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Revised 09-02

# OWNER'S MANUAL

Drum Racker Model BHDC-450-60 / 72 / 84 / 96

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#### **WARNINGS & SAFETY INSTRUCTIONS**

#### Read owner's manual completely before operating unit!

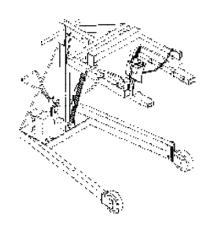
- \* Remove drum & disconnect power before working on unit.
- \* Do not stand below any part of a raised drum stacker or drum when unit is running.
- \* Stand clear of drum while operating the hand crank or chain crank
- \* Use only maintenance parts supplied or approved by the manufacturer.
- \* Do not change pressure relief valve setting.
- \* Never operate stacker/rotator unless you are watching it.
- \* Never exceed maximum capacity of 800 pounds for FULL drum: or 500 pounds for HALF-FULL drum.
- \* Load drum at the center of the cradle.
- \* Consult factory for uneven loading.
- \* Do not continue to pump on the foot pump pedal if the cradle is not raising.
- \* Do not use brake fluids or jack oils. Use AW-32 hydraulic oil or equivalent.
- \* Consult factory if adding or performing any modifications to the original equipment.
- \* Make sure all operator safety labels are in place (p.14).

#### **RECEIVING INSTRUCTIONS**

Every unit is thoroughly tested and inspected prior to shipment. However, it is possible that the unit may incur damage during transit. If you see damage when unloading make a note of it on the SHIPPER RECEIVER. 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 unit is correct for the intended application.

#### MODEL NUMBER AND CAPACITY

The model number, serial number and capacity is inscribed on the nameplate. Please remember to include these numbers in any correspondence with your dealer



HYDRAULIC DRUM STACKER BHDC-450 SERIES

#### LOADING INSTRUCTIONS

The load capacity rating as inscribed on the nameplate of your unit designates the net capacity, assuming the cradle is aligned at the center of the drum. This capacity must never be exceeded, as permanent damage or injury may result.

#### **OPERATING INSTRUCTIONS**

#### DRUMRACKER

Remove Hydraulic Drum Racker (BHDC-450), from the crate. Check carefully for damage and report any damage immediately. When using the Hydraulic Drum Racker, you can either lift up the drum horizontally or vertically.

#### Horizontal drum position

For horizontal drum position, lower the cradle near floor position until you can slide in the cradle along the side of the drum. Open carrier cradle full width and hook cradle chain on stud. Move the unit in until the end of the cradle touch the end of the drum. Lock drum in place by clinching chain with ratchet tightener.

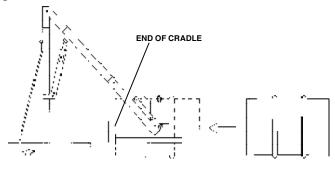


Figure 1

#### Vertical drum position

For vertical drum position, rotate the cradle to vertical position and lower the cradle until the end of the cradle is the same height as the top of the drum. Open carrier cradle full width and hook cradle chain on stud. Move the unit in until the side of the drum touches the cradle. Once again, lock drum in place by clinching chain with ratchet tightener.

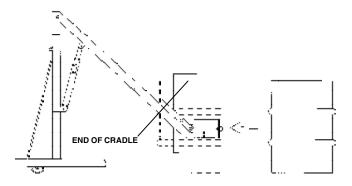


Figure 2

In both situations, raise the cradle until the drum is 3 - 4 inches above the ground before moving. It is recommended, but not required, the drum to be moved in a VERTICAL position. Remove control chain from box and place end of loop near operator. When stacking, rotate drum to the HORIZONTAL position.

Always stay clear of moving parts. The cradle will rise as the foot pedal is pumped. Depressing the release lever will lower the cradle at a control rate of descent.

In the event the unit is overloaded, the relief valve will open because of excessive pressure build up, and oil will bypass into the reservoir.

#### To rotate drum:

Pull on chain, rotating drum to horizontal position for stacking. For best control of drum rotating angle, pay out one side of the loop while pulling in the other.

\*\* For model BHDC-450-60, the drum is rotated using a hand crank instead of chain crank.

\*\* When elevation is not required, transport the drum in the lowered position.

#### **BOOM**

The BHDC-450 series may also be used as a hoist using the boom supplied with unit. The boom is stored conveniently on one of the lower straddle legs. Simply remove the 3/4" diameter pin from carriage and position boom on top of carriage, align holes and replace pin and clip. Lifting capacity for boom at hook position is 800 pounds. This capacity and load center must never be exceeded.

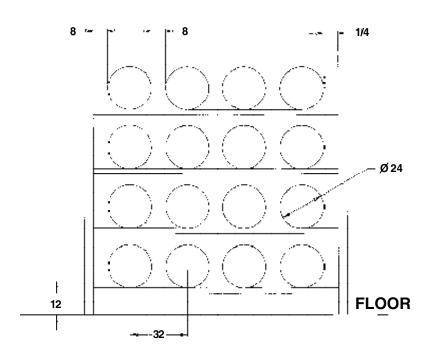
#### Ordering Replacement or Extra Parts

Our company takes pride in using the finest available parts for our equipment. We are not responsible for equipment failure resulting from the use of unapproved replacement parts. To order replacement or extra parts for your equipment contact Customer Service at the factory. In any correspondence with the factory please include the **Serial Number** which is inscribed on the nameplate of the piece of equipment. Use only the part numbers provided in this Owner's Manual. When ordering parts for AC power units please indicate the motor phase and voltage that the equipment is operating on.

#### **Safety Instructions for the Operator**

- 1.) The BHDC-450 series has a MAXIMUM CAPACITY RATING of 800 pounds FULL, and 500 pounds HALF-FULL, and is intended for lifting, moving, and stacking 55 GALLON steel drums. Do not exceed these ratings as the unsafe condition that may result could cause damage or excessive wear, or make the unit awkward to handle.
- 2.) Always load the unit properly. Make sure the end/top of the drum is touching the end of the cradle.
- 3.) When operating, loading, unloading, or maintaining your drum stacker, always use care and good judgement, have good footing and a firm hold. Keep hands and loose clothing etc., away from all moving parts. Never allow anyone to be below any part of a raised drum stacker, drum, or boom. Please read all instruction THOROUGHLY before attempting to operate your new drum stacker.
- 4.) Do not allow drum to impact on floor, ground, or dumping station etc., or there may be damage.
- 5.) Never use the unit if the cradle is in need of repairs or in the case of a malfunction.
- 6.) Notify your maintenance personnel or supervisor in case you notice anything out of the ordinary, such as binding, odd noises, appearance of oil, etc.
- 7.) Do not continue to pump on the foot pedal if the cradle is not raising. The foot pump may be permanently damaged. Relieve system pressure by depressing the release lever.
- 8.) It is recommended, but not required, the drum to be moved in a VERTICAL position. When stacking, rotate the drum to HORIZONTAL position.

#### RACK SPECIFICATIONS FOR THE HORIZONTAL DRUM STACKER (BHDC-450 SERIES)



#### **PERIODIC MAINTENANCE INSTRUCTIONS**



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

#### (A) Before Each Use Check For The Following

- 1.) Oil leaks.
- 2.) Worn or damaged hose.
- 3.) Structural deformation of cradle or frame.
- 4.) Unusual noise or binding.
- 5.) Check casters for proper operation.

