

UpRight



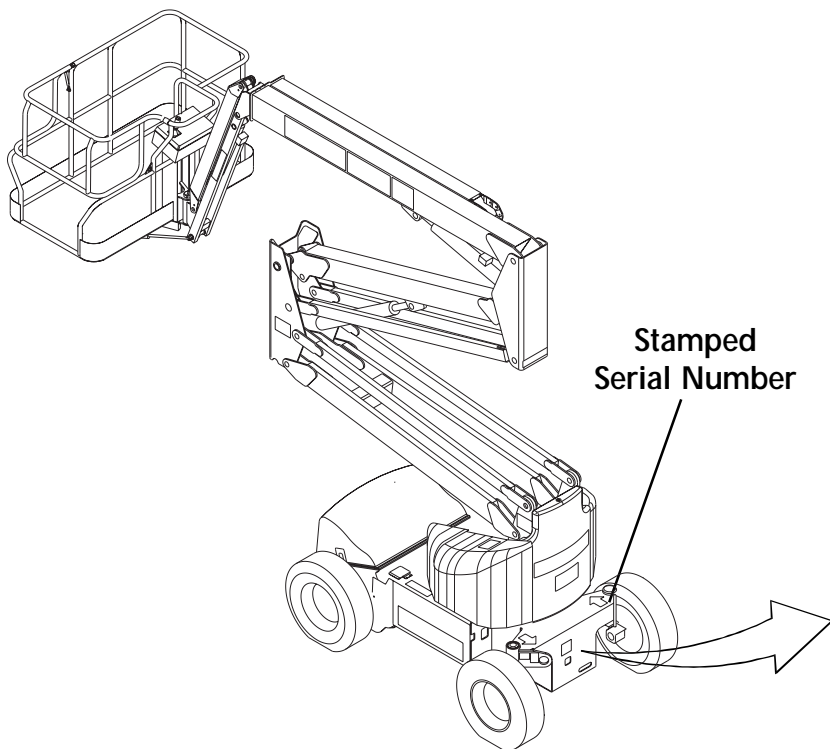
AB46 II/C

***2 WHEEL DRIVE
WORK PLATFORMS***

Service &
Parts Manual

SERVICE & PARTS MANUAL

AB46 2WD - I/C Models Serial Numbers 1000 to current



When contacting UpRight for service or parts information, be sure to include the MODEL and SERIAL NUMBERS from the equipment nameplate. Should the nameplate be missing the SERIAL NUMBER is also stamped on top of the chassis above the front axle pivot.

UpRight Inc.	
1775 PARK ST. SELMA CALIFORNIA 93662 USA	
Model: _____	Serial number: _____
GVW: _____ lbs. _____ kg.	Mfg. date: _____
Maximum allowable incline of machine when elevated: _____ deg.	
Occupants and equipment must not exceed the rated maximum load: _____ lbs. _____ kg	
Maximum platform occupants: _____	
Maximum allowable side force on platform: _____ lbs. _____ N	
Maximum platform height: _____ ft. _____ m	
Maximum platform reach: _____ ft. _____ m	
Maximum allowable wind speed: _____ mph _____ km/h	
Maximum hydraulic system pressure: _____ psi _____ bar	
Maximum system voltage: _____ vdc	
This machine is manufactured to comply with ANSI A92.5-1992.	
CAUTION: CONSULT OPERATOR'S MANUAL BEFORE USE.	
THIS PLATFORM IS NOT ELECTRICALLY INSULATED	

UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

UpRight, Inc.
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Selma, California 93662
TEL: 209/891-5200
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Foreword

Introduction

HOW TO USE THIS MANUAL

This manual is divided into 6 sections. The right hand pages of each section is marked with a black tab that lines up with one of the thumb index tabs on the right side of this page. You can quickly find each section without looking through the table of contents which follows this page. The section number printed at the top corner of each page can also 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.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

Introduction & Specifications

General description and machine specifications.

1.0

Operation

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2.0

Maintenance

Preventative maintenance and service information.

3.0

Troubleshooting

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4.0

Schematics

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5.0

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Foreword

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1.0 Introduction

PURPOSE

The purpose of this service and parts manual is to provide instructions and illustrations for the operation and maintenance of the AB 46 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.

1.1 General Description

The AB46 Work Platform consists of the platform, controller, elevating assembly, power module, control module, and chassis.

Platform

The platform has a reinforced steel floor, 43.5 inch (1.11 m) high guardrails with midrail, 6 inch (152 mm) toeboards and an entrance gate at the side of the platform.



WARNING



DO NOT use the maintenance platform without guardrails 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 cage. The foot switch must 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 elevating assembly; an articulated boom powered by two single stage lift cylinders. The hydraulic pump, driven by the engine, powers the cylinders. Solenoid operated valves control raising and lowering.

Chassis

The chassis is a structural frame that supports all the components of the AB46 Work Platform. It contains the engine, battery, hydraulic pump, and drive motors.

PURPOSE OF EQUIPMENT

The objective of the AB46 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 a creep speed range.

Elevating of the Work Platform is limited to firm, level surfaces **only**. Any degree of slope greater than 5° will sound a warning alarm when machine is elevated. If machine is lowered, a light will illuminate on platform control box.



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. Platform
2. Platform Controller Assembly
3. Elevating Assembly

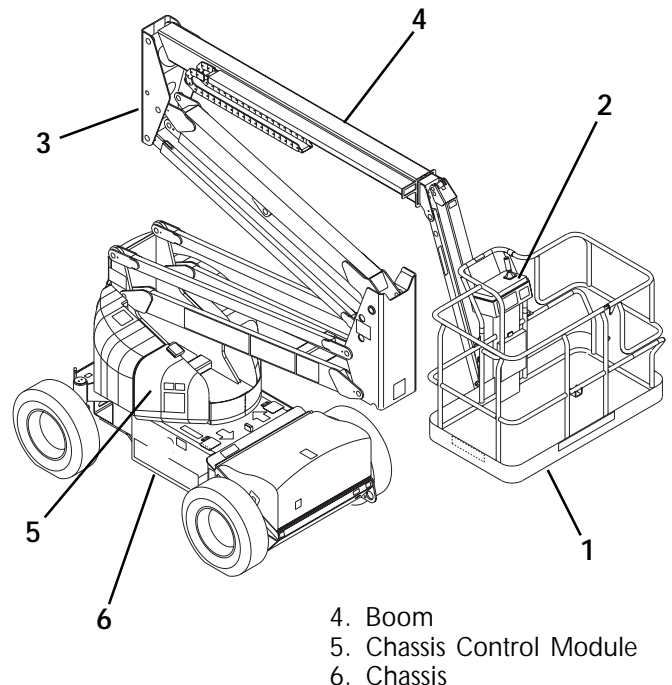
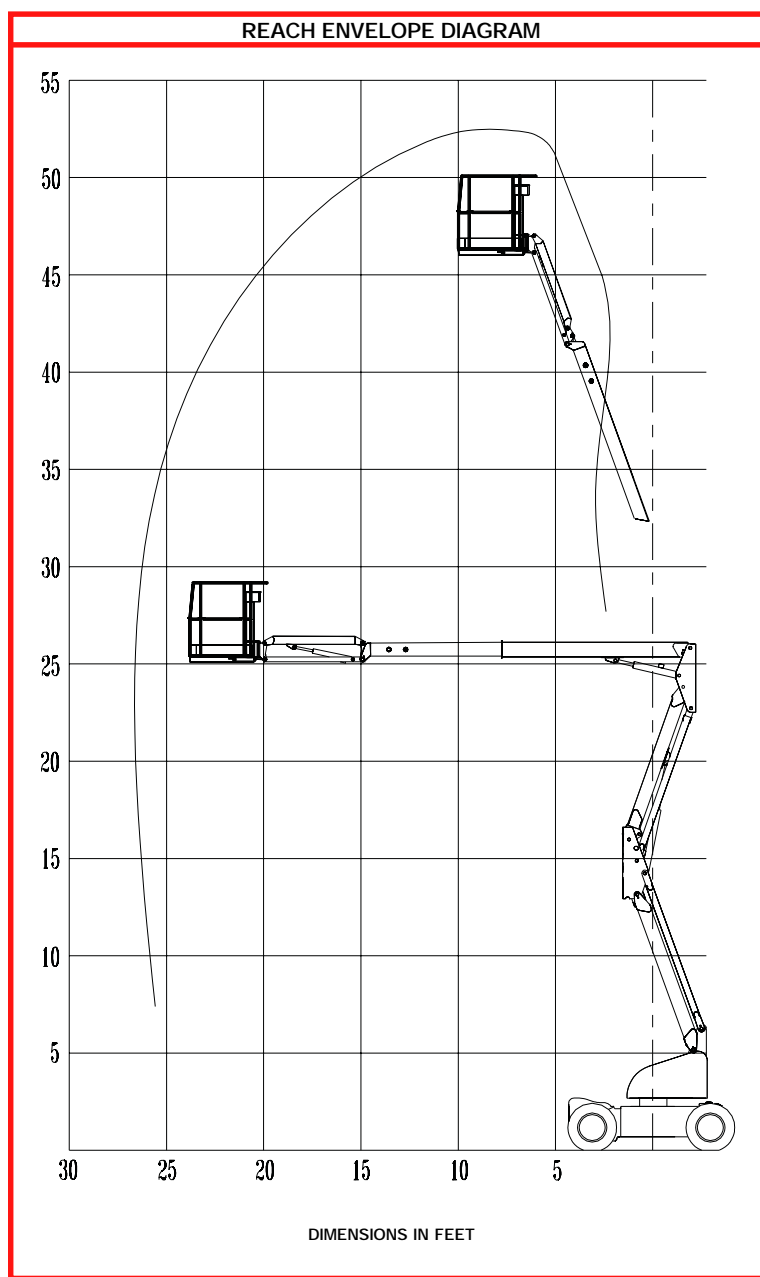


Figure 1-1: AB46 Work Platform

1.2 Specifications

Table 1-1: Specifications

ITEM	SPECIFICATION
Height	
Working height maximum	52 ft.
Platform height maximum	46 ft.
Platform step in height	9 in.
Up and over height	25 ft.
Drivable height	46 ft.
Horizontal outreach	24 ft. 6 in.
Turret rotation	360 deg. noncontinuous
Platform rotation	160 deg.
Tail swing	None
Jib length	5 ft.
Jib arc	140 deg.
Inside turning radius	2 ft.
Outside turning radius	9 ft. 10 in.
Drive speed (lowered)	3.5 mph
Drive speed (elevated)	.34 mph
Gradability	30% - 16.7 Degrees
Dimensions (boom stowed)	
Platform Size	69 in. x 39 in.
Guardrail height	43 1/2 in.
Toeboards	6 in.
Maximum platform capacity	500 lbs.
Maximum no. of occupants	2
Weight	14,140 lbs.
Overall height	6 ft. 6 in.
Overall length	17 ft. 10 in.
Overall width	5 ft. 9 in.
Wheel base	73 in.
Wheel track	59 in.
Ground Clearance	6 in.
Power source	Kubota WG750 or D905
System voltage	12VDC
Maximum Hyd. Pressure	4400 psi
Controls	Electric Proportional
Tires	10x16.5 8 ply lug tread



* Specifications subject to change without notice.

Meets or exceeds all applicable requirements of OSHA and ANSI A92.5-1992

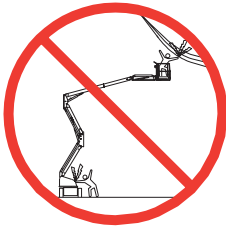
AB-46 I/C

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 boom supported aerial work platform.

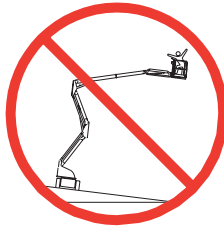
SAFETY RULES

Electrocution Hazard



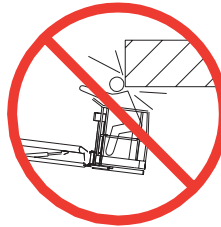
NEVER operate the machine within ten (10) feet of power lines. **THIS MACHINE IS NOT INSULATED.**

Tip Over Hazard



NEVER operate the boom or drive with platform elevated unless on firm level surface.

Collision Hazard



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

Fall Hazard



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 500 lbs. (225 kg) and two (2) occupants.

NEVER exceed 45 lbs. (200 N) 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 28 mph (12.5 m/sec.).

IN CASE OF EMERGENCY push emergency stop button to cut power to all machine functions.

ALWAYS close and secure gate 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. Refer to pages 6-66 & 6-67 for label identification.

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 battery 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 key switches off and removing all keys.

Introduction

This manual covers the operation of internal combustion powered models of the AB-46 Articulated Boom.

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; tire pressure must be 65 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. Insure that gate operates freely and latches securely.
7. Check Hydraulic fluid level with platform fully lowered.
8. Check battery fluid level (see battery maintenance, page 2-8).
9. Check fuel level, add fuel if necessary (see *fueling*, page 2-8).
10. Ensure that radiator is cold, check coolant level. Add if necessary.



WARNING



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

SYSTEM FUNCTION INSPECTION

Note: Refer to figures 2-1 and 2-2 for chassis and platform control locations.

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 turn on (rotate clockwise) emergency stop switches at the chassis control panel and at the platform control panel.
3. Press the engine start button to crank the engine; release when engine starts. If engine is cold: press and hold the choke button while starting gasoline / propane models; press the glow plug button and hold for six seconds prior to starting diesel models.
4. 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.
5. Operate each function switch to raise / lower, extend / retract, rotate left / right, each section of the elevating assembly and observe the operation of the machine. All functions should operate through full cycle smoothly.
6. Turn chassis key switch to platform.
7. Mount the platform, close and latch the gate, and attach approved fall restraint to designated platform anchorage point. Attach only one fall restraint to each point.
8. Start the engine.
9. Without depressing the foot switch, move the drive control handle, machine should not function.
10. Depress the foot switch and move the drive control handle forward and reverse. Observe that proportional functions operate smoothly, and that brakes apply quickly after control is released.
11. While depressing foot switch, operate steer switch to left and right. Observe that steering wheels turn properly.
12. While depressing foot switch, turn function speed control knob to desired setting, and operate boom controls. Observe that boom operates smoothly, and that upper boom, jib, turret rotation, platform level, and platform rotation controls operate proportionally in conjunction with function speed control knob. Observe that platform maintains level when boom is elevated.
13. With the upper boom elevated one foot, operate drive control handle. Observe that drive speed is limited to creep (1/2 foot [.15m] per second). Lower upper boom to stowed position.
14. Press the service horn button. Observe that horn is audible.



WARNING



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

Controls and Indicators

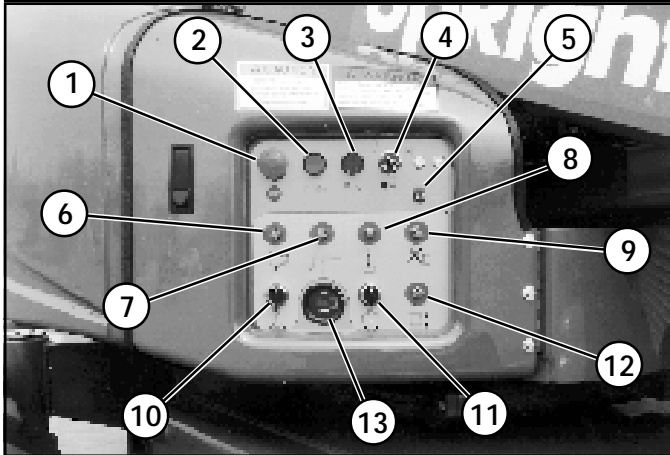


Figure 2-1: Chassis Controls

Note: The following list corresponds to the numbered items in figures one and two.

1. Emergency stop.
2. Engine start.
3. Choke / glow plug button.
4. Keyswitch
5. Control fuses.
6. Riser control.
7. Upper boom control.
8. Boom extension control.
9. Jib control.
10. Turret rotation control.
11. Platform rotation control.
12. Platform level control.
13. Hourmeter.
14. Service horn button.
15. Drive control handle.
16. Function speed control.
17. Fuel selector.
18. Foot switch (located on platform floor).
19. Out of level indicator.

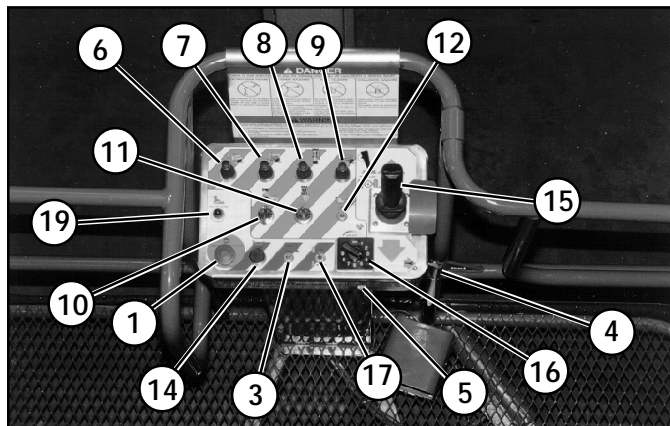


Figure 2-2: Platform Controls

Operation

Before operating work platform insure that:

Pre-operation and safety inspection has been completed, and any discrepancies have been corrected.

The operator has been thoroughly trained on the operation of the machine.

The work area is clear of all obstructions, holes, drop-offs, or persons in the route of travel.

The surface is capable of supporting wheel loads.

Refer to figures one and two for control locations.



Emergency Stop

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



Service Horn

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



WARNING



Always wear an approved fall restraint properly attached to designated platform anchorage point when driving or elevating the machine (see figure 2-3).

Attach only one fall restraint to each anchorage point.

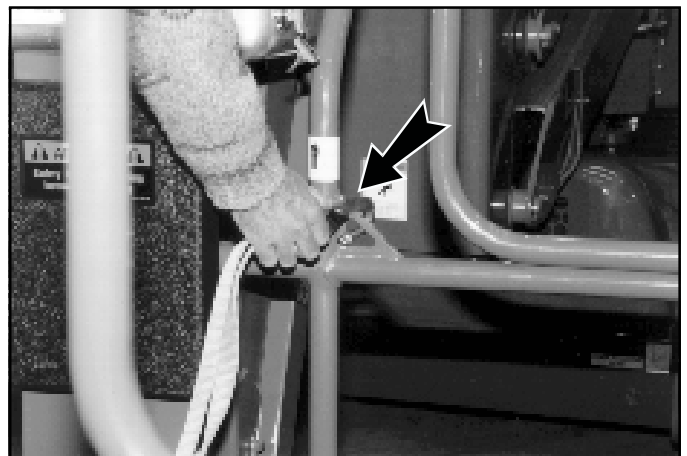


Figure 2-3: Typical Fall Restraint Anchorage Point



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. When the engine is cold: press and hold the choke button while starting gasoline / propane engines; press and hold the glow plug button for six seconds prior to starting diesel engines.

From the platform controls

1. Turn the chassis key switch to platform controls.
2. Turn the platform keyswitch fully clockwise to crank the engine. Release when engine starts.
3. When the engine is cold: Press and hold the choke button while starting gasoline / propane engines. Press and hold the glow plug button for six seconds prior to starting the diesel engine.



Driving

With Boom Lowered

1. Turn chassis key switch to platform, and turn on (turn clockwise) the chassis emergency stop switch.
2. Mount the platform, close and latch the gate.
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. Depress the foot switch and move the drive control handle forward to travel forward and reverse to travel in the reverse direction.
7. While driving, press the differential lock button, located on the front of the drive control handle, as necessary for improved traction.

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.

With Boom Elevated

Travel with boom elevated is restricted to firm level surfaces only.

When driving elevated, the machine will travel at creep speed (1/2 foot [.15 m] per second).

Steering

1. While depressing the foot switch, 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.

Once you have moved the machine to a firm level surface as near as possible to the work area, follow the instructions on page five to position the platform as close to the work area as possible.

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 planted on the platform floor at all times.

Multifunction Controls

The UpRight AB-46 employs the use of multifunction controls. This means that riser or boom extension will function at full speed while simultaneously operating upper boom, jib, turret, or rotating the platform.

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

Lower Control Operation

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



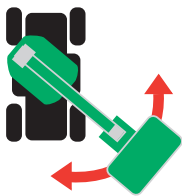
WARNING



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

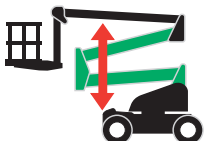
Note: Platform leveling can be performed only with the boom stowed and should be done only to calibrate the automatic leveling system.

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the platform level control switch forward to swing the platform upward, rearward to swing the platform downward. Release the switch to stop leveling.



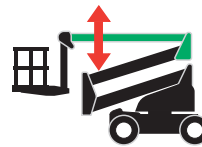
Rotating the Turret

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, turn the turret rotation control switch counterclockwise to rotate left, clockwise to rotate right. Release the switch to stop rotation. Observe the area around the boom when rotating the turret to avoid any obstructions.



Elevating the Riser

1. While depressing the foot switch, push the riser control lever forward to elevate the riser, rearward to lower the riser. Release the control lever to stop elevating / lowering. The riser will function at a constant speed, function speed control setting is not necessary.



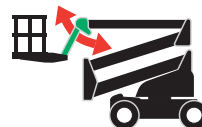
Elevating the Upper Boom

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the upper boom control lever forward to elevate the upper boom, rearward to lower the upper boom. Release the control lever to stop elevating / lowering.



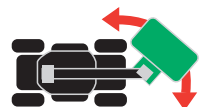
Extending the Upper Boom

1. While depressing the foot switch, push the boom extension control lever 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 constant speed, function speed control setting is not necessary.



Elevating the Jib

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the jib control lever forward to elevate the jib, rearward to lower the jib. Release the control lever to stop elevating / lowering.



Rotating the Platform

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, turn the platform rotation control switch counterclockwise to rotate left, clockwise to rotate right. Release the switch to stop rotation.

EMERGENCY OPERATION

In the event of powered function failure, the elevating assembly may be lowered manually by the following procedure.



WARNING



NEVER climb down the elevating assembly. If controls do not respond, ask someone on the ground to lower the boom manually.

Lowering Elevating Assembly

1. Open the cover on the hydraulic module (opposite side of the turret from the chassis control panel).
2. Remove the wire loop retainer from the hand pump lever, and extend the handle upward to gain leverage.
3. Operate the manual override (knurled knob) on the appropriate valve (see fig. 2-4). Push in to lower / extend, pull out to raise / retract as required.
4. While holding the appropriate valve in position, pump the handle in and out until that section of the elevating assembly is lowered / retracted.
5. Repeat as necessary operating each valve until the elevating assembly is fully lowered.

Rotating Turret

1. To manually rotate the turret, remove the manual turret crank from inside of the control side turret cover.
2. Set ratchet direction on turret crank.
3. Place the socket of the crank onto the hex shaft stub of the turret rotation gearbox.
4. Turn the crank clockwise to rotate the turret counterclockwise, turn counterclockwise to rotate the turret clockwise.

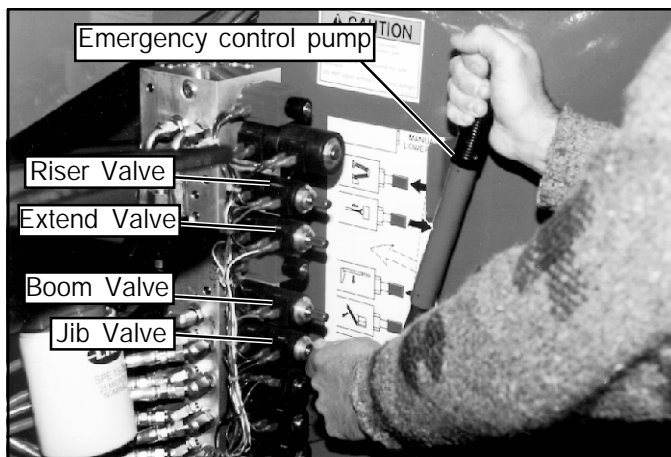


Figure 2-4: Emergency Control Operation

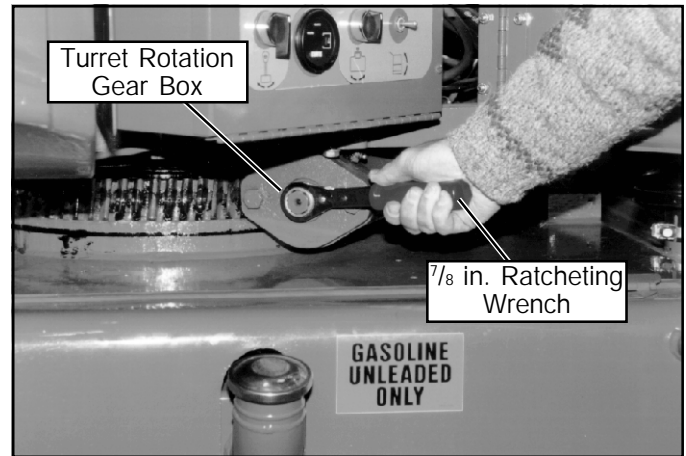


Figure 2-5: Manual Turret Rotation

EMERGENCY TOWING

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.

The batteries must be connected in order to release the brakes.

1. Insure that the platform is fully lowered, and that the turret is rotated so that the platform is to the rear of the machine.
2. Attach chain / cable of sufficient strength for towing the machine to front or rear tie down lugs.
3. Turn the keyswitch to the parking brake release position. Alarm will sound.
4. Operate the brake release hand pump located on the back of the right rear bulkhead.
5. After moving the machine, return the keyswitch to the off position and remove the key to prevent unauthorized operation.



CAUTION



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

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 all keys to prevent unauthorized operation.

Transportation

BY CRANE



WARNING



Stand clear of machine when lifting.

Check specifications on back page, insure that crane and slings are of correct capacity to lift weight of unit.

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

BY TRUCK OR TRAILER

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



CAUTION



Do not winch machine faster than 3 mph.

4. After winching, insure that brakes are set.
5. Secure the machine to the transport vehicle using chains / straps of adequate load capacity (refer to specifications, back page) attached to chassis tie down.
6. Place a wooden block (7.5" x 4" x 28") under platform support braces as shown.
7. Attach ratchet strap; under platform floor grating, over support braces. Tighten securely, do not overtighten.



WARNING



NEVER elevate the machine while on a truck or trailer.



Figure 2-6: Securing the Machine for Transportation

Maintenance

FUELING

Gasoline

1. Open fill pipe cap located on chassis left side.
2. Fill to capacity with unleaded motor fuel only.
3. Check fuel level by lifting flap located on top of chassis left side. Fuel tank full capacity is 25 US gallons.

Diesel

1. Open fill pipe cap located on chassis left side.
2. Fill to capacity with diesel motor fuel only, grade #1-D, or #2-D. Use distillate fuel only, do not use residual or blend.
3. Check fuel level by lifting flap located on top of chassis left side. Fuel tank full capacity is 25 US gallons.

HYDRAULIC OIL

1. Check oil level at sight gauge inside engine compartment right hand side with the platform fully lowered.
2. If necessary, fill to capacity with clean ISO 46 compatible hydraulic oil.
3. Lift flap located on top of chassis right side.
4. Open filler / breather cap to add hydraulic oil.
5. Replace cap.

LUBRICATION

Refer to service manual for lubrication chart and guidelines.

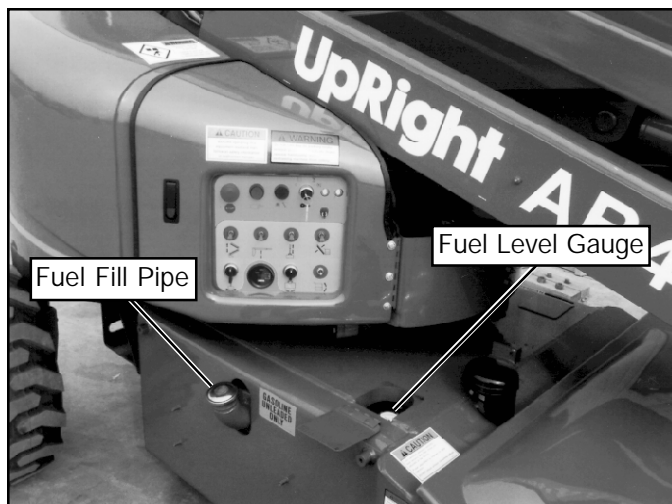


Figure 2-7: Fuel Fill Pipe and Level Gauge

BATTERY MAINTENANCE



WARNING



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

Always wear safety glasses when working with battery.

Battery fluid is highly corrosive. Rinse away any spilled fluid thoroughly with clean water.

Always replace battery with UpRight battery or manufacturer approved replacement.

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

If electrolyte level is lower than 3/8 in. (10 mm) 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 unless approved by the manufacturer in writing.

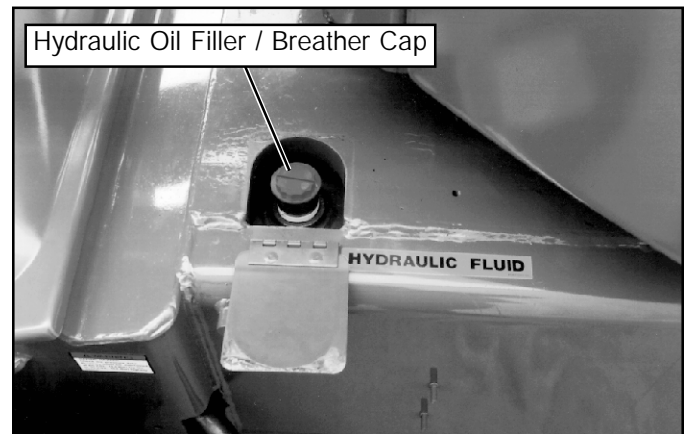


Figure 2-8: Hydraulic Oil Filler / Breather Cap

3.0 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 AB46 Work Platform.

This section contains procedures for the operation inspection, adjustment, scheduled maintenance, and repair/removal of the AB46.

Section 2.0 will aid in understanding the operation and function of the various components and systems of the AB46 and help in diagnosing and repair of the machine. Refer to Table 3-1, Preventative Maintenance Checklist, for recommended maintenance intervals.

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

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. 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 on machine.

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 base.

TERMINAL BLOCKS: Remove wires by inserting a small flat bladed screwdriver into square beside wire. Install wires by stripping 1/2" of insulation, inserting screwdriver in square and inserting wire. Be sure no strands are bend 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 AB46 work platform.

- 0-1000 PSI Hydraulic Pressure Gauge
with Adapter Fittings (UpRight P/N 014124-010)
- 0-3000 PSI Hydraulic Pressure Gauge
with Adapter Fittings (UpRight P/N 014124-030)
- 0-6000 PSI Hydraulic Pressure Gauge
with Adapter Fittings (UpRight P/N 014124-060)
- 0-30 Gallon Hydraulic Flow Meter
With 0-3000 P.S.I. Simulated Load and Adapter
Fittings (UpRight P/N 67040-000)
- Adapter Fitting (UpRight P/N 063965-002)
- Inclinometer (UpRight P/N 010119-000)
- Crimping Tool (UpRight P/N 028800-009)
- Terminal Removal Tool (P/N 028800-006)

3.1 Preventative Maintenance (Table 3-1)

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 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 this page and use the 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 Checklist

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Battery	Check electrolyte level	6M			
	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 and filter	100H			
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	400H			
Hydraulic Oil	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	Operate the emergency lowering valve and check for serviceability	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 deck	Daily			
Tires	Check for damage	Daily			
	Check air pressure (65 psi [4.5 bar])	Daily			
	Check lug nuts (torque to 90 ft. lbs. [123 Nm])	30D			

Table 3-1: Preventative Maintenance Checklist (cont'd.)

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Hydraulic Pump	Check for leaks at mating surfaces	30D			
	Check for hose fitting leaks	Daily			
	Check mounting bolts for proper torque	30D			
Torque Hubs	Check for leaks	Daily			
	Check Oil level	250H/6M			
	Change Oil after break-in	50H/30D			
	Change Oil	1000h/2y			
Steering System	Check hardware & fittings for proper torque	6M			
	Grease pivot pins	30D			
	Oil king pins	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 elevating arms for bending	6M			
Chassis	Grease linkage pins	30D			
	Check hoses for pinch or rubbing points	Daily			
	Check component mounting for proper torque	6M			
Lift Cylinder	Check welds for cracks	Daily			
	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			
Steering 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			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			
Turret	Lubricate teeth	30D			
	CHECK BOLTS FOR TORQUE	150HR			
	GREASE GEARBOX	150HR			

3.2 Blocking Elevating Assembly (Figure 3-1)



WARNING



Never perform service on the work platform in the elevating assembly area while platform is elevated without first blocking the elevating assembly.

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

7. Install brace capable of supporting elevating assembly under upper boom as shown.
8. Push lower button and gradually lower platform until brace is supporting the platform.

Removal

1. Using chassis controls, gradually raise platform until upper boom is off brace.
2. Remove brace and unhook chain from front of upper boom.
3. Push lower button to completely lower platform.

Installation

1. Park the work platform on firm level ground.
2. Fully retract upper boom.
3. Verify platform emergency stop switch is ON.
4. Turn platform/chassis switch to **CHASSIS**.
5. Using the raise button, elevate platform 8-12 inches.
6. Connect a crane or overhead hoist capable of supporting elevating assembly to front of elevating assembly.

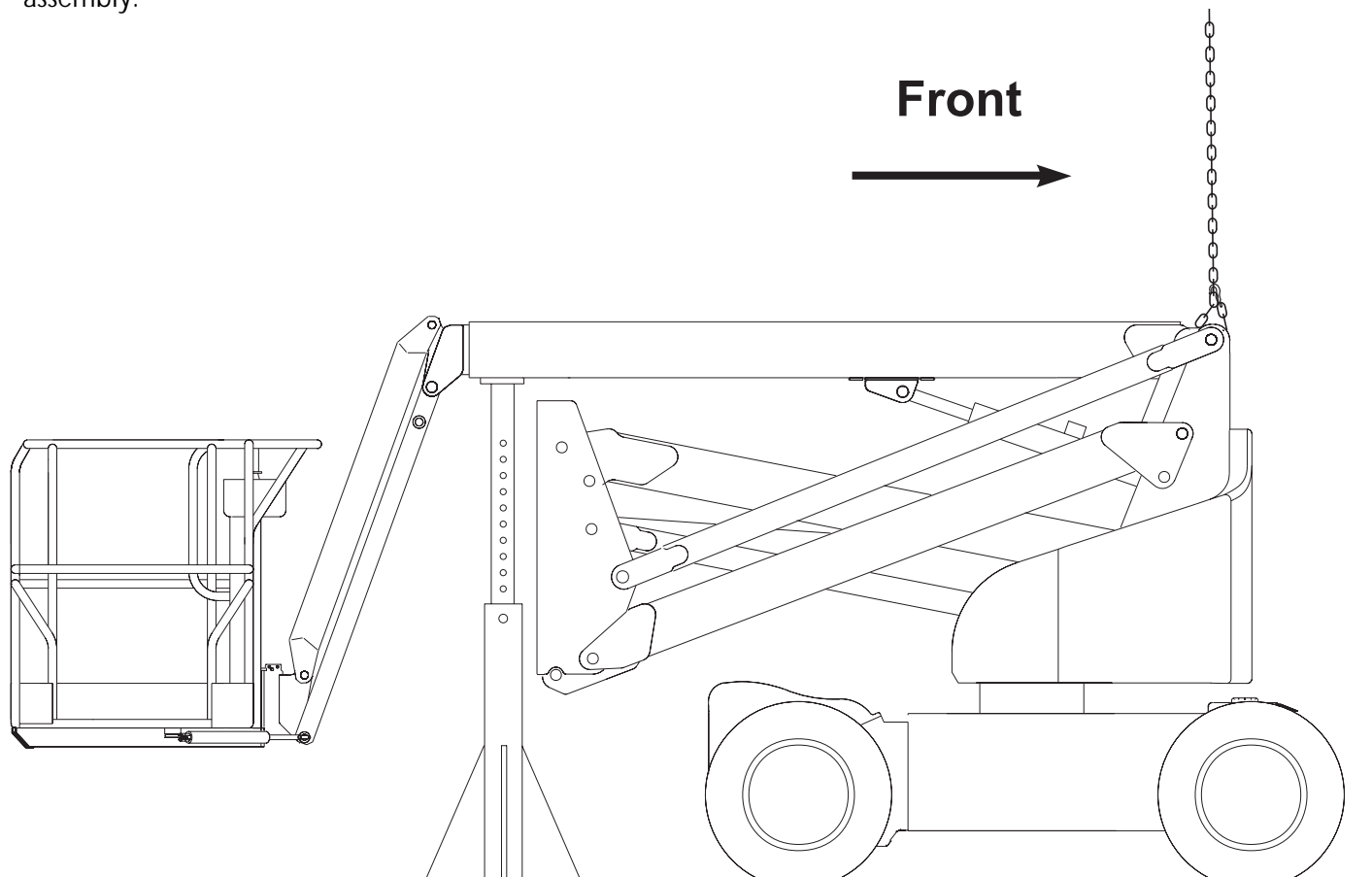


Figure 3-1: Blocking Elevating Assembly

3.3 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 3/8 in. (10mm) 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.

3.4 Lubrication

Refer to Table 3-1 for the lubrication intervals and Figure 3-2 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 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.

HYDRAULIC OIL AND FILTER

Fluid Level

With the platform fully lowered, 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 oil (ISO No. 46) 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 ISO #46 hydraulic oil.

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

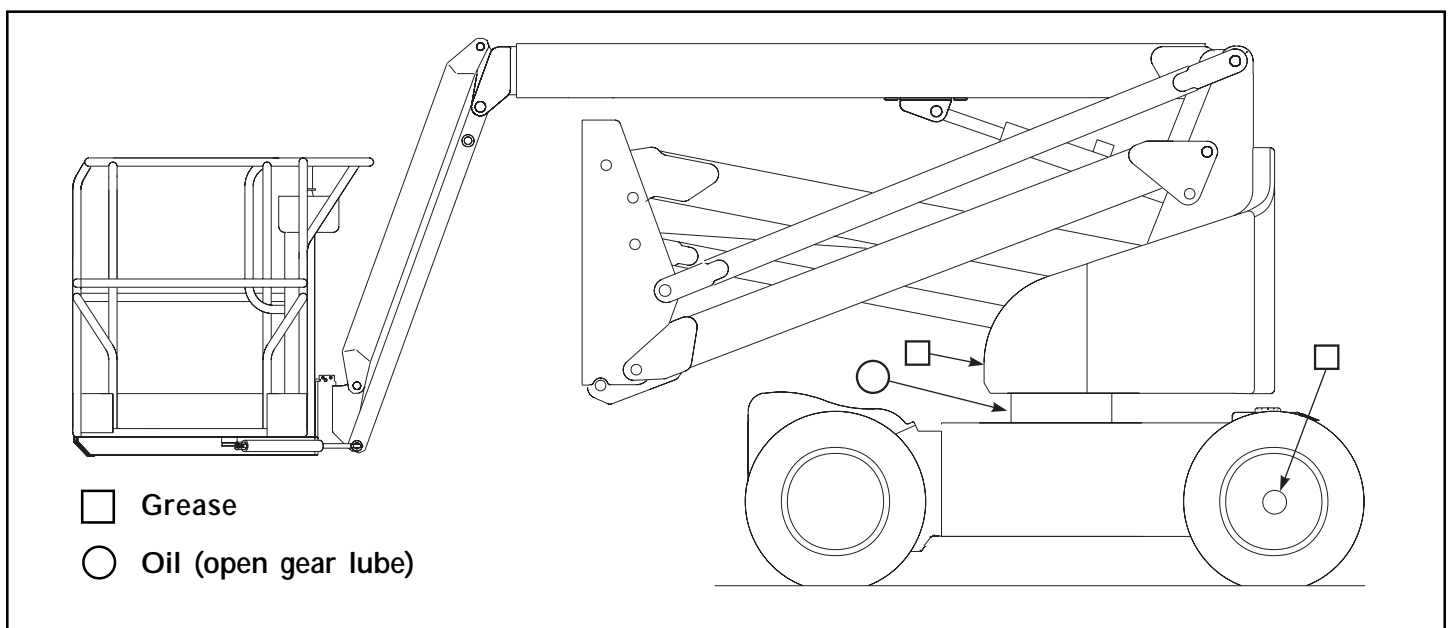


Figure 3-2: Lubrication Chart

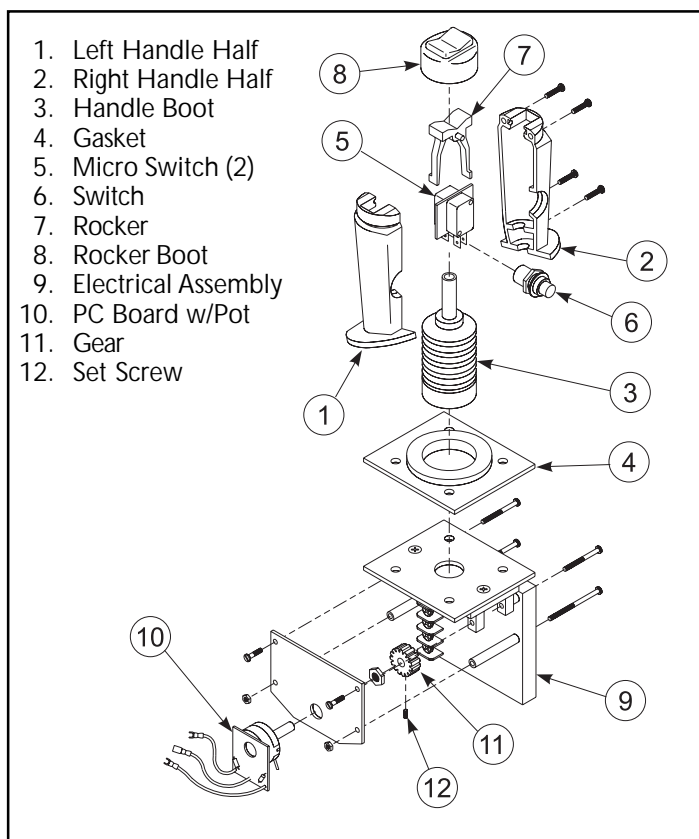


Figure 3-3: Proportional Controller

3.5 Proportional Controllers

JOYSTICK HANDLE (FIGURE 3-3)

1. If necessary, remove handle assembly from controller box.
2. Remove and replace defective parts.
3. If replacing PC board with resistor, note resistor adjustment (number of turns) and adjust new resistor to match old resistor setting.

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

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

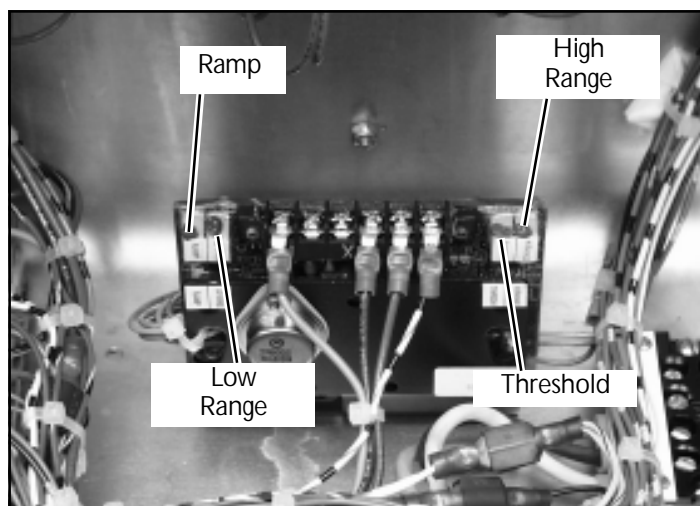


Figure 3-4: Rotary Control Adjustment, Upper Control Box

PROPORTIONAL CONTROL ADJUSTMENT

Potentiometers are sealed to protect sensitive adjustments from vibrations, or from tampering. Remove sealant prior to adjustment, and replace after.

NOTE: Do not use silicone sealer; it will damage pots.

Use a small screwdriver or special adjustment tool to set adjustment pots. Pots can be easily damaged.

Pots have 15 turns of adjustment, more than one turn will often be required to complete the adjustment. If pots have been previously set, reset by turning no more than 1 turn at a time. If they have not been previously set, preset to about mid range and start from there.

Turn pot clockwise (CW) to increase settings.

Turn pot counterclockwise (CCW) to decrease settings.

Adjust pots only in sequence as outlined in this procedure.

Rotary Control for Boom Functions (Figure 3-4)

IMPORTANT: Back out ramp trimpot 10 turns (counter clockwise) before making any adjustments.

1. Verify that battery is fully charged.
2. Connect ammeter in series at "A" terminal.
3. Set threshold at 1.00 amps or so upper boom elevates with rotary speed adjustment set on 2 and raise function switch actuated.

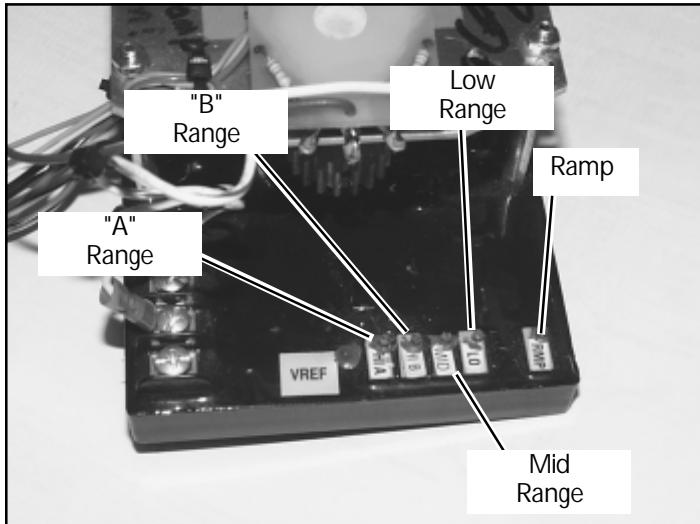


Figure 3-5: Proportional Control Adjustment, Upper Control Box

4. Set high range at 1.80 amps or so upper boom functions operate with speed adjustment on 9 or highest speed position. Check for proportional valve vibration. Valve is fully closed when it does not vibrate when energized. Do not over adjust.
5. Set low range at 1.15 amps or so machine slews 180 degrees in 45 seconds with speed control set at position 9 or full speed.
6. Turn ramp trimpot back in 10 turns. Set ramp trimpot until machine has a smooth start or upper boom delays 2 seconds with raise switch actuated and speed control set at position 9 or full speed.

Proportional Drive Control (Figure 3-5)

IMPORTANT: Back out ramp trimpot 10 turns (counter clockwise) before making any adjustments.

Adjusting one pot affects the setting of others. After making all adjustments recheck each function to verify settings.

1. Adjust threshold pot at .45 amps or so machine barely creeps as first LED lights.
2. Adjust A, B pot at 1.15-1.20 amps or so machine travels 40' in Eight seconds.
3. Adjust mid pot so machine travels One foot per second when platform is elevated.
4. Turn ramp back in 10 turns and adjust until machine stops in 2 to 3 feet from full speed when joystick is released.

3-6 Platform Down Limit Switch (Figure 3-6)

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.

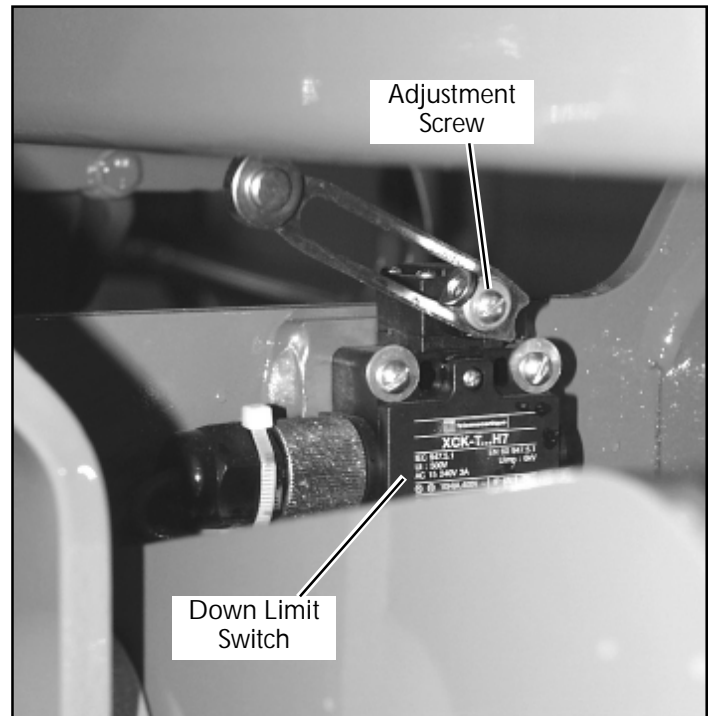


Figure 3-6: Platform Down Limit Switch



WARNING



DO NOT attempt to adjust Limit Switches without first blocking the elevating assembly (see section 3.1).

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.

3.7 Tilt Sensor (Figure 3-7)

The Tilt Sensor has four wires; red-power (12v in), black-ground, white-output (12v out) and green (to controller). To verify the sensor is working properly there are two LED's under the sensor; green indicates the sensor is on (has power), red indicates the sensor is level and the white wire is 'hot' (12v out).

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

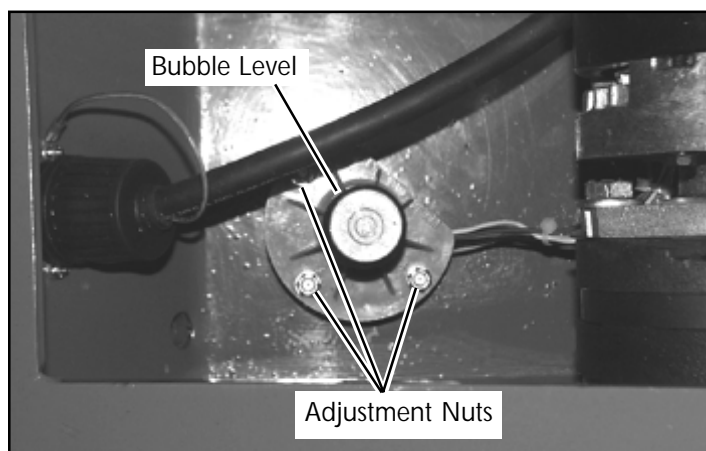


Figure 3-7: Tilt Sensor

3.8 Hydraulic Manifold (Figure 3-10)

It is not necessary to remove the manifold to perform all maintenance procedures. Prior to performing maintenance, determination if the manifold needs to be removed.

REMOVAL

1. Disconnect the battery.
2. Tag and disconnect the solenoid valve leads from the terminal strip.
3. Tag, disconnect and plug hydraulic hoses.
4. Remove the bolts that hold the manifold to the mounting bracket.
5. Remove manifold block.

DISASSEMBLY

NOTE: Mark all components as they are removed so as not to confuse their location during assembly. Refer to Figure 3-8 often to aid in disassembly and assembly.

1. Remove coils from solenoid valves.
2. Remove spool valve cover and spool valve.
3. Remove solenoid valves, lift relief valve, counterbalance valves and divider combiner valve.
4. Remove fittings, plugs, springs, balls and orifices.

CLEANING AND INSPECTION

1. Wash the manifold in cleaning solvent to remove built up contaminants and then blow out all passages with clean compressed air.
2. Inspect the manifold for cracks, thread damage and scoring where O-rings seal against internal and external surfaces.
3. Wash and dry each component and check for thread damage, torn or cracked O-rings and proper operation.
4. Replace parts and O-rings found unserviceable.

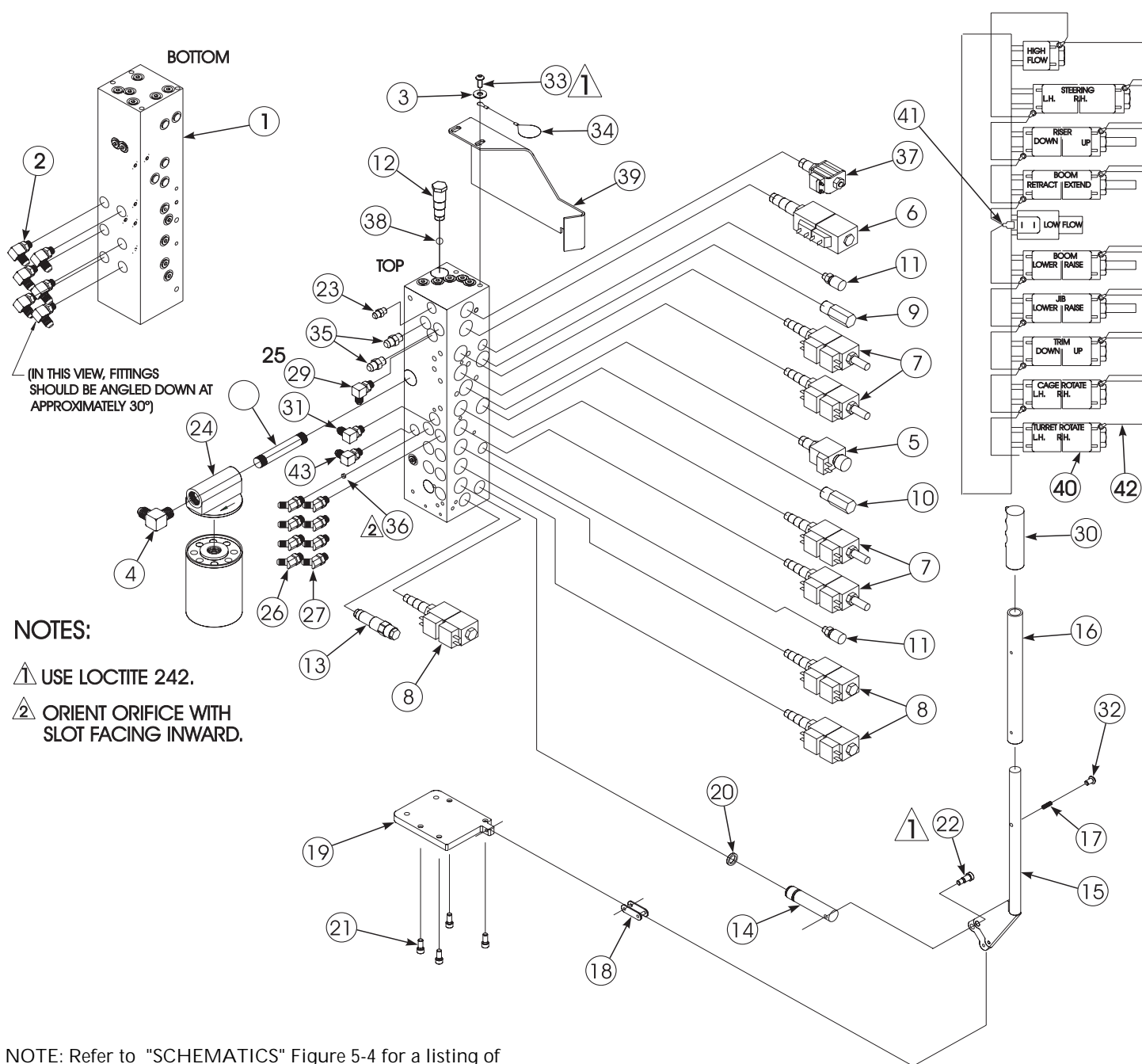
ASSEMBLY

NOTE: Lubricate all O-rings before installation to prevent damage to O-rings. Seat all balls in manifold block by lightly tapping on the ball with a brass drift punch.

1. Install fittings, plugs, springs, balls and orifices. Use one drop of Locktite #242 on each screw-in orifice.
2. Install solenoid valves, lift relief valve, counterbalance valves, divider combiner valve, and spool valve.
3. Install coils on solenoid valves.

INSTALLATION

1. Attach manifold assembly to mounting plate with bolts.
2. Connect Solenoid leads to terminal strip (as previously tagged).
3. Connect hydraulic hoses. Be certain to tighten hoses to manifold.
4. Reconnect the battery.
5. Operate each hydraulic function and check for proper operation and leaks.
6. Adjust lift relief and counterbalance valve pressures according to instructions in Section 3-10.



1. Valve Block
2. Fitting
3. Washer, 5/16 Flat
4. Fitting, Elbow
5. Low Flow Valve
6. Steering Valve
7. 4-Way Closed Center
8. 4-Way Motor Spool
9. Relief Valve
10. Relief Valve
11. Plug

12. Diverter Valve
13. Counterbalance
14. Piston
15. Lever
16. Extension
17. Detent
18. Pivot Link
19. Mounting Plate
20. Seal
21. Screw, 5/16-18
22. Screw, 3/8 x 5/8

23. Fitting
24. Filter Assembly
25. Nipple
26. Fitting Elbow
27. Fitting, Elbow
28. Fitting, Elbow
29. Fitting Elbow
30. Grip
31. Fitting Elbow
32. Screw, 10-20
33. Screw, 5/16-18

34. Lanyard
35. Fitting Adapter
36. Orifice
37. High Flow Valve
38. Steel Ball, 7/16
39. Bracket
40. Connector Ring
41. Connector Female
42. Wire
43. Fitting, Elbow

Figure 3-8: Hydraulic Manifold, Exploded View

3.9 Hydraulic Brakes

Removal

1. Park the work platform on firm level ground 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 torque hub.
5. Remove the drive motor.
5. Remove the brake.

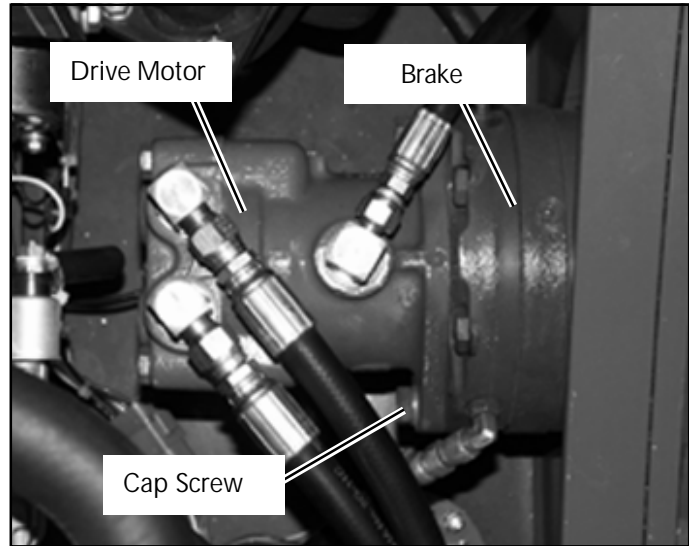


Figure 3-10: Rear Axle Assembly

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

Brake Seal Replacement(Figure 3-11)

1. With shaft protrusion downward remove capscrews (21) and washers (20) from brake assembly.
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 diameter grooves of piston.
5. Clean piston (14) and power plate (19) assemblies with solvent. Inspect the sealing surfaces of the piston (14) and power plate (19). Inspect seal grooves in the piston. Replace brake assembly if they are damaged or scratched deeply. Lubricate piston (14), power plate (19), and seals (15, 16, 17, & 18) with clean hydraulic oil prior to 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 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 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 cables to drive motor and hoses to the brake.
4. Install the wheel. Torque the wheel nuts to 90 ft. lbs. (122 N-m).
5. Remove the jack stands and lower chassis to the ground.
6. Position chassis switch to parking brake release position. Alarm will sound.
7. Start the engine to energize brake hydraulic system.
8. Check for leaks and bleed air out of brake hydraulic system using bleed valve located on brake housing.

