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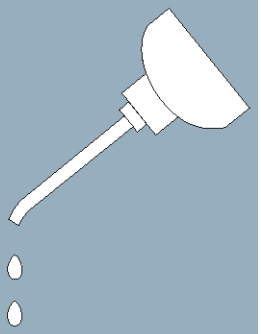
# Service & Mechanical Parts

## Centrifugal Extractors

## MMT4232C, L, R

## MXT4232C, L, R

## and Extractor Conveyors



**Read the separate safety manual before installing, operating, or servicing**

**PELLERIN MILNOR CORPORATION** POST OFFICE BOX 400, KENNER, LOUISIANA 70063-0400, U.S.A.

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# PELLERIN MILNOR CORPORATION
# LIMITED STANDARD WARRANTY

We warrant to the original purchaser that MILNOR machines including electronic hardware/software (hereafter referred to as "equipment"), will be free from defects in material and workmanship for a period of one year from the date of shipment (unless the time period is specifically extended for certain parts pursuant to a specific MILNOR published extended warranty) from our factory with no operating hour limitation. This warranty is contingent upon the equipment being installed, operated and serviced as specified in the operating manual supplied with the equipment, and operated under normal conditions by competent operators.

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will—at our option—repair or replace the defective part or parts, EX Factory (labor and freight specifically NOT included). We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

Parts damaged by exposure to weather, to aggressive water, or to chemical attack are not covered by this warranty. For parts which require routine replacement due to normal wear—such as gaskets, contact points, brake and clutch linings, belts, hoses, and similar parts—the warranty time period is 90 days.

We reserve the right to make changes in the design and/or construction of our equipment (including purchased components) without obligation to change any equipment previously supplied.

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WE NEITHER ASSUME, NOR AUTHORIZE ANY EMPLOYEE OR OTHER PERSON TO ASSUME FOR US, ANY OTHER RESPONSIBILITY AND/OR LIABILITY IN CONNECTION WITH THE SALE OR FURNISHING OF OUR EQUIPMENT TO ANY BUYER.

BMP720097/19036

BIUUUD19 (Published) Book specs- Dates: 20081231 / 20081231 / 20081231 Lang: ENG01 Applic: UUU

# How to Get the Necessary Repair Components

This document uses Simplified Technical English.
Learn more at http://www.asd-ste100.org.

You can get components to repair your machine from the approved supplier where you got this machine. Your supplier will usually have the necessary components in stock. You can also get components from the Milnor® factory.

Tell the supplier the machine model and serial number and this data for each necessary component:

- The component number from this manual
- The component name if known
- The necessary quantity
- The necessary transportation requirements
- If the component is an electrical component, give the schematic number if known.
- If the component is a motor or an electrical control, give the nameplate data from the used component.

To write to the Milnor factory:

Pellerin Milnor Corporation
Post Office Box 400
Kenner, LA 70063-0400
UNITED STATES

Telephone: 504-467-2787
Fax: 504-469-9777
Email: parts@milnor.com

— End of BIUUUD19 —

# Trademarks

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These words are trademarks of Pellerin Milnor® Corporation and other entities:

**Table 1. Trademarks**

| | | | |
|---|---|---|---|
| AutoSpot™ | GreenFlex™ | MilMetrix® | PulseFlow® |
| CBW® | GearTrace™ | MilTouch™ | RAM Command™ |
| Drynet™ | GreenTurn™ | MilTouch-EX™ | Recirc*ONE*® |
| E-P Express® | Hydro-cushion™ | MilRAIL® | RinSave® |
| E-P OneTouch® | Mentor® | Miltrac™ | SmoothCoil™ |
| E-P Plus® | Mildata® | MilVision™ | Staph Guard® |
| Gear Guardian® | Milnor® | PBW™ | |

End of document: BNUUUU02

BIUUUS27 (Published) Book specs- Dates: 20051111 / 20051111 / 20060323 Lang: ENG01 Applic: PEU

# Safety—Centrifugal Extractor

## 1. General Safety Requirements—Vital Information for Management Personnel [Document BIUUUS04]

Incorrect installation, neglected preventive maintenance, abuse, and/or improper repairs, or changes to the machine can cause unsafe operation and personal injuries, such as multiple fractures, amputations, or death. The owner or his selected representative (owner/user) is responsible for understanding and ensuring the proper operation and maintenance of the machine. The owner/user must familiarize himself with the contents of all machine instruction manuals. The owner/user should direct any questions about these instructions to a Milnor® dealer or the Milnor® Service department.

Most regulatory authorities (including OSHA in the USA and CE in Europe) hold the owner/user ultimately responsible for maintaining a safe working environment. Therefore, the owner/user must do or ensure the following:

- recognize all foreseeable safety hazards within his facility and take actions to protect his personnel, equipment, and facility;
- work equipment is suitable, properly adapted, can be used without risks to health or safety, and is adequately maintained;
- where specific hazards are likely to be involved, access to the equipment is restricted to those employees given the task of using it;
- only specifically designated workers carry out repairs, modifications, maintenance, or servicing;
- information, instruction, and training is provided;
- workers and/or their representatives are consulted.

Work equipment must comply with the requirements listed below. The owner/user must verify that installation and maintenance of equipment is performed in such a way as to support these requirements:

- control devices must be visible, identifiable, and marked; be located outside dangerous zones; and not give rise to a hazard due to unintentional operation;
- control systems must be safe and breakdown/damage must not result in danger;
- work equipment is to be stabilized;
- protection against rupture or disintegration of work equipment;
- guarding, to prevent access to danger zones or to stop movements of dangerous parts before the danger zones are reached. Guards to be robust; not give rise to any additional hazards; not be easily removed or rendered inoperative; situated at a sufficient distance from the danger zone; not restrict view of operating cycle; allow fitting, replacing, or maintenance by restricting access to relevant area and without removal of guard/protection device;
- suitable lighting for working and maintenance areas;
- maintenance to be possible when work equipment is shut down. If not possible, then protection measures to be carried out outside danger zones;
- work equipment must be appropriate for preventing the risk of fire or overheating; discharges of gas, dust, liquid, vapor, other substances; explosion of the equipment or substances in it.

1.1. **Laundry Facility**—Provide a supporting floor that is strong and rigid enough to support–with a reasonable safety factor and without undue or objectionable deflection–the weight of the fully loaded machine and the forces transmitted by it during operation. Provide sufficient clearance for machine movement. Provide any safety guards, fences, restraints, devices, and verbal and/or posted restrictions necessary to prevent personnel, machines, or other moving machinery from accessing the machine or its path. Provide adequate ventilation to carry away heat and vapors. Ensure service connections to installed machines meet local and national safety standards, especially regarding the electrical disconnect (see the National Electric Code). Prominently post safety information, including signs showing the source of electrical disconnect.

1.2. **Personnel**—Inform personnel about hazard avoidance and the importance of care and common sense. Provide personnel with the safety and operating instructions that apply to them. Verify that personnel use proper safety and operating procedures. Verify that personnel understand and abide by the warnings on the machine and precautions in the instruction manuals.

1.3. **Safety Devices**—Ensure that no one eliminates or disables any safety device on the machine or in the facility. Do not allow machine to be used with any missing guard, cover, panel or door. Service any failing or malfunctioning device before operating the machine.

1.4. **Hazard Information**—Important information on hazards is provided on the machine safety placards, in the Safety Guide, and throughout the other machine manuals. **Placards must be kept clean so that the information is not obscured. They must be replaced immediately if lost or damaged. The Safety Guide and other machine manuals must be available at all times to the appropriate personnel.** See the machine service manual for safety placard part numbers. Contact the Milnor Parts department for replacement placards or manuals.