#### Do not use if there are any of the above!

#### (B) Monthly Inspections

- 1.) Check oil level. Oil should be 1" to 1 1/2" below the top of the tank with the cradle in the fully lowered position. Add as necessary.
- 2.) Check for oil leaks.
- 3.) Check for worn or damaged hose.
- 4.) Check clevis and pivot points for wear.
- 5.) Periodically inspect all moving parts, framework, and contact areas for sign of wears, fatigue or loosening.Tighten, adjust or replace parts as necessary to prevent failure and maintain proper function.
- 6.) Check oil cradle hinges, ratchet, pawl, chain and other moving parts periodically.
- 7.) Lubricate gear-train once a month with a good grade lubricant.

  There are three grease fittings on the gear block, and one grease fitting in the idler bearing block.
- 8.) Check for unusual noise.
- 9.) Clean off dirt and debris.
- 10.) Make sure all warning labels are in place and in good condition (p.14).

#### (C) Yearly Inspection

Hydraulic oil should be changed at least once a year, or sooner if the oil darkens or becomes gritty. Flush reservoir before refilling. Presence of water is indicated if the oil turns milky. Recommended oil: AW-32 Hydraulic fluid or equal.

All maintenance work must be performed by qualified personnel with training in the repair of electrical and hydraulic components

#### HYDRAULIC OPERATION

When the operator wants to operate the unit, he/she depresses the "UP" button. This starts the electric motor which turns the hydraulic pump. Oil from the reservoir is drawn in through the suction filter and into the pump. The pump delivers the pressurized oil through the check valve before entering the cylinders.

The function of the check valve is to allow the oil to flow in one direction, i.e. towards the cylinders. It also prevents the flow of oil back into the pump circuit when the pump stops running. This holds the oil in the cylinders and maintains the desired elevation.

If the load is excessive, and the "UP" button is still depressed, pressure will build up in the circuit between the pump and the cylinders. This forces the "ball" or "poppet" in the relief valve to unseat allowing the pump flow to return to the inlet, thereby preventing hydraulic or structural damage.

When the operator wants to lower the unit, he depresses the "DOWN" button. This energizes the down solenoid valve. (In the event of power outage, the cradle can be lowered using the manual release on top of the valve stem.) The poppet in the solenoid valve is unseated and oil now returns from the cylinders through the return screen, solenoid valve, flow control valve, oil return/intake hose, filter, and into the reservoir.

The pressure compensated flow control valve controls the lowering speed of the table. It is preset and cannot be changed. Releasing the "DOWN" button will de-energize the solenoid, closing the valve poppet. This prevents the oil from returning to the reservoir and the cylinders will stop retracting. The unit is now maintained at that particular elevation.

#### Cartridge valve maintenance

The lowering valve, as discussed above, is of cartridge construction and is basically maintenance-free. If there is a faulty operation, check troubleshooting Section. To clean the cartridge valve, follow this procedure:

- 1.) WARNING: Lower the unit completely or install the maintenance safety bar(s) before removing cartridge valve.
- 2.) Use a sharp object and push the valve stem's poppet in from the bottom to open the valve.
- 3.) Repeat several times while valve is immersed in kerosene or mineral spirits. Blow dry.
- 4.) Blow compressed air through the valve while holding open as described in step 2.
- 5.) Inspect the "O" rings and the teflon extrusion washer.
- 6.) Reinstall. The valve should be tightened to approximately 30 ft. lbs.

#### Velocity fuse operation

There is a brass velocity fuse with a stainless steel spring in the base of each cylinder. In the event of a hydraulic hose or fitting failure, the cradle starts to lower at a fast rate. As soon as the descent speed exceeds the fuse's preset speed, the velocity fuse will shut off the oil flow and the cradle will remain nearly stationary until pressure is reapplied (after repairs are done). This safety feature reduces the possibility of accidental personal injury or damage to the unit or its loads. If air is introduced into the system, the velocity fuse can lock up even though no failure has occurred. To reset the velocity fuse just activate pump by depressing the "UP" button. Remove the load and follow the cylinder air bleed procedures on page 6.

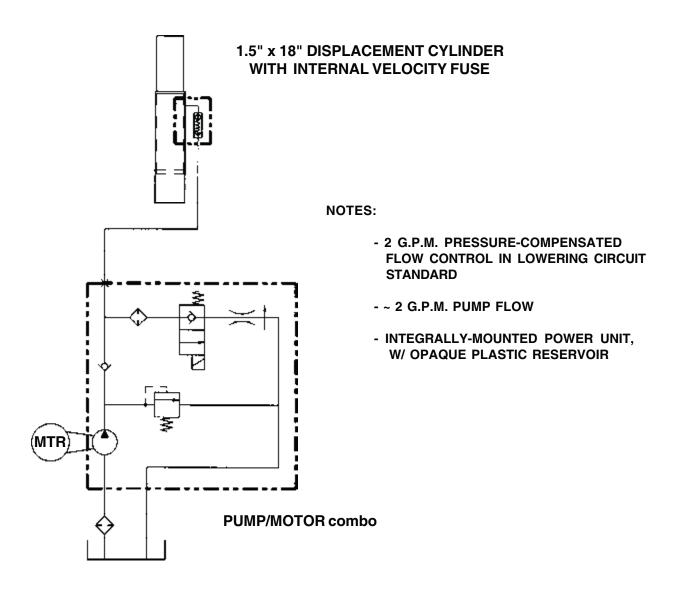
#### Air bleed procedure

If your unit descends very slowly or will not descend at all, air could be trapped in the hydraulic circuit and must be "bled" from the system. The Hydraulic Drum Stacker (BHDC-450 Series) utilizes a "bleeder" fitting at the end of the cylinder near the cross tube. If you experience the above, follow these directions.

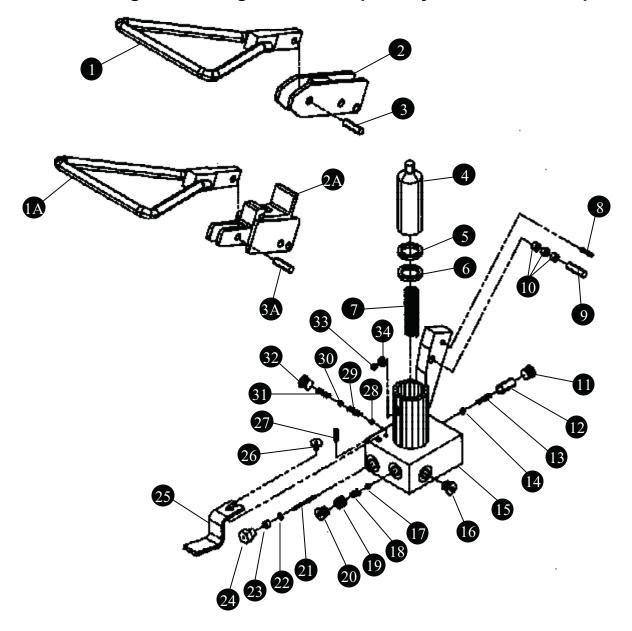
- 1.) Remove the drum from the cradle.
- 2.) Raise the unit.
- 3.) If available, place a 1/4" plastic hose over the cylinder bleeder screw.
- 4.) Loosen the bleeder screw at the top of the cylinder approximately 1/4 to 1/2 turn to allow trapped air to escape.
- 5.) When the cylinder is free of air, tighten the bleeder screw and remove the plastic hose.

