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HBD-SERIES HYDRAULIC BOX DUMPERS

INSTRUCTION MANUAL



Receiving instructions:

After delivery, Immediately remove the packaging from the product in a manner that preserves the packaging and maintains the orientation of the product in the packaging; then inspect the product closely to determine whether it sustained damage during transport. **If damage is discovered during the inspection, immediately record a complete description of the damage on the bill of lading.** If the product is undamaged, discard the packaging.

NOTES:

- 1) Compliance with laws, regulations, codes, and non-voluntary standards enforced in the location where the product is *used* is exclusively the responsibility of the owner/end-user.
- 2) Vestil is **not liable** for any injury or property damage that occurs as a consequence of failing to apply either:
 - a) Instructions in this manual; or
 - b) information provided on labels affixed to the product. Neither is Vestil responsible for *any* consequential damages sustained as a result of failing to exercise sound judgment while assembling, installing, using or maintaining this product.

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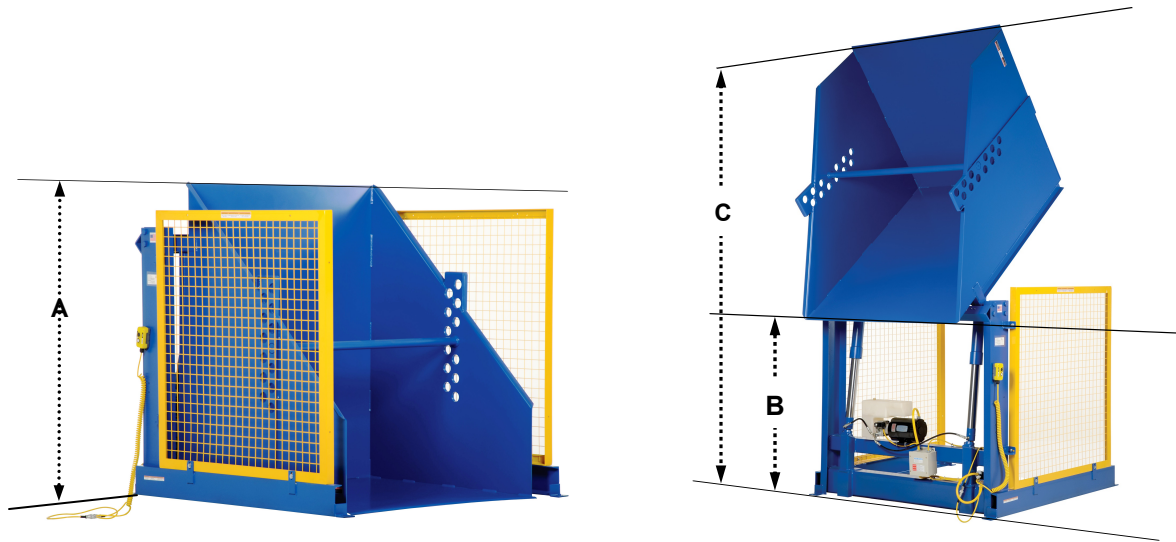
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PRODUCT INTRODUCTION

Thank you for purchasing a hydraulic box dumper (“box dumper”, “dumper” or “HBD”) made by Vestil Manufacturing Corporation (“Vestil”). Our dumpers are durable, high-quality products that are rigorously engineered to provide safety-enhancing features while preserving simplicity. Although use and maintenance procedures are relatively intuitive, any person who might use or maintain this product must familiarize him/herself with the instructions provided in this manual.

Standard design features include: 2HP (HBD-2 and HBD-4 models) or 5.5HP (HBD-6 models) 3-phase motor; cast iron pump that integrates pressure relief, check, down solenoid, and pressure compensated flow control valves; expanded metal machine side-guards; hydraulic actuators with internal brass velocity fuse and stainless steel spring; and 24V fused control circuit. Dimensions and other product specifications appear in the following tables:



| Model | A. Max. Height with chute retracted in inches (~cm) | B. Dump height in inches (~cm) | C. Maximum height with chute extended in Inches (~cm) | Chute dimensions [W x L] in inches (~cm) | Overall dimensions in inches (~cm) | Maximum rated load in pounds (~kg) | Net weight in pounds (~kg) |
|----------|---|--|---|---|---|---|----------------------------------|
| HBD-2-36 | 53 (~135) | 36 (~91) | 108 (~274) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 2,000 (~909) | 1564 (~711) |
| HBD-2-48 | 65 (~165) | 48 (~122) | 128 (~325) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 2,000 (~909) | 1701 (~773) |
| HBD-2-60 | 77 (~196) | 60 (~152) | 148 (~376) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 2,000 (~909) | 1837 (~835) |
| HBD-4-36 | 53 (~135) | 36 (~91) | 108 (~274) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 4,000 (~1,818) | 1653 (~751) |
| HBD-4-48 | 65 (~165) | 48 (~122) | 128 (~325) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 4,000 (~1,818) | 1748 (~795) |
| HBD-4-60 | 77 (~196) | 60 (~152) | 148 (~376) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 4,000 (~1,818) | 1932 (~878) |
| HBD-6-36 | 53 (~135) | 36 (~91) | 108 (~274) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 6,000 (~2727) | 1748 (~795) |
| HBD-6-48 | 65 (~165) | 48 (~122) | 128 (~325) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 6,000 (~2727) | 1837 (~835) |
| HBD-6-60 | 77 (~196) | 60 (~152) | 148 (~376) | 51.5 x 50 (131 x 127) | 64 x 67 (163 x 170) | 6,000 (~2727) | 2021 (~919) |
| HBD-FC | Optional Foot control | | | | | | |

SIGNAL WORDS:

This manual uses SIGNAL WORDS to indicate the likelihood of personal injuries, as well as the probable seriousness of those injuries, if the product is misused in the ways described. Other signal words call attention to uses of the product likely cause property damage.

The signal words used appear below along with the meaning of each word:

⚠ DANGER Identifies a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY. Use of this signal word is limited to the most extreme situations.

⚠ WARNING Identifies a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.

⚠ CAUTION Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE injury.

NOTICE Identifies practices likely to result in product/property damage, such as operation that might damage the product.

Each person who assembles, installs, uses, or maintains this product should read the entire manual in advance and fully understand the directions. If after reading the manual you do not understand an instruction, ask your supervisor or employer for clarification, because failure to adhere to the directions in this manual might result in serious personal injury.

Safe Use Recommendations:

Vestil diligently strives to identify foreseeable hazards associated with the use of its products. However, material handling is inherently dangerous and no manual can address every conceivable risk. The end-user ultimately is responsible for exercising sound judgment at all times.

⚠ DANGER Electrocutation might result if any part of the dumper contacts electrified wires. Reduce the likelihood that platform occupants or bystanders might be electrocuted by applying **common sense**:

- DO NOT *contact* electrified wires with any part of the dumper;
- DO NOT install the HBD in an area where contact with electrified wires is likely;
- DO NOT use the dumper *close to* electrified wires or other sources of electricity;
- Before using the dumper, always inspect the usage area for unusual conditions that require special precautions.

⚠ WARNING Material handling is dangerous. Improper or careless operation might result in serious personal injuries sustained by the operator(s) and/or bystanders. Work platform users should conform to the following:

- ONLY use the box dumper as a means for mechanically emptying appropriately sized (see “Load the dumper” on p. 4-5) boxes, crates and other containers. ALWAYS properly load the dumper according to the directions on p. 4-5.
- DO NOT use a damaged dumper. Examples of structural damage include: broken container restraining tube, broken fork pockets, and holes caused by rust or corrosion. Inspect the dumper before each use according to the inspection instructions on p. 5. DO NOT use the HBD unless it passes *every* element of the inspection, or until authorized maintenance personnel approve the dumper for service.
- Inspect the unit before each use according to the inspection instructions on p. 5.
- DO NOT stand beneath or travel under the dumper chute while it is elevated or allow others to do so.
- DO NOT use UNLESS each label shown in Fig. 8 on p. 14 is affixed to the dumper, undamaged and readable.
- DO NOT exceed the maximum rated load (capacity) of the dumper. The weight of the container to be dumped plus the weight of its contents must not exceed the maximum rated load of the dumper.
- DO NOT modify the box dumper in any way UNLESS you first obtain express, written approval from Vestil. Unauthorized modifications might make the dumper unsafe to use, and could result in operator and/or bystander injury.

NOTICE DO NOT fill the hydraulic system with brake fluid or jack oils. Only fill the hydraulic system with either anti-wear hydraulic oil, viscosity grade 150 SUS at 100°F (ISO 32cSt at 40°C) or Dexron transmission fluid.

Installation instructions

Responsibility for compliance will local building code(s) requirements, municipal/county ordinances, etc. rests exclusively with the end-user. The instructions that appear below are recommendations about essential, minimum steps necessary for safe installation. If law enforced where the dumper is used requires you to depart from these directions, Vestil is not responsible for *any* consequential damages sustained as a result of the installation.

Installation requires at least:

- Forklift rated for loads equal to the net weight of your HBD model (see Table on p. 2);
 - Lag bolts: ½ in. by at least 4in. (length) [approximately equivalent to 1.3cm by at least 10.2cm]
 - Masonry drill and ½ in. masonry drill bit
 - Wrench: ½ in.
 - Grout and steel shims
 - Power supply circuit: matched to motor voltage and current requirements (see Label #250 in FIG. ## on p. ##).
- NOTE:** End-user is responsible for providing overcurrent and short circuit protection.

Step 1: Position the dumper as desired with a forklift.

Step 2: Drill holes approximately 4in. (10cm) deep.

Step 3: Secure the dumper to the floor by inserting the lag bolts through the (5/8 in.) bolt holes in the anchor brackets (dotted lines in FIG. 1).

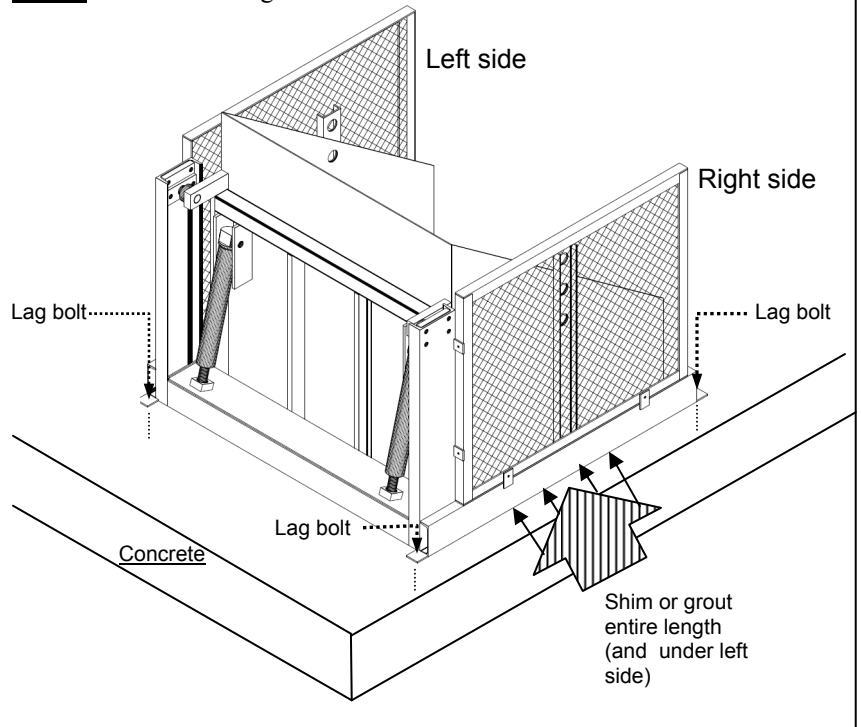
Step 4: Shim and/or grout the sides of the frame.

