OWNER'S MANUAL

Intermediate Duty Walkie Stacker

1500, 2200 and 3000 lb. Capacities

Model Nos. BGS, RWS, CSM, WSM

TABLE OF CONTENTS

IMPORTANT! : **READ AND UNDERSTAND THE CONTENTS OF THIS MANUAL BEFORE OPERATING THE EQUIPMENT.**

1. Receipt Inspection

This equipment has been thoroughly inspected prior to leaving the factory. Before placing the equipment in service, it should be thoroughly checked for damage or loss occurred in transit.

IMPORTANT! : **IF ANY DAMAGE OR LOSS IS EVIDENT, A CLAIM MUST BE MADE AGAINST THE CARRIER.**

2. Pre-Operation Instructions

1. Using appropriate tools, remove the drive unit shroud and check the wiring harness and hydraulic hoses for damage or loose connections.

2. Gain access to the hydraulic reservoir and verify that the oil level is approximately 1" (25mm) below the filler neck. *Refer to Section 10.3 : Hydraulic System Maintenance.*

   Refer to Figure 8 in Section 10.1 : Lubrication Points.

3. Open the battery compartment/covers and check that all connections are tight. Check that the batteries have not been damaged. Charge the batteries for one shift.

   Refer to Section 10.4 : Battery Maintenance

4. Read and understand *Section 3 : Safety Information* and *Section 4 : Operating Instructions* thoroughly prior to conducting a full inspection of all stacker functions. Ensure that all stacker functions operate satisfactorily.

IMPORTANT! : **DURING INITIAL CYLINDER ASSEMBLY, HYDRAULIC FLUID IS USED TO LUBRICATE ALL THE COMPONENTS. THIS ASSEMBLY FLUID MAY BE PRESENT, OR ACCUMULATED IN THE UPPER HEADNUT PORTION OF THE CYLINDER DURING THE BREAK-IN PERIOD OR NORMAL USE. A SMALL AMOUNT OF FLUID IN THIS AREA IS NORMAL AND SHOULD NOT BE MISTAKEN FOR CYLINDER SEAL LEAKAGE.**

5. Complete the Warranty Validation Form provided with this manual and return it to factory.

3. Safety Information

1. Do not operate this truck unless you have been trained and authorized to do so.

2. Do not operate this truck until you have checked its condition. Give special attention to tire, battery, controls, lifting systems (including switches), brakes, steering mechanism, straddle rollers, guards and safety devices.

3. Report the need for truck repairs to your supervisor promptly. Do not operate the truck. Neglect may cause a minor repair to become a major service problem or cause the truck to become unsafe.

4. The stacker is intended for use on level surfaces only. Stackers required to be used on grades should be counter-balanced and be equipped with either mast or fork tilt options.

5. Do not exceed the rated capacity of the vehicle as marked on the nameplate. Do not lift with the fork tips or one fork only, and be sure load is long centered and the 24" (610mm) load center is not exceeded.

6. Do not handle unstable or loosely stacked loads. Use special care when handling long, high or wide loads, to avoid tipping, loss of load, or striking bystanders.

7. Always look in direction of travel. Keep a clear view and when load obstructs visibility, travel with load trailing where possible.

8. Watch swing clearance when turning near walls, racks, pillars or other obstacles.

9. Start, stop, change direction, travel and brake smoothly. Slow down for turns and on uneven or slippery surfaces that could cause truck to slide or tip. Be aware that the truck behaves differently without a load than with a load.

10. Observe applicable traffic regulations and yield right of way to pedestrians. Slow down and sound horn at all aisle intersections and where vision is obstructed.

11. Do not ride on truck.

12. Do not carry passengers.

13. Before leaving the truck, fully lower the lifting mechanism and shut off power and key switch if equipped.

4. Operating Instructions

4.1 Controls and Instruments

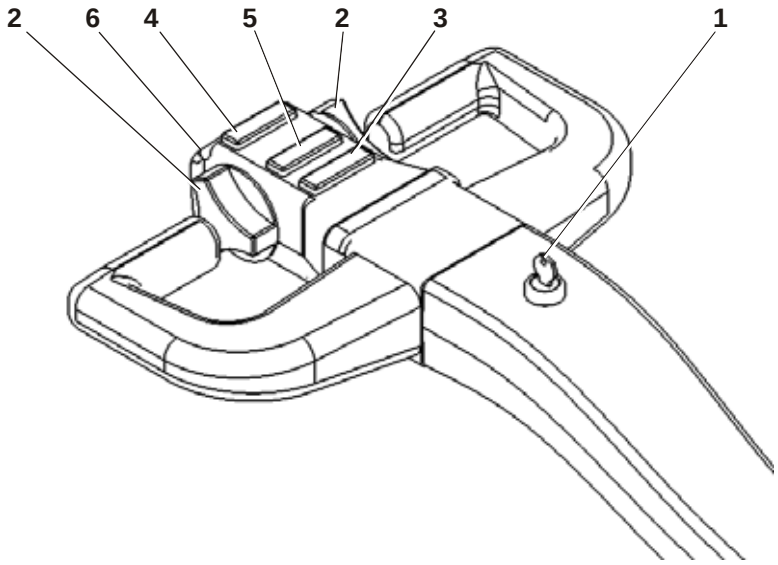


Figure 1 : Operator's Controls

All controls required for normal operation are located on the Control Head portion of the Drive Unit Assembly. The Control Head must be lowered into the "brake released" position in order for these controls to be enabled. *Refer to Item 2, Parking Brake/Deadman Feature in Section 4.2 : Basic Operation.*

1. Keyswitch

This is a two position rotary key switch that can be turned to the ON or OFF positions. When turned to the "OFF" position the keyswitch isolates the control head from the controller. It does not isolate the battery from the rest of the stackers electrical system. When turned to the "ON" position, all controls are functional (providing the Emergency Stop Button is not engaged).

2. Travel Controls

Rotating the thumb wheels in the head of the control handle controls direction and speed. Rotating the thumb wheels toward the front (fork end) of the stacker will engage the motor to drive the stacker in the forward direction. Rotating the thumb wheels in the opposite direction, toward the rear (drive unit end) of the stacker, will engage the motor to drive the stacker in the reverse direction.The speed of the stacker will vary according to the duration and degree of angular rotation applied to the thumb wheels.Releasing the thumb wheels from the desired direction will cause the stacker to slow down and eventually stop.

3. Horn

This two position momentary pushbutton will sound the horn as long as the button is pressed. The horn button is located on the control head to allow for instantaneous fingertip use without travel interruption.

WARNING! : NEVER EXCEED THE RATED CAPACITY OF THE AS MARKED ON THE NAMEPLATE. DO NOT LIFT WITH THE FORK TIPS OR ONE FORK ONLY.

4. Lift Control Pushbutton

This pushbutton will engage the stacker's hydraulic system when pressed and held. This, in turn, forces the hydraulic cylinder in the center of the mast to extend vertically. This extension causes the carriage and forks to rise. Releasing the pushbutton will stop the upward travel of the forks.

5. Lower Control Pushbutton

This pushbutton will engage the stacker's hydraulic system when pressed and held. This, in turn, allows the hydraulic cylinder in the center of the mast to retract vertically. This causes the carriage and forks to descend. Releasing the pushbutton will stop the downward travel of the forks.

6. Emergency Reverse Button

Located at the top of the steering handle. When the truck is being driven in the direction of the operator and the safety-reversing button is depressed by an obstruction or trapped operator, the vehicle instantly reverses direction in high speed and the horn will sound.

NOTE: DO NOT USE THE EMERGENCY REVERSE BUTTON FOR NORMAL TRAVEL.

REMEMBER: A safe operator is a smart operator!

4.2 Basic Operation

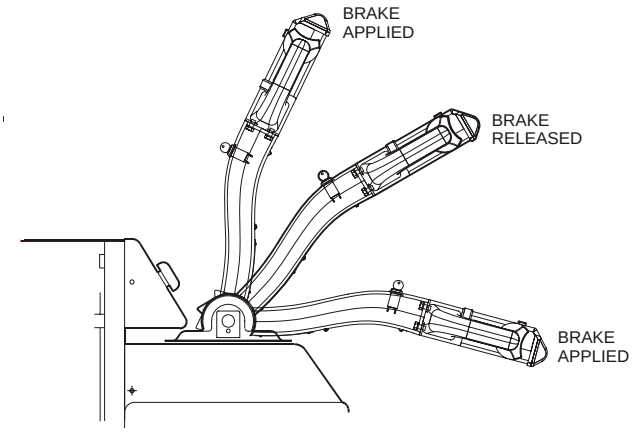


Figure 2 : Brake Controls

1. Parking Brake / Deadman Feature

The drive units integral brake is applied when the control handle is in the fully raised or fully lowered position. Power to the traction (drive) motor is cut off whenever the brake is applied in the fully raised or lowered position. The drive unit also includes a “Deadman” safety feature. The spring-loaded control handle, when released automatically returns to the upright/”Deadman” position that engages the brake and will slow the unit down to a full stop.

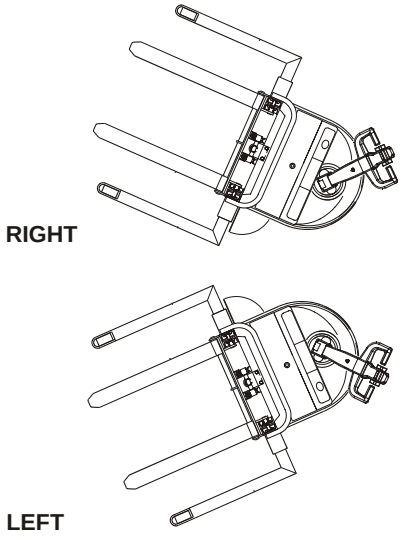


Figure 3 : Steering with the Control Head

2. Steering

The Control Head is directly attached to the central Drive Unit so that pivoting the Control Head in the desired direction will steer the stacker in the same direction.

Issue Date: 10/22/04 (Part #411-750)

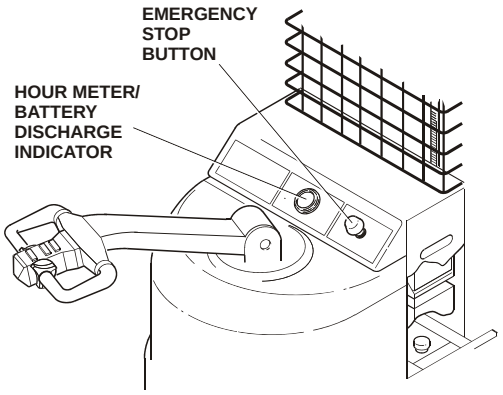


Figure 4 : Dash Panel Controls

3. Emergency Stop Button

Located on the dash panel, this large red button will interrupt power to all systems when pressed firmly. Pulling the button out will reconnect the battery to all of the stackers electrical circuits.

4. Hour Meter / Battery Discharge Indicator (Optional)

The dash panel may also include any one of a number of optional gauges or meters. The most common is a combination hour meter with battery discharge indicator (BDI).

An hourmeter assists maintenance personnel in recording stacker duty cycles and scheduling planned maintenance. The BDI specifically displays the discharge condition of the batteries.

See Section 6 : Optional Instruments - Operation

5. Control System

The Intermediate Duty Walkie Stackers are equipped with electronic travel speed control, which offers some of the following features:

Current multiplication:

During acceleration, or reduced speed operation, the electronic travel speed controller allows more current into the motor than what it takes out of the battery. This is possible because the controller acts like a D.C. transformer, i.e.: it takes in high voltage (the full battery voltage) and low current, and puts out low voltage and high current. Thus for these conditions the battery only has to supply a fraction of the current otherwise required by a resistor type controller (in which the battery current and motor current are always equal).

The result is a dramatic improvement in the vehicle's efficiency, i.e. *greater driving range per battery charge.*

Plug braking:

In most applications of these controllers, the vehicle motor will be of the series wound type. If a series wound motor is reversed while the vehicle is moving, an efficient form of electrical braking called plug braking will slow the vehicle down. When the throttle is reversed, the armature of the motor acts as a generator. Generated armature current goes through a "plug diode" built into the controller. The controller regulates the current in the motor field winding to give an appropriate level of plug braking torque. The vehicle brakes smoothly to stop, then automatically accelerates in the opposite direction.

Controller

The electronic speed controller, being a sealed, solid state unit, requires almost no maintenance. It is, however, recommended that the following items be checked occasionally, as required.

WARNING! : DISCONNECT THE BATTERY AND DEPRESS HORN SWITCH TO DRAIN CONTROLLER RESIDUAL CHARGE BEFORE ATTEMPTING ANY TYPE OF INSPECTION OR SERVICE.

a) Disconnect (Isolate) the battery by depressing the Emergency Stop Button (Refer to Section 4.2 : Basic Operation) or by lifting up the battery compartment top cover and disconnecting the SB connector.

b) Make sure that the electrical connections to the controller (as well as those to the motor, batteries, etc.) are tight.

NOTE: When checking the controller bus bar connections for tightness, be sure to use the double-wrench technique to avoid applying torquing stress on the bus bars which could crack the seals around them.

c) Remove from the terminal areas any corrosion or accumulations of dirt, acids, grease, oil, etc. It is very important that the controller terminal face be free of these substances, since their presence may lead to electrical leakage and cause faulty operation. The controller may be wiped clean.

POWER MUST BE REMOVED DURING THIS CLEANING.

6. Optional Instruments - Operation

Optional Instruments

ITEM	PART NO.	DESCRIPTION
1	032-211	Hour meter
2	032-229	Combo BDI-hour meter
3	032-244	BDI with lift lockout
4	032-256	**Combo** BDI-hour meter
5	026-511	Combo BDI-hour meter with lift lockout
		Harness for 026-511

Hour Meter

The Hour meter is activated by the control handle and records actual run time of the drive motor.

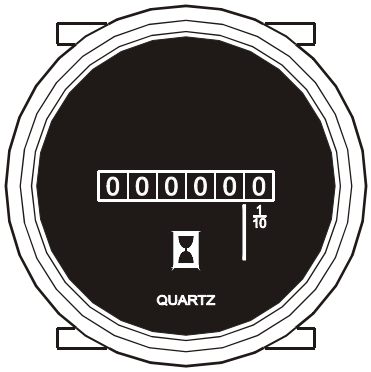


Figure 5 : Typical Hour Meter

6.1 BDI and Hour Meter

The display of the Battery Discharge Indicator (BDI) / Hour Meter is activated by the control handle and records actual run time of the drive motor. In addition, when the handle is in the driving position the accumulation of time is indicated by the flashing of an hourglass icon.

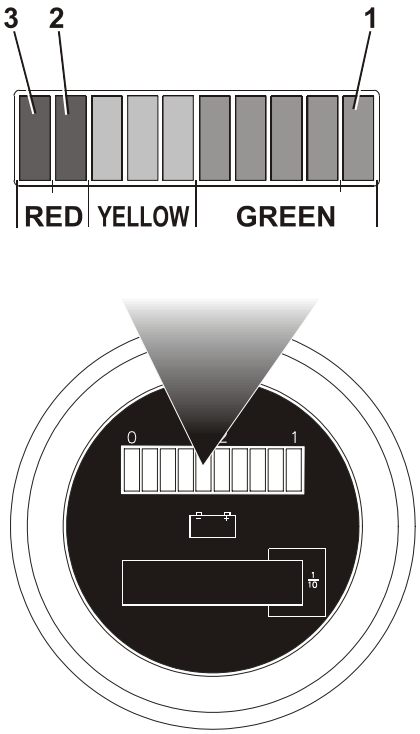


Figure 6 : Typical BDI/Hour Meter Indicators

The functioning of the red, yellow and green Light Emitting Diode (LED) display on the BDI/Hour Meter is as follows:

6. The far right LED (1.) will illuminate to indicate a proper full charge.

7. As the battery's state-of-charge condition decreases, the number of lit LEDs will also decrease.

8. At the next to last position (2.), this LED flashes indicating an "energy reserve" condition. This indicates a state-of-charge condition of approximately 70% of discharge.

9. At the empty point (3.), the 2 LEDs at the far left will alternately flash indicating a state-of-charge condition of approximately 80% discharge.

If the power is disconnected from the indicator by pressing the Emergency Stop Button during charging, the unit will reset at 2.09 volts per cell.

If the indicator remains connected during charging, a voltage of 2.35 volts per cell must be maintained in excess of 6 minutes in order to rest the unit.

6.2 BDI/ Hour Meter w/Lift Lockout

Some units may be equipped with a battery discharge indicator that may include a lift lockout feature. When the battery is severely discharged, the lifting circuit will automatically be disabled. To avoid this, the operator must return the unit for charging after the last light / bar is activated. The travel circuit will remain operational to return the unit to the charging area. Although, several different style meters are available as options, their basic functions are identical.

The lift lockout feature will ensure that the battery and electrical components are not subject to premature wear due to operating with a discharged battery. Always check the battery indicator, if equipped, in the event that the lifting circuit is not operational. General operation of a battery discharge indicator with or without the lift lockout feature, if equipped, is outlined on the drawing below.

6.3 BDI/ Hour Meter

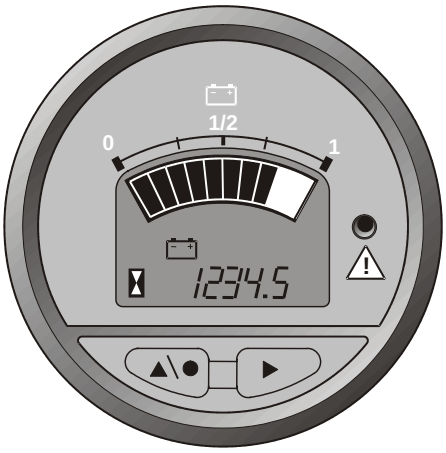


Figure 7 : BDI/Hour Meter

This multiple function meter monitors the state-of-charge condition of the batteries and total run time of the motor. As the battery's state-of-charge condition decreases, the number of darkened bars in the Liquid Crystal Display (LCD) will also decrease. The numerical display can also be configured to display the time of day and duration of time remaining until the next maintenance interval is reached.

The "▲\●" button is used to toggle the numerical display sequentially between clock, maintenance hours, and total hours.

When the "▲\●" button is pressed and held the clock and maintenance hours can be set by using the "▶" to increment the numerical display to the desired setting and using the "▲\●" button to move sequentially across digits. Pressing the "▲\●" once after the desired settings have been inputted or if the meter receives no input after 30 seconds, the meter will return to normal operation mode.

When the battery has reached a severely discharged condition, the warning indicator LED "⚠" will illuminate and the BDI portion of the LCD display will show only one bar. To avoid this, the operator must return the unit for charging before the LCD display shows less than 20% (2 bars darkened) of charge. To preserve battery life, the battery should never be allowed to reach a condition of more than 80% of discharge before recharging.

7. Drive Unit & Brake

CAUTION! : BEFORE INSPECTING ANY PART OF THE DRIVE ASSEMBLY DISCONNECT MAIN BATTERY POWER AND DEPRESS HORN SWITCH TO DRAIN RESIDUAL CONTROLLER CHARGE

1. Disconnect (Isolate) the battery by depressing the Emergency Stop Button *(Refer to Section 4.2 : Basic Operation)* or by lifting up the battery compartment top cover and disconnecting the SB connector.

The traction motor has sealed bearings and requires no external lubrication.

2. Check the condition of the drive belt and adjust the tension if necessary. The belt is correctly tensioned when a 10 lb. force applied midway between the two sprockets causes a deflection of 3/16”.

3. Check belt for unusual wear which may indicate incorrect pulley alignment.

4. To install a new belt; reduce tension, remove the old belt, install the new belt and readjust the tension to achieve the deflection indicated. Rotate the belt manually by hand for several revolutions and recheck tension after all fasteners have been tightened.

NOTE : The brake must be released by placing the control handle in the released position (See Section 4.2 : Basic Operation) and the drive wheel must be raised off the ground.

Normally this belt should not require further tensioning but should be re-inspected after several shifts of operation. Over-tensioning a belt will cause excessive noise, reduce belt life and impose higher bearing loads in drive components.

5. Change the oil in the gear reduction box 500 hours or three months after the equipment is placed in service and every 2000 hours or one year thereafter. Approved gearbox oils are listed on chart below.

Failure to adhere to carry out this procedure as part of a Planned Maintenance Schedule could void the owners warranty and/or seriously affect the owners right to claim.

6. Check the brake for safe operation. Make sure the power cut off switch disconnects the drive when the brakes are applied in both the up and down position. This unit is equipped with an internal multi-disc braking system that has no user adjustable parts. Only qualified service personnel are permitted to perform brake linkage mechanism adjustments.