Air can also become trapped in the foot pump. Please refer to page 8 for the foot pump air bleed procedure.

#### HYDRAULIC SCHEMATIC



#### Parts Diagram for Single and Two-Speed Hydraulic Foot Pumps



#### Operating Instructions

#### Features:

Your new lift equipment has been supplied with an exclusive single-speed or two-speed foot pump. The internal features of your pump include a primary pressure relief, pressure compensated return flow control valve, and an integrated lowering valve. Replaceable bushings, valve components, and seals have been utilized in the construction of the pump in the event that replacements are necessary.

#### **Operating Instructions:**

Stay clear of moving parts. The cradle will rise as the foot pedal is pumped. Depressing the release lever will lower the cradle at a controlled rate of descent.

In the event the cradle has been overloaded, the pressure relief valve will open because of excessive pressure build-up in the hydraulic system. Oil will bypass into the reservoir. **Never** increase the pressure relief valve setting more than necessary. **Do not** exceed the rated capacity of your lift equipment.

#### **Two-Speed Selection:**

The two-speed hydraulic foot pump offers two "speeds". The low speed produces *low volume/high pressure*. The high speed produces *high volume/low pressure*. The operator has the option of selecting the optimum pump speed for the application at hand. Pump speeds are selected by sliding the "lock collar" (Item # 2 on the parts identification) <u>in or out</u>. An occasional drop of oil will keep the collar working freely.

