

UpRight



SL26/30N

WORK PLATFORMS

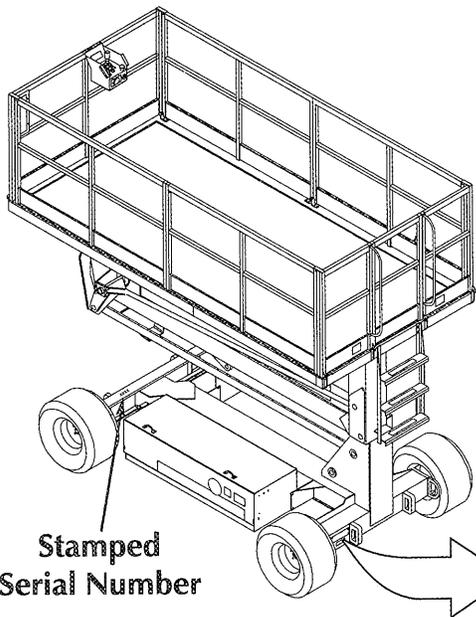
**Service &
Parts Manual**

SERVICE & PARTS MANUAL

SL-26/30N

Electric and Dual Fuel Models

Serial Numbers 9600 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 chassis front axle cross member towards the left side.

UpRight, Inc.	
1775 PARK ST.	SELMA, CA 93662 USA
MODEL NO. <input type="text"/>	MAX. PLATFORM HEIGHT <input type="text"/>
SERIAL NO. <input type="text"/>	BATTERY VOLTAGE <input type="text"/>
MAX. DISTRIBUTED LOAD <input type="text"/>	<input type="text"/>
CAUTION: CONSULT OPERATOR'S MANUAL BEFORE USE.	
THIS PLATFORM IS NOT ELECTRICALLY INSULATED	
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UpRight

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7/95 D

Forward

Introduction

HOW TO USE THIS MANUAL

This manual is divided into 7 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.

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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 an UpRight SL26/30N 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 SL26/30N Work Platform consists of the platform, controller, elevating assembly, power module, control module, and chassis (see Figure 1-1).

Platform

The platform has a reinforced wood floor, 43.5 inch (1105 mm) high guardrails with midrail, 6 inch (152 mm) toeboards and an entrance gate at the rear of the platform. The guardrails can be folded down for access through doors or for shipment.

⚠ WARNING ⚠

DO NOT use the work platform without guardrails properly assembled and in place with the fasteners properly torqued.

Controller

The controller contains the controls to operate the machine. It should be hung on the front guardrail, but may be hand held if necessary. To operate the machine, the interlock lever must be depressed to operate any function. A complete explanation of control functions can be found in *Section 3*.

Elevating Assembly

The platform is raised and lowered by the elevating assembly, a two section arm pivoting on a gear, and powered by a single stage lift cylinder. The hydraulic pump(s), driven by electric motors or by the engine, actuates the cylinder. Solenoid operated valves control raising and lowering.

Power Module

Electric Model

The power module contains the batteries, battery charger, battery control components, and motor/pump assemblies.

Dual Fuel Model

The power module contains the engine, gas tank, L.P. bottle, L.P. gas valve, battery and starter solenoid.

Control Module

The control module contains the hydraulic tank, hydraulic valve manifold, horn/alarms, tilt sensor, volt/hour meter, electrical terminal strips, and chassis controls. A complete explanation of the chassis control functions is found in *Section 3*.

Chassis

The chassis is a structural frame that supports all the components of the SL26/30N Work Platform.

PURPOSE OF EQUIPMENT

The SL26/30N Work Platform is designed to elevate personnel and materials to overhead work areas and be driven with the platform elevated on firm, level surfaces only.

NOTE: Travel with the platform raised is limited to a creep speed range.



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.

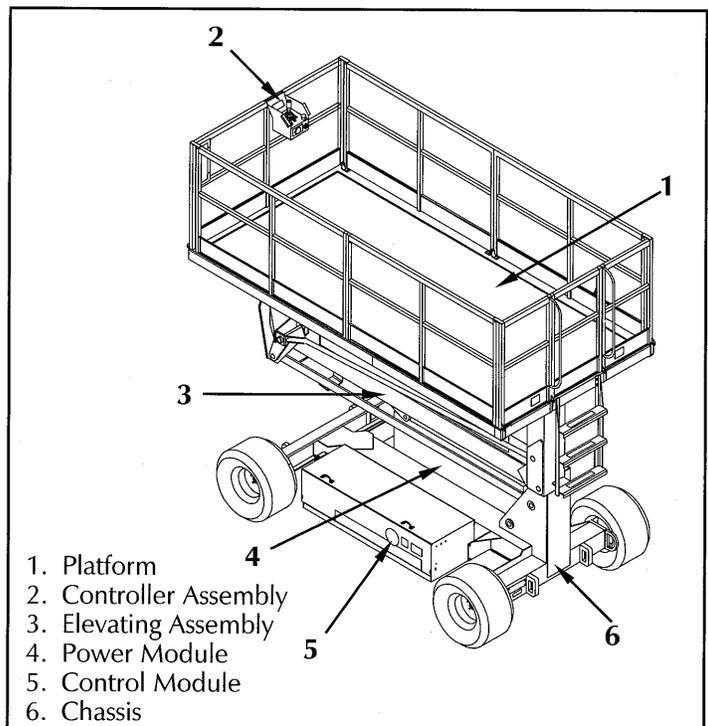


Figure 1-1: SL26/30N Work Platform

1.2 Specifications

Table 1-1: Specifications

ITEM	SL26N	SL30N
Platform Size (Inside Toeboards)		
Standard	57.5 in. x 141.5 in. [1.46 m x 3.59 m]	57.5 in. x 166.25 in. [1.46 m x 4.22 m]
w/ Extension	57.5 in. x 181.5 in. [1.46 m x 4.61 m]	N/A
Max. Platform Capacity		
Standard	1250 lbs. [567 kg]	1000 lbs. [454 kg]
w/ Extension	1250 lbs. [567 kg] (combined platform & extension)	N/A
on Extension	500 lbs. [227 kg]	N/A
Max. No. of occupants		
Standard	4 people	3 people
on Extension	2 people	N/A
Height		
Working Height	32 ft. [9.75 m]	36 ft. [10.97 m]
Max. Platform Height	26 ft. [7.93 m]	30 ft. [9.14 m]
Min. Platform Height	59 in. [1.5 m]	59 in. [1.5 m]
Dimensions		
Weight	Dual Fuel: 4,630 lbs. [2,100 kg] Electric: 4,960 [2,247 kg]	Dual Fuel: 4,942 lbs. [2,242 kg] Electric: 5,272 [2,391 kg]
Overall Width	66 in. [1.68 m], with standard tires	66 in. [1.68 m], with standard tires
Overall Height	94.5 in. [2.40 m]	94.5 in. [2.40 m]
Overall Length	149 in. [3.79 m]	173 in. [4.39 m]
Driveable Height	32 ft. [9.75 m]	36 ft. [10.97 m]
Surface Speed		
Platform Lowered: Dual Fuel	0 to 3.1 mph [0 to 5.0 km/h]	0 to 3.1 mph [0 to 5.0 km/h]
Electric	0 to 2.6 mph [0 to 4.2 km/h]	0 to 2.6 mph [0 to 4.2 km/h]
Platform Raised: Dual Fuel	0 to .5 mph [0 to .8 km/h]	0 to .5 mph [0 to .8 km/h]
Electric	0 to .5 mph [0 to .8 km/h]	0 to .5 mph [0 to .8 km/h]
System Voltage	Dual Fuel: 12 Volt DC Electric: 24 Volt DC	Dual Fuel: 12 Volt DC Electric: 24 Volt DC
Battery Charger (Electric only)	40 Amp, 110 V, 60 Hz (40 Amp, 220 V, 50 Hz, Optional)	40 Amp, 110 V, 60 Hz (40 Amp, 220 V, 50 Hz, Optional)
Hydraulic Tank Capacity	12 Gallons [45.5 l]	12 Gallons [45.5 l]
Maximum Hydraulic System Pressure	2000 psi [138 bar]	2000 psi [138 bar]
Hydraulic Fluid		
Normal Use (>32 °F [0 °C])	ISO #46	ISO #46
Low Temp. Use (-10 to 32 °F [-23 to 0 °C])	5W-20 Motor Oil	5W-20 Motor Oil
Lift System	One Single Stage Lift Cylinder	One Single Stage Lift Cylinder
Lift Speed		
Dual Fuel	Raise, 23 sec./Lower, 35 sec.	Raise, 23 sec./Lower, 35 sec.
Electric	Raise, 33 sec./Lower, 35 sec.	Raise, 33 sec./Lower, 35 sec.
Power Source	20 HP Kohler Dual Fuel, 2 Cylinder, Air Cooled Engine (Gasoline/Propane) or Two 24V Electric Motors, Eight 6V 220 Amp/Hour Batteries	20 HP Kohler Dual Fuel, 2 Cylinder, Air Cooled Engine (Gasoline/Propane) or Two 24V Electric Motors, Eight 6V 220 Amp/Hour Batteries
Drive Control	Proportional	Proportional
Control System	Joystick Controller with Interlock Lever and Thumb Rocker Steering, Toggle Selector and Emergency Stop Switches	Joystick Controller with Interlock Lever and Thumb Rocker Steering, Toggle Selector and Emergency Stop Switches
Horizontal Drive	Dual Rear Wheel, Hydraulic Motors	Dual Rear Wheel, Hydraulic Motors
Tires (Standard)	B78-13ST Slab	B78-13ST Slab
Parking Brake	Spring Applied, Hydraulic Release	Spring Applied, Hydraulic Release
Turning Radius (inside)	9 ft. 9 in. [2.97 m]	9 ft. 9 in. [2.97 m]
Maximum Gradeability	Dual Fuel: 30% [16°] Electric: 25% [14°]	Dual Fuel: 30% [16°] Electric: 25% [14°]
Wheel Base	100 in. [2.54 m]	100 in. [2.54 m]
Guardrails	43.5 in. [1.11 m] high, Fold Down with Gate	43.5 in. [1.11 m] high, Fold Down with Gate
Toeboard	6 in. [152 mm] High	6 in. [152 mm] High

NOTE: Specifications subject to change without notice.

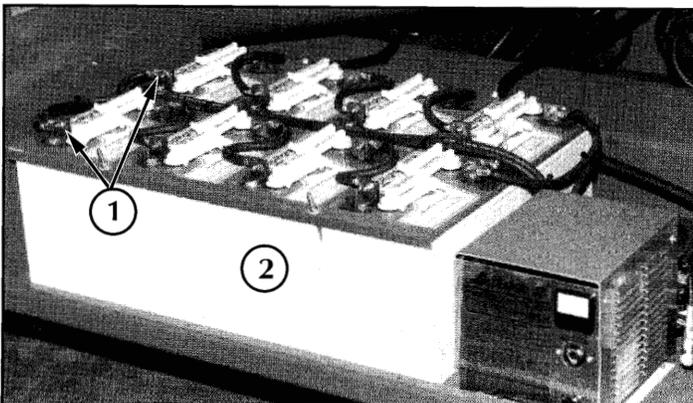
NOTE: Read and familiarize yourself with all operating instructions before attempting to operate the SL26/30N Work Platform.

2.1 Preparation for Use

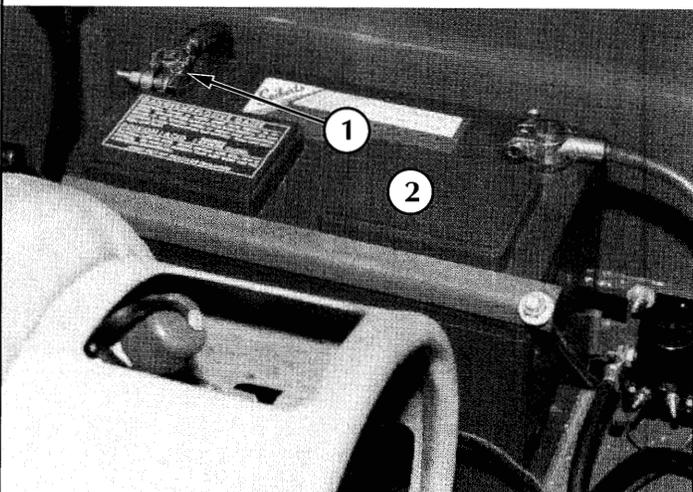
⚠ CAUTION ⚠

STAND CLEAR when cutting the metal banding to avoid being cut if the banding snaps back.

1. Remove the metal banding from the module covers and elevating linkage.
2. Remove the banding from the control console.
3. Remove tie wraps holding guardrail gate.
4. Connect the negative (-) lead terminal(s) to battery(ies) in power module (Figure 2-1).
5. Close the Emergency Lowering Valve (Figure 2-2), if necessary.



Electric Model



Dual Fuel Model

1. Negative Battery Terminal(s)
2. Battery(ies)

Figure 2-1: Batteries

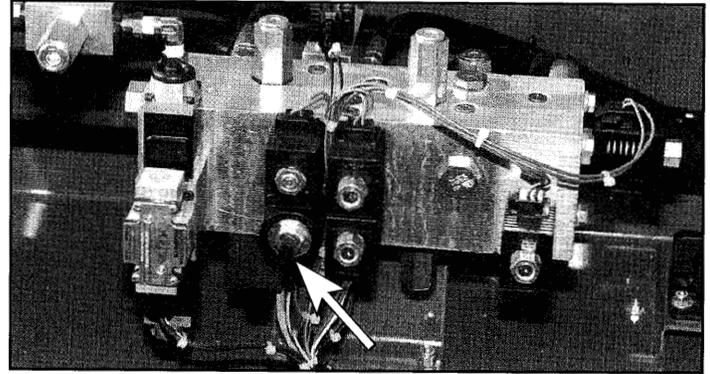


Figure 2-2: Emergency Lowering Valve

2.2 Forklifting Work Platform

NOTE: Forklifting is for transporting only.

⚠ WARNING ⚠

See specifications for weight of work platform and be certain that forklift is of adequate capacity to lift the platform.

Forklift from the side of the platform by lifting under the modules (Figure 2-3).

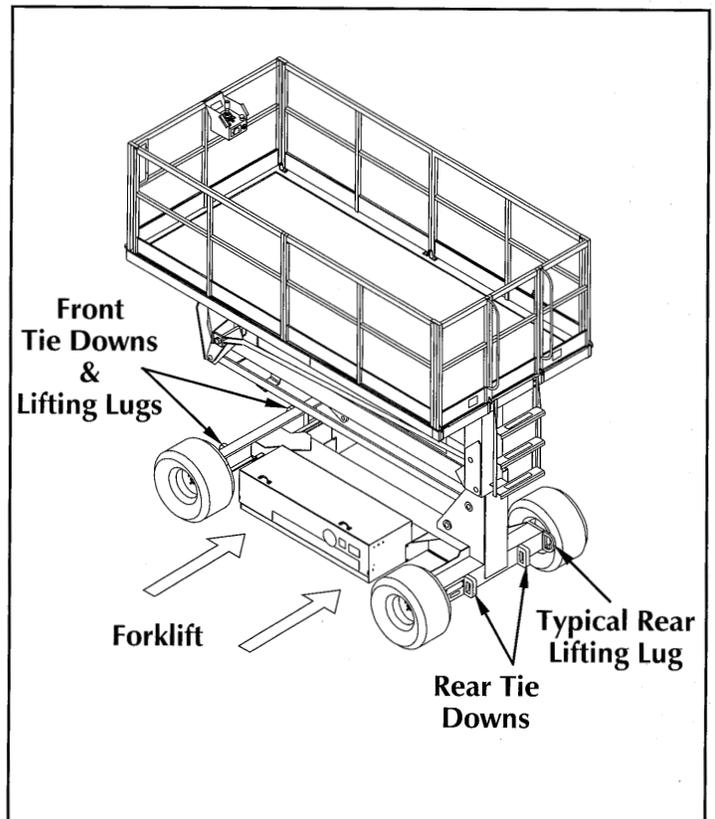


Figure 2-3: Transporting Work Platform

2.3 Transporting the Work Platform

1. Maneuver the work platform into transport position and chock the wheels.
2. Secure the work platform to the transport vehicle with chains or straps of adequate load capacity attached to the chassis tie down lugs (Figure 2-3).
3. Open the Emergency Lowering Valve.



CAUTION



The rear chassis tie down lugs are not to be used for lifting the work platform.

Overtightening of tie down chains or straps may result in damage to the machine.

2.4 Preparation for Shipment

1. Grease all the grease fittings (see Section 4.4).
2. Fully lower the platform.
3. Disconnect the battery(ies) negative (-) lead from the battery terminal(s) (Figure 2-1).
4. Band the controller to the front guardrail.
5. Band the elevating linkage to the frame just behind the front wheels and at the rear wheels.
6. Open the Chassis Emergency Lowering Valve (Figure 2-2).

2.5 Storage

No preparation for storage is required when the work platform is in normal usage. Regular maintenance procedures should continue to be performed (see Figure 4-1 and Table 4-1).

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

PRESERVATION

1. Clean painted surfaces. If the paint is damaged, repaint.
2. Fill the hydraulic tank to operating level, fluid will be visible at the Sight Gauge. **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 extended cylinder rods with a preservative such as multipurpose grease and wrap with barrier material.
4. Coat all exposed unpainted metal surfaces with preservative.
5. Service the Dual Fuel Engine according to the manufacturers recommendations.

BATTERY

1. Disconnect the battery ground cable(s) and secure to the chassis.
2. Disconnect the remaining battery leads and secure to the chassis.
3. Remove the batteries and place in alternate service.

3.0 Introduction

GENERAL FUNCTIONING

Either the engine **OR** each battery powered electric motor directly drives a hydraulic pump. The pump(s) supply oil under pressure to operate all the work platform functions. The oil flow is directed to the different functions by electrically activated solenoid valves.

DRIVING

With the Controller Key Switch **ON** (and the engine running, dual fuel models only), both chassis and controller Emergency Stop Switches **ON**, the Interlock Lever depressed, and the Drive/Lift Switch on **DRIVE**, the machine will drive forward or reverse at a speed proportional to the angle the control lever is pushed or pulled.

Driving with the Platform Lowered

Selecting **HIGH SPEED** with the Drive Speed Switch and moving the Control Lever forward or reverse with the platform fully lowered will energize the Drive Relay contacts (dual fuel only), the Platform Down Relay contacts, the Series/Parallel Coils, the Proportional Coil and the Forward or Reverse Coil to allow oil to flow into the Parking Brake (releasing the Brake) and serially through the Hydraulic Motors. The Proportional Valve closes or opens in proportion to the movement of the Control Lever (from center). As the Proportional Valve closes, more oil is allowed to flow to the Forward or Reverse Valve increasing drive speed.

Selecting **HIGH TORQUE** (low speed) with the Drive Speed Switch the Series/Parallel Valves are not energized, allowing the oil to divide through the Hydraulic Motors producing the high torque/low drive speed.

Driving with the Platform Elevated

Raising the platform (see *RAISING AND LOWERING THE PLATFORM*, below) opens the Platform Down Switch which cuts power to the Platform Down Relay. This prevents the Series/Parallel Coils from energizing and cuts power to the Controller high speed circuit. When raised the platform will only drive at the creep speed (motors in parallel).

Steering

On the top of the Control Lever is a momentary rocker switch for steering the machine left and right. Pressing the right or left side of the rocker switch will energize the Steering Coils and allow oil to flow through the Steering Valve to the Steering Cylinder. Releasing the rocker switch de-energizes the Steering Coils and holds the Steering Cylinder in position. **The Steering Cylinder will not automatically return to center. The Steering Switch must be activated to change the wheels direction.**

RAISING AND LOWERING THE PLATFORM

With the Controller Key Switch **ON** (and the engine running, dual fuel models only), both chassis and controller Emergency Stop Switches **ON**, the Interlock Lever depressed, and the Drive/Lift Switch on **LIFT**, the machine will elevate at a speed proportional to the angle the Control Lever is pushed forward.

Pushing forward on the Control Lever energizes the Proportional Coil, Up Coil and Motor Relays to start the Electric Motors (electric models only). The greater the angle (from center) of the Control Lever the more the Proportional Valve closes. As the Proportional Valve closes more oil is allowed to flow through the Lift Valve to the Lift Cylinder increasing lift speed.

Lowering the platform electrically energizes the Down Alarm and the Down Coil. This allows the oil to flow out of the Lift Cylinder through an orifice, which controls the rate of descent, then back to tank. During the last 12 in. (304 mm) of lowering the Cushion Down Valve is energized forcing the oil thru another orifice slowing the platform rate of descent. Lowering the platform manually with the Emergency Down Valve allows the oil to flow out of the Lift Cylinder in the same manner but there is no Down Alarm.

DESIGN FEATURES

The SL26/30N has the following features:

- The drive speed is limited to creep speed when operating the work platform while platform is elevated.
- The platform descent rate is controlled by an orifice (fixed speed) and is slowed further by another orifice during the last 12 in. (304 mm) of platform lowering (cushion speed). The lift cylinder is equipped with a velocity fuse to prevent descent should the lift hose rupture.
- A parking brake is automatically engaged when the Control Lever is released and the machine comes to a full stop.
- The Controller and chassis controls are equipped with Emergency Stop Switches for stopping all powered functions.
- The Interlock Lever must be depressed for the Controller to function.
- An alarm is provided to signal when the platform is lowering.
- A lift switch is located in the Control Module on the Chassis for lifting and lowering platform from ground level.
- An Emergency Down Valve is provided in the Control Module, to lower the platform in the event electrical power is lost.

3.1 Controls and Indicators

The controls and indicators for operation of the SL26/30N Work Platform are shown in Figure 3-1. The name and function of each control and indicator are listed in Table 3-1. The index numbers in Figure 3-1 correspond to the index numbers in Table 3-1. The operator shall know the location of each control and indicator and have a thorough knowledge of the function and operation of each before attempting to operate the unit.

Table 3-1: Controls and Indicators

Controller/Platform

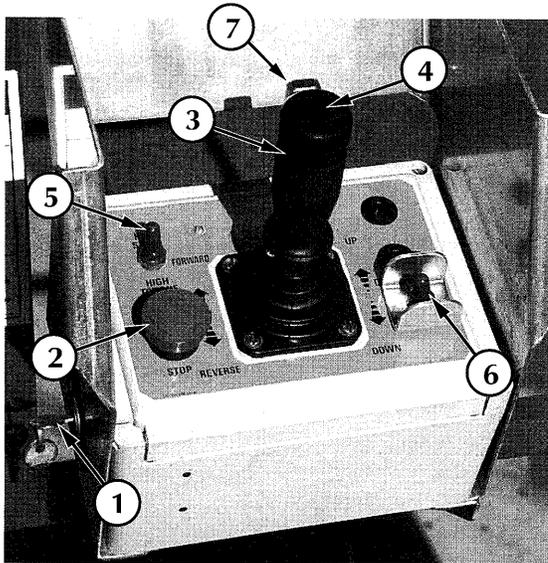
INDEX NO.	NAME	FUNCTION
1	KEY SWITCH (Electric)	Turn key clockwise to provide power to the Interlock Switch.
	KEY SWITCH (Dual Fuel)	Turn key fully clockwise to start engine when released key goes to RUN to provide power to the Interlock Switch.
2	EMERGENCY STOP SWITCH (platform)	Push red button to cut power to controls (off). Turn clockwise to provide power (on).
3	CONTROL LEVER	Move joystick forward or backwards to proportionally control Drive Valves or Lift and Down Valve depending on position of Drive Lift Switch.
4	STEERING SWITCH	Moving the momentary rocker switch RIGHT or LEFT steers the work platform in that direction. Although the Steering Switch is self centering the steering system is not. The wheels must be steered back to straight.
5	DRIVE SPEED/TORQUE SELECTOR SWITCH	Provides two speed/torque ranges, in forward or reverse. HIGH SPEED -low torque and HIGH TORQUE -low speed.
6	DRIVE/LIFT SWITCH	Selecting DRIVE allows the work platform to move forward or reverse. Selecting LIFT allows the work platform to raise or lower.
7	INTERLOCK LEVER SWITCH	Provides power to the Controller powered functions, only when depressed, preventing accidental activation of the Controller.

Chassis

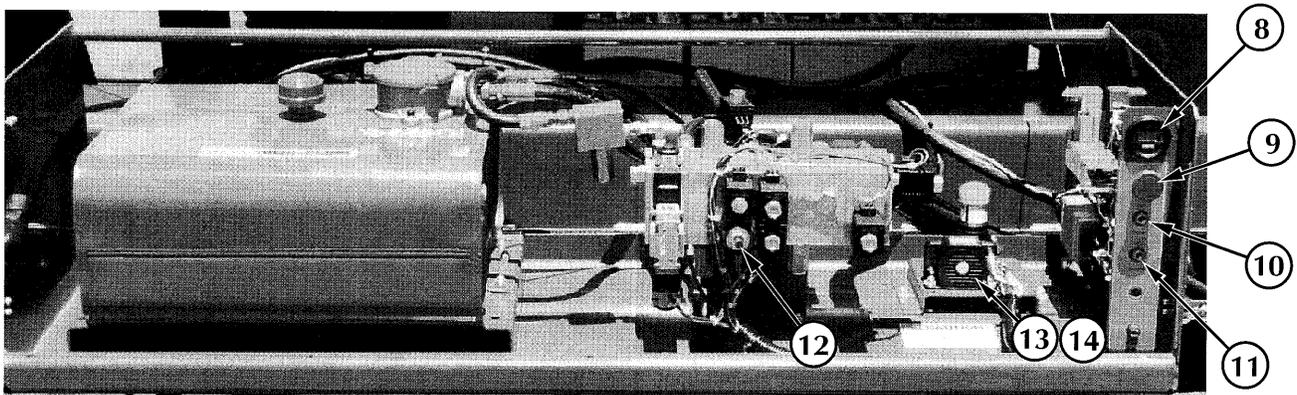
INDEX NO.	NAME	FUNCTION
8	VOLT/HOUR METER	Shows state of charge of batteries and hours machine has been on.
9	EMERGENCY STOP SWITCH (chassis)	Push red button to cut power to controls (off). Turn clockwise to provide power (on).
10	CHASSIS LIFT SWITCH	Push switch up to lift the platform and push switch down to lower the platform.
11	FUEL SELECTOR SWITCH (Dual Fuel Only)	Moving switch up or down changes the engines fuel supply between GASOLINE and PROPANE . Placing the switch in the center position purges the fuel lines prior to changing fuels.
12	EMERGENCY LOWERING VALVE	Push in and turn knob ¼ turn counterclockwise, the knob will pop out and the platform will lower. To close, push in and turn knob ¼ turn clockwise until detent engages. The platform cannot be raised until this valve is closed.
13	DOWN ALARM* (60 Hz)	Sounds an audible signal while platform is lowering during normal operation. If the Emergency Lowering Valve is used the alarm does not sound.
14	TILT ALARM* (600 Hz)	Sounds an audible signal when the platform is elevated and on a slope of 2° side to side or fore and aft.
15	BATTERY CHARGER (Electric model only)	Charger turns on automatically after a short delay. The ammeter indicates when charger is operating. Charger turns off automatically when batteries are fully charged.
16	BRAKE RELEASE PUMP**	Releases the Parking Brake allowing the machine to be moved in the event power is lost or for winching onto a trailer.

* Down Alarm and Tilt Alarm are the same unit with different inputs.

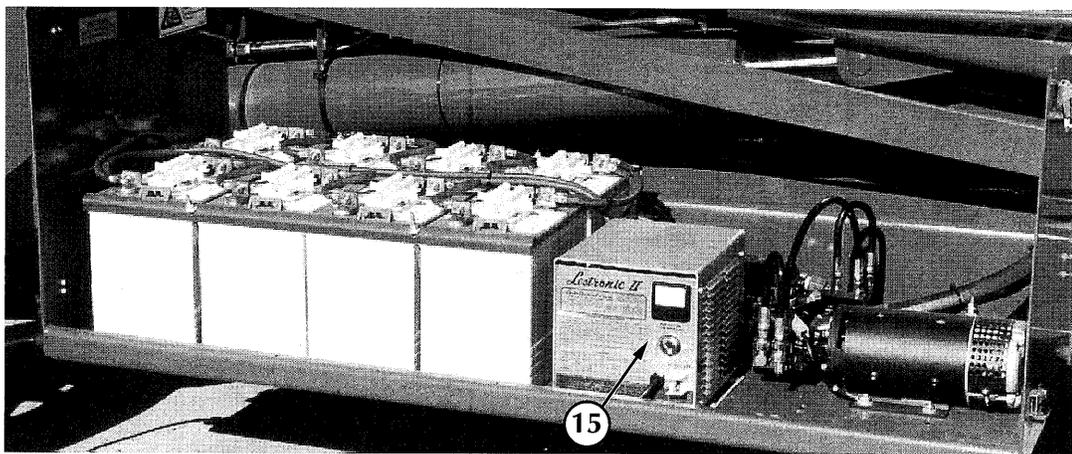
** Not Shown, see Figure 3-2.



Controller



Control Module



Power Module

Figure 3-1: Controls and Indicators

3.2 Safety Rules and Precautions

Always observe the following safety rules and precautions when using the SL26/30N Work Platform:

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

NEVER elevate the platform or drive the machine while elevated unless the machine is on a firm level surface.

NEVER sit, stand or climb on guardrail or midrail.

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

NEVER operate the machine if all guardrails are not properly in place and secured with all fasteners properly torqued.

CLOSE gate across entrance after mounting the platform.

NEVER use ladders or scaffolding on the platform.

NEVER attach overhanging loads or increase the size of the platform.

LOOK up, down and around for overhead obstructions and electrical conductors.

DISTRIBUTE all loads evenly on the platform. (For maximum platform load, refer to Table 1-1).

NEVER use damaged equipment. (Contact UpRight for instructions.)

NEVER change operating or safety systems.

INSPECT the machine thoroughly for cracked welds, loose hardware, hydraulic leaks, damaged control cable, loose wire connections and tire damage.

NEVER climb down elevating assembly with the platform elevated.

NEVER perform service on machine while platform is elevated without blocking elevating assembly.

CHECK all four tires for correct inflation (50 psi).

NEVER recharge batteries near sparks or open flame; batteries that are being charged emit highly explosive hydrogen gas.

SECURE the work platform against unauthorized use by turning the key switch off and removing the key from the key switch when leaving the machine unattended.

NEVER replace any component or part with anything other than original UpRight replacement parts without the manufacturers consent.

ALWAYS read, understand, and follow Section 8 of ANSI Standard A92.6-1990 when operating any work platform.

3.3 Pre-Operation Inspection

NOTE: Carefully read, understand and follow all safety rules, operating instructions, labels and the Scaffold Industry Association's **MANUAL OF RESPONSIBILITIES**. Perform the following steps each day before use.

VISUAL INSPECTION



WARNING



DO NOT perform service on work platform with the platform elevated unless the elevating assembly is properly blocked.

1. Remove module covers and inspect for damage, oil leaks or missing parts.
2. Check the level of the hydraulic oil with the platform fully lowered (see Section 4.4). Oil should be visible in the sight gauge. Add ISO #46 hydraulic oil, if necessary.
3. Check that the fluid level in the batteries is correct (see Section 4.3).
4. Carefully inspect the entire work platform for damage such as cracked welds or structural members, loose or missing parts, oil leaks, damaged cables or hoses, loose connections and tire damage.
5. Check that all guardrails are securely in place with all fasteners properly torqued.
6. Check tire pressure; 50 psi (3.4 bar).
7. Turn the Chassis Emergency Stop Switch to the ON position. Turn the red knob clockwise.

DUAL FUEL MODEL INSPECTION

1. Check fuel supply.
2. Check engine oil level with the dipstick.
3. Set dual fuel selector to desired position. Set to the center position to purge the system when switching fuels. If the machine is to be operated on propane, open the supply valve on the tank.

NOTE: When using LP gas, use clean, water free liquid petroleum gas, preferably from a bulk storage tank. Follow the instructions located on the power module tray for filling the tank. Over filling the propane tank may cause regulator freeze-up.



WARNING



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

ELECTRIC MODEL INSPECTION

1. Verify batteries are charged (see Section 4.3).
2. Check that AC extension cord has been disconnected from charger.

SYSTEM FUNCTION INSPECTION

⚠ WARNING ⚠

STAND CLEAR of the work platform while performing the following checks.

Before operating the work platform survey the work area for surface hazards such as holes, drop-offs, bumps and debris.

Check in **ALL** directions, including above the work platform, for obstructions and electrical conductors.

Protect control console cable from possible damage while performing checks.

1. Unhook Controller from front guardrail. Firmly grasp Controller hanger in such a manner that the Interlock Lever can be depressed, while performing the following checks from the ground.
2. Turn the Emergency Stop Button clockwise or pull up to the ON position.
3. Turn Controller Key Switch clockwise to **ON**. Turn fully clockwise to start engine (dual fuel only).
4. Position Drive/Lift Switch to **DRIVE** position.
5. With the Speed Range Switch first in **HIGH TORQUE** and then in **HIGH SPEED** depress the Interlock Lever and slowly push the Control Lever to **FORWARD** then **REVERSE** positions to check for speed and directional control. The farther you push or pull the Control Lever the faster the machine will travel.
6. Push Steering Switch **RIGHT** then **LEFT** to check for steering control.
7. Position Drive/Lift Switch to **LIFT**, rehook Controller to front guardrail.

⚠ WARNING ⚠

LOOK up and around for obstructions prior to operating the lift function.

DO NOT operate the work platform within 10 feet of any electrical power lines. **THIS WORK PLATFORM IS NOT INSULATED.**

DO NOT elevate the platform unless the work platform is on firm level ground.

DO NOT enter the elevating assembly while the platform is elevated.

8. Push Chassis Lift Switch to UP position and elevate platform while pushing the Tilt Sensor off of level. The platform should only elevate about one foot (.3 m) and the Tilt Alarm should sound. If the platform continues to elevate and/or there is no alarm **STOP** and remove the machine from service until it is repaired.
9. Release the Tilt Sensor and fully elevate platform.
10. Visually inspect the elevating assembly, lift cylinder, cables and hoses for damage or erratic operation. Check for missing or loose parts.
11. Lower the platform partially by pushing Chassis Lift Switch to **DOWN**, and check operation of the audible lowering alarm.
12. Open the Chassis Emergency Lowering Valve, push in and turn counterclockwise, to check for proper operation. Once the platform is fully lowered, close the valve, push in and turn clockwise until the detent engages.
13. Mount the platform making sure the gate has been latched.
14. Position Drive/Lift Switch to **LIFT**.
15. Slowly push Control Lever to **UP** to raise the platform, fully actuate the Control Lever to check proportional lift speed. Slowly pull Control Lever to **DOWN** position to lower platform. Check that Lowering Alarm sounds.
16. Turn Controller Key Switch to **OFF**, push the Emergency Stop Button and dismount the platform.
17. Close and secure module covers.

3.4 Operation

NOTE: Before operating work platform, ensure that the pre-operation and safety inspection has been completed, any deficiencies have been corrected and the operator has been thoroughly trained on this machine.

TRAVEL WITH PLATFORM LOWERED

1. Verify Chassis Emergency Stop Switch is in the ON position.
2. After mounting platform close and latch gate. Check that guardrails are in position and properly assembled with fasteners properly torqued.
3. Check that route is clear of persons, obstructions, holes and drop-offs and is capable of supporting the wheel loads.
4. Check clearances above, below and to the sides of the platform.
5. Turn Controller Emergency Stop Button clockwise or pull up to the ON position.
6. Set the Drive/Lift Switch to the **DRIVE** position and turn the Key Switch to **ON**. On dual fuel models start the engine.
7. Position the Drive/Lift Speed Range Switch to **HIGH TORQUE**.
8. Grasp the Control Lever so the Interlock Lever is depressed (releasing the Interlock Lever cuts power to Controller). Slowly push or pull the Control Lever to **FORWARD** or **REVERSE** to travel in the desired direction. The farther you push or pull the Control Lever from center the faster the machine will travel.
9. While moving, push the Drive/Lift Speed Range Switch to **HIGH SPEED** for travel on level surfaces or to **HIGH TORQUE** for climbing grades or traveling in confined areas.

STEERING

1. Push the Steering Switch **RIGHT** or **LEFT** to turn the wheels. Observe the tires while maneuvering to insure proper direction.

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

RAISING AND LOWERING THE WORK PLATFORM

⚠ WARNING ⚠	
<p>LOOK up and around for obstructions before performing the lift function.</p> <p>DO NOT elevate the platform unless the work platform is on a firm and level surface.</p> <p>DO NOT operate the work platform within 10 feet of any electrical lines . THIS WORK PLATFORM IS NOT INSULATED.</p> <p>NEVER enter the Elevating Assembly while the platform is elevated.</p>	

1. Position the Drive/Lift Switch to **LIFT**.
2. While depressing the Interlock Lever, push the Control Lever slowly to **UP** to raise the platform. Pushing the Control Lever farther increases the lift speed. If the machine is not level the Tilt Alarm will sound and the machine will not lift or drive. If the Tilt alarm sounds the platform **must be lowered** and the machine moved to a level location before attempting to re-elevate the Platform.
3. When the work task is completed, position the Drive/Lift Switch to **LIFT** and lower the platform by pulling back on the Control Lever until the platform is fully lowered.

TRAVEL WITH WORK PLATFORM ELEVATED

⚠ WARNING ⚠	
<p>Travel with platform elevated ONLY on firm and level surfaces.</p>	

NOTE: The work platform will travel at reduced speed when in the elevated position.

1. Check that the route is clear of persons, obstructions, holes and drop-offs and is capable of supporting the wheel loads.

2. Check clearances above, below and to the sides of platform.
3. With the platform elevated position the Drive/Lift Switch to the **DRIVE** position.
4. Push the Control Lever to **FORWARD** or **REVERSE** for the desired direction of travel. If the machine is not level the Tilt Alarm will sound and the machine will not lift or drive. If the Tilt alarm sounds the platform **must be lowered** and the machine moved to a level location before attempting to re-elevate the Platform.

EMERGENCY LOWERING

The Emergency Lowering Valve is located on the left hand side of the chassis through the cutout in the control module cover.

1. Open the Emergency Lowering Valve by pushing in and turning the knob counterclockwise approximately $\frac{1}{4}$ turn, the knob will pop out disengaging detent (see Figure 3-1).
2. Once the platform is fully lowered, be certain that the Emergency Lowering Valve is closed again. The platform will not elevate if the Emergency Lowering Valve has not been closed.
3. To close the Emergency Lowering Valve, push the knob in and turn approximately $\frac{1}{4}$ turn clockwise until the detent engages.

SWITCHING FUELS (DUAL FUEL ONLY)

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

AFTER USE EACH DAY

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

3.5 Brake Release Pump (Figure 3-1 & 3-2)

Perform the following only when the machine will not operate under its own power and it is necessary to move the machine or when towing the machine up a grade or onto a trailer to transport.

1. Close the needle valve by turning the knob clockwise.
2. Pump the Brake Release Pump until the Parking Brake Cylinder Rod clears the wheel rotor.
3. The machine will now roll when pushed or pulled.
4. Be sure to open the needle valve and verify that the cylinder rod has extended before the machine is operated.



WARNING



Never operate work platform with the Parking Brake inoperative. Serious injury or damage could result.

Never tow faster than 1 ft./sec. (.3 m/sec).

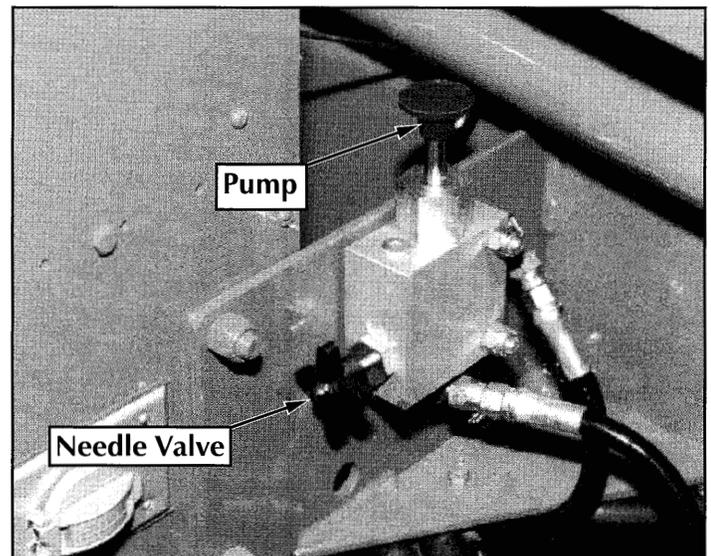


Figure 3-2: Brake Release Pump

3.6 Fold Down Guardrails (Figure 3-3)

This procedure is only for passing through doorways. Guardrails must be returned to proper position before using the machine.

FOLD DOWN PROCEDURE

NOTE: When performing the following procedures retain all fasteners.

1. Place Controller on deck.
2. Starting at the front of the platform, remove nuts, bolts and washers from the top of the front guardrail. Fold the front guardrail forward and down.
3. Hang the Controller from the front guardrail.
4. Close and latch the gate.
5. Remove nuts, bolts and washers from the top of the rear guardrail. Fold the rear guardrail back and down being careful to keep gate latched at all times.
6. Fold one side guardrail in so it rests on the deck, repeat with other side guardrail.

ERECTION PROCEDURE

1. Raise side guardrails.
2. Raise rear guardrail assembly, aligning holes and install bolts, washers and nuts. Tighten securely.
3. Place the Controller on the deck.
4. Raise front guardrail, aligning holes and install bolts, washers and nuts. Tighten securely.
5. Hang Controller from front guardrail.
6. Before operating work platform check that all fasteners are in place and properly torqued.