FACTORY APPROVED OILS FOR NORMAL AMBIENT OPERATING CONDITIONS			
APPROVED GEAR BOX OILS		**APPROVED HYDRAULIC OILS**	
Canadian	American	Canadian	American
Esso Terresso #68	Exxon Teresstic #68	Sunvis 832	Dexron II
Shell Tellus #68	Shell Turbo T-68	Valvoline Antiwear ISO32	Valvoline AW32
Petro Canada Harmony #68			

8. Mast and Carriage

1. Check the condition and wear of all channel/chain rollers on a monthly basis and replace if necessary.

2. Lubricate the points as shown in *Figure 8 : Lubrication Points*. For best performance lubricate monthly.

3. Periodically remove the lift chains and wipe clean with dry cloths. DO NOT use chemical degreasing agents. Carefully examine the chain links, pins and clevises for damage, wear or stretch and replace them if any evidence of either is found. Using a paintbrush, recoat the chains with SAE 10 motor oil, or suitable chain lubricant. Adjust the chain tension so that with the carriage fully lowered, the chains are equally taut but not supporting the carriage.

4. Check the upper limit mechanical stops for damage and repair or replace. Damage to these stops could be an indicator of a more serious problem in the lift cylinder.

9. Hydraulic Adjustments

9.1 Lifting Pressure

The hydraulic relief valve assembly controls the maximum hydraulic system pressure. The pressure relief is factory set and adjustment will be required only if a new valve assembly is installed. For operator safety, adjustment to any of these components must be made by a qualified service representative only.

9.2 Lowering Speed

Lowering speed is factory set for safe lowering and, for safety reasons, should never be changed. For operator safety during valve replacement, adjustment to the lowering speed must be made by a qualified service representative only.

10. Planned Maintenance

Spotting trouble before it happens can prevent costly down-time and extensive repairs. This, in turn, makes it possible for service and repairs to be performed when the unit is not required for regular operations. Inspection intervals outlined are for normal single-shift use and conditions. More frequent inspections are necessary for adverse conditions such as: rough floor conditions, temperature extremes, several operators, multi-shift use, dusty atmosphere, etc.

Failure to adhere to a Planned Maintenance Schedule could void the owners warranty and/or seriously affect the owners right to claim.

In addition, establishing a regular planned maintenance schedule of a stacker in certain industries may be a requirement of compliance with government regulations.

INSPECTION INTERVALS:

DAILY:

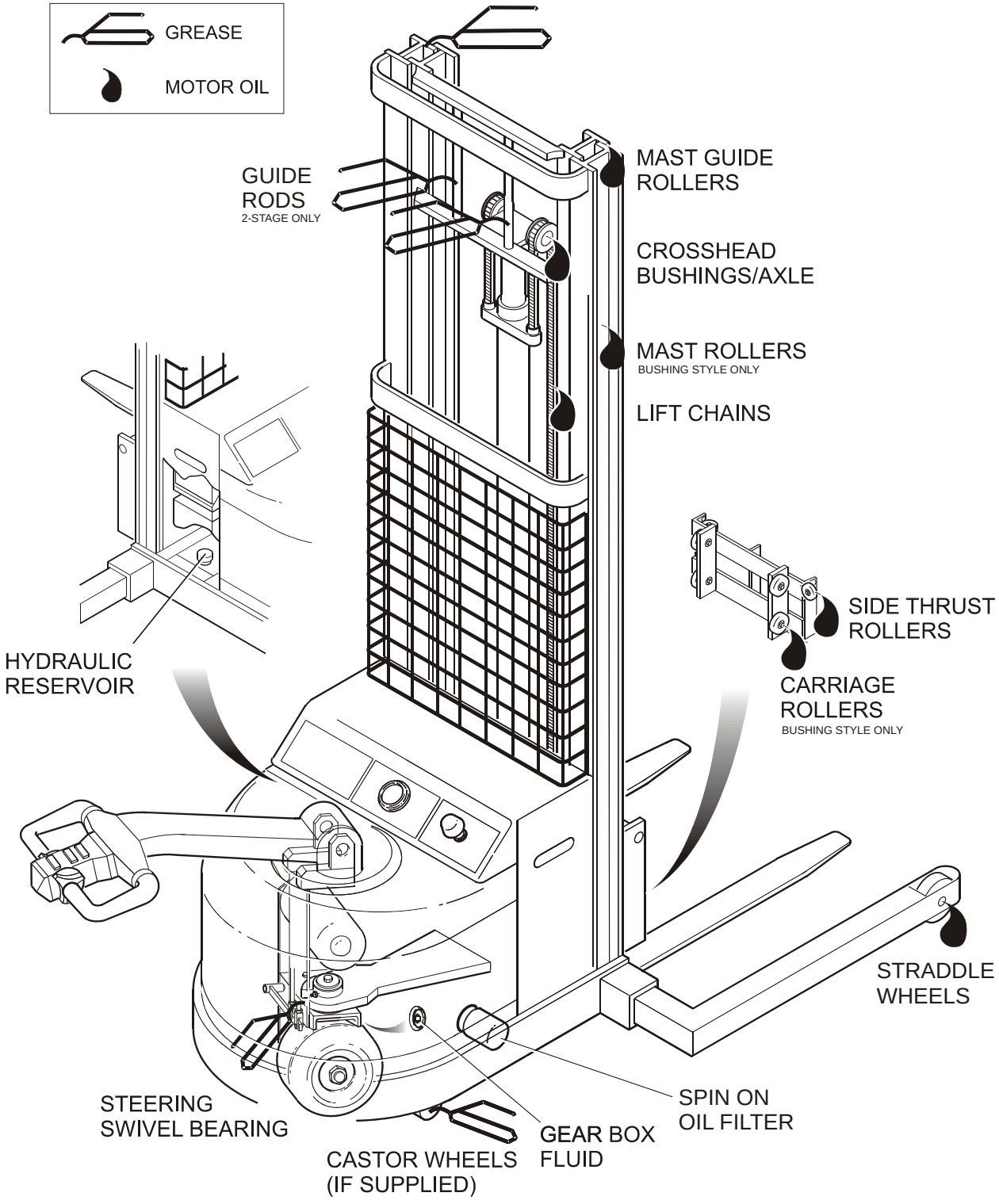
- All Operating Controls (SAFETY) *See Owner / Operator Manual*
- Battery Charge

QUARTERLY:

- Electrical System
- Hydraulic System
- Drive unit, motor brushes & moving mechanical parts

WARNING! : DISCONNECT THE BATTERY (BY PRESSING THE EMERGENCY STOP BUTTON OR BY DISCONNECTING THE SB CONNECTOR UNDER THE BATTERY COMPARTMENT COVER) AND DEPRESS HORN SWITCH TO DRAIN CONTROLLER RESIDUAL CHARGE BEFORE ATTEMPTING ANY TYPE OF INSPECTION OR SERVICE.

10.1 Lubrication Points



Note: Ball Bearing Style Rollers do <u>NOT</u> require lubrication.
Bushing Style Rollers on 1500 lb. capacity only

Figure 8 : Lubrication Points

Important notice - During initial cylinder assembly, hydraulic fluid is used to lubricate all the components. This assembly fluid may be present, or accumulated in the upper headnut portion of the cylinder during the break-in period or normal use. A small amount of fluid in this area is normal and should not be mistaken for cylinder seal leakage.

10.2 Lubrication Schedule

LUBRICATION (based on single shift, normal usage)

The transmission (gearbox) oil, hydraulic oil should be changed after the truck has been in service for six months, then minimum once a year, for normal single shift usage.

Every Month:
- Apply engine oil (SAE 10) or grease to all points. , including handle pivot points.

Every Three Months:
- Remove breather cap *(See Figure 8)* check oil level is 1" (25mm) below the top of the reservoir and add approved oil, if necessary. High oil level may cause spillage during rapid braking. The breather cap should be cleaned with a suitable cleaning solvent and blown dry (safety glasses must be worn) before you reinstall. Check gearbox oil level *(See Figure 8 : Lubrication Points)*

Every Six Months:
- Lubricate drive unit swivel bearings and wheel bearings using high quality lithium-based EP type grease. Check for smooth operation.

Yearly:
- *Perform procedure in Section 10.3 : Hydraulic System maintenance.* Inspect strainer and replace if damaged. Reinstall and add oil to 1" (25mm) below the top. For operation at normal room temperatures use only approved hydraulic oils such as:
  - ISO 32
  - Sunvis 832
  - Esso Polar 32
  - Shell Tellus 29
  - Texaco Rando Oil HD32(150)

  For Transmission (Gear Box) oil use:
  - Gulf Harmony 68
  - Esso Teresso 68
  - Shell Covil 68 or equal

  For low temperature operation consult the manufacturer for recommended hydraulic and transmission oils.

10.3 Hydraulic System Maintenance

Accessing the Hydraulic Reservoir

1. Lift up the battery compartment top cover.
2. Locate and remove the battery tray retaining bolt from the inner rear vertical face of the battery compartment.
3. Disconnect the battery SB connector.
4. Open the right and left battery compartment doors.
5. Slide the battery tray towards the right-hand side door to expose the hydraulic reservoir breather cap.
6. Remove the breather cap and verify the fluid level is filled to approximately 1" below the top of the filler neck.

This 1" gap is to allow for the heating and expansion of hydraulic fluid as it reaches normal operating temperature. Over-filling may cause spillage.

Draining and Refilling

1. Drain the hydraulic oil from the reservoir by disconnecting the hose at the base of the lift cylinder.
2. Place the end of the hose end into a collection container.
3. Operate the pump motor by operating the Lift Control Valve (or push button Lift Control if equipped) until no more oil is expelled.
4. Reconnect the hose to the base of the lift cylinder.
5. Remove the spin-on type oil filter at the return line to the reservoir. Replace the filter with one of the same rating. The factory supplied filter has a 10 micron (µ) - 18 psi bypass rating.
6. Apply a thin coat of hydraulic oil to the o-ring on the filter head.
7. Fill the filter with new hydraulic oil and mount on to the filter head.
8. Expose the hydraulic tank breather cap. See Accessing the Hydraulic Reservoir procedure above.
9. Remove the breather cap and refill to 1" below the filler neck.

10.4 Battery Maintenance

The Intermediate Duty Stacker comes equipped with 4 - Marine type Batteries and a built-in automatic charger as standard equipment. The batteries require charging at the end of every units shift (approximately every 6-8 hours).The Battery Discharge Indicator should be monitored frequently during operation. The batteries should never be allowed to discharge below 20% of charge. The batteries should also never be allowed to overcharge.

The battery and charger manufacturers operation manual should be consulted for complete charging, maintenance and handling information. The following is provided as basic fundamental knowledge.

Battery Handling

Maintenance, charging and handling of batteries should only be conducted in an area equipped with provisions to ventilate gas from charging batteries, flush and neutralize spillage, hoist batteries in and out of stackers for replacement or maintenance and ensure fire protection. If hoisting the battery tray is required, an overhead device such as a conveyor or crane with safety latches on the lift hooks is essential. A spreader bar with adjustable hooks perfectly aligned to lift from the battery tray lift eyes in a straight vertical is recommended as well as some form of insulation to prevent any contact of metal objects across the battery terminals.

General

The top of the batteries should be kept clean and dry. Wash off with clean water and baking soda when necessary. Good ventilation should be provided during charging. Prohibit any activity involving smoking, open flames, sparks or electric arcs from the battery maintenance area. Batteries used at temperatures below or above normal room temperature will have reduced capacity. If possible, occasionally each battery should be tested individually with a voltmeter to ensure a continued equalization of charge.

Charging with built-in charger / battery pack

Position the stacker in a designated charging area and secure it to prevent any accidental movement. Plug charger cord into electrical outlet 115/1/60). Charging will start and stop automatically.

Do not connect batteries to the charger while the charger is energized!

Charging with remote charger

Position the stacker in a designated charging area and secure it to prevent any accidental movement. Disconnect the SB connector from the stacker and attach it to the remote charger. Consult the charger and battery manufacturers instructions before energizing the charger. An automatic charger will start and stop on its own. Good ventilation should be provided during charging. Prohibit any activity involving smoking, open flames, sparks or electric arcs away from the battery maintenance area. The battery compartment cover must be kept open to allow for the dissipation of heat. Do not allow battery temperature to exceed 110°F (43°C). If batteries discharge rapidly during normal operation or do not charge to the proper specifications, a service technician with proper qualifications should be consulted.

WARNING! : ENSURE THAT BATTERY CHARGER ELECTRIC PLUG CANNOT COME INTO CONTACT WITH BATTERY TERMINAL POSTS.

WARNING! : DISCONNECT THE SB BATTERY CONNECTOR FROM THE MACHINE PRIOR TO CHARGING TO PREVENT ACCIDENTAL VEHICLE MOVEMENT.

Batteries requiring maintenance

The following applies to batteries equipped with cell covers that can be removed for maintenance and that require occasional addition of distilled water to battery cells.

It is assumed that the personnel performing this maintenance are properly trained and authorized to do so and that procedures are being performed using the battery (and charger) manufacturers maintenance instructions. The said procedures must also be performed in compliance with government regulations (e.g. OHSA, ANSI, etc.)

Do not allow battery temperature to exceed 110°F (43°C). Keep open flames away from batteries. Never add acid to cells. Always use de-mineralized water. Regular tap water will contaminate the battery and seriously reduce battery life. Always add distilled water after charging to ensure the electrolyte does not overflow as it heats up and expands.

WARNING! : PROPER SAFETY DEVICES SUCH AS FULL FACE SHIELD, APRON, LONG SLEEVES AND GLOVES MUST BE WORN WHEN WORKING WITH BATTERIES.

WARNING!: BATTERIES CONTAIN ELECTROLYTE, A CORROSIVE MIXTURE OF SULFURIC ACID AND DISTILLED WATER THAT CAN CAUSE SERIOUS INJURY IF IT MAKES CONTACT WITH EYES OR SKIN. IF CONTACT IS MADE, FLUSH IMMEDIATELY WITH WATER AND SEEK MEDICAL ATTENTION.

10.5 Battery Cable Connections

WARNING! : IF BATTERIES ARE REPLACED OR DISCONNECTED, VERIFY PROPER BATTERY VOLTAGE AND POLARITY BEFORE MAKING CONNECTION.

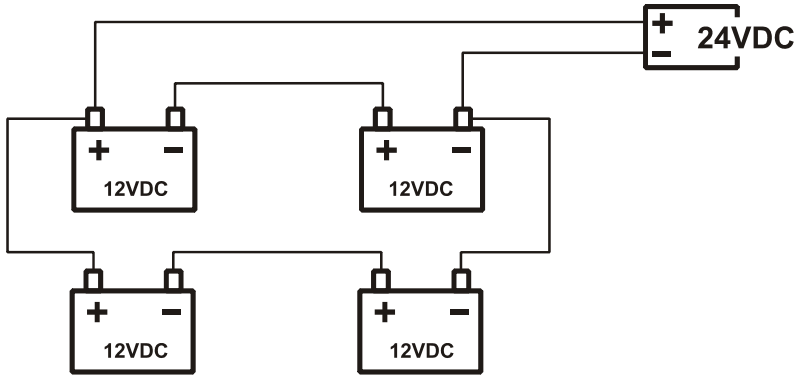


Figure 9 : Typical Cabling Arrangement For 4 - 12 Volt Batteries (Series / Parallel) With Automatic Built-in Charger pack

11. Trouble Shooting Guide

The following charts are intended to assist in identifying possible equipment malfunctions.

NOTE: REPAIRS / TROUBLE SHOOTING SHOULD BE PERFORMED BY AN AUTHORIZED TECHNICIAN.

Problem	Possible Cause
NO LIFT (Motor does not run)	• Faulty wiring from fuse to lift switch in handle. • Faulty lift switch • Faulty wiring from lift switch to pump contactor. • Faulty lift contactor • Faulty wiring from battery positive terminal to pump contactor, or from pump contactor to pump motor. • Worn out brushes in pump motor. • Defective control circuit fuse and/or main power fuse.
NO LIFT (Motor runs)	• Low hydraulic pressure caused by: - Pump check valve stuck open. - Faulty solenoid valve - stuck in the open position. • Check oil level if forks do not raise fully. • Check hydraulic pump operation. • Defective control circuit fuse.
FORKS WILL NOT LOWER	• Faulty lowering switch on steering handle. • Faulty wiring from lowering switch to solenoid valve. • Faulty solenoid coil on soft-shift control valve. • Faulty soft-shift control valve. • Faulty load lowering valve. • Faulty velocity fuse. • Faulty control circuit fuse. • Mechanical binding
NO ELECTRICAL POWER (no travel)	• No electrical power caused by: - Key switch in “OFF” position. - Emergency disconnect button depressed. - Faulty SB connector (or unplugged). - Loose battery connections. - Defective control circuit fuse and/or main power fuse. • Faulty wiring from fuse to travel control switch. • Faulty travel control switch. • Faulty wiring from travel control switch to direction contactor. • Faulty contactor. • Check traction motor. • Faulty throttle control. • Drive controller shut down after detecting fault.

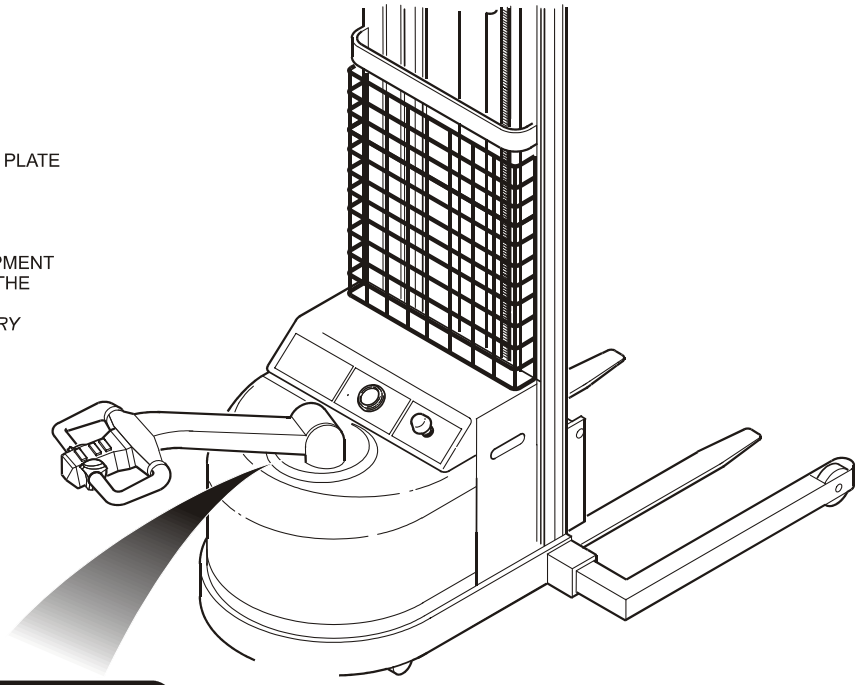
NOTE: Additional testing and diagnostics must be performed by authorized service personnel through use of the diagnostics analysis tool in the controller programmer. Consult the manufacturer or an authorized dealer for more details and assistance.

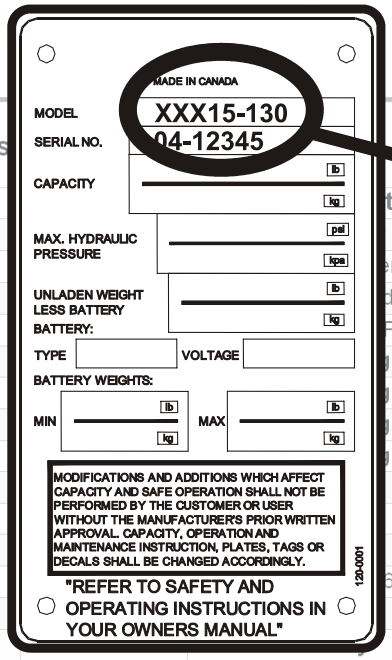
12. Intermediate Duty Stacker - Parts Listings

HOW TO USE PARTS LISTINGS

LOCATE THE SERIAL NUMBER PLATE ON THE UNDERSIDE OF THE CONTROL HANDLE, AT THE PIVOT POINT.

UPON RECEIPT OF THE EQUIPMENT COPY THE INFORMATION ON THE SERIAL NUMBER PLATE INTO *SECTION 14 : SERVICE HISTORY* OF THIS MANUAL FOR QUICK REFERENCE





USE MODEL NUMBER/CAPACITY (e.g. XXX15-130 = 1500lb. Capacity w/ 130" LIFT HEIGHT) AND/OR NUMBER OF STAGES TO DETERMINE THE CORRECT PART NUMBER OF A DESIRED ASSEMBLY

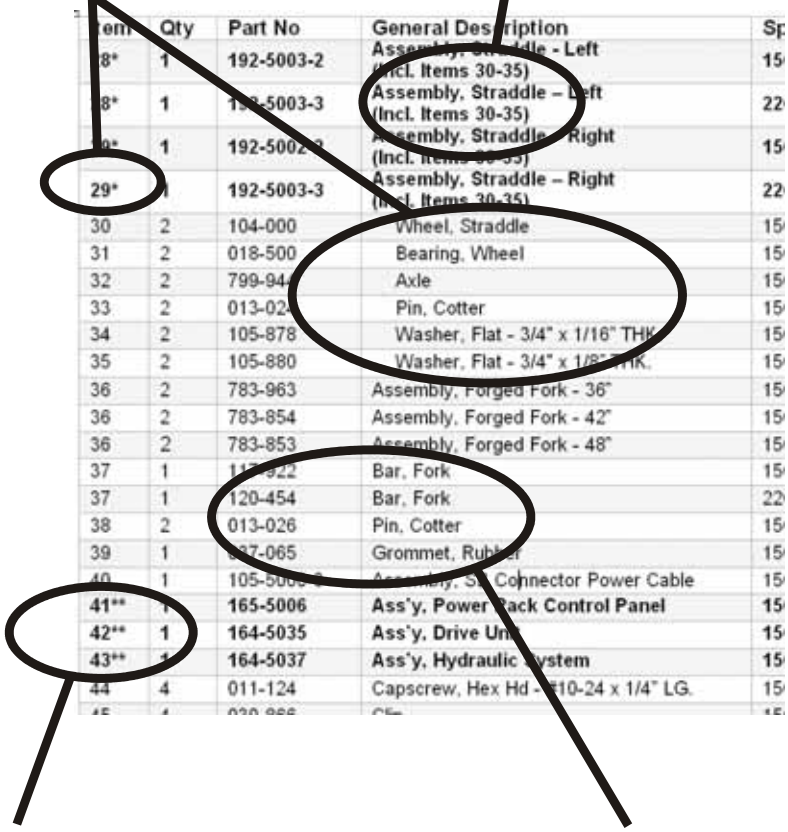
ALWAYS QUOTE THIS INFORMATION (ALONG WITH SERIAL NUMBER) WHEN ORDERING PARTS OR REQUESTING TECHNICAL SUPPORT

General As

Item	Qty		tion	
16	1		Stop	
17	1		er - *Specify Co*	
18	1		der Battery Pac	
19	1		Pack	
20*	1		ge 28" Fork O	
20*	1		ge 28" Fork O	
20*	1		ge 28" Fork O	
20*	1		ge 28" Fork OD	2200 / 3000 - 2 Stage
21	1			1500 / 2200 / 3000 1 St.
22	2			1500 / 2200 / 3000 1 St.
23	2		ID	1500 / 2200 / 3000 1 St.
24	2		6" ID	1500 / 2200 / 3000 1 St.
25**	2			1500 - 52" lift
25**	2			1500 - 72" lift
25**	2	163-5018-4	Chain Assembly	1500 - 90" lift
25**	2	163-5018-6	Chain Assembly	1500 - 110" lift
25**	2	163-5018-8	Chain Assembly	1500 - 130" lift
25**	2	163-5018-10	Chain Assembly	1500 - 150" lift
25**	2	163-5018-1	Chain Assembly	2200 / 3000 – 52" lift
25**	2	163-5018-3	Chain Assembly	2200 / 3000 – 72" lift

"ASSEMBLIES" ARE PART NUMBERS WITH ADDITIONAL LEVELS **- "SUB-ASSEMBLIES"** AND ARE INDICATED BY **BOLD TEXT.**

SHORT SUB-ASSEMBLIES ARE INDICATED BY A **SINGLE ASTERISK (*)** IN THE ITEM COLUMN AND ARE INDENTED IN THE GENERAL DESCRIPTION COLUMN (IMMEDIATELY FOLLOWING THE PARENT ASSEMBLY)



Item	Qty	Part No	General Description	Sp
28*	1	192-5003-2	**Assembly, Straddle - Left (Incl. Items 30-35)**	15
28*	1	192-5003-3	**Assembly, Straddle – Left (Incl. Items 30-35)**	22
29*	1	192-5002-2	**Assembly, Straddle – Right (Incl. Items 30-35)**	15
29*	1	192-5003-3	**Assembly, Straddle – Right (Incl. Items 30-35)**	22
30	2	104-000	Wheel, Straddle	15
31	2	018-500	Bearing, Wheel	15
32	2	799-94	Axle	15
33	2	013-02	Pin, Cotter	15
34	2	105-878	Washer, Flat - 3/4" x 1/16" THK	15
35	2	105-880	Washer, Flat - 3/4" x 1/8" THK.	15
36	2	783-963	Assembly, Forged Fork - 36"	15
36	2	783-854	Assembly, Forged Fork - 42"	15
36	2	783-853	Assembly, Forged Fork - 48"	15
37	1	117-922	Bar, Fork	15
37	1	120-454	Bar, Fork	22
38	2	013-026	Pin, Cotter	15
39	1	037-065	Grommet, Rubber	15
40	1	105-5006	Assembly, S Connector Power Cable	15
41**	**1**	**165-5006**	**Ass'y, Power Pack Control Panel**	**15**
42**	**1**	**164-5035**	**Ass'y, Drive Un**	**15**
43**	**1**	**164-5037**	**Ass'y, Hydraulic System**	**15**
44	4	011-124	Capscrew, Hex Hd - #10-24 x 1/4" LG.	15

LARGE SUB-ASSEMBLIES REQUIRING SEPARATE PAGES ARE INDICATED BY A **DOUBLE ASTERISK (**)** IN THE ITEM COLUMN. THESE SUB-ASSEMBLIES WILL APPEAR ON SUBSEQUENT PAGES IN THE SAME ORDER THAT THEY APPEAR IN THE PARENT ASSEMBLY

NOTE: SOME SUB-ASSEMBLIES WILL CONTAIN FURTHER SUB-ASSEMBLIES REQUIRING FURTHER PAGES.

ITEMS IN **PLAIN TEXT** DO NOT CONTAIN ANY ADDITIONAL SUB-ASSEMBLIES, FURTHER SERVICEABLE PARTS, OR ARE NOT SOLD SEPARATELY.

12.1 General Assembly Parts List

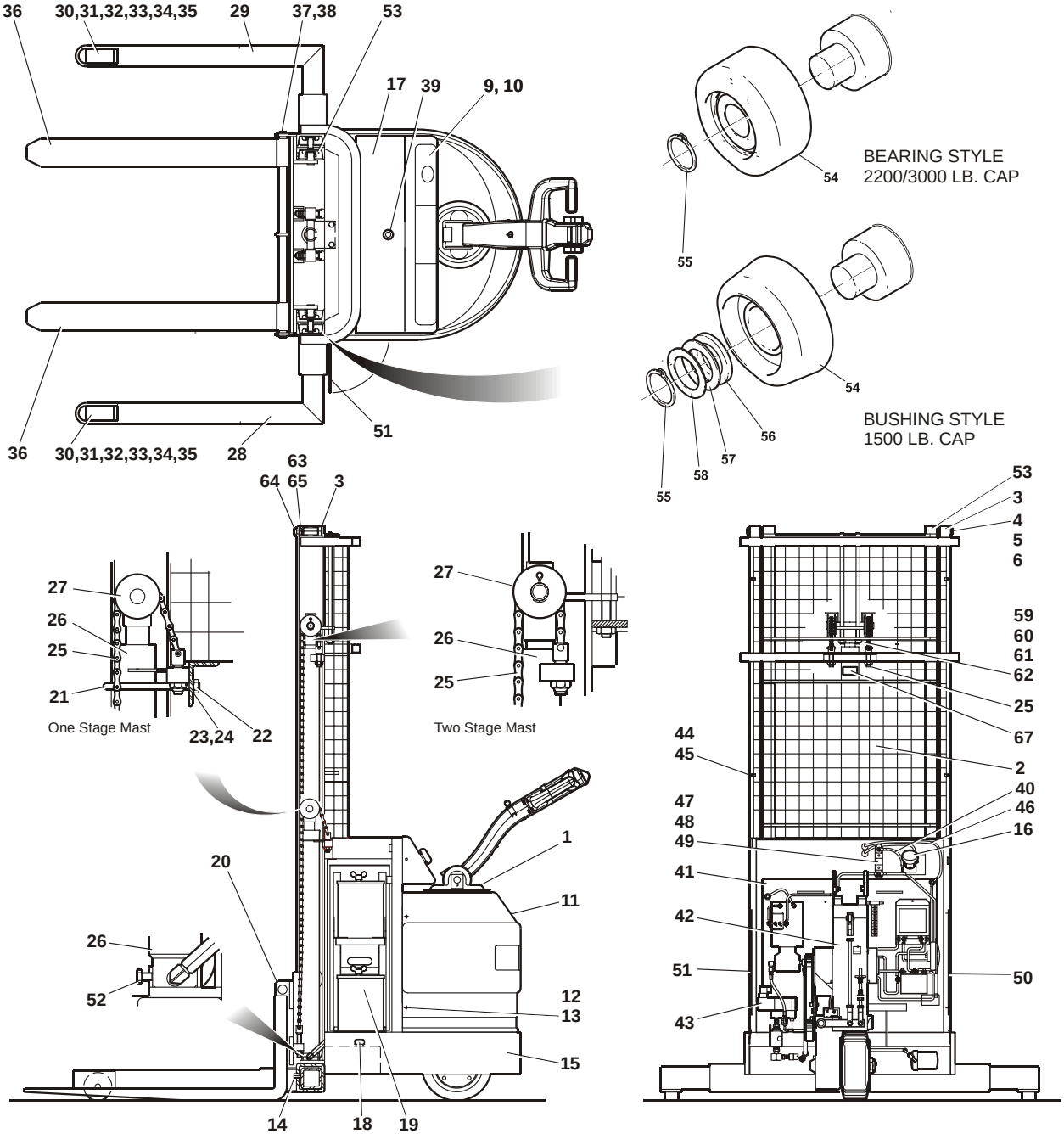


Figure 10 : General Assembly

General Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
1	1	200-01484	Cover Handle Bracket - *Specify Color*	1500 / 2200 / 3000
2	1	163-0007	Screen, Wire Mesh	1500 - 52” lift
2	1	163-0007-1	Screen, Wire Mesh	1500 - 72” lift
2	1	163-0007	Screen, Wire Mesh	1500 - 90” lift
2	1	163-0007-2	Screen, Wire Mesh	1500 - 110” lift
2	1	163-0007-1	Screen, Wire Mesh	1500 - 130” lift
2	1	163-0007-3	Screen, Wire Mesh	1500 - 150” lift
2	1	163-0000	Screen, Wire Mesh	2200 / 3000 – 52” lift
2	1	163-0000-1	Screen, Wire Mesh	2200 / 3000 – 72” lift
2	1	163-0000-2	Screen, Wire Mesh	2200 / 3000 – 90” lift
2	1	163-0000-3	Screen, Wire Mesh	2200 / 3000 – 110” lift
2	1	163-0000-4	Screen, Wire Mesh	2200 / 3000 – 130” lift
2	1	163-0000-5	Screen, Wire Mesh	2200 / 3000 – 150” lift
3	1	163-0005	Brace, Top Mast	1500 - 1 Stage
3	2	799-969	Assembly, Mast Guide	1500 - 2 Stage
4	4	010-042	Capscrew, 1/2”-13 x 1” LG.	1500
5	4	012-220	Washer, Lock – 1/2"	1500
6	4	011-508	Nut, Hex 1/2"-13	1500
7	2	120-253	Block, Stop – Inner Mast (Not Shown)	2200 / 3000 - 1 Stage
7	2	163-0008	Block, Stop – Inner Mast (Not Shown)	2200 / 3300 - 2 Stage
8	4	011-045	Capscrew, Hex Sck 3/8”-16x3/4" (Not Shown)	2200 / 3300
9	1	037-062	Plate, Dash	1500 / 2200 / 3000
10	1	038-076	Decal, Safety – English/Spanish.	1500 / 2200 / 3000
10	1	038-077	Decal, Safety – English/French	1500 / 2200 / 3000
11	1	037-061	Shroud - *Specify Color*	1500 / 2200 / 3000
12	6	011-020	Screw, Machine R/H Slot 1/4"-20 x 3/4"	1500 / 2200 / 3000
13	6	011-631	Fastener, U-type -1/4”-20	1500 / 2200 / 3000
14	4	014-076	Setscrew ,Socket Hd. 5/8"-11 x 3/4"	1500 / 2200 / 3000
15	1	162-5005	Weldment, Body and Outer Mast	1500 / 2200 / 3000
16	1	025-977	Button, Emergency Stop	1500 / 2200 / 3000
17	1	162-5010	Ass’y, Battery Cover - *Specify Color*	1500 / 2200 / 3000
18	1	035-238	Plug, Breather (Under Battery Pack)	1500 / 2200 / 3000
19	1	165-5000	Assembly, Battery Pack	1500 / 2200 / 3000
20*	**1**	**783-901-1**	**Assembly, Carriage 28” Fork OD**	**1500 – 1 Stage**
20*	**1**	**783-901-2**	**Assembly, Carriage 28” Fork OD**	**1500 – 2 Stage**
20*	**1**	**183-5005**	**Assembly, Carriage 28” Fork OD**	**2200 / 3000 - 1 Stage**
20*	**1**	**183-5010-2**	**Assembly, Carriage 28” Fork OD**	**2200 / 3000 - 2 Stage**
21	1	010-157	“U”-Bolt, 5/16”	1500 / 2200 / 3000 1 St.
22	2	011-502	Nut, Hex - 5/16”-18	1500 / 2200 / 3000 1 St.
23	2	012-210	Washer, Flat - 5/16 ID	1500 / 2200 / 3000 1 St.
24	2	012-200	Washer, Lock - 5/16” ID	1500 / 2200 / 3000 1 St.

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General Assembly Parts List

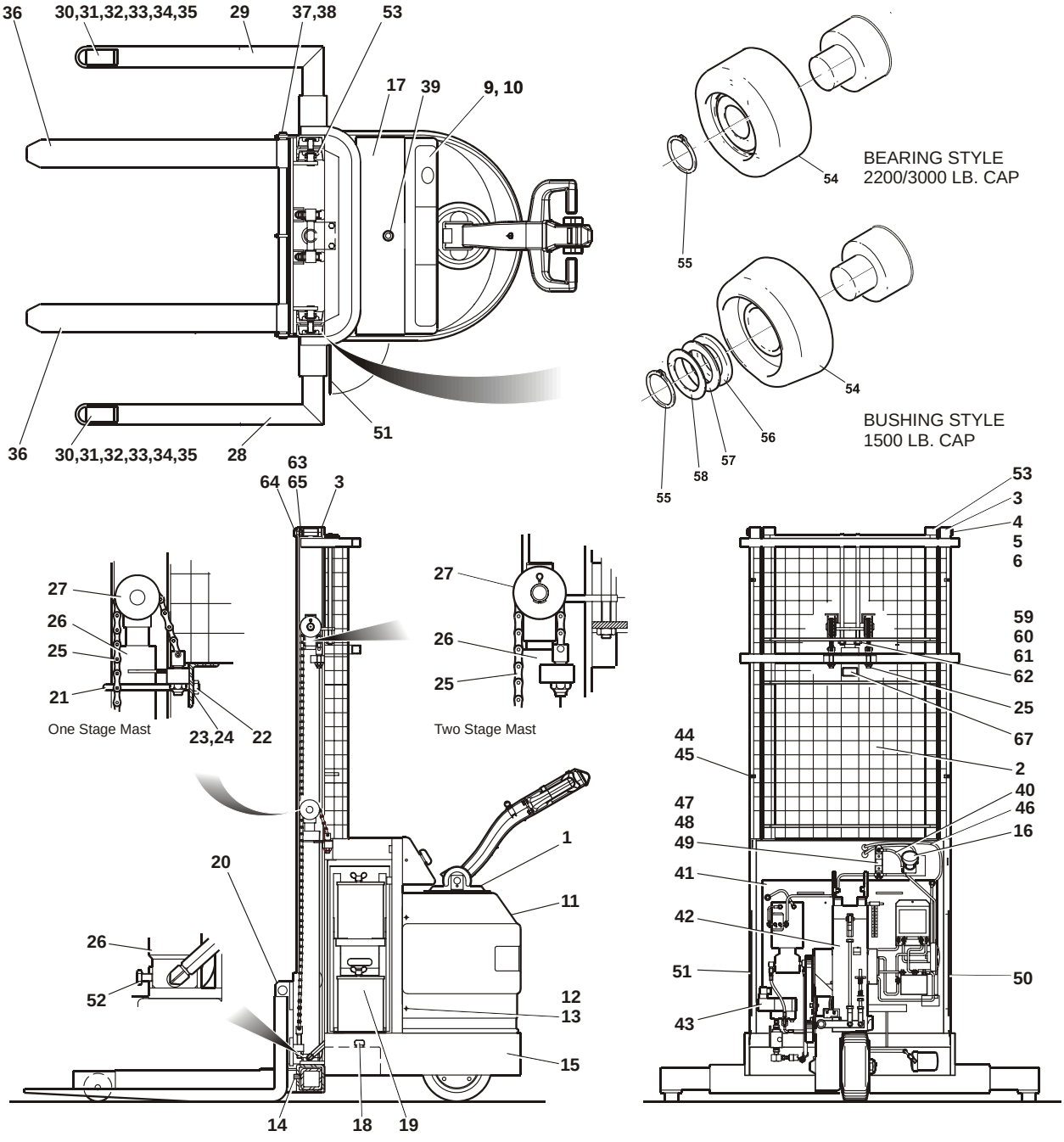

Figure 10 : General Assembly

General Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
25**	**2**	**163-5018**	**Chain Assembly**	**1500 - 52” lift**
25**	**2**	**163-5018-2**	**Chain Assembly**	**1500 - 72” lift**
25**	**2**	**163-5018-4**	**Chain Assembly**	**1500 - 90” lift**
25**	**2**	**163-5018-6**	**Chain Assembly**	**1500 - 110” lift**
25**	**2**	**163-5018-8**	**Chain Assembly**	**1500 - 130” lift**
25**	**2**	**163-5018-10**	**Chain Assembly**	**1500 - 150” lift**
25**	**2**	**163-5018-1**	**Chain Assembly**	**2200 / 3000 – 52” lift**
25**	**2**	**163-5018-3**	**Chain Assembly**	**2200 / 3000 – 72” lift**
25**	**2**	**163-5018-5**	**Chain Assembly**	**2200 / 3000 – 90” lift**
25**	**2**	**163-5018-7**	**Chain Assembly**	**2200 / 3000 – 110” lift**
25**	**2**	**163-5018-9**	**Chain Assembly**	**2200 / 3000 – 130” lift**
25**	**2**	**163-5018-11**	**Chain Assembly**	**2200 / 3000 – 150” lift**
26**	**1**	**783-510**	**Cylinder Assembly**	**1500 - 52” lift**
26**	**1**	**783-508**	**Cylinder Assembly**	**1500 - 72” lift**
26**	**1**	**783-507**	**Cylinder Assembly**	**1500 - 90” lift**
26**	**1**	**783-506**	**Cylinder Assembly**	**1500 - 110” lift**
26**	**1**	**783-504**	**Cylinder Assembly**	**1500 - 130” lift**
26**	**1**	**783-480**	**Cylinder Assembly**	**1500 - 150” lift**
26**	**1**	**783-598**	**Cylinder Assembly**	**2200 / 3000 – 52” lift**
26**	**1**	**783-596**	**Cylinder Assembly**	**2200 / 3000 – 72” lift**
26**	**1**	**783-490**	**Cylinder Assembly**	**2200 / 3000 – 90” lift**
26**	**1**	**783-489**	**Cylinder Assembly**	**2200 / 3000 – 110” lift**
26**	**1**	**783-487**	**Cylinder Assembly**	**2200 / 3000 – 130” lift**
26**	**1**	**783-485**	**Cylinder Assembly**	**2200 / 3000 – 150” lift**
27*	**1**	**783-926**	**Cross Head Assembly**	**1500 – 1 Stage**
27*	**1**	**783-927**	**Cross Head Assembly**	**1500 – 2 Stage**
27*	**1**	**783-929**	**Cross Head Assembly**	**2200 / 3000 - 1 Stage**
27*	**1**	**783-925**	**Cross Head Assembly**	**2200 / 3000 - 2 Stage**
28*	**1**	**192-5003-2**	**Assembly, Straddle - Left (Incl. Items 30-35)**	**1500**
28*	**1**	**192-5003-3**	**Assembly, Straddle – Left (Incl. Items 30-35)**	**2200 / 3000**
29*	**1**	**192-5002-2**	**Assembly, Straddle – Right (Incl. Items 30-35)**	**1500**
29*	**1**	**192-5003-3**	**Assembly, Straddle – Right (Incl. Items 30-35)**	**2200 / 3000**
30	2	104-000	Wheel, Straddle	1500 / 2200 / 3000
31	2	018-500	Bearing, Wheel	1500 / 2200 / 3000
32	2	799-944	Axle	1500 / 2200 / 3000
33	2	013-024	Pin, Cotter	1500 / 2200 / 3000
34	2	105-878	Washer, Flat - 3/4" x 1/16” THK.	1500 / 2200 / 3000
35	2	105-880	Washer, Flat - 3/4" x 1/8” THK.	1500 / 2200 / 3000

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General Assembly Parts List

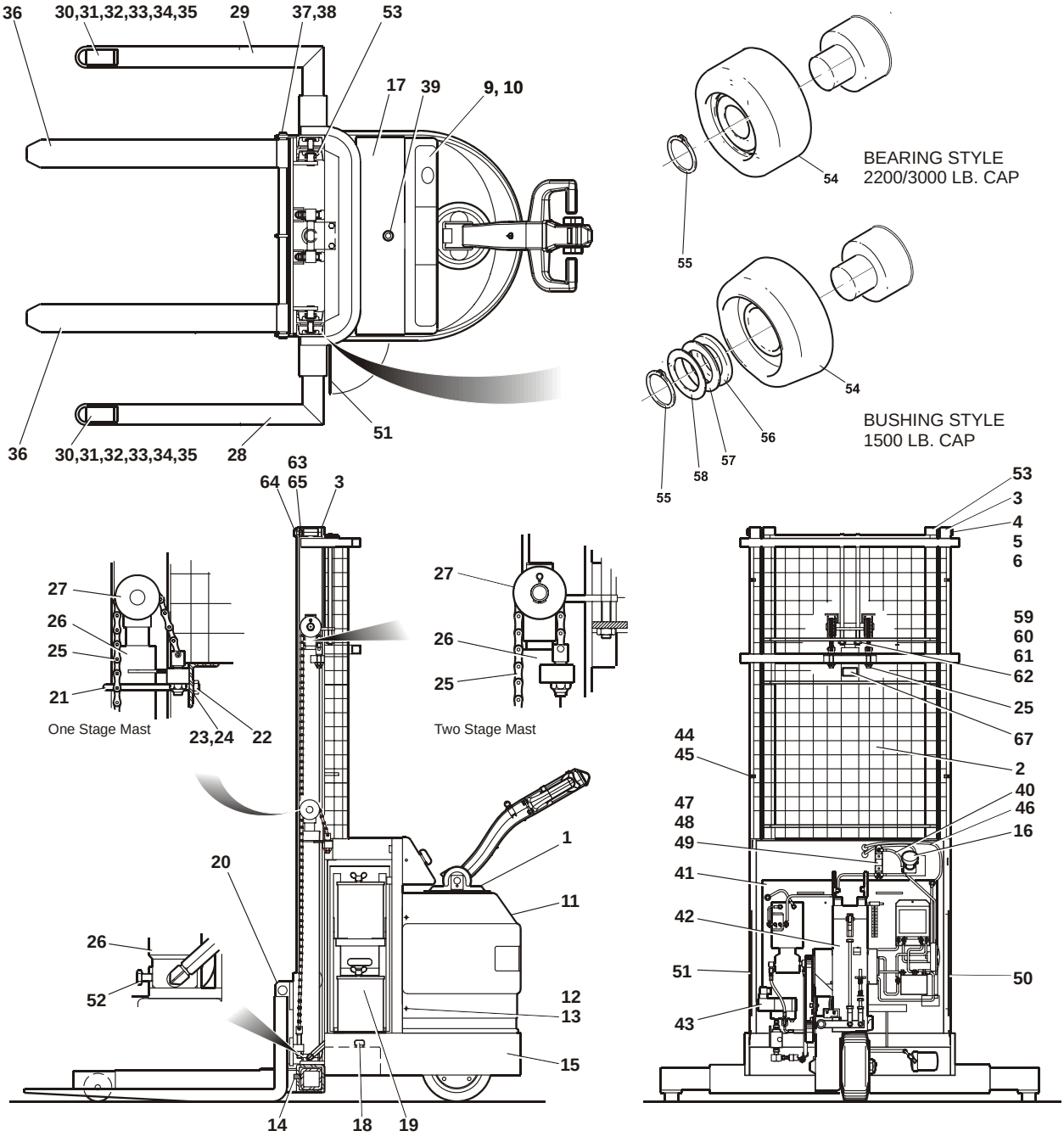

Figure 10 : General Assembly

General Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
36	2	783-963	Assembly, Forged Fork - 36”	1500 / 2200 / 3000
36	2	783-854	Assembly, Forged Fork - 42”	1500 / 2200 / 3000
36	2	783-853	Assembly, Forged Fork - 48”	1500 / 2200 / 3000
37	1	117-922	Bar, Fork	1500
37	1	120-454	Bar, Fork	2200 / 3000
38	2	013-026	Pin, Cotter	1500 / 2200 / 3000
39	1	037-065	Grommet, Rubber	1500 / 2200 / 3000
40	1	105-5000-3	Assembly, SB Connector Power Cable	1500 / 2200 / 3000
41**	**1**	**165-5006**	**Ass’y, Power Pack Control Panel**	**1500 / 2200 / 3000**
42**	**1**	**164-5035**	**Ass’y, Drive Unit**	**1500 / 2200 / 3000**
43**	**1**	**164-5037**	**Ass’y, Hydraulic System**	**1500 / 2200 / 3000**
44	4	011-124	Capscrew, Hex Hd - #10-24 x 1/4” LG.	1500 / 2200 / 3000
45	4	030-866	Clip	1500 / 2200 / 3000
46	1	783-569	Cable, #4 - 6” LG.	1500 / 2200 / 3000
47	1	783-424	Ass’y, Power Fuse Holder	1500 / 2200 / 3000
48	1	026-175	Fuse, 100A	1500 / 2200 / 3000
49	2	011-039	Screw, Machine – 1/4"-20 x 1”LG.	1500 / 2200 / 3000
50	1	780-170	Ass’y, Right Door (Battery Tray)	1500 / 2200 / 3000
51	1	780-169	Ass’y, Left Door (Battery Tray)	1500 / 2200 / 3000
52	1	010-039	Capscrew, Hex Hd. 3/8”-16 x 1”LG.	1500 / 2200 / 3000
53	1	163-5003	Weldment, Inner Mast	1500 - 90” lift
53	1	163-5003-1	Weldment, Inner Mast	1500 - 110” lift
53	1	163-5003-3	Weldment, Inner Mast	1500 - 130” lift
53	1	163-5003-5	Weldment, Inner Mast	1500 - 150” lift
53	1	163-5017	Weldment, Inner Mast	2200 / 3000 - 90” lift
53	1	163-5017-1	Weldment, Inner Mast	2200 / 3000 - 110” lift
53	1	163-5017-3	Weldment, Inner Mast	2200 / 3000 - 130” lift
53	1	163-5017-5	Weldment, Inner Mast	2200 / 3000 - 150” lift
54	4	792-344	Roller, Channel	1500 - 2 Stage
54	4	019-021	Roller, Channel	2200 / 3000 - 2 Stage
55	8	013-002	Ring, Retaining - 3/4” Shaft	1500 - 2 Stage
56	8	105-880	Washer - 3/4"x1-3/16”x1/8”	1500 - 2 Stage
57	8	105-879	Washer - 3/4"x1-3/16”x1/16”	1500 - 2 Stage
58	8	105-878	Washer - 3/4"x1-3/16”x1/32”	1500 - 2 Stage
59	2	117-746	Rod, Guide	1500 - 2 Stage
59	2	103-304	Rod, Guide	2200 / 3000 - 2 Stage
60	2	011-520	Nut, Hex ½"-20	1500 - 2 Stage
61	2	012-230	Washer, Lock - 1/2"	1500 – 2 Stage
62	2	011-533	Nut, Lock - 1/2"-20	1500 – 2 Stage
63	2	011-508	Nut, Hex – 1/2"-13	1500 – 2 Stage
64	2	010-042	Capscrew, Hex Hd. - 1/2"-13 x 1”LG.	1500 – 2 Stage
65	2	012-220	Washer, Lock - 1/2"	1500 – 2 Stage
66	1	107-942	Decal, “NO RIDING”	1500 / 2200 / 3000
67	1	117-529	Decal, “NO HANDS”	1500 / 2200 / 3000

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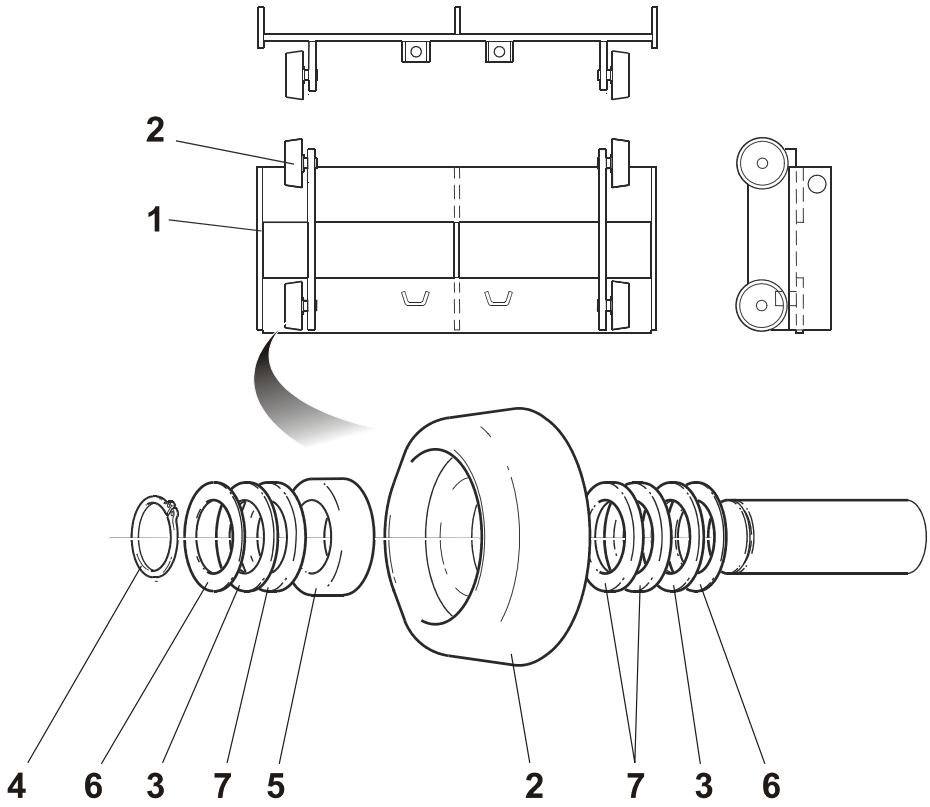
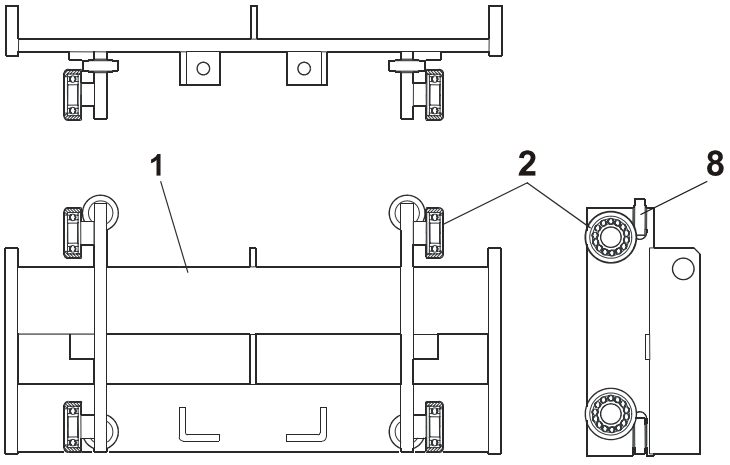
12.2 Carriage Assembly Parts List



CARRIAGE ASSEMBLY - 1500 lbs



CARRIAGE ASSEMBLY - 2200, 3000 lbs.

Figure 11 : Carriage Assemblies

Carriage Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
-	**1**	**783-901-1**	**Assembly, Carriage 28” Fork OD**	**1500 – 1 Stage**
-	**1**	**783-901-2**	**Assembly, Carriage 28” Fork OD**	**1500 – 2 Stage**
-	**1**	**183-5005**	**Assembly, Carriage 28” Fork OD**	**2200 / 3000 - 1 Stage**
-	**1**	**183-5010-2**	**Assembly, Carriage 28” Fork OD**	**2200 / 3000 - 2 Stage**
1	1	783-999-1	Carriage Weldment	1500 – 1 Stage
1	1	783-999-2	Carriage Weldment	1500 – 2 Stage
1	1	183-5006	Carriage Weldment	2200 / 3000 - 1 Stage
1	1	183-5009-2	Carriage Weldment	2200 / 3000 - 2 Stage
2	4	100-248	Carriage Roller - Bushing Style	1500 – 1 & 2 Stage
2	4	019-021	Carriage Roller - Ball Bearing Style	2200 – 1 & 2 Stage
2	4	019-021	Carriage Roller - Ball Bearing Style	3000 – 1 & 2 Stage
3	AR	105-879	Spacer Washer - 3/4" x 1-3/16" x 1/16"	1500
4	4	013-002	Retaining Ring - 3/4" DIA.	1500
5	4	018-500	Bearing	1500
6	AR	105-878	Spacer Washer - 1-3/16” OD x 3/4” ID x 1/32” THK	1500
7	AR	105-880	Spacer Washer - 3/4" x 1-3/16” x 1/8”	1500
8	4	183-5011	Side Thrust Roller	2200 / 3000

AR – As Required

12.3 Crosshead Assembly Parts List

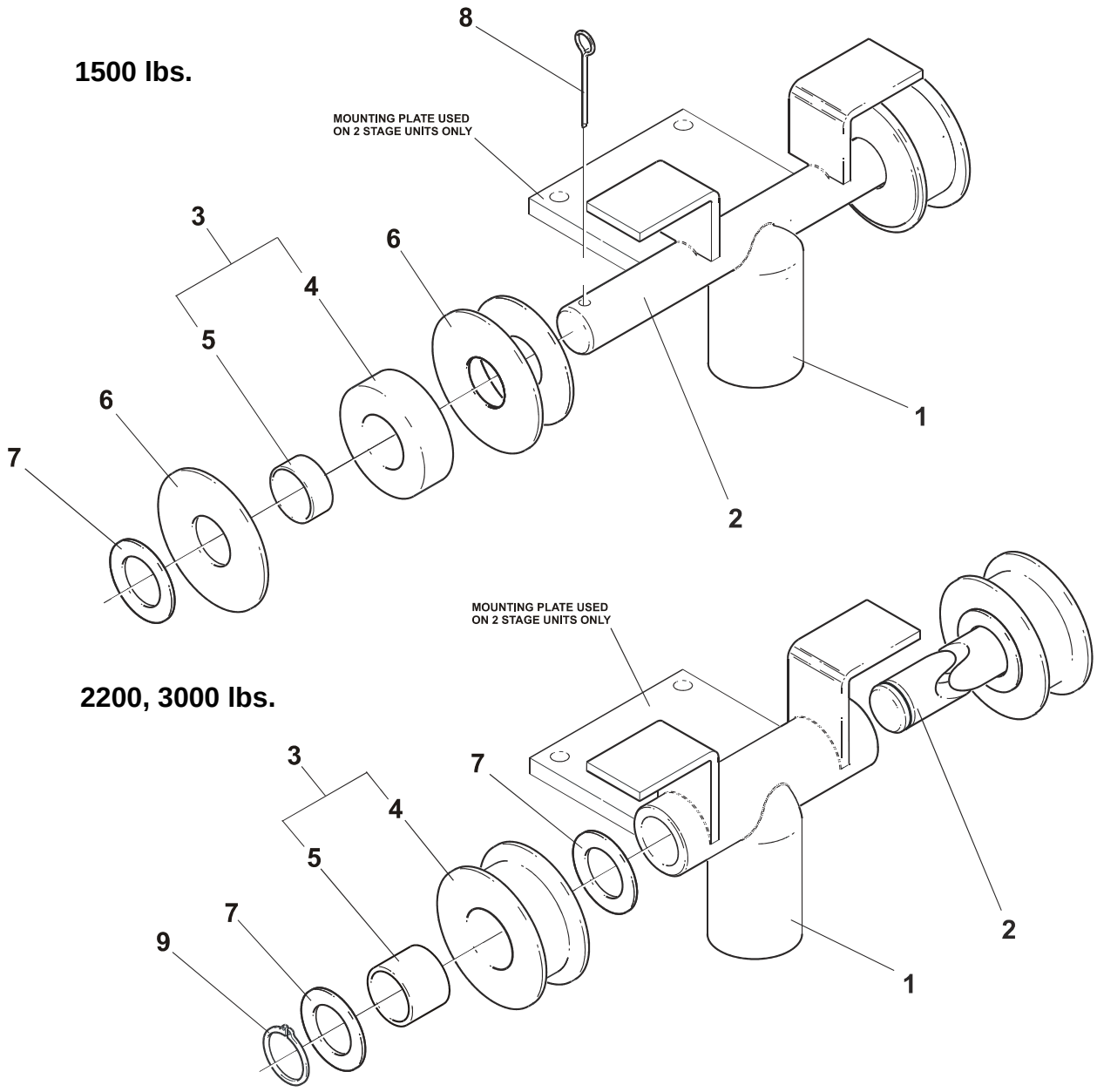


Figure 12 : Crosshead Assemblies

Crosshead Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
-	**-**	**783-926**	**Cross Head Assembly**	**1500 – 1 Stage**
-	**-**	**783-927**	**Cross Head Assembly**	**1500 – 2 Stage**
-	**-**	**783-929**	**Cross Head Assembly**	**2200 / 3000 - 1 Stage**
-	**-**	**783-925**	**Cross Head Assembly**	**2200 / 3000 - 2 Stage**
1	1	787-060	Cross Head Weldment	1500 – 1 Stage
1	1	784-427	Cross Head Weldment (c/w Mtg. Plate)	1500 – 2 Stage
1	1	783-928	Cross Head Weldment	2200 / 3000 - 1 Stage
1	1	783-968	Cross Head Weldment (c/w Mtg. Plate)	2200 / 3000 - 2 Stage
2	1	-	Cross Head Pin (Part of Weld't)	1500
2	1	117-723	Cross Head Pin	2200 / 3000
3	2	784-083	Chain Roller	1500
3	2	783-750	Chain Roller	2200 / 3000
4	2	100-089	Roller	1500
4	2	117-724	Roller	2200 / 3000
5	2	018-000	Bushing	1500
5	2	018-061	Bushing	2200 / 3000
6	4	104-013	Spacer Washer - 3"OD x 1"ID x 12G THK	1500
7	2	106-389	Spacer Washer - 1-3/4"OD x 1"ID x 1/16"THK	1500 / 2200 / 3000
8	2	013-025	Cotter Pin - DIA. 3/16 " x 1-1/2"LG	1500
9	2	013-034	Circlip - 1"	2200 / 3000

12.4 Chain Assembly

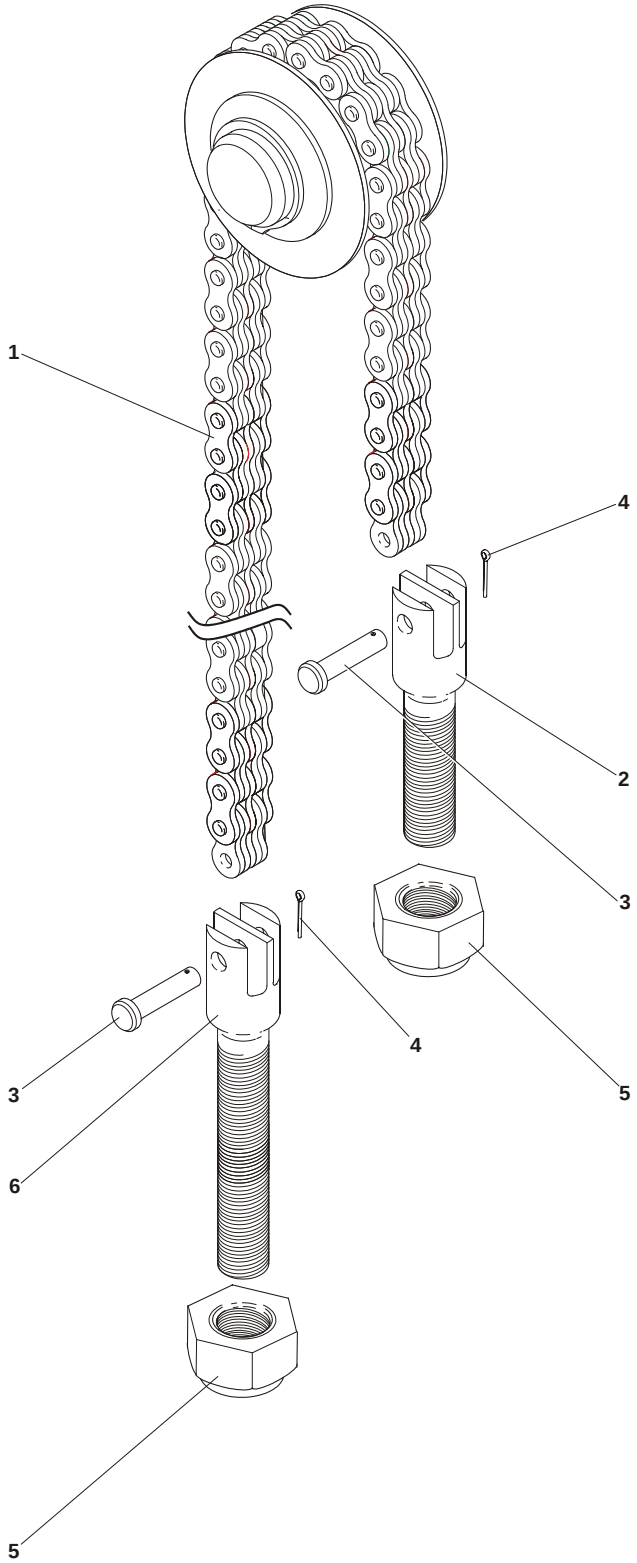


Figure 13 : Chain Assembly

Chain Assembly

Item	Qty	Part No	General Description	Specific Description
-	**-**	**163-5018**	**Chain Assembly**	**1500 - 52” lift**
-	**-**	**163-5018-2**	**Chain Assembly**	**1500 - 72” lift**
-	**-**	**163-5018-4**	**Chain Assembly**	**1500 - 90” lift**
-	**-**	**163-5018-6**	**Chain Assembly**	**1500 - 110” lift**
-	**-**	**163-5018-8**	**Chain Assembly**	**1500 - 130” lift**
-	**-**	**163-5018-10**	**Chain Assembly**	**1500 - 150” lift**
-	**-**	**163-5018-1**	**Chain Assembly**	**2200 / 3000 – 52” lift**
-	**-**	**163-5018-3**	**Chain Assembly**	**2200 / 3000 – 72” lift**
-	**-**	**163-5018-5**	**Chain Assembly**	**2200 / 3000 – 90” lift**
-	**-**	**163-5018-7**	**Chain Assembly**	**2200 / 3000 – 110” lift**
-	**-**	**163-5018-9**	**Chain Assembly**	**2200 / 3000 – 130” lift**
-	**-**	**163-5018-11**	**Chain Assembly**	**2200 / 3000 – 150” lift**
1	1	090-066-0384	Leaf Chain – 1/2" Pitch – 38-1/2”	1500 - 52” lift
1	1	090-066-0584	Leaf Chain – 1/2" Pitch – 58-1/2”	1500 - 72” lift
1	1	090-066-0554	Leaf Chain – 1/2" Pitch – 55-1/2”	1500 - 90” lift
1	1	090-066-0654	Leaf Chain – 1/2" Pitch – 65-1/2”	1500 - 110” lift
1	1	090-066-0754	Leaf Chain – 1/2" Pitch – 75-1/2”	1500 - 130” lift
1	1	090-066-0854	Leaf Chain – 1/2" Pitch – 85-1/2”	1500 - 150” lift
1	1	090-066-0394	Leaf Chain – 1/2" Pitch – 39-1/2”	2200 / 3000 – 52” lift
1	1	090-066-0594	Leaf Chain – 1/2" Pitch – 59-1/2”	2200 / 3000 – 72” lift
1	1	090-066-0584	Leaf Chain – 1/2" Pitch – 58-1/2”	2200 / 3000 – 90” lift
1	1	090-066-0684	Leaf Chain – 1/2" Pitch – 68-1/2”	2200 / 3000 – 110” lift
1	1	090-066-0784	Leaf Chain – 1/2" Pitch – 78-1/2”	2200 / 3000 – 130” lift
1	1	090-066-0884	Leaf Chain – 1/2" Pitch – 88-1/2”	2200 / 3000 – 150” lift
2	1	100-061	Clevis, 5/8”-11 x 3” LG. (Frame End)	1500/2200/3000 - 1 Stg.
2	1	100-061	Clevis, 5/8”-11 x 3” LG. (Frame End)	1500/2200/3000- 2 Stg.
3	2	100-062	Pin	1500 / 2200 / 3000
4	2	013-015	Pin, Cotter	1500 / 2200 / 3000
5	2	011-501	Nut, Huglock – 5/8”-11	1500 / 2200 / 3000
6	1	100-061	Clevis, 5/8”-11 x 3” LG. (Carriage End)	1500/2200/3000 - 1Stg.
6	1	103-951	Clevis, 5/8”-11 x 4-1/2” LG. (Carriage End)	1500/2200/3000- 2 Stg.

12.5 Lift Cylinder Assembly

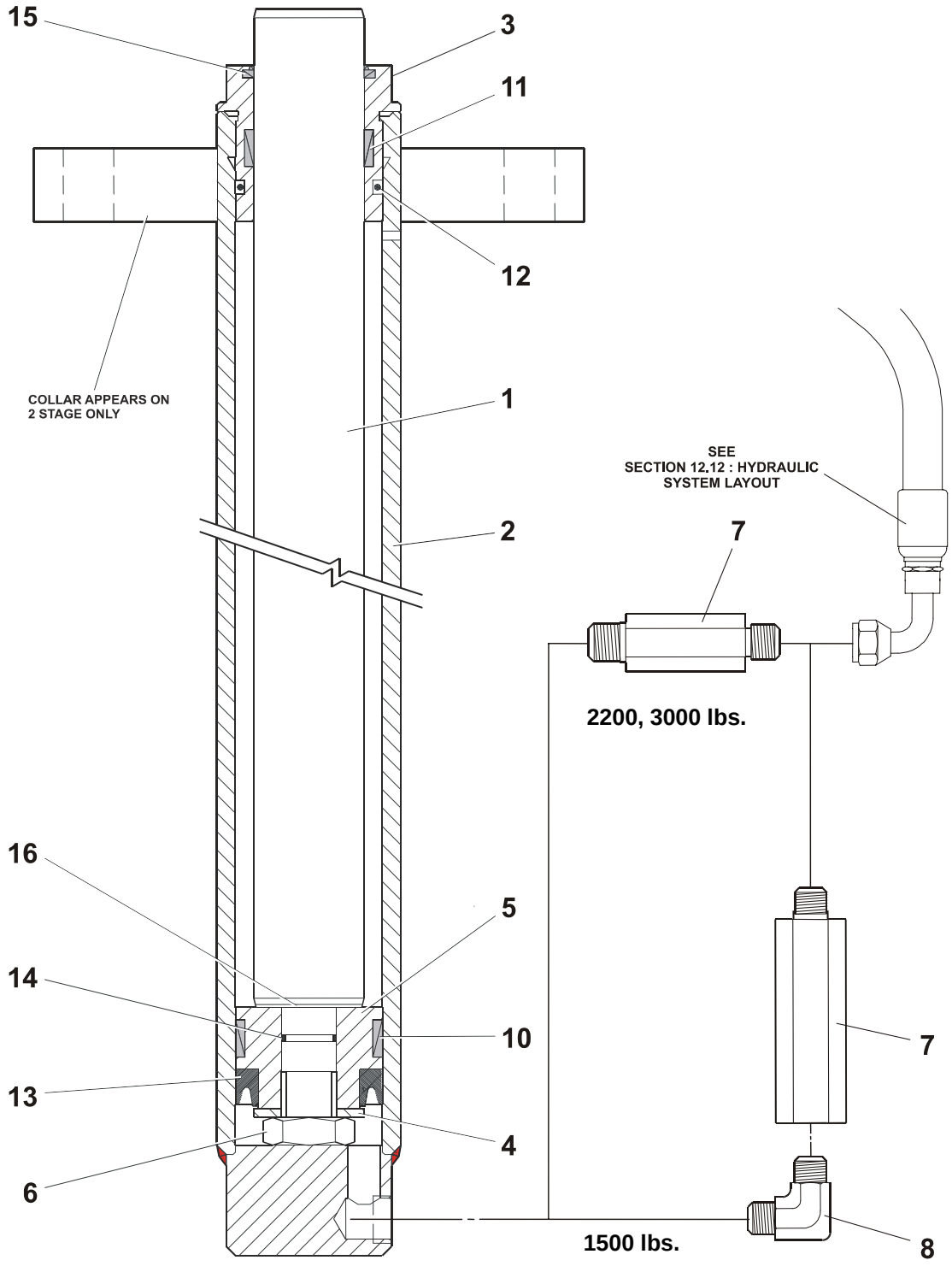


Figure 14 : Lift Cylinder Assembly

LIFTCylinder Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
-	**-**	**786-717B**	**Cylinder - 2” ID w/1-1/2” Rod**	
-	**-**	**783-510**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 52” lift**
-	**-**	**783-508**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 72” lift**
-	**-**	**783-507**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 90” lift**
-	**-**	**783-506**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 110” lift**
-	**-**	**783-504**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 130” lift**
-	**-**	**783-480**	**Cylinder Ass’y, 2” ID w/1-1/2” Rod**	**1500 - 150” lift**
		786-718B	**Cylinder - 2-1/2” ID w/1-1/2” Rod**	
-	**-**	**783-598**	**Cylinder Ass’y, 2-1/2” ID w/1-1/2” Rod**	**2200 / 3000 – 52” lift**
-	**-**	**783-596**	**Cylinder Ass’y, 2-1/2” ID w/1-1/2” Rod**	**2200 / 3000 – 72” lift**
		783-731B	**Cylinder - 2-1/2” ID w/2” Rod**	
-	**-**	**783-490**	**Cylinder Ass’y, 2-1/2” ID w/2” Rod**	**2200 / 3000 – 90” lift**
-	**-**	**783-489**	**Cylinder Ass’y, 2-1/2” ID w/2” Rod**	**2200 / 3000 – 110” lift**
-	**-**	**783-487**	**Cylinder Ass’y, 2-1/2” ID w/2” Rod**	**2200 / 3000 – 130” lift**
-	**-**	**783-485**	**Cylinder Ass’y, 2-1/2” ID w/2” Rod**	**2200 / 3000 – 150” lift**
1	1	114-800	Ram, 1-1/2" Rod, 52” Lift, 25-3/4” Stroke	1500 - 52” lift
1	1	114-802	Ram, 1-1/2" Rod, 72” Lift, 42-3/4” Stroke	1500 - 72” lift
1	1	114-804	Ram, 1-1/2" Rod, 90” Lift, 50-3/4” Stroke	1500 - 90” lift
1	1	114-805	Ram, 1-1/2" Rod, 110” Lift, 60-3/4” Stroke	1500 - 110” lift
1	1	114-807	Ram, 1-1/2" Rod, 130” Lift, 70-3/4” Stroke	1500 - 130” lift
1	1	114-809	Ram, 1-1/2" Rod, 150” Lift, 80-3/4” Stroke	1500 - 150” lift
1	1	114-800	Ram, 1-1/2" Rod, 52” Lift, 25-3/4” Stroke	2200 / 3000 – 52” lift
1	1	114-802	Ram, 1-1/2" Rod, 72” Lift, 42-3/4” Stroke	2200 / 3000 – 72” lift
1	1	114-816	Ram, 2” Rod, 90” Lift, 50-3/4” Stroke	2200 / 3000 – 90” lift
1	1	114-817	Ram, 2” Rod, 110” Lift, 60-3/4” Stroke	2200 / 3000 – 110” lift
1	1	114-819	Ram, 2” Rod, 130” Lift, 70-3/4” Stroke	2200 / 3000 – 130” lift
1	1	114-821	Ram, 2” Rod, 150” Lift, 80-3/4” Stroke	2200 / 3000 – 150” lift
2	1	783-526	Assembly, Housing - 2” ID	1500 - 52” lift
2	1	783-524	Assembly, Housing - 2” ID	1500 - 72” lift
2	1	783-522	Assembly, Housing - 2” ID	1500 - 90” lift
2	1	783-521	Assembly, Housing - 2” ID	1500 - 110” lift
2	1	783-519	Assembly, Housing - 2” ID	1500 - 130” lift
2	1	783-517	Assembly, Housing - 2” ID	1500 - 150” lift
2	1	783-590	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 52” lift
2	1	783-471	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 72” lift
2	1	783-516	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 90” lift
2	1	783-520	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 110” lift
2	1	783-518	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 130” lift
2	1	783-511	Assembly, Housing - 2-1/2” ID	2200 / 3000 – 150” lift
3	1	118-365	Nut, Head - 2” Dia.	1500
3		118-387	Nut, Head - 2-1/2” Dia. (1-1/2” Rod)	2200 / 3000 - 1 Stage
3		118-362	Nut, Head - 2-1/2” Dia. (2” Rod)	2200 / 3000 - 2 Stage
4	1	114-976	Washer, Piston - 2” Dia.	1500
4		114-977	Washer, Piston - 2-1/2” Dia.	2200 / 3000
5	1	113-542	Piston - 2” Dia.	1500 / 2200 / 3000
5		113-629	Piston - 2-1/2” Dia.	2200 / 3000
6	1	011-530	Nut, Huglock - 3/4"	1500 / 2200 / 3000
7	1	033-663	Fuse, Velocity - 7.5 GPM	1500
7	1	033-837	Fuse, Velocity - 7.5 GPM (3.28” LG.)	2200 / 3000
8	1	034-515	Fitting, Elbow - 90° - 1/4" Pipe	1500 / 2200 / 3000

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Lift Cylinder Assembly

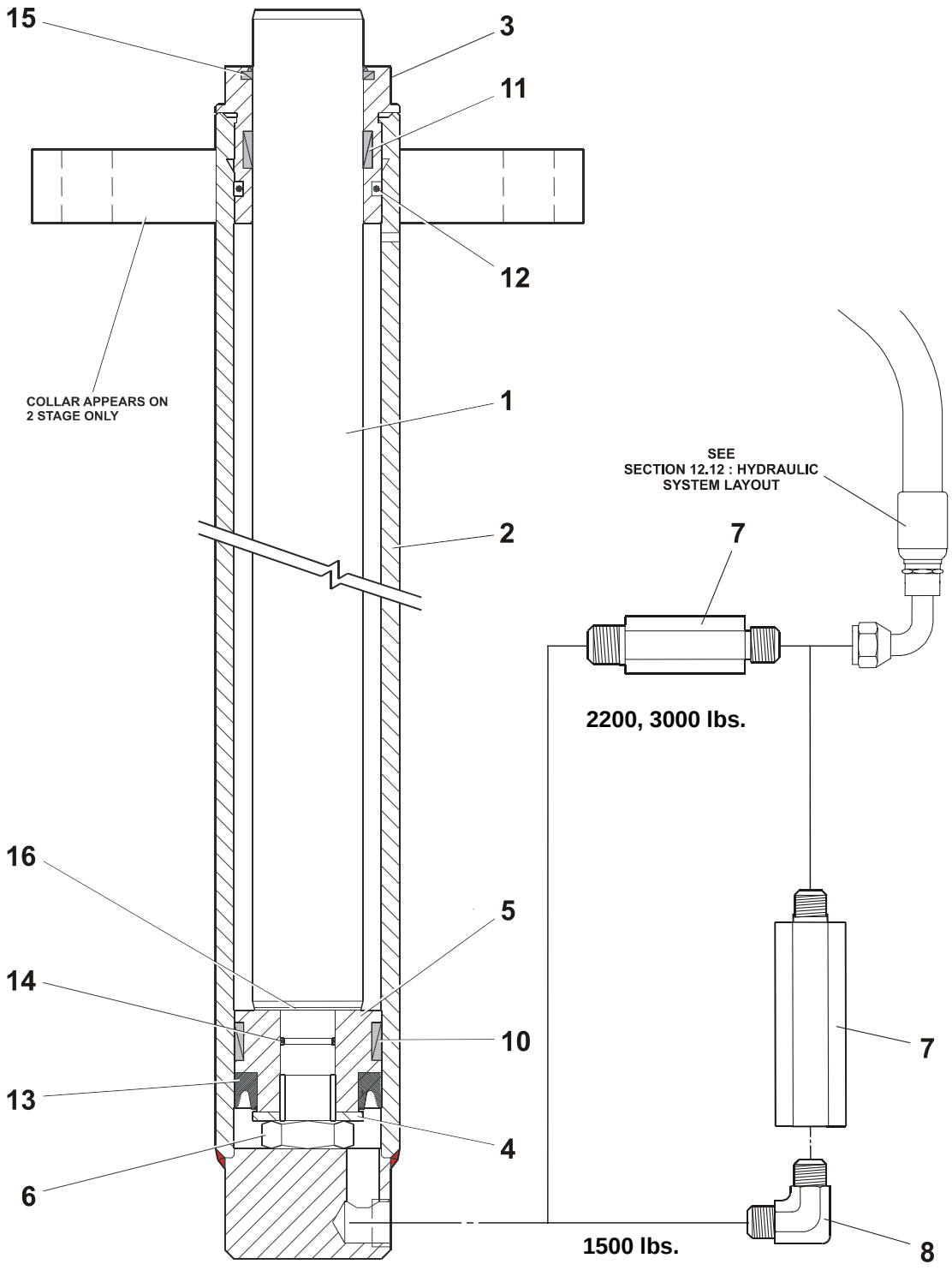

Figure 15 : Lift Cylinder Assembly

Lift Cylinder Assembly Parts List

Item	Qty	Part No	General Description	Specific Description
9*	**1**	**783-535**	**Kit, Seal - 2” Dia (Includes Items 10-16)**	**1500 / 2200 / 3000**
9*	**1**	**783-538**	**Kit, Seal - 2-1/2” Dia. (Incl. Items 10-16)**	**2200 / 3000 - 1 Stage**
9*	**1**	**783-550**	**Kit, Seal - 2-1/2” Dia. (Incl. Items 10-16)**	**2200 / 3000 - 2 Stage**
10	1	036-152	Ring, Wear - 2”	1500
10	1	036-153	Ring, Wear - 2-1/2”	2200 / 3000
11	1	036-143	Ring, Wear - (1-1/2” Rod)	1500 / 2200 / 3000-1 Stg
11	1	036-150	Ring, Wear - (2” Rod)	2200 / 3000 – 2 Stg
12	1	036-134	“O”-Ring - 2”	1500
12	1	036-133	“O”-Ring - 2-1/2”	2200 / 3000
13	1	036-118	“U”-Cup - 2”	1500 / 2200 / 3000-1 Stg
13	1	036-119	“U”-Cup - 2-1/2”	2200 / 3000 – 2 Stg
14	1	036-108	“O”-Ring	1500 / 2200 / 3000
15	1	036-098	Wiper, Rod - (1-1/2” Rod)	1500 / 2200 / 3000-1 Stg
15	1	036-021	Wiper, Rod - (2” Rod)	2200 / 3000 – 2 Stg
16	1	118-368	Gasket - (1-1/2” Rod)	1500 / 2200 / 3000-1 Stg
16	1	117-993	Gasket - (2” Rod)	2200 / 3000 – 2 Stg

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12.6 Power Pack Assembly

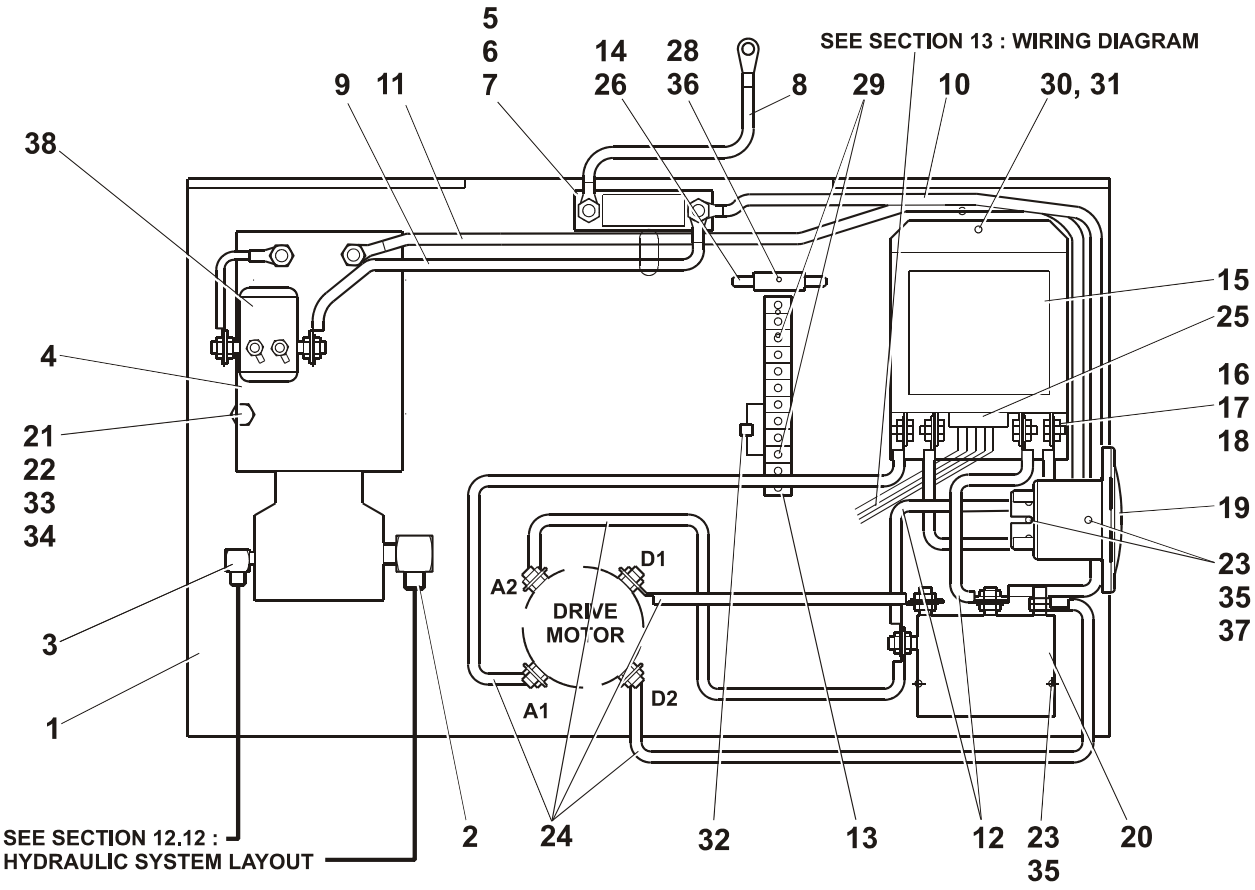

Figure 16 : Power Pack Assembly

Item	Qty	Part No.	General Description	Specific Description
-	**-**	**165-5006**	**Ass'y, Power Pack Control Panel (Rev. F)**	**1500 / 2200 / 3000**
1	1	162-0018	Panel, Steel 12 Gauge - Power Pack	1500 / 2200 / 3000
2	1	034-602	Fitting, Elbow 90° - 3/4"-16MJ - 1/4"-18MP	1500 / 2200 / 3000
3	1	034-511	Fitting, Elbow 90° - 5 - 4	1500 / 2200 / 3000
4	1	033-105	Assembly, Pump and Motor	1500 / 2200 / 3000
5	1	783-424	Holder, Fuse	1500 / 2200 / 3000
6	1	026-175	Fuse, Power – 100A ACK	1500 / 2200 / 3000
7	1	011-039	Capscrew, Screw, Flat Socket - 1/4"-20 X 1"	1500 / 2200 / 3000
8	1	780-481-2	Cable, #4, 20" LG. 2-5/16" Studs (780-481)	1500 / 2200 / 3000
9	1	780-246	Cable, #4, 12" LG. 2-5/16" Studs (780-481)	1500 / 2200 / 3000
10	1	165-5010-1	Cable,#4,23"LG,1-3/8"(116-163),1-5/16"Stud	1500 / 2200 / 3000
11	1	165-5010-2	Cable,#4,34" LG,1-3/8"(116-163),1-5/16"Stud	1500 / 2200 / 3000
12	2	165-5010	Cable,#4,9" LG. 1-3/8"(116-163),1-5/16"Stud	1500 / 2200 / 3000
13	1	030-091	Strip, Terminal (12 Pole)	1500 / 2200 / 3000

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Power Pack Assembly Parts List

Item	Qty	Part No.	General Description	Specific Description
14	1	026-211	Holder, Fuse	1500 / 2200 / 3000
15	1	026-507-1	Controller, 24V	1500 / 2200 / 3000
16	3	010-037	Capscrew, Hex - 5/16” -18 X 3/4"	1500 / 2200 / 3000
17	3	011-502	Nut, Hex - 5/16”-18 x 3/4” LG.	1500 / 2200 / 3000
18	3	012-200	Washer, Lock - 5/16”	1500 / 2200 / 3000
19	1	032-458	Horn, 24V	1500 / 2200 / 3000
20	1	025-974	Contactor, Fwd/Rev – 24V	1500 / 2200 / 3000
21	4	010-039	Capscrew, Hex - 3/8”-16 x 1" LG.	1500 / 2200 / 3000
22	8	012-211	Washer, Flat 5/16”	1500 / 2200 / 3000
23	4	011-008	Screw, Machine R/H Slot -#10-32 X 3/8" LG.	1500 / 2200 / 3000
24	4	116-163	Cable, #4 - 36” LG.	1500 / 2200 / 3000
25	1	026-513	Harness, Wiring - 10 Wire, 18 GA x 19” LG.	1500 / 2200 / 3000
26	1	026-146	Fuse, Control - 6A - 1/4” x 1-1/4” - Glass	1500 / 2200 / 3000
27	1	030-032	Clip, “P” - #3	1500 / 2200 / 3000
28	1	011-002	Screw, Machine R/H Slot - #6-32 X 1/2"	1500 / 2200 / 3000
29	2	011-003	Screw, Machine R/H Slot - #6-32 X 1"	1500 / 2200 / 3000
30	3	010-072	Capscrew, Hex - 1/4"-20 x 1/2"	1500 / 2200 / 3000
31	3	012-202	Washer, Lock - 1/4" Helical	1500 / 2200 / 3000
32	1	026-402	Diode, Wire Lead 6 Amp. - 100V	1500 / 2200 / 3000
33	4	011-507	Nut, Hex - 3/8” - 16	1500 / 2200 / 3000
34	4	012-201	Washer, Lock - 3/8” Helical	1500 / 2200 / 3000
35	4	012-225	Washer, Lock - #10 Internal Tooth	1500 / 2200 / 3000
36	1	012-223	Washer, Lock - #6 Internal Tooth	1500 / 2200 / 3000
37	2	011-516	Nut, Hex - #10 - 32	1500 / 2200 / 3000
38	1	025-717	Solenoid 24VDC	1500 / 2200 / 3000

12.7 Drive Unit Assembly

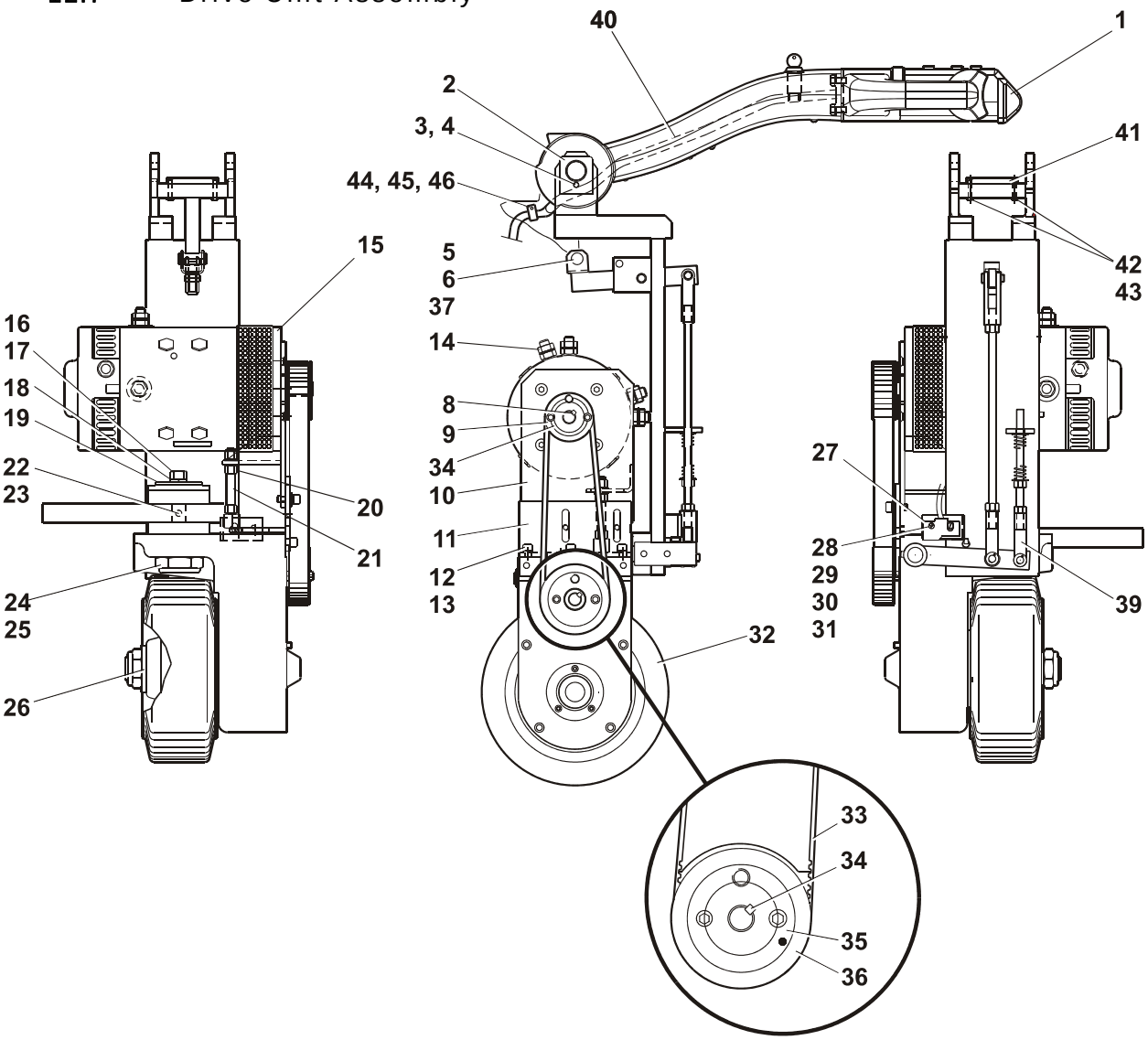

Figure 17 : Drive Unit Assembly

Item	Qty	Part No.	General Description	Specific Description
-		**164-5035**	**Ass'y, Drive Unit**	1500 / 2200 / 3000
1**	**1**	**200-01481**	**Control Handle Ass'y**	1500 / 2200 / 3000
2	1	200-01478	Pivot Pin Ass'y	1500 / 2200 / 3000
3	2	010-000	Capscrew, Hex 1/4"-20 X 3/4"	1500 / 2200 / 3000
4	2	012-202	Washer, Lock -1/ 4"	1500 / 2200 / 3000
5	1	164-0006	Pin, Cam Follower	1500 / 2200 / 3000
6	1	018-100	Bushing	1500 / 2200 / 3000
7	4	011-066	Capscrew, Hex Socket 5/16" -18 x 3/4"	1500 / 2200 / 3000

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Drive Unit Assembly

Item	Qty	Part No.	General Description	Specific Description
8	1	018-072	Bushing, Taperlock	1500 / 2200 / 3000
9	1	021-315	Pulley, Timing	1500 / 2200 / 3000
10	1	781-748	Bracket, Motor	1500 / 2200 / 3000
11	1	781-734	Bracket, Motor Pivot	1500 / 2200 / 3000
12	6	011-060	Capscrew, Hex Socket 5/16” -18 x 3/4"	1500 / 2200 / 3000
13	4	012-291	Washer, Lock - 5/16”	1500 / 2200 / 3000
14	4	037-021	Protector, Terminal	1500 / 2200 / 3000
15	1	907-0022	Motor, Drive - 24V-1HP (Brush Set - 030-885)	1500 / 2200 / 3000
16	1	013-005	Pin, Spring 5/32” x 1”	1500 / 2200 / 3000
17	1	010-057	Capscrew, 5/8” - 11 x 1-1/2”	1500 / 2200 / 3000
18	1	012-221	Washer, Lock - 5/8”	1500 / 2200 / 3000
19	1	120-321	Washer, Center Pin	1500 / 2200 / 3000
20	3	011-508	Nut, Hex - 1/ 2” - 13	1500 / 2200 / 3000
21	1	120-279	Rod, Threaded – 1/2” -13 x 3-5/8”	1500 / 2200 / 3000
22	1	019-500	Nipple, Grease	1500 / 2200 / 3000
23	1	018-507	Bearing, Cone	1500 / 2200 / 3000
24	1	120-318	Pin, Center	1500 / 2200 / 3000
25	1	011-599	Nut, Lock - 1-1/2 “ - 12	1500 / 2200 / 3000
26	1	111-653	Washer, Flat - 1.265”ID x 1/4” THK	1500 / 2200 / 3000
27	1	105-5001	Switch and Cable Ass’y	1500 / 2200 / 3000
28	2	011-003	Screw, Machine - #6-32 x 1”	1500 / 2200 / 3000
29	2	012-208	Washer, Flat – 3/16”	1500 / 2200 / 3000
30	2	012-223	Washer, Flat - #6 Int.Tooth	1500 / 2200 / 3000
31	2	011-514	Nut, Hex - #6 - 32	1500 / 2200 / 3000
32	1	780-864	Tire, Drive Ass’y -(020-048-Tire Only)	1500 / 2200 / 3000
33	1	021-317	Belt, Drive	1500 / 2200 / 3000
34	2	104-355	Key, Motor Shaft - 3/16” x 1”	1500 / 2200 / 3000
35	1	018-084	Bushing, Taperlock - 5/8” Shaft	1500 / 2200 / 3000
36	1	021-316	Pulley, Timing	1500 / 2200 / 3000
37	2	013-033	Ring, Retaining 5/8” OD	1500 / 2200 / 3000
38	1	030-865	Sleeve, Expandable Braided	1500 / 2200 / 3000
39**	**1**	**164-5001**	**Linkage Ass’y, Brake**	1500 / 2200 / 3000
40	1	164-7003	Harness	1500 / 2200 / 3000
41	1	200-01475	Bumper, Rubber	1500 / 2200 / 3000
42	2	011-181	Screw, Mach. Flat Hd - #8-32 x 1-1/4"	1500 / 2200 / 3000
43	2	011-515	Nut, Hex - #8 x 32	1500 / 2200 / 3000
44	1	30H21	Clamp, Cable - 3/8” x 1/2" Wide	1500 / 2200 / 3000
45	1	011-005	Screw, Machine Slot #8-32 x 1/2"	1500 / 2200 / 3000
46	1	012-205	Washer, Flat - #8	1500 / 2200 / 3000

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12.8 Control Handle Assembly

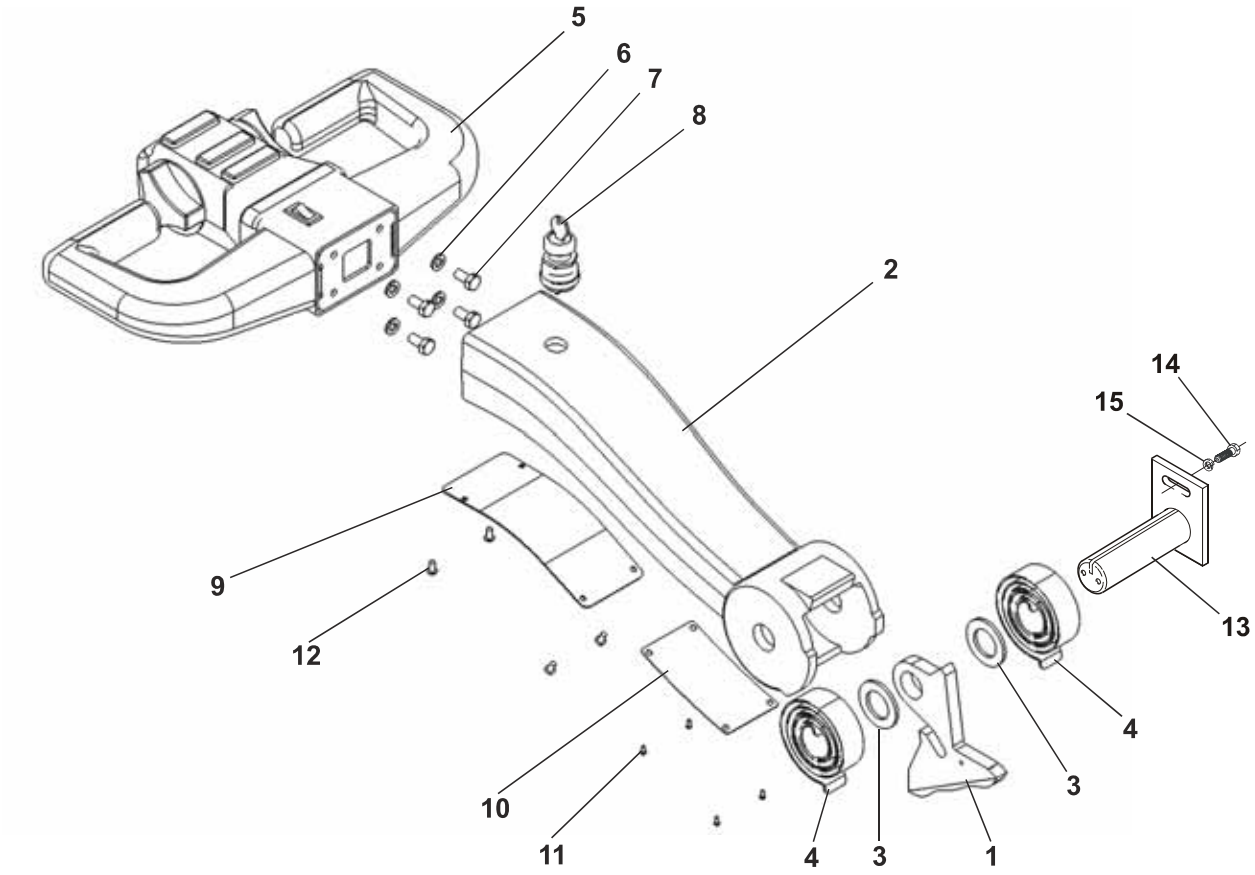

Figure 18 : Control Handle Assembly

Control Handle Assembly

Item	Qty	Part No.	General Description	Specific Description
-	**-**	**200-01481**	**Ass'y, Control Handle**	1500 / 2200 / 3000
1	1	200-01476	Cam, Machined	1500 / 2200 / 3000
2	1	200-01483	Stem, Handle Machined	1500 / 2200 / 3000
3	2	012-245	Washer, Spacer-1"IDx1-3/4"ODx1/8"THK	1500 / 2200 / 3000
4	2	017-075	Spring, Torsion – 3/32" x 3-1/16OD	1500 / 2200 / 3000
5**	**1**	**281-9451**	**Ass'y, Control Handle Switch - 24V**	1500 / 2200 / 3000
6	4	012-200	Washer, Lock 5/16" – Helical	1500 / 2200 / 3000
7	4	010-188	Capscrew, Hex Hd. – M8 x 16mm	1500 / 2200 / 3000
8	1	234-5332	Switch, Key #31-613	1500 / 2200 / 3000
9	1	200-00165	Plate, Handle Stem Cover	1500 / 2200 / 3000
10	1	120-0001	Plate, Vertical – Serial Number	1500 / 2200 / 3000
11	4	011-000	Screw, Type U - #4 x 5/16"	1500 / 2200 / 3000
12	4	011-010	Screw, Machine RH Slot - #10-24 x 3/8"	1500 / 2200 / 3000
13	1	200-01478	Assembly, Pivot Pin (Splined)	1500 / 2200 / 3000
14	2	010-000	Capscrew, Hex 1/4"-20 x 3/4"	1500 / 2200 / 3000
15	2	012-202	Washer, Lock -1/ 4"	1500 / 2200 / 3000

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12.9 Control Head Assembly

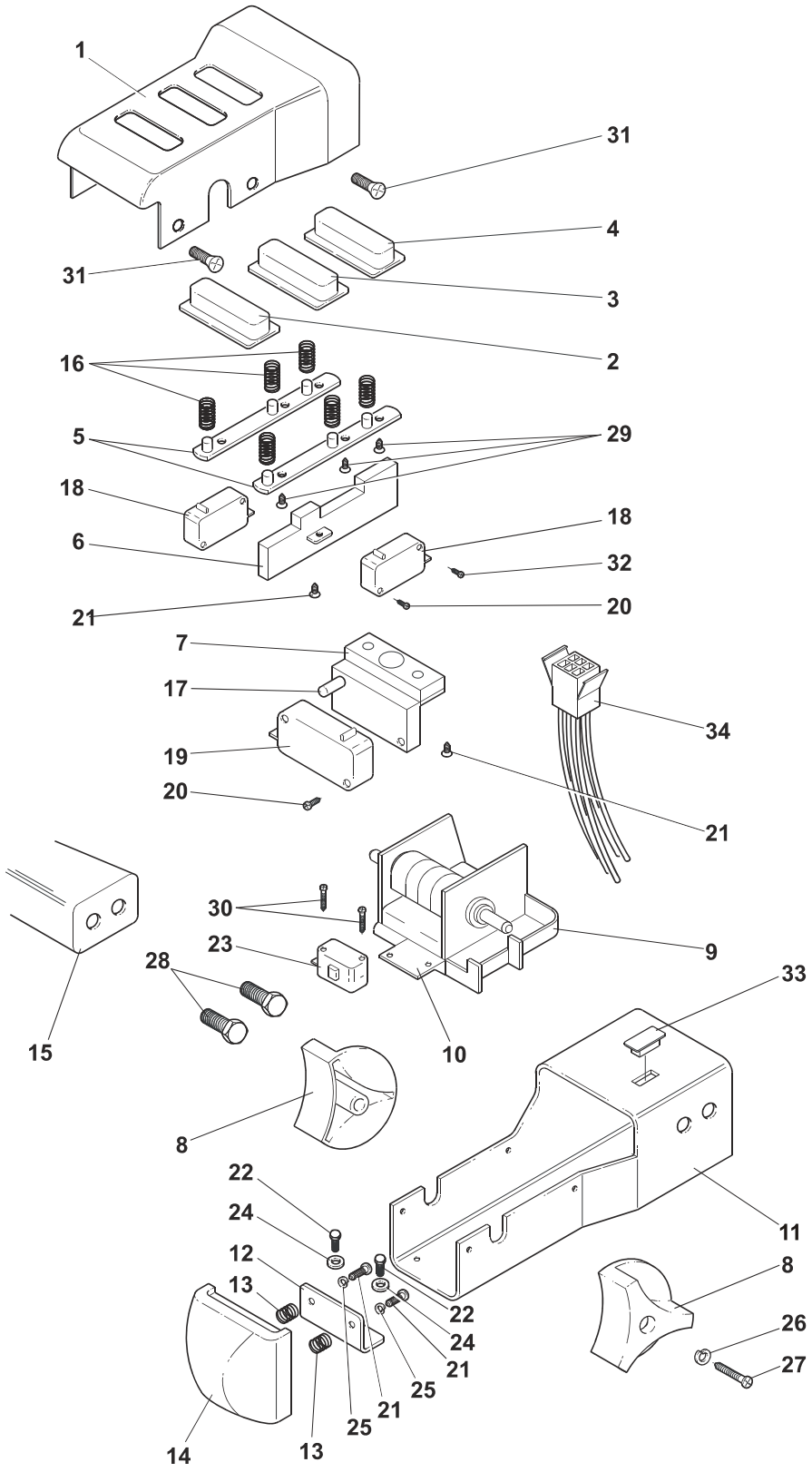

Figure 19 : Control Head Assembly

Control Head Assembly

Item	Qty	Part No.	Description	Specific Description
-	**-**	**281-9451**	**Assy, Control Head - 24V**	1500 / 2200 / 3000
1	1	929-442	Cover, Plastic	1500 / 2200 / 3000
1	1	907-0184	Cover, Plastic	1500 / 2200 / 3000
2	1	929-443	Button, LIFT	1500 / 2200 / 3000
3	1	929-444	Button, LOWER	1500 / 2200 / 3000
4	1	929-445	Button, HORN	1500 / 2200 / 3000
5	2	929-446	Bracket, Spring Retaining	1500 / 2200 / 3000
6	1	929-441	Bracket, LOWER / HORN Switch	1500 / 2200 / 3000
7	1	929-465	Bracket, LIFT SWITCH c/w Pin	1500 / 2200 / 3000
8	2	929-461	Thumbwheel, Butterfly (Black)	1500 / 2200 / 3000
9	1	929-452	Throttle, Electronic - 24V	1500 / 2200 / 3000
10	1	929-464	Bracket, Throttle Support	1500 / 2200 / 3000
10	1	930-805	Bracket, Throttle Support	1500 / 2200 / 3000
11	1	929-451	Housing	1500 / 2200 / 3000
12	1	929-458	Bracket, Emergency Reverse	1500 / 2200 / 3000
13	2	929-455	Spring, Emergency Reverse Button	1500 / 2200 / 3000
14	1	929-457	Button, Emergency Reverse	1500 / 2200 / 3000
15	2	929-450	Grip	1500 / 2200 / 3000
16	6	929-447	Spring, Lift / Lower / Horn Button	1500 / 2200 / 3000
17	1	N/A	Pin, Lift Switch (included with #7)	1500 / 2200 / 3000
18	2	929-437	Switch, Lower / Horn	1500 / 2200 / 3000
19	1	929-438	Switch, Lift	1500 / 2200 / 3000
20	4	929-439	Screw, Switch Mounting - #3 x 16 Phillips Pan Hd.	1500 / 2200 / 3000
21	5	929-453	Screw, E/R & Switch Bracket Mounting - #6 x 3/8” Slot Pan Hd.	1500 / 2200 / 3000
22	2	3GM-506	Capscrew, E/R Bracket - #10-32 x 1/4" Hex Hd.	1500 / 2200 / 3000
23	1	929-462	Switch, E/R	1500 / 2200 / 3000
24	2	1EM-50E	Washer, Flat - E/R Bracket - #10	1500 / 2200 / 3000
25	2	929-456	Washer, Wide, E/R Bracket - #3 x 08 THK.	1500 / 2200 / 3000
26	2	10E-M30	Washer, Lock - Star #4 Ext.	1500 / 2200 / 3000
27	2	13G-M3010	Screw, Throttle - #4-48 x 1/2” Pan Hd.	1500 / 2200 / 3000
28	2 – 4	3GM-812	Screw, Grip	1500 / 2200 / 3000
29	6	929-454	Screw, Button Spring Bracket – M3 x 10	1500 / 2200 / 3000
30	2	929-463	Screw, Emergency Reverse Switch	1500 / 2200 / 3000
31	4	929-448	Screw, Cover	1500 / 2200 / 3000
32	1	929-440	Screw, Horn Switch Mounting	1500 / 2200 / 3000
33	1	025-998	Plug (Grommet)	1500 / 2200 / 3000
34	1	929-460	Harness, Wire	1500 / 2200 / 3000

12.10 Brake Linkage Arrangement

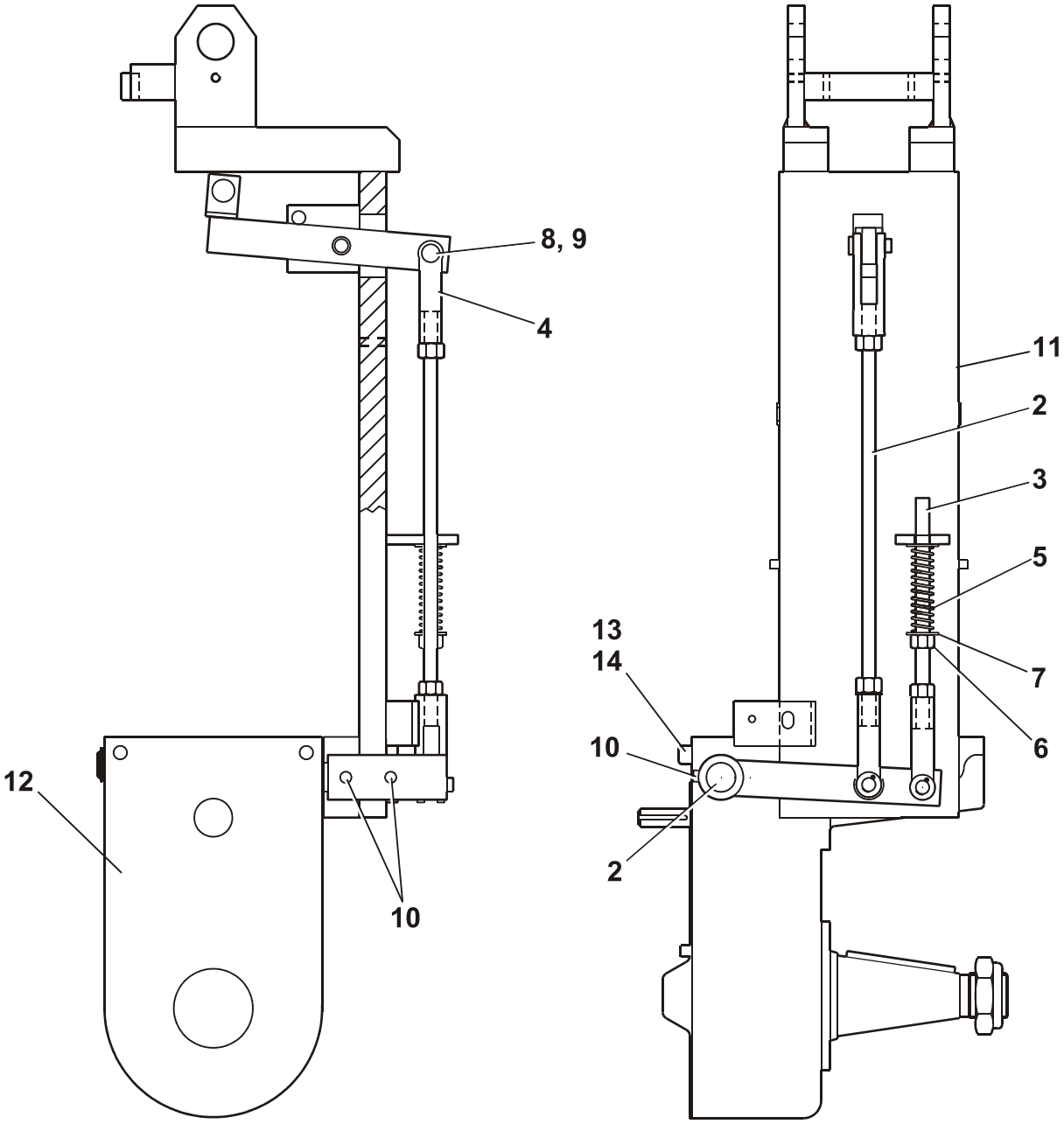

Figure 20 : Brake Linkage Arrangement

Brake Linkage Arrangement

Item	Qty	Part No.	Description	Specific Description
-	**-**	**164-5001**	**Brake Linkage Arrangement**	**1500 / 2200 / 3000**
1	1	164-5003	Lever, Brake (Gearbox)	1500 / 2200 / 3000
2	1	164-0005	Rod, Linkage	1500 / 2200 / 3000
3	1	164-0027	Rod, Brake Release	1500 / 2200 / 3000
4	3	013-513	Clevis, 3/8" - 3/8” Eye x 2-7/8”	1500 / 2200 / 3000
5	1	017-060	Spring, Compression C-18	1500 / 2200 / 3000
6	4	011-519	Nut, Hex - 3/8”-24	1500 / 2200 / 3000
7	2	012-211	Washer, Flat – 5/16”	1500 / 2200 / 3000
8	3	013-565	Pin, Clevis - 3/8" Dia. x 1-3/32"	1500 / 2200 / 3000
9	3	013-017	Pin, Cotter - 3/32” x 3/4”	1500 / 2200 / 3000
10	2	014-016	Screw, Set – 5/16”-24	1500 / 2200 / 3000
11	1	200-01485	Column, Drive Handle Mtg.	1500 / 2200 / 3000
12**	**1**	**783-299**	**Ass’y, Compact Drive Unit (Gearbox)**	**1500 / 2200 / 3000**
13	3	010-105	Capscrew, Hex - 3/8”-16 x 2-1/2"	1500 / 2200 / 3000
14	3	012-201	Washer, Lock - 3/8”	1500 / 2200 / 3000

*** - INDENTED SUB-ASSEMBLY – SHOWN ON SAME PAGE**
**** - SUB-ASSEMBLY SHOWN ON SEPARATE PAGE**

12.11 Compact Drive (Gearbox) Assembly

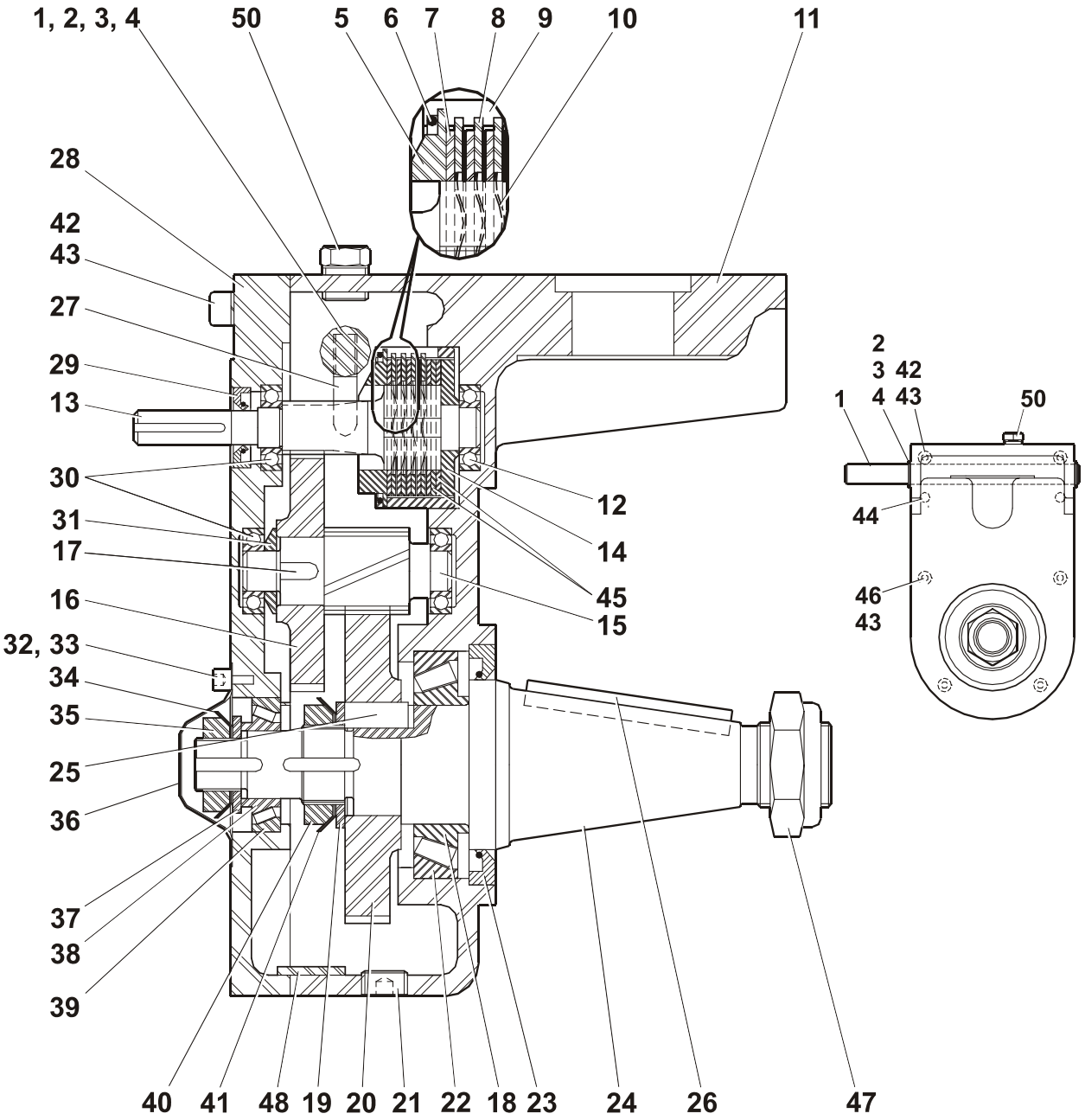

Figure 21 : Compact Drive Gearbox Assembly

Compact Drive (Gearbox) Assembly

Item	Qty	Part No.	Description	Specific Description
-		**783-299**	**Compact Drive Gear Box Ass'y**	**1500 / 2200 / 3000**
1	1	120-117	Shaft, Brake 8-3/4"	1500 / 2200 / 3000
2	2	013-002	Ring, Retaining	1500 / 2200 / 3000
3	2	036-108	O-Ring	1500 / 2200 / 3000
4	AR	105-878	Washer, Spacer - 1-3/16" OD x 3/4" ID x 1/32" THK	1500 / 2200 / 3000
5	1	110-896	Collar, Brake Thrust	1500 / 2200 / 3000
6	1	110-897	Ring, Snap	1500 / 2200 / 3000
7	5	023-527	Disk, Inner Brake	1500 / 2200 / 3000
8	4	023-526	Disk, Outer Brake	1500 / 2200 / 3000
9	1	118-738	Sleeve, Brake	1500 / 2200 / 3000
10	4	023-528	Spring, Brake Separator	1500 / 2200 / 3000
11	1	118-944	Housing, Gear Box	1500 / 2200 / 3000
12	3	021-300	Bearing, Ball	1500 / 2200 / 3000
13	1	118-734	Shaft, Input	1500 / 2200 / 3000
14	1	118-739	Plate, Locking	1500 / 2200 / 3000
15	1	118-733	Shaft, Intermediate	1500 / 2200 / 3000
16	1	118-737	Gear, Intermediate	1500 / 2200 / 3000
17	1	118-742	Key, Square - 1/ 4"	1500 / 2200 / 3000
18	1	021-302	Bearing, Cone	1500 / 2200 / 3000
19	1	021-304	Washer, Tongue	1500 / 2200 / 3000
20	1	118-736	Gear, Output	1500 / 2200 / 3000
21	2	021-090	Plug, Socket Pipe - 3/8"	1500 / 2200 / 3000
22	1	018-582	Bearing, Roller	1500 / 2200 / 3000
23	1	036-092	Seal, Output	1500 / 2200 / 3000
24	1	118-735	Shaft, Output	1500 / 2200 / 3000
25	1	118-743	Key, Square - 3/8"	1500 / 2200 / 3000
26	1	021-101	Key, Shaft - 3/8" x 3"	1500 / 2200 / 3000
27	2	110-604	Lever, Brake Operating	1500 / 2200 / 3000
28	1	118-945	Cover, Gear Box	1500 / 2200 / 3000
29	1	021-301	Seal, Oil	1500 / 2200 / 3000
30	1	021-312	Bearing	1500 / 2200 / 3000
31	1	118-740	Spacer, 1-1/ 4" OD x .608" ID x .178" THK	1500 / 2200 / 3000
32	3	012-225	Washer, Star - #10	1500 / 2200 / 3000
33	3	010-050	Capscrew, Hex Sock - #10-32 x 1-1/4"	1500 / 2200 / 3000
34	1	021-310	Washer, Lock	1500 / 2200 / 3000
35	1	118-932	Nut, Output Shaft	1500 / 2200 / 3000

AR – As Required

Continued…

Compact Drive (Gearbox) Assembly

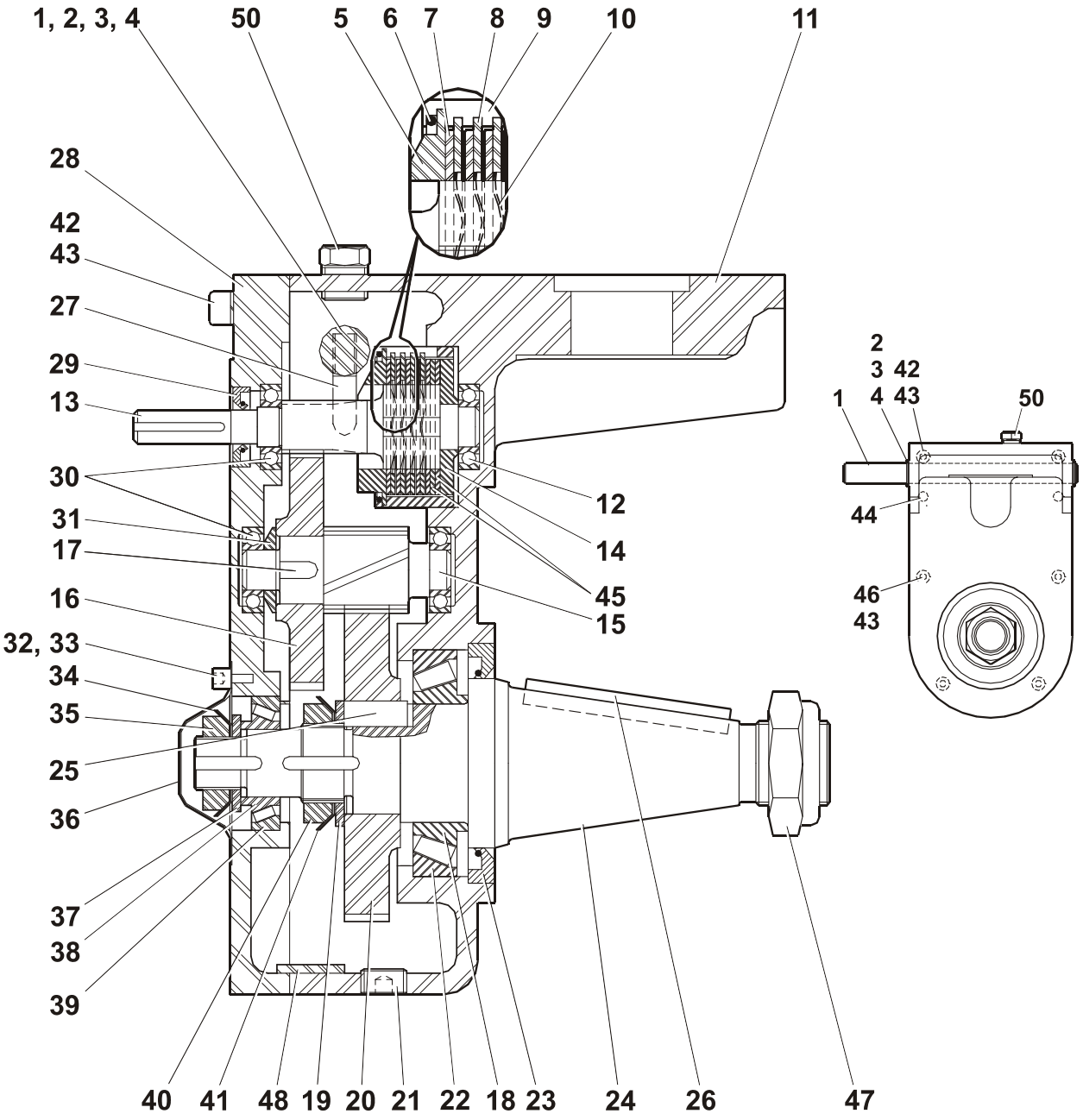

Figure 21 : Compact Drive Gearbox Assembly

Compact Drive (Gearbox) Assembly

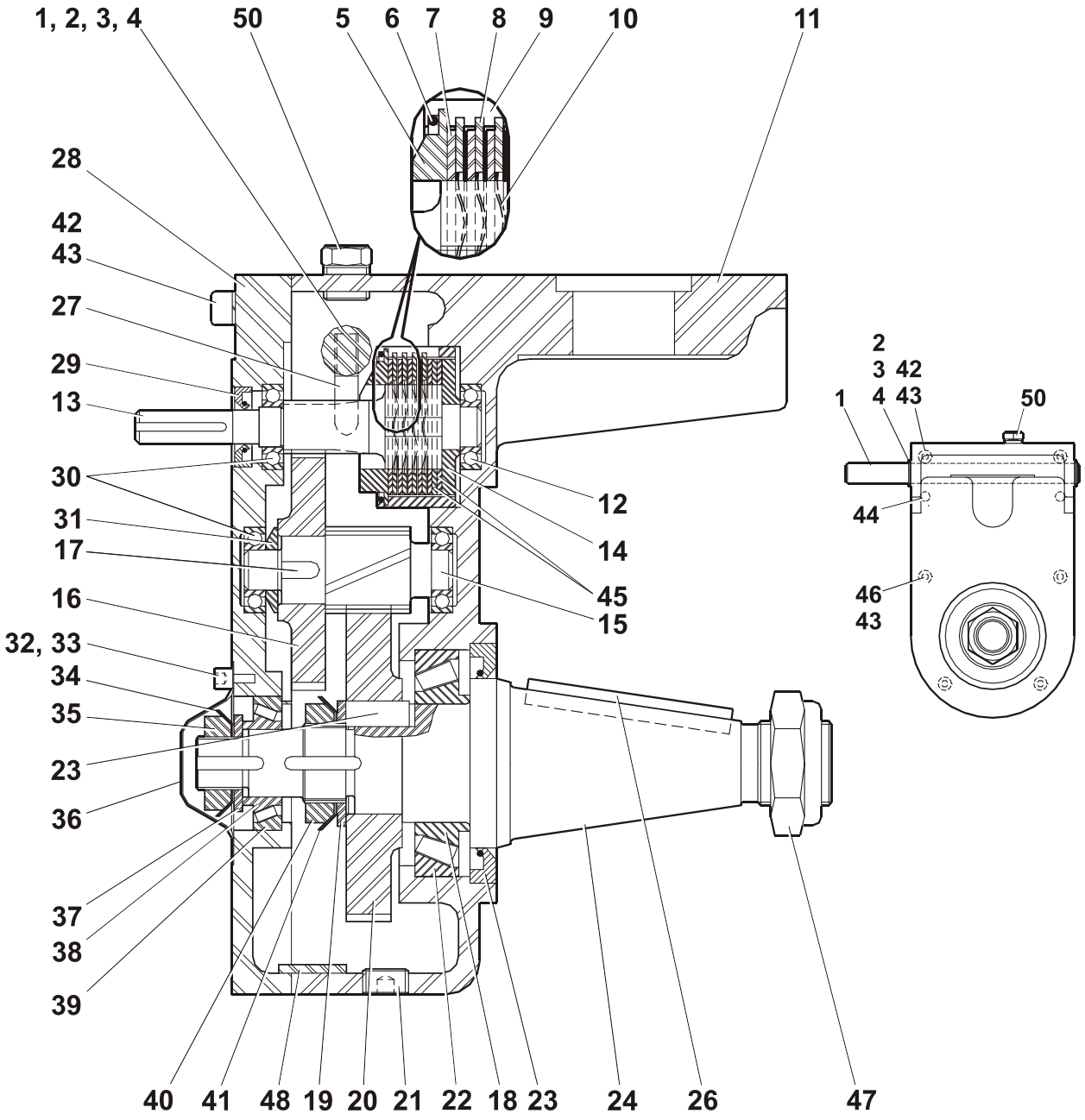

Figure 21 : Compact Drive Gearbox Assembly

Compact Drive (Gearbox) Assembly

Item	Qty	Part No	General Description	Specific Description
36	1	118-741	Plate, Cover	1500 / 2200 / 3000
37	1	021-309	Washer, Tongue	1500 / 2200 / 3000
38	1	021-308	Bearing, Cone	1500 / 2200 / 3000
39	1	021-307	Cup, Bearing	1500 / 2200 / 3000
40	1	021-306	Nut, Lock	1500 / 2200 / 3000
41	1	021-305	Washer, Lock	1500 / 2200 / 3000
42	2	011-602	Capscrew, Hex Sock 5/16”-18 X 1-1/2"	1500 / 2200 / 3000
43	6	012-291	Washer, High Collar - 5/16”	1500 / 2200 / 3000
44	2	021-105	Pin, Dowel - 3/8" Dia. x 1"	1500 / 2200 / 3000
45	2	105-882	Spacer, Inner Brake Disk - 1-3/4”	1500 / 2200 / 3000
46	4	011-597	Capscrew, Hex Socket 5/16”-18 x 1"	1500 / 2200 / 3000
47	1	011-563	Nut, Lock - 1-1/4”-12	1500 / 2200 / 3000
48	1	106-903	Tape, Magnetic	1500 / 2200 / 3000
49	1	090-973	Oil, Gear	1500 / 2200 / 3000
50	1	035-200	Plug, Breather	1500 / 2200 / 3000

12.12 Hydraulic System Assembly

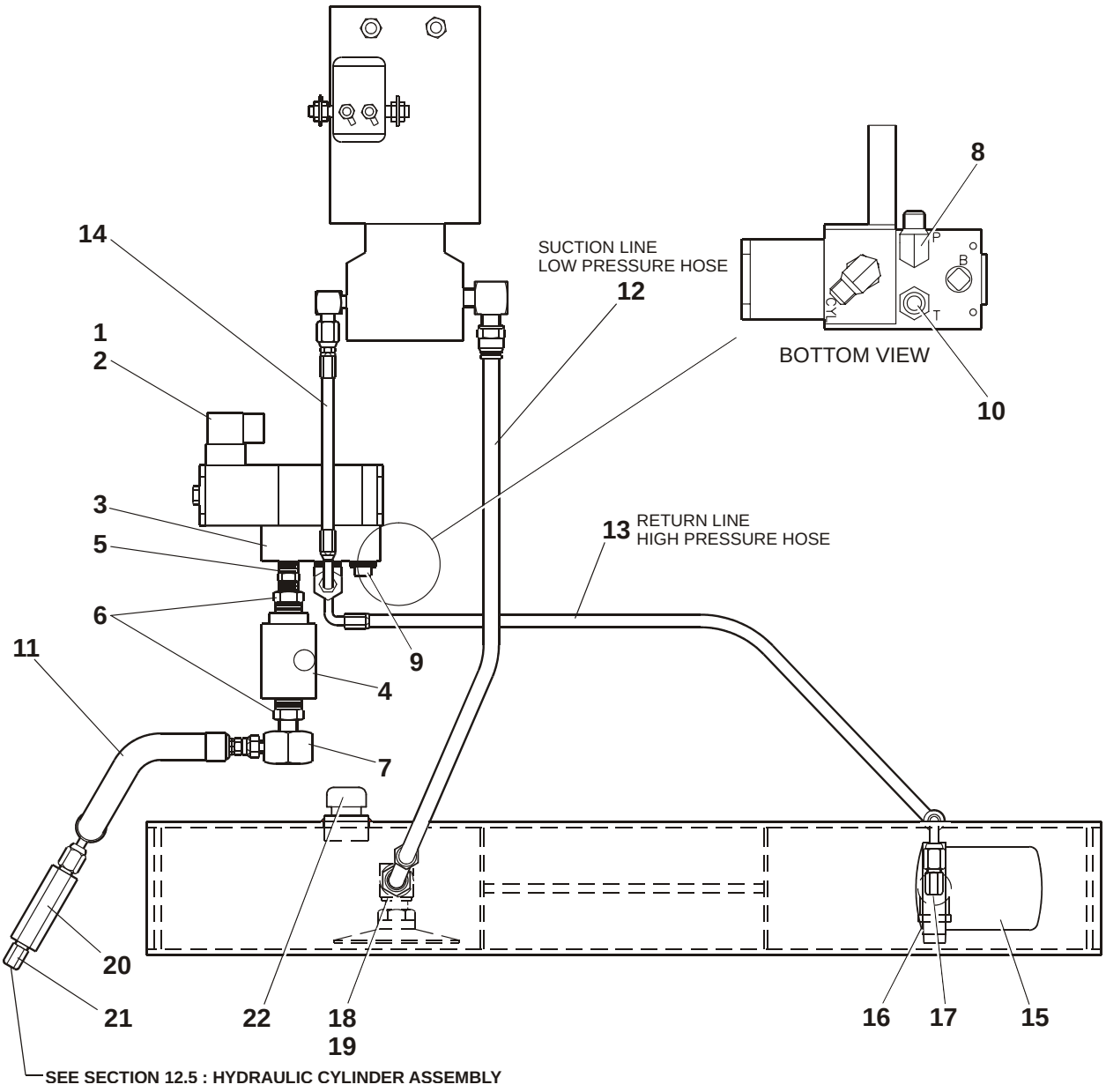

Figure 22 : Hydraulic System Assembly

Hydraulic System Assembly

Item	Qty	Part No.	Description	Specific Description
-		**164-5037**	**Hydraulic System**	1500 / 2200 / 3000
1*	**1**	**164-5038**	**Valve Ass'y, Load Lowering (Incl. Items 2-10)**	1500 / 2200 / 3000
2	1	033-734	Valve, Soft Shift – 24 VDC	1500 / 2200 / 3000
3	1	033-735	Valve, Subplate	1500 / 2200 / 3000
4	1	033-501	Valve, Load Lowering Control	1500 / 2200 / 3000
5	1	034-507	Fitting, Straight 3/8"-18MP-3/8"-18MP	1500 / 2200 / 3000
6	2	034-509	Fitting, Straight-Reducer 1/2"-14MP-3/8"-18FP	1500 / 2200 / 3000
7	1	034-500	Fitting, 90° Elbow 3/8"-18MP – 9/16"-18MJ	1500 / 2200 / 3000
8	1	034-607	Fitting, 90° Elbow 3/8"-18MP - 9/16"-18MJ	1500 / 2200 / 3000
9	1	035-000	Plug, Square Head - 3/8"NPT	1500 / 2200 / 3000
10	1	034-501	Fitting, Straight 1/ 2"-20MJ - 3/8"-18MP	1500 / 2200 / 3000
11	1	165-5001	Hose Ass'y - High Pressure #6-18" LG.	1500 / 2200 / 3000
12	1	781-815	Hose Ass'y - High Pressure #8-12" LG.	1500 / 2200 / 3000
13	1	165-5007	Hose Ass'y - High Pressure #4-20" LG.	1500 / 2200 / 3000
14	1	165-5007-1	Hose Ass'y - High Pressure #4-6" LG.	1500 / 2200 / 3000
15	1	035-269	Filter	1500 / 2200 / 3000
16	1	035-270	Head, Filter	1500 / 2200 / 3000
17	1	034-607	Fitting, 90° Elbow 5MJ-6MP	1500 / 2200 / 3000
18	1	035-092	Fitting, Elbow - 3/8" x 45° NPT Female	1500 / 2200 / 3000
19	1	034-535	Fitting, Straight - 3/8"-19MP - 3/4"-MJ	1500 / 2200 / 3000
20	1	033-663	Fuse, Velocity - 7.5 GPM	1500
20	1	033-837	Fuse, Velocity – 7.5 GPM (3.28")	2200 / 3000
21	1	034-515	Fitting, Elbow - 90° - 1/4" Pipe	1500
22	1	035-238	Cap, Filler - (Breather Plug)	1500 / 2200 / 3000

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13. Electrical System

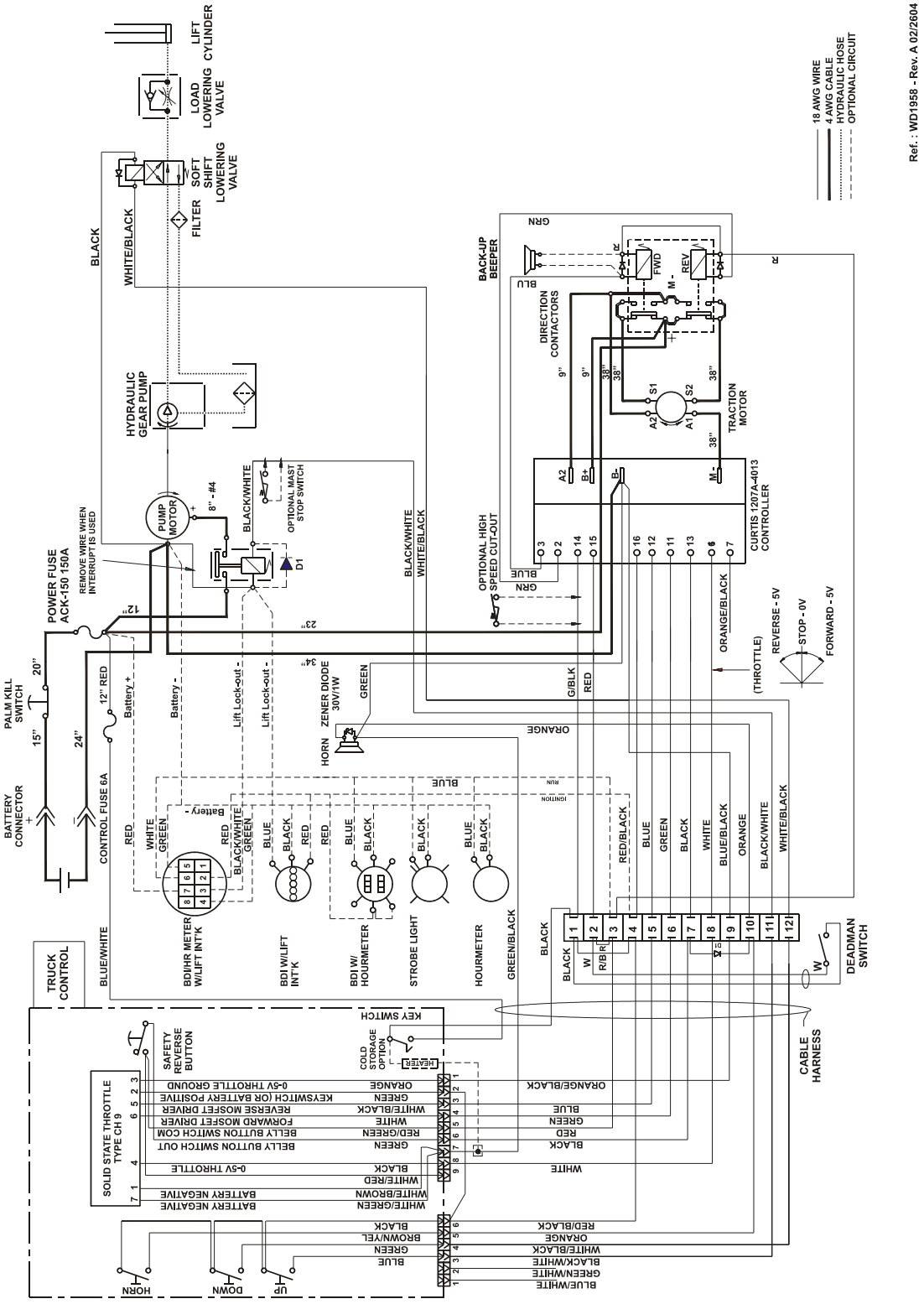

Figure 23 : Electrical Schematic

14. Service / Maintenance History

Date	Work Performed	Comments / Notes

To Order Parts

For prompt service when ordering parts, please provide the following information to your local distributor.

1. Model and serial number of the vehicle.
2. Part number, description and quantity.
3. Shipping instructions.

When in doubt as to part required, provide a sketch or the used part as a sample.

Record Here For Future Reference

Date into Service: _____

Model Number: _____

Serial Number: _____

Distributor: _____

FOR RECOMMENDED SPARE PARTS CONTACT THE MANUFACTURER

TEL: 800 668 7078 / 905 457-3900
Fax: 888 378 5781 / 905 450-6555

15. Warranty Policy

Warranty Policy

Intermediate Duty Walkie Stacker

The manufacturer warrants to the original purchaser its self-propelled equipment to be free from defective factory material and workmanship. All warranties begin on the date of delivery to the first user or the sixtieth (60) day after date of shipment, whichever comes first.

Parts or components which fall under normal usage within the following specified time periods and are proven to be defective will be repaired or replaced by the manufacturer without charge for parts or labor unless stated otherwise herein. Replacement parts will be supplied F.O.B. factory.

WARRANTY TIME PERIODS:

1.) **TWO (2) YEARS OR 4000 HRS. OPERATION WHICHEVER OCCURS FIRST.**
Transmission, including integral brakes.

2.) **ONE (1) YEAR OR 2000 HRS. OPERATION WHICHEVER OCCURS FIRST.**
Drive motor (except brushes), and electronic speed controller.

3.) **SIX (6) MONTHS OR 1000 HRS. OPERATION WHICHEVER OCCURS FIRST.**
Lift motors (except brushes), pumps, wiring harnesses, drive belts, valves, oil seals, hydraulic cylinders, hydraulic hoses, SCR controls, lift chains, weldments, and castings.

4.) **NINETY (90) DAYS OR 500 HRS. OPERATION WHICHEVER OCCURS FIRST.**
Motor brushes, contactors, switches, resistors, wheels, tires, bearings, bushings, axles, connectors, fasteners, springs, any parts not listed above.

Batteries and battery chargers are guaranteed by their manufacturer; NOT the stacker manufacturer. Please consult the factory for nearest manufacturer's representative.

WARRANTY IS VOID IF:

1.) Warranty validation form is not completed and returned to the manufacturer.

2.) Equipment has been modified or repaired in any manner not approved by the manufacturer.

3.) Equipment is overloaded beyond rated capacity.

4.) Equipment is used in abrasive conditions, corrosive conditions, freezers or excessive moisture unless equipped with an appropriate protection package. When equipped with a protection package the warranty shall be limited to ninety (90) days on all components.

THE FOLLOWING ARE NOT COVERED UNDER WARRANTY:

1.) Adjustments, including initial field set-up. Adjustments are considered part of normal maintenance procedures.

2.) Repairs required as a result of:
- Failure to follow maintenance and/or lubrication procedures specified in the owner's manual.
- Abuse, willful damage, accident, neglect or wear items.
- Shipping damage. (Claim must be made with freight carrier.)

3.) Fuses, light bulbs

THE MANUFACTURER DOES NOT ASSUME RESPONSIBILITY OR LIABILITY FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, OR FOR LOSS OF PROFIT OR DAMAGE TO TRADE OR BUSINESS WHICH RESULTS FROM THE EQUIPMENT.

THE ABOVE WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN.

Warranty: Part #038-569E

85 Heart Lake Road South,
Brampton, Ontario Canada L6W 3K2
Tel 800 668 7078 Fax 888 378 5781
www . BlueGiant.com

B L U E G I A N T E Q U I P M E N T C O R P O R A T I O N

BLUE GIANT offers a full line of Dock Levelers, Dock Safety Equipment, Accessories, Ergonomic and Scissor Lift Equipment, and Industrial Trucks. Concurrent with our continuing product improvement program, specifications are subject to change without notice. Please contact BLUE GIANT for latest information. Some features illustrated may be optional in certain market areas.

If calling from outside North America: Tel 905 457 3900 Fax 905 450 6555

Warning: This manual may not be copied, quoted or transferred in any form or medium to any individual or company, in whole or in part without written consent from Blue Giant.

Issue Date:10/22/04 (Part #411-750)