#### Parts Identification for Single and Two-Speed Hydraulic Foot Pumps

NUMBER   DESCRIPTION   Assembly, lever delta foot pedal, double speed   B01-540-003   1   Assembly, lever delta foot pedal, single speed   B01-540-004   1   2   Linkage for single-speed foot pump   BNFP-LNK1   1   2A   Linkage for two-speed foot pump   BNFP-LNK2   1   3   3/8" x 1-3/4" dia. detent pin   B01-130-004   1   3A   3/8" x 1-1/4" dia. detent pin   B01-130-005   1   4   Pump plunger   B01-041-004   1   5   Piston wiper seal   B550110   1   5   Piston wiper seal   B550110   1   7   Piston return spring   B01-146-004   1   8   1/4" x 1-1/2" spring pin   B61-130-004   1   8   1/4" x 1-1/2" spring pin   B61-130-004   1   1   1   1   1   1   1   1   1	ITEM		PART	
1A	NUMBER	DESCRIPTION	NUMBER	QUANTITY
2	1	Assembly, lever delta foot pedal, double speed	B01-540-003	1
2	1A	Assembly, lever delta foot pedal, single speed	B01-540-004	1
2A	2		BNFP-LNK1	1
3A   3/8" x 1-1/4" dia. detent pin   B01-130-005   1	2A		BNFP-LNK2	1
A   Pump plunger   B01-041-004   1     A   5   Piston wiper seal   B550110   1     A   6   Piston U-cup seal   B552101   1     7   Piston return spring   B01-146-004   1     8   1/4" x 1-1/2" spring pin   B64251   1     9   3/8" x 1-3/4" dia. Drive-Lock pin   B01-130-004   1     10   Sleeve sintered bronze bearing   B01-111-038   3     11   Fitting, "O"-ring plug   B01-116-007   1     12   Pressure compensated flow control valve   B01-127-007   1     13   Release check spring   B01-146-002   1     14   5/16" dia. steel ball   B01-145-001   1     15   Pump body/manifold   BNFP-BDYMAN   1     16   Fitting, "O"-ring plug   B01-116-007   1     17   3/8" dia. chrome steel ball   B01-145-003   1     18   Pressure relief spring   B01-146-005   1     18   Pressure relief spring   B01-146-005   1     A   19   Fitting, "O"-ring plug   B01-116-006   1     20   Fitting, "O"-ring plug   B01-116-006   1     21   Release pin seal retaining ring   B01-112-016   1     A   22   Release pin seal retaining ring   B01-112-016   1     A   23   Release lever   B01-144-002   1     24   Fitting, hydraulic plug   B01-116-004   1     25   Release lever retaining screw   B01-119-001   1     26   Release lever retaining screw   B01-119-001   1     27   3/16" x 1-1/18" spring pin   B64134   1     28   5/16" dia. chrome steel ball   B01-145-001   1     29   Inlet check spring   B01-146-001   1     30   T/16" dia. chrome steel ball   B01-146-001   1     31   Outlet check spring   B01-146-001   1     32   Fitting, "O"-ring plug   B01-116-007   1     33   1/4" -20 x 1/4" socket head cap screw   B562008   1	3	3/8" x 1-3/4" dia. detent pin	B01-130-004	1
A   Pump plunger   B01-041-004   1     A   5   Piston wiper seal   B550110   1     A   6   Piston U-cup seal   B552101   1     7   Piston return spring   B01-146-004   1     8   1/4" x 1-1/2" spring pin   B64251   1     9   3/8" x 1-3/4" dia. Drive-Lock pin   B01-130-004   1     10   Sleeve sintered bronze bearing   B01-111-038   3     11   Fitting, "O"-ring plug   B01-116-007   1     12   Pressure compensated flow control valve   B01-127-007   1     13   Release check spring   B01-146-002   1     14   5/16" dia. steel ball   B01-145-001   1     15   Pump body/manifold   BNFP-BDYMAN   1     16   Fitting, "O"-ring plug   B01-116-007   1     17   3/8" dia. chrome steel ball   B01-145-003   1     18   Pressure relief spring   B01-146-005   1     18   Pressure relief spring   B01-146-005   1     A   19   Fitting, "O"-ring plug   B01-116-006   1     20   Fitting, "O"-ring plug   B01-116-006   1     21   Release pin seal retaining ring   B01-112-016   1     A   22   Release pin seal retaining ring   B01-112-016   1     A   23   Release lever   B01-144-002   1     24   Fitting, hydraulic plug   B01-116-004   1     25   Release lever retaining screw   B01-119-001   1     26   Release lever retaining screw   B01-119-001   1     27   3/16" x 1-1/18" spring pin   B64134   1     28   5/16" dia. chrome steel ball   B01-145-001   1     29   Inlet check spring   B01-146-001   1     30   T/16" dia. chrome steel ball   B01-146-001   1     31   Outlet check spring   B01-146-001   1     32   Fitting, "O"-ring plug   B01-116-007   1     33   1/4" -20 x 1/4" socket head cap screw   B562008   1	3A	3/8" x 1-1/4" dia. detent pin	B01-130-005	1
7         Piston return spring         B01-146-004         1           8         1/4" x 1-1/2" spring pin         B64251         1           9         3/8" x 1-3/4" dia. Drive-Lock pin         B01-130-004         1           10         Sleeve sintered bronze bearing         B01-111-038         3           11         Fitting, "0"-ring plug         B01-116-007         1           12         Pressure compensated flow control valve         B01-127-007         1           13         Release check spring         B01-146-002         1           14         5/16" dia. steel ball         B01-145-001         1           15         Pump body/manifold         BNFP-BDYMAN         1           16         Fitting, "0"-ring plug         B01-116-007         1           17         3/8" dia. chrome steel ball         B01-146-003         1           18         Pressure relief spring         B01-146-005         1           18         Pressure relief spring         B01-116-006         1           20         Fitting, "0"-ring plug         B01-116-006         1           21         Release pin         B01-116-007         1           A         22         Release pin seal retaining ring         B565011	4		B01-041-004	1
7         Piston return spring         B01-146-004         1           8         1/4" x 1-1/2" spring pin         B64251         1           9         3/8" x 1-3/4" dia. Drive-Lock pin         B01-130-004         1           10         Sleeve sintered bronze bearing         B01-111-038         3           11         Fitting, "0"-ring plug         B01-116-007         1           12         Pressure compensated flow control valve         B01-127-007         1           13         Release check spring         B01-146-002         1           14         5/16" dia. steel ball         B01-145-001         1           15         Pump body/manifold         BNFP-BDYMAN         1           16         Fitting, "0"-ring plug         B01-116-007         1           17         3/8" dia. chrome steel ball         B01-146-003         1           18         Pressure relief spring         B01-146-005         1           18         Pressure relief spring         B01-116-006         1           20         Fitting, "0"-ring plug         B01-116-006         1           21         Release pin         B01-116-007         1           A         22         Release pin seal retaining ring         B565011	A 5	Piston wiper seal	B550110	1
8         1/4" x 1-1/2" spring pin         B64251         1           9         3/8" x 1-3/4" dia. Drive-Lock pin         B01-130-004         1           10         Sleeve sintered bronze bearing         B01-111-038         3           11         Fitting, "O"-ring plug         B01-116-007         1           12         Pressure compensated flow control valve         B01-127-007         1           13         Release check spring         B01-146-002         1           14         5/16" dia. steel ball         B01-146-002         1           15         Pump body/manifold         BNFP-BDYMAN         1           16         Fitting, "O"-ring plug         B01-116-007         1           17         3/8" dia. chrome steel ball         B01-145-003         1           18         Pressure relief spring         B01-146-005         1           18         Pressure adjustment plug         B01-116-006         1           20         Fitting, "O"-ring plug         B01-116-006         1           21         Release pin         B01-116-007         1           A         22         Release pin seal retaining ring         B565011         1           A         23         Release lever         B01-	A 6	Piston U-cup seal	B532101	1
9   3/8" x 1-3/4" dia. Drive-Lock pin   B01-130-004   1     10   Sleeve sintered bronze bearing   B01-111-038   3     11   Fitting, "O"-ring plug   B01-116-007   1     12   Pressure compensated flow control valve   B01-127-007   1     13   Release check spring   B01-146-002   1     14   5/16" dia. steel ball   B01-145-001   1     15   Pump body/manifold   BNFP-BDYMAN   1     16   Fitting, "O"-ring plug   B01-116-007   1     17   3/8" dia. chrome steel ball   B01-145-003   1     18   Pressure relief spring   B01-146-005   1     A   19   Fitting, pressure adjustment plug   B01-116-006   1     20   Fitting, "O"-ring plug   B01-116-007   1     21   Release pin   B01-112-016   1     A   22   Release pin seal retaining ring   B565011   1     A   23   Release rod U-cup seal   B01-144-002   1     24   Fitting, hydraulic plug   B01-116-004   1     25   Release lever   B01-040-001   1     26   Release lever retaining screw   B01-119-001   1     27   3/16" x 1-1/8" spring pin   B64134   1     28   5/16" dia. chrome steel ball   B01-145-001   1     29   Inlet check spring   B01-146-001   1     30   7/16" dia. chrome steel ball   B01-145-004   1     31   Outlet check spring   B01-146-001   1     32   Fitting, "O"-ring plug   B01-116-007   1     33   1/4" -20 x 1/4" socket head cap screw   B562008   1	7	Piston return spring	B01-146-004	1
10   Sleeve sintered bronze bearing   B01-111-038   3   11   Fitting, "O"-ring plug   B01-116-007   1   12   Pressure compensated flow control valve   B01-127-007   1   13   Release check spring   B01-146-002   1   14   5/16" dia. steel ball   B01-145-001   1   15   Pump body/manifold   BNFP-BDYMAN   1   16   Fitting, "O"-ring plug   B01-116-007   1   17   3/8" dia. chrome steel ball   B01-145-003   1   18   Pressure relief spring   B01-146-005   1   18   Pressure relief spring   B01-146-005   1   19   Fitting, pressure adjustment plug   B01-116-006   1   10   10   10   10   10   10	8	1/4" x 1-1/2" spring pin	B64251	1
10   Sleeve sintered bronze bearing   B01-111-038   3   11   Fitting, "O"-ring plug   B01-116-007   1   12   Pressure compensated flow control valve   B01-127-007   1   13   Release check spring   B01-146-002   1   14   5/16" dia. steel ball   B01-145-001   1   15   Pump body/manifold   BNFP-BDYMAN   1   16   Fitting, "O"-ring plug   B01-116-007   1   17   3/8" dia. chrome steel ball   B01-145-003   1   18   Pressure relief spring   B01-146-005   1   18   Pressure relief spring   B01-146-005   1   19   Fitting, pressure adjustment plug   B01-116-006   1   10   10   10   10   10   10	9	3/8" x 1-3/4" dia. Drive-Lock pin	B01-130-004	1
12	10		B01-111-038	3
13	11	Fitting, "O"-ring plug	B01-116-007	1
13	12	Pressure compensated flow control valve	B01-127-007	1
15	13		B01-146-002	1
16	14	5/16" dia. steel ball	B01-145-001	1
17   3/8" dia. chrome steel ball   B01-145-003   1	15	Pump body/manifold	BNFP-BDYMAN	1
18	16	Fitting, "O"-ring plug	B01-116-007	1
A       19       Fitting, pressure adjustment plug       B01-116-006       1         20       Fitting, "O"-ring plug       B01-116-007       1         21       Release pin       B01-112-016       1         A       22       Release pin seal retaining ring       B565011       1         A       23       Release rod U-cup seal       B01-144-002       1         24       Fitting, hydraulic plug       B01-116-004       1         25       Release lever       B01-040-001       1         26       Release lever retaining screw       B01-119-001       1         27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	17	3/8" dia. chrome steel ball	B01-145-003	1
20   Fitting, "O"-ring plug   B01-116-007   1	18	Pressure relief spring	B01-146-005	1
20   Fitting, "O"-ring plug   B01-116-007   1	A 19	Fitting, pressure adjustment plug	B01-116-006	1
A       22       Release pin seal retaining ring       B565011       1         A       23       Release rod U-cup seal       B01-144-002       1         24       Fitting, hydraulic plug       B01-116-004       1         25       Release lever       B01-040-001       1         26       Release lever retaining screw       B01-119-001       1         27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	20		B01-116-007	1
A       23       Release rod U-cup seal       B01-144-002       1         24       Fitting, hydraulic plug       B01-116-004       1         25       Release lever       B01-040-001       1         26       Release lever retaining screw       B01-119-001       1         27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	21	Release pin	B01-112-016	1
24         Fitting, hydraulic plug         B01-116-004         1           25         Release lever         B01-040-001         1           26         Release lever retaining screw         B01-119-001         1           27         3/16" x 1-1/8" spring pin         B64134         1           28         5/16" dia. chrome steel ball         B01-145-001         1           29         Inlet check spring         B01-146-001         1           30         7/16" dia. chrome steel ball         B01-145-004         1           31         Outlet check spring         B01-146-001         1           32         Fitting, "O"-ring plug         B01-116-007         1           33         1/4" -20 x 1/4" socket head cap screw         B562008         1           A         34         1/4" sealing washer (copper with rolled core)         B577004         1	A 22	Release pin seal retaining ring	B565011	1
25       Release lever       B01-040-001       1         26       Release lever retaining screw       B01-119-001       1         27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	A 23	Release rod U-cup seal	B01-144-002	1
26       Release lever retaining screw       B01-119-001       1         27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	24	Fitting, hydraulic plug	B01-116-004	1
27       3/16" x 1-1/8" spring pin       B64134       1         28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	25	Release lever	B01-040-001	1
28       5/16" dia. chrome steel ball       B01-145-001       1         29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	26	Release lever retaining screw	B01-119-001	1
29       Inlet check spring       B01-146-001       1         30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	27	3/16" x 1-1/8" spring pin	B64134	1
30       7/16" dia. chrome steel ball       B01-145-004       1         31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	28	5/16" dia. chrome steel ball	B01-145-001	1
31       Outlet check spring       B01-146-001       1         32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	29	Inlet check spring	B01-146-001	1
32       Fitting, "O"-ring plug       B01-116-007       1         33       1/4" -20 x 1/4" socket head cap screw       B562008       1         A       34       1/4" sealing washer (copper with rolled core)       B577004       1	30	7/16" dia. chrome steel ball	B01-145-004	1
33 1/4" -20 x 1/4" socket head cap screw B562008 1  A 34 1/4" sealing washer (copper with rolled core) B577004 1	31	Outlet check spring	B01-146-001	1
A 34 1/4" sealing washer (copper with rolled core) B577004 1	32	Fitting, "O"-ring plug	B01-116-007	1
	33	1/4" -20 x 1/4" socket head cap screw	B562008	1
A Foot Pump rebuild kit (includes items 5, 6, 19, 22, 23, & 34) B01-136-403 1	A 34	1/4" sealing washer (copper with rolled core)	B577004	1
	Α	Foot Pump rebuild kit (includes items 5, 6, 19, 22, 23, & 34)	B01-136-403	1