Step 5: Connect the power cord to the power supply.

Step 6: Run the dumper through several complete cycles. Press the “UP” button of the hand controller until the chute raises as far as it can, and then lower it completely. Repeat the cycle a few more times to confirm that the product operates properly.

Step 7: Check the oil level in the reservoir. Fully raise the chute (to the 45° “dumping position,” and then observe the level of oil in the reservoir. The surface of the oil should be 1 to 1½ inches below the fill hole.

FIG. 1: Installation diagram



Operation instructions

Load the dumper:

1. Use only properly sized waste containers: HBD's are designed to dump open-top containers. Container width should be at least ½ the width of the chute.
2. Place the container inside the chute: the back of the container should rest against the back of the chute.
3. Insert retaining tube: to prevent the container from sliding out of the chute along with the trash, install the container-retaining tube through the sockets that are most closely matched to the height of the container. The top of the container should not be more than 5 inches (~12½ cm) below the tube.
4. Dump the container: press the “UP” button on the pendant controller to raise the chute to the dumping position. The cylinders will extend, which raises the chute, only while the operator presses the “UP” button. When the operator releases the UP button, the chute will maintain its position as of the instant the button is released.

NOTE: If the net weight of the container and its contents exceeds the maximum rated load of the dumper, a relief valve (incorporated into the hydraulic system) will open. While the relief valve is open, the hydraulic cylinders will not extend, and therefore the chute will not raise/dump.

5. Return the chute to the loading position: press the “DOWN” button on the controller—the cylinders will retract, which pulls the chute toward the ground. If the DOWN button is released before the chute is completely retracted, it will maintain its position. Always completely lower the chute.

Models rated for up to 6,000 pounds (2,727kg) include a lower limit switch that prevents the cylinders from retracting more than necessary to lower the chute to the loading position.

Inspections

Before each use, inspect the listed components:

1. Wires: look for frays;
2. Hydraulic system: check lines for chafes, pinches or leaks, and the reservoir for punctures or leaks;
3. Container-restraining tube (and the openings in the chute that receive each end of the tube): damage deformation, looseness of fit;
4. Frame: check the cylinder brackets, vertical and horizontal frame members, horizontal cross-member, and angle cross member, hinge blocks, and pivot shaft and spacer assemblies for cracking, deformation and corrosion;
5. Limit switches: verify normal function. The chute should not rotate beyond approximately 45 degrees or below 0 degrees. (See FIG. 1).

Also listen for unusual sounds that might indicate binding or grinding during operation and watch for erratic movement(s). Contact maintenance personnel if you observe any unusual sound or movement and do not use the dumper until approved for service.

At least once per month, inspect the dumper as follows:

1. Oil level: fully raise the chute (to the 45°) “dumping position,” and then observe the level of oil in the reservoir. The surface of the oil should be 1 to 1½ inches below the fill hole.;
2. Pivot points: check the dumper for excessive wear at the pivot points between hydraulic cylinders and cylinder brackets, and between pivot shafts and hinge blocks;
3. Floor connection points: anchor bolts should prevent the frame from lifting off of the ground during chute operation. Concrete around each anchor bolt should be intact—no cracking or flaking;
4. Fasteners: check each fastener connection. Tighten any loose connection;
5. Hoses and wires: check each wire and hose for damage (fraying, binding, etc.);
6. Labels: labels should be easily readable and undamaged, affixed to the dumper in the locations as shown in FIG. 8 on p. 14.
7. Container-restraining tube (and the openings in the chute that receive each end of the tube): inspect the tube for damage deformation, looseness of fit.

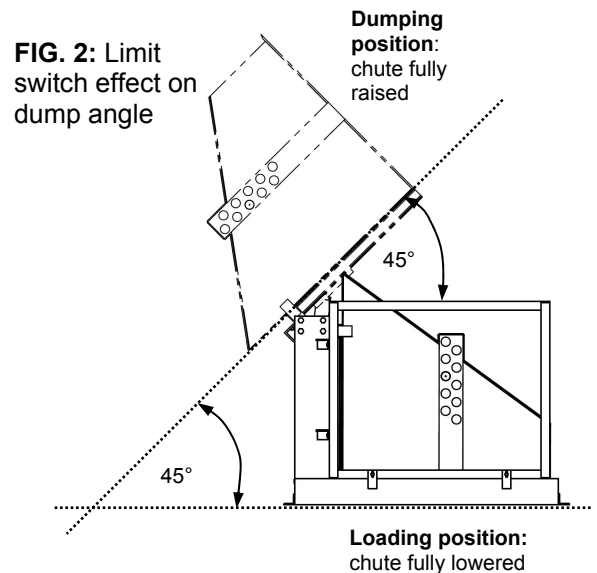
At least once per year, change the hydraulic oil if it becomes gritty or looks milky (water present in the oil). With the chute in the fully lowered position, drain the oil and replace it with either Dexron transmission fluid or anti-wear hydraulic oil, viscosity grade 150 SUS at 100°F (ISO 32 cSt at 40°C).

Power unit operation

The box dumper utilizes an electric motor directly coupled to a gear pump to pressurize the hydraulic fluid. Fluid pressure moves the cylinders up or down, and this movement performs the work required to raise and lower the chute. A hydraulic manifold bolted directly onto the gear pump houses the hydraulic control components; each component is rated for 3,000psi working pressure.

Important components of the power unit include:

- Electric motor: when ordered, the owner of this box dumper selected either a single-phase or three-phase AC motor. Regardless of phase capabilities, every motor is dual-voltage capable.
 - Gear pump: shaft coupled directly to the shaft of the electric motor. Several displacements are available are correspond to the horsepower of the motor selected.
 - Check valve (HBD-2-## and HBD-4-## models): prevents backflow of fluid through the pump and thereby allows the chute maintain a given position indefinitely.
 - Pressure relief valve: opens a path for fluid to flow back to the reservoir if fluid pressure exceeds 3,000psi.
 - Lowering solenoid valve: electrically-operated cartridge valve with an integral screen to keep contaminants from entering the valve.
 - Counterbalance valves (6,000lb. rated load models only): allow smooth motion in double-acting hydraulic circuits.
 - Pressure compensated flow control spool (2,000lb. & 4,000lb. rated load models only): located beneath the lowering valve, and regulates the fluid flow to the reservoir. This component allows the table to lower at the constant rate independent of the weight of the dumper and contents. Several sizes are available.
 - Hydraulic cylinders: 2,00lb. and 4,00lb. rated load models utilize displacement style cylinders. Each cylinder includes a bleeder valve (located at top end) for removing air from the hydraulic system.
- 6,000lb. HBD models use double action cylinders.



- Velocity fuse: a safety device installed in the hose port of each cylinder. If a hose is punctured while the HBD is in use, the velocity fuse closes automatically. The chute remains stationary until pressure is reapplied to the system.
- Hydraulic fluid: HO150 hydraulic fluid. To replenish the fluid, add anti-wear hydraulic fluid with a viscosity grade of 150 SUS at 100°F (ISO 32 @ 40°C) like AW-32 or Dexron transmission fluid.

Sequence of operation:

To tilt the chute, press the “UP” button. The motor turns and spins the gear pump. Oil flows out of the reservoir, through the suction filter and into the pump.

- 2k & 4k rated load models: pump propels oil through the check valve to the lift cylinders.
- 6k rated load models: pressurized oil flows through the energized directional valve RT and into the blind end of the lift cylinders; then oil is pressed out of the rod end and through a counterbalance valve 2CB. Counterbalance valves prevent jerky movement as the chute reaches peak elevation (45° with horizontal).
- Releasing the UP button during operation will immediately halt all chute movement.
- Additionally, an upper travel limit switch automatically turns off the motor when the chute reaches a preset 45° tilt angle.

To lower the chute, press the “DOWN” button.

- 2k & 4k max. rated load models: lowering valve opens which bypasses the check valve and allows oil in the cylinders to flow to the reservoir (through return hoses).
- 6k max. rated load models: The motor turns and the pump pushes the pressurized oil through the energized directional valve LT and into the rod end of the lift cylinders. Oil flows from the blind ends of the cylinders and through counterbalance valve 1CB, which regulates lowering speed and smoothness. A lower limit switch turns off the motor when the chute is fully lowered.
- Releasing the DOWN button during operation causes all chute movement to stop. The chute will remain in the same position until you press the DOWN button again and allow it to lower completely.