**DANGER**

Before entering platform, guardrails must be securely fastened in their proper position.

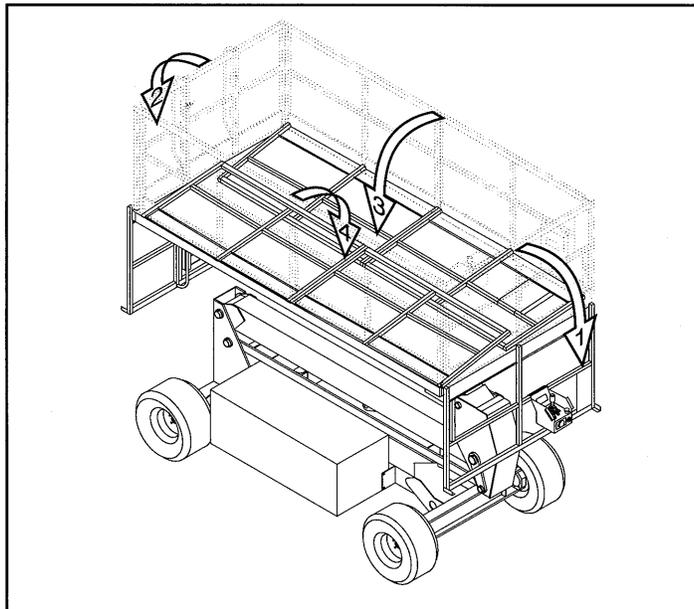


Figure 3-3: Fold Down Guardrails

4.0 Introduction

 WARNING 
<p>Be sure to read, understand and follow all information in the <i>Operation Section</i> of this manual before attempting to operate or perform service on any SL26/30N work platform.</p>

Note: For Information on the dual fuel engine refer to the engine manual.

This section contains instructions for the maintenance of the SL26/30N work platform. Procedures for the operation inspection, adjustment, scheduled maintenance, and repair/removal are included.

Referring to *Section 3.0* will aid in understanding the operation and function of the various components and systems of the SL26/30N work platform and help in diagnosing and repair of the machine.

SPECIAL TOOLS

The following is a list of special tools that are required to perform certain maintenance procedures. These tools may be purchased from your dealer.

Description	Part Number
Gauge, 0-600 psi	14124-006-00
Gauge, 0-3000 psi	14124-030-00
Inclinometer	10119-000-00

4.1 Preventative Maintenance (Table 4-1)

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. Complete descriptions of the procedures are in the text following the table.

 WARNING 
<p>Before performing preventative maintenance familiarize yourself with the operation of the machine.</p> <p>Always use the elevating assembly brace whenever it is necessary to enter the scissor assembly when the Platform is elevated.</p>

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

Model

- A= all models
- E= electric models
- D= dual fuel models

Y=Yes/Acceptable

N=No/Not Acceptable

R=Repaired/Acceptable

Preventative Maintenance Report

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

Table 4-1: Preventative Maintenance Checklist

COMPONENT	INSPECTION OR SERVICES	INTERVAL	MODEL	Y	N	R
Battery System	Check electrolyte level	Daily	A			
	Check specific gravity	30D	A			
	Clean exterior	6M	A			
	Check battery cable condition	Daily	A			
	Charge batteries	Daily	E			
	Clean terminals	6M	A			
Engine Oil	Check level and condition	Daily	D			
	Check for leaks	Daily	D			
	Change oil filter	30D	D			
Engine Fuel System	Check fuel level	Daily	D			
	Check for leaks	Daily	D			
	Replace fuel filter	6M	D			
	Check air cleaner	Daily	D			
Hydraulic Oil	Check oil level	Daily	A			
	Change filter	6M	A			
	Drain and replace oil	2Y	A			
Hydraulic System	Check for leaks	Daily	A			
	Check hose connections	30D	A			
	Check hoses for exterior wear	30D	A			
Emergency Hydraulic System	Open the emergency lowering valve and check for serviceability	Daily	A			
Controller	Check switch operation	Daily	A			
Control Cable	Check the exterior of the cable for pinching, binding or wear	Daily	A			
Platform Deck and Rails	Check fasteners for proper torque	Daily	A			
	Check welds for cracks	Daily	A			
	Check condition of deck	Daily	A			

Table 4-1: Preventative Maintenance Checklist (cont'd.)

COMPONENT	INSPECTION OR SERVICES	INTERVAL	MODEL	Y	N	R
Tires	Check for damage	Daily	A			
	Check air pressure (50 psi [3.4 bar])	Daily	A			
	Check lug nuts (torque to 90 ft. lbs. [123 Nm])	30D	A			
Hydraulic Pump	Wipe clean	30D	A			
	Check for leaks at mating surfaces	30D	A			
	Check for hose fitting leaks	Daily	A			
	Check mounting bolts for proper torque	30D	A			
	Check the drive coupling for proper torque and alignment	1Y	A			
	Lubricate pump splines	6M	D			
Drive Motors	Check for operation and leaks	Daily	A			
Steering System	Check hardware & fittings for proper torque	6M	A			
	Grease pivot pins	30D	A			
	Oil king pins	30D	A			
	Check steering cylinder for leaks & mounting bolts for proper torque	30D	A			
Elevating Assembly	Inspect for structural cracks	Daily	A			
	Check pivot points for wear	30D	A			
	Check mounting pin pivot bolts for proper torque	30D	A			
	Check linkage gear for wear	6M	A			
	Check elevating arms for bending	6M	A			
	Grease linkage pins	30D	A			
Chassis	Grease linkage gear	30D	A			
	Check hoses for pinch or rubbing points	Daily	A			
	Check component mounting for proper torque	6M	A			
	Check welds for cracks	Daily	A			
Lift Cylinder	Check the cylinder rod for wear	30D	A			
	Check mounting pin pivot bolts for proper torque	30D	A			
	Check pivot pin snap rings	30D	A			
	Check seals for leaks	30D	A			
	Inspect pivot points for wear	30D	A			
Entire Unit	Check fittings for proper torque	30D	A			
	Check for and repair collision damage	Daily	A			
	Check fasteners for proper torque	3M	A			
	Check for corrosion-remove and repaint	6M	A			
Labels	Lubricate	30D	A			
	Check for peeling, missing, or unreadable labels & replace	Daily	A			
Wheel Bearings	Check wheel assembly for play	30D	A			
	Repack wheel bearings (replace wheel bearings and seals at 2000 hrs.)	2Y	A			

4.2 Blocking Elevating Assembly (Figure 4-1)

⚠ CAUTION ⚠

DO NOT support or raise the front of the platform during any maintenance operation as this may result in damage to the tension members.

⚠ WARNING ⚠

BEFORE performing maintenance on work platform, while elevated, ensure that elevating assembly is properly supported.
DO NOT stand in elevating assembly area while installing or removing jackstand.

INSTALLATION

1. Park the work platform on firm, level ground.
2. Open control module cover.
3. Turn Chassis Emergency Stop Button clockwise to the ON position.
4. Position Chassis Lift/Lower Switch to **UP** and elevate platform approximately 12 inches (305 mm).
5. Place a jackstand with a minimum rating of 4000 lbs. (1814 Kg) between the lower mast and chassis just behind the front axle.
6. Push Chassis Lift Switch to **DOWN** position and gradually lower platform until jackstand is secured tightly between lower mast and Chassis.

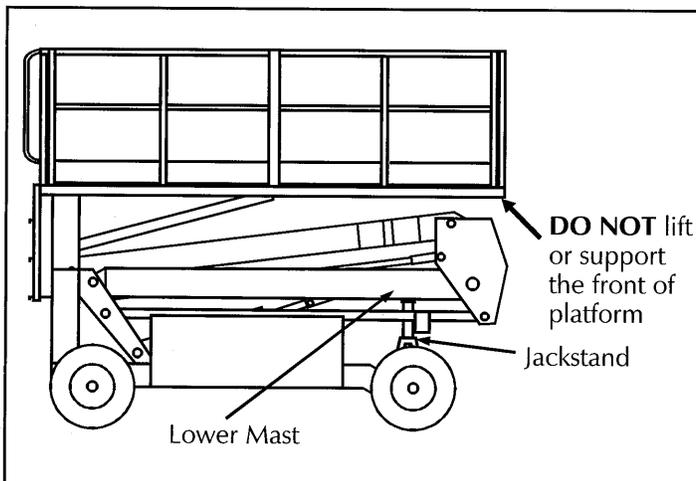


Figure 4-1: Blocking the Elevating Assembly

REMOVAL

1. Push Chassis Lift Switch to **UP** position and gradually raise platform until jackstand can be removed.
2. Remove jackstand.
3. Push Chassis Lift Switch to **DOWN** position and completely lower platform.

4.3 Battery Maintenance

⚠ WARNING ⚠

Hazard of explosive gas mixture. Keep sparks, flame, and smoking material away from batteries.
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 with high mineral content will shorten battery life.

⚠ CAUTION ⚠

If battery water level is not maintained, batteries will not fully charge creating a low discharge rate which will damage motor/pump unit and void warranty.

The battery(ies) and cables should be inspected regularly for signs of cracks in the cases, 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(ies) when it shows signs of corrosion at the terminals or when electrolyte has overflowed during charging. Use a baking soda solution to clean the battery, 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.

BATTERY CHARGING (ELECTRIC MODEL ONLY-Figure 4-2)

Charge the batteries at the end of each work shift or sooner if the batteries have been discharged.

**WARNING**

Charge the batteries only in a well ventilated area.

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

Permanent damage to the batteries will result if the batteries are not immediately recharged after discharging.

Never leave the charger unattended for more than two days.

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

Keep the charger dry.

Charge batteries as follows:

1. Check the batteries fluid level. If the electrolyte level is lower than $\frac{3}{8}$ 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. The charger turns on automatically after a short delay.
4. The charger turns off automatically when the batteries are fully charged.

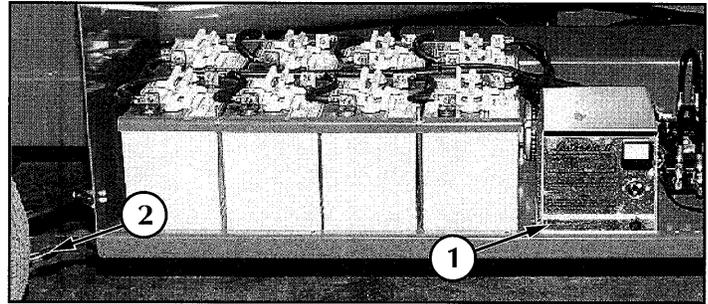


Figure 4-2: Battery Charger

BATTERY CELL EQUALIZATION

The specific gravity of the electrolyte in the battery cells should be equalized monthly. To do this, charge the battery as outlined in *Battery Charging*. After this initial charge, check the electrolyte level in all cells and add distilled water as necessary. Then, charge the batteries for an additional 8 hours. During this time, the charging current will be low (4 amps) as the cells are equalizing.

After equalization, the specific gravity of all cells should be checked with a hydrometer. The temperature corrected specific gravity should be 1.260. If the battery contains any cells with corrected readings below 1.230, the battery should be replaced.

Do not check the specific gravity in a cell to which water has just been added. If there is not enough electrolyte in a fully charged cell to obtain a sample for the hydrometer, add water and continue charging for 1 to 2 hours to adequately mix the water and electrolyte.

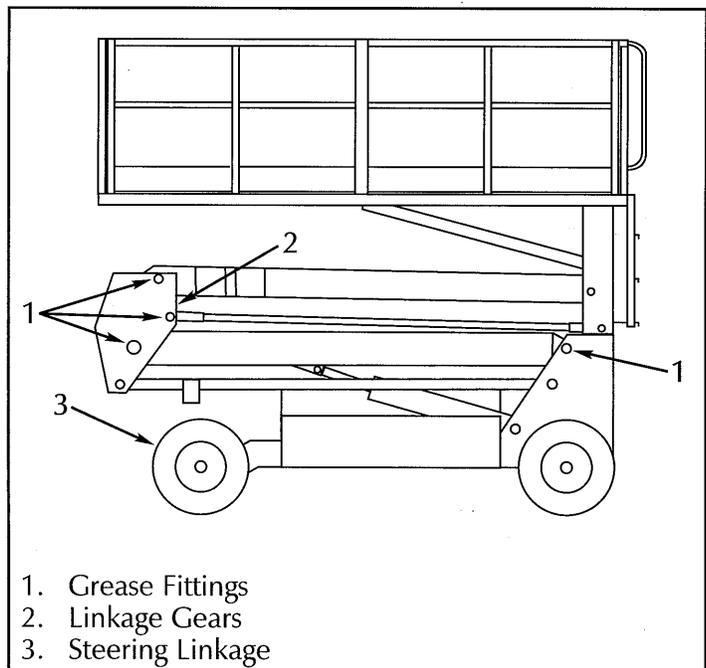


Figure 4-3: Lubrication Points

4.4 Lubrication

Refer to Table 4-1 for the lubrication intervals and Figure 4-3 for location of items that require lubrication service. Refer to the appropriate sections for lubrication information on the hydraulic oil tank and filter and rear wheel bearings.

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.

LINKAGE GEARS

1. Raise platform fully.
2. Using another work platform or ladder get up high enough to comfortably reach gears.
3. Use a long handled brush to apply multipurpose grease to the face of the gears.



CAUTION

Do not use hands to apply grease or allow any body part to enter the elevating assembly.

4. Lower the platform after greasing.

STEERING LINKAGE

Apply one or two drops of motor oil to each pivot and king pin bearing.

DUAL FUEL HYDRAULIC PUMP

Remove the capscrews that mount the pump to the engine. Remove the pump from the engine and apply high pressure molybdenum grease to the splines. Reinstall the pump and secure with the capscrews.

HYDRAULIC OIL TANK AND FILTER (Figure 4-4)

Fluid Level

With the platform fully lowered, the oil should be visible in the sight gauge. If the oil is NOT visible, fill the tank until the oil can be seen. DO NOT fill above the sight gauge or when the platform is elevated.

Oil and Filter Replacement

1. Operate the work platform for five minutes to warm up the oil. To change the filter only, go to Step 5.

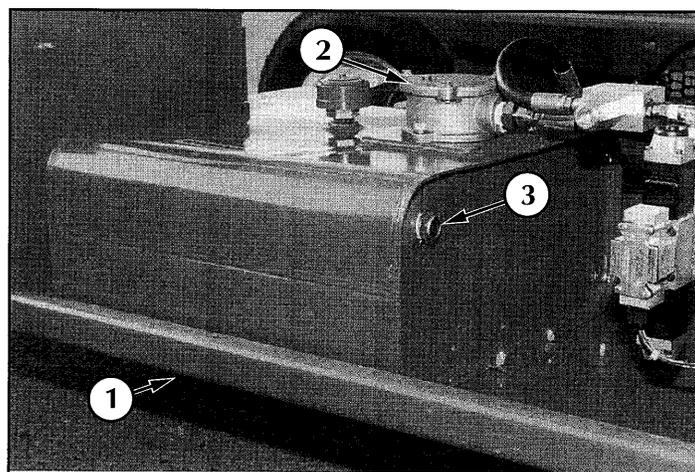


CAUTION



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. The hydraulic tank has an oil capacity of 12.0 gal (45.4 l).
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. Unscrew the filter top from the filter body.
6. Lift the filter element from the filter body.
7. Remove filter cup and clean cavity, reinstall cup.
8. Insert the replacement filter element into the filter body and press into position.
9. Fill the hydraulic oil tank to the level of the Sight Gauge with ISO #46 hydraulic oil by pouring the oil into the top of the filter. Since the oil is being filtered as it is going into the tank, it will take a while to fill the tank.



1. Drain Plug (under tank)
2. Filter Housing
3. Sight Gauge

Figure 4-4: Hydraulic Oil Tank and Filter

4.5 Setting Hydraulic Pressures

Referring to Figure 4-12 along with the other Figures will aid in the following procedures.

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



WARNING

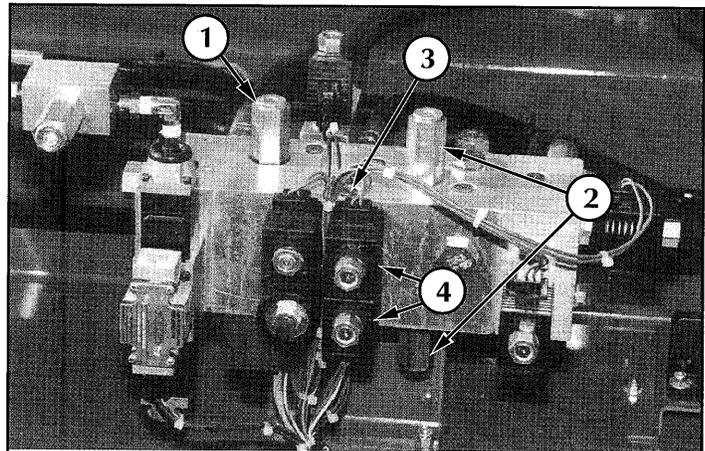


The hydraulic oil may be of sufficient temperature to cause burns. Wear safety gloves and safety glasses when handling hot oil.

The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. Obtain medical assistance **immediately** if cut by hydraulic oil.

MAIN RELIEF VALVE (Figure 4-5)

1. Operate the hydraulic system for five minutes.
2. Remove the gauge port plug and install a 0-3000 psi pressure gauge assembly.
3. Remove the plug in the end of the Main Relief Valve to expose the adjusting screw.
4. Remove the hex nuts holding the Drive Coils onto the Drive Valves and remove the coils.
5. With the engine running and the Drive/Lift Switch in **DRIVE**, position the Control Lever to **REVERSE** and hold until the system bypasses (approximately 2 seconds).
6. While holding the Control Lever in **REVERSE**, set the pressure to 2000 psi (138 bar) maximum by slowly turning the adjusting screw, clockwise increases pressure.
7. Reinstall the coils on the Drive Valves.
8. Remove the pressure gauge and reinstall all plugs.



1. Main Relief Valve
2. Counterbalance Valves
3. Gauge Port Plug
4. Drive Coils

Figure 4-5: Hydraulic Manifold Assembly, Front View

COUNTERBALANCE VALVES (Figure 4-5)

1. Operate the hydraulic system for five minutes
2. Remove the gauge port plug and install a 0-3000 psi pressure gauge assembly.
3. Exchange the top Counterbalance Valve with the Main Relief Valve.
4. Remove the plug from the end of the Counterbalance Valve to expose the adjusting screw.
5. Remove the hex nuts holding the Drive Coils onto the Drive Valves and remove the coils.
6. With the engine running and Lift/Drive Switch in **DRIVE**, position the Control Lever to **REVERSE** and hold until the system bypasses (approximately 2 seconds).
7. While holding the Control Lever in **REVERSE**, set the pressure to 900 psi (62 bar) maximum by slowly turning the adjusting screw, clockwise increases pressure.
8. Exchange the top Counterbalance Valve with the bottom Counterbalance Valve and repeat the procedure setting the bottom Counterbalance Valve to 1200 psi (83 bar).
9. Be sure to reinstall the valves to their original locations and replace all plugs when finished setting pressures.
10. Reinstall drive coils.

STEERING RELIEF VALVE

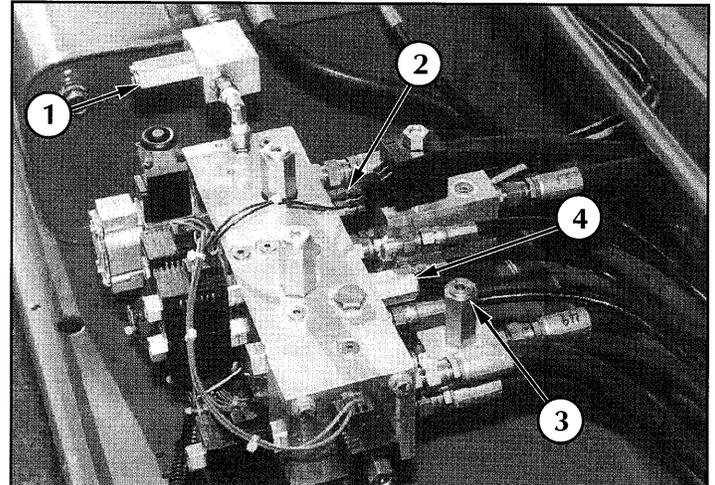
(Figure 4-6)

1. Remove the top steering hose from back of the manifold and replace it with a 0-3000 psi gauge assembly.
2. Block the end of the hose with a cap fitting.
3. Remove the plug from the end of the valve to expose the adjusting screw.
4. With the engine running, push the Steering Switch **RIGHT** and set the pressure to 1200 psi (83 bar) maximum by slowly turning the adjusting screw clockwise to increase pressure.
5. Replace the valve plug.
6. Remove the gauge and reinstall the hose.

DRIVE RELIEF VALVE

(Figure 4-6)

1. Operate the hydraulic system for five minutes
2. Remove the gauge port plug and install a 0-3000 psi pressure gauge assembly.
3. Exchange the Main Relief Valve with the Drive Relief Valve.
4. Remove the plug from the end of the valve to expose the adjusting screw.
5. Remove the hex nuts holding the Drive Coils onto the Drive Valves and remove the coils.
6. With the engine running and the Drive/Lift Switch in **DRIVE**, position the Control Lever to **REVERSE** and hold until the system bypasses (approximately 2 seconds).
7. While holding the Control Lever in **REVERSE**, set the pressure to 1500 psi (103 bar) maximum by slowly turning the adjusting screw, clockwise increases pressure.
8. Reinstall the valves to their original locations and replace all plugs when finished setting pressure.
9. Replace the Drive Valve Coils.



1. Steering Relief Valve
2. Top Steering Hose
3. Drive Relief Valve
4. Brake Pressure Reducing Valve

Figure 4-6: Hydraulic Manifold Assembly, Top View

BRAKE PRESSURE REDUCING VALVE (Figure 4-6)

1. Using two 1-ton jack stands and a 2-ton jack, jack the work platform up to raise the rear wheels off the ground and block the machine securely.
2. Remove the outlet hose from the backside of the Brake Release Pump and install a 0-600 psi gauge assembly in-line with a tee fitting.
3. Remove the plug on the end of the Brake Relief Valve.
4. With the engine running, position the Control Lever to **REVERSE** and hold.
5. While holding the Control Lever in **REVERSE**, set the pressure to 350-480 psi (24-33 bar) maximum by slowly turning the adjusting screw, clockwise increases pressure.
6. Replace the valve plug.
7. Remove the gauge and tee fitting and reinstall the hose.
8. Remove the jack stands and lower the machine.

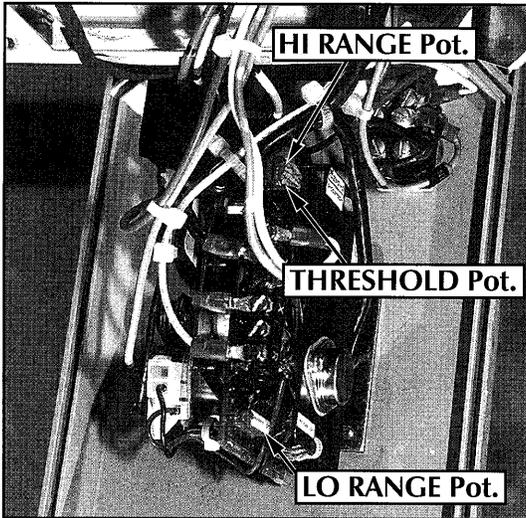


Figure 4-7: Proportional Controller Adjustment

4.6 Switch Adjustments

PROPORTIONAL CONTROL ADJUSTMENT (Figure 4-7)

To perform the adjustment, the control box must be opened by removing the screws at the corners of the controller and rotating the top forward to expose the proportional controller. Remove the potting material from the potentiometer adjustment screws if necessary. Please follow the exact sequence outlined below when making controller adjustments. It is possible that making an adjustment to one setting could affect another so please verify that all speeds are correct before completing the adjustment procedure. For all potentiometers, clockwise movement will increase, and counterclockwise movement will decrease the speed of that function.

1. Set the THRESHOLD potentiometer so that the machine is just starting to move when the controller is stroked slightly forward.
2. Mark out a 20 ft. (6.1 m) course on the ground to use for step numbers 3, 4 and 5.
3. Set the HI RANGE potentiometer so that the machine will travel 20 ft. (6.1 m) in 5 to 7 seconds at full controller deflection.

Note: the machine should be running full speed before crossing the starting line, and should run perfectly straight through the course.

4. Elevate the machine until the lower tension member clears the limit switch lever. Set the LO RANGE potentiometer so that the machine will travel 20 ft. (6.1 m) in 18 to 22 seconds at full controller deflection.

Note: the machine should be running full speed before crossing the starting line, and should run perfectly straight through the course.

5. Repeat the speed trials for verification and readjust as necessary.

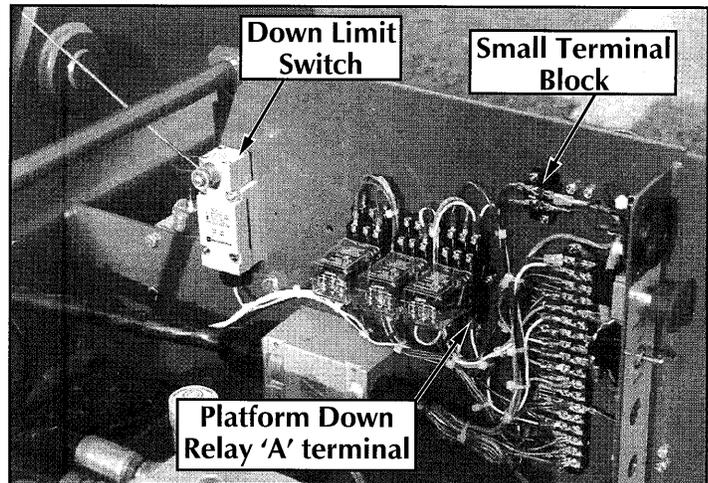


Figure 4-8: Platform Down Limit Switch Adjustment

PLATFORM DOWN LIMIT SWITCH (Figure 4-8)

The Platform Down Switch closes the circuit to the Platform Down Relay, which provides power to the Drive Relay, Cutout Relay, high speed circuit and Series/Parallel Valves and bypasses the Tilt Sensor when the platform is down.

1. Raise platform until mid link weldment rest is:
 - 2 inches (51 mm) for SL26
 - 3.5 inches (89 mm) for SL30
 from top of front axle (Figure 4-9).
2. Disconnect the black wire on the small terminal block and the white wire connected to the 'A' terminal of the Platform Down Relay (Figure 8). Connect an ohmmeter or continuity tester to the wires.
3. Adjust switch to just open by loosening hex nut and moving the actuating arm. Raise and lower platform to verify adjustment and tighten hex nut.
4. Disconnect ohmmeter and reconnect wires.
5. Lower platform.

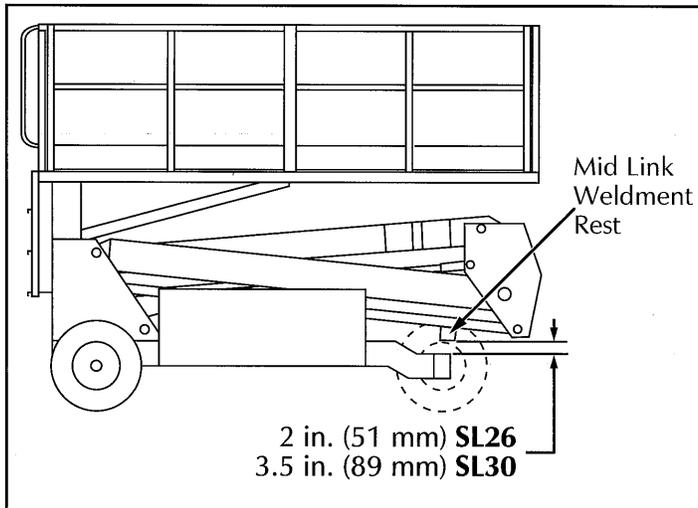


Figure 4-9: Platform Down Limit Switch Adjustment

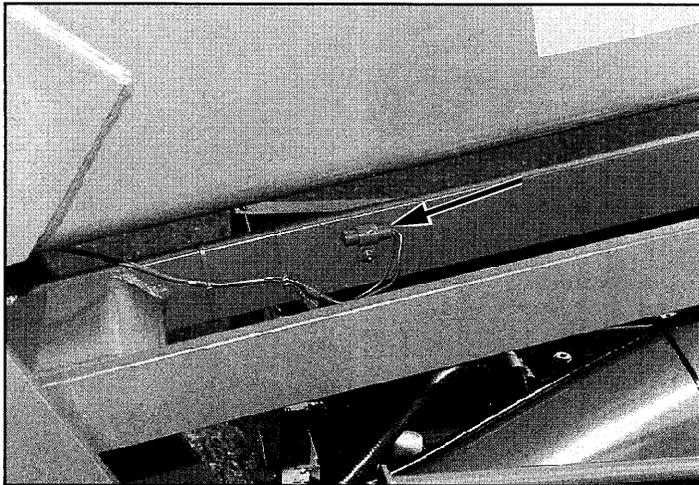


Figure 4-10: Cushion Down Limit Switch

CUSHION DOWN LIMIT SWITCH (Figure 4-10)

The Cushion Down Limit Switch is a mercury switch that provides power to energize the Cushion Valve during the last 12 in. (30 cm) of platform lowering.

1. Raise the platform 12 in. (30 cm) from its fully lowered position.
2. Disconnect the wires at the mercury switch and connect an ohmmeter or continuity tester.
3. Rotate the switch until it just closes. If necessary tighten the locknut that mounts the switch.
4. Raise and lower the platform to verify the adjustment.
5. Disconnect ohmmeter and reconnect wires.
6. Lower platform.

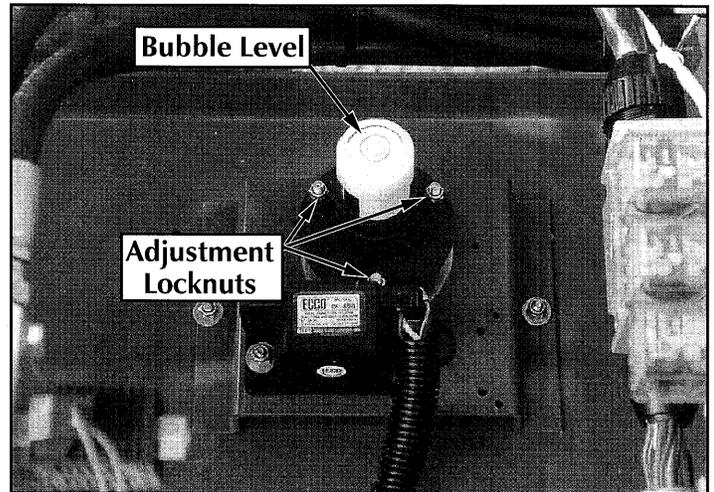


Figure 4-11: Tilt Sensor Adjustment

TILT SENSOR (FIGURE 4-11)

The Tilt Sensor has three wires; red-power (12/24 v in), black-ground, white-output (12/24 v out). 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' (12/24 v out).

1. Place machine on firm level surface $\pm 1/4^\circ$.
2. Use the Inclinator (P/N: 10119-000-00) to ensure front and rear of Chassis is level $\pm 1/4^\circ$.
3. Adjust the three leveling locknuts until the bubble is centered in the circle on the attached bubble level.

4.7 Hydraulic Manifold (Figure 4-12)

Though it is not necessary to remove the manifold to perform all maintenance procedures, a determination should be made prior to beginning as to whether or not the manifold should be removed before maintenance procedures begin.

REMOVAL

1. Disconnect the battery ground cable.
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 4-12 often to aid in disassembly and assembly.

1. Remove coils from solenoid valves.
2. Remove spool valve covers and spool valves.
3. Remove solenoid valves, main relief valve, counterbalance valves and emergency lowering 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.

1. Install fittings, plugs, springs, balls and orifices. Use one drop of Loctite #242 on each screw-in orifice.
2. Install emergency lowering valve, counterbalance valves, main relief valve, brake pressure reducing valve, solenoid valves and spool valves.
3. Install coils on solenoid valves.

INSTALLATION

1. Attach manifold assembly to mounting plate with bolts.

Note: Longer bolt goes in hole nearest the front of the module.

2. Attach steering relief valve block.
3. Attach drive relief valve block.
4. Connect Solenoid leads to terminal strip (as previously tagged).
5. Connect hydraulic hoses. Be certain to tighten hoses to manifold.
6. Operate each hydraulic function and check for proper operation and leaks.
7. Adjust all hydraulic pressures according to instructions in Section 4.5.

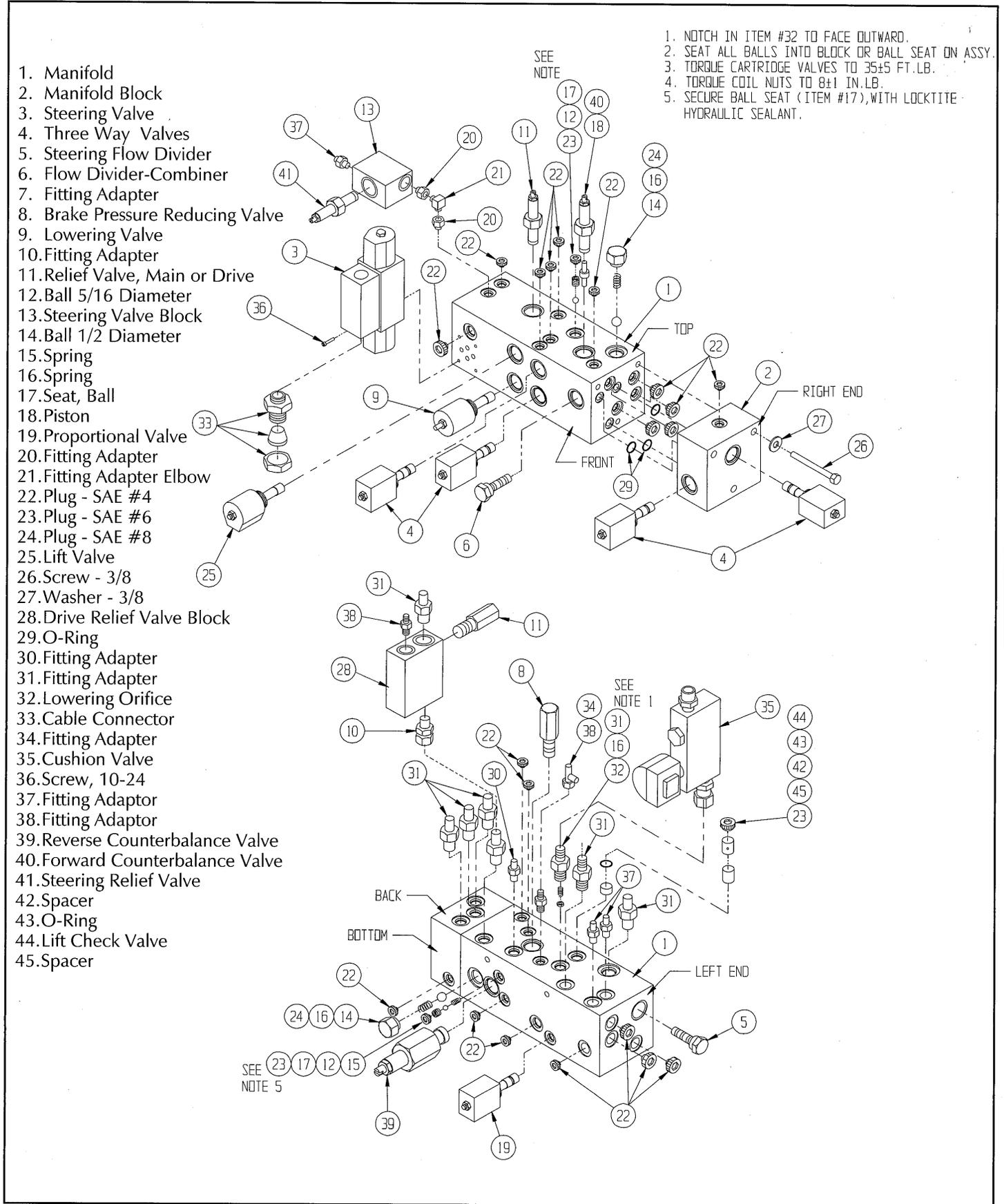


Figure 4-12: Hydraulic Manifold, Exploded View

4.8 Hydraulic Pumps

NOTE: If the hydraulic tank has not been drained, suitable means for plugging the hoses should be provided to prevent excessive fluid loss.

ELECTRIC MODELS (Figure 4-13)

Removal

1. Mark, disconnect and plug the hose assemblies.
2. Disconnect the fittings between the two pumps.
3. Loosen the capscrews and remove the pump assemblies from the motors.

Installation

1. Lubricate the pump shaft with general purpose grease and attach the pump(s) to the motor(s) with the capscrews.
2. Using a crisscross pattern torque each capscrew a little at a time until all 4 capscrews are torqued to 20 ft. lbs. (27 N-m).
3. Install the motor/pump assemblies and secure with the capscrews.
4. Reconnect the cables to the motor(s).
5. Install the fittings between the two motors.
6. Unplug and reconnect the hydraulic hoses.
7. Check the oil level in the hydraulic tank before operating the work platform.

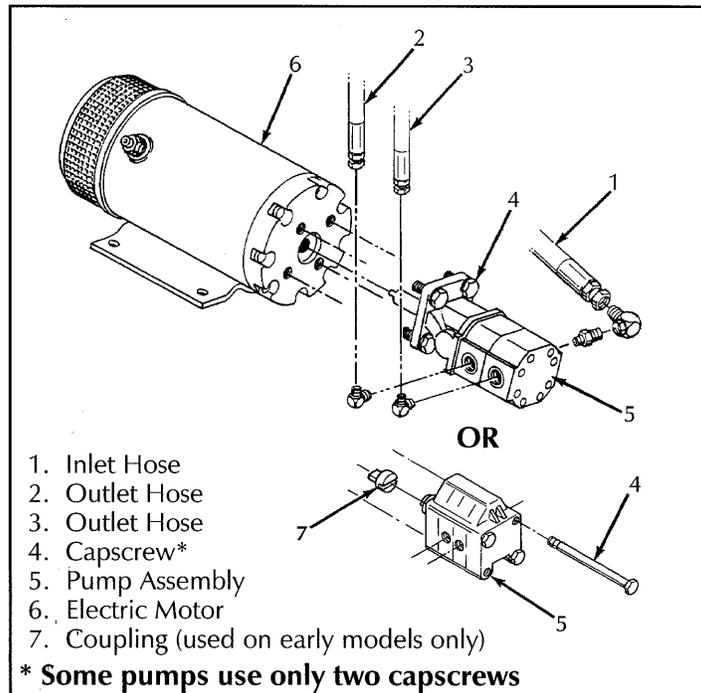


Figure 4-13: Typical Hydraulic Pump, Electric Model

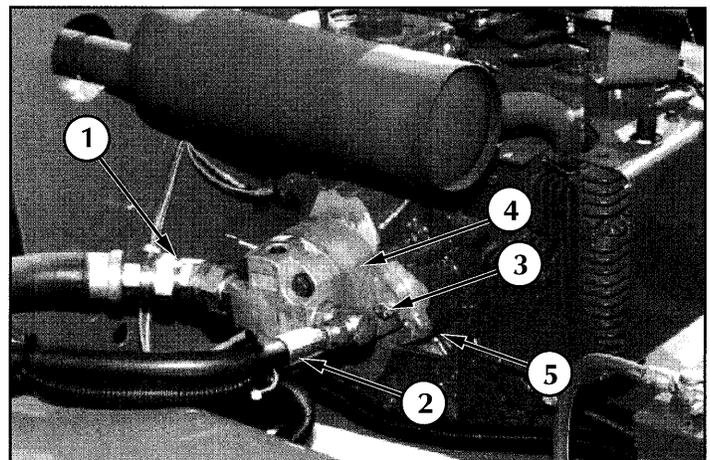
DUAL FUEL MODELS (Figure 4-14)

Removal

1. Mark, disconnect and plug the hose assemblies.
2. Loosen the capscrews and remove the pump assembly from the engine.

Installation

1. Lubricate the pump shaft with extreme high pressure molybdenum grease and attach the pump to the engine with the capscrews.
2. Torque each capscrew a little at a time until both capscrews are torqued to 20 ft. lbs. (27 N-m).
3. Unplug and reconnect the hydraulic hoses.
4. Check the oil level in the hydraulic tank before operating the work platform.



1. Inlet Hose
2. Outlet Hose
3. Capscrew
4. Pump Assembly
5. Engine Bell Housing

Figure 4-14: Typical Hydraulic Pump, Dual Fuel Model

4.9 Hydraulic Drive Motors And Hubs (Figure 4-15)

Removal

1. Park the work platform on firm level ground and block the wheels to prevent the work platform from rolling.
2. Loosen the wheel lug bolts on the motor to be removed.
3. Raise the rear of the work platform using a 2-ton jack.
4. Position jack stands under the rear axle to prevent the work platform from falling if the jack fails.
5. Remove the wheel lug bolts and wheel.
6. Remove the cotter pin, nut, hub, and shaft key.



CAUTION



ONLY use a wheel puller to remove the hub. Using any other method of removal may damage the drive motor housing or shaft and void the warranty.

Clean all fittings before disconnecting the hose assemblies.

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

7. Tag and disconnect the hose assemblies.
8. Remove the capscrews, lockwashers and drive motor assembly from the rear axle.

Installation

1. Position the drive motor in the rear axle and secure with lockwashers and capscrews.
2. Reinstall the hose assemblies.
3. Thoroughly clean the motor shaft and hub bore of all grease, paint and foreign material.
4. Reinstall the shaft key, hub, and nut. Torque each wheel hub nut to 350 ft. lbs. (478 N-m). Align the slot in the nut with the hole in the shaft and insert the cotter pin. DO NOT back off the nut to align.
5. Reinstall the wheel and lug bolts onto the hub. Torque the lug bolts to 90 ft. lbs. (123 N-m).
6. Remove the jack stands used to block the wheels. Lower the jack and remove.
7. Operate the drive system to check for leaks and proper function.

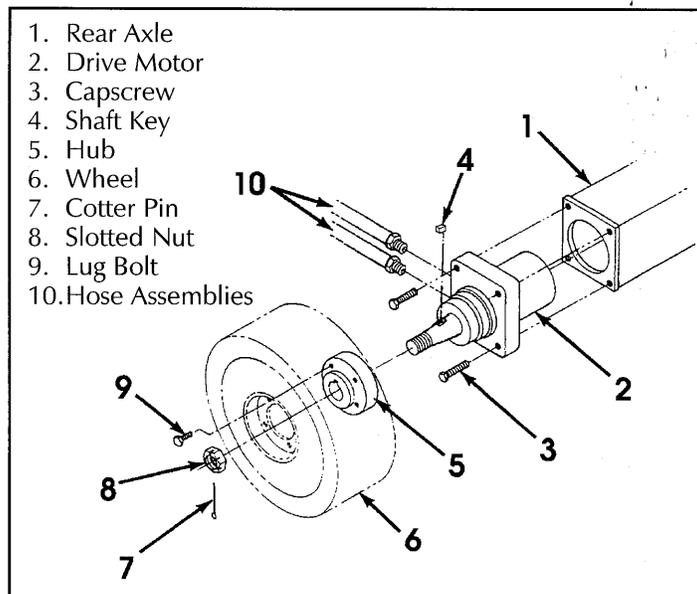


Figure 4-15: Drive Motor Installation

4.10 WHEEL BEARINGS

(Figure 4-16)

REMOVAL

1. Loosen the wheel lug nuts then, using a 2 ton capacity jack, raise the work platform until the wheel to be worked on is off the ground.
 2. Install jack stands to prevent the work platform from falling if the jack fails.
 3. Remove the wheel lug nuts and the wheel.
 4. Remove the dust cap.
 5. Remove the cotter pin.
 6. Remove the hub nut and washer.
 7. Slide the entire hub assembly from the spindle and place on clean surface.
 8. Remove the outside bearing cone and place on clean surface.
 9. Remove the grease seal and the inside bearing cone.
- Examine the bearing cups. If they are smooth, shiny and free of pits or any surface irregularities, **DO NOT** remove them.
10. If the cups need replacement, remove them by tapping around the circumference of the inside surface of the cups from the opposite side using a long drift.

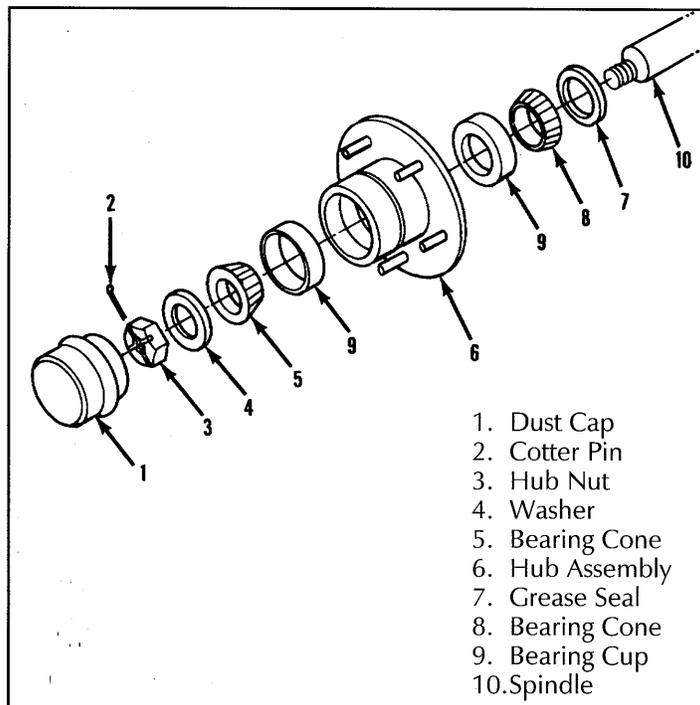


Figure 4-16: Wheel Bearings

INSTALLATION

1. Position the replacement bearing cup over the opening in the hub assembly then position the worn cup over the replacement so that the bearing surfaces face each other. Use the old bearing cone as a drift to work the replacement into position by tapping evenly around the circumference.
2. Apply a liberal coating of multi purpose grease to the bearing surface of each cup.
3. Pack the inside bearing cone with multi purpose grease and position it within the rear bearing cup in the hub assembly. Install the new grease seal.
4. Apply a thin coating of multi purpose grease to the spindle to protect the grease seal then slide the hub assembly onto the spindle.
5. Pack the outside bearing cone with multi purpose grease and slide it onto the spindle until it seats in the outer bearing cup.
6. Install the washer and hub nut. Tighten the hub nut, while rotating the assembly, until the hub drags then back the nut to the first slot that aligns with the cotter pin hole in the spindle.
7. Install a new cotter pin and bend the end up over the hub nut and the spindle.
8. Install the dust cap and wheel/tire assembly. Torque the lug nuts to 90 ft. lbs. (123 N-m).
9. Remove jack stands and lower work platform to the ground.

4.11 Brake Cylinder (Figure 4-17)

REMOVAL

1. Block the wheels to prevent the work platform from rolling when the brake is removed.
2. Tag then disconnect the hose assemblies and cap the openings to prevent foreign material from entering.
3. Remove the locknuts and lockwashers that mount the cylinder to the chassis.

DISASSEMBLY

NOTE: Prepare a clean work area on which to service the internal parts.

1. Remove fittings from cylinder barrel.
2. Remove the snap ring and withdraw the shaft and all attached components from the cylinder barrel.
3. Remove the head cap from the shaft then remove the wiper, shaft seal and seals from the head cap.
4. Unscrew the piston from the shaft and remove the static seal. Remove the piston seal from the piston.
5. Remove the spring and stop tube from the cylinder barrel.

CLEANING AND INSPECTION

1. Clean all metal parts in solvent and blow dry with filtered compressed air.
2. Check all threaded parts for stripped or damaged threads.
3. Check the bearing surfaces inside of the head cap, outer edge surface of the piston, inside of the cylinder barrel and the shaft for signs of scoring or excessive wear.
4. Check the spring for cracks.
5. Replace any parts found unserviceable.
6. Discard all seals.

ASSEMBLY AND INSTALLATION

1. Install the piston seal on the piston then assemble the static seal, shaft and piston.
2. Position the spring and stop tube on the shaft assembly.
3. Lubricate the piston seal with clean hydraulic fluid, then install the shaft assembly in the cylinder barrel.
4. Lubricate the seals with clean hydraulic fluid and install on the head cap.
5. Install the shaft seal and wiper within the head cap.
6. Lubricate entire assembly's seals and the shaft seal and wiper with clean hydraulic fluid then install the head cap onto the shaft and into the cylinder barrel.
7. Secure with snap ring.
8. Position the brake cylinder assembly on the chassis so that the shaft fully engages the brake disc, however the shaft must clear the brake disc once retracted. Secure with locknuts and washers.
9. Connect the hose assemblies.
10. Operate the brake retract circuit and check that the shaft clears the brake disc. Check for leaks.

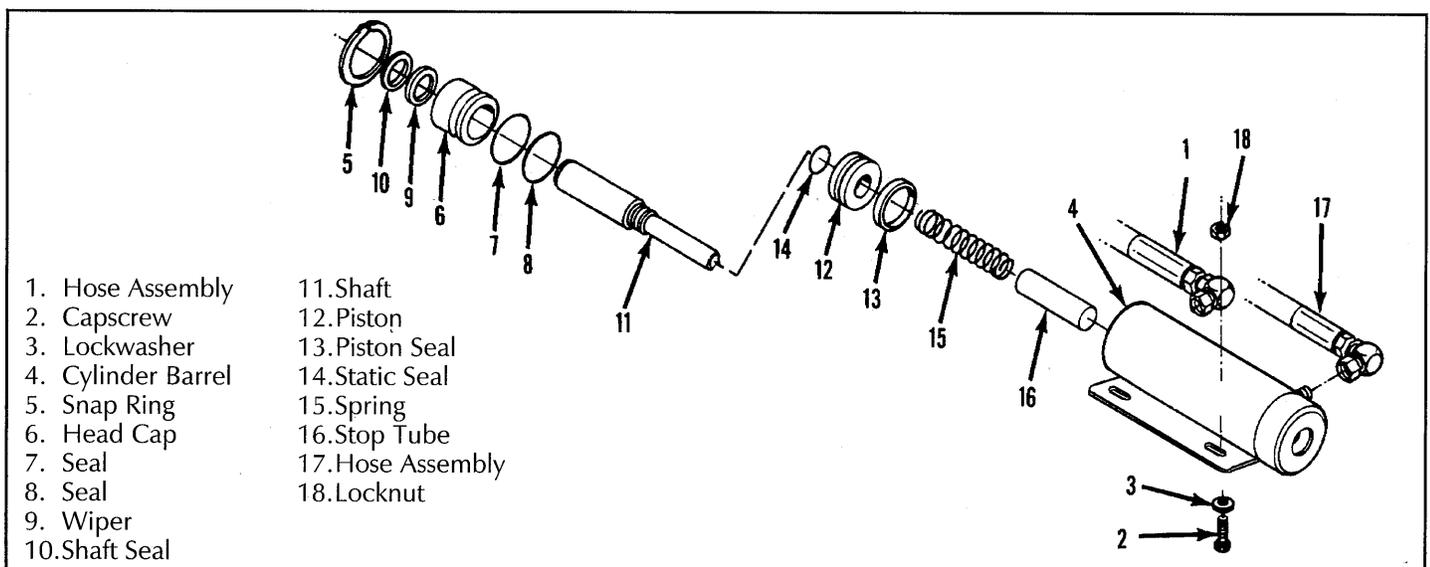


Figure 4-17: Brake Cylinder

4.12 Steering Cylinder

REMOVAL

1. Mark and disconnect the hose assemblies from the fittings and immediately cap the openings to prevent foreign material from entering.
2. Remove the capscrews securing the rod ends to the steering linkage.
3. Loosen the nut and bolt in front of the Steering Cylinder that goes through the frame.
4. Remove the capscrews and locknuts that fasten the cylinder assembly to the chassis.
5. Remove the cylinder from the chassis.

DISASSEMBLY (Figure 4-18)

1. Remove the fittings from both ends of the cylinder.
2. Remove rod ends from cylinder rods, mark position of rod ends.
3. Remove the headcaps from the barrel tube.
4. Withdraw the entire shaft assembly from either end of the barrel tube.
5. Remove the rod wipers, rod seals and static O-rings from the headcaps.
6. Discard all the seals.
7. Unscrew the No. 1 shaft from the No. 2 shaft and remove the piston.
8. Remove the piston seal and static O-ring from the piston and discard.

CLEANING AND INSPECTION

1. Wash all the metal parts in cleaning solvent and blow dry with filtered compressed air.
2. Inspect all the threaded components for stripped or damaged threads.
3. Check the inside surface of the barrel tube for scoring or excessive wear.
4. Check the piston and head caps for scoring or excessive wear.
5. Inspect the surface of both shafts for scoring or excessive wear.

ASSEMBLY AND INSTALLATION (Figure 4-18)

1. Install a new piston seal and static O-rings
2. Install the piston on the No. 1 shaft.
3. Thread the No. 2 shaft onto the No. 1 shaft and tighten securely.
4. Lubricate the piston seal with clean hydraulic fluid and install the shaft assembly in the barrel tube.

5. Lubricate and install new rod seals and static O-rings on the headcaps.
6. Lubricate and install new rod wipers in the headcaps.
7. Install headcaps in the barrel tube and tighten until the mounting holes are in-line.
8. Install the fittings in the ends of the cylinder.
9. Position the cylinder assembly in the chassis and install the capscrews and locknuts, but DO NOT tighten.
10. Tighten the nut and bolt in front of the cylinder that goes through the frame and then tighten the cylinder mounting capscrews.
10. Install the cylinder rod ends.
11. Connect the hose assemblies to the fittings.
12. Operate the steering circuit several times throughout its entire range of travel to expel trapped air and check for leaks.

ADJUSTMENT

1. Disconnect the cylinder rod ends (if connected).
2. Operate steering so that both ends of the cylinder rod are equal length ($\pm 1/32$ inch).
3. Position both tires so they are parallel with the frame and with each other.

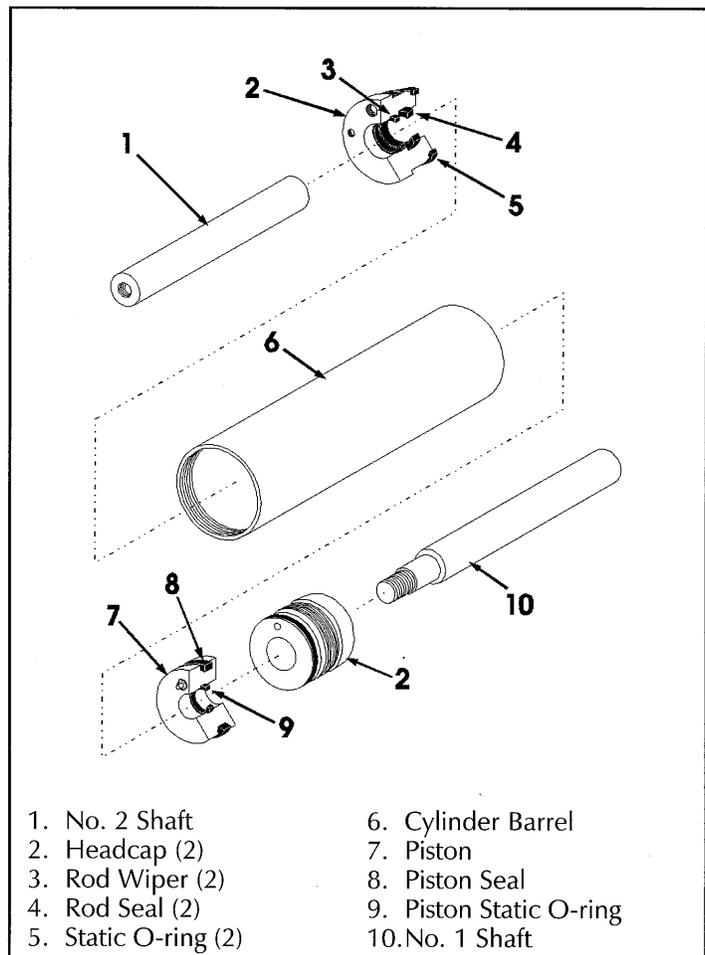


Figure 4-18: Steering Cylinder Assembly

4. Adjust the rod ends until they align with the holes on the steering linkage bars.
5. Reinstall the bolts through the steering linkage bars and rod ends. Tighten the jam nuts on the rod ends and all hardware.
6. When properly adjusted, the wheels must turn the same amount in each direction.

4.13 Lift Cylinder

NOTE: DO NOT support or raise the front of the platform during any maintenance operation as this might result in damage to the tension members.

REMOVAL

1. Raise and block the front of the elevating assembly approximately 12 inches (305 mm) above the chassis. Support with a jackstand with a minimum rating of 4000 lbs. (1814 kg).
2. Open Emergency Lowering Valve to be sure all pressure is off the Lift Cylinder.
3. Remove and cap both hoses and fittings.
4. Support the Lift Cylinder to prevent falling.
5. Remove the set screw from the end of the cylinder rod.
6. Remove the retaining ring from the upper cylinder pin. Remove the upper cylinder pin by tapping out using a soft punch.
7. Remove the retaining bolt from the lower cylinder pin and remove the pin using a soft punch.
8. Remove the cylinder by sliding it out of the front of the machine.

DISASSEMBLY (Figure 4-19)

1. Unscrew the head cap from the cylinder barrel.
2. Remove the piston and rod assembly from the cylinder barrel.
3. Unscrew the piston nut and remove piston and head cap from the piston rod.
4. Remove the piston static O-ring from the cylinder rod and discard.
5. Remove the piston seal from the piston and discard.
6. Remove the static O-ring, rod seal and rod wiper.
7. Remove the rod end breather.
8. Do not remove the velocity fuse unless replacement is necessary.

CLEANING AND INSPECTION (Figure 4-19)

1. Clean all the metal parts in cleaning solvent and blow dry with filtered compressed air.
2. Check the working surfaces of the piston head cap, cylinder barrel and rod for excessive wear or scoring.
3. Replace parts found to be unserviceable.
4. Replace all seals, O-rings and wipers.

REASSEMBLY (Figure 4-19)

1. Lubricate the static O-ring, rod seal and rod wiper and then install in the head cap.
2. Install the piston seal on the piston.
3. Install the head cap, piston static seal, piston and piston nut on the cylinder rod. Torque nut to 70 ft. lbs. (96 N-m).

Note: The head cap should be installed from the piston end of the cylinder rod. Sliding the head cap over the pivot pin hole may damage the rod seal and rod wiper.

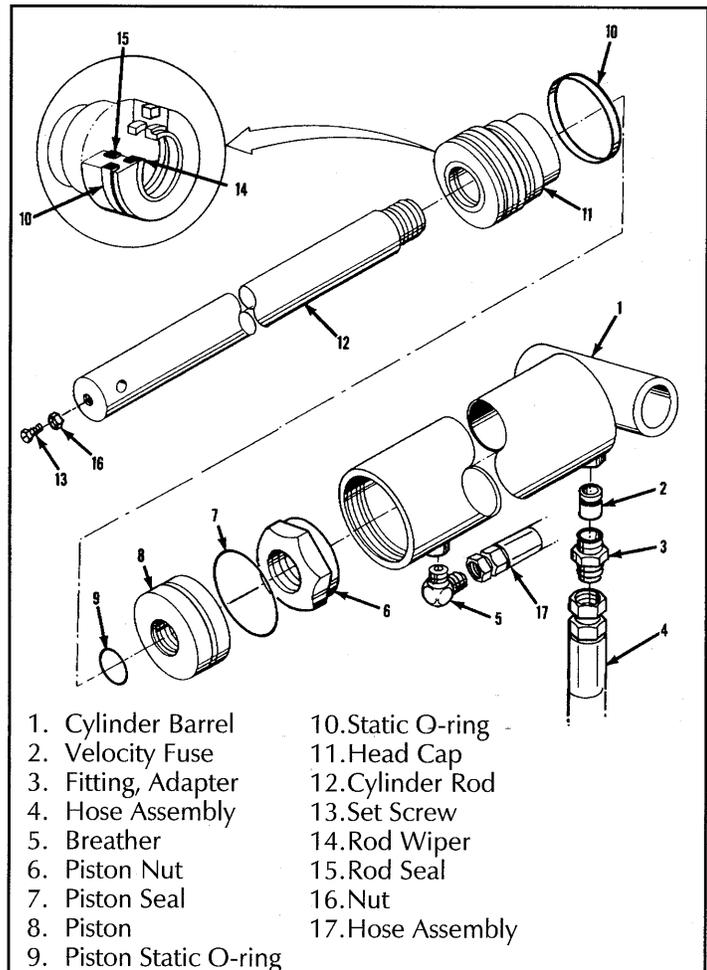


Figure 4-19: Lift Cylinder Assembly

4. Lubricate and piston seal and install the piston and rod assembly into the cylinder barrel.
5. Screw the head cap into the cylinder barrel hand tight and then turn $\frac{1}{4}$ turn further.

INSTALLATION

NOTE: Before installing the cylinder, check the pins and bearings for excessive wear. Replace if necessary.

1. Place the cylinder in position taking care to support the cylinder to prevent falling.
2. Install the lower pin and retaining bolt.
3. Install the upper pin and retaining ring.
4. Install both hoses.
5. Raise the machine and check for leaks.

4.14 Electric Motor (Figure 4-19)

TROUBLESHOOTING

1. Read the nameplate to become familiar with the motor, especially the rated voltage.
2. Try to turn the shaft by hand. Keep motor leads separated while doing this. If the shaft turns freely go to step 3. If the shaft won't turn, proceed to step 2A.
- 2A. The shaft could be tight for a number of reasons. This check is to determine if the tightness is of a temporary nature only. Obtain a power source to produce the nameplate voltage. **Do Not Make A Permanent Connection.** First touch the motor leads quickly to the power supply just long enough to observe if the shaft runs. If it does turn, then hold the motor leads on the power supply for a longer time. If the motor sounds normal, go to step 3. If the motor sounds noisy, it should be taken apart as described in the disassembly section.
3. If the motor turned freely, connect an ammeter in the circuit as shown in Figure 4-20A. With rated voltage applied and the shaft running free, the ammeter should read less than 20% of the nameplate full load current. If the motor meets the above conditions then it can be assumed the original problem is external to the motor.

DISASSEMBLY

1. Remove thru bolts.
2. Remove pulley end cover.
3. Pull the armature out of the assembly in one swift motion.
4. Remove commutator end cover.

NOTE: Do not place the stator ring in any mechanical holding device during the disassembly or assembly operation. Permanent distortion or other damage will result.

INSPECTION

Once the motor has been disassembled, go through the following check list steps to determine where the problem lies.

1. Bearings should spin smoothly and easily and have ample lubrication and be free of corrosion.
2. Armature should be checked for grounds and shorted turns. Refinish commutator surface if pitted or excessively worn.

- Brushes should be checked for wear and to ensure that they are free in the brush holders.

NOTE: Observe how brushes are assembled in brush holders and position of brush lead. New brushes must be installed in same manner. Brushes should be removed as follows:

- Remove brush spring clip from its mounting on brush assembly.
 - Lift brush assembly from brush holder.
 - Disconnect brush assembly lead.
 - New brush assembly to be installed by reversing above procedure.
- Inspect wire harness and all connections for signs of damage due to overheating.
 - Check stator to see it is securely mounted.

REASSEMBLY

- Install new brushes and be sure they are free in the holder. Install brush with the lead wires positioned as when received. Raise all brushes to the locked position. (See Figure 4-20B and step 3 in the Inspection section).
- Place commutator cover on a work bench with brush assembly facing upward.
- Place the bearing spring into the bearing bore.
- Take a complete armature assembly, including bearings, and insert commutator end bearing into the bearing bore.

Note: Do not reuse bearings which have been removed from armature shaft. Keep assembly in a vertical position. Use extreme care not to damage armature with bearing pullers. New bearings should be installed by pressing inner race of bearing onto proper position on armature shaft.

- Set the brushes to final position as shown in Figure 4-20B.
- Place the complete stator down over the vertical armature, and into position on the commutator cover.
- The stator assembly must be placed in a definite relationship with the commutator covers in order to obtain a neutral brush setting. There is a match-mark on both items. **These two marks must line up exactly. Rotate until they do.**
- Assemble the pulley end cover in the proper relationship. Insert mounting bolts and tighten alternately to ensure a good mechanical alignment.
- Spin the shaft by hand to see if it is free. Be sure motor leads (if used) are not touching together. If the leads are touching, a generator action will give the effect of friction in the motor. A no-load test can now be performed. At rated voltage, observe the no-load current. It should be less than 20% of the nameplate full load current. Anything higher indicates:
 - Brushes are not on neutral setting (check match-marks for exact alignment).
 - Faulty armature.

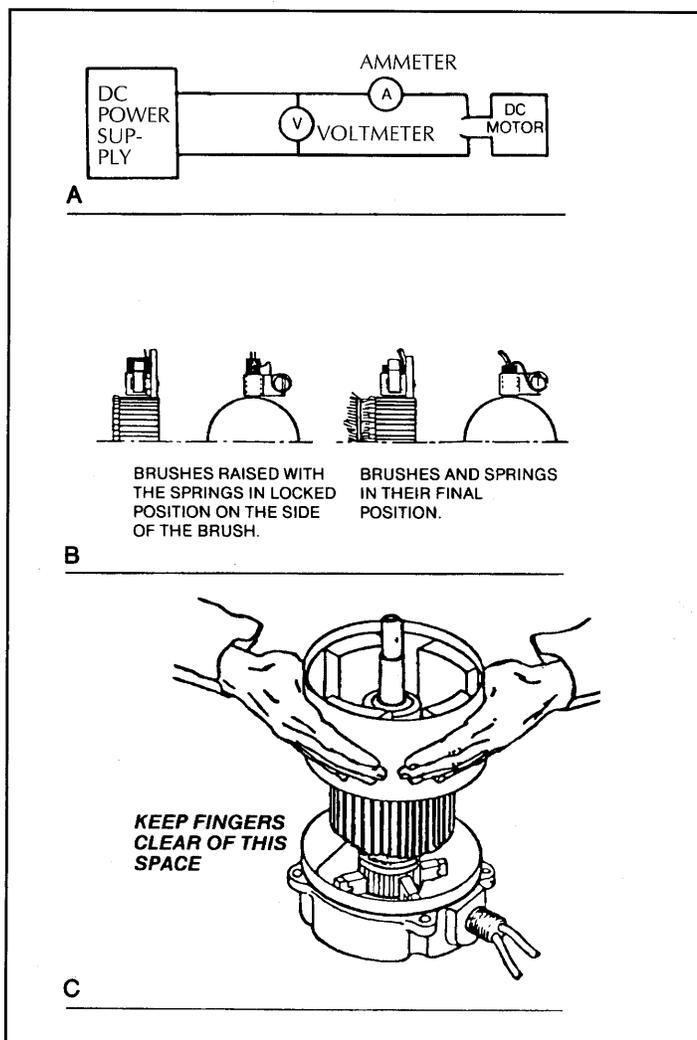


Figure 4-20: Electric Motor Service

4.15 Torque Specifications (Table 4-2)

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 4-2: 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 4-3: Hydraulic Component Torque

TYPE: SAE PART 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)

5.0 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.

GENERAL PROCEDURE

Troubleshooting should be carried out in two steps, first thoroughly study both hydraulic and electric schematics to determine possible causes. Loose terminal connections and short circuits are always a potential cause when troubleshooting. Secondly, check suspect components electrically, hydraulically and mechanically to determine if they are at fault. Refer to Tables 6-1 and 6-2 for Reference Designations used in Table 5-1.



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(ies) ground cable when replacing or testing the continuity of any electrical component.

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

1-800-926-LIFT

FROM OUTSIDE THE USA, CALL 1-209-891-5200

5.1 Troubleshooting Guide

Table 5-1: Troubleshooting Guide

PROBLEM	PROBABLE CAUSE	REMEDY
All functions inoperable, Electric Motor or Engine does not start.	1. Blown Control Circuit Fuse.	Check 15 amp Control Circuit Fuse. Replace if blown.
	2. Faulty Battery Charger.	Check the voltage output of the Battery Charger. If less than 24 VDC, repair or replace.
	3. Faulty Battery(ies).	After completely charging Batteries, test each Battery. Replace as required.
	4. Faulty Electric Motor.	While operating the steering function, check voltage across the Electric Motor terminals. If 24 VDC is present, replace the Motor .
	5. Faulty Motor Relay(s).	While operating the steering, check voltage across the coil terminals of Motor Relays. If no voltage is present, proceed with step 6. If 20 VDC or more, check continuity across the contact terminals of Motor Relay while still operating the steering function. If there is no continuity, replace the defective Motor Relay.
	6. Emergency Stop Switch failed open.	With the Emergency Stop Switch in the ON position, check continuity across the contacts. If none, replace.
	7. Key Switch.	Replace switch if inoperative.
All functions inoperable. Engine starts. Electric motor starts when control is actuated.	1. Hydraulic Reservoir low.	Check hydraulic fluid level, top off as required.
	2. Faulty Hydraulic Pump.	Check pressure and delivery of the Hydraulic Pump. Replace if required.
	3. Damaged drive coupling	Remove pump(s) from motor(s) or engine and check coupling.
	4. Proportional Valve.	Check operation. Replace if required.
	5. Faulty Proportional Controller.	Check operation. Adjust or replace if required.

Troubleshooting

Table 5-1: Troubleshooting Guide (Cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Electric Motor continues to run after controls are returned to the OFF position.	Motor Relay contacts fused together.	With 0 voltage at the coil terminals of the Motor Relay check continuity across the contact terminals. If there is continuity, replace the Motor Relay.
Engine fails to start. Does not crank or cranks slowly.	1. Battery terminals corroded or loose.	Check and tighten terminals.
	2. Discharged battery.	Check condition of battery. If serviceable, recharge battery. If defective, replace battery.
	3. Starter Solenoid.	Replace the starter solenoid.
	4. Starter Motor.	Repair or replace starter.
	5. Key Switch.	Replace the switch.
	6. Main fuse.	Check fuse and replace if required.
	7. Emergency Stop Switch.	Replace switch if inoperative.
Engine cranks but will not start.	1. Out of fuel	Fill tank.
	2. Blocked fuel line.	Remove obstruction.
	3. Fuel Filter clogged.	Clean or replace filter.
	4. Air leaks in the fuel system.	Tighten all fuel line fittings or clamps.
	5. Water in fuel system.	Drain water separator and tank if necessary to remove all water.
	6. Magneto oil pressure switch inoperative.	Check pressure switch. Replace if faulty.
	7. Fuel Pump defective/damaged.	Replace the pump.
Engine starts then stops.	1. Low fuel level.	Fill fuel tank.
	2. Fuel filter clogged.	Clean or replace the filter element.
	3. Air leaks in the fuel system.	Tighten all fuel line connections and clamps.
	4. Water in the fuel.	Drain the filter separator and tank if necessary to remove all water.
	5. Fuel pump defective/damaged.	Replace the pump.
	6. Clogged air filter.	Clean or replace air filter.
	7. Key Switch.	Switch defective or damaged. Replace the switch.
Engine smokes (white).	1. Oil level too high in crankcase.	Drain oil to proper level.
	2. Piston rings worn or sticking.	Replace rings.
Loss of power	1. Clogged Air Filter.	Clean or replace the filter.
	2. Clogged Fuel Filter.	Replace the filter.
	3. Incorrect fuel.	Drain and refill tank with proper fuel.
	4. Incorrect valve clearance.	Adjust to proper clearance.
	5. Fuel pump defective/damaged.	Replace the pump.

PROBLEM	PROBABLE CAUSE	REMEDY
Engine stops.	1. Fuel Tank empty.	Refill tank and prime system as required.
	2. Water in fuel.	Drain fuel system to remove all water and refill with fresh fuel.
	3. Magneto oil pressure switch inoperative.	Check pressure switch. Replace if faulty.
Hourmeter does not register.	1. Electrical connections loose or connected improperly.	Tighten and/or correct the connections.
	2. Hourmeter failure.	Replace the meter.
All Controller functions inoperative.	1. Blown fuse.	Find short. Replace fuse.
	2. Key Switch.	Replace switch if inoperative.
	3. Faulty Interlock Switch.	Check Interlock Switch for continuity, replace if faulty.
	4. Control Cable.	Test cable and replace if damaged.
Platform will not elevate.	1. Emergency Lowering Valve open.	Close valve.
	2. Platform overloaded.	Observe maximum load rating.
	3. Ruptured hydraulic hose.	Replace the hose and check relief valve setting.
	4. Lift Valve Solenoid.	Test solenoid and replace if inoperative.
	5. Main Relief Valve stuck open.	Replace the relief valve.
	6. Drive/Lift Switch.	Test the switch, replace if inoperative.
	7. Lift Valve.	Repair or replace valve.
	8. Hydraulic Pump.	Check for pressure and delivery. Repair or replace if inoperative.
	9. Down Valve stuck open.	Remove and inspect the valve for sticky operation or damaged o-rings. Repair or replace if unserviceable.
	10. Proportional Coil.	Test solenoid and replace if inoperative.
	11. Proportional Controller.	Test controller, replace if inoperative.
	12. Lift/Drive Relay.	Check for contact continuity and closure when energized. If no continuity or contacts do not close, replace the relay.
Unit will not steer. (Lift function operative.)	1. Steering Valve Coils (right and left).	Test coils, replace if inoperative.
	2. Open circuit in Control Cable.	Test cable for continuity, replace if defective.
	3. Steering Valve.	Test valve, replace if not serviceable.
	4. Mechanical damage.	Replace damaged parts.
	5. Steering Switch.	Replace steering switch.
	6. Diode (D10, D11)*.	Test diodes. Replace if faulty.

* Electric models only.

** Dual Fuel models only.

Troubleshooting

Table 5-1: Troubleshooting Guide (cont'd.)

PROBLEM	PROBABLE CAUSE	REMEDY
Unit will not drive.	1. Drive/Lift Switch.	Position switch in DRIVE position. Test switch and replace if inoperative.
	2. Forward or Reverse Solenoid Valve.	Test solenoid and replace if inoperative.
	3. Control Cable.	Test cable and replace if damaged.
	4. Ruptured hydraulic hose.	Replace hose.
	5. Proportional Controller.	Test controller and replace if inoperable.
	6. Main pressure Relief Valve.	Test relief valve and replace if not serviceable.
	7. Hydraulic Pump.	Test pump pressure and delivery. Replace if not serviceable.
	8. Hydraulic Motors.	Test hydraulic pressure at drive circuit. If normal, replace motors.
	9. Lift/Drive Relay.	Check for contact continuity and closure when energized. If no continuity or contacts do not close, replace the relay.
	10. Shuttle Valve not seating.	Check for contaminants and reseal ball in Valve Block.
	11. Drive Relay.**	Check for contact continuity and closure when energized. If no continuity or contacts do not close, replace the relay.
	12. Diode (D10).**	Test diode, replace if faulty.
Unit will not drive full speed.	1. Series/Parallel Valve solenoids.	Test solenoid and replace if inoperable.
	2. Proportional Controller.	Test the control and replace if inoperable.
	3. Hydraulic Motors worn.	Inspect the motors and replace if not serviceable.
	4. Hydraulic Pump worn.	Check pump pressure and delivery. Replace if not serviceable.
	5. Main pressure Relief Valve stuck open.	Check relief valve and replace if inoperable.
	6. Torque Selector/ Drive Speed Switch.	Replace switch.
	7. Platform Down Relay.	Check for contact closure when energized. If contacts do not close, replace the relay.
	8. Platform Down Switch.	Check for continuity, replace if faulty.
	9. Steering Relief Valve.	Check relief valve pressure, Replace if not serviceable.

* Electric models only.

** Dual Fuel models only.

PROBLEM	PROBABLE CAUSE	REMEDY
No drive FWD but drives in REV . Lift function operable.	1. Faulty Lift/Drive Relay.	Test Lift/Drive Relay contacts for continuity. Replace if faulty.
	2. Faulty diode (D1).**	Test diode. Replace if faulty.
	3. Faulty Forward Coil.	Test Forward Coil if proper voltage is present and coil is not magnetized, replace.
	4. Faulty Drive Valve.	Inspect Drive Valve, if spool is sticking replace.
	5. Faulty Counterbalance Valves.	Check pressure of Counterbalance Valves. Replace or reset valves as required.
	6. Shuttle Valve.	Check for contaminants and reseal ball in Valve Block.
	7. Faulty Drive Relay (R3).**	Test Drive Relay contacts for continuity. Replace if faulty.
No drive FWD but drives in REV . No lift function.	1. Faulty Up/Fwd Switch (S3).	Test Up/Fwd Switch, replace if required.
	2. Faulty Proportional Controller.	Check operation of Proportional Controller. Adjust as necessary. Replace if required.
No drive REV but drives in FWD . Lift function operable.	1. Faulty Lift/Drive Relay.	Test Lift/Drive Relay contacts for continuity. Replace if faulty.
	2. Faulty diode (D2).**	Test diode. Replace if faulty.
	3. Faulty REV Coil.	Test REV Coil, if proper voltage is present and coil is not magnetized, replace.
	4. Faulty Drive Valve.	Inspect Drive Valve, if spool is sticking replace.
	5. Faulty Counterbalance Valves.	Check pressure of Counterbalance Valves. Replace or reset valves as required.
	6. Shuttle Valve.	Check for contaminants and reseal ball in Valve Block.
	7. Faulty Drive Relay (R3).**	Test Drive Relay contacts for continuity. Replace if faulty.
No drive REV but drives in FWD . No lift function.	1. Faulty Down/Rev Switch (S2).	Test Down/Rev Switch, replace if required.
	2. Faulty Proportional Controller.	Adjust Proportional Controller, replace if required.
Platform drifts down.	1. Emergency Lowering Valve partly open or faulty.	Ensure that the Emergency Lowering Valve is completely closed. If the platform still drifts down, replace the valve.
	2. Leaky Down Valve cartridge.	Replace the Down Valve.
	3. Faulty Lift Cylinder.	Check and replace O-rings on cylinder piston, replace cylinder if not serviceable.
Platform will not lower.	1. Down Valve Solenoid Coil.	Test coil and replace if inoperable.
	2. Control Cable.	Check cable and replace if damaged.
	3. Proportional Controller.	Test control and replace if inoperable.
	4. Faulty diode (D6).	Test diode. Replace if faulty.
	5. Lift/Drive Relay.	Check relay contacts for continuity. Replace if faulty.

Table 5-1: Troubleshooting Guide (cont'd.)

PROBLEM	PROBABLE CAUSE	REMEDY
Platform starts to lower then stops.	Lift Cylinder internal fuse blown (oil viscosity too high).	Raise platform slightly. Allow hydraulic oil to warm up, then lower platform.
Brake does not release.	1. Pressure Reducing Valve.	Check pressure at brake. Replace valve if not serviceable.
	2. Shuttle Valve stuck.	Clean or replace Shuttle Valve assembly.
	3. Faulty Brake Cylinder.	Check and replace seals in cylinder.
	4. Brake Release Valve closed.	Open valve.
Brake will not lock wheel.	1. Orifice plugged.	Remove and clean Brake Orifice.
	2. Faulty Brake Cylinder.	Check and replace seals in cylinder.
	3. Brake Release Valve closed.	Open valve.

6.0 Introduction

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

The diagrams are to be used in conjunction with *Table 5-1 Troubleshooting*. They allow understanding of the makeup and functions of the systems for checking, tracing, and fault-finding during trouble analysis.

The diagrams appear in the following order:

- Figure 6-1: Electrical Schematic, Electric Model.
- Figure 6-2: Electrical Schematic, Dual Fuel Model.
- Figure 6-3: Electrical Schematic, Optional Kubota Dual Fuel Model.
- Figure 6-4: Hydraulic Schematic, Electric Model.
- Figure 6-5: Hydraulic Schematic, Dual Fuel Model.
- Figure 6-6: Hydraulic Manifold.

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.

6.1 Electrical Schematics

Table 6-1: Electrical Schematic Legend, Electric Model

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM 1	Alarm, Down	Provides warning sound (60 Hz) when deck is lowering.	Control Module center front. Red wire for 60 Hz.
ALM 2	Alarm, Tilt	Provides warning sound (600 Hz) when machine is elevated on 2° slopes, side to side or fore and aft.	Control Module center front. White wire for 600 Hz.
BAT	Batteries (8) 6 volts	To store energy.	Power Module.
CONT	Controller, Proportional Joystick	Supplies power to Lift/Drive Switch, Lift/Drive Relay, Cutout Relay contacts & Proportional Coil. Includes Switches S1-S5.	Inside Controller (Control Box).
D1	Diode	Supplies power to Joystick high speed circuit from lift circuit.	Between T5 and T6 on Fanning Strip.
D2	Diode	Supplies power to Joystick high speed circuit from down circuit.	Between T8 and T6 on Fanning Strip.
D3	Diode	Supplies power to Motor Relays thru the Cutout Relay for Lifting.	Between T5 and T13 on Fanning Strip.
D4	Diode	Supplies power to Platform Down Relay for Joystick hi speed circuit from reverse circuit.	Between T7 and T15 on Fanning Strip.
D5	Diode	Supplies power to Platform Down Relay for Joystick high speed circuit from forward circuit.	Between T4 and T15 on Fanning Strip.
D6	Diode	Supplies power to down circuit from down alarm circuit.	Between T9 and T8 on Fanning Strip.
D7	Diode	Supplies power from forward-reverse circuits thru Platform Down Relay to joystick high speed circuit thru D2.	Between T10 and T8 on Fanning Strip.
D8	Diode	Supplies power to the Controller when Lift/Drive Switch is in LIFT and prevents feedback to Steering Switches.	Between S2 and Joystick '+' terminal.
D9	Diode	Supplies power to the Controller when Lift/Drive Switch is in DRIVE and prevents feedback to Steering and Torque Switches.	Between T2 on Controller terminal strip and Joystick '+' terminal.
D10	Diode	Supplies power to Motor Relays thru the Cutout Relay when Right Steer Switch is activated.	Between T4 and T6 on Controller terminal strip.
D11	Diode	Supplies power to Motor Relays thru the Cutout Relay when Left Steer Switch is activated.	Between T3 and T6 on Controller terminal strip.
FU1	Fuse, 15 AMP	Overload protection for the control circuit.	Right front of Control Module, Bottom of Chassis Control Panel.
FU2	Fuse, 1 AMP	Overload protection for the Tilt Sensor.	In-line fuse on the Tilt Sensor output.
FU3 & 4	Fuse, 175 AMP	Overload protection for the electric motors.	Power Module behind Battery Charger.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
LS1	Switch, Platform Down Limit	Energizes Platform Down Relay, providing power to Joystick high speed and Series/Parallel circuits and bypassing Tilt Sensor when Platform is down.	Mounted to rear of Control Module right bulkhead.
LS2	Switch, Cushion, Mercury	Provides power to energize Cushion Valve during last 6 in. (15 cm) of platform lowering.	Mounted to lower tension member.
MOT1	Motor, Electric	Drives Hydraulic Pump.	Right side of Power Module.
MOT2	Motor, Electric	Drives Hydraulic Pump.	Right side of Power Module.
MTR	Meter, Hour	Shows hours machine has had power on.	Right front of Control Module, top of Chassis Control Panel.
R1	Relay, Platform Down	Provides power to Series/Parallel and Down Valves and Cutout Relay Coil when energized by Platform Down Switch (platform down). Cuts out high speed drive when platform is elevated.	Control Module right bulkhead, closest to terminal strip.
R2	Relay, Cutout	Provides power to Motor Relays when energized by either Platform Down Relay (platform down) or Tilt Sensor (platform elevated). Cuts power to Motor Relays and energizes Tilt Alarms when machine is on slopes of 2° side to side or fore and aft.	Control Module right bulkhead, center unit.
R3	Relay, Lift/Drive	Energized by Lift/Drive Switch. Provides power to Forward or Reverse Coils when unenergized and to Lift or Down circuits when energized.	Control Module right bulkhead, farthest from terminal strip.
R4	Relay, Motor	Connects Batteries to Motor.	Power Module behind Battery Charger.
R5	Relay, Motor	Connects Batteries to Motor.	Power Module behind Battery Charger.
S1	Switch, Interlock Lever	Supplies power to Lift/Drive and Controller lift/fwd & down/rev switches.	Inside Joystick handle.
S2	Switch, Controller Down/Reverse	When actuated (Joystick pulled back) provides power to down and reverse circuits. Unactuated provides power to '+' terminal of Joystick.	Inside Controller, switch farthest away when lid is open.
S3	Switch, Controller Lift/Forward	When actuated (Joystick pushed forward) provides power to lift and forward circuits.	Inside Controller, switch closest when lid is open.
S4 & 5	Switch, Steering	Actuated with thumb rocker on top of Joystick, provides power to either right or left steer circuits and Motor Relay circuit.	Inside Joystick handle.
S6	Switch, Controller Emergency Stop	Control Circuit shut off.	Platform Controller, lower left.
S7	Switch, Controller Key	Supplies power to Controller.	Platform Controller, left side.

7.0 Introduction

This section lists and illustrates the replaceable assemblies and parts of the SL26/30N 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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Illustrated Parts Breakdown

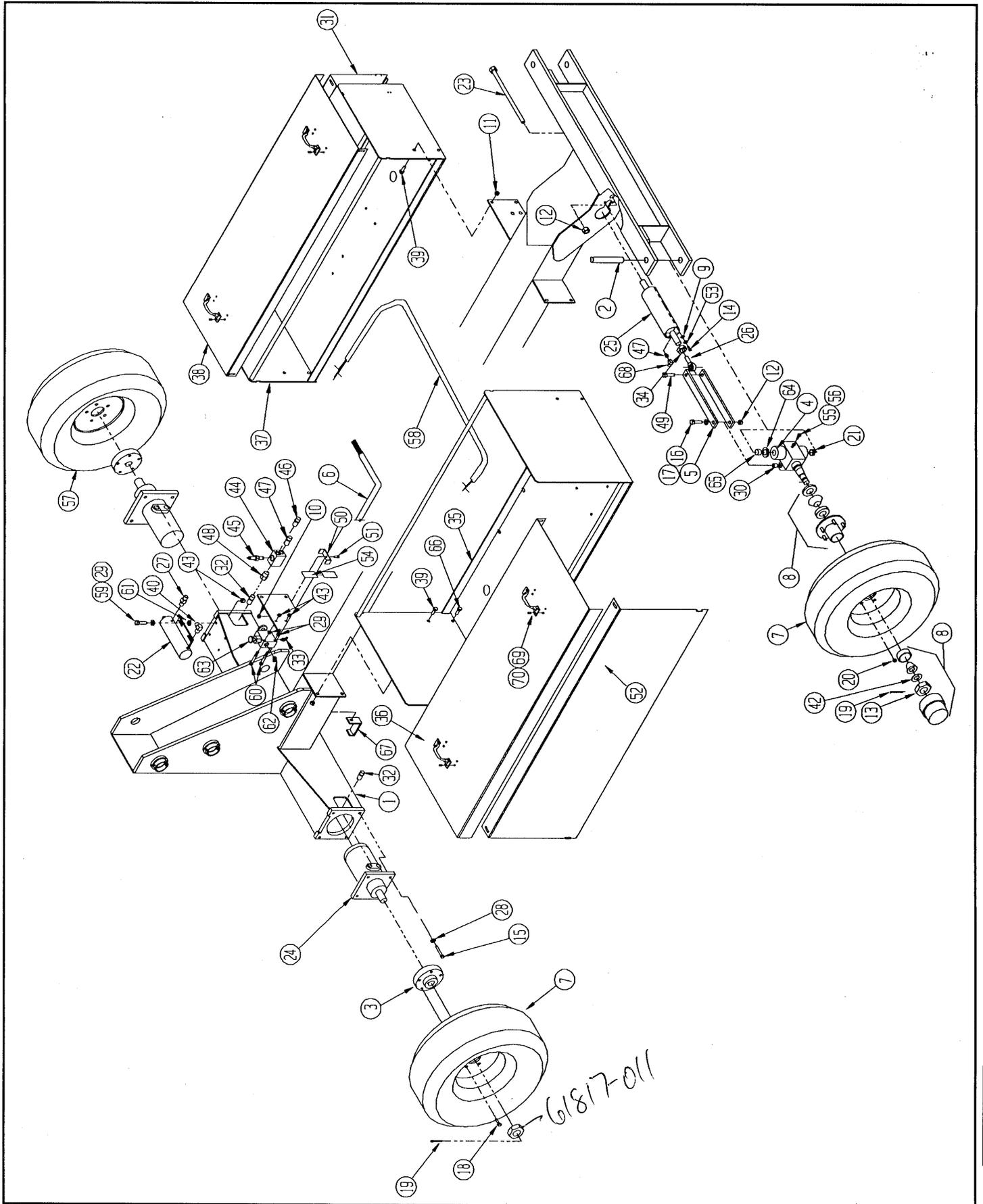
CHASSIS ASSEMBLY, SL26/30 ELECTRIC & DUAL FUEL 64001-030

ITEM	PART	DESCRIPTION	QTY.
1	64010-001	Chassis Weldment	1
2	64161-000	Steering Pin	2
3	64029-001	Hub Drive Motor	2
4	64487-000	Steering Pivot Weldment	2
5	64033-002	Steering Linkage	4
6	64007-005	Control Cable Assy	1
7	64052-002	Tire/Wheel Assy	3
8	63911-000	Hub Assy	2
-	63901-002	Dust Cap	1
-	63911-004	Outer Bearing and Race	1
-	63911-003	Inner Bearing and Race	1
-	63911-001	Grease Seal	1
9	11239-005	Washer 5/16 Dia ASTM Flat	4
10	11248-004	Locknut 1/4-20 UNC HEX	1
11	11248-008	Locknut 1/2 - 11 UNC HEX	8
12	11248-010	Locknut 5/8 - 11 UNC HEX	5
13	15945-016	Nut 1-14 UNF Slotted HEX	2
14	11253-006	Screw 5/16 - 18 UNC HHC x 3/4	4
15	11266-020	Screw 1/2 - 20 UNF HHC x 2 1/2	8
16	11240-010	Washer 5/8 Flat	2
17	64150-000	Serrated Bolt	2
18	14122-001	Wheel Bolt	10
19	11754-012	Cotter Pin 5/32 DIA x 1 1/2	4
20	05105-000	Nut, Lug	10
21	62649-002	Bearing	2
22	60479-000	Brake, Parking	1
*	60211-014	Seal Kit, Brake Cyl.	1
23	10181-096	Screw 5/8 - 11 UNC Grade 2 HHC x 12	1
24	63903-005	Motor Hyd. - DUAL FUEL MODEL	2
24	63903-006	Motor Hyd. - ELECTRIC MODEL	2
*	63903-010	Seal Kit, Motor - ALL MODELS	1
-	63903-015	Nut, Castle	1
25	63905-000	Cylinder, Steering	1
*	63905-010	Seal Kit, Steering Cyl.	1
26	63927-001	Rod End 5/8	2
27	11939-008	Fitting Adapter	1
28	11238-008	Lockwasher 1/2 DIA Split	8
29	11240-006	Washer 3/8 Flat	12
30	62642-001	Bearing	2
31	64220-000	Cover, Control Module Side	1
32	11935-005	Fitting Adaptor	4
33	11934-001	Fitting Adaptor	3

ITEM	PART	DESCRIPTION	QTY.
34	20495-010	Nut 5/8-18 UNF Jam Hex	2
35	64002-008	Power Module Assy -ELECTRIC	1
35	64002-009	Power Module Assy -DUAL FUEL	1
36	64219-000	Cover Power Module Top	1
37	64003-036	Control Module Assy -DUAL FUEL	1
37	64003-037	Control Module Assy -ELECTRIC	1
38	64221-000	Cover, Control Module	1
39	11256-010	Screw 1/2 -13 UNC HHC x 1 1/4	7
40	11940-008	Fitting Adapter	1
41*	64008-007	Hose Kit-DUAL FUEL, Serial Nos. thru 9965	1
41*	64008-023	Hose Kit-DUAL FUEL, Ser. Nos. 9966 to current	1
41*	64008-008	Hose Kit-ELECTRIC	1
42	63329-008	Washer 1 ID x 1-1/2 OD x .093 Thk	2
43	11248-006	Locknut 3/8 - 16 UNC Hex	6
44	64169-000	Valve Block	1
45	60390-000	Relief Valve	1
46	11941-006	Fitting Adapter	1
47	11941-001	Fitting Adapter	2
48	64170-005	Fitting Adapter	1
49	11257-024	Screw 5/8-11 UNC HHC X 3	1
50	64036-000	Hose Clamp	1
51	11252-014	Screw 1/4-20 UNC HHC x 1 3/4	1
52	64222-000	Cover, Power Module Side	1
53	11238-005	Lockwasher 5/16 Dia Split	4
54	29976-099	Tube 1/2 Dia Shrink	.17'
55	11705-024	Screw 3/8-16 UNC SOC HD x 1 1/2	2
56	11273-006	Nut 3/8-16 UNC HEX Jam	2
57	64052-003	Tire/Wheel Assy (with Brake Disk)	1
58	64205-001	Wire Harness-DUAL FUEL ONLY	1
59	11254-010	Screw 3/8 - 16 UNC HHC x 1 1/4	4
60	11254-020	Screw 3/8 - 16 UNC HHC x 2 1/2	2
61	63988-006	Washer, Shim 3/8 ID x 5/8 OD x .015 THK	A/R
62	11934-003	Fitting Adapter	1
63	63978-000	Hand Pump	1
64	64279-000	Thrust Washer	2
65	62642-020	Bearing	2
66	11256-012	Screw 1/2 - 13 UNC HHC x 1 1/2	1
67	64145-000	Hose Bracket	1
68	11937-001	Fitting 90°	1
69	25427-002	Handle	4
70	26553-002	Pop Rivet	16

*Not Shown

Illustrated Parts Breakdown



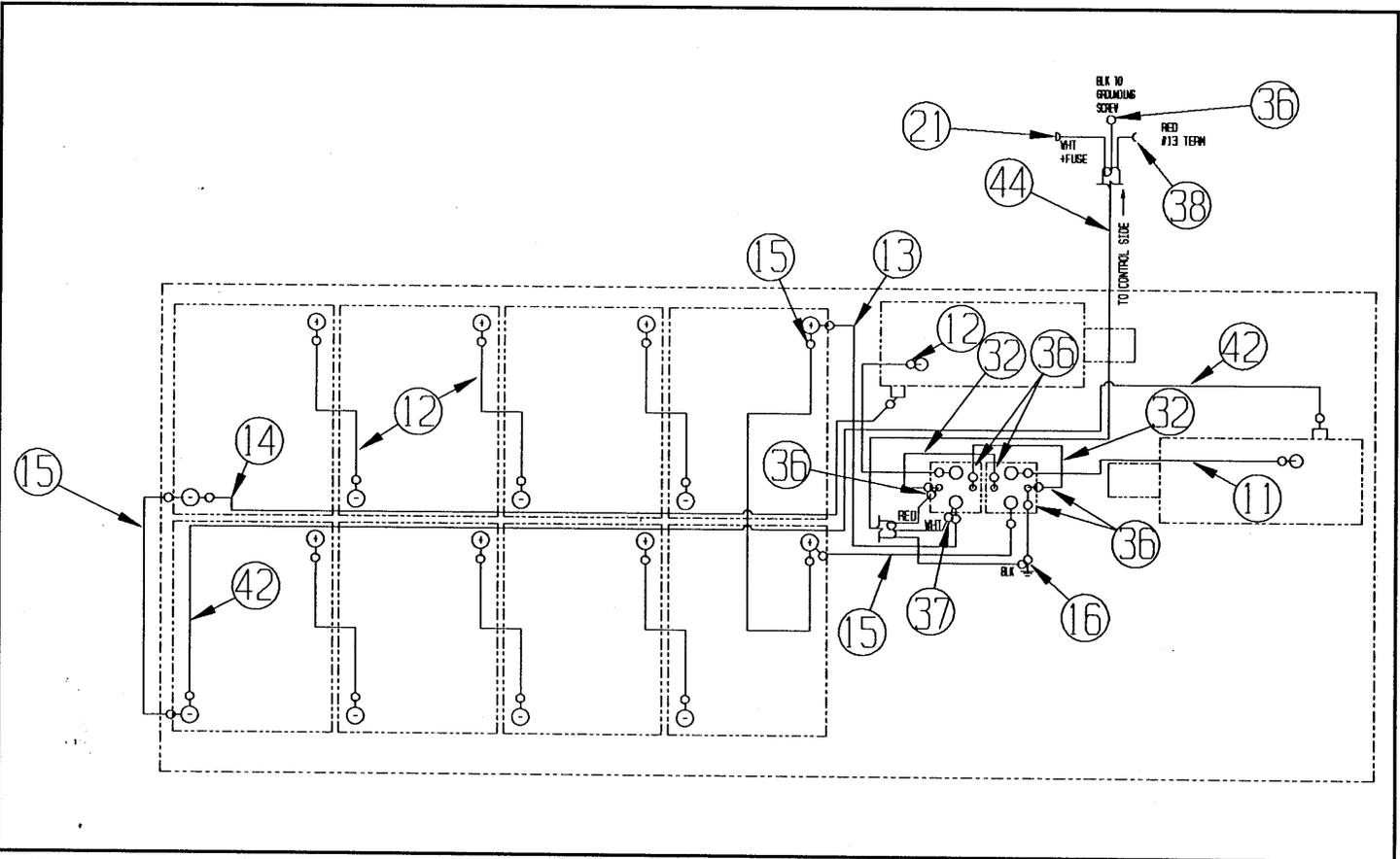
Illustrated Parts Breakdown

POWER MODULE, SL26/30
ELECTRIC MODEL
 64002-008

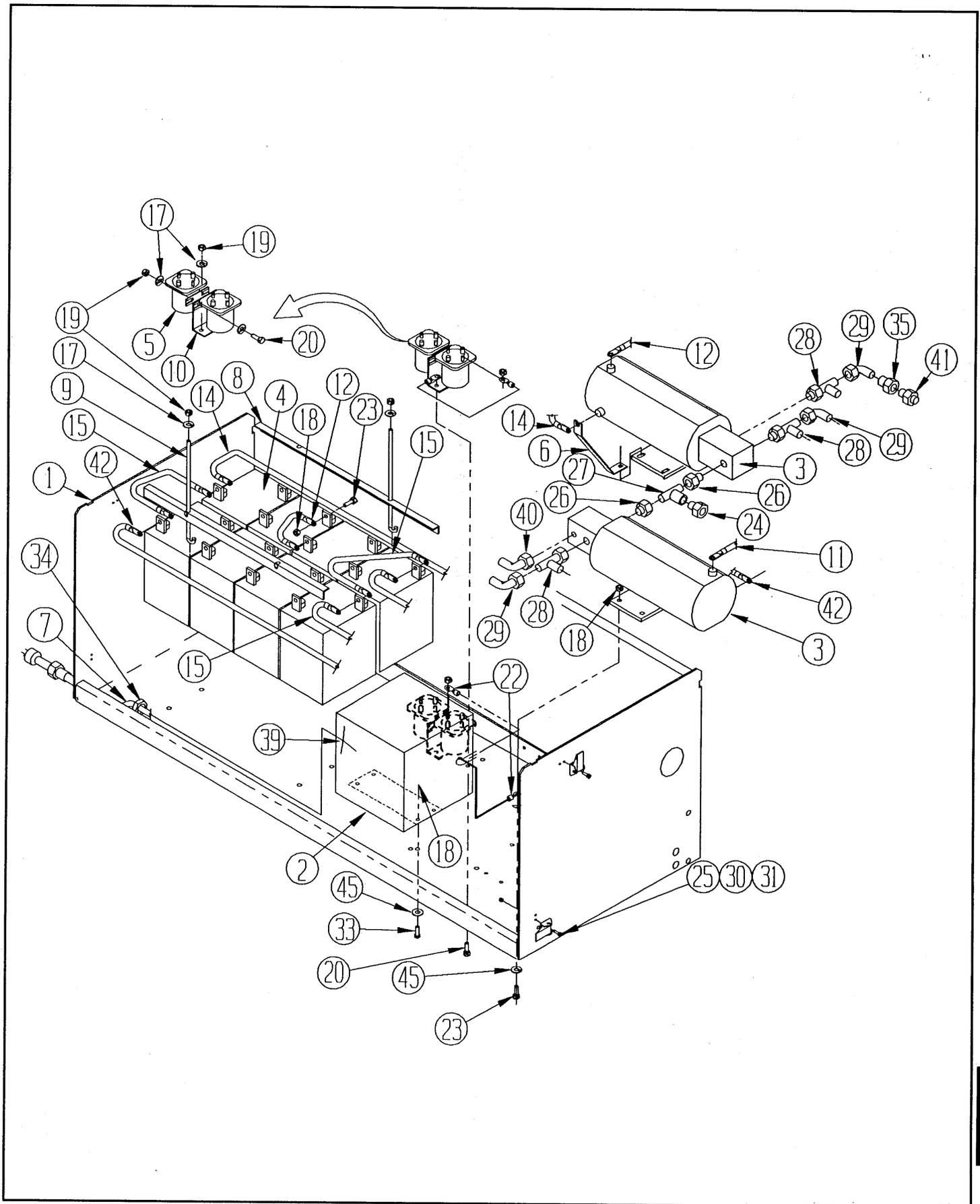
ITEM	PART	DESCRIPTION	QTY.
1	64057-001	Module Tray	1
2	63944-010	Charger, Standard; 40A, 110VAC, 60 HZ	1
2	63948-010	Charger, Optional: 40A, 220/110VAC, 50HZ	1
*	63944-012	Timer Module (Used on both Chargers)	1
*	27877-006	Fuse (Used on both Chargers)	1
3	15797-000	Power Unit	2
*	15797-010	Pump, Hydraulic	1
*	15797-003	Seal Kit, Hydraulic Pump (MTE)	1
*	15797-014	Seal Kit, Hydraulic Pump (Barnes)	1
*	15797-011	Motor, Electric	1
*	10145-001	Brush Set, Motor (Ohio)	2
4	15796-000	Battery, 12VDC, wet	8
5	10122-000	Starter Relay 24VDC	2
6	63029-000	Bus Bar	1
7	62179-000	Cord 110VAC	1
8	63083-000	Battery Hold Down	2
9	63082-000	J-Bolt	4
10	64194-000	Starter Relay Bracket	1
11	62125-004	Battery Cable Assy x 18	1
12	05416-015	Battery Cable Assy x 9	7
13	62125-006	Battery Cable Assy x 12	1
14	62125-009	Battery Cable Assy x 40	1
15	05416-006	Battery Cable Assy x 15	3
16	29601-014	Term 1/4 DIA Ring 14-16 GA	2
17	11240-004	Washer 1/4 DIA STD Flat	5
18	11248-005	Locknut 5/16 UNC HEX	28
19	11248-004	Locknut 1/4-20 UNC HEX	6

ITEM	PART	DESCRIPTION	QTY.
20	11252-006	Screw 1/4-20 UNC HHC x 3/4	4
21	29931-003	Connect Term. 1/4 Push	1
22	29601-025	Conn Ring 8 GA 5/16	2
23	11253-008	Screw 5/16-18 UNC HHC x 1	20
24	11939-022	Fitting Adapter	1
25	05299-000	Latch Toggle	4
26	15959-004	Fitting Adapter	2
27	15960-006	Fitting Adapter	1
28	15961-006	Fitting Adapter	3
29	11937-003	Fitting Adapter	3
30	11708-004	Screw 8-32 UNC MACH RD HD x 1/2	8
31	11248-002	Locknut 8-32 UNC HEX	8
32	29457-099	Wire 16 AWG Green	1.5'
33	11253-006	Screw 5/16 - 18 UNC HHC x 3/4	4
34	11868-011	Strain Relief Bushing	1
35	14048-003	Fitting Adapter	1
36	29601-013	Connector Ring #10 14-16 GA	7
37	29601-015	Connect Ring 3/8 14-16 GA	1
38	29610-002	Conn. Fork 14-16 GA #8	1
39	29620-002	Conn Butt 14-16	3
40	11934-004	Fitting Adapter	1
41	11939-015	Fitting Adapter	1
42	62125-002	Cable Assy x 69	1
43			
44	29495-099	Wire 14 GA 3-Cond	10.25'
45	11240-005	Washer 5/16 DIA STD Flat	12

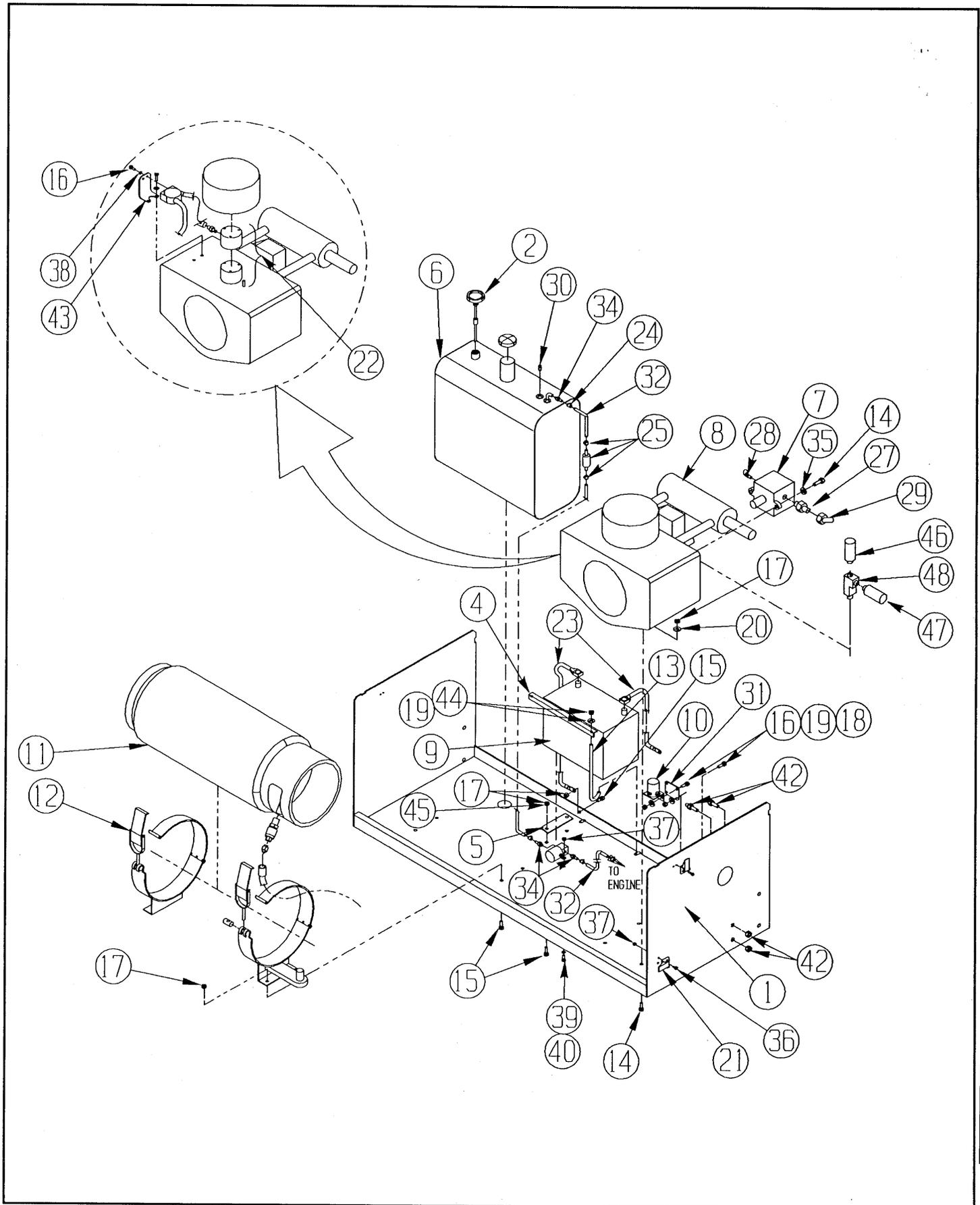
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Illustrated Parts Breakdown



Illustrated Parts Breakdown



Illustrated Parts Breakdown

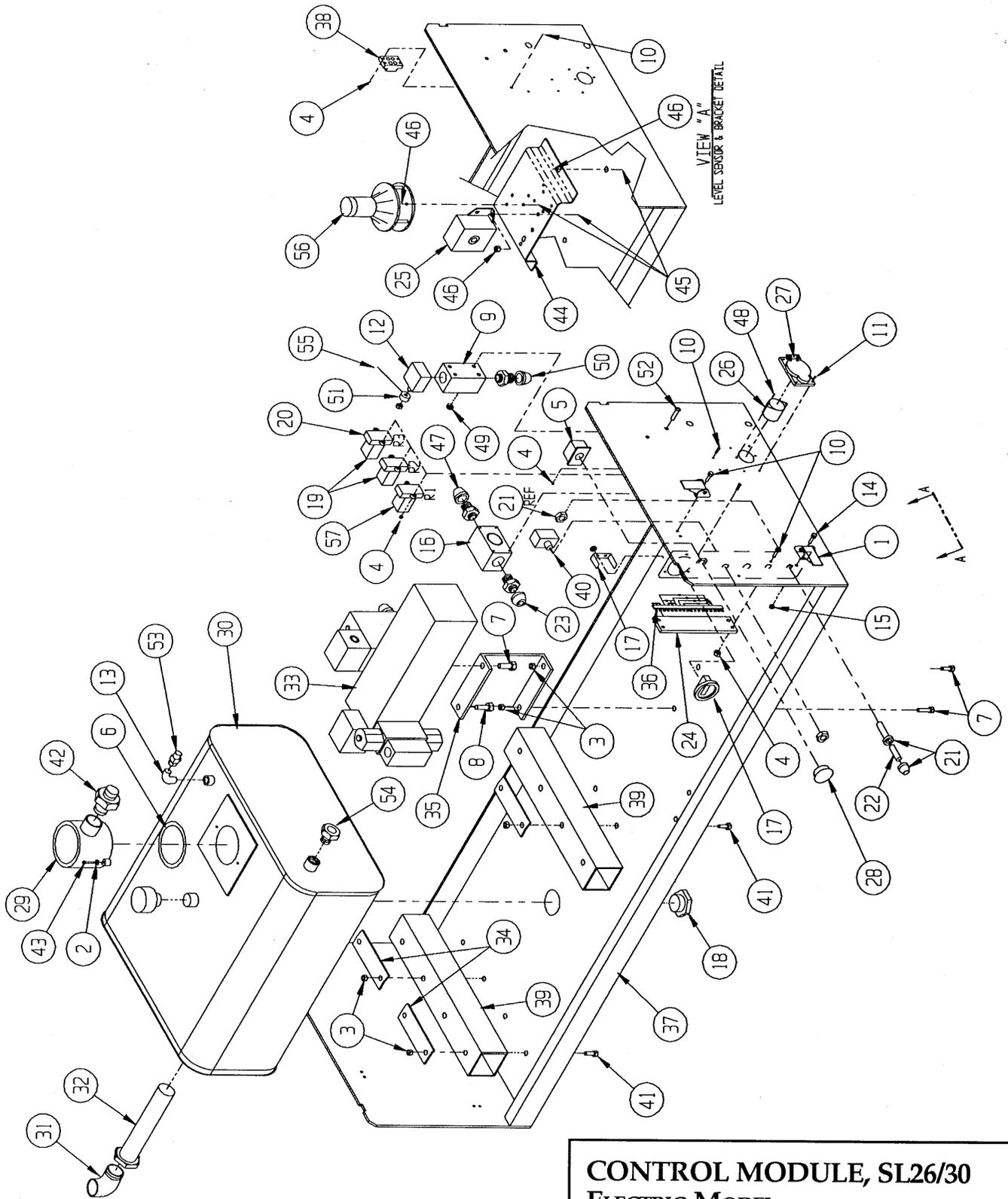
CONTROL MODULE, SL26/30
ELECTRIC MODEL, DRAWING 1 OF 2
 64003-037

ITEM	PART	DESCRIPTION	QTY.
1	05299-000	Latch Toggle	4
2	11238-005	Lockwasher 5/16 Dia Split	2
3	11248-006	Locknut, Hex 3/8-16 UNC	8
4	11248-047	Locknut, Hex 6-32 UNC	10
5	63968-004	Contact Block	1
6	63962-001	Backup Ring	1
7	11254-008	Screw, Hex 3/8-16 UNC X 1	3
8	11254-010	Screw, HHC 3/8-16 UNC X 1 1/4	1
9	15793-007	Switch Body	1
10	11715-006	Screw, RH 6-32 UNC X 3/4	8
11	11715-008	Screw, RH 6-32 UNC X 1	4
12	15793-002	Switch Head	1
13	11940-006	Fitting Adapter	1
14	11708-004	Mach Screw, Rd Hd 8-32 UNC X 1/2	8
15	11248-002	Locknut, Hex 8-32 UNC	8
16	15915-000	Box, Electrical, Bell	1
17	15752-000	Hour Meter	1
18	21305-006	Magnet Plug	1
19	27962-001	Relay 2 Pole 24v	2
20	27963-000	Socket	3
21	29701-000	Fuse Holder	1
22	29704-015	Fuse Agc 15 Amp	1
23	29925-001	Connetor, Cable	1
23	29925-001	Connetor, Cable	1
24	29928-000	Terminal Block	1
25	63778-000	Alarm 60/600 Hz 12-24v	1
26	29961-000	Inlet, Flanged	1
27	29962-000	Elec Box Cover	1
28	63968-001	Push Button, Emergency Stop	1

*Not Shown

ITEM	PART	DESCRIPTION	QTY.
29	63919-001	Filter Hyd	1
*	63919-010	Filter Element	1
30	63930-010	Oil Reservoir	1
31	63931-016	Street Elbow 1-NPT Blk Stl	1
32	63935-000	Suction Screen	1
33	64004-017	Control Valve Assy, Elect	1
*	30576-010	Service Block, Control Valve	1
34	64039-000	Fuel Tank Mounting Tab	3
35	64045-000	Manifold Mount	1
36	64056-014	Fanning Strip	1
37	64058-002	Module Weldment	1
38	29828-009	Terminal Block	1
39	64460-000	Spacer	2
40	12798-001	Switch Toggle	1
41	11254-028	Screw, HHC 3/8-16 UNC X 3 1/2	65
42	11939-019	Fitting Adapter	1
43	14334-008	Screw, Soc Hd 5/16-18 UNC X 1" Lg	2
44	63438-000	Bracket	1
45	11252-006	Screw, HHC 1/4-20 UNC X 3/4	8
46	11248-004	Locknut, Hex 1/4-20 UNC	8
47	29925-011	Connetor, Cable	1
48	11715-004	Screw 6-32 UNC X 1/2	2
49	11248-003	Locknut, Hex 10-24 UNC	2
50	29925-000	Connector, Cable	1
51	15793-003	Lever	1
52	11709-016	Mach Screw, Rd Hd 10-24 UNC X 2" Lg	2
53	20733-002	Fitting Adapter Tee	1
54	63979-006	Sight Glass	1
55	19000-099	Rod 1/8 Dia	1'
56	29945-011	Level Sensor	1
57	27962-002	Relay 3 Pole 24v	1

Illustrated Parts Breakdown



CONTROL MODULE, SL26/30
ELECTRIC MODEL
64003-037
Drawing 1 of 2

CONTROL MODULE, SL26/30
ELECTRIC MODEL, DRAWING 2 OF 2
64003-037

ITEM	PART	DESCRIPTION	QTY.
58	29452-099	Wire 16 Awg Thhn Strd Cop Black	8'
59	29455-099	Wire 16 Awg Thhn Strd Cop Brn	3'
60	29450-099	Wire 16 Awg Thhn Strd Cop Blu	3'
61	29451-099	Wire 16 Awg Thhn Strd Cop Wht	5'
62	29453-099	Wire 16 Awg Thhn Strd Cop Org	5'
63	29456-099	Wire 16 Awg Thhn Strd Cop Yel	5'
64	29454-099	Wire 16 Awg Thhn Strd Cop Red	6'
65	29478-099	Wire 16 Awg Thhn Strd Cop Red/Blk	4'
66	29620-002	Conn Butt 16-14	13
67	29610-002	Conn Fork 16-14 #8	53
68	29932-002	Terminal Jumper	2
69	29931-003	Conn Female Push 16-14 1/4	6
70	29477-099	Wire 16 Awg Thhn Strd Cop Org/Blk	4'
71	29601-013	Conn Ring 16-14 #10	6
72	29601-014	Conn Ring 16-14 1/4 Dia	8
73	29490-099	Wire 16 Awg 2-Cond. Typ So	4
74	29479-099	Wire 16 Awg Thhn Cop Wht/Blk	4'
75	29459-099	Wire 16 Awg Thhn Cop Blu/Wht	4'
76	29482-099	Wire 16 Awg Thhn Cop Grn/Wht	4'
77	05491-099	Wire 16 Awg Thhn Cop Grn/Blk	4'

Illustrated Parts Breakdown

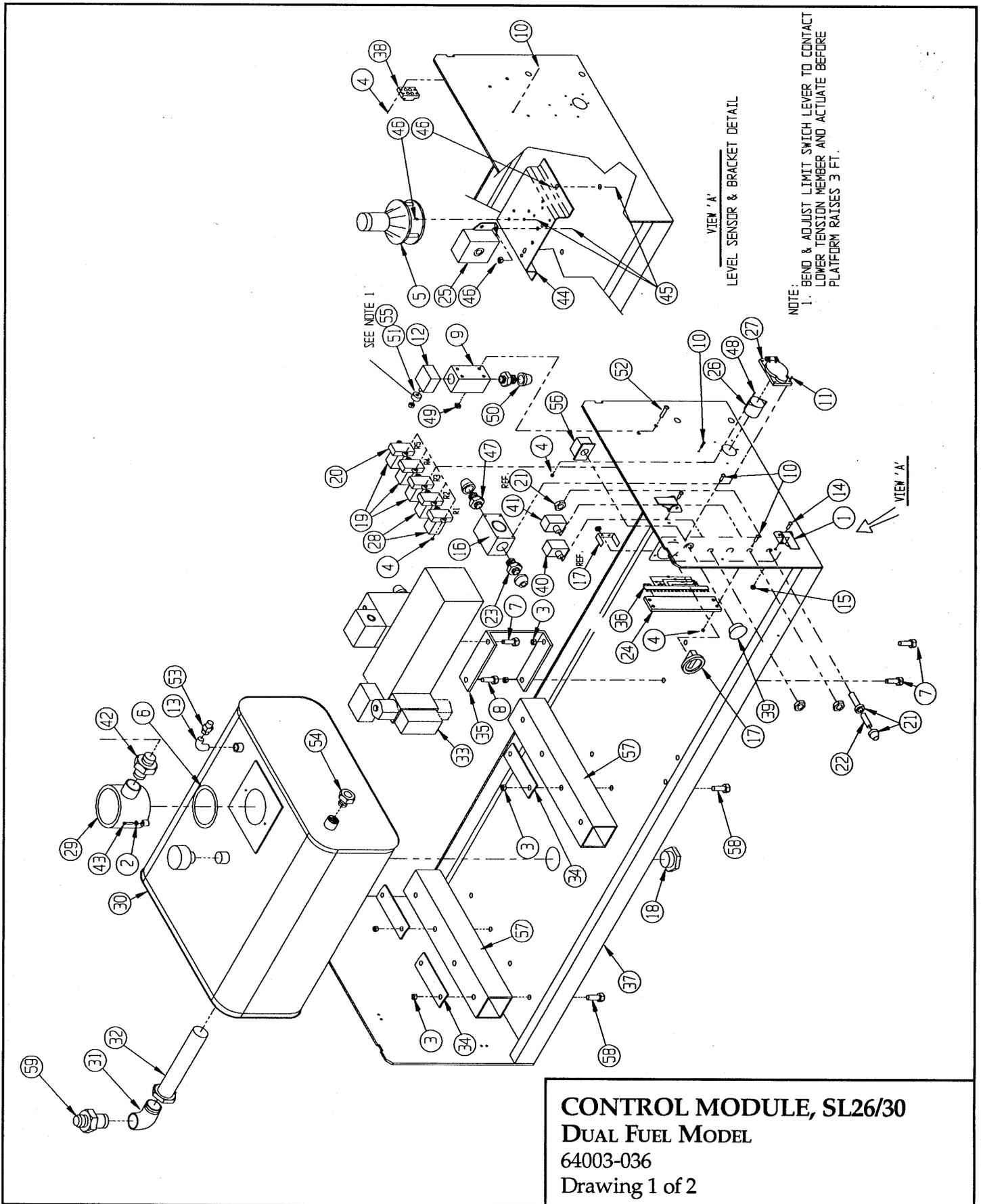
CONTROL MODULE, SL26/30
DUAL FUEL MODEL, DRAWING 1 OF 2
64003-036

ITEM	PART	DESCRIPTION	QTY.
1	05299-000	Latch Toggle	4
2	11238-005	Lockwasher 5/16 DIA Split	2
3	11248-006	Locknut 3/8-16 UNC HEX	8
4	11248-047	Locknut 6-32 UNC HEX	12
5	29945-011	Tilt Sensor	1
6	63962-001	Backup-Ring	1
7	11254-008	Screw 3/8 - 16 UNC HHC x 1	3
8	11254-010	Screw 3/8 - 16 UNC HHC x 1 1/4	1
9	15793-007	Switch Body	1
10	11715-006	Screw 6-32 UNC RH x 3/4	10
11	11715-008	Screw 6-32 UNC RH x 1	4
12	15793-002	Switch Head	1
13	11940-006	Fitting Adapter	1
14	11708-004	Screw 8-32 UNC MACH RD HD x 1/2	8
15	11248-002	Locknut 8-32 UNC HEX	8
16	15915-000	Electrical Box	1
17	15752-000	Hour Meter	1
18	21305-006	Magnet Plug	1
19	27962-000	Relay 2-Pole, 12v	3
20	27963-000	Socket	5
21	29701-000	Fuse Holder	1
22	29704-015	Fuse AGC 15 AMP	1
23	29925-001	Connector Cable	1
24	29928-000	Terminal Block	1
25	63778-000	Alarm 60/600 Hz	1
26	29961-000	Inlet, AC Male, Flanged	1
27	29962-000	Electrical Box Cover	1
28	27962-003	Relay 3-Pole, 12v	2
29	63919-001	Filter Hydraulic	1
*	63919-010	Element, Filter	1
30	63930-010	Oil Reservoir	1

*Not Shown

ITEM	PART	DESCRIPTION	QTY.
31	14920-007	Elbow 90° 1 1/4-NPT Blk Stl	1
32	63935-001	Suction Screen	1
33	64004-016	Control Valve Assy -D/F	1
*	30576-010	Service Block	1
34	64039-000	Fuel Tank Mounting Tab	3
35	64045-002	Mount-Manifold	1
36	64056-012	Fanning Strip Assy	1
37	64058-002	Module Weldment	1
38	29928-009	Terminal Block	1
39	63968-001	Push Button	1
40	12798-001	Switch, Toggle, Lift/Lower	1
41	29871-001	Switch, Toggle, Fuel Selector	1
42	11939-019	Fitting Adapter	1
43	14334-008	Screw 5/16 - 18 UNC Soc Hd x 1	2
44	63438-000	Bracket	1
45	11252-006	Screw 1/4 - 20 UNC HHC x 3/4	8
46	11248-004	Locknut 1/4 - 20 UNC HEX	8
47	29925-011	Connector Cable	1
48	11715-004	Screw 6-32 UNC x 1/2	2
49	11248-003	Locknut 10-24 UNC HEX	2
50	29925-000	Connector - Cable	1
51	15793-003	Lever	1
52	11709-016	Screw 10-24 UNC Rd Hd Mach x 2" LG	2
53	20733-002	Fitting Adapter Tee	1
54	63979-006	Sight Glass	1
55	19000-099	Rod 1/8 DIA	1'
56	63968-004	Contact Block	1
57	64460-000	Spacer	1
58	11254-028	Screw HHC 3/8- 16 UNC X 3 1/2	6
59	11939-029	Fitting	1

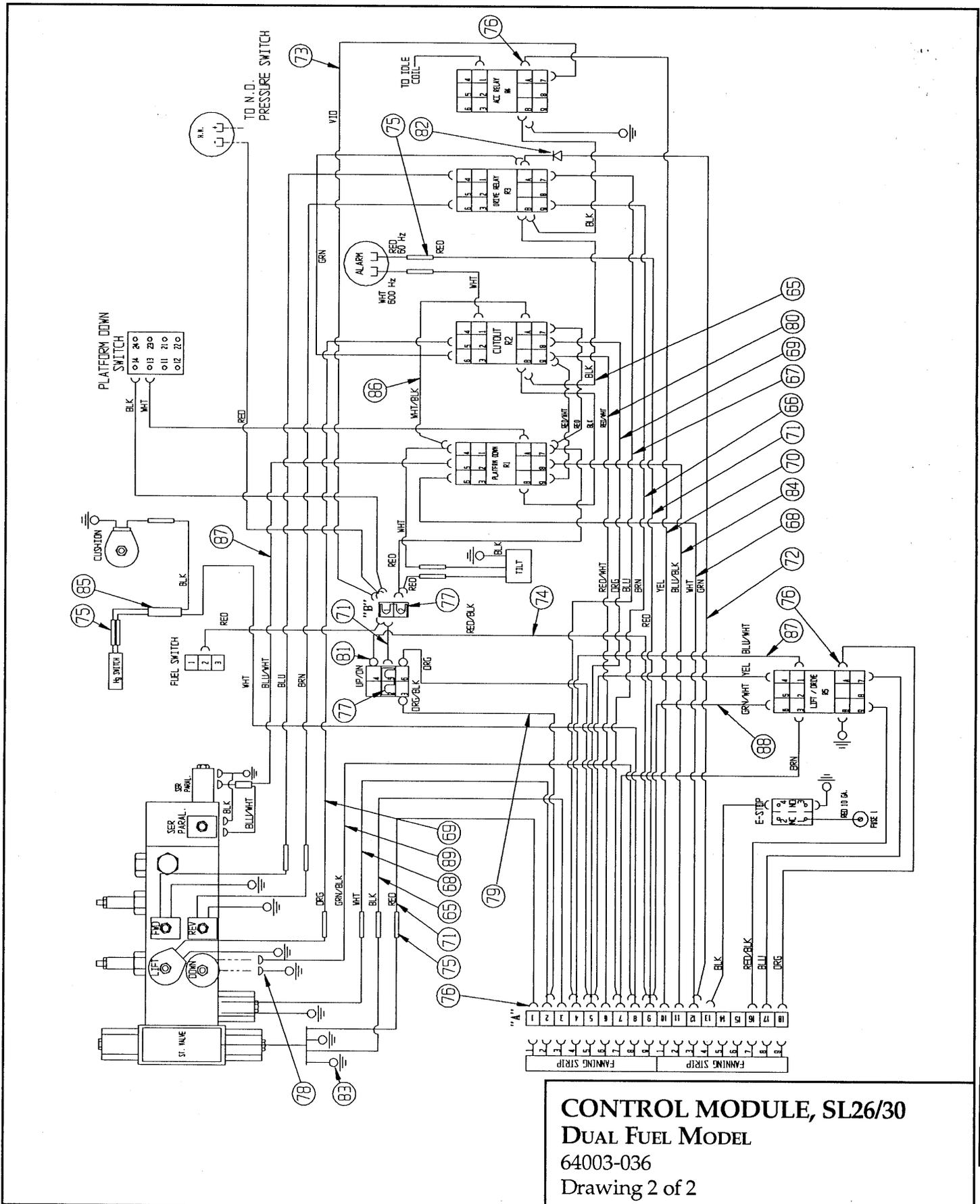
Illustrated Parts Breakdown



**CONTROL MODULE, SL26/30
DUAL FUEL MODEL, DRAWING 2 OF 2
64003-036**

ITEM	PART	DESCRIPTION	QTY.
65	29452-099	Wire 16 Awg Thhn Strd Cop Black	8'
66	29455-099	Wire 16 Awg Thhn Strd Cop Brn	3'
67	29450-099	Wire 16 Awg Thhn Strd Cop Blu	3'
68	29451-099	Wire 16 Awg Thhn Strd Cop Wht	5'
69	29453-099	Wire 16 Awg Thhn Strd Cop Org	5'
70	29456-099	Wire 16 Awg Thhn Strd Cop Yel	5'
71	29454-099	Wire 16 Awg Thhn Strd Cop Red	6'
72	29457-099	Wire 16 Awg Thhn Strd Cop Grn	5'
73	29458-099	Wire 16 Awg Thhn Strd Cop Vio	4'
74	29478-099	Wire 16 Awg Thhn Strd Cop Red/Blk	6'
75	29620-002	Conn Butt 16-14	15
76	29610-002	Conn Fork 16-14 #8	76
77	29932-002	Terminal Jumper	2
78	29931-003	Conn Female Push 16-14 1/4	6
79	29477-099	Wire 16 Awg Thhn Strd Cop Org/Blk	4'
80	29483-099	Wire 16 Awg Thhn Strd Cop Red/Wht	4'
81	29601-013	Conn Ring 16-14 #10	5
82	29825-002	Diode	1
83	29601-014	Conn Ring 16-14 1/4 Dia	8
84	29475-099	Wire 16 Awg Thhn Strd Cop Blu/Blk	3'
85	29490-099	Wire 16 Awg 2-Cond. Type So	4'
86	29479-099	Wire 16 Awg Thhn Strd Cop Wht/Blk	4'
87	29459-099	Wire 16 Awg Thhn Strd Cop Blu/Wht	4'
88	29482-099	Wire 16 Awg Thhn Strd Cop Grn/Wht	4'
89	05491-099	Wire 16 Awg Thhn Strd Cop Grn/Blk	4'

Illustrated Parts Breakdown



CONTROL MODULE, SL26/30
DUAL FUEL MODEL
 64003-036
 Drawing 2 of 2

Illustrated Parts Breakdown

CONTROL VALVE ASSEMBLY, SL26/30 ELECTRIC MODEL 64004-017

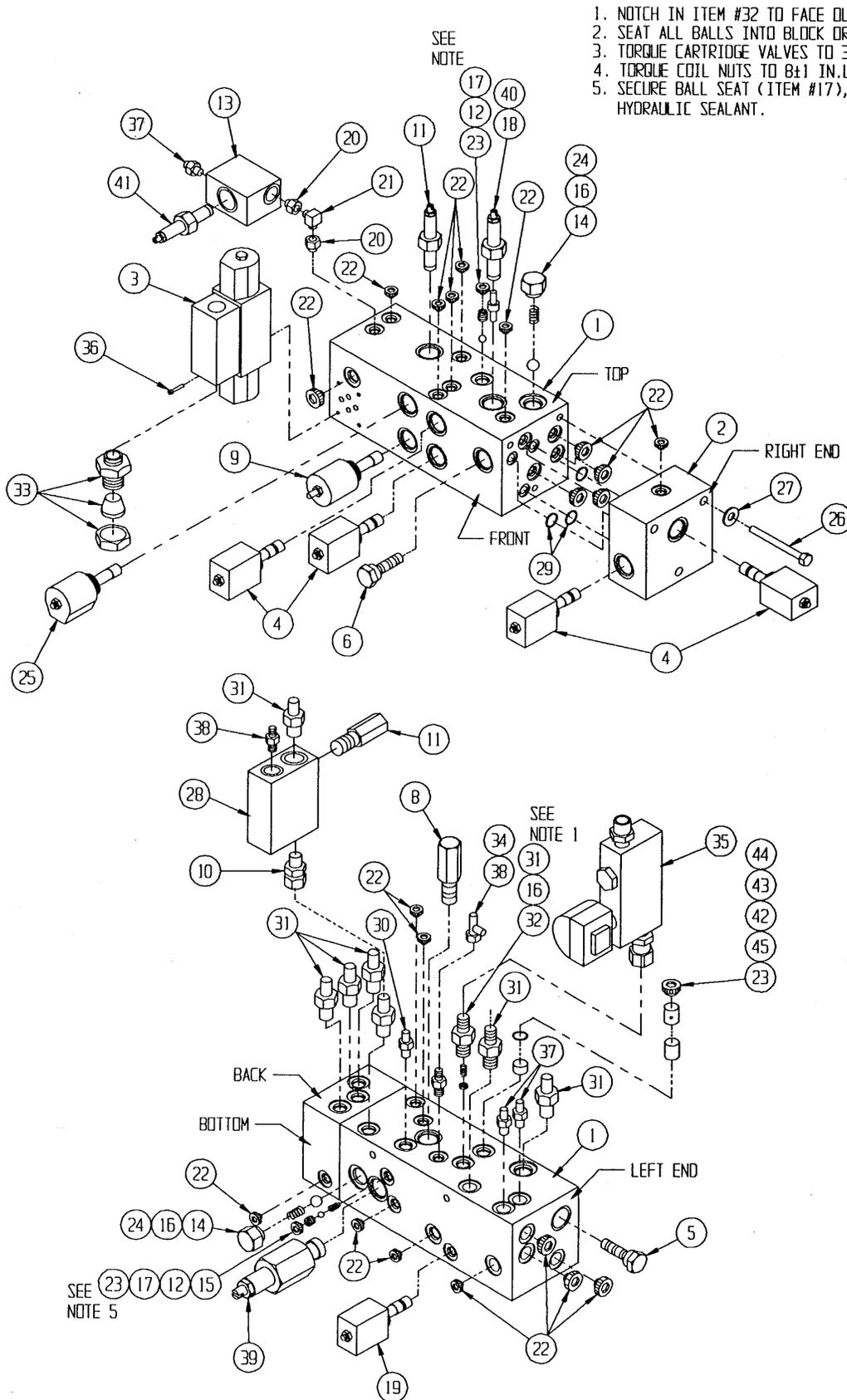
ITEM	PART	DESCRIPTION	QTY.
1	64050-002	Manifold, SL26/30	1
*	30576-010	Service Block, Control Valve	1
2	64051-000	Manifold Block, Series/Parallel	1
3	15763-000	Steering Valve, 24vdc	1
*	13888-007	O-Ring	4
4	61797-000	3-Way Valve, 24v	4
*	63976-010	Valve Seal Kit	1
5	63924-001	Flow Regulator	1
6	63924-003	Flow Divider-Combiner	1
7			
8	63922-001	Pressure Reducing	1
9	63925-002	Lowering Valve	1
10	64170-005	Fitting Adapter	1
11	60390-000	Relief Valve - Preset 2000 PSI	2
12	05135-000	Ball 5/16 Dia Stl	2
13	64223-000	Valve Block	1
14	08998-000	Ball 1/2 Dia Stl	2
15	15799-000	Spring	1
16	05133-000	Spring	3
17	61728-000	Seat Ball	2
18	63920-000	Piston	1
19	63952-002	Proportional Valve	1
20	15959-001	Fitting Adapter	2
21	13963-002	Fitting Adapter Elbow	1
22	12004-004	Plug - SAE #4	20
*	11974-004	O-Ring	1
23	12004-006	Plug - SAE #6	3
*	11974-006	O-Ring	1
24	20021-008	Plug - SAE #8	2
*	11974-008	O-Ring	1
25	15764-000	Valve - Solenoid N.C.-24V	1
26	11254-022	Screw 3/8-16 UNC HHC x 2 3/4	3
27	11240-006	Washer 3/8 Dia Std Flat	3
28	64169-000	Block, Valve, Drive Relief	1
29	13888-044	O-Ring	3
30	11941-004	Fitting Adapter	1
31	11941-006	Fitting Adapter	8
32	15919-003	Orifice Lower	1
33	29925-000	Conn Cable 3/4	1
34	20733-003	Fitting Adapter	1
35	64559-000	Cushion Valve Assembly	1
36	14412-016	Screw 10-24 UNC Soc Hd x 2	4
37	11941-005	Fitting Adaptor	3
38	11941-001	Fitting Adaptor	3
39	60390-005	Relief Valve - Preset 1200 PSI	1
40	60390-004	Relief Valve - Preset 900 PSI	1
41	60390-002	Relief Valve - Preset 1100 PSI	1
42	64281-000	Spacer	1
43	13888-007	O-Ring	1
44	03391-002	Check Valve, Lift	1
45	64278-000	Spacer	1

CONTROL VALVE ASSEMBLY, SL26/30 DUAL FUEL MODEL 64004-010

ITEM	PART	DESCRIPTION	QTY.
1	64050-002	Manifold, SL26/30	1
*	30576-010	Service Block, Control Valve	1
2	64051-000	Manifold Block	1
3	63928-003	Steering Valve 12 VDC	1
*	13888-007	O-Ring	4
4	63923-000	3-Way Valve, 12v	4
*	63976-010	Valve Seal Kit	1
5	63924-001	Flow Regulator	1
6	63924-003	Flow Divider-Combiner	1
7			
8	63922-001	Pressure Reducing	1
9	63925-001	Lowering Valve	1
10	64170-005	Fitting Adapter	1
11	60390-000	Relief Valve - Preset 2000 PSI	2
12	05135-000	Ball 5/16 Dia Stl	2
13	64223-000	Valve Block	1
14	08998-000	Ball 1/2 Dia Stl	2
15	15799-000	Spring	1
16	05133-000	Spring	3
17	61728-000	Seat Ball	2
18	63920-000	Piston	1
19	63952-001	Proportional Valve	1
20	15959-001	Fitting Adapter	2
21	13963-002	Fitting Adapter Elbow	1
22	12004-004	Plug - SAE #4	20
*	11974-004	O-Ring	1
23	12004-006	Plug - SAE #6	3
*	11974-006	O-Ring	1
24	20021-008	Plug - SAE #8	2
*	11974-008	O-Ring	1
25	60291-000	Valve - Solenoid N.C.-12V	1
26	11254-022	Screw 3/8-16 UNC HHC x 2 3/4	3
27	11240-006	Washer 3/8 DIA STD Flat	3
28	64169-000	Block, Valve, Drive Relief	1
29	13888-044	O-Ring	3
30	11941-004	Fitting Adapter	1
31	11941-006	Fitting Adapter	8
32	15919-003	Orifice Lower	1
33	29925-000	Conn., Cable 3/4	1
34	20733-001	Fitting Adapter	1
35	64559-001	Cushion Valve Assembly	1
36	14412-016	Screw 10-24 UNC SOC HD x 2	4
37	11941-005	Fitting Adaptor	3
38	11941-001	Fitting Adaptor	2
39	60390-005	Relief Valve - Preset 1200 PSI	1
40	60390-004	Relief Valve - Preset 900 PSI	1
41	60390-002	Relief Valve - Preset 1100 PSI	1
42	64281-000	Spacer	1
43	13888-007	O-Ring	1
44	03391-002	Check Valve, Lift	1
45	64278-000	Spacer	1

*Not Shown

Illustrated Parts Breakdown



Illustrated Parts Breakdown

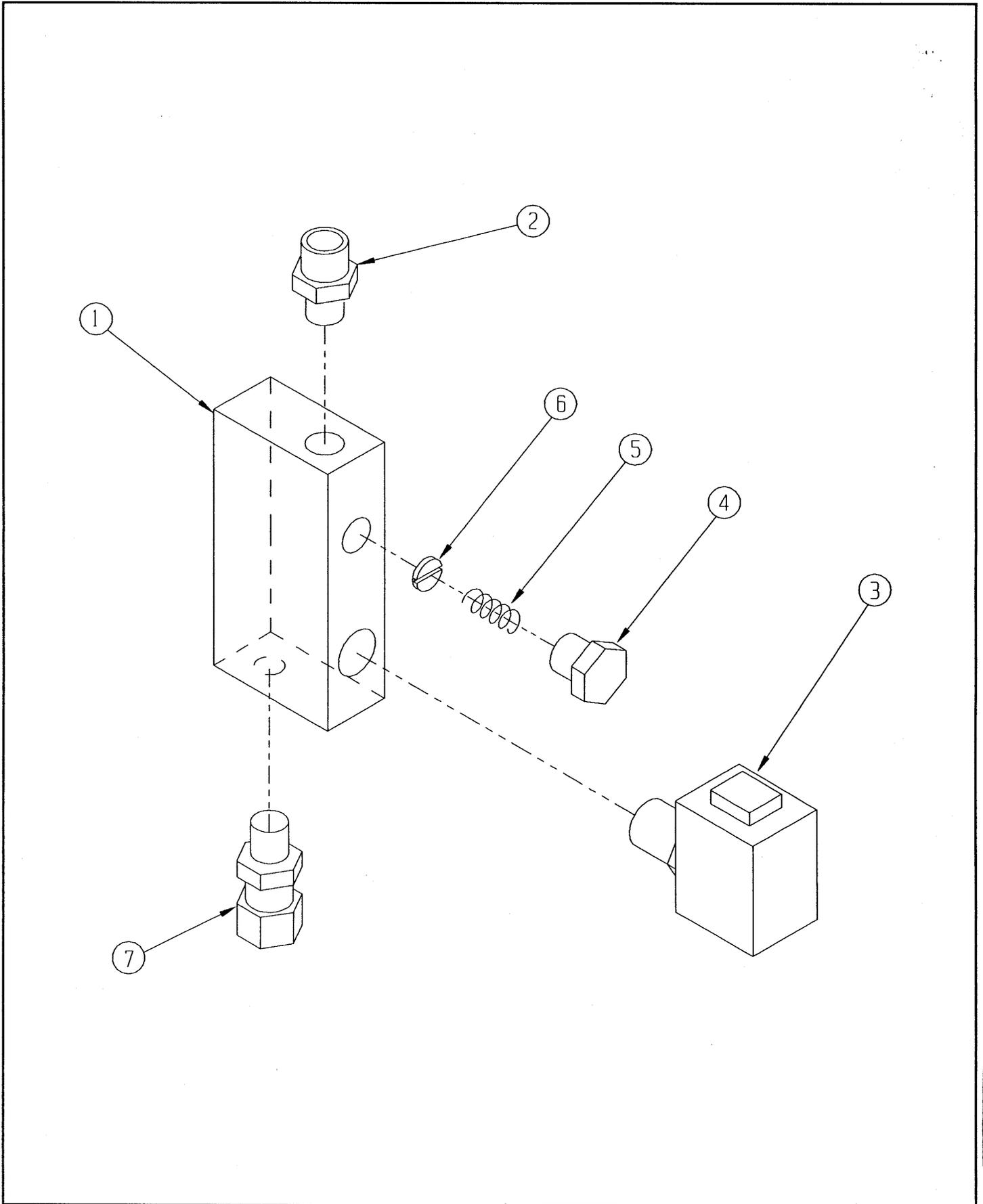
CUSHION VALVE ASSEMBLY, SL26/30
ELECTRIC MODEL
 64559-000

ITEM	PART	DESCRIPTION	QTY.
1	64560-000	Cushion Block	1
2	11941-006	Fitting	1
3	64293-005	Solenoid Valve, 24v	1
4	12004-006	Fitting, #6 Plug	1
5	05133-000	Spring	1
6	15919-001	Orifice (.062 Dia.)	1
7	64170-004	Fitting	1

CUSHION VALVE ASSEMBLY, SL26/30
DUAL FUEL MODEL
 64559-001

ITEM	PART	DESCRIPTION	QTY.
1	64560-000	Cushion Block	1
2	11941-006	Fitting	1
3	64293-003	Solenoid Valve, 12v	1
4	12004-006	Fitting, #6 Plug	1
5	05133-000	Spring	1
6	15919-001	Orifice (.062 Dia.)	1
7	64170-004	Fitting	1

Illustrated Parts Breakdown



Illustrated Parts Breakdown

ELEVATING ASSEMBLY, SL26 ELECTRIC & DUAL FUEL

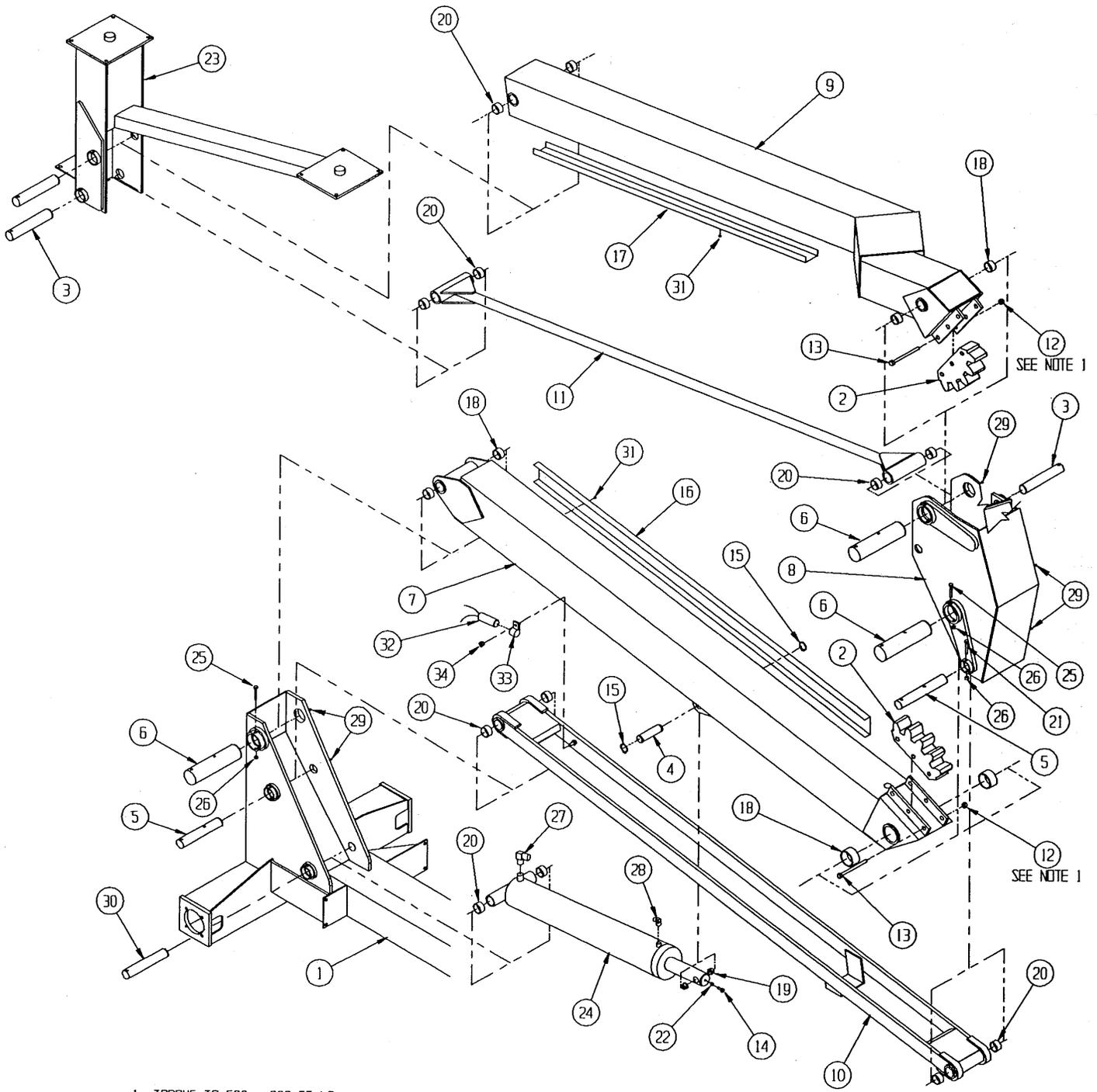
ITEM	PART	DESCRIPTION	QTY.
1	64001-029	Chassis Assy-ELECTRIC	REF.
1	64001-030	Chassis Assy-DUAL FUEL	REF.
2	64089-000	Lift Gear	2
3	64090-000	Pivot Pin 1.75 x 11.45	3
4	64093-000	Cylinder Pin	1
5	64094-000	Pivot Pin 1.75 x 13.11	2
6	64095-000	Pivot Pin 2.75 x 13.27	3
7	64060-002	Lower Arm Weldment	1
8	64070-002	Mid-Linkage Weldment	1
9	64078-002	Upper Arm Weldment	1
10	64084-002	Lower Tension Weldment	1
11	64087-000	Upper Tension Weldment	1
12	11248-016	Locknut 1-8 UNC Hex	6
13	14918-056	Screw 1-8 UNC HHC x 7	6
14	11705-020	Screw 3/8 -16 UNC Set Hex Soc x 1-1/4	1
15	11764-020	Retaining Ring	2
16	64450-000	Wire Cover	1
17	64451-000	Wire Cover	1
18	62642-030	Bearing	6
19	62649-010	Bearing	2
20	62649-020	Bearing	12
21	11254-024	Screw 3/8 - 16 UNC HHC x 3	6
22	11273-006	Nut 3/8 - 16 UNC Jam Hex	1
23	64111-001	Pedestal Weldment	1
24	63904-000	Lift Cylinder	1
*	63904-010	Seal Kit, Lift Cylinder	1
*	63904-011	Velocity Fuse	1
25	11254-030	Screw 3/8 - 16 UNC HHC x 3 3/4	3
26	11248-006	Locknut 3/8 - 16 UNC Hex	9
27	11934-013	Fitting Adapter	1
28	11940-006	Fitting Adapter	1
29	13336-001	Grease Fitting	5
30	64092-000	Pin (1 3/4)	1
31	11246-006	Locknut 3/8 - 16 UNC Thin	4
32	63497-001	Mercury Switch	1
33	13919-013	Clamp	1
34	11248-004	Locknut 1/4-20 UNC	1

ELEVATING ASSEMBLY, SL30 ELECTRIC & DUAL FUEL

ITEM	PART	DESCRIPTION	QTY.
1	64001-029	Chassis Assy-ELECTRIC	REF.
1	64001-030	Chassis Assy-DUAL FUEL	REF.
2	64089-000	Lift Gear	2
3	64090-000	Pivot Pin 1.75 x 11.45	3
4	64093-000	Cylinder Pin	1
5	64094-000	Pivot Pin 1.75 x 13.11	2
6	64095-000	Pivot Pin 2.75 x 13.27	3
7	64530-001	Lower Arm Weldment	1
8	64070-002	Mid-Linkage Weldment	1
9	64521-000	Upper Arm Weldment	1
10	64531-001	Lower Tension Weldment	1
11	64536-000	Upper Tension Weldment	1
12	11248-016	Locknut 1-8 UNC Hex	6
13	14918-056	Screw 1-8 UNC HHC x 7	6
14	11705-020	Screw 3/8 -16 UNC Set Hex Soc x 1-1/4	1
15	11764-020	Retaining Ring	2
16	64542-000	Wire Cover	1
17	64538-000	Wire Cover	1
18	62642-030	Bearing	6
19	62649-010	Bearing	2
20	62649-020	Bearing	12
21	11254-024	Screw 3/8 - 16 UNC HHC x 3	6
22	11273-006	Nut 3/8 - 16 UNC Jam Hex	1
23	64111-002	Pedestal Weldment	1
24	63904-000	Lift Cylinder	1
*	63904-010	Seal Kit, Lift Cylinder	1
*	63904-011	Velocity Fuse	1
25	11254-030	Screw 3/8 - 16 UNC HHC x 3 3/4	3
26	11248-006	Locknut 3/8 - 16 UNC Hex	9
27	11934-013	Fitting Adapter	1
28	11940-006	Fitting Adapter	1
29	13336-001	Grease Fitting	5
30	64092-000	Pin (1 3/4)	1
31	11246-006	Locknut 3/8 - 16 UNC Thin	4
32	63497-001	Mercury Switch	1
33	13919-013	Clamp	1
34	11248-004	Locknut 1/4-20 UNC	1

*Not Shown

Illustrated Parts Breakdown

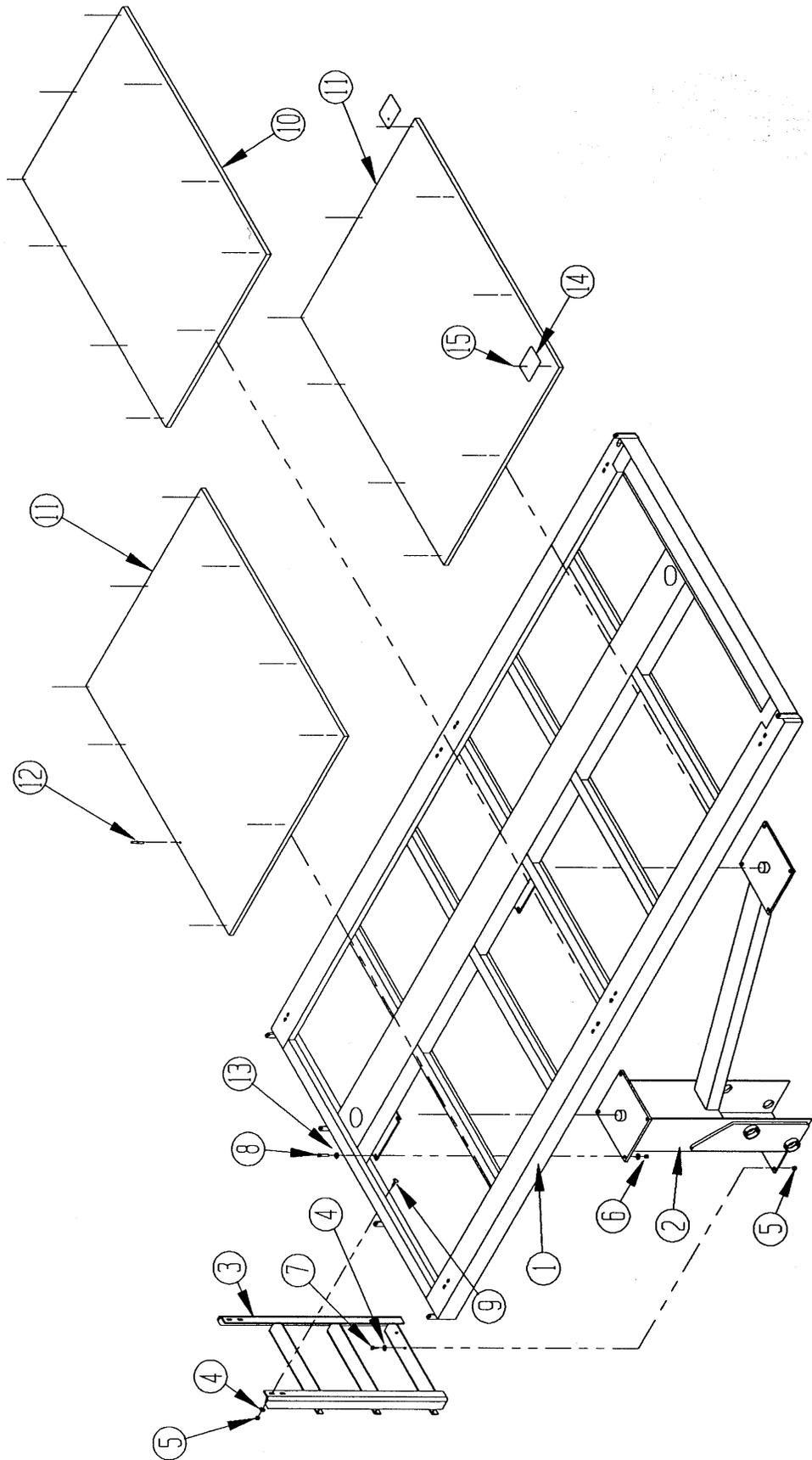


1. TORQUE TO 500 - 600 FT.LB.
2. COAT GEAR TEETH AND PINS WITH EXTREME HIGH PRESSURE MOLYBDENUM GREASE.

**PLATFORM ASSEMBLY, SL26
ELECTRIC & DUAL FUEL**

ITEM	PART	DESCRIPTION	QTY.
1	64100-001	Deck Weldment	1
2	64111-001	Pedestal Weldment	REF.
3	64119-000	Ladder Weldment	1
4	11240-006	Washer 3/8 Dia Std Flat	6
5	11248-006	Locknut 3/8 - 16 UNC	6
6	11248-008	Locknut 1/2 - 16 UNC	8
7	11254-010	Screw 3/8 - 16 UNC x 1 1/4	2
8	11256-016	Screw 1/2 -13 UNC x 2	8
9	11831-008	Bolt Carriage 3/8 -16 UNC x 1	4
10	26505-003	Plywood 3/4, 42 x 50	1
11	26505-004	Plywood 3/4, 48 x 50	2
12	26554-006	Pop Rivet 1/4 Dia .751-.875 Grip	30
13	11240-008	Washer 1/2 Dia Std Flat	16
14	64424-000	Cover Plate	2
15	26526-006	Screw Rd, HD, #10 x 3/4	4

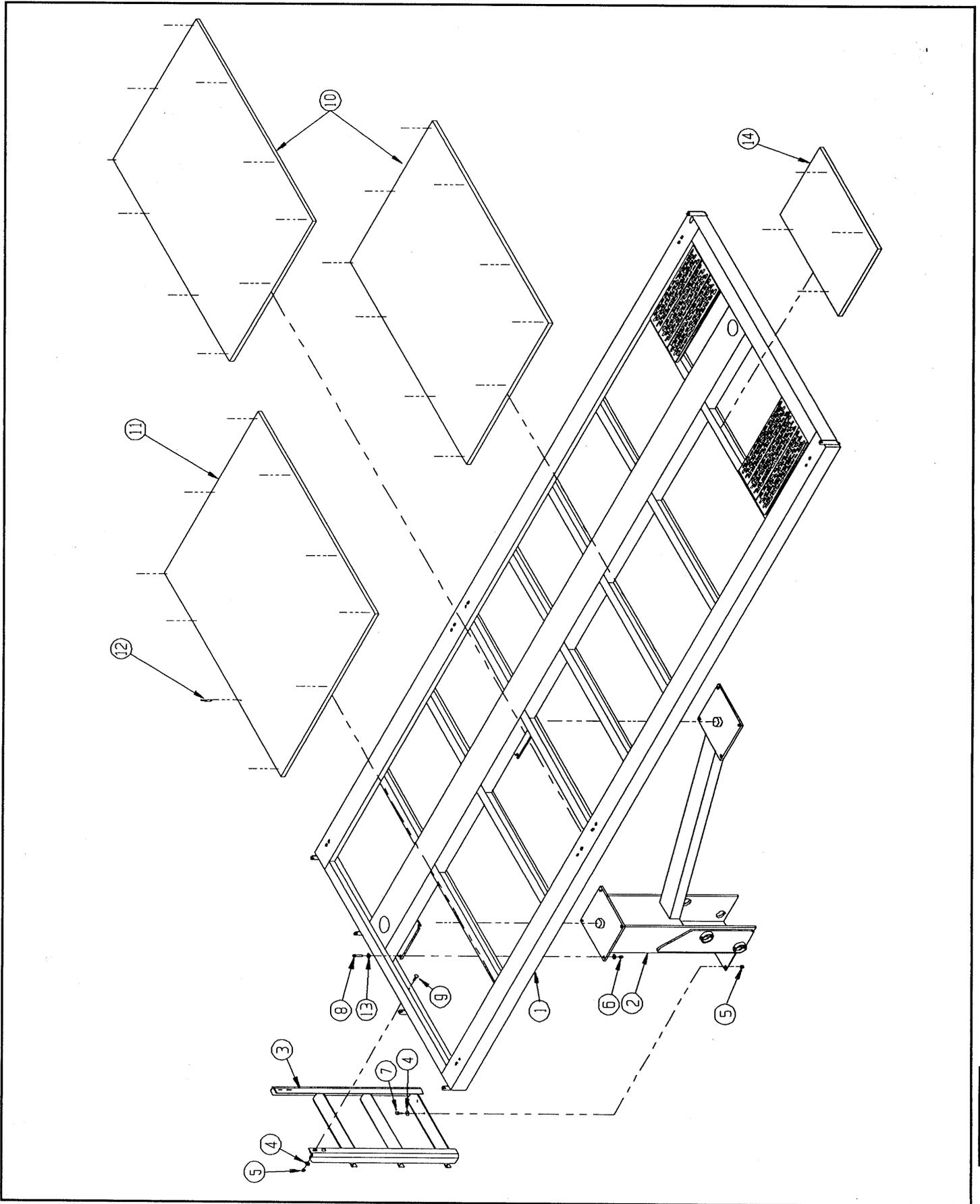
Illustrated Parts Breakdown



PLATFORM ASSEMBLY, SL30
ELECTRIC & DUAL FUEL

ITEM	PART	DESCRIPTION	QTY.
1	64540-001	Deck Weldment	1
2	64111-002	Pedestal Weldment	REF.
3	64119-000	Ladder Weldment	1
4	11240-006	Washer 3/8 Dia Std Flat	6
5	11248-006	Locknut 3/8 - 16 UNC	6
6	11248-008	Locknut 1/2 - 16 UNC	8
7	11254-010	Screw 3/8 - 16 UNC x 1 1/4	2
8	11256-016	Screw 1/2 -13 UNC x 2	8
9	11831-008	Bolt Carriage 3/8 -16 UNC x 1	4
10	26505-001	Plywood 3/4, 42 x 50	2
11	26505-002	Plywood 3/4, 48 x 60	1
12	26554-006	Pop Rivet 1/4 Dia .751-.875 Grip	36
13	11240-008	Washer 1/2 Dia Std Flat	16
14	26505-011	Plywood 3/4, 23 7/8 x 30	1

Illustrated Parts Breakdown



Illustrated Parts Breakdown

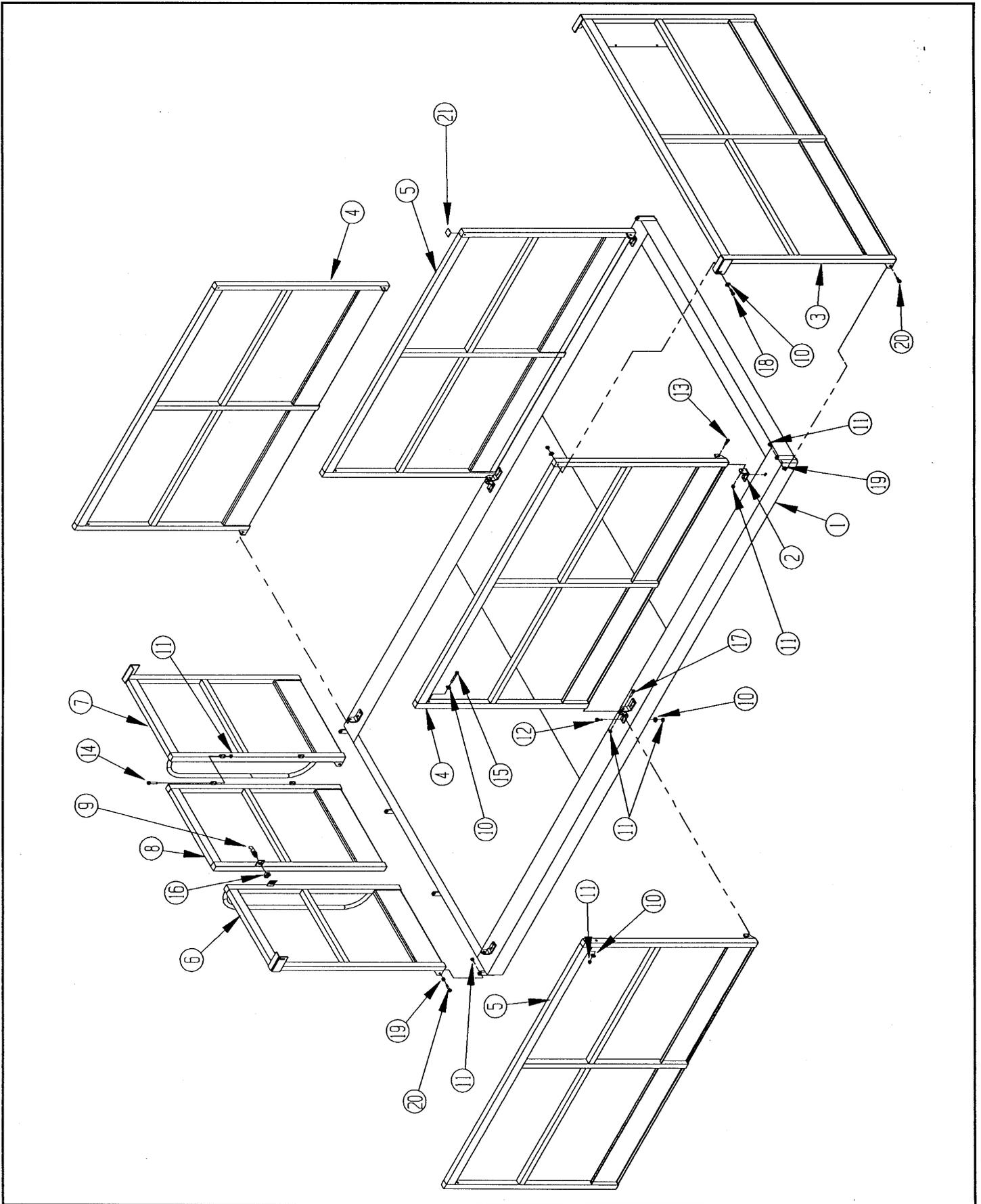
GUARDRAIL ASSEMBLY, SL26 ELECTRIC & DUAL FUEL

ITEM	PART	DESCRIPTION	QTY.
1	64100-001	Platform Weldment	REF.
2	64046-000	Rail Mounting Bracket	8
3	64124-002	Front Rail Weldment	1
4	64125-001	Side Rail Weldment - RH	2
5	64126-001	Side Rail Weldment - LH	2
6	64127-002	Rear Rail Weldment - RH	1
7	64128-002	Rear Rail Weldment- LH	1
8	64129-001	Gate Weldment	1
9	03570-000	Retaining Pin Assy	1
10	11240-006	Washer 3/8 Dia Std Flat	28
11	11248-006	Locknut 3/8 - 16 UNC	36
12	11254-008	Screw 3/8 - 16 UNC HHC x 1	16
13	11254-010	Screw 3/8 - 16 UNC HHC X 1 1/4	4
14	11254-022	Screw 3/8 - 16 UNC HHC X 2 3/4	2
15	11254-026	Screw 3/8 - 16 UNC HHC x 3 1/4	2
16	20495-012	Nut 3/4 - 16 UNF Jam HEX	1
17	11254-014	Screw 3/8 - 16 UNC HHC x 1 3/4	2
18	11254-018	Screw 3/8 16 UNC HHC x 2 1/4	4
19	11273-006	Nut 3/8 - 16 UNC Jam HEX	6
20	11254-012	Screw 3/8 - 16 UNC HHC x 1 1/2	6
21	63926-001	Plug- Sq Tube	8

GUARDRAIL ASSEMBLY, SL30 ELECTRIC & DUAL FUEL

ITEM	PART	DESCRIPTION	QTY.
1	64540-001	Platform Weldment	REF.
2	64046-000	Rail Mounting Bracket	8
3	64124-002	Front Rail Weldment	1
4	64544-000	Side Rail Weldment - RH	2
5	64543-000	Side Rail Weldment - LH	2
6	64127-002	Rear Rail Weldment - RH	1
7	64128-002	Rear Rail Weldment- LH	1
8	64129-001	Gate Weldment	1
9	03570-000	Retaining Pin Assy	1
10	11240-006	Washer 3/8 Dia Std Flat	28
11	11248-006	Locknut 3/8 - 16 UNC	36
12	11254-008	Screw 3/8 - 16 UNC HHC x 1	16
13	11254-010	Screw 3/8 - 16 UNC HHC X 1 1/4	4
14	11254-022	Screw 3/8 - 16 UNC HHC X 2 3/4	2
15	11254-026	Screw 3/8 - 16 UNC HHC x 3 1/4	2
16	20495-012	Nut 3/4 - 16 UNF Jam HEX	1
17	11254-014	Screw 3/8 - 16 UNC HHC x 1 3/4	2
18	11254-018	Screw 3/8 16 UNC HHC x 2 1/4	4
19	11273-006	Nut 3/8 - 16 UNC Jam HEX	6
20	11254-012	Screw 3/8 - 16 UNC HHC x 1 1/2	6
21	63926-001	Plug- Sq Tube	8

Illustrated Parts Breakdown



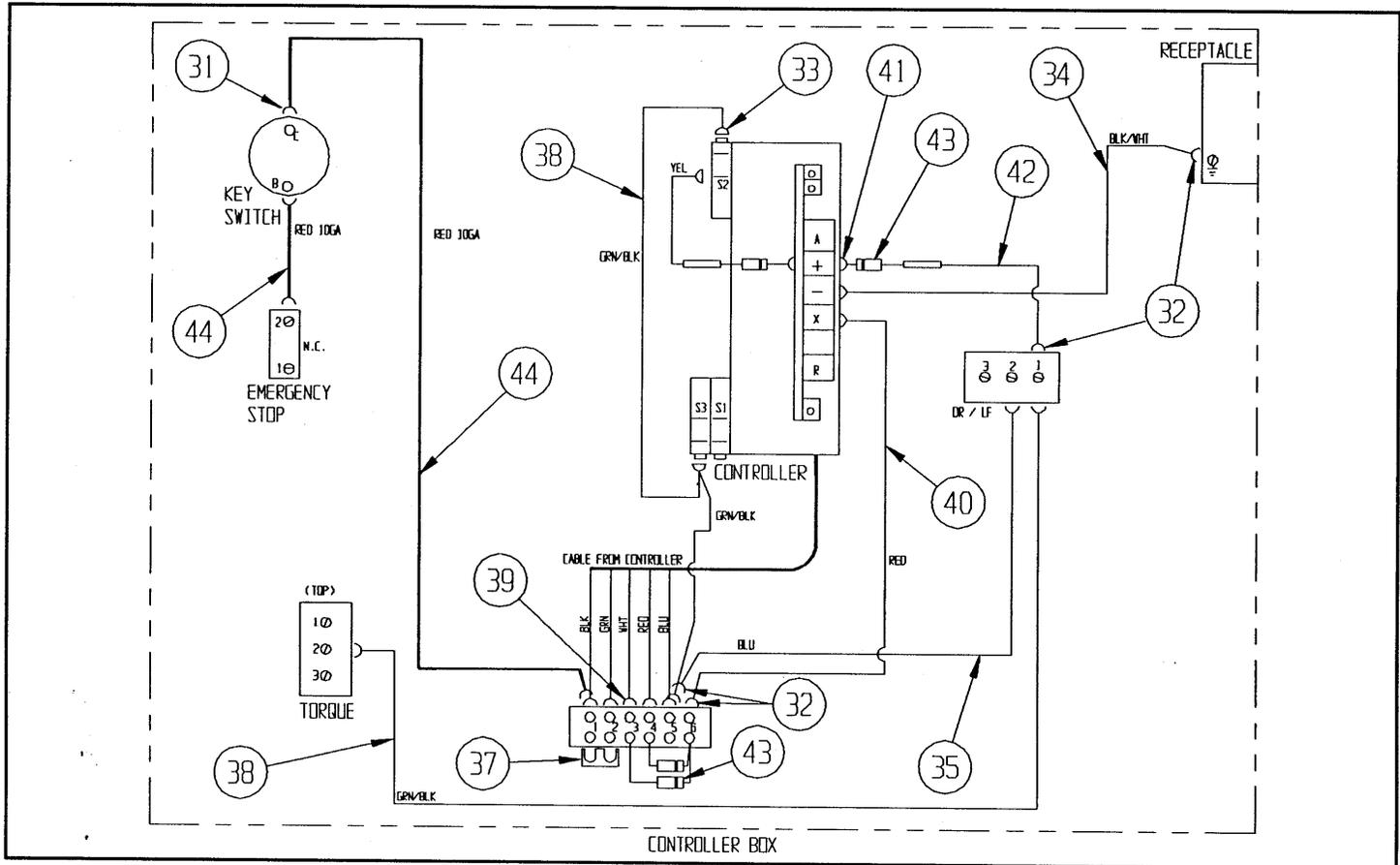
Illustrated Parts Breakdown

CONTROLLER ASSEMBLY, SL26/30 ELECTRIC MODEL 64411-013

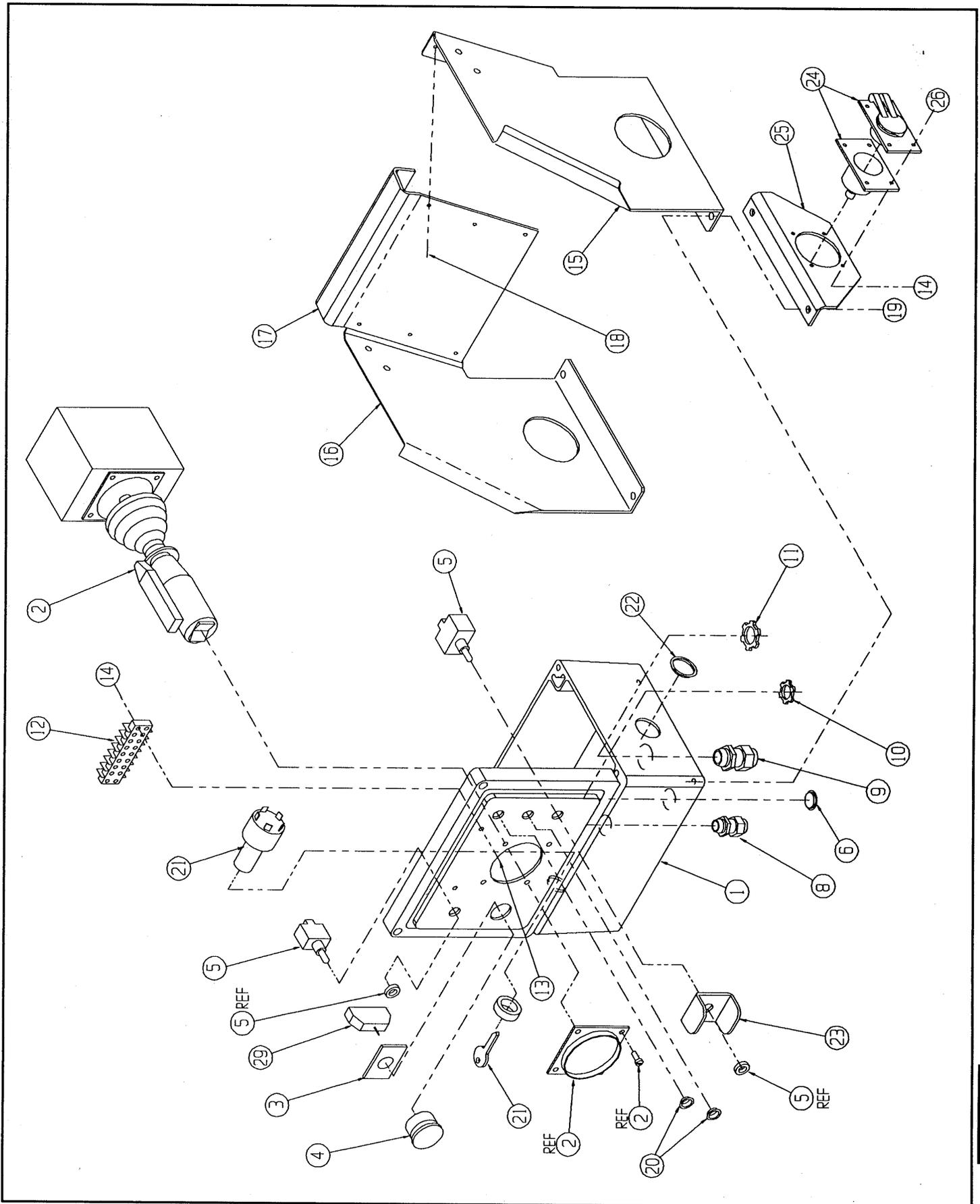
ITEM	PART	DESCRIPTION	QTY.
1	63368-003	Enclosure Box	1
2	66544-000	Controller, Proportional 24v	1
*	15772-001	Switch	4
*	66544-014	Switch, Steering	2
*	63913-003	Boot, Steering Switch	1
*	63913-004	Rocker Assembly, Steering	1
-	66544-010	Handle, 2 piece	1
-	66544-011	Lever, Interlock	1
*	66544-012	Switch, Interlock	1
-	66544-013	Boot, Joystick Shaft	1
3	64417-001	Mounting Latch, Switch	1
4	64446-003	Emergency Stop Push Button	1
5	12797-000	Switch, SPDT - Hi/Low Torque & Lift/Drive	2
6	64462-002	Caplug, 7/8 Dia	1
7			
8	29925-000	Cable Connector, 1/2"	1
9	29925-011	Cable Connector, 3/4"	1
10	29939-002	Conduit Nut, 1/2"	1
11	29939-003	Conduit Nut, 3/4"	1
12	29928-003	Terminal Block, 6 Position	1
13	11715-006	Screw, Rd Hd 6-32 UNC X 3/4	2
14	11248-047	Locknut, 6-32 UNC	6
15	64545-000	Control Box Wing, RH	1
16	64545-001	Control Box Wing, LH	1
17	63613-002	Controller Hanger	1
18	26551-007	Rivet, 1/8 Dia. X 1/4-5/16 Grip	6
19	11253-004	Screw, HHC 5/16-18 UNC X 1/2	4

ITEM	PART	DESCRIPTION	QTY.
20	64462-002	Caplug, 1/2 Dia.	2
21	05440-000	Key Switch	1
-	05442-000	Key (only)	1
22	64462-010	Caplug, 1 1/8 Dia.	1
23	08271-000	Switch Guard	1
24	08942-001	Outlet, AC	1
25	64520-000	AC Power Bracket	1
26	11715-004	Screw, Rd Hd 6-32 UNC X 1/2	4
27			
28			
29	64443-002	Contact Block, N.C.	1
30			
31	29610-004	Connector, Fork Term 12-10 Ga. #10	4
32	29610-002	Connector, Fork Term 16-14 Ga. #8	7
33	29931-003	Connector, F Push Term 16-14 Ga. .25	3
34	63574-099	Wire, 16 Ga. Black/White	1'
35	29450-099	Wire, 16 Ga. Blue	3'
36	29620-002	Connector, Butt 16-14 Ga.	2
37	29932-002	Terminal Jumper	1
38	05941-099	Wire, 16 Ga. Green/Black	1'
39	29610-001	Connector, Fork Term. 22-18 Ga. #6	5
40	29454-099	Wire, 16 Ga. Red	1'
41	29610-006	Connector, Fork Term. 16-14 Ga. #6	4
42	29401-099	Wire, 16 Ga. Yellow	1'
43	29825-002	Diode	4
44	29480-099	Wire, 10 Ga. Red	1'

*Not Shown



Illustrated Parts Breakdown



Illustrated Parts Breakdown

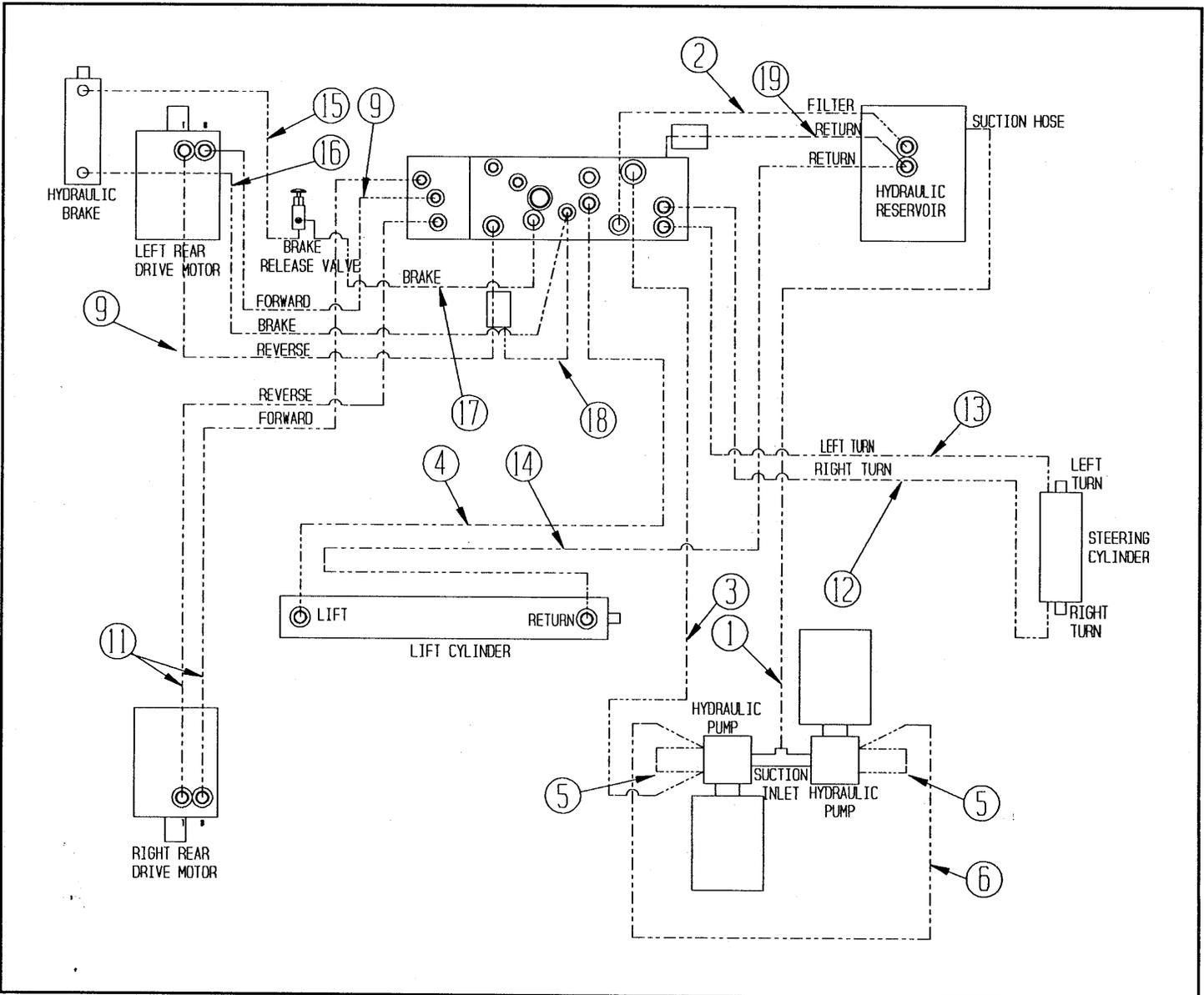
HOSE INSTALLATION, SL26/30

ELECTRIC MODEL

64008-008

ITEM	PART	DESCRIPTION	QTY.
1	64157-004	Hose Assy x 47	1
2	64156-002	Hose Assy x 23	1
3	64156-013	Hose Assy x 50	1
4	64156-004	Hose Assy x 53	1
5	61132-010	Hose Assy x 13	2
6	61132-011	Hose Assy x 23	1
7			
8			
9	64156-009	Hose Assy x 49	2
10			

ITEM	PART	DESCRIPTION	QTY.
11	64156-011	Hose Assy x 71	2
12	61131-006	Hose Assy x 77 1/2	1
13	61131-007	Hose Assy x 64	1
14	61132-007	Hose Assy x 103	1
15	60460-014	Hose Assy x 31	1
16	60460-006	Hose Assy x 64	1
17	60460-015	Hose Assy x 40	1
18	61351-011	Hose Assy x 18	1
19	60861-021	Hose Assy x 12	1



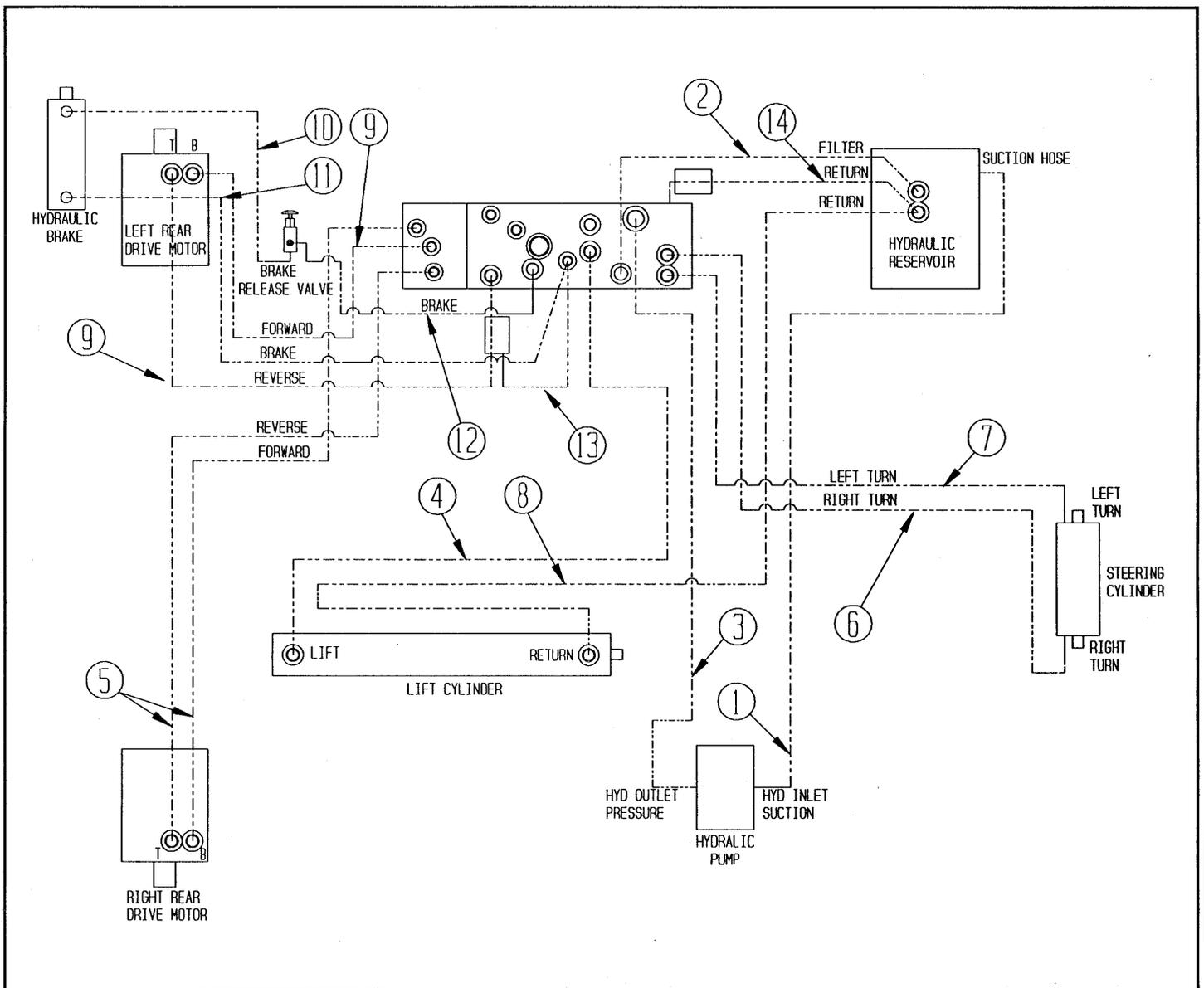
Illustrated Parts Breakdown

HOSE INSTALLATION, SL26/30
DUAL FUEL MODEL, SER. NOS. THRU 9965
 64008-007

HOSE INSTALLATION, SL26/30
DUAL FUEL MODEL, SER. NOS. 9966 TO CURRENT
 64008-023

ITEM	PART	DESCRIPTION	QTY.
1	64157-001	Hose Assy x 35	1
2	64156-002	Hose Assy x 23	1
3	64156-003	Hose Assy x 64	1
4	64156-004	Hose Assy x 53	1
5	64156-011	Hose Assy x 71	2
6	61131-006	Hose Assy x 77 1/2	1
7	61131-007	Hose Assy x 64	1
8	61132-007	Hose Assy x 103	1
9	64156-009	Hose Assy x 49	2
10	60460-014	Hose Assy x 31	1
11	60460-006	Hose Assy x 64	1
12	60460-015	Hose Assy x 40	1
13	61351-011	Hose Assy x 18	1
14	60861-021	Hose Assy x 12	1

ITEM	PART	DESCRIPTION	QTY.
1	64488-001	Hose Assy x 35	1
2	64156-002	Hose Assy x 23	1
3	64156-003	Hose Assy x 64	1
4	64156-004	Hose Assy x 53	1
5	64156-011	Hose Assy x 71	2
6	61131-006	Hose Assy x 77 1/2	1
7	61131-007	Hose Assy x 64	1
8	61132-007	Hose Assy x 103	1
9	64156-009	Hose Assy x 49	2
10	60460-014	Hose Assy x 31	1
11	60460-006	Hose Assy x 64	1
12	60460-015	Hose Assy x 40	1
13	61351-011	Hose Assy x 18	1
14	60861-021	Hose Assy x 12	1



Illustrated Parts Breakdown

LABEL KIT, SL26 & SL30

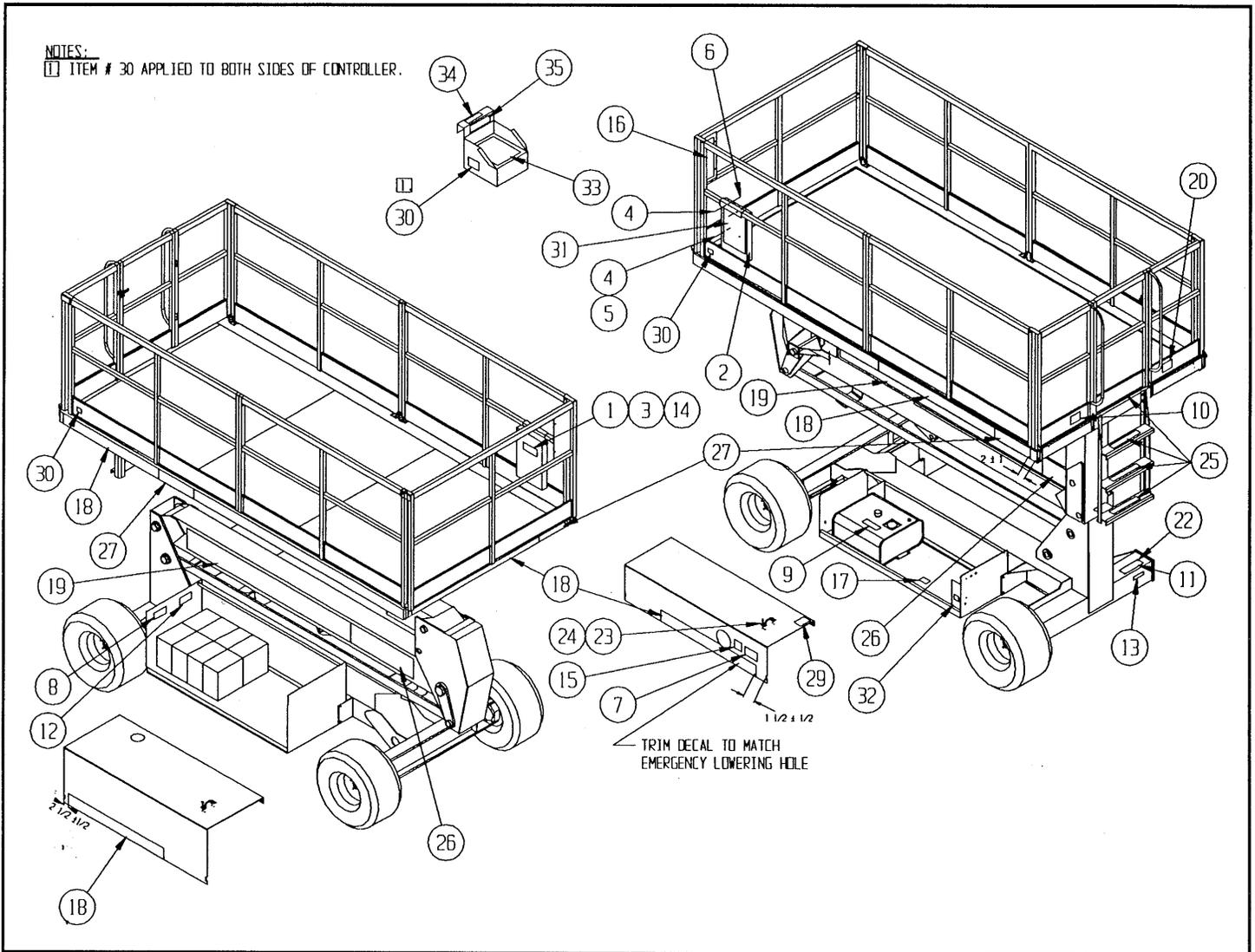
ELECTRIC MODEL

SL26: 64006-012

SL30: 64006-018

ITEM	PART	DESCRIPTION	QTY.
1	60588-005	Operator Manual	1
2	10076-000	Manual Case	1
3	10076-001	Label - Safety Rules	1
4	11248-004	Locknut 1/4-20 Unc Hex	4
5	11252-008	Screw 1/4-20 Unc HHC X 1	2
6	11252-016	Screw 1/4-20 Unc HHC X 2	2
7	66568-000	Label - Lower Platform	1
8	05221-000	Label - Battery Level	1
9	60197-000	Label - Hydraulic Fluid	1
10	66557-006	Label - Load 1250 Lbs	1
11	61205-000	Label - Name Plate	1
12	66552-000	Label - Danger Hydrogen Gas	1
13	61220-001	Label - Ansi Requirement	1
14	60577-000	Ansi Manual	1
15	62524-001	Label - Emergency Lowering	1
16	66550-004	Label - Danger Instructions	1
17	66555-000	Label - Caution Relief Valve	1
18	64048-000	Label - SL26 4 X 40 -- SL26 Only	5
18	64539-001	Label - SL30 4 X 40 -- SL30 Only	5

ITEM	PART	DESCRIPTION	QTY.
19	64049-000	Label - SL26 7 1/4 X 68 1/2 -- SL26 Only	2
19	64539-000	Label - SL30 7 1/4 X 68 1/2 -- SL30 Only	2
20	66562-000	Label - Tire Pressure 50 P.S.I.	1
21			
22	65368-000	Tack	4
23	25427-002	Handle	4
24	26553-002	Rivet Pop 3/16	16
25	60830-000	Safety Walk	4
26	64227-000	Label - N 7-1/4 X 4	2
27	64228-000	Label - N 3 X 9	3
28			
29	63423-000	Label - Brake Release	1
30	64444-000	Label - USA	4
31	64551-000	Manual Case Bracket	1
32	64414-000	Label - Controls	1
33	65791-001	Label - Controller	1
34	61515-000	Label - Lift Here	1
35	66554-000	Label - Read	1



Illustrated Parts Breakdown

LABEL KIT, SL26 & SL30

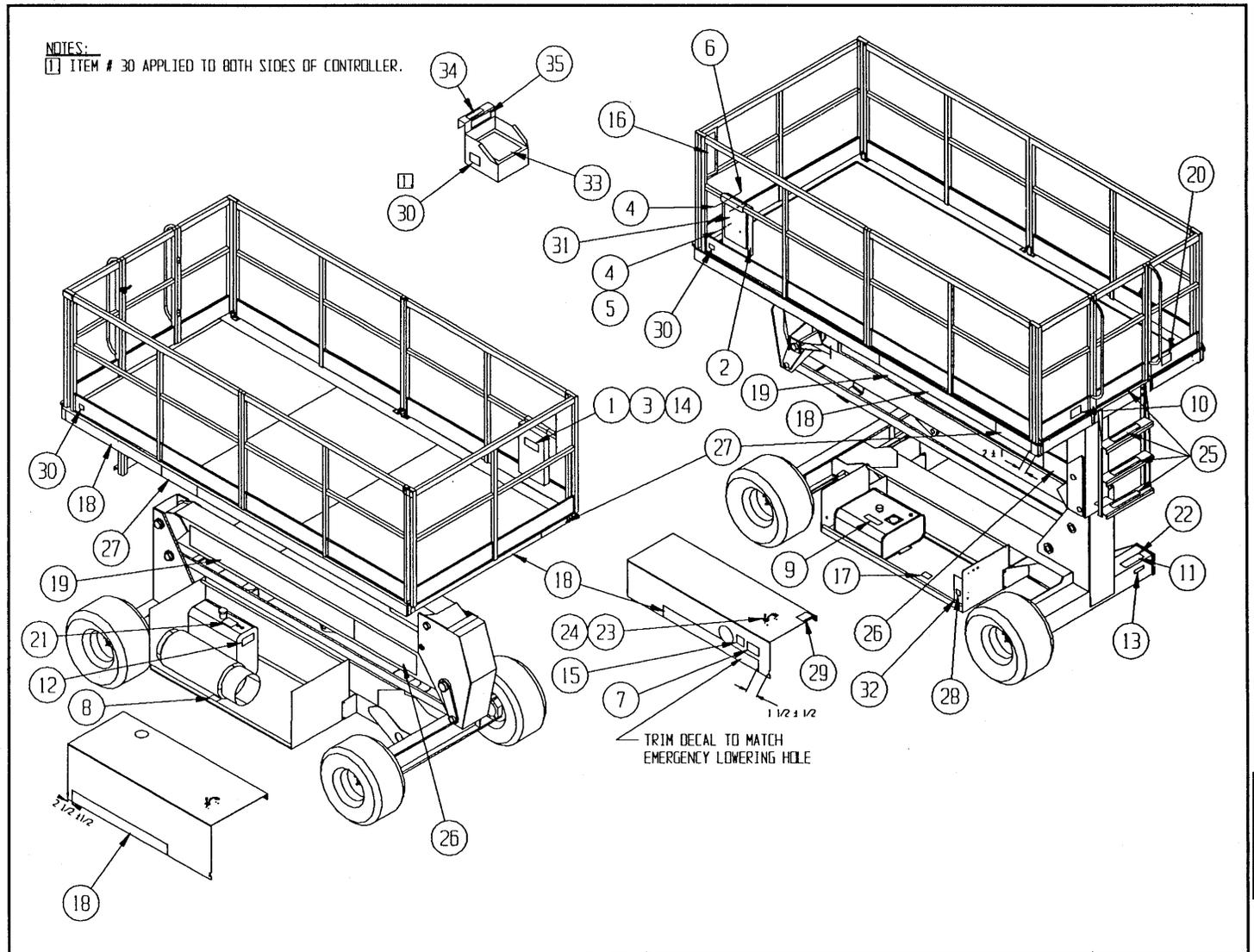
DUAL FUEL MODEL

SL26: 64006-011

SL30: 64006-017

ITEM	PART	DESCRIPTION	QTY.
1	60588-005	Operator Manual	1
2	10076-000	Manual Case	1
3	10076-001	Label - Safety Rules	1
4	11248-004	Locknut 1/4-20 UNC Hex	4
5	11252-008	Screw 1/4-20 UNC HHC X 1	2
6	11252-016	Screw 1/4-20 UNC HHC X 2	2
7	66568-000	Label - Lower Platform	1
8	64189-000	Label - Vapor Withdrawal	1
9	60197-000	Label - Hydraulic Fluid	1
10	66557-006	Label - Load 1250 Lbs	1
11	61205-000	Label - Name Plate	1
12	66552-000	Label - Danger Hydrogen Gas	1
13	61220-001	Label - ANSI Requirement	1
14	60577-000	ANSI Manual	1
15	62524-001	Label - Emergency Lowering	1
16	66550-004	Label - Danger Instructions	1
17	66555-000	Label - Caution Relief Valve	1
18	64048-000	Label - SL26 4 X 40 -- SL26 Only	5
18	64539-001	Label - SL30 4 X 40 -- SL30 Only	5

ITEM	PART	DESCRIPTION	QTY.
19	64049-000	Label - SL26 7 1/4 X 68 1/2 -- SL26 Only	2
19	64539-000	Label - SL30 7 1/4 X 68 1/2 -- SL30 Only	2
20	66562-000	Label - Tire Pressure 50 P.S.I.	1
21	64166-000	Label - Gas Unleaded	1
22	65368-000	Tack	4
23	25427-002	Handle	4
24	26553-002	Rivet Pop 3/16	16
25	60830-000	Safety Walk	4
26	64227-000	Label - N 7-1/4 X 4	2
27	64228-000	Label - N 3 X 9	3
28	64421-000	Switch Fuels	1
29	63423-000	Label - Brake Release	1
30	64444-000	Label - U.S.A.	4
31	64551-000	Manual Case Bracket	1
32	64414-000	Label - Controls	1
33	65791-001	Label - Controller	1
34	61515-000	Label - Lift Here	1
35	66554-000	Label - Read	1



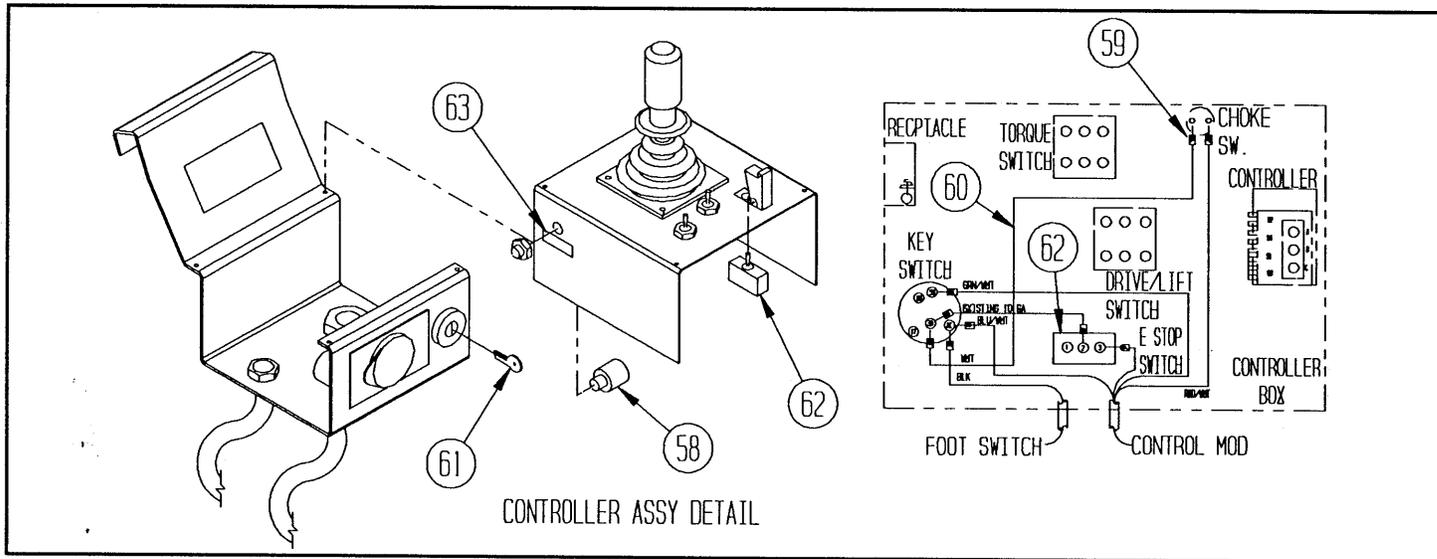
Illustrated Parts Breakdown

OPTION: KUBOTA DUAL FUEL ENGINE
DUAL FUEL
 30627-000

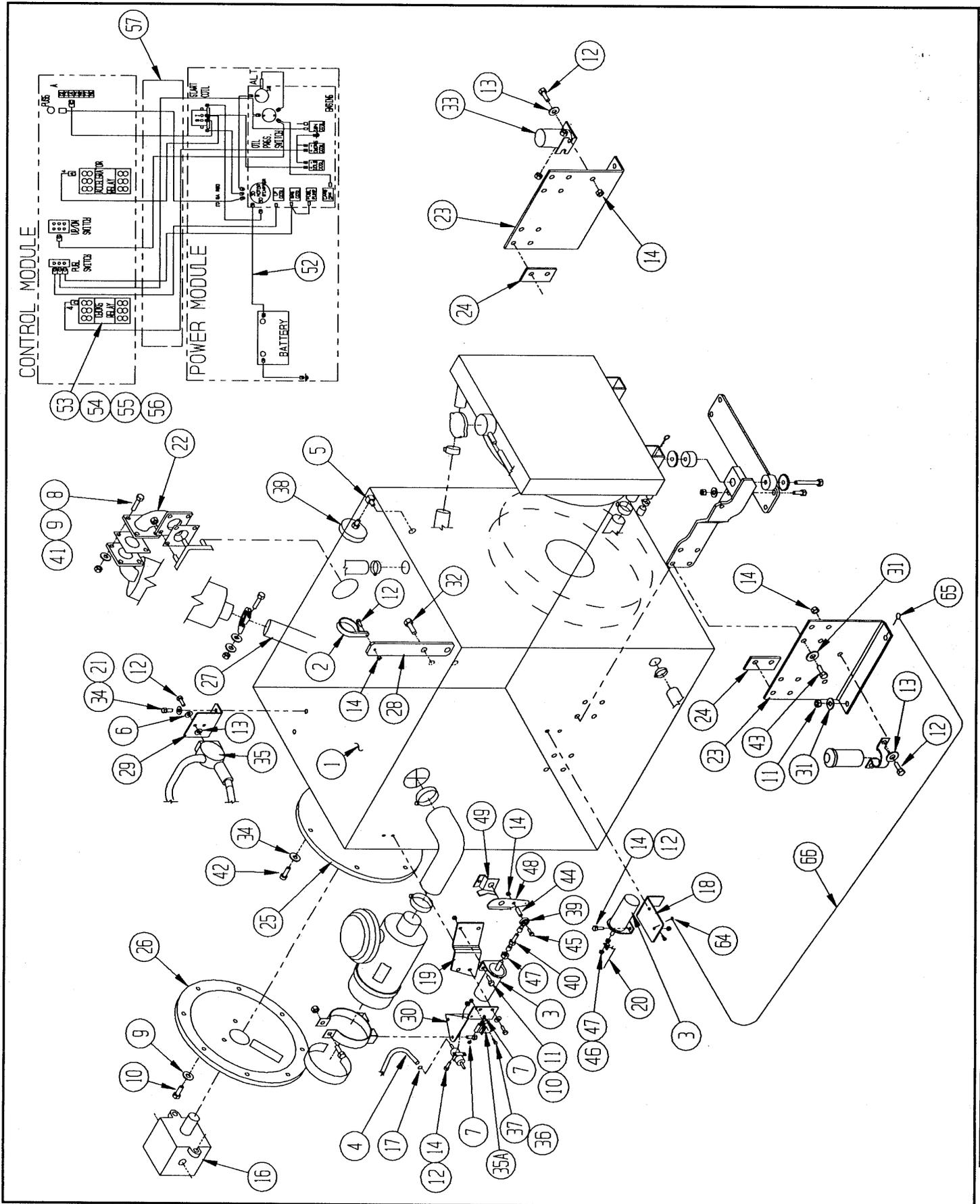
ITEM	PART	DESCRIPTION	QTY.
1	64505-000	Engine, Dual Fuel, Kubota	1
*	63936-011	Filter, Oil	1
*	64505-005	Switch, Oil Pressure	1
*	64505-008	Filter, Air	1
*	64505-009	Filter, Fuel	1
2	20398-012	Hose Clamp	1
3	63941-000	Solenoid, Throttle & Choke	2
4	12739-099	Hose 1/4 ID	5'
5	03495-001	Fitting Adapter	1
6	11238-004	Lockwasher 1/4 DIA Split	2
7	10178-003	Fitting Adapter	3
8	11254-010	Screw 3/8-16 UNC HHC x 1 1/4	12
9	11238-006	Lockwasher 3/8 Dia Split	12
10	11254-008	Screw 3/8 - 16 UNC HEX x 1	12
11	11248-006	Locknut 3/8-16 UNC HEX	12
12	11252-006	Screw 1/4-20 UNC HHC x 3/4	12
13	11240-004	Washer 1/4 DIA STD Flat	6
14	11248-004	Locknut 1/4-20 UNC HEX	11
15*	30624-016	Module Tray Weldment	1
16	63902-013	Pump, Hydraulic - Serial Nos. thru 9965	1
16	63902-015	Pump, Hydraulic - Serial Nos. 9966 to current	1
17	63125-008	Clamp	5
18	30624-008	Choke Sol Bracket	1
19	30624-009	Coil Bracket	1
20	30624-020	Choke Rod	1
21	01253-006	Screw 5/16-18 HHC x 3/4	2
22	64177-001	Muffler Weldment, SL26N	1
23	30624-007	Angle Mount	2
24	30624-021	Spacer, Engine	2
25	63939-000	Drive Plate	1
26	63938-000	Flywheel Cover	1
27	30624-014	Muffler Tail Pipe	1
28	30624-010	Hose Bracket	1
29	30624-011	Reg. Bracket	1
30	30624-012	Air, Fuel & Gas Bracket	1
31	11240-006	Washer 3/8 Dia STD Flat	10
32	11256-006	Screw 1/2-13 UNC HHC x 3/4	2
33	27972-000	Starter Sol.	1
34	11238-005	Lockwasher 5/16 DIA Split	10

ITEM	PART	DESCRIPTION	QTY.
35	63957-000	Propane Conversion Kit	1
*	63934-002	Regulator, L.P. Gas	1
*	63934-003	Solenoid, Propane	1
*	63934-004	Solenoid, Gasoline	1
*	63934-005	Adapter, Carburetor	1
36	11275-006	Screw 10-32 UNC HHC x 3/4	2
37	11249-003	Locknut 10-32 UNC HEX	2
38	63945-001	Switch, Pressure	1
39	11760-004	Rod End	1
40	64423-000	In-line Swivel	1
41	11250-006	Nut 3/8-16 UNC HEX	4
42	11287-008	Screw 5/16-18 UNC SOC HD x 1	8
43	63946-030	Screw 10M x 1.25 HHC x 30MM	12
44	18024-002	Tube 3/8 OD x .049 Wall x 7/8	1
45	11252-014	Screw 1/4-20 UNC HHC x 1 3/4	1
46	30624-019	Choke Angle	1
47	11261-004	Nut 1/4-28 UNF HEX	3
48	30624-022	Com. Lever Control	1
49	30624-023	Control Plate	1
50*	64157-000	Hose, Hydraulic Return	1
51*	64156-000	Hose, Hydraulic Supply	1
52	64275-023	Cable, Batt. x 23	1
53	27962-000	Relay, Choke	1
54	27963-000	Socket, Relay	1
55	11248-047	Locknut 6-32 UNC HEX	2
56	11715-004	Screw 6-32 UNC x 1/2	2
57	30624-017	Wire Loom	1
58	63917-000	Switch, Choke Push Button	1
59	29610-002	Conn., Fork 16-14 x #8	2
60	29451-099	Wire 16 AWG WHT	1'
61	63936-006	Switch, Key	1
-	63936-015	Key (only)	1
62	12797-000	Switch, Emergency Stop Toggle	1
63	30624-024	Label, Choke Button	1
64	29601-014	Conn., Ring 16-14 Ga 1/4 Dia.	1
65	29601-021	Conn., Ring 12-10 Ga 3/8 Dia.	1
66	29452-099	Wire, 16 Ga Blk	1.5'

*Not Shown



Illustrated Parts Breakdown

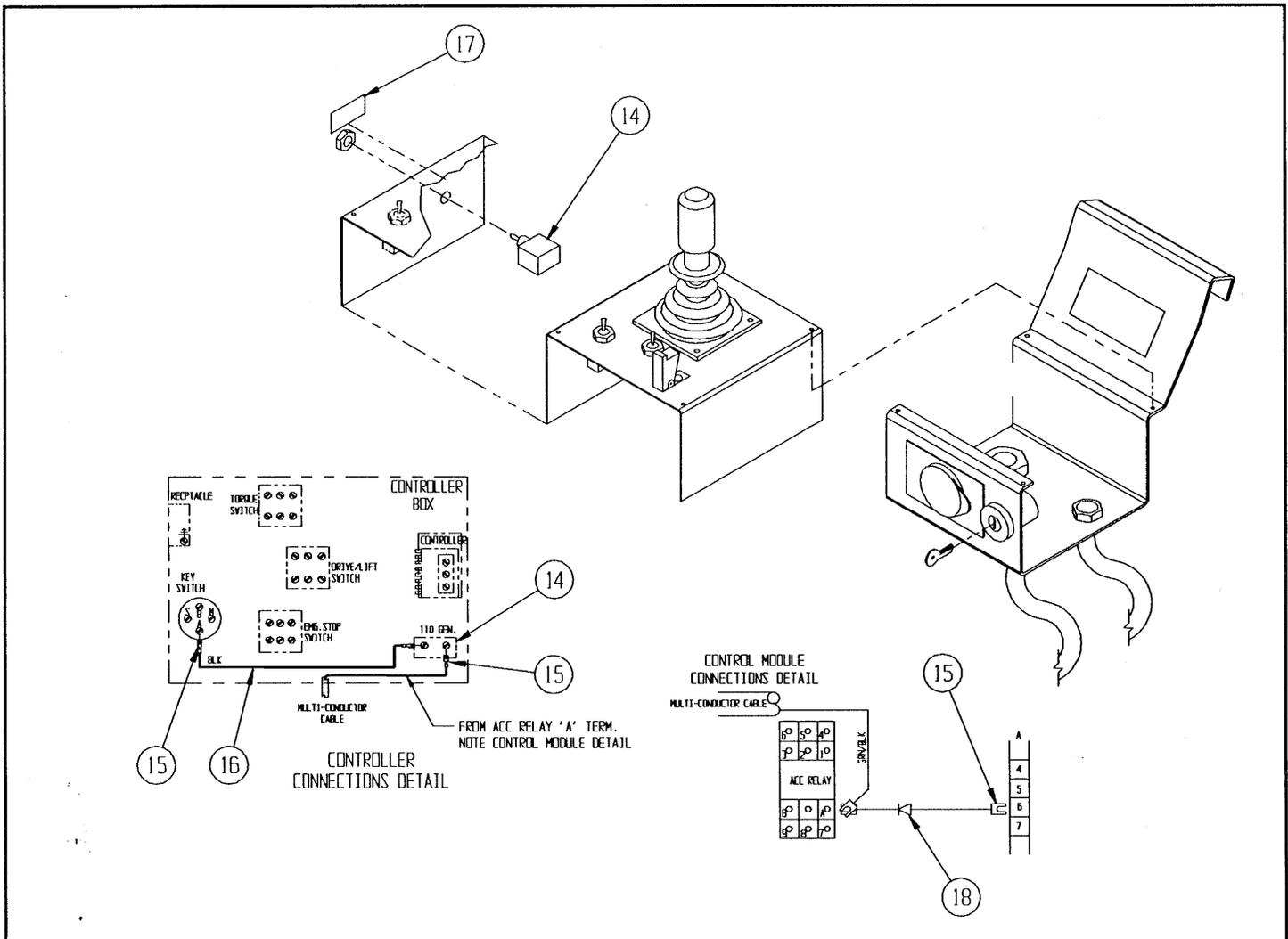


OPTION: GENERATOR

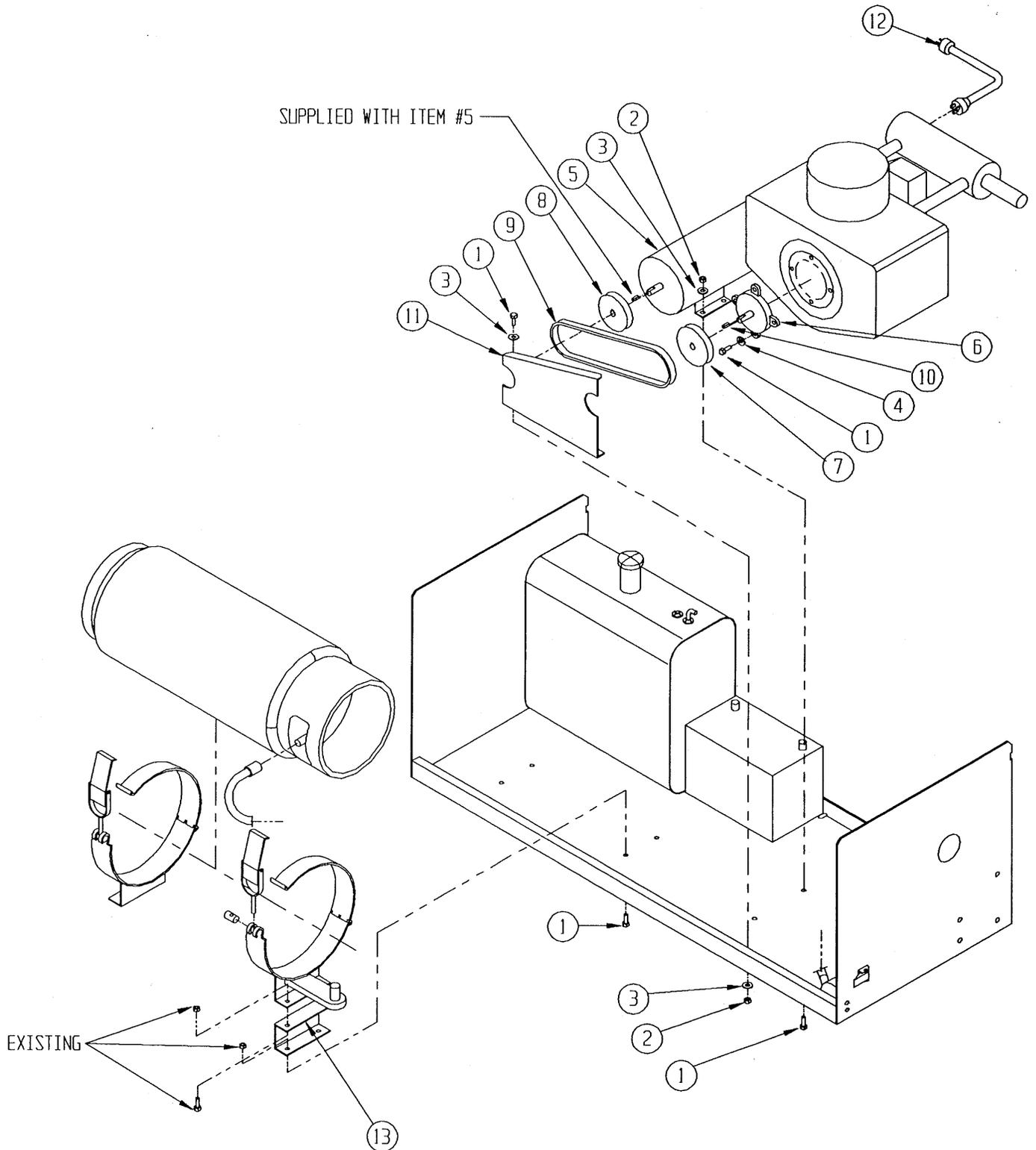
DUAL FUEL, KOHLER

63994-001

ITEM	PART	DESCRIPTION	QTY.
1	11254-008	Screw 3/8-16 UNC HHC X 1	14
2	11248-006	Locknut 3/8-16 UNC Hex	10
3	11240-006	Washer 3/8 Dia Std Flat	8
4	11238-006	Lockwasher 3/8 Dia Split	4
5	27979-000	Generator	1
6	63918-000	Drive Shaft	1
7	63949-043	Pulley	1
8	63949-040	Pulley	1
9	11675-090	Belt - V	1
10	19102-006	Bar 1/4 Sq X 3/4 CRS	1
11	64210-000	Guard	1
12	64212-000	Cord Assy	1
13	64041-000	Bracket-Propane Tank	2
14	12797-000	Switch	1
15	29610-002	Conn Term	7
16	29452-099	Wire 16 AWG THHN Strd Black	.5'
17	64211-000	Label - Off On	1
18	29825-002	Diode	2



Illustrated Parts Breakdown



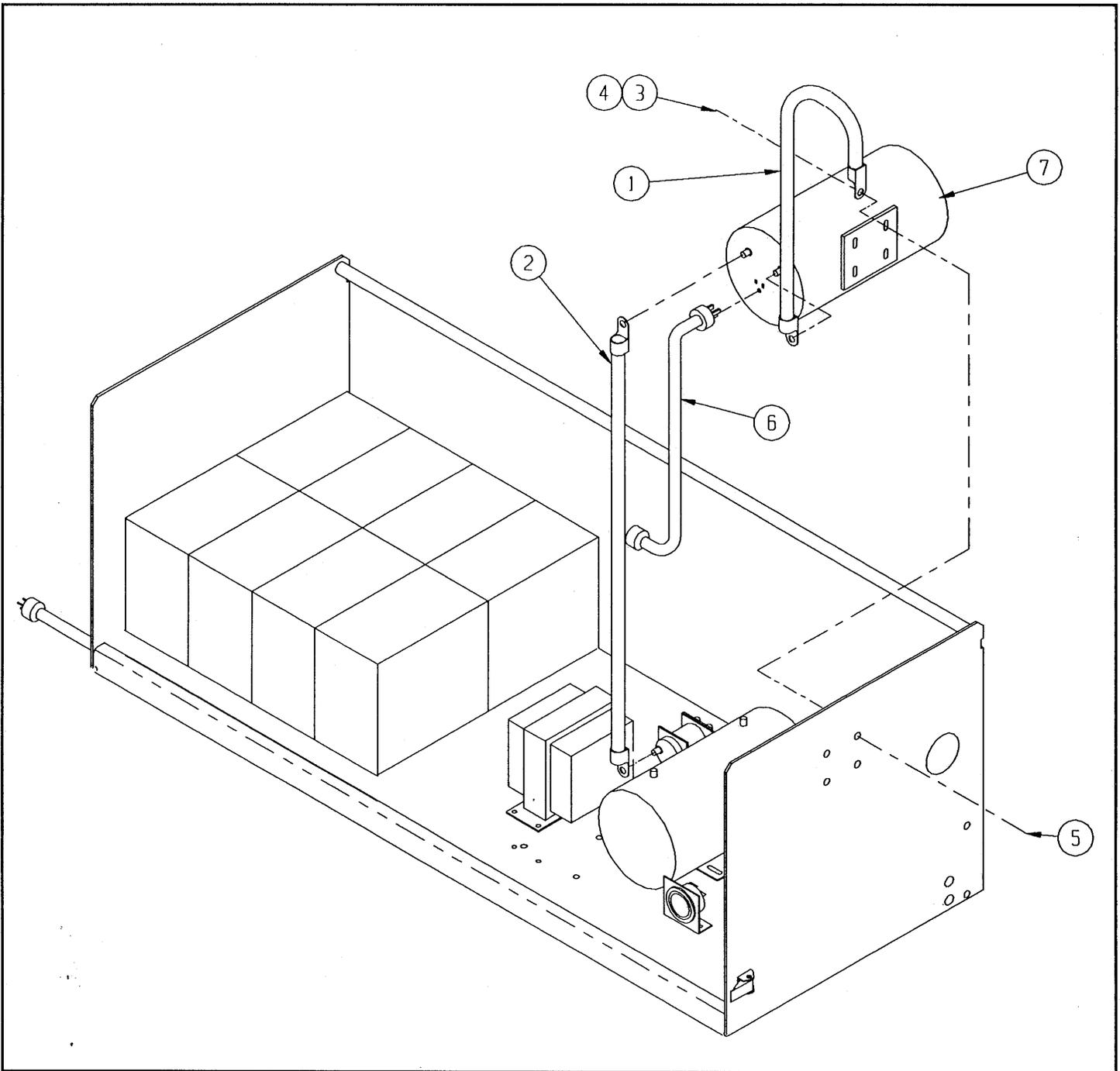
Illustrated Parts Breakdown

OPTION: GENERATOR

ELECTRIC

63994-003

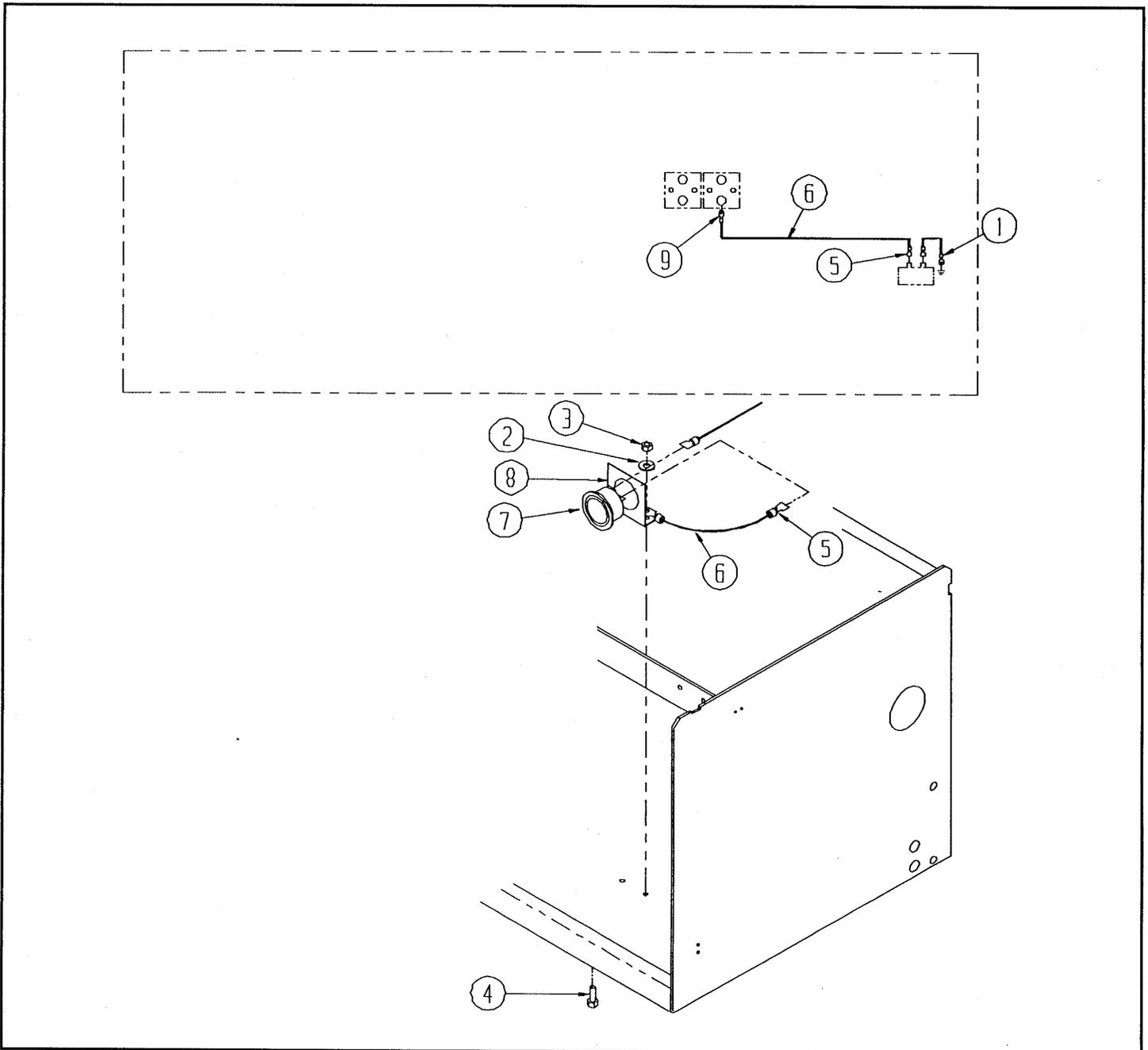
ITEM	PART	DESCRIPTION	QTY.
1	64195-001	Battery Cable Assy	1
2	62125-010	Battery Cable Assy X 36	1
3	11240-005	Washer 5/16 Dia Std Flat	4
4	11248-005	Locknut 5/16-16 UNC Hex	4
5	11252-008	Screw 5/16-18 UNC HHC X 1	4
6	64212-000	Cord Assy	1
7	26461-000	Generator	1



Illustrated Parts Breakdown

OPTION: LOW VOLTAGE METER
ELECTRIC
63995-000

ITEM	PART	DESCRIPTION	QTY.
1	29601-014	Conn., Ring 14-16 1/4 Dia	1
2	11240-004	Washer, 1/4 Dia Std Flat	1
3	11248-004	Locknut, 1/4-20 UNC Hex	1
4	11252-006	Screw, 1/4-20 UNC HHC X 3/4	2
5	29931-003	Conn., Push 16-14 x .25	2
6	29457-099	Wire, 16 AWG THHN STRD Cop Green	2.3'
7	15746-000	Meter, Low Voltage	1
8	61647-000	Bracket, Meter	1
9	29601-013	Conn., Ring 14-16 #10	1



Illustrated Parts Breakdown

OPTION: HORN & FLASHING BEACON

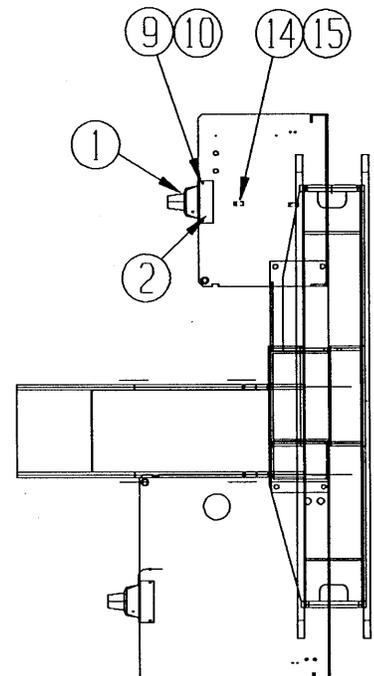
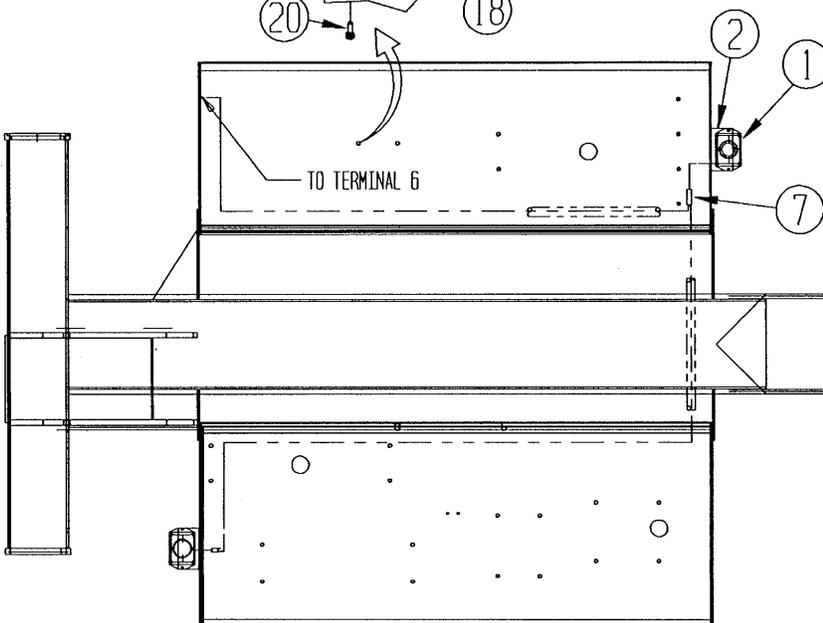
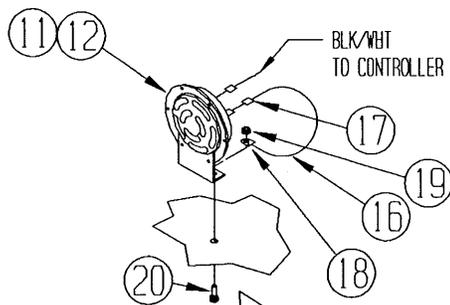
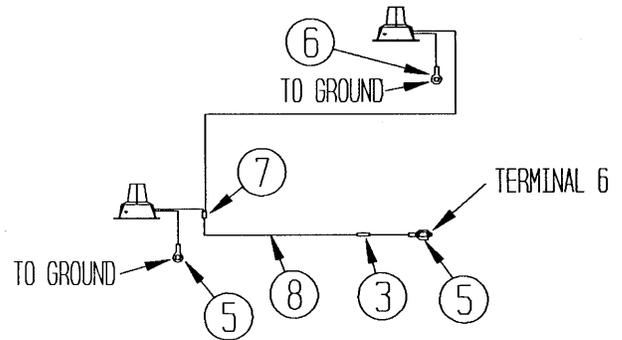
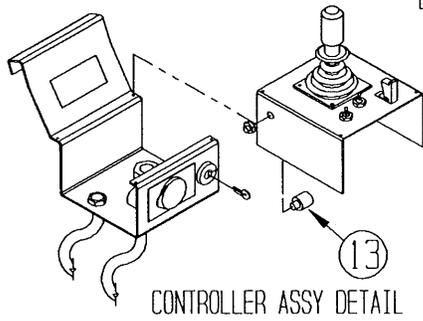
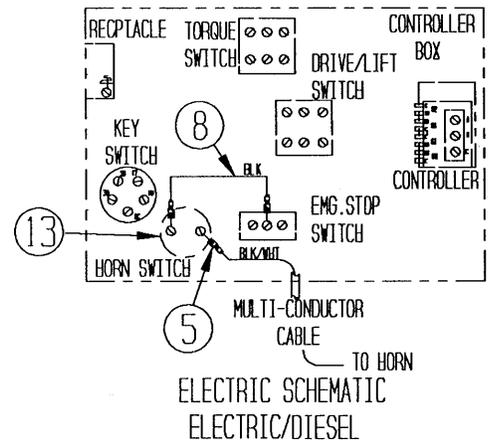
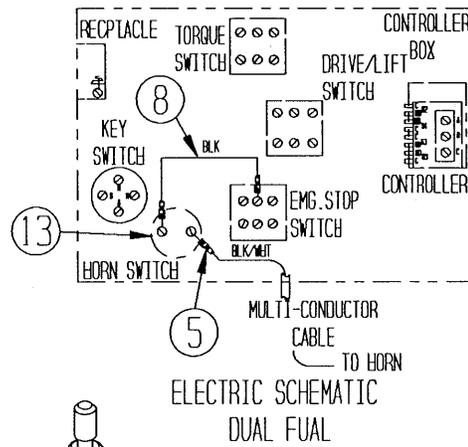
ELECTRIC & DUAL FUEL

Dual Fuel: 63999-001

Electric: 63999-002

ITEM	PART	DESCRIPTION	QTY.
1	12848-004	Light 12-24 Volt	2
2	63193-000	Light Mount Bracket	2
3	29702-000	Fuse Holder	1
4	29704-002	Fuse 2 Amp	1
5	29610-002	Term, Fork	5
6	29601-013	Term. Ring	1
7	29620-002	Connect, Butt	1
8	29452-099	Wire 16 GA Blk	17'
9	11249-003	Locknut 10-32 Hex	4
10	11826-004	Screw 10-32 Rd Hd Mach x 1/2	4
11	29958-001	Horn 12v - Dual Fuel	1
12	29958-000	Horn 24v - Electric	1
13	63917-000	Switch	1
14	29918-010	Tie Down	5
15	26551-007	Poprivet 1/8 x .251 Grip	5
16	29452-099	Wire 16 AWG Black	.5'
17	29931-003	Conn. Fm Push 16-14 1/4	2
18	29601-014	Conn. Ring 16-14 1/4	1
19	11248-004	Locknut 1/4 - 20 UNC Hex	1
20	11252-006	Screw 1/4 - 20 UNC HHC x 3/4	1

Illustrated Parts Breakdown

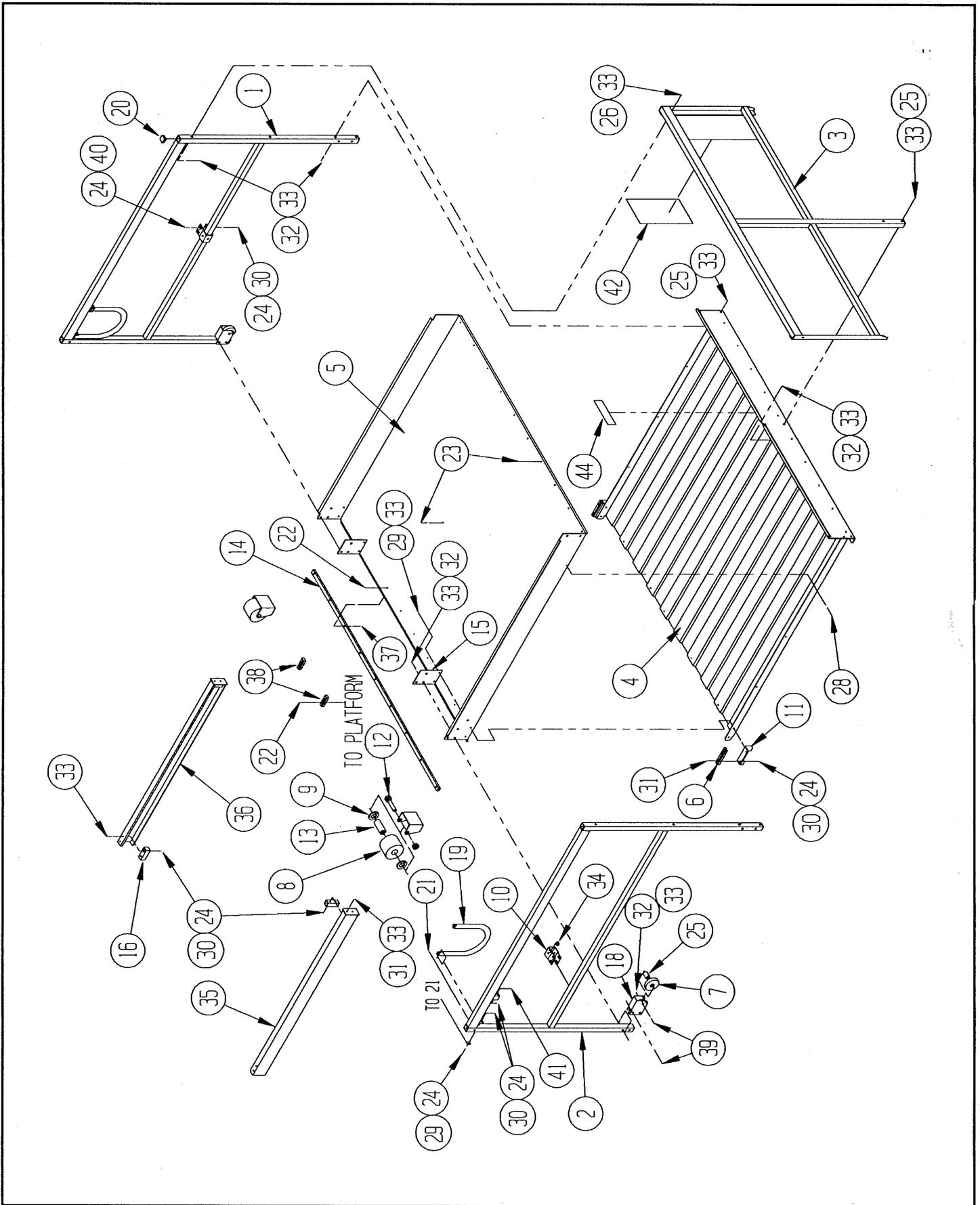


Illustrated Parts Breakdown

OPTION: DECK EXTENSION, SL26 ONLY
ELECTRIC & DUAL FUEL
64252-000-00

ITEM	PART	DESCRIPTION	QTY.
1	64241-000	Weldment - Side Rail	1
2	64242-000	Weldment - Side Rail	1
3	64243-001	Weldment - Front Rail	1
4	64245-001	Weldment - Front Rail	1
5	64255-001	Floor - Diamond Aluminum	1
6	63727-000	Block	2
7	64233-000	Wheel	2
8	64234-000	Wheel	2
9	64235-000	Washer	4
10	64239-000	Clip - Guardrail	2
11	64425-000	Weldment Slide Bracket	2
12	63990-003	Axle	2
13	64249-000	Bushing - Spanner	2
14	64256-001	Bearing Strip	1
15	64265-000	Gusset Plate	2
16	64267-000	Bumper Pad	4
17			
18	64273-000	Bracket - Rear Wheel	2
19	64270-000	Handle	2
20	63926-001	Cap	4
21	64248-000	Pin - Quick Release	2
22	26553-008	Rivet - Pop 3/16 Dia 1/2-5/8 Grip	9
23	26553-002	Rivet - Pop 3/16 Dia 1/8-1/4 Grip	33
24	11240-004	Washer 1/4 Std. Flat	20
25	64240-000	Bushing	2
26	11254-018	Screw - Cap 3/8-16 x 2 1/4	10
27	11252-008	Screw - Cap 1/4-20 x 1	8
28	11254-010	Screw - Cap 3/8-16 x 1 1/4	4
29	11252-024	Screw - Cap 1/4 - 20 x 3	2
30	11248-004	Locknut 1/4-20	16
31	12553-008	Screw 1/4-20 UNC Soc Hd x 1	4
32	11248-006	Locknut 3/8-16	16
33	11240-006	Washer 3/8 Std Flat	16
34	10080-006	Tree Clip	6
35	64259-000	Slide Weldment R.H.	1
36	64260-000	Slide Weldment L.H.	1
37	11240-002	Washer #8	5
38	64247-000	Guide Slide	2
39	11254-020	Screw - Cap 3/8 - 16 x 2 1/2	6
40	11252-016	Screw - Cap 1/4-20 x 2	4
41	11252-012	Screw - Cap 1/4 - 20 x 1 1/2	2
42	66550-004	Label, Danger	1
43			
44	66557-001	Label, Caution 500 lbs. Cap.	1

Illustrated Parts Breakdown



NOTES

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

PARTSFAX: 209/896-9244

P/N 60587-006-00

7/95 D

Table 6-1: (cont'd.)

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S8	Switch, Lift/Drive	Supplies power to Lift/Drive Relay when in LIFT or to Torque Switch, Steering Switch and "+".	Platform Controller, lower right
S9	Switch, Torque Selector (Drive/Lift Speed)	Provides power to Series/Parallel Valves through Platform Down Relay to provide High Speed drive/lift.	Platform Controller, upper left
S10	Switch, Chassis Emergency Stop	Control Circuit shut off.	Chassis Control Panel, right front of Control Module.
S11	Switch, Chassis Lift	Supplies power to Up and Proportional coils or Down circuit.	Chassis Control Panel, right front of Control Module.
SNSR	Sensor, Tilt	Cuts power to Cutout Relay when machine is on slopes of 2° side to side and fore and aft to activate Tilt Alarm.	Inside Tilt Sensor Electrical Box.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to RIGHT turn position.	Top end of Spool Valve on left front of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to LEFT turn position.	Bottom end of Spool Valve on left front of Manifold Block.
SOL3	Solenoid, Forward (coil)	Opens Forward Valve to direct oil through forward circuit for forward operation.	Top center front of Manifold Block in front of Gauge Port.
SOL4	Solenoid, Reverse (coil)	Opens Reverse Valve to direct oil thru drive circuit for reverse operation.	Bottom center front of Manifold Block below Forward Valve.
SOL5	Solenoid, Lift (Up Coil)	Opens Lift Valve.	Top front of Manifold Block, left of Forward Valve.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Bottom front of Manifold Block, below Lift Valve.
SOL7	Solenoid, Proportional (coil)	Controls Proportional Valve.	Bottom left of Manifold Block.
SOL8	Solenoid, Cushion (coil)	Opens Cushion Valve to allow high lowering speed.	Front left of Manifold Block, right of Steering Valve.
SOL9	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve for its speed drive.	Lower right front of Manifold Block.
SOL10	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve for its speed drive.	Right end of Manifold Block.

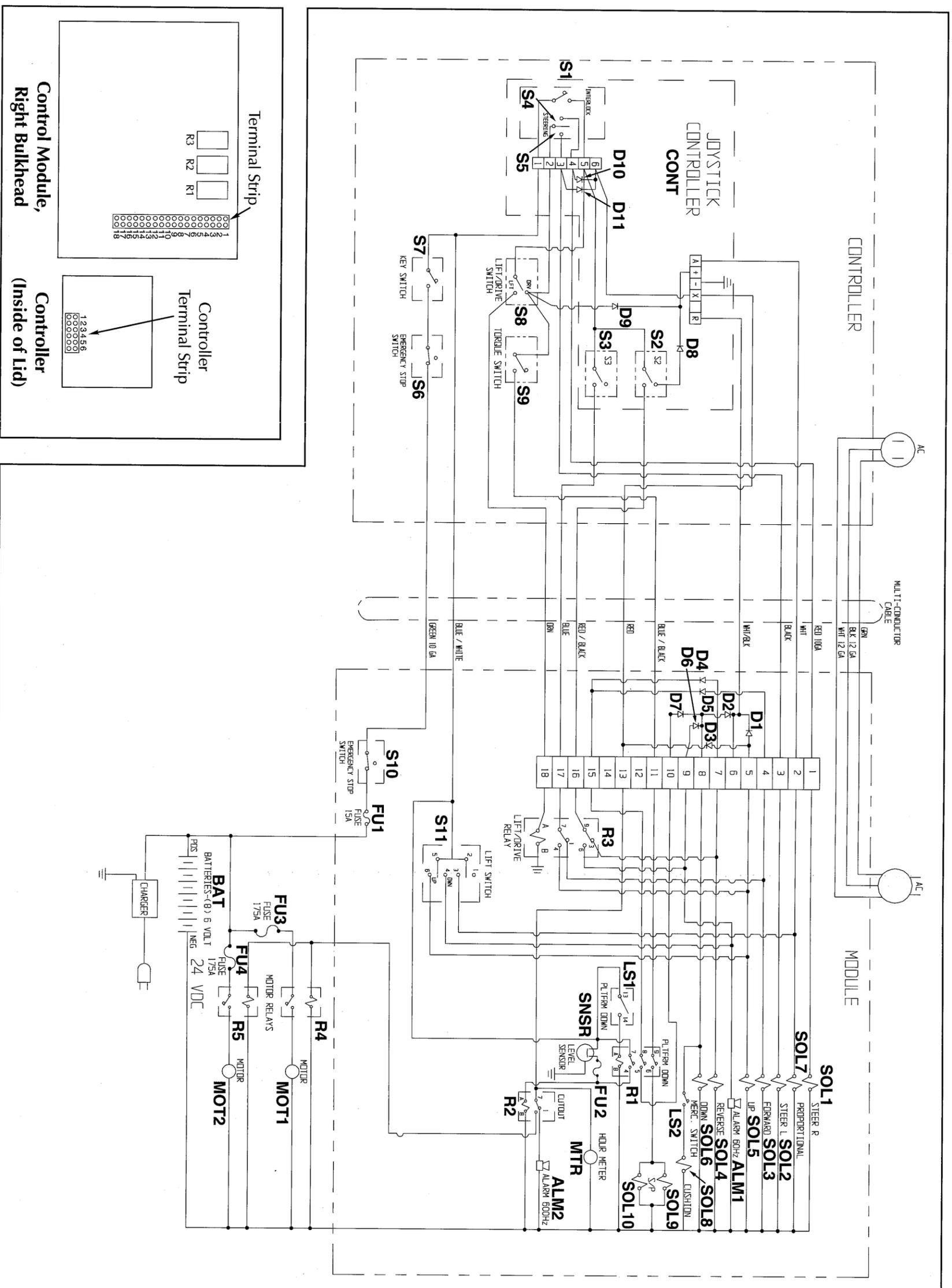


Figure 6-1: Terminal Strip and Relay Identification, Electric Model

Figure 6-2: Electrical Schematic, Electric Model

Table 6-2: Electrical Schematic Legend, Dual Fuel Model

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM 1	Alarm, Down	Provides warning sound (60 Hz) when deck is lowering.	Control Module center front. Red wire for 60 Hz.
ALM 2	Alarm, Tilt	Provides warning sound (600 Hz) when machine is elevated on 2° slopes, side to side or fore and aft.	Control Module center front. White wire for 600 Hz.
BAT	Battery, 12 volts	To store energy	Power Module.
CO1	Coil, Choke	Opens Choke as Engine warms up.	Right side of Engine Carburetor.
CO2	Coil, Engine Idle	Holds throttle in idle position.	Left side of Engine Carburetor.
CO3	Coil, Gasoline Valve	Allows gasoline to flow to Fuel Shut-off Valve.	In front of Battery on module floor.
CO4	Coil, L.P. Gas Valve	Allows L.P. Gas to flow to Fuel Shut-off Valve.	Left side of Engine, mounted to L.P. Gas Regulator.
CONT	Controller, Proportional Joystick	Supplies power to Lift/Drive Switch, Cutout Relay, & Proportional Coil. Includes Switches S1-S5.	Inside Controller (Control Box).
D1	Diode	Supplies power to Drive Relay thru Cutout and Platform Down Relays and Down circuit thru Platform down Relay from forward circuit.	Between T4 and T6 on Fanning Strip.
D2	Diode	Supplies power to Drive Relay thru Cutout and Platform Down Relays and down circuit thru Platform forward circuit.	Between T7 and T6 on Fanning Strip.
D3	Diode	Supplies power to Accelerator and Controller Relay for LIFT operation.	Between T5 and T10 on Fanning Strip.
D4	Diode	Supplies power to Accelerator and Controller Relay for REVERSE operation.	Between T7 and T10 on Fanning Strip.
D5	Diode	Supplies power to down circuit from Platform Down Relay.	Between T12 and T8 on Fanning Strip.
D6	Diode	Supplies power to down circuit from Drive/Lift Relay and Chassis Lift Switch.	Between T9 and T8 on Fanning Strip.
D7	Diode	Supplies power to Joystick 'R' terminal from lift circuit for lift.	Between T5 and T15 on Fanning Strip.
D9	Diode	High speed operation. Supplies power to Controller Relay when S2 is not activated and prevents feedback to Steering Switches.	Between T12 and T15 on Fanning Strip.
D10	Diode	Supplies power to Drive Relay.	Between S2 and Controller Relay.
D11	Diode	Prevents feedback into the gasoline or LP coils from the Idle Coil.	Between T12 and Drive Relay 'A' term.
FU1	Fuse, 15 AMP	Overload protection for the control circuit.	Attached to normally open pressure switch. Right front of Control Module, Bottom of Chassis Control Panel.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
FU2	Fuse, 1 AMP	Overload protection for the Tilt Sensor.	In-line fuse on the Tilt Sensor output.
LS1	Switch, Platform Down Limit	Energizes Platform Down Relay, providing power to joystick high speed and Series/Parallel circuits and bypassing Tilt Sensor when Platform is down.	Mounted to rear of Control Module right bulkhead.
LS2	Switch, Cushion, Mercury	Provides power to energize Cushion Valve during last 6 in. (15 cm) of Platform lowering.	Mounted to lower tension member.
MTR	Meter, Hour	Shows hours machine has power on.	Right front of Control Module, top of Chassis Control Panel.
PS1	Pressure Switch, Engine Oil, normally closed.	Stops ignition if engine loses oil pressure.	Top right of engine.
PS2	Pressure Switch, Engine Oil, normally open.	Stops fuel if engine loses oil pressure.	Top right of engine.
R1	Relay, Platform Down	Provides power to Series/Parallel and Cutout Relay and Drive Relays when energized by Platform Down Switch (platform down). Cuts out high speed drive when platform is elevated.	Control Module right bulkhead, closest to terminal strip.
R2	Relay, Cutout	Provides power to Drive Relay and closes Lift circuit when energized by Platform Down Relay (platform down) or Tilt Sensor (platform elevated). Cuts power to Drive Relay, opens lift circuit and energizes Tilt Alarms when machine is on slopes of 2° side to side or fore and aft.	Control Module right bulkhead, second relay in from terminal strip.
R3	Relay, Drive	Energized by Cutout Relay when platform is down or by Tilt Sensor with platform elevated, closes forward and reverse circuits.	Control Module right bulkhead, third relay in from terminal strip.
R4	Relay, Accelerator	Energized thru diodes D9, D3 or D4. Cuts power to the Idle Coil to increase engine speed.	Control Module right bulkhead, fourth relay in from terminal strip.
R5	Relay, Lift/Drive	Energized by Lift/Drive Switch. Provides power to Forward or Reverse Coils when unenergized and to lift or down circuits when energized.	Control Module right bulkhead, farthest relay from terminal strip.
R6	Relay, Motor	Connects Battery to Starter Motor.	Power Module, right side of Battery.
R7	Relay, Controller	Energized thru diodes D9, D3 or D4. Provides power to the Joystick '+' terminal.	Mounted inside of Controller.
S1	Switch, Interlock Lever	Supplies power to Lift/Drive and Controller S2 & S3 switches.	Inside joystick handle.
S2	Switch, Controller Down/Reverse	When actuated (joystick pulled back) provides power to down and reverse circuits. Unactuated provides power to '+' terminal of Joystick.	Inside Controller, switch farthest away when lid is open.

Table 6-2: Cont'd.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S3	Switch, Controller Lift/Forward	When actuated (joystick pushed forward) provides power to lift and forward circuits.	Inside Controller, switch closest when lid is open.
S4 & S5	Switch, Steering	Actuated with thumb rocker on top of joystick, provides power to either right or left steer circuits and Motor Relay circuit.	Inside joystick handle.
S6	Switch, Controller Emergency Stop	Control Circuit shut off.	Platform Controller, lower left.
S7	Switch, Controller Key	Supplies power to controls, magneto and starts engine.	Platform Controller, left side.
S8	Switch, Lift/Drive	Supplies power to Lift/Drive Relay when in LIFT or to Torque Switches.	Platform Controller, lower right.
S9	Switch, Torque Selector (Drive/Lift Speed)	Provides power to Series/Parallel Valves through Platform Down Relay to provide High Speed drive/lift.	Platform Controller, upper left.
S10	Switch, Chassis Emergency Stop	Control Circuit shut off.	Chassis Control Panel, right front of Control Module.
S11	Switch, Chassis Lift	Supplies power to Up and Proportional coils or Down circuit.	Chassis Control Panel, right front of Control Module.
S12	Switch, Fuel Selector	Supplies power to either Gas Coil or LP Coil.	Chassis Control Panel, right front of Control Module.
SNSR	Sensor, Tilt	Cuts power to Cutout Relay when machine is on slopes of 7° side to side and fore and aft to activate Tilt Alarm.	Inside Tilt Sensor Electrical Box.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to RIGHT turn position.	Top end of Spool Valve, mounted on left front of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to LEFT turn position.	Bottom end of Spool Valve, mounted on left front of Manifold Block.
SOL3	Solenoid, Forward	Opens Forward Valve to direct oil through drive circuit for forward operation.	Top center front of Manifold Block in front of Gauge Port.
SOL4	Solenoid, Reverse (coil)	Opens Reverse Valve to direct oil through drive circuit for reverse operation.	Bottom center front of Manifold Block below Forward Valve.
SOL5	Solenoid, Lift (Up Coil)	Opens Lift Valve.	Top front of Manifold Block, left of Forward Valve.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Bottom front of Manifold Block, below Lift Valve.
SOL7	Solenoid, Proportional (coil)	Controls Proportional Valve.	Bottom left of Manifold Block.
SOL8	Solenoid, Cushion (coil)	Opens Cushion Valve to allow high lowering speed.	Front left of Manifold Block, right of Steering Valve.
SOL9	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve to allow high speed drive.	Lower right front of Manifold Block.
SOL10	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve to allow high speed drive.	Right end of Manifold Block.

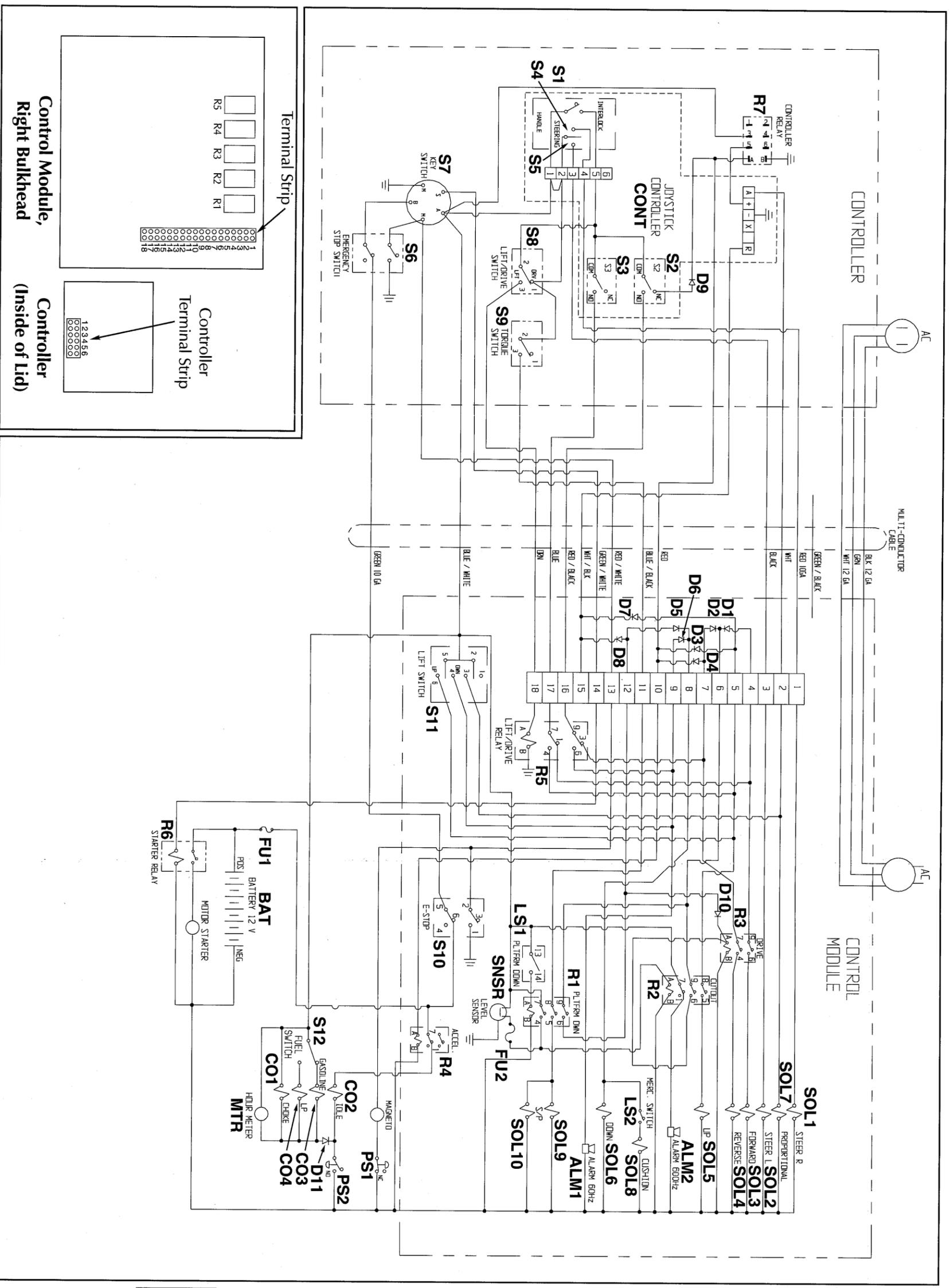


Figure 6-3: Terminal Strip and Relay Identification, Dual Fuel Model

Figure 6-4: Electrical Schematic, Dual Fuel Model

Table 6-3: Electrical Schematic Legend, Optional Kubota Dual Fuel Model

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
ALM	Alarm, Down	Provides warning sound when deck is lowering.	Right rear of Control Module.
BA1	Battery 12 volts	To store energy	Power Module.
CO1	Coil, Choke	Closes Choke for Engine cold starting.	Top front of Engine.
CO2	Coil, Engine Throttle	Increases Engine RPM for normal operation.	Front of Engine.
CO3	Coil, Gasoline Valve	Allows gasoline to flow to Fuel Shut-off Valve.	Rear of Engine under air cleaner.
CO4	Coil, L.P. Gas Valve	Allows L.P. Gas to flow to Fuel Shut-off Valve.	Left side of Engine, mounted to L.P. Gas Regulator.
CO5	Coil, Ignition	Provides high voltage to distributor.	Mounted to front Engine mount.
CO6	Coil, Fuel Shut-off	Allows fuel flow to carburetor.	Bottom of carburetor.
CONT	Controller, Proportional Joystick	Supplies power to Lift/Drive Switch, Lift/Drive Relay, Cutout Relay contacts & Proportional Coil. Includes Switches S1-S5.	Inside Controller (Control Box).
D1	Diode	Supplies power to Drive Relay thru Cutout and Platform Down Relays and Down circuit thru Platform down Relay from forward circuit.	Between T4 and T6 on Fanning Strip.
D2	Diode	Supplies power to Drive Relay thru Cutout and Platform Down Relays and down circuit thru Platform down Relay from forward circuit.	Between T7 and T6 on Fanning Strip.
D3	Diode	Supplies power to Accelerator and Controller Relay for LIFT operation.	Between T5 and T10 on Fanning Strip.
D4	Diode	Supplies power to Accelerator and Controller Relay for REVERSE operation.	Between T7 and T10 on Fanning Strip.
D5	Diode	Supplies power to Platform Down Relay.	Between T12 and T8 on Fanning Strip.
D6	Diode	Supplies power to Drive/Lift Relay and Chassis Lift Switch.	Between T9 and T8 on Fanning Strip.
D7	Diode	Supplies power to Joystick 'R' terminal from lift circuit for high speed lift.	Between T5 and T15 on Fanning Strip.
D8	Diode	Supplies power to terminal circuit for operation.	Between T12 and T15 on Fanning Strip.
D10	Diode	Controller Relay when S2 is not activated and prevents feedback to Steering Switches.	Between S2 and Controller Relay.
FU1	Fuse, 15 AMP	Supplies power to Drive Relay.	Between T12 and Drive Relay 'A' term.
FU2	Fuse, 1 AMP	Overload protection for the control circuit.	Right front of Control Module, Bottom of Chassis Control Panel.
		Overload protection for the Tilt Sensor.	In-line fuse on the Tilt Sensor output.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
LS1	Switch, Platform Down Limit	Energizes Platform Down Relay, providing power to Joystick high speed and Series/Parallel circuits and bypassing Tilt Sensor when Platform is down.	Mounted to rear of Control Module right bulkhead.
LS2	Switch, Cushion, Mercury	Provides power to energize Cushion Valve during last 6 in. (15 cm) of platform lowering.	Mounted to lower tension member.
MTR	Meter, Hour	Shows hours machine has power on.	Right front of Control Module, top of Chassis Control Panel.
PMP	Pump, Fuel, Gasoline	Supplies fuel to Gasoline Valve.	Left front of Engine under Air Cleaner.
PSW1	Pressure Switch, Engine Oil, normally open.	Cuts fuel and Ignition if engine loses oil pressure.	Back of engine next to oil filter.
R1	Relay, Platform Down	Provides power to Series/Parallel and Down Valves and Cutout Relay and Drive Relay Coils when energized by Platform Down Switch (platform down). Cuts out high speed drive when platform is elevated.	Control Module right bulkhead, closest to terminal strip.
R2	Relay, Cutout	Provides power to Drive Relay and closes Lift circuit when energized by Platform Down Relay (platform down) or Tilt Sensor (platform elevated). Cuts power to Drive Relay, opens lift circuit and engages Tilt Alarms when machine is on slopes of 2° side to side or fore and aft.	Control Module right bulkhead, second relay in from terminal strip.
R3	Relay, Drive	Energized by Cutout Relay when platform is down or by Tilt Sensor with platform elevated, closes forward and reverse circuits.	Control Module right bulkhead, third relay in from terminal strip.
R4	Relay, Accelerator	Energized thru diodes D9, D3 or D4. Provides power to the Throttle Coil to increase engine speed.	Control Module right bulkhead, fourth relay in from terminal strip.
R5	Relay, Lift/Drive	Energized by Lift/Drive Switch. Provides power to Forward or Reverse Coils when unenergized and to lift or down circuits when energized.	Control Module right bulkhead, farthest relay from terminal strip.
R6	Relay, Choke	Closes Choke for cold starting of Engine.	Mounted to Tilt Sensor bracket in Control Module.
R7	Relay, Controller	Energized thru diodes D9, D3 or D4. Provides power to the Joystick '+' terminal.	Mounted inside of Controller.
R8	Relay, Starter	Energizes starter solenoid.	Mounted to back engine mount.
S1	Switch, Interlock Lever	Supplies power to Lift/Drive and Controller S2 & S3 switches.	Inside Joystick handle.
S2	Switch, Controller Down/Reverse	When actuated (joystick pulled back) provides power to down and reverse circuits. Unactuated provides power to '+' terminal of joystick.	Inside Controller, switch farthest away when lid is open.

Table 6-3: Cont'd.

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
S3	Switch, Controller Lift/Forward	When actuated (joystick pushed forward) provides power to lift and forward circuits.	Inside Controller, switch closest when lid is open.
S4 & 5	Switch, Steering	Actuated with thumb rocker on top of joystick, provides power to either right or left steer circuits and Motor Relay circuit.	Inside joystick handle.
S6	Switch, Controller Emergency Stop Switch, Controller Key	Control Circuit shut off. Supplies power to controls, alternator and starts engine.	Platform Controller, lower left. Platform Controller, left side.
S7	Switch, Controller Key	Control Circuit shut off. Supplies power to controls, alternator and starts engine.	Platform Controller, lower left.
S8	Switch, Lift/Drive	Supplies power to Lift/Drive Relay when in LIFT or to Torque Switch and Steering Switches.	Platform Controller, lower right.
S9	Switch, Torque Selector (Drive/Lift Speed)	Provides power to Series/Parallel Valves through Platform Down Relay to provide High Speed drive/lift.	Platform Controller, upper left.
S10	Switch, Chassis Emergency Stop	Control Circuit shut off.	Chassis Control Panel, right front of Control Module.
S11	Switch, Chassis Lift	Supplies power to Up and Proportional coils or Down circuit.	Chassis Control Panel, right front of Control Module.
S12	Switch, Fuel Selector	Supplies power to either Gas Coil or LP Coil.	Chassis Control Panel, right front of Control Module.
S13	Switch, Choke	Supplies power to the Choke Relay.	On left side of Controller.
SNSR	Sensor, Tilt	Cuts power to Cutout Relay when machine is on slopes of 2° side to side and fore and aft to activate Tilt Alarm.	Inside Tilt Sensor Electrical Box.
SOL1	Solenoid, Right Steer (coil)	Shifts Steer Valve to RIGHT turn position.	Top end of Spool Valve, mounted on left front of Manifold Block.
SOL2	Solenoid, Left Steer (coil)	Shifts Steer Valve to LEFT turn position.	Bottom end of Spool Valve, mounted on left front of Manifold Block.
SOL3	Solenoid, Forward (coil)	Opens Forward Valve to direct oil through forward operation.	Top center front of Manifold Block in front of Gauge Port.
SOL4	Solenoid, Reverse (coil)	Opens Reverse Valve to direct oil through reverse operation.	Bottom center front of Manifold Block below Forward Valve.
SOL5	Solenoid, Lift (Up Coil)	Opens Lift Valve.	Top front of Manifold Block, left of Forward Valve.
SOL6	Solenoid, Down (coil)	Opens Down Valve.	Bottom front of Manifold Block, below Lift Valve.
SOL7	Solenoid, Proportional (coil)	Controls Proportional Valve.	Bottom left of Manifold Block.
SOL8	Solenoid, Cushion (coil)	Opens Cushion Valve to allow high lowering speed.	Front left of Manifold Block, right of Steering Valve.
SOL9	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve to allow high speed drive.	Lower right front of Manifold Block.
SOL10	Solenoid, Series/Parallel (coil)	Opens Series/Parallel Valve to allow high speed drive.	Right end of Manifold Block.

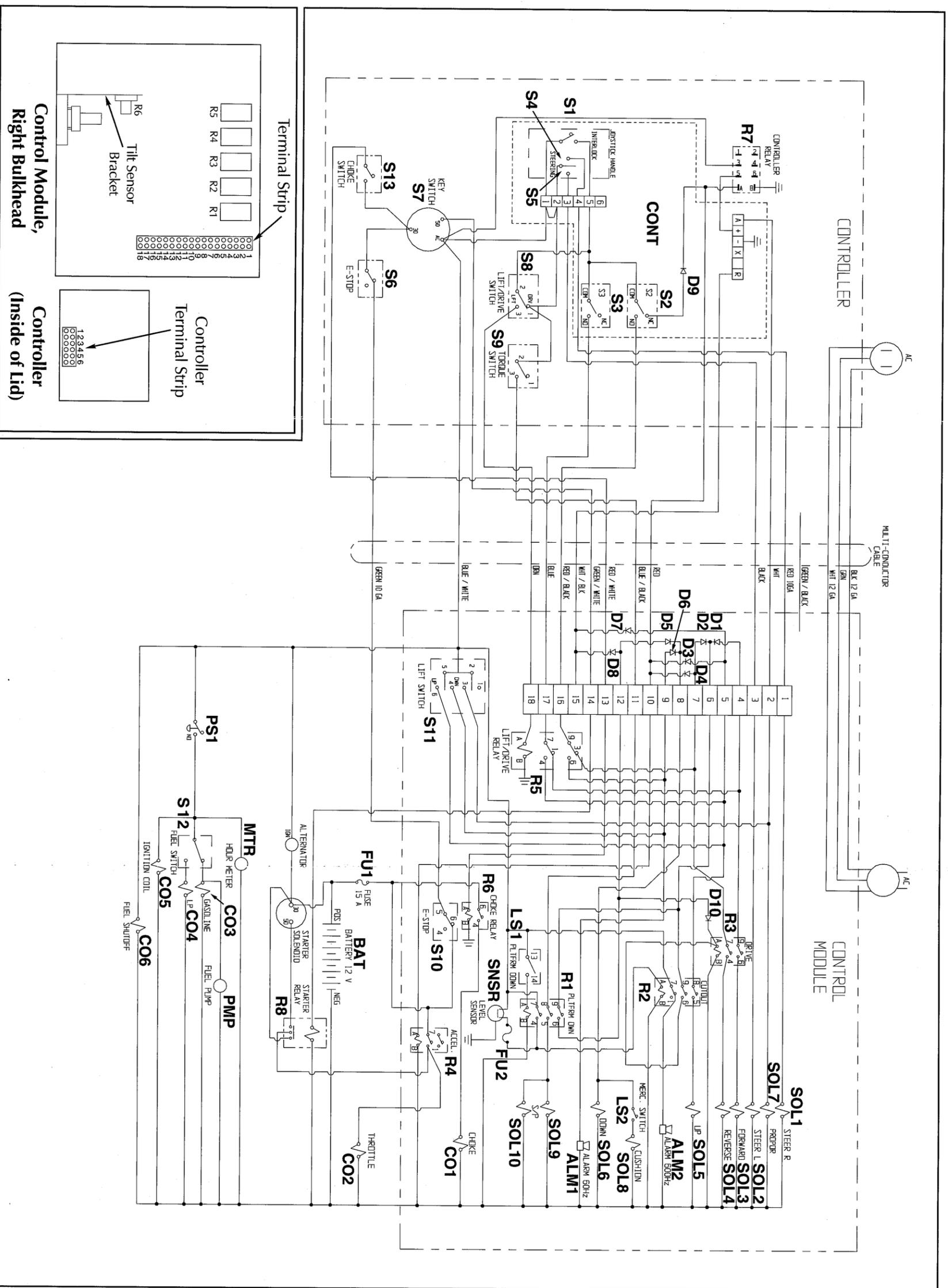


Figure 6-5: Terminal Strip and Relay Identification, Optional Kubota Dual Fuel Model

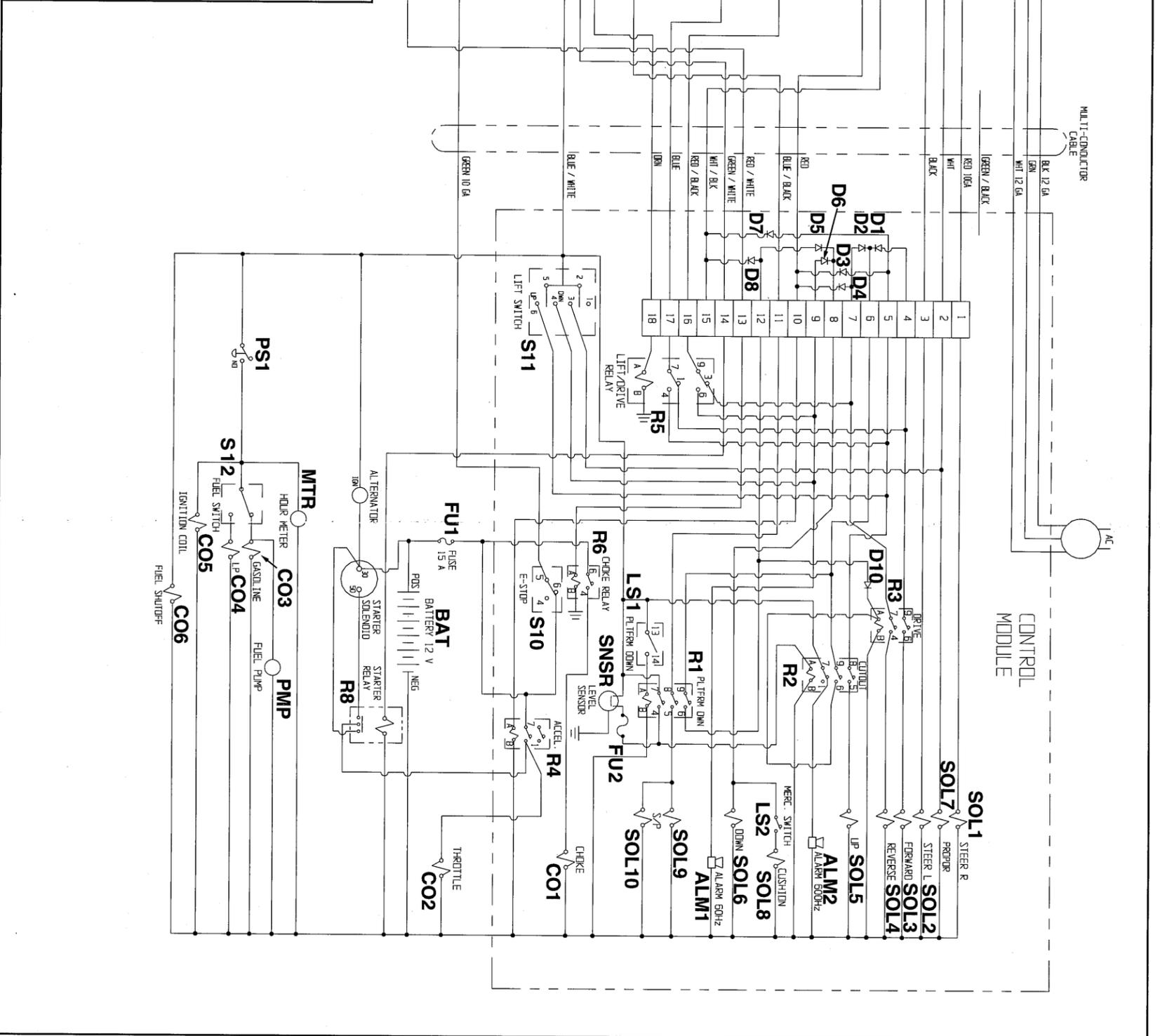


Figure 6-6: Electrical Schematic, Optional Kubota Dual Fuel Model

6.2 Hydraulic Schematic

Table 6-4: Hydraulic Schematic Legend

REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
CV1	Check Valve, Brake	Allows free flow from Brakes around Pressure Reducing Valve.	Bottom center of Manifold Block.
CV2	Check Valve, Lift	Prevents oil from leaking through Lift Valve.	Center back of Manifold Block.
CYL1	Cylinder, Steering	Provides force to steer front wheels.	Center front of Chassis.
CYL2	Cylinder, Brake	Stops Machine from moving while parked.	Left rear side of Chassis.
CYL3	Cylinder, Lift	Provides force to lift Platform.	Between chassis pedestal weld and lower arm weld.
FD1	Flow Divider, Steering	Diverts oil to Steering Valve.	Left end of Manifold Block.
FD2	Flow Divider/Combiner	Allows positive traction in parallel drive.	Right front of Manifold Block, right side of Forward Valve.
FL1	Filter	Filters oil returning to Tank.	Top of Hydraulic Tank.
FL2	Suction Screen	Traps particles in Hydraulic Tank.	Inside Hydraulic Tank at outlet.
MOT1	Drive Motor	Provides tractive effort for work platform.	In left rear axle.
MOT2	Drive Motor	Provides tractive effort for work platform.	In right rear axle.
ORF1	Orifice, Down	Controls the platform rate of descent.	Center of back of Manifold Block.
ORF2	Orifice, Cushion Down	Slows the platform rate of descent during the last 12 in. (305mm) of platform lowering.	Under plug on Cushion Valve Block Assembly.
PMP1	Pump, Hydraulic	Supplies hydraulic oil flow for all functions	On Electric Motor at right rear of Power Module OR rear of Engine.
PMP2 (Electric Model only)	Pump, Hydraulic	Supplies hydraulic oil flow for all functions	On Electric Motor at right side of Power Module.
PMP3	Pump, Brake Release	Provides a means of releasing the Parking Brake.	Mounted externally on right side of Control Module.
RV1	Valve, Main Relief	Provides over pressure protection to Pump.	Top left of Manifold Block.
RV2	Valve, Steering Relief	Provides over pressure protection to Steering Cylinder.	Middle back of Manifold Block.
REFERENCE DESIGNATION	NAME	FUNCTION	LOCATION
RV3	Valve, Drive Relief	Provides over pressure protection to Drive Motors during steering.	Back of Manifold Block, on block in drive circuit.
SV1	Valve, Shuttle	Provides oil to Brake Cylinder when either Drive FORWARD or REVERSE are actuated.	Top center of Manifold Block.
V1	Valve, Steering	Provides directional control for Steering Cylinder.	Left front of Manifold Block.
V2	Valve, Counterbalance Forward	Prevents machine from running away on slopes and cushions stops.	Top of Manifold Block, just right of center.
V3	Valve, Counterbalance Reverse	Prevents machine from running away on slopes and cushions stops.	Bottom of Manifold Block, just right of center.
V4	Valve, Forward	Provides directional control of oil for forward drive.	Front center top of Manifold Block.
V5	Valve, Reverse	Provides directional control of oil for reverse drive.	Front center bottom of Manifold Block.
V6	Valve, Velocity Fuse	Locks Lift Cylinder if limes break.	Inside Lift Cylinder Port.
V7	Valve, Lift	Provides oil flow to Lift Cylinders.	Front top of Manifold Block, left of Forward Valve.
V8	Valve, Down	Allows oil to flow out of Lift Cylinder to Tank.	Front bottom of Manifold Block, below Lift Valve.
V9	Valve, Proportional	Prevents oil from bypassing while driving and lifting.	Bottom left of Manifold Block.
V10	Valve, Brake Release	Allows use of Brake Release Pump by closing return circuit.	On side of Brake Release Pump assembly.
V11	Valve, Cushion Down	Closes to send oil thru Cushion Down Orifice, slowing platform rate of descent for the last 12 in. (305mm).	Rear of Manifold Block mounted on Cushion Block Assembly.
V12, V13	Valve Series/Parallel	Shifting both valves changes the oil flow from high torque (parallel) to high speed (series).	Right end of Manifold Block.
V14	Valve, Brake Pressure Reducing	Drops system pressure to 390 psi for proper Brake operation.	Center back of Manifold Block.

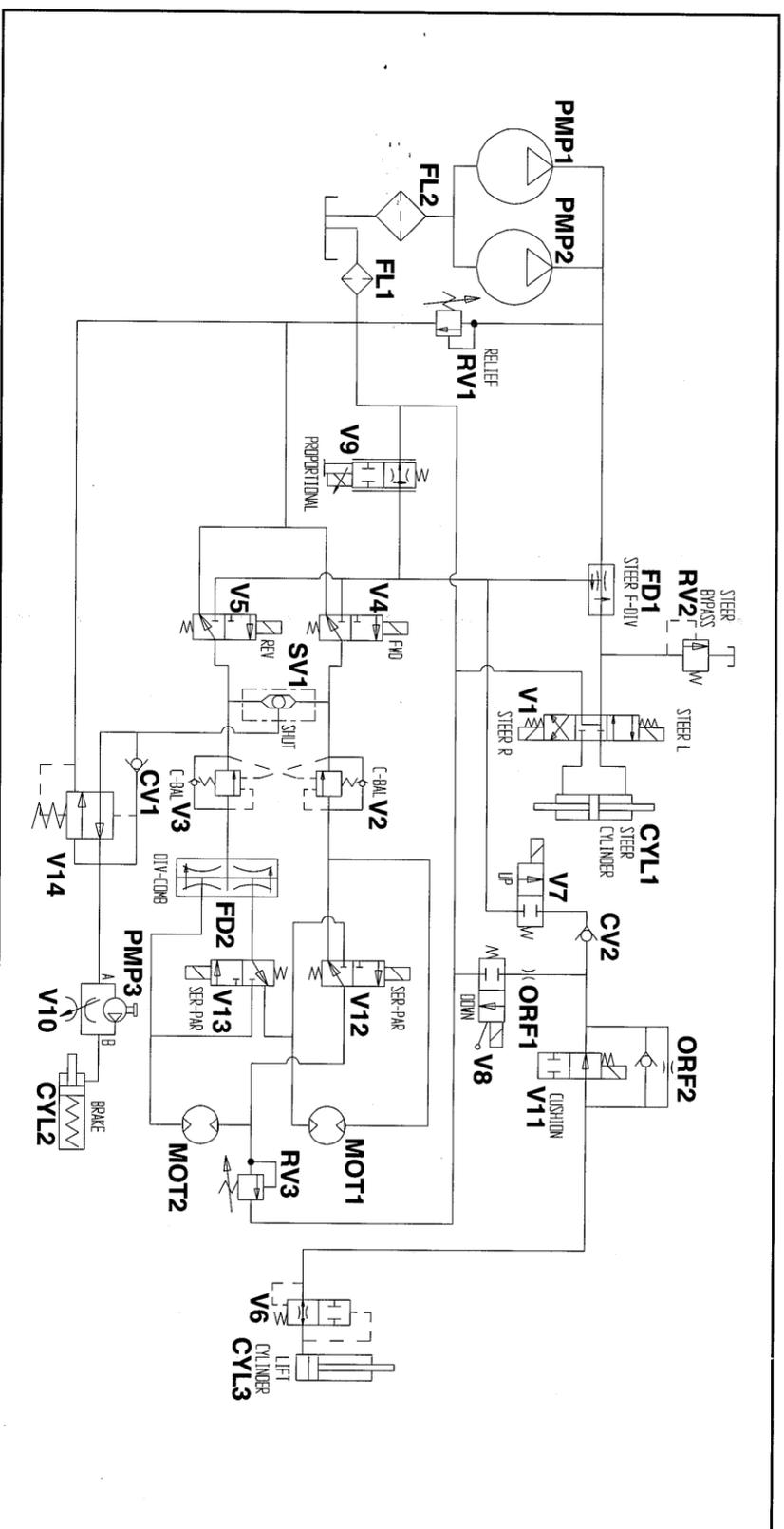


Figure 6-7: Hydraulic Schematic, Electric Model

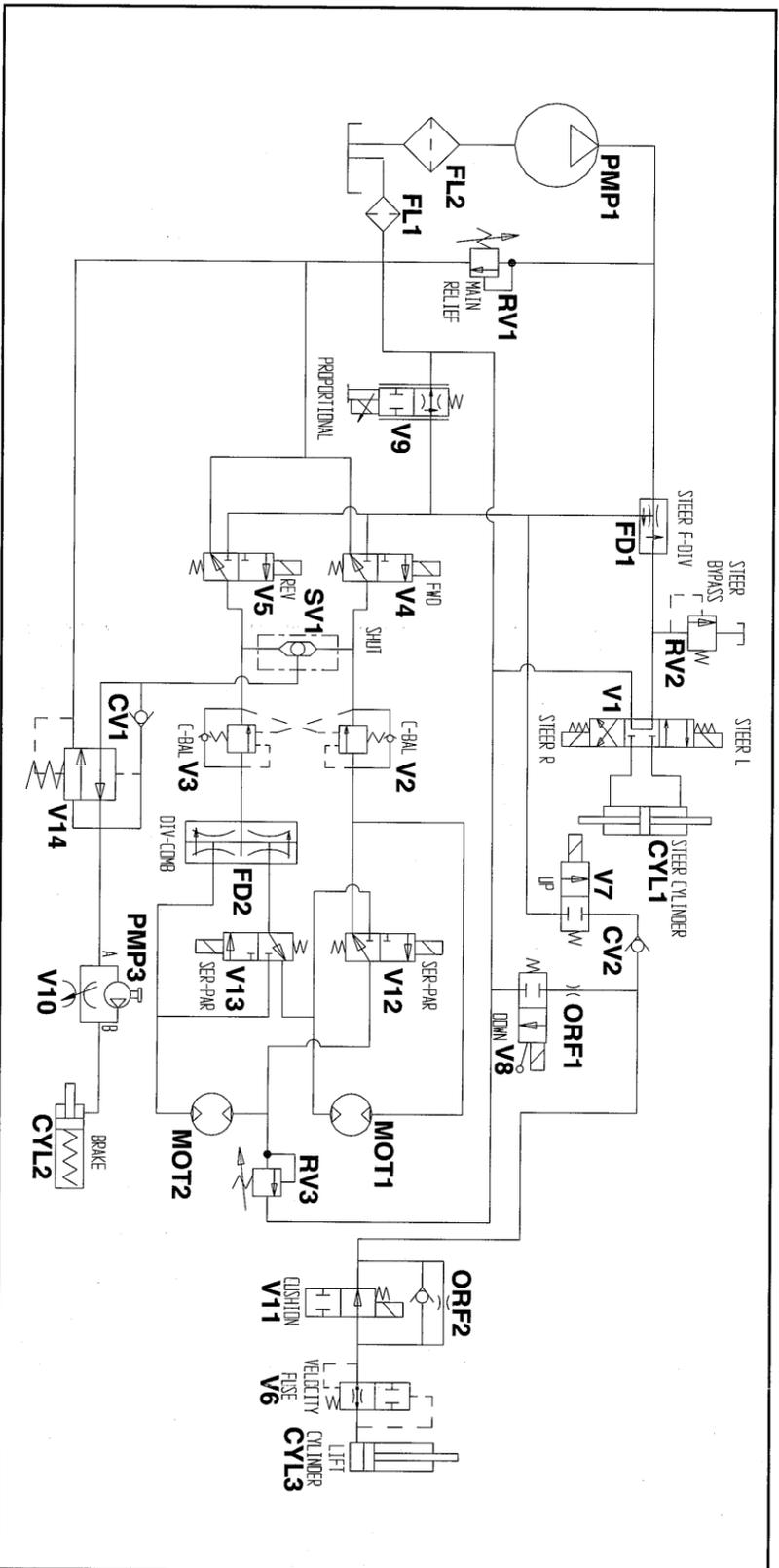


Figure 6-8: Hydraulic Schematic, Dual Fuel Model

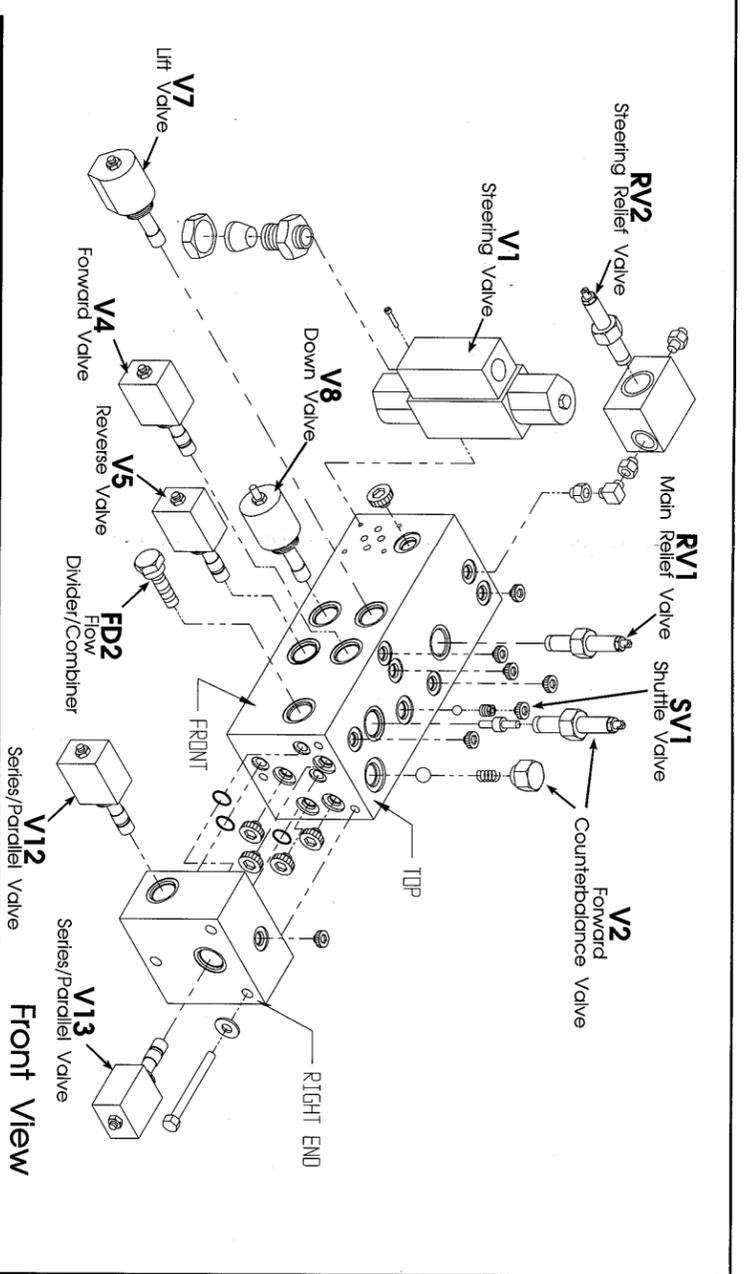


Figure 6-9: Typical Hydraulic Manifold

NOTES

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