X Kit item (included with purchase of kit)

#### Air Bleed Procedure

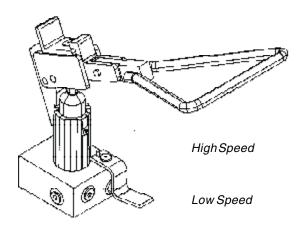
Whether your pump is a new installation, or has been recently serviced, air has likely entered the hydraulic system. The design of this pump includes an "air bleed screw" which will aid in the removal of unwanted air from the foot pump area of the hydraulic system. Use the following steps to remove the air from the system.

- 1) Check all fittings to be sure they are tight. Ensure that the oil is filled to within 1" of the top of the reservoir when the cradle is in the fully lowered position.
- 2) Locate the "air bleed screw" (Item # 34 on the pump body) and loosen approximately 1/2 turn counterclockwise. As soon as you have loosened the screw, slowly depress the foot pedal. This will force the air out of the pump chamber. Before you let the pump pedal return to the "up" or "home" position, tighten the air bleed screw. This will prevent air form reentering the pump chamber. Repeat the above procedure until the pump chamber is completely filled with oil and a "spongy" feel is no longer present. If the air bleeding procedure has been successful, the feel of the foot pedal will be firm and the complete stroke of the pump will produce fluid flow.

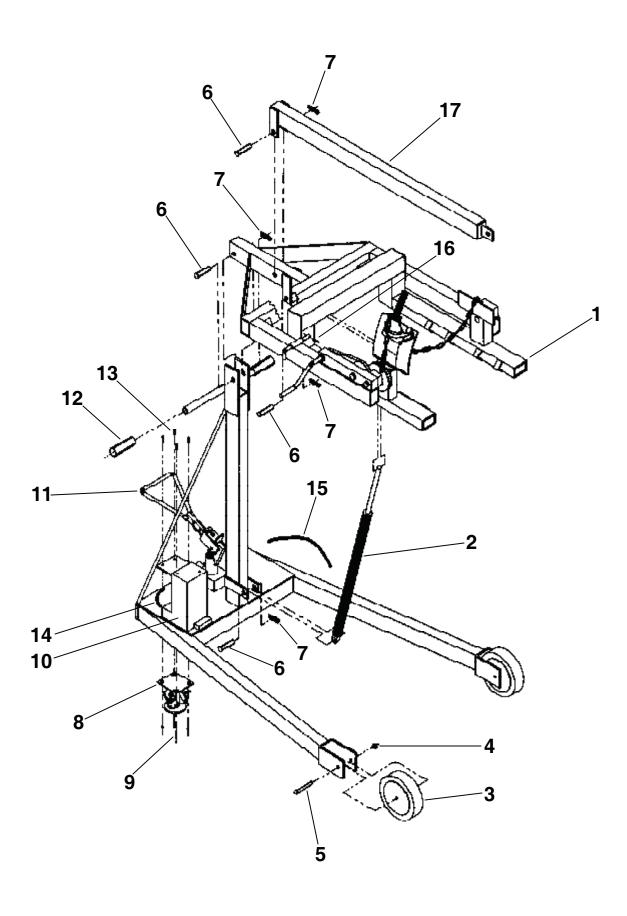
## Trouble shooting Guide for Single and Two-speed Hydraulic Foot Pump

Observation			Possible Cause		emedy	*Refer to exploded view	
1.)	Cradle does not raise	a. b.	Excessive load Oil is low	a. b.	Remove part of Fill oil to within reservoir	f the load n one inch of the top of the	
		c. d.	Pinched hose Relief valve set too low	c. d.	Correct as nece Increase only a		
2.)	Foot pedal goes down hard but cradle does not raise	a.	Particle of dirt under the pressure relief valve	a.	Lower cradle -	Disassemble, clean and reassemble	
	does not raise	b.	Particle of dirt under inlet check valve	b.		Disassemble, clean and reassemble	
3.)	Unit will pump under no load or when rapidly stroked, or pedal will	a. b.	Pump is air locked Inlet check valve has foreign material on seat	a. b.	Bleed air from	system inlet ean inlet ball and seat	
	stroke without pumping	c.	Relief setting is out of adjustment	c.	Adjust relief se		
	saone maioa pampang	d.	Foreign material on relief valve seat	d.	Lowering valv	e has foreign material on the in the open position	
4.)	Cradle raises when the pump is stroked but lowers on return stroke	a.	Outlet check is leaking	a.	Clean foreign r	naterial from ball and seat	
5.)	Cradle raises but takes too much effort	a.	Change pump displacement speed	a.	Slide locking c	ollar back	
6.)	Cradle raises but is too slow	a.	Change pump displacement speed	a.	Slide locking c		
		b.	Intake filter clogged	b.	debris, refill wi	drain reservoir, clean and flush	
		c.	Foreign material stuck under pressure relief valve or under inlet check valve	c.		Disassemble, clean and reassemble	
7.)	Spongy or jerky operation	a.	Check for foreign material stuck in clevis or pivot points or frame rails	a.	Correct as nece	essary	
		b.	Oil is low	b.	Fill oil to withi reservoir	n one inch of the top of the	
8.)	Cradle lowers too slow	a.	Pinched hose Intake filter clogged	a.	Correct as nece		
		b. с.	Foreign material lodged in velocity fuse	b. с.	Correct as nece	essary Disassemble, clean and reassemble	
		d.	Foreign material lodged in pressure compensated flow control valve	d.		Disassemble, clean and reassemble	
9.)	Cradle lowers too fast	a.	Foreign material lodged in pressure compensated flow control valve	a.	Lower cradle - pressure relief	Disassemble, clean and reassemble valve*	
10.)	Cradle raises but does not lower	a.	Foreign material lodged in pressure compensated flow control valve	a.	Lower cradle -	Disassemble, clean and reassemble	
10.)	Cradle raises but does not lower	b.	Release pin bent or missing	b.	Replace as nec		
		c.	Foreign object blocking roller travel	c.	Correct as nece	essary	
		d.	Velocity fuse is locked	d.		m hydraulic system, to unlock,	

