

A company dedicated to solving ergonomic and material handling problems since 1955.

OWNER'S MANUAL

HYDRAULIC DRUM DUMPER • Series HDD

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WARNINGS & SAFETY INSTRUCTIONS

Read owner's manual completely before operating unit!

- The load must be removed from the chute and the chute fully lowered before any work is performed on the lift.
- For battery-powered units, review the additional warnings included elsewhere in the manual.
- Ensure that all safety and warning labels stay in place and are legible. See the labels page in this manual.
- For non-portable units, the dumper's frame must be securely anchored to the floor. See the installation instructions.
- Do not use the dumper if any damage or unusual noise is observed.
- Always watch the chute and the barrel carefully when the dumper is in operation.
- Do not perform any modifications to the dumper without the manufacturer's approval. Failure to receive authorization for changes to the equipment could void the warranty.
- Maintenance and repairs are to be done only by personnel qualified to perform the required work.
- Do not use brake fluid or jack oils in the hydraulic system. If oil is needed, use an antiwear hydraulic oil with a viscosity grade of 150 SUS at 100°F, (ISO 32 @ 40°C). or Dexron transmission fluid.
- Use only replacement parts either supplied or approved by the manufacturer.

damage during transit. If you see damage when unloading, make a note of it on the BILL OF LADING.

Remove all packing and strapping material. Inspect for damage. IF DAMAGE IS EVIDENT, FILE A CLAIM WITH THE CARRIER IMMEDIATELY! Also, check the unit size, type of power unit, etc., to ensure the dumper is correct for the intended application.



HYDRAULIC DRUM DUMPER
SERIES HDD

RECEIVING INSTRUCTIONS

Every unit is thoroughly tested and inspected prior to shipment. However, it is possible that the unit may incur

INSTALLATION INSTRUCTIONS

Review this entire page before installing the dumper.

Consult the factory in the event there are questions or problems at the time of installation

The installation must be made in compliance with all the regulations applicable to the machine and its location. The installer must verify that the equipment is installed so it will be suited to the environment in which it will be used.

Installation must be performed by suitably trained personnel with access to the proper equipment. The electrical aspects of the installation should be performed by an electrician.

For Installation you will need the following:

STATIONARY UNITS ONLY:

1. A Forklift.
2. Lag bolts, a masonry drill, a masonry bit, a wrench to fit the lag bolt nuts, grout, and steel shims. Consult the building's architect or facility engineer to determine the best size and type of hardware with which to anchor the machine to the floor.

ALL UNITS:

3. A power supply circuit matching the motor voltage and current requirements. Refer to the labels on the control enclosure and to the electrical section in this manual for more information. The end-user is responsible for supplying the branch circuit's required over current and short-circuit protection.

STATIONARY UNITS ONLY:

1. Move the dumper into place with a forklift. Use care to avoid damage to the electrical or hydraulic components.
2. Anchor the frame to the floor through the 7/8" holes in the floor brackets located near the corners of the frame.
3. Shim and/or grout under the full length of the frame sides.

ALL UNITS:

4. Make the required power supply connection.
5. Operate the dumper through several full up / down cycles. Verify that the upper travel limit switch and the lower travel limit switch (if applicable) function properly.
6. Check the hydraulic oil level. It should be filled to within 1" to 1-1/2" of the reservoir's fill hole.
7. Clean up any debris or spilled oil, and verify that all of the warning and safety labels are intact.

OPERATION INSTRUCTIONS - HDD

LOADING:

The drum dumper is designed for a fluid or semifluid load in an open-top steel 55 gallon drum.

Insert the drum so it is against the back of the chute. Pull the drum clamp on each side up and over the rim of the drum to prevent the drum from sliding when dumped.

The load rating is shown on the machine data plate located on the right-side upright frame channel (typically just above the push-button control hanger). It indicates the net capacity of the dumper. Permanent damage to the lift or injury to personnel could result from exceeding the listed capacity.

OPERATION:

The lift is furnished with a constant pressure (deadman style) push-button control.

Pressing the "UP" push-button will turn on the power unit to raise the chute. The chute will raise only while the control is pressed. Upon releasing the control, the chute will stop and hold its position. A limit switch will turn off the motor when the chute reaches its maximum rotation angle.

Pressing the "DOWN" push-button will energize the lowering valve to allow the chute to descend. Again, releasing the control will stop the chute movement, and the unit will hold its position. Be certain no part of any person or object is under any part of the chute before lowering the unit.

On DC powered units, attempting to raise the lift when the battery is low will cause the motor relay protection to prevent the motor's operation. Adequate battery voltage is indicated by a green LED on the motor relay.

In the event that the load exceeds the dumping capacity, the hydraulic system's relief valve will open and not all the unit will lift.

SAFETY:

Keep all personnel clear of the machine when it is in operation.

Always load the unit properly.

Regularly inspect the stops on the top ends of the drum clamp slide tubes.

Never use the dumper if it is in need of repairs or if it seems to be malfunctioning.

Notify your maintenance personnel if you notice anything out of the ordinary, such as odd noises, erratic motion, or damage to any part of the lift or its components.

See the next page for more notes regarding operation of battery-powered units.

ORDERING REPLACEMENT PARTS:

We take pride in using quality parts on the equipment we manufacture. We are not responsible for equipment problems resulting from the use of unapproved replacement parts.

To order replacement or spare parts for this equipment, contact the factory.

In any communication with the factory please be prepared to provide the machine's serial number, which is indicated on the machine data plate.

ADDITIONAL INSTRUCTIONS FOR BATTERY-POWERED UNITS

WARNING!