If the chute slowly loses elevation without pressing the DOWN button, remove, inspect, and clean the lowering cartridge valve as follows:

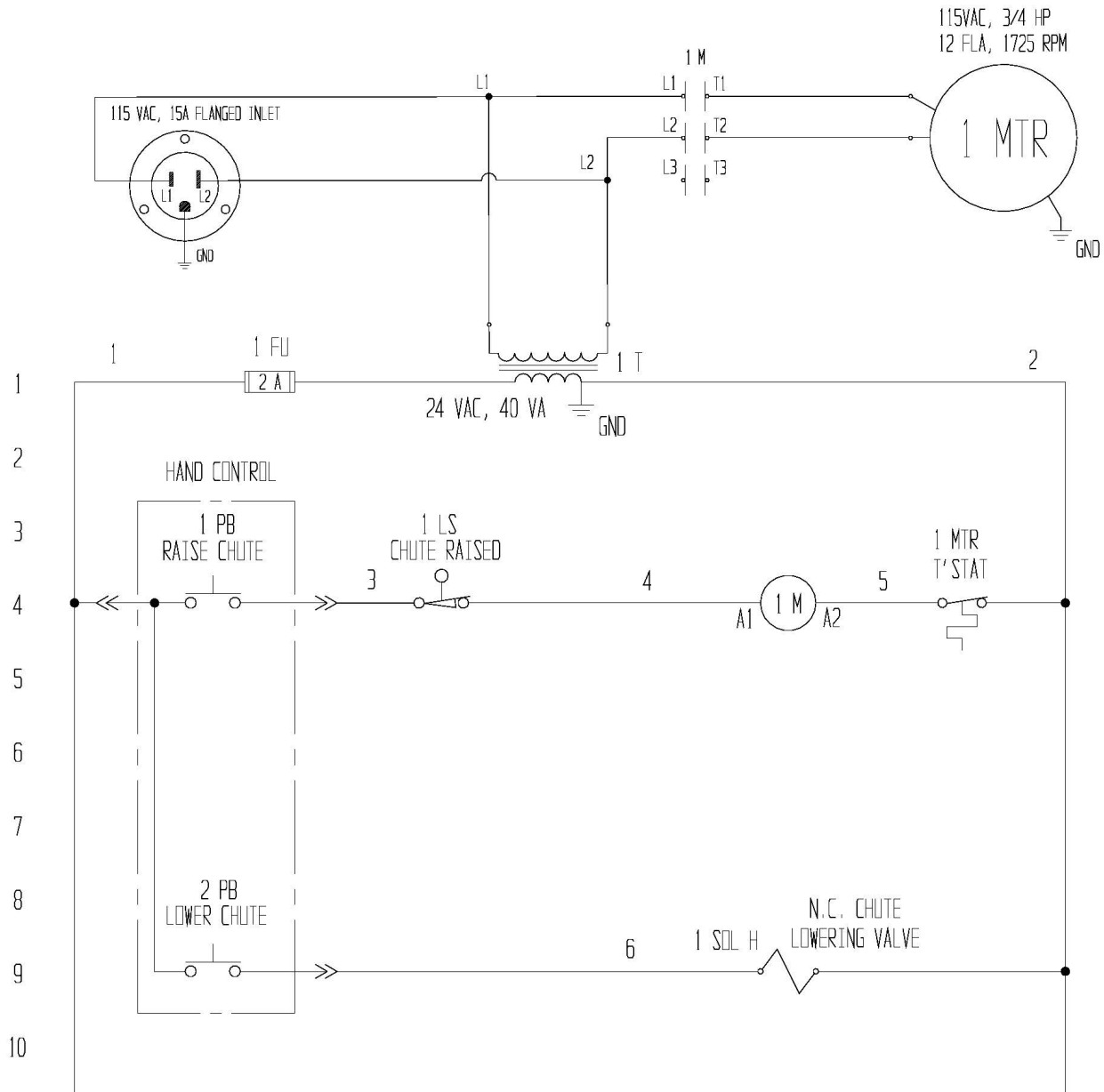
1. Lower the chute completely and unplug the AC cord.
2. If loaded, remove the container from the chute.
3. Remove the nut that fastens the solenoid coil to the valve stem, remove the coil, and then unscrew the valve from the manifold.
4. Inspect the valve for blockage(s).
5. Inspect o-rings and back-up washers for cuts, tears, etc.
6. Submerge the valve in mineral spirits or kerosene and use a thin tool, such as a small screwdriver or a 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” between the closed and open positions. If the poppet sticks, the valve stem might be bent. Replace the poppet if it doesn’t free up after cleaning.
7. Remove mineral oil from the valve with compressed air.
8. Move the poppet in and out.
9. Inspect the bottom of the valve cavity in the manifold for foreign matter.
10. With the thin tool, press the middle of the flow control spool, which is located in the bottom of the cavity. It should move down and up smoothly.
11. Reinstall the valve (in the manifold) and tighten the valve with 20 lb-ft of torque.

If the chute lowers extremely slowly, air in the cylinders might be the culprit. Air closes the velocity fuse, which prevents oil from flowing out of the cylinders. To bleed the air from the system:

- Fully lower the chute;
- If loaded, remove the container from the chute.
- Locate the bleeder valve located at the top of each cylinder (it looks like a grease zirk). Bleed one (1) cylinder at a time. Hold a rag over the valve and open it about 1/2 turn with a 3/8” or 5/16” wrench. Oil and air will sputter from the valve. Jog the motor by pressing the UP button for just a second. If air continues to escape from the bleeder valve, jog the motor several more times. Wait at least 5 seconds between successive jogs.
- As soon as air no longer is observed and only a clear stream of oil flows from the bleeder valve, close the valve.
- Check the oil level in the reservoir. If the surface of the oil is lower than 1 to 1½ in. below the fill hole, add oil until it is between 1 and 1½ inches of the fill hole.

FIG. 3A: 115VAC electrical circuit diagram (2,000 & 4,000 max. rated load models)

NOTE: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.



NOTE: Overcurrent and short circuit protection should be provided by the user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

Control relay base layout

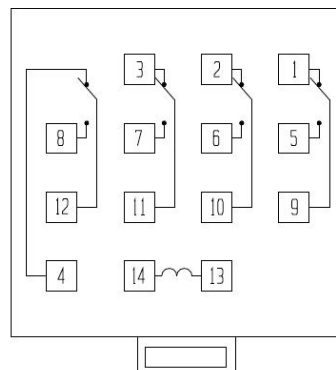
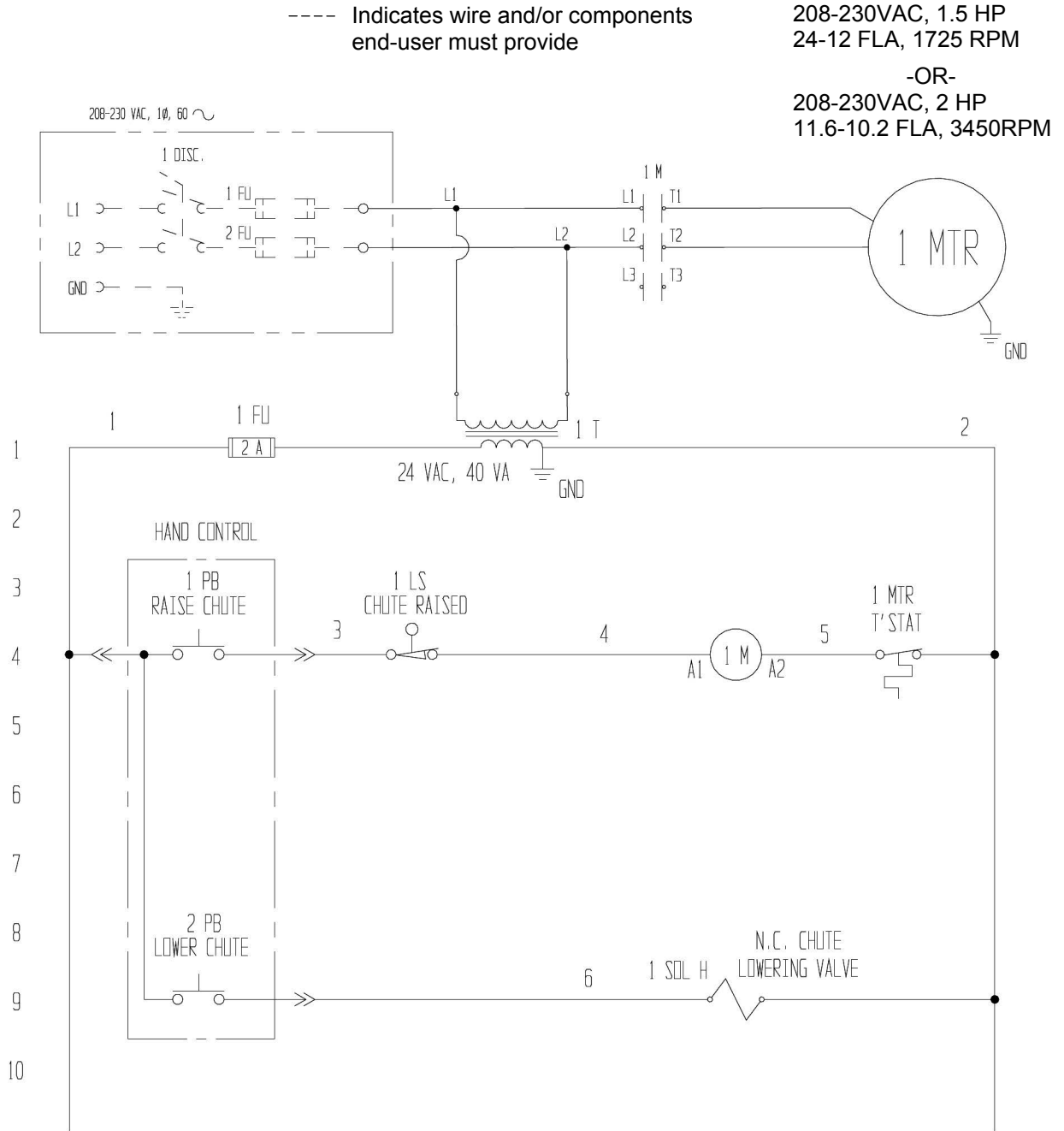


FIG. 3B: 208-230VAC electrical circuit diagram (2,000 & 4,000 max. rated load models)

NOTE: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.



NOTE: Overcurrent and short-circuit protection should be provided by the end user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

Control relay base layout

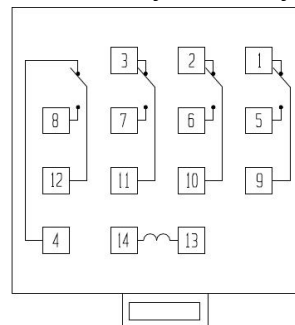
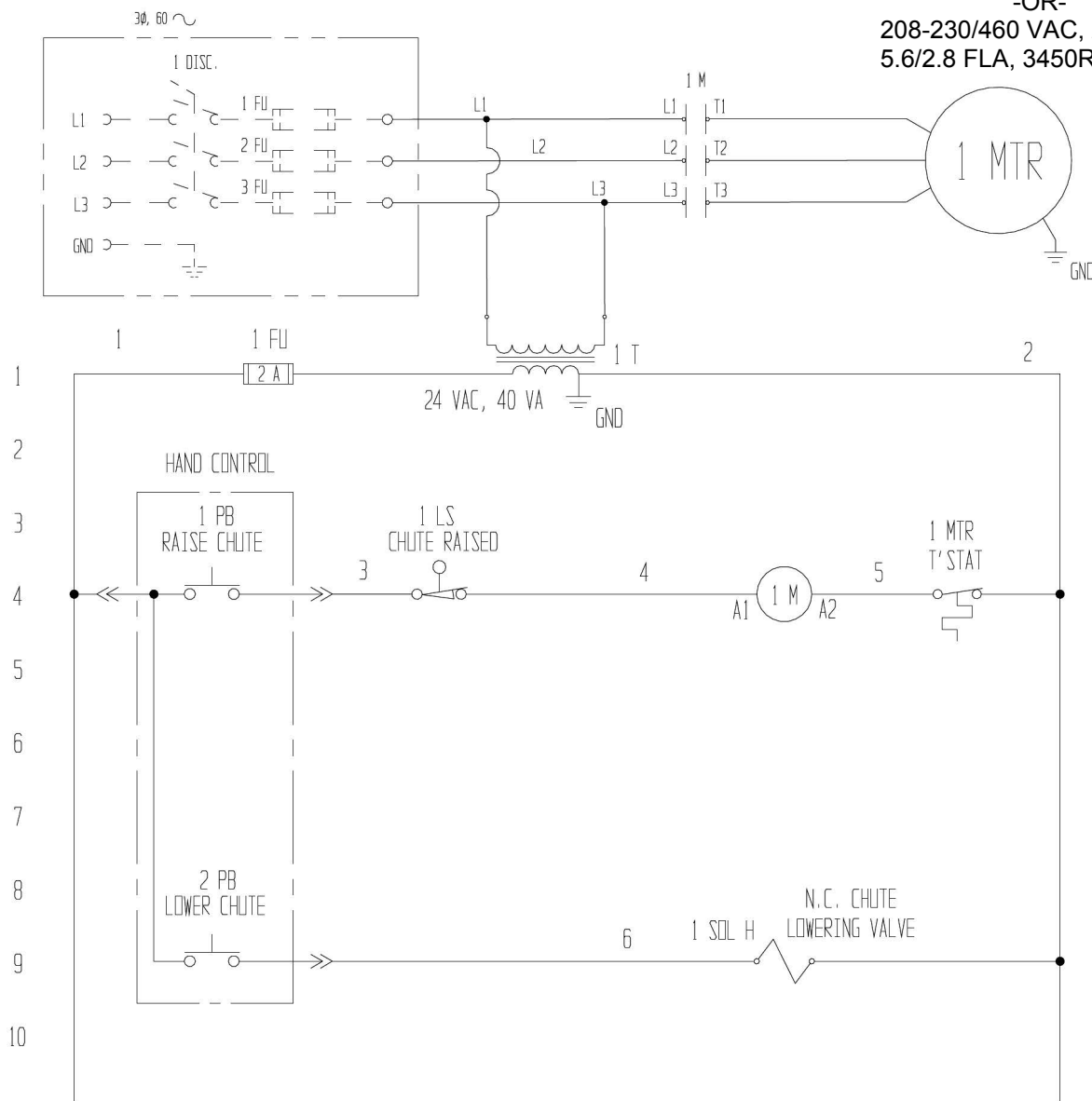


FIG. 3C: 3-phase 208-230/460 VAC electrical circuit diagram (2,000 & 4,000 max. rated load models)

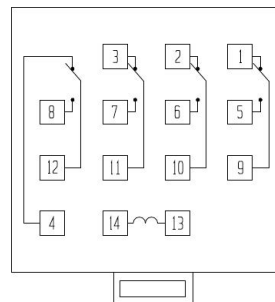
NOTE: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.

----- Indicates wire and/or components end-user must provide

208-230/460 VAC, 2 HP
7.8-6.2/3.1 FLA, 1725 RPM
-OR-
208-230/460 VAC, 2 HP
5.6/2.8 FLA, 3450RPM

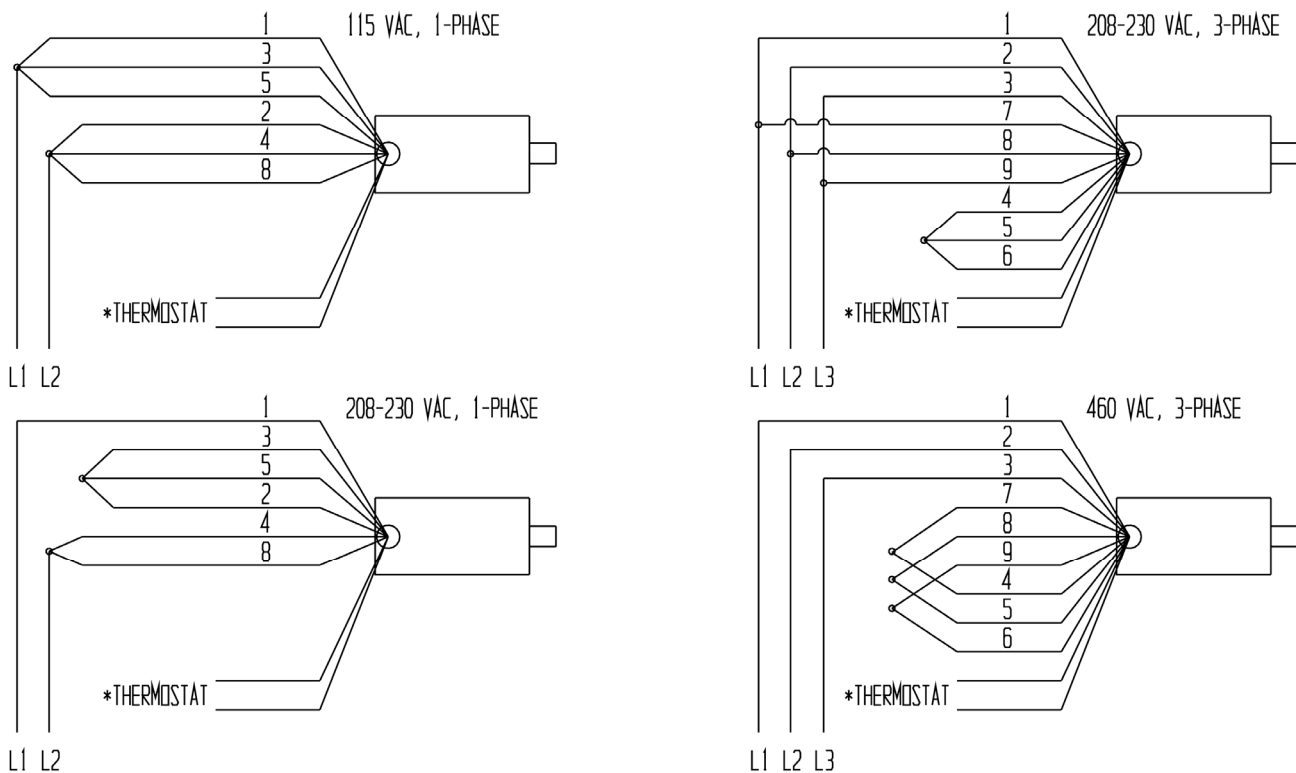


Control relay base layout



NOTE: Overcurrent and short-circuit protection should be provided by the end user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

FIG. 4: Motor lead connection diagrams for all 0.5HP, 0.75HP, & 3hp single-phase motors and for all 2HP, 5.5HP, and 6.5HP three phase motors



Attach thermostat leads to:
 1) Grounded side of the transformer secondary; and
 2) Motor relay coil.
 It does not matter which lead attaches to each location.

Transformer wiring diagram:

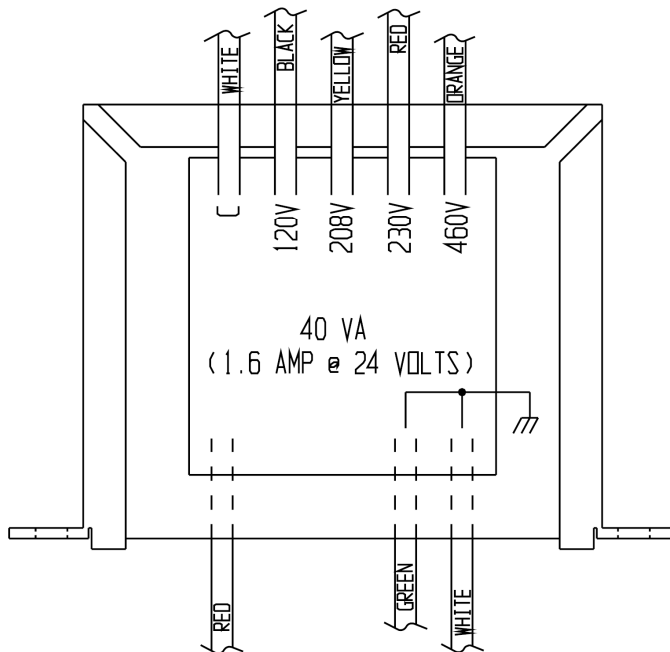
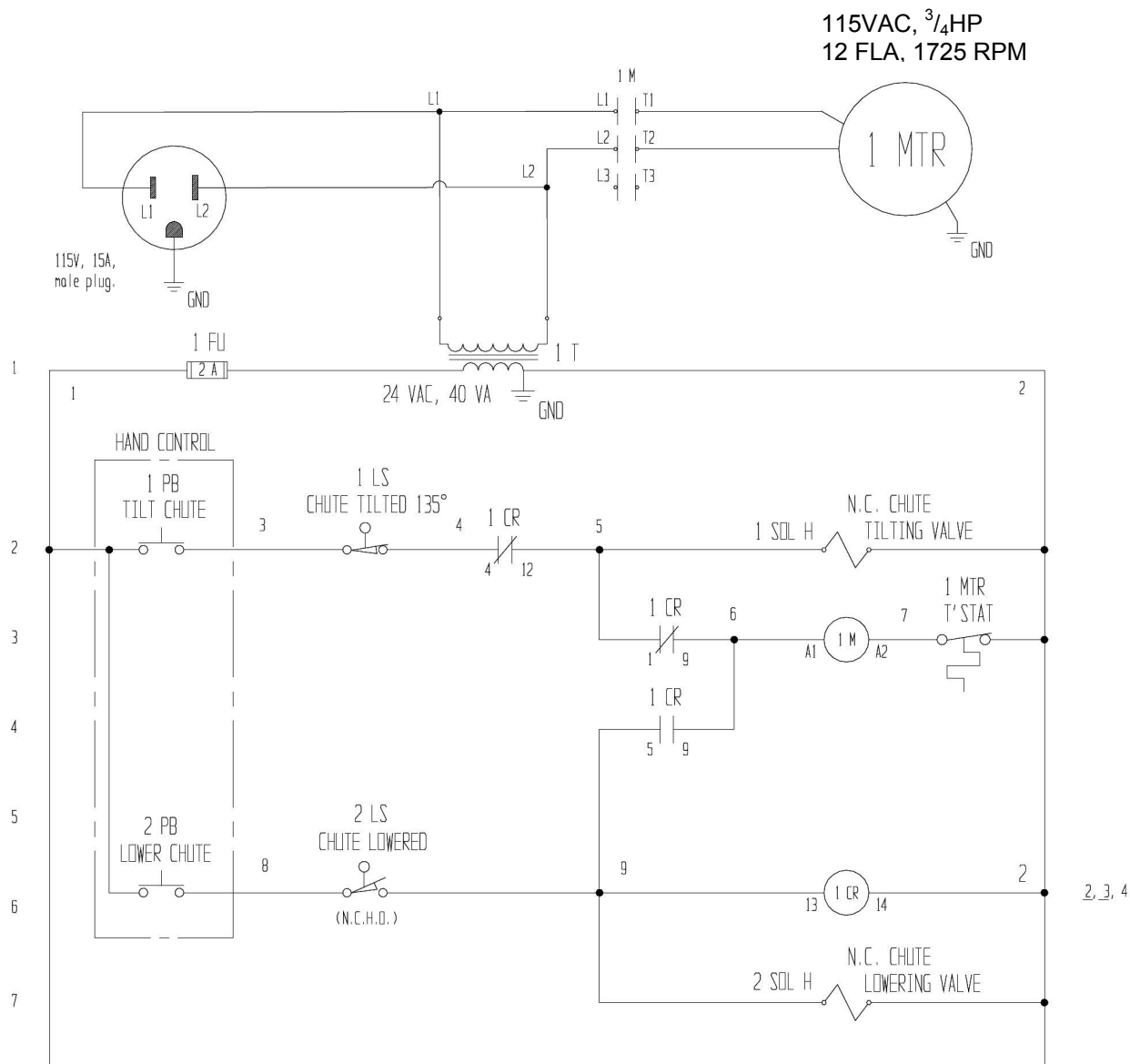


FIG. 5A: 6,000lb. capacity models 115 VAC, double-acting electrical circuit diagram



NOTE 1: Overcurrent and short-circuit protection should be provided by the end user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

NOTE 2: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.

Control relay base layout

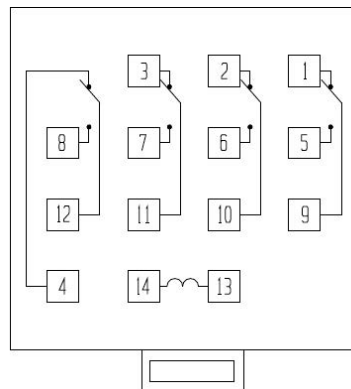
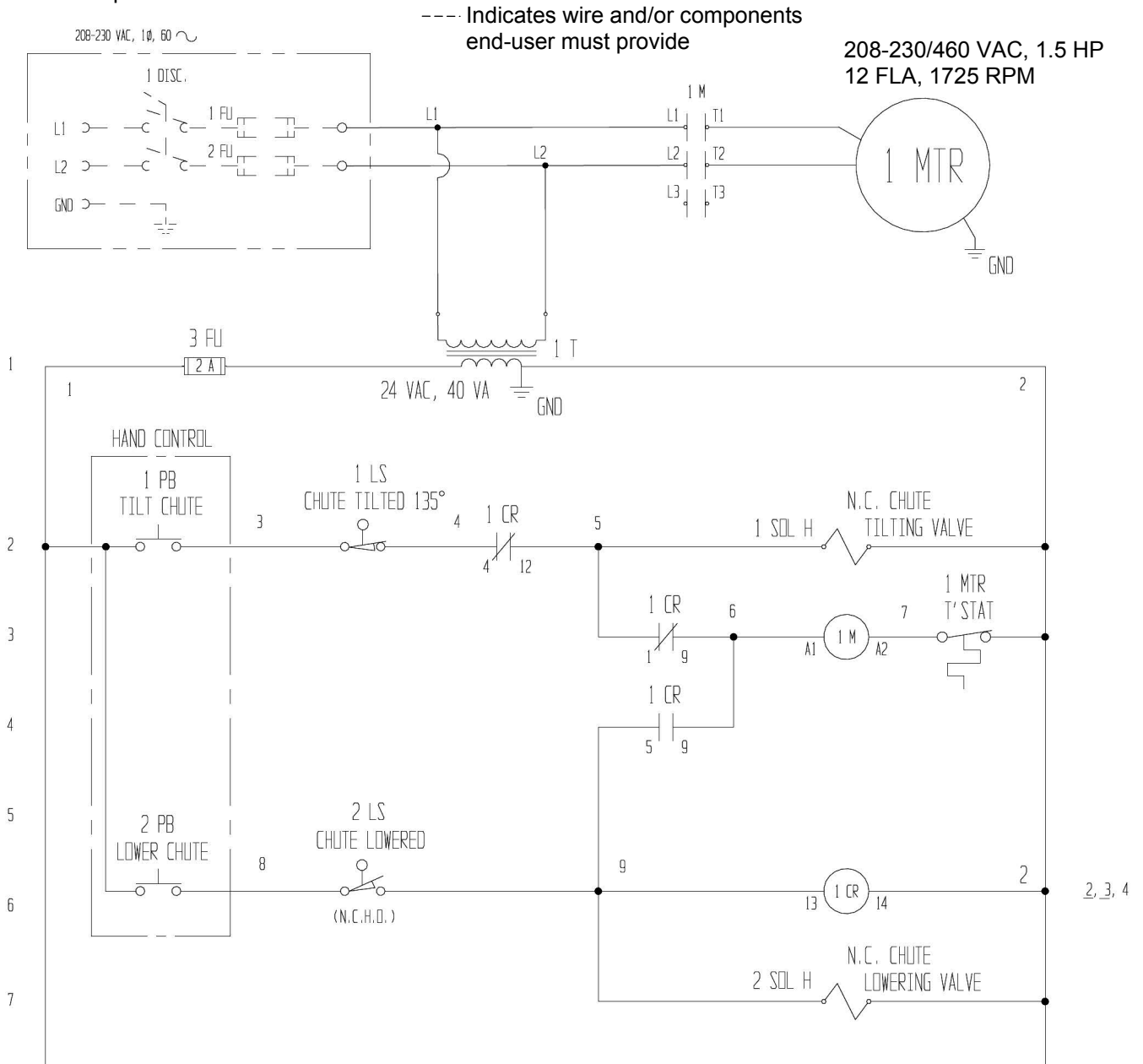


FIG. 5B: 6,000lb. capacity models 208-230 VAC, single phase, electrical circuit diagram

NOTE: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.



Turn off and disconnect all power before beginning work on this equipment.

NOTE 1: Overcurrent and short-circuit protection should be provided by the end user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

NOTE 2: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.

Control relay base layout

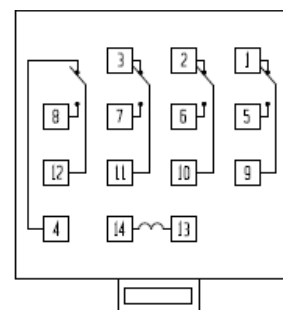
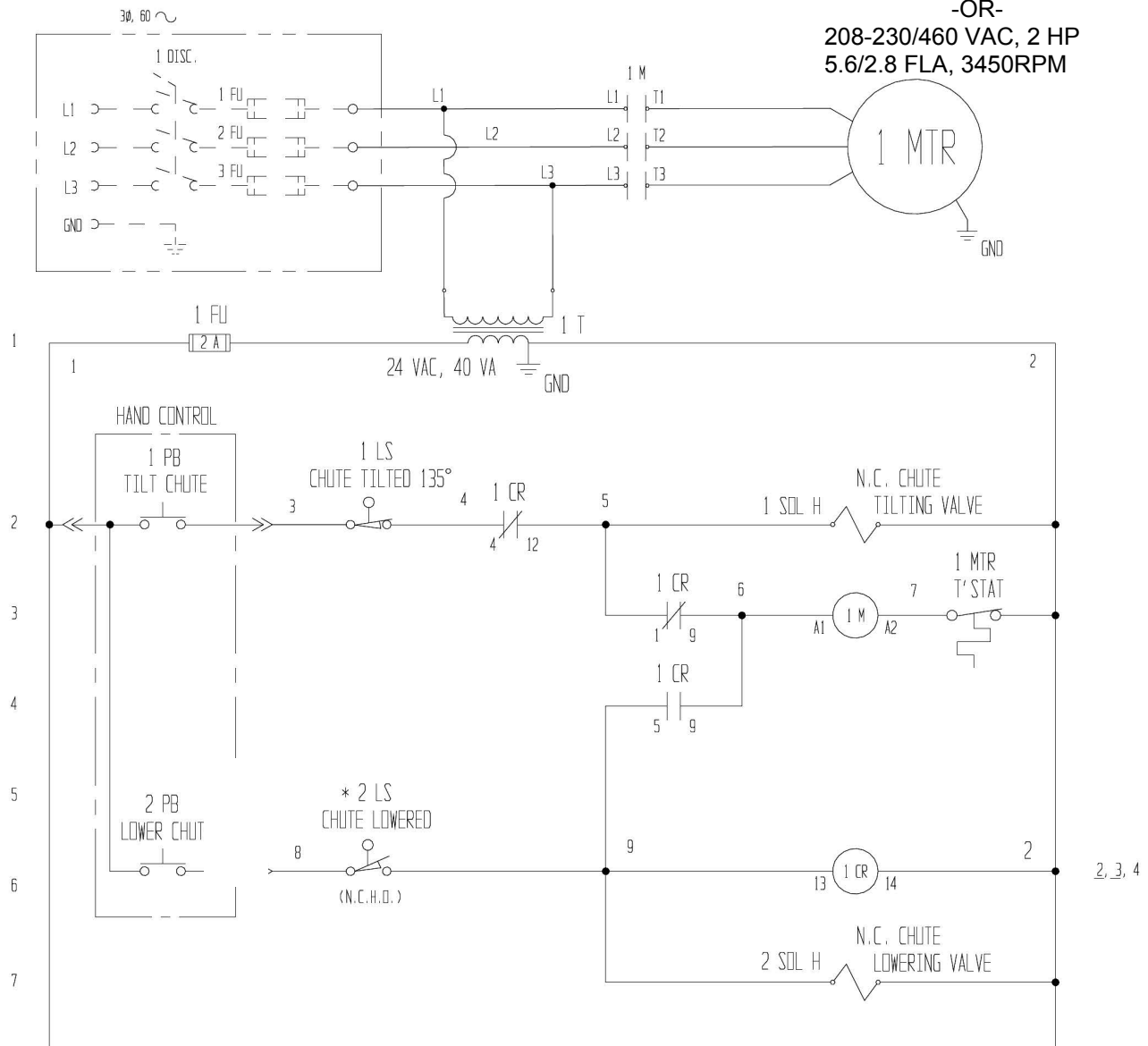


FIG. 5C: 6,000lb. capacity models, 208-230/460 VAC, 3-phase, electrical circuit diagram

208-230/460 VAC, 2 HP
7.8-6.2/3.1 FLA, 1725 RPM

-OR-

208-230/460 VAC, 2 HP
5.6/2.8 FLA, 3450RPM



NOTE 1: Overcurrent and short-circuit protection should be provided by the end user in accordance with recommendations and requirements in NEC (NFPA 70) and local codes.

NOTE 2: In this diagram, all components are represented with the chute in “home” location, i.e. resting, lowered position.

Control relay base Ia. out

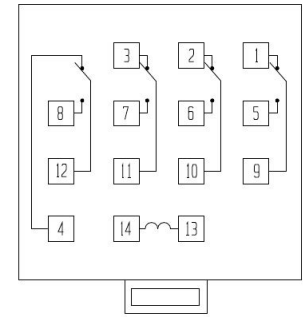


FIG. 6A: 2,000lb. & 4,000lb. capacity models, hydraulic circuit diagram

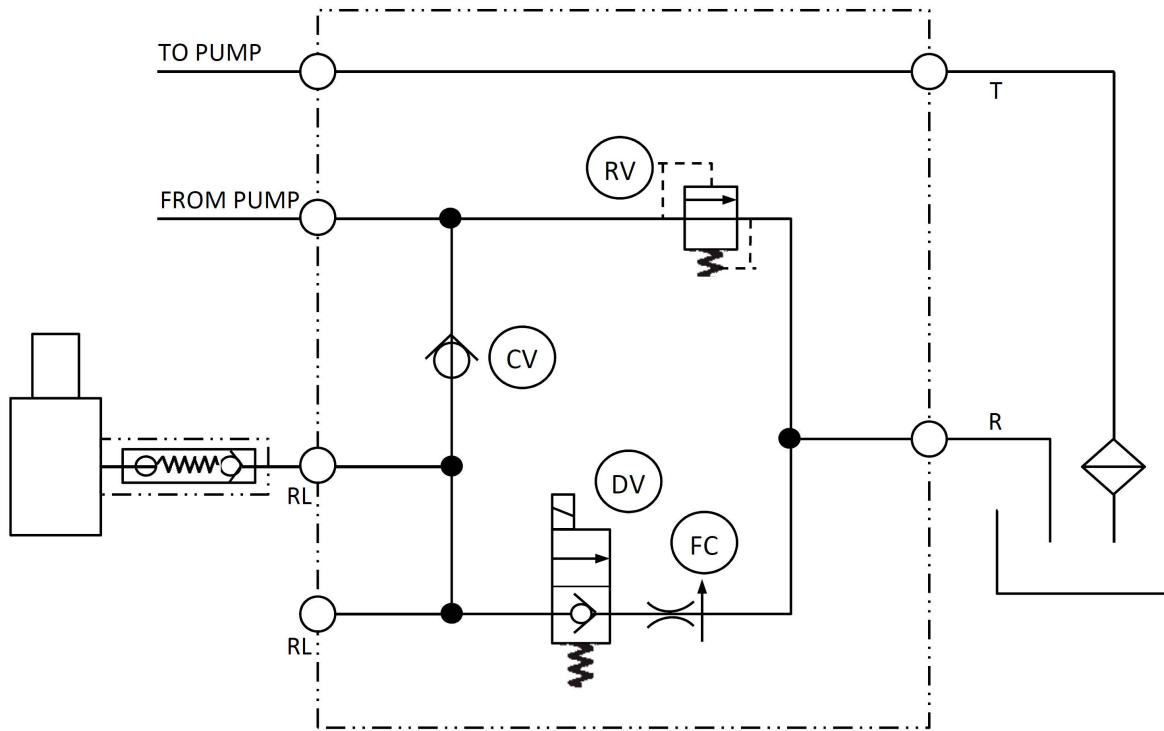


FIG. 6B: 6,000lb. capacity models, hydraulic circuit diagram

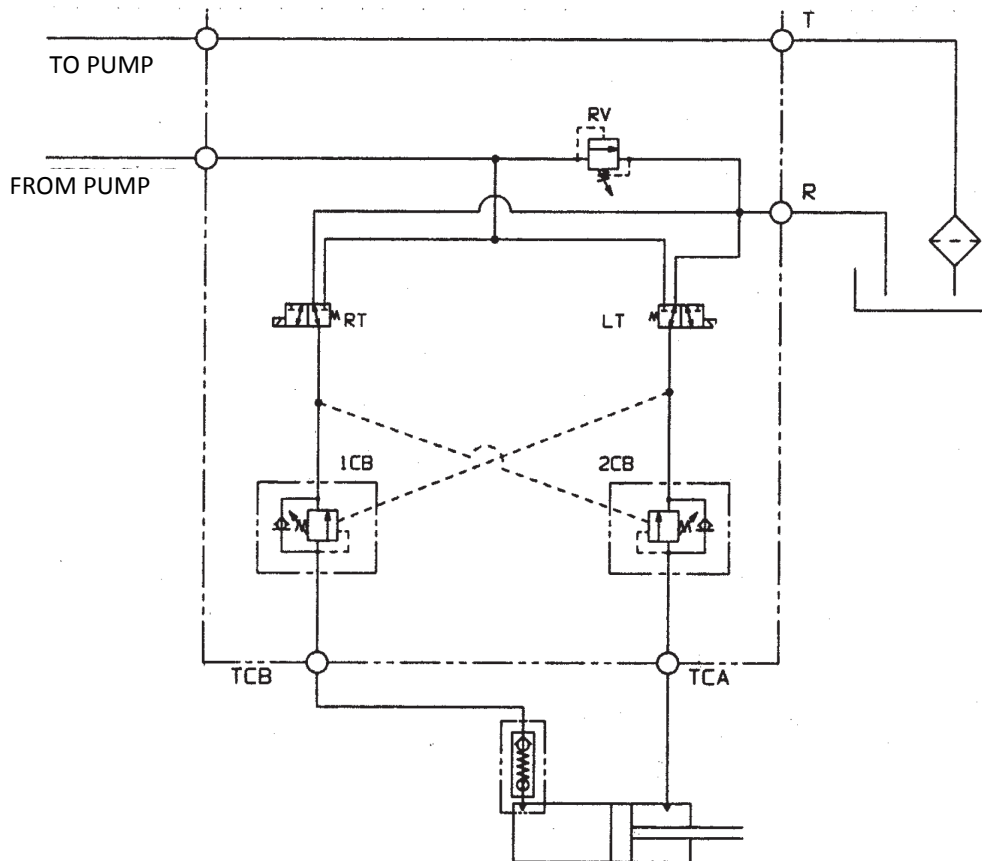
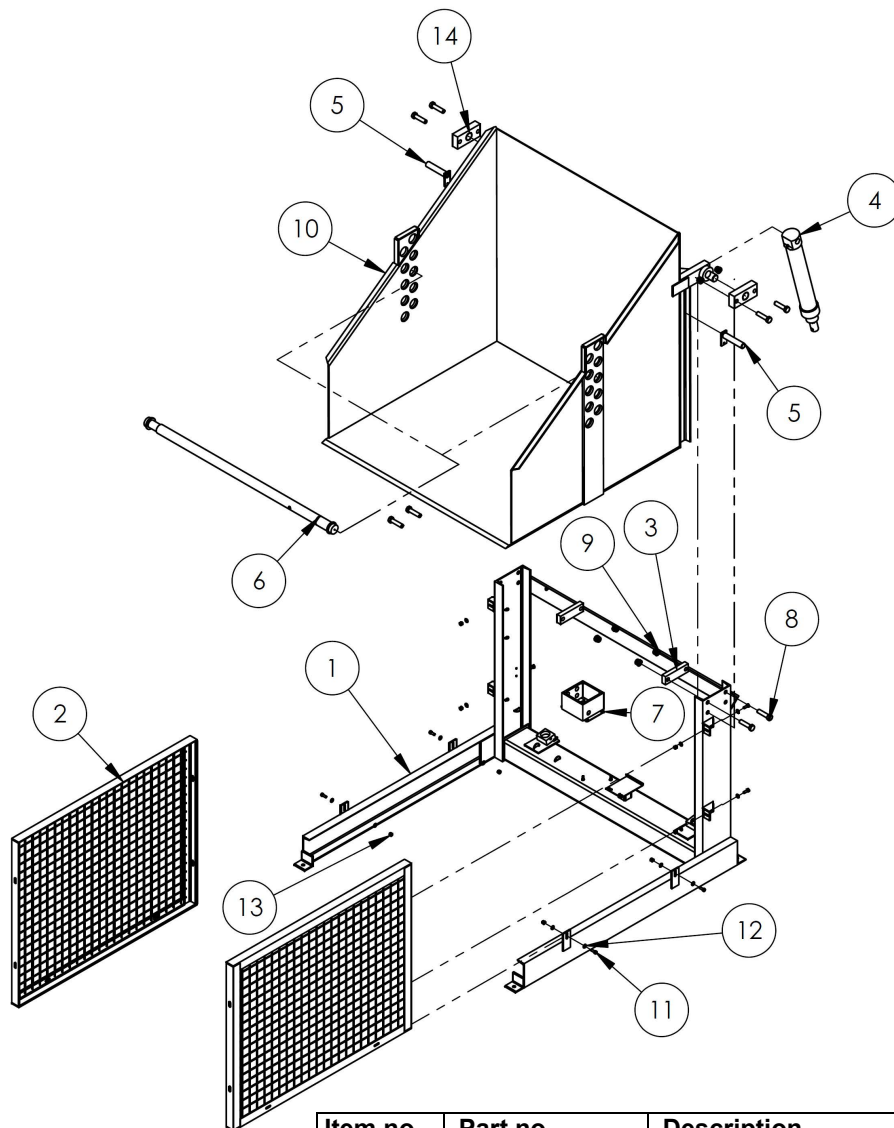
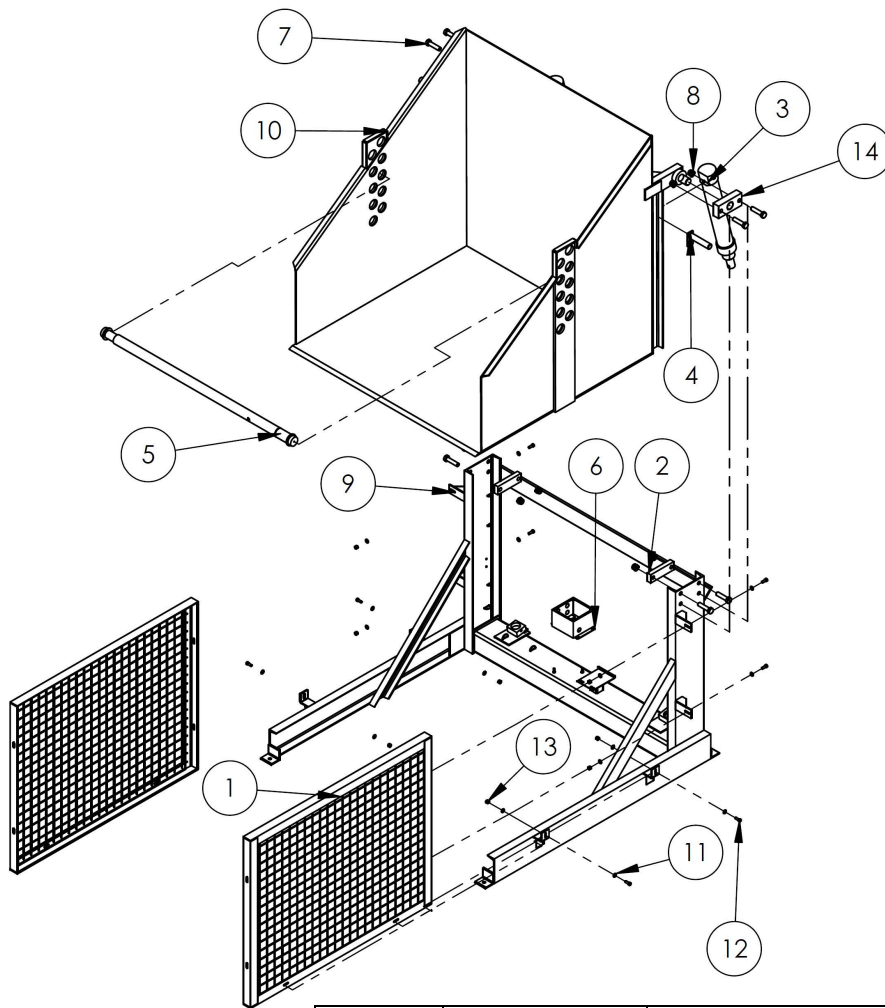
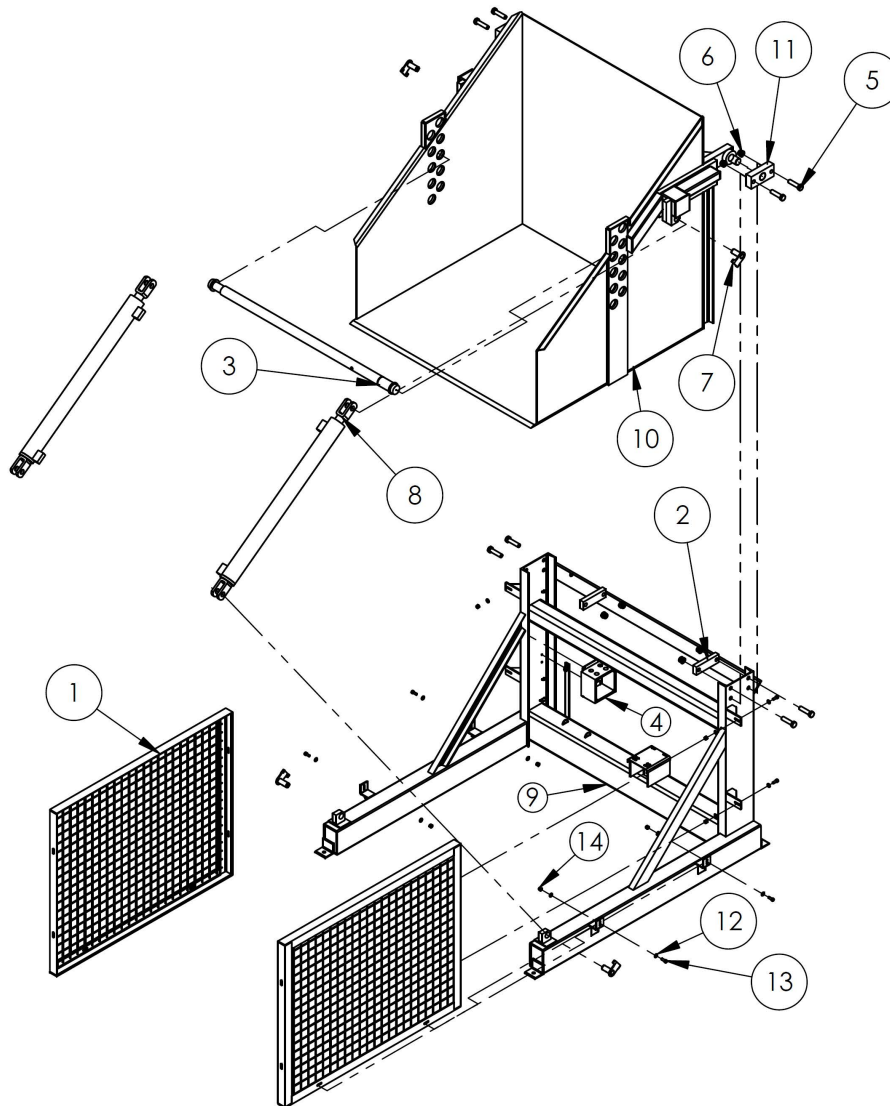