# SPEED SELECTION FOR TWO-SPEED HYDRAULIC FOOT PUMP



### BHDC-450 SERIES HYDRAULIC DRUM CARRIER/ROTATOR

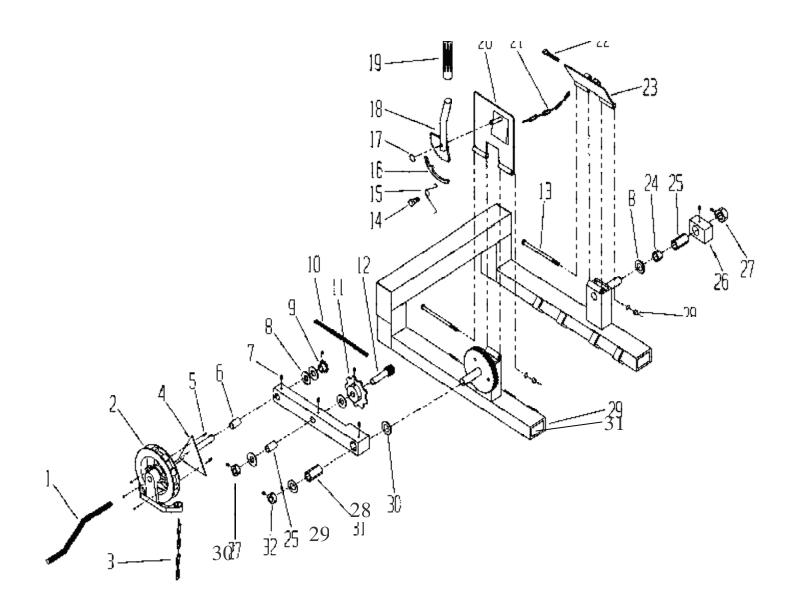


# PARTS IDENTIFICATION BHDC-450 SERIES HYDRAULIC DRUM CARRIER/ROTATOR

ITEM NO.	DESCRIPTION	PART NO.	QTY
1	HDC cradle ass'y (see pages 6 & 7)	B09538005	1
2	Hydraulic cyl., 1-1/2" dia. x 18" [HDC-450-60/72/84]	B09021004	1
	Hydraulic cyl., 1-1/2" dia. x 18" [HDC-450-96 only]	B09021004	2
3	Wheel, caster	B16132036	2
4	Locking hex nut, 1/2"-20	A/L	2
5	Hex head cap screw, 1/2"-20 x 3-1/2"	A/L	2
6	Clevis pin, 3/4" dia. x 3-3/8"	B09112006	4
7	Hitch pin clip, # 11 (Fastenal)	B45285	4
8	Floor brake	B16132080	1
9	Hex nut, 3/8"-16	A/L	4
10	Reservoir	B15023001	1
11	Two-speed hydraulic foot pump (see pages 12-13)	B250550	1
12	Handle grip	AL	2
13	Hex head cap screw, 3/8"-16 x 1"	A/L	4
14	Reservoir hose	B09623001	1
15	Hydraulic hose (HDC-450-60)	B09623002	1
	Hydraulic hose (HDC-450-72)	B09623003	1
	Hydraulic hose (HDC-450-84)	B09623004	1
	Hydraulic hose (HDC-450-96)	B09623005	1
16	Spring pin, 3/16" x 1-1/2" (HDC-305-60 only)	A/L	1
17	Boom	B09514031	1