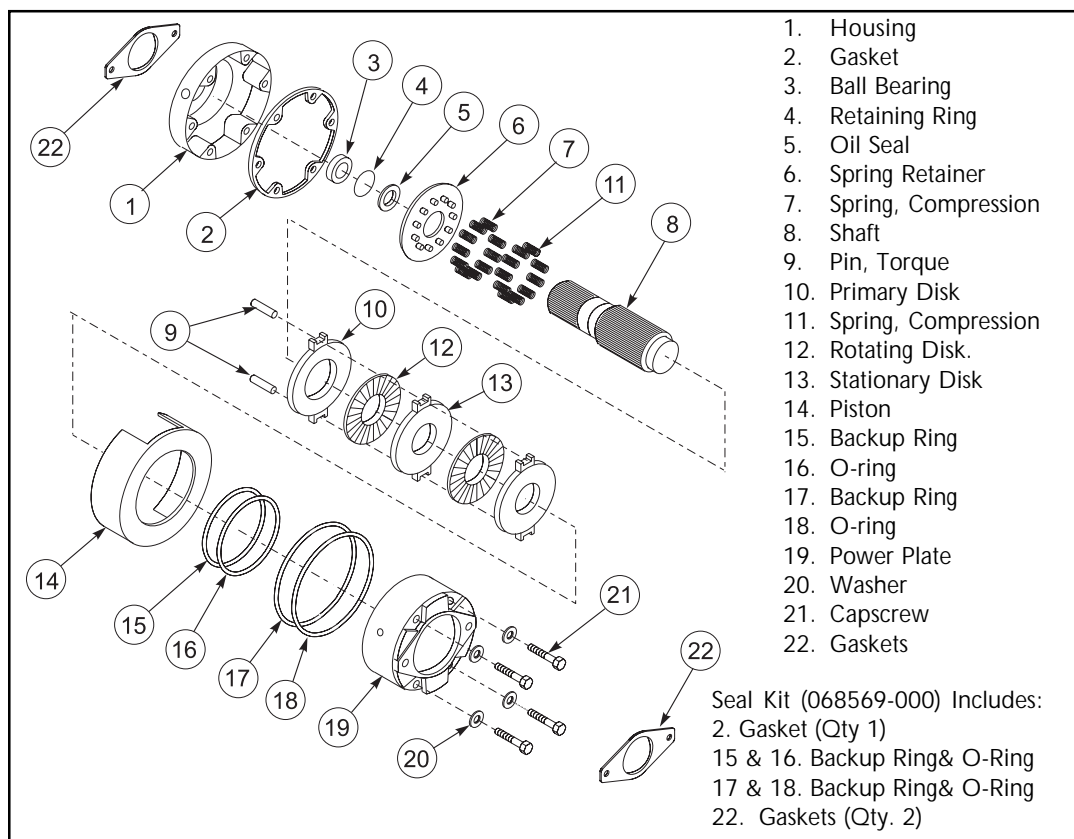


Figure 3-11: Brake Assembly

3.10 Drive Pump Settings (Figure 3-12)

NOTE: Pump is properly adjusted at factory. Pump settings should only be checked if pump failure is suspected.

MAIN RELIEF VALVES

Main relief valves "A" and "B" should be bench tested off the machine.

NOTE: Main relief valves should be adjusted to 5300 PSI.

PRESSURE OVERRIDE VALVE

1. Position machine on a firm level surface.
2. Disconnect brake solenoid on hydraulic manifold to allow brakes to remain locked.
3. Connect 6000 PSI pressure gauges at gauge port "A" and gauge port "B".
4. With engine running at normal operating RPM, position drive joystick control to full forward.
5. Adjust pressure override valve so pressure gauge "A" reads 4900 PSI. Turning pressure override adjustment screw clockwise increases pressure and turning counterclockwise decreases pressure.
6. Position drive joystick control to full reverse.
6. Check pressure reading on pressure gauge at "B". Pressure readings should be the same.

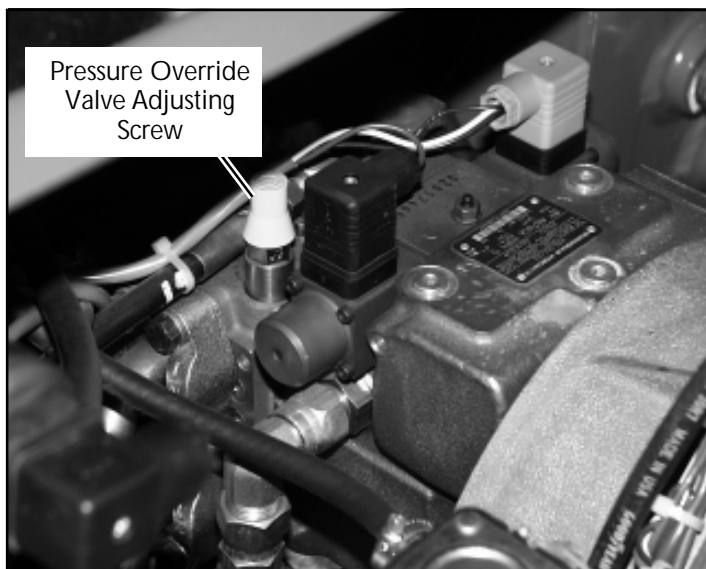


Figure 3-12: Pressure Override Valve

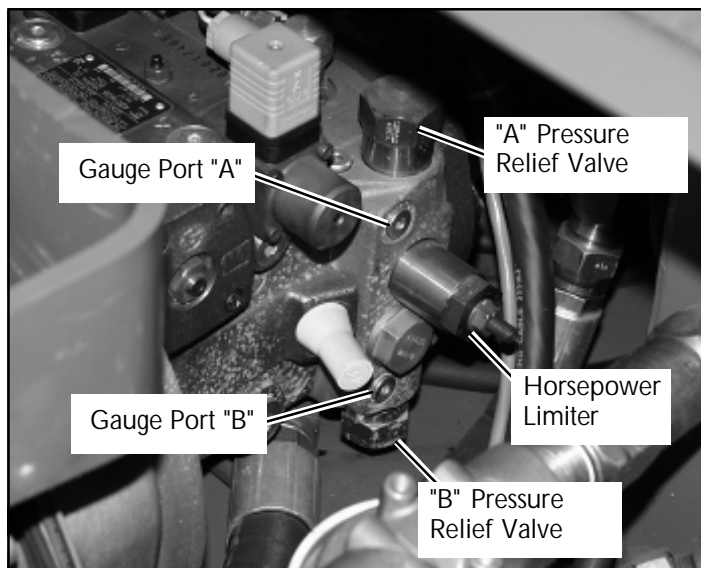


Figure 3-13: Hydraulic Pump

PUMP REMOVAL

1. Mark, disconnect and plug the hose assemblies.
2. Mark and disconnect the electric cables.
3. Remove hardware which secures power unit and remove from chassis.

PUMP INSTALLATION

1. Install power unit using hardware previously removed.
2. Unplug and reconnect the hydraulic hoses.
3. Reconnect the electric cables.
4. Fill the tank with clean hydraulic fluid.
5. Check the oil level in the hydraulic tank before operating the work platform.
6. Operate the pump and check for leaks and proper operation.
7. Replenish hydraulic fluid if necessary.

IMPORTANT: If replacing the pump, be sure the pump and hydraulic tank are filled with oil before starting the engine. Damage to the pump may occur if it is run without first being filled with oil.

3.11 FRONT WHEEL BEARINGS

Removal

1. Disconnect battery negative terminal.
2. Loosen wheel lug nuts.
3. Raise front axle using 2-ton jack. Support front axle using two 2-ton jack stands.
4. Remove wheel lug nuts and remove wheel.
5. Remove axle dust cap.
6. Remove cotter pin, hub nut, and washer.
7. Remove hub assembly.
8. Clean all parts using a suitable solvent.
9. Inspect bearings, cones and cups for wear and replace if necessary.

NOTE: Cups do not need to be replaced if they are not damaged.

Installation

NOTE: Torque all hardware to torques listed on page 3-312 unless otherwise specified.

1. Apply a liberal coating of grease to each cup.
2. Pack the inside bearing with a liberal amount of multi purpose grease and position it in the hub. Install new grease seal.
3. Apply a thin coating of grease to the spindle and slide the hub onto the spindle.
4. Pack the outside bearing cone with multi purpose grease and slide it onto the spindle until it seats in the outer bearing cup.

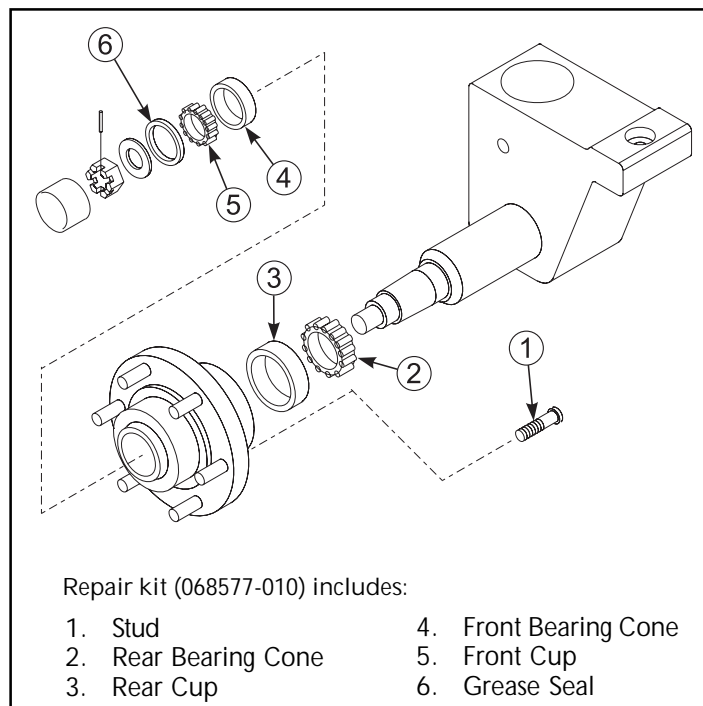


Figure 3-14: Front Axle Assembly

5. Install the washer and hub nut. While rotating the hub, tighten the hub nut until the hub drags. Then back the nut off until a slot lines up with the hole in the spindle.
6. Install a new cotter pin and bend the end up over the nut.
7. Install the dust cap and wheel. Torque the lug nuts to 90 ft. lbs. (123 N-m).
8. Remove jack stands and lower the axle to the ground.
9. Connect battery negative terminals and/or Anderson connectors.

3.12 DRIVE MOTOR REMOVAL

1. Park the work platform on firm level ground.
2. Mark and remove the drive motor hydraulic lines.

**CAUTION**

Clean all fittings before disconnecting the hose assemblies.

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

3. Remove the cap screws and washers which secure the drive motor to the torque hubs. Remove the drive motor.

Drive Motor Seal Replacement

NOTE: Refer to IPB section page 6-16 or 6-17 for available repair parts.

DISASSEMBLY (Figure 3-15)**CAUTION**

CAUTION: Safety glasses should be used during disassembly of hub.

1. Remove four cap screws which secure end cap. Remove end cap with valve plate. Do not allow valve plate to fall off end cap.
2. Carefully remove valve plate. It may be necessary to pry valve plate off with small screwdriver.
3. Remove the gasket.
4. Remove the alignment sleeves from housing.
5. Lay the motor on its side and remove cylinder block assembly.
6. Remove slipper guide and piston assemblies from cylinder block.
7. Using an O-ring pick, remove the thrust plate.

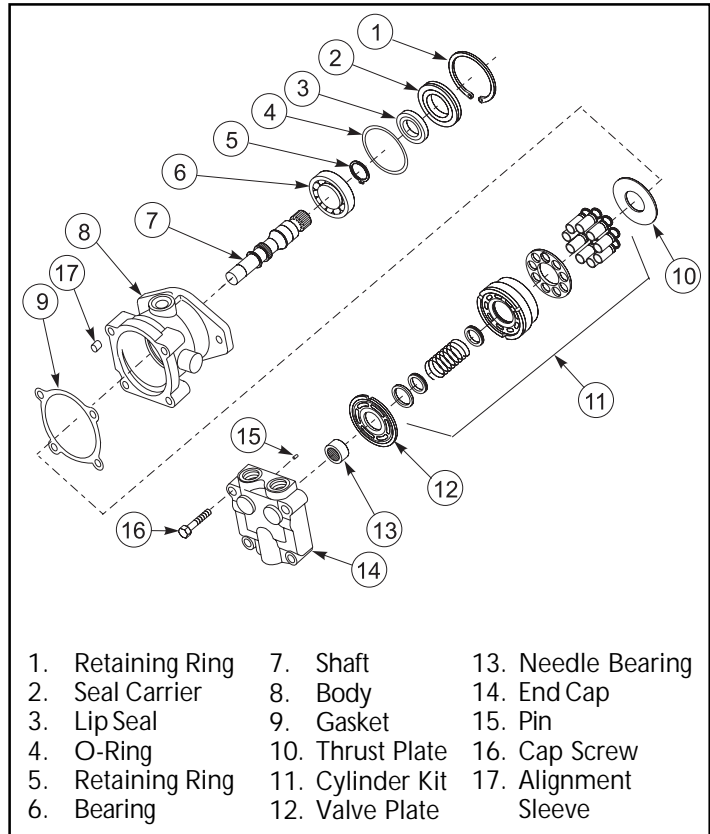


Figure 3-15: Drive Motor

8. Remove the retaining ring. Remove the shaft and seal carrier with the seal.
9. Remove the O-ring from the seal carrier and remove the seal.
10. Remove small retaining ring and press the bearing off the shaft.

Closely examine all parts for pitting and wear. If pistons or cylinders are worn or pitted, replace cylinder block assembly.

If needle bearing is to be replaced, remove needle bearing using a puller. Press new bearing in place.

Bearing cage will protrude from end cap and serve as a pilot for the valve plate.

Replace all Gaskets and O-rings. Lubricate O-rings using petroleum jelly.

ASSEMBLY

1. Assembly is reverse of disassembly
2. Apply grease to one side of thrust plate to hold it in place.
3. Using clean hydraulic oil, thoroughly lubricate and install cylinder block assembly. Install retaining ring.

Installation

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

1. Install motor using hardware previously removed.
2. Install hydraulic oil lines.
3. Operate machine slowly for a short time to clear air from hydraulic system. If necessary replenish oil tank.
4. Check for leaks.
5. Operate machine to check for proper motor operation.

3.13 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.

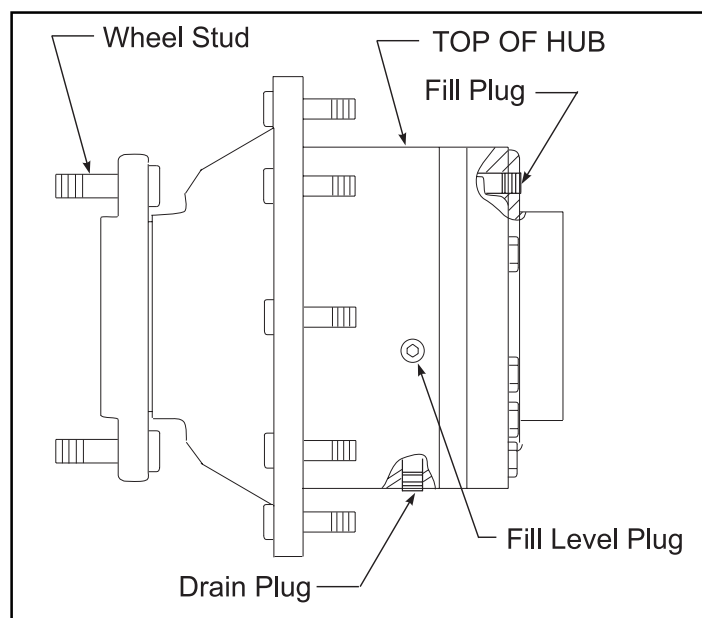


Figure 3-16: Torque Hub

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.

**CAUTION**

Clean all fittings before disconnecting the hose assemblies.

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

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

IMPORTANT: Note location of 90° fitting on torque hub body. Hub must be installed with fitting in same position.

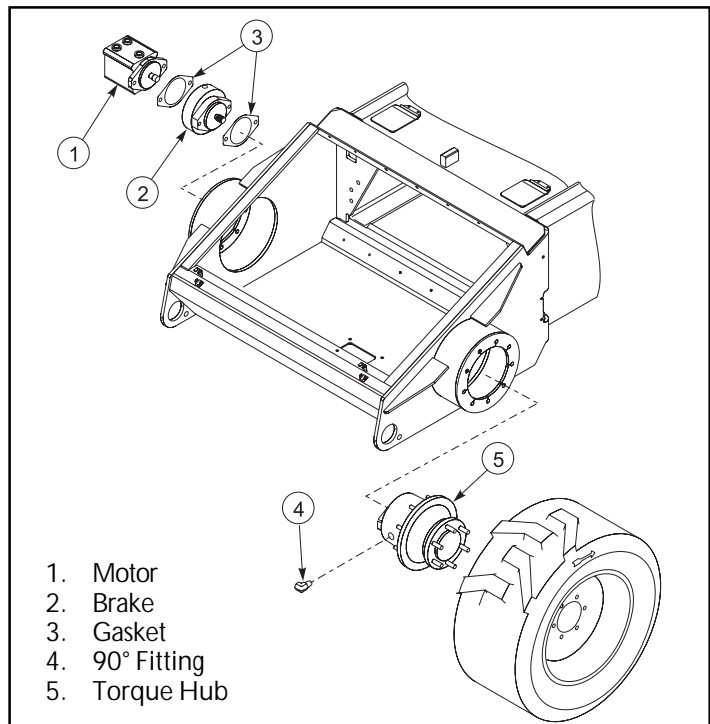


Figure 3-17: Torque Hub Assembly

Installation

IMPORTANT: Hub must be installed with 90° fitting in same position as when it was removed.

NOTE: Torque all hardware to torques listed on page 3-32 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 90ft. lbs. (123 Nm).
10. Bleed brake lines if necessary.
11. Remove jack stands and lower rear end.
12. Connect battery terminal.
13. Check function of brake.

Torque Hub Seal Replacement

ROLL AND LEAK TESTING

IMPORTANT: Torque hubs should always be roll and leak tested before disassembly and after assembly to make sure gears and sealants are working properly.

ROLL TEST

Gears should be able to rotate by applying a constant force to the axle. Some gear packages roll with more difficulty than others. Do not be concerned if gears seem to roll hard as long as they roll with consistency. If you feel more drag only at certain points the gears are not rolling freely and should be checked for improper installation or defects.

LEAK TEST

The purpose of a leak test is to make sure the unit is air tight. Pressurize hub to 5 PSI. Torque hub has a leak if the air pressure starts to fall after hub has been pressurized. Use soap and water on hub to detect location of leaks. If a leak is detected, seal or "O" ring must be replaced.

PRESSING TOOLS

The seal, cup and cone pressing tools are illustrated on pages 3-20, 3-21 and 3-23. Use pressing tools identical in size or fabricate them using the dimensions shown.

DISASSEMBLY (Figure 3-19)

CAUTION: Safety glasses should be used during disassembly of hub.

1. Remove two pipe plugs in cover and drain the oil from the unit.
2. Loosen and remove shoulder bolts and cap screws from cover. Remove cover from hub.
3. Remove "O" ring. Remove thrust washer from counterbore in cover.
4. Remove input gear from planet gears.
5. Using a punch, remove retaining ring from groove around inside of input gear.
6. Lift carrier sub-assembly from hub. Lift ring gear from hub. Remove "O" ring from counterbore in hub.
7. Remove pipe plugs from side of hub body.
8. Apply a preload to output shaft to remove retaining ring. Follow steps a & b.

- a. Place bearing cone pressing tool on retaining ring.
- b. Apply pressure to fixture using a hydraulic ram or by striking the fixture with a soft face hammer. Pressure should be applied until hub rotates with difficulty.
9. Using retaining ring pliers remove retaining ring. Remove spacer from output shaft.
10. Place spacer under hub so output shaft will fall through bottom when pressed out.
11. Press output shaft out of hub. Output shaft may come out with bearing cone and seal attached. Remove seal and discard. Use a punch and hammer to remove bearing cone. Be careful not to strike shaft with punch.
12. If seal and cone remain in hub, press them out using a pressing tool.
13. Lift bearing cone out of hub.
14. Stand hub on its small end. Using a punch and hammer, remove bearing cup from counterbore of hub. Be careful not to strike counterbore with punch.
15. Turn hub over on larger end. Using a punch and hammer, remove bearing cup from counterbore of hub. Be careful not to strike counterbore.

NOTE: Carrier sub-assembly does not need to be disassembled to replace seals.

ASSMEBL Y

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

1. Oil output shaft and bearing cone. Using cone press, press bearing cone onto end of output shaft with retaining ring groove.
3. Stand hub on its small end. Using bearing cup pressing tool press bearing cup down into hub.

NOTE: Make sure cup sits square with counterbore.

4. Turn hub over so it sit on large end. Using bearing cup pressing tool press bearing cup into small end of hub.

NOTE: Make sure cup sits square with counterbore.

5. Place output shaft into hub so end of shaft with retaining ring groove points down.
6. Oil output shaft. Using seal pressing tool press seal into counterbore in small end of hub. The closed face of the seal should be up.

Torque Hub Seal Replacement (Continued)

7. Turn hub over so small end points down. Using bearing cone pressing tool, press bearing cone onto output shaft. Rotate hub while pressing bearing. Stop pressing when hub starts to resist rotating.
8. Place spacer onto output shaft so it rests on top of bearing cone. Using retaining ring pliers, place retaining ring to make sure it is seated.
9. Hit the end of output shaft once or twice with a soft face hammer. Turn the shaft in both clockwise and counter clockwise directions while hitting. This will seat the bearing cone against the spacer and retaining ring allowing necessary endplay in the hub-shaft sub-assembly.
10. Turn hub over so it rests on large end. Measure endplay in hub-shaft sub-assembly. Follow steps a-c.
 - a. Mount a dial indicator on hub. Locate the dial rod on top of output shaft.
 - b. Lift up on output shaft until the needle on the dial stops moving.



Figure 3-18: Measuring Hub End Play

- c. Read the dial. Reading should be no greater than .008 in.
 - If dial reads less than .008 in. continue on to step 11.
 - If dial reads more than .008 in. repeat step 8-15 of "DISASSEMBLY" section.
- d. Remove spacer and replace it with thicker spacer (SK91 068570-011).
- e. Repeat steps 7-10 and remeasure end play.
11. Apply a light coat of "Never Seize" to the pipe plugs and install into pipe plug holes in hub.

NOTE: Leave hole for 90° fitting open.

MAIN ASSEMBLY

1. Position hub on its output shaft so that hubs small diameter end points down.
2. Using a marker, mark the four shoulder bolt holes in hub.
3. Grease "O" ring and place in counterbore in hub.

NOTE: "O" rings may be stretched or squeezed together in order to fit exactly in counterbore.

4. Oil all exposed surfaces inside hub. Oil carrier sub-assembly.
5. Place carrier sub-assembly, with spline connections down, into mesh with output shaft.
6. Place ring gear, with squared shoulder down, into mesh with the planet gears of the carrier sub-assembly. Make sure that marked shoulder bolt hole on ring gear aligns with any of the marked shoulder bolt holes on the hub. "X" mark should be on the cover side of ring gear.
7. Start one half of retaining ring into groove inside input gear. Use a soft punch to press the remaining half of the retaining ring into the groove.
8. Insert input gear, with large diameter end down, into mesh with planet gears.
9. Place large thrust washer over input gear so it rests on carrier housing. Oil all exposed surfaces inside hub.
10. Grease "O" ring and place into counterbore of cover.

NOTE: "O" rings may be stretched or squeezed together in order to fit exactly in counterbore.

11. Place cover on top of ring gear so the fill hole will be at top of hub when it is installed.
12. Install four shoulder bolts into shoulder bolt holes and tighten.
13. Install eight cap screws in remaining holes and tighten.
14. Apply 23-27 ft. lbs. of torque to all bolts.
15. Apply a light coat of "Never Seize" to both pipe plugs and install into the two holes in cover.
16. Roll test the unit in both clockwise and counter-clockwise directions. Turn hub nine full revolutions in each direction.
17. Leak test the hub at Five PSI for two to three minutes.

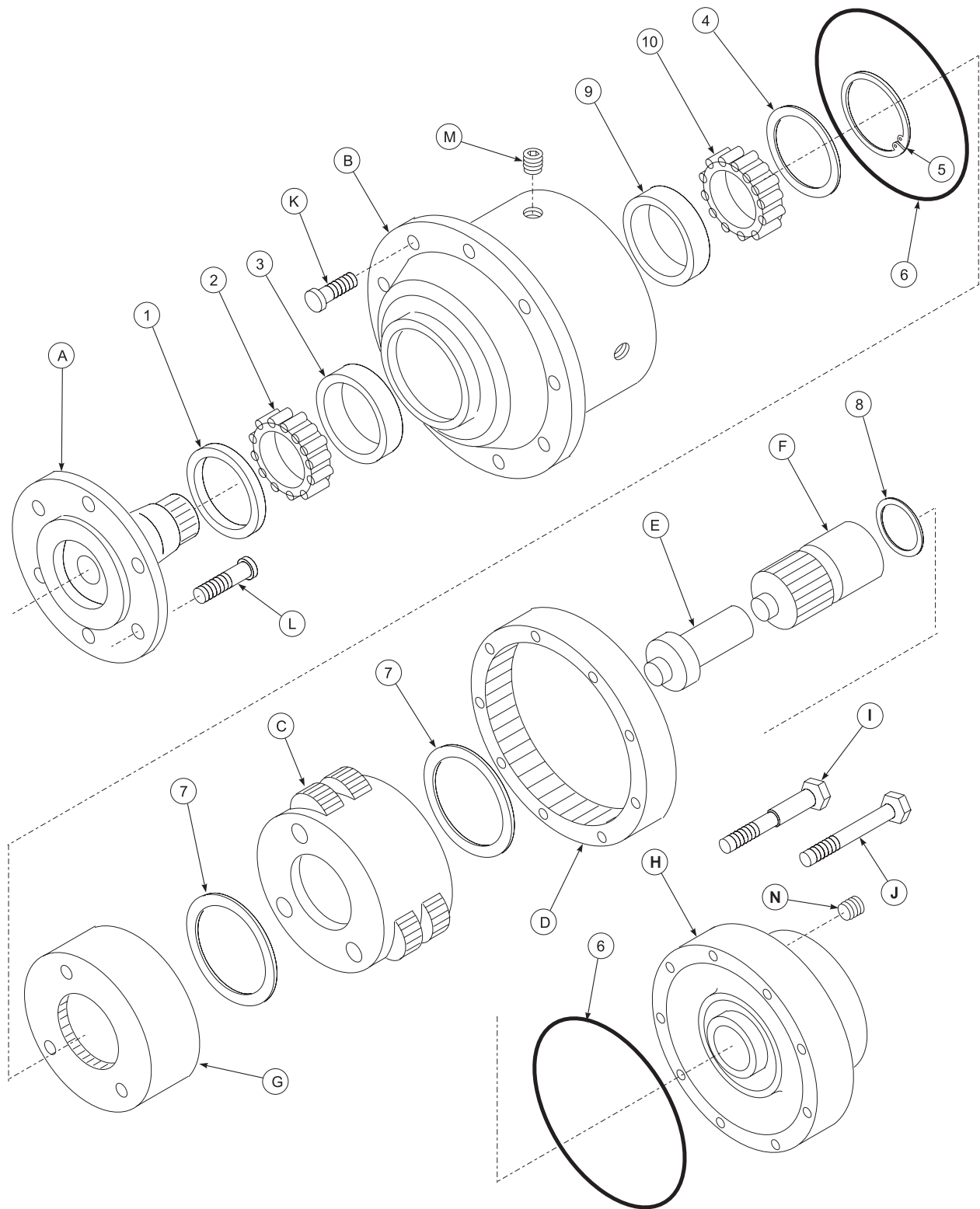


Figure 3-19: Torque Hub

- | | |
|------------------|-------------------|
| A. Spindle | F. Sun Gear |
| B. Housing | G. Gear, Internal |
| C. Carrier Assy | H. Cover |
| D. Gear Ring | I. Shoulder Bolt |
| E. Spacer, Input | J. Bolt |

- | |
|--------------|
| K. Stud |
| L. Stud |
| M. Pipe Plug |
| N. Pipe Plug |

Repair Kit (068570-010) contains:

- | | |
|--------------------------------------|----------------------|
| 1. Lip Seal | 6. O-Ring (2) |
| 2. Bearing, Cone | 7. Thrust Washer (2) |
| 3. Bearing, Cup | 9. Bearing, Cup |
| 4. Thrust Washer | 10. Bearing, Cone |
| 5. Retaining Ring | |
| 8. Thrust Washer - SK91 (068570-011) | |

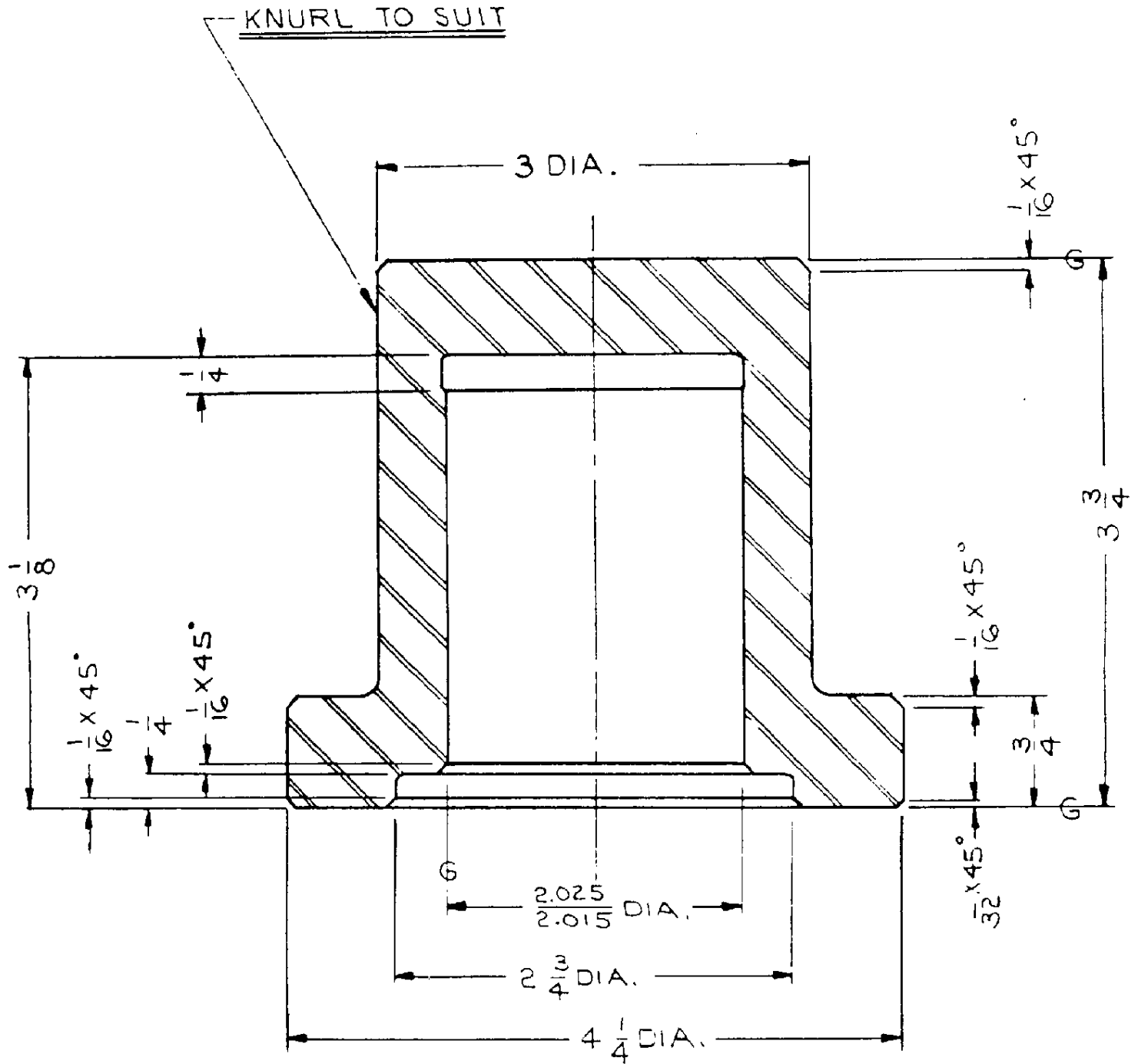


Figure 3-20: Seal Pressing Tool
SEAL PRESSING FIXTURE
Used with seal

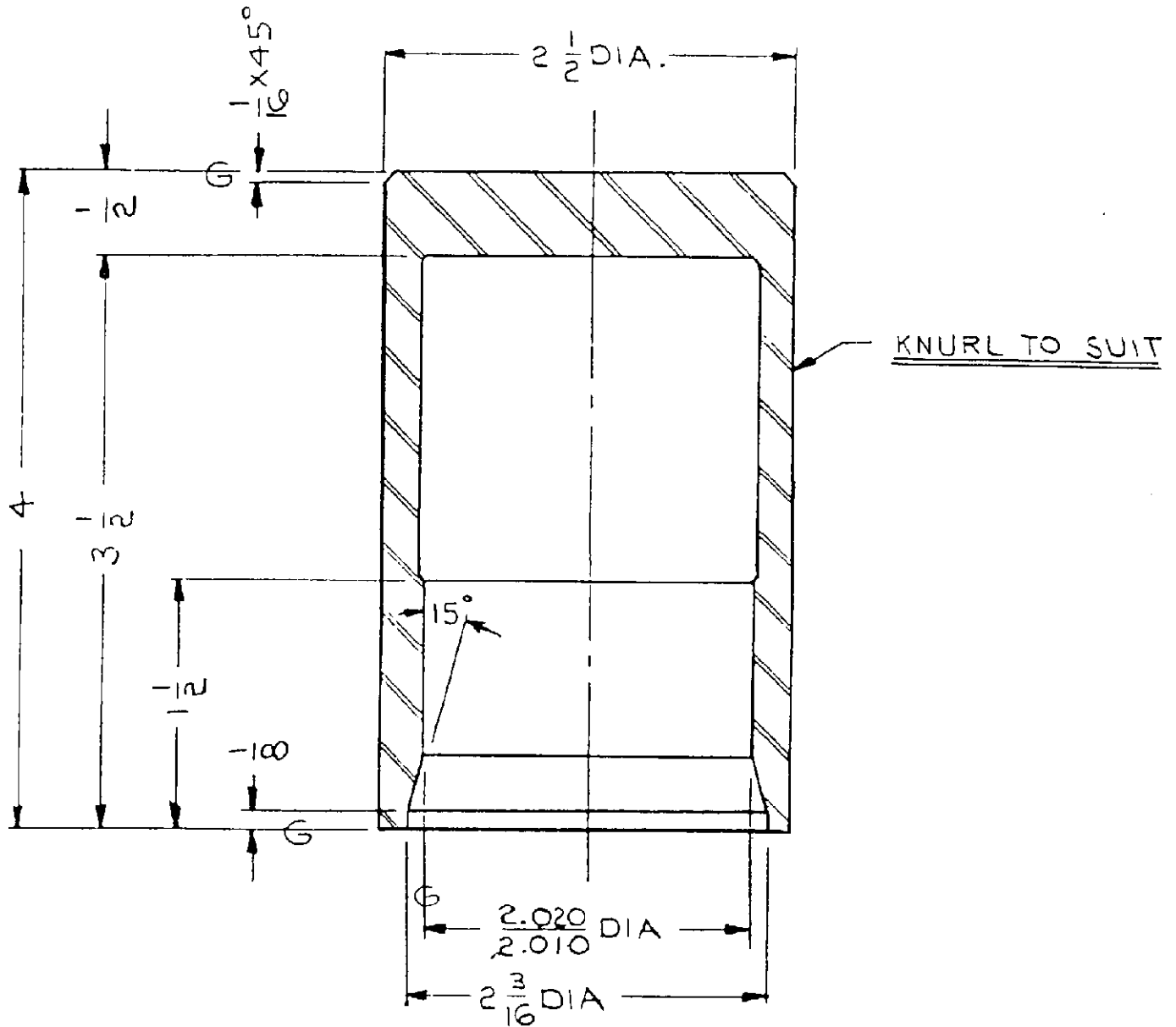


Figure 3-21: Bearing Cone Pressing Tool

BEARING CONE PRESSING FIXTURE

Used with bearing cones

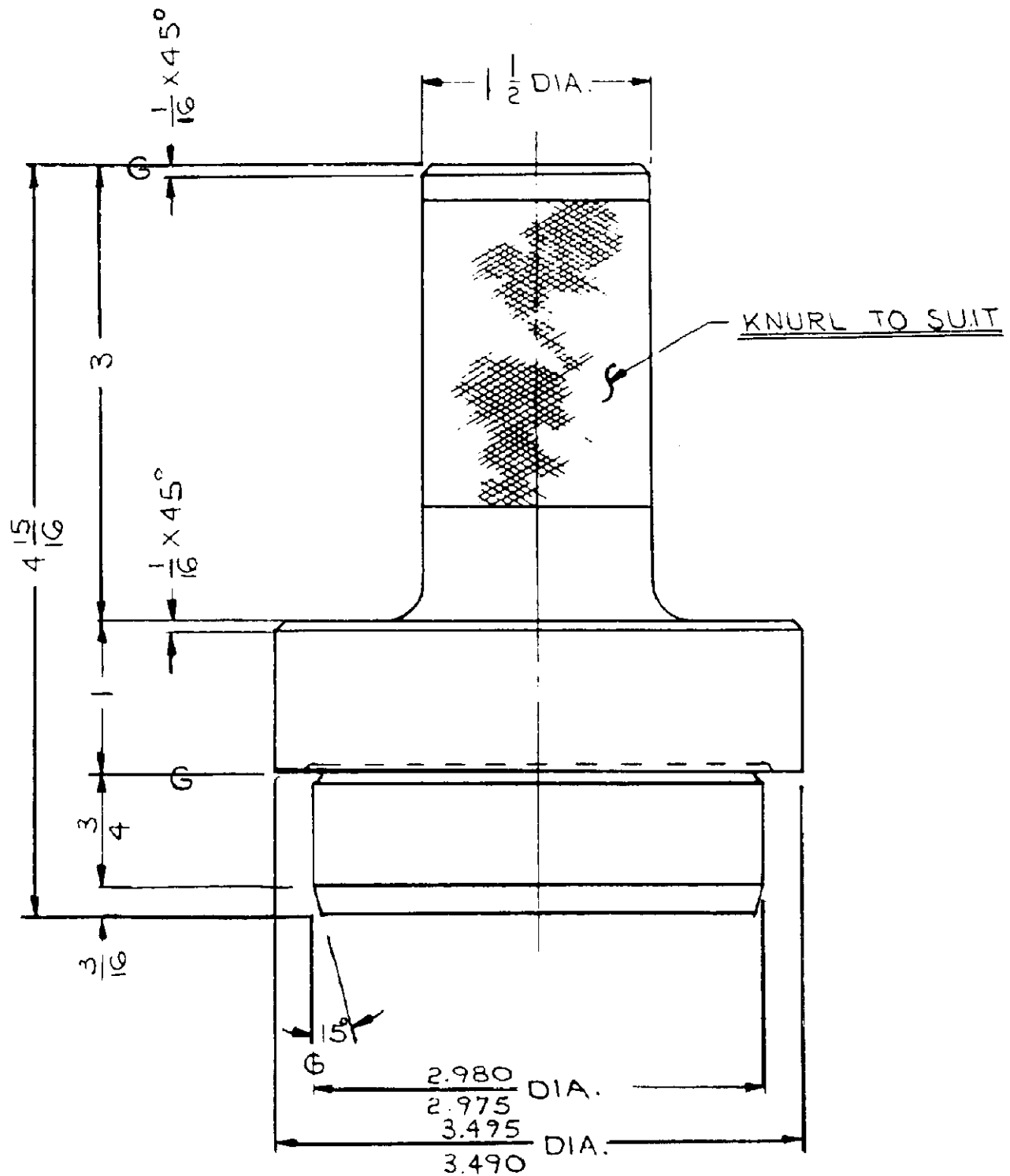


Figure 3-22: Bearing Cup Pressing Tool
BEARING CUP PRESSING FIXTURE
 Used with bearing cups

3.14 Setting Hydraulic Pressures

Figure (3-8) shows complete hydraulic manifold assembly.

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

HIGH RELIEF VALVE (Figure 3-23)

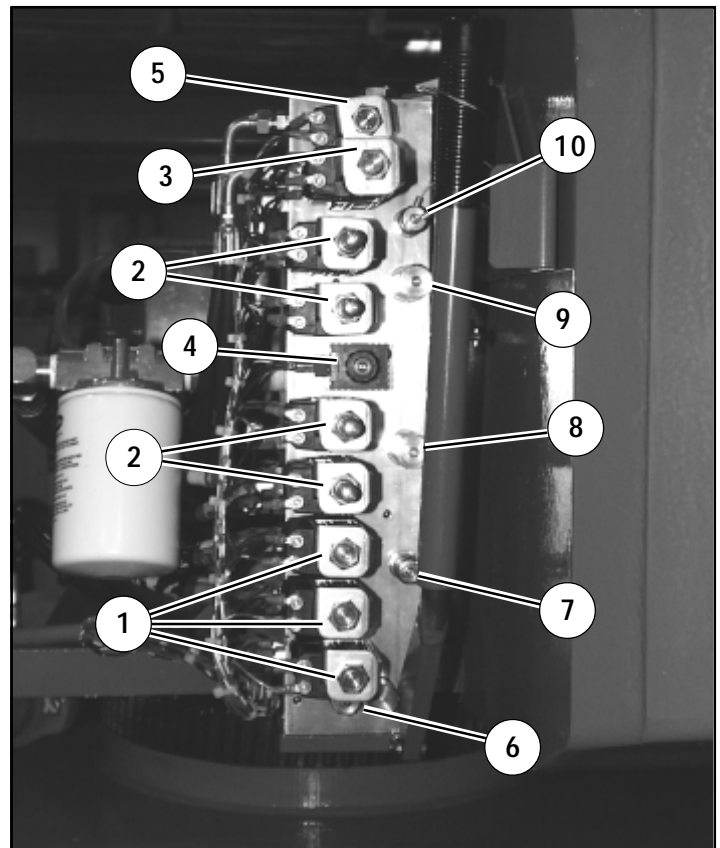
1. Operate the hydraulic system 10-15 minutes to warm the oil.
2. Remove the high relief port plug and install a 0-3000 PSI pressure gauge assembly.
3. Remove the plug in the end of the high relief valve to expose the adjusting screw.
4. Operate Jib raise function until jib is completely raised.
5. While activating the jib raise switch, set the pressure to 2500 PSI (173 bar) maximum by slowly turning the adjusting screw. Turning the adjusting screw clockwise increases pressure and counterclockwise decreases pressure.
6. Remove the pressure gauge and reinstall all plugs.

LOW RELIEF VALVE

1. Operate the hydraulic system 10 - 15 minutes to warm the oil.
2. Remove the low relief port plug and install a 0-3000 PSI pressure gauge assembly.
3. Remove the plug in the end of the low relief valve to expose the adjusting screw.
4. Turn the low relief valve adjustment screw counterclockwise two full turns.
5. Operate jib lower function until jib is completely lowered.
6. While activating the jib lower switch, set the pressure to 1500 PSI (104 bar) maximum by slowly turning the adjusting screw. Turning the adjusting screw clockwise increases pressure and counterclockwise decreases pressure.
7. Remove the pressure gauge and reinstall all plugs.

COUNTERBALANCE RELIEF VALVES

1. If any counterbalance relief valve is faulty, completely lower the jib, boom and elevating assembly and replace the counterbalance valve.
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.



1. Motor Spool 4 way Valve, 3 position
2. Closed Center 4 way Valve, 3 position
3. Tandem Center 4 way, 3 position Valve
4. Low Flow Valve
5. High Flow Valve
6. Counterbalance Valve
7. Low Relief Gage Port Plug
8. Low Relief 1500 PSI
9. High Relief 2500 PSI
10. High Relief Gage Port Plug

Figure 3-23: Valve Manifold

3.15 Master Cylinder

REMOVAL

1. Raise elevating assembly until master cylinder pins are accessible.
2. Support the cage assembly (refer to Figure 3-1).
3. Remove rod end retaining bolt and rod end pin.
4. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
5. Using a metal drift, remove rod end pin.
6. Remove base end pin retaining bolt and pin.
7. Carefully remove master cylinder.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Remove set screw from cylinder tube and unscrew head from cylinder.
2. Carefully pull rod assembly from cylinder.
3. Clamp rod end in vise and turn piston off of rod.

NOTE: Piston is loctited (Loctite #277) onto rod.

4. Slide the head off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
6. 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.
7. Inspect the rod, head, piston, and tube 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 to piston and head.
3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Clean threaded end of rod using loctite primer.
5. Using loctite #277, install piston onto rod.
6. Lubricate seals on piston and head with hydraulic oil.
7. Carefully slide rod assembly into cylinder.
8. Thread head into cylinder. Be sure hole for set screw aligns with hole in cylinder tube.
9. Clean set screw in loctite primer. Install set screw using loctite #242.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Remove boom support.
3. Slowly raise and lower boom several times. Check hydraulic connections for leaks. Check for proper slave cylinder operation.

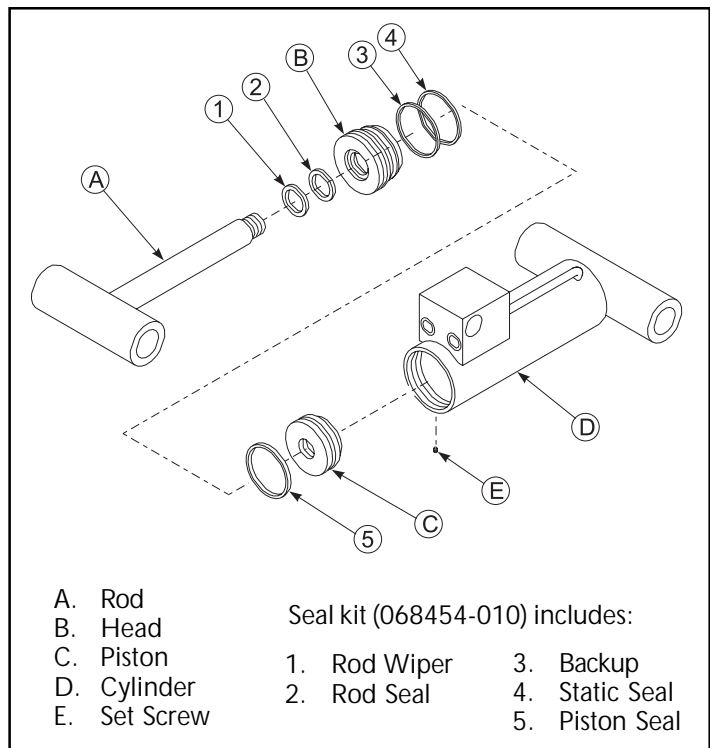


Figure 3-24: Master Cylinder

3.16 Slave Cylinder

REMOVAL

1. Extend boom until slave cylinder trunion pins are accessible. Support the cage assembly.
2. Remove rod end pin retaining bolt.
3. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
4. Using a metal drift, remove rod end pin.
5. Remove trunion pin retaining bolts and using a pin puller, remove trunion pins.
6. Carefully remove slave cylinder.

DISASSEMBLY

Note: Provide a clean work area for this operation and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Remove set screw from cylinder tube and unscrew head from cylinder.
2. Carefully pull rod assembly from cylinder.
3. Clamp rod end in vise and turn off rod extension. Slide piston off of rod.

NOTE: Rod extension is loctited (Loctite #262) onto rod.

4. Slide the head off of the rod.
5. Remove 1/4 inch socket head cap screws from rod end of cylinder and remove internal seal block from cylinder.
6. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head, piston and seal block.
7. 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.
8. 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston, head and internal block.
3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Clean threaded end of rod and rod extension using loctite primer.
5. Using loctite #262, install rod extension onto rod.
6. Lubricate seal block static seal and carefully push seal block into cylinder. Secure seal block using 1/4 socket head cap screws.
7. Lubricate seals on piston, head and seal block with hydraulic oil.
8. Carefully slide rod assembly into cylinder.
9. Thread head into cylinder. Be sure hole for set screw aligns with hole in cylinder tube.
10. Clean set screw in loctite primer. Install set screw using loctite #242.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Remove boom support.
3. Slowly raise and lower boom several times. Check hydraulic connections for leaks. Check for proper slave cylinder operation.

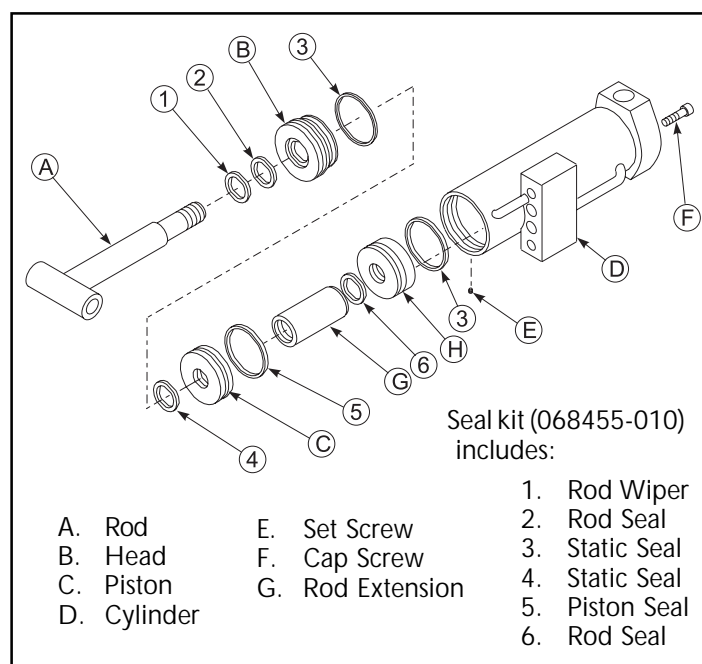


Figure 3-25: Slave Cylinder

3.17 Cage Rotate Cylinder

REMOVAL

1. Support the cage assembly at a convenient working height.
2. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
3. Remove hardware which secures cage rotate cylinder. Remove cage rotate cylinder.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Unscrew head from cylinder
2. Carefully pull shaft assembly from cylinder.
3. Secure rod end and turn piston off of rod.

NOTE: Piston is loctited (Loctite #262) onto rod.

4. Slide the head off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
6. 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.
7. Inspect cylinder 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston and head.

3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Clean threaded end of rod using loctite primer.
5. Using loctite #262, install piston onto rod.
6. Lubricate seals on piston and head with hydraulic oil.
7. Carefully slide rod assembly into cylinder.
8. Thread head into cylinder.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Slowly cycle cage rotate cylinder several times. Check hydraulic connections for leaks. Check for proper cylinder operation.

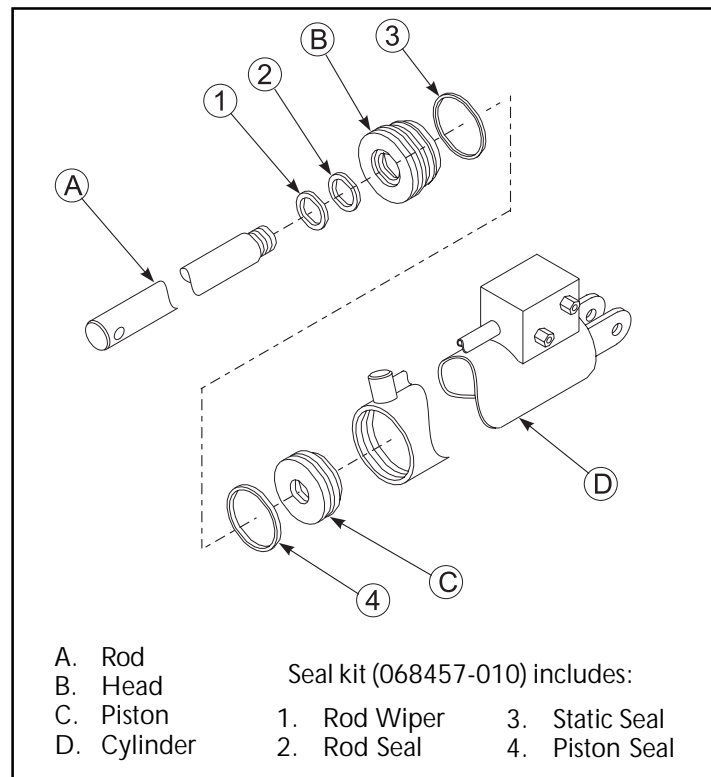


Figure 3-26: Cage Rotate Cylinder

3.18 Steering Cylinder

REMOVAL

1. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
2. Remove hardware which secures the steering arms to the spindles.
3. Remove hardware which secures steering cylinder to the chassis. Remove steering cylinder.
4. Mark steering arms for position on cylinder. Remove hardware which secures steering arms to rod ends. Using a hammer and drift, remove the roll pins which secure the steering arms to the rod ends.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Mark heads for position on cylinder. Unscrew heads from cylinder.

IMPORTANT: Heads must be installed onto same end of cylinder as they were removed from.

2. Carefully pull rod assembly from cylinder.
3. Remove one snap ring and piston lock.
4. Slide the piston off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from heads and piston.
6. 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.
7. Inspect cylinder 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston and heads.
3. Lubricate seals on piston. Slide piston on rod and secure using piston lock and snap ring.
4. Carefully slide rod assembly into cylinder.
5. Thread heads into cylinder.

IMPORTANT: Heads must be installed onto same end of cylinder as they were removed from.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Slowly steering cylinder several times. Check hydraulic connections for leaks. Check for proper cylinder operation.

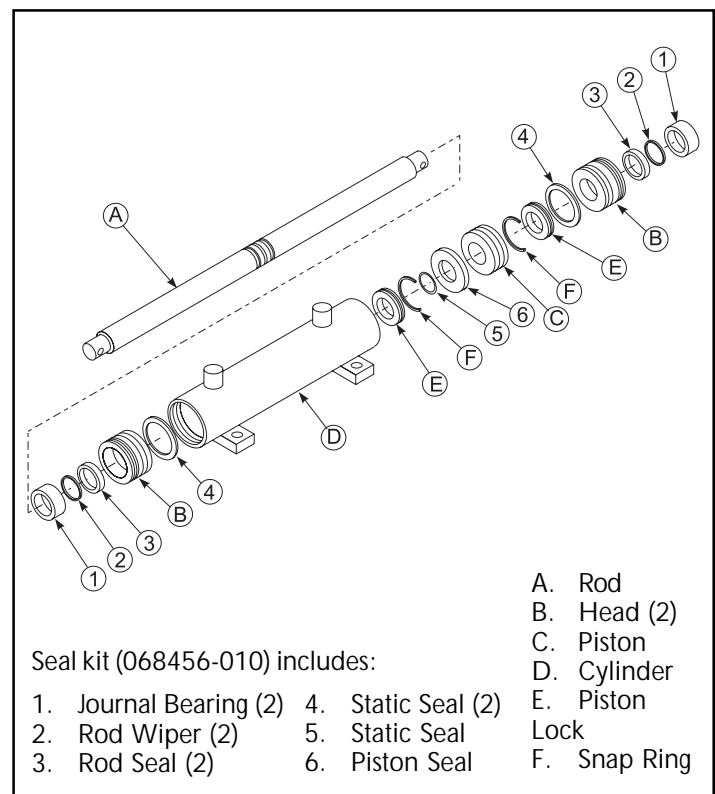


Figure 3-27: Steering Cylinder

3.19 Jib Cylinder

REMOVAL

1. Using an overhead hoist or crane, support the cage assembly at a convenient working height.
2. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
3. Remove hardware which secures jib cylinder pins.

NOTE: Jib cylinder is heavy. Take appropriate measures to support cylinder.

4. Remove jib cylinder pins. Remove jib cylinder.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not even be visible to the naked eye.

1. Remove counterbalance valve from cylinder.
2. Unscrew head from cylinder.
3. Carefully pull shaft assembly from cylinder.
4. Secure rod end and turn piston off of rod.

NOTE: Piston is loctited (Loctite #277) onto rod.

4. Slide the head off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
6. 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.
7. Inspect cylinder 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston and head.
3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Clean threaded end of rod using loctite primer.
5. Using loctite #277, install piston onto rod.
6. Lubricate seals on piston and head with hydraulic oil.
7. Carefully slide rod assembly into cylinder.
8. Thread head into cylinder.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Slowly cycle jib cylinder several times. Check hydraulic connections for leaks. Check for proper cylinder operation.

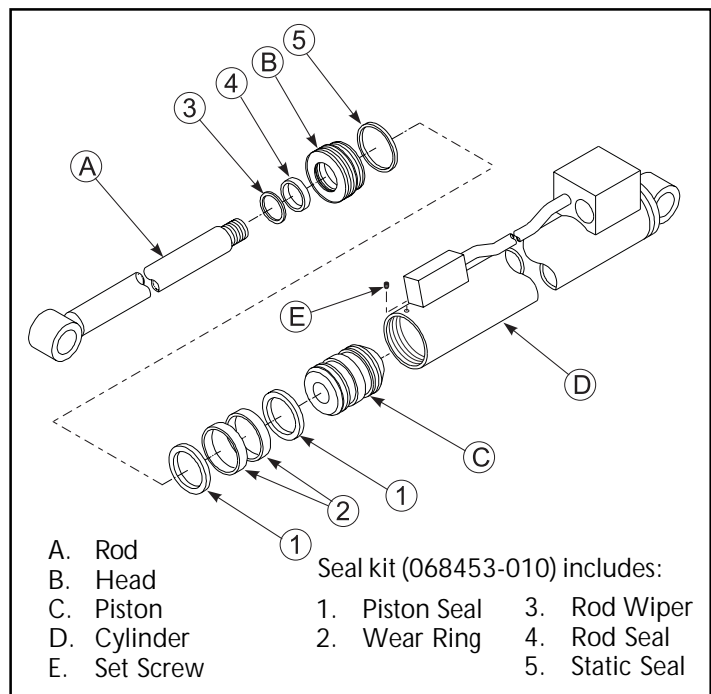


Figure 3-28: Jib Cylinder

3.20 Boom Raise & Boom Riser Cylinders

REMOVAL

1. Raise elevating assembly until cylinder pins are accessible.
1. Support the elevating assembly(refer to Figure 3-1).
2. Mark and disconnect hoses and immediately cap the openings to prevent contamination.
3. Remove hardware which secures cylinder. Remove cylinder.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Remove set screw from cylinder tube and unscrew head from cylinder.
2. Unscrew head from cylinder
3. Carefully pull shaft assembly from cylinder.
4. Remove 3/16 set screw which secures piston to rod.

NOTE: Set screw is loctited (Loctite #242) into piston.