- Working with or near lead acid batteries is dangerous. Batteries contain sulfuric acid and produce explosive gases. A battery exposition could result in loss of eyesight or serious burns.
- Do not smoke or allow a spark or flame near batteries. Charge batteries in locations which are clean, dry, and well-ventilated. Do not lay tools or anything metallic on top of any battery. All repairs to a battery must be made by experienced and qualified personnel.
- When working with batteries, remove personal items such as rings, bracelets, necklaces, and watches. Batteries can produce enough energy to weld jewelry to metal, causing severe burn.
- Always have fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- Operating the battery with a low battery voltage can cause premature motor contact failure.
- Do not expose the lift or charger to rain or adverse conditions.
- Replace defective cords or wires immediately.
- Check the battery's water level frequently.

BATTERY CHARGER OPERATING INSTRUCTIONS

Never operate the charger with either of the cables coiled. Operating the unit with the cord wrapped around itself can cause the cord to overheat, melt, and cause a short-circuit or a fire.

Plug the charger into a standard 115V receptacle. If an extension cord must be used, keep it as short and as large as possible. A small cord will decrease the output of the charger due to the voltage drop in the line. This will increase the charging time. It can also cause the 115V cord to overheat.

When properly connected, the charge LED will indicate the status of charge current flowing to the battery, as follows:

Red only - the charger is providing full output to the battery.

Both red and green - the charger is "topping off" the battery.

Green only - the charger is providing a "float," or maintenance, charge.

Remember to unplug the charger before moving the equipment. Failure to do so could cause damage to cords, receptacles and other equipment.

TROUBLESHOOTING:

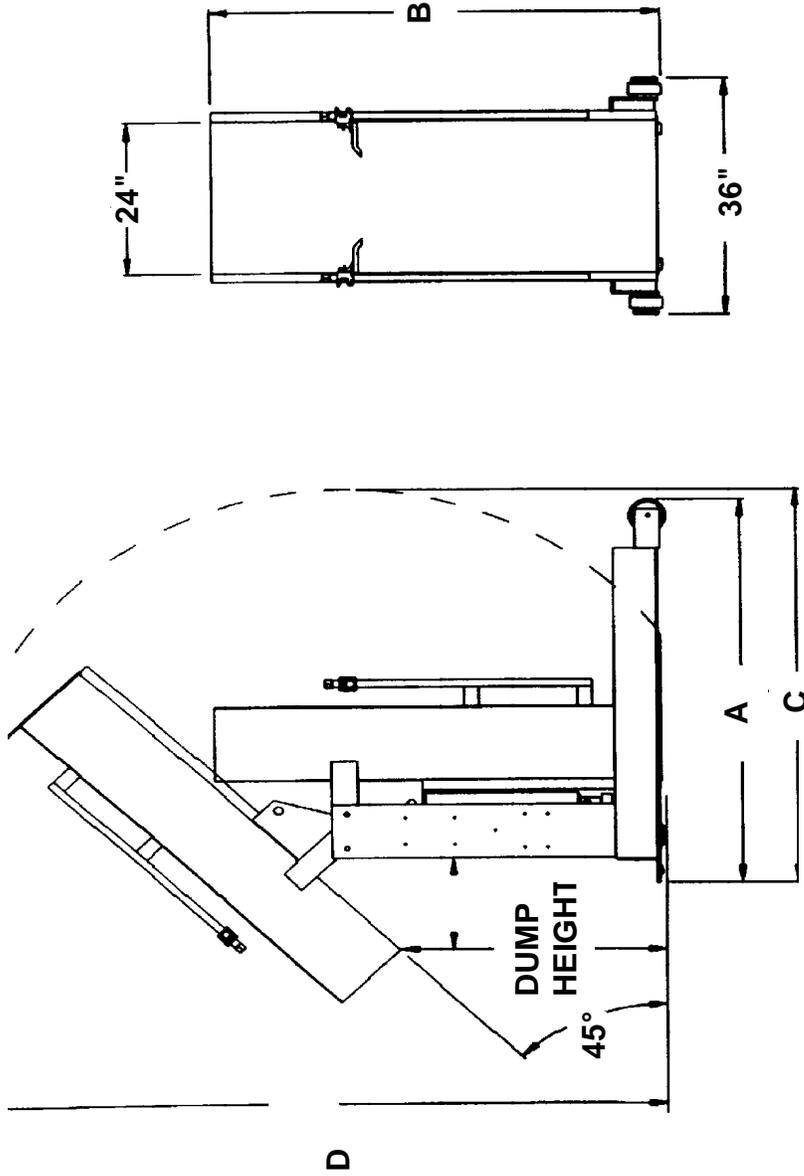
If the unit does not operate, check all of the wiring connections to make sure they're both mechanically and electrically sound - specifically at the battery, the motor, and at any location a wire is connected to the chassis. Also make sure the quick-connect plug on the end of the pendant control cord is plugged in correctly.

A fully-charged lead acid battery in good condition at room temperature should read 12.65 volts. At 11.9 volts it is considered to be fully discharged and in need of charging. When checking battery voltage, wait at least 1/2 hour after the charger has been turned off before checking the battery's voltage.

If the motor doesn't run, observe the green LED on the motor relay. If it is not lit, or if the LED goes out when the "UP" control is pressed, the battery voltage should be checked with a voltmeter.

If the batteries aren't being charged by the charger, check the output charger fuse. If it is good, check the battery's state of charge with a voltmeter.

DIMENSIONAL DATA



DUMP HEIGHT (in.)	LOAD CAPACITY						DIMENSIONS (in.)											
	750 lb.		1000 lb.		1500 lb.		PORTABLE				STATIONARY							
	DUMP TIME	SHIP WT.	DUMP TIME	SHIP WT.	DUMP TIME	SHIP WT.	A	B	C	D	A	B	C	D				
36	25 sec.	722	25 sec.	747	30 sec.	872	59-1/2	60-1/4	58-1/2	93-1/2	53-1/2	60-1/4	58-1/2	92				
42	25 sec.	757	25 sec.	752	30 sec.	907	63-1/2	66-1/4	64-1/2	103-1/2	59-1/2	66-1/2	64-1/2	100				
48	25 sec.	792	25 sec.	817	30 sec.	942	67-1/2	72-1/4	70-1/2	114	63-1/2	72-1/2	70-1/2	112-1/2				
54	25 sec.	837	25 sec.	862	30 sec.	987	76	78-1/4	76-1/2	124	72	78-1/2	76-1/2	122-1/2				
60	25 sec.	882	25 sec.	907	30 sec.	1032	76	84-1/4	82-1/2	134-1/2	72	84-1/2	82-1/2	133				

Figure 1

ROUTINE MAINTENANCE & SAFETY CHECKS -- HDD

- Care should be taken to identify all potential hazards and comply with applicable safety procedures before beginning work
- Fully lower the chute to the floor before beginning any inspection or work on the unit
- Only qualified individuals trained to understand mechanical devices and their associated electrical and hydraulic circuits should attempt troubleshooting and repair of this equipment.

(A) Before each use inspect for the following:

- 1) Frayed Wires
- 2) Oil Leaks
- 3) Pinched or chafed hoses
- 4) Damaged or loose barrel height adjustment clamps or pipes
- 5) Damaged or structural deformation to the structural members, the cylinder brackets, etc.
- 6) Unusual noise or binding, or evidence thereof
- 7) Proper functioning of all limit switches

(B) In addition to the above, inspect monthly for:

- 1) The oil level. Oil should be 1" to 1-1/2" below the reservoir's fill hole with the chute fully tilted.
- 2) Worn or damaged hydraulic hoses and electrical wires.
- 3) Proper operation of the barrel hold-down clamps.
- 4) Pivot point wear at the hinge pins and cylinder ends.
- 5) Intact pin and clevis retaining rings and / or fasteners.
- 6) Frame anchor bolts' tightness, and for cracks in the concrete around them. (Stationary units only)
- 7) Looseness, wear, or damage to the casters' bearings, mounting hardware, or surface material. (Portable units only)
- 8) Proper water level in the battery. (DC units only)
- 9) Unusual noises.
- 10) Information and warning labels being in place and in good condition.
- 11) The need to clean off dirt and debris.

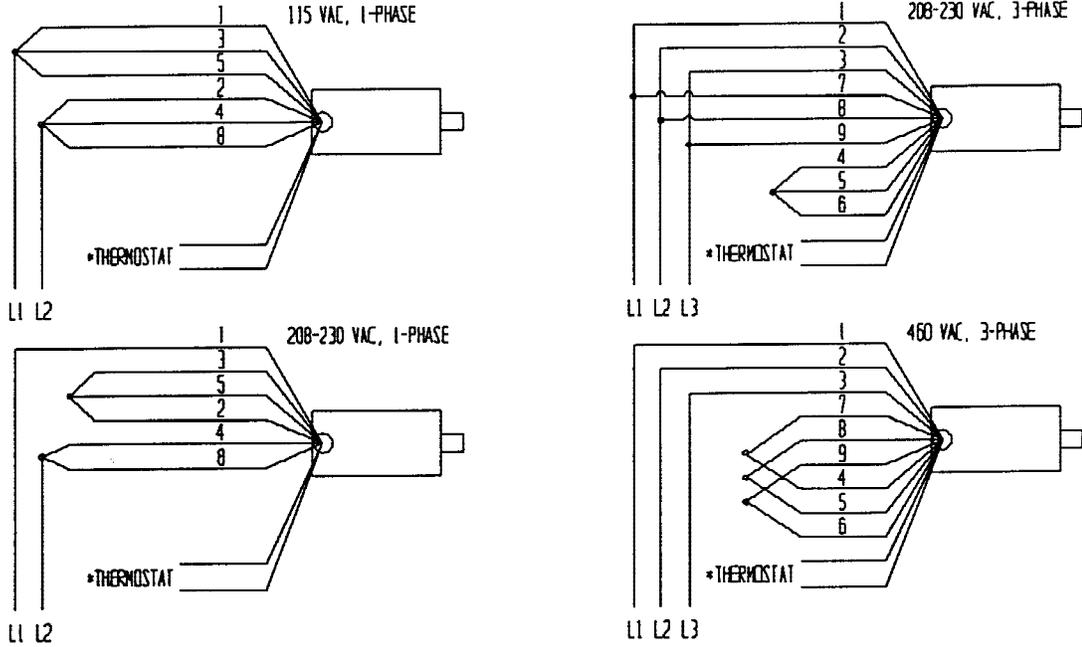
(C) Yearly Inspection

The oil should be changed if the oil darkens, becomes gritty, or turns a milky color (indicating the presence of water). Replace with anti-wear hydraulic oil with a viscosity grade of 150 SUS at 100°F, (ISO 32 @ 40°C). Ex: AW-32 or HO 150 hydraulic fluid, or Dexron transmission fluid.

MOTOR & TRANSFORMER CONNECTION DIAGRAMS

CAUTION! If the motor voltage is changed, the wire on the control transformer's primary wire has to be changed to match the new motor voltage also.

MOTOR LEAD CONNECTION DIAGRAM FOR ALL
.5HP, .75HP AND 3HP SINGLE-PHASE MOTORS AND FOR
ALL 2HP, 5.5HP, AND 6.5HP THREE-PHASE MOTORS

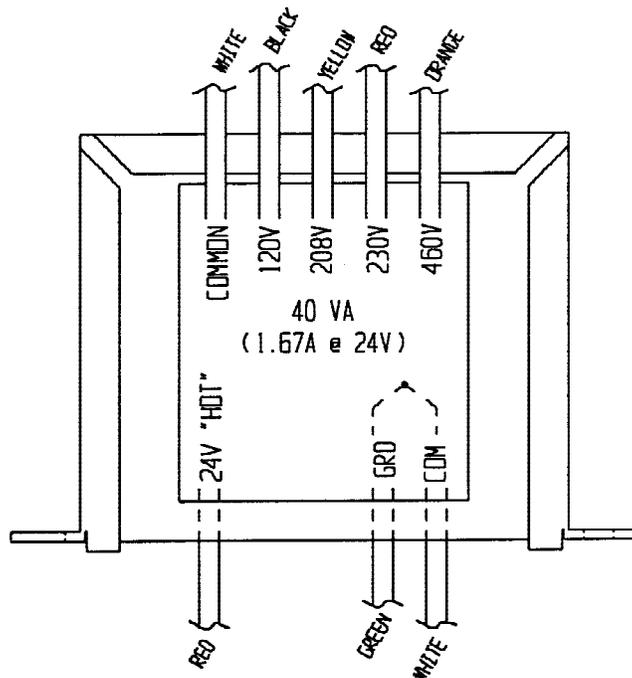


* The two thermostat leads go to: 1) the grounded side of the transformer secondary, and; 2) the motor relay coil, in either order.

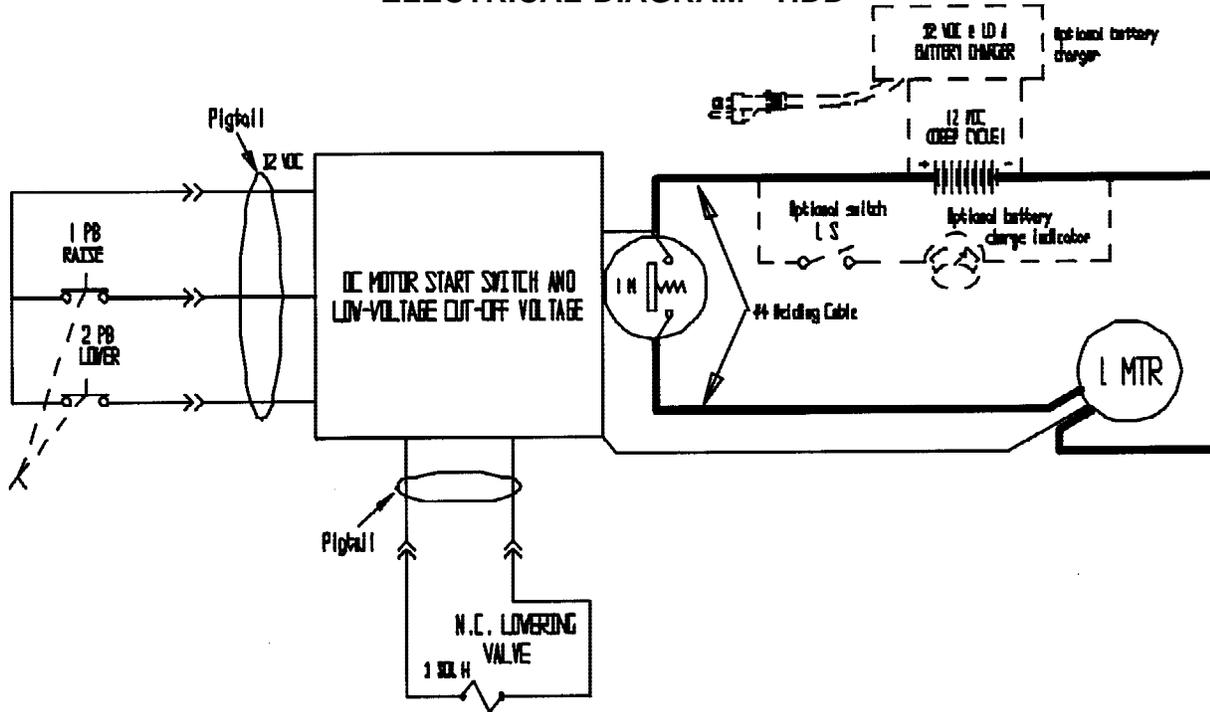


BE SURE ALL POWER IS OFF BEFORE ATTEMPTING TO WORK ON THIS EQUIPMENT!

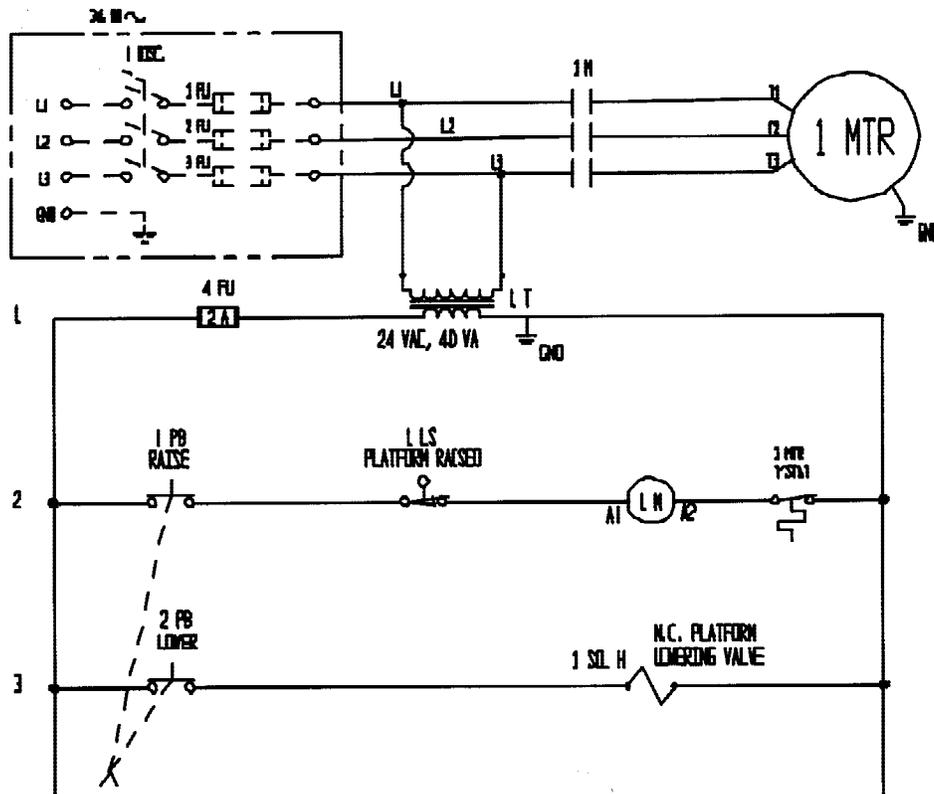
CAUTION: SERVICE WORK SHOULD BE PERFORMED ONLY BY TRAINED & QUALIFIED PERSONNEL.



ELECTRICAL DIAGRAM - HDD



OVERCURRENT & SHORT-CIRCUIT PROTECTION, AND DISCONNECT ARE TO BE PROVIDED BY THE END-USER PER THE NEC (NFPA 70) AND LOCAL CODES.



⚡ BE SURE ALL POWER IS OFF BEFORE ATTEMPTING TO WORK ON THIS EQUIPMENT!
CAUTION: SERVICE WORK SHOULD BE PERFORMED ONLY BY TRAINED & QUALIFIED PERSONNEL.

THE POWER UNIT'S OPERATION - HDD

The electric / hydraulic drum dumper utilizes an electric motor directly coupled to a gear-type hydraulic pump to produce the needed fluid pressure and flow to allow the cylinders to perform the work of dumping a drum.

A hydraulic manifold houses the hydraulic control components, and is bolted directly onto the gear pump.

The power unit's hydraulic components are all rated for 3,000 psi working pressure.

Important parts of the power unit included:

- The electric motor. Motors are available for operation on single or three phase AC supplies (all are dual voltage capable), or on a 12V DC battery.
- The gear pump. Its shaft is coupled directly to the shaft of the electric motor. Several displacements are available, depending on the motor horsepower used.
- The check valve. Its purpose is to prevent the backflow of fluid through the pump. In this way it allows the platform to be held at a given elevation indefinitely.
- The pressure relief valve. Its job is to open a path for fluid to flow back to the reservoir in the event that the fluid pressure built up by the pump exceeds 3,000 psi. Thus the system cannot see more than 3,000 psi.
- The lowering solenoid valve. This is an electrically-operated cartridge valve. It contains a screen to keep contaminants from entering the valve.
- The pressure-compensated flow control spool. This rests under the lowering valve, and regulates the fluid flow back to the reservoir when the valve opens. It allows the table to always lower at the same rate regardless of whether there is a load on the platform or not. Several sizes are available.
- The hydraulic lift cylinder(s). These are a device that is installed in the cylinder's hose port. It closes quickly in the event of a catastrophic hose failure to prevent the chute from collapsing down. The chute remains stationary until pressure is reapplied to the system.
- The hydraulic fluid. The system uses HO150 hydraulic fluid. Any anti-wear hydraulic fluid with a viscosity grade of 150 SUS at 100°F (ISO 32 @ 40°C) such as AW-32 or Dexron transmission fluid are acceptable.

When the chute is to be tilted, press the "UP" push-button. The motor turns, and in turning it spins the hydraulic gear pump. Oil is drawn from the reservoir through the suction filter and into the pump. The pump pushes the then-pressurized oil through the check valve and out to the lift cylinders

When the chute is to be lowered, press the "DOWN" push-button. The lowering valve opens, bypassing the check valve and allowing the oil in the cylinders to return back to the reservoir through the return hose. The rate at which the platform lowers is regulated by the internal pressure-compensated flow spool.

In the event that the chute creeps down slowly after releasing the "DOWN" control, it will be necessary to remove the lowering cartridge valve for inspection and cleaning, as follows:

- Lower the chute until it is fully lowered.
- Remove any load from the chute.
- Remove the nut holding the solenoid coil on the valve stem, then remove the coil, and then unscrew the valve from the manifold.
- Inspect the valve for contaminants, and the valve's o-rings and backup washers for cuts, tears, or other damage.
- With the valve immersed in mineral spirits or kerosene, use a thin tool such as a small screwdriver or a small hex wrench to push the poppet in and out several times from the bottom end of the valve. The valve should move freely, about 1/16" from closed to open position. If it sticks in, the valve stem could be bent and will need to be replaced if it doesn't free up after cleaning. Blow the valve off the compressed-air gun while again pushing the poppet in and out.
- Inspect the bottom the manifold's valve cavity for contaminants.
- Again with the tool, press on the middle of the flow control spool located in the bottom of the cavity. It should move down and back up freely.
- Reinstall the valve into the manifold, tightening the valve with approximately 20 lb-ft of torque.

If the platform lowers extremely slowly, or not at all, the cylinder's velocity fuse could be closing. This can be caused by air in the hydraulic cylinders. To bleed the air from the system:

- Lower the chute until it is fully lowered.
- Remove any load from the chute.
- Hold and rag over the cylinder's bleeder valve (it looks like a grease zirk) and open the valve about 1/2 turn with a 1/4" or 5/16" wrench. Oil and air will sputter from the valve - once no air is observed, close the valve.

AIR BLEED INSTRUCTIONS FOR DISPLACEMENT-STYLE HYDRAULIC CYLINDER

When air enters the hydraulic cylinders of the lift, it can often cause undesirable effects.

Some systems of air in the cylinders include:

- jeriness or bounciness when operating the unit;
- a delay before movement begins when the "UP" control (push-button or pedal) is pressed, and;
- locking of the safety velocity fuse(s) in the lift cylinder(s) when the "DOWN" control (push-button or pedal) is pressed, which prevents the unit from lowering.

To bleed the displacement-style cylinders:

If the cylinders are inaccessible with the unit lowered, as with our scissor lift tables, raise the platform and then lower the legs so that they restore the unit's maintenance props. Otherwise, if the cylinders are accessible with the unit fully lowered, begin wit the unit in the lowered position.

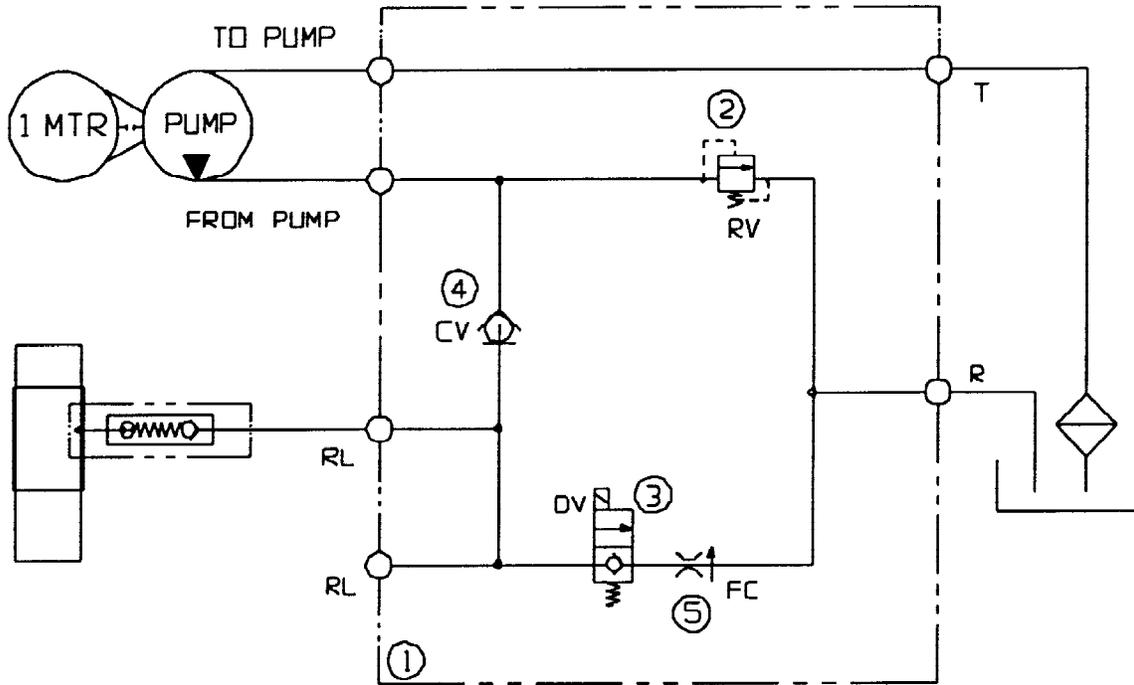
Locate the bleeder valve on the top end of the cylinder(s). It will look something like a grease zirk. Use a 5/16" or 3/8" wrench to open the bleeder valve about 1/2 turn and then place a rag over it to contain the oil that will come out will the air when it is bled. Jog the motor by pressing the "UP" control for just a second. If there is air in the cylinder, oil and air should spit and sputter out of the bleeder valve.

Jog the motor several times (wait at least five seconds in-between) until the sputtering stops and only clear oil streams from the bleeder valve. When you're certain all the air has escaped, close the valve(s).

Check the level of the hydraulic fluid in the reservoir. If the oil is not within 1-1/2" of the fill hole, add oil until it reaches that level. Then operate the unit and verify that it raises and lowers smoothly.

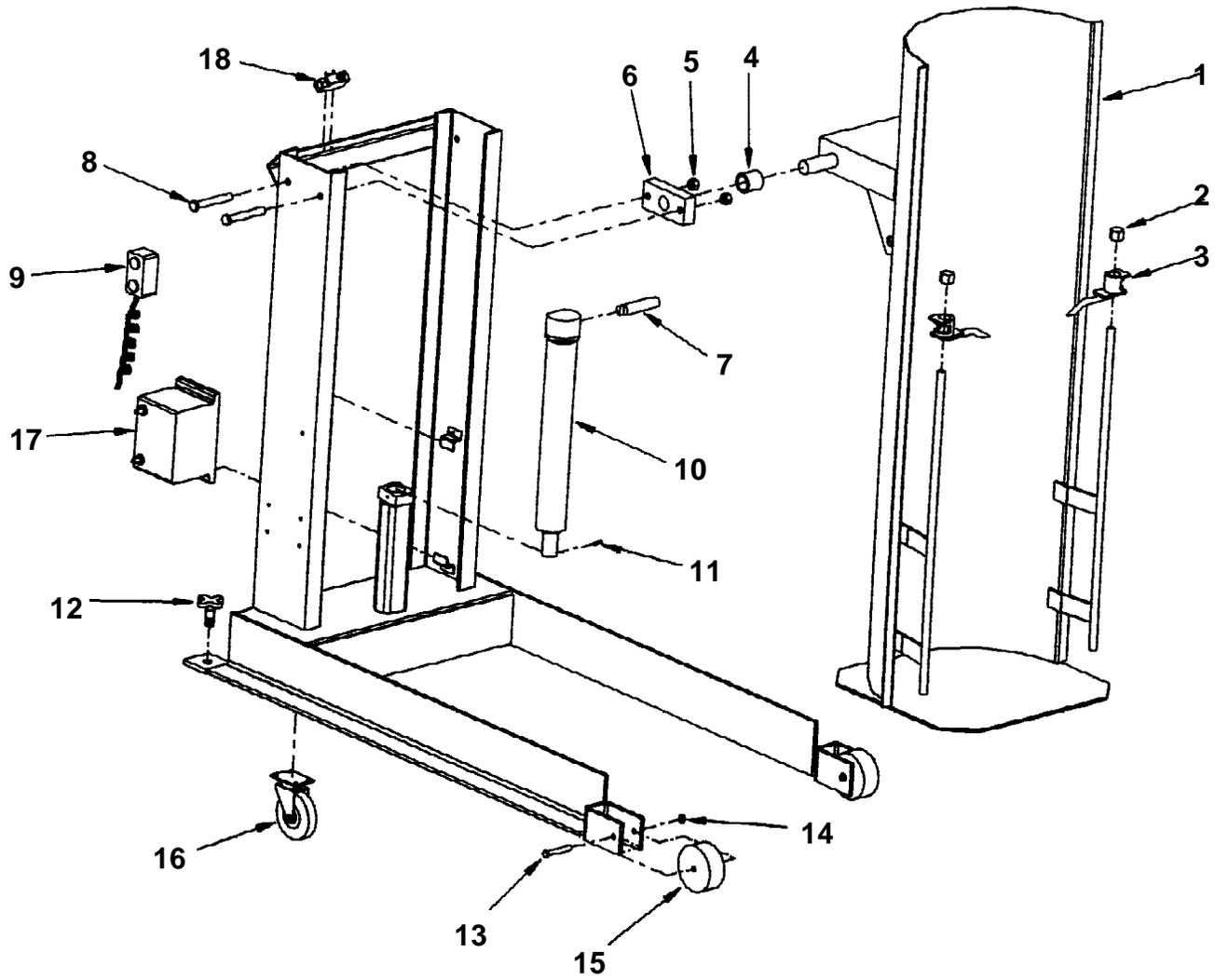
HYDRAULIC DIAGRAM

CAUTION! Do not use brake fluid or jack oils in the hydraulic system. If oil is needed, use an anti-wear hydraulic fluid with an SUS viscosity of 150-200 at 100°F (SAE viscosity grade 32) or Dexron transmission fluid.



ELECTRIC / HYDRAULIC DIAGRAM

PARTS IDENTIFICATION



SERIES HDD

Hydraulic Drum Dumper

ITEM NO.	DESCRIPTION	ENGINEER NO.	PART NO.	QTY.
1	Dump Chute Assembly (Specify chute length)	CALL	CALL	1
2	3/4" Pipe Cap	09-145-004	HDD-CAP	2
3	Height Adjustment Clamp	09-537-004	HDD-HAC	2
4	Spacer 1-1/2" SCH 40 x 2-11/16" long)	09-113-008	HDD-SPCR	2
5	3/4" - 10 Nylock Nut	37039	HDD-NUT-1	4
6	Bearing Block	09-516-012	HDD-BBK	2
7	Upper Cylinder Pin	01-112-001	HDD-UCP	1
8	Bearing Bolt (3/4" - 10 unc long Hex Head cap Screw)	12365	HDD-BLT-1	4
9	Pendant Hand Control	01-522-022	HDD-BTN	2
10	Hydraulic Cylinder (2-1/2" x 18")	09-021-007	HDD-CYL	1
11	Cylinder Rod Retainer Bolt	01-118-001	HDD-RBLT	1
12	Level Adjustment Knob	BH-0917-01	HDD-LKB	2
13*	Bolt (1/2" - 13 x 4" long Hex Head Cap Screw)	11219	HDD-BLT-2	2
14*	Nut (1/2" - 24 Nylock Nut)	37030	HDD-NUT-2	2
15*	5" x 2" Polyurethane Wheel	16-132-020	HDD-WHL	2
16*	5" x 2" Swivel Caster (Welding required)	06-132-023	HDD-CSTR	2
A	Cylinder Seal Repair Kit (Not Shown)	21629-9500	HDD-KIT-A	1
B	Caster Kit (includes items 13-15)	09-154-001	HDD-KIT-B	1
C	Hydraulic Cylinder Kit (includes items 7, 10, 11)	09-154-002	HDD-KIT-C	1
D	Bearing Kit (includes items 4, 5, 6, 8)	09-154-003	HDD-KIT-D	1

* Not applicable on stationary models

ITEM NO.	DESCRIPTION	ENGINEER NO.	PART NO.	QTY.
-	Motor Pump Combo 1 phase	-	HDD-MPA-1	1
-	Motor Pump Combo 3 phase low speed	-	HDD-MPA-3A	1
-	Motor Pump Combo 3 phase high speed	-	HDD-MPA-3B	1
-	Manifold Block	99-127-901	HDD-MAN	1
-	Pressure Relief Assembly	01-154-019	HDD-PRZ	1
-	Check Valve Assembly	01-154-020	HDD-CVA	1
-	Solenoid Valve Assembly	SU08-20.5-O-N-24AG	HDD-SVA	1
-	Cartridge Valve Only	SU08-20.5-S-B-N	HDD-CVO	1
-	Coil Only	6316024	HDD-CO	1
-	Manifold Assembly	99-127-001	HDD-MANASSY	1
-	Motor 1 phase low speed	01-135-032	HDD-MO-1	1
-	Motor 3 phase low speed	01-135-029	HDD-MO-3A	1
-	Motor 3 phase high speed	01-135-030	HDD-MO-3B	1
-	Pump Only 0.06 Displacement	01-143-905	HDD-PO-5	1
-	Pump Only 0.073 Displacement	01-143-906	HDD-PO-6	1
-	Pump Only 0.122 Displacement	01-143-907	HDD-PO-7	1
-	Pump Only 0.153 Displacement	01-143-908	HDD-PO-8	1
-	Junction Box	AB664JS	HDD-JB	1
-	Motor Contactor	E9.10-24AC	HDD-MC	1
-	Control Transformer	01-129-001	HDD-CT	1
-	Pendent Control Only	UCB-2-2	HDD-PWO	1
-	Up Travel Limit Switch	MJI-6101	HDD-LSW	1

** Please specify motor phase and voltage when ordering

Electric / Hydraulic BOM - HDD

ITEM NO.	QTY.	PARTNUMBER	PARTNUMBER
		Electrical parts used only on AC Dumpers	
1	1	01-135-XXX	Motor; varies by customer spec; contact factory
2	1	S11.310-24AC	Motor contactor, 30A, w/24 VAC coil
3	1	01-129-001	Transformer, control; w/24 VAC secondary
4	1	AGC 2	Fuse, for control circuit
5	1	01-029-006	Control enclosure, 6"W x 6"L x 4"D
6	1	99-034-008	Solenoid coil, 24 VAC
7	1	01-033-017	Connector cord, for solenoid coil
8	1	01-033-015	Cord, power, 14/3, 9' long, w/NEMA 5-15 plug (115V units only)
		Electrical parts used only on DC dumpers	
9	1	01-0135-036	Motor, 12 VDC, 2000W
10	1	15-022-004	Motor relay, "SmartStart"
11	1	99-034-010	Solenoid coil, 12 VDC
12	1	MDL-15	Fuse, charger output
13	1	15-139-001	Battery, 12 VDC, deep-cycle
14	1	01-033-024	Quick-connect cord (with 4-pin plug)
15	2	SY6319G1	Cable connector, to battery
16	1	A-402DSC	Junction box, 2"W x 4"L x 2"D
17	1	15-034-003	Battery charger, 12 VDC, 15 amp (option)
18	1	332-901	BCI (battery charge indicator) (option)
19	1	831613C3EB	Push-to-test button for BCI (option)
20	1	AB443JS	Junction box, 4"W x 4"L x 3"D (option)
		Electrical parts used on AC & DC dumpers	
21	1	01-522-019	Pushbutton control on 18" - 90" coil cord (portable units)
22	1	01-522-015	Pushbutton control on 8' straight cord (stationary units)
23	1	159/D	Multipole terminal strip
24	1	01-022-021	Limit switch, plunger (N.C.)
		Hydraulic parts used on all standard dumpers	
25	1	99-153-005	Valve, relief, 210 bar
26	1	99-153-015	Valve, solenoid, N.C.
27	1	99-153-011	Valve, check
28	1	99-153-024	Flow control spool, 2 gpm
29	1	99-021-909	Cylinder, displacement, 2.5" x 18"
30	1	99-127-001	Manifold, lift-hold-lower
31	1	01-143-XXX	Pump, hydraulic; varies by model; contact factory
32	1	03-023-001	Reservoir, 6" x 6" x 8"
33	1	DPS-40-N06	Breather plug
34	1	01-031-005	Fitting, intake screen
35	1	HO 150	Hydraulic fluid (gallons)

TROUBLESHOOTING GUIDE - HDD

Before performing any task, always lower the chute fully to the floor and disconnect the power supply.

Consult the factory for problems at time of installation, or for any problems not addressed below.

*Check the DC notes page for troubleshooting other problems specific to batter-powered units.

<u>PROBLEM</u>	<u>POSSIBLE CAUSES(S)</u>	<u>ACTION</u>
1) Power unit doesn't run when "UP" button is pressed	<ul style="list-style-type: none"> a) Transformer fuse is blown b) No supply voltage c) Upper-travel limit switch is engaged or bad d) Bad connection in control circuit e) Bad control transformer f) Open motor relay on coil g) Battery voltage low (DC units) 	<ul style="list-style-type: none"> a) Test with meter; replace if bad b) Test with meter. Check fuses, breakers, and overloads to determine the cause c) Inspect and test switch, Replace if bad d) Test all parts of circuit with meter e) Check for 24VAC; replace if bad f) Test with meter; Charge battery g) Test with meter. Change battery if low (is motor relay LED on?)
2) Motor runs properly, chute doesn't move. Motor and pump not noisy.	<ul style="list-style-type: none"> a) Motor rotation is wrong. b) Pump has failed. c) Fluid level is low. 	<ul style="list-style-type: none"> a) Verify motor shaft rotates CCW. b) Consult factory for replacement. c) Ensure reservoir is filled.
3) Motor or control enclosure hums, chatters, or buzzes, or some type of squeal can be heard; the chute does not move, or the but moves only slowly.	<ul style="list-style-type: none"> a) See second item above, for when chute doesn't raise. b) Excess voltage drop to motor, due to power wire size too small, wire run to long, or incoming voltage too low. c) Motor is "single-phasing". d) Pressure relief opening at full pressure. e) Contamination holding open the lowering valve or the check valve. 	<ul style="list-style-type: none"> a) Same as above. b) Check power installation for adequacy. Check incoming voltage while motor is running. Correct problem found. c) Determine causes of loss of voltage on one phase; correct. d) Check for structural damage or binding of the scissor legs, etc. Check for chute overload condition. e) Remove and inspect, Clean per instructions in this manual.
4) Chute raises, then drifts down	<ul style="list-style-type: none"> a) See last paragraph, above. 	<ul style="list-style-type: none"> a) Same as above.
5) Chute lowers too quickly	<ul style="list-style-type: none"> a) See above. b) Flow control spool is stuck. 	<ul style="list-style-type: none"> a) Same as above. b) See below.
6) Chute lowers too slowly	<ul style="list-style-type: none"> a) Flow control spool is stuck. b) Pinched hose. c) Velocity fuse locking (chute only slowly creeps down). 	<ul style="list-style-type: none"> a) Remove plug from FC port; push on flow spool to ensure it is fully pressed into the cavity. b) Check pressure, supply, and return hoses for kinks. c) Same as for jerky chute motion.
7) Chute won't lower.	<ul style="list-style-type: none"> a) Velocity fuse locking. b) Control transformer fuse blown. c) No supply voltage. d) Valve solenoid is bad. e) Bad connection in control circuit. f) Physical blockage of the structure. g) Solenoid valve or suction hose screen plugged. 	<ul style="list-style-type: none"> a) Same as for jerky chute motion. b) Test with meter; replace if bad. c) Test with meter. Check for cause of power loss. d) Check with multimeter on diodecheck function. (Reading for ohms will not provide an accurate test of the coil.) e) Test all parts of the circuit with meter. f) Inspect for foreign material or objects that might block the leg set or its rollers. g) Remove and inspect. Clean per instructions in this manual.
8) Spongy or jerky chute motion.	<ul style="list-style-type: none"> a) Excessive air in the hydraulic cylinders. 	<ul style="list-style-type: none"> a) Bleed air per procedure described in this manual.