A/L Available at local hardware store

# PARTSDIAGRAM FORCRADLE ASSEMBLY (DRUM RACKER) BHBC-450 SERIES

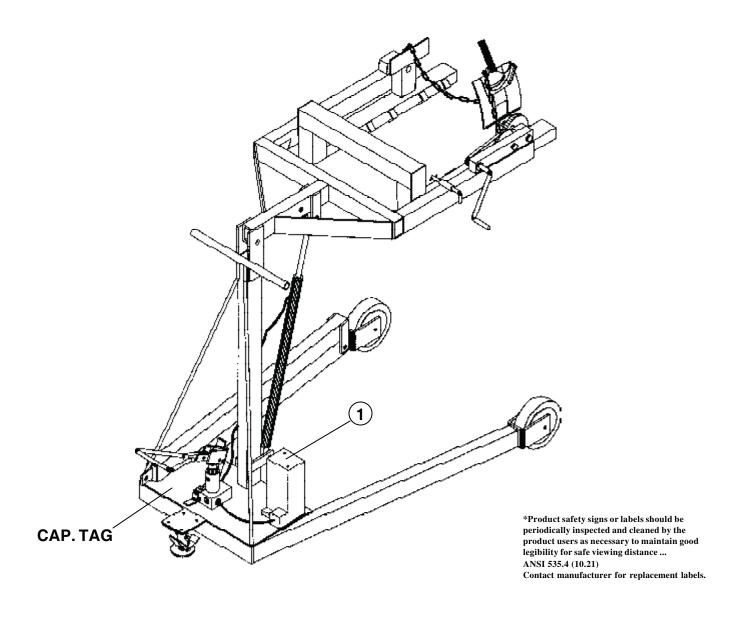


# PARTS DIAGRAM FOR CRADLE ASSEMBLY (DRUM CARRIER/ROTATOR BHDC-450 SERIES

NUMBER   DESCRIPTION   NUMBER   QUANTITY	ITEM		PART	
1 Chain wheel (BHDC-450-72/84/96 only) 2 #1/0 Babbitt lock link chain (20") (BHDC-450-72/84/96 only) 3 Chain wheel shaft w/triangle & bolts (BHDC-450-72/84/96 only) 4 Bolt & nut, 5/16-18 x 1" (BHDC-450-72/84/96 only) 5 Bearing, 3/4" ID x 2-1/2" Bolt 111048 1 6 Grease fitting Alemite (1608B) 7 Washer, 3/4" SAE 8 B09113004 5 Sprocket (12T # 35) 9 Roller chain (# 35-3/8" pitch) 10 Sprocket (36T # 35) 11 Pinion gear (7T) w/key 12 Hinge pine & nuts 14 Pawl spring 15 Pawl 16 Snap ring 17 Ratchet 18 Handle grip 19 Pawl & ratchet hinge plate 20 Binder chain 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) 22 Chain hinge plate 23 Spacer (3/4" ID) 24 Bearing, 1" ID x 2-1/2" B110 B09145003 1 SPT-P 2 D89113005 2 Bearing, 1" ID x 2-1/2" B101111047 B10111047 B102-B09113006 2 Bearing, 1" ID x 2-1/2" B1111047 B10111048 B1-P 1 B11-P	NUMBER	DESCRIPTION	NUMBER	QUANTITY
2       #1/0 Babbitt lock link chain (20") (BHDC-450-72/84/96 only)       B2-P       1         3       Chain wheel shaft w/triangle & bolts (BHDC-450-72/84/96 only)       B3-P       1         4       Bolt & nut, 5/16-18 x 1" (BHDC-450-72/84/96 only)       B35-P       3         5       Bearing, 3/4" ID x 2-1/2"       B01111048       1         6       Grease fitting Alemite (1608B)       B33-P       4         7       Washer, 3/4" SAE       B09113004       5         8       Sprocket (12T # 35)       B09042004       1         9       Roller chain (# 35-3/8" pitch)       B09042006       1         10       Sprocket (36T # 35)       B09042007       1         11       Pinion gear (7T) w/key       B09042007       1         12       Hinge pine & nuts       B157-P       2         13       Pawl shoulder screw and nut       B170-P       1         14       Pawl spring       B169-P       1         15       Pawl       B168-P       1         16       Snap ring       B169-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratche	1a	Hand wheel (BHDC-450-60 only)	B1A-P	1
3 Chain wheel shaft w/triangle & bolts (BHDC-450-72/84/96 only) 4 Bolt & nut, 5/16-18 x 1" (BHDC-450-72/84/96 only) 5 Bearing, 3/4" ID x 2-1/2" 6 Grease fitting Alemite (1608B) 7 Washer, 3/4" SAE 8 Bo9113004 5 Bo9042004 1 B09042006 1 B09042006 1 B09042007 1 Pinion gear (7T) w/key 1 B09042007 1 Pinion gear (7T) w/key 1 B157-P 1 Pawl spring 1 B168-P 1 B1	1	Chain wheel (BHDC-450-72/84/96 only)	B1-P	1
4 Bolt & nut, 5/16-18 x 1" (BHDC-450-72/84/96 only) 5 Bearing, 3/4" ID x 2-1/2" B01111048 1 6 Grease fitting Alemite (1608B) B33-P 4 7 Washer, 3/4" SAE B09113004 5 8 Sprocket (12T # 35) B09042004 1 9 Roller chain (# 35-3/8" pitch) B09042006 1 10 Sprocket (36T # 35) B09042003 1 11 Pinion gear (7T) w/key B09042007 1 12 Hinge pine & nuts B157-P 2 13 Pawl shoulder screw and nut B170-P 1 14 Pawl spring B169-P 1 15 Pawl B168-P 1 16 Snap ring B166-P 1 17 Ratchet B165-P 1 18 Handle grip B136-P 1 18 Handle grip B136-P 1 19 Pawl & ratchet hinge plate B09516006 1 20 Binder chain B180-P 1 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) B155-P 1 22 Chain hinge plate B09516007 1 23 Spacer (3/4" ID) B20-P 1 24 Bearing (Randall SH186) B7-P 2 25 Bearing block B09113005 2 27 Washer & nut B21-P 2 28 Spur gear spacer B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	2	#1/0 Babbitt lock link chain (20") (BHDC-450-72/84/96 only)	B2-P	1
5         Bearing, 3/4" ID x 2-1/2"         B01111048         1           6         Grease fitting Alemite (1608B)         B33-P         4           7         Washer, 3/4" SAE         B09113004         5           8         Sprocket (12T # 35)         B09042004         1           9         Roller chain (# 35-3/8" pitch)         B09042006         1           10         Sprocket (36T # 35)         B09042007         1           11         Pinion gear (7T) w/key         B09042007         1           12         Hinge pine & nuts         B157-P         2           13         Pawl shoulder screw and nut         B170-P         1           14         Pawl spring         B169-P         1           15         Pawl         B168-P         1           16         Snap ring         B166-P         1           17         Ratchet         B165-P         1           18         Handle grip         B136-P         1           19         Pawl & ratchet hinge plate         B09516006         1           20         Binder chain         B180-P         1           21         Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)         B155-P         1	3	Chain wheel shaft w/triangle & bolts (BHDC-450-72/84/96 only)	В3-Р	1
6 Grease fitting Alemite (1608B) B33-P 4 7 Washer, 3/4" SAE B09113004 5 8 Sprocket (12T # 35) B09042004 1 9 Roller chain (# 35-3/8" pitch) B09042006 1 10 Sprocket (36T # 35) B09042007 1 11 Pinion gear (7T) w/key B09042007 1 12 Hinge pine & nuts B157-P 2 13 Pawl shoulder screw and nut B170-P 1 14 Pawl spring B169-P 1 15 Pawl B168-P 1 16 Snap ring B166-P 1 17 Ratchet B165-P 1 18 Handle grip B136-P 1 19 Pawl & ratchet hinge plate B09516006 1 20 Binder chain B180-P 1 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) B155-P 1 22 Chain hinge plate B09516007 1 23 Spacer (3/4" ID) B20-P 1 24 Bearing (Randall SH186) B7-P 2 25 Bearing (Randall SH186) B7-P 2 26 Collar (3/4" ID) B09145001 2 27 Washer & nut B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	4	Bolt & nut, 5/16-18 x 1" (BHDC-450-72/84/96 only)	B35-P	3
7       Washer, 3/4" SAE       B09113004       5         8       Sprocket (12T # 35)       B09042004       1         9       Roller chain (# 35-3/8" pitch)       B09042006       1         10       Sprocket (36T # 35)       B09042003       1         11       Pinion gear (7T) w/key       B09042007       1         12       Hinge pine & nuts       B157-P       2         13       Pawl shoulder screw and nut       B170-P       1         14       Pawl spring       B169-P       1         15       Pawl       B168-P       1         16       Snap ring       B166-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25	5	Bearing, 3/4" ID x 2-1/2"	B01111048	1
8         Sprocket (12T # 35)         B09042004         1           9         Roller chain (# 35-3/8" pitch)         B09042006         1           10         Sprocket (36T # 35)         B09042003         1           11         Pinion gear (7T) w/key         B09042007         1           12         Hinge pine & nuts         B157-P         2           13         Pawl shoulder screw and nut         B170-P         1           14         Pawl spring         B169-P         1           15         Pawl         B168-P         1           16         Snap ring         B166-P         1           17         Ratchet         B165-P         1           18         Handle grip         B136-P         1           19         Pawl & ratchet hinge plate         B09516006         1           20         Binder chain         B180-P         1           21         Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)         B155-P         1           22         Chain hinge plate         B09516007         1           23         Spacer (3/4" ID)         B20-P         1           24         Bearing (Randall SH186)         B7-P         2	6	Grease fitting Alemite (1608B)	B33-P	4
9 Roller chain (# 35-3/8" pitch) 10 Sprocket (36T # 35) 11 Pinion gear (7T) w/key 11 B09042003 11 Pinion gear (7T) w/key 11 B157-P 12 Hinge pine & nuts 12 Hinge pine & nuts 13 Pawl shoulder screw and nut 14 Pawl spring 15 Pawl 16 Snap ring 17 Ratchet 18 Handle grip 19 Pawl & ratchet hinge plate 19 Pawl & ratchet hinge plate 20 Binder chain 20 Binder chain 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) 22 Chain hinge plate 23 Spacer (3/4" ID) 24 Bearing (Randall SH186) 25 Bearing block 27 Washer & nut 28 Spur gear spacer 29 Bearing, 1" ID x 2-1/2" 30 Collar (1" ID) 809145003 1	7	Washer, 3/4" SAE	B09113004	5
10 Sprocket (36T # 35) B09042003 1 11 Pinion gear (7T) w/key B09042007 1 12 Hinge pine & nuts B157-P 2 13 Pawl shoulder screw and nut B170-P 1 14 Pawl spring B169-P 1 15 Pawl B168-P 1 16 Snap ring B166-P 1 17 Ratchet B165-P 1 18 Handle grip B136-P 1 19 Pawl & ratchet hinge plate B09516006 1 20 Binder chain B180-P 1 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) B155-P 1 22 Chain hinge plate B09516007 1 23 Spacer (3/4" ID) B20-P 1 24 Bearing (Randall SH186) B7-P 2 25 Bearing block B09113005 1 26 Collar (3/4" ID) B09145001 2 27 Washer & nut B21-P 2 28 Spur gear spacer B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	8	Sprocket (12T # 35)	B09042004	1
11       Pinion gear (7T) w/key       B09042007       1         12       Hinge pine & nuts       B157-P       2         13       Pawl shoulder screw and nut       B170-P       1         14       Pawl spring       B169-P       1         15       Pawl       B168-P       1         16       Snap ring       B166-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"	9	Roller chain (# 35-3/8" pitch)	B09042006	1
12 Hinge pine & nuts  13 Pawl shoulder screw and nut  14 Pawl spring  15 Pawl  16 Snap ring  17 Ratchet  18 Handle grip  19 Pawl & ratchet hinge plate  20 Binder chain  21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)  22 Chain hinge plate  23 Spacer (3/4" ID)  24 Bearing (Randall SH186)  25 Bearing block  26 Collar (3/4" ID)  27 Washer & nut  28 Spur gear spacer  29 Bearing, 1" ID x 2-1/2"  10 Bi169-P  1 B169-P  1 B166-P  1 B1	10	Sprocket (36T # 35)	B09042003	1
13       Pawl shoulder screw and nut       B170-P       1         14       Pawl spring       B169-P       1         15       Pawl       B168-P       1         16       Snap ring       B166-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	11	Pinion gear (7T) w/key	B09042007	1
14       Pawl spring       B169-P       1         15       Pawl       B168-P       1         16       Snap ring       B166-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	12	Hinge pine & nuts	B157-P	2
15 Pawl B168-P 1 16 Snap ring B166-P 1 17 Ratchet B165-P 1 18 Handle grip B136-P 1 19 Pawl & ratchet hinge plate B09516006 1 20 Binder chain B180-P 1 21 Chain bolt & nut (3/8"-16 x 2-1/2" HHMS) B155-P 1 22 Chain hinge plate B09516007 1 23 Spacer (3/4" ID) B20-P 1 24 Bearing (Randall SH186) B7-P 2 25 Bearing block B09113005 1 26 Collar (3/4" ID) B09145001 2 27 Washer & nut B21-P 2 28 Spur gear spacer B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	13	Pawl shoulder screw and nut	B170-P	1
16       Snap ring       B166-P       1         17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	14	Pawl spring	B169-P	1
17       Ratchet       B165-P       1         18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	15	Pawl	B168-P	1
18       Handle grip       B136-P       1         19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	16	Snap ring	B166-P	1
19       Pawl & ratchet hinge plate       B09516006       1         20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	17	Ratchet	B165-P	1
20       Binder chain       B180-P       1         21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	18	Handle grip	B136-P	1
21       Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)       B155-P       1         22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	19	Pawl & ratchet hinge plate	B09516006	1
22       Chain hinge plate       B09516007       1         23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	20	Binder chain	B180-P	1
23       Spacer (3/4" ID)       B20-P       1         24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	21	Chain bolt & nut (3/8"-16 x 2-1/2" HHMS)	B155-P	1
24       Bearing (Randall SH186)       B7-P       2         25       Bearing block       B09113005       1         26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	22	Chain hinge plate	B09516007	1
25 Bearing block B09113005 1 26 Collar (3/4" ID) B09145001 2 27 Washer & nut B21-P 2 28 Spur gear spacer B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	23	Spacer (3/4" ID)	B20-P	1
26       Collar (3/4" ID)       B09145001       2         27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	24	Bearing (Randall SH186)	B7-P	2
27       Washer & nut       B21-P       2         28       Spur gear spacer       B09113006       2         29       Bearing, 1" ID x 2-1/2"       B01111047       1         30       Collar (1" ID)       B09145003       1	25	Bearing block	B09113005	1
28 Spur gear spacer B09113006 2 29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	26	Collar (3/4" ID)	B09145001	2
29 Bearing, 1" ID x 2-1/2" B01111047 1 30 Collar (1" ID) B09145003 1	27	Washer & nut	B21-P	2
30 Collar (1" ID) B09145003 1	28	Spur gear spacer	B09113006	2
· · · ·	29	Bearing, 1" ID x 2-1/2"	B01111047	1
31 Cradle assembly for 55 gal. steel drum B09538005 1	30	Collar (1" ID)	B09145003	1
	31	Cradle assembly for 55 gal. steel drum	B09538005	1

