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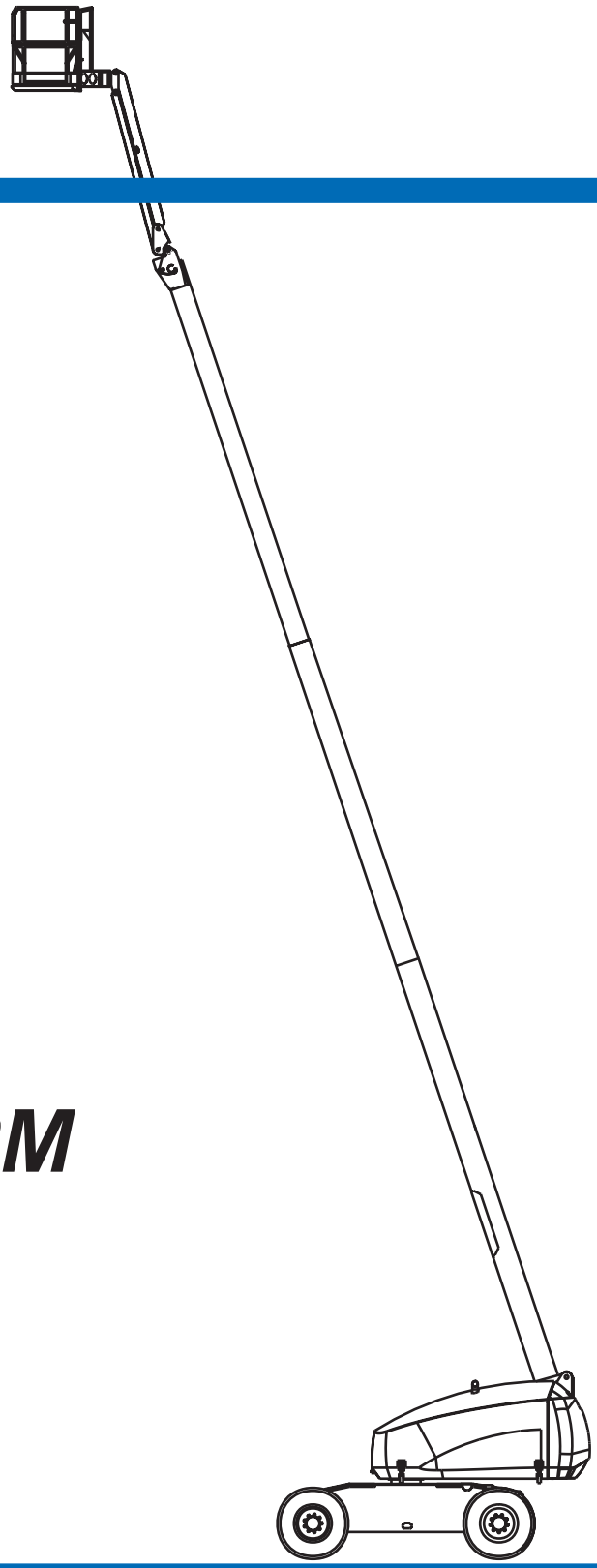

SB80

4 WHEEL DRIVE WORK PLATFORM European

Publication Number: 102321-020

Service & Parts Manual

SERVICE & PARTS MANUAL

SB80

Gas & Diesel Models

Serial Numbers 1000 - Current

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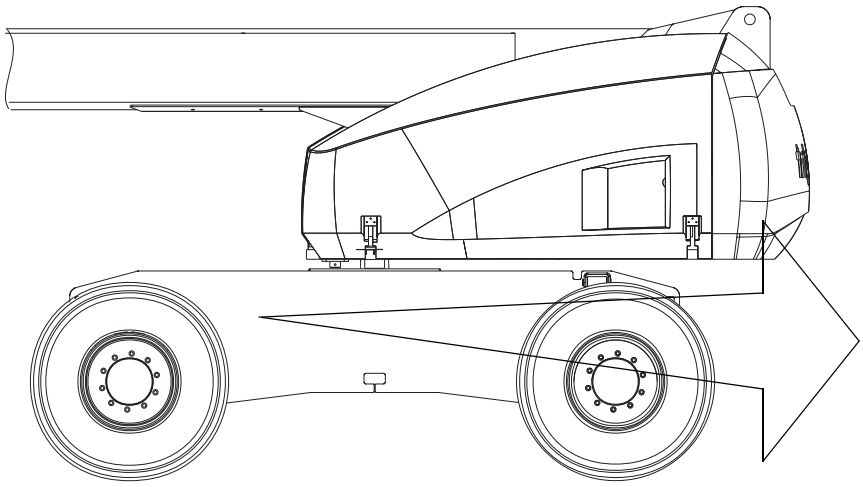

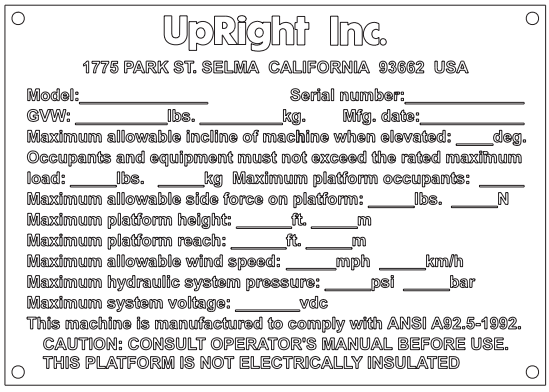

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TABLE OF CONTENTS

Forward i
- **How to Use This Manual** i
- **Special information** i
- **Workshop Procedures** i

SECTION 1

Introduction & Specifications 1-1
- **1.1 Introduction** 1-1
  - Purpose 1-1
  - Scope 1-1
- **1.2 General Description** 1-1
  - Platform 1-1
  - Platform Controller 1-1
  - Elevating Assembly 1-1
  - Power Module 1-1
  - Control Module 1-1
  - Chassis 1-1
  - Purpose of Equipment 1-1
  - Special Limitations 1-1
- **1.3 Specifications** 1-2

SECTION 2

Machine Preparation & Operation 2-1
- **2.1 Introduction** 2-2
- **2.2 Pre-Operation and Safety Inspection** 2-2
- **2.3 System Function Inspection.** 2-3
- **2.4 Controls and Indicators** 2-4
- **2.5 Operation** 2-6
  - From the Lower Controls 2-6
  - From the platform controls 2-6
  - With Boom Lowered 2-6
  - From the Platform Controls 2-7
  - With Boom Elevated 2-7
  - Steering 2-7
  - Positioning the Platform 2-7
  - Multifunction Controls 2-7
  - Lower Control Operation 2-8
  - Emergency Operation 2-9
  - Lowering Elevating Assembly 2-9
  - Emergency Towing 2-9
  - Switching Fuels (Gas/Propane Only) 2-9
  - After Use Each Day 2-9
  - Machines Equipped With Plus3 Option 2-10
- **2.6 Transportation** 2-10
  - By Crane 2-10
  - By Truck or Trailer 2-10
- **2.7 Maintenance** 2-11
  - Fueling 2-11
  - Fuel 2-11
  - Hydraulic Oil 2-11
  - Lubrication 2-12
  - Battery Maintenance 2-12
  - Tires 2-12

TABLE OF CONTENTS

SECTION 3

Maintenance 3-1

3.1 Introduction 3-1
Terminology 3-1
Special Tools 3-1
3.2 Preventative Maintenance 3-2
Preventative Maintenance Table Key 3-3
Interval 3-3
Preventative Maintenance Report 3-3
3.3 Supporting Elevating Assembly 3-4
Installing Support 3-4
Removing Support 3-4
3.4 Battery Maintenance 3-5
Battery Inspection and Cleaning 3-5
Battery Charging 3-5
3.5 Lubrication 3-6
Grease fittings 3-6
Lubricating Turret Gears 3-6
Hydraulic Oil and Filter 3-6
Fluid Level 3-6
Oil and Filter Replacement 3-6
3.6 Proportional Controllers 3-7
Joystick Handle 3-7
3.7 SuperFlex Controller 3-8
SuperFlex Optimizer 3-8
3.8 Platform Down Limit Switch 3-9
3.9 Setting Hydraulic Pressures 3-9
Main Relief Valve 3-9
Other Relief Valves 3-9
Counterbalance Relief Valves 3-9
3.10 Tilt Sensor 3-11
3.11 Drive Motors 3-12
Removal 3-12
Installation 3-12
Drive Motor Run-In 3-12
3.12 Hydraulic Brakes. 3-12
Removal 3-12
3.13 Brake Seal Replacement 3-13
Installation 3-13
3.14 Torque Hubs 3-14
Removal 3-14
Installation 3-14
Disassembly of Torque Hub 3-14
Assembly of Torque Hub 3-15
Carrier assemblies 3-16
Sealing compound 3-16
3.15 Rotary Manifold. 3-18
Removal 3-18
Disassembly 3-18
Assembly 3-18
Installation 3-18
3.16 Removing Extend Cylinder 3-19
3.17 Installing Extend Cylinder 3-20
3.18 Cylinder Repair 3-21
Removal 3-21
Disassembly 3-21
Assembly 3-21
Installation 3-21
3.19 Rotary Actuator. 3-26
Theory of Operation 3-26
Disassembly and Inspection 3-26
Assembly and Testing 3-26
Testing and Storage 3-27
Hydraulic Line Attachment 3-27
3.20 Torque Specifications 3-28
Fasteners 3-28
Hydraulic Components 3-28

TABLE OF CONTENTS

SECTION 4

Troubleshooting 4-1

4.1 Introduction 4-1
Troubleshooting Procedure 4-1
Adjustment Procedures 4-1
Checking Pump Pressures 4-1
4.2 Troubleshooting Superflex Controller. . . . 4-4
4.3 Machine Operation 4-4
Lower Control Box 4-4
Electrical Power Up 4-4
Engine Start 4-4
Glow Plug 4-4
Boom 4-4
Boom Up 4-4
Boom/Axle Logic Interlock 4-4
Boom Down 4-5
Boom Extend 4-5
Boom Extend/Axle Interlock. 4-5
Turret Rotate 4-5
Swing Right 4-5
Swing Left 4-5
Jib 4-5
Jib Up. 4-5
Jib Down 4-5
Cage Rotate 4-5
Cage Right. 4-5
Cage Left 4-5
Cage Trim Up 4-5
Cage Trim Down 4-5
Auxilliary Power
(Emergency Functions). 4-5
Upper Control Box 4-6
Power-Up 4-6
Engine Start 4-6
Glow Plug 4-6
Boom Lift Function 4-6
Boom Up. 4-6
Boom Down 4-6
Boom Extend 4-6
Boom Retract. 4-6
Turret Rotate Functions 4-6
Swing Right. 4-6
Swing Left 4-7
Jib 4-7
Jib Up 4-7
Jib Down. 4-7
Cage Rotate 4-7
Cage Right 4-7
Cage Left 4-7
Cage Trim Up 4-7
Cage Trim Down. 4-7
Auxilliary Power (Emergency Functions) 4-7
Drive Functions 4-7
Drive Forward 4-7
Drive Reverse 4-7
Steer Right 4-7
Steer Left 4-7
Torque High Speed 4-8
Torque Position. 4-8
Speed Position 4-8
Axle Functions 4-8
Axle Extend 4-8
Axle Retract 4-8
Braking 4-8
Tilt 4-8
Interlocks 4-8
4.4 Hydraulic Troubleshooting 4-8

SECTION 5

Schematics 5-1

Introduction 5-1
5.1 Electrical Schematic, SB80 - Diesel. 5-2
5.2 Electrical Schematic, SB80 - Gas 5-4
5.3 Hydraulic Schematic, SB80. 5-6

SECTION 6

Illustrated Parts Breakdown 6-1

LIST OF FIGURES

SECTION 2
Machine Preparation & Operation

Figure 2-1: Locking Pin 2-3
Figure 2-2: Controls and Indicators 2-5
Figure 2-3: Typical Fall Restraint Anchorage Point 2-6
Figure 2-4: Drive Hub (Operating position shown) 2-9
Figure 2-5: Front Chassis Tie Down Lifting Lugs 2-10
Figure 2-6: Securing the machine for transportation 2-11
Figure 2-7: Rear chassis tie down lifting lugs 2-11
Figure 2-8: Fuel Tank 2-11
Figure 2-9: Hydraulic Oil Tank 2-11

SECTION 3
Maintenance

Figure 3-1: Deutsch Connector Kit, Large 3-1
Figure 3-2: Deutsch Connector Kit, Small 3-1
Figure 3-3: Support Elevating Assembly 3-4
Figure 3-4: Turret Gears 3-6
Figure 3-5: Turret Bearing Grease Zerk (shown from below) 3-6
Figure 3-6: Proportional Controller 3-7
Figure 3-7: Lift Controller 3-7
Figure 3-8: Boom Extend Controller 3-7
Figure 3-9: Optimizer 3-8
Figure 3-10: Platform Down Limit Switch 3-9
Figure 3-11: Hydraulic Manifold, Exploded View 3-10
Figure 3-12: Tilt Sensor 3-11
Figure 3-13: Rear Axle Assembly 3-12
Figure 3-14: Brake Assembly 3-13
Figure 3-15: Torque Hub Assembly 3-15
Figure 3-16: Torque Hub 3-17
Figure 3-17: Rotary Manifold 3-18
Figure 3-18: Removing Trunion Pins 3-19
Figure 3-19: Extend Tip Boom 3-19
Figure 3-20: Remove Rod Slide Weldment 3-19
Figure 3-21: Remove trunion pins 3-19
Figure 3-22: Remove Rear Pin Cap Screw 3-20
Figure 3-23: Positioning Tip Boom Rod Slide Weldment 3-20
Figure 3-24: Master Cylinder 3-22
Figure 3-25: Slave Cylinder 3-22
Figure 3-26: Jib Cylinder 3-23
Figure 3-27: Lift Cylinder 3-23
Figure 3-28: Upper Boom Extend Cylinder 3-24
Figure 3-29: Lower Boom Extend Cylinder 3-24
Figure 3-30: Steering Cylinder 3-25
Figure 3-31: Axle Extend Cylinder 3-25
Figure 3-32: Rotary Actuator 3-26
Figure 3-33: Rotary Actuator 3-27
Figure 3-34: Cage Rotator 3-27

SECTION 4
Troubleshooting

Figure 4-1: Superflex 4-2
Figure 4-2: DMR-30 Receiver 4-3
Figure 4-3: DMT-30 Transmitter 4-3

SECTION 5
Schematics

Figure 5-1: Electrical Schematic - Diesel (102026-000) . . 5-3
Figure 5-2: Electrical Schematic - Gas (102026-001 5-5
Figure 5-3: Hydraulic Schematic (102027-000) 5-7
Figure 5-4: Valve Manifold Assembly 5-8
Figure 5-5: Series/Parallel Valve Block 5-9
Figure 5-6: Front Valve Block 5-9
Figure 5-7: Rear Valve Block 5-10
Figure 5-8: Axle Extend Valve Block 5-10
Figure 5-9: Upper Controller, Top Half 5-11
Figure 5-10: Upper Controller, Bottom Half 5-11
Figure 5-11: Upper Controller wiring Diagram 5-12
Figure 5-12: Lower Controller 5-13
Figure 5-13: Lower Controller Wiring Diagram (102018-000) 5-14

LIST OF TABLES

SECTION 1
Introduction & Specifications

Table 1-1: Specifications 1-2

SECTION 2
Machine Preparation & Operation

Table 2-1: Controls and Indicators 2-4

SECTION 3
Maintenance

Table 3-1: Preventative Maintenance Check list 3-3

Table 3-2: Torque Specifications for Fasteners 3-28

Table 3-3: Torque Specifications for Hydraulic Components 3-28

SECTION 4
Troubleshooting

Table 4-1: Electric Truth Table - Diesel 4-9

Table 4-2: Electric Truth Table - Gas 4-12

Table 4-3: Hydraulic Truth Table 4-15

SECTION 5
Schematics

Table 5-1: Electrical Schematic Legend: (102026-000) 5-2

Table 5-2: Electrical Schematic Legend: (102026-001) 5-4

Table 5-3: Hydraulic Schematic Legend (064148-023) 5-6

List of Tables

FORWARD

HOW TO USE THIS MANUAL

This manual is divided into 6 sections. The section number printed at the top corner of each page can be used as a quick reference guide.

SPECIAL INFORMATION

⚠ DANGER ⚠

Indicates the hazard or unsafe practice will result in severe injury or death.

⚠ WARNING ⚠

Indicates the hazard or unsafe practice could result in severe injury or death.

⚠ CAUTION ⚠

Indicates the hazard or unsafe practice could result in minor injury or property damage

NOTES: Give helpful information.

WORKSHOP PROCEDURES

CAUTION: Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause personal injury, or could damage a machine or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by UpRight, Inc., might be done, or of the possible hazardous consequences of each conceivable way, nor could UpRight Inc. investigate all such ways. Anyone using service procedures or tools, whether or not recommended by UpRight Inc., must satisfy themselves thoroughly that neither personal safety nor machine safety will be jeopardized.

Introduction & Specifications 1.0
General description and machine specifications.

Machine Preparation & Operation 2.0
Information on how to operate the work platform and how to prepare it for operation.

Maintenance 3.0
Preventative maintenance and service information.

Troubleshooting 4.0
Causes and solutions to typical problems.

Schematics 5.0
Schematics and valve block diagram with description and location of components.

Illustrated Parts Breakdown 6.0
Complete parts lists with illustrations.

FORWARD

NOTES:

Section 1

INTRODUCTION & SPECIFICATIONS

1.1 INTRODUCTION

Purpose

The purpose of this service and parts manual is to provide instructions and illustrations for the operation and maintenance of the SB80 Work Platform manufactured by UpRight, Inc. of Selma, California.

Scope

The manual includes procedures for proper operation, maintenance, adjustment, and repair of this product as well as recommended maintenance schedules and troubleshooting.

1.2 GENERAL DESCRIPTION

The Work Platform consists of the platform, controller, elevating assembly, power module, control module, and chassis.

Platform

The platform has a non-slip aluminum floor, 1.11 m (44 inch) high guardrails with midrail, 152 mm (6 inch) toeboards and an entrance gate at the rear of the platform.

⚠ WARNING ⚠

DO NOT use the platform without guardrails and gate properly assembled and in place.

Platform Controller

The platform controller contains the controls to operate the machine. It is located at the front of the platform. The interlock footswitch most be depressed to operate any function from the platform. A complete explanation of control functions can be found in Section 2.

Elevating Assembly

The platform is raised and lowered by the boom assembly. The hydraulic pump, driven by the engine, powers the cylinders. Solenoid operated valves control raising and lowering.

Power Module

The power module contains the engine, hydraulic pumps and battery.

Control Module

The Control Module contains the Hydraulic reservoir, fuel tank, hydraulic valve manifold. volt/hour meter, electrical terminal strips, battery, and chassis control panel. A complete explanation of the chassis control functions is found in Section 2.

Chassis

The chassis is a structural frame that supports all the components of the Work Platform.

Purpose of Equipment

The objective of the Work Platform is to provide a quickly deployable, self propelled, variable height work platform to elevate personnel and materials to overhead work areas.

Special Limitations

Travel with the platform raised is limited to creep speed.

⚠ DANGER ⚠

The elevating function shall ONLY be used when the work platform is level and on a firm surface. The work platform is NOT intended to be driven over uneven, rough or soft terrain when elevated.

1.3 SPECIFICATIONS

Table 1-1: Specifications

Specifications are subject to change without notice
Meets or exceeds all applicable requirements of OSHA and ANSI A92.5-1992

ITEM	SPECIFICATION
Height	
Working Height, Maximum	26,2 m (86 ft.)
Platform Height, Maximum	24,4 m (80 ft.)
Platform step in height	30,5 cm (12 in.)
Up and Over Height	2,3 m (7 ft. 6 in.)
Driveable Height	24,4 m (80 ft.)
Horizontal Outreach	21,9 m (72 ft.)
Turret Rotation	360 Degrees continuous
Platform Rotation	180 Degrees
Tail Swing	99 cm (3 ft. 3 in.)
Jib Length	4,2 m (8 ft.)
Jib Arc	140 Degrees
Inside Turning Radius	3 m (10 ft.)
Outside Turning Radius	7 m (23 ft.)
Drive Speed (Lowered)	5,2 kph (3.25 mph)
Drive Speed (Elevated)	1,2 kph (0.75 mph)
Gradeability	Diesel 40% Gas 35%
Controls	electric Proportional
Tires	15-22.5 x 16 ply
Tires (Plus3 Option)	18-22.5 18 ply foam filled
Dimensions	
Platform Size	1,8mstd(6 ft.)2,4m opt (8 ft.)
Guardrail Height	114 cm (45 in.)
Toeboards	15,2 cm (6 in.)
Maximum Platform Capacity	272 kg (600 lbs.)
Maximum Number of Occupants	2
Weight (Gasoline)	14515 kg (32,000 lbs.)
Weight (Diesel)	14741 kg (32,500 lbs.)
Overall height (stowed)	2,7 m (9 ft.)
Overall Length (stowed)	11,5 m (37 ft. 8 in.)
Overall Width (retracted)	2,4 m (8 ft.)
Overall Width (extended)	3,2 m (10 ft. 6 in.)
Overall Width (Plus3)	+10 cm (+4 in.)
Wheelbase	2,9 m (9 ft. 6 in.)
Ground Clearance	28 cm (11 in.)
Power Source (Gas)	GM 3.0 liter 70 H.P.
Power Source (Diesel)	Perkins 1004-42 86 H.P.
System Voltage	12 VDC
Maximum Hydraulic Pressure	345 bar (5000 PSI)

Section 2

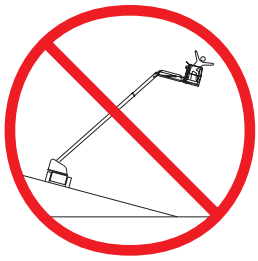
Machine Preparation & Operation

Warning

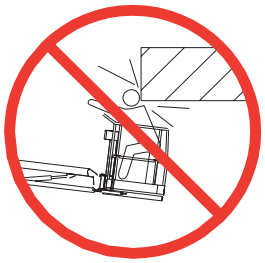
All personnel shall carefully read, understand and follow all safety rules, operating instructions, and the Scaffold Industry Association's ***Manual of Responsibilities (ANSI A92.5)*** before operating or performing maintenance on any Upright aerial work platform.

Safety Rules

NEVER operate the machine within ten feet of power lines. THIS MACHINE IS NOT INSULATED.



NEVER operate boom with platform elevated unless on firm level surface (Plus3 machines 3 Degrees).



NEVER position the platform without first checking for overhead obstructions or other hazards.

NEVER Climb, stand or sit on platform guardrails or midrail.

ALL occupants must wear an approved fall restraint properly attached to designated platform anchorage point. Attach only one fall restraint to each anchorage point.

NEVER exceed maximum platform load of 272 kg (600 lbs.) including two (2) occupants.

NEVER exceed 200 N (45 lbs.) of side force per occupant.

DISTRIBUTE all platform loads evenly on the platform.

NEVER operate the machine without first surveying the work area for surface hazards such as holes, drop-offs, bumps, curbs, or debris; and avoiding them.

OPERATE machine only on surfaces capable of supporting wheel loads.

NEVER elevate the machine when wind speeds exceed 12.5 m/sec. (28 mph).

IN CASE OF EMERGENCY push emergency stop button to deactivate all powered functions.

ALWAYS close and secure sliding rail after entering platform.

NEVER exit or enter platform while elevated.

NEVER use ladders, scaffolding, or other items to gain height; work only from the platform floor.

NEVER climb down elevating assembly while platform is elevated.

INSPECT the machine thoroughly for cracked welds, loose or missing hardware, hydraulic leaks, loose wire connections, and damaged cables or hoses before using.

VERIFY that all labels are in place and legible before using.

NEVER use a machine that is damaged, not functioning properly, or has damaged or missing labels.

IF ALARM SOUNDS while boom is elevated, STOP, carefully retract boom and lower platform without rotating. Move machine to a firm, level surface.

NEVER attach overhanging loads or use boom as a crane.

NEVER alter operating or safety systems without manufacturers written consent.

NEVER charge batteries near sparks or open flame. Charging batteries emit explosive hydrogen gas.

NEVER replace any component or part with anything other than original UpRight replacement parts without the manufacturer's written consent.

NEVER tow the machine. Transport by truck or trailer only.

AFTER USE, secure the work platform from unauthorized use by turning both keyswitches off and removing key.

California Proposition 65 Warning

Gasoline and diesel engine exhaust and some of their constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

2.1 INTRODUCTION

This manual covers the operation of internal combustion powered models of the SB-80 Boom. This manual must be stored on the machine at all times.

2.2 PRE-OPERATION AND SAFETY INSPECTION

Carefully read, understand and follow all safety rules, labels, and operating instructions, then perform the following steps each day before use.

Perform a complete visual inspection of the entire unit prior to operating. Check the following areas for discrepancies:

1. Open panels and check hydraulic components / hoses for damage or leaks. Check electrical components / wiring for damage or loose connections.
2. Inspect chassis, axles, hubs, and steering linkage for damage, deformation, buckled paint, loose or missing hardware, and cracked welds.
3. Check tires for damage, punctures, and inflation; Air filled tire pressure must be 7 bar (100 psi).
4. Check all hoses / cables for wear.
5. Inspect elevating assembly for damage, deformation, buckled paint, loose or missing hardware, and cracked welds.
6. Inspect platform and guardrails for damage, deformation, buckled paint, loose or missing hardware, and cracked welds. Ensure that gate operates freely and closes securely.
7. Check Hydraulic fluid level with platform fully lowered.
8. Check fluid level in batteries (see Battery Maintenance, Section 3-4).
9. Check fuel level, add fuel if necessary (page 2-11).
10. Check engine oil level.
11. Check air filter. Replace if necessary.
12. Set gasoline/propane selector to desired position. Set to center position to purge the system when switching fuels. If the machine is to be operated on propane, open the supply valve on the tank.

NOTE: When using LP gas, use clean, water free liquid petroleum gas, preferably from a bulk storage tank.

⚠ WARNING ⚠

Never remove the cap from a hot radiator. Hot coolant can cause severe burns.

13. Ensure that radiator is cold, check coolant level. Add coolant if necessary.

⚠ WARNING ⚠

If you smell propane, close the supply valve on the tank immediately until you have located and corrected the leak.

2.3 SYSTEM FUNCTION INSPECTION

NOTE: Refer to Figure 2-2 for chassis and platform control locations.

IMPORTANT: Before performing the System Function Inspection be sure the axles are fully extended. For axle extending instructions, refer to "Extending and retracting Axles".

1. Before performing the following tests, check area around machine and overhead for obstructions, holes, drop-offs, and debris.
2. Turn chassis key switch to chassis, and pull out emergency stop switches at the chassis control panel and at the platform control panel.
3. Retract locking pin (Figure 2-1).
4. Press the engine start toggle to crank the engine; release when engine starts. If engine is cold (less than 15 degrees F): press the glow plug button and hold for six seconds prior to starting diesel models.
5. Push in the chassis emergency stop button, engine should stop. Repeat for platform emergency stop button. Return both emergency stop buttons to the on position, and start engine.
6. Operate function switches to raise / lower, rotate left / right, each section of the elevating assembly and observe the operation of the machine. All functions should operate smoothly.
7. Turn chassis key switch to platform.
8. Mount the platform, and attach approved fall restraint to designated platform anchorage point. Attach only one fall restraint to each point.
9. While depressing the foot switch, move the drive control handle forward and reverse. Observe that proportional functions operate smoothly, and that brakes apply quickly after control is released.
10. While engaging the hand interlock, operate steer switch to left and right. Observe that steering wheels turn properly.
11. While depressing foot switch, operate boom controls. Observe that boom operates smoothly, and that boom raise and lower, turret rotation, and boom extension and retraction operate proportionally in conjunction with stroke of handle. Observe that platform maintains level when boom is elevated.

NOTE: Boom will not extend unless axles are extended. Also boom will not raise beyond 45

12. With the boom elevated five degrees above horizon or greater, operate drive control handle. Observe that drive speed is limited to creep (.30m [1 ft.] per second). Lower upper boom to stowed position.
13. Press the service horn button. Observe that horn is audible.

NOTE: Hand interlock controls drive/steer functions only.

NOTE: Foot switch controls boom functions only.

⚠ WARNING ⚠

DO NOT use a machine that is damaged or malfunctioning. Tag the machine and remove it from service until it is repaired.

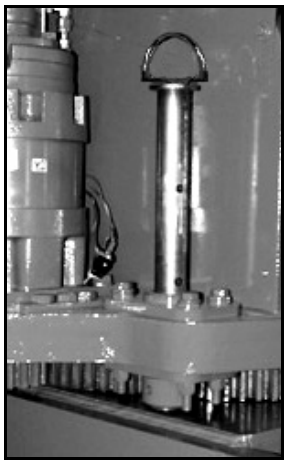


Figure 2-1: Locking Pin

2.4 CONTROLS AND INDICATORS

The controls and indicators for operation of the SB80 Work Platform are shown in Figure 2-2. The name and function of each control and indicator are listed in Table 2-1. The index numbers in Figure 2-2 correspond to the index numbers in Table 2-1. The operator shall know the location of each control and indicator and have a thorough knowledge of the function and operation of each before attempting to operate the unit.

Table 2-1: Controls and Indicators

Chassis

INDEX #	NAME	FUNCTION
1	Oil Pressure Gauge	Displays current oil pressure.
2	Water Temperature Gauge	Displays current water temperature.
3	Hourmeter	Displays number of hours machine has been in operation.
4	Emergency Stop Switch	Cuts all power to platform and chassis controls.
5	Key Switch	Switches between chassis and platform control.
6	Engine Start	Starts engine.
7	Glow Plug (Diesel Only)	Press and hold for 20 seconds when engine is cold. (Diesel only, below 15°f).
8	Auxiliary Power	Use only in the event of power failure. Provides only enough power to lower boom.
9	Enable Switch	Must be pressed in order to control functions from the chassis controls.
10	Boom Control	Controls boom functions.
11	Boom Extension Control	Controls boom extension functions.
12	Turret Control	Controls turret functions.
13	Jib Control	Controls jib functions.
14	Cage Rotation	Controls cage rotation functions.
15	Cage Level Control	Levels cage if rotated.
16	Circuit Breaker	Overcurrent protection

Platform

INDEX #	NAME	FUNCTION
17	Axle Extend/ Retract	Controls axle extend/retract functions.
18	Lights (Optional)	Turns lights on or off.
19	Generator (Optional)	Charges battery for auxiliary power.
20	Horn	Sounds horn.
21	Emergency Stop	Cuts all power to platform and chassis controls.
22	Axles Extended Indicator	Indicates if axles are extended.
23	Tilt Warning Indicator	Indicates if machine is on a slope that is unsafe.
24	Low Oil Pressure Indicator	Indicates if oil pressure is reaching dangerous levels.
25	Torque Speed Selector	Selects high or low speed drive.
26	Fuel Selector/ Glow Plug	**Dual Fuel**: Toggles between gas/propane. **Diesel**: Hold in 20 seconds when engine is cold (below 15°f).
27	Auxiliary Power	Enables auxiliary power. Provides enough power to lower the boom in the event of a power failure.
28	Boom Raise/ Swing	Controls boom raise/lower functions vertically. Controls turret swing horizontally.
29	Boom Extend/ Retract	Controls boom extend/retract functions.
30	Cage Rotate	Controls cage rotate functions.
31	Jib Raise/Lower	Controls jib raise/lower functions.
32	Cage Level	Levels cage if out of trim.
33	Drive Control Handle	Controls Forward or Reverse travel and steering on top.
34	Engine Start	Starts engine.
35	Foot Interlock Switch	Enables platform controls when depressed.

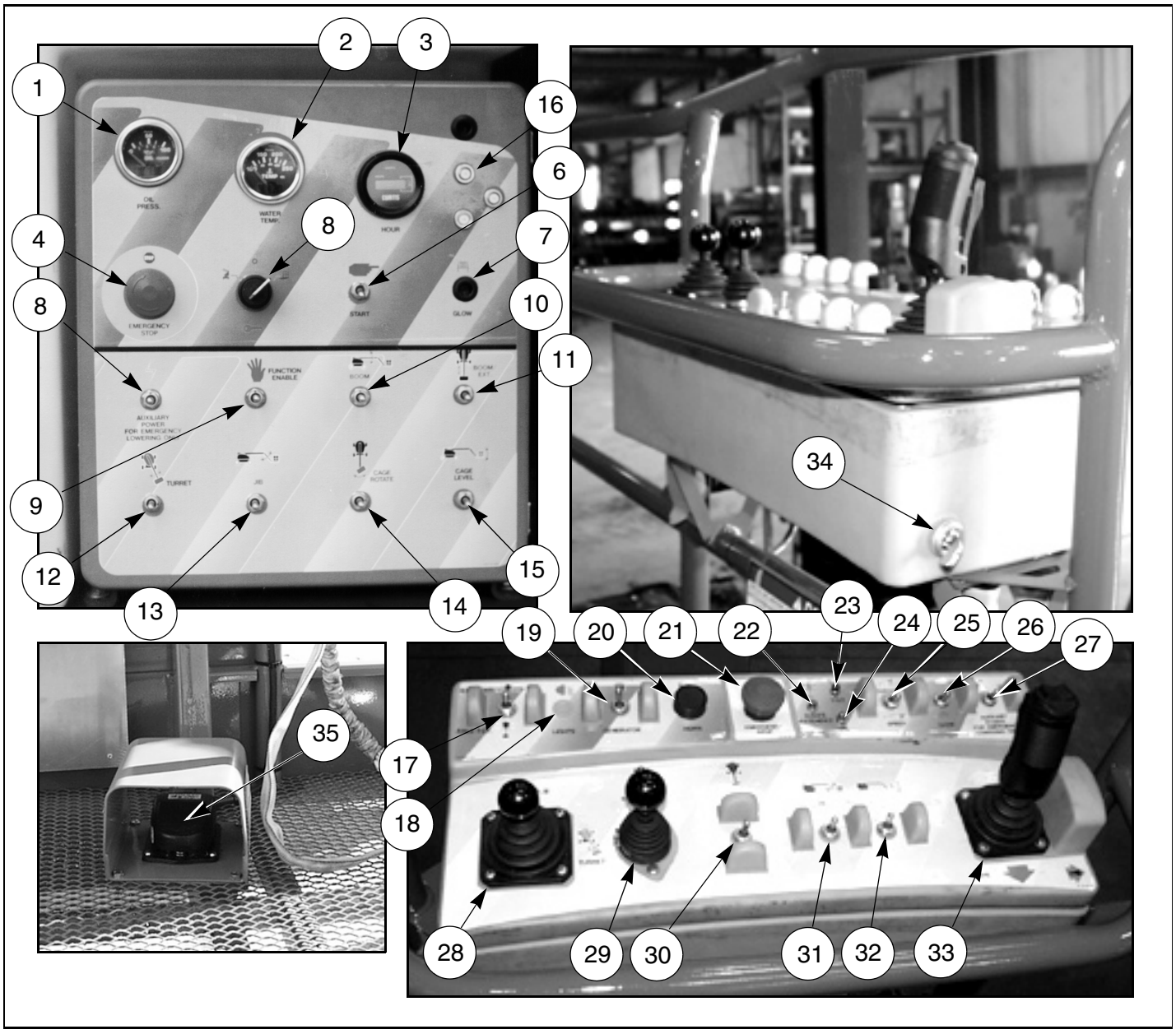


Figure 2-2: Controls and Indicators

2.5 OPERATION

Before operating work platform ensure that:

- Pre-operation and safety inspection has been completed, and any discrepancies have been corrected.
- System function inspection has been performed.
- Operator has been thoroughly trained on the operation of the machine.
- Work area is clear of all obstructions, holes, drop-offs, or persons in the route of travel.
- Surface is capable of supporting wheel loads.

Refer to Figure 2-2 for control locations.

Emergency Stop

At any time during operation, press the emergency stop button to stop all functions in the event of an emergency.

Service Horn

At any time during operation, press the service horn button to sound an audible warning in necessary.

⚠ WARNING ⚠

ALWAYS wear an approved fall restraint properly attached to designated platform anchorage point when driving or operating the machine (Figure 2-3).

Attach only one restraint to each anchorage point.

Figure 2-3: Typical Fall Restraint Anchorage Point

Starting the Engine

From the Lower Controls

1. Turn the chassis key switch to chassis position.
2. Press the start button to crank the engine. Release when the engine starts.
3. Diesel Engines: When the engine is cold (less than 15°f); press and hold the glow plug button for 20 seconds prior to starting.

From the platform controls

1. Turn the chassis key switch to platform controls.
2. Turn the platform rotary switch fully clockwise to crank the engine. Release when engine starts.
3. Diesel Engines: When the engine is cold (less than 15°f); press and hold the glow plug button for 20 seconds prior to starting.

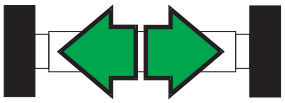
Driving

With Boom Lowered

1. Turn chassis key switch to platform, and pull out the chassis emergency stop switch.
2. Mount the platform and close sliding rail.
3. Attach approved fall restraint to designated platform anchorage point. Attach only one fall restraint to each point.
4. Start engine.

5. Check that the area around and above the work platform is clear of obstructions, holes, drop-offs, persons in the route of travel, and the surface is capable of supporting wheel loads.
6. Engage the interlock switch and move the drive control handle forward to travel forward and rearward to travel in the reverse direction.

NOTE: When the boom is rotated to the front of the chassis (steering wheels aft) directions of travel and steering will be reversed. Observe the color coded arrows on the control panel near the drive control handle, and on the chassis. They will indicate the direction of travel when the drive control handle is moved.



Extending and Retracting Axles

From the Platform Controls

Important: Axles must be fully extended to allow boom extension or boom to be raised above 45°. Machine must be driven forward or reverse while extending axles. Ensure all four wheels can be clearly seen and persons and obstacles are clear of the machine.

1. Drive the machine forward or reverse.
2. Move and hold the axle extend/retract switch to extend.
3. The axles will extend.
4. When axles are fully extended, the axles extended light (green light on platform controller) will illuminate.

NOTE: Verify Yellow bars are visible on all four axles at full extension.

5. Re-synchronize the steering geometry by steering full left or full right and holding for a few seconds.
6. All boom functions are now available.

With Boom Elevated

Travel with boom elevated is restricted to firm level surfaces only. (Plus3 machines 3°)

When driving elevated, the machine will travel at creep speed (1 foot [.30 m] per second).

Steering

1. While engaging the interlock, push the steering switch (located on top of the control handle) to the left to turn left, and right to turn right.

NOTE: Steering is not self centering. Wheels must be returned to the straight ahead position by operating the steering switch.

Positioning the Platform

Positioning the platform as close as possible to the work area requires some planning. First, you must survey the work site to find a suitable place to park the machine. This must be a firm level area as close as possible to the work area. Take into consideration all obstructions on the ground and overhead and avoid them.

Always, before operating any function, check the area around and overhead for any obstructions or electrical conductors.

⚠ WARNING ⚠

***NEVER** exit the platform while the boom is elevated. Keep both feet firmly on platform floor at all times. Do not use planks, ladders, or any other device on the platform for achieving additional height or reach.*

Multifunction Controls

The UpRight SB-80 employs the use of multifunction controls. This means that functions can operate at full speed simultaneously.

The turret may be rotated while driving if necessary to make turns in tight areas*. All other boom functions will not operate while driving.

***NOTE: European model only. On Domestic models, all functions are available while driving.**

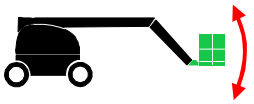
Lower Control Operation

⚠ WARNING ⚠

NEVER *exit the platform while the boom is elevated. Keep both feet firmly on platform floor at all times. Do not use planks, ladders, or any other device on the platform for achieving additional height or reach.*

All boom functions will operate at fixed speed.

1. Turn chassis keyswitch to chassis controls.
2. With engine running, operate boom control switches to position the platform.



Leveling the Platform

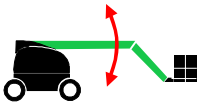
⚠ WARNING ⚠

DO NOT operate the machine if the platform does not maintain level when elevated.

Move the platform level control switch forward to swing the platform upward, rearward to swing the platform downward. Release the switch to stop leveling.

Rotating the Turret

Move the boom rotation joystick to the right to rotate right, left to rotate left. Release the switch to stop rotation. The turret rotation will function at a speed proportional to the stroke of the joystick. Make sure the area around the boom is clear of all obstructions before rotating the turret.

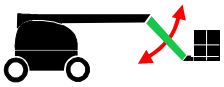


Elevating the Boom

Move the joystick forward to elevate the boom, rearward to lower the boom. Release the control lever to stop elevating / lowering. The boom elevate will function at a speed proportional to the stroke of the joystick.

Extending the Boom

While depressing the enable switch, move the boom extension control joystick rearward to extend the boom, forward to retract the boom. Release the control lever to stop extending / retracting. The boom extension will function at a speed, proportional to the stroke of the joystick.



Elevating the Jib

While depressing the enable switch, push the jib control switch forward to elevate the jib, rearward to lower the jib. Release the control lever to stop elevating / lowering.

Rotating the Platform

While depressing the enable switch, toggle the control switch left to rotate left, right to rotate right. Release the switch to stop rotation.

Emergency Operation

In the event of an engine failure, the elevating assembly may be lowered using the following procedure

⚠ WARNING ⚠

NEVER climb down the elevating assembly. If controls do not respond, follow the emergency lowering procedure.

Lowering Elevating Assembly

1. Engage the auxiliary power unit switch.
2. Operate any boom function in the normal manner.

NOTE: Auxiliary battery is capable of one emergency lowering cycle before requiring recharge. Battery is recharged while engine is in operation.

Emergency Towing

⚠ CAUTION ⚠

DO NOT tow the machine faster than 3 mph. Faster speeds will damage drive components and void warranty.

⚠ WARNING ⚠

There are no brakes when the center caps are installed in the inverted position.

Perform the following only when the machine will not operate under its own power and it is necessary to move the machine or when winching onto a trailer for transportation.

1. Ensure that the platform is fully lowered, and that the turret is rotated so that the platform is to the rear of the machine.

⚠ WARNING ⚠

Chock wheels before disengaging hubs, Machine may roll.

2. Refer to Figure 2-4 and disengage all four drive hubs. Remove two (2) screws and center cap. Reinstall center cap in the opposite direction.
3. When ready to move the machine, remove the chocks. Tow or winch into position and replace chocks.
4. Attach adequate chain/cable of sufficient strength for towing the machine to the front or rear tie down lugs.
5. Engage all four drive hubs by returning the center caps to their original orientation.

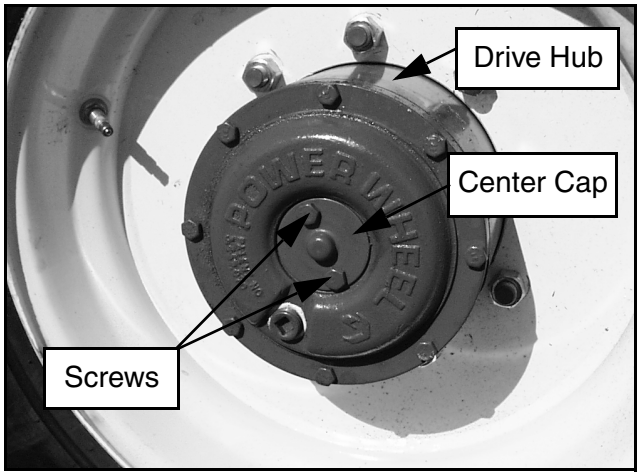


Figure 2-4: Drive Hub (Operating position shown)

Switching Fuels (Gas/Propane Only)

1. With the engine running push the Fuel Selector Switch to the center position.
2. After the engine has quit running select the appropriate fuel supply.
3. Restart the engine.

After Use Each Day

1. Ensure that the platform is fully lowered.
2. Park the machine on level ground, preferably under cover, secure against vandals, children or unauthorized operation.
3. Turn the key switch to **OFF** and remove the key to prevent unauthorized operation.

Machines Equipped With Plus3 Option

Machines equipped with Plus3 option are capable of operating all functions on a firm flat 3° slope.

⚠ WARNING ⚠

DO NOT operate machines with Plus3 option unless machine is equipped with foam filled tires. Remove machine from service and install proper tire/wheel combination before operating machine.

⚠ WARNING ⚠

If tilt warning sounds and machine will not operate, retract boom, lower platform and move machine to a firm surface less than 3°.

2.6 TRANSPORTATION

Important: Axles must be fully retracted to transport machine. Machine must be driven forward or reverse while retracting the axles. Ensure all four wheels can be clearly seen and persons and obstacles are clear of the machine.

1. Drive the machine forward or reverse.
2. Hold the axle extend/retract switch to retract.
3. The axles will retract.
4. Re-synchronize the steering geometry by steering full left or full right and holding for a few seconds.
5. The machine may now be loaded for transport.

By Crane

⚠ WARNING ⚠

Stand clear of machine when lifting.

Check specifications on Table 1-1, ensure that crane and slings are of correct capacity to lift weight of unit.

1. Ensure that boom is fully lowered and retracted.
2. Attach straps to chassis lifting lugs only. Ensure that straps are adjusted properly to keep unit level when lifting.

By Truck or Trailer

1. Ensure that boom is fully lowered and retracted.
2. Maneuver the machine onto bed of truck / trailer.
3. When winching, follow instructions for emergency towing on page 2-9. Attach winch cable to front tie down lugs.

⚠ CAUTION ⚠

Do not winch machine faster than 3 mph. Faster speeds will damage drive components and void warranty.

4. After winching, ensure that all four drive hubs are engaged by returning the center caps to their original orientation.
5. Secure the machine to the transport vehicle using chains / straps of adequate load capacity (refer to specifications, Table 1-1) attached to chassis tie down lugs (Figure 2-5).
6. Place wooden block (10 cm x 20 cm x 1 m) under platform support braces as shown. (Figure 2-6)
7. Attach ratchet strap to platform tie down brackets.

⚠ WARNING ⚠

NEVER elevate the machine while on a truck or trailer.

Figure 2-5: Front Chassis Tie Down Lifting Lugs

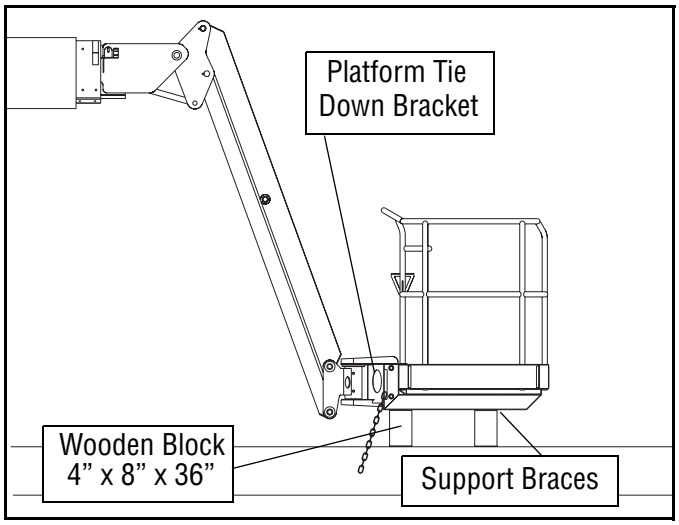


Figure 2-6: Securing the machine for transportation

Figure 2-7: Rear chassis tie down lifting lugs

2.7 MAINTENANCE

Fueling

⚠ WARNING ⚠

Use a ladder or platform when fueling the SB80.

***DO NOT** stand on tires when fueling machine.*

Fuel

1. Open left turret cover, open fill pipe cap. (see Figure 2-8)
2. Fill to capacity with gas or diesel motor fuel only. Use distillate diesel fuel only, do not use residual or blend.
3. Fuel tank full capacity is 42 US gallons.

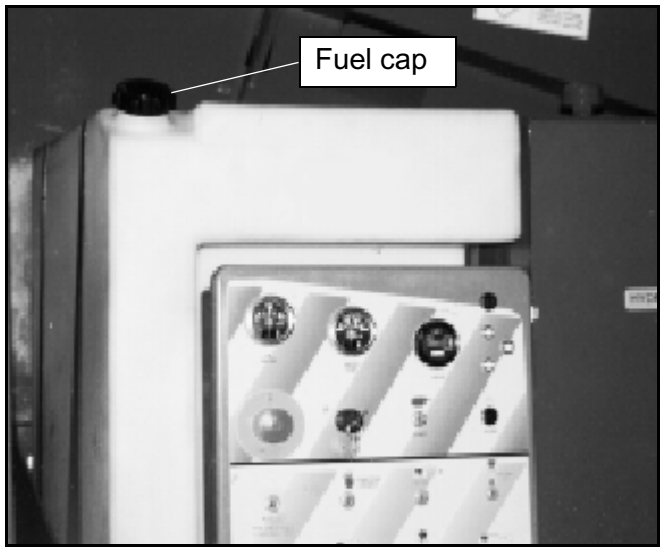


Figure 2-8: Fuel Tank

Hydraulic Oil

1. Open left turret cover and check oil level at sight gauge with the boom stowed and retracted. Engine running or stopped. (see Figure 2-9)
2. If necessary, fill to capacity with clean ISO compatible hydraulic oil. Refer to Routine Service Table 3-3.
3. Clean area around cap before opening.
4. Open filler / breather cap to add hydraulic oil.
5. Replace cap.

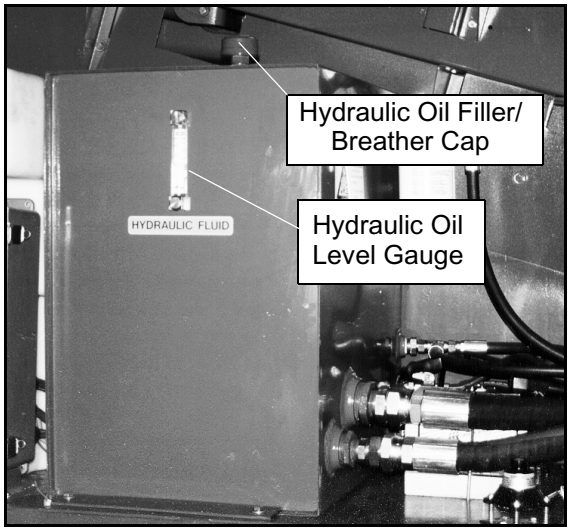


Figure 2-9: Hydraulic Oil Tank

Lubrication

Refer to Section 3 for lubrication chart and guidelines.

Battery Maintenance

⚠ WARNING ⚠

Hazard of explosive gas mixture. Keep sparks, flame and smoking materials away from batteries. Always wear safety glasses when working with batteries. Battery fluid is highly corrosive. Rinse away any spilled fluid thoroughly with clean water.

Check battery fluid level daily, especially if work platform is being used in a warm, dry climate.

If electrolyte level is lower than 10 mm (3/8 in.) above plates add distilled water only. DO NOT use tap water it will shorten battery life.

Keep terminals and top of battery clean.

Tires

Tire selection can affect the stability of the machine. Use only tires supplied by UpRight (15-22.5 NHS Tubeless 16 Ply Rating) unless approved by the manufacturer in writing. Check tire air pressure daily. (7 bar) (100 psi) (Not required for foam-filled tires).

⚠ WARNING ⚠

Do not operate machines with Plus3 option unless machine is equipped with foam filled tires. Remove machine from service and install proper tire/wheel combination before operating machine.

Section 3

MAINTENANCE

3.1 INTRODUCTION

⚠ WARNING ⚠

Be sure to read, understand and follow all information in the Operation Section of this manual before attempting to operate or perform service on any Work Platform.

NOTE: For information on the engine refer to the manual shipped with your machine.

This section contains instructions for the maintenance of the Work Platform. Procedures for the operation inspection, adjustment, scheduled maintenance, and repair/removal are included.

Referring to Section 2 will aid in understanding the operation and function of the various components and systems of the work platform, and help in diagnosing and repair of the machine.

Refer to Preventative Maintenance Checklist, for recommended maintenance intervals.

Terminology

TERMINAL BLOCKS: Located in upper and lower control boxes. Designated by **TB##**. (##) designates the number of the block which is written on the terminal block. “R” right or “L” may follow the number.

WIRE COLOR: Indicated by **color/color**. First color refers to insulation color and second color indicates stripe color. If second color is not given there is no stripe.

FORWARD: Front of machine indicated by yellow arrows on chassis.

AFT: Rear of machine indicated by orange arrows.

GENERAL PROCEDURES

CONTACT BLOCKS: Removed by inserting a flat screwdriver into the slot at either end of block and prying outward. Installed by pressing into an empty slot.

SWITCH MOUNT BASE: Assembled to back of switch actuator. Removed by rotating the small black lever counterclockwise and lifting off of base.

TERMINAL BLOCKS: Remove wires by inserting a small flat bladed screwdriver into square beside wire. Install wires by stripping 1.25 cm (1/2”) of insulation, inserting screwdriver into square and inserting wire. Be sure no strands are bent backwards. Replace wires with same rating and type.

Special Tools

The following is a list of special tools which may be required to perform certain maintenance procedures on the work platform.

- 0-1000 PSI Hydraulic Pressure Gauge with Adapter Fittings (014124-010)
- 0-3000 PSI Hydraulic Pressure Gauge with Adapter Fittings (014124-030)
- 0-5000 PSI Hydraulic Pressure Gauge with Adapter Fittings (014124-050)
- Small Deutsch Connector Field Kit (UpRight P/N 030899-000)
- Large Deutsch Connector Field Kit (UpRight P/N 030898-000)
- Inclinometer

Figure 3-1: Deutsch Connector Kit, Large

Figure 3-2: Deutsch Connector Kit, Small

3.2 PREVENTATIVE MAINTENANCE

The Complete inspection consists of periodic visual and operational checks, together with all necessary minor adjustments to assure proper performance. Daily inspection will prevent abnormal wear and prolong the life of all systems. The inspection and maintenance schedule is to be performed at regular intervals. Inspection and maintenance shall be performed by personnel who are trained and familiar with mechanical and electrical procedures.

⚠ WARNING ⚠

Before performing preventative maintenance, familiarize yourself with the operation of the machine.

Always block the elevating assembly whenever it is necessary to enter the lift assembly to perform maintenance while the platform is elevated.

The preventative maintenance table has been designed to be used primarily for machine service and maintenance repair. Please photocopy the following page and use this table as a checklist when inspecting the machine for service.

Preventative Maintenance Table Key

Interval

Daily=each shift or every day
50h/30d=every 50 hours or 30 days
250h/6m=every 250 hours or 6 months
1000h/2y=every 1000 hours or 2 years

Y=Yes/Acceptable N=No/Not Acceptable
R=Repaired/Acceptable

Preventative Maintenance Report

Date:_____
Owner: _____
Model No:_____
Serial No: _____
Serviced By: _____
Service Interval: _____

Table 3-1: Preventative Maintenance Check list

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Battery	Check electrolyte level	Daily			
	Check specific gravity	6m			
	Clean exterior	6m			
	Check battery cable condition	Daily			
	Clean terminals	6m			
Engine Oil and Filter	Check level and condition	Daily			
	Check for leaks	Daily			
	Change oil & filter (Diesel)	500h			
	Change oil & filter (Gas)	200h			
Engine Fuel System	Check fuel level	Daily			
	Check for leaks	Daily			
	Replace fuel filter	6m			
	Check air cleaner	Daily			
Engine Coolant	Check coolant level (with engine cold)	Daily			
	Replace coolant	3m			
Hydraulic Oil ***See Note**	Check oil level	Daily			
	Change filter	6m			
	Drain and replace oil	2y			
Hydraulic System	Check for leaks	Daily			
	Check hose connections	30d			
	Check hoses for exterior wear	30d			
Emergency Hydraulic System	Check operation of the emergency lowering override power unit	Daily			
Controller	Check switch operation	Daily			
Control Cable	Check the exterior of the cable for pinching, binding or wear	Daily			
Platform Deck and Rails	Check fasteners for proper torque	Daily			
	Check welds for cracks	Daily			
	Check condition of platform	Daily			
Tires	Check for damage	Daily			
	Check air pressure 6,9 bar (100PSI)	Daily			
	Check lug nuts (torque: 353 Nm [260 ft/lbs])	30d			
Hydraulic Pump	Wipe clean	30d			
	Check for leaks at mating surfaces	30d			
	Check for hose fitting leaks	Daily			
	Check mounting bolts for proper torque	30d			
Drive Motors	Check for operation and leaks	Daily			
Torque Hubs	Check for leaks	Daily			
	Check oil level	250h/6m			
	Change Oil after break-in	50h/30d			
	Torque hub mounting hardware to 353 Nm [260 ft/lbs])	6m			
	Change Oil	1000h/2y			

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Steering System	Check hardware & fittings for proper torque	6m			
	Check linkage for wear	30d			
	Check for missing or loose retainers	30d			
	Check steering cylinder for leaks	30d			
Elevating Assembly	Inspect for structural cracks	Daily			
	Check pivot points for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check members for deformation	Daily			
Chassis	Check hoses for pinch or rubbing points	Daily			
	Check component mounting for proper torque	6m			
	Check swing bearing bolt torque 475 Nm (350 ft/lbs)	6m			
	Check welds for cracks	Daily			
Axles	Grease wear pads on extending axles	30h			
Lift Cylinder	Check the cylinder rod for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check seals for leaks	30d			
	Inspect pivot points for wear	30d			
	Check fittings for proper torque	30d			
Axle Cylinder	Check the cylinder rod for wear	30d			
	Check mounting pin pivot bolts for proper torque	30d			
	Check seals for leaks	30d			
	Inspect pivot points for wear	30d			
	Check fittings for proper torque	30d			
Entire Unit	Check for and repair collision damage	Daily			
	Check fasteners for proper torque	3m			
	Check for corrosion-remove and repaint	6m			
	Lubricate	30d			
Turret	Check ring gear for wear and proper lubrication	Daily			
	Check planetary oil level	150h/3m			
	Check Lubricate ring gear(MoS_2 grease)	30d			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			

* Mobile DTE 15M, ISO grade 46, 40°F to 110°F
* Mobile DTE 13M, ISO grade 32, 10°F to 65°F

3.3 SUPPORTING ELEVATING ASSEMBLY

⚠ WARNING ⚠

Never perform service in the elevating assembly area while the platform is elevated without first supporting the elevating assembly.

DO NOT stand in the elevating assembly area while deploying or storing the jackstand.

Installing Support

1. Park the work platform on firm level ground.
2. Fully retract the boom.
3. Verify platform emergency stop switch is ON.
4. Turn platform/chassis switch to CHASSIS.
5. using the elevate boom switch, elevate the platform 20 to 30 cm (8 to 12 in.).
6. Use an overhead hoist (preferred) or jackstand (minimum capacity Two tons) to support the boom.
7. Push “Lower” button and gradually lower the platform until the elevating assembly is supported by the overhead hoist or jackstand.

Removing Support

1. Using chassis controls, slowly raise the platform until the boom is free of the support.
2. Remove the support.
3. Push “Lower” button to completely lower the platform.

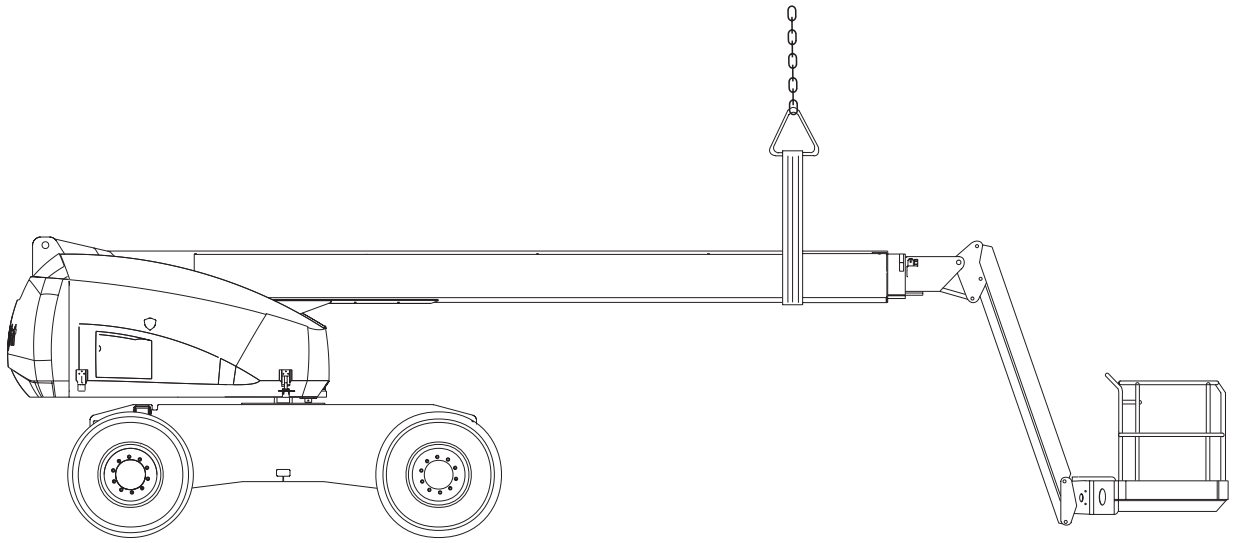


Figure 3-3: Support Elevating Assembly

3.4 BATTERY MAINTENANCE

⚠ WARNING ⚠

Hazard of explosive gas mixture. Keep sparks, flame, and smoking material away from battery.

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Thoroughly rinse away any spilled fluid with clean water.

Battery Inspection and Cleaning

Check battery fluid level daily, especially if work platform is being used in a warm, dry climate. If required, add distilled water ONLY. Use of tap water will shorten battery life.

The battery should be inspected regularly for signs of cracks in the case, electrolyte leakage and corrosion of the terminals. Inspect cables for worn spots or breaks in the insulation and for broken cable terminals.

Clean the battery when it shows signs of corrosion at the terminals or when electrolyte has overflowed during charging. Use a baking soda solution to clean the batteries, taking care not to get the solution inside the cells. Rinse thoroughly with clean water. Clean battery and cable contact surfaces to a bright metal finish whenever a cable is removed

⚠ WARNING ⚠

Hazard of explosive gas mixture. Keep sparks, flame, and smoking material away from battery.

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Thoroughly rinse away any spilled fluid with clean water.

Battery Charging

⚠ WARNING ⚠

Charge the battery only in a well ventilated area.

Do not charge the battery when the work platform is in an area containing sparks or flames.

Permanent damage will result if the battery is not immediately recharged after discharging.

Never leave the charger unattended for more than two days.

Never disconnect the cables from the battery when the charger is operating.

Keep the charger dry.

Charge battery as follows:

1. Check the fluid level. If the electrolyte level is lower than 10mm (3/8 in.) above the plates, add clean, distilled water only.
2. Connect the charger plug to a properly grounded outlet of the proper voltage and frequency.
3. Use a charger which turns off automatically when the batteries are fully charged.

3.5 LUBRICATION

Refer to Table 3-1 for the lubrication intervals and Figure 3-4 for location of items that require lubrication service. Refer to the appropriate sections for lubrication information on the Steering Linkage, Torque hubs, Hydraulic Oil, Filter, and Engine Oil and Filter.

Grease fittings

Wipe each grease fitting before and after greasing. Using multipurpose Molylube grease in a grease gun, pump the grease into the fitting until grease just begins to appear at the edges of the pivot, wipe off any excess grease.

Lubricating Turret Gears

Using a brush, apply open gear grease to the turret gears.

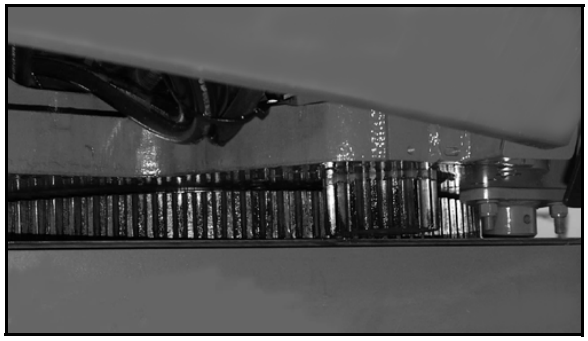


Figure 3-4: Turret Gears

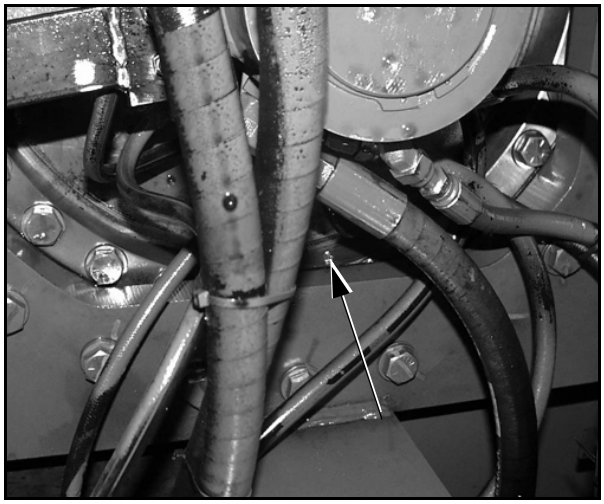


Figure 3-5: Turret Bearing Grease Zerk (shown from below)

Hydraulic Oil and Filter

Fluid Level

With the platform fully lowered and boom fully retracted, check oil level on sight gauge. If the oil is NOT in operating range, add hydraulic fluid until oil is visible in operating range on dipstick or visible in sight gauge. DO NOT fill above operating range or when the platform is elevated.

Oil and Filter Replacement

1. Operate the platform for 10-15 minutes to bring the hydraulic oil up to normal operating temperature.

⚠ CAUTION ⚠

The hydraulic oil may be hot enough to cause burns. Wear safety gloves and safety glasses when handling hot oil.

2. Provide a suitable container to catch the drained oil.
3. Remove the drain plug and allow all oil to drain into the container. Be sure to dispose of oil properly.
4. Reinstall the drain plug.
5. Remove filter element from filter head (located beside valve block).
6. Apply a thin film of clean hydraulic fluid to the gasket of the replacement filter.
7. Thread replacement filter onto the filter head until the gasket makes contact then rotate 3/4 of a turn further.
8. Fill the hydraulic oil tank to operating level on sight gauge with hydraulic fluid.

NOTE: For service Information on the engine refer to your engine manual (located in platform manual box or available from UpRight Inc.).

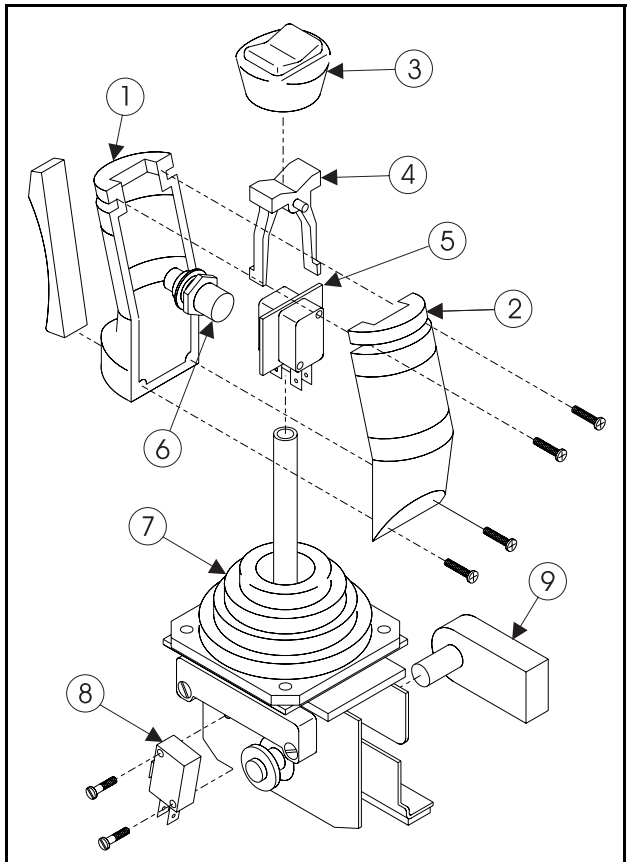
3.6 PROPORTIONAL CONTROLLERS

Joystick Handle

1. If necessary, remove handle assembly from controller box.
2. Remove and replace defective parts.
3. If replacing Digisensor, adjust Digisensor to neutral (both LED's on) when joystick is centered.

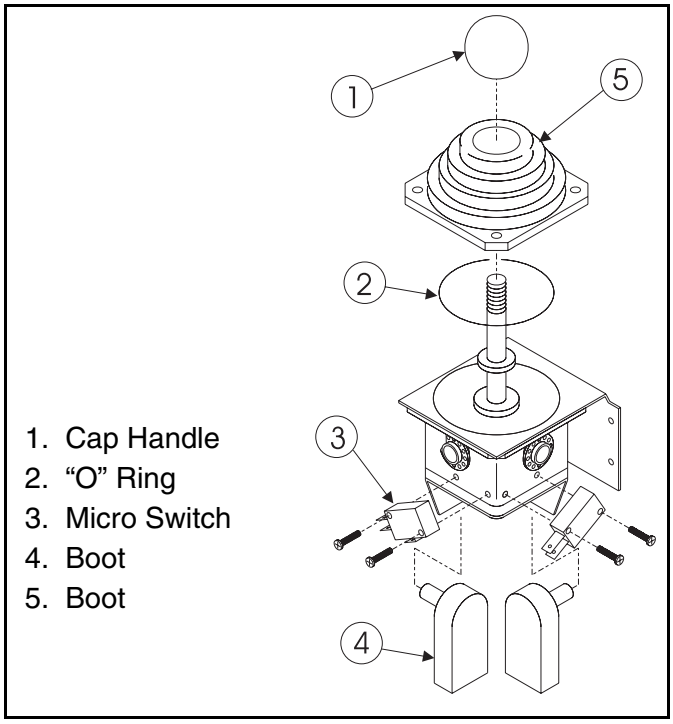
NOTE: Check that controller operates correctly when handle is pushed completely forward and reverse.

Refer to pages 6-50 (Gas) and 6-54 (Diesel) for repair part numbers.



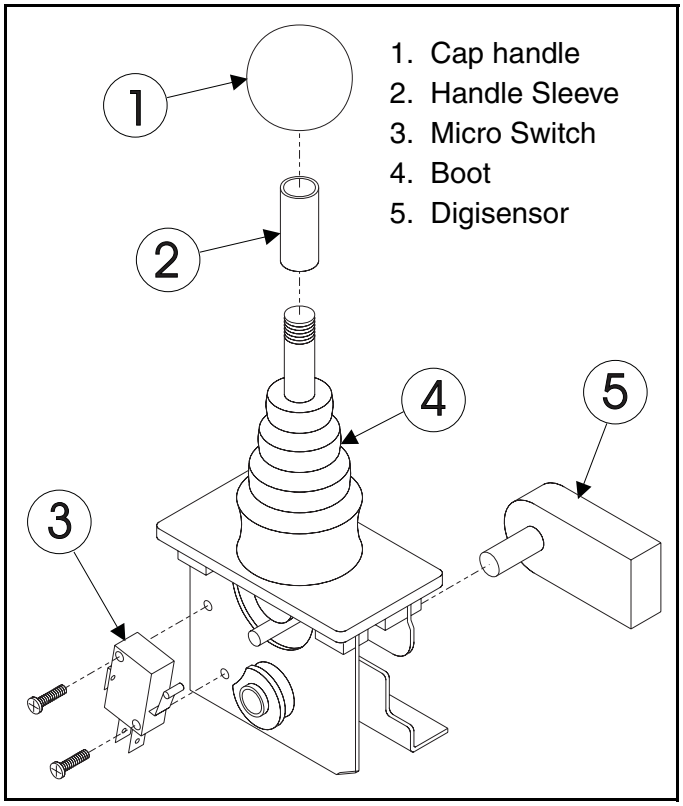
1. Handle Half, Front
2. Handle Half, Rear
3. Rocker Boot
4. Rocker
5. Micro Switch
6. Switch
7. Handle Boot
8. Drive Micro Switch
9. Digisensor

Figure 3-6: Proportional Controller



1. Cap Handle
2. "O" Ring
3. Micro Switch
4. Boot
5. Boot

Figure 3-7: Lift Controller



1. Cap handle
2. Handle Sleeve
3. Micro Switch
4. Boot
5. Digisensor

Figure 3-8: Boom Extend Controller

3.7 SUPERFLEX CONTROLLER

The SuperFlex controller is adjusted at the factory. If problems are suspected with the controller, use the optimizer (P/N 100329-000) to check for proper controller settings.

1. Check that proper voltage is supplied to the controller.
2. Be sure all cables and wiring are properly connected.
3. Be sure ground wiring is in good condition.
4. Be sure all machine interlock switches are working properly.

There are three LED's on the controller.

The CPU (Center LED) flashes if the system is O.K.

If the center LED is on steady the controller must be replaced.

The INPUT LED (Left LED) flashes whenever one or more joysticks is activated.

If the INPUT LED does not flash when a joystick is activated, check the wiring for the joystick.

If the INPUT LED is on steady there is a short (+12 volts) to the joystick.

The OUTPUT LED (right LED) flashes when an output signal is active.

If the OUTPUT LED is on steady there is a short to the output function.

SuperFlex Optimizer

Use the Optimizer to test the operation of the controller and joysticks. SB80 presets are shown.

1. Plug the Optimizer with cord into the controller.
2. Operate each machine function. The Optimizer will display each setting.
3. If the function is out of adjustment, use the plus and minus adjustment keys on the optimizer to reset to the proper setting.

NOTE: Be sure to press RUN key after making adjustments or the new setting will be lost.

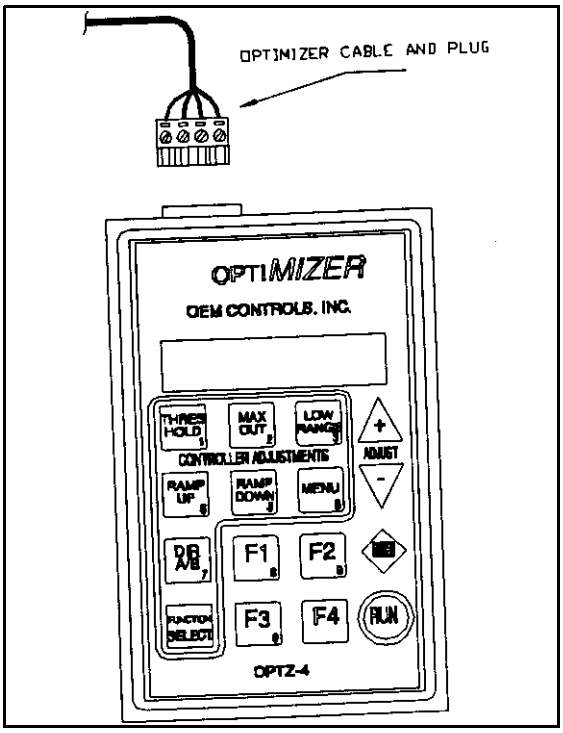


Figure 3-9: Optimizer

SUPERFLEX PRESETS:

FUNCTION	MAX	THRESHOLD	RAMP ON	RAMP OFF
EXTEND	95%	40%	0.5	0.2
RETRACT	95%	40%	0.5	0.2
LIFT, UP	95%	34.5%	0.5	0.2
LIFT, DOWN	95%	28%	0.5	0.2
SWING, LEFT/RIGHT	80%	32.5%	0.5	0.5
DRIVE, FWD./REV.	65%	28%	0.8	0.8
DUAL RANGE	33%			

STOPPING DISTANCE NOT TO EXCEED 6.5 FEET

ADJUSTMENTS TO BE MADE FROM THESE PRESETS

SPEED MEASUREMENTS:

BOOM FUNCTIONS LIFT AND EXTEND OPERATED SIMULTANEOUSLY
ELEVATING TO FULL HEIGHT AND RETURNING TO STOWED POSITION.
FULL CYCLE TIME: 115-135 SEC.
HALF CYCLE, UP 60-70 SEC.
HALF CYCLE DOWN: 55-65 SEC.

BOOM FUNCTIONS OPERATED INDIVIDUALY.
EXTEND: 55-65 SEC.
RETRACT: 30-45 SEC.
LIFT: 60-65 SEC.
LOWER: 50-60 SEC.

TURNTABLE (TURRET) ROTATE:
FULL 360° ROTATION; 90 SEC. FULL 360±5 SEC.

JIB UP/DOWN:
40/30 SEC. ±5 SEC.
FLOW CONTROL ON MAIN VALVE BLOCK.

PLATFORM ROTATE:
16 SEC. ±2 SEC.
FULL 180° ROTATION
FLOW CONTROL ON VALVE BLOCK IN JIB BOOM.

STEER:
LOCK TO LOCK 7 SEC. ±1 SEC.

DRIVE SPEEDS:

	SPEED	20 FT. TIME
HIGH SPEED	3.8 TO 4.2 MPH	3.6 TO 3.2 SEC.
LOW SPEED	0.5 TO 0.7 MPH	27.3 TO 19.5 SEC.

3.8 PLATFORM DOWN LIMIT SWITCH

The Platform Down Switch bypasses the Tilt Sensor when the platform is fully lowered and closes the circuit to the Platform Down Relay, which allows high speed travel, cage trim function and turret rotation.

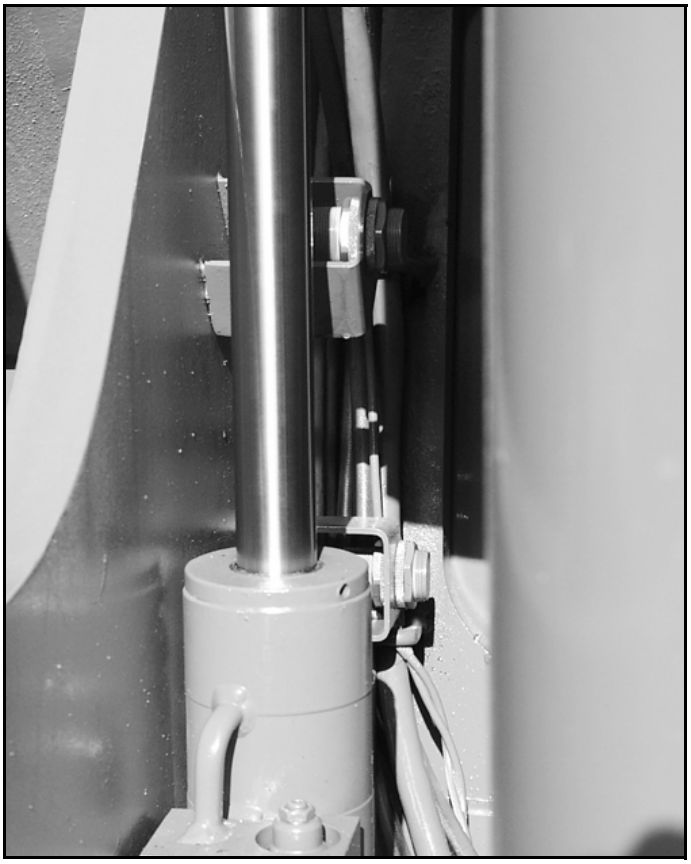


Figure 3-10: Platform Down Limit Switch

3.9 SETTING HYDRAULIC PRESSURES

Figure 3-11 shows complete hydraulic manifold assembly.

NOTE: Check hydraulic pressures whenever the pump, manifold or any relief valve has been serviced or replaced.

Main Relief Valve

1. Operate the hydraulic system 10-15 minutes to warm the oil.
2. Install a 0-207 bar (0-3000 PSI) pressure gauge to the pressure test port.
3. Retract boom completely.
4. While activating the boom retract function, set the pressure to 193 bar (2800 PSI) maximum by slowly turning the adjusting screw. Turning the adjusting screw clockwise increases pressure and counterclockwise decreases pressure.
5. Remove the pressure gauge and reinstall all plugs.

Other Relief Valves

1. Operate the hydraulic system 10-15 minutes to warm the oil.
2. Install a 0-207 bar (0-3000 PSI) pressure gauge to the pressure test port.
3. Completely extend function to be checked.
4. Continue activating function and set the pressure by slowly turning the adjusting screw until the correct pressure reads on the pressure gauge. Turning the adjusting screw clockwise increases pressure and counterclockwise decreases pressure.
5. Remove the pressure gauge and reinstall all plugs.

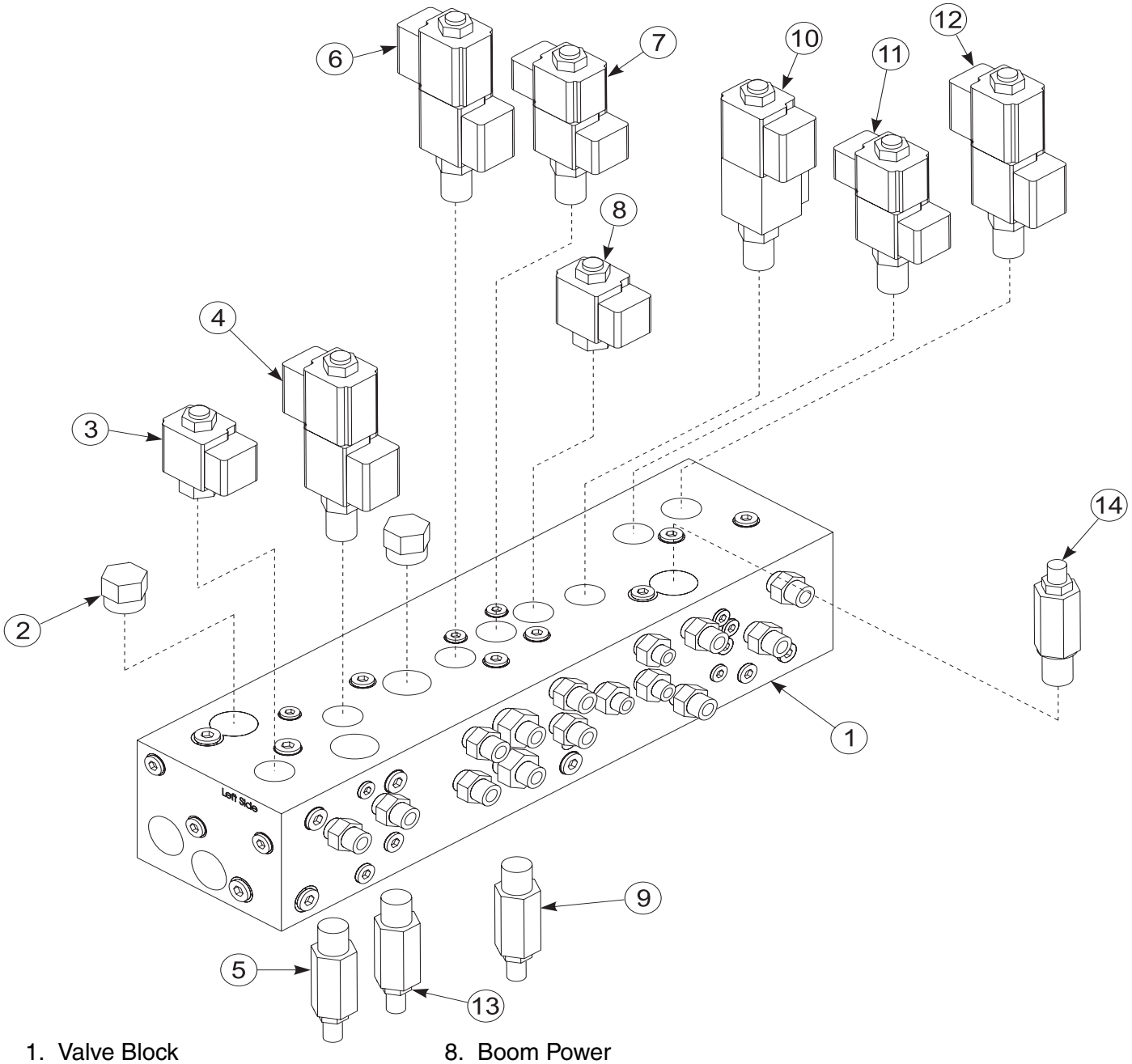
Counterbalance Relief Valves

1. If any counterbalance relief valve is faulty, completely lower the jib, and retract the boom.
2. Replace or recalibrate (bench set) the counterbalance valve.
3. Slowly cycle function related to replaced counterbalance valve several times to remove air from system.

SPECIFICATIONS AND ADJUSTMENTS

HYDRAULIC PRESSURE:

COUNTERBALANCE VALVES;	(VALVES PRESET)		
LIFT	3000 PSI		
SWING	1200 PSI		LEFT AND RIGHT
EXTEND	3000 PSI		
LEVEL SYSTEM	PSI		MASTER EXTEND AND RETRACT 3000, SLAVE EXTEND 2500, RETRACT 1500
JIB	PSI		JIB UP 3000 - JIB DOWN 1000
AXLE LOCK	4500 PSI		
PLATFORM ROTATE	1000 PSI		(MAY DEVIATE TO PREVENT CHATTER)
RELIEF VALVES;			
MAIN PRESSURE	2800 PSI		
STEER CROSSOVERS	2700 PSI		BOTH DIRECTIONS
SWING SYSTEM	1200 PSI		
EXTEND,	2600 PSI		
JIB LOWER	1400 PSI		
PLATFORM ROTATOR	2000 PSI		BOTH DIRECTIONS



1. Valve Block
2. Compensator
3. Dump Valve
4. Boom Extend
5. Boom Extend Relief
6. Boom Lift
7. Swing Turret
8. Boom Power
9. Swing relief
10. Platform Level
11. Steering
12. Axle Extend
13. Dump Relief
14. Crossline Relief

Figure 3-11: Hydraulic Manifold, Exploded View

3.10 TILT SENSOR

The Tilt Sensor has three wires; red-power (12v in), black-ground, white-output (12v out). To verify the sensor is working properly there is an LED on the bottom of the sensor that lights up when the sensor is out of level.

1. Check tires for proper pressure.
2. Place machine on firm level surface ± 1/4°.
3. Use Inclinometer to ensure that the front and rear the chassis are level within ± 1/4°.
4. Adjust the three leveling locknuts until the bubble is centered in the circle on the bubble level.
5. Elevate the platform until the down limit switch opens and push the tilt sensor base to test the alarm circuit. Alarm should sound.

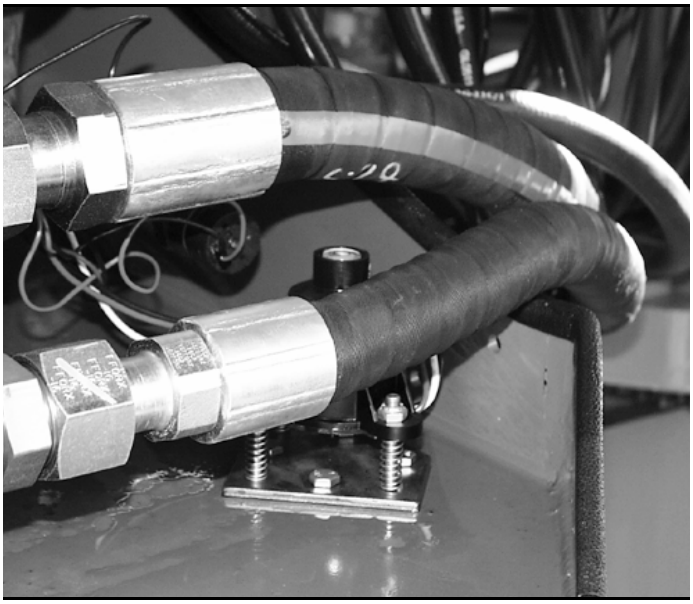


Figure 3-12: Tilt Sensor

⚠ WARNING ⚠

DO NOT attempt to adjust Limit Switches without first blocking the elevating assembly.

1. Lower the Platform completely.
2. With the Platform / Chassis switch on Chassis, push the Tilt Sensor base to test the alarm circuit.
3. If the alarm sounds, elevate the platform and adjust the position of the switch arm by loosening the adjustment screw and repositioning the arm. Lower the platform and retest. If down limit switch is properly adjusted, the tilt alarm will not sound.
4. With platform elevated, repeat step 2. When switch is properly adjusted, alarm will sound.

3.11 DRIVE MOTORS

Removal

1. Park the work platform on firm level ground with axles extended.
2. Using Four jackstands (Ten Ton capacity each), support each wheel off the ground.
3. Disconnect and immediately cap the drive motor case drain hose from the front/rear valve block.
4. Disconnect and immediately cap the other hydraulic lines from the drive motor.
5. Remove the drive motor(s).

Installation

1. With the case drain port on top, fill the replacement motor with 710 ml (24 fluid ounces) of filtered hydraulic fluid.
2. Install the case drain hose to the motor.
3. Route the case drain hose to the valve block and install the motor.
4. Connect all hydraulic hoses.

Drive Motor Run-In

⚠ CAUTION ⚠

Drive motor run-in may be done in high or low speeds but DO NOT CHANGE SPEEDS WHILE WHEELS ARE ROTATING.

1. With machine off the ground, slowly run drive wheels forward and reverse to remove all air from the system.
2. Lower the machine to the ground.

⚠ CAUTION ⚠

Drive motor run-in may be done in high or low speeds but DO NOT CHANGE SPEEDS WHILE WHEELS ARE ROTATING.

3. Slowly drive machine forward and reverse to remove all air from the system.
4. After the machine has been driven froward and reverse several times it may be operated normally changing speeds as needed while driving.

3.12 HYDRAULIC BRAKES

Removal

The SB80 is equipped with brakes on both rear wheels.

1. Park the work platform on firm level ground with axles extended and block the wheels to prevent the work platform from rolling.
2. Disconnect the hydraulic brake lines.
3. Tag and disconnect hydraulic lines to drive motors.

⚠ CAUTION ⚠

Clean all fittings before disconnecting the hose assemblies.

Plug all port holes and hose assemblies IMMEDIATELY to prevent contamination from dust and debris.

4. Remove capscrews and washers holding the drive motor and brake to the torque hub.
5. Remove the drive motor.
6. Remove the brake.

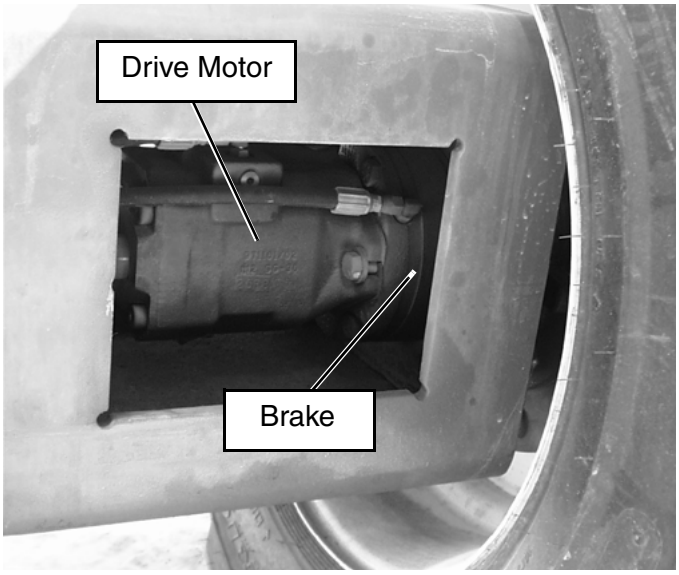


Figure 3-13: Rear Axle Assembly

NOTE: Torque all hardware to torques listed on page 3-32 unless otherwise specified.

3.13 BRAKE SEAL REPLACEMENT

1. With shaft protrusion downward remove capscrews (21) and washers (20) from brake.
2. Remove power plate (19) from housing (1). Remove the gasket (2).
3. Remove piston (14) from power plate (19) by introducing low pressure air (15 psi) into the hydraulic inlet. Make sure piston is not pointed at anyone.
4. Remove o-rings (16 & 18) and backup rings (15 & 17) from inner and outer grooves of piston.
5. Clean piston (14) and power plate (19) assemblies with solvent. Inspect sealing surfaces of piston (14) and power plate (19). Inspect seal grooves in piston. Replace brake assembly if damaged or scratched deeply. Lubricate piston (14), power plate (19), and seals (15, 16, 17, & 18) with clean hydraulic oil before assembly.
6. Install the backup rings (15 & 17) and o-rings (16 & 18) into the seal grooves in the piston.
7. Install piston into power plate using a shop press. Be careful not to damage the seals during assembly. Center cutouts in piston with torque pin holes in the power plate. Press piston to a depth no less than flush, but not exceeding 3,05 mm (0.120 in.) below the surface of the power plate at cutouts in piston. This depth is critical. The brake will not hold if it is exceeded.
8. Install gasket (2).
9. Install power plate/piston assembly (14 & 19) to housing (1) using capscrews (21) and washers (20). Tighten sequentially, one turn at a time, to press the two assemblies together. Torque capscrews 68 - 81 Nm (50 - 60 ft.-lbs.).

Installation

1. Coat output shafts of brake and drive motor with high pressure molybdenum grease and install gasket (22) and brake onto torque hub.
2. Install gasket (22) and drive motor. Align holes and install the two cap screws and lock washers.
3. Reinstall hoses to drive motor and hoses to the brake.
4. Start engine and provide pressure to brakes by moving drive joystick fractionally away from the center without actually driving machine and bleed brakes.

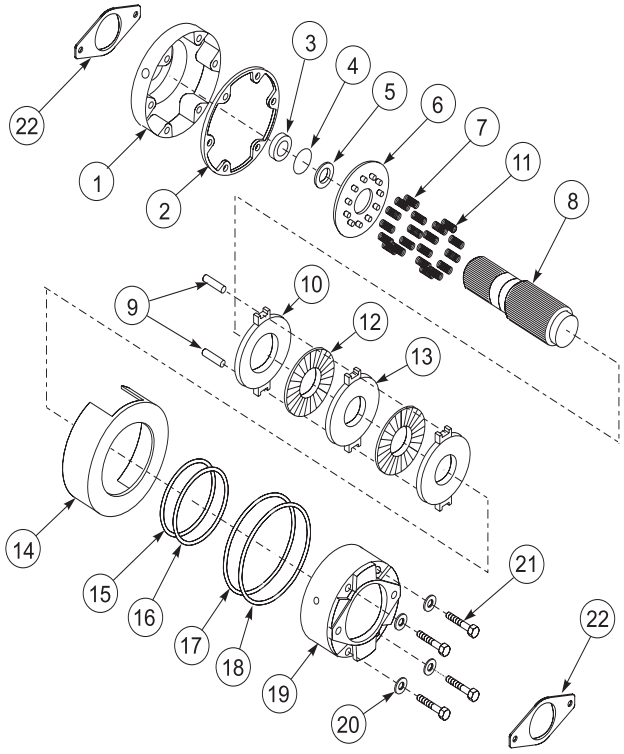


Figure 3-14: Brake Assembly

3.14 TORQUE HUBS

NOTE: Change oil in torque hubs after the first 50 hours of operation. Change every 2000 hours thereafter.

1. Remove torque hub from drive assembly (refer to "Torque Hub Removal" section).
2. Remove drain plug from underside of torque hub and drain oil from unit.
3. Replace drain plug.
4. Remove fill plug from top side of torque hub.
5. Remove fill level plug from side of hub.
6. Fill unit with 90 wt. gear oil until oil comes out fill level plug opening (1/2 full).
7. Replace fill level plug. Replace fill plug.
8. Replace torque hub.

Removal

1. Park the work platform on firm level ground and block the wheels to prevent the work platform from rolling.
2. Disconnect battery negative terminal.
3. Loosen the wheel lug nuts on the torque hub to be removed.
4. Raise the rear of the work platform using a 2-ton jack.
5. Position two 2-ton jack stands under the rear axle to prevent the work platform from falling if the jack fails.
6. Remove the wheel nuts and wheel.
7. Disconnect hydraulic brake line from brake.
8. Check for leaks and bleed air out of brake hydraulic system using bleed valve located on brake housing.

⚠ CAUTION ⚠

Clean all fittings before disconnecting the hose assemblies.

Plug and port holes and hoses IMMEDIATELY to prevent contamination.

9. Remove 90° fitting from side of torque hub.
10. Mark and remove hoses from drive motor.
11. Remove mounting bolts from drive motor.
12. Separate drive motor from brake. Discard gasket.
13. Separate brake from torque hub. Discard gasket.
14. Remove 1/2-20 nuts and washers from torque hub.
15. Remove torque hub.

Installation

NOTE: Torque all hardware to torques listed (see Table 3-2, page 28) unless otherwise specified.

1. Install torque hub using 1/2-20 nuts and 1/2 washers.
2. Remove plug from 90° fitting and install fitting in side of torque hub. Point fitting towards rear of hub.
3. Using SAE 90W weight gear lube with EP additive, fill torque hub through top plug hole in rear cover until oil comes out of 90° fitting in side. Plug 90° fitting and top of rear cover.
4. Install new gasket and brake.
5. Install new gasket and drive motor.
6. Secure assembly using washers and bolts.
7. Connect hydraulic brake lines.
8. Connect hoses to drive motor.
9. Install wheels. Torque lug nuts to 122 Nm (90ft. lbs.).
10. Bleed brake lines if necessary.
11. Remove jack stands and lower rear end.
12. Connect battery terminal.
13. Check function of brake.

Disassembly of Torque Hub

1. Slide the coupling (1) from splines on input shaft (2).
2. Position the assembly upright on face of spindle (3).
3. Remove the disengage cover (31) if necessary.
4. Remove eight bolts (29) and the large cover (28) from the unit. The thrust washer (25) and the disengage plunger (26) usually remain attached to the large cover (28) when it is removed. Remove thrust washer (25), disengage plunger (26) and "O" Ring (27) from the large cover (28).

5. Remove primary sun gear (24) from end of input shaft (2).

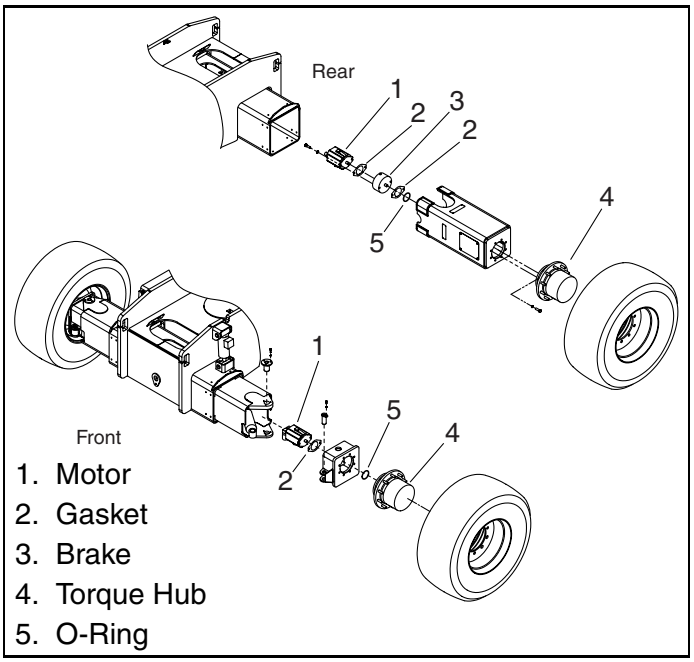


Figure 3-15: Torque Hub Assembly

6. Remove the primary carrier assembly (22).
7. Remove the secondary carrier assembly (21).
8. Remove the input shaft (2) from spindle (3). Remove the retaining rings (17), washers (18), and disengage spring (19) from input shaft (2) only if replacement is required.
9. One tab of lock washer (15) will be engaged in slot of bearing nut (16); bend back to release. Remove the bearing nut (16), lock washer (15) and thrust washer (14).

NOTE: A special locknut wrench is required for the removal of the bearing locknut. The Bearing Locknut Tool, Bearing Cone Driver and Spindle/Shaft Drive Tool are included in Service Kit, part number 100254-020.

10. Bolt Spindle Drive Tool, (Service Kit #100254-020), to ring gear (20). Grade 8 bolts should be used. Drive spindle (3) from hub (11) by turning center bolt of Spindle Drive Tool. Care should be taken to avoid damaging splines and threads on spindle.

NOTE: Bearing cone (13) has been designed with a press fit with respect to spindle (3). Considerable force will be required to remove cone from spindle.

11. Remove Spindle Drive Tool from ring gear (20).
12. Remove the eighteen bolts (9) and washers (10) from hub (11) and remove ring gear (20). It may be necessary to strike ring gear (20) with a rubber mallet to loosen from hub (11).
13. Remove the boot seal (4) and oil seal (5) and bearing cones (6 & 13) from hub (11). Inspect bearing cups (7 & 12) in position and remove only if replacement is required.

Assembly of Torque Hub

1. Press new bearing cups (7 & 12) in each side of the hub (11). It is recommended that bearing cups (7 & 12) and cones (6 & 13) be replaced in sets.
2. Assemble bearing cone (6) into cup (7) at seal end of hub (11) and press a new seal (5) into hub (11). Install boot seal (4) on hub (11) if unit is so equipped.
3. Position spindle (3) upright on bench. Lubricate lips of seal (5) and lower hub (11) onto spindle (3). Hub (11) should be centered as it is lowered over spindle (3) to prevent seal damage.
4. Assemble bearing cone (13) over spindle (3). Press bearing cone (13) over spindle bearing journal using press and cylindrical Bearing Cone Driver (Service Kit #100254-020). Press bearing cone (13) down until rollers just touch cup (12). Take care to avoid pressing cone (13) to far.

NOTE: If a press is not available, place Bearing Cone Driver tool over splined end of spindle (3) on the edge of bearing cone (13) and drive into place with hammer or mallet. If this method is used, care must be taken to avoid damage to bearing cone and spindle.

5. Install thrust washer (14) with tab in keyway of spindle and bearing nut (16). DO NOT install lock washer (15) at this time.
6. Clean mating surfaces and apply a bead of silicone sealant to face of hub (11) that mates with ring gear (20). See instructions on sealant package. Hub (11) is attached to ring gear (20) with 18 3/8-24 grade 8 hex head cap screws (9) and flat washers (10). Torque cap screws to 70-81 Nm (52-50 lb.-ft.).
7. Place Spindle Drive Tool (Service Kit #100254-020), over spindle (3) and bolt or pin to ring gear (20). Make sure center bolt of Drive Tool is not touching spindle and is prevented from rotating by jam nuts provided on tool.

8. Check initial rolling torque by installing a torque wrench (arm or dial type) on center nut of Spindle Drive Tool and turning hub (11) slowly and steadily with the torque wrench. Note mean torque. An initial bearing torque of greater than 5,9 Nm (52 lb.-in.) with boot seal installed or 5,2 Nm (46 lb.-in.) without boot seal means that the cone (13) was pressed on to tightly in step 4. In this case, back off bearing cone (13) by pressing spindle (3) out of cone (13) until initial preload is relieved. See step 10 of disassembly procedure.
9. Torque bearing nut (16) with Bearing Locknut Tool (Service Kit #100254-020) until a bearing rolling torque of 4,75-5,6 Nm (42-50 lb.-in.), with a boot seal installed, or 4,3-5,2 Nm (38-46 lb.-in.), without a boot seal is reached. This may require several trials of pressing the cone (13) by torquing the nut (16) and then checking the rolling torque. Rotate hub (11) by hand as nut is being tightened to seat bearings.

NOTE: Up to 339 Nm (250 lb.-ft.) of torque may have to be applied to bearing nut (16) in order to press cone (13) into position.

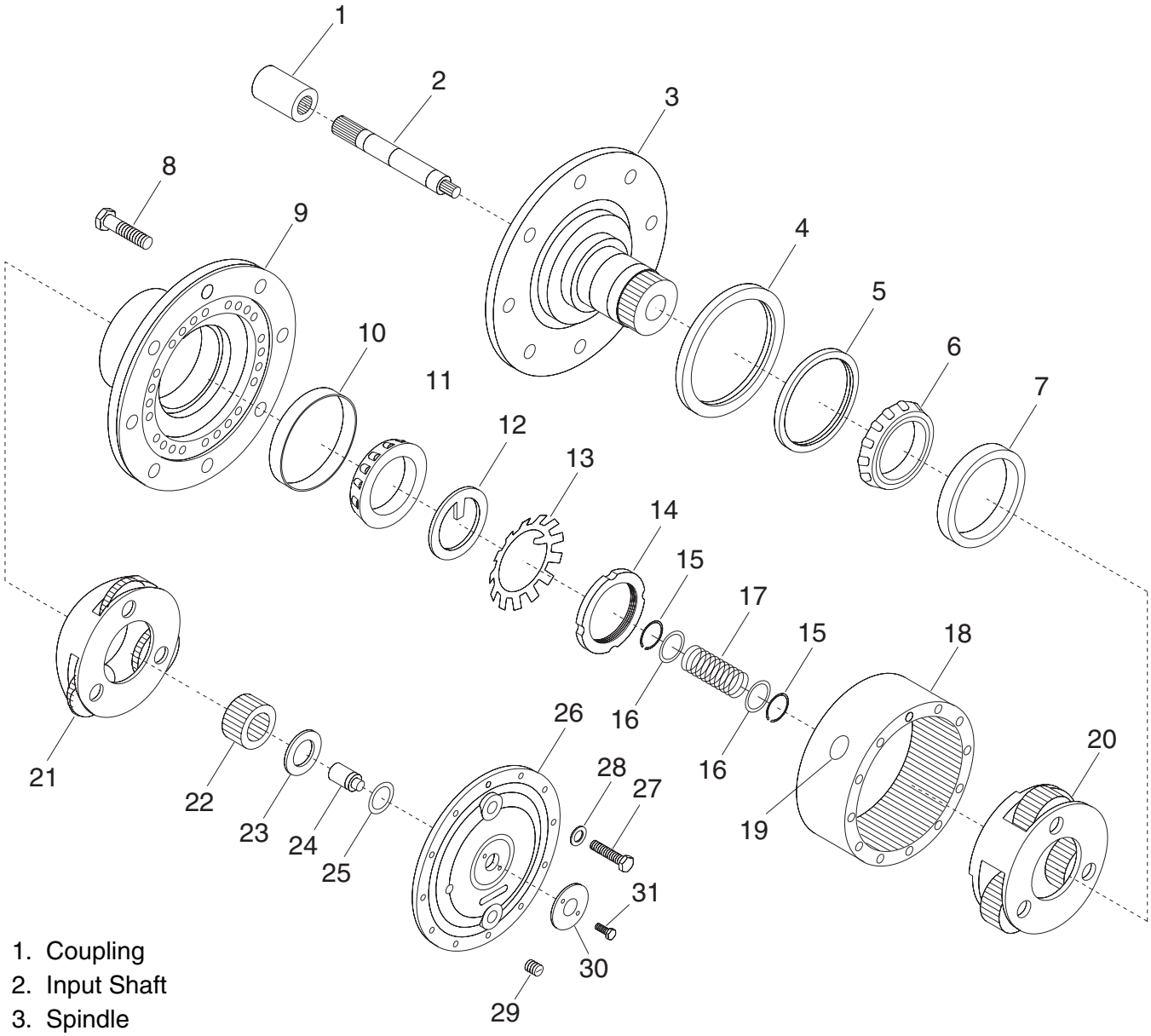
10. Remove bearing nut (16) and install lock washer (15). Replace bearing nut (16).
11. Re-torque bearing nut (16) to 80-90 Nm (60-70 lb.-ft.).
12. Secure bearing nut (16) by bending a lock washer (15) tab into one of four bearing nut slots. If no tab aligns with a slot, the nut may be tightened until one of the slots aligns with a lock washer tab.
13. Assemble a washer (18), spring (19), a second washer (18), and a retaining ring (17) in the middle grooves of input shaft (2). Install a second retaining ring (17) in groove near small end of input shaft (2).
14. Assemble the splined end of the input shaft (2) down into spindle (3).
15. Assemble the secondary carrier assembly (21) to spindle (3) at splines.
16. Assemble the primary carrier assembly (22) into the ring gear (20). It will be necessary to rotate carrier to align secondary sun gear {part of primary carrier assembly (22)} with planet gear teeth in secondary carrier assembly (21). Assemble primary sun gear (24) over input shaft (2). Rotate primary sun gear (24) to align input shaft (2) to gear splines and gear teeth in primary carrier assembly (22).
17. Lubricate “O” ring (27) and assemble in groove inside cover hole, push disengage plunger (26) into cover (28) with pointed end facing inside of unit.
18. Assemble the thrust washer (25) with tangs engaged with cover (28). NOTE: A small amount of grease applied to the back side of thrust washer (25) will hold washer in place. Apply a bead of silicone sealant to end of face of ring gear (20). Assemble cover (28) aligning holes of cover and ring gear. Assemble the eight 5/16-18 x 1 inch hex head bolts (29). Torque bolts to 27-34 Nm (20-25 lb.-ft.).
19. Assemble the disengage cover (31) with dimpled center protruding out if wheel is to be used to drive the vehicle. Assemble and torque the two 5/16-18 x 1/2 inch bolts (32). Torque bolts to 13-27 Nm (10-20 lb.-ft.).
20. Invert the torque hub assembly and assemble the coupling (1), with counterbore out, to the input shaft (2).
21. After motor is assembled to drive or drive is sealed at spindle, fill with lubricant to proper level and replace all plugs.

Carrier assemblies

Do not attempt to service primary or secondary carrier assemblies.

Sealing compound

Silastic RTV732 sealer and General Electric Silimate RTV No. 1473 or RTV No. 1503 are recommended for sealing gasket surfaces. Sealant should be applied in a continuous bead, which should be centered on the surface to be sealed but should move to the inside of the hole at each bolt hole location.



1. Coupling
2. Input Shaft
3. Spindle
9. Hub
14. Bearing Nut
15. Retaining Ring
16. Washer
17. Disengage Spring
18. Ring Gear
19. Magnetic Plug
20. Secondary Carrier Assembly
21. Primary Carrier Assy.
22. Primary Sun Gear
24. Disengage Plunger
26. large Cover
27. Hex Head Bolt
28. Flat Washer
29. Pipe Plug
30. Disengage Cover
31. Hex Head Bolt

Repair Kit Contains:
4. Boot Seal
5. Oil Seal
6. Bearing, Cone
7. Bearing, Cup
8. Wheel Bolt
10. Bearing Cup
11. Bearing Cone
12. Thrust Washer
13. Lock Washer
23. Thrust Washer
25. O-Ring

Figure 3-16: Torque Hub

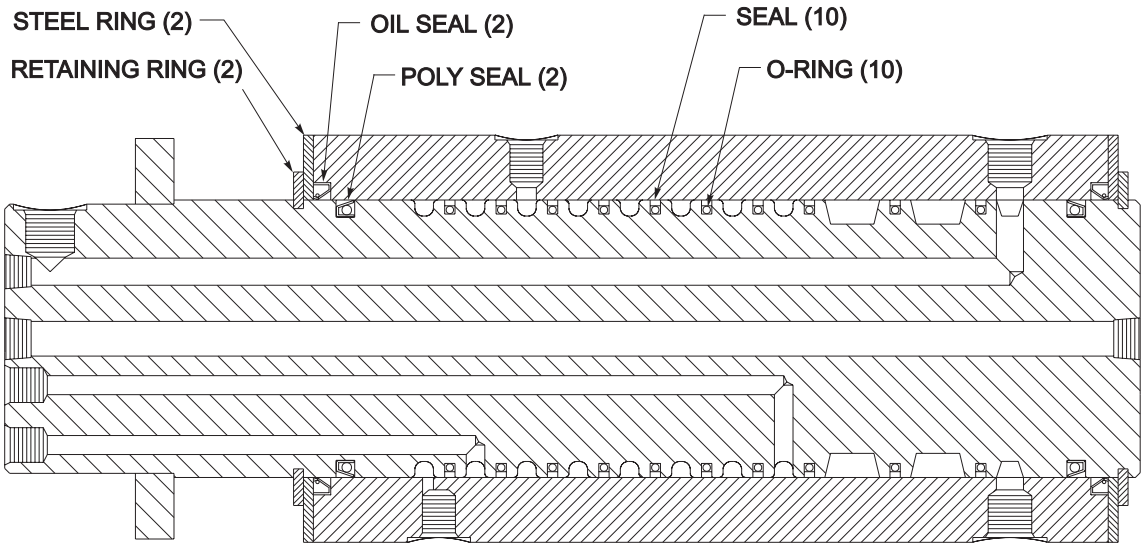


Figure 3-17: Rotary Manifold

3.15 ROTARY MANIFOLD

Removal

1. Mark and tag all hoses.
2. Remove all hoses from rotary manifold.
3. Remove rotary manifold from machine.

Disassembly

NOTE: Provide a clean work area for this operation, and observe clean assembly practices. Seals and O-rings are highly sensitive to contamination that may not be visible to the naked eye.

1. Remove retaining rings from each end of rotary manifold.
2. Carefully slide body out of housing.
3. Remove seal kit components.
4. Thoroughly clean all parts with solvent. Rinse the inside of the tube and allow to drain. A high pressure rinse and wipe with a lint free rag is preferable.
5. Inspect the body and housing for scratches, pits, or polishing. Check seal groves and sealing surfaces. Scratches or pits deep enough to catch the fingernail are unacceptable, replace the manifold.

Assembly

NOTE: Torque all hardware and fittings to torques listed (see Table 3-2, page 28) unless otherwise specified.

1. Lubricate all seals with clean hydraulic oil prior to assembly.
2. Install new seals on body and housing.
3. Carefully slide body into housing.
4. Reinstall steel rings and retaining rings.

Installation

1. Installation is reverse of removal.
2. Replenish hydraulic fluid in tank.
3. Run hydraulic system for several minutes to remove air from hydraulic lines. Cycle cylinders for each boom function.
4. Rotate turret completely.
5. Check rotary manifold for leaks. Check that all boom functions are operating properly.

3.16 REMOVING EXTEND CYLINDER

NOTE: Refer to "Illustrated Parts Section" (Section Six) for more detailed assembly drawings.

NOTE: Removing the extend cylinders requires approximately 18 m (60 ft.) of space.

IMPOTANT: The extend cylinders are very heavy. Supporting them requires the use of a fork lift or overhead crane.

IMPORTANT: Mark hoses and immediately cap all openings to prevent contamination.

Position machine on a smooth flat surface with axles extended. Chock wheels.

1. Remove Baffle Covers (both sides).
2. Remove Trunion Pin covers (both sides).
3. Extend the boom approximately 30,5 cm (12 in.) until the trunion pins are exposed.

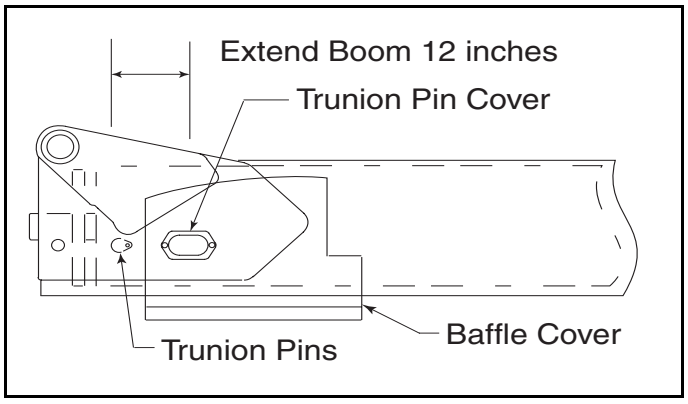


Figure 3-18: Removing Trunion Pins

4. Uncouple and plug port BE1 (stamped on Main Valve Block). This allows Tip Boom only to be extended.
5. Extend Tip Boom (almost completely) until Four 3/8 x 1-1/4 cap screws are exposed.

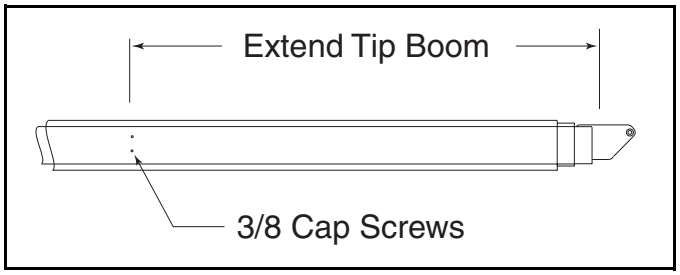


Figure 3-19: Extend Tip Boom

6. Remove 3/8 x 1-1/4 cap screws.

NOTE: These screws serve as stops to ensure proper positioning of the Tip Boom Rod Slide.

7. Retract Tip Boom. Leave rear/upper Cylinder Pin exposed.
8. Remove snap rings from rear cylinder pin.
9. Remove and cap hoses from upper extend cylinder.
10. Remove rear/upper cylinder pin.

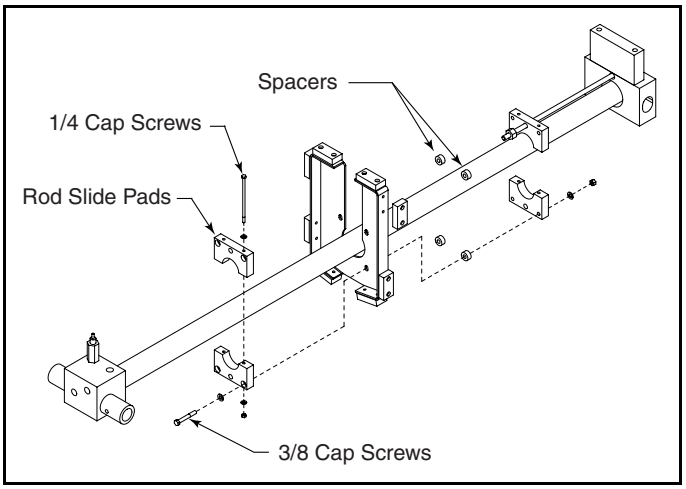


Figure 3-20: Remove Rod Slide Weldment

NOTE: Remove Mid Boom wear pads if they interfere when cylinder is removed from boom. Replace when reinstalling cylinder.

11. Remove 1/4 cap screws.
12. Remove 3/8 cap screws

NOTE: Spacers will be loose. Reinstall them when replacing cylinder.

13. Rotate Rod Slide Weldment forward. Push Slide pads on rod forward if necessary.
14. Pull Rod Slide Weldment out from below cylinder.
15. Remove Two trunion pins at rear of cylinder.

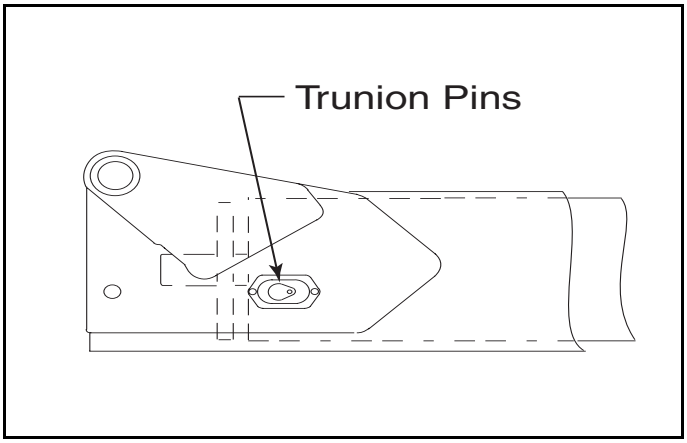


Figure 3-21: Remove trunion pins

16. Remove the cap screw which secures the front/lower cylinder pin.

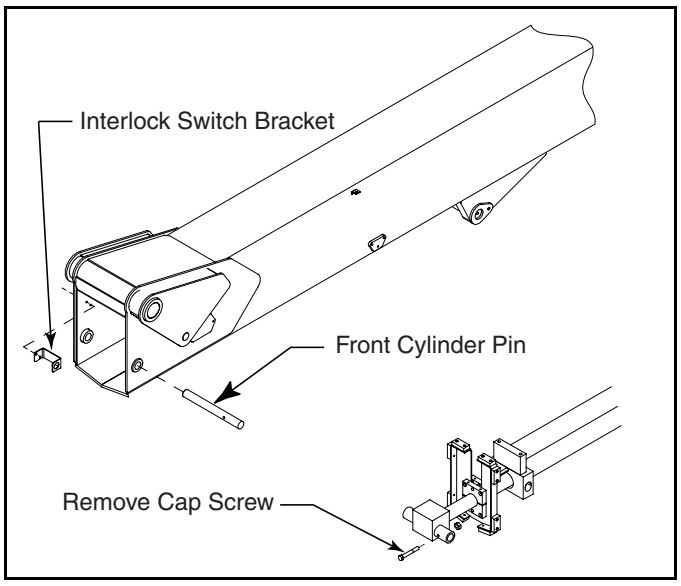


Figure 3-22: Remove Rear Pin Cap Screw

17. Remove and cap hoses from the front of the cylinder.
18. Remove the Interlock Switch Bracket and move it out of the way.
19. Remove the pin at the front of the cylinder.
20. Cylinder will now slide out the front of the boom.

IMPORTANT: Use a fork lift or overhead hoist to support the cylinder.

3.17 INSTALLING EXTEND CYLINDER

Installation of Extend cylinder is reverse of removal.

IMPORTANT: Reinstall slide pads, spacers and other items which were removed when cylinder was removed.

IMPORTANT: After cylinder is installed, extend tip boom until Four Tip Boom threaded inserts are exposed. Reinstall 3/8 cap screws. Rear/upper Rod Slide must be positioned to the rear of rear Rod Slide Weldment when cylinder is replaced. Tighten 1/4 cap screws which secure Rod Slide to hold front it in place.

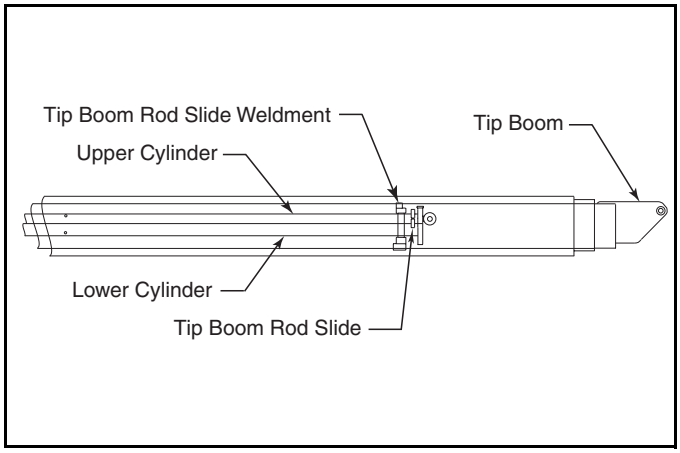


Figure 3-23: Positioning Tip Boom Rod Slide Weldment

Cycle extend cylinder several times to remove air from the hydraulic system. Replenish hydraulic fluid if necessary.

Slowly cycle extend cylinder to check for proper operation and check for leaks.

3.18 CYLINDER REPAIR

Removal

1. Remove cylinder from machine.

NOTE: Refer to "Illustrated Parts Section" for location of cylinder and list of parts which secure cylinder.

NOTE: If necessary, refer to "Supporting Elevating Assembly" at the front of the Maintenance Section.

2. Mark and disconnect hoses and IMMEDIATELY cap the openings to prevent contamination.

⚠ WARNING ⚠

Cylinders may be very heavy. Support heavy cylinders before removing pins which secure cylinder to machine.

Disassembly

1. Remove head from cylinder body.
2. Carefully slide rod assembly out of cylinder.
3. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
4. Inspect parts for scratches, pits or polishing. Check seal grooves and sealing surfaces. Scratches or pits deep enough to catch the fingernail are unacceptable; replace the cylinder. Polishing is a sign of uneven loading. When this occurs, the surface should be checked for roundness. Cylinders not round within .,178 mm (.007") should be replaced.

Assembly

NOTE: Torque all hardware to torques listed (see Table 3-2, page 28) unless otherwise specified.

NOTE: If part was originally Loctited in place, clean parts using Loctite Primer and reapply Loctite before reinstalling part.

1. Lubricate all components with clean hydraulic fluid.

NOTE: To avoid cutting the seals, do not use sharp edged tools during seal replacement. After installing seals allow at least one hour for the seals to elastically restore to their original shape before assembling cylinder.

2. Install new seal kit components.
3. Lubricate rod wiper and seal with hydraulic fluid and slide head onto rod.
4. Lubricate seals on piston and head.
5. Carefully slide rod assembly into cylinder.
6. Secure head into cylinder.

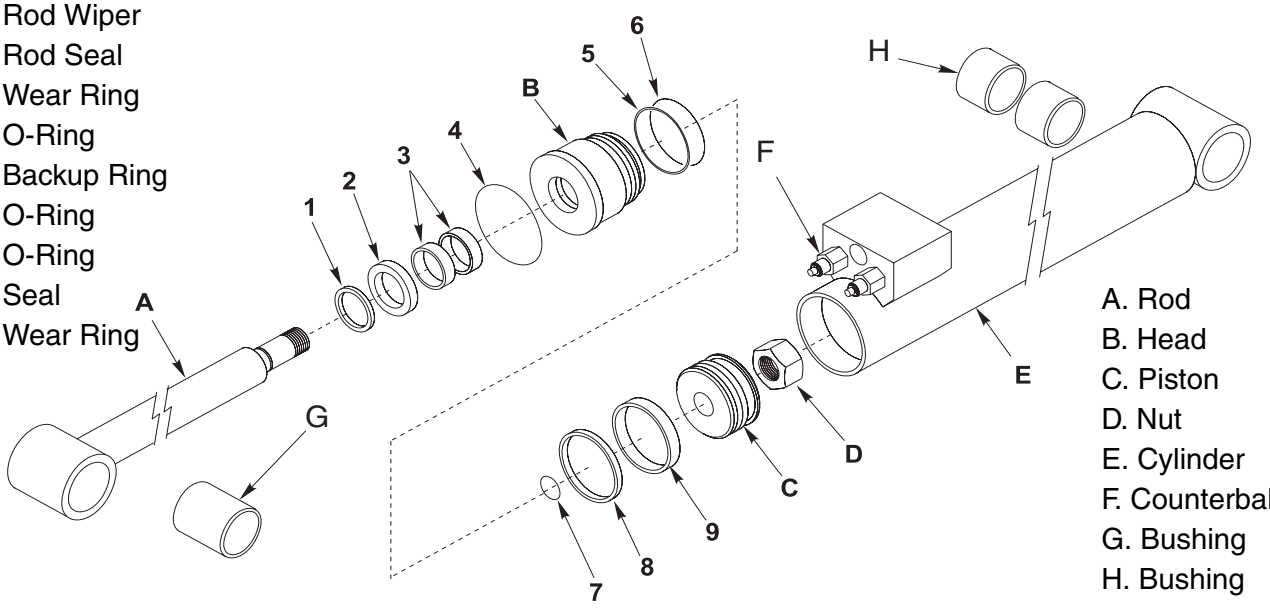
Installation

1. Installation is reverse of removal.
2. When cylinder installation is complete, carefully remove elevating assembly support.
3. Slowly cycle cylinder several times to remove air from the hydraulic system.
4. Check for proper cylinder operation. Check hydraulic connections for leaks.

Seal Kit 102255-010 Includes:

1. Rod Wiper
2. Rod Seal
3. Wear Ring
4. O-Ring
5. Backup Ring
6. O-Ring
7. O-Ring
8. Seal
9. Wear Ring

NOTE: Torque Locknut "D"to 339-407 Nm



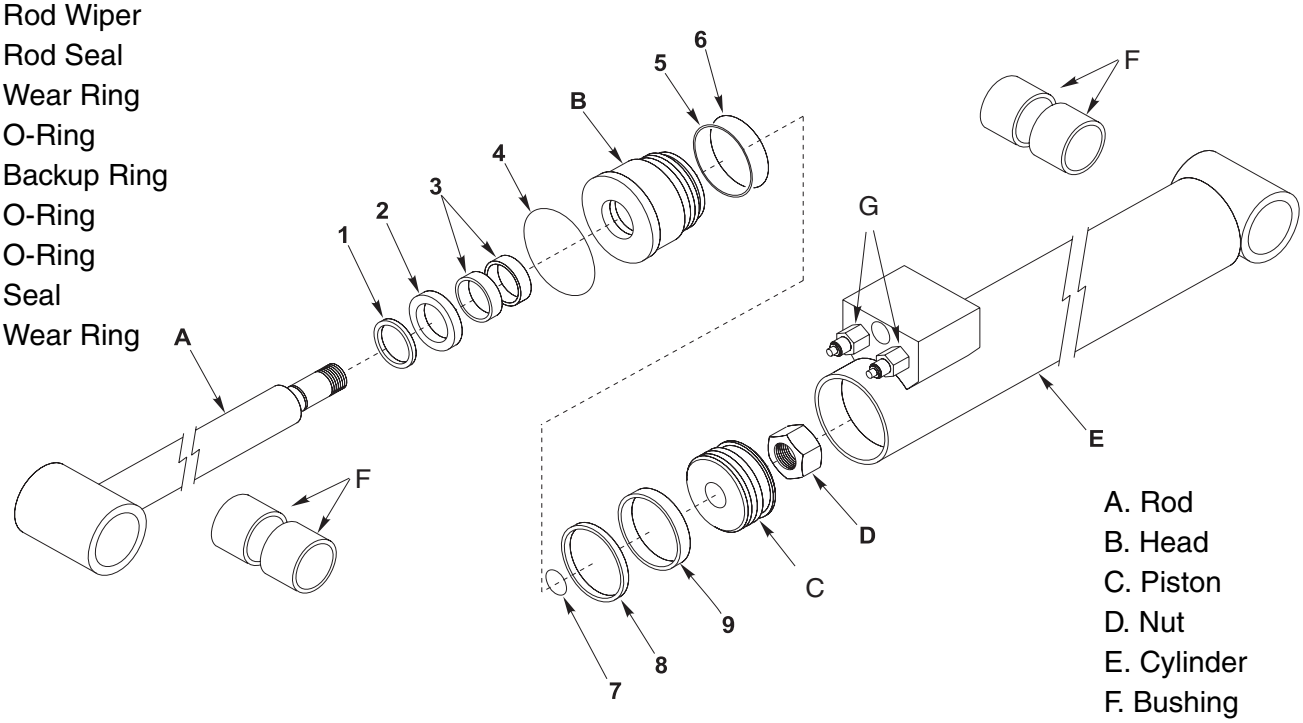
A. Rod
B. Head
C. Piston
D. Nut
E. Cylinder
F. Counterbalance
G. Bushing
H. Bushing

Figure 3-24: Master Cylinder

Seal Kit 102252-010 Includes:

1. Rod Wiper
2. Rod Seal
3. Wear Ring
4. O-Ring
5. Backup Ring
6. O-Ring
7. O-Ring
8. Seal
9. Wear Ring

NOTE: Torque Locknut "D"to 339-407 Nm



A. Rod
B. Head
C. Piston
D. Nut
E. Cylinder
F. Bushing
G. Counterbalance

Figure 3-25: Slave Cylinder

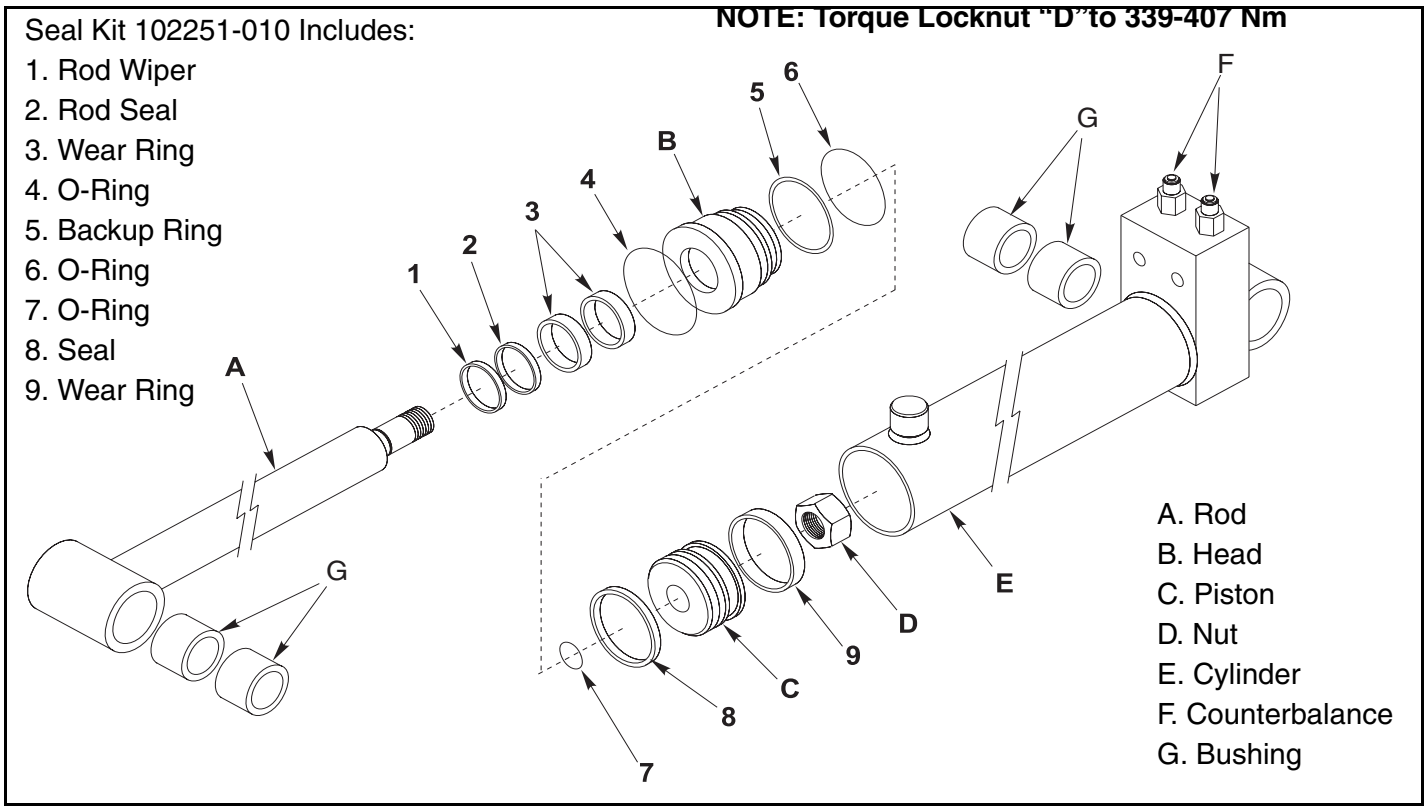


Figure 3-26: Jib Cylinder

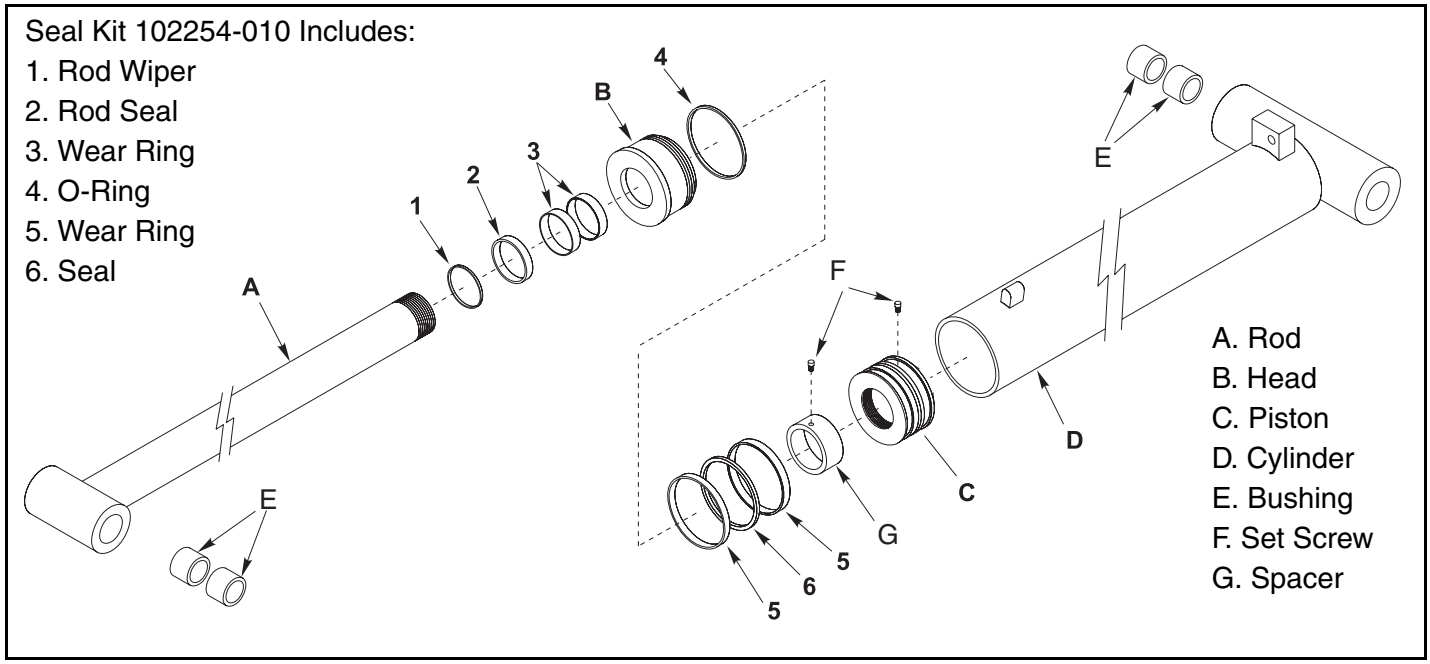


Figure 3-27: Lift Cylinder

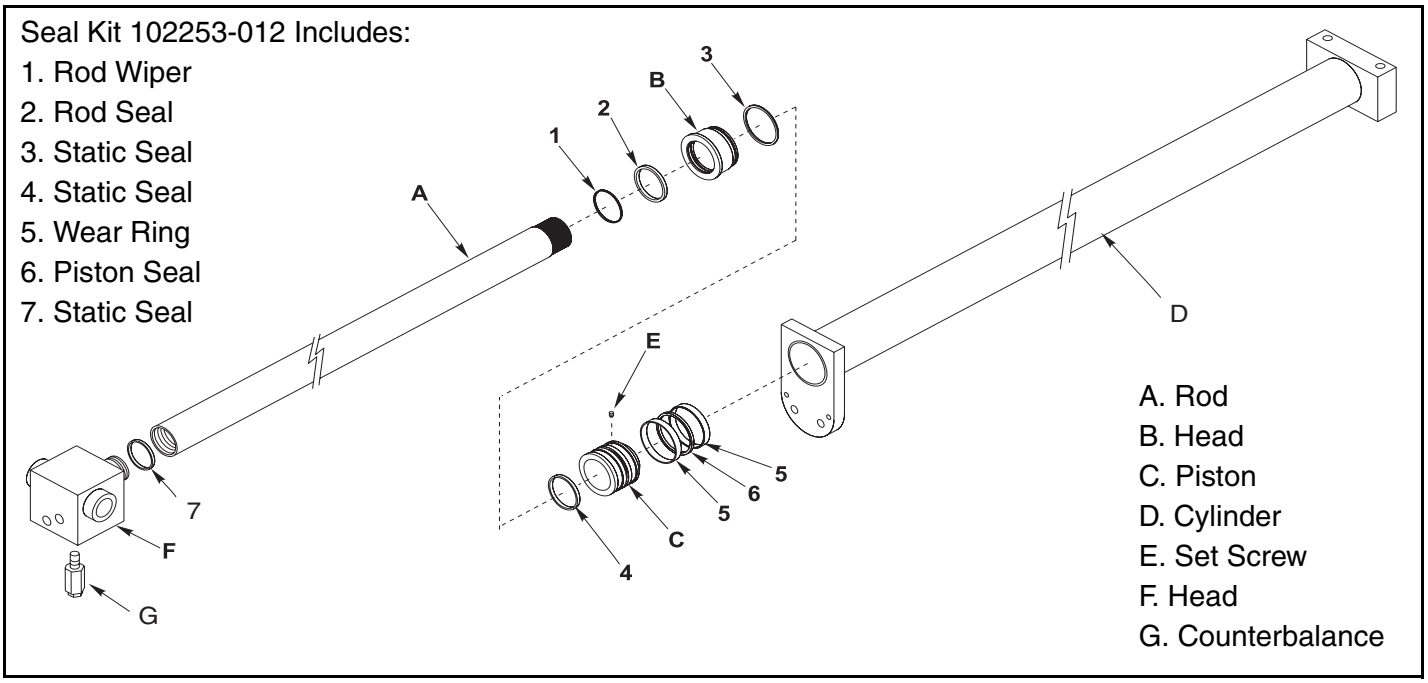


Figure 3-28: Upper Boom Extend Cylinder

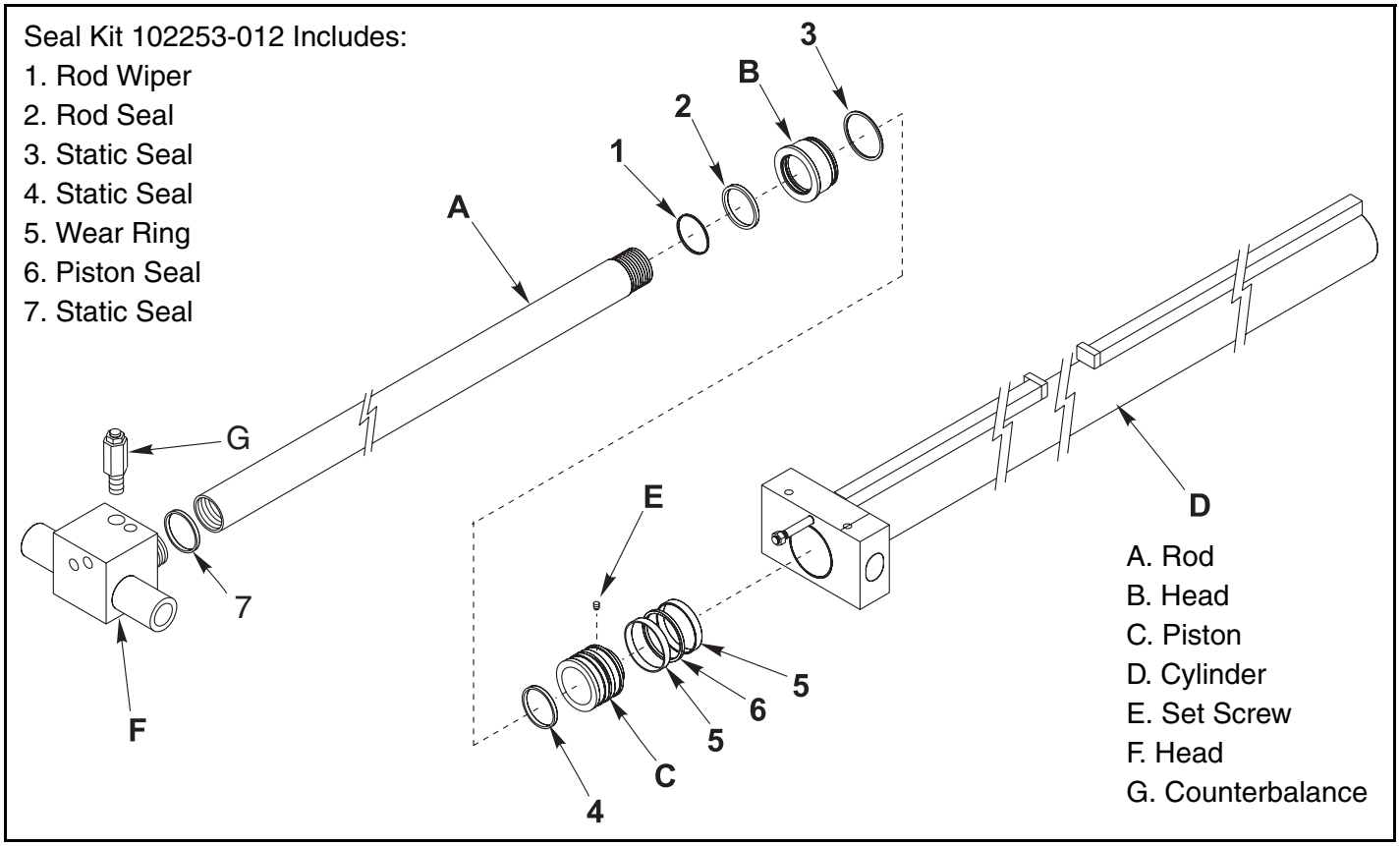


Figure 3-29: Lower Boom Extend Cylinder

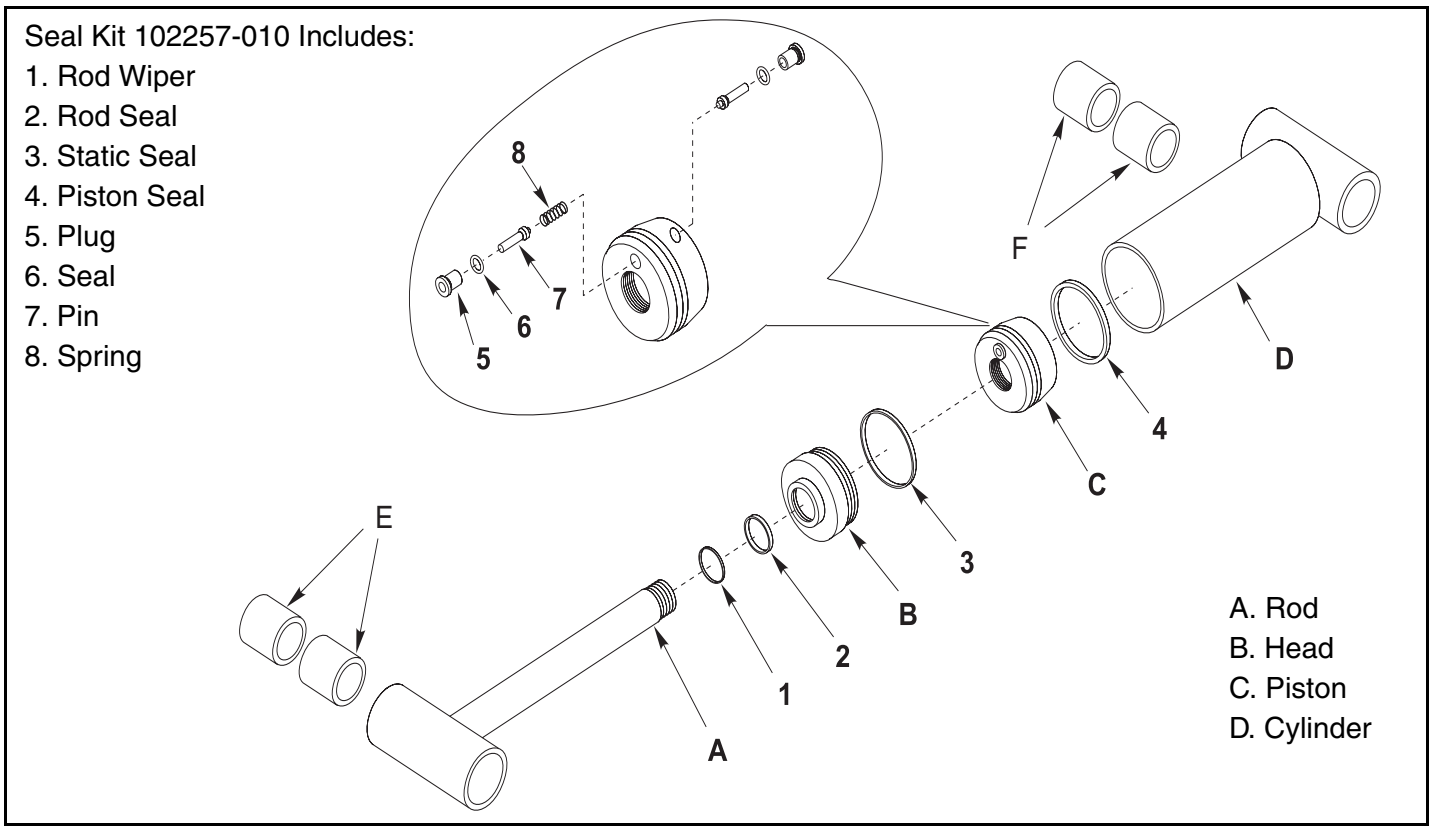


Figure 3-30: Steering Cylinder

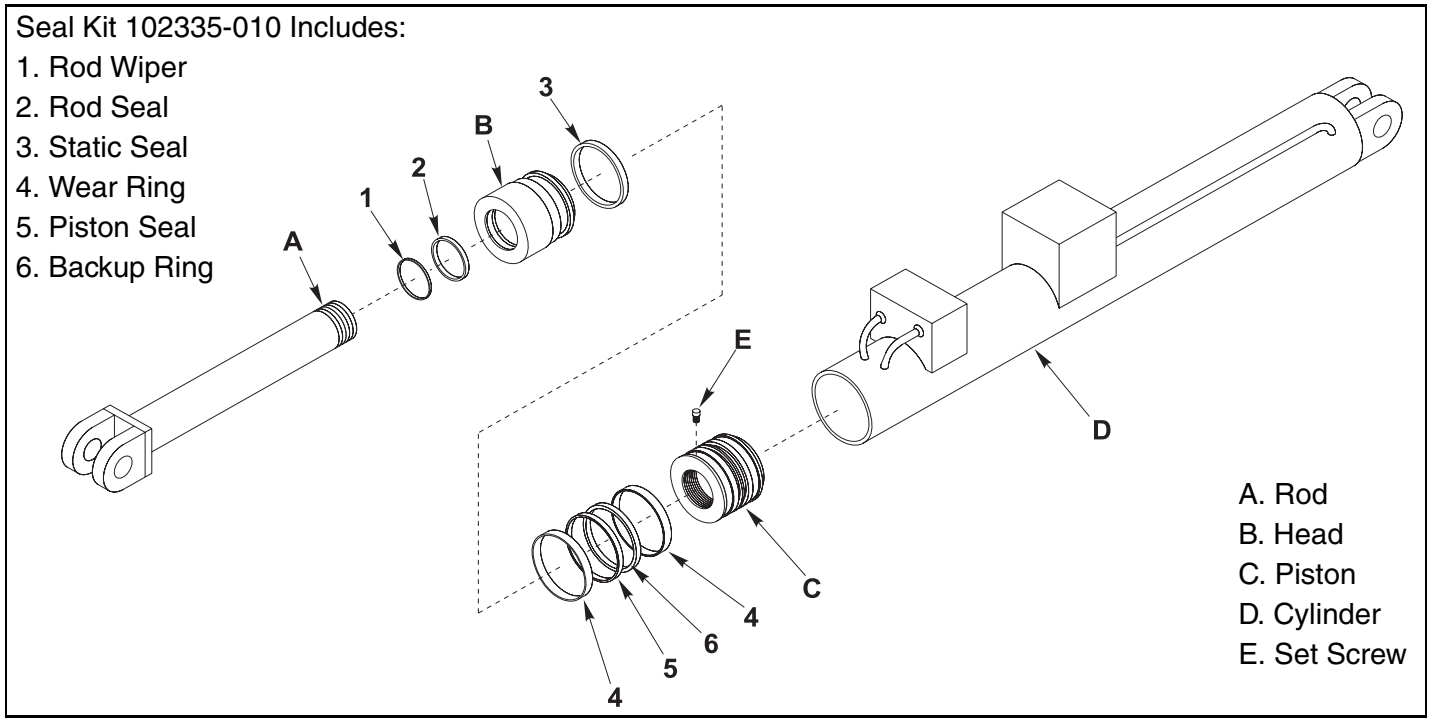


Figure 3-31: Axle Extend Cylinder

3.19 ROTARY ACTUATOR

Theory of Operation

The HP-9K Series rotary actuator is a simple mechanism that uses the sliding spline operating concept to convert linear piston motion into powerful shaft rotation. Each actuator is composed of a housing (01) and only two moving parts: the central shaft with integrated bearing tube and mounting flange (02), and the annular piston sleeve (03). Helical spline teeth machined on the shaft engage matching splines on the inside diameter of the piston. The outside diameter of the piston carries a second set of splines, of opposite hand, which engage with matching splines in the housing. As hydraulic pressure is applied, the piston is displaced axially within the housing - similar to the operation of a hydraulic cylinder - while the splines cause the shaft to rotate. When the control valve is closed, oil is trapped inside the actuator, preventing piston movement and locking the shaft in position.

The shaft is supported radially by the large upper radial bearing (302) and the lower radial bearing (303). Axially, the shaft is separated from the housing by the upper and lower thrust rings (304). The end cap (04) is adjusted for axial clearance and locked in position by set screws (105).

Displacement and torque are identical for clockwise and counter-clockwise rotation.

Disassembly and Inspection

Place on a clean workbench with ample room for all internal parts as they are removed. Remove all hydraulic fittings. Loosen set screws (105) and unthread end cap (04). Use a small grinder to remove the set screw thread stakes if necessary. Remove the stop tube (400), if furnished. The shaft is now free to move up and out of engagement with the piston sleeve (03). Note the timing marks on the spline teeth - small punch marks on the face of each gear (see Figure 3-32). Correct orientation of the marks will greatly simplify actuator timing upon reassembly. Do not remove any component without first locating the timing marks.

After removing the shaft, the piston sleeve (03) can now be moved down and out of the housing. Remove all seals and bearings from their grooves. Clean all parts thoroughly and inspect for wear. A small amount of wear in the spline teeth will have little effect on the actuator strength. New spline sets are manufactured with a backlash of about ,127 mm (.005”) per mating set. After long service, a backlash of about ,381 mm (.015”)per set may still be acceptable in most cases, depending on the required accuracy of the application.

Check the housing ring gear for wear. Inspect the cylinder bore for wear and scratches. The surface finish should be 32 RMS or better; rehone if necessary. The wear rings (302) (303) should have a maximum radial clearance of ,152 mm (.006”). A clearance in excess of ,2 mm (.008”) requires replacement. Rough and grooved shaft journals require shaft replacement.

Assembly and Testing

Wash all parts thoroughly in cleaning solvent and blow dry. Coat all sealing and working surfaces with a good grade hydraulic oil. Install seals and bearings in the piston sleeve, shaft, and end cap oriented as seen in (see Figure 3-34). The gap on the wear rings (302)(303) should not exceed 3,175 mm (.125”). Place the actuator in a vertical position and install the piston sleeve (03) in timed relation to the housing. Apply firm pressure as the new seals enter the housing and become compressed by the housing chamber.

CAUTION: Take care to insure the piston sleeve does not mar the cylinder bore. The timing marks must be aligned for proper shaft orientation (see Figure 3-32).

The shaft (02) is installed by again aligning the proper punched timing marks (see Figure 3-32). Use masking tape to temporarily tape the threaded portion of the shaft to help clear the piston seal (200). Turn the actuator upside-down and install the stop tube (400), if furnished.

Apply antiseize to threaded and surrounding areas of the end cap (04) and thread onto the shaft. Torque the end cap to 81,3 Nm (60 ft./lb)

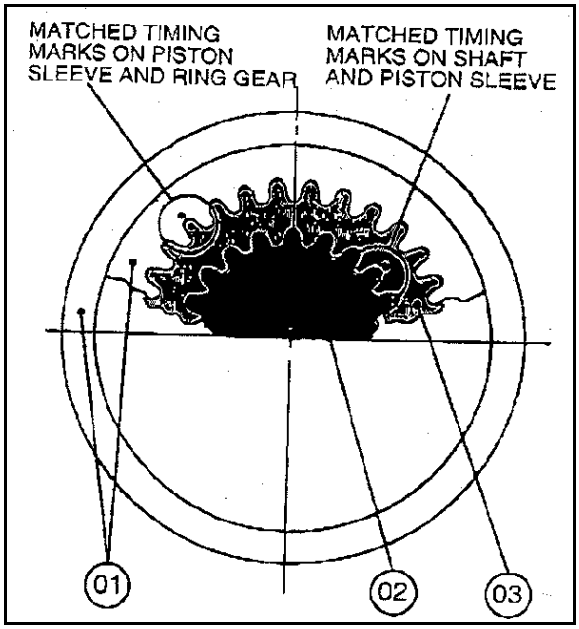
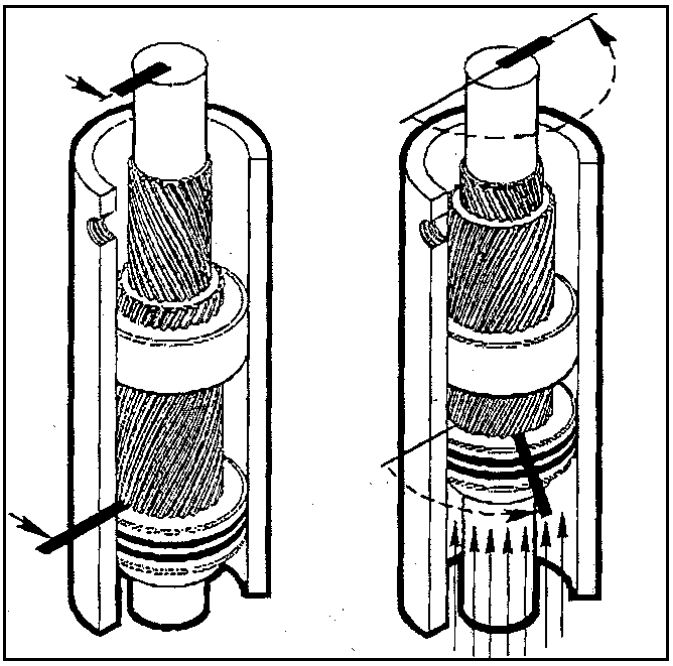


Figure 3-32: Rotary Actuator

Test the actuator for proper operation and leakage prior to securing the endcap with set screws. Mark the relative position of endcap and housing and check the marks periodically during the tests below to ensure that the endcap does not back out. Apply pressure to the actuator ports and check breakaway. The breakaway should be about 13,8 bar (200 PSI). Alternately apply pressure to port on the opposite side of the piston and check for axial movement. The axial movement should not exceed ,5 mm (.020"). If the axial movement is excessive retighten the end cap. Apply 206,8 bar (3000 PSI) pressure to one port until piston bottoms out and the actuator rotation stops. Remove non-pressurized hydraulic line and check for internal and external leakage. Repeat leakage test on opposite actuator port.



Bars indicate starting positions of piston and shaft. Arrows indicate direction they will rotate. The housing with integral ring gear remains stationary.

As fluid pressure is applied, the piston is displaced axially while the helical gearing causes the piston and shaft to rotate simultaneously. The double helix design compounds rotation: shaft rotation is about twice that of the piston.

Figure 3-33: Rotary Actuator

Testing and Storage

All HP-9K actuators are tested and operated through at least twenty-five (25) full cycles at 158,5 bar (2300 PSI) and proof tested at 310,3 bar (4500 PSI) for structural integrity. Both tests are conducted through the actuator with the valve installed.

Helac Corporation actuators are normally shipped filled with petroleum base hydraulic oil. The ports are plugged with the proper high strength steel plugs to prevent leakage during shipment.

Hydraulic Line Attachment

The hydraulic lines from the control valve to the actuator should be as short as possible. If the lines hold more oil than the actuator displaces, the oil is cycled back and forth, and not allowed to flow to tank for filtering and cooling, resulting in accelerated actuator wear.

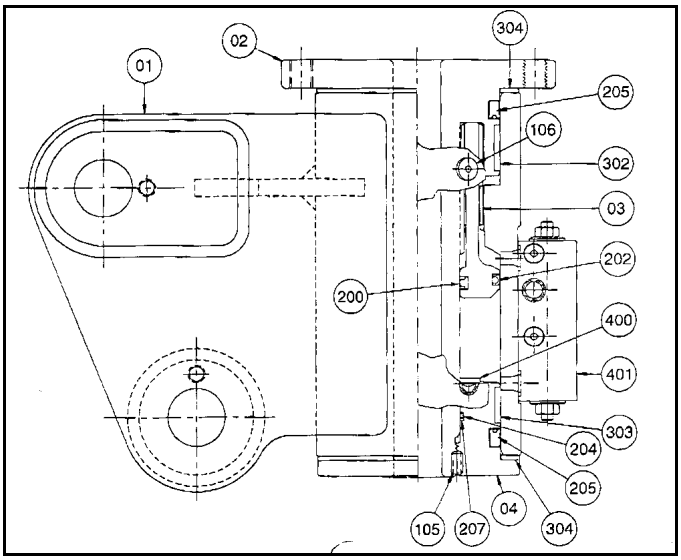


Figure 3-34: Cage Rotator

Install set screws (105) and stake to insure they will not back out during actuator operation.

3.20 TORQUE SPECIFICATIONS

Fasteners

Use the following values to torque fasteners used on UpRight Work Platforms unless a specific torque value is called out for the part being installed.

Hydraulic Components

Use the following values to torque hydraulic components used on UpRight Work Platforms.

NOTE: Always lubricate threads with clean hydraulic oil prior to installation

Table 3-2: Torque Specifications for Fasteners

AMERICAN STANDARD CAP SCREWS								
SAE GRADE	5				8			
Cap Screw Size (inches)	TORQUE				TORQUE			
	Ft./Lbs		Nm.		Ft./Lbs.		Nm.	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAx
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13
1/4 - 28	8	9	11	12	10.5	12	14	16
5/16 - 18	14	15	19	20	18.5	20	25	27
5/16 - 24	17.5	19	23	26	23	25	31	34
3/8 - 16	26	28	35	38	35	37	47.5	50
3/8 - 24	31	34	42	46	41	45	55.5	61
7/16 - 14	41	45	55.5	61	55	60	74.5	81
7/16 - 20	51	55	69	74.5	68	75	92	102
1/2 - 13	65	72	88	97.5	86	96	116	130
1/2 - 20	76	84	103	114	102	112	138	152
9/16 - 12	95	105	129	142	127	140	172	190
9/16 - 18	111	123	150	167	148	164	200	222
5/8 - 11	126	139	171	188	168	185	228	251
5/8 - 18	152	168	206	228	203	224	275	304
3/4 - 10	238	262	322	355	318	350	431	474
3/4 - 16	274	302	371	409	365	402	495	544
7/8 - 9	350	386	474	523	466	515	631	698
7/8 - 14	407	448	551	607	543	597	736	809
1 - 8	537	592	728	802	716	790	970	1070
1 - 14	670	740	908	1003	894	987	1211	1337

METRIC CAP SCREWS								
METRIC GRADE	8.8				10.9			
Cap Screw Size (millimeters)	TORQUE				TORQUE			
	Ft./Lbs.		Nm.		Ft./Lbs.		Nm.	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
M6 x 1.00	6	8	8	11	9	11	12	15
M8 x 1.25	16	20	21.5	27	23	27	31	36.5
M10 x 1.50	29	35	39	47	42	52	57	70
M12 x 1.75	52	62	70	84	75	91	102	123
M14 x 2.00	85	103	115	139	120	146	163	198
M16 x 2.50	130	158	176	214	176	216	238	293
M18 x 2.50	172	210	233	284	240	294	325	398
M20 x 2.50	247	301	335	408	343	426	465	577
M22 x 2.50	332	404	450	547	472	576	639	780
M24 x 3.00	423	517	573	700	599	732	812	992
M27 x 3.00	637	779	863	1055	898	1098	1217	1488
M30 x 3.00	872	1066	1181	1444	1224	1496	1658	2027

NOTE: These values apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil. They do not apply if special graphitic or molydisulphide greases or other extreme pressure lubricants are used

Table 3-3: Torque Specifications for Hydraulic Components

Type: SAE Part Series	Cartridge Poppet		Fittings		Hoses	
	Ft/Lbs	Nm	Ft/Lbs	Nm	Ft/Lbs	Nm
#4	N/A	N/A	N/A	N/A	135-145	15-16
#6	N/A	N/A	10-20	14-27	215-245	24-28
#8	25-30	34-41	25-30	34-41	430-470	49-53
#10	35-40	47-54	35-40	47-54	680-750	77-85
#12	85-90	115-122	85-90	115-122	950-1050	107-119
#16	130-140	176-190	130-140	176-190	1300-1368	147-155

Section 4

TROUBLESHOOTING

4.1 INTRODUCTION

This section contains troubleshooting Truth Tables for the Work Platform.

⚠ WARNING ⚠

When troubleshooting, ensure that the work platform is resting on a firm, level surface.

When performing any service which requires the Platform to be raised, the Elevating Assembly must be blocked.

Dsconnect the battery when replacing or testing the continuity of any electrical component.

This manual cannot cover all possible problems that may occur. If a specific problem is not covered in this manual, call our toll free number for service assistance.

Referring to Section 2.0 and 5.0 will aid in understanding the operation and function of the various components and systems of the SB80 and help in diagnosing and repair of the machine.

Troubleshooting Procedure

Determine whether the problem is mechanical (interference), electrical or hydraulic. Some functions require power at more than one solenoid.

Thoroughly study hydraulic and electrical schematics in **Section 5**. Check for loose connections and short circuits. Check/repair/replace each component in the Truth Table which is listed under each machine function which does not operate properly.

Use the charts on the following pages to help determine the cause of a fault in your UpRight SB80.

1. Verify your problem. Do a full function test from both platform controlsand chassis controls and note all functions thatare not operating correctly.
2. Narrow the possible causes of the malfunction. Use the troubleshooting guide to determine which components are common to all circuits that are not functioning correctly.
3. Identify the problem component. Test components that are common to all circuits that are not functioning correctly. Remember to check wires and terminals between suspect components. Be sure to check connections to battery negative.
4. Repair or replace component found to be faulty.
5. Verify that repair is complete. Do a full function test from both platform and chassis controls to verify that all functions are operating correctly and machine is performing to specified values.

NOTE: Protection diodes have been left out of the tables to eliminate confusion.

UPRIGHT USA **TEL: 1-800-926-5438**
FAX: 1-559-662-4785

UPRIGHT **TEL: +353 1 620 9300**
FAX: +353 1 620 9301

Adjustment Procedures

Hydraulic settings must be checked whenever a component is repaired or replaced.

Remove counter balance valves and “bench test” them if they are suspect.

Connect a pressure meter of appropriate range to the test port located on the right side of the hydraulic manifold.

Correct pressure settings are listed in the Section 5.

Refer to SuperFlex Optimizer settings listed in SuperFlex manual supplied with Optimizer.

Checking Pump Pressures

DRIVE PUMP

Check charge pressure at tee added to charge filter line.

To check drive pressure, connect pressure tester to port “G” on the 2 speed/Axle lock valve block.

LIFT PUMP

Test the Lift Pump pressure at the test port on the main valve block. Cycle jib completely and continue to hold switch. Pressure reading should equal main relief setting.

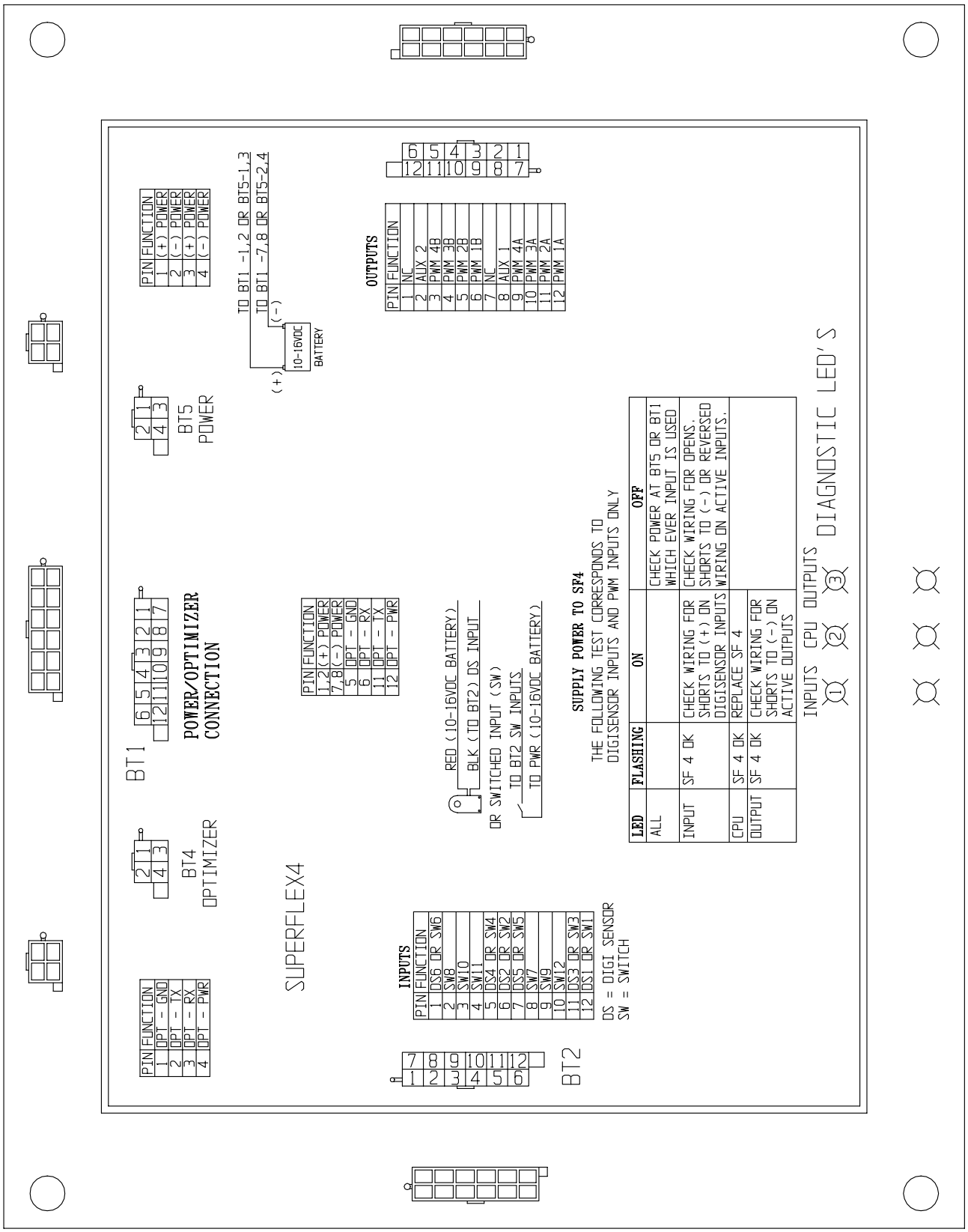


Figure 4-1: Superflex

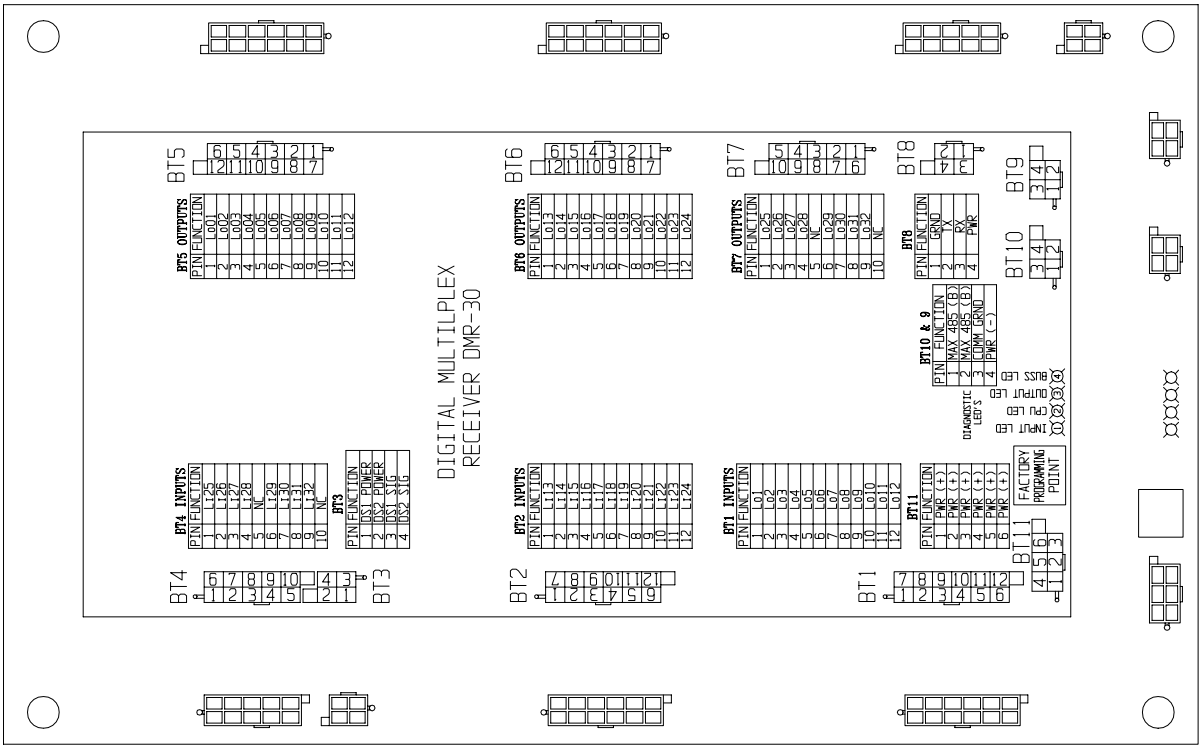


Figure 4-2: DMR-30 Receiver

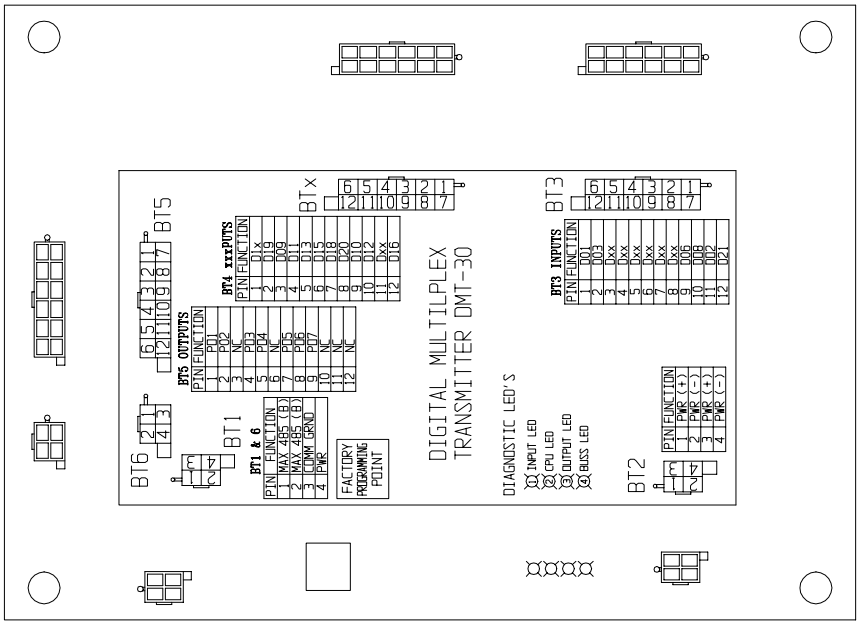


Figure 4-3: DMT-30 Transmitter

4.2 TROUBLESHOOTING SUPERFLEX CONTROLLER

There are Three compnoents to the SuperFlex system. Processor (SuperFlex), transmitter (DMT-30) and receiver (DMR-30).
The SuperFlex processor has Three 12 pin connectors. The SuperFlex connections are designated as sfBT1 thru sfBT5. There are Two auxiliary (AUX) high current outputs on sfBT3. These outputs control drive and lift/extend/swing operations.
The transmitter receives input signals from the joysticks located on the upper control box. The transmitter and receiver have LED indicators which can be used as diagnostic tools. These LED's are BT1-BT4 for the inputs and BT5-BT7 for the outputs.
There are two LED's in the proportional joystick. They indicate direction of rotation of the joystick digisensor.
"A" LED indicates counterclockwise rotation and "B" LED indicates clockwise rotation.
The dual range (switched) inputs may be independantly adjusted by using the "Optimizer" for calibration.
OPTIMIZER ADJUSTMENTS
Threshold - The amount of adjustment that causes the machine to just start moving.
Max Out - Maximum output when joystick is completely deflected.
Low Range - Low range signal
Ramp Up - Sets acceleration time.
Ramp Down - Sets Deceleration time.
There are Three LED's on the SuperFlex processor.

CPU LED (Middle LEAD) Flashes on and off if the system is operating properly. This LED will be off if there is no power to the CPU. If the LED is on continuously, there is a CPU failure and the SuperFlex controller must be replaced.
INPUT LED Flashes if one or more of the joysticks os being operated. LED is off if all joysticks are in their neutral position.
If LED is off when any joystick is being operated, check the wiring and check for 12 volt power to the joystick. If LED is on continuously, one of the digisensor wires is shorted to 12 volts.
OUTPUT LED flashes when any of the PMW outputs are active. If LED is on continuously, one of the PMW outputs is shorted to ground.

4.3 MACHINE OPERATION

Lower Control Box

Electrical Power Up

Both Emergency Stop Switches are pulled out.

Lower control box key switch in chassis position.

BT2-02 on DMR-30 (chassis power) will be illuminated.

Other LED's on DMR-30 which may be illuminated:BT2-07 (tilt), BT2-12 (telescoperinterlock), BT4-02 (lift interlock #1), BT4-03 (lift interlock #2), BT4-04 (axle pressure, AEP), BT7-04 (ignition)

The CPU LED on the DMR-30 and theSuperFlex should be flashing on/off. The buss LED on the DMR-30 should be flashing on/off. Relay #2 and #3 activated.

Engine Start

BT7-04 on DMR-30 (ignition) illuminated.

Operate start switch

BT7-08 (hour meter) illuminated, the hour meter should flash, BT2-03 (start input) will illuminate, BT2-11 will illuminate while engine is running.

NOTE: If no oil pressure is detected ignition signal is deactivated. Engine will not continue to run.

Glow Plug

BT6-08 on DMR-30 illuminated.

Boom

Boom Up

Function enabled

LED's on DMR-30 illuminated:

BT2-02 (chassis select), BT2-05, BT1-07 (lift input), BT5-09 (lift output to valve), BT6-06 (dump valve output), BT7-09 (mid throttle output), sfBT3-5 on SuperFlex (lift up output)

Boom/Axle Logic Interlock

If axles are not fully extended, boom will not elevate beyond 42 degrees. When axles are fully extend there is a 12 volt signal to relays #5 and #6. If both relays are latched there will be a 12 volt signal sent to BT4-04on the DMR-30 and sfBT2-10 on the SuperFlex. There will be 12 volts at TB7 and the green light (axle extend) on the upper controller will be illuminated.

Boom Down

Function enabled.

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-08 (boom down input), BT5-10 (boom down output to valve), BT6-06, (dump valve output), BT7-09 (mid throttle output), sfBT3-11 on SuperFlex (boom down output)

Boom Extend

Function enabled.

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-11 (boom extend input), BT5-12 (boom extend output to valve), BT6-06 (dump valve output), BT7-09 (mid throttle output), sfBT3-3 on SuperFlex (boom extend output)

Boom Extend/Axle Interlock

If axles are not fully extended, the boom will not extend.If axles are fully extended relays #5 and #6 are activated. If both relays are latched there is a 12 volt signal sent to BT4-04 on the DMR-30 and sfBT2-10 on the SuperFlex. There will be 12 volts at TB7 and the green light (axle extend) light on the upper controller will be illuminated.

Turret Rotate

Swing Right

Function enabled.

LED's ON dmr-30illuminated:

BT2-05 (function enabled), BT1-09 (swing right input), BT6-06 (dump valve output), BT7-09 (mid throttle output), sfBT3-4 on SuperFlex (swing right output)

Swing Left

Function enabled.

LED's ON dmr-30 illuminated:

BT2-05 (function enabled), BT1-10 (swing left input), BT6-06 (dump valve output), BT7-09 (mid throttle output), sfBT3-10 on SuperFlex (swing left output)

Jib

Jib Up

Function enabled.

LED's ON dmr-30 illuminated:

BT2-05 (function enabled), BT1-03 (jib up input), BT5-03 (jib up output to valve), BT6-07 (boom valve operated), BT6-06 (dump valve output), BT7-09 (mid throttle output)

Jib Down

Function enabled.

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-03 (jib down input), BT5-04 (jib down output to valve), BT6-07 (boom valve operated), BT6-06 (dump valve output), BT7-09 (mid throttle output)

Cage Rotate

Cage Right

Function enabled:

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-05 (cage right input), BT5-05 (cage right output to valve), BT6-07 (boom valve operated), BT6-06, dump valve output), BT7-09 (mid throttle output)

Cage Left

Function enabled:

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-06 (cage left input), BT5-06 (cage left output to valve), BT6-07 (boom valve operated), BT6-06, dump valve output), BT7-09 (mid throttle output)

Cage Trim Up

Function enabled:

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-01 (cage trim up input), BT5-01 (cage trim up output to valve), BT6-06 (dump valve output), BT7-09 (mid throttle output)

Cage Trim Down

Function enabled:

LED's on DMR-30 illuminated:

BT2-05 (function enabled), BT1-02 (cage trim down input), BT5-02 (cage trim down output to valve), BT6-06 (dump valve output), BT7-09 (mid throttle output)

Auxilliary Power (Emergency Functions)

Both emergency Stops are pulled out (upper and Lower)

Auxilliary Switch enabled

LED's on DMR-30 illuminated:

BT2-04 (auxilliary function output), BT6-12 (auxiliary pump output), Relay #1 activated (12 volts at relay #1, terminals #5 & #8)

NOTE: If the auxilliary switch is depressed when te engine is running the engine will stop immediately.

Upper Control Box

Power-Up

Both Emergency stops are pulled out (upper and lower)

Lower Control Box key switch in Platform position.

LED's on DMR-30 illuminated:

BT2-01 (platform power)

Other LED's may be illuminated:

BT2-07 (tilt), BT2-12 (telescope interlock), BT4-02 (lift interlock #1), BT4-03 (lift interlock #2), BT4-04 (axle pressure AEP), BT7-04 (ignition)

CPU LED at DMR-30 and Superflex should be flashing on/off. Also Buss LED on DMR-30 should be flashing on/off. Relay #2 and #3 are activated.

Engine Start

Operate start switch.

LED's illuminated:

BT4-06 on DMT-30, BT4-12 on DMT-30, BT7-04 on DMR-30(one second after lower control switcg is turned to chassis position.

Operate the start switch.

LED's on DMR-30 illuminated:

BT7-08 (hour meter) on DMR-30 is illuminated.

The hour meter will flash.

BT2-03 (start input) on DMR-30 will illuminate when engine is being cranked. It will not be illuminated after engine starts. BT2-11 (oil pressure) will be illuminated.

NOTE: If no oil pressure is detected ignition signal is deactivated. Engine will not continue to run.

Glow Plug

LED's illuminated:

BT4-10 on DMT-30, BT6-08 on DMR-30

Boom Lift Function

Boom Up

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT5-09 on DMR-30 (lift output to valve), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-6 on Superflex (digital input), sfBT3-5 on Superflex (lift up output), sfBT3-8 on Superflex (Aux. 1 output)

NOTE: If axles are not fully extended, boom will not elevate beyond 42 degrees. When axles are fully extend there is a 12 volt signal to relays #5 and #6. If both relays are latched there will be a 12 volt signal sent to BT4-04on the DMR-30 and sfBT2-10 on the SuperFlex. There will be 12 volts at TB7 and the green light (axle extend) on the upper controller will be illuminated.

Boom Down

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT5-10 on DMR-30 (lower output to valve), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-6 on Superflex (digital input), sfBT3-11 on Superflex (lower output), sfBT3-8 on Superflex (Aux. 1 output)

Boom Extend

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT5-11 on DMR-30 (extend output to valve), BT6-06 onDMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-5 on Superflex (digital input), sfBT3-3 on Superflex (lower output), sfBT3-8 on Superflex (Aux. 1 output)

Boom Retract

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT5-11 on DMR-30 (retract output to valve), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-5 on Superflex (digital input), sfBT3-9 on Superflex (retract output), sfBT3-8 on Superflex (Aux. 1 output)

Turret Rotate Functions

Swing Right

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-11 on Superflex (digital input), sfBT3-4 on Superflex (swing right output), sfBT3-8 on Superflex (Aux. 1 output)

Swing Left

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 on DMT-30, Directional LED on lift joystick, BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output), sfBT2-11 on Superflex (digital input), sfBT3-10 on Superflex (swing left output), sfBT3-8 on Superflex (Aux. 1 output)

Jib

Jib Up

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 and BT3-02 on DMT-30 (function enabled), BT5-03 on DMR-30 (jib up output to valve), BT6-07 on DMR-30 (boom valve operated), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output)

Jib Down

Function enabled - Foot switch depressed

LED's illuminated:

BT4-03 and BT3-08 on DMT-30 (function enabled), BT5-04 on DMR-30 (jib down input), BT6-07 on DMR-30 (boom valve operated), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output)

Cage Rotate

Cage Right

Function enabled - Foot switch depressed

BT4-03 and BT3-03 on DMT-30 (function enabled), BT5-05 on DMR-30 (cage right output to valve), BT6-07 on DMR-30 (boom valve operated), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output)

Cage Left

Function enabled - Foot pedal depressed

BT4-03 and BT3-09 on DMT-30 (function enabled), BT5-06 on DMR-30 (cage left output to valve), BT6-07 on DMR-30 (boom valve operated), BT6-06, dump valve output), BT7-09 (mid throttle output)

Cage Trim Up

Function enabled - Foot switch depressed

BT4-03 and BT3-01on DMT-30 (function enabled), BT5-01 on DMR-30 (cage trim up output to valve), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output)

Cage Trim Down

Function enabled - Foot switch depressed

BT4-03 and BT3-07 on DMT-30 (function enabled), BT5-02 on DMR-30 (cage trim down output to valve), BT6-06 on DMR-30 (dump valve output), BT7-09 on DMR-30 (mid throttle output)

Auxilliary Power (Emergency Functions)

Both emergency Stops are pulled out (upper and Lower) - Foot switch depressed

BT4-03 and BT4-04 on DMT-30 (Function enabled), BT2-04 on DMR-30 (auxilliary function input), BT6-12 (auxiliary pump output), Relay #1 activated (12 volts at relay #1, terminals #5 & #8)

NOTE: If the auxilliary switch is depressed when te engine is running the engine will stop immediately.

Drive Functions

Drive Forward

Function enabled - Footswitch depressed - Joystick interlock engaged

BT4-03 and BT4-08 on DMT-30 (Function enabled), BT7-09 on DMR-30 (mid throttle output), BT7-01 on DMR-30 (high throttle and brake release), sfBT3-6 on Superflex (Drive forward)

Drive Reverse

Function enabled - Footswitch depressed - Joystick interlock engaged

BT4-03 and BT4-08 on DMT-30 (Function enabled)

BT7-09 on DMR-30 (mid throttle output), BT7-01 on DMR-30 (high throttle and brake release), sfBT3-12 on Superflex (Drive reverse)

Steer Right

Function enabled - Foot switch depressed - Joystick interlock engaged

BT4-03, BT3-04 and BT4-08 on DMT-30 (Function enabled)

BT7-09 on DMR-30 (mid throttle output), BT6-06 on DMR-30 (dump valve), BT6-01 on DMR-30 (steer right output)

Steer Left

Function enabled - Foot switch depressed - Joystick interlock engaged

BT4-03, BT3-10 and BT4-08 on DMT-30 (Function enabled)

BT7-09 on DMR-30 (mid throttle output), BT6-06 on DMR-30 (dump valve), BT6-02 on DMR-30 (steer left output)

Torque High Speed

Foot switch depressed

BT4-03 om DMT-30 (Function enabled)

BT6-04 (shift valve) illuminated if drive interlock is activated.

Torque Position

No signal at BT4-09 on DMT-30

Speed Position

BT4-09 on DMT-30 (torque) is illuminated, BT6-04 on DMR-30 (shift) is illuminated

Axle Functions

NOTE: If axles are fully extended relays #5 and #6 are activated. If both relays are latched there is a 12 volt signal sent to BT4-04 on the DMR-30 and sfBT2-10 on the SuperFlex. There will be 12 volts at TB7 and the green light (axle extend) light on the upper controller will be illuminated.

Axle Extend

BT4-07 on DMT-30 illuminated, BT5-11 on DMR-30 illuminated

Input signal at relays #5 and #6

BT4-04 (AEP) on DMR-30, sfBT2-10 on Superflex illuminated

Axle Retract

BT4-02 on DMT-30 illuminated, BT5-12 on DMR-30 illuminated

Input signal at relays #5 and #6

BT4-04 (AEP) on DMR-30, sfBT2-10 on Superflex illuminated

Braking

brakes are normally locked when he machine is not in use. Brakes are unlocked by a charge pressure (26 bar] [380 PSI) from the drive motor. A 12 volt signal is sent to the brake solenoid by BT7-01 on DMR-30

Tilt

A 12 volt signal is at BT2-07 (tilt signal input) when the machine is level. If the machine is out of level or the level sensor fails the machine will stop. Red wire on level sensor is power in and white wire is signal out.

Interlocks

There are Four interlocks on the machine.

1. Axle Extend interlock (AEP) indicates axles are fully extended.
2. Lift Interlock #2 (wired in series with lift interlock #1 for safety redundancy).
3. Lift Interlock #1 (A12 Volt signal is sent to BT4-02 on DMR and sfBT2-3 on Superflex when boom is stowed). Allows high speed travel.
4. Telescope interlock (at tail end of boom). A 12 volt signal is sent to BT2-12 on DMR and sfBT2-4 on Superflex when boom is fully retracted. Allows high speed travel.

4.4 HYDRAULIC TROUBLESHOOTING

The SB80 has Two independent hydraulic systems. One for drive functions and one for lift functions.

All lift, axle and steering pressures can be verified by connecting a 207 bar (3000 PSI) gauge to L.S. port on main valve block.

⚠ WARNING ⚠

Counterbalance valves must never be removed if platform is raised and hydraulic system is under pressure. Be sure platform is completely stowed before removing counterbalance valves.

Table 4-1: Electric Truth Table - Diesel

Component	Function	Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/Retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake Release	Alarm	Hour Meter
ALM	Alarm																			X	
ALT	Alternator	X							X												
BAT1	Battery - Motor Stert	X																			
BAT2	Battery - Aux Power		X																		
C1	Controller - Drive				X	X	X	X			X										
C2	Controller - Extend			X														X			
C3	Controller - Lift			X						X											
C4	Controller - Throttle	X																			
CB1	Circuit Breaker -Motor Strt	X																			
CB2	Circuit Breaker-Aux Power		X																		
D1	Diode		X																		
D4	Diode	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
D5	Diode			X													X	X			
D6	Diode			X													X	X			
D9	Diode	X							X												
Horn	Horn																			X	
ISO	Isolator	X							X												
Lmp1	Lamp1 - Tilt	A bad tilt sensor will illuminate L1 and sound alarm. All functions will be operable.																			
Lmp2	Lamp2 - Axles Extended														X						
Lmp3	Lamp3 - Oil Pressure	X																			
MOT1	Motor - Starter	X																			
MOT2	Motor - Emergency Lower		X																		
MTR1	Hour Meter																				X
MTR2	Oil Pressure Meter	X																			
MTR3	Temp Meter	X																			
R1	Relay - Power Select	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
R2	Relay -	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
R3	Relay - Engine Start	X																			
R4	Relay - Ignition	X																			
R5	Relay - Axle Extend														X						
R6	Relay - Axle Retract														X						
R7	Relay - Auxilliary Pump		X																		
R8	Glow Plug Relay	X																			
R9	Engine Relay	X																			
REC	Receiver	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SEN	Tilt Sensor	A bad tilt sensor will illuminate L1 and sound alarm. All functions will be operable.																			
SF4	SuperFlex4 Controller	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SOL1	Solenoid - Jib Raise											X									
SOL2	Solenoid - Jib Lower											X									

TROUBLESHOOTING

Component / Function	Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/Retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake Release	Alarm	Hour Meter
SOL3 Solenoid - Cage Rotate												X								
SOL4 Solenoid - Cage Rotete												X								
SOL5 Solenoid - Steer Left						X														
SOL6 Solenoid - Steer Right							X													
SOL7 Solenoid - Boom Down									X											
SOL8 Solenoid - Boom Up			X																	
SOL9 Solenoid - Swing Left																	X			
SOL10 Solenoid - Swing Right																	X			
SOL11 Solenoid - Boom Retract																X				
SOL12 Solenoid - Boom Extrend																X				
SOL13 Solenoid - Trim Down													X							
SOL14 Solenoid - Trim Up													X							
SOL15 Solenoid - Axle Retract														X						
SOL16 Solenoid - Axle Extend														X						
SOL17 Solenoid - Dump Valve				X						X										
SOL18 Solenoid - Boom Valve											X	X								
SOL19 Solenoid - Generator (Opt)																				
SOL20 Solenoid - Reverse										X										
SOL21 Solenoid - Forward				X																
SOL22 Solenoid - Brake Valve																		X		
SOL23 Solenoid - Axle Lock																X				
SOL24 Solenoid - Shift Valve					X															
SOL25 Solenoid - Throttle Act	X																			
SW1 Switch - Glow Plug (lower)	X																			
SW2 Switch - Extend (lower)														X						
SW3 Switch - Level (lower)													X							
SW4 Switch - Engine Start (lower)	X																			
SW5 Switch - Lift (lower)			X																	
SW6 Switch - Platform Rotate (lower)												X								
SW7 Switch - Key (lower)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW8 Switch - Drive Enable (lower)				X						X										
SW9 Switch - Jib Raise/Lower (lower)											X									
SW10 Switch - Emergency Stop (lower)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW11 Switch - Auxilliary Power (lower)		X																		
SW12 Switch - Swing (upper)																	X			

Component	Function	Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/Retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake Release	Alarm	Hour Meter
SW13	Switch - Level (upper)													X							
SW14	Switch - Jib Raise/Lower (upper)											X									
SW15	Switch - Cage Rotate (upper)												X								
SW16	Switch - Auxilliary Power (upper)		X																		
SW17	Switch - Glow Plug (upper)	X																			
SW18	Switch - Torque (upper)					X															
SW19	Switch - Emergency Stop (upper)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW20	Switch - Horn (upper)																			X	
SW21	Switch - Axle Extend (upper)														X						
SW22	Switch - Switch - Key (upper)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW23	Switch - Axle Pressure																				
SW24	Switch - Axle Pressure																				
SW25	Oil Pressure Switch	X																			
SW26	Oil Pressure Sending Unit	X																			
SW27	Temp Sending Unit	X																			
SW28	Foot Interlock Switch			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW29-32	Axle Interlock Switch			X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
SW33	Optional Lights																				
SW34	Optional Generator																				
TIM	Timing Card - Cold Start	X																			
TRA	Transmitter	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Table 4-2: Electric Truth Table - Gas

Component	Function	Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake release	Alarm	Hour Meter
ALM	Alarm																			X	
ALT	Alternator	X							X												
BAT1	Battery - Motor Stert	X																			
BAT2	Battery - Aux Power		X																		
C1	Controller - Drive				X	X	X	X			X										
C2	Controller - Extend			X														X			
C3	Controller - Lift			X						X											
C4	Controller - Throttle	X																			
CB1	Circuit Breaker -Motor Strt	X																			
CB2	Circuit Breaker-Aux Power		X																		
D1	Diode		X																		
D4	Diode	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
D5	Diode			X													X	X			
D6	Diode			X													X	X			
D9	Diode	X							X												
Horn	Horn																			X	
ISO	Isolator	X							X												
Lmp1	Lamp1 - Tilt	A bad tilt sensor will illuminate L1 and sound alarm. All functions will be operable.																			
Lmp2	Lamp2 - Axles Extended														X						
Lmp3	Lamp3 - Oil Pressure	X																			
MOT1	Motor - Starter	X																			
MOT2	Motor - Emergency Lower		X																		
MTR1	Hour Meter																				X
MTR2	Oil Pressure Meter	X																			
MTR3	Temp Meter	X																			
R1	Relay - Power Select	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
R2	Relay -	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
R3	Relay - Engine Start	X																			
R4	Relay - Ignition	X																			
R5	Relay - Axle Extend														X						
R6	Relay - Axle Retract														X						
R7	Relay - Auxilliary Pump		X																		
R8	Glow Plug Relay	X																			
R9	Engine Relay	X																			
REC	Receiver	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SEN	Tilt Sensor	A bad tilt sensor will illuminate L1 and sound alarm. All functions will be operable.																			
SF4	SuperFlex4 Controller	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SOL1	Solenoid - Jib Raise											X									
SOL2	Solenoid - Jib Lower											X									

Component	Function	Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/Retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake Release	Alarm	Hour Meter
SOL3	Solenoid - Cage Rotate												X								
SOL4	Solenoid - Cage Rotete												X								
SOL5	Solenoid - Steer Left						X														
SOL6	Solenoid - Steer Right							X													
SOL7	Solenoid - Boom Down									X											
SOL8	Solenoid - Boom Up			X																	
SOL9	Solenoid - Swing Left																	X			
SOL10	Solenoid - Swing Right																	X			
SOL11	Solenoid - Boom Retract																X				
SOL12	Solenoid - Boom Extrend																X				
SOL13	Solenoid - Trim Down													X							
SOL14	Solenoid - Trim Up													X							
SOL15	Solenoid - Axle Retract														X						
SOL16	Solenoid - Axle Extend														X						
SOL17	Solenoid - Dump Valve				X						X										
SOL18	Solenoid - Boom Valve											X	X								
SOL19	Solenoid - Generator (Opt)																				
SOL20	Solenoid - Reverse										X										
SOL21	Solenoid - Forward				X																
SOL22	Solenoid - Brake Valve																		X		
SOL23	Solenoid - Axle Lock																X				
SOL24	Solenoid - Shift Valve					X															
SOL25	Solenoid - Throttle Act	X																			
SW1	Switch - Glow Plug (lower)	X																			
SW2	Switch - Extend (lower)														X						
SW3	Switch - Level (lower)													X							
SW4	Switch - Engine Start (lower)	X																			
SW5	Switch - Lift (lower)			X																	
SW6	Switch - Platform Rotate (lower)												X								
SW7	Switch - Key (lower)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW8	Switch - Drive Enable (lower)				X						X										
SW9	Switch - Jib Raise/Lower (lower)											X									
SW10	Switch - Emergency Stop (lower)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW11	Switch - Auxilliary Power (lower)		X																		
SW12	Switch - Swing (upper)																	X			

Component / Function		Engine Start and Run	Emergency Down	Boom Raise	Drive Forward	Torque	Steer Left	Steer Right	Battery Charge	Boom Lower	Drive Reverse	Jib Raise/Lower	Platform Rotate	Cage Level	Axle Extend/Retract	Oscillating Axle (optional)	Boom Extend/Retract	Turret Rotate	Brake Release	Alarm	Hour Meter
SW13	Switch - Level (upper)													X							
SW14	Switch - Jib Raise/Lower (upper)											X									
SW15	Switch - Cage Rotate (upper)												X								
SW16	Switch - Auxilliary Power (upper)		X																		
SW17	Switch - Glow Plug (upper)	X																			
SW18	Switch - Torque (upper)					X															
SW19	Switch - Emergency Stop (upper)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW20	Switch - Horn (upper)																			X	
SW21	Switch - Axle Extend (upper)														X						
SW22	Switch - Switch - Key (upper)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW23	Switch - Axle Pressure																				
SW24	Switch - Axle Pressure																				
SW25	Oil Pressure Switch	X																			
SW26	Oil Pressure Sending Unit	X																			
SW27	Temp Sending Unit	X																			
SW28	Foot Interlock Switch			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SW29-32	Axle Interlock Switch			X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
SW33	Optional Lights																				
SW34	Optional Generator																				
TIM	Timing Card - Cold Start	X																			
TRA	Transmitter	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Table 4-3: Hydraulic Truth Table

Component	Function	Boom Raise	Boom Lower	Boom Extend	Boom Retract	Turret Rotate	Jib Raise	Jib Lower	Platform Rotate	Platform Level	Axle Extend	Axle retract	Steer Right	Steer Left	Drive Forward	Drive Reverse	Engine Start	Torque	Cage Rotate	Emergency Lowering
BRK1	Swing Brake					X														
BRK2-3	Drive Brake														X	X				
CB1-2	Counterbalance Valve, Boom Extend			X																
CB3	Counterbalance Valve, Lift	X																		
CB4-5	Counterbalance Valve, Swing Motor					X														
CB6-7	Counterbalance Valve, Master Cylinder									X										
CB8-9	Counterbalance Valve, Slave Cylinder									X										
CB10-11	Counterbalance Valve, Jib						X	X												
CB12-13	Counterbalance Valve, Axle Extend										X									
CB14	Counterbalance Valve, Axle Extend										X									
CB15	Counterbalance Valve, Axle Extend										X									
CB16-17	Counterbalance Valve, Oscillating Axle (Optional)																			
CPL	Rotary Coupling	X	X	X	X		X	X	X	X									X	
CV1	Check Valve, Aux Pump																			X
CV2-3	Check Valve, Torque																	X		
CV4	Check Valve, Pilot Operated										X	X								
CYL1	Lift Cylinder	X	X																	
CYL2	Upper Extend Cylinder			X	X															
CYL 3	Lower Extend Cylinder			X	X															
CYL4	Master Cylinder	X	X																	
CYL5	Slave Cylinder	X	X																	
CYL6	Jib Cylinder						X	X												
CYL7-8	Steering Cylinders											X	X							
CYL9-10	Axle Extend Cylinders										X									
CYL11-12	Axle Adjust Cylinders(Opt)																			
FLC1	Flow Control Valve							X	X											
FLO1	Flow Divider												X	X						
FLO2	Flow Divider													X	X					
FLO3	Flow Divider													X	X					
FLO4	Flow Divider													X	X					
FLT1	Filter, Tank	X	X	X	X	X	X	X	X	X	X			X	X					
FLT2-3	Filter, Strainer	X	X	X	X	X	X	X	X	X	X									
FLT4	Filter, Drive Pump											X	X	X	X	X				

TROUBLESHOOTING

Component	Function	Boom Raise	Boom Lower	Boom Extend	Boom Retract	Turret Rotate	Jib Raise	Jib Lower	Platform Rotate	Platform Level	Axle Extend	Axle Retract	Steer Right	Steer Left	Drive Forward	Drive Reverse	Engine Start	Torque	Cage Rotate	Emergency Lowering
LSCV1	Load Sense Compensator Valve	X	X	X	X	X	X	X	X	X										
LSCV2	Load Sense Compensator Valve			X	X															
LSCV3	Load Sense Compensator Valve	X	X																	
LSCV4	Load Sense Compensator Valve					X														
MOT1	Motor, Swing					X														
MOT2	Drive Motor														X	X				
MOT3	Drive Motor														X	X				
MOT4	Drive Motor														X	X				
Mot5	Drive Motor														X	X				
ORF1-2	Orifice, Flow Control										X	X								
ORF3	Orifice, Flow Control					X														
ORF4	Orifice, Flow Control, Steering												X	X						
ORF5	Orifice, Axle Extend										X	X								
ORF6	Orifice, Left Rear Drive Motor														X	X				
ORF7	Orifice, Right Rear drive Motor														X	X				
ORF8	Orifice, Swing Motor					X														
ORF9	Orifice, Load Sense	X	X	X	X	X				X			X	X						
Pump1	Drive Pump														X	X				
Pump2	Auxilliary Lowering																			X
Pump3	Pump, Boom Functions	X	X	X	X	X	X	X	X	X		X	X	X						
ROT	Cage Rotator																		X	
RV1	Relief Valve, Dump																			
RV2-3	Relief Valve, Extend			X	X															
RV4	Relief Valve, Lift	X	X																	
RV5	Relief Valve, Swing					X														
RV6-7	Relief Valve, Drive														X	X				
RV8	Relief Valve, Axle Extend										X									
RV9	Relief Valve, Axle Retract											X								
RV10	Relief Valve, Jib						X	X												
RV11-12	Relief Valve, Platform Rotate																		X	
SW1-2	Switch, Brake Pressure																			
SV1	Shuttle Valve, Axle Extend										X									
SV2	Shuttle Valve, Drive														X	X				
SV3-4	Shuttle Valve, Logic Circuit	X	X	X	X	X					X	X	X	X						

Component	Function	Boom Raise	Boom Lower	Boom Extend	Boom Retract	Turret Rotate	Jib Raise	Jib Lower	Platform Rotate	Platform Level	Axle Extend	Axle retract	Steer Right	Steer Left	Drive Forward	Drive Reverse	Engine Start	Torque	Cage Rotate	Emergency Lowering
SV5	Shuttle Valve, master Cylinder									X										
SV6-7	Shuttle Valve, Logic Circuit	X	X	X	X	X				X										
SV8	Shuttle Valve, Swing					X														
SV9	Shuttle Valve, Logic Circuit	X	X	X	X	X														
SV10	Shuttle Valve, Lift	X	X																	
SV11	Shuttle Valve, Logic Circuit	X	X	X	X															
SV12	Shuttle Valve, Boom Extend			X	X															
V1	Dump Valve						X	X	X											
V2	Extend Valve			X	X															
V3	Lift Valve	X	X																	
V4	Swing Valve					X														
V5	Boom Power Valve						X	X	X											
V6	Master Cylinder Valve									X										
V7	Steering Valve											X	X							
V8	Axle Extend/Retract										X	X								
V9	Jib Valve						X	X												
V10	Rotator Valve																			
V11-12	Axle Extend Valves										X	X								
V13	Axle Extend Logic Valve										X	X								
V14	Drive Motor Valve, Left														X	X				
V15	Drive Motor Valve, Right														X	X				
V16	Axle Lock Valve																			
V17	Torque Valve																	X		
V18	Brake Valve																			
V19	Drive Motor Valve														X	X				

NOTES:

Section 5

SCHEMATICS

Introduction

This section contains electrical and hydraulic power schematics and associated information for maintenance purposes.

The diagrams are to be used in conjunction with the ***Troubleshooting Truth Tables*** in ***Section 4.*** They allow understanding of the makeup and functions of the systems for checking, tracing, and faultfinding during troubleshooting analysis.

The components that comprise the electrical and hydraulic systems are given a reference designation and are explained as to function and location in the following tables.

Schematic **Page**

5.1 Electrical Schematic, SB80 - Diesel 5-2

5.2 Electrical Schematic, SB80 - Gas 5-4

5.3 Hydraulic Schematic, SB80 5-6

Table **Page**

Table 5-1: Electrical Schematic Legend: (102026-000) 5-2

Table 5-2: Electrical Schematic Legend: (102026-001) 5-4

Table 5-3: Hydraulic Schematic Legend (064148-023) 5-6

5.1 ELECTRICAL SCHEMATIC, SB80 - DIESEL

Table 5-1: Electrical Schematic Legend: (102026-000)

DESIGNATION	NAME	FUNCTION	LOCATION
ALM	Alarm, Tilt	Sounds when machine is out of tilt parameters	Upper Control Box
ALT	Alternator	Power to engine and Battery	Engine
BAT1	Battery	Start Motor	Engine Module
BAT2	Battery	Auxillary Lowering	Control Module
C1	Controller, Drive	Control drive functions	Upper Control Box
C2	Controller, Extend	Control Boom Extend Functions	Upper Control Box
C3	Controller, Lift, Directional	Controll Lift and rotate	Upper Control Box
C4	Throttle Controller	Control Throttle	Engine
CB1	Circuit Breaker, Motor Start Battery	Protecion for Motor start circuit	Lower Control Box
CB2	Circuit Breaker, Auxilliary Battery	Protection for Auxilliarty Motor circuit	Lower Control Box
D1	Diode	Power to R2	Lower Control Box
D2	Diode	Protection Diode, R3	Lower Control Box
D3	Diode	Protection Diode, R4	Lower Control Box
D4	Diode	Power to R2	
D5	Diode		Lower Control Box
D6	Diode		Lower Control Box
D7	Diode	Protection Diode, R2	Lower Control Box
D8	Diode	Protection Diode, R1	Lower Control Box
D9	Diode	to Alternator	Engine
Horn	Horn	Horn Sound	Engine Module
ISO	Isolator	Charge Isolator	Engine
Lamp1	LAMP	TILT, Out of level	Upper Control Box
Lamp2	LAMP	Axles Extended	Upper Control Box
Lamp3	LAMP	Oil Pressure Low	Upper Control Box
MOT1	Motor, Starter	Start Engine	Engine
MOT2	Motor	Emergency Lowering	Control Module
MTR1	Hour Meter	Display Run Time	Lower Control Box
MTR2	Oil Pressure Meter	Display Oil Pressure	Lower Control Box
MTR3	Temp Meter	Display Engine Temp	Lower Control Box
R1	Power Select Relay	Main Power Relay	Lower Control Box
R2	Power Relay		
R3	Engine Start Relay	Start Engine	Lower Control Box
R4	Ignition Relay	Power toEngine Ignition	Lower Control Box
R5	Axle Extend/ Retract	Activate Axle Extend/Retract	Lower Control Box
R6	Axle Extend/ Retract	Activate Axle Extend/Retract	Lower Control Box
R7	Aux Pump Relay	Power to Aux Pump	Auxilliary Pump
R8	Glow Plug Relay	Heat Glow Plugs	Engine

DESIGNATION	NAME	FUNCTION	LOCATION
R9	Engine Relay	Allow Engine Operation	Engine
REC	Receiver	Receive Signal From Transmitter	Lower Control Box
SEN	Tilt Sensor	Tilt Sensor	Lower Control Mod
SF4	SuperFlex 4	Controls Machine Functions	Lower Control Mod
SOL1-2	Jib Solenoid	Raise/Lower Jib	Interlock/Jib Valve Block
SOL3-4	Cage Rotate	Rotate Cage Left/Right	Interlock/Jib Valve Block
SOL5	Solenoid	Steer Left	Lower Control Mod
SOL6	Solenoid	Steer Right	Lower Control Mod
SOL7	Solenoid	Boom Down	Lower Control Mod
SOL8	Solenoid	Boom Up	Lower Control Mod
SOL9	Solenoid	Swing Left	Lower Control Mod
SOL10	Solenoid	Swing Right	Lower Control Mod
SOL11	Solenoid	Boom Retract	Lower Control Mod
SOL12	Solenoid	Boom Extend	Lower Control Mod
SOL13	Solenoid	Trim Down	Lower Control Mod
SOL14	Solenoid	Trim Up	Lower Control Mod
SOL15	Solenoid	Axle Retract	Lower Control Mod
SOL16	Solenoid	Axle Extend	Lower Control Mod
SOL17	Dump Valve Solenoid	Energize Dump Valve	Lower Control Mod
SOL18	Boom Valve Solenoid	Energize Boom Valve	Lower Control Mod
SOL19	Generator Solenoid	Allow Generator Operation	Lower Control Mod
SOL20	Reverse Solenoid	Drive in Reverse	Main Pump
SOL21	Forward Solenoid	Drive Forward	Main Pump
SOL22	Solenoid	Brake Valve Solenoid	Engine Module
SOL23	Solenoid	Axle Lock solenoid	Engine Module
SOL24	Solenoid	Shift Valve Solenoid	Engine Module
SOL25	Solenoid	Throttle Actuator	
SW1	Glow Plug Switch	Heat Glow Plugs	Lower Control Box
SW2	Extend Switch	Extend Boom	Lower Control Box
SW3	Level Switch	Level Platform	Lower Control Box
SW4	Start Switch	Start Engine	Lower Control Box
SW5	Lift Switch	Lift/Lower Boom	Lower Control Box
SW6	Platform Switch	Rotate Platform R/L	Lower Control Box
SW7	Key Switch	Key Switch	Lower Control Box
SW8	Enable	Drive Enable	Lower Control Box
SW9	Jib Switch	Raise/Lower Jib	Lower Control Box
SW10	Emergency Stop	Emergency Stop	Lower Control Box
SW11	Auxilliary Power	Lower Platform	Lower Control Box

DESIGNATION	NAME	FUNCTION	LOCATION
SW12	Swing	Rotate Platform	Lower Control Box
SW13	Level Switch	Level Platform	Upper Control Box
SW14	Jib Switch	Raise/Lower Jib	Upper Control Box
SW15	Cage Switch	Rotate Cage	Upper Control Box
SW16	Auxilliary Power	Lower Platform	Upper Control Box
SW17	Glow Plug Switch	Heat Glow Plugs	Upper Control Box
SW18	Torque Switch	High Torque	Upper Control Box
SW19	Emergency Stop	Emergency Stop	Upper ControlBox
SW20	Horn Switch	Activate Horn	Upper Control Box
SW21	Axle Extend Switch	Extend/Retract Axles	Upper Control Box
SW22	Key Switch	Enable Machine Operation	Upper Control Box
SW23	Axle Pressure Switch1	Indicate Axle Extend	Axle
SW24	Axle Pressure Switch	Indicate Axle Extend	Axle
SW25	Oil Pressure Switch	Indicate Oil Pressure	Engine Module
SW26	Oil Pressure Sending Unit	Signal to Control Box	Engine
SW27	Temp Sending Unit	Signal to Control Box	Engine
SW28	Foot Interlock Switch	Foot Interlock	Platform Floor
SW29-32	Axle Interlock Switch	Indicate Axle Extended	Axles
SW33	Optional Lights	Turn on Lights	Upper Controller
SW34	Optional Generator	Enable Generator	Upper Controller
TIM	Timing Card	Cold Start Timing Advance	Engine
TRA	Transmitter	Send Signals to Transmitter	Upper Control Box

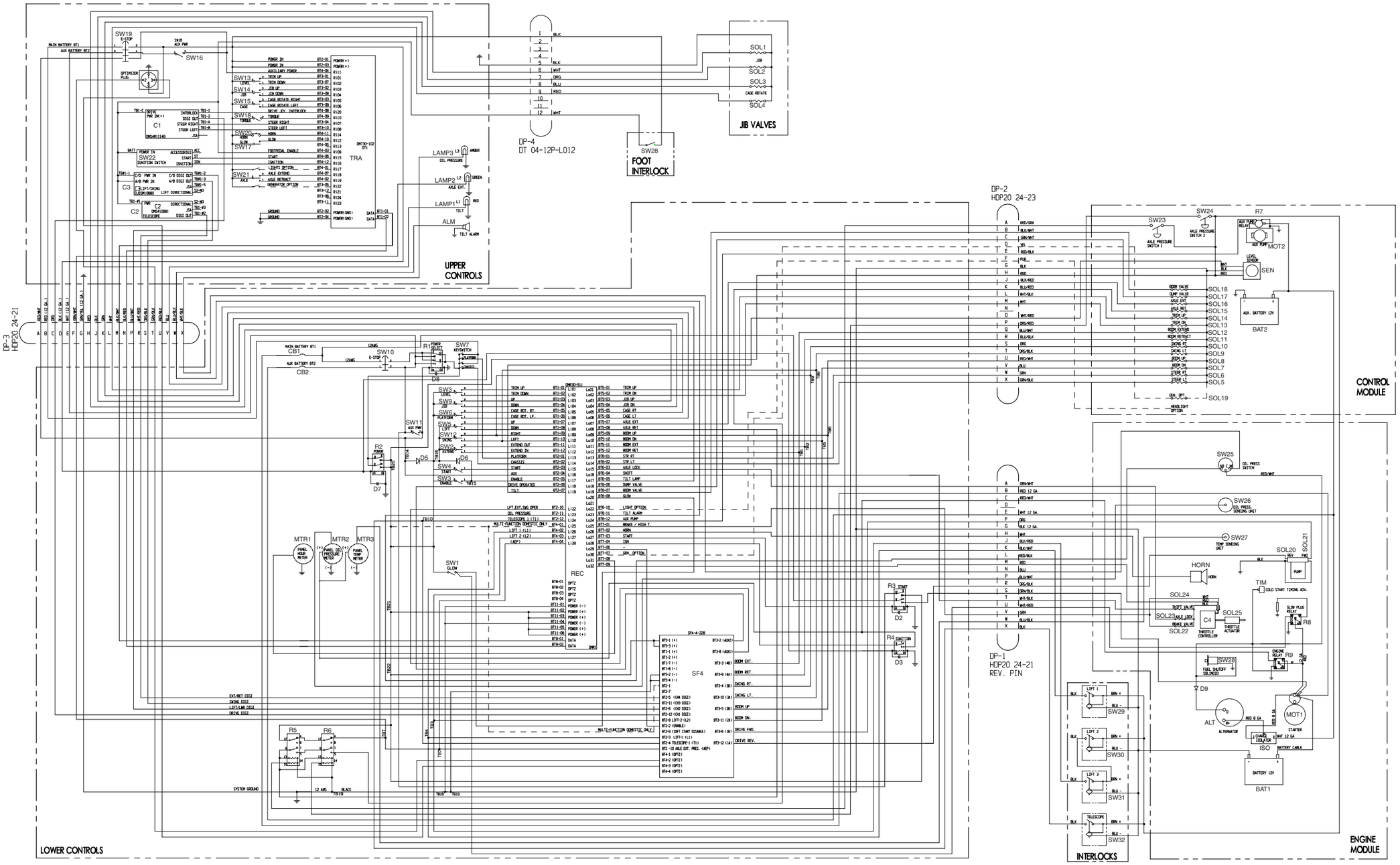


Figure 5-1: Electrical Schematic - Diesel (102026-000)

5.2 ELECTRICAL SCHEMATIC, SB80 - GAS

Table 5-2: Electrical Schematic Legend: (102026-001)

DESIGNATION	NAME	FUNCTION	LOCATION
ALM	Alarm, Tilt	Sounds when machine is out of tilt parameters	Upper Control Box
ALT	Alternator	Power to engine and Battery	Engine
BAT1	Battery	Start Motor	Engine Module
BAT2	Battery	Auxillary Lowering	Control Module
C1	Controller, Drive	Control drive functions	Upper Control Box
C2	Controller, Extend	Control Boom Extend Functions	Upper Control Box
C3	Controller, Lift, Directional	Controll Lift and rotate	Upper Control Box
CB1	Circuit Breaker, Motor Start Battery	Protecion for Motor start circuit	Lower Control Box
CB2	Circuit Breaker, Auxilliary Battery	Protection for Auxilliarty Motor circuit	Lower Control Box
D1	Diode	Power to R2	Lower Control Box
D2	Diode	Protection Diode, R3	Lower Control Box
D3	Diode	Protection Diode, R4	Lower Control Box
D4	Diode	Power to R2	
D5	Diode		Lower Control Box
D6	Diode		Lower Control Box
D7	Diode	Protection Diode, R2	Lower Control Box
D8	Diode	Protection Diode, R1	Lower Control Box
D9	Diode	to Alternator	Engine
DIST	Distributor	Maintain battery charge	Engine Module
Horn	Horn	Horn Sound	Engine Module
ISO	Isolator	Charge Isolator	Engine
Lamp1	LAMP	TILT, Out of level	Upper Control Box
Lamp2	LAMP	Axles Extended	Upper Control Box
Lamp3	LAMP	Oil Pressure Low	Upper Control Box
MOT1	Motor, Starter	Start Engine	Engine
MOT2	Motor	Emergency Lowering	Control Module
MTR1	Hour Meter	Display Run Time	Lower Control Box
MTR2	Oil Pressure Meter	Display Oil Pressure	Lower Control Box
MTR3	Temp Meter	Display Engine Temp	Lower Control Box
R1	Power Select Relay	Main Power Relay	Lower Conreol Box
R2			
R3	Engine Start Relay	Start Engine	Lower Control Box
R4	Ignition Relay	Power toEngine Ignition	Lower Control Box
R5	Axle Extend/ Retract	Activate Axle Extend/Retract	Lower Control Box
R6	Axle Extend/ Retract	Activate Axle Extend/Retract	Lower Control Box
R7	Aux Pump Relay	Power to Aux Pump	Auxilliary Pump
R8	RPG Relay		Engine

DESIGNATION	NAME	FUNCTION	LOCATION
R9	Engine Relay	Allow Engine Operation	Engine
R10	Fuel Select Relay	Switches between propane & gasoline	Engine
REC	Receiver	Receive Signal From Transmitter	Lower Control Box
SEN	Tilt Sensor	Tilt Sensor	Lower Control Mod
SF4	SuperFlex 4	Controls Machine Functions	Lower Control Mod
SOL1-2	Jib Solenoid	Raise/Lower Jib	Interlock/Jib Valve Block
SOL3-4	Cage Rotate	Rotate Cage Left/Right	Interlock/Jib Valve Block
SOL5	Solenoid	Steer Left	Lower Control Mod
SOL6	Solenoid	Steer Right	Lower Control Mod
SOL7	Solenoid	Boom Down	Lower Control Mod
SOL8	Solenoid	Boom Up	Lower Control Mod
SOL9	Solenoid	Swing Left	Lower Control Mod
SOL10	Solenoid	Swing Right	Lower Control Mod
SOL11	Solenoid	Boom Retract	Lower Control Mod
SOL12	Solenoid	Boom Extend	Lower Control Mod
SOL13	Solenoid	Trim Down	Lower Control Mod
SOL14	Solenoid	Trim Up	Lower Control Mod
SOL15	Solenoid	Axle Retract	Lower Control Mod
SOL16	Solenoid	Axle Extend	Lower Control Mod
SOL17	Dump Valve Solenoid	Energize Dump Valve	Lower Control Mod
SOL18	Boom Valve Solenoid	Energize Boom Valve	Lower Control Mod
SOL19	Generator Solenoid	Allow Generator Operation	Lower Control Mod
SOL20	Reverse Solenoid	Drive in Reverse	Main Pump
SOL21	Forward Solenoid	Drive Forward	Main Pump
SOL22	Solenoid	Brake Valve Solenoid	Engine Module
SOL23	Solenoid	Axle Lock solenoid	Engine Module
SOL24	Solenoid	Shift Valve Solenoid	Engine Module
SOL25	Solenoid	Throttle Actuator	
SW1	Glow Plug Switch	Heat Glow Plugs	Lower Control Box
SW2	Extend Switch	Extend Boom	Lower Control Box
SW3	Level Switch	Level Platform	Lower Control Box
SW4	Start Switch	Start Engine	Lower Control Box
SW5	Lift Switch	Lift/Lower Boom	Lower Control Box
SW6	Platform Switch	Rotate Platform R/L	Lower Control Box
SW7	Key Switch	Key Switch	Lower Control Box
SW8	Enable	Drive Enable	Lower Control Box
SW9	Jib Switch	Raise/Lower Jib	Lower Control Box
SW10	Emergency Stop	Emergency Stop	Lower Control Box

DESIGNATION	NAME	FUNCTION	LOCATION
SW11	Auxilliary Power	Lower Platform	Lower Control Box
SW12	Swing	Rotate Platform	Lower Control Box
SW13	Level Switch	Level Platform	Upper Control Box
SW14	Jib Switch	Raise/Lower Jib	Upper Control Box
SW15	Cage Switch	Rotate Cage	Upper Control Box
SW16	Auxilliary Power	Lower Platform	Upper Control Box
SW17	Fuel Selector Switch	Switches between propane & gasoline	Upper Control Box
SW18	Torque Switch	High Torque	Upper Control Box
SW19	Emergency Stop	Emergency Stop	Upper ControlBox
SW20	Horn Switch	Activate Horn	Upper Control Box
SW21	Axle Extend Switch	Extend/Retract Axles	Upper Control Box
SW22	Key Switch	Enable Machine Operation	Upper Control Box
SW23	Axle Pressure Switch1	Indicate Axle Extend	Axle
SW24	Axle Pressure Switch	Indicate Axle Extend	Axle
SW25	Oil Pressure Switch	Indicate Oil Pressure	Engine Module
SW26	Oil Pressure Sending Unit	Signal to Control Box	Engine
SW27	Temp Sending Unit	Signal to Control Box	Engine
SW28	Foot Interlock Switch	Foot Interlock	Platform Floor
SW29-32	Axle Interlock Switch	Indicate Axle Extended	Axles
SW33	Optional Lights	Turn on Lights	Upper Controller
SW34	Optional Generator	Enable Generator	Upper Controller
SW35	Propane Shutoff Switch	Cuts off propane supply	Engine
SW36	Fuel Pump Switch		Engine
TIM	Timing Card	Cold Start Timing Advance	Engine
TRA	Transmitter	Send Signals to Transmitter	Upper Control Box

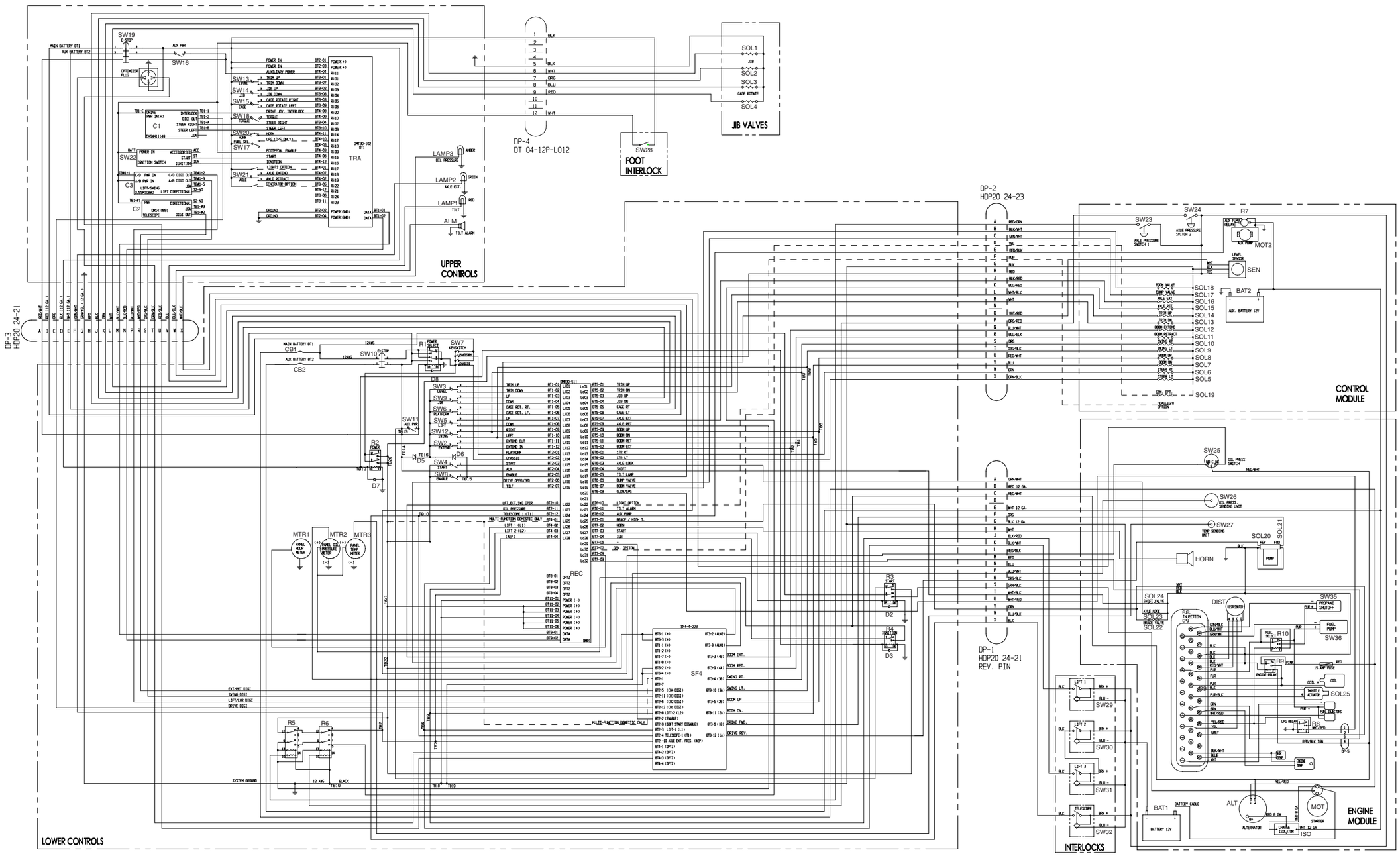


Figure 5-2: Electrical Schematic - Gas (102026-001

5.3 HYDRAULIC SCHEMATIC, SB80

Table 5-3: Hydraulic Schematic Legend (064148-023)

DESIGNATION	NAME	FUNCTION	LOCATION
CV1	Check Valve	Allows oil to flow in one direction only.	Inline to Pumps P1 and P2.
BRK1	Brake	Swing Brake	Swing Motor
BRK2-3	Brake	Left/Right Brake	Rear Drive
CB1-2	Counterbalance Valve	Boom Extend Counterbalance	Boom Extend Cyl
CB3	Counterbalance Valve	Lift Cylinder Counterbalance	Lift Cylinder
CB4-5	Counterbalance Valve	Swing Motor Counterbalance	Swing Motor
CB6-7	Counterbalance Valve	Master Cylinder Counterbalance	Master Cylinder
CB8-9	Counterbalance Valve	Slave Cylinder Counterbalance	Slave Cylinder
CB10-11	Counterbalance Valve	Jib Cylinder Counterbalance	Jib Cylinder
CB12-13	Counterbalance Valve	Axle Extend Cylinder Counterbalance	Axle Extend Cylinder
CB14	Counterbalance Valve	Axle Extend Cylinder Counterbalance	Axle Extend Cylinder
CB15	Counterbalance Valve	Axle Extend Cylinder Counterbalance	Axle Extend Cylinder
CB16-17	Counterbalance Valve	Oscillating Axle Cylinder Counterbalance	Oscillating Axle Cylinder (Optional)
CPL	Rotary Coupling	Provide Fluid Power to Turret	Turret
CV1	Check Valve -Aux Pump	Flow Check - Auxilliary Pump	Aux Pump
CV2-3	Check Valve	Flow Check - Hi/Low Torque Circuit	Torque Valve - V17
CV4	Check Valve - Pilot Operated	Flow Control - Axle Extend Logic	Axle Extend Logic Valve
CYL1	Lift Cylinder	Raise Boom	Turret
CYL2	Upper Extend Cylinder	Extend Boom	Inside Boom
CYL3	Lower Extend Cylinder	Extend Boom	Inside Boom
CYL4	Master Cylinder	Level Platform	Boom
CYL5	Slave Cylinder	Level Platform	Boom
CYL6	Jib cylinder	Raise Jib	Jib
CYL7-8	Steering Cylinders	Steer Machine	Front Axle
CYL9-10	Axle Extend Cylinders	Extend/Retract Front Axle	Front Axle
CYL11-12	Axle Adjust Cylinders	Adjust Oscillating Axle (Optional)	Front Axle (Opt)
FLC1	Flow Control Valve	Control Flow to Boom Functions	Main Valve Block
FLO1	Flow Divider	Control Flow to Right Drive Motors	
FLO2	Flow Divider	Control Flow to Drive Motors	
FLO3	Flow Divider	Control Flow to Left Drive Motors	
FLO4	Flow Divider	Control Flow to Platform Rotate	
FLT1	Filter	Tank Filter	Tank
FLT2-3	Filter	Suction Strainer	Tank
FLT4	Filter	Pump Filter	Drive Pump
LSCV1	Load Sense Compensator Valve	Bypass excess oil from Dump Circuit	Main Valve Block
LSCV2	Load Sense Compensator Valve	Bypass excess oil from Extend Circuit	Main Valve Block
LSCV3	Load Sense Compensator Valve	Bypass excess oil from Lift Circuit	Main Valve Block
LSCV4	Load Sense Compensator Valve	Bypass excess oil from Swing Circuit	Main Valve Block
MOT1	Motor	Swing Motor	Turret
MOT2	Drive Motor	Left Front Drive Motor	Left Front Axle
MOT3	Drive Motor	Right Front Drive Motor	Right Front Axle
MOT4	Drive Motor	Left Rear Drive Motor	Left Rear Axle
MOT5	Drive Motor	Right Rear Drive Motor	Right rear Axle
ORF1-2	Orifice	Flow Control - Axle Extend Cylinders	Front/Rear Axle
ORF3	Orifice	Flow Control - Swing Motor	Main Valve Block
ORF4	Orifice	Flow Control - Steering	Main Valve Block
ORF5	Orifice	Flow Control - Axle Extend Logic Valve	Axle Extend Logic Valve
ORF6	Orifice	Flow Control - Left rear Drive Motor	Left Rear Drive Mtr.
ORF7	Orifice	Flow Control - Right Rear Drive Motor	Right Rear Drive Motor
ORF8	Orifice	Flow Control - Swing Motor	Swing Motor
ORF9	Orifice	Load Sense	Main Valve Block
PUMP1	Drive Pump	Drive Pump	Engine Module
PUMP2	Pump	Auxilliary Lowering	Engne Module
PUMP3	Pump	Boom Functions	Engine Module
ROT	Rotator	Cage Rotator	Platform
RV1	Relief Valve	Dump Circuit Relief Valve	Main Valve Block
RV2	Relief Valve	Extend Circuit Relief Valve	Main Valve Block
RV3	Relief Valve	Extend Circuit Relief Valve	Main Valve Block
RV4	Relief Valve	Lift Circuit Relief Valve	Main Valve Block
RV5	Relief Valve	Swing Circuit relief Valve	Main Valve Block
RV6	Relief Valve	Drive Circuit Relief Valve	Main Valve Block
RV7	Relief Valve	Drive Circuit Relief Valve	Main Valve Block
RV8	Relief Valve	Axle Extend Relief Valve	Main Valve Block
RV9	Relief Valve	Axle Retract Relief Valve	Main Valve Block
RV10	Relief Valve	Jib Circuit Relief Valve	Main Valve Block
RV11	Relief Valve	Platform Rotator Relief Valve	Main Valve Block
RV12	Relief Valve	Platform Rotator Relief Valve	Main Valve Block
SW1	Pressure Switch	Brake Pressure Switch	Left Brake
SW2	Pressure Switch	Brake Pressure Switch	Right Brake
SV1	Shuttle Valve	Axle Extend Shuttle Valve	Main Valve Block
SV2	Shuttle Valve	Drive Circuit Shuttle Valve	Main Valve Block
SV3	Shuttle Valve	Logic Circuit Shuttle Valve	Main Valve Block
SV4	Shuttle Valve	Logic Circuit Shuttle Valve	Main Valve Block
SV5	Shuttle Valve	Master Cylinder Circuit Shuttle Valve	Main Valve Block
SV6-7	Shuttle Valve	Logic Circuit Shuttle Valve	Main Valve Block
SV8	Shuttle Valve	Swing Circuit Shuttle Valve	Main Valve Block
SV9	Shuttle Valve	Logic Circuit Shuttle Valve	Main Valve Block
SV10	Shuttle Valve	Lift Circuit Shuttle Valve	Main Valve Block
SV11	Shuttle Valve	Logic Circuit Shuttle Valve	Main Valve Block
SV12	Shuttle Valve	Extend Circuit Shuttle Valve	Main Valve Block
V1	Dump Valve	Dump Circuit Valve	Main Valve Block
V2	Extend valve	Boom Extend Circuit Valve	Main Valve Block
V3	Lift Valve	Lift Circuit Valve	Main Valve Block
V4	Swing Valve	Swing Circuit Valve	Main Valve Block
V5	Boom Power Valve	Power to Boom Functions	Main Valve Block
V6	Master Cylinder Valve	Master Cylinder Circuit Valve	Main Valve Block
V7	Drive Valve	Power to Drive Motors	Main Valve Block
V8	Axle Extend/ Retract	Extend/Retract Axles	Main Valve Block
V9	Jib Valve	Raise/Lower Jib	Jib Valve Block
V10	Rotator Valve	Rotate Platform	Jib Valve Block
V11-12	Axle Extend Valves	Extend Axles	Axle Extend Block
V13	Axle Extend Valve	Axle Extend Logic Valve	Logic Valve Block
V14	Drive Motor Valve	Left Drive Motor Valve	
V15	Drive Motor Valve	Right Drive Motor Valve	
V16	Axle Lock Valve	Axle Lock Valve	
V17	Torque Valve	Torque Valve	
V18	Brake Valve	Brake Apply Valve	
V19	Drive Motor Valve	Drive Motor Control Valve	Drive Motor

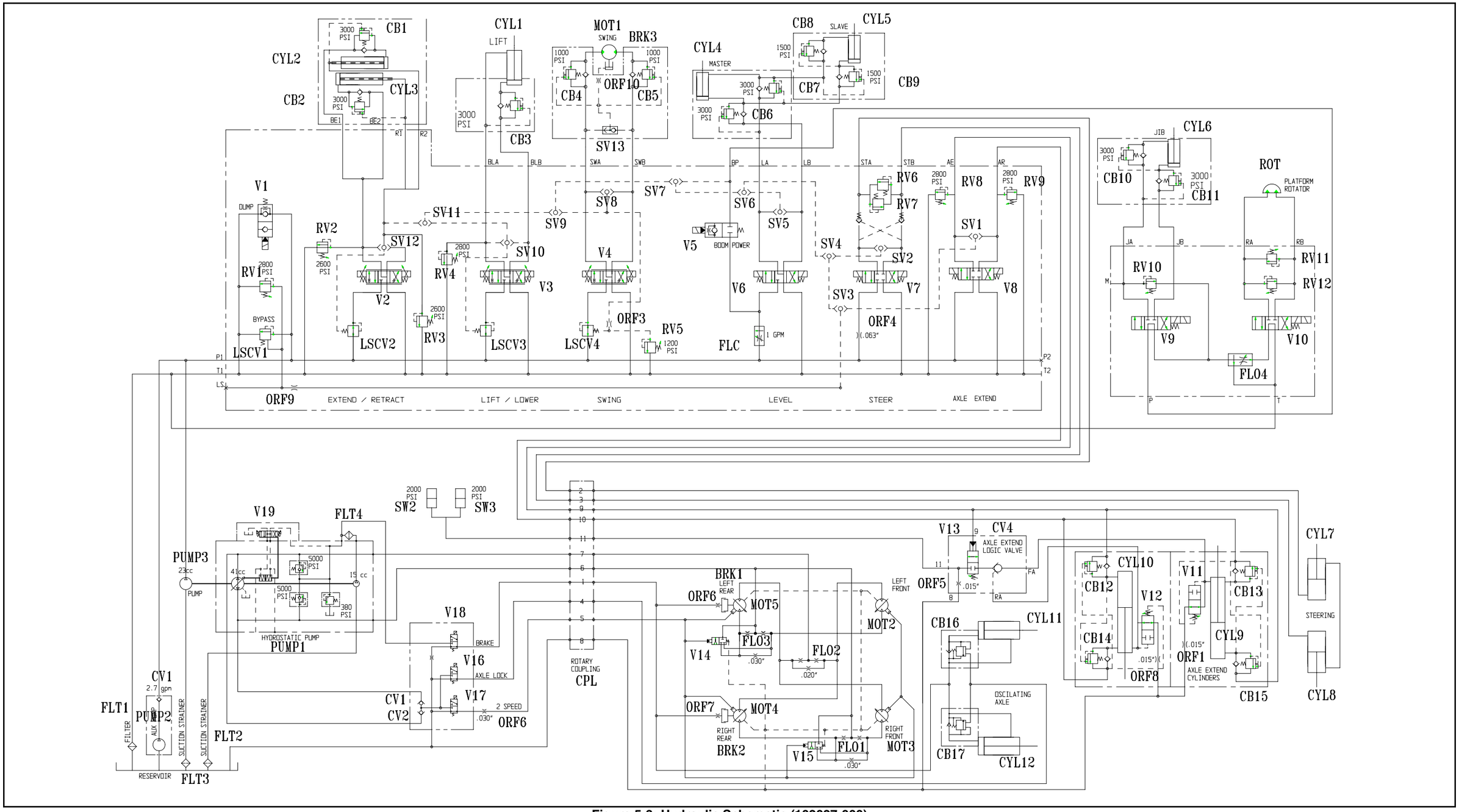


Figure 5-3: Hydraulic Schematic (102027-000)

SCHEMATICS

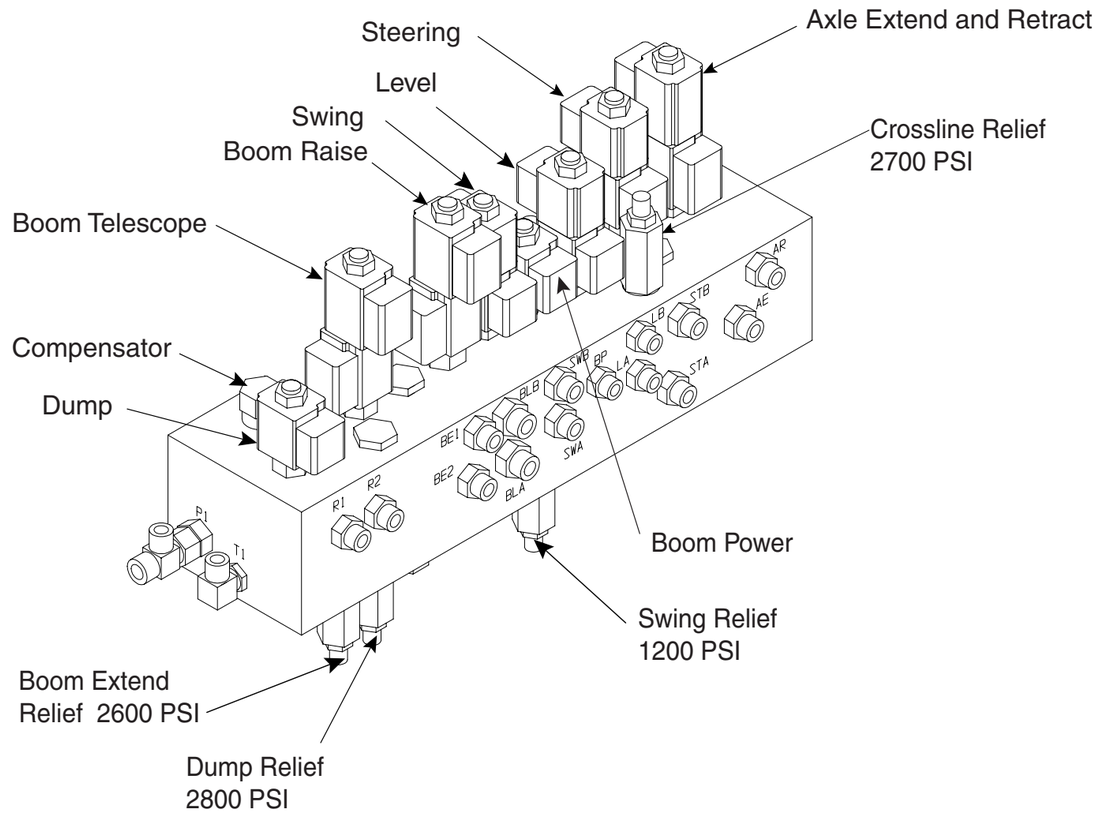


Figure 5-4: Valve Manifold Assembly

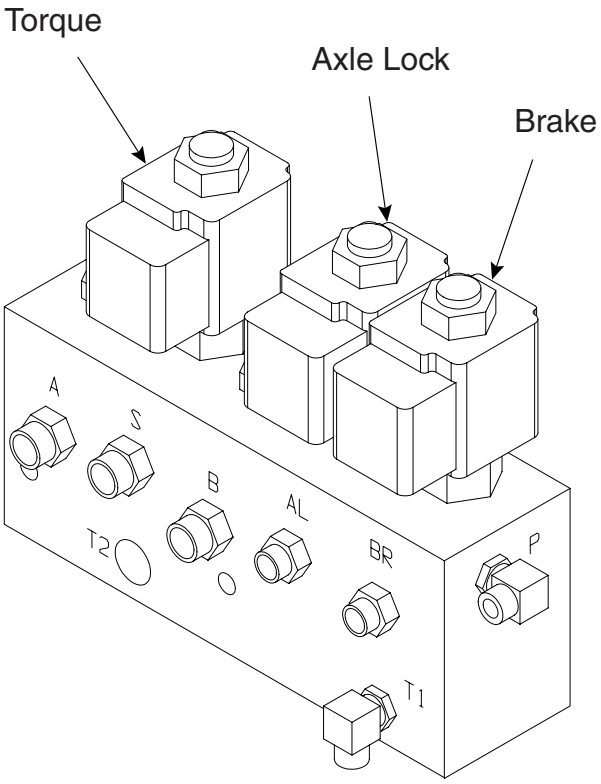


Figure 5-5: Series/Parallel Valve Block

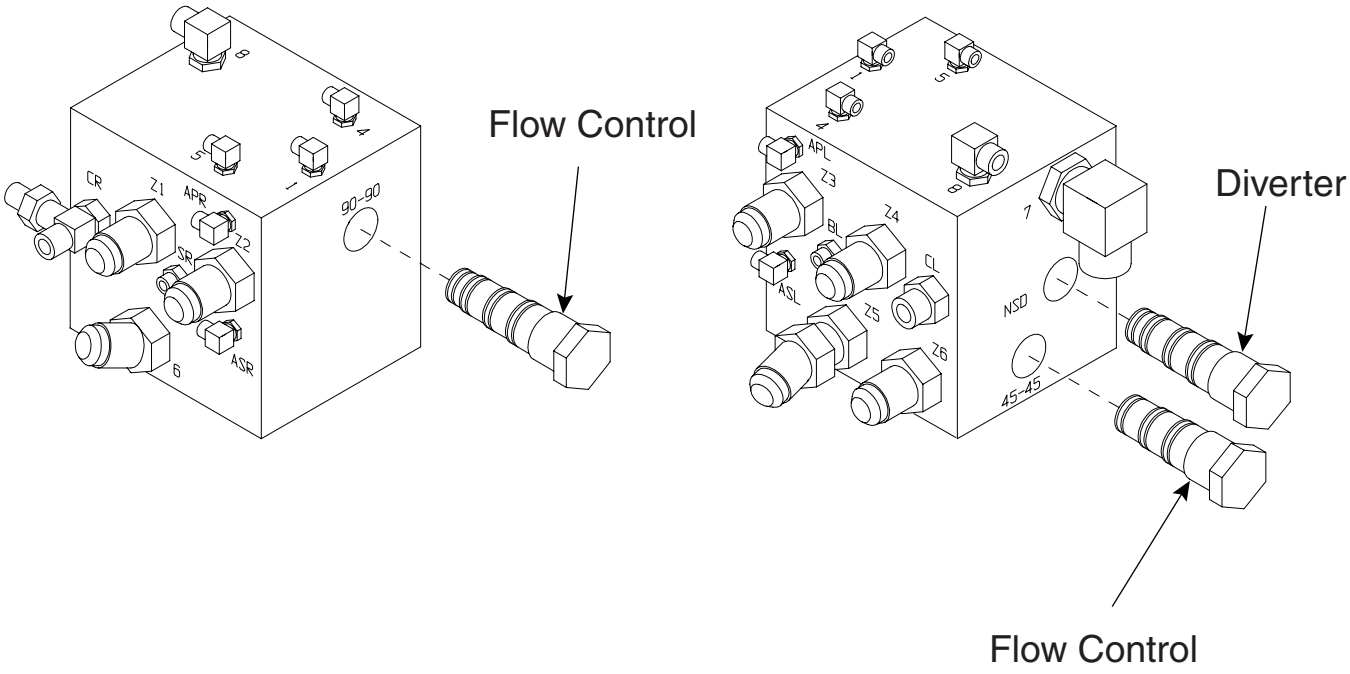


Figure 5-6: Front Valve Block

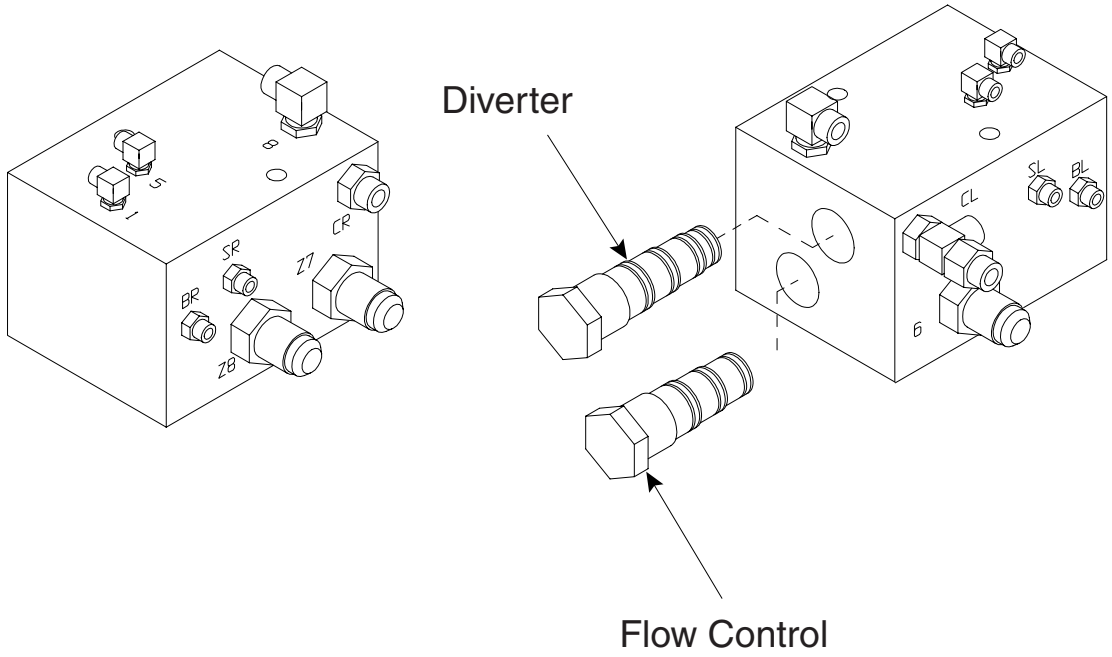


Figure 5-7: Rear Valve Block

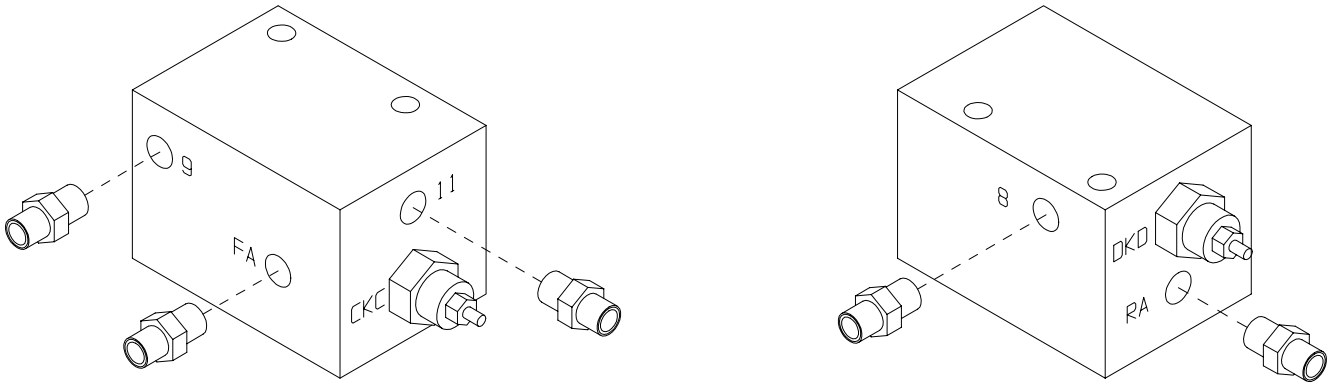


Figure 5-8: Axle Extend Valve Block

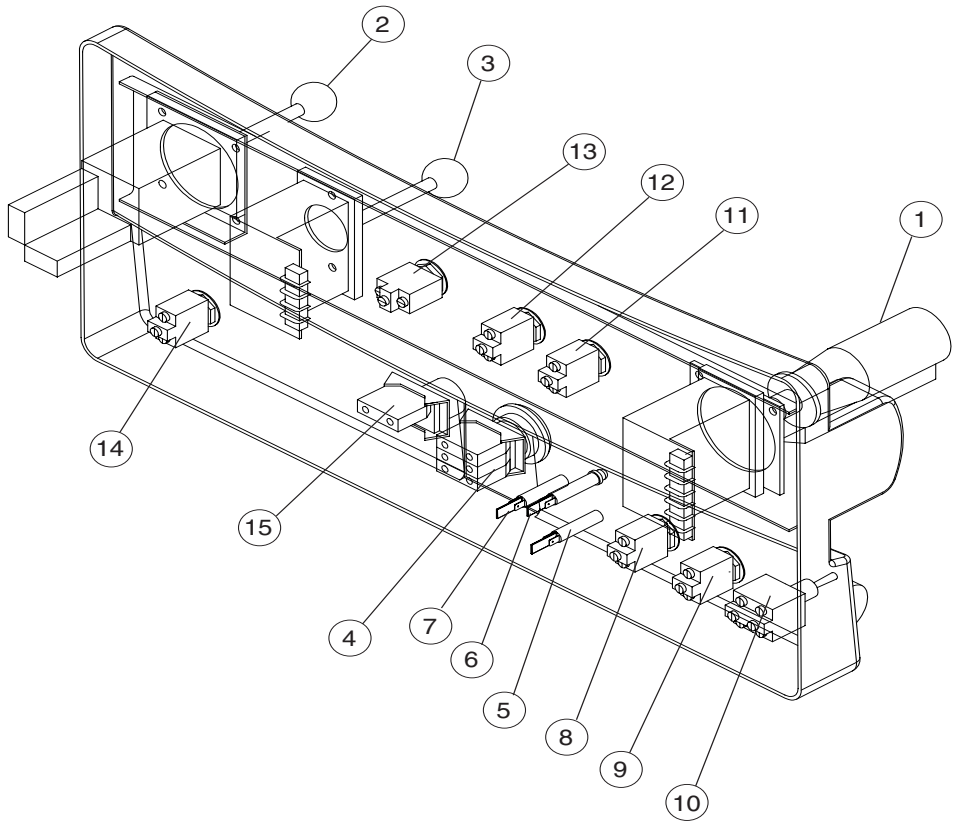


Figure 5-9: Upper Controller, Top Half

1. Drive
2. Lift
3. Boom Extend
4. Emergency Stop
5. Oil Pressure
6. Tilt Indicator
7. Axle Extend Indicator
8. Torque Speed
9. Fuel Selector/Glow Plug
10. Auxilliary power
11. Cage Level
12. Jib Raise/Lower
13. Cage Rotate
14. Axle Extend
15. Horn
16. Key Switch
17. Alarm

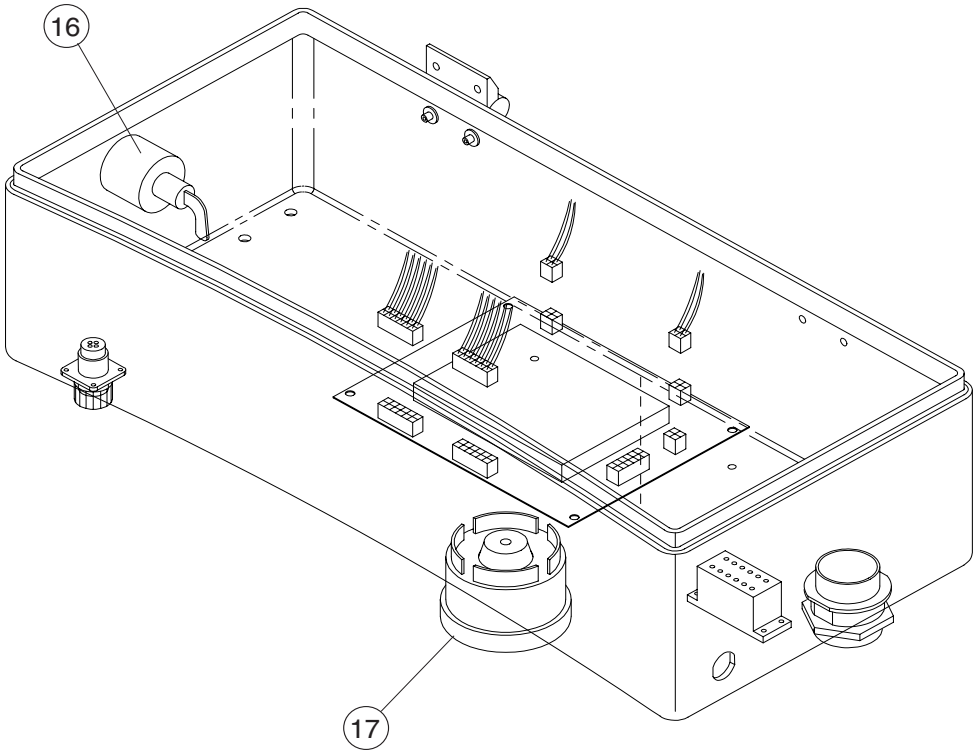


Figure 5-10: Upper Controller, Bottom Half

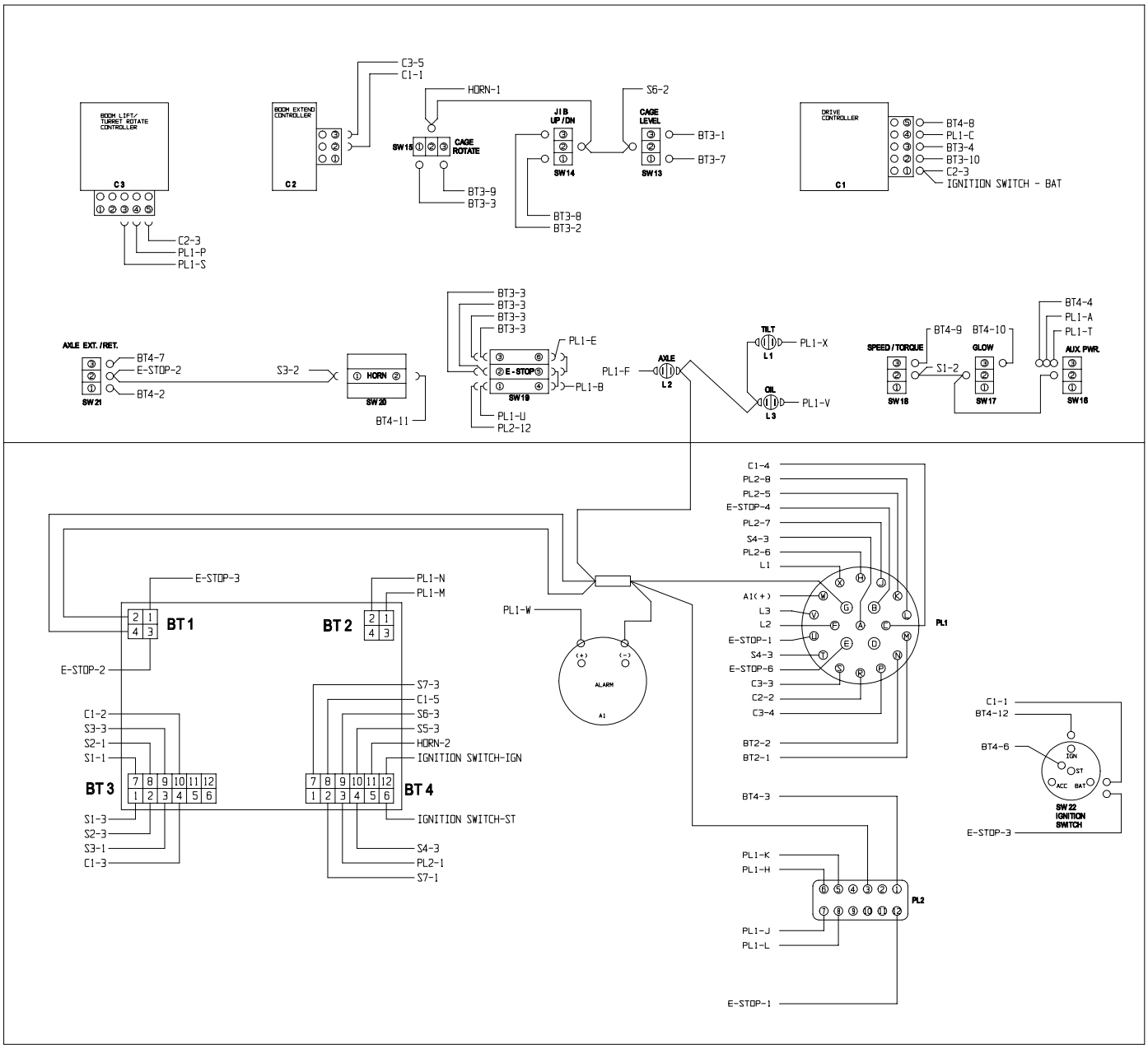


Figure 5-11: Upper Controller wiring Diagram

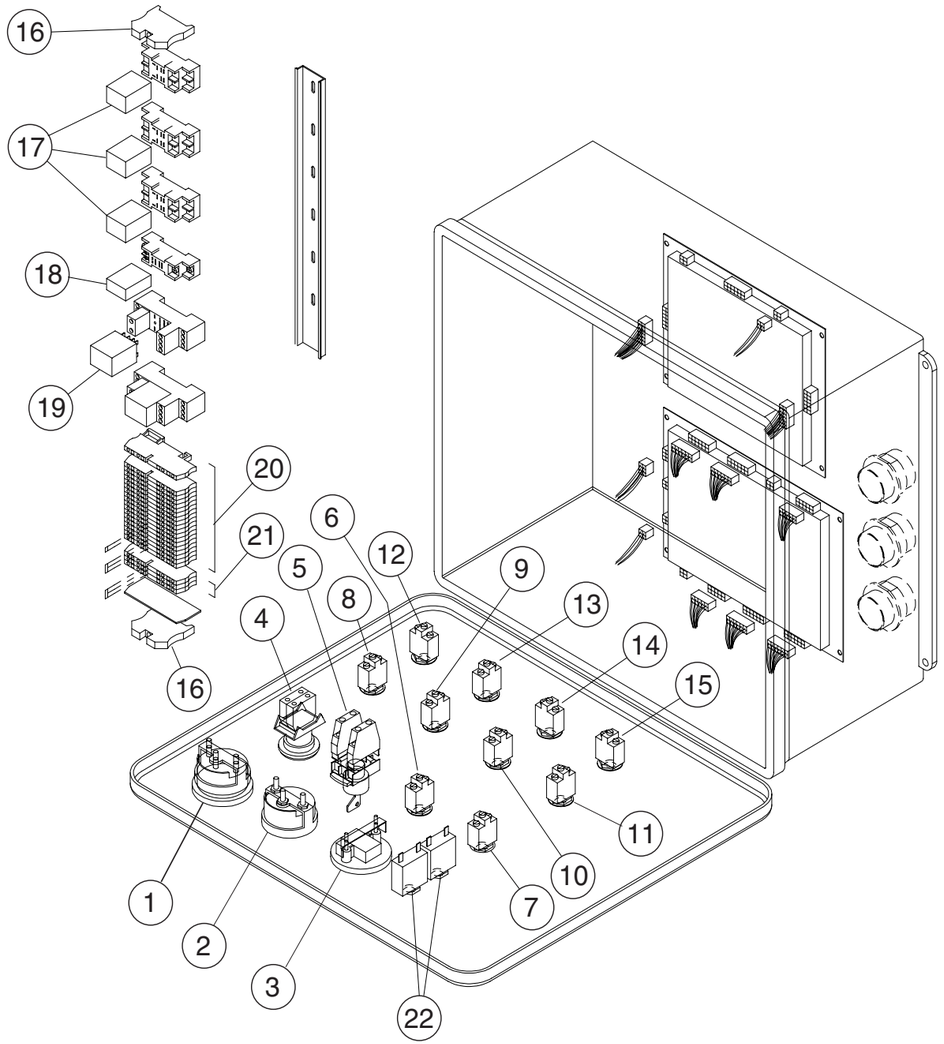


Figure 5-12: Lower Controller

1. Oil Pressure
2. Water Temp
3. Hour Meter
4. Emergency Stop
5. Key Switch
6. Engine Start
7. Glow Plug
8. Auxilliary Power
9. Enable
10. Boom Control
11. Boom Extend
12. Turret Control
13. Cage Rotate
14. Cage Level
15. End Block
16. Relay, Double
17. Relay, Double Pole
18. Relay, Single Pole
19. Relay
20. Terminal Block, Tan
21. Terminal Block, Orange
22. Circuit Breaker

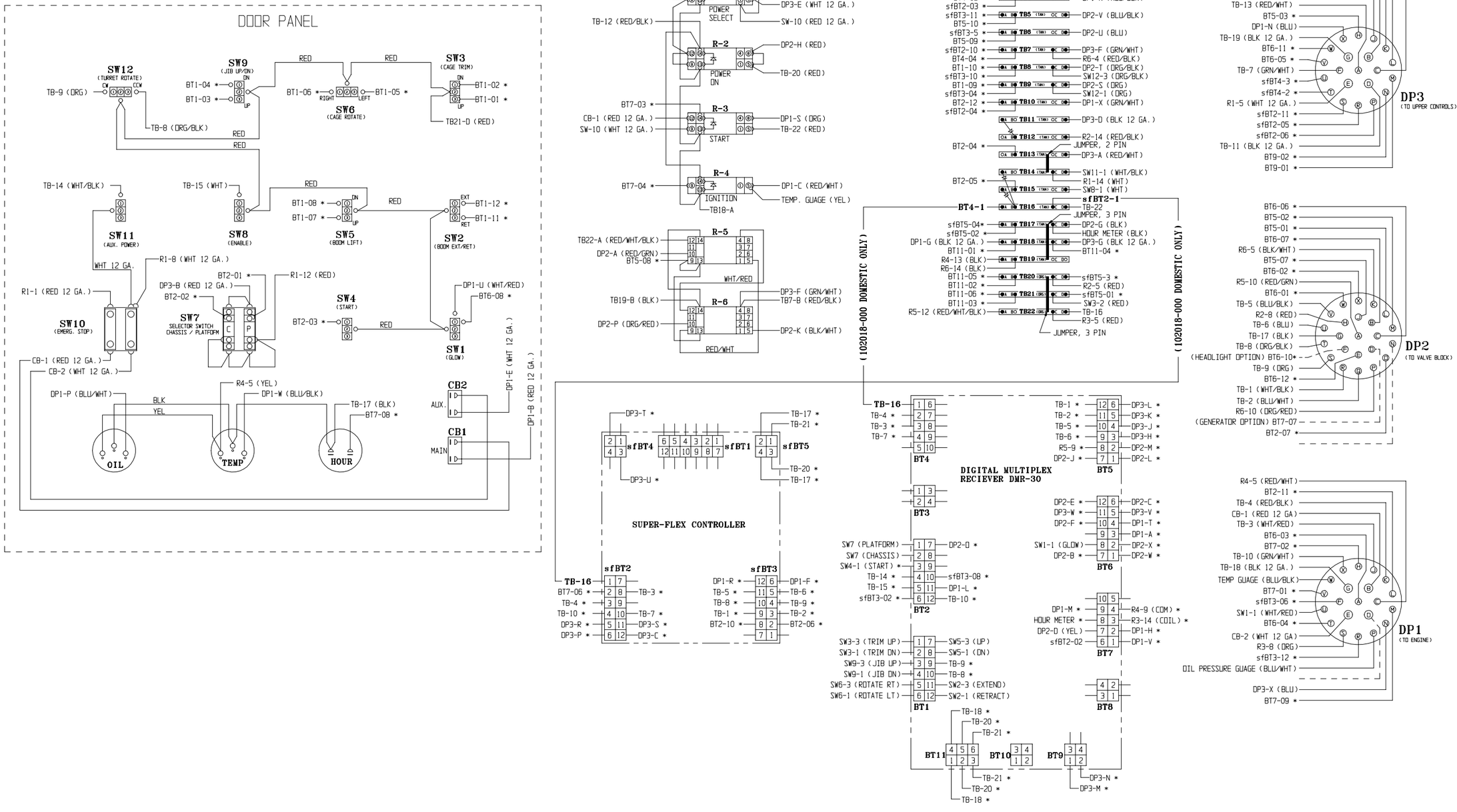


Figure 5-13: Lower Controller Wiring Diagram (102018-000)

Section 6

ILLUSTRATED PARTS BREAKDOWN

Introduction

This section lists and illustrates the replaceable assemblies and parts of this product, as manufactured by UpRight, Inc. Each parts list contains the component parts for that assembly.

CONTENTS

Final Assembly, SB80 Fixed Axle, Diesel
102000-001 - 6 - 4

Final Assembly, SB80 Oscillating Axle, Diesel
102002-001 - 6 - 8

Basic Assembly, SB80 Fixed Axle, Diesel
102004-000 - 6 - 12

Basic Assembly, SB80 Oscillating Axle, Diesel
102005-000 - 6 - 14

Chassis Assembly, SB80 Fixed Axle
102008-000 - 6 - 16

Chassis Assembly, SB80 Oscillating Axle
102008-001 - 6 - 18

Boom Assembly, SB80
102009-000 - 6 - 20

Carrier Track Assembly, SB80
102048-000 - 6 - 24

Boom Extend Assembly SB80
102049-000 - 6 - 26

Jib Assembly, SB80
102011-000 - 6 - 28

Turret Assembly, SB80
102010-000 - 6 - 30

Cover Assembly, SB80
102046-000 - 6 - 32

Engine Module Assembly, SB80, Diesel
102012-000 - 6 - 34

Control Module Assembly, SB80, Diesel
102014-001 - 6 - 38

Upper Controller Assembly, SB80, Diesel
102016-001 - 6 - 40

Lower Controller Assembly, SB80, Diesel
102018-000 - 6 - 44

Front Axle Assembly, SB80, Fixed Axle
102032-000 - 6 - 48

Front Axle Assembly, SB80, Oscillating Axle
102032-001 - 6 - 50

Rear Axle Assembly, SB80
102031-000 - 6 - 52

Hose Kit Installation, SB80, Chassis Section
102029-001 - 6 - 54

Hose Kit Installation, SB80, Turret Section
102029-001 - 6 - 56

Hose Kit Installation, SB80, Boom Section
102029-001 - 6 - 58

Rotary Manifold Assembly, SB80
102038-000 - 6 - 60

Main Valve Block Assembly, SB80
102039-000 - 6 - 61

Valve Block Assembly, SB80 Two Speed/Axle Lock/Brake
102331-000 - 6 - 62

Jib Valve Block Assembly, SB80
102332-000 - 6 - 63

Rear Manifold Assembly, SB80
102341-000 - 6 - 64

Front Manifold Assembly, SB80
102342-000 - 6 - 65

Section 6.1

ILLUSTRATED PARTS BREAKDOWN

Slew Motor Valve Assembly, SB80
102343-000 - 6 - 66

Charge Pump Filter Assembly, SB80
102327-000 - 6 - 67

Hydraulic Reservoir Assembly, SB80
102042-000 - 6 - 68

Emergency Lowering Power Unit Assembly, SB80
102334-000 - 6 - 69

Six Foot Cage Assembly, SB80
102037-100 - 6 - 70

Eight Foot Cage Assembly, SB80
102037-101 - 6 - 72

Drive Pump Assembly, SB80
102325-000 - 6 - 74

Lift Pump Assembly, SB80
102326-000 - 6 - 75

Axle Extend Logic Valve Assembly, SB80
102345-000 - 6 - 76

Front Drive Motor Assembly SB80
102328-000 - 6 - 77

Rear Drive Motor Assembly, SB80
102330-000 - 6 - 78

Platform Rotator Assembly, SB80
102340-000 - 6 - 79

Swing Drive Assembly, SB80
102346-000 - 6 - 80

Axle Float Cylinder Assembly, SB80
102333-000 - 6 - 81

Axle Extend Cylinder Assembly, SB80
102335-000 - 6 - 82

Master Cylinder Assembly, SB80
102336-000 - 6 - 83

Lift Cylinder Valve Assembly, SB80
102337-000 - 6 - 84

Slave Cylinder Assembly, SB80
102338-000 - 6 - 85

Jib Cylinder Assembly, SB80
102339-000 - 6 - 86

Steering Cylinder Assembly, SB80
102344-000 - 6 - 87

Euro Label Kit Installation, SB80 Fixed Axle, Diesel
102024-002 - 6 - 88

Euro Label Kit Installation, SB80 Oscillating Axle, Diesel
102024-005 - 6 - 90

German Label Kit Installation, SB80 Fixed Axle, Diesel
102024-006 - 6 - 92

German Label Kit Installation, SB80 Oscillating Axle, Diesel
102024-007 - 6 - 94

Tire & Wheel Assembly, SB80 Poly-Fill
LH: 102034-002, RH: 102034-003 - - - - - - - - 6 - 96

Tire & Wheel Assembly, SB80 Poly-Fill
LH: 102034-002, RH: 102034-003 - - - - - - - - 6 - 97

Fuel Tank Assembly, SB80, Diesel
102040-000 - 6 - 98

Plus3 Option, SB80
102309-001 - 6 - 99

NOTES:

ILLUSTRATED PARTS BREAKDOWN

FINAL ASSEMBLY, SB80
FIXED AXLE, DIESEL
102000-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	102004-000	BASIC ASSY. SB-80 DSL. (FIXED AXLE)	1
2	102046-000	COVER ASSY./INSTALLATION	1
4	102016-000	UPPER CONTROL BOX ASSY (DIESEL DOM)	1
5	102029-000	HOSE KIT, FIXED AXLE	1
6	102024-002	LABEL KIT, DIESEL EUROPEAN	1
7	102037-100	PLATFORM ASSY, 6 FT. EURO	1
8	102027-000	HYDRAULIC SCHEMATIC	REF.
9	102026-000	ELECTRICAL SCHEMATIC	REF.
10	063906-000	FOOT SWITCH	1
11	064479-000	GUARD, FOOT SWITCH	1
12	011252-006	SCREW, HHC. 1/4-20 UNC X 3/4 LG.	7
13	014996-004	WASHER, 1/4" SAE FLAT PLATED	9
14	011248-004	LOCKNUT, 1/4-20 UNC ESNA	11
15	011252-010	SCREW, HHC. 1/4-20 UNC X 1 1/4 LG.	2
16	068820-000	RETAINING STRAP, FOOT SWITCH	2
17	066695-006	SCREW, FLT HD #10-24 UNC X 3/4" LG.	2

ITEM	PART NO.	DESCRIPTION	QTY.
18	013949-003	LOCKWASHER, #10 STAR EXTERNAL TOOTH	2
19	011250-003	HEX NUT, #10-24 UNC	2
20	029945-018	LEVEL SENSOR	1
23	102034-002	TIRE / WHEEL ASSY. L.H. (POLY FILLED)	2
24	102034-003	TIRE / WHEEL ASSY. R.H. (POLY FILLED)	2
25	011723-036	SCREW, HHC. 3/4-10 UNC X 4 1/2" LG.	4
26	011240-012	WASHER, 3/4 FLAT	4
27	011248-012	LOCKNUT, 3/4-10 UNC ESNA	4
28	102373-000	BRACKET, CHAIN TIE DOWN	2
35	029435-099	CABLE, 3 COND. 12 GA.	100
36	102018-001	LOWER CONTROL BOX, EUROPEAN	1

SPECIFICATIONS AND ADJUSTMENTS

HYDRAULIC PRESSURE:

COUNTERBALANCE VALVES; (VALVES PRESET)

LIFT	3000 PSI	
SWING	1000 PSI	LEFT AND RIGHT
EXTEND	2700 PSI	
RETRACT	3000 PSI	
LEVEL SYSTEM	PSI	MASTER 3000, AND SLAVE EXTEND 2500, RETRACT 1500
JIB	PSI	JIB UP 3000 - JIB DOWN 1000
AXLE LOCK	4500 PSI	
PLATFORM ROTATE	1000 PSI	(MAY DEVIATE TO PREVENT CHATTER)

RELIEF VALVES;

MAIN PRESSURE	2700 PSI	
STEER CROSSOVERS	2700 PSI	BOTH DIRECTIONS
SWING SYSTEM	1000 PSI	
EXTEND,	2600 PSI	
JIB LOWER	1400 PSI	
PLATFORM ROTATOR	2000 PSI	BOTH DIRECTIONS

DRIVE SYSTEM

CHARGE PRESSURE	325 PSI
DRAW BAR PULL	18,000 LBS MIN.

SUPERFLEX PRESETS:

FUNCTION	MAX	THRESHOLD	RAMP ON	RAMP OFF
EXTEND	100%	45%	0.5	0.2
RETRACT	100%	45%	0.5	0.2
LIFT, UP	55%	28%	0.5	0.2
LIFT, DOWN	50%	37.5%	0.5	0.2
SWING, LEFT/RIGHT	63%	32.5%	0.5	0.5
LOW RANGE	72%			
DRIVE, FWD./REV.	65%	28%	0.8	0.8
LOW RANGE	33%			

STOPPING DISTANCE NOT TO EXCEED 6.5 FEET

ADJUSTMENTS TO BE MADE FROM THESE PRESETS BASED ON SPEED MEASUREMENTS.

SPEED MEASUREMENTS:

BOOM FUNCTIONS LIFT AND EXTEND OPERATED SIMULTANEOUSLY
ELEVATING TO FULL HEIGHT AND RETURNING TO STOWED POSITION.

FULL CYCLE TIME:	160 - 180 SEC.
HALF CYCLE, UP	85 - 95 SEC.
HALF CYCLE DOWN:	75 - 85 SEC.

NOTE: UP TIME SHOULD BE LIMITED BY EXTEND SPEED.
DOWN TIME SHOULD BE LIMITED BY LOWER SPEED.

TURNTABLE (TURRET) ROTATE:
FULL 360° ROTATION; 80 SEC. ±5 SEC. HIGH
110 SEC. ±5 SEC. LOW

JIB UP/DOWN:
40/30 SEC. ±5 SEC.
FLOW CONTROL ON MAIN VALVE BLOCK.

PLATFORM ROTATE:
16 SEC. ±2 SEC.
FULL 180° ROTATION
FLOW CONTROL ON VALVE BLOCK IN JIB BOOM.

STEER:
LOCK TO LOCK 8 SEC. ±1 SEC.

DRIVE SPEEDS:

	SPEED	20 FT. TIME
HIGH SPEED	3.1 TO 3.4 MPH	4.0 TO 4.4 SEC.
LOW SPEED	0.5 TO 0.7 MPH	19.5 TO 27.0 SEC.

NOTE: HIGH TORQUE IS APPROXIMATELY 1.5 MPH AND 9.1 SEC. THIS SPEED IS CONTROLLED BY THE HIGH SPEED SETTING AND CANNOT BE INDEPENDENTLY SET.

ANGLE MEASUREMENTS:

BOOM ANGLES:	ANGLE
FULLY ELEVATED	74.8° TO 75.1°
HIGH SPEED CUT OUT	8° TO 10°
AXLE RETRACTED CUTOUT	40° TO 44°

INSIDE TURNING RADIUS:

9' - 10" ±6" IN BOTH DIRECTIONS.

ENGINE RPM'S:

IDLE	900 ±25
MID	1800 ±25
HIGH	2520 ±50

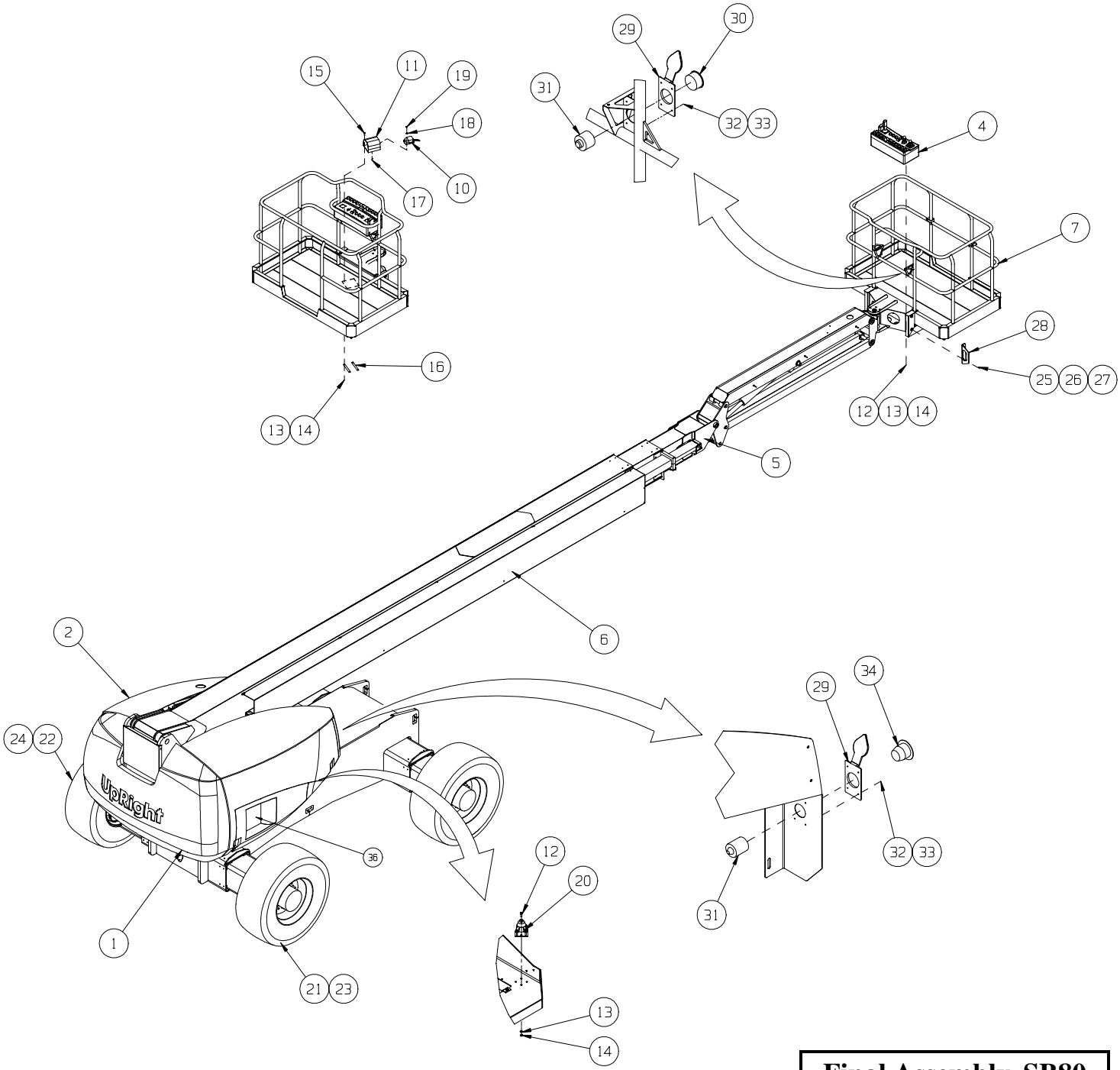
NOTE: SET IDLE SPEED BY ADJUSTING MECHANICAL STOP WHILE GOVERNER IS DE-ENERGISED.

BOOM FUNCTIONS OPERATED INDIVIDUALY

EXTEND:	85 - 95 SEC
RETRACT:	90- 100 SEC
LIFT:	50 - 60 SEC
LOWER:	50 - 60 SEC

WEIGHTS:

TURRET WELDMENT (PN 102100-000):	6000 LBS MIN
COUNTER WEIGHT (PN 100120-000)	6115-6365 LBS



Final Assembly, SB80
Fixed Axle, Diesel

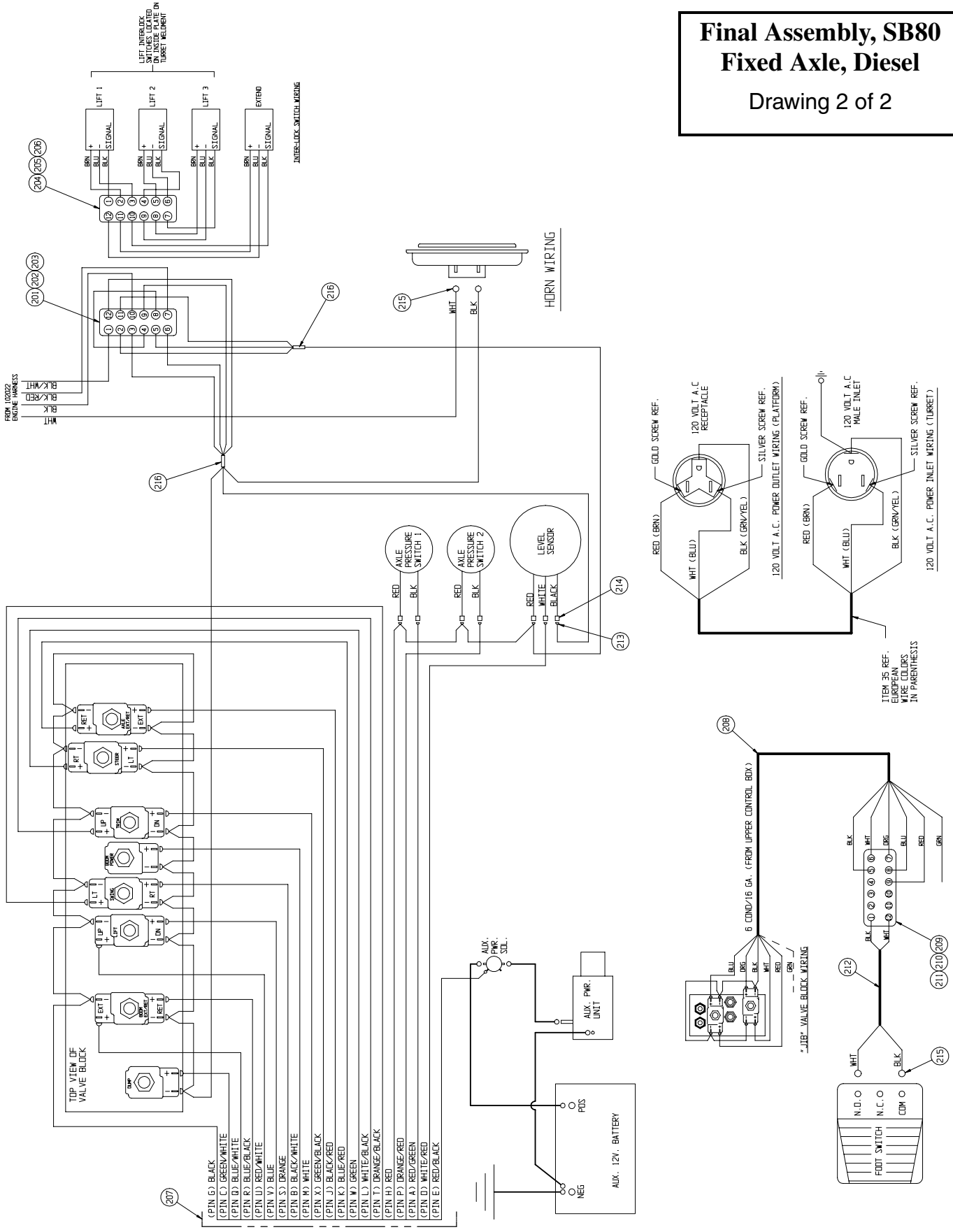
Drawing 1 of 2

FINAL ASSEMBLY, SB80
FIXED AXLE, DIESEL
102000-001

ITEM	PART NO.	DESCRIPTION	QTY.
201	102455-000	PLUG, DEUTSCH P/N DTM06-12S	1
202	100338-016	SOCKET, DEUTSCH P/N 1062-20-0022	12
203	102455-002	WEDGE, DEUTSCH P/N WM-12S	1
204	102455-001	RECEPTACLE, DEUTSCH P/N DTM04-12P	1
205	100338-015	PIN, DEUTSCH P/N 0462-202-20141	12
206	102455-003	WEDGE, DEUTSCH P/N WM-12P	1
207	102021-000	CABLE ASSY, LWR BOX TO VALVE BLOCK	1
208	029488-099	WIRE CABLE, 16 AWG / 6 COND.	FT 11
209	068760-000	PLUG, DEUTSCH P/N	1
210	068762-001	SOCKET, DEUTSCH P/N	8
211	068764-000	PLUG, SEALING	4
212	029490-099	WIRE CABLE, 16 AWG / 2 COND. TYPE SO.	FT 5
213	029931-003	CONN, FEM. PUSH FULLY INS. 14-16 GA .25	15
214	029617-002	CONN. MALE PUSH FULLY INS. 14-16 GA .25	7
215	029601-013	CONN. RING, 14-16 GA #10 DIA.	4
216	029620-003	CONN. BUTT, 10-12 GA.	2

Final Assembly, SB80 Fixed Axle, Diesel

Drawing 2 of 2



FINAL ASSEMBLY, SB80
OSCILLATING AXLE, DIESEL
102002-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	102005-000	BASIC ASSY. SB-80 DSL. (OSCIL. AXLE)	1
2	102046-000	COVER ASSY./INSTALLATION	1
4	102016-000	UPPER CONTROL BOX ASSY (DIESEL)	1
5	102029-001	HOSE KIT, OSCIL. AXLE	1
6	102024-005	LABEL KIT, DIESEL EUROPEAN	1
7	102037-100	PLATFORM ASSY, 6FT. EURO.	1
8	102027-	HYDRAULIC SCHEMATIC	REF.
9	102026-	ELECTRICAL SCHEMATIC	REF.
10	063906-000	FOOT SWITCH	1
11	064479-000	GUARD, FOOT SWITCH	1
12	011252-006	SCREW, HHC. 1/4-20 UNC X 3/4 LG.	7
13	014996-004	WASHER, 1/4" SAE FLAT PLATED	9
14	011248-004	LOCKNUT, 1/4-20 UNC ESNA	11
15	011252-010	SCREW, HHC. 1/4-20 UNC X 1 1/4 LG.	2
16	068820-000	RETAINING STRAP, FOOT SWITCH	2
17	066695-006	SCREW, FLT HD #10-24 UNC X 3/4" LG.	2

ITEM	PART NO.	DESCRIPTION	QTY.
18	013949-003	LOCKWASHER, #10 STAR EXTERNAL TOOTH	2
19	011250-003	HEX NUT, #10-24 UNC	2
20	029945-018	LEVEL SENSOR	1
23	102034-002	TIRE / WHEEL ASSY. L.H. (POLY FILLED)	2
24	102034-003	TIRE / WHEEL ASSY. R.H. (POLY FILLED)	2
25	011723-036	SCREW, HHC. 3/4-10 UNC X 4 1/2" LG.	4
26	011240-012	WASHER, 3/4 FLAT	4
27	011248-012	LOCKNUT, 3/4-10 UNC ESNA	4
28	102373-000	BRACKET, CHAIN TIE DOWN	2
35	029435-099	CABLE, 3 COND. 12 GA.	FT 105
36	102018-001	LOWER CONTROL BOX (EUROPEAN)	1

SPECIFICATIONS AND ADJUSTMENTS

HYDRAULIC PRESSURE:

COUNTERBALANCE VALVES; (VALVES PRESET)

LIFT	3000 PSI	
SWING	1000 PSI	LEFT AND RIGHT
EXTEND	2700 PSI	
RETRACT	3000 PSI	
LEVEL SYSTEM	PSI	MASTER 3000, AND SLAVE EXTEND 2500, RETRACT 1500
JIB	PSI	JIB UP 3000 - JIB DOWN 1000
AXLE LOCK	4500 PSI	
PLATFORM ROTATE	1000 PSI	(MAY DEVIATE TO PREVENT CHATTER)

RELIEF VALVES;

MAIN PRESSURE	2700 PSI	
STEER CROSSOVERS	2700 PSI	BOTH DIRECTIONS
SWING SYSTEM	1000 PSI	
EXTEND,	2600 PSI	
JIB LOWER	1400 PSI	
PLATFORM ROTATOR	2000 PSI	BOTH DIRECTIONS

DRIVE SYSTEM

CHARGE PRESSURE	325 PSI
DRAW BAR PULL	18,000 LBS MIN.

SUPERFLEX PRESETS:

FUNCTION	MAX	THRESHOLD	RAMP ON	RAMP OFF
EXTEND	100%	45%	0.5	0.2
RETRACT	100%	45%	0.5	0.2
LIFT, UP	55%	28%	0.5	0.2
LIFT, DOWN	50%	37.5%	0.5	0.2
SWING, LEFT/RIGHT	63%	32.5%	0.5	0.5
LOW RANGE	72%			
DRIVE, FWD./REV.	65%	28%	0.8	0.8
LOW RANGE	33%			

STOPPING DISTANCE NOT TO EXCEED 6.5 FEET

ADJUSTMENTS TO BE MADE FROM THESE PRESETS BASED ON SPEED MEASUREMENTS.

SPEED MEASUREMENTS:

BOOM FUNCTIONS LIFT AND EXTEND OPERATED SIMULTANEOUSLY
ELEVATING TO FULL HEIGHT AND RETURNING TO STOWED POSITION.
FULL CYCLE TIME: 160 - 180 SEC.
HALF CYCLE, UP 85 - 95 SEC.
HALF CYCLE DOWN: 75 - 85 SEC.

NOTE: UP TIME SHOULD BE LIMITED BY EXTEND SPEED.
DOWN TIME SHOULD BE LIMITED BY LOWER SPEED.

TURNTABLE (TURRET) ROTATE:
FULL 360° ROTATION; 80 SEC. ±5 SEC. HIGH
110 SEC. ±5 SEC. LOW

JIB UP/DOWN:
40/30 SEC. ±5 SEC.
FLOW CONTROL ON MAIN VALVE BLOCK.

PLATFORM ROTATE:
16 SEC. ±2 SEC.
FULL 180° ROTATION
FLOW CONTROL ON VALVE BLOCK IN JIB BOOM.

STEER:
LOCK TO LOCK 8 SEC. ±1 SEC.

DRIVE SPEEDS:

	SPEED	20 FT. TIME
HIGH SPEED	3.1 TO 3.4 MPH	4.0 TO 4.4 SEC.
LOW SPEED	0.5 TO 0.7 MPH	19.5 TO 27.0 SEC.

NOTE: HIGH TORQUE IS APPROXIMATELY 1.5 MPH AND 9.1 SEC. THIS SPEED IS CONTROLLED BY THE HIGH SPEED SETTING AND CANNOT BE INDEPENDENTLY SET.

ANGLE MEASUREMENTS:

BOOM ANGLES:	ANGLE
FULLY ELEVATED	74.8° TO 75.1°
HIGH SPEED CUT OUT	8° TO 10°
AXLE RETRACTED CUTOUT	40° TO 44°

INSIDE TURNING RADIUS:

9' - 10" ±6" IN BOTH DIRECTIONS.

ENGINE RPM'S:

IDLE	900 ±25
MID	1800 ±25
HIGH	2520 ±50

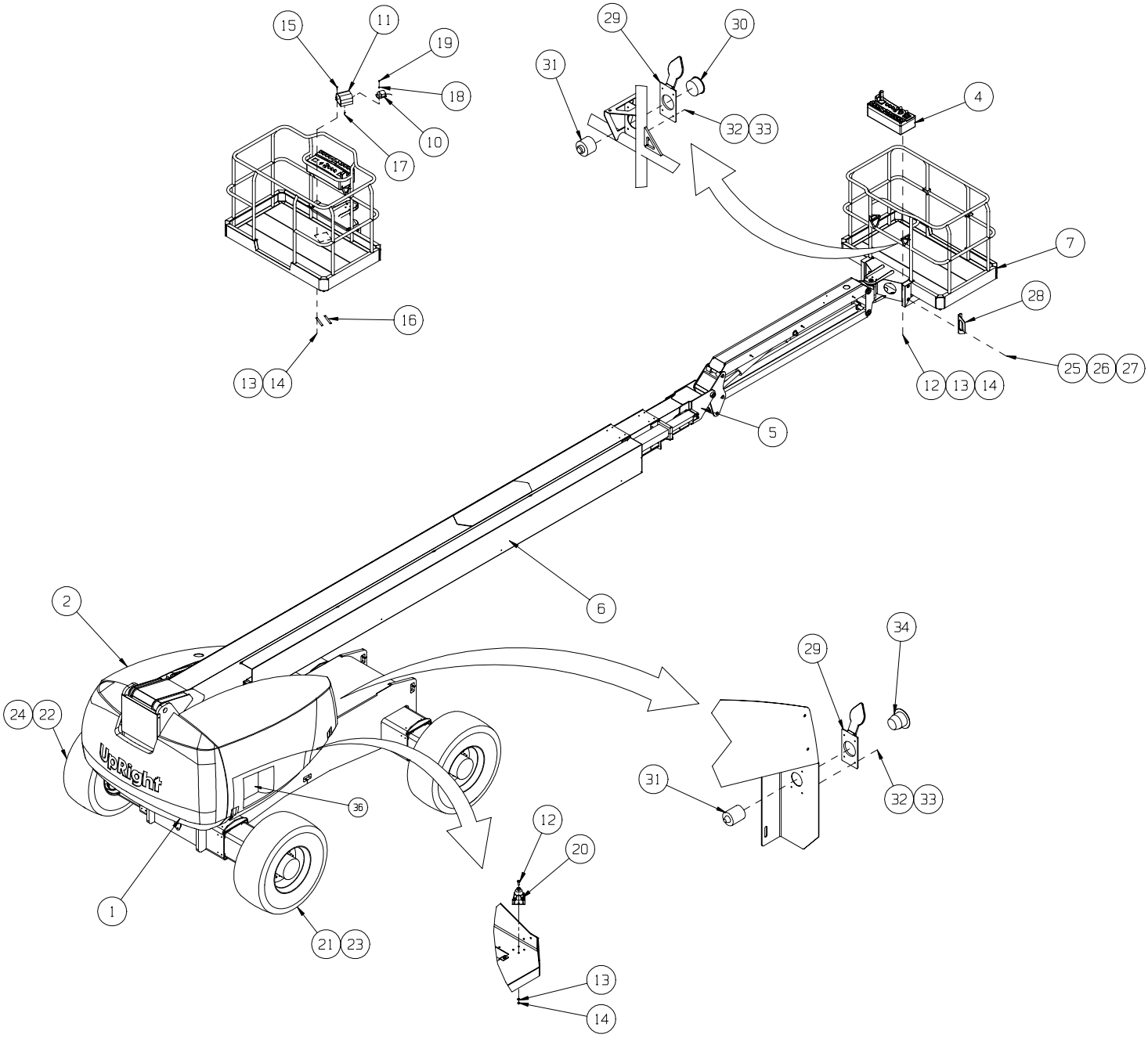
NOTE: SET IDLE SPEED BY ADJUSTING MECHANICAL STOP WHILE GOVERNER IS DE-ENERGISED.

BOOM FUNCTIONS OPERATED INDIVIDUALY

EXTEND:	85 - 95 SEC
RETRACT:	90- 100 SEC
LIFT:	50 - 60 SEC
LOWER:	50 - 60 SEC

WEIGHTS:

TURRET WELDMENT (PN 102100-000):	6000 LBS MIN
COUNTER WEIGHT (PN 100120-000)	6115-6365 LBS



Final Assembly, SB80
Oscillating Axle, Diesel

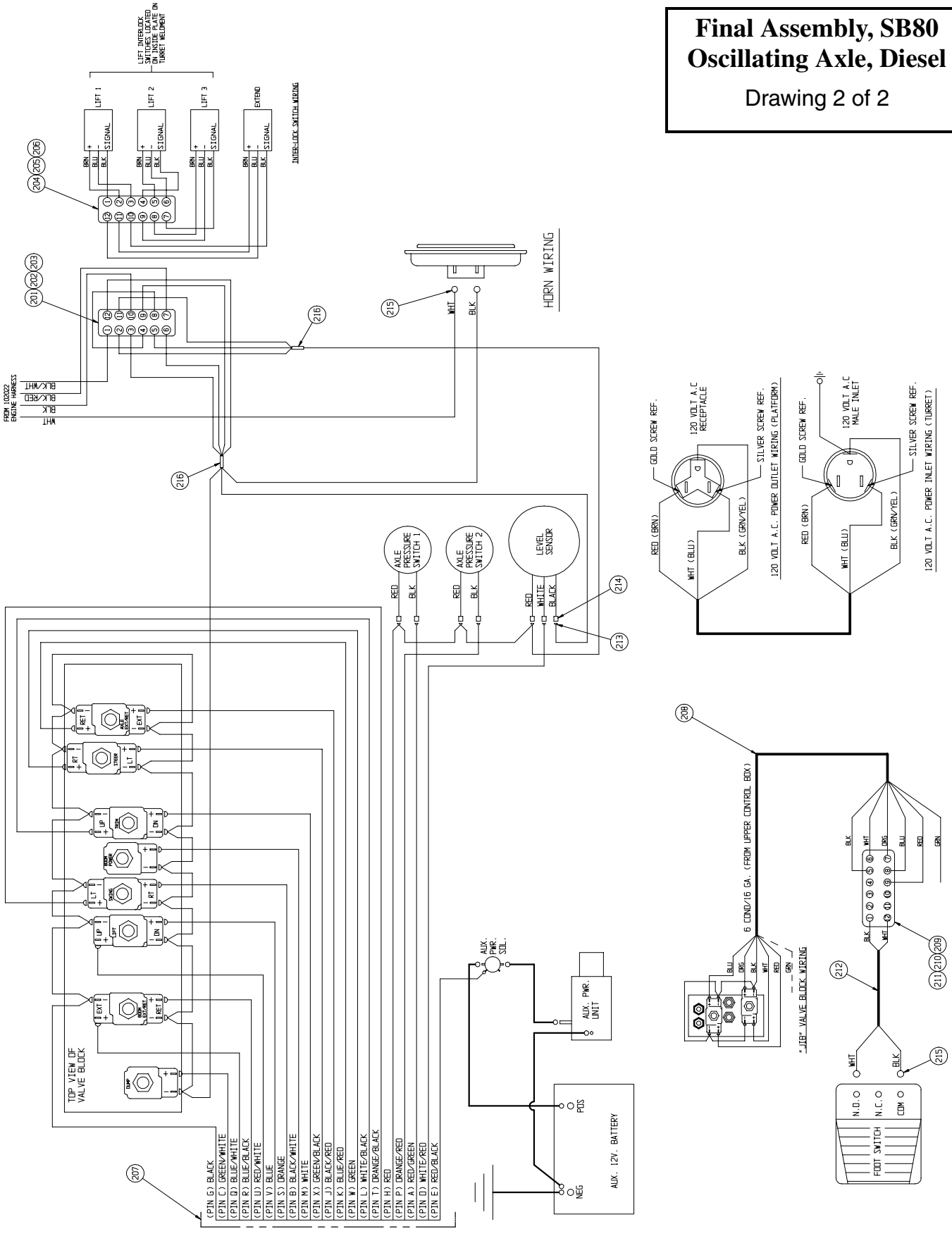
Drawing 1 of 2

FINAL ASSEMBLY, SB80
OSCILLATING AXLE, DIESEL
102002-001

ITEM	PART NO.	DESCRIPTION	QTY.
201	102455-000	PLUG, DEUTSCH P/N DTM06-12S	1
202	100338-016	SOCKET, DEUTSCH P/N 1062-20-0022	12
203	102455-002	WEDGE, DEUTSCH P/N WM-12S	1
204	102455-001	RECEPTACLE, DEUTSCH P/N DTM04-12P	1
205	100338-015	PIN, DEUTSCH P/N 0462-202-20141	12
206	102455-003	WEDGE, DEUTSCH P/N WM-12P	1
207	102021-000	CABLE ASSY, LWR BOX TO VALVE BLOCK	1
208	029488-099	WIRE CABLE, 16 AWG / 6 COND.	FT 11
209	068760-000	PLUG, DEUTSCH P/N	1
210	068762-001	SOCKET, DEUTSCH P/N	8
211	068764-000	PLUG, SEALING	4
212	029490-099	WIRE CABLE, 16 AWG / 2 COND.	FT 5
213	029931-003	CONN. FEM PUSH FULLY INS. 14-16 GA .25	15
214	029617-002	CONN. MALE PUSH FULLY INS. 14-16 GA .25	7
215	029601-013	CONN, RING, 14-16 GA, #10 DIA.	4
216	029620-003	CONN. BUTT, 10-12 GA.	2

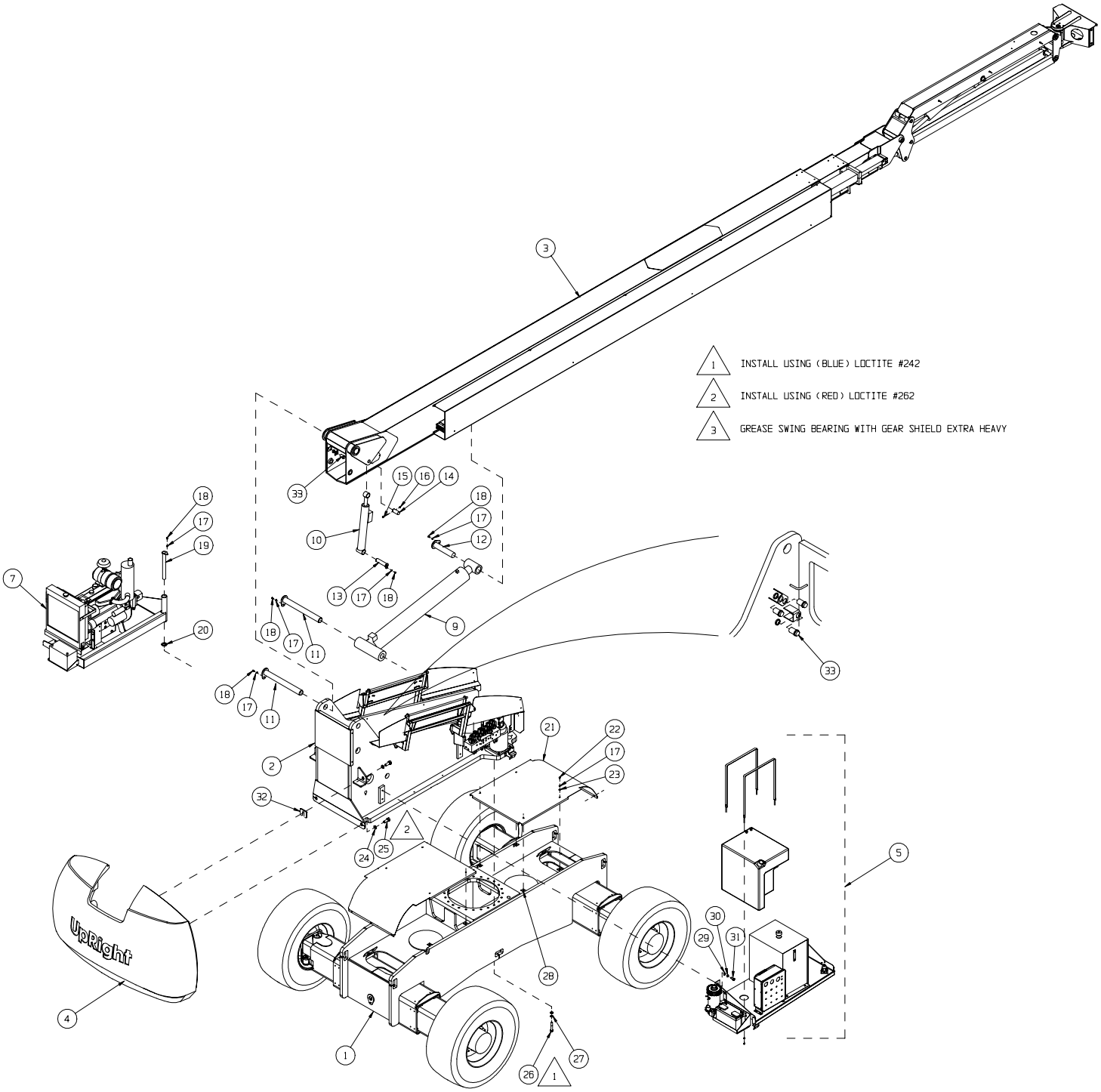
Final Assembly, SB80 Oscillating Axle, Diesel

Drawing 2 of 2



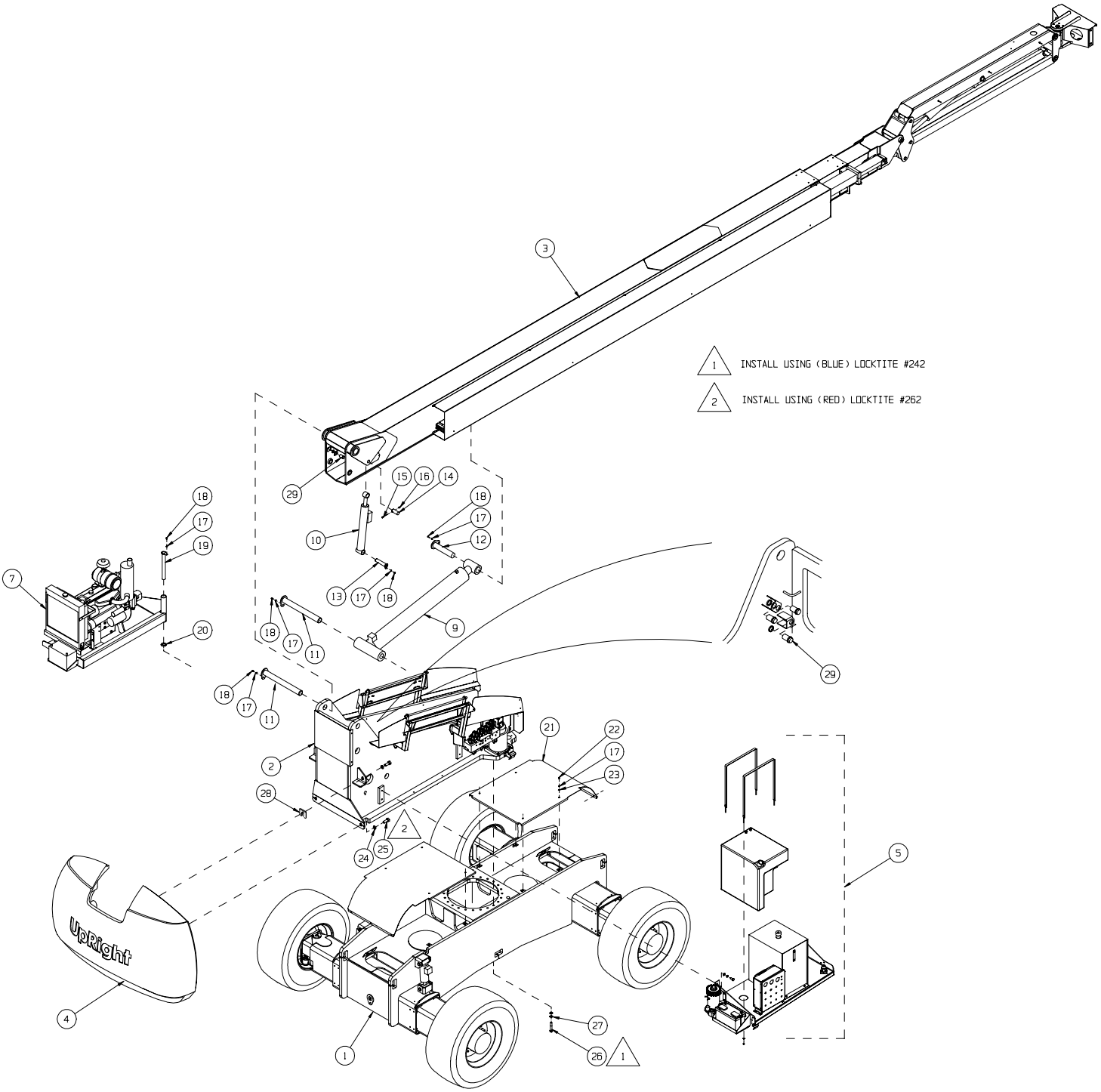
BASIC ASSEMBLY, SB80
FIXED AXLE, DIESEL
102004-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102008-000	CHASSIS ASSEMBLY, (FIXED AXLE)	1
2	102010-000	TURRET ASSEMBLY	1
3	102009-000	BOOM ASSEMBLY	1
4	102263-000	COUNTERWEIGHT	1
5	102014-001	CONTROL MODULE ASSEMBLY (DSL)	1
6	102020-000	CONTROL CABLE ASSY	1
7	102012-000	ENGINE MODULE ASSEMBLY (DSL)	1
9	102337-000	LIFT CYLINDER	1
10	102336-000	MASTER CYLINDER	1
11	100473-002	PIN WELDMENT, 2.5 DIA. X 23 3/4 LG.	2
12	100473-003	PIN WELDMENT, 2.5 DIA. X 12" LG.	1
13	100472-012	PIN WELDMENT, 1.50 DIA. X 6 1/2 LG.	1
14	100575-015	PIN, 1.50 DIA. X 3 1/2 LG.	1
15	063559-010	SCREW, SHOULDER 5/16 X 3	1
16	011248-004	LOCKNUT, 1/4-20 UNC ESNA	1
17	011238-006	LOCKWASHER, 3/8" SPLIT RING	5
18	011254-007	SCREW, HHC. 3/8-16 UNC X 7/8 LG.	5
19	100472-010	PIN WELDMENT, 1.50 DIA. X 16 1/2 LG.	1
20	010092-011	THRUST WASHER	3
21	102218-000	CHASSIS COVER	2
22	011254-004	SCREW, 3/8-16 UNC X 1/2 LG.	14
23	011240-006	WASHER, 3/8" FLAT STEEL	14
24	011239-016	WASHER, 1" DIA. ASTM A-325	4
25	011732-024	SCREW, HHC. GR8 1-8 UNC X 3"	4
26	011723-036	SCREW, HHC. GR8. 3/4-10 UNC X 4 1/2	24
27	011239-012	WASHER, 3/4" DIA. ASTM A-525	48
28	014252-006	NUTSERT 3/8-16	8
29	014996-010	WASHER 5/8 SAE FLAT	4
30	011238-010	WASHER SPLIT LOCK 5/8	4
31	011257-012	SCREW, HHC 5/8-11 UNC X 1 1/2	4
32	100198-000	SHIM, COUNTERWEIGHT	4
33	100380-000	PROXIMITY SWITCH	4


1 INSTALL USING (BLUE) LOCTITE #242
2 INSTALL USING (RED) LOCTITE #262
3 GREASE SWING BEARING WITH GEAR SHIELD EXTRA HEAVY
UpRight

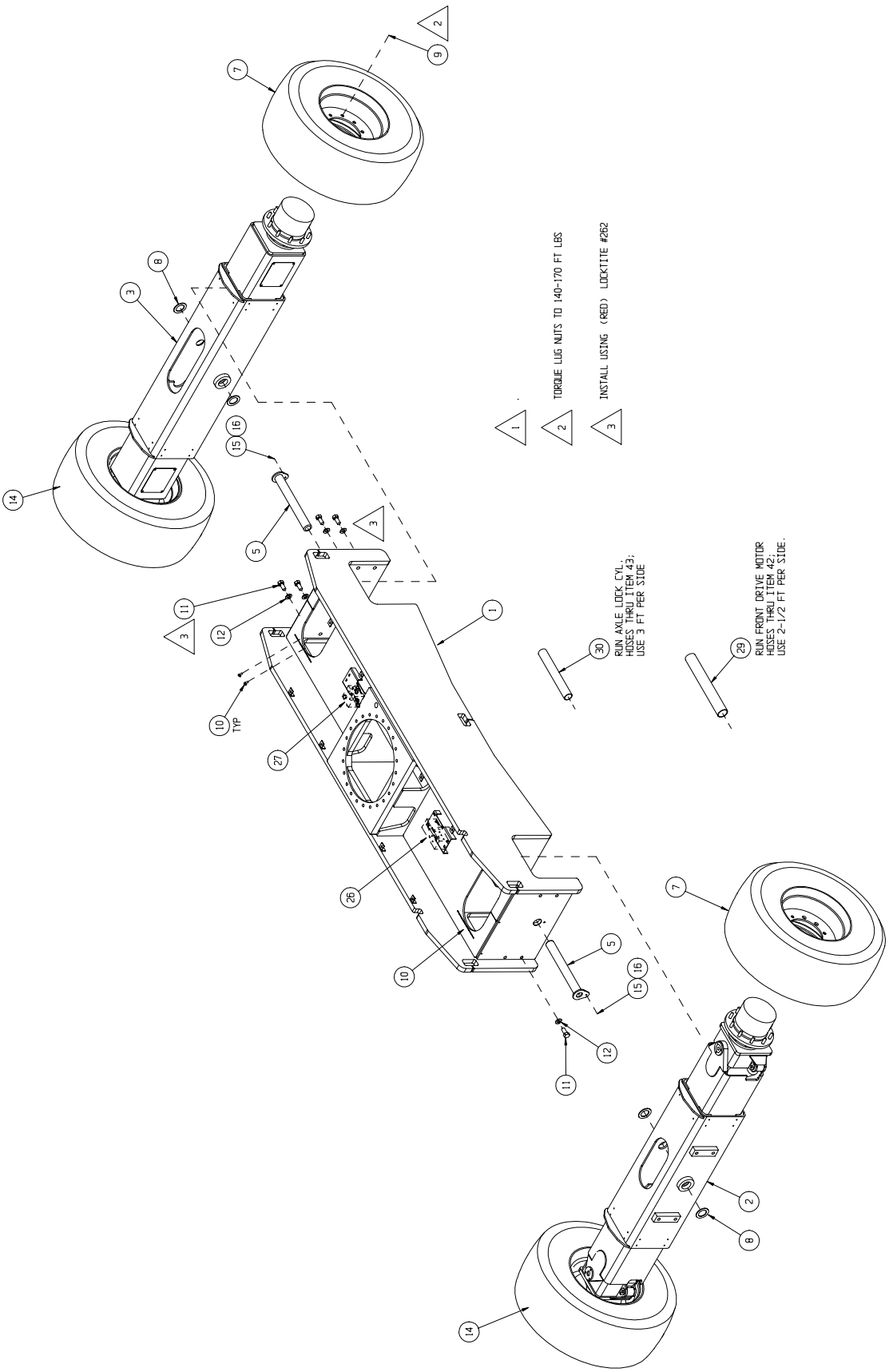
BASIC ASSEMBLY, SB80
OSCILLATING AXLE, DIESEL
102005-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102008-001	CHASSIS ASSEMBLY, (OSCILATING AXLE)	1
2	102010-000	TURRET ASSEMBLY	1
3	102009-000	BOOM ASSEMBLY	1
4	102263-000	COUNTERWEIGHT	1
5	102014-001	CONTROL MODULE ASSEMBLY (DSL)	1
6	102020-000	CONTROL CABLE ASSY	1
7	102012-000	ENGINE MODULE ASSEMBLY (DSL)	1
9	102337-000	LIFT CYLINDER	1
10	102336-000	MASTER CYLINDER	1
11	100473-002	PIN WELDMENT, 2.5 DIA. X 23 3/4 LG.	2
12	100473-003	PIN WELDMENT, 2.5 DIA. X 12" LG.	1
13	100472-012	PIN WELDMENT, 1.50 DIA. X 6 1/2 LG.	1
14	100575-015	PIN, 1.50 DIA. X 3 1/2 LG.	1
15	063559-010	SCREW, SHOULDER 5/16 X 3	1
16	011248-004	LOCKNUT, 1/4-20 UNC ESNA	1
17	011238-006	LOCKWASHER, 3/8" SPLIT RING	5
18	011254-007	SCREW, HHC. 3/8-16 UNC X 7/8 LG.	5
19	100472-010	PIN WELDMENT, 1.50 DIA. X 16 1/2 LG.	1
20	010092-011	THRUST WASHER	3
21	102218-000	CHASSIS COVER	2
22	011254-004	SCREW, 3/8-16 UNC X 1/2 LG.	14
23	011240-006	WASHER, 3/8" FLAT STEEL	14
24	011239-016	WASHER, 1" DIA. ASTM A-325	4
25	011732-024	SCREW, HHC. GR8 1-8 UNC X 3	4
26	011723-036	SCREW, HHC. GR8. 3/4-10 UNC X 4 1/2	24
27	011239-012	WASHER, 3/4" DIA. ASTM A-325	48
28	100198-000	SHIM, COUNTERWEIGHT	4
29	100380-000	PROXIMITY SWITCH	4


1 INSTALL USING (BLUE) LOCKTITE #242
2 INSTALL USING (RED) LOCKTITE #262
UpRight

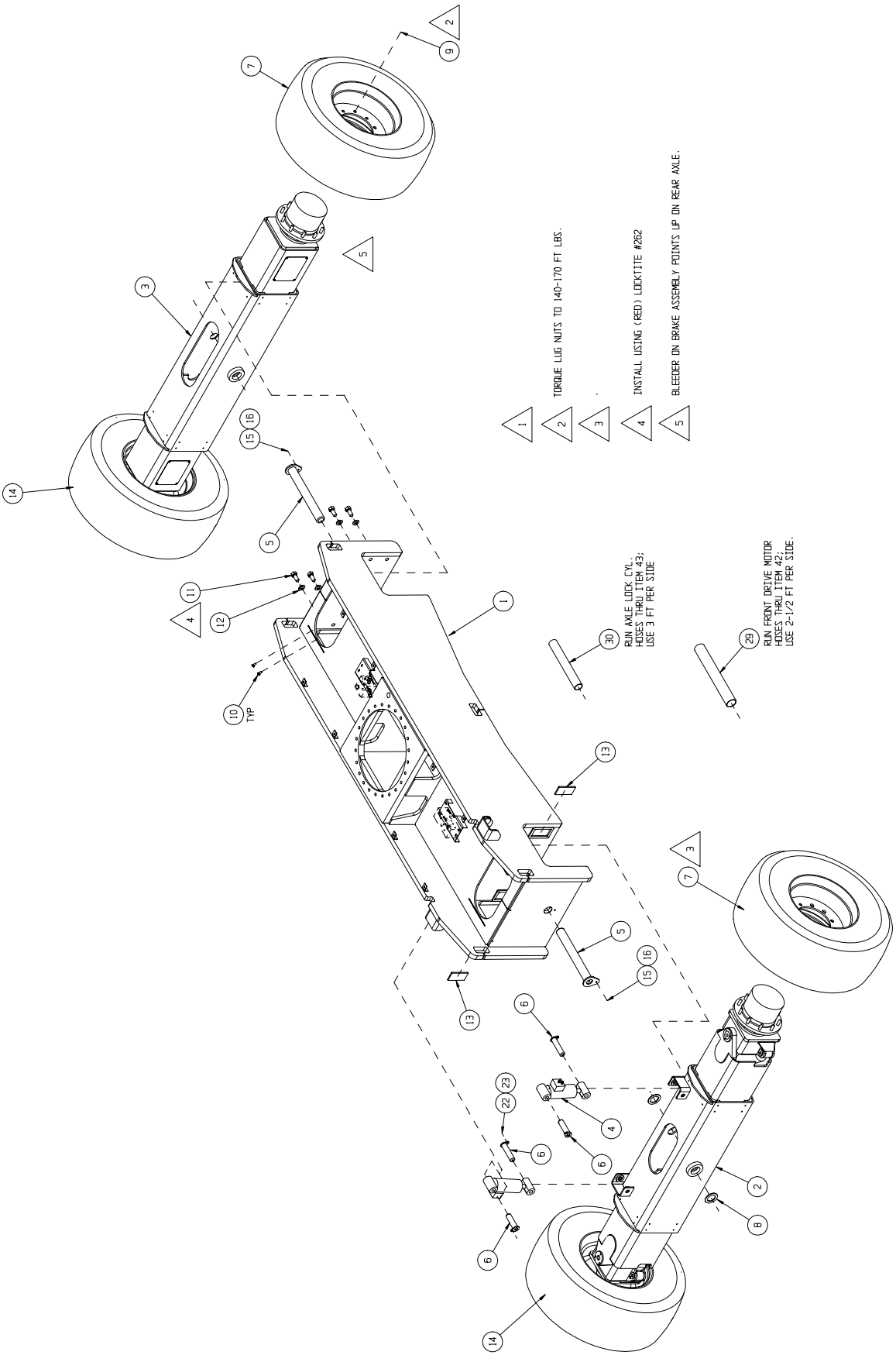
CHASSIS ASSEMBLY, SB80
FIXED AXLE
102008-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102155-001	CHASSIS WELDMENT- FIXED AXLE	1
2	102032-000	FRONT AXLE ASSEMBLY - FIXED	1
3	102031-000	REAR AXLE ASSEMBLY	1
5	102224-000	PIN ASSEMBLY	2
7	REF.	TIRE/WHL ASSY LH.(SEE FINAL ASSY)	.
8	100563-000	THRUST WASHER 2 1/2 IN ID	2
9	102267-000	WHEEL NUT .875 RA 3/4-16	40
10	012002-012	FTG. 90° BULKHEAD ADAPTER 12MJ-12MJ	8
11	011732-024	SCR, HHC GR8 1-8 UNC X 3	8
12	011239-016	WASHER, 1" DIA. ASTM A-325	8
14	REF.	TIRE/WHL ASSY RH (SEE FINAL ASSY)	.
15	011256-010	SCREW1/2-13 UNC HHC X 1 1/4 LG	2
16	011238-008	WASHER SPLIT LOCK 1/2	2
18	011723-036	SCREW HHC 3/4-10 UNC GR8 X 4 1/2	24
19	011239-012	WASHER, 3/4 FLAT ASTM A325	48
25	102345-000	AXLE LOGIC VALVE ASSY.	1
26	102342-000	VALVE BLOCK ASSY, FRONT DRIVE CHECKS	1
27	102341-000	VALVE BLOCK ASSY, REAR DRIVE CHECKS	1
29	100385-099	HOSE GUARD (2.88 ID)	FT 5
30	065369-099	HOSE GUARD (1.42 ID)	FT 6


TORQUE LUG NUTS TO 140-170 FT LBS
INSTALL USING (RED) LOCKTITE #262
RUN AXLE LOCK CYL. HOSES THRU ITEM 43; USE 3 FT PER SIDE
RUN FRONT DRIVE MOTOR HOSES THRU ITEM 42; USE 2-1/2 FT PER SIDE.
TYP

CHASSIS ASSEMBLY, SB80
OSCILLATING AXLE
102008-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	102155-000	CHASSIS WELDMENT-OSC AXLE	1
2	102032-001	FRONT AXLE ASSEMBLY - OSC	1
3	102031-000	REAR AXLE ASSEMBLY	1
4	102333-000	LOCK CYLINDER ASSEMBLY	2
5	102224-000	PIN ASSEMBLY	2
6	100472-012	PIN WELDMENT	4
7	REF.	TIRE / WHL ASSY LH. (SEE FINAL ASSY)	.
8	100563-000	THRUST WASHER 2 1/2 IN ID	4
9	102267-000	WHEEL NUT .875 RA 3/4-16	40
10	012002-012	FTG. 90° BULKHEAD ADAPTER 12MJ-12MJ	8
11	011732-024	SCR, HHC GR8 1-8 UNC X 3	4
12	011239-016	WASHER, 1" DIA. ASTM A-325	4
13	102217-000	PAD, IMPACT - FRONT AXLE	2
14	REF.	TIRE / WHL ASSY RH. (SEE FINAL ASSY)	.
15	011256-010	SCR, 1/2-13 UNC HHC X 1 1/4 LG	2
16	011238-008	WASHER SPLIT LOCK 1/2	2
18	011723-036	SCREW HHC 3/4-10 UNC GR8 X 4 1/2	24
19	011239-012	WASHER, 3/4 FLAT ASTM A325	48
22	011254-006	SCREW 3/8-16 UNC HHC X 3/4 LG	4
23	011238-006	WASHER SPLIT LOCK 3/8	4
25	102345-000	AXLE LOGIC VALVE ASSY.	1
26	102342-000	VALVE BLOCK ASSY, FRONT DRIVE CHECKS	1
27	102341-000	VALVE BLOCK ASSY, REAR DRIVE CHECKS	1
29	100385-099	HOSE GUARD (2.88 ID)	FT 5
30	065369-099	HOSE GUARD (1.42 ID)	FT 6


TORQUE LUG NUTS TO 140-170 FT LBS.
INSTALL USING (RED) LOCKTITE #262
BLEEDER ON BRAKE ASSEMBLY POINTS UP ON REAR AXLE.
RUN AXLE LOCK CYL. HOSES THRU ITEM 43; USE 3 FT PER SIDE
RUN FRONT DRIVE MOTOR HOSES THRU ITEM 42; USE 2-1/2 FT PER SIDE.
TYP

BOOM ASSEMBLY, SB80

102009-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102094-000	BASE BOOM WELDMENT	1
2	102095-000	MID BOOM WELDMENT	1
3	102096-000	TIP BOOM WELDMENT	1
4	102049-000	EXTENSION CYLINDER ASSEMBLY	1
5	102338-000	SLAVE CYLINDER ASSEMBLY	1
6	100480-003	PIN, (EXT. CYL. BASE)	1
7	100472-013	PIN WELDMENT, (EXT. CYL. MID)	2
8	102200-000	PIN, (EXT. CYL. TIP)	1
9	102201-000	PIN, SLAVE CYL.	1
10	011764-023	SNAP RING	4
11	102081-000	SHIM, 3 X 7 X .079	AS REQ.
12	102081-001	SHIM, 3 X 7 X .040	AS REQ.
13	102083-000	SHIM, 1.5 X 6 X .079	AS REQ.
14	102083-001	SHIM, 1.5 X 6 X .040	AS REQ.
15	102051-000	SLIDE PAD, HIGH LOAD	8
16	102050-000	SLIDE PAD	24

ITEM	PART NO.	DESCRIPTION	QTY.
17	102367-000	EXTEND INTERLOCK WELDMENT	1
18	102368-000	EXTEND INTERLOCK BRACKET	1
19	100562-300	BEARING, GARLOCK 4048-48	2
20	011254-008	SCREW HHC 3/8-16 UNC X 1	20
21	011254-007	SCREW HHC 3/8-16 UNC X 7/8	16
22	011238-006	WASHER 3/8 SPLIT RING LOCK	36
23	011248-006	LOCKNUT 3/8-16 ESNA	32
24	011254-004	SCREW HHC 3/8-16 UNC X 1/2	2
25	011254-010	SCREW HHC 3/8-16 UNC X 1 1/4	2
26	014996-004	WASHER 1/4 FLAT	2
27	011238-004	WASHER 1/4 LOCK	2
28	011252-006	SCREW HHC 1/4-20 UNC X 3/4	2
29	011287-004	SCREW FLAT HD SOC 3/8-16 UNC X 1/2	2
30	011254-024	SCREW HHC 3/8-16 UNC X 3	1
31	011248-006	NUT 3/8-16 ESNA	1

SB-80 BOOM ASSEMBLY PROCESS

1. REST TIP BOOM TUBE (ITEM #3) ON THE FIXTURE, INSTALL ALL UHMW BEARING WITH SHIMS ITEM #11 THRU 16 - ON TIP BOOM

2. ASSEMBLE ITEMS #3, 4 AND RELATED COMPONENTS TO THE EXTEND CYLINDER EXCLUDE ITEM #2 AND RELATED COMPONENTS - WILL BE INSTALLED LATER EXTEND THE CYLINDER, TO APPROX. 6FT ROD EXTENSION (NEVER EXTEND ROD MORE THAN 6FT UNSUPPORTED) INSTALL INTO TIP BOOM ITEM#3

3. PIN THE TIP BOOM END OF CYLINDER TO TIP BOOM WITH PIN ITEM #8 & INSTALL ITEMS 22 & 25

4. INSERT TIP BOOM TUBE/CYLINDER SUB ASSEMBLY ITEM #3 & 4 INTO MID BOOM ITEM #3 & SHIM PADS TO ALLOW .045" MAX. CLEARANCE

5. INSTALL THE TRUNNION PINS ITEM #7 TO THE BASE BOOM END OF THE CYLINDER TUBE ON THE TIP BOOM/CYLINDER SUB ASSEMBLY.

6. INSTALL ITEMS #11 THRU 16 AT TIP BOOM END & SHIM TO ALLOW .045" MAX. CLEARANCE.

7. INSTALL THE MID BOOM/TIP BOOM/CYLINDER SUB ASSEMBLY ITEMS #2,3 & 4 INTO BOOM ITEM #1

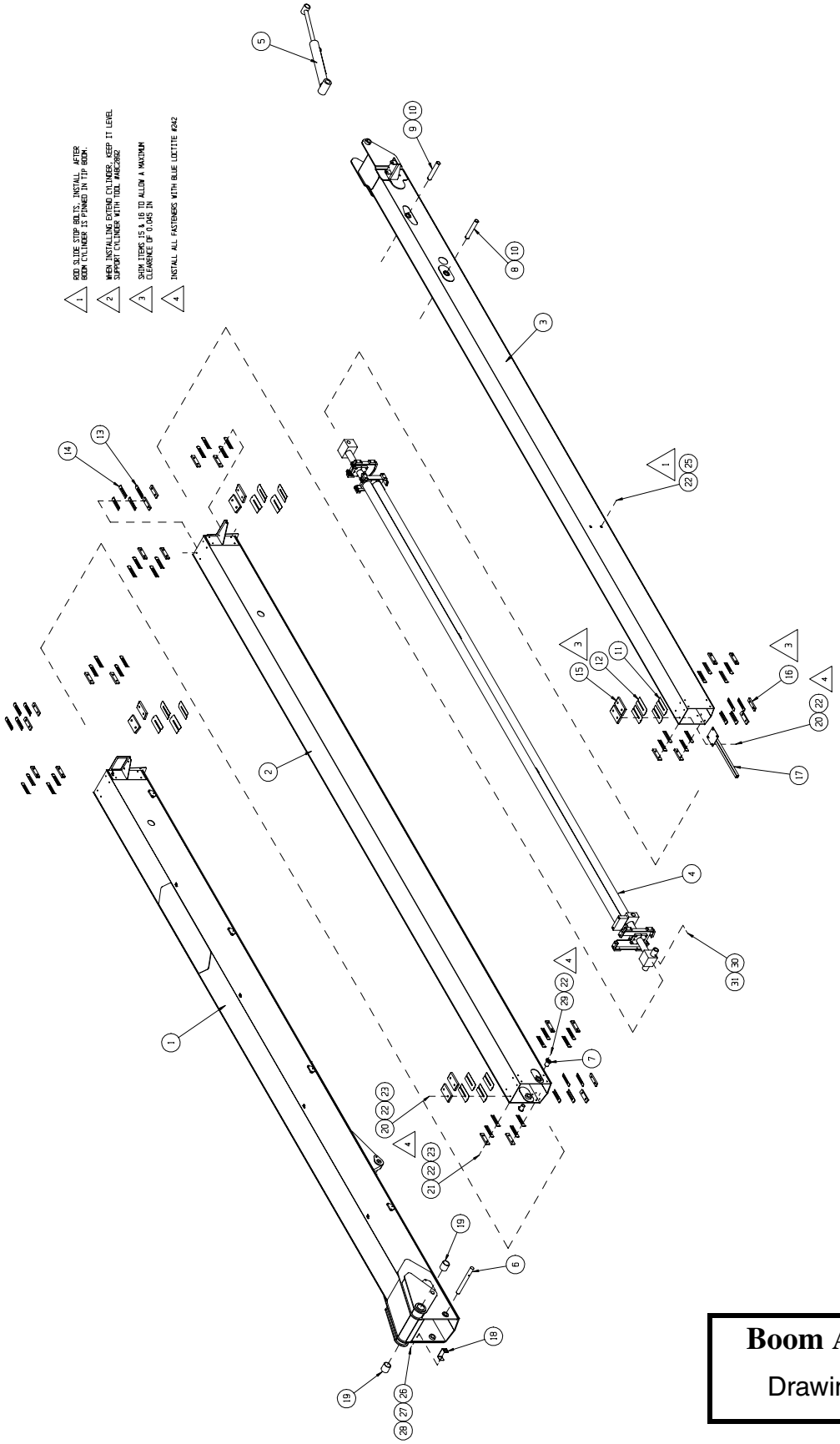
8. INSTALL ITEMS #11 THRU 16 AT THE TIP END OF BASE BOOM & SHIM TO ALLOW .045" MAX. CLEARANCE.

9. PIN THE BASE END OF CYLINDER TO BASE BOOM WITH PIN ITEM #6

10. MOUNT THE PRE-ASSEMBLIED CARRIER TRACK ITEM #202 TO BOOM ASSEMBLY

11. EXTEND AND RETRACT THE BOOM ASSEMBLY 2-3 TIMES TO ENSURE THE MOVEMENT,QUALITY, TOLERANCES, LEAKS, ETC.

12. INSTALL THE PRE-EXTENDED (10"-12") SLAVE CYLINDER ITEM #5 TO THE TIP BOOM. INCLUDE THE FITTINGS AND HOSES.



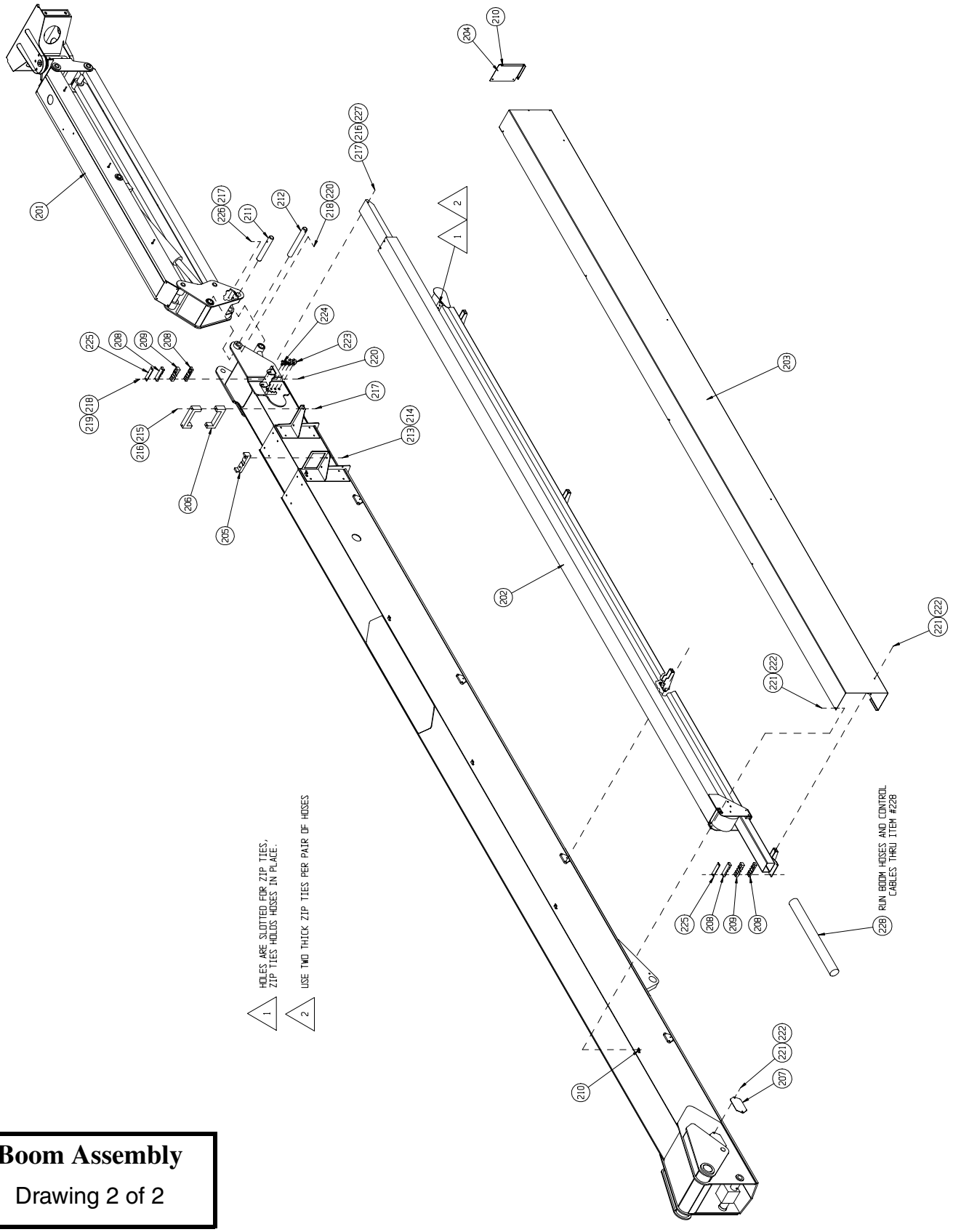
Boom Assembly

Drawing 1 of 2

BOOM ASSEMBLY, SB80

102009-000

ITEM	PART NO.	DESCRIPTION	QTY.
201	102011-000	JIB BOOM ASSEMBLY	1
202	102048-000	CARRIER TRACK ASSEMBLY	1
203	102208-000	COVER, CARRIER TRACK	1
204	102210-000	COVER, CARRIER TRACK (FRONT)	1
205	102143-000	SLIDE PAD, CARRIER TUBE	1
206	102052-000	SLIDE PAD, CARRIER TUBE	2
207	102215-000	COVER PLATE	2
208	102212-000	HOSE CLAMP, UHMW	4
209	102213-000	HOSE CLAMP, UHMW	2
210	014252-004	NUT-SERT, 1/4-20 UNC	10
211	100480-001	PIN, (1.50 DIA. X 9.88 LG.)	1
212	100480-002	PIN, (1.50 DIA. X 13.25 LG.)	1
213	011254-008	SCREW, HHC. 3/8-16 UNC X 1	2
214	011238-006	LOCKWASHER, 3/8" SPLIT RING	2
215	011254-060	SCREW, HHC. 3/8-16 UNC X 7 1/2	2
216	014996-006	WASHER, 3/8" FLAT	5
217	011248-006	LOCKNUT, 3/8-16 UNC. ESNA	5
218	011252-024	SCREW, 1/4-20 UNC X 3	4
219	014996-004	WASHER, 1/4" FLAT	4
220	011248-004	LOCKNUT, 1/4-20 UNC, ESNA	4
221	011252-004	SCREW, HHC. 1/4-20 UNC X 1/2	14
222	011238-004	LOCKWASHER, 1/4" SPLIT RING	14
223	102380-002	FTG, 90° BULKHEAD 6MFOR-6MFOR	2
224	102380-001	FTG, 90° BULKHEAD 4MFOR-4MFOR	2
225	102109-000	STIFFENER, HOSE CLAMP	2
226	011254-024	SCREW HHC 3/8-16 UNC X 3	2
227	011254-052	SCREW HHC 3/8-16 UNC X 6 1/2	1
228	100385-099	HOSE GUARD (2.88 ID)	4 FT



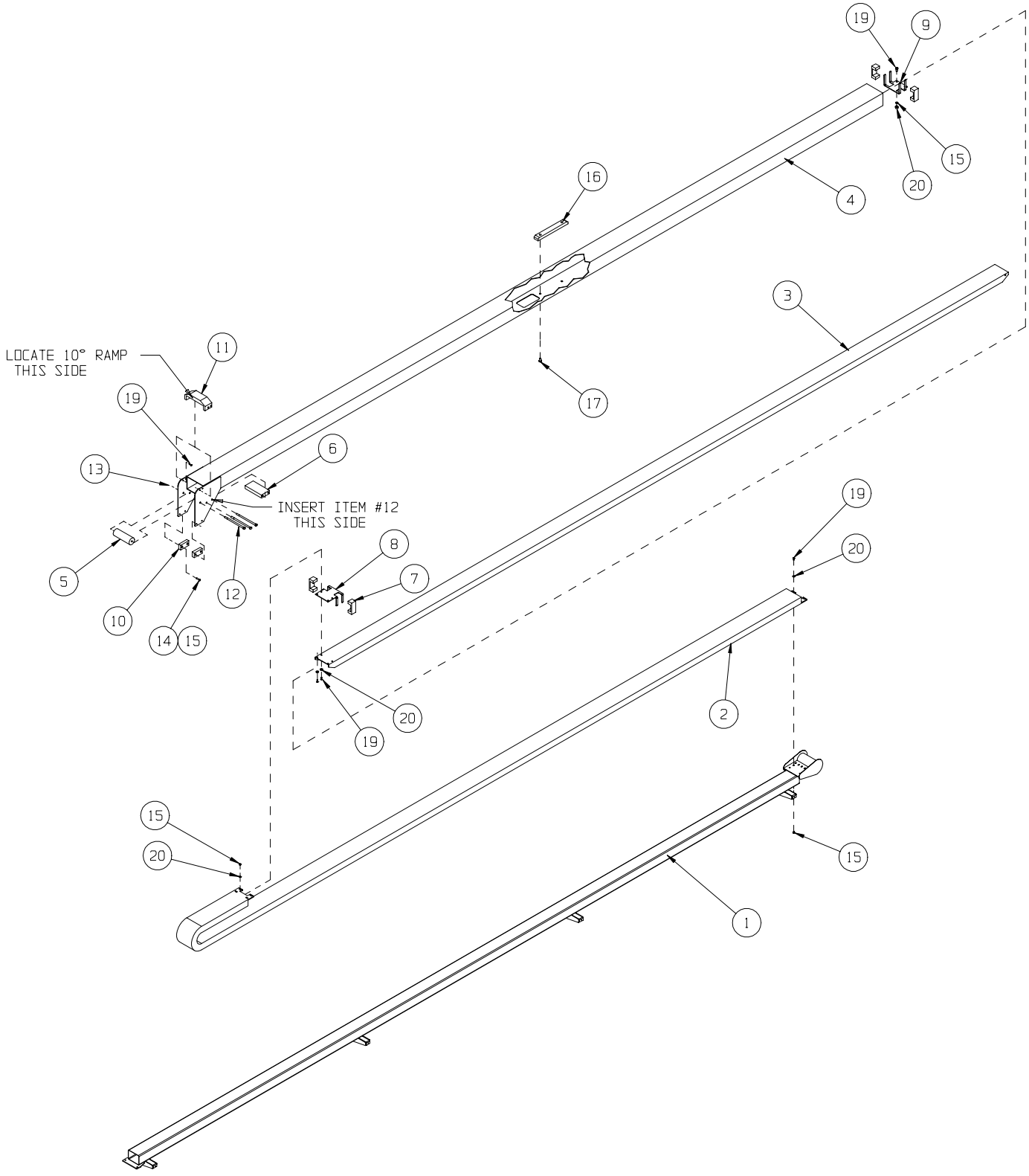
Boom Assembly

Drawing 2 of 2

CARRIER TRACK ASSEMBLY, SB80

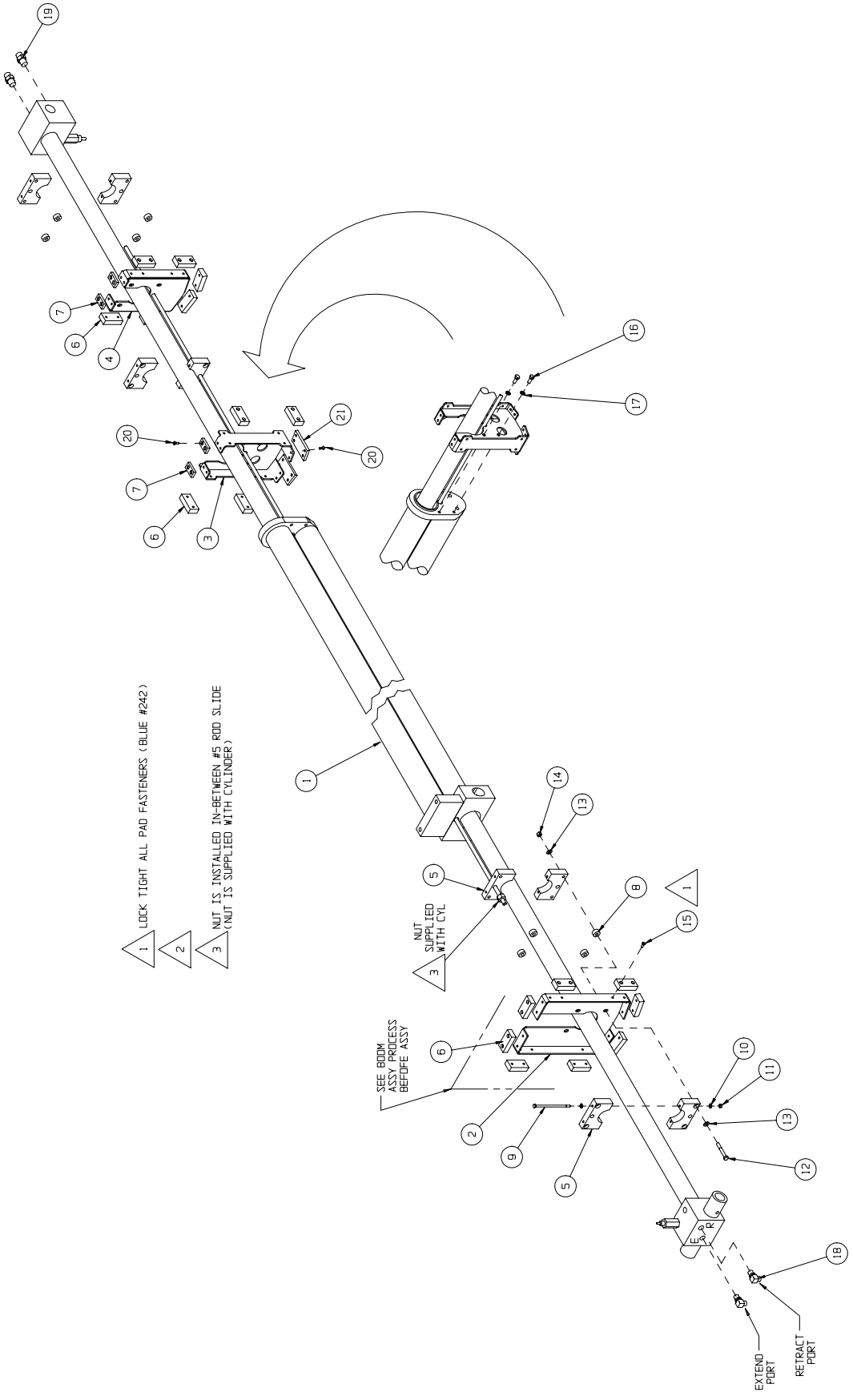
102048-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102131-000	LOWER CARRIER WELDMENT	1
2	102282-000	CARRIER TRACK	1
3	102141-000	TUBE, CARRIER (INNER)	1
4	102132-000	CARRIER TUBE WELDMENT	1
5	102138-000	ROLLER, UHMW	1
6	102136-000	SLIDE PAD, CARRIER GUIDE	1
7	102137-000	SLIDE PAD, CARRIER GUIDE	4
8	102140-000	RETAINER, SLIDE PAD	1
9	102139-000	RETAINER, SLIDE PAD	1
10	102088-000	SLIDE PAD	2
11	102389-000	CARRIER GUIDE - REAR	1
12	011254-056	SCREW, HHC. 3/8-16 UNC X 7"	3
13	011248-006	LOCKNUT, 3/8-16 UNC ESNA	3
14	011828-008	SCR, FLT HD SOC 1/4-20 UNC X 1	4
15	011248-004	LOCKNUT, 1/4-20 UNC ESNA	6
16	102053-000	SLIDE PAD	1
17	014024-006	SCREW, BUTTON HD SOC 3/8-16 X 3/4	2
19	011821-006	SCR, BUTT.HD.SOC.1/4-20 UNC X 3/4	10
20	014996-004	WASHER, 1/4" FLAT	6
21	100631-000	SLIDE PAD UPPER	2


LOCATE 10° RAMP
THIS SIDE
INSERT ITEM #12
THIS SIDE
19
9
15
20
16
4
3
11
19
17
6
13
19
20
8
7
5
12
10
14
15
20
19
2
15
20
15
1

BOOM EXTEND ASSEMBLY
SB80
102049-000

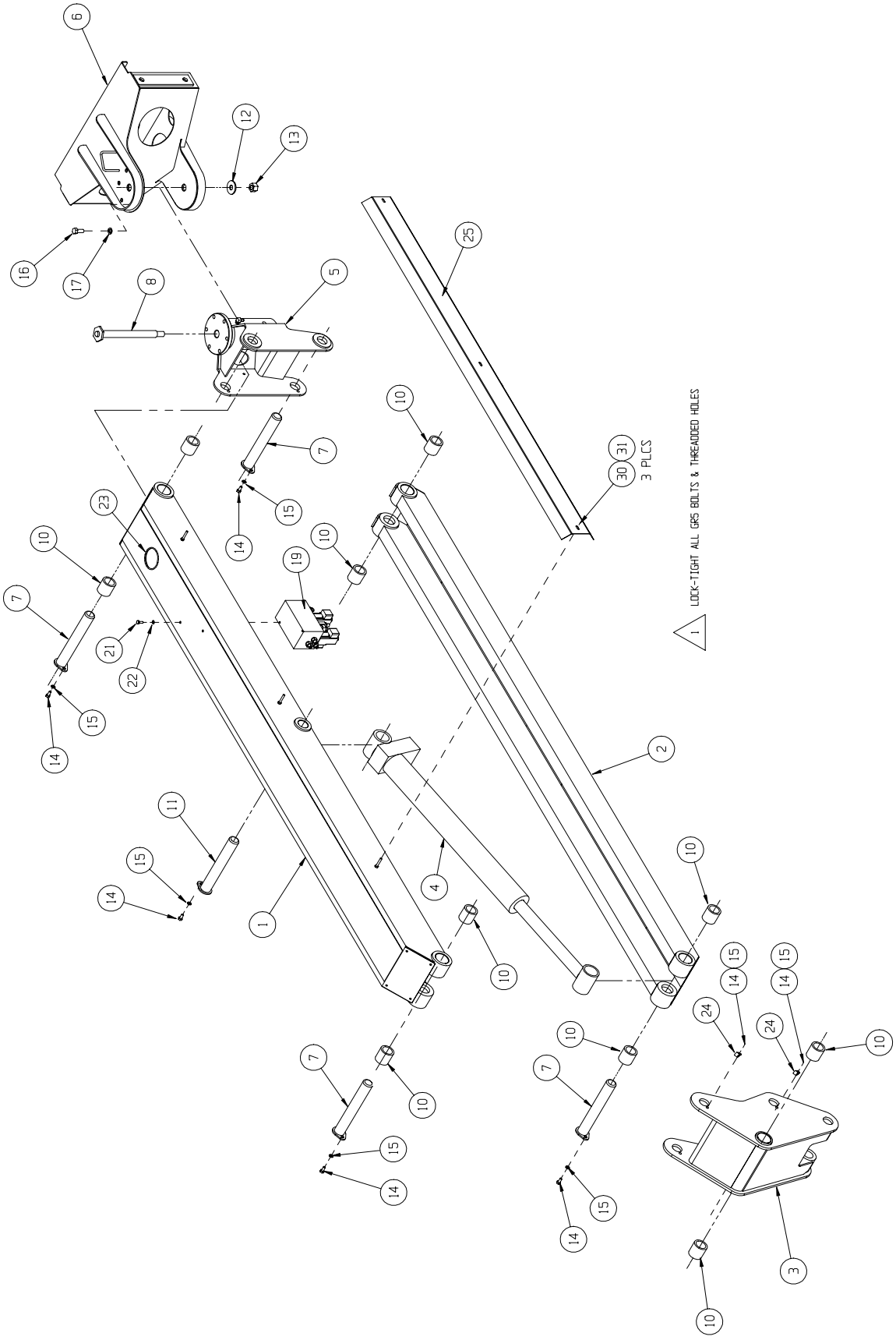
ITEM	PART NO.	DESCRIPTION	QTY.
1	102253-000	EXTENSION CYL.	1
2	102146-000	ROD SLIDE WELDMENT, LOWER	1
3	102149-000	CYL. SLIDE WELDMENT	1
4	102118-000	ROD SLIDE WELDMENT, UPPER	1
5	102082-000	ROD SLIDE (UHMW)	8
6	102088-000	PAD, ROD SLIDE (UHMW)	18
7	100631-000	PAD, UHMW	4
8	102089-000	SPACER	8
9	011252-052	SCREW, HHC. 1/4-20 UNC X 6 1/2	8
10	014996-004	WASHER, 1/4" FLAT	16
11	011248-004	LOCKNUT, 1/4-20 UNC ESNA	8
12	011254-022	SCREW, HHC. 3/8-16 UNC X 2 3/4	8
13	014996-006	WASHER, 3/8" FLAT SAE	16
14	011248-006	LOCKNUT, 3/8-16 UNC ESNA	8
15	011828-006	SCR, FLT HD. SOC. 1/4-20 UNC X 3/4	48
16	011254-010	SCREW, HHC. 3/8-16 UNC X 1 1/4	4
17	011238-006	LOCKWASHER, 3/8" SPLIT RING	4
18	100434-008	FITTING, 90° ADAPTER 6MB-6MFOR	2
19	100432-009	FITTING, STR ADAPTER 6MB-6MFOR	2
20	011828-003	SCR, FLT HD. SOC. 1/4-20 UNC X 3/8	16
21	100621-000	SLIDE PAD	2


1 LOCK TIGHT ALL PAD FASTENERS (BLUE #242)
2
3 NUT IS INSTALLED IN-BETWEEN #5 ROD SLIDE (NUT IS SUPPLIED WITH CYLINDER)
NUT SUPPLIED WITH CYL
SEE BOOM ASSY PROCESS BEFORE ASSY
EXTEND PORT
RETRACT PORT

JIB ASSEMBLY, SB80

102011-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	100456-001	UPPER JIB WELDMENT SB80	1
2	100458-000	LOWER JIB WELDMENT	1
3	102062-000	BELLCRANK WELDMENT	1
4	102339-000	JIB CYLINDER ASSEMBLY	1
5	102340-000	ROTARY ACTUATOR ASSY	1
6	102205-000	CAGE TRANSITION WELDMENT	1
7	100472-007	WELDMENT, PIN	4
8	100484-001	WELDMENT, ROTATOR PIN	1
9	011248-010	LOCKNUT, 3/4-10 UNC ESNA	1
10	100562-150	BEARING	8
11	100472-008	WELDMENT, PIN	1
12	011240-012	WASHER, Ø 3/4" FLAT	1
13	011248-012	LOCKNUT, 3/4-10 UNC ESNA	1
14	011254-004	SCR, HHC 3/8-16 UNC X 1/2	8
15	011238-006	LOCKWASHER, Ø 3/8 SPLIT RING	8
16	011256-010	SCR, HHC. 1/2-13 UNC X 1 1/4	6
17	011238-008	LOCKWASHER, Ø 1/2 SPLIT RING	6
19	102332-000	VALVE BLOCK ASSY.	1
21	011252-006	SCREW, HHC. 1/4-20 UNC X 3/4	2
22	011238-004	LOCKWASHER, 1/4" DIA.	2
23	061692-099	3/16 GROMMET	FT 1.5
24	013919-012	CLAMP HOSE KMC COV 2113	3
25	100692-000	COVER, JIB BOOM	1
30	011248-004	LOCKNUT, 1/4-20 UNC ESNA	5
31	011240-004	WASHER 1/4 FLAT	5

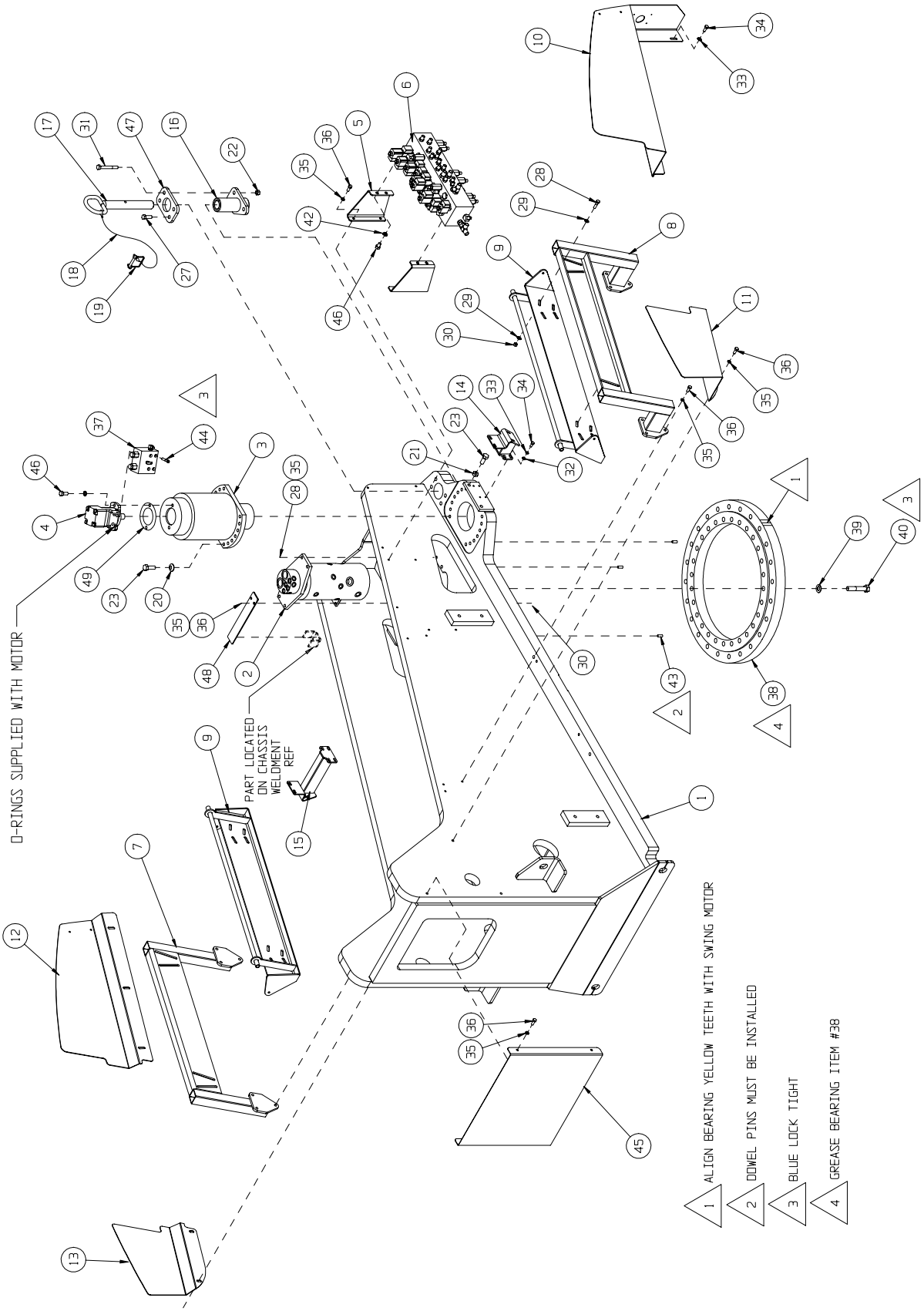

LOCK-TIGHT ALL GR5 BOLTS & THREADDED HOLES
3 PLCS

TURRET ASSEMBLY, SB80

102010-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102100-001	TURRET WELDMENT, MACHINED	1
2	102038-000	ROTARY MANIFOLD ASSY.	1
3	102346-000	SWING DRIVE	1
4	102270-000	SWING DRIVE MOTOR	1
5	100267-001	MOUNTING BRACKET, VALVE BLOCK	2
6	102039-000	VALVE BLOCK ASSY	1
7	100360-000	MOUNTING BRACKET WELDMENT	1
8	100365-001	MOUNTING BRACKET WELDMENT	1
9	100356-000	PIVOT WELDMENT	2
10	100374-002	GUARD PANEL	1
11	100376-000	GUARD PANEL	1
12	100371-000	GUARD PANEL	1
13	100373-000	GUARD PANEL	1
14	102112-000	LATCH BRACKET WELDMENT	1
15	102112-001	LATCH BRACKET WELDMENT	1
16	102220-000	SLEW LOCK WELDMENT	1
17	100278-001	PIN, SLEW LOCK	1
18	063783-007	LANYARD ASSY	1
19	100595-000	LOCKING PIN	1
20	011297-010	5/8" DIA. BELLVILLE CONICAL WASHER	14
21	011273-010	NUT, HEX JAM 5/8-11 UNC	4
22	011248-008	LOCKNUT, 1/2-13 UNC. ESNA	3
23	011291-022	SCR (GR 8) HHC. 5/8-11 UNC X 2 3/4	16
27	011256-010	SCREW, HHC. 1/2-13 UNC X 1 1/4	1
28	011254-012	SCREW, HHC. 3/8-16 UNC X 1 1/2	20
29	014996-006	WASHER, 3/8" FLAT STEEL	32

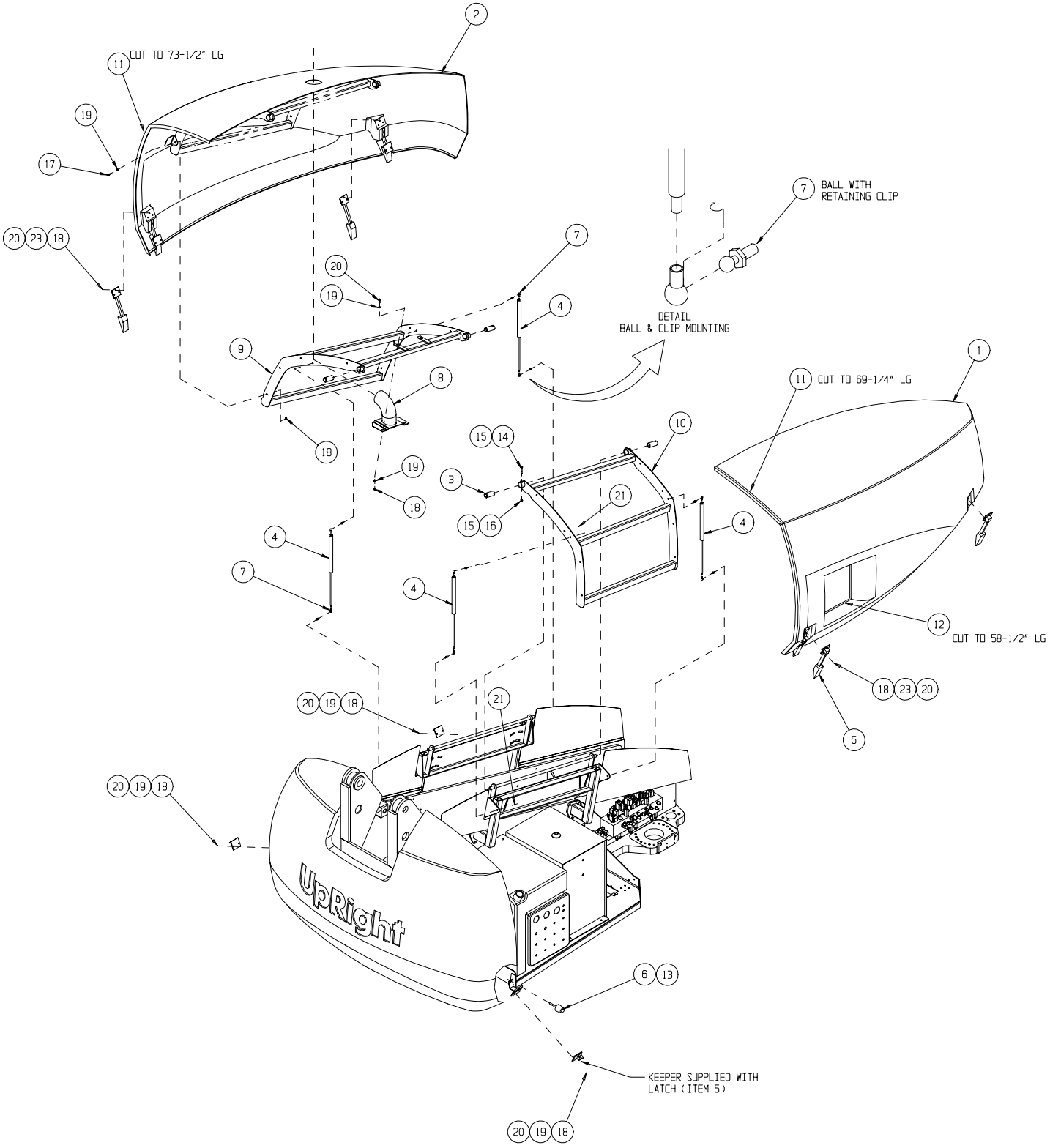
ITEM	PART NO.	DESCRIPTION	QTY.
30	011248-006	LOCKNUT, 3/8-16 UNC ESNA	2
31	011256-032	SCREW, HHC. 1/2-13 UNC X 4" LG.	3
32	011240-005	WASHER, 5/16" FLAT STEEL	4
33	011238-005	LOCKWASHER, 5/16" SPLIT RING	4
34	011253-006	SCREW, HHC. 5/16-18 UNC X 3/4 LG.	4
35	011238-006	LOCKWASHER, 3/8" SPLIT RING	32
36	011254-008	SCREW, HHC. 3/8-16 UNC X 1	30
37	102343-000	SLEW MOTOR VALVE BLOCK ASSY.	1
38	102261-000	SWING BEARING	1
39	011239-012	WASHER, FLAT ASTM A-325 3/4"	24
40	011723-028	SCREW,HHC.(GR.8) 3/4-10 UNC X 3 1/2	24
42	011238-008	LOCKWASHER, 1/2" SPLIT RING	2
43	011746-008	DOWEL PIN, 1/2 DIA X 1" LG	3
44	014334-014	SCREW, SHC. 5/16-18 UNC X 1 3/4	4
45	102360-000	REAR COVER	1
46	011256-014	SCREW, HHC. 1/2-13 UNC X 1 3/4	2
47	102365-000	MOUNTING PLATE, SWING LOCK	1
48	102395-000	PLATE, ROTARY MANIFOLD STOP	1
49	100242-011	GASKET, SWING DRIVE	1


O-RINGS SUPPLIED WITH MOTOR
PART LOCATED ON CHASSIS WELDMENT REF
1 ALIGN BEARING YELLOW TEETH WITH SWING MOTOR
2 DOWEL PINS MUST BE INSTALLED
3 BLUE LOCK TIGHT
4 GREASE BEARING ITEM #38

COVER ASSEMBLY, SB80

102046-000

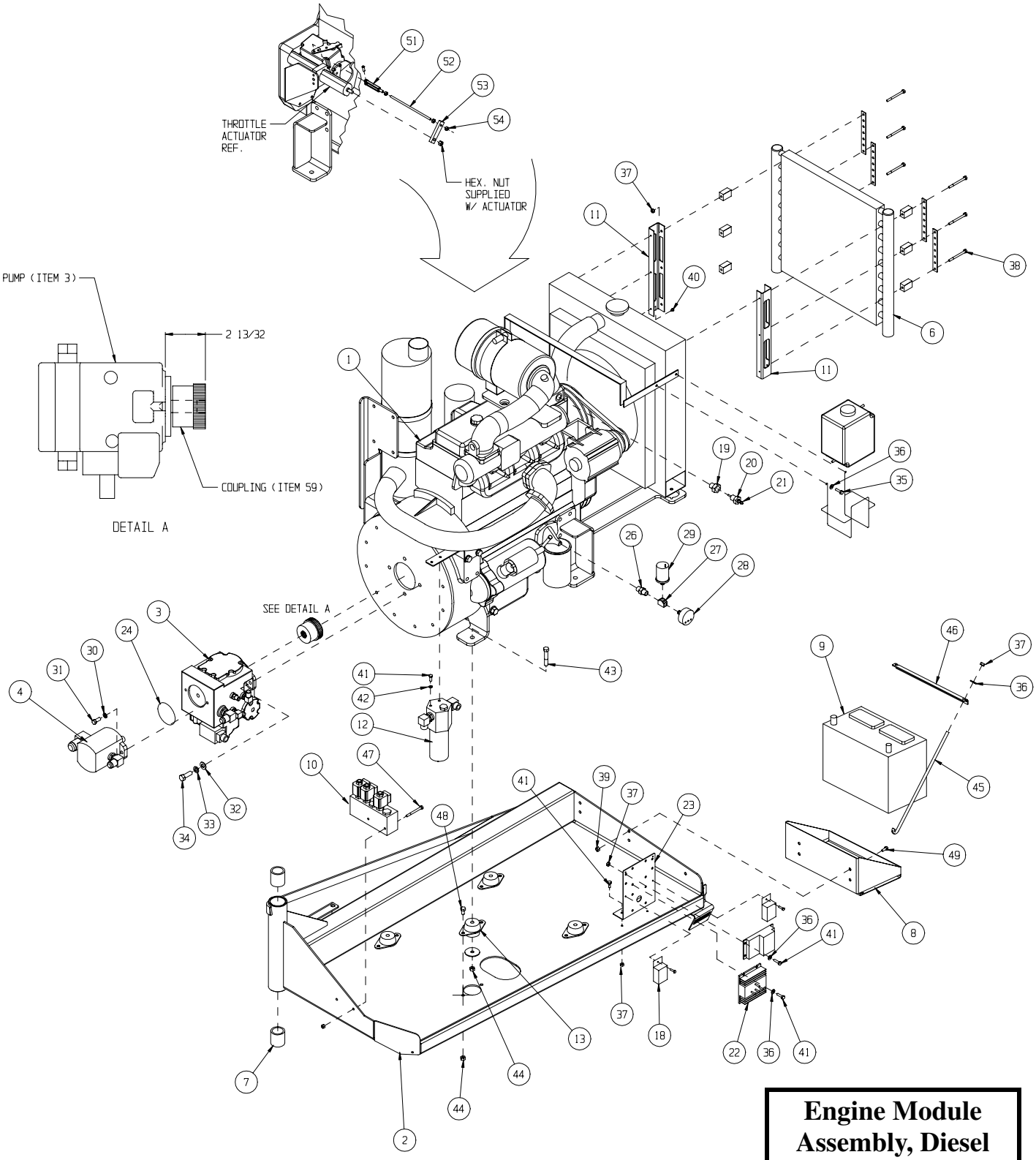
ITEM	PART NO.	DESCRIPTION	QTY.
1	100130-001	COVER, TURRET LEFT	1
2	100131-000	COVER, TURRET RIGHT	1
3	100368-000	BEARING, HINGE	4
4	100126-000	GAS SPRING	4
5	100127-000	LATCH, COVER	4
6	100128-000	BUMPER, RUBBER	4
7	100119-000	BALL STUD 13MM - WITH SAFETY CLIP	8
8	100144-000	EXHAUST PIPE WELDMENT	1
9	100350-001	COVER RIB WELDMENT	1
10	100353-000	COVER RIB WELDMENT	1
11	100370-099	DOOR SEAL "C" FT	12
12	100383-099	DOOR SEAL "B" FT	6
13	11273-006	NUT 3/8 JAM	8
14	11253-018	SCREW, HHC. 5/16-18 UNC X 2 1/4	4
15	14996-005	WASHER 5/16 SAE FLAT	16
16	11248-005	NUT 5/16-18 ESNA	4
17	11252-006	SCREW HHC 1/4-20 UNC X 3/4 LG	16
18	11248-004	NUT 1/4 ESNA	38
19	14996-004	WASHER 1/4 SAE FLAT	36
20	11252-008	SCREW HHC 1/4-20 UNC X 1 LG	22
21	11238-005	WASHER 5/16 LOCK	8
23	11240-004	WASHER 1/4 FLAT	12


2
11
CUT TO 73-1/2" LG
19
17
20 23 18
7
BALL WITH
RETAINING CLIP
20
19
4
DETAIL
BALL & CLIP MOUNTING
9
8
18
1
11
CUT TO 69-1/4" LG
10
15 14
19
3
18
15 16
21
4
4
7
4
12
CUT TO 58-1/2" LG
18 23 20
5
20 19 18
21
20 19 18
UpRight
6 13
KEEPER SUPPLIED WITH
LATCH (ITEM 5)
20 19 18

ENGINE MODULE ASSEMBLY, SB80, DIESEL

102012-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102283-000	ENGINE, PERKINS DIESEL	1
2	100168-001	ENGINE MODULE WELDMENT	1
3	102325-000	DRIVE PUMP ASSEMBLY	1
4	102326-000	LIFT PUMP ASSEMBLY	1
6	102291-000	OIL COOLER (INCL. MTG KIT)	1
7	100562-150	BUSHING, GARLOCK 1 1/2 X 2	2
8	100210-000	BATTERY TRAY WELDMENT	1
9	62299-006	BATTERY, 12 VOLT	1
10	102331-000	VALVE BLOCK ASSY, BRAKE, AXLE LOCK, 2-SPEED	1
11	102378-000	OIL COOLER MOUNTING BRACKET	2
12	102327-000	FILTER ASSEMBLY	1
13	100209-002	ENGINE MOUNT, ISOLATOR	4
18	068132-001	RELAY	2
19	011922-006	FITTING, STR. ADAPTER 6MP-8FP	1
20	100332-000	SENDING UNIT, WATER TEMP	1
21	063947-005	NUT, 5MM	1
22	100324-000	POWER CONVERTER	1
23	100318-000	MOUNTING BRACKET	1
24	013888-012	O-RING, PARKER #2-152	1
25	011246-004	NUT, 1/4-20 UNC THIN ESNA	6
26	013487-001	FITTING, STR. ADAPTER 2MP-2MP	1
27	011915-001	FITTING, TEE ADAPTOR 2FP-2FP-2FP	1
28	068954-001	OIL PRESSURE SWITCH	1
29	100333-000	OIL PRESSURE SENDING UNIT	1
30	011238-006	LOCKWASHER, 3/8" SPLIT RING	2
31	011254-008	SCREW, HHC. 3/8-16 UNC. X 1	2
32	014996-008	WASHER, 1/2" FLAT	2
33	011238-008	LOCKWASHER, 1/2" SPLIT RING	2
34	011256-012	SCREW, HHC. 1/2-13 UNC. X 1 1/2	2
35	011252-008	SCREW, HHC. 1/4-20 UNC X 1	2
36	014996-004	WASHER, 1/4" FLAT	2
37	011248-004	LOCKNUT, 1/4-20 UNC ESNA	2
38	011252-024	SCREW, HHC. 1/4-20 UNC. X 3	6
39	011248-005	LOCKNUT, 5/16-18 UNC. ESNA	4
40	011252-004	SCREW, HHC. 1/4-20 UNC X 1/2	6
41	011252-006	SCREW, HHC. 1/4-20 X 3/4	8
42	011238-004	LOCKWASHER, 1/4" SPLIT RING	2
43	011254-024	SCREW, HHC. 3/8-16 UNC X 3 1/2	4
44	011248-006	LOCKNUT, 3/8-16 UNC ESNA	16
45	063082-000	J-BOLT, BATTERY HOLD-DOWN	2
46	064040-001	BATTERY HOLD-DOWN BAR	1
47	011252-022	SCREW, HHC. 1/4-20 UNC X 2 3/4	2
48	011254-006	SCREW, HHC. 3/8-16 UNC X 3/4	8
49	011253-007	SCREW, HHC. 5/16-18 UNC X 7/8	4
51	011847-004	CLEVIS (WITH PIN AND KOTTER)	REF
52	016776-007	THREADED ROD, 1/4-28 UNF X 7 1/2" LG	REF
53	102369-000	THROTTLE LINKAGE	REF
54	020495-004	HEX JAM NUT, 1/4-28 UNF	REF



Engine Module Assembly, Diesel

Drawing 1 of 2

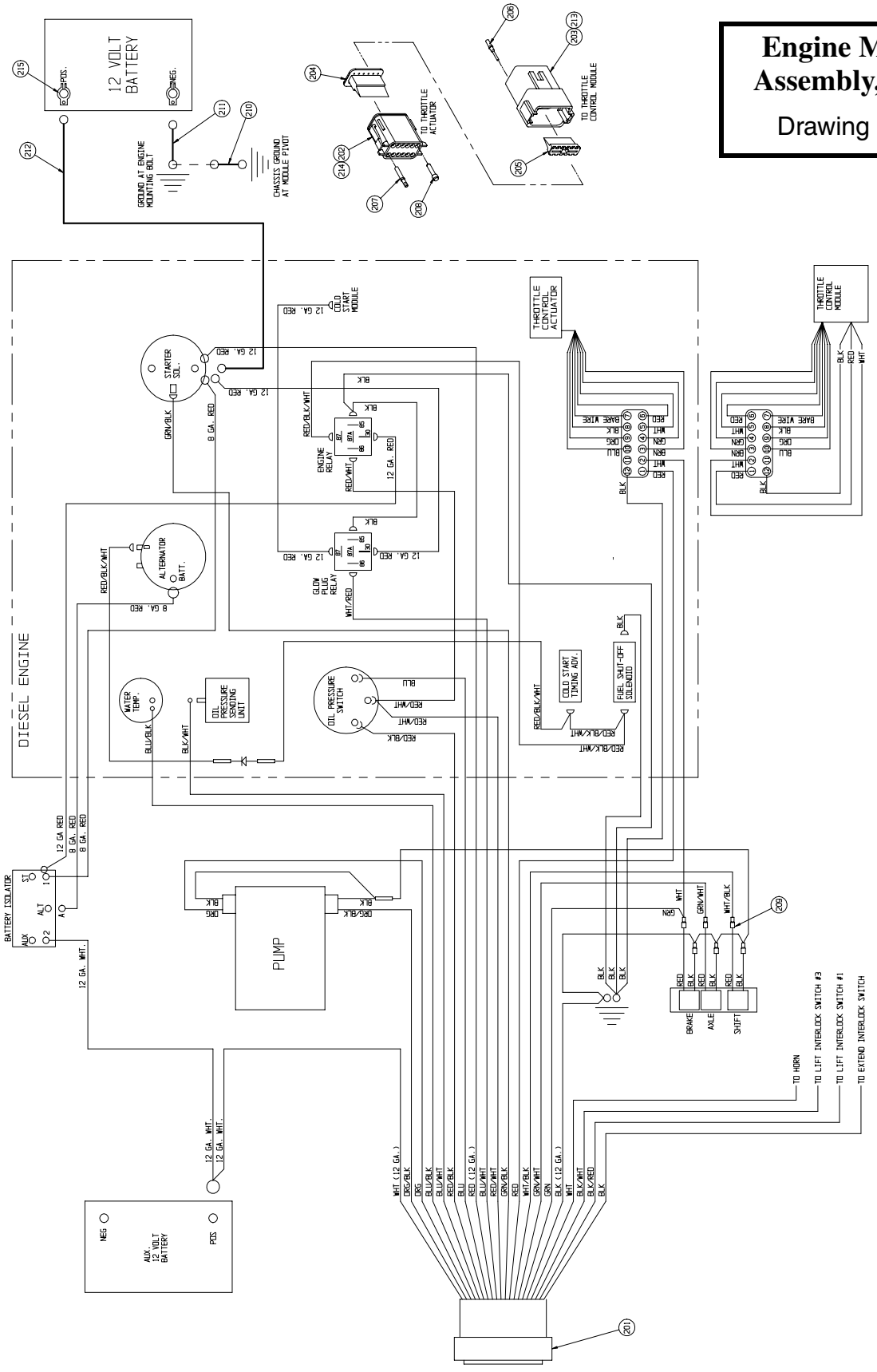
ENGINE MODULE ASSEMBLY, SB80, DIESEL

102012-000

ITEM	PART NO.	DESCRIPTION	QTY.
201	102022-000	WIRE HARNESS	1
202	068760-000	PLUG, CONNECTOR	1
203	068760-001	RECEPTACLE, CONNECTOR	2
204	068761-000	LOCK WEDGE, PLUG	1
205	068661-001	LOCK WEDGE, RECEPTACLE	1
206	068762-000	PIN, CONTACT	11
207	068762-001	SOCKET, CONTACT	8
208	068764-000	PLUG, SEALING 12-14 GA.	1
209	029617-002	CONN. MALE .25 INSUL. 14-16 GA.	6
210	064195-032	BATTERY CABLE ASSY. 32" LG.	1
211	064195-050	BATTERY CABLE ASSY. 50" LG.	1
212	064195-065	BATTERY CABLE ASSY. 65" LG.	1
213	068908-000	BOOT, DEUTSCH #DT-12-S-BT	1
214	068908-001	BOOT, DEUTSCH #DT-12-P-BT	1
215	014435-001	BATTERY TERMINAL ADAPTER	2

Engine Module Assembly, Diesel

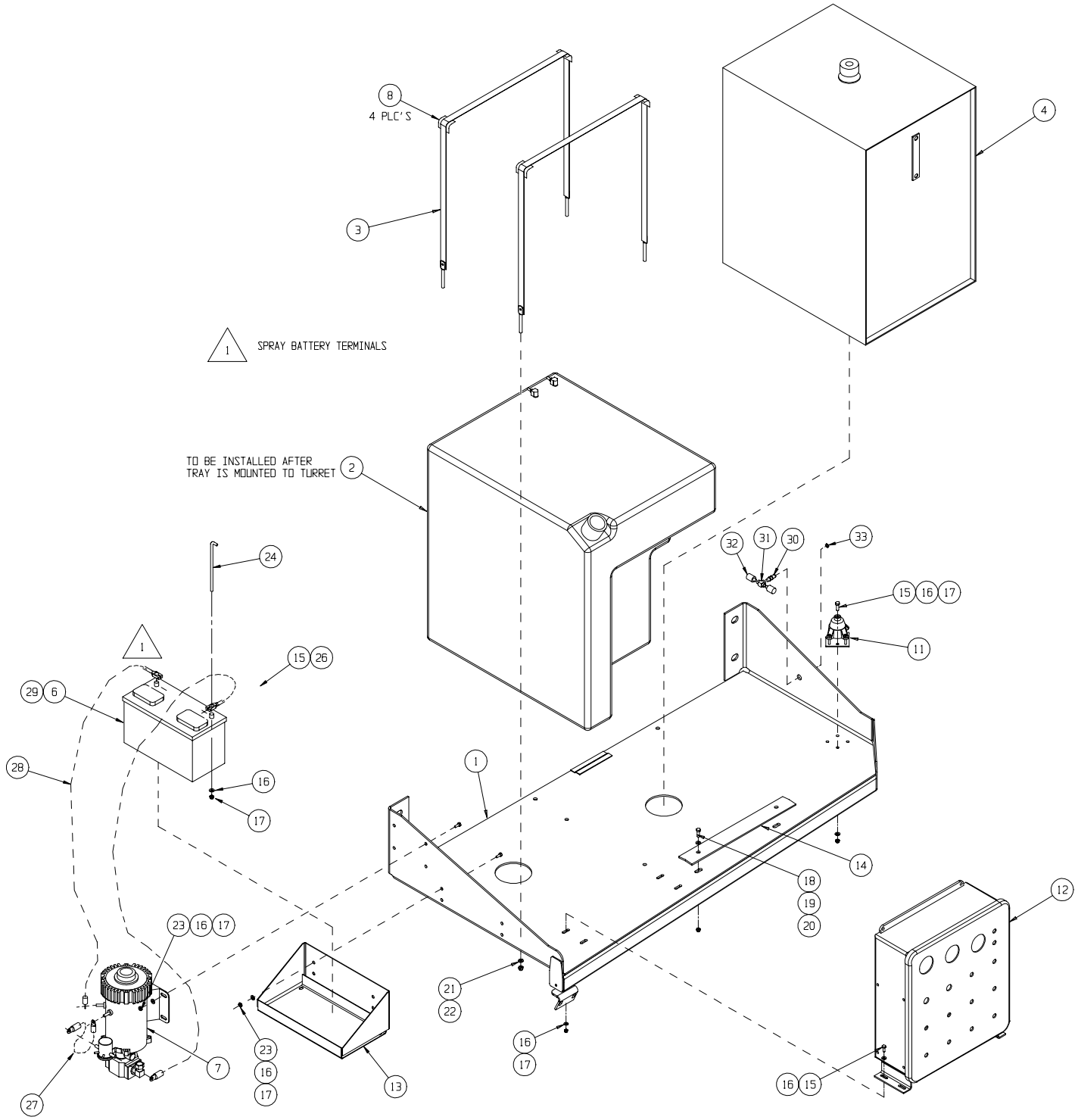
Drawing 2 of 2



CONTROL MODULE ASSEMBLY, SB80, DIESEL

102014-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	100176-001	CONTROL MODULE TRAY WELDMENT	1
2	102041-000	FUEL TANK ASSY (GAS)	1
3	100274-000	TANK STRAP	2
4	102042-000	HYDRAULIC RESERVOIR ASSY	1
5	064040-000	BATTERY HOLD DOWN	1
6	062299-002	BATTERY AUX 12V	1
7	102334-000	POWER UNIT (EMERGENCY LOWERING)	1
8	102241-000	STRAPPING EDGE PROTECTOR	4
11	029945-018	LEVEL SENSOR (GAS & DSL DOM)	REF
12	102018-000	LOWER CONTROL BOX ASSY (DSL)	REF
13	100210-000	WELDMENT, BATTERY TRAY	1
14	100313-000	TANK TAB	1
15	011252-008	SCREW, HHC. 1/4-20 UNC X 1	10
16	014996-004	WASHER 1/4 SAE FLAT PLTD	16
17	011248-004	NUT HEX ESNA 1/4-20 UNC	12
18	011253-012	SCREW HHC GR5 5/16-18 UNC X 1 1/4	2
19	014996-005	WASHER 5/16 SAE FLAT PLTD	4
20	011248-005	NUT, HEX ESNA 5/16-18 UNC	2
21	011240-006	WASHER, STD FLAT 3/8	4
22	011248-006	NUT HEX ESNA 3/8-16 UNC	2
23	011253-007	SCREW HHC 5/16-18 UNC X 7/8	8
24	012039-000	J-BOLT	2
25	011254-006	SCREW HHC GR5 3/8-16 UNC X 3/4	2
26	064195-009	BATTERY CABLE ASSY X 9" (5/16 X 5/16)	1
27	062125-011	BATTERY CABLE ASSY X 9" (3/8 X 5/16)	1
28	062125-016	BATTERY CABLE ASSY X 16" (3/8 X 5/16)	1
29	010154-000	COVER, BATTERY TERMINAL	2
30	102386-002	FTG. STR. BULKHEAD 4MP-4MJ	1
31	011915-002	FTG, TEE 1/4 FEMALE PIPE	1
32	102299-000	PRESSURE SWITCH	2
33	010147-001	LOCKNUT, BULKHEAD FTG.	1
34	014435-001	BATTERY TERMINAL ADAPTER	2


8
4 PLC'S
3
4
1
SPRAY BATTERY TERMINALS
TO BE INSTALLED AFTER
TRAY IS MOUNTED TO TURRET
2
24
32
31
30
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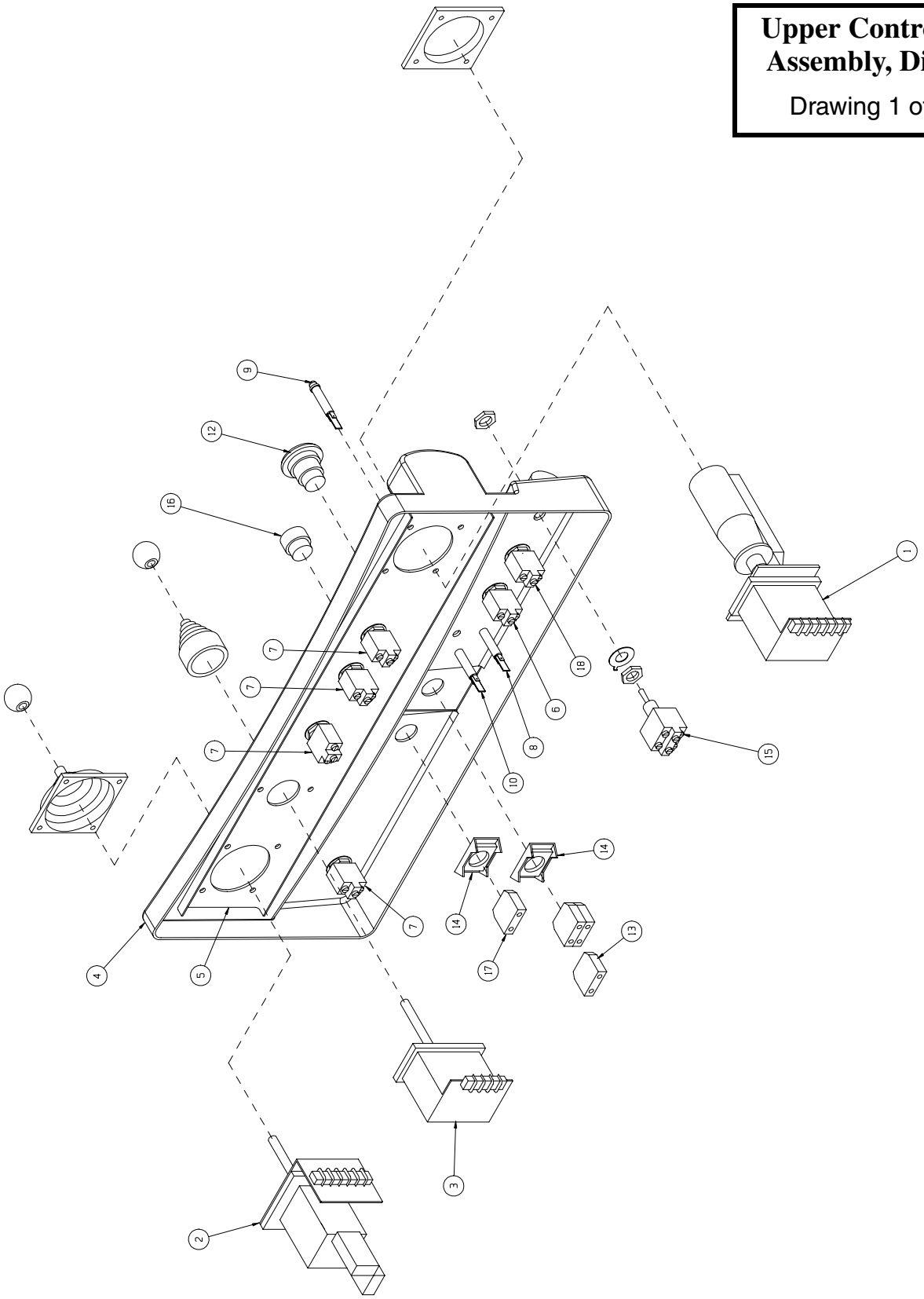
UPPER CONTROLLER ASSEMBLY, SB80, DIESEL

102016-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	100325-000	DRIVE CONTROLLER	1
2	100326-000	LIFT CONTROLLERER	1
3	100327-000	EXTEND CONTROLLER	1
4	100309-001	UPPER CONTROL BOX	1
5	100310-000	STIFFENER, UPPER CONROLLER	1
6	012797-000	SWITCH TOGGLE SPST MAINTAINED	1
7	012798-000	SWITCH TOGGLE SPDT MOMENTARY	4
8	102294-001	INDICATOR LIGHT, RED	1
9	102294-002	INDICATOR LIGHT, AMBER	1
10	102294-004	INDICATOR LIGHT, GREEN	1
12	064446-003	EMERGENCY STOP BUTTON	1
13	064443-002	CONTACT BLOCK N.C.	3
14	064417-001	FLANGE MOUNT	2
15	012798-005	SWITCH TOGGLE DPST MOMENTARY	1
16	067654-000	PUSH BUTTON, FLUSH (BLACK)	1
17	064443-001	CONTACT BLOCK N.O.	1
18	012798-006	TOGGLE SWITCH	1

Upper Controller Assembly, Diesel

Drawing 1 of 2



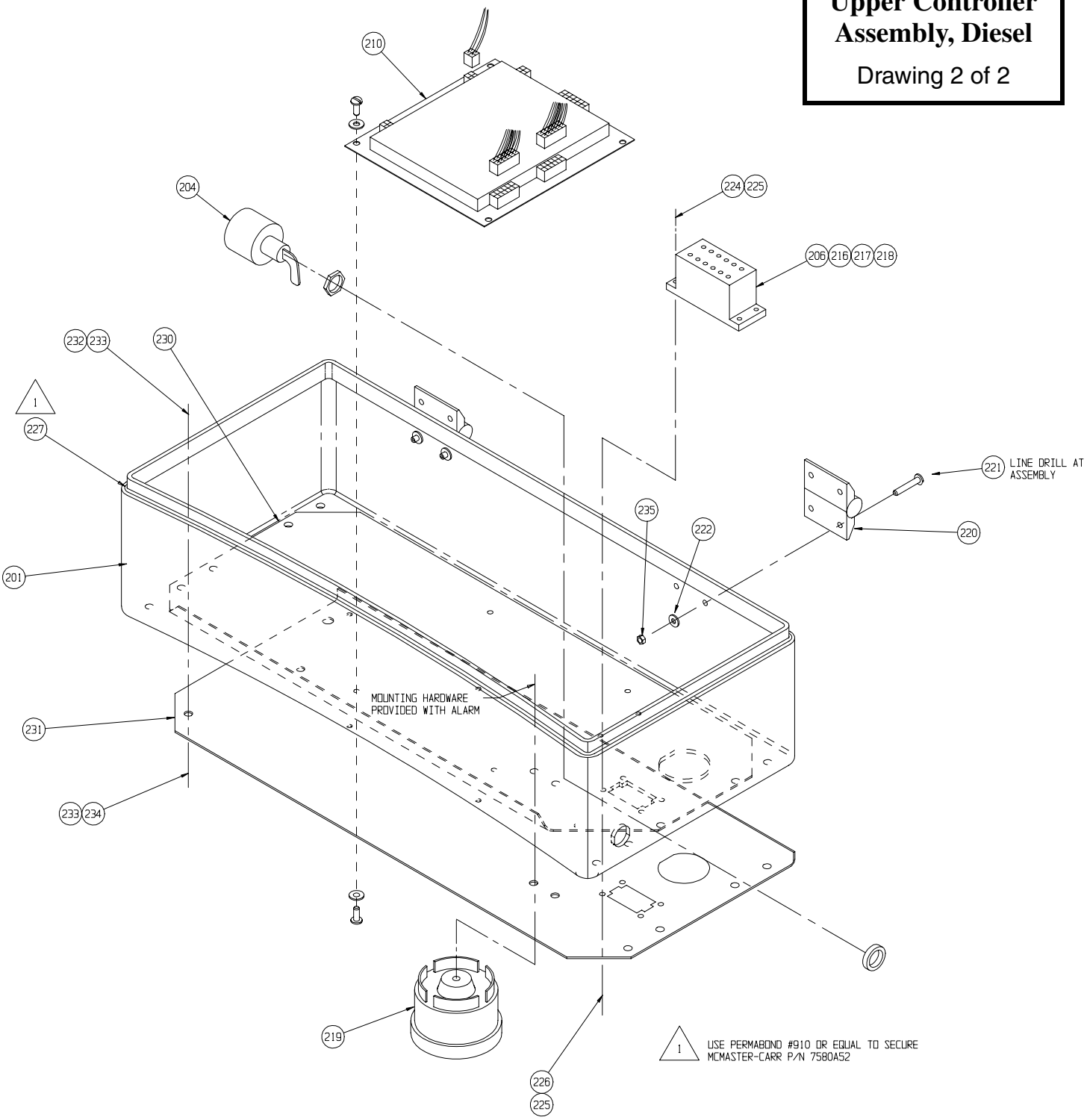
UPPER CONTROLLER ASSEMBLY, SB80, DIESEL

102016-001

ITEM	PART NO.	DESCRIPTION	QTY.
201	100309-000	UPPER CONTROL BOX	REF
204	100334-000	SWITCH, LEVER	1
206	068760-002	CONNECTOR, FLANGE 12 PIN	1
210	100327-002	CONTROLLER (SUPERFLEX)	1
216	068762-000	PIN	.
217	068762-001	SOCKET	.
218	068764-000	PLUG	.
219	066807-001	ALARM 107DB	1
220	100319-000	HINGE SOUTHCO C6-30	2
221	03965-006	SCREW HHC #10-24 X 3/4 LG	8
222	011240-003	WASHER #10 FLAT	8
224	011715-006	SCREW RD HD MACHINE #6-32 X 3/4 LG	2
225	011240-001	WASHER #6 FLAT	4
226	011248-047	LOCKNUT #6-32	2
227	100337-099	O-RING CORD 3/16 FT	3.5
230	100707-000	INNER STIFFENER	1
231	100708-000	OUTER STIFFENER	1
232	011252-006	SCREW 1/4-20 UNC HHC X 3/4 LG	1
233	011240-004	WASHER 1/4 FLAT	2
234	011248-004	LOCKNUT 1/4-20 UNC	1
235	011248-003	LOCKNUT 10-24 UNC	8

Upper Controller Assembly, Diesel

Drawing 2 of 2

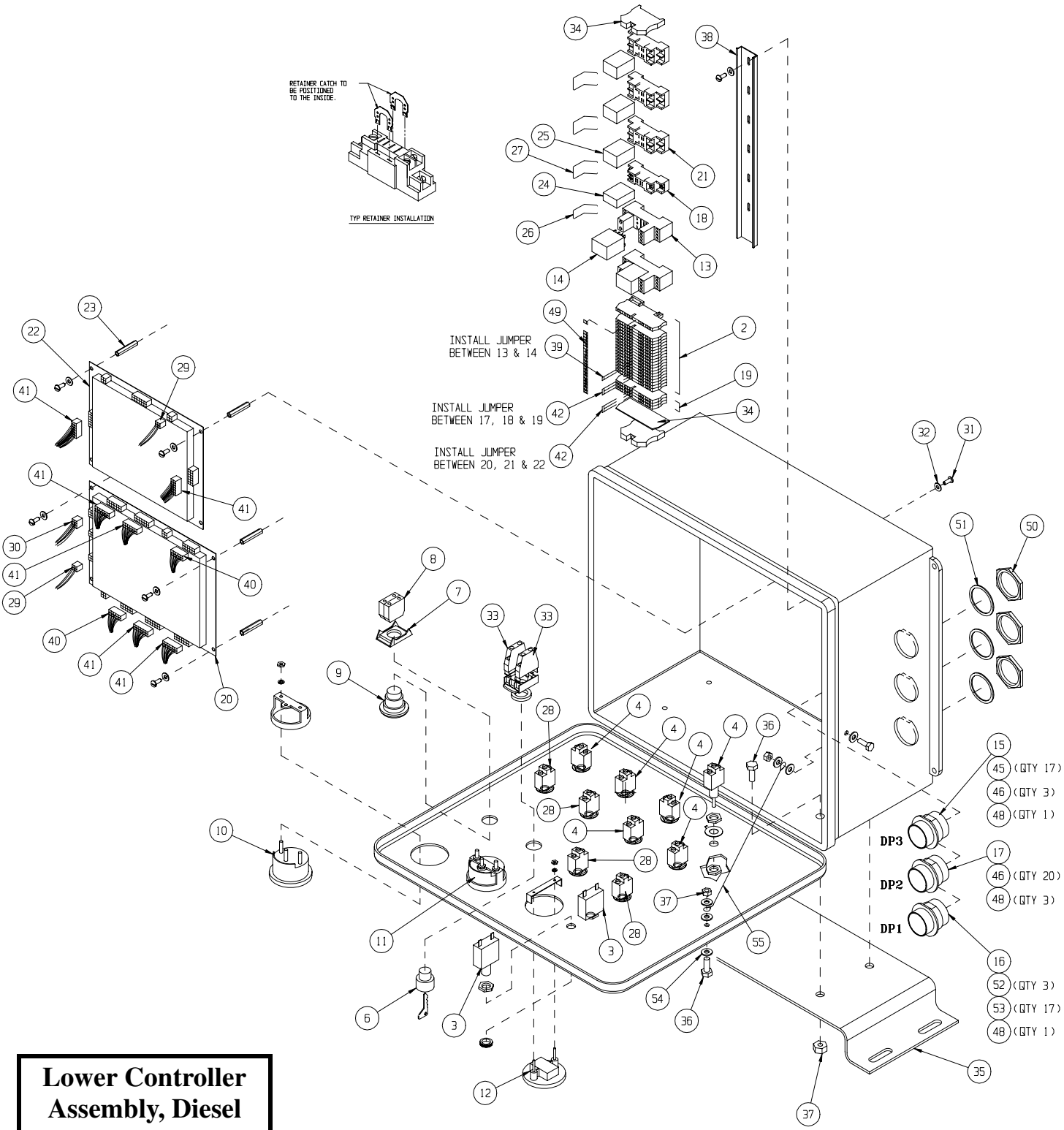


LOWER CONTROLLER ASSEMBLY, SB80, DIESEL

102018-000

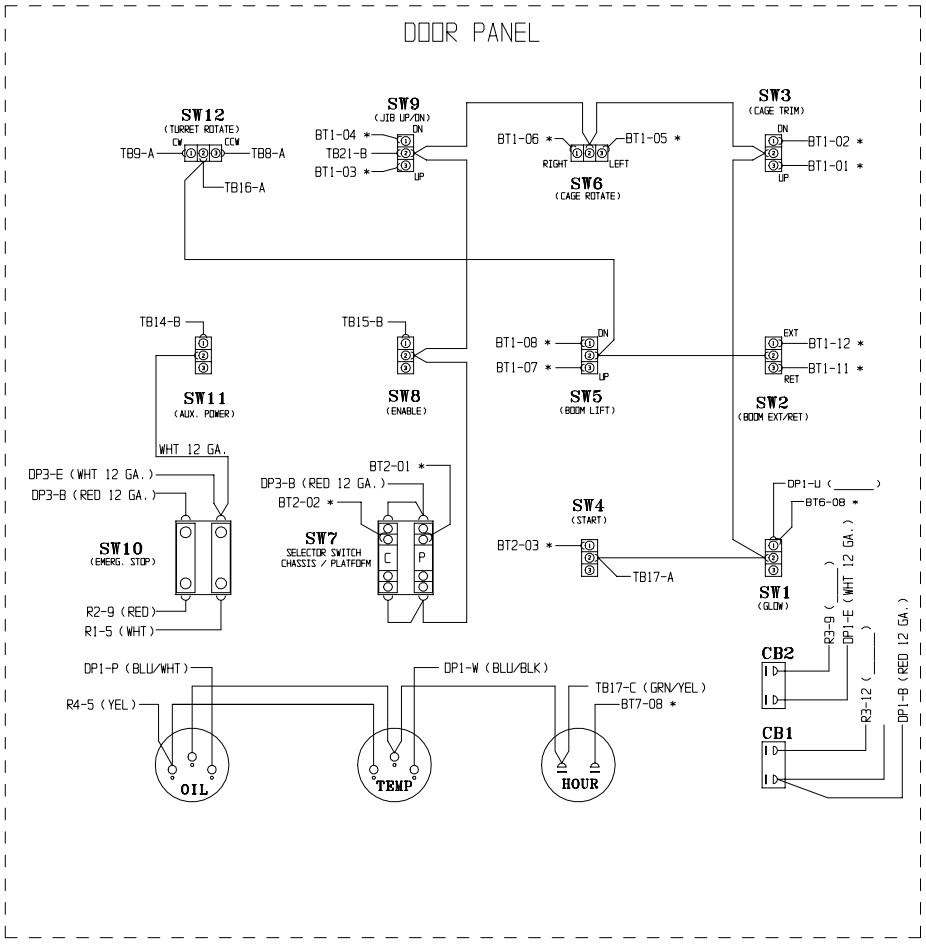
ITEM	PART NO.	DESCRIPTION	QTY.
1	102362-000	ENCLOSURE,	1
2	068698-001	TERMINAL BLOCK, TAN	19
3	068582-020	CIRCUIT BREAKER, 20 AMP	2
4	012798-000	TOGGLE SWITCH, SPDT	6
6	100335-000	SELECTOR SWITCH, KEY OPERATED	1
7	064417-001	LATCH PLATE,	1
8	064443-002	CONTACT BLOCK, N.C.	2
9	064446-003	OPERATOR, RED "MUSHROOM" BUTTON	1
10	100331-000	OIL PRESSURE GUAGE	1
11	100330-000	TEMPERATURE GUAGE	1
12	015752-000	HOUR METER	1
13	102298-000	SOCKET, RELAY	2
14	102297-000	RELAY	2
15	100338-001	CONNECTOR, HDP24-24-21-PN	1
16	100338-006	CONNECTOR, HDP24-24-21-SN	1
17	100338-008	CONNECTOR, HDP24-24-23-PN	1
18	067662-001	BASE, SINGLE POLE RELAY	1
19	068698-000	TERMINAL BLOCK, ORANGE	2
20	100328-002	CONTROLLER (MULTIFLEX)	1
21	067662-002	BASE, DOUBLE POLE RELAY	3
22	100328-001	CONTROLLER "SUPER-FLEX"	1
23	100299-000	SPACER	8
24	067661-001	RELAY, SINGLE POLE	1
25	067661-002	RELAY, DOUBLE POLE	3
26	067662-005	RETAINER CLIP, RELAY	1
27	067662-006	RETAINER CLIP, RELAY	3
28	012798-006	TOGGLE SWITCH	4

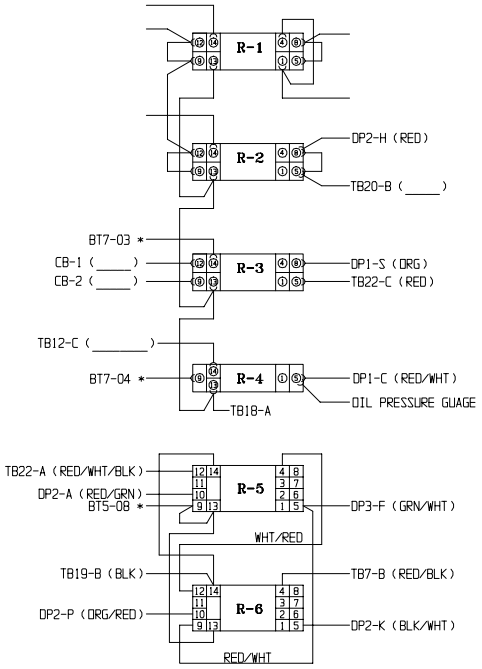
ITEM	PART NO.	DESCRIPTION	QTY.
29	102394-004	WIRE HARNESS	2
30	102394-002	WIRE HARNESS	1
31	011708-004	SCR, RD. HD. #8-32 UNC X 1/2	16
32	011240-003	WASHER, FLAT #10	16
33	068860-000	CONTACT BLOCK, N.O.	2
34	067660-006	END BLOCK, LOCKING	2
35	102363-000	MOUNTING BRACKET	1
36	011252-006	SCREW, HHC. 1/4-20 X 3/4	6
37	011248-004	LOCKNUT, 1/4-20 UNC ESNA	4
38	067893-000	DIN RAIL 13" LENGTH	1
39	068773-002	JUMPER, 2 PIN	1
40	102394-001	WIRE HARNESS	2
41	102394-003	WIRE HARNESS	6
42	068773-003	JUMPER, 3 PIN	2
45	100338-011	CONN, 12 GA PIN	3
46	100338-013	CONN, 16 GA PIN	37
48	068764-000	PLUG SEALING	5
49	100298-000	NUMBER STRIP #1 - #22	1
50	065926-002	PANEL NUT	3
51	065926-003	LOCKWASHER	3
52	100338-012	CONN, 12 GA. SOCKET	3
53	100338-014	CONN, 16 GA. SOCKET	17
54	014996-004	WASHER, 1/4" FLAT	6
55	064466-014	LANYARD ASSY	1

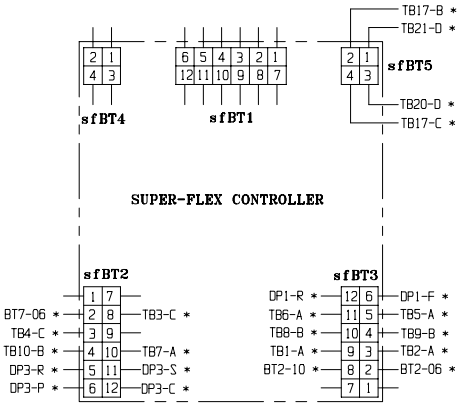


Lower Controller Assembly, Diesel

Drawing 1 of 2

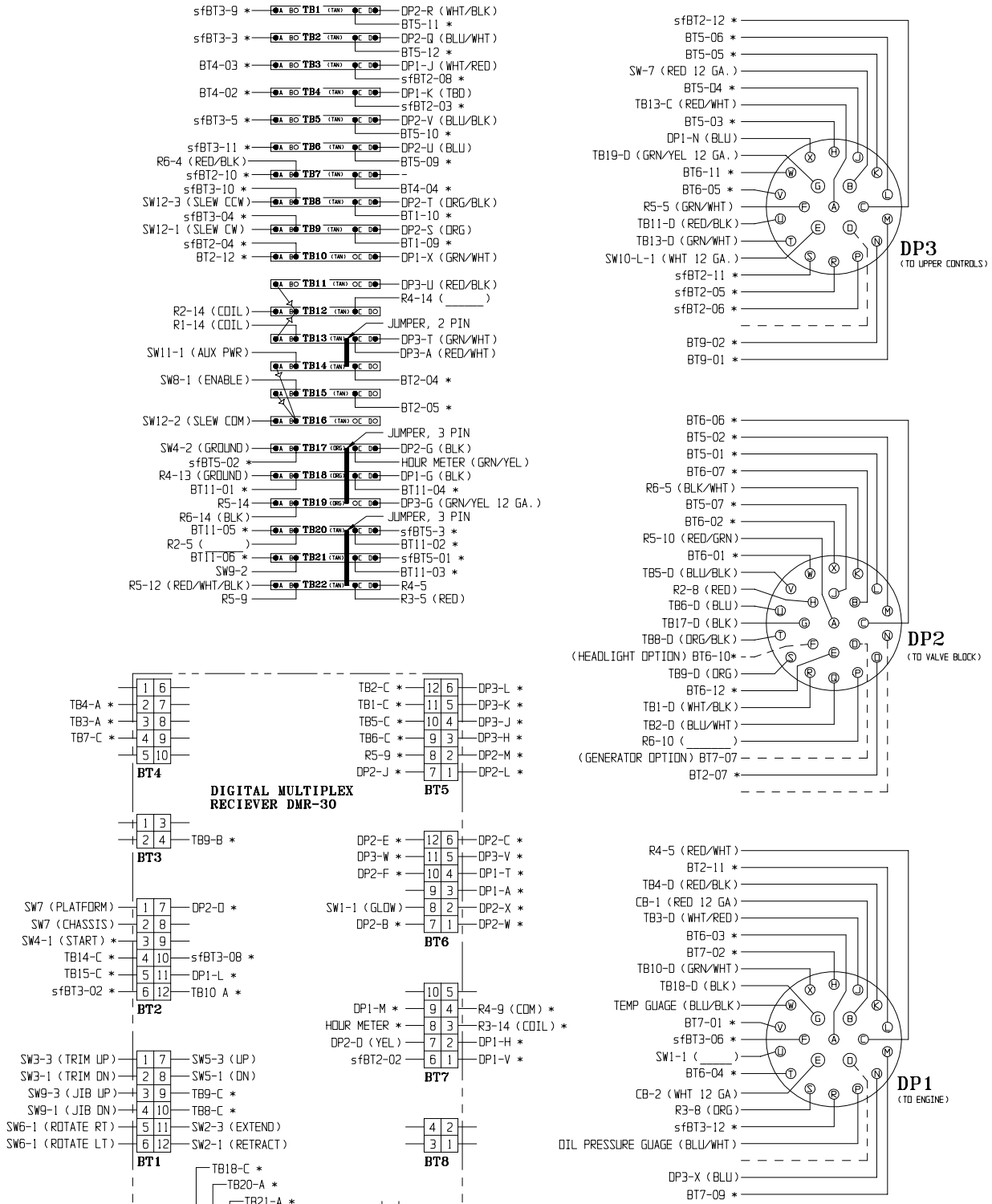






Lower Controller Assembly, Diesel

Drawing 2 of 2



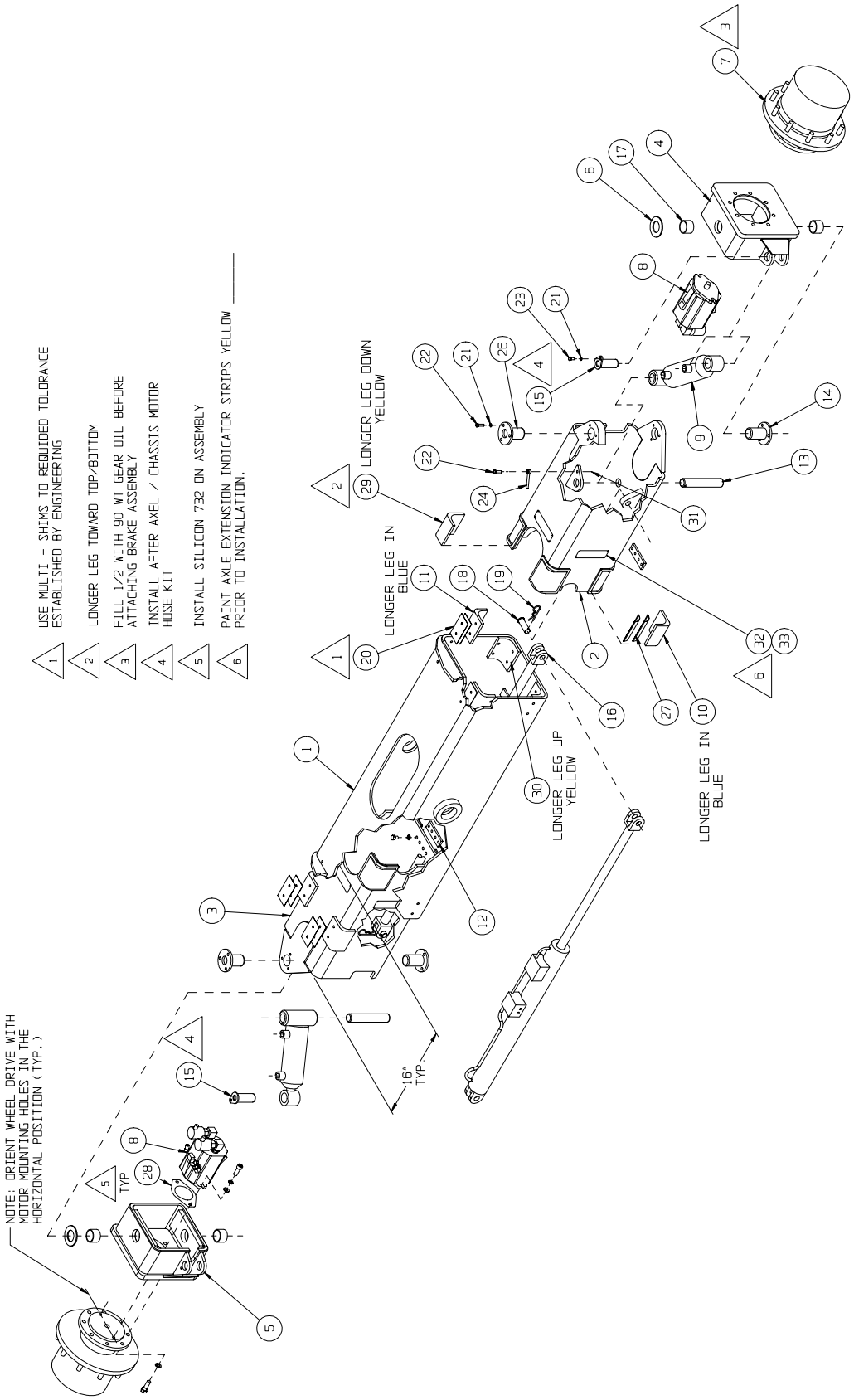
Lower Controller Assembly, Diesel

Drawing 2 of 2 (con't)

FRONT AXLE ASSEMBLY, SB80, FIXED AXLE

102032-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102171-000	FRONT AXLE WELDMENT (FIXED)	1
2	102166-000	INNER EXT. TUBE WELDMENT (L.H.)	1
3	102166-001	INNER EXT. TUBE WELDMENT (R.H.)	1
4	102163-000	STEERING KNUCKLE WELDMENT (L.H.)	1
5	102163-001	STEERING KNUCKLE WELDMENT (R.H.)	1
6	100564-000	THRUST WASHER	2
7	102258-000	WHEEL DRIVE, AUBURN 8B	2
8	102329-000	FRONT DRIVE MOTOR ASSY	2
9	102344-000	STEERING CYLINDER ASSY.	2
10	102168-001	WEAR PAD (NON-THREADED) - BLUE	4
11	102168-000	WEAR PAD, (THREADED) - BLUE	4
12	102178-000	STOP BLOCK, THREADED	2
13	100575-013	ANCHOR PIN, STEERING CYL.	2
14	100086-000	KING PIN WELDMENT LOWER	2
15	100472-011	PIN WELDMENT	2
16	102335-000	AXLE EXTEND CYLINDER ASSEMBLY	1
17	068899-001	BUSHING, 2" I.D. X 1.5" LG.	4
18	011848-050	CLEVIS PIN, 1" DIA X 2.75 LG.	2
19	062889-012	CLIP, .177 DIA WIRE	2
20	102234-000	SHIM, 20 GA.	AS REQ'D.
21	011238-006	LOCKWASHER, 3/8" SPLIT RING	16
22	011254-012	SCREW, HHC. 3/8-16 UNC X 1 1/2 LG.	14
23	011254-006	SCREW, HHC. 3/8-16 UNC X 3/4 LG.	2
24	065214-000	PIN RETAINER	2
26	102371-000	KING PIN WELDMENT UPPER	2
27	102234-001	SHIM, 20 GA.	AS REQ'D.
28	0-	GASKET	2
29	102168-003	WEAR PAD (NON-THREADED) - YELLOW	4
30	102168-002	WEAR PAD, (THREADED) - YELLOW	4
31	011248-006	NUT 3/8-16 UNC ESNA	2
32	102249-000	AXLE EXTENSION INDICATOR STRIP	6
33	065368-001	TACK FASTENER	24

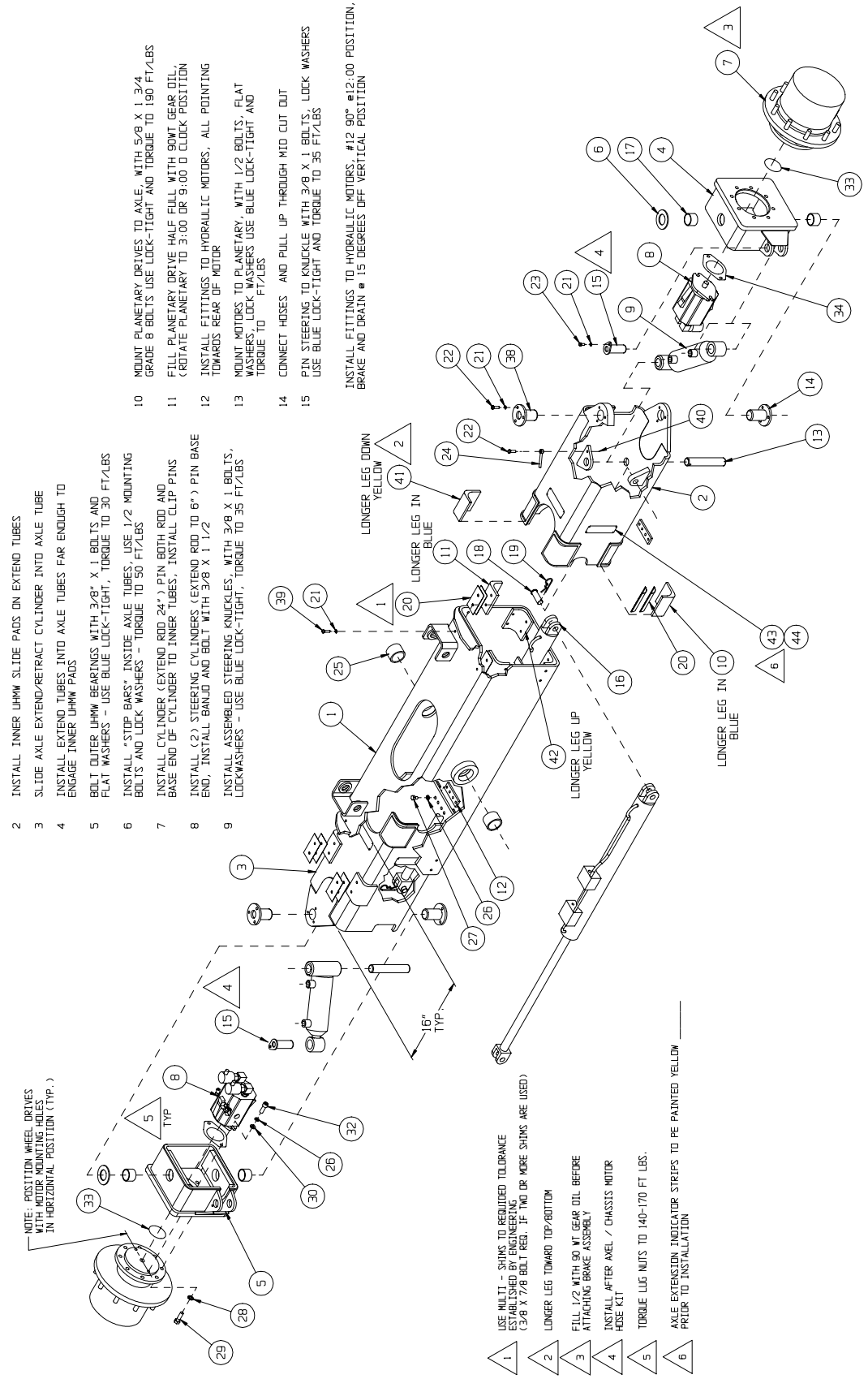

1 USE MULTI - SHIMS TO REQUIRED TOLORANCE ESTABLISHED BY ENGINEERING
2 LONGER LEG TOWARD TOP/BOTTOM
3 FILL 1/2 WITH 90 WT GEAR OIL BEFORE ATTACHING BRAKE ASSEMBLY
4 INSTALL AFTER AXEL / CHASSIS MOTOR HOSE KIT
5 INSTALL SILICON 732 ON ASSEMBLY
6 PAINT AXLE EXTENSION INDICATOR STRIPS YELLOW PRIOR TO INSTALLATION.
LONGER LEG DOWN YELLOW
LONGER LEG IN BLUE
LONGER LEG UP YELLOW
LONGER LEG IN BLUE
NOTE: ORIENT WHEEL DRIVE WITH MOTOR MOUNTING HOLES IN THE HORIZONTAL POSITION (TYP.)
16" TYP.
5 TYP

FRONT AXLE ASSEMBLY, SB80, OSCILLATING AXLE

102032-001

ITEM	PART NO.	DESCRIPTION	QTY.
1	102171-001	FRT AXLE WELDMENT (OSCILATING)	1
2	102166-000	INNER EXT. TUBE WELDMENT (L.H.)	1
3	102166-001	INNER EXT. TUBE WELDMENT (R.H.)	1
4	102163-000	STEERING KNUCKLE WELDMENT (L.H.)	1
5	102163-001	STEERING KNUCKLE WELDMENT (R.H.)	1
6	100564-000	THRUST WASHER	2
7	102258-000	WHEEL DRIVE, AUBURN 8B	2
8	102329-000	ASSY FRONT DRIVE MOTOR	2
9	102344-000	STEERING CYLINDER ASSY.	2
10	102168-001	WEAR PAD (NON-THREADED) - BLUE	4
11	102168-000	WEAR PAD, (THREADED) - BLUE	4
12	102178-000	STOP BLOCK, THREADED	2
13	100575-013	ANCHOR PIN, STEERING CYL.	2
14	100086-000	KING PIN WELDMENT LOWER	2
15	100472-011	PIN WELDMENT	2
16	102335-000	AXLE EXTEND CYLINDER ASSY.	1
17	068899-001	BUSHING, 2" I.D. X 1.5" LG.	4
18	011848-050	CLEVIS PIN, 1" DIA X 2.75 LG.	2
19	062889-002	CLIP, .177 DIA WIRE	2
20	102234-000	SHIM, 20 GA.	AS REQ'D.
21	011238-006	LOCKWASHER, 3/8" SPLIT RING	48
22	011254-012	SCREW, HHC. 3/8-16 UNC X 1 1/2 LG.	6
23	011254-006	SCREW, HHC. 3/8-16 UNC X 3/4 LG.	2
24	065214-000	PIN RETAINER	2
25	100562-250	BUSHING, 2.5 I.D. GARMAX GM4048-40	2
26	011238-008	LOCKWASHER, 1/2" SPLIT RING	12
27	011256-008	SCREW, HHC. 1/2-13 UNC X 1" LG.	8
28	011239-010	WASHER 5/8 FLAT ASTM	16
29	011291-014	SCREW, HHC GR8 5/8-11 UNC X 1 3/4	16
30	011239-008	WASHER 1/2 FLAT ASTM	4

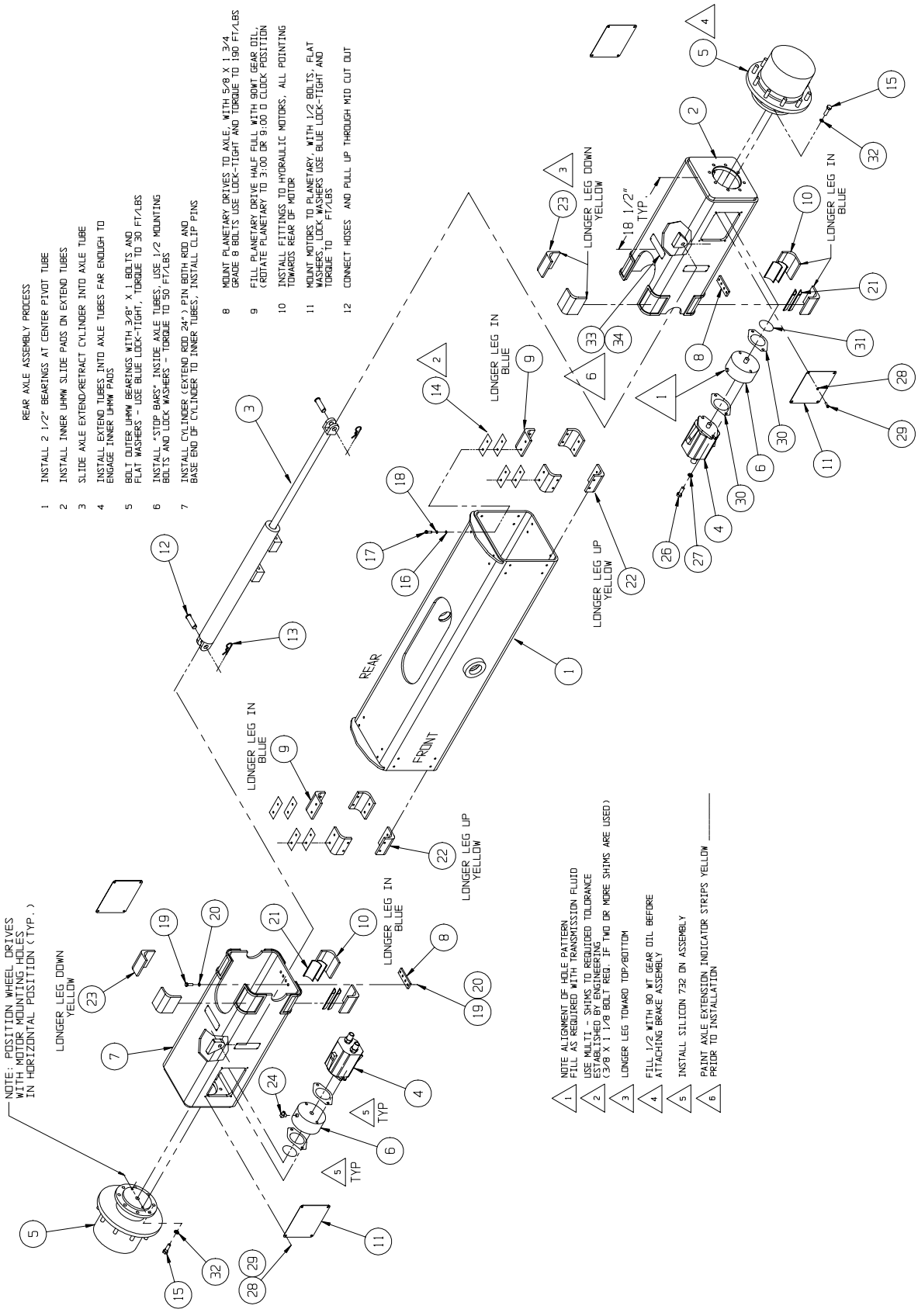
ITEM	PART NO.	DESCRIPTION	QTY.
31	011238-008	WASHER 1/2 SPLIT LOCK	4
32	014033-012	SCREW HHC GR8 1/2-13 UNC X 1 1/2	4
33	0-	O-RING	2
34	0-	GASKET	2
35	011254-012	SCREW HHC 3/8-16 UNC X 1 1/2	2
37	102234-001	SHIM, 20 GA. (BENT)	AS REQ'D.
38	102371-000	KING PIN WELDMENT UPPER	2
39	011254-007	SCREW, HHC 3/8-16 UNC X 7/8 LG	32
40	011248-006	NUT 3/8-16 UNC ESNA	2
41	102168-003	WEAR PAD (NON-THREADED) - YELLOW	4
42	102168-002	WEAR PAD, (THREADED) - YELLOW	4
43	102249-000	AXLE EXTENSION INDICATOR STRIP	6
44	065368-001	TACK FASTENER	24


FRONT AXLE ASSEMBLY PROCESS
1 INSTALL 2 1/2" BEARINGS AT CENTER PIVOT TUBE
2 INSTALL INNER UHMW SLIDE PADS ON EXTEND TUBES
3 SLIDE AXLE EXTEND/RETRACT CYLINDER INTO AXLE TUBE
4 INSTALL EXTEND TUBES INTO AXLE TUBES FAR ENOUGH TO ENGAGE INNER UHMW PADS
5 BOLT OUTER UHMW BEARINGS WITH 3/8" X 1 BOLTS AND FLAT WASHERS - USE BLUE LOCK-TIGHT, TORQUE TO 30 FT/LBS
6 INSTALL "STOP BARS" INSIDE AXLE TUBES, USE 1/2 MOUNTING BOLTS AND LOCK WASHERS - TORQUE TO 50 FT/LBS
7 INSTALL CYLINDER (EXTEND ROD 24") PIN BOTH ROD AND BASE END OF CYLINDER TO INNER TUBES, INSTALL CLIP PINS
8 INSTALL (2) STEERING CYLINDERS (EXTEND ROD TO 6") PIN BASE END, INSTALL BANJO AND BOLT WITH 3/8 X 1 1/2
9 INSTALL ASSEMBLED STEERING KNUCKLES, WITH 3/8 X 1 BOLTS, LOCK WASHERS - USE BLUE LOCK-TIGHT, TORQUE TO 35 FT/LBS
10 MOUNT PLANETARY DRIVES TO AXLE, WITH 5/8 X 1 3/4 GRADE 8 BOLTS USE LOCK-TIGHT AND TORQUE TO 190 FT/LBS
11 FILL PLANETARY DRIVE HALF FULL WITH 90WT GEAR OIL, (ROTATE PLANETARY TO 3:00 OR 9:00 O CLOCK POSITION
12 INSTALL FITTINGS TO HYDRAULIC MOTORS, ALL POINTING TOWARDS REAR OF MOTOR
13 MOUNT MOTORS TO PLANETARY, WITH 1/2 BOLTS, FLAT WASHERS, LOCK WASHERS USE BLUE LOCK-TIGHT AND TORQUE TO FT/LBS
14 CONNECT HOSES AND PULL UP THROUGH MID CUT OUT
15 PIN STEERING TO KNUCKLE WITH 3/8 X 1 BOLTS, LOCK WASHERS USE BLUE LOCK-TIGHT AND TORQUE TO 35 FT/LBS
INSTALL FITTINGS TO HYDRAULIC MOTORS, #12 90° @12:00 POSITION, BRAKE AND DRAIN @ 15 DEGREES OFF VERTICAL POSITION
NOTE: POSITION WHEEL DRIVES WITH MOTOR MOUNTING HOLES IN HORIZONTAL POSITION (TYP.)
LONGER LEG DOWN YELLOW
LONGER LEG IN BLUE
LONGER LEG UP YELLOW
LONGER LEG IN BLUE
16" TYP.
TYP
1 USE MULTI - SHIMS TO REQUIRED TOLORANCE ESTABLISHED BY ENGINEERING (3/8 X 7/8 BOLT REQ. IF TWO OR MORE SHIMS ARE USED)
2 LONGER LEG TOWARD TOP/BOTTOM
3 FILL 1/2 WITH 90 WT GEAR OIL BEFORE ATTACHING BRAKE ASSEMBLY
4 INSTALL AFTER AXEL / CHASSIS MOTOR HOSE KIT
5 TORQUE LUG NUTS TO 140-170 FT LBS.
6 AXLE EXTENSION INDICATOR STRIPS TO BE PAINTED YELLOW PRIOR TO INSTALLATION

REAR AXLE ASSEMBLY, SB80

102031-000

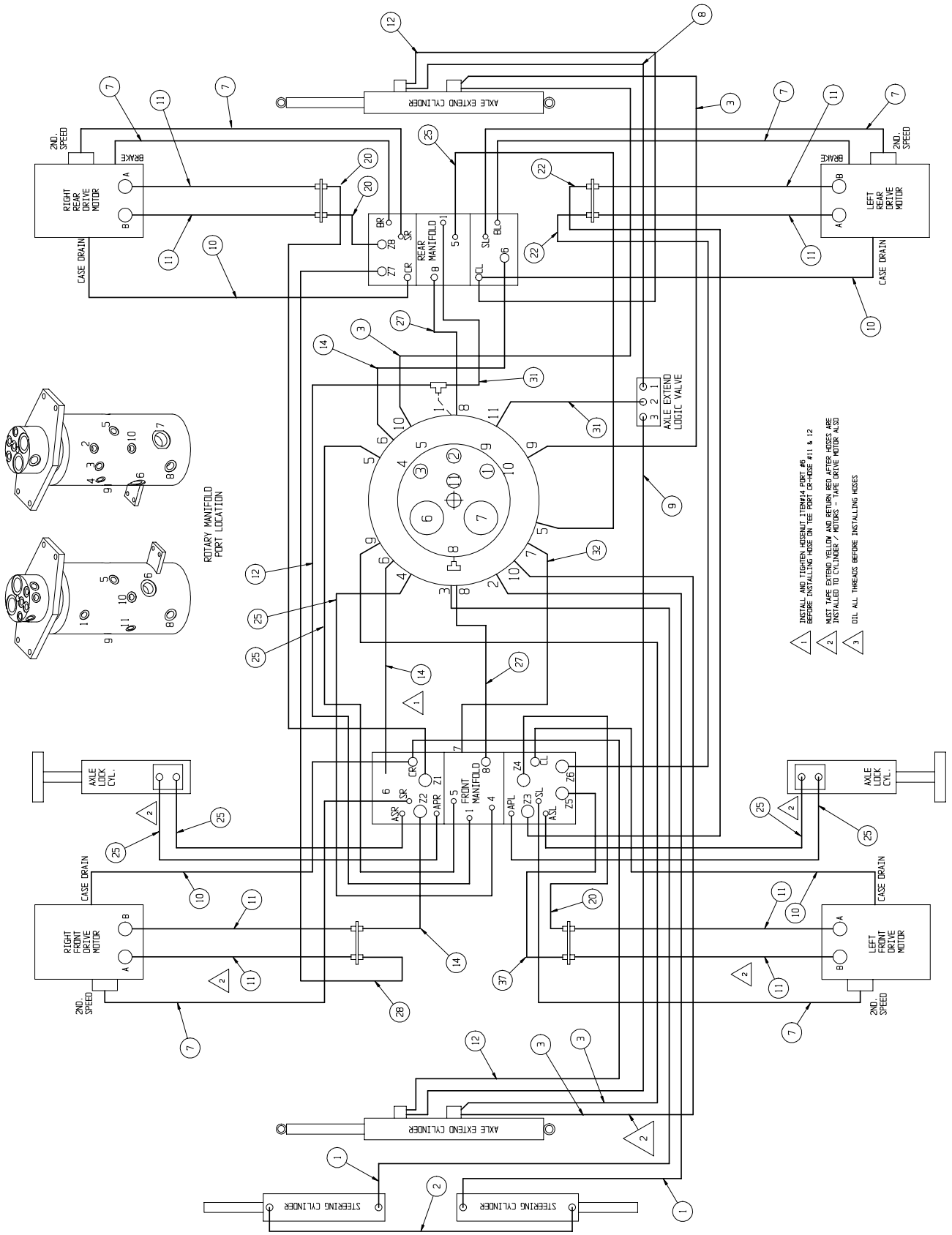
ITEM	PART NO.	DESCRIPTION	QTY.
1	102174-000	OUTER AXLE REAR WELDMENT	1
2	102159-000	REAR INNER AXLE TUBE ASSY L.H.	1
3	102335-000	AXLE EXTEND CYLINDER ASSEMBLY	1
4	102330-000	REAR DRIVE MOTOR ASSY	2
5	102258-000	AUBURN 8B WHEEL DRIVE	2
6	102279-000	AUSCO 76260 SAE B BRAKE	2
7	102159-001	REAR INNER AXLE TUBE ASSY R.H.	1
8	102178-000.	THREADED THIN STOP BLOCK	2
9	102168-000	WEAR PAD (THREADED) - BLUE	4
10	102168-001	WEAR PAD (NON THREADED) - BLUE	4
11	102176-000	COVER PLATE REAR AXLE	4
12	011848-050	PIN CYLINDER MOUNT 1 DIA X 2 3/4 LG	2
13	062889-012	HAIR PIN .177 DIA X 3 3/4 LG	2
14	102234-000	SHIM 20GA	8
15	011291-014	SCREW HHC GR8 5/8-11 UNC X 1 3/4	16
16	011240-006	WASHER 3/8 FLAT	32
17	011254-008	SCREW HHC 3/8-16 UNC X 1	32
18	011238-006	WASHER 3/8 SPLIT LOCK	32
19	011256-008	SCREW HHC 1/2-13 UNC X 1	8
20	011238-008	WASHER 1/2 SPLIT LOCK	8
21	102234-000	SHIM 20GA (BENT)	8
22	102168-002	WEAR PAD (THREADED) - YELLOW	4
23	102168-003	WEAR PAD (NON THREADED) - YELLOW	4
24	100434-002	FITTING 90° 4MB-4MFOR	2
26	011256-040	SCREW HHC 1/2-13 UNC X 5	4
27	011240-008	WASHER 1/2 FLAT	4
28	011238-006	WASHER 3/8 SPLIT LOCK	16
29	011254-008	SCREW HHC 3/8-16 UNC X 1	16
30	0.	GASKET	4
31	0.	O-RING	2
32	011238-010	WACHER 5/8 SPLIT LOCK	16
33	102249-000	AXLE INDICATOR STRIP	6
34	065368-001	TACK FASTENER	24


REAR AXLE ASSEMBLY PROCESS
1 INSTALL 2 1/2" BEARINGS AT CENTER PIVOT TUBE
2 INSTALL INNER UHMW SLIDE PADS ON EXTEND TUBES
3 SLIDE AXLE EXTEND/RETRACT CYLINDER INTO AXLE TUBE
4 INSTALL EXTEND TUBES INTO AXLE TUBES FAR ENOUGH TO ENGAGE INNER UHMW PADS
5 BOLT OUTER UHMW BEARINGS WITH 3/8" X 1 BOLTS AND FLAT WASHERS - USE BLUE LOCK-TIGHT, TORQUE TO 30 FT/LBS
6 INSTALL "STOP BARS" INSIDE AXLE TUBES, USE 1/2 MOUNTING BOLTS AND LOCK WASHERS - TORQUE TO 50 FT/LBS
7 INSTALL CYLINDER (EXTEND ROD 24") PIN BOTH ROD AND BASE END OF CYLINDER TO INNER TUBES, INSTALL CLIP PINS
8 MOUNT PLANETARY DRIVES TO AXLE, WITH 5/8 X 1 3/4 GRADE 8 BOLTS USE LOCK-TIGHT AND TORQUE TO 190 FT/LBS
9 FILL PLANETARY DRIVE HALF FULL WITH GEAR OIL, (ROTATE PLANETARY TO 3:00 OR 9:00 O CLOCK POSITION
10 INSTALL FITTINGS TO HYDRAULIC MOTORS, ALL POINTING TOWARDS REAR OF MOTOR
11 MOUNT MOTORS TO PLANETARY, WITH 1/2 BOLTS, FLAT WASHERS, LOCK WASHERS USE BLUE LOCK-TIGHT AND TORQUE TO FT/LBS
12 CONNECT HOSES AND PULL UP THROUGH MID CUT OUT
NOTE: POSITION WHEEL DRIVES WITH MOTOR MOUNTING HOLES IN HORIZONTAL POSITION (TYP.)
LONGER LEG DOWN YELLOW
LONGER LEG IN BLUE
LONGER LEG UP YELLOW
18 1/2" TYP.
REAR
FRONT
5 TYP
NOTE ALIGNMENT OF HOLE PATTERN
FILL AS REQUIRED WITH TRANSMISSION FLUID
USE MULTI - SHIMS TO REQUIRED TOLORANCE ESTABLISHED BY ENGINEERING (3/8 X 1 1/8 BOLT REQ. IF TWO OR MORE SHIMS ARE USED)
LONGER LEG TOWARD TOP/BOTTOM
FILL 1/2 WITH 90 WT GEAR OIL BEFORE ATTACHING BRAKE ASSEMBLY
INSTALL SILICON 732 ON ASSEMBLY
PAINT AXLE EXTENSION INDICATOR STRIPS YELLOW PRIOR TO INSTALLATION

HOSE KIT INSTALLATION, SB80, CHASSIS SECTION

102029-001

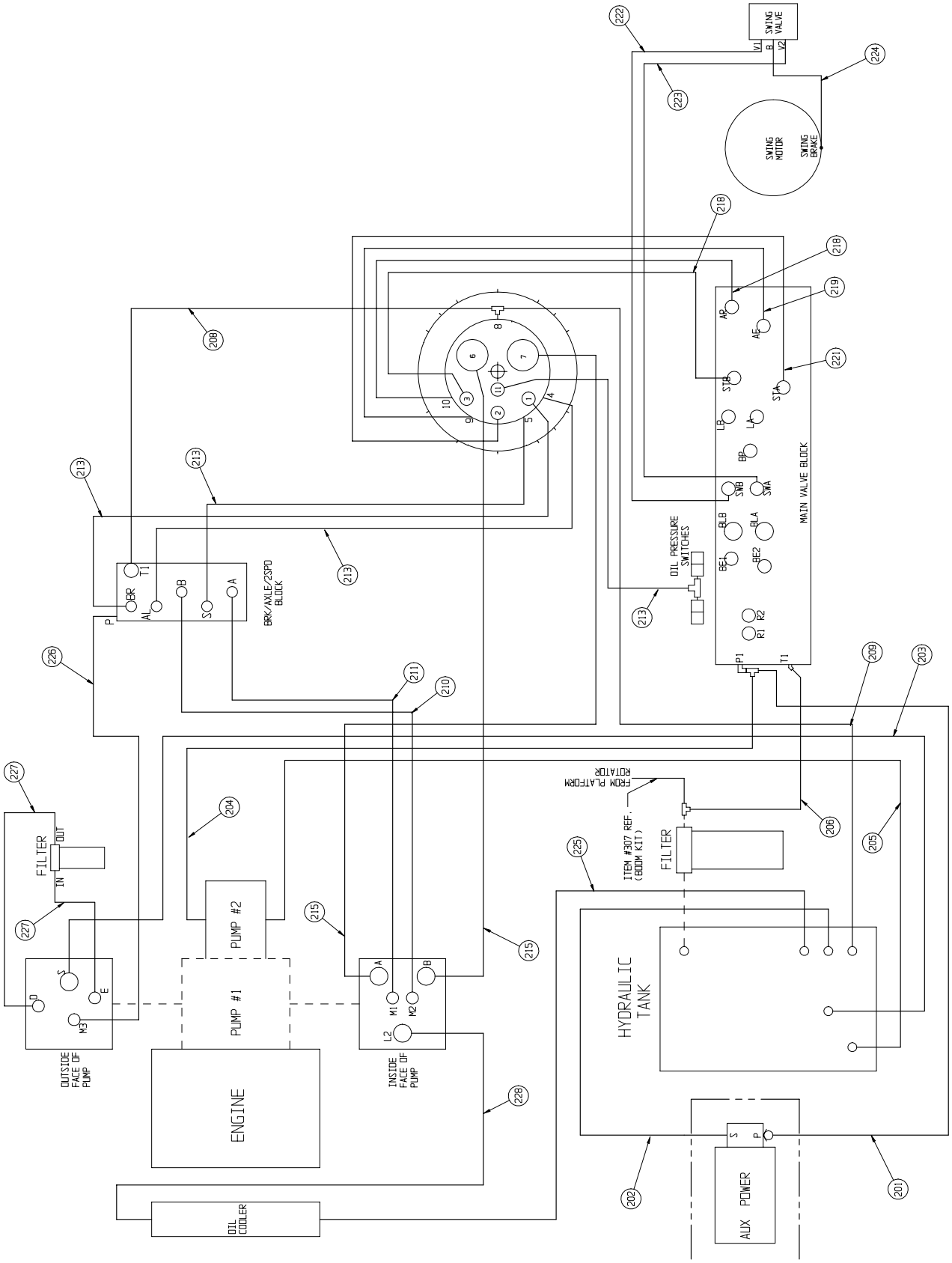
ITEM	PART NO.	DESCRIPTION	QTY.
1	102412-120	6C2AT-6FFORX-6FFORX (120")	2
2	102412-130	6C2AT-6FFORX-6FFORX (140")	1
3	102412-098	6C2AT-6FFORX-6FFORX (98)	4
7	100424-084	4M2T-4FFORX-4FFORX (84")	6
8	102404-066	4M2T-4FFORX-4FFORX90S (66")	1
9	100424-110	4M2T-4FFORX-4FFORX (140")	1
10	102417-091	8M3K-8FFORX-8FFORX (91")	4
11	102423-048	12C13-12FJX-12FJX (48")	8
12	100424-056	4M2T-4FFORX-4FFORX (56")	3
14	102421-025	12C13-12FJX-12FJX90S (26")	3
20	102421-033	12C13-12FJX-12FJX90S (32")	2
22	102421-087	12C13-12FJX-12FJX90S (87")	3
25	102424-042	4M2T-4FFORX-4FFORX (42")	7
27	102417-038	8M3K-8FFORX-8FFORX (38")	2
28	102421-083	12C13-12FJX-12FJX90S (83")	1
31	102424-048	4M2T-4FFORX-4FFORX (48")	2
32	102425-022	16C13-16FJX90M-16FJX90M (22")	1
37	102421-028	12C13-12FJX-12FJX90S (30")	1


AXLE EXTEND CYLINDER
RIGHT REAR DRIVE MOTOR
LEFT REAR DRIVE MOTOR
REAR MANIFOLD
AXLE EXTEND LOGIC VALVE
ROTARY MANIFOLD PORT LOCATION
FRONT MANIFOLD
AXLE LOCK CYL.
RIGHT FRONT DRIVE MOTOR
LEFT FRONT DRIVE MOTOR
STEERING CYLINDER
CASE DRAIN
2ND. SPEED
BRAKE
INSTALL AND TIGHTEN HOSENUT ITEM#14 PORT #6 BEFORE INSTALLING HOSE ON TEE PORT OR HOSE #11 & 12
MUST TAPE EXTEND YELLOW AND RETURN RED AFTER HOSES ARE INSTALLED TO CYLINDER & MOTORS. TAPE DRIVE MOTOR ALSO
OIL ALL THREADS BEFORE INSTALLING HOSES

HOSE KIT INSTALLATION, SB80, TURRET SECTION

102029-001

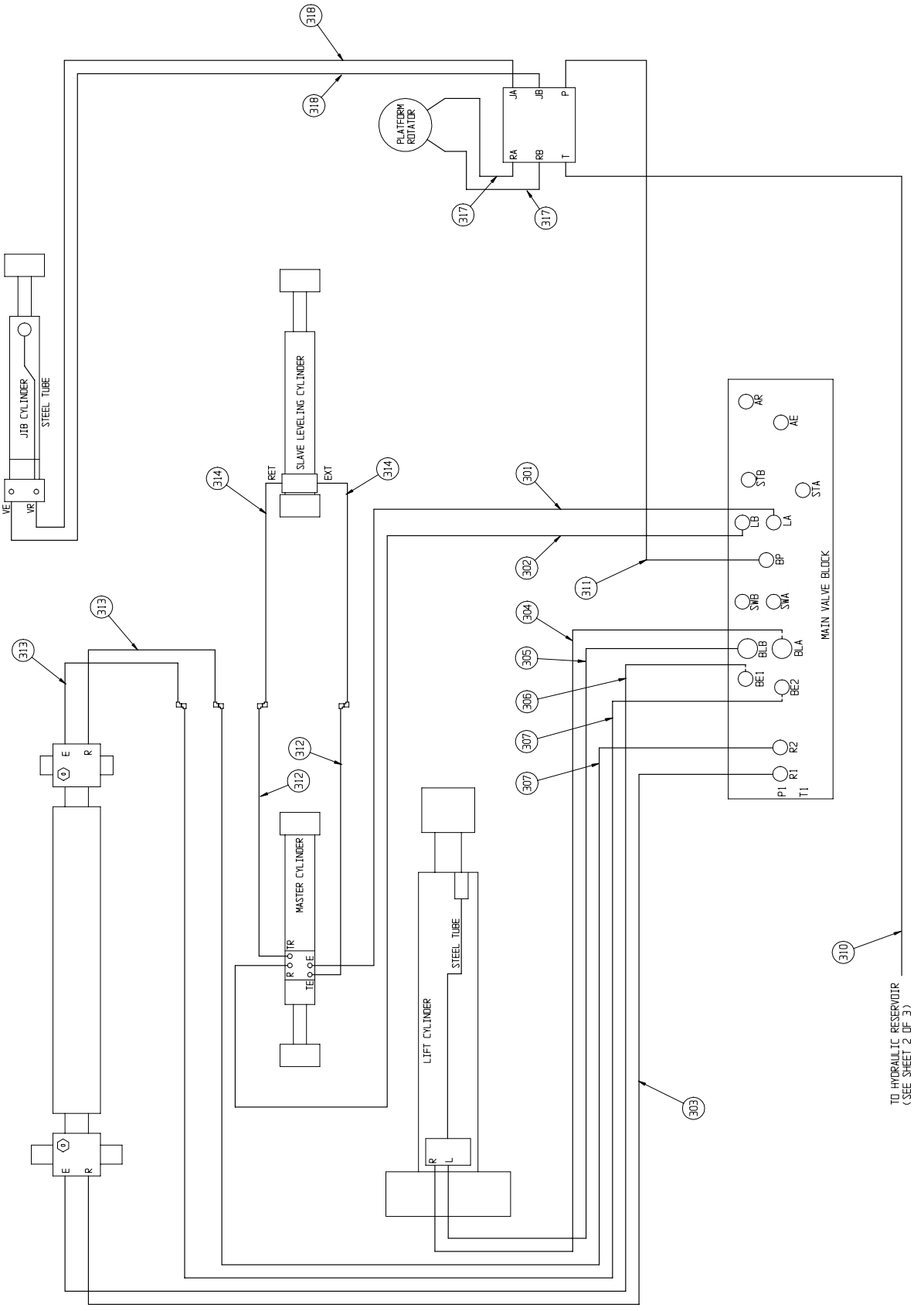
ITEM	PART NO.	DESCRIPTION	QTY.
201	102414-066	8M3K-6FFORX-8FFORX90 (66")	1
202	102415-054	8M3K-8FFORX-6FFORX (54")	1
203	102428-083	20G4H-20FFORX-20FFORX (83")	1
204	102416-079	8M3K-8FFORX90S-10FFORX (79")	1
205	102426-093	16G4H-16FFORX-16FFORX (93")	1
206	102419-017	10M3K-10FFORX-10FFORX (12")	1
208	102410-042	6M3K-6FFORX-8FFORX (42")	1
209	102414-053	8M3K-8FFORX45-8FFORX (53")	1
210	102404-024	4M2T-4FFORX90S-4FFORX (24")	1
211	102405-024	4M2T-4FFORX90L-4FFORX (24")	1
213	102404-052	4M2T-4FFORX-4FFORX90S (52")	4
215	102421-045	12C13-12FJX-12FJX90S (45")	2
218	102411-042	6M3K-6FFORX-6FFORX90L (42")	2
219	102407-042	6M3K-6FFORX-6FFORX90S (42")	1
221	102407-045	6M3K-6FFORX-6FFORX90S (45")	1
222	102411-033	6M3K-6FFORX-6FFORX90L (33")	1
223	102407-028	6M3K-6FFORX-6FFORX90S (28")	1
224	102400-015	4M3K-4FFORX-4FFORX90S (15")	1
225	102422-125	12G4H-12FFORX-12JICX45 (125")	1
226	102400-027	4M3K-4FFORX-4FFORX90S (27")	1
227	102417-024	8M3K-8FFORX-8FFORX (24")	2
228	102422-071	12G4H-12FFORX-12JICX45 (71")	1


SWING VALVE
SWING MOTOR
SWING BRAKE
MAIN VALVE BLOCK
OIL PRESSURE SWITCHES
BRK/AXLE/2SPD BLOCK
FILTER
PUMP #2
PUMP #1
ENGINE
OIL COOLER
HYDRAULIC TANK
FILTER
ITEM #307 REF. (BOOM KIT)
FROM PLATFORM ROTATOR
AUX POWER
OUTSIDE FACE OF PUMP
INSIDE FACE OF PUMP

HOSE KIT INSTALLATION, SB80, BOOM SECTION

102029-001

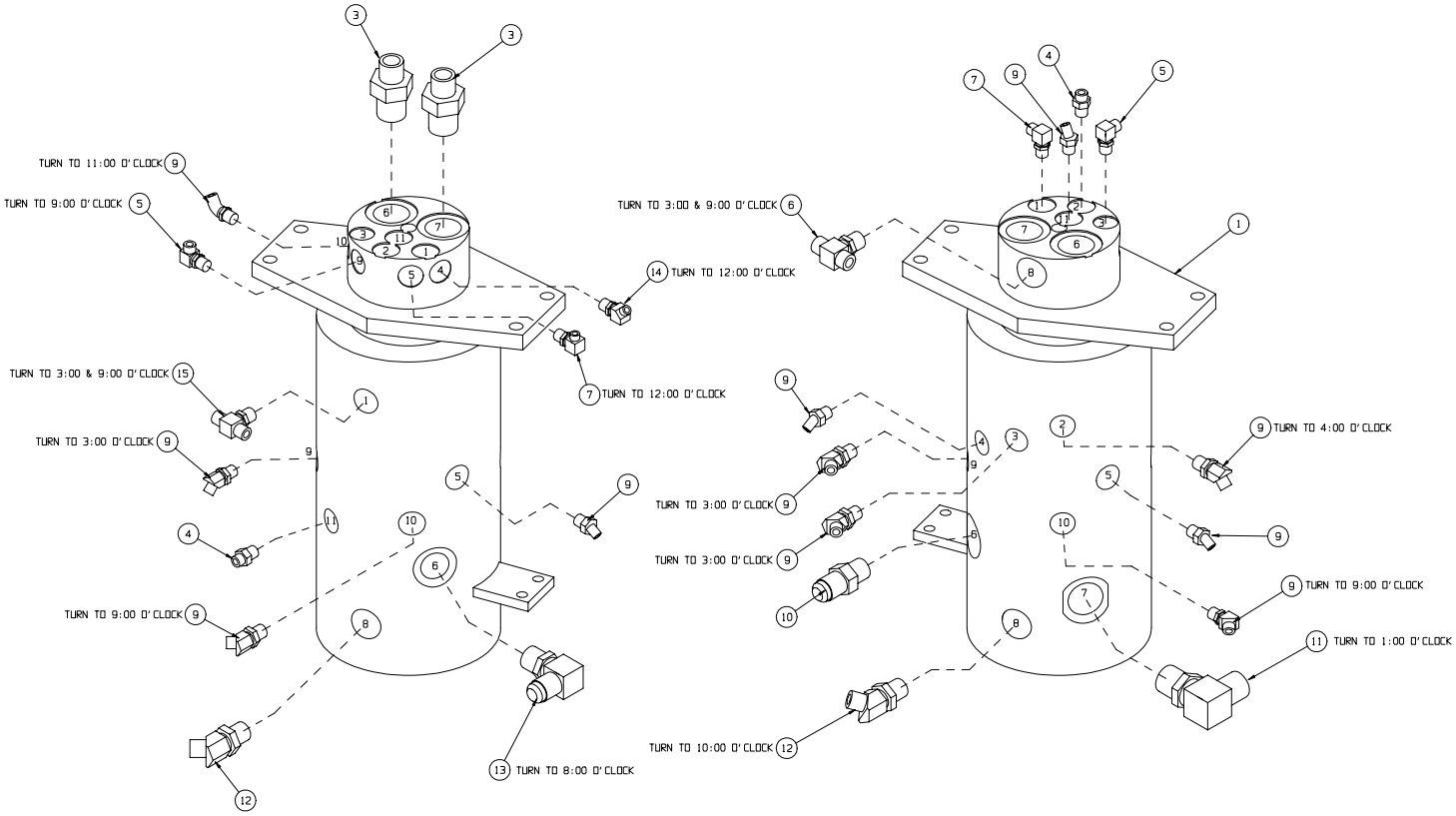
ITEM	PART NO.	DESCRIPTION	QTY.
301	102400-114	4M3K-4FFORX-4FFORX90S (114")	1
302	102401-114	4M3K-4FFORX-4FFORX90L (114")	1
303	102407-126	6M3K-6FFORX-6FFORX90S (126")	1
304	102408-112	6M3K-6JIC-6FFORX90S (112")	1
305	102407-112	6M3K-6FFORX-6FFORX90S (112")	1
306	102407-132	6M3K-6FFORX-6FFORX90S (164")	1
307	102432-137	6M3K-MTF-6FFORX-6FFORX90S (984")	2
310	102430-120	4M3K-MTF -4FFORX-6FFORX (1120")	1
311	102429-126	4M3K-MTF-4FFORX-4FFORX90S (1126")	1
312	102431-110	4M3K-MTF -4FFORX-4FFORX (888")	2
313	102407-057	6M3K-6FFORX-6FFORX90S (57")	2
314	102400-023	4M3K-4FFORX-4FFORX90S (23")	2
317	102403-030	4M3K-4FFORX-4FFORX (30")	2
318	102403-023	4M3K-4FFORX-4FFORX (23")	2


318
318
PLATFORM ROTATOR
JA
JB
P
RA
RB
T
317
317
JIB CYLINDER
STEEL TUBE
VE
VR
SLAVE LEVELING CYLINDER
RET
EXT
314
314
301
302
311
AR
AE
STB
STA
LB
LA
BP
SWB
SWA
BLB
BLA
BE1
BE2
R2
R1
P1
T1
MAIN VALVE BLOCK
304
305
306
307
307
313
313
312
312
MASTER CYLINDER
TR
TE
R
E
LIFT CYLINDER
STEEL TUBE
R
L
E
R
E
R
310
TO HYDRAULIC RESERVOIR
(SEE SHEET 2 OF 3)
303

ROTARY MANIFOLD ASSEMBLY, SB80

102038-000

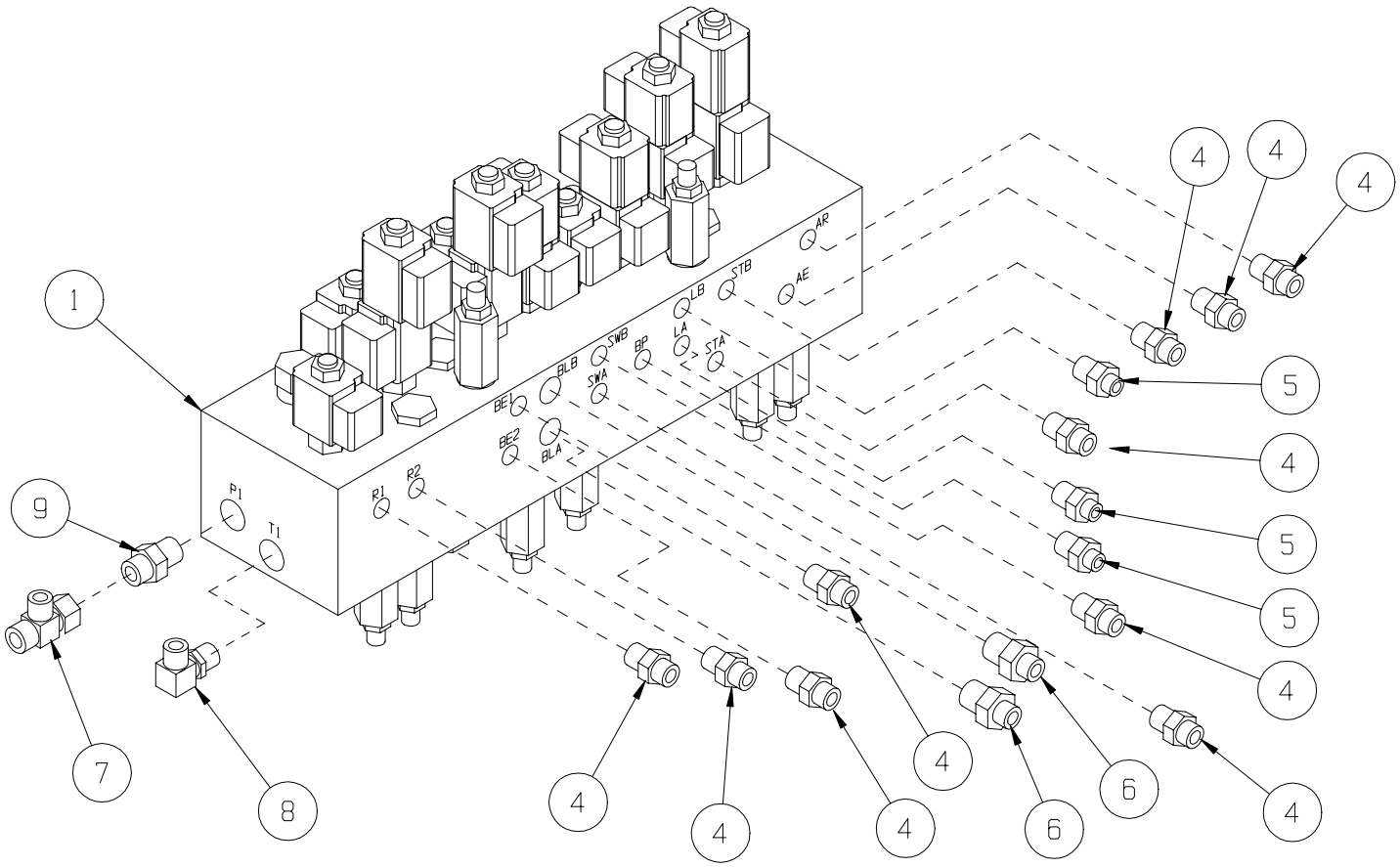
ITEM	PART NO.	DESCRIPTION	QTY.
1	102278-000	ROTARY MANIFOLD	1
3	100432-029	FITTING, STR ADAPTER 16MB-12MJ	2
4	100432-009	FITTING, STR ADAPTER 6MB-6MFOR	2
5	100434-008	FITTING, 90° ADAPTER 6MB-6MFOR	2
6	102381-005	FITTING, TEE 8MB-8MFOR-8MFOR	1
7	100434-004	FITTING, 90° ADAPTER 6MB-4MFOR	2
9	100433-005	FITTING, 45° ADAPTER 6MB-6MFOR	11
10	011941-020	FITTING, STR. ADAPTER 12MB-12MJ	1
11	100434-026	FITTING, 90° ADAPTER 16MB-16MFOR	1
12	100433-008	FITTING, 45° ADAPTER 8MB-8MFOR	2
13	011934-015	FITTING, 90° ADAPTER 12MB-12MJ	1
14	100433-002	FITTING, 45° ADAPTER 6MB-4MFOR	1
15	102381-003	FITTING, TEE 6MB-6MFOR-6MFOR	1



MAIN VALVE BLOCK ASSEMBLY, SB80

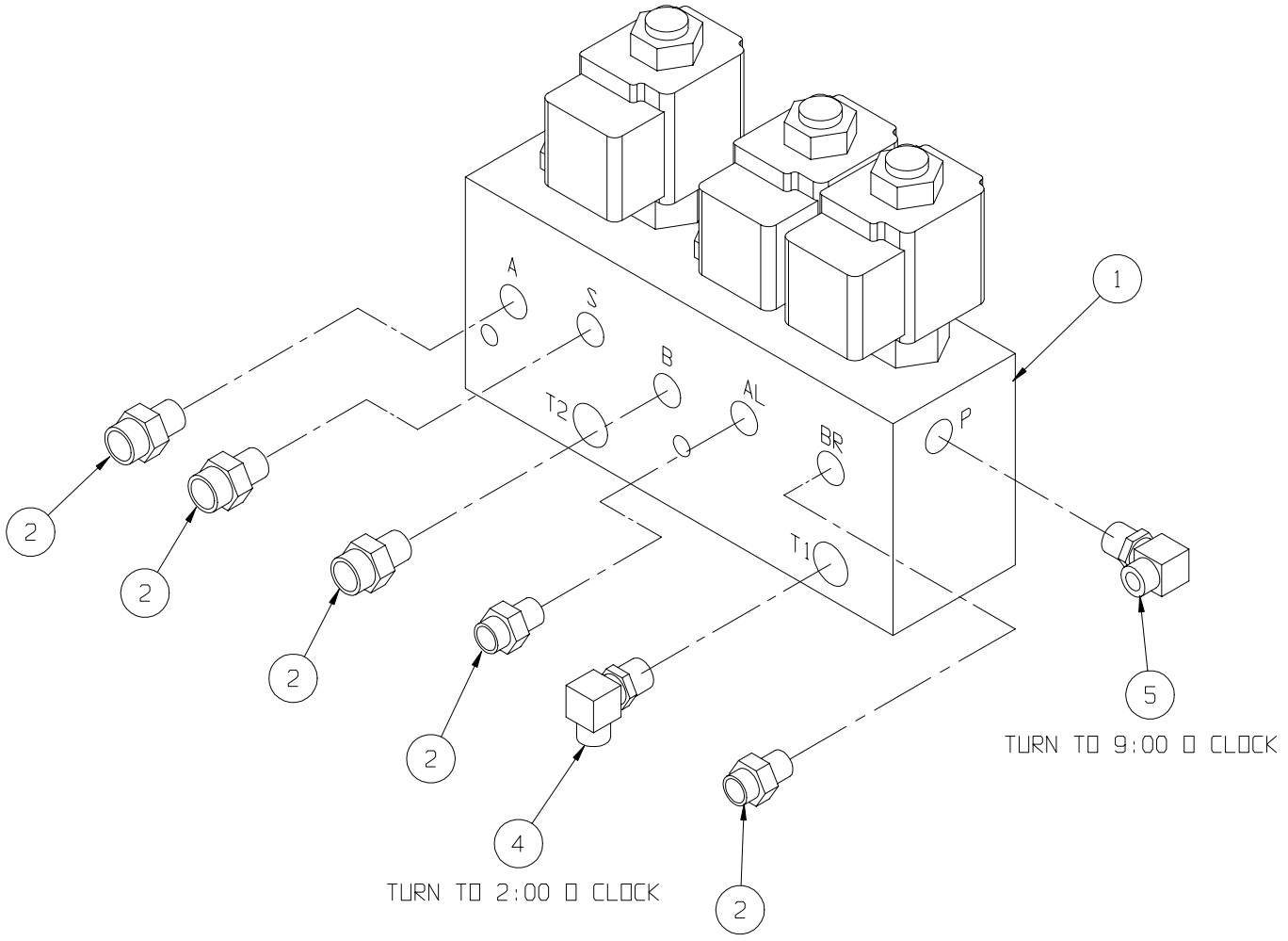
102039-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102272-000	VALVE BLOCK,	1
4	100432-009	FITTING, STR. 6MB-6MFOR	10
5	100432-004	FITTING, STR. 6MB-4MFOR	3
6	100432-010	FITTING, STR. ADAPTER 8MB-6MFOR	2
7	100448-002	FITTING, TEE 8FFORX-8MFOR-8MFOR	1
8	100434-014	FITTING, 90° 10MB-8MFOR	1
9	100432-016	FITTING, STR 10MB-8MFOR	1



VALVE BLOCK ASSEMBLY, SB80
TWO SPEED/AXLE LOCK/BRAKE
102331-000

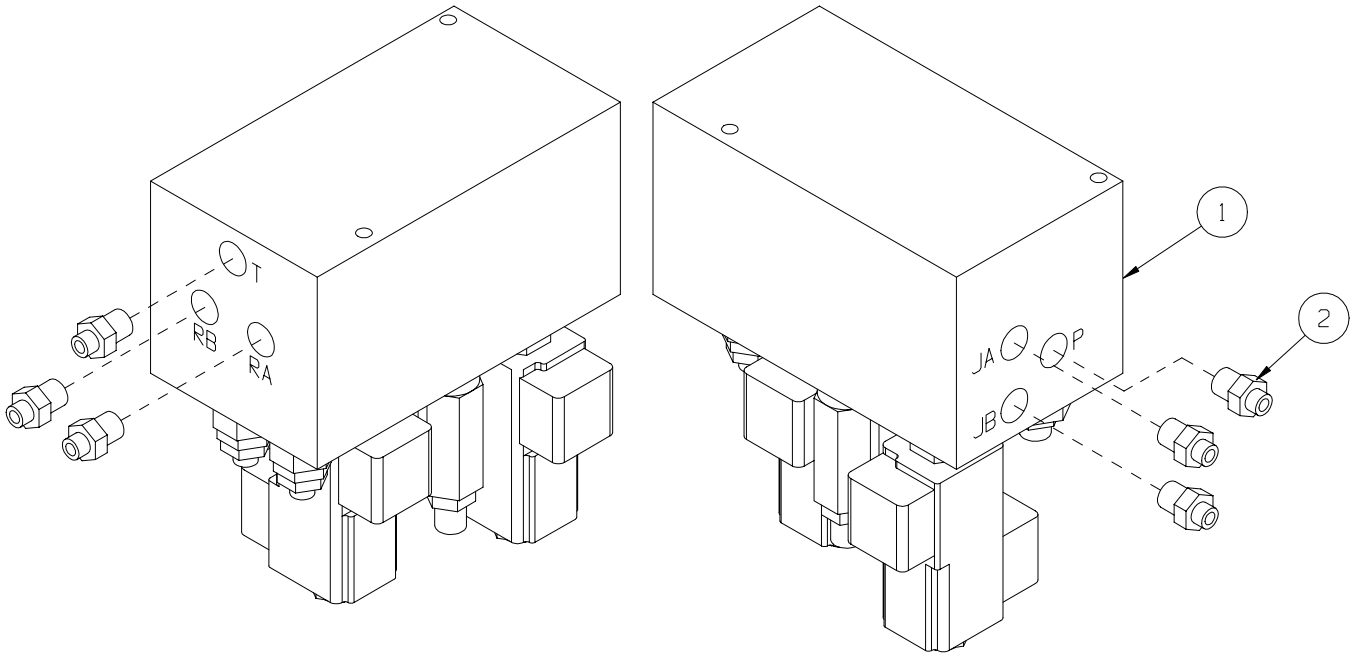
ITEM	PART NO.	DESCRIPTION	QTY.
1	100258-001	VALVE BLOCK, BRAKE/AXLE LOCK/2 SPD	1
2	100432-002	FITTING, STR ADAPTER 4MB-4MFOR	5
4	100434-008	FITTING, 90° ADAPTER 6MB-6MFOR	1
5	100434-006	FITTING, 90° ADAPTER 4MB-4MFOR	1



JIB VALVE BLOCK ASSEMBLY, SB80

102332-000

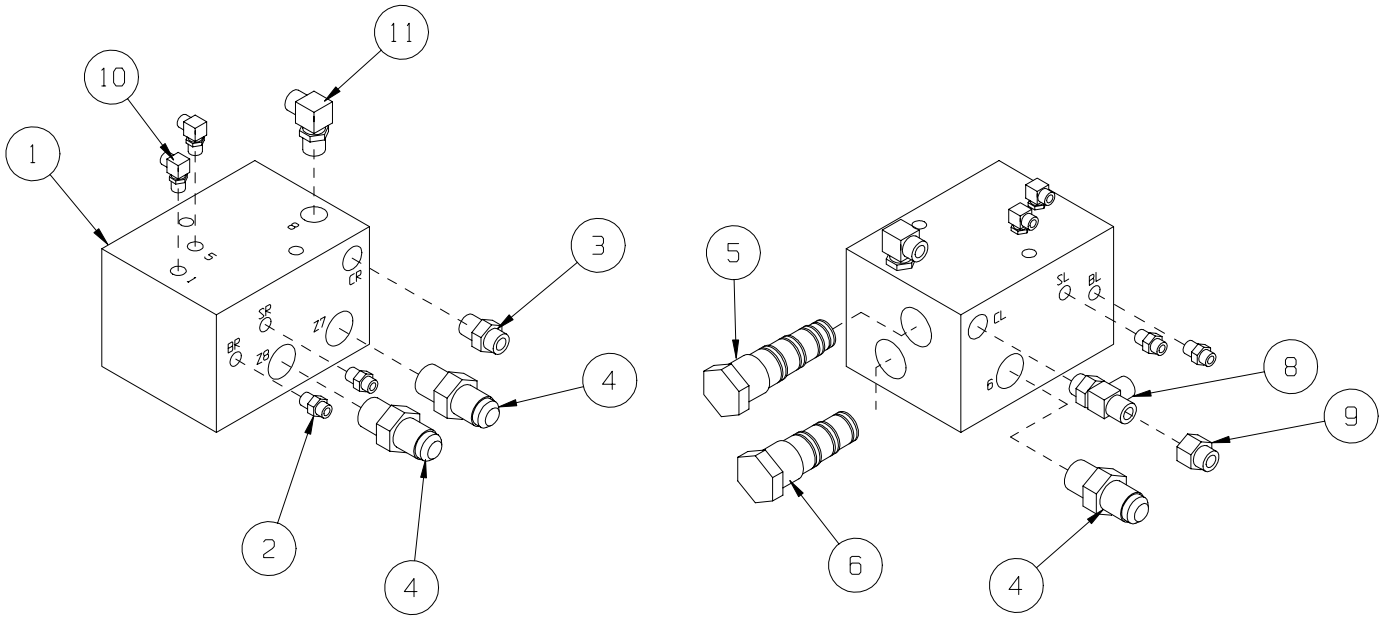
ITEM	PART NO.	DESCRIPTION	QTY.
1	100283-002	VALVE BLOCK, JIB/ROTATE	1
2	100434-008	FITTING, STR. ADAPTER 6MB-4MFOR	6



REAR MANIFOLD ASSEMBLY, SB80

102341-000

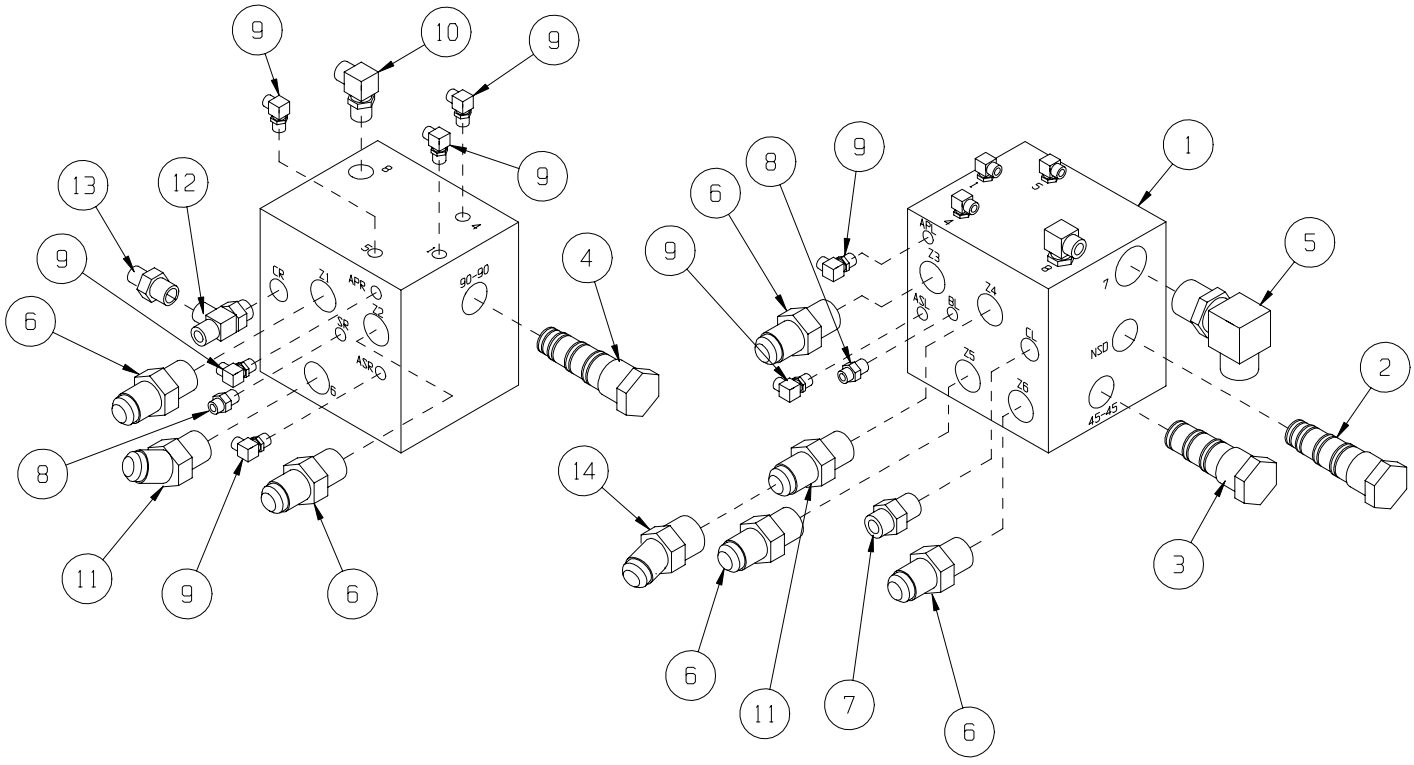
ITEM	PART NO.	DESCRIPTION	QTY.
1	102296-000	COMBINED CHASSIS MANIFOLD (REAR)	1
2	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	4
3	100432-015	FITTING, STR. ADAPTER 8MB-8MFOR	1
4	011941-020	FITTING, STR. ADAPTER 12MB-12MJ	3
5	102293-000	VALVE, STERLING #N5D125-10.0 N	1
6	102292-001	VALVE, STERLING #LO6A3 45-45	1
8	100444-004	FITTING, TEE 8MB-8MFOR-8MFOR	1
9	100437-002	FITTING, STR. REDUCER 8FFOR-4MOR	1
10	100434-002	FITTING, 90° ADAPTER 4MB-4FOR	1
11	100434-013	FITTING, 90° ADAPTER 8MB-8FOR	1



FRONT MANIFOLD ASSEMBLY, SB80

102342-000

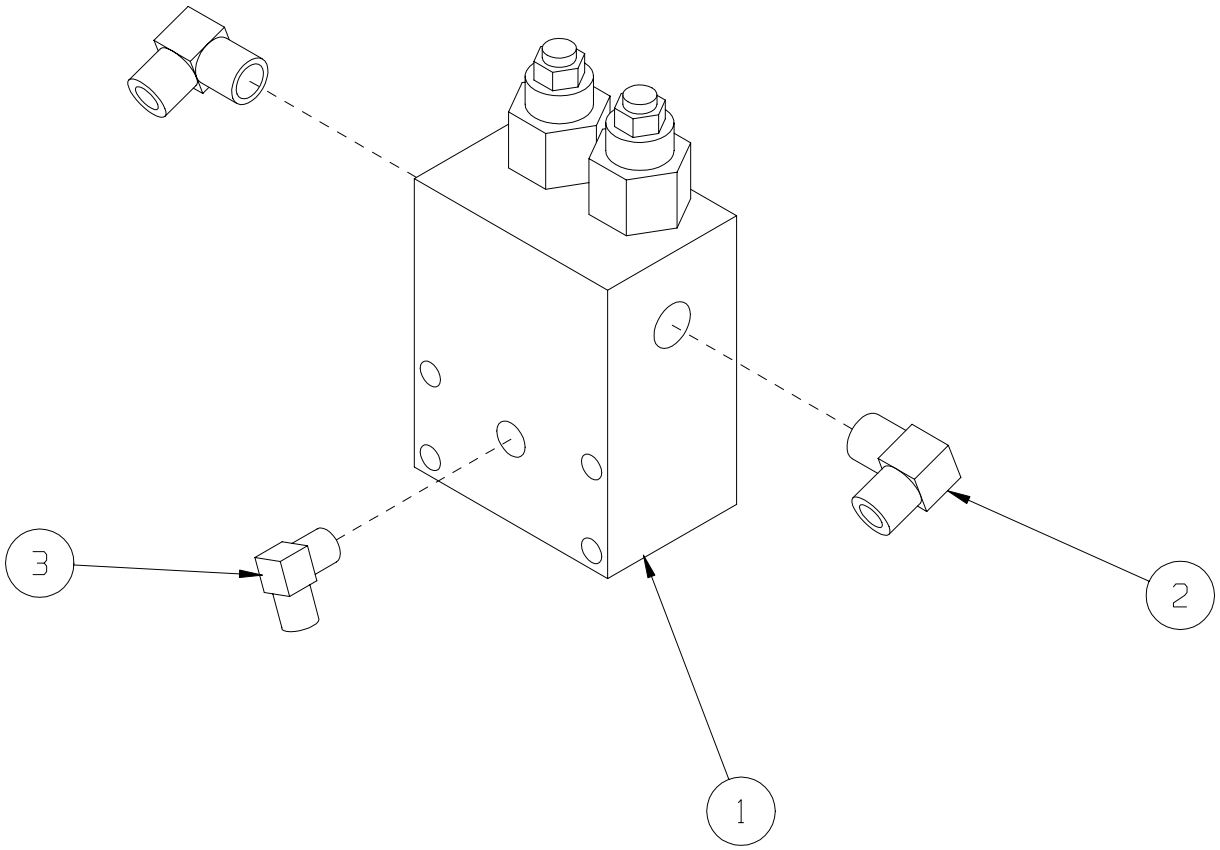
ITEM	PART NO.	DESCRIPTION	QTY.
1	102295-000	MANIFOLD BLOCK, FRONT	-
2	102293-000	VALVE, STERLING #N5D125-10.0N	1
3	102292-001	VALVE, STERLING #LO6A3 45-45	1
4	102292-002	VALVE, STERLING #LO6A3 90-90	1
5	100434-026	FITTING, 90° ADAPTER 16MB-16MFOR	1
6	100432-027	FITTING, STR. ADAPTER 12MB-12JIC	5
7	100432-005	FITTING, STR. ADAPTER 8MB-4MFOR	1
8	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	2
9	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	7
10	100434-005	FITTING, 90° ADAPTER 8MB-8MFOR	1
11	011935-007	FITTING, 45° ADAPTER 12MB-12MJ	1
12	100444-004	FITTING, TEE 8MB-8MFOR-8MFOR	2
13	100437-002	REDUCER, STR 8FFOR-4MFOR	1
14	100433-015	FITTING, 45° 12FJX-12MJ	1



SLEW MOTOR VALVE ASSEMBLY, SB80

102343-000

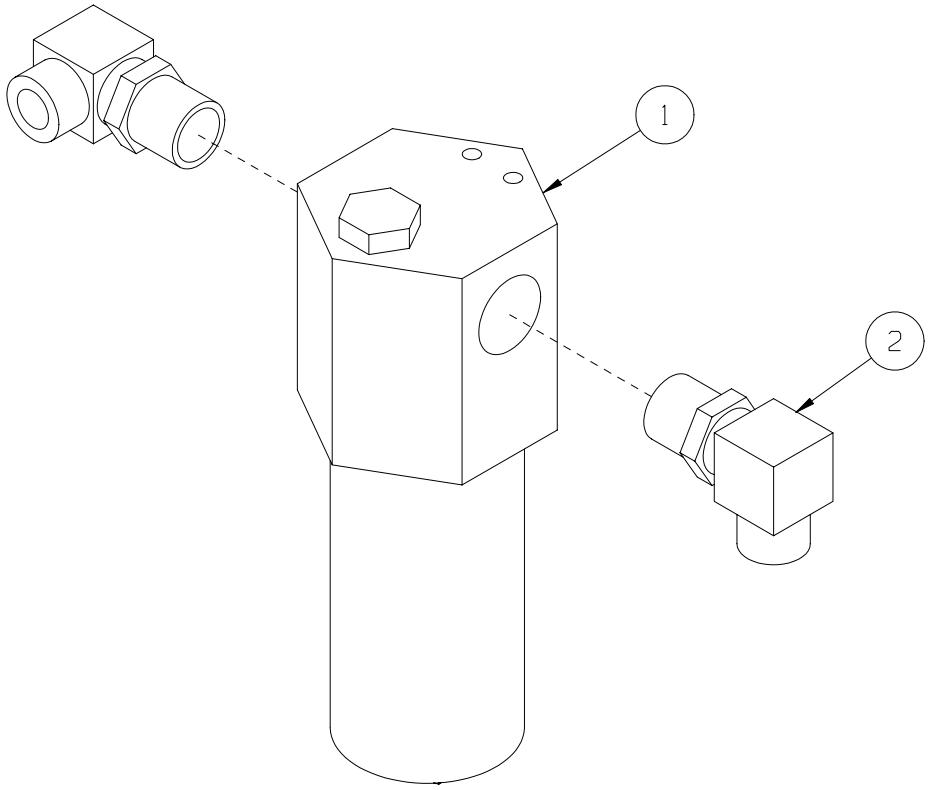
ITEM	PART NO.	DESCRIPTION	QTY.
1	100261-000	MOTOR VALVE BLOCK	1
2	100434-008	FITTING, 90° ADAPTER 6MB-6MFOR	2
3	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	1



CHARGE PUMP FILTER ASSEMBLY, SB80

102327-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	100289-000	FILTER	1
2	100434-015	FTG, 90° ADAPTER 12MB-8MFOR	2

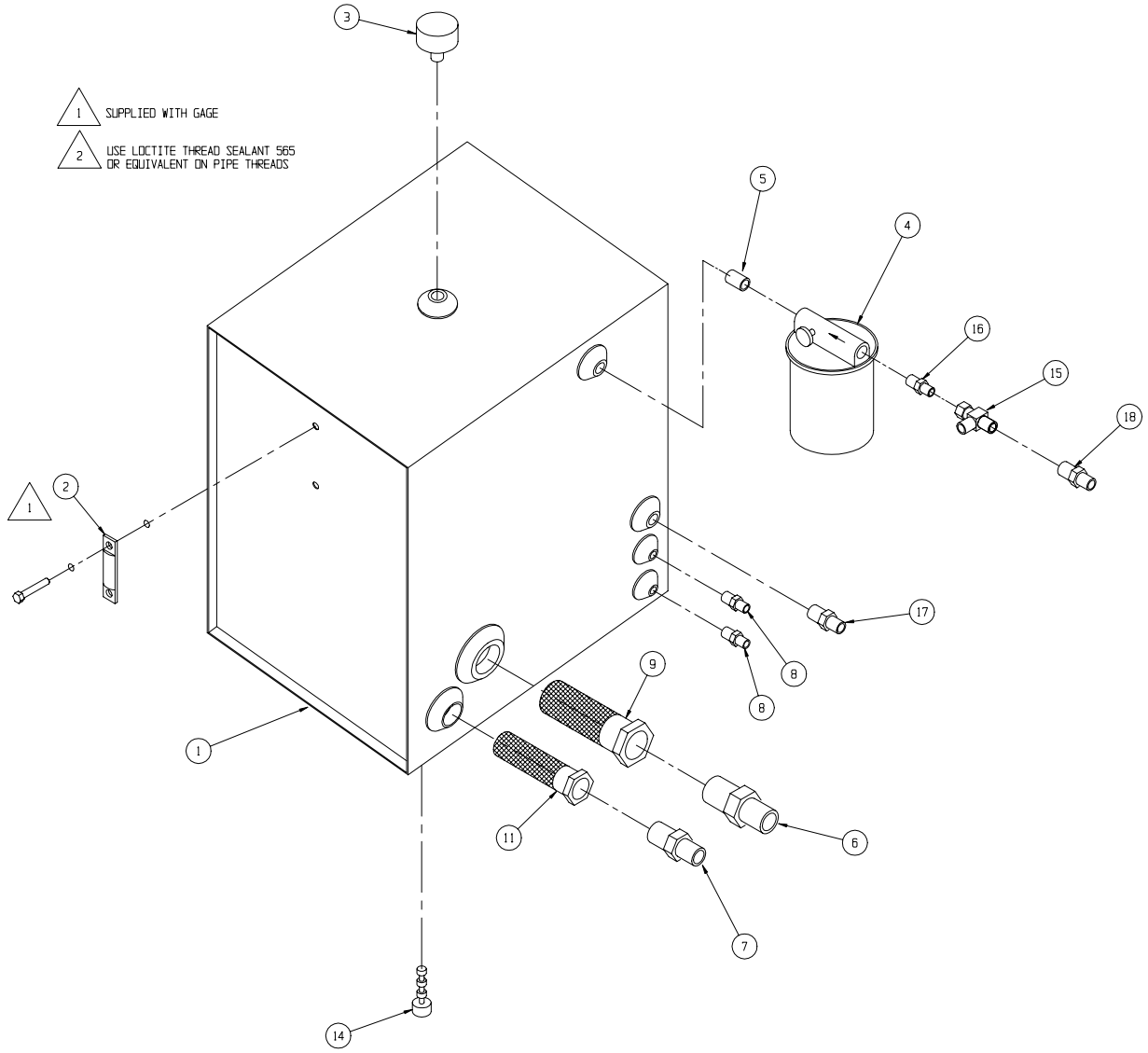


HYDRAULIC RESERVOIR ASSEMBLY, SB80

102042-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	100251-000	HYDRAULIC RESERVOIR	1
2	100287-000	SIGHT GAUGE (ALUMINUM)	1
3	063930-001	FILLER/BREATHER	1
4	100285-000	FILTER	1
5	012467-003	PIPE NIPPLE 3/4 NPT	1
6	102388-018	FITTING STR 20MP-20MFOR	1
7	102388-016	FITTING STR 16MP-16MFOR	1
8	102388-009	FITTING STR 8MP-8MFOR	2

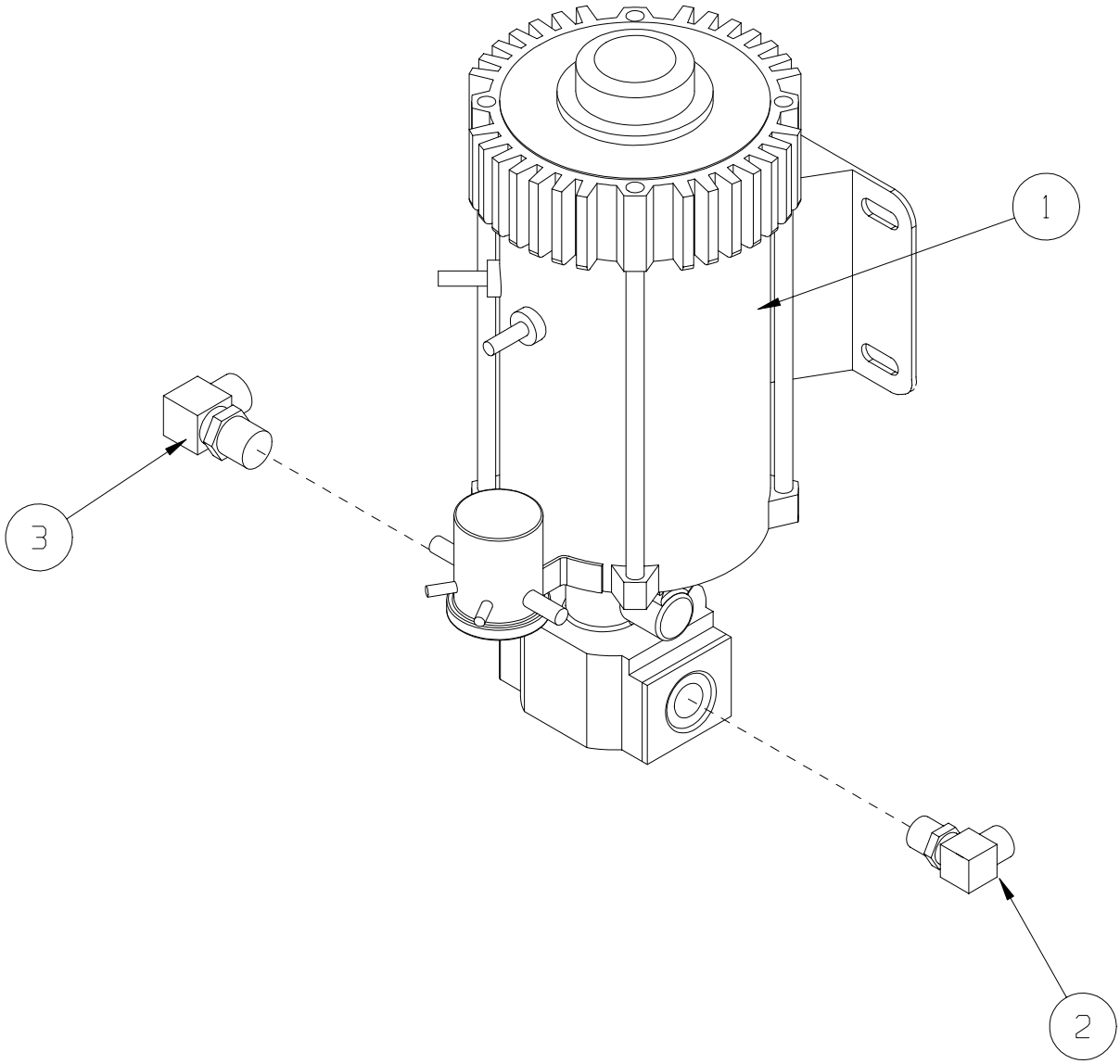
ITEM	PART NO.	DESCRIPTION	QTY.
9	100286-001	SUCTION STRAINER	1
11	100286-000	SUCTION STRAINER	1
14	100288-000	DRAIN PLUG, 3/4 MAGNETIC	1
15	100448-002	FTG,TEE 8FFORX-8MFOR-8MFOR	1
16	102388-012	FITTING STR 12MP-8MFOR	1
17	102382-017	FITTING STR 12MP-12MFOR	1
18	100437-005	FITTING REDUCER, 6MFOR-8FFOR	1



EMERGENCY LOWERING POWER UNIT ASSEMBLY, SB80

102334-000

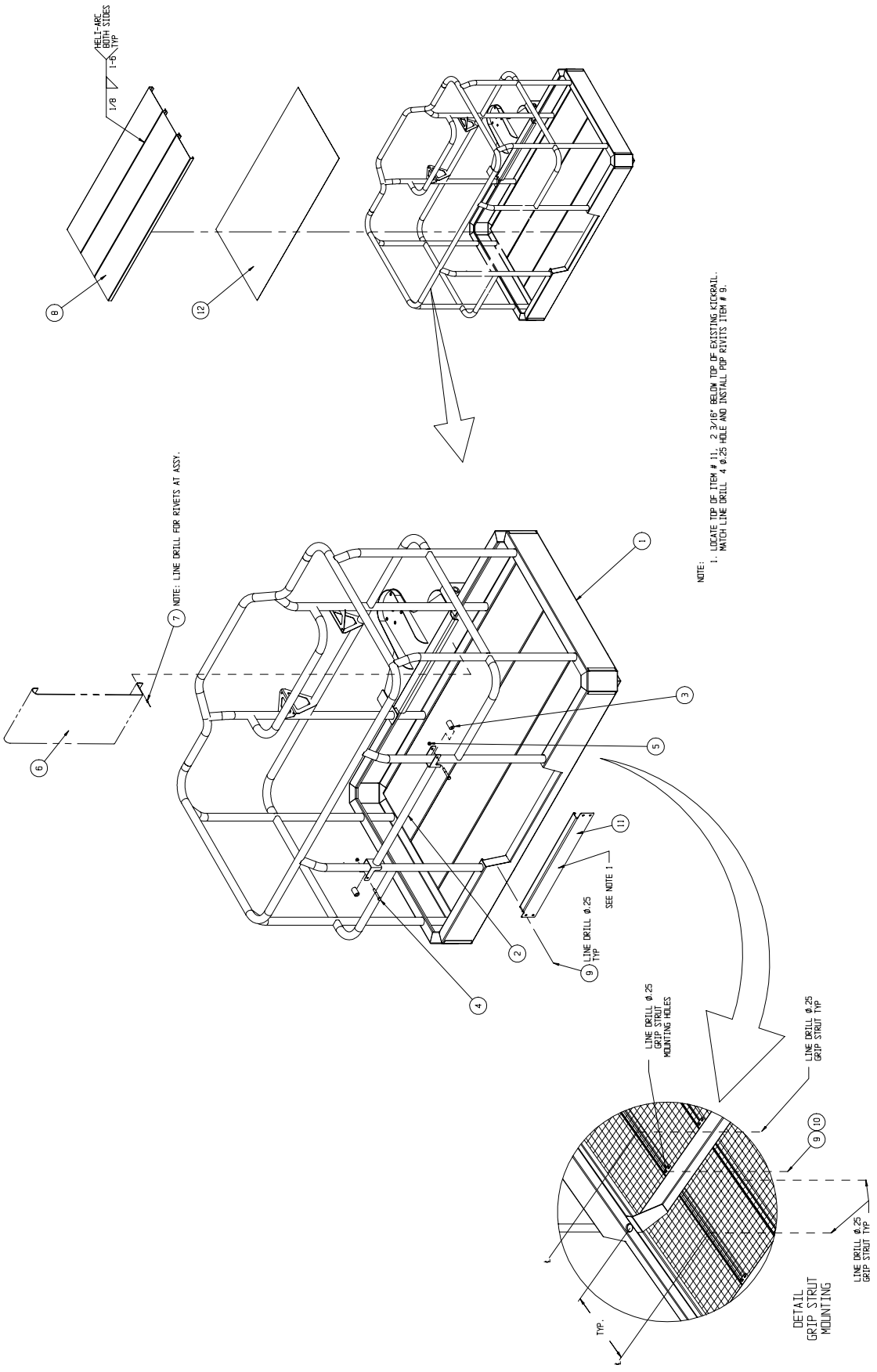
ITEM	PART NO.	DESCRIPTION	QTY.
1	102264-000	EMERGENCY LOWERING POWER UNIT	1
2	100434-008	FITTING 90° 6MB-6MFOR	1
3	100434-017	FITTING 90° 10MB-10MFOR	1



SIX FOOT CAGE ASSEMBLY, SB80

102037-100

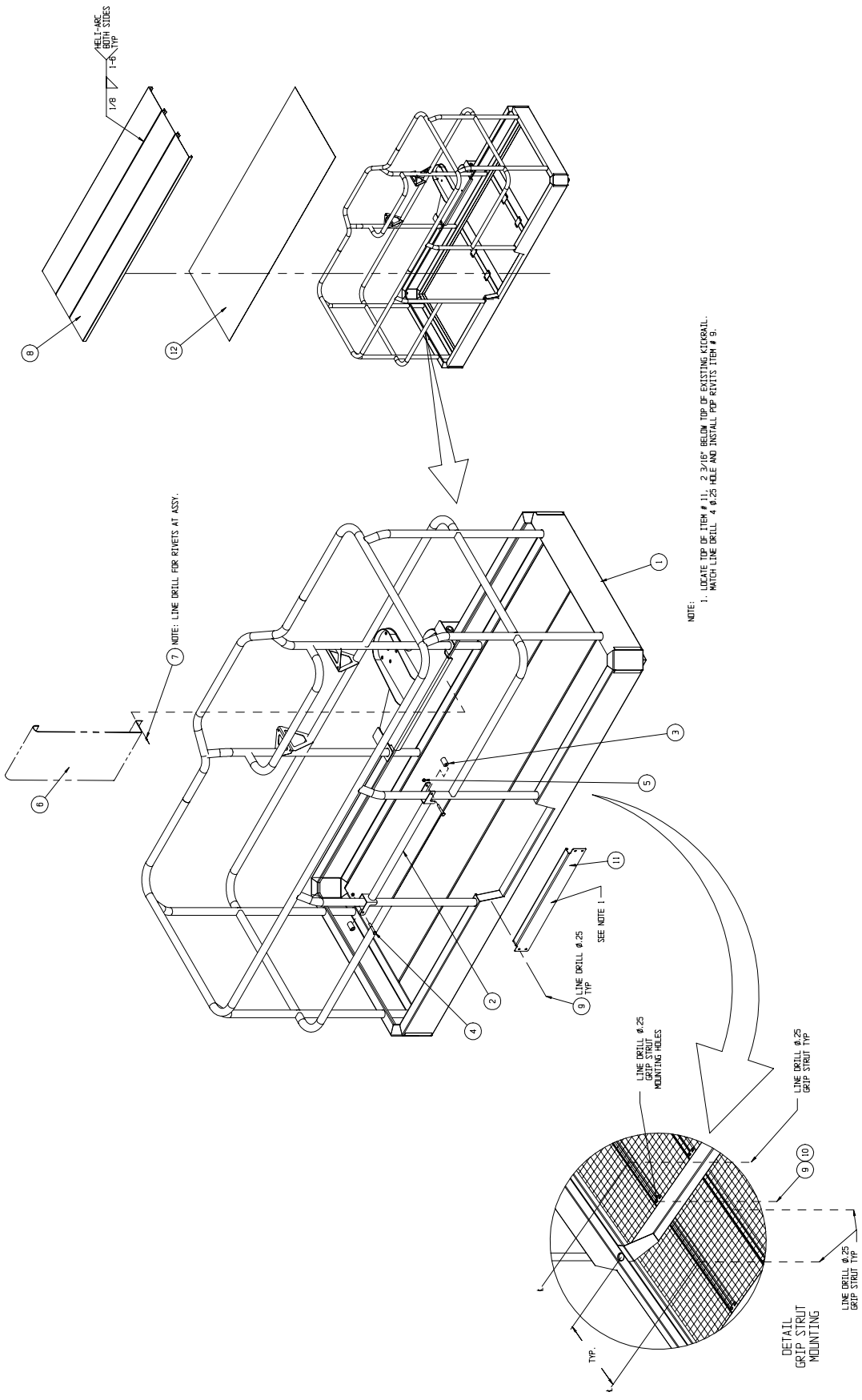
ITEM	PART NO.	DESCRIPTION	QTY.
1	102193-001	CAGE WELDMENT (6 FT.)	1
2	100478-000	LIFT-GATE WELDMENT	1
3	100481-000	ROLLER TUBE	2
4	011253-022	SCREW, HHC. 5/16-18 UNC X 2 3/4	2
5	011248-005	LOCKNUT, HEX. 5/16-18 UNC ESNA	2
6	100468-001	PANEL, DECAL MOUNT	REF
7	026551-005	POP RIVET, 1/8" DIA. (3/16-1/4 GRIP)	REF
8	102271-061	GRIP STRUT 11 3/4 X 1 1/2 X 68 1/2	3
9	026554-004	POP RIVET 1/4 .501-.625 GRIP	42
10	014996-004	WASHER 1/4 FLAT	38
11	102244-000	SILL GATE EURO	1
12	102245-000	WIRE CLOTH FLOOR	1


MELT-ARC BOTH SIDES
1/8
1-6 TYP
8
12
NOTE:
1. LOCATE TOP OF ITEM # 11, 2 3/16" BELOW TOP OF EXISTING KICKRAIL. MATCH LINE DRILL 4 Ø.25 HOLE AND INSTALL POP RIVITS ITEM # 9.
7 NOTE: LINE DRILL FOR RIVETS AT ASSY.
1
3
5
6
11
SEE NOTE 1
9 LINE DRILL Ø.25 TYP
2
4
LINE DRILL Ø.25 GRIP STRUT MOUNTING HOLES
LINE DRILL Ø.25 GRIP STRUT TYP
9
10
LINE DRILL Ø.25 GRIP STRUT TYP
TYP.
DETAIL GRIP STRUT MOUNTING

EIGHT FOOT CAGE ASSEMBLY, SB80

102037-101

ITEM	PART NO.	DESCRIPTION	QTY.
1	102193-000	CAGE WELDMENT (8 FT.)	1
2	100478-000	LIFT-GATE WELDMENT	1
3	100481-000	ROLLER TUBE	2
4	011253-022	SCREW, HHC. 5/16-18 UNC X 2 3/4	2
5	011248-005	LOCKNUT, HEX. 5/16-18 UNC ESNA	2
6	100468-001	PANEL, DECAL MOUNT	REF
7	026551-005	POP RIVET, 1/8" DIA. (3/16-1/4 GRIP)	REF
8	102271-082	GRIP STRUT 11 3/4 X 1 1/2 X 92 1/2	3
9	026554-004	POP RIVET 1/4 .501-.625 GRIP	42
10	014996-004	WASHER 1/4 FLAT	38
11	102244-000	SILL GATE EURO	1
12	102245-001	WIRE CLOTH FLOOR	1


HELI-ARC WITH SIDES TYP
1/8
1-8
8
12
NOTE:
1. LOCATE TOP OF ITEM # 11, 2 3/16" BELOW TOP OF EXISTING KICKRAIL. MATCH LINE DRILL 4 Ø.25 HOLE AND INSTALL POP RIVITS ITEM # 9.
1
7 NOTE: LINE DRILL FOR RIVETS AT ASSY.
6
3
5
11
SEE NOTE 1
9 LINE DRILL Ø.25 TYP
2
4
LINE DRILL Ø.25 GRIP STRUT MOUNTING HOLES
LINE DRILL Ø.25 GRIP STRUT TYP
9 10
LINE DRILL Ø.25 GRIP STRUT TYP
TYP.
DETAIL GRIP STRUT MOUNTING

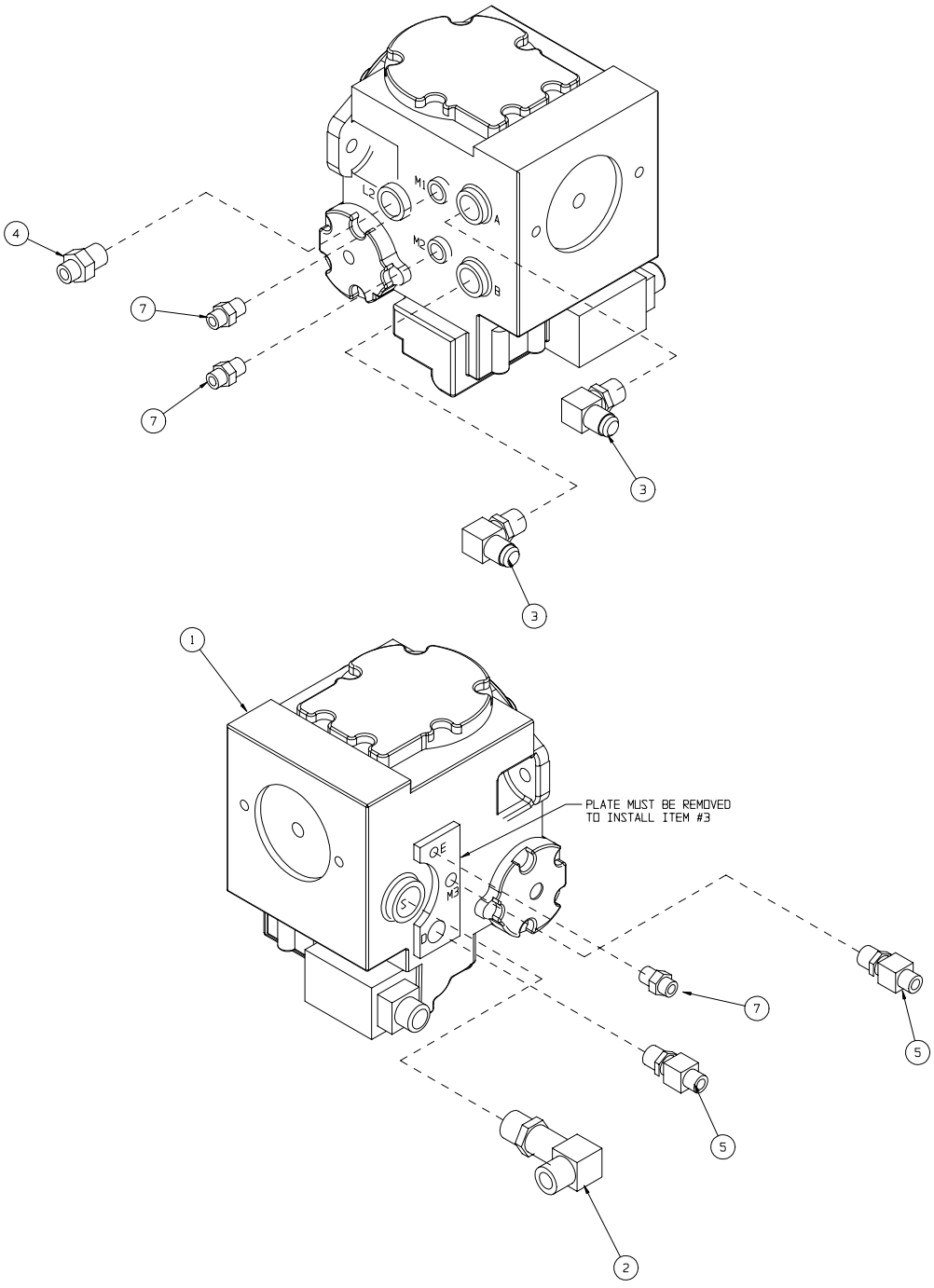
ILLUSTRATED PARTS BREAKDOWN

DRIVE PUMP ASSEMBLY, SB80

102325-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102259-000	PUMP, SUNDSTRAND SERIES 42	1
2	102397-005	FITTING, 90° LG ADAPTER 16MB-16MFOR	1
3	011934-015	FITTING, 90° ADAPTER 12MB-12MJ	2
4	100432-032	FITTING, STR. ADAPTER 16MB-12FOR	1

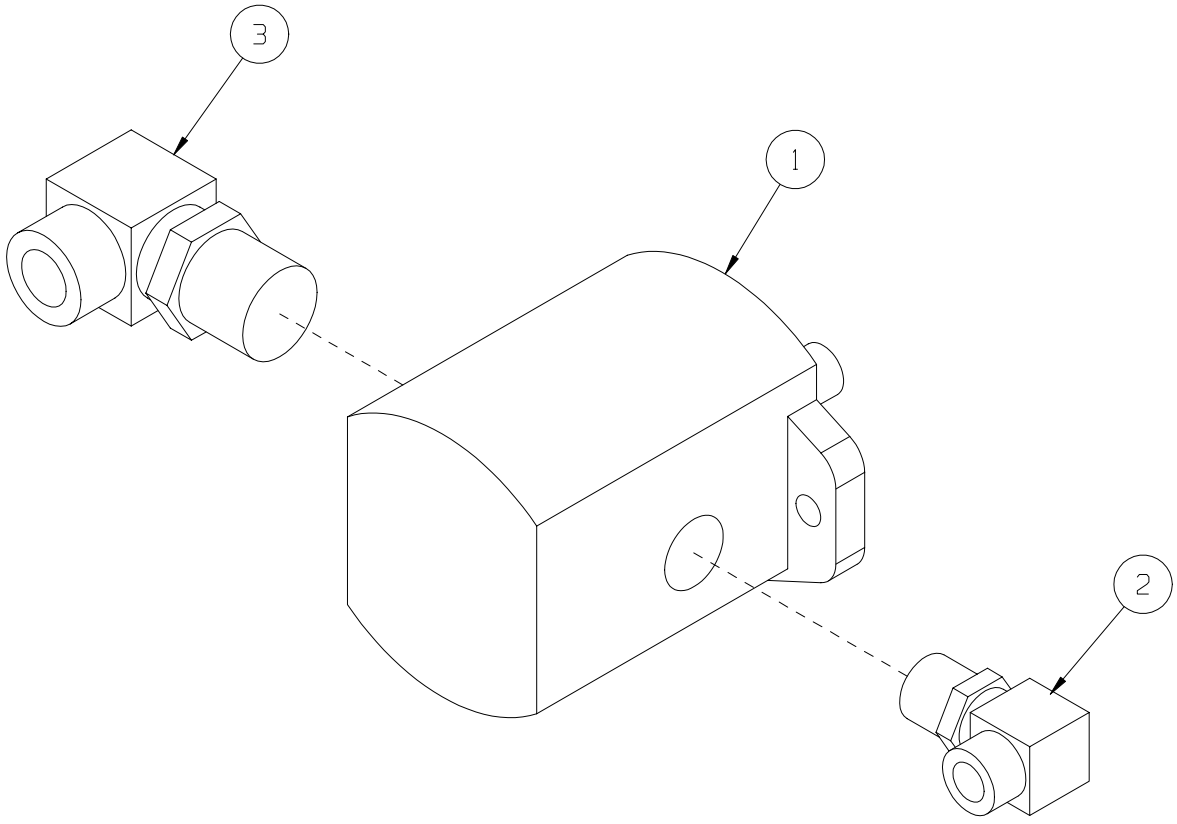
ITEM	PART NO.	DESCRIPTION	QTY.
5	100432-020	FITTING, STG ADAPTER 10MB-8FOR	2
7	100432-007	FITTING, STR ADAPTER 6MB-4MFOR	3



LIFT PUMP ASSEMBLY, SB80

102326-000

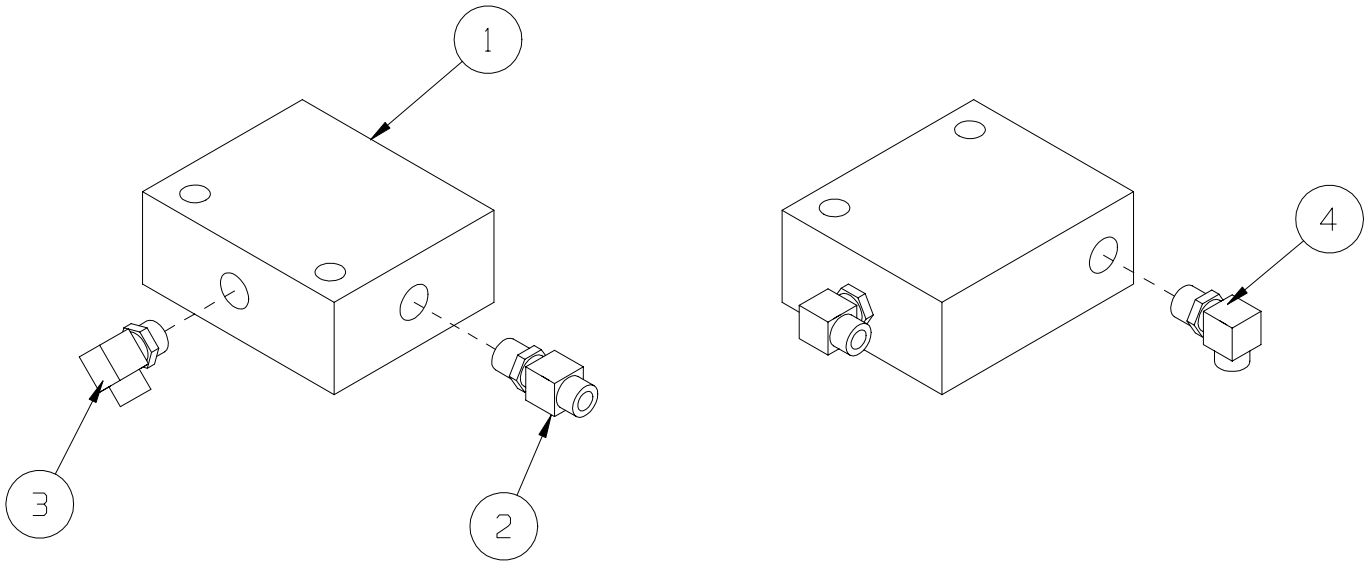
ITEM	PART NO.	DESCRIPTION	QTY.
1	102277-000	PUMP	1
2	100434-020	FITTING, 90° ADAPTER 12MB-10MFOR	1
3	100434-027	FITTING, 90° ADAPTER 16MB-20MFOR	1



AXLE EXTEND LOGIC VALVE ASSEMBLY, SB80

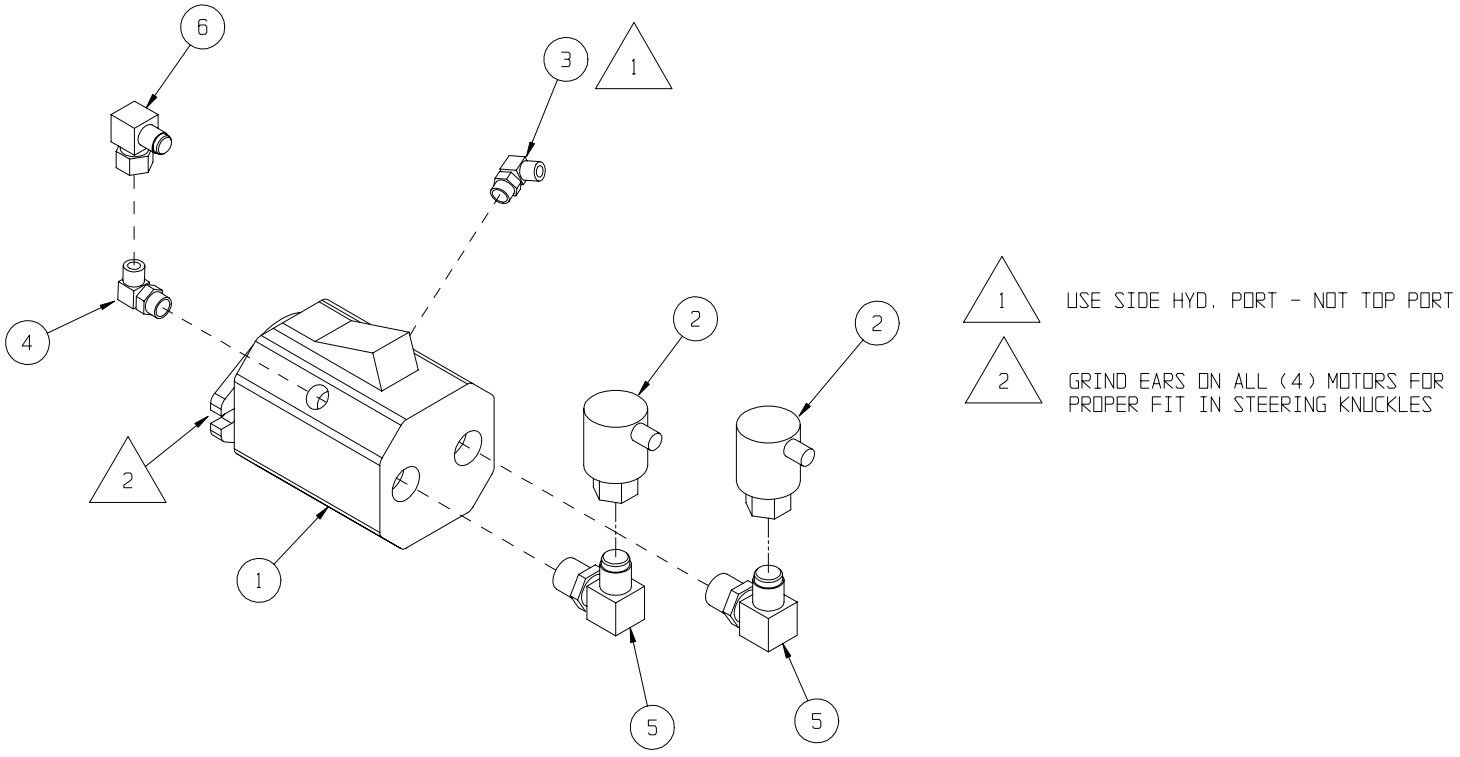
102345-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102276-000	AXLE EXTEND LOGIC VALVE	1
2	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	1
3	100434-006	FITTING, 90° ADAPTER 4MB-6MFOR	1
4	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	1



FRONT DRIVE MOTOR ASSEMBLY
SB80
102328-000

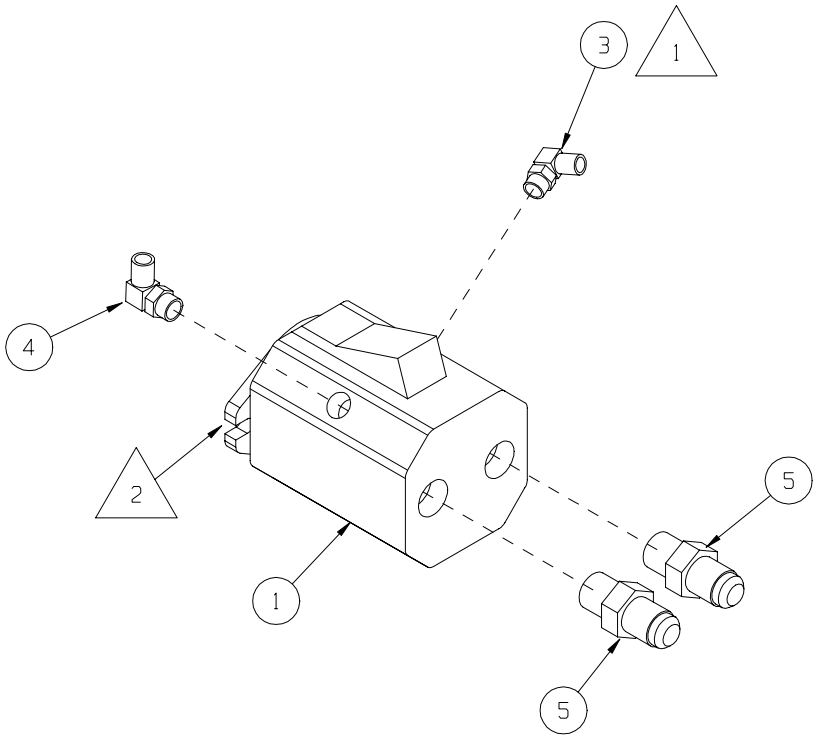
ITEM	PART NO.	DESCRIPTION	QTY.
1	102260-000	DRIVE MOTOR	1
2	102280-000	FITTING AREO #FS59011-1212-75	2
3	100434-002	FITTING 90° 4MB-4MFOR	1
4	100434-021	FITTING 90° 10MB-8MFOR	1
5	011934-015	FITTING 90° 12MB-12MJ	2
6	100435-003	FITTING 90° 8FFORX-8MFOR	1



REAR DRIVE MOTOR ASSEMBLY, SB80

102330-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102260-000	DRIVE MOTOR	1
3	100434-002	FITTING 90° 4MB-4MFOR	1
4	100434-014	FITTING 90° 10MB-8MFOR	1
5	011941-020	FITTING ST 12MB-12MJ	2



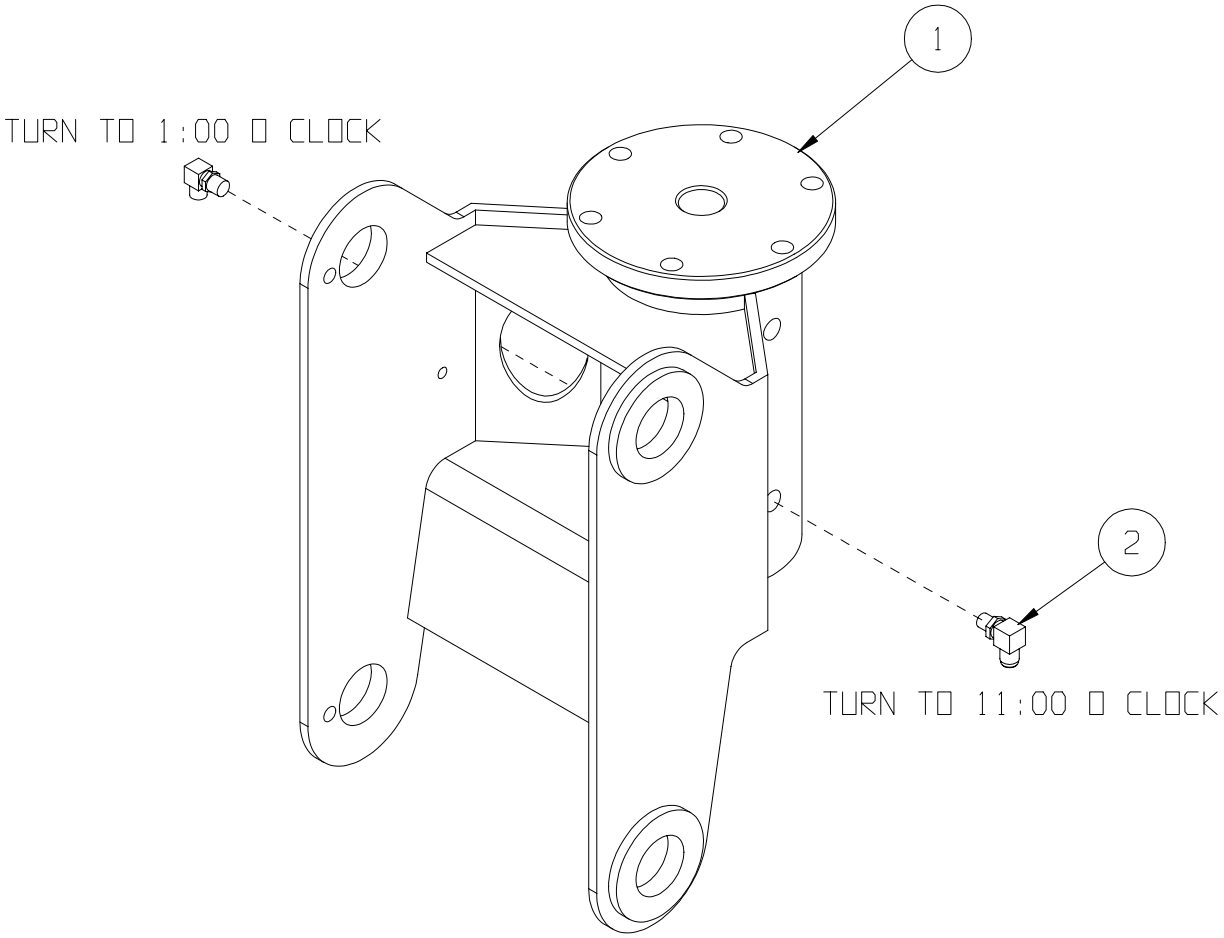
1 USE SIDE HYD. PORT - NOT TOP PORT

2 GRIND EARS ON ALL (4) MOTORS FOR PROPER FIT IN STEERING KNUCKLES

PLATFORM ROTATOR ASSEMBLY, SB80

102340-000

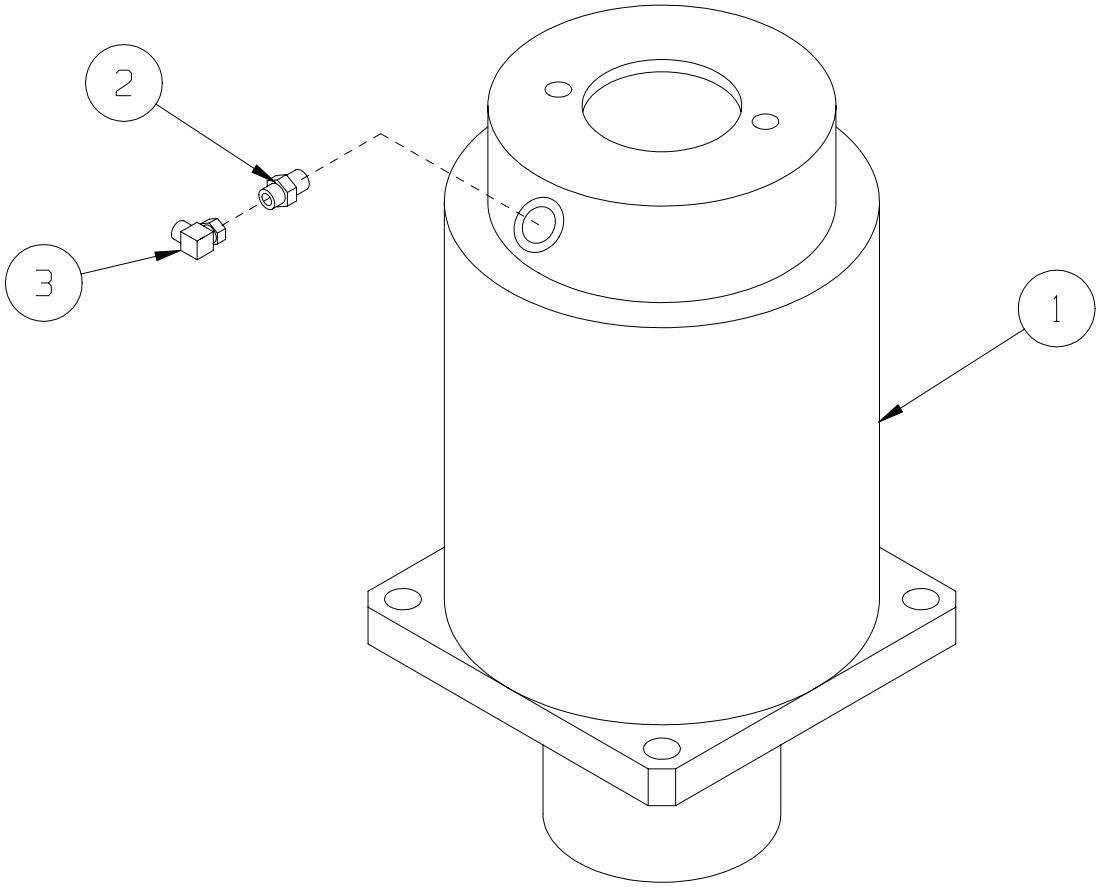
ITEM	PART NO.	DESCRIPTION	QTY.
1	100550-000	ROTATOR	1
2	100434-002	FITTING, 90° ADAPTER 4MB-4MFFORS	2



SWING DRIVE ASSEMBLY, SB80

102346-000

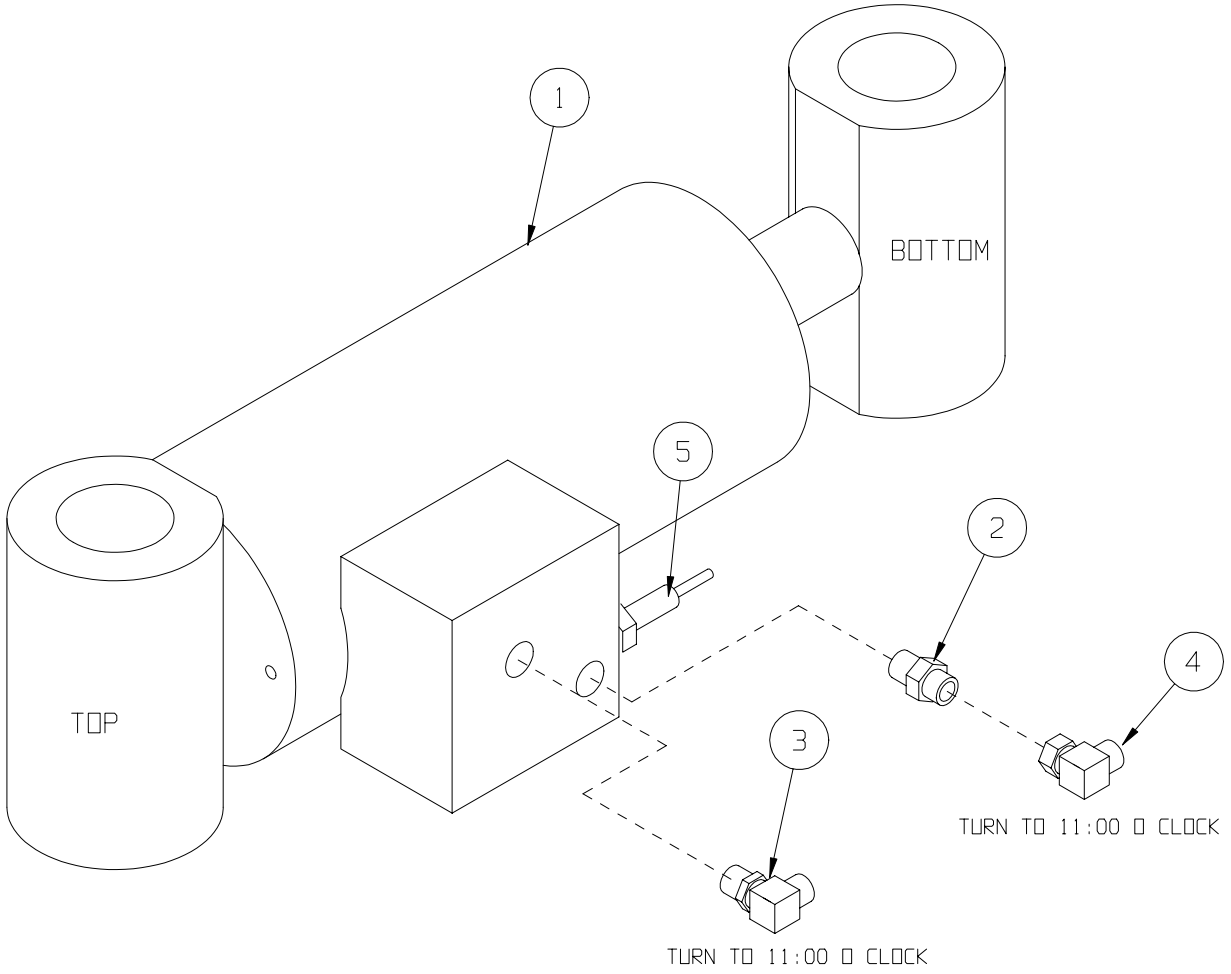
ITEM	PART NO.	DESCRIPTION	QTY.
1	102262-000	SWING DRIVE	1
2	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	1
3	100435-001	FITTING 90° ADAPTER 4MFOR-4MFOR	1



AXLE FLOAT CYLINDER ASSEMBLY, SB80

102333-000

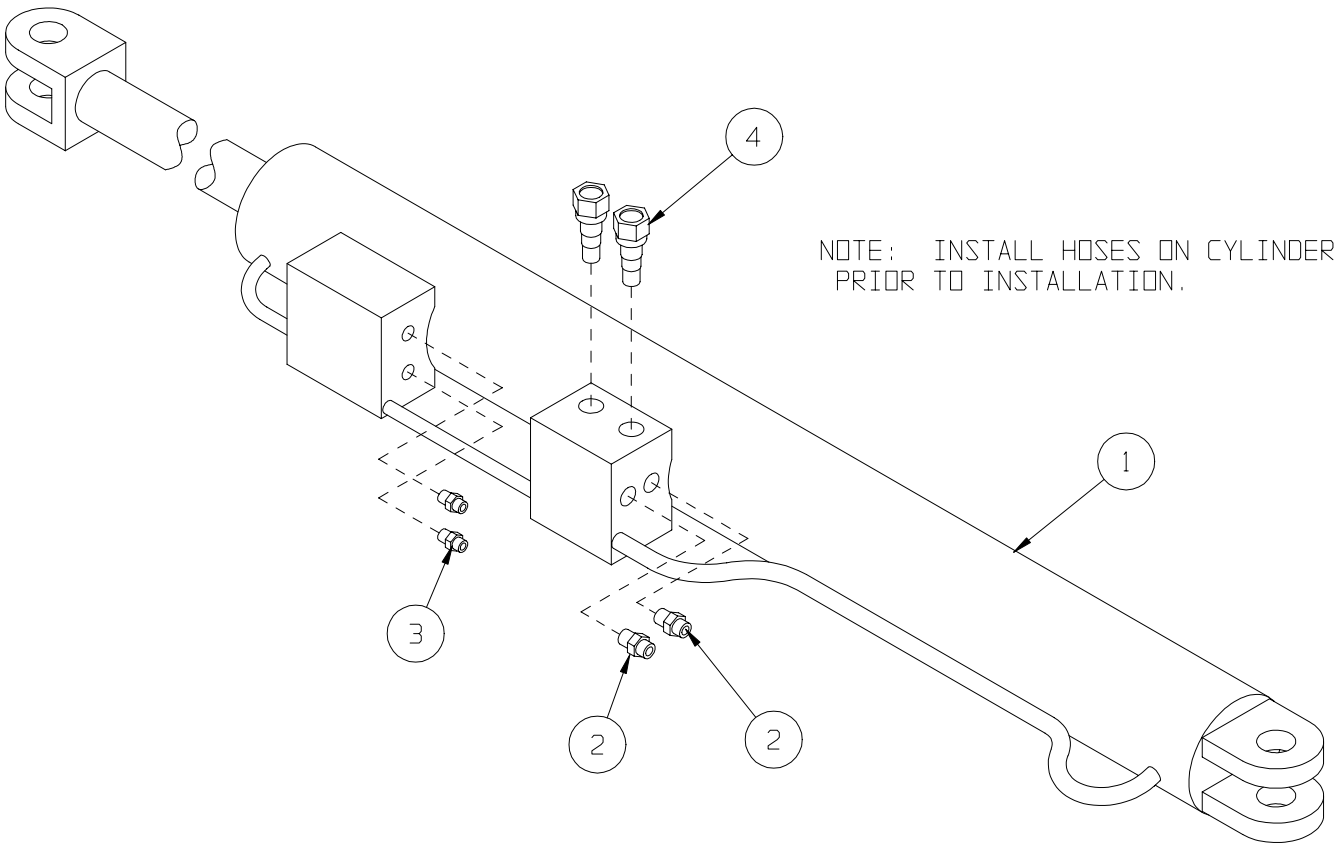
ITEM	PART NO.	DESCRIPTION	QTY.
1	100556-000	CYLINDER, AXLE FLOAT	1
2	100432-002	FITTING, STR. ADAPTER 4MB-4MFORS	1
3	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	1
4	100435-001	FITTING, 90° ADAPTER 4FFOR-4MFOR	1
5		COUNTER BALANCE VALVE	1



AXLE EXTEND CYLINDER ASSEMBLY, SB80

102335-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102256-000	CYLINDER, AXLE EXTEND	1
2	100432-009	FITTING, STR. ADAPTER 6MB-6MFOR	2
3	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	2
4	068778-001	VALVE, COUNTER BALANCE	2

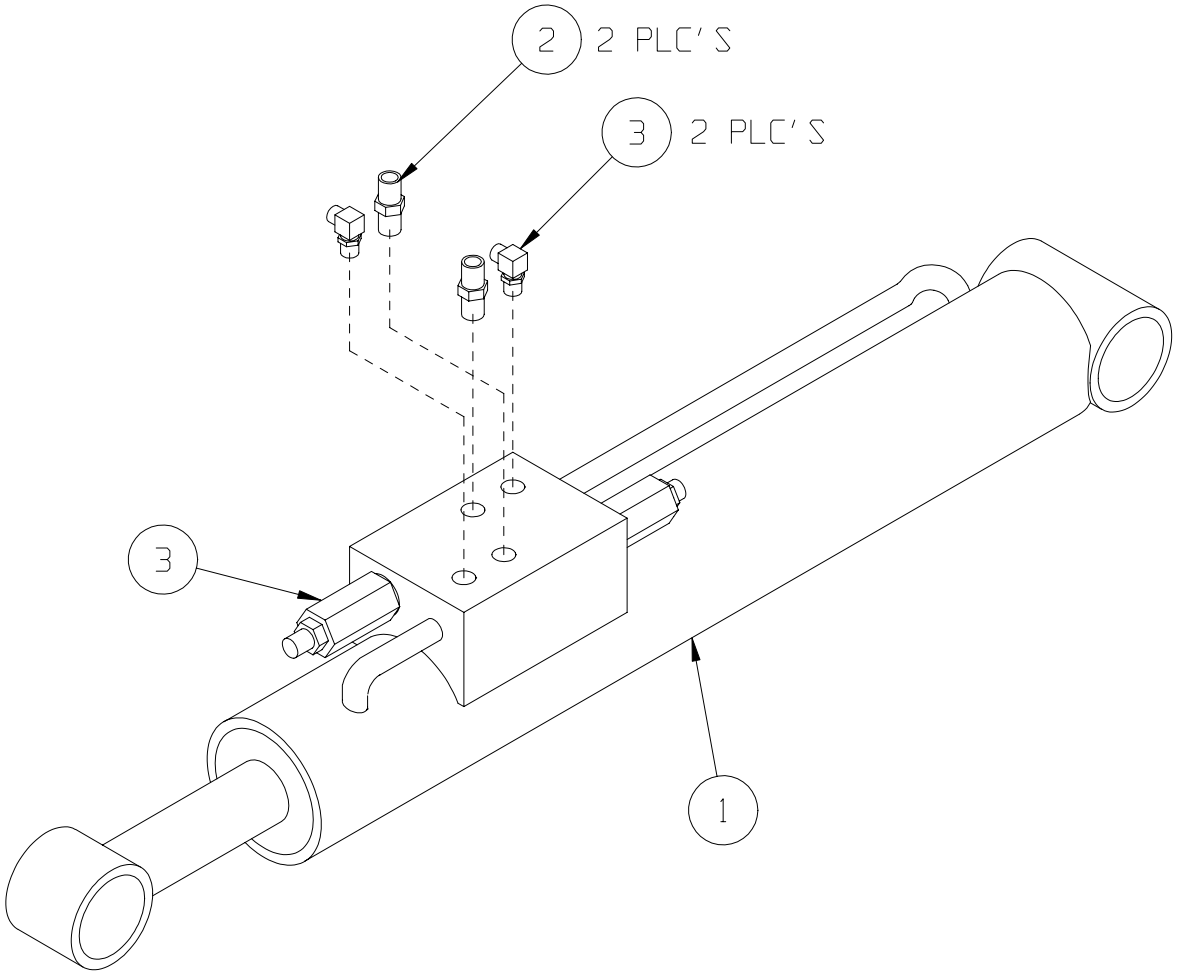


MASTER CYLINDER ASSEMBLY, SB80

102336-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102255-000	CYLINDER, MASTER	1
*	102255-010	SEAL KIT	-
*	102255-003	BUSHING (CYLINDER END)	2
*	102255-004	BUSHING (ROD END)	1
*	102255-005	COUNTERBALANCE VALVE	1
2	100432-002	FITTING, STR ADAPTER 4MB-4MFOR	2
3	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	2

*Not Shown

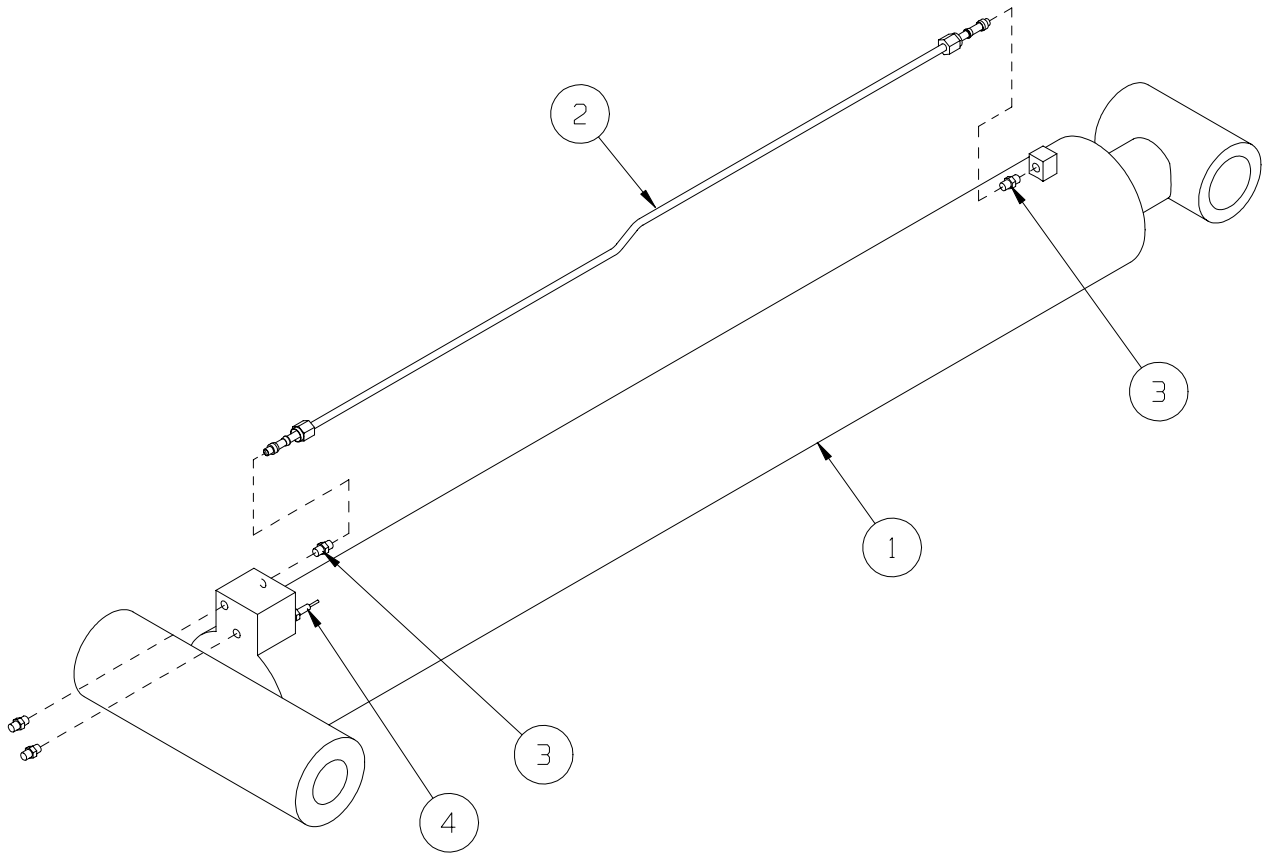


LIFT CYLINDER VALVE ASSEMBLY, SB80

102337-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102254-000	LIFT CYLINDERFT CYL.	1
*	102254-010	SEAL KIT	-
*	102254-003	BUSHING (ROD END)	1
2	102047-000	TUBE ASSY, LIFT CYL.	1
3	100434-008	FITTING, STR.ADAPTER 6MB-6MFOR	4
4		COUNTER BALANCE VALVE	1

*Not Shown

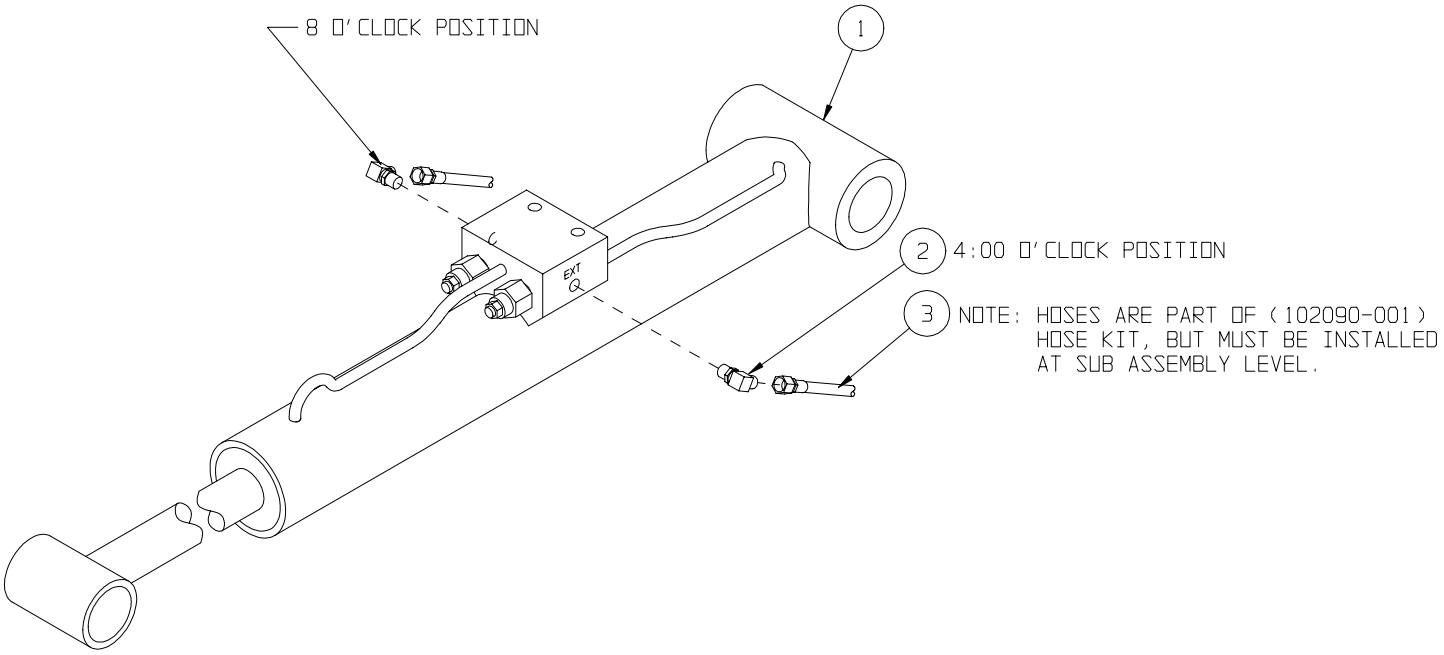


SLAVE CYLINDER ASSEMBLY, SB80

102338-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102252-000	SLAVE CYLINDER	1
*	102252-010	SEAL KIT	-
*	102252-003	BUSHING	4
*	102252-000	COUNTERBALANCE VALVE	1
2	100434-002	FITTING, 90° ADAPTER 4MB-4MFOR	2
3	REF.	HOSE (ITEM 313, 102029-001 HOSE KIT)	2

*Not Shown

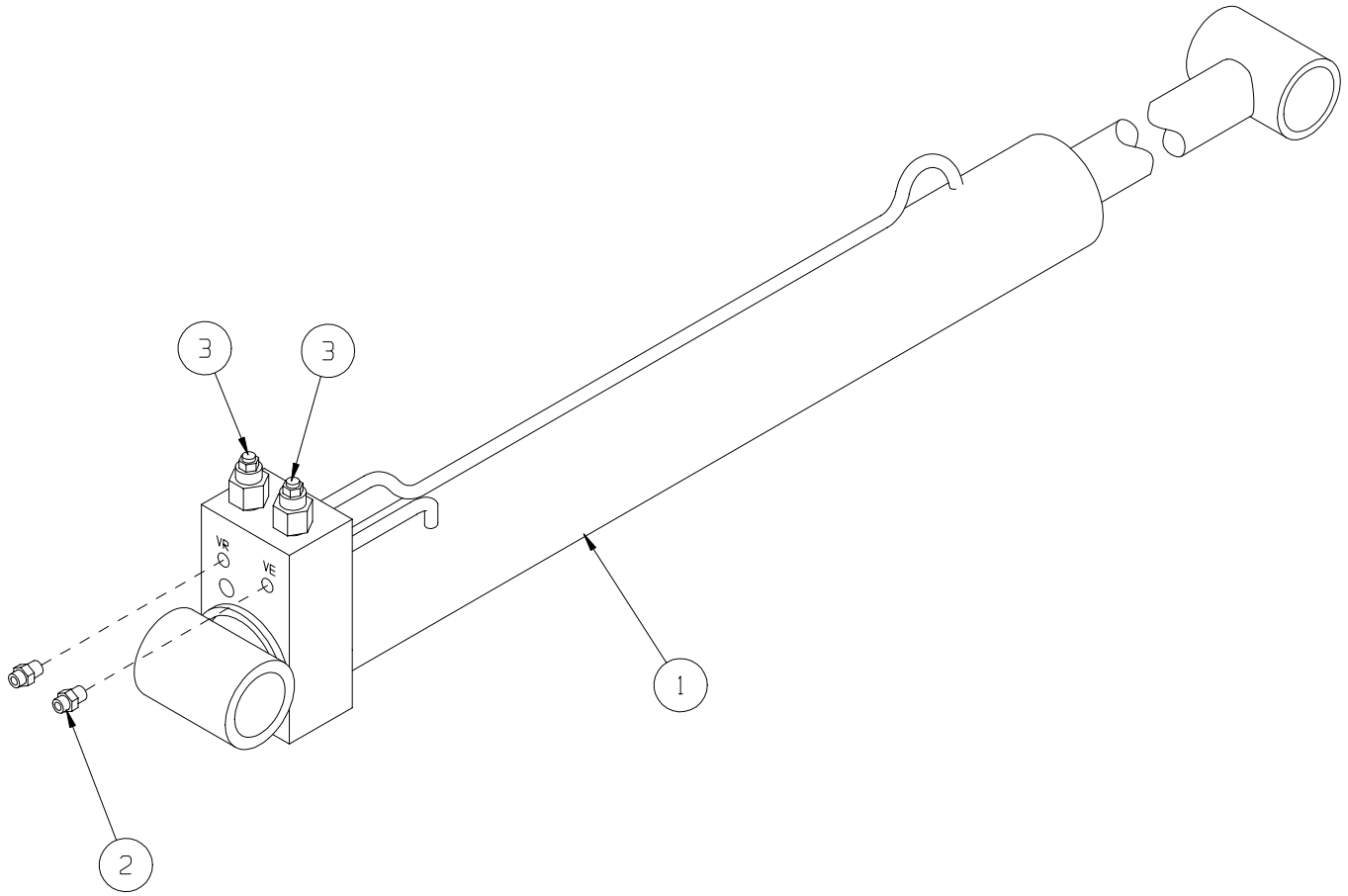


JIB CYLINDER ASSEMBLY, SB80

102339-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	102251-000	JIB CYLINDER	1
*	102251-010	SEAL KIT	-
*	102251-003	BUSHING	4
2	100432-002	FITTING, STR. ADAPTER 4MB-4MFOR	2
3	102251-004	COUNTERBALANCE VALVE	2

*Not Shown

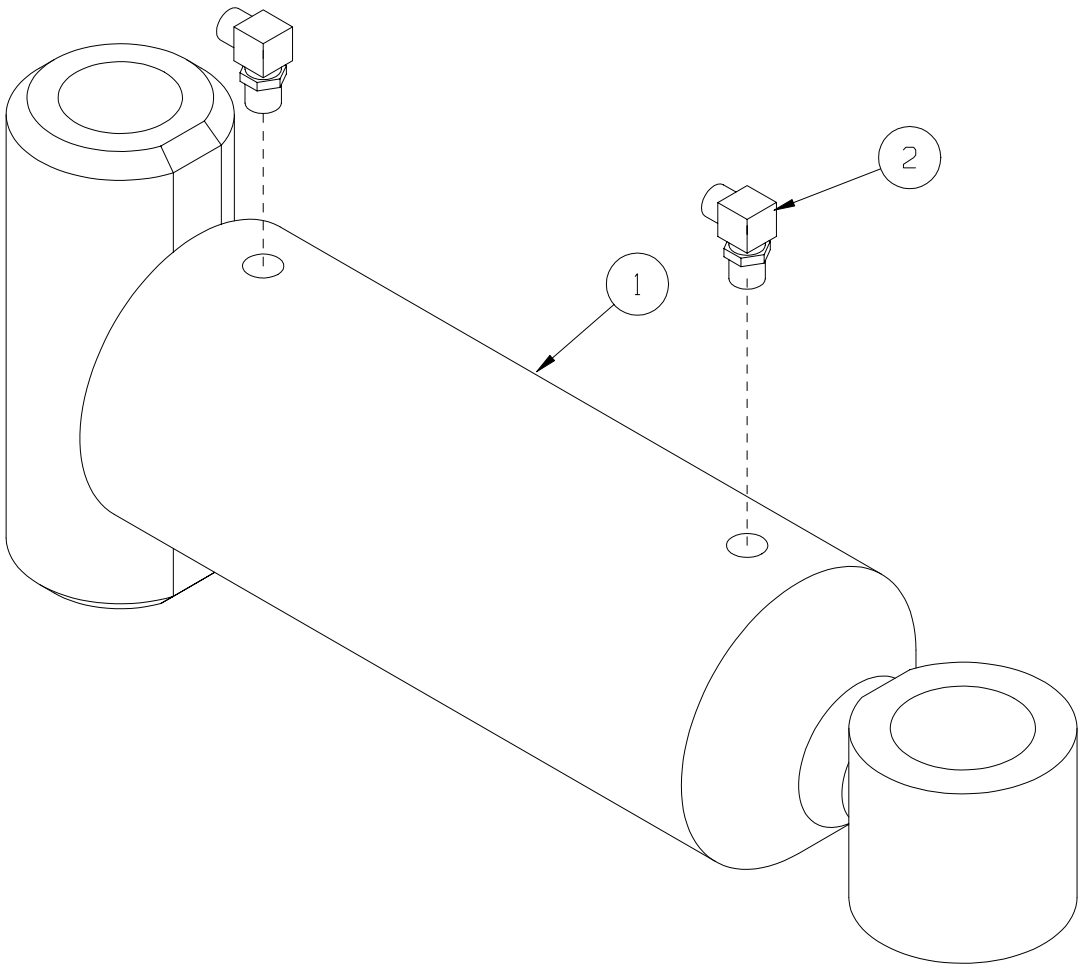


STEERING CYLINDER ASSEMBLY, SB80

102344-000

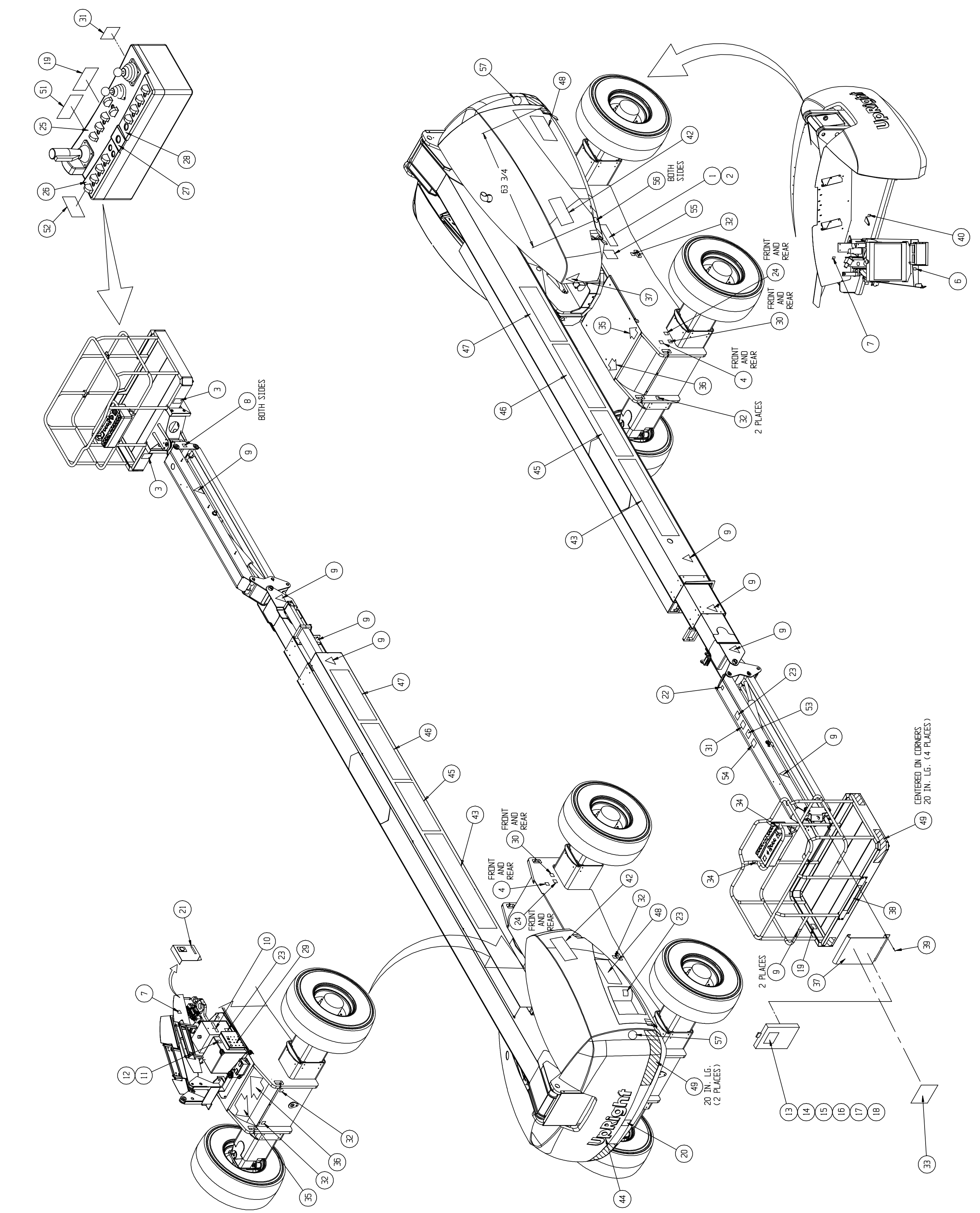
ITEM	PART NO.	DESCRIPTION	QTY.
1	102257-000	STEERING CYLINDER	1
*	102257-010	SEAL KIT	-
*	102257-003	BUSHING (ROD END)	1
*	102257-004	BUSHING (CYLINDER END)	1
2	100434-008	FITTING, 90° ADAPTER 6MB-6MFOR	2

*Not Shown



EURO LABEL KIT INSTALLATION, SB80
FIXED AXLE, DIESEL
102024-002

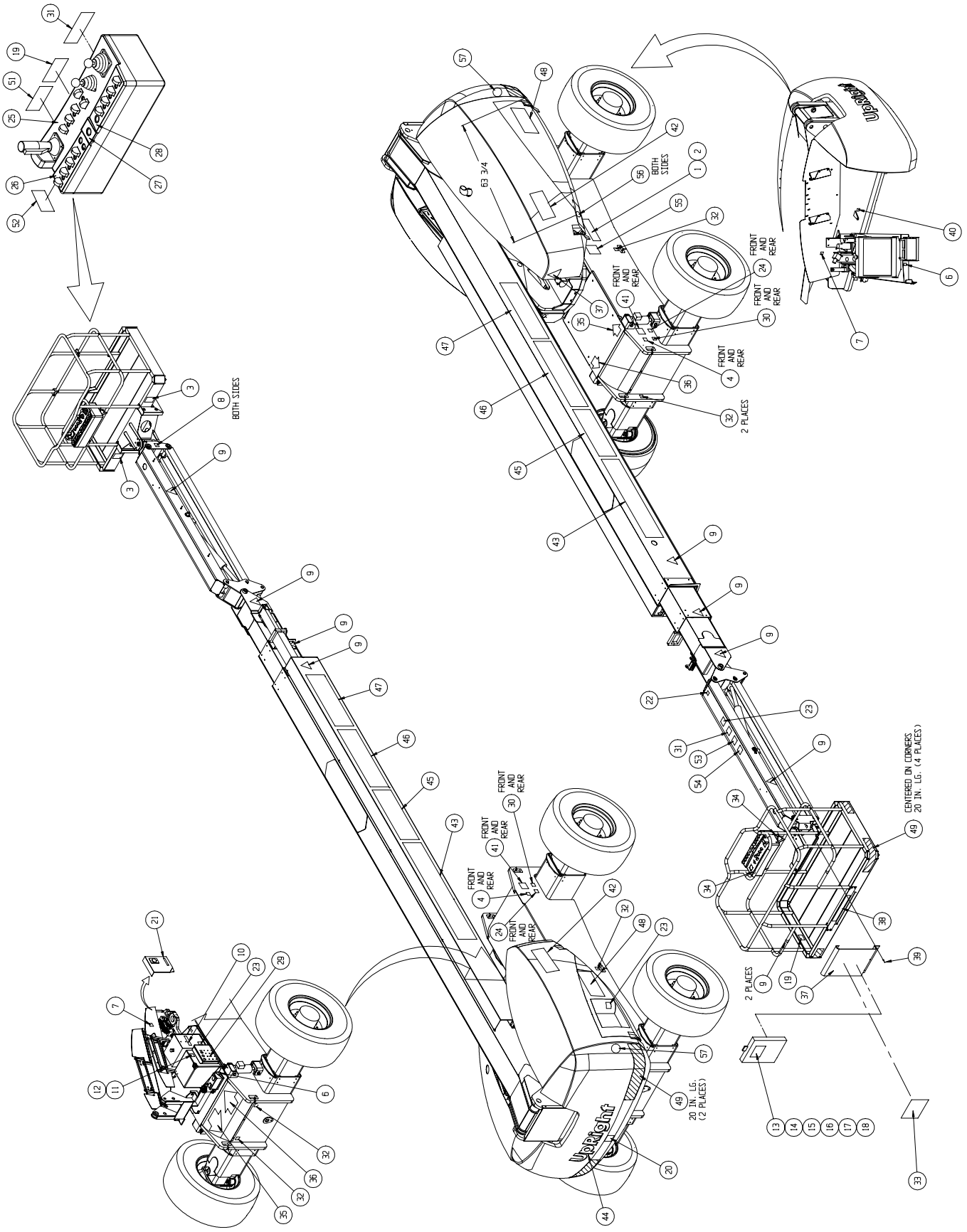
ITEM	PART NO.	DESCRIPTION	QTY.
1	061205-003	NAME PLATE / BOOM / EC	1
2	065368-000	TACK	4
3	068632-001	LABEL, TIE DOWN ONLY	2
4	066556-001	LABEL, WARNING	4
6	101210-000	LABEL BATTERY	2
7	066555-000	LABEL, CAUTION	2
9	101208-000	LABEL, PINCH POINT	10
10	101203-001	LABEL HYDRAULIC FLUID LEVEL	1
11	027898-001	LABEL DIESEL FUEL	1
13	010076-001	LABEL ATTENTION	1
14	010076-000	MANUAL CASE	1
15	102320-020	USER MANUAL	1
17	011248-004	NUT HEX ESNA 1/4-20UNC	4
18	011252-008	SCREW HHC X 1/4-20 X 1	4
19	062557-016	MAX LOAD 272 Kg	2
20	064199-001	LABEL 4WD	1
22	064444-000	LABEL USA	1
23	066554-000	LABEL BEFORE OPERATION	3
24	068979-000	LABEL, CHOCK WHEELS	4
25	100340-005	LABEL UPPER CONTROLS-DRIVE	1
26	100340-006	LABEL UPPER CONTROLS-AUX. DSL	1
27	100340-002	LABEL UPPER CONTROLS-EMERGENCY STOP	1
28	100340-008	LABEL UPPER CONTROLS-AUX.	1
29	100341-001	LABEL LOWER CONTROLS	1
30	066562-006	LABEL, TIRE PRESSURE	4
31	100100-001	LABLE AXLE EXTEND	2
32	068632-000	LABEL HOLD DOWN	6
33	100345-001	LABEL READ AND UNDERSTAND	1
34	068635-000	LABEL HARNESS POINT	2
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	100468-001	PANEL, LABEL MOUNT	1
38	061683-004	LABEL UPRIGHT	1
39	026551-005	POP RIVET 1/8 (3/16-1/4 GRIP)	3
40	062814-000	LABEL INSERT PIN	1
42	061683-007	LABEL UPRIGHT	2
43	061683-017	LABEL UPRIGHT	2
44	061683-011	LABEL UPRIGHT (C-WEIGHT)	1
45	100342-001	LABEL SB80	2
46	100343-001	LABEL -BOOM-	2
47	100344-001	LABEL LIFT	2
48	100342-002	LABEL SB80	2
49	100339-099	TAPE, SAFETY YELLOW/BLACK STRIPE	EA .10
51	100104-000	OPERATING INSTRUCTIONS	1
52	100100-000	EMERGENCY DOWN LABEL	1
53	100102-000	NON-INSULATED LABEL	1
54	100103-000	LABEL ALARM - TILT	1
55	030768-002	GS LABEL	1
56	100105-000	C.G. LABEL	2
57	100101-000	ENTRY PROHIBITED LABEL	2



63 3/4
BOTH SIDES
FRONT AND REAR
2 PLACES
CENTERED ON CORNERS 20 IN. LG. (4 PLACES)
20 IN. LG. (2 PLACES)
UpRight

EURO LABEL KIT INSTALLATION, SB80
OSCILLATING AXLE, DIESEL
102024-005

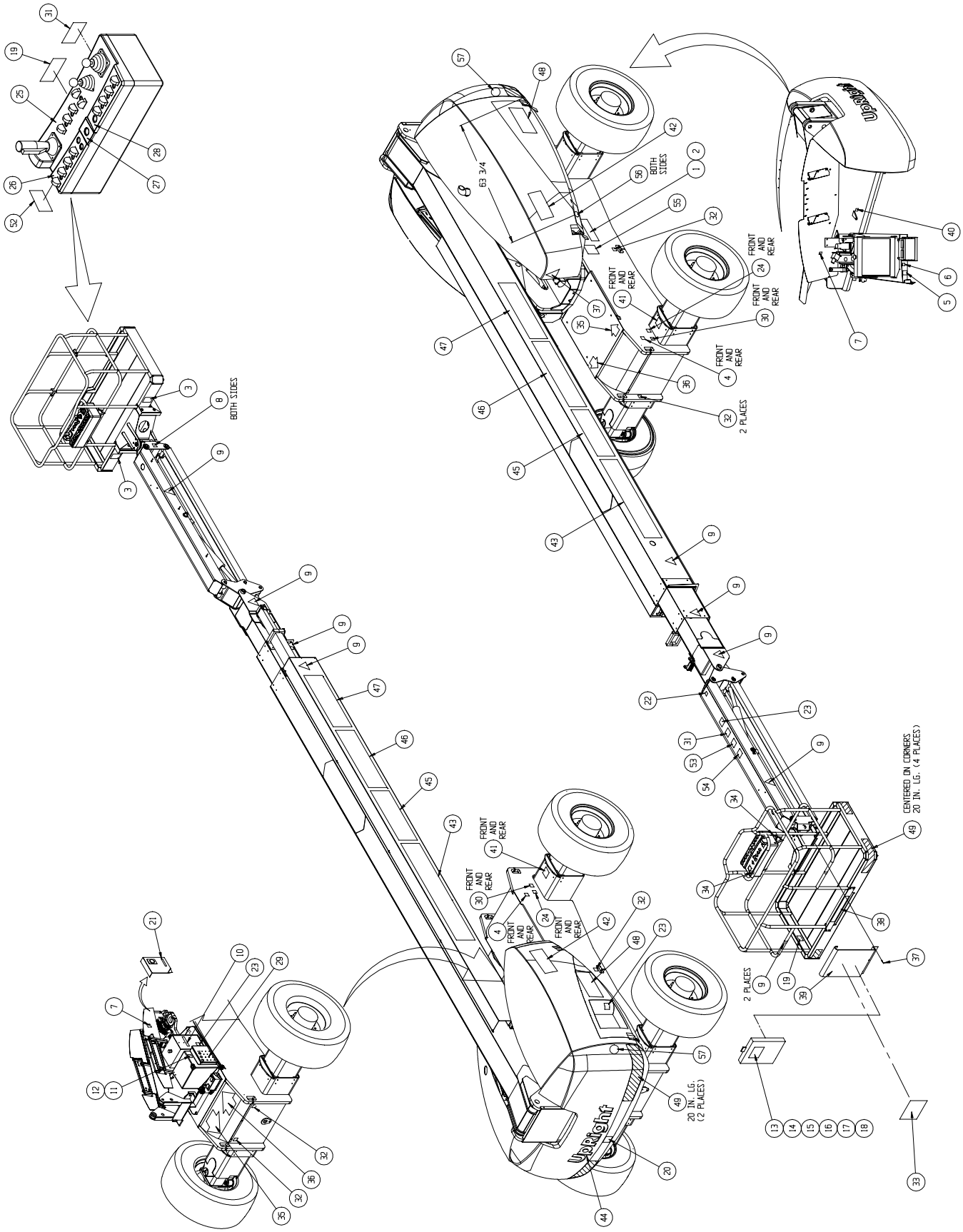
1	061205-003	NAME PLATE / BOOM / EC	1
2	065368-000	TACK	4
3	068632-001	LABEL, TIE DOWN ONLY	2
4	066556-001	LABEL, WARNING	4
6	101210-000	LABEL BATTERY	2
7	66555-000	LABEL, CAUTION	2
9	101208-000	LABEL, PINCH POINT	10
10	101203-001	LABEL HYDRAULIC FLUID LEVEL	1
11	027898-001	LABEL DIESEL FUEL	1
13	010076-001	LABEL ATTENTION	1
14	010076-000	MANUAL CASE	1
15	102320-020	USER MANUAL	1
17	011248-004	NUT HEX ESNA 1/4-20UNC	4
18	011252-008	SCREW HHC X 1/4-20 X 1	4
19	062557-016	MAX LOAD 272 Kg	1
20	064199-001	LABEL 4WD	1
22	064444-000	LABEL USA	1
23	066554-000	LABEL BEFORE OPERATION	3
24	068979-000	LABEL, CHOCK WHEELS	4
25	100340-005	LABEL UPPER CONTROLS-DRIVE	1
26	100340-006	LABEL UPPER CONTROLS-AUX. DSL	1
27	100340-002	LABEL UPPER CONTROLS-EMERGENCY STOP	1
28	100340-008	LABEL UPPER CONTROLS-AUX.	1
29	100341-001	LABEL LOWER CONTROLS	1
30	066562-006	LABEL, TIRE PRESSURE	4
31	100100-001	LABEL, AXLE EXTEND PROCEDURE	2
32	068632-000	LABEL HOLD DOWN	6
33	100345-001	LABEL READ AND UNDERSTAND	1
34	068635-000	LABEL HARNESS POINT	2
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	100468-001	PANEL LABEL MOUNT	1
38	061683-004	LABEL UPRIGHT	1
39	026551-005	RIVETS	3
40	062814-000	LABEL INSERT PIN	1
42	061683-007	LABEL UPRIGHT	2
43	061683-017	LABEL UPRIGHT	2
44	061683-011	LABEL UPRIGHT (C-WEIGHT)	1
45	100342-001	LABEL SB80	2
46	100343-001	LABEL -BOOM-	2
47	100344-001	LABEL LIFT	2
48	100342-002	LABEL SB80	2
49	100339-099	TAPE, SAFETY YELLOW/BLACK STRIPE	EA .10
51	100104-000	OPERATING INSTRUCTIONS	1
52	100100-000	EMERGENCY DOWN LABEL	1
53	100102-000	NON-INSULATED LABEL	1
54	100103-000	LABEL ALARM - TILT	1
55	030768-002	GS LABEL	1
56	100105-000	C.G. LABEL	2
57	100101-000	ENTRY PROHIBITED LABEL	2


63 3/4
BOTH SIDES
FRONT AND REAR
2 PLACES
CENTERED ON CORNERS
20 IN. LG. (4 PLACES)
20 IN. LG.
(2 PLACES)
Upright

GERMAN LABEL KIT INSTALLATION, SB80
FIXED AXLE, DIESEL
102024-006

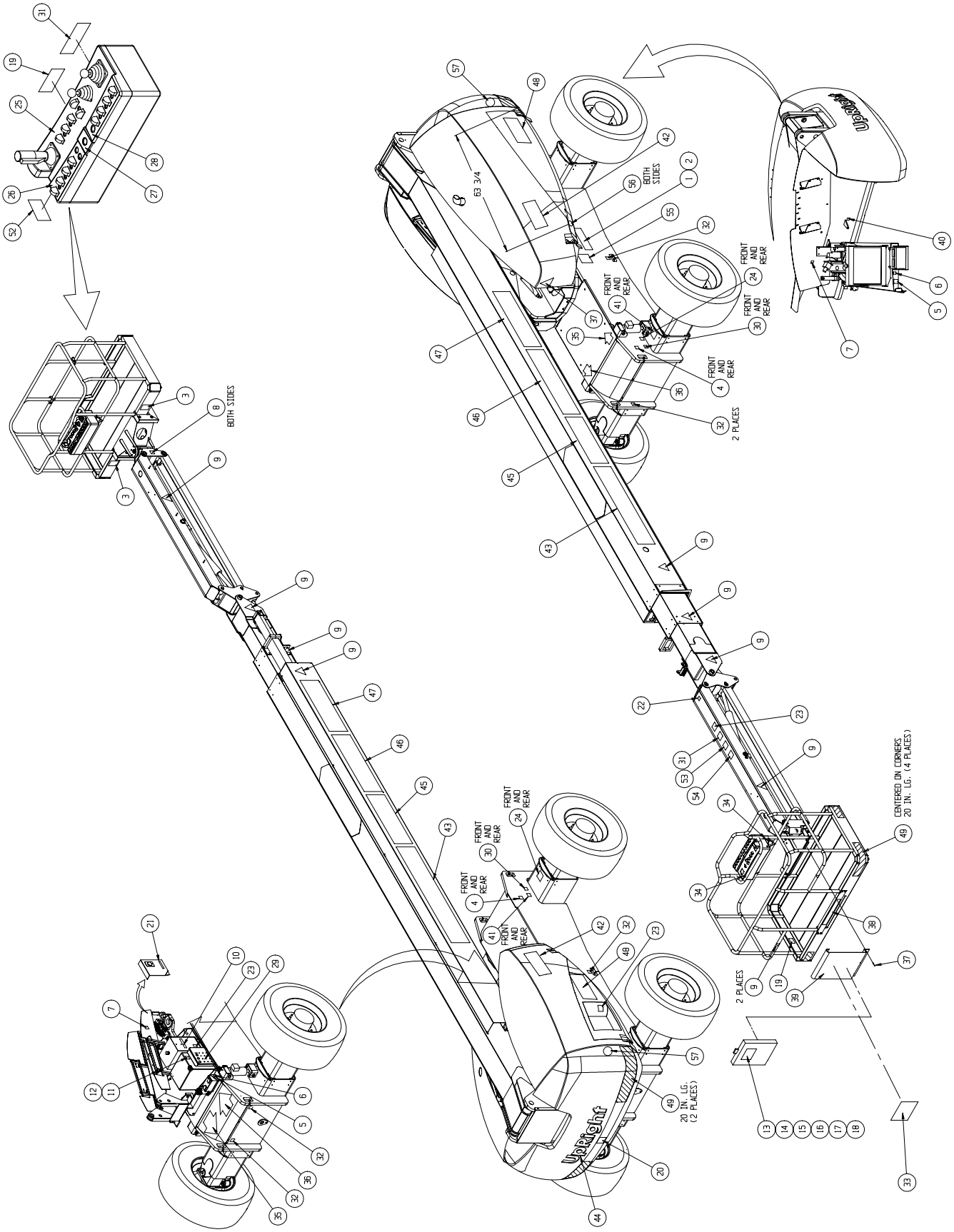
ITEM	PART NO.	DESCRIPTION	QTY.
1	061205-203	NAME PLATE / BOOM / EC GERMAN	1
2	065368-000	TACK	4
3	068632-001	LABEL, TIE DOWN ONLY	2
4	066556-001	LABEL, WARNING	4
6	101210-000	LABEL BATTERY	2
7	066555-201	LABEL CAUTION	2
9	101208-000	LABEL, PINCH POINT	10
10	101203-201	LABEL HYDRAULIC FLUID LEVEL	1
11	064914-000	LABEL DIESEL FUEL	1
13	064913-000	LABEL ATTENTION	1
14	010076-000	MANUAL CASE	1
15	102320-020	USER MANUAL	1
17	011248-004	NUT HEX ESNA 1/4-20UNC	4
18	011252-008	SCREW HHC X 1/4-20 X 1	4
19	062557-216	MAX LOAD 600 Lb / 272 Kg	2
20	064199-001	LABEL 4WD	1
22	064444-000	LABEL USA	1
23	066554-200	LABEL BEFORE OPERATION	3
24	068979-200	LABEL, CHOCK WHEELS	4
25	100340-205	LABEL UPPER CONTROLS-DRIVE	1
26	100340-206	LABEL UPPER CONTROLS-AUX. DSL	1
27	100340-202	LABEL UPPER CONTROLS-EMERGENCY STOP	1
28	100340-208	LABEL UPPER CONTROLS-AUX.	1
29	100341-201	LABEL LOWER CONTROLS	1
31	100100-001	LABEL, AXLE EXTEND	2
32	068632-000	LABEL HOLD DOWN	6
34	068635-000	LABEL HARNESS POINT	2

ITEM	PART NO.	DESCRIPTION	QTY.
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	026551-005	RIVET	3
38	061683-004	LABEL UPRIGHT	1
39	100468-001	PANEL LABEL MOUNT	1
40	062814-200	LABEL INSERT PIN	1
42	061683-007	LABEL UPRIGHT	2
43	061683-017	LABEL UPRIGHT	2
44	061683-011	LABEL UPRIGHT (C-WEIGHT)	1
45	100342-001	LABEL SB80	2
46	100343-000	LABEL -BOOM-	2
47	100344-000	LABEL LIFT	2
48	100342-002	LABEL SB80	2
49	100339-099	TAPE, SAFETY YELLOW/BLACK STRIPE	.10
51	100104-200	OPERATING INSTRUCTIONS	1
52	100100-201	EMERGENCY DOWN LABEL	1
53	100102-200	NON-INSULATED LABEL	1
54	100103-200	LABEL ALARM - TILT	1
55	030768-002	GS LABEL	1
56	100105-000	C.G. LABEL	2
57	100101-200	ENTRY PROHIBITED LABEL	2


63 3/4
BOTH SIDES
FRONT AND REAR
2 PLACES
CENTERED ON CORNERS 20 IN. LG. (4 PLACES)
20 IN. LG. (2 PLACES)
2 PLACES

GERMAN LABEL KIT INSTALLATION, SB80
OSCILLATING AXLE, DIESEL
102024-007

ITEM	PART NO.	DESCRIPTION	QTY.
1	061205-203	NAME PLATE / BOOM / EC GERMAN	1
2	065368-000	TACK	2
3	068632-001	LABEL, TIE DOWN ONLY	2
4	066556-001	LABEL, WARNING	4
6	101210-000	LABEL BATTERY	2
7	066555-201	LABEL CAUTION	2
9	101208-000	LABEL, PINCH POINT	10
10	101203-201	LABEL HYDRAULIC FLUID LEVEL	1
11	064914-000	LABEL DIESEL FUEL	1
13	064913-000	LABEL ATTENTION	1
14	010076-000	MANUAL CASE	1
15	102320-020	USER MANUAL	1
17	011248-004	NUT HEX ESNA 1/4-20UNC	4
18	011252-008	SCREW HHC X 1/4-20 X 1	4
19	062557-216	MAX LOAD 600 Lb / 272 Kg	2
20	064199-001	LABEL 4WD	1
22	064444-000	LABEL USA	1
23	066554-200	LABEL BEFORE OPERATION	3
24	068979-200	LABEL, CHOCK WHEELS	4
25	100340-205	LABEL UPPER CONTROLS-DRIVE	1
26	100340-206	LABEL UPPER CONTROLS-AUX. DSL	1
27	100340-202	LABEL UPPER CONTROLS-EMERGENCY STOP	1
28	100340-208	LABEL UPPER CONTROLS-AUX.	1
29	100341-201	LABEL LOWER CONTROLS	1
31	100100-001	LABEL, AXLE EXTEND PROCEDURE	2
32	068632-000	LABEL HOLD DOWN	6
34	068635-000	LABEL HARNESS POINT	2
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	026551-005	RIVET	3
38	061683-004	LABEL UPRIGHT	1
39	100468-001	PANEL LABEL MOUNT	1
40	062814-200	LABEL INSERT PIN	1
42	061683-007	LABEL UPRIGHT	2
43	061683-017	LABEL UPRIGHT	2
44	061683-011	LABEL UPRIGHT (C-WEIGHT)	1
45	100342-001	LABEL SB80	2
46	100343-001	LABEL -BOOM-	2
47	100344-001	LABEL LIFT	2
48	100342-002	LABEL SB80	2
49	100339-099	TAPE, SAFETY YELLOW/BLACK STRIPE	.10
51	100104-200	OPERATING INSTRUCTIONS	1
52	100100-201	EMERGENCY DOWN LABEL	1
53	100102-200	NON-INSULATED LABEL	1
54	100103-200	LABEL ALARM - TILT	1
55	030768-002	GS LABEL	1
56	100105-000	C.G. LABEL	2
57	100101-200	ENTRY PROHIBITED LABEL	2


63 3/4
BOTH SIDES
FRONT AND REAR
2 PLACES
CENTERED ON CORNERS 20 IN. LG. (4 PLACES)
20 IN. LG. (2 PLACES)
Upright

TIRE & WHEEL ASSEMBLY, SB80 POLY-FILL LEFT HAND

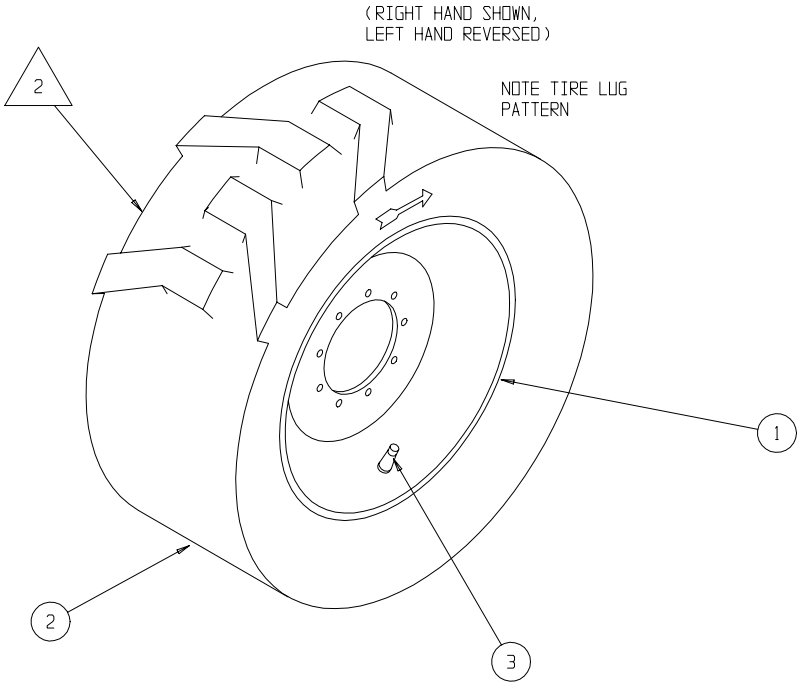
102034-002

ITEM	PART NO.	DESCRIPTION	QTY.
1	102265-000	WHEEL, 22.5 X 11.75	1
2	102268-000	TIRE, 22.5 X 15 NHS 16 PLY	1
3	012282-001	VALVE STEM	1

TIRE & WHEEL ASSEMBLY, SB80 POLY-FILL, RIGHT HAND

102034-003

ITEM	PART NO.	DESCRIPTION	QTY.
1	102265-000	WHEEL, 22.5 X 11.75	1
2	102268-000	TIRE, 22.5 X 15 NHS 16 PLY	1
3	012282-001	VALVE STEM	1



NOTES:

1. FILL TIRE & WHEEL ASSY WITH 520 LBS MIN 550 LBS MAX OF POLYFILL OR EQUIVALENT

2. BRAND BACKSIDE OF TIRE/WHEEL ASSY AS FOLLOWS:
"UPRIGHT 6KP"
SPACE
POLY-FILLED
LAST DIGIT OF YEAR WHEN TIRE WAS FILLED.
LETTER CORRESPONDING TO MONTH: (JAN=A ETC)

PART NO.	DESCRIPTION
102034-003	RIGHT HAND (AS SHOWN)
102034-002	LEFT HAND (REVERSE WHEEL)

TIRE & WHEEL ASSEMBLY, SB80 POLY-FILL, LEFT HAND

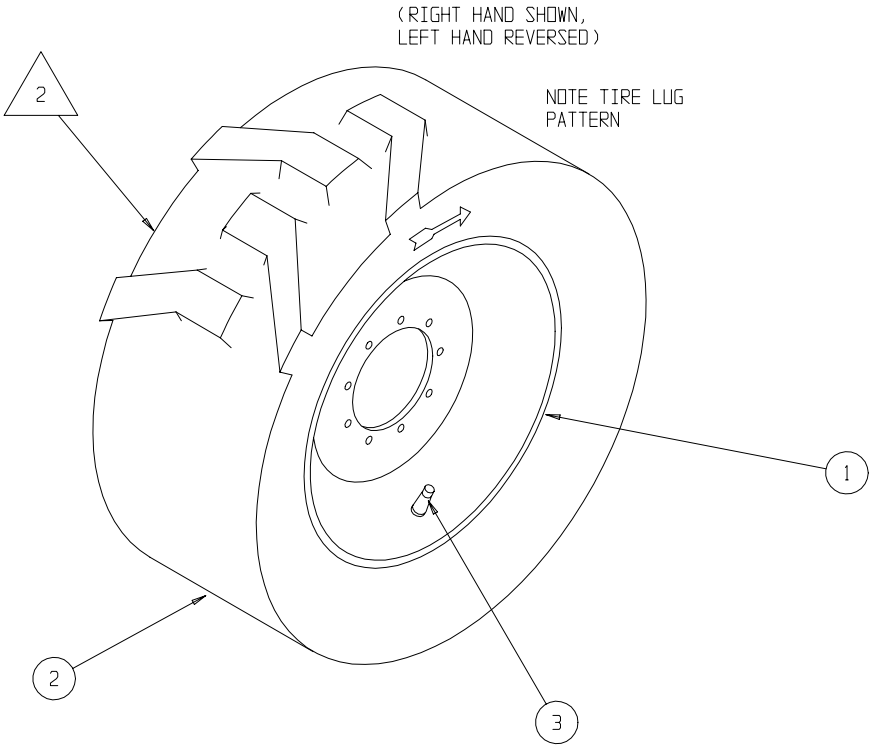
102034-002

ITEM	PART NO.	DESCRIPTION	QTY.
1	102265-000	WHEEL, 22.5 X 11.75	1
2	102268-000	TIRE, 22.5 X 15 NHS 16 PLY	1
3	012282-001	VALVE STEM	1

TIRE & WHEEL ASSEMBLY, SB80 POLY-FILL, RIGHT HAND

102034-003

ITEM	PART NO.	DESCRIPTION	QTY.
1	102265-000	WHEEL, 22.5 X 11.75	1
2	102268-000	TIRE, 22.5 X 15 NHS 16 PLY	1
3	012282-001	VALVE STEM	1



NOTES:

1. FILL TIRE & WHEEL ASSY WITH 520 LBS MIN 550 LBS MAX OF POLYFILL OR EQUIVALENT

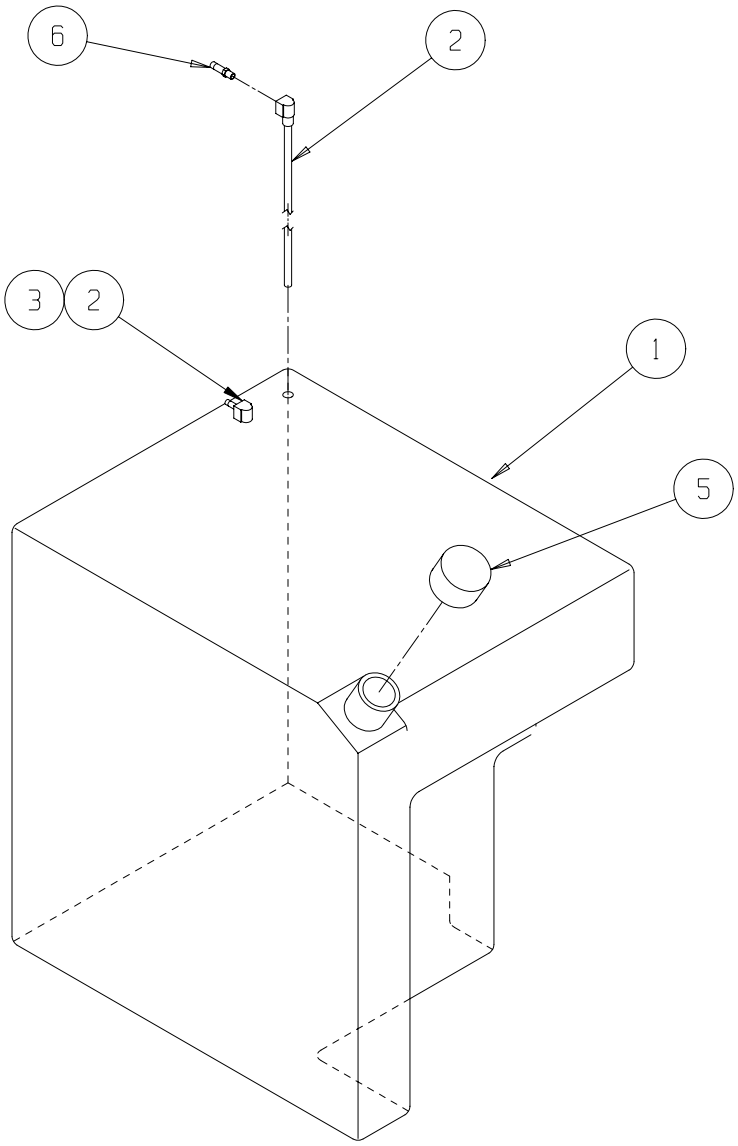
2. BRAND BACKSIDE OF TIRE/WHEEL ASSY AS FOLLOWS:
"UPRIGHT 6KP"
SPACE
LAST DIGIT OF YEAR WHEN TIRE WAS FILLED.
LETTER CORRESPONDING TO MONTH: (JAN=A ETC)
POLY-FILLED

PART NO.	DESCRIPTION
102034-003	RIGHT HAND (AS SHOWN)
102034-002	LEFT HAND (REVERSE WHEEL)

FUEL TANK ASSEMBLY, SB80, DIESEL

102040-000

ITEM	PART NO.	DESCRIPTION	QTY.
1	100250-000	FUEL TANK, PLASTIC	1
2	100272-000	WITHDRAWL TUBE	2
3	010178-003	FITTING 1/4 NPT TO 1/4 BARBED	1
4	011919-006	PIPE PLUG 3/4NPT	1
5	068982-002	FILLER CAP	1
6	010178-005	FITTING 1/4 NPT TO 5/16 BARBED	1

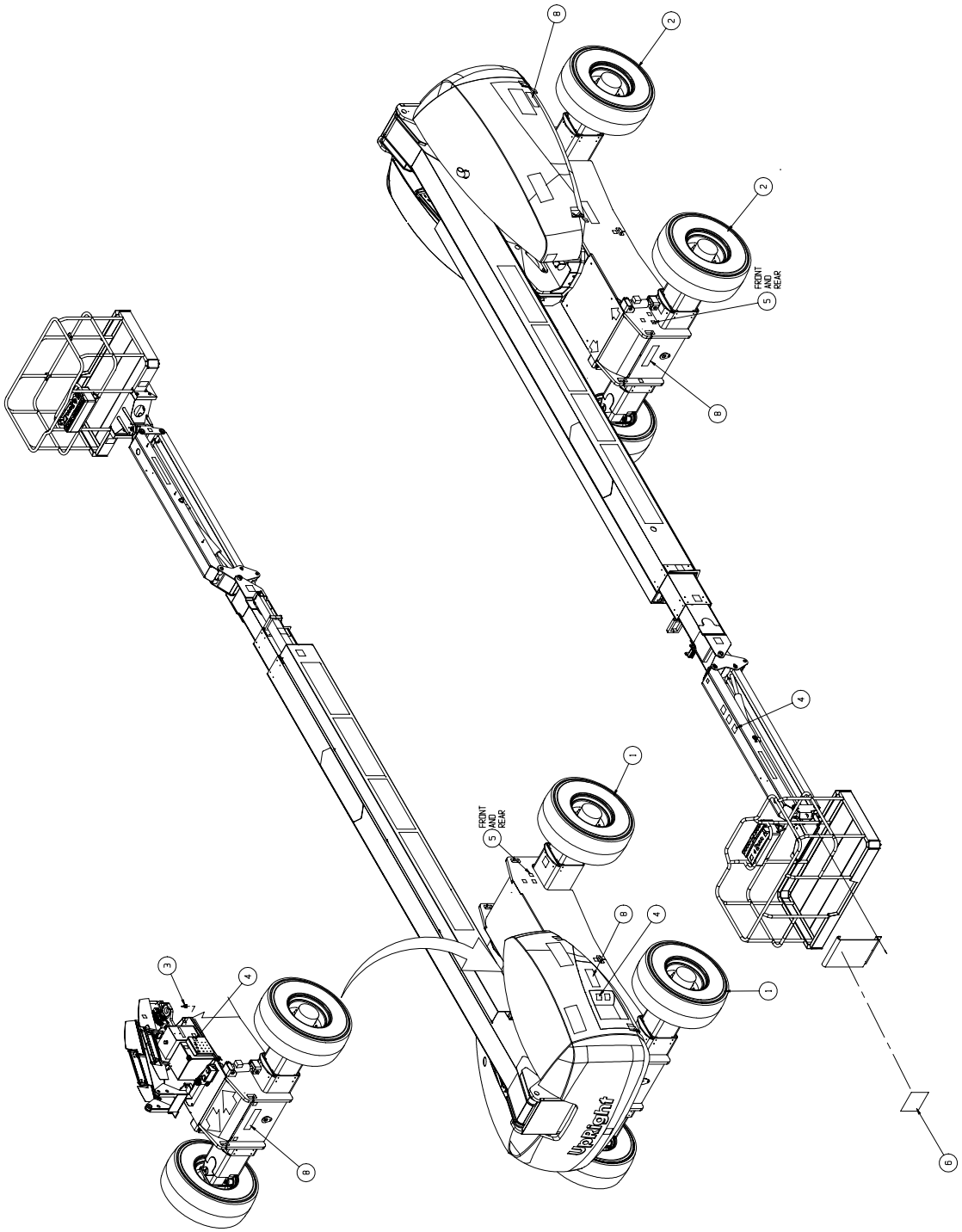


PLUS3 OPTION, SB80

102309-001

ITEM	PART NO.	DESCRIPTION	QTY.
2	102035-002	18-22.5 18 PLY POLY FILL TIRE (L.H.)	2
2	102035-003	18-22.5 18 PLY POLY FILL TIRE (R.H.)	2
3	029945-019	LEVEL SENSOR 8 deg	1
4	100106-000	LABEL, "PLUS 3" INSTRUCTIONAL	3

ITEM	PART NO.	DESCRIPTION	QTY.
5	066562-008	LABEL, POLY FILLED TIRES	4
7	100345-005	LABEL, READ AND UNDERSTAND	1
8	100342-003	LABEL, PLUS3	4



ILLUSTRATED PARTS BREAKDOWN

NOTES:

UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

Upright, Inc.
801 South Pine Street
Madera, California 93637
TEL: 559-662-3900
FAX: 559-673-6184
PARTS: 1-888-UR-PARTS
PARTSFAX: (559) 669-9884

UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

P/N 102321-020
08-02

Upright, Inc.
Unit S1, Park West Industrial Park
Friel Avenue
Nangor Road
Dublin 12, Ireland
TEL: +353 1 620 9300
FAX: +353 1 620 9301