2. Secure end of rod and turn piston off of rod.
4. Slide stop tube and head off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
6. 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.
7. Inspect cylinder 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston and head.
3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Slide stop tube onto rod.
5. Thread piston onto rod. Be sure set screw hole lines up with hole on end of rod.
6. Using loctite #242, secure piston to rod with 3/16 set screw.
7. Lubricate seals on piston and head with hydraulic oil.
8. Carefully slide rod assembly into cylinder.
9. Thread head into cylinder. Be sure hole for setscrew aligns with hole in cylinder tube.
10. Clean set screw in loctite primer. Install set screw using loctite #242.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.
2. Slowly cycle cylinder several times. Check hydraulic connections for leaks. Check for proper cylinder operation.

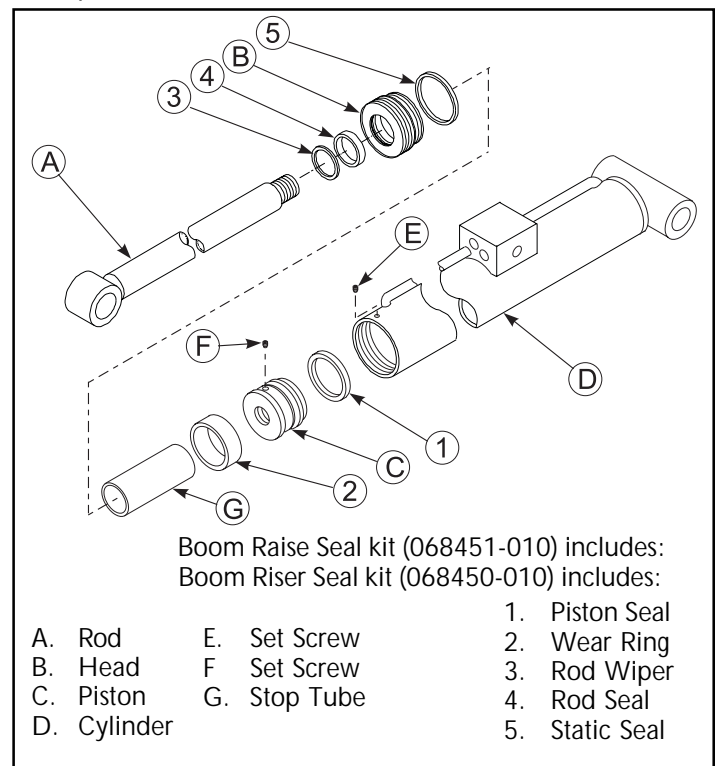


Figure 3-29: Boom Riser Cylinder (shown)

3.21 Boom Extend Cylinder

REMOVAL

1. Lower boom completely. Extend boom until front boom extend cylinder pin is accessible.
1. Use an overhead hoist or crane to support the rear of the boom (Figure 3-30).
2. Remove rear boom pivot pin.
3. Remove clips which secure front boom extend cylinder pin. Remove pin.
4. Mark and disconnect boom extend cylinder hoses and immediately cap the openings to prevent contamination.
5. Using overhead hoist, slightly raise rear of boom.

NOTE: This will extend master cylinder and allow room to remove boom extend cylinder. It may be necessary to remove a counterbalance valve to allow master cylinder to expand.

6. Remove rear boom extend cylinder pin. Carefully remove boom extend cylinder. Measure length of expanded boom cylinder.

IMPORTANT: Boom extend cylinder must be expanded to the same length when it is reinstalled.

DISASSEMBLY

Note: Provide a clean work area for this operation, and observe clean assembly practices. Seals and hydraulic cylinder components are highly sensitive to contamination that may not be visible to the naked eye.

1. Remove set screw and unscrew head from cylinder.
3. Carefully pull shaft assembly from cylinder.
4. Secure rod end and turn piston off of shaft.

NOTE: Piston is loctited (Loctite #277) onto rod.

4. Slide the head off of the rod.
5. Remove seal kit components (wipers, rod seals, o-rings and backup rings) from head and piston.
6. 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.

7. Inspect cylinder 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 .007" should be replaced.

ASSEMBLY

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

1. Lubricate all components and seals with clean hydraulic oil prior to assembly.

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 items to piston and head.
3. Lubricate rod wiper and seal with hydraulic oil and slide head onto rod.
4. Clean threaded end of rod using loctite primer.
5. Using loctite #277, install piston onto rod.
6. Lubricate seals on piston and head with hydraulic oil.
7. Carefully slide rod assembly into cylinder.

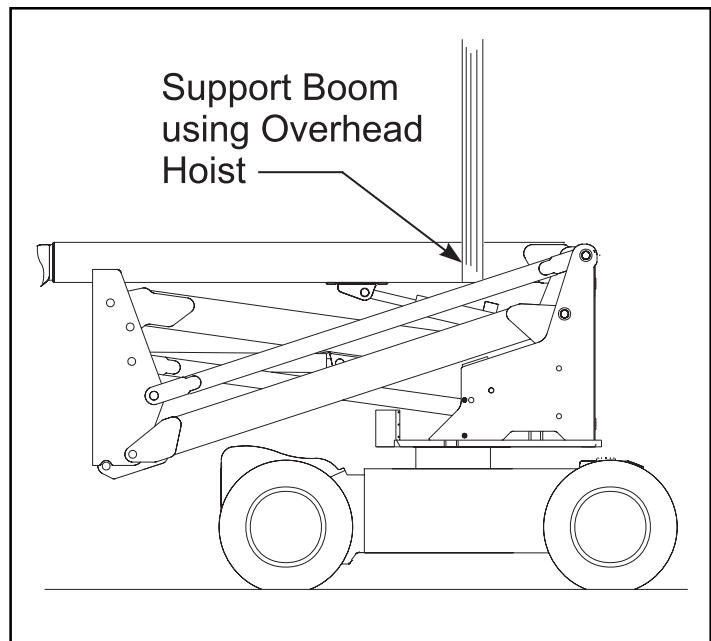


Figure 3-30: Removing Boom Extend Cylinder

8. Thread head into cylinder. Using loctite #242, install set screw.

INSTALLATION

1. Follow steps from "REMOVAL" section in reverse order to install cylinder.

IMPORTANT: Boom extend cylinder must be expanded to the same length it was when it was removed.

2. Slowly cycle cylinder several times. Check hydraulic connections for leaks. Check for proper cylinder operation.

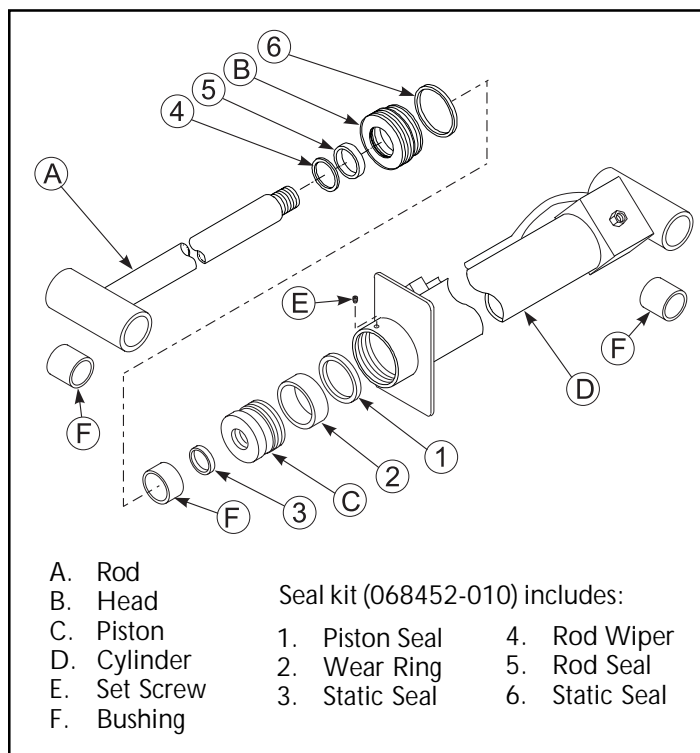


Figure 3-31: Boom Extend Cylinder

3.22 LONG TERM STORAGE

If the work platform is to be placed in long term storage (dead storage) follow these recommended preservation procedures.

PRESERVATION

1. Clean painted surfaces. If paint is damaged, repaint.
2. Fill the hydraulic tank to operating level. Fluid will be visible at the sight gauge.

IMPORTANT: Do not fill the hydraulic tank while the platform is elevated.

NOTE: Do not drain the hydraulic system prior to long term storage.

3. Coat exposed portions of cylinder rods with a preservative such as multipurpose grease and wrap with a barrier material.
4. Coat all exposed unpainted metal surfaces with preservative.
5. Service the engine according to the manufacturer's recommendations.
6. Remove the battery and place in alternative service.

3.23 Torque Specifications (Tables 3-3 & 3-4)

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.

Table 3-3: Bolt Torque

THREAD SIZE <small>American National Std.-UNC (course) Grade 5</small>	WIDTH ACROSS FLATS	TORQUE VALUE	
		ENGLISH	METRIC
1/4	7/16	110 In/Lbs	12 N·m
5/16	1/2	190 In/Lbs	22 N·m
3/8	9/16	30 Ft/Lbs	41 N·m
7/16	5/8	50 Ft/Lbs	68 N·m
1/2	3/4	75 Ft/Lbs	102 N·m
5/8	1 5/16	150 Ft/Lbs	203 N·m
3/4	1 1/8	250 Ft/Lbs	339 N·m
7/8	1 15/16	400 Ft/Lbs	542 N·m
1	1 1/2	600 Ft/Lbs	813 N·m

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 3-4: Hydraulic Component Torque

TYPE: SAEPART SERIES	CARTRIDGE POPPET		FITTINGS		HOSES	
	(Ft/Lbs	Nm)	(Ft/Lbs	Nm)	(In/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	107-131
#16	130-140	176-190	130-140	176-190	1300-1368	147-155

Coil nuts: 30 IN/Lbs (3 Nm)

4.0 Introduction

The following section on troubleshooting provides guidelines on the types of problems users may encounter in the field, helps determine the cause of problems, and suggests proper corrective action.

Careful inspection and accurate analysis of the symptoms listed in the Troubleshooting Guide will localize the trouble more quickly than any other method. 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 AB46 and help in diagnosing and repair of the machine.

GENERAL PROCEDURE

Use the charts on the following pages to help determine the cause of a fault in your UpRight AB46.

1. Verify your problem.
Do a full function test from both platform controls and chassis controls and note all functions that are 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.



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.
Disconnect the battery ground cable when replacing or testing the continuity of any electrical component.

FOR SERVICE ASSISTANCE, IN THE U.S.A., CALL:

1-800-926-5438

FROM OUTSIDE THE USA, CALL 1-209-896-5150

Table 4-1 Troubleshooting Guide - Hydraulic Schematic

Component	Function	Steer	Riser	Boom Extend	Boom Raise	Jib	Cage Level	Cage Rotate	Slew	Drive	Diff Lock	Drive	Brake Release	Parking Brake Release	
Pump		X	X	X	X	X	X	X	X						
Steer Valve		X													
Steer Cylinder		X													
High Relief		X	X	X	X	X	X	X	X						
Relief Check Valves		X	X	X	X	X	X	X	X	X		X			
High Dump		1	X	X											
Diverter Valve		2	2	2	2	2	2	2	2						
Riser Valve			X												
Riser Cylinder			X												
Riser C/B Valve			X												
Riser CK Valve			X												
Boom Extend Valve				X											
Boom Extend Cylinder				X											
Boom Extend C/B Valve				X											
Boom Extend CK Valve				X											
Boom Raise Valve					X										
Boom Raise Cylinder					X										
Boom Raise C/B Valve					X										
Boom Raise CK Valve					X										
Proportional Valve					X	X	X	X	X						
Jib Valve						X									
Jib Orifice						X									
Jib Cylinder						X									
Jib C/B Valve						X									
Jib CK Valve						X									
Master Cylinder							X								
Master Cylinder C/B Valves							X								
Master Cylinder CK Valves							X								
Slave Cylinder							X								
Slave Cylinder CB Valves							X								
Trim Level Valve							X								
Low Relief Valve			X	X	X	X	X	X	X						
Cage Rotate Cylinder								X							
Cage Rotate Valve								X							
Cage Rotate C/B Valve								X							
Cage Rotate CK Valve								X							
Slew Motor									X						
Turret Rotate Valve									X						
Turret Rotate CK Valve									X						
1000 PSI Relief									X						
1. High dump is not activated by steering. It will close for other functions while steering.															
2. Diverter valve is not activated during normal operation. Only for hand pump operation.															

Troubleshooting

Section
4.1

Table 4-1 Troubleshooting Guide - Hydraulic Schematic - (continued)

Component Function	Steer	Riser	Boom Extend	Boom Raise	Jib	Cage Level	Cage Rotate	Slew	Drive	Diff Lock Drive	Brake Release	Parking Brake Release	
Drive Pump									X	X			
Charge Pump									X	X			
Charge Pump Relief Valve									X	X			
Bypass Valve									3	3	X		
Differential Lock Valve										X			
P/O Differential Lock Valves										X			
Drive Motors									X	X			
Brake Valve									X	X	X		
Brake Orifices									X	X	X		
Brakes									X	X	X		
3 Bypass valve is not energized during normal operation.													

Table 4-2 Troubleshooting Guide - Electrical Schematics

<div><div>↙</div><div>Component</div><div>↘</div></div> <div><div>→</div><div>Function</div><div>→</div></div>	Engine Run Upper Controls	Engine Run Lower Controls	Engine Start Upper controls	Engine Start Lower Controls	Steer Right	Steer Left	Riser Elevate	Riser Descend	Boom Extend	Boom Retract	Boom Raise	Boom Lower	Jib Up	Jib Down	Cage Level Up	Cage Level Down	Cage Rotate CCW	Cage Rotate CW	Slew CCW	Slew CW	Drive	Diff Lock Drive	Parking Brake Release	Tilt Alarm	Tilt Light
Battery	X	X																							
25 A Fuse	X	X																							
Chassis EM Stop Switch	X	X																							
Chassis Key Switch	X	X																				X			
10 A Circuit Breaker CB1	X	X																							
Chassis Control Power Relay	X	X																							
Starter Mtor / Solenoid	X	X																							
Start Solenoid	X	X																							
Alternator	X	X																							
10 Amp Circuit breaker CB2		X																							
Platform EM Stop Switch	X	X																							
10 Amp Control Box Fuse	X																								
Control Box Key Switch	X																								
Diode DB20R	X																								
Diode DB20L		X																							
Engine Relay <i>Contacts and Coil</i>	X	X																							
Tilt Relay <i>Contacts</i>	X	X																					X	X	
Tilt Light <i>off for normal operation</i>	X	X																							
Tilt Alarm <i>off for normal operation</i>	X	X																							
Brake Relay <i>Contacts</i>	X	X																							
Tilt Sensor (<i>red wire</i>)	X	X																							
Tilt Sensor (<i>white wire</i>)	X	X																					X	X	
Diff Lock Relay <i>contacts</i>	X	X																							
Propane Relay <i>contacts</i>	X	X																							
Gas Relay <i>contacts</i>	X	X																							
Choke Relay <i>contacts</i>	X	X																							
Horn Relay <i>contacts</i>	X	X																							
Throttle Relay <i>contacts</i>	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Down Limit Switch	X	X																							
Down Relay <i>coil</i>	X	X																							
Engine Oil Pressure Switch	X	X																							
Distributor	X	X																							
Ignition Coil	X	X																							
Fuel Select Switch	X	X																							
Propane Relay <i>coil</i>	X	X																							
LP Valve	X	X																							
Gas Relay <i>coil</i>	X	X																							
Gas Valve	X	X																							
Fuel Pump	X	X																							
Chassis Control Power Relay <i>coil</i>		X																							
Chassis Control Power Relay <i>contacts</i>	X	X																							
Start Solenoid			X	X																					
Starter Mtor			X	X																					
Start Switch				X																					
Choke Switch			X	X																					
Choke Relay			X	X																					
Choke			X	X																					
Choke Diode			X	X																					
Throttle Relay Coil							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Throttle Solenoid							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Lower Turret Rotate Switch																			X	X					

Troubleshooting

Section
4.2

Table 4-2 Troubleshooting Guide - Electrical Schematics - (continued)

<div><div>Component</div><div>Function</div></div>	Engine Run Upper Controls	Engine Run Lower Controls	Engine Start Upper controls	Engine Start Lower Controls	Steer Right	Steer Left	Riser Elevate	Riser Descend	Boom Extend	Boom Retract	Boom Raise	Boom Lower	Jib Up	Jib Down	Cage Level Up	Cage Level Down	Cage Rotate CCW	Cage Rotate CW	Slew CCW	Slew CW	Drive	Diff Lock Drive	Parking Brake Release	Tilt Alarm	Tilt Light
Lower Cage rotate Switch																	X	X							
Lower Trim Switch															X	X									
Lower Jib Switch											X	X	X	X											
Lower Boom Elevate Switch										X	X														
Lower Boom Extend Switch									X	X															
Lower Riser Switch							X	X																	
Diode DB16													X	X	X	X	X	X	X	X					
Diode DB8													X	X	X	X	X	X	X	X					
Diode DB8.1													X	X	X	X	X	X	X	X					
Boom Speed Relay <i>coil</i>													X	X	X	X	X	X	X	X					
Boom Speed Relay <i>contacts</i>																									
Turtle / Rabbit Knob													X	X	X	X	X	X	X	X					
Diode DB17							X	X	X	X															
Diode DB18											X	X													
Foot Switch					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Boom Disconnect Relay																									
Upper Turret Rotate Switch																			X	X					
Upper Cage rotate Switch																	X	X							
Upper Trim Switch															X	X									
Upper Jib Switch													X	X											
Lower Boom Elevate Switch											X	X													
Upper Boom Extend Switch									X	X															
Upper Riser Switch							X	X																	
Turret Drive Relay <i>contacts</i>																	X	X	X	X					
Boom Disconnect Relay <i>contacts</i>							X	X	X	X	X	X	X	X											
Diode DB7													X	X	X	X	X	X	X	X					
Diode DB6											X	X													
Diode DB11													X	X	X	X	X	X							
Diode DB3							X	X	X	X															
Diode DB2							X	X	X	X															
Diode DB9											X	X													
Diode DB23L					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Diode DB23R																					X				
Diode DB24																							X		
Speed Control Knob											X	X	X	X	X	X	X	X	X	X					
Boom Speed Relay <i>contacts</i>											X	X	X	X	X	X	X	X	X	X					
Boom Speed Relay <i>coil</i>													X	X	X	X									
Drive Enable Relay <i>coil</i>																					X				
Drive Enable Relay <i>contacts</i>																					X				
Steer Right Switch					X																				
Steer Left Switch						X																			
Diff Lock Switch																						X			
Down Relay <i>contacts</i>															X	X									
Down Relay <i>contacts</i>																							X		
Down Relay <i>contacts</i>																					X	X			
Boom Extend Drive Interlock Switch																					X	X			
Forward Proportional Valve																					X	X			
Reverse Proportional Valve																					X	X			
Brake Relay <i>coil</i>																					X	X			
Brake Solenoid Valve																					X	X			
Brake Relay <i>contacts</i>																					X	X			
Boom Disconnect Relay <i>coil</i>																					X	X			

Troubleshooting

Table 4-2 Troubleshooting Guide - Electrical Schematics - (continued)

<div> <div>Component</div> <div>Function</div> </div>	Engine Run Upper Controls	Engine Run Lower Controls	Engine Start Upper controls	Engine Start Lower Controls	Steer Right	Steer Left	Riser Elevate	Riser Descend	Boom Extend	Boom Retract	Boom Raise	Boom Lower	Jib Up	Jib Down	Cage Level Up	Cage Level Down	Cage Rotate CCW	Cage Rotate CW	Slew CCW	Slew CW	Drive	Diff Lock Drive	Parking Brake Release	Tilt Alarm	Tilt Light
Turret Drive Relay coil																					X	X			
Drive Joystick																					X	X			
Diff Lock Button																						X			
Diff Lock Relay																						X			
Diff Lock Solenoid Valve																						X			
Trim Up Solenoid Valve															X										
Trim Down Solenoid Valve																X									
Trim Up Relay coil															X										
Trim Up Relay contacts															X										
Trim Down Relay coil																X									
Trim Down Relay contacts																X									
Jib Up Solenoid Valve													X												
Jib Down Solenoid Valve														X											
Jib Up Relay coil													X												
Jib Up Relay contacts													X												
Jib Down Relay coil														X											
Jib Down Relay contacts														X											
Boom Up Solenoid Valve											X														
Boom Down Solenoid Valve												X													
Boom Up Relay coil											X														
Boom Up Relay contacts											X														
Boom Down Relay coil												X													
Boom Down Relay contacts												X													
Boom Extend Solenoid Valve								X																	
Boom Retract Solenoid Valve									X																
Boom Extend Relay coil								X																	
Boom Extend Relay contacts								X																	
Boom Retract Relay coil									X																
Boom Retract Relay contacts									X																
Riser Up Solenoid Valve							X																		
Riser Down Solenoid Valve								X																	
Riser Up Relay coil							X																		
Riser Up Relay contacts							X																		
Riser Down Relay coil								X																	
Riser Down Relay contacts								X																	
Cage Right Solenoid Valve																	X								
Cage Left Solenoid Valve																X									
Cage Right Relay coil																	X								
Cage Right Relay contacts																	X								
Cage Left Relay coil																	X								
Cage Left Relay contacts																	X								
Turret Right Solenoid Valve																			X						
Turret Left Solenoid Valve																		X							
Turret Right Relay coil																			X						
Turret Right Relay contacts																			X						
Turret Left Relay coil																			X						
Turret Left Relay contacts																			X						
Steer Right Solenoid Valve					X																				
Steer Left Solenoid Valve						X																			
Proportional Valve											X	X	X	X	X	X	X	X	X	X					
High Flow Valve							X	X	X	X															
Diode DB21																							X		
Bypass Solenoid Valve																							X		
Diode DB25																							X	X	

5.0 Introduction

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

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

Section 5.1 Electrical Schematics

Figure 5-1: Electrical Schematic, Gas Model

Figure 5-2: Electrical Schematic, Dual Fuel Model

Figure 5-3: Electrical Schematic, Diesel Model

Section 5.2 Hydraulic Schematics

Figure 5-4: Hydraulic Schematic

Section 5.3 Valve Block Assemblies

Figure 5-5: Boom Valve Block Assembly

Figure 5-6: Hydraulic Valve Ports

Figure 5-7: Check Ports

Figure 5-8: Drive Valve Block Assembly

Section 5.4 Upper Controller

Figure 5-9: Upper Controller

Figure 5-10: Electrical Diagram-Upper Controller-Gas

Figure 5-11: Electrical Diagram-Upper Controller-Diesel

Section 5.5 Lower Controller

Figure 5-12: Lower Control Box Cover

Figure 5-13: Terminal Strip, Relay Identification

Figure 5-14: Electrical Diagram - Lower Control Box Gas Model

Figure 5-15: Electrical Diagram - Lower Control Box Diesel Model

5.1 Electrical Schematics

Table 5-1: Electrical Schematic Legend, Gasoline Model - 068341-001

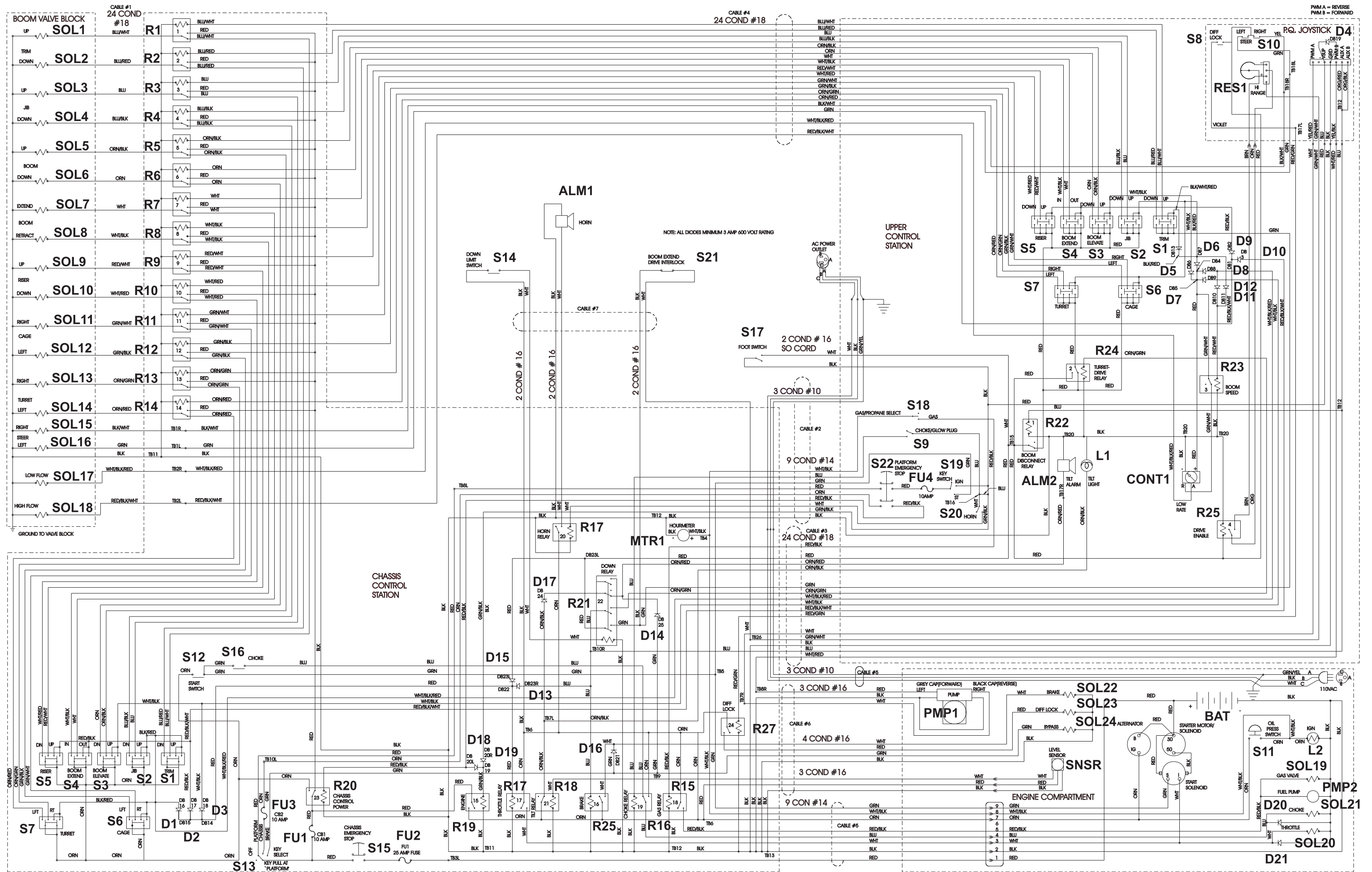
REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM 1	Horn	Warning sound	Front of chassis
ALM 2	Alarm, Tilt	Provides warning sound when slope of machine exceeds 3° side to side, or fore and aft.	Upper control box, exterior upper left side.
CONT1	Controller	Controls operating speed of various functions	Upper control box
D1	Diode	Supplies power to throttle relay	Lower control box
D2	Diode	Supplies power to throttle relay	Lower control box
D3	Diode	Supplies power to throttle relay	Lower control box
D4	Diode	Spike protection diode	Joystick handle
D5	Diode	Supplies power to speed controller CONT1	Upper control box
D6	Diode	Supplies power to speed controller CONT1	Upper control box
D7	Diode	Supplies power to speed controller CONT1	Upper control box
D8	Diode	Supplies power to speed controller CONT1	Upper control box
D9	Diode	Supplies power to high flow solenoid	Upper control box
D10	Diode	Supplies power to high flow solenoid	Upper control box
D11	Diode	Supplies power to boom elevate speed relay	Upper control box
D12	Diode	Supplies power to boom elevate speed relay	Upper control box
D13	Diode	Provides power to throttle relay	Lower control box
D14	Diode	Provides power to tilt alarm	Lower control box
D15	Diode	Provides power to throttle relay	Lower control box
D16	Diode	Provides power to brake solenoid	Lower control box
D17	Diode	Power to tilt alarm ALM2	Lower control box
D18	Diode	Power to engine relay	Lower control box
D19	Diode	Power to throttlr relay	Lower control box
D20	Diode	Engine - choke diode	Engine Compartment
D21	Diode	Engine - throttle diode	Engine Compartment

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
FU1	Fuse	Engine Power 10 AMP	Lower Control box
FU2	Fuse	Emergency Stop 25 AMP	Lower Control box
FU3	Fuse	Chassis Controls 10 AMP	Lower Control box
FU4	Fuse	Platform Controls 10 AMP	Upper Control box
L1	Tilt Light	Lights when machine is in tilt condition	Upper Control box
PMP1	Drive Pump	Hydraulic Drive Power	Chassis
PMP2	Engine Fuel Pump	Pumps fuel to Engine	Engine
R1	Relay	Power to up trim solenoid	Relay Panel
R2	Relay	Power to down trim solenoid	Lower Control box
R3	Relay	Power to up jib solenoid	Lower Control box
R4	Relay	Power to down jib solenoid	Lower Control box
R5	Relay	Power to up boom solenoid	Lower Control box
R6	Relay	Power to down boom solenoid	Lower Control box
R7	Relay	Power to extend boom solenoid	Lower Control box
R8	Relay	Power to retract boom solenoid	Lower Control box
R9	Relay	Power to up riser solenoid	Upper Control box
R10	Relay	Power to down riser solenoid	Upper Control box
R11	Relay	Power to cage Right Solenoid	Upper Control box
R12	Relay	Power to cage left solenoid	Upper Control box
R13	Relay	Power to turret right solenoid	Relay Panel
R14	Relay	Power to turret left solenoid	Relay Panel

Table 5-1: (cont.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
R15	Engine Gas Relay	Power to Engine Gas Relay	Lower Control box
R16	Engine Choke Relay	Power to Engine Choke Relay	Lower Control box
R17	Engine Throttle Relay	Power to Engine Throttle Relay	Lower Control box
R18	Low Tilt Relay	Disenables Drive Functions	Lower Control box
R19	Engine Relay	Enables Engine to operate	Lower Control box
R20	Power Relay	Power to Controller	Lower Control box
R21	Down Relay	Power to Hydraulic Pump	Lower Control box
R22	Boom Disconnect Relay	Power to Upper Controller	Upper Control box
R23	Boom Elevate Speed Relay	Power to Speed Controller	Upper Control box
R24	Turret Drive Relay	Power to Turret Rotate Solenoid	Upper Control box
R25	Drive Enable Relay	Power to Upper Control box	Upper Control box
R26	Brake Relay	Power to Brake Solenoid	Lower Control box
R27	Differential Lock Relay	Activated Differential Lock	Lower Control box
RES1	Resistor	Speed control	Joystick control
S1	Trim Switch, (two)	Power to Trim Solenoid	Lower Control box Upper Control box
S2	Jib Switch, (two)	Power to Jib Solenoid	Lower Control box Upper Control box
S3	Boom Elevate Switch (two)	Power to Boom Lift Solenoid	Lower Control box Upper Control box
S4	Boom Extend Switch (two)	Power to Boom Extend Solenoid	Lower Control box Upper Control box
S5	Riser Switch (two)	Power to Riser Solenoid	Lower Control box Upper Control box
S6	Cage Switch (two)	Power to Cage Rotate Solenoid	Lower Control box Upper Control box
S7	Turret Switch (two)	Power to Turret Rotate Solenoid	Lower Control box Upper Control box
S8	Differential Lock Switch	Locks Differential	Joystick
S9	Choke/Glowplug Switch	Actuates Choke/Glowplug	Upper Control box
S10	Steer Switch	Power to left steer and right steer relays	Upper control box, top of joystick.
S11	Oil Pressure Switch	Stops Engine if low pressure	Engine
S12	Engine Start Switch	Starts Engine	Lower control box
S13	Platform/Chassis Switch	Supplies power to Platform/Chassis	Lower control box

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S14	Down Limit Switch	Controls travel speed Slow/Fast	Turret at boom attachment
S15	Chassis Emergency Stop Switch	Emergency Stop	Lower control box
S16	Choke Switch	Actuates Engine Choke	Lower control box
S17	Foot Switch	Enables operation from platform	Floor of platform
S18	Gas/Propane Select Switch	Selects gas or propane	Platform control box
S19	Platform Key Switch	Enables operation from platform	Platform control box
S20	Horn Switch	Sounds horn	Platform control Box
S21	Boom Extend Drive Interlock	Controls travel speed Slow/Fast	On Boom
S22	Platform Emergency Stop Switch	Emergency Stop	Platform control box
SNSR	Level Sensor	Provides power to cutout relay when machine is level.	Control module.
SOL1	Trim UP Solenoid.	Controls lift valve.	Right side of manifold
SOL2	Trim Down Solenoid.	Controls lift valve.	Right side of manifold
SOL3	Jib Up Solenoid.	Controls lift valve.	Right side of manifold
SOL4	Jib Down Solenoid.	Controls lift valve.	Right side of manifold
SOL5	Boom Up Solenoid.	Controls lift valve.	Right side of manifold
SOL6	Boom Down Solenoid.	Controls lift valve.	Right side of manifold
SOL7	Boom Extend Solenoid	Controls reverse valve.	Right side of manifold
SOL8	Boom Retract Solenoid.	Controls lift valve.	Right side of manifold
SOL9	Riser Up Solenoid.	Controls lift valve.	Right side of manifold
SOL10	Riser Down Solenoid	Controls series / parallel valves.	Right side of manifold
SOL11	Cage Right Solenoid.	Controls lift valve.	Right side of manifold
SOL12	Cage Left Solenoid	Controls down valve.	Right side of manifold
SOL13	Turret Right Solenoid	Controls steer valve when steering right.	Right side of manifold
SOL14	TurretLeft Solenoid	Controls steer valve when steering left.	Right side of manifold
SOL15	Steer Right Solenoid	Controls engine throttle.	Right side of manifold
SOL16	Steer LeftSolenoid	Controls engine choke.	Right side of manifold
SOL17	Low Flow	Controls lift valve.	Right side of manifold,
SOL18	High Flow	Controls lift valve.	Right side of manifold,
SOL19	Engine Gas Valve Solenoid	Allows Gas to Engine	Engine Compartment
SOL20	Engine Choke Solenoid	Controls Engine Choke	Engine Compartment
SOL21	Engine Throttle Solenoid	Controls Engine Throttle	Engine Compartment
SOL22	Brake Solenoid	Actuates Brakes	Drive Valve Block
SOL23	Differential Lock Solenoid	Controls Differential Lock	Drive Valve Block
SOL24	Bypass Solenoid	Allows oil bypass to tank	Drive Valve Block



5.1 Electrical Schematics

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Table 5-2: Electrical Schematic Legend, Dual Fuel Model - 068341-002

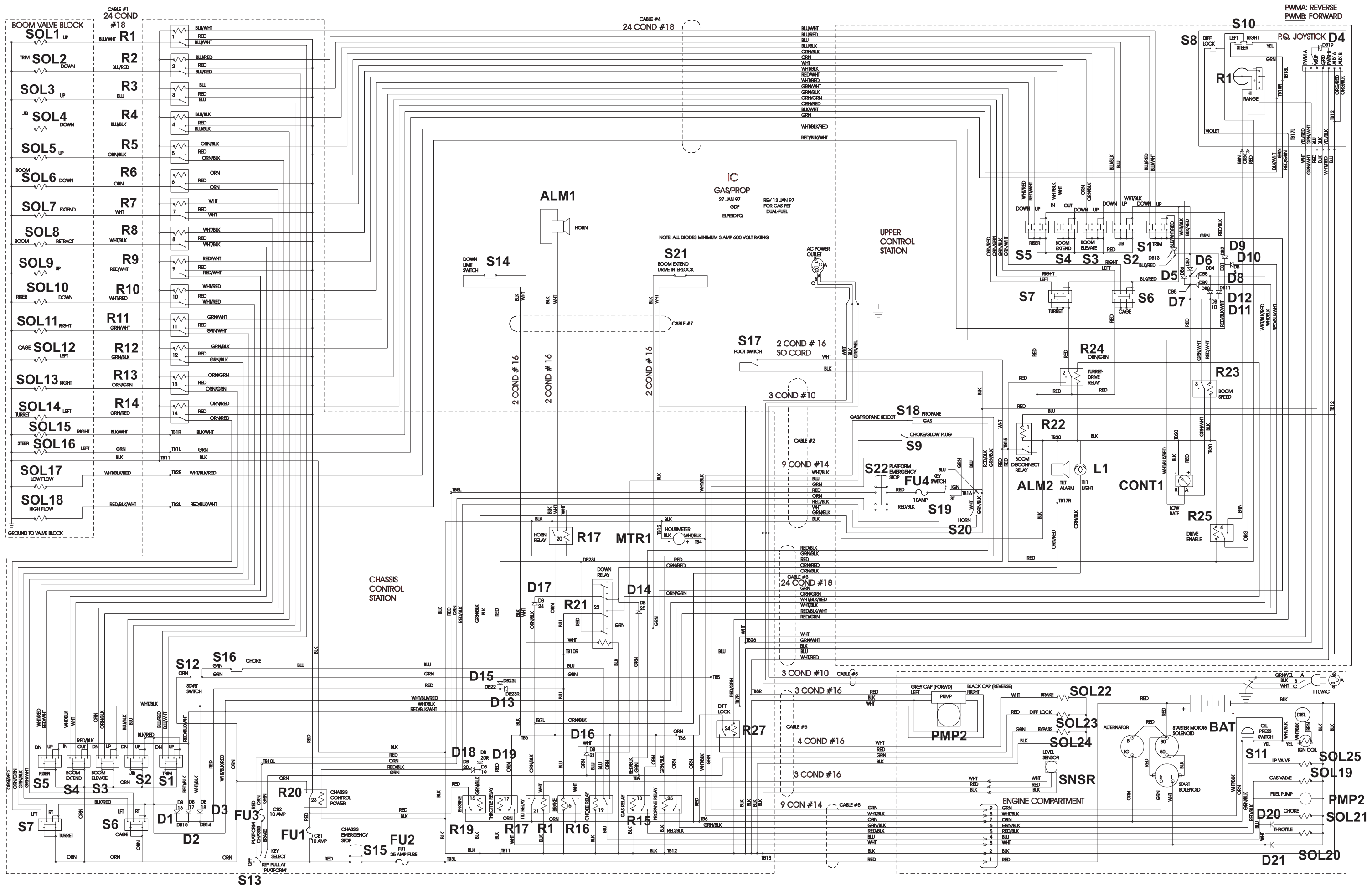
REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM 1	Horn	Warning sound	Front of chassis
ALM 2	Alarm, Tilt	Provides warning sound when slope of machine exceeds 3° side to side, or fore and aft.	Upper control box, exterior upper left side.
CONT1	Controller	Controls operating speed of various functions	Upper control box
D1	Diode	Supplies power to throttle relay	Lower control box
D2	Diode	Supplies power to throttle relay	Lower control box
D3	Diode	Supplies power to throttle relay	Lower control box
D4	Diode	Spike protection diode	Joystick handle
D5	Diode	Supplies power to speed controller CONT1	Upper control box
D6	Diode	Supplies power to speed controller CONT1	Upper control box
D7	Diode	Supplies power to speed controller CONT1	Upper control box
D8	Diode	Supplies power to speed controller CONT1	Upper control box
D9	Diode	Supplies power to high flow solenoid	Upper control box
D10	Diode	Supplies power to high flow solenoid	Upper control box
D11	Diode	Supplies power to boom elevate speed relay	Upper control box
D12	Diode	Supplies power to boom elevate speed relay	Upper control box
D13	Diode	Provides power to throttle relay	Lower control box
D14	Diode	Provides power to tilt alarm	Lower control box
D15	Diode	Provides power to throttle relay	Lower control box
D16	Diode	Provides power to brake solenoid	Lower control box
D17	Diode	Power to tilt alarm ALM2	Lower control box
D18	Diode	Power to engine relay	Lower control box
D19	Diode	Power to Throttle relay	Lower control box
D20	Diode	Engine - choke diode	Engine Compartment
D21	Diode	Engine - throttle diode	Engine Compartment

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
FU1	Fuse	Engine Power 10 AMP	Lower Control box
FU2	Fuse	Emergency Stop 25 AMP	Lower Control box
FU3	Fuse	Chassis Controls 10 AMP	Lower Control box
FU4	Fuse	Platform Controls 10 AMP	Upper Control box
L1	Tilt Light	Lights when machine is in tilt condition	Upper Control box
PMP1	Drive Pump	Hydraulic Drive Power	Chassis
PMP2	Engine Fuel Pump	Pumps fuel to Engine	Engine
R1	Relay	Power to up trim solenoid	Relay Panel
R2	Relay	Power to down trim solenoid	Lower Control box
R3	Relay	Power to up jib solenoid	Lower Control box
R4	Relay	Power to down jib solenoid	Lower Control box
R5	Relay	Power to up boom solenoid	Lower Control box
R6	Relay	Power to down boom solenoid	Lower Control box
R7	Relay	Power to extend boom solenoid	Lower Control box
R8	Relay	Power to retract boom solenoid	Lower Control box
R9	Relay	Power to up riser solenoid	Upper Control box
R10	Relay	Power to down riser solenoid	Upper Control box
R11	Relay	Power to cage Right Solenoid	Upper Control box
R12	Relay	Power to cage left solenoid	Upper Control box
R13	Relay	Power to turret right solenoid	Relay Panel
R14	Relay	Power to turret left solenoid	Relay Panel
R15	Engine Gas Relay	Power to Engine Gas Relay	Lower Control box

Table 5-2: (cont.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
R16	Engine Choke Relay	Power to Engine Choke Relay	Lower Control box
R17	Engine Throttle Relay	Power to Engine Throttle Relay	Lower Control box
R18	Low Tilt Relay	Disenables Drive Functions	Lower Control box
R19	Engine Relay	Enables Engine to operate	Lower Control box
R20	Power Relay	Power to Controller	Lower Control box
R21	Down Relay	Power to Hydraulic Pump	Lower Control box
R22	Boom Disconnect Relay	Power to Upper Controller	Upper Control box
R23	Boom Elevate Speed Relay	Power to Speed Controller	Upper Control box
R24	Turret Drive Relay	Power to Turret Rotate Solenoid	Upper Control box
R25	Drive Enable Relay	Power to Upper Control box	Upper Control box
R26	Brake Relay	Power to Brake Solenoid	Lower Control box
R27	Differential Lock Relay	Activated Differential Lock	Lower Control box
R28	Propane Relay	Power to Gas or LP Solenoid	Lower Control box
R29	Horn Relay	Power to Horn	Lower Control box
RES1	Resistor	Speed control	Joystick control
S1	Trim Switch, (two)	Power to Trim Solenoid	Lower Control box Upper Control box
S2	Jib Switch, (two)	Power to Jib Solenoid	Lower Control box Upper Control box
S3	Boom Elevate Switch (two)	Power to Boom Lift Solenoid	Lower Control box Upper Control box
S4	Boom Extend Switch (two)	Power to Boom Extend Solenoid	Lower Control box Upper Control box
S5	Riser Switch (two)	Power to Riser Solenoid	Lower Control box Upper Control box
S6	Cage Switch (two)	Power to Cage Rotate Solenoid	Lower Control box Upper Control box
S7	Turret Switch (two)	Power to Turret Rotate Solenoid	Lower Control box Upper Control box
S8	Differential Lock Switch	Locks Differential	Joystick
S9	Choke/Glowplug Switch	Actuates Choke/Glowplug	Upper Control box
S10	Steer Switch	Power to left steer and right steer relays	Upper control box, top of joystick.
S11	Oil Pressure Switch	Stops Engine if low pressure	Engine
S12	Engine Start Switch	Starts Engine	Lower control box
S13	Platform/Chassis Switch	Supplies power to Platform/Chassis	Lower control box
S14	Down Limit Switch	Controls travel speed Slow/Fast	Turret at boom attachment

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S15	Chassis Emergency Stop Switch	Emergency Stop	Lower control box
S16	Choke Switch	Actuates Engine Choke	Lower control box
S17	Foot Switch	Enables operation from platform	Floor of platform
S18	Gas/Propane Select Switch	Selects gas or propane	Platform control box
S19	Platform Key Switch	Enables operation from platform	Platform control box
S20	Horn Switch	Sounds horn	Platform control Box
S21	Boom Extend Drive Interlock	Controls travel speed Slow/Fast	On Boom
S22	Platform Emergency Stop Switch	Emergency Stop	Platform control box
SNSR	Level Sensor	Provides power to cutout relay when machine is level.	Control module.
SOL1	Trim UP Solenoid.	Controls lift valve.	Right side of manifold
SOL2	Trim Down Solenoid.	Controls lift valve.	Right side of manifold
SOL3	Jib Up Solenoid.	Controls lift valve.	Right side of manifold
SOL4	Jib Down Solenoid.	Controls lift valve.	Right side of manifold
SOL5	Boom Up Solenoid.	Controls lift valve.	Right side of manifold
SOL6	Boom Down Solenoid.	Controls lift valve.	Right side of manifold
SOL7	Boom Extend Solenoid	Controls reverse valve.	Right side of manifold
SOL8	Boom Retract Solenoid.	Controls lift valve.	Right side of manifold
SOL9	Riser Up Solenoid.	Controls lift valve.	Right side of manifold
SOL10	Riser Down Solenoid	Controls series / parallel valves.	Right side of manifold
SOL11	Cage Right Solenoid.	Controls lift valve.	Right side of manifold
SOL12	Cage Left Solenoid	Controls down valve.	Right side of manifold
SOL13	Turret Right Solenoid	Controls steer valve when steering right.	Right side of manifold
SOL14	TurretLeft Solenoid	Controls steer valve when steering left.	Right side of manifold
SOL15	Steer Right Solenoid	Controls engine throttle.	Right side of manifold
SOL16	Steer LeftSolenoid	Controls engine choke.	Right side of manifold
SOL17	Low Flow	Controls lift valve.	Right side of manifold,
SOL18	High Flow	Controls lift valve.	Right side of manifold,
SOL19	Engine Gas Valve Solenoid	Allows Gas to Engine	Engine Compartment
SOL20	Engine Choke Solenoid	Controls Engine Choke	Engine Compartment
SOL21	Engine Throttle Solenoid	Controls Engine Throttle	Engine Compartment
SOL22	Brake Solenoid	Actuates Brakes	Drive Valve Block
SOL23	Differential Lock Solenoid	Controls Differential Lock	Drive Valve Block
SOL24	Bypass Solenoid	Allows oil bypass to tank	Drive Valve Block
SOL25	LP Valve Solenoid	Allows LP Gas to Engine	Engine Compartment



5.1 Electrical Schematics

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Table 5-3: Electrical Schematic Legend, Diesel Model - 068341-003

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM 1	Horn	Warning sound	Front of chassis
ALM 2	Alarm, Tilt	Provides warning sound when slope of machine exceeds 3° side to side, or fore and aft.	Upper control box, exterior upper left side.
CONT1	Controller	Controls operating speed of various functions	Upper control box
D1	Diode	Supplies power to throttle relay	Lower control box
D2	Diode	Supplies power to throttle relay	Lower control box
D3	Diode	Supplies power to throttle relay	Lower control box
D4	Diode	Spike protection diode	Joystick handle
D5	Diode	Supplies power to speed controller CONT1	Upper control box
D6	Diode	Supplies power to speed controller CONT1	Upper control box
D7	Diode	Supplies power to speed controller CONT1	Upper control box
D8	Diode	Supplies power to speed controller CONT1	Upper control box
D9	Diode	Supplies power to high flow solenoid	Upper control box
D10	Diode	Supplies power to high flow solenoid	Upper control box
D11	Diode	Supplies power to boom elevate speed relay	Upper control box
D12	Diode	Supplies power to boom elevate speed relay	Upper control box
D13	Diode	Provides power to throttle relay	Lower control box
D14	Diode	Provides power to tilt alarm	Lower control box
D15	Diode	Provides power to throttle relay	Lower control box
D16	Diode	Provides power to brake solenoid	Lower control box
D17	Diode	Power to tilt alarm ALM2	Lower control box
D18	Diode	Power to engine relay	Lower control box
D19	Diode	Power to throttle relay	Lower control box
D20	Diode	Power to Engine	Engine Compartment

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
FU1	Fuse	Engine Power 10 AMP	Lower Control box
FU2	Fuse	Emergency Stop 25 AMP	Lower Control box
FU3	Fuse	Chassis Controls 10 AMP	Lower Control box
FU4	Fuse	Platform Controls 10 AMP	Upper Control box
L1	Tilt Light	Lights when machine is in tilt condition	Upper Control box
PMP1	Drive Pump	Hydraulic Drive Power	Chassis
R1	Relay	Power to up trim solenoid	Relay Panel
R2	Relay	Power to down trim solenoid	Lower Control box
R3	Relay	Power to up jib solenoid	Lower Control box
R4	Relay	Power to down jib solenoid	Lower Control box
R5	Relay	Power to up boom solenoid	Lower Control box
R6	Relay	Power to down boom solenoid	Lower Control box
R7	Relay	Power to extend boom solenoid	Lower Control box
R8	Relay	Power to retract boom solenoid	Lower Control box
R9	Relay	Power to up riser solenoid	Upper Control box
R10	Relay	Power to down riser solenoid	Upper Control box
R11	Relay	Power to cage Right Solenoid	Upper Control box
R12	Relay	Power to cage left solenoid	Upper Control box
R13	Relay	Power to turret right solenoid	Relay Panel
R14	Relay	Power to turret left solenoid	Relay Panel

Table 5-3: (cont.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
R15	Glow Plug Relay	Power to Glow Plug	Lower Control box
R16	Brake Relay	Power to Brake Solenoid	Lower Control box
R17	Engine Throttle Relay	Power to Engine Throttle Relay	Lower Control box
R18	Low Tilt Relay	Disenables Drive Functions	Lower Control box
R19	Engine Relay	Enables Engine to operate	Lower Control box
R20	Power Relay	Power to Controller	Lower Control box
R21	Down Relay	Power to Hydraulic Pump	Lower Control box
R22	Boom Disconnect Relay	Power to Upper Controller	Upper Control box
R23	Boom Elevate Speed Relay	Power to Speed Controller	Upper Control box
R24	Turret Drive Relay	Power to Turret Rotate Solenoid	Upper Control box
R25	Drive Enable Relay	Power to Upper Control box	Upper Control box
R26	Differential Lock Relay	Activates Differential Lock	Lower Control box
RES1	Resistor	Speed control	Joystick control
S1	Trim Switch, (two)	Power to Trim Solenoid	Lower Control box Upper Control box
S2	Jib Switch, (two)	Power to Jib Solenoid	Lower Control box Upper Control box
S3	Boom Elevate Switch (two)	Power to Boom Lift Solenoid	Lower Control box Upper Control box
S4	Boom Extend Switch (two)	Power to Boom Extend Solenoid	Lower Control box Upper Control box
S5	Riser Switch (two)	Power to Riser Solenoid	Lower Control box Upper Control box
S6	Cage Switch (two)	Power to Cage Rotate Solenoid	Lower Control box Upper Control box
S7	Turret Switch (two)	Power to Turret Rotate Solenoid	Lower Control box Upper Control box
S8	Differential Lock Switch	Locks Differential	Joystick
S9	Choke/Glowplug Switch	Actuates Choke/Glowplug	Upper Control box
S10	Steer Switch	Power to left steer and right steer relays	Upper control box, top of joystick.
S11	Oil Pressure Switch	Stops Engine if low pressure	Engine
S12	Engine Start Switch	Starts Engine	Lower control box
S13	Platform/Chassis Switch	Supplies power to Platform/Chassis	Lower control box

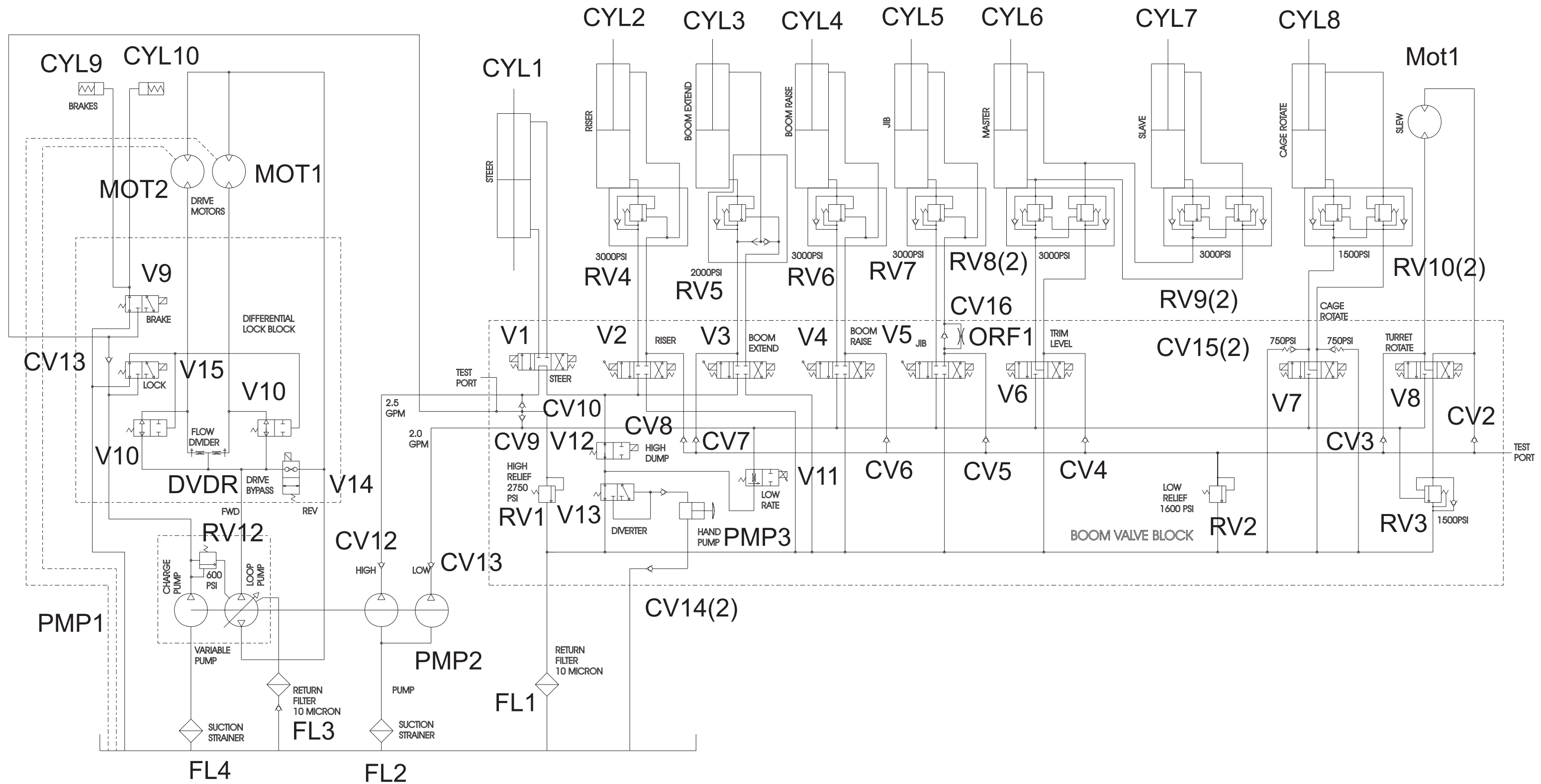
REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S14	Down Limit Switch	Controls travel speed Slow/Fast	Turret at boom attachment
S15	Chassis Emergency Stop Switch	Emergency Stop	Lower control box
S16	Choke/Glow Plug Switch	Actuates Choke/Glow Plug	Lower control box
S17	Foot Switch	Enables operation from platform	Floor of platform
S18	Platform Emergency Stop Switch	Emergency Stop	Platform control box
S19	Platform Key Switch	Enables operation from platform	Platform control box
S20	Horn Switch	Sounds horn	Platform control Box
S21	Boom Extend Drive Interlock	Controls travel speed Slow/Fast	On Boom
SNSR	Level Sensor	Provides power to cutout relay when machine is level.	Control module.
SOL1	Trim UP Solenoid.	Controls lift valve.	Right side of manifold
SOL2	Trim Down Solenoid.	Controls lift valve.	Right side of manifold
SOL3	Jib Up Solenoid.	Controls lift valve.	Right side of manifold
SOL4	Jib Down Solenoid.	Controls lift valve.	Right side of manifold
SOL5	Boom Up Solenoid.	Controls lift valve.	Right side of manifold
SOL6	Boom Down Solenoid.	Controls lift valve.	Right side of manifold
SOL7	Boom Extend Solenoid	Controls reverse valve.	Right side of manifold
SOL8	Boom Retract Solenoid.	Controls lift valve.	Right side of manifold
SOL9	Riser Up Solenoid.	Controls lift valve.	Right side of manifold
SOL10	Riser Down Solenoid	Controls series / parallel valves.	Right side of manifold
SOL11	Cage Right Solenoid.	Controls lift valve.	Right side of manifold
SOL12	Cage Left Solenoid	Controls down valve.	Right side of manifold
SOL13	Turret Right Solenoid	Controls steer valve when steering right.	Right side of manifold
SOL14	TurretLeft Solenoid	Controls steer valve when steering left.	Right side of manifold
SOL15	Steer Right Solenoid	Controls engine throttle.	Right side of manifold
SOL16	Steer LeftSolenoid	Controls engine choke.	Right side of manifold
SOL17	Low Flow	Controls lift valve.	Right side of manifold,
SOL18	High Flow	Controls lift valve.	Right side of manifold,
SOL19	Engine Run Solenoid	Allows Engine to Run	Engine Compartment
SOL20	Engine Throttle Solenoid	Controls Engine Throttle	Engine Compartment
SOL21	Brake Solenoid	Actuates Brakes	Drive Valve Block
SOL22	Differential Lock Solenoid	Controls Differential Lock	Drive Valve Block
SOL23	Bypass Solenoid	Allows oil bypass to tank	Drive Valve Block

Table 5-4: Hydraulic Schematic Legend

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
CV1 & CV2	Check Valve, Brake	Allows free flow from brakes around pressure reducing valve	Rear of Chassis
CV3	Check Valve, Turret Rotate	Flow Check	Hydraulic Manifold
CV4	Check Valve, Trim	Flow Check	Hydraulic Manifold
CV5	Check Valve, Jib	Flow Check	Hydraulic Manifold
CV6	Check Valve, Boom Raise	Flow Check	Hydraulic Manifold
CV7	Check Valve, Boom Extend	Flow Check	Hydraulic Manifold
CV8	Check Valve, Riser	Flow Check	Hydraulic Manifold
CV9	Check Valve, High Relief	Flow Check	Hydraulic Manifold
CV10	Check Valve, High Relief	Flow Check	Hydraulic Manifold
CV11	Check Valve, Brake Release	Flow Check	Hydraulic Manifold
CV12	Check Valve, High	Flow Check	Hydraulic Manifold
CV13	Check Valve, Low	Flow Check	Hydraulic Manifold
CV14 (2)	Check Valve, Hand Pump	Stops flow from hand pump through diverter valve	Hydraulic Manifold
CV15 (2)	Check Valve,	Reduces pressure for smooth cage rotate operation	Hydraulic Manifold
CV16	Check Valve, Jib Lower	Sends oil through OR2 to slow jib lowering	Hydraulic Manifold
CV17	Check Valve, Brake	Flow Check	Differential Lock Block
CYL1	Steering Cylinder	Actuates steering linkage to steer front wheels.	Front axle assembly
CYL2	Riser Cylinder	Raise Elevating Assembly	Elevating Assembly
CYL3	Boom Extend Cylinder	Extend Boom	Inside Boom
CYL4	Boom Raise Cylinder	Raise Elevating Assembly	Elevating Assembly
CYL5	Jib Cylinder	Raise Jib	Jib
CYL6	Master Cylinder	Maintain cage level	Rear of Boom
CYL7	Slave Cylinder	Maintain cage level	Front of Boom
CYL8	Cage Rotate Cylinder	Rotate cage	Between cage and Jib
CYL9	Left Brake Cylinder	Release left brake	Left brake
CYL10	Right Brake Cylinder	Release right brake	Right brake
DVDR	Flow Divider	Divides oil flow evenly	Differential Lock Block
FL1	Filter, Return	Keep oil clean	Hydraulic tank
FI2	Filter, Suction Strainer	Keep oil clean	Pump
FI3	Filter, Return	Keep oil clean	Hydraulic tank
FI4	Filter, Suction Strainer	Keep oil clean	Pump
MOT1	Motor, Slew	Turns Turret	Bottom of turret
ORF1	Jib Down Orifice	Limits the descent speed of the jib.	
PMP1	Drive Pump	Provides fluid power for drive system.	Chassis
PMP2	Boom Pump	Provides fluid power for boom system.	Chassis
PMP3	Hand Pump	Pump up brakes for towing	Hydraulic manifold

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
RV1	High Pressure Relief Valve	Limits maximum pressure	Hydraulic manifold
RV2	Low Pressure Relief Valve	Limits minimum pressure	Hydraulic manifold
RV3	Turret Rotate Relief Valve	Limit pressure to turret rotate motor	Hydraulic manifold
RV4	Riser Relief Valve	Limit pressure to riser cylinder	Riser cylinder
RV5	Boom Extend Relief Valve	Limit pressure to boom extend cylinder	Boom extend cylinder
RV6	Boom Raise Relief Valve	Limit pressure to boom raise cylinder	Boom raise cylinder
RV7	Jib Relief Valve	Limit pressure to jib cylinder	Jib cylinder
RV8 (2)	Master Relief Valve	Limit pressure to master cylinder	Master cylinder
RV9 (2)	Slave Relief Valve	Limit pressure to slave cylinder	Slave cylinder
RV10 (2)	Cage Rotate Relief Valve	Limit pressure to cage rotate cylinder	Cage rotate cylinder
RV11	Charge Relief Valve	Limit Charge Pressure	Drive Pump
V1	Steering Valve	Controls oil flow to steering cylinder	Top of manifold, ports marked 'D'.
V2	Riser Valve	Controls oil flow to Riser Cylinder	Front of manifold, port
V3	Boom Extend Valve	Controls oil flow to Boom Extend Cylinder	Hydraulic manifold
V4	Boom Raise Valve	Controls oil flow to Boom Raise Cylinder	Hydraulic manifold
V5	Jib Valve	Controls oil flow to Jib Cylinder	Hydraulic manifold
V6	Trim/Level Valve	Controls oil flow to Master Cylinder	Hydraulic manifold
V7	Cage Rotate Valve	Controls oil flow to Cage Rotate Cylinder	Hydraulic manifold
V8	Turret Rotate Valve	Controls oil flow to Slew Motor (MOT1)	Hydraulic manifold
V9	Brake Apply Valve	Apply brakes	Brake valve block
V10	Pilot Valve	Allows oil flow to drive motors to vary	Differential Lock Block
V11	Low Rate Valve	Flow control	Hydraulic manifold
V12	High Dump Rate	Power to riser and boom extend cylinders	Hydraulic manifold
V13	Diverter Valve	Allows hand pump to function	Hydraulic manifold
V14	Bypass Valve	Allows oil to bypass to tank	Differential Lock Block
V15	Differential Lock Valve	Actuate Pilot Valves	Differential Lock Block

Note: See figure 5-5 for hydraulic valve locations.



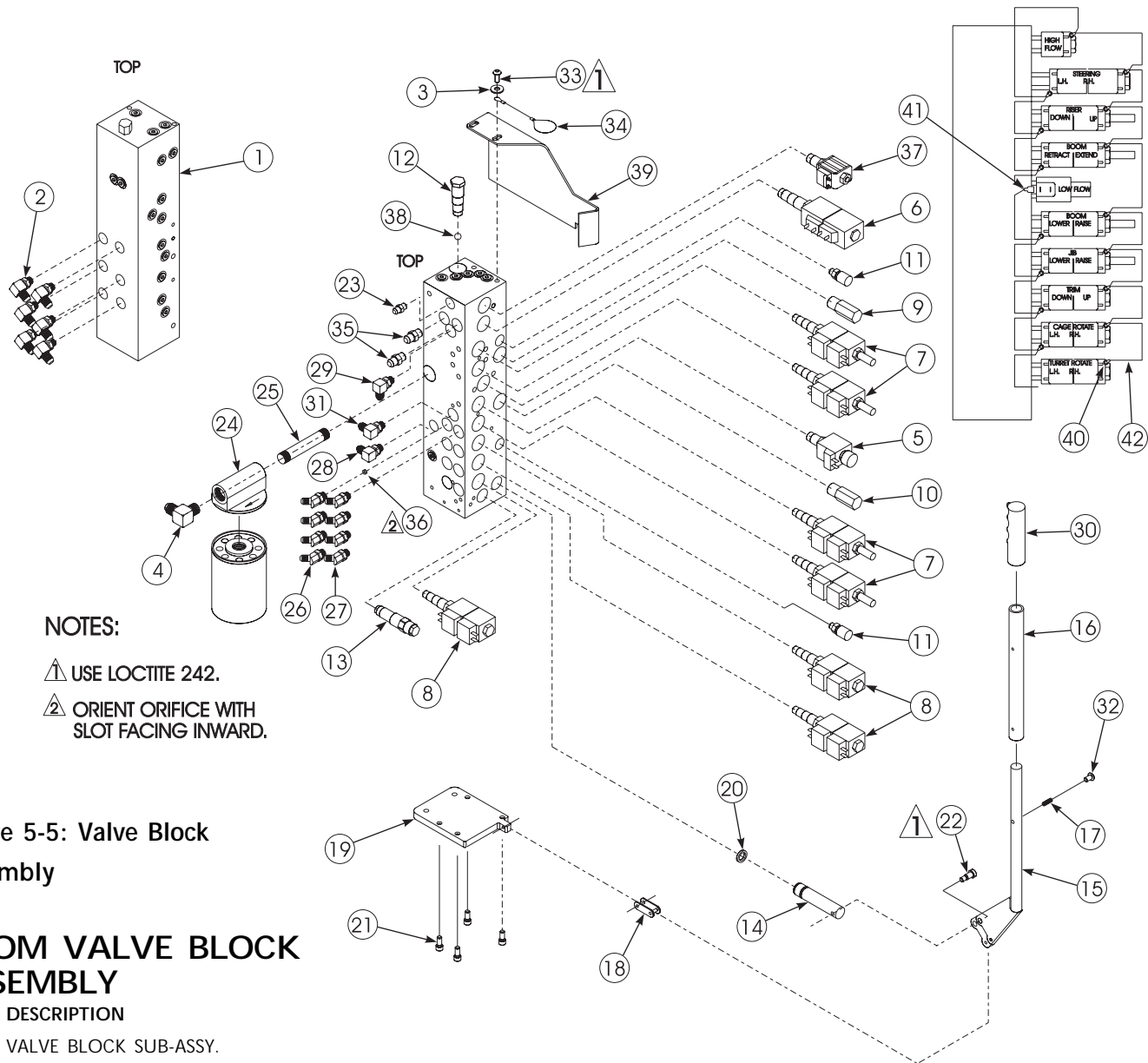


Figure 5-5: Valve Block Assembly

BOOM VALVE BLOCK ASSEMBLY

ITEM DESCRIPTION

1. VALVE BLOCK SUB-ASSY.
2. FITTING, 2062-4-4S
3. WASHER, 5/16 FLAT
4. 90° ELBOW 3/4 NPT X 3/4 JIC
5. FLOW CNTRL, WATERMAN
6. 3 POS, 4 WAY, TANDEM CENTER
7. 3 POS, 4 WAY, CLOSED CENTER
8. 3 POS, 4 WAY, MOTOR SPOOL
9. RELIEF VALVE, 2540 PSI
10. RELIEF VALVE, 1450 PSI
11. PLUG, GAUGE PORT
12. DIVERTER VALVE
13. COUNTERBALANCE VALVE, TURRET ROTATE
14. PISTON, HAND PUMP
15. LEVER WELDMENT, HAND PUMP
16. LEVER EXTENSION, HAND PUMP
17. DETENT BALL / SPRING
18. PIVOT LINK
19. MOUNTING PLATE, VALVE BLOCK
20. SEAL, POLY PACK #12500625
21. SCREW, SOC.HD. 5/16-18 UNC X 1/2
22. SCREW, SHOULDER, 3/8 X 5/8
23. FITTING 202702-4-6S

ITEM DESCRIPTION

24. FILTER ASSEMBLY
25. PIPE NIPPLE, 3/4 SCHD 40 X 4
26. FITTING, 45° 6MB-4MJ
27. FITTING, 45° SWIVEL EL. 4MB-4MJ
28. FITTING, 90° 4MB-6MJ
29. FITTING, 90° EL. 6MB-6MJ
30. HAND GRIP, VINYL
31. FITTING, 2062-6-4S
32. SCREW BUTT HEAD 1/4-20 UNC X 1/2
33. SCREW BUTT HEAD, 5/16-18 UNC X 3/4
34. LANYARD ASSEMBLY
35. FITTING 202702-6-6S
36. ORFICE
37. VALVE
38. STEEL BALL 7/16 DIA
39. BRACKET
40. CONNECTOR RING, 18-14 GA. #8
41. CONNECTOR, FEMALE, PUSH, .25
42. WIRE, 16 GA. BLACK

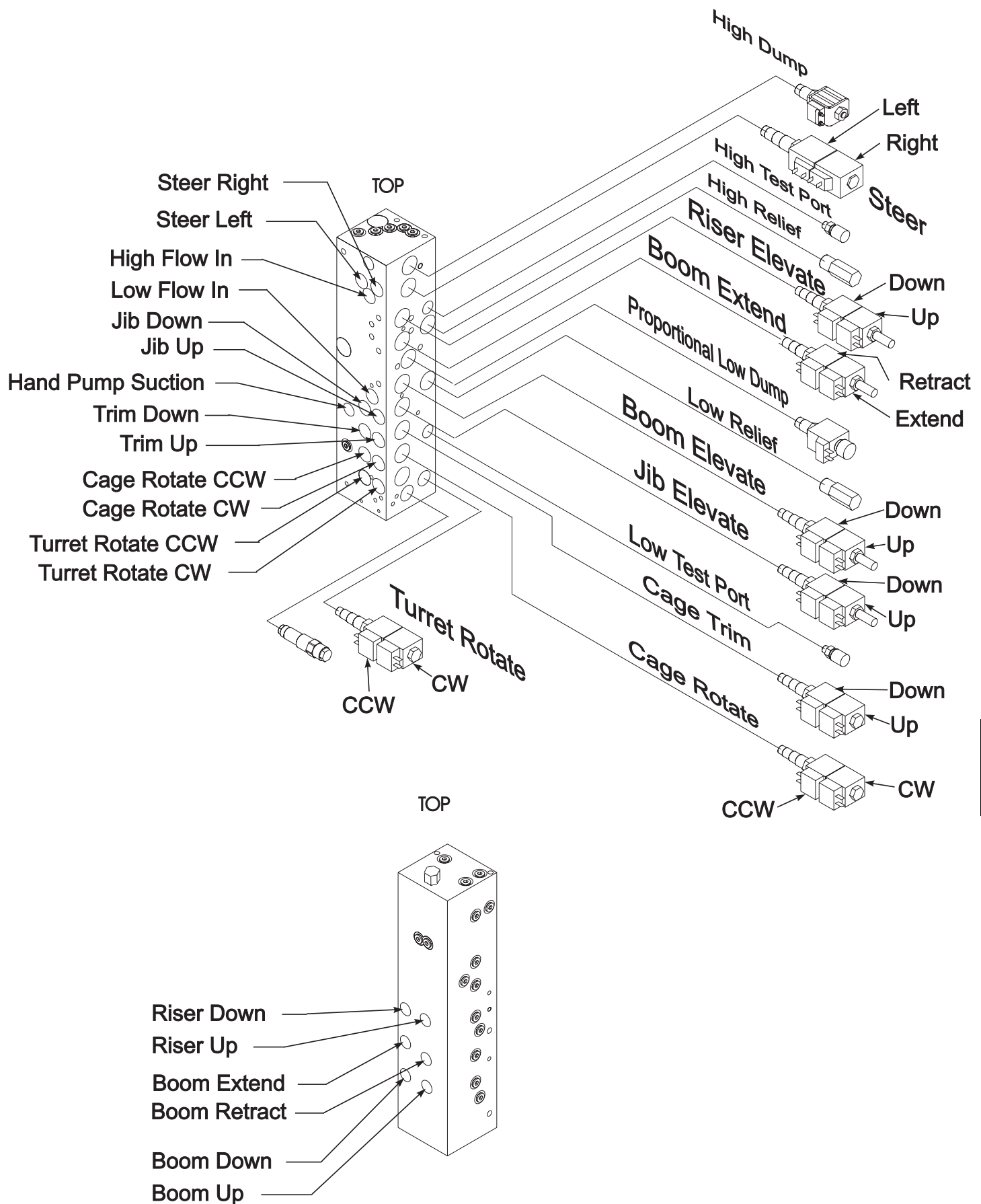


Figure 5-6: Hydraulic Valve Ports

BOTTOM VIEW

Valve is shown upside down

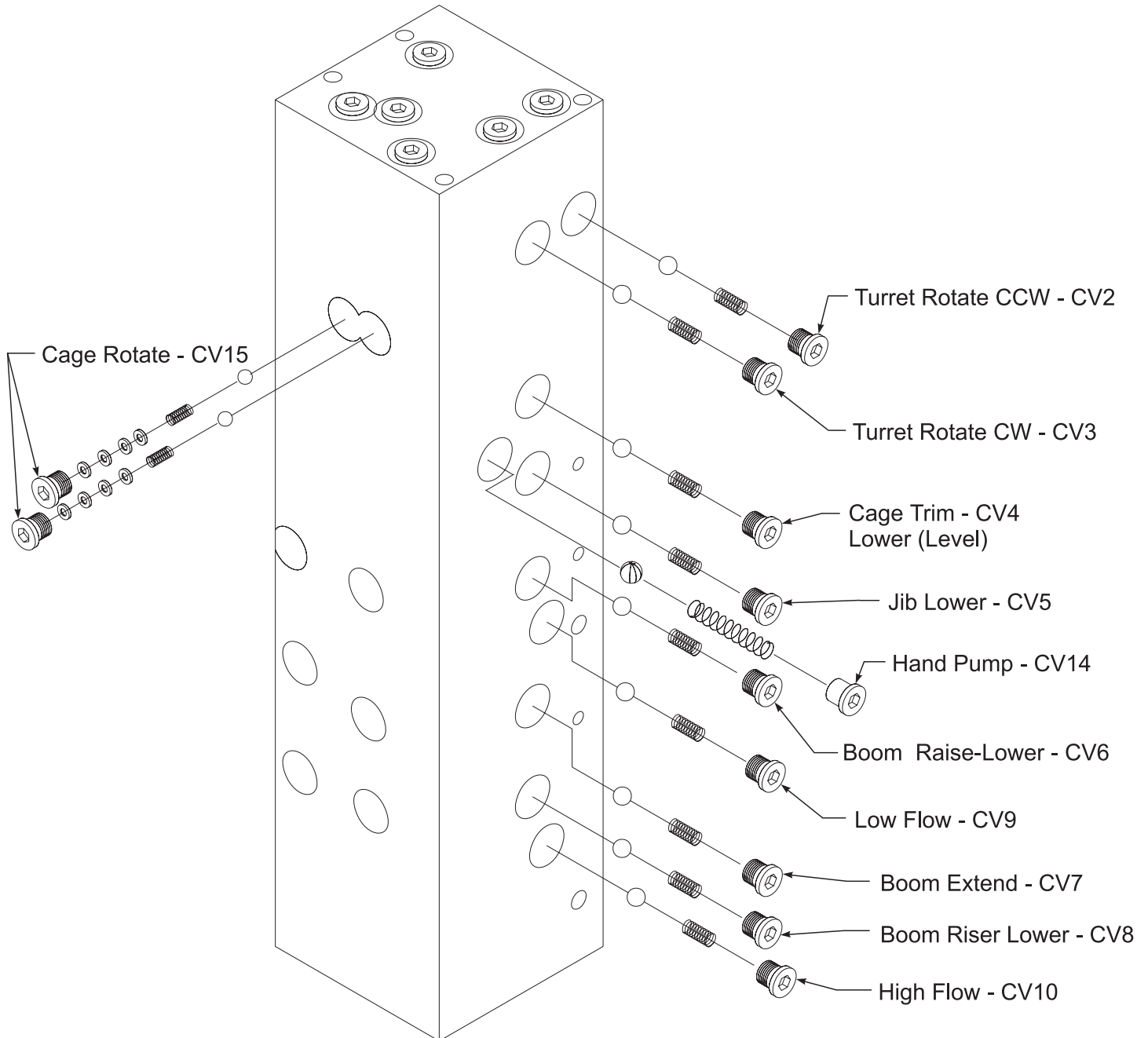


Figure 5-7: Check Ports

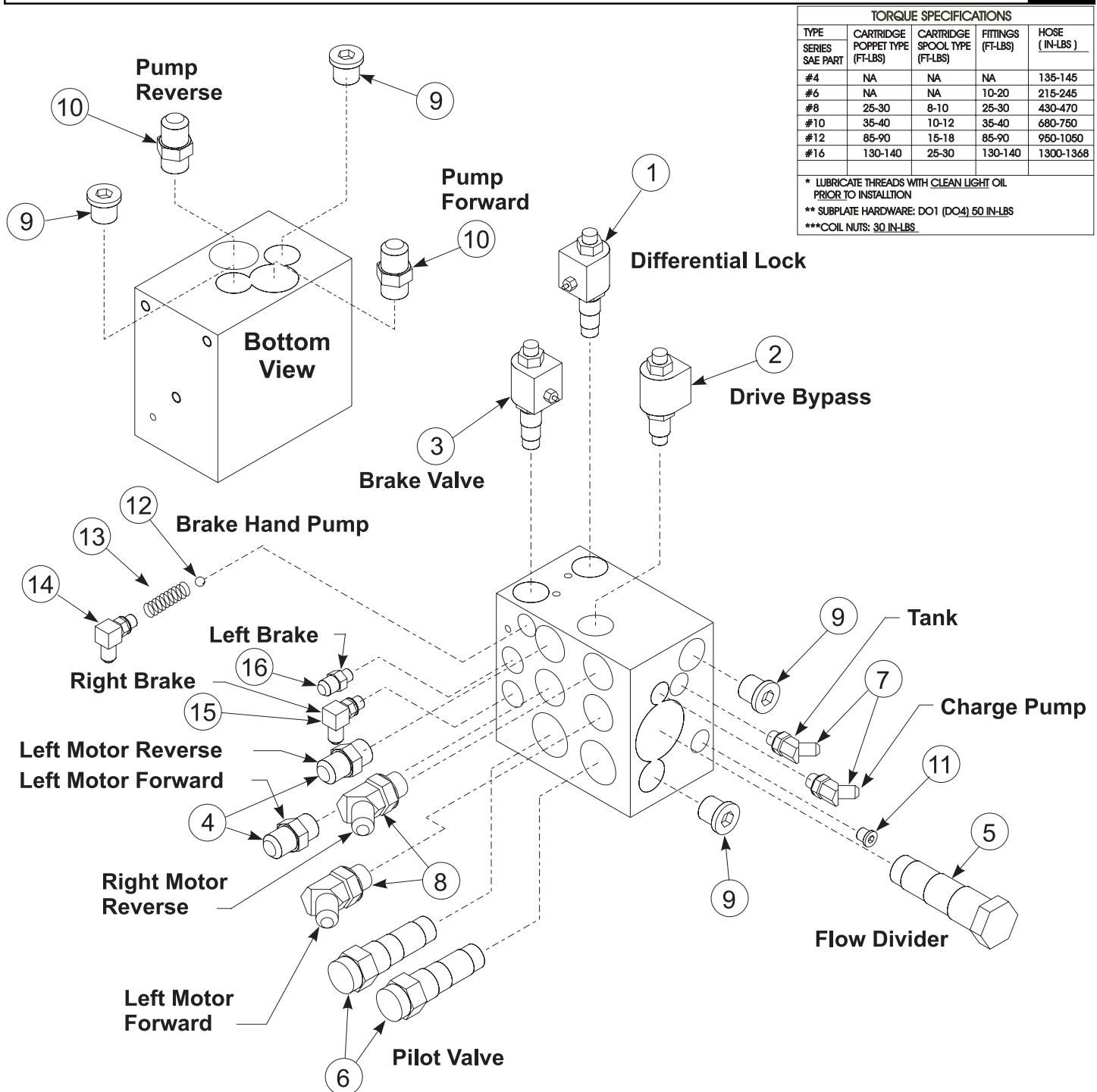


Figure 5-8: Drive Valve Box

DRIVE VALVE BLOCK ASSEMBLY

ITEM DESCRIPTION

1. Valve Spool, 2 Position - 3 Way
2. Valve, Poppet - 2 Way ON/OFF
3. Valve Spool, 2 Position - 3 Way
4. Adapter, 10MB - 8MJ
5. Valve, Flow Control
6. Valve, Spool - 2 Way N.O.
7. Adapter, 45° - 4MB - 4MJ
8. Adapter, 45° - 10MB - 8MJ
9. Plug, #8 SAE
10. Adapter, 12MB - 12MJ

ITEM DESCRIPTION

11. Plug, #4 SAE
12. Steel Ball, 15/16 Diameter
13. Spring, 1/4 Diameter x 19/32
14. Adapter, 90° - 4MB - 4MJ90
15. Adapter, 90° - 6MB - 4MJ
16. Adapter, 6MB - 4MJ

5.5 Upper Control Box Component Location

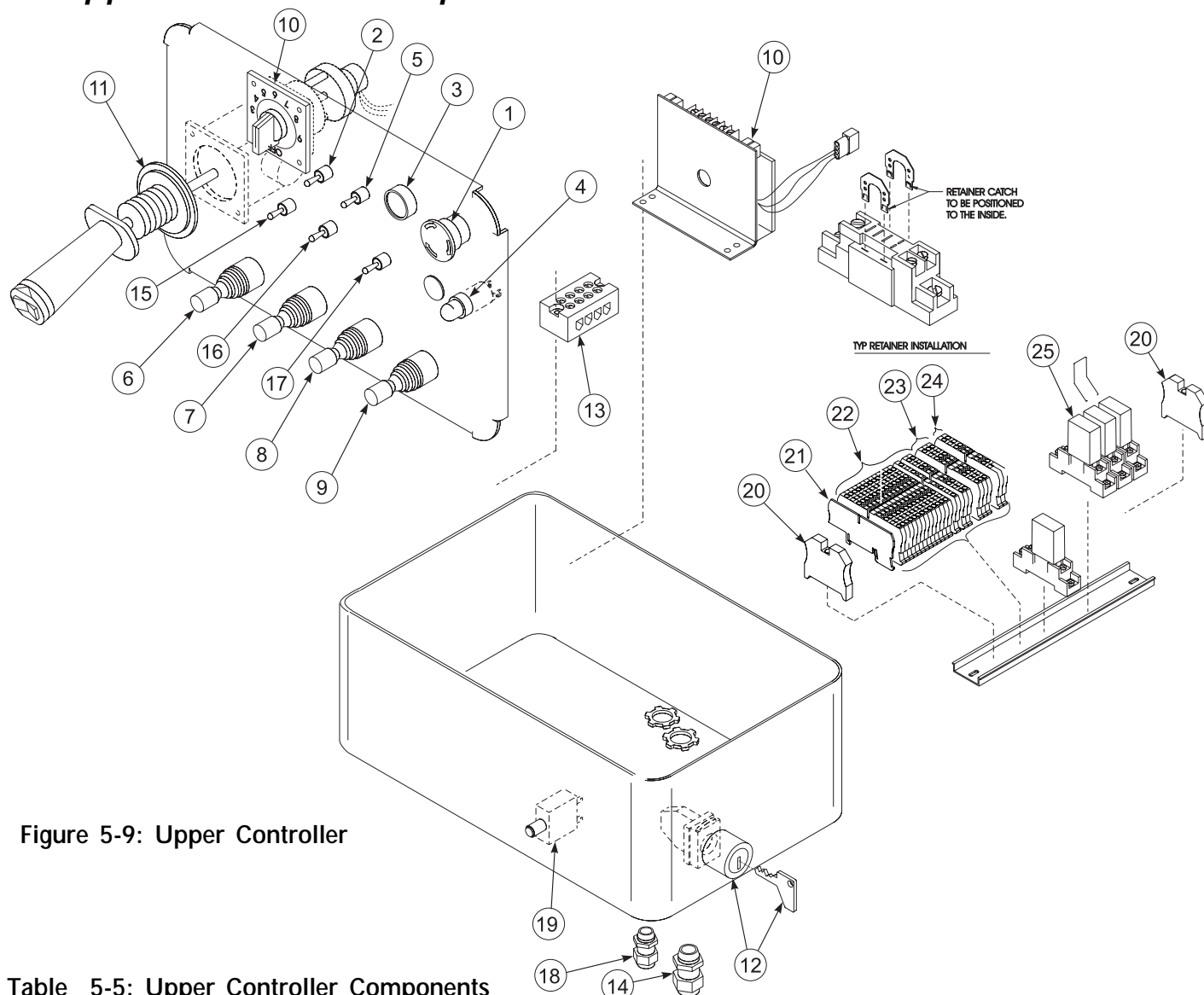


Table 5-5: Upper Controller Components

	Gas Model	Diesel Model
1. Emergency Stop Button	X	X
2. LP/Gas Switch	X	
3. Horn	X	X
4. Out of Level Lamp	X	X
5. Switch, Choke/Glow Plug	X	X
6. Switch, Jib Control	X	X
7. Switch, Boom Extend	X	X
8. Switch, Upper Boom	X	X
9. Switch, Riser Control	X	X
10. Rheostat, Controller	X	X
11. Joystick	X	X
12. Key Switch/Engine Start	X	X
13. Terminal Strip	X	X

	Gas Model	Diesel Model
14. Cable Connector, 3/4	X	X
15. Switch, Platform Level	X	X
16. Switch, Platform Rotate	X	X
17. Switch, Turret Rotate	X	X
18. Cable Connector, 1/2	X	X
19. Circuit Breaker, 10 amp	X	X
20. Terminal End	X	X
21. End Cap, Contact Block	X	X
22. Terminal Block, Tan	X	X
23. Terminal Block, Blue	X	X
24. Terminal Block, Orange	X	X
25. Relay, SPDT, 48 Volt	X	X

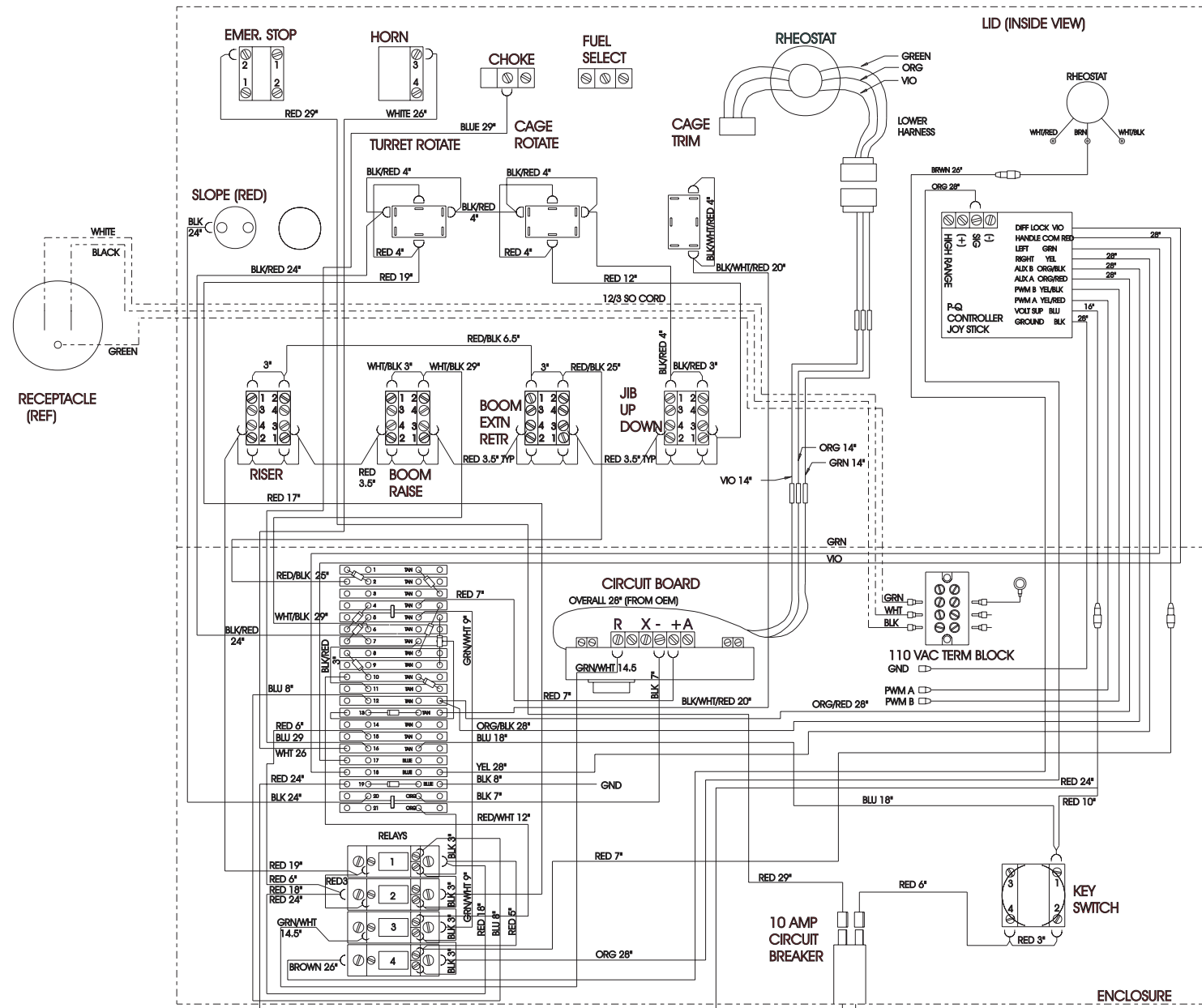


Figure 5-10: Electrical Diagram Upper Control Box - Gasoline Model

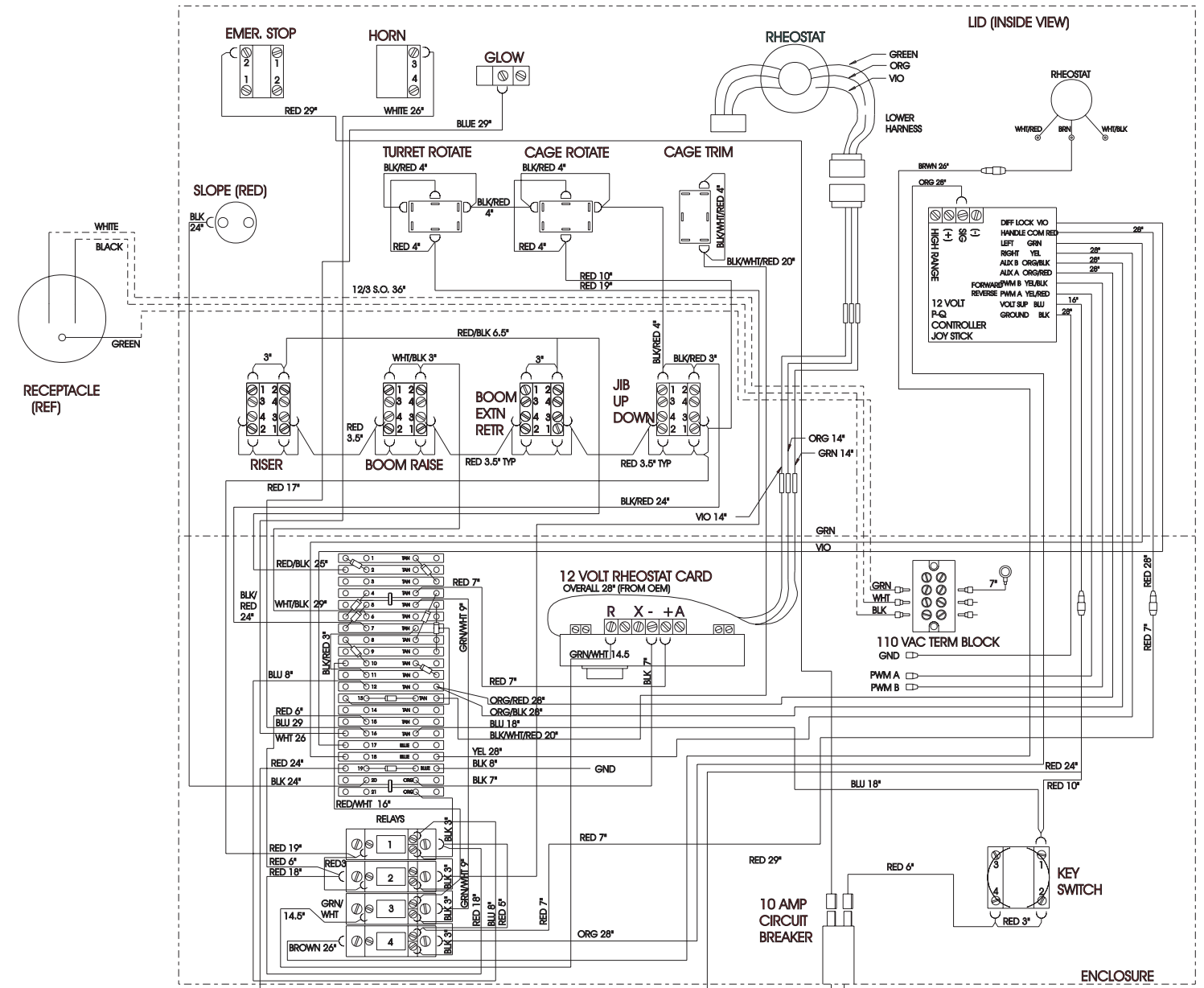


Figure 5-11: Electrical Diagram Upper Control Box - Diesel Model

5.6 Lower Control Box Component Location

Table 5-6: Lower Controller Components

1. Emergency Stop Button
2. Engine Start Button
3. Choke/Glow Plug
4. Key Switch
5. Fuse (25A)
6. Riser Switch
7. Boom Raise Switch
8. Boom Extend Switch
9. Jib Extend Switch
10. Turret Rotate
11. Cage Rotate Switch
12. Cage Level Switch
13. Hour Meter
14. Circuit Breaker

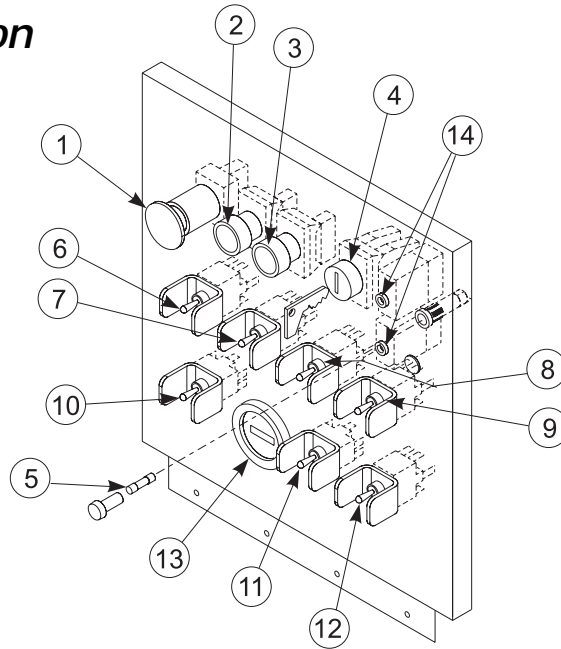


Figure 5-12: Lower Control Box Cover

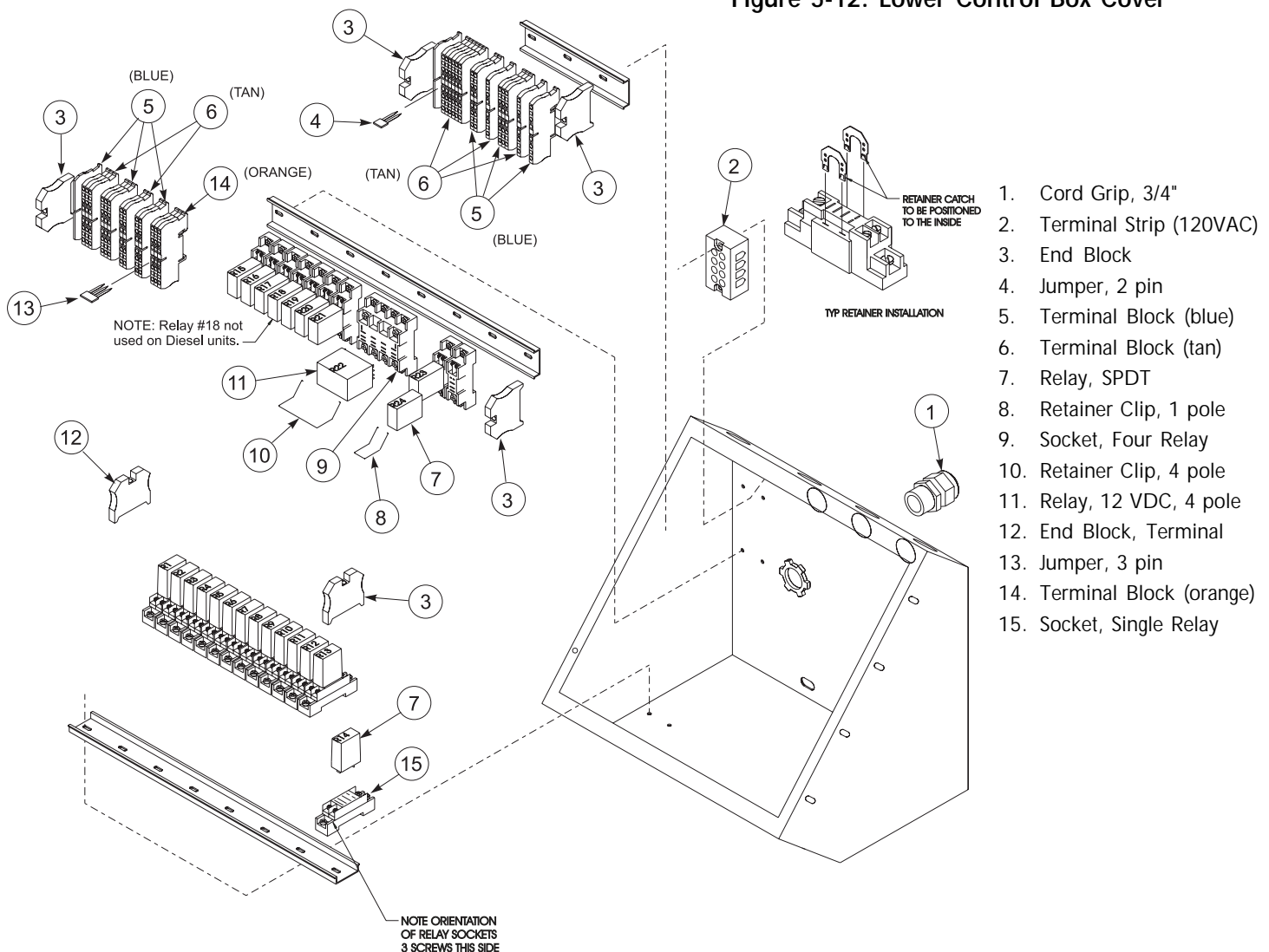
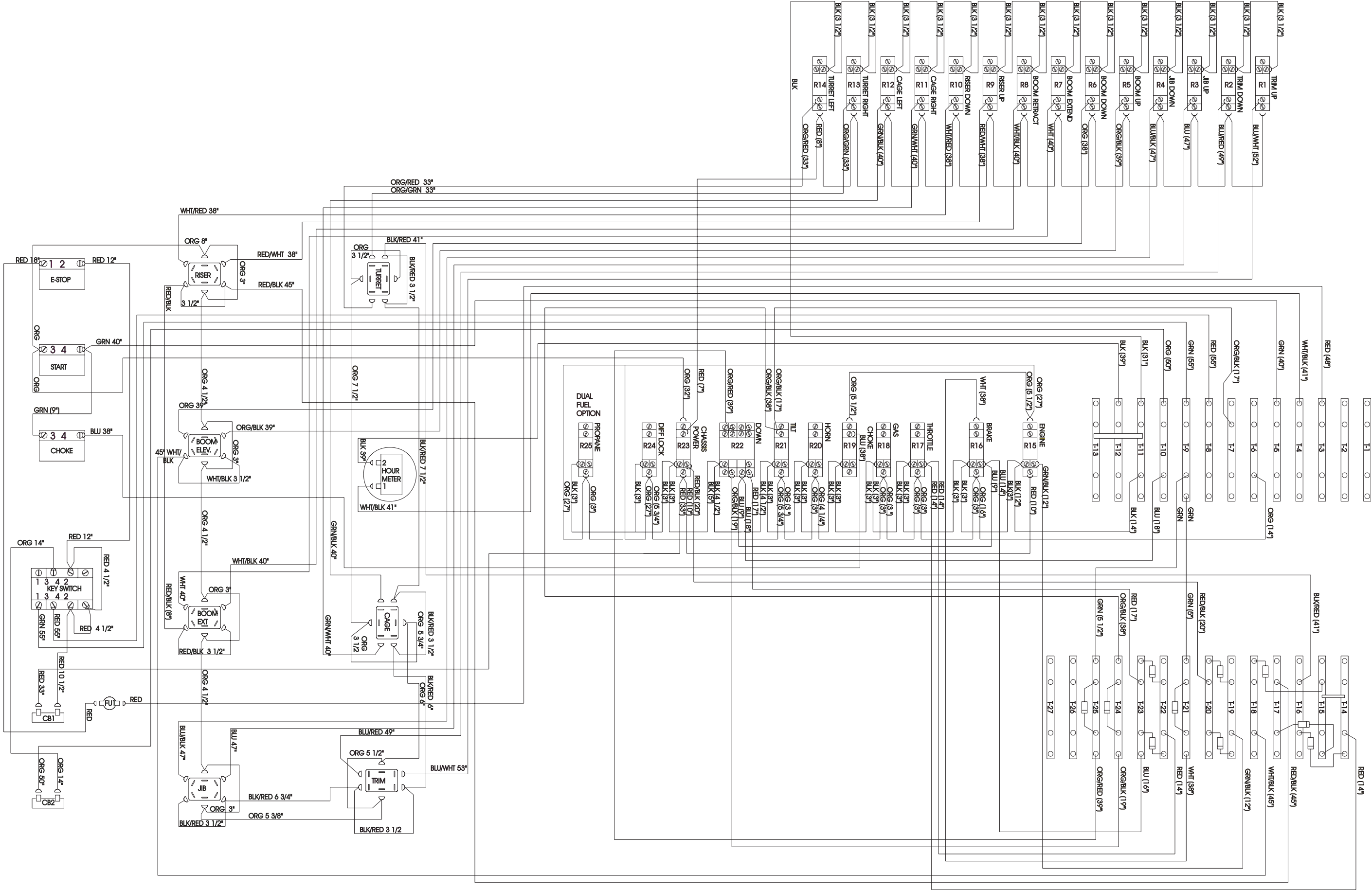


Figure 5-13: Terminal Strip, Relay Identification



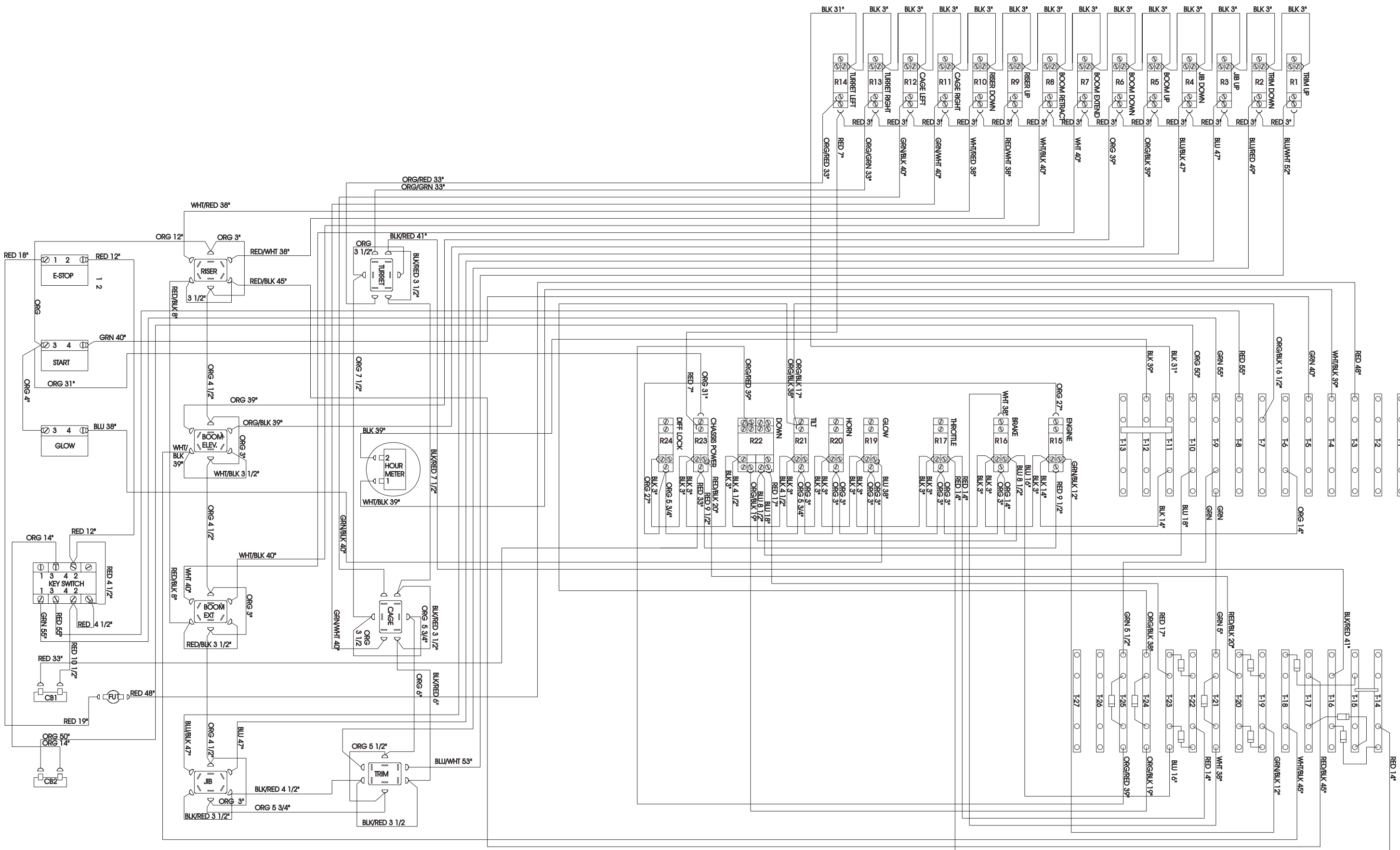


Figure 5-15: Electrical Diagram - Lower Control Box - Diesel Model - 068328-002

6.0 Introduction

This section lists and illustrates the replaceable assemblies and parts of the AB46 Gas/Diesel Work Platform, as manufactured by UpRight, Inc.

Each parts list contains the component parts for that assembly indented to show relationship where applicable.

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FINAL ASSEMBLY, AB46

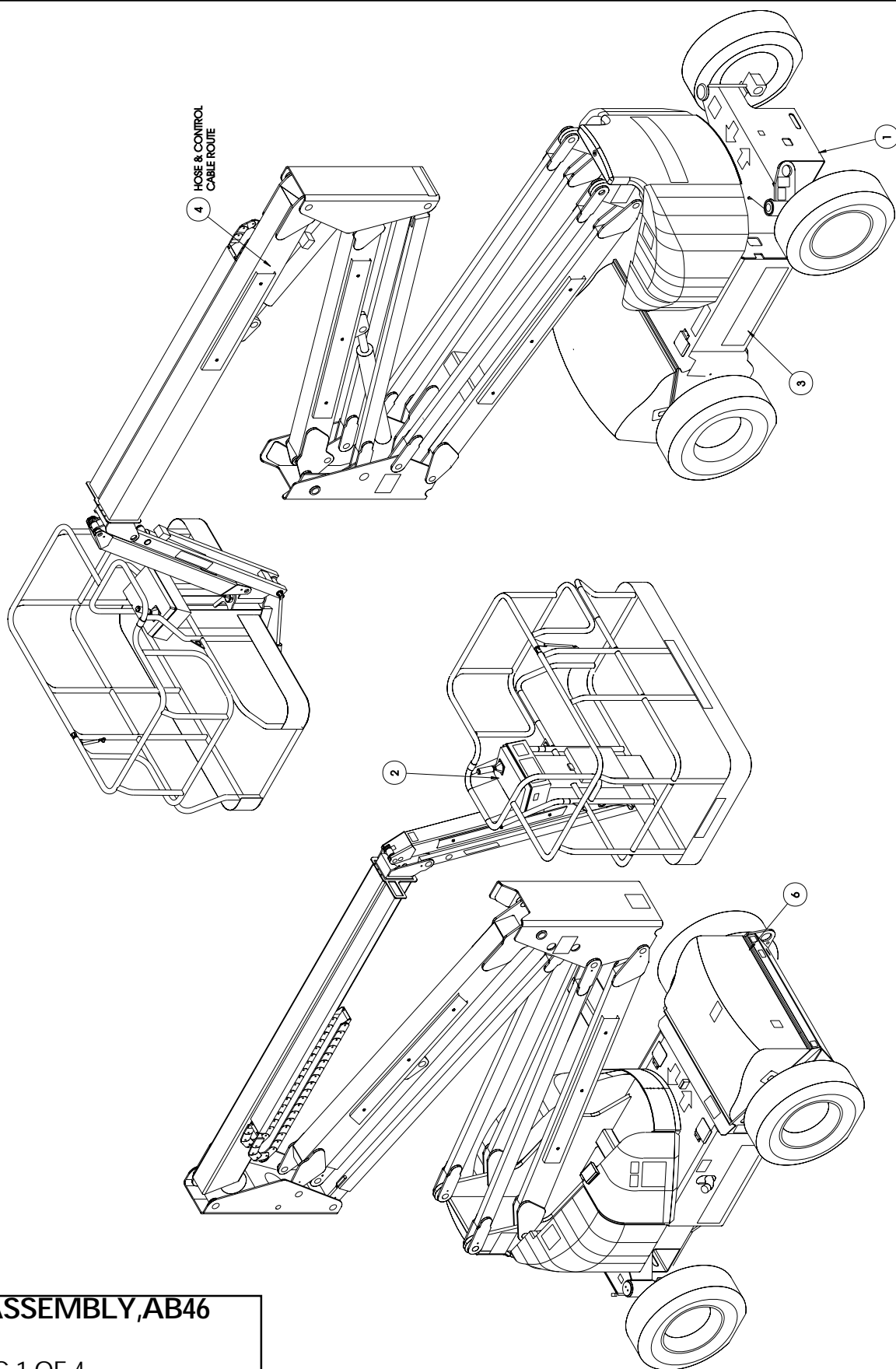
GAS

68301-000

ITEM	PART	DESCRIPTION	QTY.
1	68304-000	BASIC ASSY. AB46-G	1
2	68339-002	CONTROLLER INSTL-GAS DOM	1
3	68335-001	LABEL KIT/INSTL-GAS	1
4	68336-001	HOSE KIT/INSTL-I/C NOT SHOWN	1
6	29945-014	LEVEL SENS P-Q GASDOM NOT SHOWN	1
7	68340-002	HYDRAULIC SCHEMATIC AB46 I.C.	REF
8	68341-001	ELEC SCHEMATIC AB46 GAS DOMESTIC	REF
201	29433-099	CABLE, 24 COND. 18 GA.	11FT
202	29433-099	CABLE, 24 COND. 18 GA.	63 FT
203	29434-099	CABLE, 3-10 GA. / 9-14 GA.	11FT
204	29434-099	CABLE, 3-10 GA. / 9-14 GA.	63 FT
205	29433-099	CABLE, 24 COND. 18 GA.	63 FT
206	29447-099	WIRE, 3 COND. 16 GA.	13 FT
207	29447-099	WIRE, 3 COND. 16 GA.	11 FT
208	29498-099	WIRE, 4 COND. 16 GA.	11 FT
210	29496-099	WIRE, 2 COND. 16 GA.	26 FT
211	29496-099	WIRE, 2 COND. 16 GA.	37 FT
212	29496-099	WIRE, 2 COND. 16 GA.	5 FT
213	68814-000	TERMINAL, PIN	6
214	29610-006	TERMINAL, FORK 18-16 #6	41
301	29601-005	TERMINAL, RING 18-22 GA. #10	22
302	29931-003	TERMINAL, FEM. PUSH-ON 16-14	15
303	14914-001	TERMINAL, MALE PUSH-ON 18-22 .25	3
401	29440-099	WIRE, 3 COND. 12 GA. SO.	2 FT
402	29490-099	WIRE, 2 COND. 16 GA. SO.	8 FT
403	29496-099	WIRE, 2 COND. 16 GA.	2 FT

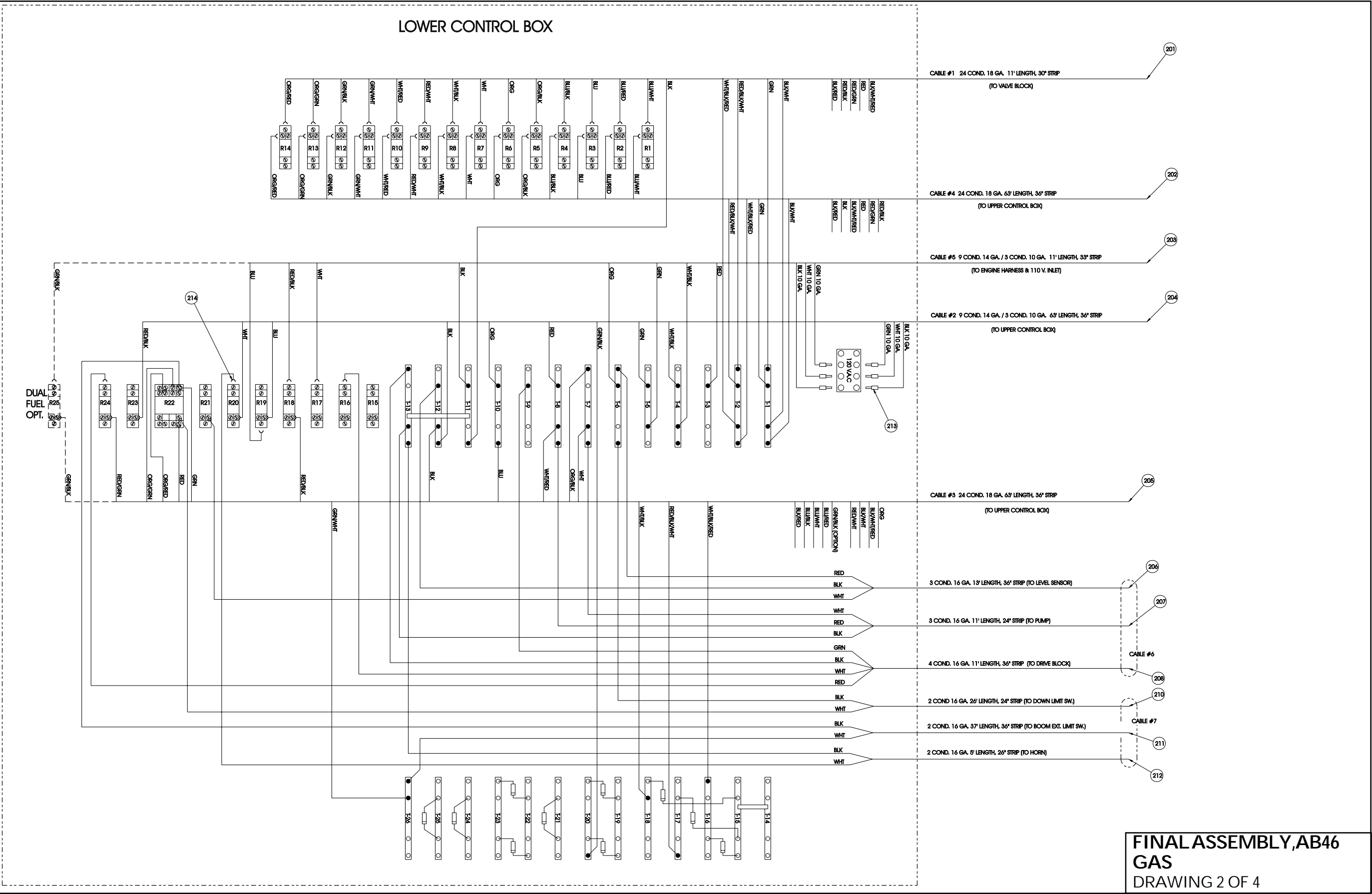
Illustrated Parts Breakdown

Section
6.2

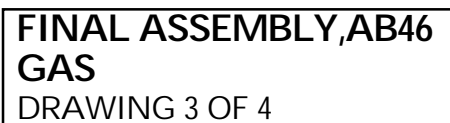


FINAL ASSEMBLY, AB46
GAS
DRAWING 1 OF 4

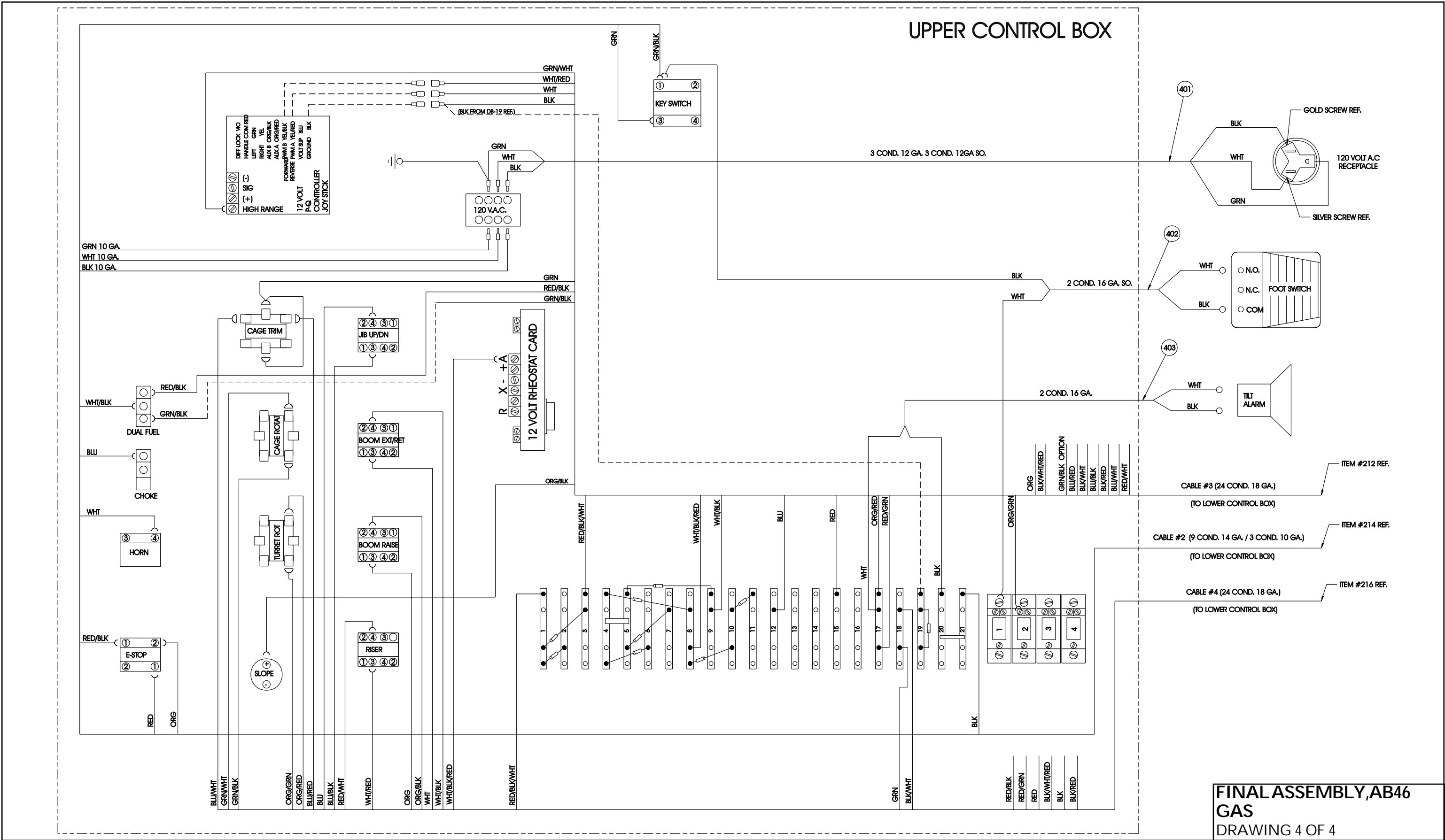
Illustrated Parts Breakdown



Section 6.2



Illustrated Parts Breakdown



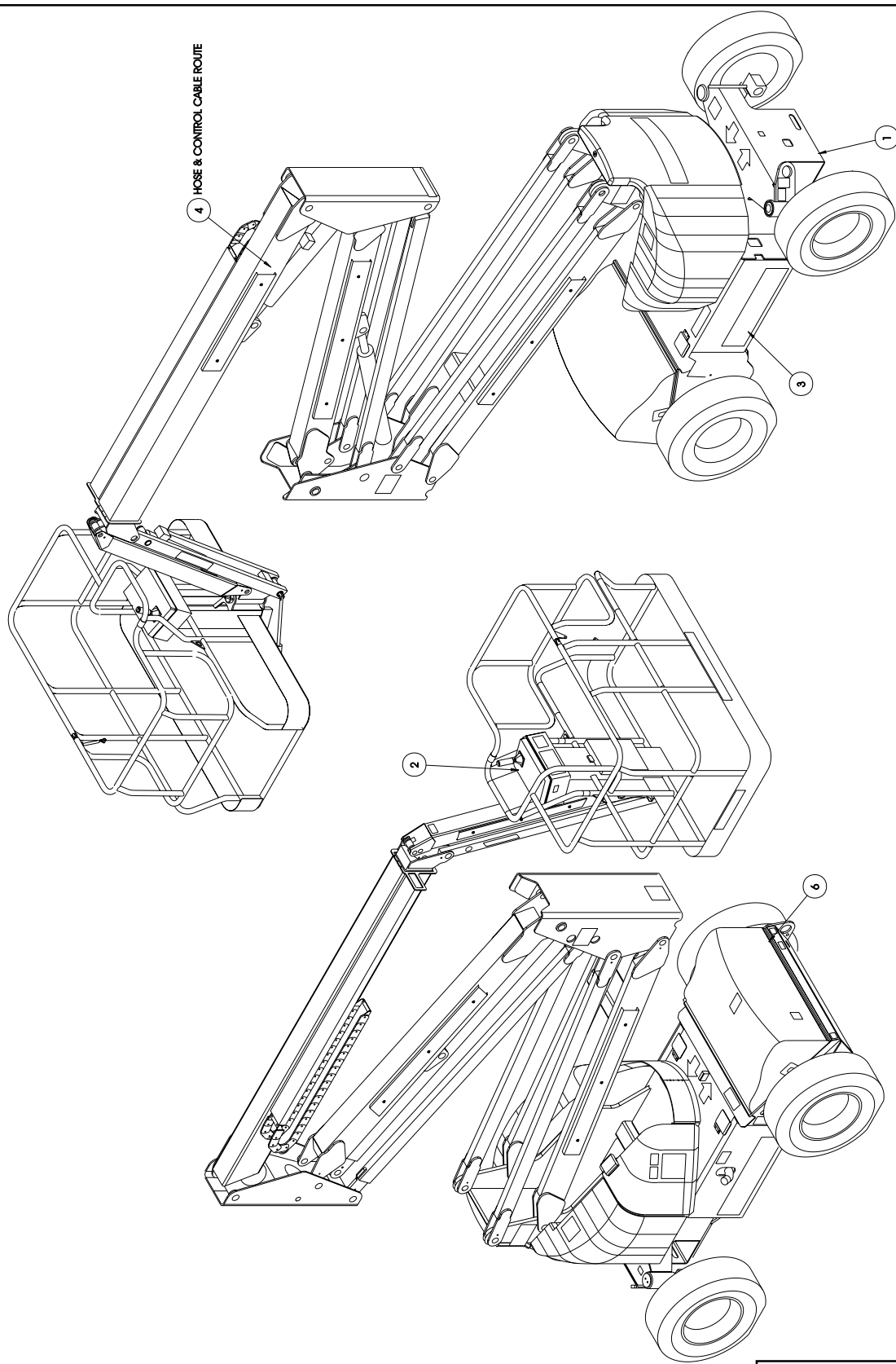
NOTES:

FINAL ASSEMBLY
AB46 DIESEL
68302-000

ITEM	PART	DESCRIPTION	QTY.
1	68305-000	BASIC ASSY. AB46-D	1
2	68339-003	CONTROLLER INSTL-DSL, DOM	1
3	68335-002	LABEL KIT/INSTL-DSL, DOM	1
4	68336-001	HOSE KIT/INSTL-DSL NOT SHOWN	1
6	29945-014	LEVEL SENS P-Q DOM-I/C NOT SHOWN	1
7	68340-002	HYDRAULIC SCHEMATIC AB46 I.C.	REF
8	68341-003	ELECTRIC SCHEMATIC AB46 DIESEL DOM	REF
201	29610-006	TERMINAL, FORK 18-14 GA. #6	65
202	68814-000	TERMINAL, PIN	12
205	29496-099	WIRE, 2 COND. 16 GA.	5 FT
206	29496-099	WIRE, 2 COND. 16 GA.	37 FT
207	29496-099	WIRE, 2 COND. 16 GA.	24 FT
209	29498-099	WIRE, 4 COND. 16 GA.	11 FT
210	29447-099	WIRE, 3 COND. 16 GA.	11 FT
211	29447-099	WIRE, 3 COND. 16 GA.	13 FT
212	29433-099	CABLE, 24 COND. 18 GA.	63FT
214	29434-099	CABLE, 3-10 GA. / 9-14 GA.	63
215	29434-099	CABLE, 3-10 GA. / 9-14 GA.	63
216	29433-099	CABLE, 24 COND. 18 GA.	63
217	29433-099	CABLE, 24 COND. 18 GA.	11
301	29601-005	TERM, RING 18-22 GA. #10	22
302	29931-003	TERM, FEM. PUSH-ON 16-14	15
303	14914-001	TERM, MALE PUSH-ON 18-22 .25	3
402	29490-099	WIRE, 2 COND. 16 GA. SO.	8 FT
401	29440-099	WIRE, 3 COND. 12 GA. SO.	2 FT
403	29496-099	WIRE, 2 COND. 16 GA.	2 FT

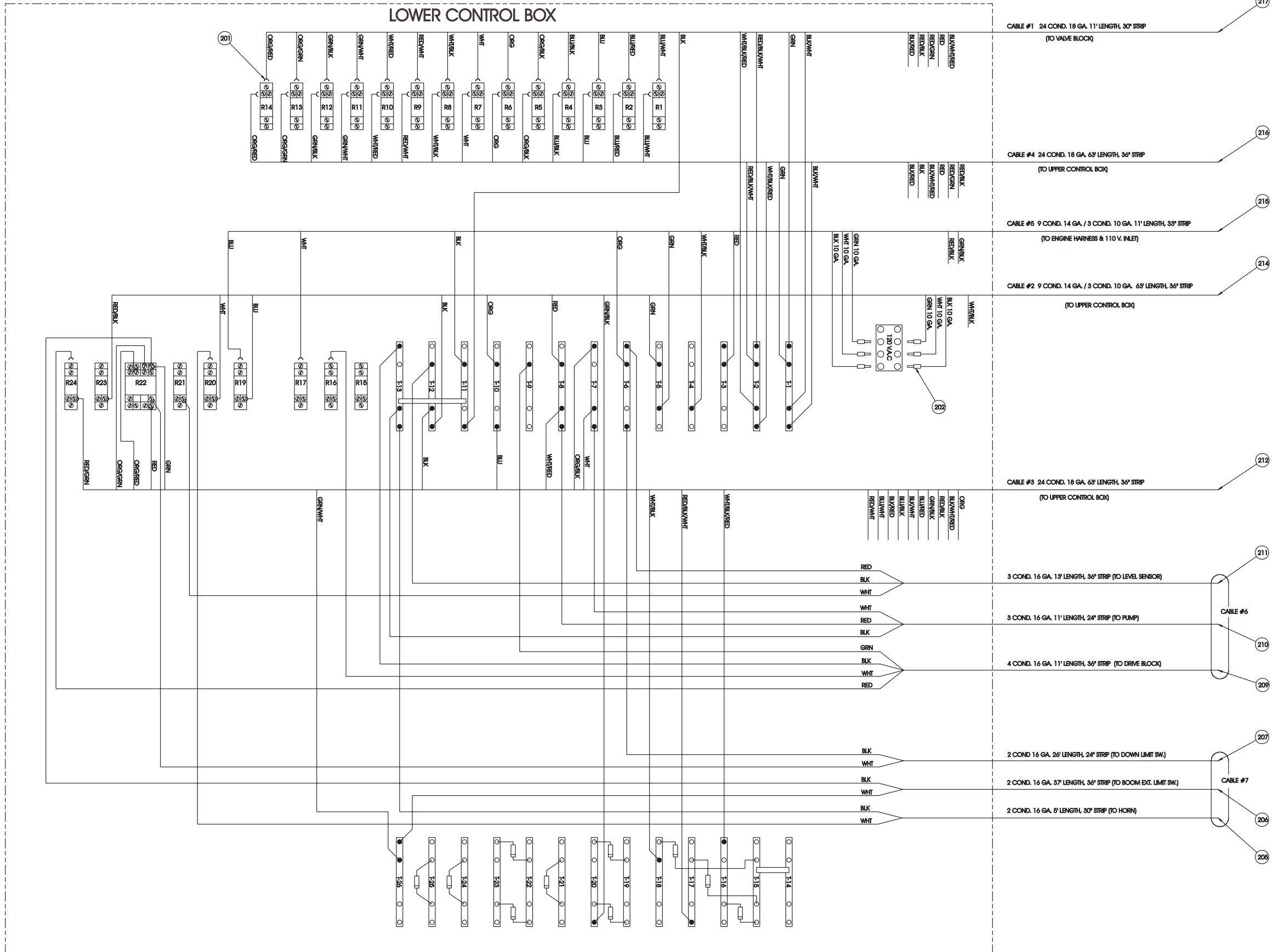
Illustrated Parts Breakdown

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**FINAL ASSEMBLY, AB46
DIESEL**
DRAWING 1 OF 4

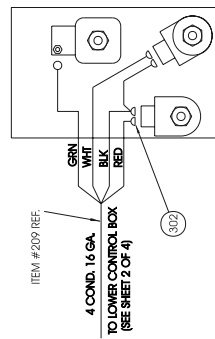
Illustrated Parts Breakdown



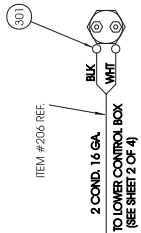
**FINAL ASSEMBLY, AB46
DIESEL**
DRAWING 2 OF 4

Illustrated Parts Breakdown

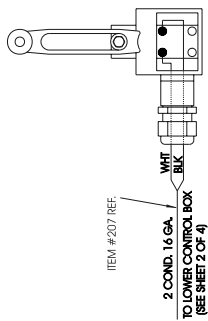
Section
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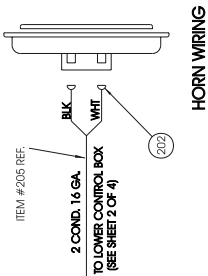
DRIVE BLOCK WIRING



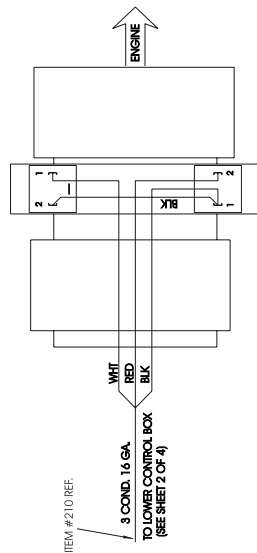
BOOM EXTENSION
LIMIT SWITCH WIRING



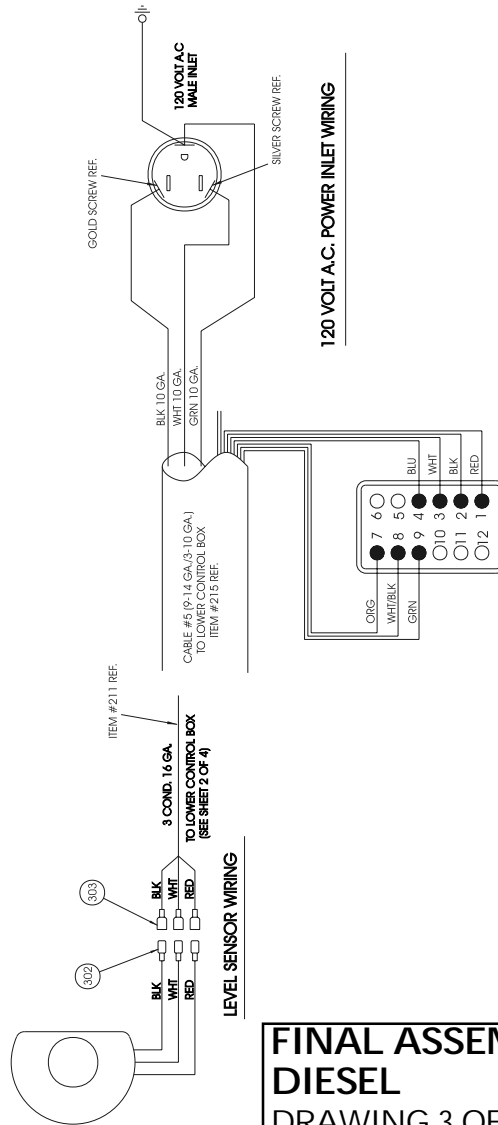
DOWN LIMIT SWITCH WIRING



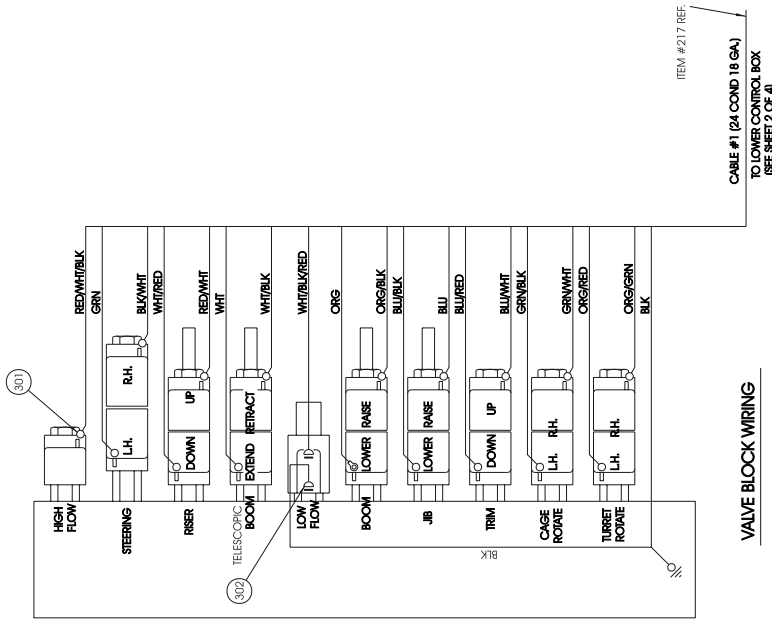
HORN WIRING



PUMP WIRING



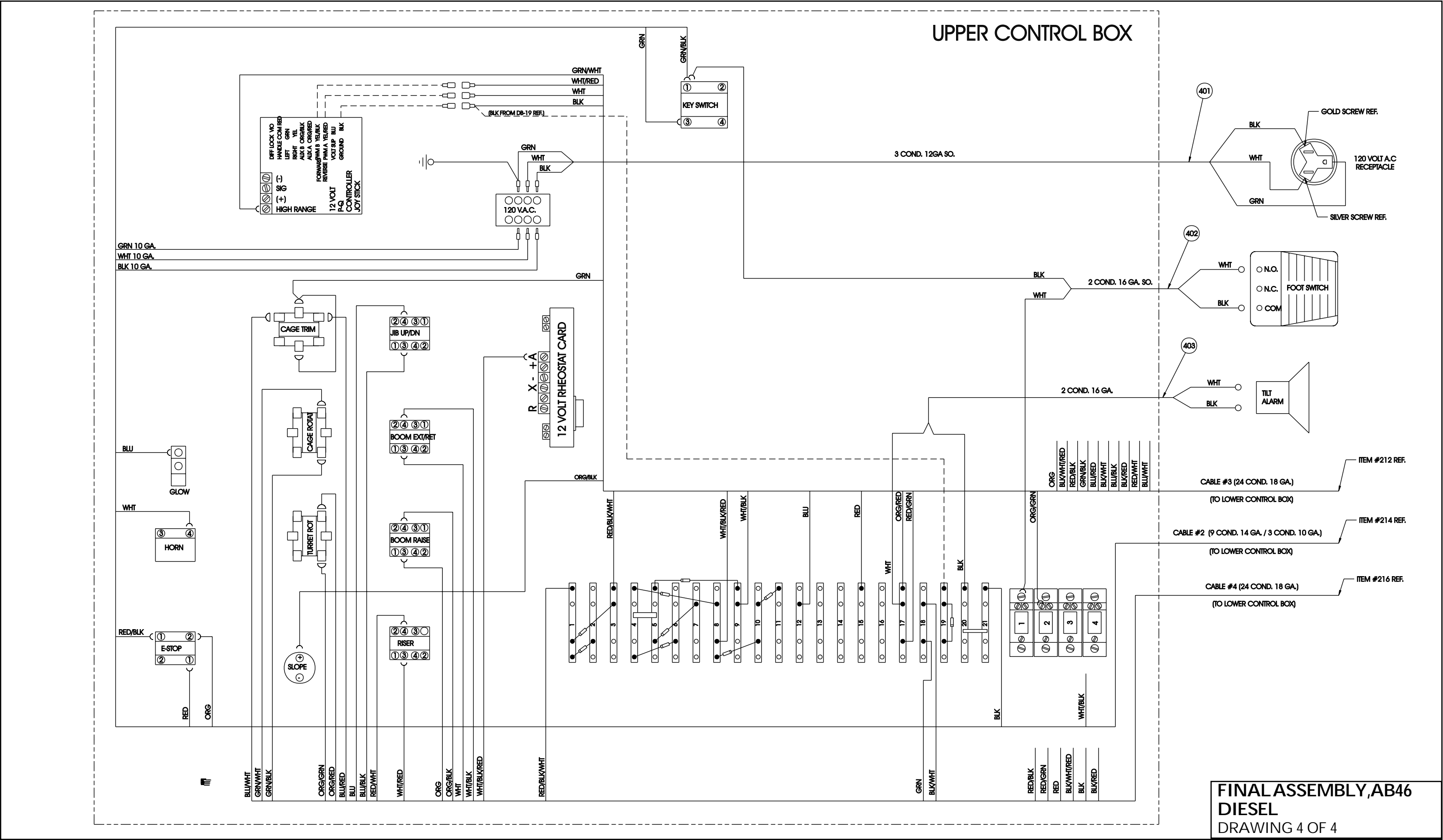
ENGINE CABLE WIRING "DEUTSCH CONNECTOR"
SEE DWG. #68666-000 SHEET 2 OF 2 FOR
PART NUMBER CALL-OUTS



VALVE BLOCK WIRING

FINAL ASSEMBLY, AB46
DIESEL
DRAWING 3 OF 4

Illustrated Parts Breakdown



NOTES:

Illustrated Parts Breakdown

BASIC ASSEMBLY AB46 GAS 68304-000

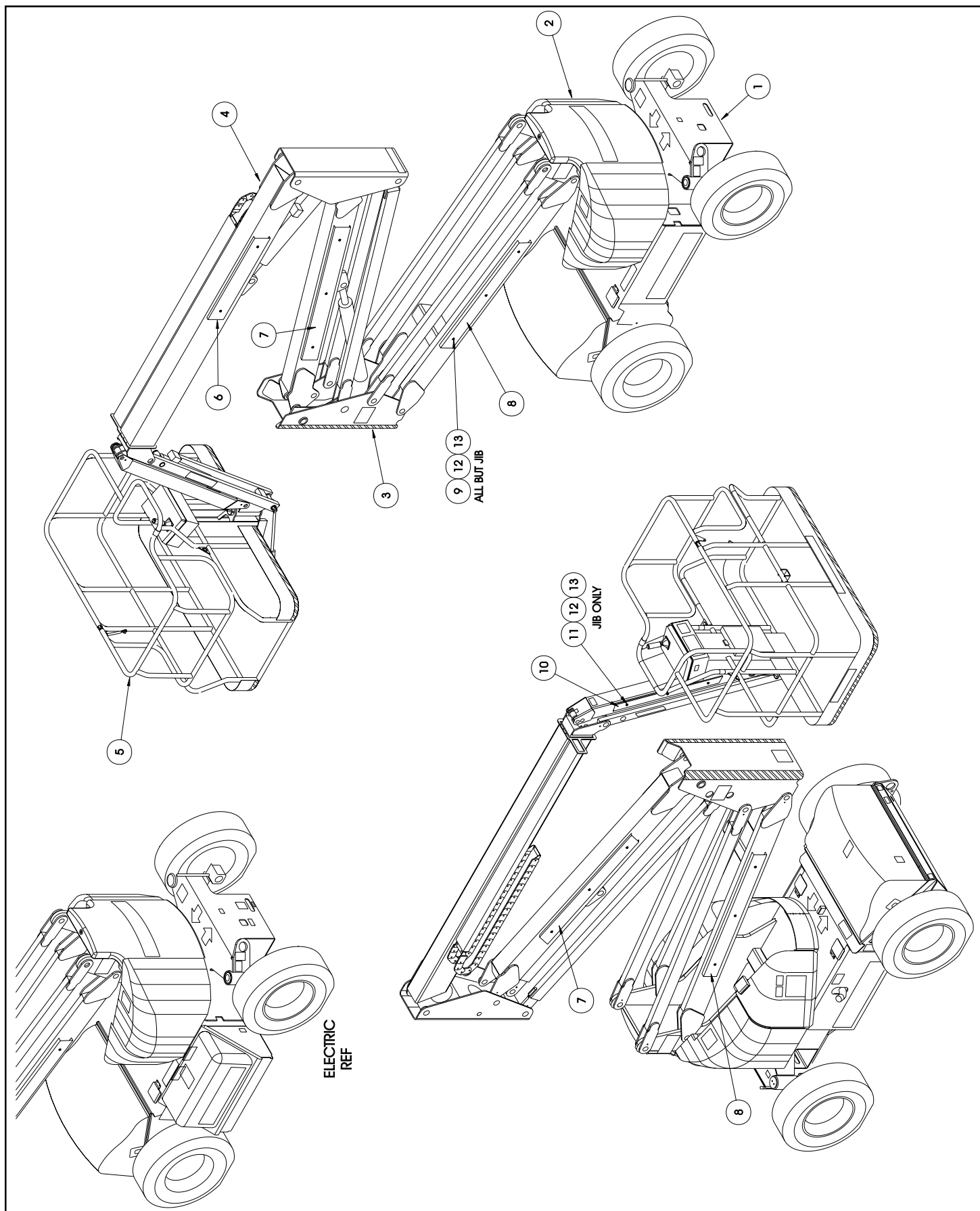
ITEM	PART	DESCRIPTION	QTY.
1	68320-001	CHASSIS ASSY. AB46-GAS	1
2	68330-001	TURRET ASSY-GAS	1
3	68323-000	LOWER LINKAGE ASSY	1
4	68322-000	UPPER LINKAGE ASSY	1
5	68325-001	CAGE "B" ASSY	1
6	68703-000	HOSE GUARD	1
7	68704-000	HOSE GUARD (58")	2
8	68705-000	HOSE GUARD (68")	2
9	68706-000	HOSE CLAMP	14
10	68731-000	HOSE GUARD-JIB	1
11	68732-000	HOSE CLAMP-JIB	3
12	11248-004	NUT HEX ESNA 1/4-20 UNC	17
13	11240-004	WASHER 1/4 STD FLAT	17

BASIC ASSEMBLY AB46 DIESEL 68305-000

ITEM	PART	DESCRIPTION	QTY.
1	68320-002	CHASSIS ASSY. AB46-DSL	1
2	68330-002	TURRET ASSY-GAS	1
3	68323-000	LOWER LINKAGE ASSY	1
4	68322-000	UPPER LINKAGE ASSY	1
5	68325-001	CAGE "B" ASSY	1
6	68703-000	HOSE GUARD	1
7	68704-000	HOSE GUARD (58")	2
8	68705-000	HOSE GUARD (68")	2
9	68706-000	HOSE CLAMP	14
10	68731-000	HOSE GUARD-JIB	1
11	68732-000	HOSE CLAMP-JIB	3
12	11248-004	NUT HEX ESNA 1/4-20 UNC	17
13	11240-004	WASHER 1/4 STD FLAT	17

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CHASSIS ASSEMBLY AB46 GAS 68320-001

ITEM	PART	DESCRIPTION	QTY.
1	68381-000	CHASSIS WELDMENT (I/C)	1
2	11256-012	SCREW HHC 1/2-13UNC X 1-1/2	2
3	11239-008	WASHER FLAT ASTM 325 1/2"D	24
4	11248-008	LOCKNUT 1/2-13UNC ESNA	8
5	68370-000	SPINDLE WELDMENT (L.H.)	1
6	68370-001	SPINDLE WELDMENT (R.H.)	1
7	68368-000	STEERING PIVOT SHAFT	2
8	11257-040	SCR, HHC. 5/8-11 UNC X 5	2
9	11248-010	LOCKNUT, 5/8-11 UNC. (ESNA)	6
10	68456-000	STEERING CYLINDER	1
*	68456-010	SEAL KIT	1
11	68702-000	SCREW, 5/16" MODIFIED	2
12	11239-005	WASHER, 5/16" ASTM A-325	4
13	11740-014	ROLL PIN 1/2" DIA X 1 3/4"	2
14	11248-005	LOCKNUT, ESNA 5/16"-18UNC	2
15	68372-000	STEERING ARM	2
16	11256-014	SCREW, HHC 1/2-13UNC X 1 3/4	4
17	62642-033	BUSHING, Ø 1.25 X 1.00 (20DU16)	4
18	68380-000	STEERING PIN (SHORT)	2
19	68378-000	STEERING PIN (LONG)	2
20	11240-008	WASHER, FLAT 1/2"	2
21	11256-032	SCR, HHC. 1/2-13 UNC X 4	2
22	11249-008	LOCKNUT, 1/2-20 UNF (ESNA)	18
23	10092-014	THRUST WASHER, GARLOCK G 28 DU	2
24	68576-001	BUSHING, GARLOCK #GF4852-40	4
25	11788-001	SEAL, GARLOCK #71 X 6308	2
26	13888-224	O-RING, 1.75 I.D. X .125 SECT	2
27	68373-000	CAP, STEERING PIN	2
28	11253-006	SCR, HHC. 5/16-18 UNC X 3/4	4
29	68577-000	FRONT HUB ASSY.	2
*	68577-010	FRONT HUB REPAIR KIT	1
*	68577-008	STUD BOLTS	1
*	11469-005	WHEEL NUTS	1
30	67664-000	WHEEL/TIRE ASSY (RIGHT)	2
31	11297-010	BELLEVILLE WASHER, 5/8 DIA.	18
32	11469-005	LUG NUT 90° 9/16-18 UNF	24
33	11238-008	LOCKWASHER, SPLIT RING 1/2"	6
34	11240-014	WASHER FLAT 7/8"	REF
35	11245-014	NUT HEX CASTLE 7/8-14UNF	REF
36	11753-016	COTTER PIN 1/8" DIA. X 2" LG.	REF
37	67664-001	WHEEL/TIRE ASSY (LEFT)	2
38	11252-008	SCREW, HHC 1/4-20 UNC X 1	6
39	11941-004	FITTING, STR. 6MB-4MJ	2
40	11254-022	SCREW, HHC 3/8-16 UNC X 2 3/4	5
44	68388-000	COVER PLATE	1
45	68575-000	MOTOR, HYDRAULIC	1
46	68571-000	DRIVE, WORM GEAR	1
47	14576-026	SCR, HHC. GR8 5/8-18UNF X 3 1/4	18
48	11941-038	FITTING	2
49	68757-001	LATCH	2
50	11715-004	SCREW MACH #6-32 X 1/2	4
51	68658-000	COVER, ENGINE COVER	1
52	11248-047	NUT #6-32	4
53	11240-001	WASHER #6	4
54	68386-001	DOOR WELDMENT R/H	1
55	68386-000	DOOR WELDMENT L/H	1
56	11248-004	NUT HEX ESNA 1/4-20	4
57	11252-016	SCREW HHC GR5 1/4-20 UNC	4
58	68680-007	FITTING, 90 DEG ELBOW	2
201	68381-000	CHASSIS WELDMENT (I/C)	REF

ITEM	PART	DESCRIPTION	QTY.
202	11238-006	WASHER LOCK 3/8 SPLIT	3
203	11934-001	FITTING 90° 4MB 4MJ	1
204	20541-011	HOSE CLAMP	2
205	68709-000	HYDRAULIC TANK ASSY.	1
206	64275-034	BATTERY CABLE (POS)	2
207	68774-000	RUBBER SUPPORT	2
208	68729-001	HOSE RADIATOR	1
209	68729-000	HOSE RADIATOR	1
210	68347-000	VALVE BLOCK ASSY (DRIVE)	1
214	**	GASKET	REF
216	68710-000	FUEL TANK ASSEMBLY	1
217	11240-006	WASHER 3/8 FLAT	14
218	11248-006	NUT HEX 3/8-16 ESNA	16
219	68661-000	ENGINE ASSY GAS	1
220	14252-004	NUT SERT 1/4-20 UNC	6
221	68570-000	PLANTARY DRIVE	2
*	68570-010	TORQUE HUB REPAIR KIT	1
*	68570-011	THRUST WASHER	1
222	68690-000	MOTOR, HYDRAULIC	2
*	68690-011	RETAINING RING	1
*	68690-012	LIP SEAL	1
*	68690-013	O-RING	1
*	68690-014	BEARING	1
*	68690-015	END CAP GASKET	1
*	68690-016	THRUST PLATE	1
*	68690-017	CYLINDER BLOCK KIT (SB-9410)	1
*	68690-018	VALVE PLATE	1
*	68690-019	NEEDLE BEARING	1
223	11934-010	FITTING 10MB-8MJ 90°	2
224	11934-007	FITTING 8MB-6MJ 90°	2
225	11935-001	FITTING 45° 4MBH 4MJ	1
226	68650-000	SHROUD, RADIATOR	1
227	29945-VAR	LEVEL SENSOR (SEE FINAL ASSY)	REF
228	11935-005	FITTING 45° 10MB-8MJ	2
229	11254-010	SCREW HHC 3/8-16 X 1 1/4	10
231	62299-002	BATTERY 12V DC	1
232	11715-004	SCREW RD HD # 6-32 X 1/2	2
233	11248-047	NUT # 6-32 HEX	2
234	29961-001	SEAL	1
235	68665-000	SPACER	3
236	68569-000	BRAKE, OSKO	2
237	11256-036	SCREW, HHC 1/2-13 UNC X 4 1/2	4
238	68676-000	RADIATOR	1
239	68675-000	BRACE WELDMENT	1
240	68549-000	BATTERY HOLD-DOWN BAR	1
241	12039-000	ROD, BATTERY HOLD-DOWN	2
242	11240-005	WASHER, 5/16" FLAT	2
243	11250-005	NUT HEX 5/16-18 UNC	2
244	*	RADIATOR BOTTLE	REF
245	68539-001	BOTTLE BRACKET	1
246	11252-006	SCREW, HHC 1/4-20UNC X 3/4	5
247	11248-004	NUT HEX ESNA 1/4-20	5
248	68751-000	GRILL	1
249	29961-000	INLET	1
250	19930-090	COUNTERWEIGHT	2
251	11257-020	SCREW HHC 5/8-11 UNC X 2 1/2	4
252	11240-010	WASHER 5/8 FLAT	4
253	003495-000	FITTING, STREET ELBOW	2

* Not Shown

Illustrated Parts Breakdown

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CHASSIS ASSEMBLY AB46 DIESEL 68320-002

ITEM	PART	DESCRIPTION	QTY.
1	68381-000	CHASSIS WELDMENT (I/C)	1
2	11256-012	SCREW HHC 1/2-13UNC X 1-1/2	2
3	11239-008	WASHER FLAT ASTM 325 1/2"D	24
4	11248-008	LOCKNUT 1/2-13UNC ESNA	8
5	68370-000	SPINDLE WELDMENT (L.H.)	1
6	68370-001	SPINDLE WELDMENT (R.H.)	1
7	68368-000	STEERING PIVOT SHAFT	2
8	11257-040	SCR, HHC. 5/8-11 UNC X 5	2
9	11248-010	LOCKNUT, 5/8-11 UNC. (ESNA)	6
10	68456-000	STEERING CYLINDER	1
*	68456-010	SEAL KIT	1
11	68702-000	SCREW, 5/16" MODIFIED	2
12	11239-005	WASHER, 5/16" ASTM A-325	4
13	11740-014	ROLL PIN 1/2" DIA X 1 3/4"	2
14	11248-005	LOCKNUT, ESNA 5/16"-18UNC	2
15	68372-000	STEERING ARM	2
16	11256-014	SCREW, HHC 1/2-13UNC X 1 3/4	4
17	62642-033	BUSHING, Ø 1.25 X 1.00 (20DU16)	4
18	68380-000	STEERING PIN (SHORT)	2
19	68378-000	STEERING PIN (LONG)	2
20	11240-008	WASHER, FLAT 1/2"	2
21	11256-032	SCR, HHC. 1/2-13 UNC X 4	2
22	11249-008	LOCKNUT, 1/2-20 UNF (ESNA)	18
23	10092-014	THRUST WASHER, GARLOCK G 28 DU	2
24	68576-001	BUSHING, GARLOCK #GF4852-40	4
25	11788-001	SEAL, GARLOCK #71 X 6308	2
26	13888-224	O-RING, 1.75 I.D. X .125 SECT	2
27	68373-000	CAP, STEERING PIN	2
28	11253-006	SCR, HHC. 5/16-18 UNC X 3/4	4
29	68577-000	FRONT HUB ASSY.	2
*	68577-010	FRONT HUB REPAIR KIT	1
*	68577-008	STUD BOLTS	1
*	11469-005	WHEEL NUTS	1
30	67664-000	WHEEL/TIRE ASSY (RIGHT)	2
31	11297-010	BELLEVILLE WASHER, 5/8 DIA.	18
32	11469-005	LUG NUT 90° 9/16-18 UNF	24
33	11238-008	LOCKWASHER, SPLIT RING 1/2"	6
34	11240-014	WASHER FLAT 7/8"	REF
35	11245-014	NUT HEX CASTLE 7/8-14UNF	REF
36	11753-016	COTTER PIN 1/8" DIA. X 2" LG.	REF
37	67664-001	WHEEL/TIRE ASSY (LEFT)	2
38	11252-008	SCREW, HHC 1/4-20 UNC X 1	6
39	11941-004	FITTING, STR. 6MB-4MJ	2
40	11254-022	SCREW, HHC 3/8-16 UNC X 2 3/4	5
44	68388-000	COVER PLATE	1
45	68575-000	MOTOR, HYDRAULIC	1
46	68571-000	DRIVE, WORM GEAR	1
47	14576-026	SCR, HHC. GR8 5/8-18UNF X 3 1/4	18
48	11941-038	FITTING	2
49	68757-001	LATCH	2
50	11715-004	SCREW MACH #6-32 X 1/2	4
51	68658-000	COVER, ENGINE COVER	1
52	11248-047	NUT #6-32	4
53	11240-001	WASHER #6	4
54	68386-001	DOOR WELDMENT R/H	1
55	68386-000	DOOR WELDMENT L/H	1
56	11248-004	NUT HEX ESNA 1/4-20	4
57	11252-016	SCREW HHC GR5 1/4-20 UNC	4
58	68680-007	FITTING, 90 DEG ELBOW	2
201	68381-000	CHASSIS WELDMENT (I/C)	REF

ITEM	PART	DESCRIPTION	QTY.
202	11238-006	WASHER LOCK 3/8 SPLIT	3
203	11934-001	FITTING 90° 4MB 4MJ	1
204	20541-011	HOSE CLAMP	2
205	68709-000	HYDRAULIC TANK ASSY.	1
206	64275-034	BATTERY CABLE (POS)	2
207	68774-000	RUBBER SUPPORT	2
208	68729-002	HOSE RADIATOR DIESEL	1
209	68729-003	HOSE RADIATOR DIESEL	1
210	68347-000	VALVE BLOCK ASSY (DRIVE)	1
214	**	GASKET	REF
216	68710-000	FUEL TANK ASSEMBLY	1
217	11240-006	WASHER 3/8 FLAT	14
218	11248-006	NUT HEX 3/8-16 ESNA	16
219	68666-000	ENGINE ASSY DIESEL	1
220	14252-004	NUT SERT 1/4-20 UNC	6
221	68570-000	PLANTARY DRIVE	2
*	68570-010	TORQUE HUB REPAIR KIT	1
*	68570-011	THRUST WASHER	1
222	68690-000	MOTOR, HYDRAULIC	2
*	68690-011	RETAINING RING	1
*	68690-012	LIP SEAL	1
*	68690-013	O-RING	1
*	68690-014	BEARING	1
*	68690-015	END CAP GASKET	1
*	68690-016	THRUST PLATE	1
*	68690-017	CYLINDER BLOCK KIT (SB-9410)	1
*	68690-018	VALVE PLATE	1
*	68690-019	NEEDLE BEARING	1
223	11934-010	FITTING 10MB-8MJ 90°	2
224	11934-007	FITTING 8MB-6MJ 90°	2
225	11935-001	FITTING 45° 4MBH 4MJ	1
226	68650-000	SHROUD, RADIATOR	1
227	29945-VAR	LEVEL SENSOR (SEE FINAL ASSY)	REF
228	11935-005	FITTING 45° 10MB-8MJ	2
229	11254-010	SCREW HHC 3/8-16 X 1 1/4	10
231	62299-002	BATTERY 12V DC	1
232	11715-004	SCREW RD HD # 6-32 X 1/2	2
233	11248-047	NUT # 6-32 HEX	2
234	29961-001	SEAL	1
235	68665-000	SPACER	3
236	68569-000	BRAKE, OSKO	2
237	11256-036	SCREW, HHC 1/2-13 UNC X 4 1/2	4
238	68676-000	RADIATOR	1
239	68675-000	BRACE WELDMENT	1
240	68549-000	BATTERY HOLD-DOWN BAR	1
241	12039-000	ROD, BATTERY HOLD-DOWN	2
242	11240-005	WASHER, 5/16" FLAT	2
243	11250-005	NUT HEX 5/16-18 UNC	2
244	**	RADIATOR BOTTLE	REF
245	68539-001	BOTTLE BRACKET	1
246	11252-006	SCREW, HHC 1/4-20UNC X 3/4	5
247	11248-004	NUT HEX ESNA 1/4-20	5
248	68751-000	GRILL	1
249	29961-000	INLET	1
250	19930-090	COUNTERWEIGHT	2
251	11257-020	SCREW HHC 5/8-11 UNC X 2 1/2	4
252	11240-010	WASHER 5/8 FLAT	4
253	003495-000	FITTING, STREET ELBOW	2

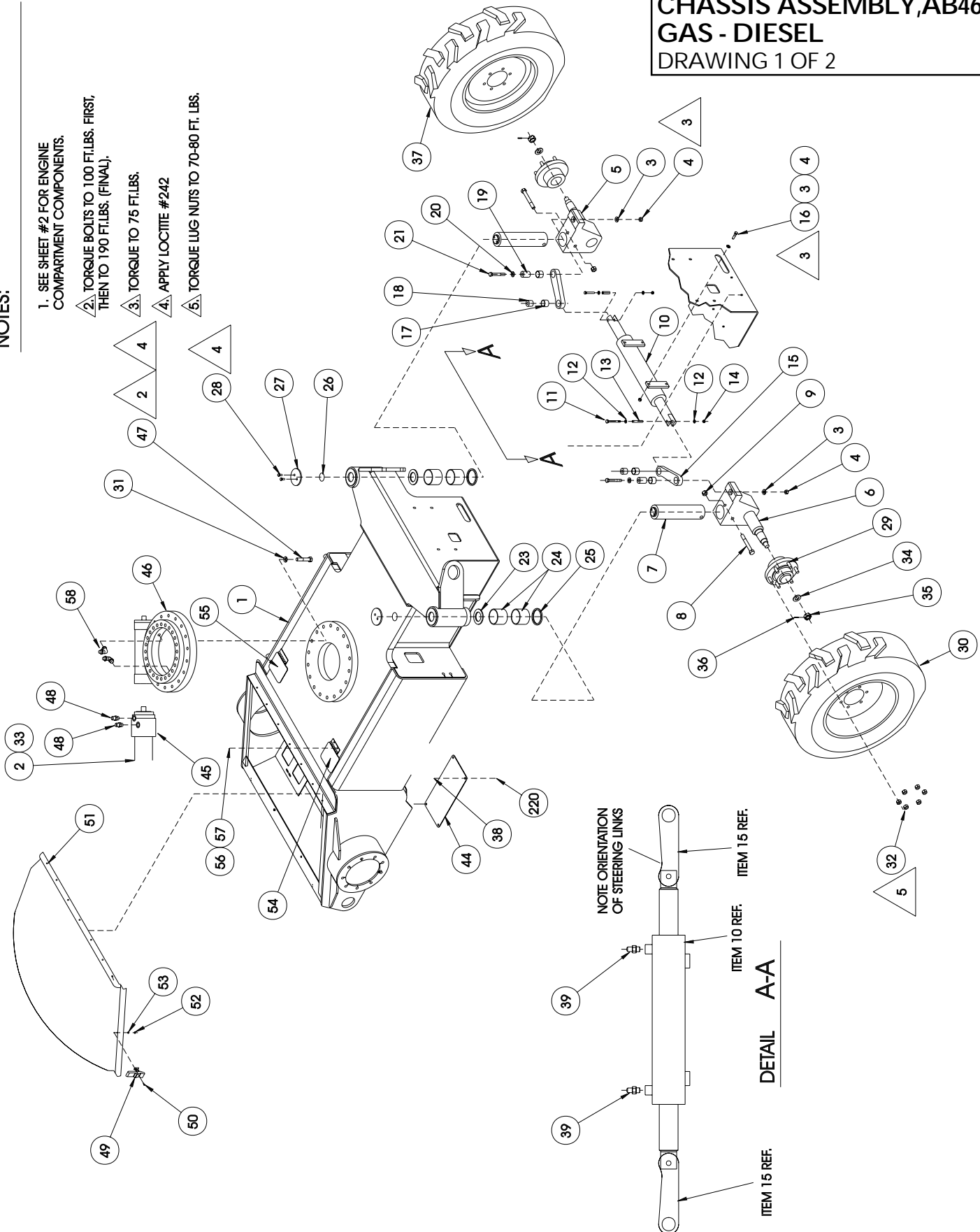
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Illustrated Parts Breakdown

CHASSIS ASSEMBLY, AB46
GAS - DIESEL
DRAWING 1 OF 2

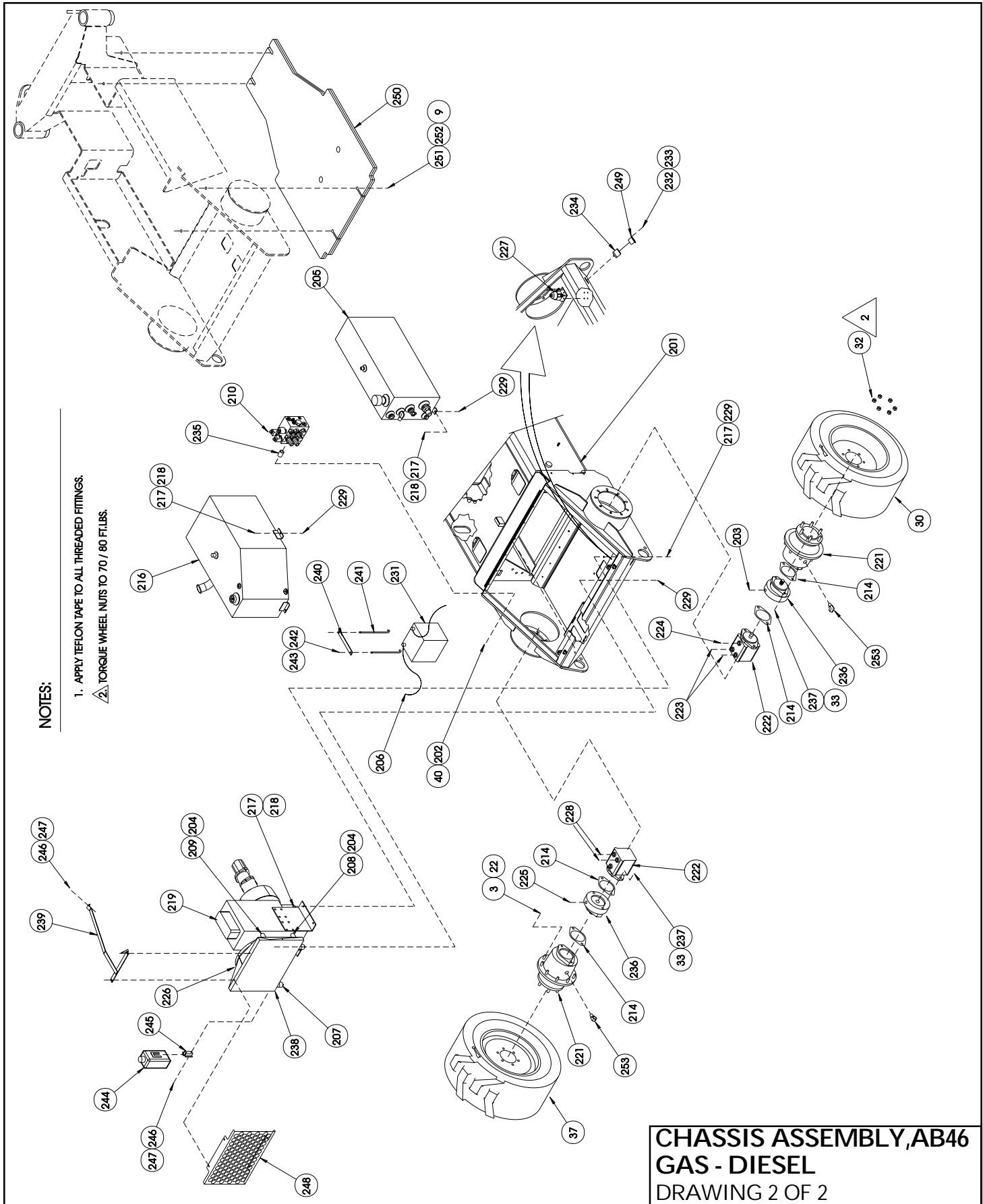
NOTES:

1. SEE SHEET #2 FOR ENGINE COMPARTMENT COMPONENTS.
2. TORQUE BOLTS TO 100 FT.LBS. FIRST, THEN TO 190 FT.LBS. (FINAL).
3. TORQUE TO 75 FT.LBS.
4. APPLY LOCTITE #242
5. TORQUE LUG NUTS TO 70-80 FT. LBS.



Illustrated Parts Breakdown

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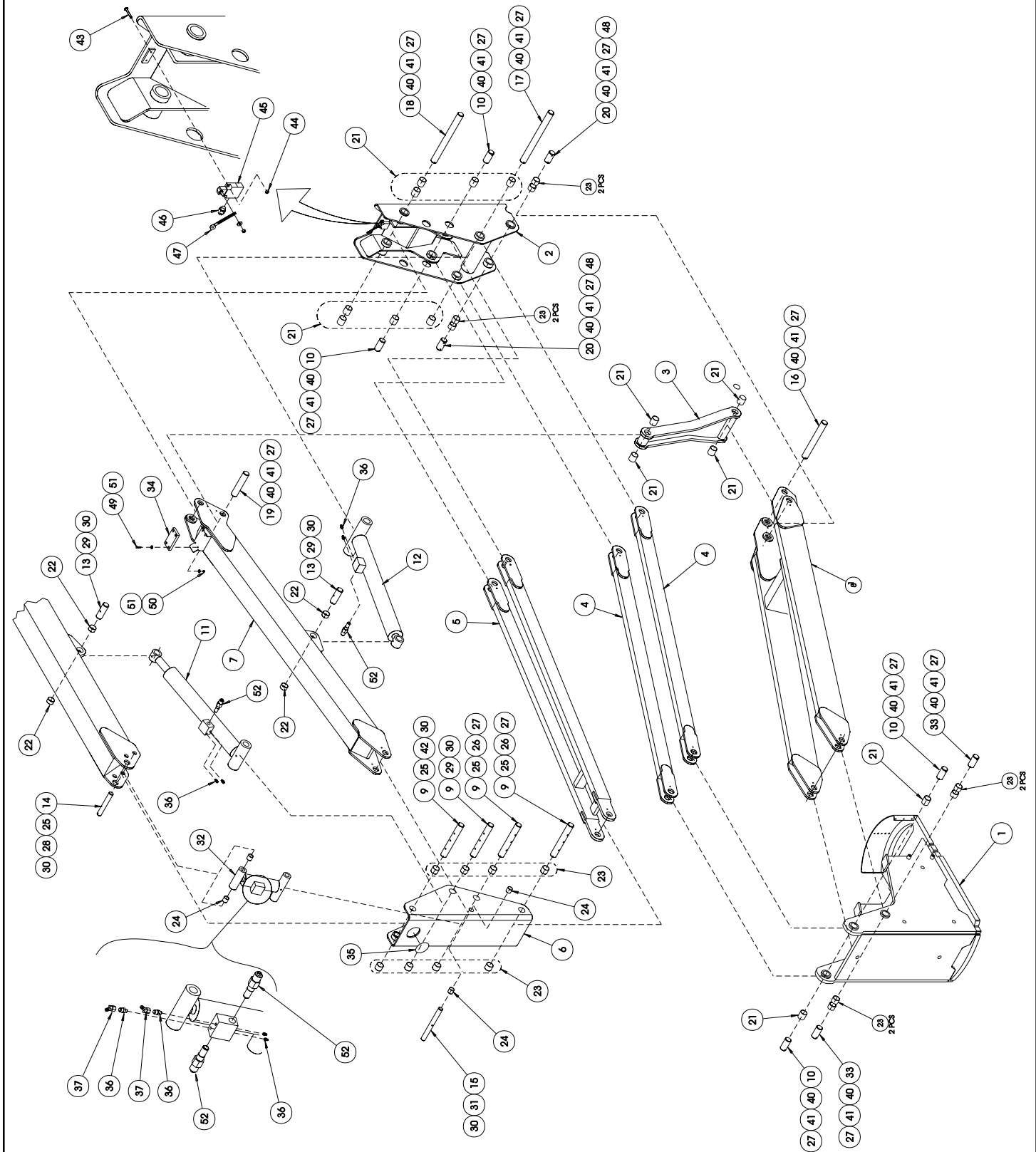
LOWER BOOM LINKAGE ASSEMBLY AB46 68323-000

ITEM	PART	DESCRIPTION	QTY.
1	68330-000	TURRET ASSEMBLY	REF
2	68397-000	RISER POST WELDMENT	1
3	68399-000	TENSION LINK WELDMENT	1
4	68400-000	1ST. TENSION RAIL WELDMENT	2
5	68543-000	2ND. TENSION RAIL WELDMENT	1
6	68412-000	FRONT RISER WELDMENT	1
7	68415-000	2ND. RISER BOOM WELDMENT	1
8	68417-000	1ST. RISER BOOM WELDMENT	1
9	68475-000	PIN, 1.75 DIA. X 12.25 LG.	4
10	68477-001	PIN, 1.75 DIA. X 3.75 LG.	4
11	68451-000	CYLINDER, BOOM RAISE	1
*	68451-010	SEAL KIT, BOOM	1
12	68450-000	CYLINDER, BOOM RISER	1
*	68450-010	SEAL KIT, RISER	1
13	68477-007	PIN, 1.75 DIA. X 5.00 LG.	2
14	68796-002	PIN, 1.50 DIA. X 8.50 LG.	1
15	68796-001	PIN, 1.50 DIA. X 12.25 LG.	1
16	68477-005	PIN, 1.75 DIA. X 13.75 LG.	1
17	68477-003	PIN, 1.75 DIA. X 19.50 LG.	1
18	68477-002	PIN, 1.75 DIA. X 16.50 LG.	1
19	68477-006	PIN, 1.75 DIA. X 8.63 LG.	1
20	68794-000	PIN, 1.75 DIA. X 5.88 LG.	2
21	62642-034	BUSHING, Ø 1.75 X 2 (28DU32)	14
22	62642-028	BUSHING, Ø 1.75 X 1 (28DU16)	4
23	62642-031	BUSHING, Ø 1.75 X 1.50 (28DU24)	16
24	62642-036	BUSHING, Ø 1.50 X 1.25 (24DU20)	4
25	65214-000	ROD END (PIN RETAINER) 3/8"	4
26	11254-006	SCR, HHC 3/8-16UNC X 3/4	14
27	11238-006	LOCKWASHER, SPLIT RING 3/8	14
28	11254-012	SCR, HHC 3/8-16UNC X 1 1/2	2
29	11254-028	SCR, HHC 3/8-16UNC X 3 1/2	3
30	11248-006	LOCKNUT, HEX 3/8-16UNC (ESNA)	6
31	11254-024	SCR, HHC 3/8-16UNC X 3	1
32	68454-000	MASTER CYLINDER	1
*	68454-010	SEAL KIT, MASTER	1
33	68477-008	PIN, 1.75 DIA X 4.75 LG.	2
34	68660-000	REST PAD	1
35	66516-004	CAP, 4"	1
36	11941-004	FITTING, STR 6MB-4MJ	6
37	11932-001	FITTING, 45° 4FJX-4MJ	2
40	65214-001	ROD END (PIN RETAINER) 1/2"	12
41	11254-010	SCREW HHC 3/8-16UNC X 1-1/4"	12
42	11254-014	SCREW HHC 3/8-16UNC X 1-3/4"	1
43	11709-014	SCREW RD HD 10-24 X 1-3/4"	2
44	11248-003	NUT, 10-24 ESNA	2
45	68556-000	SWITCH	1
46	29925-000	STRAIN RELIEF	1
47	68556-001	LEVER	1
48	11739-020	ROLL PIN 3/8 X 2-1/2	2
49	11253-010	SCREW HHC 5/16-18 UNC X 1 1/4	4
50	11248-005	LOCKNUT HEX 5/16-18 UNC ESNA	4
51	14996-005	WASHER 5/16 SAE FLAT	8
52	68778-000	VALVE, COUNTERBALANCE	4

* Not Shown

Illustrated Parts Breakdown

Section
6.2



UPPER BOOM LINKAGE ASSEMBLY

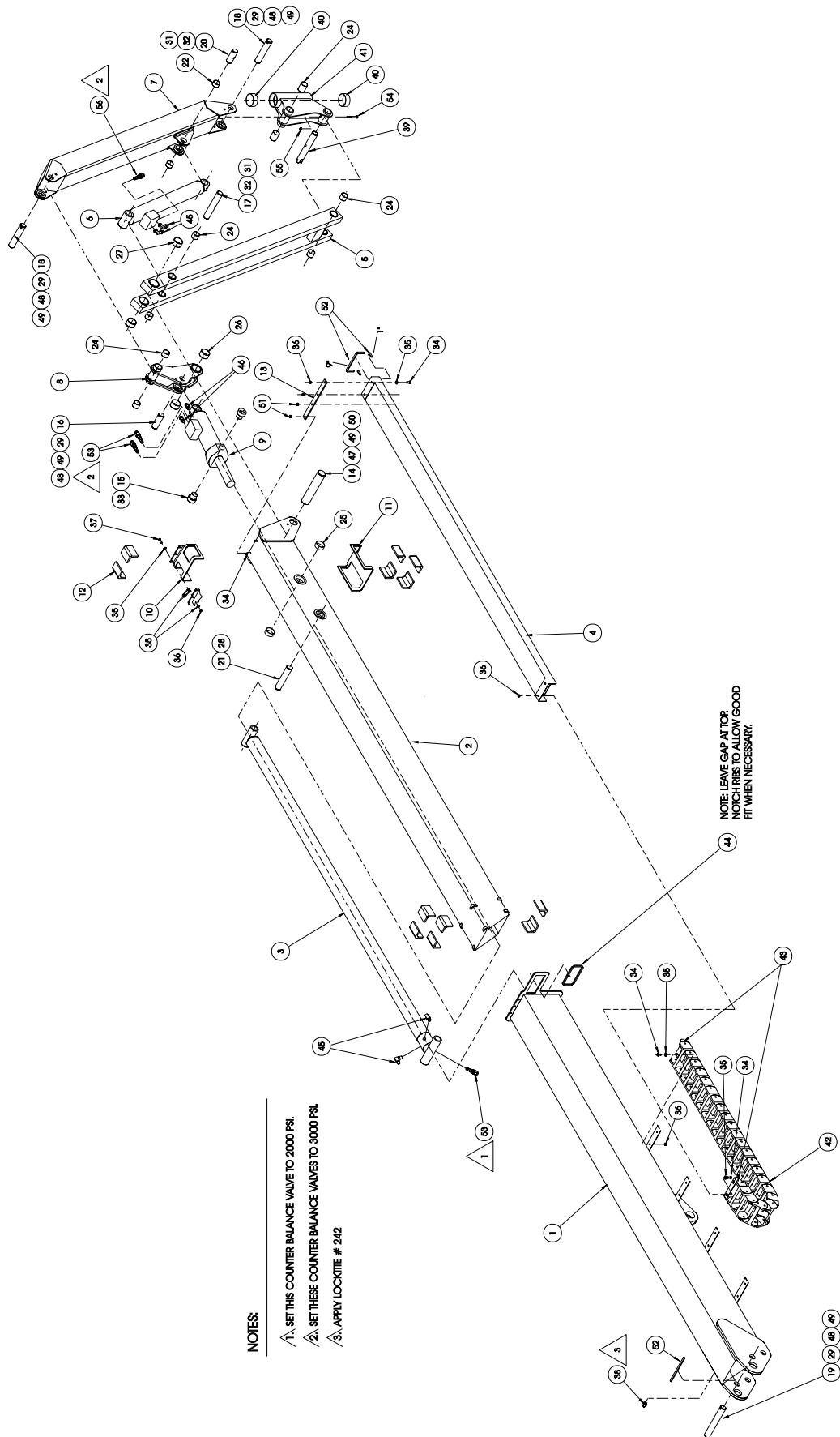
AB46

68322-000

ITEM	PART	DESCRIPTION	QTY.
1	68497-000	TOP (OUTER) BOOM WELDMENT	1
2	68496-000	TOP (INNER) BOOM WELDMENT	1
3	68452-000	BOOM EXTEND CYLINDER	1
*	68452-010	SEAL KIT, EXTEND	1
4	68479-000	EXTENSION TUBE WELDMENT	1
5	68447-000	LEVELING TUBE WELDMENT	1
6	68453-001	JIB CYLINDER	1
*	68453-010	SEAL KIT, JIB CY.	1
7	68439-000	JIB BOOM WELDMENT	1
8	68438-000	SWINGING FRAME WELDMENT	1
9	68455-000	SLAVE CYLINDER	1
*	68455-010	SEAL KIT, SLAVE	1
10	68436-000	UPPER BEARING PAD CASSETTE	1
11	68435-000	LOWER BEARING PAD CASSETTE	1
12	68423-000	WEAR PAD	12
13	68492-000	EXT. TUBE MTG. BRACKET	1
14	68477-006	PIN, JIB ASSY. PIVOT	1
15	68473-000	PIN, SLAVE CYL. TRUNNION	2
16	68476-005	PIN, SLAVE CYL. ROD END	1
17	68476-006	PIN, JIB CYL. BASE	1
18	68476-003	PIN, BOOM PIVOT	2
19	68476-002	PIN, TELESCOPIC CYL. BASE	1
20	68476-004	PIN, JIB CYL. ROD END	1
21	68474-000	PIN, TELESCOPIC CYL. ROD END	1
22	62642-024	BUSHING, Ø 1.25 X .75 (20DU12)	2
24	62642-025	BUSHING, Ø 1.25 X 1.75 (20DU28)	8
25	62642-027	BUSHING, Ø 1.75 X .75 (28DU12)	2
26	62642-031	BUSHING, Ø 1.75 X 1.50 (28DU24)	2
27	62642-029	BUSHING, Ø 1.75 X 1.75 (28DU28)	2
28	11764-120	RETAINING RING, TRUARC #5100-125	2
29	65214-000	ROD END (PIN RETAINER)	4
31	11248-006	LOCKNUT, HEX. 3/8-16 UNC (ESNA)	2
32	11254-020	SCR, HHC 3/8-16 UNC X 2 1/2	2
33	12553-014	SCR, SOC HD. 1/4-20 UNC X 1 3/4	4
34	11822-006	SCR, BUTT. HD. 5/16-18 UNC X 3/4	8
35	14996-005	WASHER, FLAT 5/16 S.A.E.	30
36	11248-005	LOCKNUT, HEX. 5/16-18 UNC (ESNA)	12
37	11253-010	SCR, HHC. 5/16-18 X 1 1/4	6
38	62881-000	SWITCH, BALL DETENT	1
39	68508-000	PIN, LOWER	1
40	62642-040	BUSHING, Ø 2.50 X 1.00 (40DU16)	2
41	68470-000	PIVOT BRACKET WELDMENT	1
42	68691-022	CAT TRACK (22 LINKS)	1
43	REF.	MOUNTING BRACKET (SET)	1
44	68701-099	WEAR STRIP, POLYETHYLENE	1.33 FT
45	11934-003	FITTING 6-4	4
46	11941-001	FITTING 6-4	2
47	65214-001	ROD END	1
48	11254-010	SCREW HHC 3/8-16UNC X 1 1/4	4
49	11238-006	WASHER, 3/8 SPLIT LOCK	5
50	11254-008	SCREW, HHC 3/8-16UNC X 1	1
51	11246-005	NUT, HEX ESNA 5/16-18UNC	2
52	61692-099	GROMMET (EDGE COVER)	1.5 FT
53	68778-000	VALVE, COUNTER BALANCE	3
54	11253-020	SCREW HHC 5/16-18 X 2 1/2	1
55	11248-005	NUT HEX ESNA 5/16-18UNC	1
56	68778-001	VALVE, COUNTER BALANCE	1

Illustrated Parts Breakdown

Section
6.2



NOTES:

1. SET THIS COUNTER BALANCE VALVE TO 2000 PSI.
2. SET THESE COUNTER BALANCE VALVES TO 3000 PSI.
3. APPLY LOCKTITE # 242

NOTE: LEAVE GAP AT TOR
NOTCH RIBS TO ALLOW GOOD
FIT WHEN NECESSARY.

Illustrated Parts Breakdown

TURRET ASSEMBLY AB46 GAS 68330-001

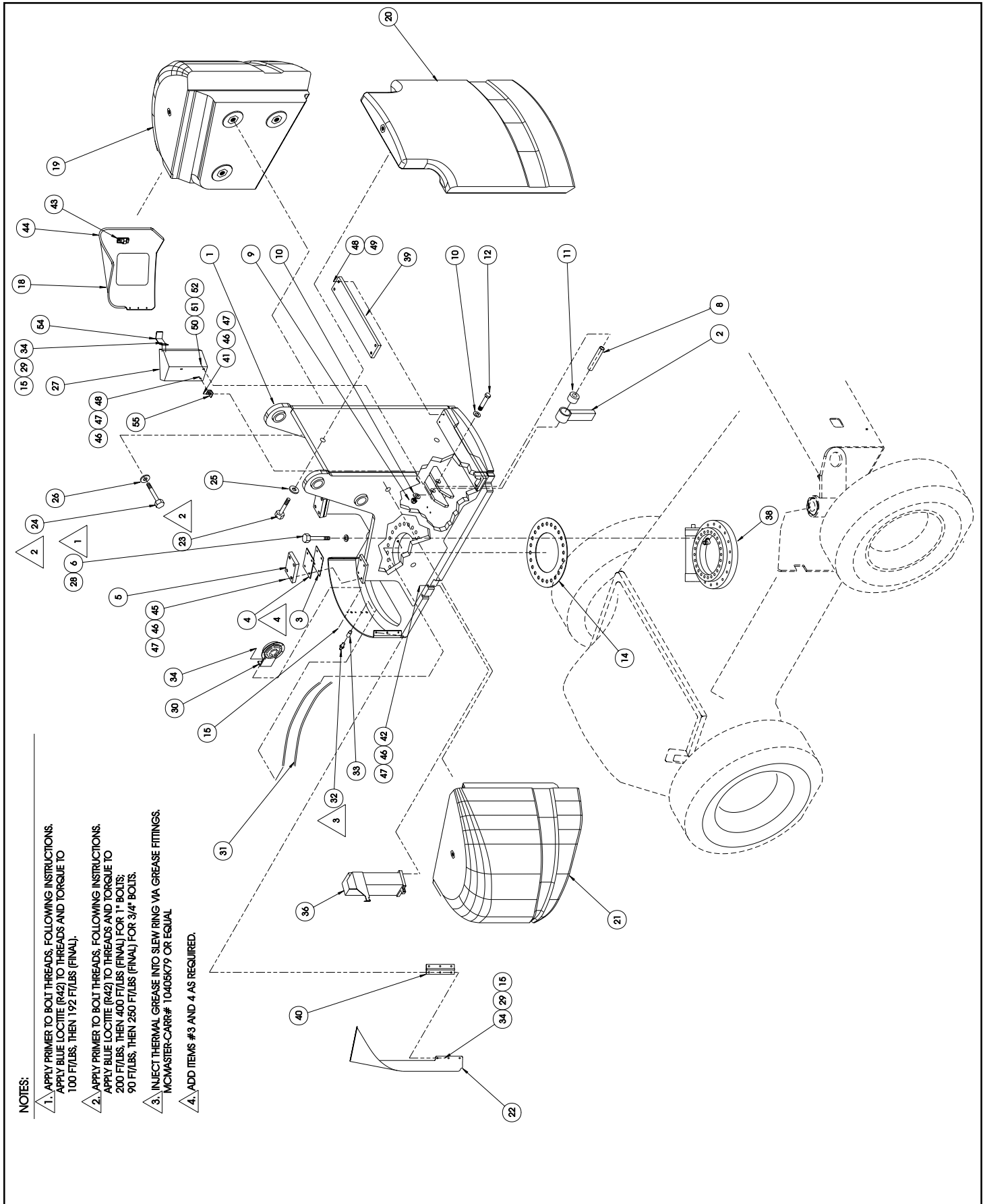
ITEM	PART	DESCRIPTION	QTY.
1	68392-000	TURRET POST WELDMENT	1
2	68485-000	STOP WELDMENT	1
3	68319-000	SHIM, 16GA, REST PAD	4
4	68319-001	SHIM, 10GA, REST PAD	4
5	68660-000	REST PAD	2
6	11291-032	SCREW, HHC 5/8-11 X 4 GR 8	24
8	68478-000	TUBE, STL 1"O.D. X .120W X 3.10" LG	1
9	11248-012	NUT, HEX ESNA 3/4-10 ESNA	1
10	11240-012	WASHER 3/4 STL	2
11	68720-002	NEOPRENE SPRING CYLINDER-POLY.	1
12	14099-036	SCREW, HHC 3/4-10 X 4-1/2	1
14	68472-000	SHIM RING	1
15	11248-004	NUT, HEX ESNA 1/4-20	18
18	68656-000	COVER TRIM, GROUND CONTROL	1
19	68653-000	COUNTER WEIGHT, LEFT SIDE	1
20	68652-000	COUNTER WEIGHT, REAR	1
21	68654-000	COUNTER WEIGHT, RIGHT SIDE	1
22	68657-000	COVER TRIM, VALVE BLOCK	1
23	14099-012	SCREW HHC, 3/4-10UNC X 1-1/2	2
24	14918-020	SCREW HHC, 1-8UNC X 2-1/2	6
25	11239-012	WASHER FLAT ASTM 3/4" A325	2
26	11240-016	WASHER FLAT 1" STD	6
27	68328-001	LOWER CONTROL BOX-GAS	1
28	11297-010	BELLEVILLE WASHER 5/8 DIA	24
29	11240-004	WASHER, 1/4 FLAT STD	30
30	29958-001	HORN, 12 VOLT	1
31	68678-024	TUBING, POLYURETHANE 24"	2
32	13336-001	FITTING, GREASE	2
33	68679-003	FITTING, BULKHEAD	2
34	11252-006	SCREW, HHC 1/4-20 X 3/4	16
36	68348-001	VALVE BLOCK ASSY-I/C	1
38	REF	DRIVE WORM GEAR (68571)	REF
39	68660-001	REST PAD	1
40	68759-000	HINGE, TURRET COVER	2
41	11253-018	SCRW HHC GR5 5/16-18 X 1-1/2	1
42	11253-022	SCRW HHC GR5 5/16-18 X 2-3/4	2
43	68757-002	LATCH, SOUTHCO	2
44	61692-099	GROMMET MATERIAL	10FT
45	11253-012	SCRW HHC GR5 5/16-18 X 1-1/2	8
46	11248-005	NUT HEX 5/16-18 ESNA	12
47	14996-005	WASHER 5/16 FLAT SAE	22
48	11253-006	SCRW HHC GR5 5/16-18 X 3/4	5
49	11238-005	WASHER, SPLIT LOCK 5/16	4
50	11254-006	SCRW HHC GR5 3/8-16 UNC X 3/4	6
51	11238-006	WASHER, SPLIT LOCK 3/8	6
52	14996-006	WASHER, 3/8 FLAT SAE	6
54	68792-000	BRACKET	1
55	68793-000	BRACKET	1

TURRET ASSEMBLY AB46 DIESEL 68330-002

ITEM	PART	DESCRIPTION	QTY.
1	68392-000	TURRET POST WELDMENT	1
2	68485-000	STOP WELDMENT	1
3	68319-000	SHIM, 16GA, REST PAD	4
4	68319-001	SHIM, 10GA, REST PAD	4
5	68660-000	REST PAD	2
6	11291-032	SCREW, HHC 5/8-11 X 4 GR 8	24
8	68478-000	TUBE, STL 1"O.D. X .120W X 3.10" LG	1
9	11248-012	NUT, HEX ESNA 3/4-10 ESNA	1
10	11240-012	WASHER 3/4 STL	2
11	68720-002	NEOPRENE SPRING CYLINDER-POLY.	1
12	14099-036	SCREW, HHC 3/4-10 X 4-1/2	1
14	68472-000	SHIM RING	1
15	11248-004	NUT, HEX ESNA 1/4-20	18
18	68656-000	COVER TRIM, GROUND CONTROL	1
19	68653-000	COUNTER WEIGHT, LEFT SIDE	1
20	68652-000	COUNTER WEIGHT, REAR	1
21	68654-000	COUNTER WEIGHT, RIGHT SIDE	1
22	68657-000	COVER TRIM, VALVE BLOCK	1
23	14099-012	SCREW HHC, 3/4-10UNC X 1-1/2	2
24	14918-020	SCREW HHC, 1-8UNC X 2-1/2	6
25	11239-012	WASHER FLAT ASTM 3/4" A325	2
26	11240-016	WASHER FLAT 1" STD	6
27	68328-002	LOWER CONTROL BOX-DIESEL	1
28	11297-010	BELLEVILLE WASHER 5/8 DIA	24
29	11240-004	WASHER, 1/4 FLAT STD	30
30	29958-001	HORN, 12 VOLT	1
31	68678-024	TUBING, POLYURETHANE 24"	2
32	13336-001	FITTING, GREASE	2
33	68679-003	FITTING, BULKHEAD	2
34	11252-006	SCREW, HHC 1/4-20 X 3/4	16
36	68348-001	VALVE BLOCK ASSY-I/C	1
38	REF	DRIVE WORM GEAR (68571)	REF
39	68660-001	REST PAD	1
40	68759-000	HINGE, TURRET COVER	2
41	11253-018	SCRW HHC GR5 5/16-18 X 1-1/2	1
42	11253-022	SCRW HHC GR5 5/16-18 X 2-3/4	2
43	68757-002	LATCH, SOUTHCO	2
44	61692-099	GROMMET MATERIAL	10FT
45	11253-012	SCRW HHC GR5 5/16-18 X 1-1/2	8
46	11248-005	NUT HEX 5/16-18 ESNA	12
47	14996-005	WASHER 5/16 FLAT SAE	22
48	11253-006	SCRW HHC GR5 5/16-18 X 3/4	5
49	11238-005	WASHER, SPLIT LOCK 5/16	4
50	11254-006	SCRW HHC GR5 3/8-16 UNC X 3/4	6
51	11238-006	WASHER, SPLIT LOCK 3/8	6
52	14996-006	WASHER, 3/8 FLAT SAE	6
54	68792-000	BRACKET	1

Illustrated Parts Breakdown

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Illustrated Parts Breakdown

ENGINE ASSEMBLY, AB46 KUBOTA GAS 68661-000

ITEM	PART	DESCRIPTION	QTY.
1	67615-000	ENGINE, KUBOTA GAS	1
2	68668-000	PUMP, VARIABLE DISPLACEMENT A10VG	1
3	63941-000	SOLENOID, THROTTLE	1
4	12739-099	HOSE, FUEL LINE	4.5 FT
5	20541-003	HOSE CLAMP	6
6	REF	FUEL FILTER, INLINE	1
7	27972-000	SOLENOID, STARTER RELAY	1
8	11252-006	SCREW HHC 1/4-20 X 3/4	22
9	68536-000	BRACKET, ENGINE MOUNT GAS	2
10	REF	AIR CLEANER AND HOSES	1
11	11941-015	FITTING 10MB-10MJ	1
12	11254-008	SCREW HHC 3/8-16 X 1	2
13	68722-000	WELDMENT, MUFFLER SPACER	1
14	REF	COIL, IGNITION	1
15	11934-027	FITTING, 90° 8MB- 4MJ	1
16	67695-000	SPACER	2
18	11937-007	FITTING, 90° 12FJX-12MJ	1
19	68708-000	BRACKET, SOLENOID WELDMENT	1
20	11934-019	FITTING 16MB-16MJ 90°	1
21	11252-004	SCREW, 1/4-20 X 1/2LG	10
22	11238-004	WASHER, SPLIT LOCK 1/4	10
23	68747-001	HOSE, AIR INTAKE-GAS	1
25	68812-000	SPLIT FLANGE KIT #12 S FX10	2
26	11941-016	FITTING 10MB-12MJ	1
27	68669-000	PUMP, GEAR TYPE	1
28	11937-003	FITTING 90° 6MJ-6FJX	2
29	20541-013	HOSE CLAMP	4
30	11252-010	SCREW HHC 1/4-20UNC X 1 1/4	1
31	11240-004	WASHER FLAT STD 1/4	18
32	11238-004	WASHER SPLIT LOCK 1/2	2
33	11248-004	NUT HEX 1/4-20 ESNA	15
34	67617-040	KTR BELL HOUSING KIT	1
35	11256-010	SCREW HHC 1/2-13UNC X 1-1/4	2
36	REF.	MUFFLER	1
39	11240-006	WASHER FLAT STD 3/8	4
40	63946-030	SCREW HHC M10 X 1.25 GR5 X 30MM	12
41	REF	SCREW (SUPPLIED W/ AIR CLEANER)	2
42	REF	SCREW MANIFOLD (SUPPLIED W/ ENGINE)	4

ITEM	PART	DESCRIPTION	QTY.
43	11253-010	SCREW, HHC 5/16-18 UNC X 1 1/4	4
44	11273-005	NUT, HEX. JAM 5/16-18 UNC	4
45	11238-005	LOCK WASHER, SPLIT RING	4
46	REF	ELECTRIC FUEL PUMP	1
47	20495-004	NUT, HEX. JAM 1/4-28 UNF	3
48	30624-019	CHOKE ANGLE	1
49	30624-020	CHOKE ROD	1
50	30624-008	CHOKE SOLENOID BRACKET	1
51	11240-007	WASHER FLAT STD 7/16	12
53	03142-001	FITTING 2MP-2FP	1
54	63945-001	OIL PRESS SWITCH	1
56	68629-000	BRACKET, FUEL PUMP	1
57	11937-006	FITTING, 90° 10FJX-10MJ	1
58	11248-006	LOCKNUT, HEX. 3/8-16UNC ESNA	2
60	68770-001	TAIL PIPE (GAS/PROPANE) AB46	1
62	67615-043	ENGINE ACCESSORY KIT	1
63	67615-041	THERMOSTAT KIT	1
64	68779-000	VALVE, CHECK	2
65	67599-000	SOLENOID,	1
66	20731-005	CHAIN	1
67	68630-006	SPRING LINKAGE	1
68	11847-004	YOKE END	1
69	67807-000	SOLENOID BKACKET	1
101	29602-026	CONN RING #2 3/8 DIA	3
102	29601-039	CONN RING 12-10 GA. 5/16	2
103	29601-013	CONN RING 16-14 GA. # 10	7
104	29620-002	BUTT CONNECTOR 14-16 GA.	2
105	29931-003	CONN FEMALE PUSH 16-14 GA. 1/4	2
106	29478-099	WIRE 16 AWG RED/BLK	2.2 FT
107	29453-099	WIRE 16 AWG ORG	2 FT
108	REF.	TUBING HEAT SHRINK 1/4"	REF
109	29480-099	WIRE 10 AWG RED	1 FT
110	29601-008	CONN RING 18-22 GA 5/16	4
111	29451-099	WIRE 16 AWG WHT	5 FT
112	29470-099	WIRE 12 AWG RED	4 FT
113	29472-099	WIRE 12 AWG BLK	3 FT
114	29456-099	WIRE 16 AWG YEL	3 FT
115	29452-099	WIRE 16 AWG BLK	6 FT
116	29457-099	WIRE 16 AWG GRN	4 FT
117	29479-099	WIRE 16 AWG WHT/BLK	3.5 FT
118	29450-099	WIRE 16 ASW BLU	4.5 FT
119	68762-000	PIN - CONTACT	8
120	68762-001	SOCKET - CONTACT	8
121	68764-000	PLUG - SEALING 12-14 GA.	8
122	68761-001	LOCK WEDGE - PLUG	1
123	68761-000	LOCK WEDGE - RECEPTACLE	1
124	68760-000	PLUG - CONNECTOR	1
125	68760-001	RECCPTACLE - CONNECTOR	1

Illustrated Parts Breakdown

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ENGINE REPLACEMENT PARTS KUBOTA GAS 68661-000

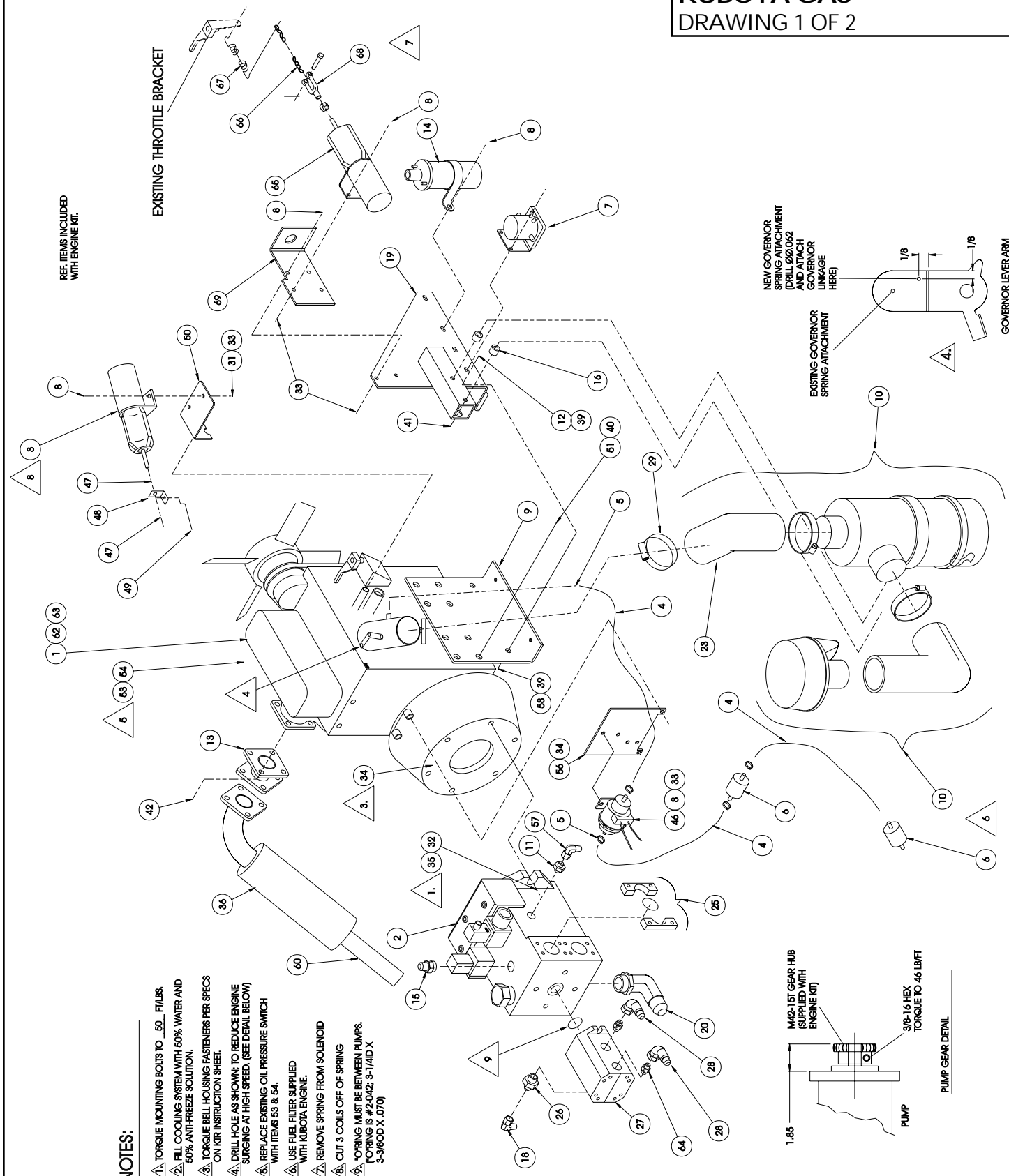
ITEM	PART	DESCRIPTION	QTY.
*	67615-095	DISTRIBUTOR	1
*	67615-026	TRIGGER/IGNITOR	1
*	67615-025	ROTOR	1
*	67615-096	DIST/HOUSING	1
*	64505-002	SPARK PLUG	1
*	67615-082	IGNITION SWITCH	1
*	67615-093	KEY, SWITCH	1
*	67615-027	COIL	1
*	67615-028	ALTERNATOR 12V-30 AMP	1
*	67615-094	REGULATOR 12V-30 AMP	1
*	67615-030	STARTER-12V	1
*	67615-097	MAGNETIC SWITCH	1
*	67615-098	OVER-RUNNING CLUTCH	1
*	67615-099	INTAKE MANIFOLD	1
*	67615-100	INTAKE MANIFOLD O-RING	1
*	67615-101	INTAKE MANIFOLD O-RING	1
*	67615-102	INTAKE MANIFOLD CAP SCREW	1
*	67615-103	INTAKE MANIFOLD CAP SCREW	1
*	67615-104	INTAKE MANIFOLD CAP SCREW	1
*	67615-105	INTAKE MANIFOLD O-RING	1
*	67615-106	A/C TO CARB ADAPTER HOSE	1
*	67615-107	AIR CLEANER ASSEMBLY	1
*	64505-008	AIR CLEANER ELEMENT	1
*	67615-108	AIR CLEANER GASKET	1
*	67615-035	EXHAUST MANIFOLD	1
*	67615-109	PIPE (HOSE) INLET	1
*	67615-110	MANIFOLD GASKETS	1
*	67615-111	MANIFOLD STUDS	1
*	67615-112	MANIFOLD NUTS	1
*	67615-113	MUFFLER GASKET	1
*	67615-114	MUFFLER MANIFOLD STUDS	1
*	67615-115	MUFFLER MANIFOLD NUTS	1
*	67615-018	MUFFLER	1
*	67615-013	RADIATOR	1
*	67615-116	DRAIN COCK	1
*	67615-117	COOLING FAN	1
*	67615-015	WATER PUMP W/GASKET	1
*	67615-016	THERMOSTAT	1
*	67615-118	THERMOSTAT GASKET	1

ITEM	PART	DESCRIPTION	QTY.
*	67615-019	FAN BELT	1
*	67615-017	OVERFLOW TANK KIT	1
*	67615-119	THERMOSTAT HOUSING	1
*	67615-120	LOWER WATER PIPE	1
*	67615-037	DRAIN COCK	1
*	67615-038	DRAIN PLUG O-RING	1
*	67615-039	CYL HEAD GASKET	1
*	67615-044	HEAD COVER GASKET	1
*	67615-045	BREATHING ELEMENT	1
*	67615-079	FLYWHEEL	1
*	67615-080	RING GEAR	1
*	67615-041	KTR HUB 6-13-15	1
*	67615-042	KTR NYLON GEAR 9T	1
*	64505-011	OIL FILTER CARTRIDGE	1
*	64505-005	OIL PRESS SWITCH	1
*	67615-083	DIP STICK OIL GAUGE	1
*	67615-084	OIL FILL CAP SEAL	1
*	67615-085	GOVERNOR SPRING-LARGE	1
*	67615-086	SPRING-BUFFER	1
*	67615-087	CONTROL ASSEMBLY PLATE	1
*	67615-088	SPEED CONTROL LEVER	1
*	67614-007	IN-LINE FUEL FILTER	1
*	67615-089	ELECTRIC FUEL PUMP	1
*	67615-090	CARB FLANGE GASKET	1
*	64505-007	CARBURETOR	1
*	67615-012	FUEL OFF SOLENOID	1
*	67615-091	CARB INLET FLANGE	1
*	67615-092	CARB FLANGE SPACER	1
*	67615-078	CARB ADAPTER	1
*	67615-055	LP REG/VAP/CONT	1
*	67615-051	GASOLINE SHUT OFF	1
*	67615-052	LP LOCK OFF	1
*	67615-077	LPG LOAD BLOCK	1
*	67615-070	TANK CPL, 7141F	1
*	67615-075	HYDRASTATIC VALVE	1
*	67615-010	LPG KIT	1
*	67615-121	DISTRIBUTOR CAP	1

* Not Shown

Illustrated Parts Breakdown

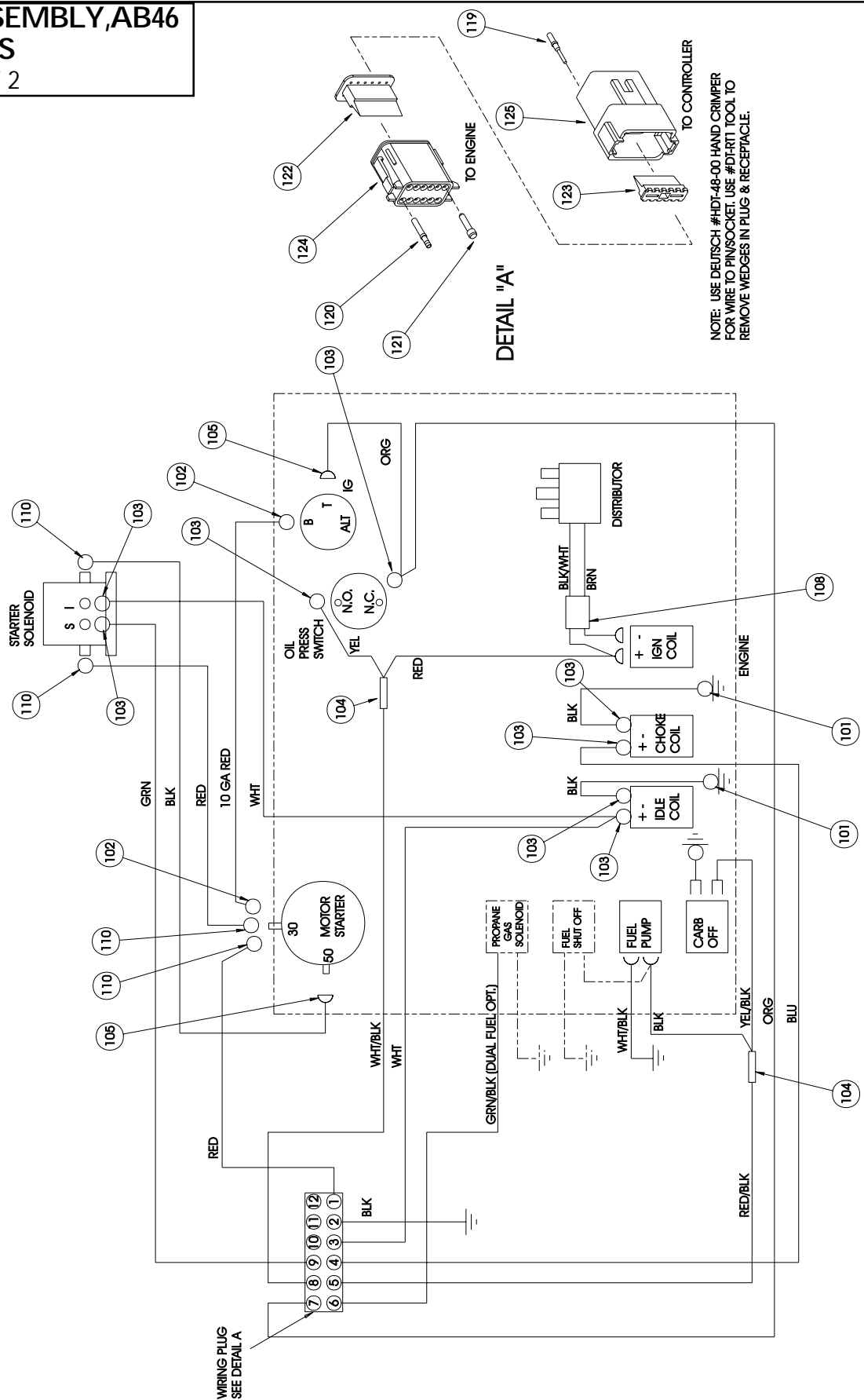
ENGINE ASSEMBLY, AB46
KUBOTA GAS
DRAWING 1 OF 2



Illustrated Parts Breakdown

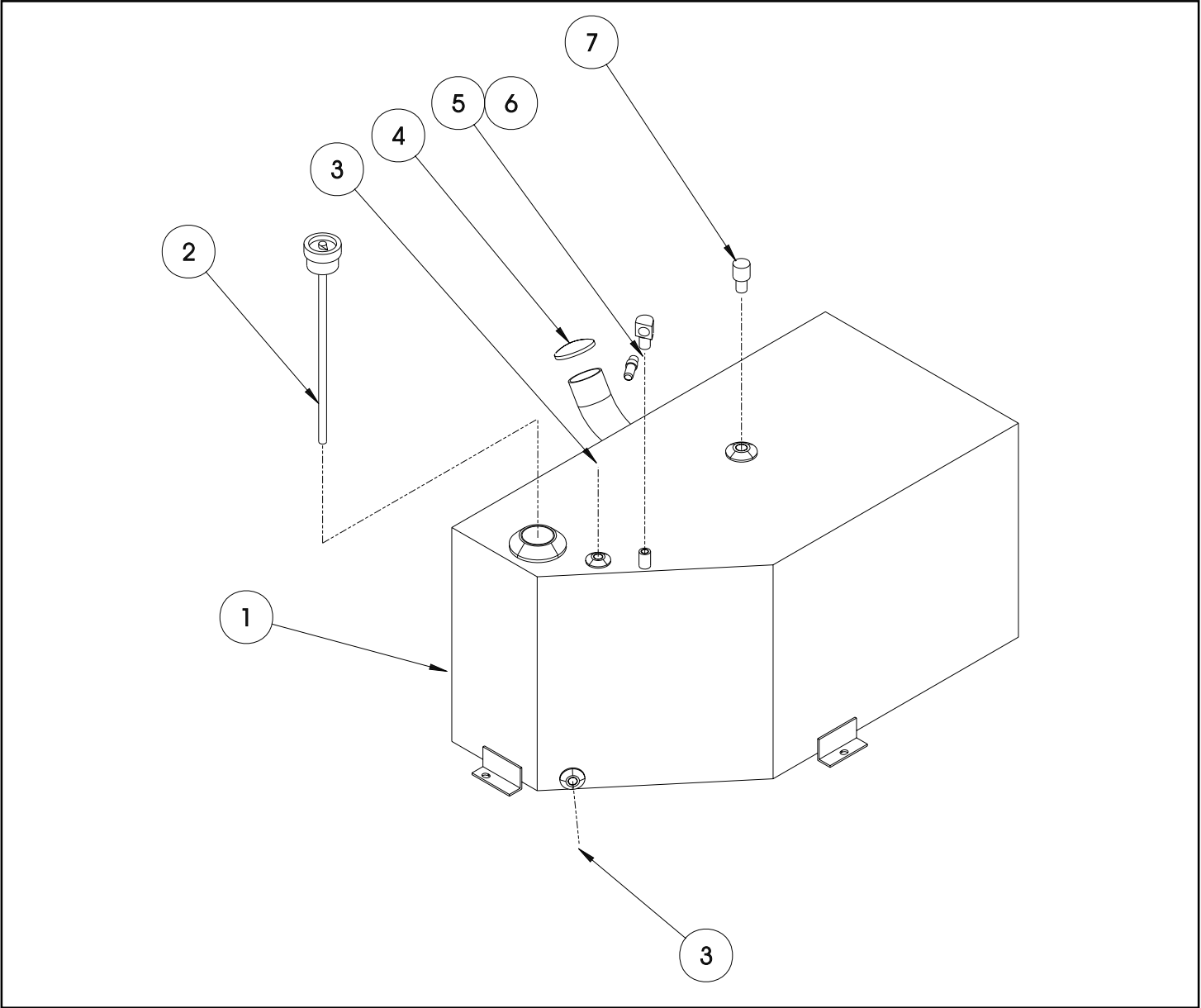
Section
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ENGINE ASSEMBLY, AB46 KUBOTA GAS DRAWING 2 OF 2



FUEL TANK ASSEMBLY, AB46
GAS
68710-000

ITEM	PART	DESCRIPTION	QTY.
1	068671-000	FUEL TANK	1
2	063982-003	FUEL GAGE	1
3	011919-002	PLUG 1/4	2
4	063929-001	CAP-NON VENTED	1
5	003495-000	FITTING, STREET ELBOW 1/4	1
6	010178-003	FITTING, BARBED 1/4	1
7	068711-000	BREATHER, GITS	1



NOTES:

Illustrated Parts Breakdown

ENGINE ASSEMBLY, AB46 KUBOTA DIESEL 68666-000

ITEM	PART	DESCRIPTION	QTY.
1	68694-000	ENGINE, KUBOTA DIESEL	1
2	68668-000	PUMP, VARIABLE DISPLACEMENT A10VG	1
3	67599-000	SOLENOID, THROTTLE	1
4	12733-099	HOSE, FUEL 5/16 LINE	FT 4.5
5	20541-003	HOSE CLAMP	8
6	11937-003	FITTING 90° 6MJ-6FJX	2
7	27972-000	SOLENOID, STARTER RELAY	2
8	11252-006	SCREW HHC 1/4-20 X 3/4	12
9	68537-000	BRACKET, ENGINE MOUNT	2
10	12736-099	HOSE FUEL 3/16 LINE	2
11	68730-000	BRACKET, AIR CLEANER	1
12	REF	FUEL FILTER, SPIN ON	1
13	68722-001	WELDMENT, MUFFLER SPACER	1
14	11941-015	FITTING STR 10MB 10MJ	1
15	67870-000	BRACKET, DIESEL FUEL FILTER	1
16	64423-000	INLINE SWIVEL - 1/4	1
17	11760-004	ROD END BEARING - 1/4-28	1
18	11934-019	FITTING 16MB-16MF 90°	1
19	11937-007	FITTING 90° 12FJX 12MJ	1
20	11240-007	WASHER, FLAT STD 7/16	12
21	63946-030	SCREW HHC M10 X 1.25 GR5 X 30MM	12
22	REF	SCREW (SUPPLIED W/AIRCLEANER)	2
23	11252-004	SCREW, HHC 1/4-20 X 1/2	2
24	11934-027	FITTING 90° 8MB 4MJ	1
25	68812-000	FLANGE KIT	2
26	11941-016	FITTING STR 10MB 12MJ	1
27	68669-000	PUMP, GEAR TYPE	1
29	20541-013	HOSE CLAMP	4
30	11252-008	SCREW HHC 1/4-20UNC X 1	3
31	11240-004	WASHER FLAT STD 1/4	6
32	11238-004	WASHER SPLIT LOCK 1/2	2
33	11248-004	NUT HEX 1/4-20 ESNA	12
34	67617-050	KTR BELL HOUSING KIT D/F #0034	1
35	11256-010	SCREW HHC 1/2-13UNC X 1-1/4	2
36	11937-006	FITTING 90° 10FJX 10MJ	1
37	11253-010	SCREW HHC 5/16-18 X 1 1/4	4
38	REF	AIR CLEANER, HOSES & CLAMPS	1
39	11240-006	WASHER FLAT STD 3/8	2

ITEM	PART	DESCRIPTION	QTY.
40	11238-005	WASHER 5/16 SPLIT LOCK	4
41	11273-005	NUT HEX 5/16 UNC JAM	4
43	69203-000	SUPPORT BRACKET	1
44	63961-025	SCREW M8 X 25mm LG	4
45	REF	INLINE FILTER	1
46	63961-035	SCREW M8 X 35mm LG	2
47	63946-045	SCREW M10 X 45mm LG	2
48	63936-024	MUFFLER GASKET	1
49	20495-004	NUT HEX 1/4-28 UNF JAM	2
50	03142-001	FITTING 2MP 2FP	1
51	63945-001	OIL PRESSURE SWITCH	1
52	68770-000	EXHAUST TUBE	1
53	68747-000	INTAKE HOSE	1
54	13259-006	CLAMP	1
55	68779-000	VALVE CHECK	2
56	18084-003	TUBE 3/4 OD X 3/16W X .33 LG	1
57	18084-004	TUBE 3/4 OD X 3/16W X .205 LG	1
58	11240-005	WASHER FLAT STD 5/16	4
102	29601-021	CONN RING 12-10 GA. 3/8 DIA	5
103	29601-014	CONN RING 16-14 GA. 1/4 D	6
104	29610-002	CONN FORK 16-14 GA. #8	7
105	29616-002	CONN FEMALE PUSH 16-14 GA. 1/4	2
106	29452-099	WIRE 16 AWG BLK	FT. 3
107	29453-099	WIRE 16 AWG ORG	FT. 6.2
109	29480-099	WIRE 10 AWG RED	FT. 3.8
110	68764-000	PLUG - CONNECTOR SEAL	10
111	29451-099	WIRE 16 AWG WHT	FT 4.8
112	29454-099	WIRE 16 AWG RED	FT 4.8
113	29601-020	CONN RING 12-10 GA 1/4 DIA	1
114	68762-001	SOCKET - CONTACT	7
115	68762-000	PIN - CONTACT	7
116	29457-099	WIRE 16 AWG GRN	FT. 3.4
117	29479-099	WIRE 16 AWG WHT/BLK	FT. 3.4
118	29450-099	WIRE 16 ASW BLU	FT. 2.5
119	68761-001	DEUTSCH LOCKING WEDGE - CONN	1
120	68761-000	DEUTSCH LOCKING WEDGE - CONN	1
121	68760-000	DEUTSCH CONNECTOR -RECEPTACLE	1
122	68760-001	DEUTSH CONNECTOR -PLUG	1
123	29601-013	CONN RING 16-14 GA #10	2
124	29601-040	CONN RING 16-14 GA 5/16 DIA	2

Illustrated Parts Breakdown

Section
6.2

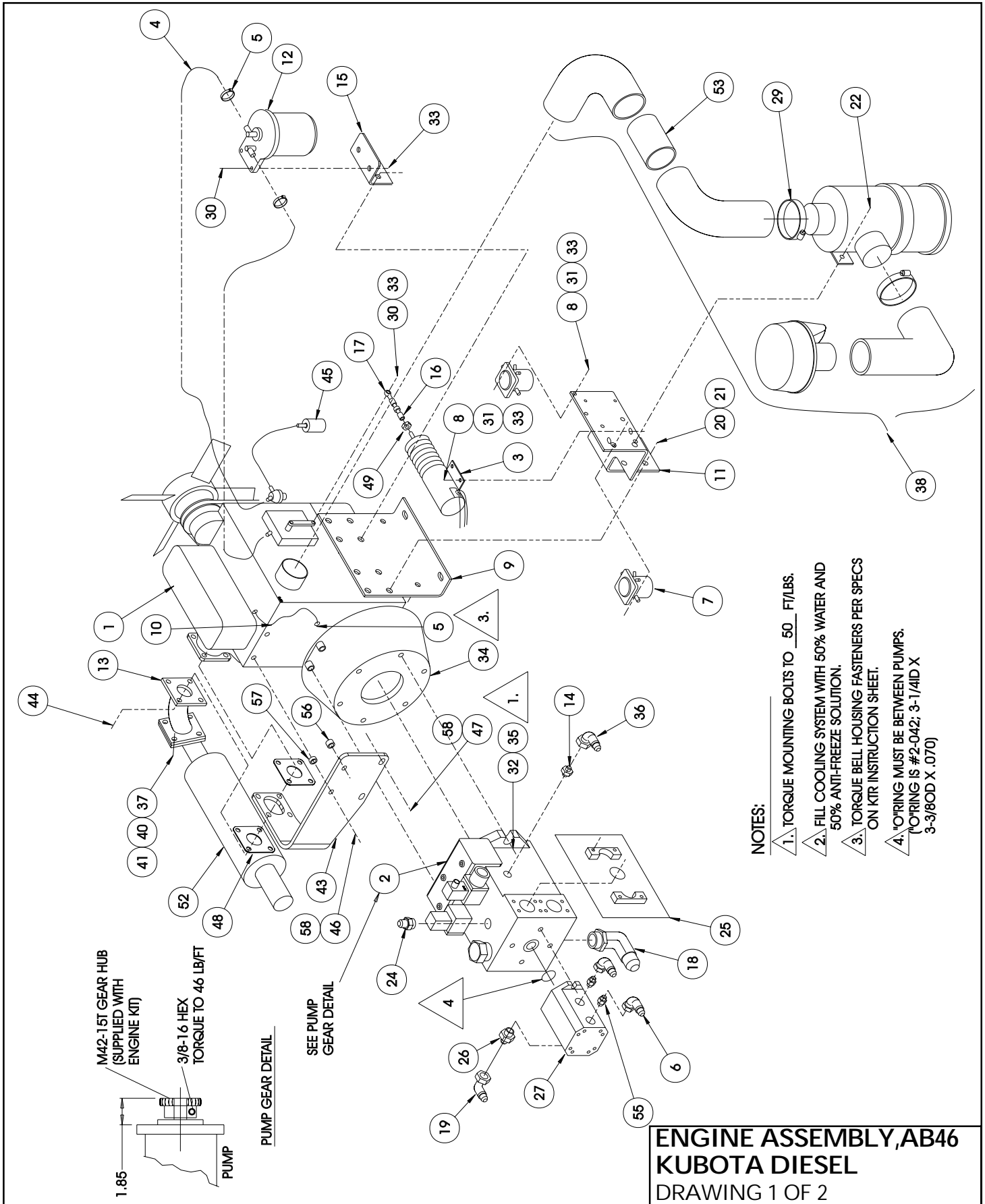
ENGINE REPLACEMENT PARTS KUBOTA DIESEL 68666-000

ITEM	PART	DESCRIPTION	QTY.
*	67615-037	DRAIN COCK	1
*	67614-036	PAN GASKET	1
*	67614-037	DRAIN PLUG O-RING	1
*	67614-038	CYL HEAD GASKET	1
*	67614-039	HEAD COVER GASKET	1
*	67614-040	BREATHER ELEMENT	1
*	67614-032	FLYWHEEL	1
*	67614-031	RING GEAR	1
*	67617-051	KTR HUB 6-13-15	1
*	67617-052	KTR NYLON GEAR 9T	1
*	67614-004	OIL FILTER CARTRIDGE	1
*	67614-023	OIL PRESS SWITCH	1
*	67614-041	DIP STICK OIL GAUGE	1
*	67615-084	OIL FILL CAP SEAL	1
*	67614-042	GOVERNOR SPRING - LARGE	1
*	67614-043	GOVERNOR SPRING - START	1
*	67614-009	FUEL INJECTION PUMP	1
*	67614-044	SHIM ASSEMBLY	1
*	67614-045	SHIM ASSEMBLY	1
*	67614-046	CONTROL PLATE ASSEMBLY	1
*	67614-047	SPEED CONTROL LEVER	1
*	67614-048	STOP LEVER	1
*	67614-049	NOZZLE HOLDER ASSEMBLY	1
*	67614-050	NOZZLE HOLDER GASKET	1
*	67614-051	PLEATED FUEL ELEMENT	1
*	67614-052	FUEL FILTER ASSEMBLY	1
*	67614-053	O-RING FILTER-SMALL	1
*	67614-054	SPIN ON ELEMENT	1
*	67614-007	IN-LINE FUEL FILTER	1
*	67614-026	MECHANICAL FUEL PUMP	1
*	67614-016	OVERFLOW TANK KIT	1
*	68694-019	THERMOSTAT HOUSING	1

ITEM	PART	DESCRIPTION	QTY.
*	67614-075	SHUT DOWN SOLENOID	1
*	67614-55	AIR BLEEDER SCREW	1
*	67615-082	IGNITION SWITCH	1
*	67615-093	KEY, SWITCH	1
*	67614-011	GLOW PLUGS	1
*	67614-056	GLOW PLUG CORD	1
*	67614-057	ALTERNATOR, 12V-40AMP	1
*	67614-058	ALTERNATOR STAY	1
*	67614-059	STARTER-12V	1
*	67614-060	MAGNETIC SWITCH	1
*	67614-061	OVER-RUNNING CLUTCH	1
*	67614-062	INTAKE MANIFOLD	1
*	67614-063	INTAKE MANIFOLD O-RING	1
*	67614-064	INTAKE MANIFOLD CAP SCREW	1
*	67614-065	INTAKE MANIFOLD CAP SCREW	1
*	67614-066	INTAKE MANIFOLD CAP SCREW	1
*	68694-018	AIR CLEANER ASSEMBLY	1
*	64505-008	AIR CLEANER ELEMENT	1
*	67615-108	AIR CLEANER GASKET	1
*	67614-029	EXHAUST MANIFOLD	1
*	67614-067	MANIFOLD GASKETS	1
*	67614-068	MANIFOLD STUDS	1
*	67614-069	MANIFOLD NUTS	1
*	67614-070	MUFFLER GASKET	1
*	68694-017	MUFFLER	1
*	67614-071	MUFFLER-MANIFOLD NUTS	1
*	67614-013	RADIATOR CAP	1
*	67614-072	DRAIN COCK	1
*	67614-073	DRAIN COCK GASKET	1
*	67614-030	COOLING FAN	1
*	67614-015	WATER PUMP W/GASKET	1
*	67614-014	THERMOSTAT	1
*	67614-074	THERMOSTAT GASKET	1
*	67614-018	FAN BELT	1

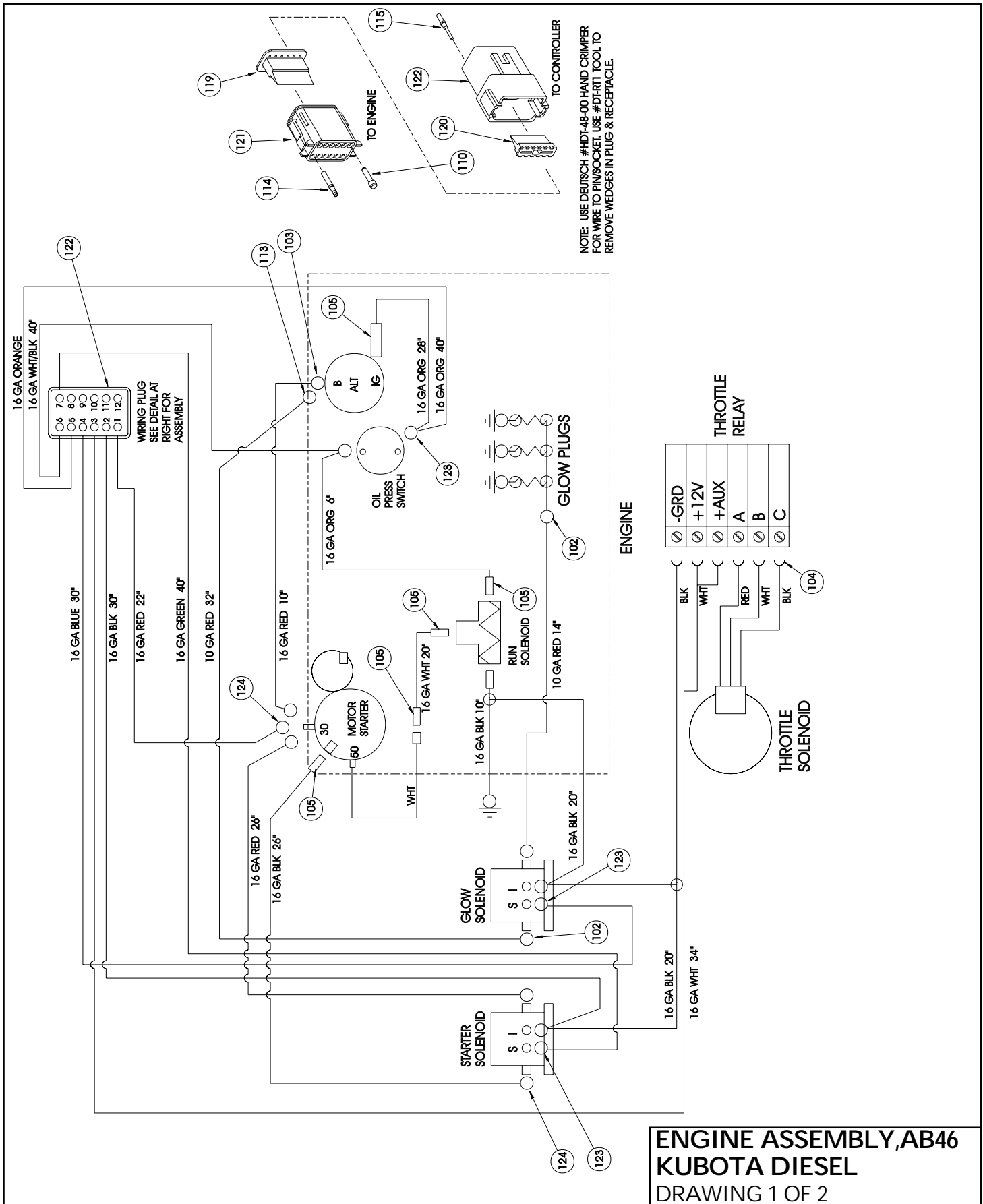
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Illustrated Parts Breakdown



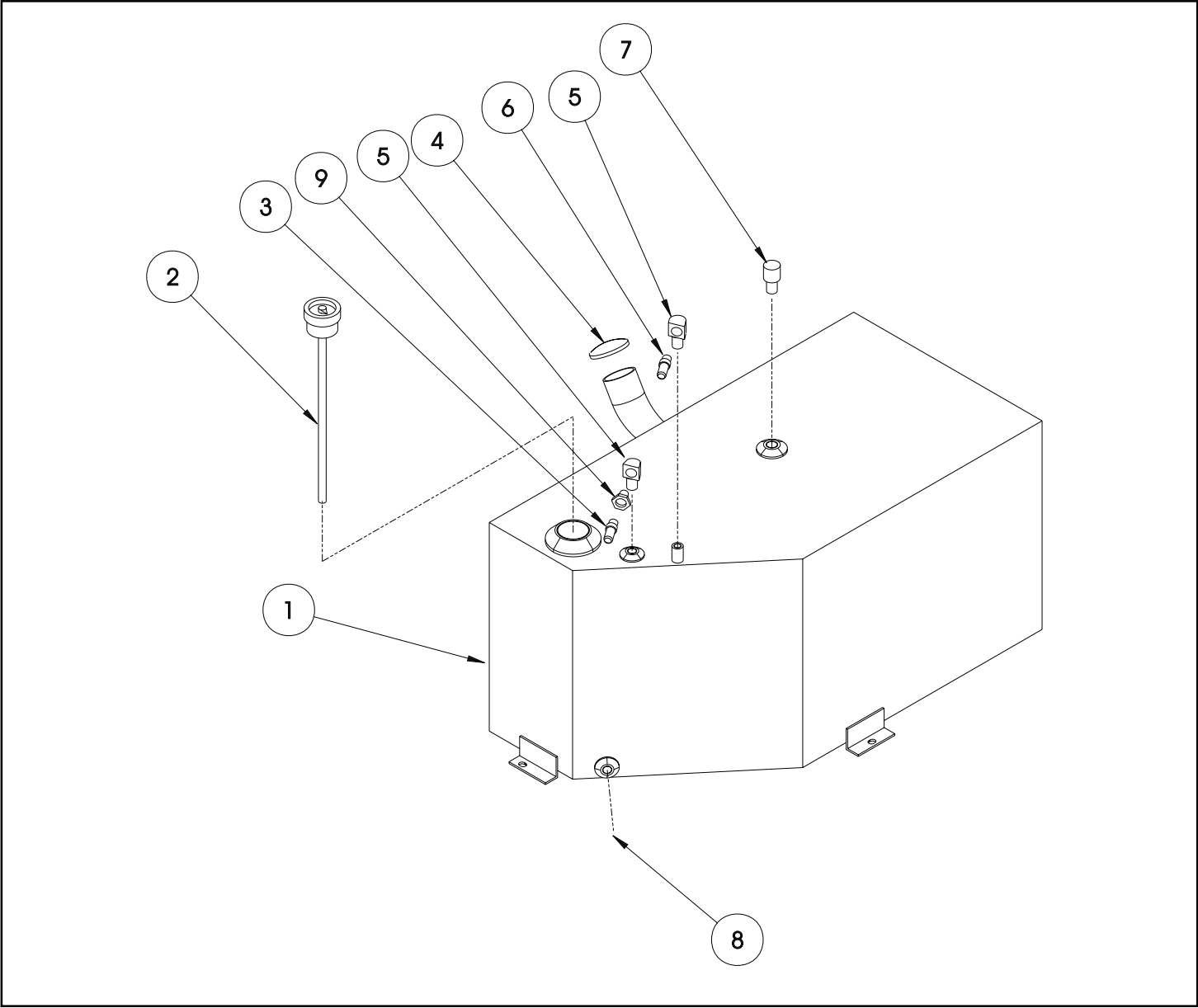
Illustrated Parts Breakdown

Section
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FUEL TANK ASSEMBLY, AB46
DIESEL
68710-001

ITEM	PART	DESCRIPTION	QTY.
1	068671-000	FUEL TANK	1
2	063982-003	FUEL GAGE	1
3	010178-001	FITTING, BARBED 1/8	1
4	063929-001	CAP-NON VENTED	1
5	003495-000	FITTING, STREET ELBOW 1/4	2
6	010178-005	FITTING, BARBED 1/4	1
7	068711-000	BREATHER, GITS	1
8	011919-002	FITTING, PLUG 1/4 HEX	1
9	003556-001	FITTING ADAPTER	1



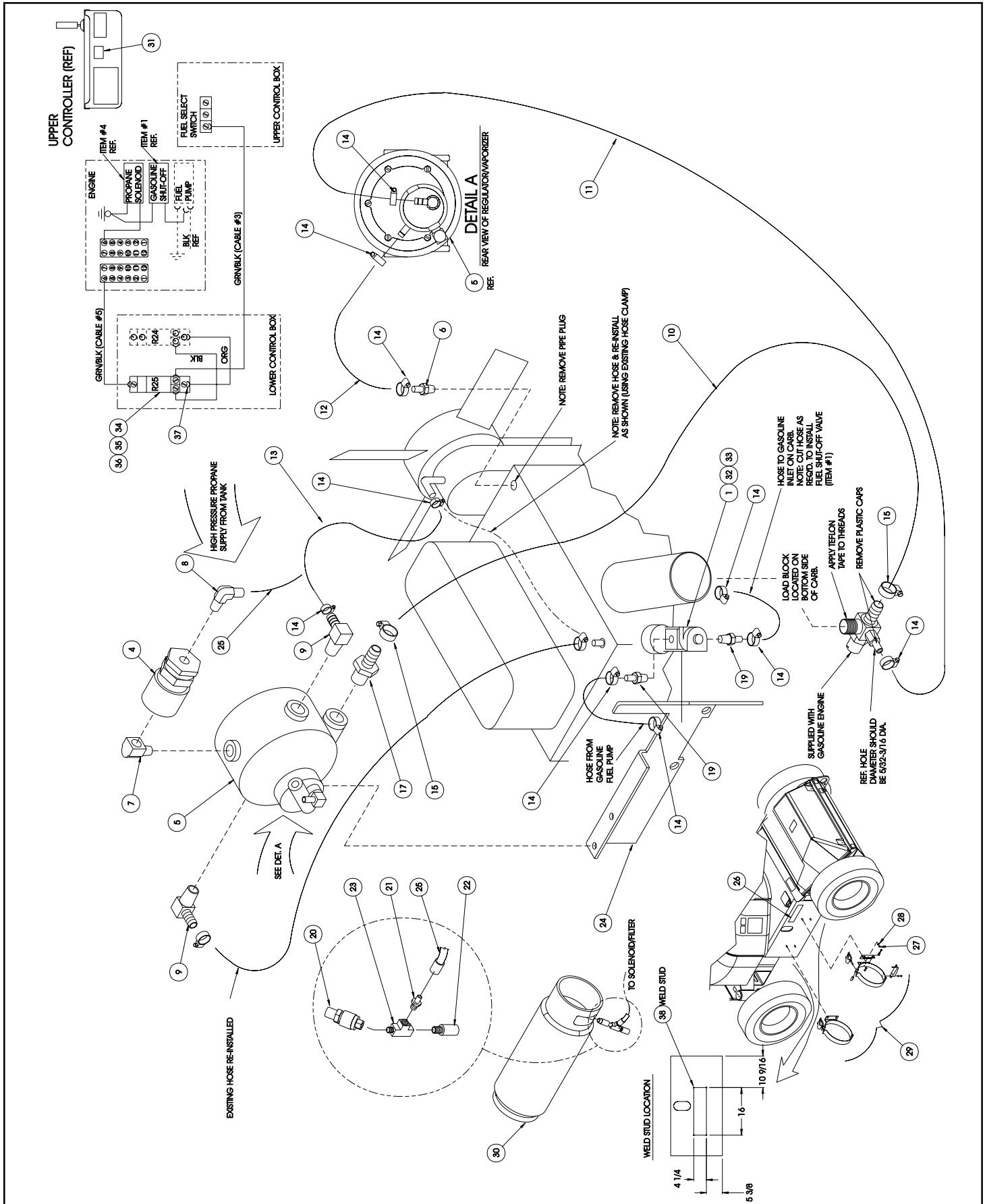
NOTES:

DUAL FUEL CONVERSION KIT

AB46

68296-000

ITEM	PART	DESCRIPTION	QTY.
1	67615-051	GASOLINE SHUT-OFF VALVE (LP-1)	1
4	67615-052	SOLENOID/FILTER (LP-2)	1
5	67615-055	REGULATOR / VAPORIZER (LP-5)	1
6	67615-056	FTG, 1/8 MPT - 1/4 HOSE BARB	1
7	67615-057	FTG, 90° STREET EL 1/4 PIPE	1
8	67615-058	FTG, 90° ELBOW 4 MPT - 6 MJ	2
9	67615-059	FTG, 90° 6 MPT - 5/16 HOSE BARB	2
10	67615-060	1/2" DIA. LP HOSE X 22" LG.	1
11	67615-061	1/4" DIA. HOSE X 23" LG.	1
12	67615-062	1/4" DIA. HOSE X 19" LG.	1
13	67615-063	5/16 DIA. HOSE X 15" LG.	10
14	67615-064	HOSE CLAMP 5/16"	10
15	67615-065	HOSE CLAMP 1/2"	2
17	67615-067	FTG, STR 8 MPT -1/2 HOSE BARB	1
19	67615-069	FTG, STR. 2 NPT - 5/16 HOSE BARB	2
20	67615-070	FEMALE ADAPTER (PROPANE TANK)	1
21	67615-073	FTG, STR 2MP-6MJ BRASS	1
22	67615-075	RELIEF VALVE 400 PSI	1
23	67615-074	FTG, 2-2-2 STR TEE BRASS	1
24	68805-000	BRACKET, PROPANE REGULATOR	1
25	67615-047	HOSE, HIGH PRESSURE SUPPLY 42" LG.	1
26	64189-001	DECAL, LIQUID WITHDRAWL	1
27	11248-006	LOCKNUT 3/8-16 UNC ESNA	4
28	11240-006	WASHER, 3/8" FLAT	4
29	68296-010	TANK MOUNTING BRACKET	1
30	27934-003	FUEL TANK, PROPANE	1
31	64421-000	DECAL	1
32	11252-006	SCRW, HHC 1/4-20 UNC X 3/4	2
33	11248-004	LOCKNUT, 1/4-20 UNC ESNA	2
34	67662-001	SOCKET, RELAY (SINGLE POLE)	1
35	68756-001	RELAY, SINGLE POLE	1
36	67662-005	RETAINER CLIP	1
37	29610-006	TERM, FORK 16-14 #6	9
38	14250-003	WELD STUD 3/8-16 X 1	4

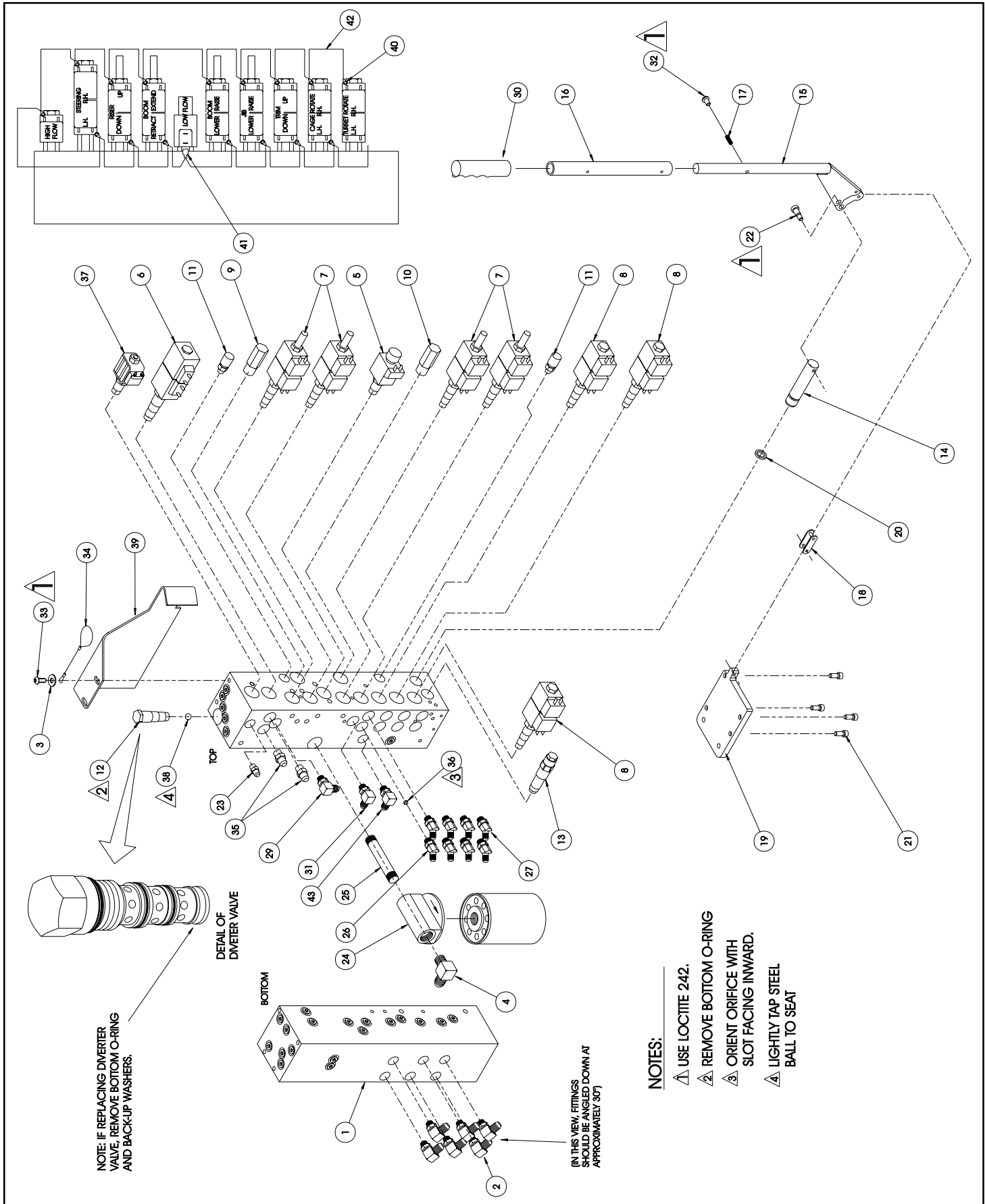


VALVE BLOCK ASSEMBLY, AB46 GAS/DIESEL 68348-001

ITEM	PART	DESCRIPTION	QTY.
1	68349-000	VALVE BLOCK SUB-ASSY.	1
2	11934-001	FITTING, 2062-4-4S	6
3	11240-005	WASHER 5/16 FLAT	2
4	11940-019	90° ELBOW 3/4NPT X 3/4 JIC	1
5	68681-000	FLOW CNTRL,WATERMAN 12C241SP-11/A10	1
6	68683-000	3 POS, 4 WAY, TANDEM CENTER	1
7	68682-000	3 POS, 4 WAY, CLOSED CENTER	4
8	68684-000	3 POS, 4 WAY, MOTOR SPOOL	3
9	60390-020	RELIEF VALVE, 2540 PSI	1
10	60390-021	RELIEF VALVE, 1450 PSI	1
11	63965-001	PLUG, GAGE PORT	2
12	68558-000	DIVERTER VALVE	1
13	68778-000	COUNTERBALANCE VALVE	1
14	68430-000	PISTON, HAND PUMP	1
15	68428-000	LEVER WELDMENT, HAND PUMP	1
16	68429-000	LEVER EXTENSION, HAND PUMP	1
17	68564-001	DETENT BALL / SPRING	1
18	68566-000	PIVOT LINK	1
19	68425-000	MOUNTING PLATE, VALVE BLOCK	1
20	12499-016	SEAL, POLYPAK #12500625	1
21	14334-004	SCREW. SOC. HD. 5/16-18 UNC X 1/2	4
22	15936-005	SCREW, SHOULDER Ø 3/8 X 5/8 LG	1
23	11941-002	FITTING 202702-4-6S	1
24	05154-001	FILTER ASSY.	1
25	14028-008	PIPE NIPPLE, 3/4 SCHD 40 X 4	1
26	11935-013	FITTING 45° 6MB-4MJ	1
27	11935-001	FITTING, 45° SWIVEL EL. 4MB-4MJ	7
29	11934-004	FITTING 90° EL. 6MB-6MJ	1
30	68700-000	HAND GRIP, VINYL	1
31	11934-003	FITTING 2062-6-4S	1
32	11821-004	SCRW BUTT HEAD 1/4-20UNC X 1/2	1
33	11822-006	SCRW BUTT HEAD 5/16-18 UNC X 3/4	2
34	63783-002	LANYARD ASSY	1
35	11941-005	FITTING 202702-6-6S	2
36	15919-000	ORFICE	1
37	68781-001	VALVE	1
38	61827-000	STEEL BALL 7/16 DIA	1
39	68791-000	BRACKET	1
40	29601-012	CONN. RING, 18-14 GA. #8	16
41	29616-002	CONN. FEM. PUSH, .25	1
42	29452-099	WIRE, 16 GA. BLACK	3 FT.
43	11934-026	FITTING 90° 4MB-6MJ	1

Illustrated Parts Breakdown

Section
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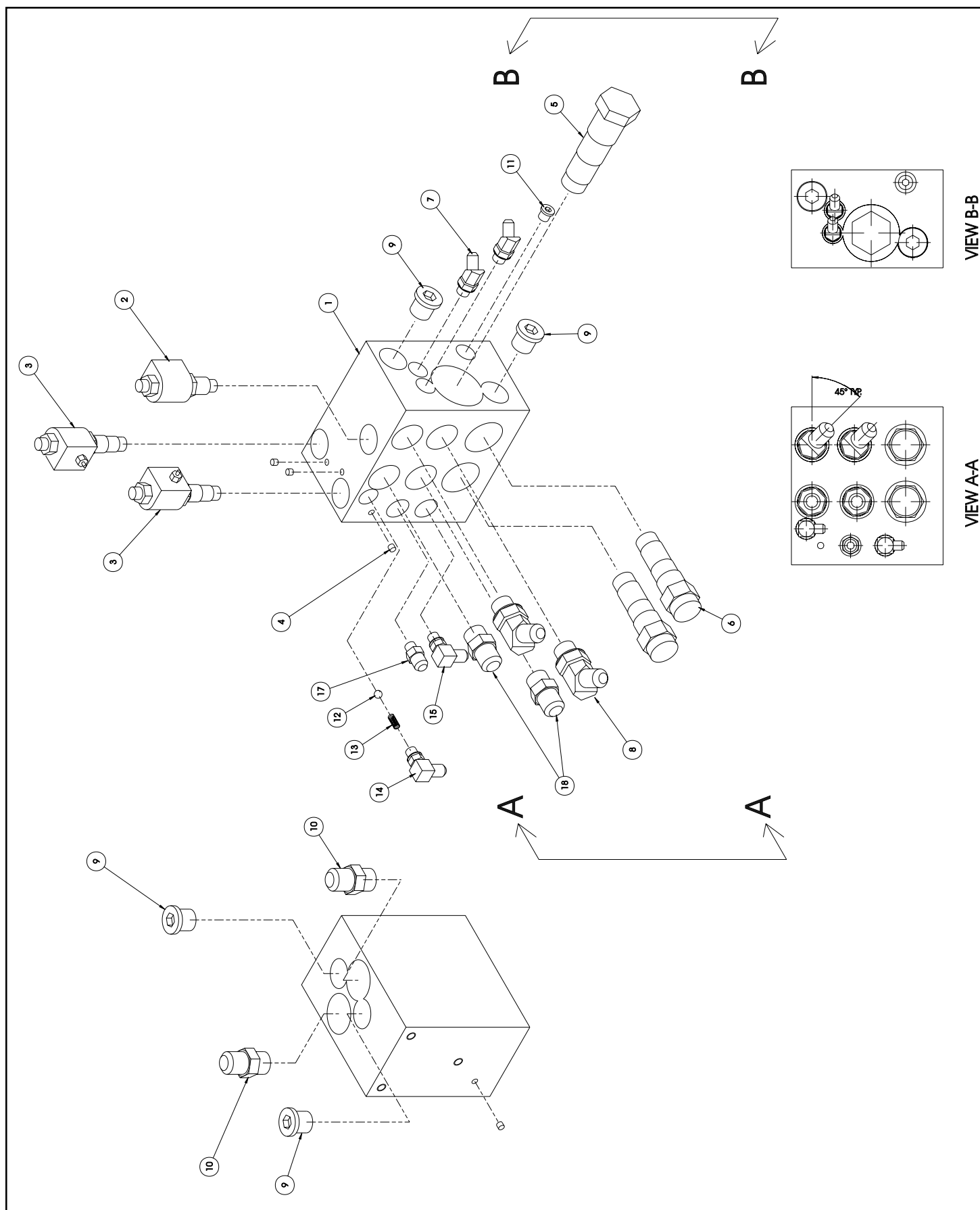


DRIVE VALVE BLOCK ASSEMBLY AB46 - GAS/DIESEL 68347-000

ITEM	PART	DESCRIPTION	QTY.
1	68546-000	VALVE BLOCK, DRIVE	1
2	68578-000	VALVE, POPPET 2 WAY ON/OFF	1
3	67649-000	VALVE, SPOOL 2 POS 3 WAY	2
4	63977-010	PLUG, EXPANDER "KOENIG" 1/4"	4
5	68579-000	VALVE, FLOW CONTROL	1
6	68596-000	VALVE, SPOOL 2 WAY N.O.	2
7	11935-001	ADAPTER, 45° EL 4MB-4MJ	2
8	11935-005	ADAPTER, 45° EL 10MB-8MJ	2
9	12004-008	PLUG, #8 S.A.E.	4
10	11941-020	ADAPTER, STR. 12MB-12MJ	2
11	12004-004	PLUG, #4 S.A.E.	1
12	05135-000	BALL, Ø 5/16" STEEL	1
13	13987-009	SPRING, Ø 1/4" X 19/32	1
14	11934-001	ADAPTER, 90° EL 4MB-4MJ90	1
15	11934-003	ADAPTER, 90° EL 6MB-4MJ	1
17	11941-004	FITTING, STR. 6MB-4MJ	1
18	11941-014	ADAPTER, STR. 10MB-8MJ	2

Illustrated Parts Breakdown

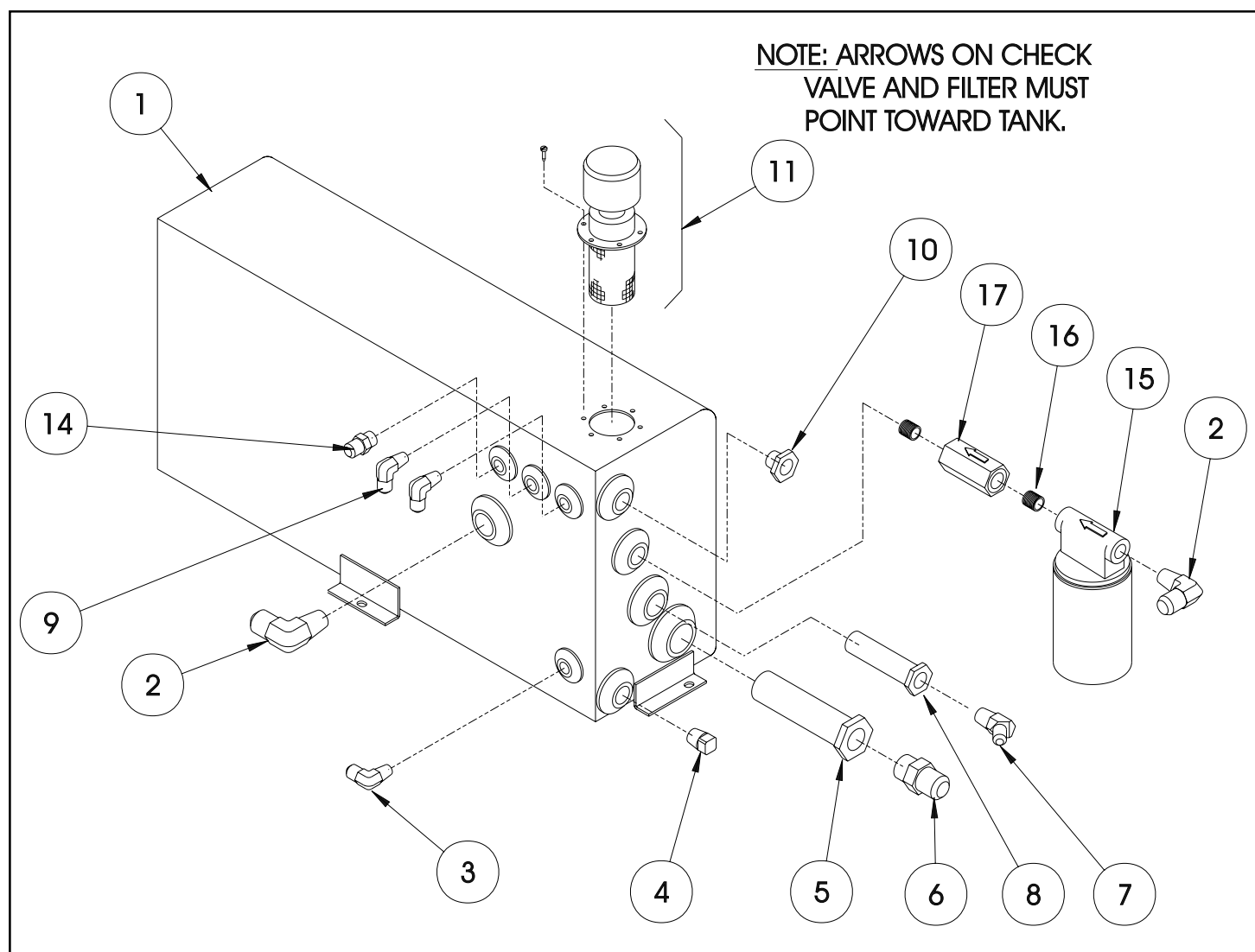
Section
6.2



Illustrated Parts Breakdown

**HYDRAULIC TANK ASSEMBLY, AB46
GAS/DIESEL**
68709-000

ITEM	PART	DESCRIPTION	QTY.
1	68670-000	HYDRAULIC RESERVOIR	1
2	11940-019	FITTING, 90° ELBOW 12MP-10MJ	2
3	11940-008	FITTING, 90° ELBOW 6MP-4MJ	1
4	21305-007	PLUG, MAGNETIC	1
5	63935-000	STRAINER	1
6	11939-024	FITTING, STR ADAPTER 16MP-16MJ	1
7	13485-017	FITTING, 45° ELBOW 12MP-12MJ	1
8	61818-000	STRAINER	1
9	11940-010	FITTING, 90° ELBOW 6MP-6MJ	2
10	63979-006	SIGHT GUAGE	1
11	68840-000	FILLER BREATHER CAP & SCREEN	1
14	11939-008	FITTING, STR ADAPTER 6MP-4MJ	1
15	05154-001	FILTER, HYDRAULIC SPIN ON	1
16	12467-003	NIPPLE, PIPE 3/4 CLOSE	2
17	68809-000	CHECK VALVE	1



NOTES:

Illustrated Parts Breakdown

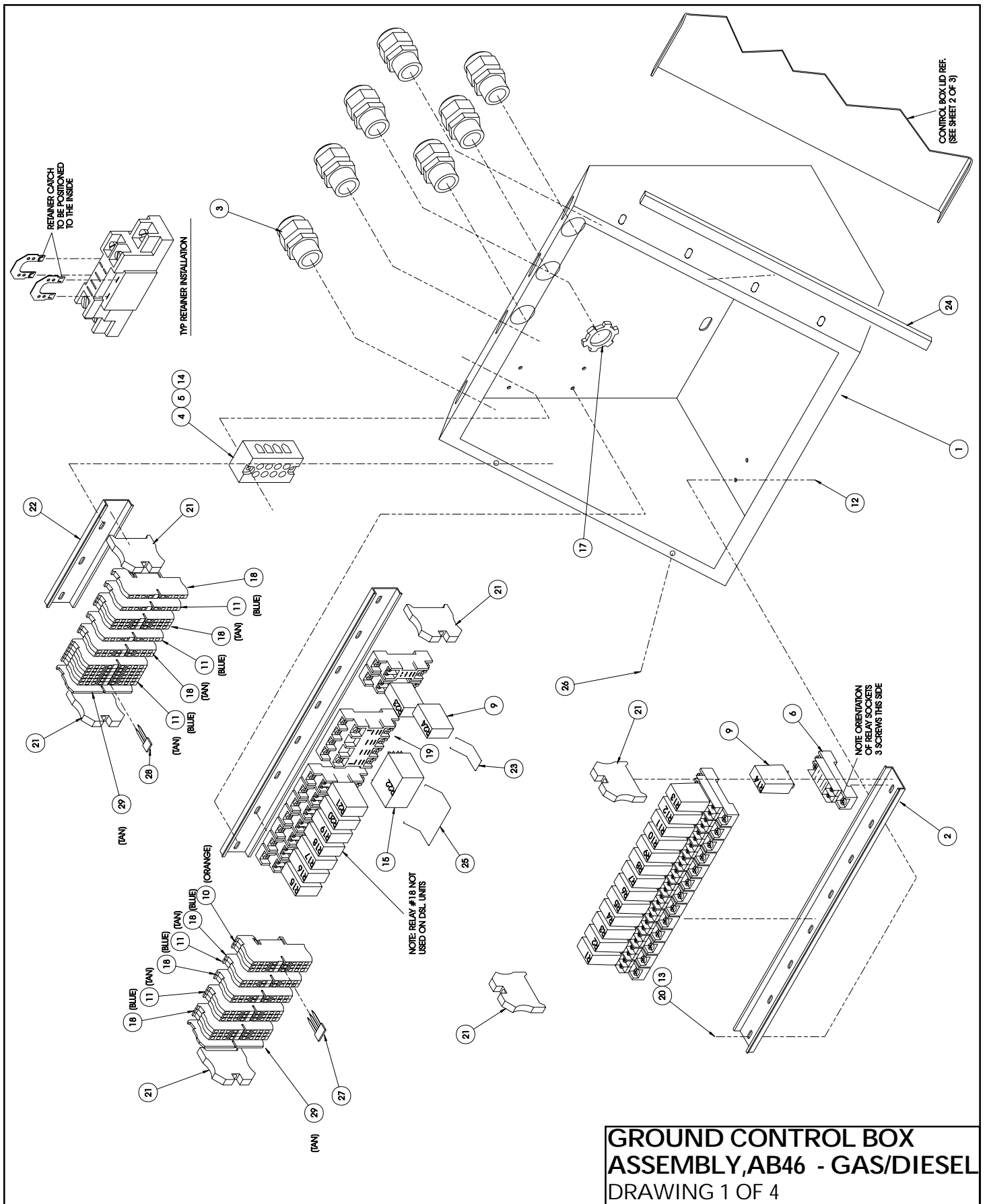
GROUND CONTROL BOX ASSEMBLY AB 46 GAS/DIESEL 68328-001 GAS/68328-002 DIESEL

ITEM	PART	DESCRIPTION	QTY. GAS -001	QTY. DIESEL -002
1	68717-000	BOX, GROUND CONTROL	1	1
2	67893-002	DIN RAIL, 14" LONG	2	2
3	29925-001	CORD GRIP, 3/4"	7	7
4	68734-004	TERMINAL STRIP (120 VOLT A.C.)	1	1
5	11709-010	SCREW, RD HD #10-24 UNC X 1 1/4	2	2
6	67662-001	SOCKET, RELAY SINGLE	23	23
9	67661-001	RELAY, SPDT	23	23
10	68698-000	BLOCK, TERMINAL (ORANGE)	3	3
11	68698-001	BLOCK, TERMINAL (TAN)	12	12
12	11248-047	NUT, ESNA 6-32	6	6
13	11240-001	WASHER, FLAT STD #6	6	6
14	11248-003	LOCKNUT, #10-24 UNC ESNA	2	2
15	67661-004	RELAY, 12VDC (FOUR POLE)	1	1
16	13283-002	CABLE MOUNT	18	18
17	29939-003	CONDUIT LOCKNUT 3/4"	7	7
18	68698-002	BLOCK, TERMINAL (BLUE)	12	12
19	67662-004	SOCKET, RELAY FOUR	1	1
20	11715-003	SCREW, RD HD MACH 6-32 X 1/2	6	6
21	67660-006	END BLOCK, TERMINAL	6	6
22	67893-001	DIN RAIL 4" LONG	1	1
23	67662-005	RETAINER CLIP, 1 POLE RELAY	23	22
24	68889-099	WEATHERSTRIP (FT)	4.5	4.5
25	67662-007	RETAINER CLIP, 4 POLE RELAY	1	1
26	14252-004	NUT SERT 1/4-20 UNC	2	2
27	68773-003	JUMPER 3 PIN	1	1
28	68773-002	JUMPER 2 PIN	1	1
29	68698-004	END, TERMINAL BLOCK (TAN)	2	2
201	68719-000	CONTROLLER BOX LID	1	1
202	64446-003	EMERGENCY STOP BUTTON	1	1
204	15752-000	HOUR METER	1	1
206	12798-004	TOGGLE SWITCH MOM DPDT	7	7
207	68582-010	CIRCUIT BREAKER 10 AMP	2	2
208	66516-008	PLUG, Ø .437 HEYCO	1	1
209	64443-002	CONTACT BLOCK N.C.	1	1
210	64443-001	CONTACT BLOCK N.O.	2	2

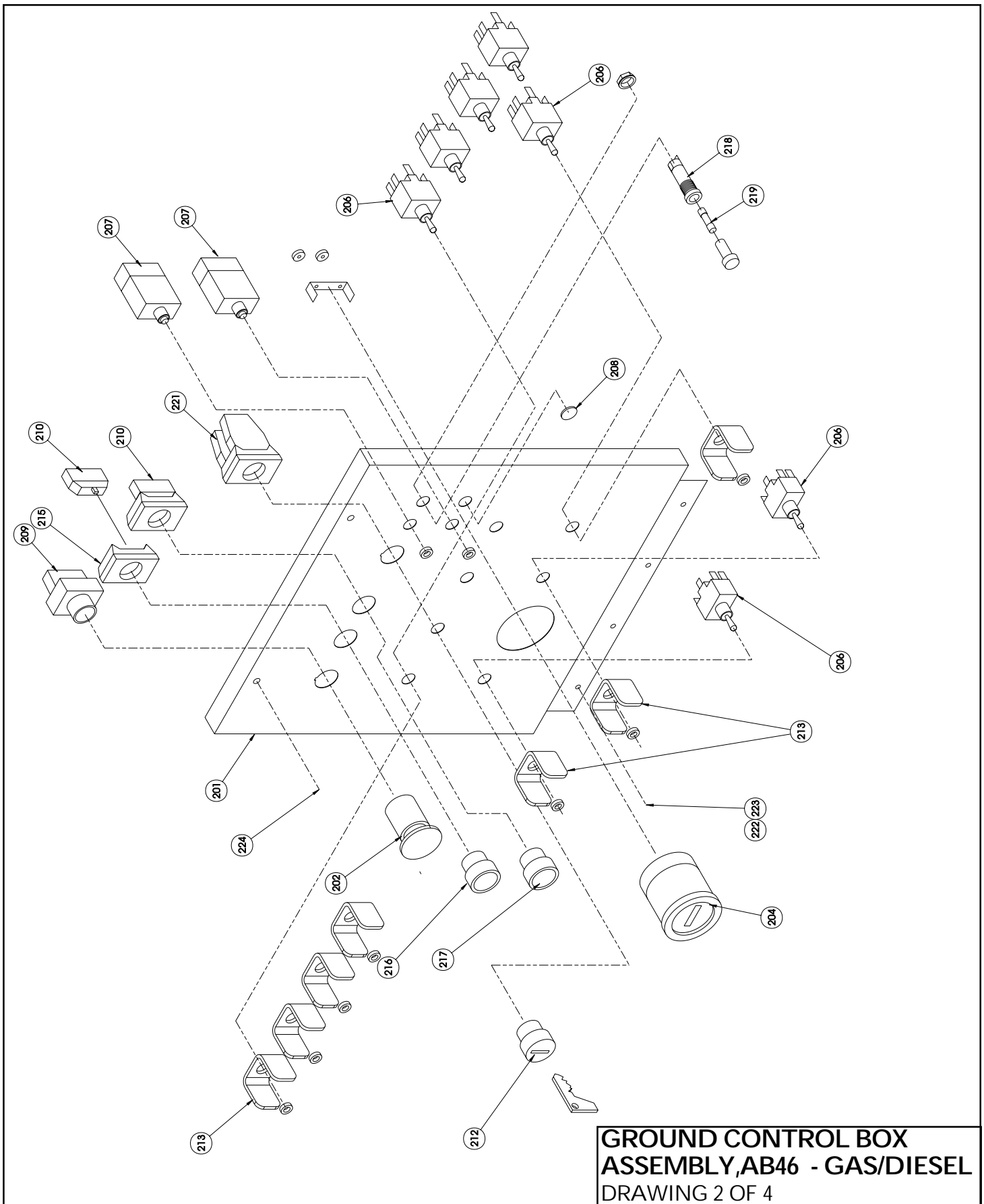
ITEM	PART	DESCRIPTION	QTY. GAS -001	QTY. DIESEL -002
212	68588-001	KEY SELECTOR SWITCH	1	1
*	68807-010	KEY		1
213	08271-001	GUARD, TOGGLE SWITCH	7	7
215	64417-001	FLANGE, 3 CONTACT	2	2
216	67652-000	PUSH BUTTON, MOMENTARY GREEN	1	1
217	67654-000	PUSH BUTTON, MOMENTARY BLACK	1	1
218	29701-000	FUSE HOLDER	1	1
219	29704-025	FUSE 25A	1	1
221	66805-012	CONTACT BLOCK,	2	2
222	11709-004	SCRW MACH RD HD 10-24UNC X 1/2	4	4
223	11248-003	NUT HEX ESNA 10-24UNC	4	4
224	11821-005	SCRW BUTT HD SOC 1/4-20 X 5/8 LG	2	2
301	29452-099	WIRE, 16 GA. BLACK	13 FT	13 FT
302	29451-099	WIRE, 16 GA. WHITE	8 FT	8 FT
303	29454-099	WIRE, 16 GA. RED	30 FT	30 FT
304	29457-099	WIRE, 16 GA. GREEN	8.3 FT	8.3 FT
305	29453-099	WIRE, 16 GA. ORANGE	25FT	25 FT
306	29450-099	WIRE, 16 GA. BLUE	18FT	18 FT
307	29479-099	WIRE, 16 GA. WHITE/BLACK	10FT	10 FT
308	29478-099	WIRE, 16 GA. RED/BLACK	6.5FT	6.5 FT
309	05491-099	WIRE, 16 GA. GREEN/BLACK	5.3FT	5.3 FT
310	29477-099	WIRE, 16 GA. ORANGE/ BLACK	9.5FT	9.5 FT
311	29475-099	WIRE, 16 GA. BLUE/BLACK	4FT	4 FT
313	29483-099	WIRE, 16 GA. RED/WHITE	3.2FT	3.2 FT
314	29482-099	WIRE, 16 GA. GREEN/WHITE	3.3FT	3.3 FT
315	29459-099	WIRE, 16 GA. BLUE/WHITE	4.3FT	4.3 FT
316	29355-099	WIRE, 16 GA. BLACK/RED	5.5FT	5.5 FT
317	29356-099	WIRE, 16 GA. WHITE/RED	3.1FT	3.1 FT
318	29357-099	WIRE, 16 GA. ORANGE/RED	5.8FT	5.8 FT
319	29358-099	WIRE, 16 GA. BLUE/RED	4.2FT	4.2 FT
321	29360-099	WIRE, 16 GA. ORANGE/GREEN	3FT	3 FT
322	29825-002	DIODE 3AMP 400V	10	10
323	29610-002	CONN FORK TERM 16-14	94	132
324	29616-002	CONN F PUSH TERM 16-14	32	32

Illustrated Parts Breakdown

Section
6.2

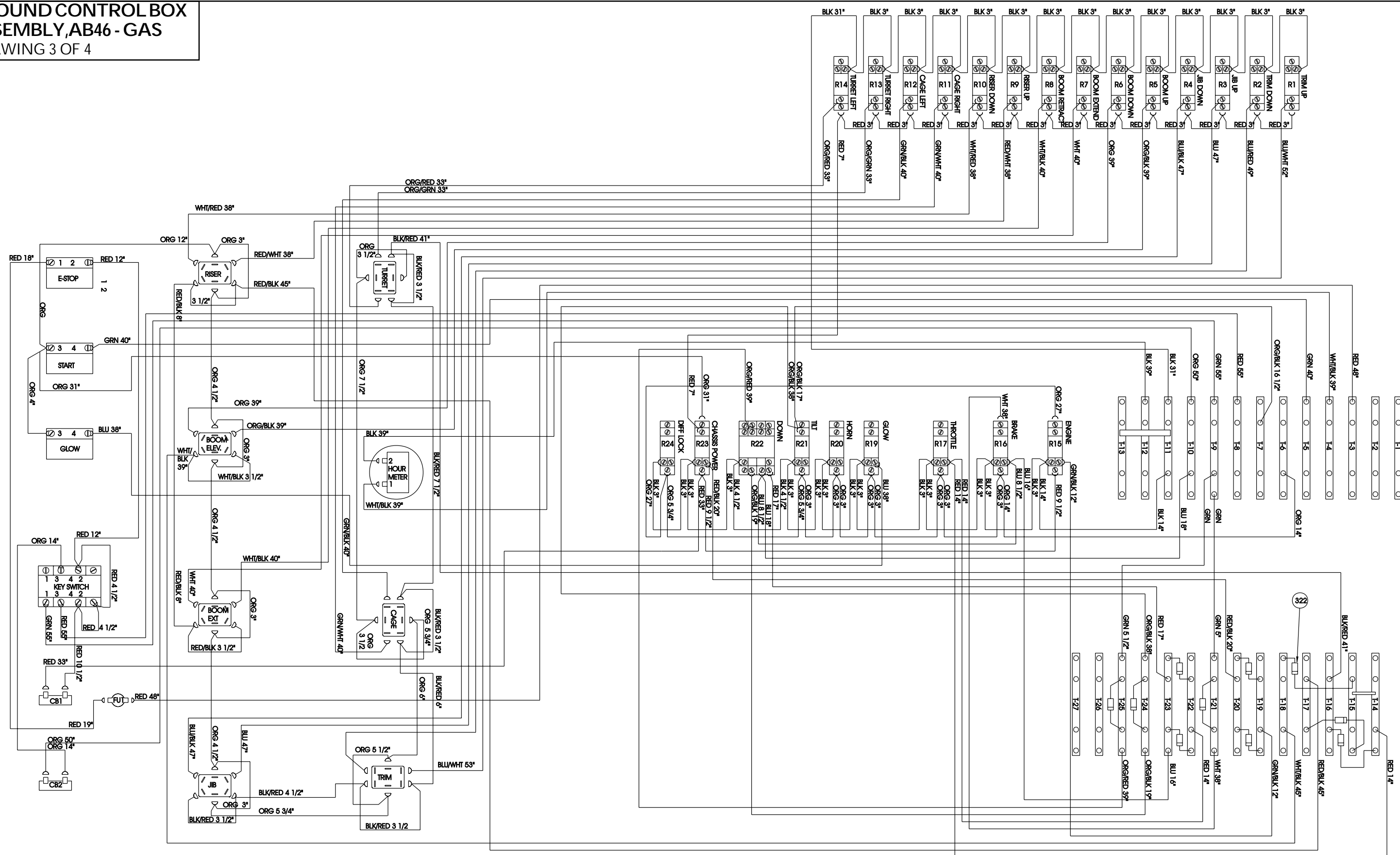


Illustrated Parts Breakdown



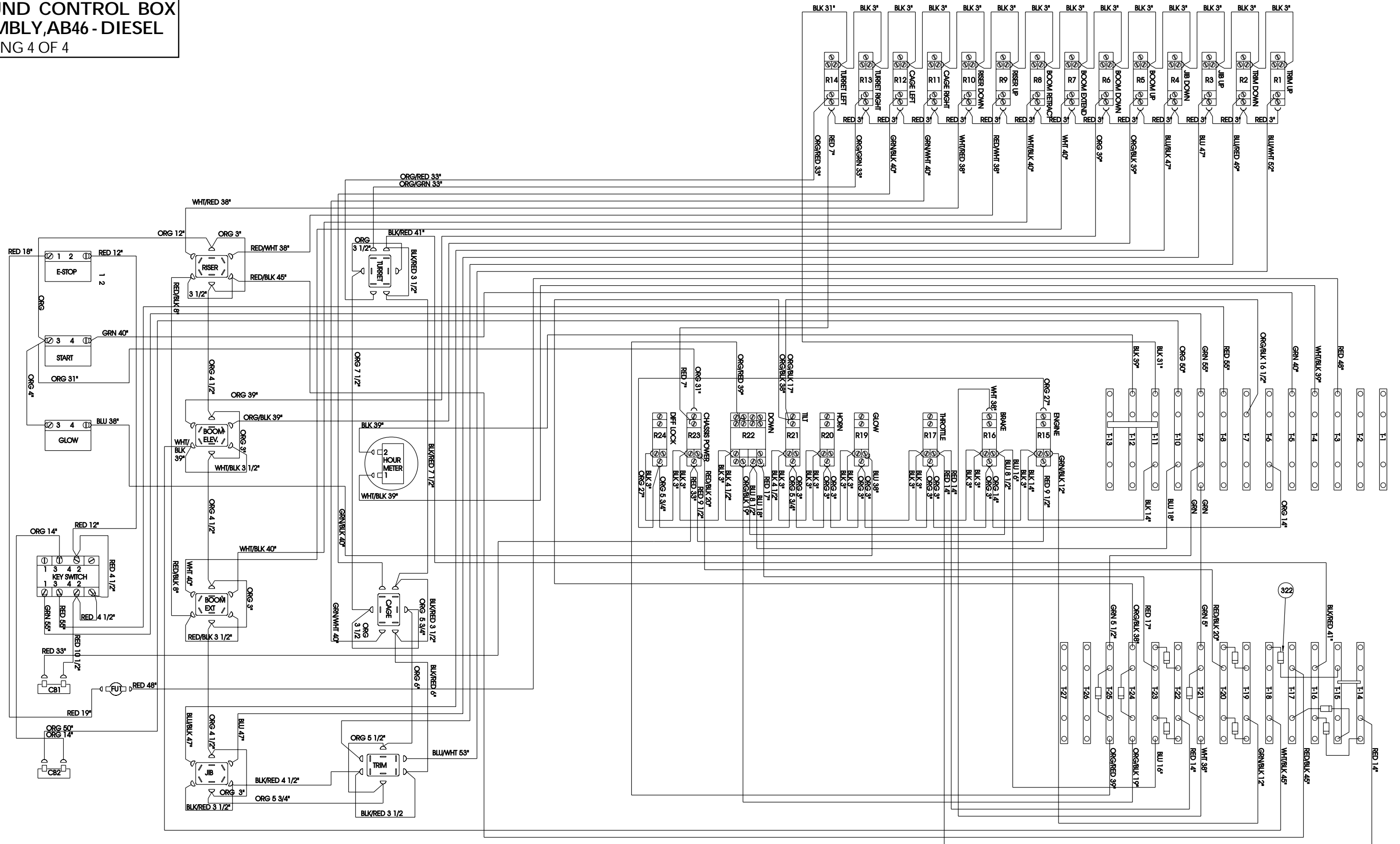
Illustrated Parts Breakdown

**GROUND CONTROL BOX
ASSEMBLY, AB46 - GAS**
DRAWING 3 OF 4



Illustrated Parts Breakdown

GROUND CONTROL BOX ASSEMBLY,AB46 - DIESEL DRAWING 4 OF 4



NOTES:

Illustrated Parts Breakdown

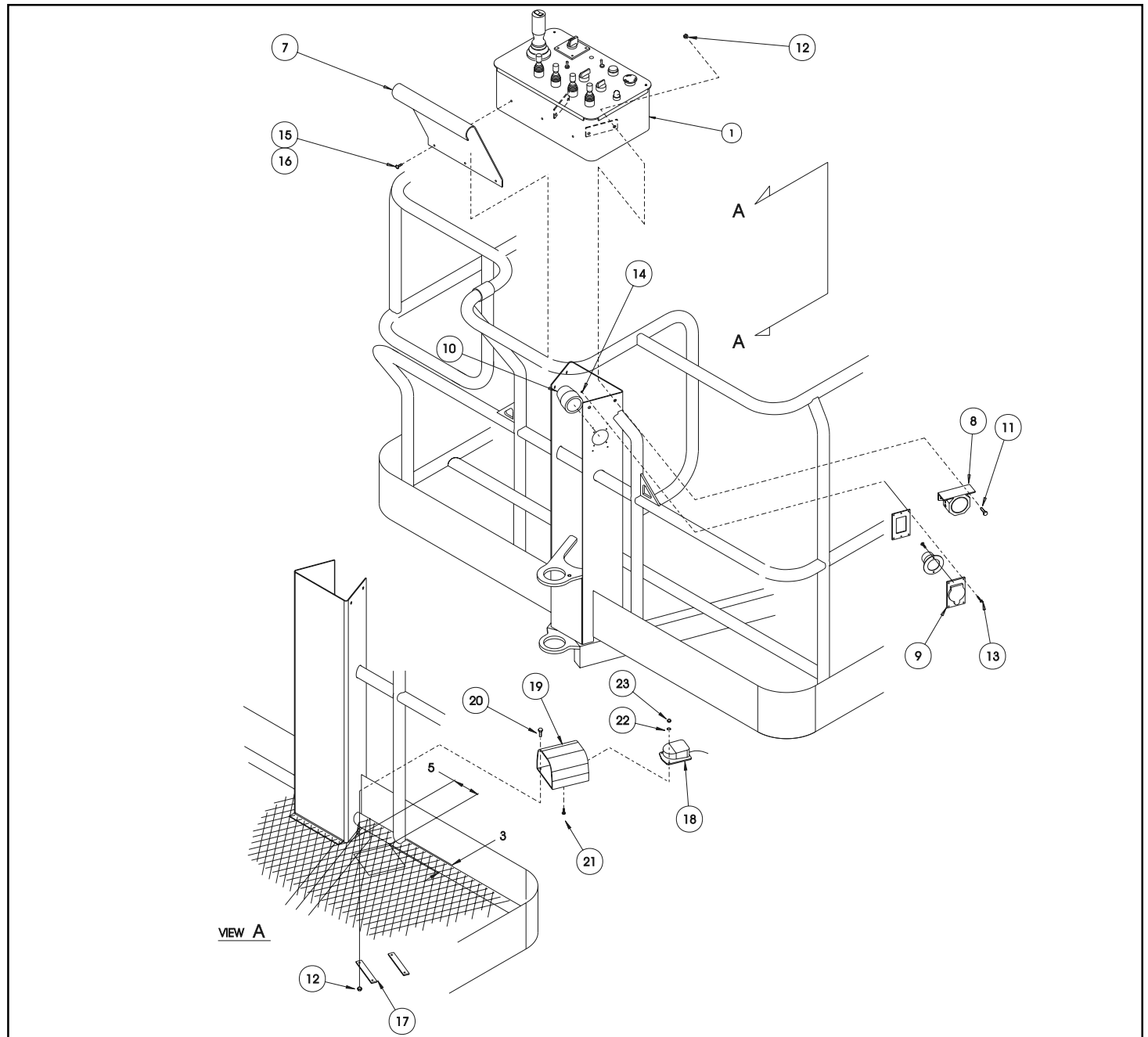
CONTROLLER INSTALLATION

AB46 GAS

68339-002

ITEM	PART	DESCRIPTION	QTY.
1	68329-001	CONTROLLER ASSY - DOM. (GAS)	1
7	68750-000	DECAL MOUNT	1
8	63778-001	ALARM	1
9	08942-001	FEMALE RECEPTACLE	1
10	29961-001	SEAL	1
11	11252-008	SCREW HHC 1/4-20 UNC X 1	4
12	11248-004	NUT HEX 1/4-20 UNC ESNA	8
13	11715-006	SCREW RD HD 6-32 UNC X 3/4	4
14	11248-047	NUT HEX 6-32 UNC ESNA	4
15	11709-006	SCREW RD HD 10-24 UNC X 3/4	3

ITEM	PART	DESCRIPTION	QTY.
16	11248-003	NUT HEX 10-24 UNC ESNA	3
17	68820-000	RETAINING STRAP-FOOTSWITCH	2
18	63906-000	FOOT SWITCH CLPR	1
19	64479-000	SWITCH GUARD, FOOT	1
20	11252-012	SCREW HHC 1/4-20 UNC X 1 1/2	4
21	66695-006	SCREW FLAT HD 10-24 UNC X 3/4	2
22	13949-003	WASHER, #10 STAR, EXTERNAL TOOTH	2
23	11250-003	HEX NUT 10-24 UNC	2



Illustrated Parts Breakdown

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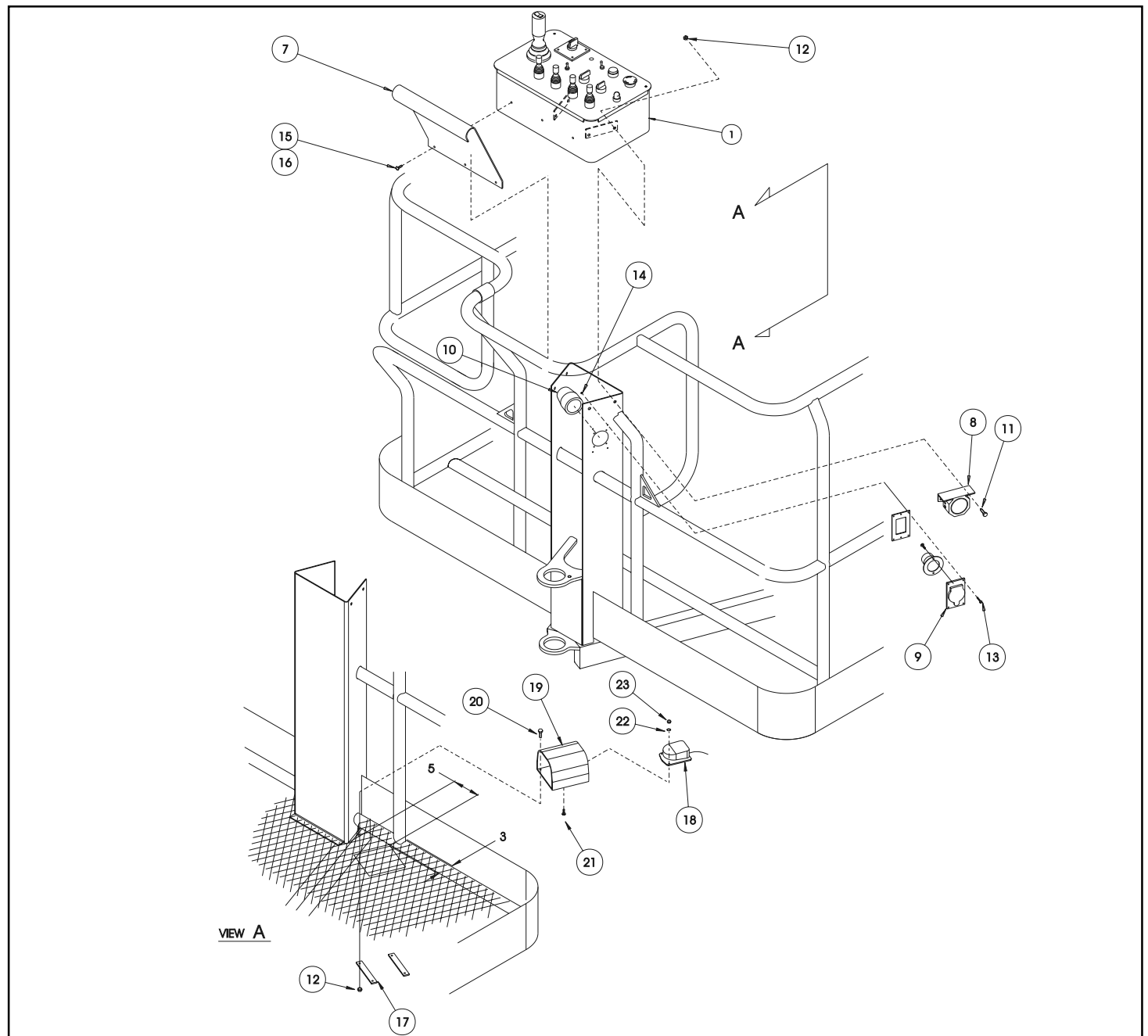
CONTROLLER INSTALLATION

AB46 DIESEL

68339-003

ITEM	PART	DESCRIPTION	QTY.
1	68329-002	CONTROLLER ASSY - DOM. (DIESEL)	1
7	68750-000	DECAL MOUNT	1
8	63778-001	ALARM	1
9	08942-001	FEMALE RECEPTACLE	1
10	29961-001	SEAL	1
11	11252-008	SCREW HHC 1/4-20 UNC X 1	4
12	11248-004	NUT HEX 1/4-20 UNC ESNA	8
13	11715-006	SCREW RD HD 6-32 UNC X 3/4	4
14	11248-047	NUT HEX 6-32 UNC ESNA	4
15	11709-006	SCREW RD HD 10-24 UNC X 3/4	3

ITEM	PART	DESCRIPTION	QTY.
16	11248-003	NUT HEX 10-24 UNC ESNA	3
17	68820-000	RETAINING STRAP-FOOTSWITCH	2
18	63906-000	FOOT SWITCH CLPR	1
19	64479-000	SWITCH GUARD, FOOT	1
20	11252-012	SCREW HHC 1/4-20 UNC X 1 1/2	4
21	66695-006	SCREW FLAT HD 10-24 UNC X 3/4	2
22	13949-003	WASHER, #10 STAR, EXTERNAL TOOTH	2
23	11250-003	HEX NUT 10-24 UNC	2



CONTROLLER ASSEMBLY-PLATFORM AB46 GAS 68329-001

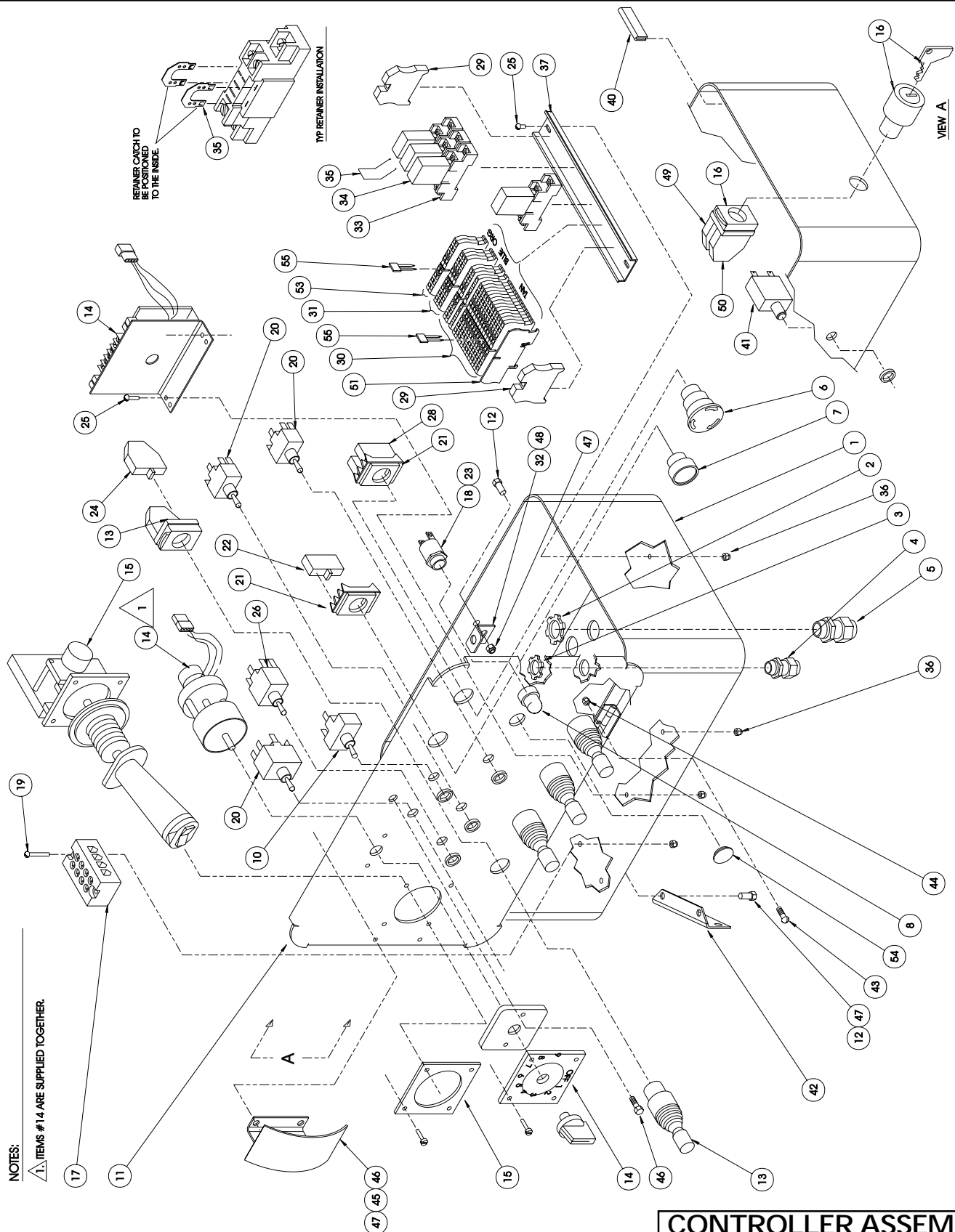
ITEM	PART	DESCRIPTION	QTY.
1	68589-001	BOX, ENCLOSURE	1
2	29939-003	LOCKNUT 3/4" NPT	4
3	29939-002	LOCKNUT 1/2" NPT	1
4	29925-000	CONNECTOR CABLE 1/2" NPT	1
5	29925-001	CONNECTOR CABLE 3/4" NPT	4
6	64446-003	EMERGENCY STOP BUTTON	1
7	67654-000	PUSH BUTTON FLUSH (BLACK)	1
8	68595-001	LENS, RED	1
9	11249-003	NUT, HEX 10-32 ESNA	2
10	12798-003	SWITCH, TOGGLE 2 POS	1
11	68800-000	LID WELDMENT, CONTROLLER I/C	1
12	11252-005	SCREW 1/4-20UNC X 5/8	5
13	68594-000	JOYSTICK - OPERATOR	4
14	68593-001	RHEOSTAT - CONTROLLER (12VOLT)	1
15	68795-000	JOYSTICK, P-Q	1
*	68795-010	HANDLE HALF, TRS, RIGHT	1
*	68795-011	HANDLE HALF, TRS, LEFT	1
*	68795-012	BOOT, M115, 0.31 SHAFT	1
*	68795-013	GASKET, M115 TRS GRIP	1
*	68795-014	SWITCH, XG3-Z1	1
*	68795-015	PUSH BUTTON, BLACK, SWITCH SPST	1
*	68795-016	SWITCH ACTUATOR,ROCKER SWCH GRIP	1
*	68795-017	CAP, ROCKER SWITCH GRIP	1
*	68795-018	ELECTRICAL ASSEMBLY, M115-1596	1
*	68795-019	ELEC ASSY, 500 ohm POTENTIOMETER	1
*	68795-020	PINION GEAR, M115	1
*	68795-021	SOCKET SET SCREW, 6-32 x 1/8, CUP	1
16	68819-000	KEYSWITCH & KEY	1
*	68807-010	KEY	1
17	68734-004	TERMINAL STRIP, 120V AC	1
18	68590-000	BASE INDICATOR (LAMP)	1
19	11826-012	SCREW RD HD 10-32 X 1-1/2	2
20	12798-004	TOGGLE SWITCH, 3 POS MOMENTARY	3
21	64417-001	FLANGE MOUNT	2
22	64443-001	CONTACT BLOCK, N.O.	1
23	68591-001	LAMP T-2-1/2	1
24	66805-012	CONTACT BLOCK, N.O./N.C.	8
25	11715-003	SCREW RD HD 6-32 X 3/8	4
26	29871-001	TOGGLE SWITCH, 3 POS. HOLD	1
28	64443-002	CONTACT BLOCK N.C.	2
29	67660-006	TERMINAL END	2
30	68698-001	TERMINAL BLOCK (TAN)	16
31	68698-002	TERMINAL BLOCK (BLUE)	3
32	68799-000	ANGLE, CONTROLLER	1
33	67662-001	RELAY SOCKET	4
34	67661-001	RELAY, SPDT 12 VOLT	4
35	67662-005	RETAINING CLIP & WIRE	4
36	11250-001	NUT HEX 6-32	4

ITEM	PART	DESCRIPTION	QTY.
37	67893-003	MOUNTING RAIL, DIN 8-1/4"	1
40	68897-099	GASKET, BLACK RUBBER	3.25 FT
41	68582-010	CIRCUIT BREAKER 10 AMP	1
42	68767-000	BRACKET, UPPER CONTROLLER	2
43	11708-004	SCREW 8-32 X 1/2	2
44	11248-002	NUT, HEX ESNA 8-32 UNC	2
45	11252-003	SCRW HHC 1/4-20UNC X 3/8"	2
46	68801-000	HAND SUPPORT WELDMENT	1
47	11248-004	NUT HEX ESNA 1/4-20UNC	7
48	14252-004	NUT SERT 1/4-20	1
49	66805-010	CONTACT BLOCK GE 1 N.O.	1
50	66805-011	CONTACT BLOCK GE 1 N.C.	1
51	68698-004	END CAP, CONTACT BLOCK	1
53	68698-000	TERMINAL BLOCK ORANGE	2
54	66516-005	PLUG, 11/16 FLUSH	1
55	68773-002	JUMPER 2 PIN	2
202	29454-099	WIRE 16GA RED FT	21
203	29482-099	WIRE 16GA GREEN/WHIT	3 FT
204	68735-099	WIRE 16GA BLACK/RED	5 FT
205	29452-099	WIRE 16GA BLACK	9.3 FT
206	29610-006	TERM FORK 18-14GA #6	60
207	29620-002	BUTT CONNECTOR 18-14GA	6
208	14914-001	CONN MALE PUSH INSULATED	3
209	29931-003	CONN FEMALE PUSH INSULATED	6
210	29451-099	WIRE 16GA WHITE	5.8 FT
211	29931-003	CONN FEMALE PUSH .25 (16-14GA)	12
212	29450-099	WIRE 16GA BLUE	4.1 FT
213	29825-002	DIODE 3 AMP 400V	9
214	29478-099	WIRE 16GA RED/BLACK	3.5 FT
215	29457-099	WIRE 16GA GREEN	1.5 FT
216	29616-001	CONN FEMALE PUSH .187 (16-14GA)	3
217	29360-099	WIRE 16GA ORANGE/GREEN	2 FT
218	29453-099	WIRE 16GA ORANGE	1.2 FT
219	29458-099	WIRE 16GA PURPLE	1.2 FT
220	29479-099	WIRE 16GA WHITE/BLACK	4 FT
221	29459-099	WIRE 16GA BLUE/WHITE	.5 FT
222	29483-099	WIRE 16GA RED/WHITE	2.5 FT
223	29601-039	RING TERM	1
224	29455-099	WIRE 16GA BROWN	3 FT
226	68814-000	PIN TERMINAL	6
227	REF	RECEPTACLE	1
228	29464-099	WIRE 14GA GREEN	.5 FT

* Not Shown

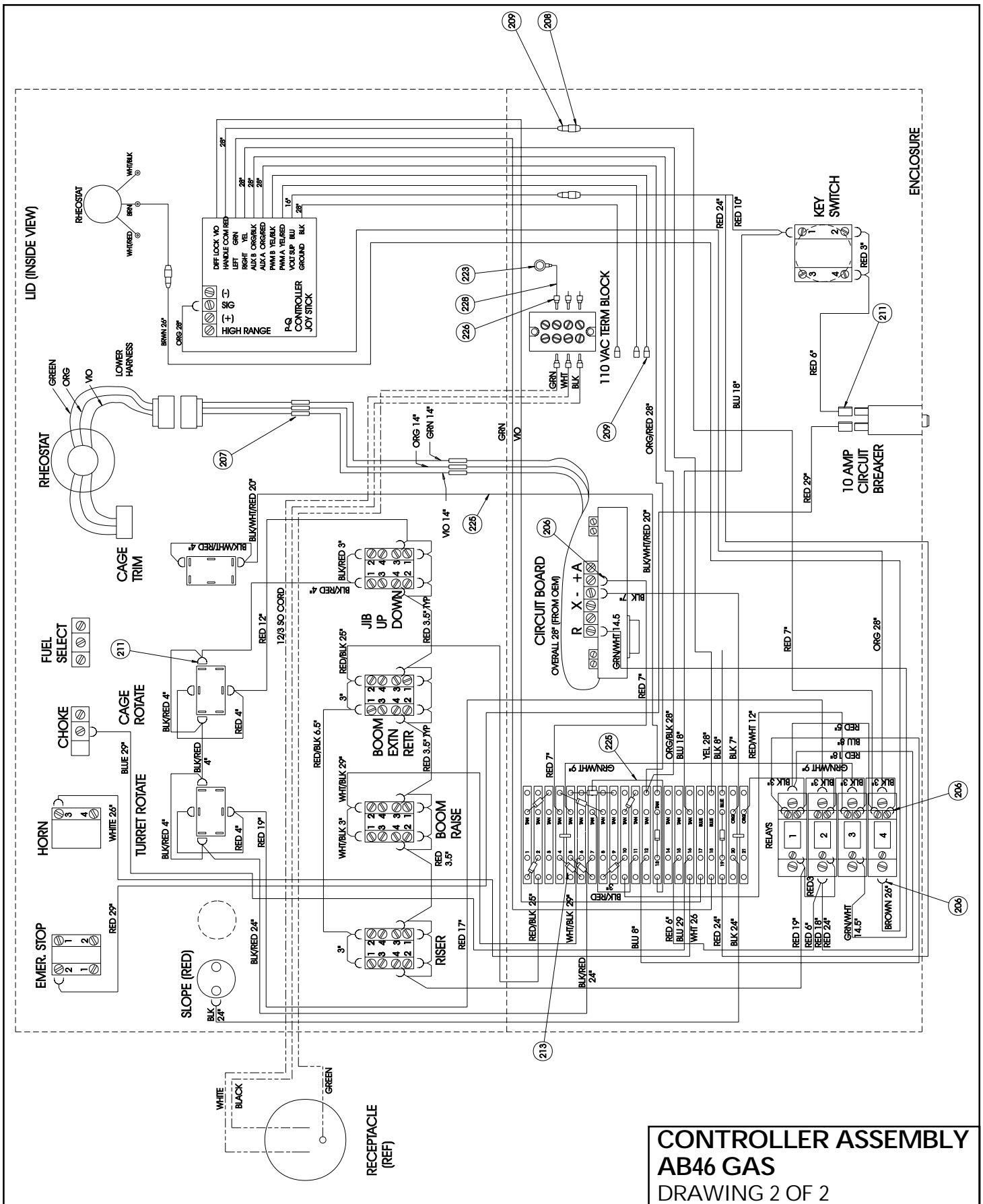
Illustrated Parts Breakdown

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**CONTROLLER ASSEMBLY
AB46 GAS**
DRAWING 1 OF 2

Illustrated Parts Breakdown



NOTES:

Illustrated Parts Breakdown

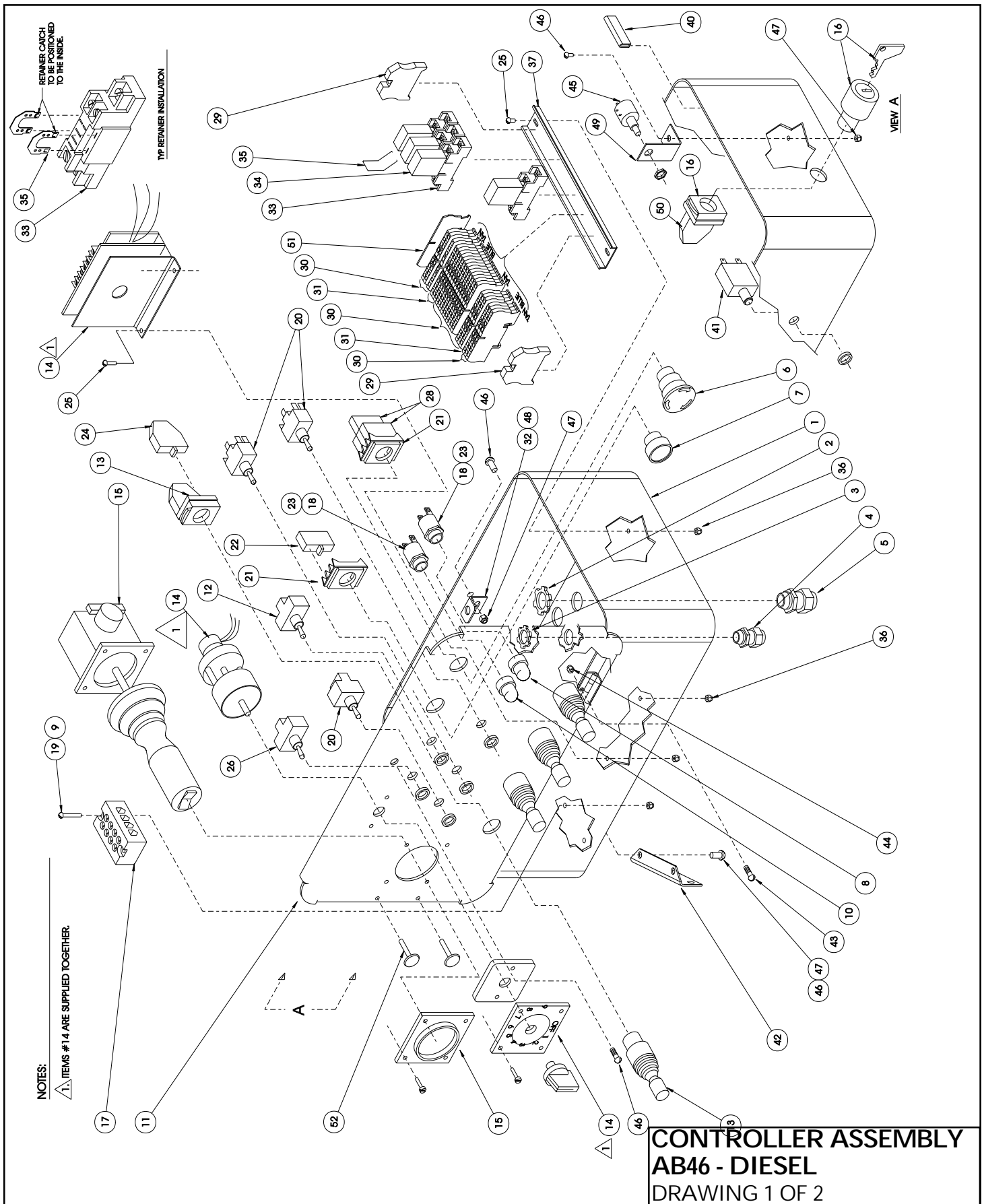
CONTROLLER ASSEMBLY-PLATFORM AB46 DIESEL 68329-002

ITEM	PART	DESCRIPTION	QTY.
1	68589-001	BOX, ENCLOSURE	1
2	29939-003	LOCKNUT 3/4" NPT	4
3	29939-002	LOCKNUT 1/2" NPT	1
4	29925-000	CONNECTOR CABLE 1/2" NPT	1
5	29925-001	CONNECTOR CABLE 3/4" NPT	4
6	64446-003	EMERGENCY STOP BUTTON	1
7	67654-000	PUSH BUTTON FLUSH (BLACK)	1
8	68595-001	LENS, RED	1
9	11249-003	NUT, HEX 10-32 ESNA	2
10	66516-008	HOLE PLUG Ø .437	1
11	68800-000	LID ASSY, CONTROLLER I/C	1
12	11252-005	SCREW 1/4-20UNC X 5/8	5
13	68594-000	JOYSTICK - OPERATOR	4
14	68593-001	RHEOSTAT - CONTROLLER (12VOLT)	1
15	68795-000	JOYSTICK, P-Q	1
*	XXXXX-XXX	HANDLE HALF, TRS, RIGHT	1
*	XXXXX-XXX	HANDLE HALF, TRS, RIGHT	1
*	XXXXX-XXX	BOOT, M115, 0.31 SHAFT	1
*	XXXXX-XXX	GASKET, M115 TRS GRIP	1
*	XXXXX-XXX	SWITCH, XG3-Z1	1
*	XXXXX-XXX	PUSH BUTTON, BLACK, SWITCH SPST	1
*	XXXXX-XXX	SWITCH ACTUATOR, ROCKER SWCH GRIP	1
*	XXXXX-XXX	CAP, ROCKER SWITCH GRIP	1
*	XXXXX-XXX	ELECTRICAL ASSEMBLY, M115-1596	1
*	XXXXX-XXX	ELEC ASSY, 500 ohm POTENTIOMETER	1
*	XXXXX-XXX	PINION GEAR, M115	1
*	XXXXX-XXX	SOCKET SET SCREW, 6-32 x 1/8, CUP	1
16	68819-000	KEYSWITCH & KEY	1
*	68807-010	KEY	1
17	68734-004	TERMINAL STRIP, 120V AC	1
18	68590-000	BASE INDICATOR (LAMP)	1
19	11826-012	SCREW RD HD 10-32 X 1-1/2	2
20	12798-004	TOGGLE SWITCH, MOMENTARY Q-D	3
21	64417-001	FLANGE MOUNT	2
22	64443-001	CONTACT BLOCK, N.O.	1
23	68591-001	LAMP T-2-1/2	1
24	66805-012	CONTACT BLOCK, N.O./N.C.	8
25	11715-003	SCREW RD HD 6-32 X 3/8	4
26	12798-003	SWITCH, TOGGLE MOM.	1
28	64443-002	CONTACT BLOCK N.C.	2
29	67660-006	TERMINAL END	2
30	68698-001	TERMINAL BLOCK (TAN)	16
31	68698-002	TERMINAL BLOCK (BLUE)	3
32	68799-000	ANGLE, CONTROLLER	1
33	67662-001	RELAY SOCKET	4
34	67661-001	RELAY, SPDT 12 VOLT	4
35	67662-005	RETAINING CLIP & WIRE	4
36	11250-001	NUT HEX 6-32	4
37	67893-003	MOUNTING RAIL, DIN 8-1/4"	1
40	68897-099	GASKET, BLACK RUBBER	3.25 FT

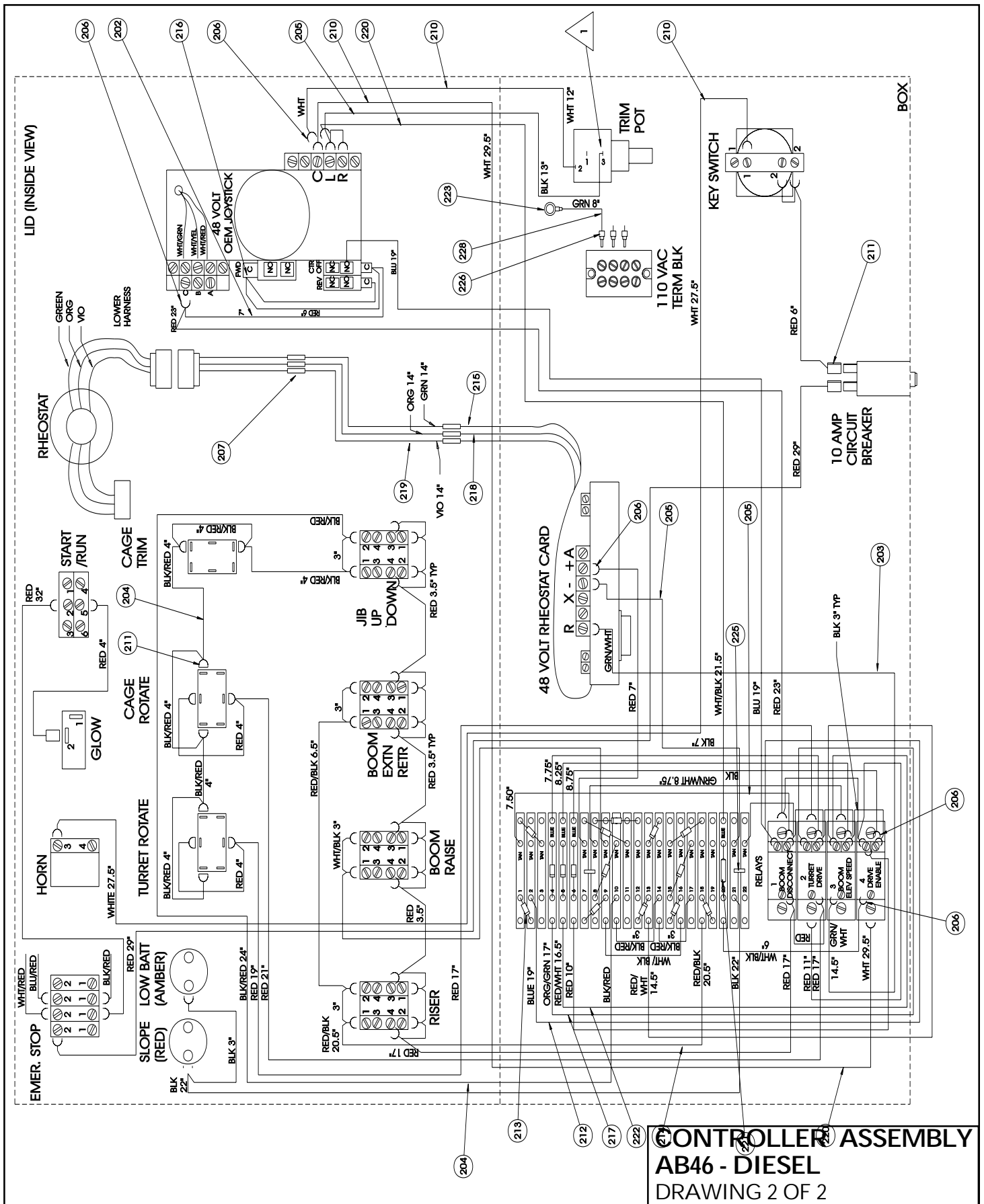
ITEM	PART	DESCRIPTION	QTY.
41	68582-010	CIRCUIT BREAKER 10 AMP	1
42	68767-000	BRACKET, UPPER CONTROLLER	2
43	11708-004	SCREW 8-32 X 1/2	2
44	11248-002	NUT, HEX ESNA 8-32 UNC	2
45	11252-003	SCRW HHC 1/4-20 UNC X 3/8"	2
46	68801-000	HAND SUPPORT WELDMENT	1
47	11248-004	NUT HEX ESNA 1/4-20UNC	7
48	14252-004	NUT SERT 1/4-20	1
49	66805-010	CONTACT BLOCK GE 1 N.O.	1
50	66805-011	CONTACT BLOCK GE 1 N.C.	1
51	68698-004	END CAP, CONTACT BLOCK	1
53	68698-000	TERMINAL BLOCK ORANGE	2
54	66516-005	PLUG, 11/16 FLUSH	1
55	68773-002	JUNPER 2 PIN	2
202	29454-099	WIRE 16GA RED	10 FT
203	29482-099	WIRE 16GA GREEN/WHT	3 FT
205	29452-099	WIRE 16GA BLACK	9.3 FT
206	29610-006	TERM FORK 18-14GA #6	60
207	29620-002	BUTT CONNECTOR 18-14GA	6
208	14914-001	CONN MALE PUSH INSULATED	3
209	29931-003	CONN FEMALE PUSH INSULATED	6
210	29451-099	WIRE 16GA WHITE	5.8 FT
211	29931-003	CONN FEMALE PUSH .25 (16-14GA)	12
212	29450-099	WIRE 16GA BLUE	4.1 FT
213	29825-002	DIODE 3 AMP 400V	9
214	29478-099	WIRE 16GA RED/BLACK	3.5 FT
215	29457-099	WIRE 16GA GREEN	1.5 FT
216	29616-001	CONN FEMALE PUSH .187 (16-14GA)	3
217	29360-099	WIRE 16GA ORANGE/GREEN	2 FT
218	29453-099	WIRE 16GA ORANGE	1.2 FT
219	29458-099	WIRE 16GA PURPLE	1.2 FT
220	29479-099	WIRE 16GA WHITE/BLACK	4 FT
221	29459-099	WIRE 16GA BLUE/WHITE	.5 FT
222	29483-099	WIRE 16GA RED/WHITE	2.5 FT
223	29601-039	RING TERM	1
224	29455-099	WIRE 16GA BROWN	3 FT
225	29361-099	WIRE 16GA BLK/WHT/RED	2 FT
226	68814-000	PIN TERMINAL	6
227	REF	RECEPTACLE	1
228	29464-099	WIRE 14GA GREEN	.5 FT

Illustrated Parts Breakdown

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Illustrated Parts Breakdown



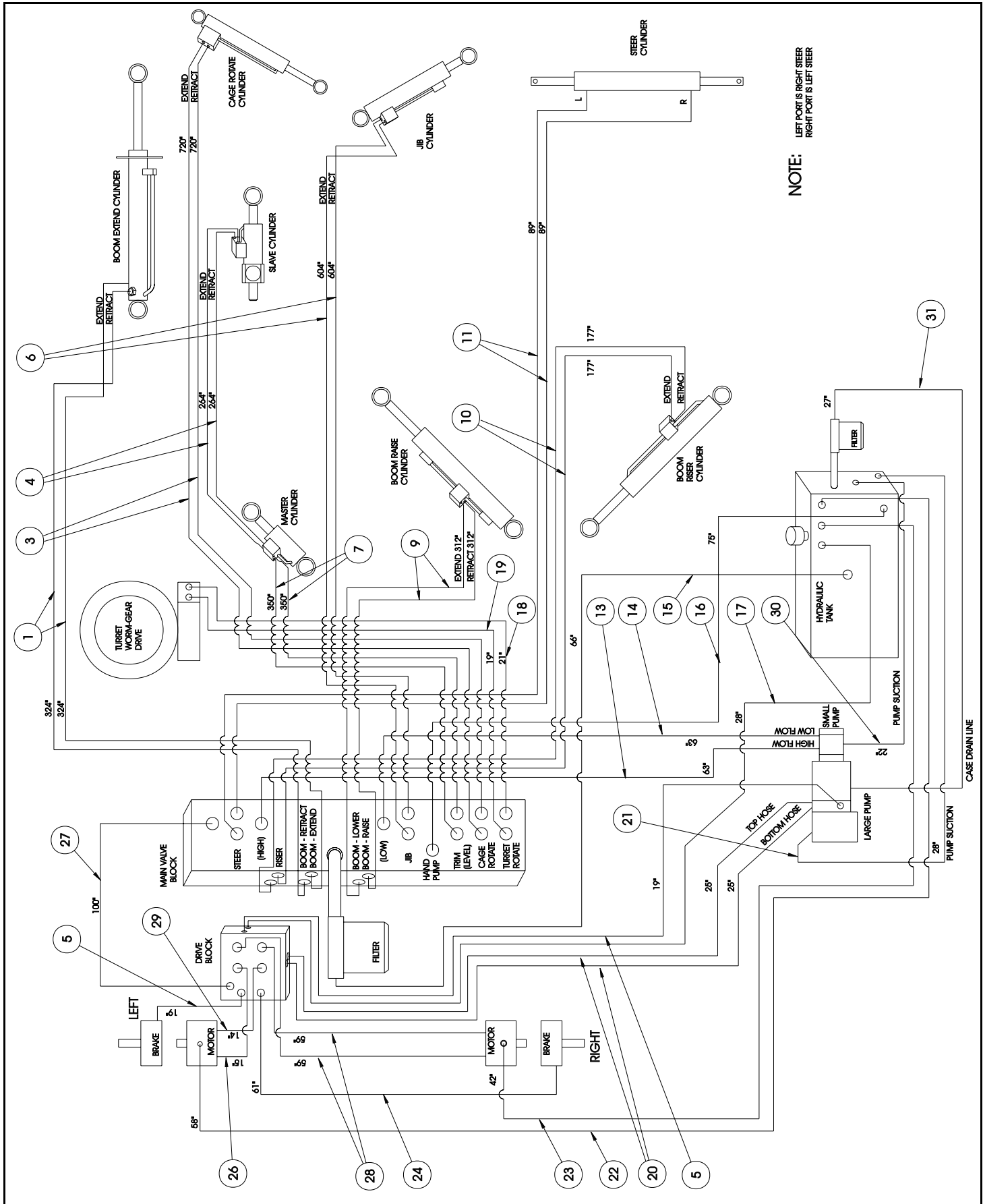
NOTES:

HOSE KIT AB46 GAS/DIESEL 68336-001

ITEM	PART	DESCRIPTION	QTY.
1	68737-324	1/4 HOSE ASSY X 324" 4FJX-4FJX	2
3	68737-720	1/4 HOSE ASSY X 720" 4FJX-4FJX	2
4	68809-264	3/16 HOSE ASSY X 264" 4FJX-4FJX	2
5	68737-019	1/4 HOSE ASSY X 19"4FJX-4FJX	2
6	68736-604	3/16 HOSE ASSY X 604" 4FJX-4FJX	2
7	68736-350	3/16 HOSE ASSY X 350" 4FJX-4FJX	2
9	68737-312	1/4 HOSE ASSY X 312" 4FJX-4FJX	2
10	68737-177	1/4 HOSE ASSY X 177" 4FJX-4FJX	2
11	68753-089	1/4 HOSE ASSY X 89" 4FJX-6FJX90°S	2
13	68741-063	1/4 HOSE ASSY X 63" 6FJX-6FJX	1
14	68763-063	1/4 HOSE ASSY X 63" 6FJX-4FJX	1
15	68740-066	1/2 HOSE ASSY X 66" 10FJX-10FJX	1
16	68736-075	3/16 HOSE ASSY X 75" 4FJX-4FJX	1
17	68737-028	1/4 HOSE ASSY X 28" 4FJX-4FJX	1
18	68736-021	3/16 HOSE ASSY X 21" 4FJX-4FJX	1
19	68736-019	3/16 HOSE ASSY X 19" 4FJX-4FJX	1
20	68738-025	3/4 HOSE ASSY X 25" 12FJX-12FL45°	2
21	68739-028	1" HOSE ASSY X 28" 16FJX-16FJX	1
22	68745-058	3/8 HOSE ASSY X 58" 6FJX- 6FJX	1
23	68745-042	3/8 HOSE ASSY X 42" 6FJX- 6FJX	1
24	68737-061	1/4 HOSE ASSY X 61" 4FJX- 4FJX	1
26	68742-015	1/2 HOSE ASSY X 15" 8FJX- 8FJX	1
27	68753-100	1/4 HOSE ASSY X 100" 4FJX- 6FJX 90°	1
28	68742-059	1/2 HOSE ASSY X 59" 8FJX- 8FJX	2
29	68742-014	1/2 HOSE ASSY X 14" 8FJX-8FJX	1
30	68744-022	3/4 HOSE ASSY X 22" 12FJX-12FJX	1
31	68743-027	5/8 HOSE ASSY X 27" 10FJX-10FJX	1

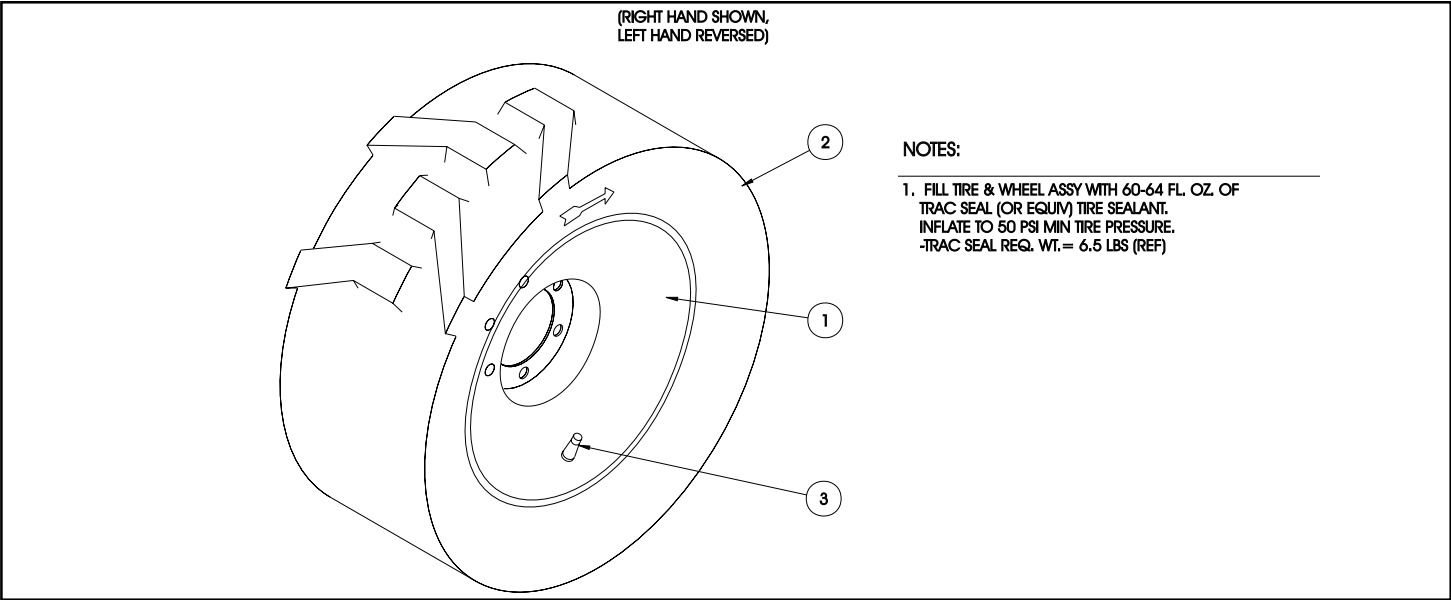
Illustrated Parts Breakdown

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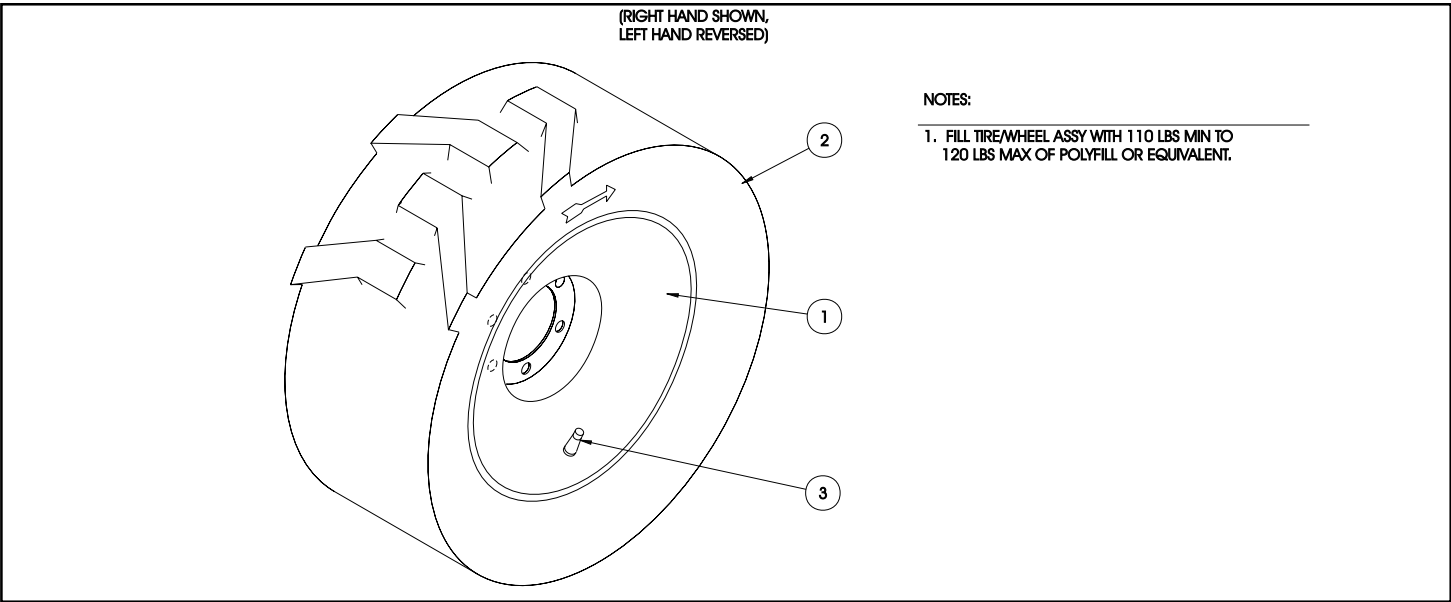
TIRE & WHEEL ASSEMBLY
AB46 GAS/DIESEL
67664-000/001

ITEM	PART	DESCRIPTION	QTY.
1	67609-000	WHEEL, 16.5 X 8.25 6 HOLE, 6 BC	1
2	67610-000	TIRE, 10-16.5 NHS 8 PLY	1
3	12282-001	VALVE STEM	1



TIRE & WHEEL ASSEMBLY -POLY FILLED
AB46 GAS/DIESEL
67664-002/003

ITEM	PART	DESCRIPTION	QTY.
1	67609-000	WHEEL, 16.5 X 8.25 6 HOLE, 6 BC	1
2	67610-000	TIRE, 10-16.5 NHS 8 PLY	1
3	12282-001	VALVE STEM	1



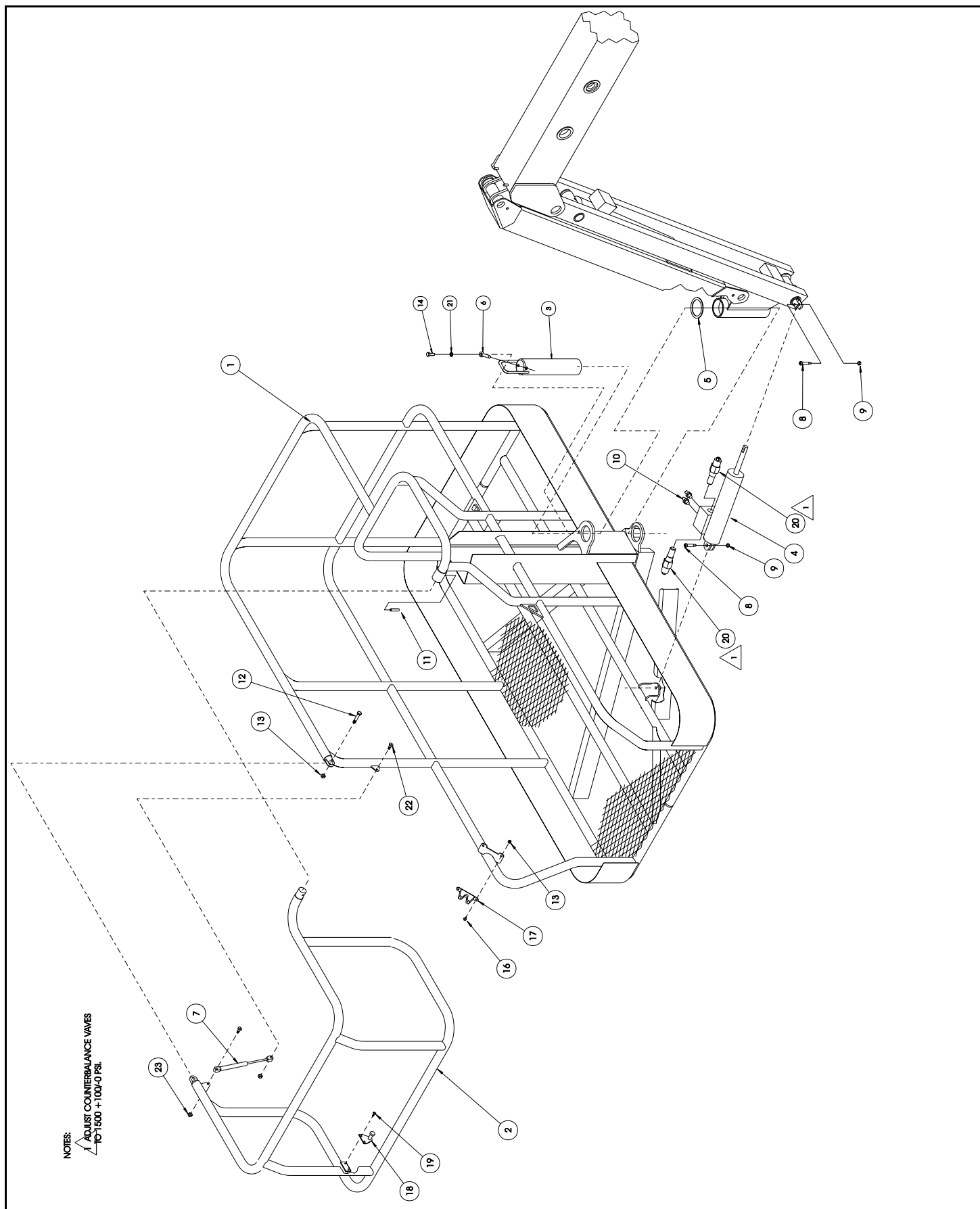
NOTES:

CAGE "B" ASSEMBLY AB46 68325-001

ITEM	PART	DESCRIPTION	QTY.
1	68500-001	CAGE "B" WELDMENT	1
2	68532-000	LIFT-UP GATE WELDMENT	1
3	68775-000	BASKET PIN WELDMENT	1
4	68457-000	CYLINDER, CAGE ROTATION	1
*	68457-010	SEAL KIT, CAGE ROTATE	1
5	68651-000	THRUST WASHER G32DU (MODIFIED)	1
6	65214-000	PIN RETAINER	1
7	63650-012	GAS SPRING	1
8	15936-010	SHOULDER BOLT	2
9	11248-005	LOCKNUT	2
10	11939-004	FITTING, 4MP-4MJ	2
11	11737-012	ROLLPIN 1/4" X 1-1/2"	1
12	11703-008	SCREW, HHC 1/4-20 X 1-1/2	1
13	11248-004	NUT HEX 1/4-20	3
14	11254-008	SCREW HHC 3/8-16 X 1	1
16	11821-005	SCREW BUTTON HD 1/4-20 UNC X 5/8	2
17	68277-000	LATCH ROTARY	1
18	68806-000	STRIKER WELDMENT	1
19	11709-004	SCREW RND HD 10-24 UNC X 1/2	2
20	68778-000	VALVE COUNTERBALANCE (550 PSI)	2
21	11238-006	LOCKWASHER 3/8 SPLIT	1
22	15936-005	SHOULDER BOLT 3/8 X 5/8 LG	2
23	11248-005	NUT, ESNA 5/16-18	2

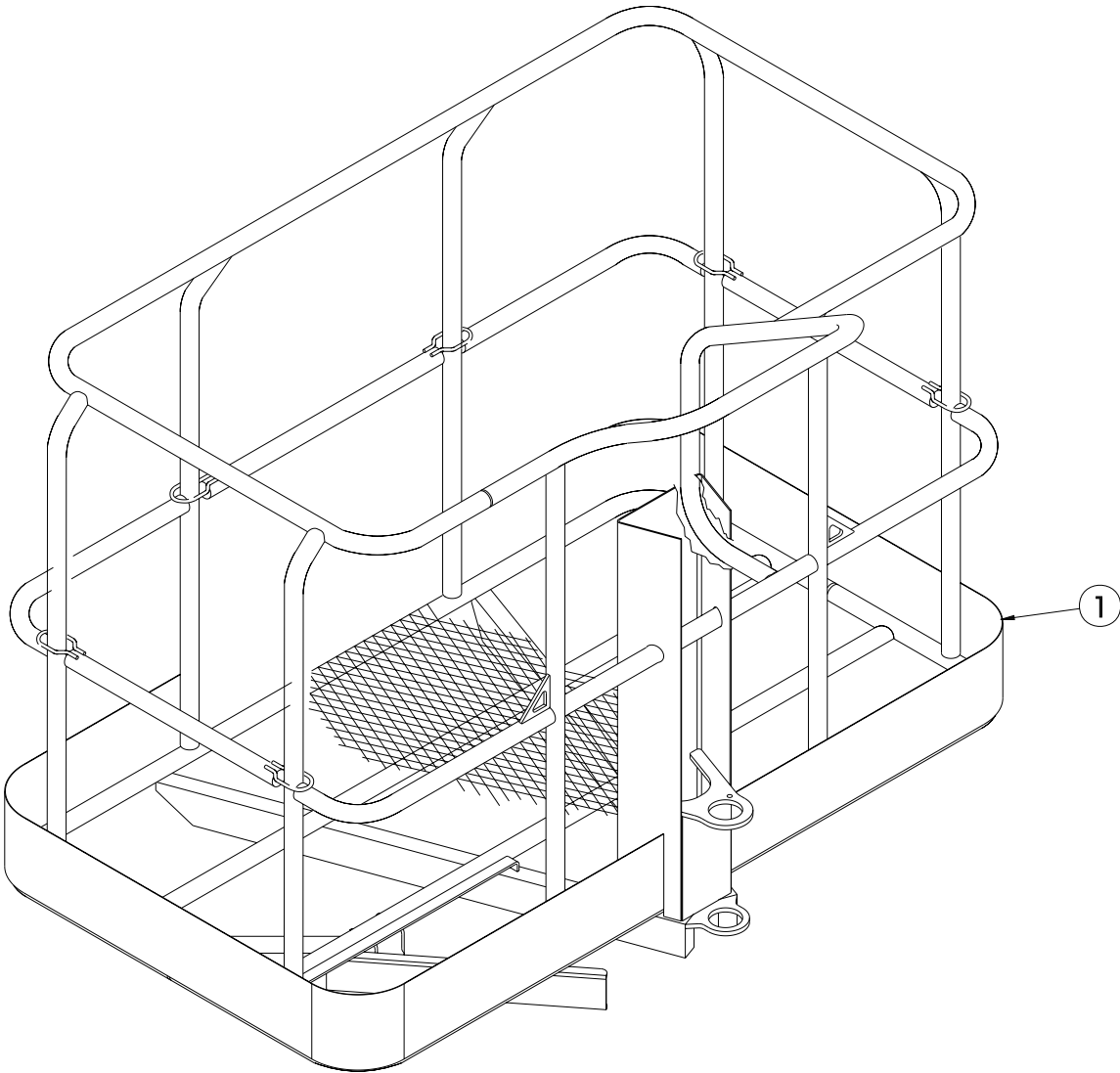
Illustrated Parts Breakdown

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CAGE "A"
AB46
68500-000

ITEM	PART	DESCRIPTION	QTY.
1	68500-000	CAGE "A" WELDMENT	1



Illustrated Parts Breakdown

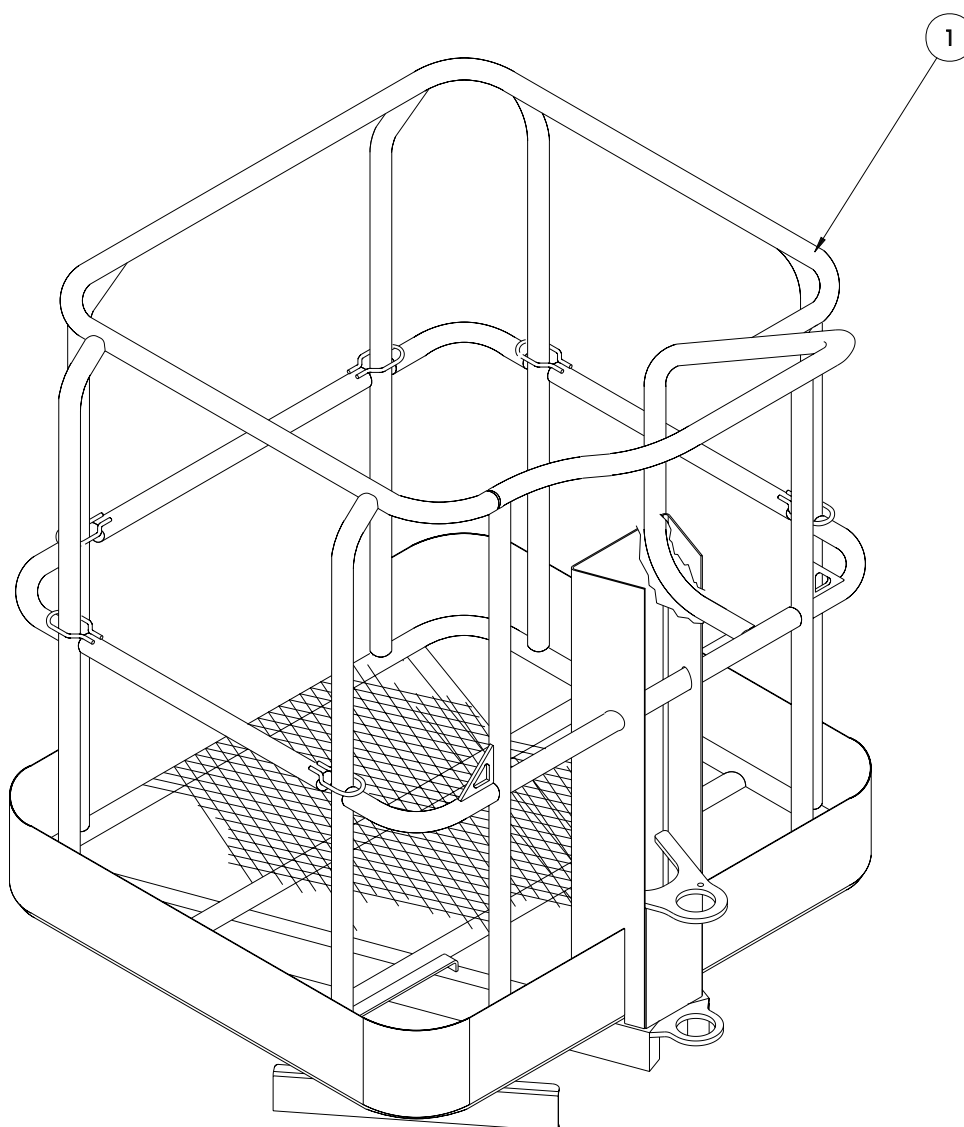
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4 FT. CAGE

AB46

68500-003

ITEM	PART	DESCRIPTION	QTY.
1	68500-003	CAGE WELDMENT 4 FT	1



Illustrated Parts Breakdown

LABEL KIT, AB46 GAS 68335-001

ITEM	PART	DESCRIPTION	QTY.
2	061205-002	NAME PLATE / BOOM	1
3	065368-000	TACK	4
5	066552-000	LABEL EXPLOSIVE GAS	1
6	005221-000	LABEL BATTERY LEVEL	1
7	066555-000	LABEL LIMIT SWITCH	2
8	066556-000	LABEL PINCH POINT	2
9	066553-001	LABEL PINCH POINT	5
10	060197-000	LABEL HYDRAULIC FLUID	1
12	064166-000	LABEL UNLEADED FUEL	1
13	010076-000	MANUAL CASE	1
14	010076-001	LABEL ATTENTION	1
15	068342-001	USER MANUAL DOM I/C	1
16	060565-000	ANSI 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	062557-012	MAX LOAD 500 Lb / 225 Kg	2
22	064444-000	LABEL USA	1
23	066554-000	LABEL BEFORE OPERATION	3
24	068641-000	LABEL WARNING BRAKE RELEASE-I/C	1
25	068586-010	LABEL UPPER CONTROLS I/C	1
27	068587-010	LABEL LOWER CONTROLS	1
28	066562-001	TIRE PSI	4
30	066568-000	LABEL CRUSHING HAZARD	2
32	068632-000	LABEL HOLD DOWN	4
33	068633-000	LABEL READ & UNDERSTAND	1
34	068635-000	LABEL HARNESS POINT	2
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	066553-004	LABEL PINCH POINT	4
38	068638-000	LABEL EMERGENCY LOWER	1
39	068639-000	LABEL POWER TO PLATFORM	1
40	068634-001	LABEL AB46	2
41	061683-005	LABEL UPRIGHT	5
43	061683-007	LABEL UPRIGHT	1
48	068649-000	LABEL, CAUTION- RAISE JIB BOOM	1

LABEL KIT, AB46 DIESEL 68335-002

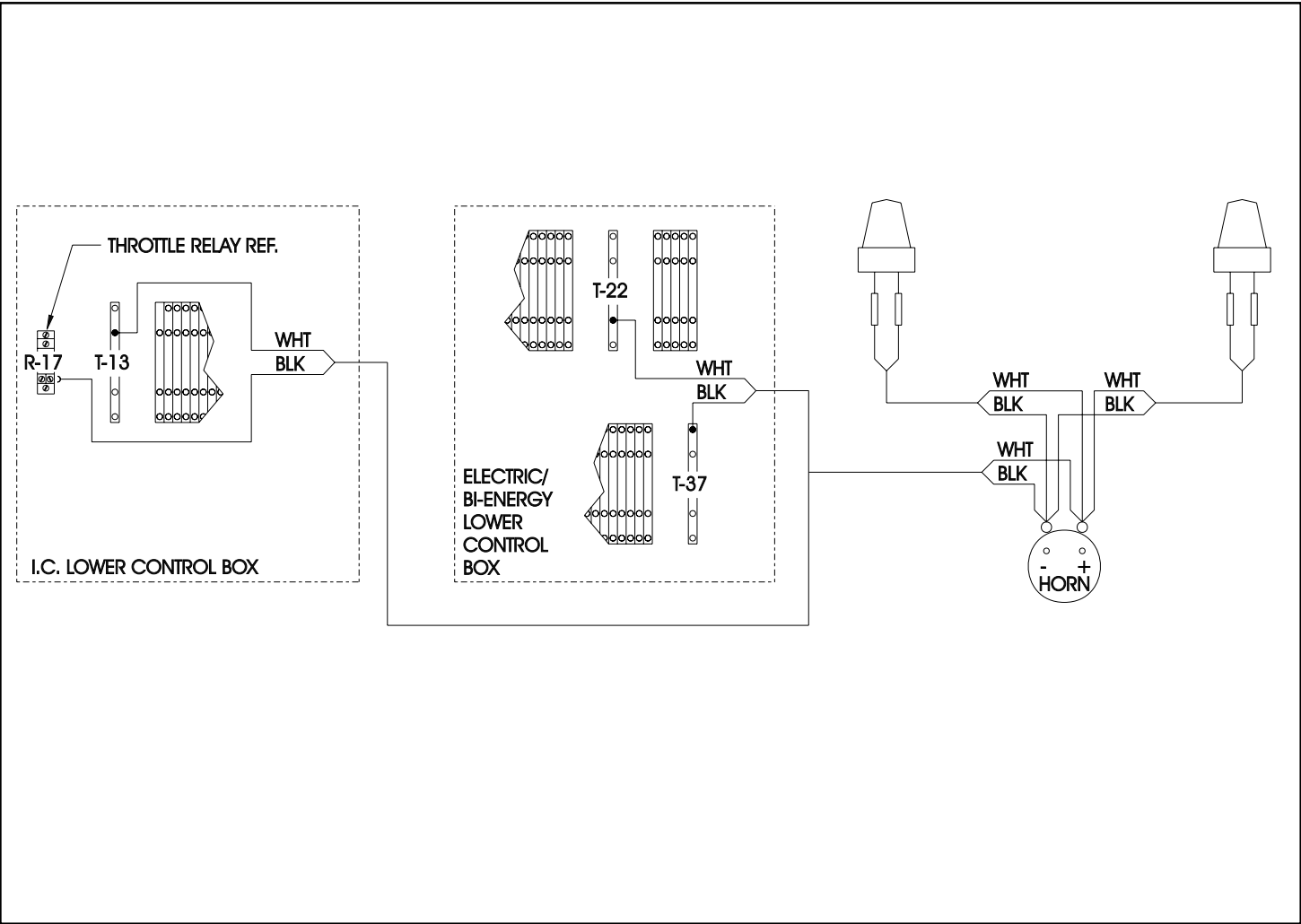
ITEM	PART	DESCRIPTION	QTY.
2	061205-002	NAME PLATE / BOOM	1
3	065368-000	TACK	4
5	066552-000	LABEL EXPLOSIVE GAS	1
6	005221-000	LABEL BATTERY LEVEL	1
7	066555-000	LABEL LIMIT SWITCH	2
8	066556-000	LABEL PINCH POINT	2
9	066553-001	LABEL PINCH POINT	5
10	060197-000	LABEL HYDRAULIC FLUID	1
11	027898-000	LABEL DIESEL FUEL	1
13	010076-000	MANUAL CASE	1
14	010076-001	LABEL ATTENTION	1
15	068342-001	USER MANUAL DOM I/C	1
16	060565-000	ANSI 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	062557-012	MAX LOAD 500 Lb / 225 Kg	2
22	064444-000	LABEL USA	1
23	066554-000	LABEL BEFORE OPERATION	3
24	068641-000	LABEL WARNING BRAKE RELEASE-I/C	1
25	068586-010	LABEL UPPER CONTROLS I/C	1
27	068587-010	LABEL LOWER CONTROLS	1
28	066562-001	TIRE PSI	4
30	066568-000	LABEL CRUSHING HAZARD	2
32	068632-000	LABEL HOLD DOWN	4
33	068633-000	LABEL READ & UNDERSTAND	1
34	068635-000	LABEL HARNESS POINT	2
35	068637-000	LABEL ARROW YELLOW	2
36	068637-001	LABEL ARROW ORANGE	2
37	066553-004	LABEL PINCH POINT	4
38	068638-000	LABEL EMERGENCY LOWER	1
39	068639-000	LABEL POWER TO PLATFORM	1
40	068634-001	LABEL AB46	2
41	061683-005	LABEL UPRIGHT	5
43	061683-007	LABEL UPRIGHT	1
48	068649-000	LABEL, CAUTION- RAISE JIB BOOM	1

Section 6.2



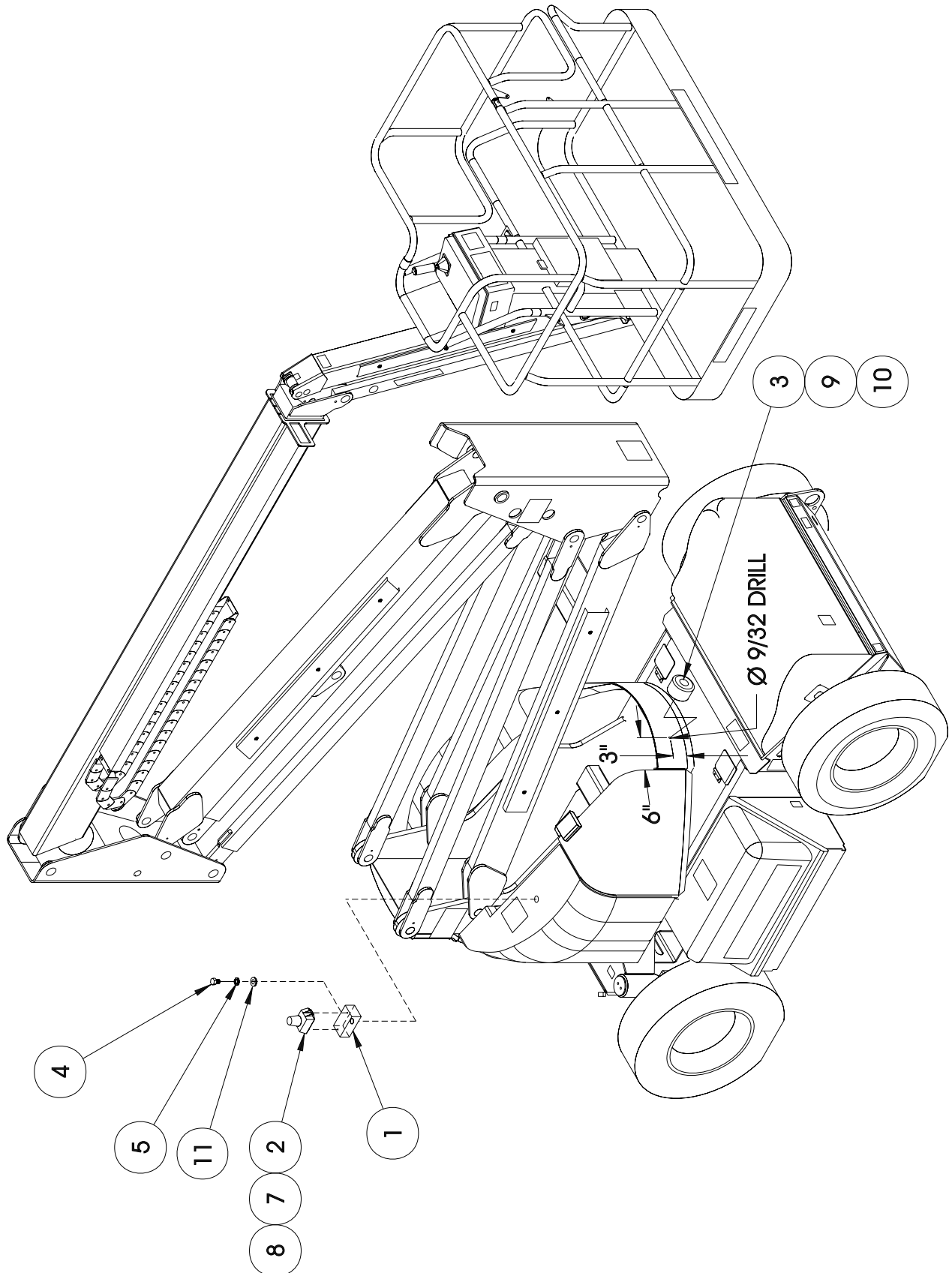
MOTION ALARM/FLASHING BEACON
OPTION - AB46
68294-000

ITEM	PART	DESCRIPTION	QTY.
1	66817-000	STROBE MOUNT WELDMENT	2
2	12848-004	FLASHING STROBE LIGHT	2
3	66807-000	HORN	1
4	11258-008	SCR. HHC 3/4-10 UNC X 1	1
5	11238-016	WASHER, SPLIT LOCK	1
6	29496-099	WIRE, C COND. 16 GA.	8 FT
7	11709-004	SCREW # 10-24 UNC X 1/2" LG	4
8	11248-003	LOCKNUT # 10-24 UNC ESNA	4
9	11252-006	SCREW, HHC 1/4-20UNC X 3/4" LG.	1
10	11239-004	LOCKWASHER, 1/4" SPLIT RING	1
11	11240-012	FLATWASHER STD 3/4"	2



Illustrated Parts Breakdown

Section
6.2



UpRight

Call Toll Free in U.S.A.

1-800-926-LIFT

UpRight, Inc.

1775 Park Street

Selma, California 93662

TEL: 209/891-5200

FAX: 209/896-9012

PARTS: 1-888-UR-PARTS

PARTSFAX: 209/896-9244

068343-001

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