# WARNING LABEL IDENTIFICATION

MAKE SURE ALL WARNING LABELS ARE IN PLACE!





USE AW-32 HYDRAULIC OIL OR EQUIVALENT

#### LIMITED WARRANTY

ONE YEAR LIMITED WARRANTY. The manufacturer warrants for the original purchaser against defects in materials and workmanship under normal use one year after date of purchase. (Not to exceed 15 months after date of manufacture.) Any part which is determined by the manufacturer to be defective in material or workmanship and returned to the factory, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at our option. Labor costs for warranty repairs and/or modifications are not covered unless done at manufacturer's facilities. Any modifications performed without written approval of the manufacturer may void warranty. This limited warranty gives purchaser specific legal rights which vary from state to state.

LIMITATION OF LIABILITY. To the extent allowable under applicable law, the manufacturer's liability for consequential and incidental damages is expressly disclaimed.

The manufacturer's liability in any event is limited to, and shall not exceed, the purchase price paid. Misuse or modification may void warranty.

WARRANTY DISCLAIMER. Our company has made a diligent effort to illustrate and describe the products shown accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions.

The provisions of the warranty shall be construed and enforced in accordance with the UNIFORM COMMERCIAL CODE and laws as enacted in the State of Indiana.

DISPOSITION. Our company will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within the Limited Warranty. Warranty claims must be made in writing within said year.

#### **SERVICE RECORD**

DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED:	DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED:
DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED:	DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED:
DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED:	DATE OF SERVICE:/  WORK DONE BY:  SERVICE PERFORMED: