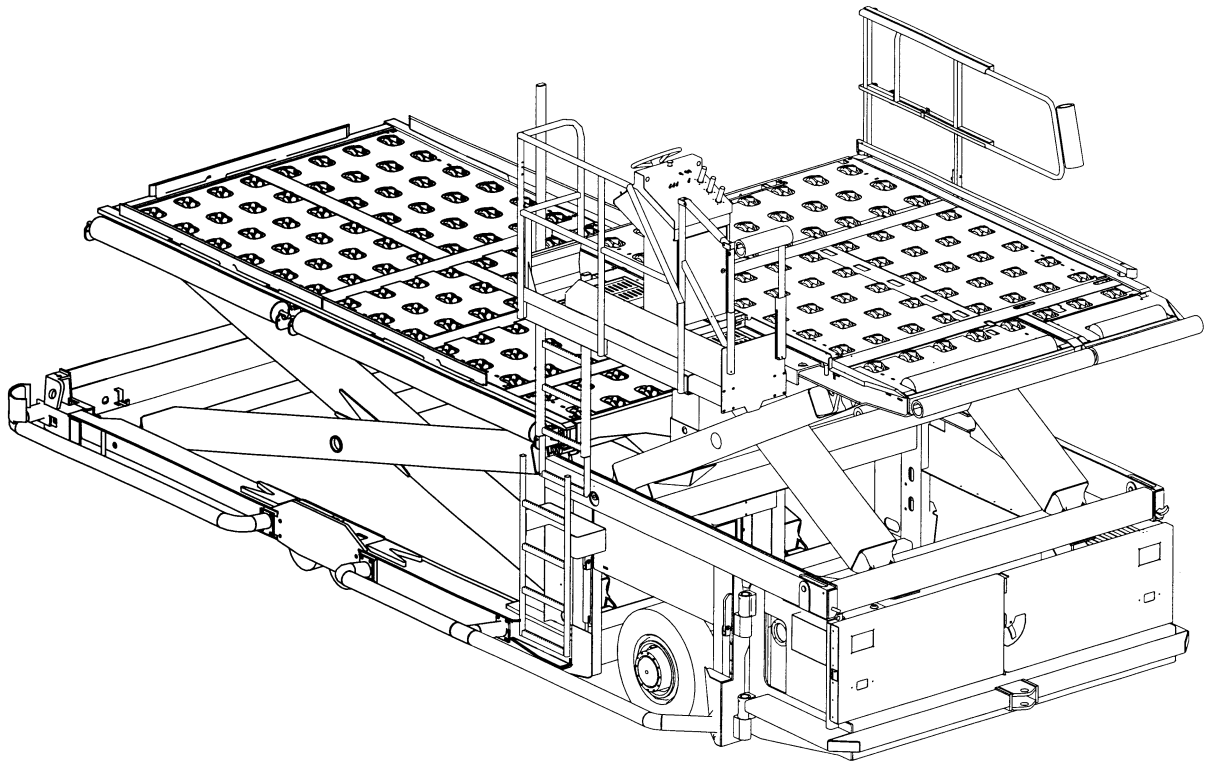


COMMANDER 15

Container/Pallet Loader



FMC Corporation
Airline Equipment



Airline Equipment Div.
Orlando, Florida

DRAWN BY:
T. Lastrapes
DATE
1-07-98

DWG SIZE L
SHEET L OF 2

DRAWING AND PART NUMBER
620-5306-031

DESCRIPTION

MODEL

United Cmdr Std.

Commander 15

RELEASE NO.
38310

APPROVED

DATE

CHECKED

DATE

REV ECN NO.

DATE

SALES ORDER NO.

LOADER SERIAL NUMBER

UI06386

CR98061

CHG	NO	SSY	PART NUMBER	DESCRIPTION
	1	1	622-6244-001	COMMANDER - STANDARD CONFIGURATION
22	2	1	623-0552-001	Elec Inst Hot Stamp C-15 Note:ADD 622-7174 TO SPEC Eng Plcrd
22	3	1	622-7174	Electrical Installation Hot Stamp (FOR OPTIONS)
22	4	1	622-6438-003	Electrical Installation Forward Scissors- Hot Wire Stamp
20	5	1	622-6240-005	Right/Left Container and Pallet Transfer
22	6	1	623-0554-005	Right/Left Container and Pallet Transfer Elec Inst Hot Stamp - Eng Plcrd
	7	1	621-1512-012	Lagged Transfer Roller
	8	1	623-1683	W-Bridge, w/Wing Deck Plates
	9	1	620-6831	W-Wing, Folding
17	10	1	622-6791-002	A-Bridge Common Parts, Container
17	11	1	622-6872-001	A-Std. Side Guides, Std. Bridge
17	12	1	623-1667-001	A-Deck Plates, Container Bridge w/Wing Deck Plates
5-175	13	1	622-6946-001	A-Rollers, Bridge Fwd. Lagged
17	14	1	622-7100	A-Bumper, Bridge Std.
16	15	1	620-9304-002	Handrail Left, folding & locking
15	16	1	620-7081-001	Ladder with lower rung & protection (Standard)
14	17	1	622-6510	Operators Cab (standard on all machines)
13	18	1	623-2651	A-PMOD DTZ BF4M1012, 4 Cyl
22	19	1	623-0548-002	Deutz BF4M-1012 Diesel Eng Elec Inst PWR Mod Hot Stamp-Eng Plcrd
12	20	1	622-2061	Diesel cover assembly
9	21	1	620-8439-003	Installation Drive Tires (Solid)
21	22	1	622-3327-002	Carbon Steel Hyd Tank w/external connections & 2" filler (UAL)
21	23	1	622-3172	Main frame hydraulic assembly - Std/Wide
18	24	1	620-8868	Manual Folding Wing (Standard Commander only)
5-39	25	1	622-5911	Electrical Inst. Status Panel Assy.
5-182	26	1	623-0941	Standard Filler Cap and Neck (Screw-on)
6	27	1	622-3364	Decals, English
5-55	28	1	622-7436	Positioning lights
5-53	29	1	622-7391	Work lights aimed at rear platform (Std)
5-52	30	1	622-7370-002	Bridge Tilt Electrical Installation Hot Stamp
5-36	31	1	622-5463	Dessicant dryer for hydraulic oil
5-47	32	1	622-6889	High pressure filtration (non-bypassing) diesel
5-16	33	1	622-1020	Front maintenance stands (standard & wide)
5-4	34	1	620-3057	Cab Corner Bumpers
5-46	35	1	622-6831	Galley Module, Electrical Installation



Airline Equipment Div.
Orlando, Florida

DRAWN BY:
T. Lastrapes
DATE
1-07-98

DWG SIZE L
SHEET 2 OF 2

DRAWING AND PART NUMBER
620-5306-031

DESCRIPTION

MODEL

United Cmdr Std.

Commander 15

RELEASE NO.
38310

APPROVED

DATE

CHECKED

DATE

REV ECN NO.

DATE

SALES ORDER NO.

UI06386

LOADER SERIAL NUMBER

CR98061

ITEM QTY		DESCRIPTION	
CHG NO	SSY PART NUMBER		
5-198 36	1 623-2995-001	Handrail, Left side for ext side load (2 piece) UAL	
5-198 37	1 623-2995-002	Handrail, Extra sockets (UAL)	
38	1 620-2773	Decals, asset numbers (UAL)	
39	1 620-9044	United Airlines Commander Paint Spec (534-Gray)	
40	1 620-5298	Paint Scheme - Black & Yellow Parts	
41	1 623-1000-003	Electrical Option Placards - English	
42	1 623-0639	Mechanical Option Decals - English	

This Specification is the same as -030 except for engine part number update

THANK YOU

FOR PURCHASING THIS **FMC** PRODUCT. IT HAS BEEN DESIGNED TO GIVE YOU MANY YEARS OF RELIABLE SERVICE. PLEASE CONTACT **FMC** AT THE FOLLOWING NUMBERS IF YOU REQUIRE ASSISTANCE WITH WARRANTY, UNIT SET-UP AND OPERATION, OR SPARE PARTS.

ORLANDO OFFICE

FIELD SERVICE/WARRANTY

1-800-327-1686 Within the U.S.

407-850-4207 Outside the U.S.

FAX : 407-850-4221

PARTS SALES

1-800-821-3019 Within the U.S.

407-850-4208 Outside the U.S.

FAX : 407-850-4221

SEE NEXT PAGE FOR REGIONAL OFFICE NUMBERS.

REGIONAL OFFICE NUMBERS:

LONDON OFFICE

**FIELD SERVICE/WARRANTY
AND PARTS SALES**

PHONE: 44-181-754-1544

FAX : 44-181-754-1545

SINGAPORE OFFICE

**FIELD SERVICE/WARRANTY
AND PARTS SALES**

PHONE: 65-542-9255

FAX : 65-542-7493

MADRID OFFICE

FIELD SERVICE/WARRANTY

PHONE: 34-91-877-58-89

FAX : 34-91-877-58-81

PARTS SALES

PHONE: 34-91-877-58-83

FAX : 34-91-877-58-84

OPERATION, MAINTENANCE MANUAL
INCLUDING
ILLUSTRATED PARTS LIST

EDITION 3, JANUARY 1996
FOR USE WITH COMMANDER 15 LOADER

REVISION 5

SERIAL NUMBER: CR96012 & UP

MANUFACTURED BY

FMC CORPORATION APSD
AIRLINE EQUIPMENT
7300 PRESIDENTS DRIVE
ORLANDO, FLORIDA 32809
TELEPHONE: (407) 851-3377
FAX: (407) 850-4221

SEPTEMBER 1999

CONFIDENTIAL

THIS MANUAL CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF THE AIRLINE EQUIPMENT OF FMC CORPORATION, AND CANNOT BE DUPLICATED, USED OR DISCLOSED IN WHOLE OR IN PART, EXCEPT WITH THE EXPRESS WRITTEN PERMISSION OF FMC CORPORATION.

© 1994, 1995, 1996, 1997 1998 1999 FMC, all rights reserved as an unpublished work.

FMC Corporation/APSD
Airline Equipment
7300 Presidents Drive
Orlando, Florida 32809
USA

FMC Corporation/APSD
Airline Equipment
Carretera de Barcelona Km.34.400
Alcala de Henares
Madrid, Spain

FMC Corporation/APSD
Airline Equipment
75 Airport Cargo Road
SATS Maintenance Centre
Cargo Complex
Singapore Changi Airport
Singapore 1781

FMC Corporation/APSD
Airline Equipment
Building 391
Viscount Way
Heathrow Airport
Middlesex, United Kingdom
TW6 2JD

LIST OF EFFECTIVE PAGES

All pages in this issue are original.

LIST OF WARNINGS AND CAUTIONS USED IN THIS MANUAL

The following warnings and cautions are used in this manual. Read all of them and follow the instructions when performing the procedures. The symbol shown below is used to call your attention to some procedures that could cause death or injury to personnel and/or damage to equipment.



A WARNING MEANS THAT A PROCEDURE THAT FOLLOWS COULD CAUSE DEATH OR INJURY TO YOU OR OTHER PERSONNEL IN THE AREA IF THE PROCEDURE IS NOT FOLLOWED AS WRITTEN.

CAUTION

A CAUTION MEANS THAT A PROCEDURE THAT FOLLOWS COULD CAUSE DAMAGE TO EQUIPMENT IF THE PROCEDURE IS NOT FOLLOWED AS WRITTEN.



BEFORE STARTING ANY TYPE OF POWER UNIT, OBSERVE ALL PRECAUTIONS BELOW.

INSURE POWER MODULE TEE BOLT IS SECURELY FASTENED.

INSURE THAT ALL PERSONNEL ARE CLEAR OF LOADER.

AT BEGINNING OF SHIFT, ENSURE THAT ALL SCHEDULED SERVICES HAVE BEEN PERFORMED. THIS INCLUDES CHECK OF TIRE CONDITION, FUEL AND FLUID LEVELS, AND OVERALL CHECK FOR LOOSE OR MISSING HARDWARE, AND GENERAL CONDITION OF LOADER.

DO NOT ATTEMPT TO OPERATE THE COMMANDER 15 WITHOUT HAVING BEEN PROPERLY TRAINED IN OPERATION AND SAFETY REQUIREMENTS.

DO NOT OPERATE LOADER WHILE UNDER INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION THAT MAY PREVENT FULL ABILITY TO CONTROL LOADER.

BE ALERT AT ALL TIMES DURING LOADER OPERATION.

IT IS PERMISSABLE TO PERFORM NORMAL LOADING OPERATIONS WHILE THE AIRCRAFT IS BEING REFUELED IF FACILITY OR REGULATORY RULES DO NOT PROHIBIT AND THE OPERATOR HAS ENSURED THAT THERE ARE NO HYDRAULIC LEAKS, OR UNSAFE CONDITIONS PRESENT. CAUTION SHOULD BE TAKEN TO ASSURE THAT POSSIBLE FUEL SPILLS WILL NOT SPLASH OR DRAIN ON THE ENGINE EXHAUST SYSTEM.

**WARNING**

WHEN USING BRIDGE TILT ENSURE ADEQUATE CLEARANCE BETWEEN LOADER AND AIRCRAFT. FAILURE TO DO SO COULD CAUSE DAMAGE TO AIRCRAFT OR LOADER.

**WARNING**

THE COMMANDER 15 IS NOT DESIGNED FOR USE AS A TRANSPORTING VEHICLE. ANY ATTEMPT TO USE IT FOR OPERATIONS OTHER THAN CARGO TRANSFER MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

THE COMMANDER 15 IS DESIGNED TO BE DRIVEN ON PAVED OR CEMENT SURFACES APPROVED TO SUPPORT THE WEIGHT AND USE OF GROUND SUPPORT EQUIPMENT VEHICLES. DRIVING THE COMMANDER 15 ON OTHER THAN THESE APPROVED SURFACES COULD RESULT IN INJURY TO PERSONNEL AND SERIOUS DAMAGE TO THE VEHICLE.

**WARNING**

DO NOT ALLOW PERSONNEL UNDER BRIDGE OR PLATFORM UNLESS ADEQUATE SUPPORTS ARE IN PLACE. FAILURE TO SUPPORT BRIDGE OR PLATFORM MAY ALLOW BRIDGE OR PLATFORM TO FALL, RESULTING IN DEATH OR INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

**WARNING**

USE EXTREME CAUTION WHEN WALKING ON BRIDGE OR PLATFORM AT ALL TIMES. AVOID STEPPING ON ROLLERS OR CLUSTER ROLLER ASSEMBLIES. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR DEATH.

**WARNING**

USE EXTREME CAUTION WHEN WALKING IN AREAS MARKED BY STRIPED WARNING TAPE.

**WARNING**

OBSERVE ALL INSTRUCTIONS IN AIRPORT OPERATIONS MANUAL WHEN DRIVING LOADER. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

BEFORE DISENGAGING HUB DRIVES, CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

DO NOT EXCEED 11 KPM (7 MPH) WHEN TOWING LOADER. EXCEEDING SPEED LIMIT MAY CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

IF HUB DRIVES ARE NOT IMMEDIATELY ENGAGED, PLACE SUITABLE WARNING SIGN ON LOADER TO INSURE THAT ALL PERSONNEL ARE AWARE OF THE CONDITION. FAILURE TO OBSERVE THIS WARNING MAY CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

DO NOT ALLOW PERSONNEL DIRECTLY IN FRONT OF LOADER. KEEP AREA CLEAR DURING LIFTING.

**WARNING**

BEFORE STARTING ANY ADJUSTMENT PROCEDURE THAT WOULD REQUIRE THE PLATFORM TO BE IN AN ELEVATED POSITION, MOVE THE MAINTENANCE STANDS INTO POSITION AND LOWER THE PLATFORM FULLY AGAINST THE MAINTENANCE STANDS. DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT OF THE LOADER IN EITHER DIRECTION.

IT IS MANDATORY THAT EYE PROTECTION (SAFETY GOGGLES OR FACE SHIELD) BE WORN WHEN MAKING PRESSURE CHECKS AND/OR ADJUSTMENTS ON THE HYDRAULIC SYSTEM. HYDRAULIC OIL WILL CAUSE EYE INJURIES. IF HYDRAULIC OIL GETS ON THE SKIN, WASH AFFECTED AREA IMMEDIATELY TO AVOID IRRITATION.

WHEN MAKING PRESSURE CHECKS OR ADJUSTMENTS, USE GAUGES WITH KNOWN ACCURACY. IMPROPER HYDRAULIC ADJUSTMENTS CAN CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

DO NOT REMOVE GAUGE PORT PLUGS, GAUGES OR LOOSEN HYDRAULIC CONNECTIONS WITH THE POWER UNIT RUNNING. HYDRAULIC PRESSURE IN THE SYSTEMS COULD CAUSE HYDRAULIC OIL TO SPRAY ON PERSONNEL.

**WARNING**

CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

USE EYE PROTECTION AND PROTECTIVE CLOTHING RECOMMENDED BY THE MANUFACTURER OF THE WELDING EQUIPMENT YOU ARE USING.

**WARNING**

USE EYE PROTECTION AND PROTECTIVE CLOTHING RECOMMENDED BY THE MANUFACTURER OF THE WELDING EQUIPMENT YOU ARE USING.

**WARNING**

DO NOT ALLOW PERSONNEL UNDER THE PLATFORM UNLESS MAINTENANCE STANDS ARE IN PLACE. FAILURE TO SUPPORT THE PLATFORM MAY ALLOW PLATFORM TO FALL, RESULTING IN DEATH OR INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

**WARNING**

BEFORE PERFORMING ANY MAINTENANCE OR WHILE MAKING ANY ADJUSTMENTS OR REPAIRS TO THE LOADER, IT IS MANDATORY THAT THE MASTER SWITCH BE TURNED OFF (POWER UNIT STOPPED).

**WARNING**

BE PREPARED TO OVERRIDE THE REAR LIFT OR HIT THE EMERGENCY SHUTDOWN IN THE EVENT OF PLATFORM OVERTRAVEL.

**WARNING**

USE ALL SAFETY PRECAUTIONS PER COMMANDER MAINTENANCE MANUAL WHILE WORKING ON THE UNIT.

**WARNING**

DO NOT LET THE PLATFORM INTERFACE WITH THE BRIDGE AT THIS TIME.

**WARNING**

EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

**WARNING**

LOADER ENGINE MUST BE SHUTDOWN WHEN MAKING ANY SWITCH ADJUSTMENT TO PREVENT AN UNCONTROLLED MOVEMENT THAT COULD POSSIBLY RESULT IN DEATH OR INJURY TO PERSONNEL OR DAMAGE TO THE LOADER.

**WARNING**

TROUBLESHOOTING OF THIS EQUIPMENT SHOULD ONLY BE DONE BY QUALIFIED TECHNICIANS THAT ARE TRAINED IN THE USE AND OPERATION OF THE EQUIPMENT. THE MAIN DRIVE WHEELS MUST BE CHOCKED TO PREVENT LOADER MOVEMENT IN EITHER DIRECTION AND PLATFORM MAINTENANCE STANDS MUST BE INSTALLED FOR SUPPORT WHENEVER PLATFORM IS RAISED FOR MAINTENANCE OR ADJUSTMENTS. FAILURE TO FOLLOW GOOD SAFETY PRACTICES DURING MAINTENANCE AND TROUBLESHOOTING PROCEDURES COULD RESULT IN DEATH OR SERIOUS INJURY TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT.

CAUTION

DO NOT USE MAXIMUM SPEED RANGE (RABBIT) IF LOADER IS CLOSER THAN 3 METERS (10 FT.) TO AIRCRAFT.

CAUTION

OPEN DOOR CAREFULLY. FAILURE TO USE CARE MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.

- CAUTION** FOR SHOOT-THE-GAP OPERATION, POSITION THE LOADER SO THAT RUBBER BUMPERS ON BRIDGE FACE ARE CLOSE TO BUT DO NOT TOUCH THE AIRCRAFT.
- CAUTION** USE EXTREME CARE TO PREVENT CONTAMINATION OF HYDRAULIC SYSTEM WHEN INSTALLING GAUGES, FITTINGS, OR REPLACING A COMPONENT. CONTAMINATION CAN RESULT IN DAMAGE TO EQUIPMENT.
- WHENEVER AN ADJUSTABLE HYDRAULIC RELIEF VALVE OR PRESSURE REDUCING VALVE IS REPLACED, REDUCE THE PRESSURE SETTING PRIOR TO STARTING THE POWER UNIT. ADJUST THE REPLACED COMPONENT TO SPECIFICATION AS OUTLINED IN THE ADJUSTMENT PROCEDURES.
- CAUTION** CHECK THAT CHAIN ANCHOR HAS NOT BEEN ADJUSTED TOO FAR FORWARD AND STRIKES THE CASTING WHICH SUPPORTS THE PRIMARY CYLINDER.
- CAUTION** TAG ALL SHIMS, LEFT AND RIGHT FOR REASSEMBLY.
- CAUTION** JUMPER WIRES SHOULD NEVER BE USED, AS AN ERROR (SHORT CIRCUIT) CAN DESTROY THE CIRCUIT BOARD.
- CAUTION** DO NOT STOP POWER UNIT WITH LOADER IN POSITION TO TRANSFER CARGO. DO NOT LEAVE LOADER UNATTENDED. FAILURE TO OBSERVE THIS CAUTION MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.
- CAUTION** IT WILL BE NECESSARY TO ADJUST HEIGHT OF BRIDGE AS AIRCRAFT POSITION CHANGES DURING CARGO TRANSFER. FAILURE TO MAINTAIN ALIGNMENT OF AIRCRAFT AND BRIDGE MAY RESULT IN DAMAGE TO EQUIPMENT.
- CAUTION** IT WILL BE NECESSARY TO MANUALLY ADJUST HEIGHT OF BRIDGE AS AIRCRAFT POSITION CHANGES DURING CARGO TRANSFER. FAILURE TO MAINTAIN ALIGNMENT OF AIRCRAFT AND BRIDGE MAY RESULT IN DAMAGE TO EQUIPMENT.
- CAUTION** CLOSE CARGO DOOR CAREFULLY, FAILURE TO DO SO MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.
- CAUTION** TO PREVENT DAMAGE TO THE STABILIZER CYLINDER ASSEMBLIES, IT IS RECOMMENDED THE STABILIZERS NOT BE EXTENDED WHEN THE UNIT IS PARKED.
- CAUTION** LIFT UNIT ONLY ON POINTS INDICATED ON FIGURE 1. FAILURE TO USE DESIGNATED LIFT POINTS WILL RESULT IN EQUIPMENT DAMAGE.

- CAUTION** DO NOT OPERATE ELECTRICAL PUMP CONTINUOUSLY FOR MORE THAN 1 MINUTE. OPERATION FOR MORE THAN 1 MINUTE WILL OVERHEAT MOTOR AND MAY CAUSE DAMAGE. IF EMERGENCY PROCEDURES CANNOT BE COMPLETED WITHIN 1 MINUTE, WAIT AT LEAST 10 MINUTES TO ALLOW MOTOR TO COOL, THEN CONTINUE.
- CAUTION** ENERGIZE THE EMERGENCY POWER UNIT ONLY WHILE OTHER SWITCHES ARE TURNED ON. CONTINUOUS OPERATION WHILE NOT IN USE CAUSES THE ELECTRIC MOTOR TO OVERHEAT UNNECESSARILY.
- CAUTION** CLOSE AND SECURE CARGO DOOR CAREFULLY. FAILURE TO USE CARE MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.
- CAUTION** DISCONNECT BATTERY BEFORE TOWING LOADER.
- CAUTION** TOWING LOADER WITHOUT DISENGAGING HUBS WILL SERIOUSLY DAMAGE COMPONENTS.
- CAUTION** IN THE EVENT OF UNIT DE-COMMISSIONING, MAJOR OVERHAUL OR SERVICING, ANY ENVIRONMENTALLY SENSITIVE MATERIALS NEED TO BE DISPOSED OF PROPERLY. PROPER DISPOSAL SHALL FOLLOW LOCAL ENVIRONMENTAL REGULATIONS AND RECOMMENDATIONS. EXAMPLES OF SUCH MATERIALS INCLUDE: RUBBER TIRES AND BELTS, BATTERIES, LUBRICANTS (MOTOR OILS AND GREASE), HYDRAULIC OIL, ALL TYPES OF GLYCOL AND FUEL.



AIRLINE EQUIPMENT

CALIFORNIA

PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.

TABLE OF CONTENTS

OPERATION AND MAINTENANCE MANUAL

WITH ILLUSTRATED PARTS LIST

	<u>CHAPTER</u>
GENERAL INFORMATION AND OPERATING INSTRUCTIONS	1
MAINTENANCE	2
OVERHAUL	3
ILLUSTRATED PARTS LIST	4
OPTIONAL EQUIPMENT	5
MANUFACTURER'S DATA	6

CHAPTER 1. GENERAL INFORMATION AND OPERATING INSTRUCTIONS

TABLE OF CONTENTS

Section 1. Description

	<u>Page</u>
1. GENERAL	1
2. CAPABILITIES	1
3. MAJOR COMPONENTS	1
Chassis	1
Bridge	3
Operator's Cab	7
Platform	7
Power Unit	20
Hydraulic System	20
Electrical System	20
4. MISCELLANEOUS COMPONENTS	20
Lights	20
Horns	20
Audible Alarms	21
Powered Bogy Wheels	21
Folding handrail	21
5. AVAILABLE OPTIONS	21

Section 2. Operation

1. CONTROL AND INDICATORS	1
Driver's Panel Controls	1
Upright Panels	5
Operator's Panel Controls	8
Gauge Panel and Miscellaneous Controls	12
Driver's Console	14

	<u>Page</u>
2. PROCEDURES	16
Starting Power Unit	16
Stopping Power Unit	17
Bridge Tilt (Optional)	17
Approaching Aircraft for Cargo Transfer	17
Transferring Cargo From Aircraft	20
Transferring Cargo To Aircraft	21
Departing From Aircraft	22
Parking Loader	23

Section 3. Specifications

1. PERFORMANCE	1
2. POWER UNIT DATA	2
3. HYDRAULIC SYSTEM	2
4. ELECTRICAL SYSTEM	2
5. BRAKE SYSTEM	3
6. WHEELS AND TIRES	3
7. CAPACITIES	3
8. WEIGHT AND DIMENSIONS	4
9. OPERATOR'S VIBRATION LEVELS	4
10. ADJUSTMENT SETTINGS	6

Section 4. Shipping

1. GENERAL	1
2. SURFACE TRANSPORTATION	1
3. AIR TRANSPORTATION	1

Section 5. Storage

1. SHORT TERM STORAGE (1 MONTH MAXIMUM)	1
2. LONG TERM STORAGE	1

Section 6. Emergency Procedures

	<u>Page</u>
1. DEPARTING AIRCRAFT	1
2. DISENGAGING HUB DRIVES	3
3. TOWING	3
4. LIFT TOWING	4
5. ENGAGING HUB DRIVES	4

CHAPTER 1

LIST OF FIGURES

<u>Chapter- Section</u>	<u>Fig. No.</u>	<u>Title</u>	<u>Page</u>
1-1	1	TYPICAL COMMANDER 15 CONTAINER/PALLET LOADER	2
1-1	2	BRIDGE COMPONENTS (TYPICAL)	4
1-1	3	BRIDGE, THREE-WING VERSION	5
1-1	4	BRIDGE, ONE-WING VERSION	6
1-1	5	OPERATOR'S CAB COMPONENTS	8
1-1	6	DRIVER'S PANEL	9
1-1	7	DRIVER'S PANEL (UPRIGHT)	10
1-1	8	OPERATOR'S PANEL	11
1-1	9	PLATFORM COMPONENTS (TYPICAL)	12
1-1	10-13	PLATFORM CONFIGURATIONS	15
1-1	14	POWER UNIT (TYPICAL)	19
1-2	1	DRIVER'S PANEL	2
1-2	2,3	INTERNATIONAL SYMBOLS FOR DRIVER'S PANEL CONTROLS	3
1-2	4	UPRIGHT PANELS	6
1-2	5	INTERNATIONAL SYMBOLS FOR DRIVER'S SIDE CONTROL PANEL	7
1-2	6	OPERATOR'S CONTROL PANEL	9
1-2	7,8	INTERNATIONAL SYMBOLS FOR OPERATOR'S CONTROL PANEL	10
1-2	9	GAUGE PANEL AND MISCELLANEOUS CONTROLS	13
1-2	10	DRIVER'S CONSOLE	15
1-3	1	DIMENSIONS	5
1-4	1	SHIPPING	3
1-6	1	DRIVE HUB DISENGAGEMENT AND ENGAGEMENT	2

<u>Chapter– Section</u>	<u>Fig. No.</u>	<u>Title</u>	<u>Page</u>
1–6	3	LIFT TOWING	5

CHAPTER 1. GENERAL INFORMATION AND OPERATING INSTRUCTIONS

Section 1. Description

1. **GENERAL**

The COMMANDER 15 loader (Figure 1) is a single-operator, self-propelled vehicle capable of lifting and conveying cargo weighing up to 6800 kg (15000 lb) It can handle containers or pallets and service a variety of aircraft.

Design concept utilizes the latest in technology and incorporates modular power units, improved conveying system, electrical systems, and hydraulic components. Power units can be a variety of diesel. The electrical system is a relay system, 24-volt DC, and the hydraulic system is closed-center and load-sensing. Two hydraulic motors power the planetary drive wheels to propel the loader.

A number of components of the COMMANDER 15 loader are available in different configurations. For instance, the platform can be supplied for rear loading only, or for right side or left side and rear loading, or right, left, and rear loading. Other components are standard for all loaders. The various configurations and features available are described in this section.

2. **CAPABILITIES**

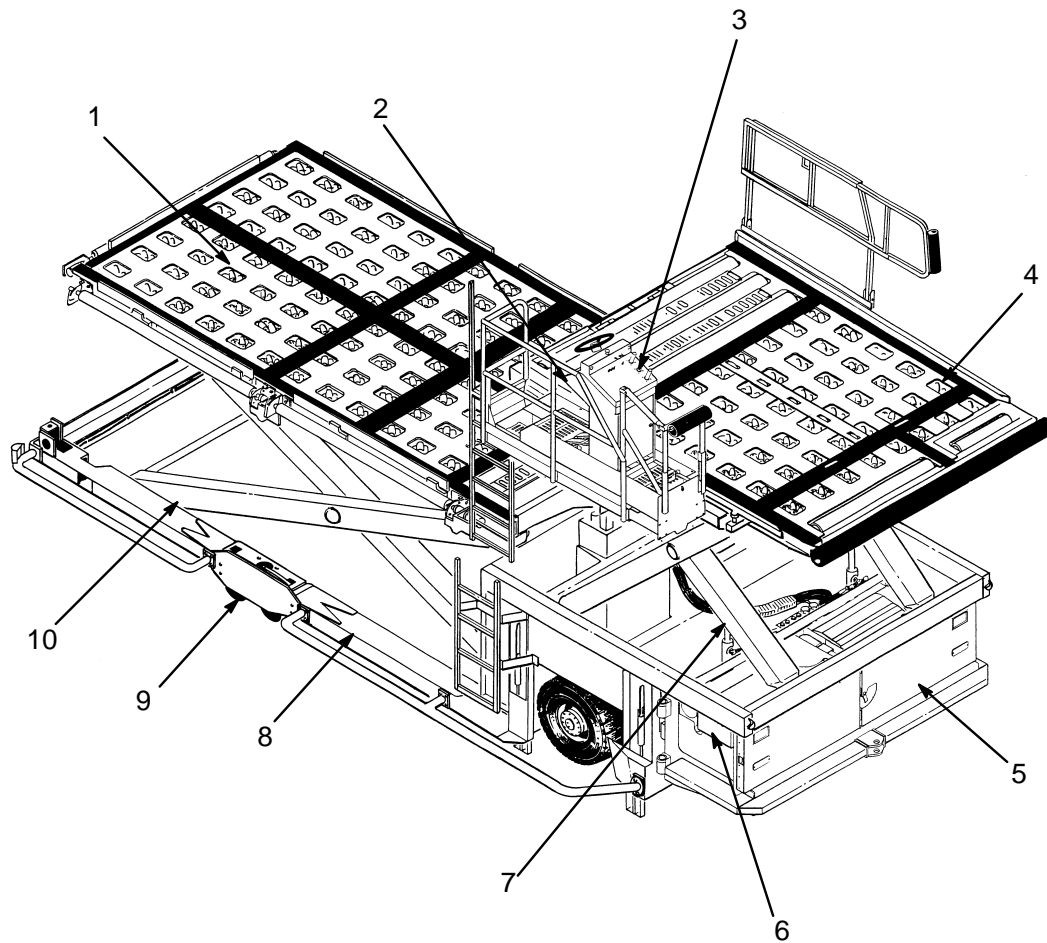
The minimum height of 0.46 m (18") of the platform facilitates transfer of cargo from surface vehicles. The turning radius of 7.9 m (26 ft) and inching capability of the propulsion system provide safe and precise control for positioning the loader. The maximum height to which cargo can be lifted is 3.55 m (140").

A double-scissors assembly is available to increase the lift height to 5.6 m (220").

3. **MAJOR COMPONENTS**

A. Chassis

The chassis is a rigid steel framework on which all other components are mounted. Two steerable drive wheels support the chassis at the front, and two boggy wheel assemblies, consisting of two wheels each, support the rear of the chassis. The drive wheels propel the chassis hydraulically by means of two planetary gear hubs. The boggy wheel assemblies are supplied with a hydraulic height adjustment. Brakes and steering are also hydraulically powered. During cargo transfer, the chassis is supported by six stabilizers that are hydraulically controlled to provide a stable platform for cargo transfer.



- | | |
|---------------------|---------------------|
| 1. PLATFORM | 6. GAUGE PANEL |
| 2. DRIVER'S PANEL | 7. FORWARD SCISSORS |
| 3. OPERATOR'S PANEL | 8. CHASSIS |
| 4. BRIDGE | 9. BOGY WHEEL |
| 5. POWER UNIT | 10. REAR SCISSORS |

Figure 1
TYPICAL COMMANDER 15 CONTAINER/PALLET LOADER

B. Bridge (Figure 2)

The bridge is raised and lowered by a scissors assembly that is powered by two hydraulic cylinders. A patented cargo convey system provides for cargo movement and eliminates the need for manually adjusting position of cargo. The convey system consists of cluster roller assemblies and cylindrical rollers.

The roller assemblies provide the motive force that conveys the cargo. Each cluster roller assembly consists of a hub that supports six barrel-shaped rollers at an angle to the center line of the hub.

Direction of roller assembly rotation is controlled by switches (joysticks) mounted on the operator's control panel. Power is supplied by shafts that are driven by hydraulic motors. In some cases, several shafts are driven by one motor via sprockets and roller chains.

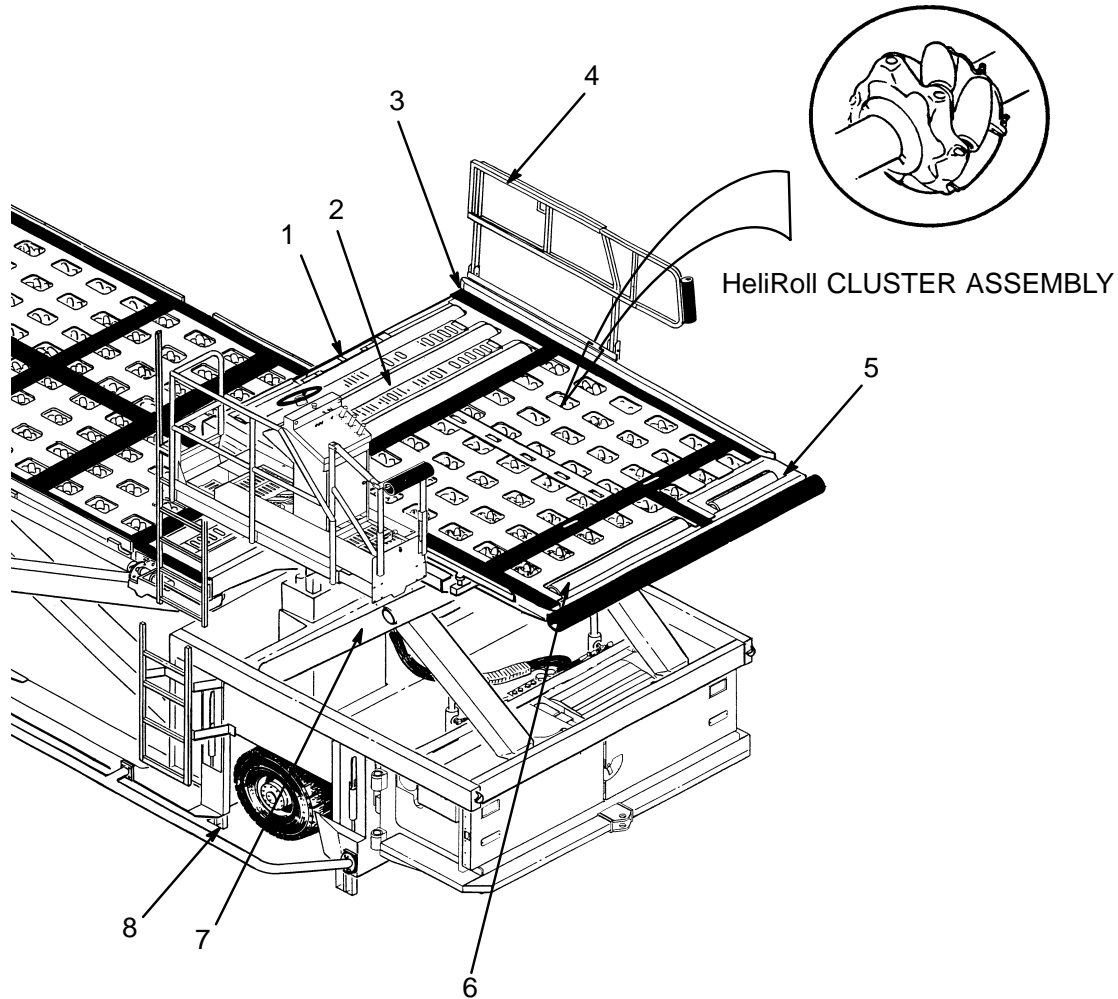
When cargo is conveyed forward or rearward, all roller assemblies rotate in the same direction. For movement to either side, some roller assemblies are driven in one direction, and others are driven in the opposing direction. The various combinations of rotation allow the operator to control cargo position without being required to manually shift it.

Two guides on the bridge are hydraulically adjustable from side to side to assist in aligning cargo for transfer onto the aircraft. The front of the bridge may be equipped with three folding wings (Figure 3) so that the loader can be used to transfer cargo to or from aircraft with varying door widths. Three folding wings are used only on the "wide option" of the loader, and are raised and lowered hydraulically. A one-wing version is standard. The one-wing version can be hydraulically raised or lowered, or may be equipped with a mechanical latch that secures it in the horizontal position until manual lowering is required.

A load stop is located at the rear of the bridge. It is normally in the extended (up) position, except when the platform is at the same level as the bridge. The stop is mechanically operated, and automatically prevents cargo movement off the bridge unless the platform is in a position to accept the cargo. Powered cylindrical rollers at the front of the bridge support and transfer cargo as it is conveyed on or off the bridge. A hinged handrail is installed on the left side of the bridge.

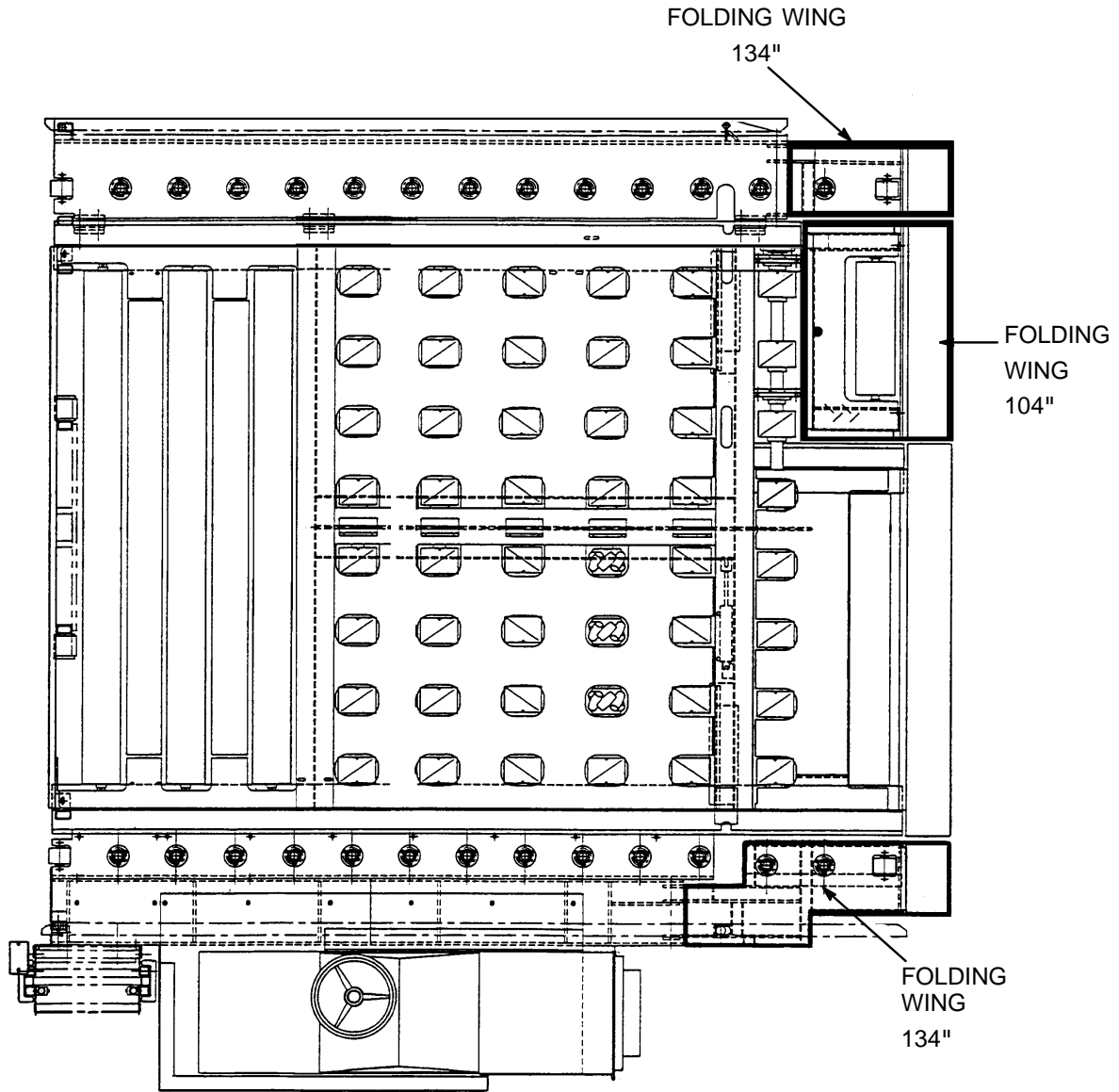
A double-scissors assembly can be provided to increase the maximum lifting height of 5.6 m (220"), which provides a main deck loading capability.

The bridge can be equipped with an optional aircraft following assembly (tracking sensor) that automatically adjusts bridge height to compensate for change in aircraft height as cargo is transferred. The sensor roller assembly touches the aircraft at one point only; the requirement for a variety of adapter hooks is eliminated. The automatic feature can be bypassed, if desired, and the operator can manually change bridge height as necessary.



- | | |
|-----------------------|------------------------|
| 1. LOAD STOP | 5. WING |
| 2. CYLINDRICAL ROLLER | 6. CYLINDRICAL ROLLER |
| 3. SIDE GUIDE (2) | 7. SCISSORS ASSEMBLY |
| 4. HANDRAIL | 8. STABILIZER ASSEMBLY |

Figure 2
BRIDGE COMPONENTS (TYPICAL)



THREE WINGS (OPTIONAL) ARE HYDRAULICALLY
RAISED AND LOWERED

Figure 3
BRIDGE, THREE-WING VERSION

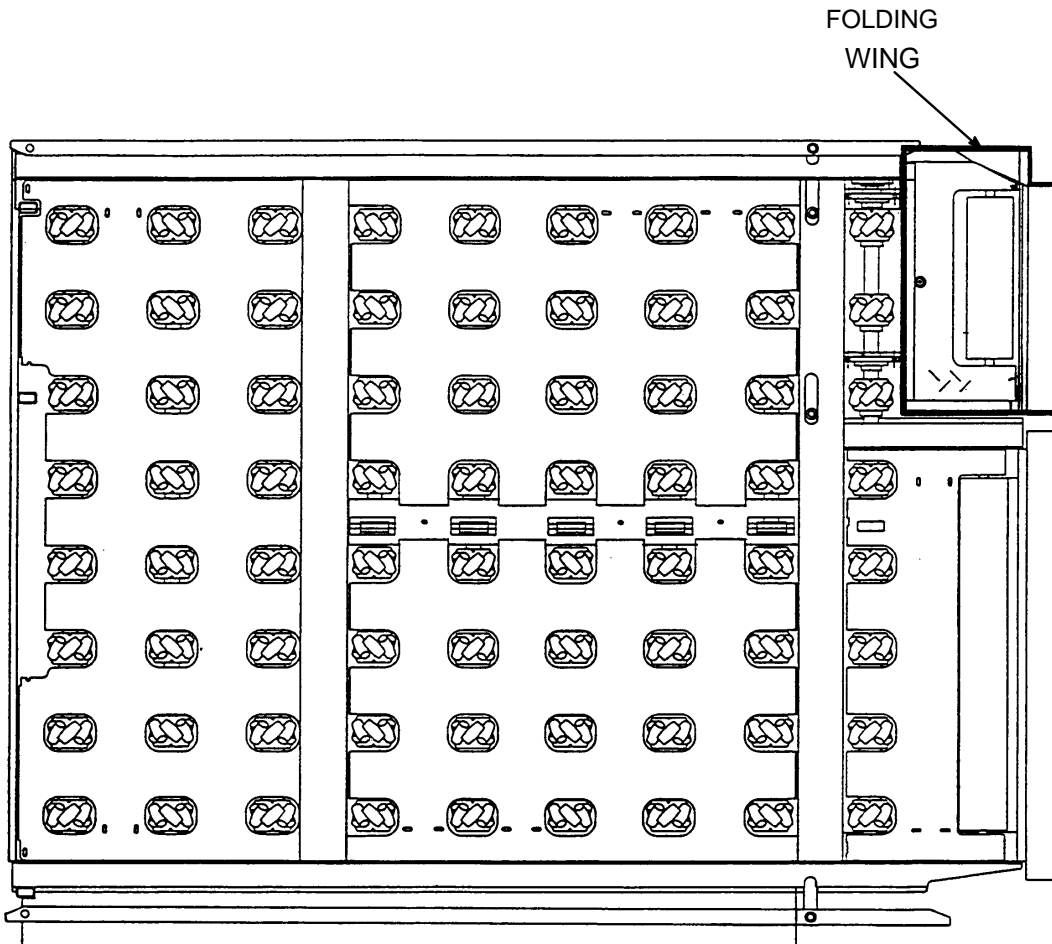


Figure 4
BRIDGE, ONE-WING VERSION

C. Operator's Cab

The operator's cab (Figure 5) contains all controls required to drive the loader and transfer cargo. The stand-up design offers maximum visibility as well as safe, convenient, and comfortable access to loader and aircraft controls. The operator's cab is hydraulically adjustable fore and aft to allow the operator to gain access to aircraft controls during cargo transfer.

Controls and indicators used to drive the loader and position cargo are located on two panels on the operator's control. Indicators are placed on the driver's panel (Figure 6) so that operation of the loader can be monitored. Controls for propulsion speed and direction are also included. Located on the operator's panel (Figure 7, Figure 8) are the switches used to position and transfer the cargo to raise and lower the bridge and platform, and to operate the side and rear stops.

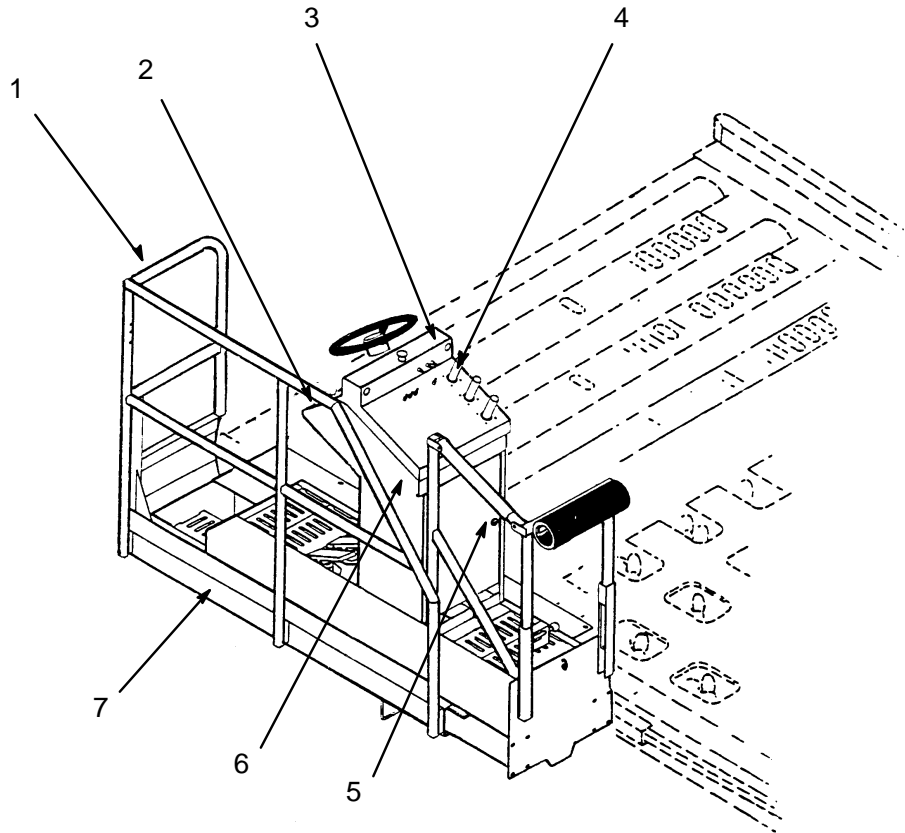
Also included is an accelerator pedal that proportionally controls the speed of the loader. The proportional control feature allows precise positioning of the loader and provides an inching capability as the aircraft is approached. A pedal actuates the hydraulic brakes. Handrails are an integral part of the platform for operator safety during operation of the loader.

D. Platform (Figure 9)

The platform is also raised and lowered by a scissors assembly; however, it is powered by three hydraulic cylinders that operate in conjunction with four lift chain assemblies to position the platform.

Depending on the configuration of the platform, a cargo convey system similar to that of the bridge may be purchased. Hydraulically operated stops prevent unintentional off loading of cargo. The stops can be automatically or manually operated. Proximity switches prevent manual operations when the platform is not in the proper position for loading or unloading. Proximity switches on the bridge must also sense correct position of the platform before cargo can be transferred to or from the platform.

Thirteen configurations of the platform are available. Types of rollers, number of movable stops, and other hardware vary with the configuration of a particular platform. Each configuration is explained below. All configurations, except the end load only, allow the operator to mechanically rotate containers on the platform.



- | | |
|-----------------------------|----------------------------|
| 1. HANDRAIL | 5. STATUS PANEL (OPTIONAL) |
| 2. DRIVER'S PANEL | 6. BRIDGE PANEL |
| 3. DRIVER'S PANEL (UPRIGHT) | 7. OPERATOR'S CAB |
| 4. OPERATOR'S PANEL | |

Figure 5
OPERATOR'S CAB COMPONENTS

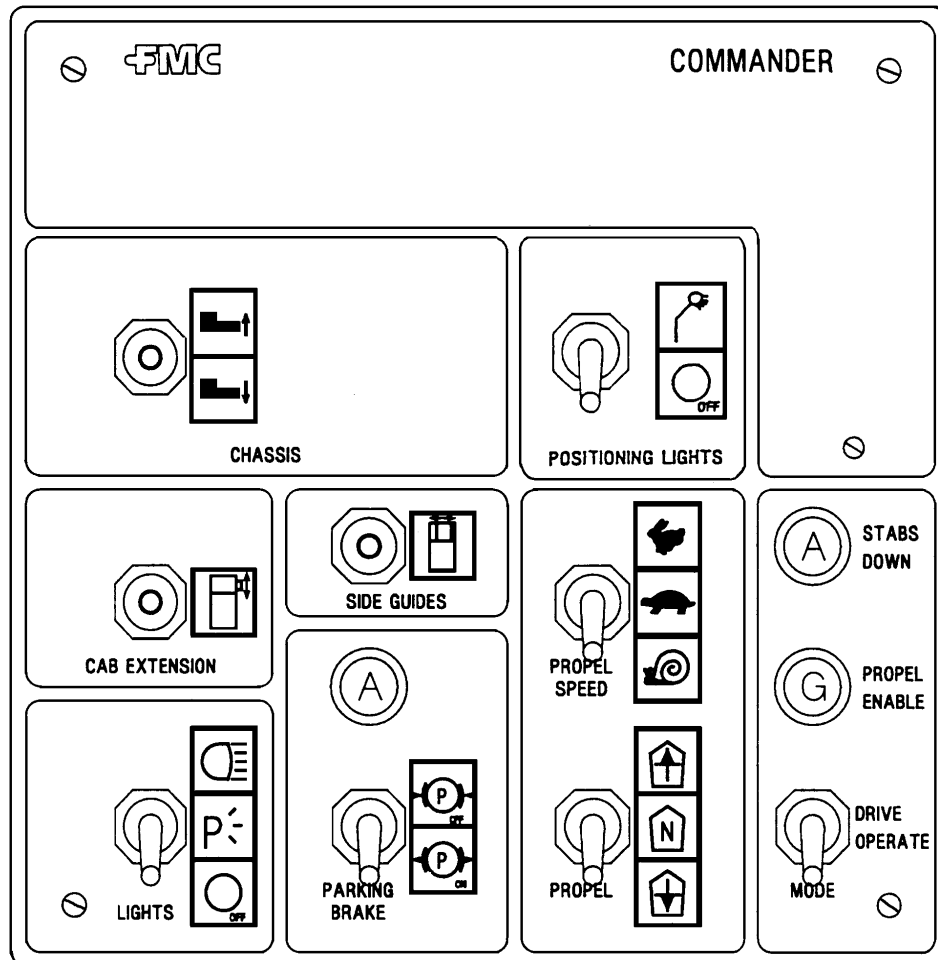


Figure 6
DRIVER'S PANEL

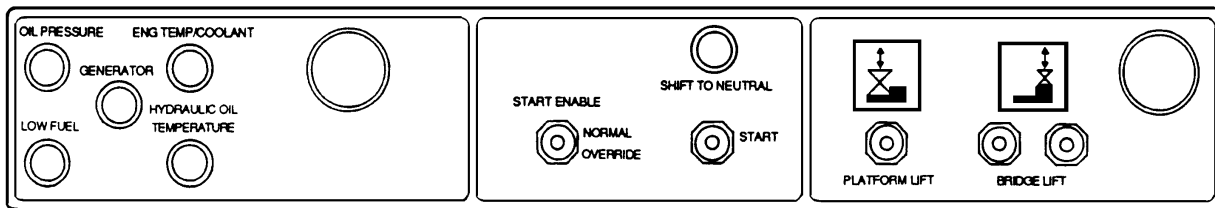
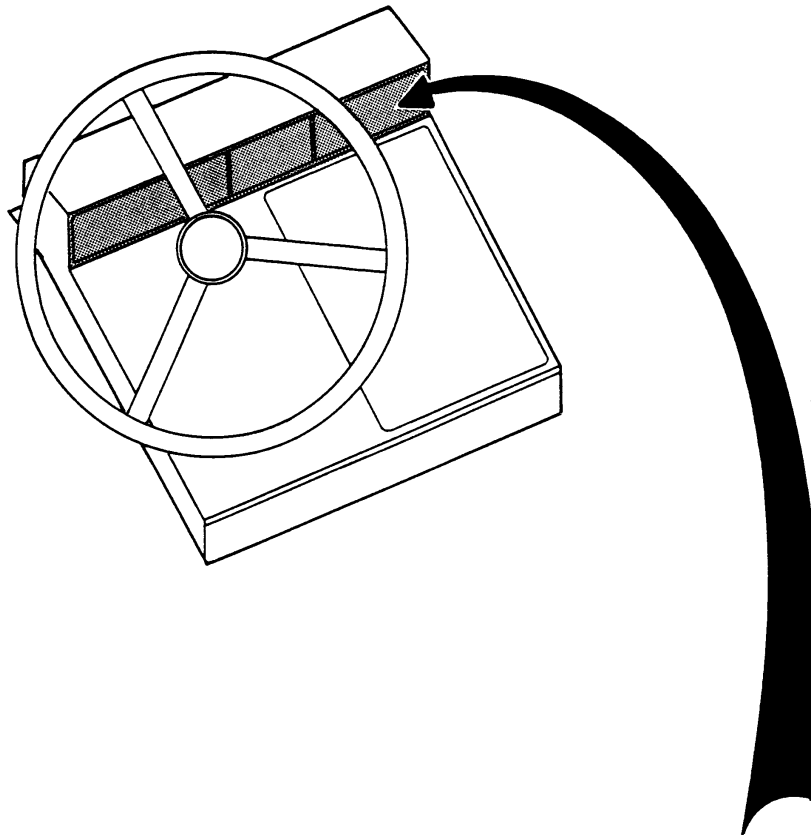


Figure 7
DRIVER'S PANEL (UPRIGHT)

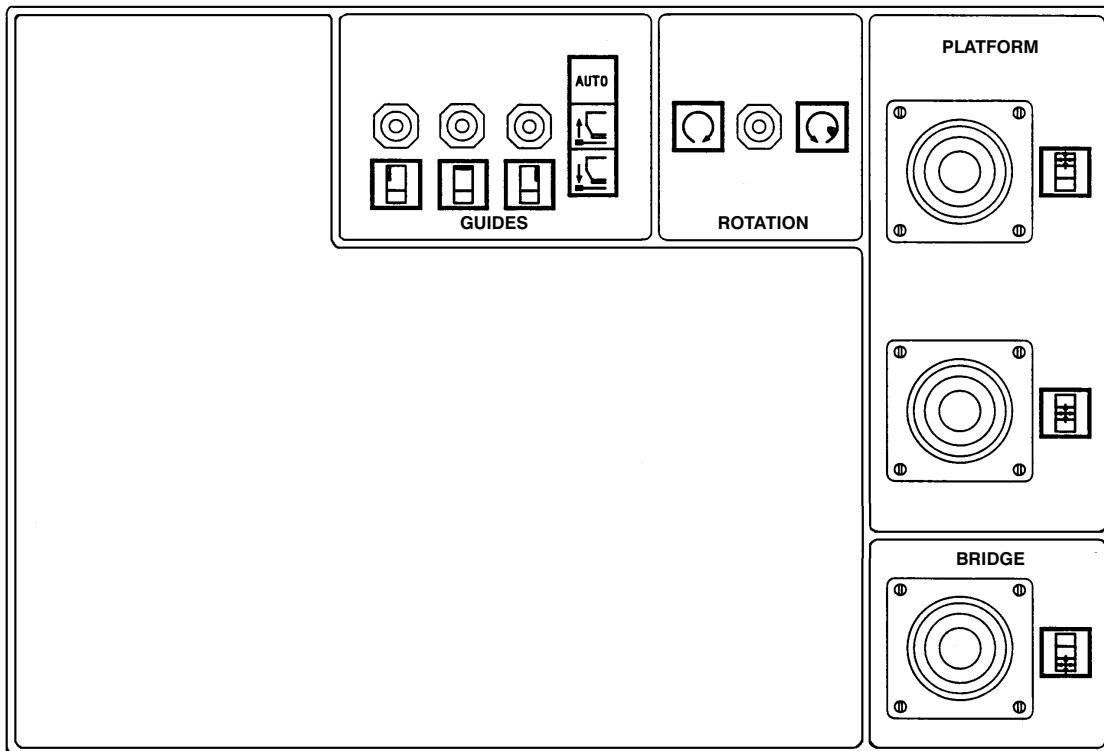
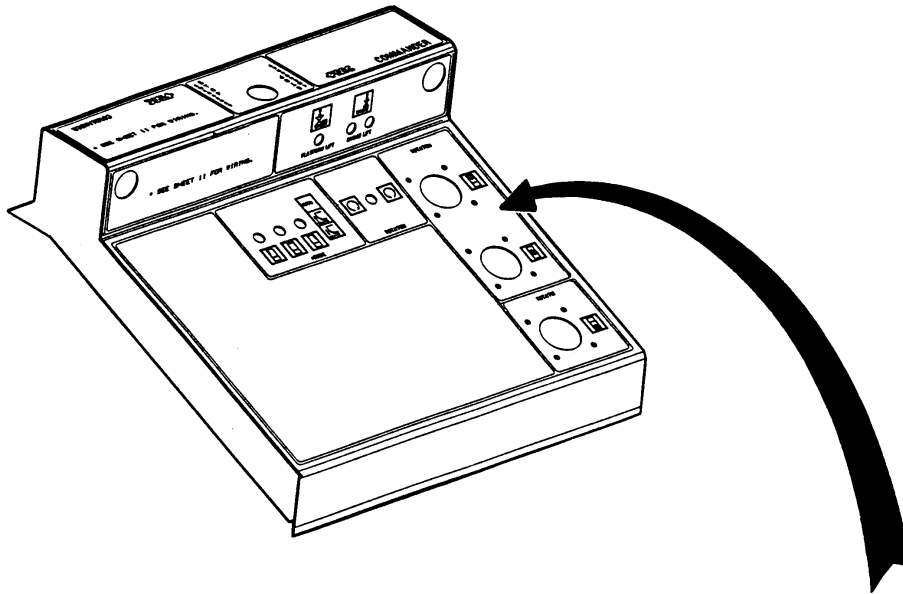
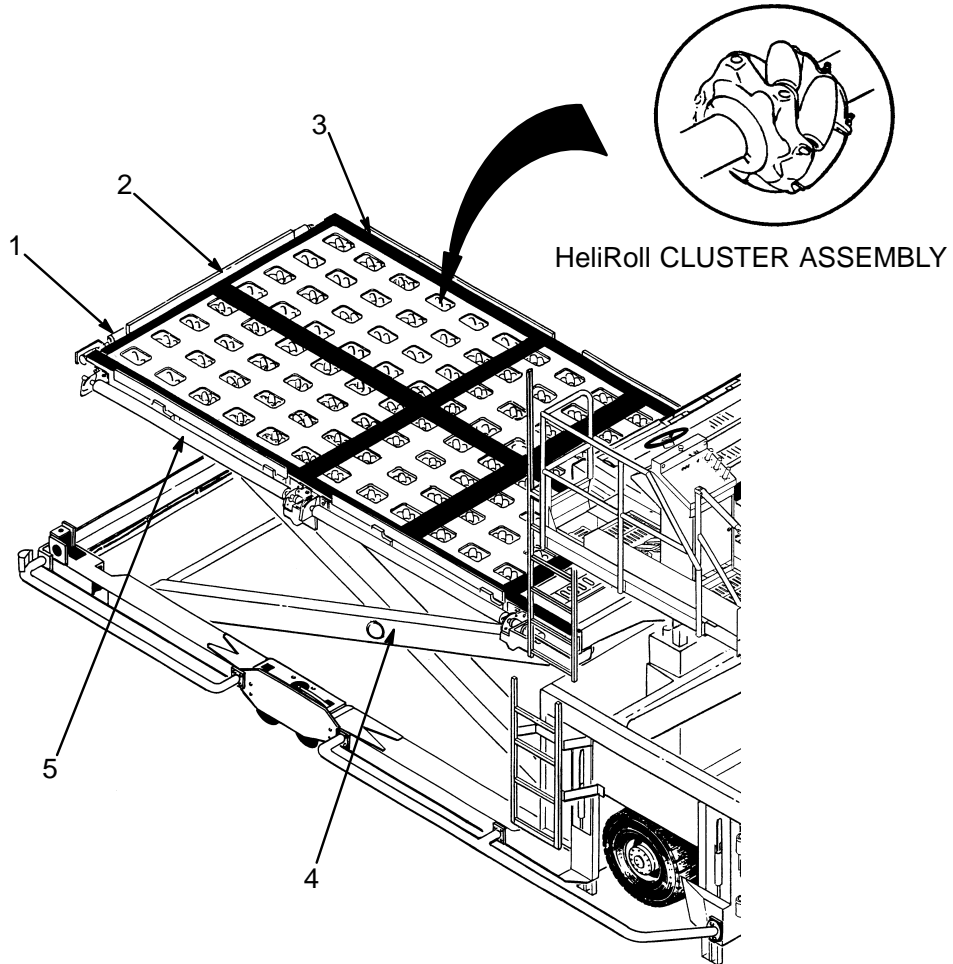


Figure 8
OPERATOR'S PANEL



- | | |
|----------------|----------------------|
| 1. REAR ROLLER | 4. SCISSORS ASSEMBLY |
| 2. REAR STOP | 5. SIDE ROLLER |
| 3. SIDE STOP | |

Figure 9
PLATFORM COMPONENTS (TYPICAL)

(1) End Pallet Load (Figure 10)

Allows the operator to transfer palletized or containerized cargo to or from the rear of the loader. Fourteen cylindrical rollers move the cargo; no cluster roller assemblies are used. A hydraulically powered cylindrical roller at the rear assists in transferring cargo to and from the transporting vehicle.

Only the rear stop is hydraulically powered; the side stops are stationary.

(2) End Load w/Container Side Shift (Figure 10)

Allows the operator to transfer containerized cargo to or from the rear of the loader. Cargo can be side shifted or rotated for alignment. Six rows of cluster roller assemblies and eight cylindrical rollers move the cargo. A hydraulically powered cylindrical roller at the rear assists in transferring cargo to and from the transporting vehicle.

(3) Right Side Container Load (Figure 10)

Allows the operator to transfer containerized cargo to or from the right side and rear of the loader. Six rows of cluster roller assemblies and eight cylindrical rollers move the cargo. Hydraulically powered cylindrical rollers at the right side and rear assist in transferring cargo to and from the transporting vehicle.

Hydraulically powered stops for the right side and the rear are provided for this configuration.

(4) Right & Left Side Container Load (Figure 11)

Allows the operator to transfer containerized cargo to or from the right and left sides and the rear of the loader. Six rows of cluster roller assemblies and eight cylindrical rollers move the cargo. Hydraulically powered cylindrical rollers at both sides and the rear assist in cargo transfer to and from the transporting vehicle.

Hydraulically powered stops for the right and left sides and the rear are provided for this configuration.

(5) End Load w/Pallet Side Shift (Figure 11)

Allows the operator to transfer palletized or containerized cargo to or from the rear of the loader. Pallets can be side shifted for alignment and containers can be either side shifted for alignment or rotated to meet aircraft profile. Nine rows of cluster roller assemblies and six forward cylindrical rollers move the cargo. A hydraulically powered cylindrical roller at the rear assists in transferring cargo to and from the transporting vehicle.

(6) Right Side Pallet Load (Figure 11)

Allows the operator to transfer palletized or containerized cargo to or from the right side and rear of the loader. Nine cluster roller assemblies and five cylindrical rollers move the cargo. In addition, two hydraulically powered cylindrical rollers at the right side and rear assist in transferring cargo to and from the transporting vehicle.

Hydraulically powered stops for the right side and the rear are provided for this configuration.

(7) Right & Left Side Pallet Load (Figure 12)

Allows the operator to transfer palletized or containerized cargo to or from the right and left sides of the loader and to or from the rear. Nine rows of cluster roller assemblies and five cylindrical rollers move the cargo. Two hydraulically powered cylindrical rollers on each side and one at the rear assist in transferring cargo to and from the transporting vehicle.

Hydraulically powered stops for the right and left sides and the rear are provided for this configuration.

(8) Right & Left Pallet Side Shift Extended Side Load (Figure 12)

Allows the operator to transfer palletized or containerized cargo to or from the right and left sides of the loader and to or from the rear. Twelve rows of cluster roller assemblies and two front cylindrical rollers move the cargo fore/aft. Hydraulically powered cylindrical rollers at the right side and rear assist in transferring cargo to and from the transporting vehicle. See rotation point.

(9) Right & Left Pallet Side Shift Extended Side Load (Figure 12)

Allows the operator to transfer palletized or containerized cargo to or from the right and left sides of the loader and to or from the rear. Twelve rows of cluster roller assemblies and two front cylindrical rollers move the cargo fore/aft. Hydraulically powered cylindrical rollers at the right side and rear assist in transferring cargo to and from the transporting vehicle. See rotation point.

(10) End Load w/Pallet Side Shift Powered Guides (Figure 12)

Same as (5) above, but with the added ability to rotate pallets at the rear and side load left and right side.

(11) Extended Side Load (Figure 13)

Same as (8) and (9) above except platform is longer. Twelve rows of cluster assemblies and five front rollers.

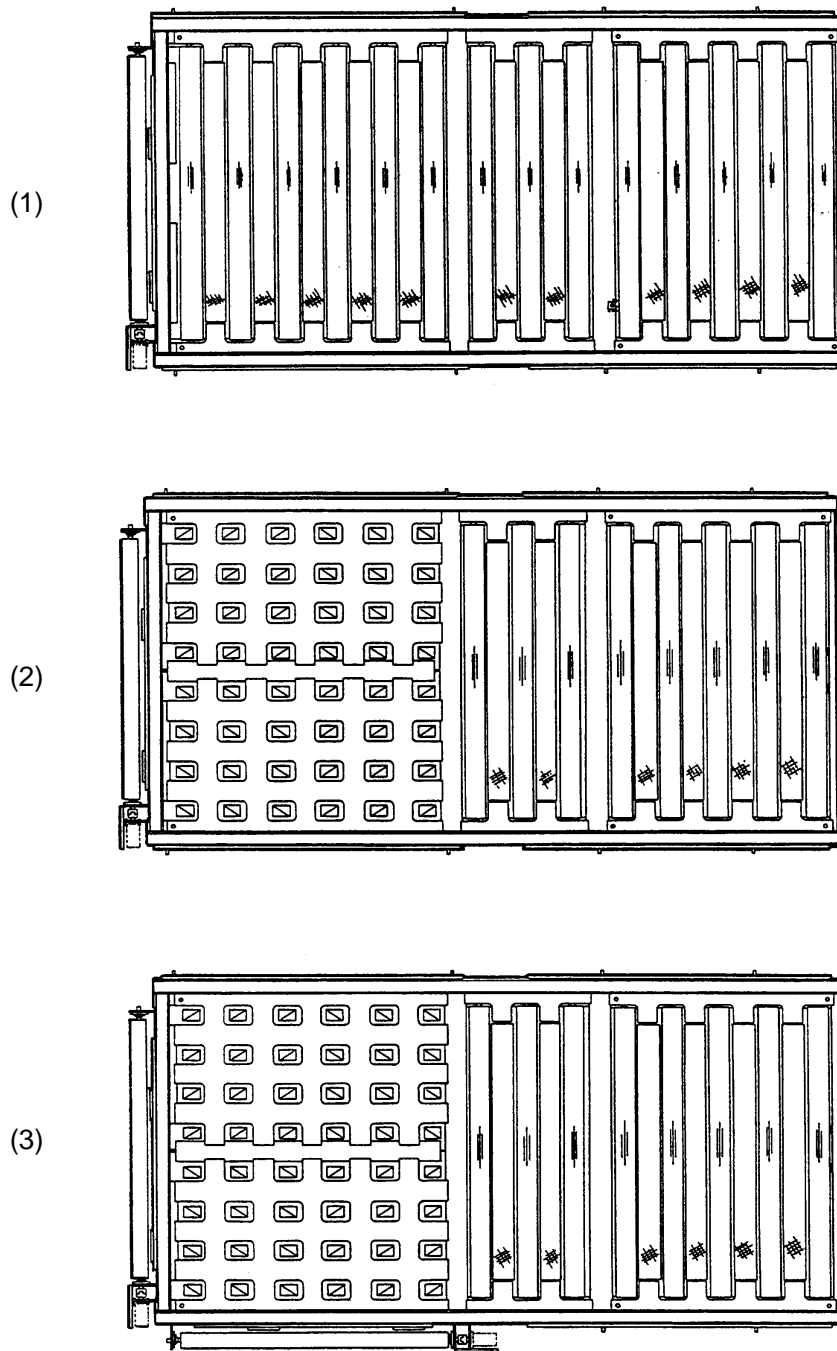


Figure 10
PLATFORM CONFIGURATIONS

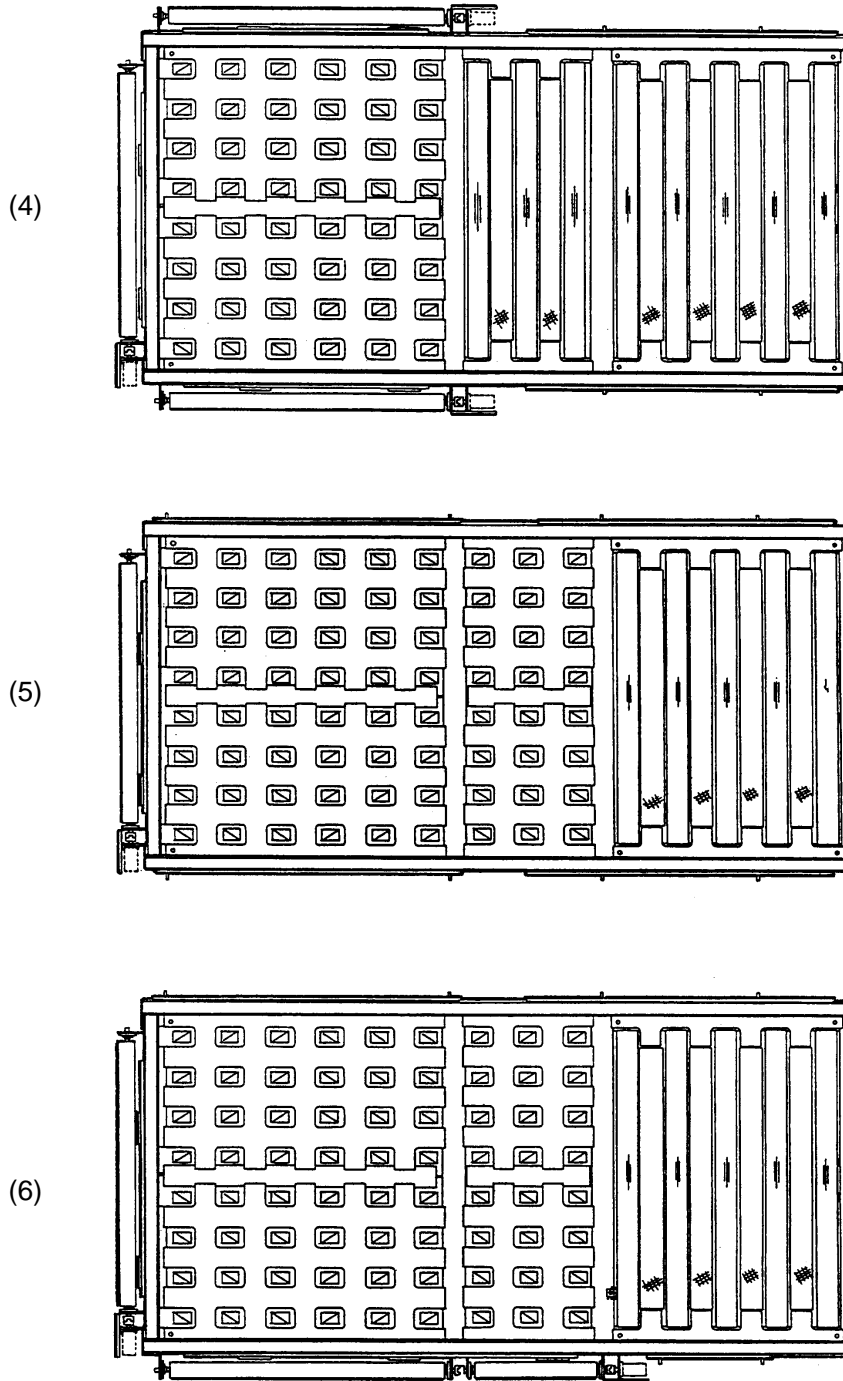


Figure 11
PLATFORM CONFIGURATIONS

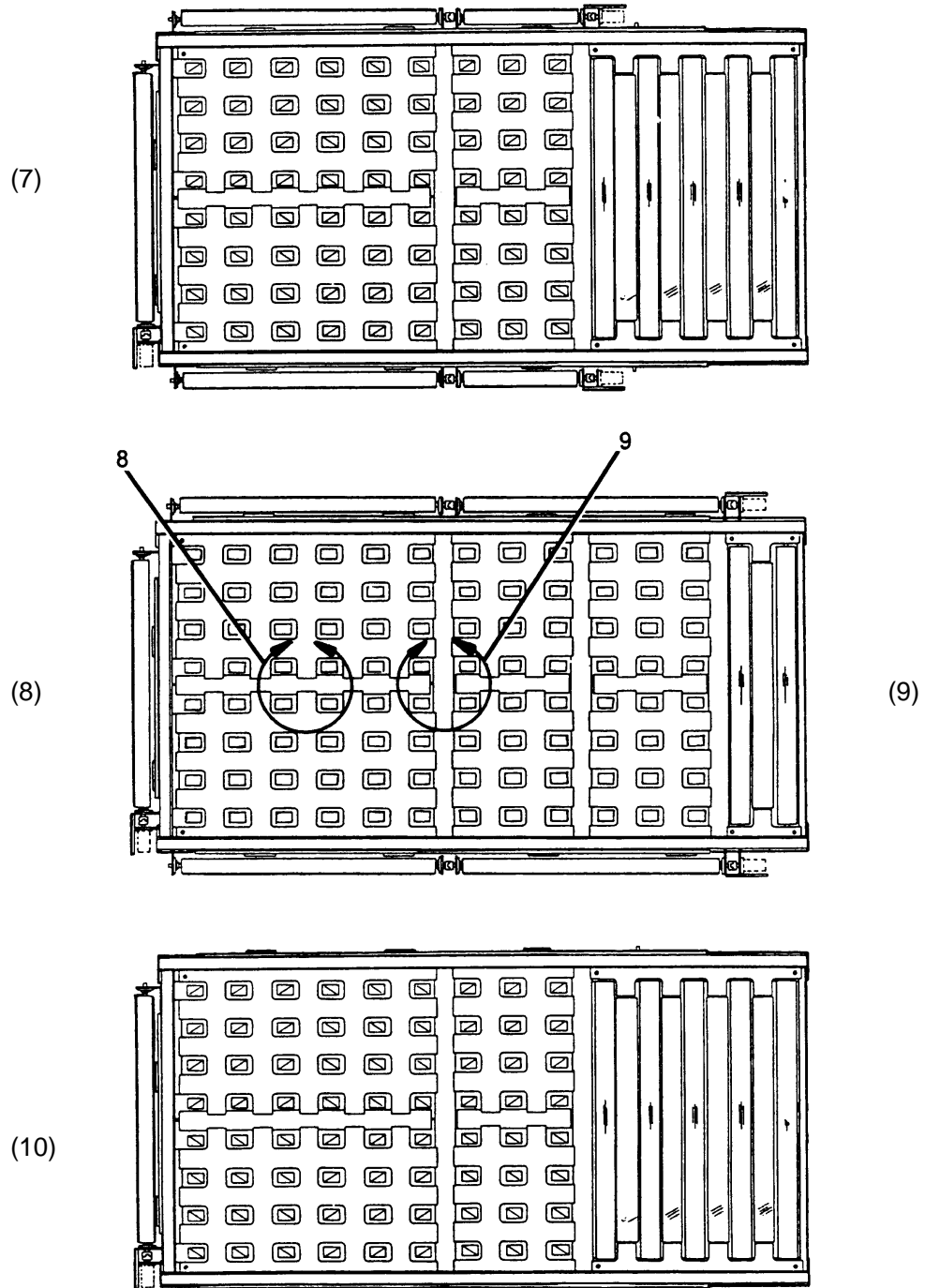


Figure 12
PLATFORM CONFIGURATIONS

(11)

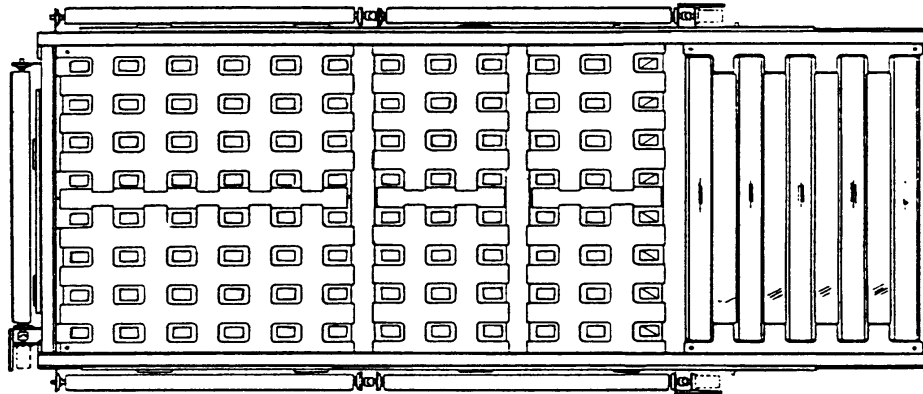
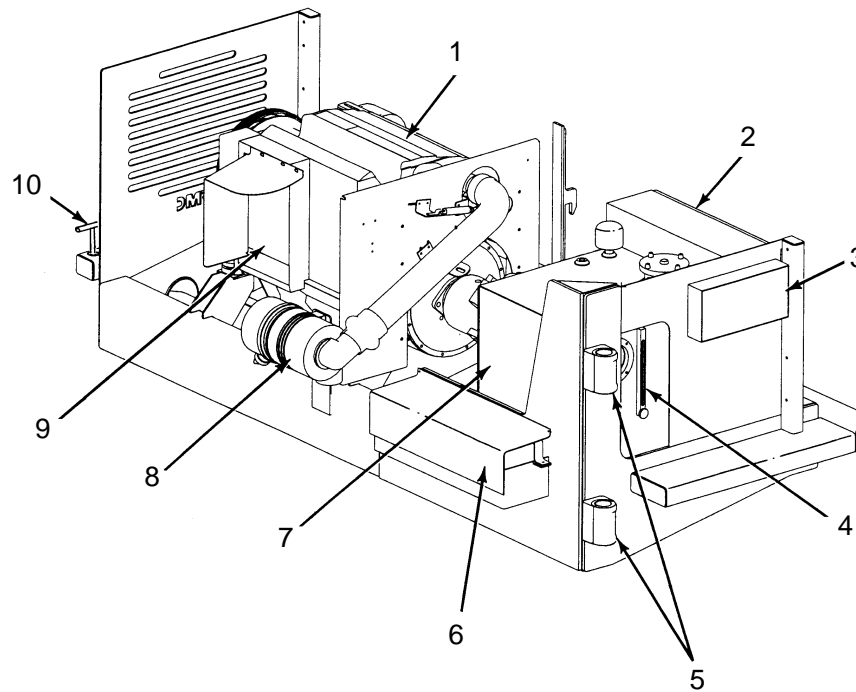


Figure 13
PLATFORM CONFIGURATIONS



- | | |
|---------------------------------|------------------------|
| 1. ENGINE | 6. BATTERIES |
| 2. MAIN PANEL | 7. HYDRAULIC RESERVOIR |
| 3. GAUGE PANEL | 8. AIR CLEANER |
| 4. HYD. FLUID LEVEL/TEMP. GAUGE | 9. RADIATOR |
| 5. HINGES | 10. TEE BOLT |

Figure 14
POWER UNIT (TYPICAL)

E. Power Unit (Figure 14)

The power unit is located at the front of the loader. It is a modular unit that is hinged on the left side of the loader. A single bolt on the right side can be removed to permit the module to swing out for complete access to components when maintenance is required. A power panel on the right side of the module contains controls and indicators used to start and operate the power unit at ground level.

A Perkins diesel engine, and other engines, are available as the primary source of power for the loader.

F. Hydraulic System

A closed-center, load-sensing hydraulic system is used on the COMMANDER 15 loader. It provides hydraulic power for the cargo transfer, raising and lowering the bridge and platform, proportional propulsion, steering and braking, and operation of the various guides that are used to insure safe handling of cargo. A dynamic braking feature is also incorporated into the hydraulic system to provide smooth deceleration when the operator releases the accelerator.

The axial piston pump is directly driven by the power unit and delivers 114 liters per minute at 234 bar (30 gpm at 3400 psi) depending on the power unit used.

Solenoid valves control fluid flow at correct pressure to operate the loader's hydraulic components. Check valves prevent load-bearing hydraulic cylinders from retracting if hydraulic pressure is not properly maintained in the system. An electrically driven emergency pump is included to allow the operator to perform emergency procedures if the power unit or main hydraulic pump should fail.

G. Electrical System

The 24-volt electrical system provides power for control of the hydraulic system, for lights, and other accessories. Power is derived from two 12-volt batteries (connected in series) as the basic 24-volt electrical system. An engine-driven alternator maintains battery charge.

Operator controls and indicators feature plug-in connectors, in most cases, for quick and easy replacement. Proximity switches throughout the system assure proper operational sequencing; circuit breakers protect critical components of the loader.

The design incorporates printed circuit boards, keyed plug-in connectors, and an **optional** STATUS PANEL. The STATUS PANEL, which makes use of light-emitting diodes (LED's), is provided to assist maintenance personnel in isolating the cause of malfunctions.

4. MISCELLANEOUS COMPONENTS

A. Lights

Sealed beam headlights are supplied for night operations. Parking lights, turn lights, and a turn signal control that incorporates a flasher control for hazardous conditions are also supplied.

B. Horns

Two electrical automotive-type horns are included.

C. Audible Alarms

Alarms sound when the loader is operated in reverse.

D. Powered Boggy Wheels

Hydraulically powered boggy wheel assemblies increase the ground clearance at the rear of the chassis while propelling.

E. Folding handrail located on left side of forward bridge for added operator protection.

5. AVAILABLE OPTIONS

A. Bridge tilt provides flexibility for uneven ramp conditions. Bridge can be tilted to align with aircraft doorway.

B. Any combination of cargo transfer: rear only; right and rear; left and rear; or right, rear, and left. A container and pallet rotation feature can also be supplied.

C. Variety of diesel engines.

D. A flashing beacon mounted on the operator's platform.

E. Cold start for starting diesel engine in cold climate conditions.

F. Consult with your sales representative for other options.

*Section 2. Operation***1. CONTROL AND INDICATORS****A. Driver's Panel Controls**

NOTE: Panel controls are shown in Figure 1. Symbols are shown in Figure 2 and Figure 3.

- (1) CHASSIS SWITCH – three-position momentary switch (center position = off). Raises or lowers the rear chassis by extending or retracting bogey wheel cylinders.
- (2) RAISE CHASSIS INDICATOR (OPTION) (flashing red) – illuminates unless chassis is raised.
- (3) BRIDGE SIDE GUIDES SWITCH – three-position switch spring-loaded to center (off) position; shifts guides left when momentarily placed in left position, or to right when placed in right position.
- (4) POSITIONING LIGHTS SWITCH (OPTION) – two-position toggle switch lights area in front of bridge.
- (5) PROPEL SPEED SWITCH – three-position control used to select ranges of speed in forward and reverse direction. The fast (rabbit) position provides maximum speed for direction selected with drive control, slow (turtle) position provides a medium speed, and creep (snail) position provides minimum speed control.
- (6) STABILIZERS DOWN INDICATOR (amber) – illuminates when stabilizers are down.
- (7) PROPEL ENABLE INDICATOR (green) – illuminates when loader is ready to drive.
- (8) MODE SWITCH – two-position switch: extends (lowers) stabilizers and rear chassis when placed in operate position, and retracts stabilizers when placed in drive position. Amber indicator illuminates when stabilizers are fully extended. Locking switch standard. Switch must be lifted out of position prior to changing selection or damage could result to switch if excessive force is used.
- (9) PROPEL SWITCH – three-position control used to select a forward direction, a neutral position, and a reverse direction.

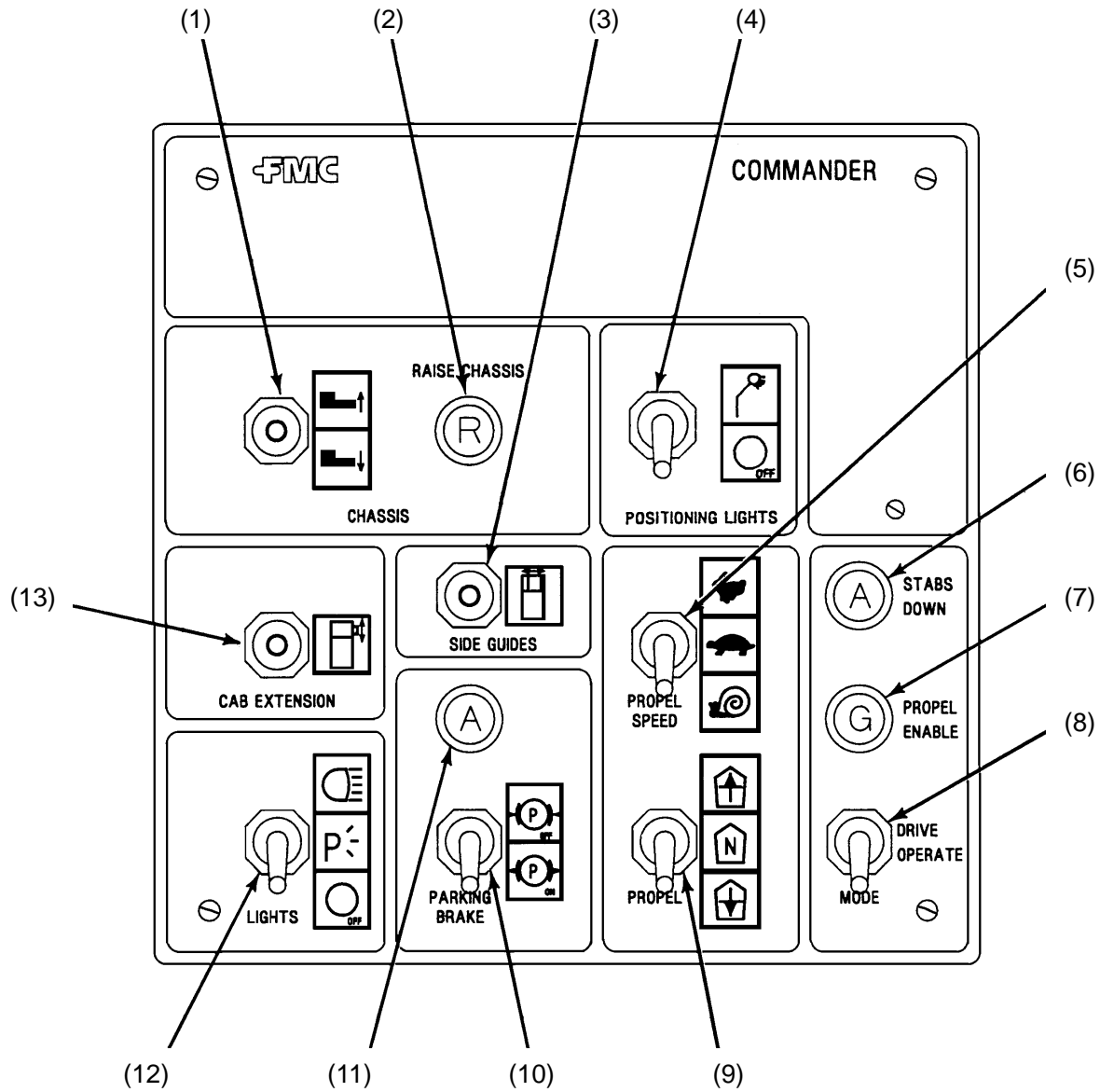


Figure 1
DRIVER'S PANEL

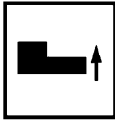

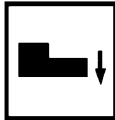










	CHASSIS			
(1)		Raise	(5)	 Creep – Snail
		Lower	(6)	 STABILIZERS DOWN INDICATOR
(2)		RAISE CHASSIS INDICATOR	(7)	 PROPEL ENABLE INDICATOR
(3)		BRIDGE SIDE GUIDES	(8)	NO SYMBOL DRIVE/OPERATE MODE
(4)		POSITIONING LIGHT	(9)	 PROPEL Forward
(5)		PROPEL SPEED Fast – Rabbit		 Neutral
		Slow – Turtle		 Reverse

Figure 2
INTERNATIONAL SYMBOLS FOR DRIVER'S PANEL CONTROLS

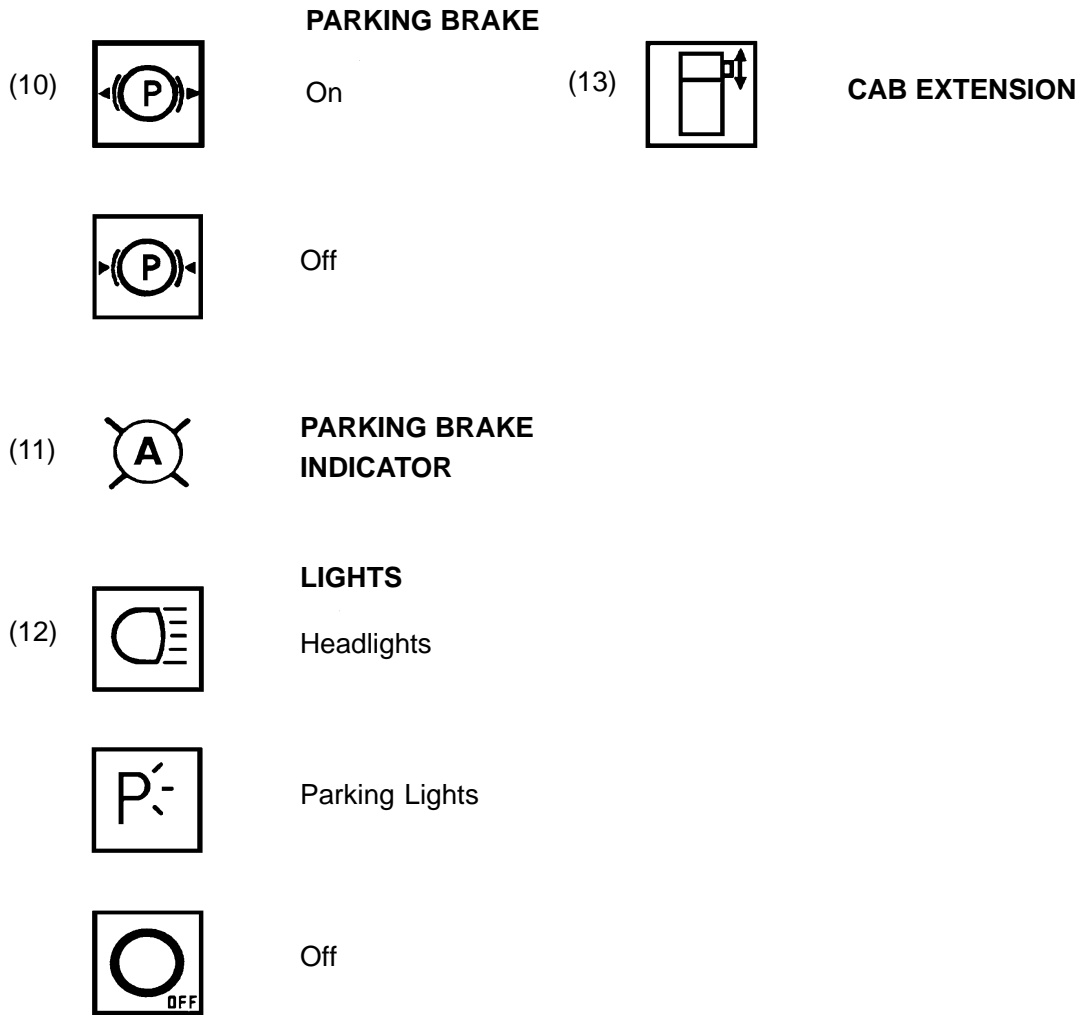


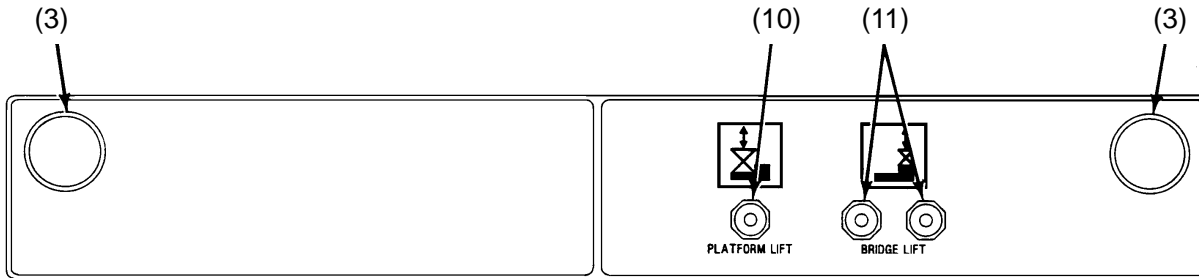
Figure 3
INTERNATIONAL SYMBOLS FOR DRIVER'S PANEL CONTROLS

- (10) PARKING BRAKE SWITCH – two-position switch. Applies parking brake when set to ON and illuminates amber indicator to show that brake is applied. Releases brake when set to OFF and causes amber indicator to go out. Parking brake is automatically applied when mode switch is set to operate position.
- (11) PARKING BRAKE INDICATOR (amber) – illuminates when parking brake is ON.
- (12) LIGHTS SWITCH – three-position switch turns headlamps and running lights on when switch is up; turns parking lights on when switch is in center position; turns lights off when switch is down.
- (13) CAB EXTENSION SWITCH – three-position switch spring-loaded to OFF position; extends operator's cab when switch is up; retracts operator's cab when switch is down.

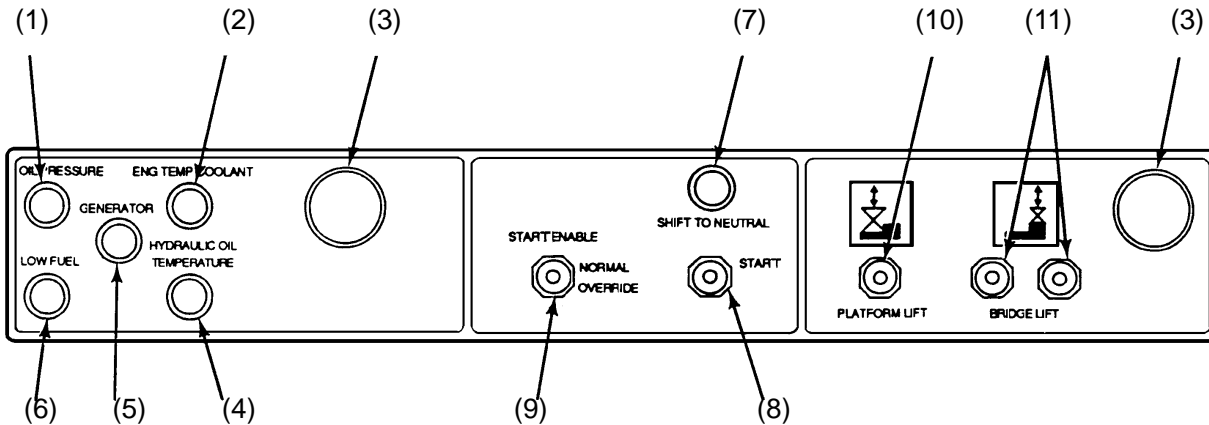
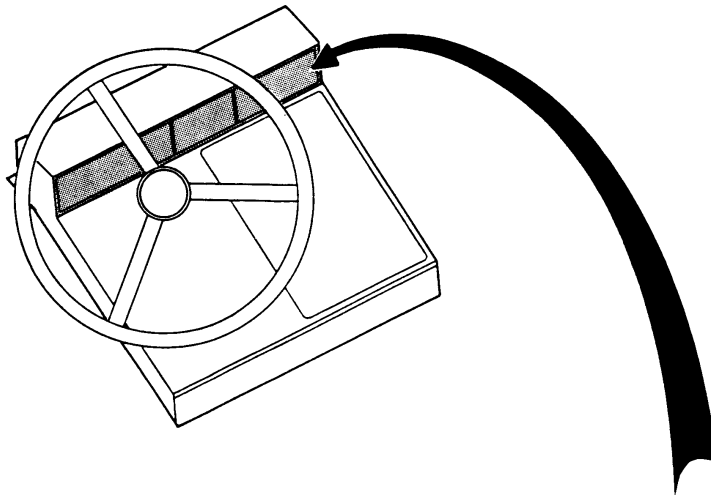
B. Upright Panels

NOTE: Panel controls are shown in Figure 4. Symbols are shown in Figure 5.

- (1) OIL PRESSURE INDICATOR (red) – illuminates when engine oil pressure is low (0.3 bar [4 psi]).
- (2) ENG. TEMP./COOLANT INDICATOR (red) – illuminates when engine is hot (93.3°C [200°F]) or coolant level is low (optional).
- (3) PANEL LIGHTS – illuminate panel when headlights are on.
- (4) HYDRAULIC OIL TEMPERATURE INDICATOR (red) – illuminates when hydraulic oil is hot (82.2°C [180°F]).
- (5) GENERATOR INDICATOR (red) – illuminates when generator is not charging.
- (6) LOW FUEL INDICATOR (red) – illuminates when fuel is low (19 liters [5 gallons]) or light will flash (optional).
- (7) SHIFT TO NEUTRAL INDICATOR (amber) – illuminates when PROPEL SWITCH is not set to N.
- (8) AUXILIARY START SWITCH – two-position toggle switch starts power unit when set to START and the spring-loaded START ENABLE SWITCH is held in NORMAL position. The MASTER START SWITCH on the gauge panel downstairs must be ON.



OPERATOR'S SIDE



DRIVER'S SIDE

Figure 4
UPRIGHT PANELS





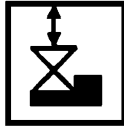

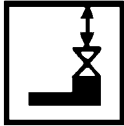

(1)		OIL PRESSURE INDICATOR	(7)		SHIFT TO NEUTRAL INDICATOR
(2)		ENG. TEMP./ COOLANT INDICATOR	(8)	NO SYMBOL	AUXILIARY START
(3)	NO SYMBOL	PANEL LIGHTS (2)	(9)	NO SYMBOL	START ENABLE
(4)		HYDRAULIC OIL TEMPERATURE INDICATOR	(10)		PLATFORM LIFT
(5)		GENERATOR INDICATOR	(11)		BRIDGE LIFT
(6)		LOW FUEL INDICATOR			

Figure 5
INTERNATIONAL SYMBOLS FOR UPRIGHT PANELS

- (9) START ENABLE SWITCH – OVERRIDE to start, NORMAL when engine running.

Hold the START ENABLE SWITCH in OVERRIDE in the event of platform overtravel to bypass shutdown during cranking. Switch must remain in OVERRIDE to keep engine running.

- (10) PLATFORM LIFT SWITCH – three-position switch spring-loaded to off position; raises and lowers platform.

- (11) BRIDGE LIFT SWITCHES – two 3-position switches spring-loaded to off position: raises bridge when switch is up, and lowers bridge when switch is down.

C. Operator's Panel Controls

NOTE: Panel controls are shown Figure 6. Symbols are shown in Figure 7 and Figure 8.

- (1) FOLDING WING SWITCH 2.6 m (104") (OPTION) – three-position toggle switch; spring-loaded to off position. Raises or lowers bridge wing.

- (2) FOLDING WING SWITCH 3.4 m (134") (OPTION) – three-position toggle switch; spring-loaded to off position. Raises or lowers bridge wings.

- (3) GUIDE SWITCHES – three 3-position toggle switches (with platform down):

When switch is up (AUTO), the selected guide automatically lowers when platform is below 24" (unless truck transfer option moves it to 60").

When switch is in center position, the selected guide remains up.

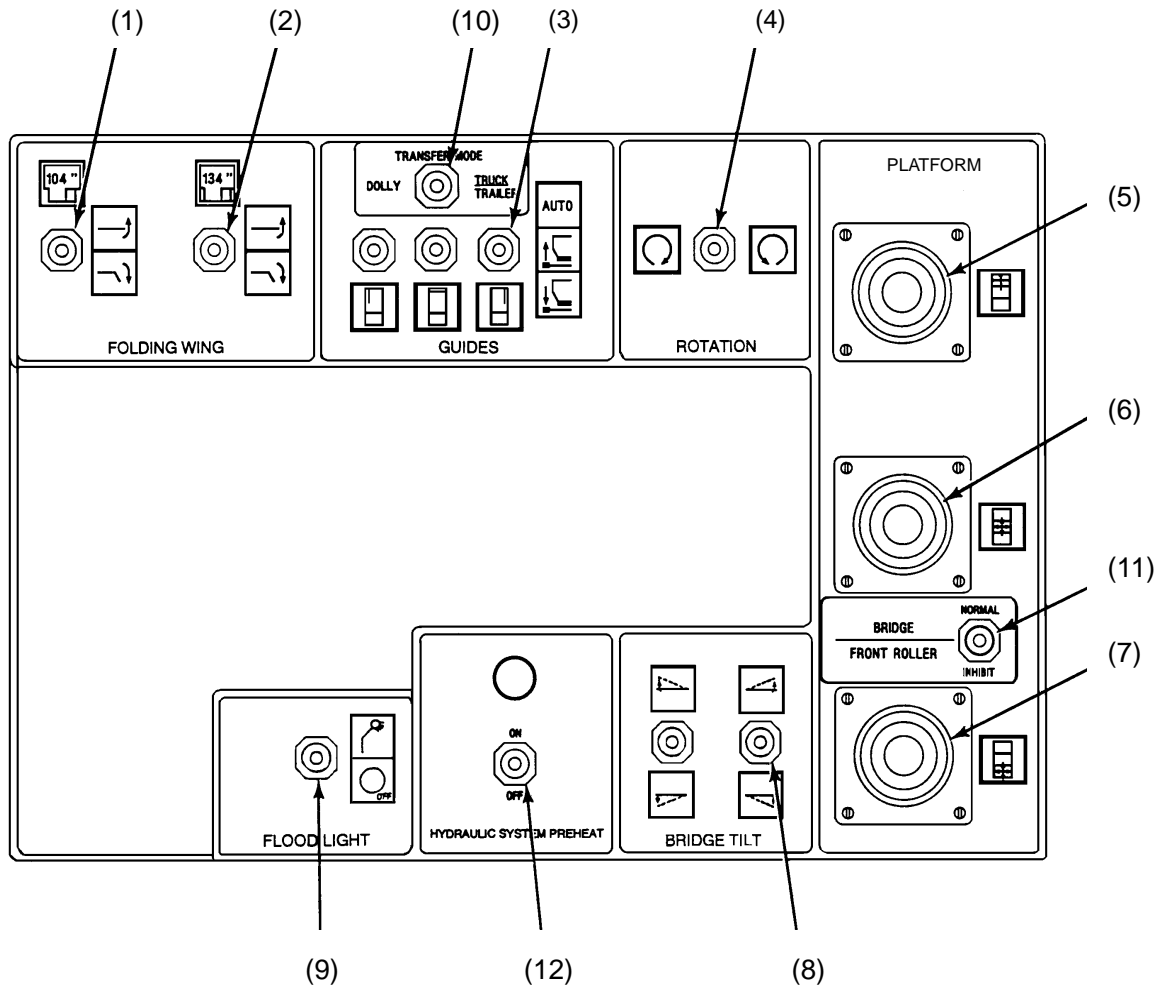
When switch is down, operator can momentarily lower the selected guide when platform is below 24" (or below 60" with option).

- (4) ROTATION SWITCH – three-position toggle switch spring-loaded to off position. When set to the right, causes cargo to rotate counterclockwise on rear platform.

- (5) PLATFORM CONVEY JOYSTICK – five-position joystick moves cargo on rear section of platform in direction of arrows on switch placard (center position is off; fwd; aft; left; right).

- (6) PLATFORM CONVEY JOYSTICK – five-position joystick moves cargo on front section of platform in direction of arrows on switch placard.

- (7) BRIDGE CONVEY JOYSTICK – five-position switch moves cargo on bridge in direction of arrows on switch placard.



NOTE: ITEMS 1, 2, 8, 9, 10 AND 12 ARE OPTIONAL

Figure 6
OPERATOR'S CONTROL PANEL

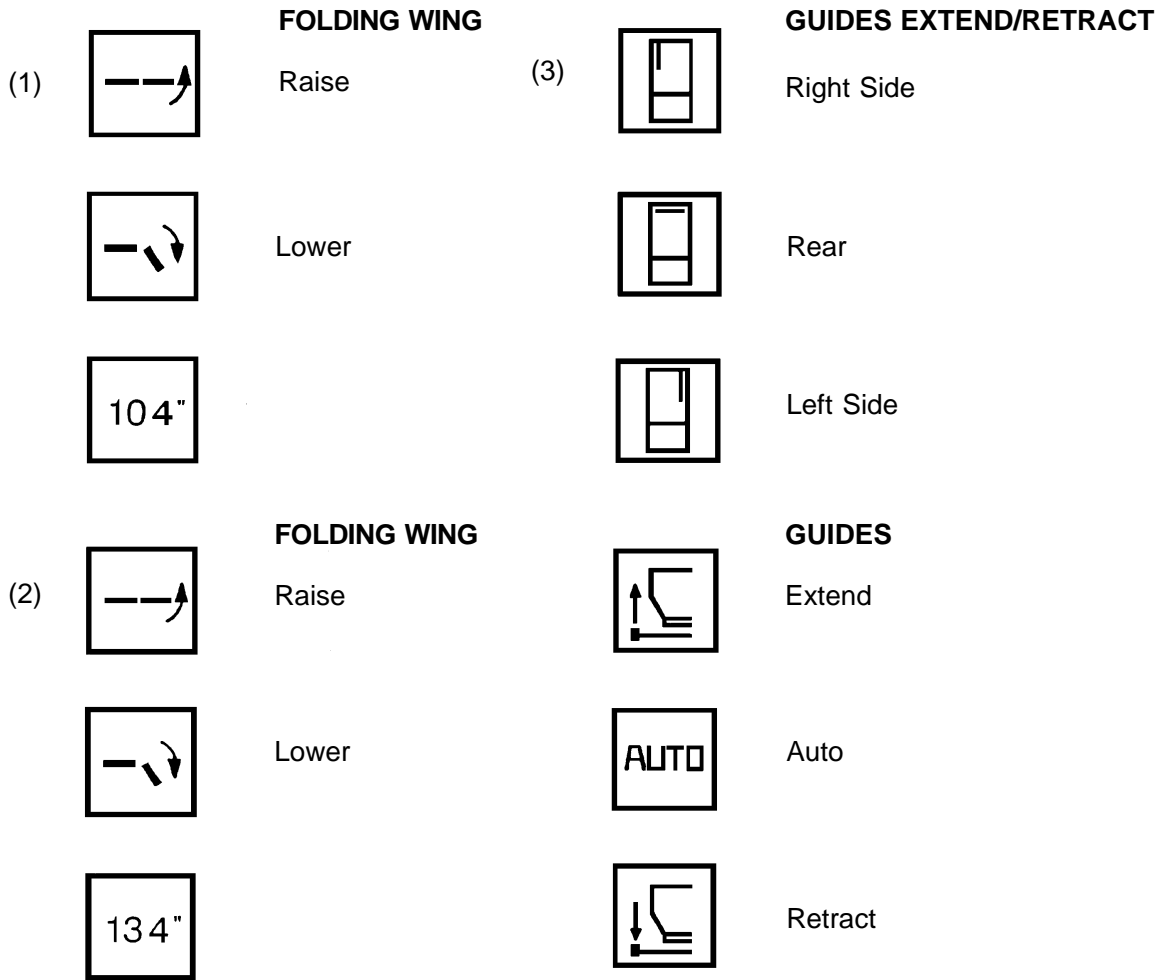


Figure 7
INTERNATIONAL SYMBOLS FOR OPERATOR'S CONTROL PANEL

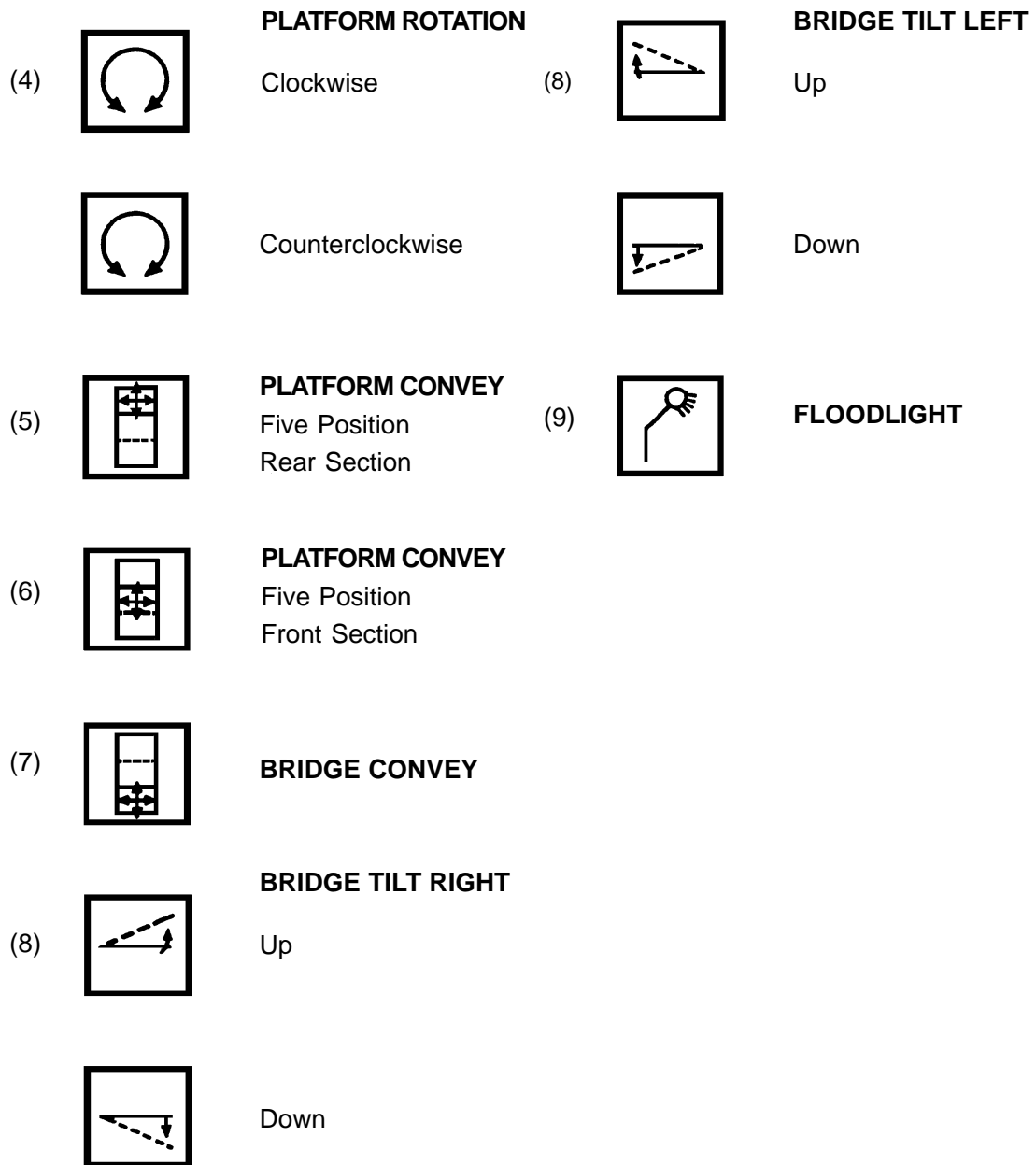


Figure 8
INTERNATIONAL SYMBOLS FOR OPERATOR'S CONTROL PANEL

- (8) BRIDGE TILT (OPTION) – two toggle switch operation.
 - (9) FLOODLIGHT SWITCH (OPTION) – two-position toggle switch; turns floodlights on or off.
 - (10) TRANSFER MODE (OPTION) – a truck trailer or dolly height can be selected through a switch. Additional transfer modes are available for 60" transfer and super lower option.
 - (11) BRIDGE FRONT ROLLER INHIBIT (OPTION) – a switch can be selected for normal operation or inhibit the front rollers.
 - (12) HYDRAULIC SYSTEM PREHEAT (OPTION) (amber) – illuminates when switch is on. Hydraulic oil is preheated before operation.
- D. Gauge Panel and Miscellaneous Controls (Figure 9)
- (1) OIL PRESSURE GAUGE – indicator in green area shows satisfactory engine oil pressure. Indicator in red area shows that pressure is low.
 - (2) COOLANT TEMPERATURE GAUGE – indicator in green area indicates satisfactory operating temperature range. Indicator in red area indicates excessively hot temperature.
 - (3) TACHOMETER (OPTION) – for engine protection, indicates engine RPM.
 - (4) HYDRAULIC OIL TEMPERATURE (red) – illuminates when hydraulic oil is hot (82.2°C [180°F]).
 - (5) VOLTS GAUGE – indicates voltage output of generator.
 - (6) HOURMETER – indicates total hours of engine operation.
 - (7) FUEL LEVEL GAUGE – indicator shows approximate level of fuel in tank. Red area at lower left shows limited amount of fuel available and indicates that loader should be refueled to insure that operations can be continued without interruption.
 - (8) LOW FUEL INDICATOR (red) – for engine protection: illuminates when remaining fuel is low (19 liters [5 gallons]) or light will flash (optional).
 - (9) EMERGENCY STOP SWITCH – when pushed in, shuts off power unit. Switch is not to be used for routine shutdown of power unit. Ignition light and proximity switches remain ON when emergency stop is pushed.

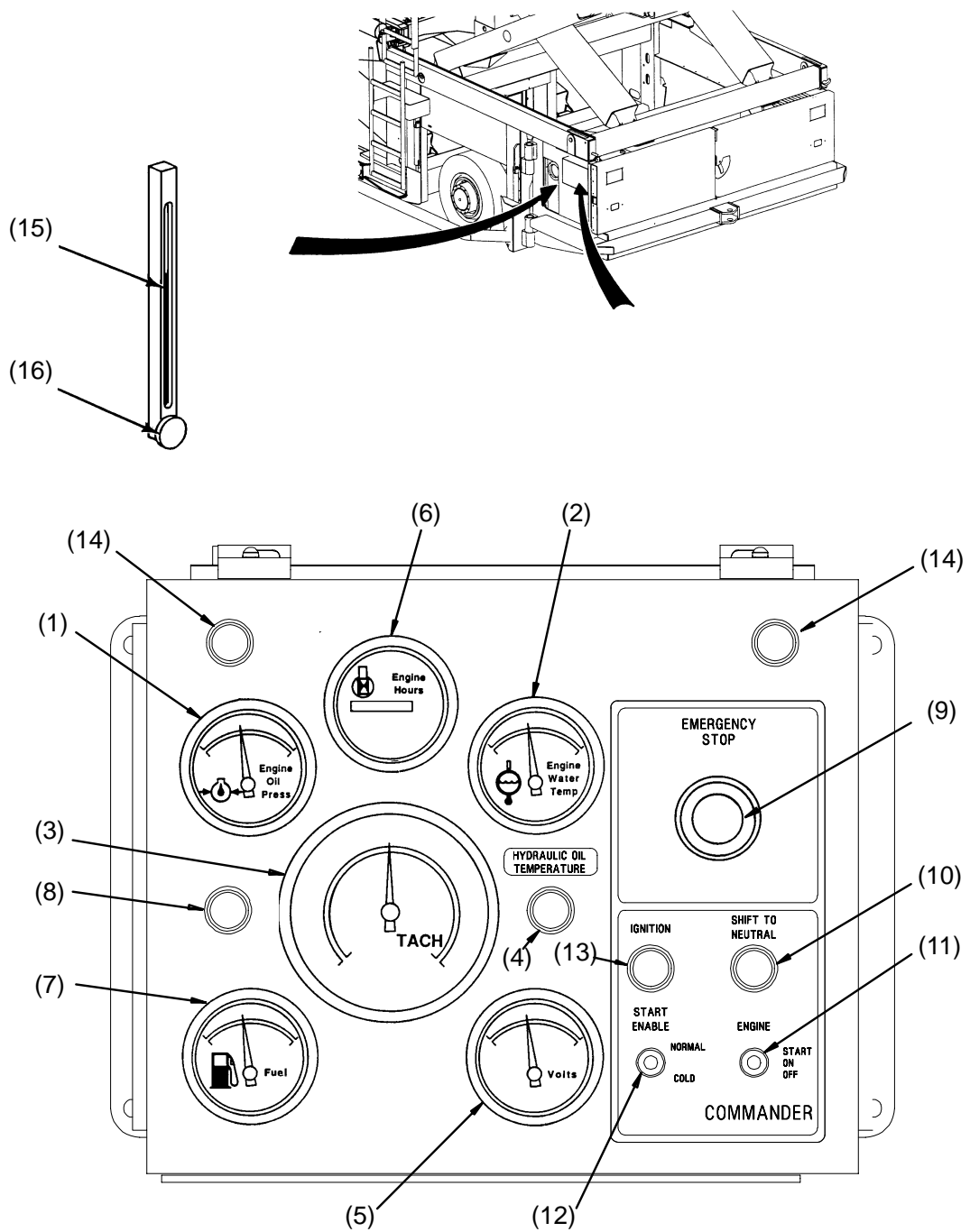


Figure 9
GAUGE PANEL AND MISCELLANEOUS CONTROLS

- (10) SHIFT TO NEUTRAL INDICATOR (amber) – illuminates when PROPEL SWITCH is not set to N.
 - (11) MASTER START SWITCH – starts engine. ON: engine running, OFF: engine shutdown.
 - (12) START ENABLE SWITCH – NORMAL – override to start, COLD to preheat engine.
 - (13) IGNITION LAMP (amber) – illuminates when master start switch is ON.
 - (14) PANEL LIGHTS – illuminates panel when headlights are ON.
 - (15) FLUID LEVEL INDICATOR – indicates oil level in hydraulic tank.
 - (16) TEMPERATURE INDICATOR – indicates temperature of hydraulic oil.
- E. Driver's Console (Figure 10)
- (1) ACCELERATOR – foot pedal, regulates drive speed of loader.
 - (2) BRAKE – foot pedal, applies service brakes.
 - (3) HORN SWITCH – push button at center of steering wheel, sounds horn when pressed.
 - (4) TURN SIGNAL SWITCH – indicates direction of turn, flasher included.
 - (5) EMERGENCY STOP SWITCH – push button shuts down loader and applies parking brake.
 - (6) EMERGENCY PUMP SWITCH – located under right corner of driver's console. Provides emergency hydraulic power for all loader functions except drive and platform lift when master start switch is ON.

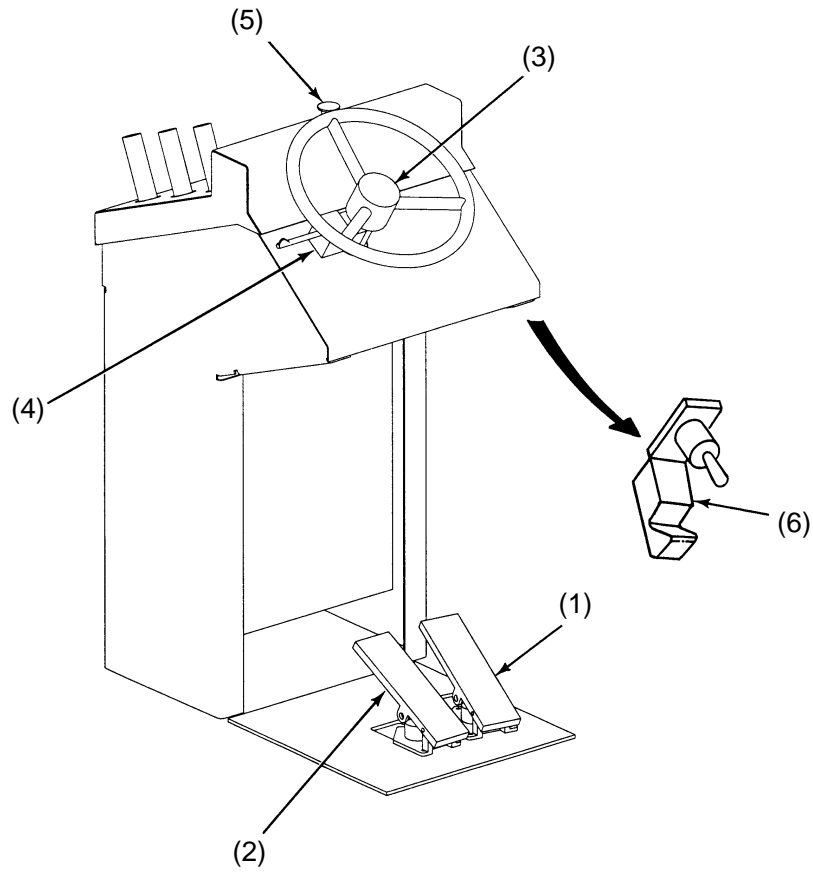


Figure 10
DRIVER'S CONSOLE

2. PROCEDURES**A. Starting Power Unit – Diesel Engine****WARNING**

BEFORE STARTING ANY TYPE OF POWER UNIT, OBSERVE ALL PRECAUTIONS BELOW:

INSURE POWER MODULE TEE BOLT IS SECURELY FASTENED.

INSURE THAT ALL PERSONNEL ARE CLEAR OF LOADER.

AT BEGINNING OF SHIFT, ENSURE THAT ALL SCHEDULED SERVICES HAVE BEEN PERFORMED INCLUDING CHECK OF TIRE CONDITION, FUEL AND FLUID LEVELS, AND OVERALL CHECK FOR LOOSE OR MISSING HARDWARE AND GENERAL CONDITION OF LOADER.

DO NOT ATTEMPT TO OPERATE THE COMMANDER 15 WITHOUT BEING PROPERLY TRAINED IN OPERATION AND SAFETY REQUIREMENTS.

DO NOT OPERATE LOADER WHILE UNDER INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION THAT MAY PREVENT FULL ABILITY TO CONTROL LOADER.

BE ALERT AT ALL TIMES DURING LOADER OPERATION.

IT IS PERMISSIBLE TO PERFORM NORMAL LOADING OPERATIONS WHILE AIRCRAFT IS BEING REFUELED IF FACILITY OR REGULATORY RULES DO NOT PROHIBIT AND OPERATOR HAS ENSURED THAT THERE ARE NO HYDRAULIC LEAKS OR UNSAFE CONDITIONS PRESENT. TAKE CAUTION TO ASSURE THAT POSSIBLE FUEL SPILLS WILL NOT SPLASH OR DRAIN ON ENGINE EXHAUST SYSTEM.

- (1) Set PROPEL SWITCH to N.
- (2) Insure that both EMERGENCY STOP SWITCHES (on gauge panel and driver's console) are pulled out.
- (3) Insure that PARKING BRAKE SWITCH is set to ON.
- (4) Set MASTER START SWITCH to ON and press and hold COLD START switch for 15 seconds (if equipped with COLD START option).
- (5) Set MASTER START SWITCH to START while holding START ENABLE switch on until engine starts, then release switch to ON after engine starts. It may be necessary to hold START ENABLE on until engine develops oil pressure.
- (6) Observe gauges to insure that all indicators show normal operation.
- (7) Allow engine to warm up for several minutes.

(8) Refer to paragraphs B through E below for required operational procedures.

B. Stopping Power Unit – Diesel Engine

(1) Set PARKING BRAKE SWITCH to ON and note that indicator illuminates.

(2) Shift PROPEL SWITCH to N.

(3) Let engine idle for 3 or 4 minutes.

(4) Set MASTER START SWITCH to OFF.

C. Bridge Tilt (Optional)



WARNING

WHEN USING BRIDGE TILT, ENSURE ADEQUATE CLEARANCE BETWEEN LOADER AND AIRCRAFT. FAILURE TO DO SO COULD CAUSE DAMAGE TO AIRCRAFT OR LOADER.

With loader in position at the aircraft doorway, operate either BRIDGE TILT SWITCH to obtain desired interface angle.

D. Approaching Aircraft for Cargo Transfer



WARNING

THE COMMANDER 15 IS NOT DESIGNED FOR USE AS A TRANSPORTING VEHICLE. ANY ATTEMPT TO USE IT FOR OPERATIONS OTHER THAN CARGO TRANSFER MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.



WARNING

THE COMMANDER 15 IS DESIGNED TO BE DRIVEN ON PAVED OR CEMENT SURFACES APPROVED TO SUPPORT THE WEIGHT AND USE OF GROUND SUPPORT EQUIPMENT VEHICLES. DRIVING THE COMMANDER 15 ON OTHER THAN THESE APPROVED SURFACES COULD RESULT IN INJURY TO PERSONNEL AND SERIOUS DAMAGE TO VEHICLE.



WARNING

DO NOT ALLOW PERSONNEL UNDER BRIDGE OR PLATFORM UNLESS ADEQUATE SUPPORTS ARE IN PLACE. FAILURE TO SUPPORT BRIDGE OR PLATFORM MAY ALLOW BRIDGE OR PLATFORM TO FALL, RESULTING IN DEATH OR INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

**WARNING**

USE EXTREME CAUTION AT ALL TIMES WHEN WALKING ON BRIDGE OR PLATFORM. AVOID STEPPING ON ROLLERS OR CLUSTER ROLLER ASSEMBLIES. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR DEATH.

**WARNING**

USE EXTREME CAUTION WHEN WALKING IN AREAS MARKED BY STRIPED WARNING TAPE.

**WARNING**

BEFORE STARTING ANY TYPE OF POWER UNIT, OBSERVE ALL PRECAUTIONS BELOW:

INSURE POWER MODULE TEE BOLT IS SECURELY FASTENED.

INSURE THAT ALL PERSONNEL ARE CLEAR OF LOADER.

AT BEGINNING OF SHIFT, ENSURE THAT ALL SCHEDULED SERVICES HAVE BEEN PERFORMED INCLUDING CHECK OF TIRE CONDITION, FUEL AND FLUID LEVELS, AND OVERALL CHECK FOR LOOSE OR MISSING HARDWARE AND GENERAL CONDITION OF LOADER.

DO NOT ATTEMPT TO OPERATE THE COMMANDER 15 WITHOUT BEING PROPERLY TRAINED IN OPERATION AND SAFETY REQUIREMENTS.

DO NOT OPERATE LOADER WHILE UNDER INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION THAT MAY PREVENT FULL ABILITY TO CONTROL LOADER.

BE ALERT AT ALL TIMES DURING LOADER OPERATION.

IT IS PERMISSIBLE TO PERFORM NORMAL LOADING OPERATIONS WHILE AIRCRAFT IS BEING REFUELED IF FACILITY OR REGULATORY RULES DO NOT PROHIBIT AND OPERATOR HAS ENSURED THAT THERE ARE NO HYDRAULIC LEAKS OR UNSAFE CONDITIONS PRESENT. TAKE CAUTION TO ASSURE THAT POSSIBLE FUEL SPILLS WILL NOT SPLASH OR DRAIN ON ENGINE EXHAUST SYSTEM.

- (1) Start power unit:
 - (a) Set PROPEL SWITCH to N.
 - (b) Insure that EMERGENCY STOP SWITCHES (on gauge panel and driver's console) are pulled out.
 - (c) Insure that PARKING BRAKE SWITCH is set to ON.
 - (d) Set MASTER START SWITCH to ON and press and hold COLD START switch for 15 seconds (if equipped with COLD START option).
 - (e) Set MASTER START SWITCH to START while holding START ENABLE switch on until engine starts, then release switch to ON after engine starts. It may be necessary to hold START ENABLE on until engine develops oil pressure.

- (f) Observe gauges to insure that all indicators show normal operation.
- (g) Allow engine to warm up for several minutes.
- (2) Lower bridge and platform and safety rails (where applicable).
- (3) Retract the operator's cab fully.
- (4) Actuate BRIDGE TILT SWITCHES (OPTION) so that both sides are at their lowest height.
- (5) Check area to be sure that intended drive path is free of obstructions.
- (6) Set MODE SWITCH to DRIVE.
- (7) Hold CHASSIS SWITCH up until red flashing RAISE CHASSIS INDICATOR goes out.
- (8) Insure that STABILIZERS DOWN INDICATOR goes out.
- (9) Set PARKING BRAKE SWITCH to OFF and note that indicator goes out.
- (10) Set PROPEL SWITCH to the forward or reverse position.

CAUTION DO NOT USE MAXIMUM SPEED RANGE (RABBIT) IF LOADER IS CLOSER THAN 3 M (10 FT) TO AIRCRAFT.

- (11) Set PROPEL SPEED SWITCH to desired speed. Start with switch in mid-range (TURTLE), then set to high range (RABBIT) at about 5 kph (3 mph).
- (12) Press accelerator pedal; as soon as loader moves, release accelerator pedal and press brake pedal to check for smooth and positive brake operation.



WARNING OBSERVE ALL INSTRUCTIONS IN AIRPORT OPERATIONS MANUAL WHEN DRIVING LOADER. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (13) Drive loader to within 3 m (10 ft) of aircraft.
- (14) Stop loader; set PROPEL SPEED SWITCH to low range (SNAIL).

- (15) Lower chassis fully; RAISE CHASSIS INDICATOR will flash.
- (16) Adjust height of bridge as required so that aircraft cargo door will clear bridge when loader is positioned and door is opened.

NOTE: Some aircraft configurations require bridge to be fully lowered.

- (17) Slowly drive loader toward aircraft; stop when bridge is approximately 0.3 m (12") from aircraft. Be sure that loader is squarely positioned relative to aircraft fuselage.
- (18) Set PARKING BRAKE SWITCH to ON and note that indicator illuminates.

CAUTION OPEN DOOR CAREFULLY. FAILURE TO USE CARE MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.

- (19) Open aircraft cargo door.
- (20) Adjust height of bridge to aircraft.
- (21) Set PARKING BRAKE SWITCH to OFF and drive loader forward until in position with aircraft door.

CAUTION FOR SHOOT-THE-GAP OPERATION, POSITION THE LOADER SO THAT RUBBER BUMPERS ON BRIDGE FACE ARE CLOSE TO – BUT DO NOT TOUCH – THE AIRCRAFT.

- (22) Hold PROPEL SWITCH to N. Set MODE SWITCH to OPERATE (this will automatically set parking brake and extend stabilizers). Note that PARKING BRAKE INDICATOR and STABILIZERS DOWN INDICATOR illuminate.
- (23) Hold BRIDGE SIDE GUIDES SWITCH to left or right position to align side guides and door for cargo transfer.
- (24) Lower bridge for alignment with door.
- (25) Extend operator's platform as required for cargo transfer (optional).
- (26) Raise safety rails where applicable.

CAUTION DO NOT STOP POWER UNIT WITH LOADER IN POSITION TO TRANSFER CARGO. DO NOT LEAVE LOADER UNATTENDED. FAILURE TO OBSERVE THIS CAUTION MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.

- (27) Transfer cargo from aircraft to ground equipment (see para. E) or to aircraft (see para. F).

E. Transferring Cargo from Aircraft

NOTE: It is assumed that all procedures for approaching the aircraft (see para. D) have been performed.

- (1) Hold PLATFORM LIFT SWITCH up until platform automatically stops at same level as bridge. Note that STOP at rear of bridge retracts.
- (2) When cargo is in position to be moved onto bridge, hold BRIDGE JOYSTICK to rearward convey position until cargo is completely on bridge.
- (3) Adjust position of cargo on bridge by operating BRIDGE JOYSTICK in required directions until cargo is laterally centered on bridge.
- (4) Insure that side and rear stops on platform are extended.
- (5) Hold all three joysticks simultaneously to rearward position until cargo is as far back as possible on platform.

CAUTION IT IS NECESSARY TO ADJUST HEIGHT OF BRIDGE AS AIRCRAFT POSITION CHANGES DURING CARGO TRANSFER. FAILURE TO MAINTAIN ALIGNMENT OF AIRCRAFT AND BRIDGE MAY RESULT IN DAMAGE TO EQUIPMENT.

NOTE: It may be necessary to rotate cargo on platform. Use ROTATION SWITCH as required.

- (6) If another container is to be transferred, repeat steps (3) through (5) but do not operate rear PLATFORM JOYSTICK; then continue to step (7) below.
- (7) Hold PLATFORM LIFT SWITCH down until platform is at same level as ground vehicle.
- (8) Set GUIDES SWITCH to AUTO or DOWN to retract left, right, or rear stop on platform (whichever is closest to ground vehicle).
- (9) Hold PLATFORM JOYSTICK to move cargo onto ground vehicle, then release PLATFORM JOYSTICK and GUIDES SWITCH (if not in AUTO position).
- (10) If more cargo is to be transferred, repeat steps (1) through (9). If transfer is complete, continue to step (11) below.

- (11) Hold PLATFORM LIFT SWITCH down until platform stops automatically, then perform procedures in para. G.

F. Transferring Cargo to Aircraft

NOTE: It is assumed that all procedures for approaching the aircraft (para. D.) have been performed.

- (1) Operate PLATFORM LIFT SWITCH until platform is at same level as ground vehicle that contains cargo.
- (2) Set GUIDES SWITCH to AUTO position or hold in retract position to retract left, right, or rear stop on platform (whichever is closest to ground vehicle).
- (3) Hold PLATFORM JOYSTICK to move cargo onto platform, release JOYSTICK when cargo is approximately centered laterally on platform, then release GUIDES SWITCH (if not in AUTO).

NOTE: If a second container is to be moved onto platform, operate rear and center joysticks simultaneously to move first container to front of platform, then repeat steps (2) and (3) above. Use ROTATION SWITCH as required to position container.

- (4) Hold PLATFORM LIFT SWITCH up until rear platform automatically stops at same level as bridge. Note that stops at rear of bridge retract.
- (5) Hold center and forward joysticks to forward position until container is on forward platform.
- (6) Hold BRIDGE JOYSTICK to forward position until cargo is on aircraft.

CAUTION

IT IS NECESSARY TO MANUALLY ADJUST HEIGHT OF BRIDGE AS AIRCRAFT POSITION CHANGES DURING CARGO TRANSFER. FAILURE TO MAINTAIN ALIGNMENT OF AIRCRAFT AND BRIDGE MAY RESULT IN DAMAGE TO EQUIPMENT.

NOTE: For second container, operate joysticks simultaneously to move container onto bridge, then repeat steps (5) and (6) above.

- (7) Hold PLATFORM LIFT SWITCH down until platform is again at same level as ground vehicle that contains cargo.
- (8) If more cargo is to be transferred, repeat steps (2) through (7). If transfer is complete, go to step (9) below.

- (9) Hold PLATFORM LIFT SWITCH down until platform stops automatically, then perform procedures for departing from the aircraft in para. G below.

G. Departing from Aircraft



WARNING

THE COMMANDER 15 IS NOT DESIGNED FOR USE AS A TRANSPORTING VEHICLE. ANY ATTEMPT TO USE FOR OPERATIONS OTHER THAN CARGO TRANSFER MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (1) Check area to be sure that intended drive path is free of obstructions.
- (2) Amber PARKING BRAKE INDICATOR and STABILIZERS DOWN INDICATOR should be illuminated.
- (3) Retract operator's platform so that it will clear aircraft when bridge is moved.
- (4) Lower bridge so that it will clear cargo door when it is closed.

CAUTION

CLOSE CARGO DOOR CAREFULLY. FAILURE TO DO SO MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.

- (5) Carefully close and latch cargo door.
- (6) Set MODE SWITCH to DRIVE. Note that stabilizers retract and STABILIZERS DOWN INDICATOR goes out.
- (7) Raise Chassis. (RAISE CHASSIS INDICATOR flashes when rear chassis is raised with switch.)
- (8) Set PROPEL SWITCH to reverse position.
- (9) Set PARKING BRAKE SWITCH to OFF and note that indicator goes out.
- (10) Slowly back loader away from aircraft.
- (11) Lower bridge until it stops automatically.



WARNING

OBSERVE ALL INSTRUCTIONS IN AIRPORT OPERATIONS MANUAL WHEN DRIVING LOADER. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (12) Set PROPEL SPEED SWITCH to low range (SNAIL).
- (13) Drive loader to assigned location.
- (14) If no further operations are required, park loader and stop power unit as instructed in para. H below.

H. Parking Loader

- (1) Set PROPEL SWITCH to N.
- (2) Set the PARKING BRAKE SWITCH to ON and note that the PARKING BRAKE INDICATOR illuminates.

CAUTION

TO PREVENT DAMAGE TO THE STABILIZER CYLINDER ASSEMBLIES, DO NOT SET THE MODE SWITCH TO "OPERATE" WHEN THE UNIT IS PARKED AS THIS WILL EXTEND THE STABILIZERS.

- (3) Let engine idle for 3 or 4 minutes.
- (4) Set MASTER START SWITCH to OFF.

Section 3. Specifications

1. PERFORMANCE

Lift capacity	6800 kg (15000 lb)
Load capacity	Two containers (LD-3) (or similiar dimensions) or one pallet (3.17 m x 2.4 m) (125" x 96")
Platform lift speeds	
• Platform	13.7 m/min (45 fpm)
• Bridge (standard)	3.6 m/min (11.7 fpm)
• Bridge (main deck capable)	4.6 m/min (15.2 fpm)
Minimum transfer height	
• Platform	0.48 m (19")
• Bridge	1.78 m (70") – Standard 1.93 m (76") – Main deck
Maximum transfer height	
• Platform and bridge (standard)	3.55 m (140")
• Platform (high)	4 m (161")
• Bridge (main deck capable)	5.6 m (220")
Conveying speed	18.3 m/min (60 fpm)
Drive speed (maximum)	11 km/hr (7 mph)
Stopping distance (full speed)	4.6 m (15 ft) approx.
Turning radius (swept)	7.9 m (26 ft)
Operating temperature (ambient)	-32 to 52°C (-25 to 125°F)
Wind speed (maximum during operation)	73 km/hr (45 mph)
Wind speed (withstand–stability)	161 km/hr (100 mph)

2. POWER UNIT DATA

Engines

MODEL	NO. OF CYL	COOLING	IDLE RPM DTRPM BHP*	FUEL	DISPLACEMENT
Perkins 1004-4 Perkins 1004-4T	4	Liquid	1400 2400 88	Diesel	4L (243 in ³)
Deutz BF4M1012	4	Liquid	1500 2400 87	Diesel	3.19L (195 in ³)
Cummins 6BT 5.9	6	Liquid	1300 2000 152	Diesel	5.9L (360 in ³)

*IDLE RPM/DEMAND THROTTLE RPM/HORSEPOWER @ DEMAND THROTTLE – NO LOAD.

Electrical System: 24 VDC; (2) 12-volt batteries connected in series.

Sound Level Emission Data

MODEL	DISTANCE 1 M HIGH RPM	AT OPERATOR EAR
Perkins 1004-4 Perkins 1004-4T	79dBA	77dBA
Deutz BF4M1012	90dBA	82dBA

3. HYDRAULIC SYSTEM

Closed center, pressure compensated, load sensing.

Filters: Breather Replaceable
Return (3) Replaceable elements

- In-tank return filter with 1 element
- Case drain of pump
- Case drain of propel motors

NOTE: See Chapter-Section 2-1, page 7, for recommended hydraulic oil grades and operating conditions.

Emergency pump rating (electrically powered) 4.5 liter/min @ 172 bar (1.2 gpm @ 2500 psi)

4. ELECTRICAL SYSTEM

Generator capacity	24 VDC/70 amps
Battery	Two 12 VDC connected in series

5. BRAKE SYSTEM

Drive wheels:	Parking	Spring-applied, hydraulically released
	Service	Hydraulically applied
	Fluid	Hydraulic oil

6. WHEELS AND TIRES

Drive wheels:	Wheels	8.00 x 15
	Tires	Soft, solid rubber 300 x 15 NHS (pneumatic optional)
	Tire pressure	9.64 bar (140 psi) (optional)
Bogy wheels (rear)		Solid
Steering		Hydraulically actuated, power assisted
Maximum steering angle		43°
Drive hubs:	Type	Planetary torque hubs
	Model	Fairfield Mfg. W2B2 (assy. #W2B @ F033N)

7. CAPACITIES

Fuel	151.4 liter (35 gal) total 113.6 liter (30 gal) usable
Diesel	#2 Diesel
Engine coolant	Refer to engine manual
Engine oil	Refer to engine manual
Planetary hub (oil EP-90 or equivalent)	503 cc (35 oz. approx.)
Hydraulic fluid reservoir	190 liter (50 gal)
Hydraulic hose lines	26 liter (7 gal)
Hydraulic fluid total	216 liter (57 gal)

8. WEIGHT AND DIMENSIONS

Weight:	Standard	14969 kg (33000 lb and up, depending on features supplied)
	Wide	15876 kg (35000 lb)
	Universal	16783 kg (37000 lb)
Ground Pressure (assume normal operation & design load)		371 psi
Length		8.66 m (340.94")
Width (with standard platform)		3.4 m (134")
Height (with handrails)		4.77 m (187")
Wheelbase		4.2 m (164.1")

9. OPERATOR'S VIBRATION LEVELS

Vibration Levels	N/A
------------------	-----

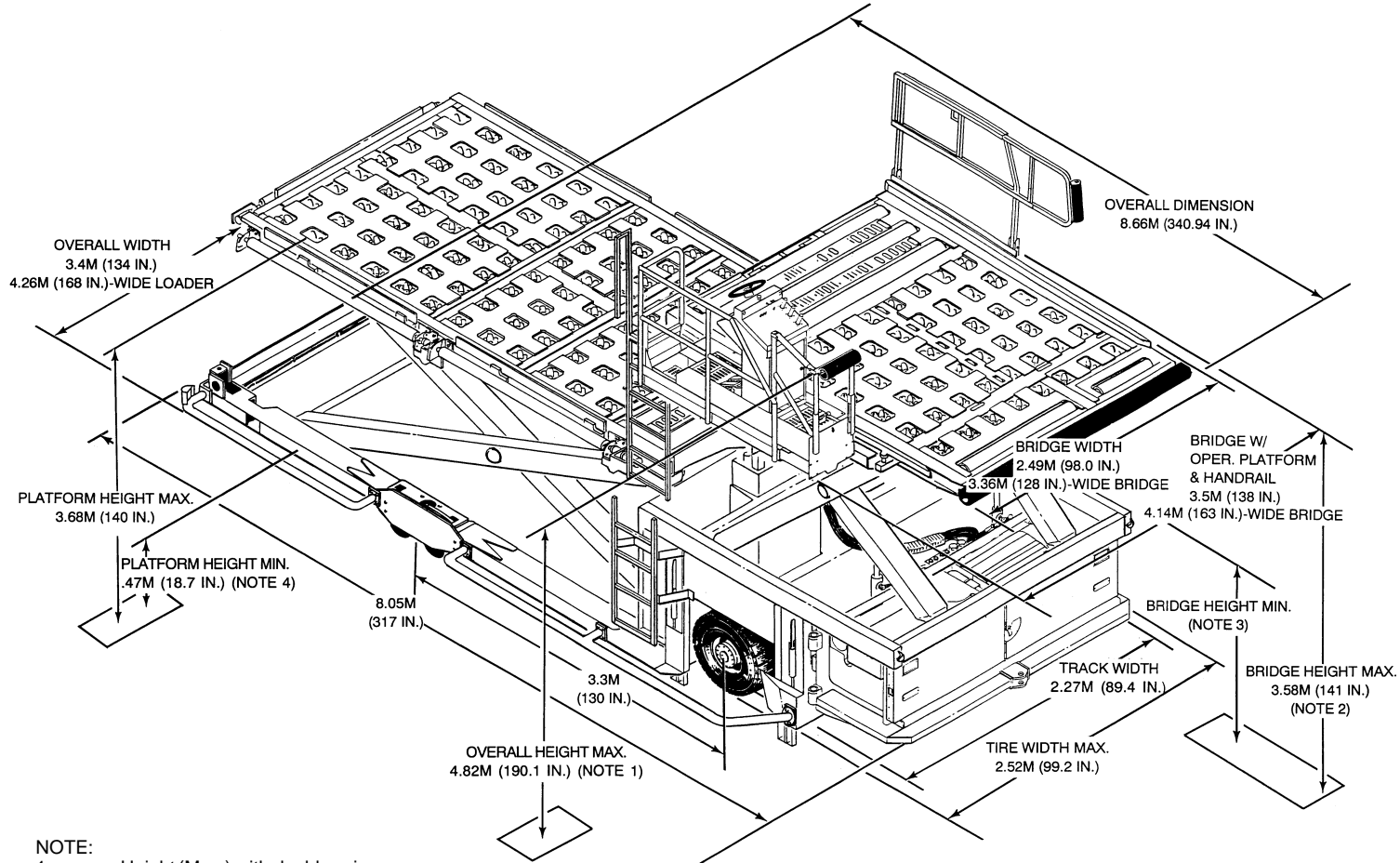


Figure 1
DIMENSIONS

NOTE:

- 1 Height (Max.) with double scissor
6.65 m (262 in).
- 2 Extendable to 5.59m (220")
with double scissors (Main Deck).
- 3 1.68 m (66 in) for bogy wheel extended – Standard loader
1.93 m (76 in) – Main Deck.
- 4 With retractable bogy assemblies,
minimum height is .46 m (18 in).
- 5 Center of gravity varies with choice of
power units and other features.
Forklift points are marked with decals.

10. ADJUSTMENT SETTINGS

A. Hydraulic Adjustments

- (1) Standby (sensing) pressure: 17 bar (250 psi).
- (2) System relief pressure: 248 bar (3600 psi).
- (3) Compensator setting: 214 bar (3400 psi).
- (4) Main pressure reducing valve in service manifold: 190 bar (2750 psi) on gauge.
- (5) Insure proper bogey wheel retraction speed before adjusting stabilizers: 3-4 sec.
- (6) Stabilizers reducing valve: 5/8" lift.
- (7) Stabilizer pressure switch: Unit should lift 13 mm (1/2") from ground measured at center of drive wheel.
- (8) Last stabilizer down needle valve: 1-1/2 to 2 turns open.
- (9) Stabilizer speeds: set 6-10 sec.; retract 4-8 sec.
- (10) Parking brake release pressure: 14 bar (200 psi). At brake, have stabilizers up, parking brake OFF to set pressure.
- (11) Bridge speed unloaded full extension: up 48-53 sec.; down 29-34 sec.
- (12) Bridge flow control and counterbalance valve adjustments: travel level up .25"
travel level down .25"
- (13) Bridge counterbalance valve pressure down: 1700-1800 psi.
- (14) Platform speeds unloaded full extension: up 20-22 sec.; down 20-22 sec.
- (15) Cab extend and retract speeds: 14-20 sec.
- (16) Bridge tilt speeds (optional): up and down 2-3 sec.

- (17) Bridge guide speeds left and right: 3-7 sec.
- (18) Bogy wheel speeds up and down: 3-4 sec.
- (19) Power wing speeds (optional) adjustable for smooth operation, no sticking or binding.
- (20) 134" left wing needle valve 1/8 to 1/4 turn open for last up and down of cycle (optional).
- (21) Set guide pilot relief valve to insure smooth auto guide function down.
- (22) Platform lifting chains adjusted to full down so platform rests on frame bed.
- (23) Lifting chains perpendicular to frame and parallel to lift cylinders.
- (24) All conveyer chains adjusted to 2% slack.

B. Electrical Adjustments (see Chapter-Section 2-3, Hydraulic and Electrical Adjustment Procedures)

- (1) Adjust all proximity switches per specifications.
- (2) Drive speed pot adjustments.
- (3) Platform speed adjustments.

Section 4. Shipping

1. **GENERAL**

This section contains general information on preparation of the loader for transportation by surface or air. Check regulations of the states and/or countries through which the loader will be transported for specific requirements such as dimensional limitations, whether or not the loader can be transported with fuel, etc.

Review storage requirements (Section 5) for information on protection that may be required if time en route is expected to be more than two or three days.

2. **SURFACE TRANSPORTATION**

Refer to Chapter 1, Section 3 (Specifications) for weight and dimensions of the loader to determine the load carrying requirements for the vehicle to be used for transportation.

To comply with surface transportation standards, it is recommended that the operator's cab, and ladder be removed for transport.

A. Lifting

When lifting loader for transport, use longer length cables or chains on the rear chassis than on the front of unit. This will enable the loader to lift evenly off the surface from its center of gravity (Figure 1).

The power module pin should be secured prior to lifting loader onto a vehicle.

B. Restraint

Restrain the loader with universal tie-down straps, chains and over-center tensioning devices, and chocks. Do not route tie-downs across handrails or ladders. See Figure 1 for tie-down location and use a cross-tie method when securing vehicle. Do not use tie-down hooks for towing or lifting of loader.

Inspect all attaching points to insure that the restraints are secure and that straps (if used) do not bear against angular surfaces that may cause failure en route due to chafing or vibration.

Check for presence of any loose items. If necessary, pack the items separately and place in a secure location.

3. **AIR TRANSPORTATION**

Depending on type of aircraft used for transportation, it may be necessary to remove the operator's cab, and ladder prior to transporting the loader.

If the operator's cab, and ladder are removed from the loader, cover all hydraulic line connectors with protective caps, plugs, or tape. Secure lines and electrical conductors to prevent damage during transportation.

If the loader is to be towed, insure that the hub drives are disengaged.

Restrain the loader with universal tie-down straps, chains and over-center tensioning devices, and chocks. Do not route tie-downs across handrails or ladders. See Figure 1 for tie-down location and use a cross-tie method when securing vehicle. Do not use tie-down hooks for towing or lifting or lifting of loader.

Inspect all attaching points to insure that the restraints are secure and that straps (if used) do not bear against angular surfaces that may cause failure en route due to chafing or vibration.

Check for presence of any loose items. If necessary, pack the items separately and place in a secure location.

CAUTION

LIFT UNIT ONLY ON POINTS INDICATED ON FIGURE 1. FAILURE TO USE DESIGNATED LIFT POINTS WILL RESULT IN EQUIPMENT DAMAGE.

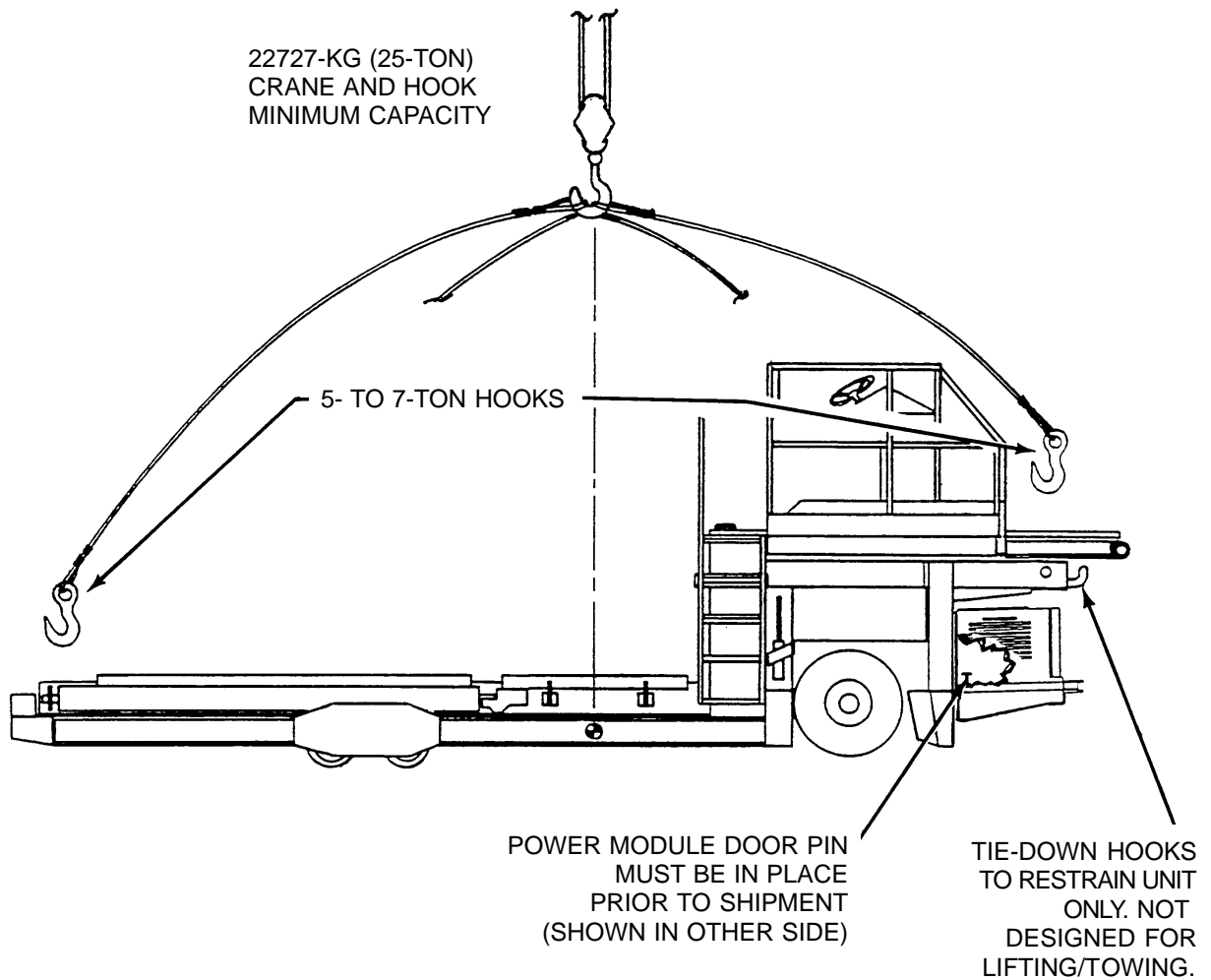


Figure 1
SHIPPING

*Section 5. Storage***1. SHORT-TERM STORAGE – ONE MONTH MAXIMUM**

- A. Perform all periodic maintenance services that are due as prescribed in Chapter 2.
- B. Chock drive wheels front and rear to prevent movement in any direction.
- C. Disconnect and remove two 12-volt batteries and store in cool, dry location.
- D. Coat all exposed unpainted metal surfaces with rust preventative. Especially important are exposed hydraulic cylinder rods, roller chains, sprockets, and lift chains.

2. LONG-TERM STORAGE

Ideally, the loader should be stored in a shelter to protect it from the weather. If a shelter is not available, use protective material such as tarpaulins, plastic sheets, etc., to cover the loader.

NOTE: Refer to the manufacturer's manual for procedures to be performed for engine preservation.

- A. Perform all periodic maintenance services that are due as prescribed in Chapter 2.
- B. Raise and block chassis so that all wheels are off ground.
- C. Disconnect and remove two 12-volt batteries and store in cool, dry location.
- D. Coat all exposed unpainted surfaces with rust preventative. Especially important are exposed hydraulic cylinder rods, roller chains, sprockets, and lift chains.
- E. If shelter is not available, cover bridge and platform with tarpaulins or other protective material. Cover and tape instrument panels to provide a moisture-proof seal.

*Section 6. Emergency Procedures***1. DEPARTING AIRCRAFT**

Use these procedures if the engine fails or if the main hydraulic pump fails.

CAUTION

DO NOT OPERATE ELECTRICAL PUMP CONTINUOUSLY FOR MORE THAN 1 MINUTE. OPERATION FOR MORE THAN 1 MINUTE WILL OVERHEAT MOTOR AND MAY CAUSE DAMAGE. IF EMERGENCY PROCEDURES CANNOT BE COMPLETED WITHIN 1 MINUTE, WAIT AT LEAST 10 MINUTES TO ALLOW MOTOR TO COOL, THEN CONTINUE.

- A. Ensure the MASTER START SWITCH is in the ON position.
- B. Open the electrical pump switch guard located under the driver's panel, pull and hold the EMERGENCY PUMP SWITCH and note that the pump starts.

CAUTION

ENERGIZE THE EMERGENCY POWER UNIT ONLY WHILE OTHER SWITCHES ARE TURNED ON. CONTINUOUS OPERATION WHILE NOT IN USE CAUSES THE ELECTRIC MOTOR TO OVERHEAT UNNECESSARILY.

- C. Actuate joystick switches ONLY TO REMOVE cargo from loader to aircraft or to a ground vehicle. DO NOT CONTINUE LOADING.
- D. Disengage optional auto tracking sensor if engaged.
- E. Hold PLATFORM LIFT SWITCH down until platform stops automatically.
- F. Slightly retract operator's cab to clear aircraft before bridge is lowered.
- G. Position bridge to allow cargo door to be closed and secured.

CAUTION

CLOSE AND SECURE CARGO DOOR CAREFULLY. FAILURE TO USE CARE MAY RESULT IN DAMAGE TO AIRCRAFT OR LOADER.

- H. Chock drive wheels to prevent movement until tow vehicle is properly attached.
- I. Set MODE SWITCH to DRIVE. Note that stabilizers retract and STABILIZERS DOWN INDICATOR goes out.
- J. Close electrical pump switch guard and note that pump stops.

- K. Set MASTER START SWITCH to OFF.

CAUTION

DISCONNECT BATTERY BEFORE TOWING LOADER.

**WARNING**

BEFORE DISENGAGING HUB DRIVES, CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- L. Disengage hub drives (refer to page 3).
- M. Tow loader from aircraft to a safe parking or maintenance area. (refer to page 3)

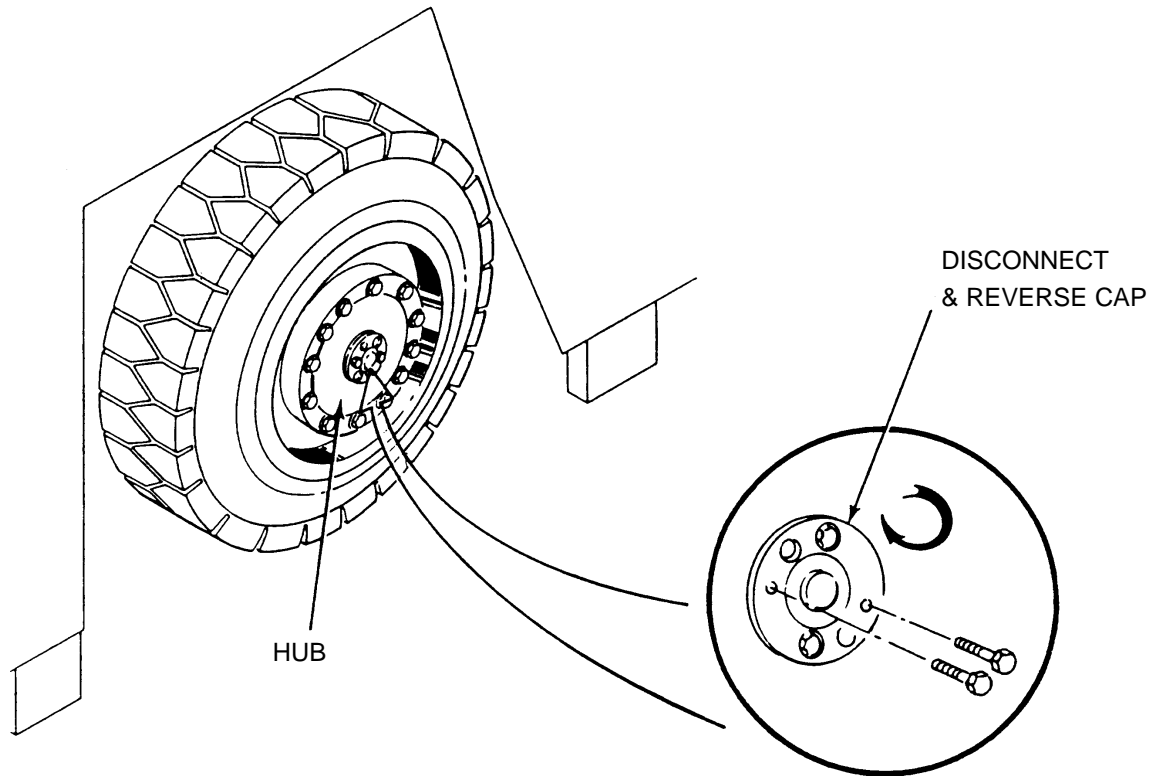


Figure 1
DRIVE HUB DISENGAGEMENT AND ENGAGEMENT

2. DISENGAGING HUB DRIVES**WARNING**

BEFORE DISENGAGING HUB DRIVES, CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- A. Chock drive wheels front and back to prevent movement in either direction.
- B. Remove disconnect cap (Figure 1) on one hub by removing two screws and pulling cap away from hub.
- C. Reverse position of cap so that nipple faces inward, place against hub, then install and tighten the screws.
- D. Repeat steps (B) and (C) above for other hub.

3. TOWING**WARNING**

DO NOT EXCEED 11 KPM (7 MPH) WHEN TOWING LOADER. EXCEEDING SPEED LIMIT MAY CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

CAUTION

TOWING LOADER WITHOUT DISENGAGING HUBS WILL SERIOUSLY DAMAGE COMPONENTS.

- A. Insure that hubs have been disengaged before proceeding.
- B. Connect tow bar between towing vehicle and loader.
- C. Remove chocks and tow loader to desired location.
- D. Upon arrival at selected location, immediately chock drive wheels and disconnect tow bar.
- E. Engage hub drives (paragraph 5) as soon as possible.

**WARNING**

IF HUB DRIVES ARE NOT IMMEDIATELY ENGAGED, PLACE SUITABLE WARNING SIGN ON LOADER TO INSURE THAT ALL PERSONNEL ARE AWARE OF THE CONDITION. FAILURE TO OBSERVE THIS WARNING MAY CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

4. LIFT TOWING

- A. Insure stabilizers are retracted and drive hubs are disengaged before proceeding.
- B. Locate steering lock pin in wheel well on right side of loader with power module open. Move pin from stow position to the steering lock position (Figure 2).

**WARNING**

DO NOT ALLOW PERSONNEL DIRECTLY IN FRONT OF LOADER. KEEP AREA CLEAR DURING LIFTING.

- C. Use a minimum 10-ton lift capacity tow truck and raise loader from rear chassis a maximum of 0.45 m (1-1/2 ft). Inspect front of loader from operator side of loader for ground clearance.
- D. Slowly tow loader to maintenance location.
- E. Upon arrival at selected location, lower loader onto ground surface and immediately chock drive wheels. Stow the steering lock pin.

5. ENGAGING HUB DRIVES**WARNING**

BEFORE ENGAGING HUB DRIVES, CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- A. If wheels are not already chocked, chock them front and back.

NOTE: When performing step B below, remove cap slowly to prevent disconnect rod from coming out of hub.

- B. Remove disconnect cap (Figure 1) on one hub by removing two cap screws and slowly pulling cap away from hub.
- C. Reverse position of cap so that nipple faces outward, place cap against hub, then install cap screws and torque to 7.9-9.0 Nm (70-80 lb-in).
- D. Repeat steps (B) and (C) for other hub.

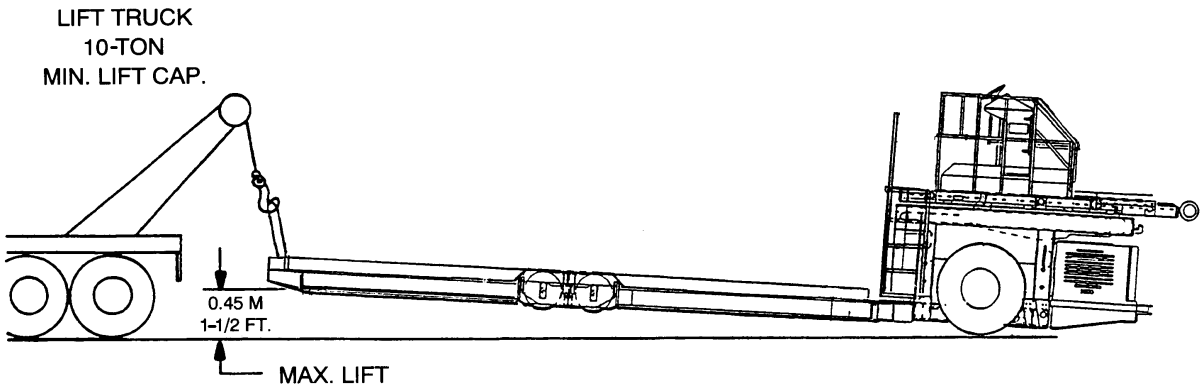
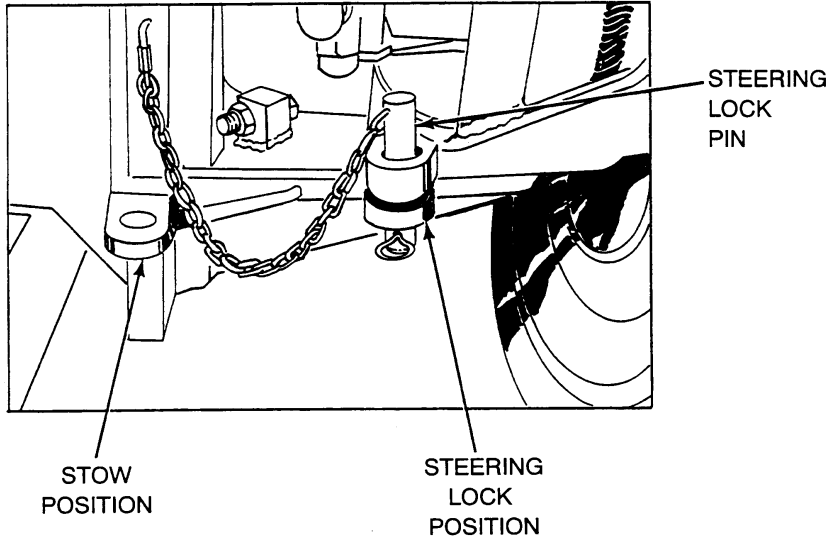


Figure 2
LIFT TOWING

CHAPTER 2. MAINTENANCE

TABLE OF CONTENTS

Section 1. Servicing

	<u>Page</u>
1. NEW EQUIPMENT CHECK LIST	1
2. PERIODIC MAINTENANCE	2
3. COMMANDER 15 LOADER PERFORMANCE SPECIFICATIONS	6
4. HYDRAULIC OIL RECOMMENDATIONS	7
5. LUBRICATION	7
Grease Points	7
Pivot Points and Chains	7
Fill Points	7

Section 2. Mechanical Adjustments

1. MECHANICAL INSPECTION AND ADJUSTMENT	1
Sprocket Inspection	1
Roller Chain Inspection	2
Roller Chain Adjustment	2
HeliRoll Casting Repair	5
Lift Chain Assembly	8
Primary Chain Anchor Adjustment (Only if Required)	9
Lift Module Rear Platform Assembly – Removal	13
Lift Module Platform Assembly – Installation	14
Deutz Engine Removal Procedure	15

Section 3. Hydraulic & Electrical Adjustments

1. HYDRAULIC SYSTEM	1
Standby Pressure	2
Main Relief Valve, and Pump Pressure Compensator Pressure Adjustment	4
Rear Chassis Raise and Lower (Bogy Wheel Cylinder Extend and Retract) Speed Adjustments.	11

	<u>Page</u>
Parking Brake Release Pressure	13
Stabilizer Adjustments	15
Bridge Raise/Lower Flow Controls (STANDARD LOADER)	20
Bridge Raise/Lower Flow Controls (MAIN DECK AND UNIVERSAL LOADER) ...	21
Bridge Needle and Counterbalance Valves	23
Dynamic Braking Adjustment	25
Platform Raise Speed Control Adjustments	28
Platform Lower	28
Platform Slow Lower Speed Control Adjustment	30
Platform Fast Lower Speed Control Adjustment	31
Platform Guides Pressure Reducing Valve Adjustment	31
Platform Convey Speed	34
Platform Convey Crossover Relief Valves	35
Power Steering Pressure Reducing Valve Adjustment	38
Bridge Powered Guides Speed Adjustment	39
Wide Bridge Powered Wings Adjustment – Bridge with Folding Wings Only ...	39
Bridge Convey Speeds	44
Bridge Convey Crossover Relief Valves	48
Cab Extend/Retract Speed Adjustment	49
Bridge Tilt Flow Control Adjustments (Option)	50
Emergency Pump Relief Valve	51
2. SWITCH ADJUSTMENT PROCEDURE	53
Proximity Switch Adjustments	53
3. ELECTRICAL SYSTEM	54
6PRS Proximity Switch (Stabilizers Up)	54
5PRS Proximity Switch (Bridge Down)	54
9PRS, 10PRS, 11PRS Proximity Switches. (Guides Proximity Switches)	57
12PRS Proximity Switch (Tells Guide To Raise), Platform Below 610mm	59
13PRS Proximity Switch, Platform Within 100mm (4 Inches) of Bridge	59
14PRS Proximity Switch (Platform/Bridge Interface)	59
15PRS Proximity Switch Platform 25mm (1 inch) Above Bridge	60
16PRS and 17PRS Proximity Switches (Bridge Stops Lowered)	63
18PRS Proximity Switch (Check To See If All Guides Are Up, If Not Platform Will Not Raise Above 30 Inches), Platform Below 760mm (30 Inches)	63

	<u>Page</u>
19PRS Proximity Switch (Truck Transfer Height Option), platform below 1525mm to 1780mm	64
1PLS Overtravel Shutdown. Limit Switch, Bridge On Track	64
4PS Pressure Switch, Stabilizer Down	66
3PS Pressure Switch, Bogy Wheels Extended (OPTIONAL)	66
Propel Board Preliminary Adjustment	69
Propulsion Performance Adjustment	71
Platform Lift Adjustment	72

Section 4. Troubleshooting

1. GENERAL	1
2. INTRODUCTION	1
3. HYDRAULIC SYSTEM	1
Service Manifold Assembly, Hydraulic	6
Propel/Lift Manifold Assembly, Hydraulic	28
4. ELECTRICAL SYSTEM	48
Main Panel	48
Driver's Panel	48
Control Panel	48
Bridge Panel	48
Status Panel (OPTIONAL)	48
Proximity Switch	49
Electrical Schematic	49
5. TROUBLESHOOTING GUIDE	55

CHAPTER 2

LIST OF FIGURES

<u>Chapter- Section</u>	<u>Fig. No.</u>	<u>Title</u>	<u>Page</u>
2-1	1,2	LUBRICATION LOCATIONS	10
2-1	3,4	FILL POINT	13
2-2	1	ROLLER CHAIN ADJUSTMENT	3
2-2	2	CHAIN SLACK MEASUREMENT	4
2-2	3,4	HeliRoll CASTING REPAIR	5
2-2	5	SECONDARY CHAIN ADJUSTMENT	11
2-2	6	PRIMARY CHAIN ADJUSTMENT	12
2-2	7	DEUTZ ENGINE REMOVAL PROCEDURE	16
2-3	1-3	HYDRAULIC PUMP ADJUSTMENTS	6
2-3	4,5	MAIN RELIEF VALVE PRESSURE ADJUSTMENT	9
2-3	6	REAR CHASSIS RAISE AND LOWER (BOGY WHEEL CYLINDER EXTEND AND RETRACT) SPEED ADJUSTMENT	12
2-3	7	PARKING BRAKE PRESSURE ADJUSTMENT	14
2-3	8,9	SOLENOID VALVE IDENTIFICATION CHART	16
2-3	10	STABILIZER ADJUSTMENT	18
2-3	11	BRIDGE RAISE/LOWER FLOW CONTROL ADJUSTMENT	22
2-3	12	BRIDGE NEEDLE AND COUNTERBALANCE VALVE ADJUSTMENT	24
2-3	13	DYNAMIC BRAKING ADJUSTMENT	27
2-3	14	PLATFORM SPEED CONTROL ADJUSTMENT	29
2-3	15,16	PLATFORM GUIDES PRESSURE REDUCING VALVE	32
2-3	17,18	PLATFORM FLOW CONTROL AND CROSSOVER RELIEF VALVES	36
2-3	19,20	POWER STEERING ADJUSTMENT	40

<u>Chapter– Section</u>	<u>Fig. No.</u>	<u>Title</u>	<u>Page</u>
2–3	21,22	BRIDGE VALVE BANK ADJUSTMENTS	42
2–3	23	POWER WING CYLINDER ADJUSTMENT	45
2–3	24,25	BRIDGE CONVEY ADJUSTMENTS	46
2–3	26	EMERGENCY PUMP ADJUSTMENT	52
2–3	27	PROXIMITY SWITCH ADJUSTMENT	53
2–3	28	STABILIZER PROXIMITY SWITCH	55
2–3	29	BRIDGE DOWN PROXIMITY SWITCH	56
2–3	30	PROXIMITY SWITCH LOCATION	57
2–3	31	PLATFORM DOWN PROXIMITY SWITCHES	58
2–3	32,33	INTERFACE PROXIMITY SWITCH ADJUSTMENTS	61
2–3	34	OVERTRAVEL SHUTDOWN SWITCH	65
2–3	35	STABILIZER PRESSURE SWITCH	67
2–3	36	BOGY WHEEL PRESSURE SWITCH	68
2–3	37	PROPEL BOARD ADJUSTMENTS	70
2–3	38	PLATFORM LIFT ADJUSTMENT	73
2–4	1	HYDRAULIC TROUBLE SHOOTING GUIDE	3
2–4	2,3	SOLENOID VALVE LOCATIONS	4
2–4	4,5	SERVICE MANIFOLD ASSEMBLY	8
2–4	6,7	BRIDGE RAISE CIRCUIT	10
2–4	8,9	BRIDGE LOWER CIRCUIT	12
2–4	10,11	PARKING BRAKE RELEASE CIRCUIT	14
2–4	12,13	RAISE CHASSIS (BOGY WHEEL EXTEND) CIRCUIT	16
2–4	14,15	LOWER CHASSIS (BOGY WHEEL EXTEND) CIRCUIT	18
2–4	16,17	PLATFORM LOWER – PILOT SIGNAL	20
2–4	18,19	STABILIZER RAISE	22
2–4	20,21	STABILIZER LOWER	24
2–4	22,23	MAINTAIN STABILIZERS UP WHILE PROPELLING	26

<u>Chapter– Section</u>	<u>Fig. No.</u>	<u>Title</u>	<u>Page</u>
2–4	24,25	PROPEL & LIFT MANIFOLD ASSEMBLY	30
2–4	26,27	PROPEL FORWARD	32
2–4	28,29	PROPEL REVERSE	34
2–4	30,31	FORWARD DYNAMIC BRAKING	36
2–4	32,33	REVERSE DYNAMIC BRAKING	38
2–4	34,35	LOADER MOVING FORWARD WITH SYSTEM SHIFTED TO REVERSE	40
2–4	36,37	PLATFORM RAISE	42
2–4	38,39	PLATFORM SLOW LOWER	44
2–4	40,41	PLATFORM FAST LOWER	46
2–4	42–45	STATUS PANEL (OPTIONAL)	50
2–4	46	PROXIMITY SWITCH LOCATIONS	54
2–4	47–51	HYDRAULIC SYSTEM SCHEMATIC	74
2–4	52	ELECTRICAL SCHEMATIC INFORMATION	84
2–4	53	PLATFORM CONVEY TROUBLESHOOTING CHART	86
2–4	54–89	ELECTRICAL SCHEMATIC 622–7180	88

CHAPTER 2. MAINTENANCE

Section 1. Servicing

1. NEW EQUIPMENT CHECKLIST

CHECKLIST	CHECK (√)
Perform walk-around inspection and check for obvious damage, missing parts, and fluid leaks.	
Check power unit fluid levels: fuel, oil, coolant for engines, electrolyte for batteries. Fill to specified level as required.	
Check level of oil in hydraulic reservoir.	
Check operator's access ladder for security.	
Check all handrails and mounting brackets. Lubricate latches.	
Check lights and turn signals.	
Check horns.	
Check accelerator and brake mechanisms for ease of operation.	
Re-torque front drive wheels to 234 Nm (170 ft-lb) dry.	
Check roller assemblies for damage.	
Check leaf chains on lift mechanism for lubrication.	
Check platform guides (stops) for lubrication.	
Start power unit. Check gauges and indicators for indication of proper operations, THEN MAKE OPERATIONAL CHECK OF UNIT:	
Stabilizers	Extend/Retract
Parking Brake	Released/Applied
Cab	Extend/Retract
Bogy Wheels	Extend/Retract
Bridge Guides	Left/Right
Bridge	Raise/Lower
Platform	Raise/Lower
Bridge Convey	Left /Right
	Fwd/Aft
Platform Convey (Front Section)	Left/Right
	Fwd/Aft

CHECKLIST		CHECK (√)
Platform Convey (Rear Section)	Left/Right	
	Fore/Aft	
Container Rotation	Clockwise	
	Counterclockwise	
Bridge Tilt (Optional)	Left/Right	
Platform Forward Load Stop		
Bridge Forward Load Stop (Optional)		
Platform Guides (Raise and Lower)	Left Side	
	Right Side	
	Rear	
Bridge Folding Wings (Raise and Lower)	Left Side	
	Right Side	
Propulsion, Forward & Reverse		
Brakes	Service	
	Parking	
	Dynamic	
Steering		
Inspect all hydraulic hoses and fittings for leaks.		
Inspect all hydraulic motors for fluid leakage.		
Inspect steering valve for fluid leakage.		
Inspect scissors pivot pins and rollers for lubrication.		
Inspect pivot points of bridge lift cylinders for lubrication.		
Inspect operator's cab slides and rollers for lubrication.		
Inspect all wiring harnesses and wires for security.		
Inspect roller assembly chains for correct tension and lubrication.		
Check emergency pump operation.		
Check oil level in drive axle planetary gear hubs.		
Make performance checks (see performance specifications).		

2. PERIODIC MAINTENANCE

Regular maintenance is required to insure optimum loader performance and long life for machine components. Maintain a loader by performing periodic maintenance at the intervals listed in the Periodic Maintenance table below.

If a loader is being operated in severe weather conditions such as extreme heat or cold, or in sandy, dusty, or snowy areas, increase the frequency of periodic maintenance as necessary.

CAUTION

IN THE EVENT OF UNIT DE-COMMISSIONING, MAJOR OVERHAUL OR SERVICING, ANY ENVIRONMENTALLY SENSITIVE MATERIALS MUST BE DISPOSED OF PROPERLY. PROPER DISPOSAL SHALL FOLLOW LOCAL ENVIRONMENTAL REGULATIONS AND RECOMMENDATIONS. EXAMPLES OF SUCH MATERIALS INCLUDE RUBBER TIRES AND BELTS, BATTERIES, LUBRICANTS (MOTOR OILS AND GREASE), HYDRAULIC OIL, AND ALL TYPES OF GLYCOL AND FUEL.

PERIODIC MAINTENANCE

PROCEDURE	PERIOD (HOURS)			
	8	50	100	OTHER
Perform walk-around inspection and check for obvious damage, missing parts and fluid leaks.	x			
Check condition of drive wheels.	x			
Check condition of tires.	x			
Check condition of bogey wheel tires.	x			
Check power unit fluid levels: fuel, engine oil, and engine coolant.	x			
Check batteries for clean connections and correct electrolyte level.	x			
Check condition of hydraulic filter element.	x			
Check fluid level in hydraulic reservoir.	x			
Check condition of operator's access ladder and mounting.	x			
Check condition of all handrails and mounting brackets.	x			
Check platform edge rollers for damage and drive coupling for being secure.	x			
Check all lights and turn signal operation.	x			
Check horn operation.	x			
Start power unit. Check gauges and indicators for indication of proper operation.	x			
Inspect pivot pins on bridge lift cylinders for wear.	x			
Stabilizers Retract/Extend	x			
Parking Brake Release/Applied	x			
Cab Retract/Extend (R.H. cab only)	x			
Bogey Wheels Retract/Extend	x			
Bridge Guides Left/Right	x			
Bridge Raise/Lower	x			

PERIODIC MAINTENANCE

PROCEDURE		PERIOD (HOURS)			
		8	50	100	OTHER
Bridge Convey	Left/Right/Fwd/Aft	x			
Platform Convey (Front Section)	Left/Right/Fwd/Aft	x			
Platform Convey (Rear Section)	Left/Right/Fwd/Aft	x			
Container Rotation	Clockwise/Counterclockwise	x			
Bridge Tilt (Optional)	Left/Right	x			
Platform Fwd Load Stop	Raise/Lower	x			
Platform Guides	Raise/Lower: Left, Right, Rear	x			
Folding Wings	Raise/Lower: Left, Right, Center	x			
Propulsion	Forward/Reverse	x			
Brakes	Service/Dynamic	x			
Steering		x			
Demand throttle operation		x			
Emergency pump operation		x			
Inspect for fluid leaks upon completion of function check.		x			
Check all roller assemblies for condition and missing parts or damage.			x		
Check access door latches for ease of operation and lubricate.			x		
Lubricate all pivot & slide points on platform guides (stops).			x		
Check oil level in planetary gear hubs.				x	Change after first 50 hours of operation and every 1000 hours thereafter.
Check scissors pivot pins and rollers for wear. Lubricate.			x		
Check chains on platform lift for wear and correct adjustment. Lubricate chains.			x		
Check all clevis and cotter pins for wear and damage: four chains with two per chain (eight total). Replace clevis and/or cotter pins as needed.			x		
Inspect condition of all hydraulic hoses and fittings and check for leakage.			x		

PERIODIC MAINTENANCE

PROCEDURE	PERIOD (HOURS)			
	8	50	100	OTHER
Inspect all hydraulic components for fluid leakage.		x		
Inspect pivot pins on bridge lift cylinders for wear and lubricate.		x		
Inspect HeliRoll and roller assemblies for damage and wear.		x		
Inspect accelerator and brake assemblies for wear. Lubricate pivot points.		x		
Inspect operator's cab slides and rollers for wear. Lubricate.		x		
Inspect all wiring harnesses for damage and security.		x		
Check all wiring terminals for being secure.				Annually
Check chain tension on all HeliRoll and roller shafts. Lubricate chains.		x		
Replace engine oil, fuel and air filters.				Refer to engine manufacturer's recommendations (Chapter 6)
Check engine and service.				Refer to engine manufacturer's recommendations on service intervals and procedures (Chapter 6)
Replace hydraulic reservoir breather.				Annually
Change oil in hydraulic reservoir and replace filter element.				Annually
Replace filter element.				Whenever indicator is "UP"
Make performance check.				Annually
Re-torque front drive wheel lugnuts to 234 Nm (170 ft-lb) dry.				After first 100 hours of operation. Thereafter, annually or every 1500 hours.
Re-torque wheel mount retaining bolts and nuts to 325 Nm (240 ft-lb) dry.				After first 100 hours of operation. Thereafter, annually or every 1500 hours.
Inspect and tighten six sockethead cap screws that attach the operator's compartment to the bridge.				Annually

PERIODIC MAINTENANCE

PROCEDURE	PERIOD (HOURS)			
	8	50	100	OTHER
Replace the six sockethead cap screws that attach the operator's compartment to the bridge.				Every 5 years

3. COMMANDER 15 LOADER PERFORMANCE SPECIFICATIONS

ENGINE SPECIFICATIONS AND OPERATING RPM

ENGINE MODEL	LOW IDLE	HIGH IDLE FULL LOAD	RATED HORSE POWER
Perkins 1004-4	1400 rpm	2400 rpm	88 @ 2400 rpm
Deutz Diesel BF4M 1012	1500 rpm	2400 rpm	87 @ 2400 rpm
Cummins 6BT 5.9	1300 rpm	2000 rpm	152 @ 2000 rpm

PROPULSION SPEEDS

(Time to travel over 100 measured feet)

Snail Mode	60-70 sec/30 m (100 ft)
Turtle Mode	20-24 sec/30 m (100 ft)
Rabbit Mode	10-12 sec/30 m (100 ft)

BRAKES (SERVICE)

Must stop loader in 4.5 m (15 ft), or less, from full speed (Rabbit mode).

BRAKES (DYNAMIC)

Must stop loader within 10.5-12 m (35-40 ft) from full speed (Rabbit mode).

BOGY WHEELS

Extend and Retract	3-8 sec
--------------------	---------

STABILIZERS

Extend	6-10 sec
Retract	4-8 sec

NOTE: Right center stabilizer is last stabilizer to extend and retract. This stabilizer MUST lag by 2-3 seconds.

BRIDGE SPEEDS, FULL EXTENSION, STANDARD LOADER

Bridge Raise	29-34 sec
Bridge Lower	19-24 sec

BRIDGE SPEEDS, FULL EXTENSION, MAIN DECK CAPABILITY

Bridge Raise	48-53 sec
Bridge Lower	29-34 sec

BRIDGE TRANSFER SPEEDS

Forward and Aft 60 fpm (39-41 rpm)
 Side Transfer 30 fpm (19-21 rpm)

PLATFORM SPEEDS, FULL EXTENSION, STANDARD LOADER

Platform Raise 17-22 sec
 Platform Lower 10-15 sec

PLATFORM SPEED, FULL EXTENSION, HIGH SPEED PLATFORM OPTION

Platform Raise 15-16 sec
 Platform Lower 10-15 sec

PLATFORM TRANSFER SPEEDS

All Transfer Speeds 60 fpm (39-41 rpm)

CAB

Extend and Retract 14-20 sec

BRIDGE GUIDES

Side to Side 3-7 sec

BRIDGE TILT CYLINDERS

Extend and Retract 2-3 sec

4. HYDRAULIC OIL RECOMMENDATIONS

Use Mobile DTE series, or equivalent, for temperatures listed below in the COMMANDER 15 loader:

OIL OPERATING TEMPERATURE RANGE

RECOMMENDED HYDRAULIC FLUID	MINIMUM AMBIENT START-UP TEMP.	MAXIMUM BULK OIL (RESERVOIR) TEMP.
MOBIL DTE 11M	-32°C (-25°F)	66°C (150°F)
MOBIL DTE 13M	-12°C (10°F)	74°C (165°F)
MOBIL DTE 19M	16°C (60°F)	82°C (180°F)

SEVERE COLD WEATHER OPERATION

MIL-5606 -32°C to 49°C (-25°F to 125°F)

MIL-5606 is to be used only when minimum oil temperature is below -18°C (0°F).

5. LUBRICATION

A. Grease Points (Figure 1)

Wipe grease fittings clean and apply EP lithium base NLGI Grade 1 or 2 grease. Before coating other surfaces with grease, clean surfaces to remove dirt and foreign material.

B. Pivot Points and Chains (Figure 2)

Apply SAE 30 oil with brush or oil can as appropriate.

C. Fill Points (Figure 3, Figure 4)

Refer to Figure 3 for locations of fill points for hydraulic oil reservoir and drive wheel hubs.



GREASE

GREASE POINTS			
ITEM-DESCRIPTION		TOTAL FITTINGS	INTERVAL
1	Bridge lift cylinders (upper & lower)	4	S
2	Steering pivot bearings (top & bottom each side)	4	Q
3	Tie rod	2	Q
4	Power steering cylinder (rod end)	1	Q
5	Bridge scissors (upper & lower front pivot points)	4	S
6	Bridge scissors (midpoint)	2	S
7	Platform scissors (upper & lower front pivot points)	4	S
8	Platform scissors (midpoint)	2	S
9	Platform lift chain sheaves (top & bottom)	4	S
10	Platform lift assembly slides. Apply light coat of grease to sliding surfaces	-	S
11	Platform load stops (left, rear, right). Apply light coat of grease to three ramps on each	9	S
12	Bridge scissors rollers (upper & lower) (qty. varies with features supplied)		Q
13	Power module hinges	2	A
14	Bogy wheels	4	Q
15	Platform scissors rollers (upper & lower)	4	Q

NOTE: Q = Quarterly, S = Semiannually, A = Annually
 Check at intervals listed and lubricate as required. In unusual weather conditions, check at more frequent intervals.

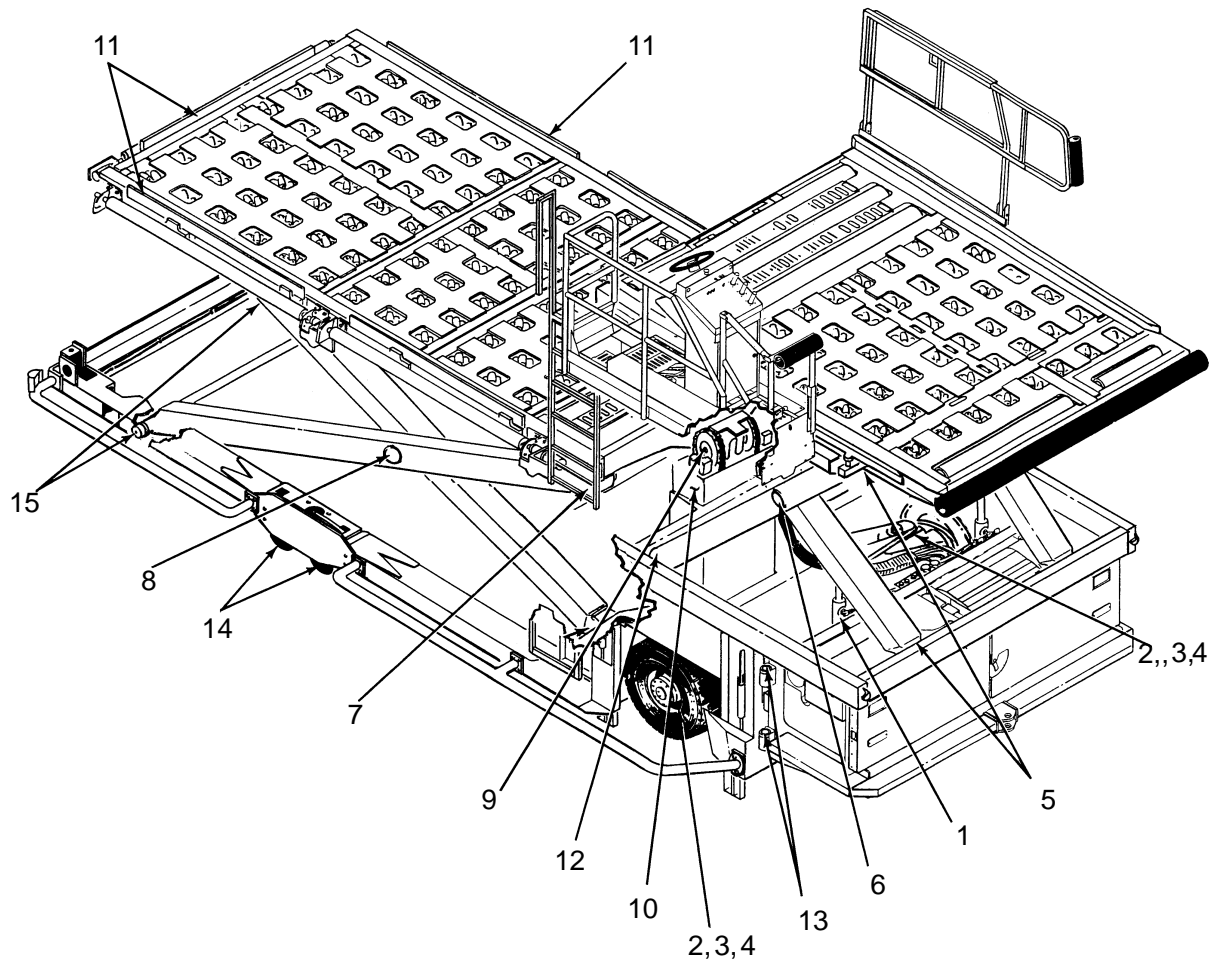


Figure 1
LUBRICATION LOCATIONS



OIL

OIL POINTS			
ITEM-DESCRIPTION		TOTAL FITTINGS	INTERVAL
1	Power steering cylinder pivot point	1	Q
2	Operator's cab hydraulic cylinder pivot points	2	Q
3	Power unit module pivot pins (2)	2 EA.	Q
4	Access panel hinge	1	Q
5	Access panel hinges	1	Q
6	Lift chains	4	Q
7	Bridge side guide pivot points	4	Q
8	Bridge handrail hinge points	2	Q
9	Bridge roller chains (qty. varies with features supplied)		Q
10	Platform roller chains (qty. varies with features supplied)		Q
11	Platform load stops hydraulic cylinder pivot points (left, rear, right)	6	Q

NOTE: Q = Quarterly, S = Semiannually, A = Annually
 Check at intervals listed and lubricate as required. In unusual weather conditions, check at more frequent intervals.

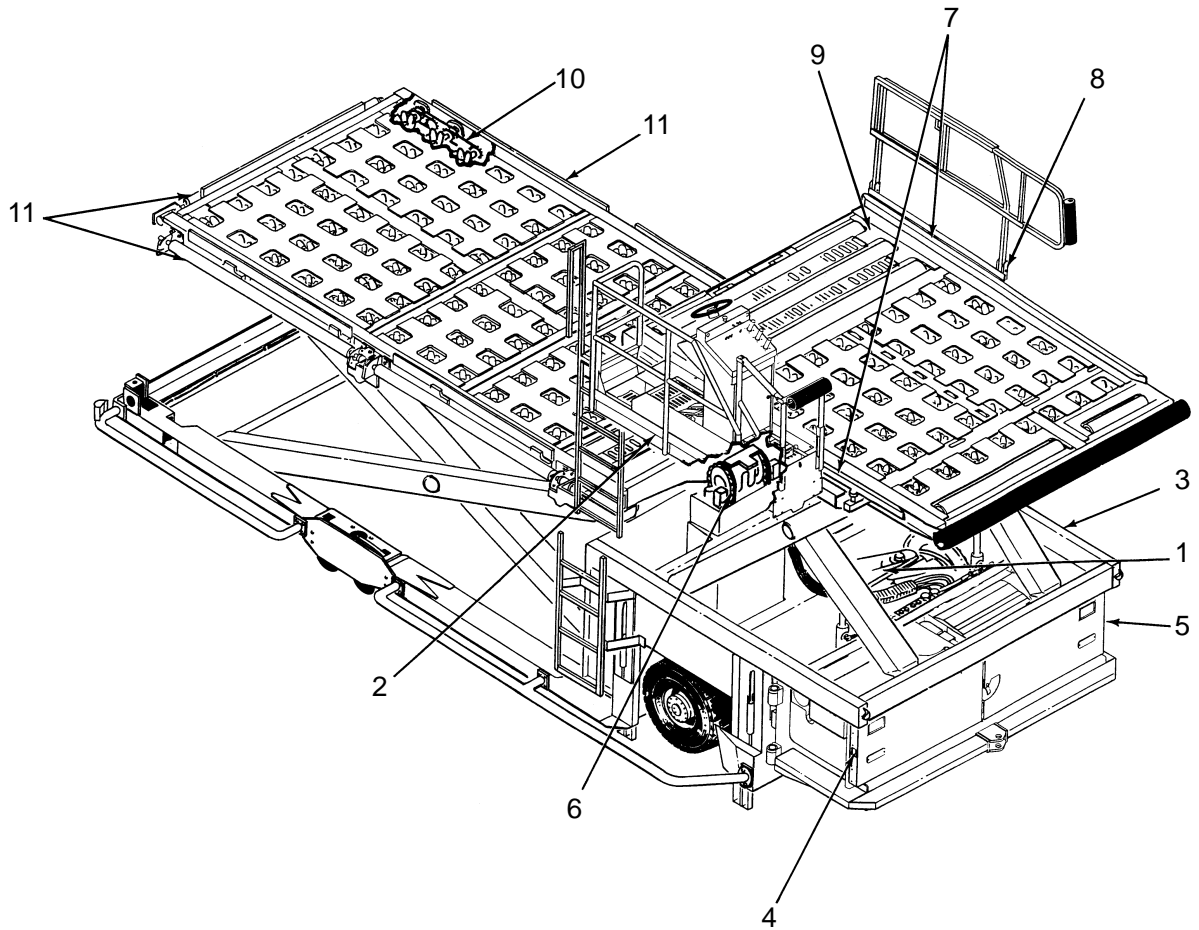
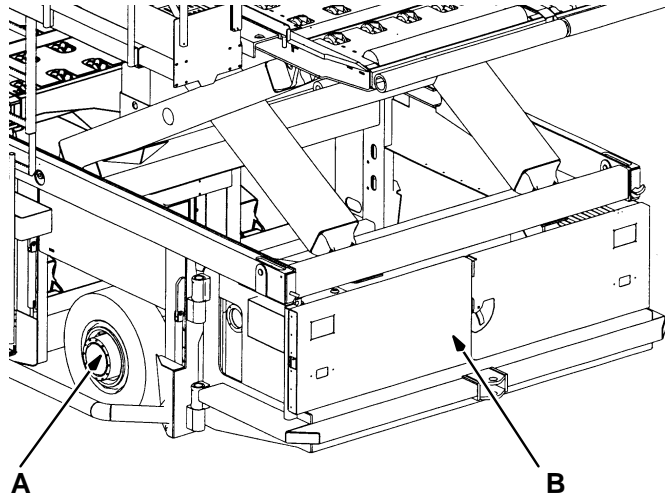


Figure 2
LUBRICATION LOCATIONS



FILL

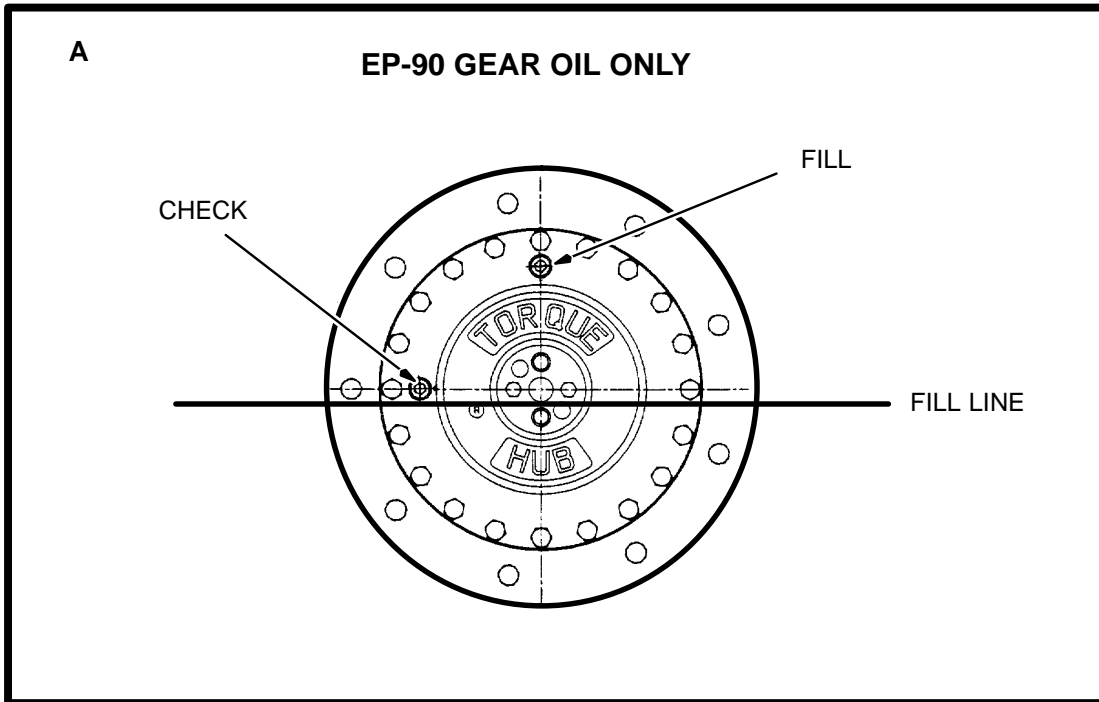


Figure 3
FILL POINT

FILL

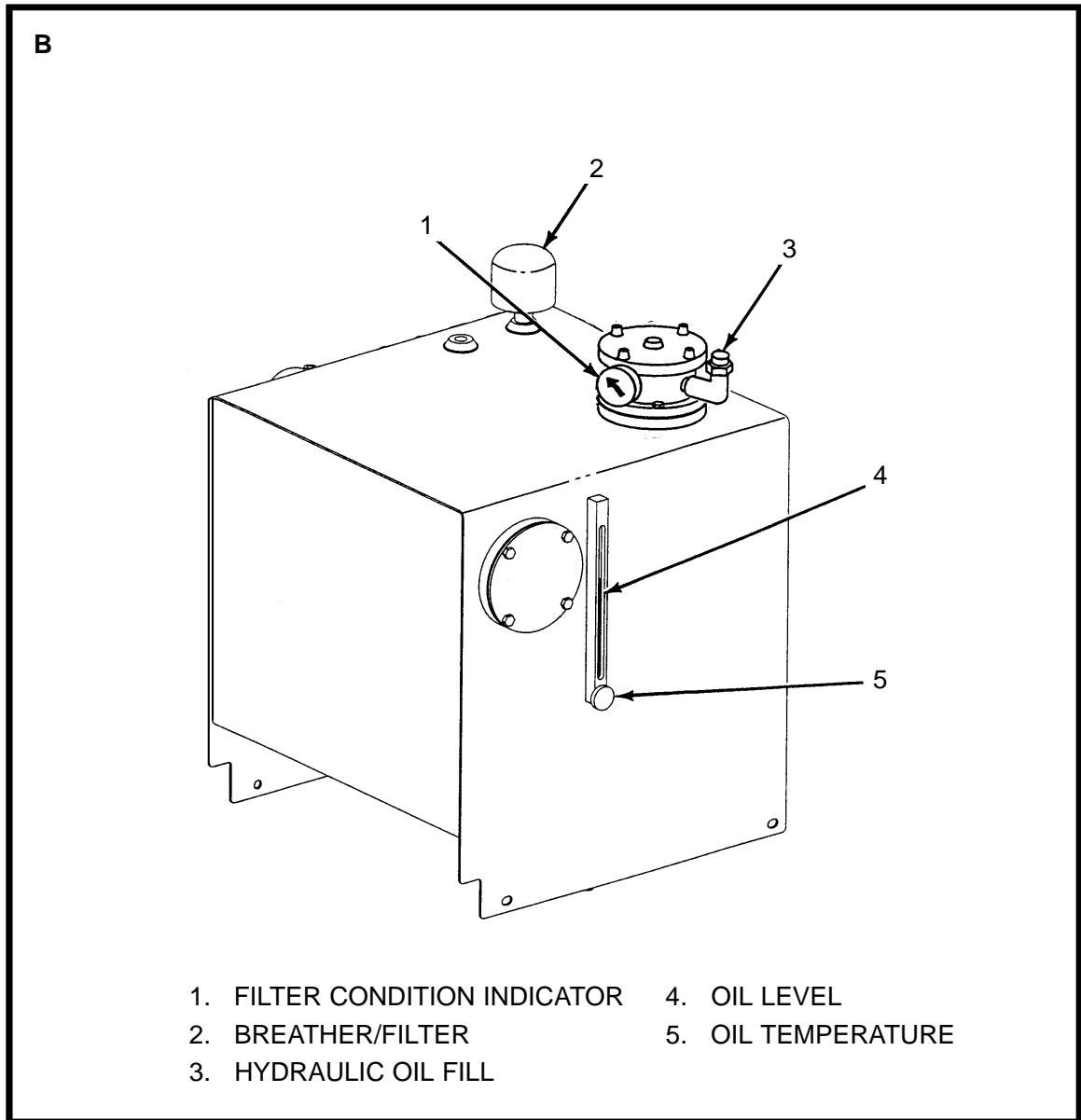


Figure 4
FILL POINT

Section 2. Mechanical Adjustments**WARNING**

BEFORE STARTING ANY ADJUSTMENT PROCEDURE THAT REQUIRES THE PLATFORM TO BE IN AN ELEVATED POSITION, MOVE THE MAINTENANCE STANDS INTO POSITION AND LOWER THE PLATFORM FULLY AGAINST THE MAINTENANCE STANDS. DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT OF THE LOADER IN EITHER DIRECTION.

IT IS MANDATORY THAT EYE PROTECTION (SAFETY GOGGLES OR FACE SHIELD) BE WORN WHEN MAKING PRESSURE CHECKS AND/OR ADJUSTMENTS ON THE HYDRAULIC SYSTEM. HYDRAULIC OIL WILL CAUSE EYE INJURIES. IF HYDRAULIC OIL GETS ON THE SKIN, WASH AFFECTED AREA IMMEDIATELY TO AVOID IRRITATION.

WHEN MAKING PRESSURE CHECKS OR ADJUSTMENTS, USE GAUGES WITH KNOWN ACCURACY. IMPROPER HYDRAULIC ADJUSTMENTS CAN CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

DO NOT REMOVE GAUGE PORT PLUGS OR GAUGES, OR LOOSEN HYDRAULIC CONNECTIONS WITH THE POWER UNIT RUNNING. HYDRAULIC PRESSURE IN THE SYSTEMS COULD CAUSE HYDRAULIC OIL TO SPRAY ON PERSONNEL.

CAUTION

USE EXTREME CARE TO PREVENT CONTAMINATION OF HYDRAULIC SYSTEM WHEN INSTALLING GAUGES, FITTINGS, OR REPLACING A COMPONENT. CONTAMINATION CAN RESULT IN EQUIPMENT DAMAGE.

WHENEVER AN ADJUSTABLE HYDRAULIC RELIEF VALVE OR PRESSURE REDUCING VALVE IS REPLACED, REDUCE THE PRESSURE SETTING PRIOR TO STARTING THE POWER UNIT. ADJUST THE REPLACED COMPONENT TO SPECIFICATION AS OUTLINED IN THE ADJUSTMENT PROCEDURES.

1. MECHANICAL INSPECTION AND ADJUSTMENT**A. Sprocket Inspection**

- (1) Inspect sprockets for broken teeth.
- (2) Inspect for alignment and secure attachment to shafts.

NOTE: If sprockets are replaced, replace the chain also. Using an old chain on new sprockets will cause premature wear of the sprockets.

B. Roller Chain Inspection

- (1) Inspect chains for elongation by comparing with a new chain. If elongation is 3% or more (3 links in 100, or about 1/2 link in 17), replace the chain.
- (2) Inspect chain for discoloration. Brown or red color on chain or in oil indicates presence of rust. Remove chain and inspect rollers, links, and pins. If evidence of galling, excessive wear, or corrosion exists, replace chain.
- (3) Inspect chain for proper adjustment. The chain slack should be within the operating range as tabulated and measured in para. C below.

C. Roller Chain Adjustment

Frequent adjustment of roller chains should not be required; however, a check should be made periodically as listed in the Periodic Maintenance table in Chapter-Section 2-1.

- (1) Remove deck plates as necessary to gain access for adjustments.
- (2) Loosen the bearing mounting bolts (Figure 1). Keep mounting bolts snug to ease adjustment and prevent unintentional movement of shaft.
- (3) On shaft with additional support (Figure 1), loosen the support mount bolts completely so the bearing will move freely.
- (4) Measure slack in the chain by lightly pushing down at the midpoint of one chain span (Figure 2). Push just enough to take up the slack in the other span(s). At that midpoint, measure the distance from the center of the chain pin, or another convenient location, to a stationary reference. Typically, this reference will be the platform or bridge frame. Record measurement as "A".
- (5) Now push the the chain up and, in the same manner as before, record measurement "B". Be sure to use exactly the same reference locations used to record measurement "A".
- (6) The difference between measurements "A" and "B" is the amount of slack in the chain.
- (7) Using the adjuster jam nuts (Figure 1), adjust the center distance (Figure 2) between the sprockets to obtain the slack listed in Table 1. Note that in some cases, adjustment of one chain may effect another chain adjustment. Check all chains and continue progressive adjustment until all are correct.

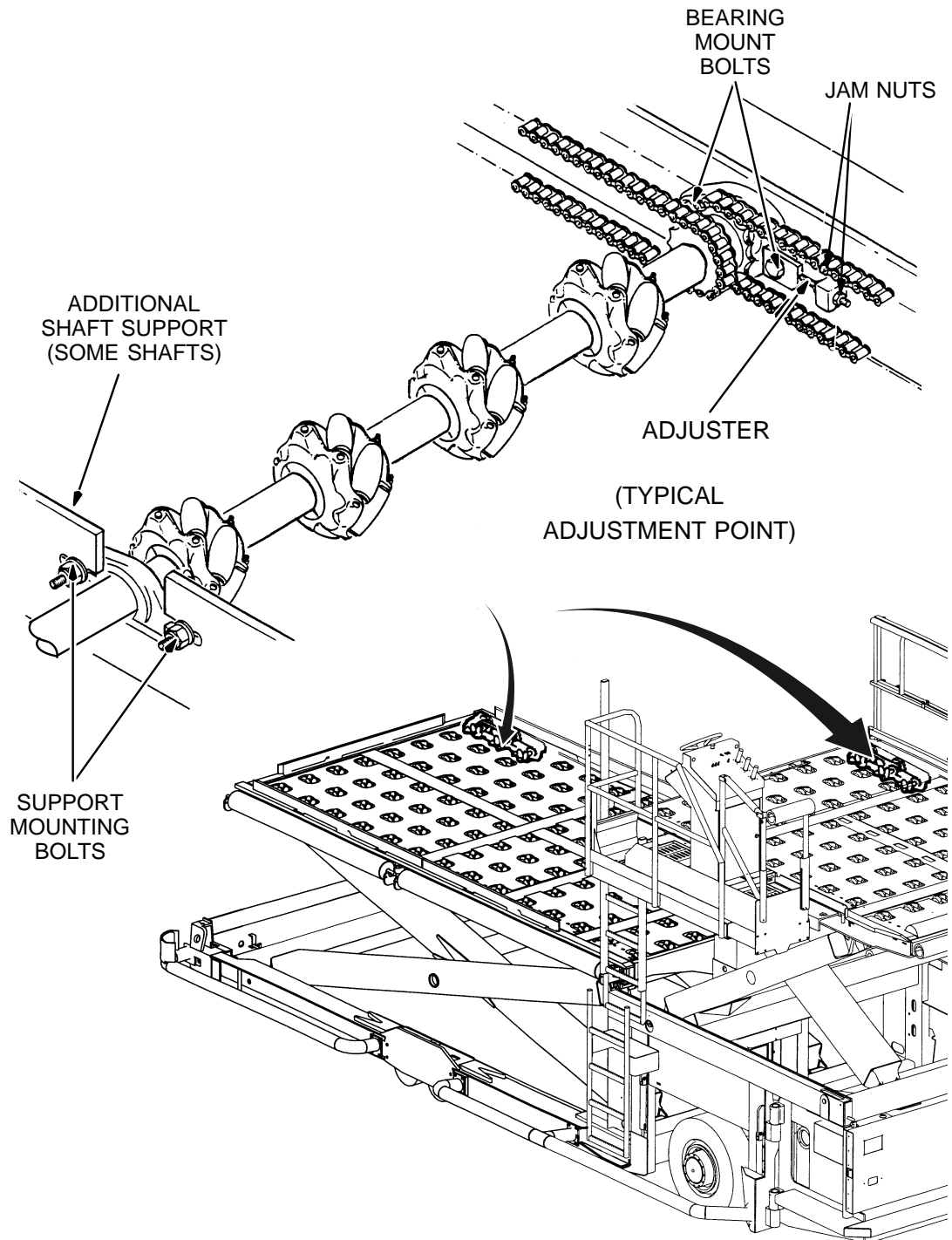


Figure 1
ROLLER CHAIN ADJUSTMENT

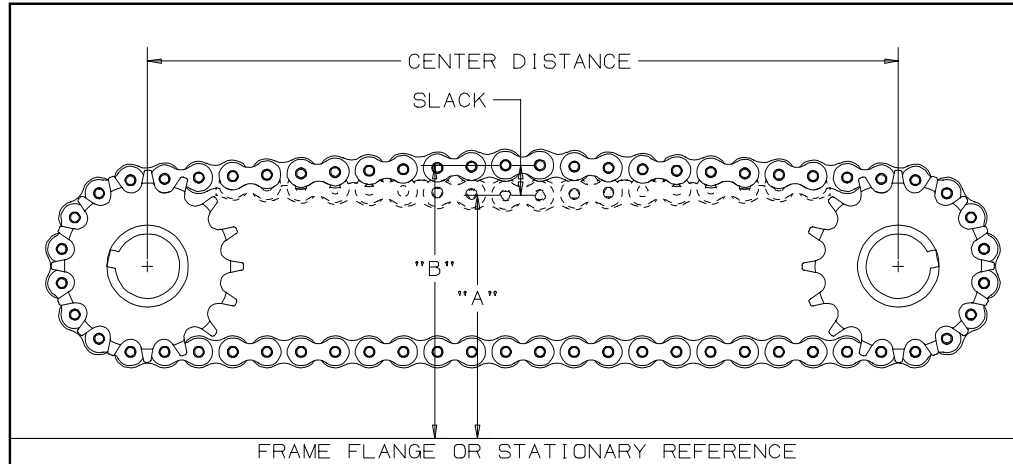


Figure 2
CHAIN SLACK MEASUREMENT

- (8) Tighten bearing mount bolts to secure adjustment.

NOTE: Early model COMMANDER bearing mount bolts are zinc-plated (silver colored) ISO grade 8.8 bolts and should be torqued to 40 ft-lbs (54 Nm). Later models have phosphate (black colored) ISO grade 10.9 mount bolts in some locations; torque these bolts to 65 ft-lbs (88 Nm).

TABLE 1

CONFIGURATION	SLACK	OPERATING RANGE (SEE NOTE BELOW)
Rear platform shaft to shaft	7mm	0-14mm
Bridge shaft to shaft	10mm	0-20mm
All hydraulic convey motor to shaft	10mm	4-16mm

NOTE: Operating range is a condition of drivetrain tolerance. Values only apply to slack which has been set to the values given in this table in accordance with the method of this section. Zero slack values are only acceptable if the slack is greater than 6mm when shafts are rotated 180° and remeasured.

- (9) Snug adjuster jam nuts against block.
- (10) Tighten support mount bolts where used.
- (11) Reinstall deck plates.

D. HeliRoll Casting Repair

The HeliRoll castings are occasionally damaged by impact with defective containers or pallets. Also, the roller pin may be broken and the roller lost. If the “D” hole of the casting is intact and the round hole will still capture the pin, simply replace the missing parts. If the casting is damaged so that the pin will not be retained, it is still possible to repair weld it without removing it from the loader. A badly worn drive pin slot can also be repaired using this process. Refer to Figure 3 and Figure 4.

- (1) Rotate the shaft with the damaged HeliRoll casting until the location requiring repair is at the top. Remove any oxidization with a wire brush or similar device.
- (2) Insert the roller pin, FMC P/N 620-0283, into the casting in its normal position. The pin will act as a pattern for the weld buildup. Refer to step (4) below for recommended welding processes.
- (3) To repair badly worn drive pin slots, it is necessary to remove the deck plate or raise the platform and engage the maintenance stands. Refer to step (5) below for recommended welding processes.
- (4) Welding processes – pin retention repair



WARNING

CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

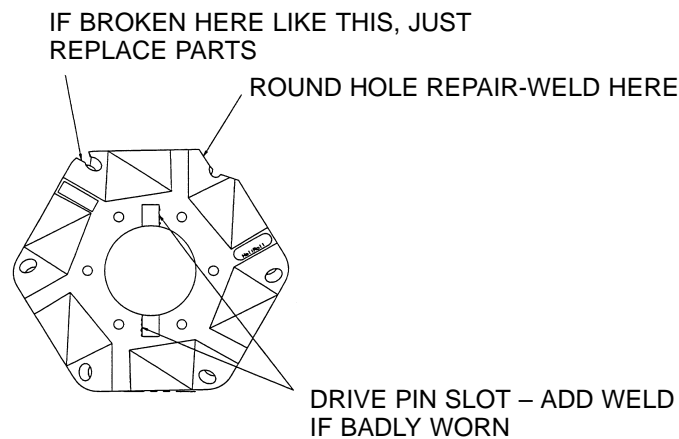


Figure 3
HeliRoll CASTING REPAIR

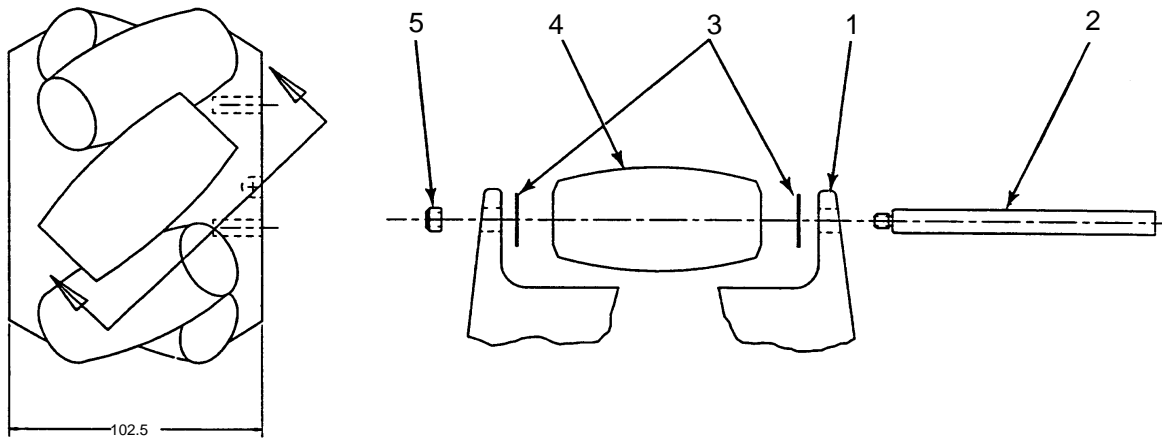


Figure 4
HeliRoll CASTING REPAIR

NOTE: Torque nut to 8-10 ft-lb (100-120 in-lb). Apply Loctite #290 to lock nuts (6 places).

PARTS LIST			
ITEM NO	PART NO	NOMENCLATURE	UNITS PER ASSY
1	620-8100-001	HUB CASTING, L.H.	1
2	620-1093	PIN	6
3	622-2821	THRUST WASHER	12
4	620-6187	ROLLER ASSEMBLY	6
5	620-4742	NUT, Lock	6
-	MRO5-00162	LOCTITE #290	.01 OZ.

**WARNING**

USE EYE PROTECTION AND PROTECTIVE CLOTHING RECOMMENDED BY THE MANUFACTURER OF THE WELDING EQUIPMENT YOU ARE USING.

- (a) Torch welding (Henrob torch)
 - 1) Use medium tip, set pressures to 5 psi (.07 bar) oxygen and 5 psi (.07 bar) acetylene.
 - 2) Apply flux to the aluminum welding rod (use manufacturer's recommendation).
 - 3) Preheat the outer edge of the repair surface. Build up the casting by working toward the pin.
 - 4) Allow to cool, remove the pin, and grind the inner surface flat where it will contact the roller thrust washer (Figure 4, Item 3).
 - 5) Assemble pin, roller, thrust washers, and nut.
 - 6) Torque nut to 8 ft-lb (10 Nm) and apply Loctite #290 to end of nut.
- (b) Tungsten Inert Gas (TIG) welding
 - 1) Use Miller Synchronwave 250 or similar welder.
 - 2) Use 1/8 or 3/32 filler rod of alloy 6163, 5356, or 6061 aluminum.
 - 3) Set welder to 28 volts, 215 amps.
 - 4) Set Argon gas to 28 cu ft (793 ltr) per hour.
 - 5) Build up the casting by working toward the pin.
 - 6) Allow to cool, remove the pin, and grind the inner surface flat where it will contact the roller thrust washer (Figure 4, Item 3).
 - 7) Assemble pin, roller, thrust washers and nut.
 - 8) Torque nut to 8 ft-lb (10 Nm) and apply Loctite #290 to end of nut.
- (5) Welding processes – drive pin repair

**WARNING**

USE EYE PROTECTION AND PROTECTIVE CLOTHING RECOMMENDED BY THE MANUFACTURER OF THE WELDING EQUIPMENT YOU ARE USING.

- (a) Rotate the casting on the HeliRoll shaft until the drive pin is firmly against one side of the slot.
- (b) Wire-brush the slot adjacent to the pin to remove oxidation.
- (c) Use either of the welding processes described above to fill in weld around the drive pin.

E. Lift Chain Assembly

(1) Chain Wear Inspection

During chain operation, some metal-to-metal contact does occur, and parts eventually wear. The progressive joint wear elongates chain pitch, causing the chain to lengthen. By placing a certain number of pitches under tension, elongation can be measured. When elongation reaches the limit of 12-1/4" over any 8 pitches in areas receiving the most wear, or recommended by the manufacturer "wear indicator," the chain should be replaced. It is imperative that chain replacement be done in pairs.

(2) Clevis and Cotter Pins

Check all clevis and cotter pins for wear and damage: four chains with two per chain (eight total). Replace clevis and/or cotter pins as needed (ref. Figure 5 and Figure 6).



WARNING

CHOCK BOTH DRIVE WHEELS FRONT AND BACK TO PREVENT MOVEMENT IN EITHER DIRECTION. FAILURE TO DO SO MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.



WARNING

DO NOT ALLOW PERSONNEL UNDER THE PLATFORM UNLESS MAINTENANCE STANDS ARE IN PLACE. FAILURE TO SUPPORT THE PLATFORM MAY ALLOW PLATFORM TO FALL, RESULTING IN DEATH OR INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.



WARNING

BEFORE PERFORMING ANY MAINTENANCE OR WHILE MAKING ANY ADJUSTMENTS OR REPAIRS TO THE LOADER, IT IS MANDATORY THAT THE MASTER SWITCH BE TURNED OFF (POWER UNIT STOPPED).

NOTE: Park loader on level ground in a safe, well lit maintenance area and extend the stabilizers.

NOTE: Amber indicator light for parking and stabilizers should be illuminated.

- (3) Secondary Chain Adjustment (Only if Required) (Figure 5)
- (a) With the platform fully down, examine the top of the rear lift mechanism. The gap between the inner slide assembly and the outer stationary housing should be the same on both sides. If the gap is equal on both sides, go to step (b). If the gap is not the same, see step (c).
 - (b) Tighten the chain on the side with the smallest gap by rotating the secondary chain adjuster nut clockwise. Use a 38mm or 1-1/2" socket and 36" long, .75" drive extension. The secondary chain adjuster nut is located on the front side of the secondary lift cylinders on top of the casting to which the three lift cylinders are bolted. Continue to tighten the nut until the gap is equal on the left and right sides.
 - (c) With an equal gap on the left and right sides between the inner slide assembly and the outer housing, tighten both the left and right secondary chain adjuster nuts 1/2 turn. Observe the inner slide assembly while raising the platform. The inner slide assembly should not shift to the side when the platform starts to lift or when the transition between primary and secondary cylinders occur. This transition occurs when the platform is 74" above ground level. If the inner slide assembly does side shift while lifting, repeat step (c). Continue to repeat this step until side shifting is eliminated. While performing this adjustment, maintain an equal gap between the left and right inner slide assembly and the outer stationary housing by tightening the secondary chain adjuster nut on the side with the smallest gap.
 - (d) When step (c) is completed, the inner slide assembly should extend no more than .25" above the stationary outer housing.
 - (e) When satisfied with inspection and adjustment, proceed to primary chain adjustment and/or platform interfacing if necessary.
 - (f) Inspect chain clevis and cotter pins for damage and replace if required.

F. Primary Chain Anchor Adjustment (Only if Required) (Figure 6)

- (1) Inspect for chain wear prior to primary chain anchor adjustment and insure that secondary chains are inspected and adjusted correctly.
- (2) Raise platform and place maintenance stands in "SERVICE" position.
- (3) Lower platform onto maintenance stands, releasing tension from chain.
- (4) With power unit stopped or battery plug disconnected, loosen chain anchor nut approximately 20mm (3/4").
- (5) Protect the chain anchor threads and use a hammer to drive the chain anchor forward until the end of the chain anchor is in line with the surface of the chain sheave and the chain is vertical.

- (6) Inspect chain clevis and cotter pins for damage and replace if required.
- (7) With maintenance stands in place, use a level to check each lift cylinder housing (forward and rear) so they are PARALLEL with each other.
- (8) Tighten the chain anchor nut until it contacts the chain anchor washer. DO NOT TORQUE THE NUT. The nut prevents the chain anchor from moving forward in operation. Any torque on the nut will move the chain anchor out of adjustment.
- (9) Start power unit and raise the platform. Do not stow the safety stands at this time.

**WARNING**

DO NOT ALLOW PERSONNEL UNDER PLATFORM UNLESS MAINTENANCE STANDS ARE IN PLACE. FAILURE TO SUPPORT PLATFORM MAY ALLOW PLATFORM TO FALL, RESULTING IN DEATH OR INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (10) With the primary cylinder extended, the center of the primary chain sheave will be in line with the center of the secondary cylinders on the left and right sides. Stow the maintenance stands, then with the platform full down, the primary chain will be parallel to the rear face of the lift housing. Verify this by placing a straight edge across the lift housing and measuring to the left and right chains at top and bottom. All dimensions should agree within 3mm (1/8").

CAUTION

CHECK THAT CHAIN ANCHOR HAS NOT BEEN ADJUSTED TOO FAR FORWARD AND STRIKES THE CASTING WHICH SUPPORTS THE PRIMARY CYLINDER.

- (11) Inspect all bearing blocks. If worn to the extent that bearing block screws scrub on a mating surface, replace them.
- (12) Raise the bridge approximately one foot from full down. Raise the platform to interface with the bridge and observe the interface mechanism for correct operation.

**WARNING**

BE PREPARED TO OVERRIDE THE REAR LIFT OR HIT THE EMERGENCY SHUTDOWN IN THE EVENT OF PLATFORM OVERTRAVEL.

- (13) If necessary, readjust forward-most proximity switch (4PRS-B) up or down to achieve correct platform interface. If platform stops below bridge, move switch (4PRS-B) down 3mm (1/8") to raise platform to interface.

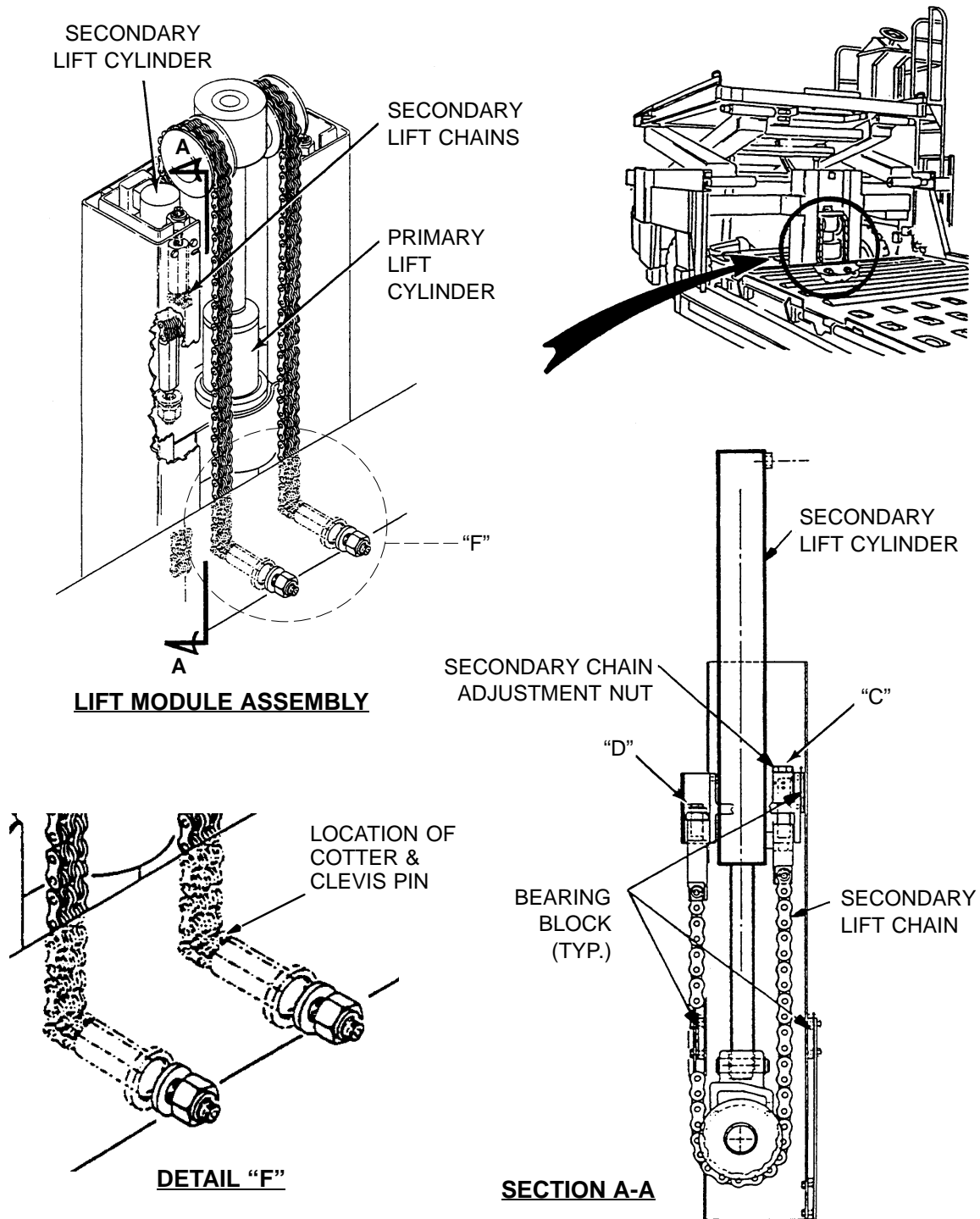


Figure 5
SECONDARY CHAIN ADJUSTMENT

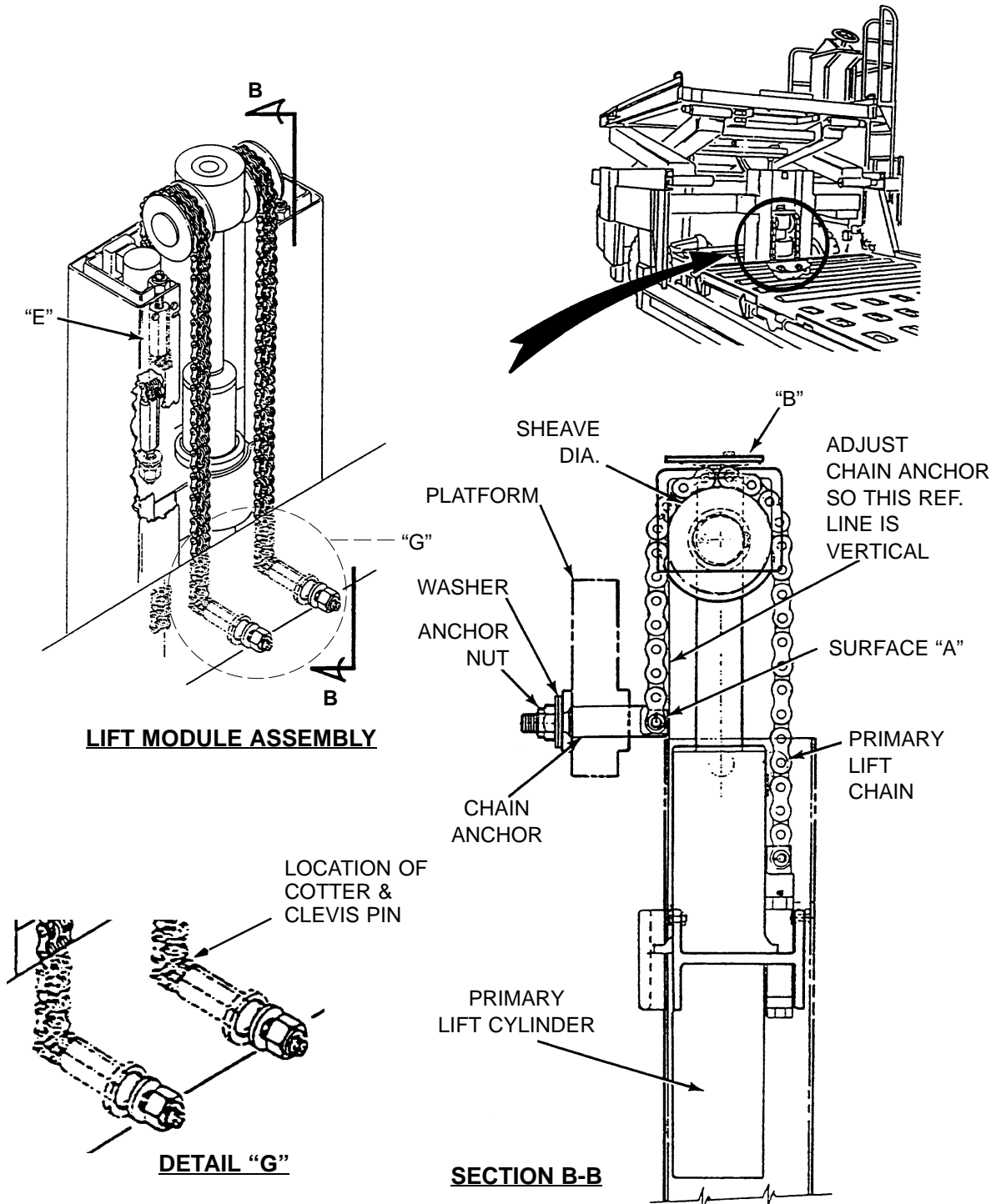


Figure 6
PRIMARY CHAIN ADJUSTMENT

G. Lift Module Rear Platform Assembly – Removal



WARNING

USE ALL SAFETY PRECAUTIONS PER COMMANDER MAINTENANCE MANUAL WHILE WORKING ON THE UNIT.

NOTE: Tools required: Hand tools, chain/straps, two forklifts.

SPECIAL: Block of wood 4" x 4" x 15" long, hydraulic caps and plugs.

- (1) Park loader on level ground in a safe, well lit maintenance area and extend the stabilizers by setting MODE SWITCH to OPERATE.
- (2) Raise the rear platform and place on safety stands.
- (3) Install 4" x 4" x 15" wooden block under primary lift cylinder. Stow safety stands and lower the rear platform on to the wooden block.

NOTE: Platform will not go all the way down. It will be raised 15".

- (4) Remove the interface plate on top of the primary lift cylinder. See Figure 6 (B).
- (5) Use two forklifts to raise the platform up or reinstall the safety stands. Do not put forks under scissors. Lift platform at front only.
- (6) Remove hydraulic lines at lift cylinders and seal with steel caps or plugs.
- (7) Remove chain clevis pins at platform chain anchors.

NOTE: If there are problems with clevis pin removal, raise platform with forklifts to top of lift assembly and remove pins.

- (8) Remove chain anchors.
- (9) Remove safety stands and lower rear platform fully to the frame bed.
- (10) Loosen secondary lift chain nuts in the front until the rear nuts are hand loose. See Figure 5 (C) and (D).
- (11) Use a 6mm Allen wrench to remove the two forward slider pads, rear pads and all shims.

CAUTION TAG ALL SHIMS, LEFT AND RIGHT FOR REASSEMBLY.

(12) Remove four 8mm bolts. See Figure 6 (E).

(13) Strap the secondary lift chains to the cylinder.

NOTE: Do not let the chains fall down in the lift module.

(14) Install a chain through the holes at the top of the module and lift it out for repairs.

H. Lift Module Platform Assembly – Installation

NOTE: Install in reverse procedure in para. G.

(1) When installing the chain anchor, the first chain link must be vertical.

(2) Leave the interface plate off at this time.

CAUTION PLATFORM MUST BE ON SAFETY STANDS FOR NEXT STEP, ITEM (3).

(3) Use 3mm Allen wrench to crack bleeder open on primary lift cylinder.

(4) With engine at idle, bump the platform lift switch (UP) until all the air has been discharged.

**WARNING** DO NOT LET THE REAR PLATFORM INTERFACE WITH THE BRIDGE AT THIS TIME.

(5) Tighten bleeder.

(6) Install interface plate on top of primary cylinder.

(7) Cycle the platform several times and check the chain adjustment. Follow the adjustments per the manual.

(8) If necessary, readjust forward most proximity switch (4PRS-B) up or down to achieve correct platform interface.

I. Deutz Engine Removal Procedure (Figure 7)

NOTE: See Figure 7 for item locations.

- (1) Remove throttle arm where it protrudes through fire wall.
- (2) Remove bolts (11) from pump mounting flange.
- (3) Remove fuel lines.
- (4) Remove exhaust system.
- (5) Remove engine mounting bolts (4).
- (6) Remove fire wall mounting bolts.
- (7) Remove air intake.
- (8) Block up pumps for support when engine is removed.
- (9) Lift engine by lift points and pull away from pumps.
- (10) Remove coupling from engine by removing bolts (8) which hold pump coupling to flywheel.

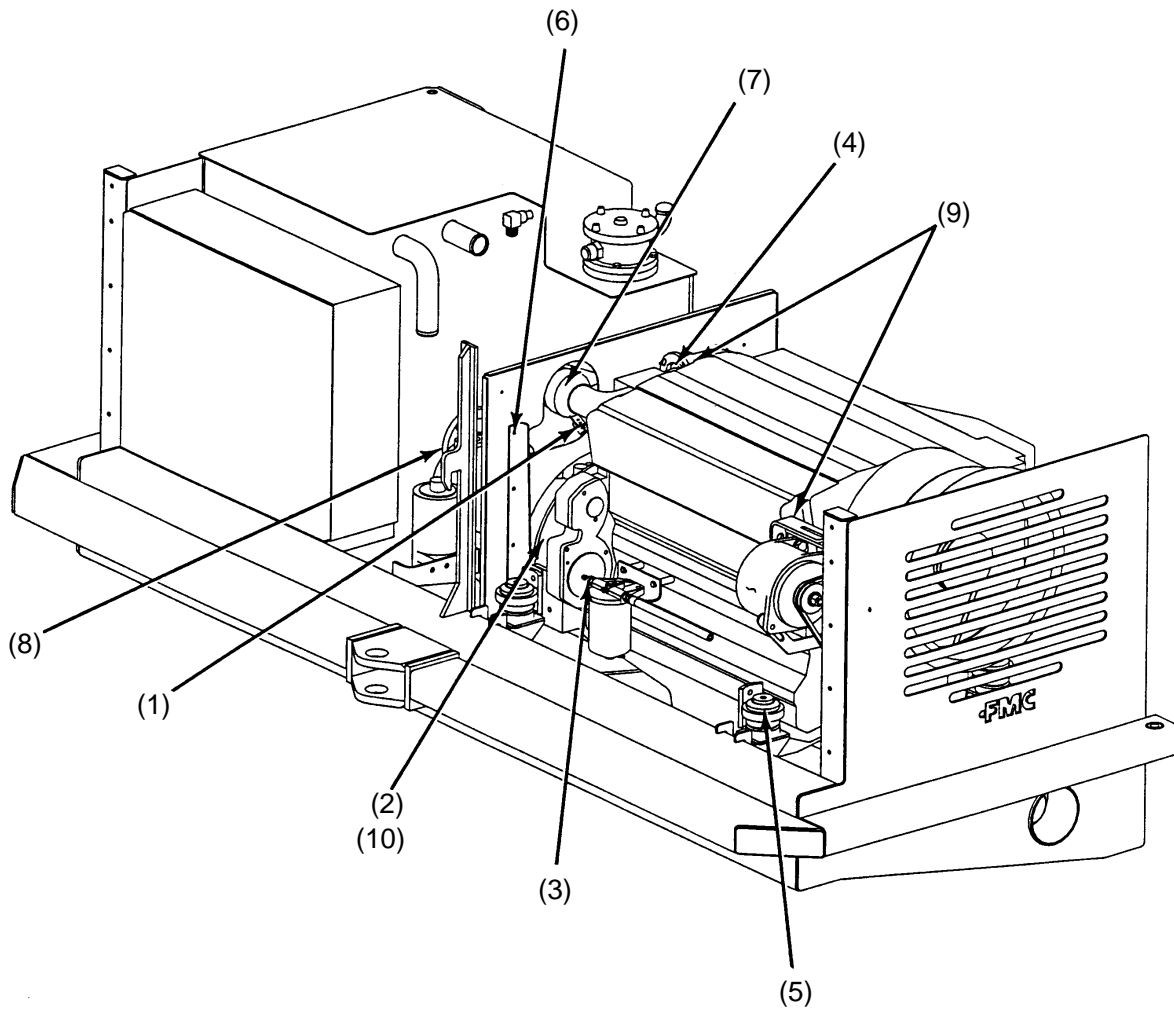
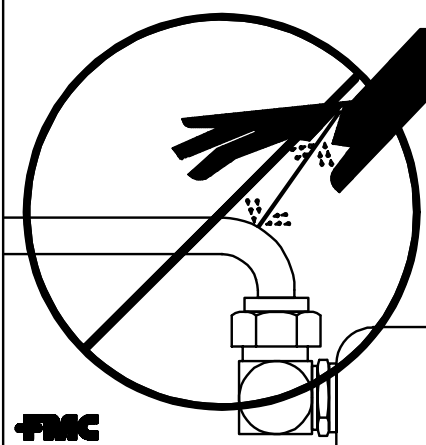


Figure 7
DEUTZ ENGINE REMOVAL PROCEDURE

Section 3. Hydraulic & Electrical Adjustments

1. HYDRAULIC SYSTEM

	<p style="text-align: center;">▲ WARNING</p> <p style="text-align: center;">KEEP AWAY FROM LEAKS</p> <p>HYDRAULIC OIL UNDER PRESSURE CAN PENETRATE THE SKIN, CAUSING INJURY AND DEATH.</p> <p>DO NOT TOUCH HOSES, TUBING OR OTHER HYDRAULIC COMPONENTS UNDER PRESSURE, BECAUSE OF UNEXPECTED LEAKS.</p> <p>DO NOT ATTEMPT TO "FEEL" FOR THE SOURCE OF A LEAK.</p> <p>ALWAYS WEAR EYE PROTECTION WHEN NEAR PRESSURIZED HYDRAULIC SYSTEMS</p> <p>TURN OFF AND DISABLE POWER TO THE PUMP, AND RELEASE PRESSURE FROM ALL SYSTEMS BEFORE REMOVING ANY COMPONENT.</p> <p>IF HYDRAULIC OIL PENETRATES THE SKIN, SEEK IMMEDIATE MEDICAL ATTENTION TO REMOVE THE OIL, AS IT CAN CAUSE GANGRENE AND DEATH.</p>
--	--

The hydraulic system is a closed center system with a load sensing control that automatically regulates pump displacement. When there is no system demand, the pump stands by at near zero flow and low pressure.

When making performance checks, hydraulic system pressure checks, or hydraulic system adjustments, the hydraulic oil must be at normal operating temperature.

Eye protection, safety glasses or a face shield must always be worn for protection against injury when hydraulic systems are under pressure and adjustments are being made.

The loader drive wheels must always be chocked to prevent movement of the loader in either direction, and the stabilizers extended by placing the MODE SWITCH in the OPERATE position.

All adjustments on the bridge can be accomplished with the bridge in the fully lowered position. The platform must have the maintenance stands installed to support the platform whenever personnel are required to go under the platform for maintenance or adjustment procedures.

A. Standby Pressure (Figure 1 thru Figure 3)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove the bolt that secures the power unit in the closed position, and swing the power unit open to gain access to pumps and valves.
- (2) Have assistant start the power unit, retract the stabilizers by setting the MODE SWITCH to DRIVE, and set PARKING BRAKE SWITCH to ON. VERIFY this by observing that the STABILIZERS DOWN INDICATOR is OFF, and the PARKING BRAKE INDICATOR is ON. ALL GUIDES MUST BE IN THE UP POSITION.
- (3) Have assistant shut off the engine.
- (4) Remove the 0-345 bar (0-5000 psi) gauge (Figure 3) at the end of the propel/lift manifold, and replace it with a 0-40 bar (0-600 psi) gauge.
- (5) Disconnect load sense hose connected to pump. Plug the end of the hose.
- (6) Have assistant start the power unit and allow 2-3 minutes for the system to stabilize.
- (7) Observe the pressure gauge for indicated pressure of 17 bar (250 psi).
- (8) To adjust the standby pressure of the pump,, first remove the protective cap and loosen the locknut on the adjusting screw (Figure 1).
- (9) Turn the adjusting screw of the pump counterclockwise until the gauge shows less than 16.6 bar (240 psi).
- (10) Turn the adjusting screw of the pump clockwise until the gauge shows 17 bar (250 psi), tighten the locknut, and replace the protective cap.
- (11) Have assistant shut down the power unit.
- (12) Remove the low pressure gauge and reinstall the 0-345 bar (0-5000 psi) gauge.
- (13) Reconnect the load sense hose to the pump.

- (14) Clean up any hydraulic oil that has leaked during the adjustment procedure.
- (15) Swing the power unit closed and secure it with the retention bolt.

B. Main Relief Valve and Pump Pressure Compensator Pressure Adjustment (Figure 1 thru Figure 5)

NOTE: An assistant is required for this procedure.

Hydraulic oil must be at normal operating temperature.

The engine will lug (slow down) during this adjustment procedure (normal characteristic).

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Lower the bridge to its extreme down position and shut off engine.
- (2) Remove the bolt that secures the power unit in the closed position, and swing the power unit open to gain access to the pressure gauge and main relief valve.
- (3) Locate the main relief valve at the rear of the propel/lift manifold and just to the left of the long, black proportional flow control valve (Figure 4).
- (4) Locate the pressure gauge at the right of the propel/lift manifold (Figure 3).
- (5) Open the right-hand front door of the power unit to gain access to the compensator controls on the pumps.
- (6) Locate the pressure compensator control adjusting screw on the pump (Figure 1).
- (7) Turn the compensator adjusting screw counterclockwise to the minimum pressure setting.
- (8) Turn the adjusting screw of the main relief valve clockwise to its maximum pressure setting.
- (9) Disconnect the tubing from the BRIDGE RAISE port (Labelled AR) at the top right of the rear of the service manifold (Figure 5). Cap the port adapter and plug (1/2" size) the tubing.
- (10) Have assistant start the engine.
- (11) Have assistant shift the BRIDGE LIFT SWITCH to the lift position.

- (12) Turn the compensator adjusting screw of the pump clockwise to slightly above 248 bar (3600 psi).

NOTE: Speed is essential during the next two steps because the engine horsepower is being converted to heat in the hydraulic oil when the main relief valve is venting oil to the reservoir.

- (13) Turn the adjusting screw of the main relief valve counterclockwise to lower the pressure to 248 bar (3600 psi), and tighten its locknut. You will hear the engine begin to load.
- (14) Very quickly, turn the compensator adjusting screw of the pump counterclockwise to reduce its setting to 234 bar (3400 psi). Tighten its locknut and install the acorn nut.
- (15) Very quickly, turn the compensator adjusting screw of the rear pump counterclockwise to reduce its setting to 190 bar (2750 psi). Tighten its locknut and install the acorn nut.
- (16) Shut off the engine. Remove the cap and plug from the bridge raise port and tube, and reconnect the tubing.
- (17) Clean up any oil that has leaked during the adjustment procedures.
- (18) Close the front doors.
- (19) Swing the power unit closed and secure it with the retention bolt.

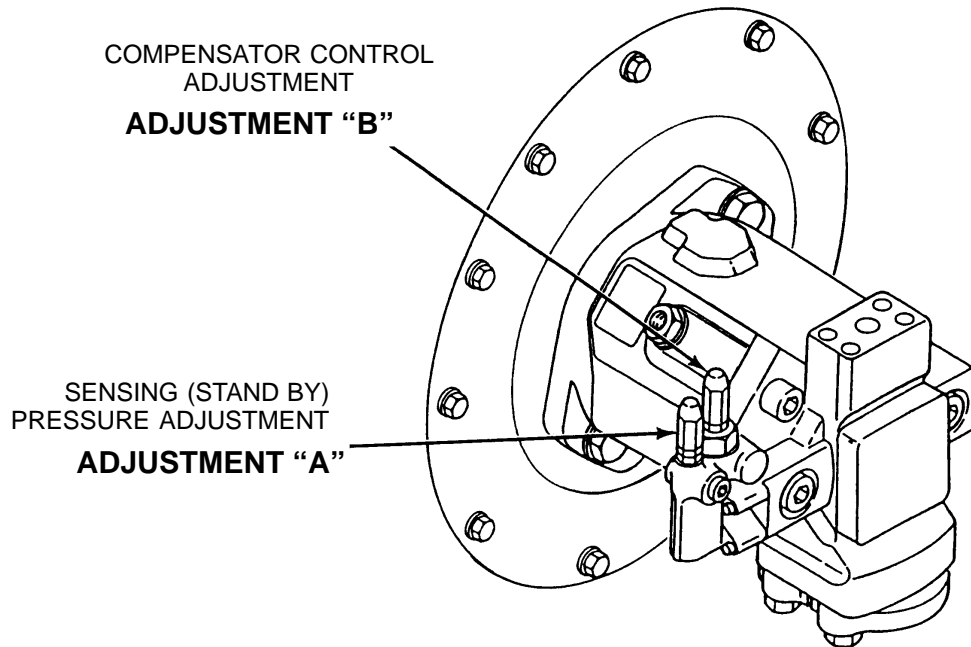
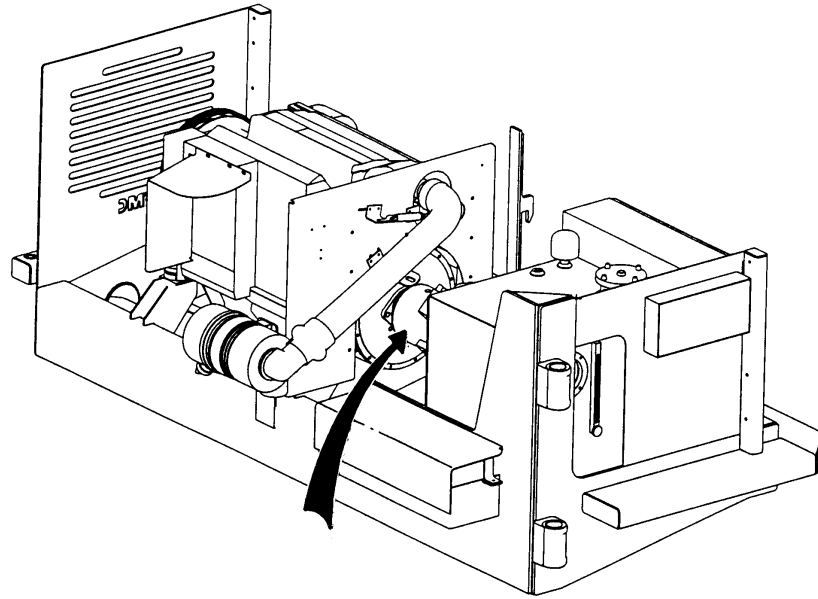


Figure 1
HYDRAULIC PUMP ADJUSTMENTS

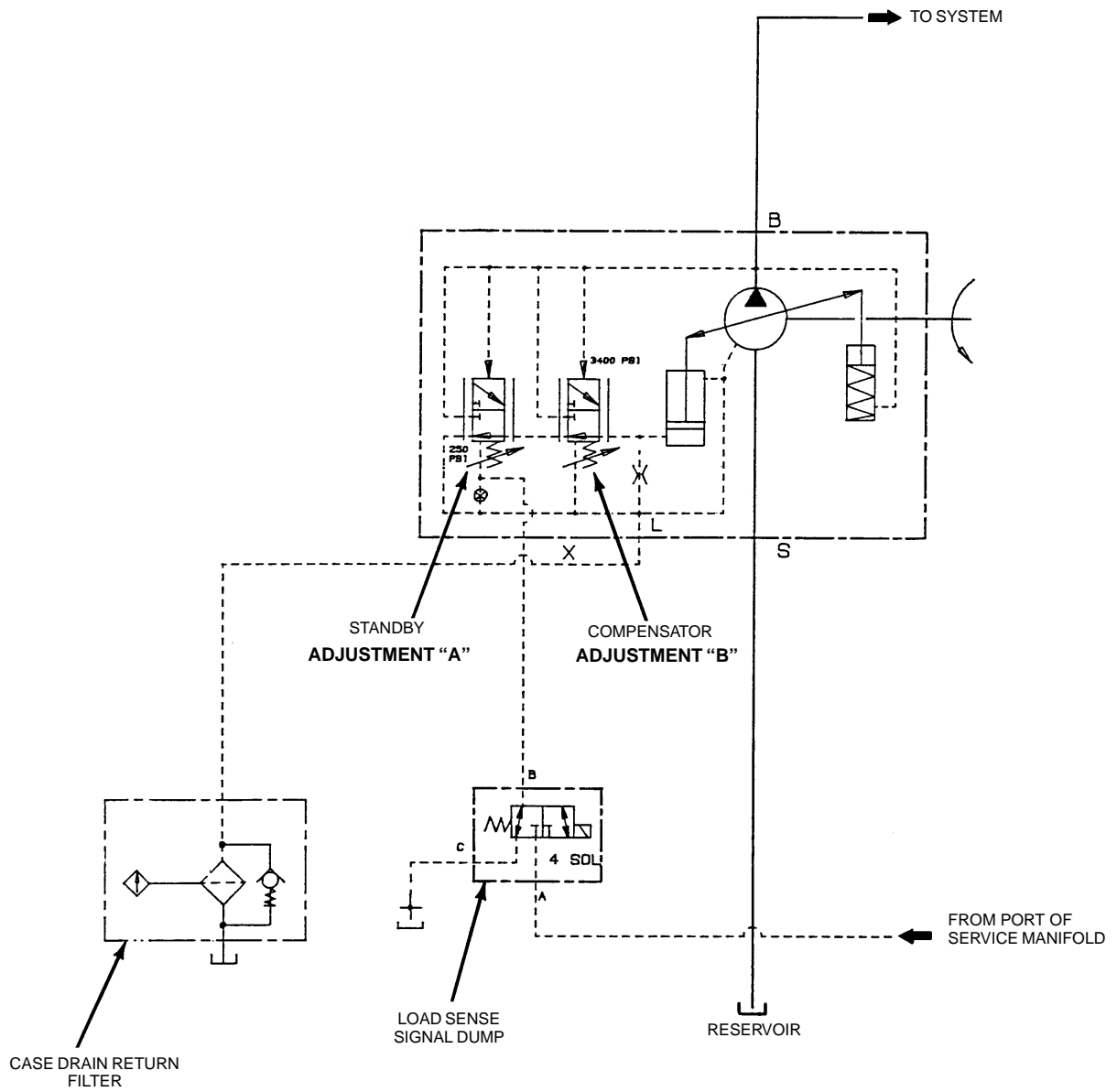
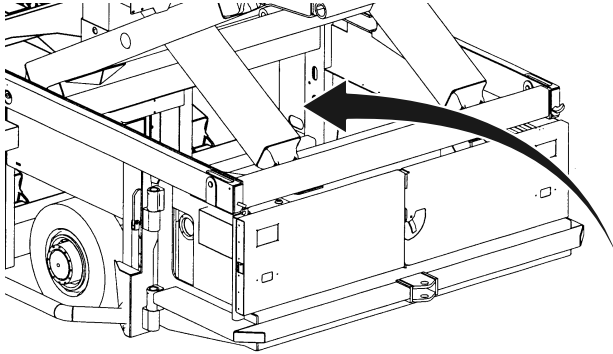


Figure 2
HYDRAULIC PUMP ADJUSTMENTS



PRESSURE GAUGE
0-300 BAR
(0-5000 PSI)

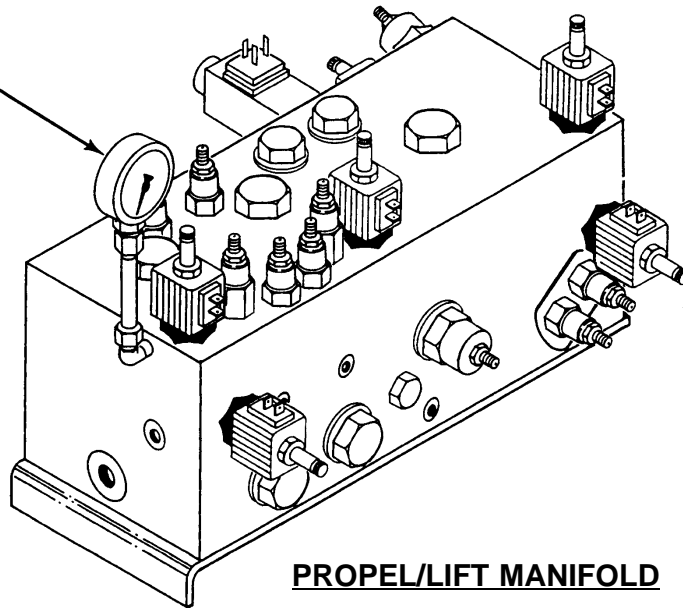


Figure 3
HYDRAULIC PUMP ADJUSTMENT

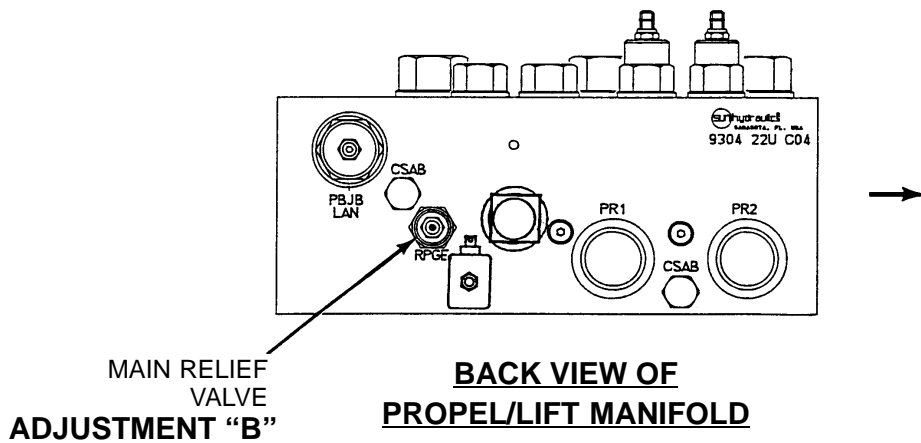
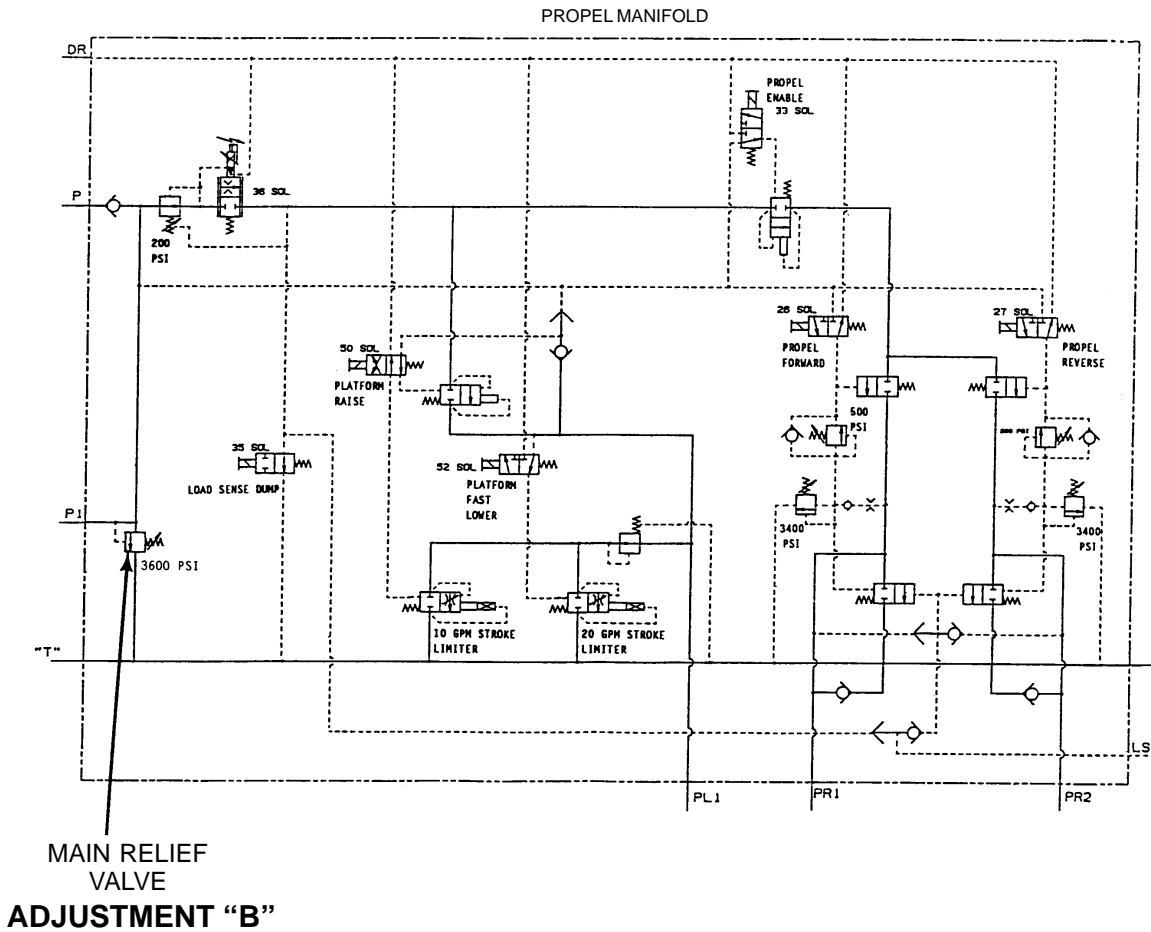


Figure 4
MAIN RELIEF VALVE PRESSURE ADJUSTMENT

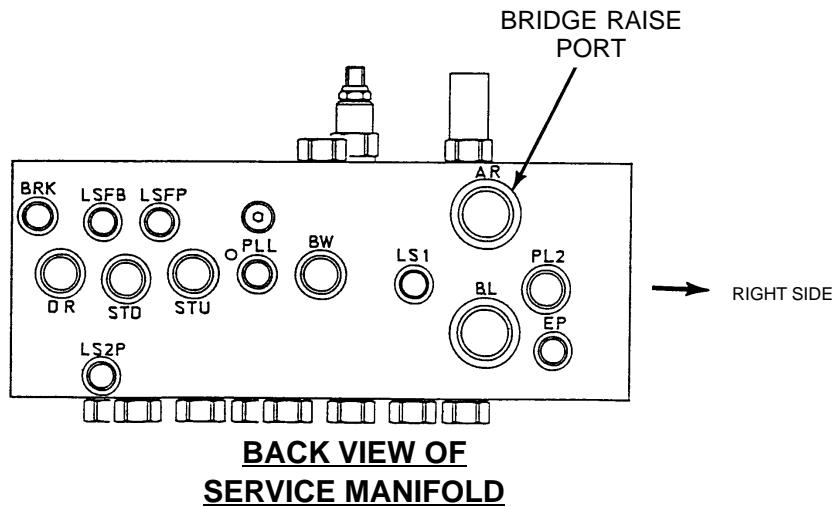
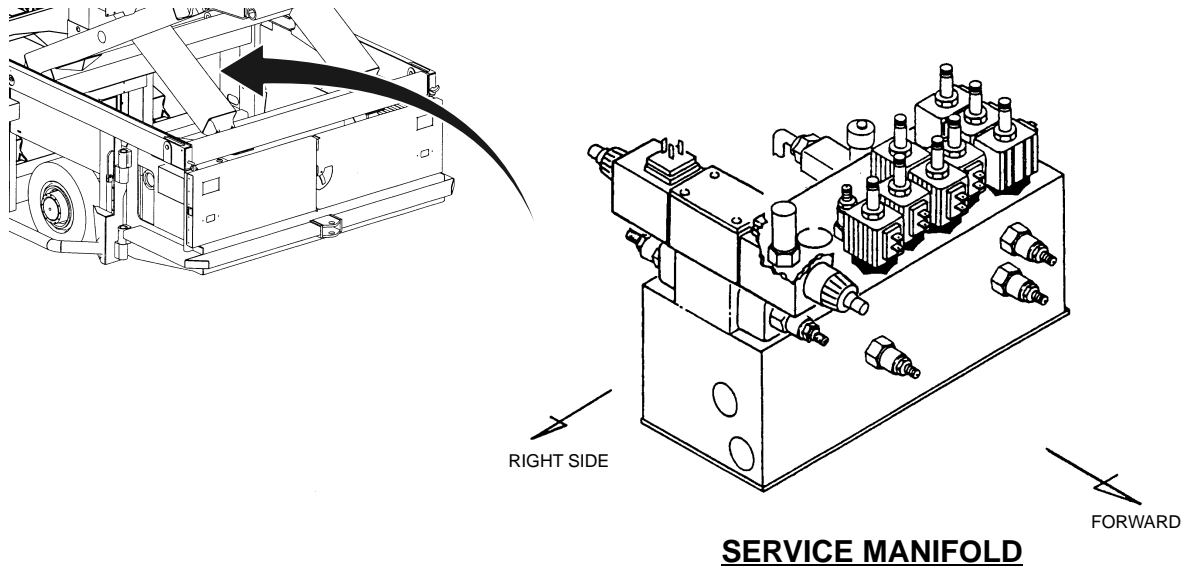


Figure 5
MAIN RELIEF VALVE PRESSURE ADJUSTMENT

C. Rear Chassis Raise and Lower (Bogy Wheel Cylinder Extend and Retract) Speed Adjustments (Figure 6)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature. Begin with the rear of the chassis in the extreme lowest position (bogy wheel cylinders fully retracted).

- (1) Remove the bolt that secures the power unit in the closed position, and swing the power unit to its FULL OPEN position to gain access to the needle valve and flow control valve.



WARNING

IF THE POWER UNIT IS NOT TO THE FULL OPEN POSITION, IT WILL SWING OPEN ON ITS OWN WHEN THE REAR OF THE CHASSIS IS RAISED.

- (2) Have an assistant start the engine.
- (3) Set the MODE SWITCH to DRIVE.
- (4) Extend the bogy wheel cylinders until the rear of the chassis is at its maximum height. The time from full retraction to full extension should be 7-9 seconds.
- (5) If the time from full retraction to full extension is not 7-9 seconds, loosen the locknut on the adjusting screw of the needle valve on top of the service manifold, and turn the screw clockwise to extend the time, or counterclockwise to decrease the time.
- (6) Have assistant retract the bogy wheel cylinders to lower the chassis. Time for the full retraction should be 3-4 seconds.
- (7) If the time to lower the chassis is not 3-4 seconds, loosen the locknut on the flow control valve adjusting screw and turn the screw clockwise to increase the time, or counterclockwise to decrease the time. This flow control valve is mounted on 1/2" steel tubing running fore and aft, 8" under propel manifold.
- (8) With the rear of the chassis in its lowest position, shut off the engine.
- (9) Swing the power unit closed and secure it with the retention bolt.

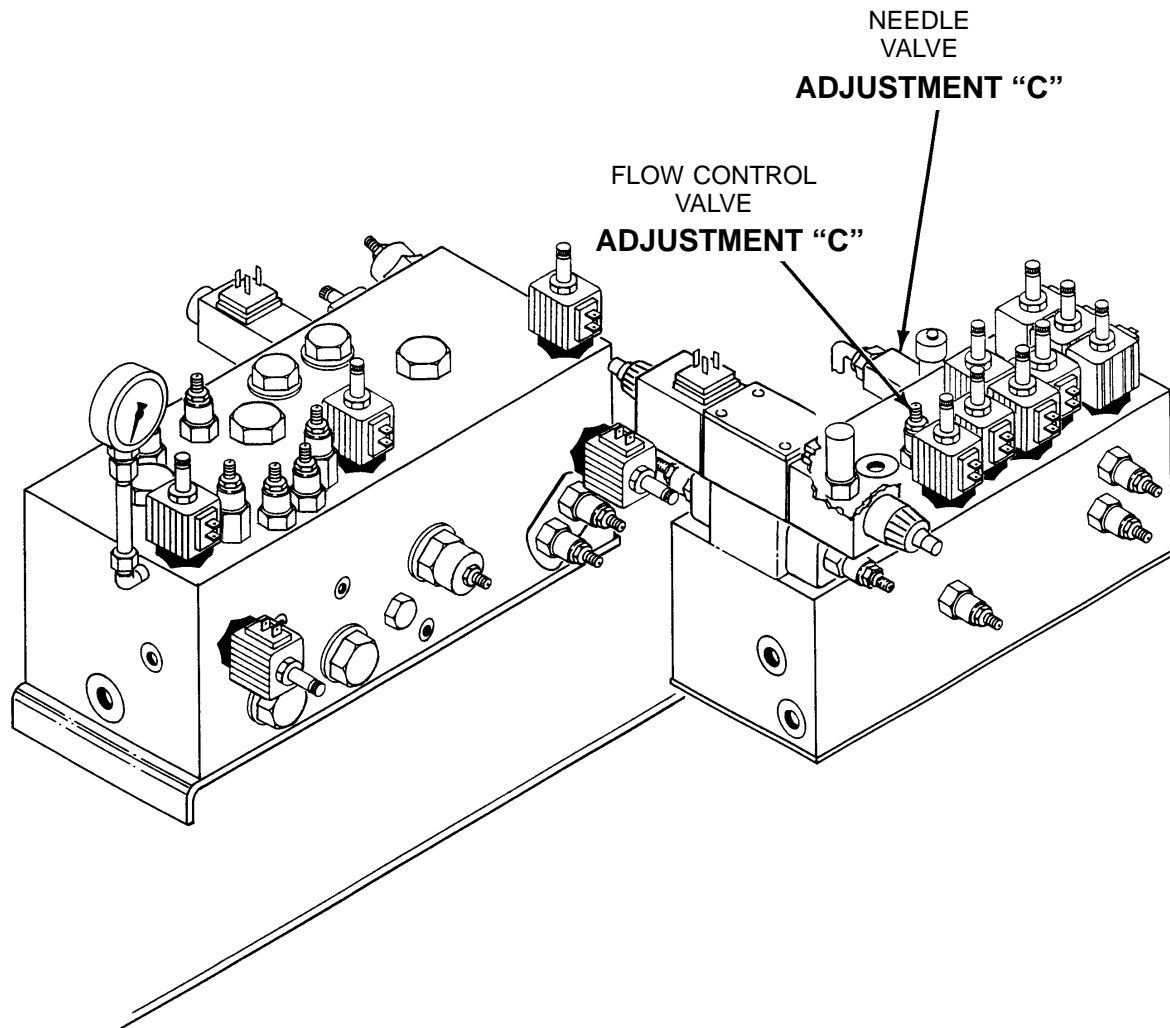


Figure 6
REAR CHASSIS RAISE AND LOWER
(BOGY WHEEL CYLINDER EXTEND AND RETRACT)
SPEED ADJUSTMENT

D. Parking Brake Release Pressure (Figure 7)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove the bolt that secures the power unit in the closed position, and swing the power unit open to gain access to the valves and brakes.
- (2) Have an assistant start the engine and set the MODE SWITCH to DRIVE, and the PARKING BRAKE SWITCH to OFF.
- (3) Shut off the engine.
- (4) Remove the 1/4" steel tubing from the top left port (Marked BRK) at the rear of the service manifold, and install a 0-40 bar (0-600 psi) gauge onto that port. Plug the open end of the tube.
- (5) Have assistant start the engine, and observe the gauge for a pressure of 200 psi.
- (6) If the pressure is not 200 psi, loosen the locknut on the pressure reducing valve at the right front of the service manifold. Turn the adjustment screw clockwise to increase the pressure, or counterclockwise to decrease the pressure.
- (7) Tighten the locking nut on the adjustment screw, and have the assistant switch the parking brake from OFF to ON, and back to OFF to confirm the pressure is still 200 psi.
- (8) Remove the gauge and reconnect the brake tubing to the port.
- (9) Clean up any oil that has leaked during the adjustment procedure.
- (10) Swing the power unit closed and secure it with the retention bolt.

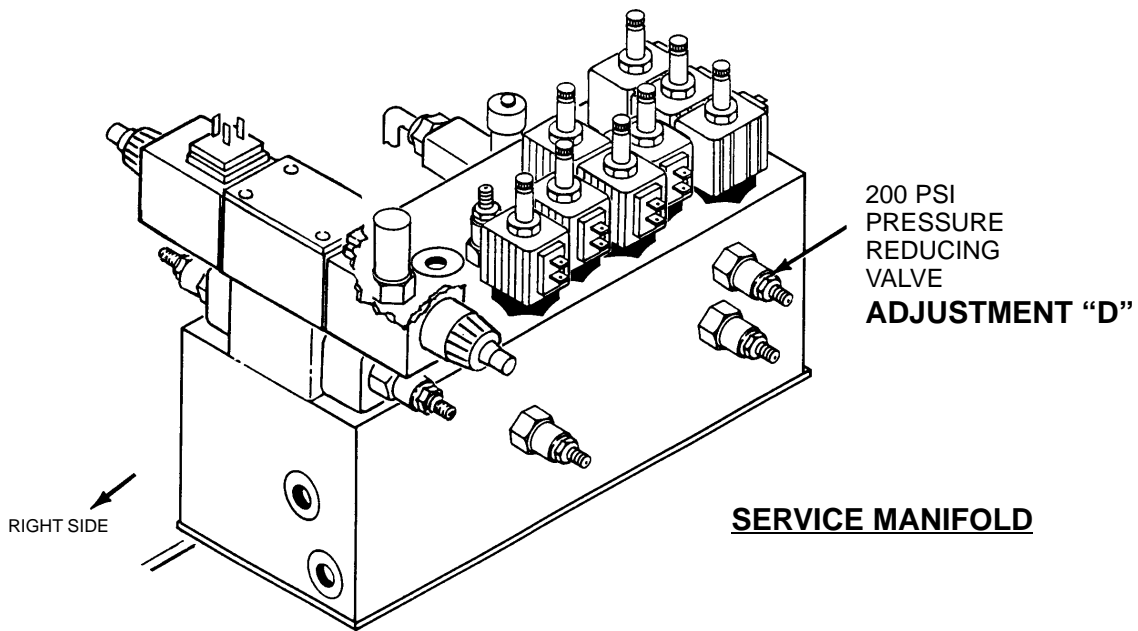
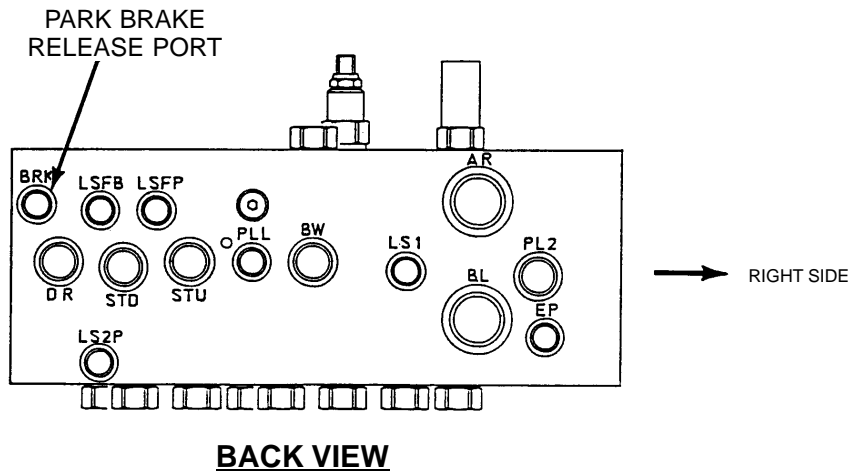


Figure 7
PARKING BRAKE PRESSURE ADJUSTMENT

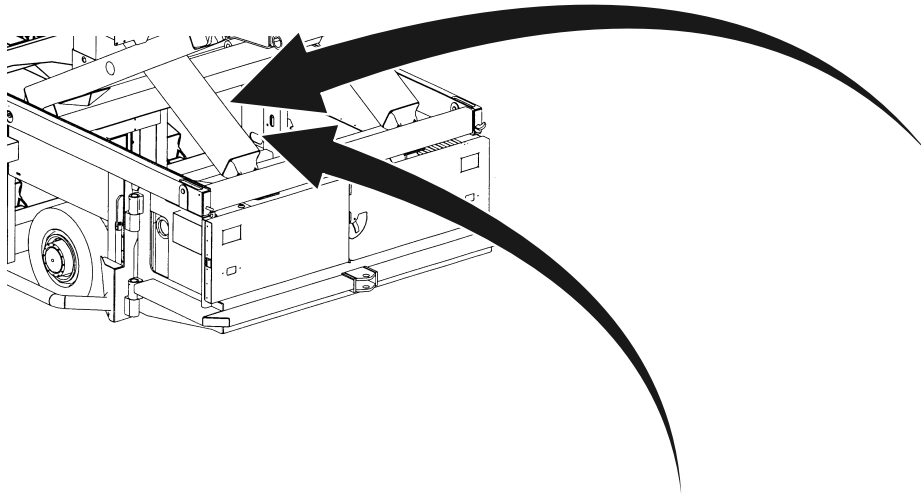
E. Stabilizer Adjustments (Figure 9, Figure 10)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Have assistant start the engine.
- (2) Lower the rear of the chassis (retract the boggy wheel cylinders).
- (3) Remove the bolt that secures the power unit in the closed position, and swing the power unit open to gain access to the stabilizer circuit valves.
- (4) Disconnect the wires from the boggy wheel extend solenoid valve #29SOL (Figure 9).
- (5) Have assistant turn the steering wheel to the extreme left or right, and continue trying to turn it. Observe the pressure gauge for a correct reading of 186 bar (2500 psi). If the pressure is not correct, refer to the section on adjusting the steering pressure reducing valve.



- 27 SOL Propulsion reverse
- 26 SOL Propulsion forward
- 51 SOL Platform slow lower
- 31 SOL Parking brake release
- 30 SOL Stabilizer retract
- 38 SOL Stabilizer extend
- 36,50 SOL Platform fast lift
- 52 SOL Platform fast lower
- 36,50 SOL Platform slow lift
- 16 SOL Bridge lower
- 13 SOL Bridge raise
- 28 SOL Bogy wheel lower
- 28,29 SOL Bogy wheel raise
- 29A SOL Stabilizer up (propel)
- 4 SOL Load sense signal dump
- 7 SOL Demand throttle
- 33 SOL Propel enable
- 35 SOL Load sense dump
- 37 SOL Emergency jacking

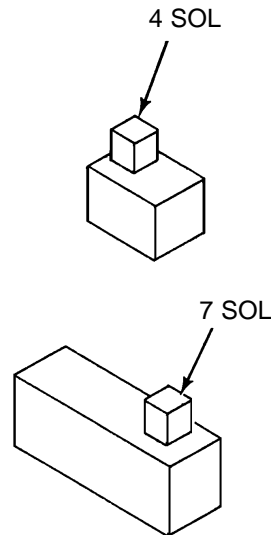
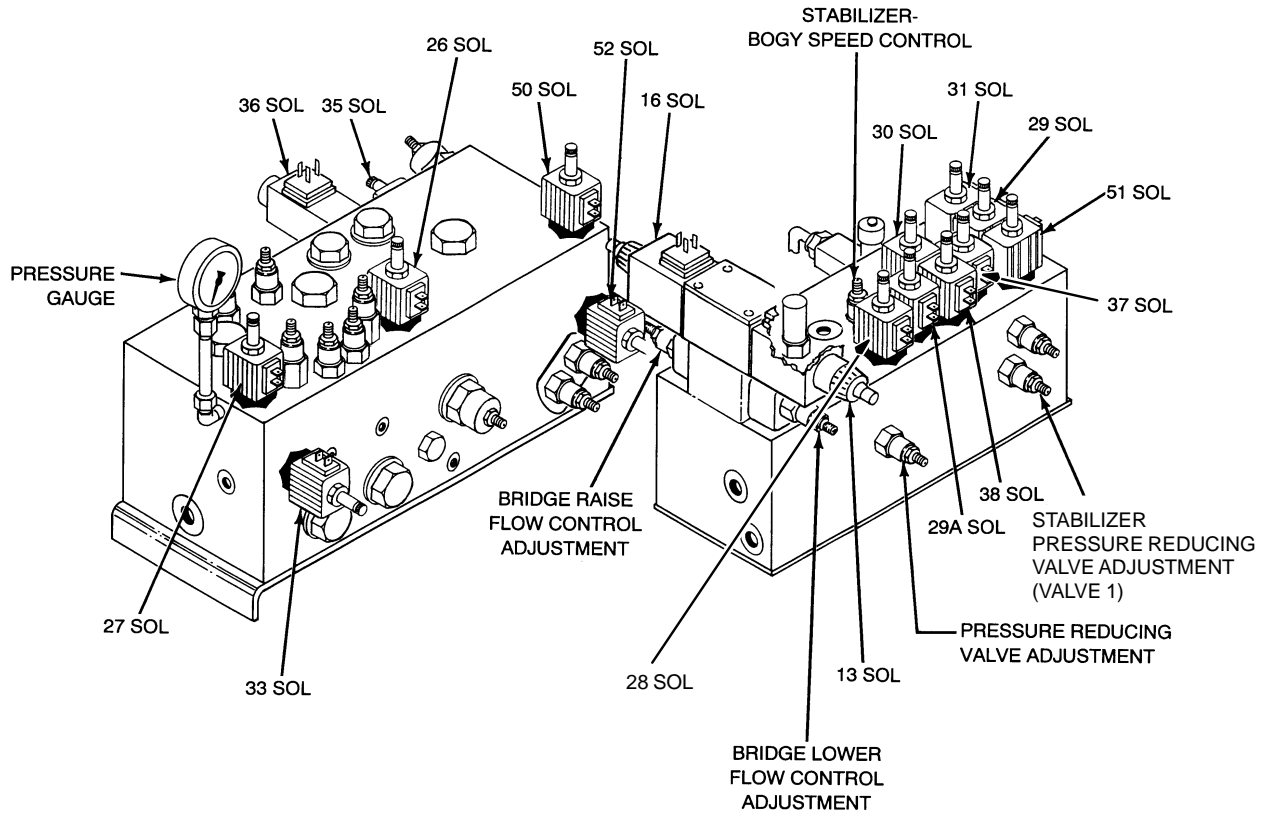


Figure 8
SOLENOID VALVE IDENTIFICATION CHART

PROPEL/LIFT MANIFOLD



SERVICE MANIFOLD

Figure 9
SOLENOID VALVE IDENTIFICATION CHART

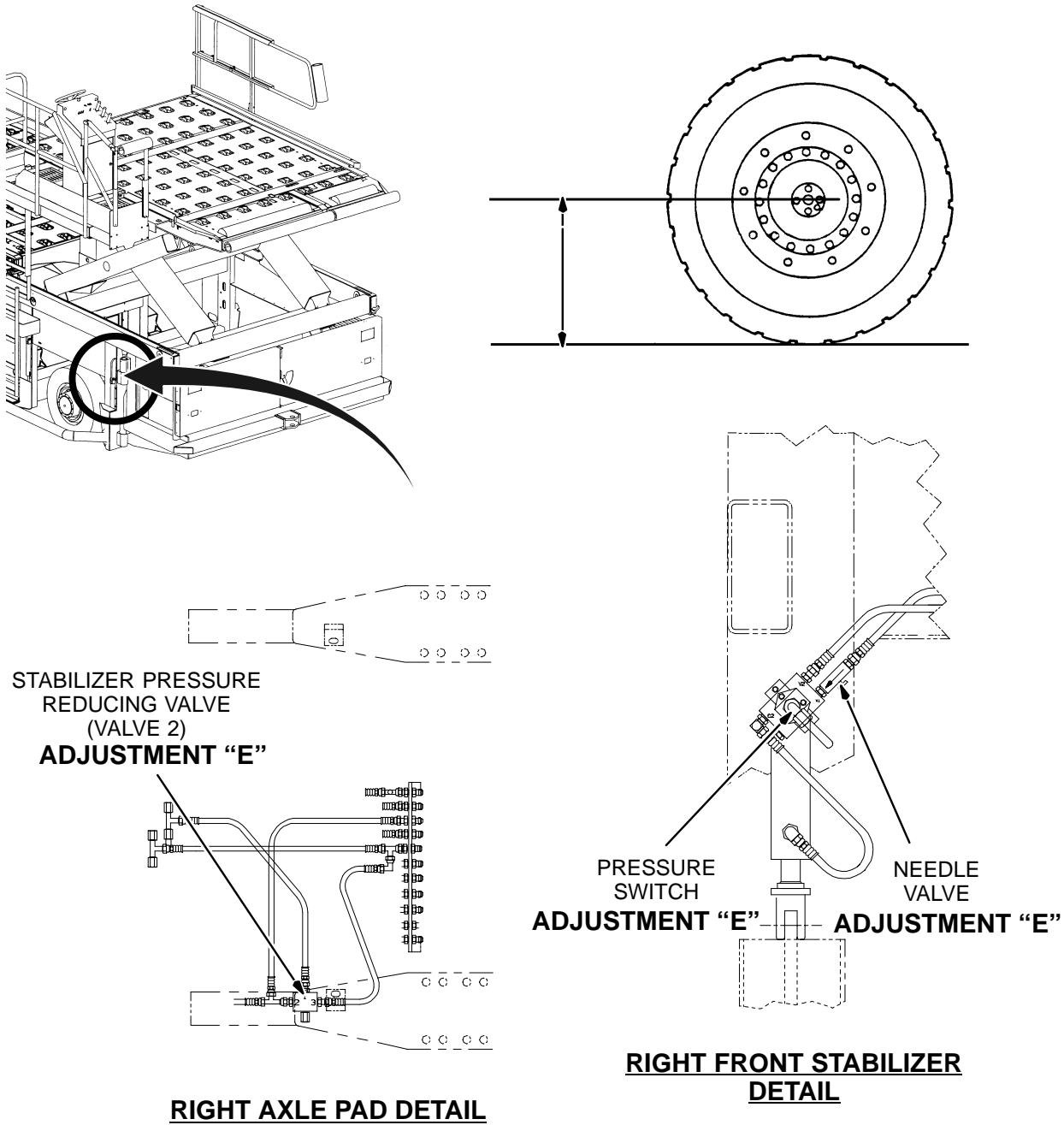


Figure 10
STABILIZER ADJUSTMENT

- (6) Loosen the locknut on the stabilizer pressure switch and turn the adjusting screw fully clockwise (Figure 10).
- (7) Have assistant start the power unit and extend the stabilizers by setting the MODE SWITCH to OPERATE.
- (8) With the stabilizers set, observe the pressure gauge and adjust the service manifold stabilizer pressure reducing valve to obtain 165 bar (2400 psi) (Figure 9, valve 1). To adjust the pressure, loosen the locknut on the stabilizer pressure reducing valve and turn the adjusting screw clockwise to increase the pressure, or counterclockwise to decrease the pressure. Tighten the locknut.

NOTE: Remaining adjustments require power unit to be closed. Close power unit after each adjustment.

- (9) Have assistant start the power unit and raise the stabizers by setting the MODE SWITCH to DRIVE.
- (10) With the stabilizers raised, measure and record the distance from the center of the left drive wheel planetary gear case to the ground (Figure 10).
- (11) Cycle the stabilizers several times, then set the stabilizers.
- (12) Measure the distance from the point previously marked on the drive wheel to the ground. This distance should now be 6-10mm (1/4-3/8") greater than the previous measurement.
- (13) To adjust this distance, loosen the locknut on the stabilizer pressure reducing valve (Figure 10, valve 2), and turn the adjusting screw clockwise to increase the distance, or counterclockwise to decrease the distance. Tighten the locknut and close the power unit after each adjustment.

NOTE: Stabilizer cylinder check valves will not allow chassis to lower as pressure is decreased. Stabilizer circuit must be reset with each decreased pressure adjustment.

- (14) Cycle the stabilizers to verify the adjustment is correct.
- (15) Next, turn the adjusting screw of the pressure switch fully counterclockwise, and have the assistant reset the stabilizers.
- (16) Adjust the pressure switch to obtain equal center-to-ground measurements at both planetary gear cases. To adjust pressure switch, turn adjusting screw clockwise to increase the pressure and increase the rise of the right gear case, or counterclockwise to decrease the pressure and rise. Tighten locknut and close power unit after each adjustment (Figure 10).
- (17) Cycle the stabilizers several times to verify that the adjustment is correct.
- (18) Adjust the flow control valve on the right-front stabilizer to obtain a 2-3 second delay on extension and retraction from all other stabilizer cylinders (Figure 10). Turn the adjustment screw clockwise to increase the delay time, or counterclockwise to decrease the delay. **THE RIGHT-FRONT STABILIZER MUST BE THE LAST STABILIZER TO EXTEND AND RETRACT.** Tighten locknut and close power unit after each adjustment.
- (19) Reconnect the wires to the boggy wheel extend solenoid valve #29SOL.
- (20) Swing the power unit to the closed position and secure it with retention bolt.

F. Bridge Raise/Lower Flow Controls – STANDARD LOADER (Figure 11)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove bolt that secures power unit closed, and swing power unit open to gain access to flow control adjustments.
- (2) Have assistant start power unit, set MODE SWITCH to OPERATE to extend stabilizers, then raise and lower bridge (full extension).
- (3) Check time required to raise and lower bridge (full extension):

Bridge raise	29-34 seconds
Bridge lower	29-34 seconds
- (4) To adjust bridge raise flow control, loosen locknut on adjusting screw and turn adjusting screw clockwise to decrease flow (increase time), or counterclockwise to increase flow (decrease time).
- (5) To adjust bridge lower flow control, loosen locknut on adjusting screw and turn adjusting screw clockwise to decrease flow (increase time), or counterclockwise to increase flow (decrease time).
- (6) When adjustments are completed, tighten locknuts securely on adjusting screws.
- (7) Clean up any hydraulic oil that has leaked.
- (8) Swing power unit closed and secure with retention bolt.

G. Bridge Raise/Lower Flow Controls – MAIN DECK AND UNIVERSAL LOADER (Figure 11)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove bolt that secures power unit closed and swing power unit open to gain access to flow control adjustments.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers, then raise and lower bridge (full extension).
- (3) Check time that is required to raise and lower bridge (full extension):

Bridge raise	39-41 sec
Bridge lower	29-34 sec
- (4) To adjust bridge raise flow control, loosen lock nut on adjusting screw and turn adjusting screw clockwise to decrease flow (increase time) or counterclockwise to increase flow (decrease time).
- (5) To adjust bridge lower flow control, loosen lock nut on adjusting screw and turn adjusting screw clockwise to decrease flow (increase time) or counterclockwise to increase flow (decrease time).
- (6) When adjustments are completed, tighten lock nuts securely on adjusting screws.
- (7) Clean up any hydraulic oil that has leaked.
- (8) Swing power unit closed and secure with retention bolt.

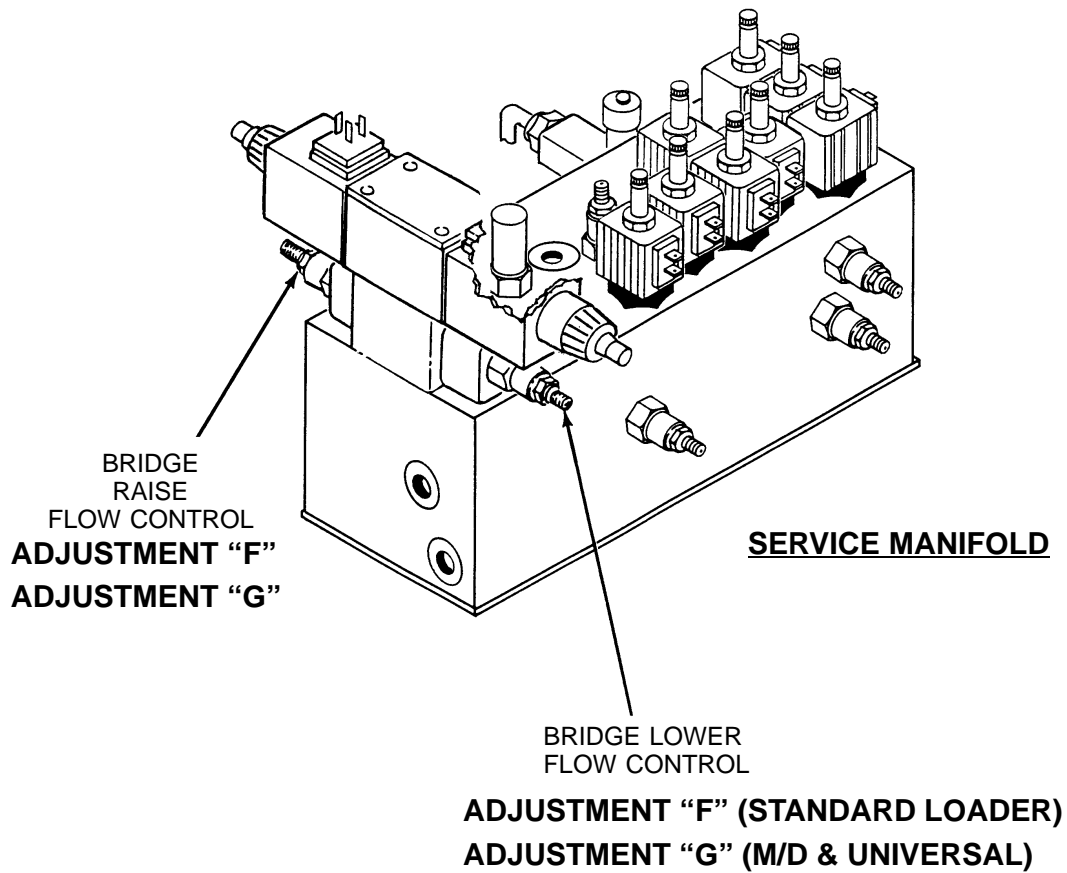


Figure 11
BRIDGE RAISE/LOWER FLOW CONTROL ADJUSTMENT

H. Bridge Needle and Counterbalance Valves (Figure 12)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to needle and counterbalance valves at the base of the bridge lift cylinders.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers, and then cycle bridge UP and DOWN several times.
- (3) Have assistant raise bridge approximately half way, then raise platform fully to interface with the bridge and check bridge and platform for being level, side to side. Roll planes are to be level $\pm 9-12\text{mm}$ ($3/8-1/2"$) at the extreme left and right sides at interface. (Platform and bridge top frame surfaces can be used for measuring as an alternate to the roll planes.)
- (4) Adjust needle valve on bridge cylinder to level bridge when bridge is being RAISED. Turn adjusting screw clockwise to slow the bridge down (on the left side) or counterclockwise to increase the bridge lift (on the left side).

NOTE: After each adjustment of the needle valve, lower the platform and bridge, then RAISE the bridge halfway. Raise the platform to interface and check level of the platform and bridge.

- (5) Tighten lock screw securely after adjusting needle valve.
- (6) Have assistant raise the bridge fully, then lower to platform interface and check that bridge is level with platform, side to side. Roll planes are to be level $\pm 9-12\text{mm}$ ($3/8-1/2"$). (Platform and bridge top frame surfaces can be used for measuring as an alternate to the roll planes.)

NOTE: Platform is to be at approximately midpoint of bridge extension when checking level of the bridge and platform.

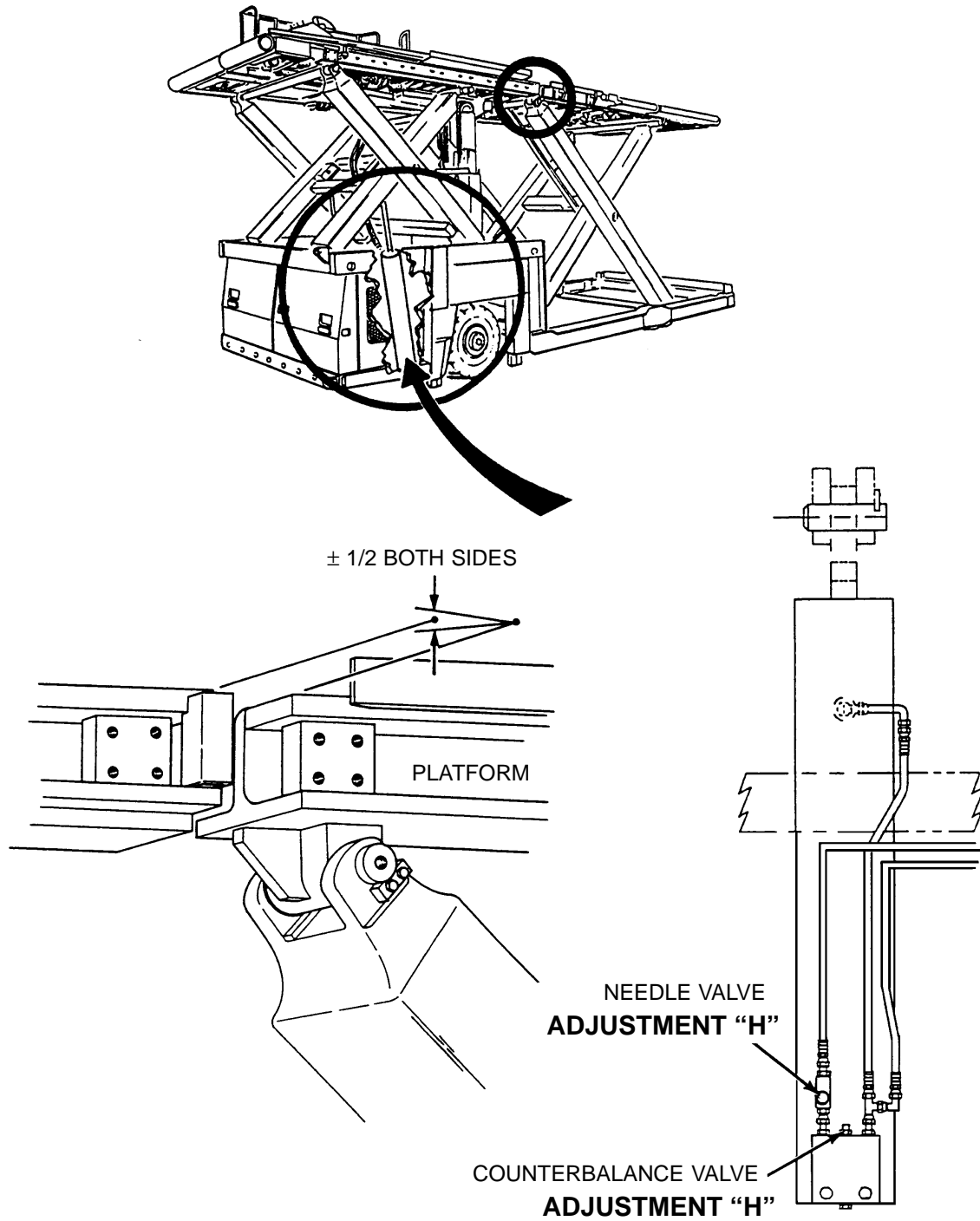


Figure 12
BRIDGE NEEDLE AND COUNTERBALANCE VALVE ADJUSTMENT

(7) Adjust bridge counterbalance valves to make bridge level with the platform, when the bridge is lowered, to specification of $\pm 9-12\text{mm}$ ($3/8-1/2"$) by loosening the adjusting screw lock nuts and turning adjusting screws clockwise to decrease pressure or counterclockwise to increase pressure. Lock screws are to be securely tightened after each adjustment.

(8) Hydraulic pressures to lower bridge must be verified to be within specifications whenever bridge needle and counterbalance valves are adjusted:

(STANDARD LOADER)

Bridge lower pressure 83-90 bar (1200-1300 psi)

(MAIN DECK LOADER)

Bridge lower pressure 96-103 bar (1400-1500 psi)

(9) If bridge lower pressures are not within specifications, readjust counterbalance valves to increase pressure and level bridge with platform. BRIDGE LOWER HYDRAULIC PRESSURE MUST NEVER BE LESS THAN THE MINIMUM PRESSURE SPECIFIED.

Indicated pressure readings on gauge will include the standby pressure of 14 bar (200 psi) and this must be subtracted to obtain correct counterbalance pressure.

(STANDARD LOADER)

83-90 bar (1200-1300 psi)

Indicated pressure

104-111 bar (1500-1600 psi)

(MAIN DECK LOADER)

96-103 bar (1400-1500 psi)

Indicated pressure

110-117 bar (1600-1700 psi)

(10) Have assistant shut down power unit.

(11) Clean up any hydraulic oil that has leaked.

(12) Swing power unit closed and secure with retention bolt.

I. Dynamic Braking Adjustment (Figure 13)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

Braking adjustment must be done on smooth, hard, dry and level surface.

(1) Mark a measured distance of 9 m (30 ft) and 12 m (40 ft) on surface where loader is to be checked and adjusted.

(2) Have assistant drive loader forward at maximum speed in RABBIT mode and release accelerator at beginning point of measured distance.

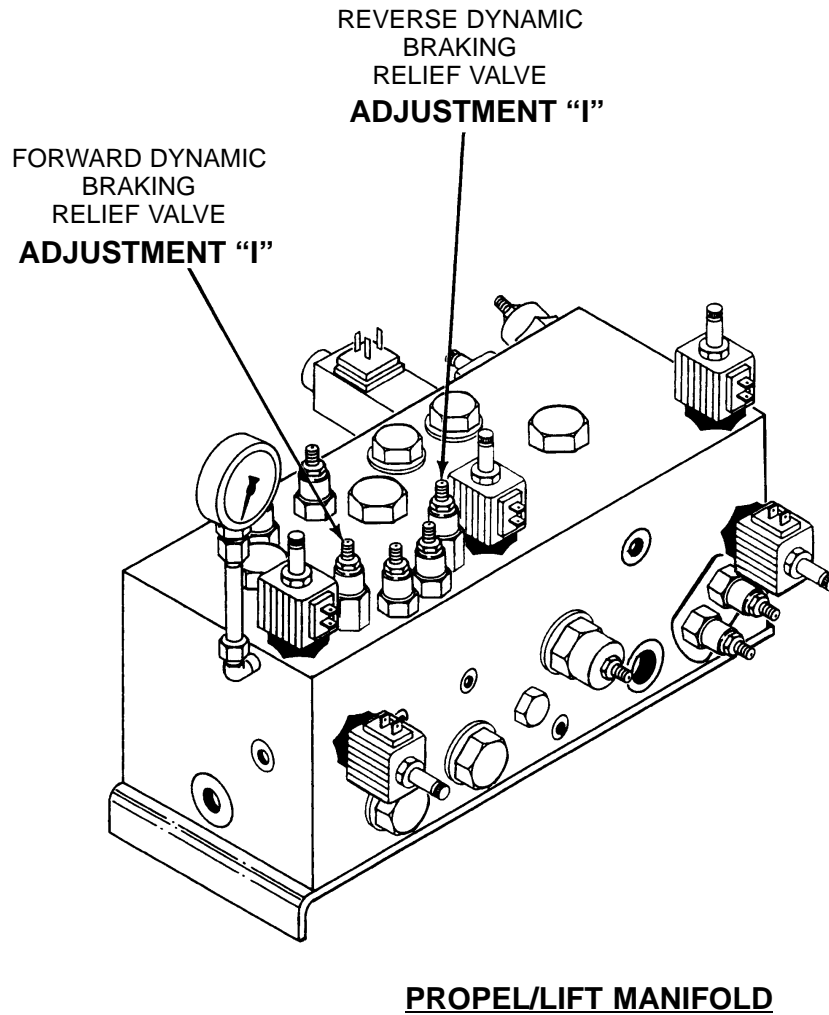


Figure 13
DYNAMIC BRAKING ADJUSTMENT

- (3) Loader must come to a complete stop smoothly in 10.5-12 m (35-40 ft).
- (4) To make dynamic braking adjustment, have assistant set parking brakes and shut down power unit.
- (5) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to dynamic braking adjustment.
- (6) Loosen lock nut on dynamic braking pressure adjusting screw and turn adjusting screw clockwise to decrease stopping distance, or counterclockwise to increase stopping distance. Make adjustments in 1/2-turn increments until dynamic braking is set within specifications.
- (7) Dynamic braking adjusting screw lock nut is to be tightened securely after each adjustment.
- (8) Swing power unit closed and secure with retention bolt after each adjustment has been made.
- (9) Repeat steps 2-8 above until dynamic braking stops the loader in the specified distance of 10.5-12 m (35-40 ft).
- (10) Repeat steps 2-9 for driving in reverse direction.

J. Platform Raise Speed Control Adjustments (Figure 14)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) The platform slow and fast raise speed, and the time of acceleration to maximum speed, are controlled electronically by the signal to the proportional valve located at the rear of the PROPEL/LIFT manifold.
- (2) Refer to para. P. Platform Lift Adjustment, in the Electrical System section, for instructions on adjusting the slow speed raise signal, the fast speed raise signal, and the ramp time.

- (3) There is a pressure reducing valve in the hydraulic system upstream of the proportional flow control valve cartridge. The addition of a pressure reducing valve causes the proportional flow control valve to be pressure compensated.
- (4) To adjust this pressure reducing valve (Figure 14), loosen the lock nut and turn the adjusting screw counterclockwise to its stop, then turn it clockwise exactly 2 turns. This will give a setting of 14 bar (200 psi).
- (5) To fine tune the platform speed to follow the bridge speed, refer to Chapter-Section 2-3, para. Q, page 72.

K. Platform Lower

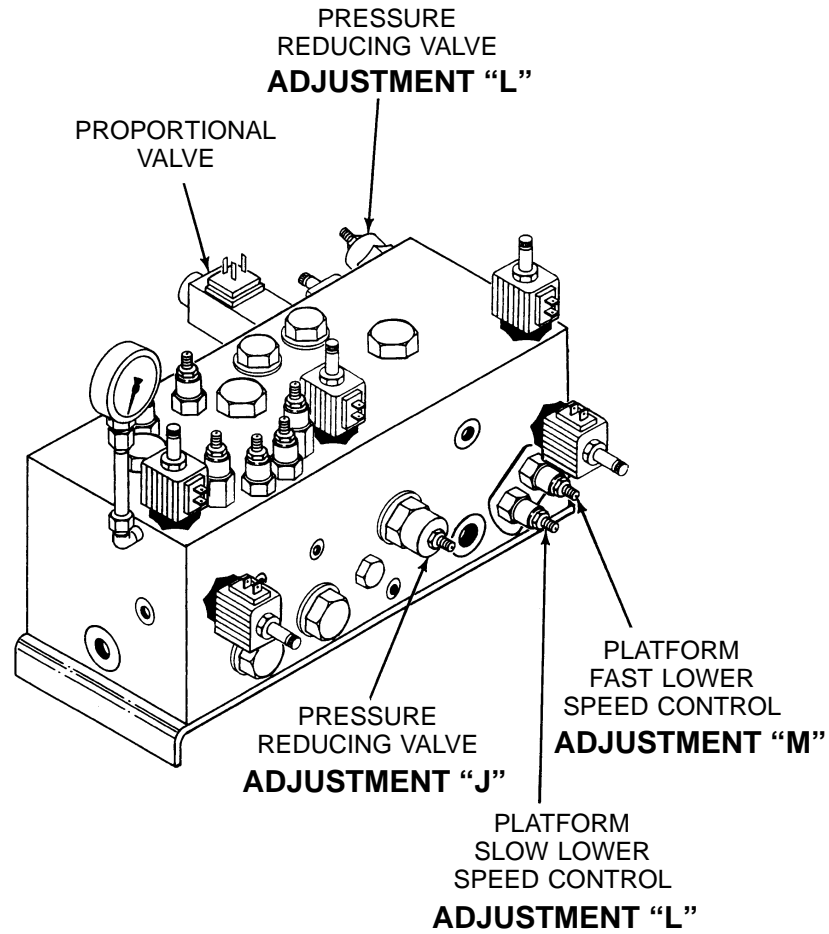
NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) The pilot signal, which opens the pilot-operated check valves on the platform cylinders to allow oil to escape and the platform to lower, is from the SERVICE manifold.
- (2) The pilot pressure is fixed at 2500 psi. Please refer to para. Q. Power Steering Pressure Reducing Valve Adjustment for instructions for adjusting this pressure.



PROPEL/LIFT MANIFOLD

Figure 14
PLATFORM SPEED CONTROL ADJUSTMENT

L. Platform Slow Lower Speed Control Adjustment (Figure 14)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Have assistant start the power unit, set the MODE SWITCH to OPERATE, and raise the bridge to full height. Next, lower the bridge to confirm that it lowers in the time specified in the performance specifications.
- (2) Raise the bridge and platform to full height, and then lower the bridge. The platform must automatically follow the bridge down smoothly.
- (3) If the platform slow lower speed does not match the bridge lower speed, make the following adjustments.
- (4) The platform slow lower speed control valve is located at the lower-right corner of the front surface of the propel/lift manifold. It is the lowest of the two valves which are slightly recessed into the manifold body. This flow control valve is pressure compensated by a pressure reducing valve which is located at the top left of the rear surface of the propel/lift manifold.
- (5) Remove the bolt that secures the power unit in the closed position, and swing the power unit open to gain access to the manifolds.
- (6) The setting of the pressure reducing valve is not critical, so loosen the lock nut and turn the adjusting screw counterclockwise to its stop, then turn it clockwise 1-1/4 turns. Tighten the lock nut. This will give a pressure of approximately 14 bar (200 psi).
- (7) Disconnect the wires from the platform fast lower solenoid valve, #52SOL.
- (8) Loosen the lock nut on the slow lower flow control valve adjusting screw, and turn the screw clockwise to slow the platform lowering speed, or counterclockwise to increase the speed. Tighten the lock nut after each adjustment.
- (9) Repeat this adjustment until the platform slow lower speed matches that of the bridge.
- (10) Reconnect the wires to the platform fast lower solenoid valve #52SOL.

M. Platform Fast Lower Speed Control Adjustment (Figure 14)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) After the platform slow lower speed has been adjusted correctly, have assistant raise the bridge and platform to full height, and time lowering the platform fully to confirm the speed is 50 feet per minute. It should take 20-22 seconds.
- (2) The adjusting screw for platform fast lower speed is just above and to the right of the slow lower speed control, in the recessed area.
- (3) Loosen the lock nut, and turn the adjusting screw clockwise to reduce the speed, and counterclockwise to increase the speed. Tighten the lock nut after each adjustment.
- (4) Confirm that the speed is 50 feet per minute.
- (5) Swing the power unit to the closed position and secure it with the retention bolt.

N. Platform Guides Pressure Reducing Valve Adjustment (Figure 15, Figure 16)

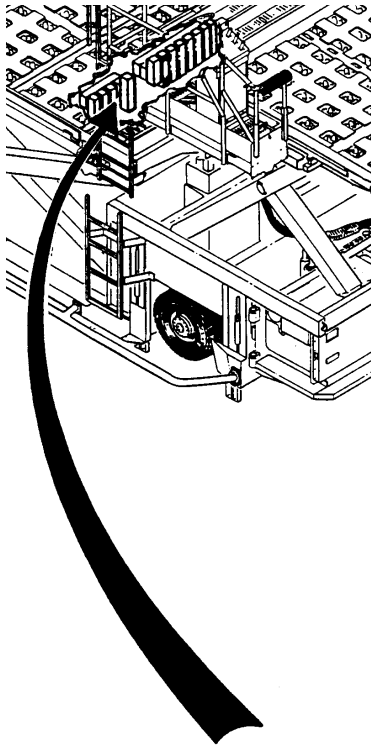
NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



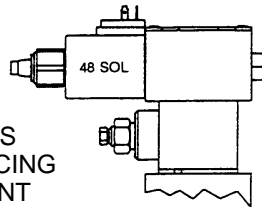
WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENT.

- (1) Have assistant start power unit and set the MODE SWITCH to OPERATE to extend the stabilizers, and then raise the platform. Move the maintenance stands into position and lower the platform fully against the maintenance stands.
- (2) Open power unit access doors so that pressure gauge may be observed.
- (3) Have assistant manually actuate side guide solenoid valve and observe for indicated pressure of 45 bar (650 psi) on gauge.



PLATFORM GUIDES
PRESSURE REDUCING
VALVE ADJUSTMENT



ADJUSTMENT "N"

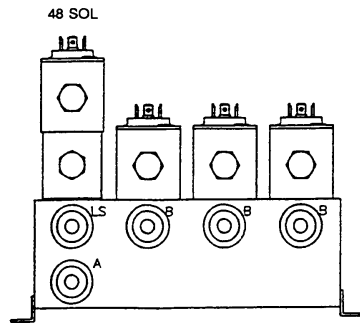
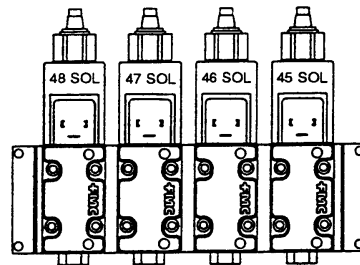


Figure 15
PLATFORM GUIDES PRESSURE REDUCING VALVE

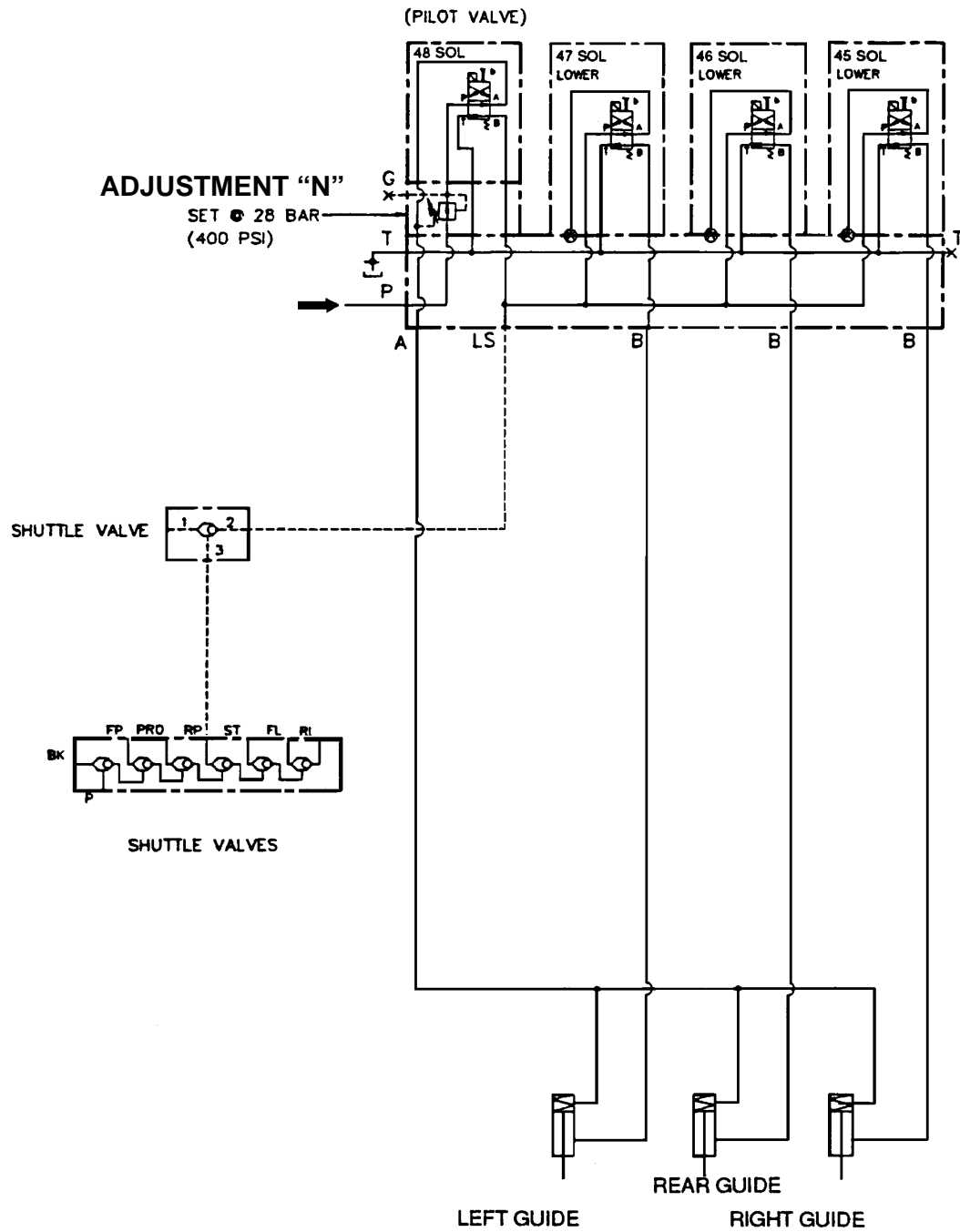


Figure 16
PLATFORM GUIDES PRESSURE REDUCING VALVE

NOTE: A 45 bar (650 psi) indicated reading on gauge port "A" is the combined pressure of the platform guides reducing valve and standby pressure, i.e.:

28 bar (400 psi) reducing valve pressure
17 bar (250 psi) standby pressure
45 bar (650 psi) indicated pressure on gauge

- (4) To adjust pressure reducing valve, loosen lock nut on adjusting screw and turn adjusting screw clockwise to increase pressure, or counterclockwise to decrease pressure. Tighten lock nut securely after each adjustment.
 - (5) Clean up any hydraulic oil that has leaked.
 - (6) Raise platform and stow maintenance stands, then lower platform and close power unit access doors when adjustments are completed.
 - (7) Have assistant shut down power unit.
- O. Platform Convey Speed (Figure 17, Figure 18)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers and then raise platform. Move maintenance stands into position and then lower platform fully against maintenance stands.
- (2) Have assistant actuate platform convey switches and time rollers for specified revolutions per minute (39-41 rpm) to obtain 60 feet per minute surface speed.
- (3) To adjust roller speed, loosen lock nut on flow control adjusting screw and turn adjusting screw clockwise to increase speed, and counterclockwise to decrease speed. Tighten lock nut securely after each adjustment.
- (4) Clean up any hydraulic oil that has leaked.
- (5) Have assistant raise platform. Stow maintenance stands and then lower platform.

P. Platform Convey Crossover Relief Valves (Figure 17, Figure 18)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers and then raise platform. Position maintenance stands to support platform and lower platform fully against maintenance stands. Have assistant shut down power unit.
- (2) Remove hydraulic hose from either "A" port or "B" port on valve assembly to be checked and cap adapter and plug (1/2" size) hose.
- (3) Have assistant start power unit.
- (4) Manually actuate valve being checked and the pilot pressure solenoid valve (80SOL). Observe pressure gauge for indicated reading of 86 bar (1250 psi).

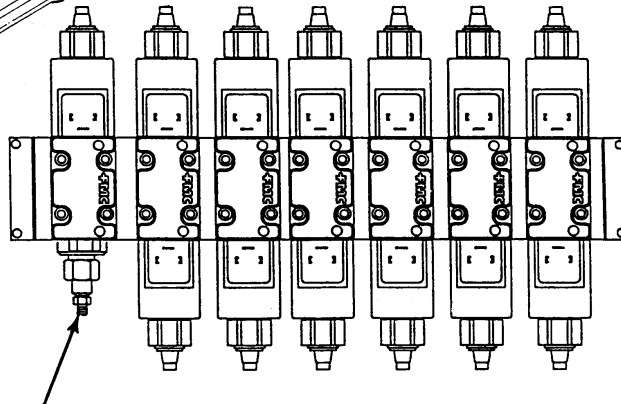
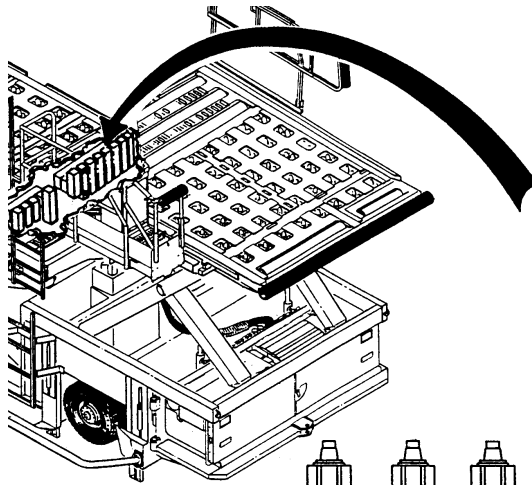
NOTE: A 86 bar (1250 psi) indicated reading at gauge is the combined pressure of the crossover relief valve and standby pressure, i.e.:

69 bar (1000 psi) crossover relief pressure
17 bar (250 psi) standby pressure
 86 bar (1250 psi) indicated pressure

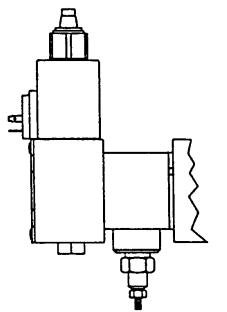
- (5) To adjust crossover relief valve pressure, loosen lock nut on adjusting screw and turn adjusting screw clockwise to increase pressure, and counterclockwise to decrease pressure. Securely tighten lock nut on adjusting screw after each adjustment.

NOTE: Solenoid valve and pilot pressure valve (80SOL) must be manually held actuated to obtain indicated pressure when making adjustments.

- (6) Check and adjust both relief valves in each valve section while hydraulic lines are capped.
- (7) Have assistant shut down power unit.



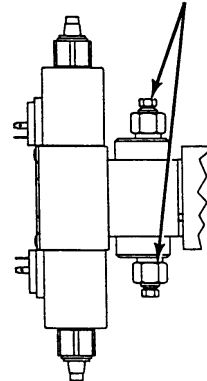
ADJUSTMENT "O"



FLOW CONTROL
PLATFORM
CONVEY
SPEED

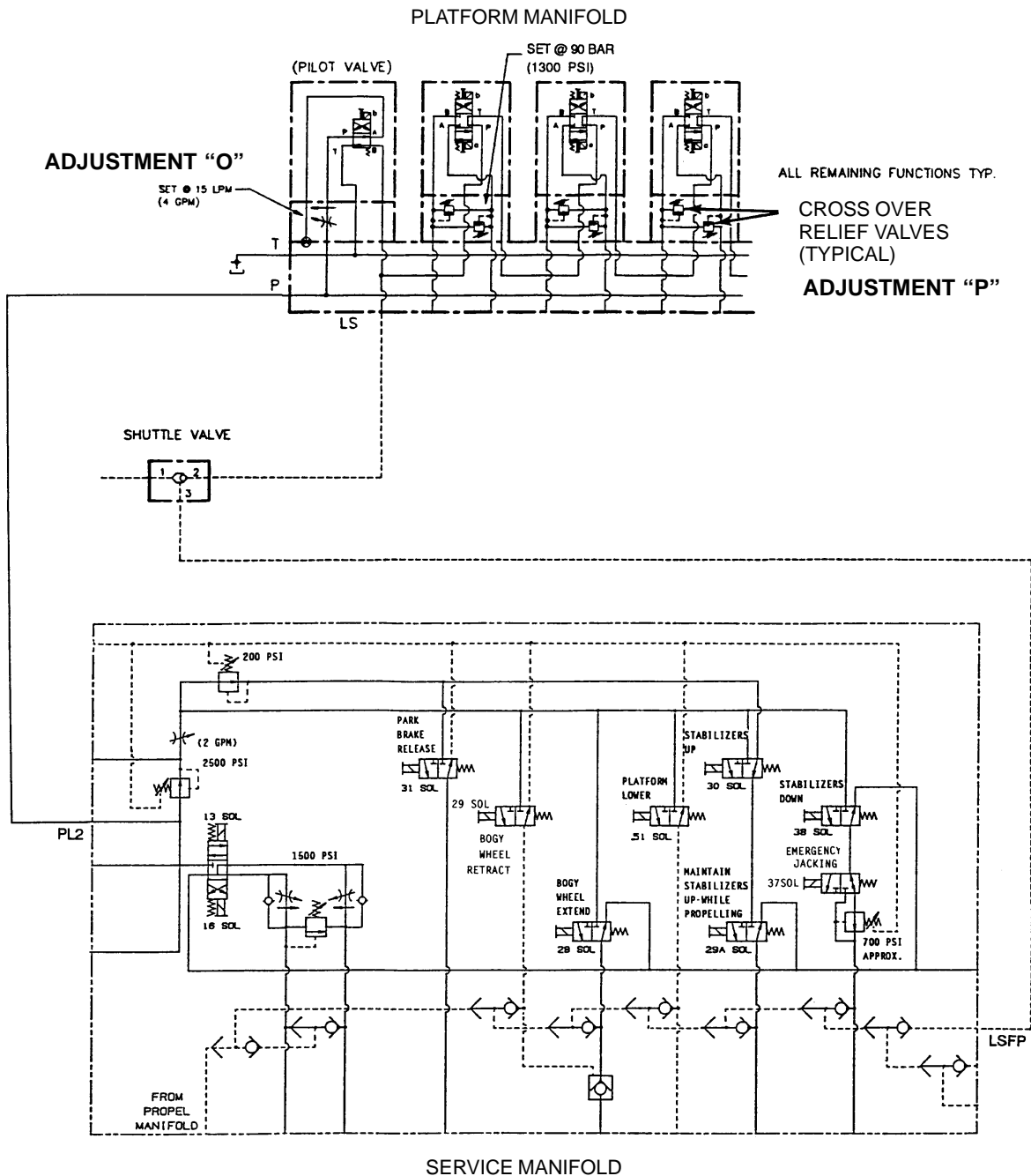
ADJUSTMENT "O"

CROSSOVER
RELIEF
VALVES
(TYPICAL)



ADJUSTMENT "P"

Figure 17
PLATFORM FLOW CONTROL AND
CROSSOVER RELIEF VALVES



PLATFORM CONVEY CIRCUIT

Figure 18
PLATFORM FLOW CONTROL AND
CROSSOVER RELIEF VALVES

NOTE: This adjustment procedure applies to all valve sections with crossover relief valves in the convey system. Options available for the COMMANDER loader determine the number of valves required and the position in the valve banks. Refer to composite hydraulic schematic for valve sections with crossover relief valves.

- (8) Remove caps and plugs from hoses and adapters and reinstall hoses on adapters.
- (9) Clean up any hydraulic oil that has leaked.
- (10) Have assistant start power unit and raise platform. Remove and stow maintenance stands, lower platform, and shut down power unit.

Q. Power Steering Pressure Reducing Valve Adjustment (Figure 19, Figure 20)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to power steering reducing valve adjustment. This pressure reducing valve is located on the service manifold as shown in Figure 19.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend the stabilizers. Turn steering wheel fully in either direction, and continue turning in that direction while observing pressure gauge for an indicated reading of 190 bar (2750 psi).

NOTE: A 190 bar (2750 psi) indicated pressure gauge reading is the combined pressure of the power steering reducing valve and standby pressure, i.e.:

172 bar (2500 psi) power steering reducing valve
17 bar (250 psi) standby pressure
190 bar (2750 psi) indicated pressure on gauge

- (3) To adjust power steering reducing valve, loosen lock nut on adjusting screw and turn adjusting screw clockwise to increase pressure, or counterclockwise to decrease pressure.
- (4) When power steering reducing valve pressure has been set to specifications, tighten lock nut on adjusting screw securely.
- (5) Have assistant shut down power unit.
- (6) Clean up any hydraulic oil that has leaked.

- (7) Swing power unit closed and secure with retention bolt.

NOTE: Power steering reducing valve pressure of 172 bar (2500 psi) is the correct pressure setting for flow to all hydraulic circuits on the bridge.

- R. Bridge Powered Guides Speed Adjustment (Figure 21, Figure 22)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to guide speed needle valve.

NOTE: Needle valve is located in manifold block below 20SOL solenoid valve.

- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers. Next, shift guides from side to side. Specified time for full shift is 3-7 seconds.

- (3) To adjust shift speed, loosen lock screw on needle valve and turn needle valve clockwise to decrease flow (increase time), or counterclockwise to increase flow (decrease time). Tighten lock nut securely after each adjustment.

- (4) Clean up any hydraulic oil that has leaked.

- (5) Swing power unit closed and secure with retention bolt.

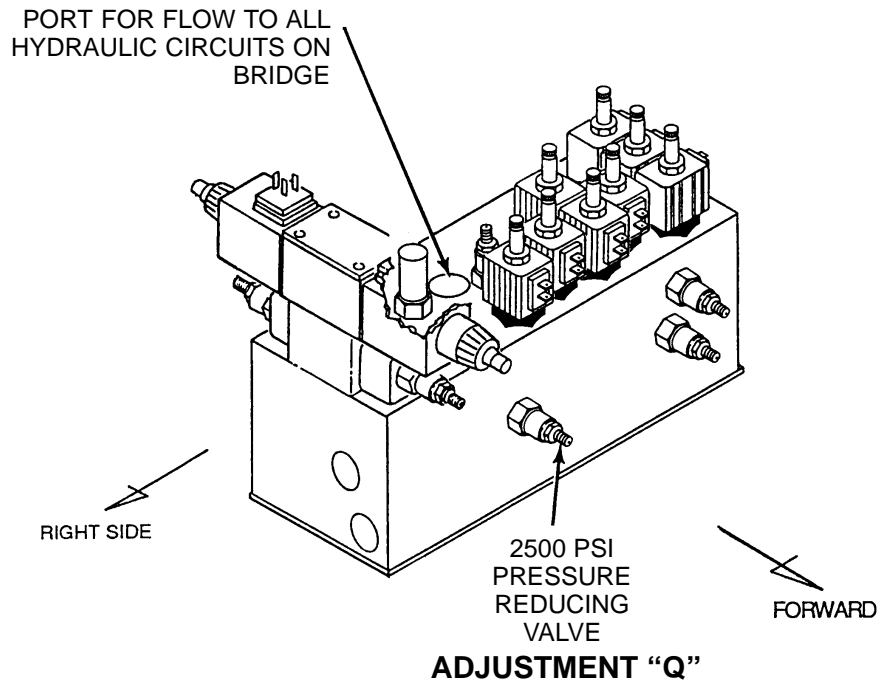
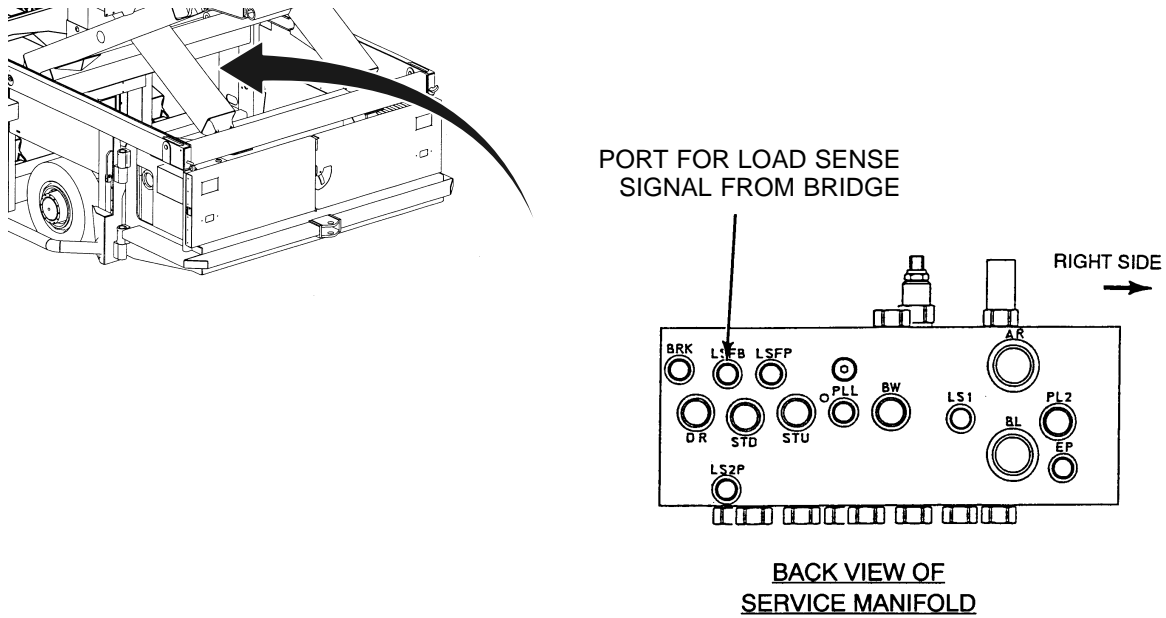
- S. Wide Bridge Powered Wings Adjustment (Figure 21 thru Figure 23) – **Bridge with Folding Wings Only**

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.



SERVICE MANIFOLD

Figure 19
POWER STEERING ADJUSTMENT

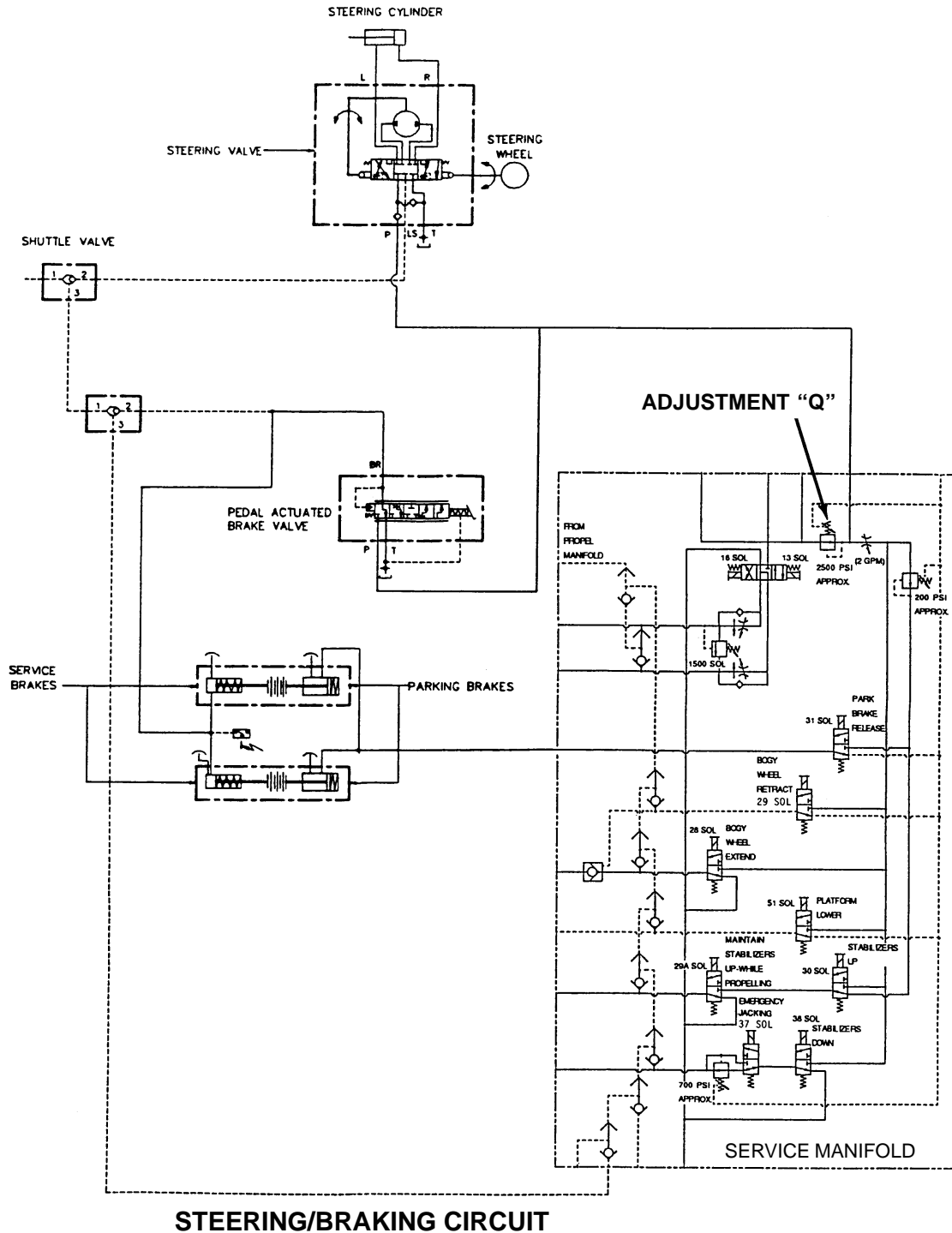


Figure 20
POWER STEERING ADJUSTMENT

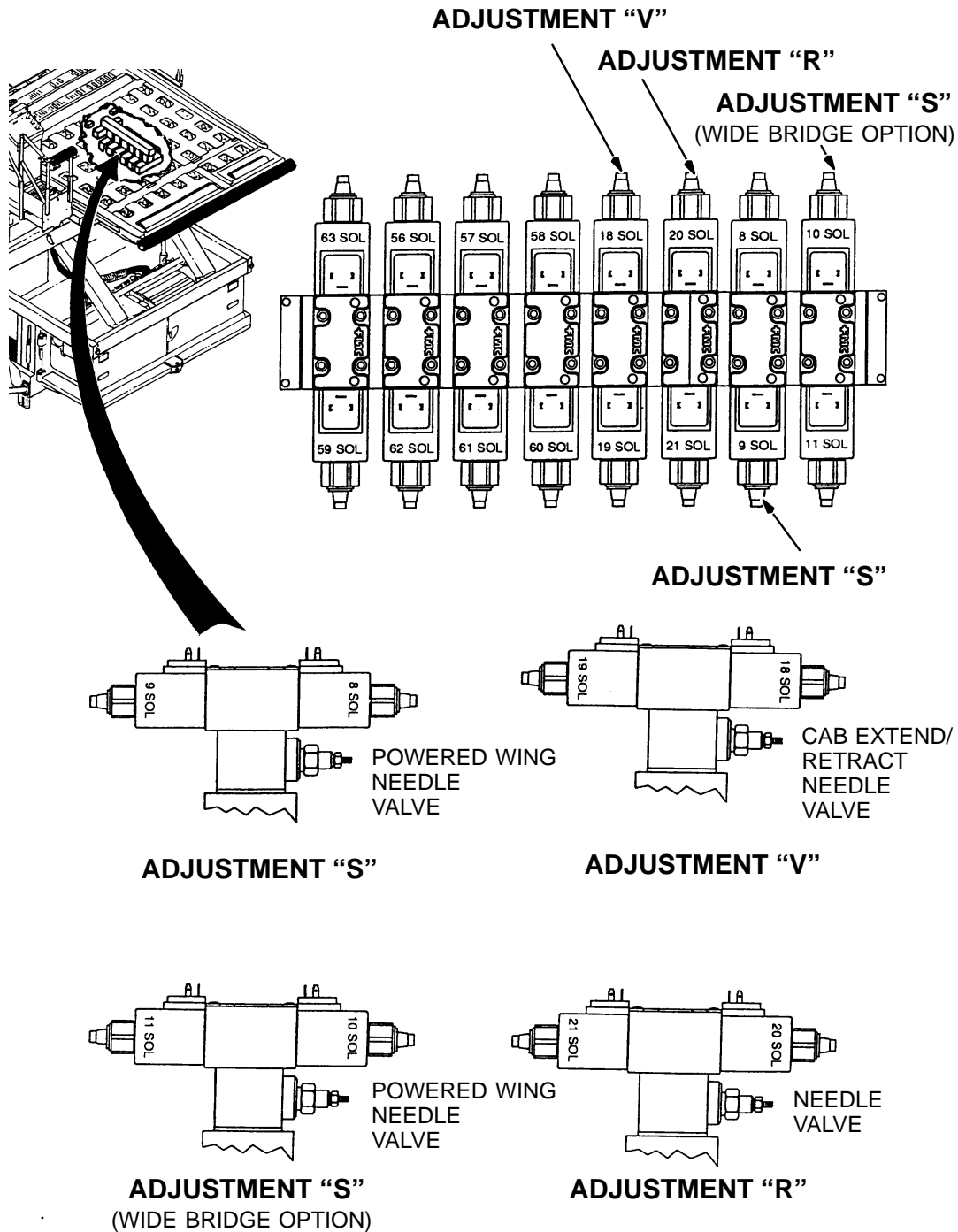
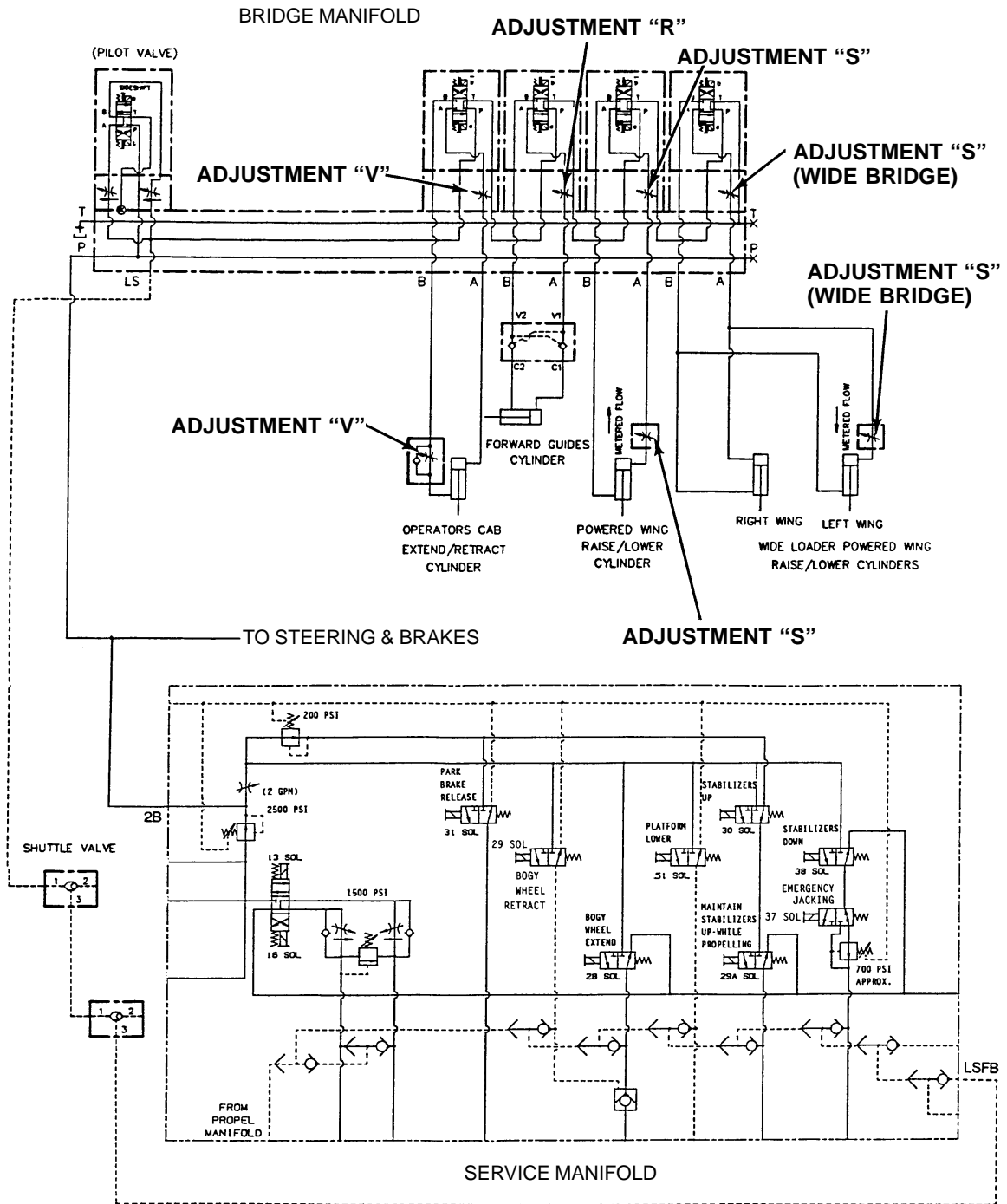


Figure 21
BRIDGE VALVE BANK ADJUSTMENTS



BRIDGE CYLINDER FUNCTIONS

Figure 22
BRIDGE VALVE BANK ADJUSTMENTS

- (1) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to powered wing needle valves.
- (2) Have assistant actuate switch to raise and lower left and right side powered wings. Wings should raise and lower in the specified time of 4-5 seconds. Left side powered wing must raise and lower fully AFTER right-side wing.
- (3) To adjust left and right side powered wings, loosen lock nut and turn adjusting screw fully clockwise on left side powered wing hydraulic cylinder.
- (4) Adjust needle valve to raise and lower right side wing in the specified time of 4-5 seconds. Tighten lock nut securely after each adjustment. Needle valve is located in manifold block below 10SOL solenoid valve.
- (5) Turn adjusting screw on secondary needle valve counterclockwise until left side powered wing raises and lowers in specified time of 4-5 seconds. Tighten lock nut on adjusting screw.

NOTE: Left side powered wing must raise and lower fully after right side powered wing is full up and full down.

- (6) Clean up any hydraulic oil that has leaked.
- (7) Swing power unit closed and secure with retention bolt.

T. Bridge Convey Speeds (Figure 24, Figure 25)

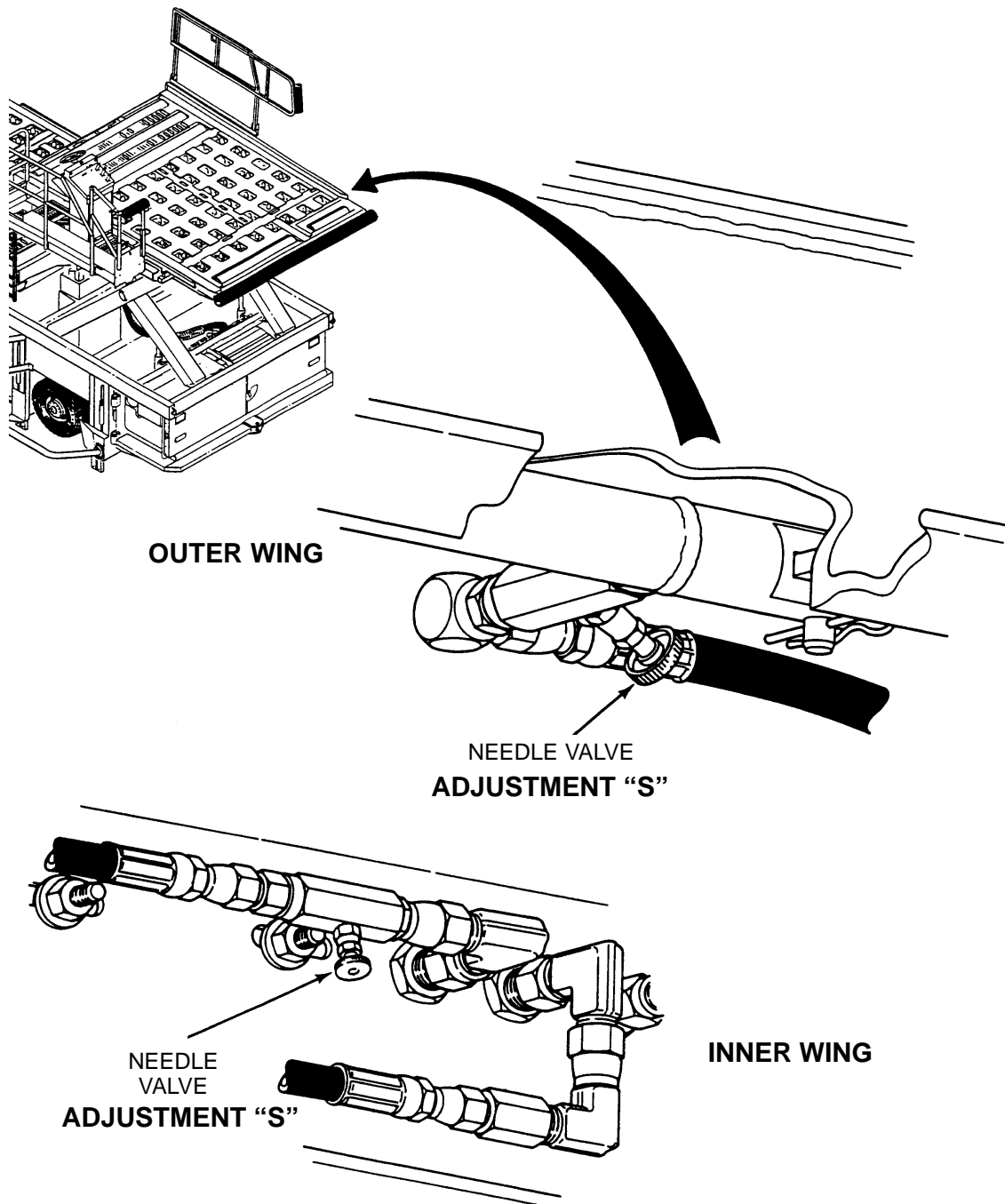
NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position, and swing power unit open for access to flow control adjustments.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers, and then actuate bridge convey switch. Time rollers for specified revolutions per minute (39-41 rpm) to obtain 60 feet per minute surface speed.



NOTE: BRIDGE WITH FOLDING WINGS ONLY

Figure 23
POWER WING CYLINDER ADJUSTMENT

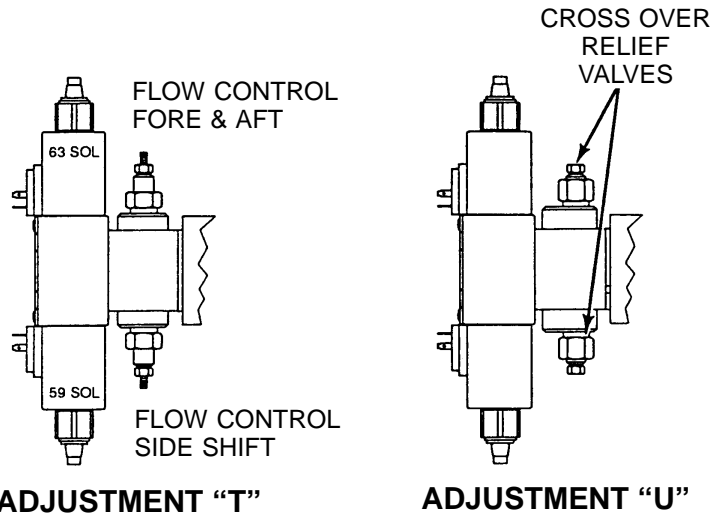
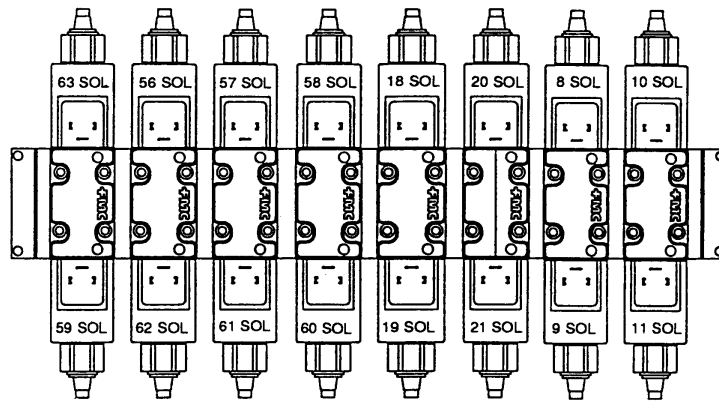
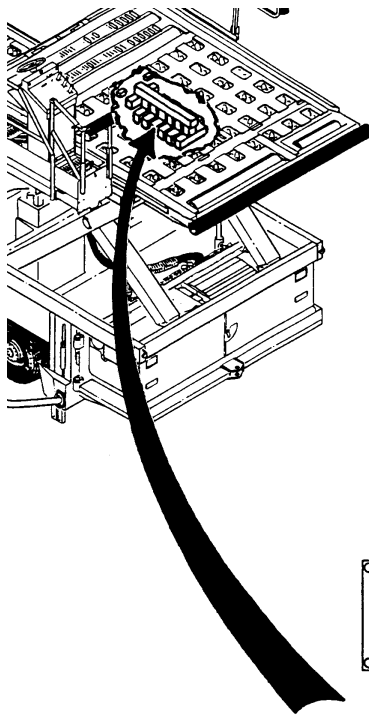


Figure 24
BRIDGE CONVEY ADJUSTMENTS

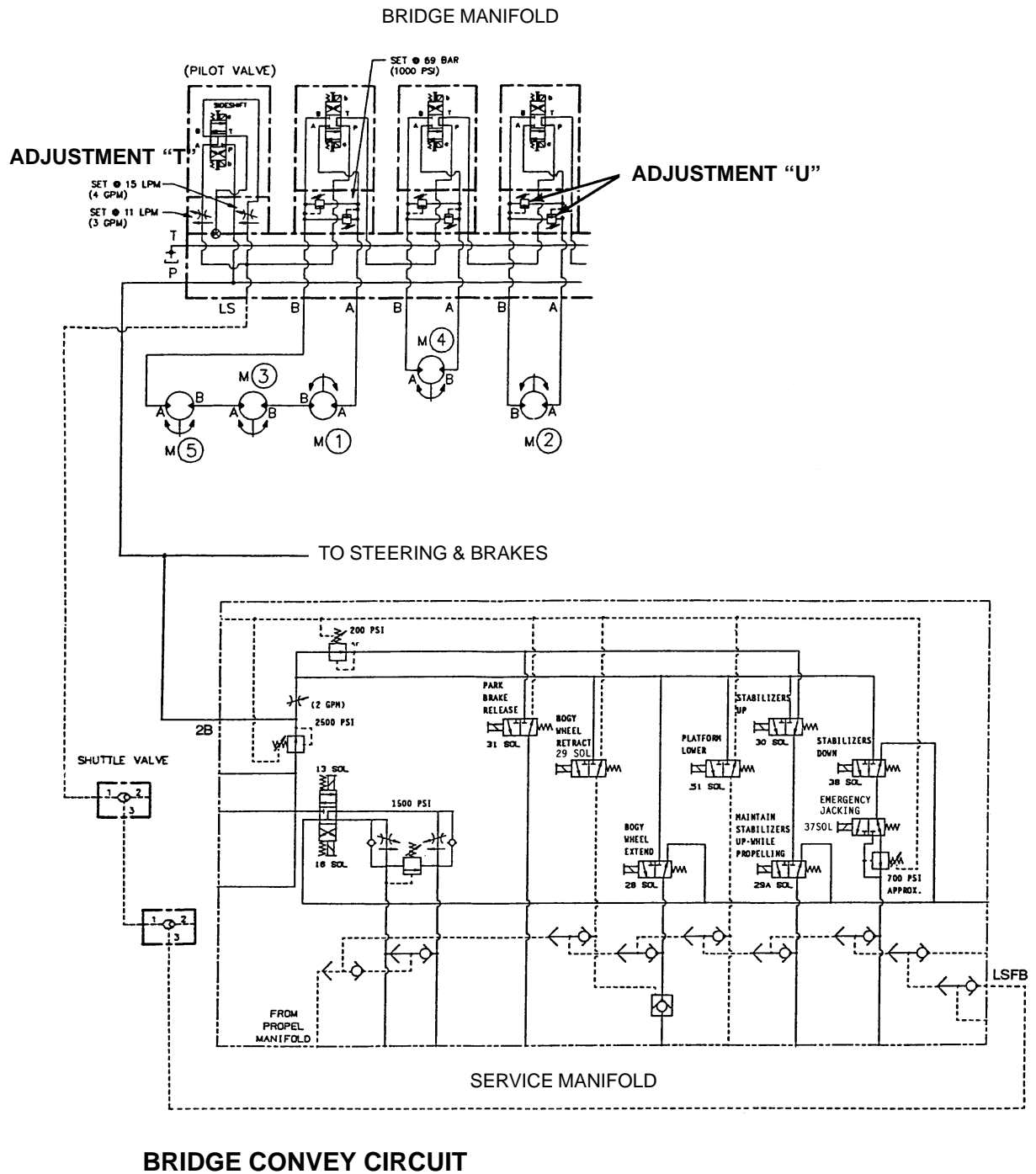


Figure 25
BRIDGE CONVEY ADJUSTMENTS

- (3) To adjust roller speed (fore and aft), loosen lock nut on flow control adjusting screw and turn adjusting screw clockwise to increase speed, or counterclockwise to decrease speed. Tighten lock nut securely after each adjustment.

NOTE: Flow control adjustment is located in manifold block below 63SOL solenoid valve (Figure 24, Figure 25).

- (4) To adjust roller speed for side transfer on bridge, loosen lock nut on adjusting screw and turn adjusting screw clockwise to decrease speed, or counterclockwise to increase speed. Tighten lock nut securely after each adjustment.

NOTE: Side transfer speed is 30 feet per minute (19-21 rpm). Side transfer adjusting screw is located in manifold block below 59 solenoid valve (Figure 24, Figure 25).

- (5) Clean up any hydraulic oil that has leaked.
- (6) Swing power unit closed and secure with retention bolt.

U. Bridge Convey Crossover Relief Valves (Figure 24, Figure 25)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position, and swing power unit open to gain access to crossover relief valve adjusting screws.
- (2) Remove hydraulic hose from either "A" port or "B" port on valve assembly to be checked and cap adapter and plug hose.
- (3) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers.
- (4) Manually actuate valve being checked and the pilot pressure solenoid valve (63). Observe pressure gauge for indicated reading of 86 bar (1250 psi).

NOTE: A 86 bar (1250 psi) indicated reading at gauge port "A" is the combined pressure of the crossover relief valve and standby pressure, i.e.:

69 bar (1000 psi) crossover relief pressure
17 bar (250 psi) standby pressure
 86 bar (1250 psi) indicated pressure

- (5) To adjust crossover relief valve pressure, loosen lock nut on adjusting screw and turn adjusting screw clockwise to increase pressure, or counterclockwise to decrease pressure. Tighten lock nut on adjusting screw securely after each adjustment.

NOTE: Solenoid valve and pilot pressure valve must be manually held actuated to obtain indicated pressure when making adjustments.

- (6) Check and adjust both relief valves in each valve section while hydraulic lines are capped.
- (7) Have assistant shut down power unit.
- (8) Remove caps and plugs from hose and adapter and reinstall hose.
- (9) Clean up any hydraulic oil that has leaked.
- (10) Swing power unit closed and secure with retention bolt.

NOTE: This adjustment procedure applies to all valve sections with crossover relief valves in the convey system. Options available for the COMMANDER loader determine the number of valves required and the position in the valve banks. Refer to Hydraulic System Schematic, sheets 1-7, for valve sections with crossover relief valves.

V. Cab Extend/Retract Speed Adjustment (Figure 21, Figure 22)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position and swing power unit open for access to cab extension needle valve located in manifold block below 18SOL solenoid valve.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers, and then fully extend operator's cab. Time to extend must be within specified time of 14 +1, -0 seconds, full travel.

- (3) To adjust speed of cab extension, first check cab retract flow control needle valve adjustment. Loosen lock nut and turn needle valve fully clockwise until it seats, then turn needle valve exactly 1-1/2 turns counterclockwise and lock needle valve with lock nut.
- (4) Recheck time for full cab extension and adjust cab extend needle valve to obtain full cab extension in specified time of 14 +1, -0 seconds, full travel.
- (5) Recheck cab retract speed for full travel in specified time of 20 ± 2 seconds.

NOTE: Adjust cab extend speed needle valve **ONLY** to correct extend and retract speeds to specifications. **DO NOT** change preset setting on cab retract flow control needle valve.

- (6) Clean up any hydraulic oil that has leaked.
- (7) Swing power unit closed and secure with retention bolt.

W. Bridge Tilt Flow Control Adjustments (Option)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.



WARNING

LOADER DRIVE WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Remove bolt that secures power unit in the closed position, and swing power unit open to gain access to flow control valves.
- (2) Have assistant start power unit and set MODE SWITCH to OPERATE to extend stabilizers and then actuate bridge tilt switches. Bridge tilt cylinders must extend or retract fully in the specified time of 2-3 seconds.
- (3) To adjust the raise speed (extend cylinders), loosen lock screw on flow control valve in the line connected to the "P" port on valve manifold and turn adjusting screw clockwise to decrease flow (increase time), or counterclockwise to increase flow (decrease time). Tighten lock screw securely after each adjustment.
- (4) To adjust the lower speed (retract cylinder), loosen lock screw on flow control valve in the line connected to the "T" port on valve manifold and turn adjusting screw clockwise to decrease flow (increase time), or counterclockwise to increase flow (decrease time). Tighten lock nut securely after each adjustment.
- (5) Shut down power unit.

- (6) Clean up any hydraulic oil that has leaked.
- (7) Swing power unit closed and secure with retention bolt.

X. Emergency Pump Relief Valve (Figure 26)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

**WARNING**

EYE PROTECTION MUST BE WORN WHEN MAKING HYDRAULIC ADJUSTMENTS.

- (1) Open power unit doors.
- (2) Remove pressure hose from emergency hydraulic pump and plug hose to prevent contamination and loss of hydraulic oil.
- (3) Install 0-345 bar (0-5000 psi) pressure gauge on outlet port or hydraulic pump.
- (4) Have assistant actuate emergency pump and observe gauge for 172 bar (2500 psi) indicated pressure.
- (5) Adjust pressure relief valve by removing cap and turning adjusting screw clockwise to increase pressure, or counterclockwise to decrease pressure. Tighten lock nut when pressure has been adjusted to specifications.
- (6) Remove gauge and plug, and reconnect the pressure hose.
- (7) Clean up any hydraulic oil that has leaked.
- (8) Close power unit doors.

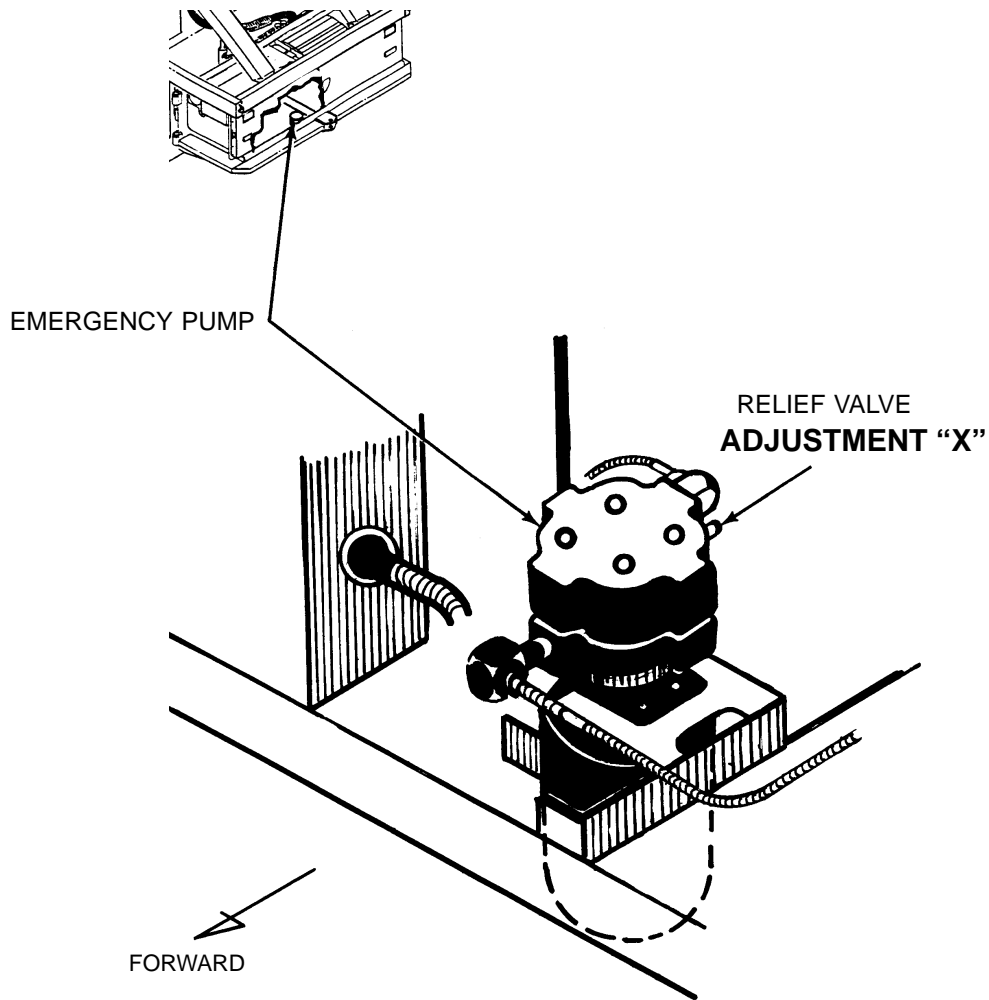


Figure 26
EMERGENCY PUMP ADJUSTMENT

2. **SWITCH ADJUSTMENT PROCEDURE**

A. Proximity Switch Adjustments



WARNING

LOADER ENGINE MUST BE SHUTDOWN WHEN MAKING ANY SWITCH ADJUSTMENT TO PREVENT AN UNCONTROLLED MOVEMENT THAT COULD POSSIBLY RESULT IN DEATH OR INJURY TO PERSONNEL OR DAMAGE TO THE LOADER.

(1) Inductive Proximity Switch

The proximity switch is a generic term which means it is a device capable of acting as an electronic switch when in the presence or close proximity of a metallic object. The important distinction that differentiates it from a mechanical switch is that it does not require physical contact with anything else to operate.

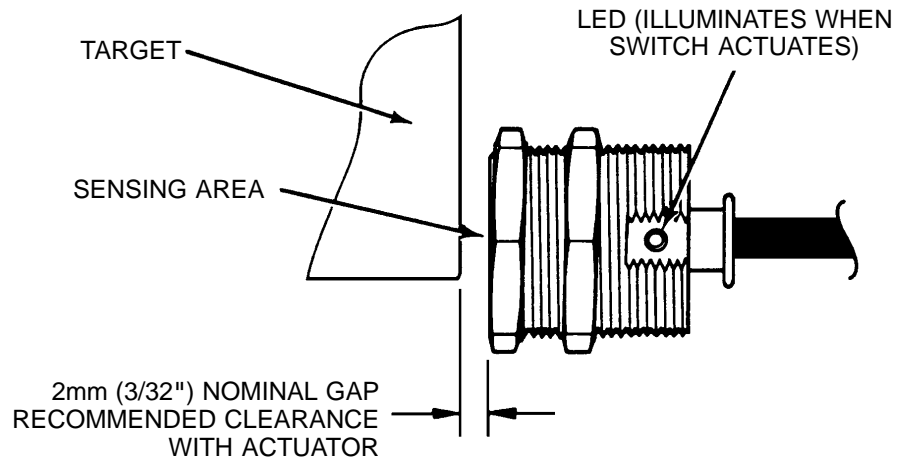


Figure 27
PROXIMITY SWITCH ADJUSTMENT

3. ELECTRICAL SYSTEM**A. 6PRS Proximity Switch (Stabilizers Up) (Figure 28) – EFFECTIVITY : UP TO CR96149**

- (1) Start power unit and retract stabilizers fully by setting MODE SWITCH to DRIVE (with platform fully lowered) then shut power unit down.
- (2) Loosen locknut on switch bracket and adjust proximity switch directly in front of stabilizer pin and tighten locknuts securely.

NOTE: The switch sensing area must have 3mm (.12 inches) ± 1mm clearance to actuating pin.

- (3) Start power unit and verify adjustment by actuating stabilizers. Reposition switch as required to achieve switch actuation when stabilizer is within 15mm (9/16 inches +0, -2mm (3/32 inches) from full retraction.

B. 6PRS Proximity Switch (Stabilizers Up) (Figure 28) – EFFECTIVITY : CR96150 & UP

- (1) Start power unit and retract stabilizers fully by setting MODE SWITCH to DRIVE (with platform fully lowered) then shut power unit down.
- (2) Loosen locknut on back of switch and adjust proximity switch so the sensing face is flush with the channel surface and tighten locknuts securely.

NOTE: The switch sensing face must not extend beyond channel surface.

- (3) Start power unit and verify adjustment by actuating stabilizers and driving the loader.

C. 5PRS Proximity Switch (Bridge Down) (Figure 29)

- (1) Start power unit and lower bridge fully, then shut engine off.
- (2) Loosen Locknuts and position switch to actuate when bridge is fully lowered and tighten locknuts securely.
- (3) Verify switch adjustment by starting power unit and raise bridge 150mm (6") maximum.

NOTE: Actuate powered wing switch to raise powered wings. Wings must not raise with bridge elevated 150mm (6").

- (4) Readjust switch as required to actuate only when bridge is fully down.
- (5) 5PRS proximity switch will also actuate bridge up/reverse alarm (option).

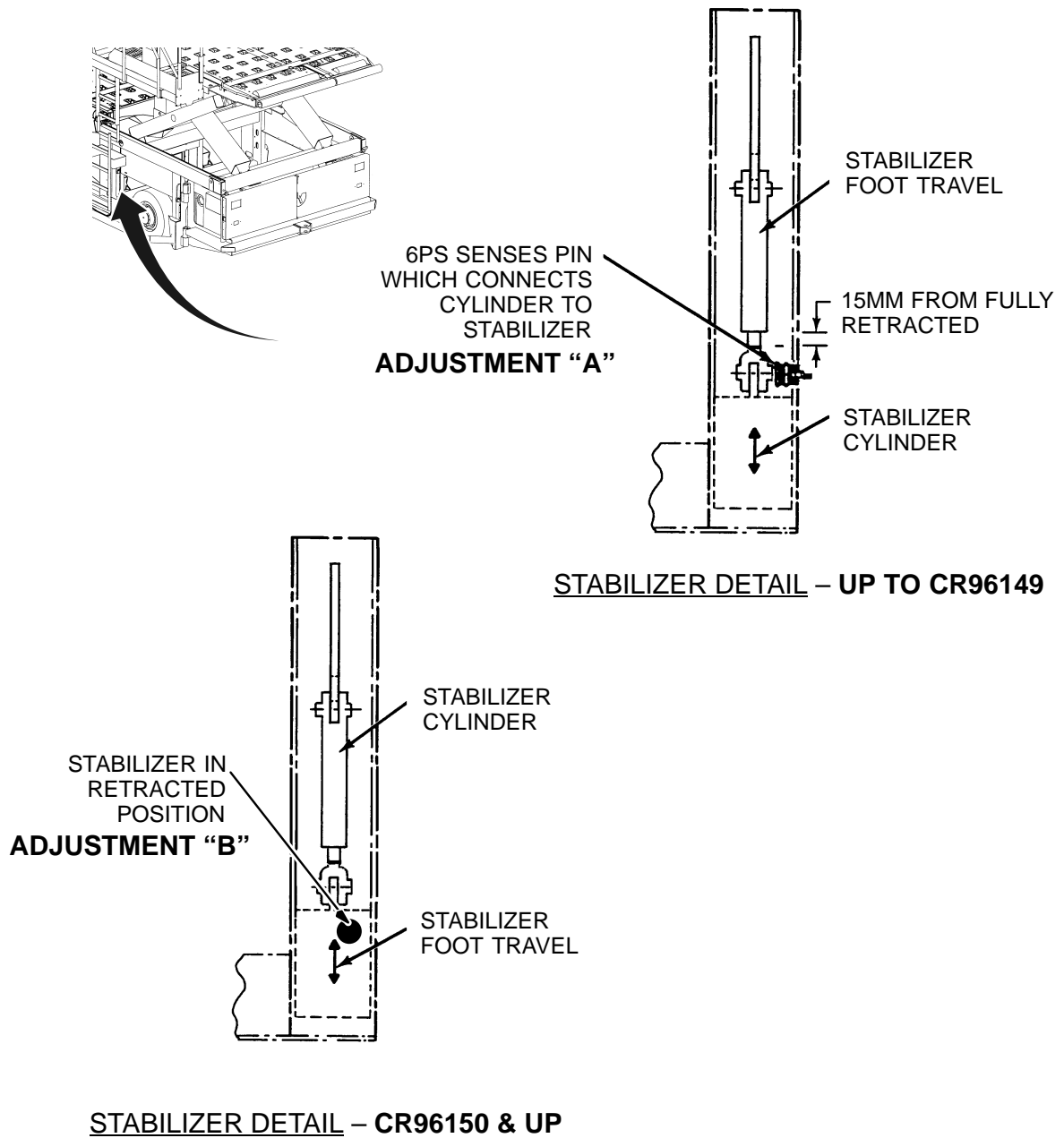
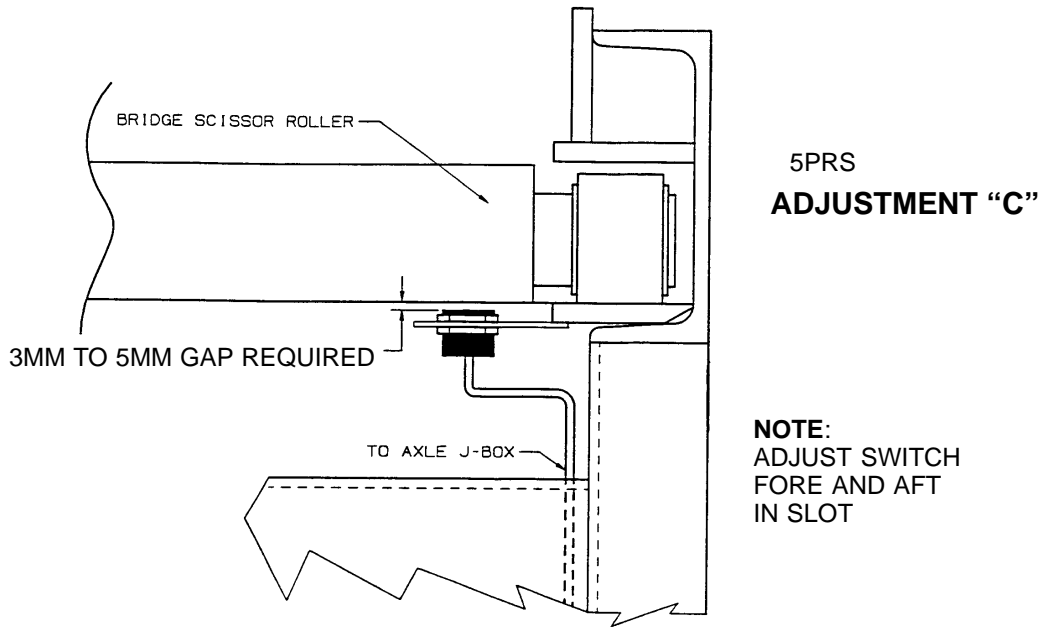
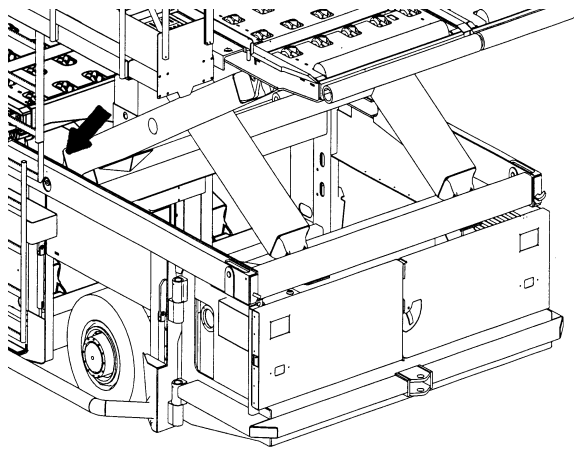


Figure 28
STABILIZER PROXIMITY SWITCH



NOTE: BRIDGE WITH FOLDING WINGS ONLY

Figure 29
BRIDGE DOWN PROXIMITY SWITCH

D. 9PRS, 10PRS, 11PRS Proximity Switches (Guides Proximity Switches) (Figure 30)

NOTE: Each guide on the platform will actuate a proximity switch located in the guide support when the guide is in the raised position.

- 9PRS Left Side Guide Raised
- 10PRS Rear Guide Raised
- 11PRS Right Side Guide Raised

(1) Position switch in bracket with the face (sensing surface) 2-3mm (3/32-1/8") away from sensing plate on guide with guide fully up.

NOTE: Switch must not interfere with sensing plate or switch will be damaged when the guide is raised.

(2) Tighten locknut on proximity switch securely when switch is proper distance from sensing plate with guide up.

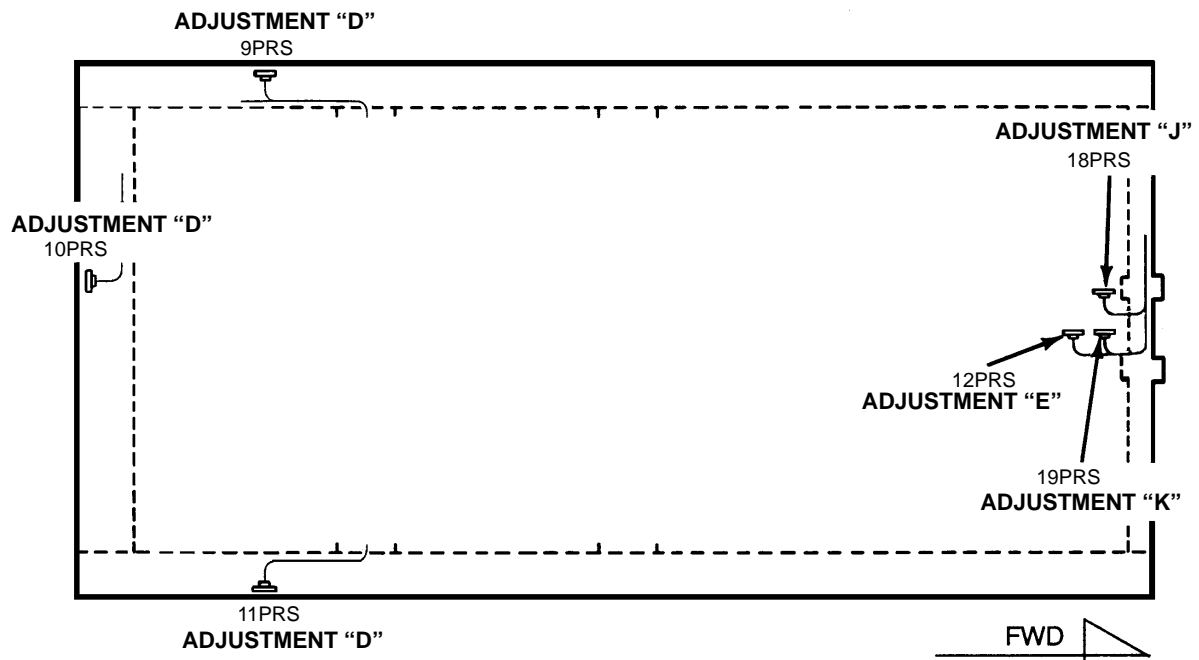


Figure 30
PROXIMITY SWITCH LOCATION

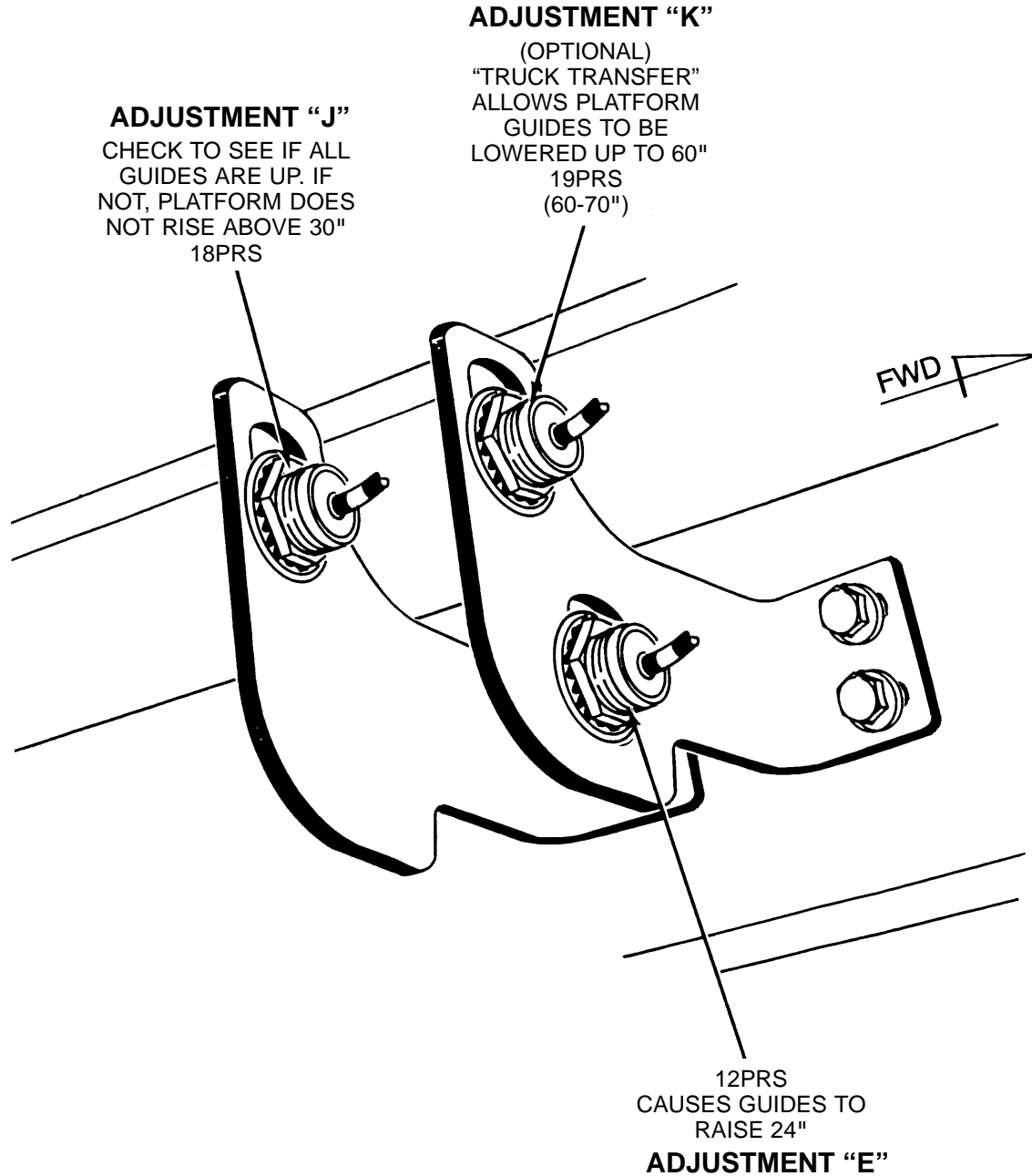


Figure 31
PLATFORM DOWN PROXIMITY SWITCHES

E. 12PRS Proximity Switch (Tells Guide To Raise), Platform Below 610mm (24") (Figure 31, Figure 30)

- (1) 12PRS proximity switch is located underneath forward section of platform.
- (2) Start power unit and raise platform exactly 610mm (24") and shut power unit down.
- (3) Turn MASTER START SWITCH to ON position and place MODE SWITCH in OPERATE. **DO NOT START POWER UNIT.**
- (4) Position proximity switch in slotted bracket until LED indicator light (on side of proximity switch) just actuates on when sensing the actuating arm. Tighten locknut securely after adjustment.

NOTE: Maintain specified clearance of 2-3mm (3/32-1/8") between actuating arm and face of proximity switch.

- (5) Turn MASTER START SWITCH OFF and replace walk deck.

F. 13PRS Proximity Switch, Platform Within 100mm (4") of Bridge (Figure 32)

- (1) Position switch in mounting hole with the face (sensing surface) 2-3mm (3/32-1/8") from being flush with end of tapped hole.

NOTE: Switch MUST NOT protrude through mounting hole or it will be damaged by the actuating ring.

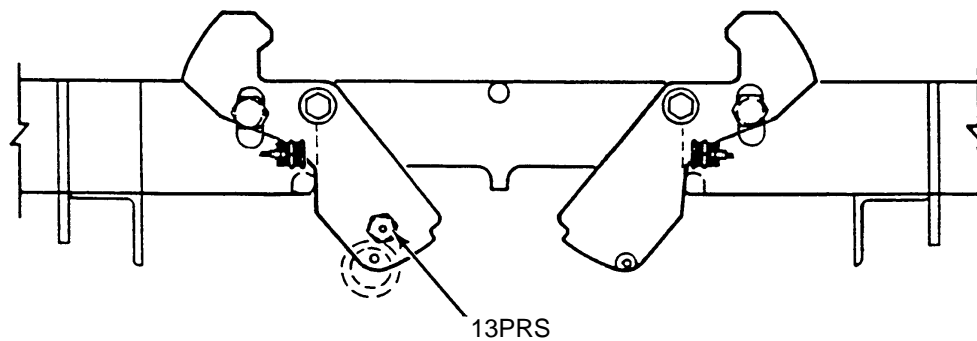
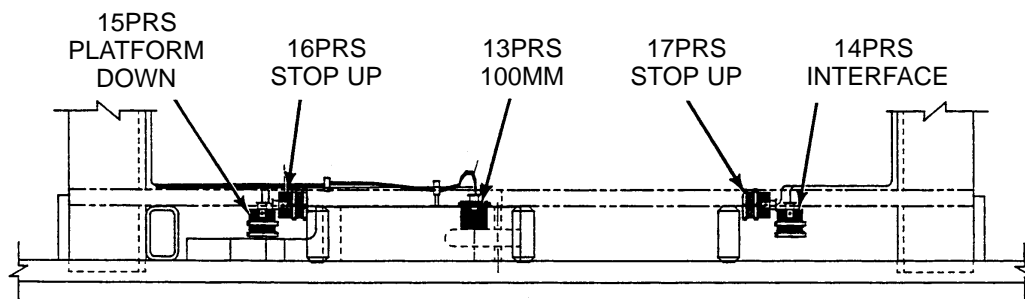
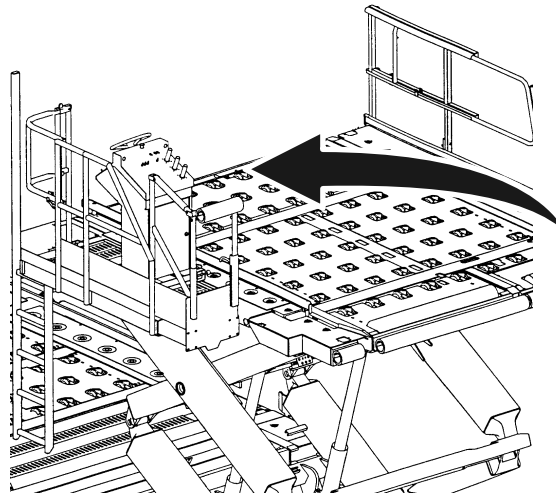
G. 14PRS Proximity Switch (Platform/Bridge Interface) (Figure 33)

- (1) Turn MASTER START SWITCH ON and set MODE SWITCH to OPERATE. **DO NOT START POWER UNIT.**
- (2) Lower right-rear stop on bridge until top is level with bridge frame and secure while manually making adjustment.
- (3) Position proximity switch 14PRS in adjustment slot for LED to just go out and tighten locknuts on proximity switch (LED located on side of proximity switch).

NOTE: Clearance between bridge stop and proximity switch face must be maintained at 2-3mm (3/32-1/8").

- (4) Release bridge right-side stop.

- (5) Start power unit and raise bridge 300mm (12") or more, then raise platform fully to interface with bridge.
 - (6) Platform and bridge roll plane is to be level, \pm 9-12mm (3/8-1/2") when platform interfaces with bridge.
 - (7) If platform and bridge are not level with specification of \pm 9-12mm (3/8-1/2"), readjust proximity switch.
 - (8) Lower platform and bridge fully down and shut down power unit.
 - (9) Move proximity switch **UP** in adjusting slot to lower platform and **DOWN** in adjusting slot to raise platform at interface.
 - (10) Recheck switch adjustment (repeat steps 5-8).
- H. 15PRS Proximity Switch Platform 25mm (1") Above Bridge (Figure 33)
- (1) Turn MASTER START SWITCH ON and place MODE SWITCH in OPERATE. **DO NOT START POWER UNIT.**
 - (2) Lower left side stop on bridge to obtain a measurement of 8mm (5/16") and secure while manually making adjustment.
 - (3) Position proximity switch 15PRS in adjustment slot for LED to just goes out and tighten locknuts on proximity switch (LED on side of proximity switch).
- NOTE:** Clearance between bridge stop and proximity switch face must be maintained at 2-3mm (3/32-1/8").
- (4) Tape a thin piece of steel on 14PRS sensing area (a washer will work).
 - (5) Release bridge left side stop.
 - (6) Start power unit.
 - (7) Raise platform. Platform must raise 25mm (1") above bridge. When proximity switch 15PRS deactivates (light goes out), platform will stop raising and start to lower.
 - (8) If platform does not raise and deactivate proximity switch at 25mm (1"), readjust proximity switch.



ADJUSTMENT "F"

REAR STOP INSTALLATION

VIEW FROM REAR

Figure 32
INTERFACE PROXIMITY SWITCH ADJUSTMENTS

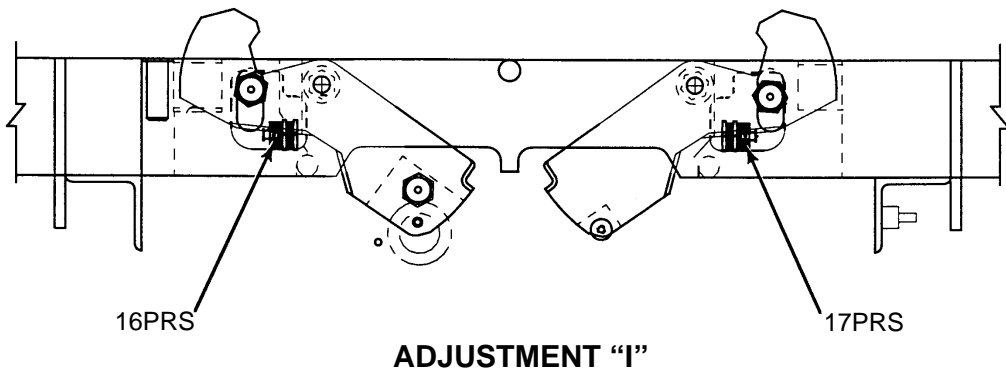
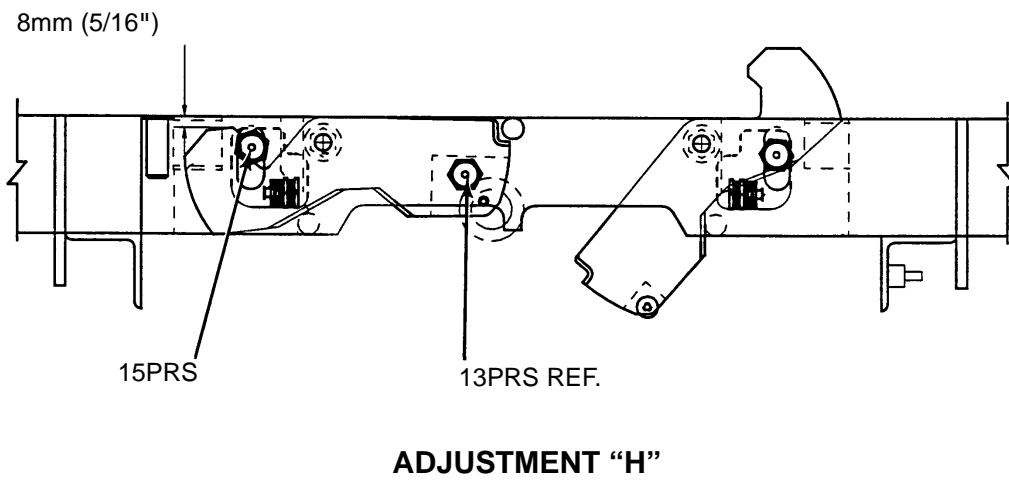
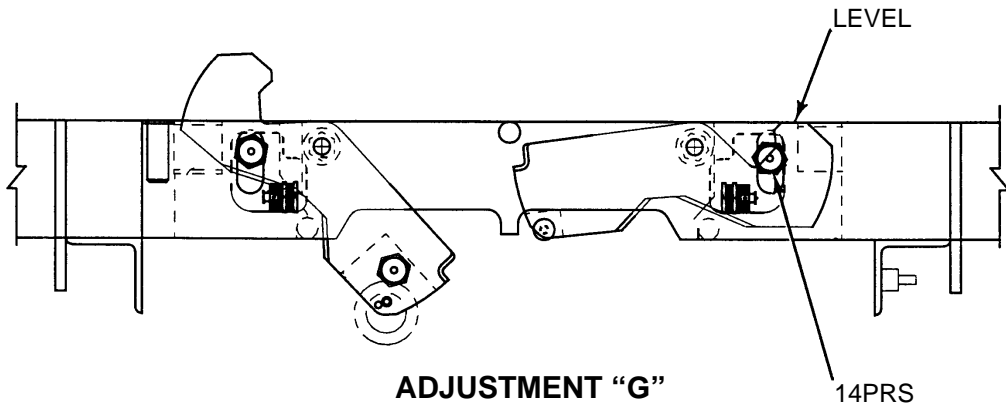


Figure 33
INTERFACE PROXIMITY SWITCH ADJUSTMENTS

- (9) Lower platform and bridge fully down and shut power unit OFF.
- (10) Move proximity switch **UP** in adjusting slot to lower platform and **DOWN** in adjusting slot to raise platform when proximity switch actuates.
- (11) Recheck switch adjustment (repeat steps 5-8).
- (12) Remove steel washer and tape added in step (4).

NOTE: When raising platform to actuate proximity switch, exercise care that platform does not exceed 25mm (1") and allow platform interface plate to strike bridge and shear bolt.

I. 16PRS and 17PRS Proximity Switches (Bridge Stops Lowered) (Figure 33)

- (1) Turn MASTER START SWITCH ON and place MODE SWITCH in OPERATE – **DO NOT START POWER UNIT.**
- (2) With stops in full UP position, switch face 2-3mm (1/16-1/8") from stop wide shoulder face.
- (3) Check to see LED's are illuminated.
- (4) Verify LED's go out when stops lower.

J. 18PRS Proximity Switch (Verify that all guides are up; if not, platform will not raise above 30"), Platform Below 760mm (30") (Figure 31, Figure 30)

NOTE: An assistant is required for this procedure.

- (1) Open bridge panel door to observe status panel indicator illuminates.
- (2) 18PRS proximity switch is located underneath forward section of platform.
- (3) Have assistant start power unit and raise platform exactly 760mm (30") and shut power unit OFF.
- (4) Turn MASTER START SWITCH to ON position and set mode switch to OPERATE. **DO NOT START POWER UNIT.**
- (5) Loosen locknut on proximity switch 18PRS and move switch in slotted adjusting bracket until switch just actuates. Tighten locknut securely after each adjustment.

NOTE: Observe status panel indicator lights. Light 18PRS (J10) will illuminate when proximity switch 18PRS is actuated.

NOTE: Clearance between proximity switch sensing face and actuating arm must be maintained at 2-3mm (3/32-1/8") to prevent damage to switch.

(6) Start power unit and lower platform, then shut down power unit.

(7) Close bridge panel door and replace walk deck on platform.

- K. 19PRS Proximity Switch (Truck Transfer Height Option), Platform Below 1525mm-1780mm (60-70") noted on Customer Specification Drawing (Figure 31, Figure 30)

NOTE: An assistant is required for this procedure.

(1) Open bridge panel door to observe status panel indicator illuminates.

(2) 19PRS proximity switch is located at underneath forward section of platform.

(3) Have assistant raise platform 1525mm (60") from ground level and shut down power unit.

(4) Turn MASTER START SWITCH ON and place MODE SWITCH in OPERATE position.

(5) Loosen locknut on proximity switch 19PRS and move switch in adjustment slot until indicator light on side of switch just turns off. Tighten locknut securely after each adjustment.

NOTE: Clearance between proximity switch sensing face and actuating arm must be maintained at 2-3mm (3/32-1/8") to prevent damage to switch.

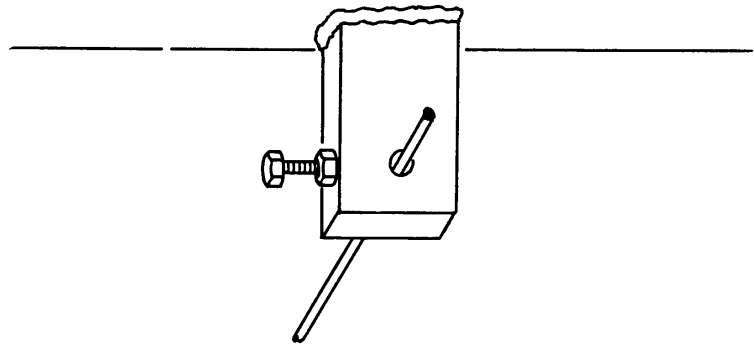
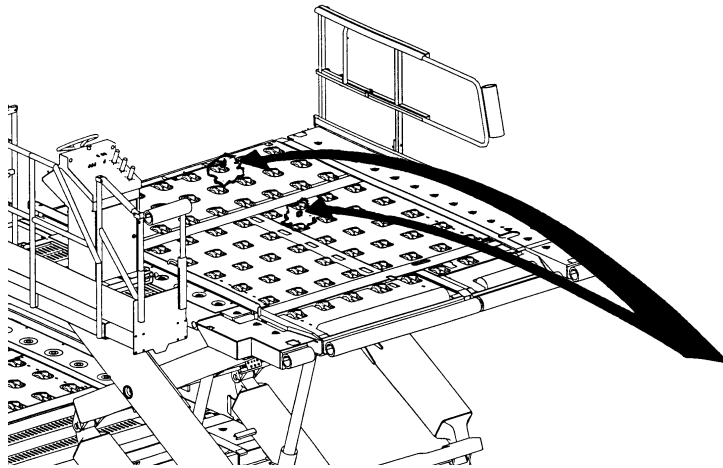
(6) Start power unit, lower platform, then shut down power unit.

(7) Close bridge panel door and replace walk deck on platform.

NOTE: This option available for 65" truck transfer height, and will require platform to be raised to 1650mm (65") level when adjusting proximity switch.

- L. 1PLS Overtravel Shutdown. Limit Switch, Bridge On Track (Figure 34)

(1) Adjust actuating cable to remove all excess slack without pulling actuating pin from limit switch.



ADJUSTMENT "L"

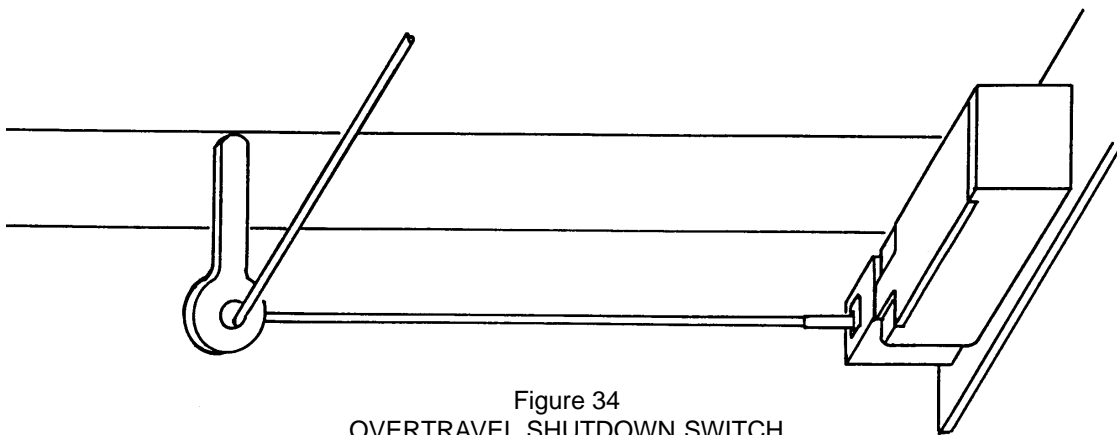


Figure 34
OVERTRAVEL SHUTDOWN SWITCH

- (2) Start engine and place MODE SWITCH in OPERATE to extend stabilizers.
 - (3) Pull on cable to remove actuating pin. Power unit must shut down when actuating pin is removed.
- M. 4PS Pressure Switch, Stabilizer Down (Figure 35)
- (1) Refer to stabilizer adjustment procedure "E" under Hydraulic Adjustment.
- N. 3PS Pressure Switch, Bogy Wheels Extended (Figure 36) (OPTIONAL)

NOTE: An assistant is required for this procedure.

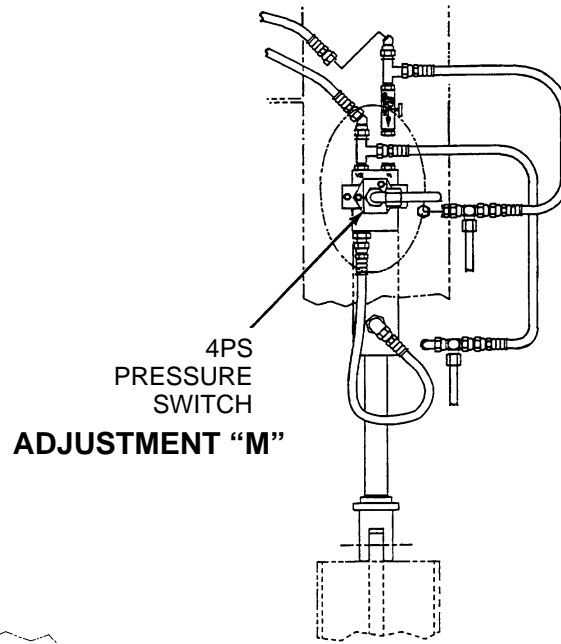
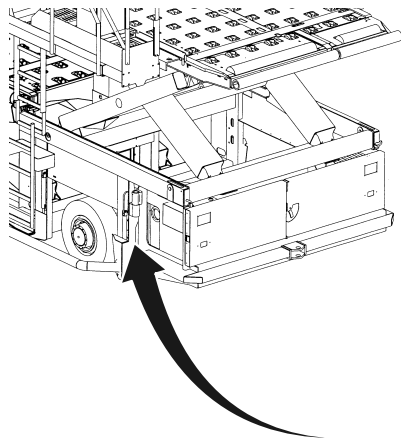
**WARNING**

LOADER WHEELS MUST BE CHOCKED TO PREVENT MOVEMENT IN EITHER DIRECTION. EYE PROTECTION MUST BE WORN WHEN MAKING ADJUSTMENTS.

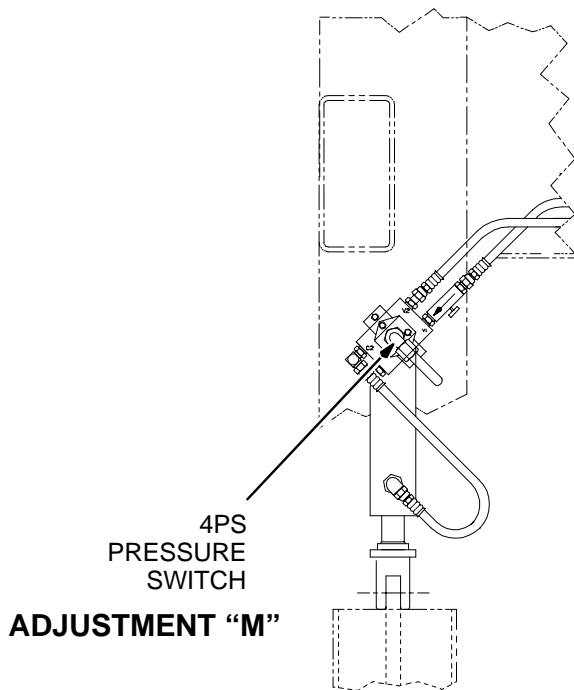
- (1) Remove bolt that secures power unit in the closed position and swing power unit open to gain access to pressure switch.
- (2) Loosen locknut and turn adjusting screw fully clockwise.
- (3) Have assistant start power unit and partially extend bogy wheels by raising chassis.
- (4) Turn adjusting screw clockwise until indicator light on operator's panel is illuminated, then turn adjusting screw one (1) additional turn clockwise. Tighten locknut securely.
- (5) Verify switch adjustment by extending and retracting bogy wheels.

NOTE: 3PS pressure switch must be adjusted so that the Driver's Panel RAISE CHASSIS INDICATOR LIGHT illuminates in DRIVE mode and remains on until chassis is fully raised.

- (6) Shut power unit down.
- (7) Swing power unit closed and secure with retention bolt.



EFFECTIVITY: UP TO CR96149



EFFECTIVITY: CR96150 & UP

Figure 35
STABILIZER PRESSURE SWITCH

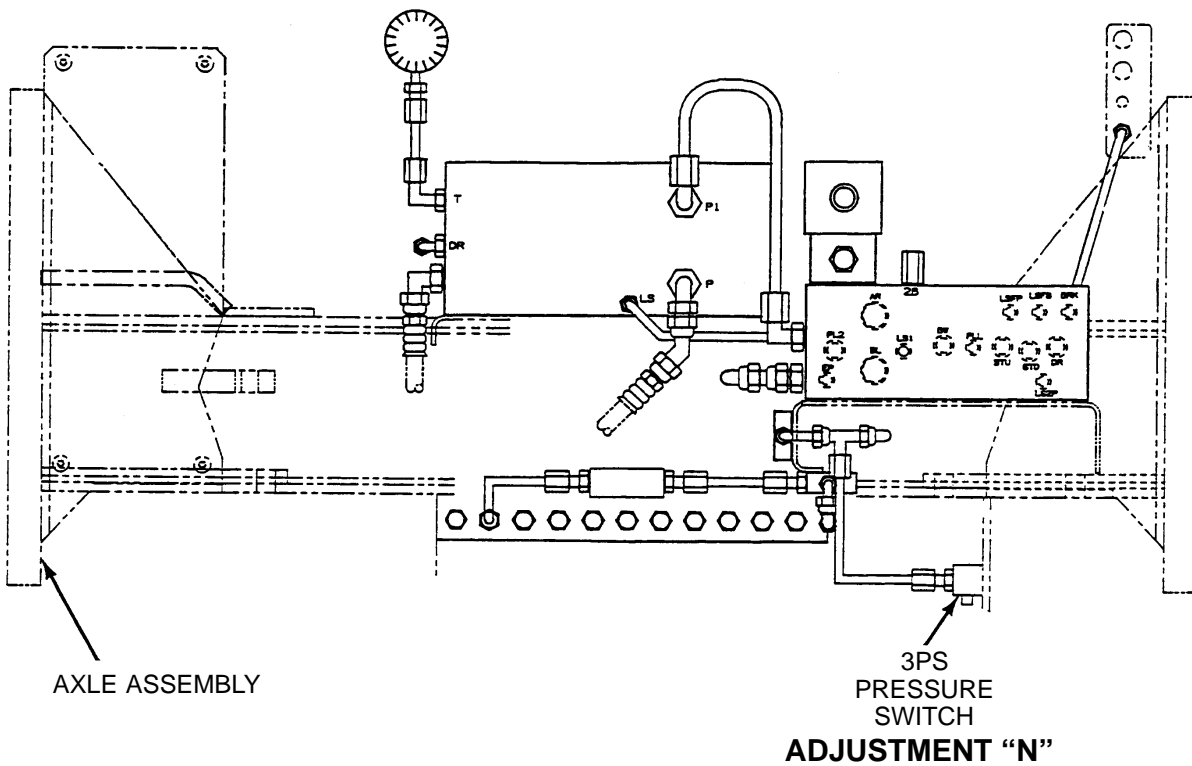
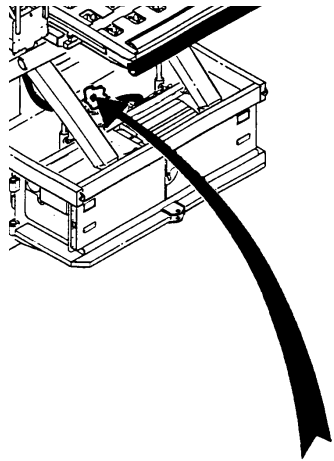


Figure 36
BOGY WHEEL PRESSURE SWITCH

O. Propel Board Preliminary Adjustment (Figure 37)

NOTE: An assistant is required for this procedure.

- (1) Open bridge panel door to obtain access to propel board (propel board is located on door of bridge panel).
- (2) Connect a digital voltmeter to propel board terminal strip.
 - (a) Black (-) lead to terminal marked "1"
 - (b) Red (+) lead to terminal marked "158"

COMMANDER

PROPULSION ADJUSTMENT

NOTES: UNIT IS FACTORY PRESET AND SHOULD NOT REQUIRE ADJUSTMENTS, HOWEVER, IF ADJUSTMENTS ARE NECESSARY FOLLOW THE STEPS BELOW. ADJUSTMENTS MAY CHANGE SLIGHTLY. RECHECK SETTINGS ONCE STEP 9 IS COMPLETED.

1. SELECT "DRIVE MODE", "SNAIL SPEED", AND "FWD".
2. AFTER "PROPEL ENABLE" LIGHT ON - TURN OFF ENGINE.
3. TURN PARK BRAKE SWITCH TO "OFF".
4. TURN IGN. SWITCH TO "ON" AND HOLD START ENABLE SWITCH TO "NORMAL".
5. ATTACH VOLTMETER LEAD (+) TO TB-158, AND LEAD (-) TO TB-1.
6. TO ADJUST SPEEDS, TURN TRIMPOTS:

INCREASE DECREASE

NOTE: TRIMPOTS ARE 30 TURN POTS.

ADJUSTING LO (REF. VOLTAGE APPROXIMATELY 4V.)

7. DEPRESS FOOTPEDAL UNTIL VOLTMETER JUST STARTS TO SHOW A READING. TURN "LO" TRIMPOT ON 1VC.

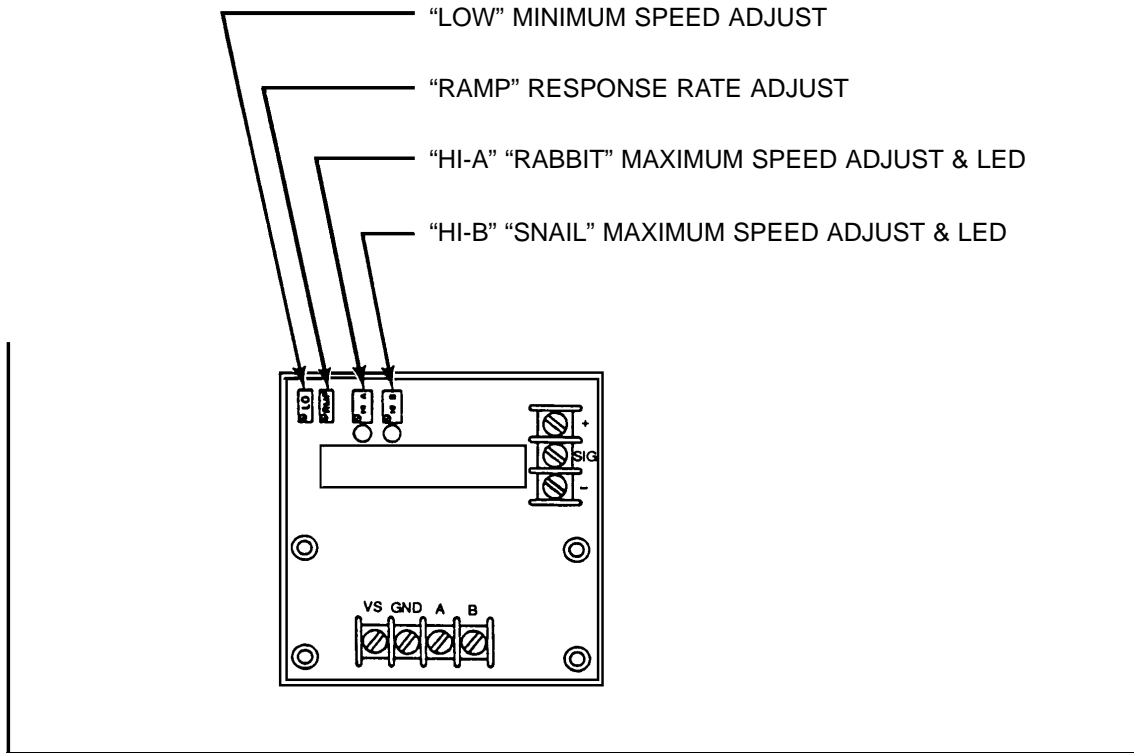
ADJUSTING HI-A (REF. VOLTAGE APPROXIMATELY 12.5V)

8. SELECT "RABBIT" SPEED. FULLY DEPRESS FOOTPEDAL. TURN "HI-A" TRIMPOT ON 1VC.

ADJUSTING HI-B (REF. VOLTAGE APPROXIMATELY 7.3V)

9. SELECT "SNAIL" SPEED. FULLY DEPRESS FOOTPEDAL. TURN "HI-B" TRIMPOT ON 1VC.

NOTE: An assistant is needed to hold START ENABLE SWITCH and push foot pedal.



GENERAL INFORMATION

FEATURE	FUNCTION	PRELIMINARY SETTING
"RAMP" TRIMPOT	RESPONSE RATE ADJUST (NOT USED)	N/A
"HI B" Trimpot	"SNAIL" Maximum Speed Adjust	Approximately 7.3V
"HI B" LED	"ON" during SNAIL Output	
"HI A" Trimpot	"RABBIT" Maximum Speed Adjust	Approximately 12.5V
"HI A" LED	"ON" during RABBIT Output	
"LOW" Trimpot	Minimum Speed Adjust	4 ± 0.5 Volts

Figure 37
PROPEL BOARD ADJUSTMENTS

P. Propulsion Performance Adjustment (Figure 37)

NOTE: An assistant is required for this procedure. Hydraulic oil must be at normal operating temperature.

NOTE: Loader performance tests are to be made on smooth, hard, dry and level surface.

PROPULSION PERFORMANCE SPECIFICATIONS

RABBIT	30 m (100 ft)	10-12 sec
SNAIL	30 m (100 ft)	60-70 sec

- (1) Mark a measured distance of 30 m (100 ft) on surface where performance test will be made.
- (2) Have assistant drive loader in RABBIT mode through measured distance with accelerator fully depressed and record time to drive 30 m (100 ft).

NOTE: Loader must be at maximum speed when traveling through measured distance.

- (3) Rabbit (high speed) adjustment.

Turn "HI-A" trimpot clockwise to increase speed and counterclockwise to decrease speed. Make adjustments in 1/4-turn increments until propulsion speed is within specifications of 30 m (100 ft) in 10-12 seconds.

NOTE: If power unit lugs down (looses rpm) continuously when driving straight, or when "cornering," turn "HI-A" trimpot counterclockwise in 1/4-turn increments to decrease maximum speed. Lugging condition can be eliminated and propulsion speed will remain within specifications.

- (4) Have assistant drive loader in SNAIL mode through measured distance with accelerator fully depressed and record time to drive 30 m (100 ft).

NOTE: Loader must be at maximum speed when traveling through measured distance.

- (5) Snail (low speed) adjustment.



Turn "HI-B" trimpot clockwise to increase speed and counterclockwise to decrease speed. Make adjustments in 1/4-turn increments until propulsion speed is within specification of 30 m (100 ft) in 60-70 seconds.

- (6) Whenever an adjustment is made to "HI-A" trimpot in RABBIT speed, it is mandatory that SNAIL speed be rechecked. When an adjustment is made to "HI-B" trimpot, RABBIT speed must be rechecked. The adjusting of one trimpot has an effect on the other trimpot; therefore, it may be necessary to readjust each trimpot a number of times until both trimpots are correctly adjusted to obtain the specified propel speeds in RABBIT and SNAIL.
- (7) Shut power unit down, close main panel door and secure with retention bolts.
- Q. Platform Lift Adjustment (Figure 38)

FMC **COMMANDER**

PLATFORM LIFT ADJUSTMENT

1. SELECT "OPERATE" MODE AND "NEUTRAL".
2. LOWER PLATFORM UNTIL FULLY DOWN.
3. TURN OFF ENGINE, TURN IGNITION SWITCH TO "ON".
4. ATTACH VOLTMETER, AS FOLLOWS: LEAD (+) TO TB-158, LEAD (-) TO TB-1.
5. TO ADJUST LIFT SPEEDS AND RAMP, TURN TRIMPOTS:

 INCREASE DECREASE

NOTE: TRIMPOTS ARE 30 TURN POTS.

ADJUSTING SLOW SPEED - (REF. VOLTAGE APPROXIMATELY 11V.)

6. HOLD SWITCH "A" AND "B" IN THE UP POSITION. TURN "LO" TRIMPOT ON 2VC.

ADJUSTING FAST SPEED - (REF. VOLTAGE APPROXIMATELY 17V.)

7. HOLD SWITCH "A" IN THE UP POSITION. TURN "HI" TRIMPOT ON 2VC.

ADJUSTING RAMP - (REF. RAMP APPROX. 3 SEC.)

8. TURN "RAMP" TRIMPOT ON 2VC. **NOTE: RAMP MAX=5 SEC. APPROX 5 TURNS PER SEC.**

PERFORMANCE ADJUSTMENT: START ENGINE & RAISE PLATFORM TO INTERFACE HEIGHT. ADJUST "LO" TRIMPOT UNTIL PLATFORM FOLLOWS THE BRIDGE UP SMOOTHLY A MINIMUM OF 1 FOOT.

NOTE: After hydraulic adjustments have been made (ref. Sec. 2-3, para. J., page 27), set electrical voltages (trimpots on 2VC) to approx. given settings (as shown on decal) so that the platform follows the bridge speed.

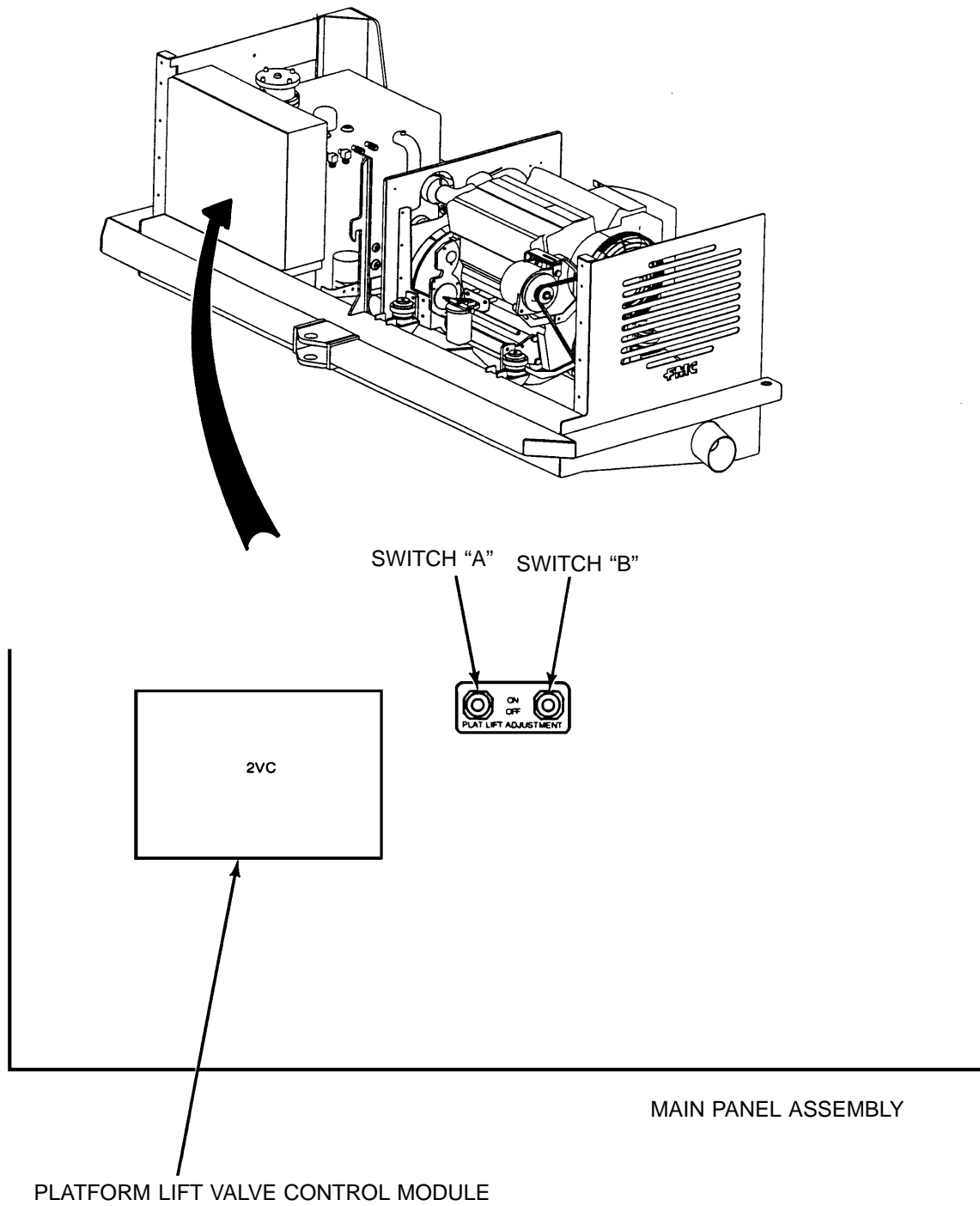


Figure 38
PLATFORM LIFT ADJUSTMENT

Section 4. Troubleshooting

1. GENERAL



WARNING

TROUBLESHOOTING OF THIS EQUIPMENT SHOULD BE DONE ONLY BY QUALIFIED TECHNICIANS WHO ARE TRAINED IN THE USE AND OPERATION OF THE EQUIPMENT. THE MAIN DRIVE WHEELS MUST BE CHOCKED TO PREVENT LOADER MOVEMENT IN EITHER DIRECTION AND PLATFORM MAINTENANCE STANDS MUST BE INSTALLED FOR SUPPORT WHENEVER PLATFORM IS RAISED FOR MAINTENANCE OR ADJUSTMENTS. FAILURE TO FOLLOW GOOD SAFETY PRACTICES DURING MAINTENANCE AND TROUBLESHOOTING PROCEDURES COULD RESULT IN DEATH OR SERIOUS INJURY TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT.

The information contained in this section is provided as a guide to assist technical service personnel in troubleshooting operational malfunctions in the COMMANDER 15 CONTAINER/PALLET LOADER Hydraulic and Electrical Systems. The information should be used in conjunction with the Troubleshooting section, Schematics, Reference Designators, and Adjustment Procedures incorporated in this manual.

- A. Before starting troubleshooting procedures, verify that the correct operating procedures were used. An incorrect operating procedure can cause apparent malfunctions.
- B. The most important practice to observe when working on the hydraulic system is cleanliness. Serious damage can result quickly from foreign material (contamination) in the hydraulic system. When a hydraulic system is opened, cap or plug all ports and openings to keep foreign material and moisture-laden air (contamination) from entering the system. DO NOT use Teflon tape or pipe compound on straight threads.

2. INTRODUCTION

The FMC COMMANDER is a hydraulically operated, electrically controlled aircraft pallet/container loader. The hydraulic and electrical systems are complex and require a thorough understanding to determine the cause of a malfunction, or failure of a component. System diagnosis is mandatory to locate a component that is out of adjustment or has failed, in the minimum amount of time.

3. HYDRAULIC SYSTEM

- A. The hydraulic system is a closed-center system with a load-sensing control that automatically regulates pump displacement. When there is no system demand, the pump stands by at near zero flow and low pressure. When the system demands flow, the pump delivers only the flow required by the system at a pressure required to move the load, plus standby pressure.

- B. A heavy-duty, liquid-filled pressure gauge is installed at the propel/lift manifold, and hydraulic system diagnosis is accomplished by observing the pressure readings on the gauge when a particular hydraulic circuit is actuated. The hydraulic schematics and adjustment procedures indicate the correct setting for each pressure adjustment.
- C. The first step in diagnosing a malfunction is to isolate the malfunction to the hydraulic system or to the electrical control system.

All solenoid actuated control valves in the hydraulic system are equipped with a manual override that can be used to actuate the valve should there be a loss of electrical current. The manual override shifts the valve spool and permits oil flow for the loader function to operate. The pressure gauge can be observed for the correct pressure reading for the system (loader function) in use.

NOTE: To obtain oil flow and pressure at the valve assemblies on the bridge and platform, it is necessary to actuate the pilot valve with the directional control valve in hydraulic circuits with a pilot valve.

- D. Use the Hydraulic Troubleshooting Guide (Figure 1) to assist in locating the cause of a malfunction when incorrect pressure or incorrect flow has been determined.
- E. Solenoid Valve, Hydraulic Locations (Figure 2, Figure 3)

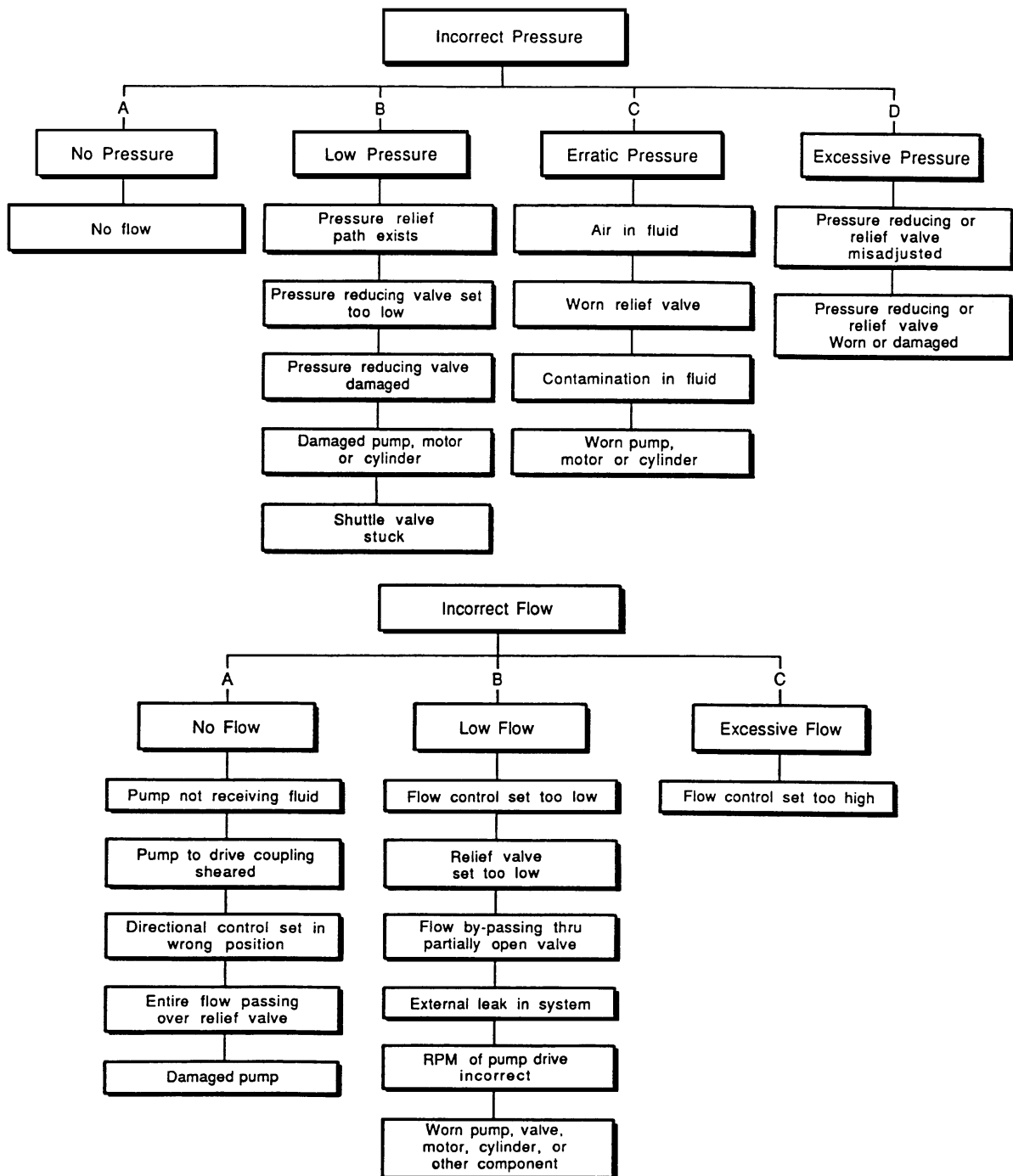


Figure 1
HYDRAULIC TROUBLESHOOTING GUIDE

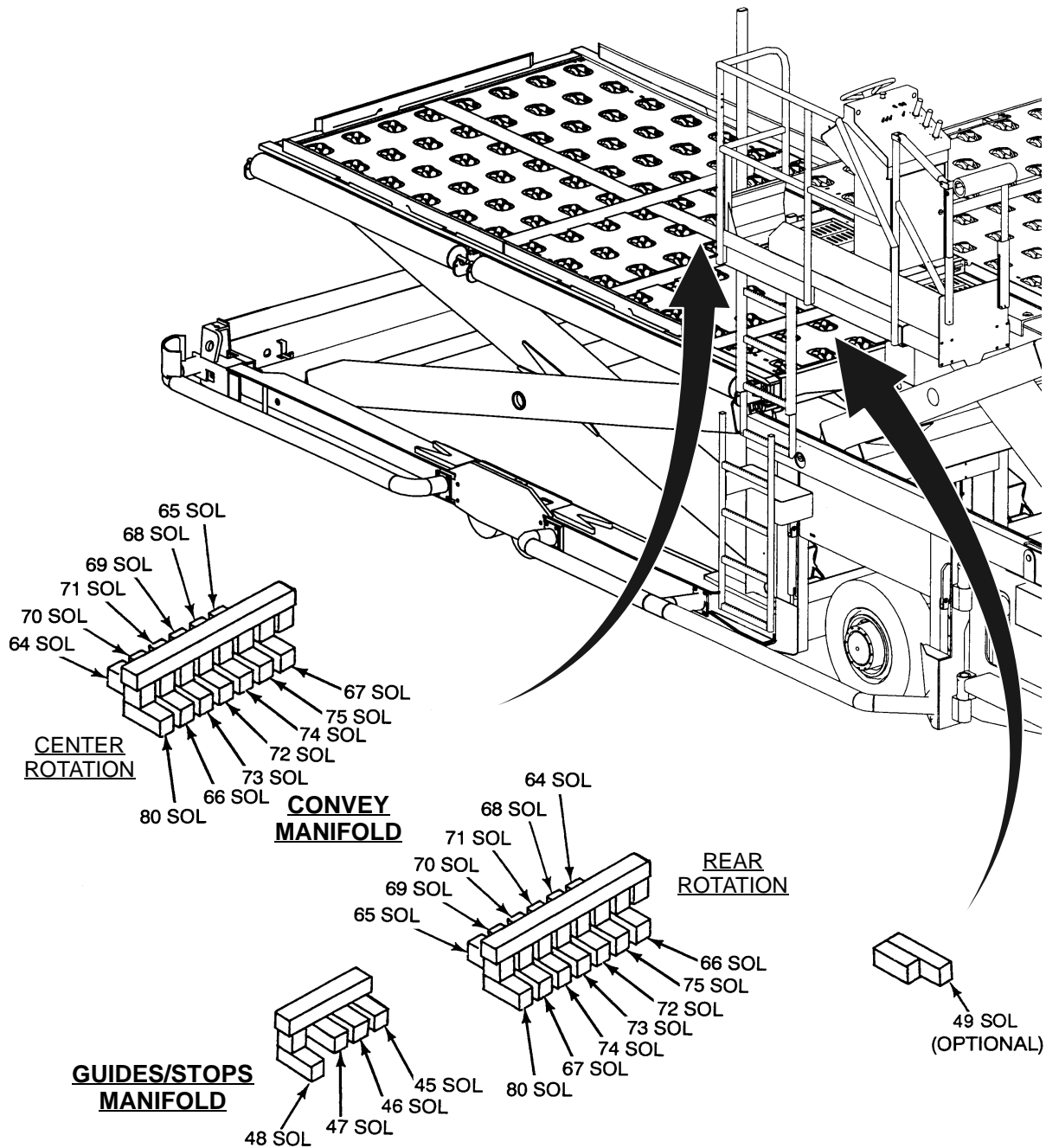


Figure 2
SOLENOID VALVE LOCATIONS

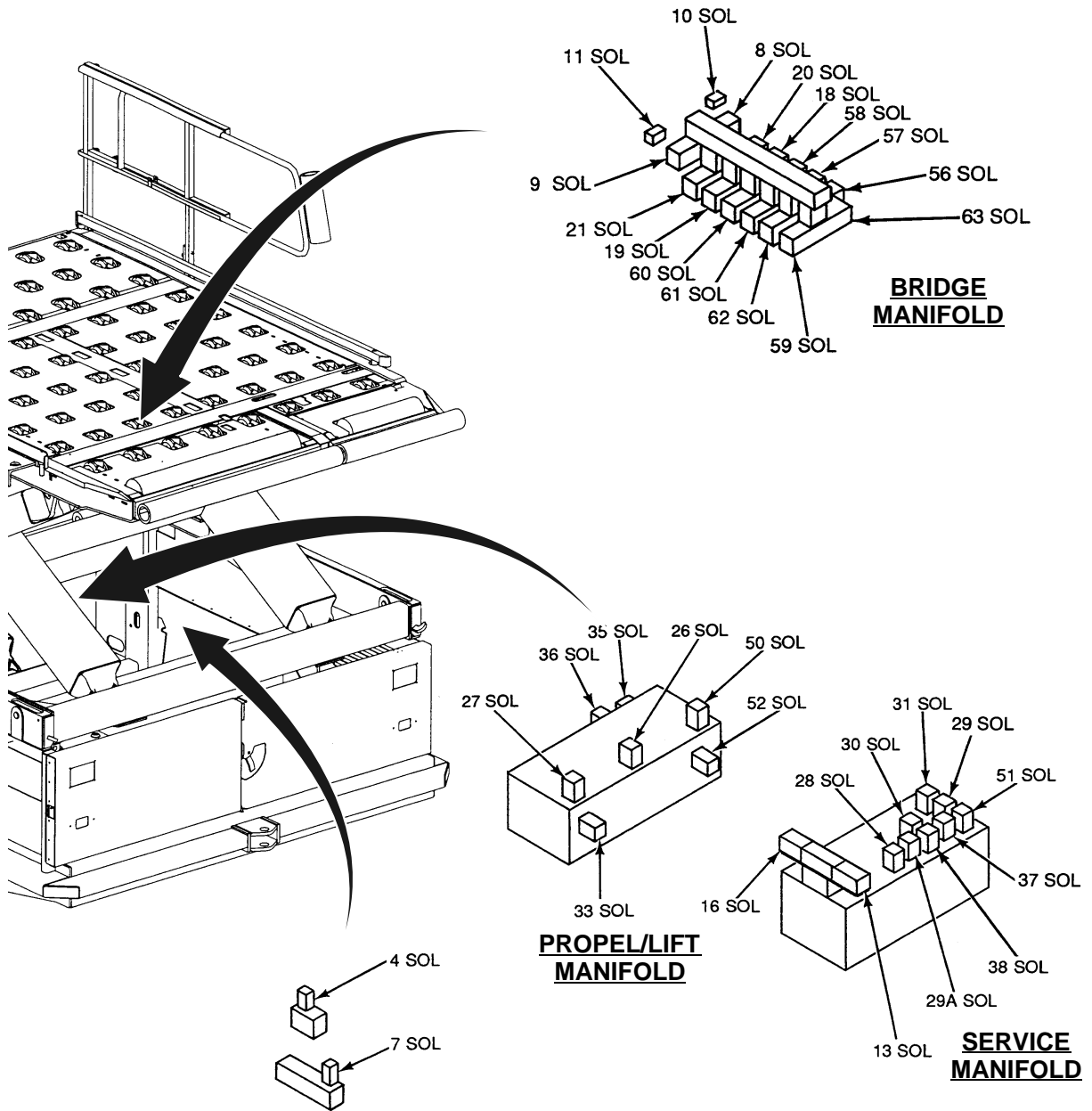


Figure 3
SOLENOID VALVE LOCATIONS

F. Service Manifold Assembly, Hydraulic (Figure 4 thru Figure 23)

All hydraulic components and circuits in the service manifold assembly are shown on pages 8-27. Pages 8 and 9 show the entire assembly with all components, and each following page shows only those components which are used in the performance of an individual hydraulic function.

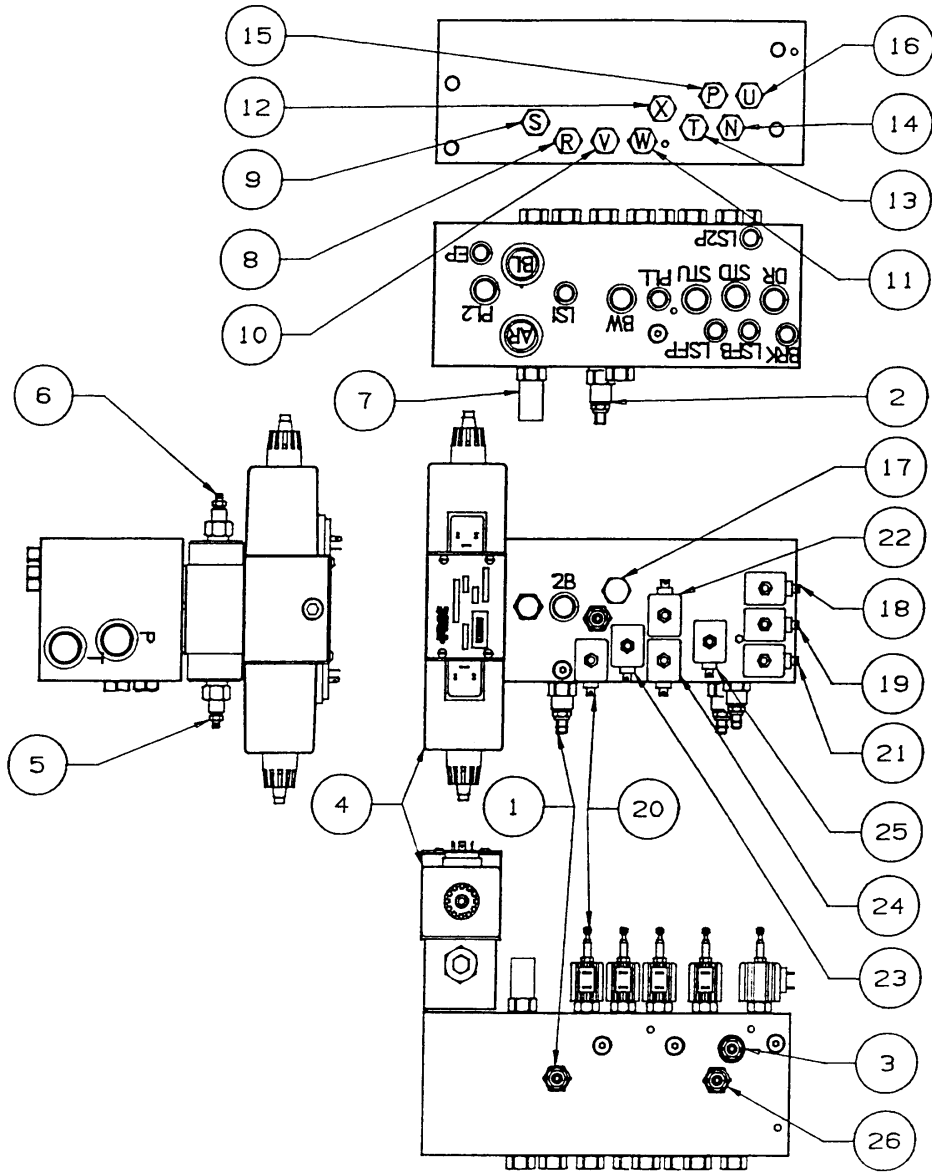
The left side of each page shows an assembly drawing giving the location of each component on the body, and the right side shows the same components in a schematic of ISO standard symbols.

<u>PAGE</u>	<u>DESCRIPTION</u>
8, 9	Service Manifold Assembly
10, 11	Bridge Raise Circuit
12, 13	Bridge Lower Circuit
14, 15	Parking Brake Release Circuit
16, 17	Raise Chassis (Bogy Wheel Extend) Circuit
18, 19	Lower Chassis (Bogy Wheel Retract) Circuit
20, 21	Platform Lower – Pilot Signal
22, 23	Stabilizers Raise
24, 25	Stabilizers Lower
26, 27	Maintain Stabilizers Up While Propelling

These drawings will assist in troubleshooting each circuit and in locating the individual components on the manifold assembly.

NOTE: For correct installation torque values for all cartridges and plugs in this manifold, please refer to Parts List in Hydraulic Section 4-21, P/N 621-4877.

THIS PAGE INTENTIONALLY BLANK



NOTE:
 FOR CORRECT INSTALLATION TORQUE VALUES FOR ALL CARTRIDGES AND PLUGS IN THIS MANIFOLD, PLEASE REFER TO PARTS LIST IN HYDRAULIC SECTION 4-21, P/N 621-4877.

Figure 4
 SERVICE MANIFOLD ASSEMBLY

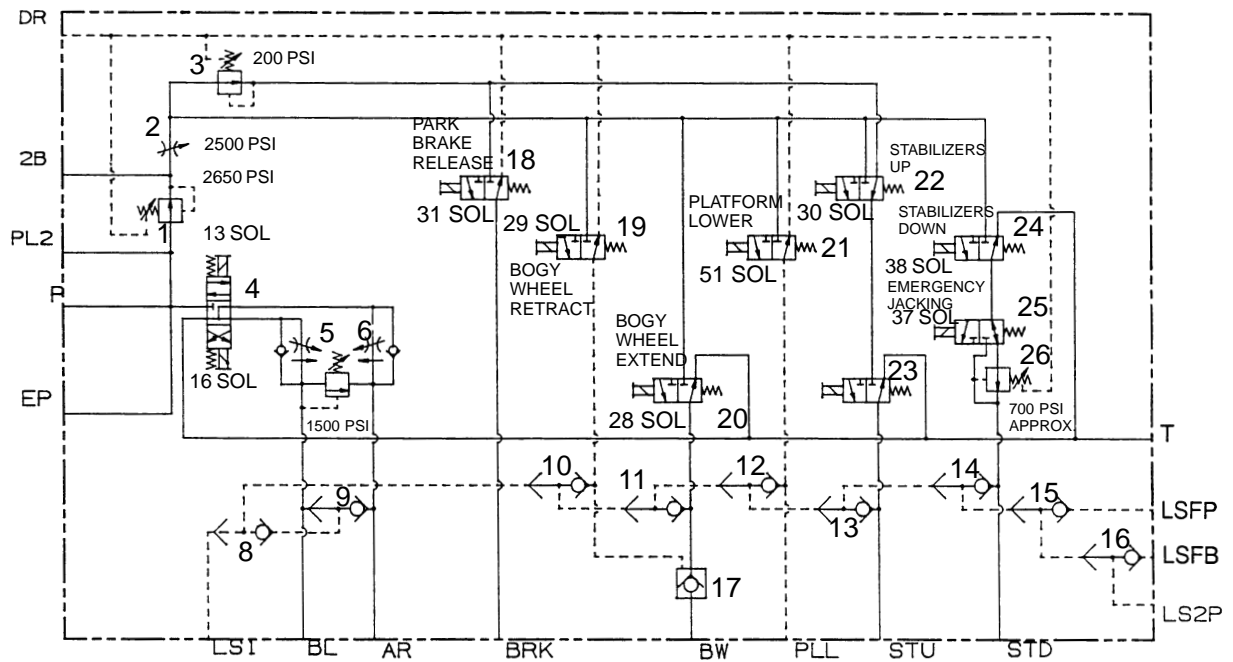


Figure 5
SERVICE MANIFOLD ASSEMBLY

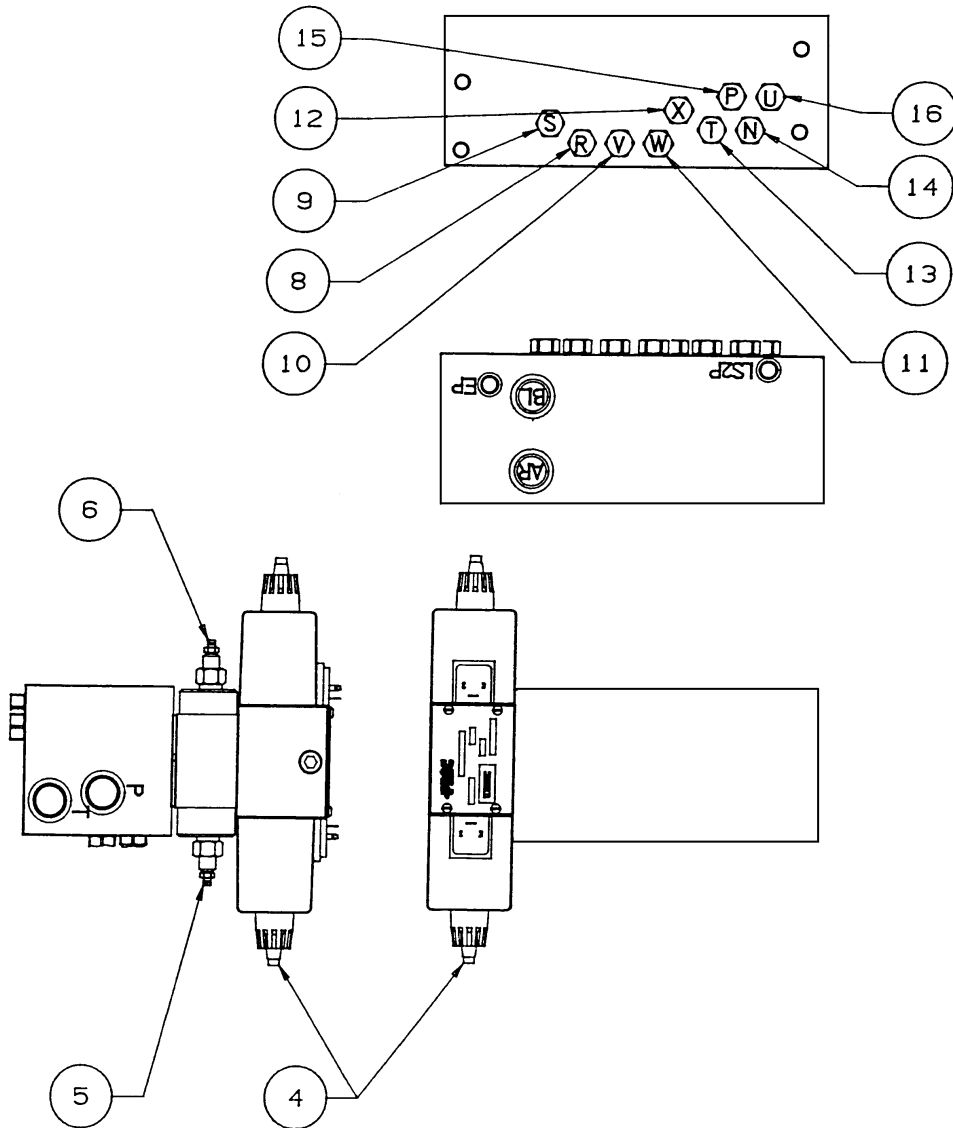


Figure 6
BRIDGE RAISE CIRCUIT

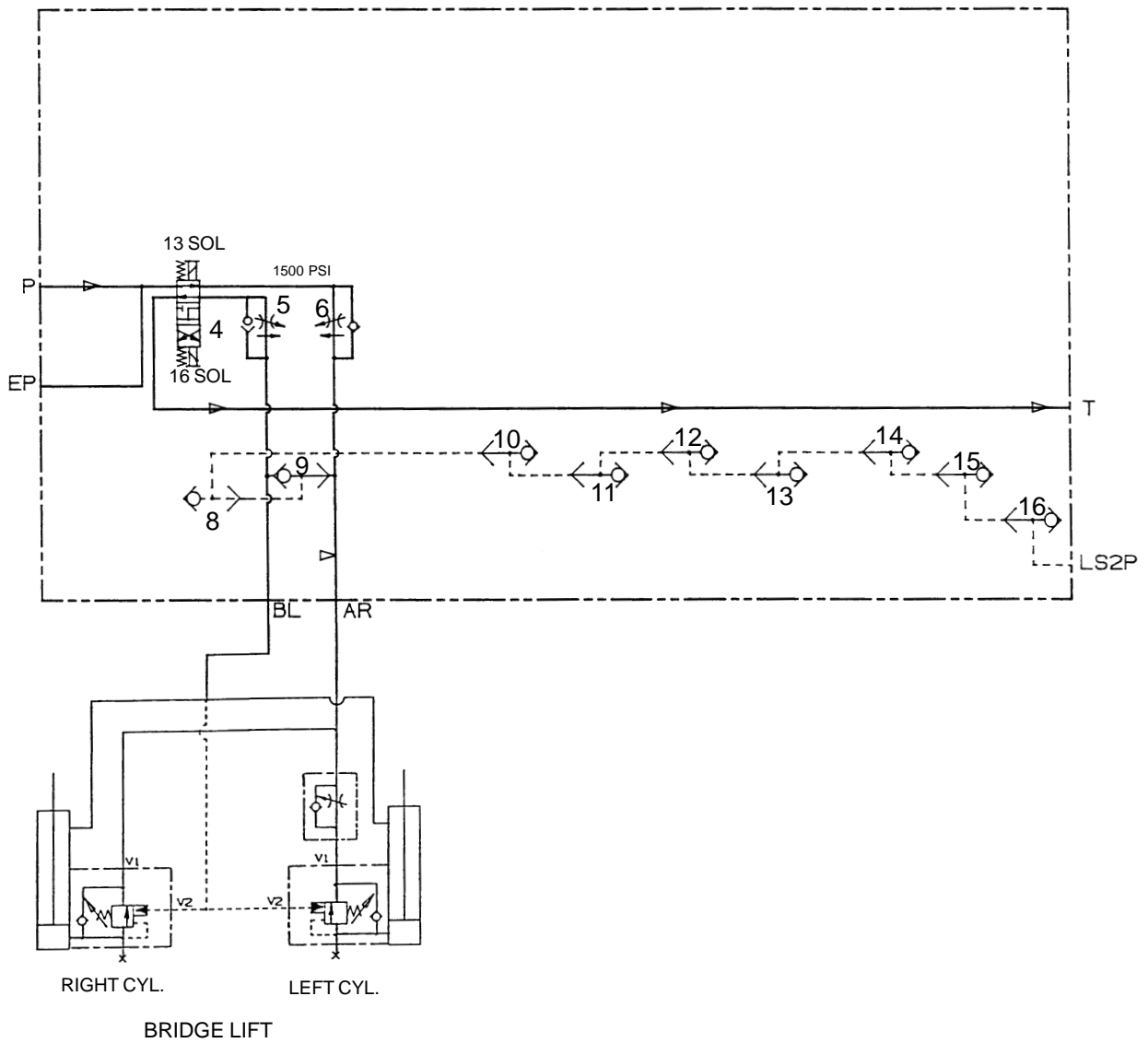


Figure 7
BRIDGE RAISE CIRCUIT

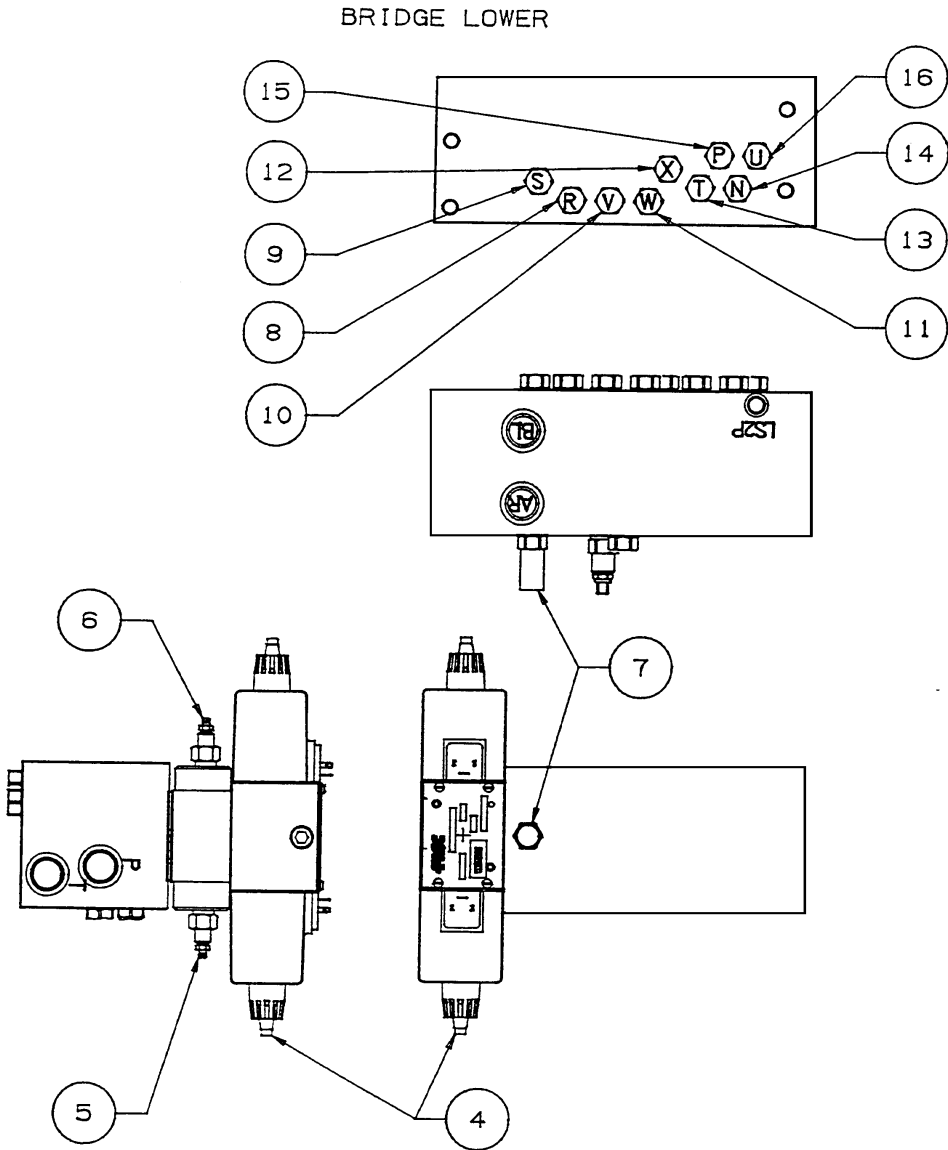


Figure 8
BRIDGE LOWER CIRCUIT

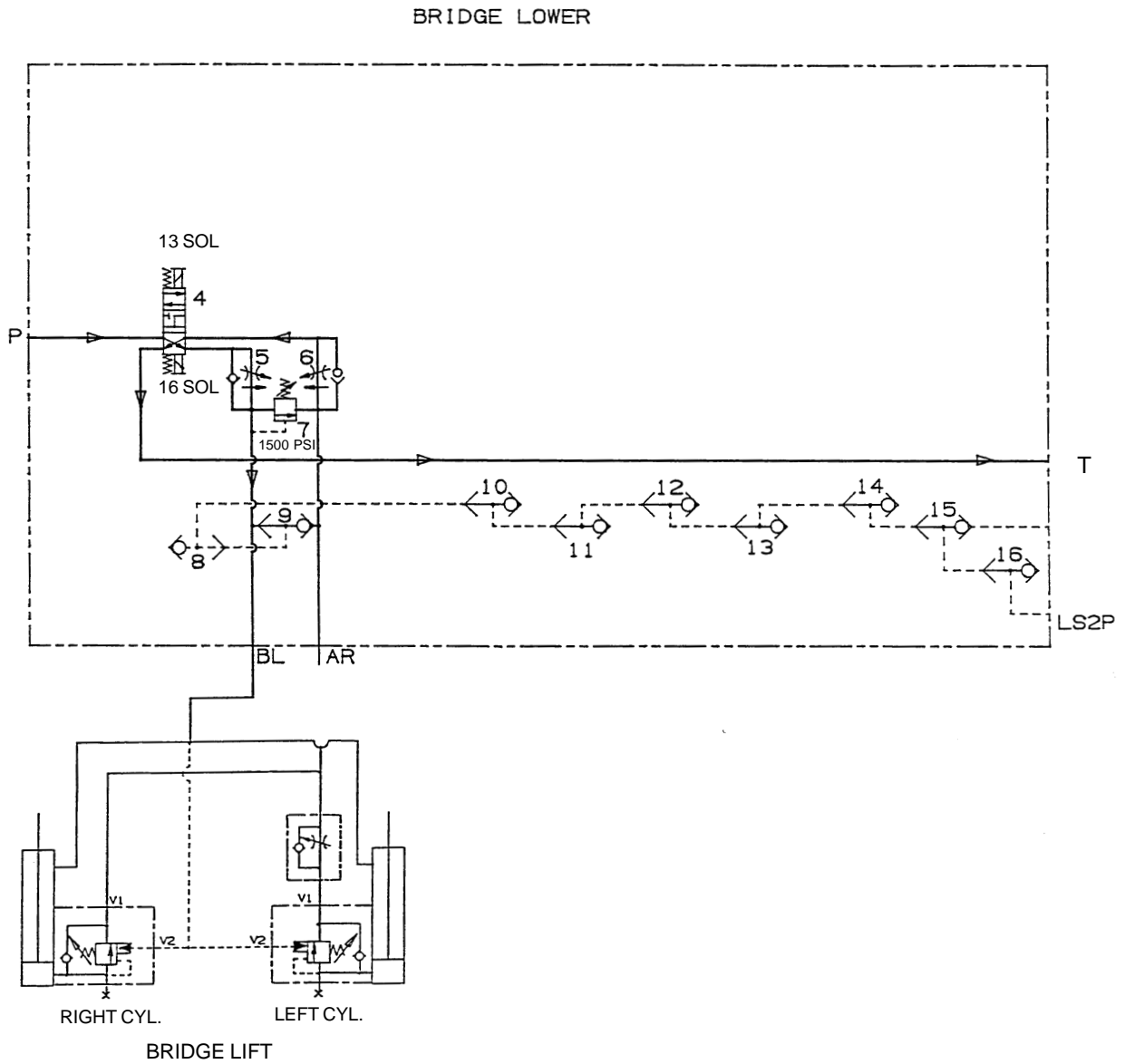


Figure 9
BRIDGE LOWER CIRCUIT

PARK BRAKE RELEASE

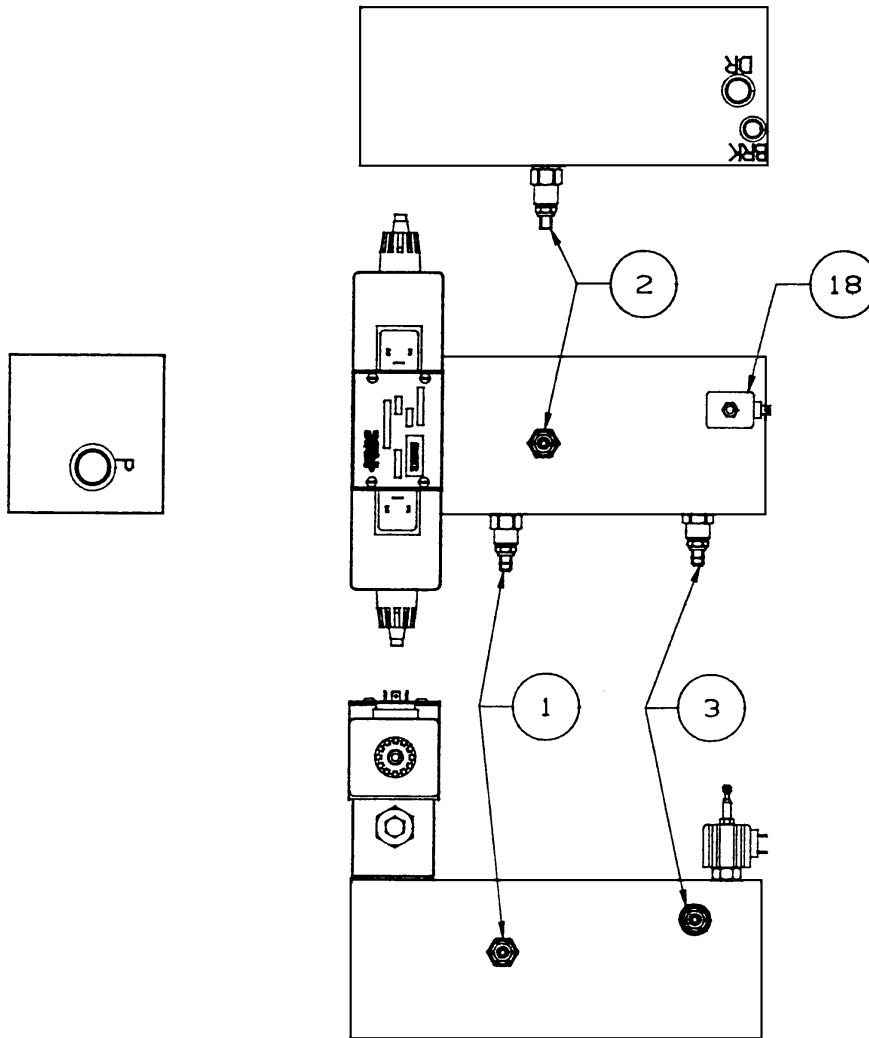


Figure 10
PARKING BRAKE RELEASE CIRCUIT

PARK BRAKE RELEASE

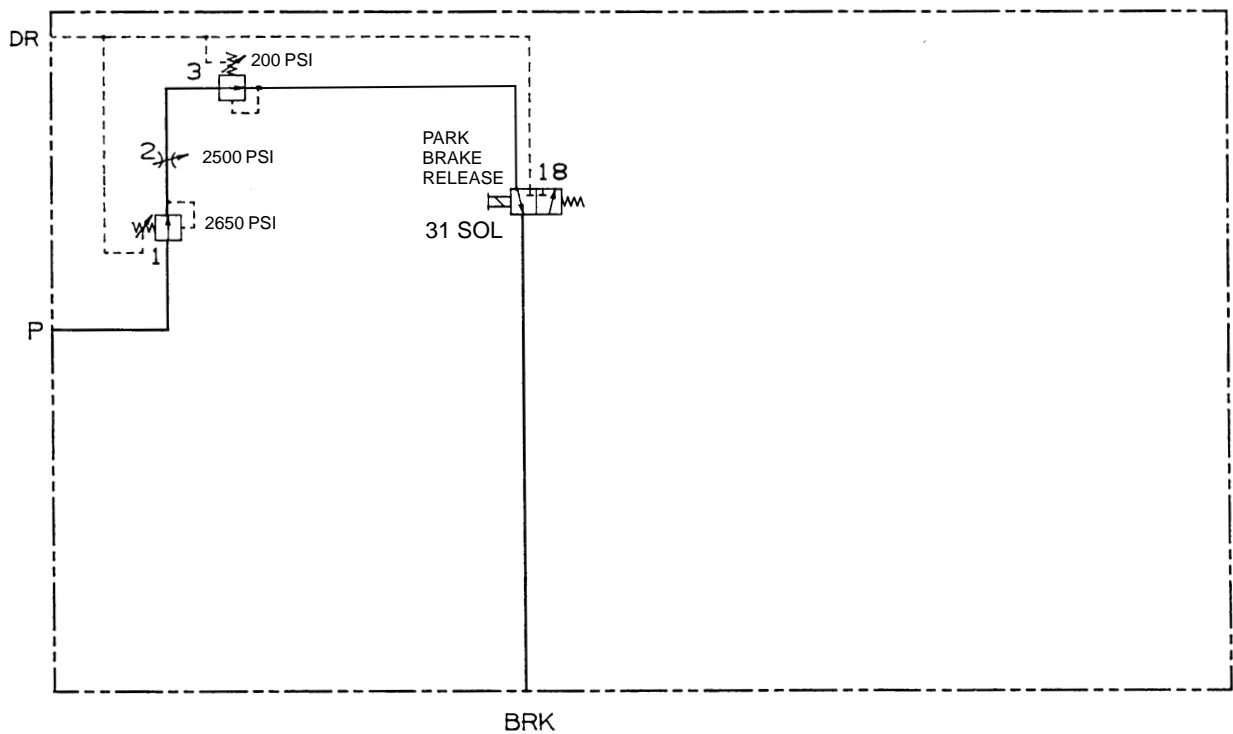


Figure 11
PARKING BRAKE RELEASE CIRCUIT

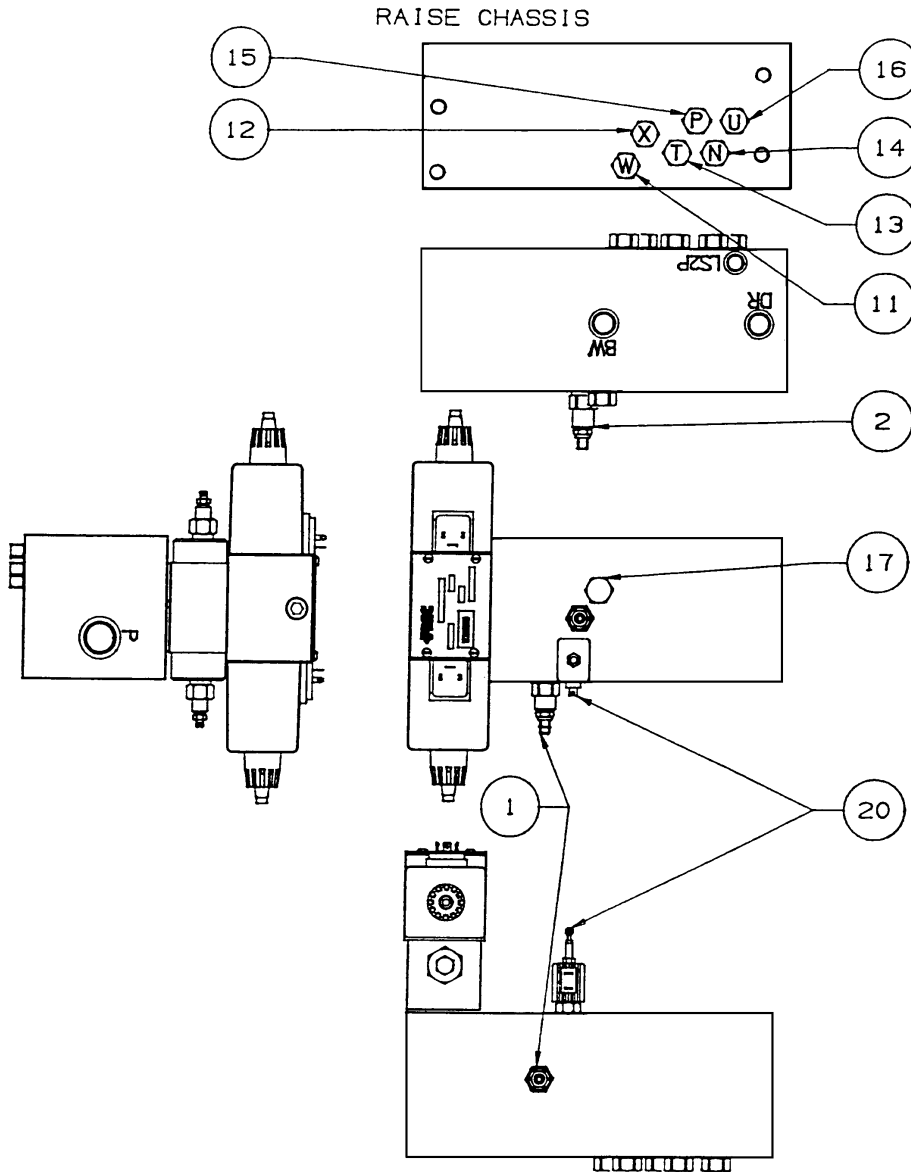


Figure 12
RAISE CHASSIS (BOGY WHEEL EXTEND) CIRCUIT

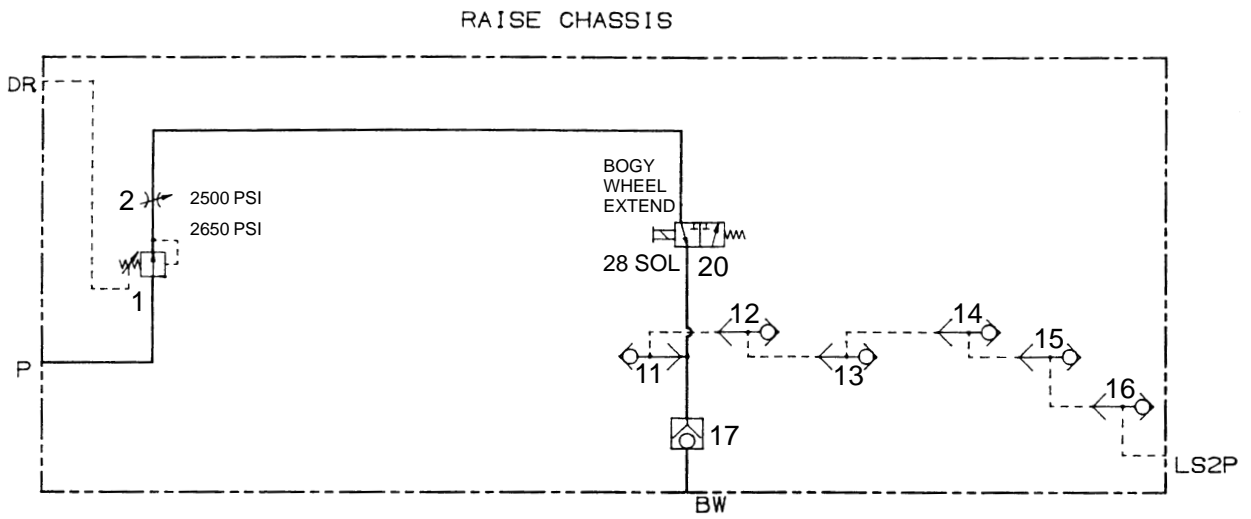


Figure 13
RAISE CHASSIS (BOGY WHEEL EXTEND) CIRCUIT

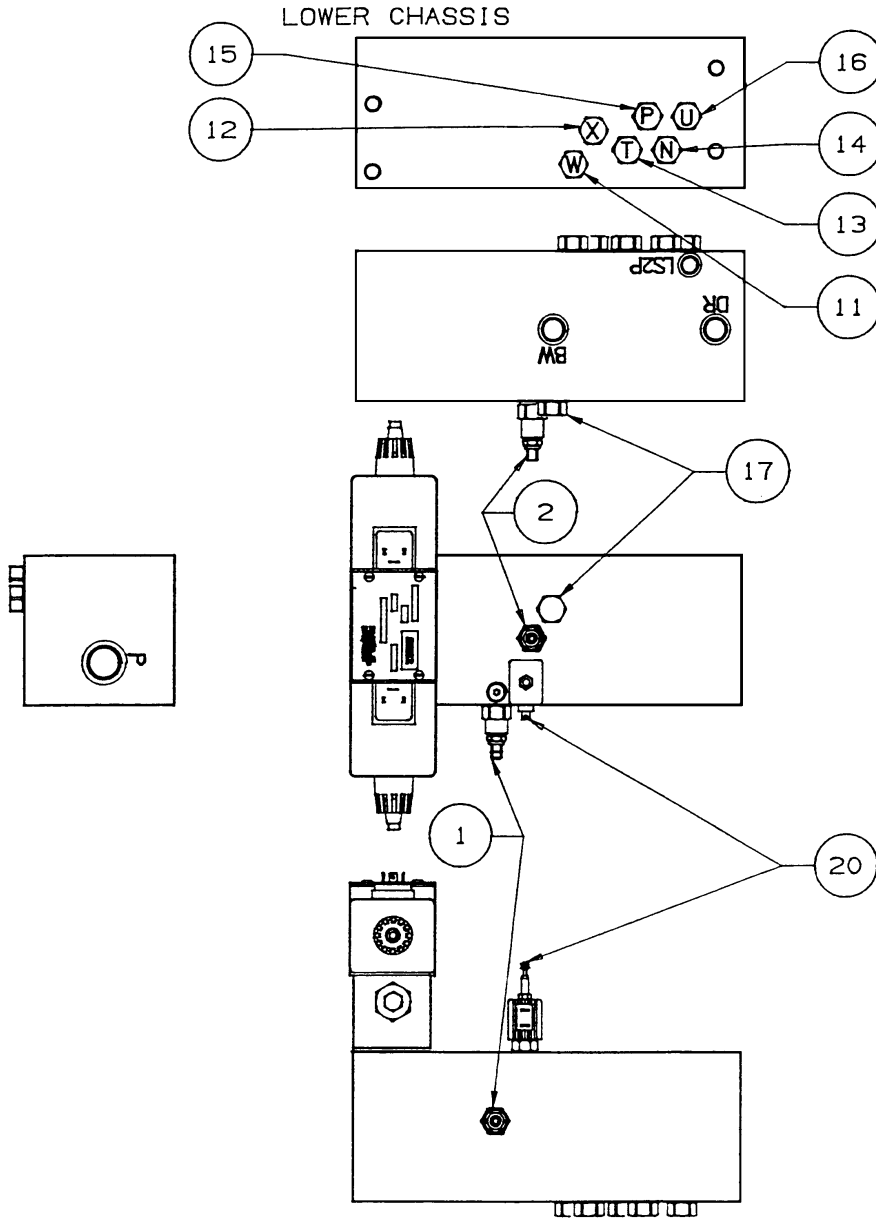


Figure 14
LOWER CHASSIS (BOGY WHEEL EXTEND) CIRCUIT

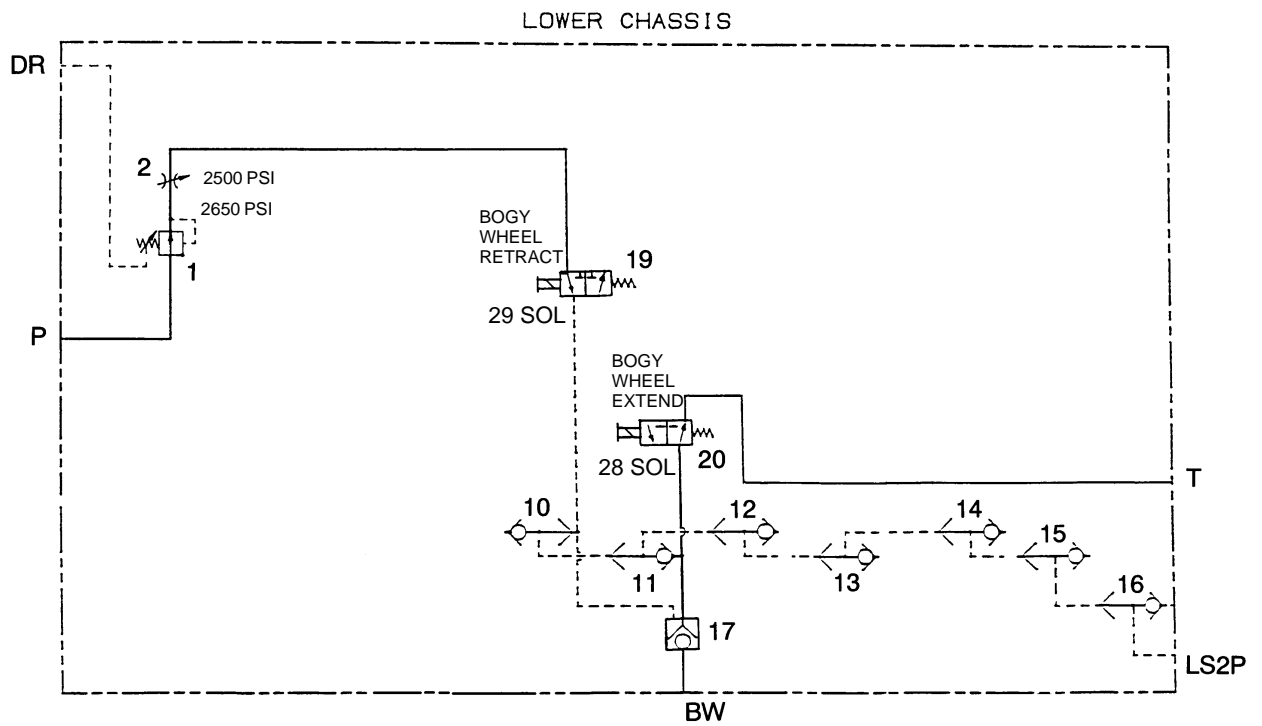


Figure 15
LOWER CHASSIS (BOGY WHEEL EXTEND) CIRCUIT

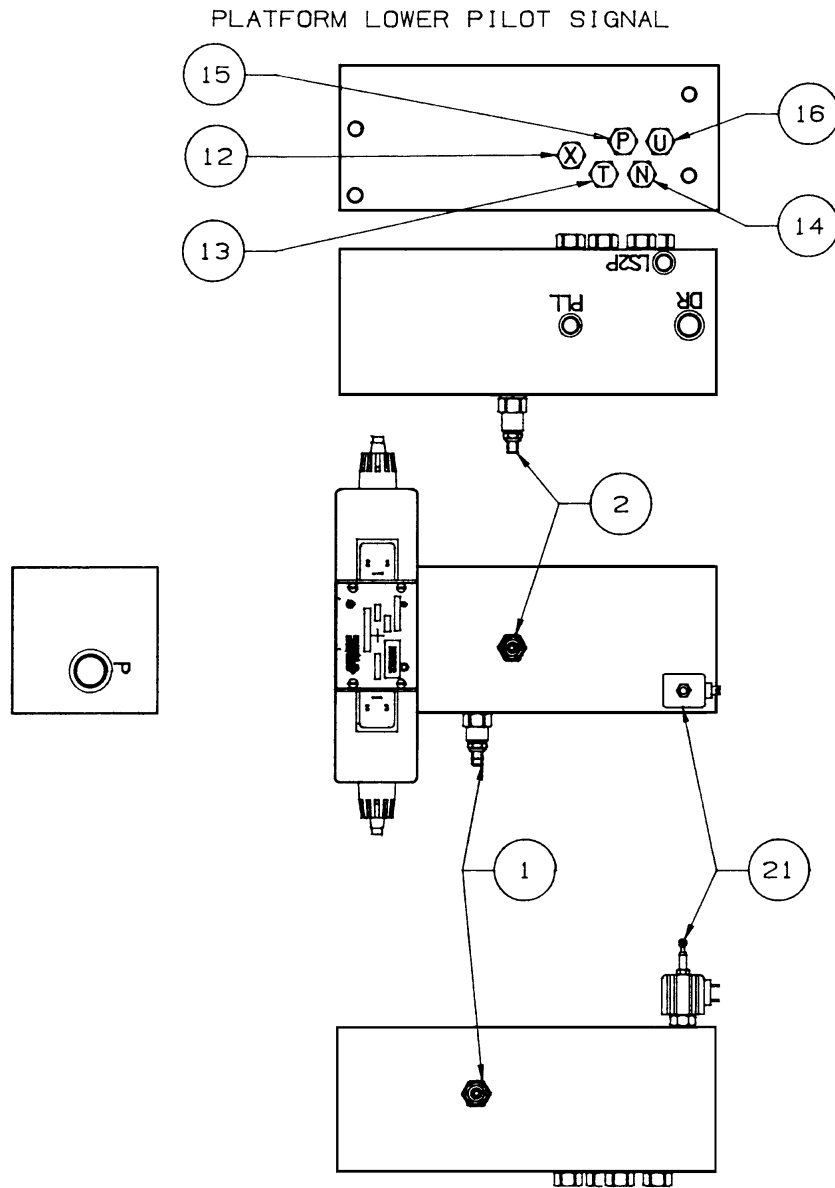


Figure 16
PLATFORM LOWER – PILOT SIGNAL

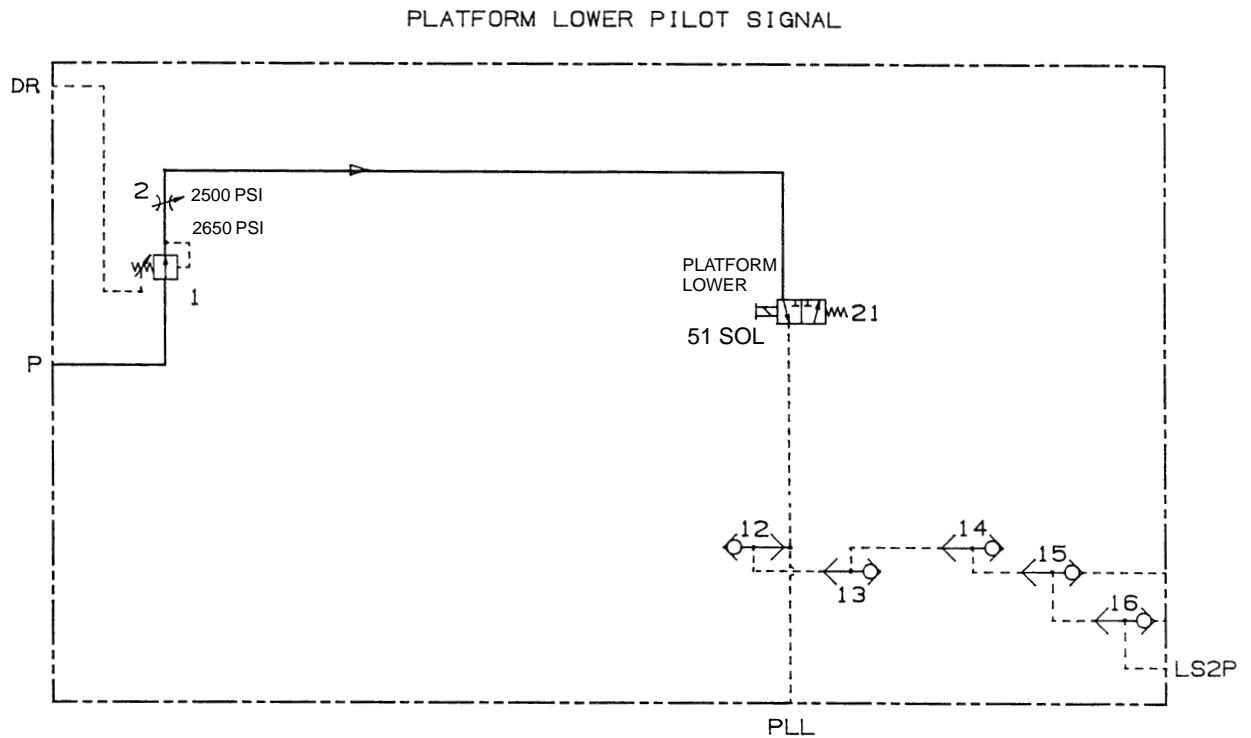


Figure 17
PLATFORM LOWER – PILOT SIGNAL

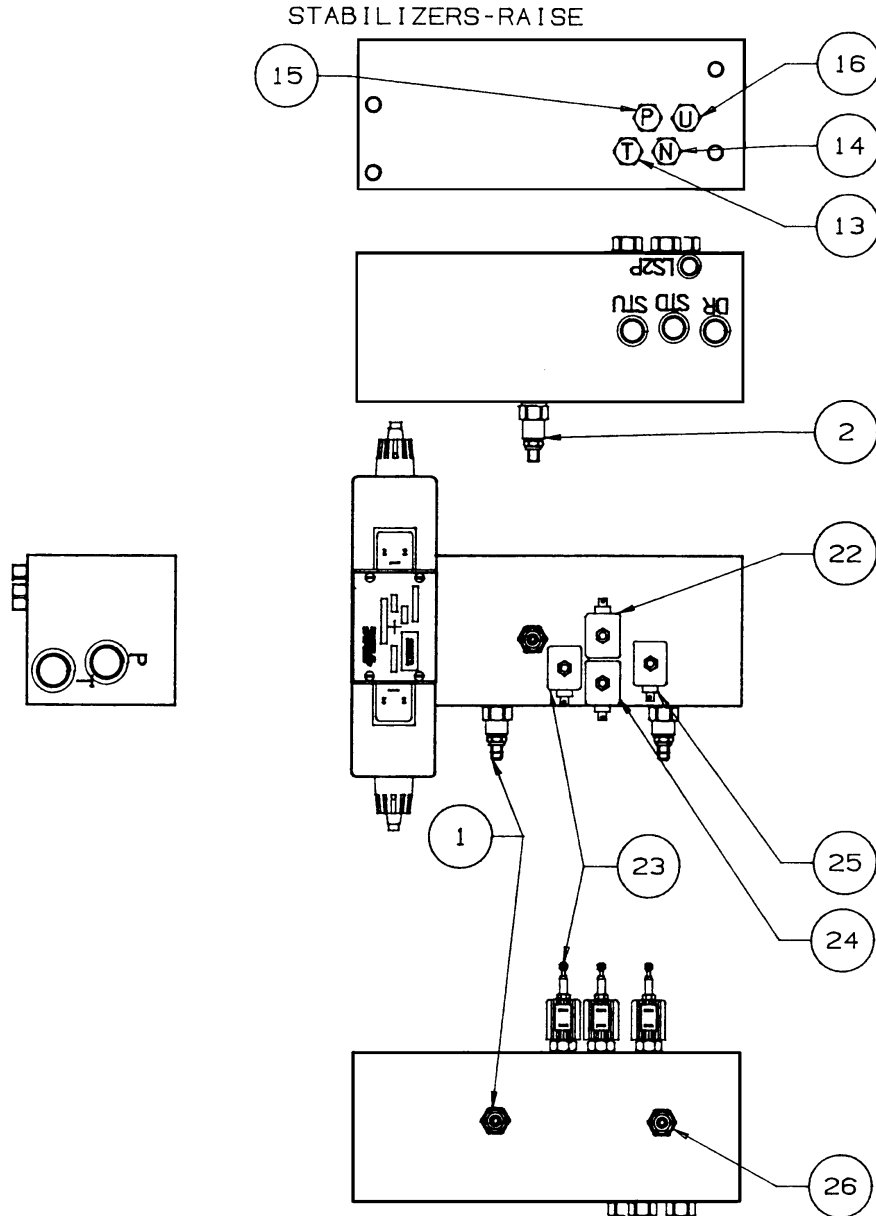


Figure 18
STABILIZER RAISE

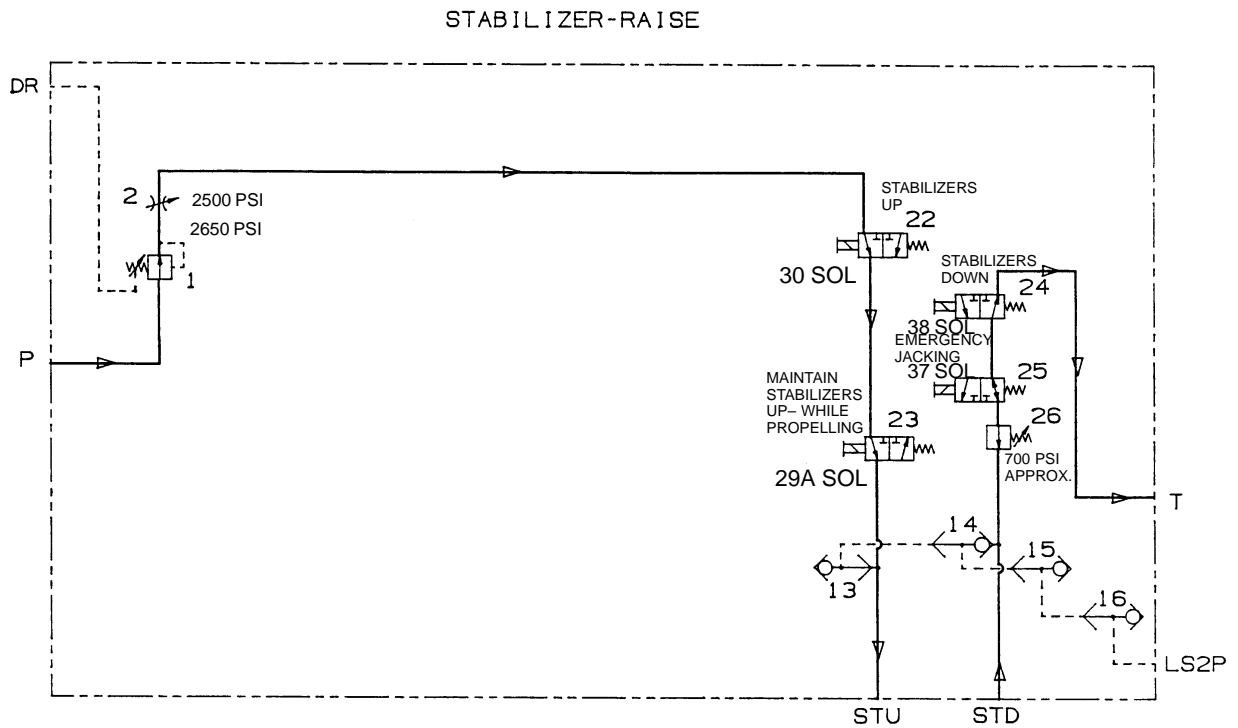


Figure 19
STABILIZER RAISE

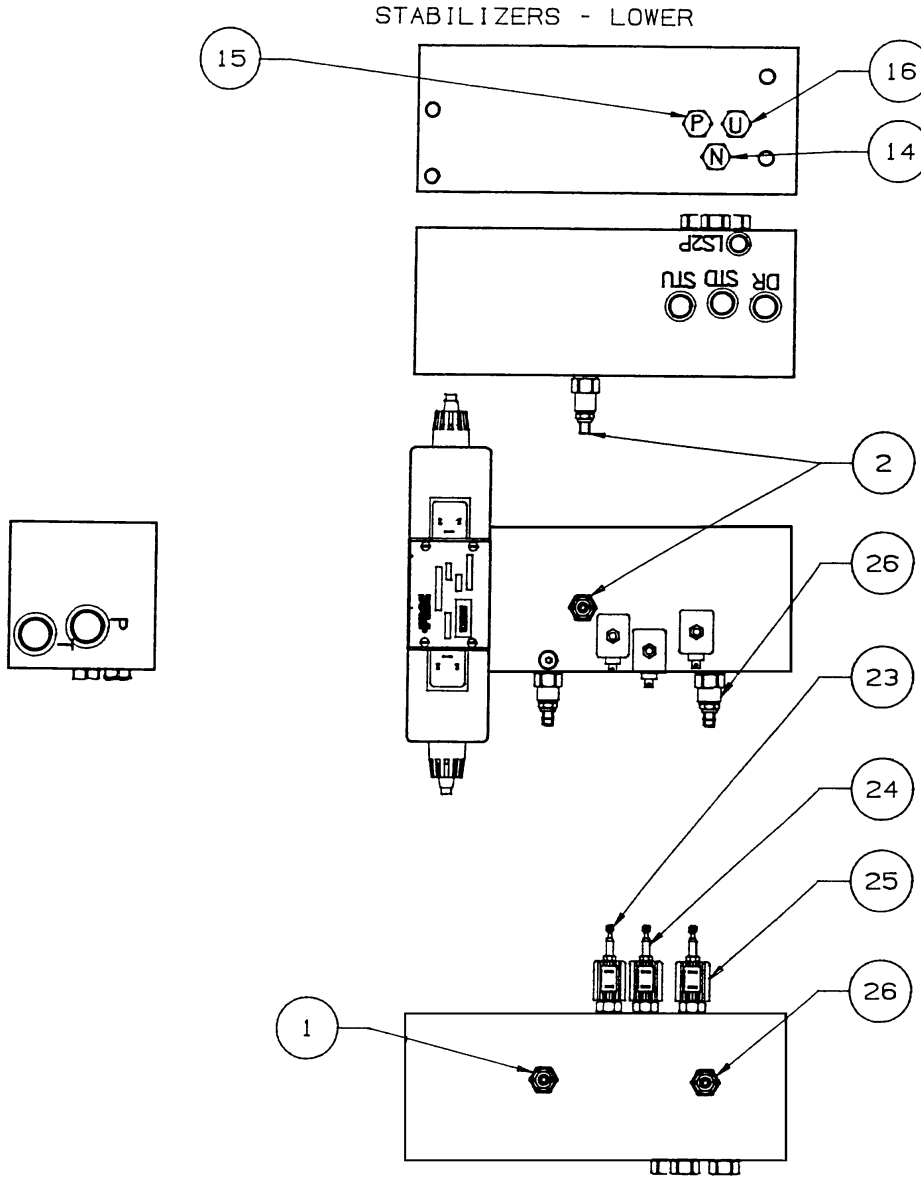


Figure 20
STABILIZER LOWER

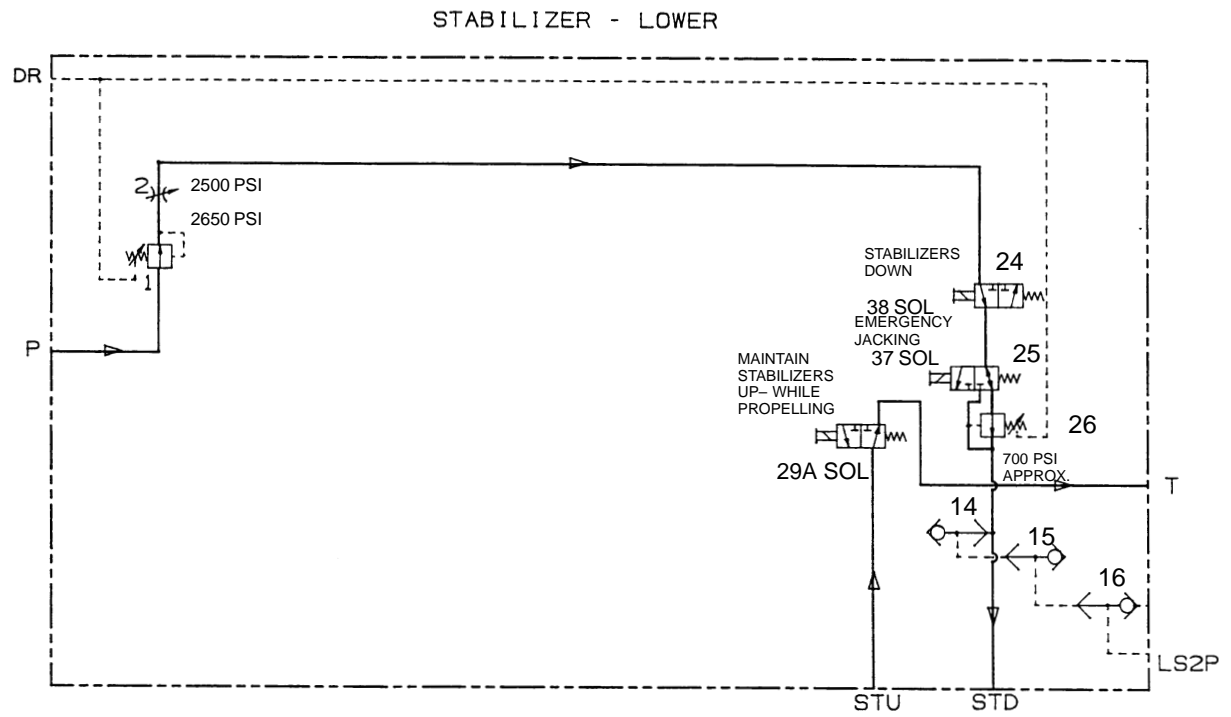


Figure 21
STABILIZER LOWER

MAINTAIN STABILIZERS UP
WHILE PROPELLING

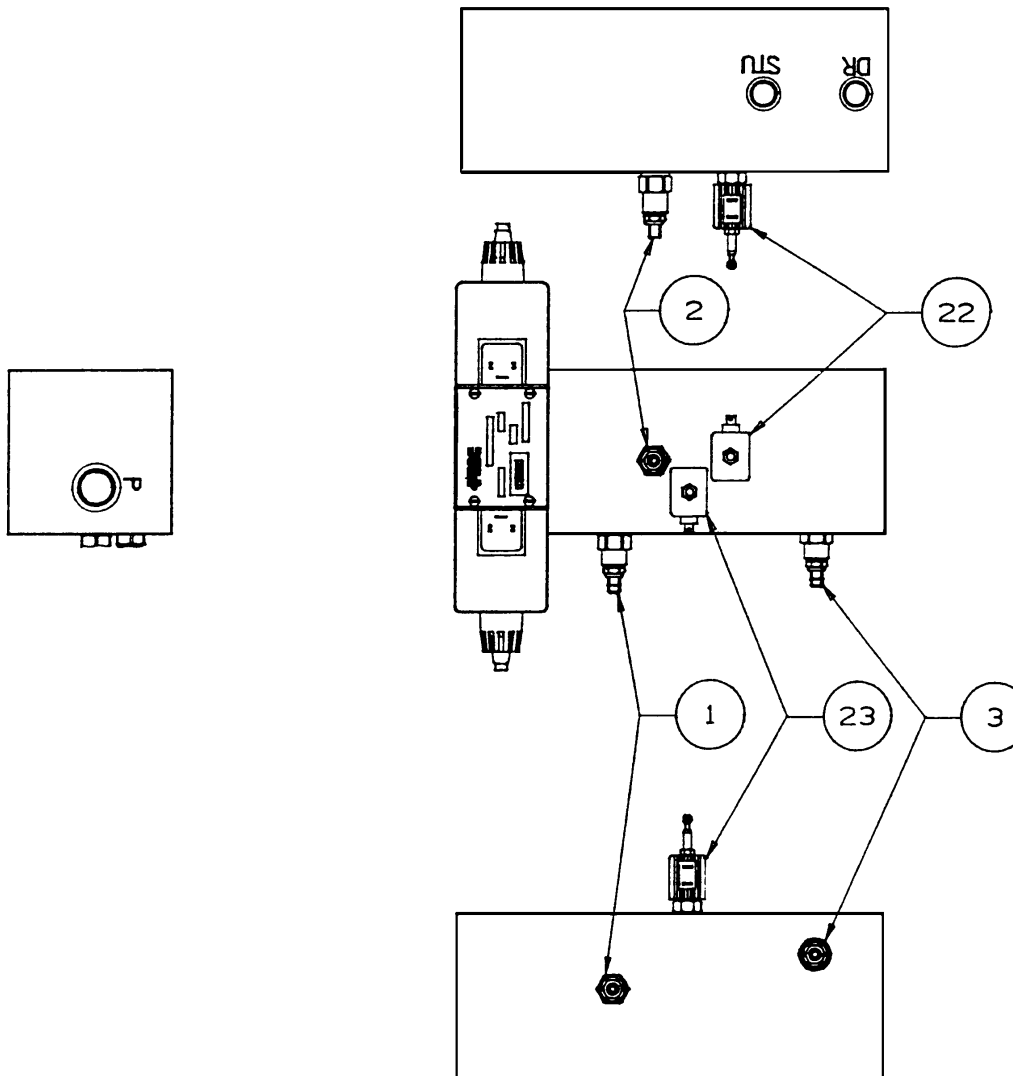


Figure 22
MAINTAIN STABILIZERS UP WHILE PROPELLING

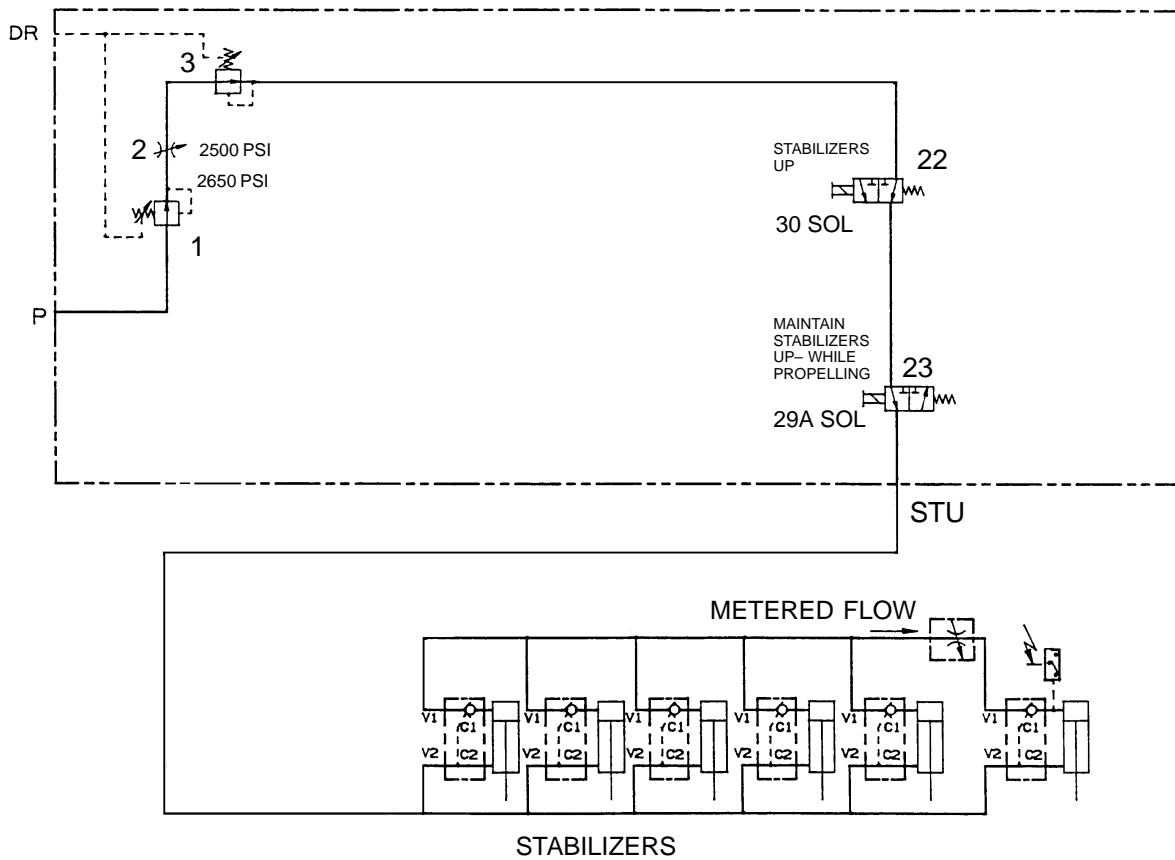


Figure 23
MAINTAIN STABILIZERS UP WHILE PROPELLING

G. Propel & Lift Manifold Assembly, Hydraulic (Figure 24 thru Figure 41)

All hydraulic components and circuits in the Propel & Lift Manifold assembly are shown on pages 30-47. Pages 30 and 31 show the entire assembly with all components, and each following page shows only those components which are used in the performance of an individual hydraulic function.

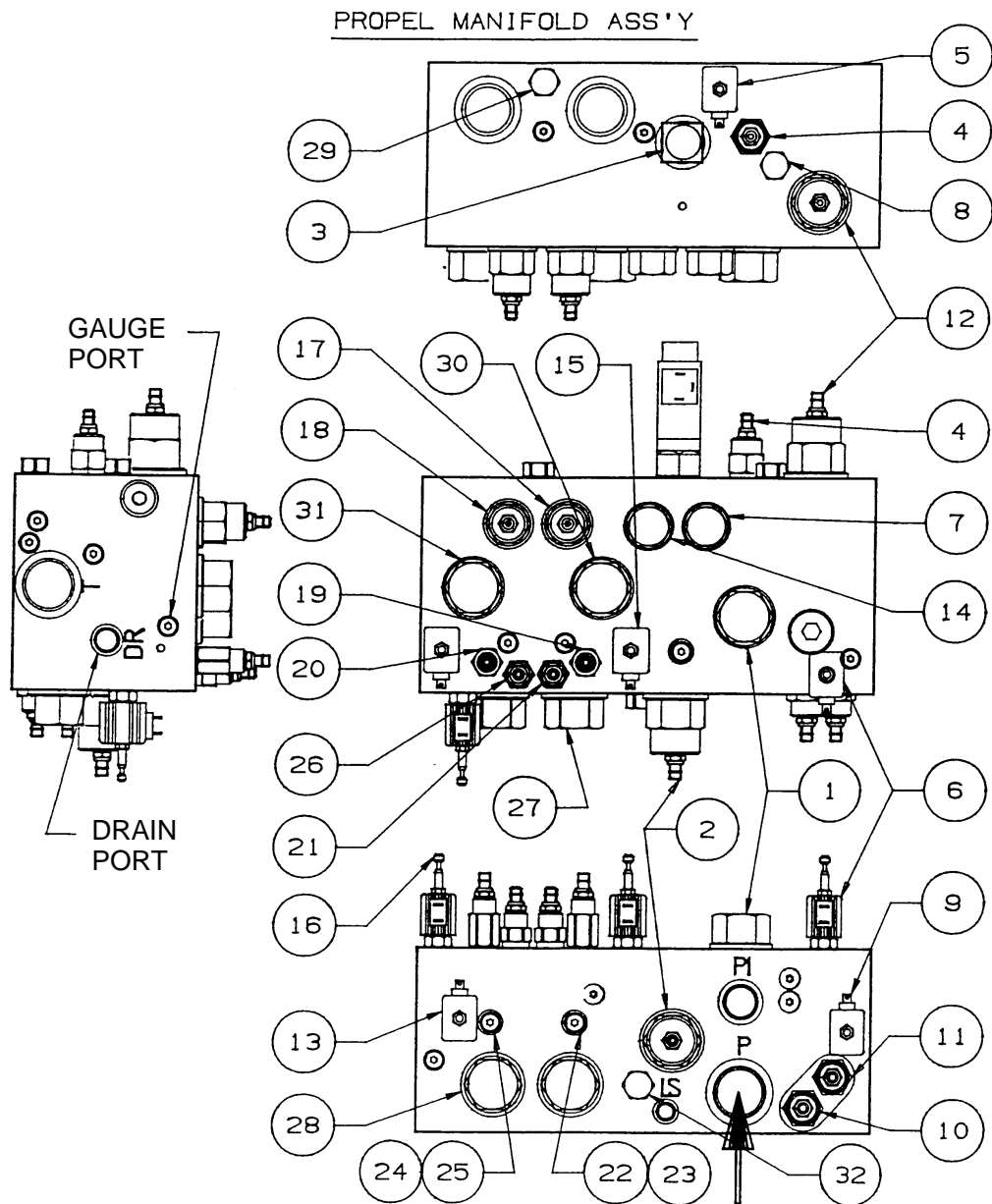
The left side of each page shows an assembly drawing giving the location of each component on the body, and the right side shows the same components in a schematic of ISO standard symbols.

<u>PAGE</u>	<u>DESCRIPTION</u>
30, 31	Propel/Lift Manifold Assembly
32, 33	Propel Forward
34, 35	Propel Reverse
36, 37	Forward Dynamic Braking
38, 39	Reverse Dynamic Braking
40, 41	Loader Moving Forward with System Shifted to Reverse
42, 43	Platform Raise
44, 45	Platform Slow Lower
46, 47	Platform Fast Lower

These drawings will assist in troubleshooting each circuit, and in locating the individual components on the manifold assembly.

NOTE: For correct installation torque values for all cartridges and plugs in this manifold, please refer to Parts List in Hydraulic Section 4-21, P/N 622-3168.

THIS PAGE INTENTIONALLY BLANK



NOTE:
 FOR CORRECT INSTALLATION TORQUE VALUES FOR ALL CARTRIDGES AND PLUGS
 IN THIS MANIFOLD, PLEASE REFER TO PARTS LIST IN HYDRAULIC SECTION 4-21,
 P/N 622-3168.

Figure 24
 PROPEL & LIFT MANIFOLD ASSEMBLY

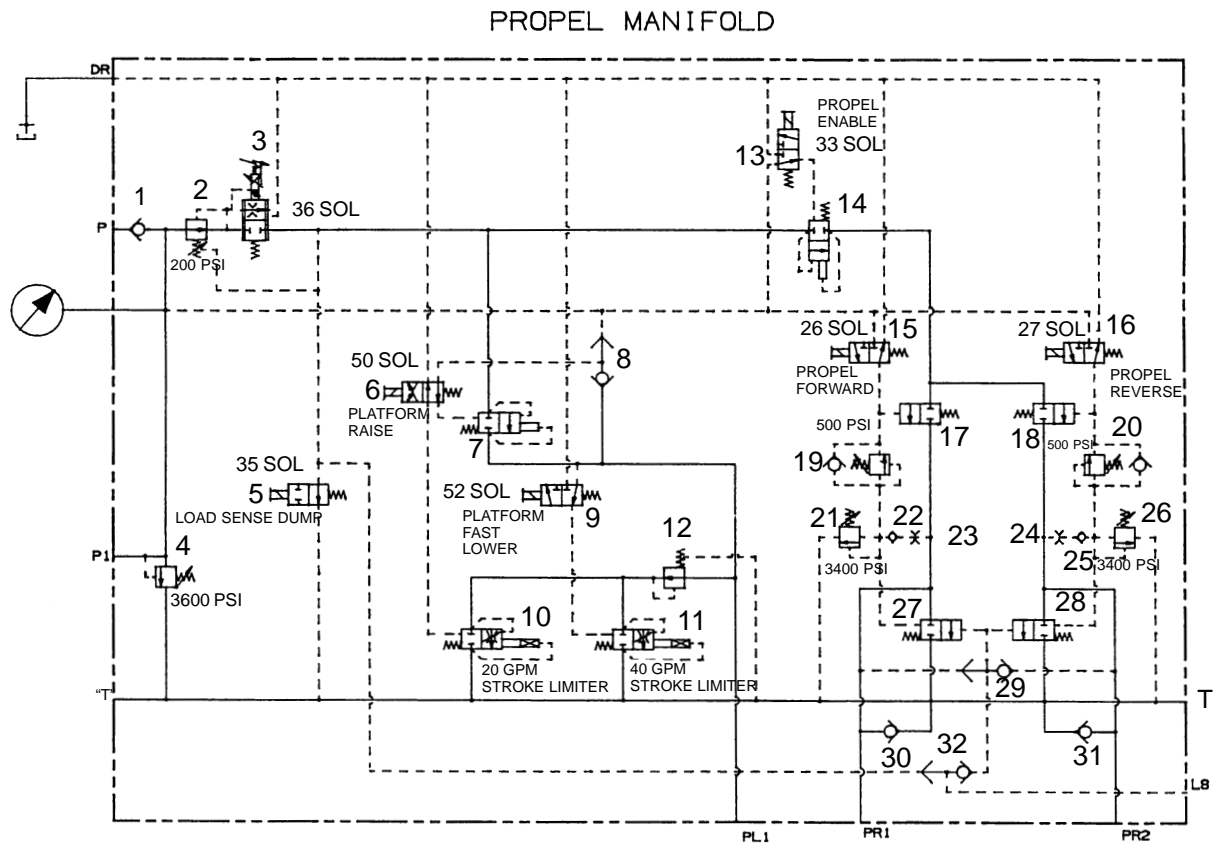


Figure 25
PROPEL & LIFT MANIFOLD ASSEMBLY

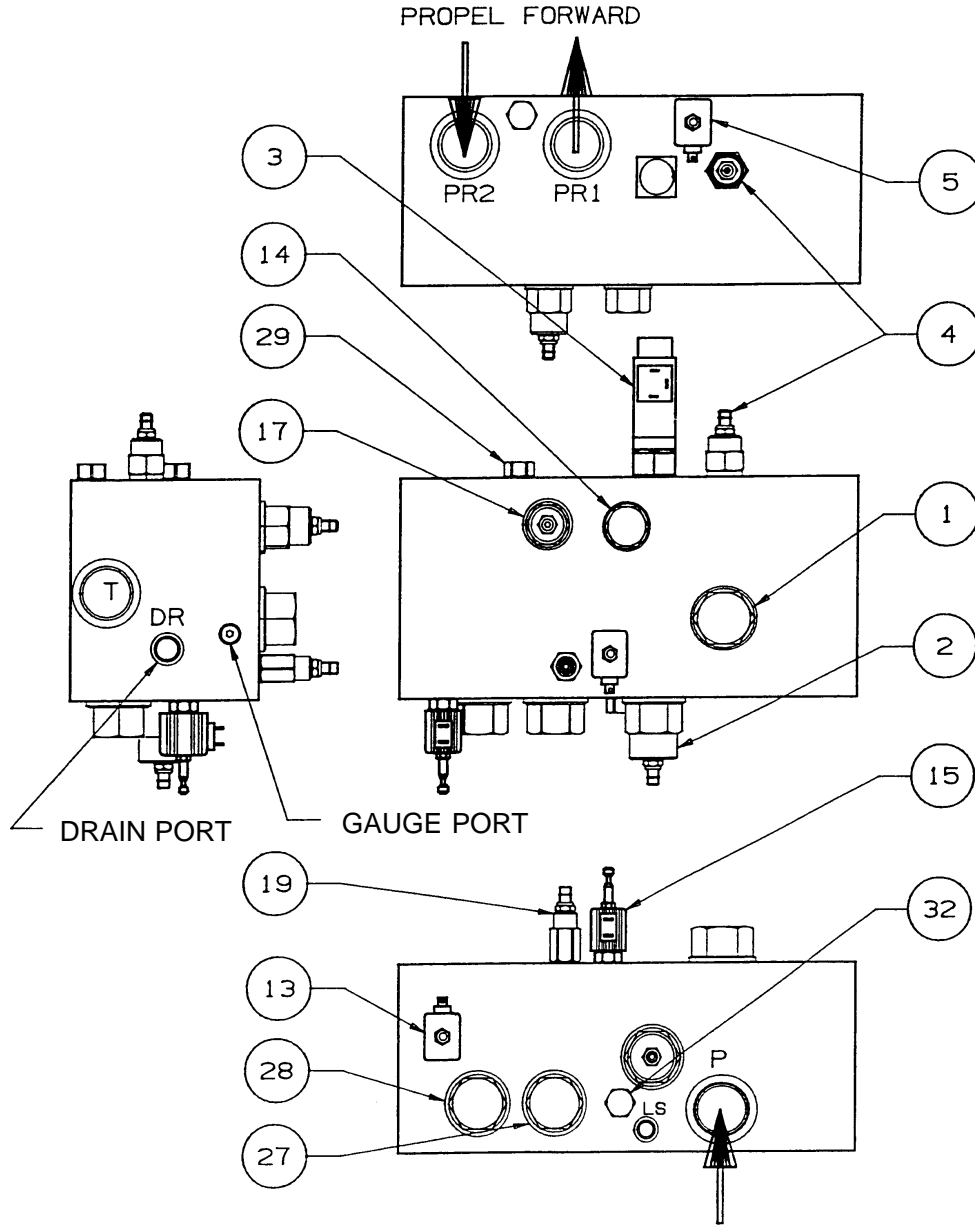


Figure 26
PROPEL FORWARD

PROPEL FORWARD

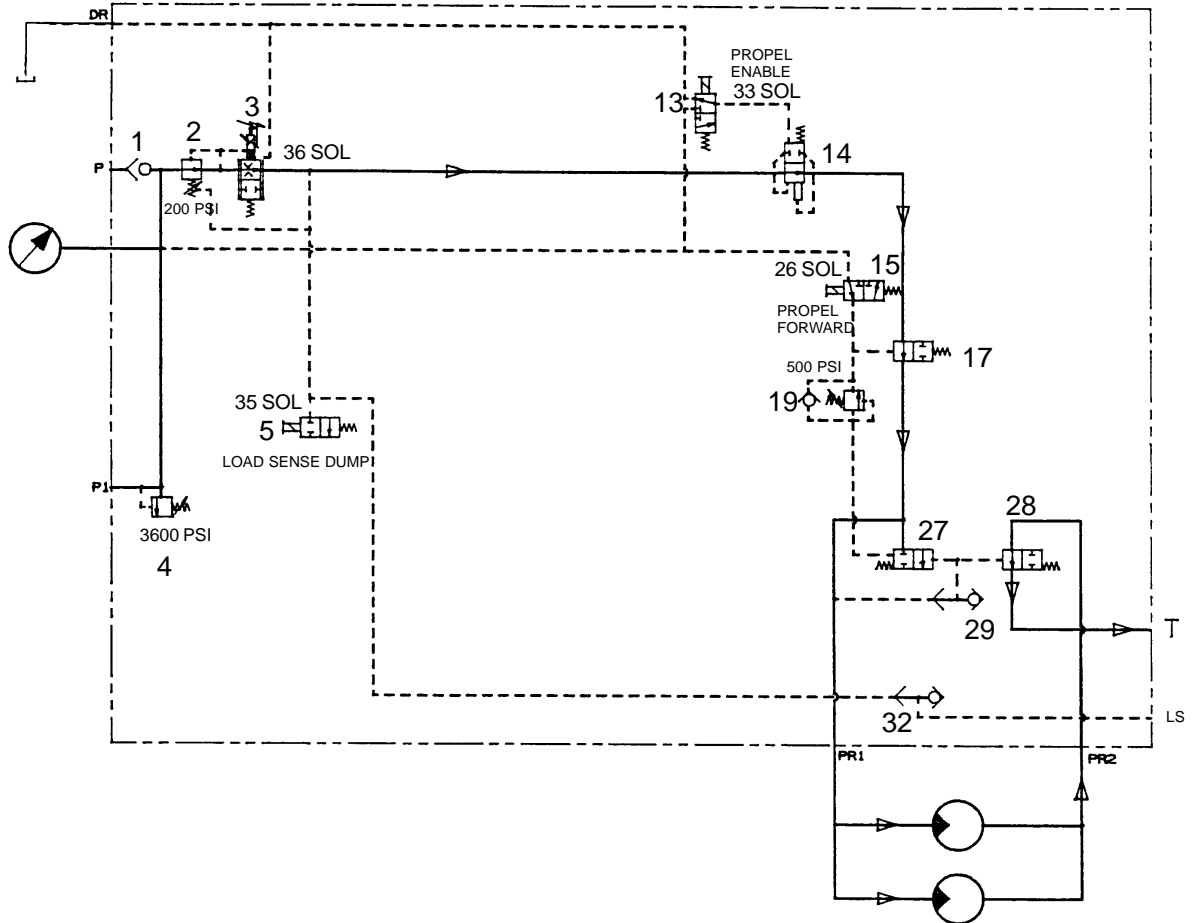


Figure 27
PROPEL FORWARD

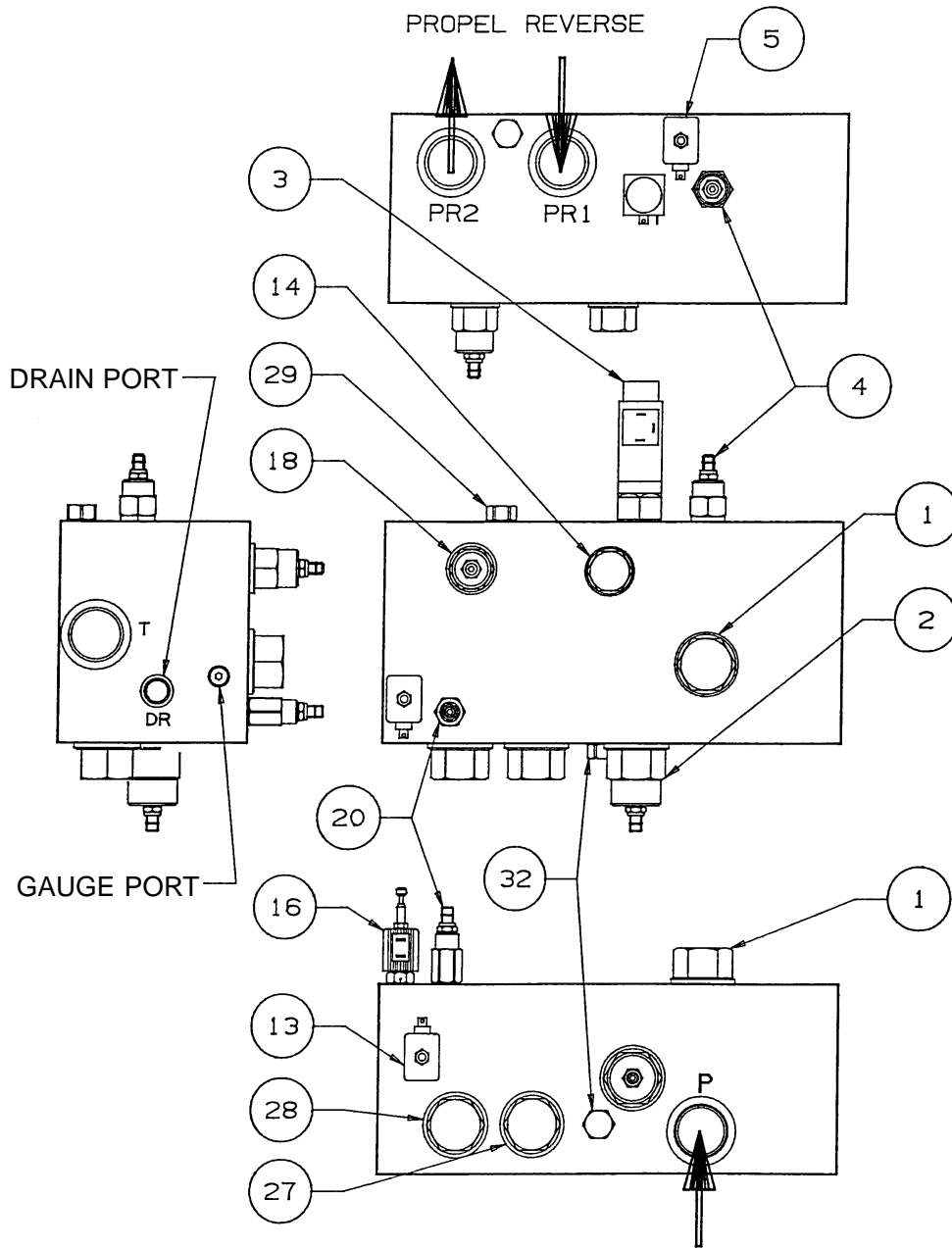


Figure 28
PROPEL REVERSE

PROPEL REVERSE

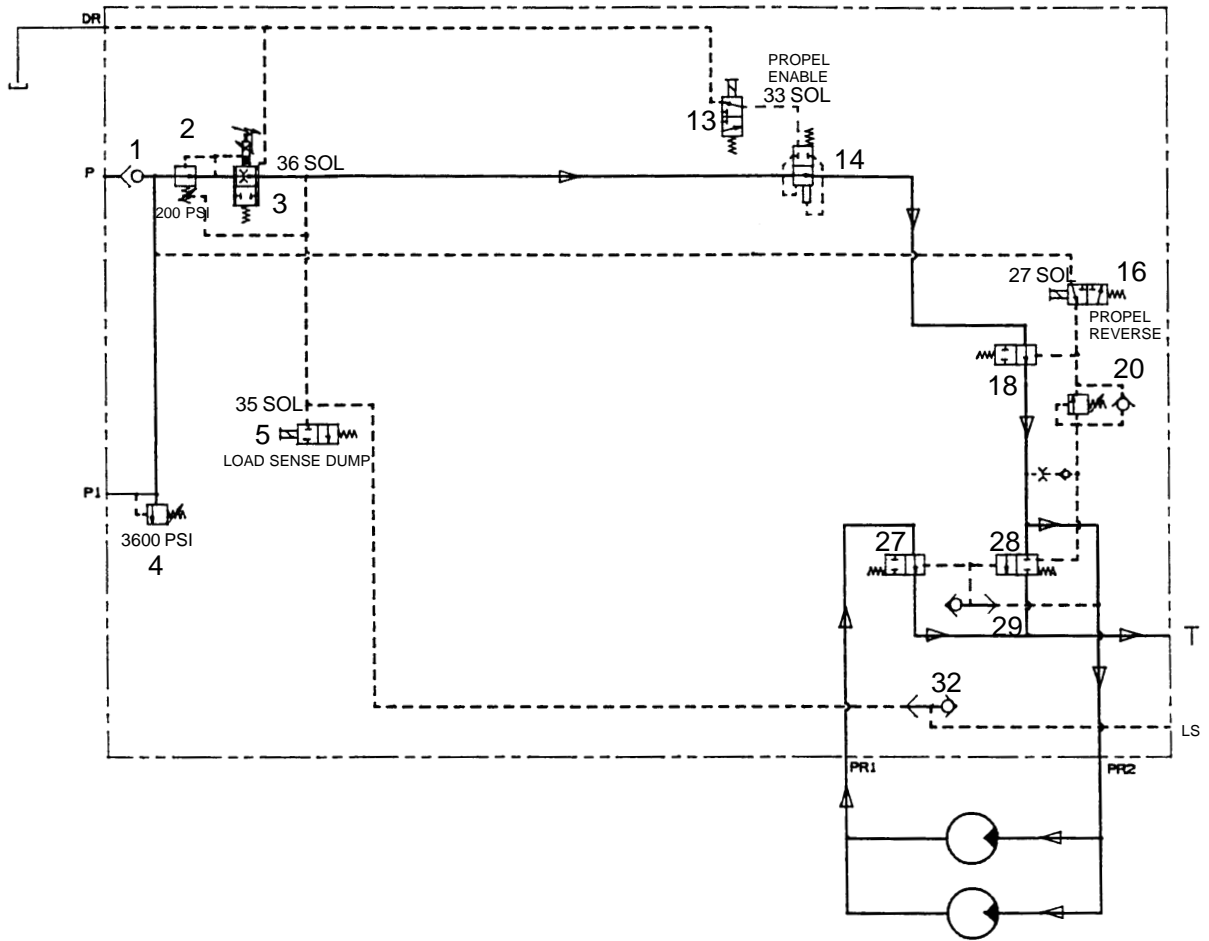


Figure 29
PROPEL REVERSE

FORWARD DYNAMIC BRAKING

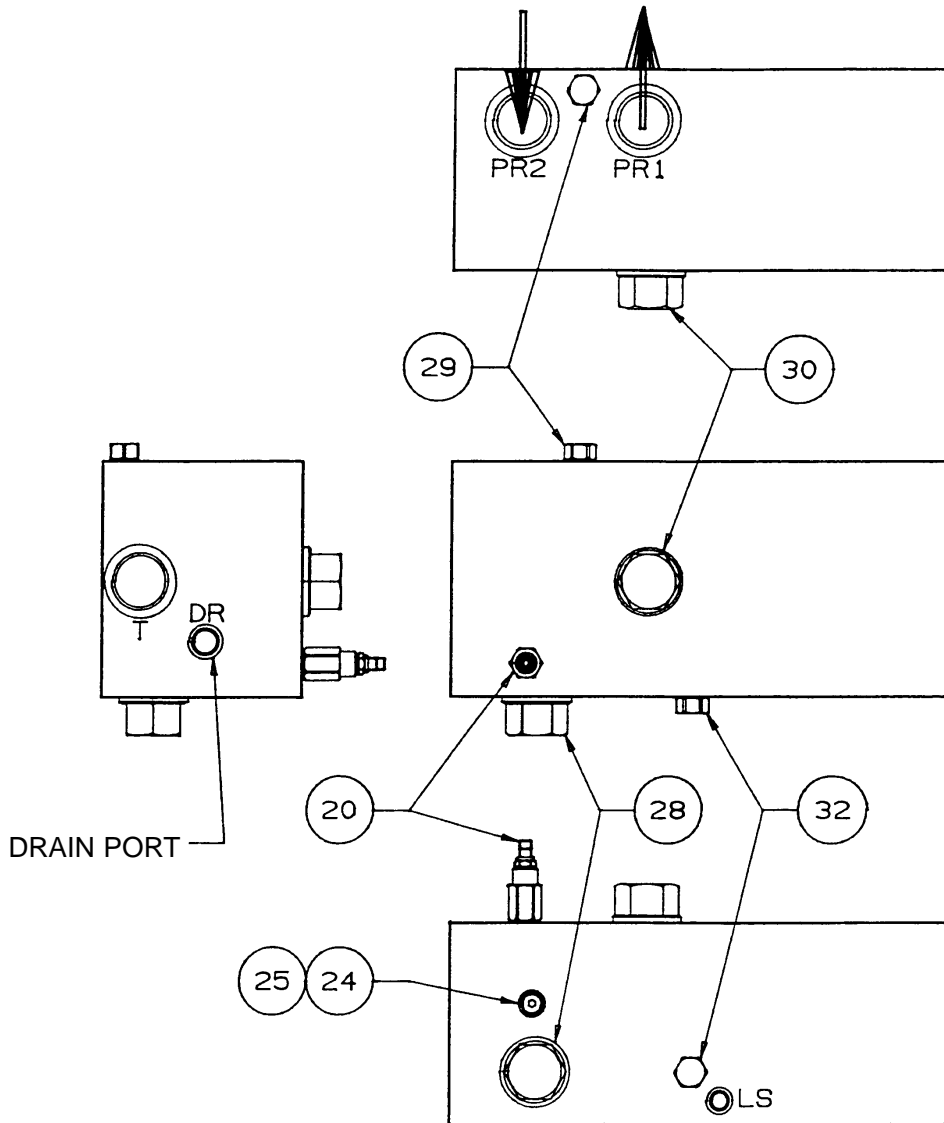


Figure 30
FORWARD DYNAMIC BRAKING

FORWARD DYNAMIC BRAKING

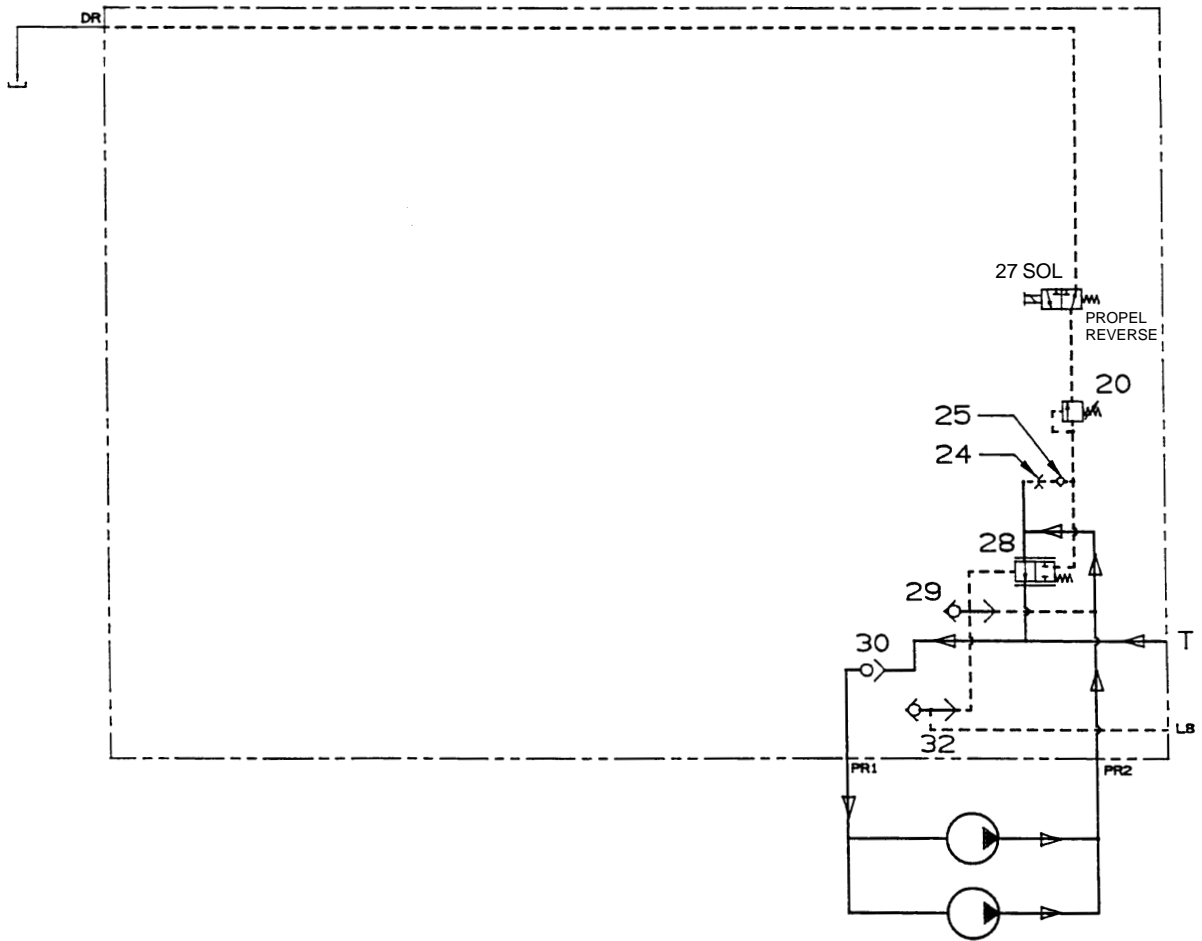


Figure 31
FORWARD DYNAMIC BRAKING

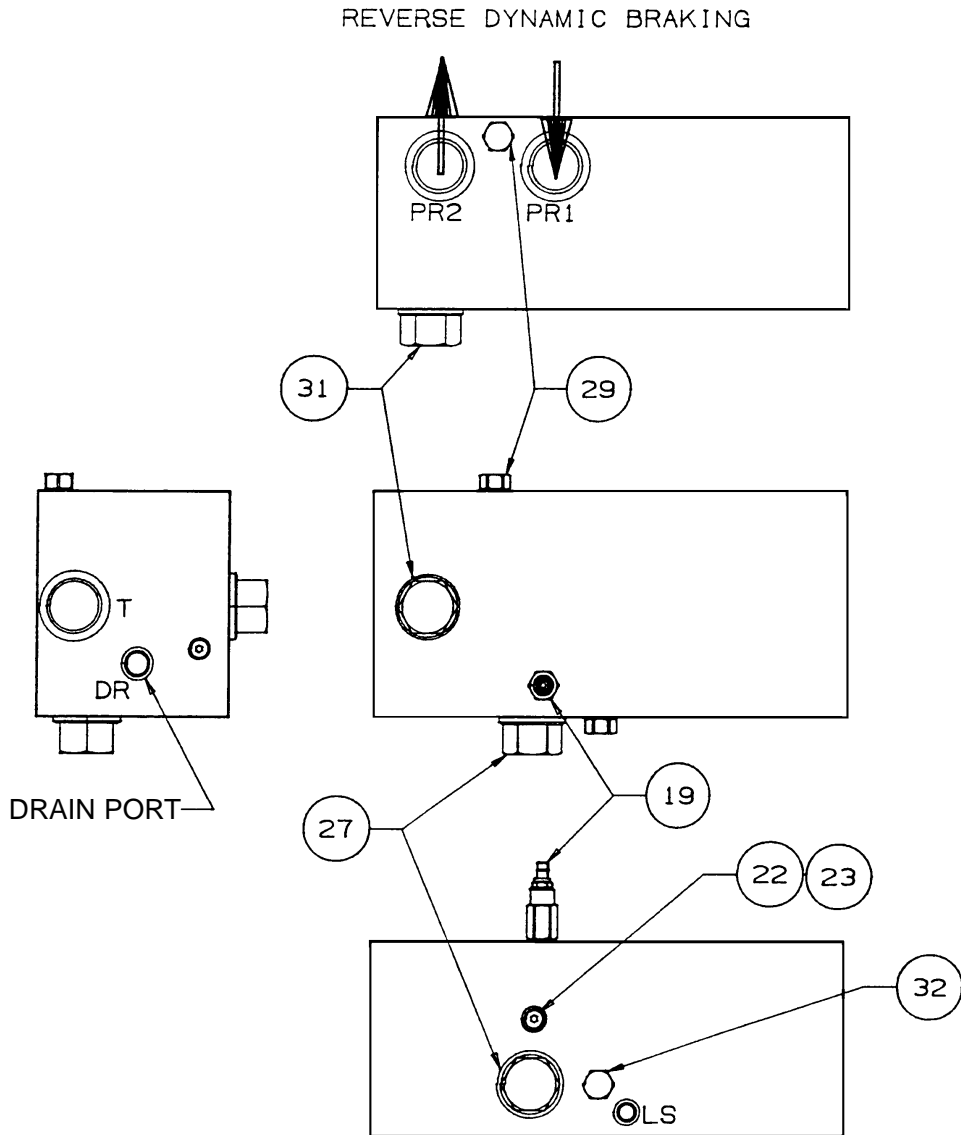


Figure 32
REVERSE DYNAMIC BRAKING

REVERSE DYNAMIC BRAKING

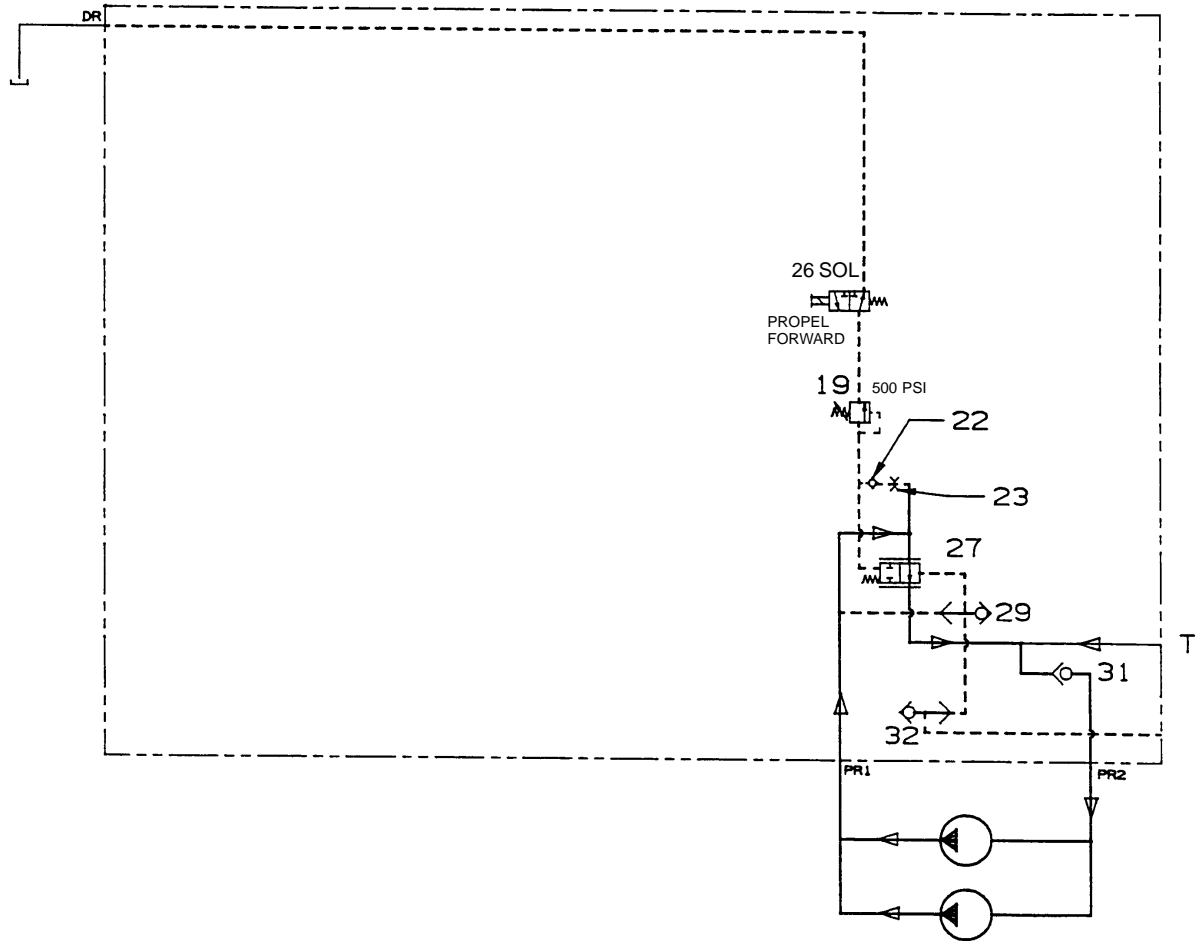


Figure 33
REVERSE DYNAMIC BRAKING

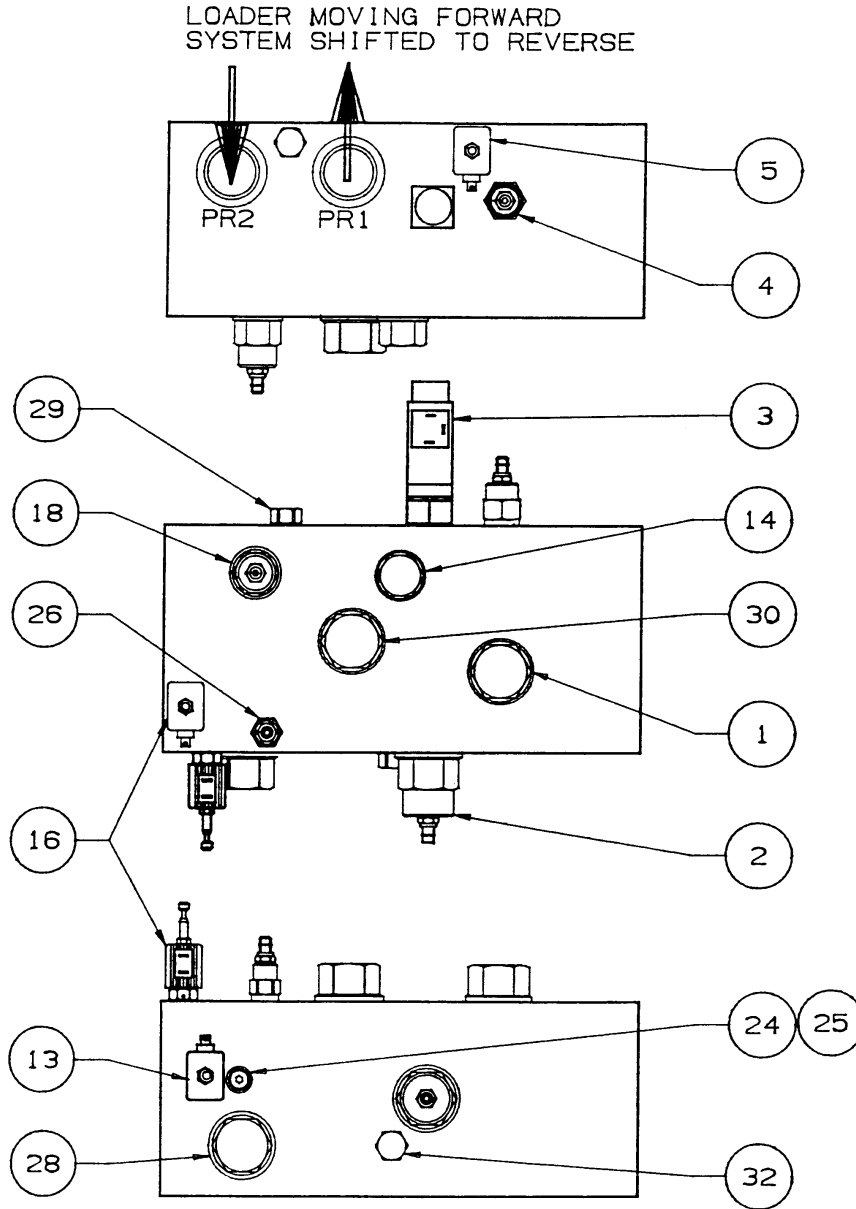


Figure 34
LOADER MOVING FORWARD WITH SYSTEM SHIFTED TO REVERSE

LOADER MOVING FORWARD
SYSTEM SHIFTED TO REVERSE

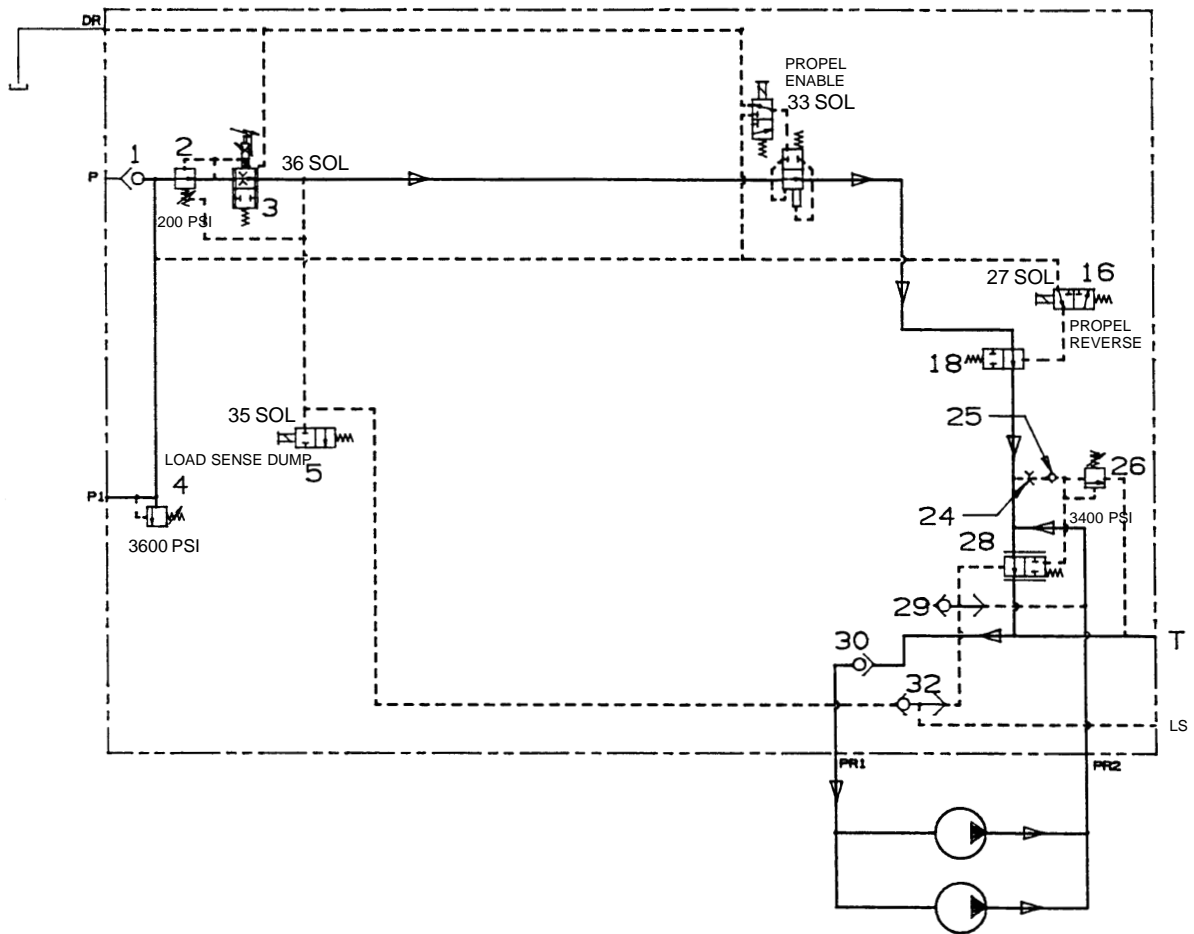


Figure 35
LOADER MOVING FORWARD WITH SYSTEM SHIFTED TO REVERSE

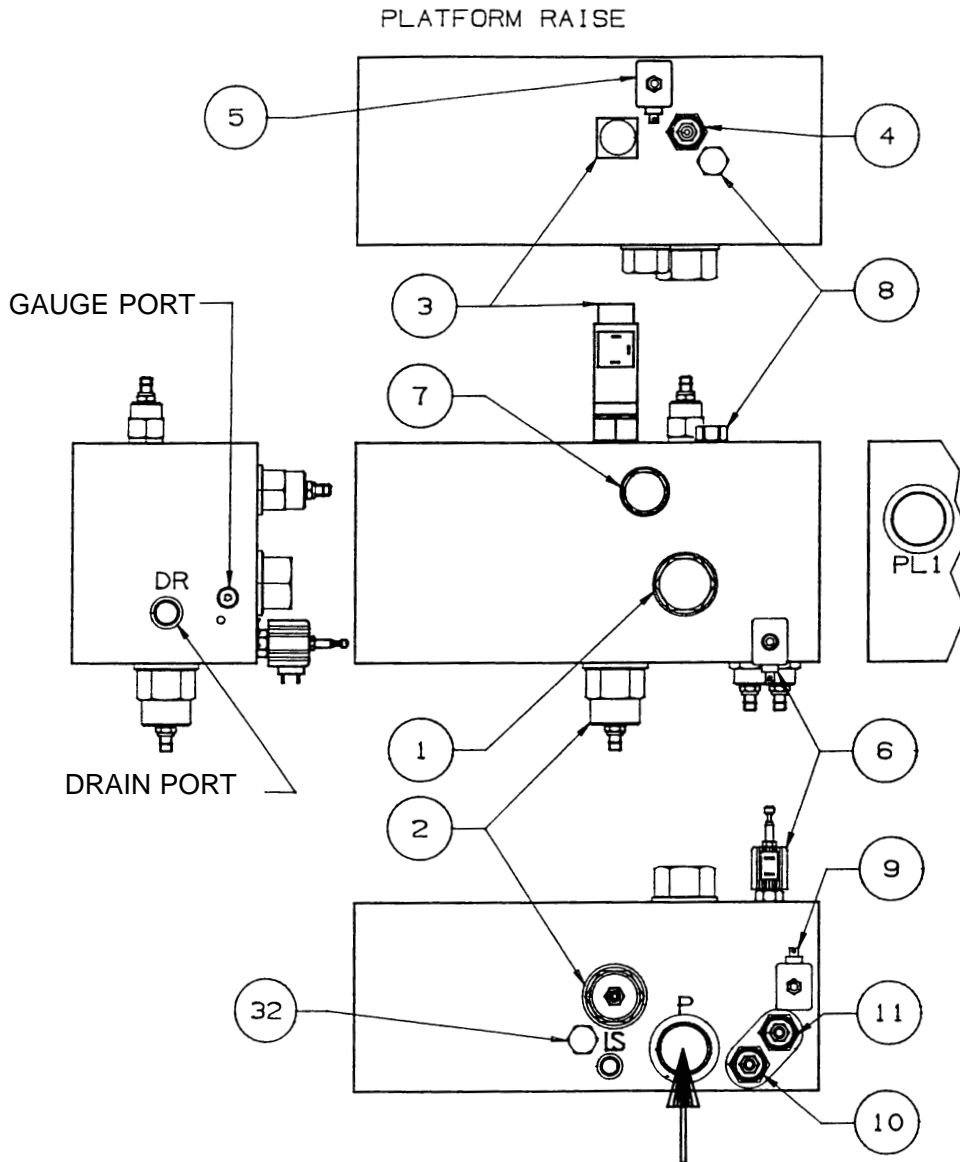


Figure 36
PLATFORM RAISE

PLATFORM RAISE

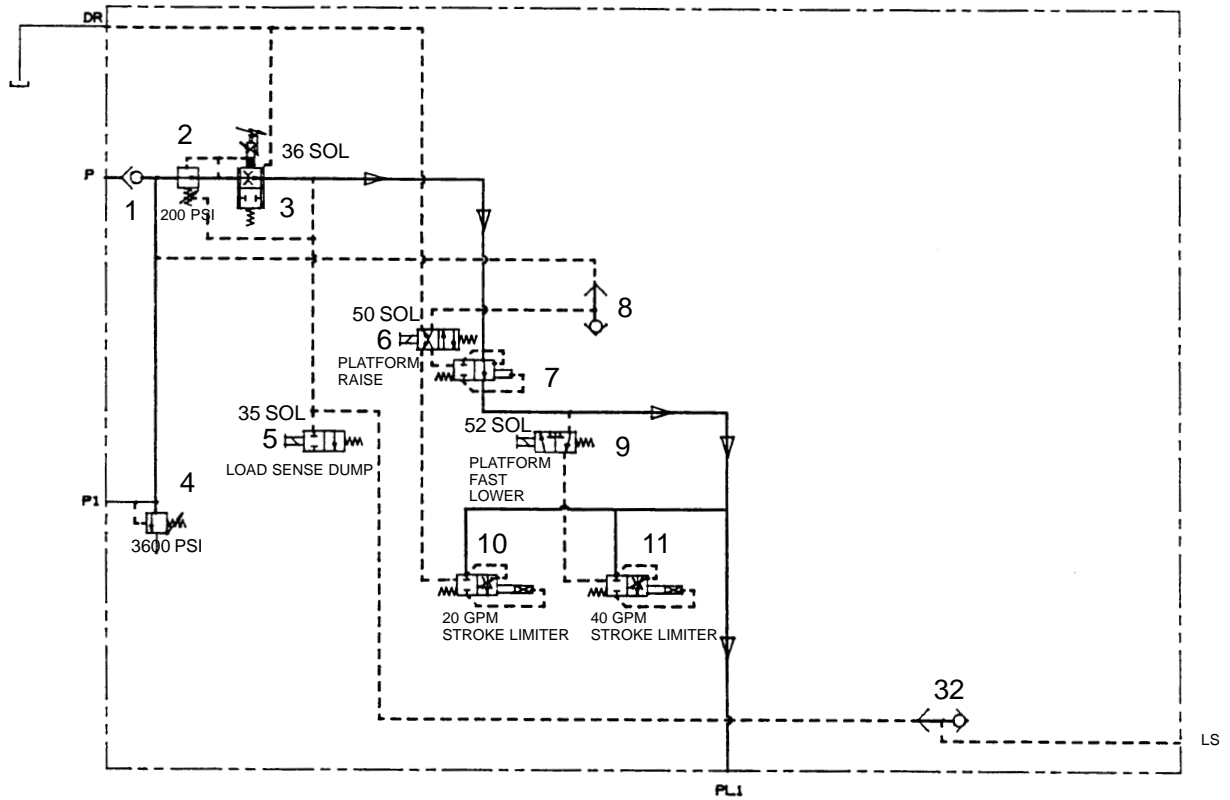


Figure 37
PLATFORM RAISE

PLATFORM SLOW LOWER

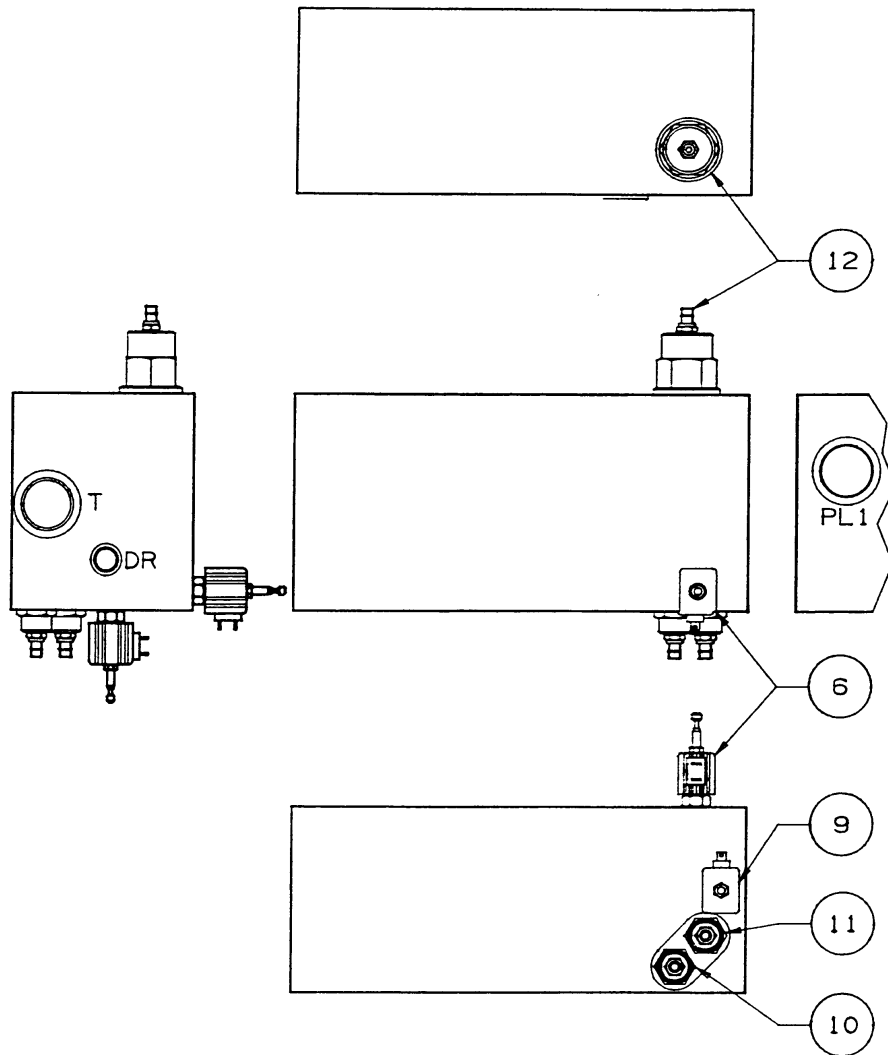


Figure 38
PLATFORM SLOW LOWER

PLATFORM SLOW LOWER

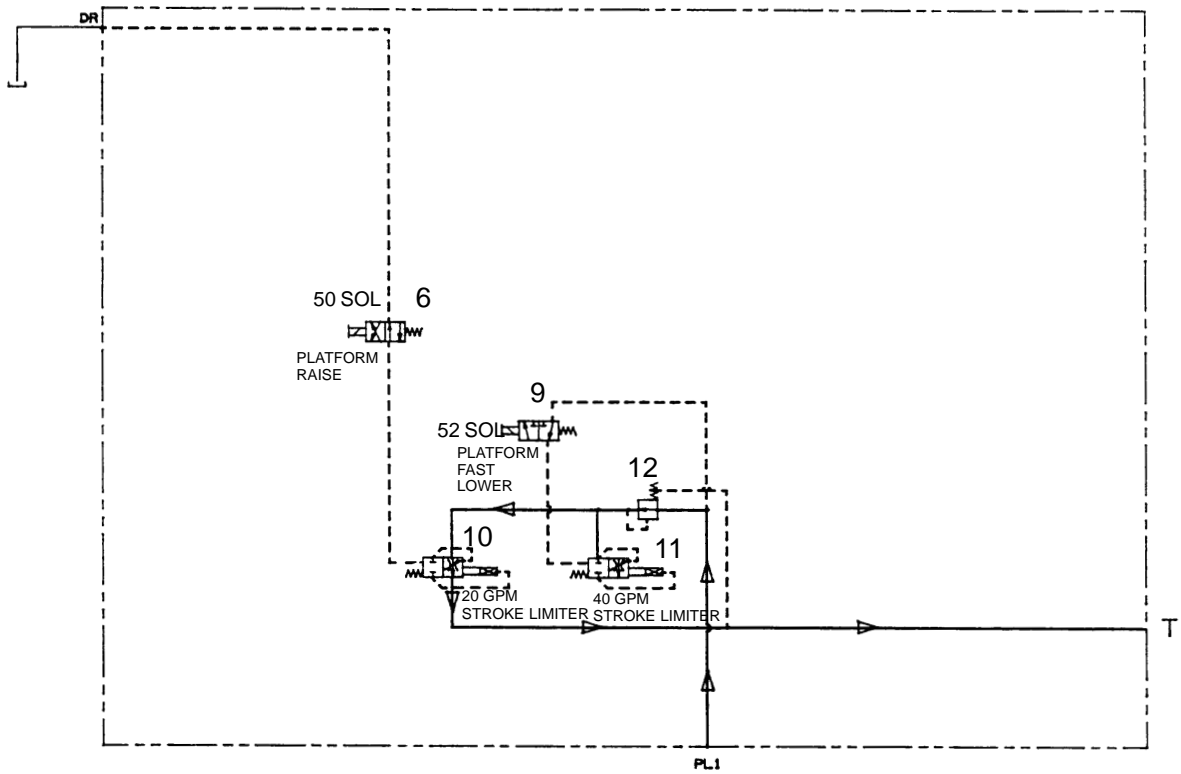


Figure 39
PLATFORM SLOW LOWER

PLATFORM FAST LOWER

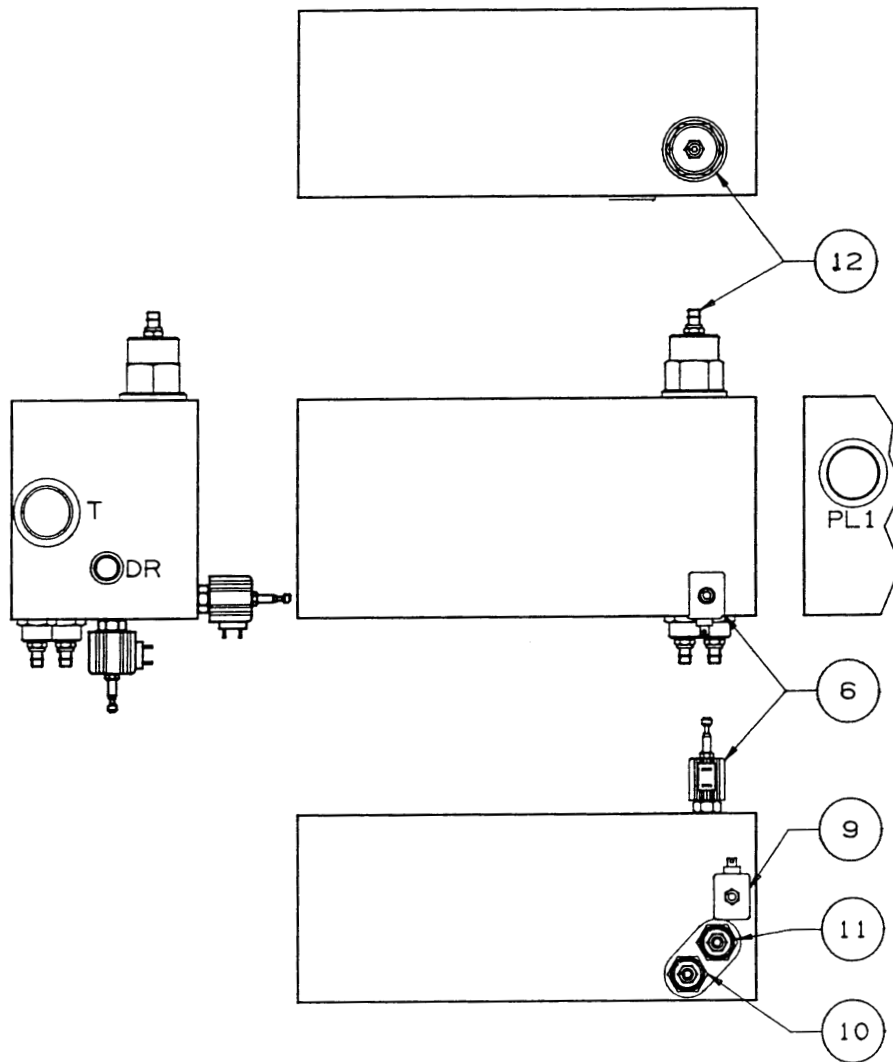


Figure 40
PLATFORM FAST LOWER

PLATFORM FAST LOWER

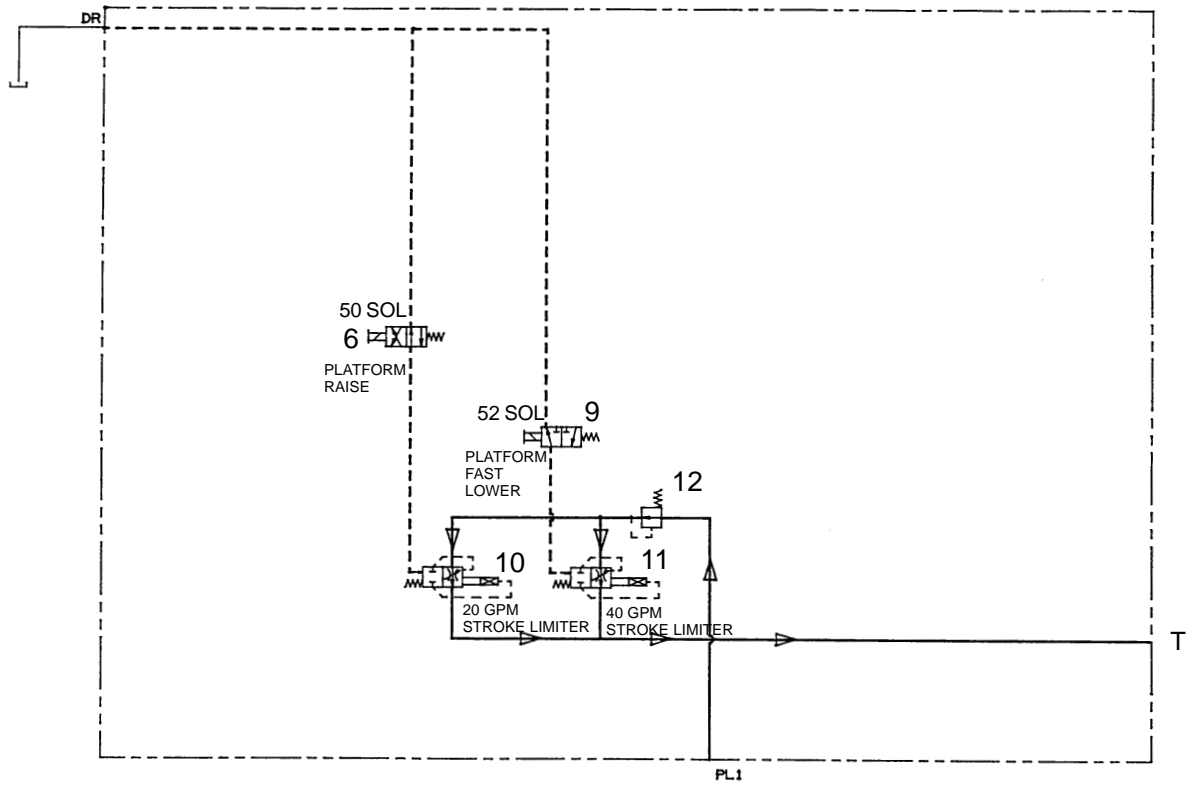


Figure 41
PLATFORM FAST LOWER

4. **ELECTRICAL SYSTEM**

The COMMANDER 15 Loader has a 24-volt DC electrical system that controls all functions of the loader. The components of the electrical system are located in the main panel and in the bridge console. Proximity switches in various locations sense a specific position of a mechanical component for the actuation and interlocking of electrical circuits.

A. Main Panel

The main panel is located on the power unit and contains relays and contactors associated with operation of the power unit, and circuit breakers for overload protection. A terminal block strip is used for interconnecting the power unit wiring with the loader's electrical system. The platform convey modules and platform lift module are also located in this panel.

B. Driver's Panel

The driver's panel on the console has the engine fault lights and the switches required to drive and position the loader at the aircraft.

C. Control Panel

The control panel on the console has the necessary switches for the loader functions that are required for cargo operations, and an emergency stop switch that shuts the loader power unit down and disconnects power to the control circuits.

D. Bridge Panel

The bridge panel is located in the console and contains the propulsion board and the system status panel. Wire harnesses connect these components to the main panel, driver's panel, control panel, solenoid valves, and proximity switches. The bridge convey module is also located here.

E. Status Panel (Figure 42 thru Figure 45) (Optional)

The status panel, mounted on the inside of the bridge panel door, is connected to the bridge PCB by one cable. The status panel monitors the COMMANDER electrical system and provides a visual indication of relays that are energized (actuated) and the solenoid valve circuits that are energized at any given time, and reduces the time required to locate a misadjustment or a failed component. This visual approach to troubleshooting eliminates many electrical checks with a voltmeter and the use of test lights. Schematic drawings of the electrical system must be used when troubleshooting and using the status panel as a visual aid. A decal is provided beside the status panel as a quick reference guide.

CAUTION

JUMPER WIRES SHOULD NEVER BE USED BECAUSE AN ERROR (SHORT CIRCUIT) CAN DESTROY THE CIRCUIT BOARD.

Troubleshooting the COMMANDER 15 Loader is simplified with the status panel, and most troubleshooting can be done with the power unit (engine) OFF. With the MASTER START SWITCH in the ON position and the START ENABLE SWITCH held on, the electrical current is provided to the control switches. When a control switch is actuated for a loader function, a combination of lights will illuminate on the status panel. With the power unit OFF, and with no hydraulic flow, the loader remains static and the electrical system can be diagnosed for a misadjustment or failed component.

To use the status panel as a troubleshooting aid, start the power unit and set the MODE SWITCH to OPERATE to let the stabilizers fully extend, then shut the power unit down. Turn the ignition switch to the ON position and hold START ENABLE SWITCH in NORMAL mode, but **DO NOT** start the power unit. Actuate a switch that commands the loader function that has a problem and observe and record the status panel lights that are illuminated. Refer to the status panel function guide on page 55 for the lights that should be illuminated for a loader function.

NOTE: Some troubleshooting checks require the MODE SWITCH be in DRIVE and the stabilizers fully retracted when observing the status panel indicator lights.

Raise or lower the platform or bridge to the position a malfunction occurs and shut the power unit down. Turn the ignition switch ON – **DO NOT START THE POWER UNIT** – then observe the illuminated lights on the status panel. Refer to the status panel function guide for the lights that should be illuminated.

Incorrect display of status panel indicator lights will require reviewing the electrical schematics to diagnose the problem.

Failure to obtain relay lights indicates there is a possible failure in the power feed, the switch being actuated or of an interlock contact (another relay) that did not actuate closed to complete the circuit. If the relay light is illuminated as required, the control circuit has been completed and no further checking is required.

The solenoid valve indicator lights indicate that control circuits have been completed and there is an output from the relay to the solenoid valves. If the solenoid valve does not actuate with the indicator light illuminated, a voltmeter check must be made at the valve to verify that there is not an open circuit between the console and the valve. Always make voltmeter checks across the solenoid valve terminals; **DO NOT** use the loader frame for ground.

F. Proximity Switch

Proximity switches require inspection for loose or broken wires. Refer to Figure 46 for proximity switch locations.

G. Electrical Schematic

Refer to Figure 52 for “HOW TO READ THIS SCHEMATIC” and Figure 54 thru Figure 89 for electrical schematic.

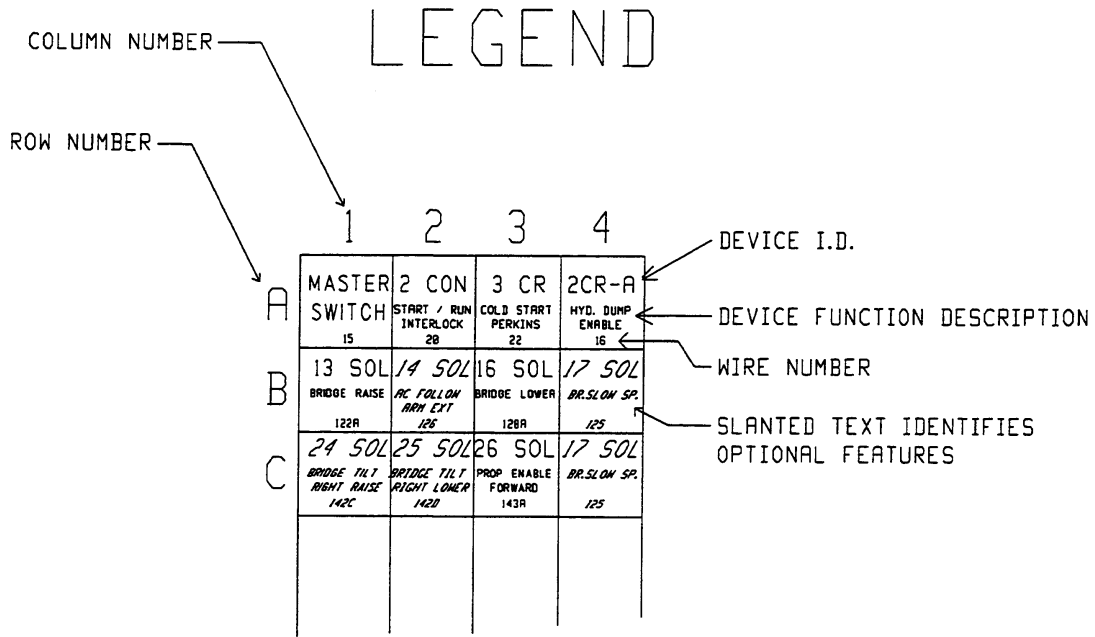
FMC CORP. COPYRIGHT 1994 622-1759

	1	2	3	4	5	6	7	8	9	10	11	12
A	MASTER SWITCH 15	3 CON START / RUN INTERLOCK 20	SPARE	SPARE	4 SOL HYD. DUMP 40	6 SOL ENG. FUEL 38	7 SOL DEMAND THROTTLE 41	SPARE	8 SOL 104" WING UP 111	9 SOL 104" WING DOWN 112	10 SOL 134" WING UP 113	11 SOL 134" WING DOWN 114
B	13 SOL BRIDGE RAISE 122A	14 SOL AC FOLLOW ARM EXT 125	16 SOL BRIDGE LOWER 128A	SPARE	13 CR AC FOLLOW RAISE 135	14 CR AC FOLLOW LOWER 136	18 SOL CAB EXTEND 138	19 SOL CAB RETRACT 139	20 SOL BR. GUIDE SHIFT LEFT 141	21 SOL BR. GUIDE SHIFT RIGHT 142	22 SOL BRIDGE TILT LEFT RAISE 143A	23 SOL BRIDGE TILT LEFT LOWER 143B
C	24 SOL BRIDGE TILT RIGHT RAISE 142C	25 SOL BRIDGE TILT RIGHT LOWER 142D	26 SOL PROP ENABLE FORWARD 143A	SPARE	15 CR- B NEUTRAL INTERLOCK 144	15 CR- C PROPEL REV. ENABLE 145	28 SOL CHSSIS RAISE 148B	29 SOL CHSSIS LOWER 148C	SPARE	30 SOL STABILIZERS RETRACT 165A	SPARE	31 SOL PARK BRAKE OFF 152C
D	16 CR CREEP ENABLE 155	33 SOL PROP. ENABLE 155A	35 SOL LOAD SENSE DUMP 156	38 SOL STABILIZERS EXTEND 165C	45 SOL PLAT GUIDE LEFT RETRACT 169	46 SOL PLAT. GUIDE REAR DOWN 172	18 CR PLAT. GUIDE RIGHT DOWN 171	47 SOL PLAT. GUIDE RIGHT DOWN 173	48 SOL PILOT PLAT GUIDES 174	19 CR PLAT GUIDE EXTENDED 177	49 SOL PLAT. FWD LOAD STOP 178	20 CR PLAT RAISE SLOW 182D
E	21 CR PLAT RAISE FAST 182C	22 CR PLAT LOWER SLOW 186	23 CR PLAT LOWER FAST 191	SPARE	SPARE	SPARE	SPARE	28 CR PLAT. CNVY FRONT FWD 203	29 CR PLAT. CNVY FRONT AFT 204	30 CR PLAT. CNVY FRONT RHT 205	31 CR PLAT. CNVY FRONT LEFT 206	32 CR PLAT. CNVY REAR FWD 207
F	33 CR PLAT CONVEY REAR AFT 208	34 CR PLAT CONVEY REAR RIGHT 209	35 CR PLAT CONVEY REAR LEFT 210	36 CR PLAT. CH ROTATION 211	37 CR PLAT. CCH ROTATION 212	50 SOL PLAT PILOT RAISE 213A	51 SOL PLAT LOWER SLOW 213B	52 SOL PLAT LOWER FAST 214	56 SOL BRIDGE CNVY FWD 221	57 SOL BRIDGE CNVY FWD 223	58 SOL BRIDGE CNVY FWD 224	59 SOL PILOT BRIDGE CNVY 226A
G	60 SOL BRIDGE CNVY AFT 225A	61 SOL BRIDGE CNVY AFT 227	62 SOL BRIDGE CNVY AFT 227A	63 SOL PILOT BRIDGE 228	64 SOL PLAT. CNVY FRONT FWD 234	65 SOL PLAT. CNVY FRONT FWD 235	66 SOL PLAT. CNVY FRONT AFT 236	67 SOL PLAT. CNVY FRONT AFT 237	68 SOL PLAT. CNVY REAR FWD 243	69 SOL PLAT. CNVY REAR FWD 244	70 SOL PLAT. CNVY REAR FWD 245	71 SOL PLAT. CNVY REAR FWD 246
H	72 SOL PLAT CNVY REAR AFT 249	73 SOL PLAT. CNVY REAR AFT 250	74 SOL PLAT CNVY REAR AFT 251	75 SOL PLAT. CNVY REAR AFT 252	76 SOL PT LFT ROLL RUN RIGHT 255	77 SOL PLAT SIDE ROLL LEFT 257	78 SOL PLAT SIDE ROLL RIGHT 258	80 SOL PILOT PLAT CNVY 259	38 CR BRIDGE ON TRACKS 260	42 CR BRIDGE FULL DOWN 261	43 CR STABILIZER RETRACTED 265	SPARE
J	46 CR PLAT LEFT GUIDE UP 269	47 CR PLAT REAR GUIDE UP 270	48 CR PLAT RIGHT GUIDE UP 272	49 CR PLAT. BELOW 510mm(24") 273	SLOW FOLLOW 274	INTERFACE 275	PLAT OVERTRAVEL 276	BRIDGE STOP L.R. UP 277	BRIDGE STOP R.R. UP 278	PLAT. BELOW 510mm(24") 279	SPARE	SPARE
K	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE

P13

P12

Figure 42
STATUS PANEL (OPTIONAL)



EXAMPLE: IF LED # A4 IS ILLUMINATED, 2CR-A IS ON, WHICH INDICATES THE HYD. DUMP VALVE AND ITS WIRE NUMBER 16 IS ENERGIZED.

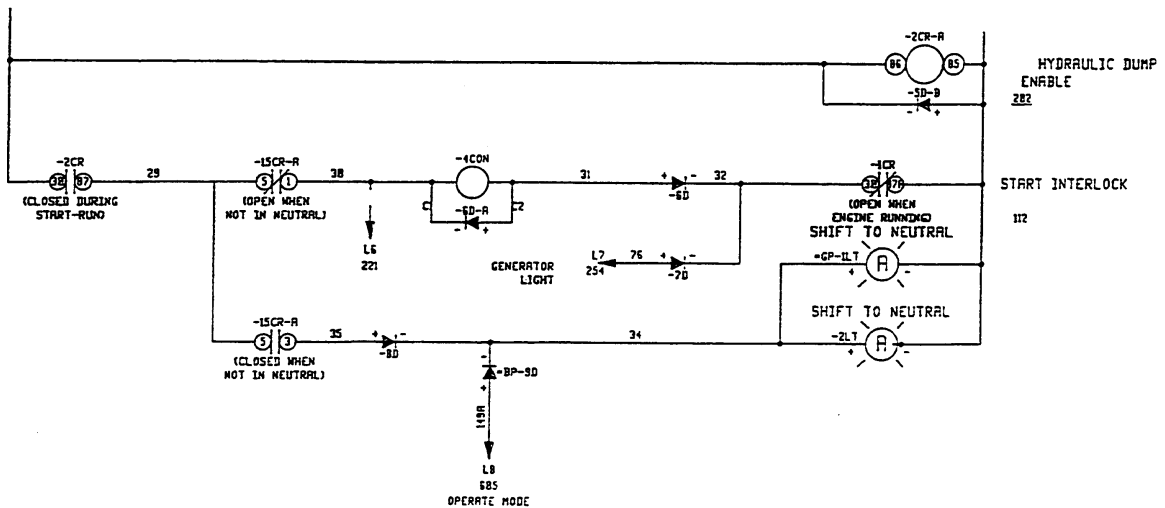
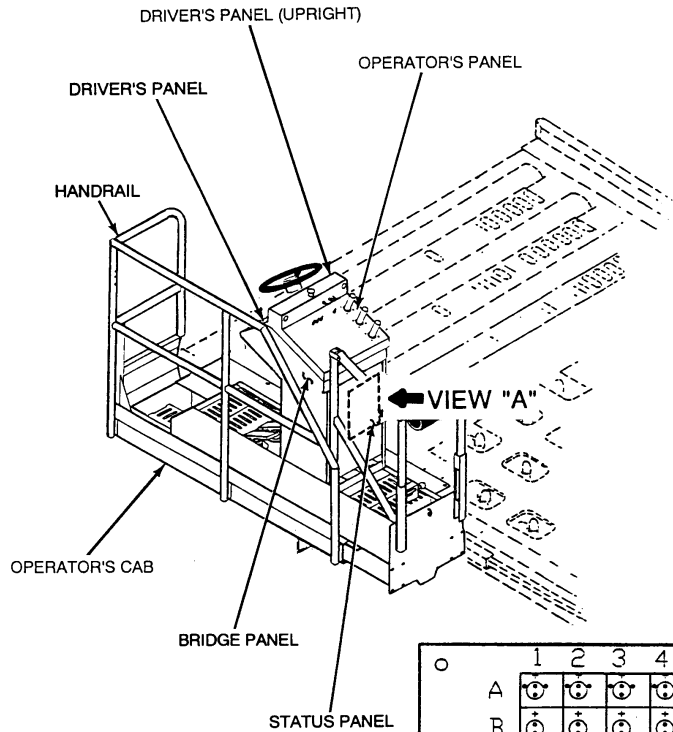
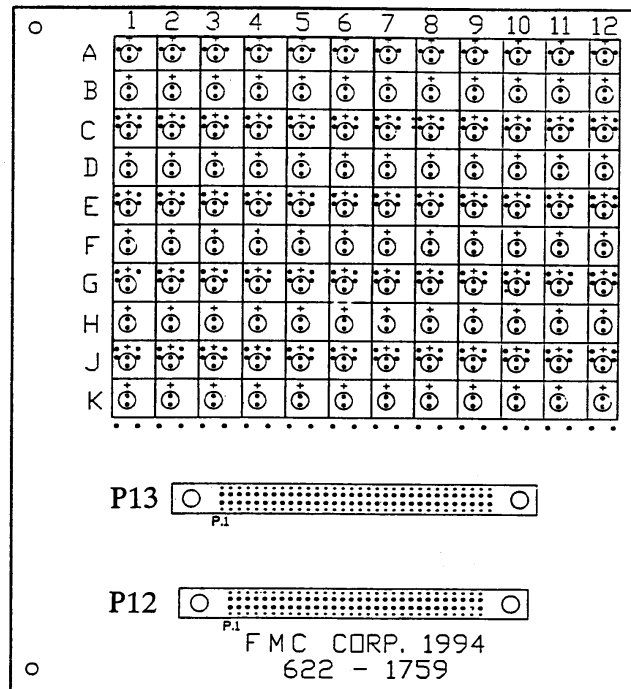


Figure 43
STATUS PANEL (OPTIONAL)

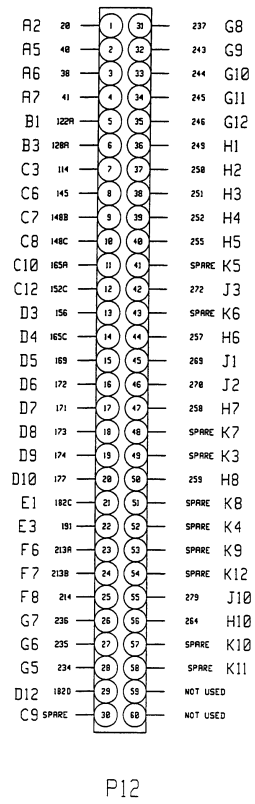
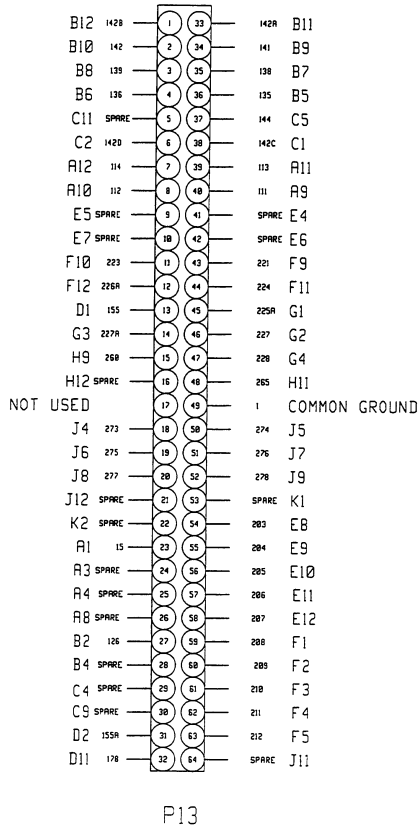


AS FUNCTION USED,
CORRESPONDING LED
WILL LIGHT.



VIEW "A"

Figure 44
STATUS PANEL (OPTIONAL)



PCB--FRONT VIEW
CONNECTOR REAR VIEW

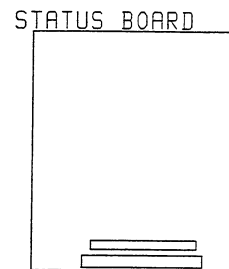
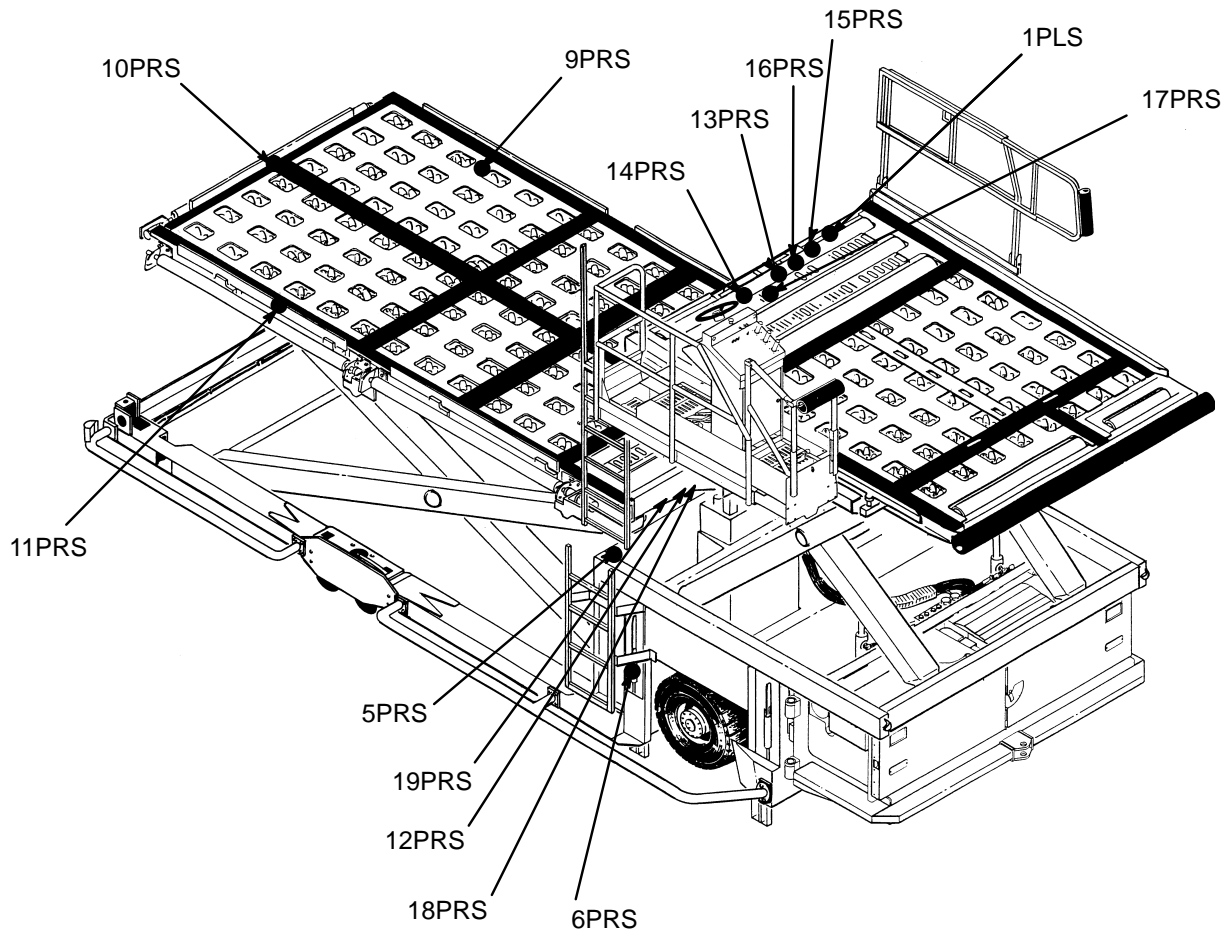


Figure 45
STATUS PANEL (OPTIONAL)

**NOTE:**

13PRS, 14PRS, 15PRS, 16 PRS, 17PRS, 1PLS
ARE LOCATED UNDER BRIDGE

Figure 46
PROXIMITY SWITCH LOCATIONS

5. TROUBLESHOOTING GUIDE

The following guide lists loader malfunctions and some possible causes of a listed malfunction. When there is a problem or malfunction of the loader, read through the list on the left side of the chart. Possible causes are listed to the right.

This guide lists the most common problems that could be encountered, but is not meant to replace troubleshooting procedures that require diagnosing a system malfunction using the hydraulic and electrical schematics.

The status panel indicator lights on the bridge electrical panel, and an accurate voltmeter, must be used to identify electrical problems. Electrical schematics must be referred to when troubleshooting the COMMANDER electrical system. Proximity switches and pressure switches must be adjusted to specifications when they are replaced (refer to Chapter-Section 2-3, Hydraulic & Electrical Adjustment Procedures).

Hydraulic troubleshooting can be done using the pressure gauge that is installed as standard equipment and the hydraulic schematics.

Hydraulic component problems are usually caused by oil contamination and many components can be made serviceable by a thorough cleaning. Hydraulic filter elements must be replaced when a system has been cleaned of contamination. The hydraulic filter element must be replaced whenever the warning indicator is visible.

When a component is repaired or replaced, always check the hydraulic circuit for the correct indicated pressure and correct actuator speeds. Refer to the adjustments and performance specifications.

The Troubleshooting Guide does not include obvious causes such as burned out light bulbs, loose wire connections, physical damage to wire harnesses, components, etc. It is assumed that the technician will check these items before proceeding with detailed troubleshooting procedures and adjustments.

TROUBLE	PROBABLE CAUSE
No engine cranking	Battery charge low 3CB tripped 1 or 2PB (emergency stops) pushed Not in neutral Engine already running
No ignition lights on gauge panel	Battery 1BAT and/or 2BAT discharged Master "Engine" switch not turned on 3CB tripped
Engine cranks but does not run when start enable switch is released	Fuel contaminated Cold engine (diesel) Filter(s) clogged or dirty No fuel Glowplugs Engine shutdown condition Generator – no output Low oil pressure High engine temperature High hydraulic oil temperature Overtravel
Engine starts but demand throttle does not function	Demand throttle control relay 4CR faulty Demand throttle linkage improperly adjusted Hydraulic valve 7SOL

TROUBLE	PROBABLE CAUSE
Oil pressure gauge does not indicate pressure	Engine oil pump Oil pressure sending unit (1POT) Oil pressure gauge (1GA)
Coolant temperature gauge does not indicate temperature	Engine temperature sending unit (2POT) Engine temperature gauge (2GA)
Fuel gauge does not indicate fuel level	Fuel sending unit (3POT) Fuel gauge (3GA)
Voltmeter does not indicate	V-belt loose Voltmeter Alternator regulator
Generator failure light does not go out when engine is running	V-belt loose 1CR Alternator
Oil pressure warning light does not go out when engine is running	Oil pressure switch Oil pressure low
Engine coolant temperature warning light illuminates	Low coolant level Engine thermostat Engine temperature switch
Hydraulic oil temperature warning light illuminates	Hydraulic oil temperature above 180° Hydraulic oil temperature switch
Low fuel warning light illuminates	Low fuel Low fuel float switch

TROUBLE	PROBABLE CAUSE
Headlamps and parking lights do not illuminate	Circuit breaker 9CB tripped
Floodlights do not illuminate	Circuit breaker 7CB tripped
Positioning light does not illuminate	Circuit breaker 7CB tripped
Stoplights do not illuminate	Stoplight switch
Turn signals do not function	Circuit breaker 8CB tripped
	Flasher
	Turn signal switch
Backup alarm does not sound when loader is in reverse	Alarm horn
	8CB tripped
	15CR-C
Backup lights do not light when loader is in reverse	15CR-C
Bridge up reverse alarm (optional) does not sound with bridge raised and unit in reverse	Warning alarm
	5PRS
	15CR-C
	42CR
Horns do not sound	Horn switch
	1CB, 10CR, 7CB
Emergency pump does not operate	Circuit breaker 3CB tripped, 6TGS
	Electric pump motor or contactor

TROUBLE	PROBABLE CAUSE
<p>Loader does not drive or propel in either direction</p>	<p>Drive selector switch control in neutral</p> <p>Platform not below 24" (12PRS, 49CR)</p> <p>Parking brake set</p> <p>Circuit breaker 11CB tripped</p> <p>Forward/Reverse directional switch</p> <p>Accelerator control faulty or maladjusted</p> <p>Propulsion control board faulty or maladjusted</p> <p>Stabilizers not fully up (6PRS, 43CR)</p> <p>Parking brake pressure reducing valve maladjusted</p> <p>Drive hubs disengaged</p> <p>Drive motors seized</p> <p>Main system relief valve pressure improperly adjusted</p> <p>Pump compensator maladjusted</p> <p>Shuttle valve stuck</p> <p>Propel enable valve cartridge stuck</p> <p>33SOL cartridge failed</p> <p>Proportional valve 38SOL failed</p> <p>Pressure reducing valve at proportional valve contaminated</p> <p>Brake not fully released</p> <p>Brake valve 31SOL failed</p> <p>Pump failure</p>

TROUBLE	PROBABLE CAUSE
Loader moves forward but not in reverse	Propulsion fwd enable valve 26SOL Fwd/Rev directional switch
Loader moves in reverse but not forward	Propulsion rev enable valve 27SOL Fwd/Rev directional switch
Loader moves in fast mode only	Speed selector switch circuit 16CR
Loader moves or drives in forward or reverse but is slow or sluggish	Engine RPM low Accelerator control improperly adjusted Main system relief improperly adjusted Sense line shuttle check valve between propulsion valve and pump control valve blocked Pump control Proportional valve Pressure reducing valve at proportional valve
Loader drives normally but has little or no dynamic braking when accelerator is released	Dynamic brake relief valve improperly adjusted
Loader drives normally forward and reverse but has severe dynamic braking when accelerator is released	Dynamic brake relief valve improperly adjusted
Stabilizers do not extend	Solenoid valve 38SOL Circuit breaker 11CB tripped Pressure switch 4PS improperly adjusted 4TD timer (time set too long) or (timing resistor not connected) Stabilizer reducing valve improperly adjusted

TROUBLE	PROBABLE CAUSE
Stabilizers extend but indicator light does not light or indicate stabilizers are extended	Pressure switch 4PS improperly adjusted Stabilizer reducing valve improperly adjusted Shuttle valve
Stabilizers extend but do not retract	Circuit breaker 11CB tripped Stabilizer proximity limit switch 6PRS improperly adjusted
Stabilizers extend but do not retract	Solenoid valve 30SOL Platform not fully down
Stabilizers extend but one or more do not move or fully extend	Last stabilizer up or down restrictor (right center) stabilizer blocked, improperly adjusted Bent cylinder rod Stabilizer extend pressure switch 4PS improperly adjusted
Stabilizers retract but one or more do not move or fully retract	Stabilizer check valve Last stabilizer up or down restrictor valve improperly adjusted Bent cylinder rod
Stabilizer movement erratic or cylinder chatters when being extended	Last stabilizer down pressure switch 4PS improperly adjusted Stabilizer reducing valve improperly adjusted Bent cylinder rod

TROUBLE	PROBABLE CAUSE
Hydraulic-powered boggy wheels do not extend	Circuit breaker 11CB tripped Bogy extend solenoid valve 28SOL Platform not fully down Hydraulic cylinder faulty Flow control valve for lowering speed improperly adjusted Bogy lower solenoid 29SOL
Operator's cab does not extend or retract	Circuit breaker 10CB tripped Bridge pilot solenoid valve 63SOL Cab extend/retract solenoid valve 18SOL and/or 19SOL Cab extension cylinder restrictor valve closed
Operator's cab extends but does not retract	Cab retract solenoid valve 19SOL Flow control valve faulty
Operator's cab moves slowly when extending and retracting	Cab extend/retract restrictor valve improperly adjusted Cab extend/retract solenoid valve 18SOL and/or 19SOL Bridge pilot solenoid valve 63SOL
Loader drives or propels in both forward and reverse but no function on either bridge or platform	Circuit breaker 11CB tripped Not in neutral

TROUBLE	PROBABLE CAUSE
<p>Bridge side guides do not move left or right</p>	<p>Circuit breaker 10CB tripped</p> <p>Bridge pilot solenoid valve 63SOL</p> <p>Bridge side guides solenoid valves 20SOL and/or 21SOL</p> <p>Bridge side guides speed-adjust restrictor valve incorrectly adjusted</p> <p>Restrictor valve</p> <p>Hydraulic cylinder</p>
<p>Bridge side guides move left but not right</p>	<p>Bridge side guide solenoid valve 21SOL</p> <p>Pilot-operated check valve</p> <p>Bridge side guide solenoid valve 20SOL</p>
<p>Bridge side guides move right but not left</p>	<p>Pilot-operated check valve faulty</p>
<p>Bridge powered wing 104" (Optional) does not move up or down</p>	<p>Bridge down proximity switch 5PRS maladjusted</p> <p>104" folding wing up and/or down solenoid valves 8SOL and 9SOL</p> <p>Bridge pilot solenoid valve 63SOL</p> <p>Restrictor valve closed</p> <p>Hydraulic cylinder faulty</p>
<p>Bridge powered wing 104" (Optional) moves up but not down</p>	<p>104" wing down solenoid valve 9SOL</p> <p>Hydraulic cylinder</p>
<p>Bridge powered wing 104" (Optional) moves down but not up</p>	<p>104" wing up down switch 10TGS</p> <p>104" wing raise solenoid valve 8SOL</p> <p>Hydraulic cylinder faulty</p>

TROUBLE	PROBABLE CAUSE
<p>Bridge powered wing 134" (Optional) does not move up or down</p>	<p>Circuit breaker 10CB tripped</p> <p>Bridge down proximity limit switch 5PRS maladjusted</p> <p>134" folding wing solenoid valves 10SOL and/or 11SOL</p> <p>Bridge pilot solenoid valve 63SOL</p> <p>Restrictor valve closed</p> <p>Hydraulic cylinder faulty</p>
<p>Bridge powered wing 134" (Optional) moves up but not down</p>	<p>134" powered wing down solenoid valve 11SOL</p>
<p>Bridge powered wing 134" (Optional) moves down but not up</p>	<p>Powered wing 134" up down switch 11TGS</p> <p>134" wing up solenoid valve 10SOL</p> <p>Hydraulic cylinder</p>
<p>Bridge does not convey in any direction</p>	<p>Circuit breaker 11CB tripped</p> <p>Bridge circuit breaker 13CB tripped</p> <p>Bridge pilot solenoid valve 63SOL or 59SOL</p>
<p>Bridge does not convey left</p>	<p>Bridge convey solenoid valves 58SOL, 59SOL & 61SOL</p>
<p>Bridge does not convey right</p>	<p>Bridge convey solenoid valves 57SOL, 59SOL & 60SOL</p>
<p>Bridge does not convey AFT</p>	<p>Bridge convey solenoid valves 60SOL, 61SOL & 62SOL</p>
<p>Bridge does not convey FWD</p>	<p>Bridge convey solenoid valves 56SOL, 57SOL & 58SOL</p>

TROUBLE	PROBABLE CAUSE
One or more roller assemblies do not rotate when any function is selected on bridge for convey	Bridge convey solenoid valves 56SOL, 57SOL, 58SOL, 59SOL, 60SOL, and/or 61SOL Drive motor Driver roller drive chains broken Sprocket keys sheared
Bridge does not raise or lower	Bridge circuit breaker 10CB tripped 12TGS, 14TGS Bridge raise/lower solenoid valves 13SOL and/or 16SOL Bridge raise/lower speed adjustment control valve improperly adjusted Sense line shuttle valve
Bridge raises but does not lower	Bridge lower solenoid valve 16SOL Bridge cylinder counterbalance valves improperly adjusted Sense line shuttle valve
Bridge lowers but does not raise	Bridge lift solenoid valve 13SOL Sense line shuttle valve
Bridge lowers unevenly	Bridge lift cylinder counterbalance valves improperly adjusted Bridge lift cylinders
Bridge raises unevenly	Raise level flow control valve improperly adjusted Bridge lift cylinder counterbalance valves Bridge lift cylinders

TROUBLE	PROBABLE CAUSE
Platform does not raise	Drive/operate mode switch not in operate position Not in neutral Circuit breaker 11CB tripped Proportional valve 36SOL Pressure reducing valve at proportional valve Platform raise solenoid valve 20SOL Platform fast lower solenoid valve 52SOL Platform overtravel proximity switch 5PRS maladjusted Platform interfacing proximity switch 15PRS maladjusted Platform stops held in down position Sense line shuttle valve stuck Platform speed adjustment switch held on
Platform raises very slowly or does not shift into fast speed	100mm of bridge proximity switch 13PRS maladjusted 760mm proximity switch 18PRS maladjusted Proportional valve 36SOL Pressure reducing valve at proportional valve Any platform guide lowered
Platform raises to (650mm) 25.6" only	Right, left, or rear stop of platform in down position Guide down proximity switches 9PRS, 10PRS, 11PRS maladjusted Platform below 610mm proximity switch 12PRS maladjusted

TROUBLE	PROBABLE CAUSE
Platform will not lower	<p>Circuit breaker 11CB tripped</p> <p>Rear stops on bridge held down or stuck in down position and platform not within 100mm of bridge</p> <p>Bridge rear stop lowered proximity switches 16PRS and/or 17PRS maladjusted</p> <p>Platform lower solenoid valve 51SOL</p> <p>Platform down pilot pressure reducing valve improperly adjusted. Ref. steering circuit</p> <p>Platform slow lower flow control valve improperly adjusted</p> <p>Pressure reducing valve at platform lower flow control valves faulty</p> <p>Platform lift cylinder pilot-operated check valves</p>
Platform lowers very slowly	<p>Platform guide held in down position</p> <p>Platform guides lowered proximity switches 9PRS, 10PRS, 11PRS maladjusted</p> <p>Platform within 100mm of bridge proximity 13PRS maladjusted</p> <p>Platform fast down solenoid valve 52SOL</p> <p>Pressure reducing valve at platform lower flow control valves faulty</p> <p>Platform fast lower flow control valve improperly adjusted</p>
Platform lowers only part way; one lift cylinder does not retract	<p>Lift cylinder pilot operated check valve faulty</p> <p>Mechanical binding of scissor or lift cylinder components</p>

TROUBLE	PROBABLE CAUSE
Platform does not convey in any direction	Circuit breaker 11CB tripped Platform convey pilot solenoid valve 80SOL Sense line shuttle valve
Platform rear section conveys forward but not AFT	Solenoid valves 72SOL, 73SOL, 74SOL, 75SOL, 80SOL Joystick switch
Platform rear section conveys AFT but not forward	Convey solenoid valves 68SOL, 69SOL, 70SOL, 71SOL, 80SOL (REAR ROTATE ONLY) Joystick switch
Platform rear section does not convey left or right	Platform convey solenoid valves Left – 68SOL, 70SOL, 72SOL, 74SOL, 77SOL, and 80SOL Right – 69SOL, 71SOL, 73SOL, 75SOL, 78SOL and 80SOL Joystick switch Rotate switch
Platform rotates cargo counterclockwise but not clockwise	Container rotation switch
Platform rotates cargo clockwise but not counterclockwise	Container rotation switch
Front section of platform does not convey	Platform convey solenoid valves Joystick switch

TROUBLE	PROBABLE CAUSE
One or more roller assemblies do not rotate on platform when a specific function is selected	Solenoid valves 64SOL thru 75SOL Convey motors M1 thru M18 Roller chains broken Sprocket keys sheared or missing Chains broken
Platform side and rear guides do not function	Circuit breaker 11CB tripped Platform below 650mm proximity switch 15PRS maladjusted Side guide pilot solenoid valve 48SOL Shuttle valve Side guide pressure reducing valve improperly adjusted Side guide cylinders
Platform right guide does not lower	Right guide lower solenoid valve 47SOL Cylinder faulty
Platform rear guide does not lower	Rear guide lower solenoid valve 46SOL
Platform left guide does not lower	Left guide lower solenoid 45SOL Cylinder faulty
Parking brake does not release	Parking brake solenoid valve 31SOL Parking brake pressure reducing valve improperly adjusted Brake assembly Service brake actuator valve

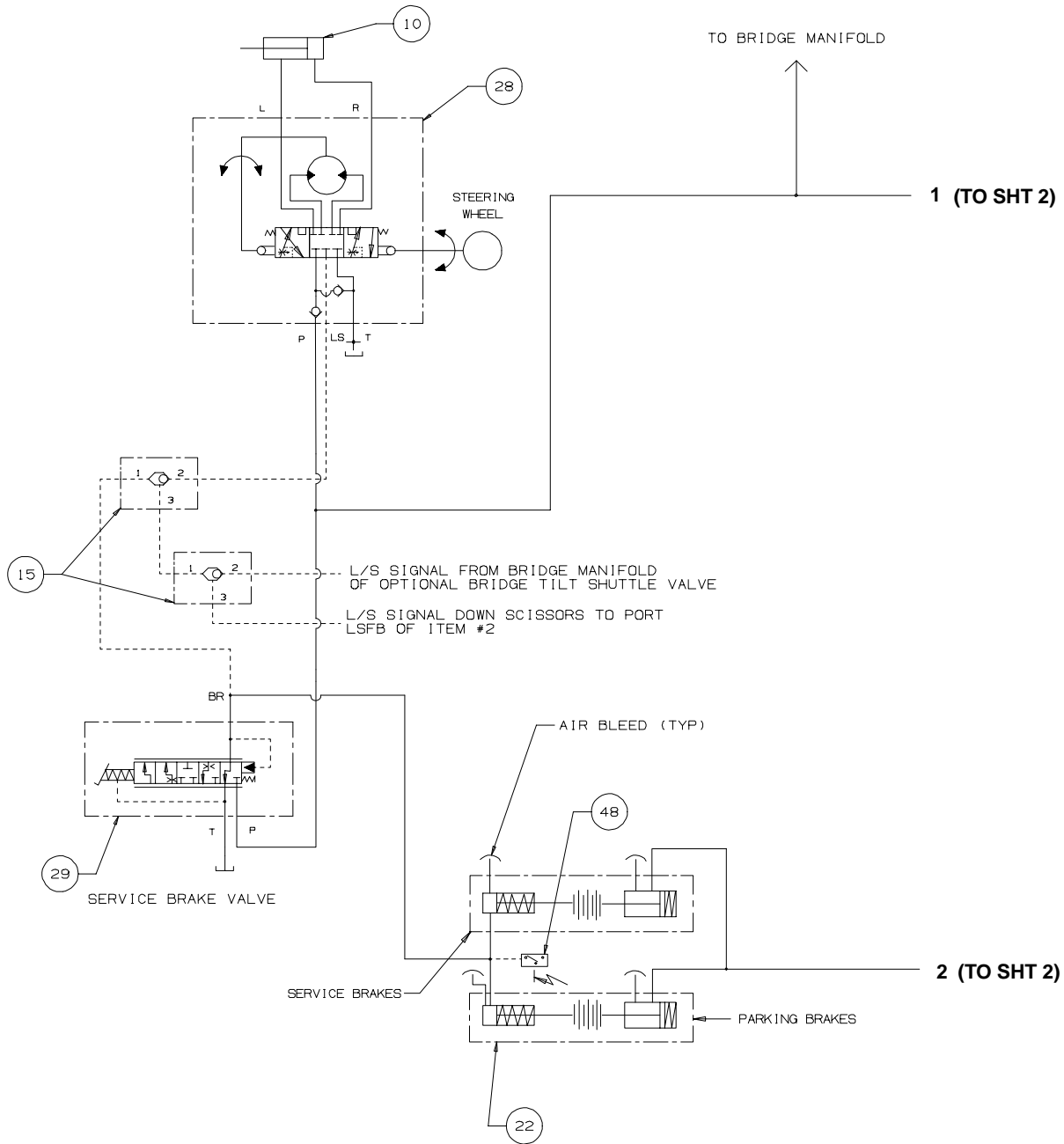
TROUBLE	PROBABLE CAUSE
Loader hard to steer or no power steering	Power steering pressure reducing valve improperly adjusted Shuttle valve stuck Steering valve Hydraulic cylinder for steering
Loader steers in one direction only	Steering valve Hydraulic cylinder
Loader has little or no braking action when pedal depressed	Power steering pressure reducing valve improperly adjusted Service brake hydraulic actuating valve Sense line shuttle valve
Loader pulls to left or right when brakes are applied	Brake assembly

THE FOLLOWING SCHEMATIC DRAWINGS COVER ALL POSSIBLE OPTIONS THAT MAY BE INCORPORATED ON A SINGLE UNIT. THESE DRAWINGS ARE FOR GENERAL PURPOSE USE AND REFLECT OPTIONS THAT ARE AVAILABLE ON CURRENT PRODUCTION LOADERS.

HYDRAULIC PARTS

PARTS LIST			
ITEM NO	PART NO	NOMENCLATURE	UNITS PER ASSY
1	622-3168	PROPEL/LIFT MANIFOLD ASSEMBLY	1
2	621-4877	SERVICES MANIFOLD ASSEMBLY	1
3	621-5641	CYLINDER, Bogy	2
4	621-5638	CYLINDER, Rear Stabilizer	2
5	621-5640	CYLINDER, Stabilizer	4
6	620-0811	PRESSURE SWITCH	2
7	620-0810	VALVE, Needle	3
8	620-0770	VALVE, P.O. Check	4
9	620-3315	VALVE ASSEMBLY	1
10	620-0183	CYLINDER, Steering	1
11	620-1569	VALVE, Flow Control	3
12	620-1428	MOTOR, Convey	13
13	620-1836	PLATFORM MANIFOLD ASSEMBLY	1
14	621-5639	CYLINDER, Platform Guide/Stops	4
15	620-0128	VALVE, Shuttle	5
16	620-1832	MANIFOLD ASSEMBLY, Guide/Stops	1
17	621-5647	CYLINDER, Bridge Lift, Main Deck	2
18	620-2725	VALVEPAC, Main Deck	2
19	620-3605	MANIFOLD ASSEMBLY, Bridge	1
20	620-1527	VALVE, Dual P.O. Check	1
21	621-5643	CYLINDER, Guide	3
22	620-4120	SERVICE/PARKING BRAKE	2
23	620-9350	EMERGENCY POWER UNIT	1
24	620-3481	PRESSURE COMP. FLOW CONTROL	2
25	620-3255	BRIDGE TILT MANIFOLD ASSEMBLY	1
26	620-4642	RESTRICTOR	1
27	621-5642	CYLINDER, Tilt	2
28	620-4093	STEERING CONTROL VALVE	1
29	620-9214	POWER BRAKE VALVE	1
30	620-0460	FILTER, Return	REF
31	620-0461	ELEMENT, Return Filter	REF
32	621-5645	SECONDARY LIFT CYLINDER	2

PARTS LIST			
ITEM NO	PART NO	NOMENCLATURE	UNITS PER ASSY
33	620-8310	VALVE, Throttle Control	1
34	622-6916	VALVE, Load Sense Dump	1
35	622-3327-001	HYDRAULIC TANK	1
36	620-3007	PUMP	1
37	621-5644	PRIMARY LIFT CYLINDER	1
38	620-0141	MOTOR	2
39	621-2256	CYLINDER, Throttle	1
40	621-5636	CYLINDER, Cab Extend	1
41	621-5637	CYLINDER, R.H. Powered Wing	1
42	514-8244-002	ELEMENT, Pressure Filter	REF
43	514-8244	FILTER, Pressure	REF
44	621-5454	BREATHER, Tank	REF
45	621-5556	FILTER, Return	2
46	621-5556-002	ELEMENT, Filter	2
47	620-2565	GAUGE, Pressure	1
48	620-6380	SWITCH, Pressure	1
49	621-5646	BRIDGE LIFT CYLINDER	2
50	620-1534	BRIDGE LIFT CYLINDER VALVEPAC	2
51	620-0193	SELECTOR VALVE	1
52	621-5689	REDUCING/RELIEVING VALVE	1
53	620-0590	VENTED P.O. CHECK VALVEPAC	2
54	620-0591	VENTED P.O. CHECK VALVEPAC	1
55	620-1131	PILOT MANIFOLD	1
56	620-1130	PRESSURE MANIFOLD	1
57	621-5556-001	INDICATOR GAUGE	2
58	620-1738	VALVE, Pressure Reducing	1
59	622-9495	VALVE, Solenoid Operated Pressure Reducing	1
60	623-2831	VALVEPAC, Pressure Control	1



REV. F

Figure 47
 HYDRAULIC SYSTEM SCHEMATIC
 (SHEET 1 OF 7)
 622-4448

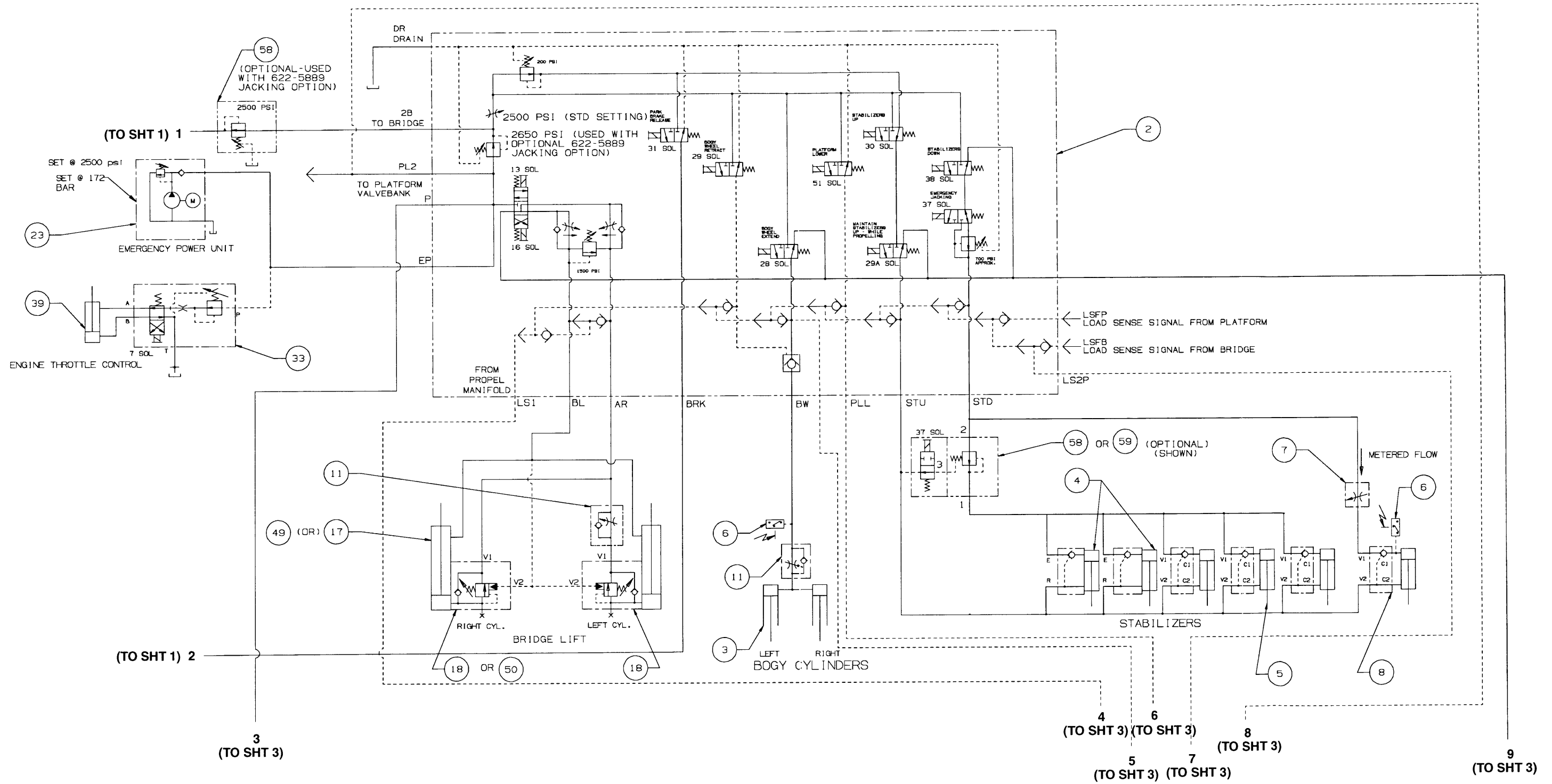


Figure 48
HYDRAULIC SYSTEM SCHEMATIC
(SHEET 2 OF 5)
622-4448

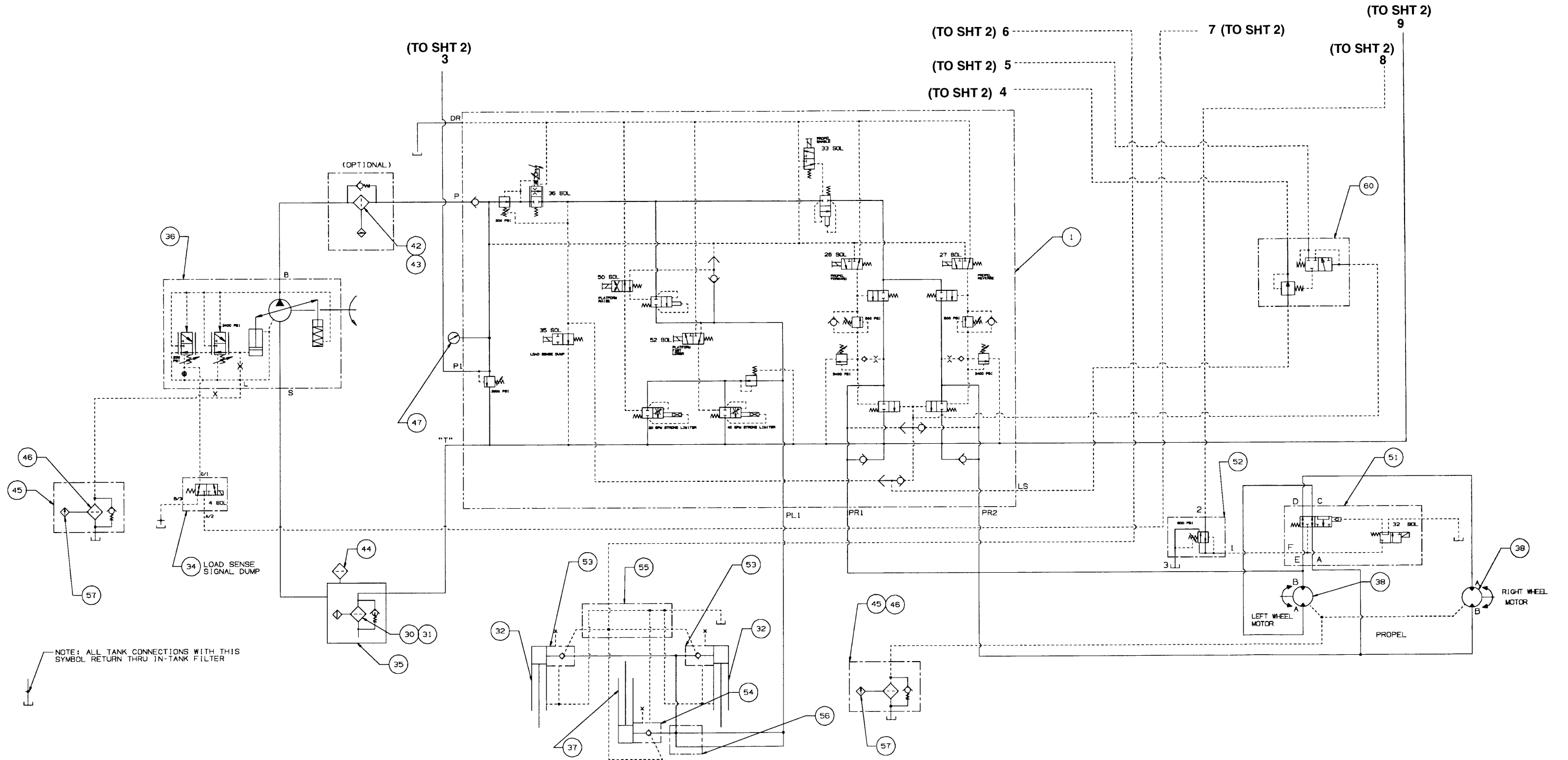


Figure 49
HYDRAULIC SYSTEM SCHEMATIC
(SHEET 3 OF 5)
622-4448

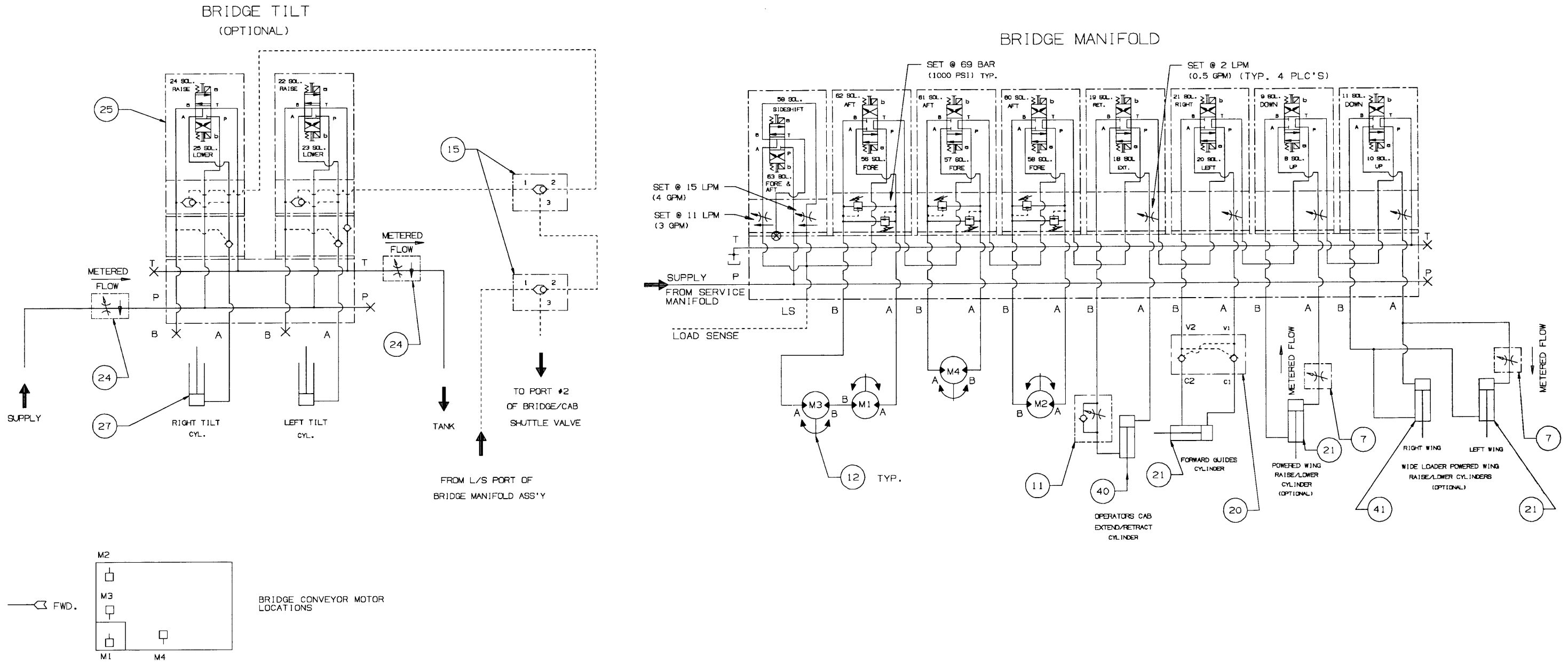


Figure 50
HYDRAULIC SYSTEM SCHEMATIC
(SHEET 4 OF 5)
622-4448

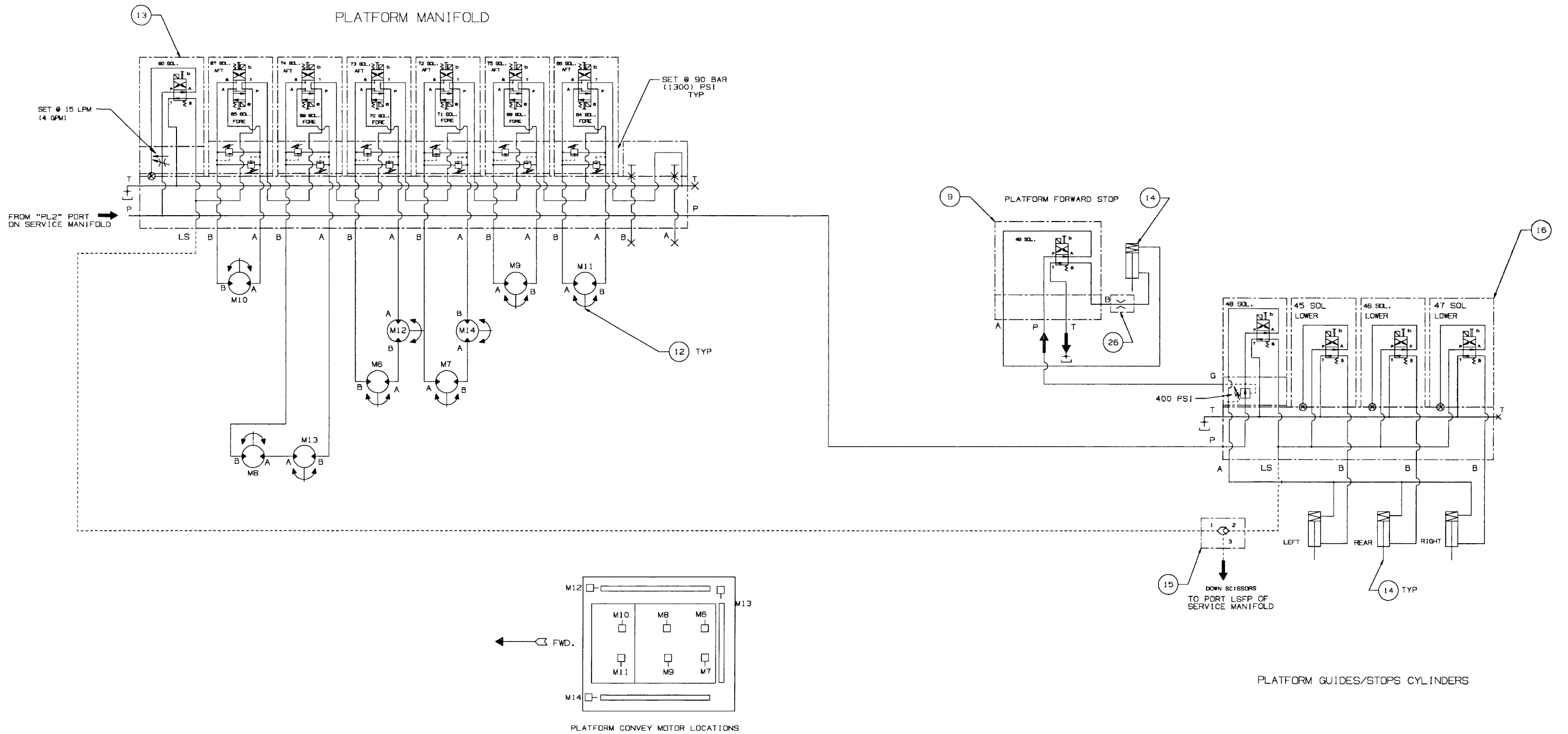


Figure 51
 HYDRAULIC SYSTEM SCHEMATIC
 (SHEET 5 OF 7)
 622-4448

THIS ELECTRICAL SCHEMATIC SHOWS THE “STANDARD” COMPONENTS FOUND IN ALL FACTORY UNITS PLUS MOST OF THE COMMON OPTIONS AVAILABLE. IT IS EFFECTIVE FOR CR96012 AND LATER.

REF: SEE 621-5700 FOR PRIOR PRODUCTION MODELS.

PAGES 108-119 REFLECT THE DIFFERENT PLATFORM CONFIGURATIONS. EACH PAGE IS IDENTIFIED AS TO ITS SPECIFIC CONFIGURATION AND ONLY FOUR PAGES APPLY TO ANY GIVEN MACHINE. USE ONLY THE FOUR PAGES THAT APPLY TO YOUR MACHINE:

Figure 74-Figure 77 show **REAR ROTATION PLATFORM** configuration.

Figure 78-Figure 81 show **CENTER ROTATION PLATFORM** configuration.

Figure 82-Figure 85 show **LONG PLATFORM** configuration.

NOTE: Please see Figure 53 for Platform Convey Troubleshooting Chart.

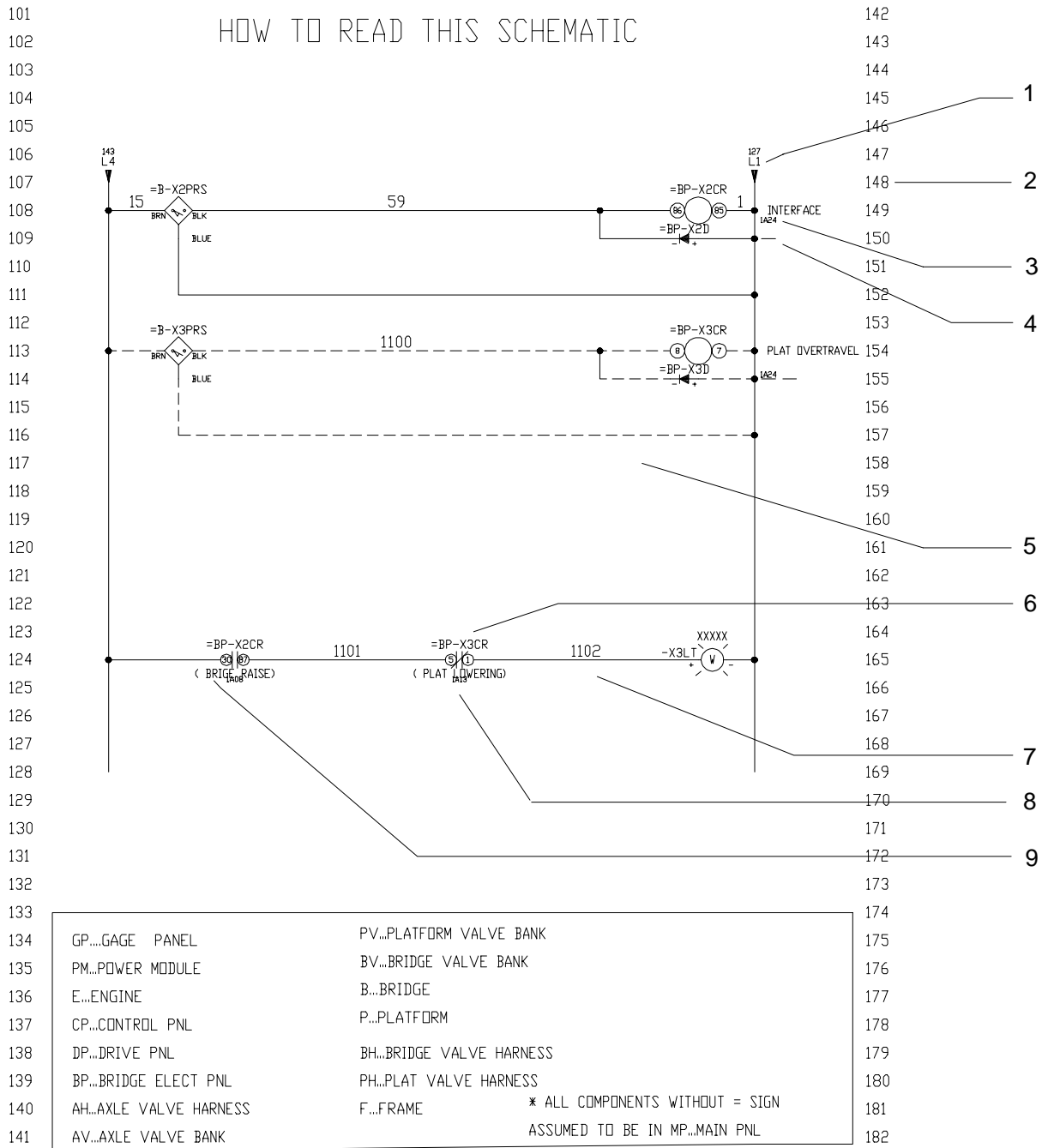


Figure 52
ELECTRICAL SCHEMATIC INFORMATION

- | | | |
|---|---------------------------|--|
| 1 | SIGNAL CROSS-REFERENCE | TELLS WHERE THE SIGNAL IS COMING FROM OR GOING TO. THE L1 IS THE COMPUTER'S WAY OF KEEPING TRACK AND THE NUMBER ABOVE IT TELLS WHAT LINE NUMBER IT CAME FROM OR IS GOING TO FOR QUICK REFERENCING. |
| 2 | LINE NUMBER REFERENCE | IN THIS PARTICULAR CASE, LINE 148 IS INTERPRETED AS SHEET 1 LINE 48. |
| 3 | LINE CROSS-REFERENCE | TELLS WHERE TO FIND THE CONTACTS FOR THE RELAY COIL IT IS LOCATED BESIDE. THE NUMBER REFERS TO LINE NUMBER. IF THE NUMBER IS UNDERLINED, IT MEANS THE CONTACT IS NORMALLY CLOSED; OTHERWISE, IT WILL BE NORMALLY OPEN. |
| 4 | LINE W/NO NUMBER ABOVE IT | THE N.C. CONTACT HAS NOT BEEN USED. THE LINE IS A REFERENCE THAT IT STILL HAS A N.C. CONTACT AVAILABLE. IF THIS HAD BEEN A 2-POLE OR 4-POLE RELAY, THERE WOULD BE 2 OR 4 LINES IN A ROW. |
| 5 | DOTTED LINES | REPRESENT OPTIONS OR OTHERWISE NON-STANDARD FEATURES. |
| 6 | DEVICE I.D. | THIS SET OF NUMBERS IDENTIFIES THE SPECIFIC COMPONENT. THE = SIGN TELLS WHERE THE COMPONENT IS INSTALLED (I.E., =BP MEANS IT IS LOCATED IN THE BRIDGE PANEL). IF THE = SIGN IS NOT PRESENT, IT IS ASSUMED TO BE IN THE MAIN PANEL. THE -X2CR IS THE ACTUAL DEVICE I.D. (SEE LEGEND FOR LOCATION EXPLANATIONS.) |
| 7 | WIRE NUMBER | LOCATES AND IDENTIFIES WIRE NUMBERS. |
| 8 | COIL LINE REFERENCE | TELLS WHERE THE COIL IS LOCATED. |
| 9 | FUNCTION | THIS DESCRIPTION TELLS WHEN THE CONTACTS CHANGE STATE OR WHEN THE COIL IS ENERGIZED. ALL CONTACTS SHOWN IN UNEXECUTED STATE. |

PLATFORM CONFIGURATION	DIRECTION	FRONT SECTION	REAR SECTION	ROTATION	
REAR ROTATION	FWD	64 65 77 80 SCL G5 G6 H6 H8 LED	68 69 70 71 78 80 SCL G9 G10 G11 G12 H7 H8 LED		
	AFT	66 67 78 80 SCL G7 G8 H7 H8 LED	72 73 74 75 77 80 SCL H1 H2 H3 H4 H6 H8 LED	CW	68 71 73 74 77 80 SCL G9 G12 H2 H3 H6 H8 LED
	LEFT	64 67 77 80 SCL G5 G8 H6 H8 LED	69 71 73 75 77 80 SCL G10 G12 H2 H4 H6 H8 LED	CCW	69 70 72 75 78 80 SCL G10 G11 H1 H4 H7 H8 LED
	RIGHT	65 66 78 80 SCL G6 G7 H7 H8 LED	68 70 72 74 78 80 SCL G9 G11 H1 H3 H7 H8 LED		
CENTER ROTATION	FWD	64 65 69 80 SCL G5 G6 G10 H8 LED	69 70 71 80 SCL G10 G11 G12 H8 LED		
	AFT	66 67 74 80 SCL G7 G8 H3 H8 LED	72 73 74 80 SCL H1 H2 H3 H8 LED	CW	65 66 68 69 71 73 80 SCL G6 G7 G9 G10 G12 H2 H8 LED
	LEFT	64 67 69 75 80 SCL G5 G8 G10 H4 H8 LED	69 71 73 75 80 SCL G10 G12 H2 H4 H8 LED	CCW	64 67 68 69 70 72 80 SCL G5 G8 G9 G10 G11 H1 H8 LED
	RIGHT	65 66 68 74 80 SCL G6 G7 G9 H3 H8 LED	68 70 72 74 80 SCL G9 G11 H1 H3 H8 LED		
CMDR-LONG	FWD	64 65 80 SCL G5 G6 H8 LED	68 69 70 71 77 80 SCL G9 G10 G11 G12 H6 H8 LED		
	AFT	66 67 80 SCL G7 G8 H8 LED	72 73 74 75 78 80 SCL H1 H2 H3 H4 H7 H8 LED	CW	69 70 72 75 76 77 80 SCL G10 G11 H1 H4 H5 H6 H8 LED
	LEFT	65 66 80 SCL G6 G7 H8 LED	68 70 72 74 77 80 SCL G9 G11 H1 H3 H6 H8 LED	CCW	68 71 73 74 76 77 80 SCL G9 G12 H2 H3 H5 H6 H8 LED
	RIGHT	64 67 80 SCL G5 G8 H8 LED	69 71 73 75 78 80 SCL G10 G12 H2 H4 H7 H8 LED		

Figure 53
PLATFORM CONVEY TROUBLESHOOTING CHART

THIS PAGE INTENTIONALLY BLANK

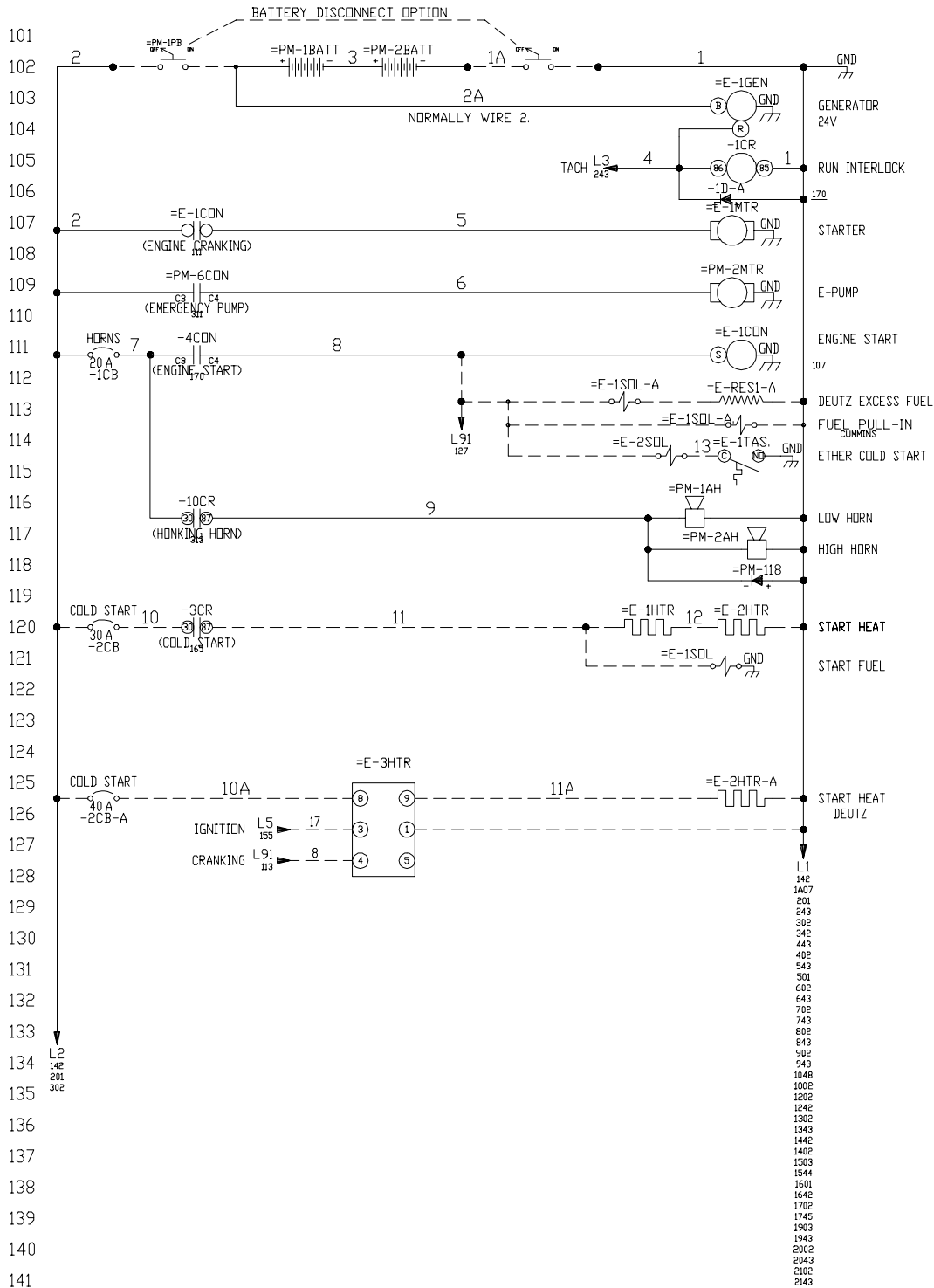


Figure 54
ELECTRICAL SCHEMATIC
622-7180

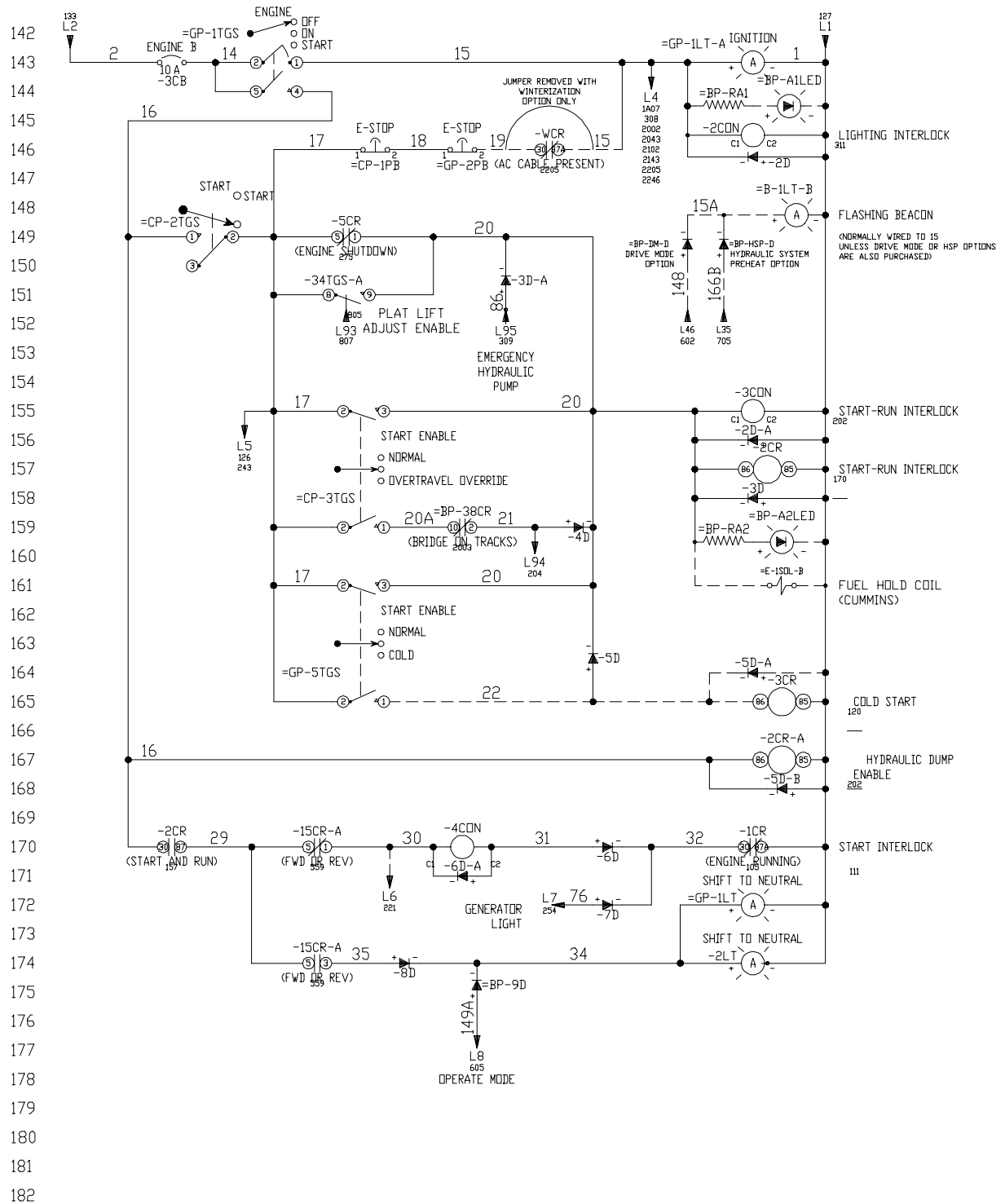


Figure 55
ELECTRICAL SCHEMATIC
622-7180

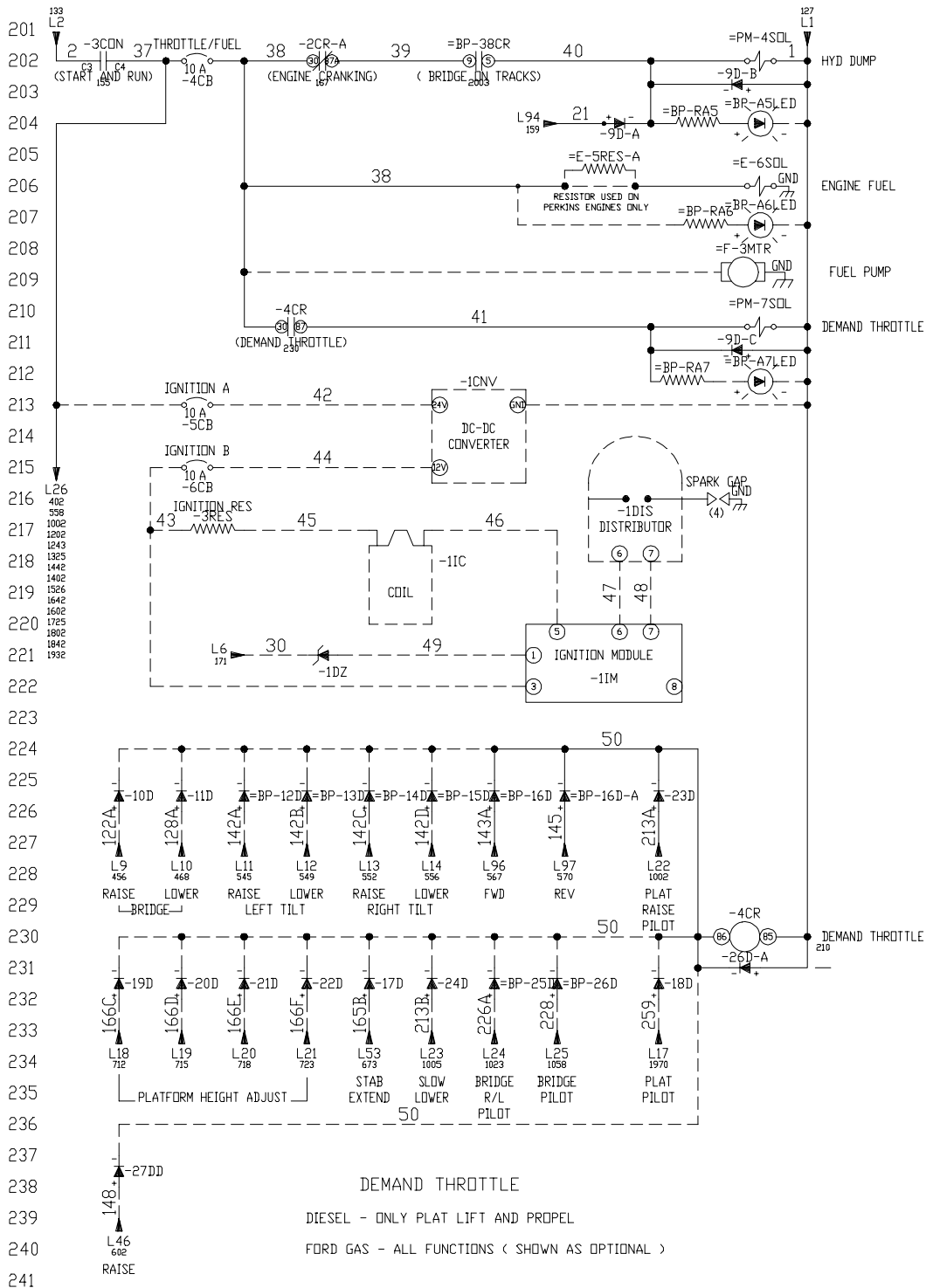


Figure 56
ELECTRICAL SCHEMATIC
622-7180

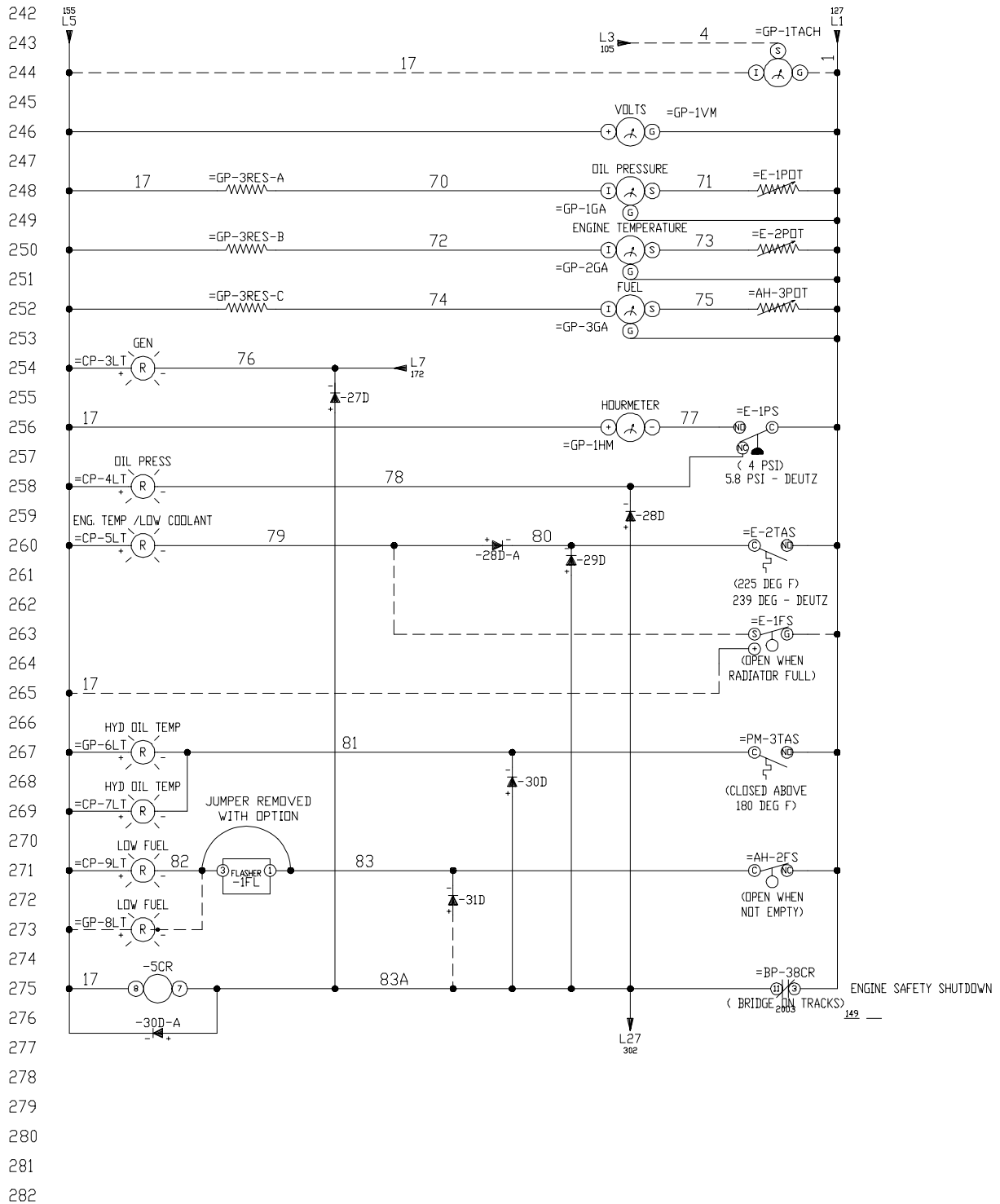


Figure 57
ELECTRICAL SCHEMATIC
622-7180

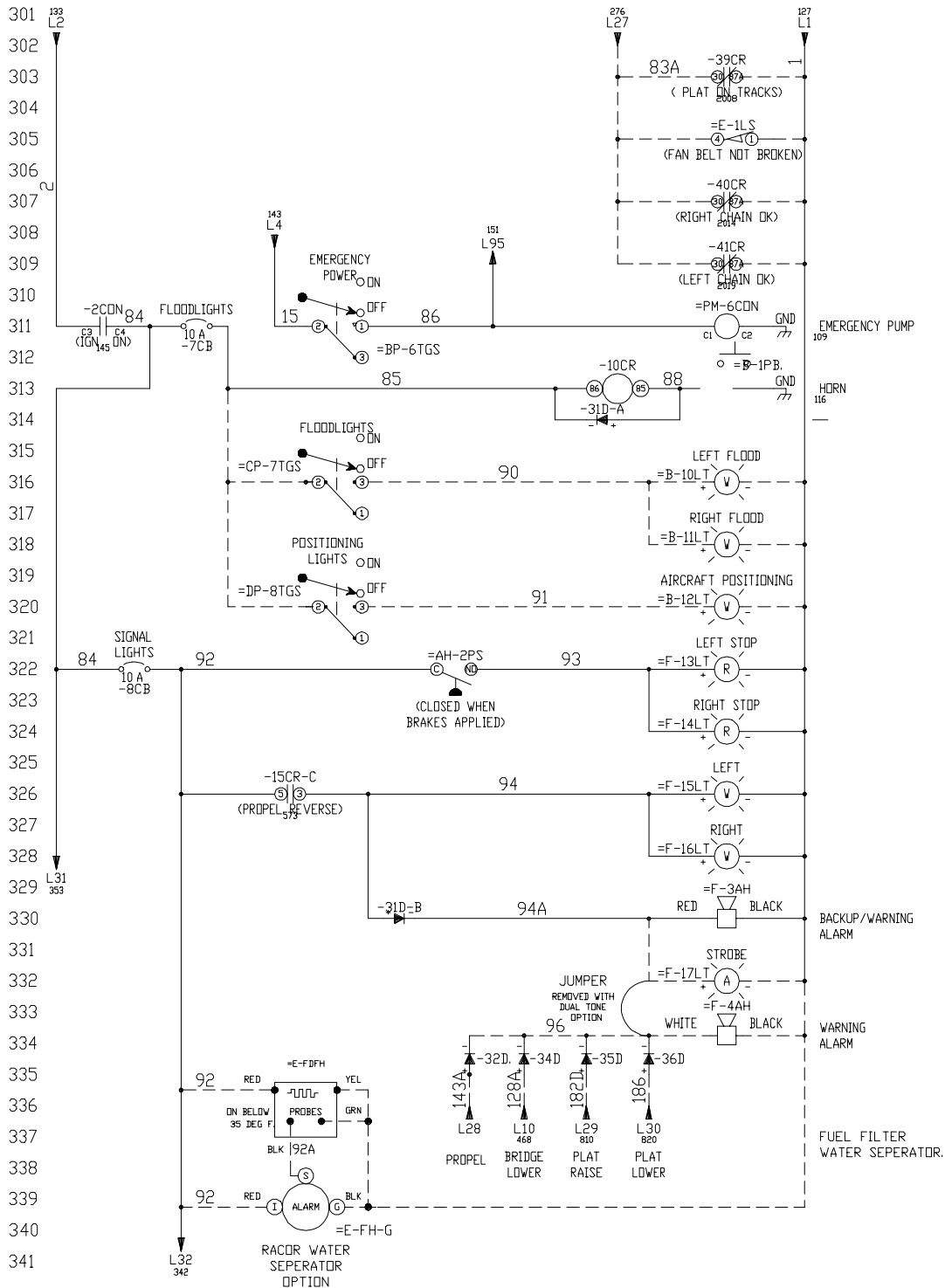


Figure 58
ELECTRICAL SCHEMATIC
622-7180

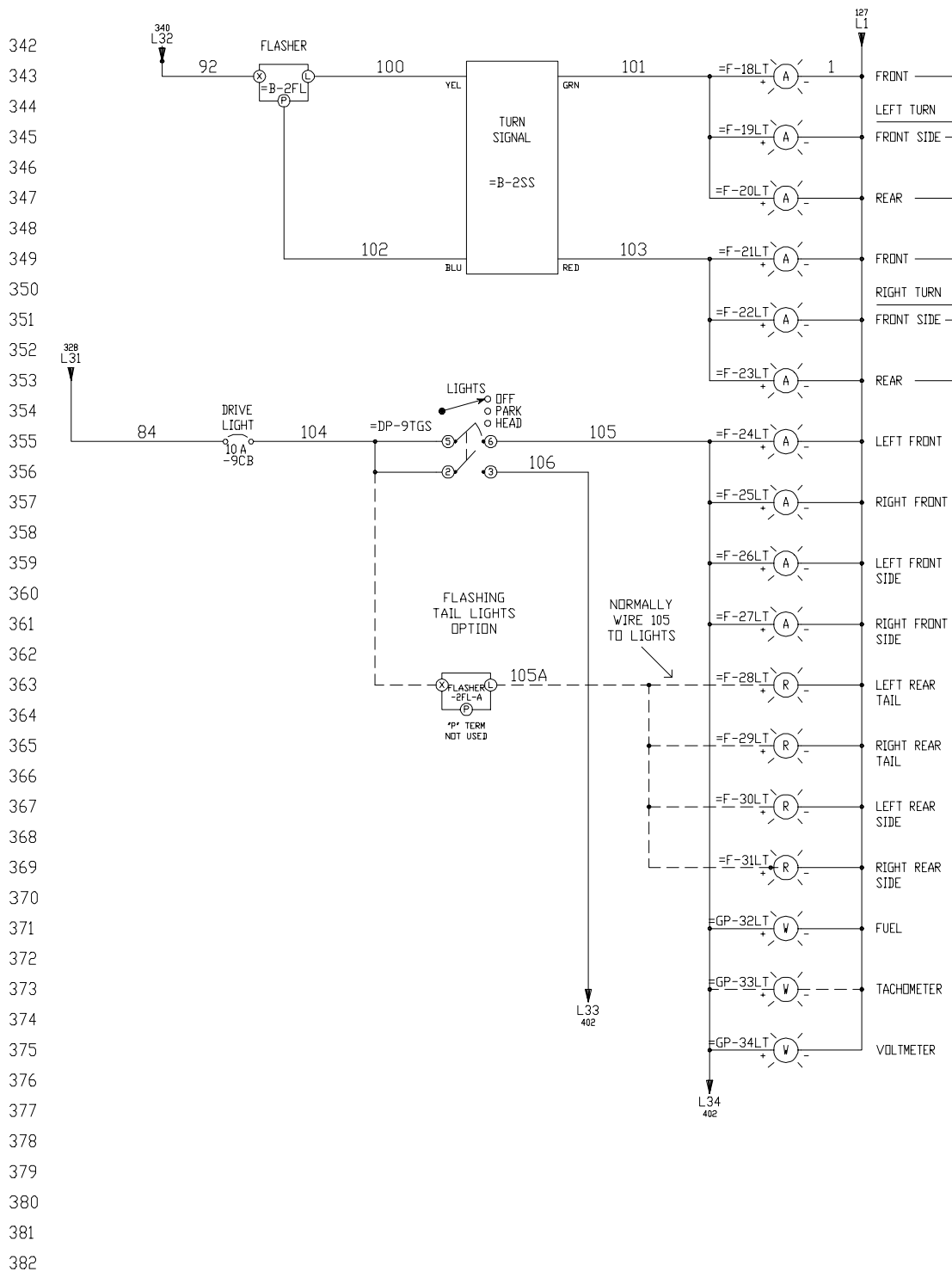


Figure 59
ELECTRICAL SCHEMATIC
622-7180

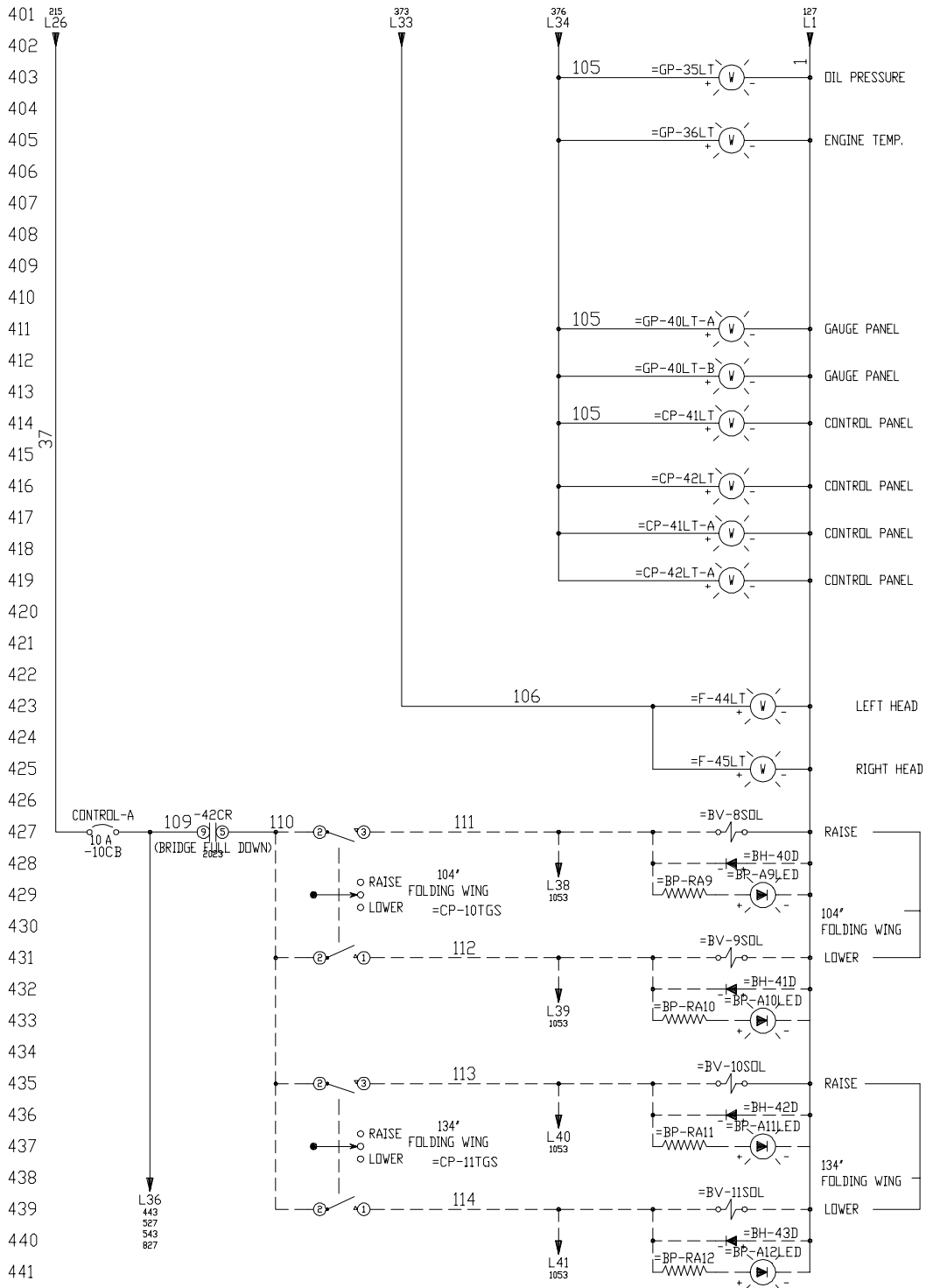


Figure 60
ELECTRICAL SCHEMATIC
622-7180

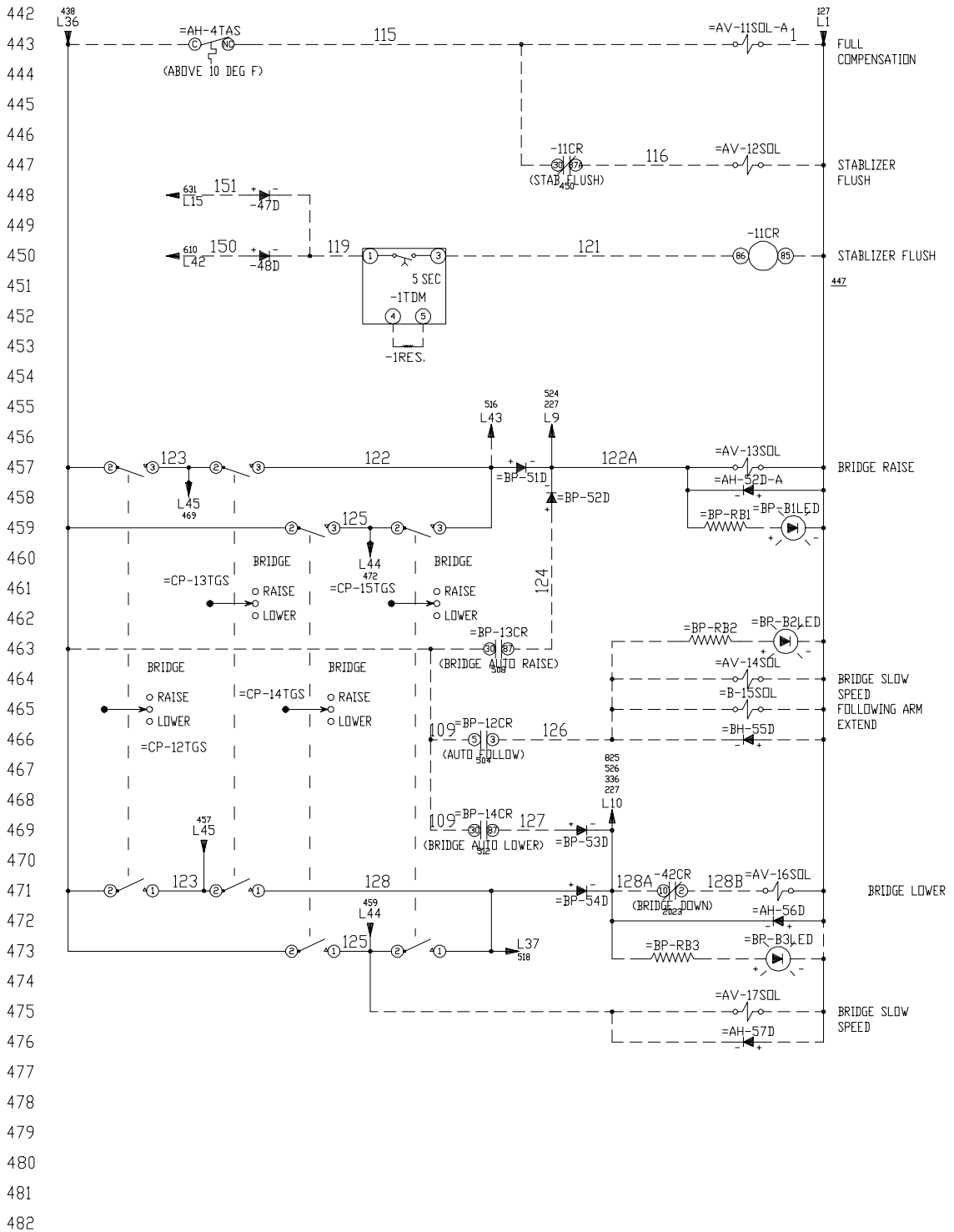


Figure 61
ELECTRICAL SCHEMATIC
622-7180

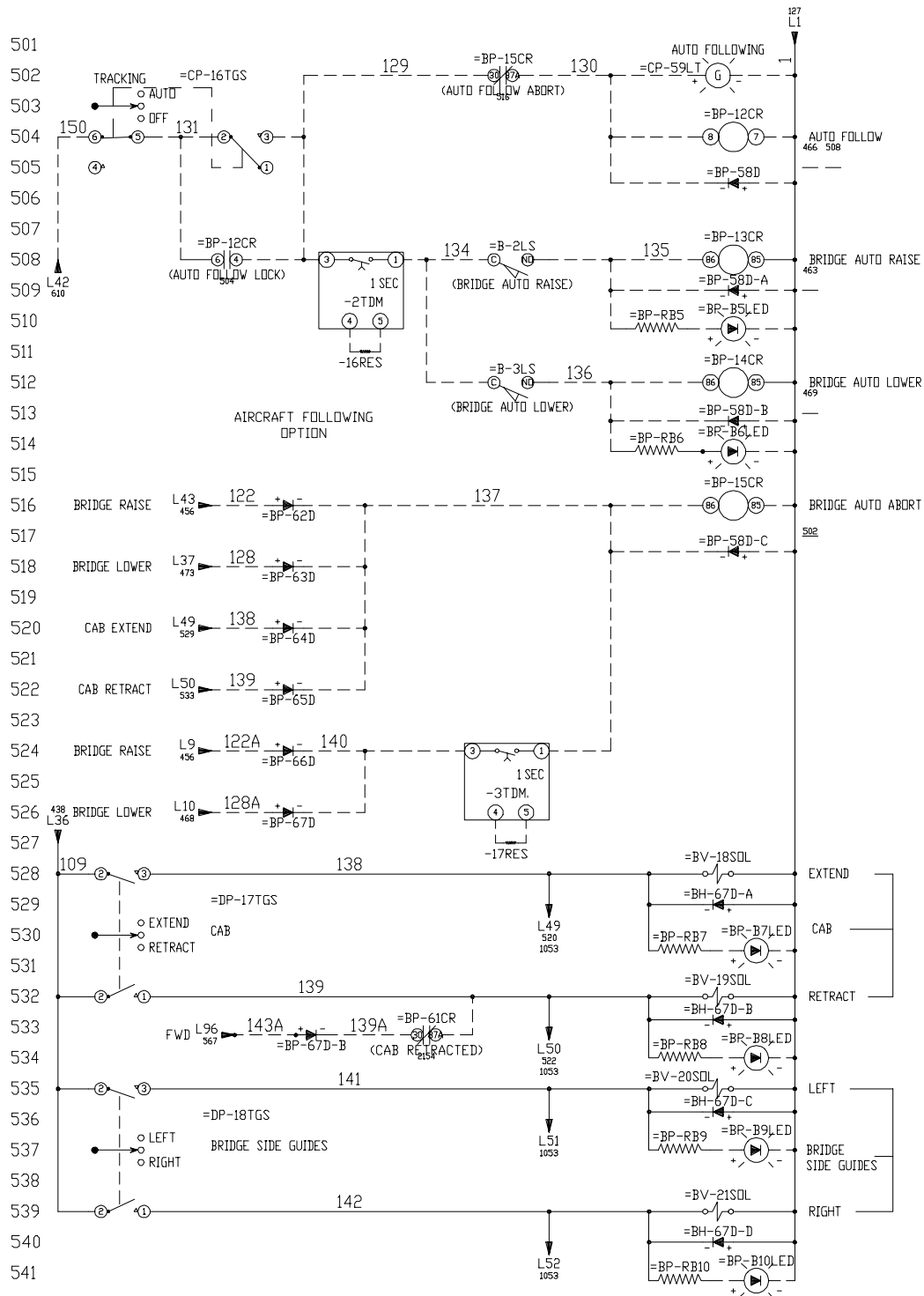


Figure 62
ELECTRICAL SCHEMATIC
622-7180

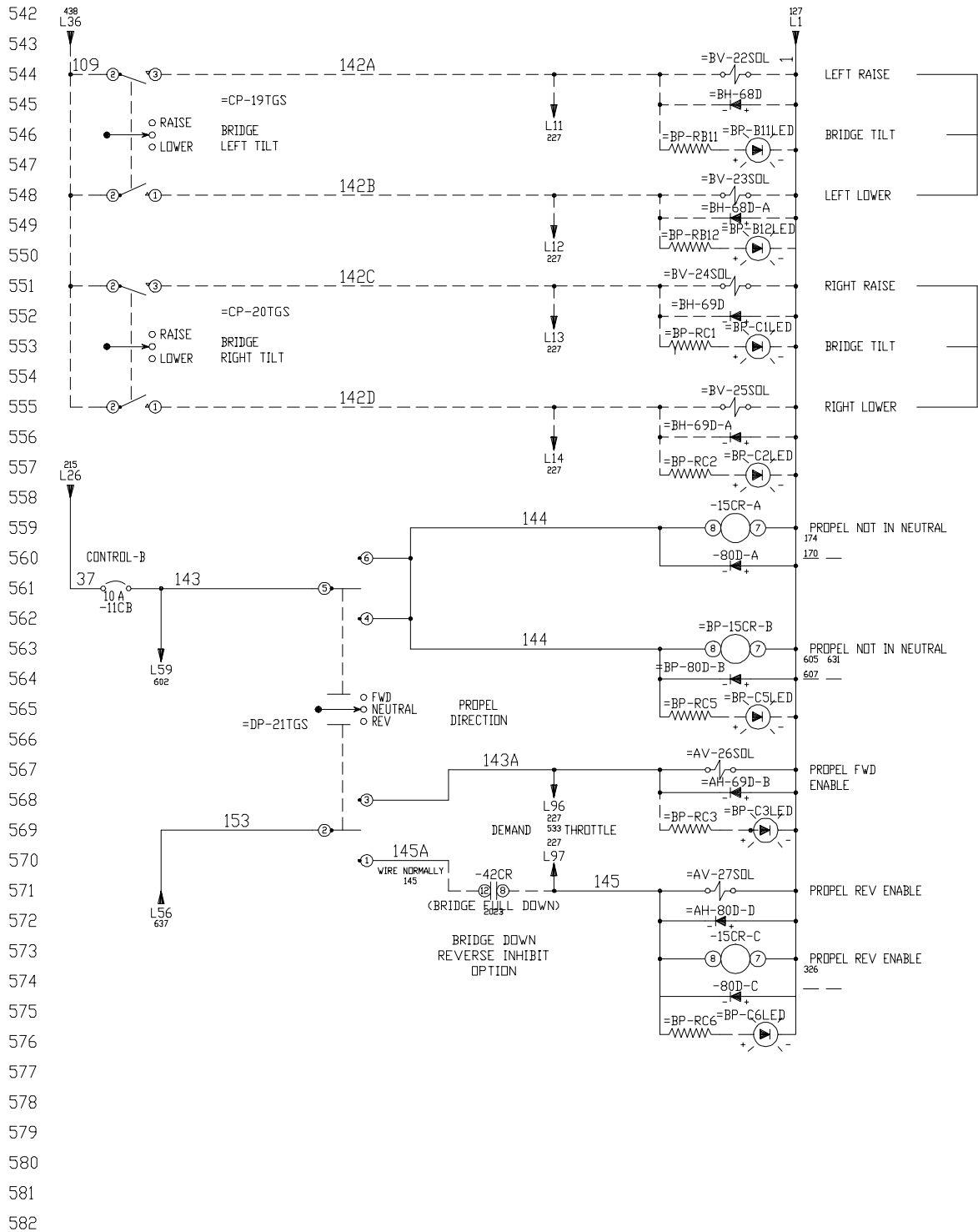


Figure 63
ELECTRICAL SCHEMATIC
622-7180

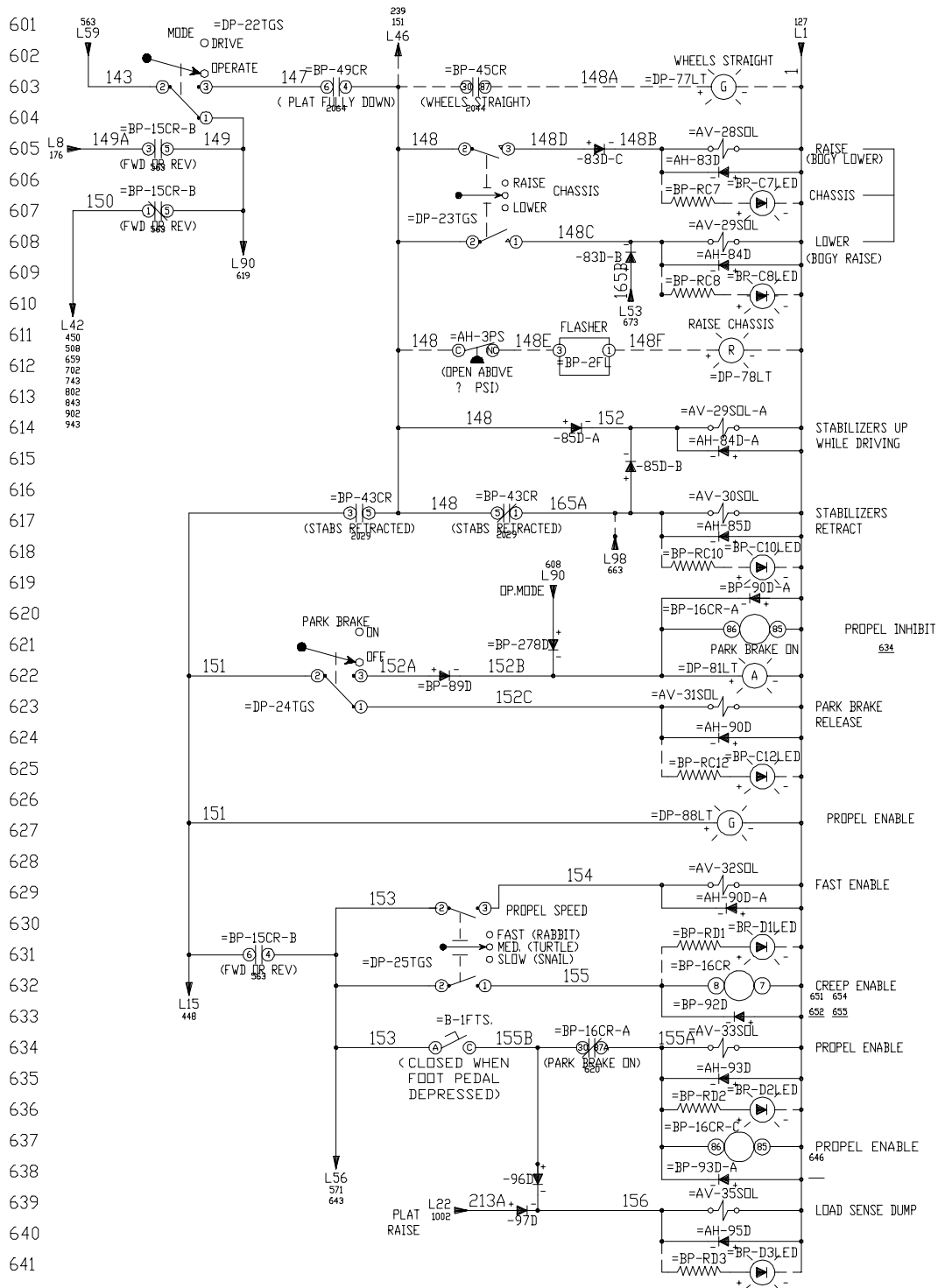


Figure 64
ELECTRICAL SCHEMATIC
622-7180

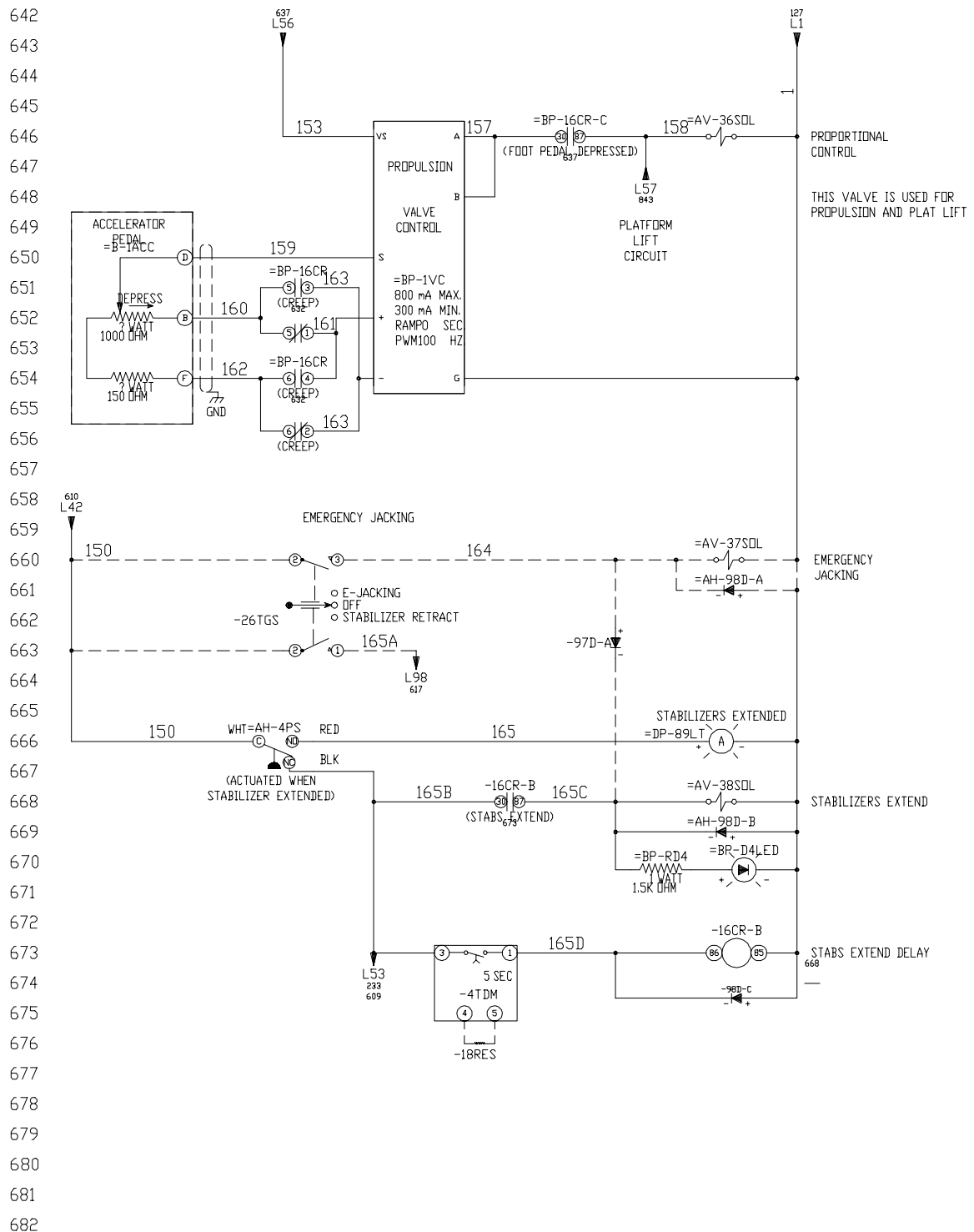


Figure 65
ELECTRICAL SCHEMATIC
622-7180

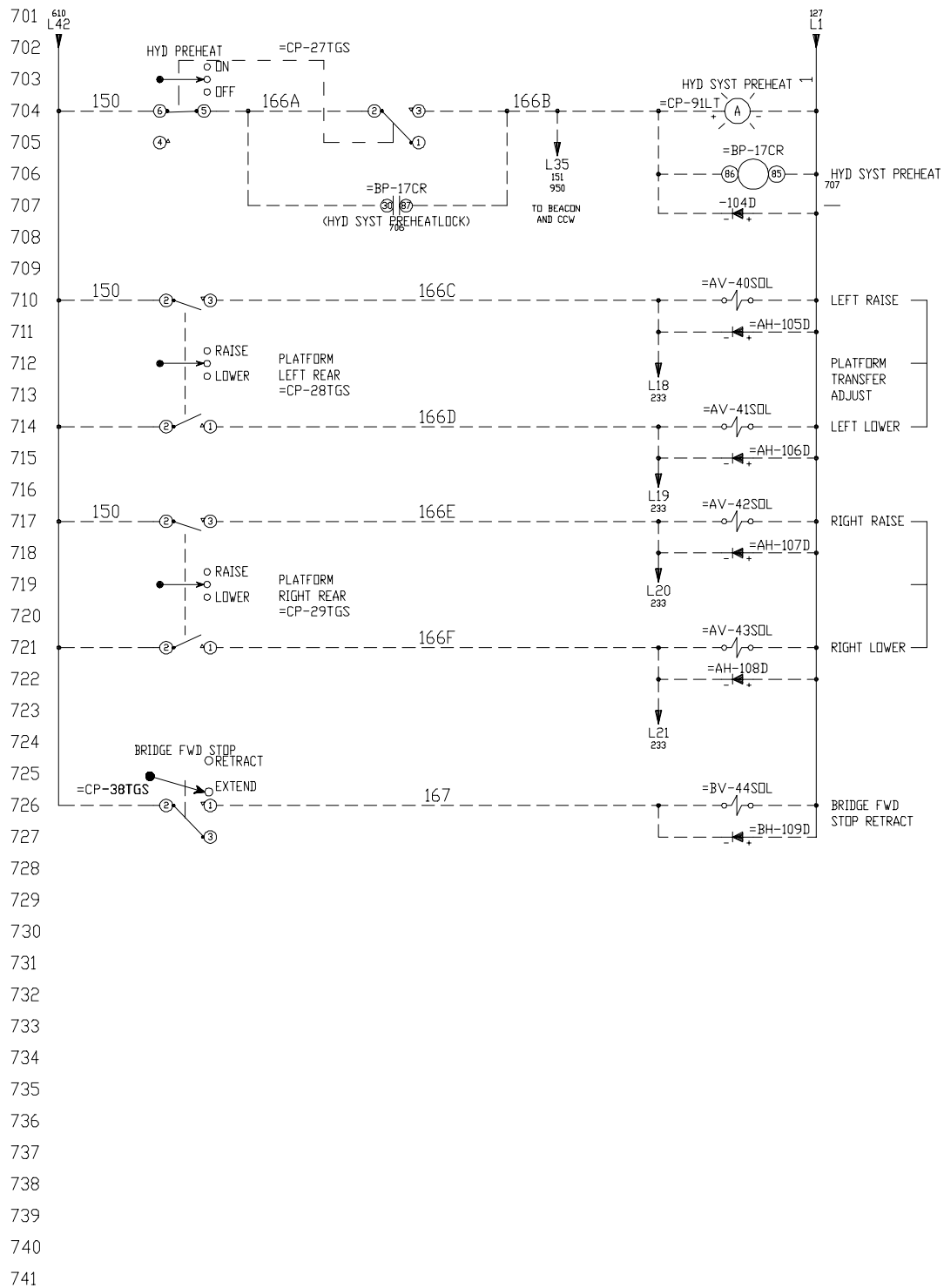


Figure 66
ELECTRICAL SCHEMATIC
622-7180

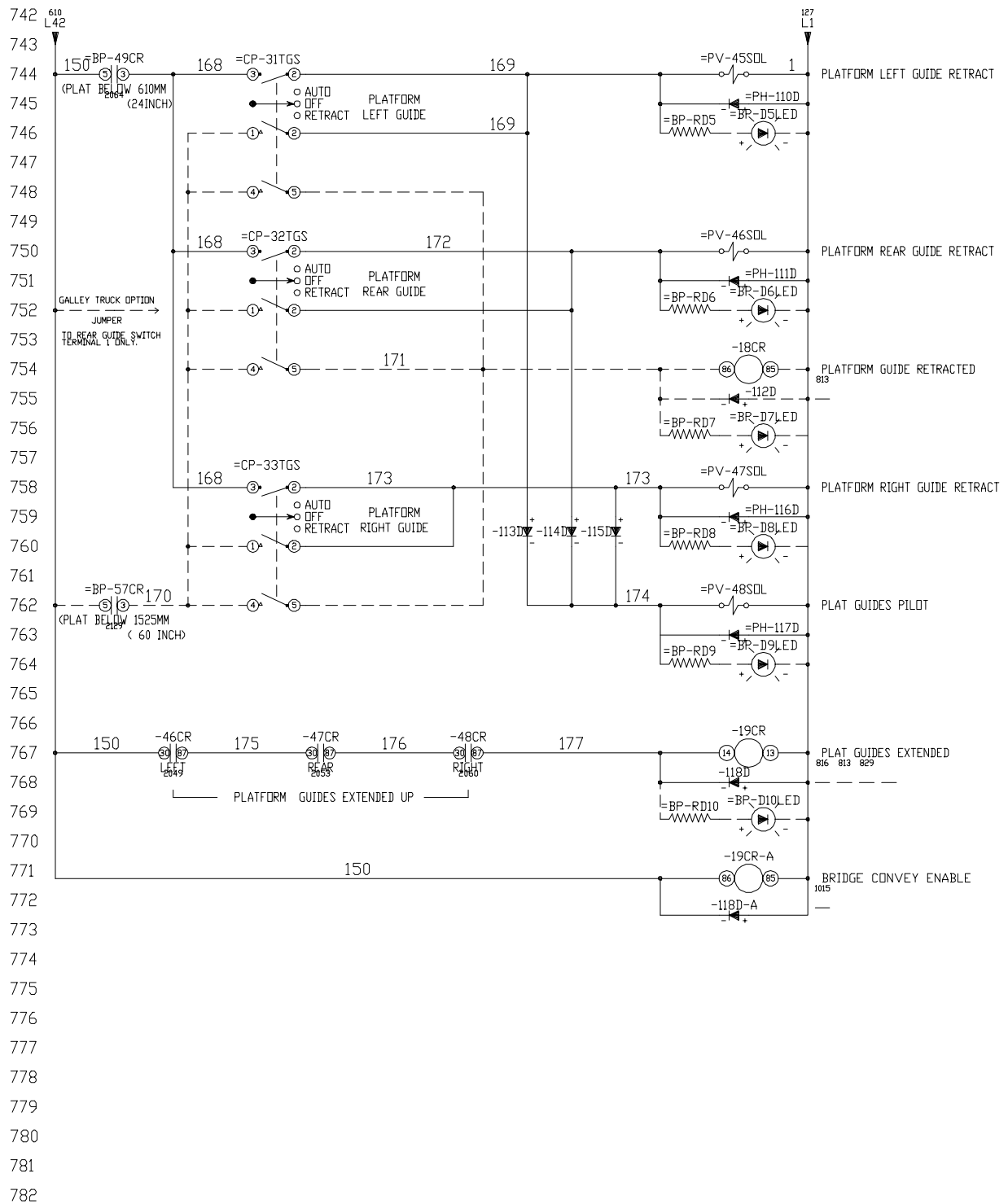


Figure 67
ELECTRICAL SCHEMATIC
622-7180

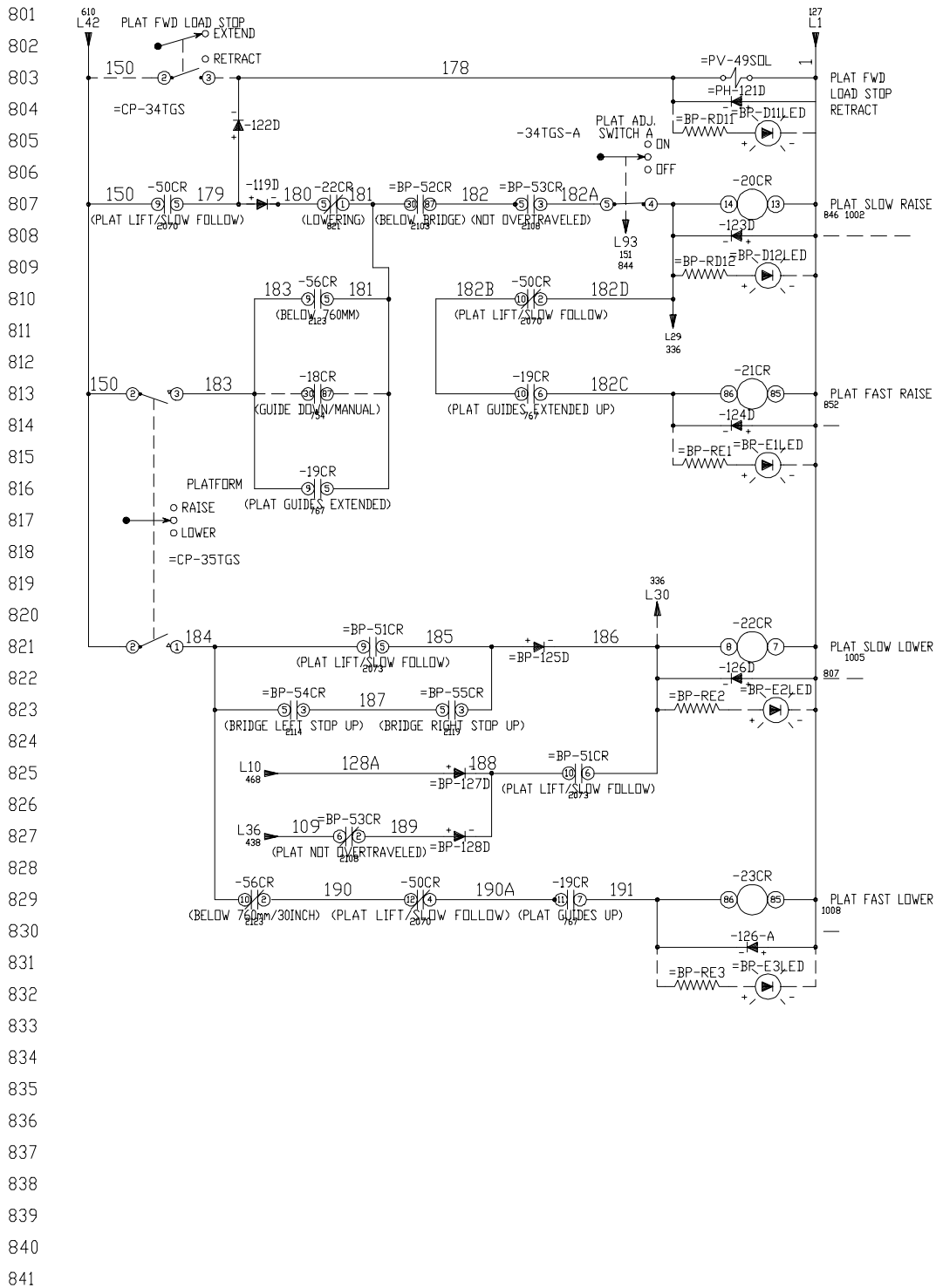


Figure 68
ELECTRICAL SCHEMATIC
622-7180

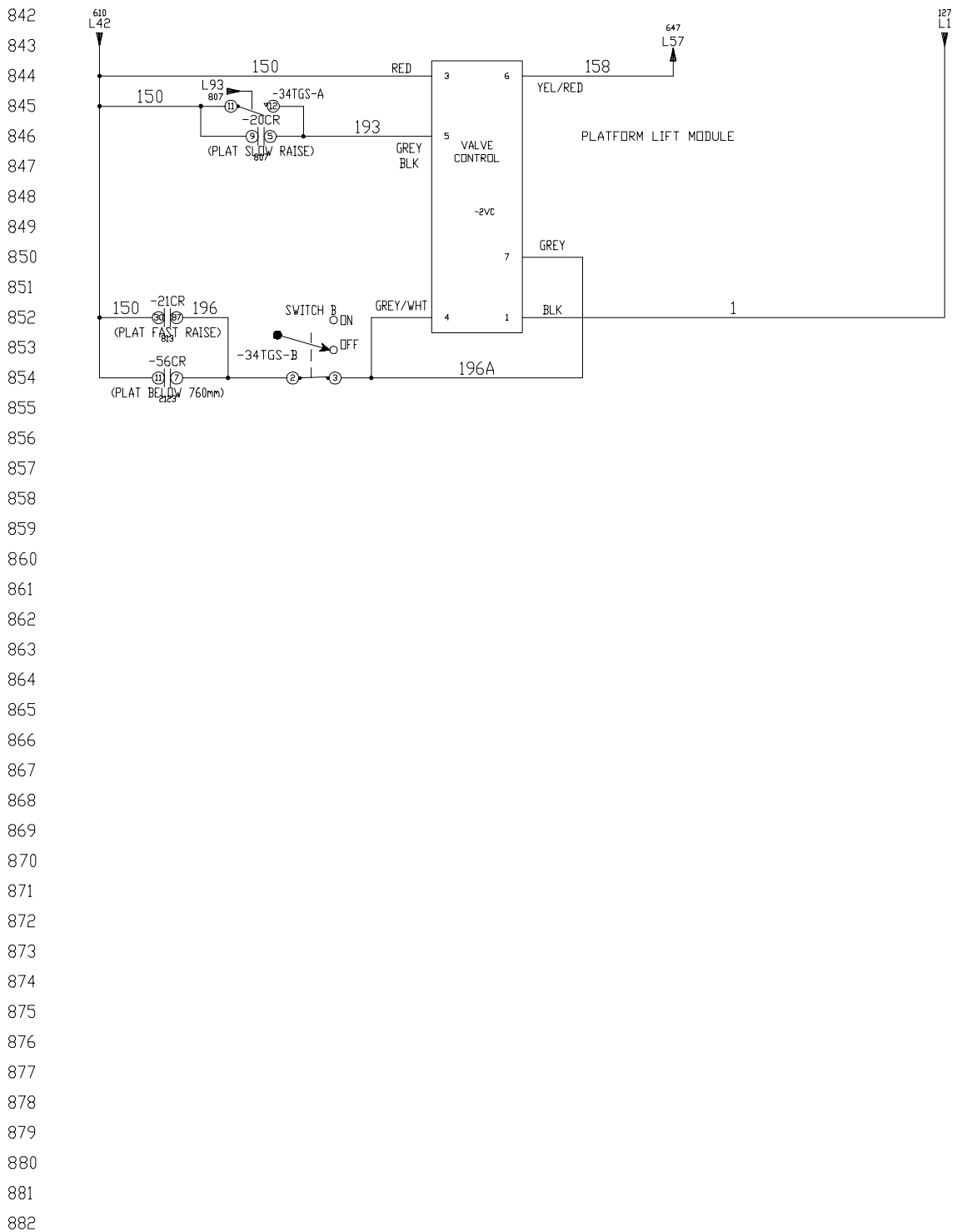


Figure 69
ELECTRICAL SCHEMATIC
622-7180

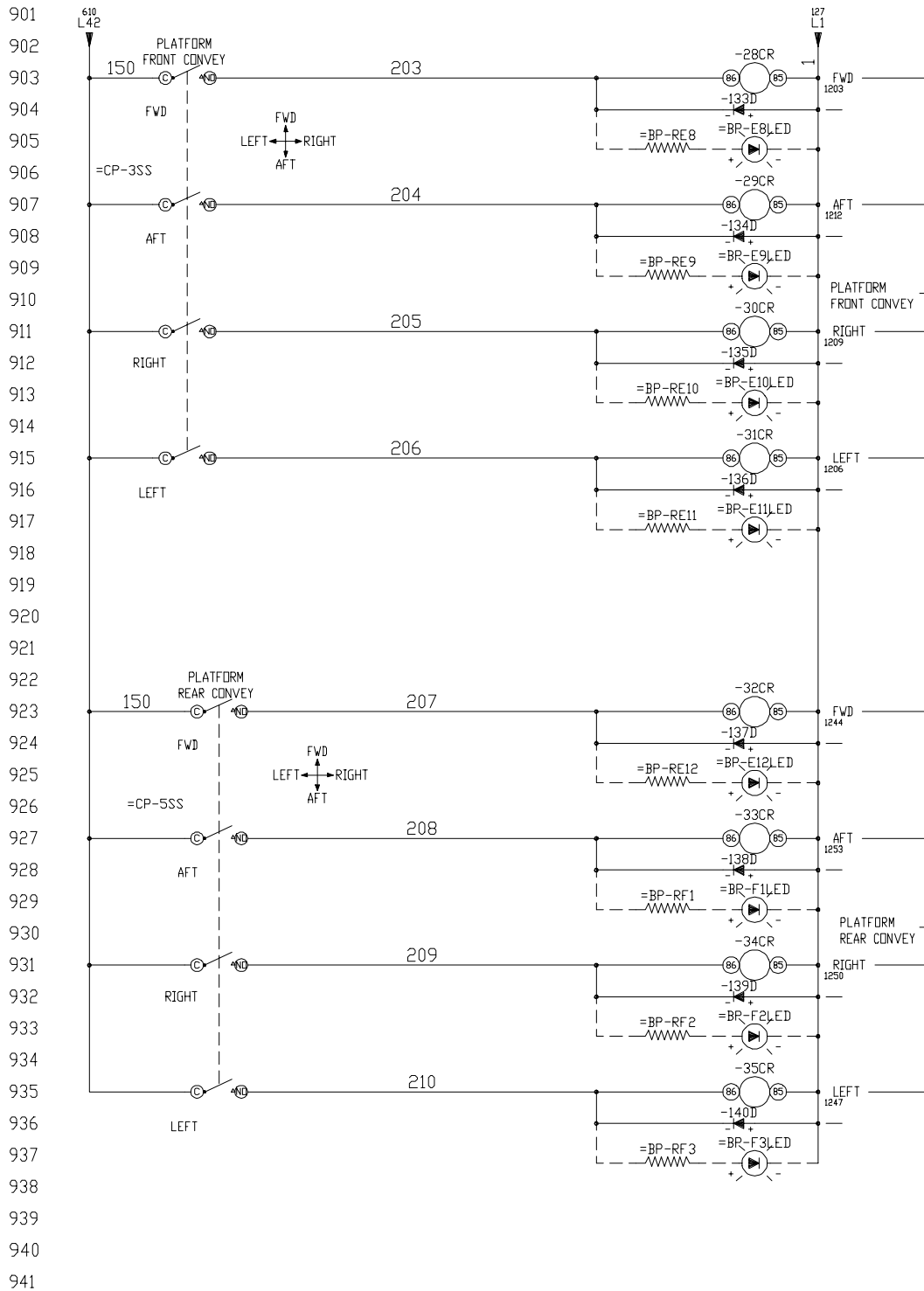
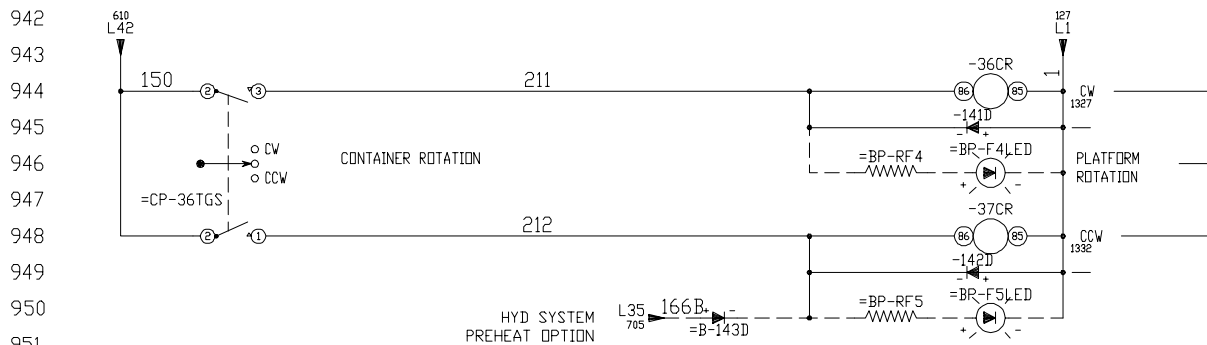


Figure 70
ELECTRICAL SCHEMATIC
622-7180



942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982

**FOR PLATFORM CONVEY TROUBLESHOOTING CHART
SEE FIGURE 53**

Figure 71
ELECTRICAL SCHEMATIC
622-7180

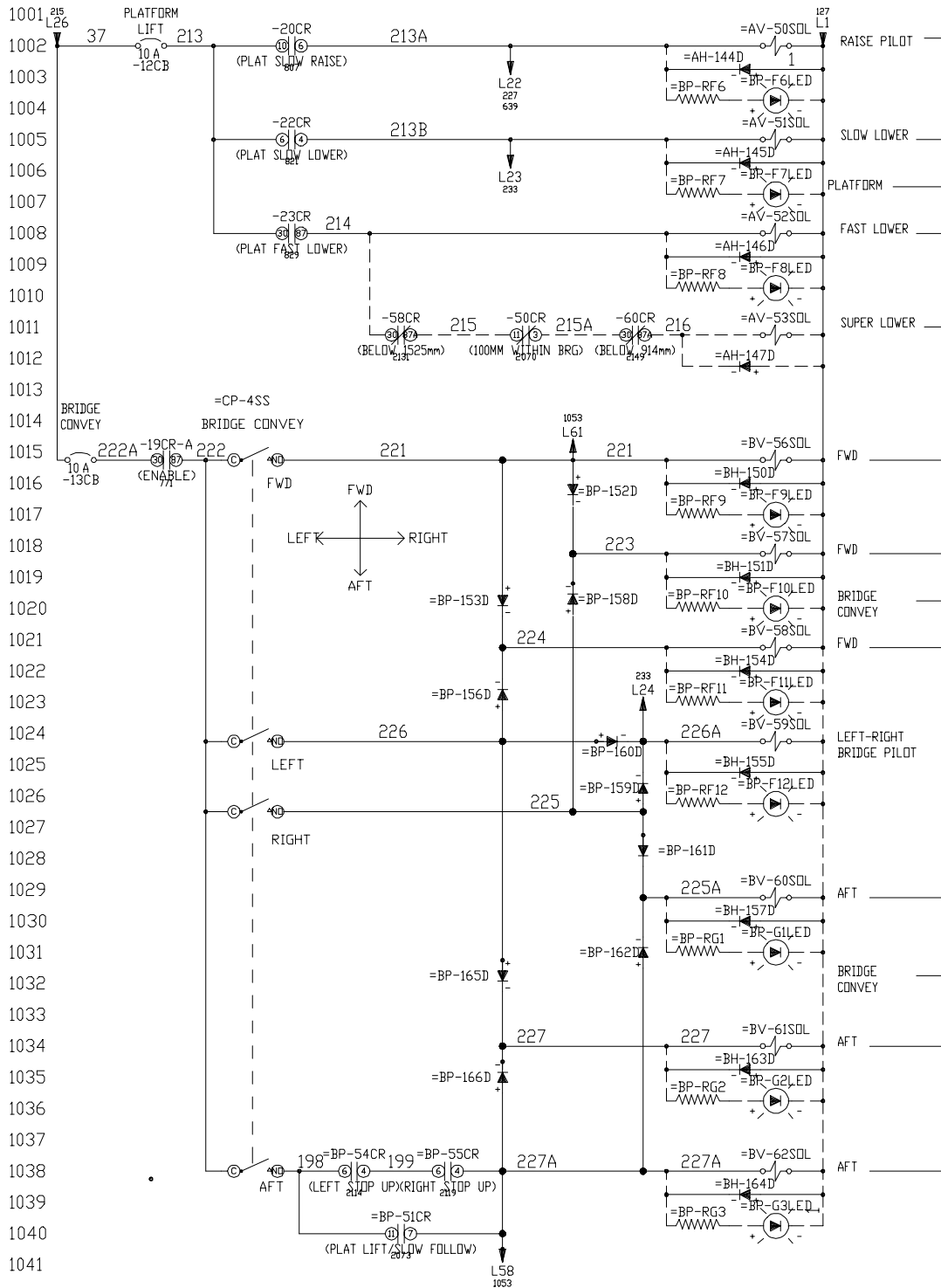
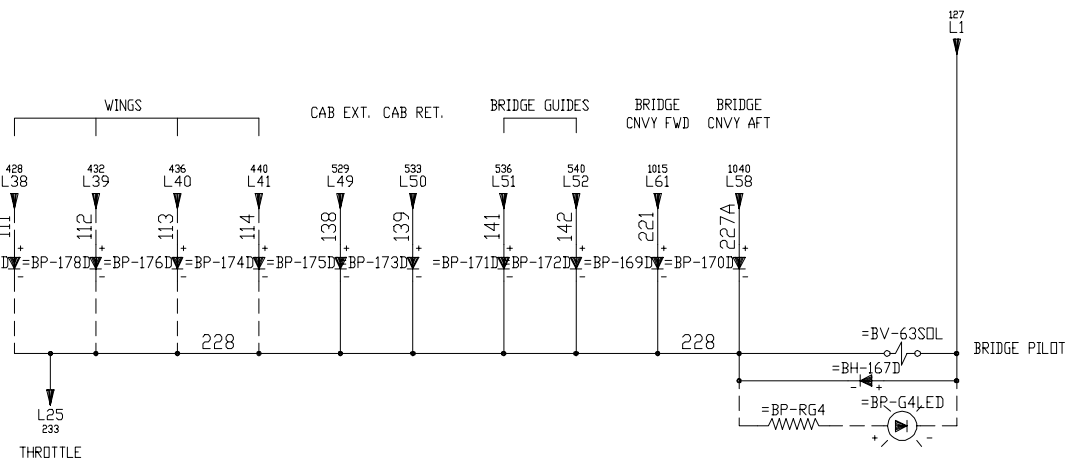


Figure 72
ELECTRICAL SCHEMATIC
622-7180

1042
1043
1044
1045
1046
1047
1048
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1060
1061
1062
1063
1064
1065
1066
1067
1068
1069
1070
1071
1072
1073
1074
1075
1076
1077
1078
1079
1080
1081
1082



BRIDGE CONVEY

FWD	56, 57, 58, 63 SOL F9, F10, F11, G4 LED	AFT	60, 61, 62, 63 SOL G1, G2, G3, G4 LED
RT	57, 59, 60, SOL F10, F12, G1 LED	LFT	58, 59, 61 SOL F11, F12, G2 LED

Figure 73
ELECTRICAL SCHEMATIC
622-7180

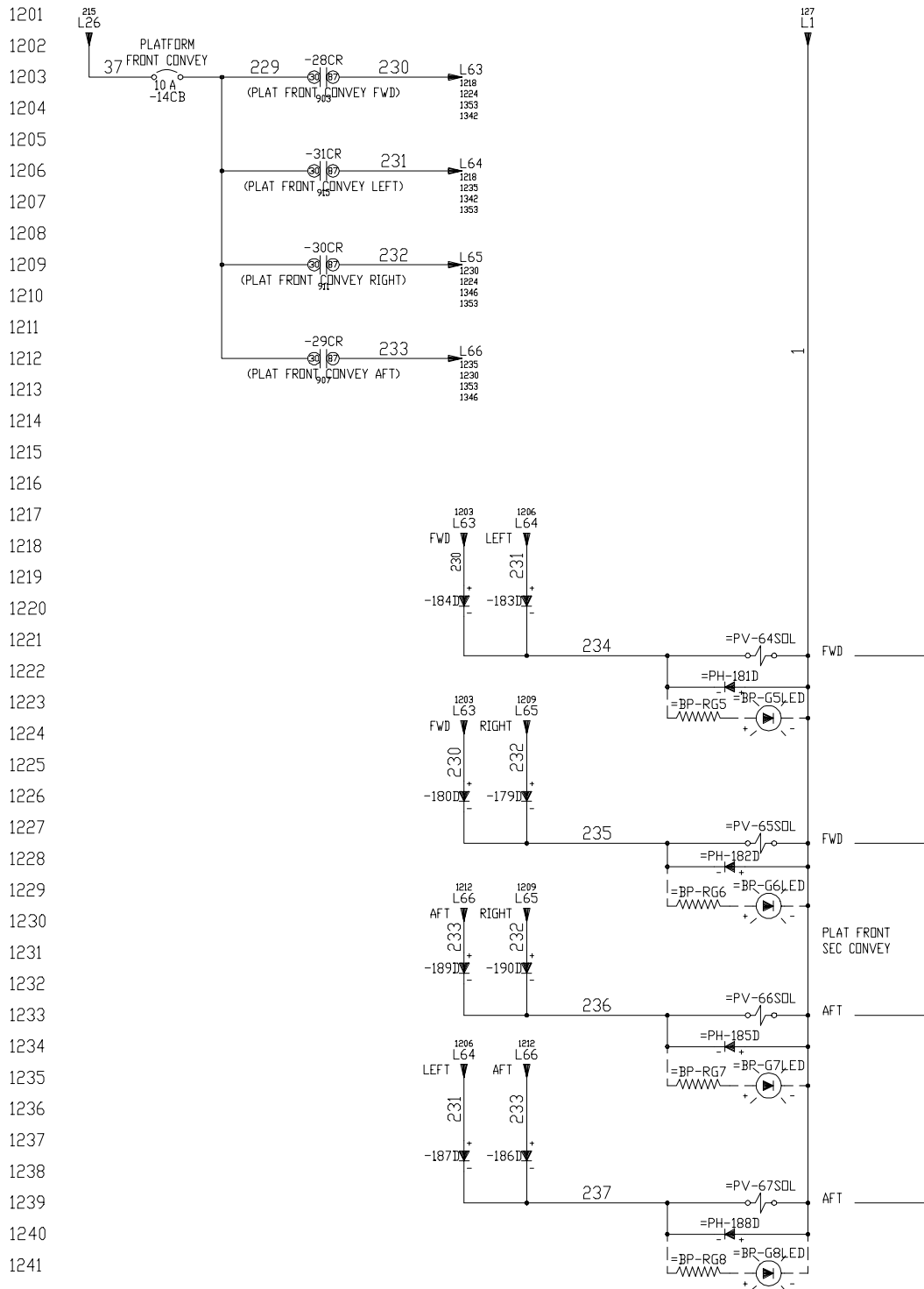


Figure 74
ELECTRICAL SCHEMATIC
622-7180

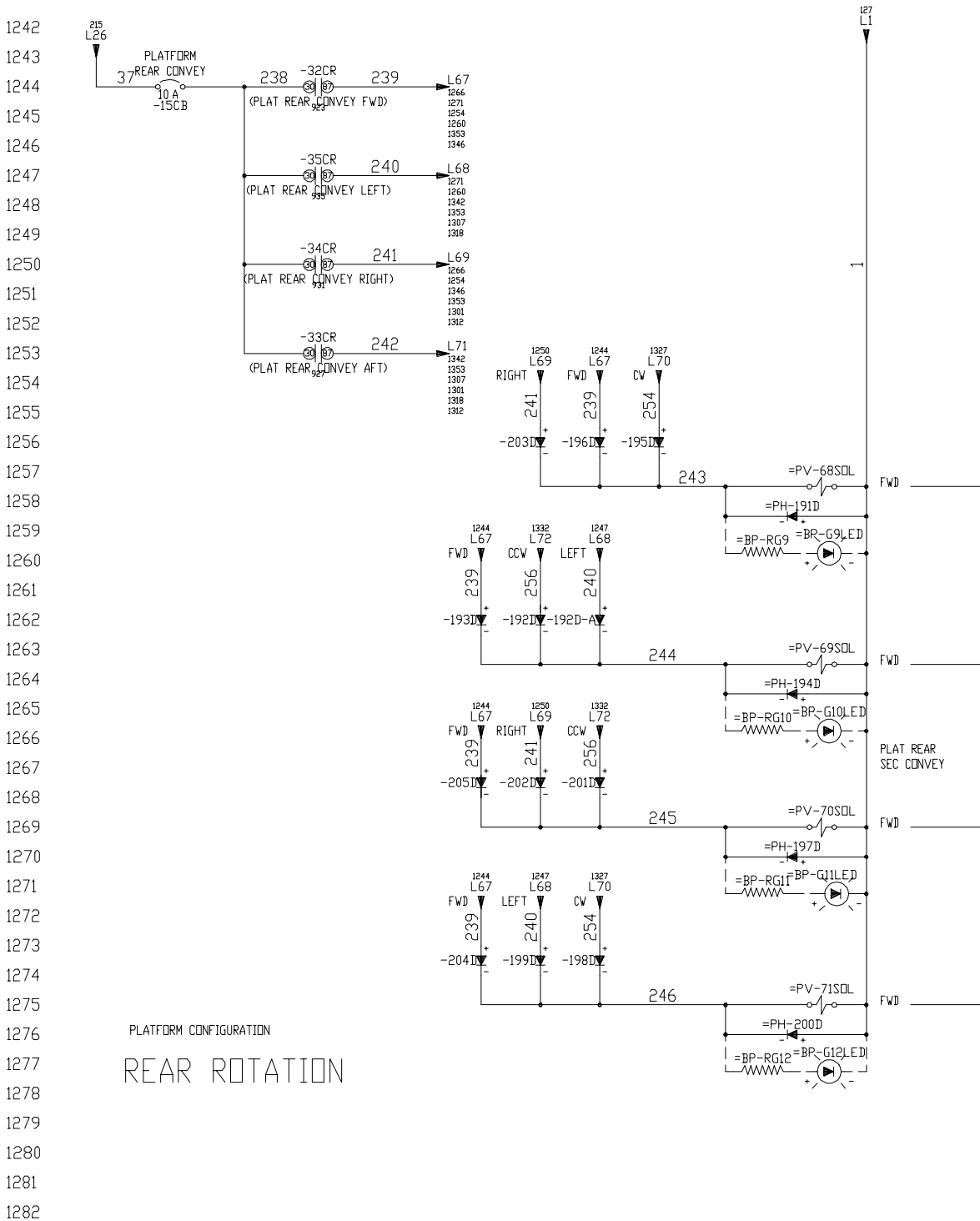


Figure 75
ELECTRICAL SCHEMATIC
622-7180

1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
1313
1314
1315
1316
1317
1318
1319
1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1340
1341

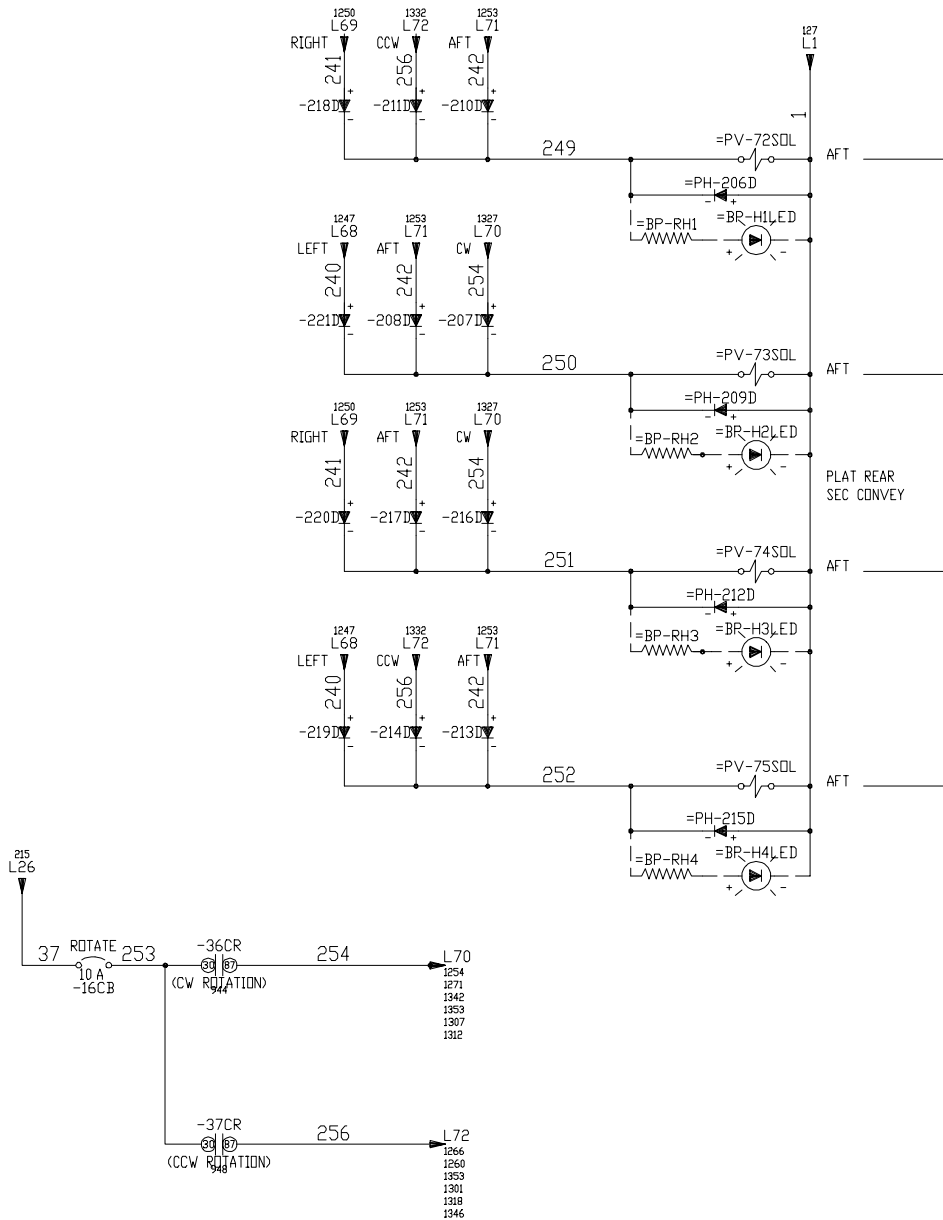
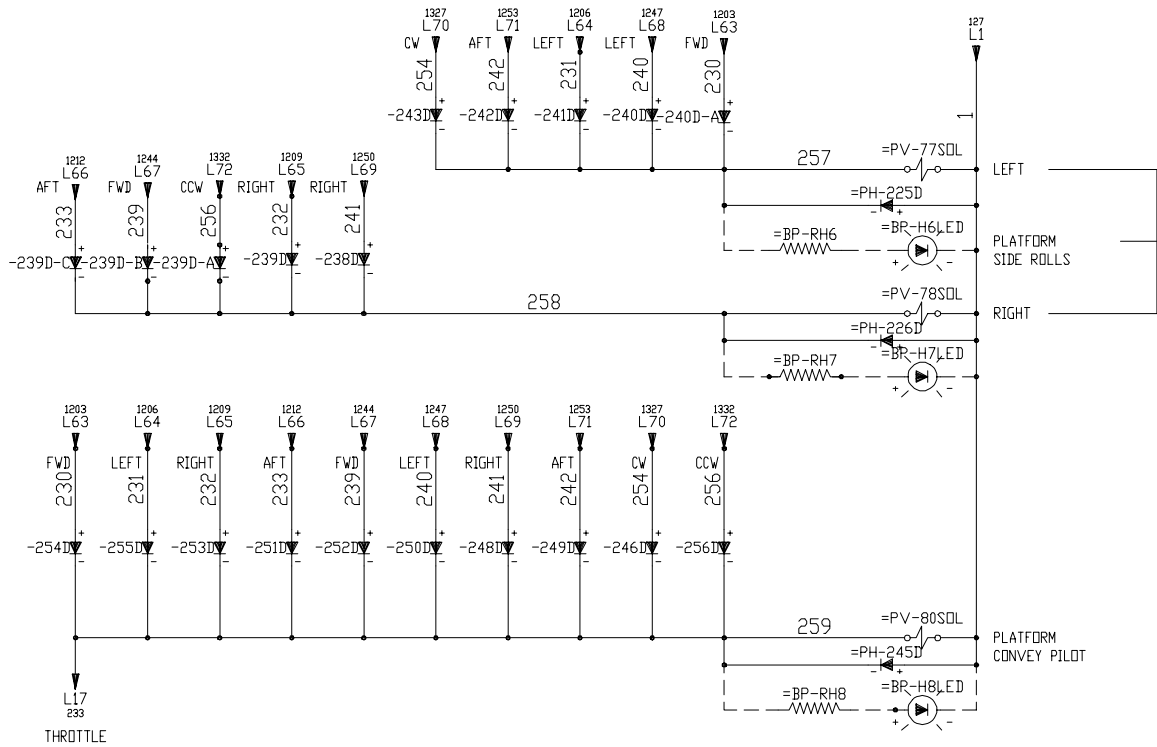


Figure 76
ELECTRICAL SCHEMATIC
622-7180

1342
1343
1344
1345
1346
1347
1348
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1360
1361
1362
1363
1364
1365
1366
1367
1368
1369
1370
1371
1372
1373
1374
1375
1376
1377
1378
1379
1380
1381
1382



PLATFORM CONFIGURATION
REAR ROTATION

Figure 77
ELECTRICAL SCHEMATIC
622-7180

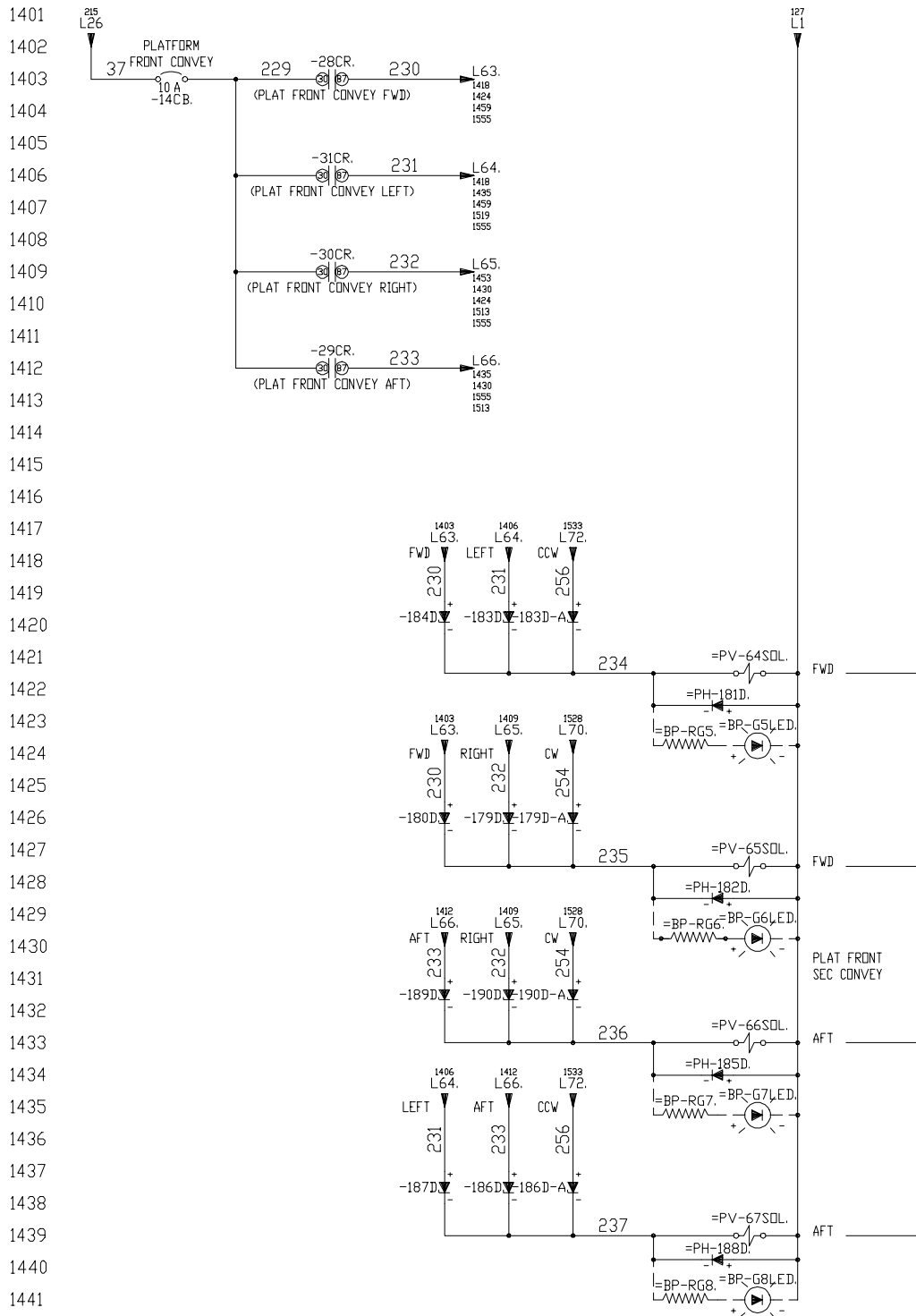


Figure 78
ELECTRICAL SCHEMATIC
622-7180

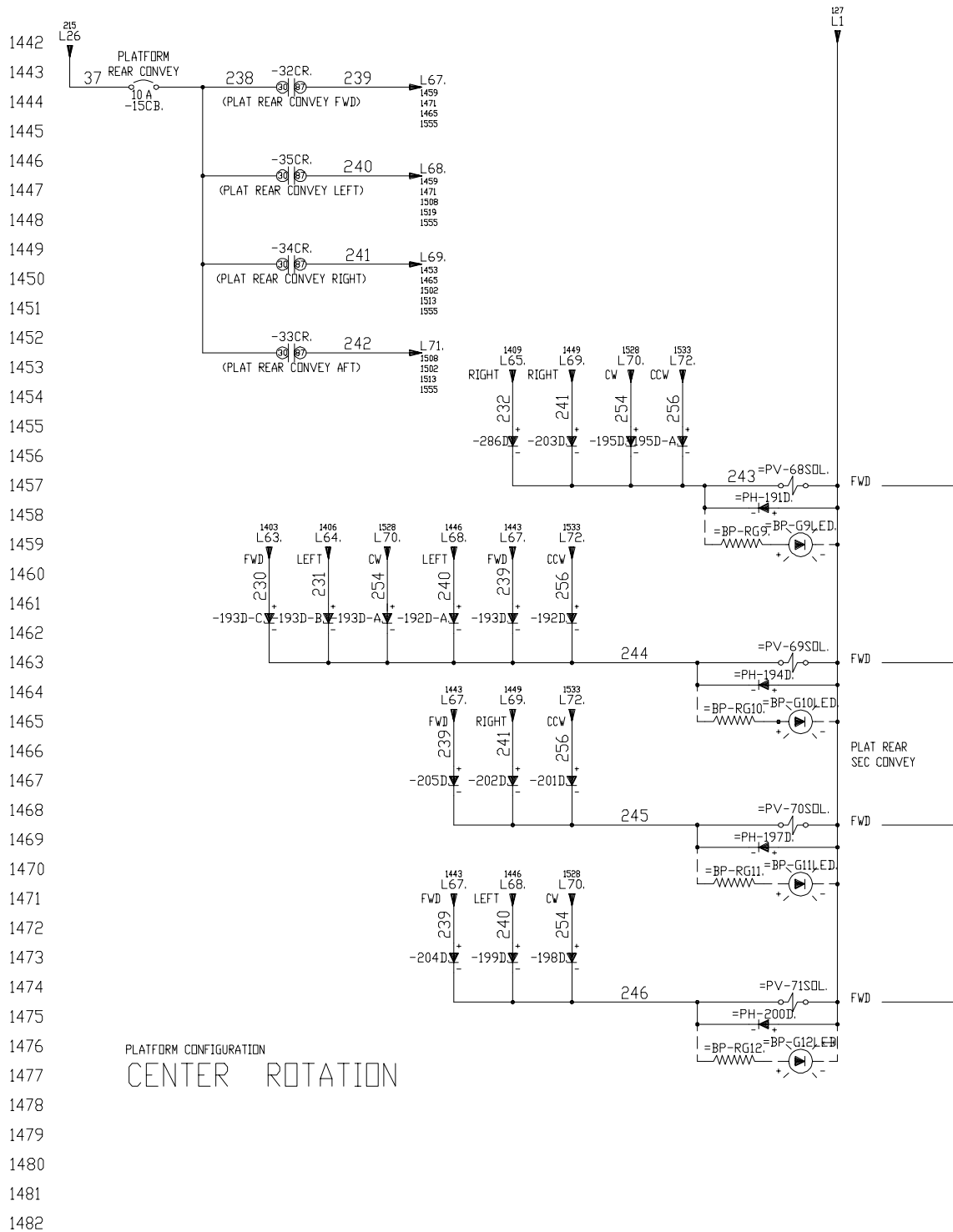


Figure 79
ELECTRICAL SCHEMATIC
622-7180

1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1540
1541

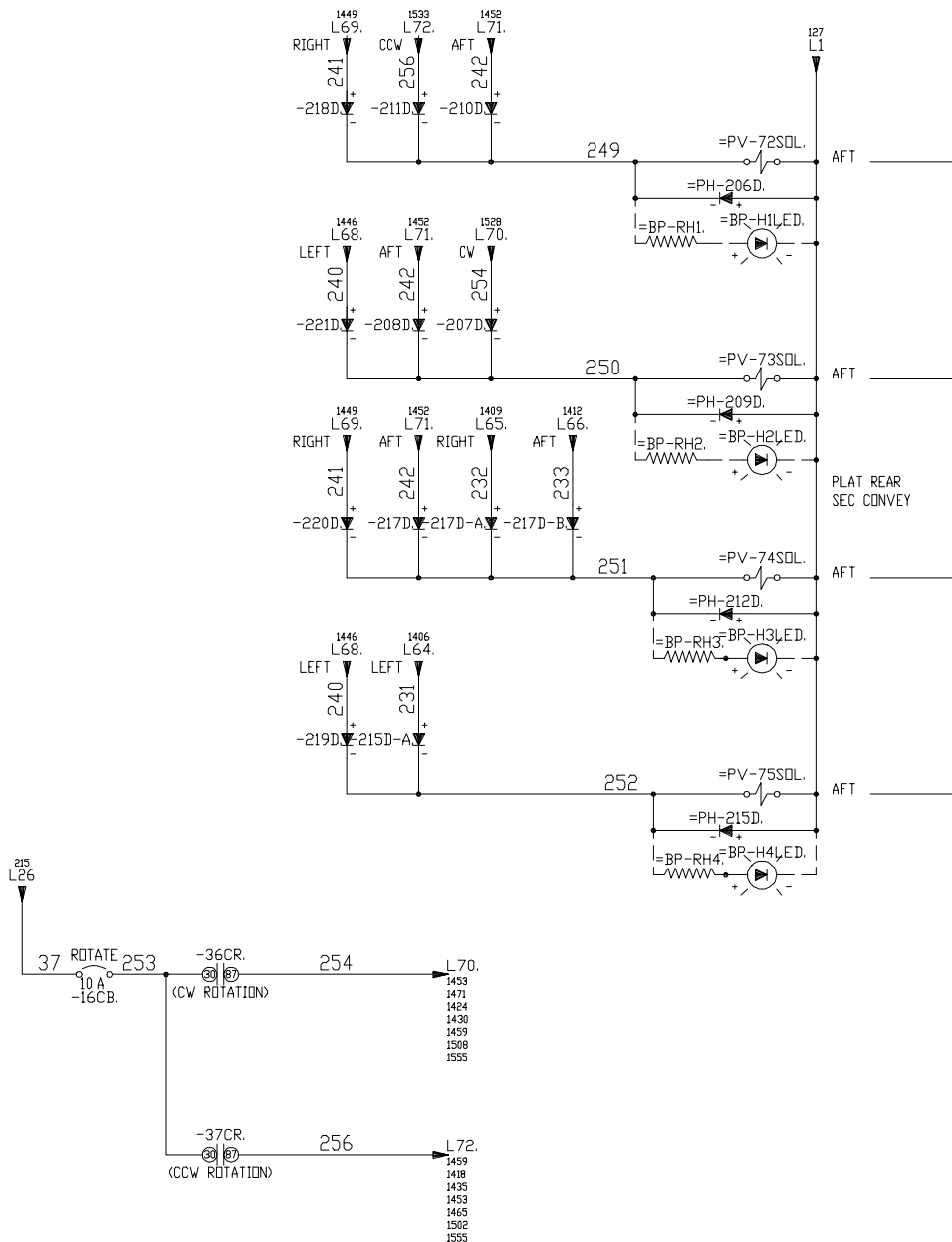
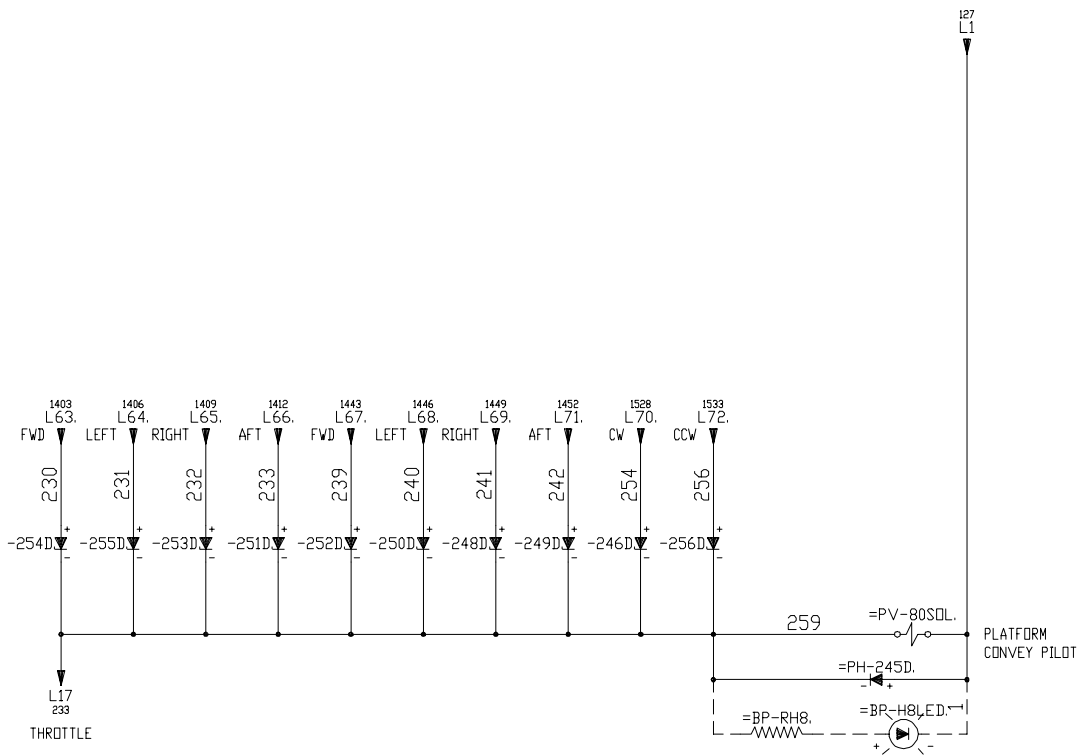


Figure 80
ELECTRICAL SCHEMATIC
622-7180

1542
 1543
 1544
 1545
 1546
 1547
 1548
 1549
 1550
 1551
 1552
 1553
 1554
 1555
 1556
 1557
 1558
 1559
 1560
 1561
 1562
 1563
 1564
 1565
 1566
 1567
 1568
 1569
 1570
 1571
 1572
 1573
 1574
 1575
 1576
 1577
 1578
 1579
 1580
 1581
 1582



PLATFORM CONFIGURATION
 CENTER ROTATION

Figure 81
 ELECTRICAL SCHEMATIC
 622-7180

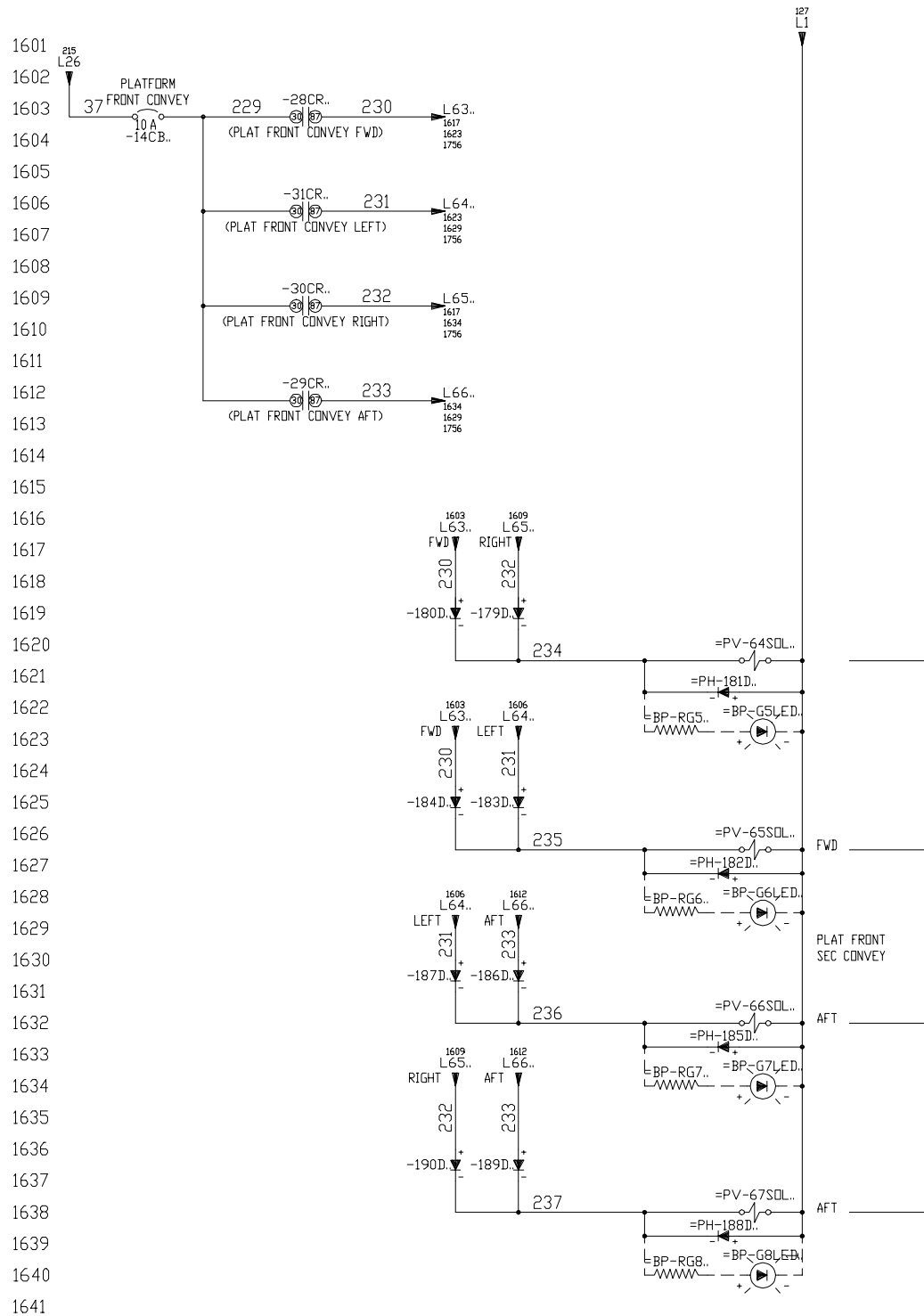


Figure 82
ELECTRICAL SCHEMATIC
622-7180

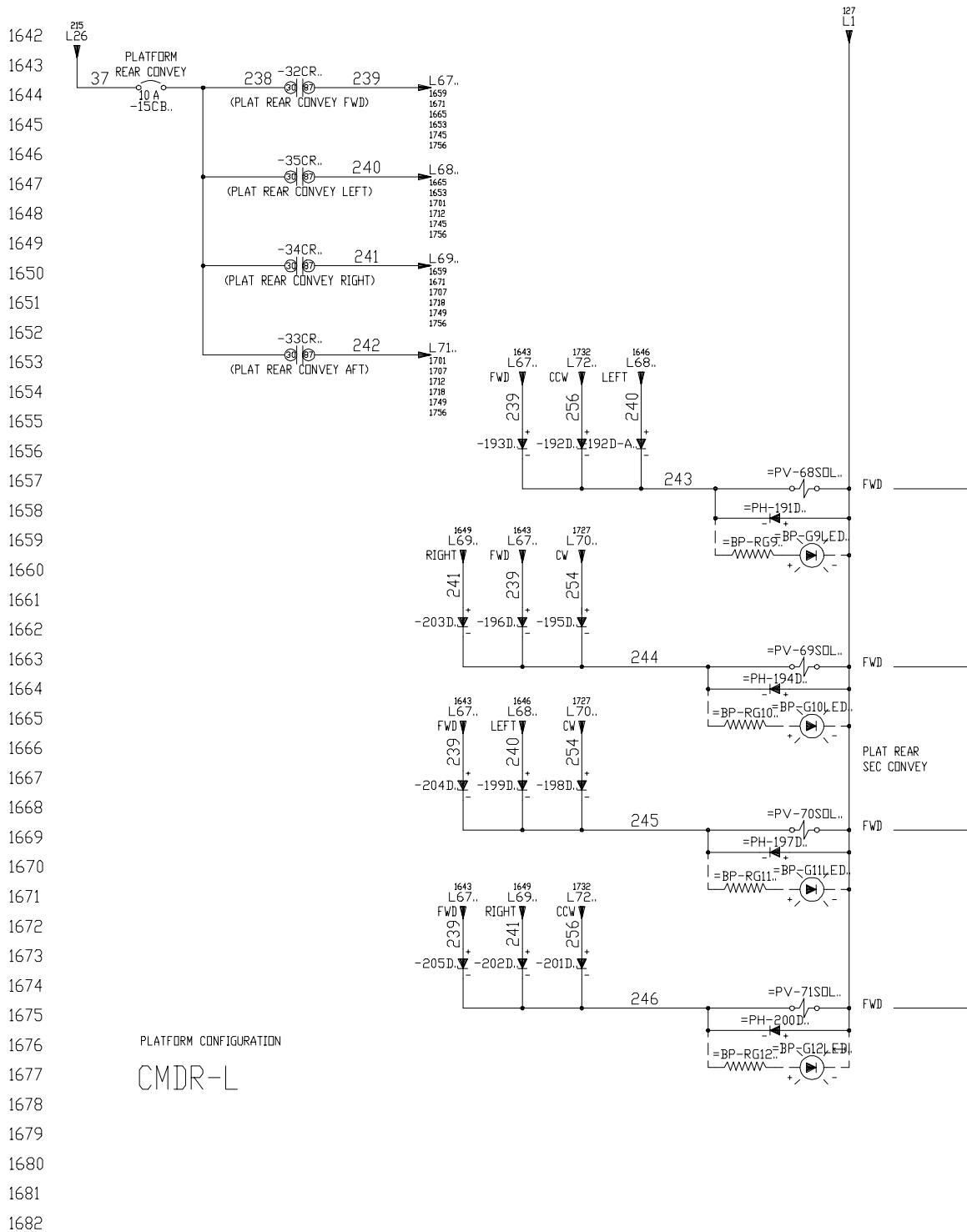


Figure 83
ELECTRICAL SCHEMATIC
622-7180

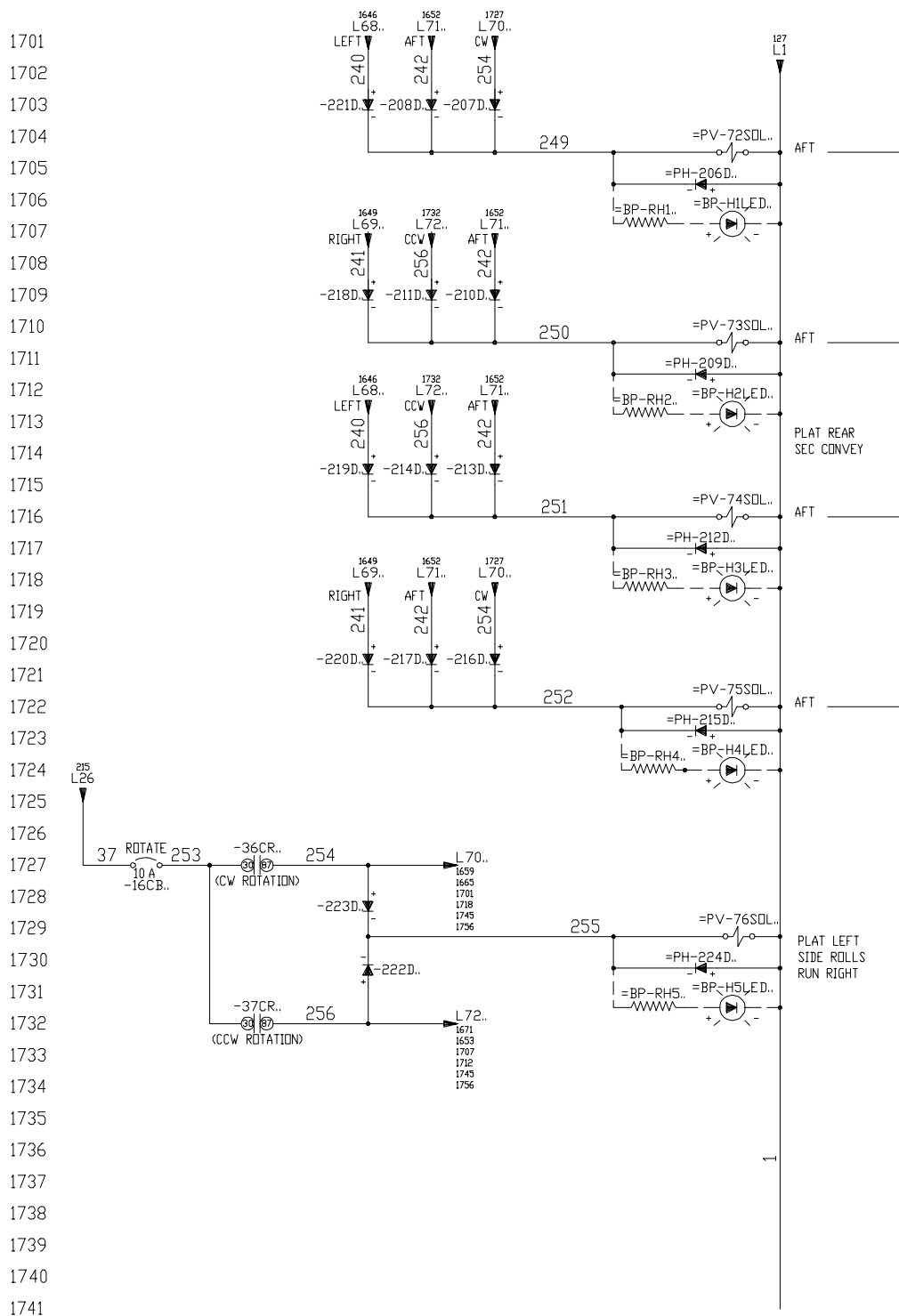
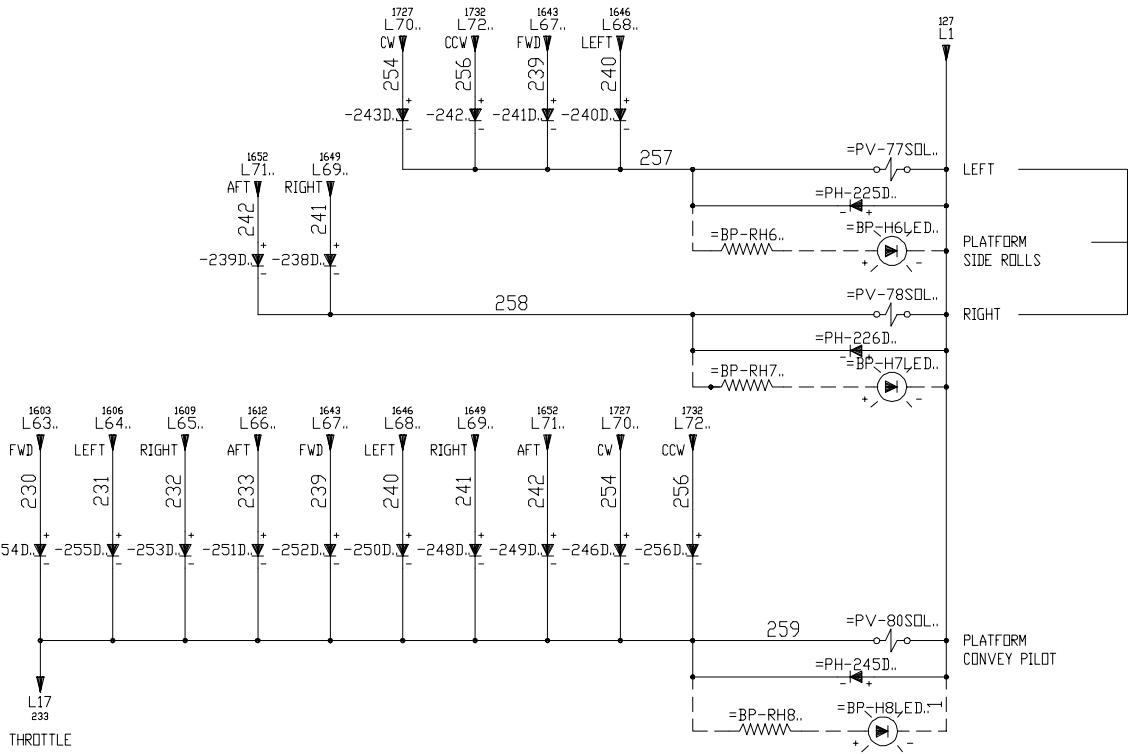


Figure 84
ELECTRICAL SCHEMATIC
622-7180

1742
 1743
 1744
 1745
 1746
 1747
 1748
 1749
 1750
 1751
 1752
 1753
 1754
 1755
 1756
 1757
 1758
 1759
 1760
 1761
 1762
 1763
 1764
 1765
 1766
 1767
 1768
 1769
 1770
 1771
 1772
 1773
 1774
 1775
 1776
 1777
 1778
 1779
 1780
 1781
 1782



PLATFORM CONFIGURATION
 CDR-L

Figure 85
 ELECTRICAL SCHEMATIC
 622-7180

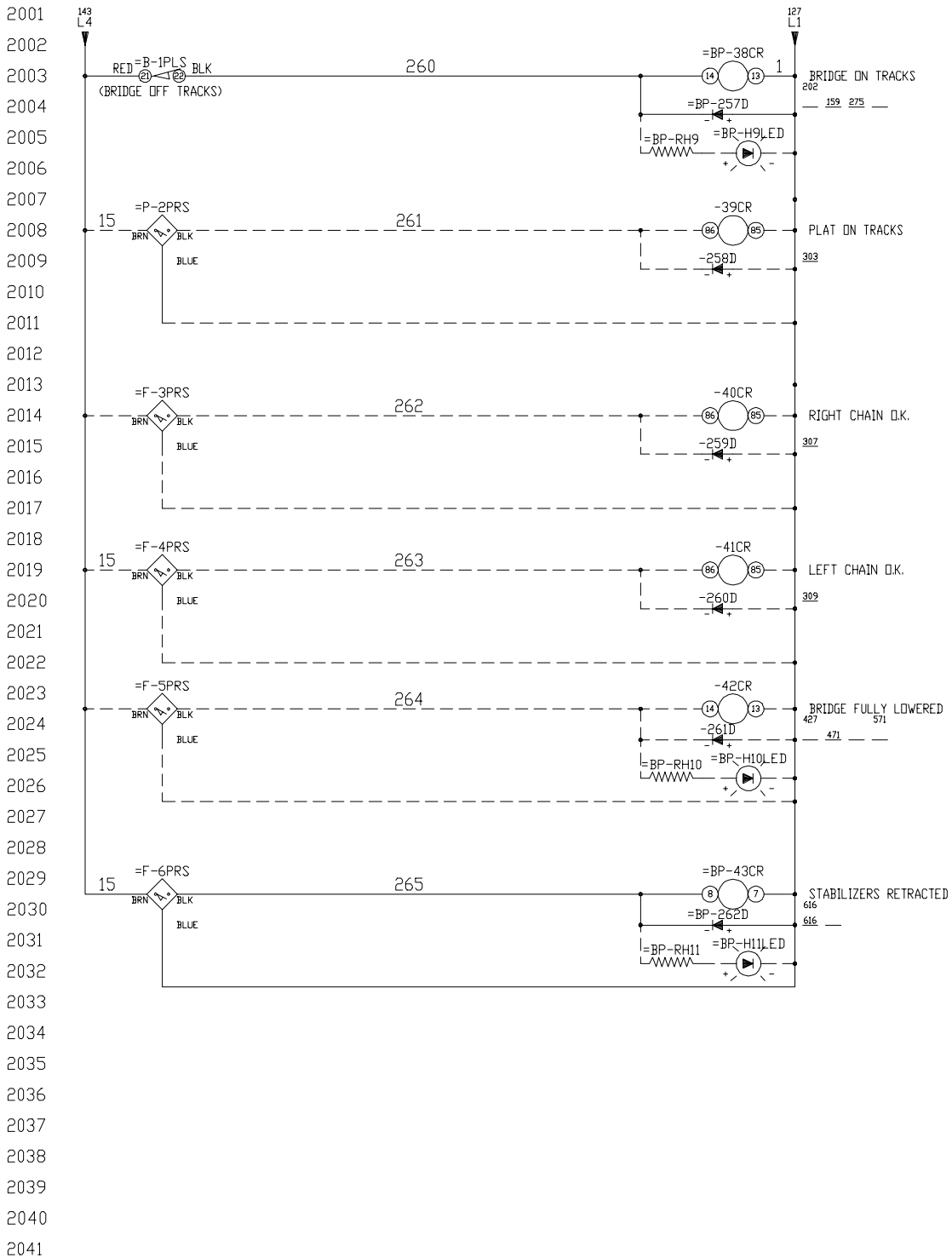


Figure 86
ELECTRICAL SCHEMATIC
622-7180

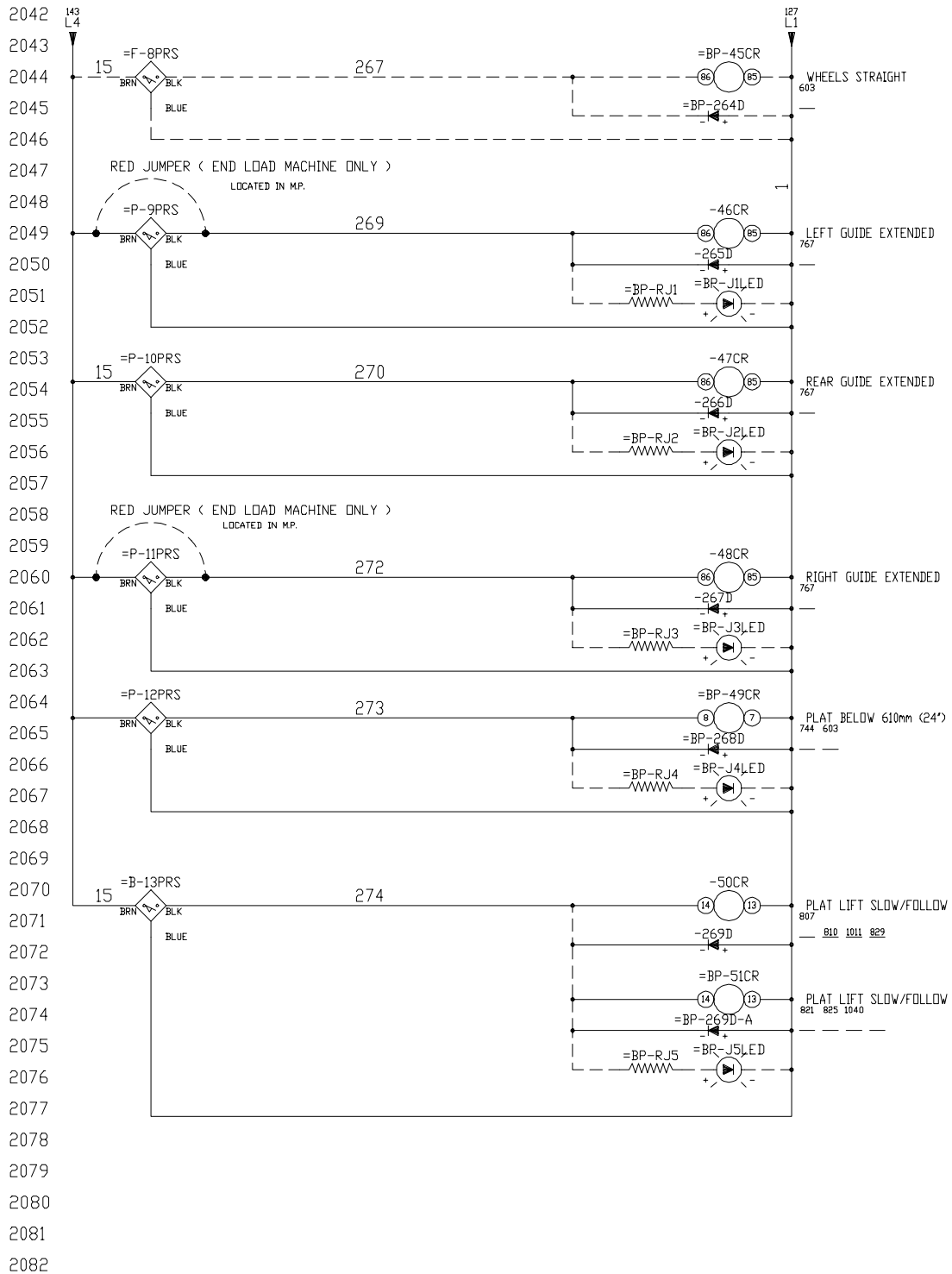


Figure 87
ELECTRICAL SCHEMATIC
622-7180

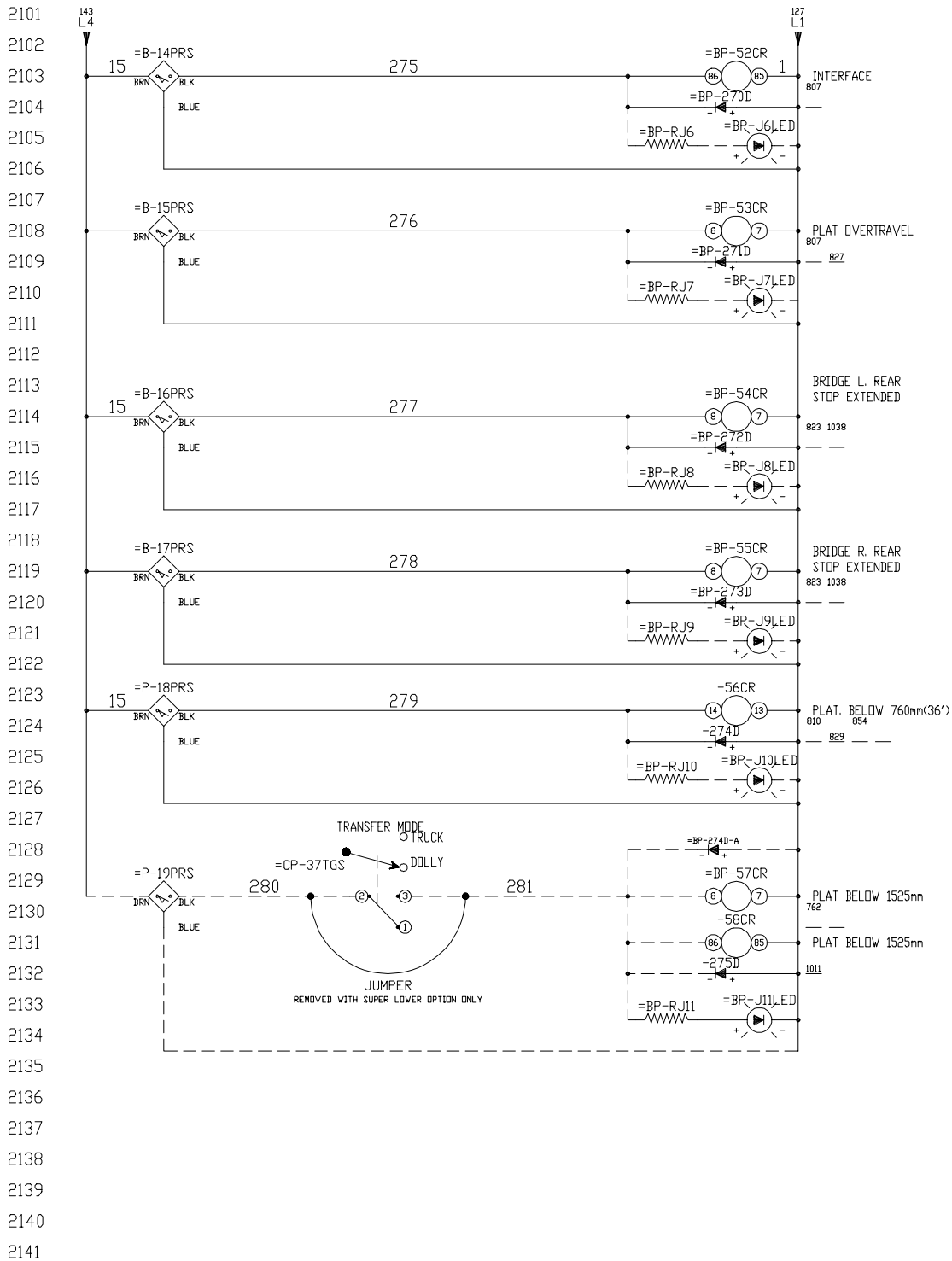


Figure 88
ELECTRICAL SCHEMATIC
622-7180

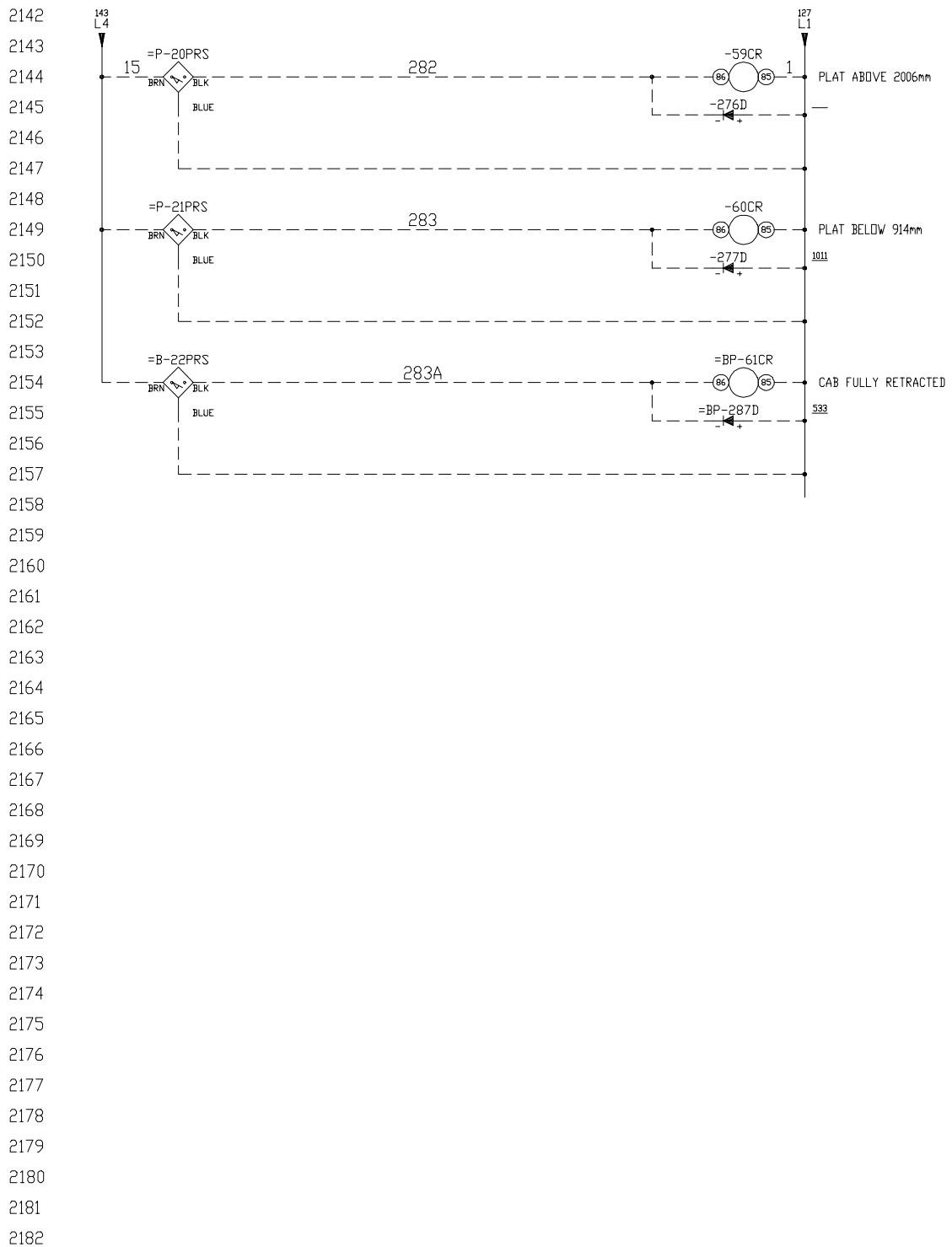


Figure 89
ELECTRICAL SCHEMATIC
622-7180

CHAPTER 3. OVERHAUL

TABLE OF CONTENTS

Section 1. Overhaul Procedure

	<u>Page</u>
1. GENERAL	1

CHAPTER 3. OVERHAUL

Section 1. Overhaul Procedure

CAUTION

IN THE EVENT OF UNIT DE-COMMISSIONING, MAJOR OVERHAUL OR SERVICING, ANY ENVIRONMENTALLY SENSITIVE MATERIALS NEED TO BE DISPOSED OF PROPERLY. PROPER DISPOSAL SHALL FOLLOW LOCAL ENVIRONMENTAL REGULATIONS AND RECOMMENDATIONS. EXAMPLES OF SUCH MATERIALS INCLUDE: RUBBER TIRES AND BELTS, BATTERIES, LUBRICANTS (MOTOR OILS AND GREASE), HYDRAULIC OIL, ALL TYPES OF GLYCOL AND FUEL.

1. GENERAL

- A. If an overhaul of a component or system is needed (or required), refer to Chapter 6, Manufacturer's Data for pertinent information. The section or sections that cover the component or system should be read in full and understood completely before attempting any part of an overhaul.
- B. Units operating in extreme conditions (such as high or low temperatures, long periods of sustained operation, continued operation in sand or dust, or continued exposure to sea air or moisture) need regular inspection. Overhaul periods can be set as necessary.
- C. For the adjustment of components, refer to Chapter 2, Maintenance Section.

CHAPTER 4. ILLUSTRATED PARTS LIST

TABLE CONTENTS

Page

Section 1. Introduction

1.	GENERAL	1
2.	HOW TO ORDER PARTS	1
3.	PARTS RETURNED FOR CREDIT	2
4.	STANDARD WARRANTY	2

Section 2. Vendor Federal Supply Codes

1.	GENERAL	1
2.	PURPOSE OF ASSIGNING MANUFACTURERS' CODES	1
3.	METHOD OF LISTING	1

Section 3. Numerical Parts List

1.	INTRODUCTION	1
2.	EXPLANATION OF COLUMNS	1
3.	NUMERICAL ARRANGEMENT SEQUENCE	1
4.	SAMPLE APPLICATION	1

Section 4. Detailed Parts

1.	EXPLANATION OF COLUMNS	1
	Figure And Item Number	1
	Part Number	1
	Airline Part Number	1
	Nomenclature	1
	Effectivity	1
	Units Per Assembly	1
2.	FINAL ASSEMBLY	2

Section 5. Body Assembly

1.	MAIN FRAME AND SCISSOR, CENTER LIFT	623-1267	2
2.	REAR SAFETY STANDS, STANDARD	620-2864	8
3.	FENDER ASSEMBLY	620-4102-001	9
4.	STABILIZER INSTALLATION	622-4000	11

Section 6. Identification

1.	IDENTIFICATION	622-3364	2
----	----------------	----------	---

Section 7. Platform Lift

1.	PLATFORM LIFT ASSEMBLY	620-1673	2
2.	CHAIN PRIMARY TAKE-UP	620-1661	7
3.	CHAIN SECONDARY TAKE-UP	620-1660	9

Section 8. Axle Assembly

1.	AXLE ASSEMBLY, AUSCO BRAKES	623-1580	2
2.	PLANETARY REDUCER	620-3641	10

Section 9. Tires Installation

1.	TIRES INSTALLATION	620-8439-003	2
----	--------------------	--------------	---

Section 10. Bogy Assembly

1.	BOGY ASSEMBLY, ADJUSTABLE	620-6429	2
2.	BOGY WHEEL ASSEMBLY	623-1966	4

Page

Section 11. Fuel Tank

1.	FUEL TANK INSTL., DIESEL ENGINE (EFF: UP TO CR97136)	622-0666	2
2.	FUEL TANK ASSY WITH #6 FITTINGS	622-0667	4
3.	FUEL TANK INSTL., DIESEL ENGINE, ALUMINIZED STEEL (EFF: CR97137 & UP)	623-0900	6
4.	FUEL TANK ASSY, ALUMINIZED STEEL	622-8837	8

Section 12. Engine Cover

1.	ENGINE COVER, DIESEL ENGINE	622-2061	2
----	-----------------------------	----------	---

Section 13. Power Module (Engine)

1.	POWER MODULE, DEUTZ BF4M1012	623-2651	2
2.	ENGINE, DEUTZ BF4M1012	623-2650	12
3.	COUPING INSTALLATION, 281FC PUMP DRIVE	622-8150	16
4.	DEMAND THROTTLE ASSEMBLY, DEUTZ	623-5209	18

Section 14. Operator's Cab

1.	OPERATOR'S CAB	622-6510	2
----	----------------	----------	---

Section 15. Ladder

1.	LADDER ASSEMBLY	620-7081	2
----	-----------------	----------	---

Section 16. Handrail

1.	HANDRAIL, LEFT SIDE, FOLDING & LOCKING	620-9304-002	2
----	--	--------------	---

Section 17. Bridge Assembly

1.	BRIDGE, CONTAINER SIDE SHIFT	622-6791-002	2
2.	DRIVE SHAFT ASSEMBLY	622-3095	11
3.	BRIDGE, STANDARD, SIDE GUIDES ASSEMBLY	622-6872-001	13
4.	BRIDGE DECK PLATES, CONTAINER W/WING DECK	623-1667-001	15
5.	BUMPERS ASSEMBLY, BRIDGE	622-7100	17

Section 18. Bridge Wing

1.	BRIDGE MANUAL WING ASSEMBLY	620-8868	2
----	-----------------------------	----------	---

Section 19. Platform Shaft

1.	PLATFORM SHAFT ASSEMBLY	622-0522	2
2.	HELIROLL CLUSTER ASSEMBLY	620-8859	4

Section 20. Platform

1.	PLATFORM, RIGHT & LEFT SIDE PALLET	622-6240-005	2
----	------------------------------------	--------------	---

Section 21. Hydraulic System

1.	MAIN FRAME HYDRAULICS	622-3172	2
2.	SCISSORS HYDRAULICS, LOWER LOBE	622-3171	18
3.	PLATFORM LIFT HYDRAULICS	620-1746	22
4.	AXLE HYDRAULICS	623-2760	28
5.	PROPEL/LIFT MANIFOLD	622-3168	37
6.	SERVICE MANIFOLD	621-4877	40
7.	HYDRAULIC TANK, CARBON STEEL W/EXT. CONNECTION & 2" FILLER	622-3327-002	43
8.	POWER MODULE HYDRAULICS	622-3164	46
9.	OPERATOR'S CAB HYDRAULICS	620-2734	52
10.	BRIDGE HYDRAULICS, CONTAINER	622-1044-002	56
11.	BRIDGE MANIFOLD ASSEMBLY	620-3605	66

Page

Section 21. Hydraulic System (Continued)

12.	PLATFORM HYDRAULICS, R & L SIDE PALLET	620-9854	69
13.	PLATFORM MANIFOLD ASSEMBLY	620-1836	82
14.	PLATFORM GUIDE/STOPS MANIFOLD	620-1832	85

Section 22. Electrical System

1.	MAIN FRAME ELECTRICAL W/HOT STAMP	622-6450-006	2
2.	AMBER LIGHT ASSEMBLY	620-1389	6
3.	FORWARD SCISSORS, LOWER LOBE	622-6438-001	7
4.	AXLE AREA ELECTRICAL	622-8882	12
5.	POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER ENGLISH	623-0548	15
6.	COLD START ELECTRICAL, DEUTZ 4 CYLINDER	622-3000	22
7.	MAIN PANEL ASSEMBLY	622-6215	27
8.	GAUGE PANEL ASSEMBLY, ENGLISH	623-0543	38
9.	CONSOLE ELECTRICAL, R.H., ENGLISH	623-0545	42
10.	BRIDGE PANEL, R.H.	622-6219	47
11.	CONTROL PANEL ASSEMBLY, ENGLISH	623-0544	59
12.	DRIVE PANEL ASSEMBLY, ENGLISH	623-0542	70
13.	BRIDGE ELECTRICAL	622-6437	74
14.	PLATFORM ELECTRICAL	622-6439	78
15.	PLATFORM CONVEY DIODE BOARD, REAR ROTATE	622-6440	82
16.	PLATFORM CONVEY DIODE, FRONT SECTION	622-2945	84
17.	PLATFORM CONVEY DIODE, REAR SECTION	622-2946	87

NOTE: Please see Chapter 5 for Optional Equipment.

CHAPTER 4. ILLUSTRATED PARTS LIST

Section 1. Introduction

1. **GENERAL**

- A. Chapter 4 includes the parts lists and illustrations for the Commander 15. Parts lists are subdivided by assembly.
- B. A table of contents lists the various assemblies and subassemblies of the Loader. Instructions for ordering and returning parts, and the standard FMC warranty, are included in this section. Review the warranty before ordering and/or returning parts.
- C. Vendor Federal Supply Codes, listed in numerical order in Section 2, are provided for items not modified by FMC Corporation.
- D. An explanation of columns assists in using the parts lists.

2. **HOW TO ORDER PARTS**

Orders will receive prompt attention and errors will be minimized if the customer follows the suggestions listed below:

- A. Write order legibly (preferably typewritten). Date the order and show a requested shipping date.
- B. Give the full name, address, and telephone number (if in the USA) of the person ordering the parts. Give the full name and address of the person who is to receive the parts.

NOTE: Give the billing address if different from the shipping address.

- C. Specify shipping mode; i.e., via Air Freight, Motor Freight, United Parcel Service, Parcel Post, etc.
- D. Indicate the quantity of each item required, starting with units of measure ("each," "feet," etc.), as required.
- E. State the FMC part number, followed by a complete description. Check to be sure the part number and description agree. Parts not assigned on FMC part number should be ordered by manufacturer's name and part number.

- F. If possible, include the model and serial number of the unit for which parts are required.
- G. Assign a number to the order and sign it legibly.
- H. Immediately confirm all telegraph and telephone orders with purchase orders.
- I. Address orders as follows:

FMC CORPORATION
AIRLINE EQUIPMENT
7300 PRESENTS DRIVE
ORLANDO, FLORIDA 32809

3. PARTS RETURNED FOR CREDIT

- A. Before returning any part, write a letter to FMC Corporation, Airline Equipment, requesting permission. Give an exact list, descriptions, and part numbers. Explain why you wish to return parts and what action is desired; repair, credit, or replacement. Include model and serial number of the unit from which the parts were removed.
- B. If authority is granted transportation charges must be prepaid, the sender's name must be marked on the outside of the container, and a return order must be enclosed with the returned parts.
- C. Only parts purchased from FMC may be returned for credit consideration.
- D. If a replacement part is desired before returning a defective part, a separate purchase order must accompany this request. When credit is approved, your account will be credited with the proper amount.

4. STANDARD WARRANTY

- A. FMC warrants new equipment of its own manufacture against defective workmanship and materials under normal use and service for a period of one year from the date of shipment. FMC's obligations under this warranty are limited to the repair or replacement, at FMC's election, of defective parts F.O.B. the factory where originally manufactured, provided that such defect is reported to FMC within such one year period. Equipment covered by this agreement that is not manufactured by FMC shall be covered by the warranty, if any, of its manufacturer.
- B. THERE ARE NO UNDERSTANDINGS, REPRESENTATIONS, OR WARRANTIES OF ANY KIND, EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE (INCLUDING, BUT WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE), NOT EXPRESSLY SET FORTH HEREIN.
- C. Except as expressly provided herein, FMC shall not be liable to Buyer for damage of any kind or nature occasioned by or arising out of the installation, operation, use, misuse, non-use, repair, or replacement of said equipment, or out of the use of any method or process for which the same may be employed.

- D. In the event, notwithstanding the terms of this agreement, it is determined by a court of competent jurisdiction that an express warranty has been given by FMC to Buyer with respect to the speed, capacity, or other like performance characteristics of said equipment, FMC's liability for breach of the same shall be limited to accepting return of such equipment F.O.B. plant of manufacture, refunding any amounts paid thereon by Buyer (less depreciation at the rate of 15% per year if Buyer has used said equipment for more than 30 days), and canceling any balance still owing on the equipment.
- E. **DISCLAIMER OF CONSEQUENTIAL DAMAGES:** FMC IN NO EVENT SHALL BE LIABLE FOR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT. CONSEQUENTIAL DAMAGES FOR PURPOSES HEREOF SHALL INCLUDE (WITHOUT LIMITATION) LOSS OF USE, INCOME, OR PROFIT, OR LOSSES SUSTAINED AS THE RESULT OF INJURY (INCLUDING DEATH) TO ANY PERSON, OR LOSS OF OR DAMAGE TO PROPERTY (INCLUDING, WITHOUT LIMITATION, PROPERTY HANDLED OR PROCESSED BY THE USE OF SAID EQUIPMENT).

*Section 2. Vendor Federal Supply Codes***1. GENERAL**

The Federal Supply Code for Manufacturers (FSCM) is a coding system of five-digit numbers assigned to establish which are manufacturers or have design control of items of supply procured by agencies of the Federal Government. It is the basic purpose of the system to contain only manufacturing organizations, primarily to facilitate the processing of Federal Catalog Data.

2. PURPOSE OF ASSIGNING MANUFACTURERS' CODES

The FSCM number is an essential tool in machine accounting operations within the Federal Catalog System. When a Federal Item Identification contains data related to a given manufacturer, it is necessary to assign a five-digit code to that manufacturer so that the data can be processed into the master reference files maintained by the Directorate of Item Identification, Defense Logistics Services Center (DLSC). The FSCM number is used in conjunction with his item number, symbol, or trade name (when he identified the item by trade name only) assigned by him to his item of supply. The FSCM number and his item number are used in the screening of item identification against each other, primarily for the detection of duplication.

3. METHOD OF LISTING

This list is arranged in numerical sequence by manufacturer's FSCM number. The FSCM numbers have been taken from Cataloging Handbook H4-1 furnished by Defense Logistics Services Center, Attn: DLSC-JBDA, Federal Center, 74 N. Washington, Battle Creek, Michigan 49017-3084.

V01276	Aeroquip Corp. Industrial Connectors Division Van Wert Plant 1225 W. Main St. Van Wert, OH 45891-0389
V05506	Martin Sprocket and Gear 3100 Sprocket Rd. P.O. Box 888 Arlington, TX 76010
V05779	Parker-Hannifin Co. Filter Division 16810 Fulton County Rd. #2 Metamora, OH 43540V
V08481	Texas Hydraulics Inc. 3410 North Range Rd. Temple, TX 76503
V08832	Schroeder Brothers Corp. Box 72 Nichol Ave. McKees Rock, PA 15136
V09990	Parker-Hannifin Corp. Hydraulic Valve Div. 520 Ternes Ave. Elyria, OH 44035
V11341	Cross Mfg. Inc. 100 Factory St. Lewis, KS 67552
V12190	Paul Monroe Hydraulics 1701 West Sequoia Ave. Orange, CA 92668-1015
V12662	Peterson Mfg. 4200 East 135th St. Grandview, MO 64030-2821

V13446	Perkins Engines, Inc. 32500 Van Dorn Road Wayne, MI 48184-2554
V13829	Commercial Intertech Inc. 1775 Logan Avenue Youngstown, OH 44501
V16764	Delco-Remy Division of General Motors 2401 Columbus Ave. P. O. Box 2439 Anderson, IN 46018-9986
V18265	Donaldson Co. 1400 West 94th St. P.O. Box 1299 Minneapolis, MN 55440
V19220	Eberhard Manufacturing Company 2734 Tennyson Road Cleveland, OH 44104
V21672	Faultless Caster Corp. 1421 North Garvin St. Evansville, IN 47717
V23040	Ford Motor Corp. Ford Parts and Service Div. Government Parts Sales 3000 Schaefer Rd. P.O. Box 1902 Dearborn, MI 48121
V23803	NTN Bearing Corporation of America 77 West End Rd. Totowa, NJ 07512-1405
V24346	Lube Devices, Inc. 1864 Nagle Ave. P.O. Box 1148 Manitowoc, WI 54220-1702

V24976	Danfoss Inc. 16 McKee Dr. Mahwah, NJ 07430
V32705	Vickers, Inc. 1401 Crooks Rd. Troy, MI 48084-7106
V36719	Deutz Diesel Div. KHD Canada Inc. 4420 Garand St. Laurent Quebec, Canada M4R 2A3
V49082	Daman Products Co. Inc. 3622 N. Home St. P.O. Box 974 Mishawaka, IN 46544-0974
V4N453	Gulf Controls Corp. 5201 Tampa West Blvd. P.O. Box 15100 Tampa, FL 33684
V4N453	Gulf Controls Corp. 5201 Tampa West Blvd. P.O. Box 15100 Tampa, FL 33684
V54035	Sun Hydraulics Corp. 1500 University Pkwy. P.O. Box 3377 Sarasota, FL 34230
V55752	Racor Division Parker-Hannifin Corp. 3400 Finch Road P.O. Box 3208 Modesto, CA 95353

V58114 Rexroth Corp.
The Mobile Hydraulics Div.
1700 Old Mansfield Rd.
P. O. Box 394
Wooster, OH 44691-9050

V5L031 Sparton Mfg. Company
100 John R. Road, Suite 202
Troy, MI 48083

V62246 P-Q Control, Inc.
95 Dolphin Rd.
Bristol, CT 06010

V68301 Telemecanique Inc.
2002 Bethel Rd.
Westminster, MD 21157

V6Y402 Phillips Tempco Inc.
Div. of Budd Co., Inc.
9700 W. 74th Street
Eden Prairie, MN 55344

V73047 Fairfield Manufacturing
U.S. 52 South
Lafayette, IN 47902

V74400 Hobbs Division
Stewart-Warner Corp.
Yale Blvd. & Ash Streets
Springfield, IL 62705

V75665 Lovejoy, Inc.
2655 Wisconsin Ave.
Downers Grove, IL 60515-4229

V77640 Parker-Hannifin Corp.
Ross Gear Div.
Snapps Ferry Rd.
Greeneville, TN 37744

V77977 Signal Stat Corp.
1200 Commerce Avenue
Union, NJ 74420

V78422 J.W. Speaker Corp.
W185 N11315 Whitney Dr.
P.O. Box 489
Germantown, WI 53022

V79470 Weatherhead Div.
Dana Corp.
6615 Brotherhood Way
Ft. Wayne, IN 46825

V80980 Vickers
St. Louis, MO

V91929 Micro Switch Div.
Honeywell Inc.
11 W. Spring St.
Freeport, IL 61032

V95408 Kim Hotstart Mfg. Co.
P.O. Box E. 5724 Broadway
Spokane, WA
99210-0042

V95879 Stewart Warner Corp.
Alemite Div.
1826 Diversey Parkway
Chicago, IL 60614-1540

V98738 Stewart Warner Corp.
Electrical Div.
1300 North Kostner St.
Chicago, IL 60651-1605

V99383 Hydratech Division
Fresno Machine and Mfg. Inc.
1331 South West Ave.
P.O. Box 12344
Fresno, CA 93777

V99588	Grote Manufacturing Co. P.O. Box 766 Madison, IN 47250-0766
VAUSCO	AUSCO Products, Inc. 2245 Pipestone Road P.O. Box 8787 Benton Harbor, MI 49022-8787
VKOLDB	Kold Ban Industries, Ltd. 900 Pingree Road Algonquin, IL 60102
VOA9U1	Callahan Fluid Power Inc. 5411 W. Crenshaw St. Tampa, FL 33614
VOAJW6	Victor Fluid Power, Inc. Hwy. 212 West Granite Falls, MN 56241
VOB820	Cummins Engine Company Inc. 1460 National Road Box 3005 Columbus, IN 47202-3005
VOC7Z2	Hydraforce Inc. 673 Academy Drive Northbrook, IL 60062

*Section 3. Numerical Parts List***1. INTRODUCTION**

The numerical listing comprises part numbers of the equipment. Included in this list are references to Section, Figure, and Item numbers of the parts located in Chapter 4.

When a part number is known and item description or illustration is desired, the number should be located in the numerical index. In this list, Section, Figure, and Item number is shown for each part number. By consulting the respective parts list or illustration, the part can be located by reference to the corresponding item number.

2. EXPLANATION OF COLUMNS

- A. The first column contains the FMC's part numbers. The part number are in numerical order.
- B. The second column is for airline (customer) part numbers.
- C. The third column identifies the section.
- D. The fourth column identifies the figure number which illustrates each item.
- E. The fifth column identifies the item number

3. NUMERICAL ARRANGEMENT SEQUENCE

Part number arrangement begins at the extreme left-hand position and continues to the right, one position at a time. The first position arrangement of the part number is as follows:

Numerals 0 through 9

4. SAMPLE APPLICATION

The following list of numbers is in correct numeric sequence:

102-0001
102-0020
102-0031
102-0035
102-0043
102-0059

NUMERICAL LIST WILL BE SENT UPON REQUEST

*Section 4. Explanation of Parts List Columns***1. FIGURE AND ITEM NUMBER**

The first column provides a cross reference between the parts listed and the illustrations. To find a view of the part listed and its visual relationship to the assembly, locate the figure and item number in the list, then refer to the indicated illustration and locate the part by item number. To find a part number and description in the parts list, locate the part on an illustration, note the item number, then refer to the parts list and locate the applicable part number and description.

2. PART NUMBER

The second column lists the part number necessary for reordering repair parts. In addition, the Nomenclature column contains the Vendor Federal Supply Code and part numbers for all vendor-supplied items that have not been reworked by Airline Equipment, FMC Corporation. Standard commercial hardware can be ordered from FMC Corporation or obtained locally. Vendor parts can be obtained from FMC Airline Equipment or directly from the vendor.

3. AIRLINE PART NUMBER

A column is provided so that individual customers can add their own part numbers.

4. NOMENCLATURE

The fourth column lists the description of each item in the parts list. The identifying noun or key word is the first word in the nomenclature column. The remainder of this column contains the rest of the description to assist in completely identifying the item. Vendor Supplied Codes are listed after the description in parentheses. The code number is listed first, followed by the part number. If the item has been modified, it is so noted. The vendor code number is preceded by the capital letter "V".

5. EFFECTIVITY

Effectivity shall indicate the applicability of parts to any given piece of equipment. When an item is applicable to all units, no effectivity shall be shown.

6. UNITS PER ASSEMBLY

The final column indicates the quantity of each part required to complete the next higher assembly. The abbreviation REF indicates that a part number is referenced to another list; this practice insures that the quantity shown on the list does not exceed the quantity used on the loader.

7. EXPLANATION OF COLUMNS**A. FIGURE AND ITEM NUMBER**

The first column provides a cross-reference between the parts listed and the illustrations. To find a view of the part listed and its visual relationship to the assembly, locate the figure and item number in the list, then refer to the indicated illustration and locate the part by item number. To find a part number and description in the parts list, locate the part on an illustration, note the item number, then refer to the parts list and locate the applicable part number and description.

B. PART NUMBER

The second column lists the part number necessary for reordering repair parts. In addition, the Nomenclature column contains the Vendor Federal Supply Code and part numbers for all vendor-supplied items that have not been reworked by Airline Equipment, FMC Corporation. Standard commercial hardware can be ordered from FMC Corporation or obtained locally. Vendor parts can be obtained from FMC Airline Equipment or directly from the vendor.

C. AIRLINE PART NUMBER

A column is provided so that individual customers can add their own part numbers.

D. NOMENCLATURE

The fourth column lists the description of each item in the parts list. The identifying noun or key word is the first word in the nomenclature column. The remainder of this column contains the rest of the description to assist in completely identifying the item. Vendor Supplied Codes are listed after the description in parentheses. The code number is listed first, followed by the part number. If the item has been modified, it is so noted. The vendor code number is preceded by the capital letter "V".

E. EFFECTIVITY

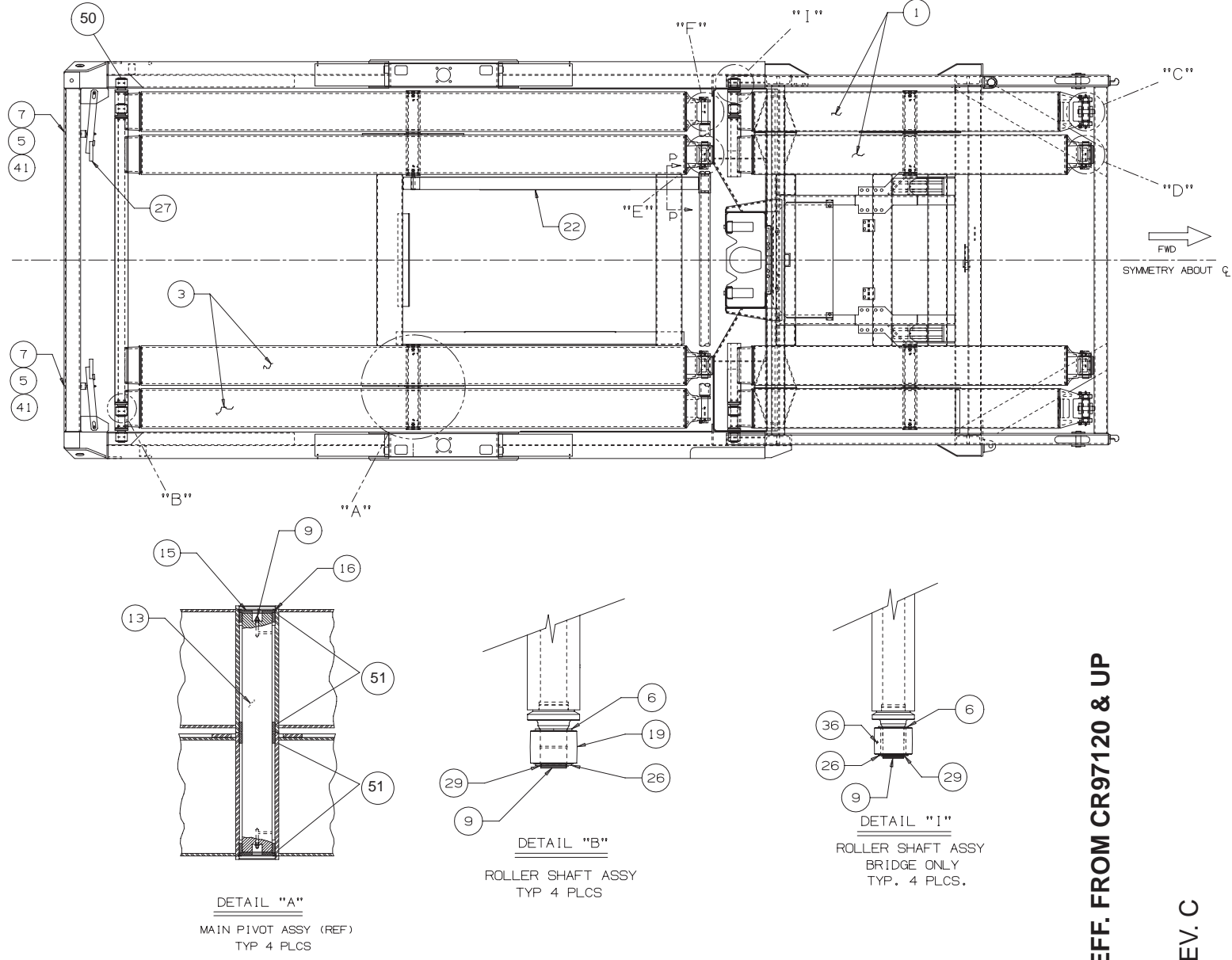
Effectivity shall indicate the applicability of parts to any given piece of equipment. When an item is applicable to all units, no effectivity shall be shown.

F. UNITS PER ASSEMBLY

The final column indicates the quantity of each part required to complete the next higher assembly. The abbreviation REF indicates that a part number is referenced to another list; this practice insures that the quantity shown on the list does not exceed the quantity used on the Loader.

Section 5. Body Assembly

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	MAIN FRAME AND SCISSOR, CENTER LIFT	623-1267	FIGURE 1	2
2.	REAR SAFETY STANDS, STANDARD	620-2864	FIGURE 5	8
3.	FENDER ASSEMBLY	620-4102-001	FIGURE 6	9
4.	STABILIZER INSTALLATION	622-4000	FIGURE 7	11



EFF. FROM CR97120 & UP

REV. C

Figure 1
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
 623-1267

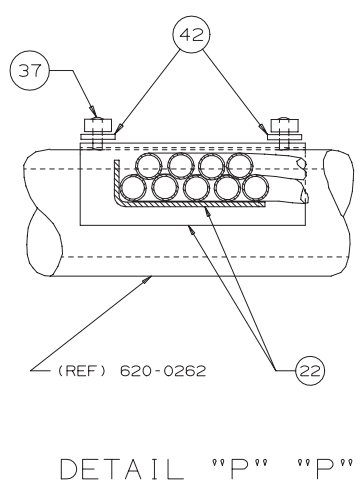
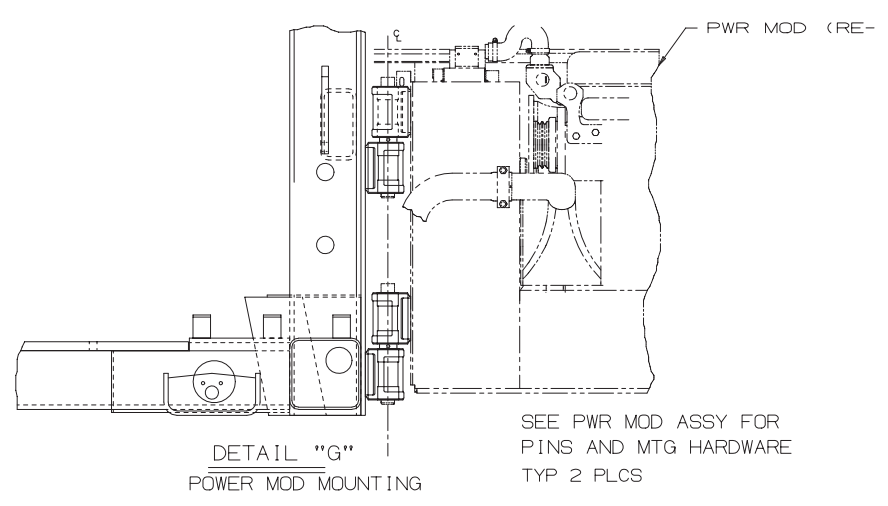
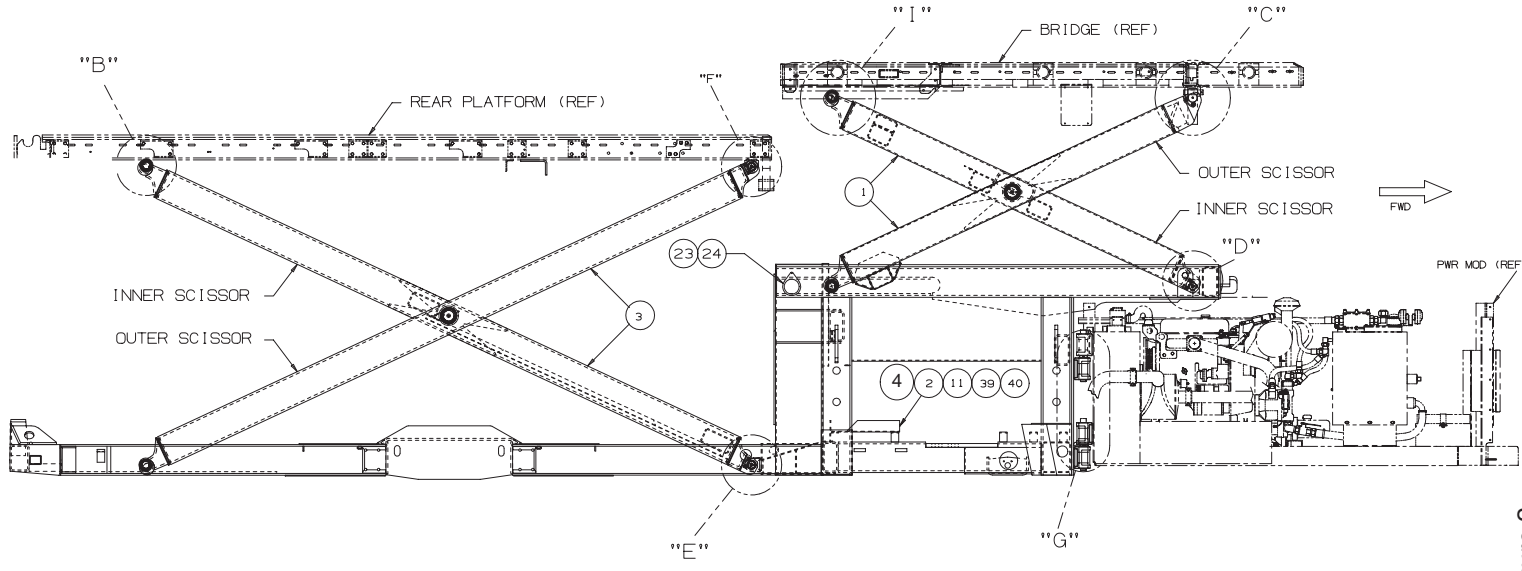
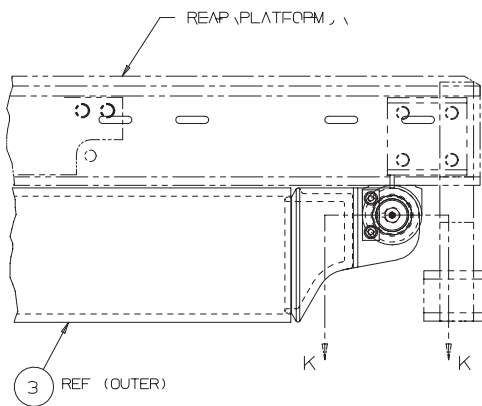
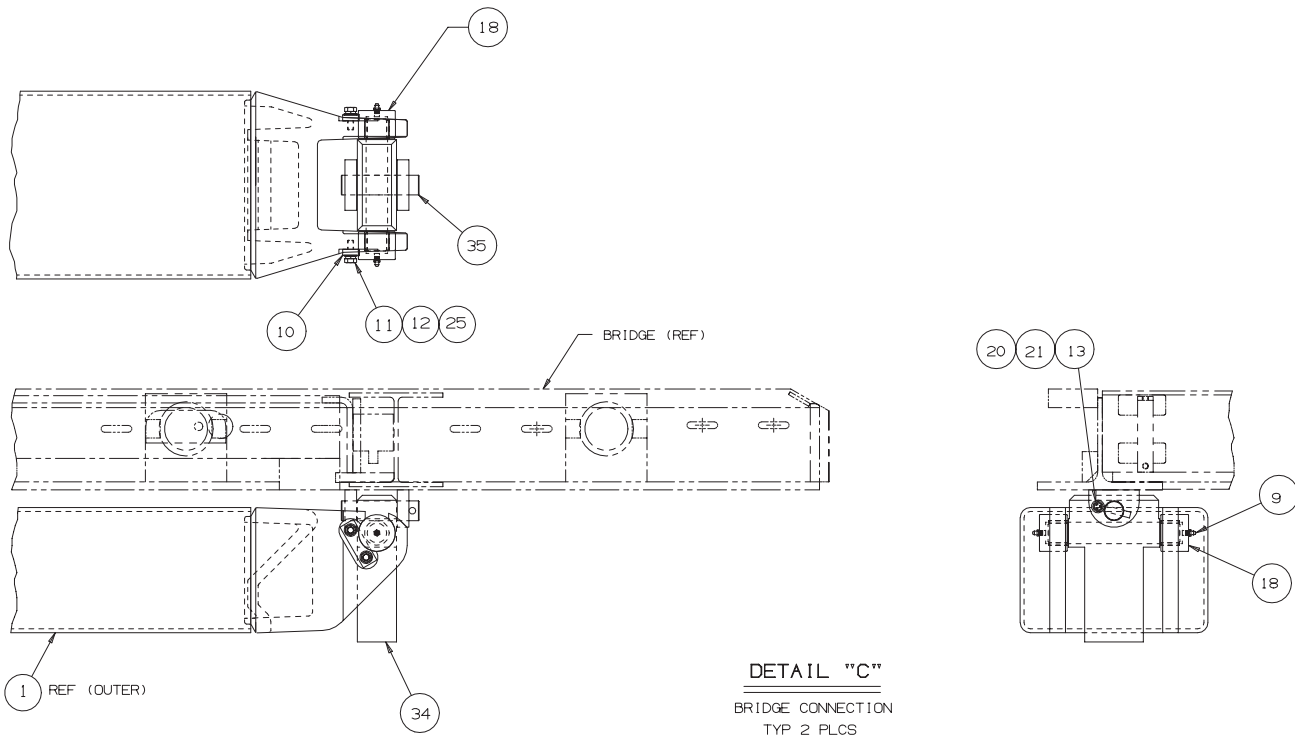
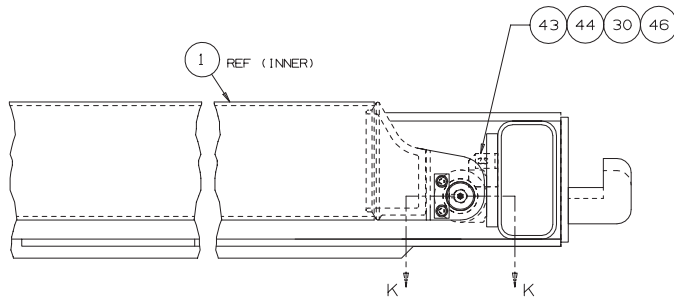


Figure 2
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267

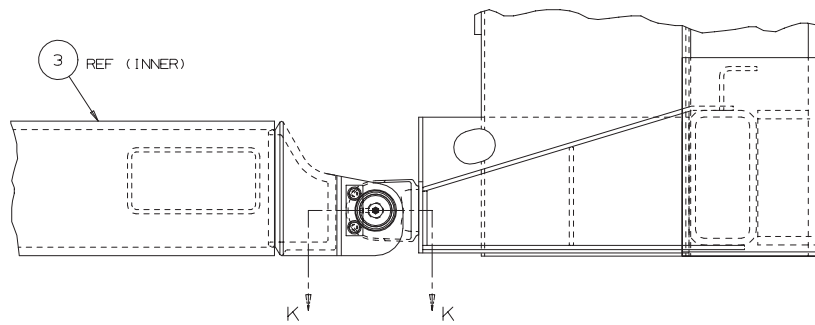


DETAIL "F"
REAR PLATFORM CONNECTION
TYP 2 PLCS

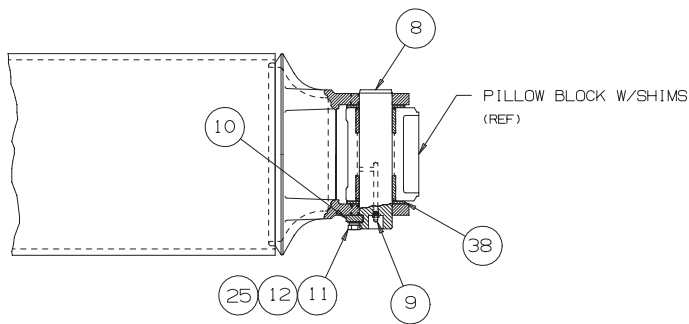
Figure 3
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267



DETAIL "D"
FRONT SCISSOR CONNECTION



DETAIL "E"
REAR SCISSOR CONNECTION
TYP 2 PLCS



SECTION K-K
SCISSOR PIVOT ASSY W/SHIMS
TYP 6 PLCS

Figure 4
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267

**MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267**

Figure 1 thru Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-7774		SCISSORS ASSEMBLY, Front		1
2	519-1234		CRADLE WELDMENT		1
3	620-6493		SCISSORS ASSEMBLY, Rear		1
4	623-0900		FUEL TANK INSTALLATION (Ref. Sect. 4-11)	EFF: CR97135 & UP	REF
5	621-4036		COVER, Tail Light		2
6	622-5977		WASHER, Inner Support w/Taper		8
7	620-0953		SCREW, Hex Hd Cap, M6 x 1 x 16mm		8
8	620-8730		PIN, End Pivot		6
9	620-0704		GREASE FITTING (V95879 #2103)		18
10	620-1066		LOCKPLATE		10
11	620-0662		WASHER, Flat Hard M10 Narrow		24
12	620-0633		SCREW, Hex Hd, 8.8 M10 x 1.5 x 30mm		20
13	620-1115		WASHER, Lock 3/8 Hi-Collar		2
17	620-1486-001		MAIN FRAME WELDMENT		1
18	620-3238		BEARING CAP ASSEMBLY Consisting of:		4
-	620-3236		CAP, Bearing		1
-	620-3237		BUSHING		1
-	620-0704		GREASE FITTING		1
19	622-3591		SCISSORS ROLLER ASSEMBLY Consisting of:		8
-	622-3590		ROLLER, Scissors (Housing)		1
-	622-2851		BUSHING		1
-	622-4156		SEAL		2
20	620-3276		ROD END		2
21	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		2
22	620-2168		HOSE GUIDE WELDMENT, Rear		1
23	622-4964		COVER, Bearing		2
24	107-0048		SCREW, Self Tapp, Type F 12 x 24 x 5/8"		2
25	620-1954		WASHER, Lock 7/16 Hi-Collar		20
26	622-5862		WASHER, Precision Support		8
27	620-2864		REAR SAFETY STANDS (Ref. Figure 5, Page 8)		1
28	111-2414		SCREW, Socket Hd Cap, 5/16 -24 x 1"		16

**MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267**

Figure 1 thru Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
29	620-0747		SNAP RING		8
30	620-0661		WASHER, Flat Hard M8 Narrow		4
34	623-0183		STRUT, Bridge		2
35	620-3278		PIN, Pivot		2
37	620-0656		NUT, PTH M8 x 1.25		2
38	620-8506		SHIM, Pillow Block 50mm		12
39	620-9743		SCREW, Carr. Hd 6.8 M10 x 1.5 x 30mm Zinc		4
40	620-0657		NUT, PTH 8 M10 x 1.5		4
41	110-0241		WASHER, Lock 1/4 Cad. Pl.		8
42	110-0255		WASHER, Flat 5/16 Cad. Pl.		2
43	623-2161		BRACKET WELDMENT, Bulkhead		1
44	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 20mm		2
46	620-1367		NUT, Hex 8 M8 x 1.25 x 20mm		2
50	621-3844		SPINDLE		4
51	620-0072		BUSHING		16
-	Not Shown				

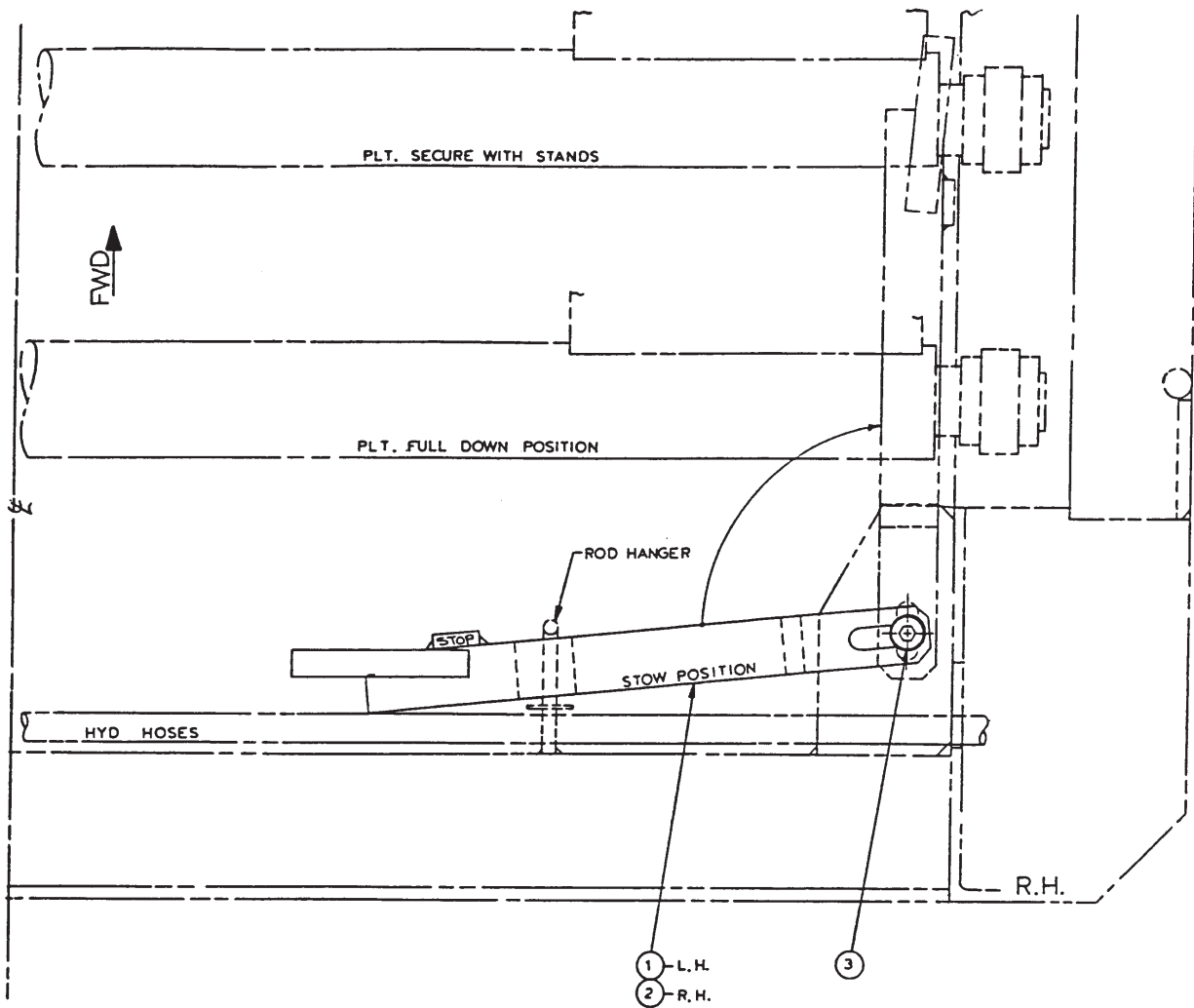


Figure 5

**REAR SAFETY STANDS ASSEMBLY, STANDARD
620-2864**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	620-2788-001		SAFETY STAND, L.H.		1
2	620-2788-002		SAFETY STAND, R.H.		1
3	620-2793		BOLT, Shoulder, M16		2

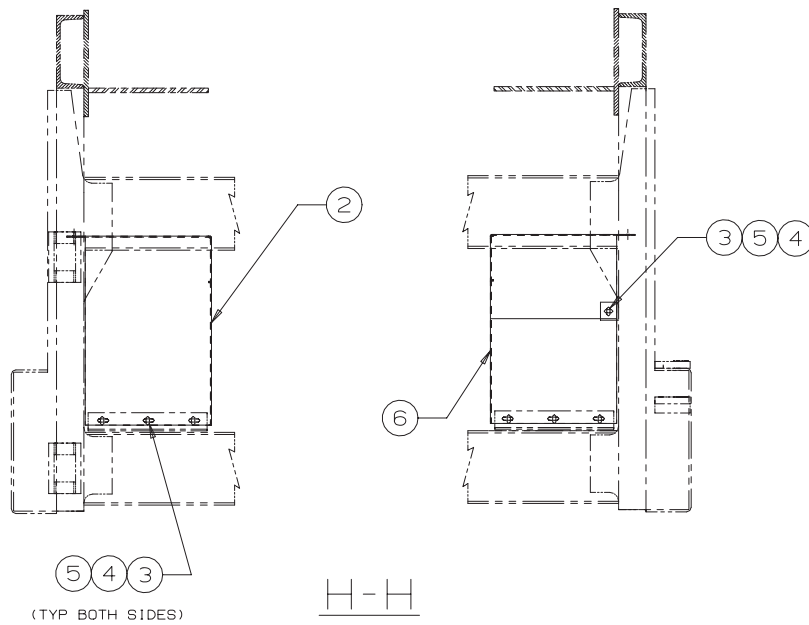
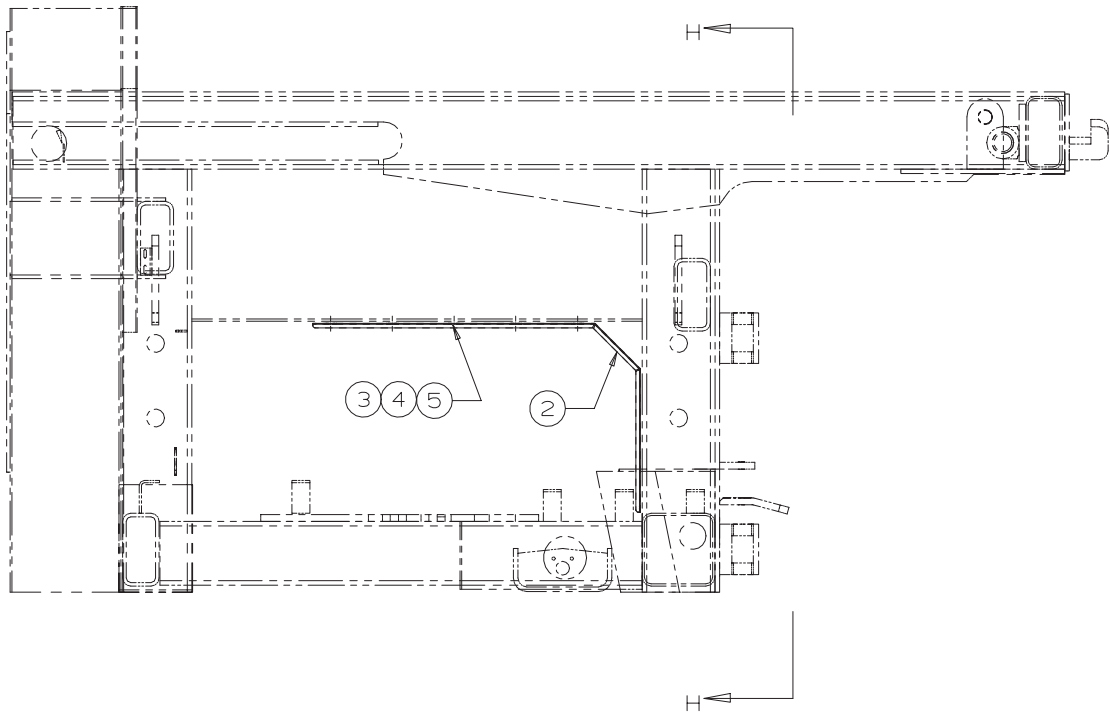
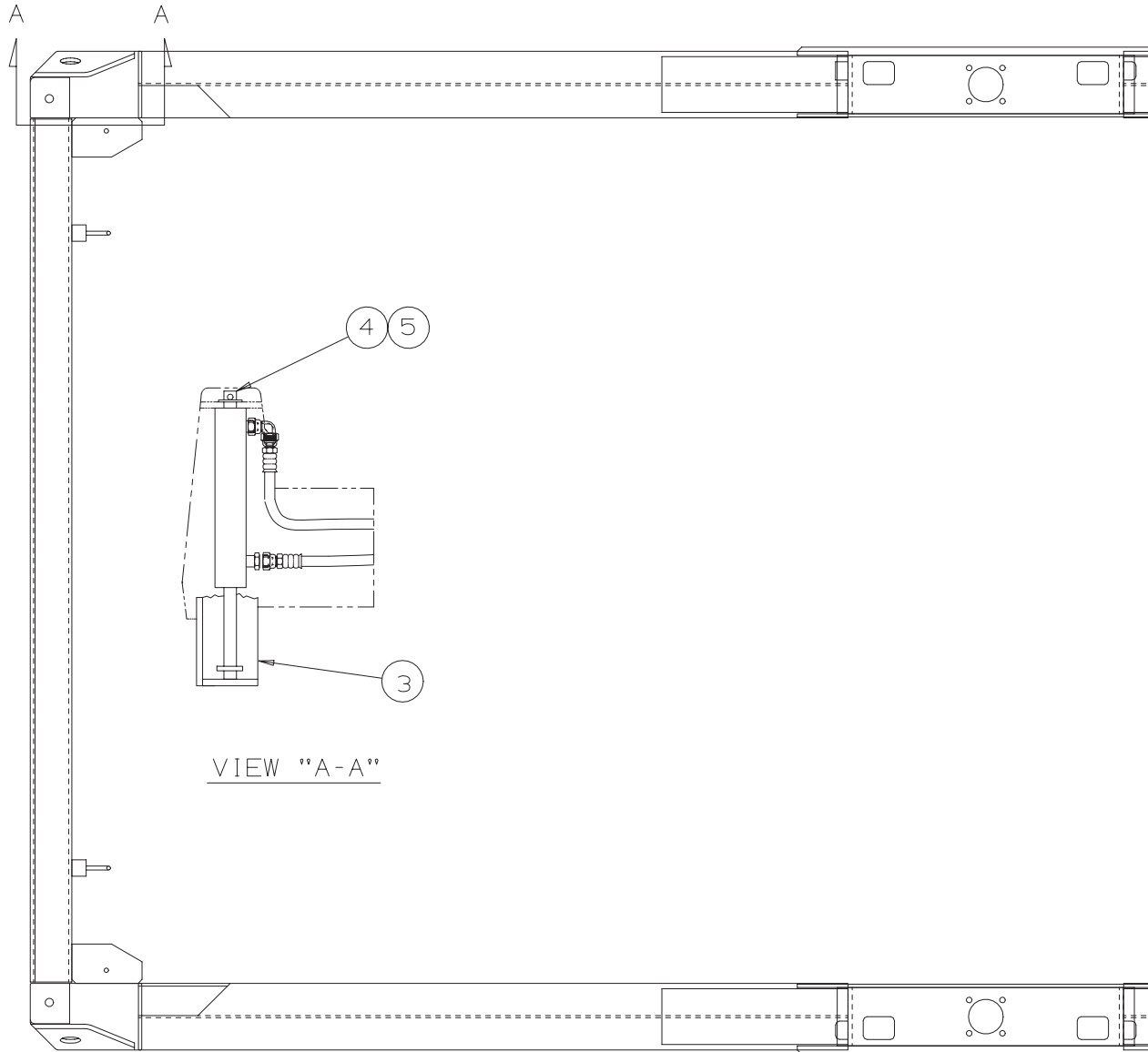


Figure 6
FENDER ASSEMBLY
620-4102-001

**FENDER ASSEMBLY
620-4102-001****Figure 6**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
2	620-3768		FENDER, R.H.		1
3	620-0626		SCREW, Hex Hd, 8.8" M8 x 1.25 x 30mm		16
4	620-0656		NUT, Lock Hex ESNA M8 x 1.25		16
5	107-1353		WASHER, Flat Hard M8 Regular		32
6	622-3501		FENDER, L.H.		1



REV. C

Figure 7
STABILIZER INSTALLATION
622-4000

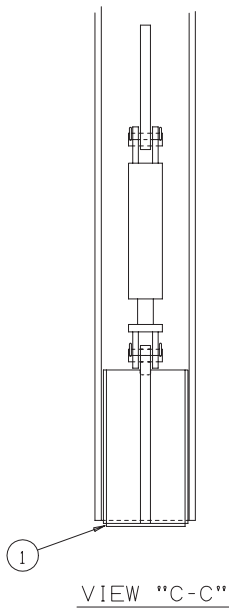
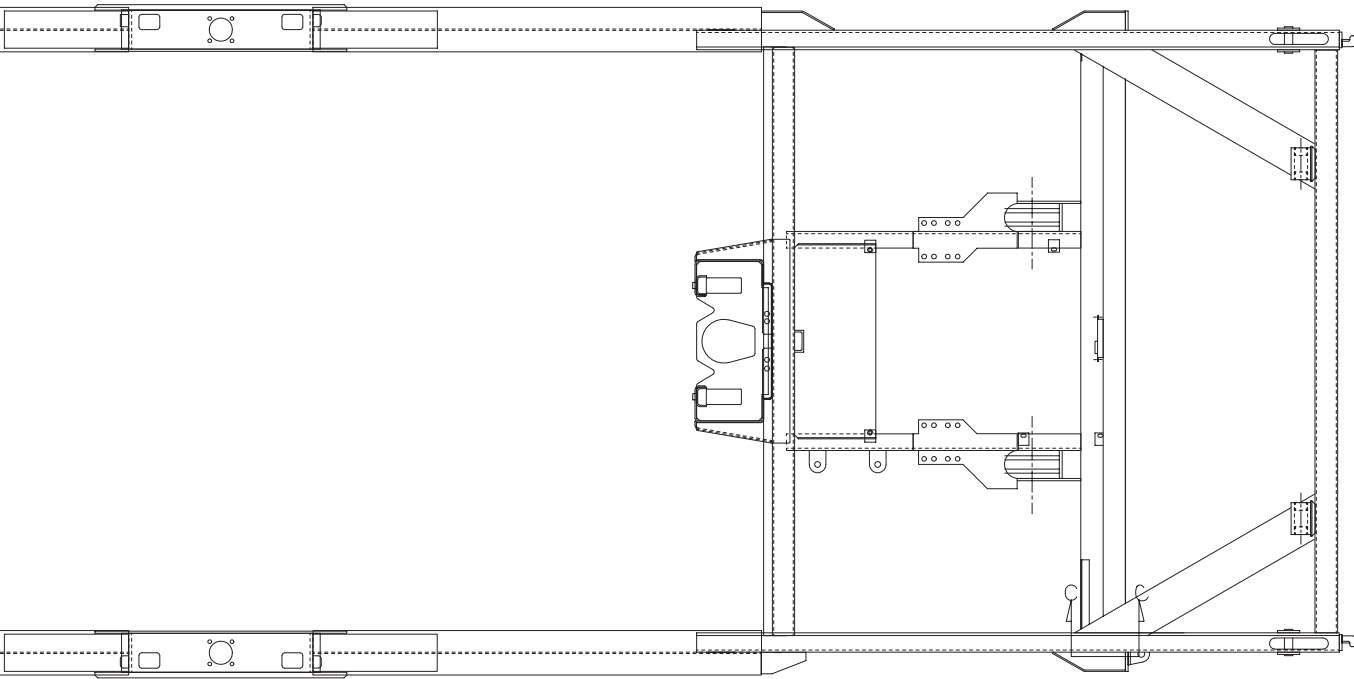


Figure 8
STABILIZER INSTALLATION
622-4000

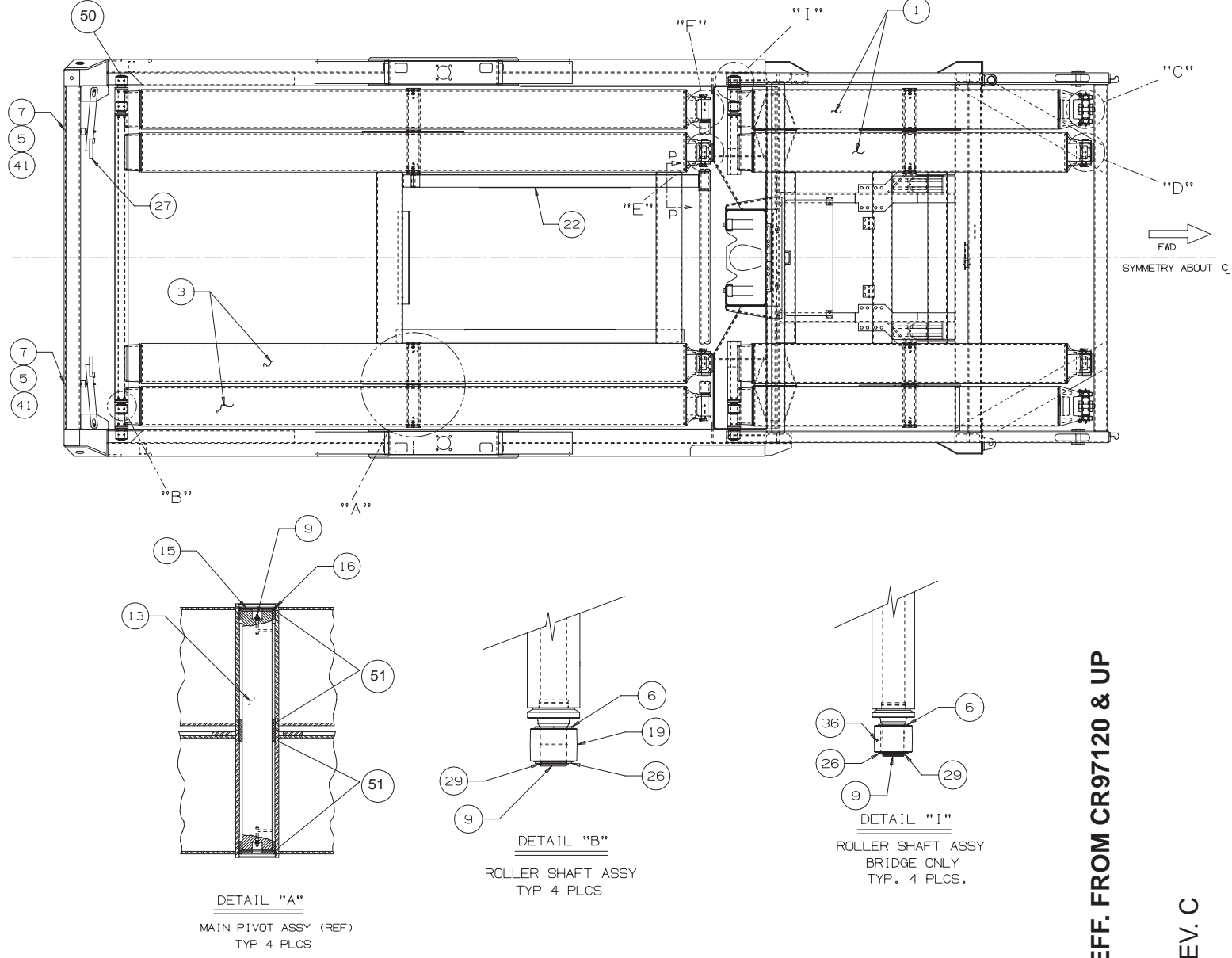
**STABILIZER INSTALLATION
622-4000**

Figure 7, Figure 8

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1077		STABILIZER, Welded		4
3	620-0740		STABILIZER FOOT, Rear		2
4	620-0746		PIN, Grove		4
5	620-0665		WASHER, Flat M20		2

Section 5. Body Assembly

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	MAIN FRAME AND SCISSOR, CENTER LIFT	623-1267	FIGURE 1	2
2.	REAR SAFETY STANDS, STANDARD	620-2864	FIGURE 5	8
3.	FENDER ASSEMBLY	620-4102-001	FIGURE 6	9
4.	STABILIZER INSTALLATION	622-4000	FIGURE 7	11



EFF. FROM CR97120 & UP

REV. C

Figure 1
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
 623-1267

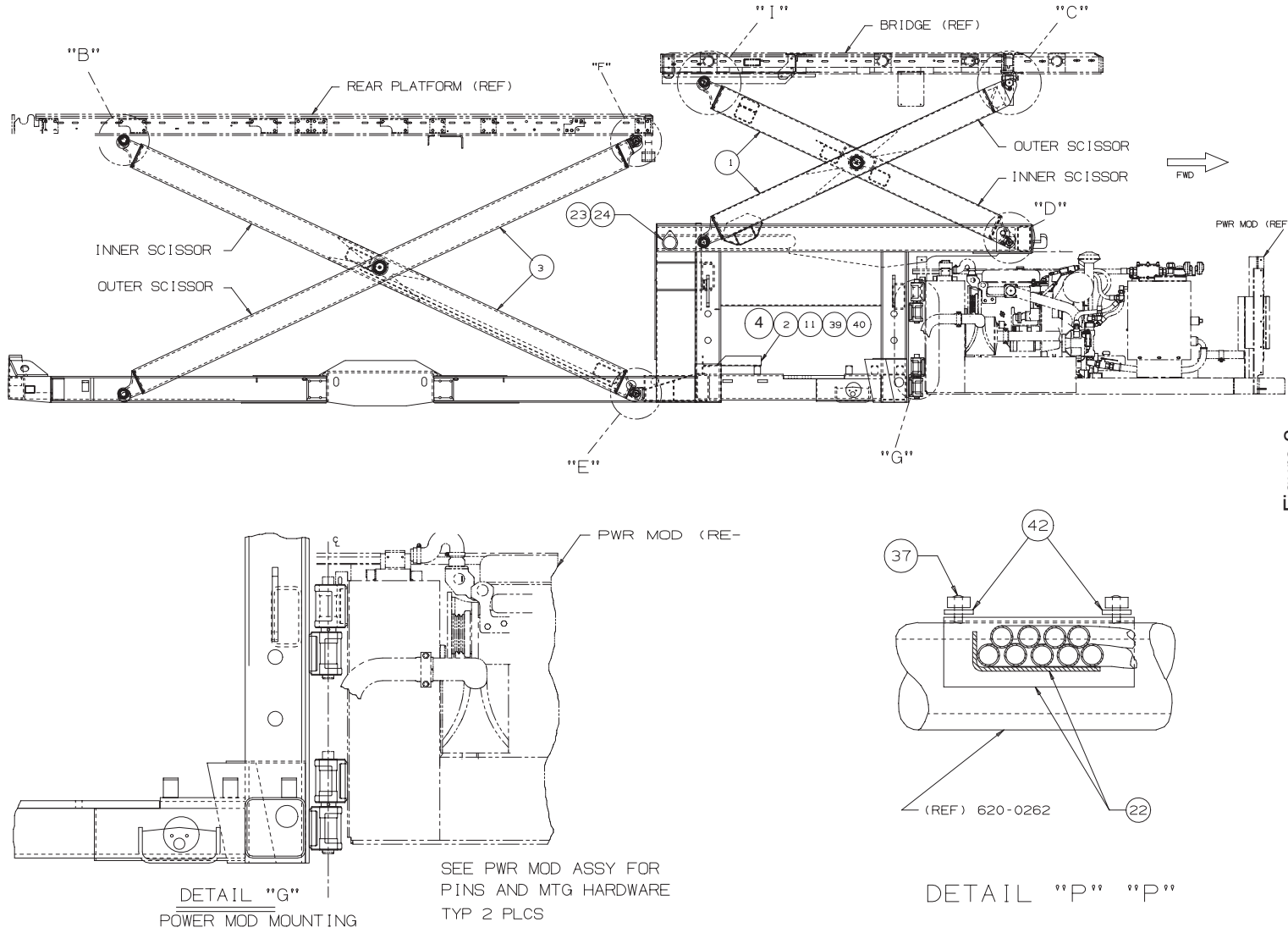
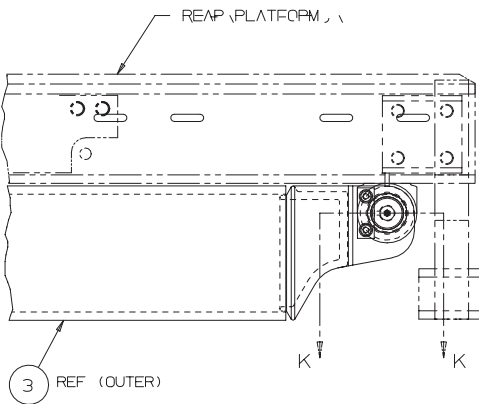
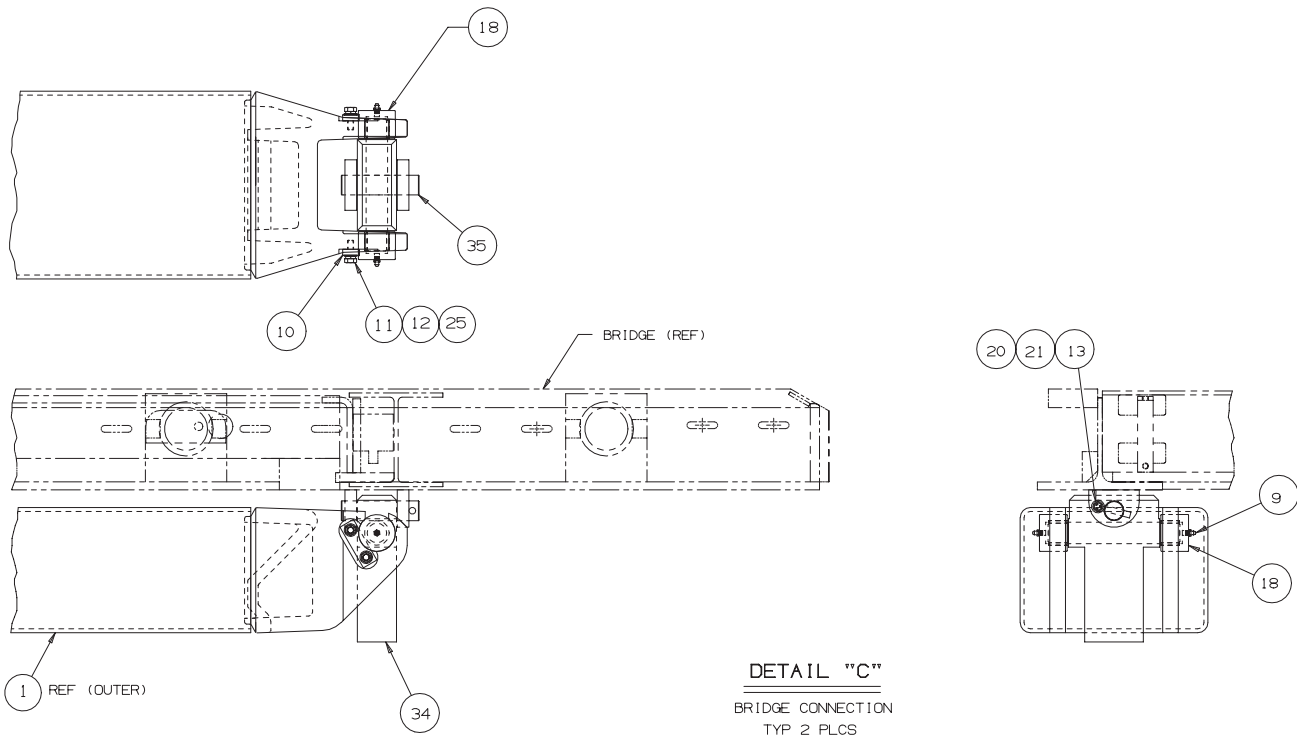
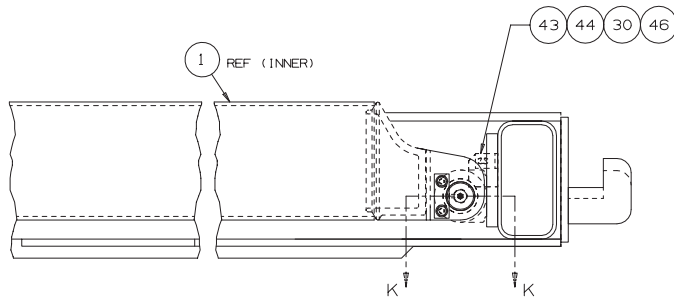


Figure 2
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
 623-1267

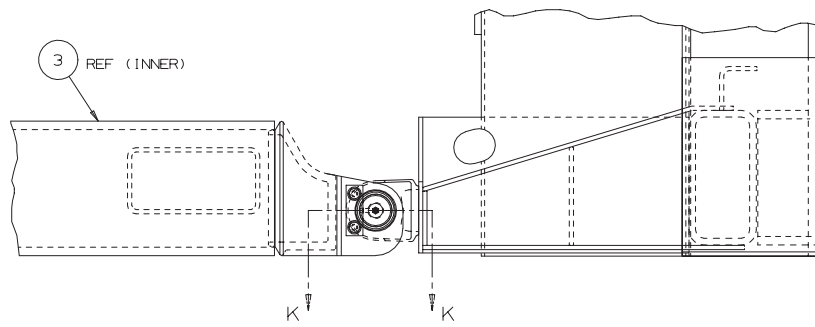


DETAIL "F"
REAR PLATFORM CONNECTION
TYP 2 PLCS

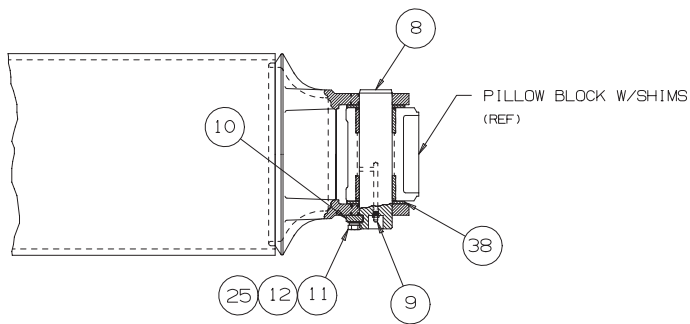
Figure 3
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267



DETAIL "D"
FRONT SCISSOR CONNECTION



DETAIL "E"
REAR SCISSOR CONNECTION
TYP 2 PLCS



SECTION K-K
SCISSOR PIVOT ASSY W/SHIMS
TYP 6 PLCS

Figure 4
MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267

**MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267**

Figure 1 thru Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-7774		SCISSORS ASSEMBLY, Front		1
2	519-1234		CRADLE WELDMENT		1
3	620-6493		SCISSORS ASSEMBLY, Rear		1
4	623-0900		FUEL TANK INSTALLATION (Ref. Sect. 4-11)	EFF: CR97135 & UP	REF
5	621-4036		COVER, Tail Light		2
6	622-5977		WASHER, Inner Support w/Taper		8
7	620-0953		SCREW, Hex Hd Cap, M6 x 1 x 16mm		8
8	620-8730		PIN, End Pivot		6
9	620-0704		GREASE FITTING (V95879 #2103)		18
10	620-1066		LOCKPLATE		10
11	620-0662		WASHER, Flat Hard M10 Narrow		24
12	620-0633		SCREW, Hex Hd, 8.8 M10 x 1.5 x 30mm		20
13	620-1115		WASHER, Lock 3/8 Hi-Collar		2
17	620-1486-001		MAIN FRAME WELDMENT		1
18	620-3238		BEARING CAP ASSEMBLY Consisting of:		4
-	620-3236		CAP, Bearing		1
-	620-3237		BUSHING		1
-	620-0704		GREASE FITTING		1
19	622-3591		SCISSORS ROLLER ASSEMBLY Consisting of:		8
-	622-3590		ROLLER, Scissors (Housing)		1
-	622-2851		BUSHING		1
-	622-4156		SEAL		2
20	620-3276		ROD END		2
21	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		2
22	620-2168		HOSE GUIDE WELDMENT, Rear		1
23	622-4964		COVER, Bearing		2
24	107-0048		SCREW, Self Tapp, Type F 12 x 24 x 5/8"		2
25	620-1954		WASHER, Lock 7/16 Hi-Collar		20
26	622-5862		WASHER, Precision Support		8
27	620-2864		REAR SAFETY STANDS (Ref. Figure 5, Page 8)		1
28	111-2414		SCREW, Socket Hd Cap, 5/16 -24 x 1"		16

**MAIN FRAME AND SCISSORS CENTER LIFT ASSEMBLY
623-1267**

Figure 1 thru Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
29	620-0747		SNAP RING		8
30	620-0661		WASHER, Flat Hard M8 Narrow		4
34	623-0183		STRUT, Bridge		2
35	620-3278		PIN, Pivot		2
37	620-0656		NUT, PTH M8 x 1.25		2
38	620-8506		SHIM, Pillow Block 50mm		12
39	620-9743		SCREW, Carr. Hd 6.8 M10 x 1.5 x 30mm Zinc		4
40	620-0657		NUT, PTH 8 M10 x 1.5		4
41	110-0241		WASHER, Lock 1/4 Cad. Pl.		8
42	110-0255		WASHER, Flat 5/16 Cad. Pl.		2
43	623-2161		BRACKET WELDMENT, Bulkhead		1
44	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 20mm		2
46	620-1367		NUT, Hex 8 M8 x 1.25 x 20mm		2
50	621-3844		SPINDLE		4
51	620-0072		BUSHING		16
-	Not Shown				

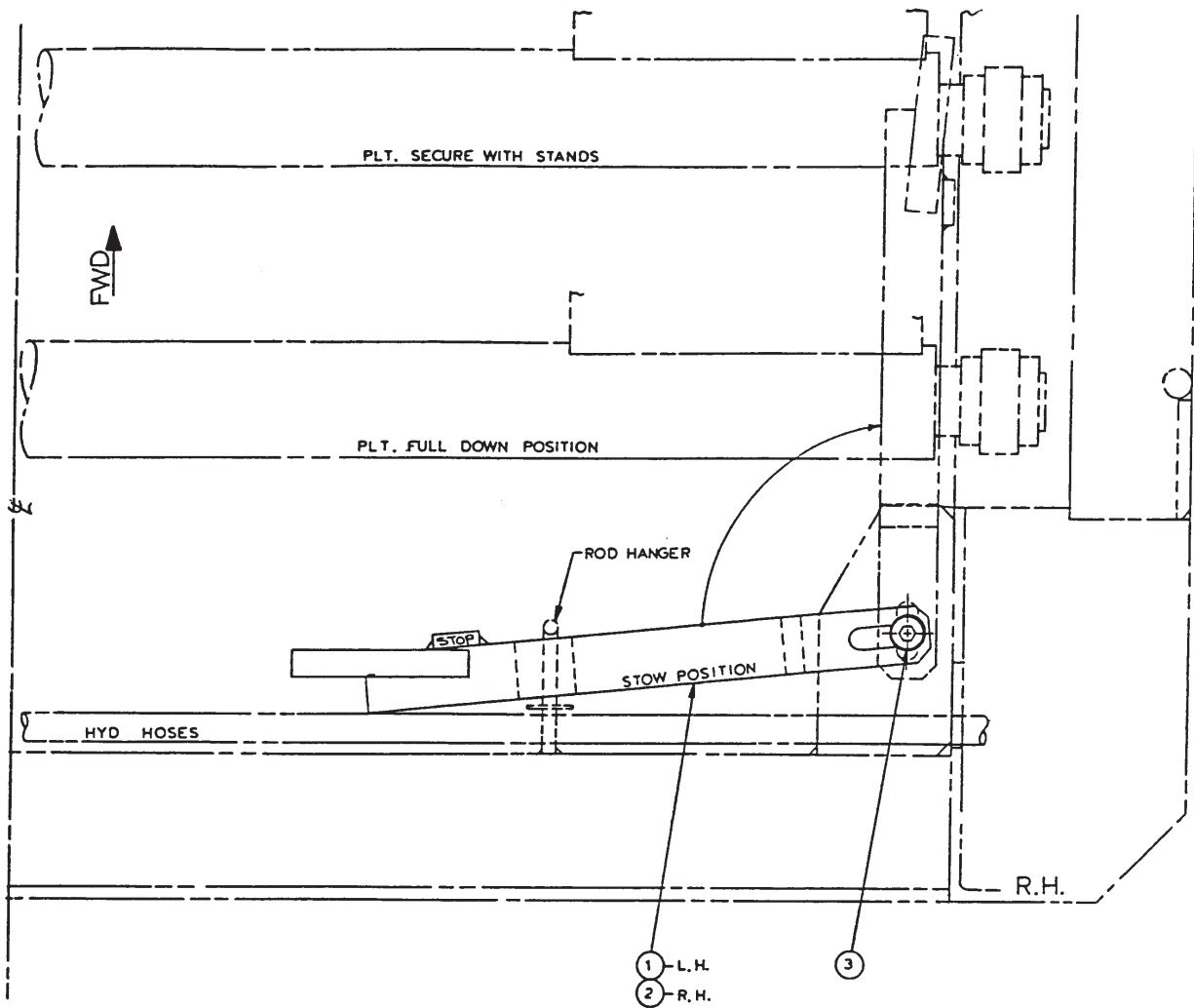


Figure 5

**REAR SAFETY STANDS ASSEMBLY, STANDARD
620-2864**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-2788-001		SAFETY STAND, L.H.		1
2	620-2788-002		SAFETY STAND, R.H.		1
3	620-2793		BOLT, Shoulder, M16		2

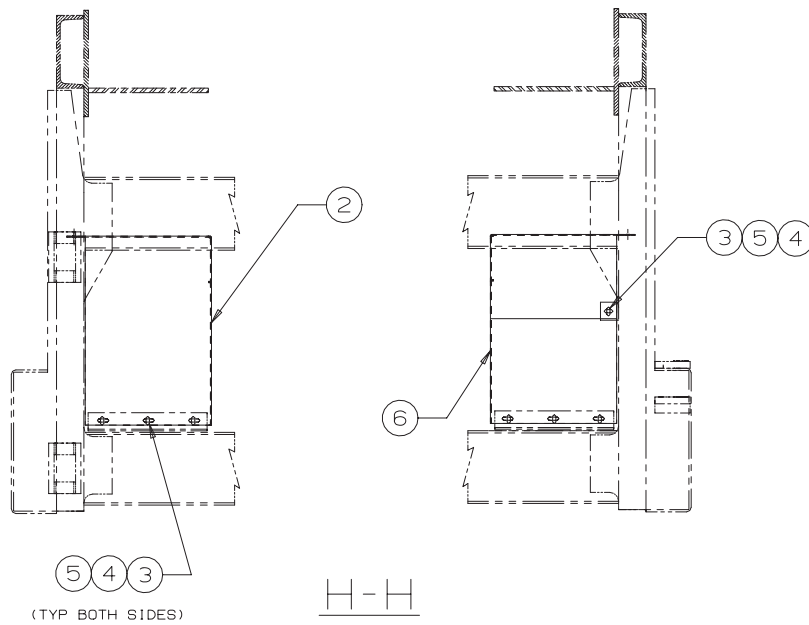
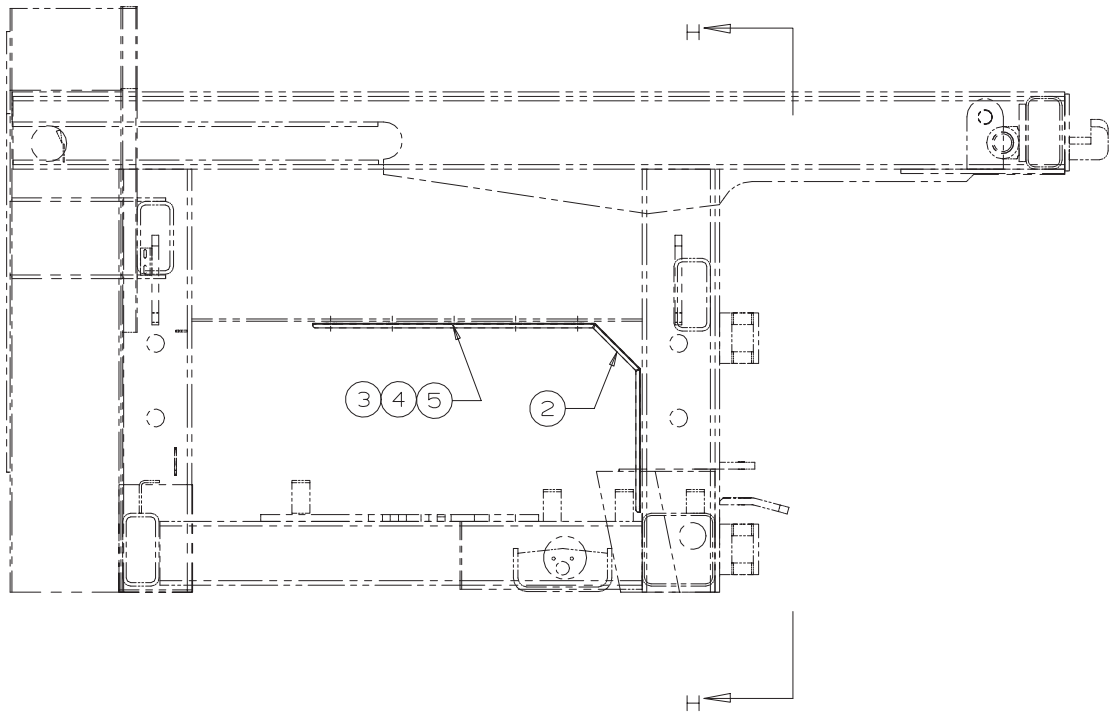
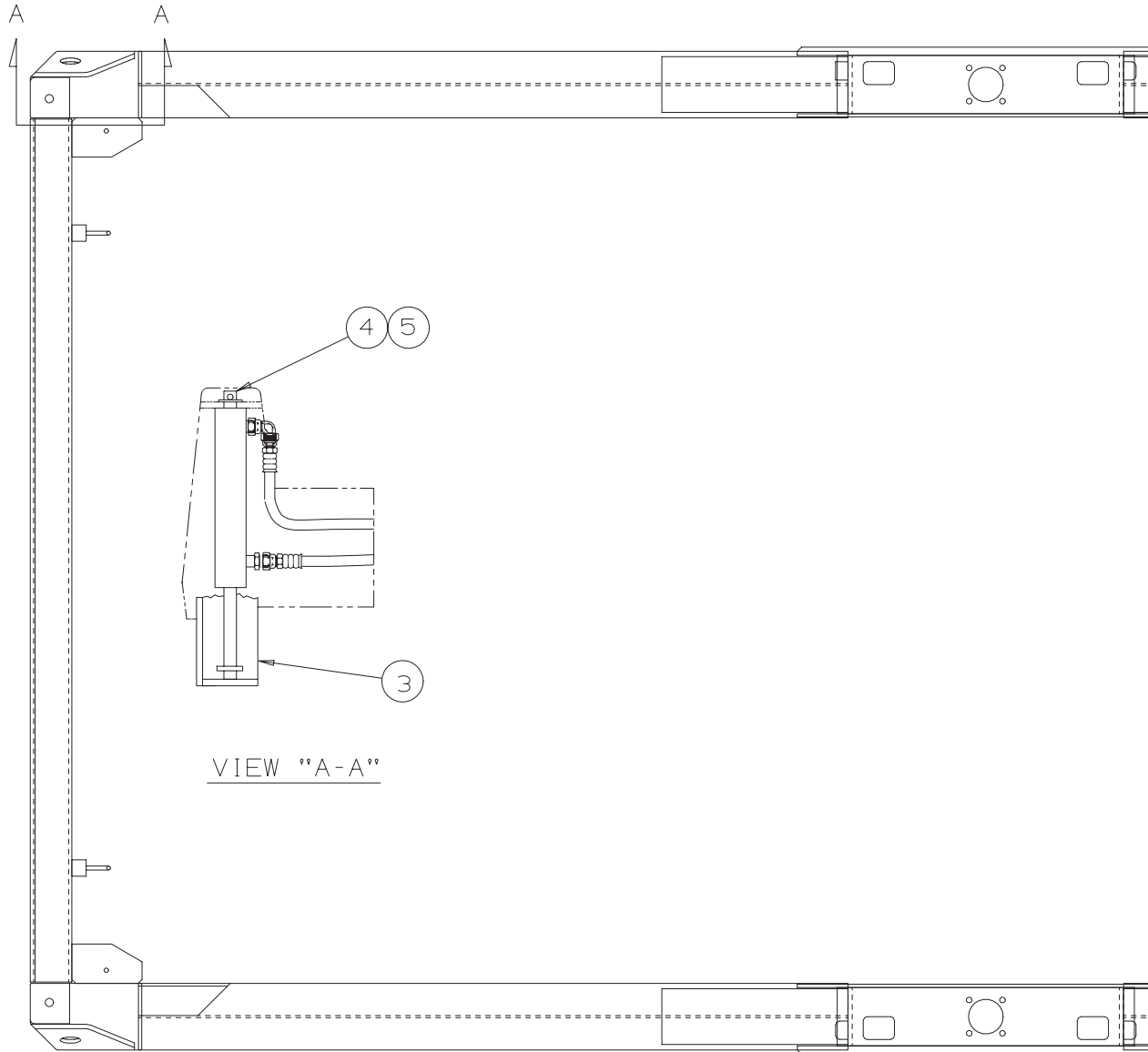


Figure 6
FENDER ASSEMBLY
620-4102-001

**FENDER ASSEMBLY
620-4102-001****Figure 6**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
2	620-3768		FENDER, R.H.		1
3	620-0626		SCREW, Hex Hd, 8.8" M8 x 1.25 x 30mm		16
4	620-0656		NUT, Lock Hex ESNA M8 x 1.25		16
5	107-1353		WASHER, Flat Hard M8 Regular		32
6	622-3501		FENDER, L.H.		1



REV. C

Figure 7
STABILIZER INSTALLATION
622-4000

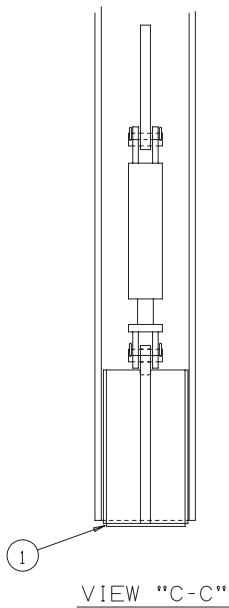
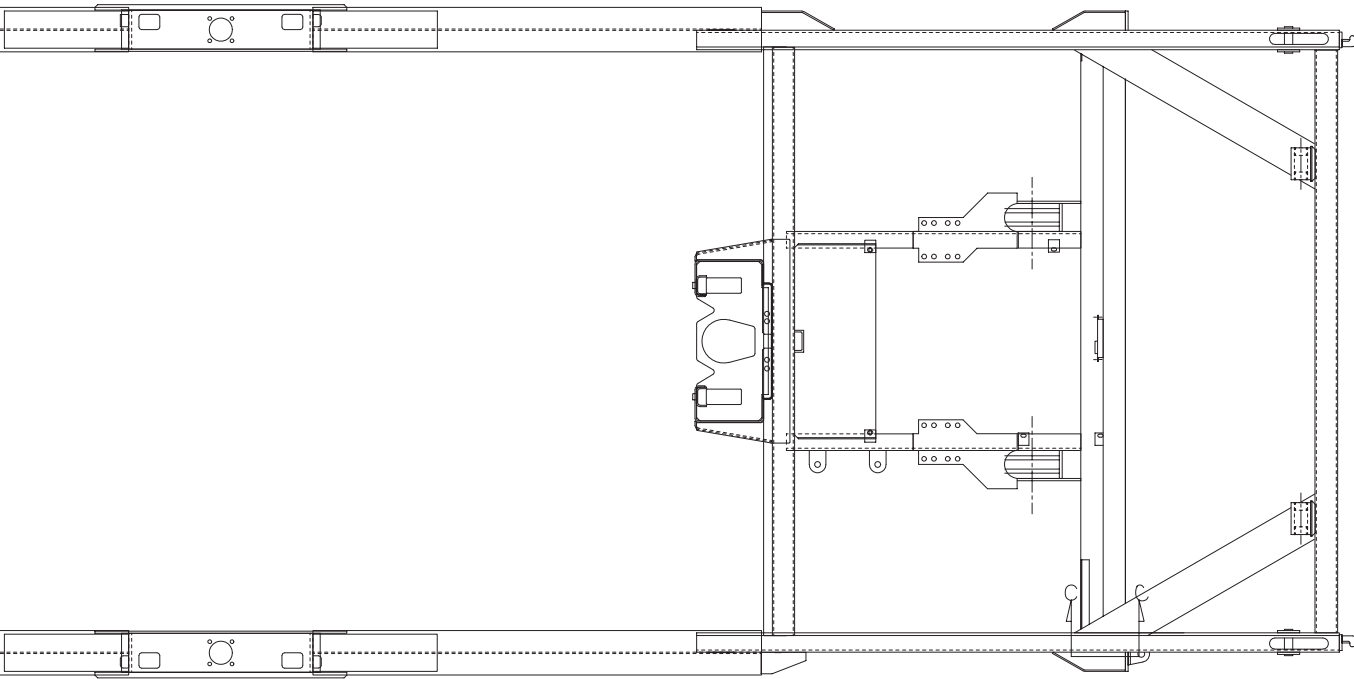


Figure 8
STABILIZER INSTALLATION
622-4000

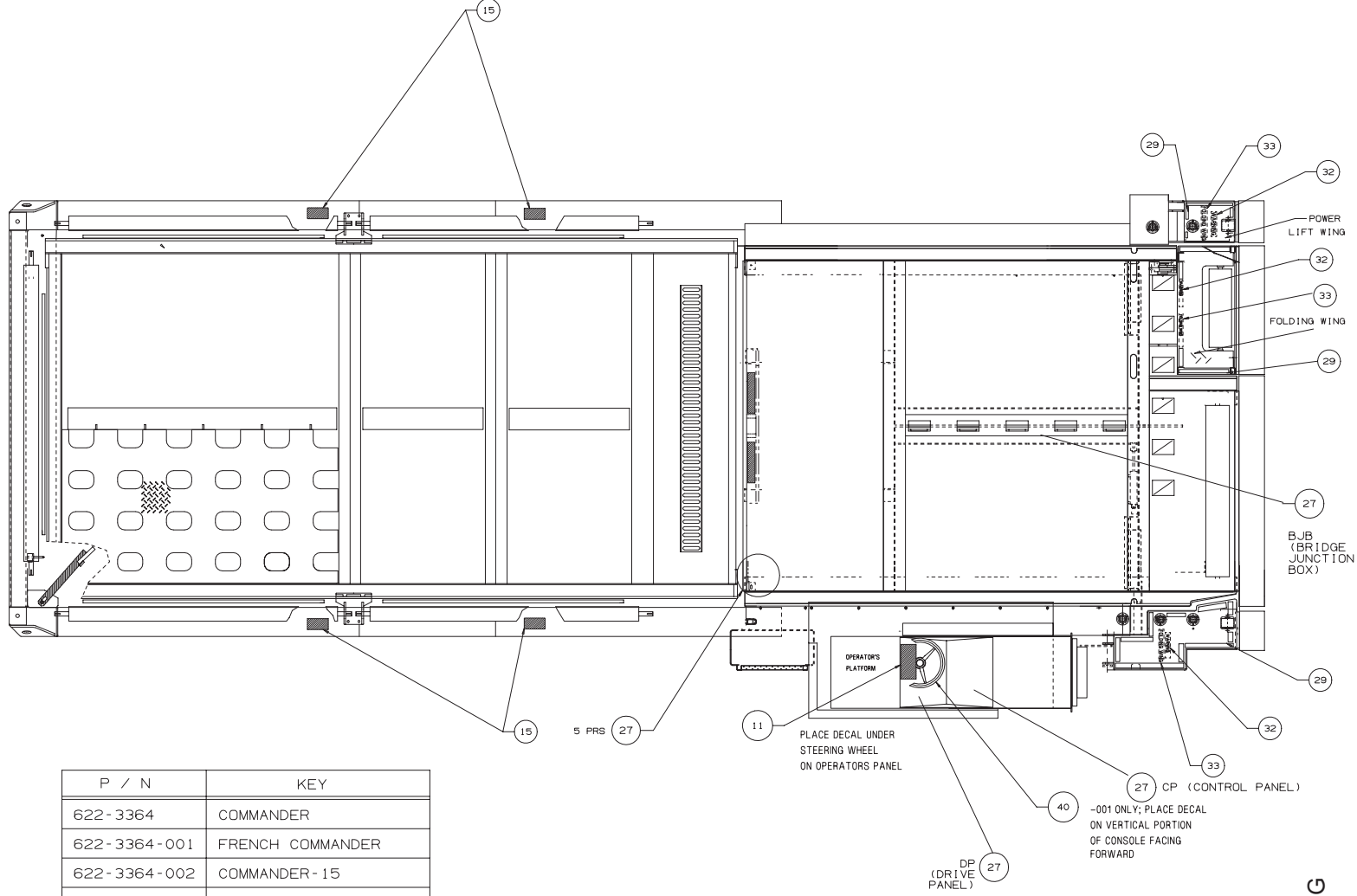
**STABILIZER INSTALLATION
622-4000**

Figure 7, Figure 8

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1077		STABILIZER, Welded		4
3	620-0740		STABILIZER FOOT, Rear		2
4	620-0746		PIN, Grove		4
5	620-0665		WASHER, Flat M20		2

Section 6. Identification

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	IDENTIFICATION	622-3364	FIGURE 1	2



P / N	KEY
622-3364	COMMANDER
622-3364-001	FRENCH COMMANDER
622-3364-002	COMMANDER-15
622-3364-003	SPANISH COMMANDER

Figure 1
IDENTIFICATION
622-3364

REV. G

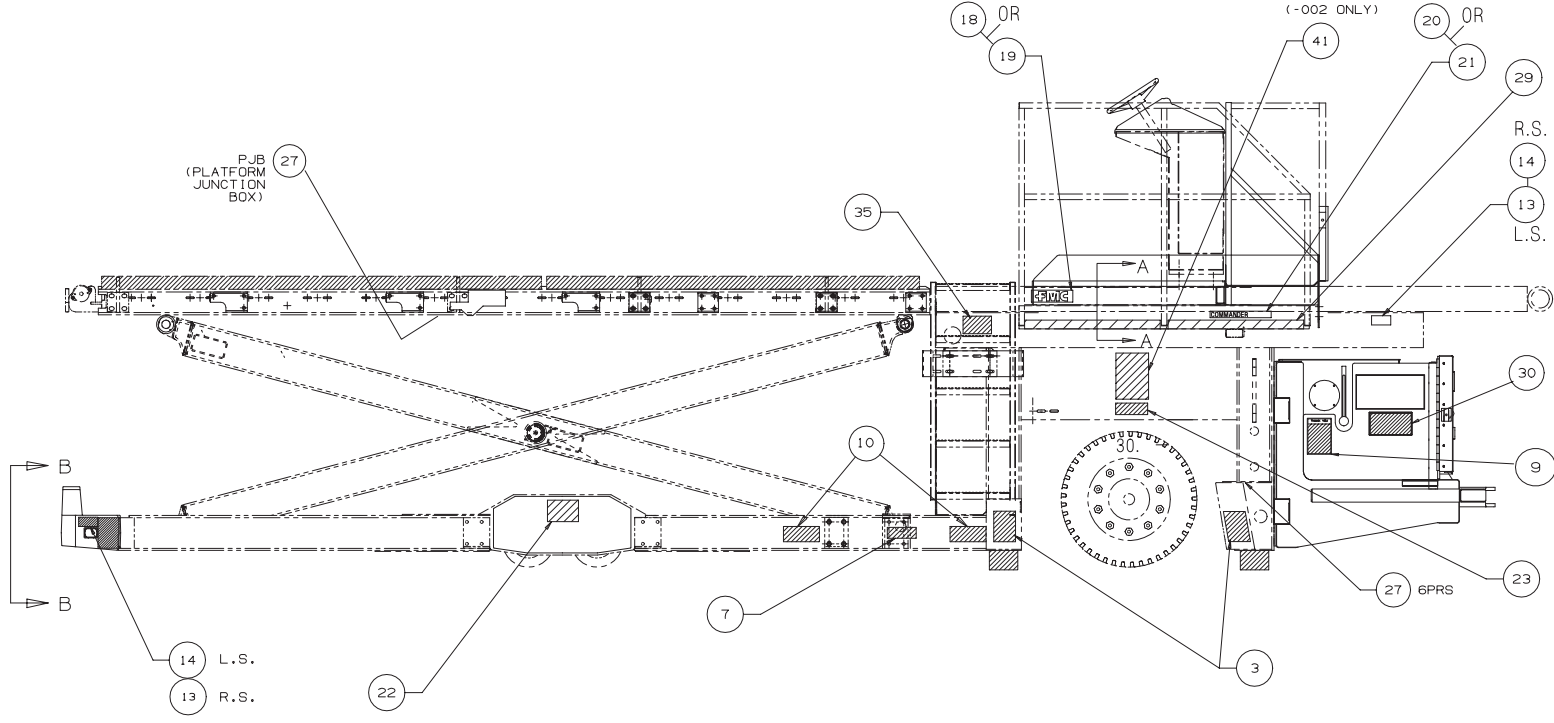
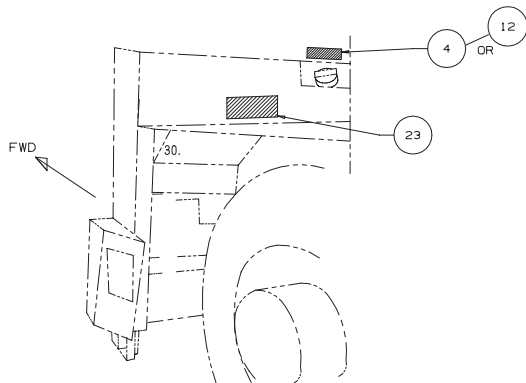
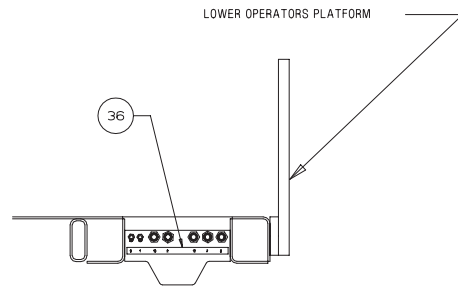


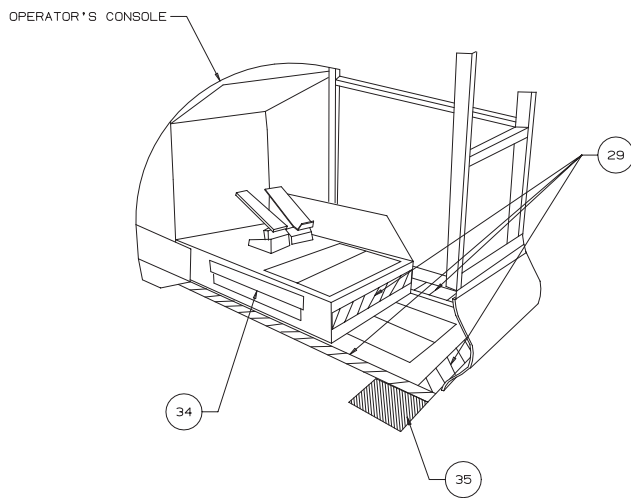
Figure 2
IDENTIFICATION
622-3364



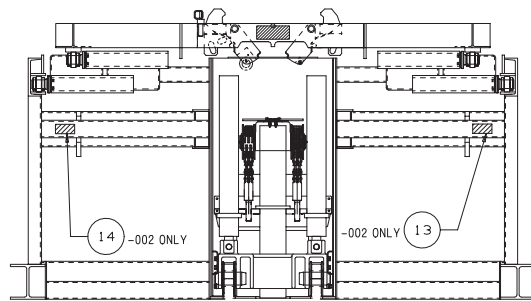
VIEW OF LEFT HAND WHEEL WELL



VIEW A-A CAB HYDRAULIC CONNECTIONS
LOOKING FORWARD



OPERATOR STATION, WARNING DECALS



VIEW OF LIFT POINTS
(CMDR-15-L)

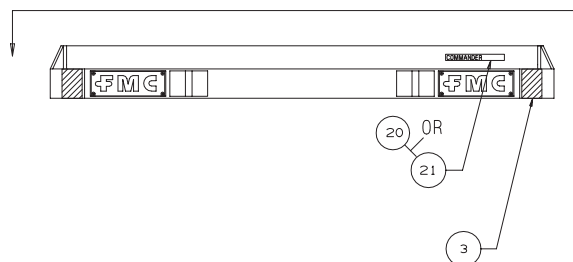
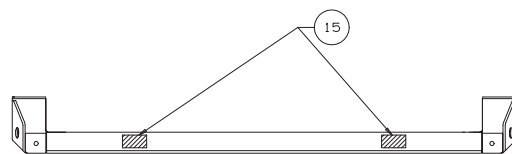
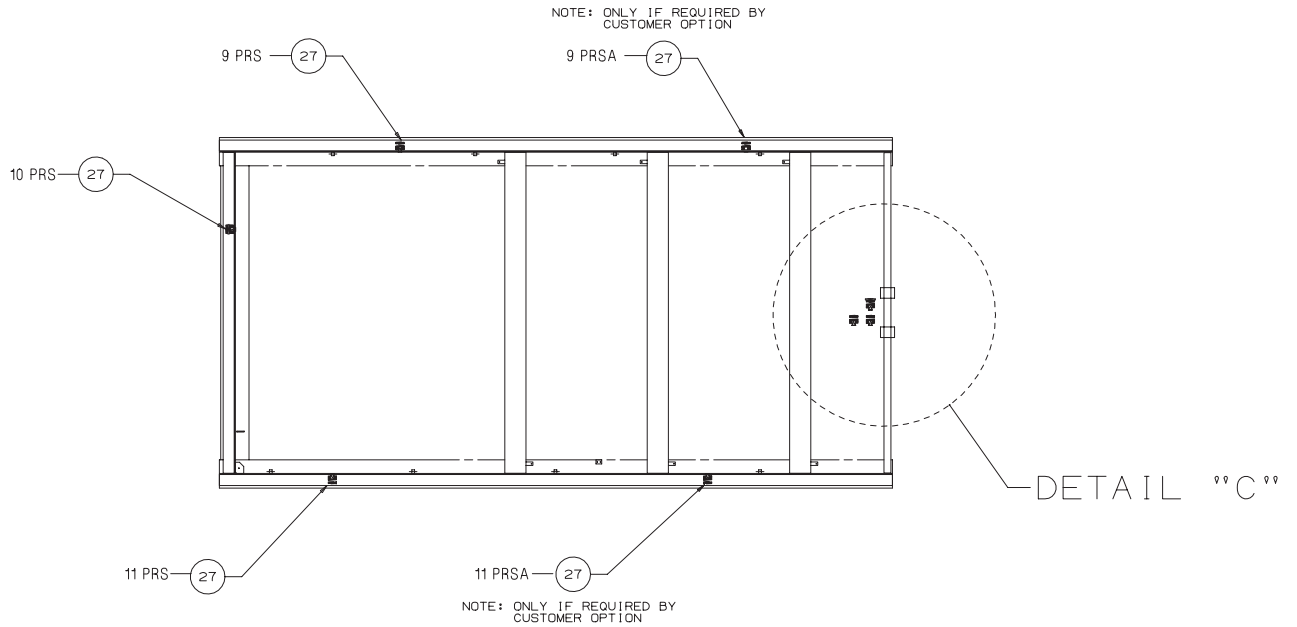


Figure 3
IDENTIFICATION
622-3364



PROXIMITY SWITCH LOCATION, REAR PLATFORM

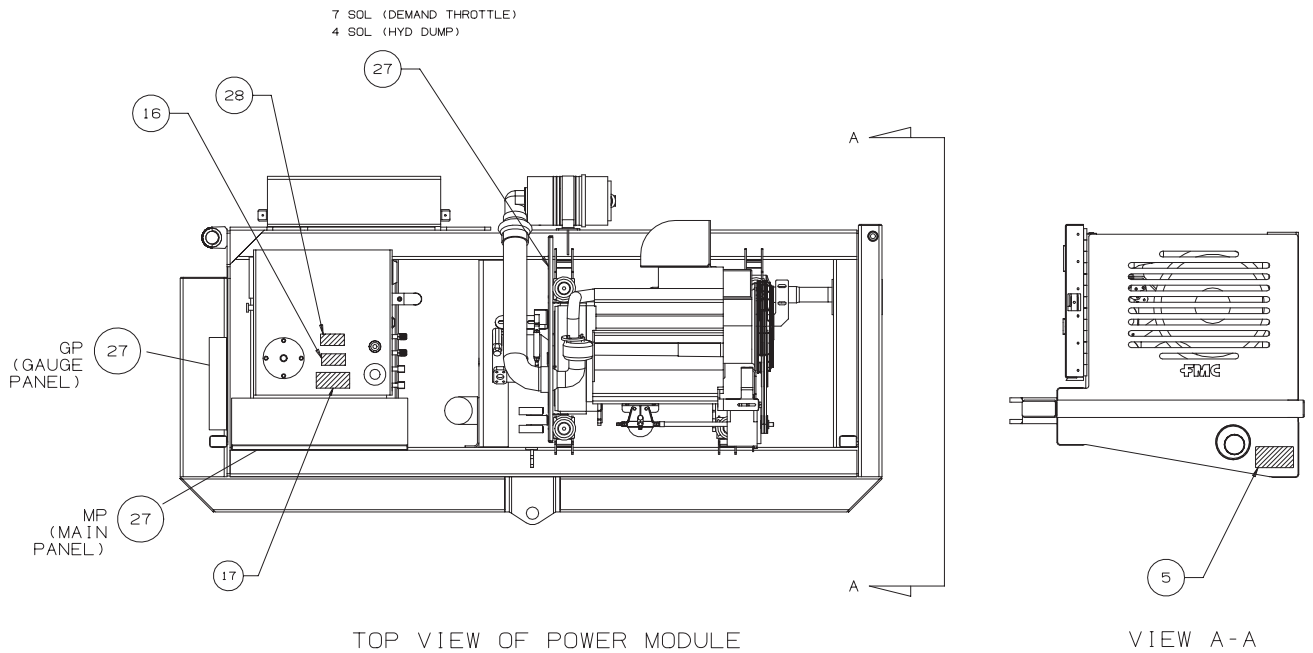


Figure 4
IDENTIFICATION
622-3364

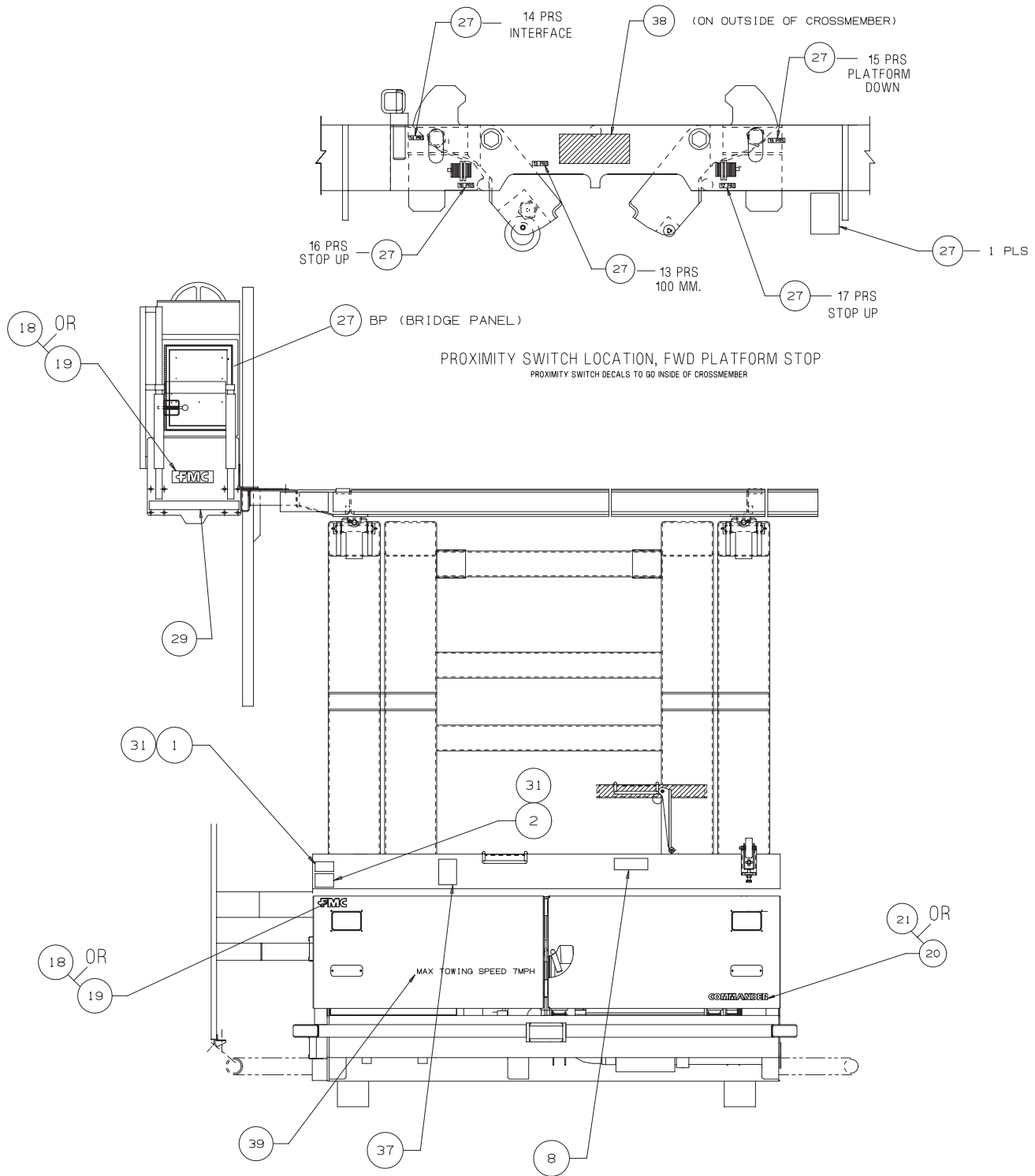
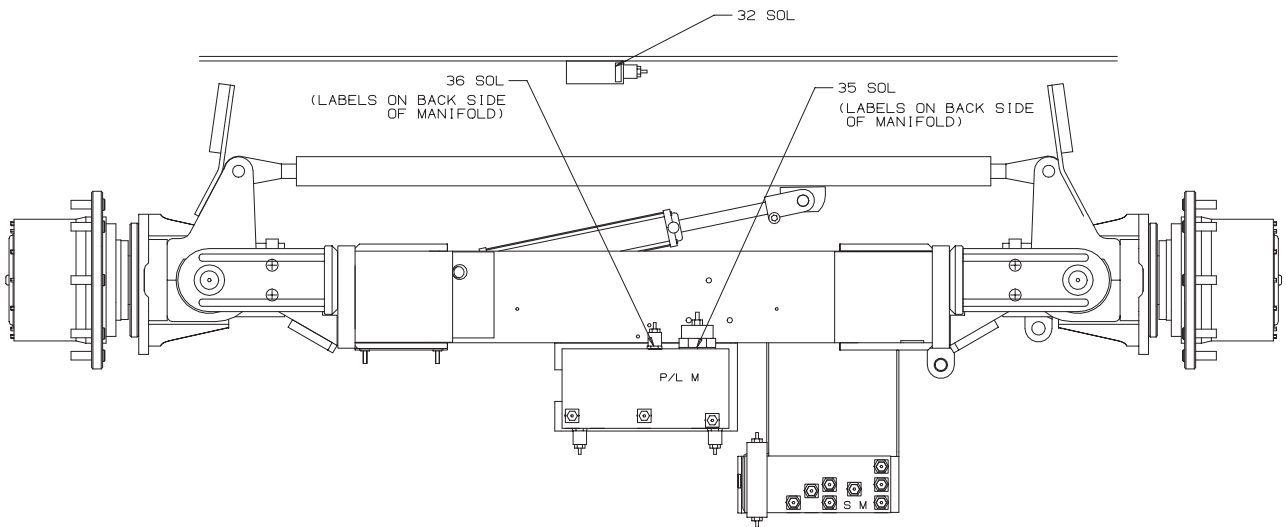
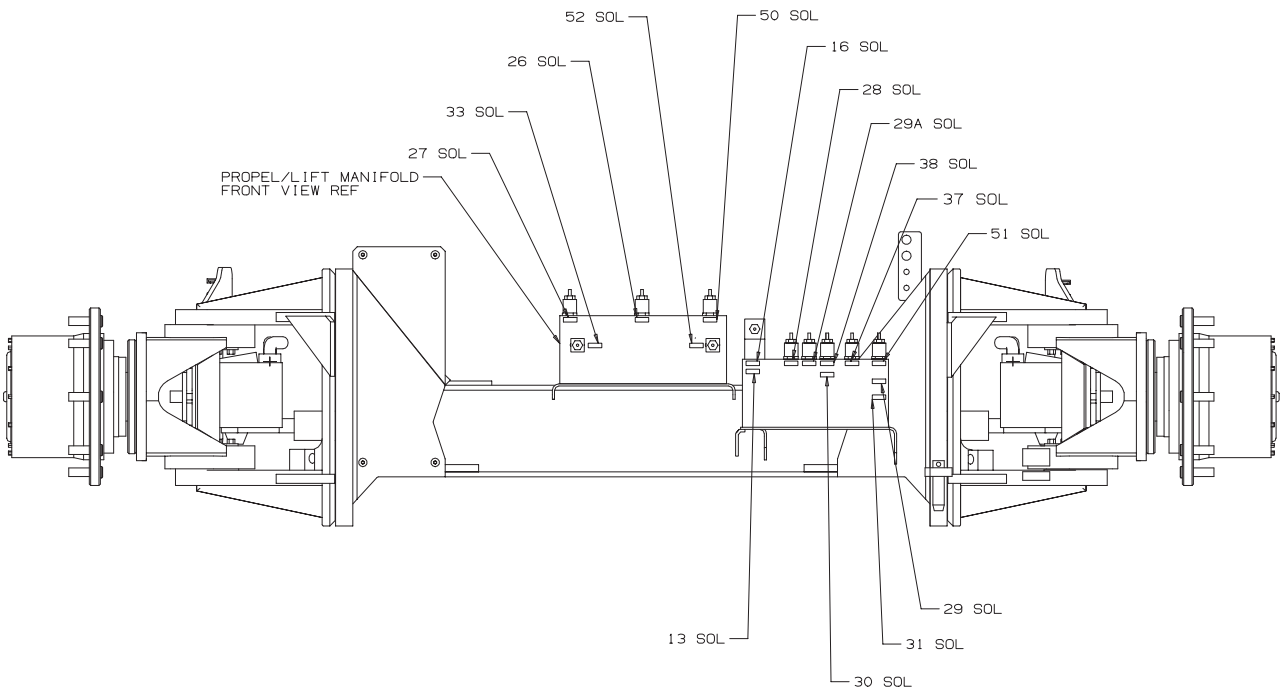


Figure 5
 IDENTIFICATION
 622-3364

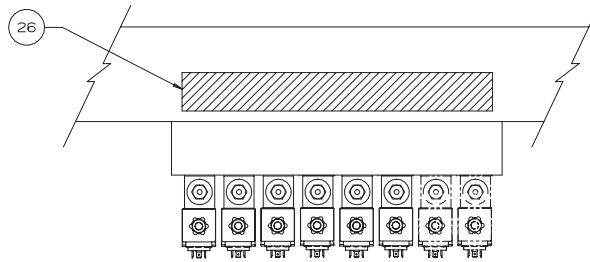


TOP VIEW OF AXLE & VALVE BANK

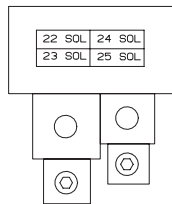


FRONT VIEW OF AXLE & VALVE BANK

Figure 6
IDENTIFICATION
622-3364

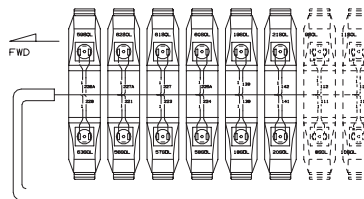


BRIDGE VALVES (SIDE VIEW)



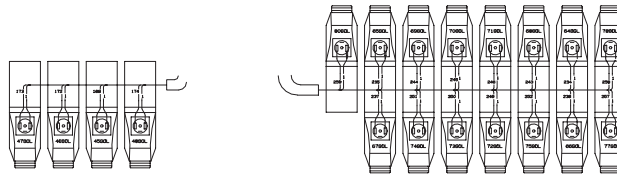
BRIDGE TILT OPTION

(AS SEEN FROM LEFT SIDE)

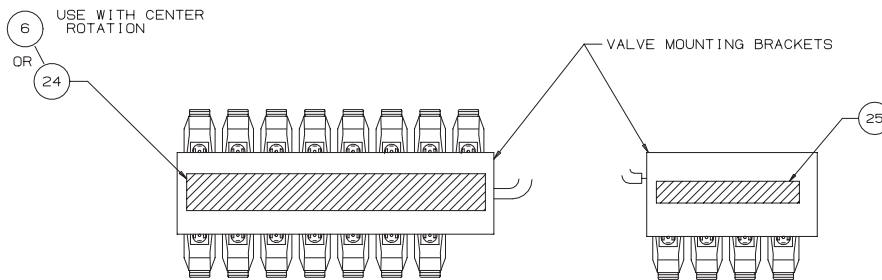


BRIDGE VALVES

(AS SEEN FROM BELOW)



PLATFORM VALVES (FRONT VIEW)



PLATFORM VALVES (REAR VIEW)

Figure 7
IDENTIFICATION
622-3364

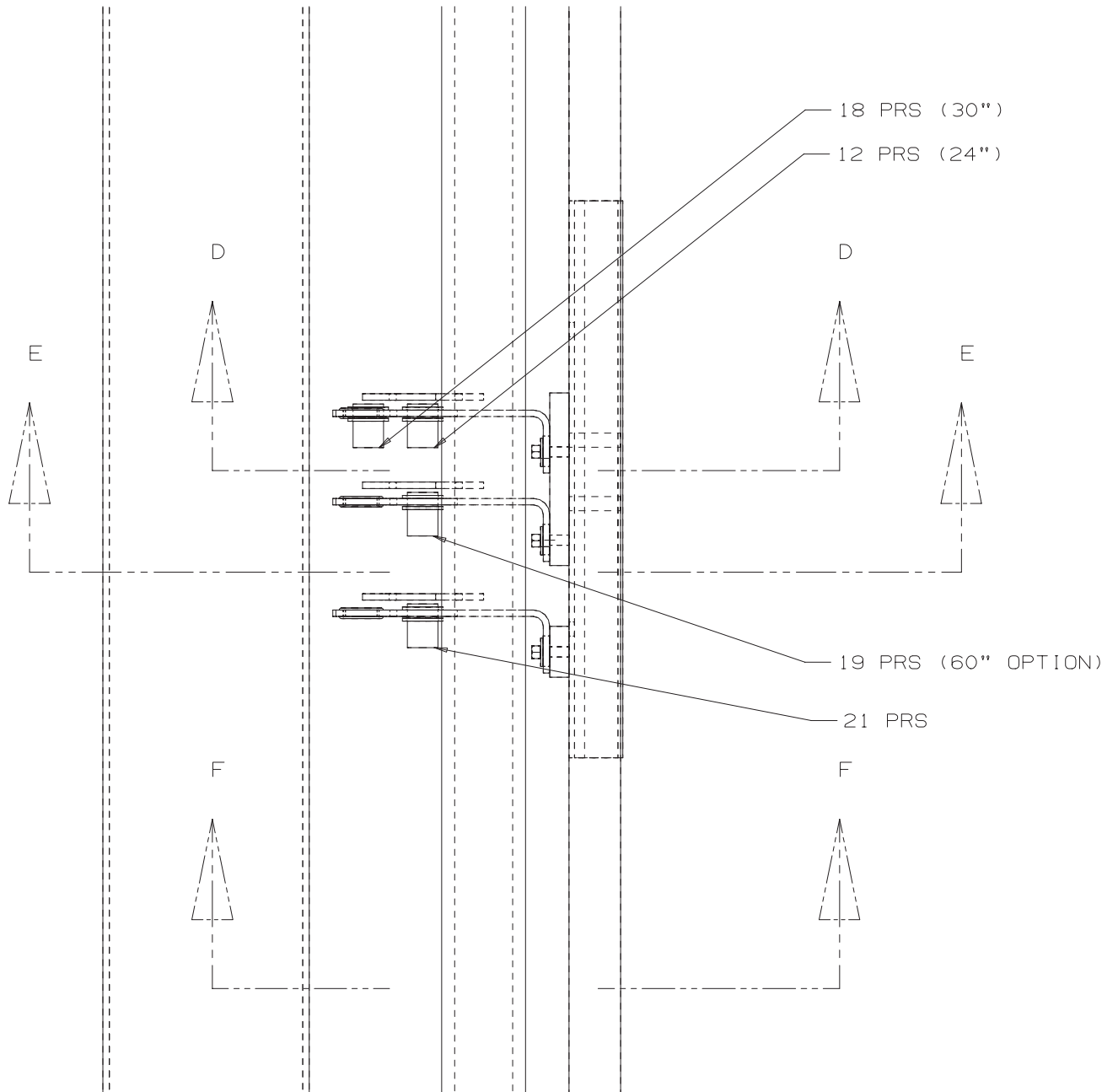


Figure 8
IDENTIFICATION
622-3364

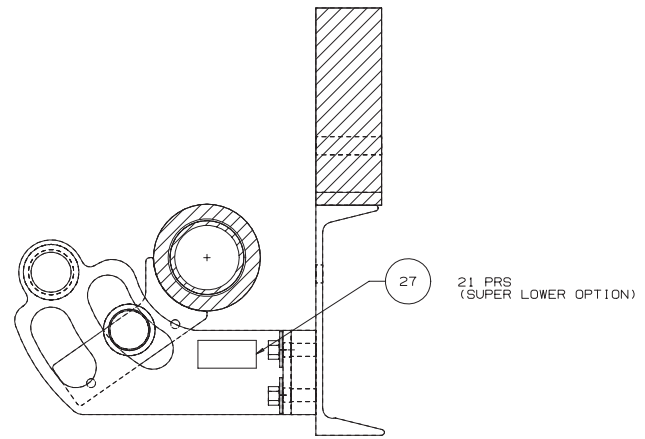
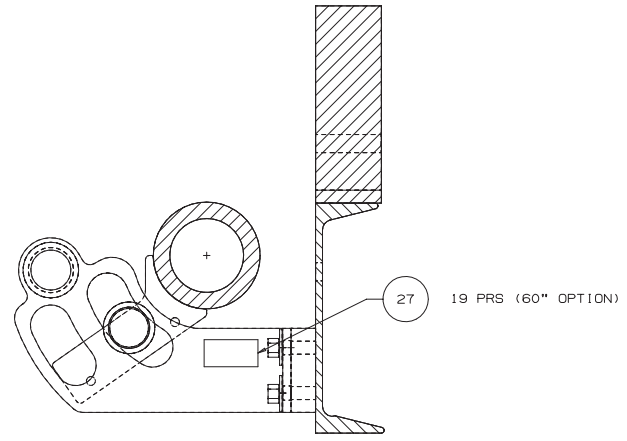
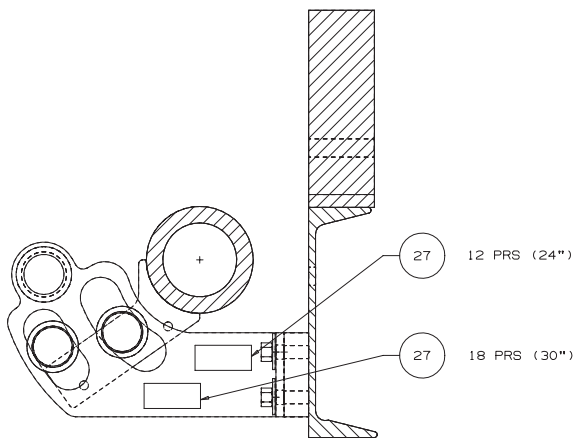


Figure 9
IDENTIFICATION
622-3364

**IDENTIFICATION
622-3364**

Figure 1 thru Figure 9

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	515-7880		PLACARD, Flite Line		1
2	622-0321		PLACARD, Patent		1
3	239-3725		DECAL, Warning		8
4	515-9901		DECAL, Gas		REF
5	515-8933		CAUTION, Hot Exhaust Decal		1
6	622-4270		DECAL, Solenoid, Platform Center Rotate		1
7	519-0242		DECAL, Center of Gravity		2
8	620-2566		DECAL, Wing Warning		1
9	519-5412		DECAL, Customer Service, FMC		1
10	515-8932		DECAL, Fork Lift		4
11	621-1530		DECAL, Warning Instruction		1
12	515-9904		DECAL, Diesel		1
13	519-0437-001		LIFT POINT		2
14	519-0437-002		LIFT POINT		2
15	515-8930		DECAL, No Step, Keep Clear		6
16	239-6664		LUBE		1
17	239-8414		HYDRAULIC SYSTEM		1
18	620-2320-001		LOGO, FMC (Red)		3
19	620-2320-002		LOGO, FMC (White)		3
20	620-2319-001		DECAL, Commander, (Red)		3
21	620-2319-002		DECAL, Commander, (White)		3
22	622-2852		DECAL, Lock Pins		2
23	622-3388		DECAL, Torque Wheel		2
24	622-4267		DECAL, Solenoids, Platform		1
25	622-4269		DECAL, Solenoids, Platform Stops		1
26	622-4268		DECAL, Solenoids, Bridge		1
27	622-0776		DECAL, Component Designation		1
28	519-2560		DECAL, Hydraulic Fluid		1
29	620-2890		SAFETY MARKING TAPE		46'
30	622-4260		DECAL, Towing (Used With Ausco Brake)		1
31	107-0820		RIVET, Pop (.12 x .25 IN.)		6
32	620-7683		DECAL, Warning		3
33	620-7682		DECAL, Folding Wing		3
34	620-7933		DECAL, Striped Area		1
35	620-7994		DECAL, Warning Ladder		2
36	620-8716		DECAL, Hydraulic Hose Ident., Cab		1

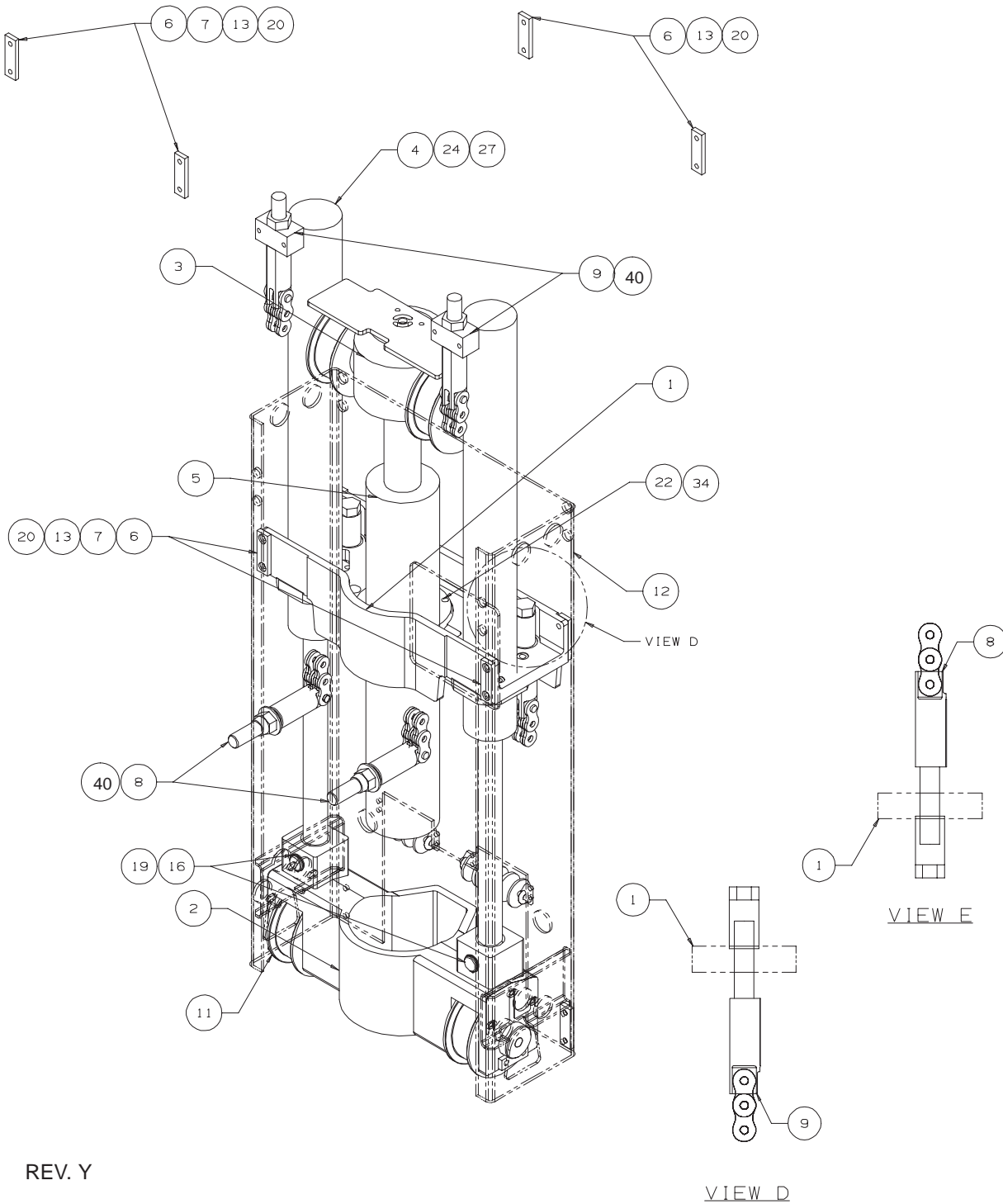
**IDENTIFICATION
622-3364**

Figure 1 thru Figure 9

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
37	620-8877		DECAL, Do not Lift – Power Module		1
38	620-9523		DECAL, Bridge Stop		1
39	620-6385		DECAL, Max Tow Speed		1

Section 7. Platform Lift

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	PLATFORM LIFT ASSEMBLY, REAR, STANDARD	620-1673	FIGURE 1	2
2.	CHAIN PRIMARY TAKE-UP, STANDARD	620-1661	FIGURE 4	7
3.	CHAIN SECONDARY TAKE-UP, STANDARD	620-1660	FIGURE 5	9



REV. Y

Figure 1
PLATFORM LIFT ASSEMBLY
620-1673

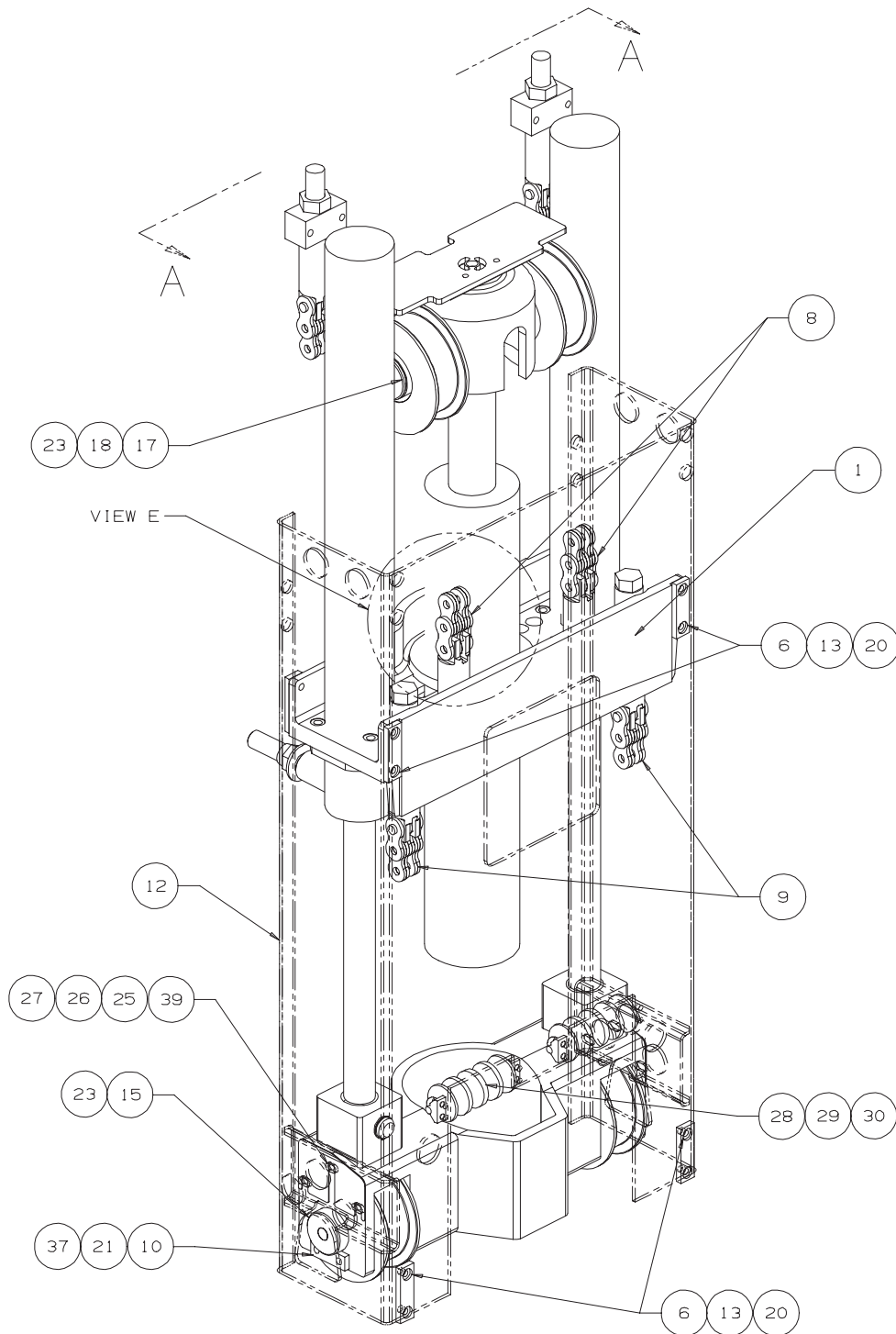


Figure 2
PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673

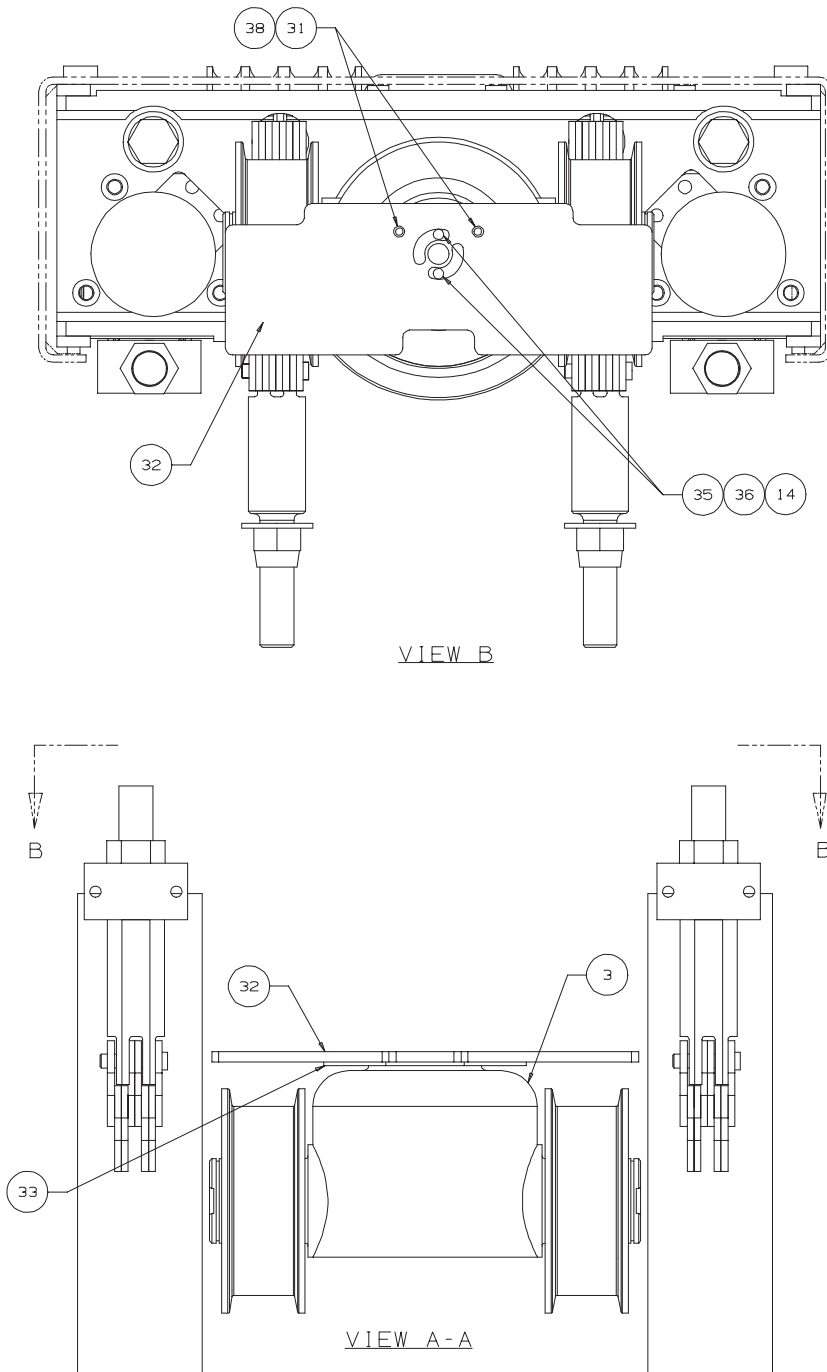


Figure 3
PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673

**PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673**

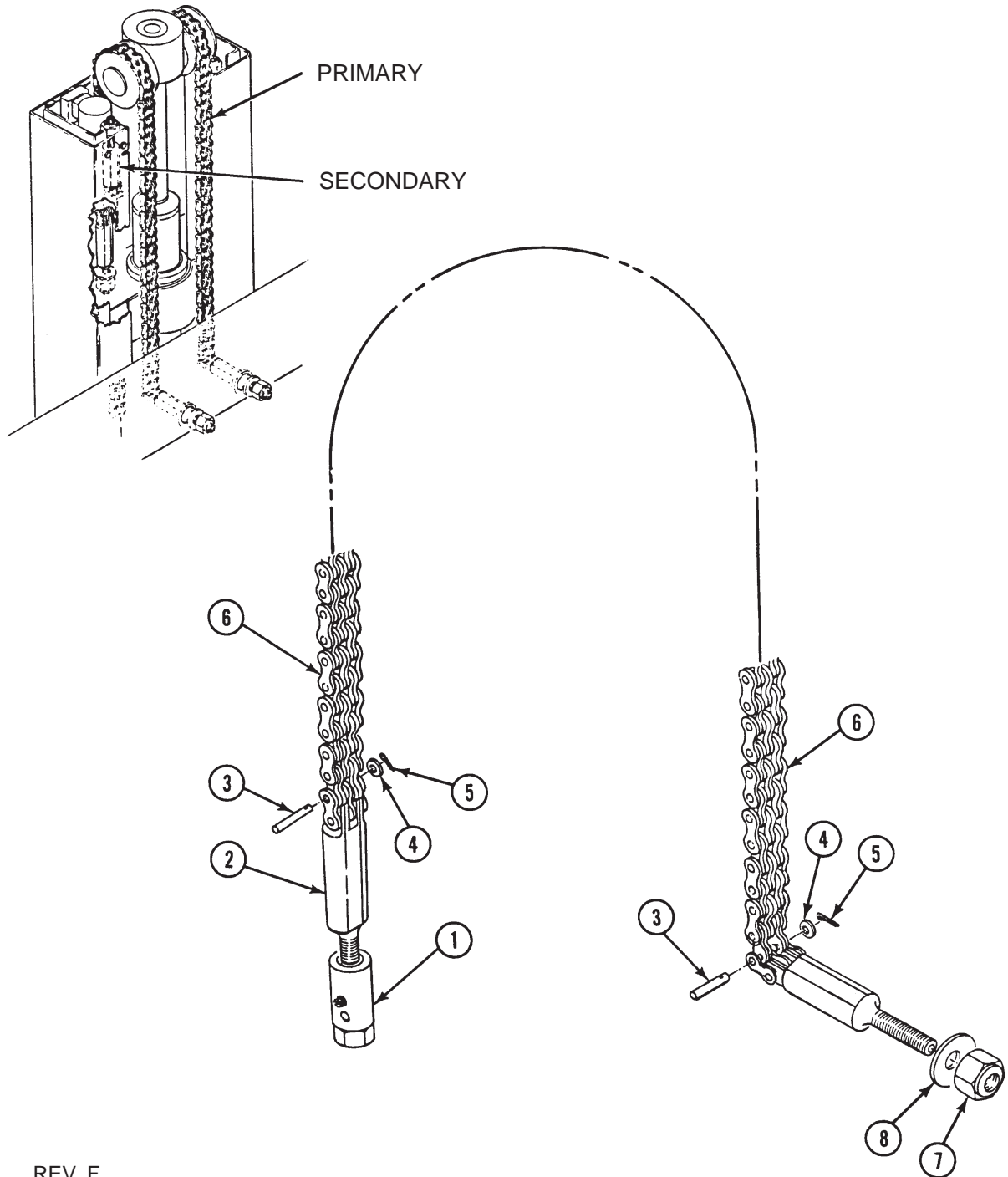
Figure 1 thru Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0191		ANCHOR PLATE, Lift Cylinder		1
2	620-0197		YOKE, Lift Cylinder		1
3	620-0196		TRUNNION, Lift Cylinder		1
4	621-5645		LIFT CYLINDER, Secondary (V08481 #A34034432FDAZ)	CR96001 & Up	2
			Consisting of:		
-	621-5645-090		SEAL KIT (V08481 #15038)		2
5	621-5644		LIFT CYLINDER, Primary (V08481 #A50026048FHAZ)	CR96001 & Up	1
			Consisting of:		
-	621-5644-090		SEAL KIT (V08481 #15251)		1
6	623-5850		PAD, Bearing	CR98381 & Up	10
7	620-2492		SHIM		16
8	620-1661		CHAIN TAKE-UP ASSY, Primary, Std. (Ref. Figure 4, Page 7)		2
9	620-1660		CHAIN TAKE-UP ASSY, Secondary, Std. (Ref. Figure 5, Page 9)		2
10	620-1066		LOCKPLATE		2
11	620-1662		SHEAVE ASSEMBLY		4
			Consisting of:		
-	620-0478		SHEAVE MACHINED		1
-	620-0072		BUSHING		2
12	620-1103		INNER SLIDE WELDMENT, Standard Lift		1
13	620-0657		NUT, PTH, 8 M10 x 1.5		16
14	620-0662		WASHER, Flat Hard M10 Narrow		2
15	620-0206		PIN, Sheave		2
16	620-0208		RING, Snap		4
17	620-0220		WASHER, Thrust		2
18	620-0209		SNAP RING, Trunnion		2
19	620-0204		PIN, Lift Cylinder, Secondary		2
20	620-0721		SCREW, Flat Hd, M10 x 1.5 x 35mm		20
21	620-0633		SCREW, Hex Hd, M10 x 1.5 x 20mm		4
22	620-0644		SCREW, Hex Hd, 8.8 M12 x 1.75 x 70mm		3
23	620-0704		GREASE FITTING, Straight (V95879 #2103)		4
24	620-0643		SCREW, Hex Hd, M12 x 1.75 x 60mm		6

**PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673**

Figure 1 thru Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
25	620-0640		BOLT, M12 x 30mm		6
26	620-0663		WASHER, Flat Hard M12 Narrow		6
27	110-0245		WASHER, Lock M12		12
28	620-1752		ROLLER		4
29	620-1751		ROD		2
30	620-1750		CLAMP		4
31	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		2
32	622-0017		PLATE, Chain Guard		1
33	620-3813		SPACER, Chain Guard Gravity Stops		1
34	620-0658		NUT, M12 x 1.75		3
35	110-2363		SCREW, Socket Hd Cap, 3/8-16 x 1.25"		2
36	620-1115		WASHER, Lock 3/8 Hi-Collar		2
37	620-1954		WASHER, Lock 7/16 Hi-Collar		4
38	110-0242		WASHER, Lock 5/16 Cad. Pl.		2
39	622-7801		SHIM, Center Lift Assembly		2
40	105-0732		NEVER SEEZE		1oz
-	Not Shown				

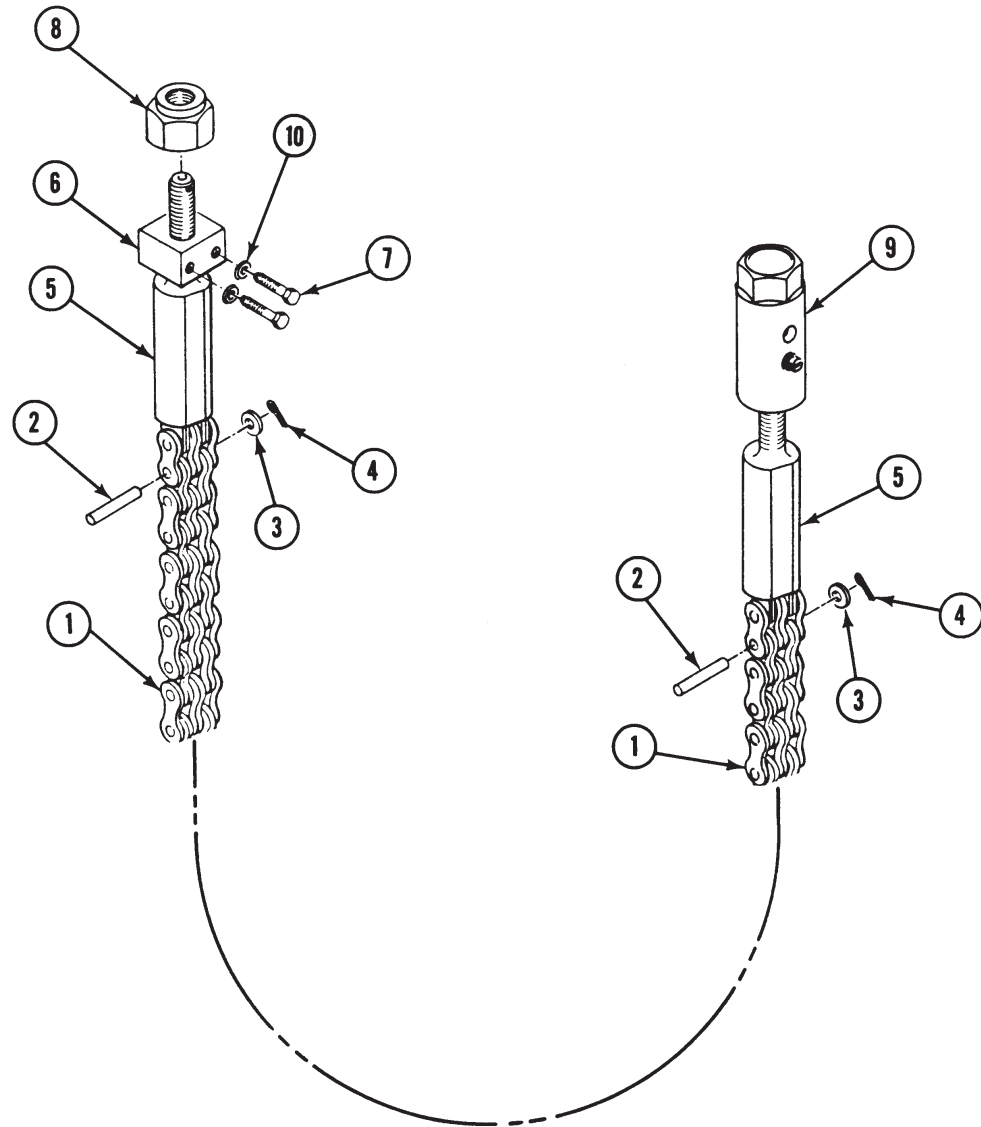


REV. F

Figure 4
CHAIN TAKE-UP ASSEMBLY, PRIMARY, STANDARD
620-1661

**CHAIN TAKE-UP ASSEMBLY, PRIMARY, STANDARD
620-1661****Figure 4**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-2667		CHAIN ANCHOR NUT ASSY. Consisting of:		1
-	620-2569		NUT, Chain Anchor		1
-	620-2735		SETSCREW, Nylon		3
2	620-0712		ANCHOR, Chain		2
3	620-0077		PIN, Clevis		2
4	620-0663		WASHER, Flat Hard M12 Narrow		2
5	110-0364		PIN, Cotter M2.5 x 20mm Lg		2
6	620-0079		CHAIN, Leaf Primary		1
7	620-0722		NUT, PTH M30 x 3.5		1
8	110-0259		WASHER, Flat Hard 1.25 Cad. Pl.		1
-	Not Shown				



REV. E

Figure 5
CHAIN TAKE-UP ASSEMBLY, SECONDARY, STANDARD
620-1660

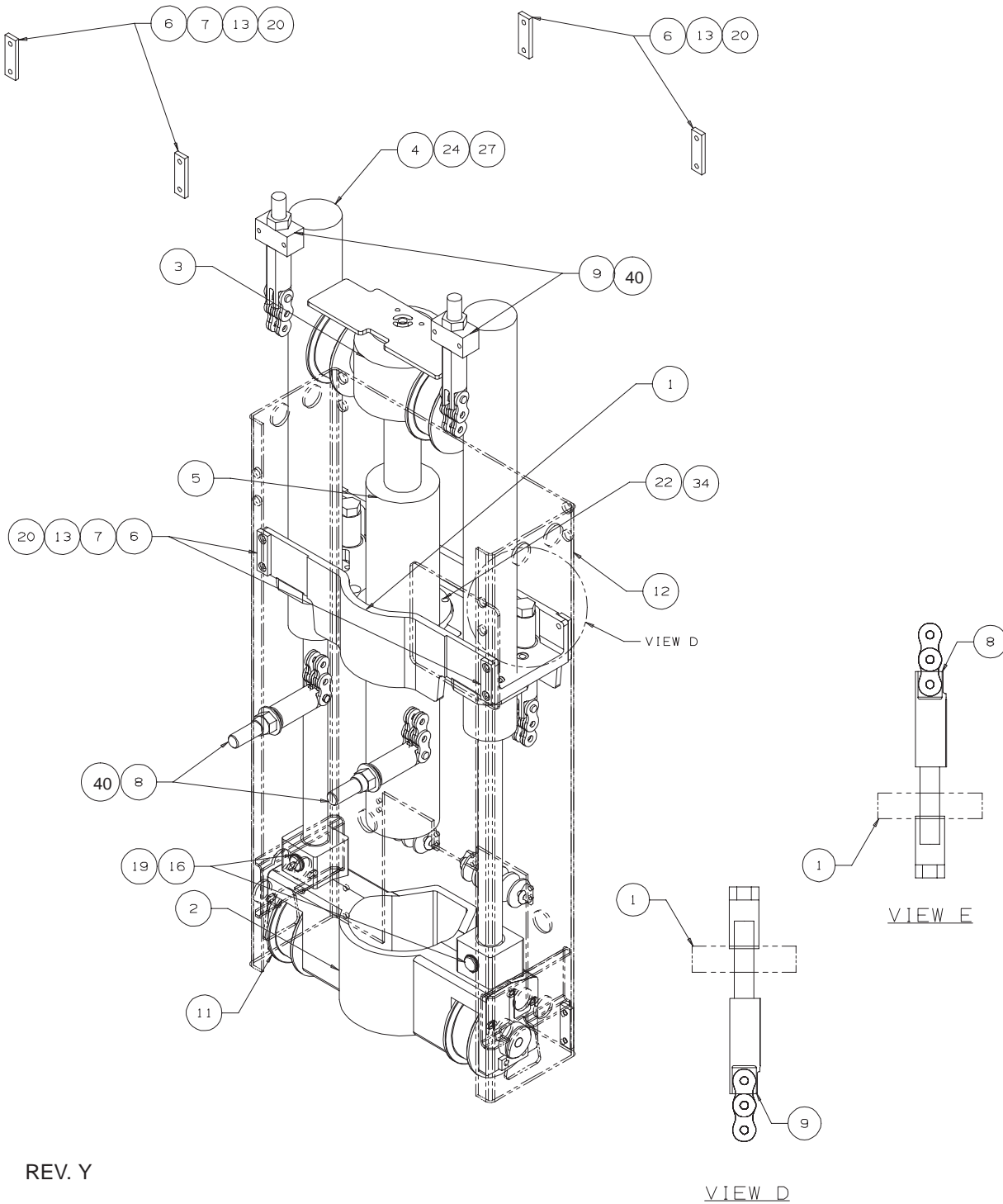
**CHAIN TAKE-UP ASSEMBLY, SECONDARY, STANDARD
620-1660**

Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0078		CHAIN, Leaf Secondary		1
2	620-0077		PIN, Clevis		2
3	620-0663		WASHER, Flat Hard M12 Narrow		2
4	110-0364		PIN, Cotter M2.5 x 20		2
5	620-0712		ANCHOR, Chain		2
6	623-1631		BLOCK, Chain Anchor Mtg		1
7	107-1960		SCREW, Hex Hd, M10 x 1.5 x 55mm ZP		2
8	620-0722		NUT, M30		1
9	620-2667		CHAIN ANCHOR NUT ASSEMBLY		1
			Consisting of:		
-	620-2569		NUT, Chain Anchor		1
-	620-2735		SETSCREW, Nylon		3
10	620-1954		WASHER, Lock, Hi Collar .44		2
-	Not Shown				

Section 7. Platform Lift

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	PLATFORM LIFT ASSEMBLY, REAR, STANDARD	620-1673	FIGURE 1	2
2.	CHAIN PRIMARY TAKE-UP, STANDARD	620-1661	FIGURE 4	7
3.	CHAIN SECONDARY TAKE-UP, STANDARD	620-1660	FIGURE 5	9



REV. Y

Figure 1
PLATFORM LIFT ASSEMBLY
620-1673

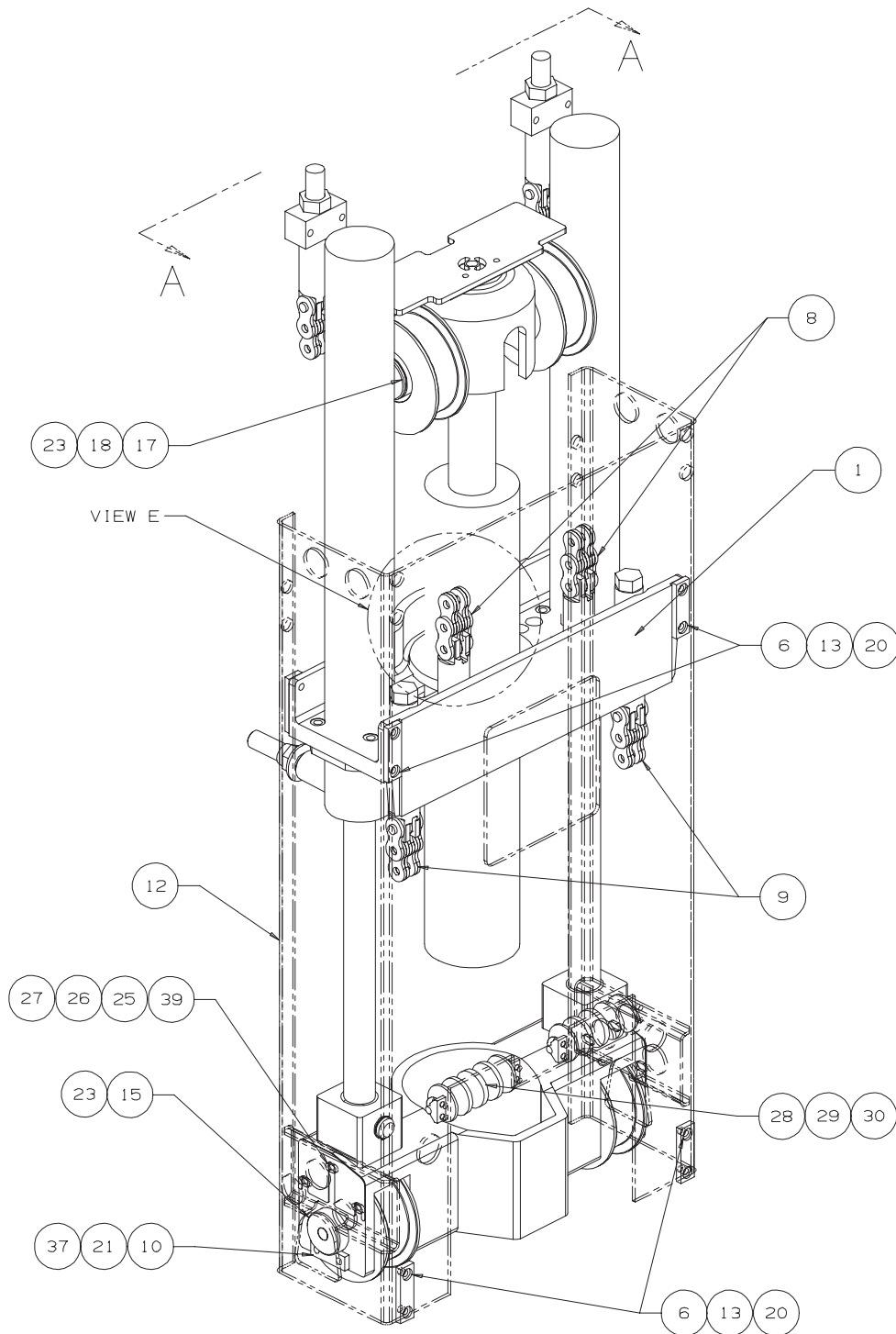


Figure 2
PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673

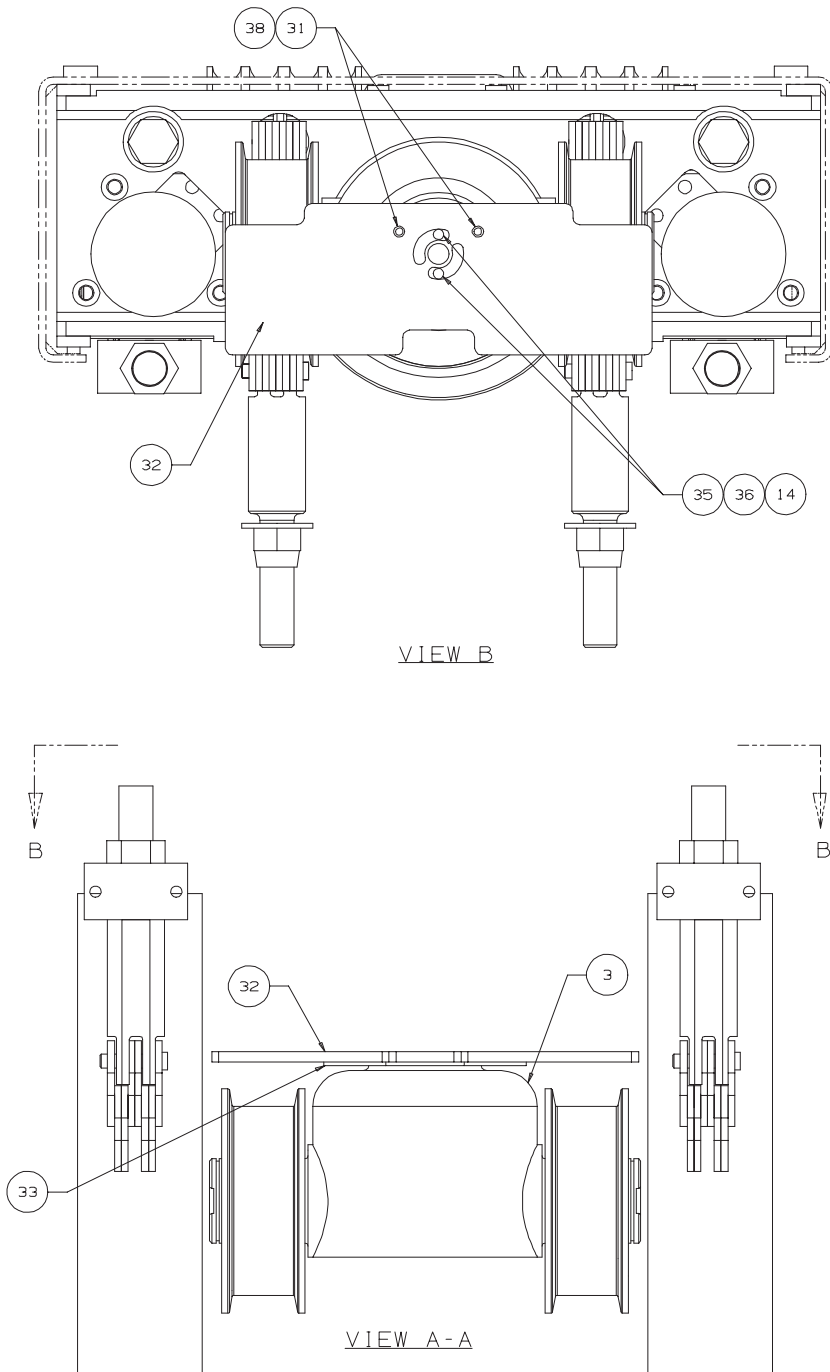


Figure 3
PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673

**PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673**

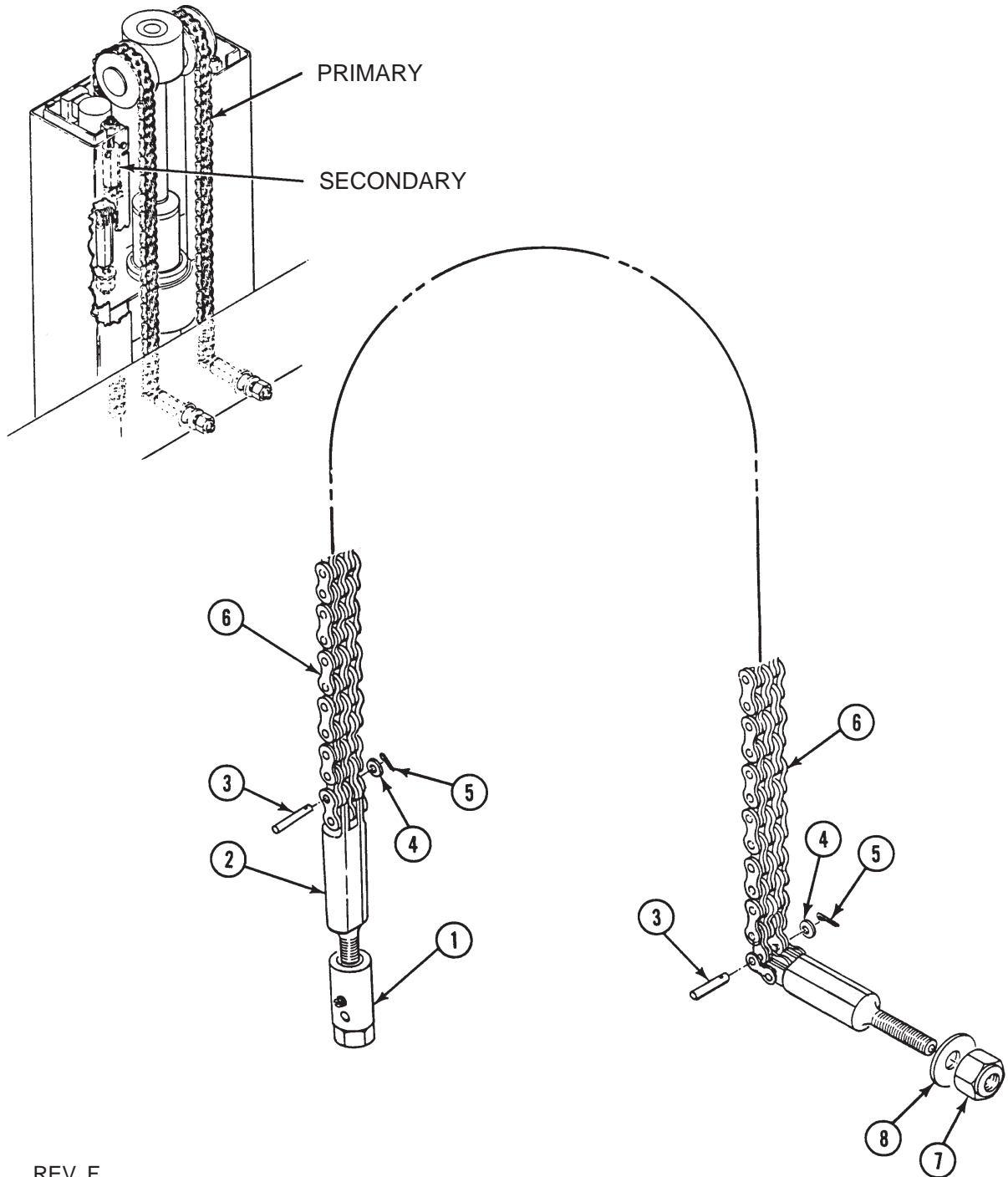
Figure 1 thru Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0191		ANCHOR PLATE, Lift Cylinder		1
2	620-0197		YOKE, Lift Cylinder		1
3	620-0196		TRUNNION, Lift Cylinder		1
4	621-5645		LIFT CYLINDER, Secondary (V08481 #A34034432FDAZ)	CR96001 & Up	2
			Consisting of:		
-	621-5645-090		SEAL KIT (V08481 #15038)		2
5	621-5644		LIFT CYLINDER, Primary (V08481 #A50026048FHAZ)	CR96001 & Up	1
			Consisting of:		
-	621-5644-090		SEAL KIT (V08481 #15251)		1
6	623-5850		PAD, Bearing	CR98381 & Up	10
7	620-2492		SHIM		16
8	620-1661		CHAIN TAKE-UP ASSY, Primary, Std. (Ref. Figure 4, Page 7)		2
9	620-1660		CHAIN TAKE-UP ASSY, Secondary, Std. (Ref. Figure 5, Page 9)		2
10	620-1066		LOCKPLATE		2
11	620-1662		SHEAVE ASSEMBLY		4
			Consisting of:		
-	620-0478		SHEAVE MACHINED		1
-	620-0072		BUSHING		2
12	620-1103		INNER SLIDE WELDMENT, Standard Lift		1
13	620-0657		NUT, PTH, 8 M10 x 1.5		16
14	620-0662		WASHER, Flat Hard M10 Narrow		2
15	620-0206		PIN, Sheave		2
16	620-0208		RING, Snap		4
17	620-0220		WASHER, Thrust		2
18	620-0209		SNAP RING, Trunnion		2
19	620-0204		PIN, Lift Cylinder, Secondary		2
20	620-0721		SCREW, Flat Hd, M10 x 1.5 x 35mm		20
21	620-0633		SCREW, Hex Hd, M10 x 1.5 x 20mm		4
22	620-0644		SCREW, Hex Hd, 8.8 M12 x 1.75 x 70mm		3
23	620-0704		GREASE FITTING, Straight (V95879 #2103)		4
24	620-0643		SCREW, Hex Hd, M12 x 1.75 x 60mm		6

**PLATFORM LIFT ASSEMBLY, REAR, STANDARD
620-1673**

Figure 1 thru Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
25	620-0640		BOLT, M12 x 30mm		6
26	620-0663		WASHER, Flat Hard M12 Narrow		6
27	110-0245		WASHER, Lock M12		12
28	620-1752		ROLLER		4
29	620-1751		ROD		2
30	620-1750		CLAMP		4
31	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		2
32	622-0017		PLATE, Chain Guard		1
33	620-3813		SPACER, Chain Guard Gravity Stops		1
34	620-0658		NUT, M12 x 1.75		3
35	110-2363		SCREW, Socket Hd Cap, 3/8-16 x 1.25"		2
36	620-1115		WASHER, Lock 3/8 Hi-Collar		2
37	620-1954		WASHER, Lock 7/16 Hi-Collar		4
38	110-0242		WASHER, Lock 5/16 Cad. Pl.		2
39	622-7801		SHIM, Center Lift Assembly		2
40	105-0732		NEVER SEEZE		1oz
-	Not Shown				



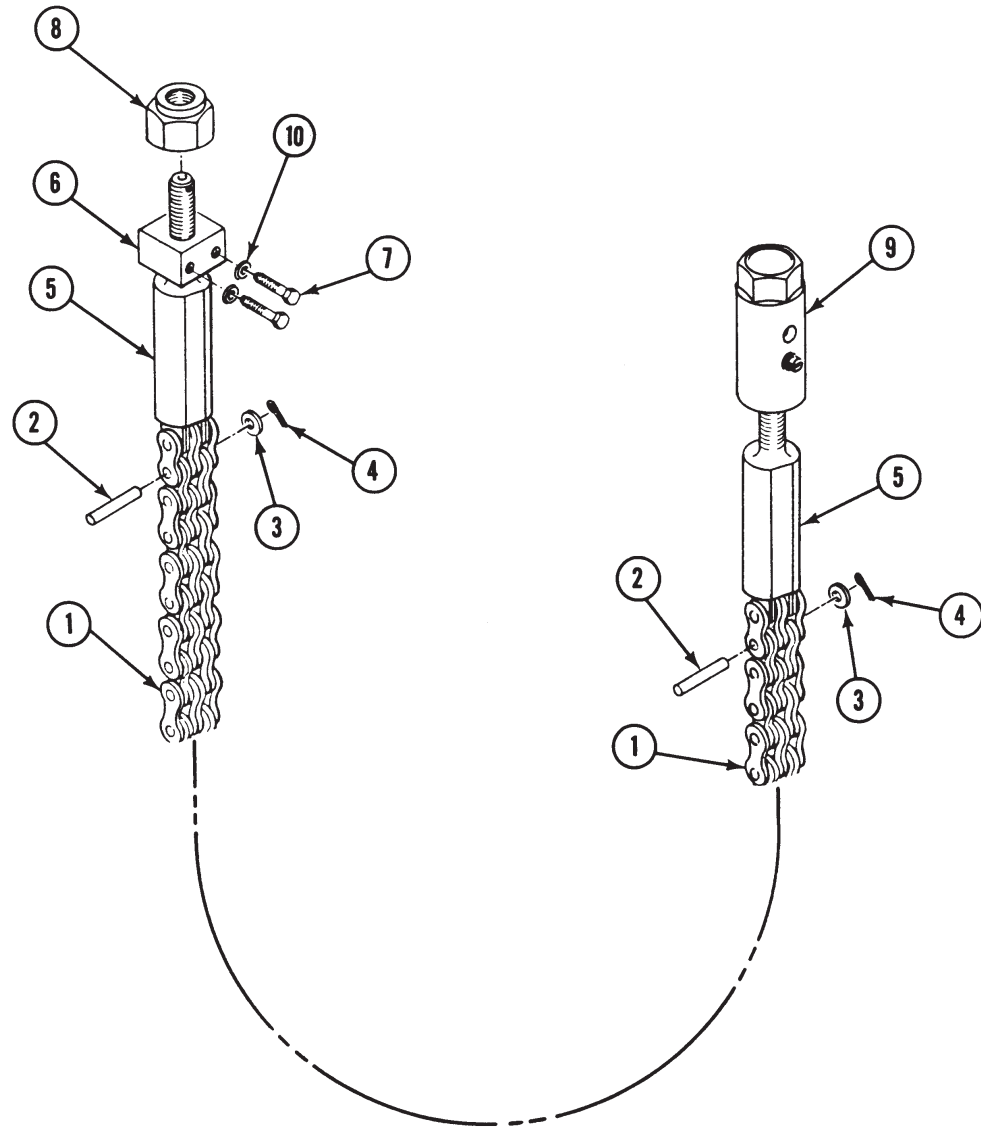
REV. F

Figure 4
CHAIN TAKE-UP ASSEMBLY, PRIMARY, STANDARD
620-1661

**CHAIN TAKE-UP ASSEMBLY, PRIMARY, STANDARD
620-1661**

Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-2667		CHAIN ANCHOR NUT ASSY.		1
			Consisting of:		
-	620-2569		NUT, Chain Anchor		1
-	620-2735		SETSCREW, Nylon		3
2	620-0712		ANCHOR, Chain		2
3	620-0077		PIN, Clevis		2
4	620-0663		WASHER, Flat Hard M12 Narrow		2
5	110-0364		PIN, Cotter M2.5 x 20mm Lg		2
6	620-0079		CHAIN, Leaf Primary		1
7	620-0722		NUT, PTH M30 x 3.5		1
8	110-0259		WASHER, Flat Hard 1.25 Cad. Pl.		1
-	Not Shown				



REV. E

Figure 5
CHAIN TAKE-UP ASSEMBLY, SECONDARY, STANDARD
620-1660

**CHAIN TAKE-UP ASSEMBLY, SECONDARY, STANDARD
620-1660**

Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0078		CHAIN, Leaf Secondary		1
2	620-0077		PIN, Clevis		2
3	620-0663		WASHER, Flat Hard M12 Narrow		2
4	110-0364		PIN, Cotter M2.5 x 20		2
5	620-0712		ANCHOR, Chain		2
6	623-1631		BLOCK, Chain Anchor Mtg		1
7	107-1960		SCREW, Hex Hd, M10 x 1.5 x 55mm ZP		2
8	620-0722		NUT, M30		1
9	620-2667		CHAIN ANCHOR NUT ASSEMBLY		1
			Consisting of:		
-	620-2569		NUT, Chain Anchor		1
-	620-2735		SETSCREW, Nylon		3
10	620-1954		WASHER, Lock, Hi Collar .44		2
-	Not Shown				

Section 8. Axle Assembly

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	AXLE ASSEMBLY, AUSCO BRAKES	623-1580	FIGURE 1	2
2.	PLANETARY REDUCER	620-3641	FIGURE 3	6

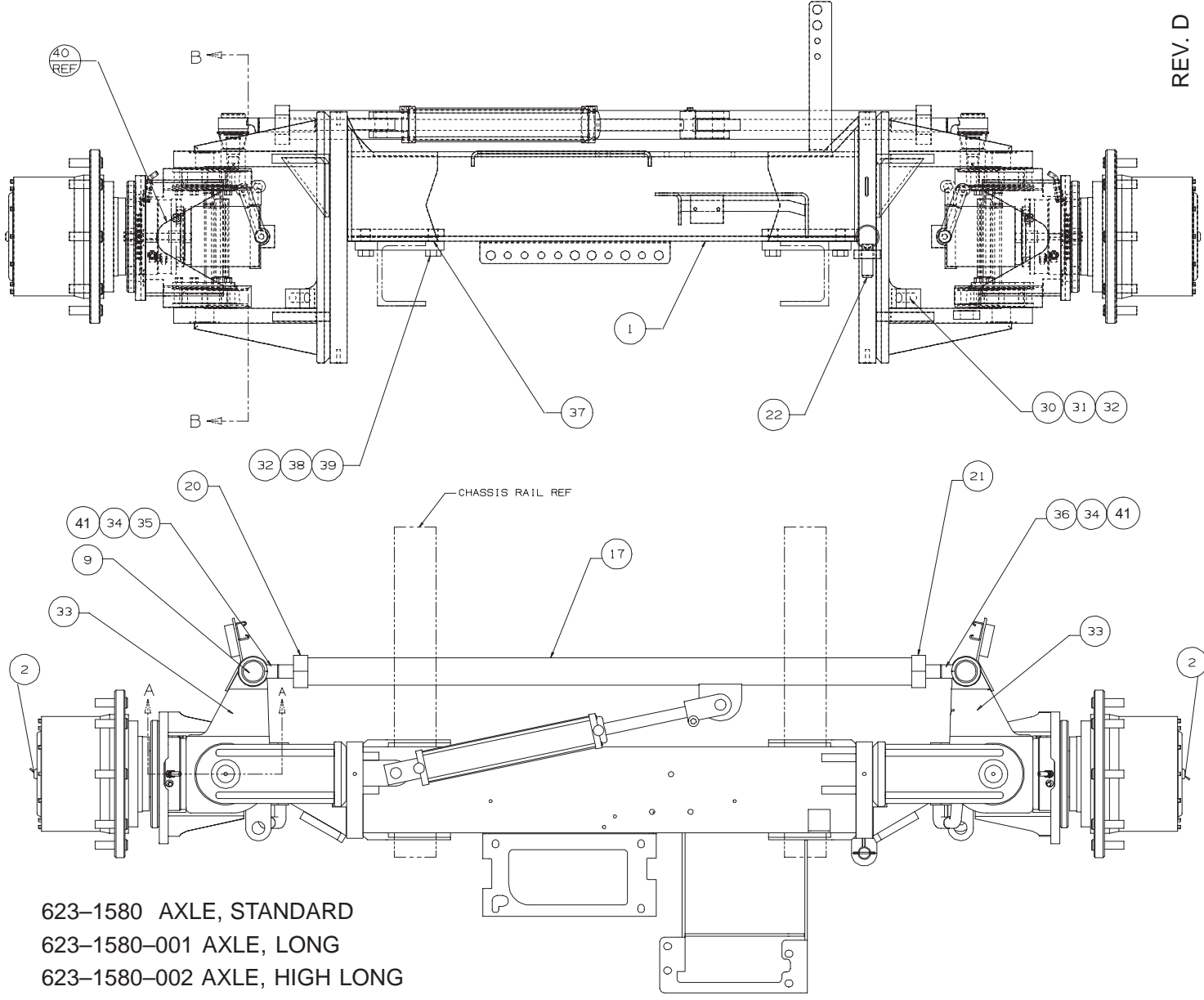


Figure 1
 AXLE ASSEMBLY, AUSCO BRAKES
 623-1580

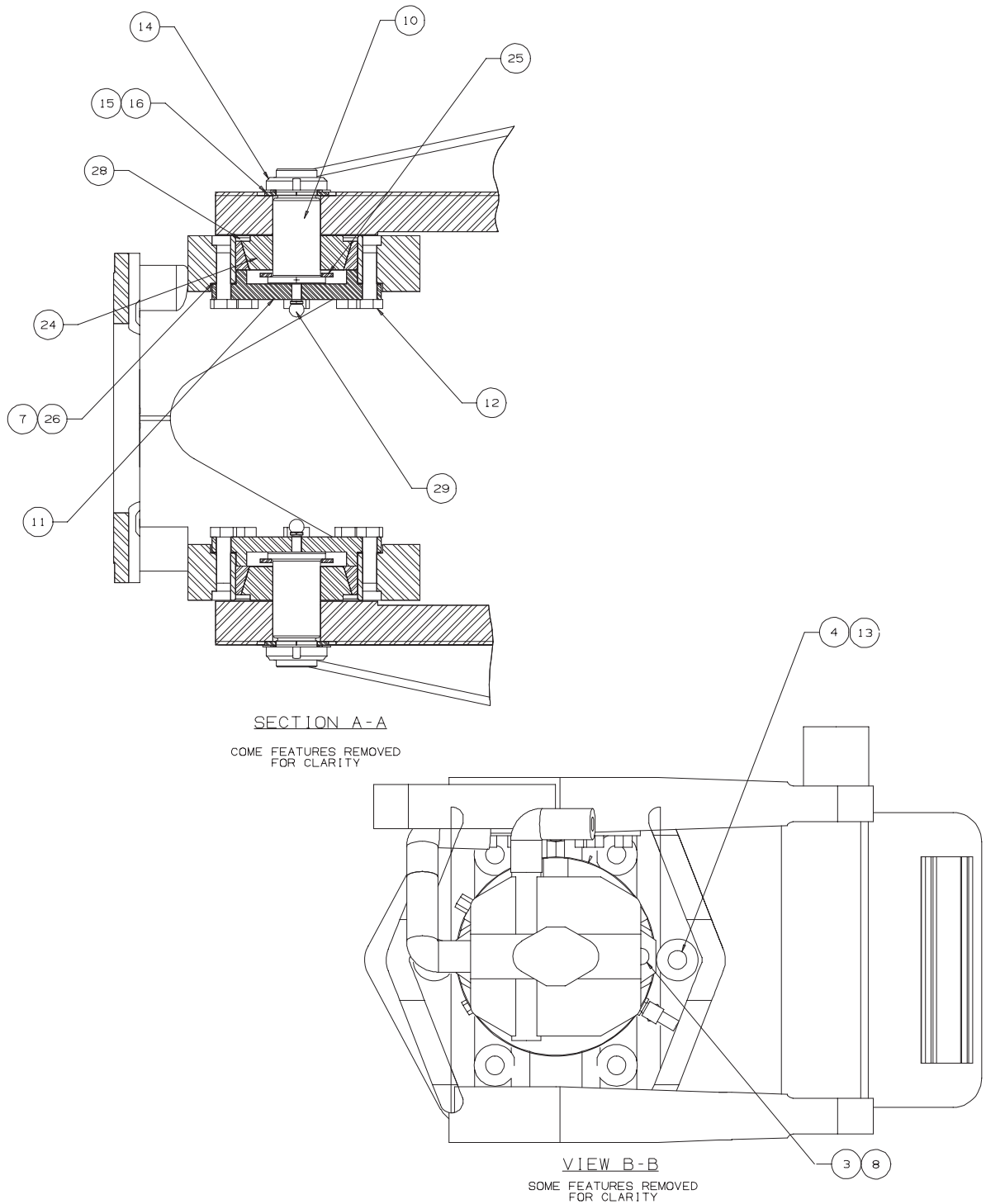


Figure 2
AXLE ASSEMBLY, AUSCO BRAKES
623-1580

**AXLE ASSEMBLY, AUSCO BRAKES
623-1580**

Figure 1, Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6568		AXLE WELDMENT		1
2	620-3641		PLANETARY REDUCER (V73047 #W2B2F0337) (Ref. Figure 3, Page 6)		2
3	107-1153		SCREW, Socket Hd Cap, 1/2-13 x 6 1/2 "		4
4	620-1032		SCREW, Hex Hd , 5/8-11 x 2 1/4 GR.8		12
7	620-1613		SHIM, Bearing Set .125"		4
8	110-0245		WASHER, Spring Lock, 1/2 Cad. Pl.		4
9	105-0691		GREASE FITTING, 90°, 1/4-28		2
			Consisting of:		
-	622-3177		WHEEL MOUNT, Machined R.H.		1
-	620-0453-002		CUP, Bearing		2
10	620-0666		PIN, Steering Pivot		4
11	620-1079		CAP, Bearing Set		4
12	620-1124		SCREW, Hex Hd, 8.8 M12 x 1.75 x 35mm		32
13	103-0626		NUT, ESNA 5/8-11		12
14	514-5148		NUT, Lock, Bearing Set		4
15	514-5142		WASHER, Lock, 1.42 I.D."		4
16	620-0579		WASHER, Tongued		4
17	620-0618		TIE ROD WELDMENT		1
20	620-0686		NUT, Jam, 1 1/4-12 R.H.		1
21	620-0685		NUT, Jam, 1 1/4-12, L.H.		1
22	620-3223		PIN ASSEMBLY		1
			Consisting of:		
-	620-6060		PIN, Steering Lock		1
-	104-0284		CHAIN, Mach. Link Gal.Straight Size #4		.9 IN
-	620-6071		PIN, Hairpin Cotter		1
-	620-6072		RING, Split		1
23	623-2760		AXLE HYDRAULIC INSTALLATION (Ref. Sect. 4-21)		1
24	620-0453-001		CONE, Bearing		4
25	620-0668		WASHER		4
26	620-1080		SHIM, .020"		8
28	620-0606		SEAL, V-Ring		4
29	620-0699		GREASE FITTING, 90° (V95879 #2105)		4
30	620-1053		NUT, Jam, M20 x 2.5		2

**AXLE ASSEMBLY, AUSCO BRAKES
623-1580**

Figure 1, Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
31	620-1801		SCREW, Hex Hd , 8.8 M20 x 2.5 x 80mm		2
32	620-0665		WASHER, Flat Hard, M20 Narrow		22
33	622-4863		WHEEL MOUNT, Machined L.H.		1
			Consisting of:		
-	622-3178		WHEEL MOUNT, Machined L.H.		1
-	620-0453-002		CUP, Bearing		2
34	110-0354		PIN, Cotter, 5/32 x 1 1/2" CP		2
35	622-9620		TIE ROD END, R.H. Thrd, W/7/8-14 Nut		1
36	622-9631		TIE ROD END. L.H. Thrd, W/7/8-14 Nut		1
37	622-6706		SHIM, Axle Mount		2
38	620-0655		SCREW, Hex Hd, 8.8 M20 x 2.5 x 100mm		16
39	107-1506		NUT, PTH, M20 x 2.5		16
40	620-4120		AUSCO BRAKE, Single Rotor (VAUSCO MODEL #73285)		REF
			Consisting of:		
-	620-4120-001		O-Ring KIT, Fail Safe Piston (VAUSCO #PK661)		
-	620-4120-002		O-RING KIT, Service Brake Piston (VAUSCO #PK1151)		
-	620-4120-003		STACK KIT, (VAUSCO #PK863)		
-	620-4120-004		BEARING KIT, (VAUSCO #PK864)		
-	620-4120-005		GASKET KIT, (VAUSCO #PK664)		
-	620-4120-006		SHAFT PART, (VAUSCO #34986)		
-	620-4120-007		BLEED SCREW, (VAUSCO #29035)		
-	620-4120-090		SEAL KIT AND GASKET		
41	622-3511-009		WASHER, Flat Hard .88 Narrow		2
-	Not Shown				

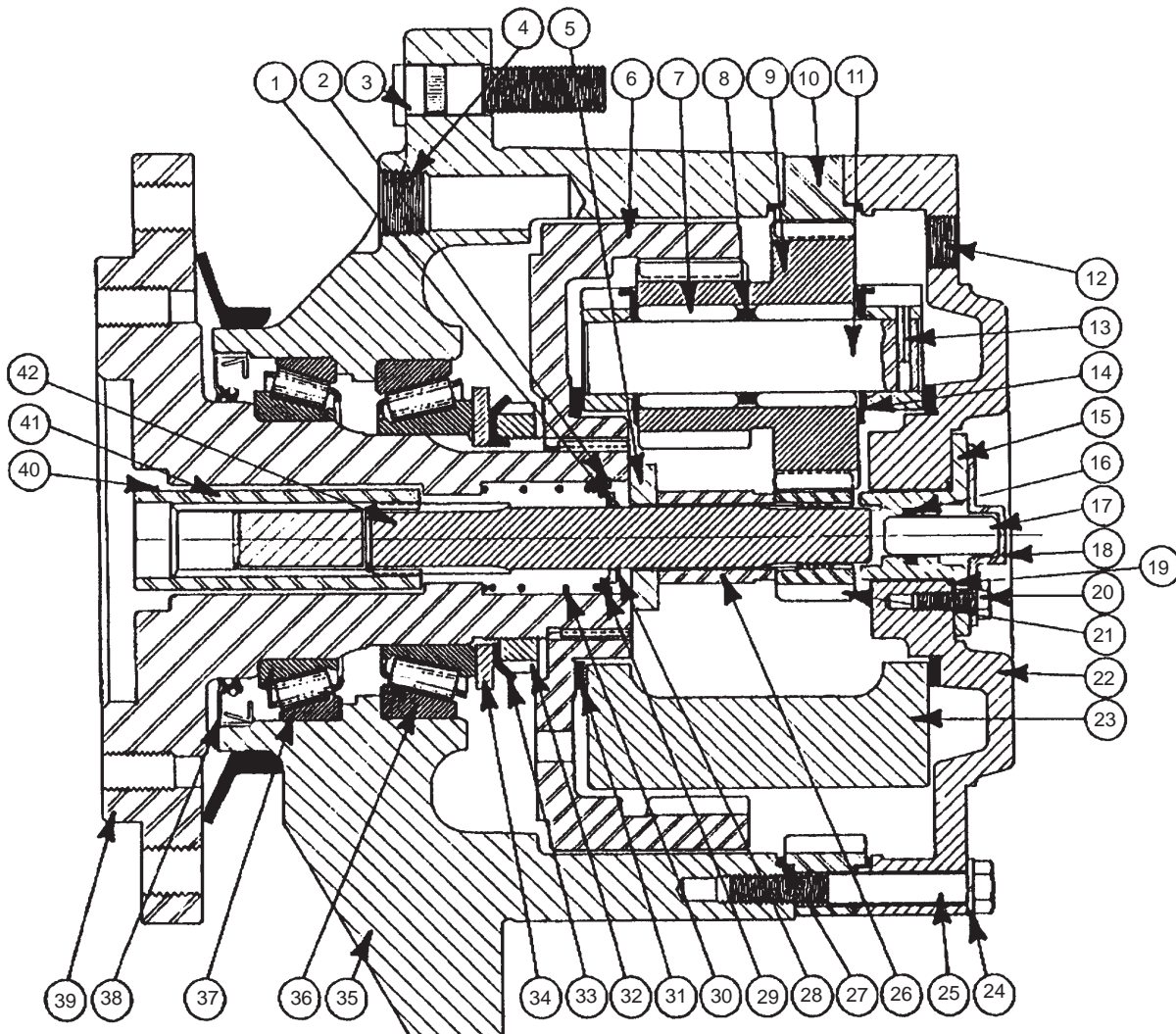


Figure 3
PLANETARY REDUCER
620-3641

**PLANETARY REDUCER
620-3641**

**NOTE: The Planetary Reducer is purchased from Fairfield Manufacturing (Vendor Code V73047).
Manufacturer's part number is W2BF0337.**

Figure 3

<u>ITEM NO.</u>	<u>FMC PART NO.</u>	<u>VENDOR PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3641-907	2901006	WASHER, Thrust		1
2	620-3641-908	910059	RET, Ring, Ext.		1
3	620-3641-095	97000F	WHEEL STUD		9
4		950104	PIPE PLUG, MAGN. NPTF		2
5	620-3641-923	2901007	SPACER, Input		1
6	620-3641-922	2400003	GEAR, Internal		1
7		1200803	BEARING, Needle		114
8		2201001	SPACER, Thrust		3
9	620-3641-916	2300002	GEAR, Cluster		3
10	620-3641-914	2500076	GEAR, Ring		1
11		2200101	SHAFT, Planet		3
12	620-3641-927	950003	PIPE PLUG, STD. NPTF		2
13		920002	PIN, Roll		3
14		2200301	WASHER, Thrust, Tanged		6
15	620-3641-909	1900402	COVER, Cap		1
16	620-3641-093	940001	COVER O-RING		1
17	620-3641-911	1900101	DISENGAGE ROD		1
18	620-3641-096	1900401	DRIVE DISCONNECT CAP		1
19	620-3641-094	940002	COVER O-RING		1
20	620-3641-926	930004	SCREW, Hex Hd, .250 x 20 x .75" GR5		4
21	620-3641-915	2100001	GEAR, Sun		1
22	620-3641-919	2500401	COVER, Plate		1
23		2200501	CARRIER		1
24	620-3641-905	960008	WASHER, Lock, .387 x .094		20
25	620-3641-904	930103	SCREW, Hex Hd, .375 x 16 x 3" GR8		20
26	620-3641-921	2901008	SPACER, Input		1
27	620-3641-092	940021	RING GEAR O-RING		2
28	620-3641-906	910007	RET, Ring, Ext.		1
29	620-3641-903	1901009	WASHER, Thrust		1
30	620-3641-920	1901502	SPRING		1
31	620-3641-006	3200301	WASHER, Thrust		2
32	620-3641-005	980113	NUT, Bearing		1
33	620-3641-912	9601H13	WASHER, Lock, Tanged		1

**PLANETARY REDUCER
620-3641**

**NOTE: The Planetary Reducer is purchased from Fairfield Manufacturing (Vendor Code V73047).
Manufacturer's part number is W2BF0337.**

Figure 3

ITEM NO.	FMC PART NO.	VENDOR PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
34	620-3641-004	960301	WASHER, Flat, Tanged		1
35		2500602	HOUSING		1
36	620-3641-003	AM2500803	CUP & CONE KIT		1
37	620-3641-002	AM1500815	CUP & CONE KIT		1
38	620-3641-091	1501308	LIP SEAL		1
39	620-3641-001	2400702	SPINDLE		1
40	620-3641-901	910016	RET, Ring, Ext.		1
41	620-3641-902	2100202	COUPLING		1
42	620-3641-913	1100104	SHAFT, Input		1
43	620-6367	AM4W1000Q	QUICK DISCONNECT KIT		1
44	620-3641-090		SEAL KIT		1

Section 9. Tires Installation

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	TIRES INSTALLATION	620-8439	FIGURE 1	2

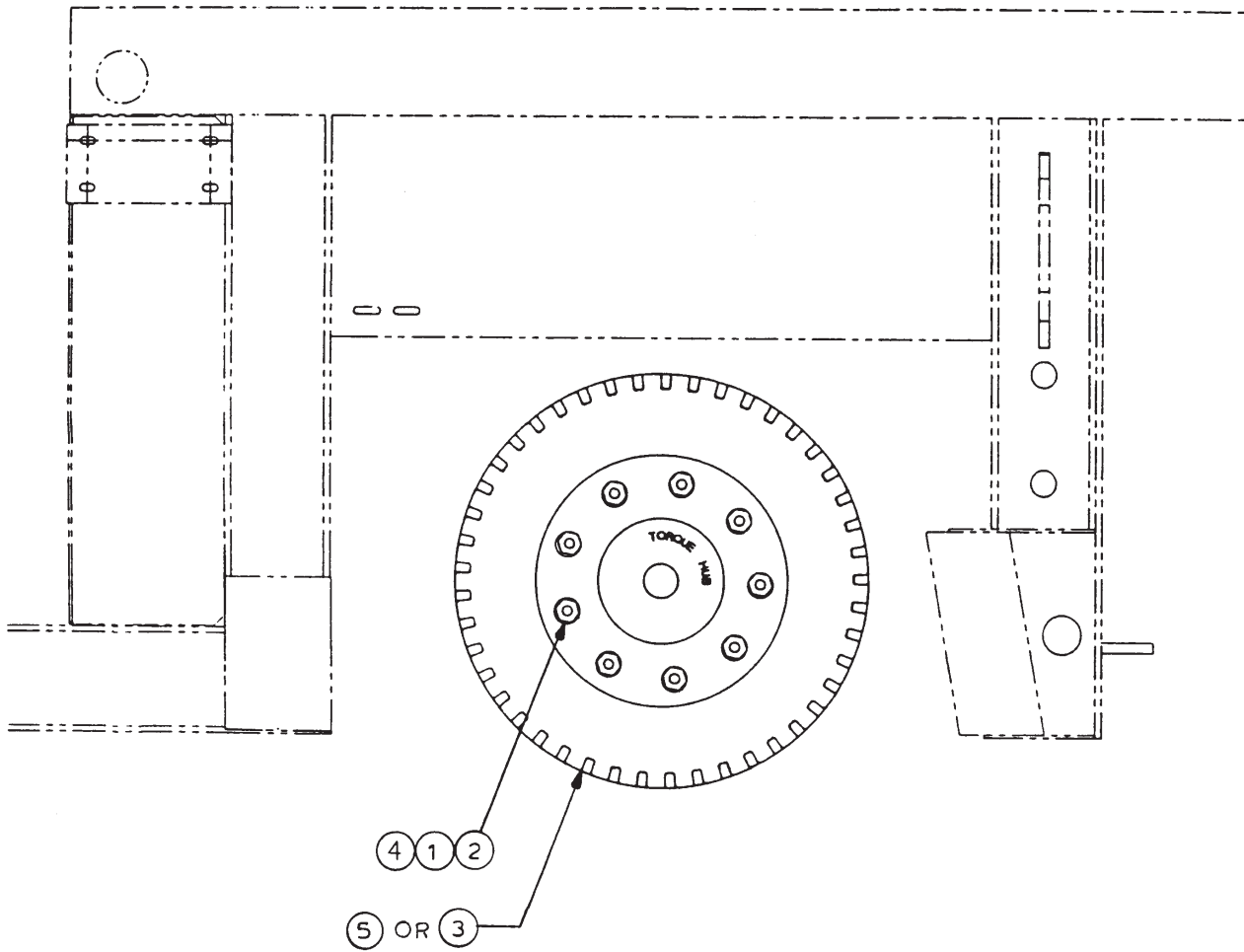


Figure 1

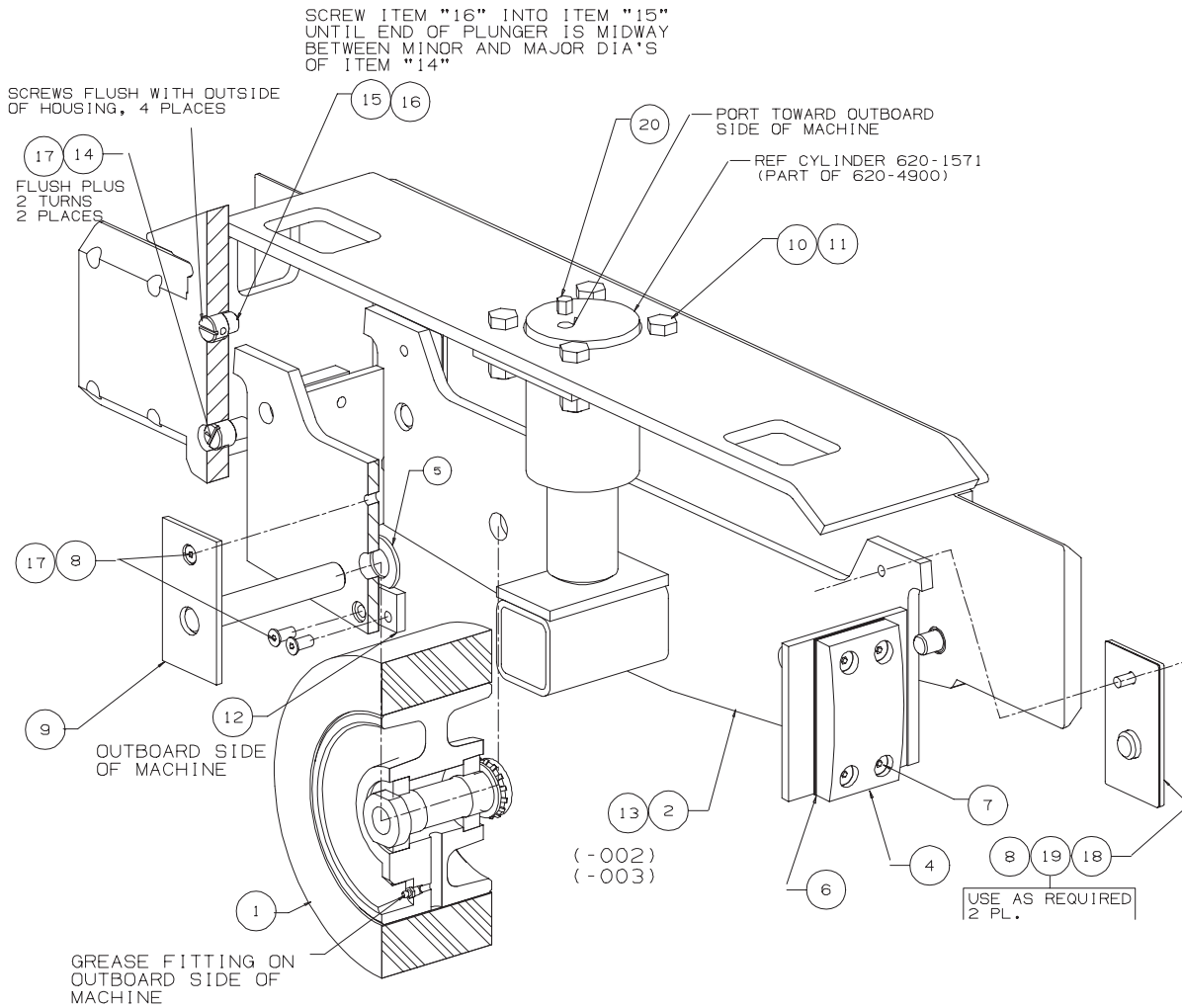
**TIRES INSTALLATION
620-8439**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-2370		NUT, Lug 5/8-18 Zinc Pl.		18
2	620-3641-095		STUD		18
3	621-2303		TIRE, Solid Softuff		2
4	622-2149		WHEEL WASHER		18
5	620-3612		TIRE, Air Filled		2

Section 10. Bogy Assembly

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	BOGY ASSEMBLY, ADJUSTABLE	620-6429	FIGURE 1	2
2.	BOGY WHEEL ASSEMBLY	623-1966	FIGURE 2	4

NOTE:
 OUTER PLATE OF BOGY CARRIER, END PLATE
 OF BOGY HOUSING, AND PART OF BOGY HOUSING OUTER PLATE BLANKED FOR CLARITY.



- | | |
|--------------|--|
| 620-6429 | BOGY ASSY, ADJUSTABLE, STANDARD |
| 620-6429-001 | PARTS SERVICE ONLY, STANDARD |
| 620-6429-002 | BOGY ASSY, ADJUSTABLE, HIGH GROUND CLEARANCE |
| 620-6429-003 | PARTS SERVICE ONLY, HIGH GROUND CLEARANCE |

REV. M

Figure 1
 ADJUSTABLE BOGY ASSEMBLY
 620-6429

**ADJUSTABLE BOGY ASSEMBLY
620-6429**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-1966		BOGY WHEEL ASSEMBLY AND BEARING SLEEVE (Ref Figure 2, Page 4)		4
2	620-9725		WHEEL SUPPORT, Standard		2
4	620-1606		BEARING BLOCK		4
5	622-5408		WASHER		4
6	620-1607		SHIM		4
7	107-1178		SCREW, Flat Hd, M10 x 1.5 x 35mm		16
8	620-1119-001		SCREW, Soc. Hd, M10 x 1.5 x 20mm Low Hd		16
9	620-3715		SHAFT ASSEMBLY		4
10	620-0659		NUT, PTH, 8 M16 x 2		8
11	620-0648		SCREW, Hex Hd, 8.8 M16 x 2 x 60mm		8
12	620-9726		STOP BLOCK, Shaft		4
13	621-1269		WHEEL SUPPORT, (Hi Grd. Clear. only)		2
14	622-2845		SCREW, Dog		8
15	622-2846		SCREW, Lock		4
16	622-2847		PLUNGER		4
17	105-0327		LOCTITE, Blue, Type 242		1 oz
18	622-3335		WEAR PLATE WELDMENT		4
19	622-3338		SHIM		4
20	623-2987		CAPLUG, Bleeder Screw		1

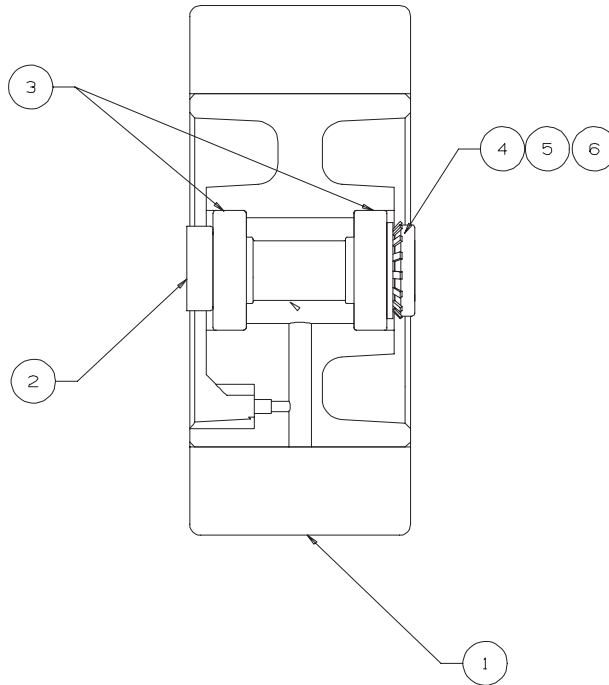


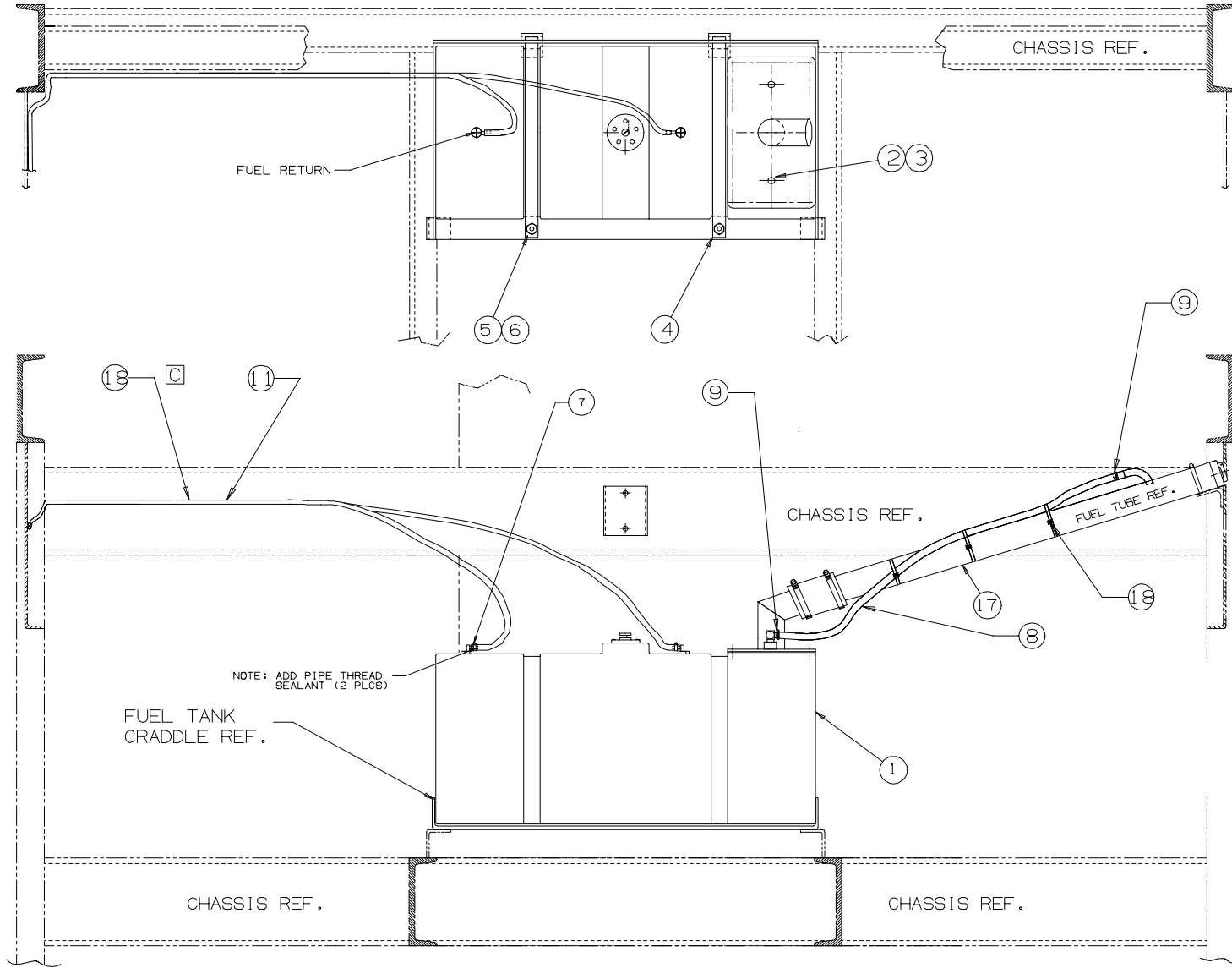
Figure 2

**BOGY WHEEL ASSEMBLY AND BEARING SLEEVE
623-1966**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-1967		WHEEL, Bogy 12 x 5 x 8"		1
			Consisting of:		
-	623-1967		WHEEL, Press On Poly 12 x 5 x 8		1
-	623-1967-002		HUB, Wheel Center Aluminum		1
2	623-1945		SLEEVE, Bogy wheel Bearing		1
3	238-5249-003		BEARING, Roller		2
4	620-0579		WASHER, Tongued		1
5	514-5142		WASHER, Lock		1
6	514-5148		NUT, Lock		1

Section 11. Fuel Tank

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	FUEL TANK INSTL., DIESEL ENGINE (EFF: UP TO CR97136)	622-0666	FIGURE 1	2
2.	FUEL TANK ASSY WITH #6 FITTINGS (EFF: UP TO CR97136)	622-0667	FIGURE 2	4
3.	FUEL TANK INSTL., DIESEL ENGINE, ALUMINIZED STEEL (EFF: CR97137 & UP)	623-0900	FIGURE 3	6
4.	FUEL TANK ASSEMBLY, ALUMINIZED STEEL	622-8837	FIGURE 4	8



EFF: UP TO CR97136

Figure 1
FUEL TANK INSTALLATION, DIESEL ENGINE
622-0666

**FUEL TANK INSTALLATION, DIESEL ENGINE
622-0666**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-0667		FUEL TANK ASSEMBLY, (Ref. Figure 2, Page 4)		1
2	105-1089		BARB, Straight 5/8-1/2 NPT		1
3	118-2671-004		ELBOW, 90°, 1/2 (V79470 #C3409X8)		1
4	519-1064		STRAP, Tank		2
5	110-0818		NUT, Lock .31-18 ESNA		2
6	620-0661		WASHER, Flat 3/8		2
7	105-1262		CLAMP, Hose		2
8	104-0577		HOSE, 5/8 x 45" Lg		3.34'
9	105-0085		CLAMP, Hose 5/8		2
11	105-1190		HOSE, Fuel Line 3/8"		42.65'
14	105-0077		CLAMP ASSEMBLY, 63.5 I.D.		1
17	622-3011		TUBE WELDMENT, Fuel Filler		1
18	105-0211		TY-RAP		7

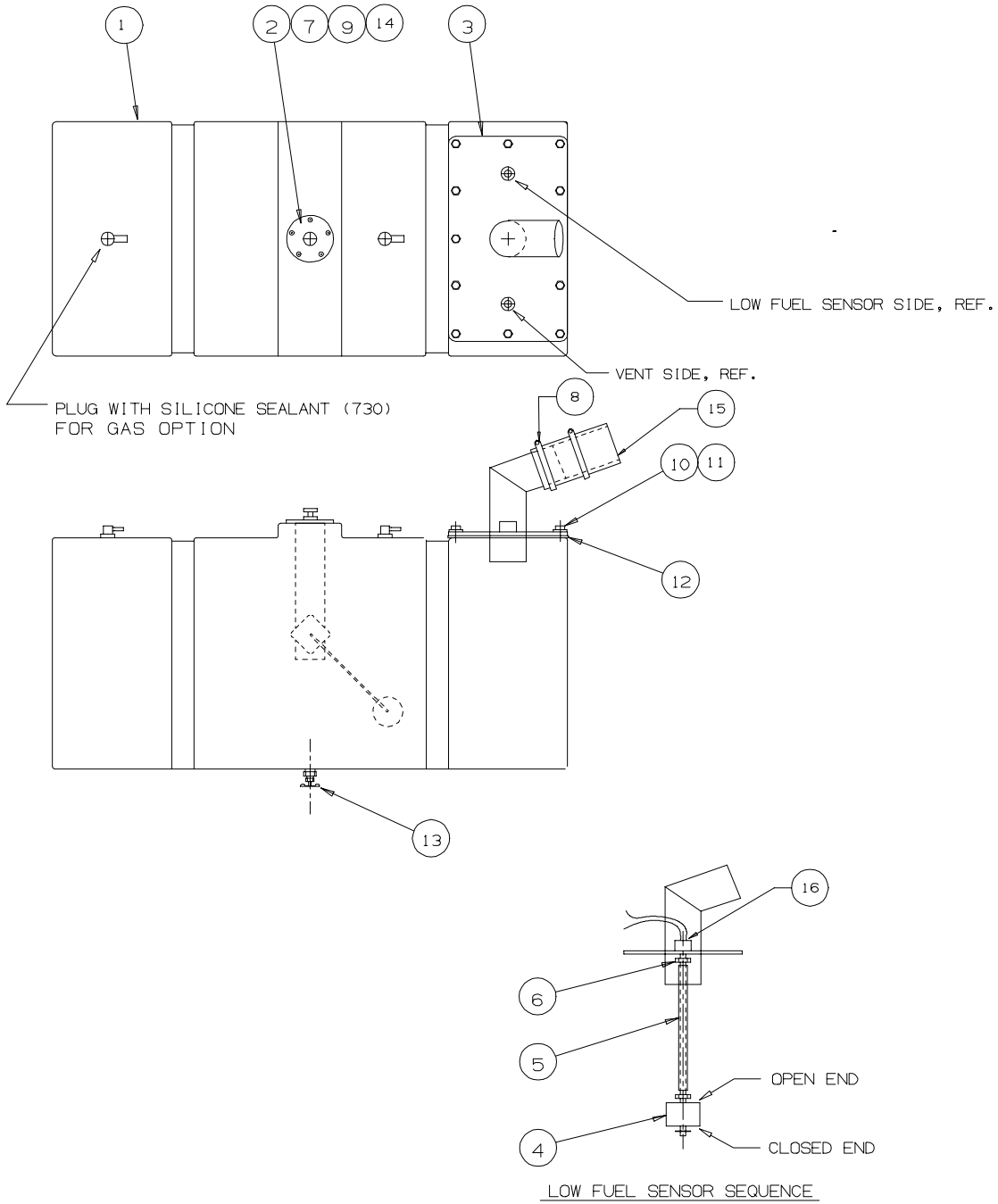
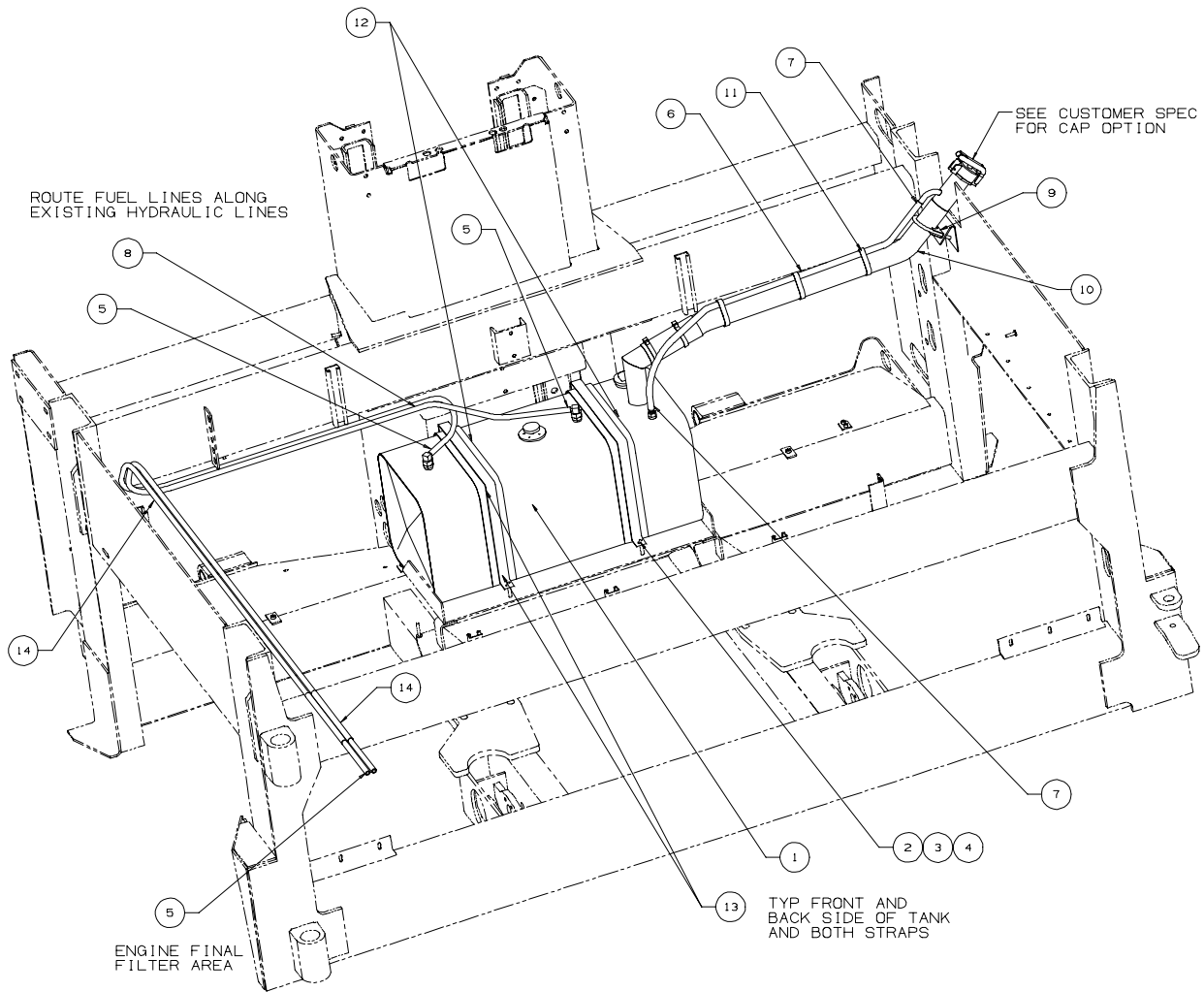


Figure 2
 FUEL TANK ASSEMBLY WITH #6 FITTINGS
 622-0667

**FUEL TANK ASSEMBLY WITH #6 FITTINGS
622-0667**

Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-0668		FUEL TANK, With #6 Fittings		1
2	232-8790-011		SENDING UNIT, Fuel Gauge		1
3	620-3642		COVER WELDMENT		1
4	519-1239		LOW FUEL SENSOR		1
5	519-1240		TUBE		1
6	118-2658-008		NIPPLE, Reducer, 1/2 x 1/4 NPT		1 1
7	111-4755		SCREW		5
9	231-5027-003		GASKET		1
10	110-0805		SCREW, Hex Hd, 1/4-20 x 3/4" CP		12
11	107-1338		WASHER, Flat 1/4		12
12	620-8823		GASKET, Fuel Tank		1
13	620-1952		DRAIN COCK		1
14	DWG-514-6319		DRAWING, Fuel Tank Level Sender		REF
15	239-9671-007		HOSE, Fuel 2.50 x 7"		1
16	105-0366		SEALANT, Solvent Resistant (730)		.05 OZ



EFF: CR97137 & UP

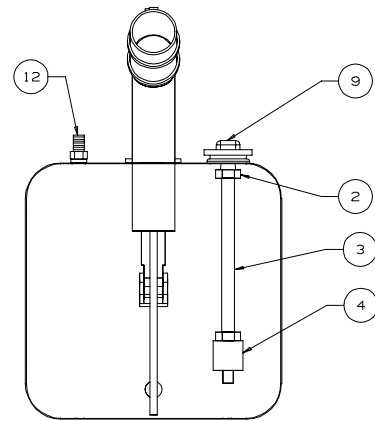
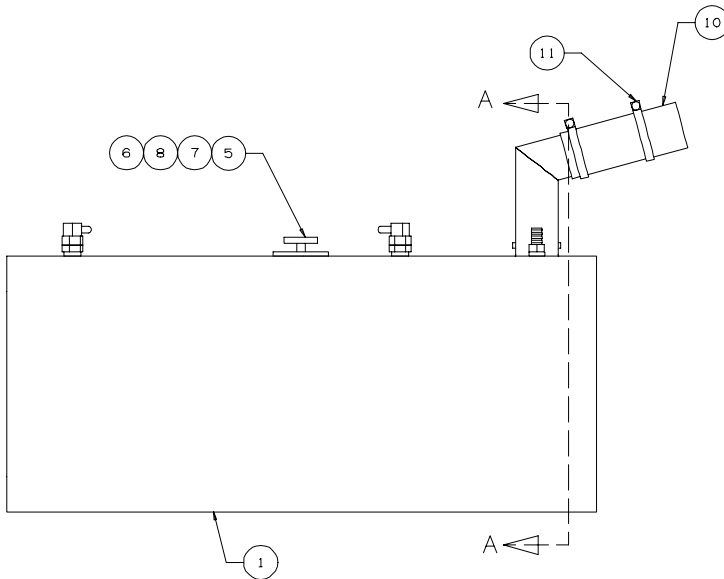
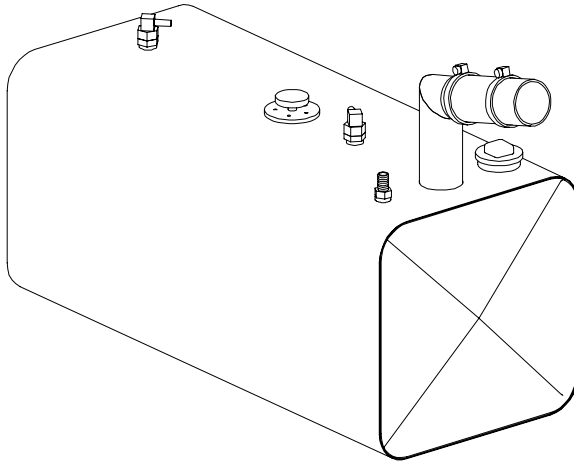
REV. D

Figure 3
FUEL TANK INSTALLATION, DIESEL ENGINE, ALUMINIZED STEEL
623-0900

FUEL TANK INSTALLATION, DIESEL ENGINE, ALUMINIZED STEEL
623-0900

Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-8837		FUEL TANK ASSEMBLY (Ref. Figure 4, Page 8)		1
2	519-1064		STRAP, Tank		2
3	110-0818		NUT, Lock .31-18 ESNA		2
4	620-0661		WASHER, Flat 3/8		2
5	105-1262		CLAMP, Hose		2
6	104-0577		HOSE, 5/8 x 45" Lg		4'
7	105-0085		CLAMP, Hose 5/8		2
8	105-1190		HOSE, Fuel Line 3/8"		43'
9	105-0077		CLAMP ASSEMBLY, 63.5 I.D.		1
10	623-0899		TUBE WELDMENT, Fuel Fill, Center Lift		1
11	105-0211		TY-RAP		7
12	623-2611		STRIP, Fuel Tank strap Protect		2
13	105-0210		TY-RAP		8
14	237-8101		HOSE PROTECTOR, Plastic		4'



SECTION A - A

REV. B

Figure 4
FUEL TANK ASSEMBLY
622-8837

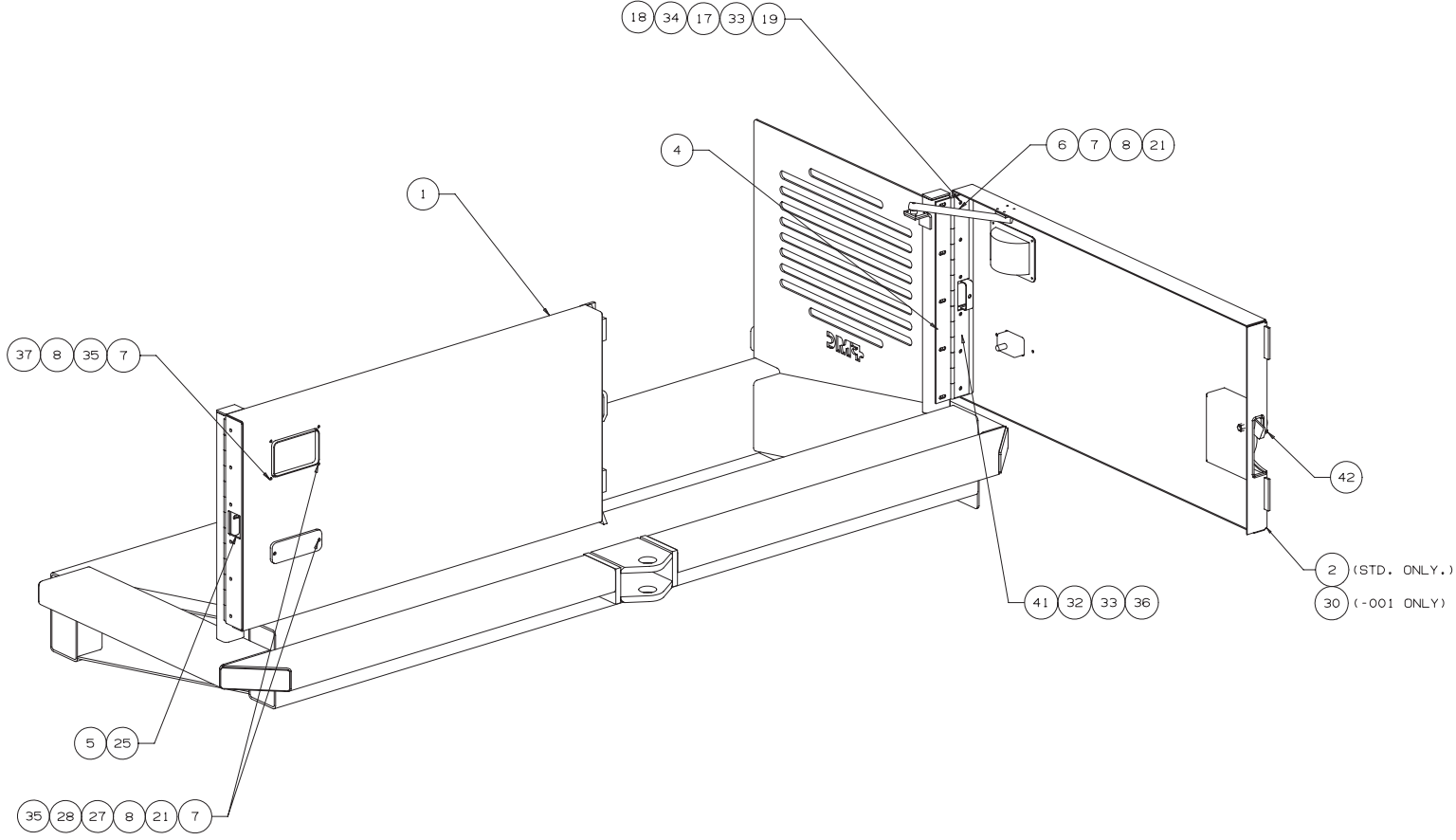
**FUEL TANK ASSEMBLY
622-8837**

Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-8836		FUEL TANK		1
2	118-2658-008		NIPPLE, Reducer, 1/2 x 1/4 NPT		1
3	519-1240		TUBE		1
4	519-1239		LOW FUEL SENSOR		1
5	232-8790-011		SENDING UNIT, Fuel Gauge		1
6	111-4755		SCREW		5
7	231-5027-003		GASKET		1
8	DWG-514-6319		DRAWING, Fuel Tank Level Sender		REF
9	622-9566		PLUG, Modified		1
10	239-9671-007		HOSE, Fuel 2.50 x 7"		1
11	105-0103		CLAMP, Hose 3"		1

Section 12. Engine Cover

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	ENGINE COVER, DIESEL ENGINE	622-2061	FIGURE 1	2

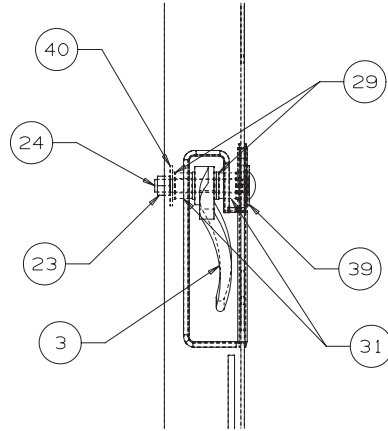


622-2061
622-2061-001

STD. COVER ASSEMBLY.
COVER ASSEMBLY,
LOUVERED DOOR.

REV. G

Figure 1
COVER INSTALLATION, DIESEL ENGINE
622-2061



DETAIL "A"

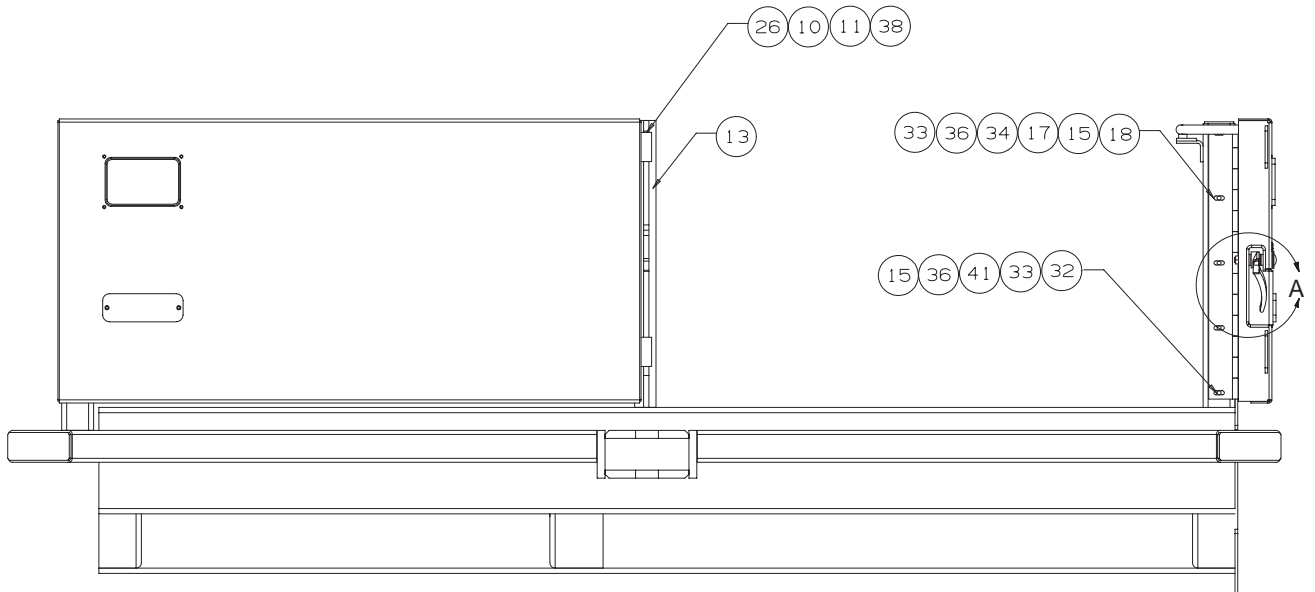


Figure 2
COVER INSTALLATION, DIESEL ENGINE
622-2061

**COVER INSTALLATION, DIESEL ENGINE
622-2061**

Figure 1, Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-2065		DOOR WELDMENT, Right		1
2	622-2064		DOOR WELDMENT, Left		1
3	621-4918		LATCH, Door		1
4	621-4916		HINGE, Door		2
5	620-1208		WASHER, Shoulder .25 Nylon		4
6	854-966		DOOR STOP		2
7	110-0135		SCREW, 10-24 x 1" CP		28
8	117-7576		NUT, ESNA 10-24		28
10	107-0770		SCREW, Pan Hd Mach, 1/4-20 x 1"		4
11	110-0254		WASHER, Flat 1/4		4
13	519-2570		WEATHER STRIPPING		5'
17	620-0656		NUT, PTH M8 x 1.25		22
18	110-0255		WASHER, Flat 5/16 CP		2
19	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		10
21	620-0803		WASHER, Flat Hard M5 Narrow		36
23	103-0622		NUT, Lock ESNA .50-13 Thin		1
24	110-0184		BOLT, Carriage Hd .50-13 x 3.5		1
25	620-6069-002		MARKER LAMP, Amber		REF
			Consisting of:		
-	620-6068-002		MARKER LIGHT, Amber 12V (V12662 #M114A)		1
-	620-6068-003		COMMON PARTS ASSEMBLY		1
-	620-4851		LAMP, 28V #464		1
26	231-4324		BUMPER, Door Retainer		2
27	620-0595		HEADLIGHT, Sealed Beam (V74400 #72769)		REF
28	620-1389		AMBER LIGHT ASSEMBLY (Ref. Sect. 4-22)		REF
29	110-7385		WASHER, Flat .50		6
30	622-4591		DOOR, Left, Optional Louvered Door		1
31	622-8155		SPACER, Door Latch		2
32	519-5511		SCREW, M8 x 1.25 x 80mm		2
33	620-0661		WASHER, Flat Hard M8 Narrow		36
34	620-0627		SCREW, Hex Hd, 8.8 M8 x 1.25 x 40mm		2
35	110-3959		WASHER, Flat #10		20
36	620-1367		NUT, Hex M8 x 1.25		4
37	239-9076-001		CLAMP, Loop		2

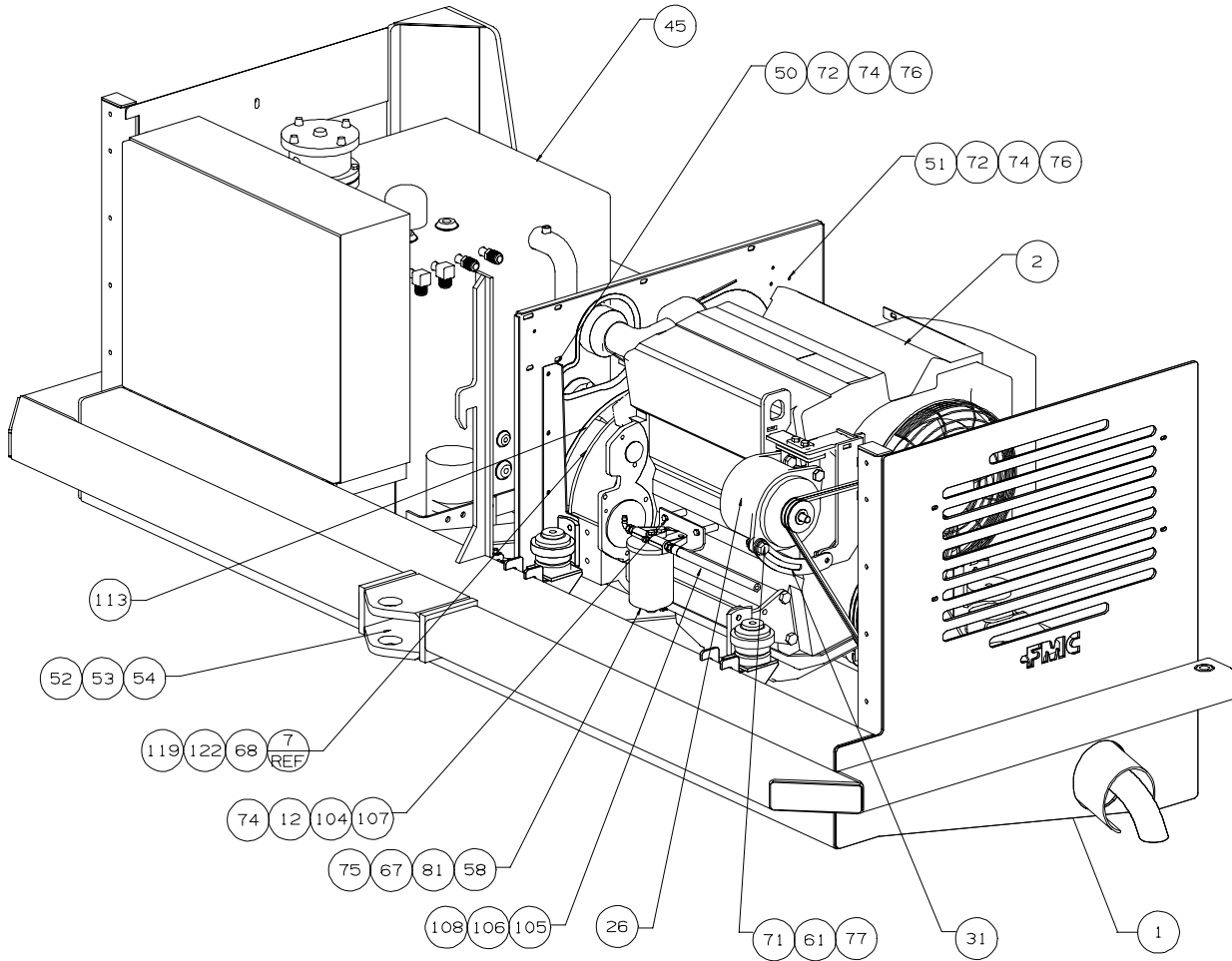
**COVER INSTALLATION, DIESEL ENGINE
622-2061**

Figure 1, Figure 2

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
38	110-0235		NUT, ESNA 1/4-20		4
39	110-7386		WASHER, Flat 5/8 CP		2
40	620-0663		WASHER, Flat Hard M12 Narrow		1
41	102-1189		CLAMP, Coated 11/16 ID Support		4
42	514-1000		QUICK EDGE MINITRIM		1.5'
-	Not Shown				

Section 13. Power Module (Engine)

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	POWER MODULE, DEUTZ BF4M1012	623-2651	FIGURE 1	2
2.	ENGINE, DEUTZ BF4M1012	623-2650		13
3.	COUPLING INSTALLATION, 281FC PUMP DRIVE EFF: CR96331 & UP	622-8150	FIGURE 7	17
4.	DEMAND THROTTLE ASSEMBLY, DEUTZ	623-5209	FIGURE 8	19



- 623-2651 POWER MODULE, DEUTZ BF4M1012
- 623-2651-003 POWER MODULE, DEUTZ BF4M1012 W/SPARK ARRESTOR

REV. D

Figure 1
 POWER MODULE, DEUTZ BF4M1012
 623-2651

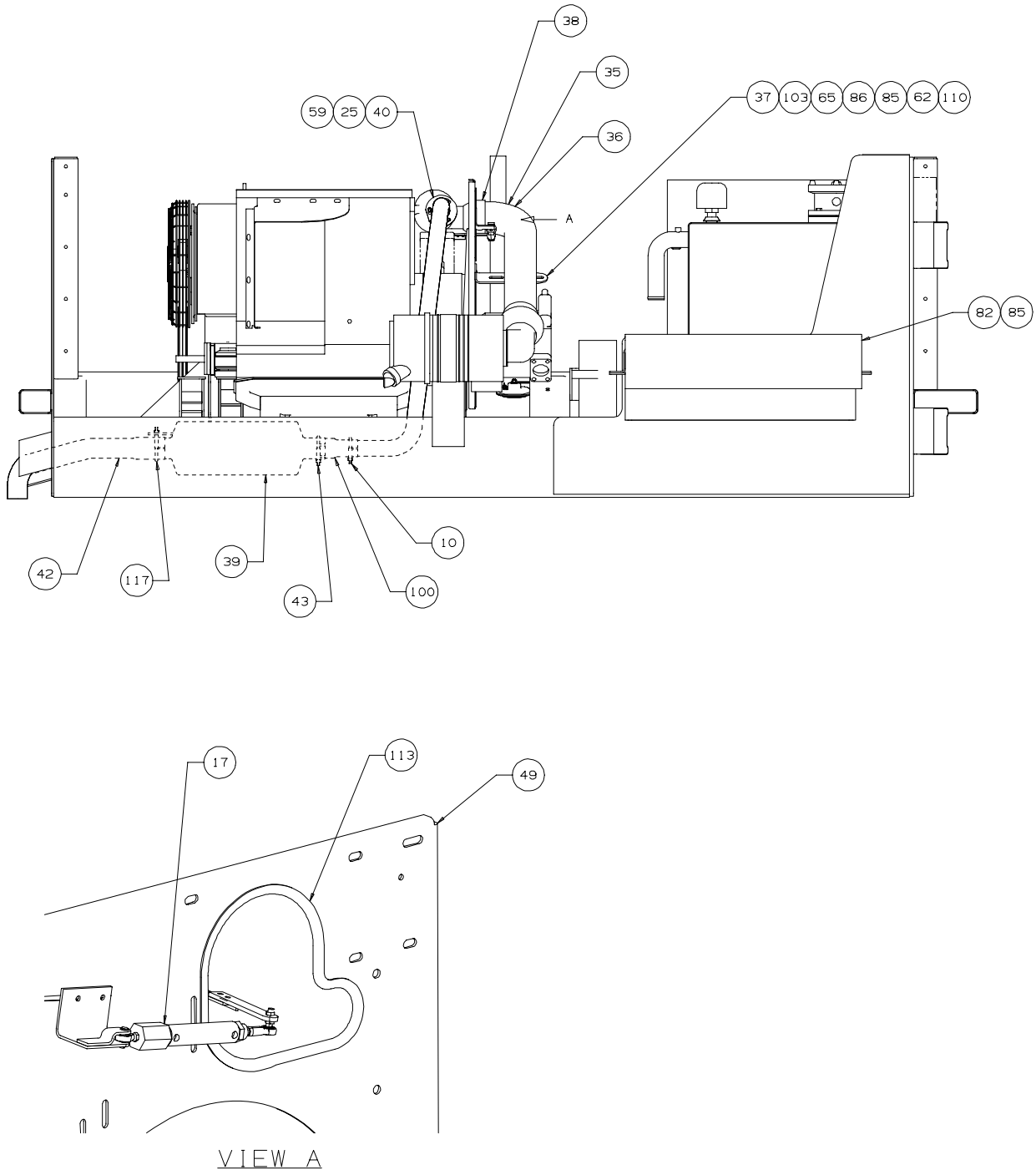


Figure 2
POWER MODULE, DEUTZ BF4M1012
623-2651

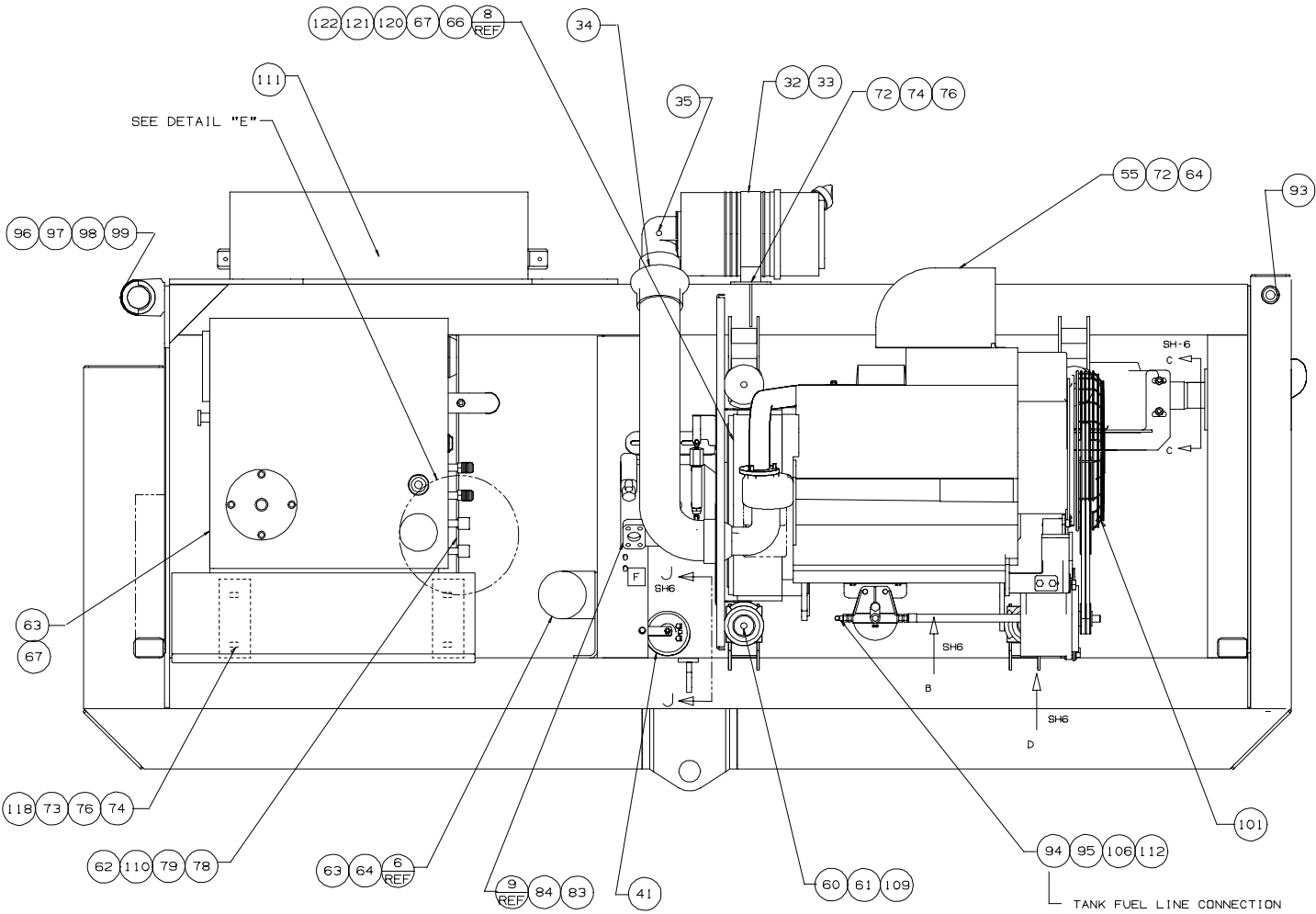
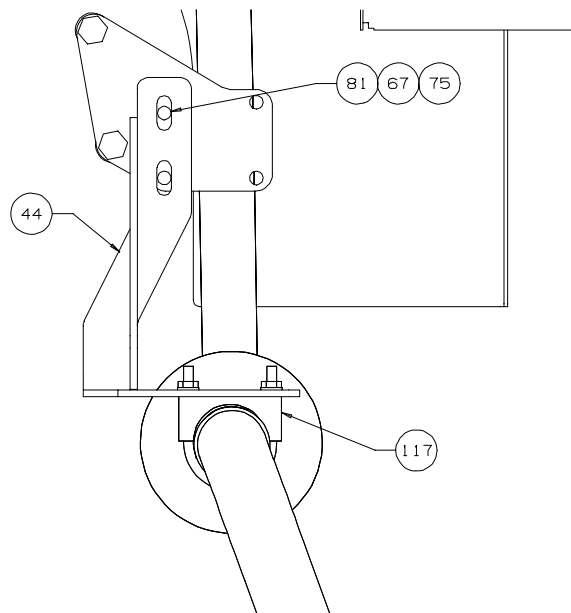
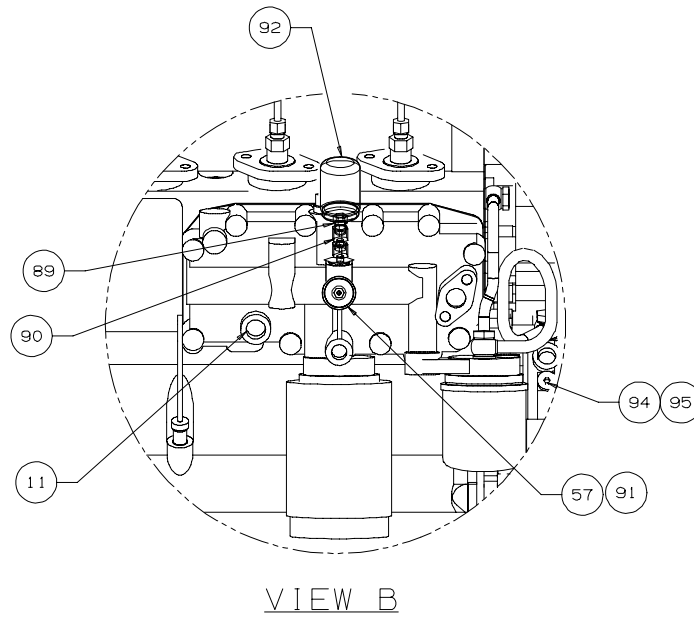
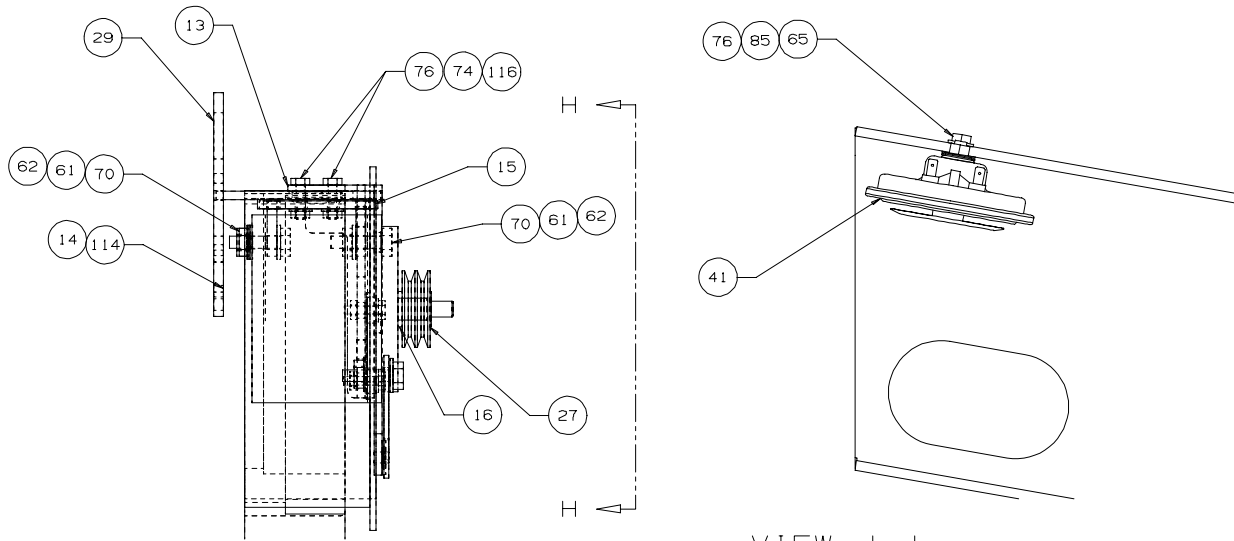


Figure 3
POWER MODULE, DEUTZ BF4M1012
623-2651



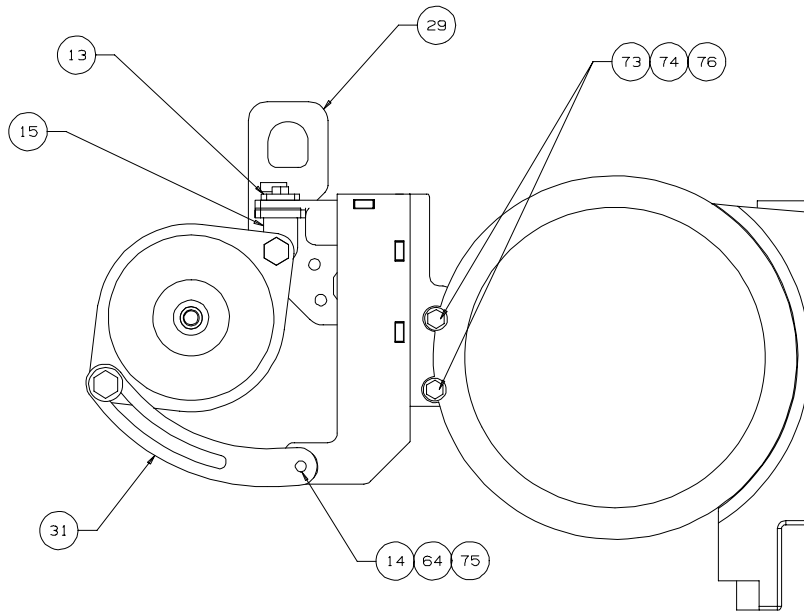
SOME ITEMS NOT SHOWN
FOR CLARITY.

Figure 4
POWER MODULE, DEUTZ BF4M1012
623-2651



VIEW D
SOME ITEMS NOT SHOWN FOR CLARITY.

VIEW J-J
SOME ITEMS NOT SHOWN FOR CLARITY.



VIEW H-H
SOME ITEMS NOT SHOWN FOR CLARITY.

Figure 5
POWER MODULE, DEUTZ BF4M1012
623-2651

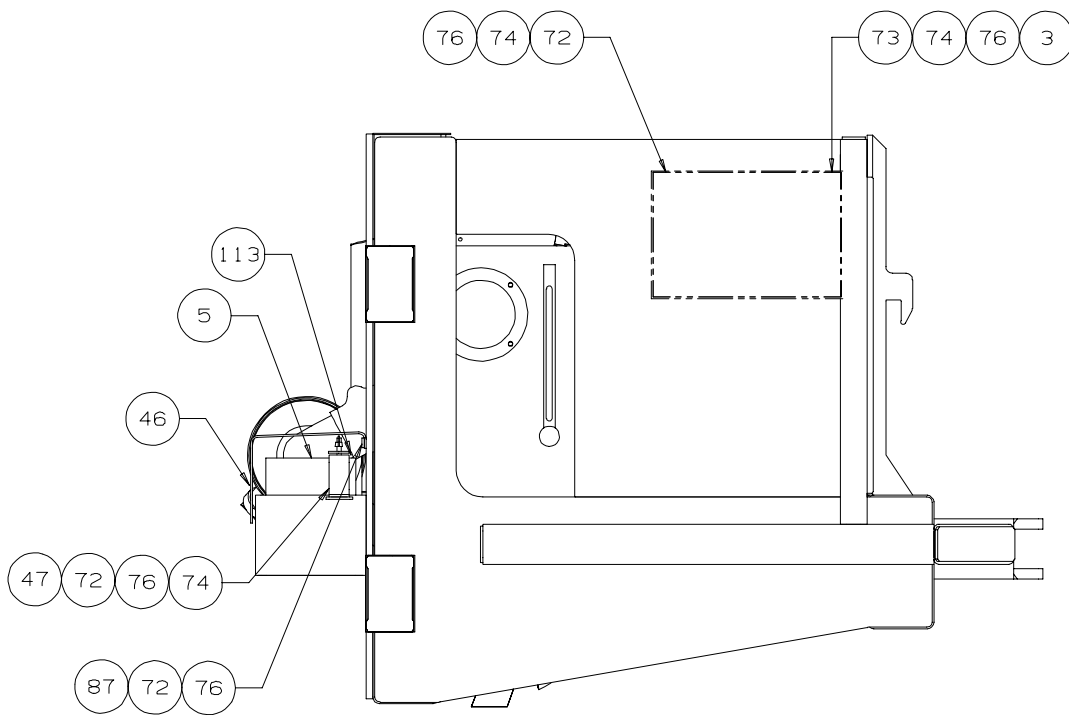
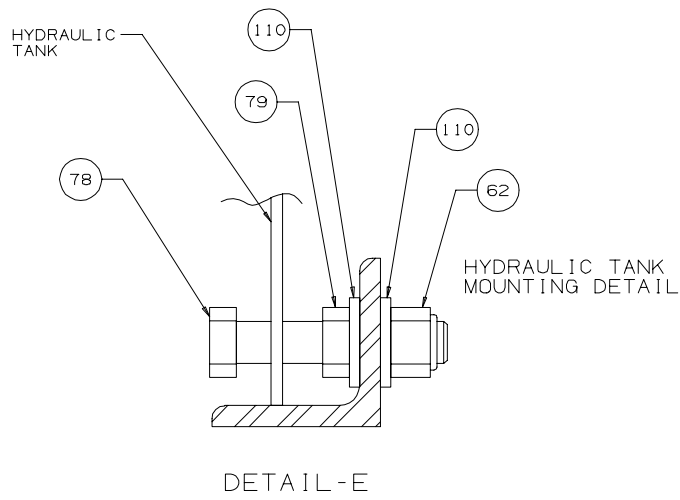


Figure 6
POWER MODULE, DEUTZ BF4M1012
623-2651

**POWER MODULE, DEUTZ BF4M1012
623-2651**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-2019		POWER MOD. FRAME W/ENG MOUNTS		1
2	623-2650		ENGINE, Deutz BF4M1012 (Ref. Page 13)		1
3	519-5247		WASHER, Sealing 3/8		2
5	515-5937		BATTERY, 12 Volt		2
6	620-9350		EMERGENCY POWER UNIT (V0A9U1 #646 S30 A25)		REF
-	620-9350-001		Consisting of: REPLACEMENT MOTOR (V0A9U1 #80065-2S)		
-	623-7453		REPLACEMENT SOLENOID, 24V 300A		
7	622-8150-003		DRIVE FLANGE, 10"		REF
8	622-8150-002		FLYWHEEL HOUSING, Eng./Pump ADP		REF
9	620-3007		PUMP, Hydraulic Variable Displ. (V58114 #5142-004-034)		REF
-	620-3006-001		Consisting of: REPLACEMENT COMPENSATOR (V58114 #5102-552-003 DFR1 Control)		1
-	620-3007-090		SEAL KIT (V58114 #5140-635-011)		1
10	105-0075		CLAMP, Pipe 2 1/8		1
11	514-3086-002		SENDER, Water Temperature (V98738 #3280ED-F/334H)		1
12	110-0242		WASHER, Lock .31 ZP		2
13	623-4751		PLATE, Retaining Alternator Mounting		1
14	620-0633		SCREW, Hex Hd, M10 x 1.5 x 30mm		5
15	623-2661		BRACKET WELD., Alternator Support		1
16	622-0902		SPACER, Alternator Pulley		1
17	623-5209		DEMAND THROTTLE ASSEMBLY (Ref. Figure 8, Page 19)		1
25	107-1283		SCREW, Hex Hd, 10.9 M8 x 1.25 x 25mm		3
26	620-0081-001		ALTERNATOR, 24V (V16764 #1105474)		1
27	622-2345		PULLEY, 2 Groove 3" Dia		1
28	622-2452		V-BELT, Drive		2
29	623-2826		BRACKET WELD., Alternator Mounting		1
31	623-2662		BRACKET, Adjusting Alternator		1
32	622-2731		AIR CLEANER (V18265 MODEL #G082528)		1

**POWER MODULE, DEUTZ BF4M1012
623-2651**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
			Consisting of:		
-	622-2731-001		FILTER ELEMENT, (V18265 #P328889)		
-			VALVE, Vacuator (V18265 #P159914)		
-			BODY ASSEMBLY, (V18265 #P534058)		
-			COVER, (18265 #P534048)		
-			PLUG, (18265 #P522840)		
33	622-2732		MOUNTING BAND, Air Cleaner (V18265 #H002023)		1
34	622-2734		REDUCER, Hump		1
35	515-3008-002		RESTRICTION INDICATOR, (V18265 #RBX00-2251)		1
36	622-3355		TUBE, Air Intake		1
37	622-0931		BRACKET, Air Intake		1
38	105-0094		CLAMP, 3 1/2 - 5		2
39	622-2667		MUFFLER		1
40	622-2672		EXHAUST PIPE/FLANGE WELD		1
41	623-8831		HORN, 108db 335 HZ 24 V (V1CW22 95370)		1
42	622-3356		EXHAUST PIPE, Tail		1
43	105-0077		CLAMP, Muffler 2 3/4		1
44	622-6428		BRACKET, Muffler		1
45	622-3164		HYDRAULIC INSTL, Power Module (Ref. Sect. 4-21)		1
46	621-5099		BATTERY COVER		1
47	622-0930		BATTERY HOLD DOWN		1
49	622-2079		FIREWALL WELDMENT		1
50	622-0434		BRACKET, Firewall, Front		1
51	622-0469		BRACKET, Firewall, Rear		1
52	620-4581		PIN ASSEMBLY, Front Towing		1
			Consisting of:		
-	620-4549		HANDLE, Pin for Towing		1
-	620-4550		PIN, for Front Towing		1
53	104-0282-0305		COIL CHAIN, #2 x 12" Lg 9 Links		1
54	104-0282-0142		COIL CHAIN, #2 x 5.6" 5 Links		1
55	622-0848		DEFLECTOR, Radiator		1
57	238-8605		SENDER, Oil Pressure (V95879 #411-K)		1

**POWER MODULE, DEUTZ BF4M1012
623-2651**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
58	622-3390		BRACKET, Fuel/Water Separator Mount		1
59	107-1957		WASHER, Lock 5/16 Hi Alloy Zinc		3
60	107-1394		SCREW, Hex Hd, 10.9 M12 x 1.75 x 120mm		4
61	107-1351		WASHER, Flat Hard M12 Regular		12
62	110-0237		NUT, Lock ESNA .50-13		6
63	110-0068		SCREW, Hex Hd, .376-16 x .75"		4
64	110-0243		WASHER, Lock .375		8
65	107-1711		SCREW, Hex Hd, M6 x 1 x 25mm		3
66	107-0754		SCREW, Hex Hd, M10 x 1.5 x 25mm		10
67	622-3511-003		WASHER, Flat Hard .38 Narrow ZP		22
68	107-2016		SCREW, Soc Hd, M10 x 1.5 x 40mm		8
70	110-0067		SCREW, Hex Hd, .50 x 13 x 2"		2
71	110-0055		SCREW, Hex Hd, .50 x 13 x 1.25"		1
72	107-1701		SCREW, Hex Hd, M8 x 1.25 x 25mm		22
73	620-0626		SCREW, Hex Hd, M8 x 1.25 x 30mm		8
74	622-3511-002		WASHER, Flat Hard .31 Narrow ZP		38
75	620-0657		NUT, PTH 8 M10 x 1.5		5
76	620-0656		NUT, PTH 8 M8 x 1.25		26
77	110-0245		WASHER, Lock Spring .50		1
78	110-0056		SCREW, Hex Hd, .50 x 13 x 2.5"		2
79	112-1553		NUT, Jam .50-13		2
80	620-0663		WASHER, Flat M12 Narrow		2
81	107-1050		SCREW, Hex Hd, M10 x 1.5 x 35mm ZP		2
82	620-0953		SCREW, Hex Hd, M6 x 1.0 x 16mm		3
83	110-0355		SCREW, Hex Hd, .625 x 11 x 1.5"		2
84	110-0247		WASHER, Lock .625 I.D.		2
85	622-3511-001		WASHER, Flat Hard .25 Narrow		5
86	620-0948		NUT, ESNA M6 x 1.0		2
87	622-5951		STRIP, Battery Cover		1
89	622-0928		ADAPTER, #6-37 to .12 NPT F		1
90	622-0929		ADAPTER, M14-1.5 to #6-37"		1
91	102-1698		ADAPTER, M10-1 M to 1/8 NPTF		1
92	621-1874		OIL PRESSURE SWITCH		1
-	621-1874-001		Consisting of: BOOT (V74400 #79380)		1

**POWER MODULE, DEUTZ BF4M1012
623-2651**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
-	621-1874-002		SWITCH, Oil Pressure (V74400 #78928)		1
93	620-6254		TEE BOLT, Long		1
			Consisting of:		
-	107-1774		SCREW, Hex Hd, M20 x 2.5 x 140mm		1
-	111-9986		WASHER, 3/4 x 2		1
-	620-1698-001		HRS, Round 16 x 75" Lg		1
-	620-4410		SPLIT RING, Zinc Coated		1
-	104-0284		LINK, Str. Mach. Chain Gal Size #4 (10 Links)		.5'
-	517-0761-0145		HRS, Round 16 x 5.70" Lg		1
94	622-1221		ADAPTER, M16-1.5 #8 3/4-16 370		3
95	622-1220		BARB, 37° Flare 3/4-16 #6"		3
96	620-9073		PIN, Engine Pivot		2
97	620-0747		SNAP RING		4
98	620-0704		GREASE FITTING, (V95879 #2103)		4
99	620-1314		WASHER, Thrust		2
100	622-2668		ESPANDER		1
101	622-2460		BLOWER GRILL MODIFICATION		1
103	107-1895		U-BOLT, .50-13UNC X 4.5 X 5		1
104	517-1363-0051		TUBE, .62 x .12 x 2" Lg		2
105	105-1190		HOSE, Fuel .38 Diesel/Gas J1527		3'
106	105-1262		BAND CLAMP, Hose ABA 12017 SS		2
107	620-0630		SCREW, Hex Hd Cap, M8 x 1.25 x 70mm		2
108	519-8700-008		SPIRAL WRAP, Plastic .50 I.D.		3'
109	620-0658		NUT, PTH 8 M12 x 1.75		4
110	110-7385		WASHER, Flat .50		10
111	622-4258		"J" BOLT, Battery Hold Down		1
112	102-0187		90° ELBOW, -8 SAE F Swivel		1
113	519-0198		TRIM, Quickedge		6.5'
114	110-0243		WASHER, Lock 7/16 CP		4
116	620-0627		SCREW, Hex Hd, M8 x 1.25 x 40mm		2
117	107-1272		CLAMP, Muffler 2 3/4"		1
118	622-7654		SHIM, MTG. Electric Box		4
119	622-8150		COUPLING INSTL., 281 CF Pump Drive (Ref. Figure 7, Page 17)		1
120	107-1007		SCREW, Set .50-13 x .50"		4

**POWER MODULE, DEUTZ BF4M1012
623-2651**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
121	107-0994		SCREW, Set .625-11 x .625"		2
122	105-0327		LOCKTITE, #242-31		1oz
-	Not Shown				

**DEUTZ BF4M1012 DIESEL ENGINE
623-2650**

NOTE: The standard engine is purchased from Deutz Corporation (Vendor Code V36719).
An operator's handbook and a parts book are included.

The following parts are not shown on Figure 1 thru Figure 6.

<u>ITEM NO.</u>	<u>FMC PART NO.</u>	<u>VENDOR PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-2564-001	29-1206	SYSTEM CODE, BF4M1012		1
2	622-2564-002	29-0549	BASIC COMPONENTS, Crankcase, crankshaft, cyl. head integrated cooling system		1
3	622-2564-003	29-1456	GOVERNOR, Speed Control 2500rpm		1
4	622-2564-004	29-1372	INJECTION PUMPS, PSI Pistons & camshaft		1
5	622-2564-005	29-1227	TURBOCHARGER, mounted flywheel end, outlet left		1
6	622-0175-006	29-1464	W/O CONTENT without muffler		1
7	622-2564-007	29-1208	EXHAUST COUNTERFLANGE, W/O Elbow & exhaust brake		1
8	622-2564-008	29-1243	INTAKE MANIFOLD, for rear mount turbocharger		1
9	622-2564-009	29-1235	TURBO INLET ELBOW, 100mm		1
10	622-2564-010	29-1218	OIL SUMP, Center sump		1
11	622-2564-011	29-1221	LUBE OIL DIPSTICK, Right front		1
12	622-0175-012	29-1387	CLOSING PARTS, W/O Auxiliary drive A		1
13	622-0175-013	29-1388	CLOSING PARTS, W/O Auxiliary drive B		1
14	622-0175-014	29-1389	CLOSING PARTS, W/O Auxiliary drive C		1
15	622-0175-015	29-1394	CLOSING PARTS, W/O Air compressor		1
16	622-2564-016	29-1804	W/O CONTENT, W/O Air Compressor suction pipes		1
17	622-2564-017	29-1223	LUBE OIL FILLER, Top		1
18	622-2564-018	29-1269	LUBE OIL COOLER, with connection for coolant preheating		1
19	622-2564-019	29-1271	LUBE OIL FILTER, mounted		1
20	622-0175-020	29-1274	CLOSING PARTS, W/O Connecting parts for cab heater		1
21	622-0175-021	29-1276	CLOSING PARTS, Provision for water jacket heater		1
22	622-0175-022	29-1251	FUEL FILTER, Mounted		1

**DEUTZ BF4M1012 DIESEL ENGINE
623-2650**

**NOTE: The standard engine is purchased from Deutz Corporation (Vendor Code V36719).
An operator's handbook and a parts book are included.**

The following parts are not shown on Figure 1 thru Figure 6.

<u>ITEM NO.</u>	<u>FMC PART NO.</u>	<u>VENDOR PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
23	622-0175-023	29-1242	FUEL LINES, Lift pump to filter, filter to inj. pump injector return		1
24	622-2564-024	29-1289	RADIATOR		1
25	622-2564-025	29-1299	COOLING BLOWER & PUMP, with thermostat, 370mm dia. fan		1
26	622-2564-026	29-0734	AIR GUIDE COMPONENTS		1
27	622-0175-027	29-0866	LIFTING EYE, Front W/O Alternator, for V-belt drive "B"		1
28	622-2564-028	29-1900	W/O CONTENT, W/O Protective screen		1
29	622-0175-029	29-1241	FUEL LIFT PUMP, Integrated in V-belt idler		1
30	622-0175-030	29-1944	W/O CONTENT, W/O Hand primer pump & fuel prefilter		1
31	622-0175-031	29-1338	W/O CONTENT, W/O Air conditioning compressor		1
32	622-2564-032	29-1724	V-BELT DRIVE SYSTEM "B"		1
33	622-2564-033	29-1764	TORSIONAL DAMPER		1
34	622-0175-034	29-1395	W/O CONTENT, W/O Flywheel driven PTO components		1
35	622-0175-035	29-1399	ADAPTER HOUSING, SAE 3		1
36	622-2564-036	29-1340	COVER PLATE, for adapter housing		1
37	622-2564-037	29-1408	FLYWHEEL, SAE 8/10		1
38	622-0175-038	29-1418	ENGINE MOUNTING FEET, Rear		2
39	622-0175-039	29-1574	W/O CONTENT, W/O Fastening parts for crankcase mounted rear mounts		1
40	622-0175-040	29-1564	FRONT ENGINE MOUNTING, Attachment points for feet		2
41	622-0175-041	29-1439	ENGINE SHUTDOWN, 24V solenoid, energized to run		1
42	622-2564-042	29-1445	LIFTING EYE Flywheel End		1
43	622-0175-043	29-1437	CLOSING PARTS, W/O Electronic engine monitoring system		1

**DEUTZ BF4M1012 DIESEL ENGINE
623-2650**

**NOTE: The standard engine is purchased from Deutz Corporation (Vendor Code V36719).
An operator's handbook and a parts book are included.**

The following parts are not shown on Figure 1 thru Figure 6.

<u>ITEM NO.</u>	<u>FMC PART NO.</u>	<u>VENDOR PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
44	622-0175-044	29-1455	CLOSING PARTS, W/O Oil pressure monitor		1
45	622-0175-045	29-1465	W/O CONTENT, W/O Lube oil level monitor		1
46	622-0175-046	29-1524	COOLANT TEMP MONITOR, W/O Gauge		1
47	622-0175-047	29-2008	COOLANT LEVEL SWITCH, With counterplug		1
48	622-0175-048	29-1583	W/O COOLANT		1
49	622-0175-049	29-1479	W/O CONTENT, W/O Speed monitor connection		1
50	622-0175-050	29-1481	W/O CONTENT, W/O Hourmeter		1
51	622-0175-051	29-0915	ELECTRIC STARTER 24V, Frame ground		1
52	622-2564-052	29-1435	GLOW PLUGS, 24V W/O Starting accessories		1
53	622-2564-053	29-2013	WIRING FOR STARTING AID		1
54	622-2564-054	27-2016	COUNTERPLUGS		1
55	622-2564-055	29-1482	W/O CONTENT, W/O Cumbustion Air Ftr		1
56	622-2564-056	29-1483	W/O CONTENT, W/O Airfilter main Ind.		1
57	622-2564-057	29-1484	W/O CONTENT, W/O Precleaner or cap		1
58	622-2564-058	29-1485	W/O CONTENT, W/O Corrugated rubber Hose		1
59	622-2564-059	29-1486	W/O CONTENT, W/O Connection sleeve		1
60	622-2564-060	29-1487	W/O CONTENT, W/O Elbow		1
61	622-2564-061	29-0821	MANUFACTURER'S NAMEPLATE		1
62	622-2564-062	29-0723	FACTORY TEST RUN, Standard		1
63	622-2564-063	29-1501	W/O CONTENT		1
64	622-2564-064	29-1513	ENGLISH MANUAL, 1 Set		1
65	622-2564-065	29-1505	FINISH COATING Slategray		1
66	622-2564-066	29-1506	PRESERVATION, 6 Month		1
67	622-2564-067	29-2067	CONTAINER PACKING		1

**DEUTZ BF4M1012 DIESEL ENGINE
623-2650**

NOTE: The standard engine is purchased from Deutz Corporation (Vendor Code V36719).
An operator's handbook and a parts book are included.

The following parts are not shown on Figure 1 thru Figure 6.

ITEM NO.	FMC PART NO.	VENDOR PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
68	622-0175-054	29-2412	PRE FILTER, Water/Fuel Separator		1
69	514-3086-002		SENDER, Water Temperature		1

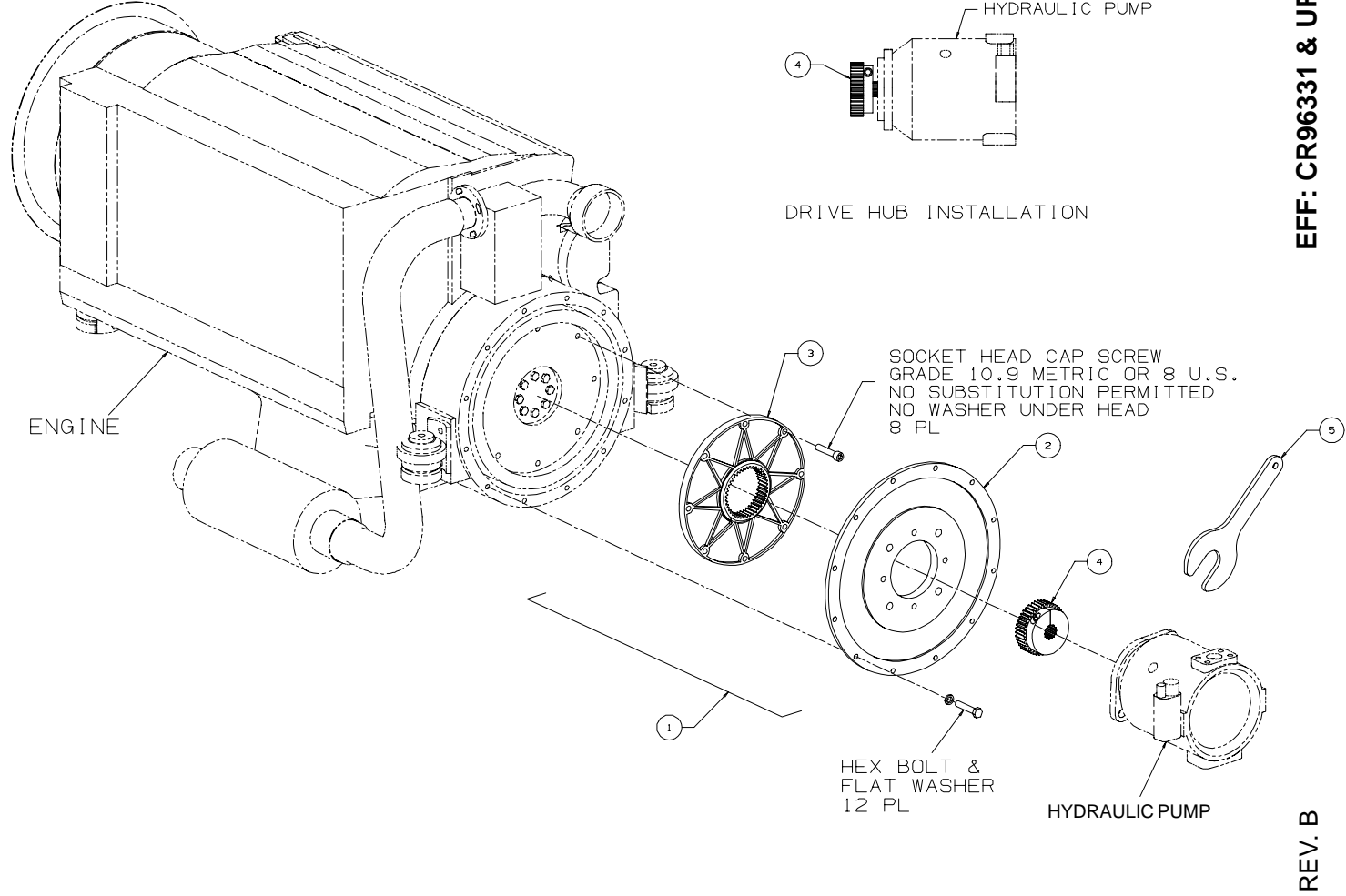


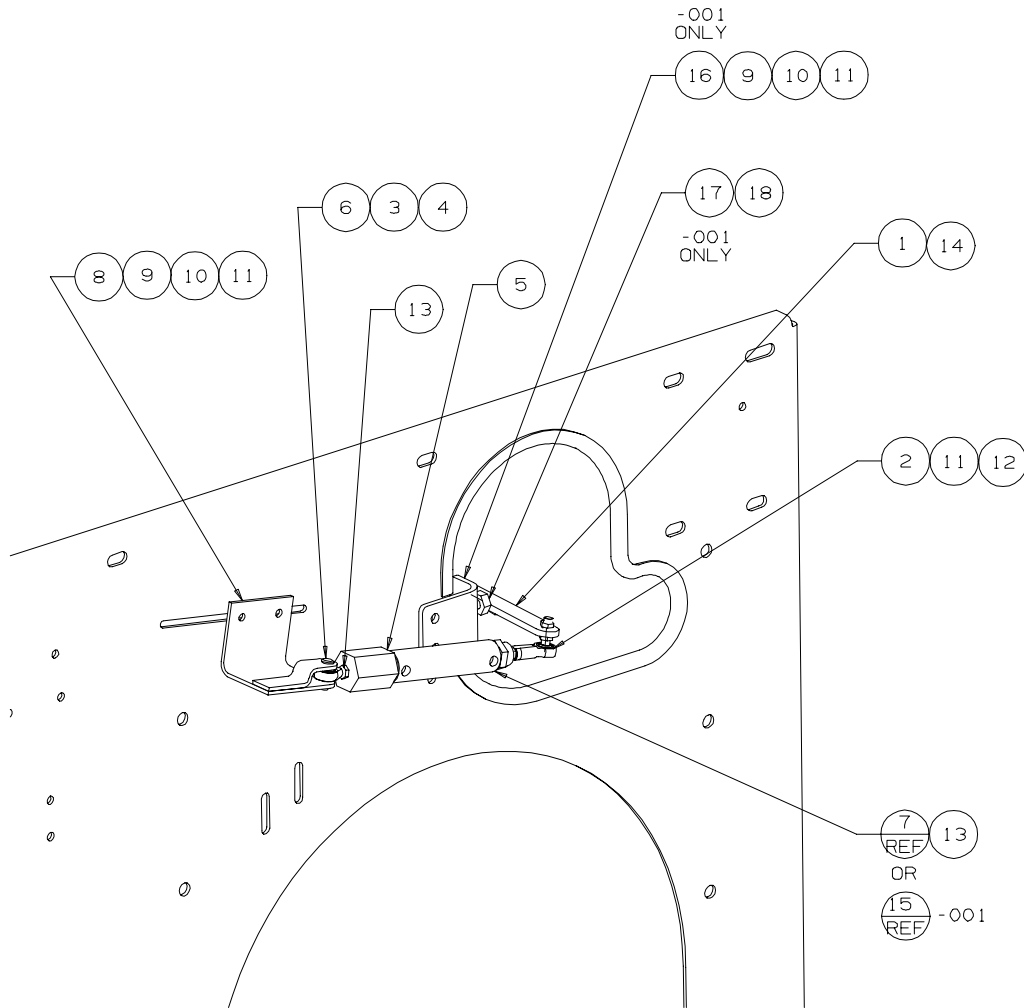
Figure 7
COUPLING INSTALLATION, 281FC PUMP DRIVE
622-8150

**COUPLING INSTALLATION, 281FC PUMP DRIVE
622-8150****Figure 7**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	622-8070		PUMP DRIVE, 281FC		1
2	622-8070-001		FLYWHEEL HOUSING, Eng/Pump ADP		REF
3	622-8070-002		DRIVE FLANGE, 10"		REF
4	622-8070-003		DRIVE HUB, SAE "C"		REF
5	622-8151		DRIVE HUB SPACER TOOL		REF

NOTES:

1 USE LOCK WASHER SUPPLIED WITH THROTTLE HYDRAULIC CYLINDER BETWEEN CONNECTOR AND CYLINDER.



623-5209 A-DEMAND THROTTLE,DTZ BF4M1012
 623-5209-001 A-DEMAND THROTTLE,DTZ BF6M1012

Figure 8
 DEMAND THROTTLE ASSEMBLY, DEUTZ
 623-5209

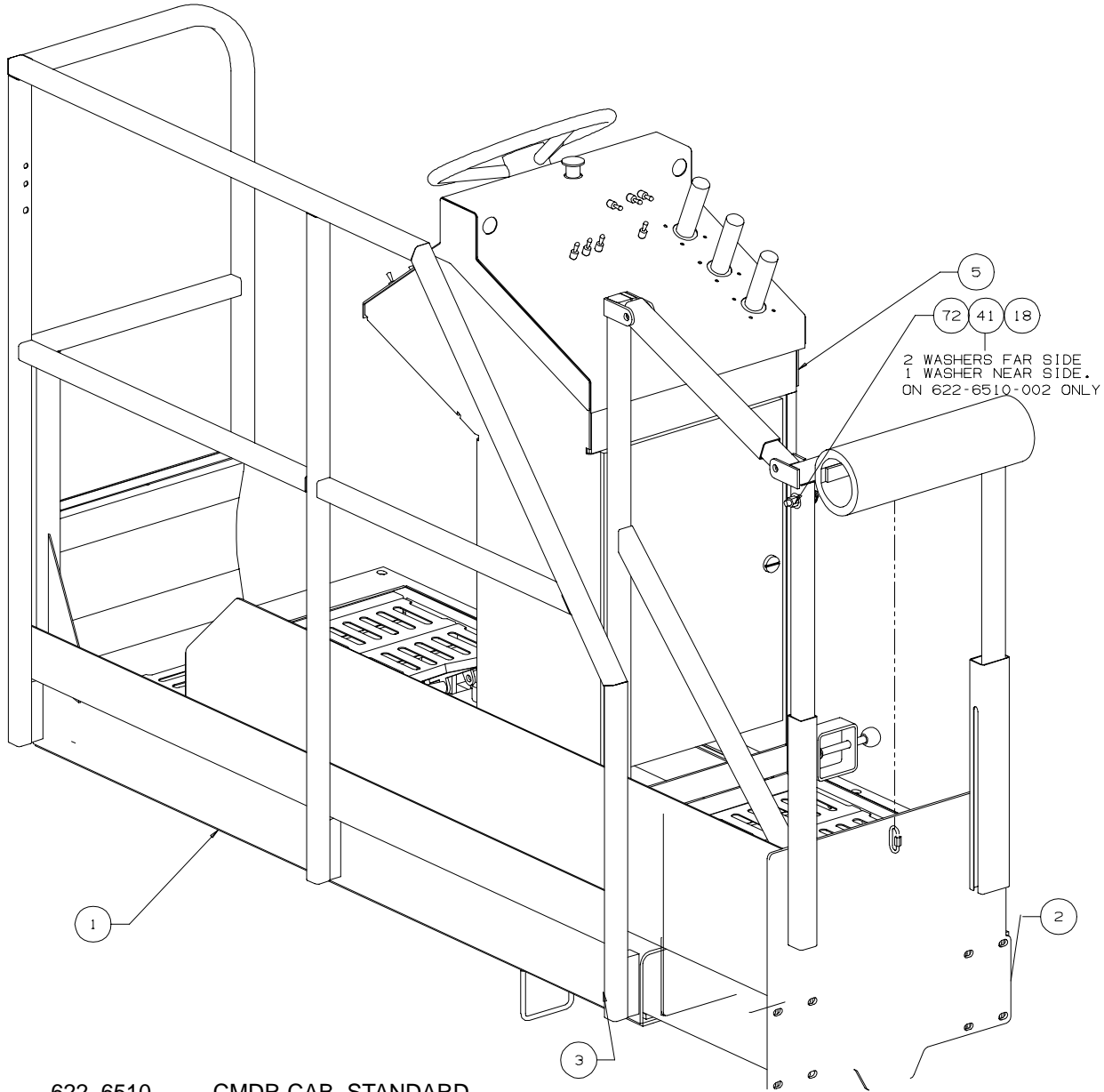
**DEMAND THROTTLE ASSEMBLY, DEUTZ BF4M1012
623-5209**

Figure 8

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-0957		EXTENSION, Throttle Arm		1
2	621-2261		BALL JOINT, Swivel (1/4-28)		1
3	103-0737		PIN, Clevis 1/4 x 7/8"		1
4	110-0361		PIN, Cotter 1/16 x 1"		1
5	623-4830		CONNECTOR, Hex F .25-28 x F.75-20		1
6	623-4912		ROD END, Male 1/4-28		1
7	621-2256		CYLINDER, Demand Throttle 1.5" Stroke (V4N453 MODEL NO. 7D-1 1/2)		REF
			Consisting of:		
-	621-2256-090		SEAL KIT		1
8	623-5237		BRACKET WELDMENT, Demand Throttle		1
9	107-1711		SCREW, Hex Hd, M6 x 1.0 x 25mm		2
10	620-0948		NUT, ESNA M6 x 1.0		2
11	622-3511-001		WASHER, Flat 1/4 Mil-Carb. SAE		5
12	110-9527		NUT, Lock ESNA 1/4-28		1
13	110-9585		NUT, Jam 1/4-28		2
14	107-1703		SCREW, Hex Hd, M6 x 1.0 x 12mm		2
-	Not Shown				

Section 14. Operator's Cab

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	OPERATOR'S CAB	622-6510	FIGURE 1	2



622-6510 CMDR CAB, STANDARD
622-6510-004 CMDR WITH LOWERED RAIL

REV. K

Figure 1
OPERATOR'S CAB
622-6510

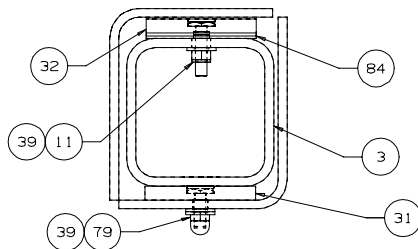
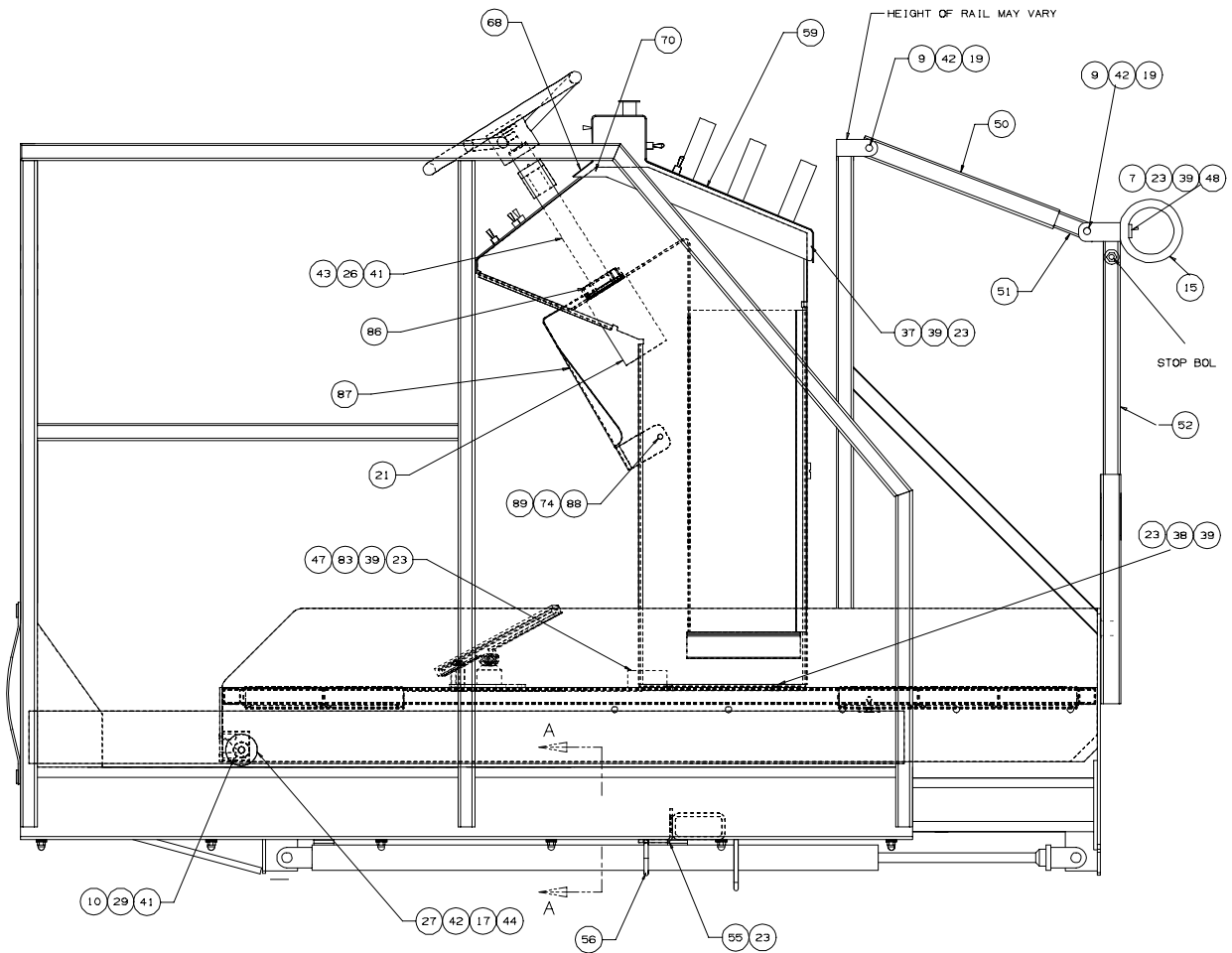


Figure 2
OPERATOR'S CAB
622-6510

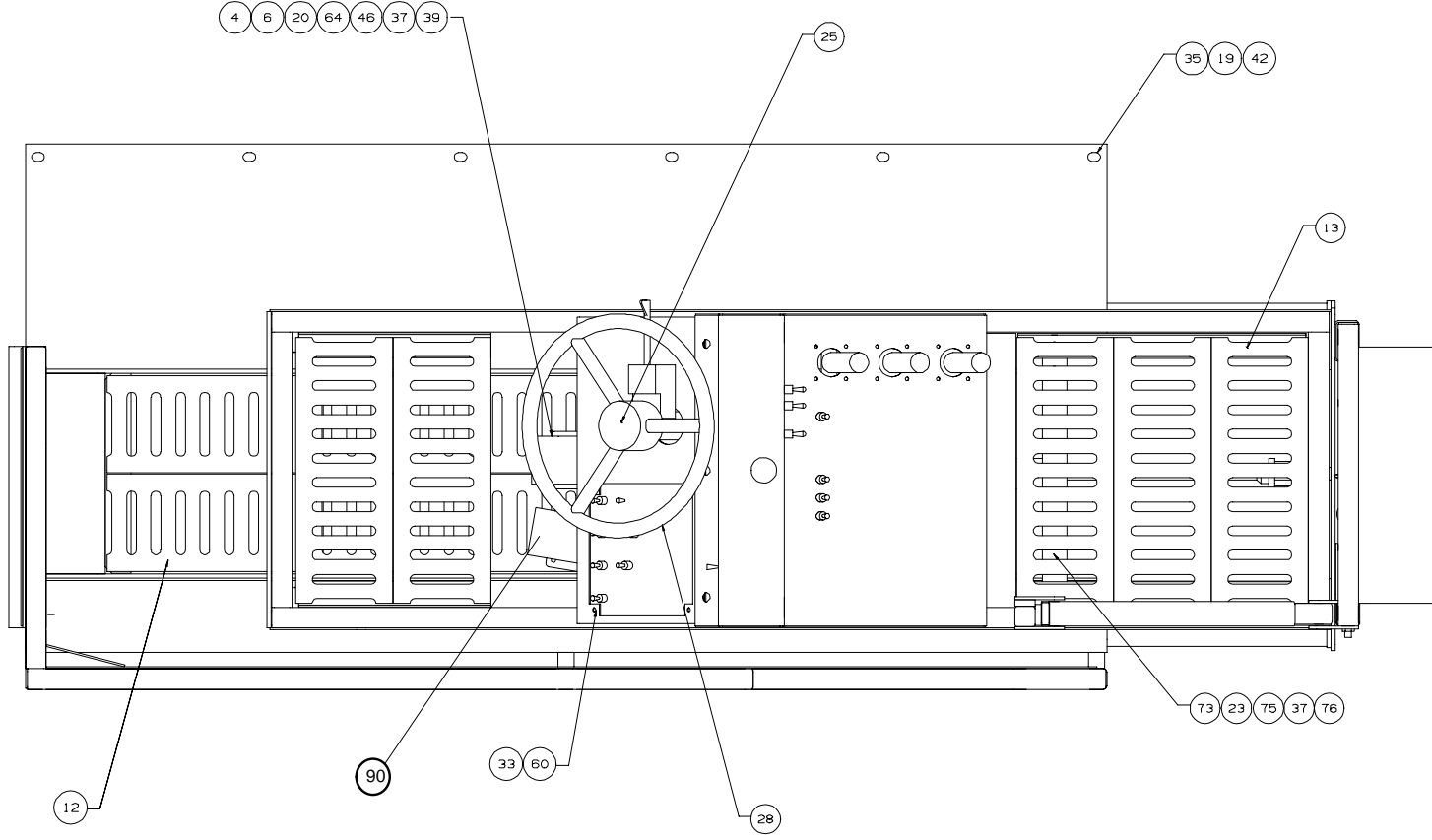


Figure 3
OPERATOR'S CAB
622-6510

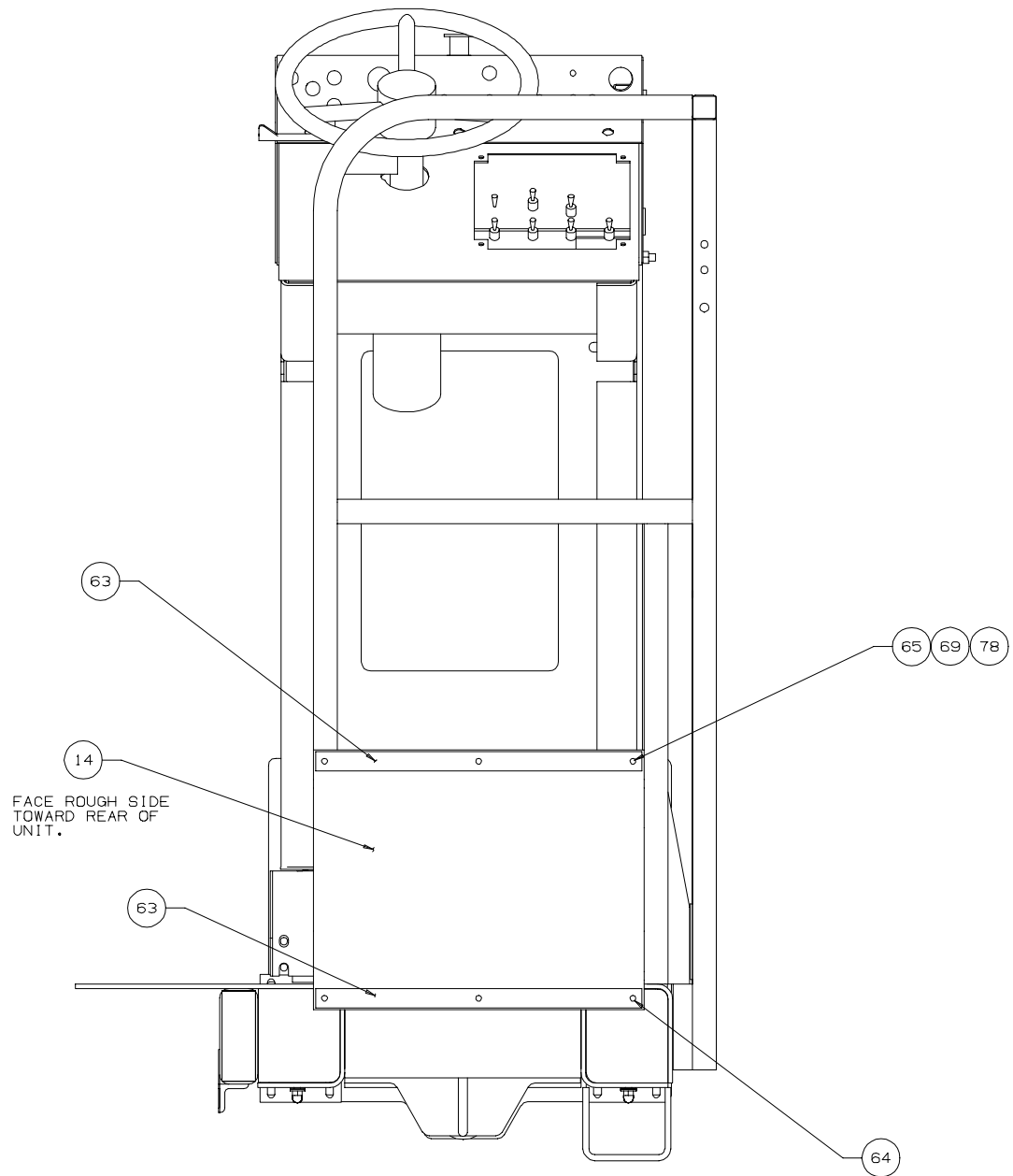


Figure 4
OPERATOR'S CAB
622-6510

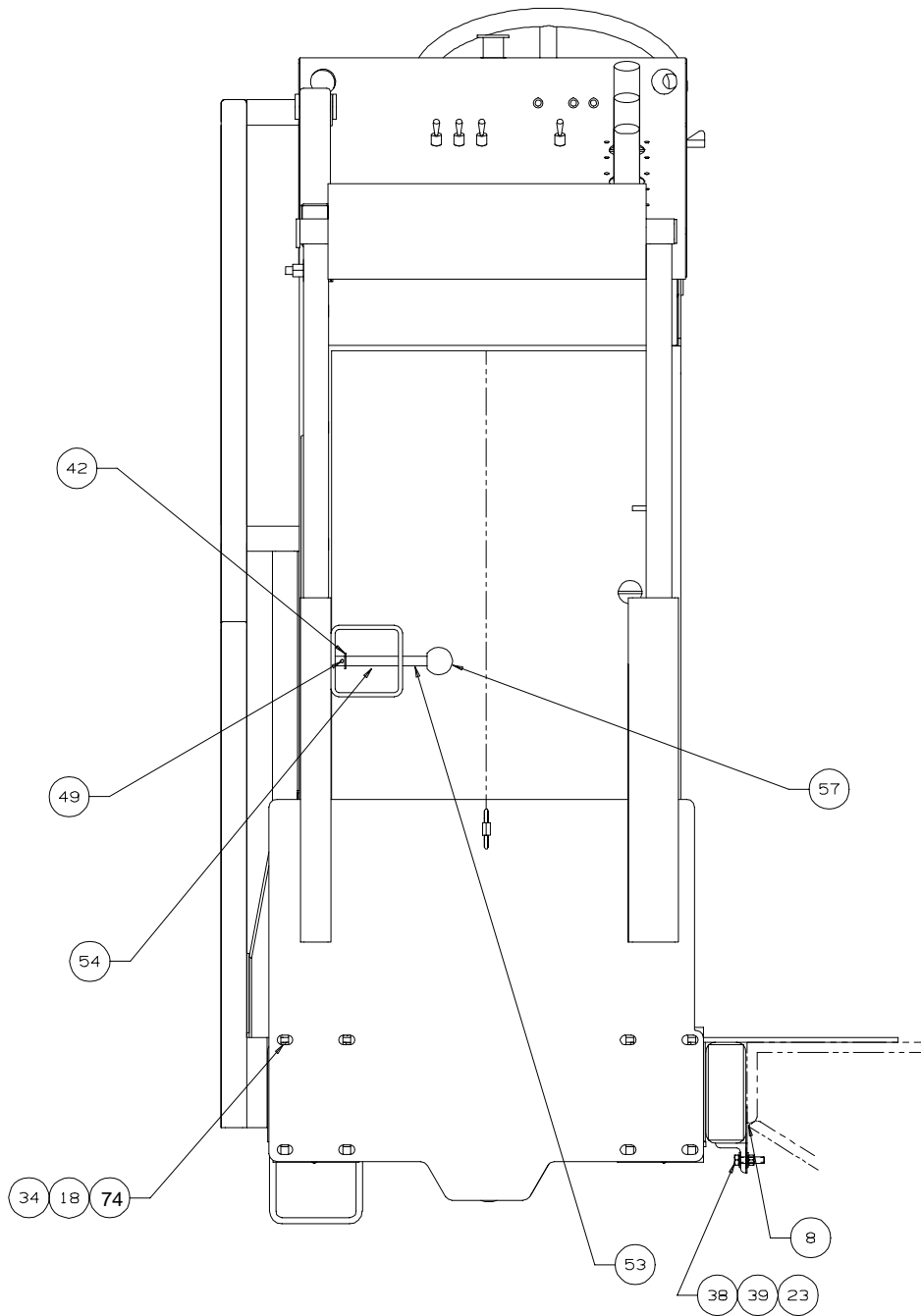


Figure 5
OPERATOR'S CAB
622-6510

**OPERATOR'S CAB ASSEMBLY
622-6510**

Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0266		OPERATOR'S CAB WELDMENT, Lower		1
2	622-0201		OPERATOR'S CAB WELDMENT, Upper (Standard Cab Only)		1
3	620-0403		TUBE WELDMENT, Telescoping with cab		2
4	620-1098		PEDAL, Brake (V58114 #L014150)		1
5	622-3592		CONSOLE BASE WELDMENT		1
6	620-9214		VALVE, Power Brake, Wet Chamber (V58114 #1701-002-003)		1
			Consisting of:		
-	620-4563-001		DUST BOOT (V58114 #1701-044-002)		
-	620-4563-002		PLUNGER SEAL (V58114 #1701-076-002)		
-	620-9214-090		SEAL KIT (V58114 #1701-635-002)		
7	620-1357		STRAP		1
8	622-4066		SHIM, Cab Support, Bolt-In		3
9	519-5512		SCREW, Hex Hd, 8.8 M12 x 1.75 x 80mm		2
10	622-2786		ROLLER MOUNT, Modified		2
11	620-1367		NUT, Hex M8 x 1.25		4
12	620-0592		GRATING, Lower Platform		2
13	620-0593		GRATING, Upper Platform		5
14	620-4390		TOEBOARD, PVC Belting, Loose		1
15	620-1358		BUMPER		1
17	517-1926-042		SPACER, Roller Mount Modified		2
18	620-0657		NUT, PTH, 9 M10 x 1.5		9
19	620-0658		NUT, PTH, 9 M12 x 1.75		8
20	620-1350		BRACKET, Brake Pedal		1
21	620-4093		LOAD SENSING STEERING UNIT (V24976 #150-3098)		1
23	620-0656		NUT, PTH, M8 x 1.25		15
25	623-2676		HORN BUTTON, Use W/623-2675 Wheel (620-6787 Horn Button to be used only with 519-9174 Wheel)	CR98011 & UP	1
26	110-0043		SCREW, Hex Hd, 3/8 -16 x 1 1/4"		4
27	622-2695		ROLLER, Plastic Modified 60mm Lg		2
28	623-2675		STEERING WHEEL, Hub 7/8-16 Spline	CR98011 & UP	1
29	620-0632		SCREW, Hex Hd, 8.8 M10 x 1.5 x 20mm		4

**OPERATOR'S CAB ASSEMBLY
622-6510**

Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
30	622-3292		OPERATOR'S CAB WELD, Upper (Galv.)		1
31	622-7284		WEAR PLATE, Long		2
32	622-7283		WEAR PLATE, Short		2
33	107-1991		NUT, U, 10-24		4
34	107-1050		SCREW, Hex Hd, 8.8 M10 x 1.5 x 35mm		8
35	622-4812		SCREW, Soc Button, M12 x 1.75 x 40mm		6
37	107-0349		SCREW, Hex Hd, 8.8 M8 x 1.25 x 20mm		8
38	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		5
39	620-0661		WASHER, Flat Hard, M8 Narrow		52
41	620-0662		WASHER, Flat Hard, M10 Narrow		6
42	620-0663		WASHER, Flat Hard, M12 Narrow		13
43	620-7159		STEERING COLUMN, w/Horn Button (V24976 #150X1414)		1
44	620-0643		SCREW, Hex Hd, 8.8 M12 x 1.75 x 10mm		2
46	118-7612		WASHER, Lock 1/4		5
47	620-0128		VALVE, Shuttle (V54035 #CSAB-XXN-ECI) Consisting of:		1
-	620-1326-001		CARTRIDGE, Sun #CSAB XXN		1
-	620-0128-002		BODY, Sun #ECI"		1
48	620-0629		SCREW, Hex Hd, 8.8 M8 x 1.25 x 60mm		2
49	620-0691		PIN, Roll, M4 x 24		1
50	622-0203		TUBE, Telescoping Top Rail (Outer)		1
51	622-0188		TUBE, Telescoping Top Rail (Inner)		1
52	620-7068		HANDRAIL, Front Adjustable		1
53	620-4485		PIN, Handrail Lock		1
54	107-0247		SPRING		1
55	620-4602		BRACKET, Cylinder Support		1
56	105-0075		CLAMP, Muffler 2		1
57	515-1889		KNOB, Plastic		1
58	621-3015		HANDRAIL, Front Adjustable		1
59	514-1000		QUICKEDGE MINITRIM		3'
60	107-0728		SCREW, Bind SH, 10-24 x 1 CP		4
62	620-2734		OPERATOR'S CAB HYDRAULICS (Ref. Sect. 4-21)		1
63	620-2947		BAR, Mounting		2
64	107-0350		SCREW, Hex Hd, 8.8 M6 x 1 x 20mm		8

**OPERATOR'S CAB ASSEMBLY
622-6510**

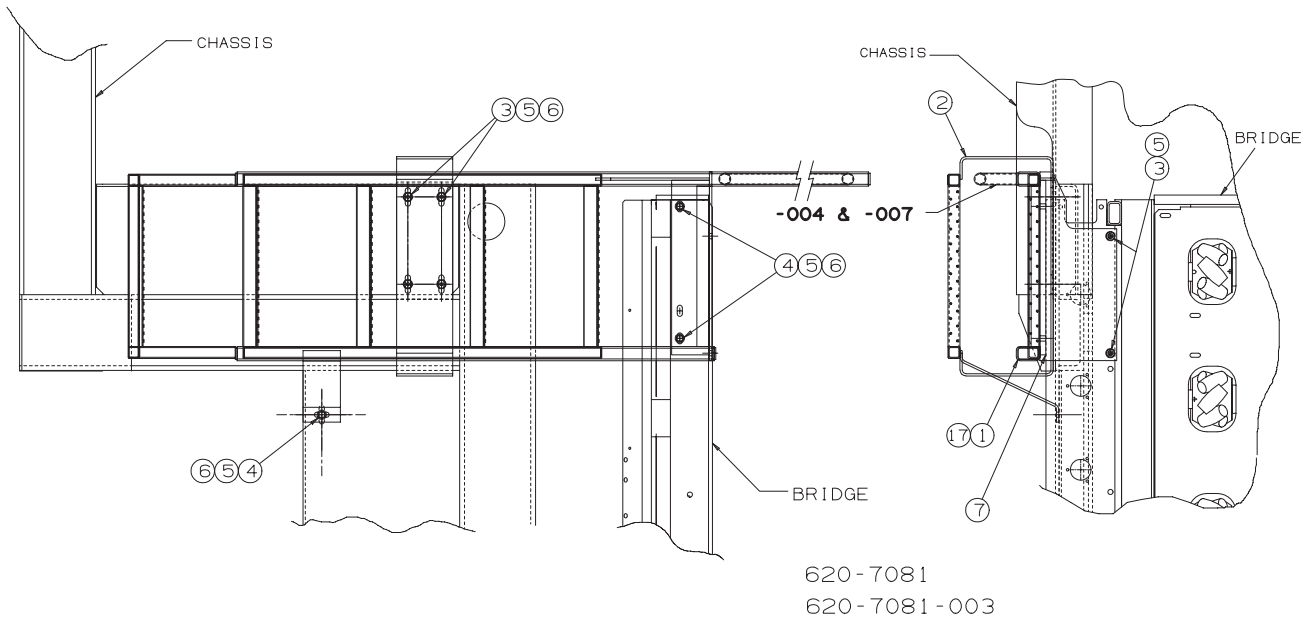
Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
65	620-0948		NUT, PTH, M6 x 1		3
66	622-3270		GALV. TUBE, Telescoping Top Rail (Inner)		1
67	622-3271		GALV. TUBE, Telescoping Top Rail (Outer)		1
68	621-5230		LATCH, Adjustable Grip		3
69	107-0369		SCREW, Hex Hd, 8.8 M6 x 1 x 25mm		3
70	621-5244		GASKET, Console		1
71	104-0284		CHAIN, Mach. Str. Link, 26" Lg		2.2'
72	620-0636		SCREW, Hex Hd, 8.8 M10 x 1.5 x 60mm		1
73	620-2745		BAR, Support Strain Clamp		1
74	110-0256		WASHER, Flat 3/8 Std CP		17
75	239-9076-009		CLAMP		4
76	107-0350		SCREW, Hex Hd, 8.8 M6 x 1 x 20mm		4
77	620-0948		NUT, ESNA M6 x 1		5
78	620-0956		WASHER, Flat Hard M6 Narrow		14
79	107-1492		NUT, Domed Hex M8 DIN 1587		12
80	622-0201-002		OPERATOR'S CAB WELDMENT, Upper		1
82	622-0201-003		OPER.'S CAB WELD, w/Lowered Rail (-004 Only)		1
83	620-0628		SCREW, Hex Hd, 8.8 M8 x 1.25 x 50mm		2
84	622-7538		SHIM		2
86	517-1916-0013		TUBE, Rd. Steel .625OD. x .049W x .5L		4
87	622-0919		COVER, Steering Valve		1
88	112-0459		SCREW, Hex Hd, 5/16 x 18 x 3 1/4"		1
89	110-0818		NUT, Lock ESNA, .31-18		1
90	620-8345		FOOT CONTROLLER (V62246 #C-07582)		REF
-	Not Shown				

Section 15. Ladder

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	LADDER ASSEMBLY	620-7081	FIGURE 1	2

- 2. USE 620-1930-001 (WIDE LOADER EXTENSION BRACKETS) IN ADDITION TO 620-7081 OR 620-7081-002 ON ALL WIDE LOADERS.

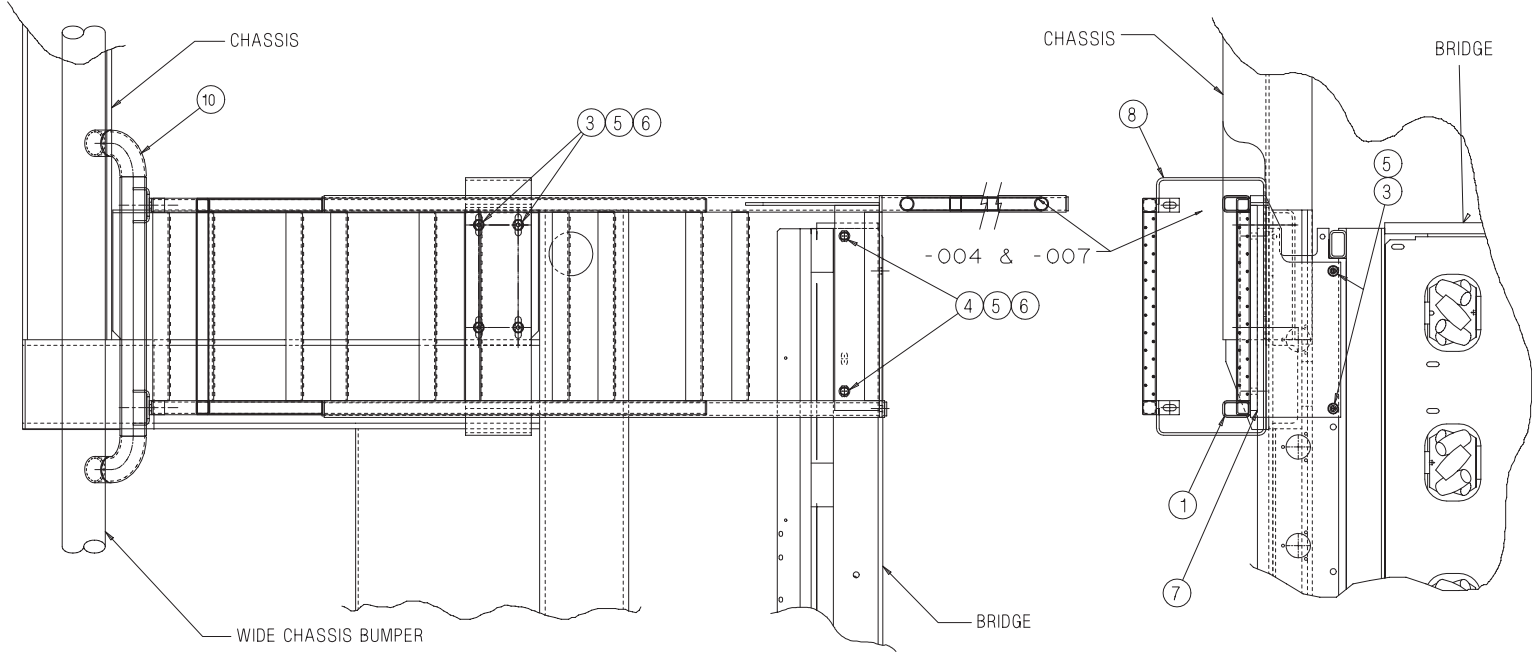


THESE OPTIONS PROVIDES A LADDER ASSEMBLY FOR STANDARD FRONT SCISSORS. THESE LADDER ASSEMBLIES HAVE APPROXIMATELY 184 MM (7.24") BETWEEN THE INNER AND OUTER RUNGS, AND PROVIDES INCREASED STIFFNESS IN THE INNER LADDER. 620-7081 HAS A LOWER RUNG 29" ABOVE THE GROUND AND 620-7081-001 AND 620-7081-002 HAVE A LOWER RUNG 17" ABOVE THE GROUND WITH OUTER LADDER PROTECTION. 620-7081-001 IS FOR USE ON NARROW LOADERS AND 620-7081-002 IS FOR USE ON WIDE LOADERS.

PART NUMBER	TITLE
620-7081	LADDER ASSEMBLY
620-7081-001	LADDER ASSEMBLY, 17" LOWER RUNG, STANDARD
620-7081-002	LADDER ASSEMBLY, 17" LOWER RUNG, WIDE
620-7081-003	LADDER ASSEMBLY (FRENCH REG.)
620-7081-004	LADDER ASSEMBLY WITH GRAB BAR, WIDE
620-7081-005	LADDER ASSEMBLY WITH GUARD
620-7081-006	LADDER ASSEMBLY FOR ACCESS STAIRS
620-7081-007	LADDER ASSEMBLY 17" LOWER RUNG, GRAB BAR, STD

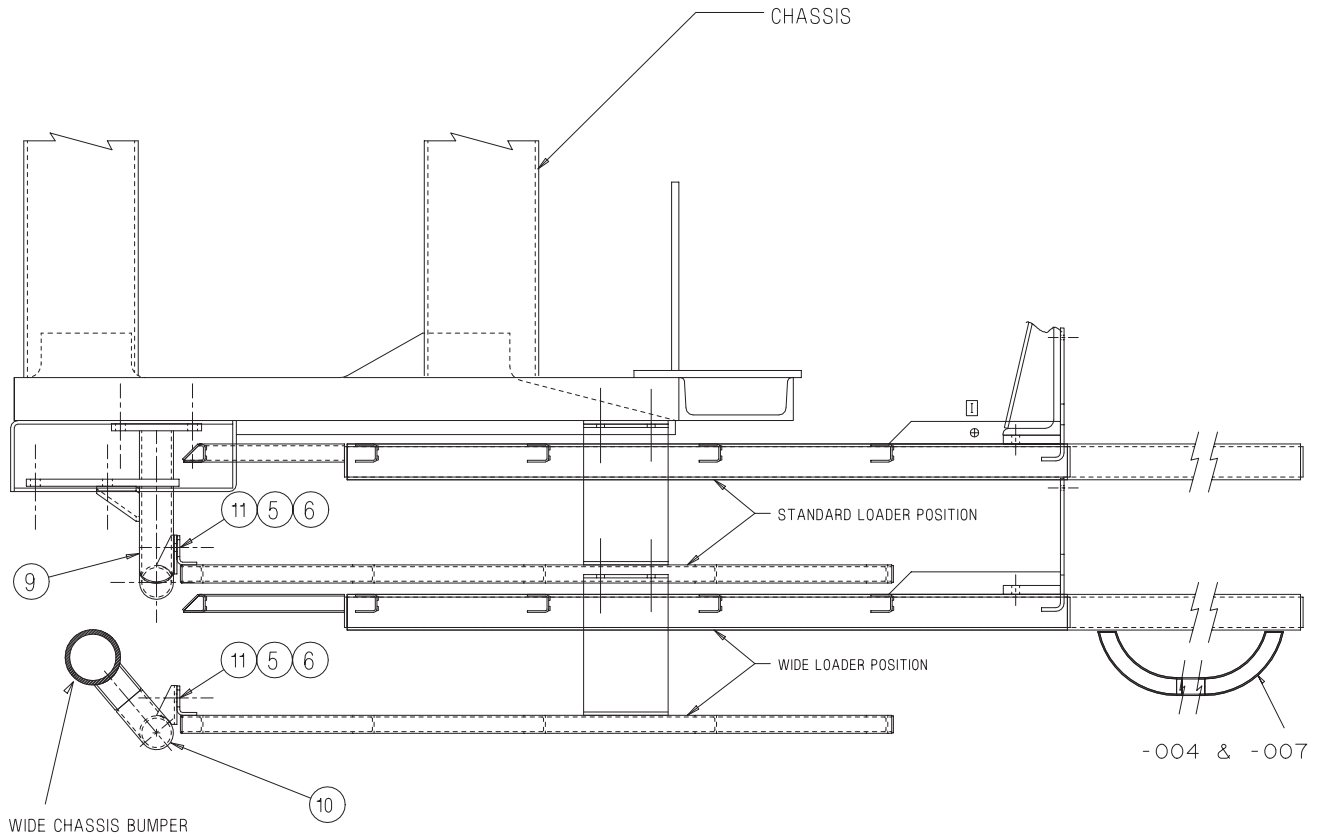
REV. K

Figure 1
LADDER ASSEMBLY
620-7081



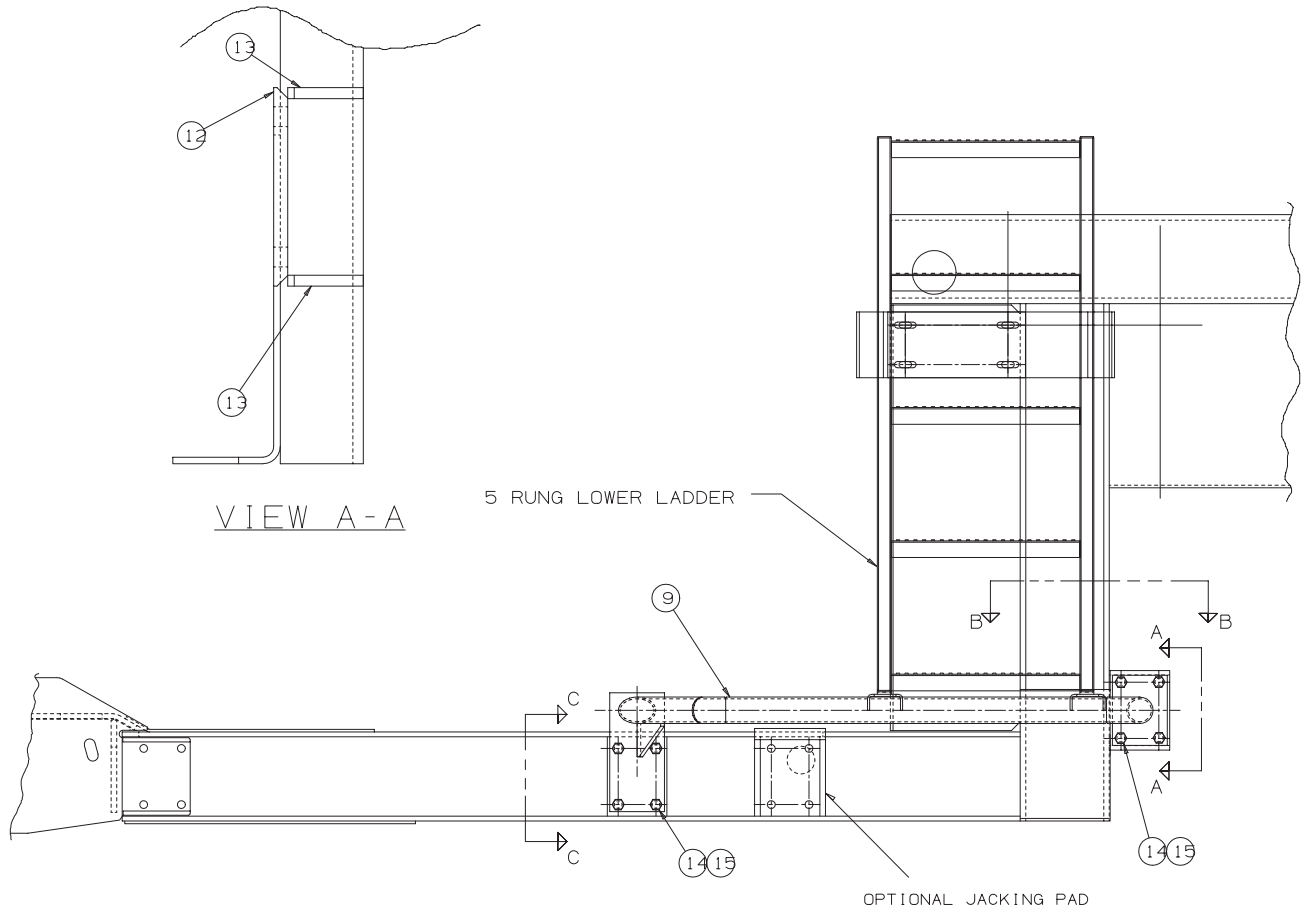
620-7081-001, -002, -004, -007

Figure 2
LADDER ASSEMBLY
620-7081



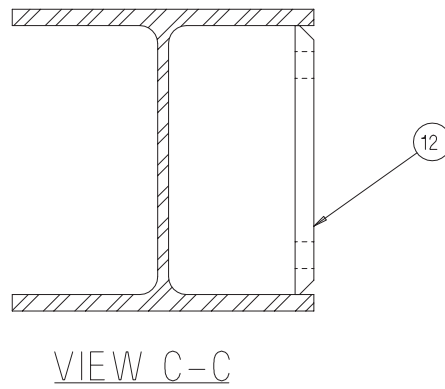
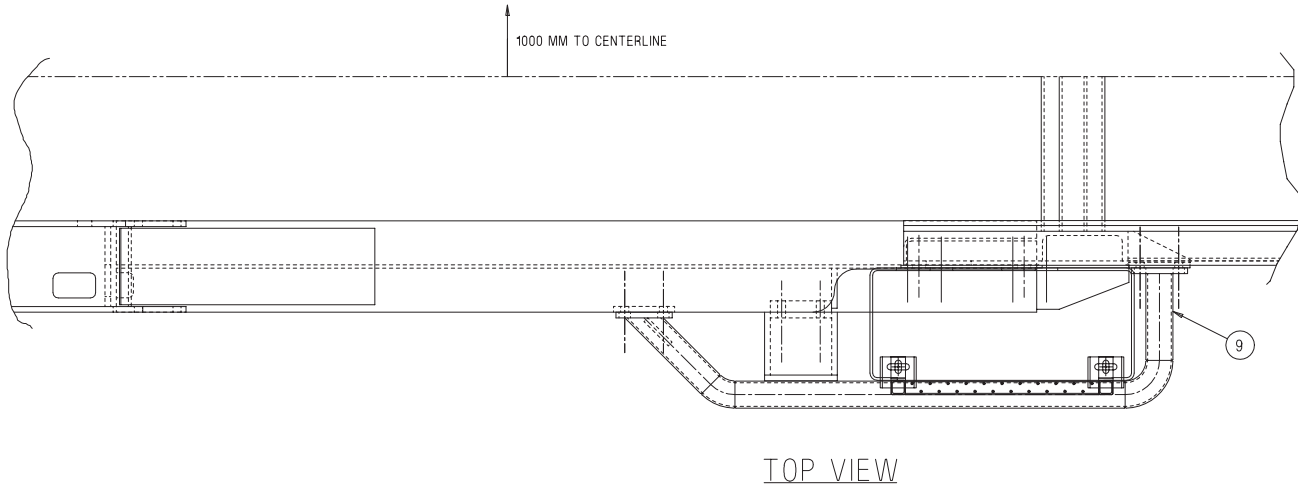
620-7081-001, -002, -004, -007
VIEWED FROM REAR OF LOADER

Figure 3
LADDER ASSEMBLY
620-7081



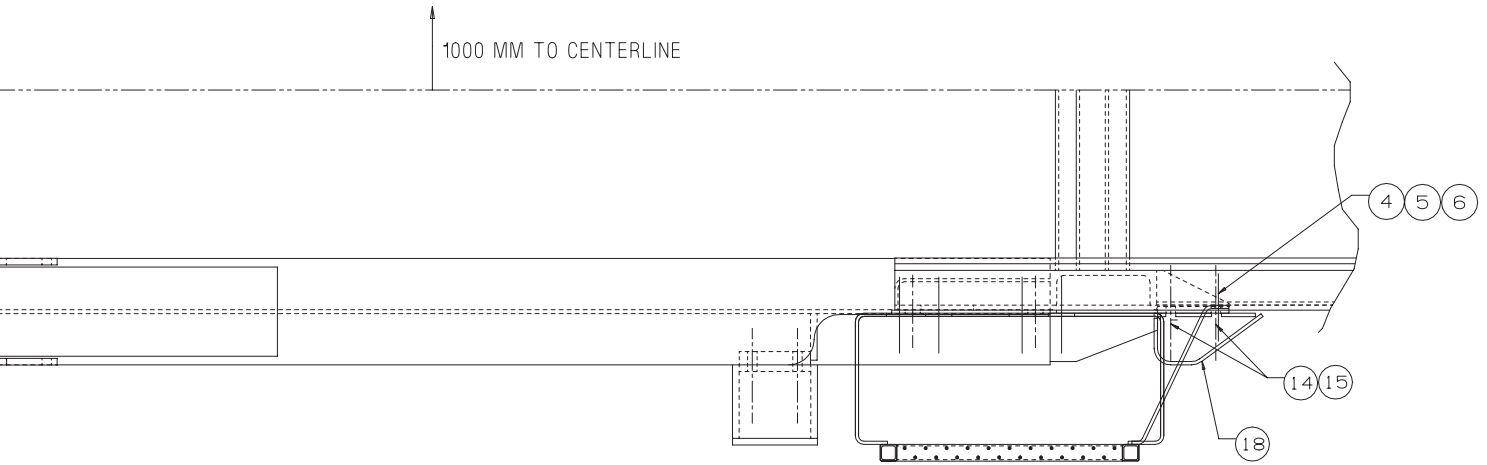
620-7081-001, -007

Figure 4
LADDER ASSEMBLY
620-7081



620-7081-001

Figure 5
LADDER ASSEMBLY
620-7081



TOP VIEW
-005

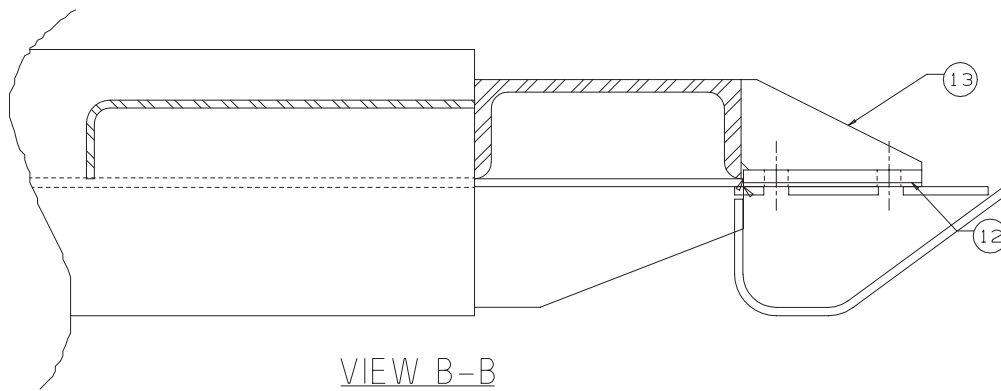


Figure 6
LADDER ASSEMBLY
620-7081

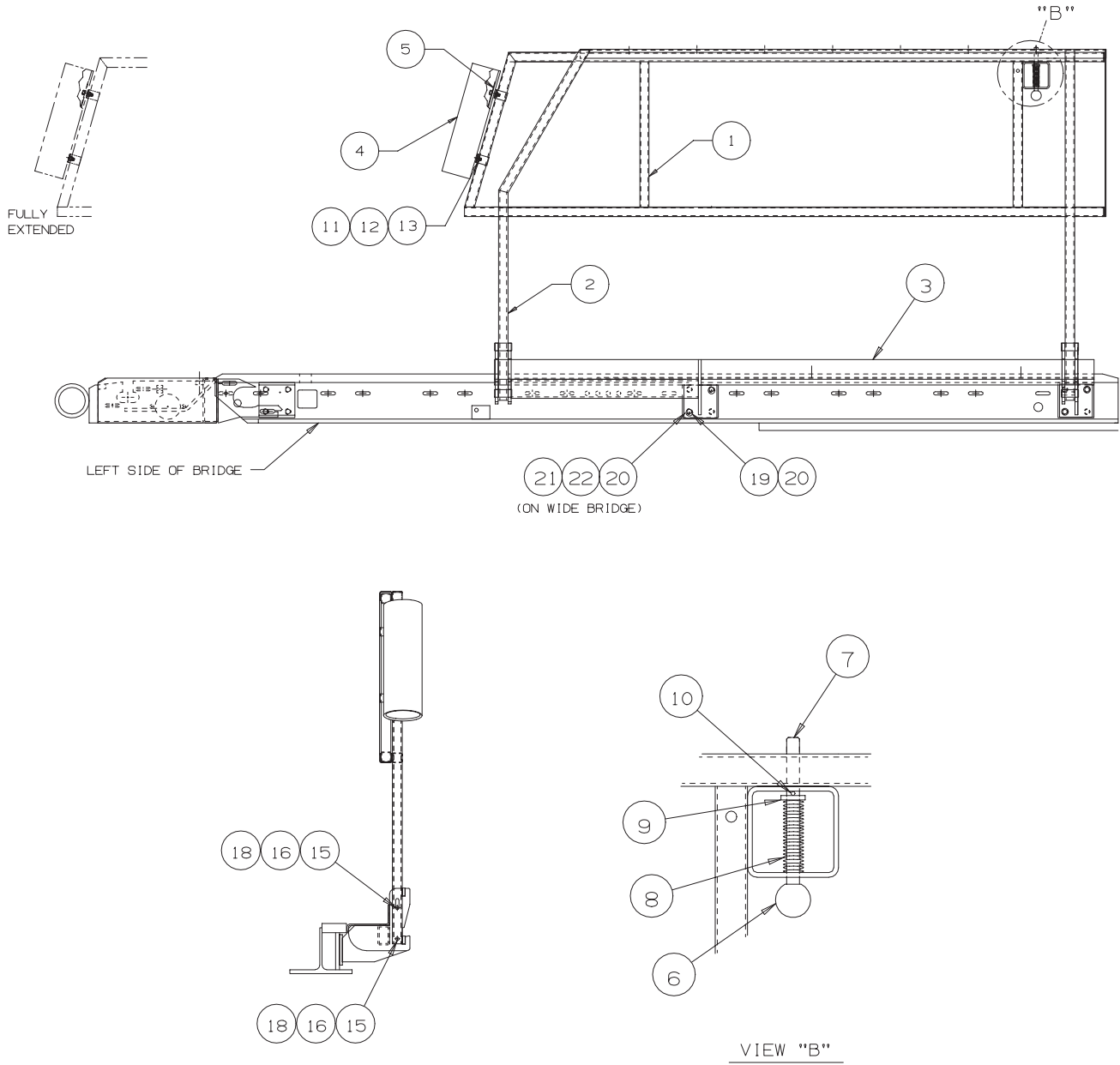
**LADDER ASSEMBLY
620-7081**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-7033		UPPER LADDER (INNER)		1
2	620-7031		LOWER LADDER (OUTER)		1
3	620-2119		SCREW, Soc. Button, M12 x 1.75 x 50mm		6
4	620-0643		SCREW, Hex Hd, M12 x 1.75 x 60mm		3
5	620-0658		NUT, PTH M12 x 1.75		9
6	620-0663		WASHER, Flat Narrow M12		14
7	620-7038		SHIM, Upper Ladder		2
8	622-2941		LOWER LADDER, 17" Low Rung		1
9	620-4266		LADDER SUPPORT WELD		1
10	620-4992		LADDER SUPPORT WELD, Wide		1
11	107-0736		SCREW, Hex Hd, M12 x 1.75 x 40mm		2
12	620-2032		PLATE, Extension Mounting		2
13	620-4299		GUSSET, Mounting Plate		2
14	620-0648		SCREW, Hex Hd, M16 x 2 x 60mm		8
15	620-0659		NUT, PTH M16 x 2		8
16	621-3016		LOWER LADDER WELD, French Reg.		1
17	622-4442		UPPER LADDER WELD, Inner		1
18	622-5850		FENDER WELD, RH Rear		1

Section 16. Handrail

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	HANDRAIL, LEFT SIDE, FOLDING & LOCKING	620-9304-002	FIGURE 1	2



REV. E

Figure 1
HANDRAIL, LEFT SIDE, FOLDING & LOCKING
620-9304-002

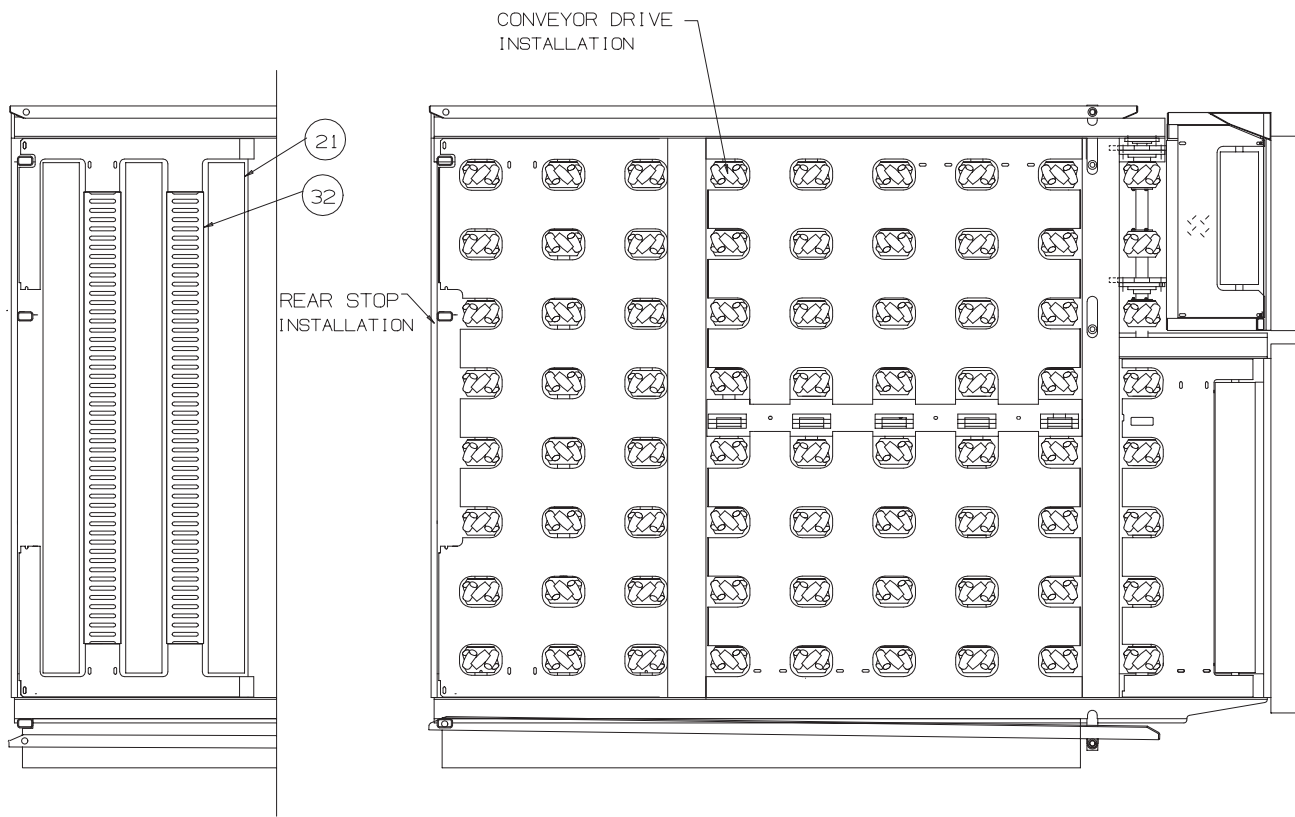
**HANDRAIL, LEFT SIDE, FOLDING & LOCKING
620-9304-002**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-3797		HANDRAIL WELD, Telescoping		1
2	620-9305		HANDRAIL WELD, Left Side Bridge		1
3	620-9316		HANDRAIL WELD, Base		1
4	620-1358		BUMPER, Handrail		1
5	620-1357		STRAP, Bumper		1
6	515-1889		KNOB, Plastic		1
7	620-9085		PIN, Handrail Lock		1
8	107-0247		SPRING		1
9	620-0663		WASHER, Flat Hard M12		1
10	620-0691		PIN, Roll M4 x 24		1
11	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		2
12	620-0661		WASHER, Flat Hard M8 Narrow		2
13	620-0656		NUT, M8 x 1.25		2
15	620-0657		NUT, M10 x 1.5		3
16	620-0662		WASHER, Flat Hard M10 Narrow		6
18	620-0637		SCREW, Hex Hd, 8.8 M10 x 1.5 x 70mm		3
19	620-0651		SCREW, Hex Hd, 8.8 M20 x 2.5 x 40mm		4
20	620-0665		WASHER, Flat Hard M20 Narrow		4
21	620-0660		NUT, PTH M20 x 2.5		REF
22	620-0653		SCREW, Hex Hd, 8.8 M20 x 2.5 x 60mm		REF

Section 17. Bridge Assembly

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	BRIDGE ASSEMBLY, CONTAINER	622-6791-002	FIGURE 1	2
2.	DRIVE SHAFT ASSEMBLY	622-3095	FIGURE 7	11
3.	BRIDGE, STANDARD, SIDE GUIDES ASSEMBLY	622-6872-001	FIGURE 8	13
4.	BRIDGE DECK PLATES ASSEMBLY, CONTAINER W/WING DECK	623-1667-001	FIGURE 9	15
5.	BUMPERS ASSEMBLY, BRIDGE	622-7100	FIGURE 10	17



CONTAINER BRIDGE: -002

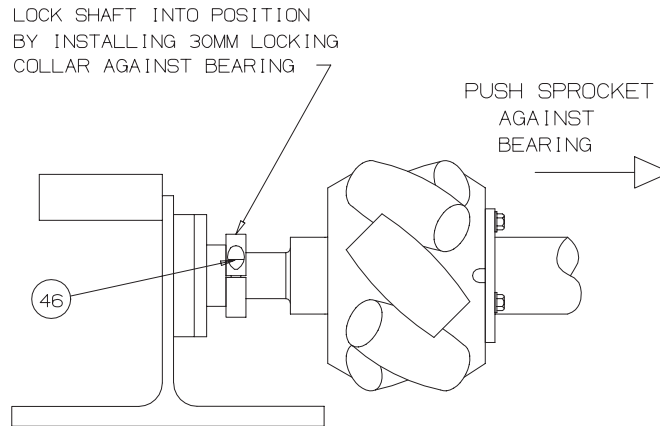
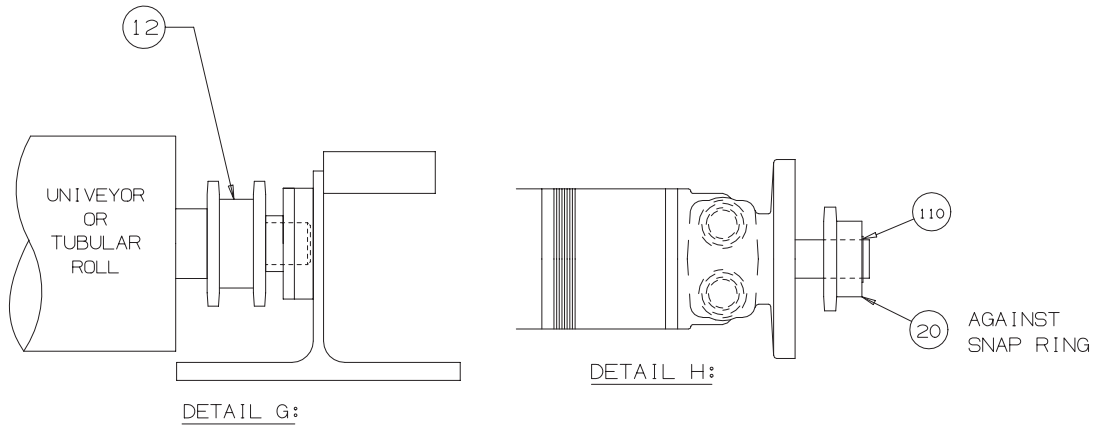
PALLET BRIDGE: -001

FOR PALLET AND CONTAINER BRIDGES SEE THE CUSTOMER SPECIFICATION FOR THE CORRECT OPTION LISTED BELOW.

- 1. BRIDGE WELDMENT
- 2. FOLDING WING WELDMENTS
- 3. SIDE GUIDES
- 4. BUMPER OPTION
- 5. DECK PLATE OPTION
- 6. FORWARD TRANSFER ROLLER OPTION

REV. B

Figure 1
BRIDGE ASSEMBLY, CONTAINER
622-6791-002



FOR ALL UNIVEYOR SHAFTS & ROLLERS.
DETAIL J:

Figure 3
BRIDGE ASSEMBLY, CONTAINER
622-6791-002

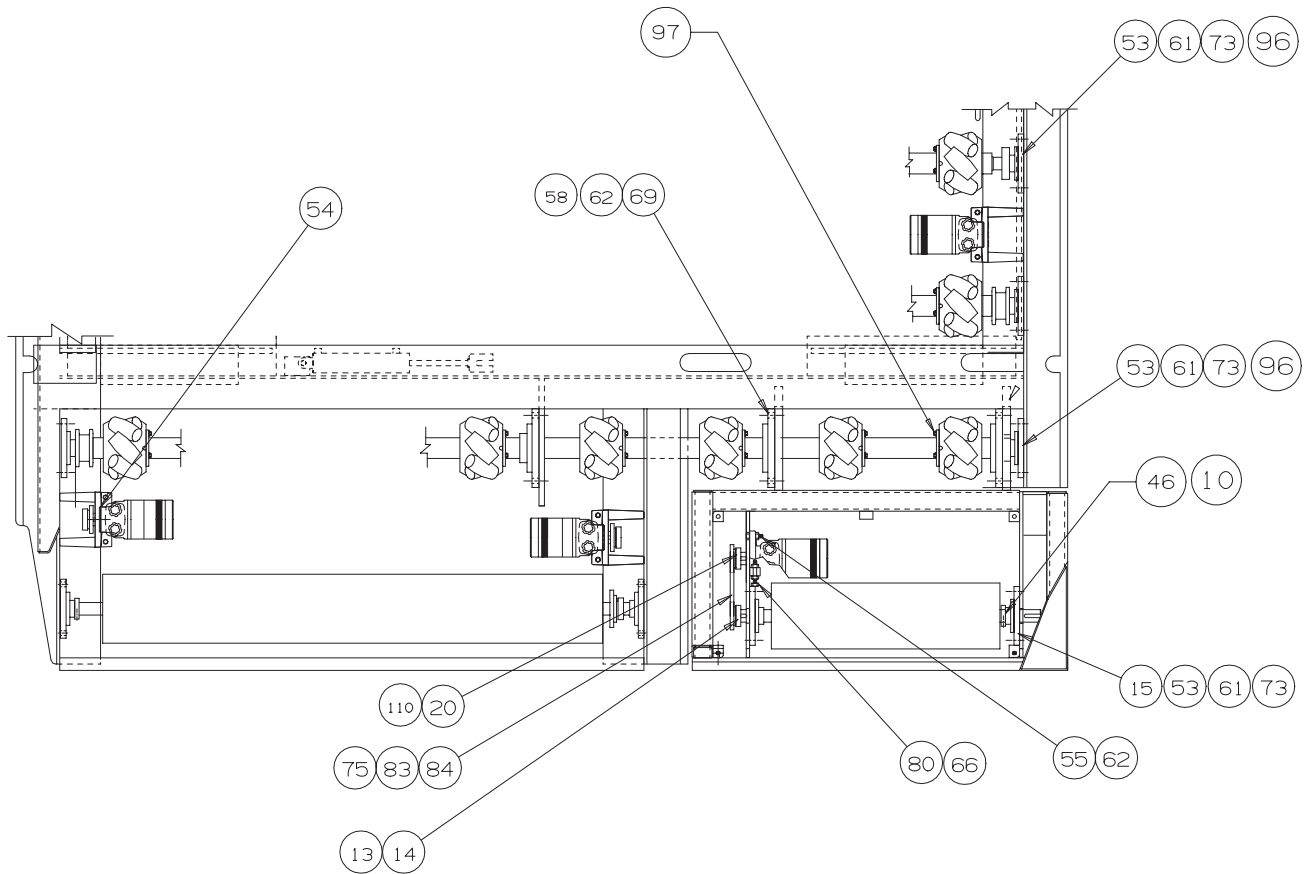
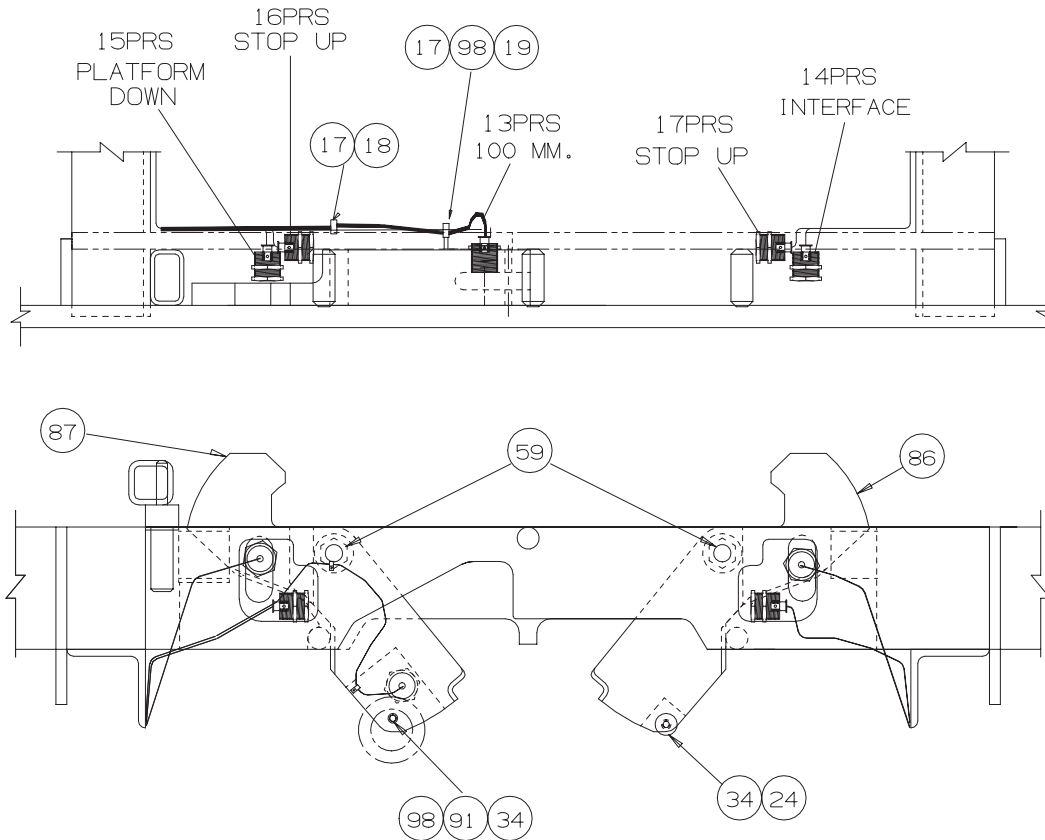


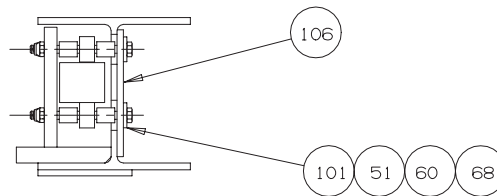
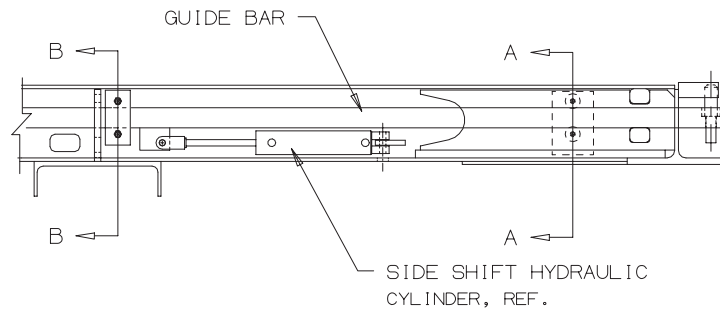
Figure 4
BRIDGE ASSEMBLY, CONTAINER
622-6791-002



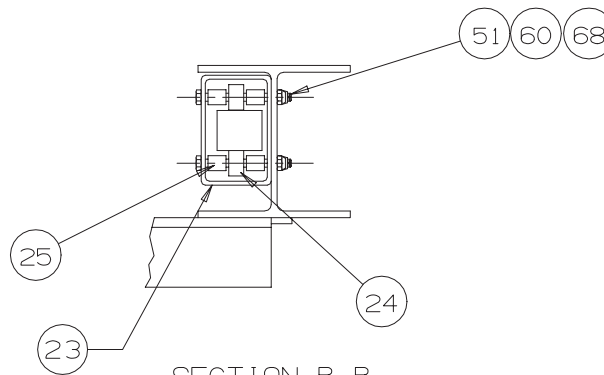
REAR STOP DETAIL

NOTE : APPLY 1502 NO LOK ANTI-SEIZ
(NEVER SEEZE) TO PIVOT SCREWS
AND RUBBING SURFACES ON STOPS
AND ROLLER BUSHINGS.

Figure 5
BRIDGE ASSEMBLY, CONTAINER
622-6791-002



SECTION A-A



SECTION B-B

GUIDE BAR
INSTALLATION.

SEE SIDE GUIDE OPTION
FOR CORRECT GUIDE BAR

Figure 6
BRIDGE ASSEMBLY, CONTAINER
622-6791-002

**BRIDGE ASSEMBLY, CONTAINER
622-6791-002**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
7	622-6515		BRACKET, Bridge Elec. Enclosure Mount		1
10	622-6972		COLLAR, Shaft, 30mm		7
11	622-2447		PLATE, Wire Support		1
12	620-3062		SPROCKET, 30mm 16T, Double Single (V05506 #DS50A16H)		1
13	620-0455-004		KEY, 8 x 7 x 32"		1
14	620-3061		SPROCKET, 30mm 16T, Single (V05506 #50BS16H)		5
15	620-0085		BEARING, 30mm (V23803 #FX06A27)		22
17	239-9076-003		CLAMP, Loop		2
18	107-0047		SCREW, Self Tapping #10-24 x 1/2"		1
19	107-1553		SCREW, Self Tapping #10-24 x 1"		1
20	620-1591		SPROCKET, 12T 1 In. Bore (V05506 #50BS12H)		5
21	620-9171-001		CONVEY ROLLER, 6", 2304 mm		3
23	620-0382		SUPPORT, Side Guide		1
24	620-3005		ROLLER ASSEMBLY Consisting of:		7
-	620-2895		ROLLER, Stop		1
-	620-2896		BUSHING		1
25	620-0383		SPACER		12
28	107-0764		SCREW, Pan Hd, 32 x 1/2" CP		1
29	118-5252		NUT, ESNA 10-32		1
32	620-0471		STRUT		2
33	620-0455-003		KEY, 8 x 7 x 45"		6
34	103-0810		PIN, Roll .31" x 2"		2
46	111-2403		SCREW, Socket Hd, 1/4-28 x 3/4"		7
48	622-1562-002		CABLE, Steel Pull		1
49	107-0369		SCREW, Hex Hd, 8.8 M6 x 1 x 25mm		1
50	620-0948		NUT, ESNA M6 x 1		1
51	620-0777		SCREW, Hex Hd, 8.8 M8 x 1.25 x 90mm		2
52	107-0999		SCREW, Hex Hd, 8.8 M8 x 1.25 x 80mm		4
53	620-0634		SCREW, Hex Hd, 8.8 M10 x 1.5 x 40mm		41
54	620-0640		SCREW, Hex Hd, 8.8 M12 x 1.75 x 30mm		8
55	620-0641		SCREW, Hex Hd, 8.8 M12 x 1.75 x 40mm		9
56	620-0642		SCREW, Hex Hd, 8.8 M12 x 1.75 x 50mm		12

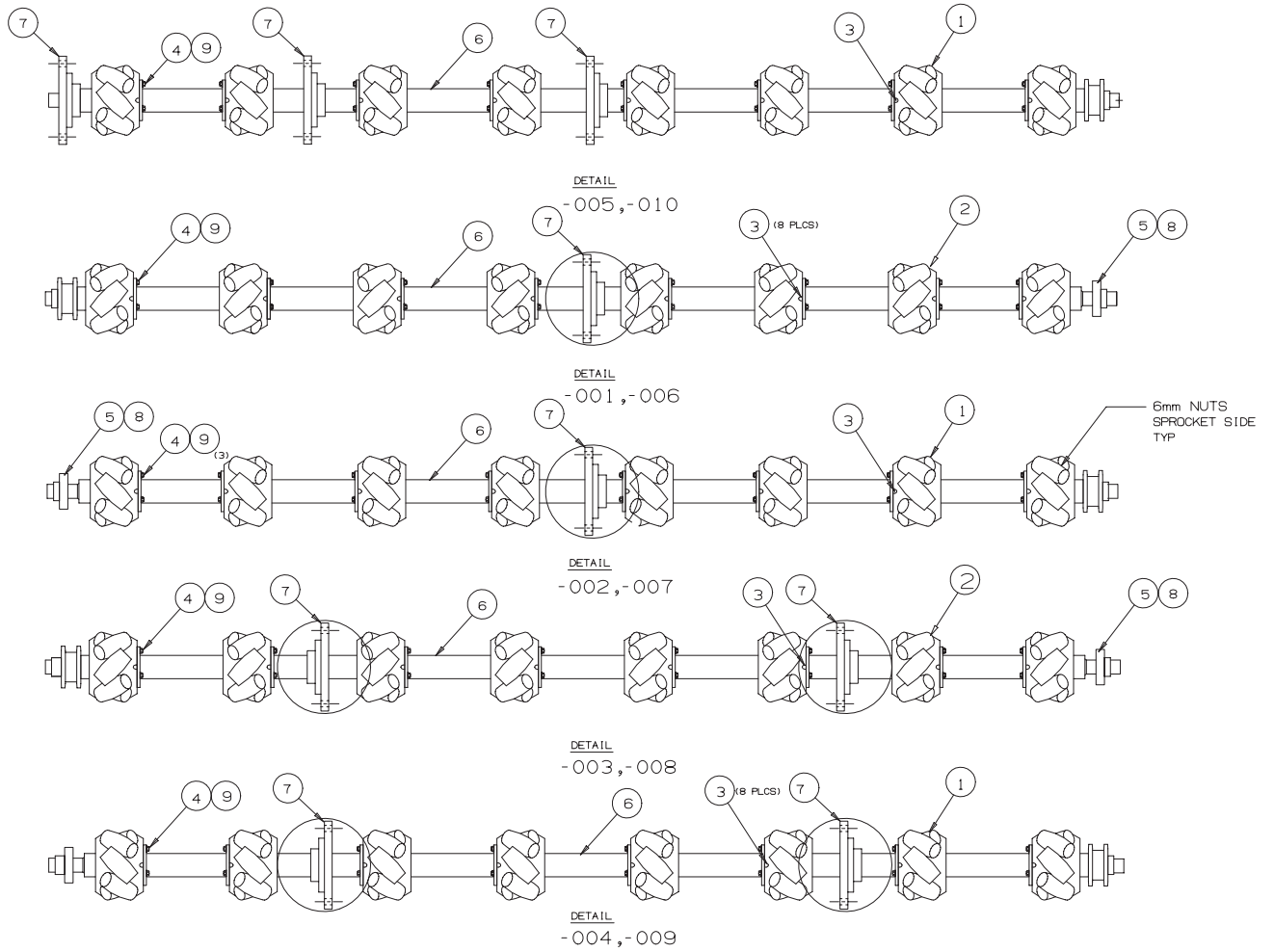
**BRIDGE ASSEMBLY, CONTAINER
622-6791-002**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
57	107-1050		SCREW, Hex Hd, 8.8 M10 x 1.5 x 35mm		2
58	620-0643		SCREW, Hex Hd, 8.8 M12 x 1.75x 60mm		4
59	620-0655		SCREW, Hex Hd, 8.8 M20 x 2.5 x 100mm		2
60	620-0656		NUT, ESNA, M8		9
61	620-0657		NUT, ESNA, M10		46
62	620-0658		NUT, ESNA, M12		32
63	620-1363		NUT, Lock M20		4
65	620-6072		RING, Split (Plated)		1
66	620-1367		NUT, Jam, M8 x 1.25		24
67	110-0360		PIN, Cotter .19 x 1 Cad. Pl.		1
68	620-0661		WASHER, Flat Hard, M8 Narrow		14
69	620-0663		WASHER, Flat Hard, M10 Narrow		32
70	620-0665		WASHER, Flat Hard, M20 Narrow		2
72	622-1044-002		HYDRAULICS, Container Side Shift (Ref. Sect. 4-21)		1
73	107-1352		WASHER, Flat Hard, M10 Regular		46
75	104-0311-0524		CHAIN, #50 Roller x 0524 mm Lg		0
76	104-0311-0905		CHAIN, #50 Roller x 0905 mm Lg		0
77	104-0311-1572		CHAIN, #50 Roller x 1572 mm Lg		0
78	104-0311-1603		CHAIN, #50 Roller x 1603 mm Lg		0
80	622-4820		TAB, Chain Adjust		12
83	104-0312		LINK, Offset or Half #50		0
84	104-0313		LINK, Connecting, Single		0
85	620-0629		SCREW, Hex Hd, 8.8 M8 x 1.25 x 60mm		1
86	620-6239		GRAVITY STOP, Right, Notched		1
87	622-2152		GRAVITY STOP, Left, Notched		1
88	622-3095-001		L.H. FWD SHAFT ASSEMBLY (Ref. Figure 7, Page 11)		3
89	622-3095-002		R.H. FWD SHAFT ASSEMBLY (Ref. Figure 7, Page 11)		2
91	620-6350		ROLLER FLAG, Stainless Steel		1
92	622-6548-020		CHAIN KIT, #50		1
96	620-0635		SCREW, Hex Hd, 8.8 M10 x 1.5 x 50mm		3
97	620-8930		SCREW, Hex Hd, Self Tapping 1/4		24
98	620-3303-098		TUBE, Stainless 12.7 x 1.65 x 16" Lg		2
100	620-0662		WASHER, Flat M10		4
101	110-0242		WASHER, Lock 5/16 Cad. Pl.		4

**BRIDGE ASSEMBLY, CONTAINER
622-6791-002****Figure 1 thru Figure 6**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
106	620-3421		PLATE, Side Guide Support		2
110	104-0977		RETAINING RING, External		5
113	622-3095-005		R.H. FWD SHAFT ASSEMBLY (Ref. Figure 7, Page 11)		1
-	Not Shown				



- 622-3095-001 L.H. FWD HELIROLL SHAFT ASSY.
- 622-3095-002 R.H. FWD HELIROLL SHAFT ASSY.
- 622-3095-003 L.H. AFT HELIROLL SHAFT ASSY.
- 622-3095-004 R.H. AFT HELIROLL SHAFT ASSY.
- 622-3095-005 R.H. FWD HELIROLL SHAFT ASSY. FRONT
- 622-3095-006 LH FWD HELIROL SHAFT W/DBL BUS
- 622-3095-007 RH FWD HELIROL SHAFT W/DBL BUS
- 622-3095-008 LH AFT HELIROL SHAFT W/DBL BUS
- 622-3095-009 RH AFT HELIROL SHAFT W/DBL BUS
- 622-3095-010 RH FRT HELIROL SHAFT W/DBL BUS

REV. C

Figure 7
DRIVE SHAFT ASSEMBLY
622-3095

**DRIVE SHAFT ASSEMBLY
622-3095****Figure 7**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-8859-002		CLUSTER ASSEMBLY, R.H. (Ref. Sect. 4-19, Figure 2, Page 4)		8
1	620-8859-004		CLUSTER ASSY, R.H. W/Double Bushing (Ref. Sect. 4-19, Figure 2, Page 4)		8
2	620-8859-001		CLUSTER ASSEMBLY, L.H. (Ref. Sect. 4-19, Figure 2, Page 4)		8
2	620-8859-003		CLUSTER ASSY, L.H. W/Double Bushing (Ref. Sect. 4-19, Figure 2, Page 4)		8
3	620-0074		PIN, Drive 9mm		8
4	620-7748		CLAMP RING		8
5	622-6972		COLLAR, 30mm		1
6	622-2875		DRIVE SHAFT & SPROCKET WELD,		1
7	620-0359		BEARING, 50mm (V21335 #SCJT-50)		1
8	107-2403		SCREW, Socket Hd, 1/4-28 x 3/4" CP		1
9	620-8930		SCREW, Hex Self Tapping		24
10	620-2768		EXTEND RUST TREATMENT		1 Gal

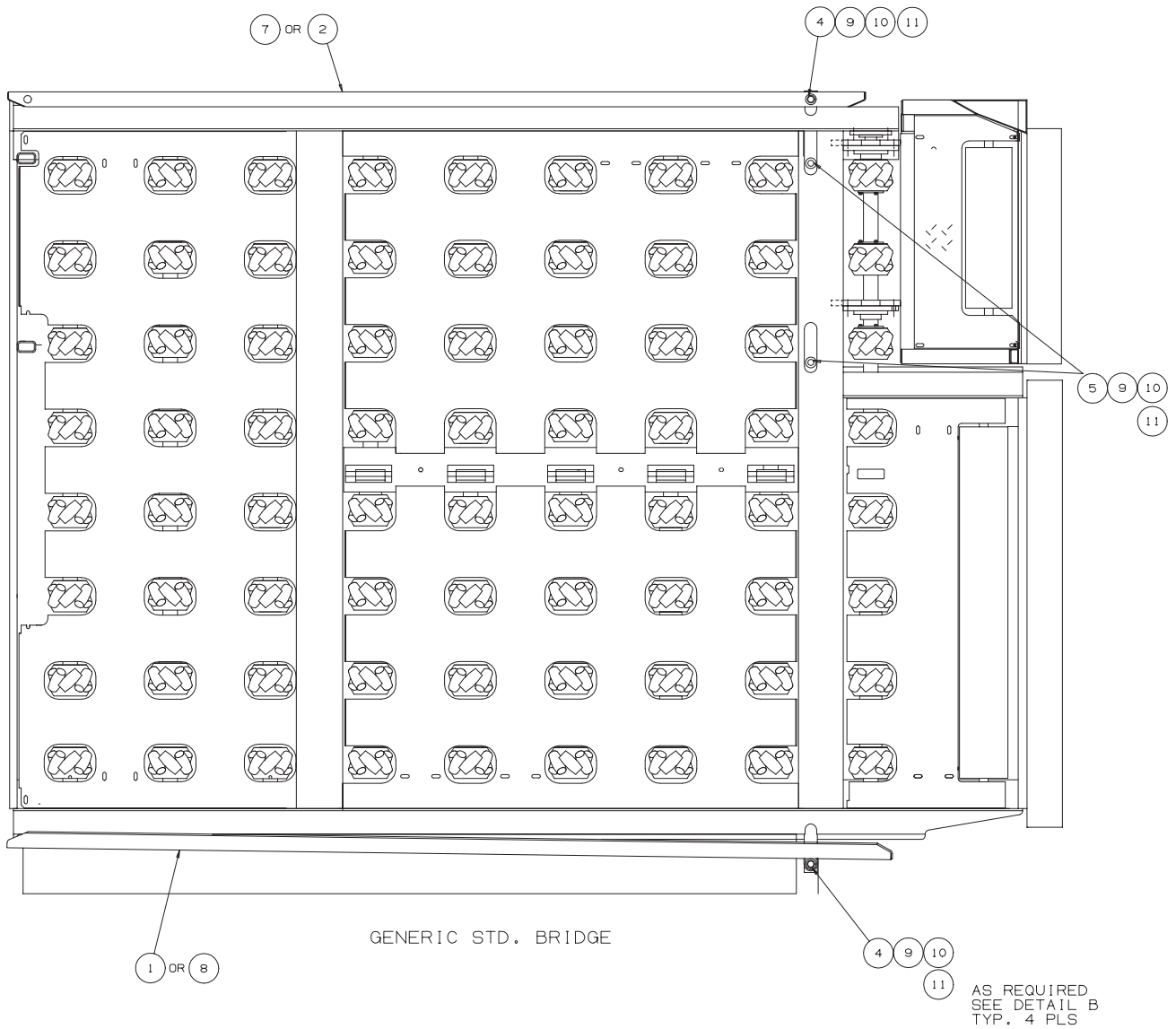


Figure 8
BRIDGE, STANDARD, SIDE GUIDES ASSEMBLY
622-6872-001

**BRIDGE, STANDARD, SIDE GUIDES ASSEMBLY
622-6872-001****Figure 8**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	620-7201		GUIDE WELDMENT, R.H., Bridge		1
2	622-7330		SIDE GUIDE WELDMENT, L.H., Bridge		1
3	620-3394		GUIDES BAR WELDMENT, Bridge		1
4	620-0582		PIN, Bridge Guide, Long		2
5	622-7838		PIN, Bridge Guide, Left Side		2
9	620-0665		WASHER, Flat Hard M20 Narrow		4
10	620-1363		NUT, Lock M20		4
11	622-7839		SHIM, Guide Pin		8

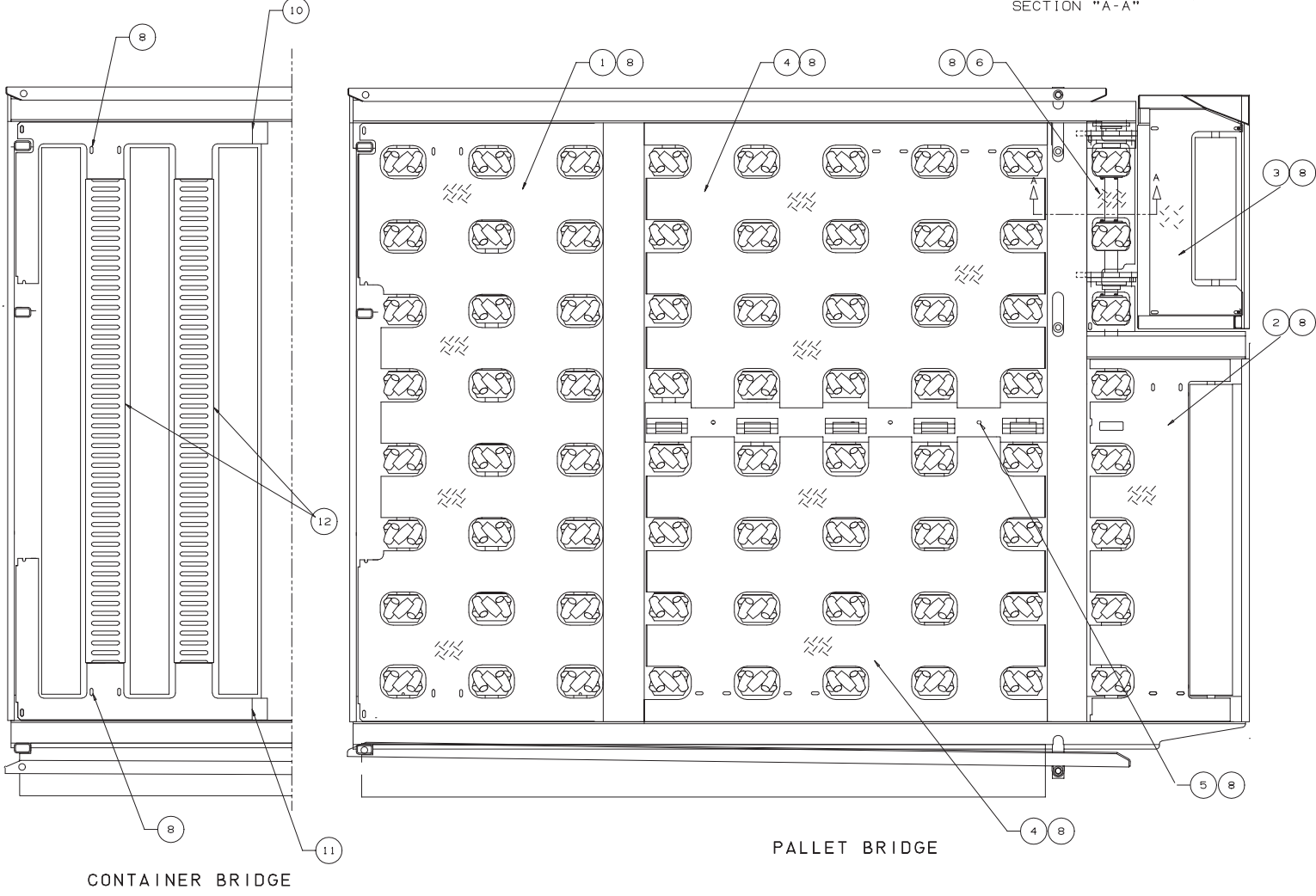
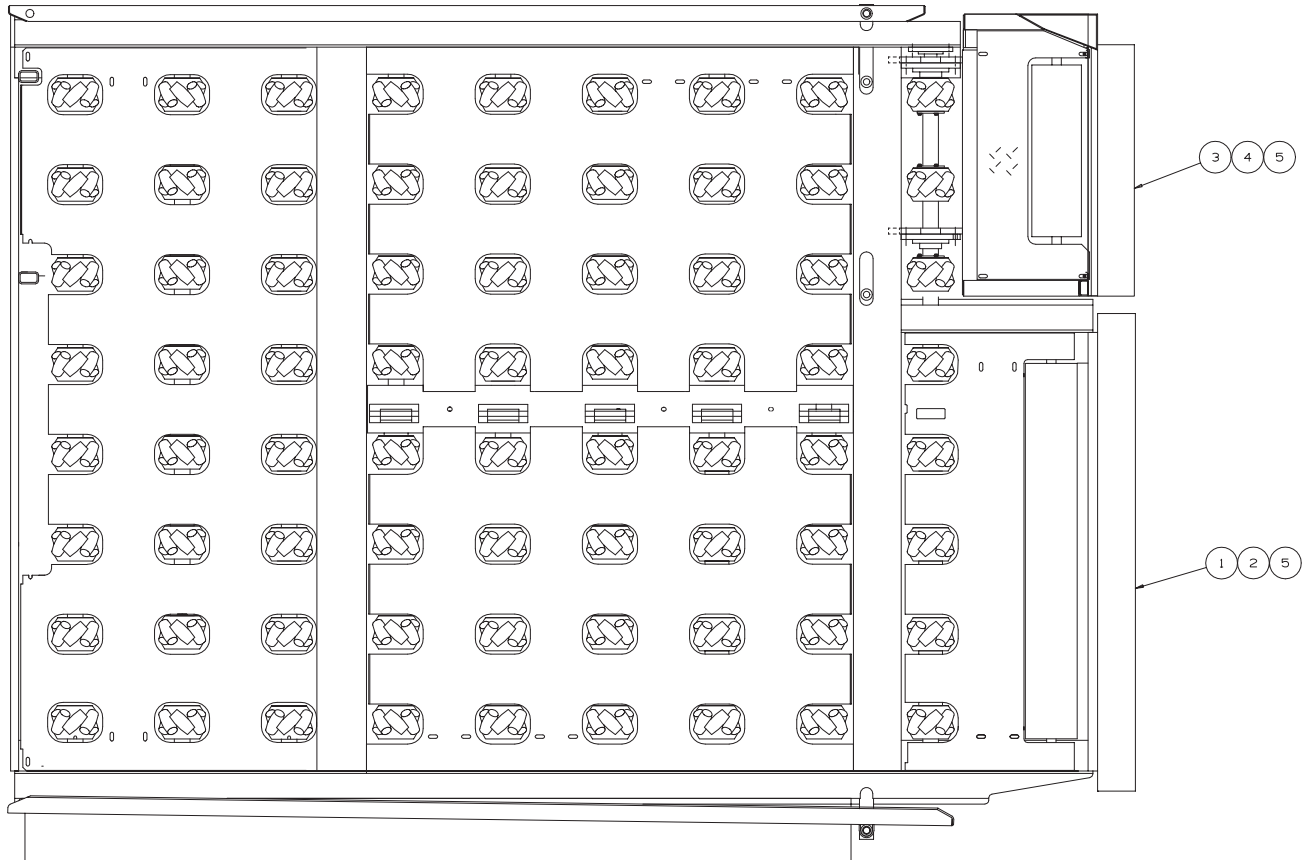


Figure 9
BRIDGE DECKPLATES ASSEMBLY, CONTAINER W/WING DECK
623-1667-001

**BRIDGE DECKPLATES ASSEMBLY, CONTAINER W/WING DECK
623-1667-001****Figure 9**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
2	620-6902		DECKPLATES WELDMENT, Bridge FWD		1
3	620-6830		DECK COVER, Folding Wing		1
4	620-4308		DECK PLATE WELDMENT, Middle		1
5	620-4305		COVER WELDMENT, Cross Brace		1
6	620-7340		C/C DECK PLATE, Front Bridge		1
7	620-7298		BRACE, Deck Plate		2
8	622-2196		BOLT, Special Low Hd, Deck Plate		31
9	623-1667-023		DECK PLATES KIT, Container W/Wing Deck Plate		1
10	620-6756		BRIDGE LH. REAR DECK WELD., STR. RLR.		1
11	620-6757		BRIDGE RH. REAR DECK WELD., STR. ROLR.		1
12	620-0471		STRUT		1



GENERIC STD. BRIDGE

Figure 10
BUMPERS ASSEMBLY, BRIDGE
622-7100

**BUMPERS ASSEMBLY, BRIDGE
622-7100****Figure 10**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	620-1729		BUMPER		1
2	620-0354		STRIP, Bumper Mounting		1
3	620-4161		BUMPER		1
4	620-4202		STRIP, Bumper Mounting		1
5	620-0641		SCREW, Hex Hd, M12 x 40mm		8

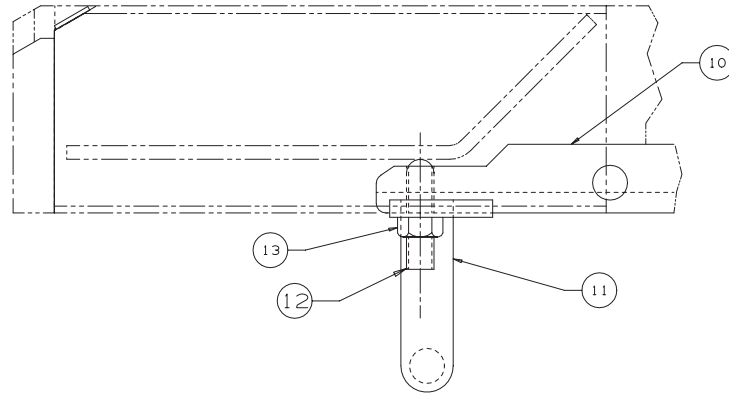
Section 18. Bridge Wing

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	BRIDGE MANUAL WING ASSEMBLY	620-8868	FIGURE 1	2

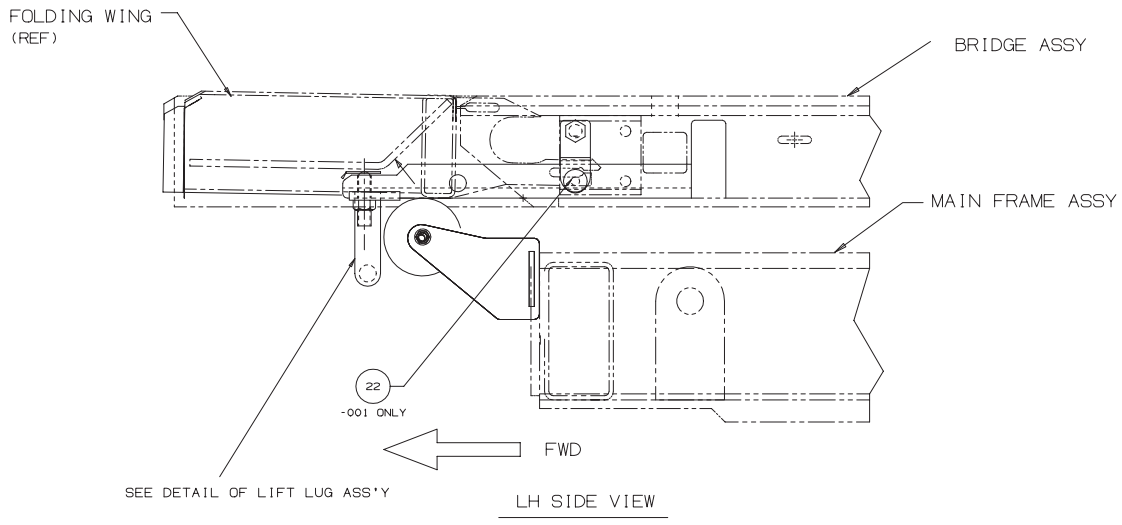
PRODUCT TECH SPECIFICATION

WHERE TO USE: ALL UNITS REQUIRING NON-POWERED WING.

PHYSICAL FUNCTION: TO MANUALLY RAISE AND LOWER FOLDING WING.



DETAIL OF LIFT LUG ASS'Y



620-8868 CMDR STD
620-8868-001 CMDR HL

REV. H

Figure 1
BRIDGE MANUAL WING ASSEMBLY
620-8868

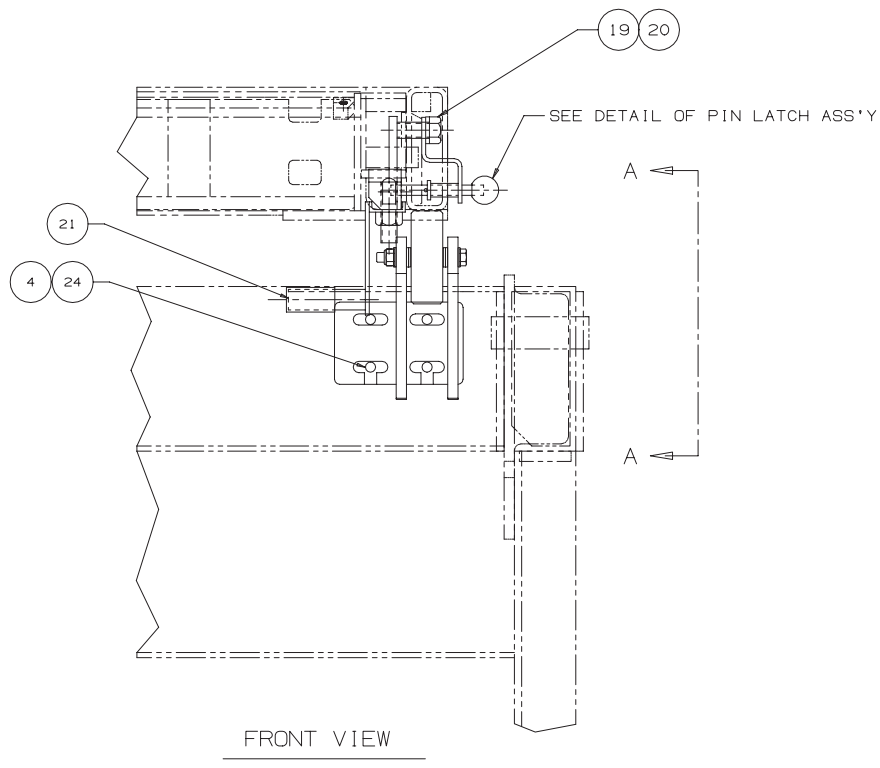
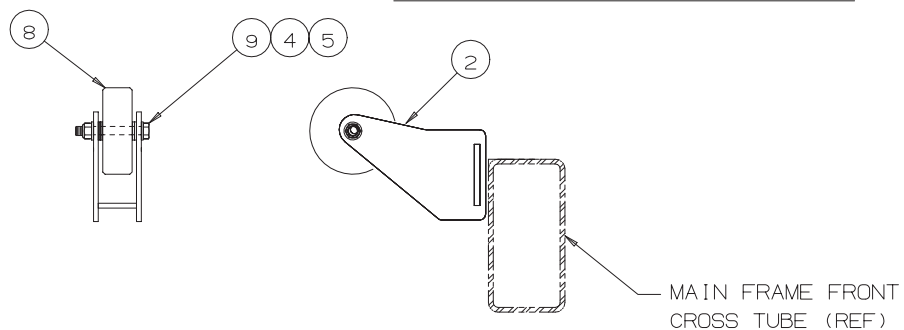
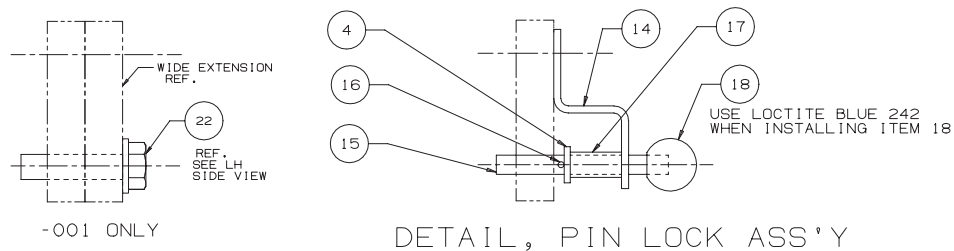


Figure 2
BRIDGE MANUAL WING ASSEMBLY
620-8868

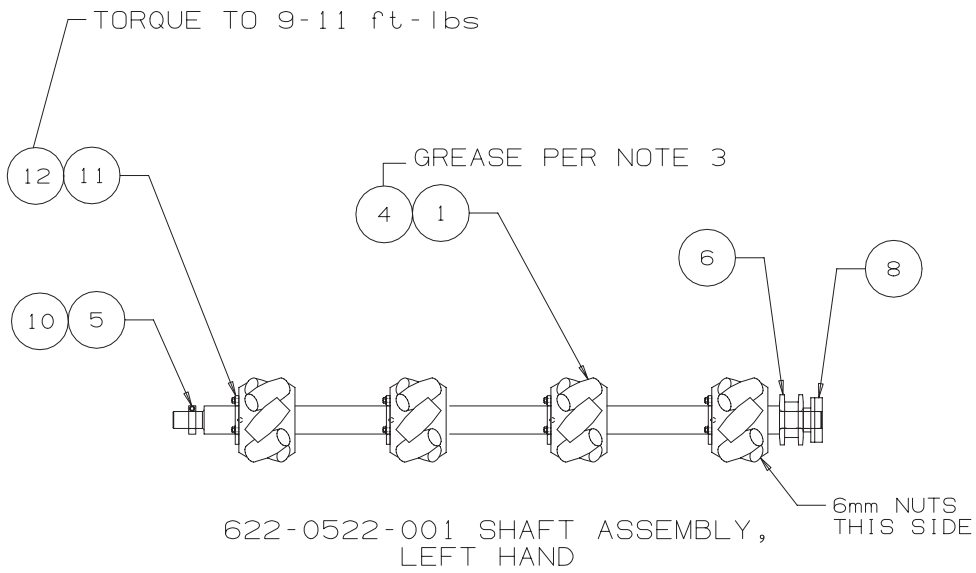
**BRIDGE MANUAL WING ASSEMBLY
620-8868**

Figure 1, Figure 2

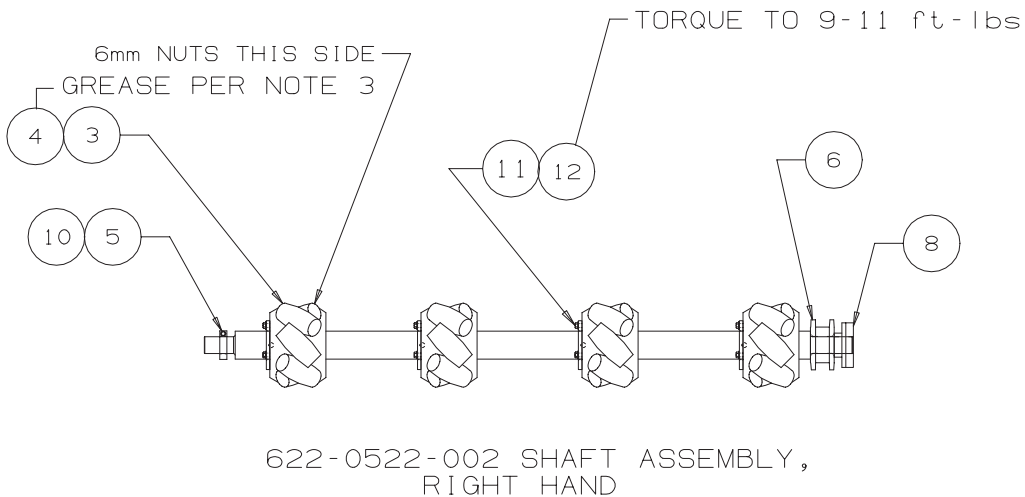
ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
2	622-9789		WHEEL MOUNT WELD, Folding Wing		1
4	620-0663		WASHER, Flat Hard M12 Narrow		13
5	620-0658		NUT, PTH M12 x 1.75mm		1
8	620-2526		ROLLER		1
9	620-7395		SCREW, Hex Hd, 8.8 M12 x 1.75 x 90mm		1
10	620-8729		LIFT LUG WELDMENT		1
11	620-8728		WING HANDLE WELDMENT		1
12	620-8748		SCREW, Set, Flat Point Slotted		1
13	107-1102		NUT, Hex Style, M20 x 2.5 CP		1
14	620-8856		BRACKET, Lock Pin		1
15	620-8824		PIN, Latch Lock		1
16	620-0691		ROLLPIN, M4 x 24		1
17	620-8855		SPRING, Compression		1
18	515-1889		KNOB, Plastic		1
19	620-0651		SCREW, Hex Hd, 8.8 M20 x 2.5 x 40mm		1
20	117-7261		WASHER, Spring Lock		1
21	620-8822		PROTECTIVE GRIP		1
22	620-1362		SCREW, Hex Hd, M20 x 2.5 x 90mm		1
23	622-0883		LABEL, Wing Latch, High Long		REF
24	620-0640		SCREW, Hex Hd, 8.8 M12 x 1.75 x 30mm		4
25	620-2566		LABEL, Wing Latch, Standard		REF

Section 19. Platform Shaft

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	PLATFORM SHAFT ASSEMBLY	622-0522	FIGURE 1	2
2.	HELIROLL CLUSTER ASSEMBLY	620-8859	FIGURE 2	4



622-0522-003 SHAFT ASSEMBLY, L.H. W/DBL BUSHINGS



622-0522-004 SHAFT ASSEMBLY, R.H. W/DBL BUSHINGS

3) THE 6mm NUTS ON THE ROLLER PINS MUST BE ON THE SPROCKET SIDE. APPLY ANTI SIZE 220-401 OR EQUIVALENT TO ITEM 4 PINS AS REQUIRED.

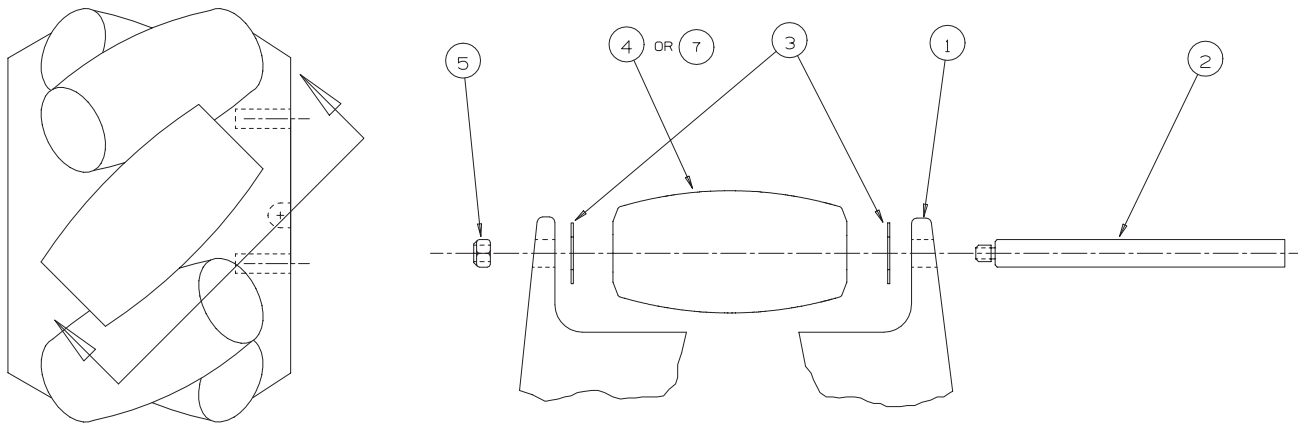
REV. C

Figure 1
 PLATFORM SHAFT ASSEMBLY
 622-0522

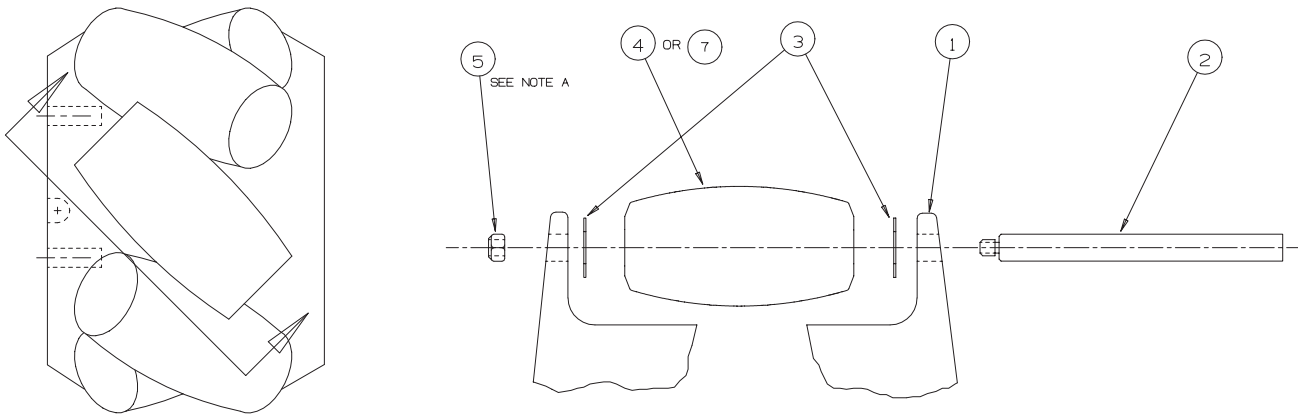
**PLATFORM SHAFT ASSEMBLY
622-0522**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-8859-001		CLUSTER ASSEMBLY, L.H. (Ref. Figure 2, Page 4)		4
1	620-8859-003		CLUSTER ASSY, L.H. W/Double Bushing (Ref. Figure 2, Page 4)		4
3	620-8859-002		CLUSTER ASSEMBLY, R.H. (Ref. Figure 2, Page 4)		4
3	620-8859-004		CLUSTER ASSY, R.H. W/Double Bushing (Ref. Figure 2, Page 4)		4
4	620-0074		PIN, Drive 9mm		4
5	622-6972		COLLAR, 30mm		1
6	622-0521		DRIVE SHAFT & SPROCKET, 16T		1
8	620-0085		BEARING, 30mm Self Aligning (V23803 #FX06A27)		1
10	107-2403		SCREW, Soc Hd Cap, 1/4-28 x 3/4" CP		1
11	620-7748		CLAMP RING		4
12	620-8930		SCREW, Hex Hd, Self Tapping		12



620-8859-001 L.H. ASSEMBLY SHOWN
 620-8859-003 L.H. 4 BUSHINGS



620-8859-002 R.H. ASSEMBLY SHOWN
 620-8859-004 R.H. 4 BUSHINGS

NOTES :

- A) TORQUE NUT TO 8-10 FT. LBS. (100-120 IN. LBS.)
- B) APPLY LOCKTITE #290 TO NUTS. (6 PLACES)

REV. C

Figure 2
 HeliRoll CLUSTER ASSEMBLY
 620-8859

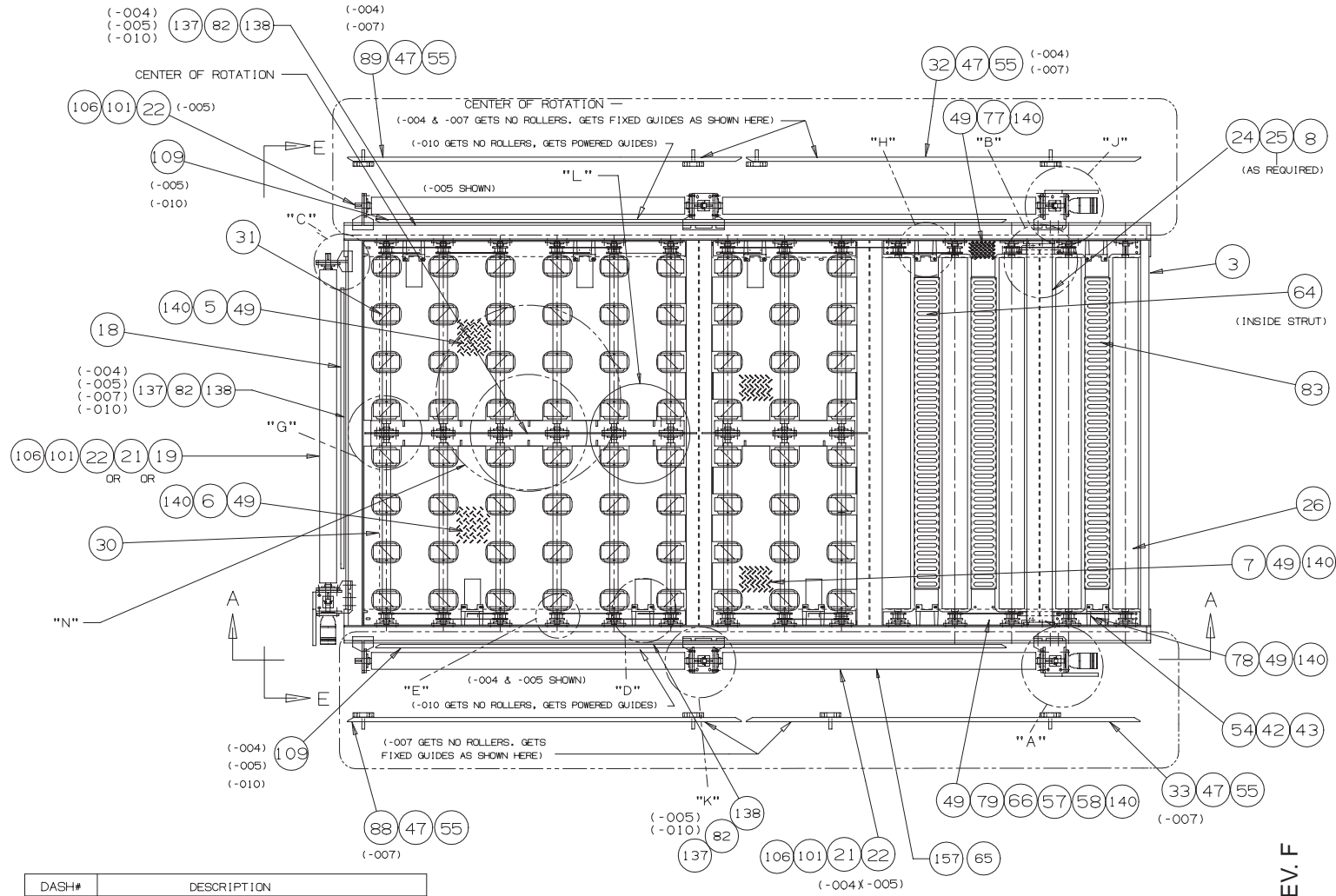
**HELIROLL CLUSTER ASSEMBLY
620-8859**

Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-8100-001		CASTING, Hub L.H.		1
1	620-8100-002		CASTING, Hub R.H.		1
2	620-1093		PIN		6
3	622-2821		WASHER, Thrust		12
4	620-6187		ROLLER ASSEMBLY		6
			Consisting of:		
-	620-6189		ROLLER, Garlock Bushed		1
-	620-4729		DU BUSHING, Garlock		1
5	620-4742		NUT, Lock M6 All Metal		6
6	MR05-00162		LOCTITE #290		1 OZ
7	620-6187-001		ROLLER ASSEMBLY, 4 Bushings		6
			Consisting of:		
-	620-6189		ROLLER, Garlock Bushed		1
-	620-4729		DU BUSHING, Garlock		4
-	Not Shown				

Section 20. Platform

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	PLATFORM, RIGHT & LEFT SIDE PALLET	622-6240-005	FIGURE 1	2

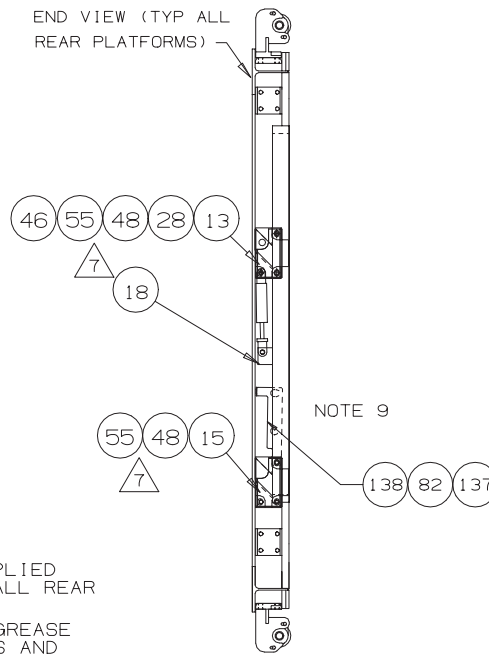
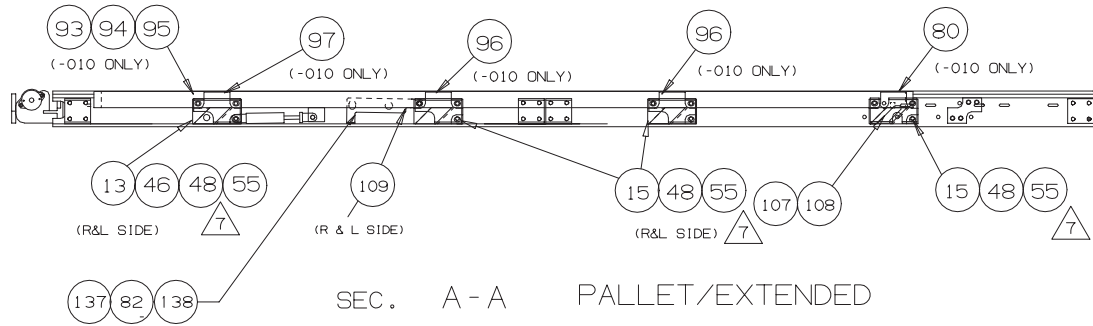


DASH#	DESCRIPTION
-004	RIGHT SIDE PALLET LOAD
-005	RIGHT & LEFT SIDE PALLET LOAD
-007	END LOAD W/PALLET SIDE SHIFT
-010	END LOAD W/POWERED SD GUIDES

REV. F

Figure 1
 PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
 622-6240-005

NOTE 9



SEC. E-E

- 5) ALL GREASE FITTINGS (IF SUPPLIED ON BEARINGS) GO DOWN. TYP. ALL REAR PLATFORMS.
- 6) USE 1502 NO LOK ANTI-SEIZE GREASE ON MOVEABLE STOPS @ CASTINGS AND DECK SCREWS.
- 7) ITEM 55 AT THESE LOCATIONS MUST BE INSTALLED IN LOWER BOLT HOLE.
- 8) TORQUE SET SCREWS TO 50-55 IN.-LB. ON ITEMS 36 & 37
- 9) SECURE ITEM 138 IN POSITION USING ITEM 15 MOUNTING BOLTS AND ITEMS 82 AND 137.

Figure 2
 PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
 622-6240-005

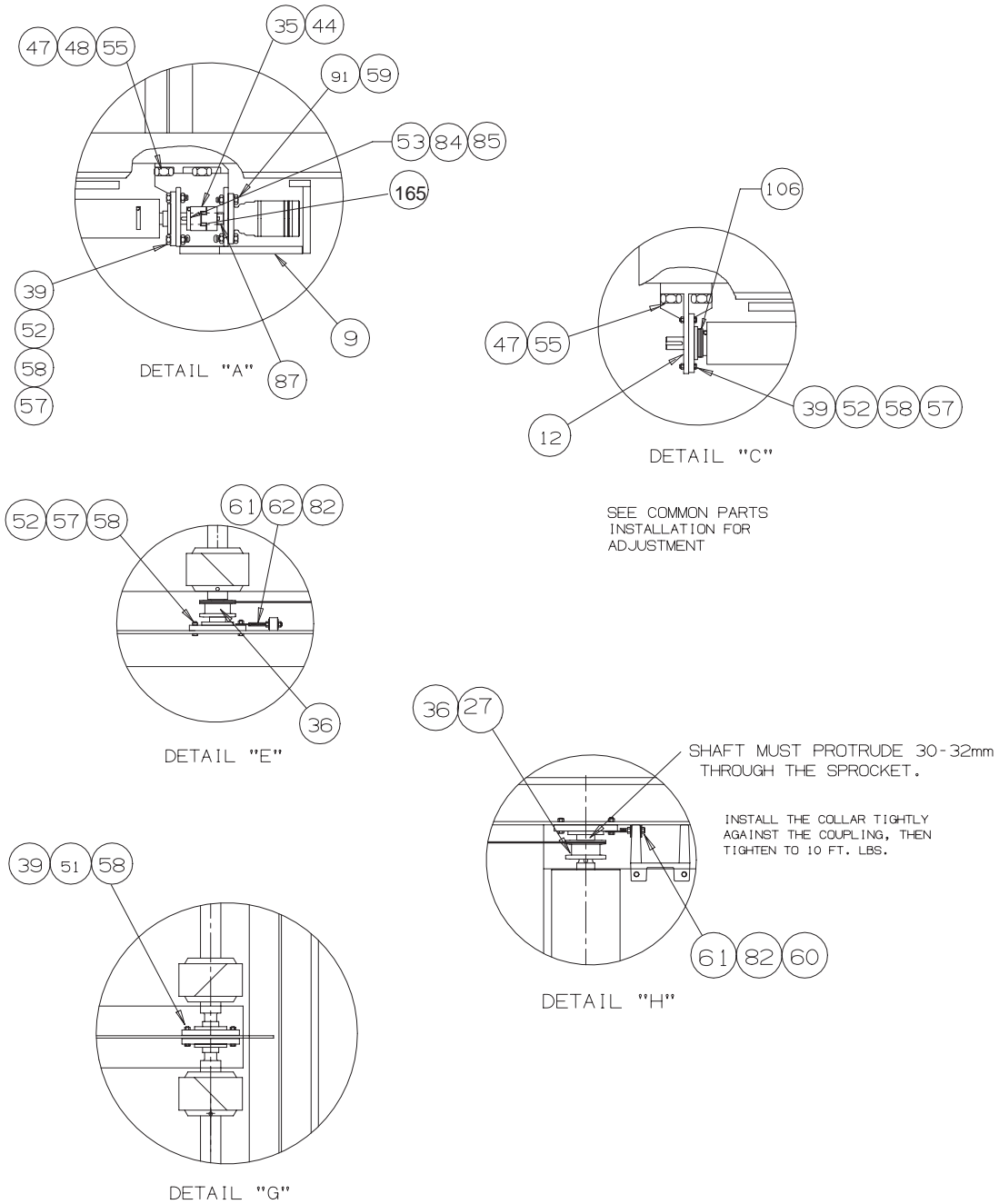


Figure 3
 PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
 622-6240-005

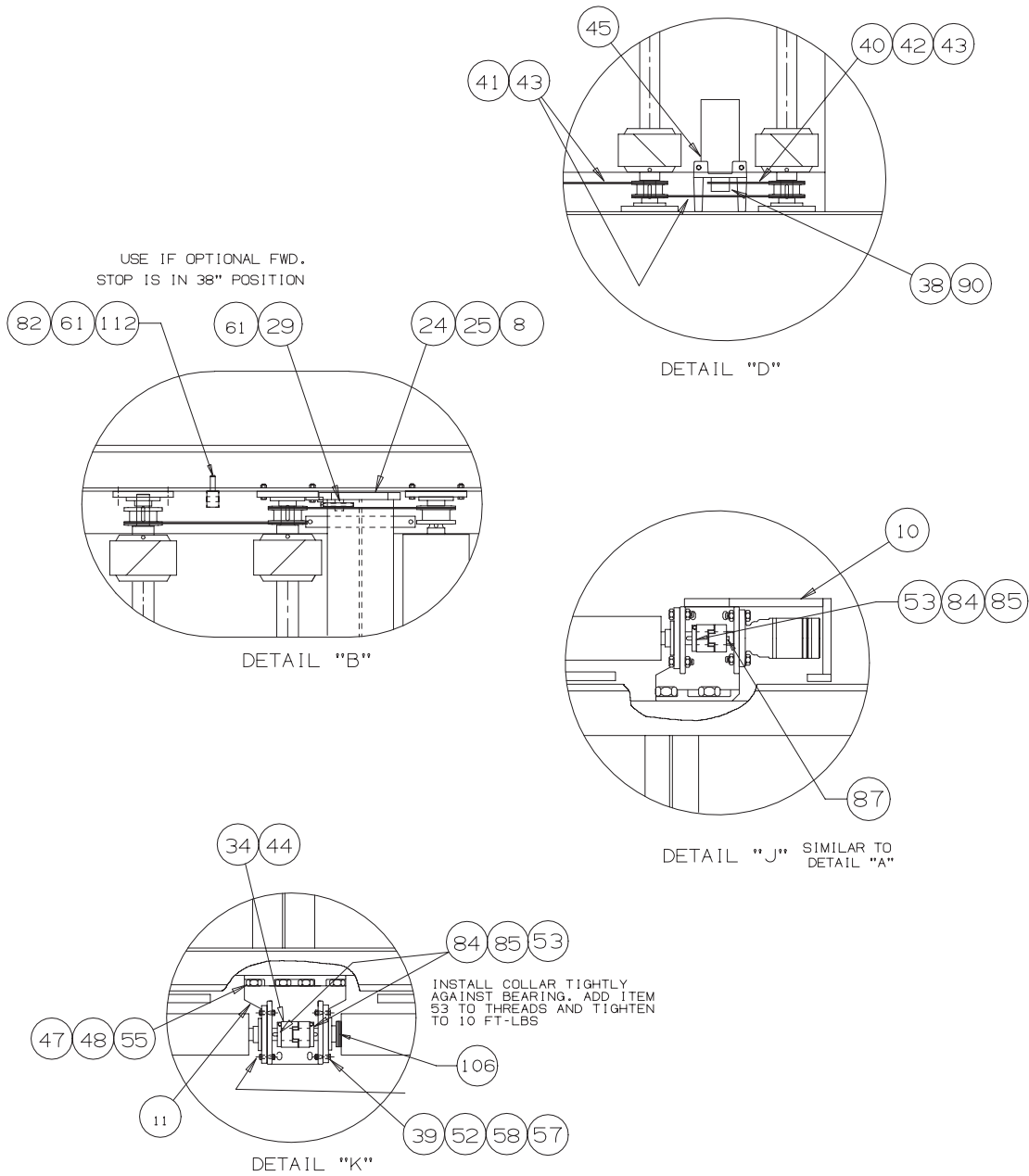


Figure 4
 PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
 622-6240-005

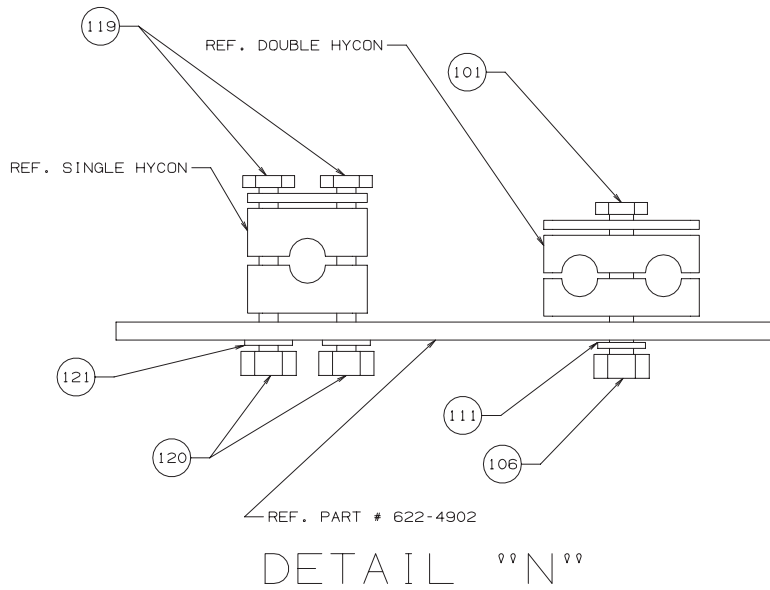
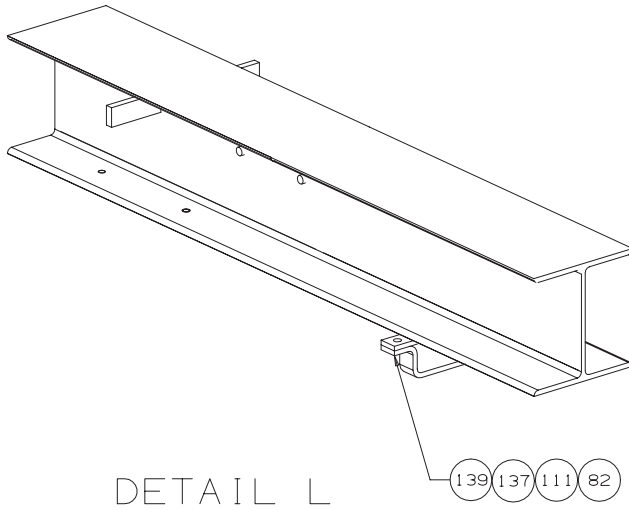


Figure 5
PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
622-6240-005

**PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
622-6240-005**

Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
3	620-6241-003		PLATFORM WELDMENT, Pallet/Extended		1
5	620-6182		DECK PLATE WELDMENT, Left Rear		1
6	620-6183		DECK PLATE WELDMENT, Right Rear		1
7	620-6181		DECK PLATE WELDMENT		2
8	107-1078		SCREW, Hex Hd Cap, M16 x 2 x 30mm		6
9	620-2297		MOTOR BRACKET, Right & Rear		2
10	620-2298		MOTOR BRACKET, Left		1
11	620-2299		SUPPORT, Double Roll		2
12	620-0298		CASTING ROLL, Single		3
13	620-0299		CASTING, Side Stop W/Cylinder Mounting		3
15	620-0323		CASTING STOP, Adjust		7
18	622-3287		END STOP WELDMENT		1
22	621-1512-011		STEEL ROLLERS		1
			Consisting of:		
-	620-9170-001		ROLLER, 4" Transfer 2086 Plain		5
	621-1512-012		LAGGED ROLLERS		1
			Consisting of:		
-	620-9170-001		ROLLER, 4" Transfer 2086 Lagged		5
24	622-9174		CROSSMEMBER, Bolt-In		1
25	620-8894		SHIM, Bolt in Crossmember		2
26	620-9171-001		ROLLER WELDMENT, 150mm Dia		5
27	620-0455-003		KEY, 8 x 7 x 45mm		8
28	620-0628		SCREW, Hex Hd, 8.8 M8 x 1.25 x 50mm		3
29	622-4821		CHAIN, Tab Adjusting		2
30	622-0522-001		DRIVE SHAFT, Left (Ref. Sect. 19, Figure 1, Page 2)		9
31	622-0522-002		DRIVE SHAFT, Right (Ref. Sect. 19, Figure 1, Page 2)		9
34	622-8626		COUPLING, 30 x 30mm Bore		2
35	622-8146		COUPLING, 30 x 25.4mm Bore		3
36	620-3062		SPROCKET, 16T 30mm Bore Dbl Single (V05506 #DS50A16H)		1
37	620-3061		SPROCKET, 16T 30mm Bore Single (V05506 #50BS16H)		7
38	620-1591		SPROCKET, 12T 1" Bore (V05506 #50BS12H)		6
39	620-0085		BEARING, 30mm Self Aligning		56

**PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
622-6240-005**

Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
40	104-0311-0524		CHAIN, Roller, RC50 Precut 33 Pitch		6
41	104-0311-0905		CHAIN, Roller, RC50 Precut 57 Pitch		16
42	104-0312		LINK, Offset or Half #50		23
43	104-0313		LINK, Connecting, Single		23
44	107-1242		KEY, Woodruff 8 x 13 SS DIN6388		7
45	107-0735		SCREW, Hex Hd, 8.8 M12 x 1.75 x 30mm		12
46	620-0655		SCREW, Hex Hd, 8.8 M12 x 2.5 x 100mm		3
47	620-0653		SCREW, Hex Hd, 8.8 M20 x 2.5 x 60mm		24
48	620-0651		SCREW, Hex Hd, 8.8 M20 x 2.5 x 40mm		39
49	622-2196		BOLT, Deck Plate, Special Low Head		38
51	620-0635		SCREW, Hex Hd, 8.8 M10 x 1.5 x 50mm		23
52	107-1461		SCREW, Hex Hd, 8.8 M10 x 1.5 x 40mm DIN 931		71
53	105-0327		LOCKTITE, 242		1oz
54	104-0311-0873		CHAIN, Roller, RC50 Precut 55 Pitch		1
55	620-0665		WASHER, Flat Hard M20 Narrow		46
57	620-0662		WASHER, Flat Hard M10 Narrow		58
58	620-0657		NUT, PTH, 9 M10 x 1.5		94
59	620-0658		NUT, PTH, 9 M12 x 2.3		6
60	622-4819		TAB, Chain Adjust		20
61	620-1367		NUT, M8 x 1.25		56
62	622-8651		TAB, Chain Adjust		8
64	620-4190		COVER, Solenoid		1
65	620-9160		SHIM, Wide Extension		20
66	622-6084		SUPPORT, Deck Plate		1
74	620-9854		HYDRAULIC, R & L Pallet Side Load (Ref. Sect. 4-21)		1
77	620-6743		DECK COVER, Middle		1
78	620-4311		DECK SUPPORT, Forward		2
79	620-9101		DECK COVER, (3) Rollers		1
82	620-0661		WASHER, Flat Hard M8 Narrow		49
83	620-0471		STRUT		3
84	622-6972		SHAFT COLLAR, 30mm		7
85	111-2403		SCREW, Socket Hd, 1/4-28 x 3/4" Cad Pl		7
87	620-6850		SPACER, Motor Coupling		3
90	104-0977		RETAINING RING, External		6

**PLATFORM, RIGHT & LEFT CONTAINER & PALLET TRANSFER
622-6240-005**

Figure 1 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
91	107-1056		SCREW, Hex Hd, M12 x 1.75 x 45mm		6
101	623-0097		SHIM INSTL., Transfer Rollers, Platform		1
106	622-2071		SHIM, Roller		20
107	620-8720		SCREW, Socket Hd, M10 x 1.5 x 20mm Full Thd.		2
108	107-1363		WASHER, Lock M10 Plated		2
109	622-3261		SIDE GUIDE WELDMENT		1
111	107-0701		SCREW, Hex Hd, M8 x 1.25 x 20mm		2
112	623-0166		TAB ADJUSTER SUPPORT WELD		2
119	110-0089		SCREW, Hex Hd, 1/4 x 20 x 2 1/4"		4
120	110-0235		NUT, Lock 1/4 x 20		4
121	110-0254		WASHER, Flat 1/4		7
137	620-0656		NUT, PTH 8 M8-1.25 ESNA		8
138	622-4244		BRACKET, Platform Proximity Mounting		3
139	623-0405		BRACKET, Cable Support		1
140	MR05-00024		NEVER SEEZ		1oz
150	622-3320-032		CHAIN KIT, #50		1
157	622-6901		DWG, Rollplane Adjust. for Platform		1
165	620-4416-003		SPIDER		1
-	Not Shown				

Section 21. Hydraulic System

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	MAIN FRAME HYDRAULICS	622-3172	FIGURE 1	2
2.	SCISSORS HYDRAULICS, LOWER LOBE	622-3171	FIGURE 11	18
3.	PLATFORM LIFT HYDRAULICS	620-1746	FIGURE 13	22
4.	AXLE HYDRAULICS	623-2760	FIGURE 17	28
5.	PROPEL/LIFT MANIFOLD	622-3168	FIGURE 22	37
6.	SERVICE MANIFOLD	621-4877	FIGURE 24	40
7.	HYDRAULIC TANK, CARBON STEEL	622-3327-001	FIGURE 26	43
8.	POWER MODULE HYDRAULICS	622-3164	FIGURE 28	46
9.	OPERATOR'S CAB HYDRAULICS	620-2734	FIGURE 31	52
10.	BRIDGE HYDRAULICS, CONTAINER	622-1044-002	FIGURE 33	56
11.	BRIDGE MANIFOLD ASSEMBLY	620-3605	FIGURE 40	66
12.	BRIDGE EXTENSION HYDRAULICS	621-5000	FIGURE 42	69
13.	PLATFORM HYDRAULICS, EXT. SIDE LOAD W/CENTER PALLET ROTATION	620-9850	FIGURE 47	77
14.	PLATFORM MANIFOLD ASSEMBLY	620-1836	FIGURE 56	90
15.	PLATFORM GUIDE/STOPS MANIFOLD	620-1832	FIGURE 58	93
16.	WIDE PLATFORM EXTENSION HYDRAULICS	620-8724	FIGURE 59	95

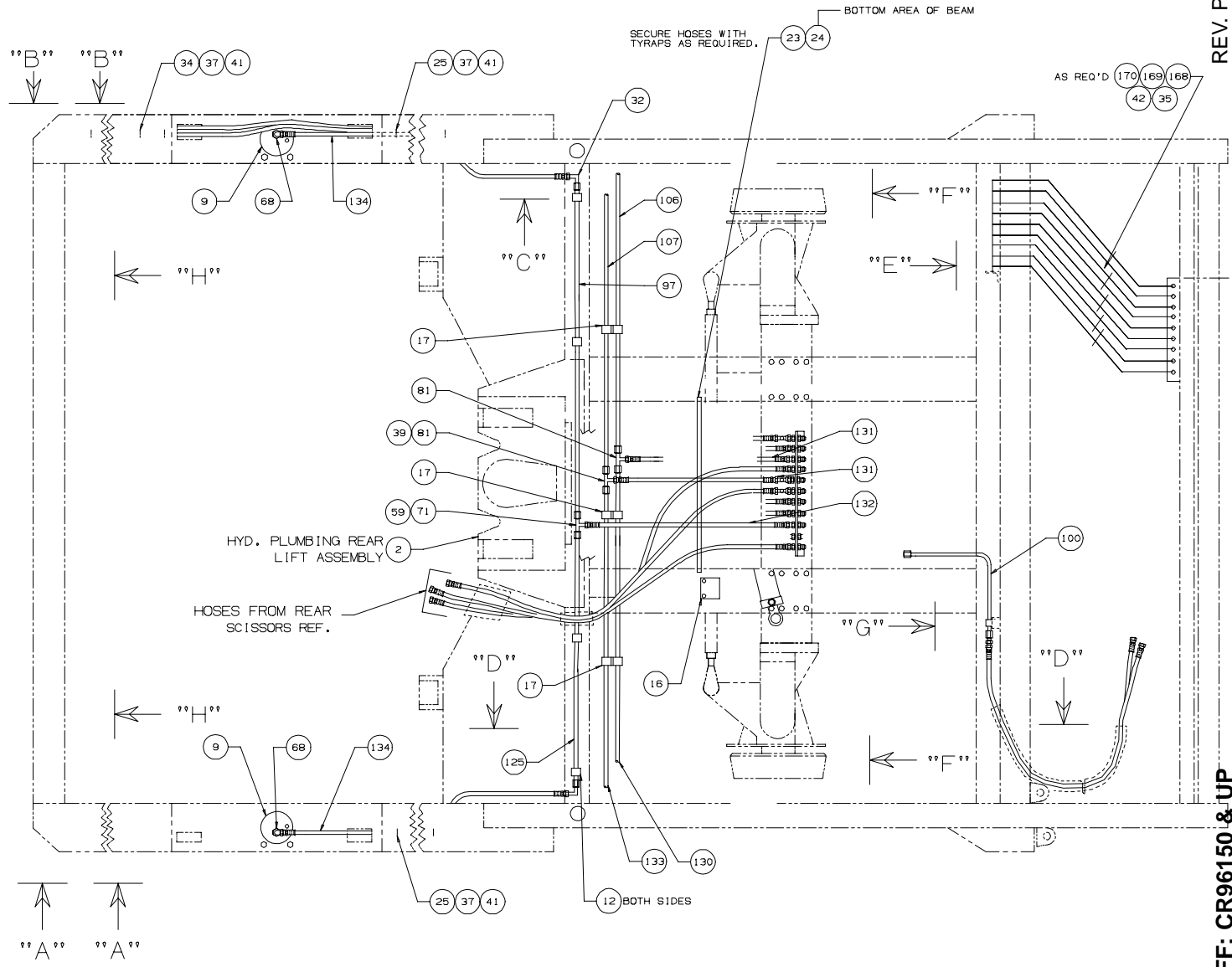


Figure 1
MAIN FRAME HYDRAULICS
622-3172

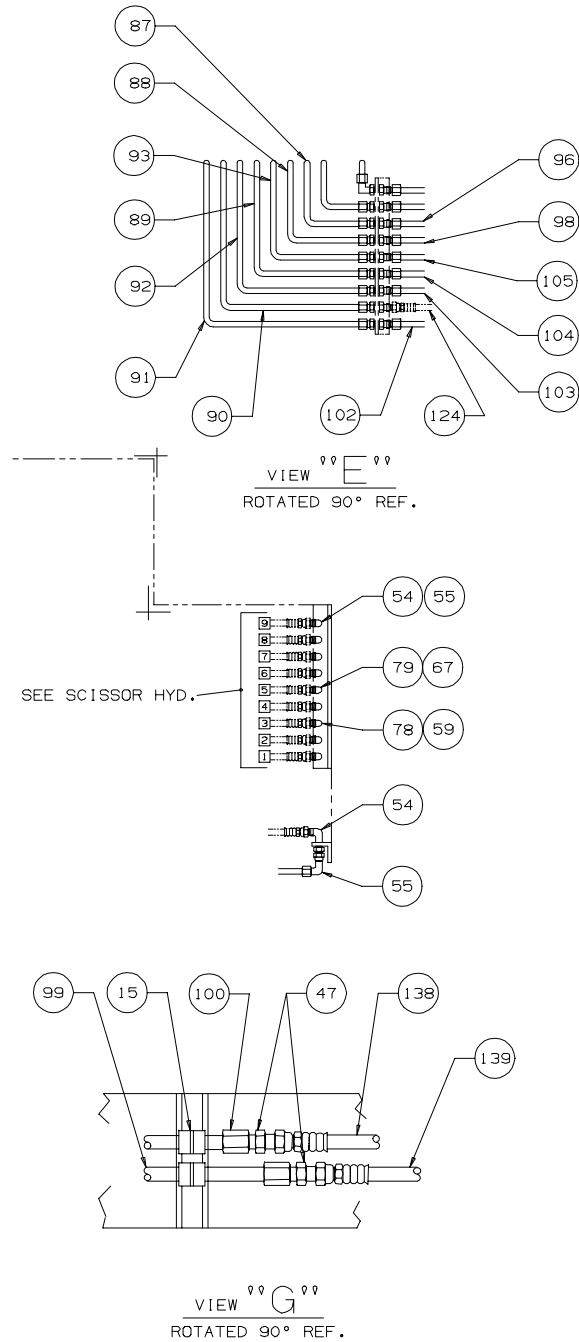
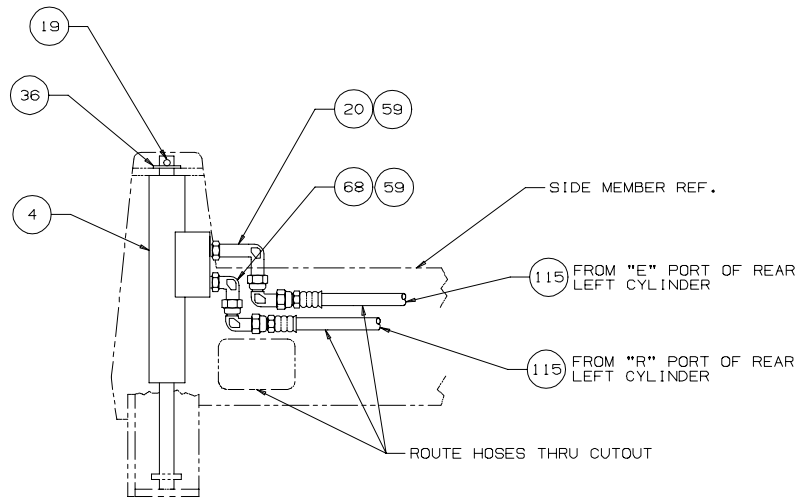
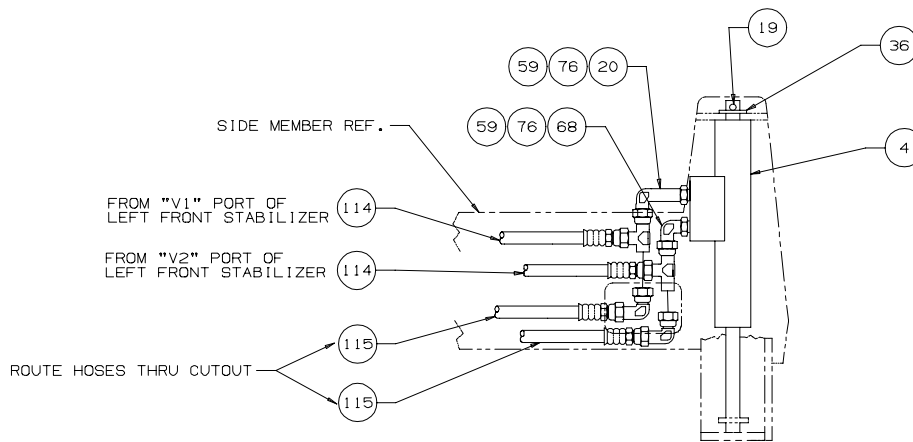


Figure 2
MAIN FRAME HYDRAULICS
622-3172



SECTION A - A



SECTION B - B

ROTATED 180°

Figure 3
MAIN FRAME HYDRAULICS
622-3172

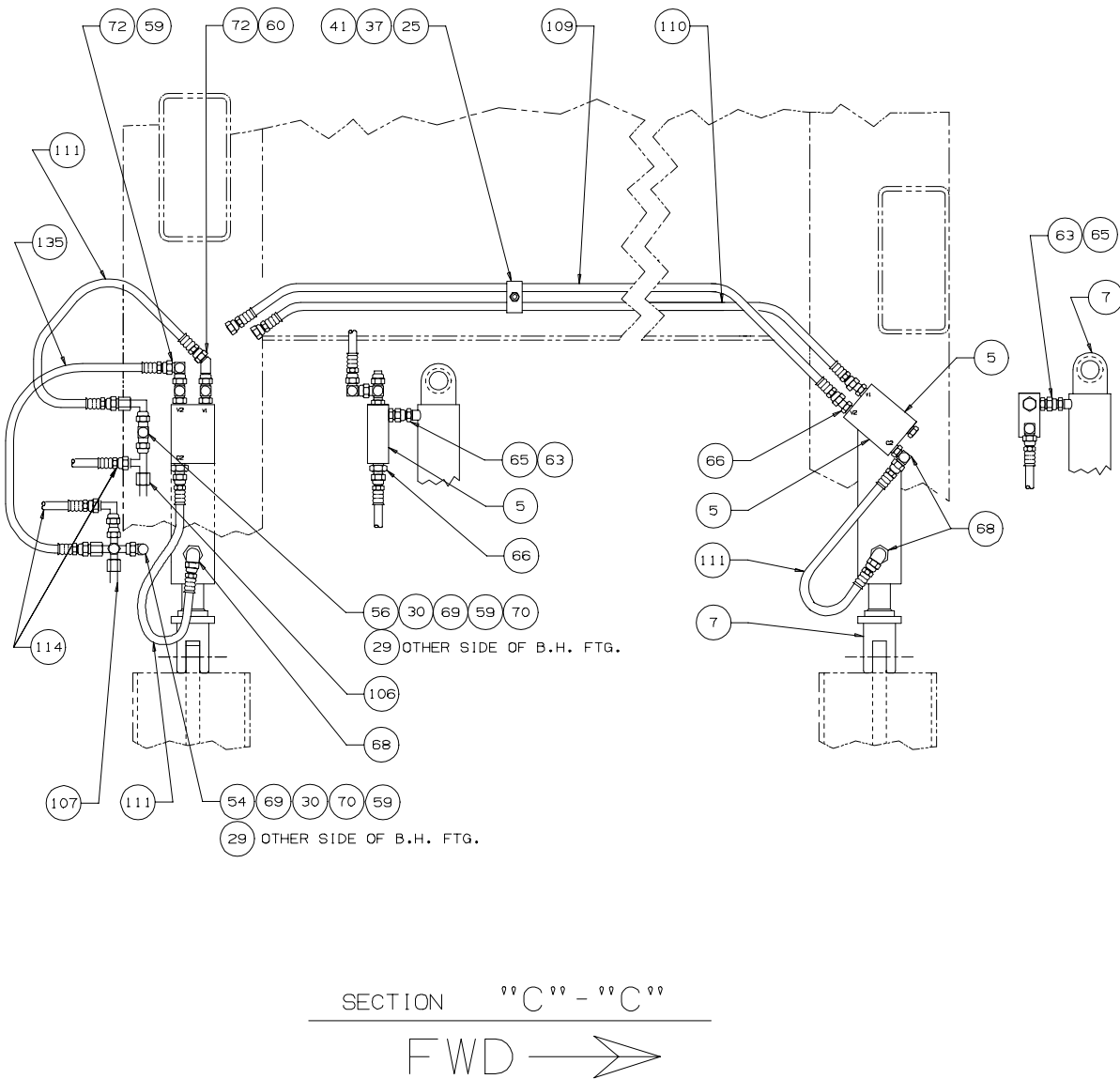
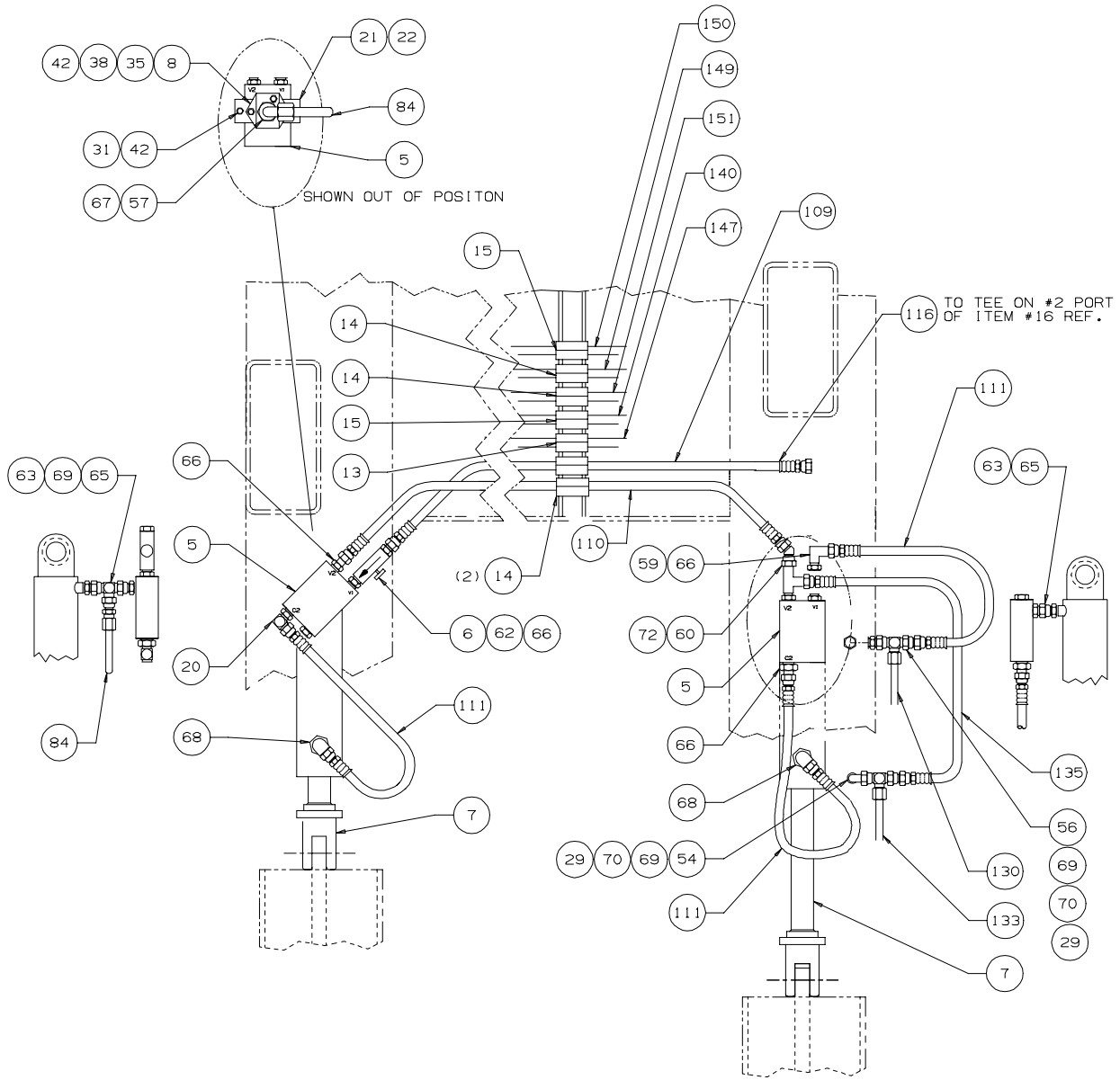


Figure 4
MAIN FRAME HYDRAULICS
622-3172



SECTION "D" - "D"



Figure 5
MAIN FRAME HYDRAULICS
 622-3172

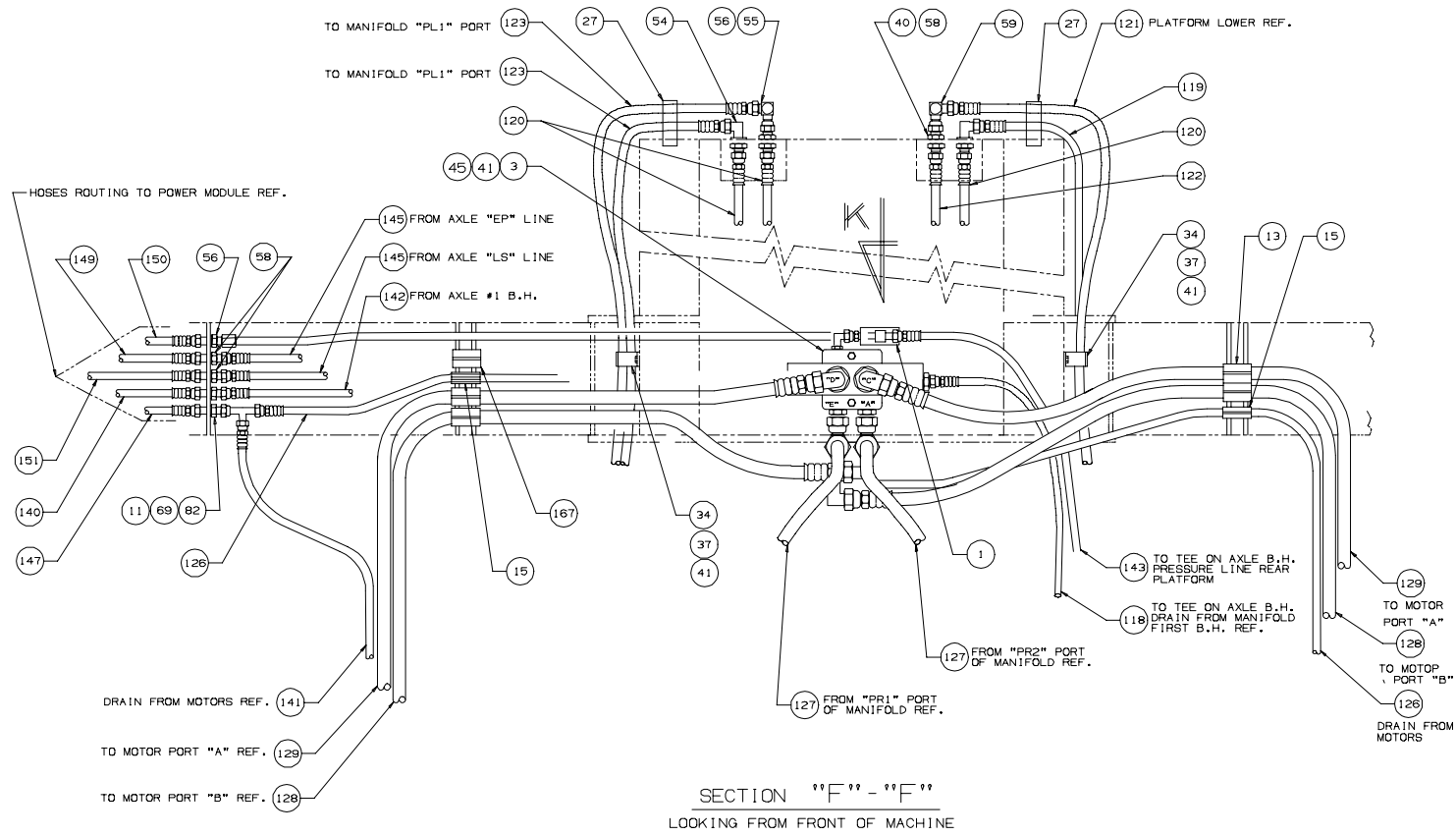
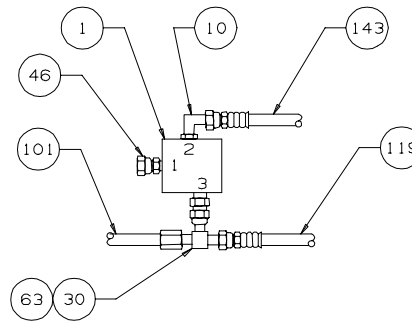
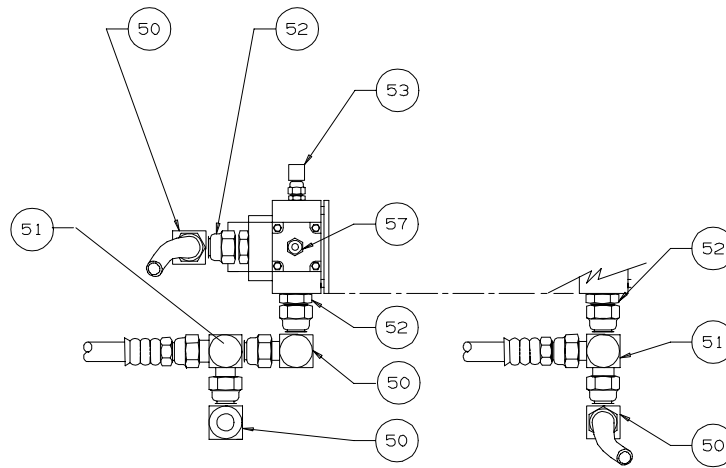


Figure 6
MAIN FRAME HYDRAULICS
622-3172

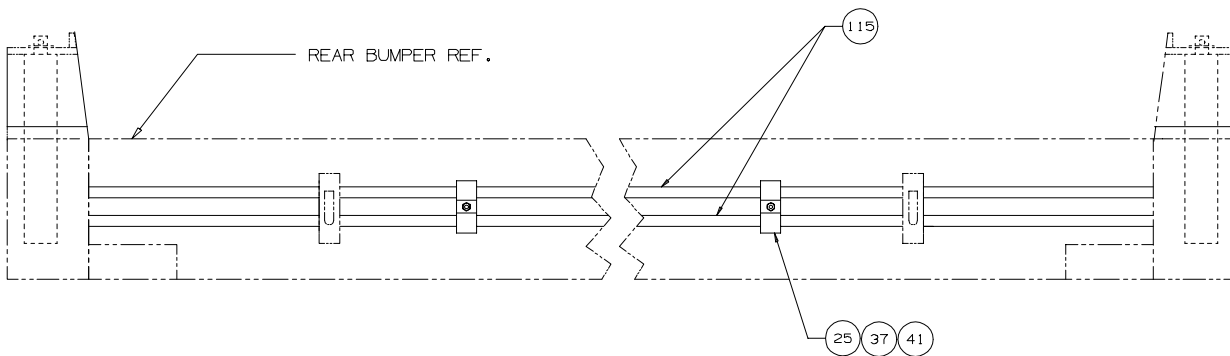


VIEW "K"



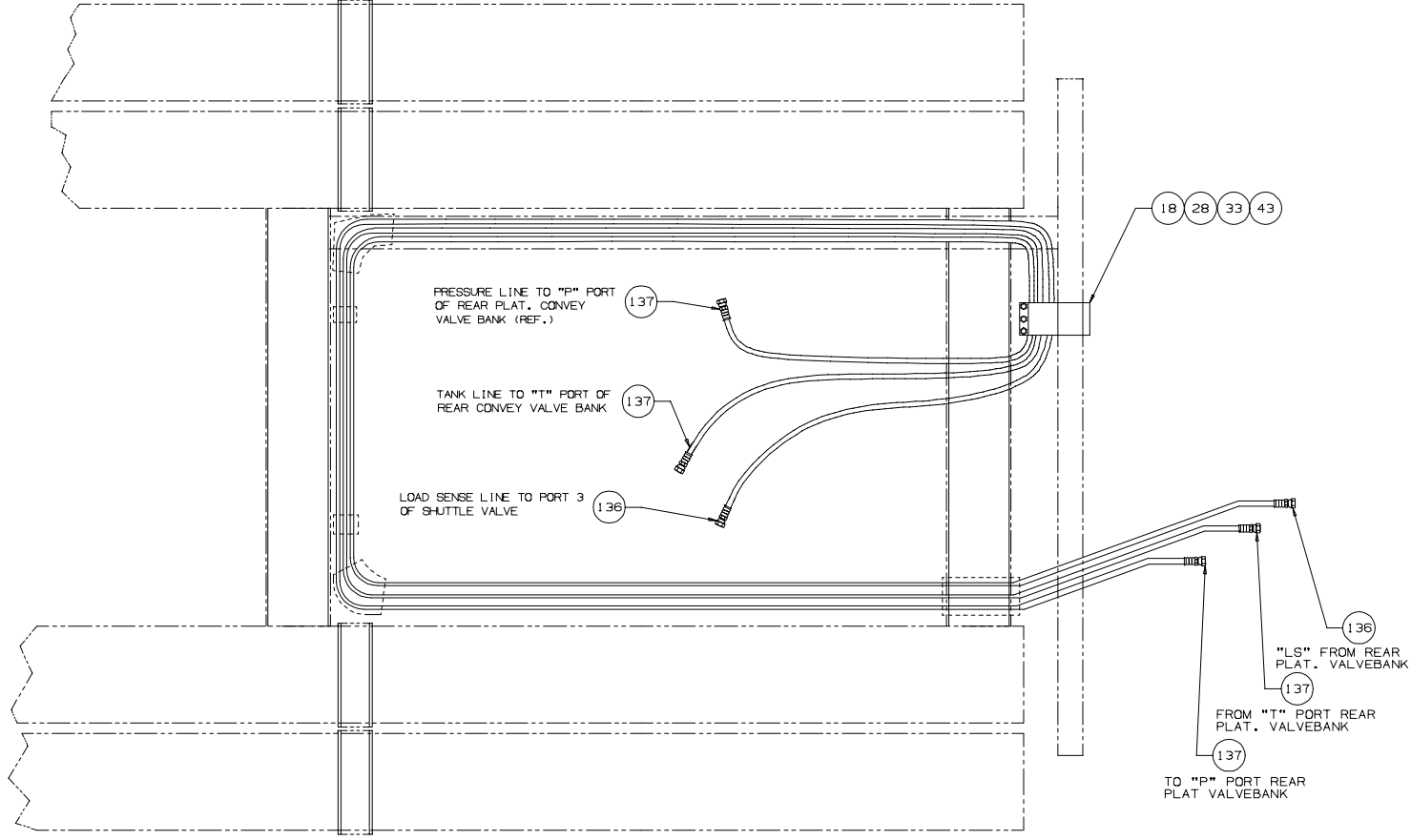
"A" PORT FITTINGS

"E" PORT FITTINGS



SECTION "H" - "H"

Figure 7
MAIN FRAME HYDRAULICS
622-3172



PLAN VIEW OF REAR SCISSORS

Figure 8
MAIN FRAME HYDRAULICS
622-3172

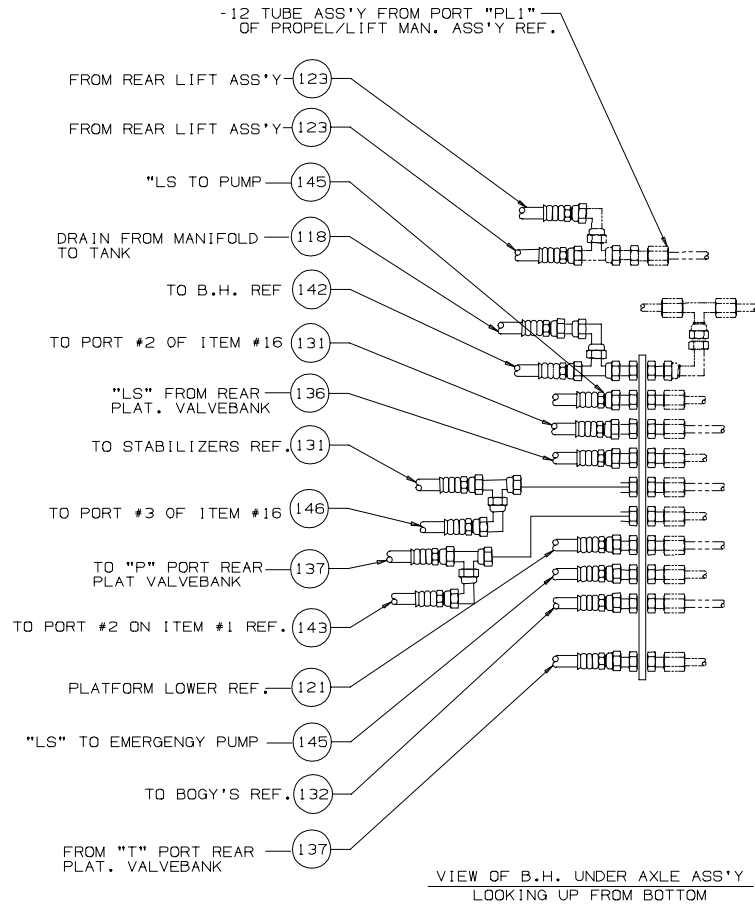
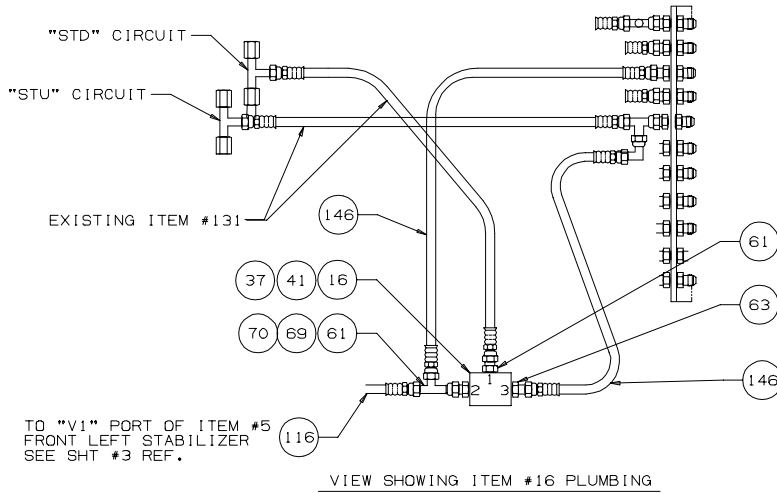
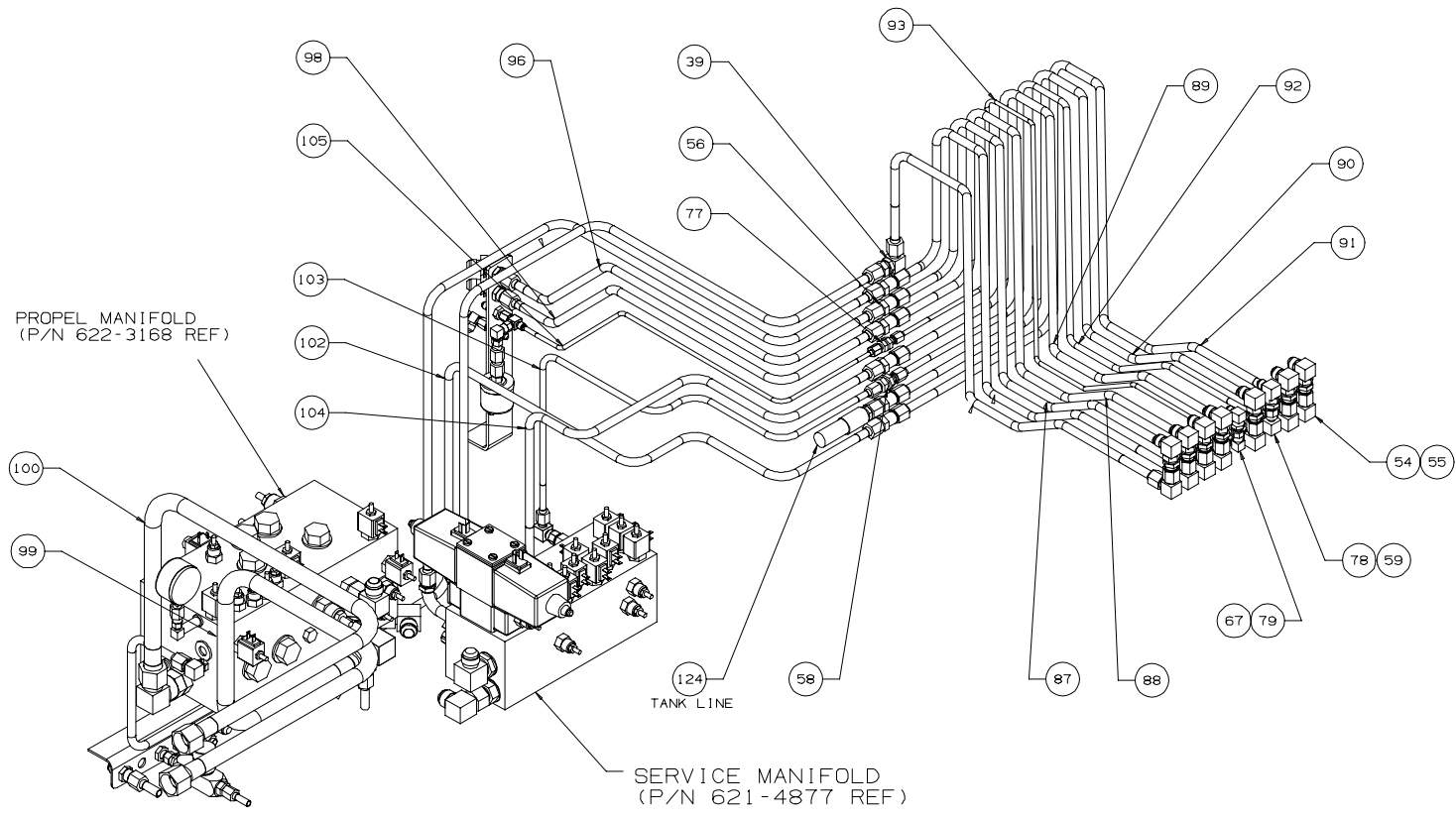


Figure 9
MAIN FRAME HYDRAULICS
622-3172



VIEW SHOWING TUBE ROUTING BETWEEN MANIFOLD & CHASSIS

Figure 10
MAIN FRAME HYDRAULICS
622-3172

**MAIN FRAME HYDRAULICS
622-3172**

Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	621-5689		VALVE, Pressure Reducing (V54035 #PPDB, LBN ECJ) Consisting of:		1
-	620-0127-001		CARTRIDGE, SUN #PPDB LBN		1
-	620-1738-002		BODY, SUN #ECJ		1
2	620-1746		HYD. PLUMBING PLATFORM LIFT (Ref. Figure 13, Page 22)		1
3	620-0193		SELECTOR VALVE ASSEMBLY (V11341 #SD5ATBA5-129431) Consisting of:		1
-	620-0193-092		COIL REPLACEMENT (V0C7Z2 #6302024)		1
-	620-0193-093		SEAL KIT (V11341 #2V0058)		1
-	620-0193-002		CARTRIDGE VALVE COMPLETE (V11341 #1A9331)		1
4	621-5638		CYLINDER, Stabilizer (V08481 #S14006512DDBZ) Consisting of:		2
-	620-1527-001		VALVE, PO Check SUN #CKCB-XAN		1
-	621-5638-090		SEAL KIT (V08481 #SK13496)		2
5	620-0770		VALVE, P. O Check Close Coupled (V54035 #CKC4-XAN-ZRK) Consisting of:		4
-	620-1527-001		CARTRIDGE, SUN #CKCA XAN		1
-	620-0770-001		BODY, SUN #ZRK		1
6	620-0810		VALVE, Needle (V09990 #PN620S)		1
7	621-5640		CYLINDER, Stabilizer (V08481 #S20006020CCAZ) Consisting of:		4
-	621-5640-090		SEAL KIT (V08481 #13484)		
8	621-5426		SWITCH, Pressure		1
9	621-5641		CYLINDER, Suspension (V08481 #A32002740FOAZ) Consisting of:		2
-	621-5641-090		SEAL KIT (V08481 #15252)		
10	102-0192		ELBOW, 90° -8 M O-Ring x -8 M JIC		1
11	102-1277		REDUCER, -12 x -8 JIC		1
12	620-4441		CLAMP, 3/8" Tube		4

**MAIN FRAME HYDRAULICS
622-3172**

Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
13	237-6060-125		CLAMP, 3/4" Tube		5
14	237-6060-750		CLAMP, 1/2" Hose		4
15	237-6060-100		CLAMP, 1" Tube		6
16	620-1738		VALVE, Reducing		1
17	620-4442		CLAMP, 1/2" Tube		3
18	620-2553		BELTING		1
19	103-0763		PIN, Groove		2
20	102-1329		ELBOW, 90° Lg, -6 M O-Ring x -6 M JIC		3
21	620-7247		PLATE, Stabilizer Mount		1
22	620-7248		PLATE, Pressure Switch		1
23	622-2618-002		BRACKET, Hose Support		1
24	110-0064		SCREW, Hex Hd, 1/2-13 x 1 1/2"		2
25	102-1189		CLAMP, Hose		32
26	102-1191		CLAMP, Hose		2
27	104-1164		CLAMP, Hose		2
28	620-2554		PLATE, Clamp		2
29	620-0881		PLUG, -8 JIC		4
30	102-1144		TEE, Swivel Branch, -8 JIC		1
31	620-0802-006		SCREW, Hex Hd, 8.8 M5 x .8 x 50mm		2
32	102-1067		ELBOW UNION, 90° -6 JIC		2
33	620-0952		SCREW, Hex Hd, 8.8 M6 x 1 x 30mm		3
34	104-1158		CLAMP		10
35	620-0802-001		SCREW, Hex Hd, 8.8 M5 x .8 x 10mm		10
36	620-0665		WASHER, Flat M20		2
37	107-1353		WASHER, Flat Hard M8 Regular		20
38	620-0803		WASHER, Flat M5		4
39	102-0321		ELBOW, 45° Swivel, -8 JIC		1
40	620-0664		WASHER, Flat Hard M16 Narrow		1
41	620-0656		NUT, PTH, M8		20
42	620-0947		NUT, PTH, 9 M5 x 0.8		12
43	620-0948		NUT, PTH, 8 M 6 x 1		3
45	620-0637		SCREW, Hex Hd, 8.8 M10 x 1.5 x 70mm		2
46	102-1130		CONN., Str. Sw, -8 M O-Ring x -8 F		1
47	620-0832		UNION, Str., -16 JIC		2
50	102-0280		ELBOW, 90° Swivel, -12 JIC (V79470 #C5506X12)		5

**MAIN FRAME HYDRAULICS
622-3172**

Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
51	620-0856		TEE, Run, -12 JIC (V01276 #203102T-12-12S)		3
52	102-1093		CONN., Str., -12 M O-Ring x -12 M (V01276 #202702-12-12S)		4
53	102-0192		ELBOW, 90° -8 M O-Ring x -8 M JIC (V01276 #2062-8-8)		3
54	102-0200		ELBOW, 90°, Bulk Hd, -8 MJIC (V01276 #2043-8-8)		11
55	102-0187		ELBOW, 90° Swivel, -8 JIC (V01276 #2071T-8-8)		7
56	102-0322		CONN., Str., Bulk Hd, -8 M JIC (V01276 #P2041-8-8)		11
57	118-2679-003		CONN., Str., 2 M NPT x -4 M JIC (V79470 #C5205X4)		2
58	102-0296		CONN., Str., Bulk Hd, -6 M JIC (V79470 #C5325X6)		4
59	102-0031		ELBOW, 90° Swivel, -6 JIC (V01276 #2071T-6-6S)		13
60	102-1267		ELBOW, 45° Sw, -6 JIC (V01276 #2070-6-6)		3
61	102-1095		CONN., Str., -8 M O-Ring x -8 M JIC		2
62	620-1540		UNION, Str., -6 M O-Ring (V09990 #0505-6-6)		2
63	102-1466		CONN., Str., -6 M O-Ring x -8 M JIC (V01276 #202702-6-8)		5
65	620-0940		CONN., Str. Sw., -6 M O-Ring x -8 F JIC (V01276 #P2266-6-8S)		4
66	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC (V01276 #202702T-6-6S)		6
67	102-0902		ELBOW, 90° Swivel, -4 JIC		2
68	102-0190		ELBOW, 90° -6 M O-Ring x -6 M JIC (V01276 #2062-6-6S)		9
69	102-0324		TEE, Swivel Run, -8 JIC (V01276 #P203102T-8-8)		5
70	102-1123		REDUCER, -8 F JIC x -6 M JIC		5
71	102-1080		TEE, Union -6 M JIC (V01276 #2033T-6-6)		1
72	620-0871		TEE, Swivel Run, -6 MO-Ring x -6 MJIC (V01276 #203005T-6-6S)		4

**MAIN FRAME HYDRAULICS
622-3172**

Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
73	620-0915		REDUCER, -8 F JIC x -4 M JIC (V01276 #221501-T-4-8S)		1
74	102-1447		REDUCER, -6 F JIC x -4 M JIC		1
76	102-1158		TEE, Swivel Run, -6 JIC (V01276 #203102-6-6)		2
77	102-1078		UNION, Bulk Hd., -4 M JIC		1
78	102-0949		ELBOW, 90°, Bulk Hd. Union, -6 JIC		1
79	102-0199		ELBOW, 90°, Bulk Hd. Union, -4 JIC		1
80	622-3172-007		HOSE ASSEMBLY KIT		1
81	102-0203		TEE, Union, -8 JIC		2
82	102-0170		UNION, Str. Bulk Hd., , -12 JIC		1
83	622-3172-002		TUBE ASSEMBLY KIT		1
84	620-7249		TUBE ASSEMBLY, -4		1
87	623-1728		TUBE ASSEMBLY, -8		1
88	623-1727		TUBE ASSEMBLY, -8		1
89	623-1725		TUBE ASSEMBLY, -8		1
90	623-1658		TUBE ASSEMBLY, -8		1
91	623-1657		TUBE ASSEMBLY, -8		1
92	623-1659		TUBE ASSEMBLY, -6		1
93	623-1726		TUBE ASSEMBLY, -4		1
96	622-3819		TUBE ASSEMBLY, -8		1
97	622-4011		TUBE ASSEMBLY, -6		1
98	623-2764		TUBE ASSEMBLY, -8		1
99	622-4009		TUBE ASSEMBLY, -16		1
100	622-4010		TUBE ASSEMBLY, -16		1
101	622-4364		TUBE ASSEMBLY, -8		1
102	622-3821		TUBE ASSEMBLY, -8		1
103	622-3822		TUBE ASSEMBLY, -6		1
104	622-3886		TUBE ASSEMBLY, -8		1
105	622-3809		TUBE ASSEMBLY, -4		1
106	622-4012		TUBE ASSEMBLY, -8		1
107	622-4013		TUBE ASSEMBLY, -8		1
108	622-3172-001		HOSE ASSEMBLY KIT		1
109	519-0196-059		HOSE ASSY, -6 x 1499 (59 IN.) Lg		2
110	519-0196-058		HOSE ASSY, -4 x 1473 (58 IN.) Lg		2
111	519-0196-025		HOSE ASSY, -6 x 635 (25 IN.) Lg		6

**MAIN FRAME HYDRAULICS
622-3172**

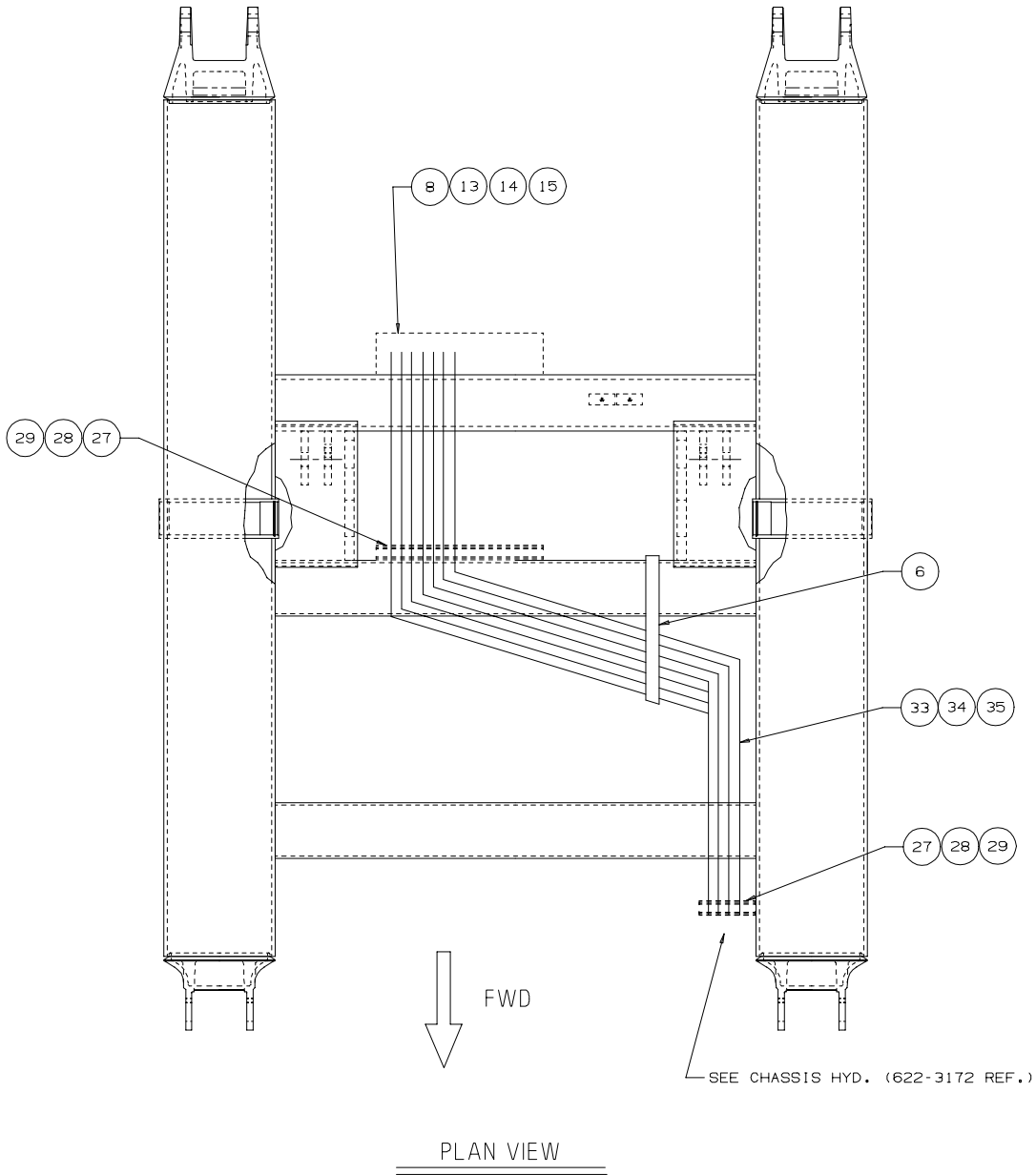
Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
114	519-0196-220		HOSE ASSY, -6 x 5588 (220 IN.) Lg		2
115	519-0196-110		HOSE ASSY, -6 x 2794 (110 IN.) Lg		2
116	519-0196-109		HOSE ASSY, -6 x 2769 (109 IN.) Lg		1
117	519-0196-117		HOSE ASSY, -6 x 2972 (117 IN.) Lg		1
118	620-2013-070		HOSE ASSY, -4 x 1778 (70 IN.) Lg		1
119	519-0197-060		HOSE ASSY, -8 x 1524 (60 IN.) Lg		1
120	519-0197-055		HOSE ASSY, -8 x 1397 (55 IN.) Lg		3
121	519-0196-107		HOSE ASSY, -6 x 2718 (107 IN.) Lg		1
122	519-0196-055		HOSE ASSY, -6 x 1397 (55 IN.) Lg		1
123	519-0197-108		HOSE ASSY, -8 x 2744 (108 IN.) Lg		2
124	519-0197-138		HOSE ASSY, -8 x 3506 (138 IN.) Lg		1
125	622-4018		TUBE ASSEMBLY, -6		1
126	519-0197-124		HOSE ASSY, -8 x 3150 (124 IN.) Lg		1
127	620-1847-031		HOSE ASSY, -12 x 788 (31 IN.) Lg		2
128	620-1847-077		HOSE ASSY, -12 x 1956 (77 IN.) Lg		2
129	620-1847-087		HOSE ASSY, -12 x 2210 (87 IN.) Lg		2
130	622-4020		TUBE ASSEMBLY, -8		1
131	519-0197-030		HOSE ASSY, -8 X 762 (30 IN.) Lg		2
132	519-0196-032		HOSE ASSY, -6 x 813 (32 IN.) Lg		1
133	622-4019		TUBE ASSEMBLY, -8		1
134	519-0196-105		HOSE ASSY, -6 x 2667 (105 IN.) Lg		2
135	519-0196-030		HOSE ASSY, -6 x 762 (30 IN.) Lg		2
136	519-0196-340		HOSE ASSY, -6 x 8636 (340 IN.) Lg		2
137	519-0197-340		HOSE ASSY, -8 x 8636 (340 IN.) Lg		2
138	620-1848-100		HOSE ASSY, -16 x 2540 (100 IN.) Lg		1
139	620-1848-104		HOSE ASSY, -8 x 2642 (104 IN.) Lg		1
140	519-0197-134		HOSE ASSY, -8 x 3404 (134 IN.) Lg		1
141	519-0197-052		HOSE ASSY, -8 x 1321 (52 IN.) Lg		1
142	519-0197-096		HOSE ASSY, -8 x 2439 (96 IN.) Lg		1
143	519-0197-086		HOSE ASSY, -8 x 2185 (86 IN.) Lg		1
144	519-0196-098		HOSE ASSY, -6 x 2490 (98 IN.) Lg		2
145	519-0196-096		HOSE ASSY, -6 x 2439 (96 IN.) Lg		2
146	519-0197-035		HOSE ASSY, -8 x 889 (35 IN.) Lg		2
147	620-1847-138		HOSE ASSY, -12 x 3506 (138 IN.) Lg		1
148	519-0197-070		HOSE ASSY, -8 x 1778 (70 IN.) Lg		1
149	519-0196-150		HOSE ASSY, -6 x 3810 (150 IN.) Lg		1

**MAIN FRAME HYDRAULICS
622-3172**

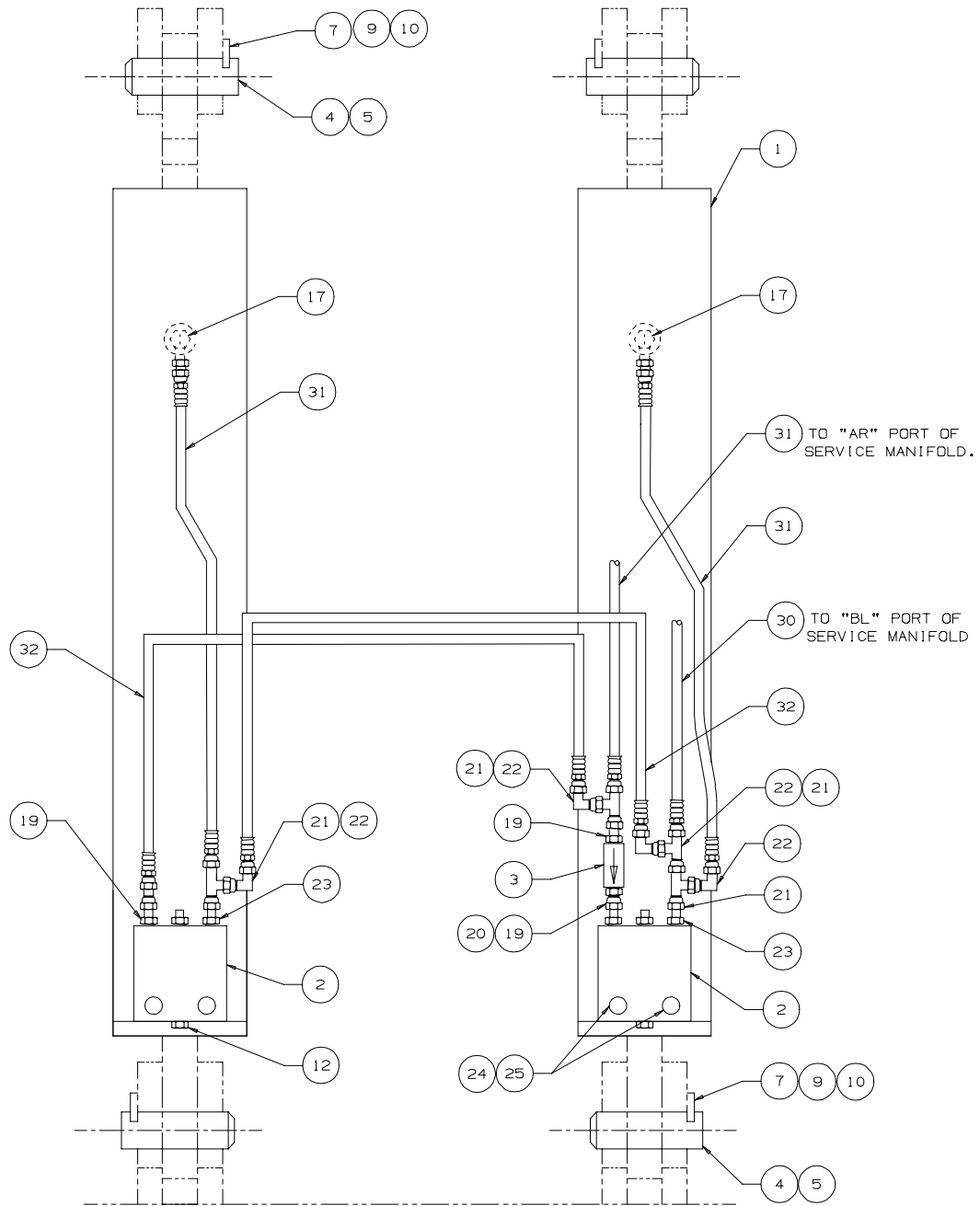
Figure 1 thru Figure 10

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
150	519-0197-115		HOSE ASSY, -8 x 2921 (115 IN.) Lg		1
151	519-0196-154		HOSE ASSY, -6 x 3912 (154 IN.) Lg		1
167	237-6060-175		CLAMP, Tube		1
168	239-9076-001		CLAMP		2
169	239-9076-003		CLAMP		2
170	239-9076-004		CLAMP		4
-	Not Shown				



REV. G

Figure 11
SCISSORS HYDRAULIC, STANDARD LOWER LOBE
622-3171



CYLINDER PLUMBING
LOOKING FROM FRONT OF MACHINE

Figure 12
SCISSORS HYDRAULIC, STANDARD LOWER LOBE
622-3171

**SCISSORS HYDRAULIC, STANDARD LOWER LOBE
622-3171**

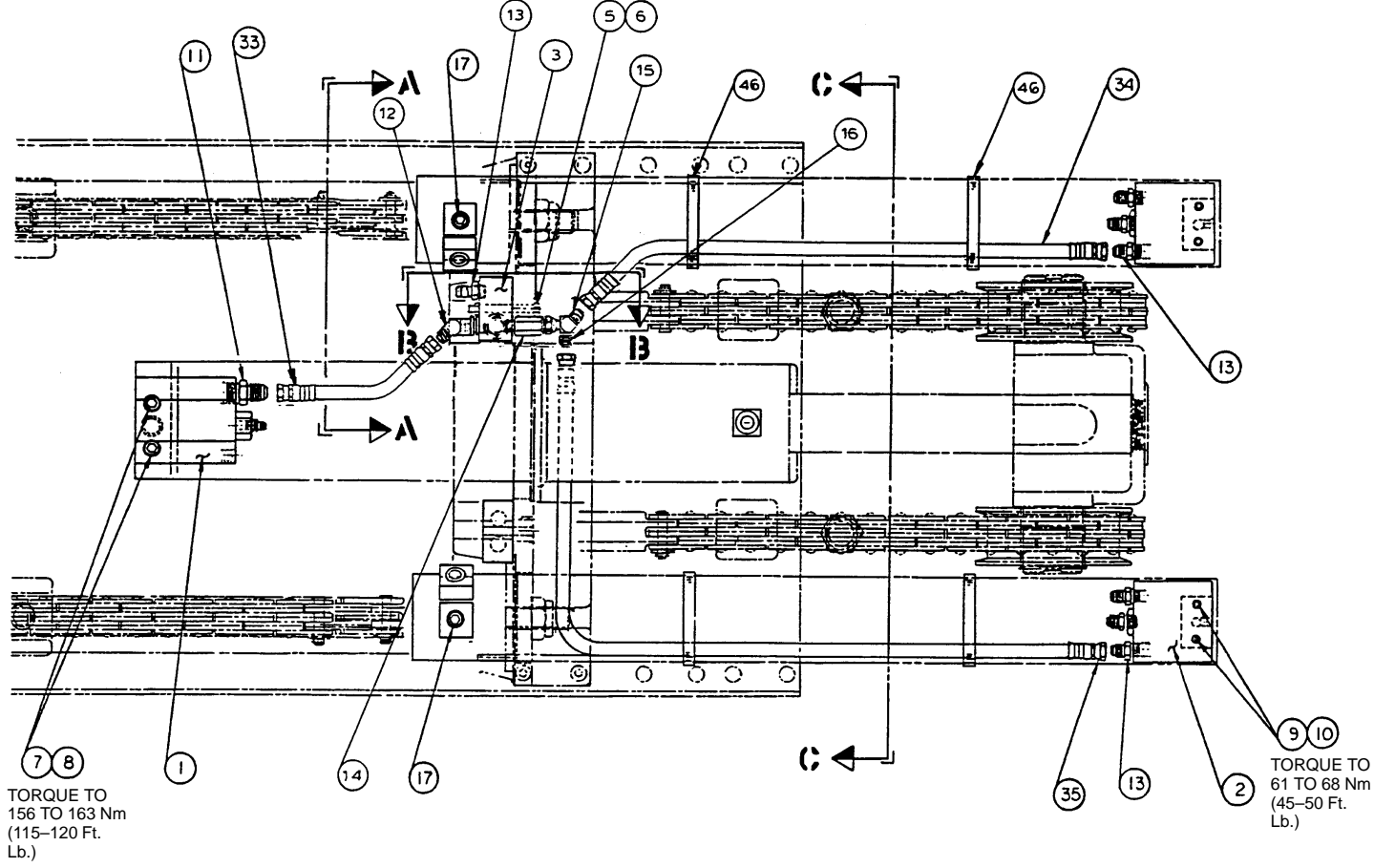
Figure 11, Figure 12

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	621-5646		CYLINDER, Bridge Lift (V08481 #S34037032SSAZ) Consisting of:		2
-	621-5646-090		SEAL KIT (V08481 #15038)		
2	620-1524		VALVE PAC, Forward Lift Cylinder (V54035 #8606-23U-C04) Consisting of:		2
-	620-0590-001		BODY, SUN #151-390		
-	620-0590-002		SEAL O-RING, SUN #500-101-117		
-	620-1509		VALVE, Counter Balance, SUN #CBEA LHN		
3	620-1569		VALVE, Needle (V09990 #F820S)		1
4	620-1039		PIN		4
5	620-0704		GREASE FITTING (V95879 #2103)		4
6	622-5251		STRAP, Hose		1
7	620-1066		LOCK PLATE		4
8	622-4635		HOSE & ELECTRICAL BLOCK		1
9	107-0755		SCREW, Hex Hd, M10 x 1.5 x 20mm		4
10	110-0243		WASHER, Spring Lock .375 I.D.		12
12	620-0884		PLUG, -4 M O-Ring (V79470 #7237X4)		2
13	620-0663		WASHER, Flat M12		6
14	519-5512		SCREW, Hex Hd, M12 x 10mm		3
15	620-0658		NUT, ESNA, M2		3
16	622-3171-001		HOSE ASSEMBLY KIT		1
17	102-0192		ELBOW, 90°, -8 M O-Ring x -8 M JIC (V79470 #C5515X8)		2
19	102-1095		CONN., Str., -8 M O-Ring x -8 M JIC (V01276 #202702-8-8S)		3
20	102-1130		CONN., Str. Sw, -8 M O-Ring x -8 F JIC (V01276 #2085X12X12S)		1
21	102-0324		TEE, Run Swivel, -8 JIC (V01276 #P203102T-8-8))		4
22	102-0187		ELBOW, 90° Swivel, -8 JIC (V01276 #P2071T-8-8)		4
23	102-1466		CONN., Str., -6 M O-Ring x -8 M JIC (V79470 #C5315X8X6)		2

**SCISSORS HYDRAULIC, STANDARD LOWER LOBE
622-3171**

Figure 11, Figure 12

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
24	620-1113		SCREW, Soc Hd Cap, 3/8-24 x 2"		4
25	620-1115		WASHER, .375 I.D. Hi-Collar		4
27	237-6060-625		HOSE CLAMP, Hydra-Zorb		2
28	237-6060-750		HOSE CLAMP, Hydra-Zorb		2
29	237-6060-100		HOSE CLAMP, Hydra-Zorb		10
30	519-0197-040		HOSE ASSY, -8 x 1016 (40 IN.) Lg		1
31	519-0197-034		HOSE ASSY, -8 x 864 (34 IN.) Lg		3
32	519-0197-078		HOSE ASSY, -8 x 1982 (78 IN.) Lg		2
33	519-0197-173		HOSE ASSY, -8 x 4395 (173 IN.) Lg		5
34	519-0196-173		HOSE ASSY, -6 x 4395 (173 IN.) Lg		1
35	620-2013-173		HOSE ASSY, -4 x 4395 (173 IN.) Lg		1
-	Not Shown				



REV. P

Figure 13
PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746

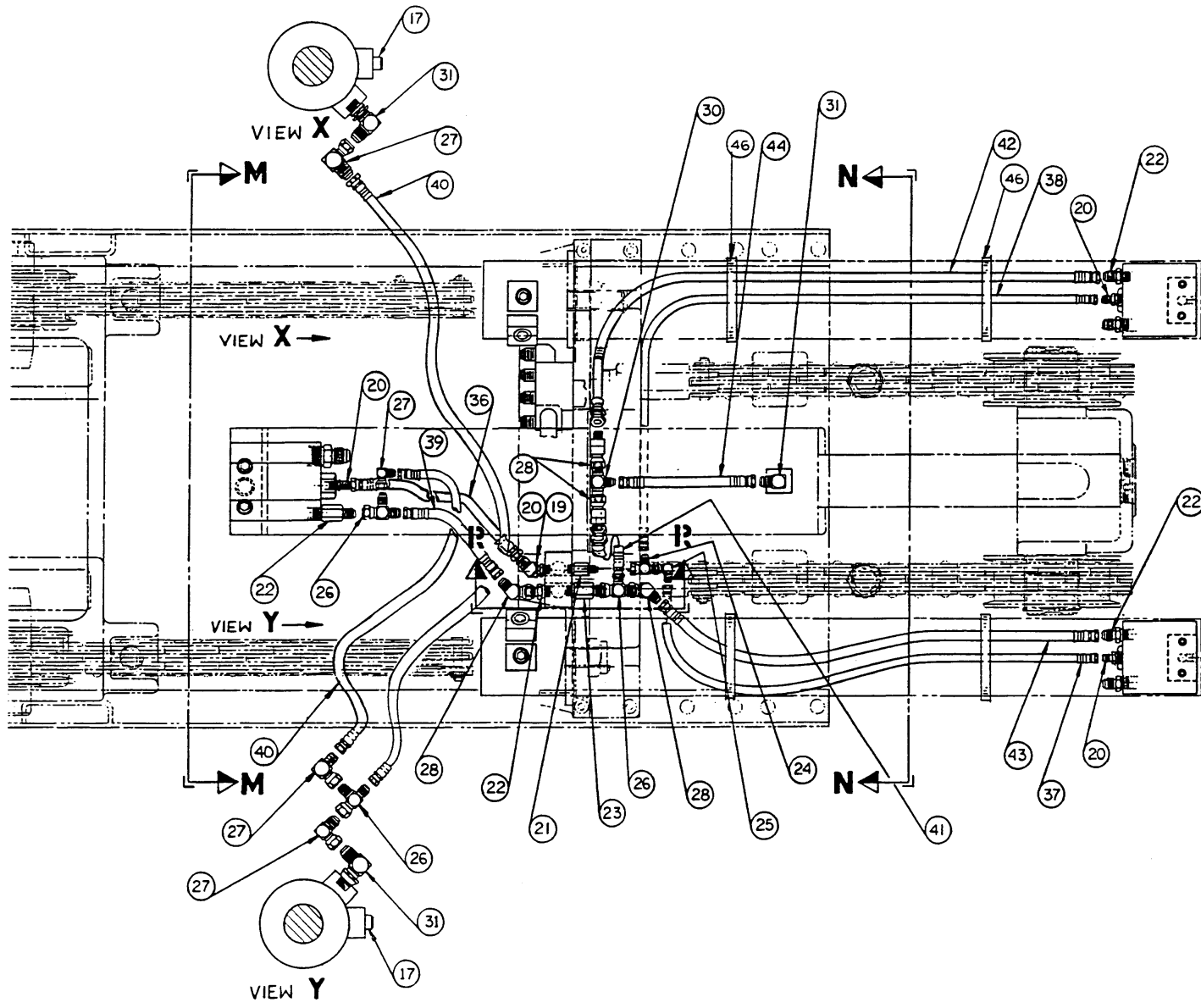
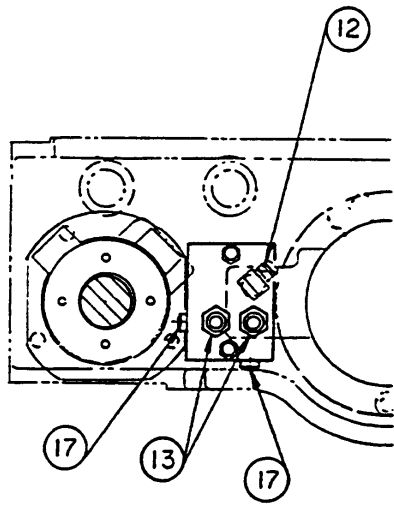
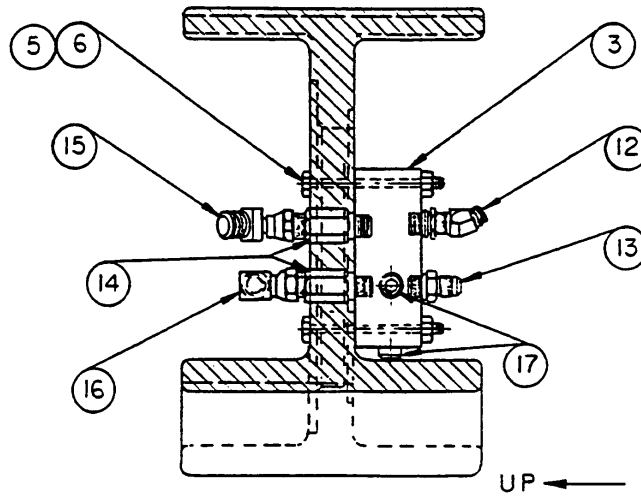


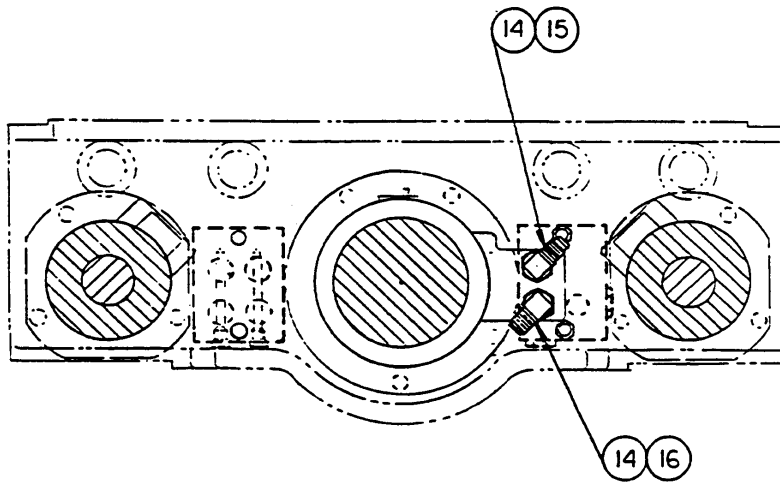
Figure 14
PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746



SECTION AA
(VIEWED FROM BOTTOM)



SECTION BB
TO REAR OF LOADER



SECTION CC
(VIEWED FROM TOP)

Figure 15
PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746

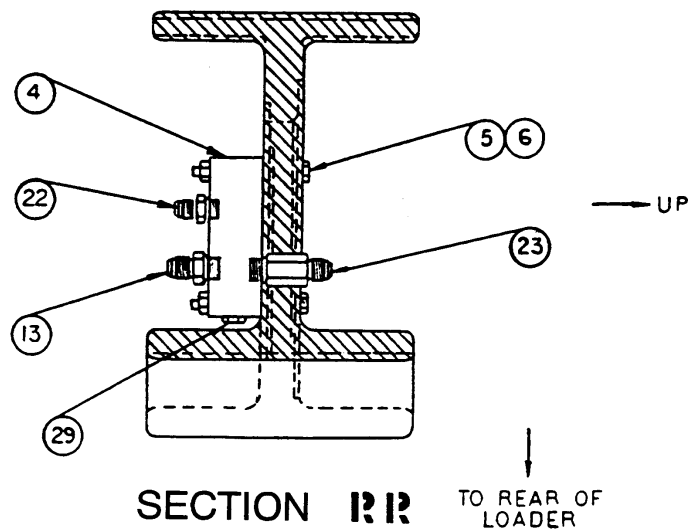
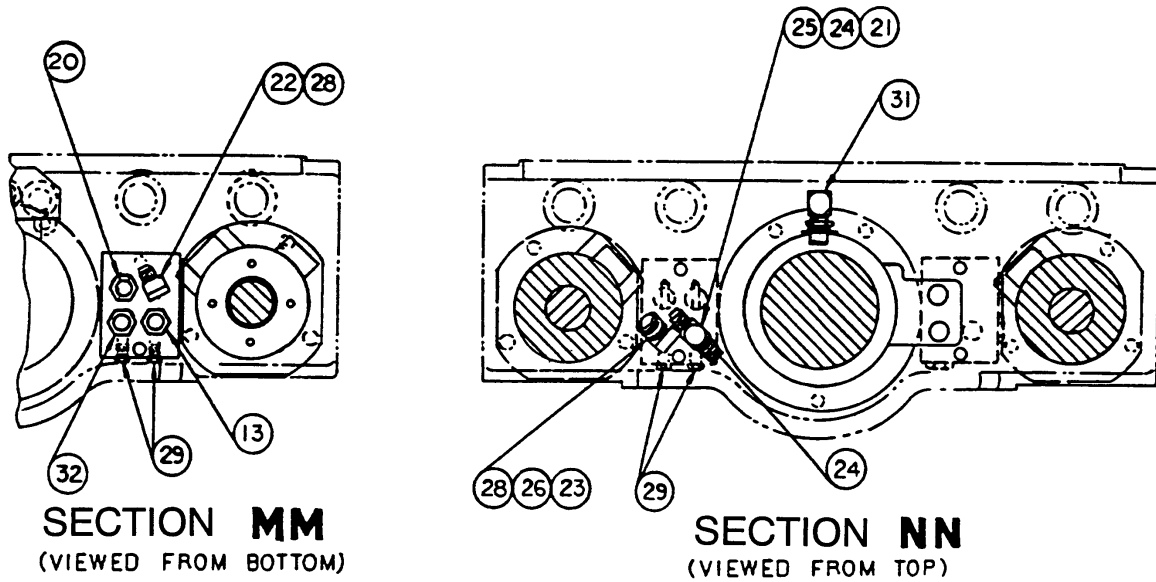


Figure 16
PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746

**PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746**

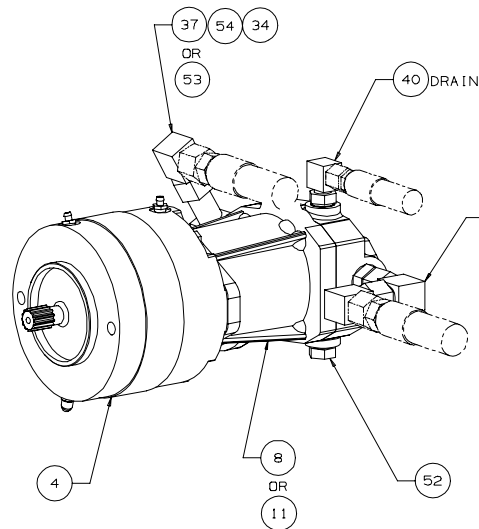
Figure 13 thru Figure 16

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0591		VALVE PAC, Vented P.O. Check (V54035 #8601-07U-C04) Consisting of:		1
-	620-0591-001		BODY, Sun #151-391		1
-	620-1510		CHECK VALVE, Vented Pilot-To-Open		1
-	620-0591-002		SEAL O-RING, Sun #500-101-121		1
2	620-0590		VALVE PAC, Vented P.O. Check (V54035 #8601-6U-C04) Consisting of:		2
-	620-0590-001		BODY, Sun #151-390		1
-	620-1511		CHECK VALVE, Vented Pilot-To-Open		1
-	620-0590-002		SEAL O-RING, Sun #500-101-117		1
3	620-1130		MANIFOLD PRESSURE		1
4	620-1131		MANIFOLD, Pilot		1
5	107-1042		SCREW, Hex Hd, 8.8 M10 x 1.5 x 85mm		4
6	620-0657		NUT, PTH 9 M10 x 1.5		4
7	111-2440		SCREW, Soc Hd Cap, .50-20 x 1.75"		2
8	620-1116		WASHER, Lock, 1/2 I.D. Hi- Collar		2
9	620-1113		SCREW, Soc Hd Cap, .375-24 x 2"		4
10	620-1115		WASHER, Lock .38 Hi-Collar		4
11	102-1093		CONN., -12 M JIC x -12 M O-Ring (V01276 #2 02702-12-12S)		1
12	620-0936		ELBOW, 45° -12 M JIC x -12 M O-Ring		1
13	102-1095		CONN., -8 M JIC x -8 M O-Ring (V01276 #202702-8-8S)		5
14	102-1088		CONN., Str. Lg, -8 M JIC x -8 M O-Ring		2
15	102-0321		ELBOW, 45° Sw Nut, -8 M JIC x -8 F JIC (V79470 #C5356X8)		1
16	102-0187		ELBOW, 90° Sw Nut, -8 F JIC x -8 M JIC (V01276 #2071T-8-8)		1
17	620-1539		PLUG, -8 M O-Ring Hollow (V09990 #05HP-8)		4
19	102-0901		ELBOW, 45° Sw Nut, -4 F JIC x -4 M JIC		1
20	118-2680-003		CONN., -4 M JIC x -4 M O-Ring (V79470 #C5315X4)		4
21	620-1737		CONN., -4 M O-Ring x -4 M JIC (V79470 #C5316-4)		1
22	620-0859		CONN., Lg -6 M JIC x -6 M O-Ring		4

**PLATFORM LIFT HYDRAULIC ASSEMBLY
620-1746**

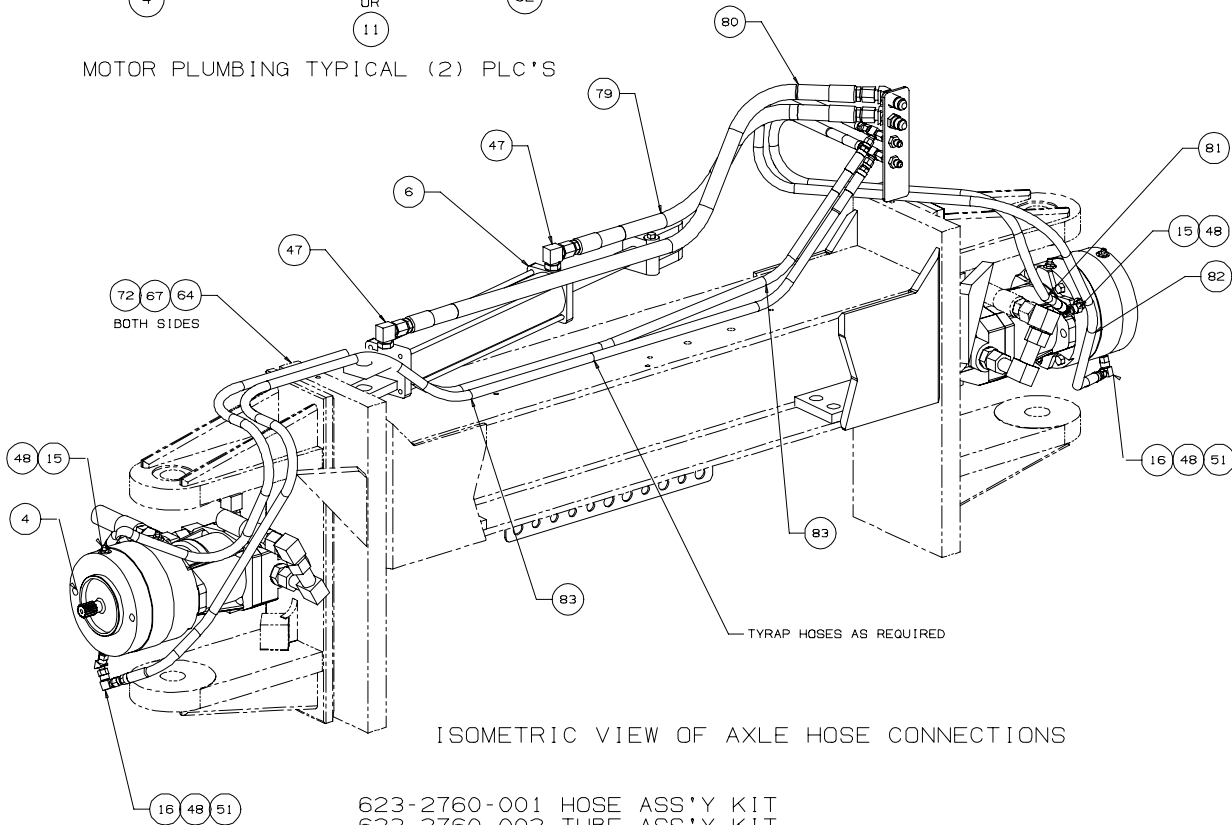
Figure 13 thru Figure 16

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
23	620-0938		CONN., Lg -6 M JIC x -6 M O-Ring (V01276 #202713T-6-6S)		1
24	102-1167		TEE, Swivel Nut , -4 M JIC x -4 F JIC (V01276 #203102-4-4)		1
25	620-0923		ELBOW, 45° Sw Nut, -4 M JIC x -1 F JIC		1
26	102-1158		TEE, Run Swivel, -6 F JIC x - 6 M JIC		3
27	102-0031		ELBOW, 90°, -6 F JIC x -6 M JIC (V79470 #C5505X6)		4
28	102-1267		ELBOW, 45° Sw Nut, -6 F JIC x -6 M JIC		5
29	620-1537		PLUG, -4 M O-Ring Hollow (V09990 #05HP-4)		2
30	620-0843		TEE, Union -6 M JIC (V01276 #2033T-6-6S)		1
31	102-0191		ELBOW, 90°, -6 M JIC x -8 M O-Ring		3
32	102-1094		CONN., -6 M JIC x -8 M O-Ring (V01276 #202702-8-6)		1
33	620-1847-012		HOSE ASSY, -12 x 304 (12 IN.) Lg		REF
34	519-0197-029		HOSE ASSY, -8 x 737 (29 IN.) Lg		REF
35	519-0197-044		HOSE ASSY, -8 x 1120 (44 IN.) Lg		REF
36	620-2013-012		HOSE ASSY, -4 x 304 (12 IN.) Lg		REF
37	620-2013-029		HOSE ASSY, -4 x 737 (29 IN.) Lg		REF
38	620-2013-043		HOSE ASSY, -4 x 1092 (43 IN.) Lg		REF
39	519-0196-011		HOSE ASSY, -6 x 280 (11 IN.) Lg		REF
40	519-0196-010		HOSE ASSY, -6 x 250 (10 IN.) Lg		REF
41	519-0196-006		HOSE ASSY, -6 x 155 (6 IN.) Lg		REF
42	519-0196-034		HOSE ASSY, -6 x 864 (34 IN.) Lg		REF
43	519-0196-028		HOSE ASSY, -6 x 712 (28 IN.) Lg		REF
44	519-0196-008		HOSE ASSY, -6 x 190 (8 IN.) Lg		REF
45	620-1746-001		HOSE ASSEMBLY KIT		1
46	622-0307		CLAMP, Hose		4
-	Not Shown				



73 HYDRA-ZORB CLAMPS NOT SHOWN
74 INSTALLED ON AXLE TO CHASSIS INSTALLATION

MOTOR PLUMBING TYPICAL (2) PLC'S

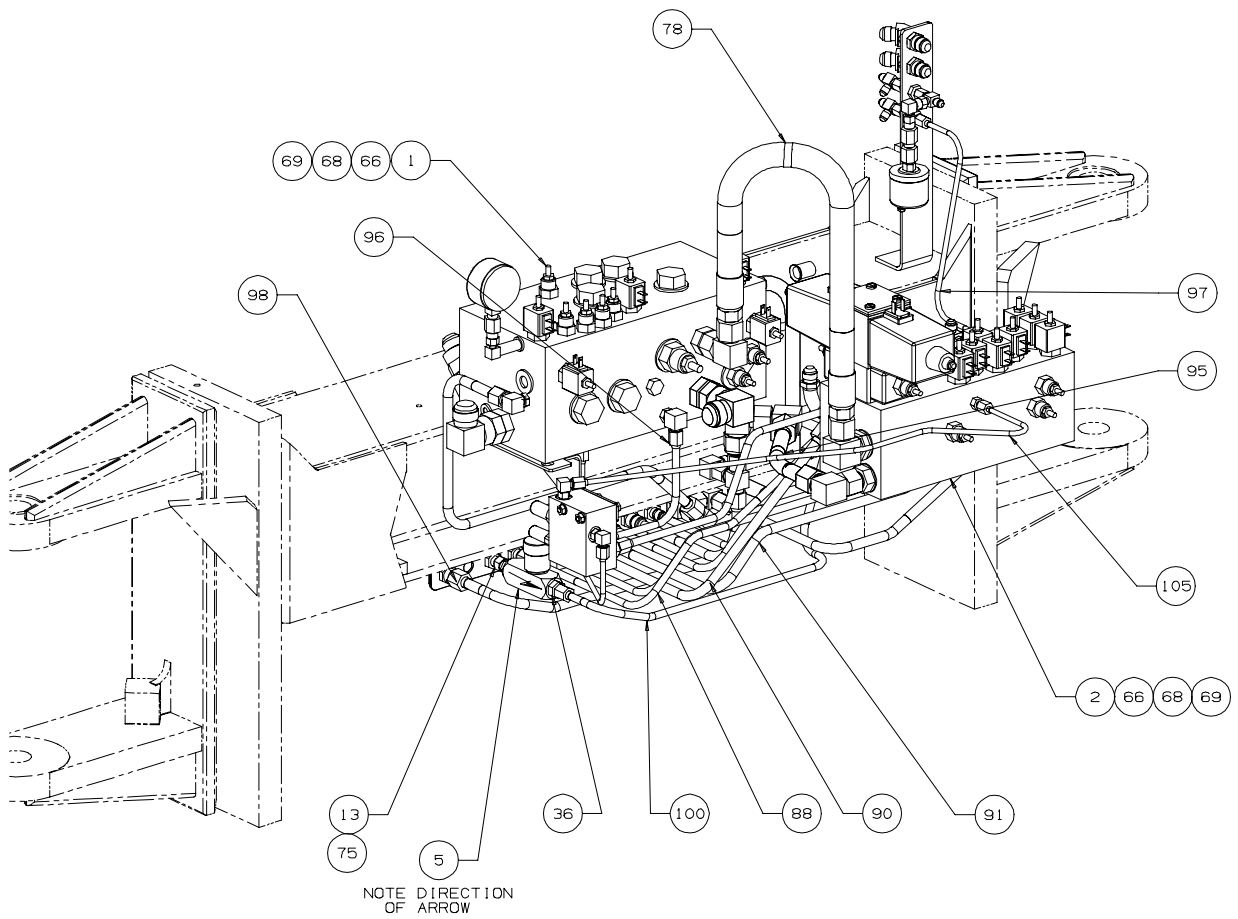


ISOMETRIC VIEW OF AXLE HOSE CONNECTIONS

- 623-2760-001 HOSE ASS'Y KIT
- 623-2760-002 TUBE ASS'Y KIT
- 623-2760-003 CMDRHL VALVEBANK
- 623-2760-004 CMDR W/2.5 in.3 DISPL. MOTOR
- 623-2760-005 CMDRHL W/2.5 in.3 DISPL. MOTOR

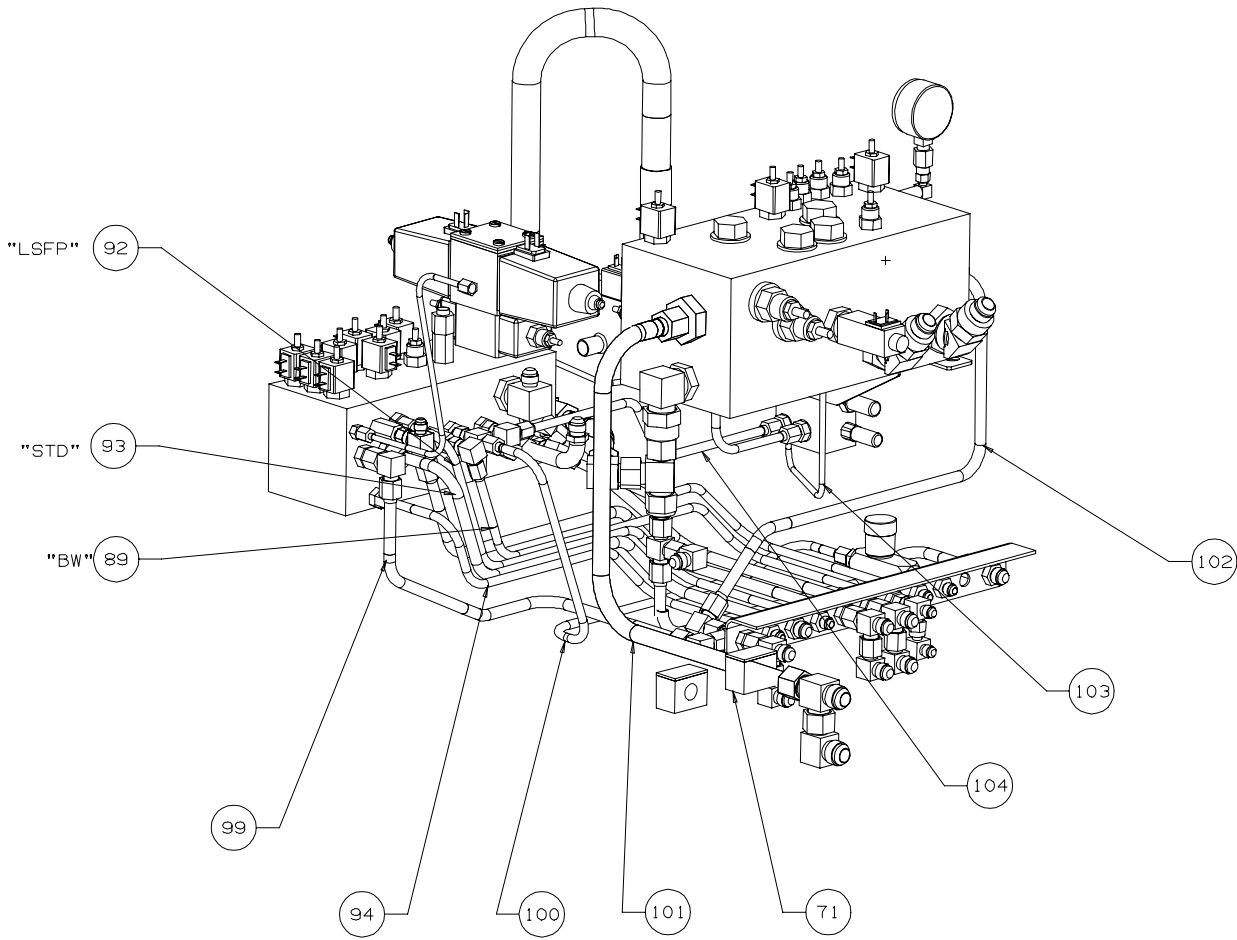
REV. C

Figure 17
AXLE HYDRAULICS
623-2760



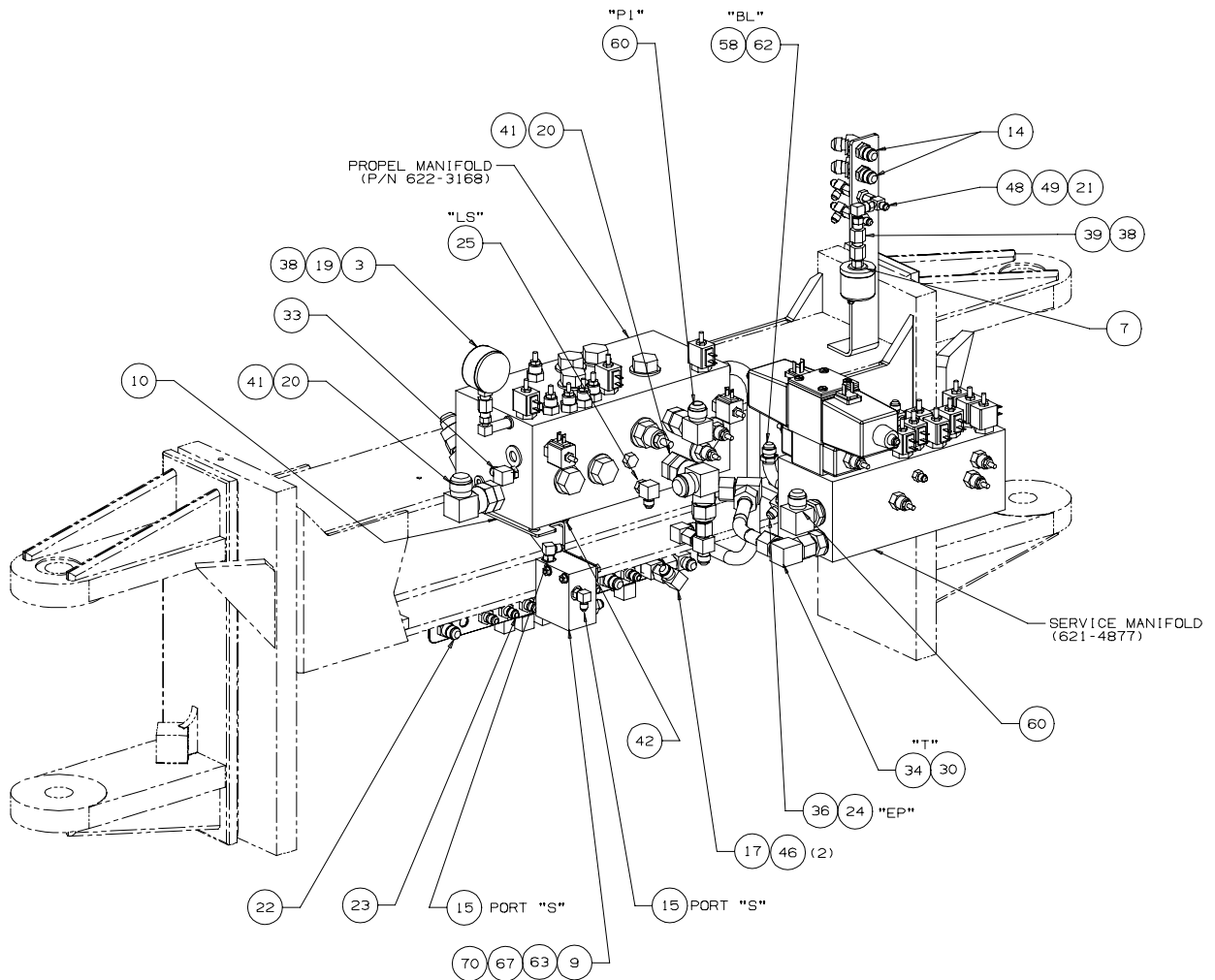
FRONT ISOMETRIC VIEW OF TUBE INSTALLATION

Figure 18
AXLE HYDRAULICS
623-2760



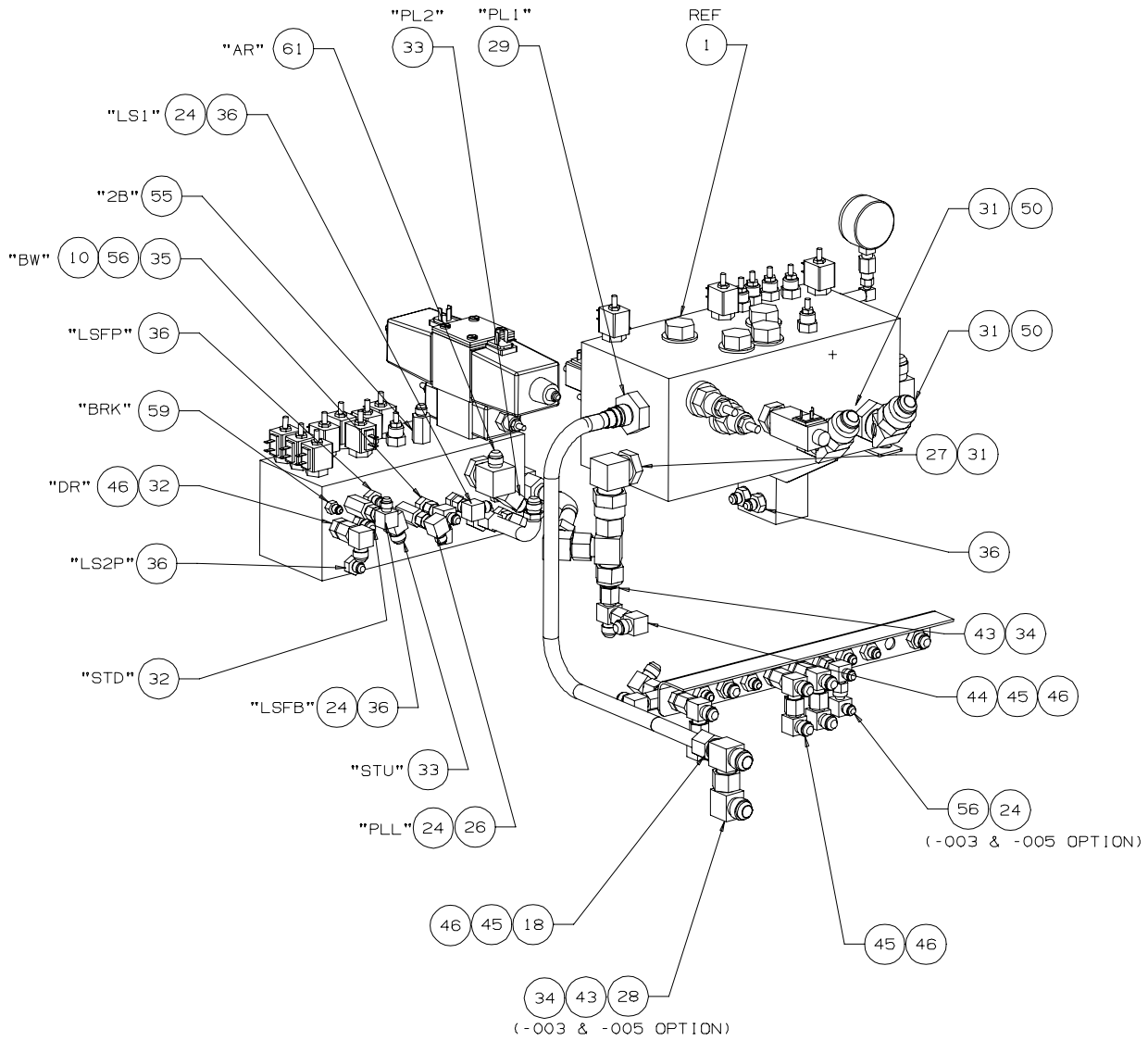
REAR ISOMETRIC VIEW OF TUBE INSTALLATIUN

Figure 19
AXLE HYDRAULICS
623-2760



ISOMETRIC VIEW OF ADAPTER INSTALLATION

Figure 20
AXLE HYDRAULICS
623-2760



REAR VIEW OF ADAPTER INSTALLATION

Figure 21
 AXLE HYDRAULICS
 623-2760

**AXLE HYDRAULIC INSTALLATION
623-2760**

Figure 17 thru Figure 21

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-3168		PROPEL/LIFT MANIFOLD ASSEMBLY (Ref. Figure 22, Page 37)		1
2	621-4877		SERVICES MANIFOLD ASSEMBLY (Ref. Figure 24, Page 40)		1
3	620-2565		GAUGE		
4	620-4120		AUSCO BRAKE, Single Rotor (VAUSCO #73285)		2
			Consisting of:		
-	620-4120-001		O-Ring KIT, Fail Safe Piston (VAUSCO #PK661)		
-	620-4120-002		O-RING KIT, Service Brake Piston (VAUSCO #PK1151)		
-	620-4120-003		STACK KIT, (VAUSCO #PK863)		
-	620-4120-004		BEARING KIT, (VAUSCO #PK864)		
-	620-4120-005		GASKET KIT, (VAUSCO #PK664)		
-	620-4120-006		SHAFT PART, (VAUSCO #34986)		
-	620-4120-007		BLEED SCREW, (VAUSCO #29035)		
-	620-4120-090		SEAL KIT AND GASKET		
5	620-1569		VALVE, Needle (V09990 #F820S)		1
6	620-0183		CYLINDER, Steering (V11341 #DB250-1323-106CCA0)		1
			Consisting of:		
-	620-0183-090		SEAL KIT (V11341 #1C4433)		
7	620-6380		SWITCH, Pressure Hydraulic		1
8	620-0141		MOTOR, Propel (V32705 #MFE15-9-30-030)		2
9	623-2831		VALVE PACK, Pressure Reducing (V54035 #9708-28U-C04)		1
			Consisting of:		
-	623-2831-001		BODY, Sun #Z153-892-100		
-	623-2831-002		VALVE, Reducing, Sun #PBBB CAN 2800 PSI		
-	623-2831-003		VALVE, Directional, Sun #DPBB CAN 1000 PSI		
10	623-2836		BRACKET, Mounting		1
12	102-0899		FTG, Cap, -6 JIC		1
13	102-1130		CONN., Str. Sw., -6 M O-Ring x -8 F JIC		1

**AXLE HYDRAULIC INSTALLATION
623-2760**

Figure 17 thru Figure 21

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
14	102-1314		ELBOW, 45°, Bulk Hd, -8 JIC (V01276 #P2042-8-8S)		2
15	102-0188		ELBOW, 90°, -4 M O-Ring x -4 M JIC		2
16	118-2680-003		CONN., Str., -4 M O-Ring x -4 M JIC (V79470 #C5315X4)		4
17	102-1151		TEE, Run -8 JIC B.H.		1
18	620-0830		UNION, Str. -12 M JIC x -8 M JIC		1
19	102-1027		ELBOW, 90° Lg, -4 M O-Ring x -4 M JIC		1
20	102-0168		CONN., Str., -20 M O-Ring x -16 M JIC		2
21	102-1078		CONN., Str., Bulk Hd, -4 JIC (V79470 #C5325X4)		2
22	102-0322		CONN., Str., Bulk Hd, -8 JIC (V01276 #P2041-8-8)		4
23	102-0296		CONN., Str., Bulk Hd, -6 JIC (V01276 #2041-6-6)		6
24	102-0031		ELBOW, 90° Swivel, -6 JIC (V79470 #C5506X6)		4
25	102-0190		ELBOW, 90°, -6 M O-Ring x -6 M JIC (V79470 #C5515X6)		1
26	620-0938		CONN., Str. Lg, -6 M O-Ring x -6 M JIC		1
27	102-0919		ELBOW, 90°, -20 M O-Ring x 16 M JIC (V01276 #2062-20-16)		1
29	102-1178		CONN., -20 M O-Ring x -12 M JIC		1
30	102-1093		CONN., Str., -12 M O-Ring x -12 M JIC (V01276 #P202702-12-12S)		1
31	102-1091		REDUCER, -16 F JIC x -12 M JIC (V01276 #P221501-16-12S)		3
32	102-1095		CONN., Str., -8 M O-Ring x -8 M JIC (V01276 #202702-8-8S)		3
33	102-0192		ELBOW, 90°, -8 M O-Ring x -8 M JIC (V79470 #C5515X8)		3
34	102-0280		ELBOW, 90° Swivel, -12 JIC (V79470 #C5506X12)		8
35	102-1094		CONN., Str., -8 M O-Ring x -6 M JIC		2
36	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC (V79470 #C5315X6)		7
37	102-1335		CONN., Str., -14 M O-Ring x -12 M JIC		4
38	102-1071		CONN., Str. Swivel, -4 F NPT x -4 F JIC		2
39	118-2659-001		BUSHING, -2 F NPT x -4 M NPT		1

**AXLE HYDRAULIC INSTALLATION
623-2760**

Figure 17 thru Figure 21

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
40	102-0027		ELBOW, 90°, -10 M O-Ring x -8 M JIC (V01276 #P2062-10-8S)		2
41	102-1365		ELBOW, 90° Swivel, -16 JIC		2
42	102-1718		CONN., Str., -8 M O-Ring x -4 M JIC		1
43	102-1162		TEE, Swivel Run, -12 JIC		1
44	102-1277		REDUCER, -12 F JIC x -8 M JIC (V01276 #221501-12-8)		1
45	102-0324		TEE, Swivel Run, -8 JIC (V01276 #P203102T-8-8)		5
45	102-0324		TEE, Swivel Run, -8 JIC (V01276 #P203102T-8-8)		
46	102-0187		ELBOW, 90° Swivel, -8 JIC (V79470 #C5506X8)		8
47	102-0194		ELBOW, 90°, -6 M O-Ring x -8 M JIC (V79470 #C5515X8X6)		2
48	102-0902		ELBOW, 90° Swivel, -4 JIC (V01276 #P2071-4-4S)		5
49	102-1167		TEE, Swivel Run, -4 JIC (V79470 #C5306X4)		3
50	519-8646		ELBOW, 45°, -20 M O-Ring x -16 M JIC		2
51	620-0923		ELBOW, 45° Swivel, -4 JIC (V79470 #C5356X4)		2
52	620-0887		PLUG, Hex -10 M O-Ring (V79470 #7237X10)		2
54	620-0928		ELBOW, 90°, -12 F JIC x -12 M JIC Tube		2
55	102-1088		CONN., Str. Lg, -8 M O-Ring x -8 M JIC		1
58	620-0930		ELBOW, 90° Long Swivel, -8 JIC		1
59	102-1087		CONN., Str., -6 M O-Ring x -4 M JIC (V01276 #202702-6-4-S)		1
60	102-0195		CONN., Str., -12 M O-Ring x -12 M JIC (V79470 #C5515X12)		1
61	102-1287		ELBOW, 90°, -12 O-Ring x -8 M JIC (V01276 #2062-12-8)		1
62	102-1332		CONN., Str., -12 M O-Ring x -8 M JIC		2
63	110-6858		SCREW, Hex Hd, 1/4 x 20 x 2.75"		2
64	620-0626		SCREW, Hex Hd, M8 x 1.25 x 30mm		2
65	620-0802-003		SCREW, Hex Hd, M5 x .8 x 20mm		2
66	110-0054		SCREW, Hex Hd, 1/2-13 x 1"		8
67	110-0254		WASHER, Flat 1/4		8

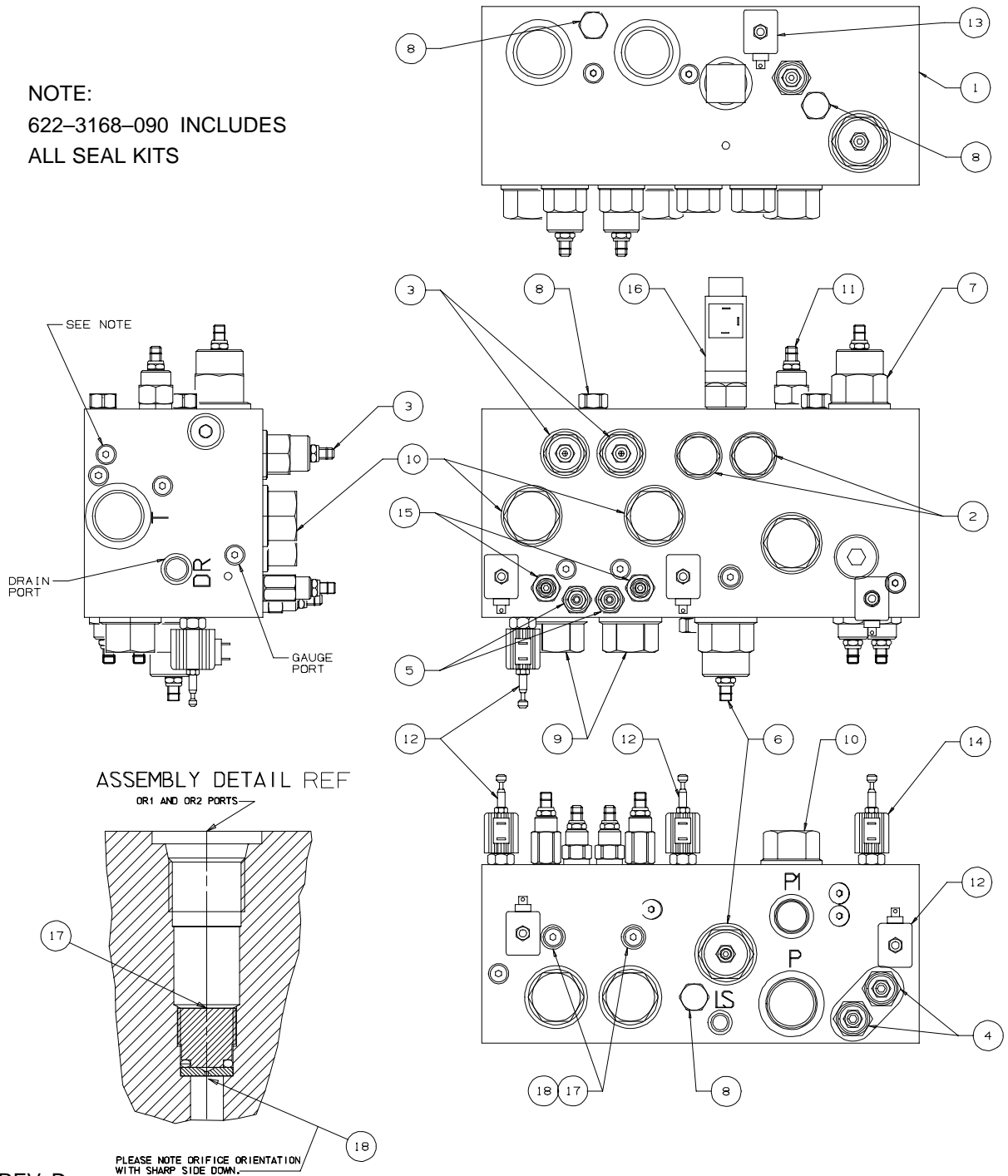
**AXLE HYDRAULIC INSTALLATION
623-2760**

Figure 17 thru Figure 21

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
68	110-0257		WASHER, Flat 1/2		8
69	110-0245		WASHER, Lock 1/2		8
75	102-1320		CONN., Str., -8 M O-Ring x -6 F O-Ring		2
70	110-0235		NUT, ESNA 1/4-20		2
71	620-4442		CLAMP, Hycon, 3/4" Tube Single		1
72	102-1189		CLAMP		4
73	237-6060-125		CLAMP, Tube 1		4
74	237-6060-100		CLAMP, Tube 1/2		2
77	623-2760-001		HOSE ASSEMBLY KIT		1
78	620-1847-030		HOSE ASSY, -12 x 762 (30 IN.) Lg		1
79	519-0197-025		HOSE ASSY, -8 x 635 (25 IN.) Lg		1
80	519-0197-042		HOSE ASSY, -8 x 1167 (42 IN.) Lg		1
81	620-2013-038		HOSE ASSY, -4 x 966 (38 IN.) Lg		1
82	620-2013-042		HOSE ASSY, -4 x 1067 (42 IN.) Lg		1
83	620-2013-083		HOSE ASSY, -4 x 2109 (83 IN.) Lg		2
87	623-2760-002		TUBE ASSEMBLY KIT		1
88	623-1554		TUBE ASSEMBLY, -6		1
89	623-1640		TUBE ASSEMBLY, -6		1
90	623-1641		TUBE ASSEMBLY, -8		1
91	623-1642		TUBE ASSEMBLY, -8		1
92	623-1643		TUBE ASSEMBLY, -6		1
93	623-1644		TUBE ASSEMBLY, -8		1
94	623-1645		TUBE ASSEMBLY, -6		1
95	622-1159		TUBE ASSEMBLY, -12		1
96	623-2833		TUBE ASSEMBLY, -6		1
97	623-1651		TUBE ASSEMBLY, -4		1
98	623-2762		TUBE ASSEMBLY, -6		1
99	623-2757		TUBE ASSEMBLY, -8		1
100	623-2758		TUBE ASSEMBLY, -6		1
101	623-2759		TUBE ASSEMBLY, -12		1
102	623-2761		TUBE ASSEMBLY, -8		1
103	623-2832		TUBE ASSEMBLY, -4		1
104	623-2834		TUBE ASSEMBLY, -6		1
105	623-2835		TUBE ASSEMBLY, -4		1

- Not Shown

NOTE:
622-3168-090 INCLUDES
ALL SEAL KITS



REV. D

Figure 22
PROPEL/LIFT MANIFOLD ASSEMBLY
622-3168

PROPEL MANIFOLD

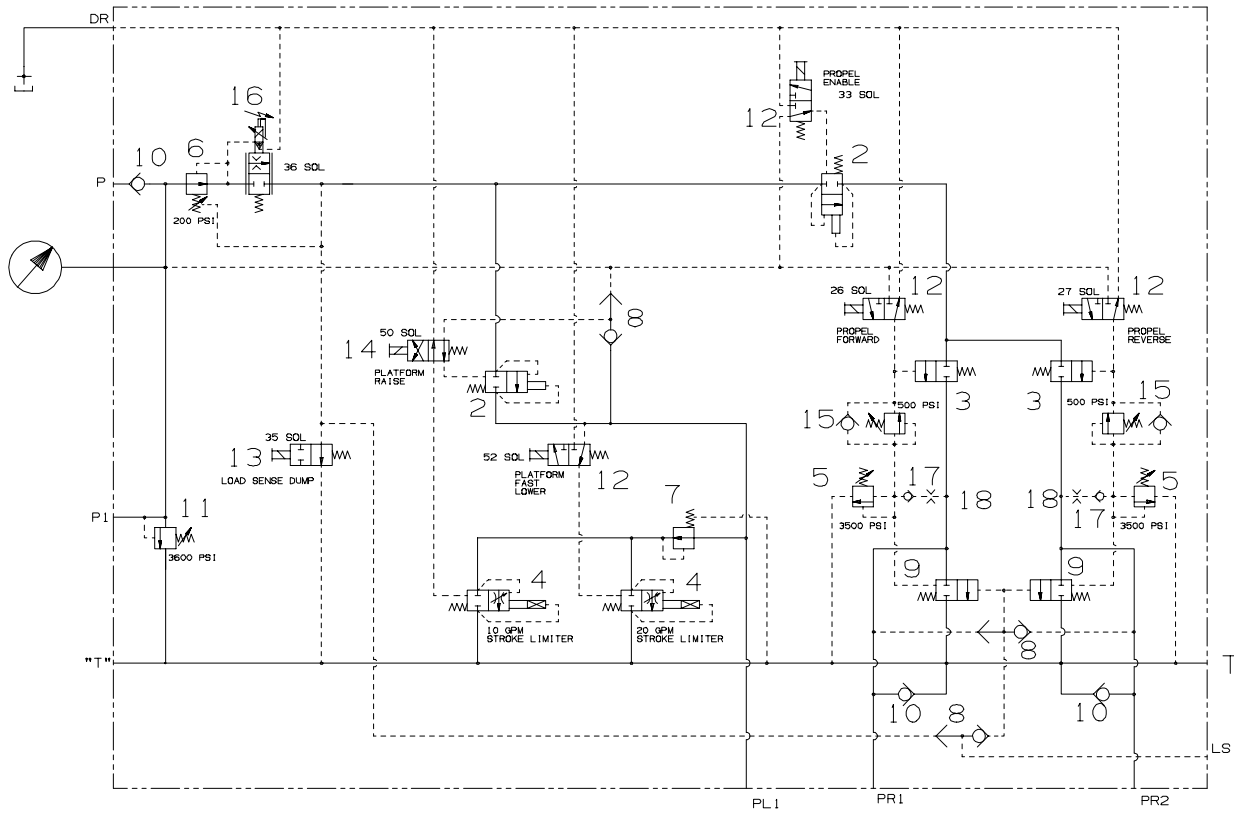


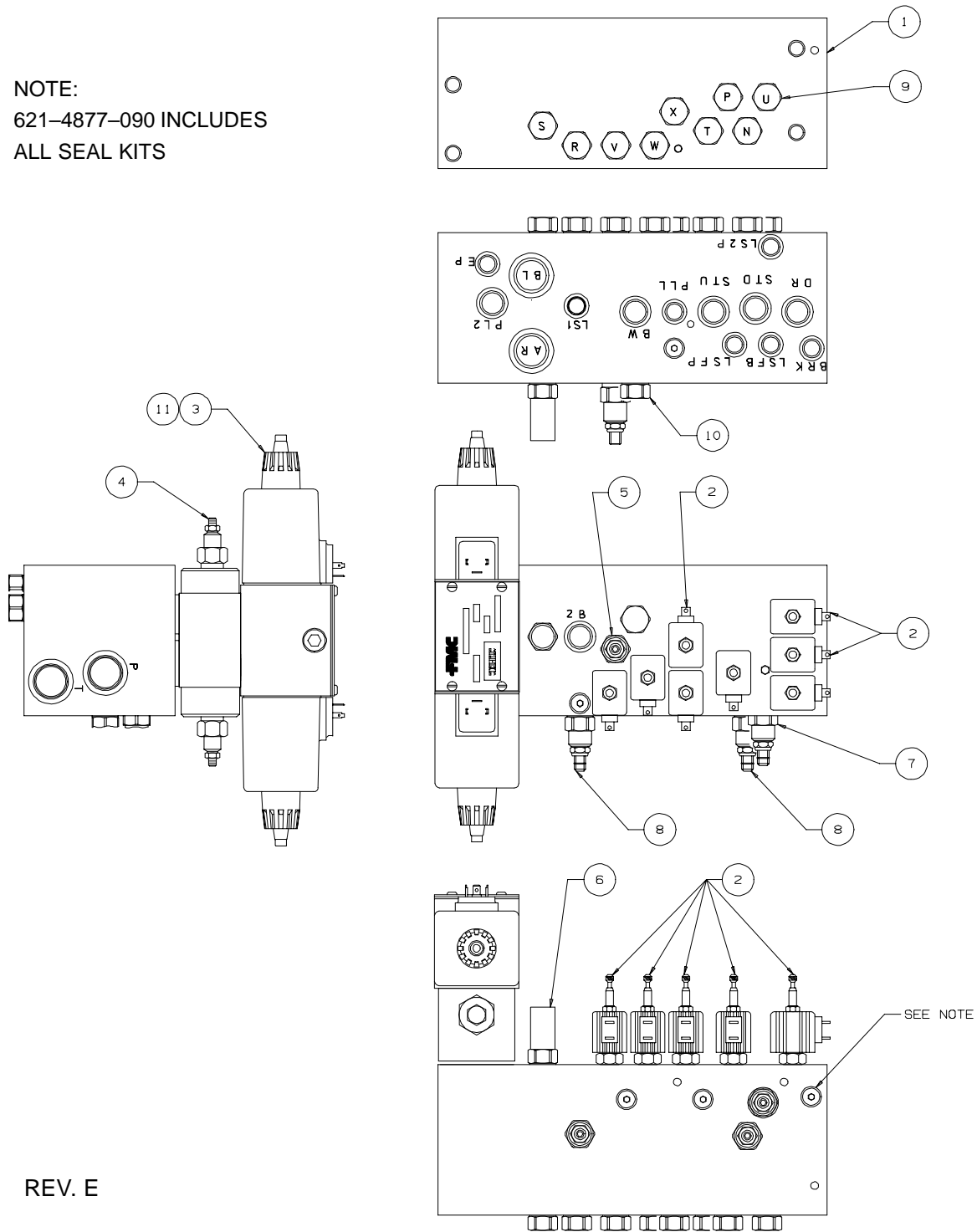
Figure 23
 PROPEL/LIFT MANIFOLD ASSEMBLY
 622-3168

**PROPEL/LIFT MANIFOLD ASSEMBLY
622-3168**

Figure 22, Figure 23

ITEM NO.	PART NO.	SEAL KIT PART NO.	NOMENCLATURE	TORQUE FT. LBS. (Nm)	UNITS PER ASSY.
1	622-3167		MANIFOLD, Propel/Lift (V54035 #9304 22U C04)		1
2	620-9837-013	620-1510-090	ELEMENT, N.O. Switching (V54035 #LOHC XDN)	150-160 (203-217)	REF
3	620-9837-012	620-1510-090	ELEMENT, N.C. Switching (V54035 #LKHC LDN)	150-160 (203-217)	REF
4	621-5497	620-1510-090	ELEMENT, N.O. Switching (V54035 #9312 20U C04)	45-50 (61-68)	REF
5	620-9837-010	620-0109-090	VALVE, Relief (V54035 #RBAC LCN)	30-35 (41-47)	REF
6	621-5499	519-9963-090	VALVE, Reducing (V54035 #PBJB LQN)	350-375 (475-508)	REF
7	621-5500	519-9963-090	VALVE, Reducing (V54035 #PBJB LAN)	350-375 (475-508)	REF
8	620-1326-001	620-1326-003	VALVE, Shuttle (V54035 #CSAB XXN)	30-35 (41-47)	REF
9	620-9837-002	620-9837-007	VALVE, Two Way (V54035 #DKJS XHN)	350-375 (475-508)	REF
10	620-9837-004	620-9837-008	VALVE, Check	350-375 (475-508)	REF
11	620-9837-001	620-1819-090	VALVE, Relief (V54035 #RPGE LCN)	45-50 (61-68)	REF
12	621-5174	621-5174-090	VALVE, Directional	15 (20)	REF
13	621-5173	621-5173-090	VALVE, Directional	15 (20)	REF
14	621-5175	621-5175-090	VALVE, Directional	15 (20)	REF
15	621-5498	620-1326-003	VALVE, Sequence	15 (20)	REF
16	620-9837-021	621-5658	VALVE, Proportional	75-90 (102-122)	1
			Consisting of:		
-	621-5658		SEAL KIT		1
-	621-5659		PROPORTIONAL SOL, 24V		1
17	621-4874-001	515-1836-010	VALVE, Check	1-2 (1.3-3)	REF
18	621-4874-002		ORIFICE		REF
19	622-3168-009		BOSS PLUG O-RING KIT		REF
			Consisting of:		
-		118-2718-003	O-RING BOSS PLUG, SAE 4	10 (14)	
-		118-2718-005	O-RING BOSS PLUG, SAE 6	15 (20)	
-		118-2718-006	O-RING BOSS PLUG, SAE 8	35 (47)	
-		118-2718-007	O-RING BOSS PLUG, SAE 10	40 (54)	
-		118-2718-008	O-RING BOSS PLUG, SAE 12	55 (75)	
-	Not Shown				

NOTE:
621-4877-090 INCLUDES
ALL SEAL KITS



REV. E

Figure 24
SERVICE MANIFOLD ASSEMBLY
621-4877

SERVICE MANIFOLD

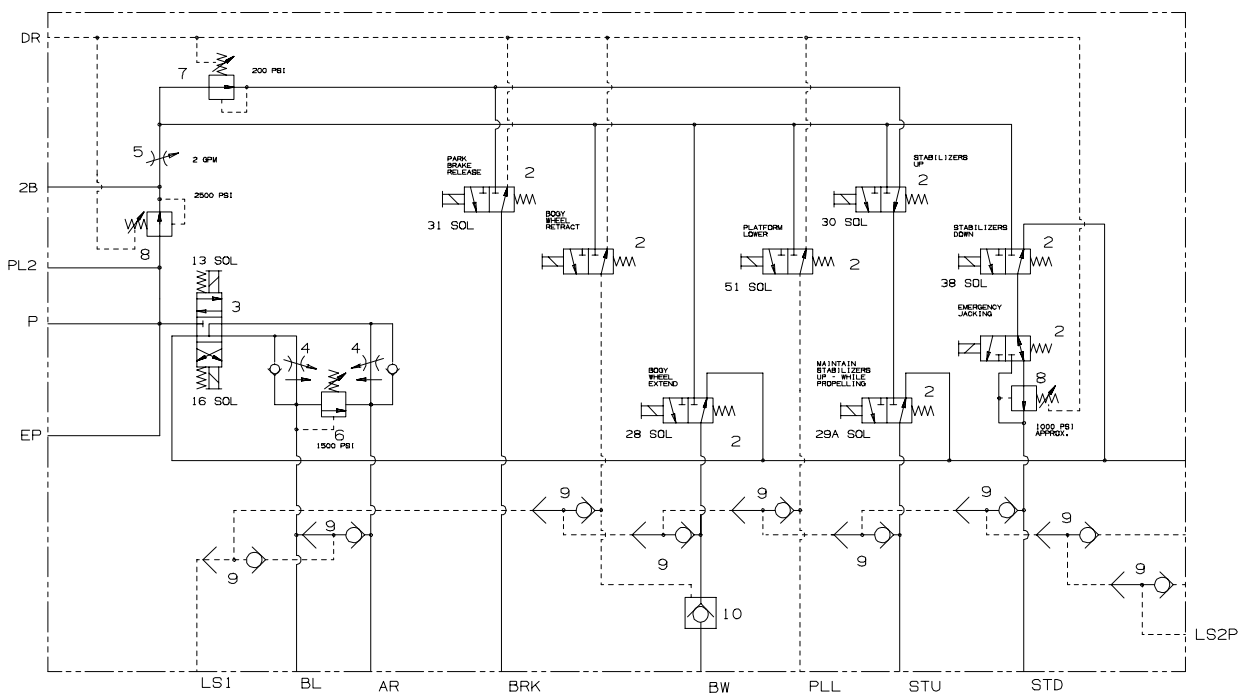
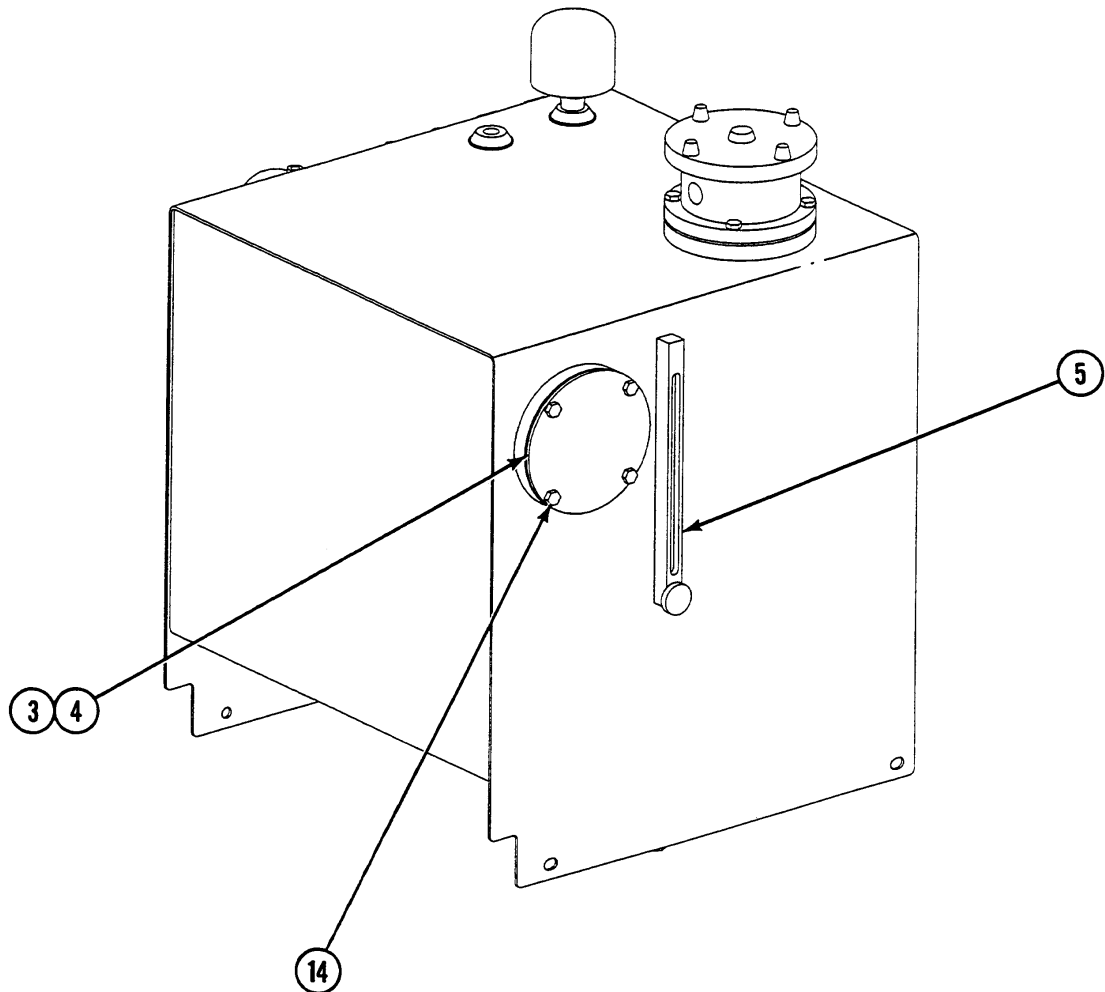


Figure 25
SERVICE MANIFOLD ASSEMBLY
621-4877

**SERVICE MANIFOLD ASSEMBLY
621-4877**

Figure 24, Figure 25

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>SEAL KIT PART NO.</u>	<u>NOMENCLATURE</u>	<u>TORQUE FT. LBS. (Nm)</u>	<u>UNITS PER ASSY.</u>
1	622-2147		MANIFOLD, Service		1
2	621-5174	621-5174-090	VALVE, Directional	15 (20)	8
3	620-6454		VALVE, Directional		1
4	620-4698	519-0311-090	VALVE, Flow Control (V54035 #FDCB LAN DBY)	45-50 (61-68)	1
5	620-0123-001	620-0109-090	VALVE, Needle (V54035 #NFCC LCN)	30-35 (41-47)	1
6	620-6338-001	620-0109-090	VALVE, Relief (V54035 #RPEC CBN, 1500 PSIG)	30-35 (41-47)	1
7	620-9837-005	620-1326-003	VALVE, Pressure Reducing (V54035 #PBDB LQN)	30-35 (41-47)	1
8	620-9837-006	620-1326-003	VALVE, Pressure Reducing (V54035 #PBDB LAN)	30-35 (41-47)	2
9	620-1326-001	620-1326-003	VALVE, Shuttle (V54035 #CSAB XXN)	30-35 (41-47)	9
10	620-3249-001	620-1326-003	VALVE, Check (V54035 #CKCB XAN)	30-35 (41-47)	1
11	621-5501		STUD KIT		1
19	621-4877-009		BOSS PLUG O-RING KIT		REF
-		118-2718-003	O-RING BOSS PLUG, SAE 4	10 (14)	
-		118-2718-005	O-RING BOSS PLUG, SAE 6	15 (20)	
-		118-2718-007	O-RING BOSS PLUG, SAE 10	40 (54)	
-		118-2718-008	O-RING BOSS PLUG, SAE 12	55 (75)	
-	Not Shown				



REV. C

Figure 26
HYDRAULIC TANK, CARBON STEEL
622-3327-001

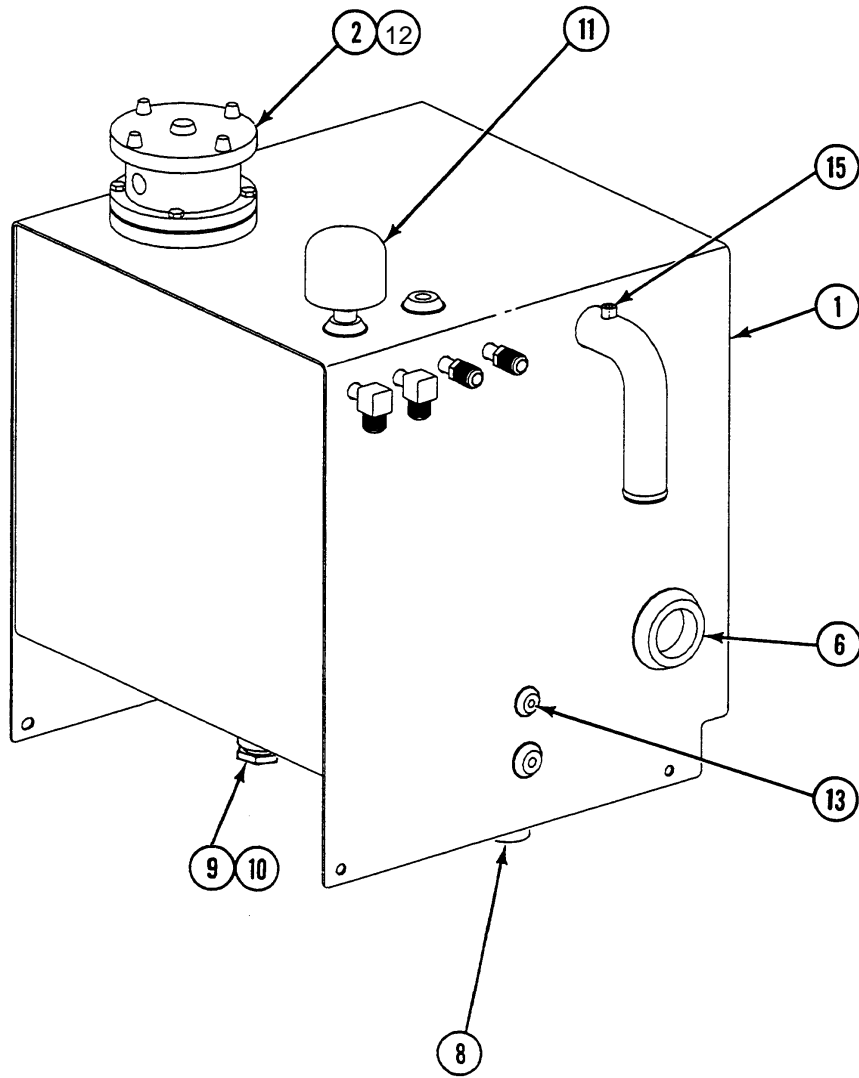
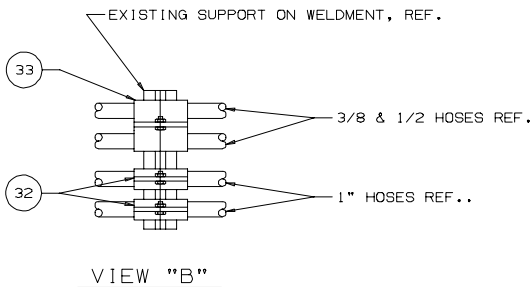
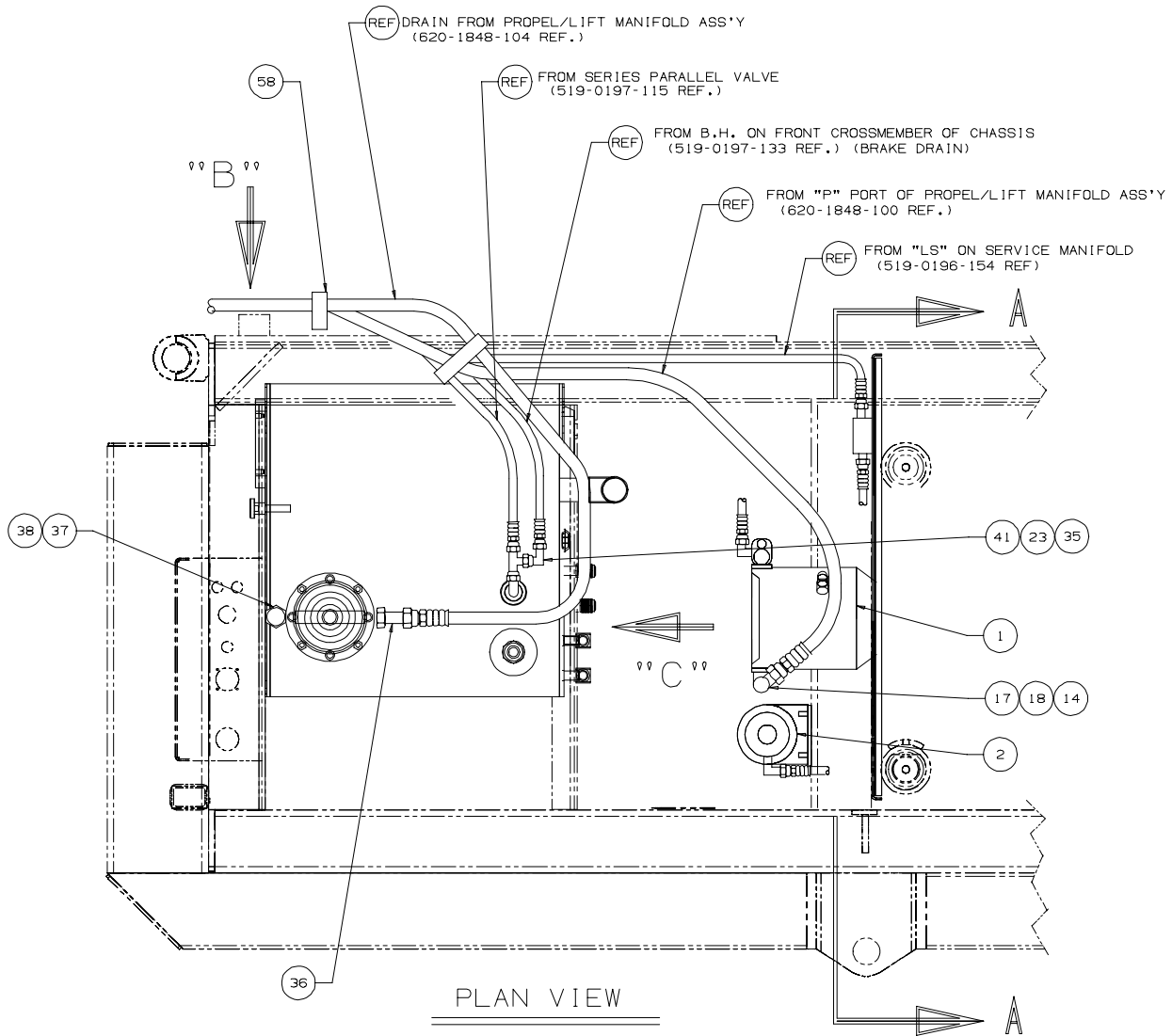


Figure 27
HYDRAULIC TANK, CARBON STEEL
622-3327-001

**HYDRAULIC TANK, CARBON STEEL
622-3327-001**

Figure 26, Figure 27

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-3147-001		HYDRAULIC TANK WELDMENT		1
2	620-0460		FILTER ASSEMBLY, RTM		1
			Consisting of:		
-	620-0461		BYPASS SET ELEMT REPLACEMENT		
3	519-4244-002		GASKET, Filter (V08832 #LFT-642)		1
4	621-5093-001		CAP, Hydraulic Tank		1
5	238-4469		GAUGE, Hydraulic Fluid Level (V24346 #G640-12-B-2)		1
6	118-1344		PLUG, 2.50 Blk Iron, Sq. Hd.		1
8	110-5105		PLUG, 1.50 NPT Blk Iron, Core Sq Hd.		1
9	622-1258		PLUG, 1.50 NPT Modified Sq Hd.		1
10	621-1933		MAGNETIC RESERVIOR ROD		1
11	621-5454		BREATHER, Air		1
12	107-0754		SCREW, Hex Hd, M10 x 1.5 x 25mm		4
13	514-4745		SWITCH, Temp. 180 Immersion (3TAS)		1
14	107-0353		SCREW, Hex Hd, 8.8 M10 x1.5 x 16mm		4
15	110-9987		PLUG, .25 NPT Blk Iron Solid		1
-	Not Shown				



REV. K

Figure 28
 POWER MODULE HYDRAULICS, DIESEL ENGINE
 622-3164

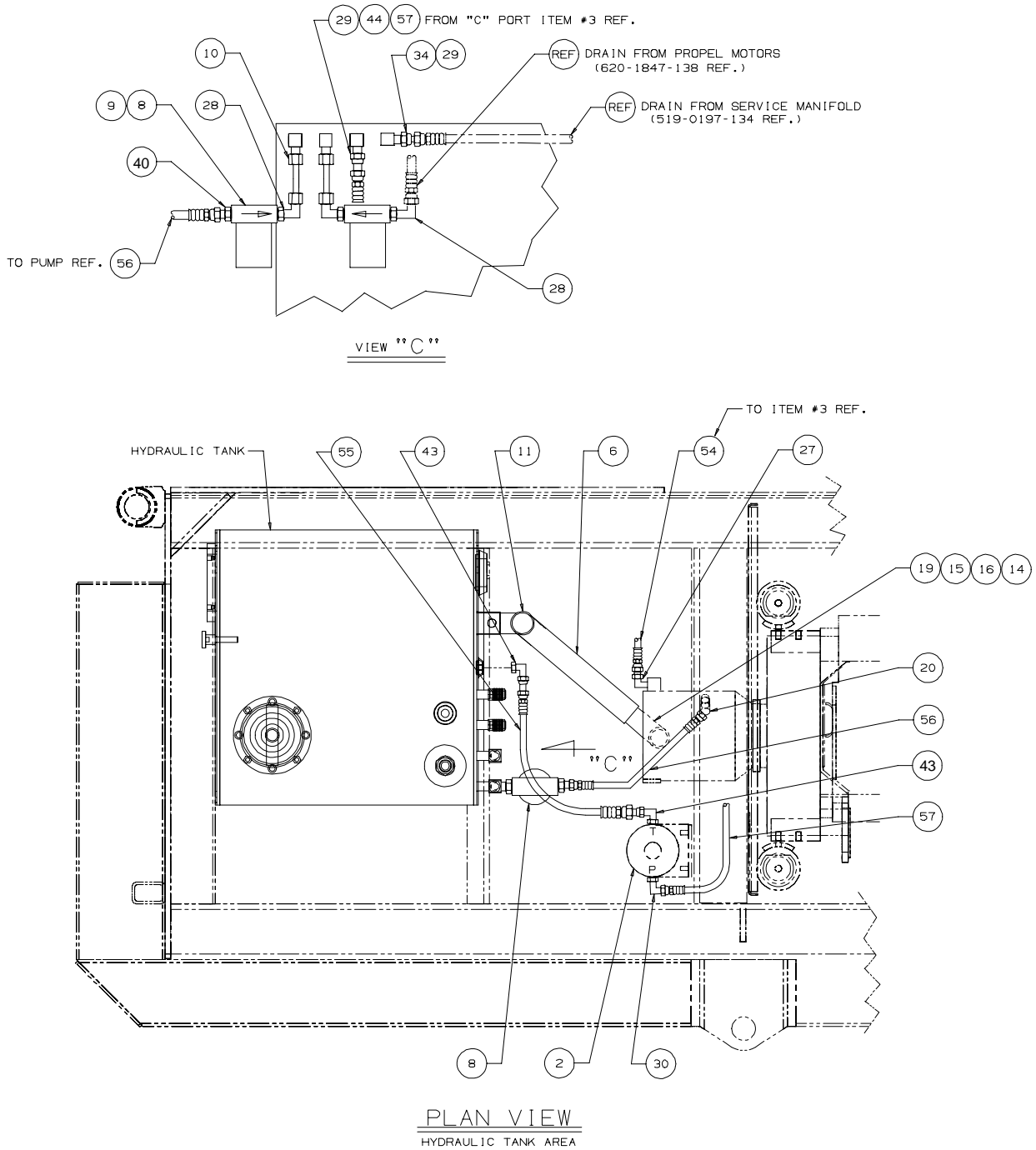


Figure 29
POWER MODULE HYDRAULICS, DIESEL ENGINE
622-3164

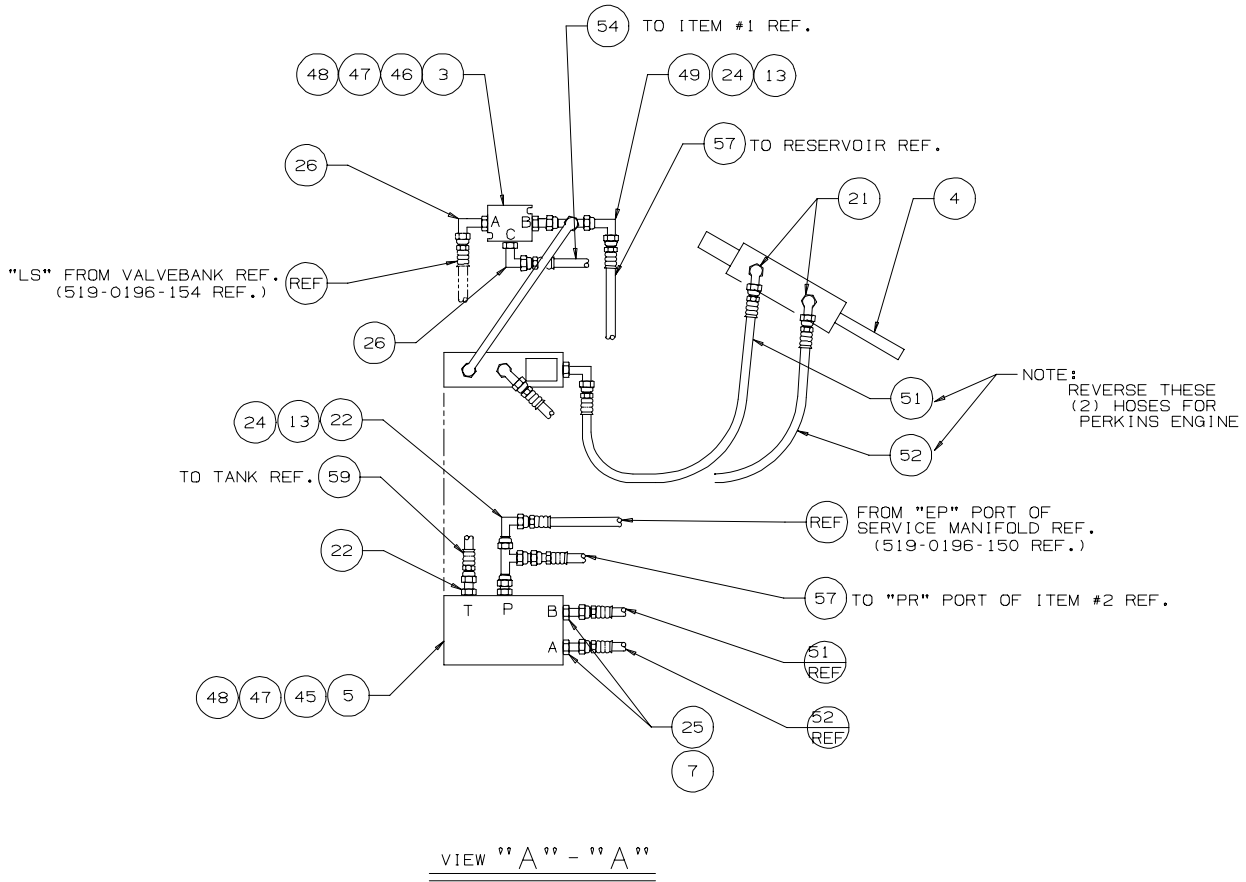


Figure 30
 POWER MODULE HYDRAULICS, DIESEL ENGINE
 622-3164

**POWER MODULE HYDRAULICS, DIESEL ENGINE
622-3164**

Figure 28 thru Figure 30

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3007		PUMP, Hyd (Flange Mounting) Displ. (V58114 #5142-004-034) Consisting of:		1
-	620-3006-001		REPLACEMENT COMP. ASSY. (V58114 #5102-552-003 DFR1 Control)		1
-	620-3007-090		SEAL KIT (V58114 #5140-635-011)		1
2	620-9350		EMERGENCY PUMP (V0A9U1 Webster Pump #646 S30 A25) Consisting of:		1
-	620-9350-001		Consisting of: REPLACEMENT MOTOR (V0A9U1 #80056-2S)		1
-	620-9350-002		REPLACEMENT MOTOR W/SOLENOID (V0A9U1 #86116-1S)		1
-	620-9350-003		REPLACEMENT SOLENOID (V0A9U1 #80007-3)		1
3	622-6916		VALVE, 2 Pos 3 Way 24V Solenoid (V09990 #DS083LTD024LP64) Consisting of:		1
-	622-6916-001		CARTRIDGE (V09990 #DS083LTD024LP)		
-	621-5174-001		REPLACEMENT COIL		
-	622-6916-090		SEAL KIT		
4	621-2256		CYLINDER, Demand Throttle 1.5 Stroke <u>(Used on Non Perkins Engine)</u> (V4N453 #CLIPPARD MINIMATIC 7D-1 1/2) Consisting of:		1
-	621-2256-090		SEAL KIT		1
5	620-8310		VALVE, Throttle (V09990 #HFC32459)		1
6	623-0419-022		HOSE, Suction, 2 I.D.		1
7	102-0902		ELBOW, 90° Sw, -4 JIC		2
8	621-5556		FILTER, Spin-On (V05779 #12 AT 1OCN 3MMLI) Consisting of:		2
-	621-5556-002		REPLACEMENT FILTER ELEMENT (V05779 #921999)		

**POWER MODULE HYDRAULICS, DIESEL ENGINE
622-3164**

Figure 28 thru Figure 30

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
9	621-5556-001		GAUGE, Indicator (V09990 #925400)		1
10	622-2384		TUBE ASSEMBLY, -12		1
11	105-0136-004		CLAMP, Hose		2
12	620-0810		VALVE, Needle (V09990 #620S)		1
13	102-0031		ELBOW, 90° Swivel, -6 JIC		2
14	110-0245		WASHER, Lock 1/2		4
15	102-1677		ELBOW, 90°, -4 Bolt Flange		1
16	110-0056		SCREW, Hex Hd, 1/2-13 x 1 1/2"		4
17	102-1676		FLANGE, Split Half Kit, -20		1
18	519-5535-006		FLANGE (V01276 #FF5162-2016S)		1
19	515-1836-228		O-RING		1
20	102-0027		ELBOW, 90°, -10 M O-Ring x -8 M JIC (V01276 #P2062-10-8S)		1
21	118-2681-003		ELBOW, 90°, -2 M NPT x -4 M JIC		2
22	620-0860		CONN., Str., -4 M O-Ring x -6 M JIC (V79470 #C5315X6X4)		2
23	102-0324		TEE, Run Swivel, -8 JIC		1
24	102-1158		TEE, Run Swivel, -6 JIC (V79470 #C5706X6X6)		2
25	118-2680-003		CONN., Str., -4 M O-Ring x -4 M JIC (V79470 #C5315X4)		2
26	102-0190		ELBOW, 90°, -6 M O-Ring x -6 M JIC (V79470 #C5515X6)		2
27	102-1238		ELBOW, 90°, -4 M O-Ring x -6 M JIC		1
28	102-0195		ELBOW, 90°, -12 M O-Ring x -12 JIC (V79470 #C5515X12)		3
29	102-0280		ELBOW, 90° Swivel, -12 JIC (V79470 #C5506X12)		1
30	118-2681-009		ELBOW, 90°, -6 M NPT x -6 JIC (V01276 #2024-6-6)		1
32	237-6060-150		TUBE CLAMP, Hydra-Zorb		2
33	237-6060-200		TUBE CLAMP, Hydra-Zorb		1
34	102-1277		REDUCER, -12 F JIC x -8 M JIC (V01276 #221501-12-8)		1
35	102-0187		ELBOW, 90° Swivel, -8 JIC		1
36	519-4575-001		CONN., Str., -24 M O-Ring x -16 M JIC		1

**POWER MODULE HYDRAULICS, DIESEL ENGINE
622-3164**

Figure 28 thru Figure 30

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
37	102-0922		CAP, -20 JIC (V79470 #C5129X20)		1
38	620-1736		ELBOW, 90°, -24 M O-Ring x -20 M JIC (V01276 #2062-24-24)		1
39	102-1287		ELBOW, 90°, -12 M O-Ring x -8 M JIC		2
40	102-1332		CONN., Str., -12 M O-Ring x -8 M JIC		1
41	102-0319		ELBOW, 90°, -12 NPT x -8 JIC		1
42	102-1267		ELBOW, 45°, -6 F JIC x -6 M JIC		1
43	102-0176		ELBOW, 90°, -8 M NPT x -8 M JIC		2
44	102-0865		REDUCER, -12 F JIC x -6 M JIC (V79470 #C5015-12-6)		1
45	111-1605		SCREW, Hex Hd, 1/4-20 x 4"		2
46	111-1601		SCREW, Hex Hd, 1/4-20 x 1 3/4"		2
47	110-0254		WASHER, Flat 1/4		8
48	103-0613		NUT, ESNA 1/4		4
49	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC		1
50	622-3164-001		HOSE ASSEMBLY KIT		1
51	620-2013-020		HOSE ASSY, -4 x 508 (20 IN.) Lg		1
52	620-2013-022		HOSE ASSY, -4 x 559 (22 IN.) Lg		1
53	622-6029		CYLINDER, Demand Throttle 1" Stroke (For Perkins Engine Only) (V4N453 #CLIPPARD MINIMATIC 7D-1 1/2) Consisting of:		1
-	622-6029-090		SEAL KIT		
54	519-0196-025		HOSE ASSY, -6 x 635 (25 IN.) Lg		1
55	519-0196-022		HOSE ASSY, -6 x 559 (22 IN.) Lg		1
56	519-0197-017		HOSE ASSY, -8 x 432 (17 IN.) Lg		1
57	519-0196-050		HOSE ASSY, -6 x 1270 (50 IN.) Lg		1
58	622-5251		STRAP, Hose Support		2
59	519-0196-016		HOSE ASSY, -6 x 406 (16 IN.) Lg		1
-	Not Shown				

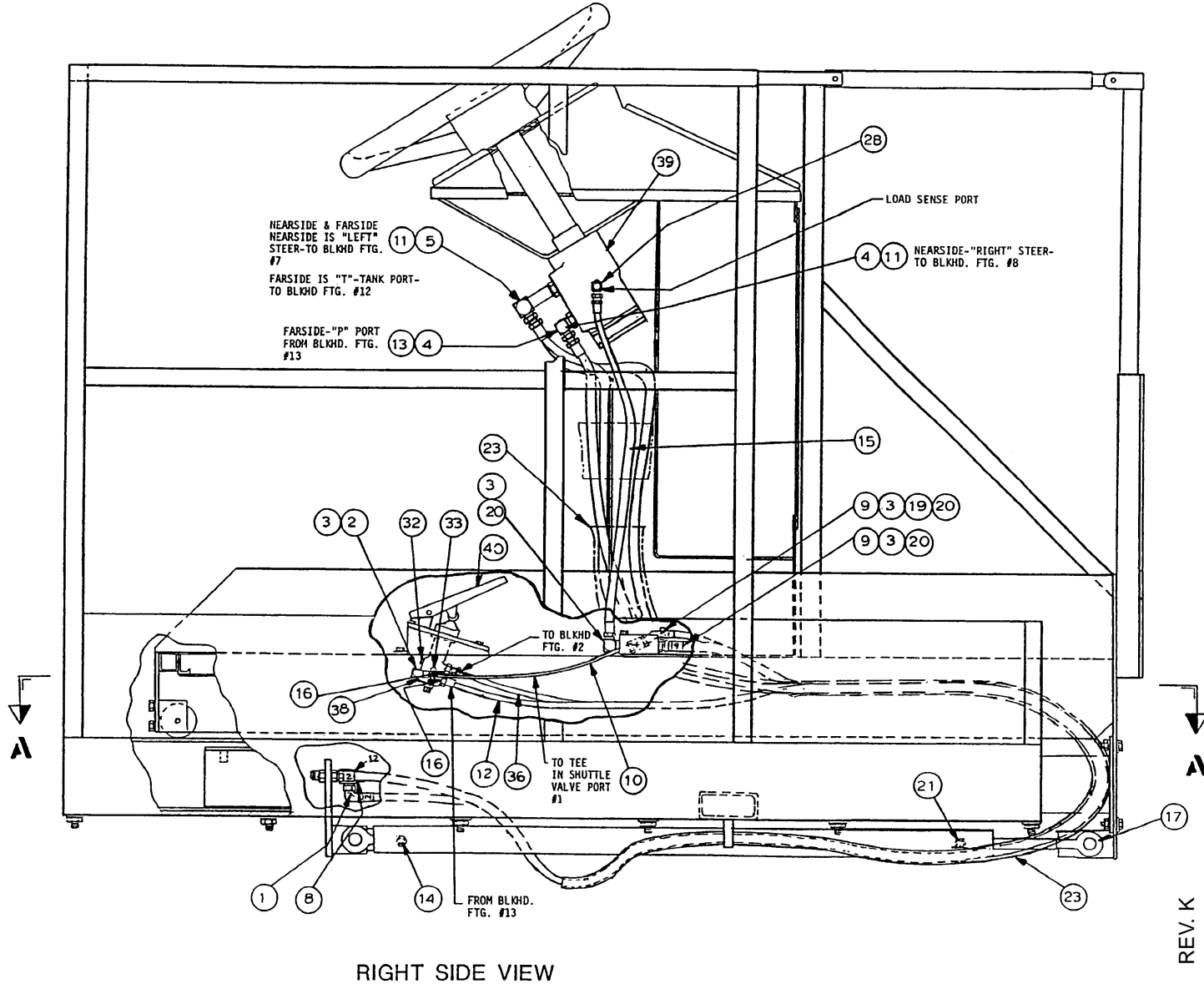


Figure 31
OPERATOR'S CAB HYDRAULICS
620-2734

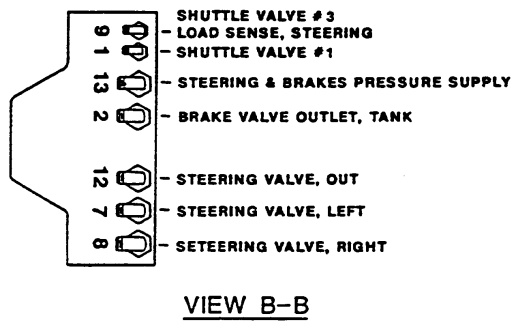
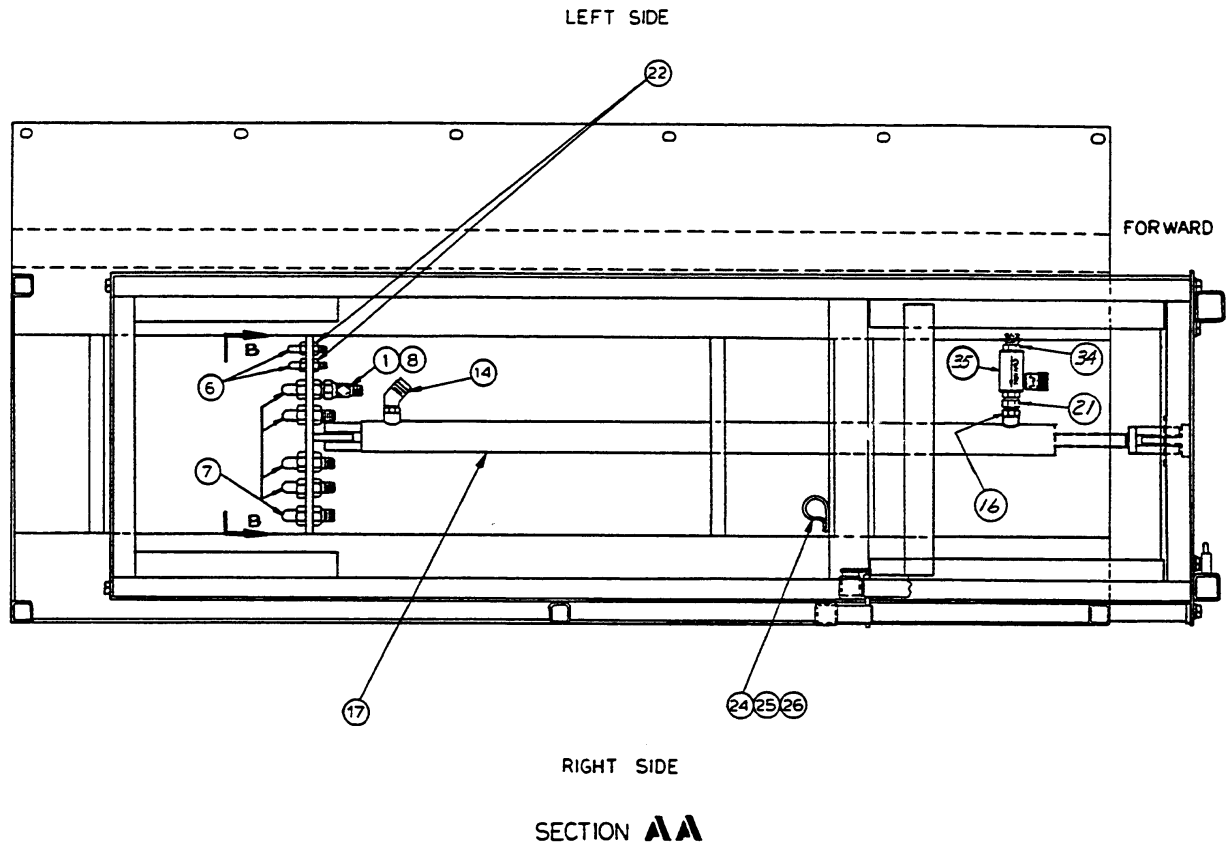


Figure 32
OPERATOR'S CAB HYDRAULICS
620-2734

**OPERATOR'S CAB HYDRAULICS
620-2734**

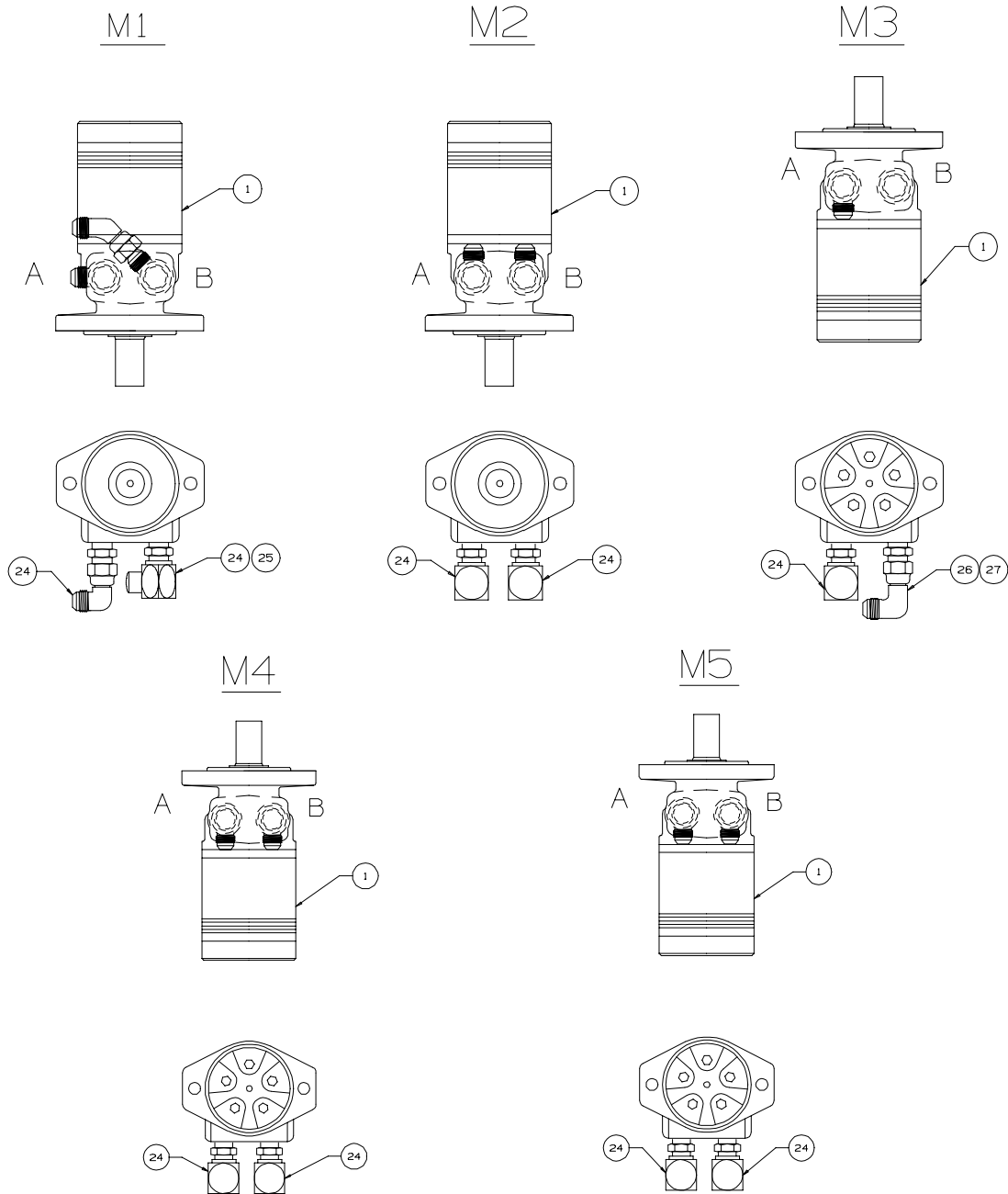
Figure 31 thru Figure 32

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	102-0187		ELBOW, 90° Swivel, -8 JIC (V01276 #2071T-8-8)		1
2	102-1461		ELBOW, 90°, -4 M JIC x -6 M O-Ring (V01276 #2062-6-4)		1
3	102-0902		ELBOW, 90° Swivel, -4 JIC (V79470 #C5506X4)		4
4	102-0192		ELBOW, 90° -8 M O-Ring x -8 M JIC (V01276 #2062-8-8)		2
5	102-0193		ELBOW, 90° Lg, -8 M O-Ring x -8 M JIC (V01276 #206209-8-8)		2
6	102-1044		ELBOW, 45°, Bulk Hd, -4 JIC		2
7	102-0322		CONN., Str., Bulk Hd, -8 M JIC (V01276 #P2041-8-8)		5
8	102-1161		TEE, Run Swivel, -8 JIC		1
9	620-2013-090		HOSE ASSY, -4 x 2286 (90 IN) Lg		2
10	620-2013-017		HOSE ASSY, -4 x 432 (17 IN) Lg		1
11	519-0197-106		HOSE ASSY, -8 x 2693 (106 IN) Lg		3
12	519-0197-090		HOSE ASSY, -8 x 2286 (90 IN) Lg		1
13	519-0197-102		HOSE ASSY, -8 x 2591 (102 IN) Lg		1
14	620-1753		ELBOW, 45° -6 M O-Ring x -6 M JIC (V01276 #2061-6-6)		1
15	620-2013-027		HOSE ASSY, -4 x 686 (27 IN) Lg		1
16	102-1466		CONN., Str., -6 M O-Ring x -8 M JIC (V01276 #202702-6-8)		3
17	621-5636		CYLINDER, Operator's Cab (V08481 #S14038012CCAZ) Consisting of:		1
-	621-5636-090		SEAL KIT (V08481 #13496)		1
19	620-0848		TEE, -4 JIC		1
20	102-1087		CONN., -6 M O-Ring x -4 M JIC		3
21	102-1130		CONN., Sw, -8 M O-Ring x -8 M JIC		1
22	102-0206		NUT, Bulk Hd 1/4T		2
23	620-2770		CORDURA SLEEVE, 80 IN. Lg		6' 8
24	102-1190		CLAMP, Rubber Coated		1
25	620-0656		NUT, PTH, M8 x 1.25		1
26	107-1353		WASHER		1
27	620-2734-001		HOSE ASSEMBLY KIT		1
28	102-0188		ELBOW, 90°, -4 M O-Ring x -4 M JIC		1

**OPERATOR'S CAB HYDRAULICS
620-2734**

Figure 31 thru Figure 32

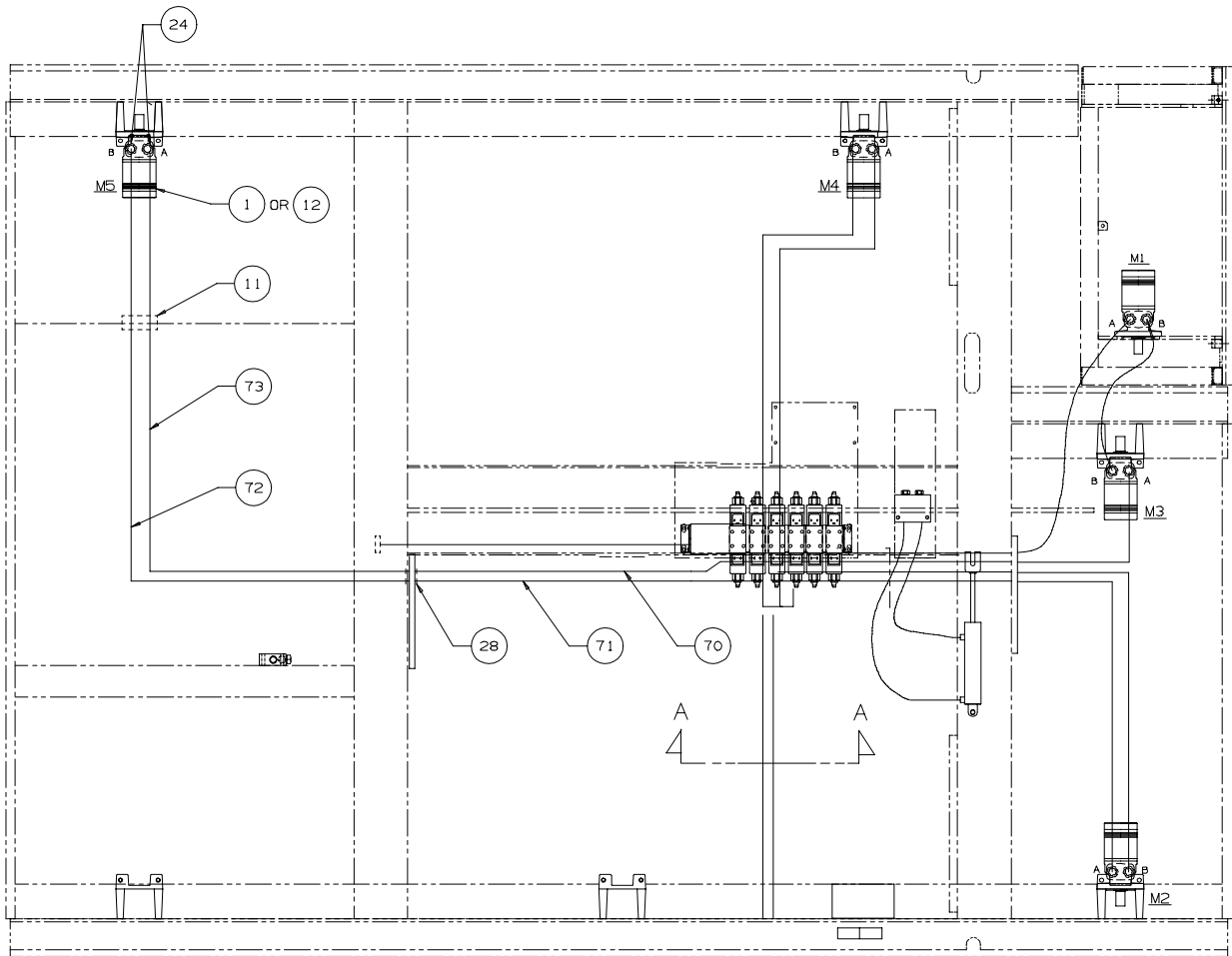
<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
32	620-0885		PLUG, -6 O-Ring		1
33	620-0884		PLUG, -4 O-Ring		1
34	102-1094		CONN., -8 M O-Ring x -6 M JIC		1
35	620-1569		VALVE, Needle		1
36	519-0197-093		HOSE ASSY, -8 x 2362 (93 IN.) Lg		1
38	620-9214		VALVE, Power Brake, Wet Chamber (V58114 #1701-001-003) Consisting of:		1
-	620-4563-001		DUST BOOT (V58114 #1701-044-002)		
-	620-4563-002		PLUNGER SEAL (V58114 #1701-076-002)		
-	620-9214-090		SEAL KIT (V58114 #1701-635-002)		
39	620-4093		LOAD SENSING STEERING UNIT (V24976 #150-3098)		1
40	620-1098		PEDAL, Brake (V58114 #L014150)		1
-	Not Shown				



REV. L

ELEVATION OF MOTORS MOUNTED ON PLATFORM

Figure 33
BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
622-1044-002



-002 CONTAINER SIDE SHIFT ASS'Y

Figure 34
BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
622-1044-002

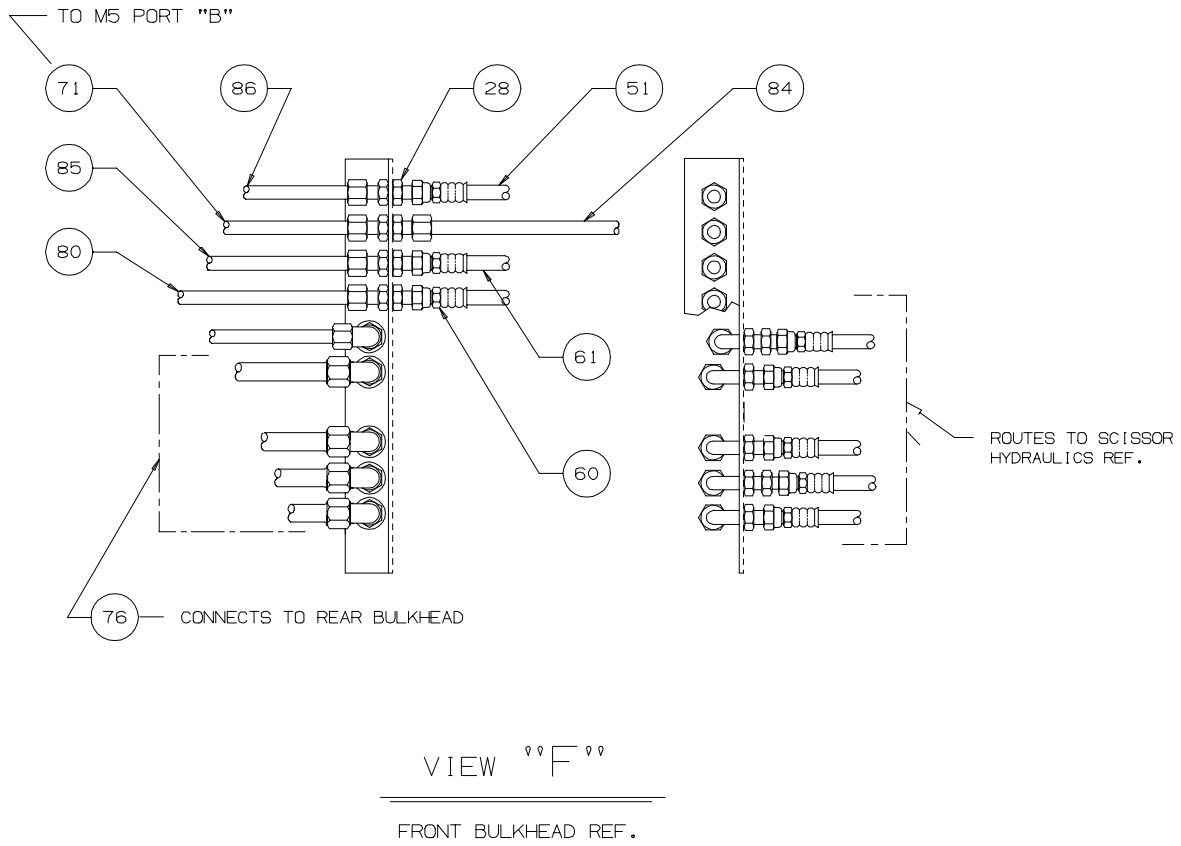


Figure 35
BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
622-1044-002

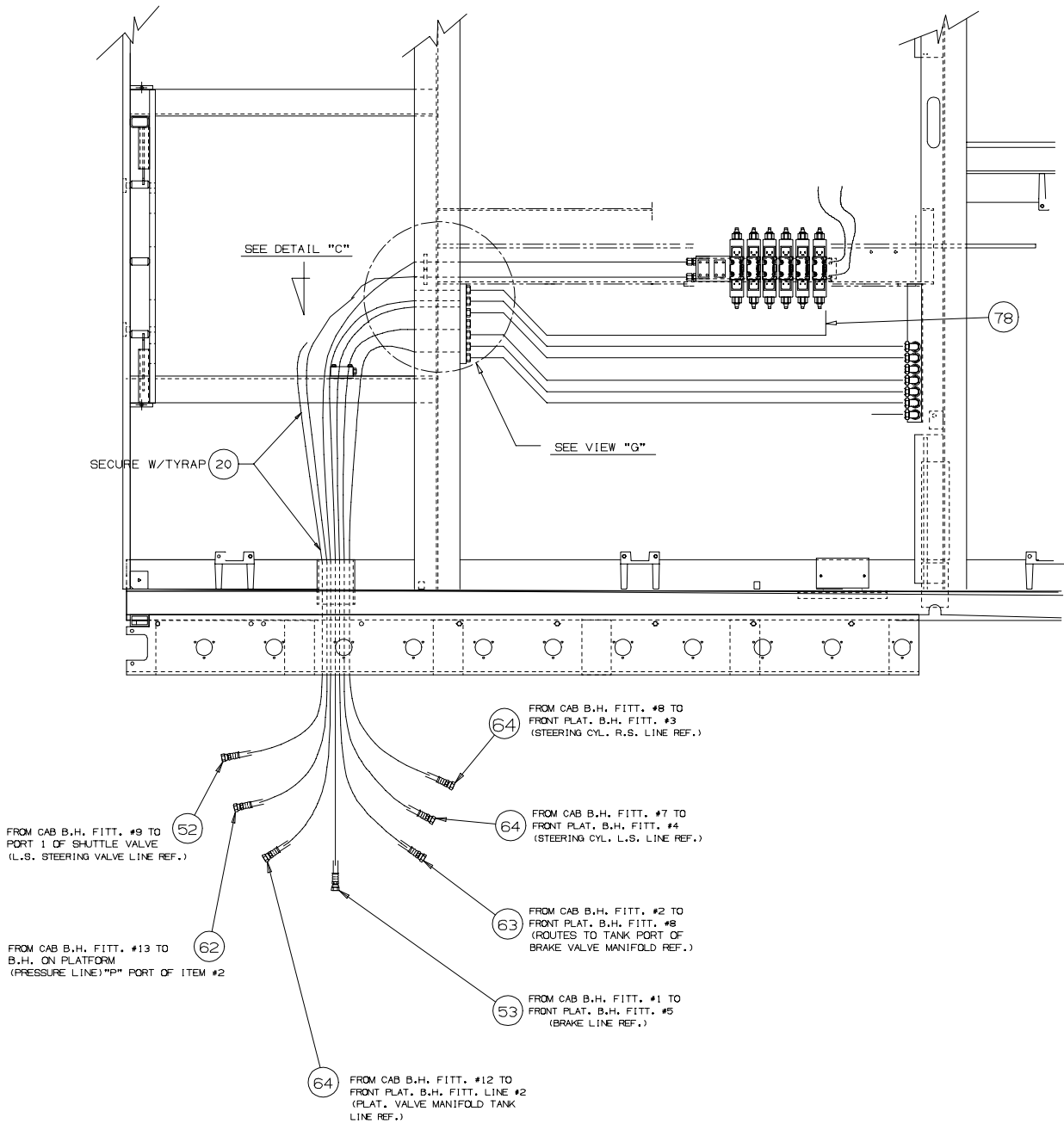
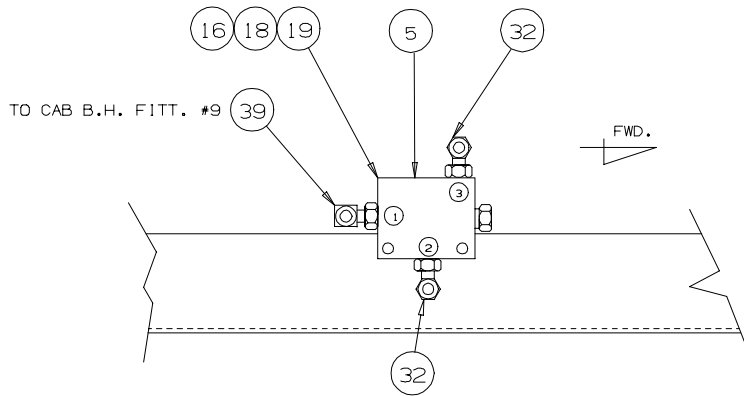
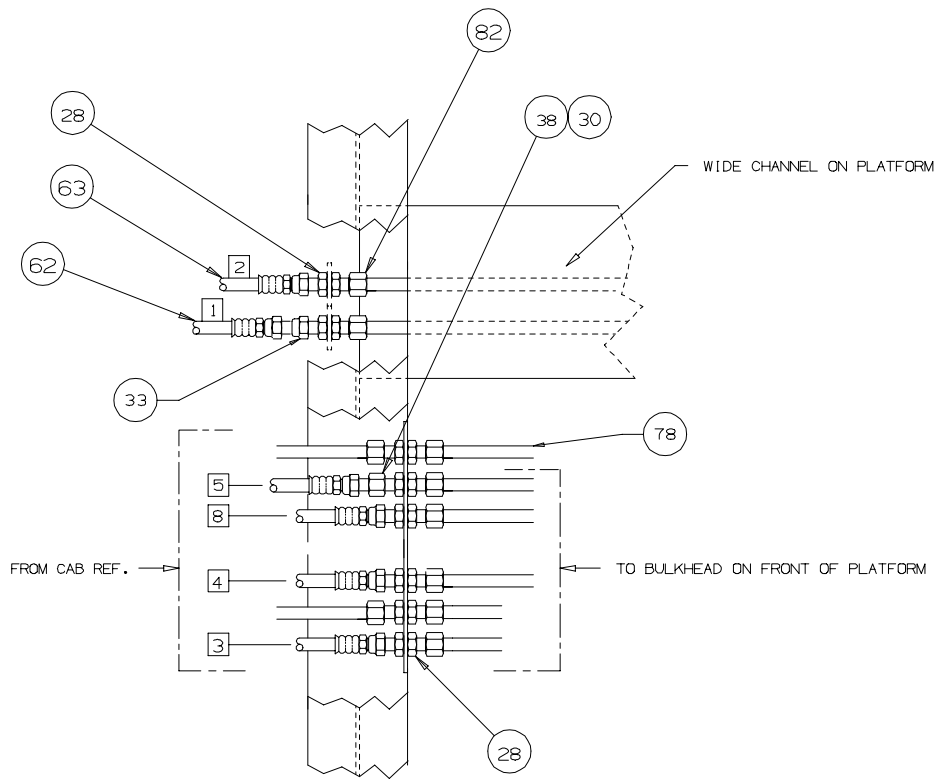


Figure 36
 BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
 622-1044-002



DETAIL "C"



VIEW "G"

Figure 37
BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
622-1044-002

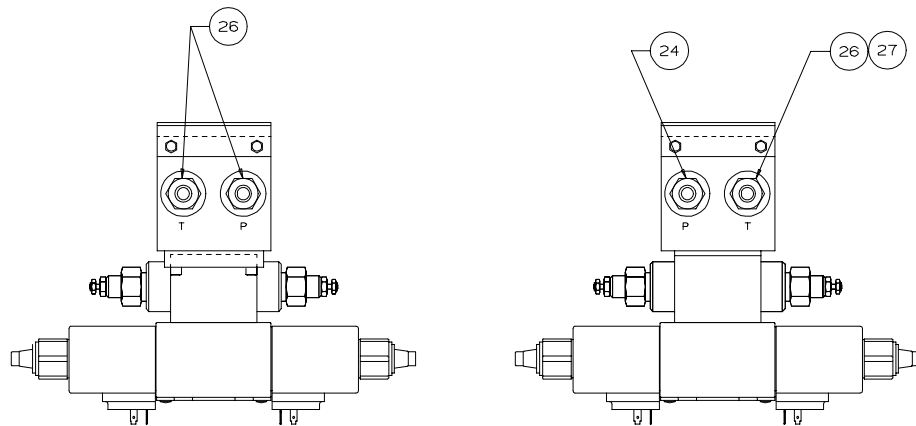
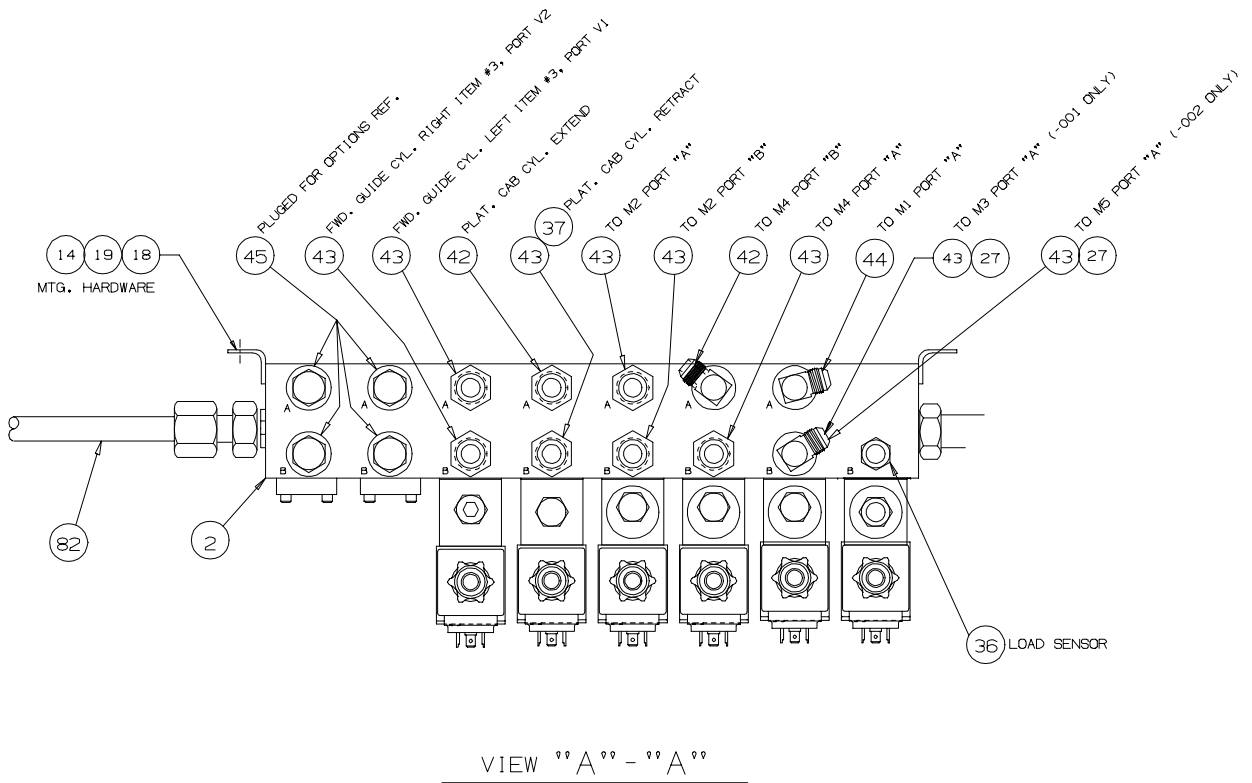


Figure 38
 BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
 622-1044-002

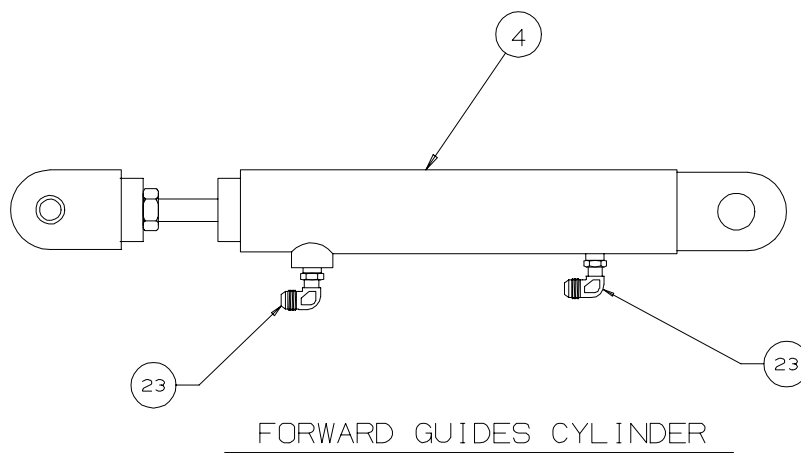


Figure 39
BRIDGE HYDRAULIC , CONTAINER SIDE SHIFT
622-1044-002

**BRIDGE HYDRAULIC, CONTAINER SIDE SHIFT
622-1044-002**

Figure 33 thru Figure 39

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1428		MOTOR, Hydraulic (V77640 #K82248-225 Model MG180613.AAAC) Consisting of:		4
-	620-1428-001		QUAD RING SEAL ONLY (V77640 #032821)		
-	620-1428-090		SEAL KIT (V77640 #SK000090)		
-	110-0279		WOODRUFF KEY		
2	620-3605		BRIDGE PLATFORM MANIFOLD (Ref. Figure 40, Page 66)		1
3	620-1527		VALVE, Check, Dual P. O. (V54035 #CKCA-XAN-YEI) Consisting of:		1
-	620-1527-001		CARTRIDGE, Sun #CKCA XAN		
-	620-1527-002		BODY, Sun #YEI		
4	621-5643		CYLINDER, Bridge Guide (V08481 #510006008CCAZ) Consisting of:		1
-	621-5643-090		SEAL KIT (V08481 #13445)		
5	620-0128		VALVE, Shuttle (V54035 #CSAB-XXN-ECI) Consisting of:		1
-	620-1326-001		CARTRIDGE, Sun #CSAB XXN		
-	620-0128-002		BODY, Sun #ECI		
10	620-4442		CLAMP, Double Tube 1/2		1
11	620-4443		CLAMP, Double Tube 1/2		2
14	107-0349		SCREW, Hex Hd, M8 x 1.25 x 20mm		4
15	620-0626		SCREW, Hex Hd, M8 x 1.25 x 30mm		4
16	620-0628		SCREW, Hex Hd, M8 x 1.25 x 50mm		4
18	620-0656		NUT, PTH M8 x 1.25		8
19	620-0661		WASHER, Flat M8 Narrow		10
20	620-2770		CORDURA SLEEVE PROTECTION		5'
22	102-0949		ELBOW, 90°, Bulk Hd Union, -6 JIC (V01276 #2043-6-6S)		1
23	102-0190		ELBOW, 90°, -6 M O-Ring x -6 M JIC		1
24	102-0027		ELBOW, 90°, -10 M O-Ring x -8 M JIC (V01276 #P2062-10-8S)		10

**BRIDGE HYDRAULIC, CONTAINER SIDE SHIFT
622-1044-002**

Figure 33 thru Figure 39

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
25	102-0321		ELBOW, 45° Swivel, -8 JIC (V01276 #P2070T-8-8-S)		1
26	118-2680-011		CONN., Str., -10 M O-Ring x -8 M JIC (V01276 #202702-10-8)		5
27	620-0927		ELBOW, 90° Tube Swivel, -8 JIC (V01276 #PFF5163T-0808S)		3
28	102-0322		CONN., Str., Bulk Hd, -8 M JIC (V01276 #P2041-8-8)		13
29	102-0200		ELBOW, 90°, Bulk Hd, -8 M JIC (V01276 #2043-8-8)		5
30	102-1447		REDUCER, -6 F JIC x- 4 M JIC		2
31	102-0187		ELBOW, 90° Swivel, -8 JIC (V01276 #2071T-8-8)		1
32	102-0194		ELBOW, 90°, -6 M O-Ring x -6 M JIC (V01276 #C5515X8X6)		3
33	102-1123		REDUCER, -8 F JIC x -6 M JIC (V01276 #221501-8-6)		3
34	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC (V01276 #202702T-6-6S)		1
35	102-0031		ELBOW, 90° Swivel, -6 JIC (V01276 #2071T-6-6S)		3
36	102-1466		CONN., Str., -6 M O-Ring x -8 M JIC (V01276 #202702-6-8)		2
37	620-0930		ELBOW, 90° Swivel Long, -8 JIC		1
38	102-0296		CONN., Str., Bulk Hd, -6 M JIC (V79470 #C5325X6)		1
39	102-1461		ELBOW, 90°, -6 M O-Ring x - 4 M JIC		1
40	102-0902		ELBOW, 90° Swivel, -4 JIC		1
41	620-0887		PLUG, -10 M O-Ring		1
42	102-0193		ELBOW, 90° Lg, -8 M O-Ring x -8 M JIC		1
43	102-1095		CONN., Str., -8 M O-Ring x -8 M JIC (V01276 #206209-8-8S)		4
44	102-0192		ELBOW, 90° -8 M O-Ring x -8 M JIC (V01276 #2062-8-8)		1
45	102-1187		PLUG, -8 M O-Ring (V79470 #7237X8)		6
51	519-0197-047		HOSE ASSY, -8 x 1194 (47 IN.) Lg		1
52	620-2013-086		HOSE ASSY, -4 x 2185 (86 IN.) Lg		1
53	620-2013-096		HOSE ASSY, -4 x 2439 (96 IN.) Lg		1

**BRIDGE HYDRAULIC, CONTAINER SIDE SHIFT
622-1044-002**

Figure 33 thru Figure 39

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
54	519-0196-017		HOSE ASSY, -6 x 432 (17 IN.) Lg		1
55	519-0196-023		HOSE ASSY, -6 x 584 (23 IN.) Lg		1
56	519-0196-018		HOSE ASSY, -6 x 458 (18 IN.) Lg		1
57	519-0196-055		HOSE ASSY, -6 x 1397 (55 IN.) Lg		1
58	519-0197-097		HOSE ASSY, -8 x 2464 (97 IN.) Lg		1
59	519-0197-030		HOSE ASSY, -8 x 762 (30 IN.) Lg		1
60	622-2327		TUBE ASSEMBLY, -8		1
61	622-2326		TUBE ASSEMBLY, -8		1
62	519-0196-092		HOSE ASSY, -6 x 2337 (92 IN.) Lg		1
63	519-0197-095		HOSE ASSY, -8 x 2413 (95 IN.) Lg		1
64	519-0197-102		HOSE ASSY, -8 x 2591 (102 IN.) Lg		3
66	622-1044-006		HOSE ASSEMBLY KIT, Container Bridge		1
68	622-1044-004		TUBE ASSEMBLY KIT, Container Bridge		1
70	620-6153		TUBE ASSEMBLY, -8		1
71	620-6154		TUBE ASSEMBLY, -8		1
72	620-4810		TUBE ASSEMBLY, -8		1
73	620-4811		TUBE ASSEMBLY, -8		1
74	620-4819		TUBE ASSEMBLY, -6		1
75	620-4802		TUBE ASSEMBLY, -8		1
76	620-4751		TUBE ASSEMBLY, -8		4
77	620-4752		TUBE ASSEMBLY, -8		1
78	620-4812		TUBE ASSEMBLY, -8		1
79	622-2783		TUBE ASSEMBLY, -8		1
80	620-4756		TUBE ASSEMBLY, -8		1
81	620-4759		TUBE ASSEMBLY, -8		1
82	620-4763		TUBE ASSEMBLY, -8		2
83	620-4764		TUBE ASSEMBLY, -8		1
84	620-4765		TUBE ASSEMBLY, -8		1
85	620-4766		TUBE ASSEMBLY, -8		1
86	620-4767		TUBE ASSEMBLY, -8		1
87	622-2784		TUBE ASSEMBLY, -8		1
88	620-4769		TUBE ASSEMBLY, -8		1
89	620-4771		TUBE ASSEMBLY, -8		1
90	620-4776		TUBE ASSEMBLY, -8		1

- Not Shown

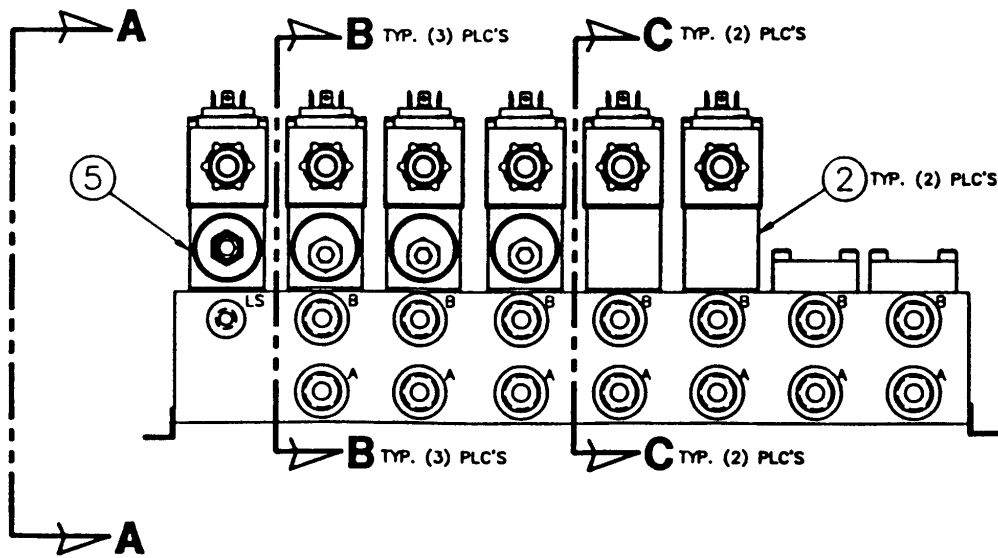
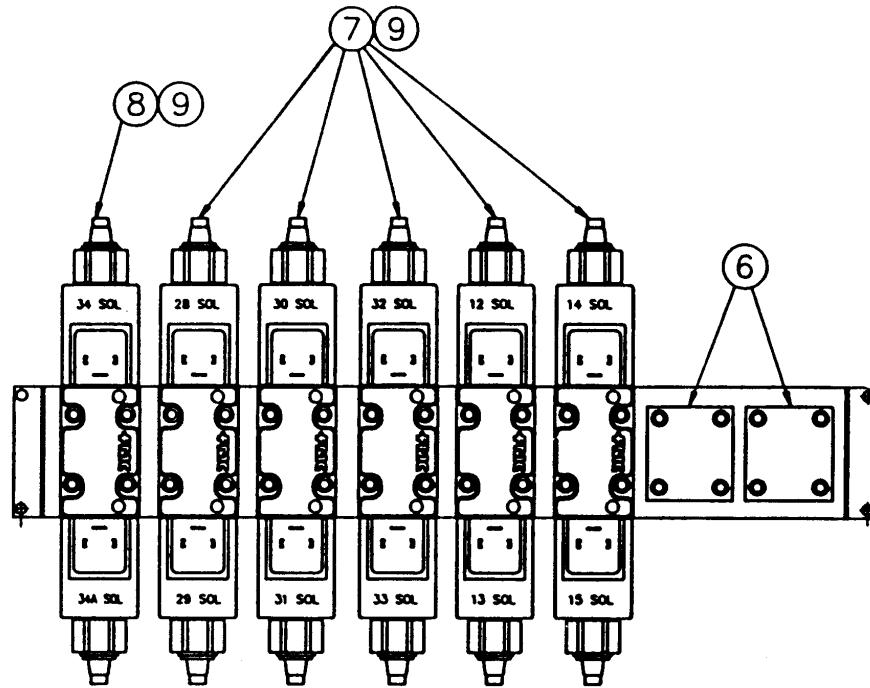


Figure 40
BRIDGE MANIFOLD ASSEMBLY
620-3605

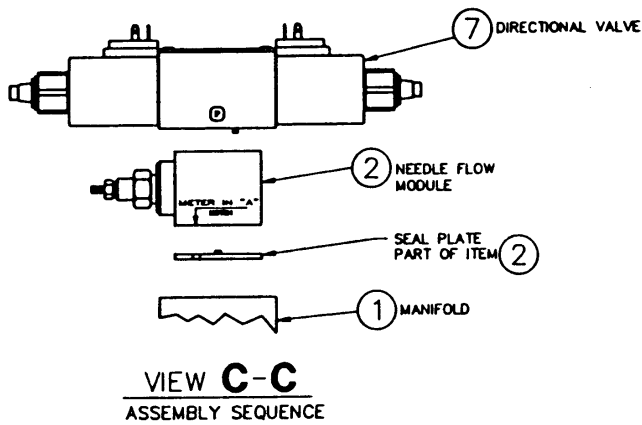
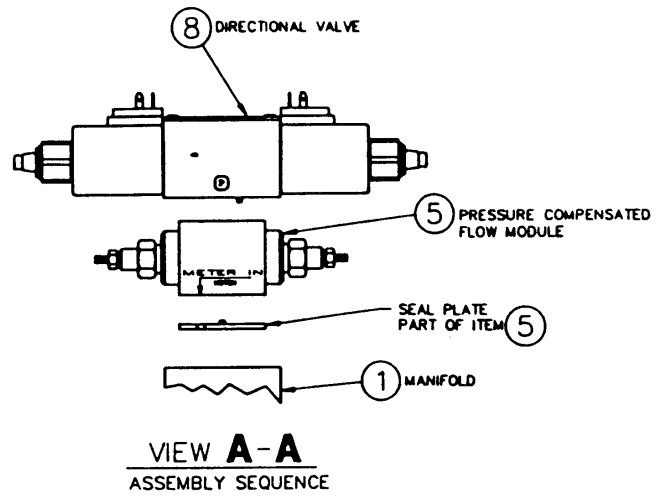
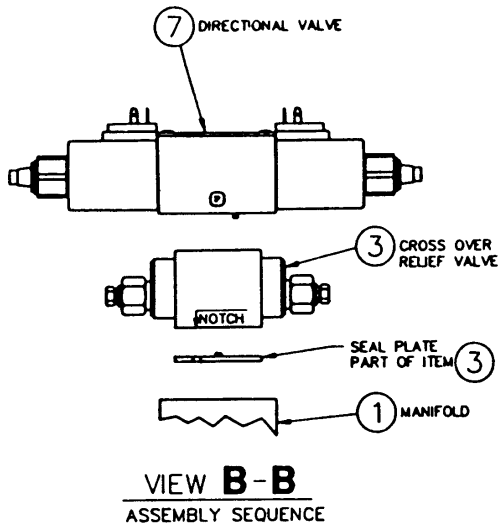


Figure 41
BRIDGE MANIFOLD ASSEMBLY
620-3605

**BRIDGE MANIFOLD ASSEMBLY
620-3605**

Figure 40, Figure 41

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3497		MANIFOLD, 8 Station DO1 (V4N453 #GCC-1534-1)		1
2	620-0123		MODULE, Flow, Needle (V54035 #NFCC-LCN-GBA) Consisting of:		2
-	620-0123-001		CARTRIDGE, Sun #NFCC LCN		1
-	620-1664-002		BODY, Sun #GBA		1
3	620-0132		MODULE, Relief, Crossover (V54035 #RPEC-FBN-FBY) Consisting of:		3
-	620-1526-001		CARTRIDGE, Sun #RPEC FBN		1
-	620-0132-002		BODY, Sun #FBY		1
5	620-3648		MODULE, Flow, Pressure Compensated (V54035 #8803-08U-C04) Consisting of:		1
-	620-1664-001		CARTRIDGE, Sun #FDBA LAN		1
-	620-0120-001		CARTRIDGE, 4.0 Sun #FXCA LAN		1
-	620-3648-001		BODY, W/Seals Sun #GBY		1
6	620-0112		COVER PLATE, Series		2
7	620-6452		VALVE, 3 Position DO3 Directional (V09990 #DIVW8CJW70X4533) Consisting of:		5
-	620-6451-091		COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6451-090		SEAL KIT (V09990 #1300166)		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
8	620-6451		VALVE, 3 Position DO3 Directional (V09990 #DIVW4CJW70X4532) Consisting of:		1
-	620-6451-091		COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6451-090		SEAL KIT (V09990 #1300166) Consisting of:		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
9	620-0118		BOLT KIT (V54035 #992-111)		6

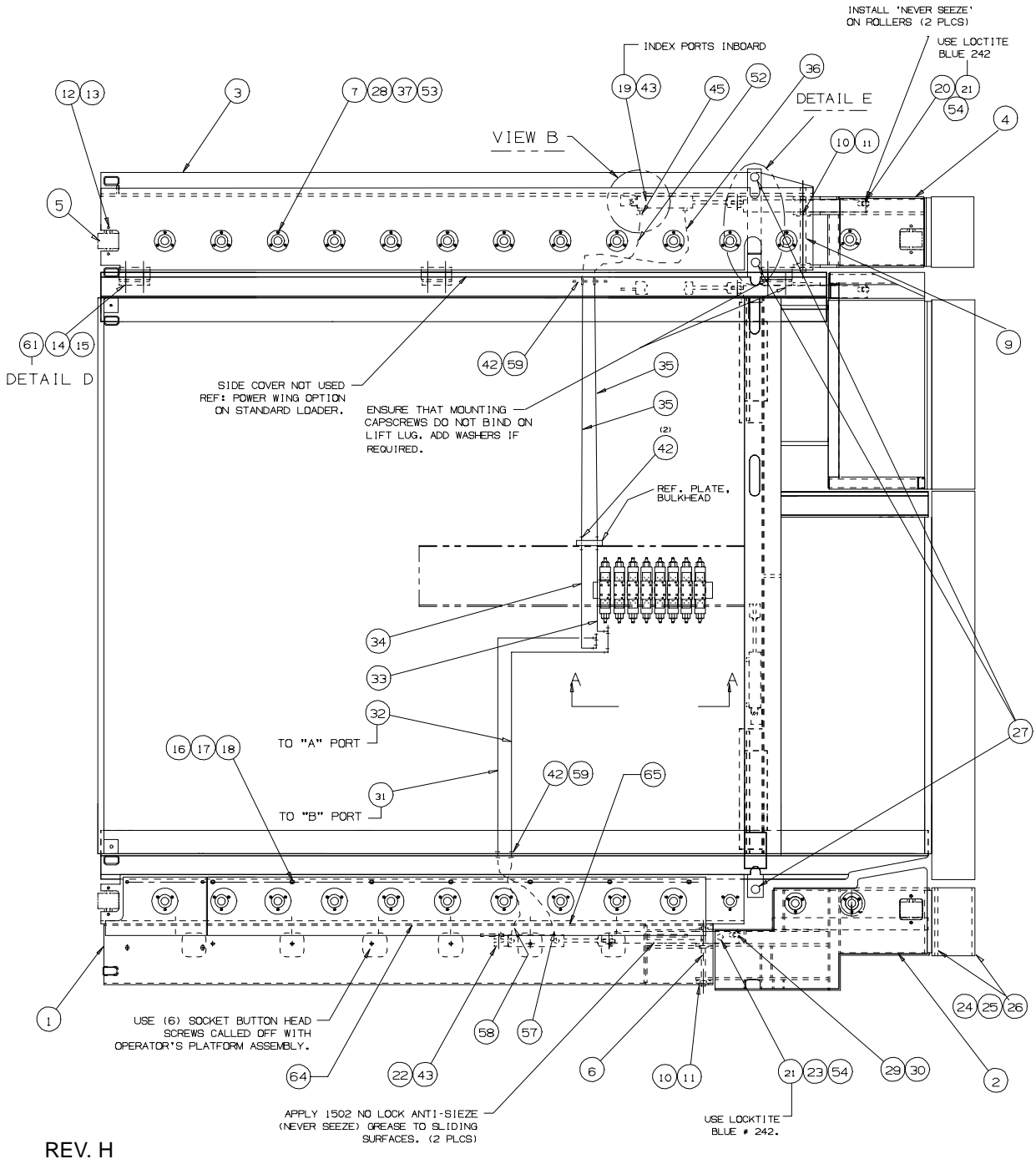
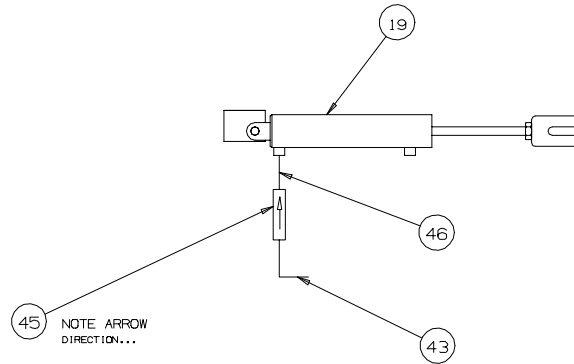
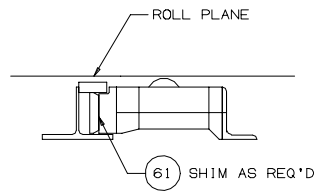


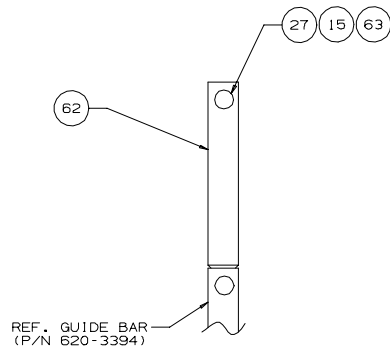
Figure 42
BRIDGE EXTENSION HYDRAULIC
621-5000



DETAIL B

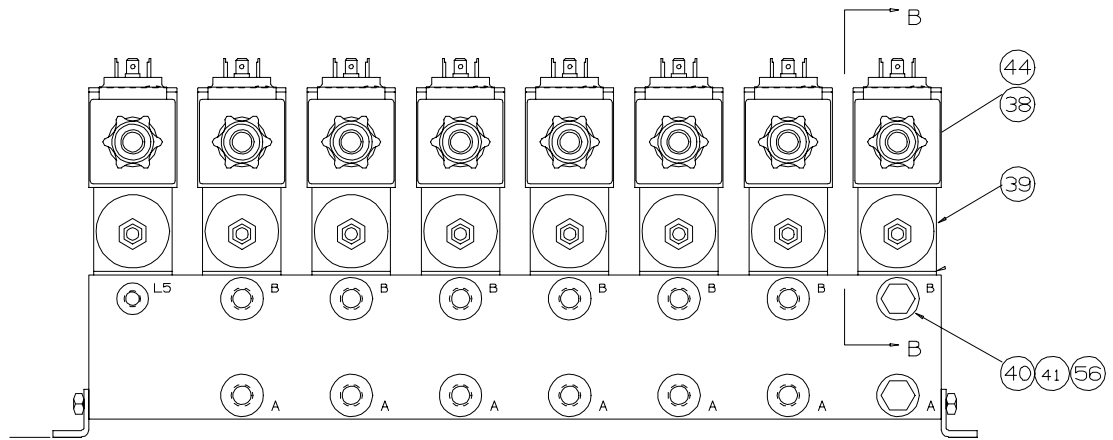


DETAIL D
WIDE EXTENSION
MOUNTING

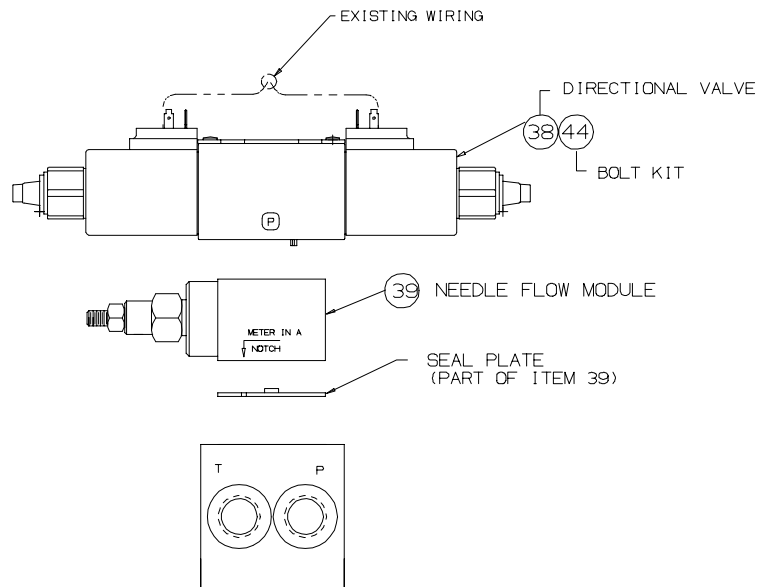


DETAIL E

Figure 43
BRIDGE EXTENSION HYDRAULIC
621-5000



VIEW A



VIEW B-B
ASSEMBLY SEQUENCE

Figure 44
BRIDGE EXTENSION HYDRAULIC
621-5000

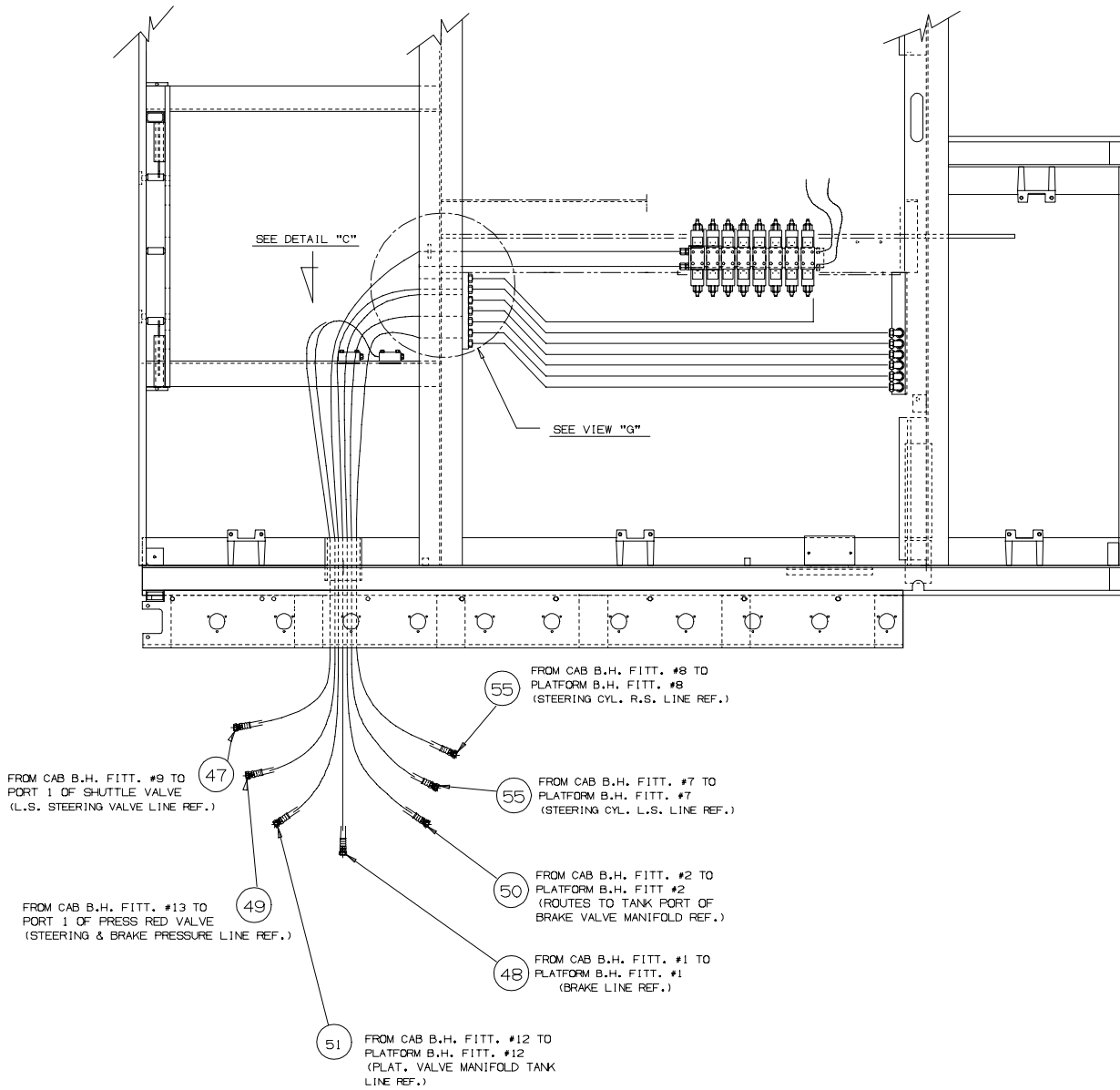
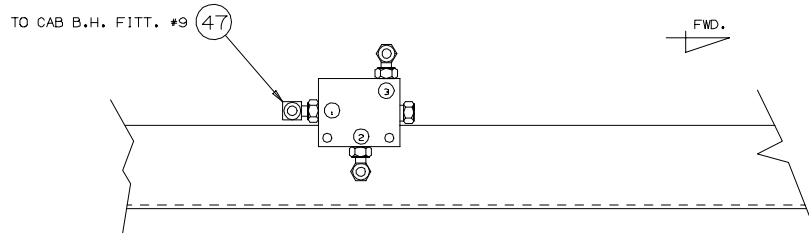
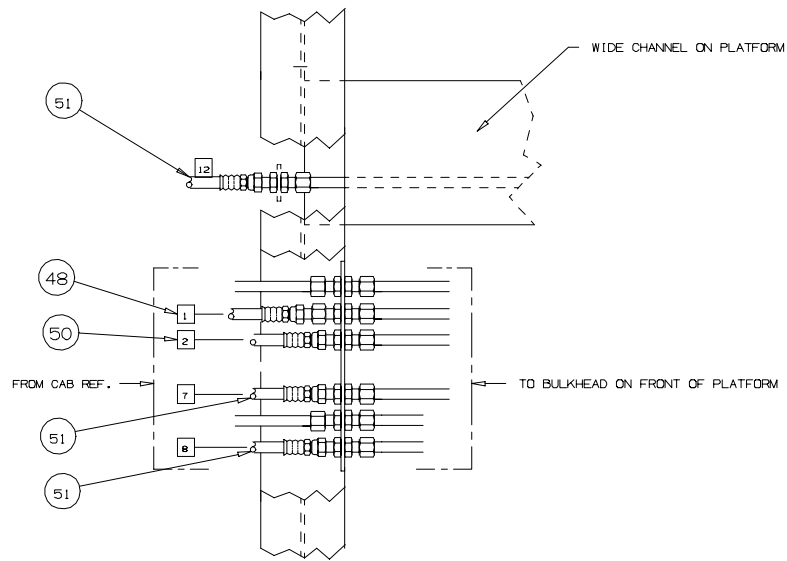


Figure 45
BRIDGE EXTENSION HYDRAULIC
621-5000



DETAIL "C"



VIEW "G"

Figure 46
BRIDGE EXTENSION HYDRAULIC
621-5000

**BRIDGE EXTENSION HYDRAULIC
621-5000**

Figure 42 thru Figure 46

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-7440		EXTENSION WELDMENT, R.H.		1
2	622-6607		FOLDING WING WELDMENT, R.H.		1
3	621-4768		EXTENSION WELDMENT, L.H.		1
4	620-3654		FOLDING WING WELDMENT, L.H.		1
5	623-0673		ROLLER ASSEMBLY, Interface		4
			Consisting of:		
-	623-0682		SHAFT, Interface Roller		1
-	623-0683		BUSHING, Interface Roller		1
-	623-0684		ROLLER, Interface		1
-	623-0685		SPACER, Interface		2
6	620-3807		PIN, Pivot		1
7	620-0956		WASHER, Flat Hard M6 Narrow		78
8	620-4800-001		HOSE KIT		1
9	620-2060		BAR, Pivot		1
10	110-7389		WASHER, Flat 1 IN. SAE Light		7
11	110-8689		PIN, Cotter .19 IN.		4
12	620-0636		SCREW, Hex Hd, 8.8 M10 x 1.5 x 60mm		8
13	620-0657		NUT, Lock M10 x 1.5		8
14	620-1801		SCREW, Hex Hd, 8.8 M20 x 2.5 x 80mm		12
15	622-3511-008		WASHER, Flat .75 ZP		25
16	620-2119		SCREW, Soc Button Hd, M12 x 1.75 x 50		9
17	620-0663		WASHER, Flat Hard M12 Narrow		17
18	620-0658		NUT, PTH, 8 M12 x 1.75		17
19	621-5643		CYLINDER, L. H. Hyd w/Hardware & Pins (V08481 #510006008CCAZ)		1
			Consisting of:		
-	621-5643-090		SEAL KIT (V08481 #13445)		
20	620-1575		LIFT LUG WELDMENT		1
21	622-0136		SCREW, Soc Hd Set M20 Modification		2
22	621-5637		CYLINDER, R.H. Hyd w/Hardware & Pins (V08481 #S10008208CCAZ)		1
			Consisting of:		
-	621-5637-090		SEAL KIT (V08481 #13445)		1
23	620-2153		RAM WELDMENT		1
24	620-2063		BUMPER		2
25	620-2076		MOUNTING STRIP, Bumper		2

**BRIDGE EXTENSION HYDRAULIC
621-5000**

Figure 42 thru Figure 46

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
26	107-0736		SCREW, Hex Hd, 8.8 M12 x 1.75 x 40mm		4
27	622-7838		PIN, Bridge Guide, Left Side		3
28	107-1657		SCREW, Pan Hd Mach, M6 x 1 x 30mm		78
29	620-2739		ROLLER		2
30	103-0808		PIN, Roll		2
31	620-6128		TUBE ASSEMBLY, 1/2"		REF
32	610-6129		TUBE ASSEMBLY, 1/2"		REF
33	620-6130		TUBE ASSEMBLY, 1/2"		REF
34	620-3121		TUBE ASSEMBLY, 1/2"		REF
35	620-6132		TUBE ASSEMBLY, 1/2"		REF
36	519-0196-036		HOSE ASSY, -6 x 36 Lg		REF
37	620-0948		NUT, PTH, M6 x 1		78
38	620-6452		VALVE, 3 Position DO3 Directional (V09990 #DIVW8CJW70X4533)		1
			Consisting of:		
-	620-6451-091		COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6451-090		SEAL KIT (V09990 #1300166)		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
39	620-0123		MODULE, Flow, Needle (V54035 #NFCC-LCN-GBA)		1
			Consisting of:		
-	620-0123-001		CARTRIDGE, Sun #NFCC LCN		1
-	620-1664-002		BODY, Sun #GBA		1
40	102-1095		CONN., Str., -8 M O-Ring x -8 M JIC		2
41	102-0324		TEE, Swivel Run, -8 M JIC x -8 F JIC		2
42	102-0322		CONN., Str., Bulk Hd, -8 M JIC (V01276 #P2041-8-8)		6
43	102-0190		ELBOW, 90° -6 M O-Ring x -6 M JIC (V01276 #2062-6-6S)		4
44	620-0118		BOLT KIT (V54035 #992-111)		1
45	620-0810		VALVE, Needle (V09990 #PN620S)		1
46	620-1540		UNION, -6 M O-Ring (V09990 #0505-6-6)		1
47	620-2013-089		HOSE ASSY, -4 x 89 Lg		REF
48	620-2013-098		HOSE ASSY, -4 x 98 Lg		REF
49	519-0197-090		HOSE ASSY, -8 x 90 Lg		REF

**BRIDGE EXTENSION HYDRAULIC
621-5000**

Figure 42 thru Figure 46

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
50	519-0197-097		HOSE ASSY, -8 x 97 Lg		REF
51	519-0197-100		HOSE ASSY, -8 x 100 Lg		REF
52	519-0196-029		HOSE ASSY, -6 x 29 Lg		REF
53	620-3622		ROLLER, 40mm Roll Transfer		26
54	107-1102		NUT, Hex Style 1 8 M20 x 2.5 CP		2
55	519-0197-104		HOSE ASSY, -8 x 104 Lg		REF
56	102-0187		ELBOW, 90°, Swivel -8 JIC (V01276 #2071T-8-8)		2
57	519-0196-032		HOSE ASSY, -6 x 32 Lg		REF
58	519-0196-025		HOSE ASSY, -6 x 25 Lg		REF
59	102-1123		REDUCER, -8 F JIC x -6 M JIC		4
60	620-4800-002		TUBE KIT		1
61	620-9160		SHIM, Wide Extension		18
62	622-2609		GUIDE BAR WELDMENT		1
63	620-0660		NUT, ESNA M20		3
64	622-5941		SHIM, Bridge, Extension		2
65	622-5942		SHIM, Bridge, Extension, Front		2
-	Not Shown				

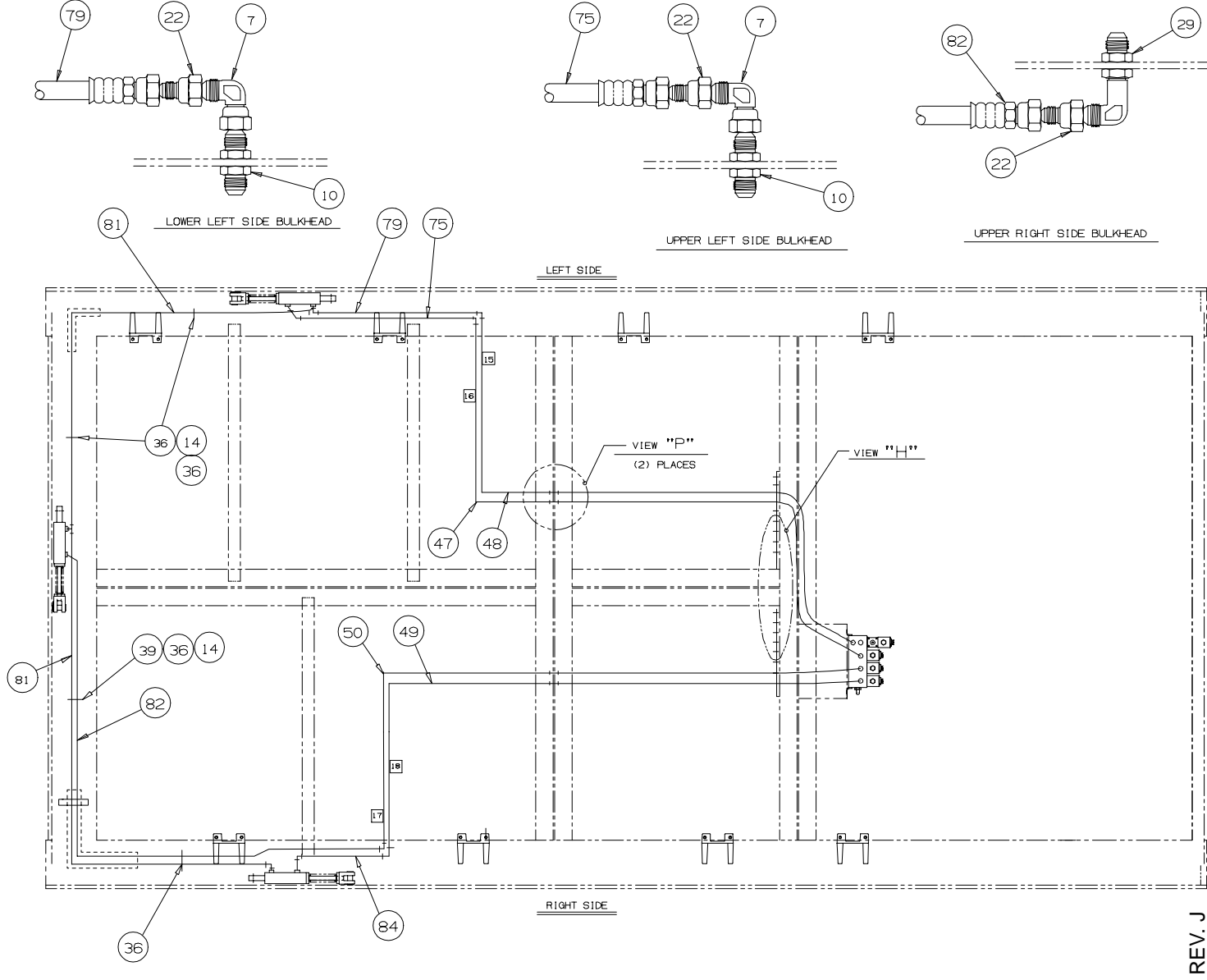
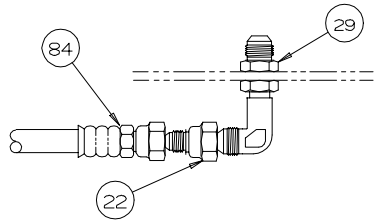
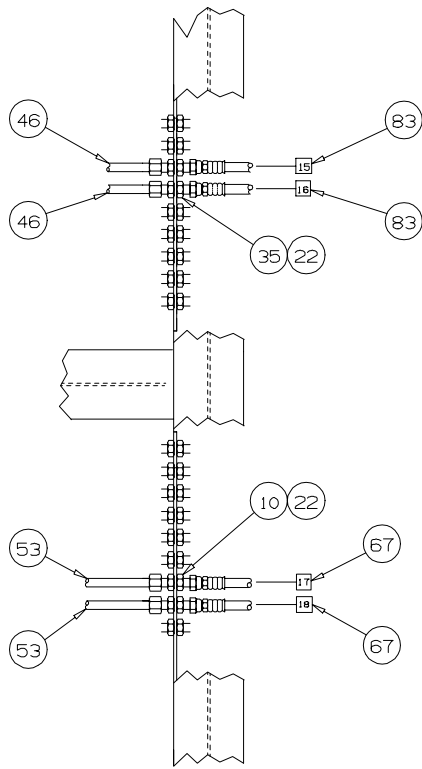


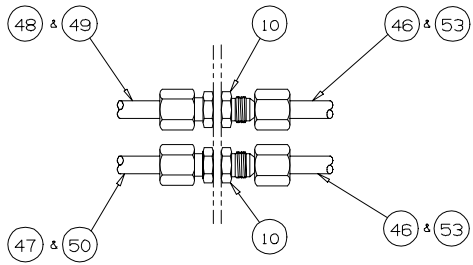
Figure 47
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850



LOWER RIGHT SIDE BULK-HEAD



ENLARGED VIEW "H"



VIEW "P"

Figure 48
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

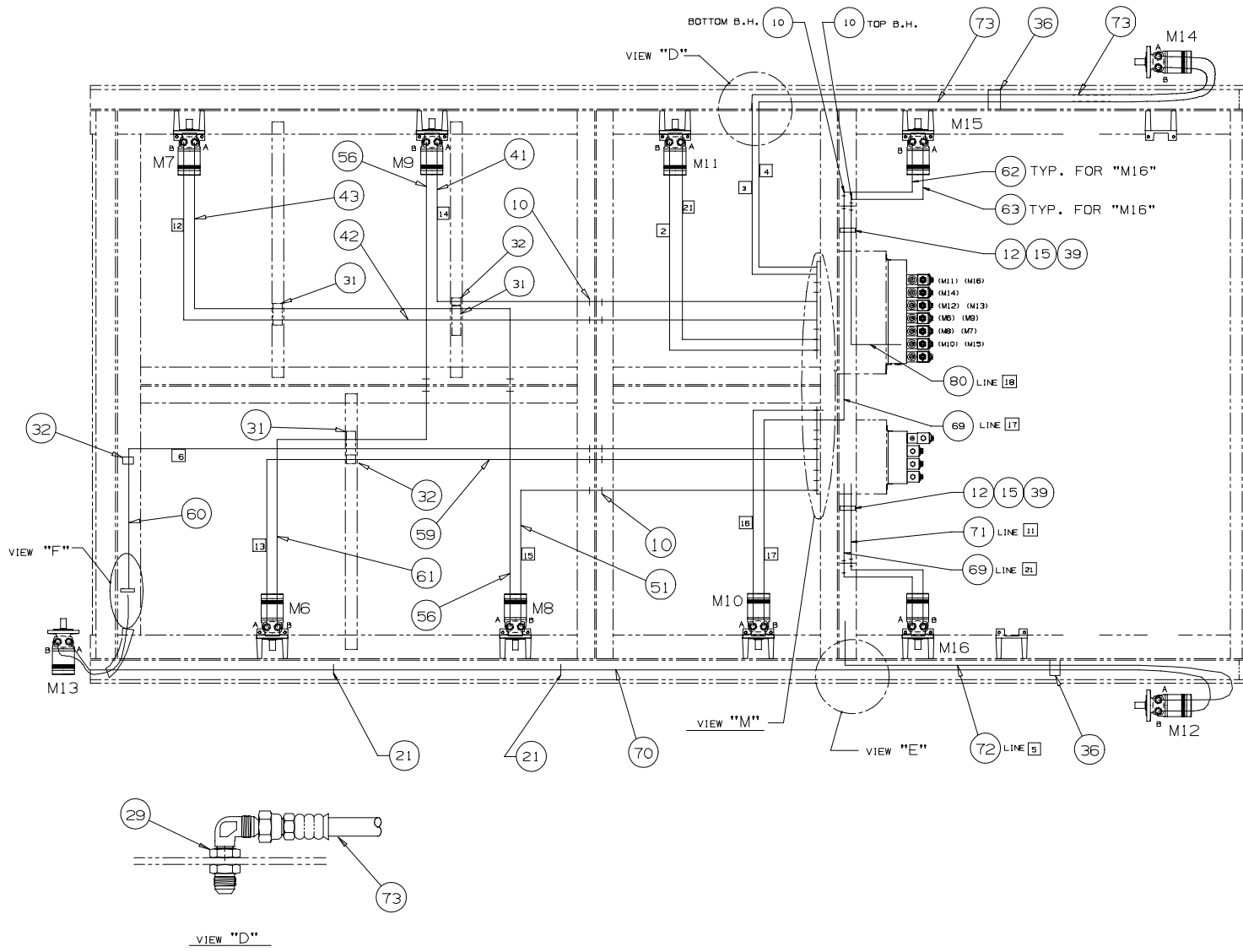


Figure 49
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

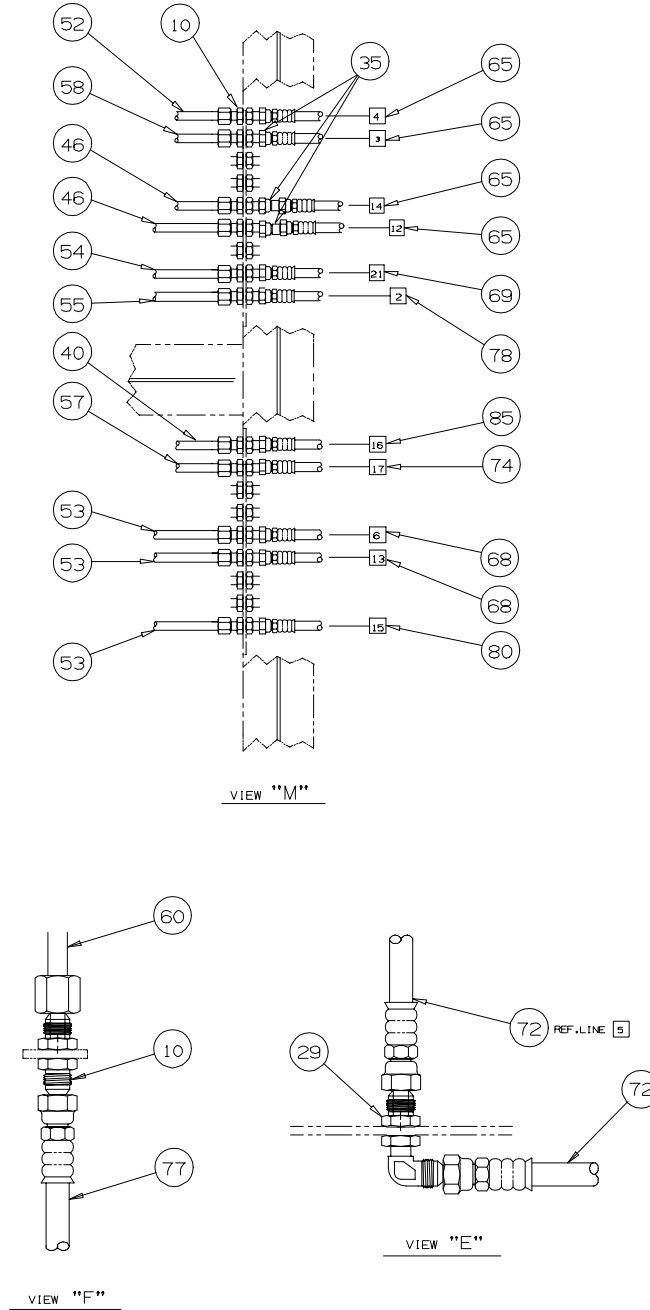


Figure 50
 PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
 620-9850

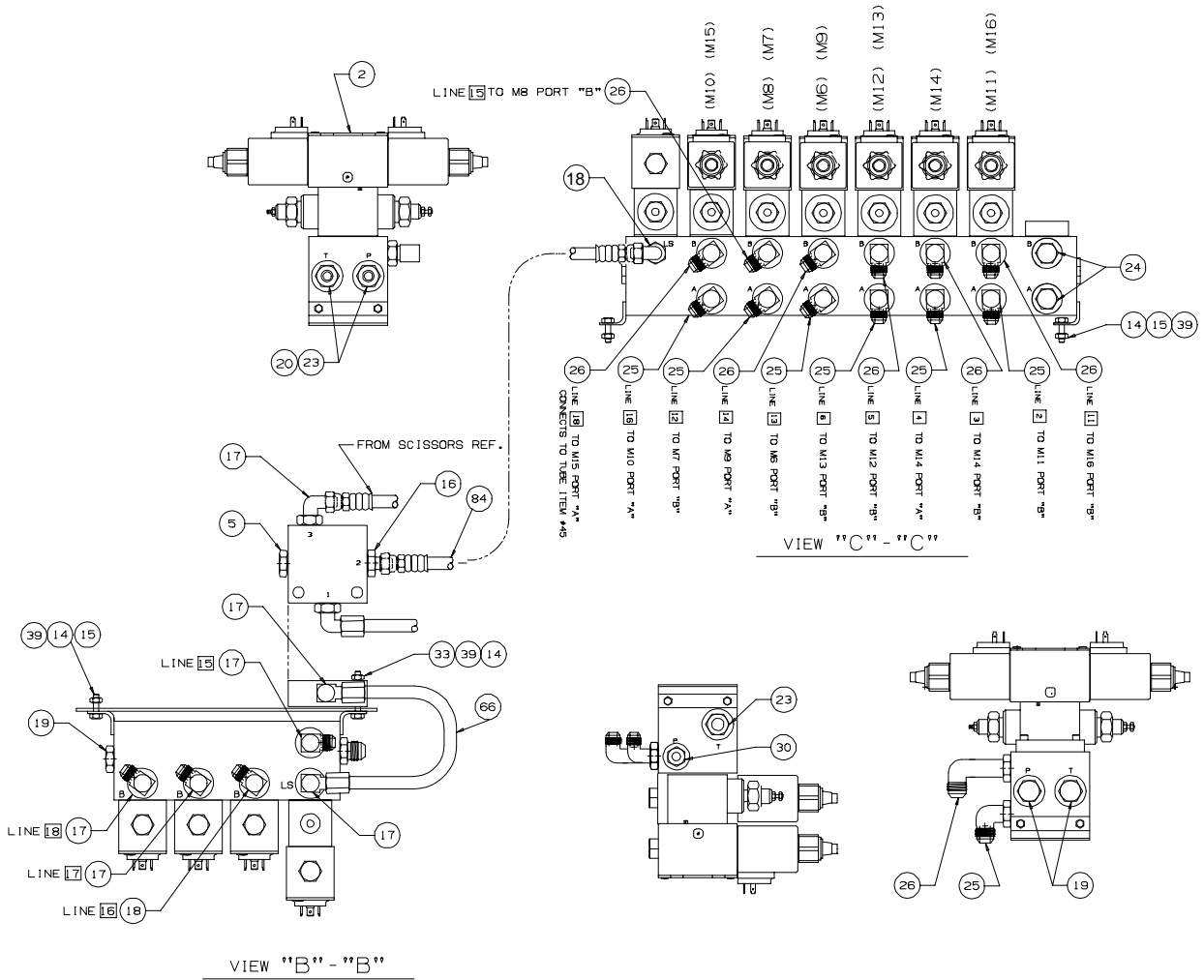
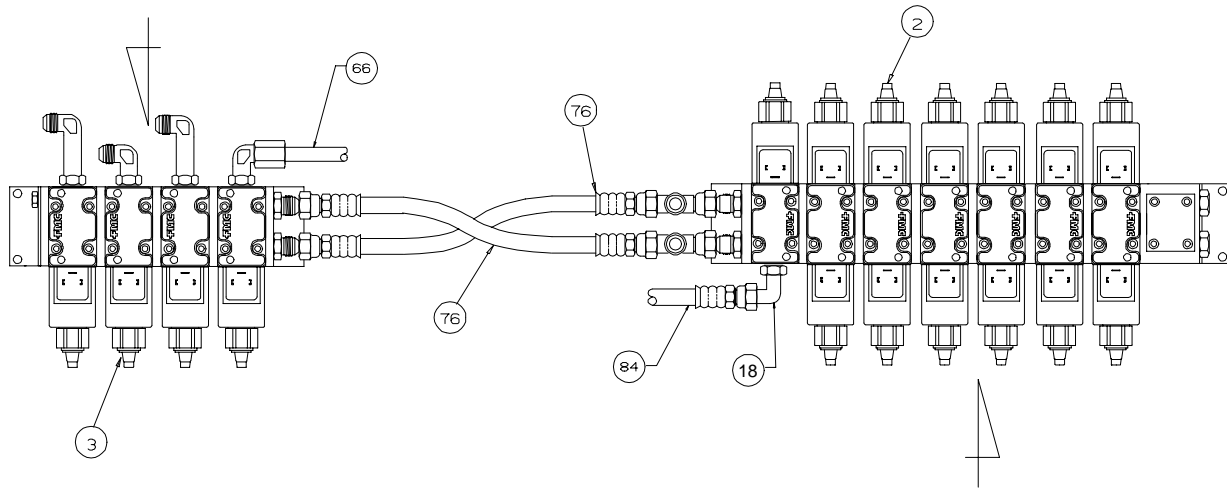


Figure 51
 PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
 620-9850

VIEW "B" - "B"



VIEW "A" - "A"

VIEW "C" - "C"

Figure 52
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

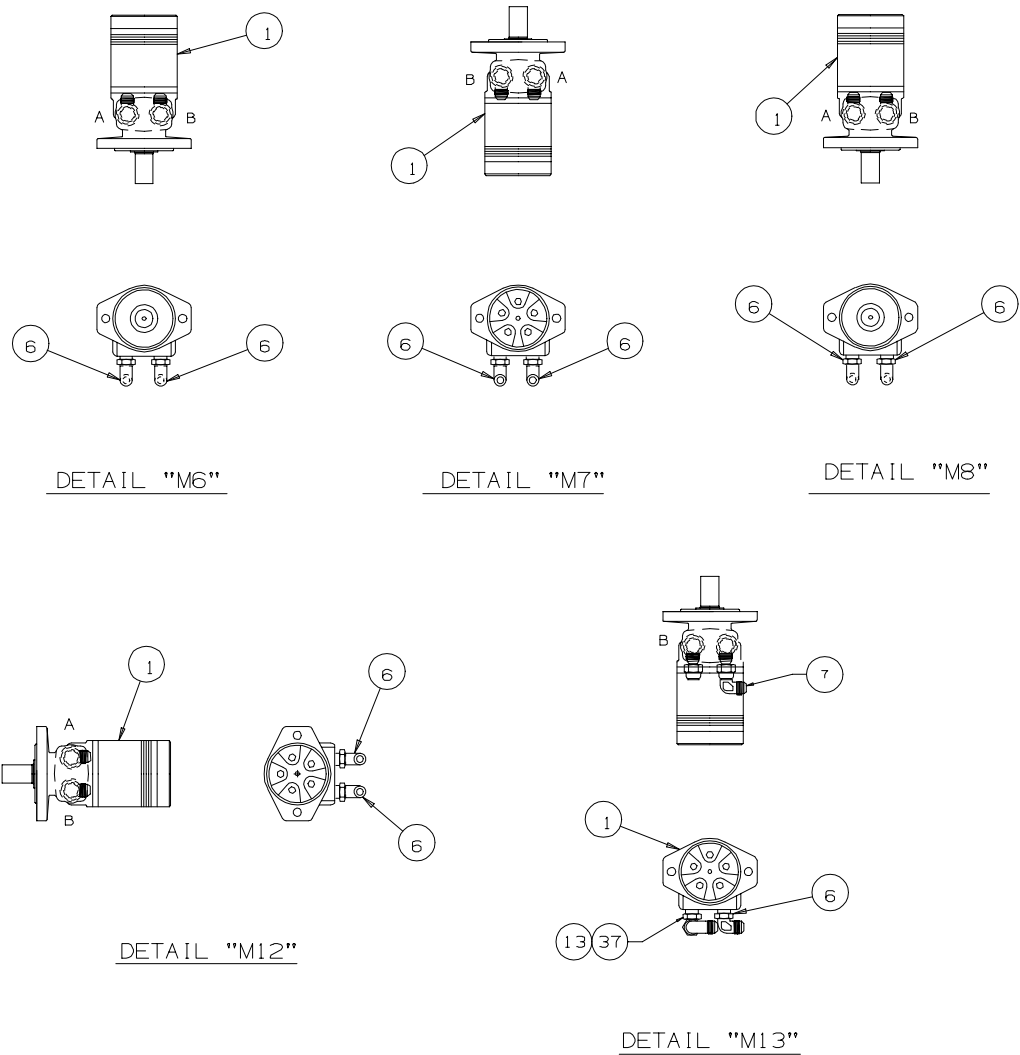


Figure 53
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

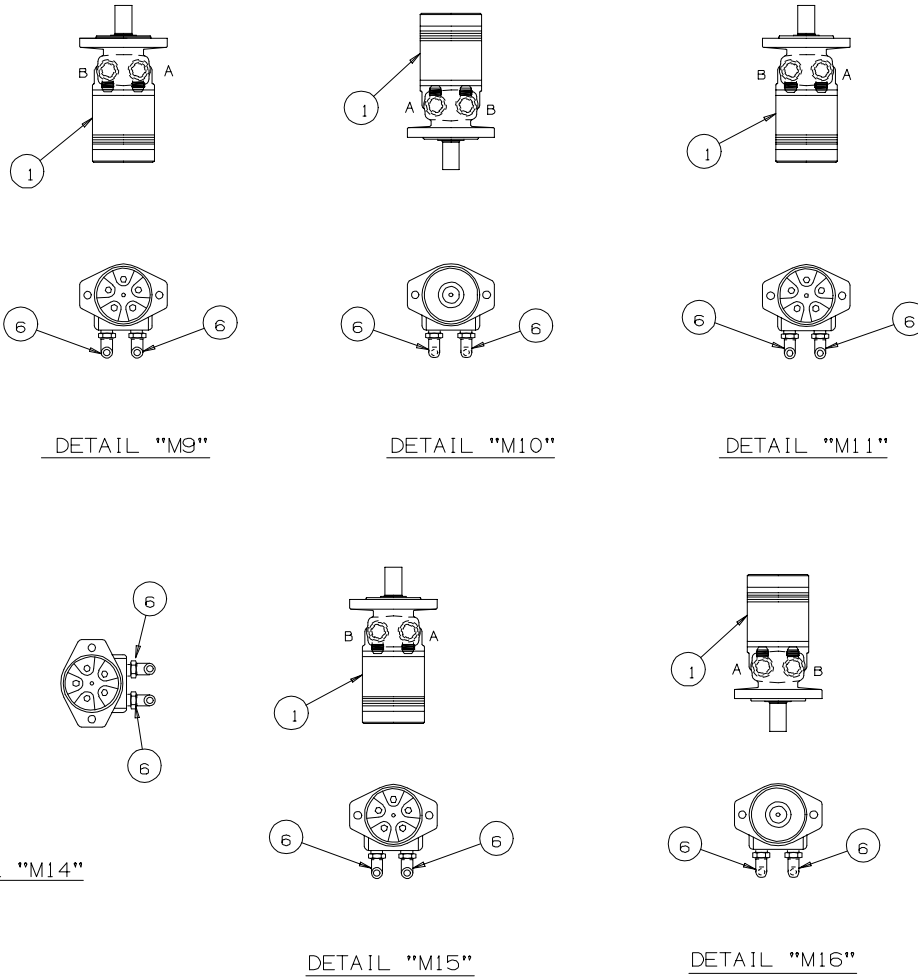


Figure 54
 PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
 620-9850

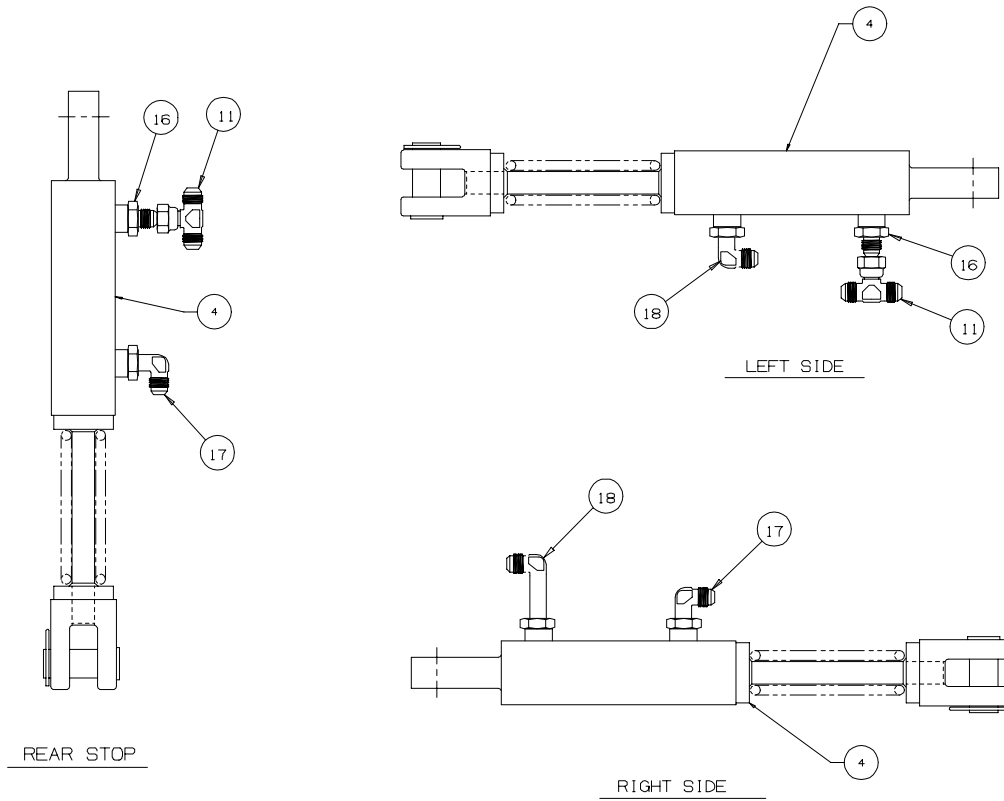


Figure 55
PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

**PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850**

Figure 47 thru Figure 55

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1428		MOTOR HYDRAULIC (V77640 #K82248-225 Model 180613.AAAC) Consisting of:		11
-	620-1428-001		QUAD RING SEAL ONLY (V77640 #032821)		
-	620-1428-090		SEAL KIT (V77640 #SK000090)		
-	110-0279		WOODRUFF KEY		
2	620-1836		MANIFOLD ASSY, Platform (Ref. Figure 56, Page 90)		1
3	620-1832		GUIDES/STOP MANIFOLD ASSY (Ref. Figure 58, Page 93)		1
4	621-5639		CYLINDER, Rear Platform Stop (V08481 #A1403012LCAZ) Consisting of:		3
-	621-5639-090		SEAL KIT (V08481 #15239)		
5	620-0128		VALVE, Shuttle (V54035 #CSAB-XXN-ECI) Consisting of:		1
-	620-1326-001		CARTRIDGE, Sun #CSAB XXN		1
-	620-0128-002		BODY, Sun #ECI		1
6	102-0027		ELBOW, 90°, -10 M O-Ring x -8 M JIC (V79470 #C5515X8X10)		21
7	102-0187		ELBOW, 90° Swivel, -8 JIC (V01276 #2071T-8-8)		4
10	102-0322		CONN., Str., Bulk Hd, -8 M JIC (V01276 #P2041-8-8)		27
11	620-0849		TEE, Swivel Branch, -6 JIC		2
12	102-1192		CLAMP		7
13	102-0321		ELBOW, 45° Swivel, -8 FJIC		1
14	620-0656		NUT, PTH, M8 x 1.25		14
15	620-0626		SCREW, Hex Hd, M8 x 1.25 x 30mm		14
16	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC (V01276 #202702T-6-6S)		4
17	102-0190		ELBOW, 90°, -6 M O-Ring x -6 M JIC (V01276 #2062-6-6S)		7
18	102-1329		ELBOW, 90° Lg, -6 M O-Ring x -6 M JIC (V01276 #206209-6-6)		4

**PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850**

Figure 47 thru Figure 55

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
19	620-0887		PLUG, -10 M O-Ring Boss (V01276 #900598-10S)		3
20	102-0324		TEE, Swivel Run, -8 JIC (V79470 #C5706X8)		2
21	102-1189		CLAMP		7
22	102-1123		REDUCER, -8 F JIC x -6 M JIC (V01276 #221501-8-6)		11
23	118-2680-011		CONN., -10 M O-Ring x -8 M JIC (V01276 #202702-10-8)		3
24	102-1187		PLUG, -8 M O-Ring		2
25	102-0192		ELBOW, 90°, -8 M O-Ring x -8 M JIC (V01276 #2062-8-8)		6
26	102-0193		ELBOW, 90° Lg, -8 M O-Ring x -8 M JIC (V01276 #206209-8-8)		6
28	102-0194		ELBOW, 90°, -6 M O-Ring x -8 M JIC		1
29	102-0200		ELBOW, 90° B.H., -8 M JIC x -8 M JIC		5
30	102-1466		CONN., Str., -6 M O-Ring x -8 M JIC (V01276 #202702-6-8)		1
31	620-4442		CLAMP ASSEMBLY, 1/2 Double Consisting of:		2
-	620-4444-001		BOLT, Hex Hd Size 2 LP/HH		1
-	620-4444-002		TOP PLATE, Size 2 ZP/TP		1
-	620-4444-003		CLAMP PAIR, Size 2-PP .50		1
-	620-4444-004		WELD PLATE, Size 2 ZP/WP 305		1
32	620-4443		CLAMP ASSEMBLY, 1/2 Double Consisting of:		3
-	620-4444-001		BOLT, Hex Hd Size 2 LP/HH		2
-	620-4444-002		TOP PLATE, Size 2 ZP/TP		1
-	620-4444-003		CLAMP PAIR, Size 2-PP .50		1
-	620-4444-004		WELD PLATE, Size 2 ZP/WP 305		1
33	620-0629		SCREW, Hex Hd, M8 x 1.25 x 60mm		1
34	620-9850-001		PLATFORM TUBE KIT		1
35	102-1314		ELBOW, 45° B.H., -8 M JIC x -8 M JIC		6
36	104-1150		CLAMP		5
37	102-0954		ELBOW, 45°, -10 M O-Ring x -8 M JIC		1
38	102-0912		UNION, Str. -8 JIC		2
39	620-0661		WASHER		12
40	620-9754		TUBE ASSEMBLY, 1/2"		1

**PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850**

Figure 47 thru Figure 55

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
41	620-8770		TUBE ASSEMBLY, 1/2"		1
42	620-8769		TUBE ASSEMBLY, 1/2"		1
43	620-6228		TUBE ASSEMBLY, 1/2"		1
46	620-8750		TUBE ASSEMBLY, 1/2"		1
47	620-8751		TUBE ASSEMBLY, 1/2"		1
48	620-8752		TUBE ASSEMBLY, 1/2"		1
49	620-8753		TUBE ASSEMBLY, 1/2"		1
50	620-8754		TUBE ASSEMBLY, 1/2"		1
51	620-8755		TUBE ASSEMBLY, 1/2"		1
52	620-8756		TUBE ASSEMBLY, 1/2"		1
53	620-8757		TUBE ASSEMBLY, 1/2"		5
54	620-8758		TUBE ASSEMBLY, 1/2"		1
55	620-8759		TUBE ASSEMBLY, 1/2"		1
56	620-6227		TUBE ASSEMBLY, 1/2"		2
57	620-9755		TUBE ASSEMBLY, 1/2"		1
58	620-8762		TUBE ASSEMBLY, 1/2"		1
59	620-9756		TUBE ASSEMBLY, 1/2"		1
60	620-8764		TUBE ASSEMBLY, 1/2"		1
61	620-9757		TUBE ASSEMBLY, 1/2"		1
62	622-6021		TUBE ASSEMBLY, 1/2"		2
63	622-6020		TUBE ASSEMBLY, 1/2"		2
64	620-9850-002		PLATFORM HOSE KIT		1
65	519-0197-013		HOSE ASSY, -8 x 331 (13 IN.) Lg		4
66	622-7958		TUBE ASSEMBLY, 3/8"		1
67	519-0196-026		HOSE ASSY, -6 x 661 (26 IN.) Lg		2
68	519-0197-033		HOSE ASSY, -8 x 839 (33 IN.) Lg		2
69	519-0197-043		HOSE ASSY, -8 x 1093 (43 IN.) Lg		2
70	519-0197-198		HOSE ASSY, -8 x 5030 (198 IN.) Lg		1
71	519-0197-056		HOSE ASSY, -8 x 1423 (56 IN.) Lg		1
72	519-0197-069		HOSE ASSY, -8 x 1753 (69 IN.) Lg		2
73	519-0197-086		HOSE ASSY, -8 x 2185 (86 IN.) Lg		2
74	519-0197-023		HOSE ASSY, -8 x 585 (23 IN.) Lg		1
75	519-0196-023		HOSE ASSY, -6 x 585 (23 IN.) Lg		1
76	519-0197-012		HOSE ASSY, -8 x 305 (12 IN.) Lg		2
77	519-0197-016		HOSE ASSY, -8 x 407 (16 IN.) Lg		1
78	519-0197-020		HOSE ASSY, -8 x 508 (20 IN.) Lg		1

PLATFORM HYDRAULICS, EXTENDED SIDE LOAD W/CENTER PALLET ROTATION
620-9850

Figure 47 thru Figure 55

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
79	519-0196-019		HOSE ASSY, -6 X 483 (19 IN.) Lg		1
80	519-0197-039		HOSE ASSY, -8 x 991 (39 IN.) Lg		2
81	519-0196-087		HOSE ASSY, -6 x 2210 (87 IN.) Lg		2
82	519-0196-104		HOSE ASSY, -6 x 2642 (104 IN.) Lg		1
83	519-0196-034		HOSE ASSY, -6 x 864 (34 IN.) Lg		2
84	519-0196-014		HOSE ASSY, -6 x 356 (14 IN.) Lg		2
85	519-0197-018		HOSE ASSY, -8 x 458 (18 IN.) Lg		1
-	Not Shown				

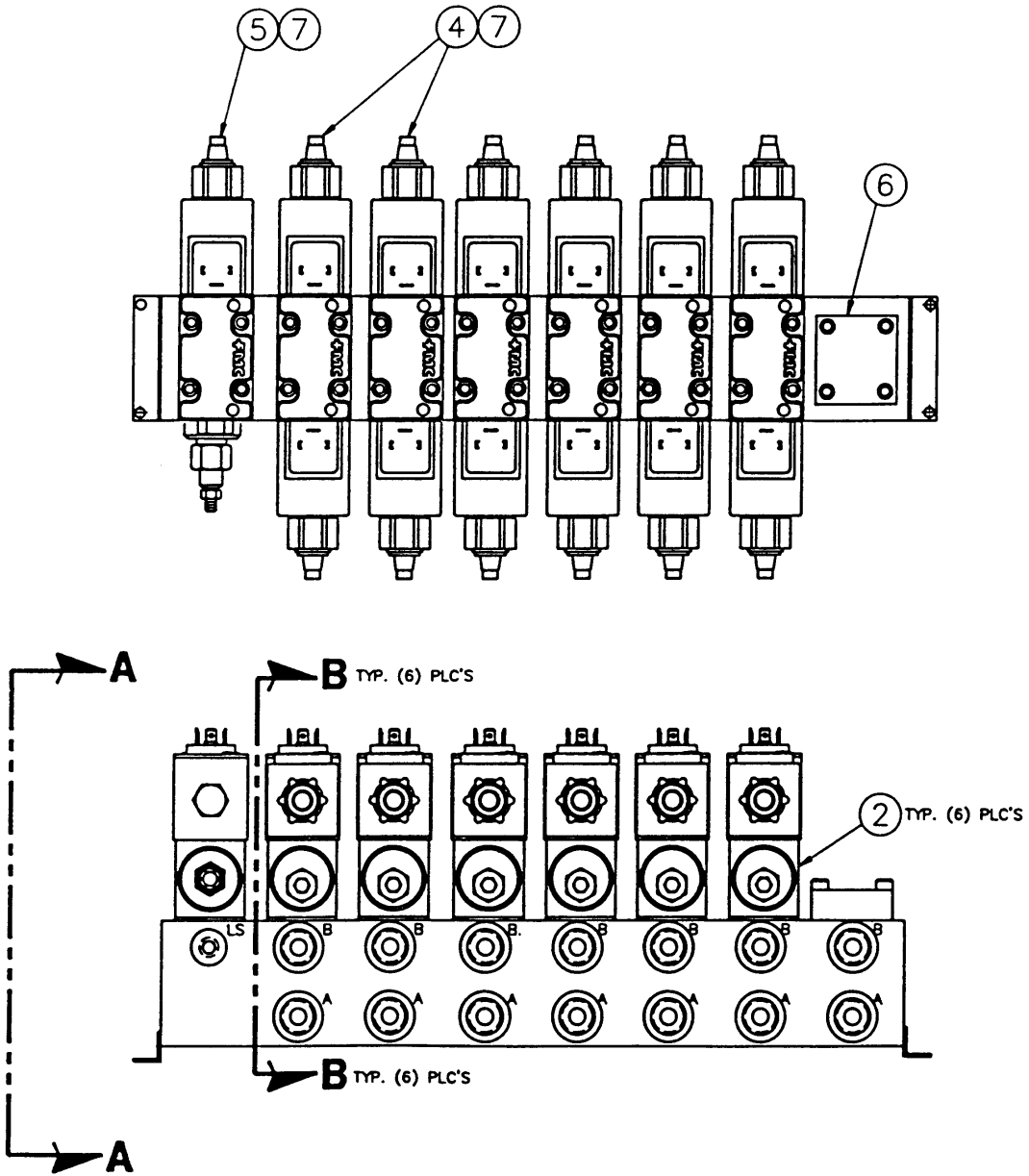


Figure 56
PLATFORM MANIFOLD ASSEMBLY
620-1836

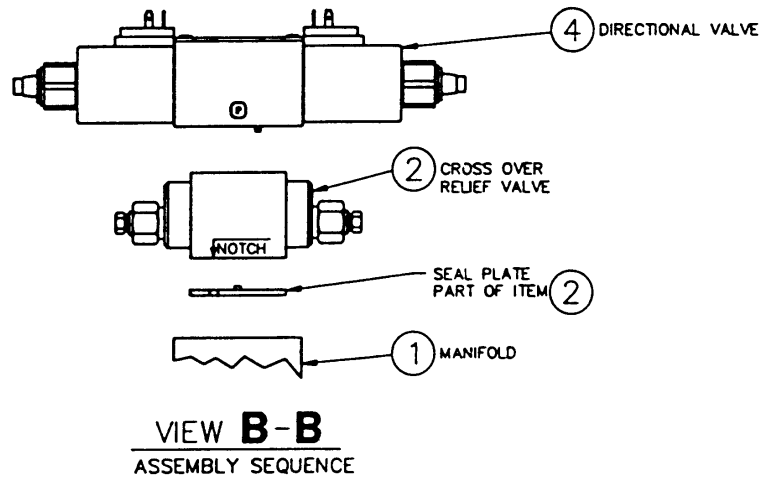
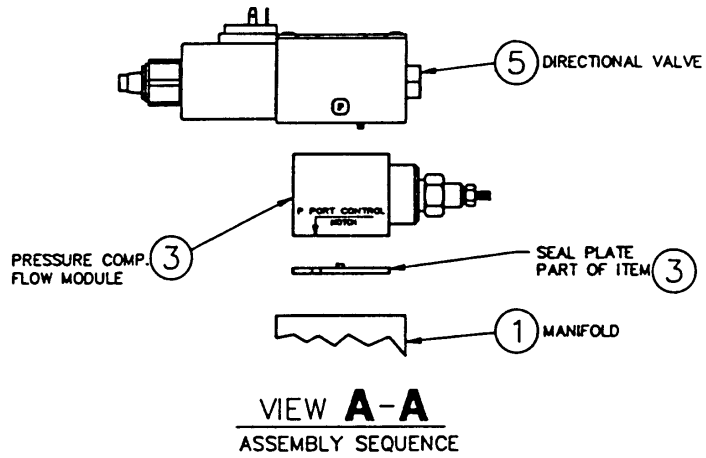
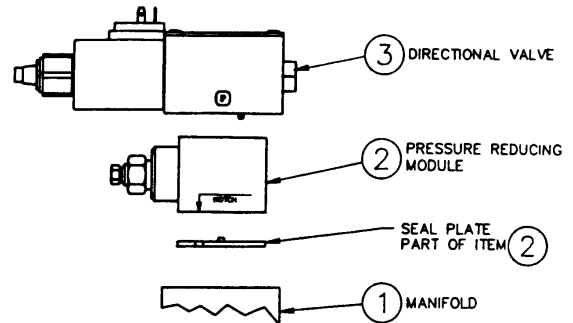
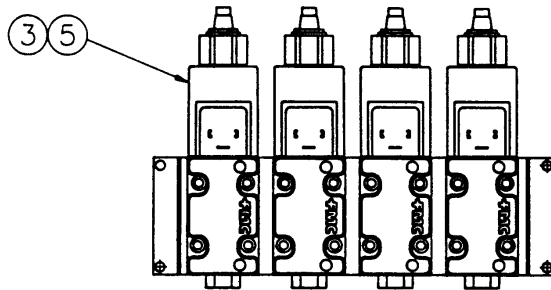


Figure 57
PLATFORM MANIFOLD ASSEMBLY
620-1836

**PLATFORM MANIFOLD ASSEMBLY
620-1836**

Figure 56, Figure 57

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0116		MANIFOLD, 8 Station D01 (V4N453 #GCC-1534-1)		1
2	620-0132		MODULE, Relief, Crossover (V54035 #RPEC-FBN-FBY)		6
-	620-1526-001		Consisting of: CARTRIDGE, Sun #RPEC FBN		2
-	620-0132-002		BODY, Sun #FBY		1
3	620-0120		MODULE, Flow, Pressure Comp. (V54035 #FXCA-LAN-GBP-4.0)		1
-	620-0120-001		Consisting of: CARTRIDGE, Sun #FXCA LAN-4.01		1
-	620-0120-002		BODY, Sun #GBP		1
4	620-6452		VALVE, Directional, 3 Position D03 (V09990 #DIVW8CJW70X4533)		6
-	620-6451-091		Consisting of: COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6452-090		SEAL KIT (V09990 #1300166)		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
5	620-6453		VALVE, 2 Pos DO3 Directional (V09990 #DIVW20BJW0X4534)		1
-	620-6451-091		Consisting of: COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6451-090		SEAL KIT (V09990 #1300166)		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
6	620-0112		COVER PLATE, Series		1
7	620-0118		BOLT KIT (V54035 #992-111)		7
-	Not Shown				



VIEW **A-A**
ASSEMBLY SEQUENCE

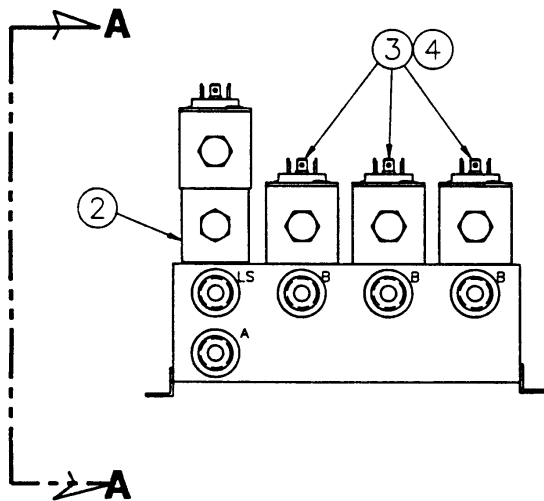
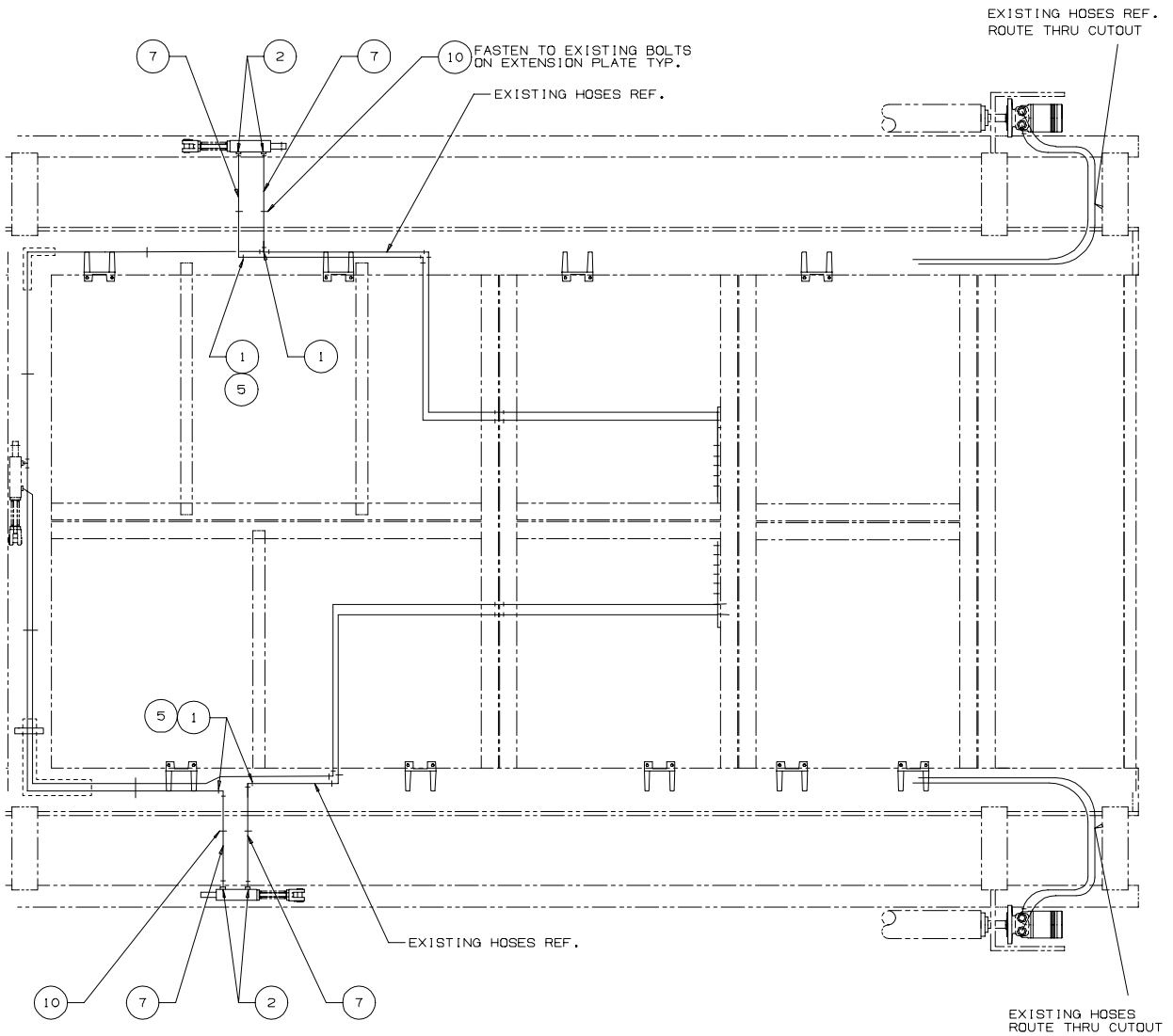


Figure 58
PLATFORM GUIDE/STOPS MANIFOLD ASSEMBLY
620-1832

**PLATFORM GUIDE/STOPS MANIFOLD ASSEMBLY
620-1832**

Figure 58

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-0114		MANIFOLD, 4 Station D03 (V4N453 #GCC-1534-3)		1
2	620-1459		MODULE, Pressure Reducing (V54035 #PBDB-FBN-EBP) Consisting of:		1
-	620-1459-001		CARTRIDGE, Sun #PBDB FBN		1
-	620-1459-002		BODY, Sun #EBP		1
3	620-6453		VALVE, 2 Pos DO3 Directional (V09990 #DIVW20BJW0X4534) Consisting of:		2
-	620-6451-091		COIL REPLACEMENT (V09990 #MB697231)		1
-	620-6451-090		SEAL KIT (V09990 #1300166)		1
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC697161)		1
4	620-0137		BOLT KIT, D01 Valve W/O Modules (V32705 #BKDG03-699M)		1
5	620-0118		BOLT KIT, D01 Valve W/O Modules (V54035 #992-111)		1
-	Not Shown				



REV. D

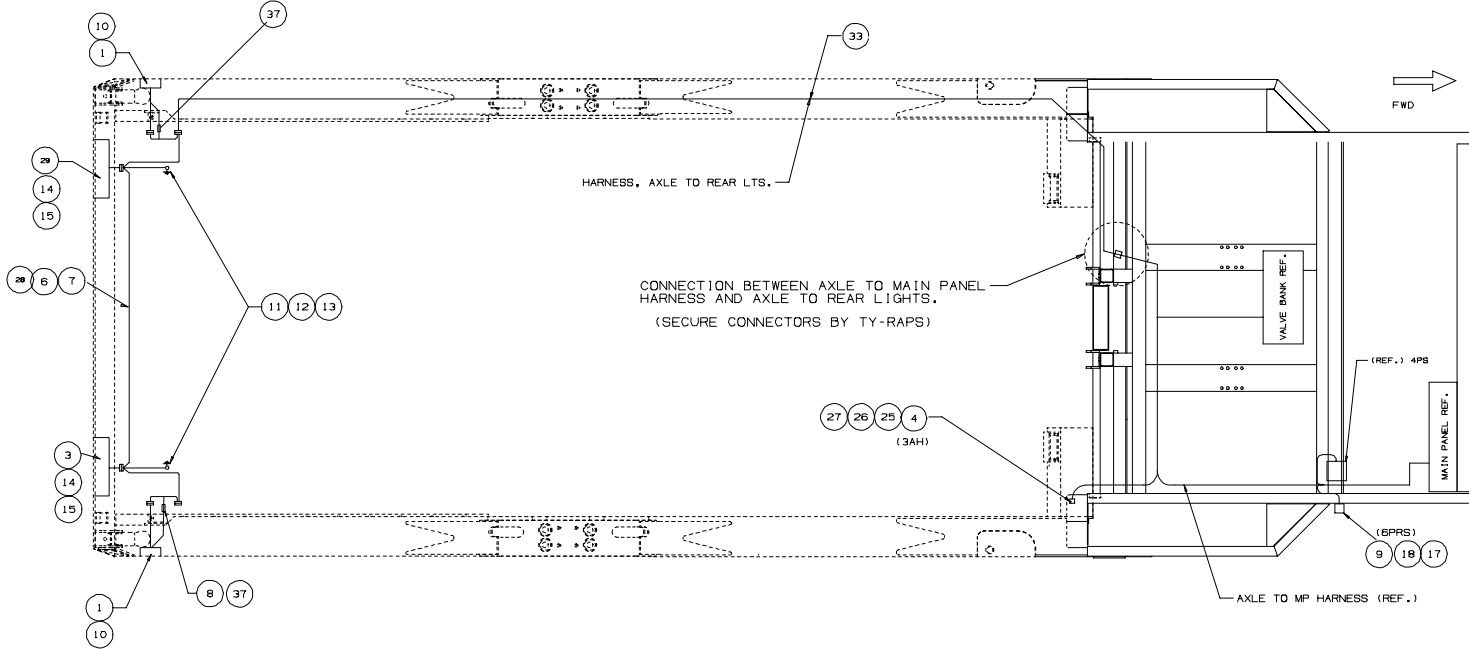
Figure 59
WIDE PLATFORM EXTENSION HYDRAULICS,
620-8724

**WIDE PLATFORM EXTENSION HYDRAULICS
620-8724****Figure 59**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	102-0907		UNION, Str., -6 M JIC (V01276 #2027-6-6S)		4
2	620-0859		CONN., Str., -6 M O-Ring x -6 M JIC (V79470 #C5315X6)		4
5	102-0031		ELBOW, 90° Swivel, -6 JIC (V01276 #2071T-6-6S)		3
6	620-8724-001		HOSE ASSEMBLY KIT		1
7	519-0196-014		HOSE ASSY, -6 x 356 (14 IN.) Lg		4
10	104-1157		CLAMP, .75 I.D.		4

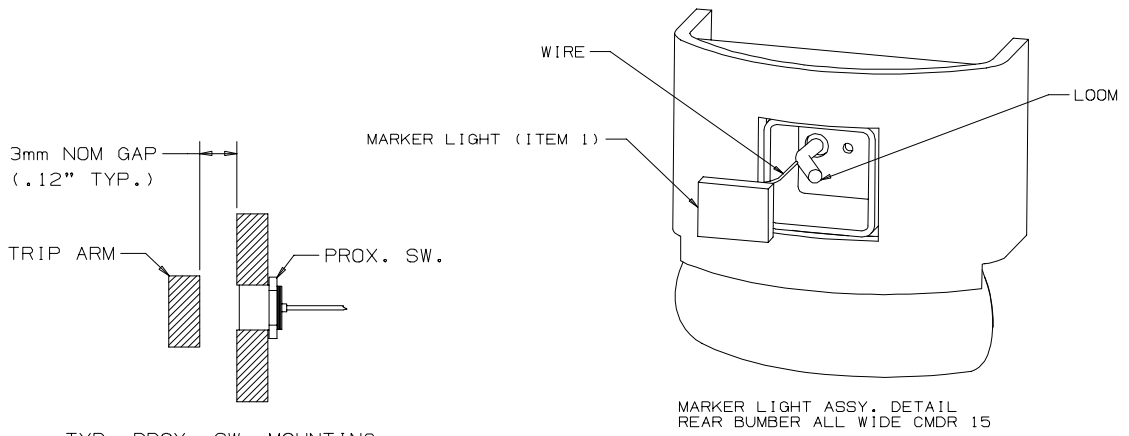
Section 22. Electrical System

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Fig.</u>	<u>Page</u>
1.	MAIN FRAME ELECTRICAL, W/HOT STAMP	622-6450-006	FIGURE 1	2
2.	AMBER LIGHT ASSEMBLY	620-1389	FIGURE 3	6
3.	FORWARD SCISSORS, STANDARD LOWER LOBE	622-6438-001	FIGURE 4	7
4.	AXLE AREA ELECTRICAL	622-8882	FIGURE 8	12
5.	POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER ENGLISH	623-0548	FIGURE 10	15
6.	COLD START ELECTRICAL, DEUTZ	622-3000	FIGURE 15	22
7.	MAIN PANEL ASSEMBLY	622-6215	FIGURE 19	27
8.	GAUGE PANEL ASSEMBLY, ENGLISH	623-0543	FIGURE 27	38
9.	CONSOLE ELECTRICAL, R.H., ENGLISH	623-0545	FIGURE 29	42
10.	BRIDGE PANEL, R.H.	622-6219	FIGURE 32	47
11.	CONTROL PANEL ASSEMBLY, ENGLISH	623-0544	FIGURE 41	59
12.	DRIVE PANEL ASSEMBLY, ENGLISH	623-0542	FIGURE 50	70
13.	BRIDGE ELECTRICAL	622-6437	FIGURE 53	74
14.	PLATFORM ELECTRICAL	622-6439	FIGURE 56	78
15.	PLATFORM CONVEY DIODE BOARD, REAR ROTATE	622-6440	FIGURE 59	82
16.	PLATFORM CONVEY DIODE, FRONT SECTION	622-2945	FIGURE 60	84
17.	PLATFORM CONVEY DIODE, REAR SECTION	622-2946	FIGURE 62	87



REV. F

Figure 1
MAIN FRAME ELECTRICAL, W/HOT STAMPING
 622-6450-006



NOTE:
PULL LOOM THRU WELDMENT AS SHOWN
AND CLAMP IN PLACE WITH MARKER LIGHT

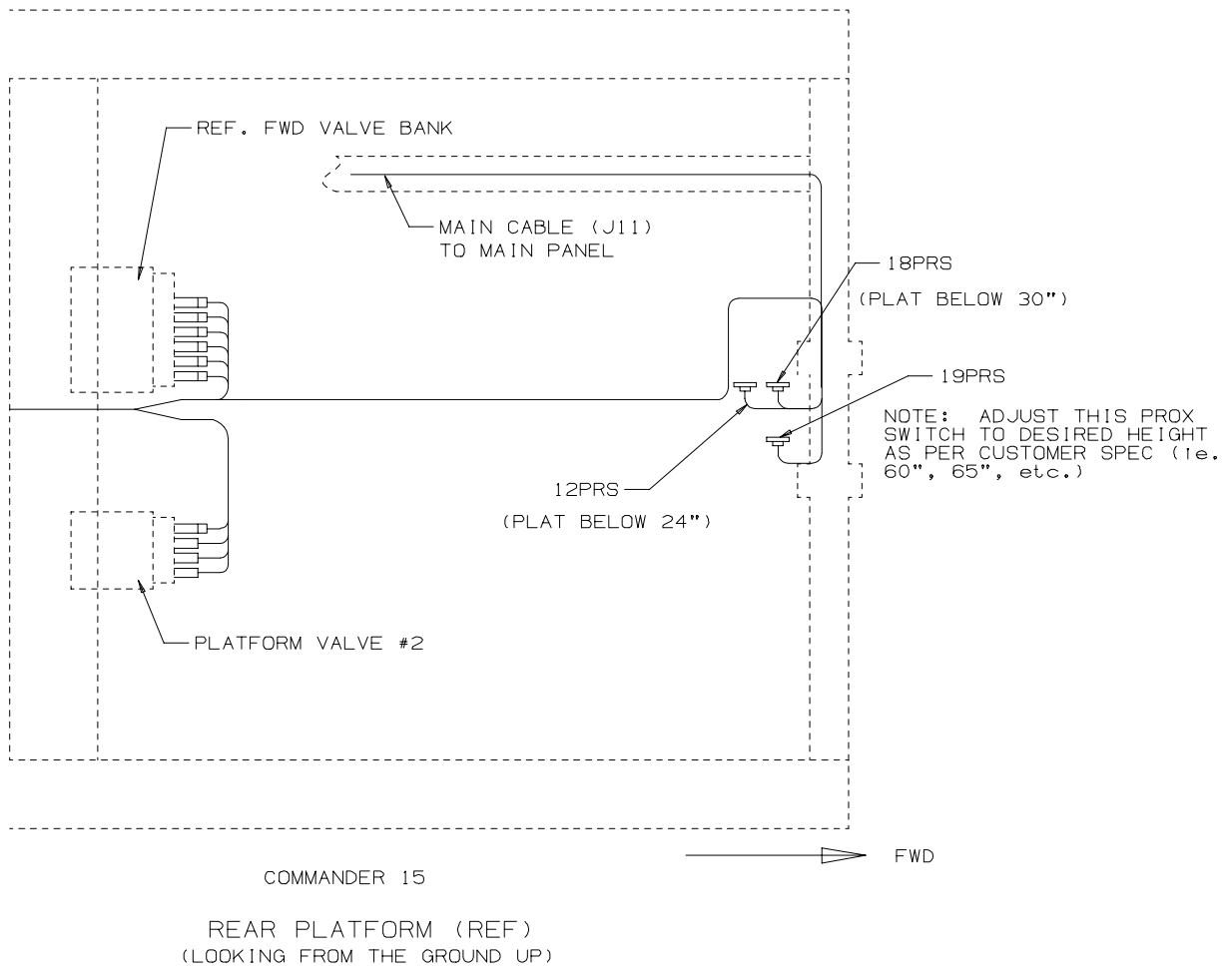


Figure 2
MAIN FRAME ELECTRICAL, W/HOT STAMPING
622-6450-006

**MAIN FRAME ELECTRICAL, WHOT STAMPING
622-6450-006**

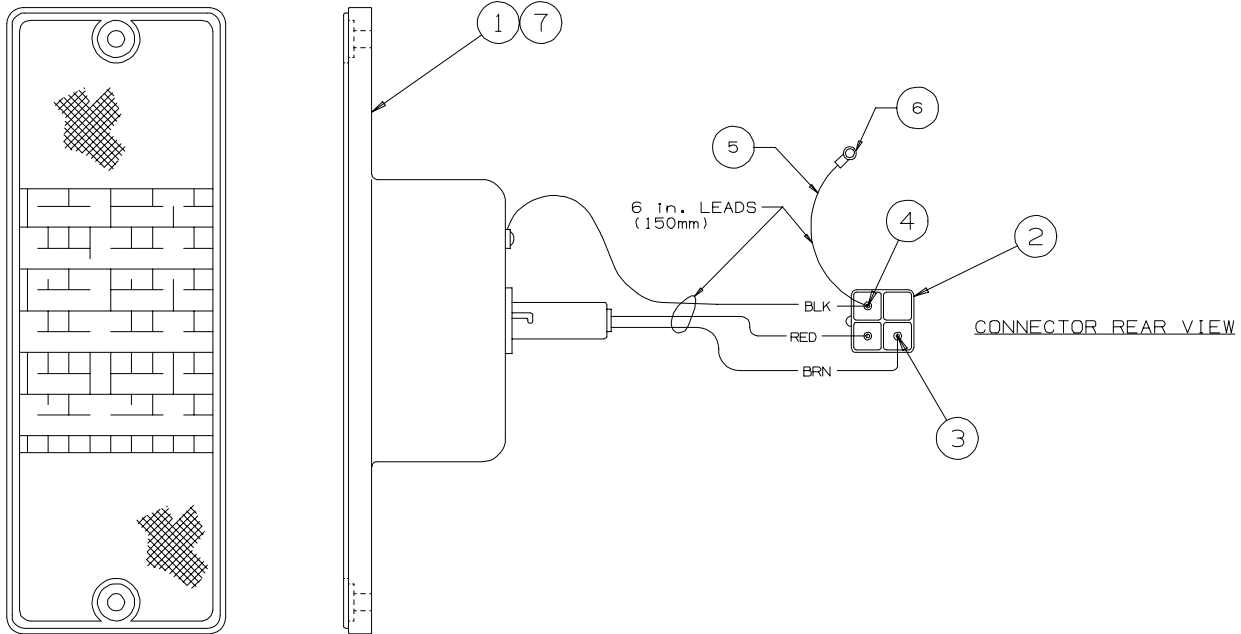
Figure 1, Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-6069-001		MARKER LIGHT ASSEMBLY, Red		2
			Consisting of:		
-	620-6068-001		MARKER LIGHT, Red 12V		1
-	620-4851		LAMP, 24V #464		1
-	620-6068-002		MARKER LIGHT, Amber 12V (V12662 #M114A)		1
2	620-1323		TAIL LIGHT ASSEMBLY, Left		1
			Consisting of:		
	620-0231		TAIL LIGHT, Left (V99588 #01-5211-72 comb./lamp w/yellow turn, 24 volt bulbs, chrome housing)		
			Consisting of:		
-	620-0796		LAMP, Back-Up & Turn, #1683		2
-	620-4710		HELLA LAMP, Stop & Tail, #78265		1
-	621-5215-001		HEATSHRINK, 1/4"		5'
3	620-1324		TAIL LIGHT ASSEMBLY, Right		1
			Consisting of:		
	620-0231		TAIL LIGHT, Left (V99588 #01-5211-72 comb./lamp w/yellow turn, 24 volt bulbs, chrome housing)		
			Consisting of:		
-	620-0796		LAMP, Back-Up & Turn, #1683		2
-	620-4710		HELLA LAMP, Stop & Tail, #78265		1
-	621-5215-001		HEATSHRINK, 1/4"		5'
4	623-1583		BACKUP ALARM ASSEMBLY (SMART)	CR 97194 & UP	1
			Consisting of:		
-	623-1582		ALARM, Backup (Smart)		1
6	105-0210		TY-RAP, 7.3 IN. x 50#		20
7	105-0214		TY-RAP, 3/6 IN.		20
8	519-5559-007		TERM., Male Slip-on 18 AWG		2
9	622-5918-002		PROXIMITY SWITCH ASSEMBLY		1
			Consisting of:		
-	622-1812		SWITCH, Proximity (30mm) W/15 Foot Cord (V68301 #XS1N30PA340-L1-TF)		1
10	620-2286		CLIP, Marker Lite		2
11	620-0802-002		SCREW, Pan Hd Mach, M5 x 0.8 x 12mm		2

**MAIN FRAME ELECTRICAL, WHOT STAMPING
622-6450-006**

Figure 1, Figure 2

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
12	620-0803		WASHER, Flat Hard M5 Narrow		2
13	620-0947		NUT, PTH, M5 x 0.8		2
14	622-1640		U-NUT, 1/4-20		12
15	107-0769		SCREW, Pan Hd Mach, 1/4-20 x 3/4" Slotted		12
17	239-9076-003		CLAMP		3
18	107-0806		RIVET, Cherry 3/16		3
25	620-0625		SCREW, Hex Hd, 8.8 M8 x 1.25 x 20mm		2
26	620-0656		NUT, PTH M8 x 1.25		2
27	620-0661		WASHER, Flat Hard M8 Narrow		2
33	622-6466-006		HARNESS, Axle to Rear Lights Standard w/Hot Stamp		2
34	622-6466-007		HARNESS, Axle to Rear Lights Long w/Hot Stamp		2
36	622-0785-002		HARNESS, Rear Lights w/Hot Stamp		2
37	621-5559-006		TERM., Female Slip-on 18 AWG		2
-	Not Shown				

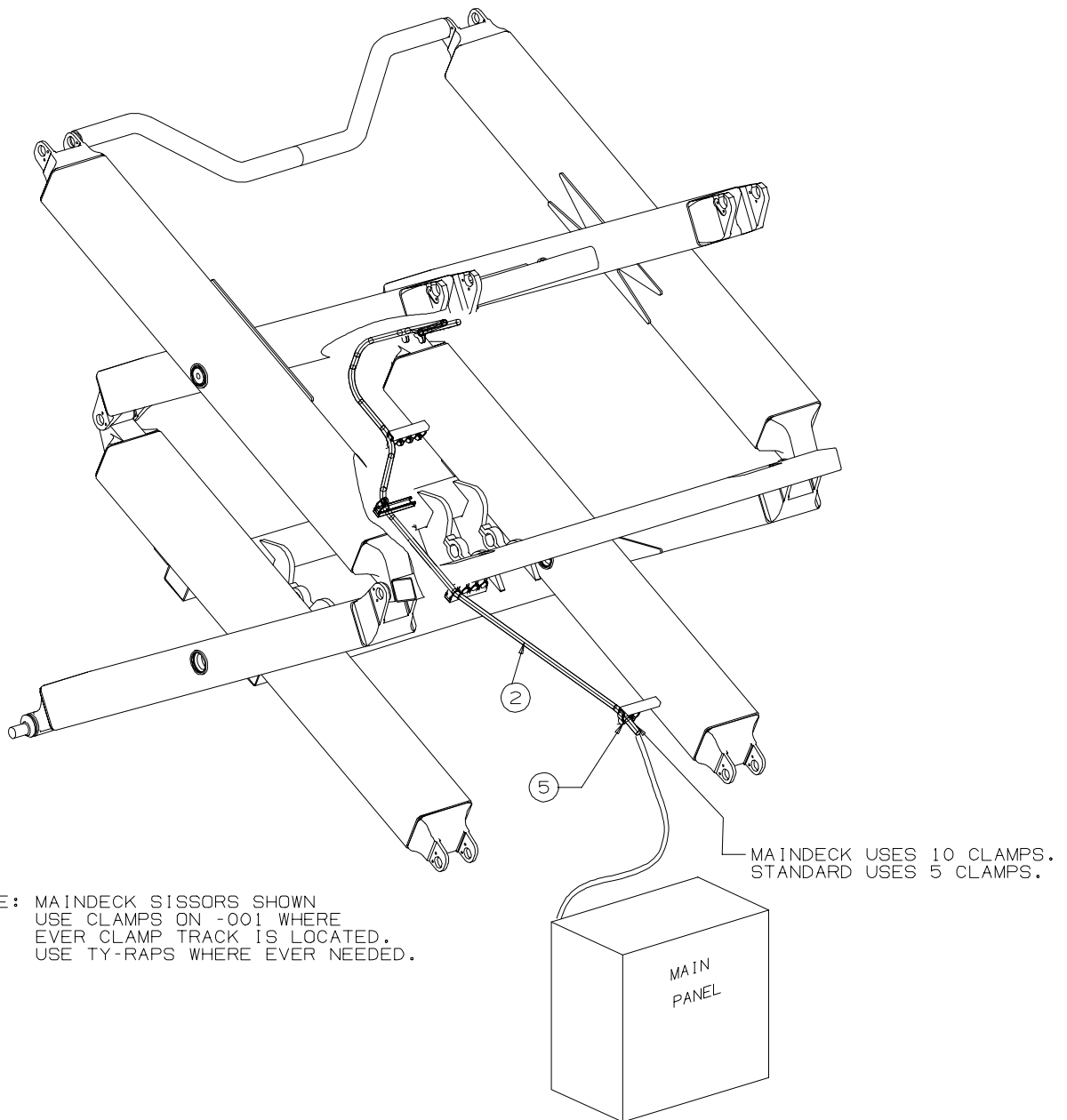


REV. E

Figure 3

**AMBER LIGHT ASSEMBLY
620-1389**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-4724		LIGHT, Amber 12V Turn/Park (V78442 #250ST-12V-AMBER)		1
2	239-1759		CONN. BODY, 4 Contact Male		1
3	620-1329-001		CONN. TERM, Male		2
4	620-1329-002		CONN. TERM, Male		1
5	620-3900-018		WIRE, 18 AWG Yello GXL		.5'
6	620-1240-005		TERM., 18 AWG to .25 (M6) Ring		1
7	620-4710		LAMP, 24V Tail/Stop		1
8	621-5215-001		HEAT SHRINK, 1/4"		.5'



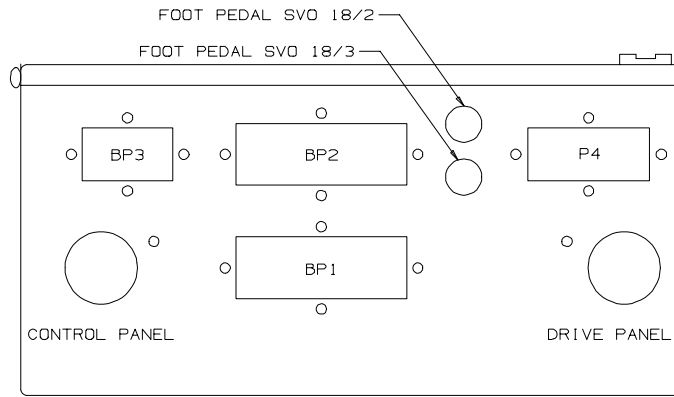
NOTE: MAINDECK SISSORS SHOWN
USE CLAMPS ON -001 WHERE
EVER CLAMP TRACK IS LOCATED.
USE TY-RAPS WHERE EVER NEEDED.

MAINDECK USES 10 CLAMPS.
STANDARD USES 5 CLAMPS.

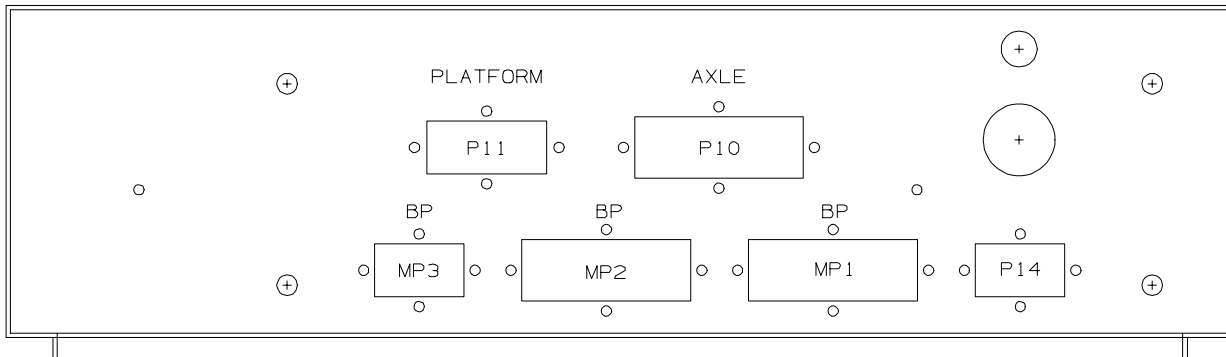
622-6438-001 STANDARD SCISSORS
622-6438-003 STANDARD SCISSORS & HOT STAMPING

REV. D

Figure 4
FORWARD SCISSORS, STANDARD LOWER LOBE
622-6438-001



BOTTOM VIEW OF BRIDGE PANEL
DETAIL "A"



INSIDE BOTTOM VIEW OF MAIN PANEL
DETAIL "B"

Figure 5
FORWARD SCISSORS, STANDARD LOWER LOBE
622-6438-001

COND. NO.	TAPE	WIRE NO.	AWG	FROM	TO
1	RED	16	18	MJ1 (1)	BJ2 (1)
2	RED	21	18	MJ1 (2)	BJ2 (2)
3	RED	34	18	MJ1 (3)	BJ2 (3)
4	RED	50	18	MJ1 (4)	BJ2 (4)
5	RED	76	18	MJ1 (5)	BJ2 (5)
6	RED	78	18	MJ1 (6)	BJ2 (6)
7	RED	79	18	MJ1 (7)	BJ2 (7)
8	RED	81	18	MJ1 (8)	BJ2 (8)
9	RED	82	18	MJ1 (9)	BJ2 (9)
10	RED	83A	18	MJ1 (10)	BJ2 (10)
11	RED	86	18	MJ1 (11)	BJ2 (11)
12	RED	88	18	MJ1 (12)	BJ2 (12)
13	RED	101	18	MJ1 (13)	BJ2 (13)
14	RED	103	18	MJ1 (14)	BJ2 (14)
15	RED	SPARE F	18	MJ1 (57)	BJ2 (57)
16	RED	109	18	MJ1 (16)	BJ2 (16)
17	RED	110	18	MJ1 (17)	BJ2 (17)
18	RED	SPARE E	18	MJ1 (58)	BJ2 (58)
19	RED	SPARE D	18	MJ1 (59)	BJ2 (59)
20	RED	SPARE C	18	MJ1 (60)	BJ2 (60)
21	RED	SPARE B	18	MJ1 (61)	BJ2 (61)
22	RED	122A	18	MJ1 (22)	BJ2 (22)
23	RED	SPARE A	18	MJ1 (62)	BJ2 (62)
24	RED	128A	18	MJ1 (24)	BJ2 (24)
25	RED	143A	18	MJ1 (25)	BJ2 (25)
26	RED	144	18	MJ1 (26)	BJ2 (26)
27	RED	145	18	MJ1 (27)	BJ2 (27)
28	RED	148	18	MJ1 (28)	BJ2 (28)
29	RED	154	18	MJ1 (29)	BJ2 (29)
30	RED	152C	18	MJ1 (30)	BJ2 (30)
31	RED	155A	18	MJ1 (31)	BJ2 (31)
32	RED	158	18	MJ1 (32)	BJ2 (32)
33	RED	165	18	MJ1 (33)	BJ2 (33)
34	RED	165A	18	MJ1 (34)	BJ2 (34)
35	RED	169	18	MJ1 (35)	BJ2 (35)
36	RED	171	18	MJ1 (36)	BJ2 (36)
37	RED	172	18	MJ1 (37)	BJ2 (37)
38	RED	173	18	MJ1 (38)	BJ2 (38)
39	RED	178	18	MJ1 (39)	BJ2 (39)
40	RED	181	18	MJ1 (40)	BJ2 (40)
41	RED	182	18	MJ1 (41)	BJ2 (41)
42	RED	183	18	MJ1 (42)	BJ2 (42)
43	RED	184	18	MJ1 (43)	BJ2 (43)
44	RED	186	18	MJ1 (44)	BJ2 (44)
45	RED	203	18	MJ1 (45)	BJ2 (45)
46	RED	204	18	MJ1 (46)	BJ2 (46)
47	RED	205	18	MJ1 (47)	BJ2 (47)
48	RED	206	18	MJ1 (48)	BJ2 (48)

COND. NO.	TAPE	WIRE NO.	AWG	FROM	TO
1	BLUE	1	14	MJ1 (49)	BJ2 (49)
2	BLUE	1	14	MJ1 (50)	BJ2 (50)
3	BLUE	1	14	MJ1 (51)	BJ2 (51)
4	BLUE	15	14	MJ1 (52)	BJ2 (52)
5	BLUE	17	14	MJ1 (53)	BJ2 (53)
6	BLUE	18	14	MJ1 (54)	BJ2 (54)
7	BLUE	85	14	MJ1 (55)	BJ2 (55)
8	BLUE	92	14	MJ1 (56)	BJ2 (56)
9	BLUE	104	14	MJ1 (15)	BJ2 (15)
10	BLUE	105	14	MJ1 (18)	BJ2 (18)
11	BLUE	106	14	MJ1 (19)	BJ2 (19)
12	BLUE	143	14	MJ1 (20)	BJ2 (20)
13	BLUE	150	14	MJ1 (21)	BJ2 (21)
14	BLUE	155B	14	MJ1 (23)	BJ2 (23)
15	BLUE	222	14	MJ1 (70)	BJ2 (70)
16	BLUE	SPARE G	14	MJ1 (63)	BJ2 (63)
17	BLUE	SPARE F	14	MJ1 (64)	BJ2 (64)
18	BLUE	SPARE E	14	MJ1 (65)	BJ2 (65)
19	BLUE	SPARE D	14	MJ1 (66)	BJ2 (66)
20	BLUE	SPARE C	14	MJ1 (67)	BJ2 (67)
21	BLUE	SPARE B	14	MJ1 (68)	BJ2 (68)
22	BLUE	SPARE A	14	MJ1 (69)	BJ2 (69)

Figure 6
 FORWARD SCISSORS, STANDARD LOWER LOBE
 622-6438-001

COND. NO.	TAPE	WIRE NO.	AWG	FROM	TO
1	WHT	207	18	MJ2 (3)	BJ1 (3)
2	WHT	208	18	MJ2 (4)	BJ1 (4)
3	WHT	209	18	MJ2 (5)	BJ1 (5)
4	WHT	210	18	MJ2 (6)	BJ1 (6)
5	WHT	211	18	MJ2 (7)	BJ1 (7)
6	WHT	212	18	MJ2 (8)	BJ1 (8)
7	WHT	265	18	MJ2 (9)	BJ1 (9)
8	WHT	SPARE a	18	MJ2 (10)	BJ1 (10)
9	WHT	273	18	MJ2 (11)	BJ1 (11)
10	WHT	274	18	MJ2 (12)	BJ1 (12)
11	WHT	280	18	MJ2 (13)	BJ1 (13)
12	WHT	281	18	MJ2 (14)	BJ1 (14)
13	WHT	264	18	MJ2 (22)	BJ1 (22)
14	WHT	148D	18	MJ2 (23)	BJ1 (23)
15	WHT	20	18	MJ2 (24)	BJ1 (24)
16	WHT	148C	18	MJ2 (25)	BJ1 (25)
17	WHT	39	18	MJ2 (26)	BJ1 (26)
18	WHT	40	18	MJ2 (27)	BJ1 (27)
19	WHT	148E	18	MJ2 (28)	BJ1 (28)
20	WHT	SPARE Z	18	MJ2 (57)	BJ1 (57)
21	WHT	SPARE Y	18	MJ2 (58)	BJ1 (58)
22	WHT	SPARE X	18	MJ2 (59)	BJ1 (59)
23	WHT	SPARE W	18	MJ2 (60)	BJ1 (60)
24	WHT	SPARE V	18	MJ2 (61)	BJ1 (61)
25	WHT	SPARE U	18	MJ2 (62)	BJ1 (62)
26	WHT	SPARE T	18	MJ2 (63)	BJ1 (63)
27	WHT	SPARE S	18	MJ2 (43)	BJ1 (43)
28	WHT	SPARE R	18	MJ2 (44)	BJ1 (44)
29	WHT	SPARE Q	18	MJ2 (45)	BJ1 (45)
30	WHT	SPARE P	18	MJ2 (46)	BJ1 (46)
31	WHT	SPARE N	18	MJ2 (47)	BJ1 (47)
32	WHT	SPARE M	18	MJ2 (48)	BJ1 (48)
33	WHT	SPARE L	18	MJ2 (49)	BJ1 (49)
34	WHT	SPARE K	18	MJ2 (29)	BJ1 (29)
35	WHT	SPARE J	18	MJ2 (30)	BJ1 (30)
36	WHT	SPARE H	18	MJ2 (31)	BJ1 (31)
37	WHT	SPARE G	18	MJ2 (32)	BJ1 (32)
38	WHT	SPARE F	18	MJ2 (33)	BJ1 (33)
39	WHT	259	18	MJ2 (36)	BJ1 (36)
40	WHT	38	18	MJ2 (37)	BJ1 (37)
41	WHT	41	18	MJ2 (38)	BJ1 (38)
42	WHT	SPARE E	18	MJ2 (34)	BJ1 (34)
43	WHT	SPARE D	18	MJ2 (35)	BJ1 (35)
44	WHT	SPARE C	18	MJ2 (15)	BJ1 (15)
45	WHT	SPARE B	18	MJ2 (16)	BJ1 (16)
46	WHT	148B	18	MJ2 (39)	BJ1 (39)
47	WHT	279	18	MJ2 (40)	BJ1 (40)
48	WHT	SPARE A	18	MJ2 (17)	BJ1 (17)

COND. NO.	TAPE	WIRE NO.	AWG	FROM	TO
1	GRN	SPARE J	18	MJ2 (18)	BJ1 (18)
2	GRN	156	18	MJ2 (41)	BJ1 (41)
3	GRN	165C	18	MJ2 (42)	BJ1 (42)
4	GRN	SPARE H	18	MJ2 (19)	BJ1 (19)
5	GRN	SPARE G	18	MJ2 (20)	BJ1 (20)
6	GRN	SPARE F	18	MJ2 (21)	BJ1 (21)
7	GRN	SPARE E	18	MJ2 (1)	BJ1 (1)
8	GRN	174	18	MJ2 (50)	BJ1 (50)
9	GRN	177	18	MJ2 (51)	BJ1 (51)
10	GRN	182C	18	MJ2 (52)	BJ1 (52)
11	GRN	191	18	MJ2 (53)	BJ1 (53)
12	GRN	213A	18	MJ2 (54)	BJ1 (54)
13	GRN	213B	18	MJ2 (55)	BJ1 (55)
14	GRN	214	18	MJ2 (56)	BJ1 (56)
15	GRN	236	18	MJ2 (64)	BJ1 (64)
16	GRN	235	18	MJ2 (65)	BJ1 (65)
17	GRN	234	18	MJ2 (66)	BJ1 (66)
18	GRN	182D	18	MJ2 (67)	BJ1 (67)
19	GRN	SPARE D	18	MJ2 (2)	BJ1 (2)
20	GRN	237	18	MJ2 (68)	BJ1 (68)
21	GRN	243	18	MJ2 (69)	BJ1 (69)
22	GRN	244	18	MJ2 (70)	BJ1 (70)
23	GRN	245	18	MJ3 (4)	BJ3 (4)
24	GRN	246	18	MJ3 (5)	BJ3 (5)
25	GRN	249	18	MJ3 (6)	BJ3 (6)
26	GRN	250	18	MJ3 (7)	BJ3 (7)
27	GRN	251	18	MJ3 (8)	BJ3 (8)
28	GRN	252	18	MJ3 (9)	BJ3 (9)
29	GRN	255	18	MJ3 (10)	BJ3 (10)
30	GRN	SPARE C	18	MJ3 (3)	BJ3 (3)
31	GRN	272	18	MJ3 (11)	BJ3 (11)
32	GRN	SPARE B	18	MJ3 (2)	BJ3 (2)
33	GRN	257	18	MJ3 (12)	BJ3 (12)
34	GRN	269	18	MJ3 (13)	BJ3 (13)
35	GRN	270	18	MJ3 (14)	BJ3 (14)
36	GRN	258	18	MJ3 (15)	BJ3 (15)
37	GRN	SPARE A	18	MJ3 (1)	BJ3 (1)

Figure 7
 FORWARD SCISSORS, STANDARD LOWER LOBE
 622-6438-001

**FORWARD SCISSORS, STANDARD LOWER LOBE
622-6438-001**

Figure 4 thru Figure 7

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
2	622-6329-001		CABLE ASSY, Standard		1
3	105-0214		TY-RAP, 3.6" 18#		10
4	105-0210		TY-RAP, 7.3" 50#		10
5	237-6060-162		CLAMP, Tube		10
7	622-6329-003		CABLE ASSY, Hot Stamping Option		1

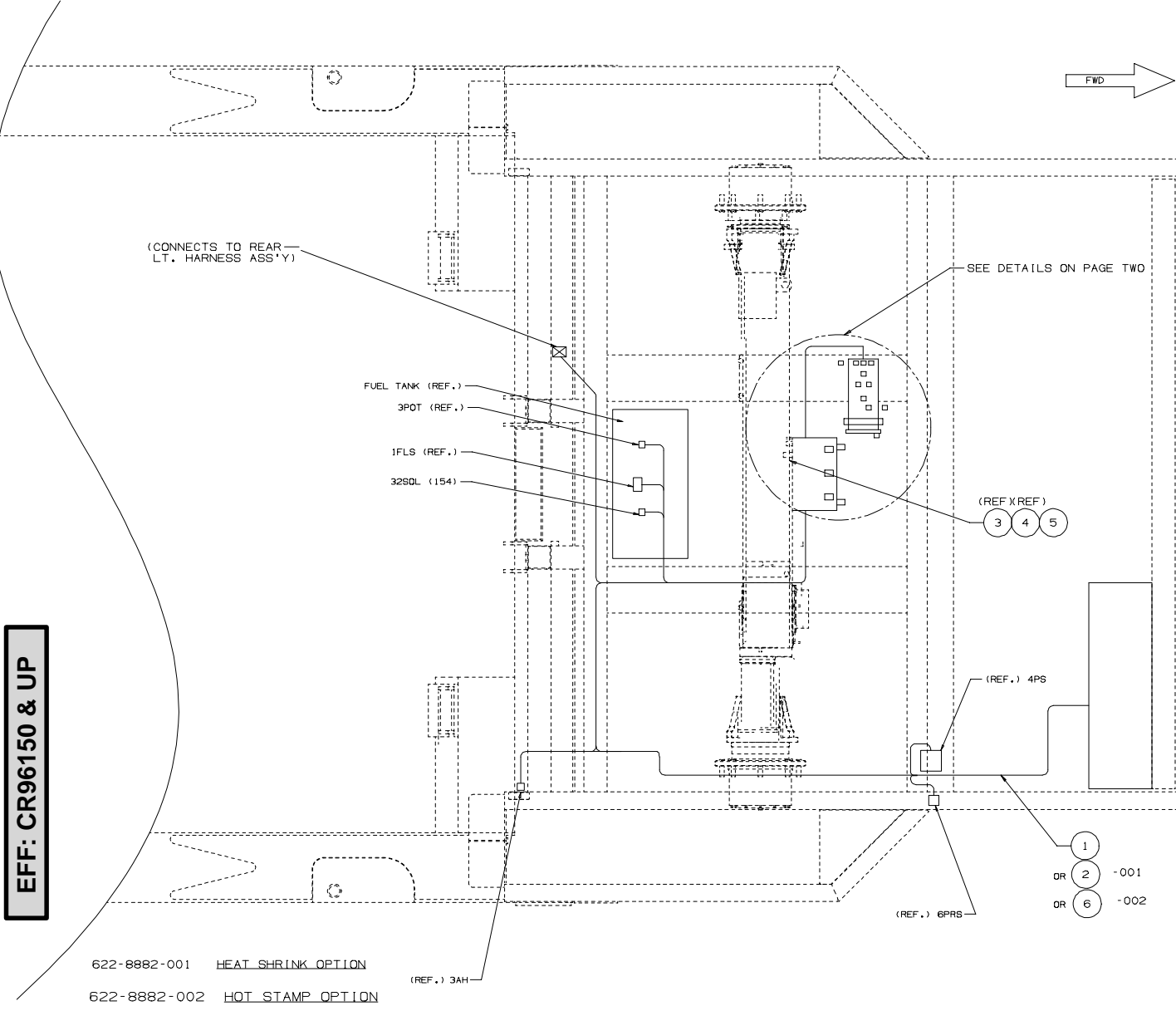


Figure 8
 AXLE AREA ELECTRICAL
 622-8882

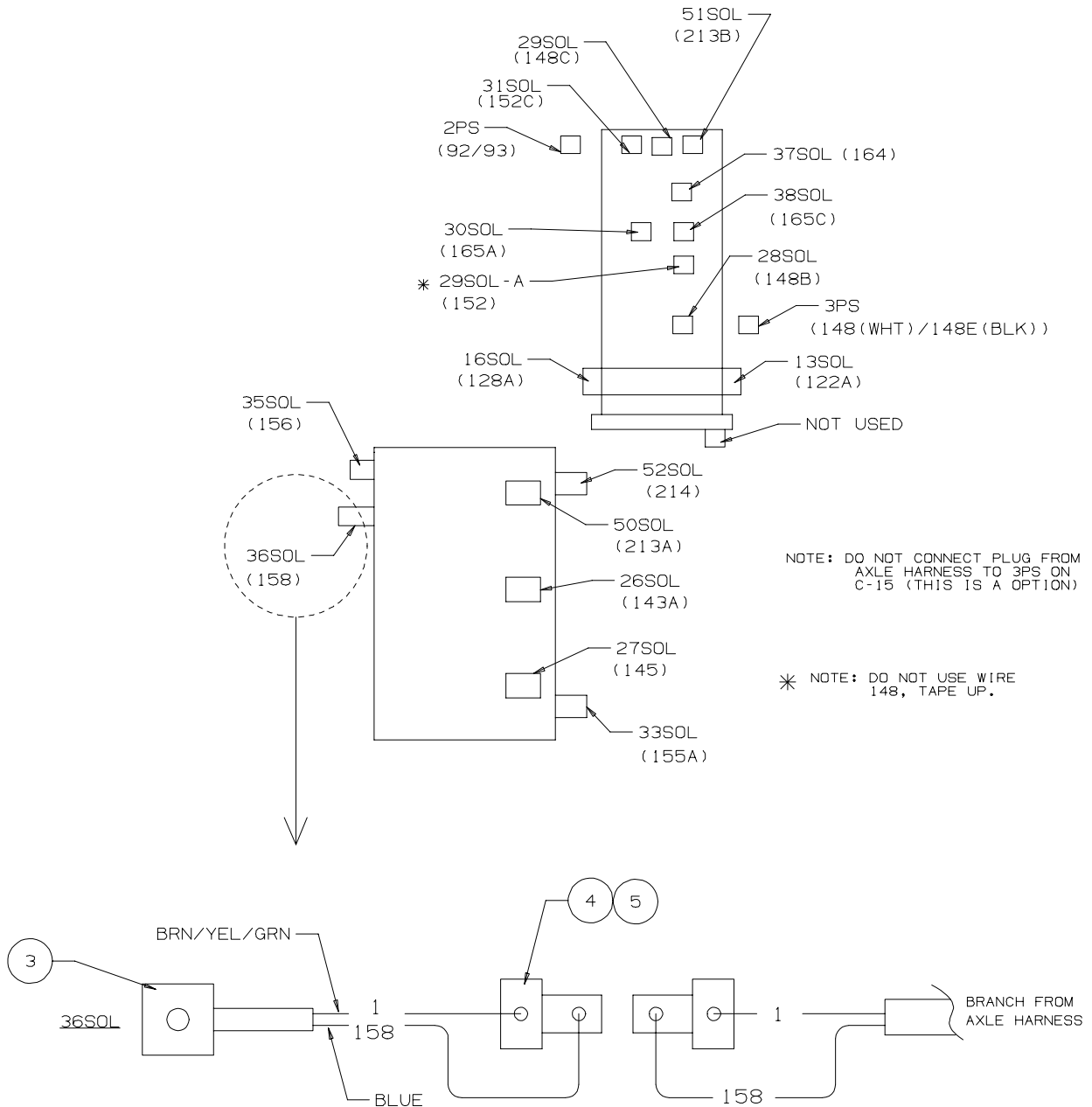
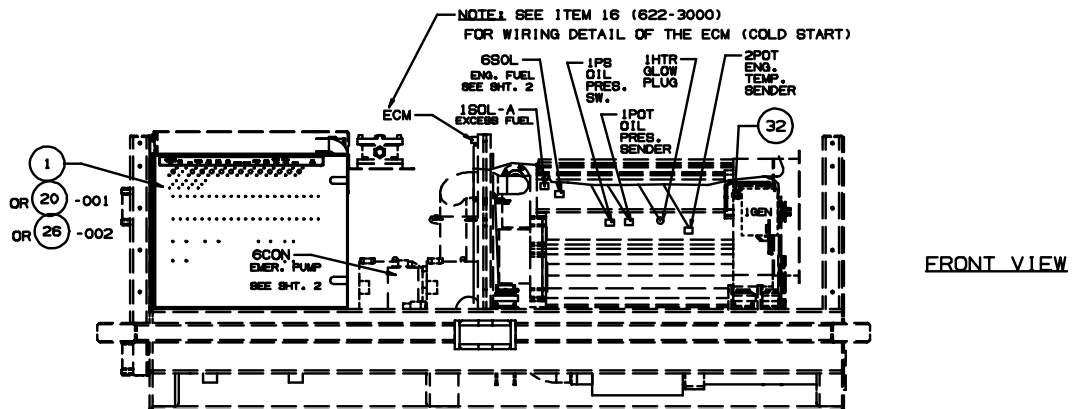
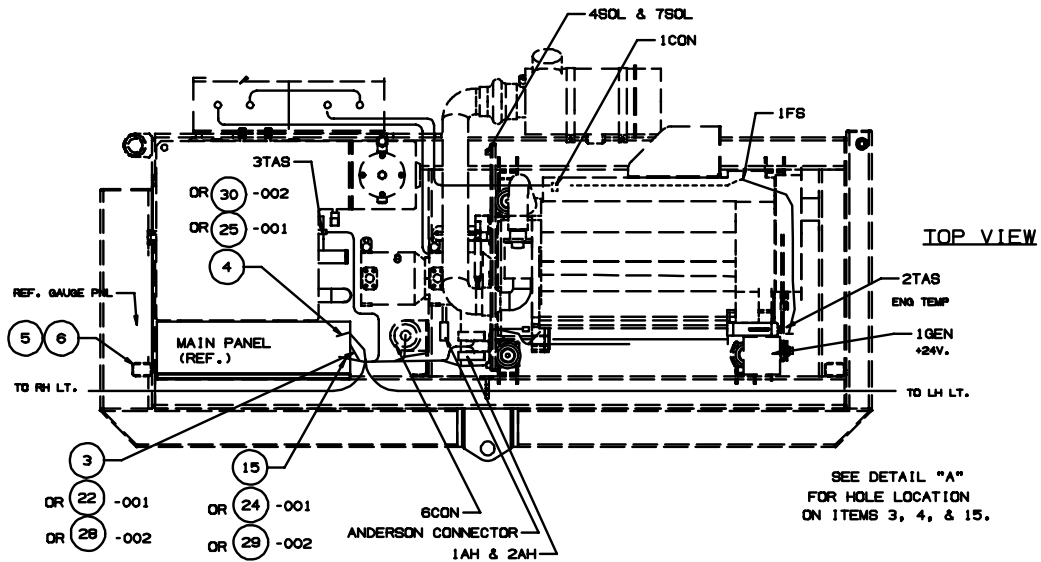
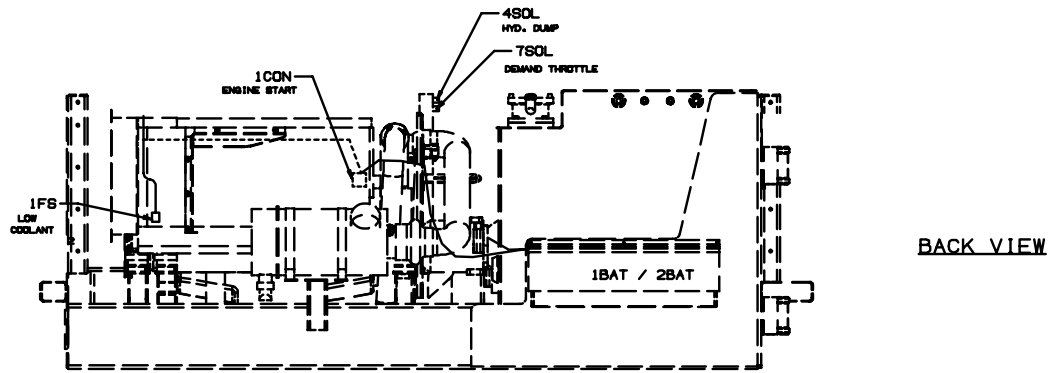


Figure 9
AXLE AREA ELECTRICAL
622-8882

**AXLE AREA ELECTRICAL
622-8882****Figure 8, Figure 9**

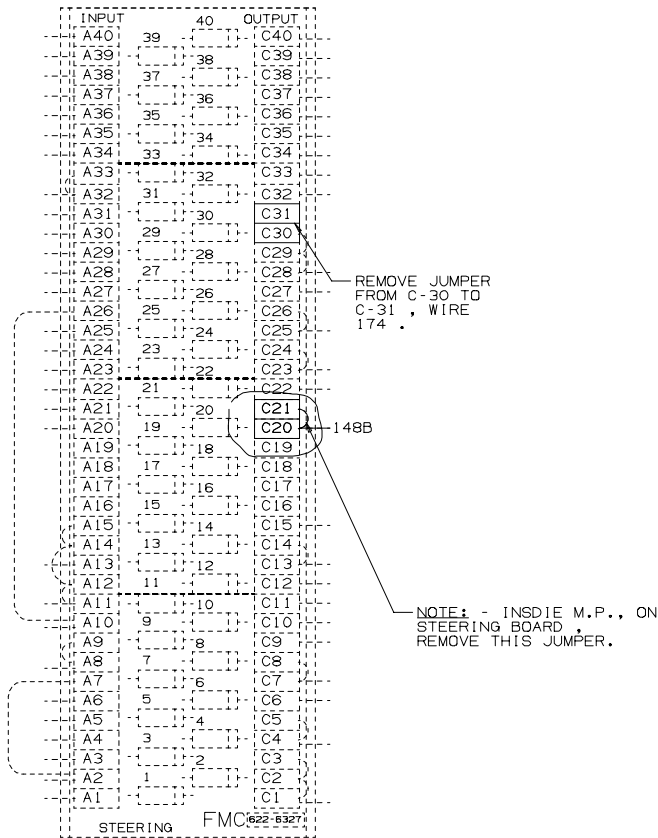
ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	622-6321		HARNESS, Axle		1
2	622-6321-001		HARNESS, Axle w/Heat Shrink		1
3	620-3232		DIN CONNECTOR, w/ Cord, 6 Foot		1
4	514-4758		HOUSING, 2 Contact Male		1
5	620-1329-001		TERM., Male 18 AWG		2
6	622-6321-002		HARNESS, Axle w/Hot Stamp		1



- 623-0548-001 HEATSHRINK OPTION (ENGLISH)
- 623-0548-002 HOT STAMP OPTION (ENGLISH)

REV. E

Figure 10
 POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
 623-0548



DIODE STEERING - MAIN PANEL

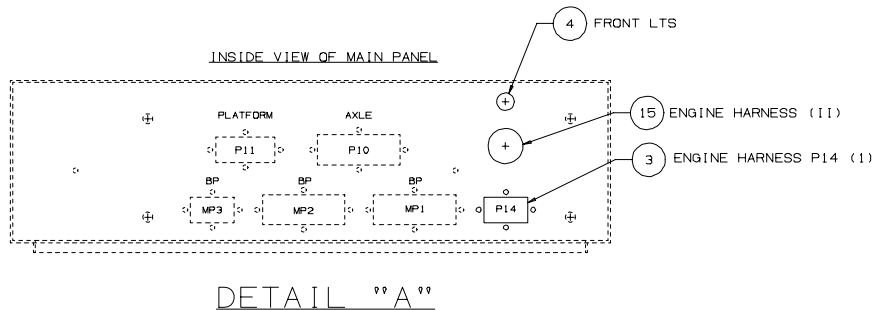


Figure 11
POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548

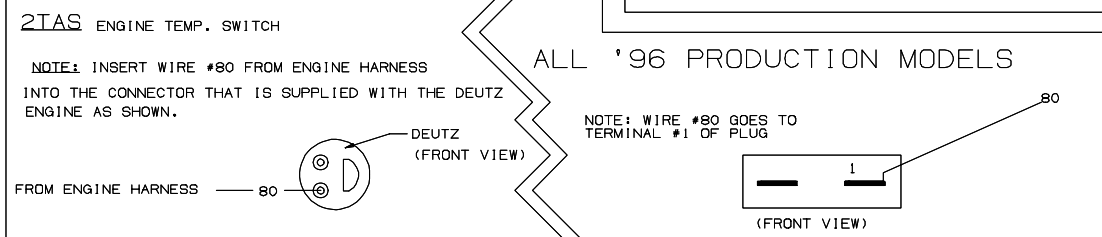
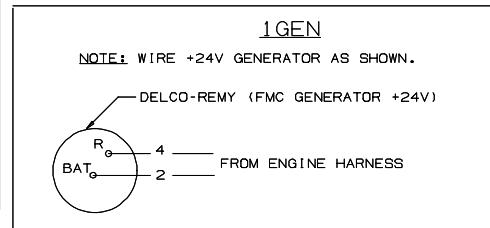
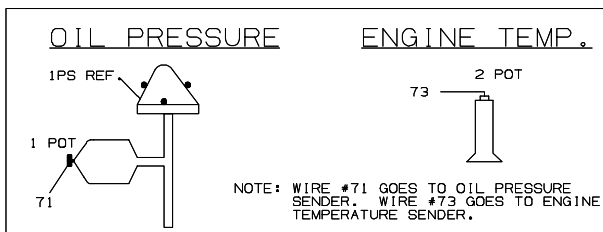
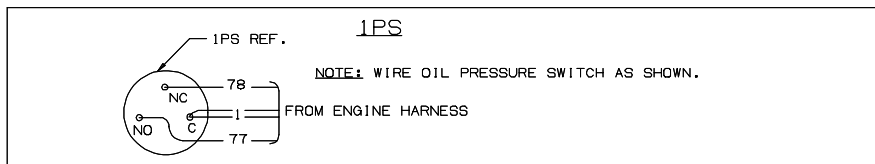
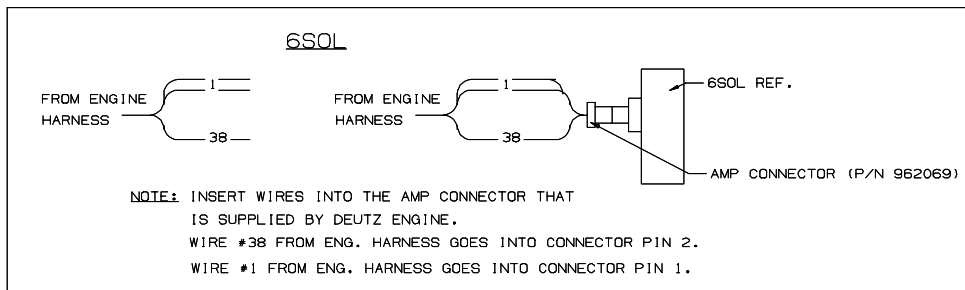
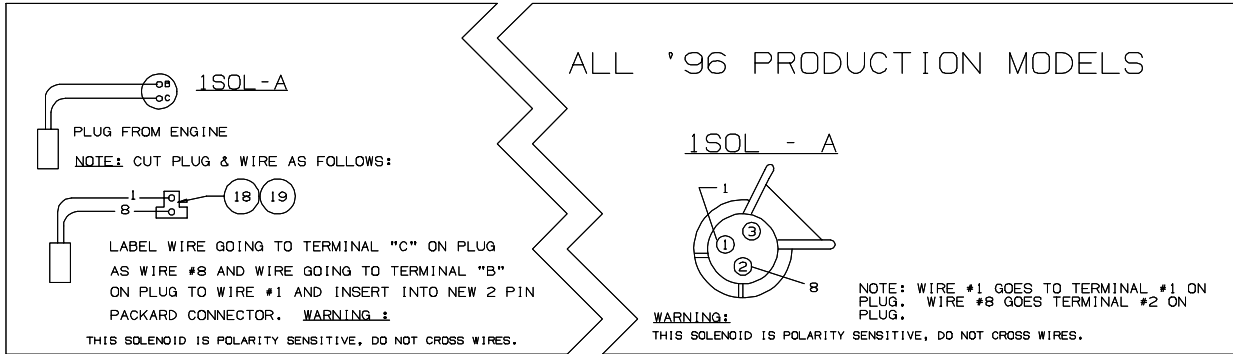


Figure 12
POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548

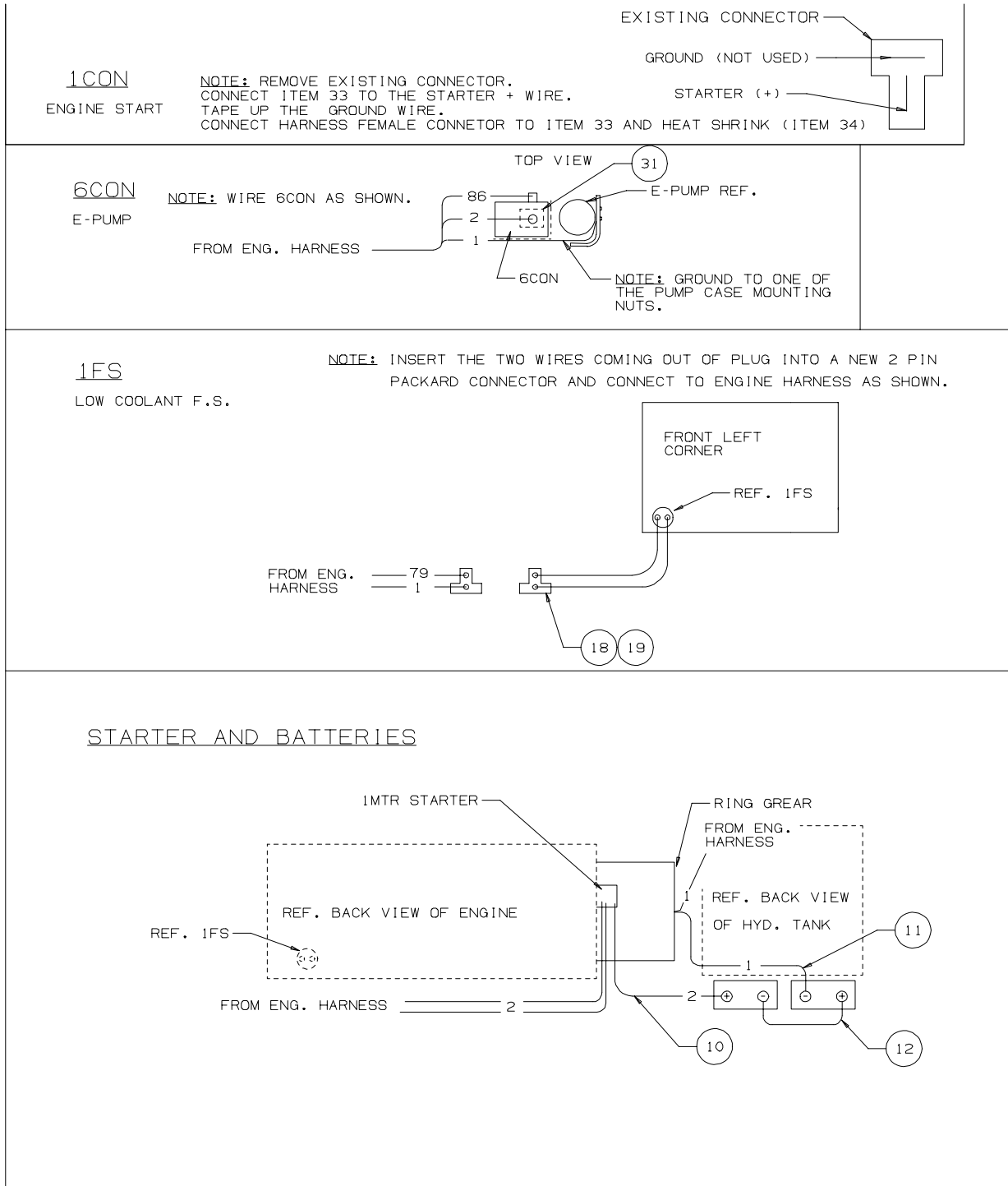


Figure 13
POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548

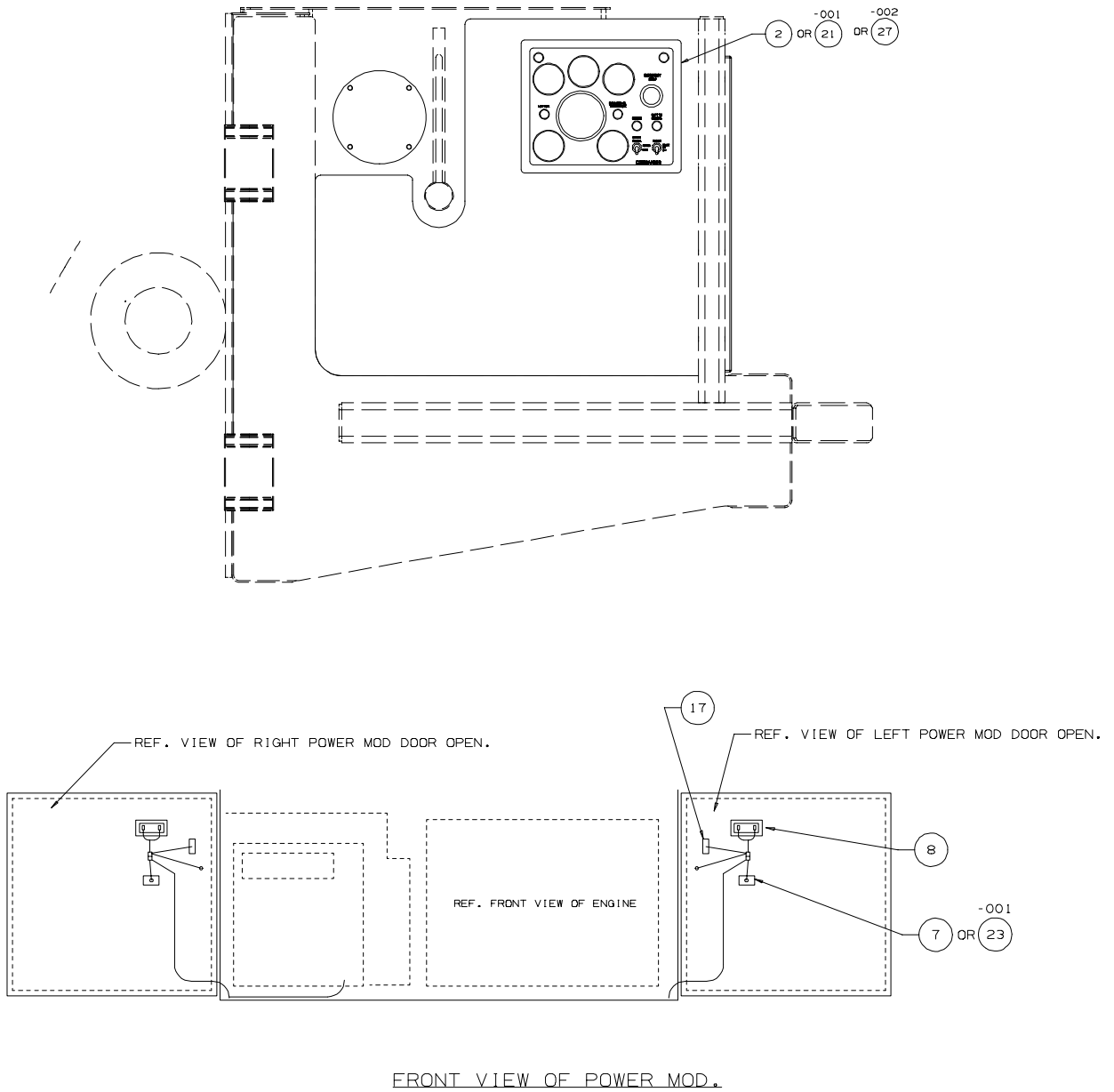


Figure 14
POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548

**POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548**

Figure 10 thru Figure 14

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6215		MAIN PANEL ASSEMBLY (Ref. Figure 19, Page 27)		1
2	623-0543		GAUGE PANEL ASSEMBLY (Ref. Figure 27, Page 38)		1
3	622-8602		HARNESS, Engine (I)		1
4	622-0792		HARNESS, Front Lts.		1
5	106-0906		NIPPLE, Chase 1 1/2		1
6	106-0009		NUT, Lock 1 1/2		1
7	620-1389		LIGHTS, Marker		2
8	620-0595		LIGHTS, Head		2
9	621-4966-024		CABLE ASSY, Ground Strap 24 (2/0)		1
10	239-9737-066		CABLE ASSY, Battery (+)		1
11	514-9073-066		CABLE ASSY, Battery (-)		1
12	620-1375		BATTERY CABLE SERIES		1
13	105-0214		TY-RAP, 3.6 18#		20
14	105-0210		TY-RAP, 7.3 50#		20
15	622-8580		HARNESS, Engine (II)		1
16	622-3000		COLD START ELECTRICAL (Ref. Figure 15, Page 22)		1
17	620-6069-002		MARKER LIGHT ASSEMBLY Consisting of:		2
-			MARKER LIGHT, Amber		1
18	514-4757		HOUSING, Female 2 Pin		2
19	620-1330-001		TERM, Female 2 Pin		1
20	622-6215-001		MAIN PANEL ASSY, w/Heatshrink (Ref. Figure 19, Page 27)		1
21	623-0543-001		GAUGE PANEL ASSY, w/Heat Shrink (Ref. Figure 27, Page 38)		1
22	622-8602-001		HARNESS, Engine (I) w/Heatshrink		1
23	620-1389-001		LIGHTS, Marker w/Heatshrink		2
24	622-8580-001		HARNESS, Engine (II) w/Heatshrink		1
25	622-0792-001		HARNESS, Front Lts. w/Heatshrink		1
26	622-6215-002		MAIN PANEL ASSY, w/Hot Stamp (Ref. Figure 19, Page 27)		1
27	623-0543-002		GAUGE PANEL, W/Hot Stamp (Ref. Figure 27, Page 38)		1
28	622-8602-002		HARNESS, Engine (I) w/Hot Stamp		1
29	622-8580-002		HARNESS, Engine (II) w/Hot Stamp		1

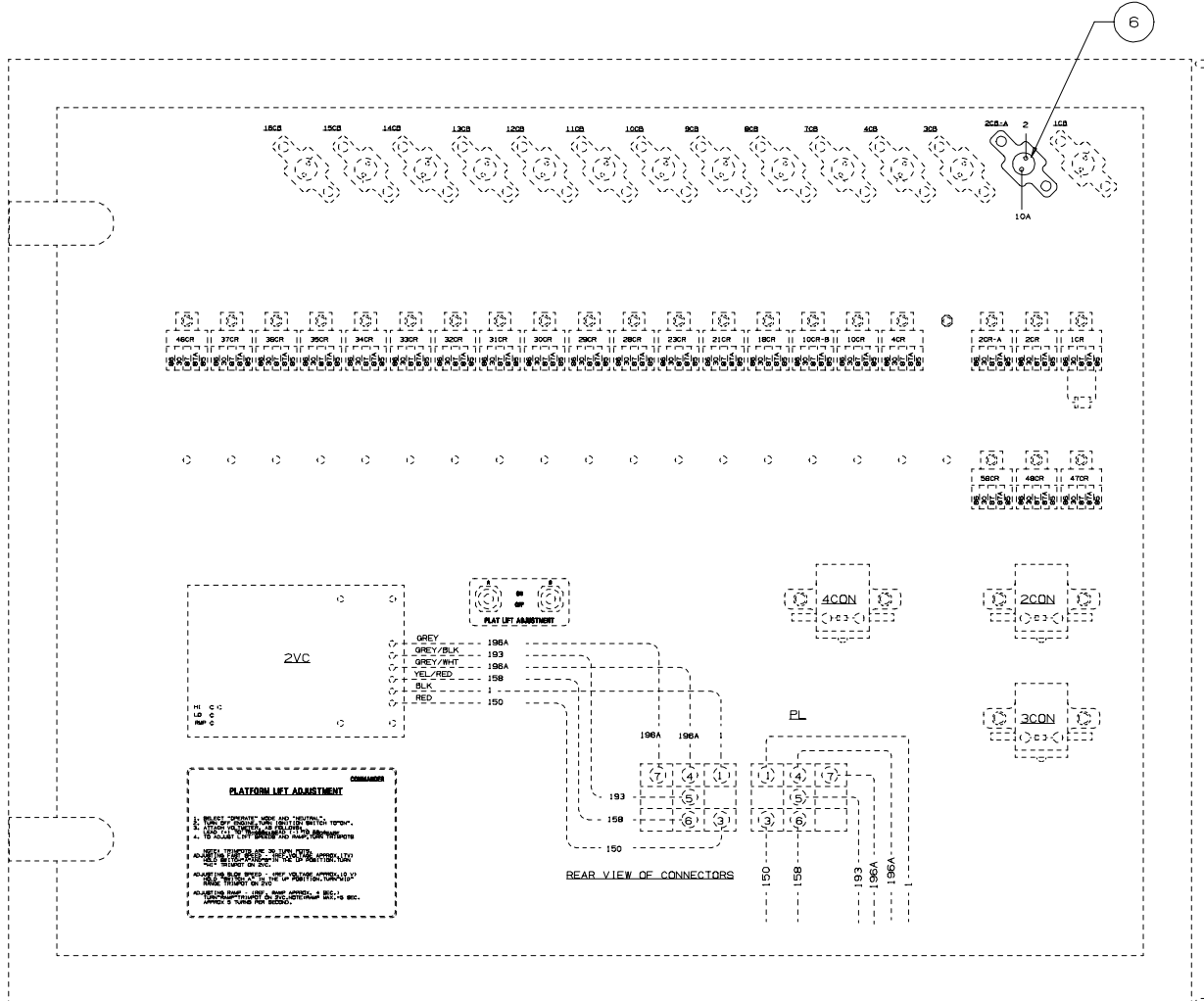
POWER MODULE ELECTRICAL, DEUTZ 4 CYLINDER, ENGLISH
623-0548

Figure 10 thru Figure 14

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
30	622-0792-002		HARNESS, Front Light w/Hot Stamp		1
31	620-6940-002		BATTERY TERMINAL PROTECTOR		1
32	622-4568		CABLE, Ground 8"		1
33	519-5559-004		TERM., Male Slip-On .032-.250 14-16 AWG		1
34	621-5215-003		SHRINK TUBING, .500/.250 ID.		1"
-	Not Shown				

WIRE TABLE

WIRE NO.	SIZE AWG	LENGTH INCH.	FROM	TO
2	8		TB-2	2CB-A
10A	8		TB-10A	2CB-A



REV. C

Figure 15
COLD START ELECTRICAL, DEUTZ
622-3000

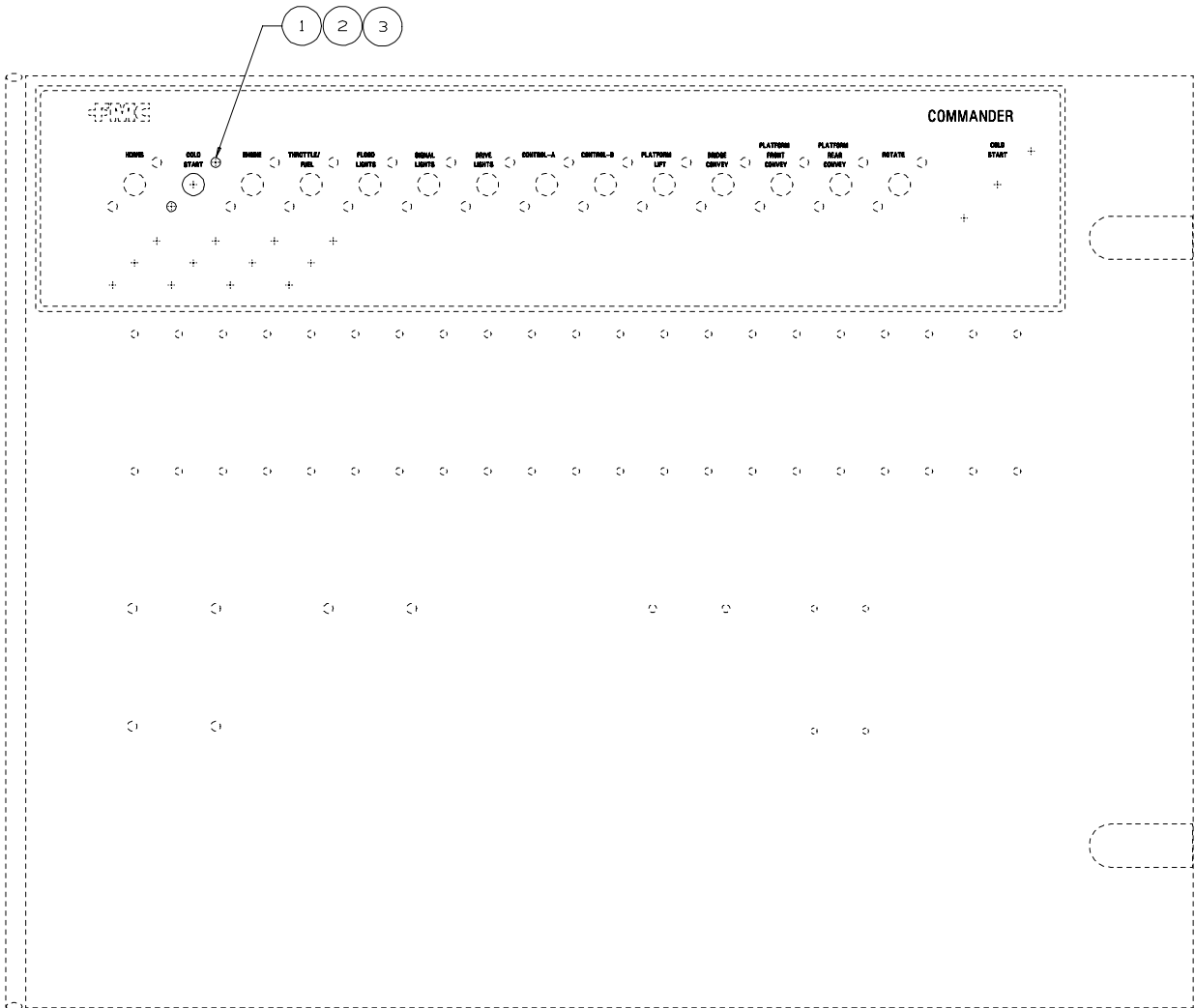
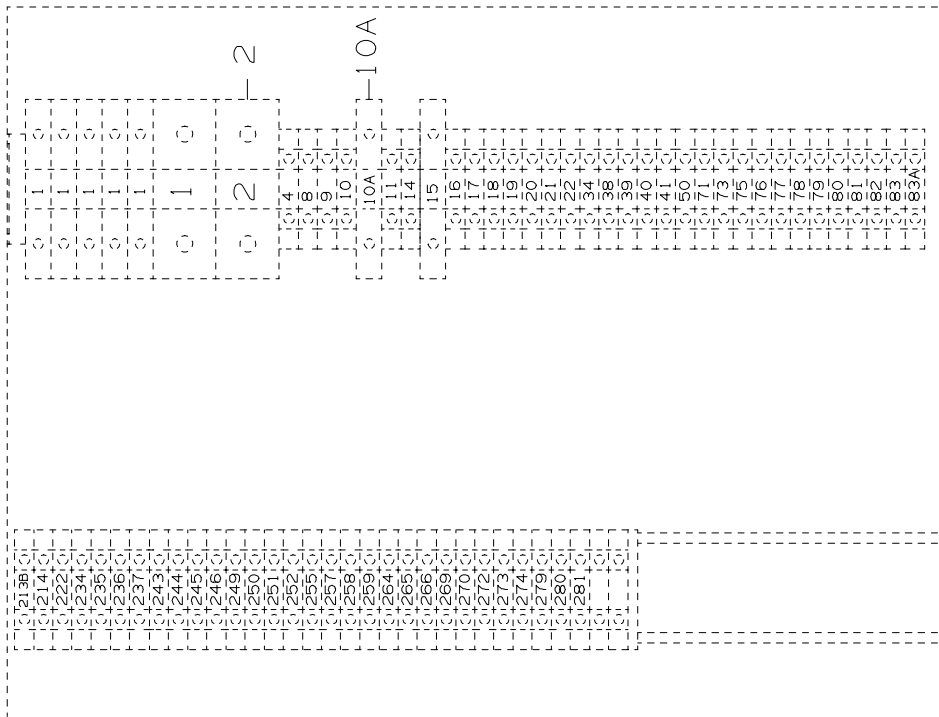
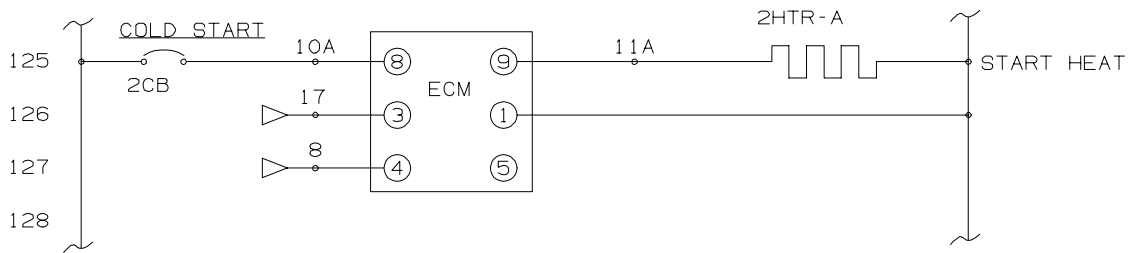


Figure 16
COLD START ELECTRICAL, DEUTZ
622-3000

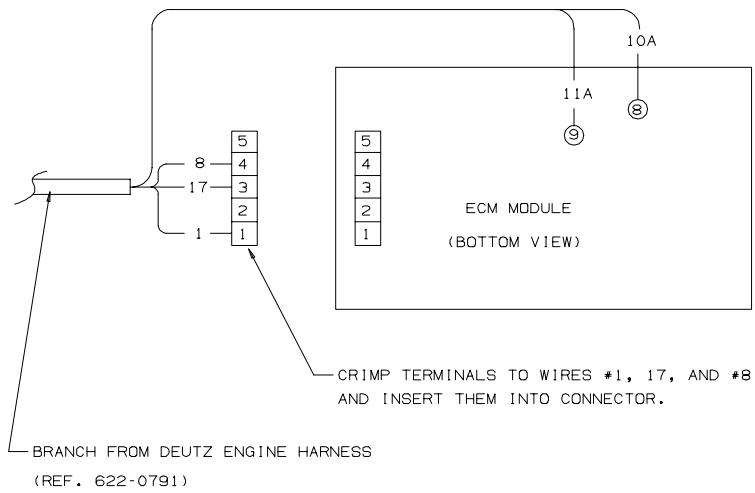
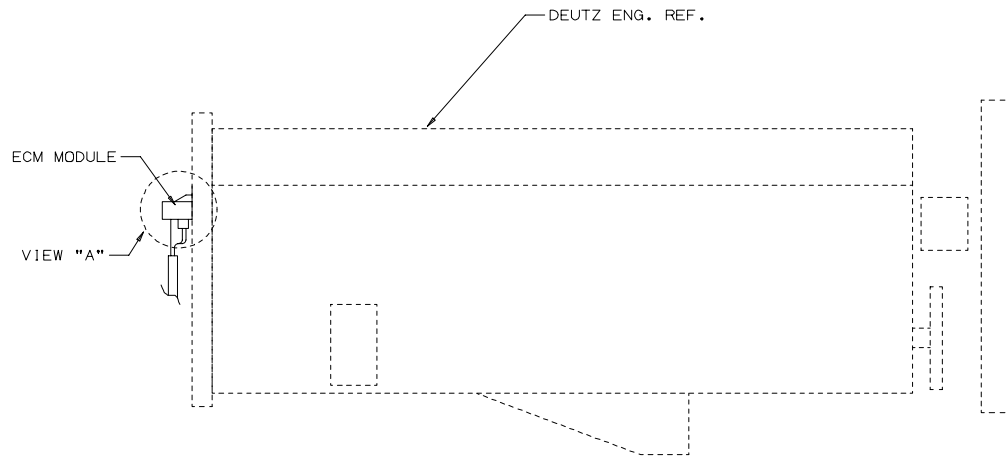


FRONT VIEW OF INNER PANEL



ELEC. SCHEMATIC
(REF. 621-5700)

Figure 17
COLD START ELECTRICAL, DEUTZ
622-3000



VIEW "A"

Figure 18
COLD START ELECTRICAL, DEUTZ
622-3000

**COLD START ELECTRICAL, DEUTZ
622-3000**

Figure 15 thru Figure 18

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	239-4085-040		CIRCUIT BREAKER, 40A		1
2	107-0792		SCREW, Pan Hd Mach, 10-32 x 1"		2
3	118-5252		NUT, Lock ESNA 10-32		2
5	239-8101-008		WIRE, 8 AWG Red SGX		18'
6	239-3646-016		TERM., 8 AWG to #1/4 Ring		2

COND. NO.	WIRE NO.	SIZE AWG	FROM	TO
	213	18	23CR(30)	20CR(10)
	213	18	20CR(10)	22CR(6)
	213A	18	TB-213A	P10(41)
	213A	18	TB-213A	20CR(6)
	213A	18	TB-213A	MPSJ2(7)
	213B	18	TB-213B	P10(42)
	213B	18	TB-213B	22CR(4)
	214	18	TB-214	P10(43)
	214	18	TB-214	23CR(87)
	222	14	TB-222	MP1(70)
	222	14	TB-222	19CR-A(87)
	222A	14	19CR-A(30)	13CB
	229	18	14CB	28CR(30)
	229	18	28CR(30)	29CR(30)
	229	18	14CB	30CR(30)
	229	18	30CR(30)	31CR(30)
	230	18	TB-230	28CR(87)
	230	18	TB-230	FSJ(1)
	230	18	TB-230	RSJ(12)
	231	18	TB-231	31CR(87)
	231	18	TB-231	FSJ(2)
	231	18	TB-231	RSJ(11)
	232	18	TB-232	30CR(87)
	232	18	TB-232	FSJ(4)
	232	18	TB-232	RSJ(10)
	233	18	TB-233	29CR(87)
	233	18	TB-233	FSJ(6)
	233	18	TB-233	RSJ(9)
	234	18	TB-234	P11(10)
	234	18	TB-234	FSJ(4)
	234	18	TB-234	RSJ(5)
	235	18	TB-235	P11(11)
	235	18	TB-235	FSJ(3)
	236	18	TB-236	P11(12)
	236	18	TB-236	FSJ(1)
	236	18	TB-236	RSJ(9)
	237	18	TB-237	P11(13)
	237	18	TB-237	FSJ(7)
	237	18	TB-237	RSJ(1)
	238	14	15CB	33CR(30)
	238	18	33CR(30)	34CR(30)
	238	14	15CB	35CR(30)
	238	18	35CR(30)	32CR(30)
	239	18	TB-239	32CR(87)
	239	18	TB-239	FSJ(3)
	239	18	TB-239	RSJ(6)
	240	18	TB-240	35CR(87)
	240	18	TB-240	RSJ(5)
	241	18	TB-241	34CR(87)
	241	18	TB-241	RSJ(4)
	242	18	TB-242	33CR(87)
	242	18	TB-242	FSJ(5)
	242	18	TB-242	RSJ(3)
	243	18	TB-243	P11(14)
	243	18	TB-243	RSJ(22)
	244	18	TB-244	P11(15)
	244	18	TB-244	RSJ(3)
	245	18	TB-245	P11(16)
	245	18	TB-245	RSJ(7)
	246	18	TB-246	P11(17)
	246	18	TB-246	RSJ(11)
	249	18	TB-249	P11(18)

COND. NO.	WIRE NO.	SIZE AWG	FROM	TO
	249	18	TB-249	RSJ(21)
	250	18	TB-250	P11(19)
	250	18	TB-250	RSJ(19)
	251	18	TB-251	P11(20)
	251	18	TB-251	RSJ(17)
	252	18	TB-252	P11(21)
	252	18	TB-252	RSJ(15)
	253	14	16CB	36CR(30)
	253	18	36CR(30)	37CR(30)
	254	18	TB-254	36CR(87)
	254	18	TB-254	RSJ(2)
	255	18	TB-255	P11(22)
	255	18	TB-255	RSJ(6)
	256	18	TB-256	37CR(87)
	256	18	TB-256	RSJ(1)
	257	18	TB-257	P11(23)
	257	18	TB-257	FSJ(8)
	257	18	TB-257	RSJ(14)
	258	18	TB-258	P11(24)
	258	18	TB-258	FSJ(6)
	258	18	TB-258	RSJ(10)
	259	18	TB-259	P11(25)
	259	18	TB-259	FSJ(12)
	259	18	TB-259	RSJ(23)
	264	18	TB-264	42CR(14)
	264	18	TB-264	MP2(22)
	264	18	TB-264	P10(18)
	265	18	TB-265	MP2(9)
	265	18	TB-265	P10(19)
	269	18	TB-269	P11(26)
	269	18	TB-269	46CR(86)
	270	18	TB-270	P11(27)
	270	18	TB-270	47CR(86)
	272	18	TB-272	P11(28)
	272	18	TB-272	48CR(86)
	273	18	TB-273	P11(29)
	273	18	TB-273	MP2(11)
	274	18	TB-274	MP2(12)
	274	18	TB-274	50CR(14)
	279	18	TB-279	P11(30)
	279	18	TB-279	56CR(14)
	280	18	TB-280	MP2(13)
	280	18	TB-280	P11(31)
	281	18	TB-281	MP2(14)
	281	18	TB-281	58CR(86)

Figure 21
MAIN PANEL ASSEMBLY
622-6215

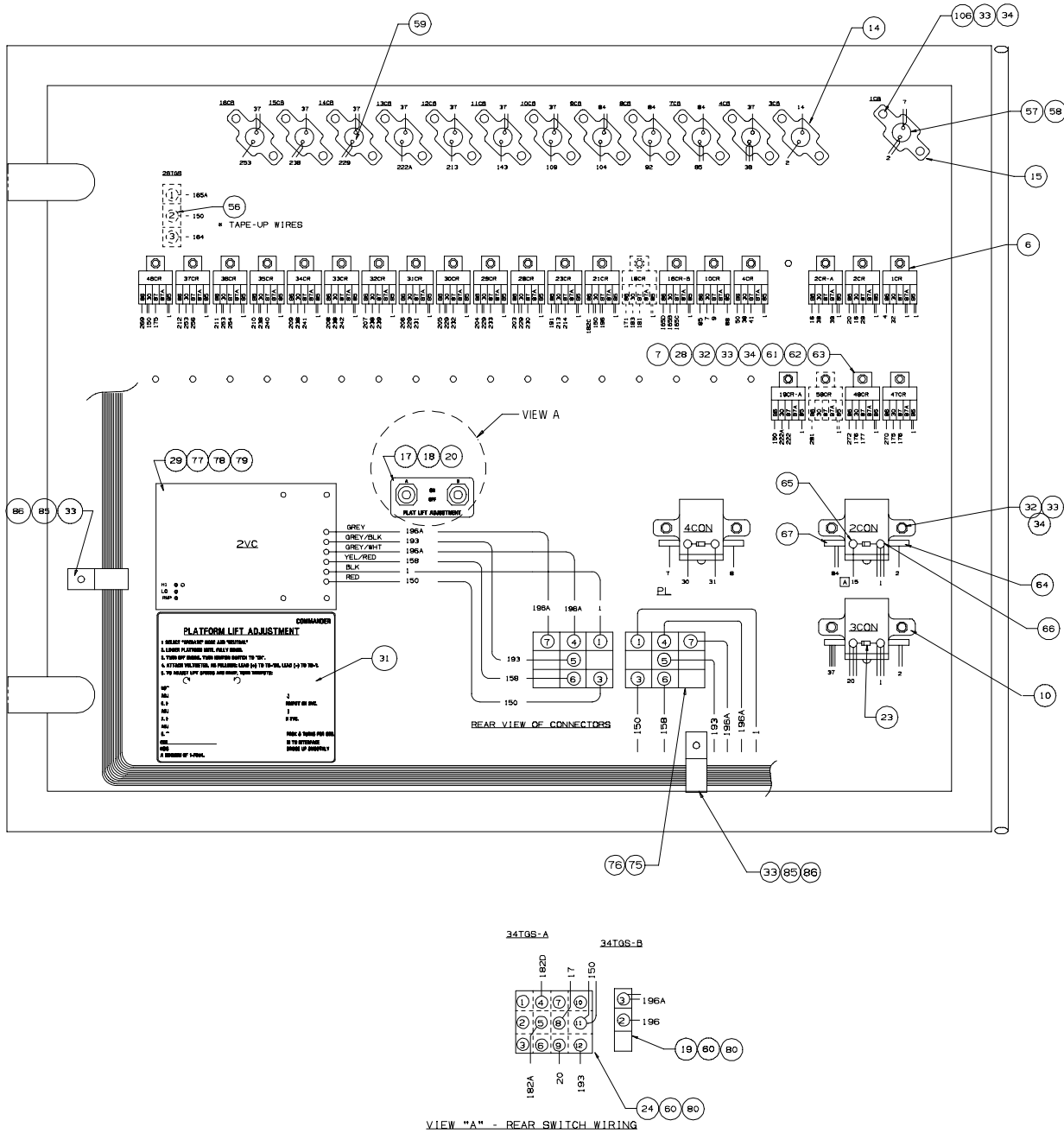
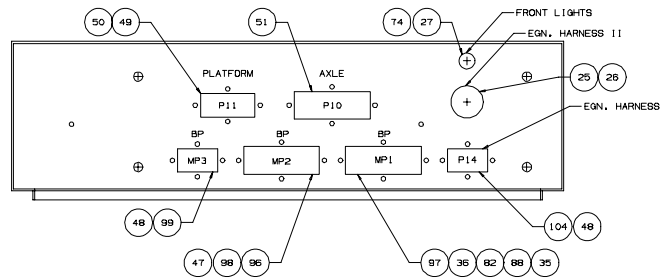
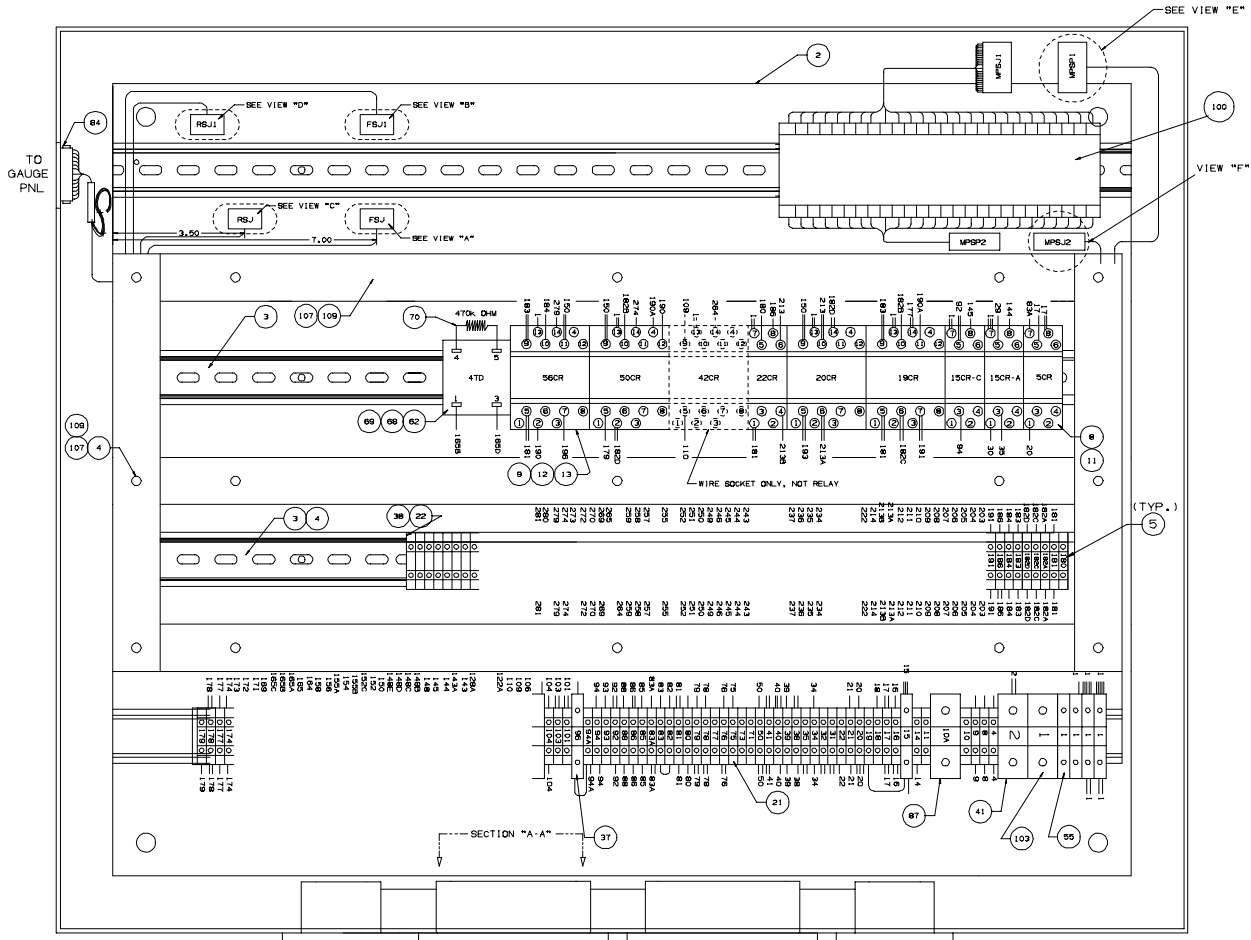


Figure 22
 MAIN PANEL ASSEMBLY
 622-6215



INSIDE BOTTOM VIEW OF MAIN PANEL

Figure 24
MAIN PANEL ASSEMBLY
622-6215

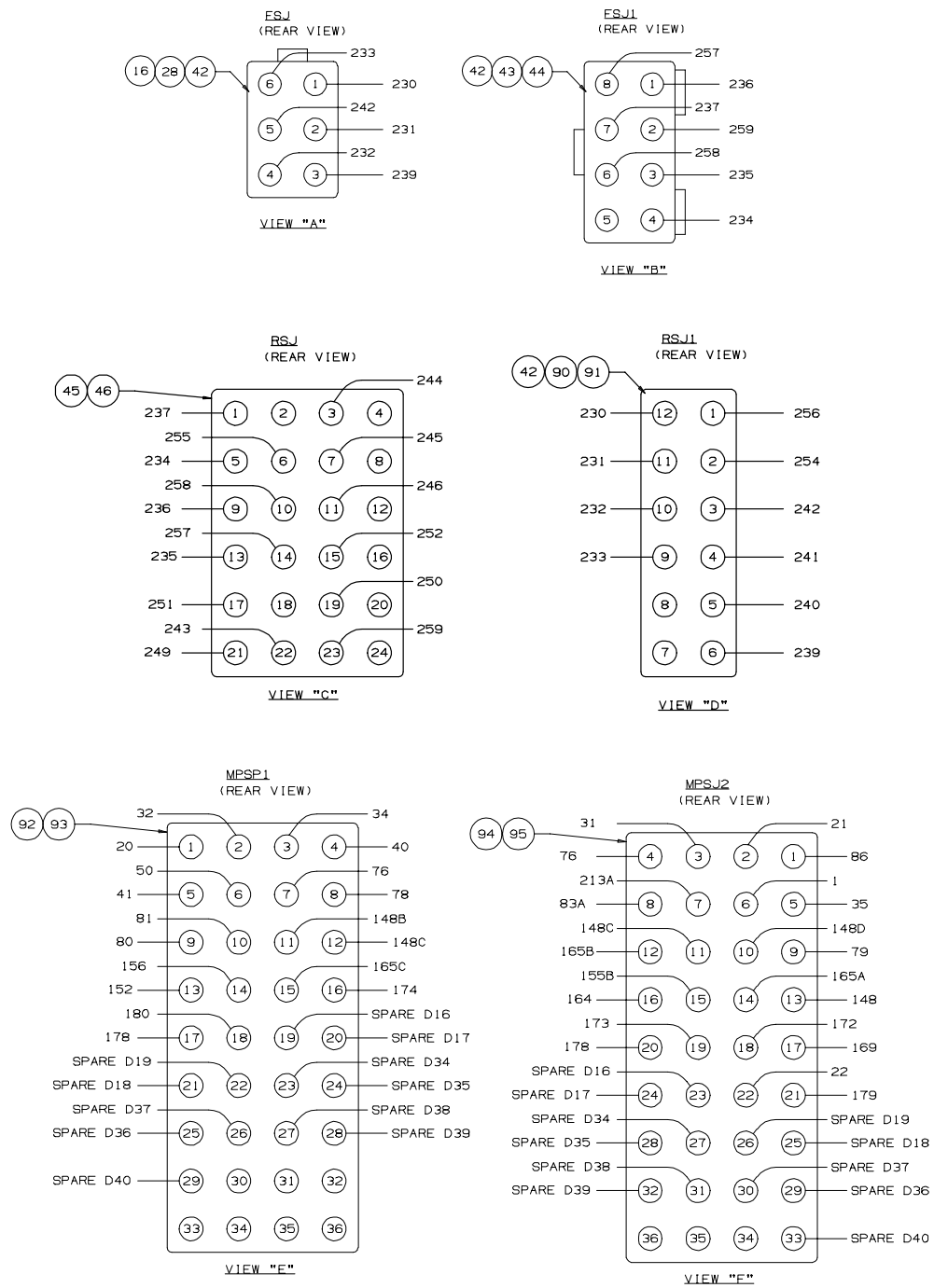


Figure 25
MAIN PANEL ASSEMBLY
622-6215

MP - (STATUS)

COND NO.	WIRE NO.	SIZE AWG	FROM	TO
	259	18	MP2(36)	TB-259
	38	18	MP2(37)	TB-38
	41	18	MP2(38)	TB-41
	148B	18	MP2(39)	TB-148B
	279	18	MP2(40)	TB-279
	156	18	MP2(41)	TB-156
	165C	18	MP2(42)	TB-165C
	174	18	MP2(50)	TB-174
	177	18	MP2(51)	TB-177
	182C	18	MP2(52)	TB-182C
	191	18	MP2(53)	TB-191
	213A	18	MP2(54)	TB-213A
	213B	18	MP2(55)	TB-213B
	214	18	MP2(56)	TB-214
	236	18	MP2(64)	TB-236
	235	18	MP2(65)	TB-235
	234	18	MP2(66)	TB-234
	182D	18	MP2(67)	TB-182D
	237	18	MP2(68)	TB-237
	243	18	MP2(69)	TB-243
	244	18	MP2(70)	TB-244
	245	18	MP3(4)	TB-245
	246	18	MP3(5)	TB-246
	249	18	MP3(6)	TB-249
	250	18	MP3(7)	TB(250)
	251	18	MP3(8)	TB-251
	252	18	MP3(9)	TB-252
	255	18	MP3(10)	TB-255
	272	18	MP3(11)	TB-272
	257	18	MP3(12)	TB-257
	269	18	MP3(13)	TB-269
	270	18	MP3(14)	TB-270
	258	18	MP2(15)	TB-258

Figure 26
MAIN PANEL ASSEMBLY
622-6215

**MAIN PANEL ASSEMBLY
622-6215**

Figure 19 thru Figure 26

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6223		ENCLOSURE MODIFIED		1
2	622-6216		PANEL, Modified		1
3	622-0244-001		TRACK, Relay DIN		2
4	107-0811		RIVET, 3/16		27
5	622-0244-027		MARKER STRIP, (USK10)		15
6	622-6214-003		RELAY, 12V w/Diode		1
7	622-6214-004		RELAY, 24V w/Diode		21
8	622-6328		RELAY, 24V (LY2) w/Diode		4
9	622-6328-001		RELAY, 24V (LY4) w/Diode		4
10	620-0757		CONTACTOR, 24V		3
11	621-2736		SOCKET, Relay (LY2)		4
12	621-2737		SOCKET, Relay (IY4)		4
13	621-2738		HOLD DOWN CLIPS		16
14	239-2601-010		CIRCUIT BREAKER, 10A		12
15	239-2601-020		CIRCUIT BREAKER, 20A		1
16	622-2967-008		PLUG, 6 Pos (Female)		1
17	622-0784		PLACARD, Platform Lift Adjustment		1
18	622-0932		BRACKET, Toggle Switch		1
19	515-3065		TOGGLE SWITCH, SPST		1
20	107-0764		SCREW, PHM, Slotted 10-33 x 1/2"		2
21	622-0244-002		TERMINAL BLOCK, 22-12A AWG		150
22	622-0244-003		TERMINAL BLOCK END		2
23	620-2983-001		DIODES, 3A		3
24	515-3071		TOGGLE SWITCH, 4PDT		1
25	106-0008		NUT, Lock 1 1/4		1
26	106-0093		CONN. CORD, 1 1/4"		1
27	106-0006		NUT, Lock 1/2		1
28	622-2967-024		WEDGE, 6 Pos (Plug)		1
29	622-1753		VALVE CONTROL MODULE, Plat. Lift		1
30	622-8594		PLACARD, Main Panel		1
31	622-0326		DECAL, Adjust		1
32	107-0765		SCREW, Pan Hd Mach, 10-32 x 3/4"		52
33	118-5252		NUT, ESNA 10-32		79
34	110-3959		WASHER, Flat #10		78
35	622-2967-014		TERMINAL, #14 Pin		15
36	118-7293		WASHER, #8		24

**MAIN PANEL ASSEMBLY
622-6215**

Figure 19 thru Figure 26

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
37	622-0244-007		TERMINAL BLOCK, 18-8 AWG		3
38	622-0244-004		CLAMP END, USK 4 & 10		3
39	622-0244-005		MARKING STRIP, USK		15
40	622-0244-006		MARKING PEN		1
41	622-0244-011		TERMINAL BLOCK, 1/0		1
42	622-2967-015		SOCKETS, Term		23
43	622-2967-010		PLUG, 8 Pos (Female)		1
44	622-2967-026		WEDGE, 8 Pos (Plug)		1
45	620-1843-002		HOUSING, 24 Socket (Female)		1
46	620-1266-002		TERM., Socket 18 AWG		16
47	622-2962-009		PLUGS, Sealing		111
48	622-2962-020		GASKET, 24 Pin		2
49	622-2962-019		GASKET, 40 Pin		2
50	622-2962-005		RECEPTACLE, Flange Mount (40 Pin)		1
51	622-2962-021		RECEPTACLE, Flange Mount (70 Pin)		1
55	622-0244-009		TERMINAL BLOCK, Ground		5
56	620-1240-002		TERM., 18 AWG To #6 Ring		3
57	239-3646-009		TERM., 10 AWG To #8 Ring		6
58	239-3646-003		TERM., 14 AWG To #8 Ring		27
59	620-1240-003		TERM., 18 AWG To #8 Ring		5
60	620-1240-002		TERM., 18 AWG To #6 Ring		6
61	239-3650-001		TERM., 14 AWG Female Slip-On		35
62	239-3650-003		TERM., 18 AWG Female Slip-On		64
63	239-3650-002		TERM., 10 AWG Female Slip-On		4
64	239-3646-012		TERM., 10 AWG To 5/16 Ring		9
65	620-1240-004		TERM., 18 AWG To #10 Ring		8
66	239-3646-004		TERM., 14 AWG To #10 Ring		1
67	239-3646-006		TERM., 14 AWG To 5/16 Ring		2
68	621-1031-001		TIME DELAY ON MAKE, Relay		1
69	620-9546		MOUNT, Module DIN		1
70	620-4478-001		RESISTOR, 470K OHM, 1/2W		1
71	620-3900-018		WIRE, 18 AWG GXL YEL		2450'
72	620-3900-014		WIRE, 14 AWG GXL YEL		280'
73	620-3900-010		WIRE, 10 AWG GXL YEL		55'
75	519-4385		PLUG HOUSING, 9 Circuit		1
76	519-4387		PIN CONTACTS		6

**MAIN PANEL ASSEMBLY
622-6215**

Figure 19 thru Figure 26

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
77	111-3877		SCREW, Pan Hd Mach, 6-32 x 1"		4
78	237-1382-004		NUT, ESNA 6-32		4
79	118-7287		WASHER, FLAT #6 Cad. Pl.		4
80	239-3646-002		TERM., 14 AWG To #6 Ring		2
81	622-0783		DECAL, Main Panel		1
82	111-5765		SCREW, Round Hd Phillip 8-32 x .75"		24
84	622-6308		CABLE ASSY, Main Panel to Gauge Panel		1
85	239-9076-009		CLAMP, 1 1/4		1
86	111-4775		SCREW, Round Hd #10-32		1
87	622-0244-010		TERMINAL BLOCK, 6-4 AWG		1
88	103-0635		NUT, ESNA 8-32		24
90	622-2967-012		PLUG, 12 Pos (Female)		1
91	622-2967-028		WEDGE, 12 Pos (Plug)		1
92	620-1265-001		HOUSING, 36 Pin		1
93	620-1266-001		PINS		36
94	620-1265-002		HOUSING, 36 Socket		1
95	620-1266-002		SOCKETS		36
96	622-2962-001		RECEPTACLE, Flange Mount, (70 Pin)		1
97	622-2962-002		RECEPTACLE, Flange Mount		1
98	622-2967-013		TERMINAL, #16 Pin		193
99	622-2962-014		RECEPTACLE, Flange Mount (24 Pin)		15
100	622-6327		DIODE ASSEMBLY, Steering		1
101	620-3902-004		WIRE, 4 AWG		4'
102	620-3087-002		MARKER, Metal (Blank)		15
103	622-0244-026		TERMINAL BLOCK, (Ground) 1/0		1
104	622-2962-012		RECEPTACLE, Flange Mount (24 Pin)		1
106	107-0792		SCREW, Pan Hd Mach, 10-32 x 1"		26
107	622-1358-005		WIRE DUCT, 1.0 x 2.0		7'
109	622-1358-008		WIRE DUCT, Cover		7'
111	621-5215-001		HEATSHRINK 1/4		15'
112	622-6308-002		HARNESS, MP to GP, Hot Stamp		1
113	622-6327-001		DIODE STEERING ASSY, Hot Stamp		1

WIRE NO.	SIZE AWG	LENGTH INCH.	FROM	TO
1	18		PG(1)	1LT
1	18		1LT	1LT-A
1	18		1LT-A	40LT-A
1	18		40LT-A	2GA(G)
1	18		2GA(G)	1VM(G)
1	18		1VM(-)	3GA(G)
1	18		3GA(G)	1GA(G)
1	18		1GA(G)	40LT-B
14	18		PG(2)	1TGS(2)
14	JUMPER		1TGS(2)	1TGS(5)
15	18		PG(3)	1TGS(1)
15	18		1TGS(1)	1LT-A
16	18		PG(4)	1TGS(4)
17	18		PG(5)	5TGS(2)
17	18		5TGS(2)	1VM(I)
17	18		1VM(+)	3RES-C
17	18		3RES-C	1HM(+)
17	18		1HM(+)	3RES-A
17	18		3RES-A	3RES-B
17	18		3RES-B	6LT
18	18		PG(6)	2PB(1)
19	18		PG(7)	2PB(2)
20	18		PG(8)	5TGS(3)
22	18		PG(9)	5TGS(1)
34	18		PG(10)	1LT
70	18		3RES-A	1GA(I)
71	18		PG(11)	1GA(S)
72	18		3RES-B	2GA(I)
73	18		PG(12)	2GA(S)
74	18		3RES-C	3GA(I)
75	18		PG(13)	3GA(S)
77	18		PG(14)	1HM(-)
81	18		PG(15)	6LT
105	18		PG(16)	40LT-A
105	18		40LT-A	36LT
105	18		36LT	40LT-B
105	18		40LT-B	35LT
105	18		35LT	32LT
105	18		32LT	34LT
SPARE H	18		PG(17)	LID
SPARE G	18		PG(18)	LID
SPARE F	18		PG(19)	LID
SPARE E	18		PG(20)	LID
SPARE D	18		PG(21)	LID
SPARE C	18		PG(22)	LID
SPARE B	18		PG(23)	LID
SPARE A	18		PG(24)	LID

Figure 28
GAUGE PANEL ASSEMBLY, ENGLISH
623-0543

**GAUGE PANEL ASSEMBLY, ENGLISH
623-0543**

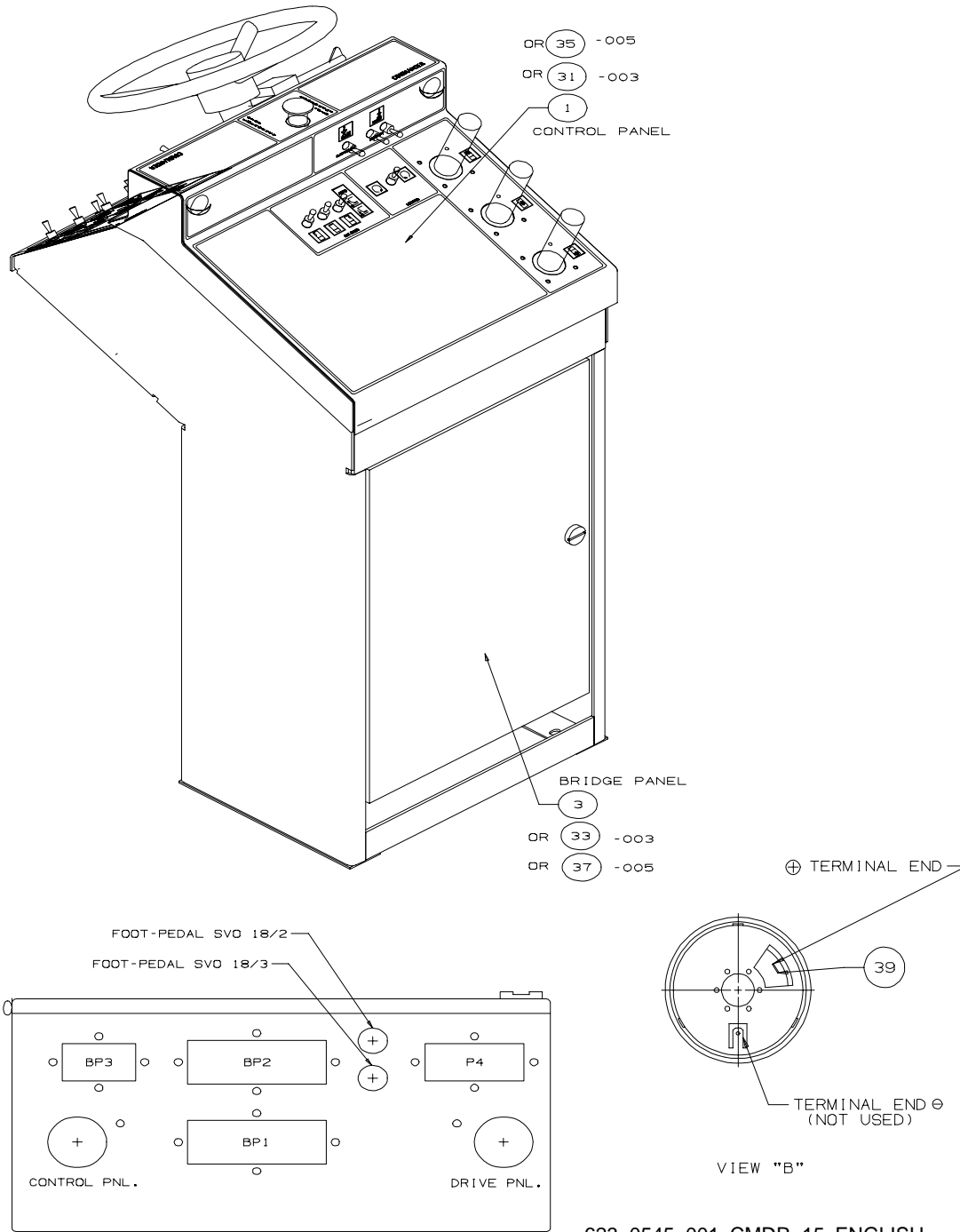
Figure 27, Figure 28

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6468		ENCLOSURE MODIFIED		1
2	623-0079		PLACARD, Emergency Stop, English		1
3	620-1843-001		HOUSING, 24 Pin		1
4	620-1266-001		PIN CONTACTS		1
5	238-1579		SWITCH, Toggle 3 Pos. Mom (V91929 #1NT1-7)		1
6	239-0854		SWITCH, Toggle		1
7	622-5906		PUSHBUTTON ASSEMBLY		1
8	620-0763-004		PILOT LIGHT, Amber		2
9	514-3085-013		VOLTMETER 24V		1
10	514-3085-009		GAUGE, Oil Pressure		1
11	514-3085-002		GAUGE, Eng. Temp		1
12	514-3085-001		GAUGE, Fuel Level		1
13	239-3328-001		HOURMETER (V74400 #85135)		1
14	620-0763-002		PILOT LIGHT, Red		1
15	620-0764		LAMP, 24V		5
16	237-5418		PANEL ILLUMINATOR		2
17	514-3085-012		VOLTAGE REDUCER (GAUGE)		3
18	514-3085-016		LIGHTING KIT (GAUGE)		4
19	620-3900-018		WIRE, 18 AWG GXL		75'
20	620-0763-001		BASE HOLDER, Pilot Light		3
21	622-6310		PLACARD, Hydraulic Oil		1
22	239-3646-002		TERM., 14 AWG To #6 Ring		5
23	620-1240-002		TERM., 18 AWG To #6 Ring		5
24	239-3646-001		TERM., 14 AWG To #4 Ring		2
25	620-1240-001		TERM., 18 AWG To #4 Ring		4
27	239-3121		JUMPER, Toggle Switch		1
28	239-3649-002		BUTT-SPLICE, Terminal 14 AWG		3
29	239-3649-001		BUTT-SPLICE, Terminal 18 AWG		1
31	519-5559-004		TERM., Male Slip-On 14 AWG		3
34	239-3650-001		TERM., 14 AWG Slip-On		1
35	239-3650-003		TERM., 18 AWG Slip-On		1
36	239-3646-004		TERM., 14 AWG To #10 Ring		5
37	620-1240-004		TERM., 18 AWG To #10 Ring		6

GAUGE PANEL ASSEMBLY, ENGLISH
623-0543

Figure 27, Figure 28

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
38	622-0779		DECAL, Gauge Panel		1
39	621-5215-001		HEATSHRINK, 1/4		5'



REV. B

SECTION "A-A"

- 623-0545-001 CMDR-15, ENGLISH
- 623-0545-003 CMDR-15 W/HEATSHRINK, ENGLISH
- 623-0545-005 CMDR-15 W/HOT STAMP, ENGLISH

Figure 29
 CONSOLE ELECTRICAL, R.H., ENGLISH
 623-0545

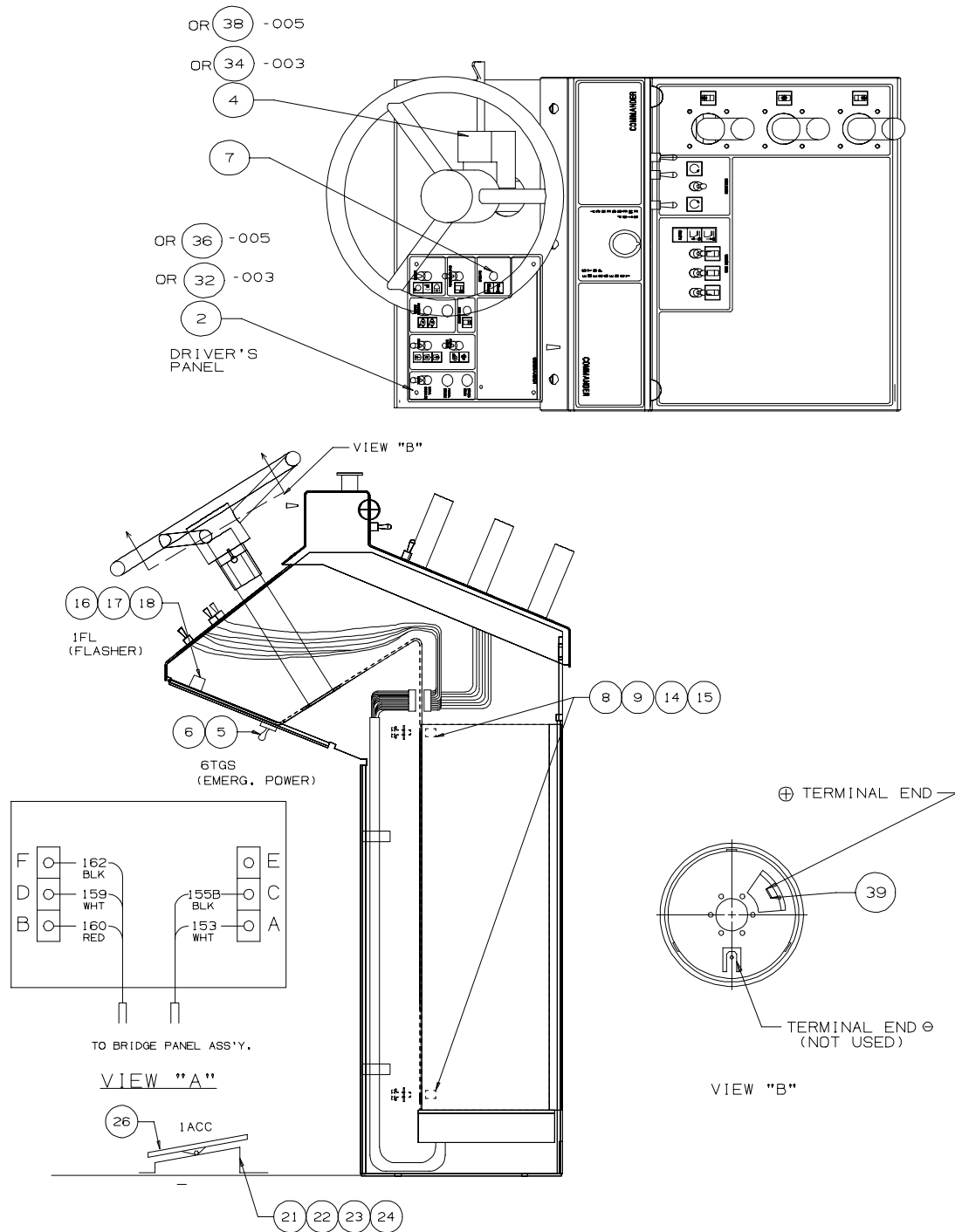


Figure 30
 CONSOLE ELECTRICAL, R.H., ENGLISH
 623-0545

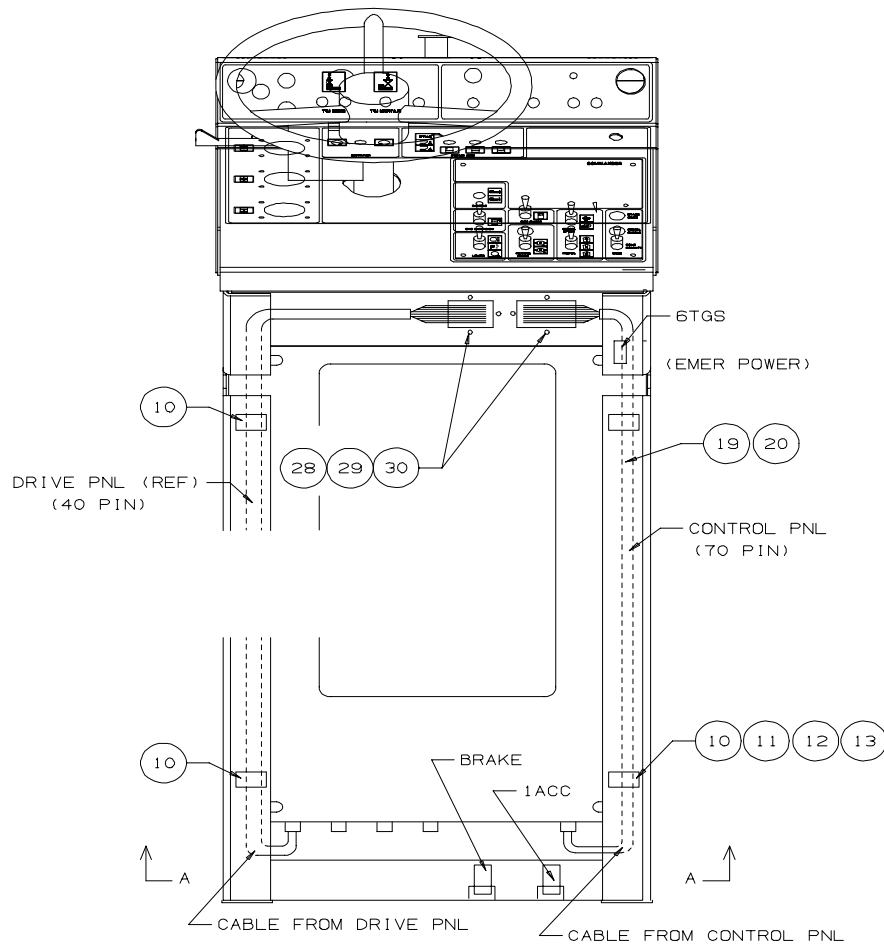


Figure 31
 CONSOLE ELECTRICAL, R.H., ENGLISH
 623-0545

**CONSOLE ELECTRICAL, R.H., ENGLISH
623-0545**

Figure 29 thru Figure 31

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-0544		CONTROL PANEL ASSEMBLY (Ref. Figure 41, Page 59)		1
2	623-0542		DRIVE PANEL ASSEMBLY (Ref. Figure 50, Page 70)		1
3	622-6219		BRIDGE PANEL ASSEMBLY, R.H. (Ref. Figure 32, Page 47)		1
4	622-0768		TURN SIGNAL SWITCH ASSEMBLY Consisting of:		1
-	620-1060		ACTUATOR, Turn Signal (V77977 #902)		1
-	620-0797		FLASHER, Turn Signal 24VDC (V77977 #120-24V)		1
-	621-5215-001		HEATSHRINK, 1/4		1
5	238-1579		SWITCH, Toggle (V91929 #1NT1-7)		1
6	620-2761-002		PLACARD, Emergency Power		1
8	110-0255		WASHER, Flat 5/16 CP		1
9	110-0242		WASHER, Lock 5/16 CP		1
10	239-9076-009		CLAMP, 1 1/4		4
11	107-1061		SCREW, Hex Hd, 10-24 x 1 1/4"		4
12	117-7576		NUT, Lock ESNA 10-24		4
13	110-0253		WASHER, Flat #10 CP		4
14	110-0045		SCREW, Hex Hd, 5/16-18 x 1		1
15	107-1839		NUT, Poly, 5/16-18		1
16	620-0805-001		SCREW, Pan Hd Mach, M4 x .7 x 10mm		2
17	107-1094		NUT, PTH M4 x .7		2
18	620-0806		WASHER, Flat Hard M4 Narrow		2
19	105-0214		TY-RAP, 3.6 #18		10
20	105-0210		TY-RAP, 7.3 #50		10
21	620-2564		BRACKET, Accelerator		1
22	620-0952		SCREW, Hex Hd, 8.8 M6 x 1 x 30mm		8
23	620-0956		WASHER, Flat Hard M6 Narrow		8
24	620-0948		NUT, PTH 9 M6 x 1		4
26	620-8345		FOOT CONTROLLER (V62246 #C-07582)		1
28	111-5765		SCREW, Round Hd Phillip 8-32 x 3/4"		8
29	103-0635		NUT, ESNA 8-32		8
30	118-7293		WASHER, Flat 8		8

**CONSOLE ELECTRICAL, R.H., ENGLISH
623-0545****Figure 29 thru Figure 31**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
31	623-0544-008		CONTROL PANEL, W/Heatshrink (Ref. Figure 41, Page 59)		1
32	623-0542-001		DRIVE PANEL, W/Heatshrink (Ref. Figure 50, Page 70)		1
33	622-6219-001		BRIDGE PANEL, W/Heatshrink (Ref. Figure 32, Page 47)		1
35	623-0544-009		CONTROL PANEL, W/Hot Stamp (Ref. Figure 41, Page 59)		1
36	623-0542-002		DRIVE PANEL, W/Hot Stamp (Ref. Figure 50, Page 70)		1
37	622-6219-002		BRIDGE PANEL, W/Hot Stamp (Ref. Figure 32, Page 47)		1
38	622-0768-002		TURN SIGNAL, W/Hot Stamp (See Item #4 for Details)		1
39	239-3650-003		TERM., Female Slip-On 22-18 AWG		1
-	Not Shown				

COND. NO.	PIN NO.	WIRE NO.	SIZE AWG	FROM	TO
		1	18	TB-1	P4(1)
		1	18	TB-1	P4(2)
		1	18	TB-1	P4(3)
		1	14	TB-1	BP2(49)
		1	14	TB-1	BP2(50)
		1	14	TB-1	BP2(51)
		1	18	TB-1	DPP(1)
		1	18	TB-1	CPP(1)
		1	18	TB-1	15CR-B(7)
		1	18	15CR-B(7)	16CR(7)
		1	18	16CR(7)	38CR(3)
		1	18	38CR(3)	38CR(13)
		1	18	38CR(13)	43CR(7)
		1	18	43CR(7)	49CR(7)
		1	18	49CR(7)	51CR(13)
		1	18	51CR(13)	53CR(7)
		1	18	53CR(7)	54CR(7)
		1	18	54CR(7)	55CR(7)
		1	18	55CR(7)	57CR(7)
		1	18	TB-1	52CR(85)
		1	18	52CR(85)	16CR-A(85)
		-	-	-	-
		-	-	-	-
		-	-	-	-
		1	18	16CR-A(85)	16CR-C(85)
		-	-	-	-
		1	18	16CR-C(85)	1VC(GND)
		15	18	TB-15	P4(4)
		15	14	TB-15	BP2(52)
		15	18	TB-15	DPP(2)
		16	18	TB-16	BP2(1)
		16	18	TB-16	CPP(2)
		17	14	TB-17	BP2(53)
		17	18	TB-17	CPP(3)
		18	14	TB-18	BP2(54)
		18	18	TB-18	CPP(4)
		20	18	TB-20	BP1(24)
		20	18	TB-20	CPP(5)
		20A	18	TB-20A	38CR(10)
		20A	18	TB-20A	CPP(6)
		21	18	TB-21	BP2(2)
		21	18	TB-21	38CR(2)
		34	18	TB-34	BPJ2(1)
		34	18	TB-34	BP2(3)
		34	18	TB-34	CPP(7)
		39	18	TB-39	38CR(9)
		39	18	TB-39	BP1(26)
		40	18	TB-40	38CR(5)
		40	18	TB-40	BP1(27)
		50	18	TB-50	BPJ2(2)
		50	18	TB-50	BP2(4)
		76	18	TB-76	BP2(5)
		76	18	TB-76	CPP(8)
		78	18	TB-78	BP2(6)
		78	18	TB-78	CPP(9)
		79	18	TB-79	BP2(7)
		79	18	TB-79	CPP(10)
		81	18	TB-81	BP2(8)
		81	18	TB-81	CPP(11)
		82	18	TB-82	BP2(9)
		82	18	TB-82	CPP(12)
		83A	18	TB-83A	BP2(10)
		83A	18	TB-83A	38CR(11)
		85	14	TB-85	BP2(55)
		86	18	TB-86	BP2(11)
		86	18	TB-86	DPP(3)

REV. B

COND. NO.	PIN NO.	WIRE NO.	SIZE AWG	FROM	TO
		88	18	TB-88	BP2(12)
		88	18	TB-88	DPP(4)
		92	14	TB-92	BP2(56)
		92	18	TB-92	DPP(5)
		101	18	TB-101	BP2(13)
		101	18	TB-101	DPP(6)
		103	18	TB-103	BP2(14)
		103	18	TB-103	DPP(7)
		104	14	TB-104	BP2(15)
		104	18	TB-104	DPP(8)
		105	14	TB-105	BP2(18)
		105	18	TB-105	CPP(13)
		105	18	TB-105	DPP(9)
		106	14	TB-106	BP2(19)
		106	18	TB-106	DPP(10)
		109	18	TB-109	BP2(16)
		109	18	TB-109	53CR(6)
		109	18	TB-109	CPP(14)
		109	18	TB-109	DPP(11)
		110	18	TB-110	BP2(17)
		110	18	TB-110	CPP(15)
		111	18	TB-111	CPP(16)
		111	18	TB-111	P4(23)
		111	18	TB-111	BPP1(10)
		112	18	TB-112	CPP(17)
		112	18	TB-112	P4(24)
		112	18	TB-112	BPP1(11)
		113	18	TB-113	CPP(18)
		113	18	TB-113	P4(25)
		113	18	TB-113	BPP1(12)
		114	18	TB-114	CPP(19)
		114	18	TB-114	P4(26)
		114	18	TB-114	BPP1(13)
		122	18	TB-122	BPP1(4)
		122	18	TB-122	CPP(20)
		122A	18	TB-122A	BP2(22)
		122A	18	TB-122A	BPJ2(3)
		128	18	TB-128	BPP1(5)
		128	18	TB-128	CPP(21)
		128A	18	TB-128A	BPP1(18)
		128A	18	TB-128A	BPJ2(4)
		128A	18	TB-128A	BP2(24)
		138	18	TB-138	BPP1(6)
		138	18	TB-138	P4(5)
		138	18	TB-138	DPP(12)
		139	18	TB-139	BPP1(7)
		139	18	TB-139	P4(6)
		139	18	TB-139	DPP(13)
		141	18	TB-141	BPP1(8)
		141	18	TB-141	P4(7)
		141	18	TB-141	DPP(14)
		142	18	TB-142	BPP1(9)
		142	18	TB-142	P4(8)
		142	18	TB-142	DPP(15)
		143	14	TB-143	BP2(20)
		143	18	TB-143	DPP(16)
		143A	18	TB-143A	BPP1(12)
		143A	18	TB-143A	BP2(25)
		143A	18	TB-143A	DPP(17)
		144	18	TB-144	BP2(26)
		144	18	TB-144	15CR-B(8)
		144	18	TB-144	DPP(18)
		145	18	TB-145	BPP1(3)
		145	18	TB-145	BP2(27)
		145	18	TB-145	DPP(19)

Figure 32
BRIDGE PANEL, RIGHT HAND
622-6219

WIRE TABLE CABLE "A" J13 (64 PIN)

COND NO.	BASE COL	STRIPE 1	STRIPE 2	WIRE NO.	SIZE AWG	FROM	TO
1	BLK			142B	22	TB-142B	J13(1)
2	WHT			142	22	TB-142	J13(2)
3	RED			139	22	TB-139	J13(3)
4	GRN			136	22	TB-136	J13(4)
5	ORG			SPARE C11	22	SPARE	J13(5)
6	BLU			142D	22	TB-142D	J13(6)
7	WHT	BLK		114	22	TB-114	J13(7)
8	RED	BLK		112	22	TB-112	J13(8)
9	GRN	BLK		SPARE	22	SPARE	J13(9)
10	ORG	BLK		SPARE	22	SPARE	J13(10)
11	BLU	BLK		223	22	TB-223	J13(11)
12	BLK	WHT		226A	22	TB-226A	J13(12)
13	RED	WHT		155	22	TB-155	J13(13)
14	GRN	WHT		227A	22	TB-227A	J13(14)
15	BLU	WHT		260	22	TB-260	J13(15)
16	BLK	RED		SPARE	22	SPARE	J13(16)
17	WHT	RED		-	22	-	J13(17)
18	ORG	RED		273	22	TB-273	J13(18)
19	BLUE	RED		275	22	TB-275	J13(19)
20	RED	GRN		277	22	TB-277	J13(20)
21	ORG	GRN		SPARE J12	22	SPARE	J13(21)
22	BLK	WHT	RED	SPARE K2	22	SPARE	J13(22)
23	WHT	BLK	RED	15	22	TB-15	J13(23)
24	RED	BLK	WHT	SPARE A3	22	SPARE	J13(24)
25	GRN	BLK	WHT	SPARE A4	22	SPARE	J13(25)
26	ORG	BLK	WHT	SPARE A8	22	SPARE	J13(26)
27	BLU	BLK	WHT	126	22	TB-126	J13(27)
28	BLK	RED	GRN	SPARE B4	22	SPARE	J13(28)
29	WHT	RED	GRN	SPARE C4	22	SPARE	J13(29)
30	RED	BLK	GRN	SPARE D9	22	SPARE	J13(30)
31	GRN	BLK	ORG	155A	22	TB-155A	J13(31)
32	ORG	BLK	GRN	178	22	TB-178	J13(32)
33	BLU	WHT	ORG	142A	22	TB-142A	J13(33)
34	BLK	WHT	ORG	141	22	TB-141	J13(34)
35	WHT	RED	ORG	138	22	TB-138	J13(35)
36	ORG	WHT	BLU	135	22	TB-135	J13(36)
37	WHT	RED	BLU	144	22	TB-144	J13(37)
38	BLK	WHT	WHT	142C	22	TB-142C	J13(38)
39	WHT	BLK	BLK	113	22	TB-113	J13(39)
40	RED	WHT	WHT	111	22	TB-111	J13(40)

WIRE TABLE CABLE "B" J13 (64 PIN)

COND NO.	BASE COL	STRIPE 1	STRIPE 2	WIRE NO.	SIZE AWG	FROM	TO
1	BLK			SPARE	22	SPARE	J13(41)
2	WHT			SPARE	22	SPARE	J13(42)
3	RED			221	22	TB-221	J13(43)
4	GRN			224	22	TB-224	J13(44)
5	ORG			225A	22	TB-225A	J13(45)
6	BLU			227	22	TB-227	J13(46)
7	WHT	BLK		228	22	TB-228	J13(47)
8	RED	BLK		265	22	TB-265	J13(48)
9	GRN	BLK		1	22	TB-1	J13(49)
10	ORG	BLK		274	22	TB-274	J13(50)
11	BLU	BLK		276	22	TB-276	J13(51)
12	BLK	WHT		278	22	TB-278	J13(52)
13	RED	WHT		SPARE K1	22	SPARE	J13(53)
14	GRN	WHT		203	22	TB-203	J13(54)
15	BLU	WHT		204	22	TB-204	J13(55)
16	BLK	RED		205	22	TB-205	J13(56)
17	WHT	RED		206	22	TB-206	J13(57)
18	ORG	RED		207	22	TB-207	J13(58)
19	BLUE	RED		208	22	TB-208	J13(59)
20	RED	GRN		209	22	TB-209	J13(60)
21	ORG	GRN		210	22	TB-210	J13(61)
22	BLK	WHT	RED	211	22	TB-211	J13(62)
23	WHT	BLK	RED	212	22	TB-212	J13(63)
24	RED	BLK	WHT	SPARE J11	22	SPARE	J13(64)

Figure 35
BRIDGE PANEL, RIGHT HAND
622-6219

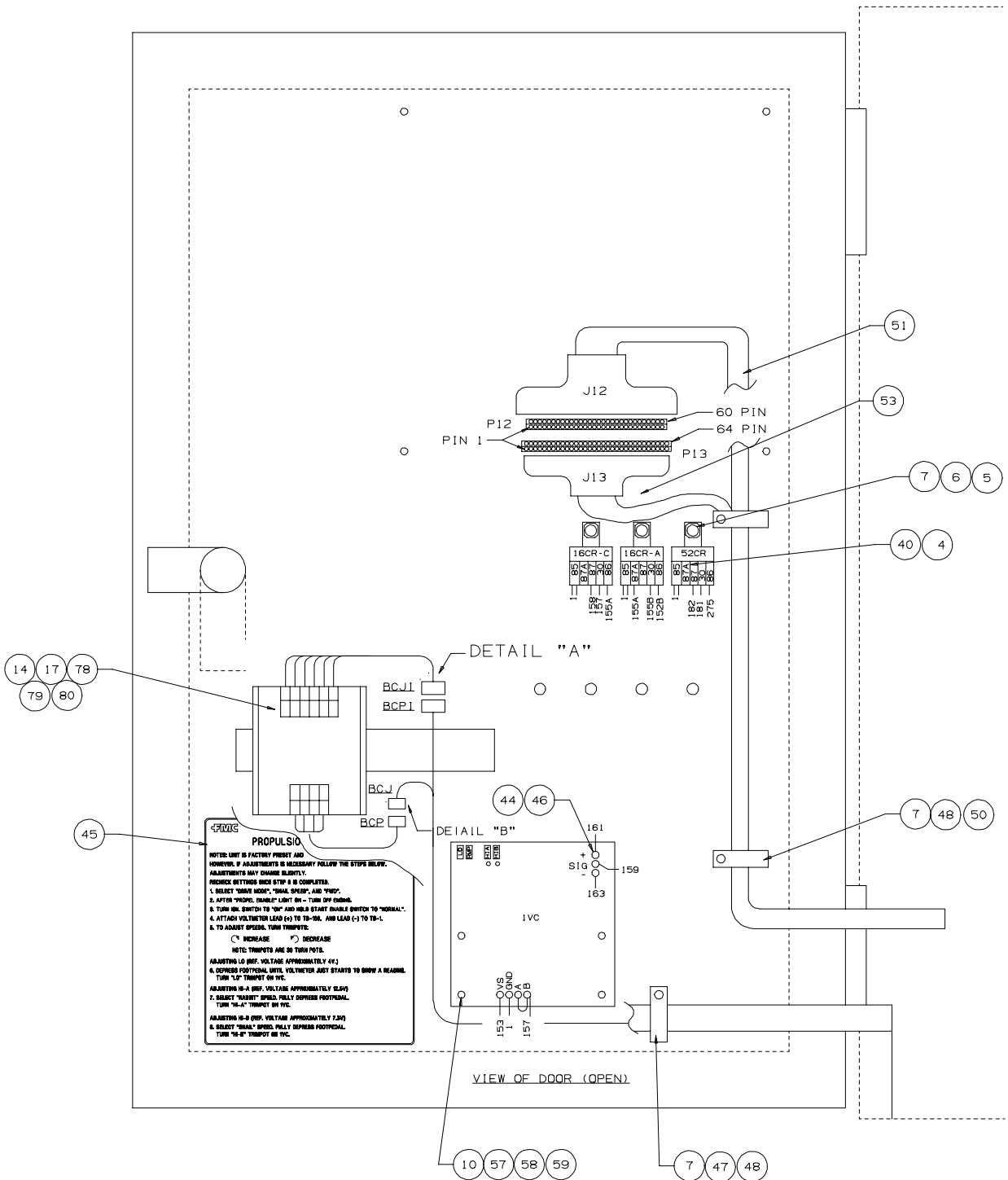


Figure 36
BRIDGE PANEL, RIGHT HAND
622-6219

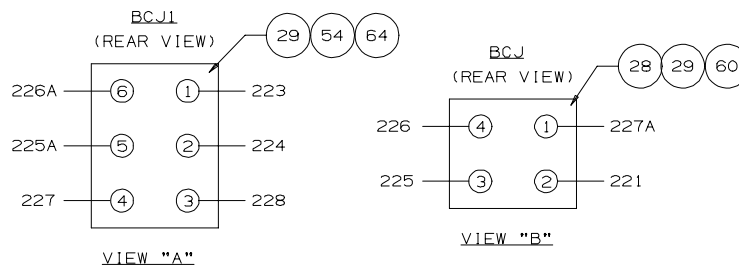


Figure 37
BRIDGE PANEL, RIGHT HAND
622-6219

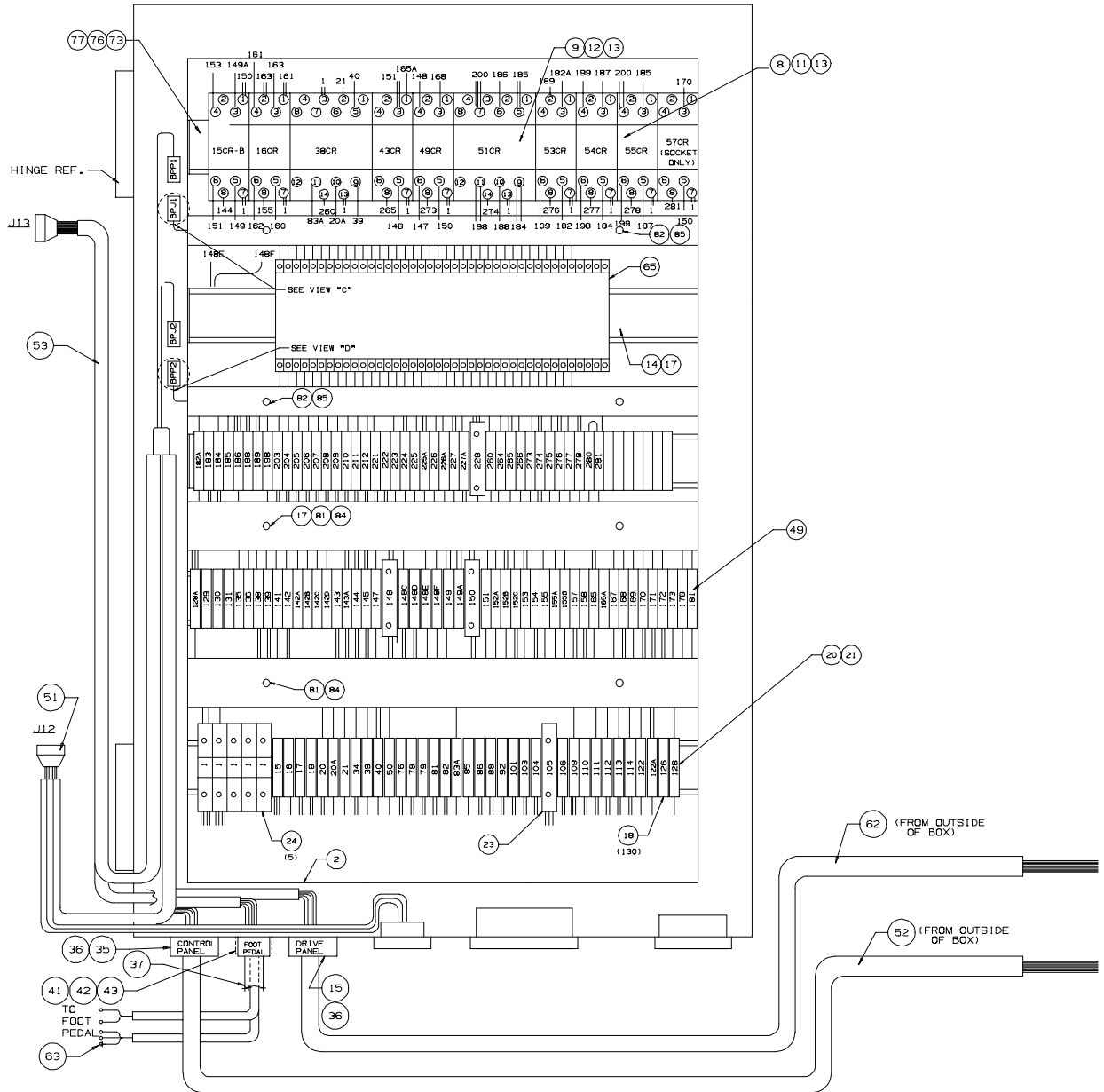


Figure 38
BRIDGE PANEL, RIGHT HAND
622-6219

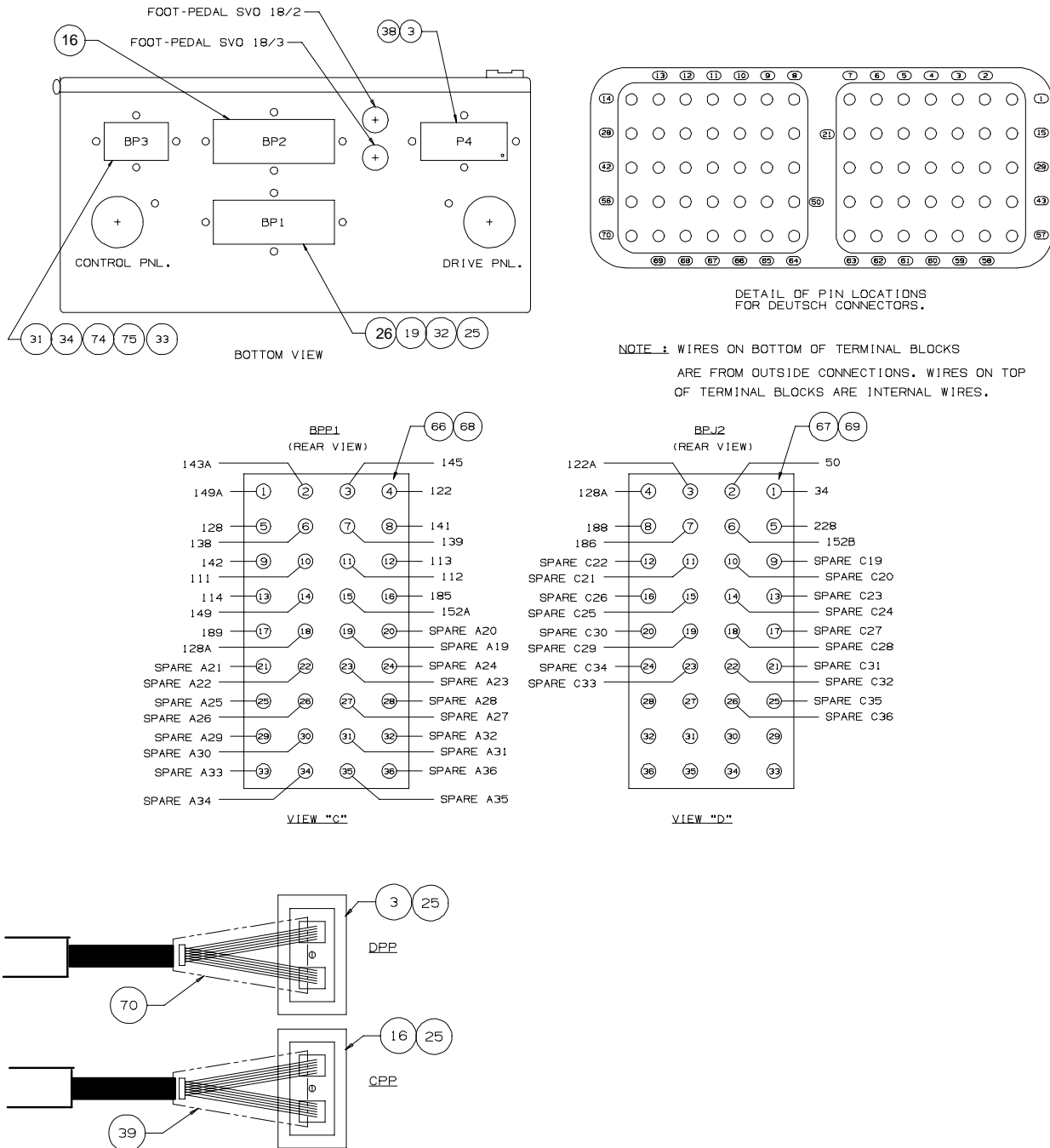


Figure 39
BRIDGE PANEL, RIGHT HAND
622-6219

WIRE TABLE CABLE "AA" J12 (60 PIN)

COND NO.	BASE	STRIPE	WIRE NO.	SIZE AWG	FROM	TO
1	BLK		SPARE C	22	BP3(3)	J12(41)
2	WHT		272	22	BP3(11)	J12(42)
3	RED		SPARE B	22	BP3(2)	J12(43)
4	GRN		257	22	BP3(12)	J12(44)
5	BRN		269	22	BP3(13)	J12(45)
6	BLU		270	22	BP3(14)	J12(46)
7	ORG		258	22	BP3(15)	J12(47)
8	YEL		SPARE A	22	BP3(1)	J12(48)
9	-		-	22	-	-
10	-		-	22	-	-

WIRE TABLE CABLE J12 "CC"

COND NO.	BASE	STRIPE	WIRE NO.	SIZE AWG	FROM	TO
1	BLK		20	22	J12(1)	TB-20
2	WHT		40	22	J12(2)	TB-40
3	RED		122A	22	J12(5)	TB-122A
4	GRN		128A	22	J12(6)	TB-128A
5	ORG		143A	22	J12(7)	TB-143A
6	BLU		145	22	J12(8)	TB-145
7	WHT	BLK	148C	22	J12(10)	TB-148C
8	RED	BLK	165A	22	J12(11)	TB-165A
9	GRN	BLK	152C	22	J12(12)	TB-152C
10	ORG	BLK	169	22	J12(15)	TB-169
11	BLU	BLK	172	22	J12(16)	TB-172
12	BLK	WHT	171	22	J12(17)	TB-171
13	RED	WHT	173	22	J12(18)	TB-173
14	GRN	WHT	186	22	J12(30)	TB-186
15	BLU	WHT	264	22	J12(56)	TB-264
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

NOT USED

WIRE TABLE CABLE J12 "BB"

COND NO.	BASE	STRIPE	PIN NO.	WIRE NO.	SIZE AWG	FROM	TO
1	BLK			SPARE Q	22	BP1(33)	J12(49)
2	WHT			259	22	BP1(36)	J12(50)
3	RED			38	22	BP1(37)	J12(3)
4	GRN			41	22	BP1(38)	J12(4)
5	ORG			SPARE P	22	BP1(34)	J12(51)
6	BLU			SPARE N	22	BP1(35)	J12(52)
7	WHT	BLK		SPARE M	22	BP1(15)	J12(53)
8	RED	BLK		SPARE L	22	BP1(16)	J12(54)
9	GRN	BLK		148B	22	BP1(39)	J12(9)
10	ORG	BLK		279	22	BP1(40)	J12(55)
11	BLU	BLK		SPARE K	22	BP1(17)	J12(57)
12	BLK	WHT		SPARE J	22	BP1(18)	J12(58)
13	RED	WHT		156	22	BP1(41)	J12(13)
14	GRN	WHT		165C	22	BP1(42)	J12(14)
15	BLU	WHT		SPARE H	22	-	-
16	BLK	RED		SPARE G	22	-	-
17	WHT	RED		SPARE F	22	-	-
18	ORG	RED		SPARE E	22	-	-
19	BLU	RED		174	22	BP1(50)	J12(19)
20	RED	GRN		177	22	BP1(51)	J12(20)
21	ORG	GRN		182C	22	BP1(52)	J12(21)
22	BLK	WHT	RED	191	22	BP1(53)	J12(22)
23	WHT	BLK	RED	213A	22	BP1(54)	J12(23)
24	RED	BLK	WHT	213B	22	BP1(55)	J12(24)
25	GRN	BLK	WHT	214	22	BP1(56)	J12(25)
26	ORG	BLK	WHT	236	22	BP1(64)	J12(26)
27	BLU	BLK	WHT	235	22	BP1(65)	J12(27)
28	BLK	RED	GRN	234	22	BP1(66)	J12(28)
29	WHT	RED	GRN	182D	22	BP1(67)	J12(29)
30	RED	BLK	GRN	SPARE D	22	-	-
31	GRN	BLK	ORG	237	22	BP1(68)	J12(31)
32	ORG	BLK	GRN	243	22	BP1(69)	J12(32)
33	BLU	WHT	ORG	244	22	BP1(70)	J12(33)
34	BLK	WHT	ORG	245	22	BP3(4)	J12(34)
35	WHT	RED	ORG	246	22	BP3(5)	J12(35)
36	ORG	WHT	BLU	249	22	BP3(6)	J12(36)
37	WHT	RED	BLU	250	22	BP3(7)	J12(37)
38	BLK	WHT	GRN	251	22	BP3(8)	J12(38)
39	WHT	BLK	GRN	252	22	BP3(9)	J12(39)
40	RED	WHT	GRN	255	22	BP3(10)	J12(40)

Figure 40
BRIDGE PANEL, RIGHT HAND
622-6219

**BRIDGE PANEL, RIGHT HAND
622-6219**

Figure 32 thru Figure 40

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6306		ENCLOSURE MODIFIED		1
2	622-6220		PANEL MODIFIED		1
3	622-2962-005		RECEPTACLE, Flange Mount (40 Pin)		2
4	239-3650-003		TERM., 18 AWG Female Slip-On		9
5	622-6214-004		RELAY, 24V Cube w/Diode		3
6	107-0792		SCREW, Pan Hd Mach 10-32 x 1"		12
7	118-5252		NUT, ESNA 10-32		15
8	622-6328		RELAY, 24V LY2 w/Diode		7
9	622-6328-001		RELAY, 24V LY4 w/Diode		2
10	620-8344		VALVE CONTROL MODULE		1
11	621-2736		SOCKET RELAY, LY2		8
12	621-2737		SOCKET RELAY, LY4		2
13	621-2738		HOLD DOWN CLIPS		20
14	622-0244-001		TRACK, Mounting DIN		2
15	106-0094		CONNECTOR CORD, 1 1/4"		1
16	622-2962-001		RECEPTACLE, Flange Mount (70 Pin)		1
17	107-0811		RIVET, 3/16		10
18	622-0244-002		TERMINAL BLOCK (USK4)		130
19	622-2967-014		PIN, #14		15
20	622-0244-003		END COVER		3
21	622-0244-004		END CLAMP		5
22	622-0244-005		MARKER STRIP		14
23	622-0244-007		TERMINAL BLOCK (USK10)		4
24	622-0244-009		TERMINAL BLOCK, Ground 8 AWG		5
25	622-2967-013		TERMINAL, #16 Pin		197
26	622-2962-002		RECEPTACLE, Flange Mount (70 Pin)		1
27	622-2964		DIODE BRIDGE CONVEY ASSY		1
28	622-2967-006		PLUG, 4 Pos (Female)		1
29	622-2967-015		SOCKET, (16-18 AWG)		10
30	620-3900-018		WIRE, 18 AWG GXL YEL		1720'
31	622-2962-014		RECEPTACLE, Flange Mount (24 Pin)		1
32	622-2962-009		SEALING, Plugs		69
33	622-2962-020		GASKET, 24 Pin		1
34	118-7293		WASHER, Flat #18		16
35	106-0093		CONNECTOR CORD, 1 1/4		1
36	106-0008		NUT, Lock 1 1/4		2

**BRIDGE PANEL, RIGHT HAND
622-6219**

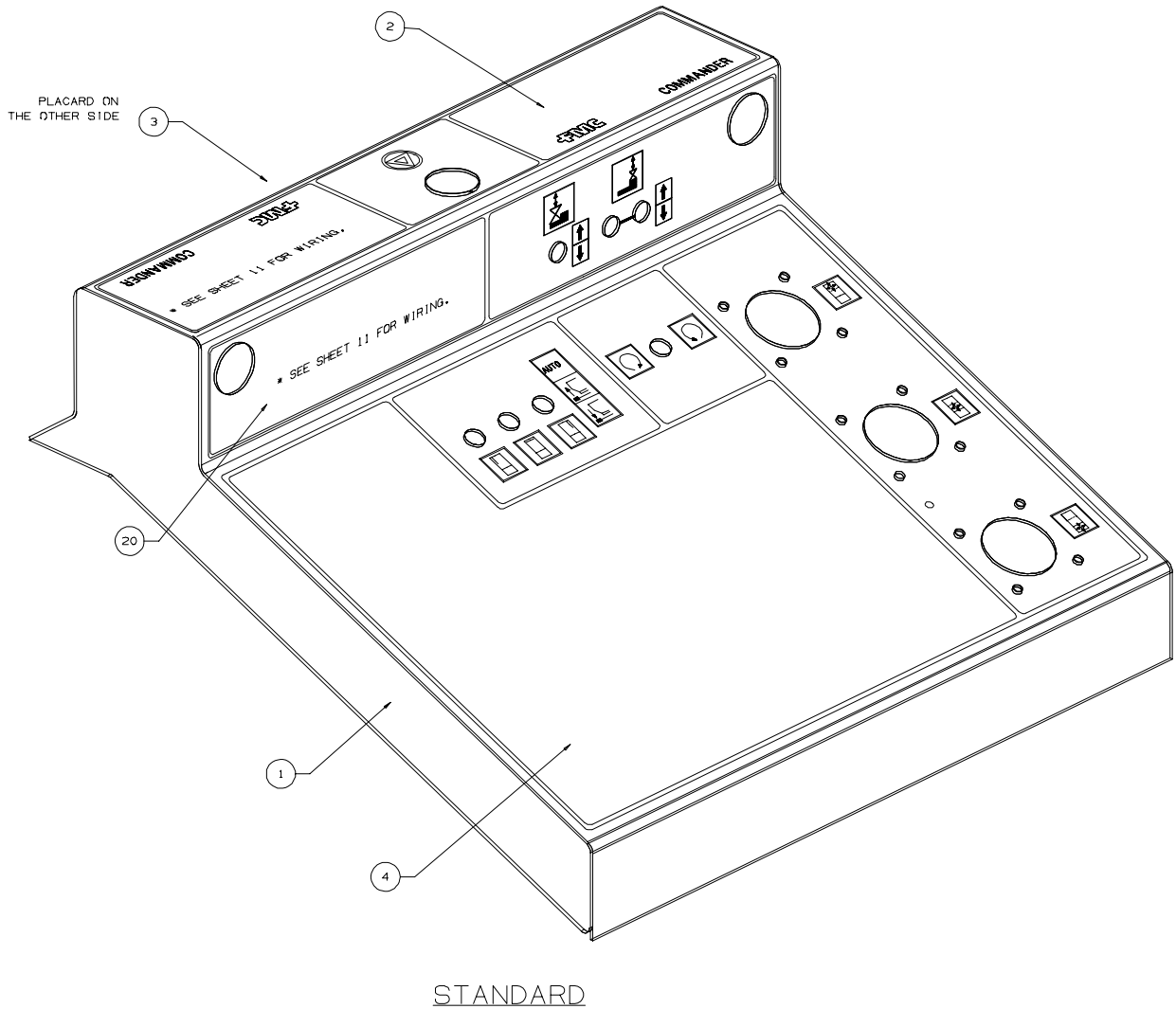
Figure 32 thru Figure 40

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
37	239-8972		SHIELDED CABLE, 3 COND.		7'
38	622-2962-019		GASKET, 40 Pin		1
39	622-2962-018		BOOT, 70 Pin		1
40	239-3650-001		TERMINAL, 14 AWG Female Slip-On		3
41	515-2139		SVO CORD, 18/2		6'
42	106-0945		CONNECTOR CORD, 1/2		2
43	106-0006		NUT, Lock 1/2		2
44	620-1240-002		TERMINAL, 18 AWG to #6 Ring		6
45	622-0326-001		DECAL, Propulsion Adjust		1
46	239-3646-002		TERMINAL, 14 AWG to #6 Ring		1
47	239-9076-006		CLAMP, 3/4		1
48	111-4775		SCREW, Pan Hd Mach, #10-32		3
49	622-0244-027		MARKER STRIP, (USK10)		15
50	239-9076-007		CLAMP		2
51	622-6326		CONNECTOR ASSY, Status Cab		1
52	239-9008-006		LOOM, 1		3'
53	622-1798		STATUS HARNESS, BP (J13)		1
54	622-2967-008		PLUG, 6 Pos (Female)		1
56	622-0782		DECAL, Bridge Panel		1
57	111-3877		SCREW, Pan Hd Mach 6-32 x 1"		4
58	237-1382-004		NUT, Lock ESNA 6-32		4
59	118-7287		WASHER, #6		4
60	622-2967-022		WEDGE, 4 Pos Plug		1
62	239-9008-005		LOOM, 3/4		3.2'
63	620-1240-002		TERMINAL, 18 AWG to #6 Ring		5
64	622-2967-024		WEDGE, 6 Pos Plug		1
65	622-2970		DIODE STEERING ASSY		1
66	620-1265-001		HOUSING, 36 Plug		1
68	620-1266-001		TERMINAL, Pins		36
69	620-1266-002		TERMINAL, Sockets		36
70	622-2962-017		BOOT, 40 Pin		1
71	107-0781		SCREW, #10 x 25 x 2 1/4"		3
72	622-3900-014		WIRE, 14 AWG Yellow		108
73	622-1560		STANDOFF		15
74	111-5765		SCREW, Round Hd Phillip 8-32 x 3/4"		16
75	105-0635		NUT, ESNA 8-32		16

**BRIDGE PANEL, RIGHT HAND
622-6219**

Figure 32 thru Figure 40

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
76	107-0004		SCREW, Hex Hd, #10-24 x 1		3
77	110-0253		WASHER, Flat #10 CP		6
78	107-0767		SCREW, Pan Hd Mach 1/4-20 x 1/2"		2
79	620-0947		NUT, PTH M5 x .08		2
80	620-0803		WASHER, Flat Hard M5 Narrow		4
81	622-1358-002		WIRE DUCT, 1' x 2'		2'
82	622-1358-005		WIRE DUCT, 5' x 1'		2'
83	621-5215-001		HEAT SHRINK, 1/4"		12'
84	622-1358-008		WIRE DUCT, Cover		2'
85	622-1358-006		WIRE DUCT, Cover		2'
86	622-2964-002		DIODE BRIDGE CONVEY, w/Hot Stamp		1
87	622-2970-001		DIODE STEERING, w/Hot Stamp		1



- 623-0544-008 HEAT SHRINK OPTION
- 623-0544-009 HOT STAMP OPTION

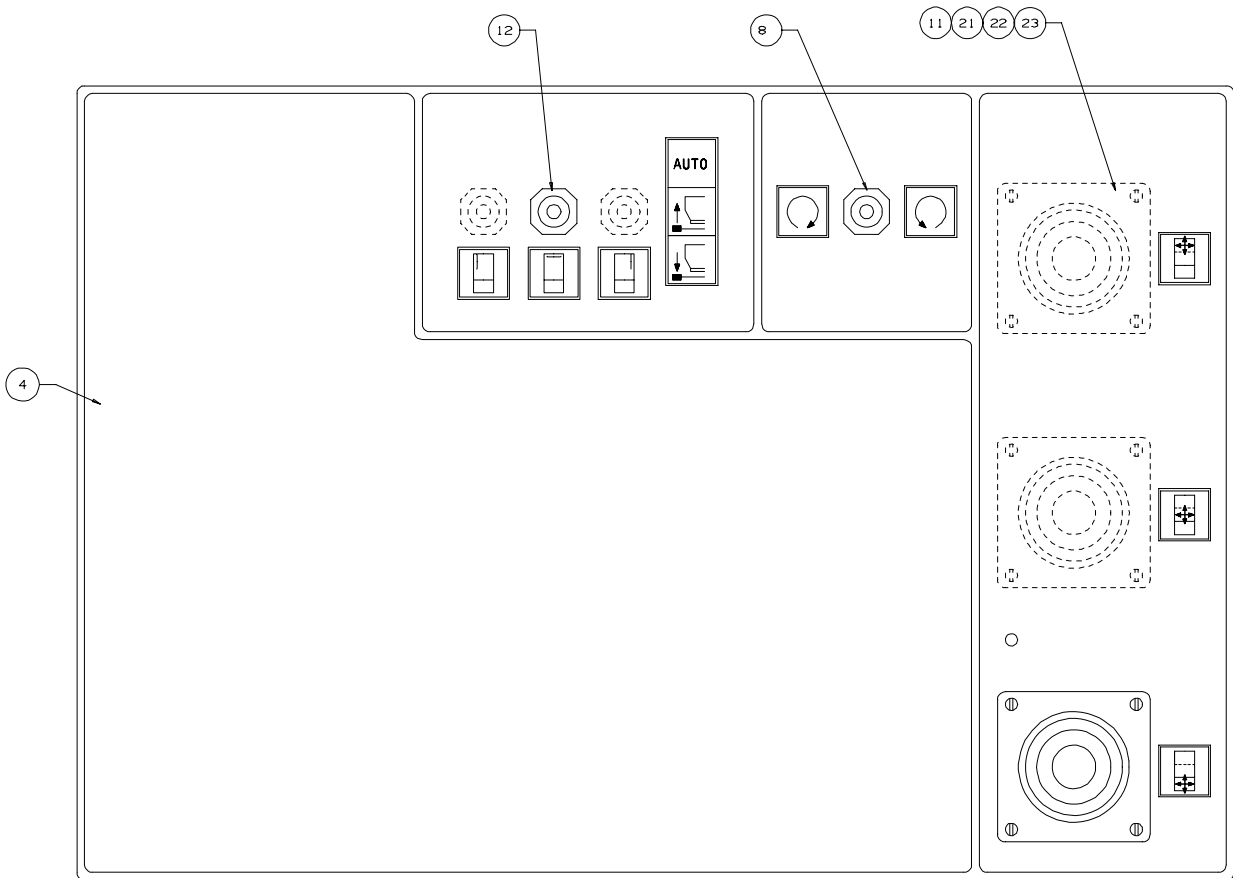
REV. B

Figure 41
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544

WIRE NO.	SIZE AWG	FROM	TO
1	18	CPJ(1)	CHASSIS GND
1	18	CHASSIS GND	2LT
16	18	CPJ(2)	2TGS(1)
17	18	CPJ(3)	1PB(1)
17	18	1PB(1)	2TGS(2)
17	18	2TGS(2)	3TGS(2)
17	18	3TGS(2)	7LT
17	18	7LT	9LT
17	18	9LT	4LT
17	18	4LT	3LT
17	18	3LT	5LT
18	18	CPJ(4)	1PB(2)
20	18	CPJ(5)	3TGS(3)
20A	18	CPJ(6)	3TGS(1)
34	18	CPJ(7)	2LT
76	18	CPJ(8)	3LT
78	18	CPJ(9)	4LT
79	18	CPJ(10)	5LT
81	18	CPJ(11)	7LT
82	18	CPJ(12)	9LT
105	18	CPJ(13)	41LT
105	18	41LT	42LT
105	18	42LT	41LT-A
105	18	41LT-A	42LT-A
109	18	CPJ(14)	14TGS(2)
109	18	14TGS(2)	12TGS(2)
110	18	CPJ(15)	11TGS(2)
110	18	11TGS(2)	10TGS(2)
111	18	CPJ(16)	10TGS(3)
112	18	CPJ(17)	10TGS(1)
113	18	CPJ(18)	11TGS(3)
114	18	CPJ(19)	11TGS(1)
122	18	CPJ(20)	13TGS(3)
122	18	13TGS(3)	15TGS(3)
123	18	12TGS(1)	12TGS(3)
123	18	12TGS(3)	13TGS(2)
125	18	14TGS(1)	14TGS(3)
125	18	14TGS(3)	15TGS(2)
128	18	CPJ(21)	15TGS(1)
128	18	15TGS(1)	13TGS(1)
150	18	CPJ(22)	36TGS(2)
150	18	36TGS(2)	35TGS(2)
150	18	35TGS(2)	35TGS-A(2)
150	18	35TGS-A(2)	3SS-3(C)
150	18	3SS-3(C)	3SS-1(C)
150	18	3SS-1(C)	3SS-4(C)
150	18	3SS-4(C)	3SS-2(C)
150	18	3SS-2(C)	5SS-3(C)
150	18	5SS-3(C)	5SS-1(C)
150	18	5SS-1(C)	5SS-4(C)
150	18	5SS-4(C)	5SS-2(C)
168	18	CPJ(23)	31TGS(3)
168	18	31TGS(3)	32TGS(3)
168	18	32TGS(3)	33TGS(3)
169	18	CPJ(24)	31TGS(2)
170	18	CPJ(25)	31TGS(1)
170	18	31TGS(1)	31TGS(4)
170	18	31TGS(4)	32TGS(1)
170	18	32TGS(1)	32TGS(4)
170	18	32TGS(4)	33TGS(1)
170	18	33TGS(1)	33TGS(4)
171	18	CPJ(26)	31TGS(5)

WIRE NO.	SIZE AWG	FROM	TO
171	18	31TGS(5)	32TGS(5)
171	18	32TGS(5)	33TGS(5)
172	18	CPJ(27)	32TGS(2)
173	18	CPJ(28)	33TGS(2)
183	18	CPJ(29)	35TGS(3)
183	18	35TGS(3)	35TGS-A(3)
184	18	CPJ(30)	35TGS(1)
184	18	35TGS(1)	35TGS-A(1)
198	18	CPJ(32)	4SS-2(NO)
203	18	CPJ(35)	3SS-1(NO)
204	18	CPJ(36)	3SS-2(NO)
205	18	CPJ(37)	3SS-4(NO)
206	18	CPJ(38)	3SS-3(NO)
207	18	CPJ(39)	5SS-1(NO)
208	18	CPJ(40)	5SS-2(NO)
209	18	CPJ(41)	5SS-4(NO)
210	18	CPJ(42)	5SS-3(NO)
211	18	CPJ(43)	36TGS(3)
212	18	CPJ(44)	36TGS(1)
221	18	CPJ(31)	4SS-1(NO)
222	18	CPJ(70)	4SS-3(C)
222	18	4SS-3(C)	4SS-1(C)
222	18	4SS-1(C)	4SS-4(C)
222	18	4SS-4(C)	4SS-2(C)
225	18	CPJ(33)	4SS-4(NO)
226	18	CPJ(34)	4SS-3(NO)
b	18	CPJ(45)	SPARE
a	18	CPJ(46)	SPARE
Z	18	CPJ(47)	SPARE
Y	18	CPJ(48)	SPARE
W	18	CPJ(49)	SPARE
V	18	CPJ(50)	SPARE
U	18	CPJ(51)	SPARE
T	18	CPJ(52)	SPARE
S	18	CPJ(53)	SPARE
R	18	CPJ(54)	SPARE
Q	18	CPJ(55)	SPARE
P	18	CPJ(56)	SPARE
O	18	CPJ(57)	SPARE
N	18	CPJ(58)	SPARE
M	18	CPJ(59)	SPARE
L	18	CPJ(60)	SPARE
K	18	CPJ(61)	SPARE
J	18	CPJ(62)	SPARE
H	18	CPJ(63)	SPARE
G	18	CPJ(64)	SPARE
F	18	CPJ(65)	SPARE
E	18	CPJ(66)	SPARE
D	18	CPJ(67)	SPARE
C	18	CPJ(68)	SPARE
B	18	CPJ(69)	SPARE

Figure 42
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544



FRONT VIEW

STANDARD

Figure 43
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544

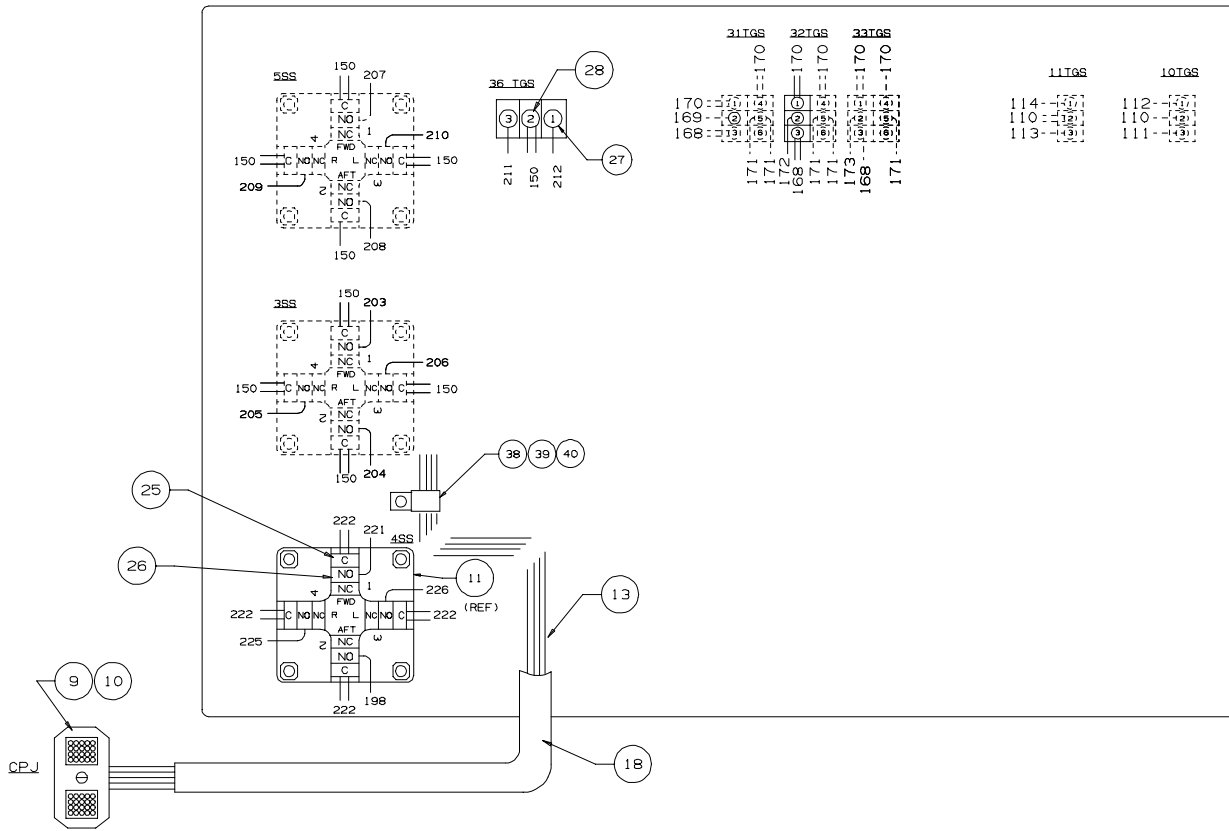
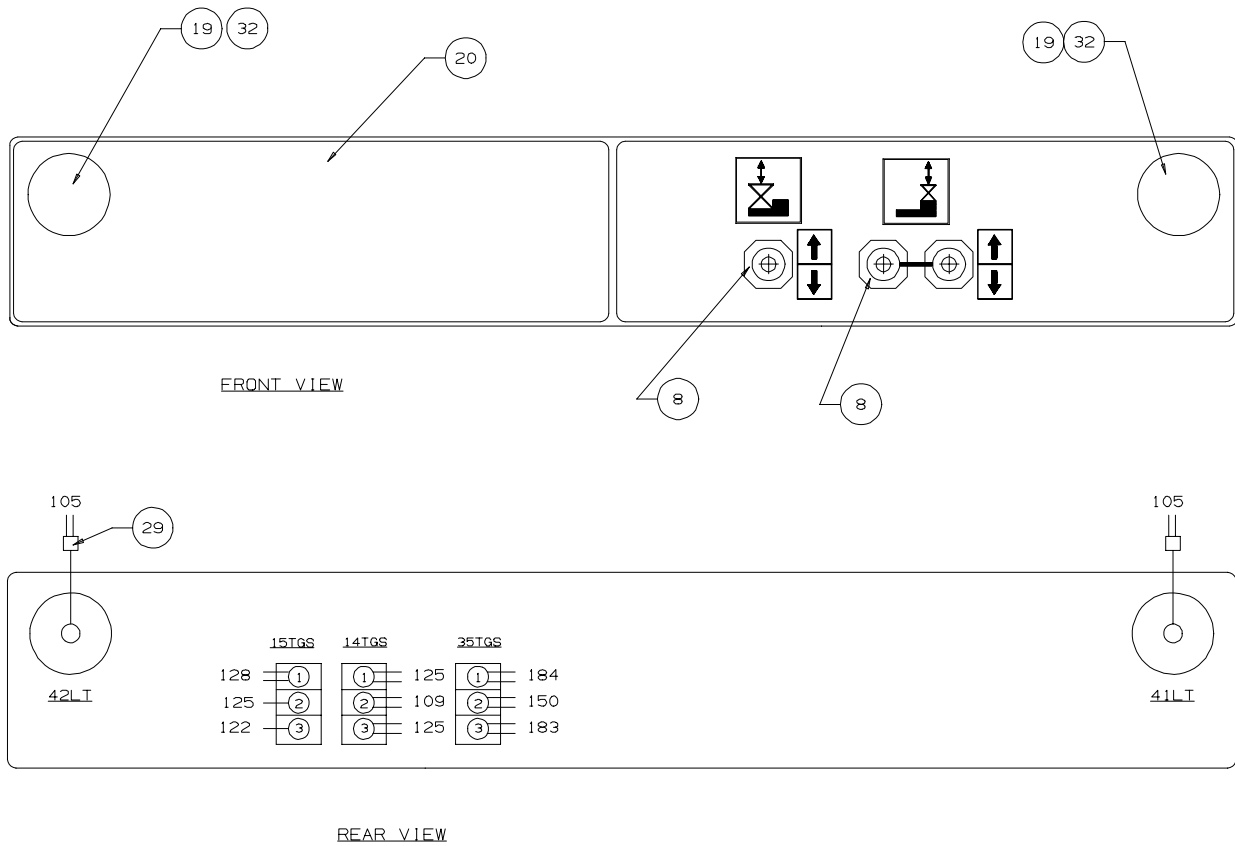
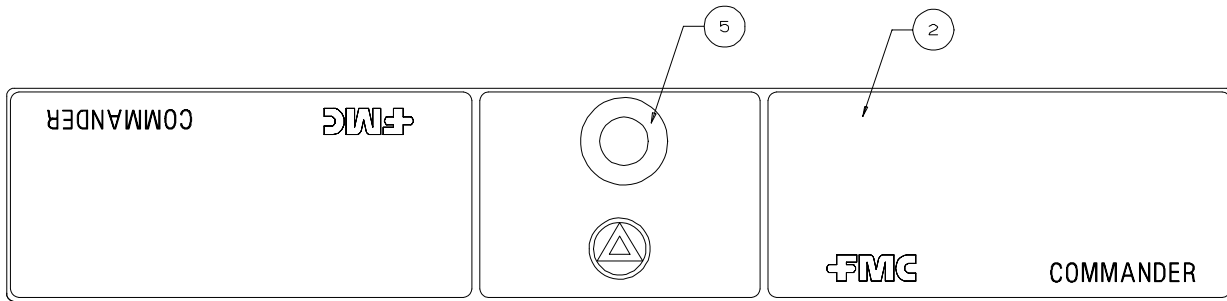


Figure 44
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544

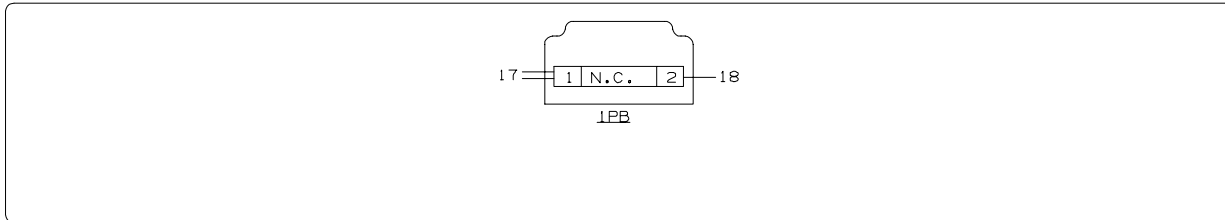


STANDARD

Figure 45
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544



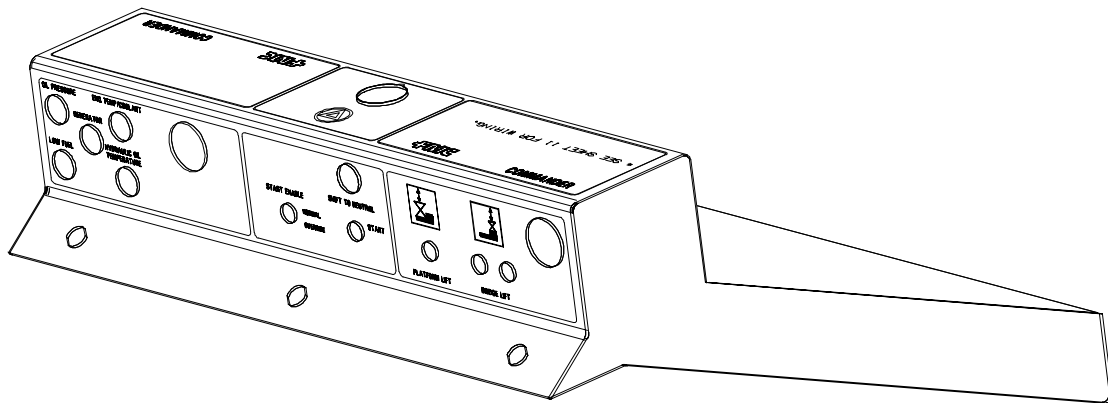
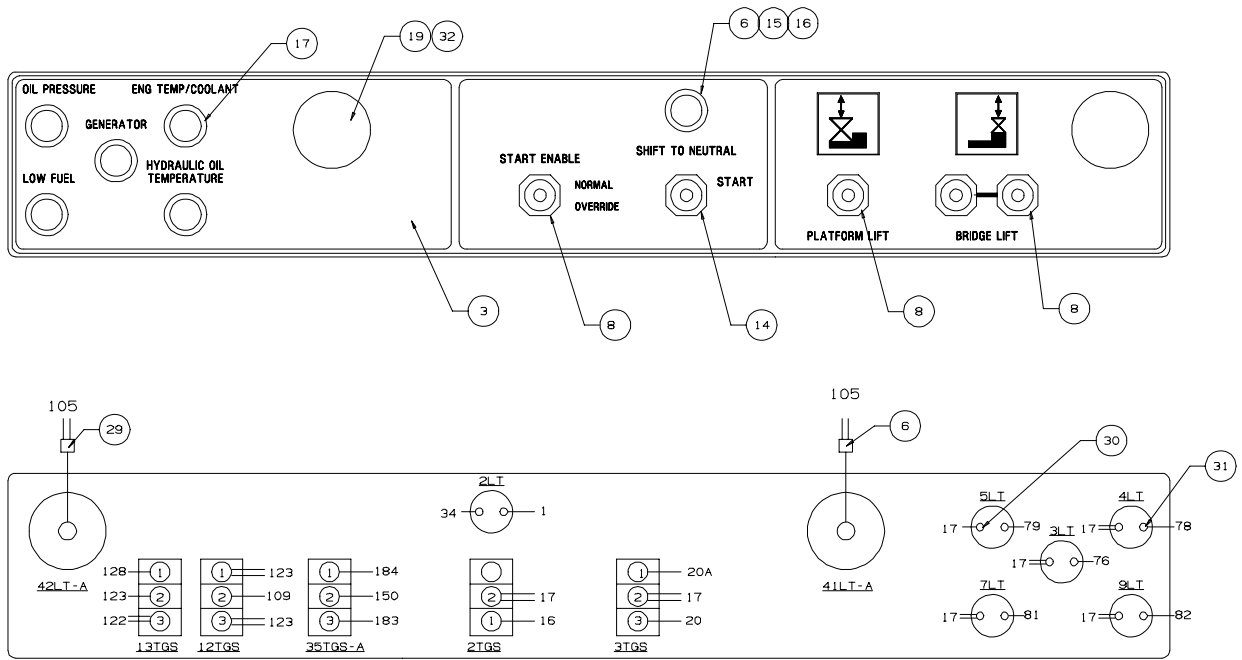
FRONT VIEW



REAR VIEW

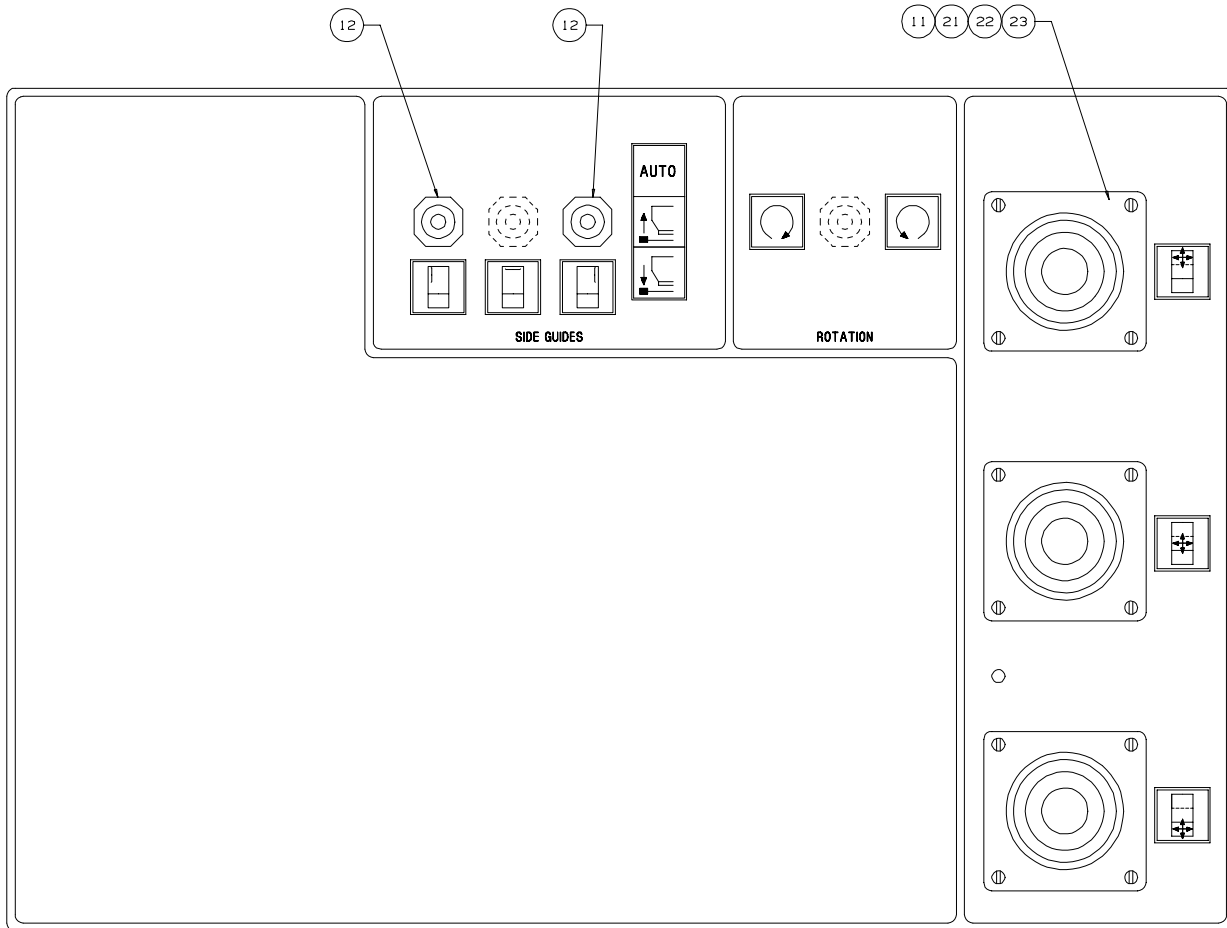
STANDARD

Figure 46
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544



STANDARD

Figure 47
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544

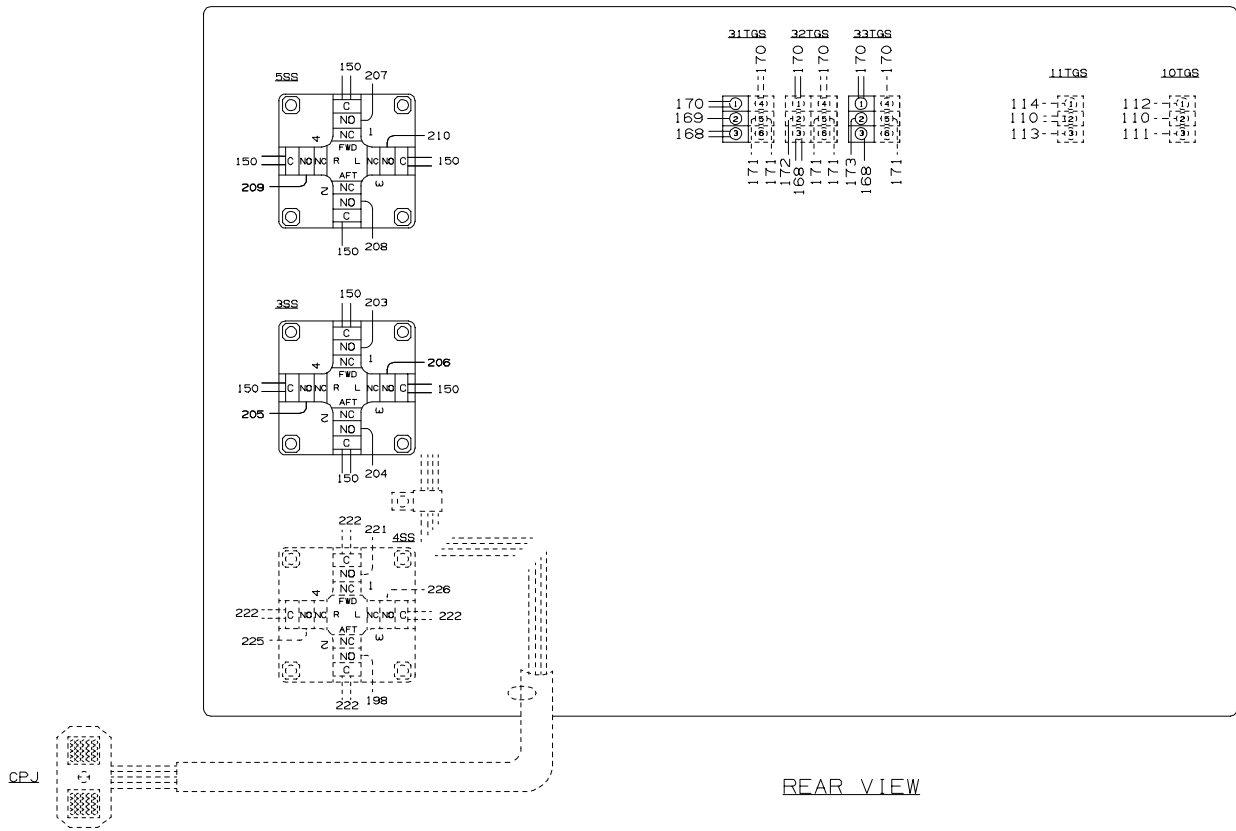


FRONT VIEW

- 001

(RIGHT/LEFT PALLET LOAD)

Figure 48
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544



- 001

(RIGHT/LEFT PALLET LOAD)

Figure 49
CONTROL PANEL ASSEMBLY, ENGLISH
623-0544

**CONTROL PANEL ASSEMBLY, RIGHT/LEFT PALLET LOAD, ENGLISH
623-0544-001**

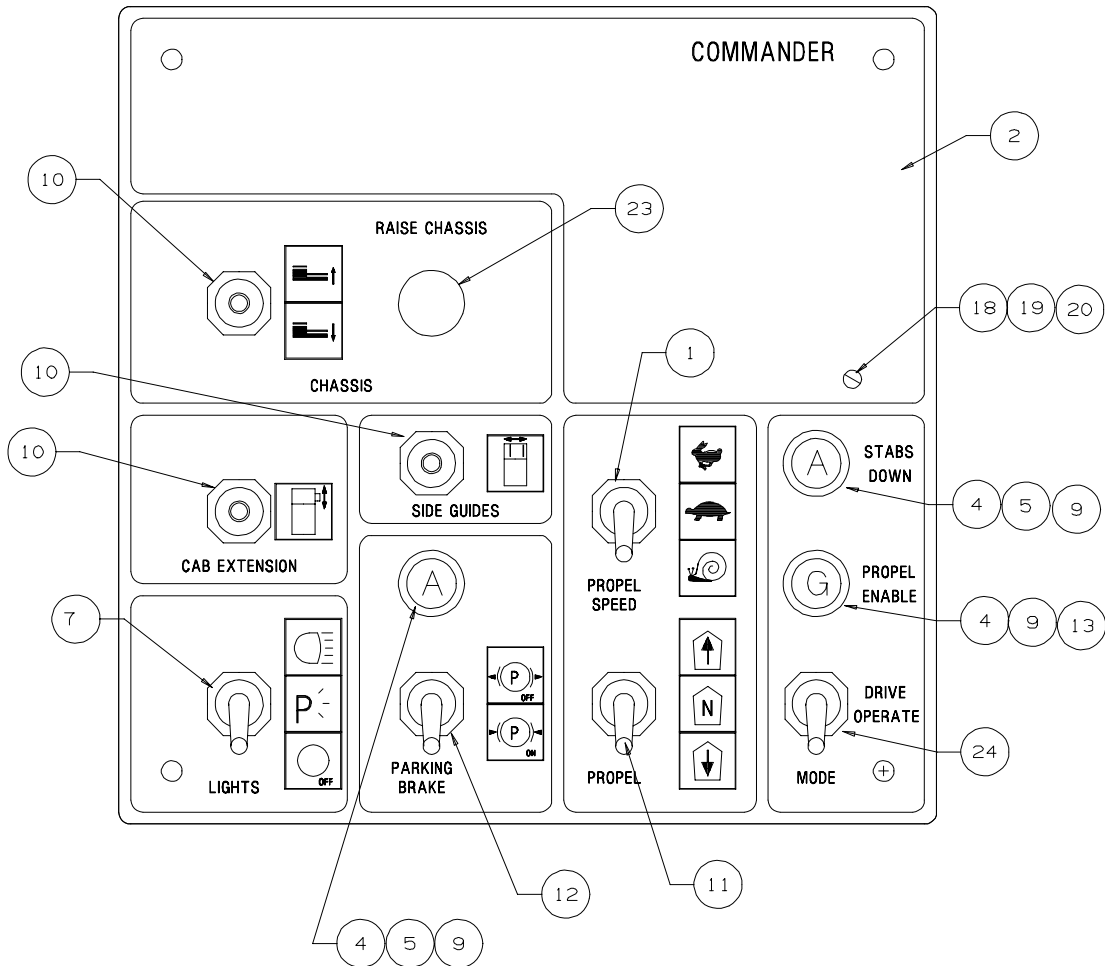
Figure 41 thru Figure 49

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-0169		PANEL WELDMENT		1
2	622-8597		PLACARD, Control Panel, Upper		1
3	623-0081		PLACARD, Control Panel, Middle, English		1
4	623-0077		PLACARD, Control Panel, Lower, English		1
5	622-5906		PUSHBUTTON ASSY, Emergency Stop		1
6	239-3649-001		CONNECTOR		1
7	620-0764		LAMP, 24V		6
8	238-1579		SWITCH, Toggle 3 Pos. Mom (V91929 #1NT1-7)		8
9	622-2962-003		PLUG, 70 Socket		1
10	622-2967-015		TERM., #16 Socket		70
11	519-6725		JOYSTICK, 4 Way 4 Pos. (V68301 #XDP-C5555C4)		3
-	515-2148		Consisting of: REPLACEMENT SWITCH (V91929 #V3-101-D8)		
-	519-6725-001		BOOT (V68301 #WN1400510000)		
12	237-7700		TOGGLE SWITCH, 3 Pos Mom/Maint. (V91929 #1TK1-5)		3
13	620-3900-018		WIRE, 18 AWG GXL YEL		200'
14	515-3065		SWITCH, Toggle SPST		1
15	620-0763-001		BASE HOLDER, Indicator Light		6
16	620-0763-004		PILOT LIGHT, Amber		1
17	620-0763-002		PILOT LIGHT, Red		5
18	239-9008-006		LOOM, 1		2'
19	621-5208		LICENSE LIGHT		4
20	623-0080		PLACARD, Middle B, English		1
21	107-1375		SCREW, Pan Hd Mach, M4 x .7 x 50mm		20
22	620-0806		WASHER, Flat Hard M4 Narrow		24
23	107-1094		NUT, PTH 8 M4 x 0.7		20
24	622-2962-018		BOOT, Rubber		1
25	519-5559-002		TERM., Female Slip-On .020 x .187		12
26	519-5559-009		TERM., Female Slip-On .020 x .187		12
27	620-1240-002		TERM., 18 AWG #6 Stud Ring		21
28	239-3646-002		TERM., 14 AWG #6 Ring		16
29	239-3649-002		TERMINAL		3
30	239-3646-001		TERMINAL		4

**CONTROL PANEL ASSEMBLY, RIGHT/LEFT PALLET LOAD, ENGLISH
623-0544-001**

Figure 41 thru Figure 49

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
31	620-1240-001		TERM., 18 AWG #4 Stud Ring		8
32	519-5356		BULB, 24V GE #303		4
33	622-0777		DECAL, Control Panel		1
37	623-0544		CONTROL PANEL ASSY, STANDARD		1
38	239-9076-009		CLAMP, 1.25"		1
39	118-5252		NUT, Hex ESNA #10-32		1
40	111-4775		SCREW, Pan Hd. Mach, #10-32		1
41	621-5215-001		HEATSHRINK, 1/4		8'
-	Not Shown				



623-0542-001 HEAT SHRINK OPTION

623-0542-002 HOT STAMP OPTION

Figure 50
DRIVE PANEL ASSEMBLY, ENGLISH
623-0542

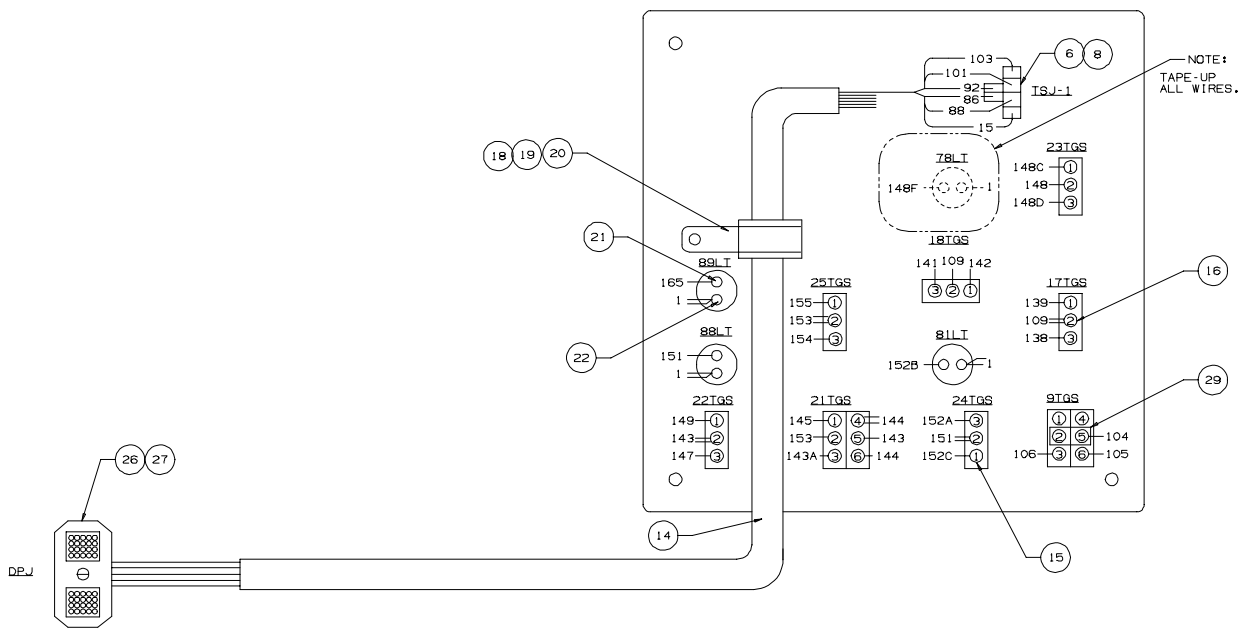


Figure 51
DRIVE PANEL ASSEMBLY, ENGLISH
623-0542

WIRE NO.	SIZE AWG	LENGTH INCH.	FROM	TO
1	18		DPJ(1)	89LT
1	18		89LT	88LT
1	18		88LT	81LT
1	18		81LT	78LT
15	18		DPJ(2)	TSJ-1
86	18		DPJ(3)	TSJ-1
88	18		DPJ(4)	TSJ-1
92	18		DPJ(5)	TSJ-1
101	18		DPJ(6)	TSJ-1
103	18		DPJ(7)	TSJ-1
104	18		DPJ(8)	9TGS(2)
104	ITEM #29		9TGS(2)	9TGS(5)
105	18		DPJ(9)	9TGS(6)
106	18		DPJ(10)	9TGS(3)
109	18		DPJ(11)	17TGS(2)
109	18		17TGS(2)	18TGS(2)
138	18		DPJ(12)	17TGS(3)
139	18		DPJ(13)	17TGS(1)
141	18		DPJ(14)	18TGS(3)
142	18		DPJ(15)	18TGS(1)
143	18		DPJ(16)	22TGS(2)
143	18		22TGS(2)	21TGS(5)
143A	18		DPJ(17)	21TGS(3)
144	18		DPJ(18)	21TGS(4)
144	18		21TGS(4)	21TGS(6)
145	18		DPJ(19)	21TGS(1)
147	18		DPJ(20)	22TGS(3)
148	18		DPJ(21)	23TGS(2)
148C	18		DPJ(22)	23TGS(1)
148D	18		DPJ(23)	23TGS(3)
148F	18		DPJ(24)	78LT
149	18		DPJ(25)	22TGS(1)
151	18		DPJ(26)	24TGS(2)
151	18		24TGS(2)	88LT
152A	18		DPJ(27)	24TGS(3)
152B	18		DPJ(28)	81LT
152C	18		DPJ(29)	24TGS(1)
153	18		DPJ(30)	25TGS(2)
153	18		25TGS(2)	21TGS(2)
154	18		DPJ(31)	25TGS(3)
155	18		DPJ(32)	25TGS(1)
165	18		DPJ(33)	89LT
H	18		DPJ(34)	SPARE
F	18		DPJ(35)	SPARE
E	18		DPJ(36)	SPARE
D	18		DPJ(37)	SPARE
C	18		DPJ(38)	SPARE
B	18		DPJ(39)	SPARE
A	18		DPJ(40)	SPARE

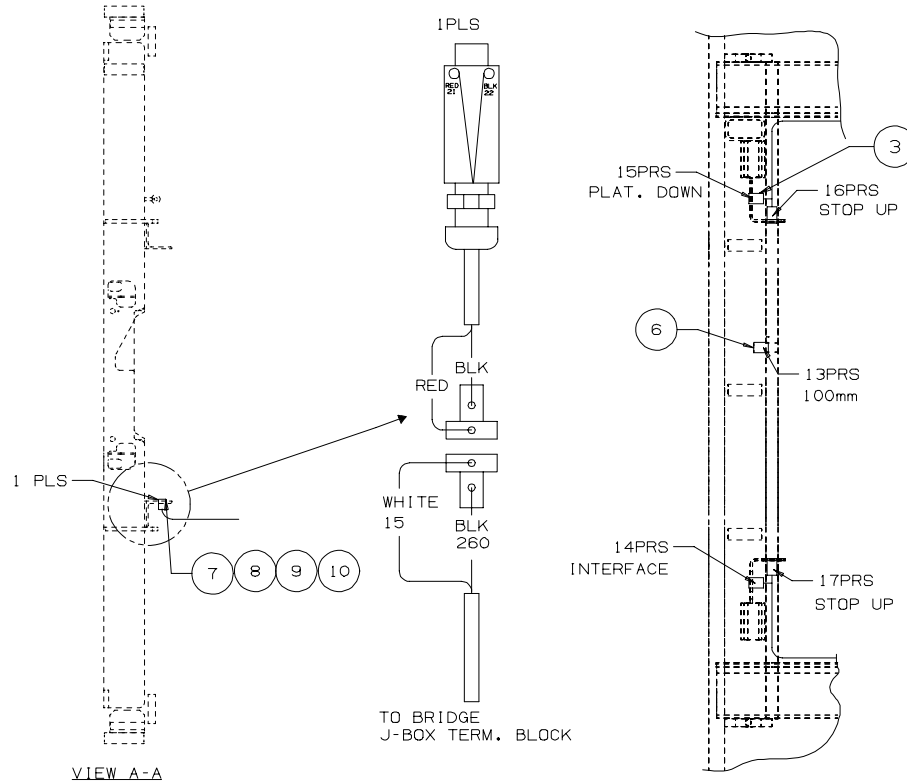
* TAPE-UP THESE WIRES.

Figure 52
DRIVE PANEL ASSEMBLY, ENGLISH
623-0542

**DRIVE PANEL ASSEMBLY, ENGLISH
623-0542**

Figure 50 thru Figure 52

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	238-6222		SWITCH, Toggle (V91929 #1TL1-1)		1
2	623-0078		PLACARD, Drive Panel, English		1
3	620-3900-018		WIRE, 18 AWG GXL YEL		200'
4	620-0763-001		BASE HOLDER, Indicator Light		2
5	620-0763-004		PILOT LIGHT, Amber		2
6	620-1088		CONN. BODY, 6 Pin Female		1
7	237-5490		SWITCH, Toggle 3 Pos. Maint. (V91929 #2TL1-10)		1
8	620-1330-001		TERM., 18 AWG Female		6
9	620-0764		LAMPS, 24V		2
10	238-1579		SWITCH, Toggle 3 Pos. Mom (V91929 #1NT1-7)		3
11	519-4249		SWITCH, Toggle DPDT (V91929 #2TL1-1)		1
12	238-6221		SWITCH, Toggle 2 Pos. Maint. (V91929 #1TL1-3)		1
13	620-0763-003		PILOT LIGHT, Green		1
14	239-9008-005		LOOM, 1		4
15	620-1240-002		TERM., 18 AWG TO #6 Ring		22
16	239-3646-002		TERM., 14 AWG TO #6 Ring		5
17	622-2962-016		BOOT, 40 Pin		1
18	239-9076-009		CLAMP, 1 1/4		1
19	118-5252		NUT, Hex ESNA #10-32		1
20	111-4775		SCREW, Pan Hd Mach #10-32		1
21	620-1240-001		TERM., 18 AWG to #4 Ring		5
22	239-3646-001		TERM., 14 AWG to #4 Ring		3
23	520-1001-007		PILOT LIGHT, Red		1
24	622-6208		LOCKING, Toggle Switch SPDT		1
25	622-0778		DECAL, Drive Panel		1
26	622-2962-006		PLUG, (40 Socket)		1
27	622-2967-015		TERM., #16 Socket		40
28	621-5215-001		HEATSHRINK, 1/4		5'
29	239-3121		JUMPER		1



- 622-6437-001 HEATSHRINK OPTION
- 622-6437-002 HOT STAMP OPTION
- 622-6437-003 HIGH LONG W/HEATSHRINK OPTION

REV. C

Figure 53
BRIDGE ELECTRICAL INSTALLATION
622-6437

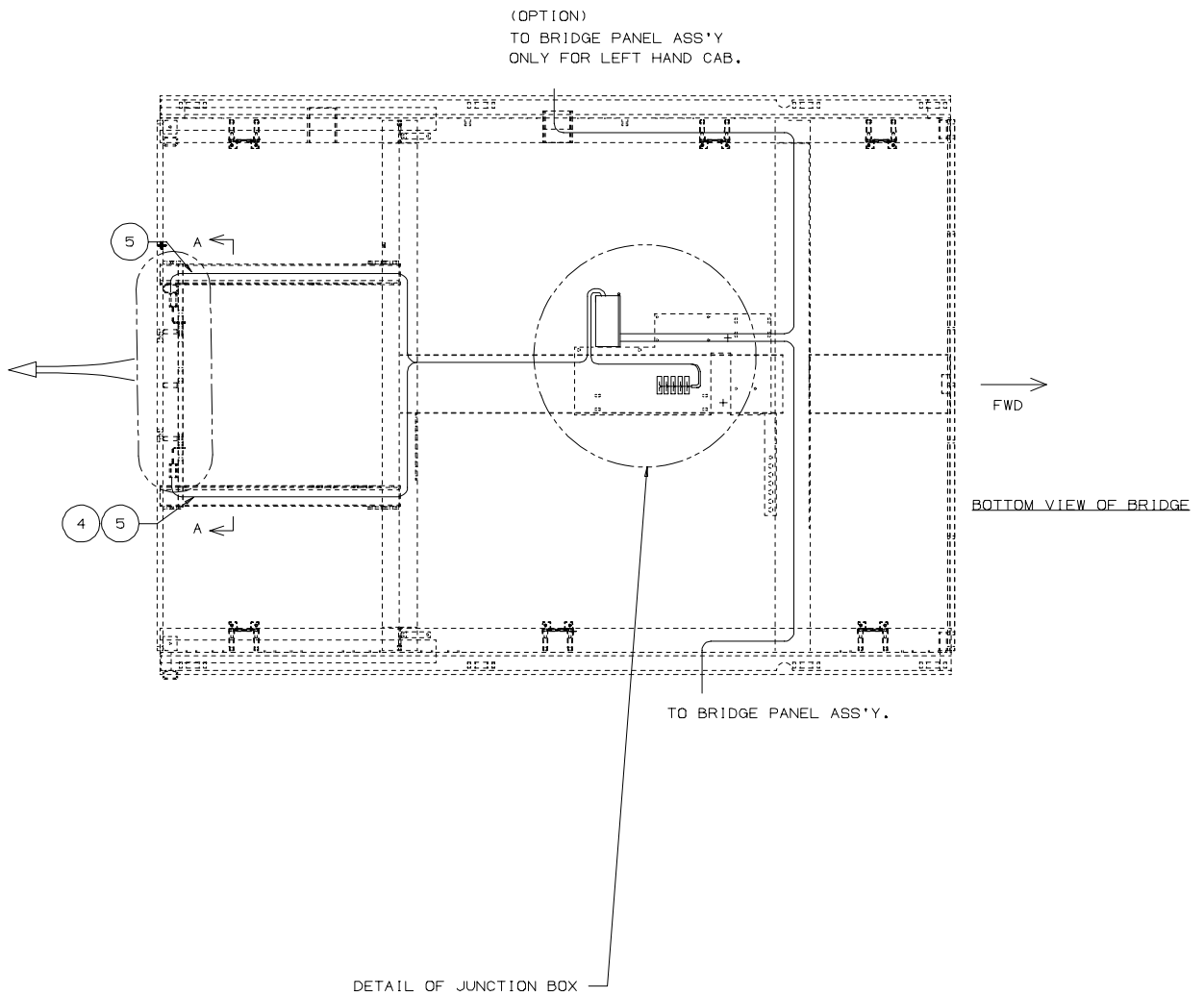


Figure 54
BRIDGE ELECTRICAL INSTALLATION
622-6437

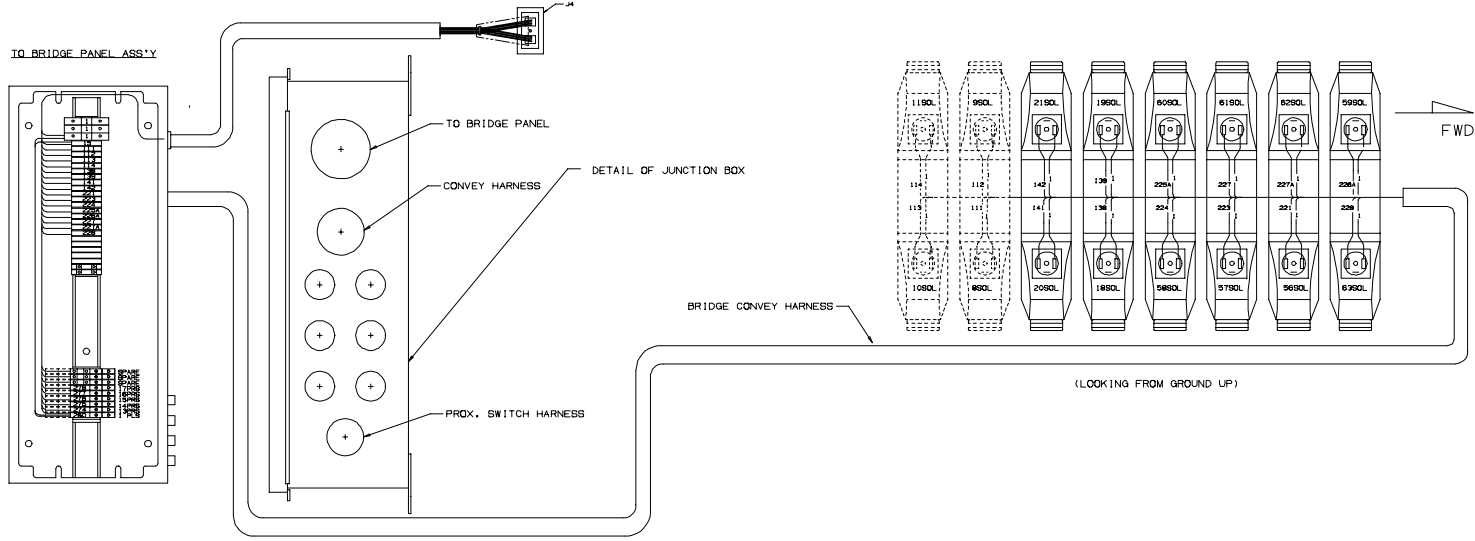
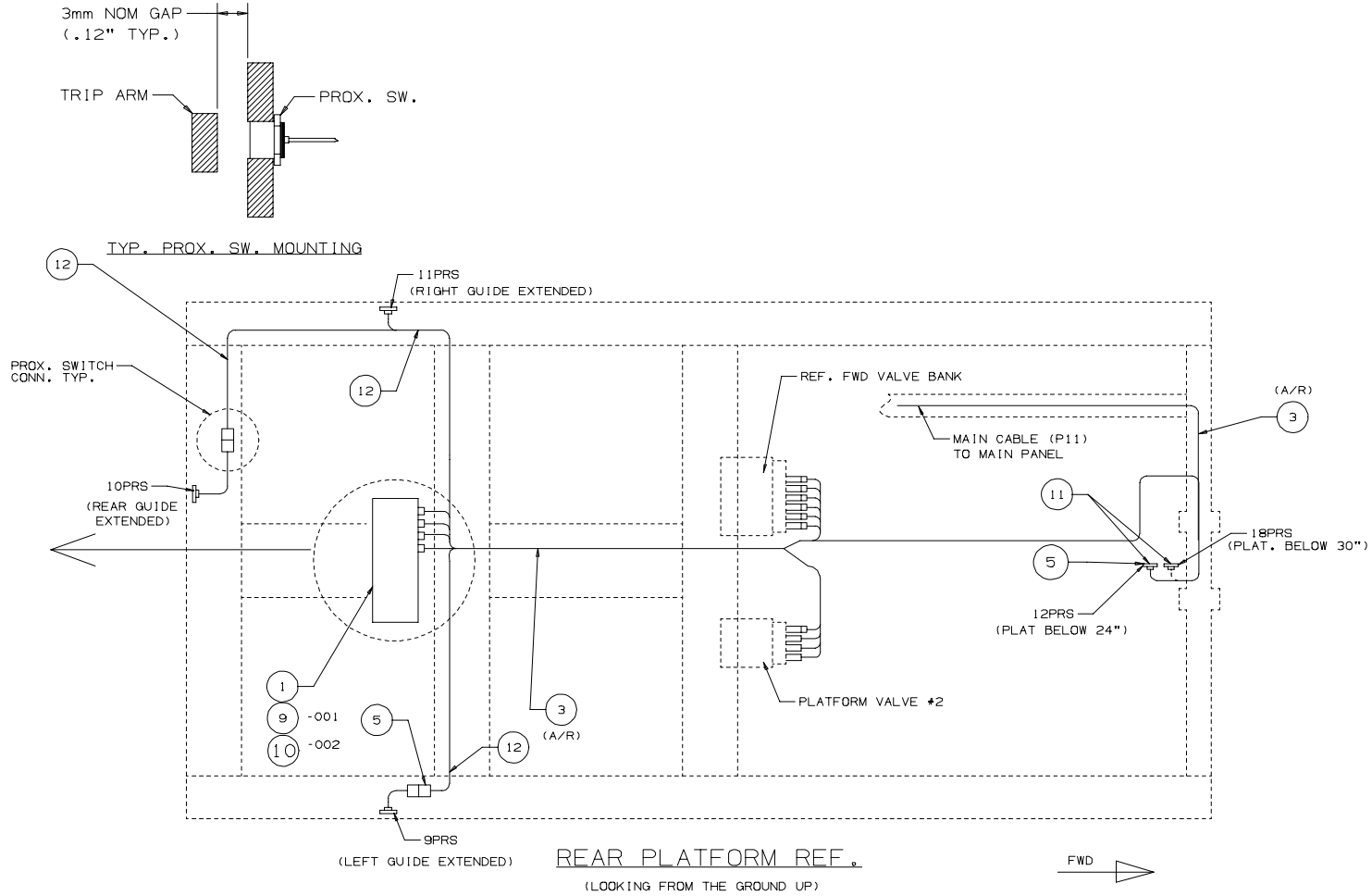


Figure 55
BRIDGE ELECTRICAL INSTALLATION
622-6437

**BRIDGE ELECTRICAL INSTALLATION
622-6437**

Figure 53 thru Figure 55

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6458		BRIDGE J-BOX ASSEMBLY		1
2	622-6458-001		BRIDGE J-BOX, W/Heatshrink		1
3	622-5918-002		PROXIMITY SWITCH ASSEMBLY, 12"		4
			Consisting of:		
-	623-2010		SWITCH, Proximity (30mm) W/15 Foot Cord (V68301 #XS1N30PA9B5C)		
4	105-0214		TY-RAP, 3.6 #18		20
5	105-0210		TY-RAP, 7.3 #50		20
6	622-5918-003		PROXIMITY SWITCH ASSEMBLY, 24"		1
			Consisting of:		
-	623-2010		SWITCH, Proximity (30mm) W/15 Foot Cord (V68301 #XS1N30PA9B5C)		
7	622-1527		SWITCH ASSEMBLY, Overtravel		1
			Consisting of:		
-	622-1884		SWITCH, Safety Interlock		
8	107-1375		SCREW, Pan Hd Mach, M4 x 7 x 50mm		2
9	107-1094		NUT, Lock ESNA M4 x 7		2
10	620-0806		WASHER, Flat M4		4
11	622-6458-002		BRIDGE J-BOX, W/Hot Stamping		1
12	622-6458-003		BRIDGE J-BOX, High Long W/Heatshrink		1
-	Not Shown				

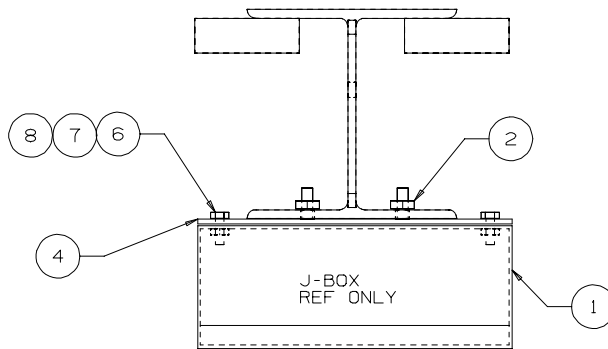
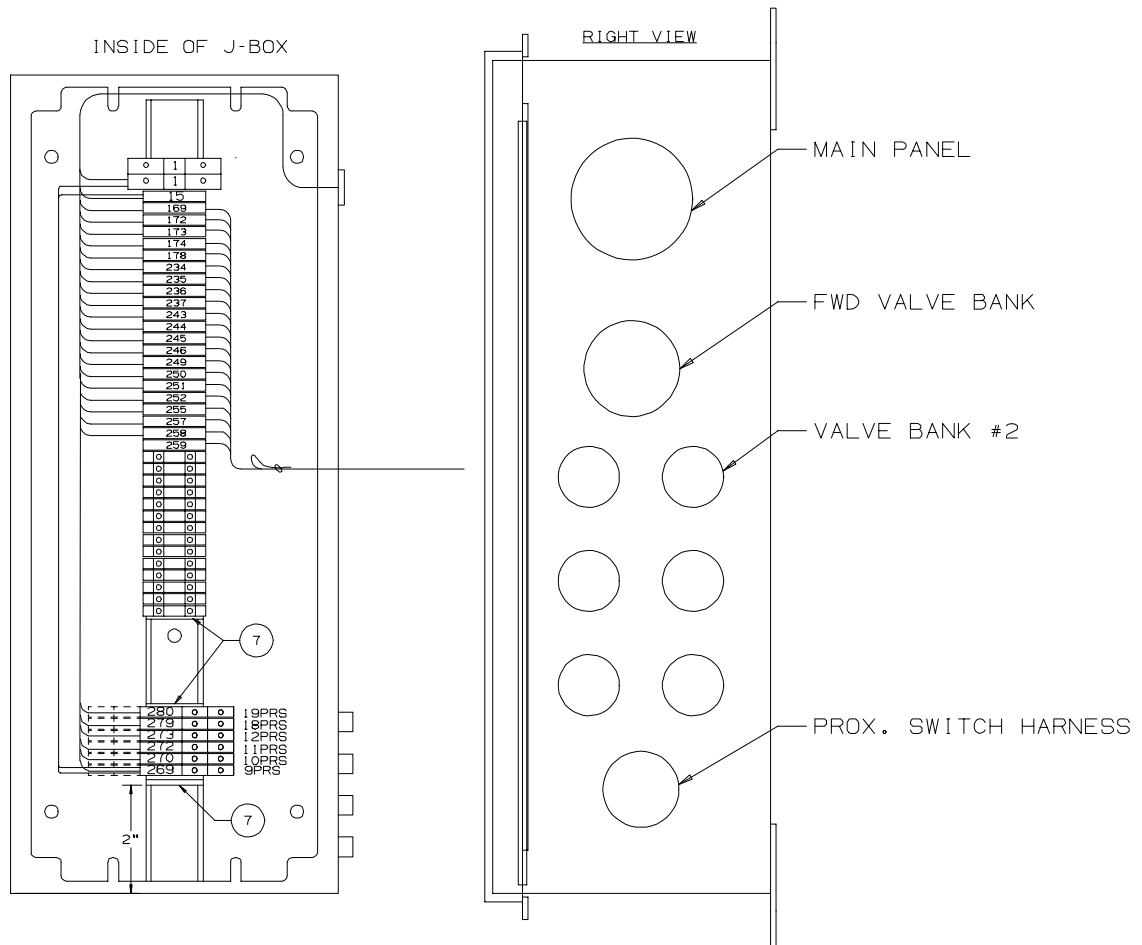


622-6439-001 OPTION, HEAT SHRINK

622-6439-002 HOT STAMP OPTION

REV. B

Figure 56
PLATFORM ELECTRICAL INSTALLATION
622-6439



J BOX INSTALLATION

Figure 57
PLATFORM ELECTRICAL INSTALLATION
622-6439

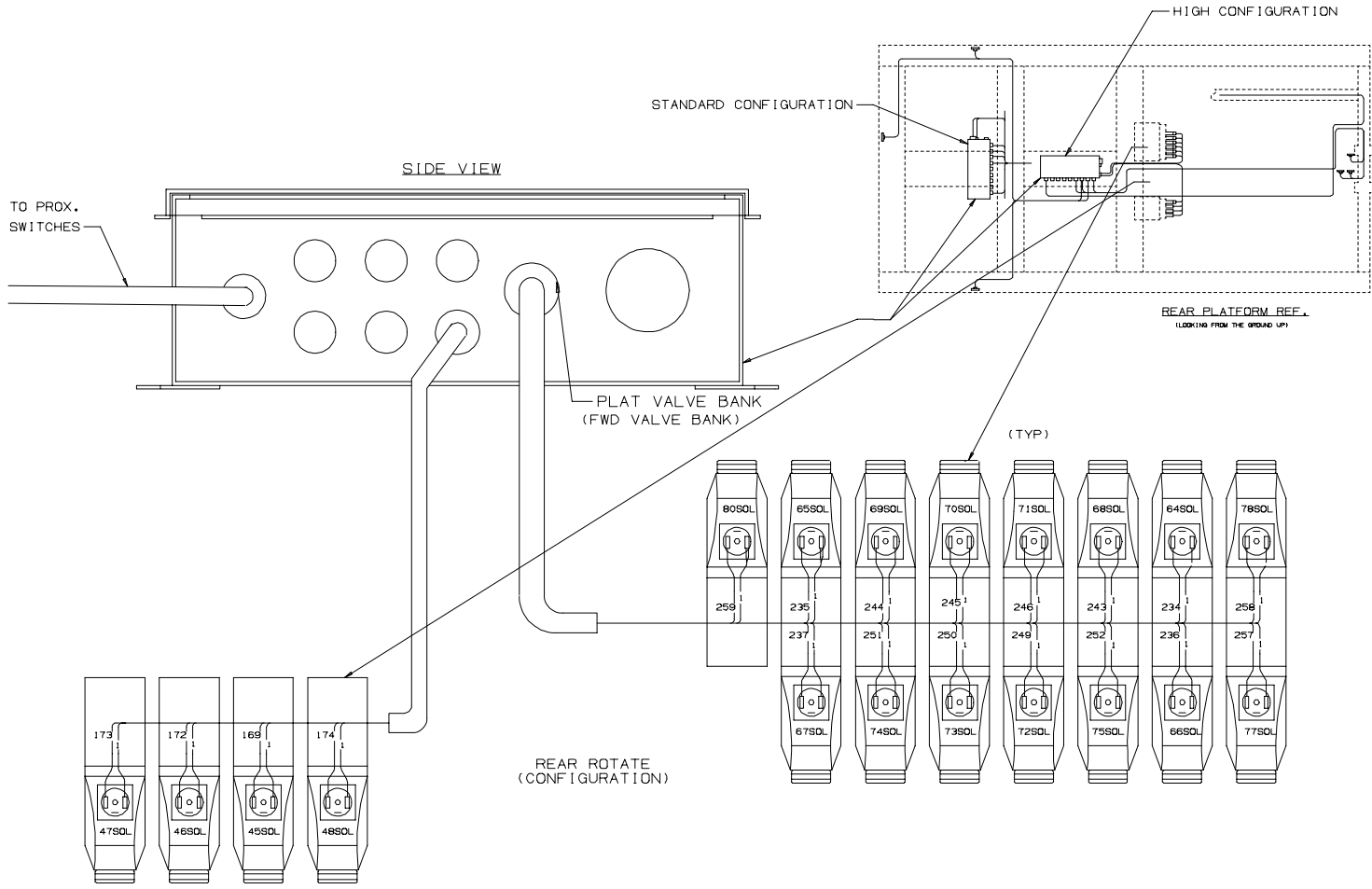
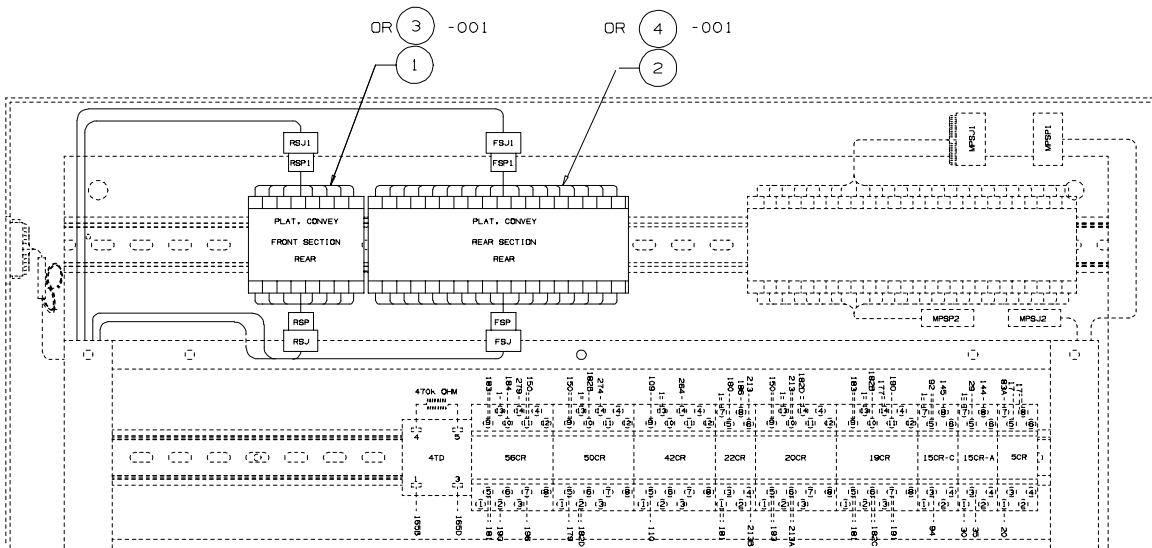
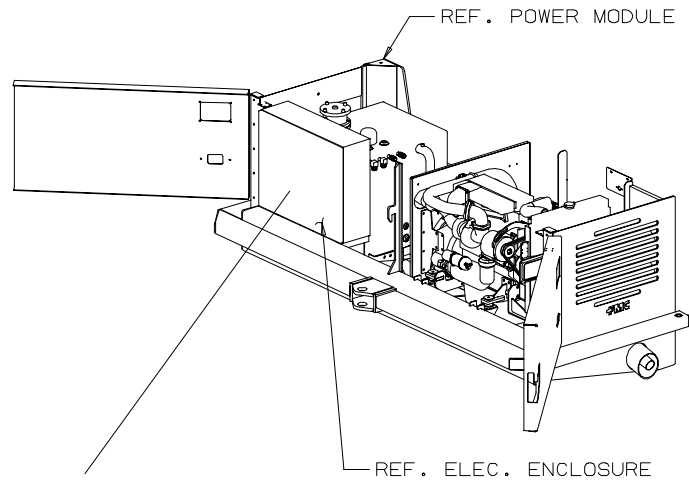


Figure 58
PLATFORM ELECTRICAL INSTALLATION
622-6439

**PLATFORM ELECTRICAL INSTALLATION
622-6439**

Figure 56 thru Figure 58

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6456		PLATFORM JUNCTION BOX ASSEMBLY		1
2	620-0656		NUT, ESNA, PTH 8 M8 x 1.25		4
3	105-0210		TY-RAP		20
4	622-6619		BRACKET MOUNT, Pltf Elec. Enclosure		1
5	622-5918-002		PROXIMITY SWITCH ASSEMBLY, 12"		7
-	623-2010		Consisting of: SWITCH, Proximity (30mm) W/15 Foot Cord (V68301 #XS1N30PA9B5C)		
6	107-1711		SCREW, Hex Hd, M6 x 1.0 x 25mm		4
7	620-0948		NUT, Lock M6 x 1.0		4
8	620-0956		WASHER, Flat M6		4
9	622-6455-003		PLATFORM J-BOX ASSY, w/Heatshrink		1
10	622-6455-006		PLATFORM J-BOX ASSY, w/Hot Stamp		1
11	622-5918-003		PROXIMITY SWITCH ASSEMBLY, 24"		2
-	623-2010		Consisting of: SWITCH, Proximity (30mm) W/15 Foot Cord (V68301 #XS1N30PA9B5C)		
12	237-2308-012		GROMMET, 1.125" I.D.		3
-	Not Shown				



622-6440
622-6440-001

STANDARD
HOT STAMP OPTION

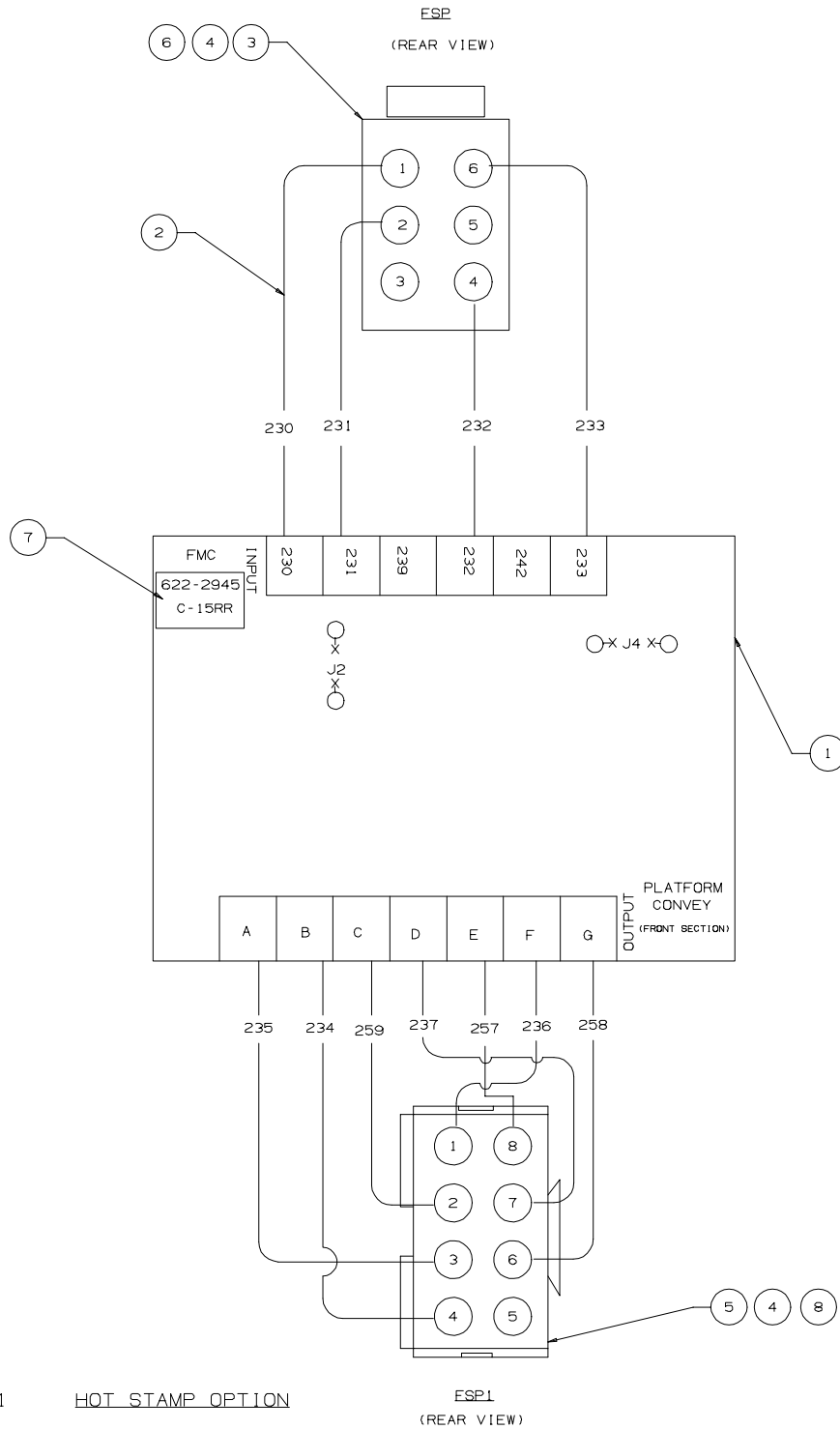
REV. A

Figure 59
PLATFORM CONVEY DIODE BOARD, REAR ROTATE
622-6440

PLATFORM CONVEY DIODE BOARD, REAR ROTATE
622-6440

Figure 59

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-2945		DIODE ASSEMBLY, Front Section (Ref. Figure 60, Page 84)		1
2	622-2946		DIODE ASSEMBLY, Rear Section (Ref. Figure 62, Page 87)		1
3	622-2945-001		DIODE ASSY, Front Sec. w/Hot Stamp (Ref. Figure 60, Page 84)		1
4	622-2946-001		DIODE ASSY, Rear Sec. w/Hot Stamp (Ref. Figure 62, Page 87)		1



622-2945-001

HOT STAMP OPTION

ESP1
(REAR VIEW)

REV. B

Figure 60
PLATFORM CONVEY DIODE, FRONT SECTION
622-2945

WIRE #	SIZE (AWG)	FROM	FROM
230	18	FSP (1)	TB-230
231	18	FSP (2)	TB-231
232	18	FSP (4)	TB-232
233	18	FSP (6)	TB-233
234	18	FSP1 (4)	TB-B
235	18	FSP1 (3)	TB-A
236	18	FSP1 (1)	TB-F
237	18	FSP1 (7)	TB-D
257	18	FSP1 (8)	TB-E
258	18	FSP1 (6)	TB-G
259	18	FSP1 (2)	TB-C

Figure 61
 PLATFORM CONVEY DIODE, FRONT SECTION
 622-2945

**PLATFORM CONVEY DIODE, FRONT SECTION
622-2945****Figure 60, Figure 61**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	622-2952		PCB ASSY, Front Section		1
2	620-3900-018		WIRE, 18 AWG Yellow GXL		6'
3	622-2967-007		RECEPTACLE, 6 Position Male		1
4	622-2967-013		PINS		11
5	622-2967-009		RECEPTACLE, 8 Position Male		1
6	622-2967-023		WEDGE, 6 Position Receptacle		1
7	622-3412-002		DECAL, Front Section		1
8	622-2967-025		WEDGE, 8 Position Receptacle		1

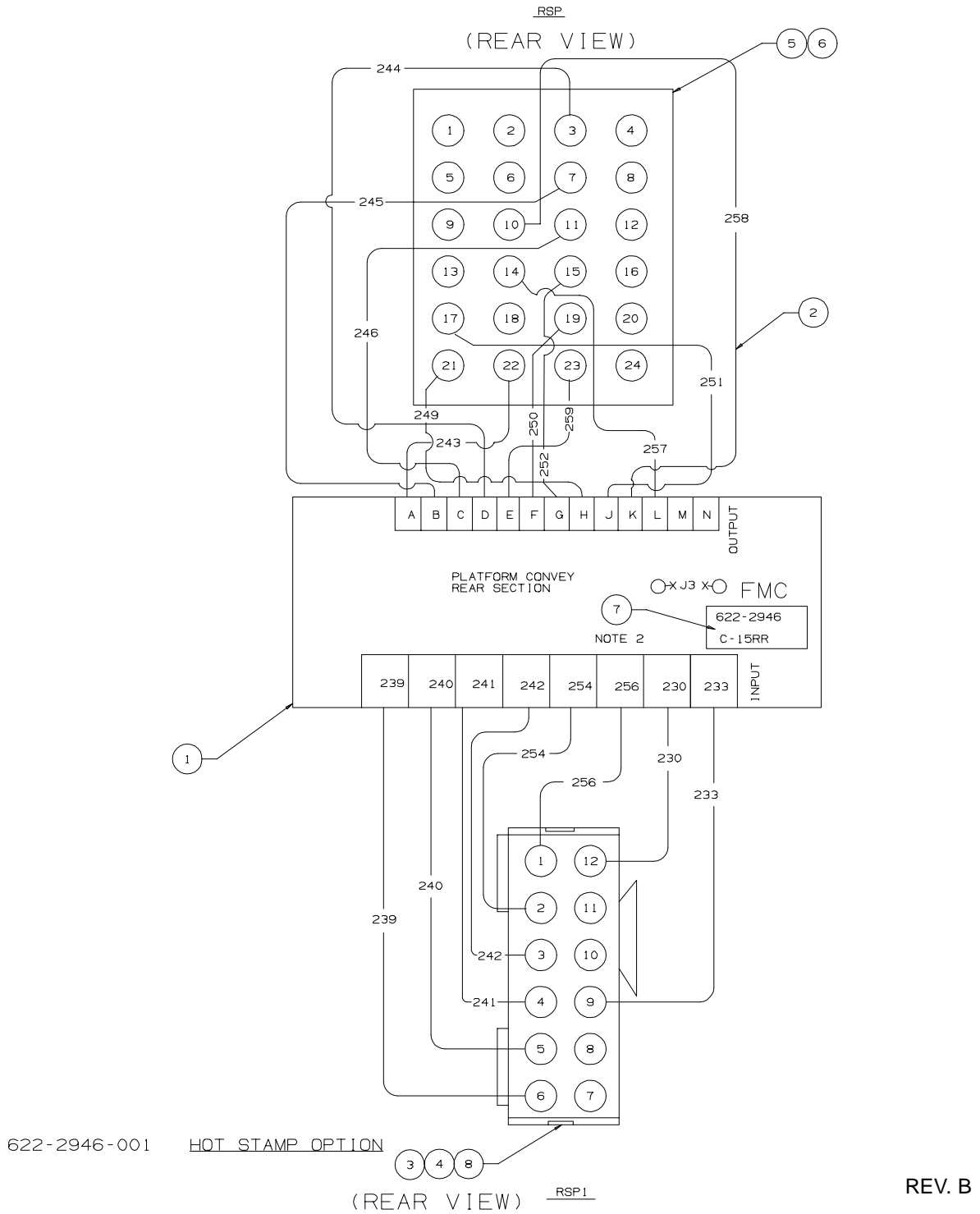


Figure 62
PLATFORM CONVEY DIODE, REAR SECTION
622-2946

REV. B

WIRE TABLE

WIRE NO.	SIZE (AWG)	FROM	TO
230	18	RSP1 - (12)	TB-230
233	18	RSP1 - (9)	TB-233
239	18	RSP1 - (6)	TB-239
240	18	RSP1 - (5)	TB-240
241	18	RSP1 - (4)	TB-241
242	18	RSP1 - (3)	TB-242
243	18	RSP - (22)	TB-A
244	18	RSP - (3)	TB-D
245	18	RSP - (7)	TB-B
246	18	RSP - (11)	TB-C
249	18	RSP - (21)	TB-H
250	18	RSP - (19)	TB-F
251	18	RSP - (17)	TB-J
252	18	RSP - (15)	TB-G
254	18	RSP1 - (2)	TB-254
256	18	RSP1 - (1)	TB-256
257	18	RSP - (14)	TB-L
258	18	RSP - (10)	TB-K
259	18	RSP - (23)	TB-E

Figure 63
PLATFORM CONVEY DIODE, REAR SECTION
622-2946

**PLATFORM CONVEY DIODE, REAR SECTION
622-2946**

Figure 62, Figure 63

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-2953		PCB ASSEMBLY, Rear Section		1
2	620-3900-018		WIRE, 18 AWG Yellow GXL		12'
3	622-2967-011		RECEPTACLE, 12 Position Male		1
4	622-2967-013		PINS, 18 AWG		8
5	620-1843-001		CAP HOUSING, 24 Position Male		1
6	622-1266-001		CONTACT PIN		11
7	622-3412-004		DECAL, Rear Section		1
8	622-2967-027		WEDGE, 12 Position Receptacle		1

CHAPTER 5. OPTIONAL EQUIPMENT

NOTE: Not all option sections are included in this manual: only those installed on your machine.

TABLE CONTENTS

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Section</u>
1.	BUMPER, CORNER	620-3057	4
2.	MAINTENANCE STAND, FRONT, LOWER LOBE	622-1020	16
3.	FILTER/DRYER INSTALLATION	622-5463	36
4.	STATUS PANEL ELECTRICAL	622-5911	39
5.	GALLEY MODULE ELECTRICAL	622-6831	46
6.	HIGH PRESSURE FILTER, NON-BYPASS	622-6889	47
7.	BRIDGE TILT INSTALLATION	622-7370	52
8.	LIGHTS, PLATFORM WORK	622-7391	53
9.	LIGHTS, POSITIONING	622-7436	55
10.	BRIDGE FORWARD ROLLERS, LAGGED	622-6946-001	175
11.	FUEL FILLER, CAP & NECK (SCREW-ON)	623-0941	182
12.	HANDRAIL, LEFT OR RIGHT	623-2995	198

Section 4. Bumper, Corner

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	BUMPER, CORNER	620-3057	2

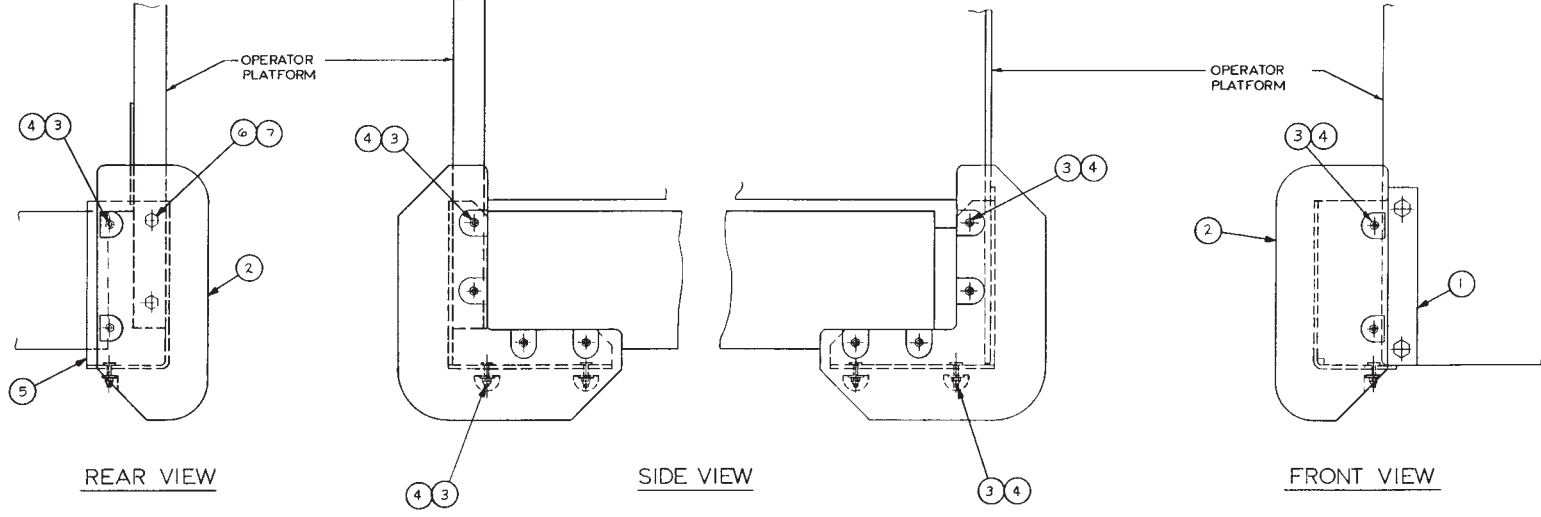


Figure 1
Bumper, Corner
620-3057

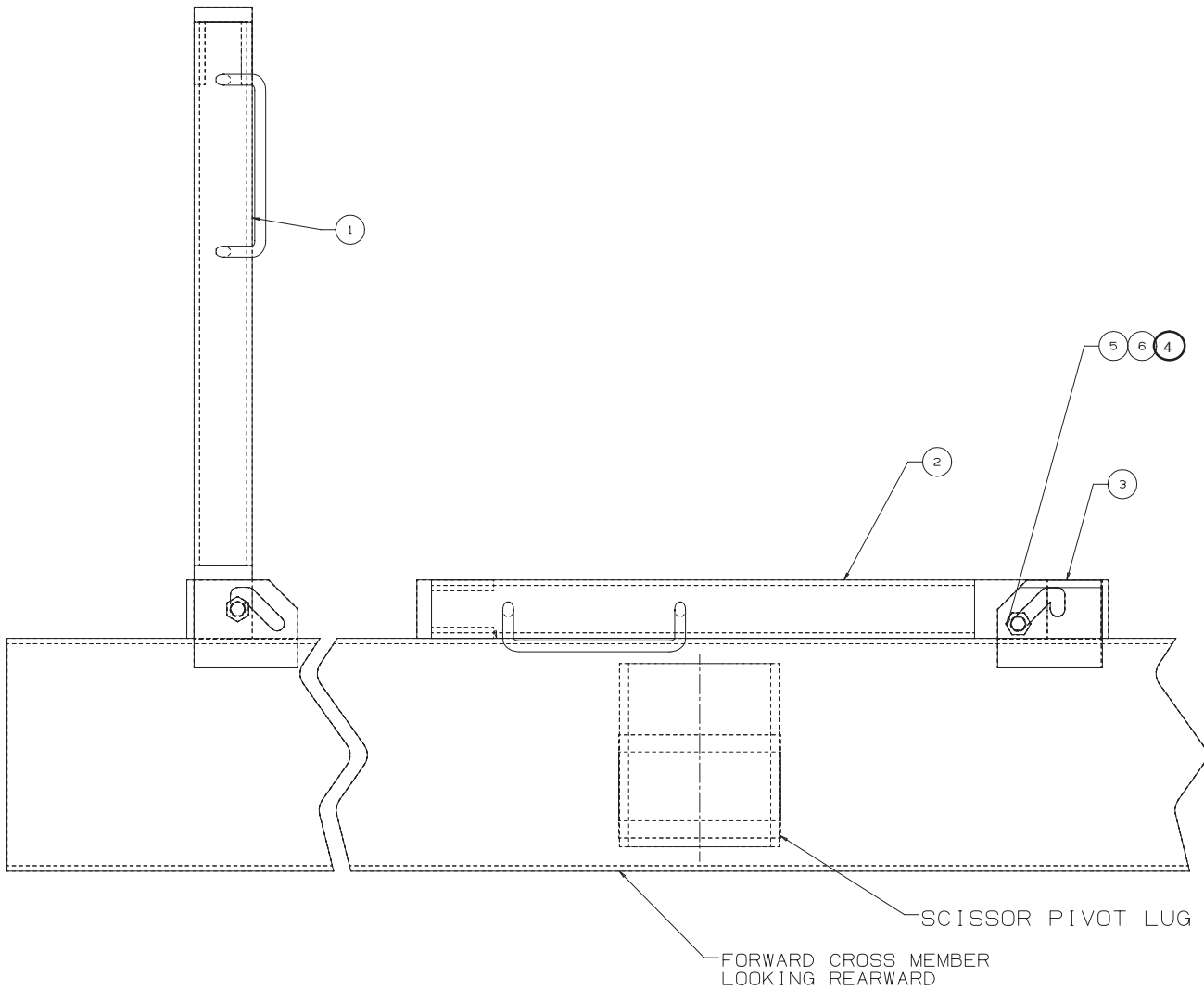
**BUMPER, CORNER
620-3057**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3022		BRACKET, Bumper		1
2	238-1612		BUMPER, w/Mtg. Holes		2
3	620-0803		WASHER, Flat Hard M5 Narrow		16
4	620-0947		NUT, PTH 8 M5 x 0.8		16
5	620-3023		BRACKET, Bumper		1
6	620-0629		SCREW, Hex Hd 8.8 M8 x 1.25 x 60mm		2
7	620-0656		NUT, PTH 8 M 8 x 1.25		2

Section 16. Maintenance Stand, Front, Lower Lobe

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	MAINTENANCE STAND, FRONT, LOWER LOBE	622-1020	2



REV. F

Figure 1
MAINTENANCE STAND, FRONT
622-1020

**MAINTENANCE STAND, FRONT
622-1020**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-1021		MAINT. STAND WELD, RH.		1
2	622-1027		MAINT. STAND WELD, LH.		1
3	622-2839		MAINT. STANDS WELD, Mod		1
4	620-0663		WASHER, Flat Hard M12 Narrow		4
5	107-1722		SCREW, Hex Hd, M12 x 1.75 x 140mm		2
6	620-0658		NUT, PTH 8 M12 x 1.75		2

Section 36. Filter/Dryer Installation

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	FILTER/DRYER INSTALLATION	622-5463	2

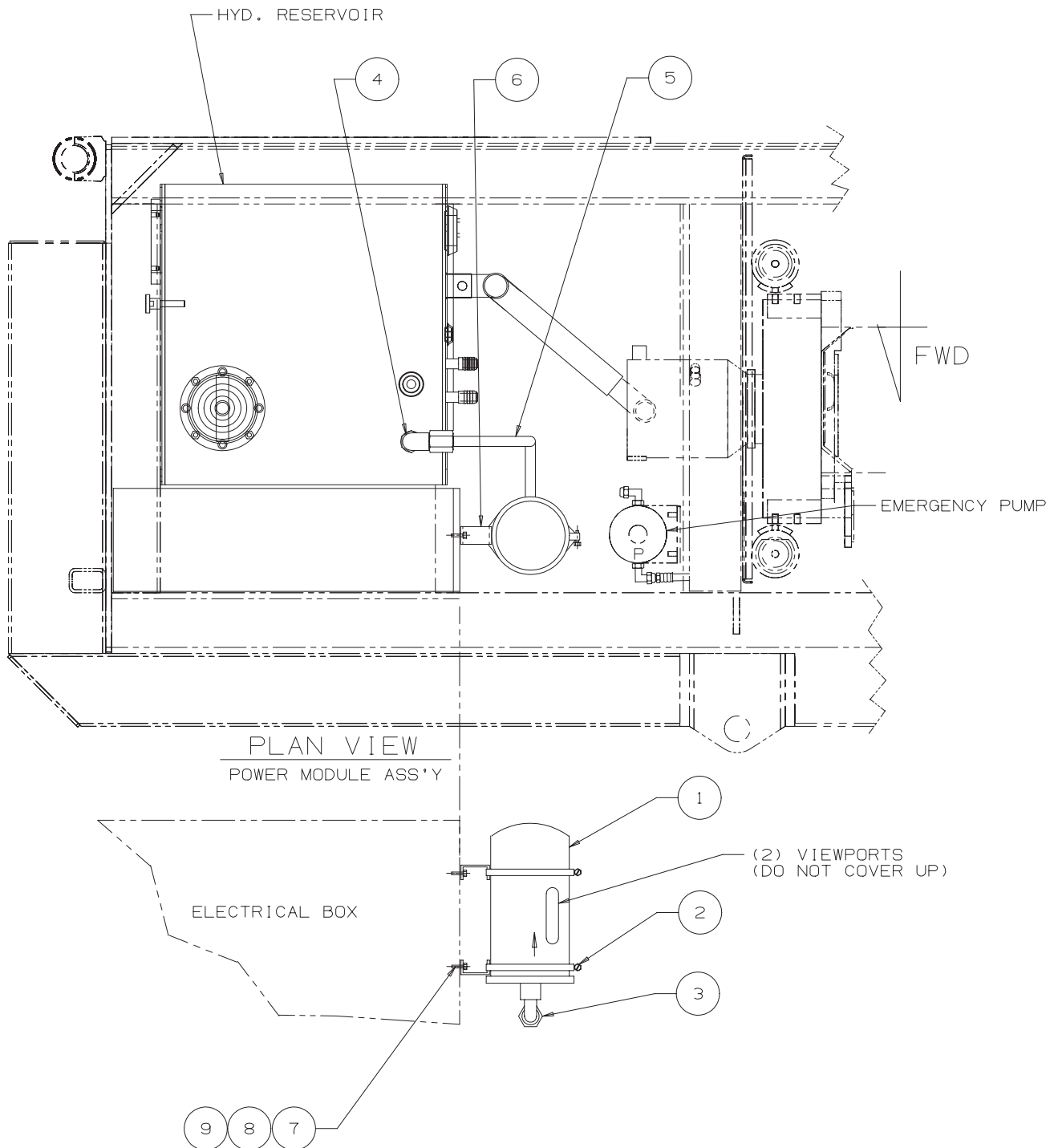


Figure 1
 FILTER/DRYER INSTALLATION
 622-5463

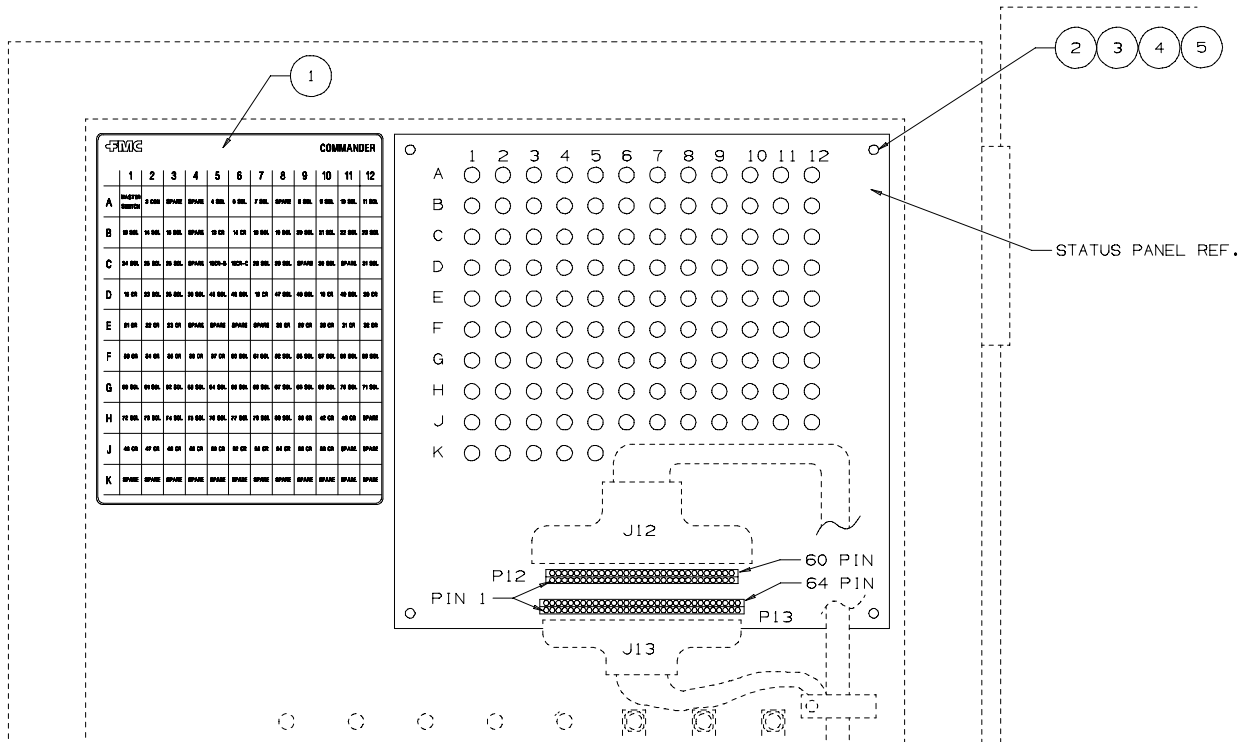
**FILTER/DRYER INSTALLATION
622-5463**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	519-2708		RESERVOIR FILTER/DRIER		1
2	105-0113		CLAMP, Hose 8-5/8 Max		2
3	620-0897		ELBOW, 90° -16 MO-Ring x -12 MJIC		1
4	102-0177		ELBOW, 90° -12 SAEM x -12 NPTFM		1
5	622-5506		TUBE ASSEMBLY, -12		1
6	622-5509		BRACKET, Filter Support		2
7	107-0350		SCREW, Hex Hd, 8.8 M6 x 1.00 x 20mm		2
8	620-0948		NUT, ESNA M6 x 1.00		2
9	620-0956		WASHER, Flat Hard M6 Narrow		4

Section 39. Status Panel Electrical

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	STATUS PANEL ELECTRICAL	622-5911	2



VIEW OF DOOR (OPEN)

BRIDGE PANEL ASSEMBLY

REV. C

Figure 1
STATUS PANEL ELECTRICAL
622-5911

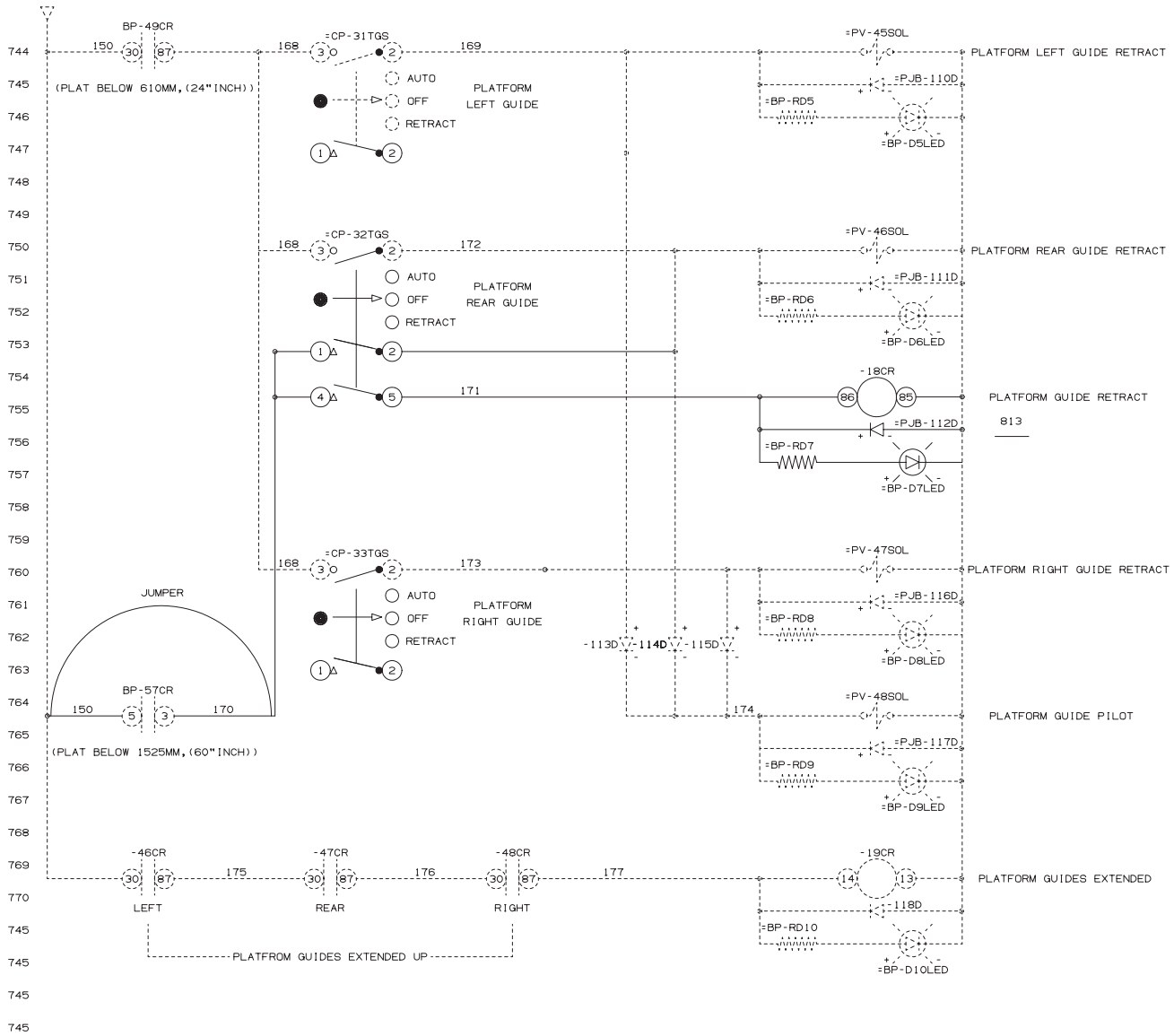
**STATUS PANEL ELECTRICAL
622-5911**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-5654		DECAL, Status Panel		1
2	622-1759		STATUS PANEL		1
3	620-3053-002		STAND-OFF, Hex 6 x 32 x .50"		4
4	107-0759		SCREW, Pan Hd, 6 x 32 x 1/4"		8
5	620-0806		WASHER, Flat Hard M4 Narrow		16

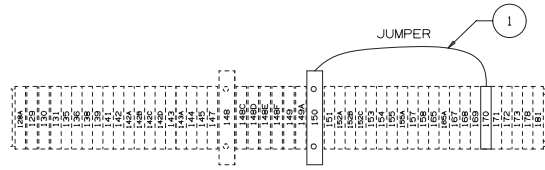
Section 46. Galley Module Electrical

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	GALLEY MODULE ELECTRICAL	622-6831	2

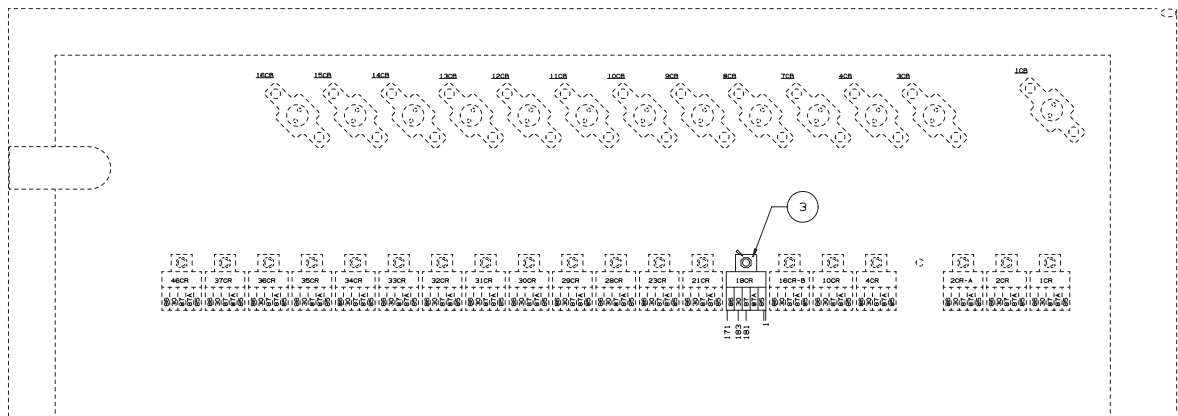


REV. C

Figure 1
GALLEY MODULE ELECTRICAL
622-6831

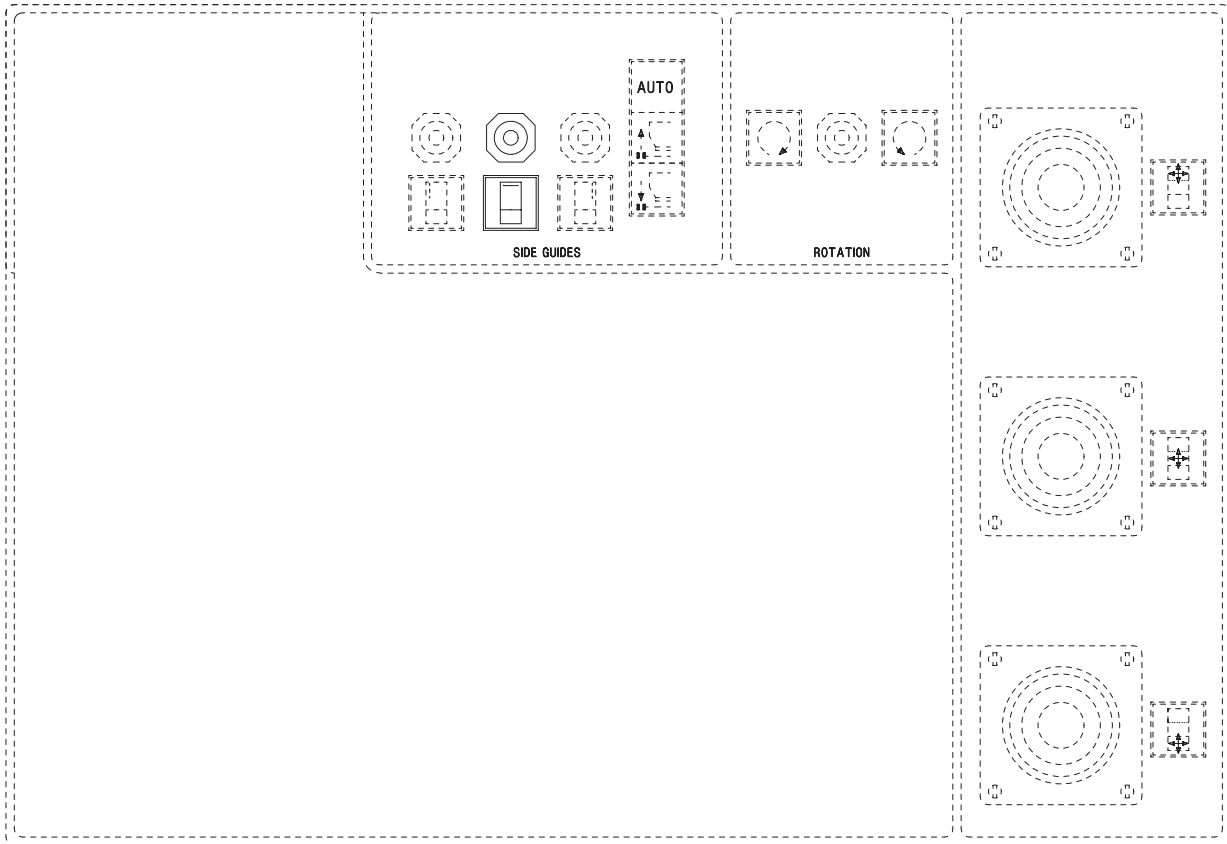


INSIDE OF BRIDGE ELECTRICAL PANEL



MAIN PANEL

Figure 2
GALLEY MODULE ELECTRICAL
622-6831



FRONT VIEW OF CONTROL PANEL

Figure 3
GALLEY MODULE ELECTRICAL
622-6831

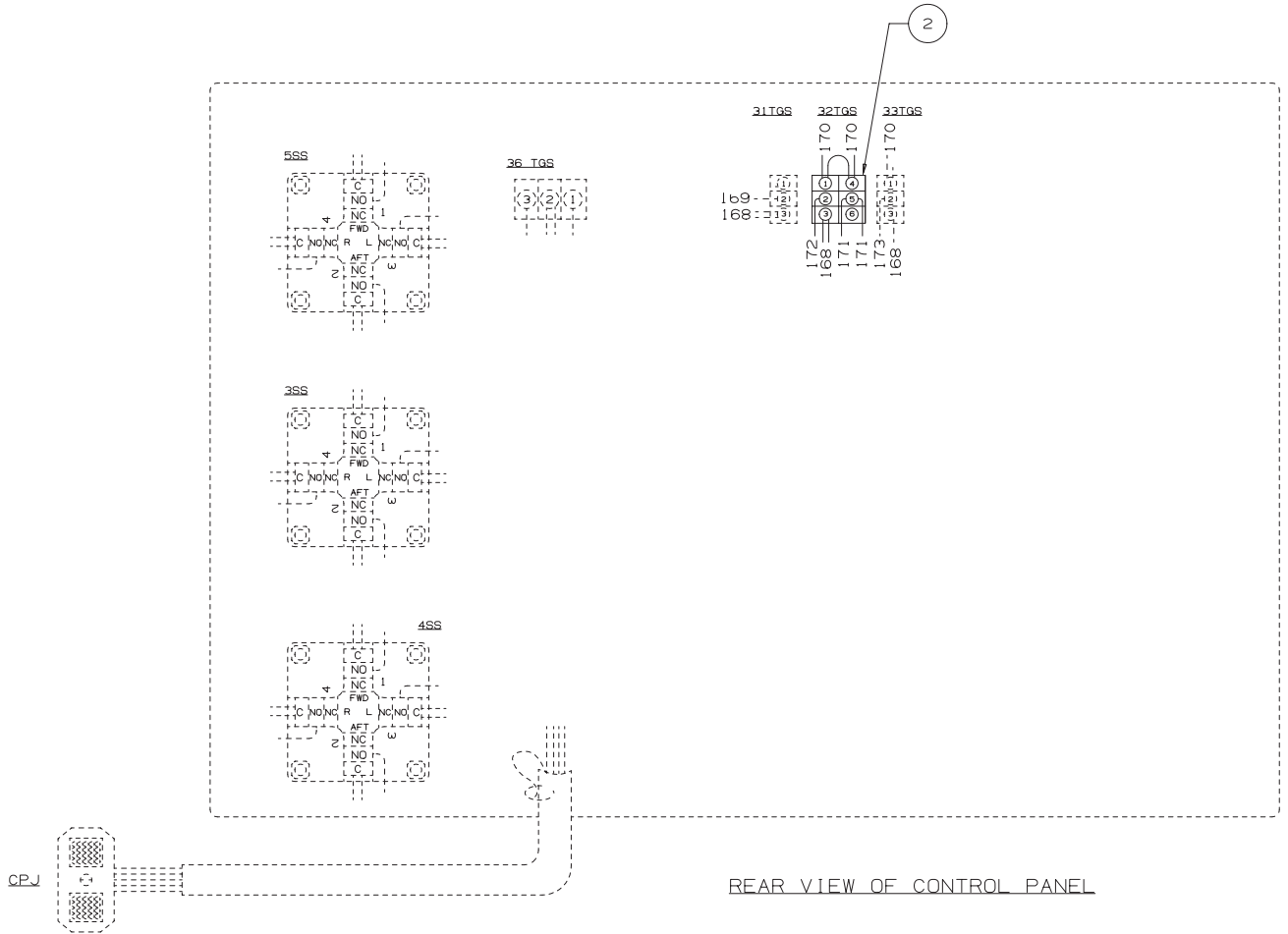


Figure 4
 GALLEY MODULE ELECTRICAL
 622-6831

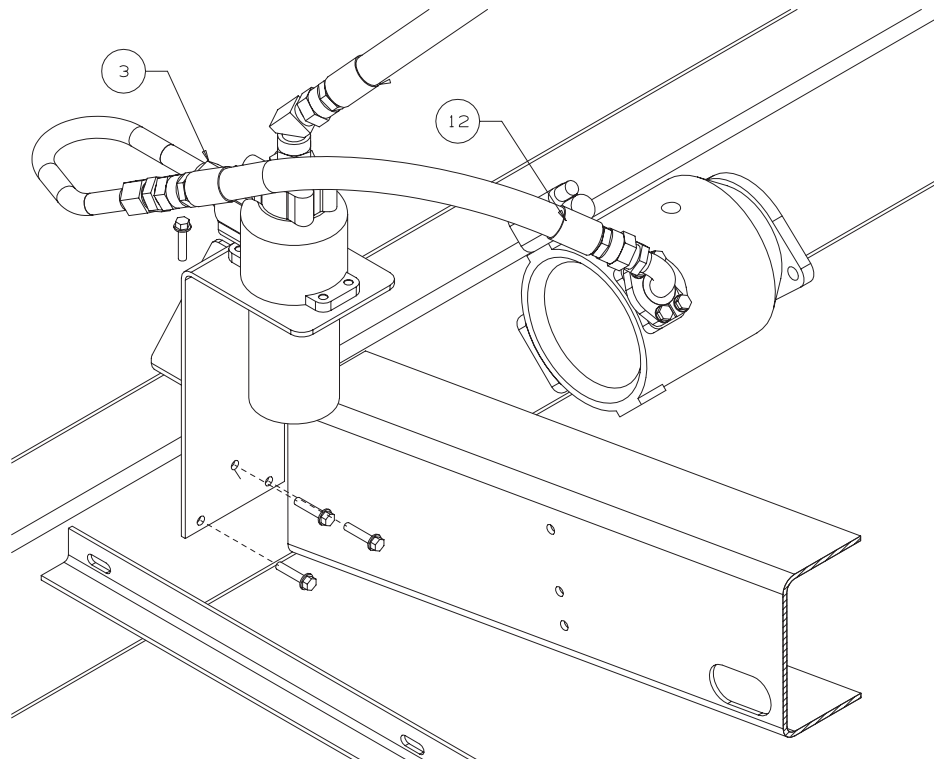
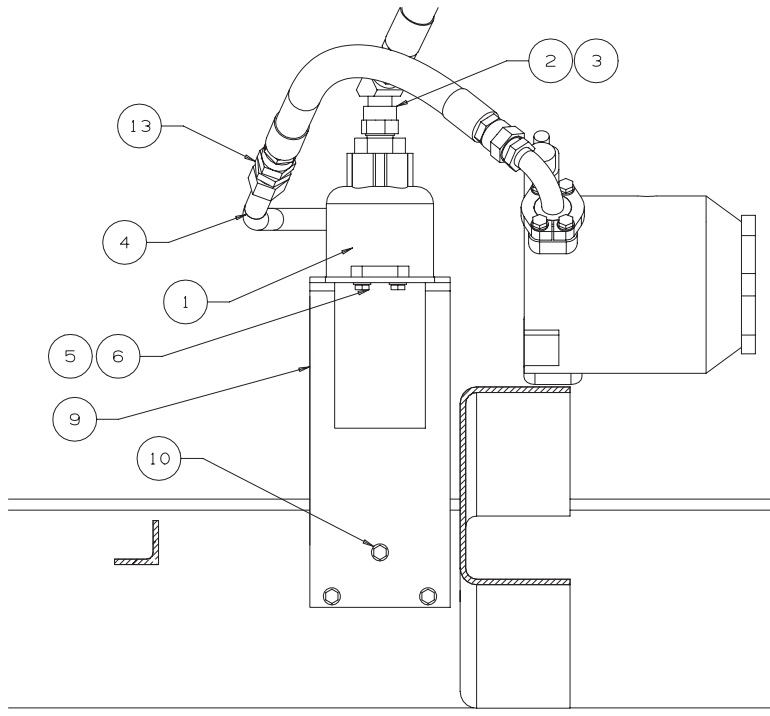
**GALLEY MODULE ELECTRICAL
622-6831**

Figure 1 thru Figure 4

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3900-018		WIRE, 18 AWG YEL GXL		.5'
2	238-6051		SWITCH, DPDT Toggle (V91929 #2NT1-5)		1
3	622-6214-004		RELAY, 24V Cube w/Diode		1

Section 47. High Pressure Filter, Non-Bypass

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	HIGH PRESSURE FILTER, NON-BYPASS	622-6889	2



REV. A

SOME DETAILS REMOVED FOR CLARITY

Figure 1
HIGH PRESSURE FILTER, NON-BYPASS
622-6889

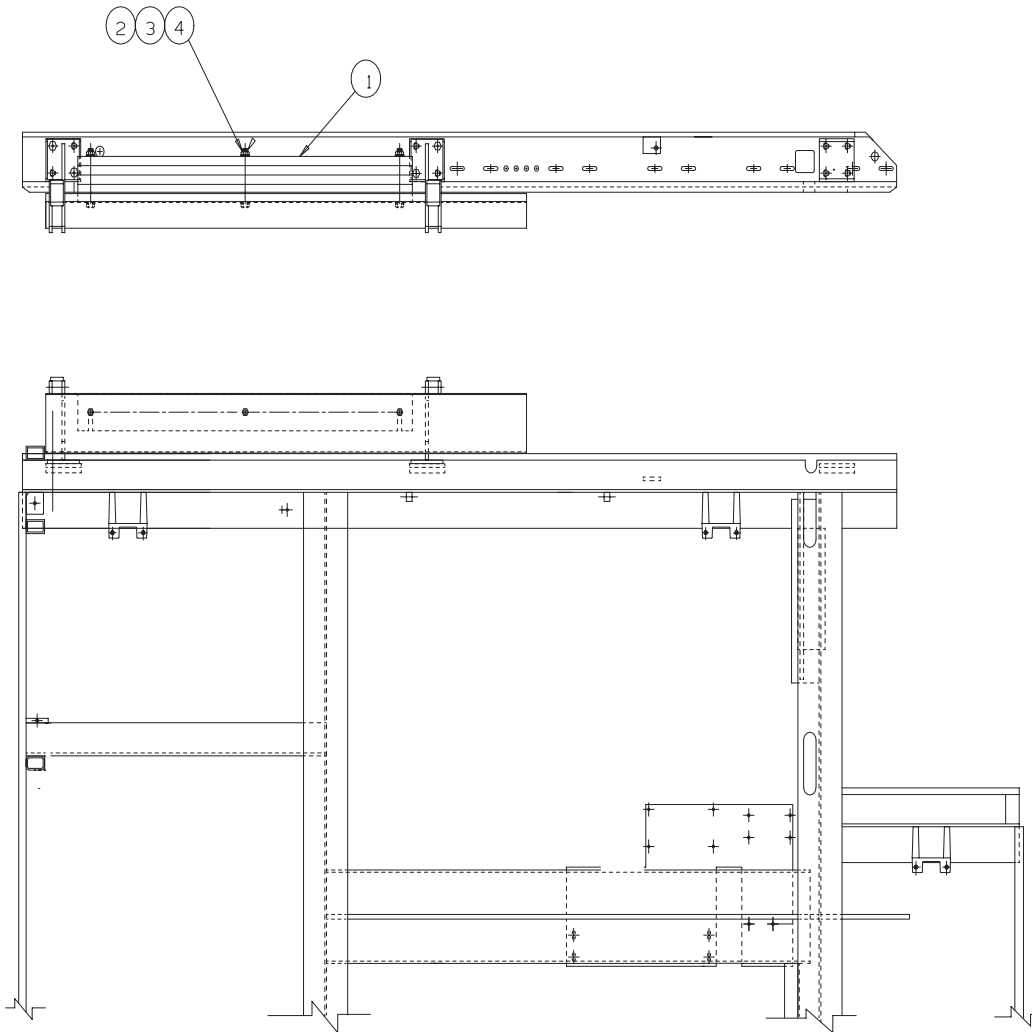
**HIGH PRESSURE FILTER, NON-BYPASS
622-6889**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-2736		FILTER, High Pressure		1
2	102-0832		ELBOW, 45° Sw, -16 JIC (V79470 #C5356X15)		1
3	519-4575-001		CONN., Str. -24 MO-Ring x -16 MJIC		2
4	623-0438		TUBE ASSY, -16		1
5	110-0050		SCREW, Hex Hd, 7/16 x 1 1/4"		4
6	110-0244		WASHER, Lock 7//16		4
8	620-2736-001		ELEMENT, Filter		1
9	622-6579		BRACKET, Mounting		1
10	107-1055		SCREW, Self Tapp., 3/8 x 16 x 1 3/4"		4
12	620-1848-024		HOSE ASSY, -16 x 24" Lg		1
13	620-0832		FTG, -16 Union		1

Section 52. Bridge Tilt Installation

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	BRIDGE TILT INSTALLATION	622-7370	2
2.	HYDRAULIC INSTALLATION, BRIDGE TILT	622-2400	5
3.	BRIDGE MANIFOLD ASSEMBLY	620-3255	10
4.	ELECTRICAL INSTALLATION, BRIDGE TILT	622-7182	12



COUNTERWEIGHT INSTALLATION

STANDARD LOADER

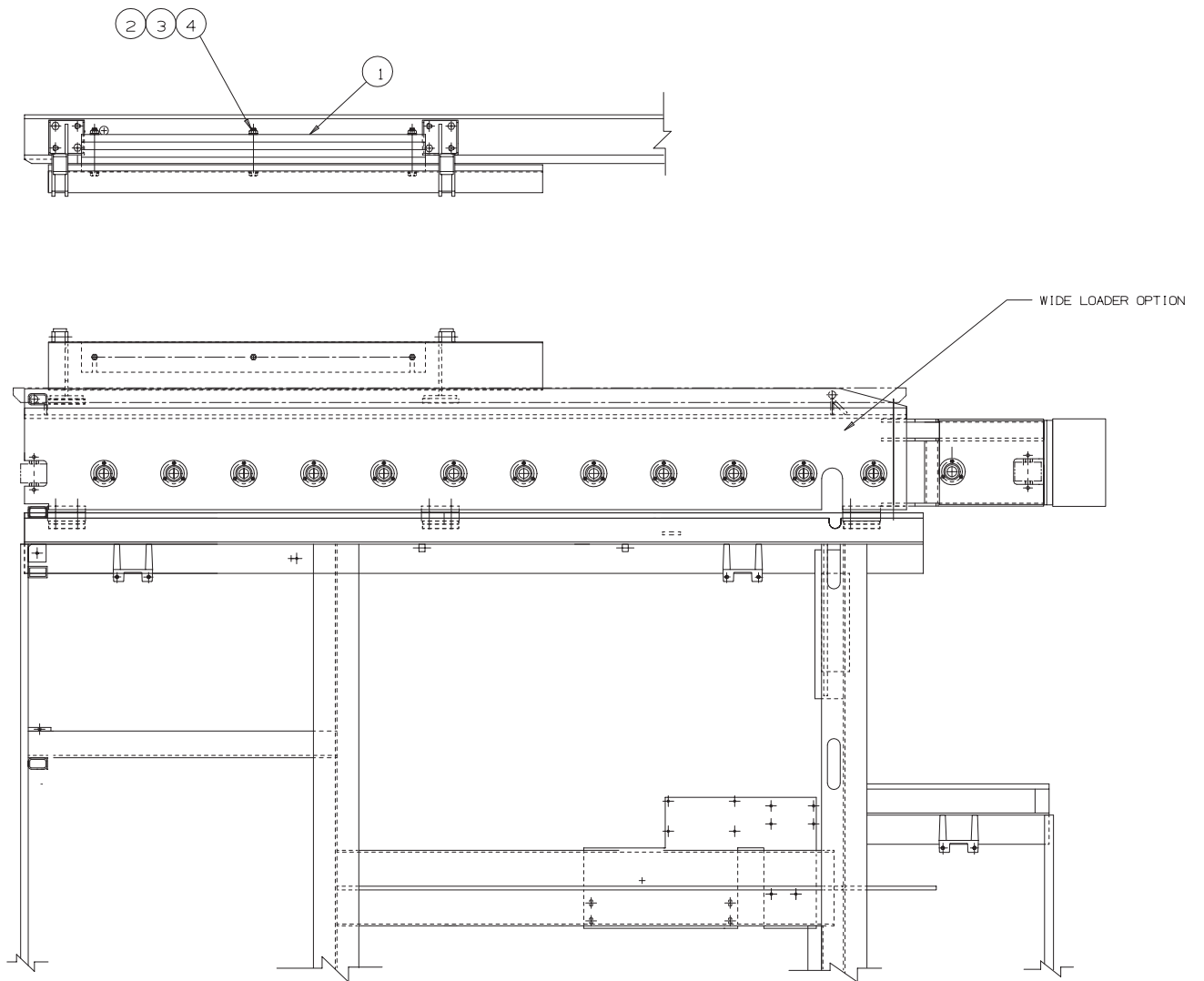
NOTE :

622-7370 BRIDGE TILT FOR UNITS BEFORE 1996

622-7370-001 BRIDGE TILT FOR 1996 UNITS

REV. A

Figure 1
BRIDGE TILT INSTALLATION
622-7370

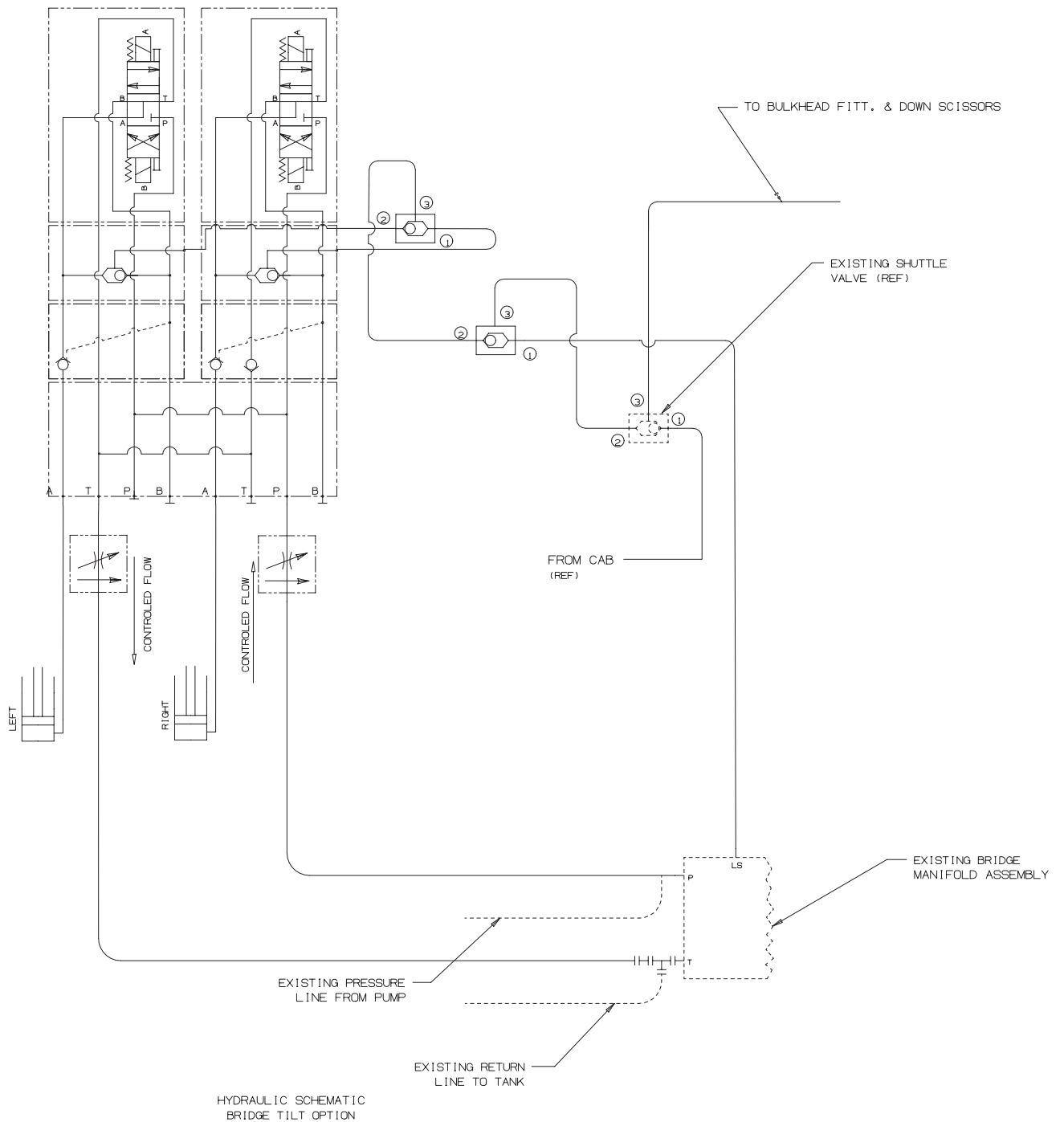


COUNTERWEIGHT INSTALLATION
UNIVERSAL & WIDE LOADER

Figure 2
BRIDGE TILT INSTALLATION
622-7370

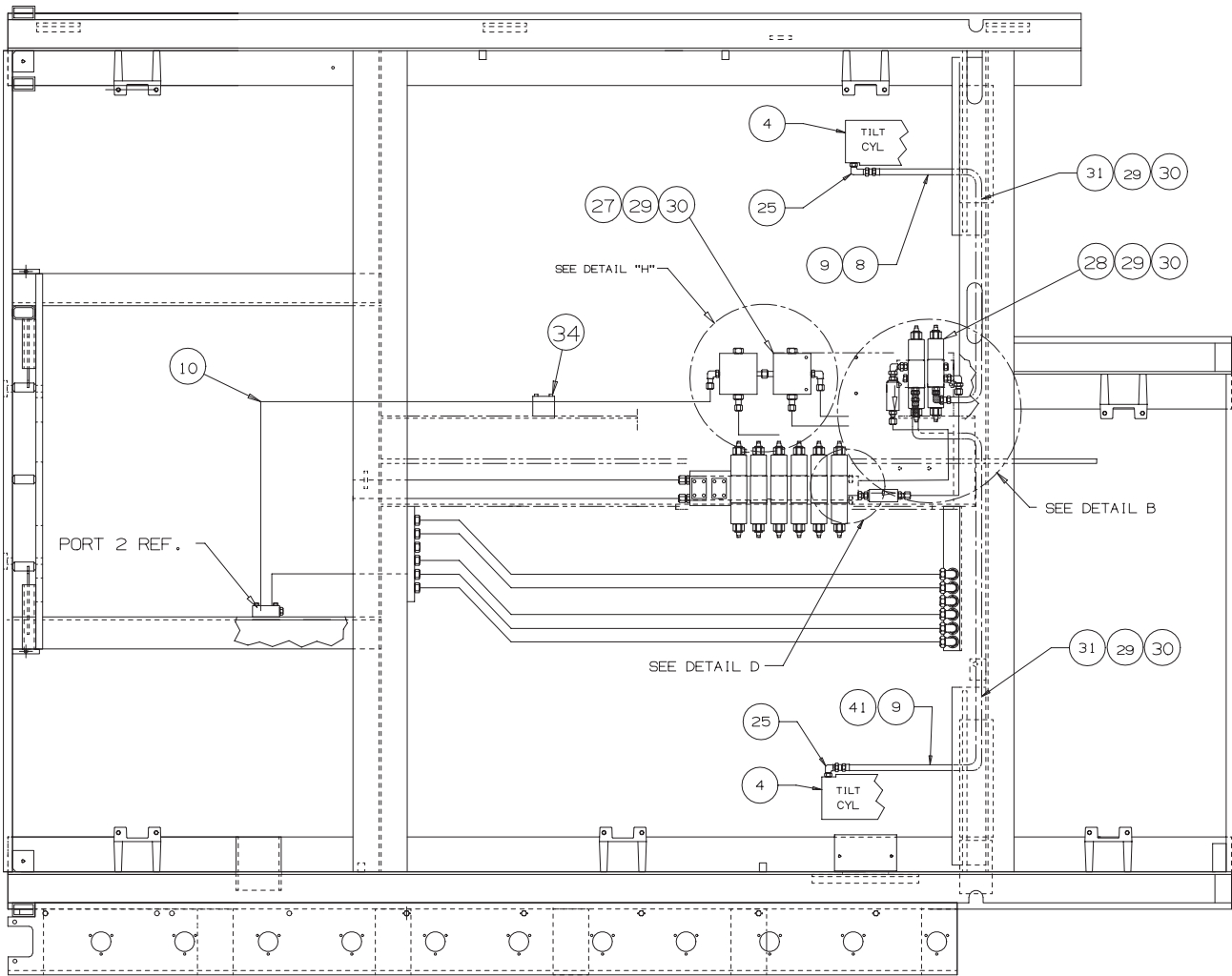
**BRIDGE TILT INSTALLATION
622-7370****Figure 1, Figure 2**

ITEM NO.	PART NO.	AIRLINE PART NO.	NOMENCLATURE	EFF.	UNITS PER ASSY.
1	620-3916		COUNTERWEIGHT		4
2	107-1707		SCREW Hex Hd 8.8 M12 x 1.75 x 130mm		3
3	620-0658		NUT, PTH 8 M12 x 1.75		3
4	620-0663		WASHER, Flat Hard M12 Narrow		6
6	622-7182		ELEC INSTL, Bridge Tilt (Ref. Figure 7, Page 12)		1
7	622-2400		HYDRAULIC INSTL, Bridge Tilt (Ref. Figure 3, Page 5)		1
8	622-7182-001		ELEC INSTL, Bridge Tilt (-001 Only) (Ref. Figure 7, Page 12)		1



REV. E

Figure 3
HYDRAULIC INSTALLTION, BRIDGE TILT
622-2400



TOP VIEW OF FORWARD PLATFORM

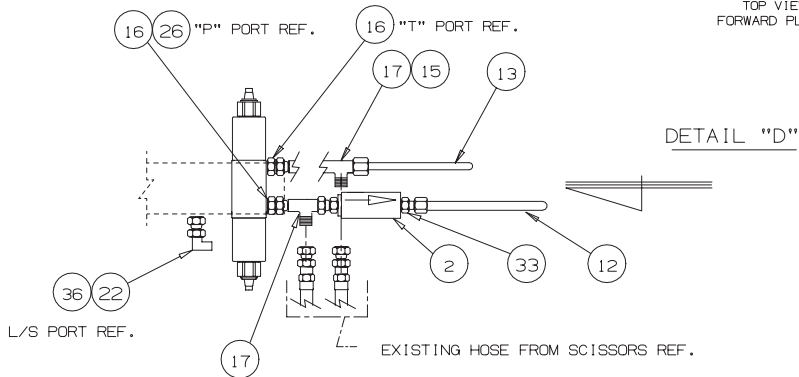


Figure 4
HYDRAULIC INSTALLTION, BRIDGE TILT
622-2400

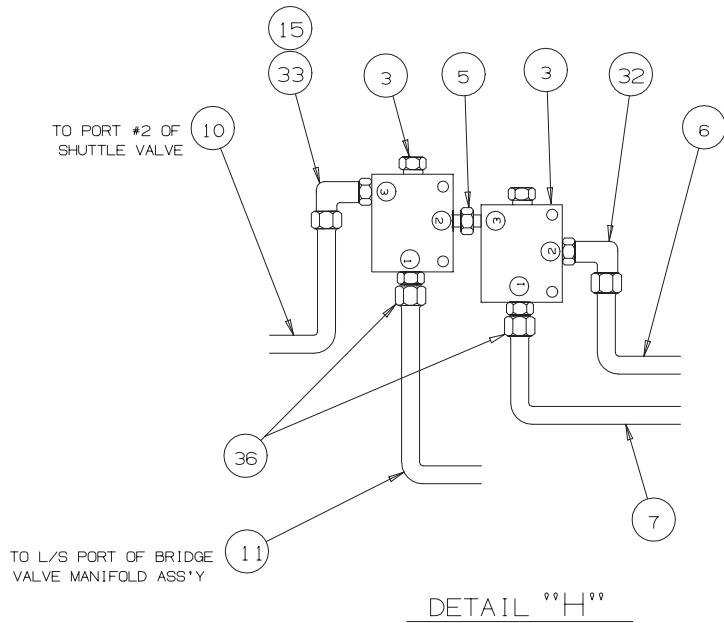
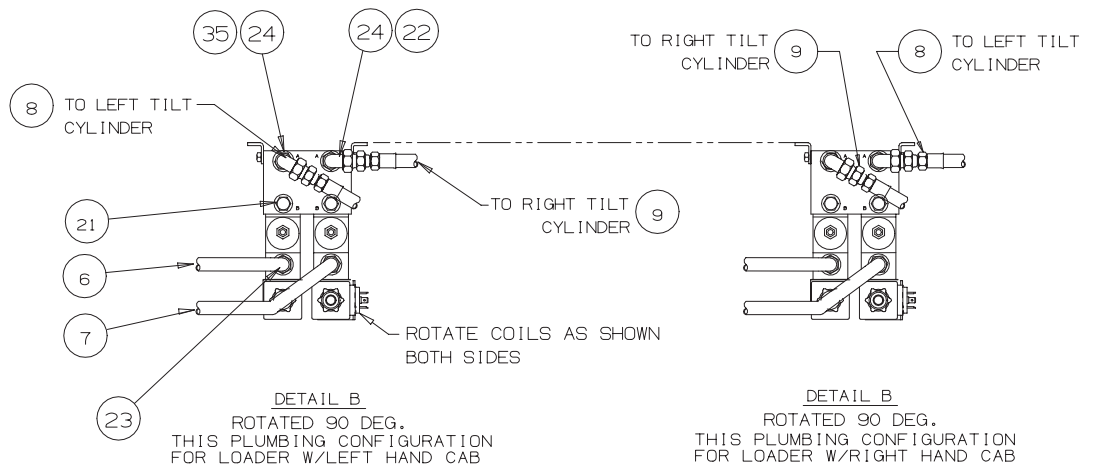
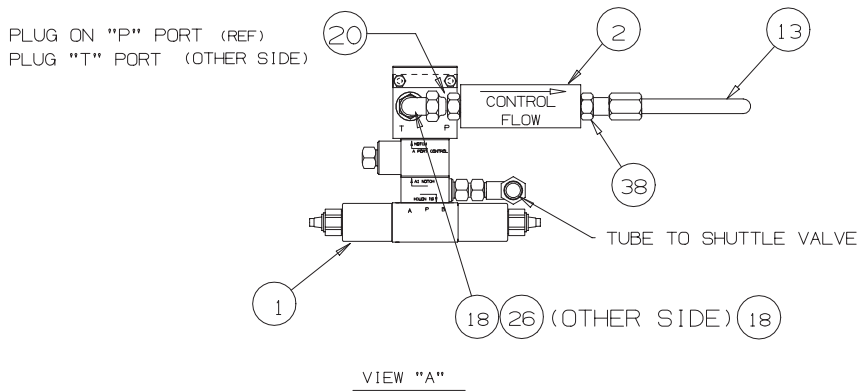


Figure 5
HYDRAULIC INSTALLTION, BRIDGE TILT
622-2400

**HYDRAULIC INSTALLATION, BRIDGE TILT
622-2400**

Figure 3 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3255		BRIDGE TILT MANIFOLD ASSY (Ref. Figure 6, Page 10)		1
2	620-3481		VALVE, Flow Control		2
3	620-0128		VALVE, Shuttle (V54035 #CSABXXN ECI)		2
-	620-1326-001		Consisting of: CARTRIDGE, Sun #CSAB XXN		1
-	620-0128-002		BODY, Sun #EC		1
4	620-8030		CYLINDER, Hydraulic, Bridge Tilt Consisting of:	UP TO CR96011	2
-	620-3234-090		SEAL KIT		2
-	620-8030-001		REPLACEMENT BLEEDER SCREW		1
4	621-5642		CYLINDER, Hydraulic Bridge Tilt (V08481 #A30002040TDAZ)	FROM CR96012	2
-	621-5642-090		Consisting of: SEAL KIT (V08481 #13487)		
5	620-1540		UNION, -6 SAEM x -6 MO-Ring		1
6	622-2393		TUBE ASSEMBLY, 3/8 O.D.		1
7	622-2391		TUBE ASSEMBLY, 3/8 O.D.		1
8	620-2013-042		HOSE ASSY, -4 x 42" Lg		1
9	620-2013-052		HOSE ASSY, -4 x 52" Lg		1
10	622-2394		TUBE ASSEMBLY, 1/2 O.D.		1
11	622-2392		TUBE ASSEMBLY, 3/8 O.D.		1
12	622-5461		TUBE ASSEMBLY, 1/2 O.D.		1
13	622-5451		TUBE ASSEMBLY, 1/2 O.D.		1
15	102-0187		ELBOW, 90° Sw, -8 FJIC x -8 MJIC (V01276 #2071T-8-8)		2
16	118-2680-011		CONN., -8 SAEM x -10 MO-Ring		2
17	102-0324		TEE, Run -8 SAEM (V79470 #C5706X8)		2
18	102-0027		ELBOW, 90°, -10 MO-Ring x -8 MJIC		2
20	620-0887		PLUG, -10 Male O-Ring Boss (V01276 #900598-10S)		2
21	102-1187		PLUG, -8 Male O-Ring Boss		1
22	102-0902		ELBOW, 90° Sw, -4 FJIC x -4 MJIC		1
23	620-0860		CONN., -6 JIC x -4 MO-Ring		2
24	519-5912		CONN., -4 JIC x -8 MO-Ring		2
25	102-1461		ELBOW, 90°, -6 MO-Ring x -4 MJIC		2

**HYDRAULIC INSTALLATION, BRIDGE TILT
622-2400**

Figure 3 thru Figure 5

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
26	620-0940		CONN., Sw, -8 FJIC x -6 MO-Ring (V01276 #2266-6-8S)		2
27	620-0628		SCREW, Hex Hd, 8.8 M8 x 1.25 x 50mm		2
28	620-0626		SCREW, Hex Hd, 8.8 M8 x 1.25 x 30mm		4
29	620-0656		NUT, PTH, 8 M8 x 1.25		8
30	620-0661		WASHER, Flat Hard M8 Narrow		12
31	104-1157		CLAMP, -4 Hose		2
32	102-0190		ELBOW, 90°, -6 MJIC x -6 MO-Ring		2
33	102-1466		CONN., -8 MJIC x -6 MO-Ring		2
34	620-4443		TUBE CLAMP, Single 1/2		1
35	620-0923		ELBOW, 45° Sw, -4 JIC		1
36	620-0859		CONN., Str, -6 MO-Ring x -6 MJIC		3
37	622-2400-001		TUBE KIT		1
38	102-0194		ELBOW, 90°, -6 MO-Ring x -8 MJIC		1
39	622-2400-002		HOSE KIT		1
40	622-2400-004		HOSE KIT, Standard Bridge		1
41	620-2013-062		HOSE ASSY, -4 x 62" Lg		1
-	Not Shown				

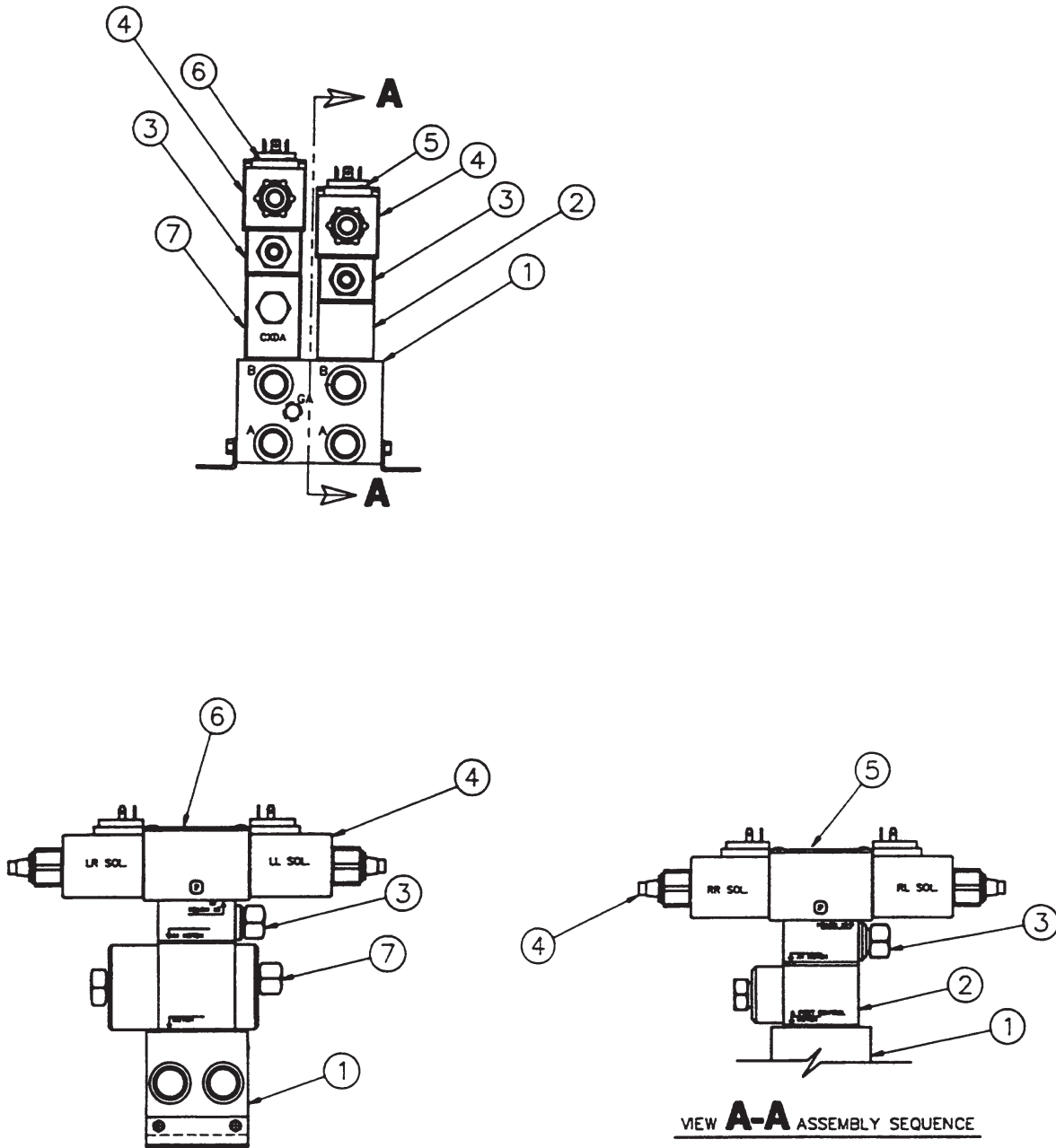
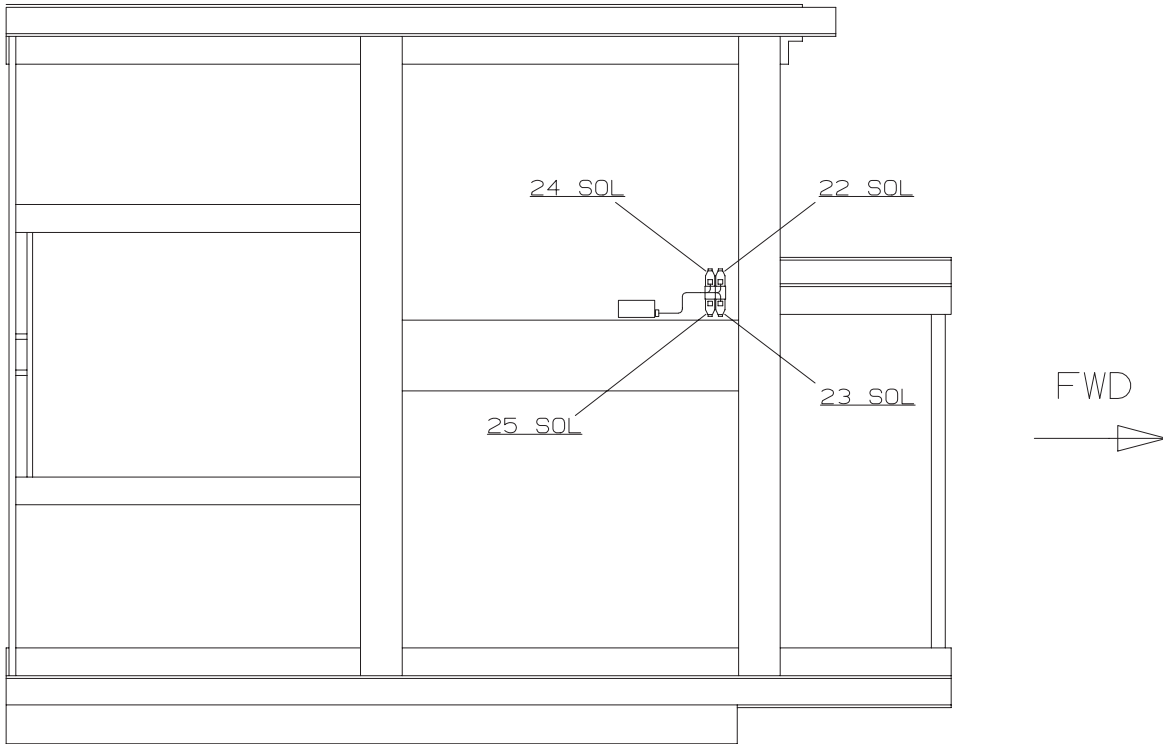


Figure 6
BRIDGE TILT MANIFOLD ASSEMBLY
620-3255

**BRIDGE TILT MANIFOLD ASSEMBLY
620-3255**

Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-3838		MANIFOLD (V49082 #AD01P-P-02-2S-12)		1
2	620-0131		MODULE, P. O. Check (V54035 #CKCA-XAN-EBA) Consisting of:		1
-	620-1527-001		CARTRIDGE, Sun #CKCA XAN		1
-	620-0131-002		BODY, Sun #EBA (W/Buna & Seals)		1
3	620-3248		MODULE, Load Sensing (V54035 #CSAAEXNGBS) Consisting of:		2
-	620-3248-001		CARTRIDGE, Sun #CSAAEXN		1
-	620-3248-002		BODY, Sun #GBS		1
4	620-6451		VALVE, Directional 3 Position DO3 (V09990 #DIVW4CJW70X4532) Consisting of:		4
-	620-6451-091		COIL REPLACEMENT (V09990 #MB697231)		
-	620-6451-090		SEAL KIT (V09990 #1300166)		
-	620-6451-092		BOOT REPLACEMENT (V09990 #MC69716)		
5	107-1169		SCREW, Soc Hd Cap, #10-24 x 4.25		4
6	519-4538		BOLT KIT, D03 (D01) Valve (V54035 #992-011)		1
7	620-6157		MODULE, Dual Check Valve (V54035 #8904-24U-C04) Consisting of:		1
-	620-6157-001		CARTRIDGE, Check Sun #CXCD XAN1		
-	620-1527-001		CARTRIDGE, P.O. Check Sun #CKCA XAN		1
-	620-6157-002		BODY, W/Buna & Seals Sun		1
-	Not Shown				



BRIDGE
(BOTTOM VIEW)

- 622-7182-001 HEAT SHRINK OPTION
- 622-7182-002 HOT STAMP OPTION

REV. A

Figure 7
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182

ON BRIDGE JUNCTION BOX , DO THE FOLLOWING ,
FIND THE SPARE WIRES AND RELABEL THEM AS SHOWN:

COND NO	SPARE WIRE	LABEL AS	SIZE AWG	FROM	TO
24	SPARE N	142A	18	TB-142A	J4(28)
25	SPARE M	142B	18	TB-142B	J4(29)
26	SPARE L	142C	18	TB-142C	J4(30)
27	SPARE K	142D	18	TB-142D	J4(31)

BRIDGE JUNCTION BOX

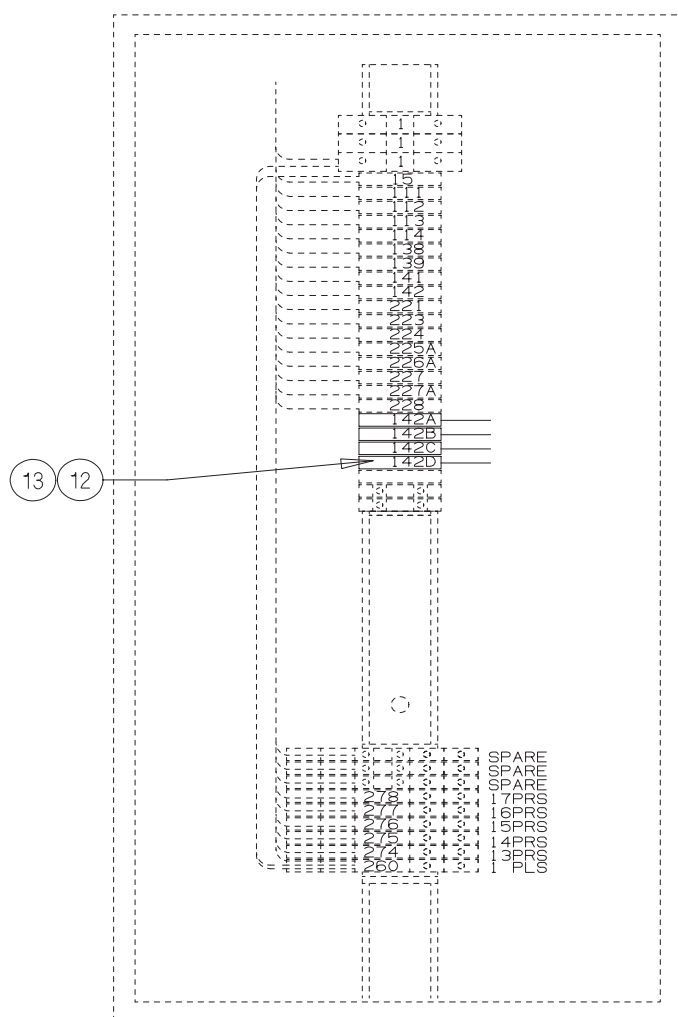


Figure 8
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182

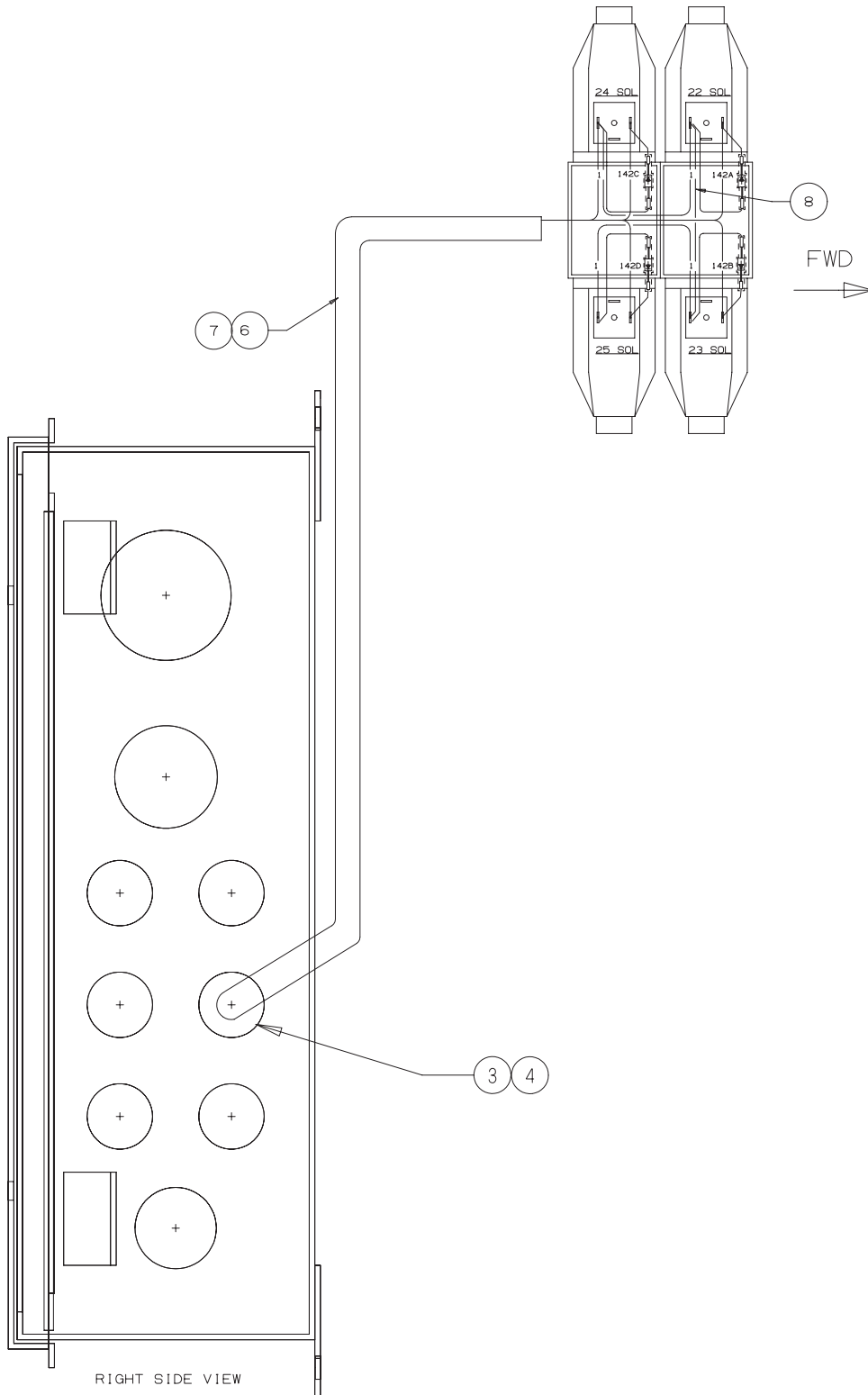
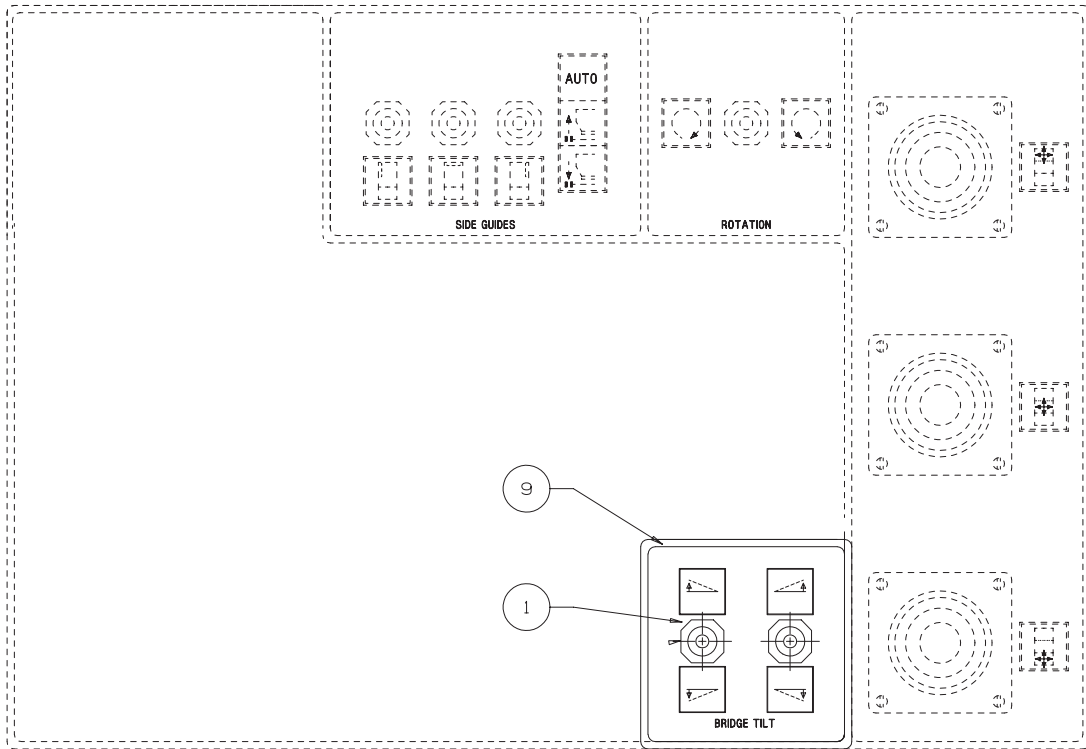
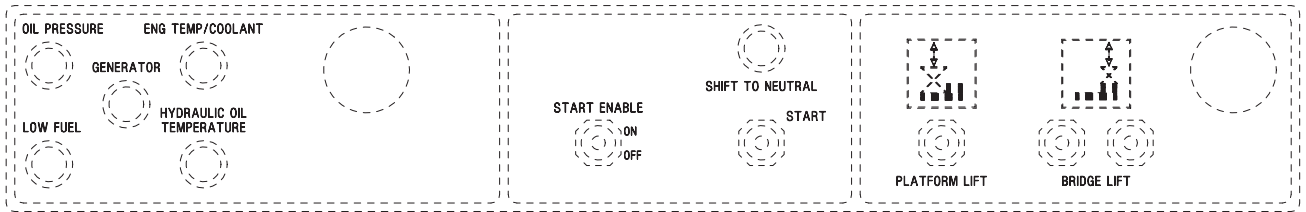


Figure 9
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182



FRONT VIEW OF CONTROL PANEL

RELEASABLE SPARE WIRES IN THE CONTROL PANEL HARNESS AT BOTH ENDS.

WIRE	SPARE	SIZE	FROM	TO
109	-	18	12TGS (2)	19TGS (2)
109	-	18	19TGS (2)	20TGS (2)
142A	b	18	CPJ (45)	19TGS (3)
142B	a	18	CPJ (46)	19TGS (1)
142C	Z	18	CPJ (47)	20TGS (3)
142D	Y	18	CPJ (48)	20TGS (1)

SPARE	RELABLED TO	WIRE #
b	RELABLED TO	142A
a	RELABLED TO	142B
Z	RELABLED TO	142C
Y	RELABLED TO	142D

Figure 10
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182

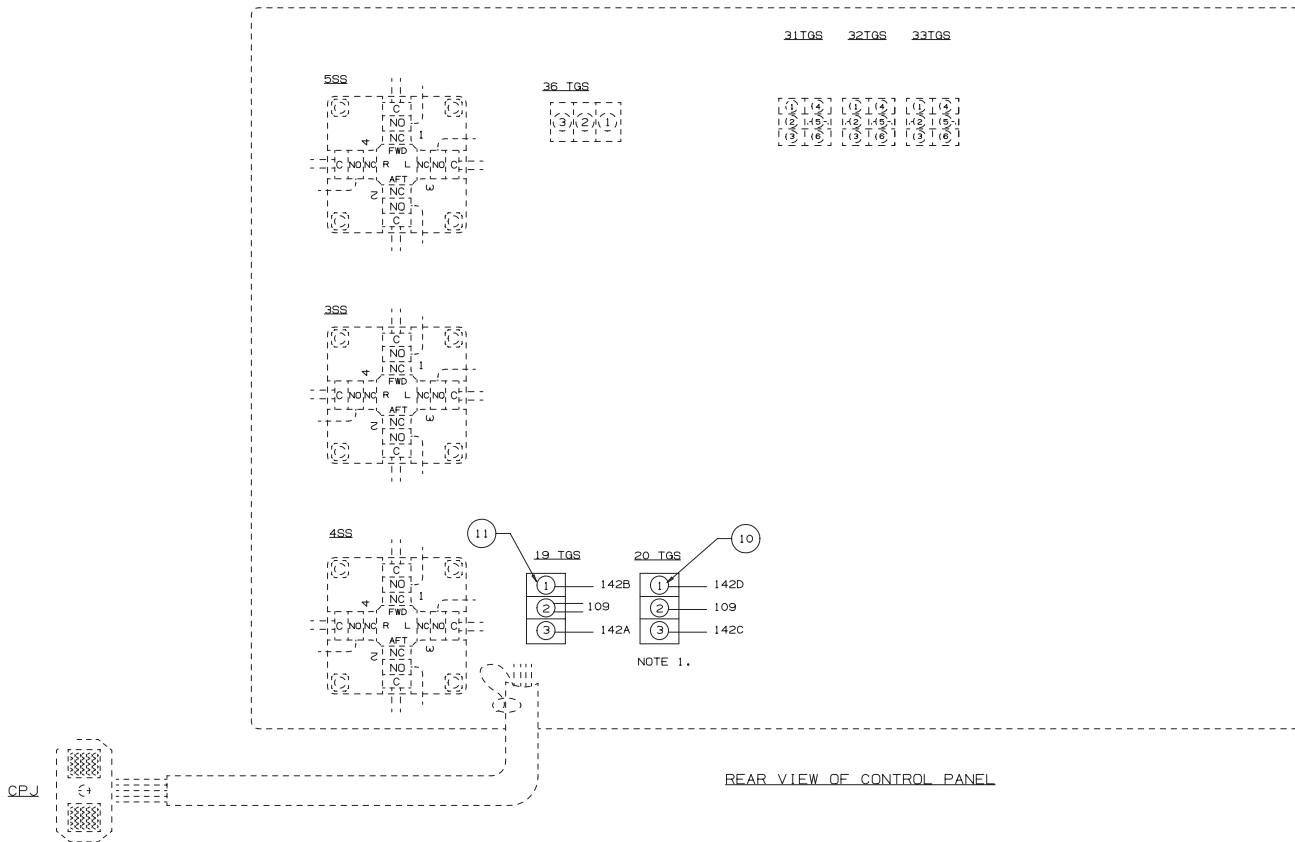
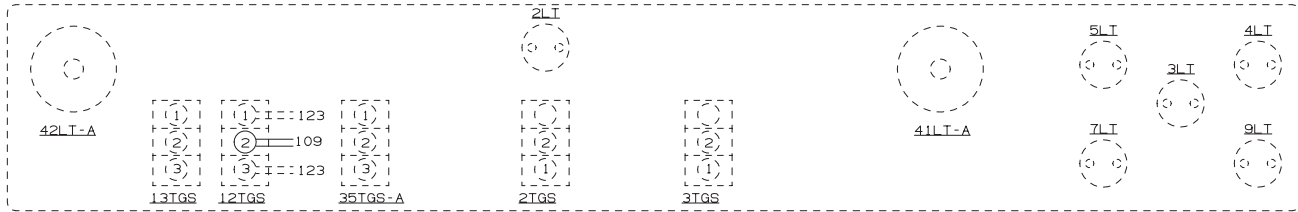
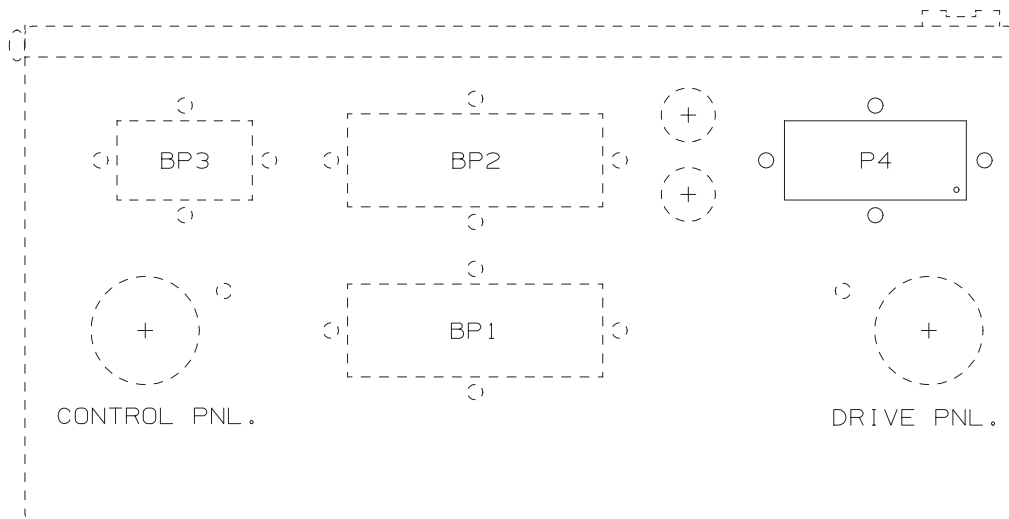


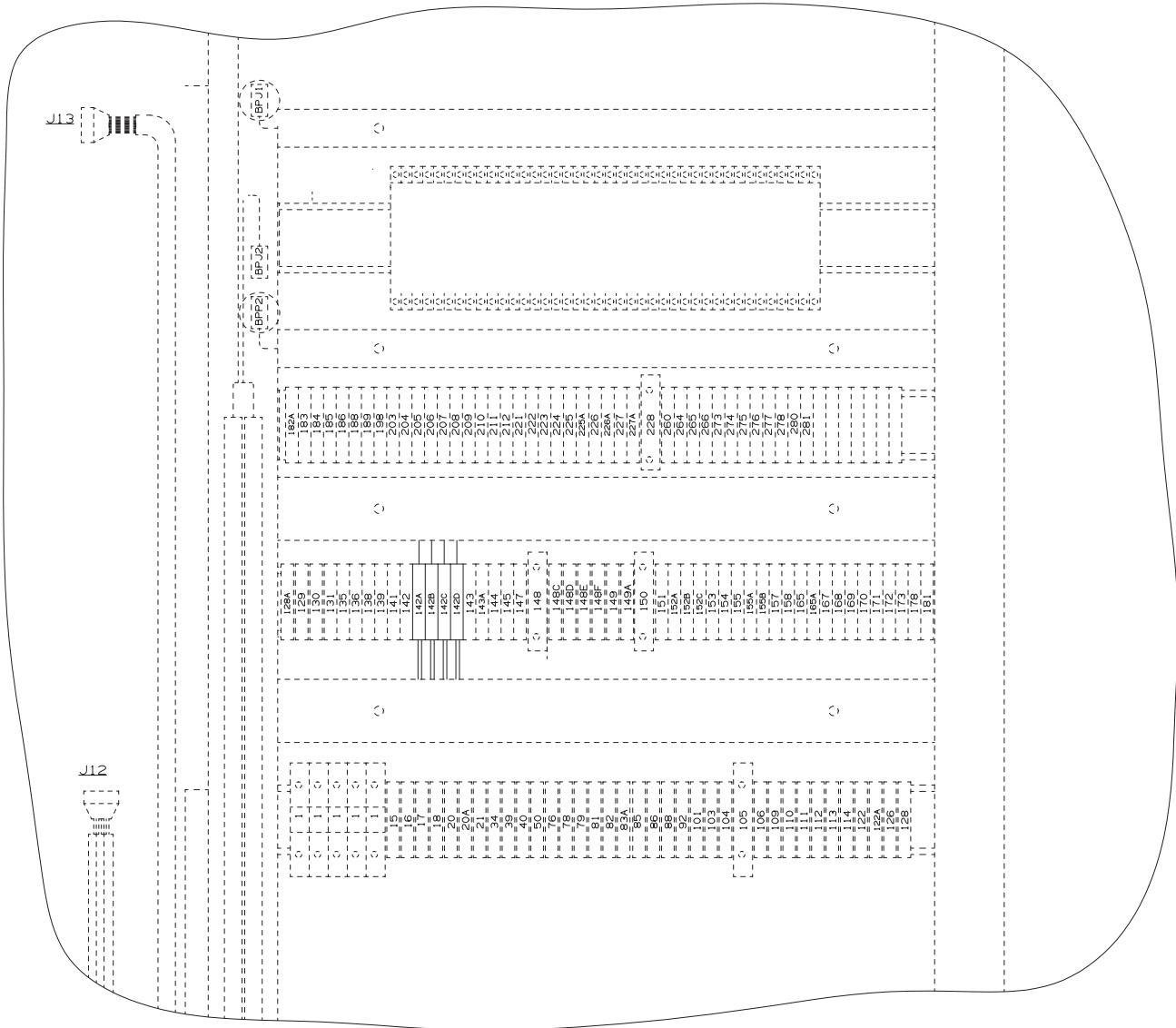
Figure 11
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182

	SPARE WIRE	LABEL AS	SIZE AWG	FROM	TO
	SPARE b	142A	18	CPP(45)	TB-142A
*		142A	18	TB-142A	P4(28)
	SPARE a	142B	18	CPP(46)	TB-142B
*		142B	18	TB-142B	P4(29)
	SPARE Z	142C	18	CPP(47)	TB-142C
*		142C	18	TB-142C	P4(30)
	SPARE Y	142D	18	CPP(48)	TB-142D
*		142D	18	TB-142D	P4(31)



BOTTOM VIEW

Figure 12
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182



VIEW OF BRIDGE PANEL

Figure 13
ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182

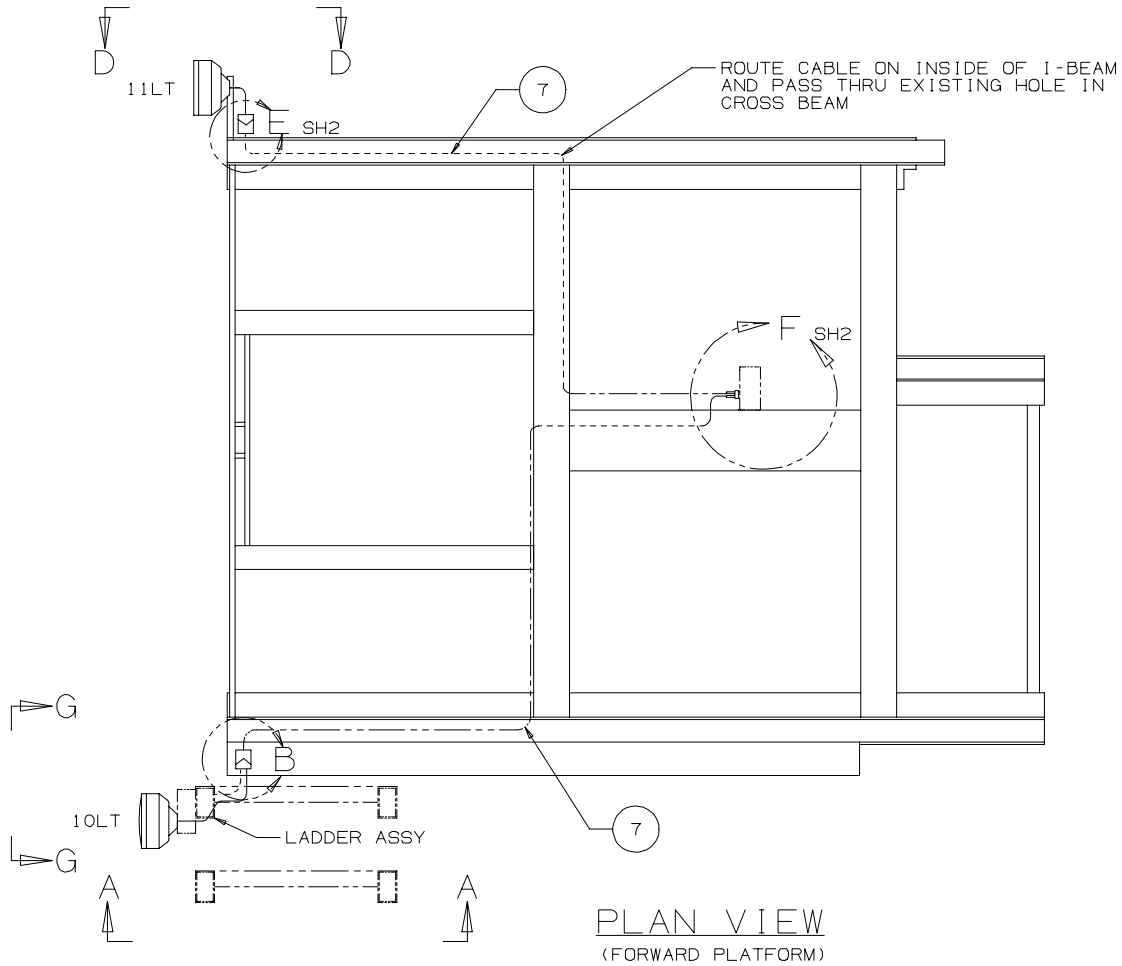
**ELECTRICAL INSTALLATION, BRIDGE TILT
622-7182**

Figure 7 thru Figure 13

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	238-1579		SWITCH, Toggle, SPDT (V91929 #1TL1-7)		2
2	622-2967-013		TERM. PIN, 16-18 AWG		4
3	106-0080		CORD CONN., 1/2		1
4	106-0006		NUT, Lock 1/2		1
5	620-3900-018		WIRE, 18 AWG Yel GXL		15
6	622-6320		HARNESS, Bridge Tilt		1
7	105-0210		TY-RAP, 7.31		5
8	105-0214		TY-RAP, 3.62		5
9	622-5020		PLACARD, Bridge Tilt		1
10	620-1240-002		TERM., 18 AWG To #6 Ring		5
11	239-3646-002		TERM., 14 AWG To #6 Ring		2
12	622-0244-002		TERMINAL BLOCK, USK-4		4
13	622-0244-005		MARKING STRIP		1
17	622-0787		HARNESS, Bridge Tilt		1

Section 53. Lights, Platform Work

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	LIGHTS, PLATFORM WORK	622-7391	2



622-7391	- OPTIONS FOR STANDARD C-15 LOADERS (INC. GERMAN REQ.) W/ PICTOGRAMS.
622-7391-001	- OPTION FOR M/D C-15 LOADERS W/ PICTOGRAMS.
622-7391-002	- OPTION FOR M/D GERMAN REQ. C-15 LOADERS W/ PICTOGRAMS.
622-7391-003	- OPTION FOR WIDE & UNIVERSAL C-15 LOADERS, INCLUDING GERMAN REQ. ALSO C-30 LOADERS W/ PICTOGRAMS.
622-7391-004	- OPTION FOR STD C-15 LOADERS WITH PLATFORM HANDRAILS W/ PICTOGRAMS

REV. C

Figure 1
 PLATFORM WORK LIGHTS
 622-7391

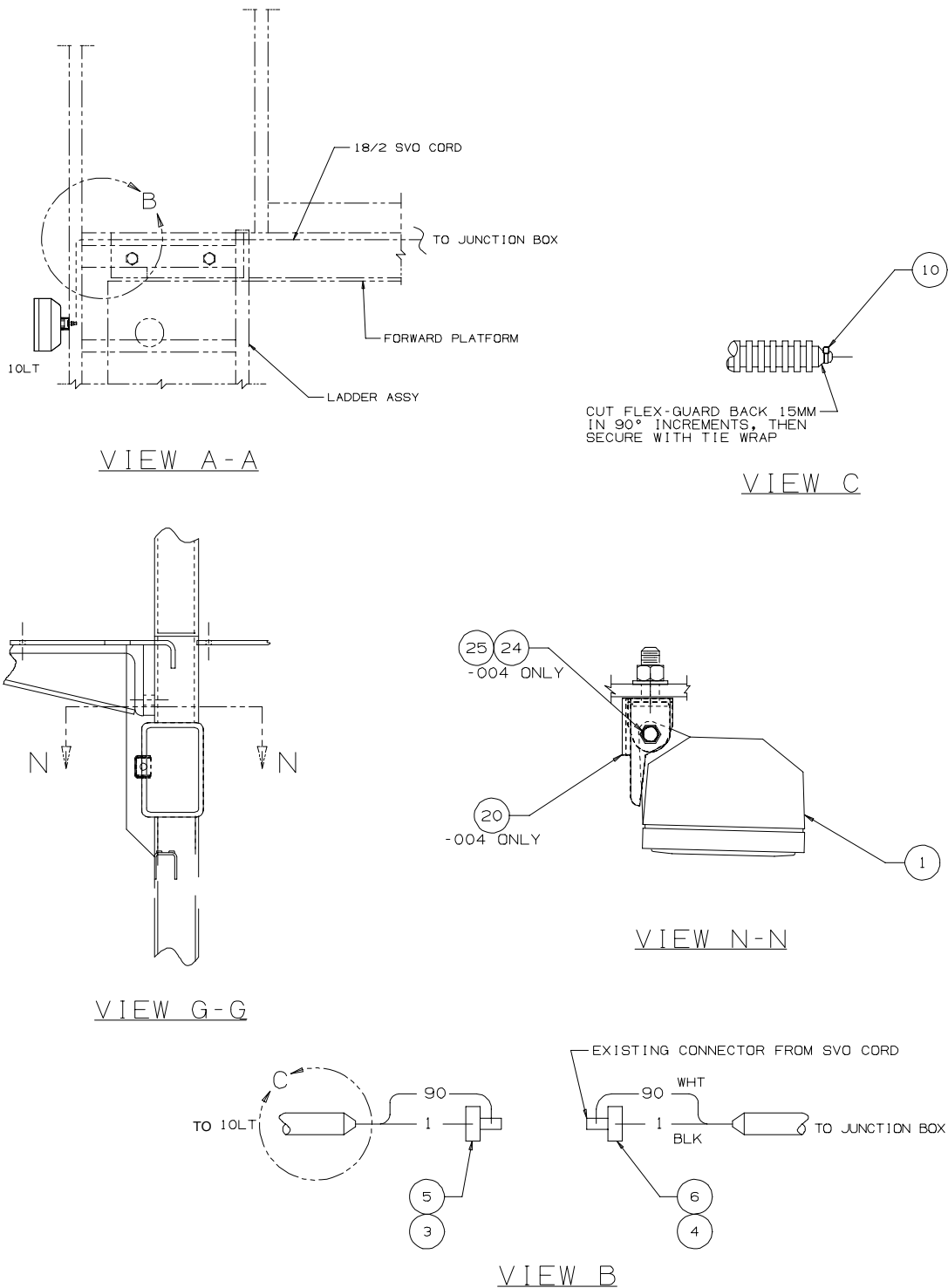
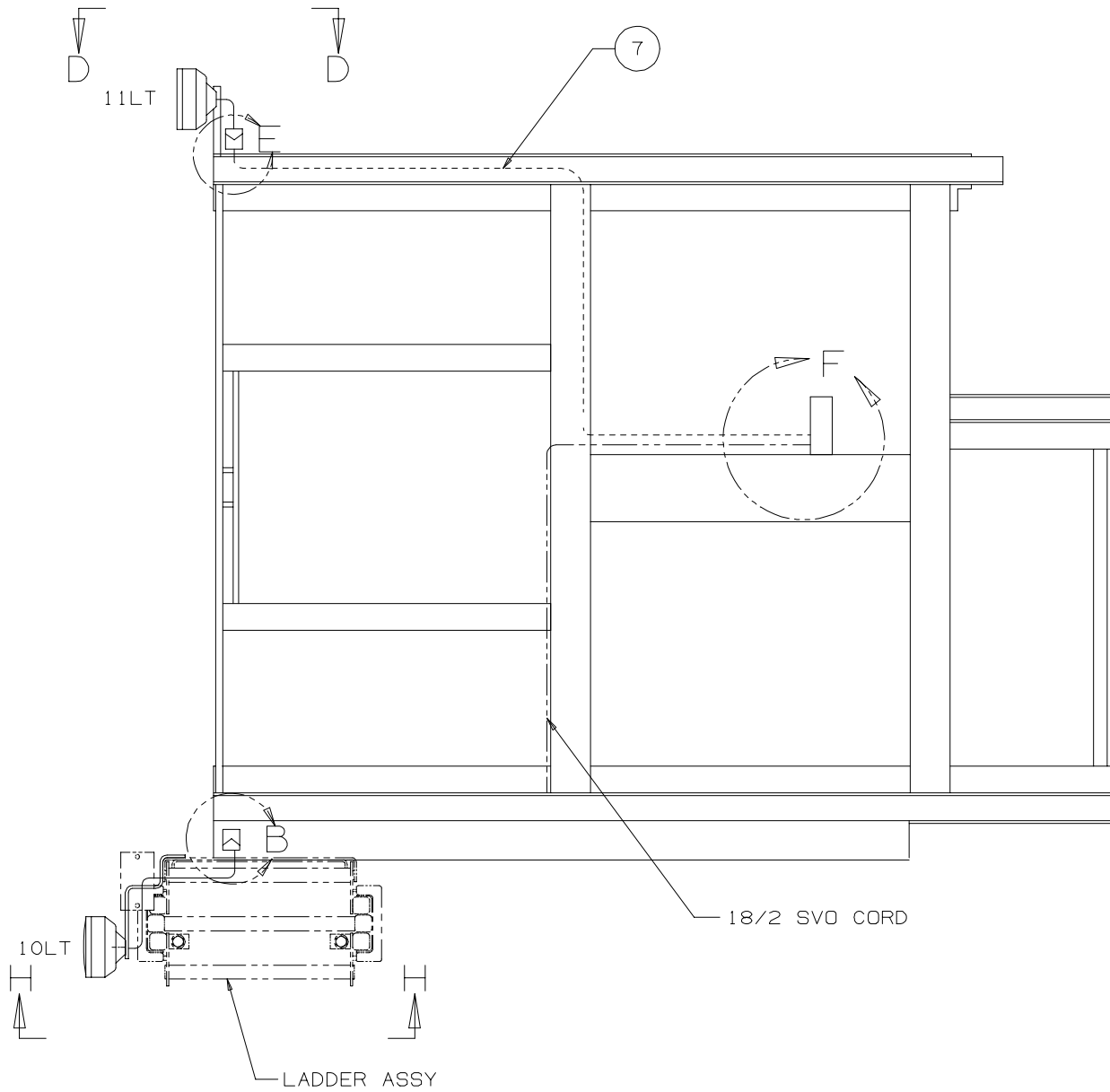
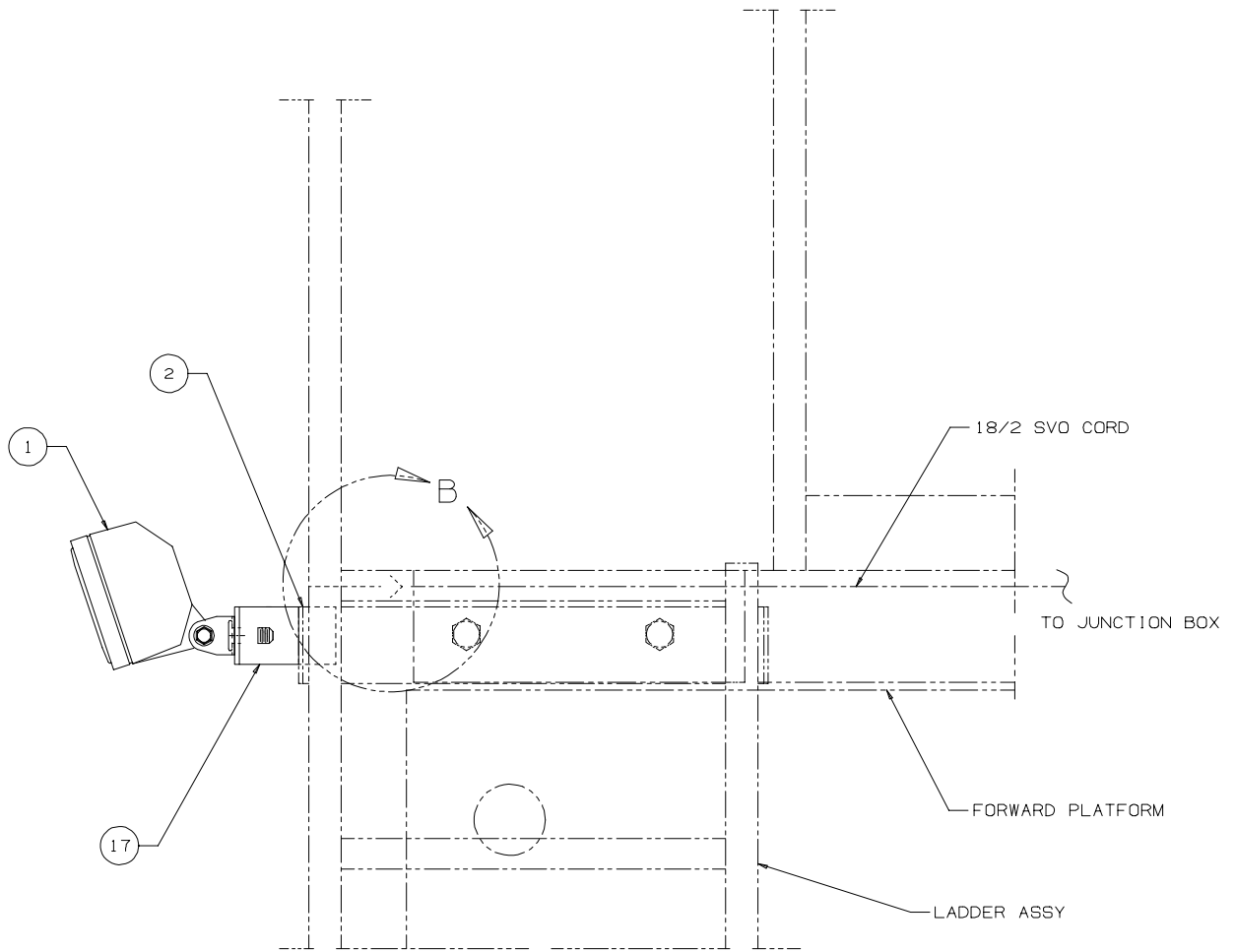


Figure 2
 PLATFORM WORK LIGHTS
 622-7391



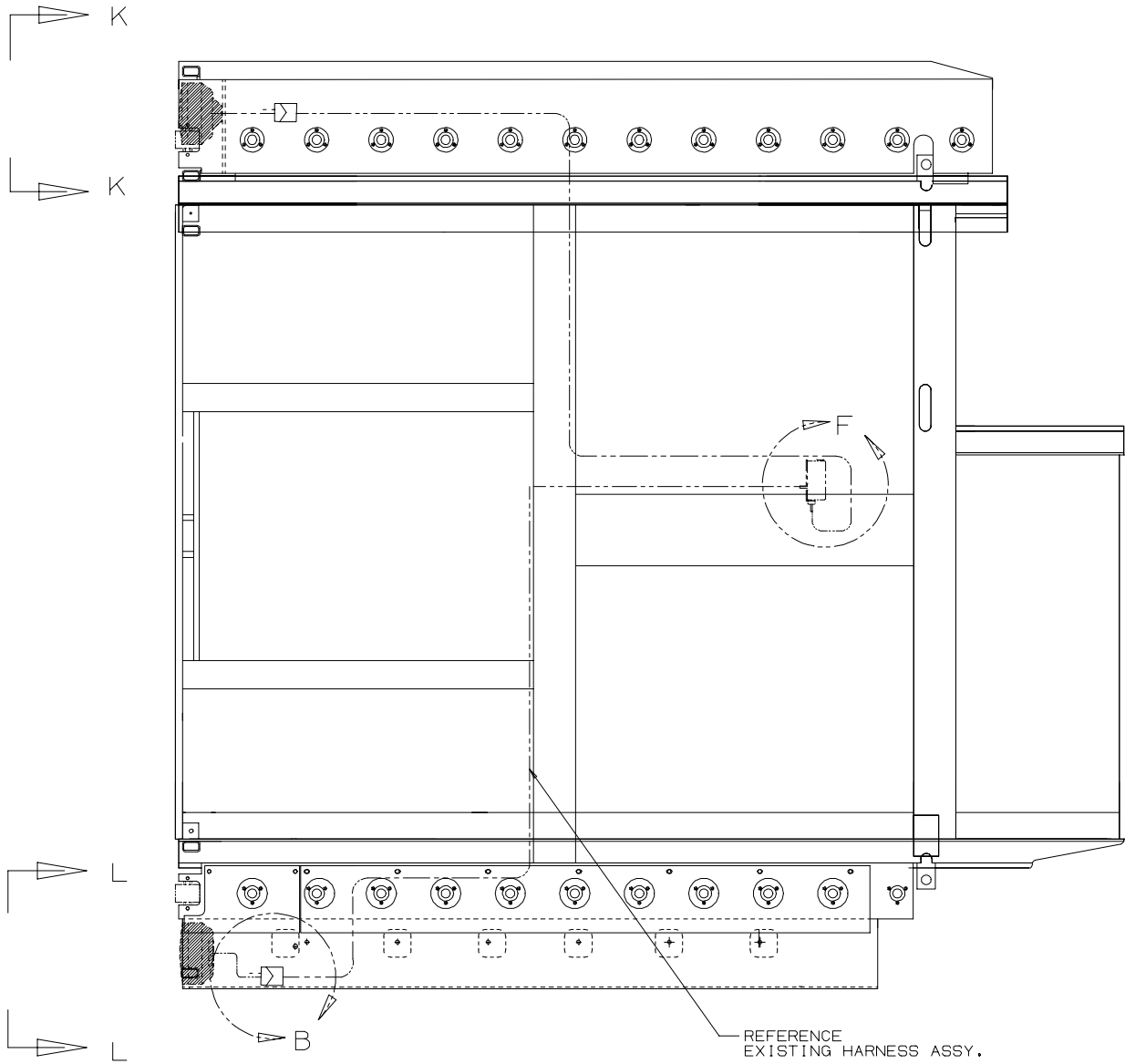
PLAN VIEW
(FORWARD PLATFORM)
(MAIN DECK SCISSORS)
622-7391-001

Figure 3
PLATFORM WORK LIGHTS
622-7391



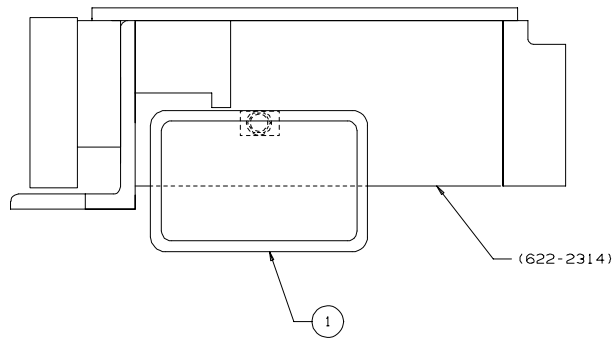
VIEW H-H

Figure 4
PLATFORM WORK LIGHTS
622-7391

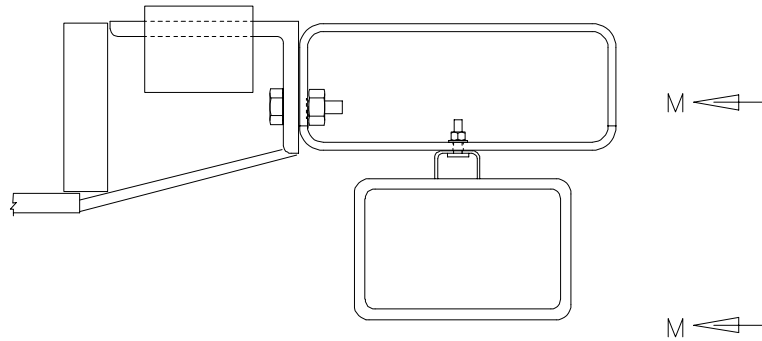


PLAN VIEW
(FORWARD PLATFORM)
(WIDE BRIDGE/UNIVERSAL C-15 AND C-30)
622-7391-003

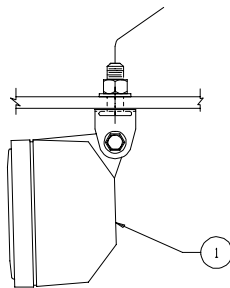
Figure 5
PLATFORM WORK LIGHTS
622-7391



VIEW K-K
(WHERE APPLICABLE, TYP BOTH SIDES)



VIEW L-L



VIEW M-M

Figure 6
PLATFORM WORK LIGHTS
622-7391

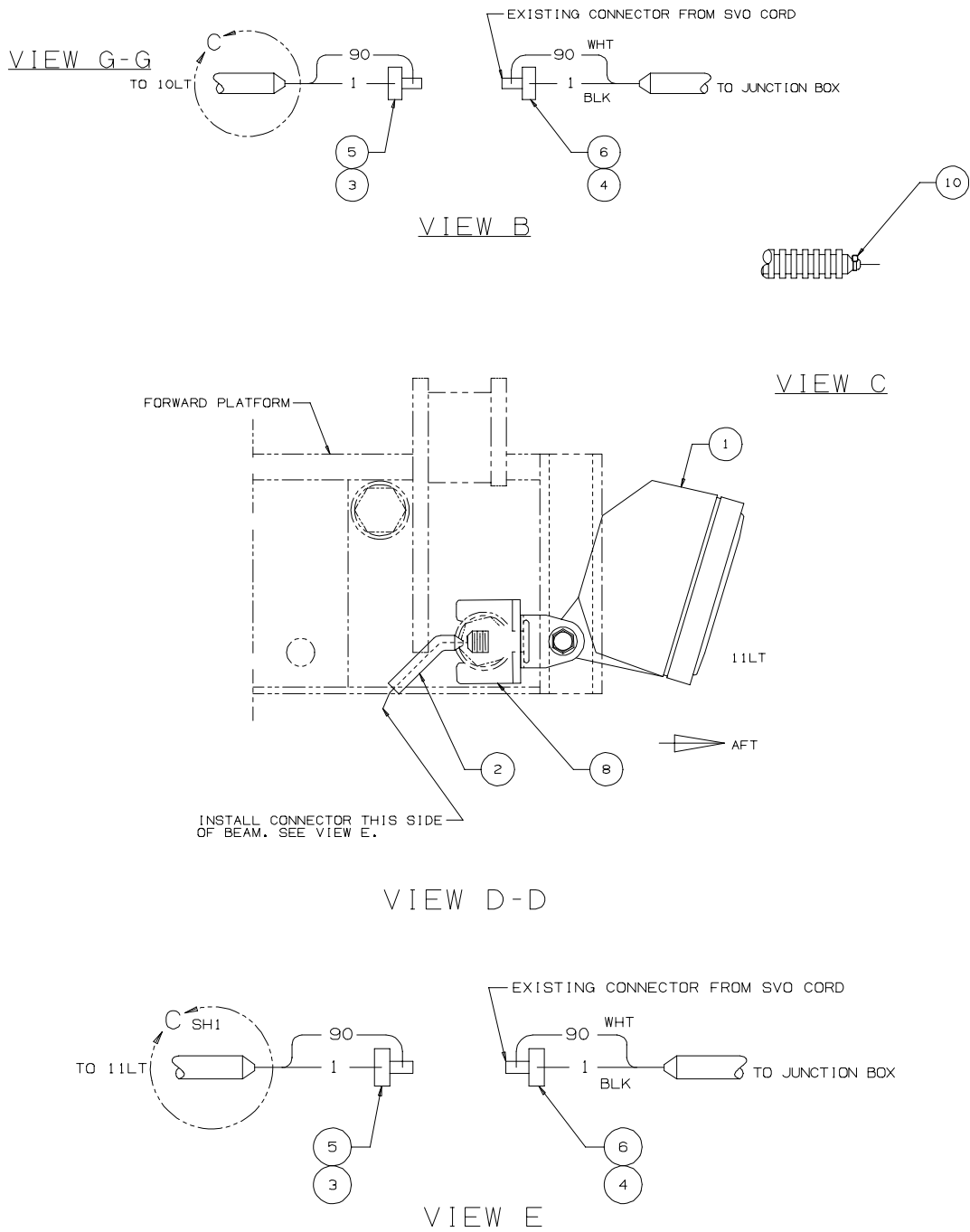
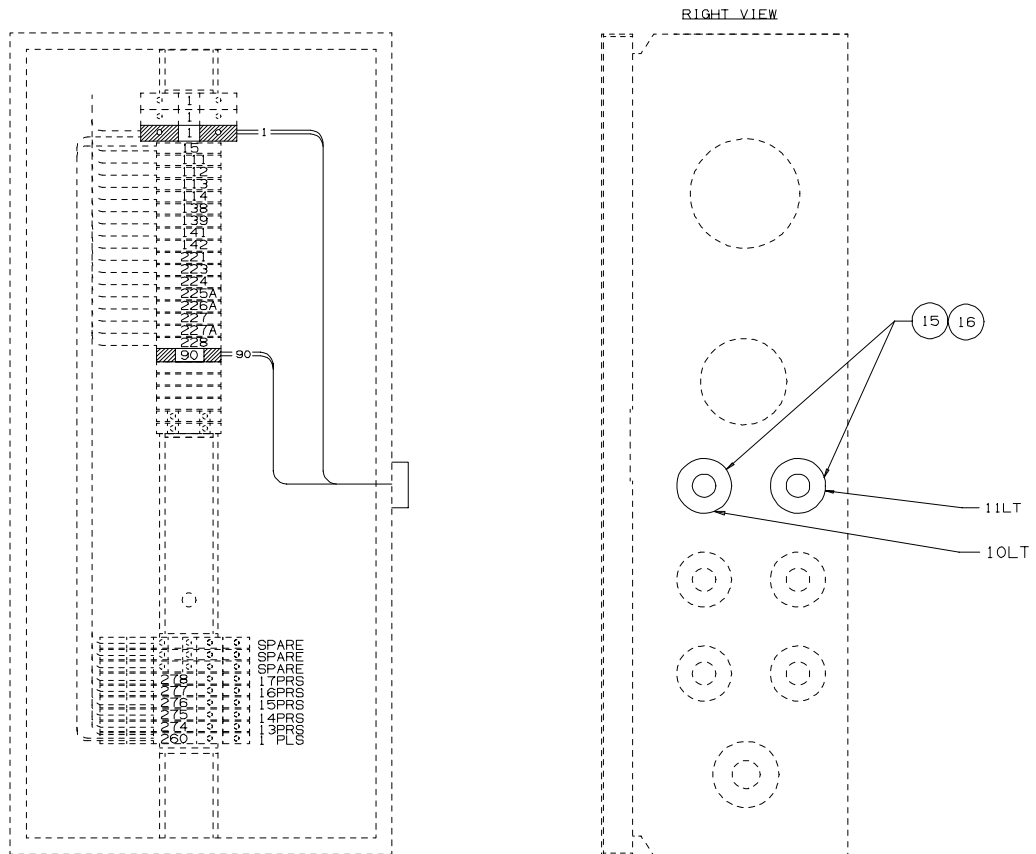


Figure 7
 PLATFORM WORK LIGHTS
 622-7391

WIRE TABLE

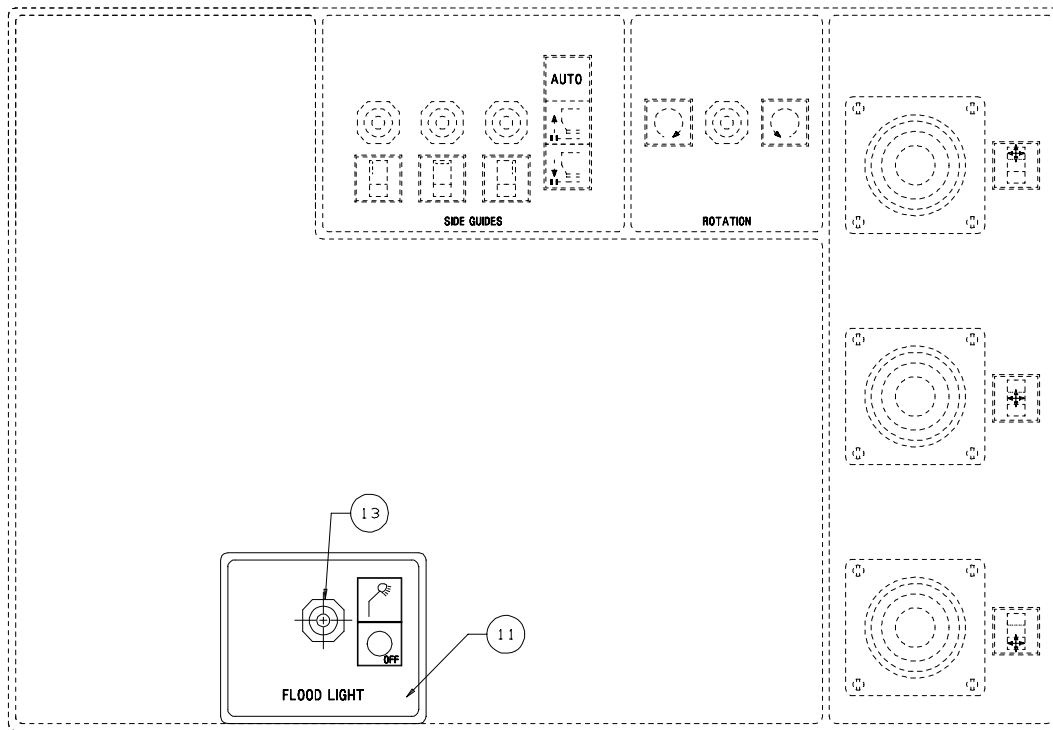
COND. NO.	WAS SPARE	WIRE NO.	SIZE AWG	FROM	TO
33	H	90	18	J4(33)	TB-90



VIEW F
BRIDGE JUNCTION BOX

Figure 8
PLATFORM WORK LIGHTS
622-7391

C O N T R O L P A N E L



FRONT VIEW

SPARE LT	WIRE NO.	SIZE AWG	LENGTH INCH.	FROM	TO
W	85	18		CPJ(49)	7TGS(2)
V	90	18		CPJ(50)	7TGS(3)

NOTE: USE SPARE WIRES LABELED AS "W" AND "V" IN THE CONTROL PANEL ASS'Y.

Figure 9
PLATFORM WORK LIGHTS
622-7391

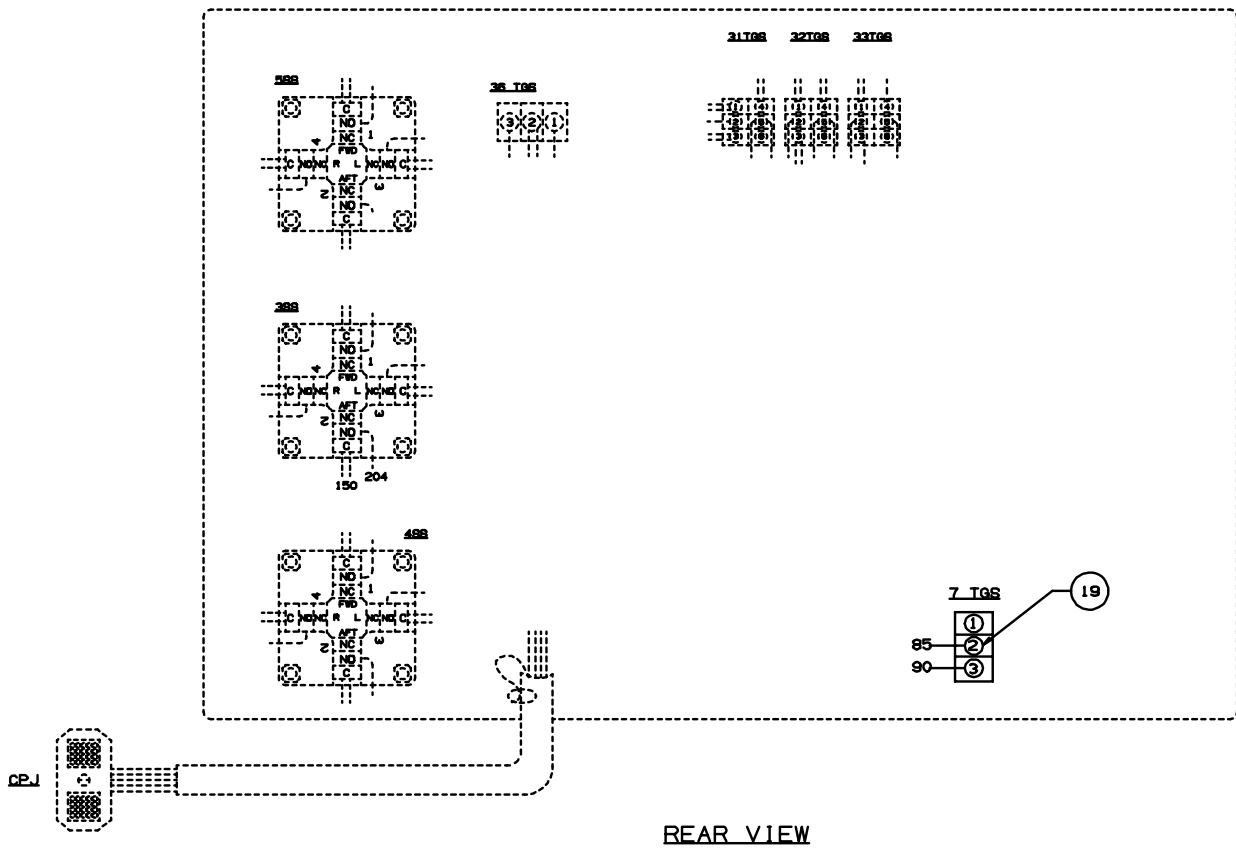


Figure 10
PLATFORM WORK LIGHTS
622-7391

B R I D G E P A N E L

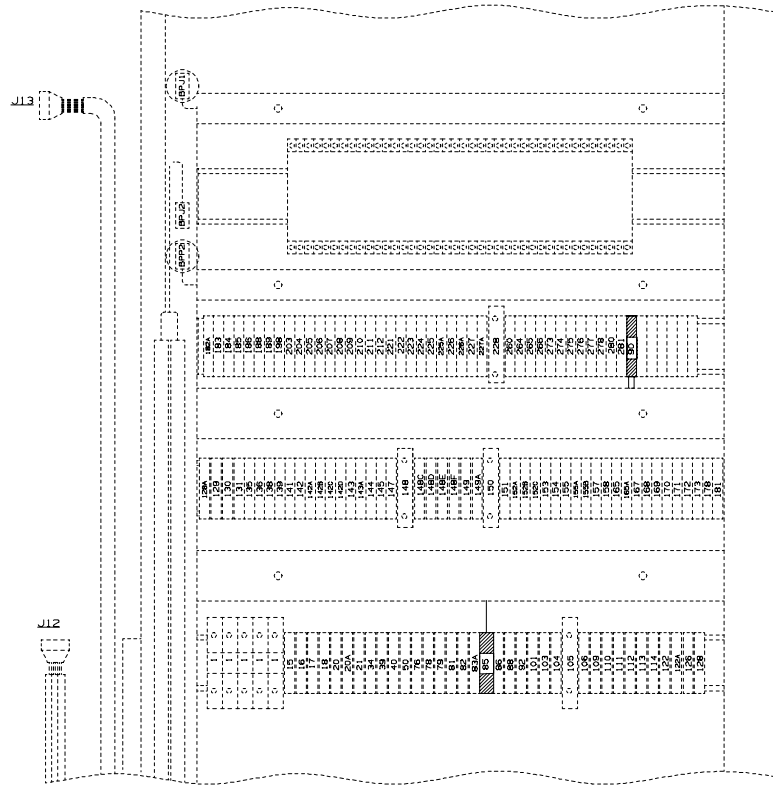


Figure 11
PLATFORM WORK LIGHTS
622-7391

WIRE TABLE

WAS SPARE	WIRE NO.	SIZE AWG	FROM	TO
W	85	18	CPP(49)	TB-85
V	90	18	CPP(50)	TB-90
	90	18	P4(33)	TB-90

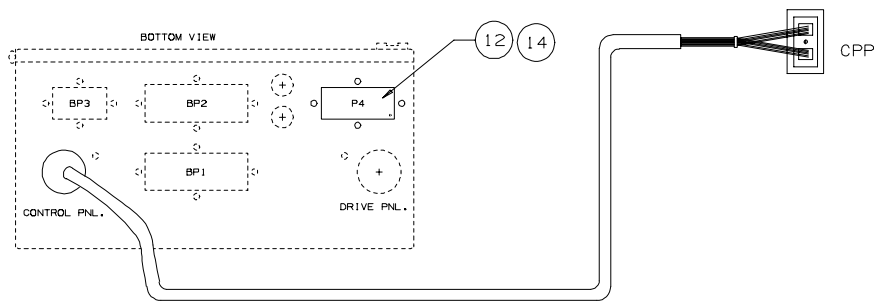


Figure 12
PLATFORM WORK LIGHTS
622-7391

**PLATFORM WORK LIGHTS
622-7391**

Figure 1 thru Figure 12

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1416-001		FLOODLIGHT ASSEMBLY		2
2	620-1317-001		FLEXGUARD, Nylon .350 (9mm)		1M
3	620-1329-001		TERM., Male 18-20 AWG		4
4	620-1330-001		TERM., Female 18-20 AWG		4
5	514-4758		CONN., Body Male 1 Pin		2
6	514-4757		CONN., Body Female 2 Pin		2
7	515-2139		CORD, 18 AWG 2 Cond Type Svt		40
8	620-2644		BRACKET, Light		1
9	105-0210		TY-RAP, 7.3 In x 50 Lb		10
10	105-0214		TY-RAP, 3.6 In x 18 Lb		4
11	622-0368-001		PLACARD, Flood Light		1
12	622-2967-013		TERM., Pin 18 AWG		1
13	238-6221		SWITCH, Toggle SPDT (V91929 #1TL1-3)		1
14	620-3900-018		WIRE, 18 Ga Yellow GXL		3'
15	106-0078		CORD, Conn. 1/2"		2
16	106-0006		NUT, Lock 1/2"		2
17	620-8329		BRKT, Light Rh.Md. Ladder (-001 Only)		1
18	622-0244-002		TERMINAL BLOCK, 22-12 AWG		2
19	620-1240-002		TERM., 18 AWG to #6 Ring		2
20	623-5166		BRACKET, Light (-004 Only)		1
21	620-8196		BRACKET, Light (German Regulations) (-002 Only)		1
22	107-0735		SCREW, Hex Hd, M12 x 1.75 x 30mm (-002 Only)		2
23	620-0658		NUT, PTH 8 M12 x 1.75 (-002 Only)		2
24	620-0629		SCREW, Hex Hd, M8 x 1.25 x 60mm (-004 Only)		1
25	620-0656		NUT, PTH 8 M8 x 1.25 (-004 Only)		1

Section 55. Lights, Positioning

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	LIGHTS, POSITIONING	622-7436	2

D R I V E P A N E L

WIRE NO.	SIZE AWG	LENGTH INCH.	FROM	TO
* 85	18		DPJ(34)	8TGS(2)
* 91	18		DPJ(35)	8TGS(3)

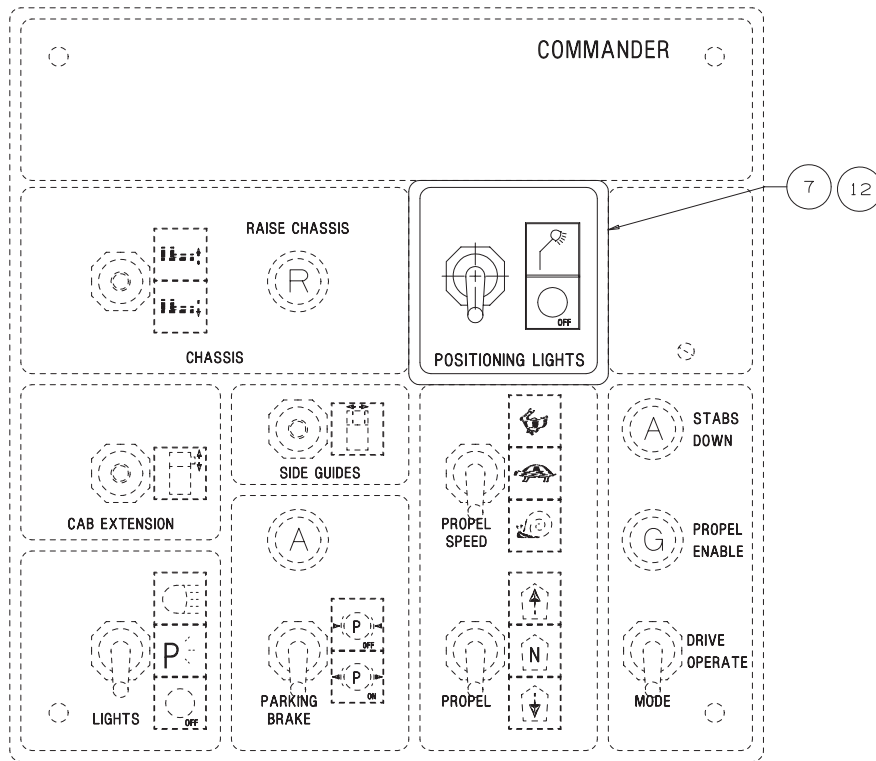


Figure 1
LIGHTS, POSITIONING
622-7436

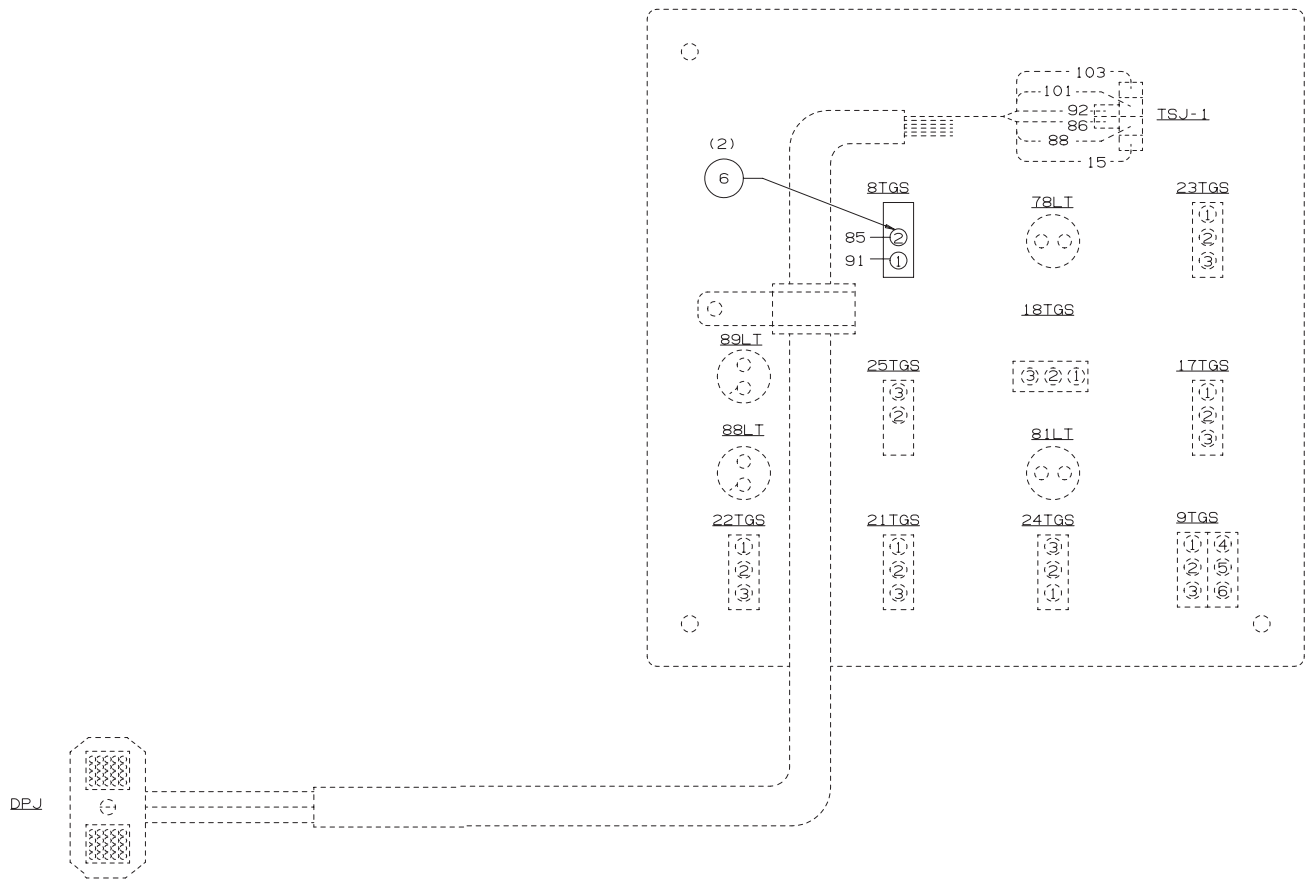
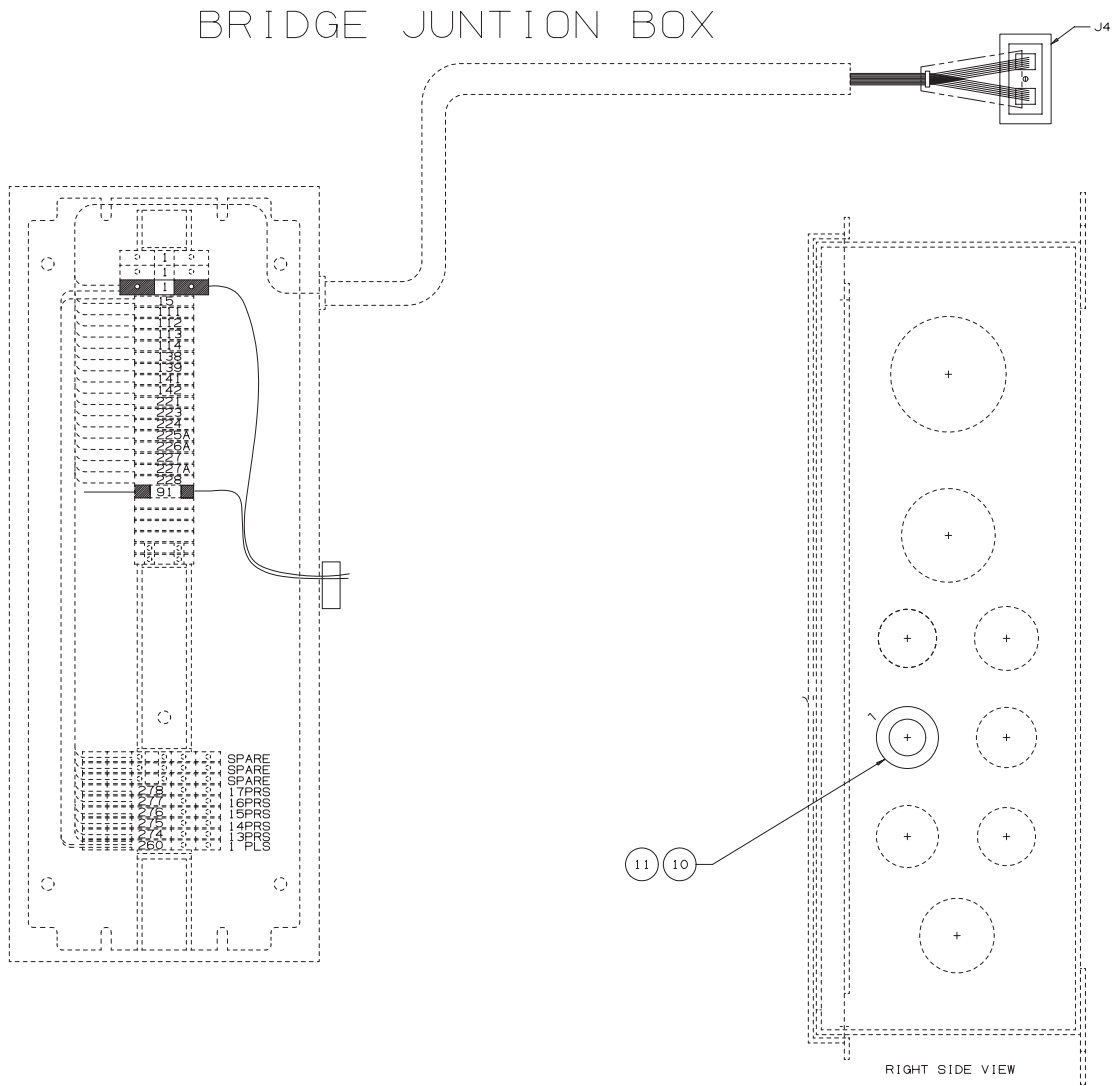


Figure 2
LIGHTS, POSITIONING
622-7436

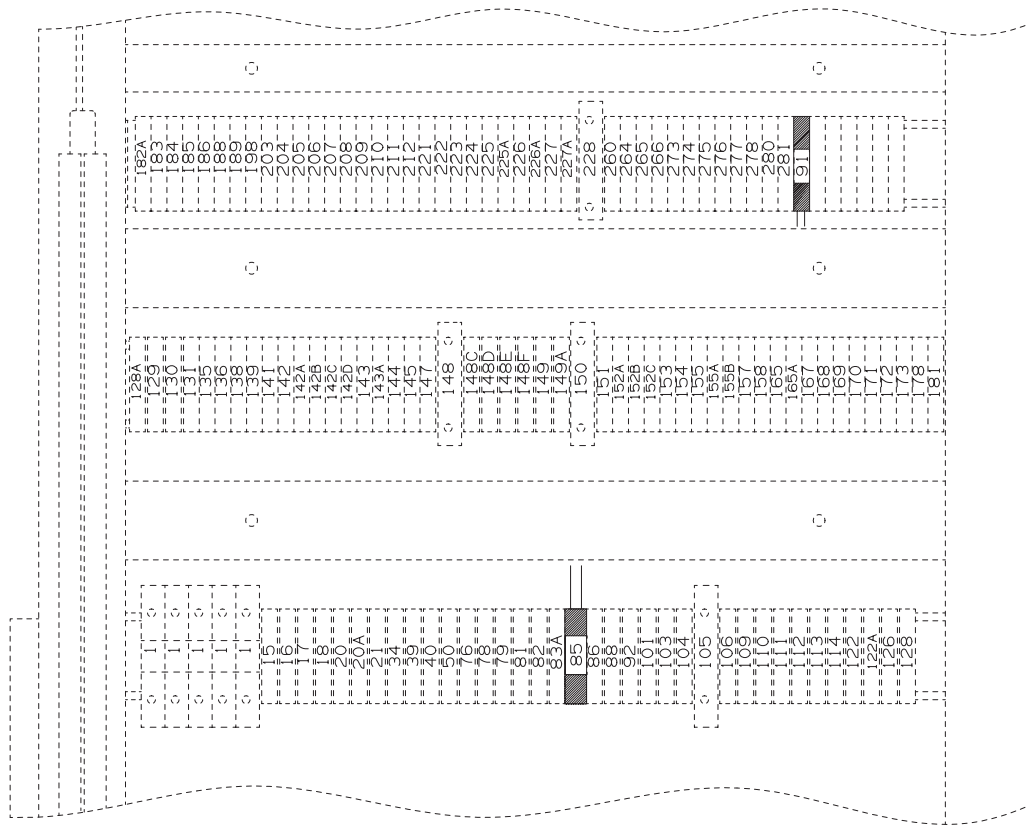


WIRE TABLE

WAS SPARE	COND.	WIRE #	SIZE	FROM	TO
"G"	34	91	18	J4 (34)	TB-91

Figure 3
LIGHTS, POSITIONING
622-7436

BRIDGE PANEL



WIRE TABLE

WAS SPARE	WIRE #	SIZE	FROM	TO	
"H"	85	18	DPP (34)	TB-85	
"F"	91	18	DPP (35)	TB-91	
*	-	91	18	P4 (34)	TB-91

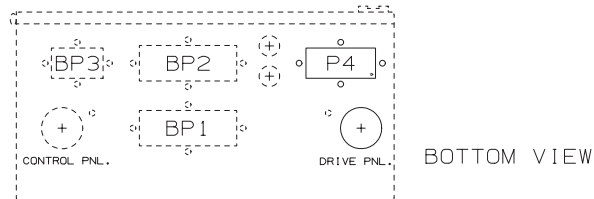


Figure 4
LIGHTS, POSITIONING
622-7436

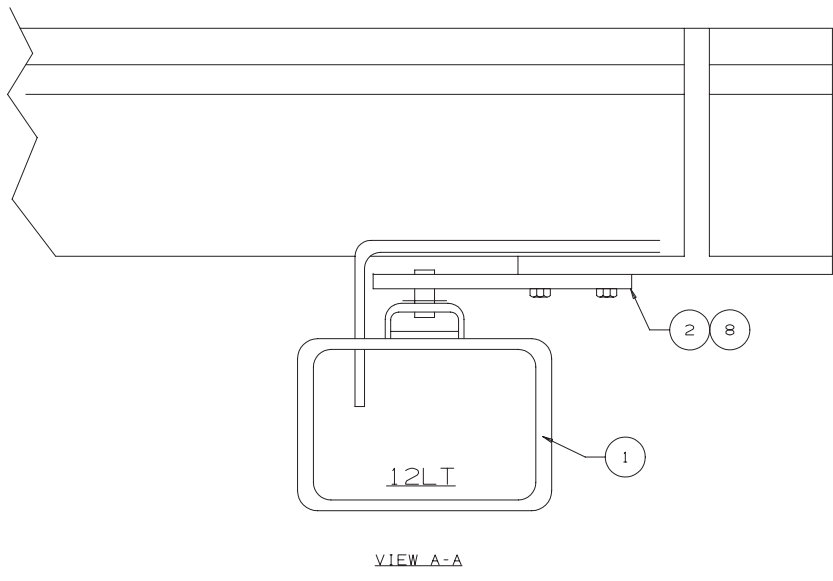
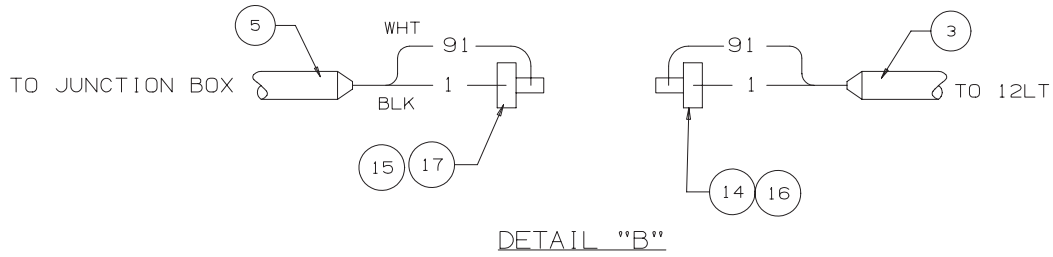
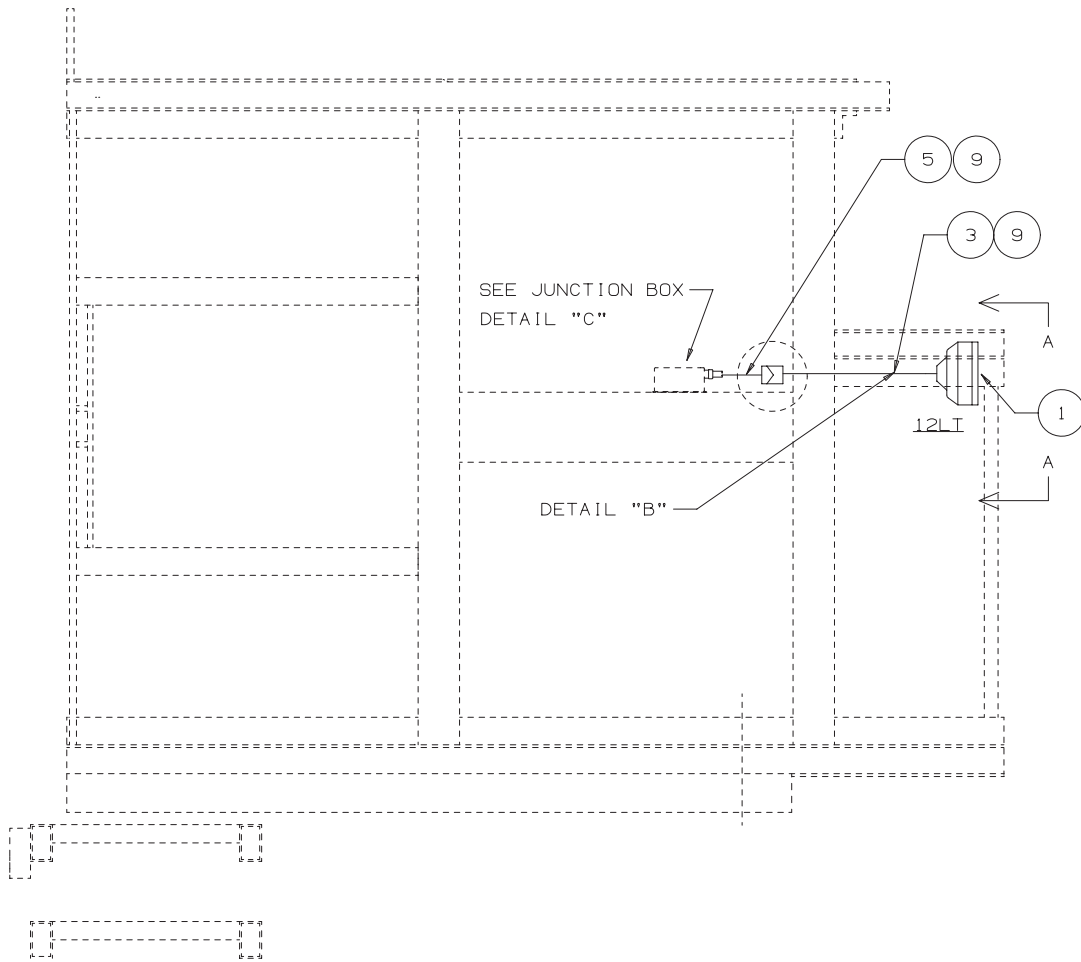


Figure 5
LIGHTS, POSITIONING
622-7436



PLAN VIEW
(FORWARD PLATFORM)
(STANDARD SCISSORS)

Figure 6
LIGHTS, POSITIONING
622-7436

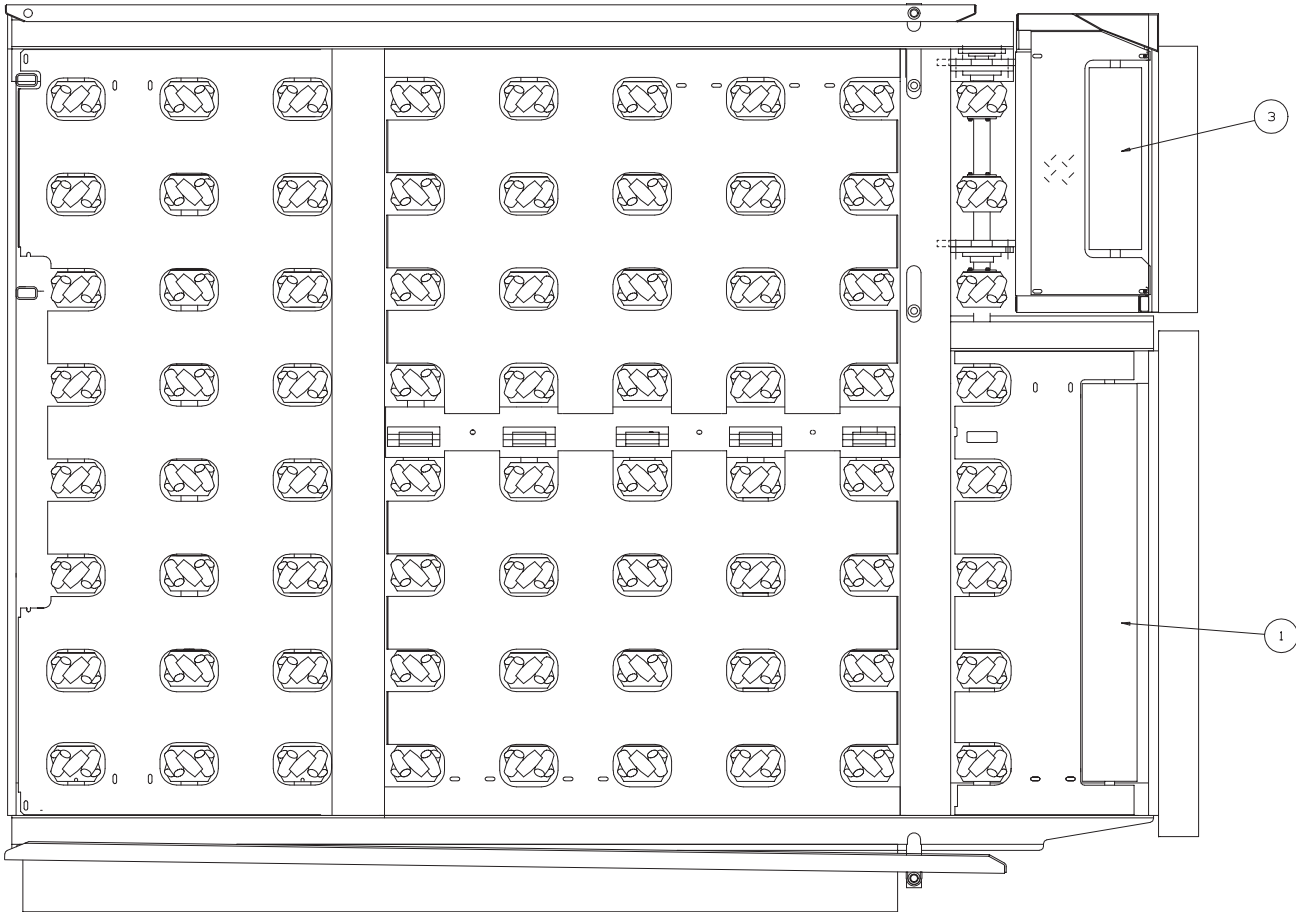
**LIGHTS, POSITIONING
622-7436**

Figure 1 thru Figure 6

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-1416-001		FLOODLIGHT ASSEMBLY		1
2	620-3275		BRACKET, Light		1
3	620-1317-001		FLEXGUARD, Nylon		1
4	622-0244-002		TERMINAL BLOCK, 22-12 AWG		2
5	515-2139		CORD, 18 AWG 2 Cond Type SVT		15
6	620-1240-002		TERM., 18 AWG to #6 Ring		2
7	238-6221		SWITCH, Toggle (V91929 #1NT1-3)		1
8	107-0350		SCREW, Hex Hd, 8.8 M6 x 1 x 20mm		2
9	105-0210		TY-RAP, 7.3 In x 50 Lb		15
10	106-0006		NUT, Lock 1/2"		1
11	106-0078		CONN., Cord.1/2 St. (T-B#2521)		1
12	622-1757		PLACARD, Positioning Light		1
13	620-1329-001		TERM., 18-20 AWG Male		2
14	620-1330-001		TERM., 18-20 AWG Female		2
15	514-4758		CONN. BODY, Male 2 Pin		1
16	514-4757		CONN. BODY, Female 2 Pin		1

Section 175. Bridge Forward Rollers,, Lagged

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	BRIDGE FORWARD ROLLERS, LAGGED	622-6946-001	2



GENERIC STD. BRIDGE

Figure 1
BRIDGE FORWARD ROLLERS, LAGGED
622-6946-001

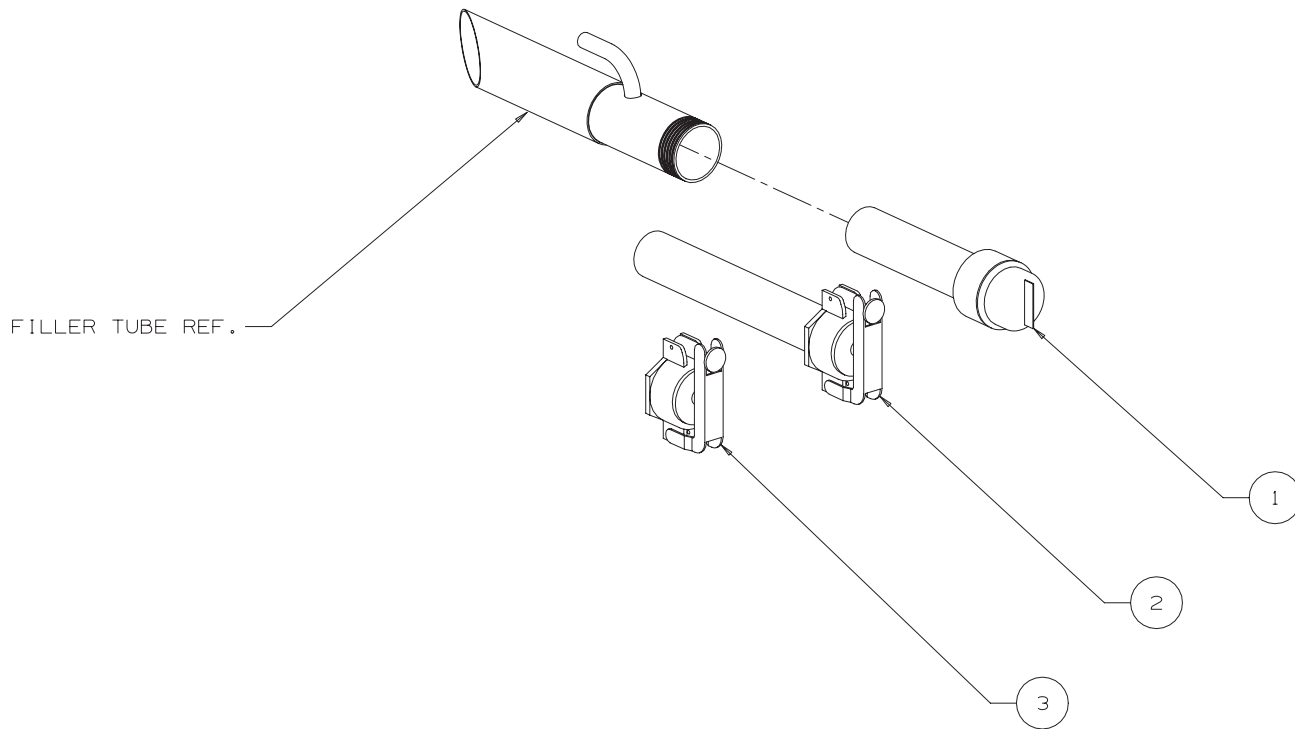
**BRIDGE FORWARD ROLLERS, LAGGED
622-6946-001**

Figure 1

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	622-6592		ROLLER, Lagged, Convey/Transfer		1
2	621-2300-020		ROLLER, Lagged		1

Section 182. Fuel Filler Cap & Neck

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	FUEL FILLER CAP & NECK (SCREW-ON)	623-0941	2



- 623-0941 FILLER CAP & NECK (SCREW-ON)
- 623-0941-001 FUEL FILLER, PROTECTO SEAL GREEN CAP W/SCREEN
- 623-0941-002 FUEL FILLER, PROTECTO SEAL GREEN CAP ONLY

REV. C

Figure 1

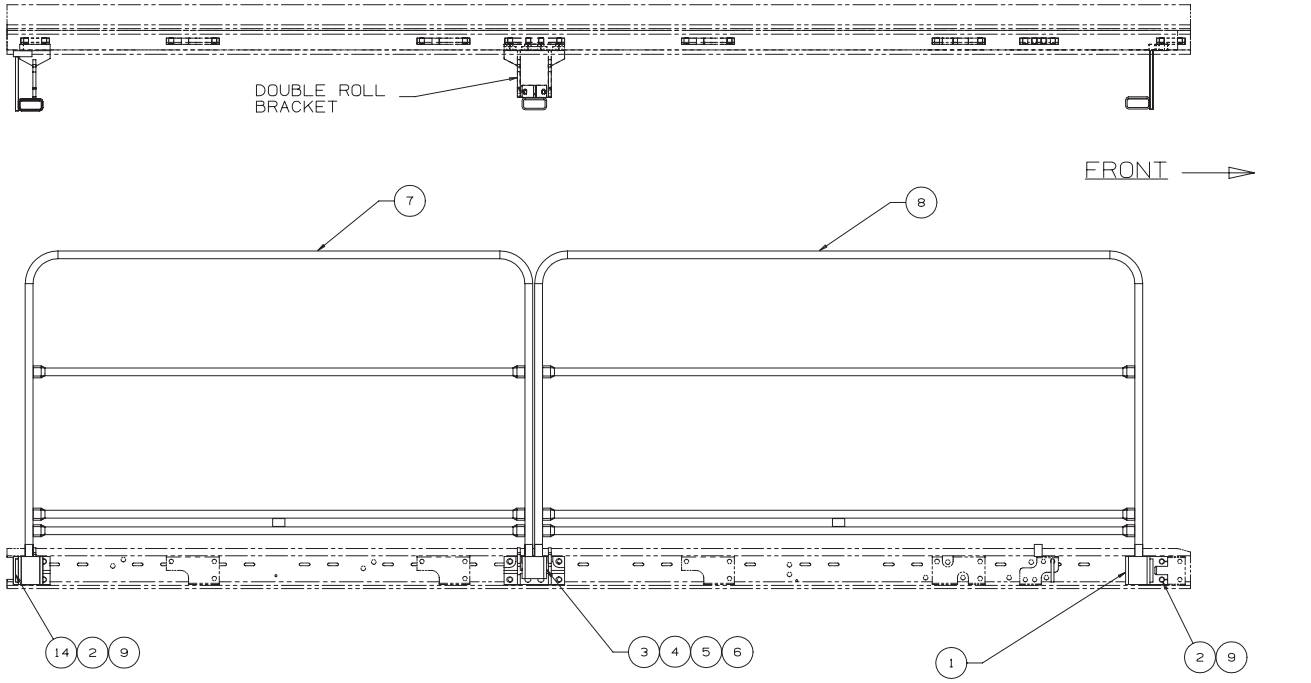
**FUEL FILLER CAP & NECK (SCREW-ON)
623-0941**

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	623-0942		FILLER CAP & NECK (SCREW ON)		1
2	622-6109		CAP, Green Fuel Tank (W/Screen) – 001		1
3	622-6109-001		CAP, Green Fuel Tank (W/O Screen)– 002		1

Section 198. Handrail Assembly, Left or Right

	<u>Assembly</u>	<u>Assy. No.</u>	<u>Page</u>
1.	HANDRAIL ASSEMBLY	623-2995	2

TOP VIEW - HANDRAIL SUPPORT ORIENTATION



623-2995 R.H. SHOWN
 623-2995-001 L.H. (NOT SHOWN)
 REAR PLATFORM HANDRAILS W/ALL
 SIDE TRANSFER

BOLT BRACKETS ON
 OVER EXISTING ROLL
 OR STOP BRACKETS

- 623-2995 = R.H. (PLAIN NO.) W/ALL SIDE TRANSFER
- 623-2995-001 = L.H. W/ALL SIDE TRANSFER
- 623-2995-002 = EXTRA SOCKETS
- 623-2995-003 = R.H. END LOAD ONLY
- 623-2995-004 = L.H. END LOAD ONLY
- 623-2995-005 = EXTRA SOCKETS
- 623-2995-006 = R.H. UNIVERSAL ONLY
- 623-2995-007 = L.H. UNIVERSAL ONLY
- 623-2995-008 = LH W/ALL SIDE TRNSFR &
RR PTN
- 623-2995-009 = EXTRA SOCKETS W/RR PROTECTION

THIS OPTION PROVIDES REMOVABLE HANDRAILS FOR THE REAR PLATFORM RIGHT AND LEFT SIDES. 623-2995 PROVIDES A HANDRAIL AND MOUNTING BRACKETS FOR RIGHT SIDE MOUNTING. 623-2995-001 PROVIDES A HANDRAIL AND MOUNTING BRACKETS FOR LEFT SIDE MOUNTING. 623-2995-002 PROVIDES A SET OF MOUNTING BRACKETS ONLY, FOR ONE HANDRAIL MOUNTING ON EITHER RIGHT OR LEFT SIDE OF REAR PLATFORM. THESE OPTIONS ARE DESIGNED FOR USE ON END SUPPORT FOR THE HANDRAIL

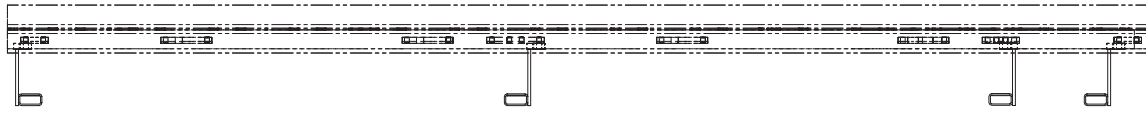
623-2995-003 PROVIDES A HANDRAIL AND MOUNTING BRACKETS FOR RIGHT SIDE MOUNTING. 623-2995-004 PROVIDES A HANDRAIL AND MOUNTING BRACKETS FOR LEFT SIDE MOUNTING. 623-2995-005 PROVIDES A SET OF MOUNTING BRACKETS ONLY, FOR ONE HANDRAIL MOUNTING ON EITHER RIGHT OR LEFT SIDE OF REAR PLATFORM. THESE OPTIONS ARE DESIGNED FOR USE ON END LOAD TRANSFER PLATFORMS ONLY, WITH FIXED SIDE STOPS ON BOTH SIDES.

623-2995-006 PROVIDES HANDRAILS AND MOUNTING BRACKETS FOR RIGHT SIDE MOUNTING FOR UNIVERSAL LOADER ONLY. 623-2995-007 PROVIDES HANDRAILS AND MOUNTING BRACKETS FOR LEFT SIDE MOUNTING FOR UNIVERSAL LOADER ONLY.

623-2995-008 PROVIDES HANDRAILS AND MOUNTING BRACKETS FOR L.H. MOUNTING WITH SIDE TRANSFER ROLLERS AND REAR ROLLER PROTECTION INSTALLED.

623-2995-009 PROVIDES MOUNTING BRACKETS ONLY FOR MOUNTING ON EITHER SIDE OF REAR PLATFORM HAVING SIDE TRANSFER AND REAR ROLLER PROTECTION.

Figure 1
HANDRAIL ASSEMBLY, LEFT OR RIGHT
623-2995



TOP VIEW - HANDRAIL SUPPORT ORIENTATION

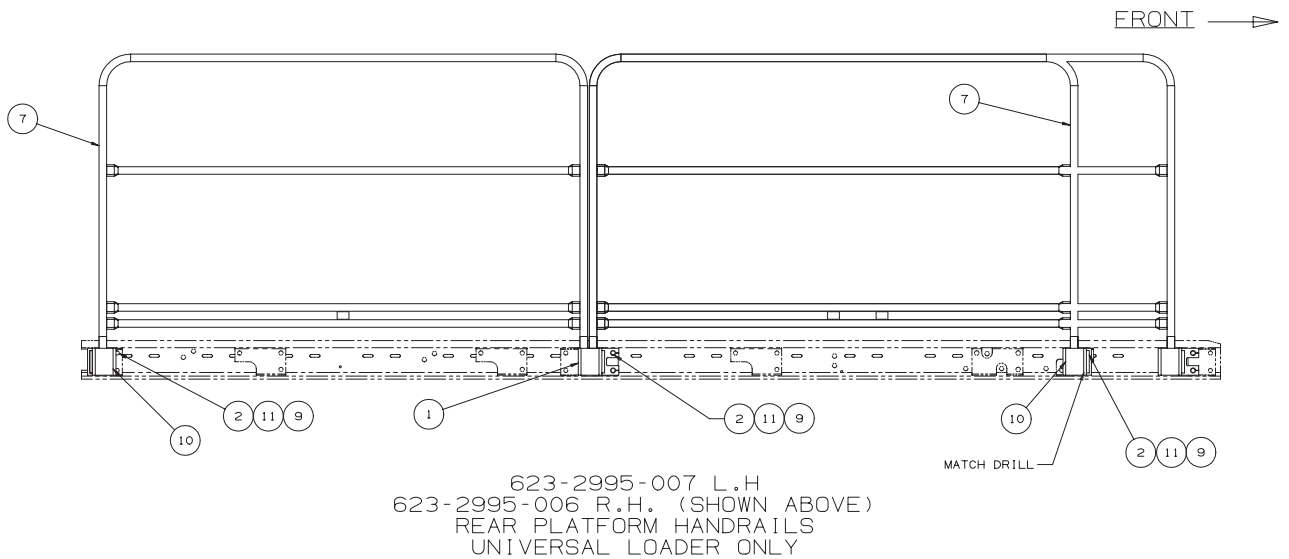
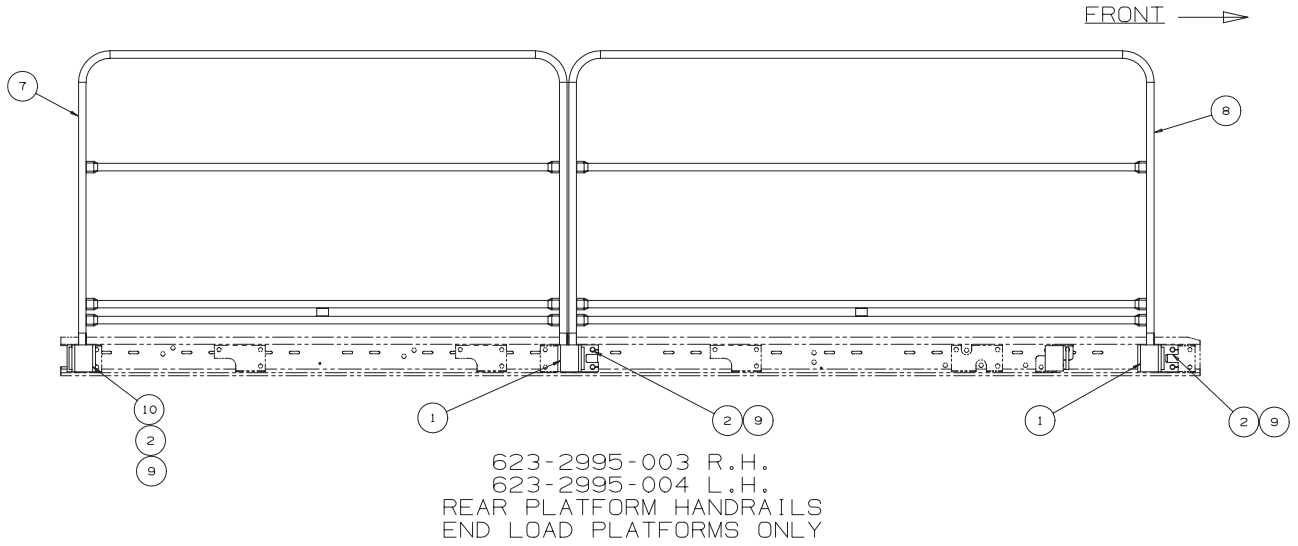
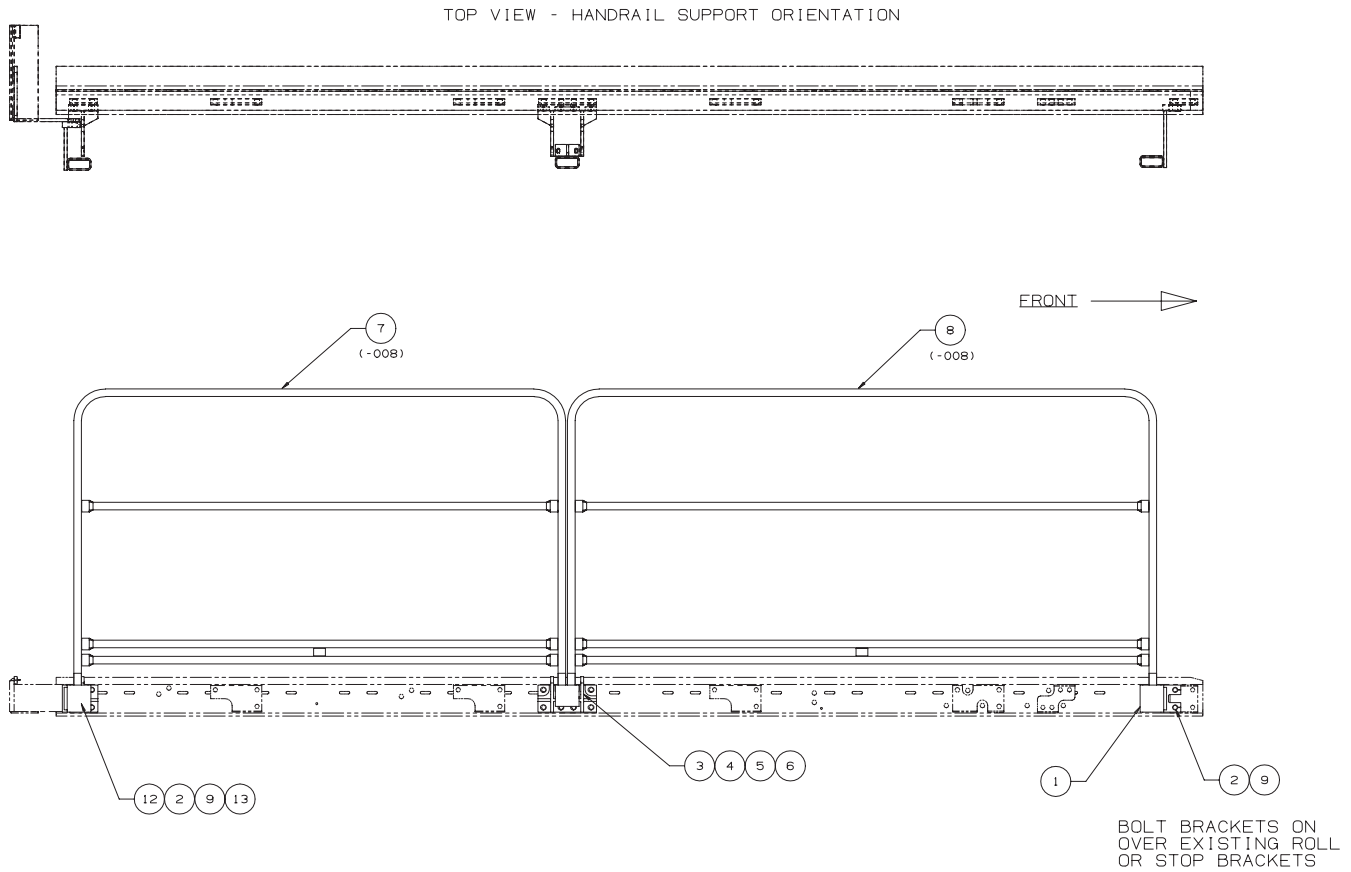


Figure 2
HANDRAIL ASSEMBLY, LEFT OR RIGHT
623-2995



623-2995-008 L.H.
623-2995-009 R.H. (SHOWN ABOVE)
REAR PLATFORM HANDRAILS
WITH CLOSE CLEARANCE PROTECTION

Figure 3
HANDRAIL ASSEMBLY, LEFT OR RIGHT
623-2995

**HANDRAIL ASSEMBLY, LEFT OR RIGHT
623-2995**

Figure 1 thru Figure 3

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>AIRLINE PART NO.</u>	<u>NOMENCLATURE</u>	<u>EFF.</u>	<u>UNITS PER ASSY.</u>
1	620-2257		HANDRAIL SOCKET		1
2	620-1801		SCREW, Hex Hd, 8.8 M20 x 2.5 x 80mm		4
3	620-2563		SOCKET		1
4	620-2859		SCREW, Soc Hd, M10 x 1.5 x 45mm		2
5	620-0657		NUT, PTH 8 M10 x 1.5		2
6	107-1352		WASHER, Flat Hard M10 Regular		4
7	620-6135		HANDRAIL		1
8	620-2560		HANDRAIL		1
9	620-0665		WASHER, Flat Hard M20 Narrow		4
10	620-6134		SOCKET, Handrail		1
11	620-0660		NUT, Hex M20 x 2.5		2
12	623-2921		HANDRAIL BRACKET WELDMENT		1
13	107-1774		SCREW, Hex Hd, 8.8 M20 x 2.5 x 140mm		2
14	623-4035		HANDRAIL BRACKET WELDMENT		1