FIG. 7A: HBD-2-36, HBD-2-48, and HBD-2-60 exploded parts diagram & bill of materials

| Item no. | Part no. | Description | Quantity |
|----------|-------------|--|----------|
| 1 | 34-514-007 | Base frame weldment: HBD-2-36 | 1 |
| | 34-514-008 | HBD-2-48 | 1 |
| | 34-514-009 | HCD-2-60 | 1 |
| 2 | 34-524-001 | Guard assembly weldment: HBD-2-36 | 2 |
| | 34-524-002 | HBD-2-48 | 2 |
| | S1085065-A5 | HCD-2-60 | 2 |
| 3 | 34-037-001 | Stop block | 2 |
| 4 | 99-021-909 | Cylinder, 2 $\frac{1}{2}$ in. x 18in. | 2 |
| 5 | 24-511-030 | Pin assembly, cylinder | 2 |
| 6 | 34-514-005 | Retaining tube assembly frame | 1 |
| 7 | 09-029-003 | Junction box | 1 |
| 8 | 13365 | $\frac{3}{4}$ in. – 10 x 3in #5 zinc-plated bolt | 8 |
| 9 | 37039 | $\frac{3}{4}$ in. – 10 zinc-plated Nylock nut | 8 |
| 10 | 34-545-004 | Chute weldment: HBD-2-36 | 1 |
| | | HBD-2-48 | |
| | | HCD-2-60 | |
| 11 | 11105 | $\frac{3}{8}$ in. – 16 x 1in. HHCS #2 zinc-plated bolt | 8 |
| 12 | 33008 | $\frac{3}{8}$ in. USS zinc-plated flat washer | 16 |
| 13 | 37024 | $\frac{3}{8}$ in. Nylock insert nut | 8 |
| 14 | 09-516-012 | Mounting block subassembly bracket | 2 |

FIG. 7B: HBD-4-36, HBD-4-48, and HBD-4-60 exploded parts diagram & bill of materials

| Item no. | Part no. | Description | Quantity |
|----------|------------|--|----------|
| 1 | 34-524-001 | Guard assembly weldment: HBD-4-36 | 2 |
| | 34-524-002 | HBD-4-48 | 2 |
| | 34-524-003 | HBD-4-60 | 2 |
| 2 | 34-037-001 | Stop block | 2 |
| 3 | 99-021-909 | Hydraulic cylinder: HBD-4-36: 2 ¹ / ₂ in. x 18in. | 2 |
| | 99-021-018 | HBD-4-48 & HBD-4-60: 3in. x 18in. | 2 |
| 4 | 24-511-030 | Cylinder pin assembly | 2 |
| 5 | 34-514-005 | Retainer tube assembly | 1 |
| 6 | 09-029-003 | Junction box | 1 |
| 7 | 13365 | ³ / ₄ in. – 10 x 3in. UNC #5 zinc-plated bolt | 8 |
| 8 | 37039 | ³ / ₄ in. – 10 zinc-plated Nylock nut | 8 |
| 9 | 34-514-040 | Base frame weldment: HBD-4-36 | 1 |
| | 34-514-041 | HBD-4-48 | 1 |
| | 34-514-042 | HBD-4-60 | 1 |
| 10 | 34-545-004 | Chute weldment: HBD-4-36 | 1 |
| | 34-545-005 | HBD-4-48 | 1 |
| | 34-545-006 | HBD-4-60 | 1 |
| 11 | 33008 | ³ / ₈ in. USS zinc-plated flat washer | 16 |
| 12 | 11105 | ³ / ₈ in. – 16 x 1in #2 zinc-plated bolt | 8 |
| 13 | 37024 | ³ / ₈ in. Nylock insert nut | 8 |
| 14 | 09-516-012 | Block subassembly bracket | 2 |

FIG. 7C: HBD-6-36, HBD-6-48, and HBD-6-60 exploded parts diagram & bill of materials

| Item no. | Part no. | Description | Quantity |
|----------|------------|---|----------|
| 1 | 34-524-001 | Guard assembly weldment: HBD-6-36 | 2 |
| | 34-524-002 | HBD-6-48 | 2 |
| | 34-524-003 | HBD-6-60 | 2 |
| 2 | 34-037-001 | Stop block | 2 |
| 3 | 34-514-005 | Retaining tube assembly | 1 |
| 4 | 09-029-003 | Junction box | 1 |
| 5 | 13365 | $\frac{3}{4}$ in. – 10 x 3in. UNC #5 zinc-plated bolt | 8 |
| 6 | 37039 | $\frac{3}{4}$ in. – 10 zinc-plated Nylock nut | 8 |
| 7 | 03-612-002 | Hinge pin assembly | 4 |
| 8 | 99-021-947 | 3in. x 36in. stroke piston-style hydraulic cylinder | 2 |
| 9 | 34-514-043 | Base frame weldment: HBD-6-36 | 1 |
| | | HBD-6-48 | |
| | | HBD-6-60 | |
| 10 | 34-545-019 | Chute weldment: HBD-6-36 | 1 |
| | | HBD-6-48 | |
| | | HBD-6-60 | |
| 11 | 09-516-012 | Mounting block bracket subassembly | 2 |
| 12 | 33008 | $\frac{3}{8}$ in. USS zinc-plated flat washer | 16 |
| 13 | 11105 | $\frac{3}{8}$ in. – 16 x 1in #2 zinc-plated bolt | 8 |
| 14 | 37024 | $\frac{3}{8}$ in. Nylock insert nut | 8 |

Troubleshooting Guide

⚠ WARNING DO NOT attempt to resolve any issue discussed below UNTIL the chute is fully lowered and the power supply is disconnected.

| <u>Issue:</u> | <u>Possible cause(s):</u> | <u>Solution:</u> |
|--|---|---|
| 1. Power unit doesn't run when "UP" button is pressed. | 1a. Transformer fuse is blown. b. No supply voltage. c. Upper-travel limit switch is engaged or bad. d. Faulty connection in control circuit. e. Bad control transformer. f. Open motor relay coil. g. (DC units) Low battery voltage. | 1a. 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 24 VAC; replace if bad. f. Test with meter; replace if bad. g. Test with meter. Charge battery if low (is motor relay LED on?) |
| 2. Motor runs properly, chute doesn't move. Motor and pump not noisy. | 2a. Incorrect motor rotation. b. Pump failure. c. Low hydraulic fluid level. | 2a. Verify motor shaft rotates counterclockwise. 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 chute moves only slowly. | 3a. See 2b above. b. Excess voltage drop to motor due to power wire size too small, wire run too 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. | 3a. Same as 2b. b. Check power installation for adequacy. Check incoming voltage <i>while motor is running</i> . Correct problem(s). c. Determine cause of loss of voltage on one phase; correct. d. Check for structural damage or binding of the rollers, etc. Check for chute overload condition. e. Remove and inspect. Clean the valve with mineral spirits. |
| 4. Chute elevates, then drifts down. | 4. See 3e above. | 4. Same as 3e. |
| 5. Chute lowers too slowly. | 5a. Flow control spool is stuck. b. Pinched hose. c. Velocity fuse locking (chute only slowly creeps down). | 5a. Remove plug from FC port; push down on the center of the flow spool to ensure it moves freely. b. Check pressure, supply, and return hoses for kinks. c. Same as 7 (below). |
| 6. Chute lowers too quickly. | 6a. See 3e. b. Flow control spool is stuck. | 6a. Same as 3e. b. Same as 5a. |
| 7. Spongy or jerky chute motion. | 7. Air in the hydraulic cylinders. | 7. Bleed air per procedure described in this manual. |

LIMITED WARRANTY

Vestil Manufacturing Corporation (“Vestil”) warrants this product to be free of defects in material and workmanship during the warranty period. Our warranty obligation is to provide a replacement for a defective original part if the part is covered by the warranty, after we receive a proper request from the warrantee (you) for warranty service.

Who may request service?

Only a warrantee may request service. *You are a warrantee if* you purchased the product from Vestil or from an authorized distributor AND Vestil has been fully paid.

What is an “original part”?

An original part is a part used to make the product as shipped to the warrantee.

What is a “proper request”?

A request for warranty service is proper if Vestil receives: 1) a photocopy of the Customer Invoice that displays the shipping date; AND 2) a written request for warranty service including your name and phone number. Send requests by any of the following methods:

Mail
Vestil Manufacturing Corporation
2999 North Wayne Street, PO Box 507
Angola, IN 46703

Fax
(260) 665-1339
Phone
(260) 665-7586

Email
sales@vestil.com

In the written request, list the parts believed to be defective and include the address where replacements should be delivered.

What is covered under the warranty?

After Vestil receives your request for warranty service, an authorized representative will contact you to determine whether your claim is covered by the warranty. Before providing warranty service, Vestil may require you to send the entire product, or just the defective part or parts, to its facility in Angola, IN. The warranty covers defects in the following *original* dynamic components: motors, hydraulic pumps, electronic controllers, switches and cylinders. It also covers defects in *original* parts that wear under normal usage conditions (“wearing parts”), such as bearings, hoses, wheels, seals, brushes, and batteries.

How long is the warranty period?

The warranty period for original components is 1 year. The warranty period begins on the date when Vestil ships the product to the warrantee. If the product was purchased from an authorized distributor, the period begins when the distributor ships the product. Vestil may extend the warranty period for products shipped from authorized distributors by *up to* 30 days to account for shipping time.

If a defective part is covered by the warranty, what will Vestil do to correct the problem?

Vestil will provide an appropriate replacement for any *covered* part. An authorized representative of Vestil will contact you to discuss your claim.

What is not covered by the warranty?

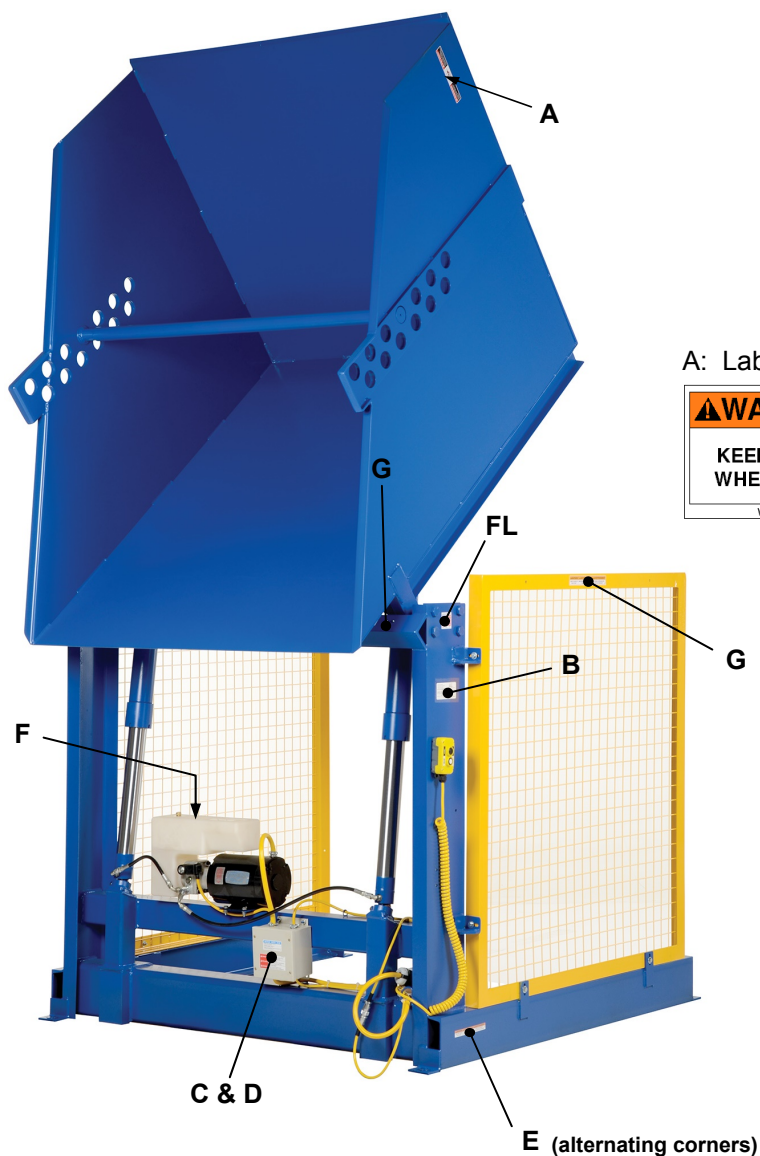
1. Labor;
2. Freight;
3. Occurrence of any of the following, which automatically voids the warranty:
 - Product misuse;
 - Negligent operation or repair;
 - Corrosion or use in corrosive environments;
 - Inadequate or improper maintenance;
 - Damage sustained during shipping;
 - Collisions or other incidental contacts causing damage to the product;
 - Unauthorized modifications: DO NOT modify the product IN ANY WAY without first receiving written authorization from Vestil. Modification(s) might make the product unsafe to use or might cause excessive and/or abnormal wear.

Do any other warranties apply to the product?

Vestil Manufacturing Corp. makes no other express warranties. All implied warranties are disclaimed to the extent allowed by law. Any implied warranty not disclaimed is limited in scope to the terms of this Limited Warranty.



FIG. 8: Product Markings and Labels



FL: 2" "Made in USA"



A: Label #220

| ⚠ WARNING | ⚠ ADVERTENCIA | ⚠ AVERTISSEMENT |
|---|--|--|
| KEEP CLEAR WHEN IN USE | MANTENGASE ALEJADO CUANDO SE ESTA OPERANDO | SE TENIR À DISTANCE LORS DU FONCTIONNEMENT |
| VESTIL MANUFACTURING CORPORATION • Angola, Indiana USA • Phone (260) 665-7586 • sales@vestil.com • www.vestil.com 220 Rev 08/02 | | |

B: Label #287

| |
|---|
| MODEL/MODÉLO/MODÈLE _____ |
| STATIC CAPACITY (evenly distributed) _____ lbs. |
| LA CAPACIDAD CONSTANTE (distribuida uniformemente) _____ kgs. |
| CAPACITÉ STATIQUE (distribuée régulièrement) _____ kgs. |
| SERIAL/SERIE/SÉRIE _____ |
| 287 REV 08/12 |

C: Label #250

| NOTICE | NOTA | AVIS |
|--|-------------|-------------|
| POWER SUPPLY: 460V/3 Phase/60 HZ | | |
| CONTROL VOLTAGE: 24 V AC | | |
| CORRIENTE: 460V/3 Fase/60 HZ | | |
| VOLTAJE DE CONTROL: 24 V CA | | |
| ALIMENTATION DE COURANT: 460V/3 Monophase/ 60 HZ | | |
| CONTRÔLER LE VOLTAGE: 24 V AC | | |
| 250 | | |

D: Label #221

| | | |
|------------------|---|--------------|
| ⚠ DANGER | ELECTRICAL SHOCK Shut power off and consult owners manual before working on this equipment. | 221 Rev 0111 |
| ⚠ PELIGRO | EI GOLPE ELECTRICO Corte la corriente consulte el manual de propietario antes de trabajar en este equipo. | |
| ⚠ DANGER | CHOC ELECTRIQUE Couper le courant et consulter le manuel d'utilisation avant de travailler sur cet équipement | |

E: Label #204

| ⚠ WARNING | ⚠ ADVERTENCIA | ⚠ AVERTISSEMENT |
|-----------------------|-----------------------------|---------------------------------------|
| SECURE FRAME TO FLOOR | ASEGURE EL BASTIDOR AL PISO | FIXER SOLIDEMENT LE CADRE AU PLANCHER |
| 204 Rev 11/10 | | |

F: Label #206

| |
|--|
| ISO 32 / 150 SUS |
| HYDRAULIC OIL OR NON-SYNTHETIC TRANSMISSION FLUID |
| ACEITE HIDRAULICO O LIQUIDOS DE TRANSMISION NO SINTETICOS |
| HUILE OU LIQUIDE HYDRAULIQUE NON-SYNTHÉTIQUE |
| 206 Rev. 1003 |
| VESTIL MANUFACTURING CORPORATION • Phone (260) 665-7586 • www.vestil.com |

G: Label #208 (on both left and right sides)

| ⚠ WARNING | ⚠ ADVERTENCIA | ⚠ AVERTISSEMENT |
|--|---------------------------------------|---|
| KEEP CLEAR OF PINCH POINT | MANTENGASE ALEJADO DEL PUNTO DE CORTE | SE TENIR À DISTANCE DU POINT DE PINCEMENT |
| VESTIL MANUFACTURING CORPORATION • Phone (260) 665-7586 • Fax (260) 665-1339 • sales@vestil.com • www.vestil.com 208 Rev 08/02 | | |