1.5. **Maintenance**—Ensure the machine is inspected and serviced in accordance with the norms of good practice and with the preventive maintenance schedule. Replace belts, pulleys, brake shoes/disks, clutch plates/tires, rollers, seals, alignment guides, etc. before they are severely worn. Immediately investigate any evidence of impending failure and make needed repairs (e.g., cylinder, shell, or frame cracks; drive components such as motors, gear boxes, bearings, etc., whining, grinding, smoking, or becoming abnormally hot; bending or cracking of cylinder, shell, frame, etc.; leaking seals, hoses, valves, etc.) Do not permit service or maintenance by unqualified personnel.

## 2. Safety Alert Messages—Internal Electrical and Mechanical Hazards [Document BIUUUS11]

The following are instructions about hazards inside the machine and in electrical enclosures.

**WARNING 1: Electrocution and Electrical Burn Hazards**—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not unlock or open electric box doors.
- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.

**WARNING 2: Entangle and Crush Hazards**—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.

**WARNING 3: Crush Hazards**—Tilting machines only—The machine housing will crush your body or limbs if it descends or falls while you are under it. Housing can descend with power off or on. Manual operation of tilting valves overrides safety interlocks. Improper operation of manual tilting valves may cause the housing to descend.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.

## 3. Safety Alert Messages—External Mechanical Hazards [Document BIUUUS12]

The following are instructions about hazards around the front, sides, rear or top of the machine.

**WARNING 4: Crush Hazards**—Suspended machines only—Spaces between the shell and housing can close and crush or pinch your limbs. The shell moves within the housing during operation.

- Do not reach into the machine housing or frame.
- Keep yourself and others clear of movement areas and paths.

**WARNING 5: Fall, Entangle, and Strike Hazards**—Machine motion can cause you to fall or become entangled in or struck by nearby objects if you stand, walk, or ride on the machine. Shuttles and conveyor belts move automatically.

- Keep yourself and others off of machine.

## 4. Safety Alert Messages—Cylinder and Processing Hazards

**[Document BIUUUS13]**

The following are instructions about hazards related to the cylinder and laundering process.

**DANGER 6: Entangle and Sever Hazards**—Contact with goods being processed can cause the goods to wrap around your body or limbs and dismember you.

- Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- Do not touch goods inside or hanging partially outside the turning cylinder.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.

**WARNING 7: Crush Hazards**—Contact with the turning cylinder can crush your limbs. The cylinder will repel any object you try to stop it with, possibly causing the object to strike or stab you.

- Lock out and tag out power at the main machine disconnect before reaching into the cylinder.
- Do not place any object in the turning cylinder.

**WARNING 8: Confined Space Hazards**—Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not attempt unauthorized servicing, repairs, or modification.

**WARNING 9: Explosion and Fire Hazards**—Flammable substances can explode or ignite in the cylinder, drain trough, or sewer. The machine is designed for washing with water, not any other solvent. Processing can cause solvent-containing goods to give off flammable vapors.

- Do not use flammable solvents in processing.

# 5. Safety Alert Messages—Unsafe Conditions [Document BIUUUS14]

## 5.1. Damage and Malfunction Hazards

### 5.1.1. Hazards Resulting from Inoperative Safety Devices

**WARNING 10: Multiple Hazards**—Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.

**WARNING 11: Electrocution and Electrical Burn Hazards**—Electric box doors—Operating the machine with any electric box door unlocked can expose high voltage conductors inside the box.

- Do not unlock or open electric box doors.

**WARNING 12: Entangle and Crush Hazards**—Guards, covers, and panels—Operating the machine with any guard, cover, or panel removed exposes moving components.

- Do not remove guards, covers, or panels.

### 5.1.2. Hazards Resulting from Damaged Mechanical Devices

**WARNING 13: Multiple Hazards**—Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- Do not operate a damaged or malfunctioning machine. Request authorized service.

**WARNING 14: Explosion Hazards**—Cylinder—A damaged cylinder can rip apart during extraction, puncturing the shell and discharging metal fragments at high speed.

- Do not operate the machine with any evidence of damage or malfunction.

## 5.2. Careless Use Hazards

### 5.2.1. Careless Operation Hazards—Vital Information for Operator Personnel (see also operator hazards throughout manual)

**WARNING 15: Multiple Hazards**—Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- Do not operate a damaged or malfunctioning machine. Request authorized service.
- Do not attempt unauthorized servicing, repairs, or modification.
- Do not use the machine in any manner contrary to the factory instructions.
- Use the machine only for its customary and intended purpose.
- Understand the consequences of operating manually.

**CAUTION 16: Goods Damage and Wasted Resources**—Entering incorrect cake data causes improper processing, routing, and accounting of batches.

- Understand the consequences of entering cake data.

### 5.2.2. Careless Servicing Hazards—Vital Information for Service Personnel (see also service hazards throughout manuals)

**WARNING 17: Electrocution and Electrical Burn Hazards**—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

**WARNING 18: Entangle and Crush Hazards**—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

**WARNING 19: Crush Hazards**—Tilting machines only—The machine housing will crush your body or limbs if it descends or falls while you are under it. Housing can descend with power off or on. Manual operation of tilting valves overrides safety interlocks. Improper operation of manual tilting valves may cause the housing to descend.

- Secure both red safety supports in accordance with the instructions furnished, then lock out and tag out power at the main machine disconnect before working under the tilted machine.
- Do not operate the manual tilt valves with anyone under the machine.
- Do not operate the tilt controls with anyone under the machine.

**WARNING 20: Confined Space Hazards**—Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not enter the cylinder until it has been thoroughly purged, flushed, drained, cooled, and immobilized.

— End of BIUUUS27 —

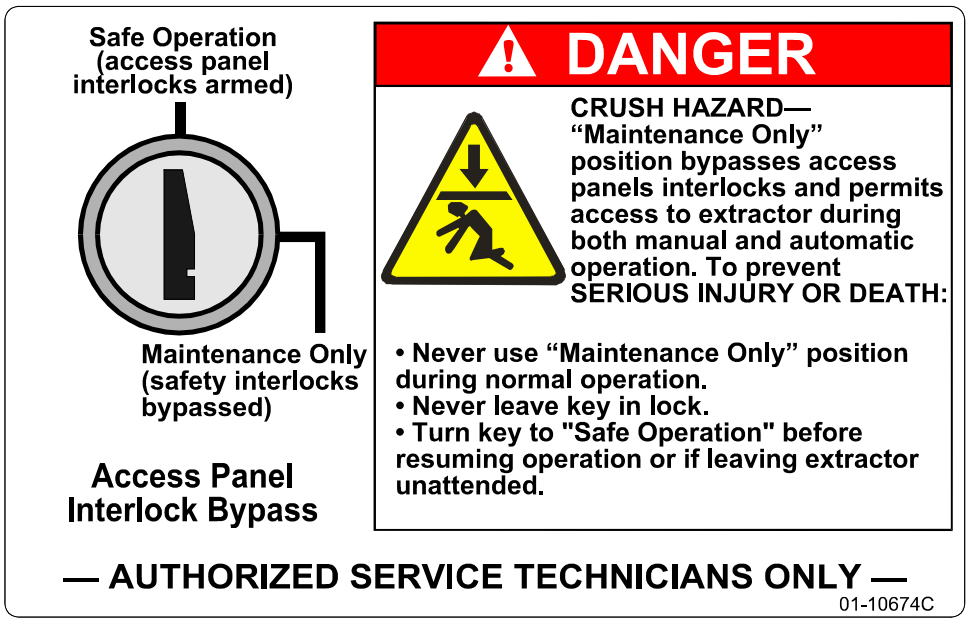
# SAFETY ALERT for Owner/Managers and Maintenance Personnel: Using the Access Panel Interlock Bypass Key Switch

The access panels on this machine are equipped with safety lockout switches that disable the machine if a panel is removed. The Access Panel Interlock Bypass key switch permits bypassing this safety feature to allow access to certain moving parts during required maintenance procedures. This key switch, located inside the low voltage control box, is shown in Figure 1.

**DANGER 1: Crush Hazard**—The "Maintenance Only" position bypasses access panel interlocks and permits access to moving parts during both manual and automatic operation. **To prevent serious injury or death**, comply with, or ensure compliance with the following:

- **Never use the machine for normal operation with this switch in the "Maintenance Only" position.**
- **Never use this switch to clear faults or for any operational function.**
- **Use this switch *only* if you are a trained, authorized service technician**, and only when performing maintenance that requires immediate access to moving parts normally shielded by the access panels.
- Always turn the switch to the "Safe Operation" position **and remove the key** before resuming normal operation or stepping away from the machine.
- Keep the Access Panel Interlock Bypass key secured away from machine operators and all other personnel who do not fully understand the results of using it.
- Keep all electrical and control cabinets closed and securely latched. Keep control cabinet keys away from untrained employees.

**Figure 1: Access Panel Bypass Key Switch and Safety Placard**

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# Use the Red Safety Supports for Maintenance — MMT42_, MXT42_

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## 1. What Safety Supports are Provided and Why

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These machines are provided with four safety stands—two short (which also serve as shipping brackets) and two long. After the shell is tilted to one of two positions–horizontal or full up–the appropriate stands are placed around the shafts of the extended hydraulic cylinders and secured in position. The safety supports provide protection against the drifting down of the vertically moving portion of the machine during maintenance in the event of a leak in the hydraulic system. They are not intended to restrain the machine from coming down under power. Use the safety support(s) whenever the maintenance to be performed requires you to place any part of your body in or near the path of the vertically moving portion of the machine.

**WARNING:** **Incorrect use of the safety supports —** can cause the machine to descend and crush you.

- Never work near the path of the vertically moving portion of the machine unless the safety supports are deployed and power is removed from the machine.
- Do not use power to close a small gap between the machine and the safety supports. Use care not to lower the machine with the safety supports deployed.
- Maintain the safety support(s) in good condition.
- When not in use, stow the safety support(s) in the location(s) provided on the machine or in a convenient, designated location.

## 2. How To Deploy the Safety Stands

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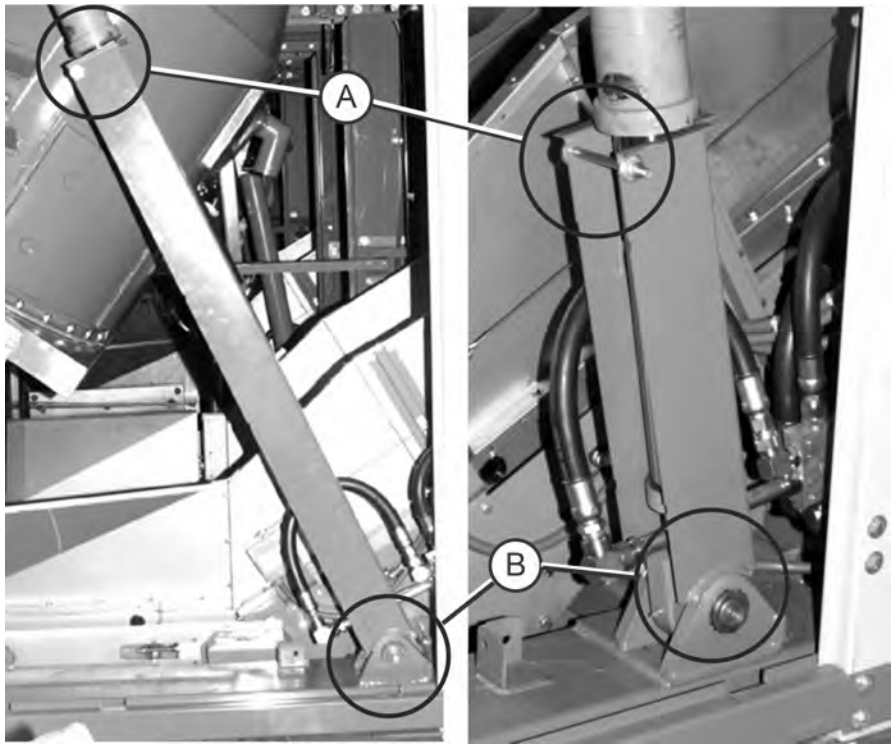
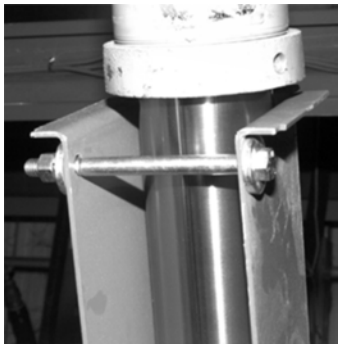
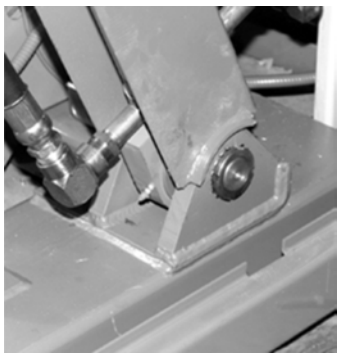
1. Use the Manual mode to raise the shell (drum) to the needed position—horizontal or full up.
2. Install the long or short safety stands as follows:
   a. See the illustration below. Put the stands around the tilt cylinder shafts gently. Use care not to hit the hydraulic cylinder shaft with any part of the safety stand. Put the rounded bottom of the stand on the pivot mount. See Detail B.
   b. Lock each stand in position with the bolt, nut and washers provided. See Detail A.




**Safety Stands— Long at left, short at right**



**Detail A**



**Detail B**

3. Remove electric power from the machine.

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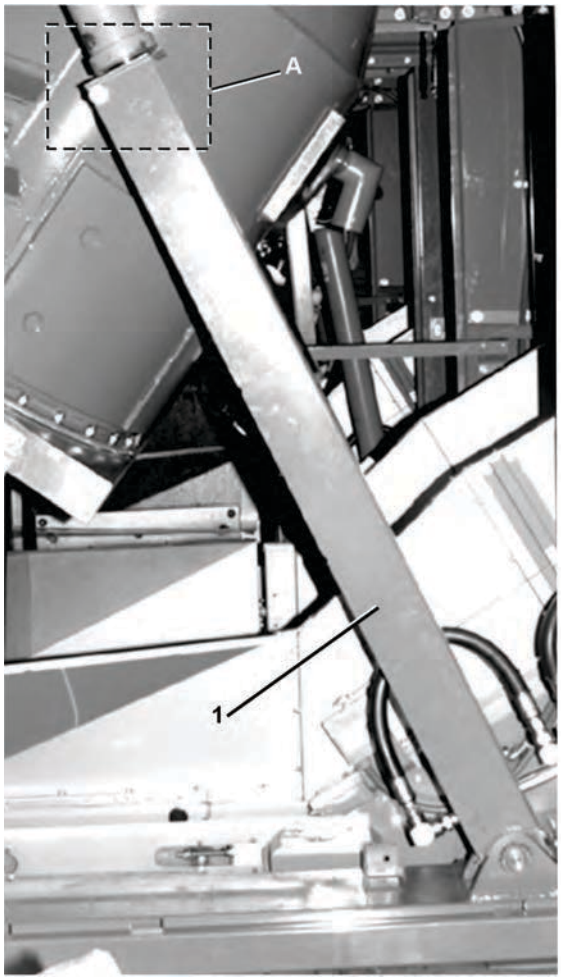
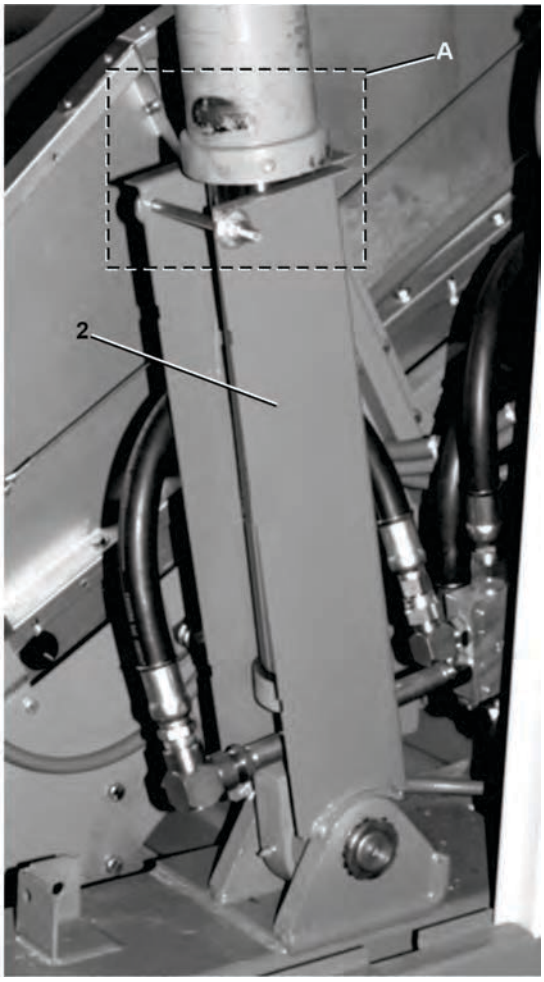
# Safety Stands

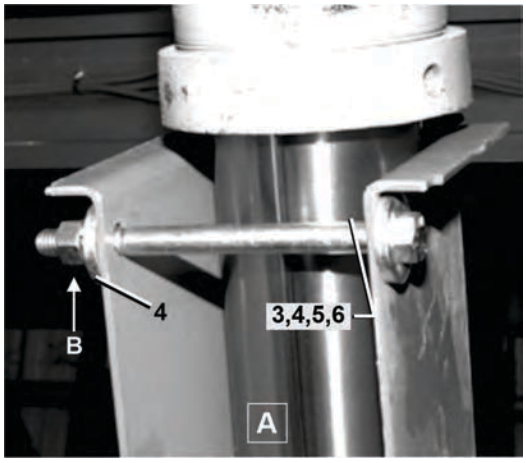


**M7E4232C,L,R M9E4232C,L,R M7V4232C,L,R M9V4232C,L,R**

**Used on Both Sides of the Machine**




**Legend**

**A . . .** See detail A

**B . . .** Insure the factory-supplied hardware is fastened properly as shown here.

# Safety Stands



**M7E4232C,L,R M9E4232C,L,R M7V4232C,L,R M9V4232C,L,R**

### Table 1. Parts List—Safety Stands

| Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations. | | | | |
|---|---|---|---|---|
| **Used In** | **Item** | **Part Number** | **Description/Nomenclature** | **Comments** |
| Reference Assemblies | | | | |
| | A | GGS16002 | SAFETY STAND LARGE 42M7E | LARGE |
| | B | GGS16005 | SAFETY STAND SMALL 42M7E | SMALL |
| Components | | | | |
| A | 1 | W3 16325 | *WLDMT= LARGE SAFETY STAND | |
| B | 2 | W3 16324 | *WLDMT= SMALL SAFETY STAND | |
| all | 3 | 15K203D | HEXCAPSCR 1/2-13X5.5 GR5 ZINC | |
| all | 4 | 15U280 | FL+WASHER(USS STD)1/2 ZNC PL+D | |
| all | 5 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 6 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |

# 1 Installation

# HANDLING AND SETTING CENTRIFUGAL EXTRACTORS

## Handling Precautions

1. Remove the protective coverings (leaving the machine on shipping skids) and examine carefully for possible shipping damage. **If the machine is damaged, notify the transportation company immediately.**

   **NOTE:** Once the machine is given to the carrier, it is solely the responsibility of the carrier to ensure that no damage occurs during transit. In addition to readily apparent damage, carriers are liable for concealed damage. **Do not hesitate to file a claim with the carrier if the machine is damaged in any way during shipment.** Milnor® will be glad to assist you in filing your claim, but is not responsible for any shipping damage to the machine once it has been delivered to the carrier in good condition.

2. Consult Milnor® for instructions if crane lifting is required.

3. Use skids for fork lifting. If possible, leave the machine on shipping skids until it is near its final position. Once the skids are removed, take care in placing forks under the machine. **Do not allow the forks to come in contact with valves, piping, motors, etc., located under the machine.**

4. Never push, pull, lift, jack, or exert pressure on any components that protrude from the machine frame (shell front, door, electric boxes, controls, guards, conduits, conveyors, piping, etc.).

## Site Requirements

### Space Requirements

1. All openings and corridors through which equipment must pass during installation must be large enough to accomodate the width and the height of the machine as shown on the dimensional drawings. It is occasionally possible to reduce the overall dimensions by removing piping or other special modifications. Consult Milnor® for additional information.

2. Sufficient clearance must be provided for normal operation and maintenance procedures.

### Operation Requirements

1. Allow sufficient ventilation for the heat and vapors of normal operation to dissipate.

2. Provide easy access to controls. Operators must be able to view all status lights and reach all controls associated with the machine.

**Foundation Requirements**—The floor and/or all other support components must have sufficient strength and rigidity with due consideration for the natural or resonant frequency thereof to withstand the fully loaded weight of the machine, including the wet goods and any repeated sinusoidal (rotating) forces generated during its operation. Determining the suitability of floors, foundations, and other supporting structures normally requires *analysis by a qualified structural engineer.*

## Setting Procedures

To protect against lateral creeping of the machine during operation (due to vibration), roughen the area of the floor where the grout will be applied. Anchor bolts are required.

1. With the machine near the final location, unbolt the shipping skids. Observing all precautions, lift the machine off its skids, and lower the machine onto blockings. Shim the blockings until the machine is level and approximately 1" (25) clearance exists under each base pad. Install anchor bolts (as shown on the dimensional drawing), but **do not tighten bolts until grout is completely dry.**

2. Apply grout between the existing foundation floor and the base pads, observing the following considerations:

- Use only industrial strength non-shrinking grout.
- If the grout (after mixing) is too thin (causing it to flow from under the base pads), install temporary cardboard framing around pads to retain the grout until it cures.
- If the grout (after mixing) is of proper consistency, pack or trowel by hand.

**⚠ CAUTION ⚠**

**VIBRATION AND MALFUNCTION HAZARD—Voids under base pads can magnify vibration and cause unsatisfactory operation.**

☞ **Grout must displace total clearance between base pads and existing foundation floor.**

☞ **Voids must not exist.**

3. Tighten anchor bolts evenly using only one-quarter turn on each bolt before moving to the next one. While tightening, frequently skip from front to back and right to left to insure uniform tension. After tightening all bolts, check each bolt at least twice during the first week of operation.

4. **Please check perforated cylinder for smoothness before placing machine in service. We cannot accept claims for damage to cylinder's smooth finish after machine has been placed in service.**

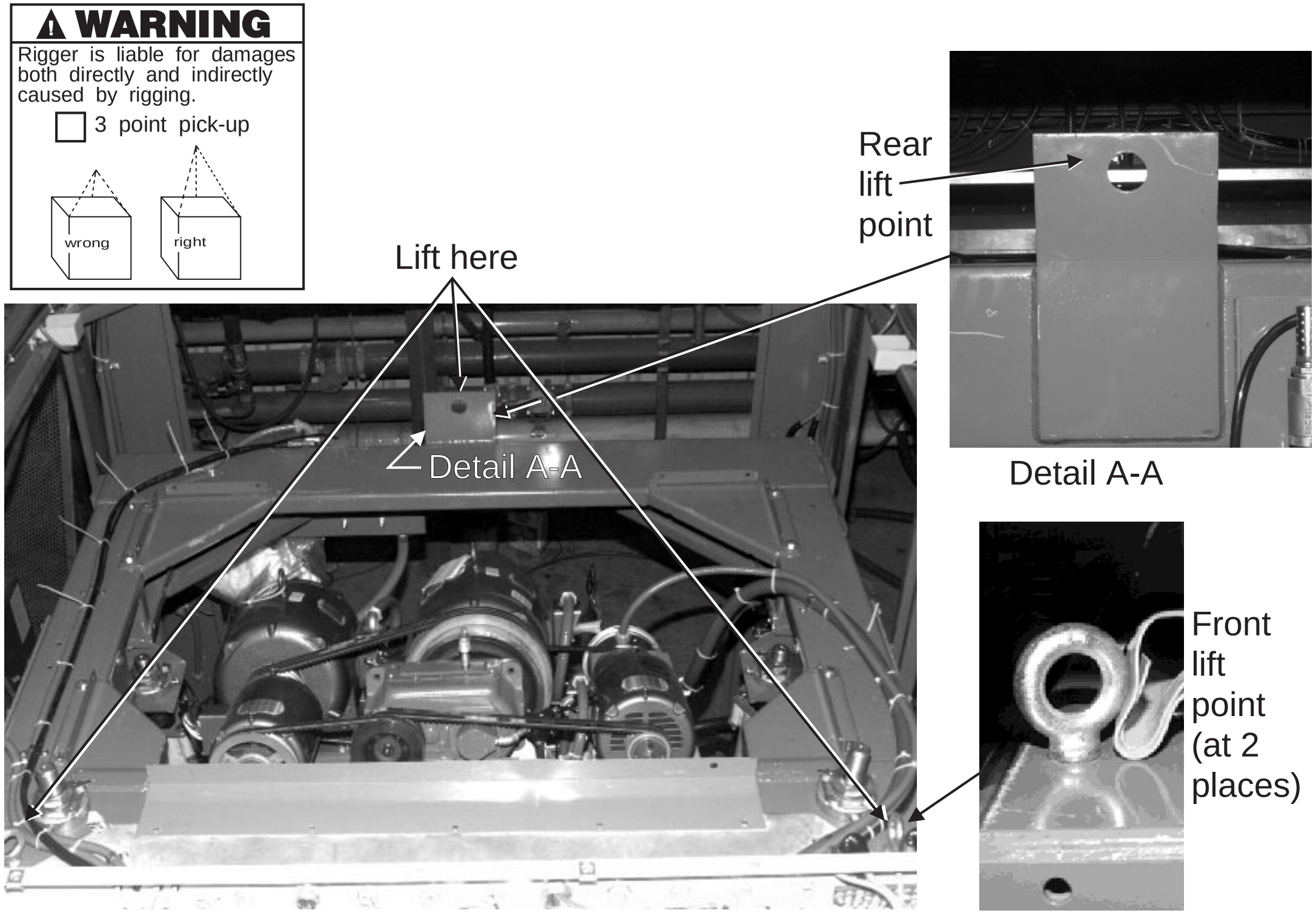
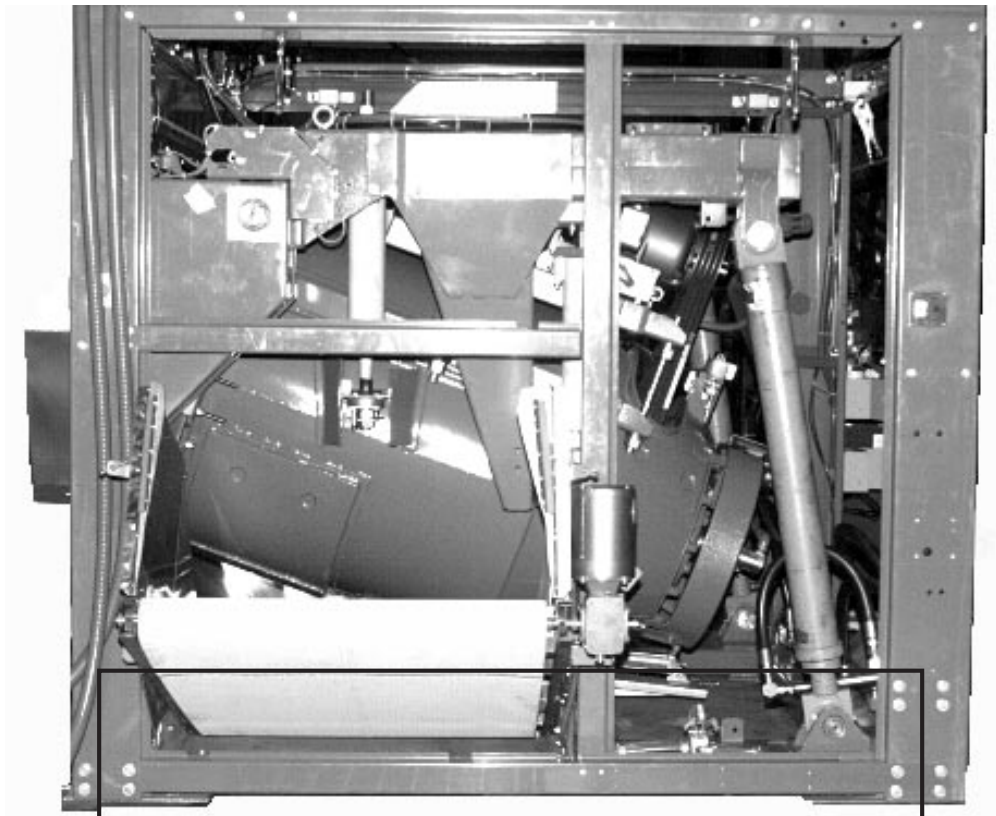
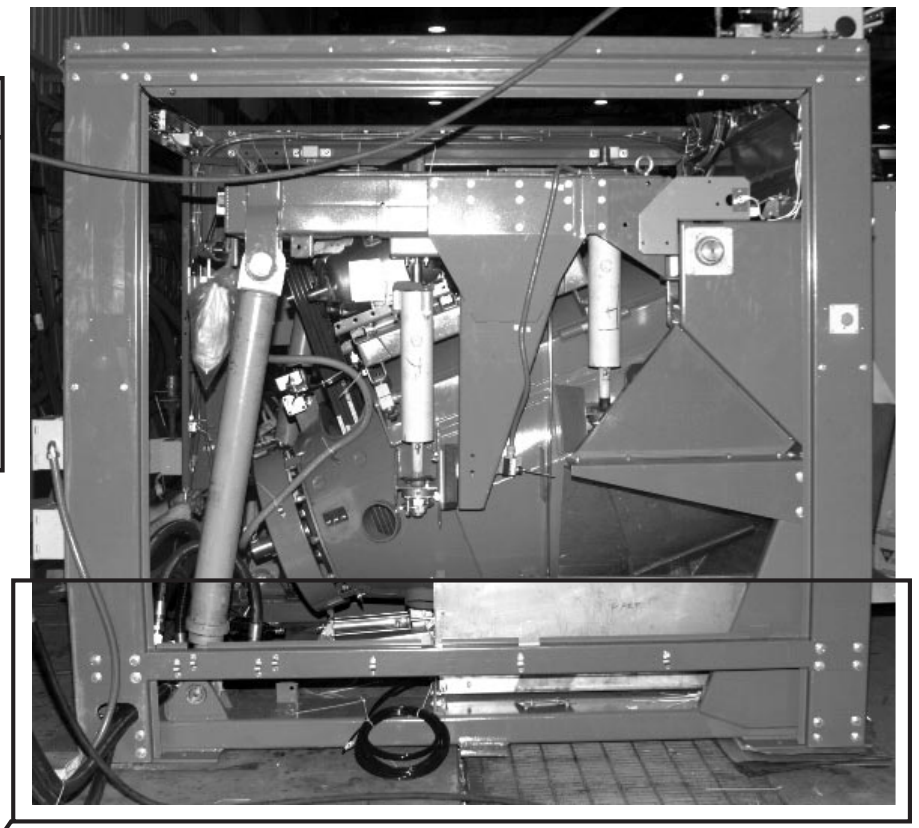



**FIGURE 1** (MSINA406AE)
**Lifting and Jacking Points**



**⚠ CAUTION ⚠**

Lift and jack at base only (shown below). Forklift blades must not contact conveyor, hydraulic lines, or cosmetics. See "Jacking Precautions" below.



base

**Jacking Precautions**

**NOTE 1:** Only lift or jack high enough to place or remove crawlers or other moving aids.

**NOTE 2:** When jacking machine, spread forks far enough apart to distribute weight properly. Do not rack machine!

**FIGURE 2** (MSINA406AE)
**Lifting and Jacking Points**

# ⚠ WARNING ⚠

Remove shipping restraints before attempting to run machine, but only after machine is in place. Restraints are usually marked with red, and may be concealed behind access panels. Replace those fasteners which are part of the machine structure.

Front shipping mounting bracket location (painted red)

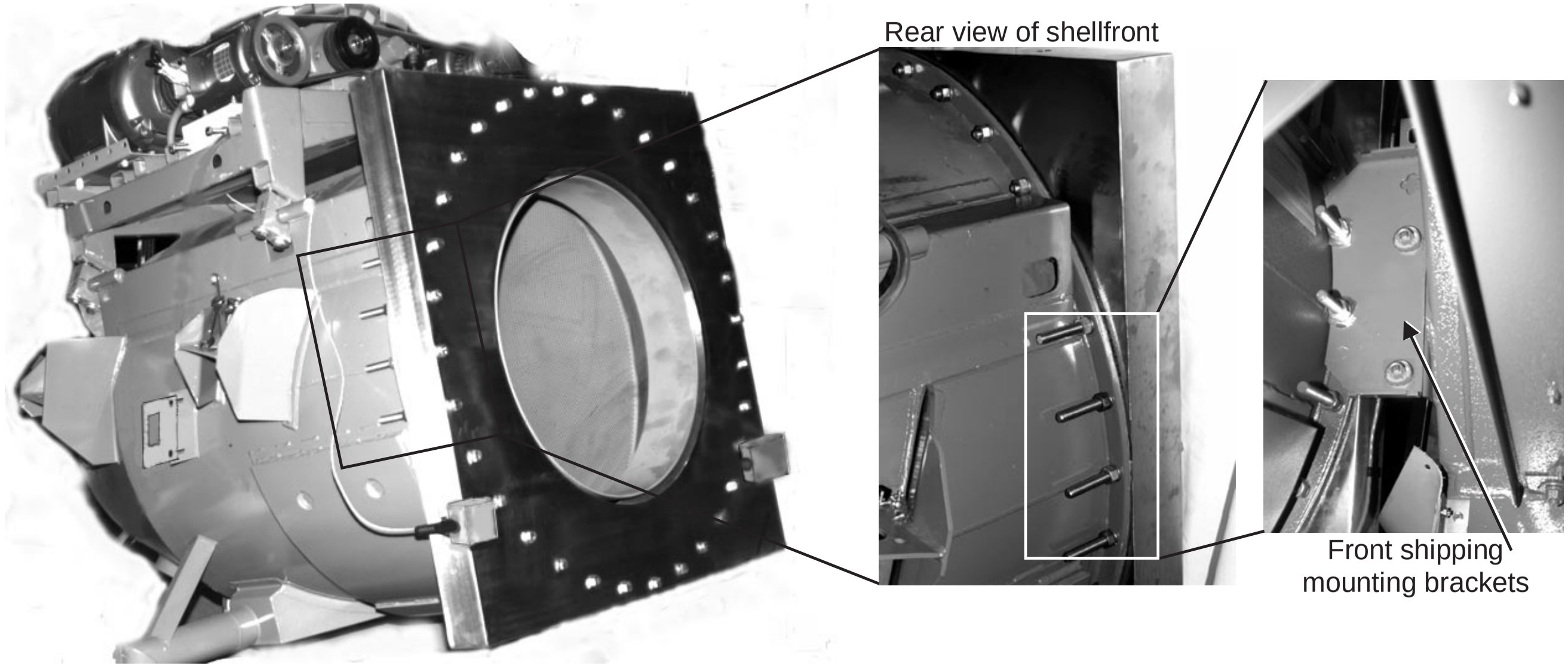



**FIGURE 3** (MSINA406AE)
**Shipping Brackets and Restraints (painted red)**

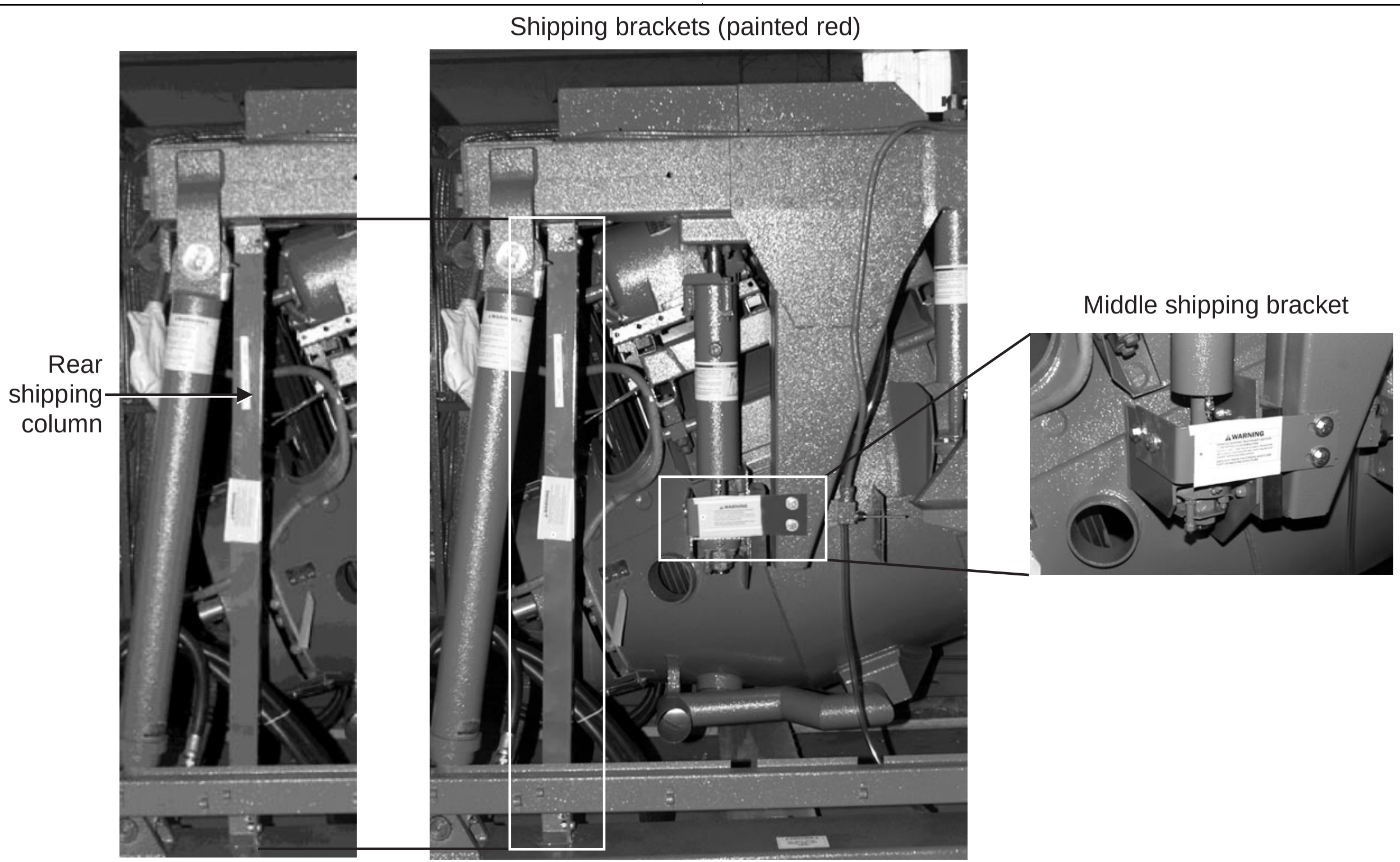



**FIGURE 4** (MSINA406AE)
**Shipping Restraints and Brackets (painted red)**

# CENTRIFUGAL EXTRACTOR SERVICE CONNECTIONS

## General

These service connections are required (depending on the machine model and optional features):

1. Piped inlets and outlets (compressed air, reuse water, or drain and load chute drain, if equipped). The sizes and locations of piped inlets and outlets are shown on the dimensional drawings for the machine.
2. Electric power connections, (for additional information see "EXTERNAL FUSE AND WIRE SIZES FOR MILNOR® MACHINES" - MAEFUSE1AE).

## Requirements for Piped Connections

Inlet pressures must be within the minimum/maximum range specified. Pressure outside of the specified range may cause the machine to operate inefficiently or malfunction, and may damage machine components.

**⚠ CAUTION ⚠**

**MACHINE DAMAGE—Valve bodies will be ruined if twisted and distorted.**

☞ **Hold the connection side of the valve with a wrench when connecting plumbing.**

**Piped Inlet/Outlet Specifications**—The piped inlet and outlet requirements are as follows (see dimensional drawings for the size and location of connection points):

### Piped Inlets

| Description of Connection | Source Requirements | Piping Specifications |
|---|---|---|
| **Compressed air inlet** | 1" NPT 85-115 PSI (5.97-8.08 kilogram/centimeter$^2$) | Pipe material per plumbing code |

### Piped Outlets

| Description of Connection | Destination Requirements | Piping Specifications |
|---|---|---|
| **Reuse tank discharge pipe** | 1 1/2" NPT | Rubber hose, PVC, or other approved material per plumbing code |
| **Drain (non-reuse equipped machines)** | 3" NPT unrestricted gravity feed to sewer | Same as above |
| **Load chute drain (piped to sewer or reuse tank)** | 1" (25.4) | Flexible tubing or other approved material per plumbing code |

# When Making Electrical Power Connections

**⚠ DANGER ⚠**

**ELECTROCUTION HAZARD—Contact with high voltages can kill or seriously injure you.**

☞ **All electrical connections must be made by a competent electrician.**

1. Connections must be made by a competent electrician.
2. See fuse and wire sizing information in the schematic manual and on the machine nameplate.
3. "Stinger leg" if any, must be connected to terminal L3 only.
4. Make power connections within beltbox.
5. Only use BUSSMAN FUSETRON FRN (up to 250V), FRS (up to 600V) or similar lag fuses. The nameplate for fuse sizes must not be applied to standard fuses.
6. See nameplate for fuse and wire sizes. If wire runs more than 50 feet (15.24), increase by one wire size per each additional 50 feet (15.24).

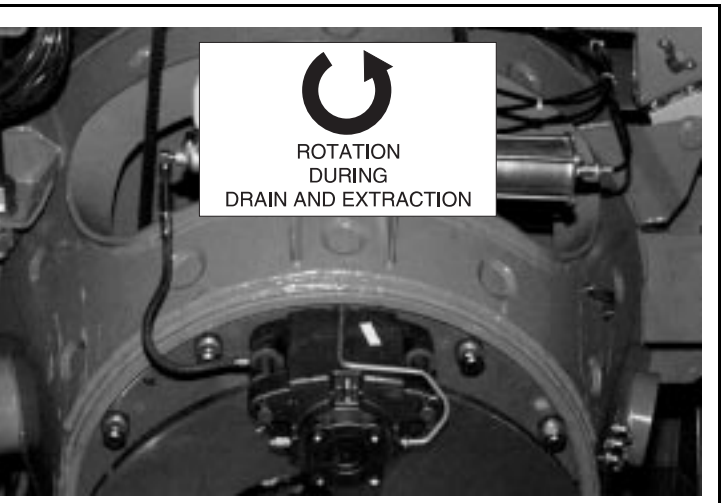
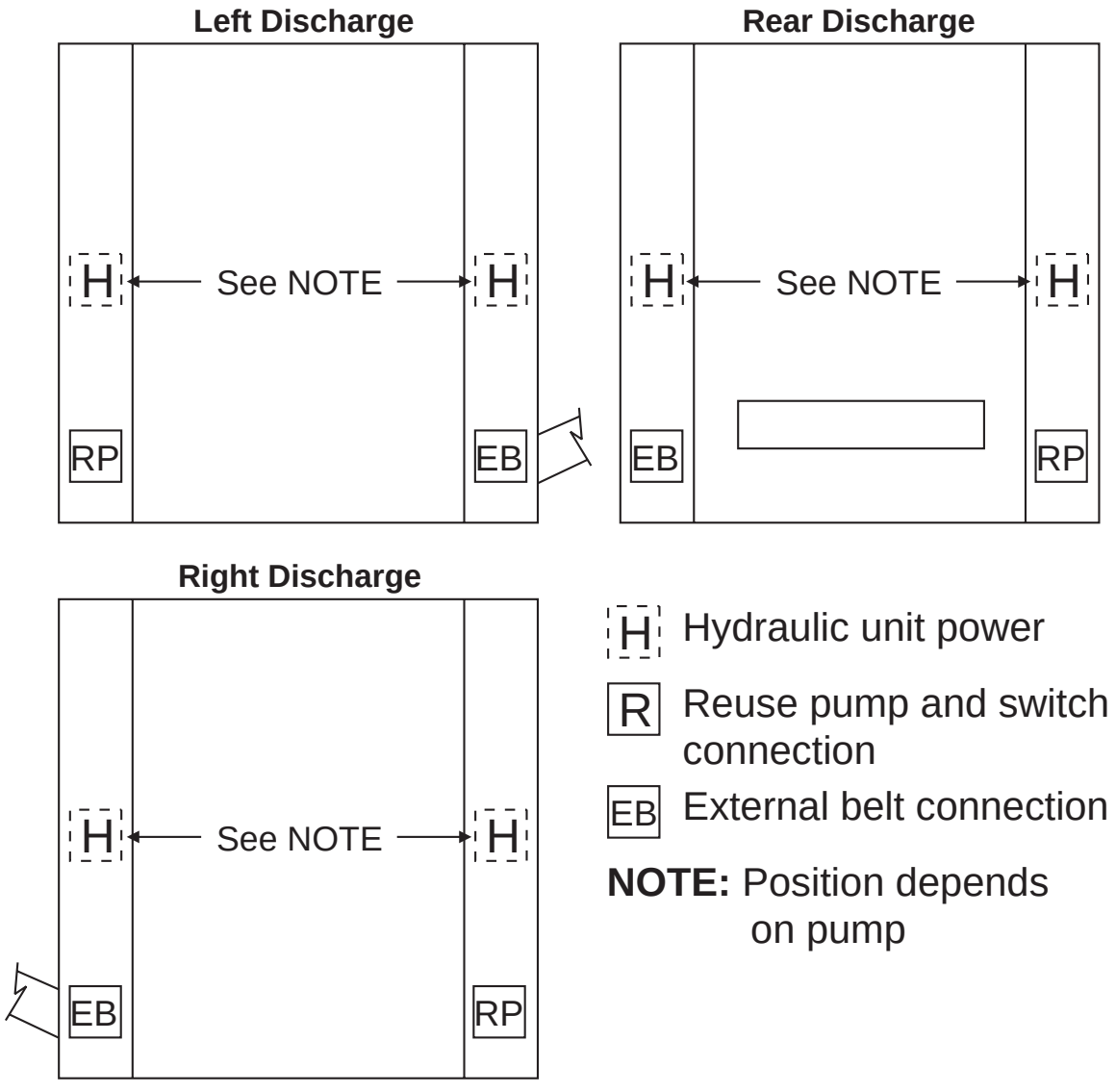



**FIGURE 1** (MSIN0906AE)
**Cylinder Rotation (Viewed from rear)**

7. Verify all motor rotation (see the M7E extractor reference manual for more information). If the cylinder turns in the wrong direction, interchange the wires connected to L1 and L2. **Never move L3, under any circumstances.**

**NOTE:** Before shipping, all motors are properly phased for correct rotation. It is possible to reverse the direction of rotation in a three-phase machine by interchanging the incoming power leads. Therefore, the rotation of a three-phase machine must be observed and corrected when the machine is first installed. If it is necessary to reverse the rotation, simply swap the incoming power lines to the machine (never move L3 if L3 is a stinger leg). Never attempt to reconnect motors or the motor control devices.




Hydraulic unit power

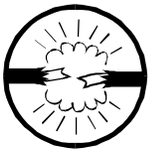
Reuse pump and switch connections

External belt connections

**FIGURE 2** (MSIN0906AE)
**Electrical Connections**

# Electric Power and Air Connections

**⚠ CAUTION ⚠**



**Voltage fluctuations of more than 10% above or below the specified voltage for the machine are extremely detrimental to electrical components, especially motors.**

☞ **Correct any such condition prior to commissioning the machine.**

The customer must furnish a remotely mounted disconnect switch with lag type fuses, circuit breakers, and wiring between the electrical service box and the junction box on the machine. The sizes of these fuses and wires, along with the motor fuses supplied with the machine, depend on the machine voltage. See fuse and wire sizing information in the schematic manual and on the machine nameplate.

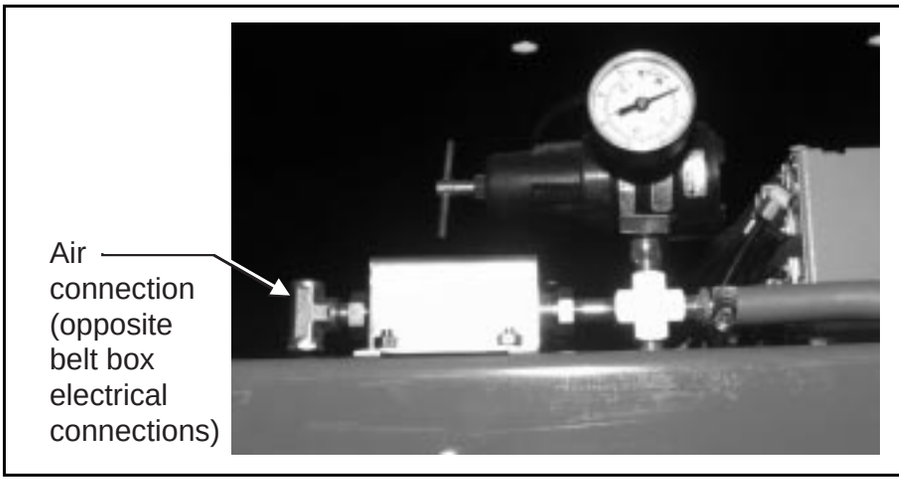



**FIGURE 3** (MSIN0906AE)
**Air Connection**

**AIR CONNECTION**

MINIMUM 85 PSI (Generally)
MAXIMUM 110 PSI (Check nameplate on machine)

THE BRAKE INTERLOCK PRESSURE SWITCH WILL NOT PERMIT THE MACHINE TO EXTRACT IF THE AIR PRESSURE IS TOO LOW. THE MACHINE WILL ROTATE AT DRAIN SPEED INSTEAD.

If this happens, check your air compressor. If your gauge shows more than 85 PSI the gauge is probably faulty. Some air compressors are set with too great a pressure differential between the lowest pressure obt ainable and the highest pressure obtainable. Hence, if your compressor is set to go on at 60 PSI and off at 110 PSI, the machine will extract quite satisfactorily whenever the air pressure is above 85 PSI, but will not enter extraction at all when the pressure is below 85 PSI.

**⚠ CAUTION**

USE ONLY YOUR FINGERS TO DEPRESS THE KEYS.

NEVER USE SHARP OBJECTS.

WHEN USED PROPERLY THIS KEYPAD WILL WITHSTAND HEAVY INDUSTRIAL USE.

DAMAGE MAY OCCUR IF KEYS ARE DEPRESSED BY A SCREWDRIVER, PEN, ETC.

**FIGURE 4** (MSIN0906AE)
**Air and Electrical Connection Precautions**

# About the Forces Transmitted by Milnor® Washer-extractors

During washing and extracting, all washer-extractors transmit both static and dynamic (cyclic) forces to the floor, foundation, or any other supporting structure. During washing, the impact of the goods as they drop imparts forces which are quite difficult to quantify. Size for size, both rigid and flexibly-mounted machines transmit approximately the same forces during washing. During extracting, rigid machines transmit forces up to 30 times greater than equivalent flexibly-mounted models. The actual magnitude of these forces vary according to several factors:

- machine size,
- final extraction speed,
- amount, condition, and type of goods being processed,
- the liquor level and chemical conditions in the bath preceding extraction, and
- other miscellaneous factors.

Estimates of the maximum force normally encountered are available for each Milnor® model and size upon request. Floor or foundation sizes shown on any Milnor® document are only for on-grade situations based only on previous experience without implying any warranty, obligation, or responsibility on our part.

## 1. Rigid Machines

Size for size, rigid washer-extractors naturally require a stronger, more rigid floor, foundation, or other supporting structure than flexibly-mounted models. If the supporting soil under the slab is itself strong and rigid enough and has not subsided to leave the floor slab suspended without support, on grade installations can often be made directly to an existing floor slab if it has enough strength and rigidity to safely withstand our published forces without transmitting undue vibration. If the subsoil has subsided, or if the floor slab itself has insufficient strength and rigidity, a deeper foundation, poured as to become monolithic with the floor slab, may be required. Support pilings may even be required if the subsoil itself is “springy” (i.e., if its resonant frequency is near the operating speed of the machine). Above-grade installations of rigid machines also require a sufficiently strong and rigid floor or other supporting structure as described below.

## 2. Flexibly-mounted Machines

Size for size, flexibly-mounted machines generally do not require as strong a floor, foundation, or other supporting structure as do rigid machines. However, a floor or other supporting structure having sufficient strength and rigidity, as described in Section 3, is nonetheless vitally important for these models as well.

## 3. How Strong and Rigid?

Many building codes in the U.S.A. specify that laundry floors must have a minimum live load capacity of 150 pounds per square foot (732 kilograms per square meter). However, even compliance with this or any other standard does not necessarily guarantee sufficient rigidity. In any event, it is the sole responsibility of the owner/user to assure that the floor and/or any other supporting structure exceeds not only all applicable building codes, but also that the floor and/or any other supporting structure for each washer-extractor or group of washer-extractors actually has sufficient strength and rigidity, plus a reasonable factor of safety for both, to support the weight of all the fully loaded machine(s) including the weight of the water and goods, and including the published 360º rotating sinusoidal RMS forces that are transmitted by the machine(s). Moreover, the floor, foundation, or other supporting structure must have sufficient

rigidity (i.e., a natural or resonant frequency many times greater than the machine speed with a reasonable factor of safety); otherwise, the mentioned 360º rotating sinusoidal RMS forces can be multiplied and magnified many times. It is especially important to consider all potential vibration problems that might occur due to all possible combinations of forcing frequencies (rotating speeds) of the machine(s) compared to the natural frequencies of the floor and/or any other supporting structure(s). A qualified soil and/or structural engineer must be engaged for this purpose.

**Figure 1: How Rotating Forces Act on the Foundation**

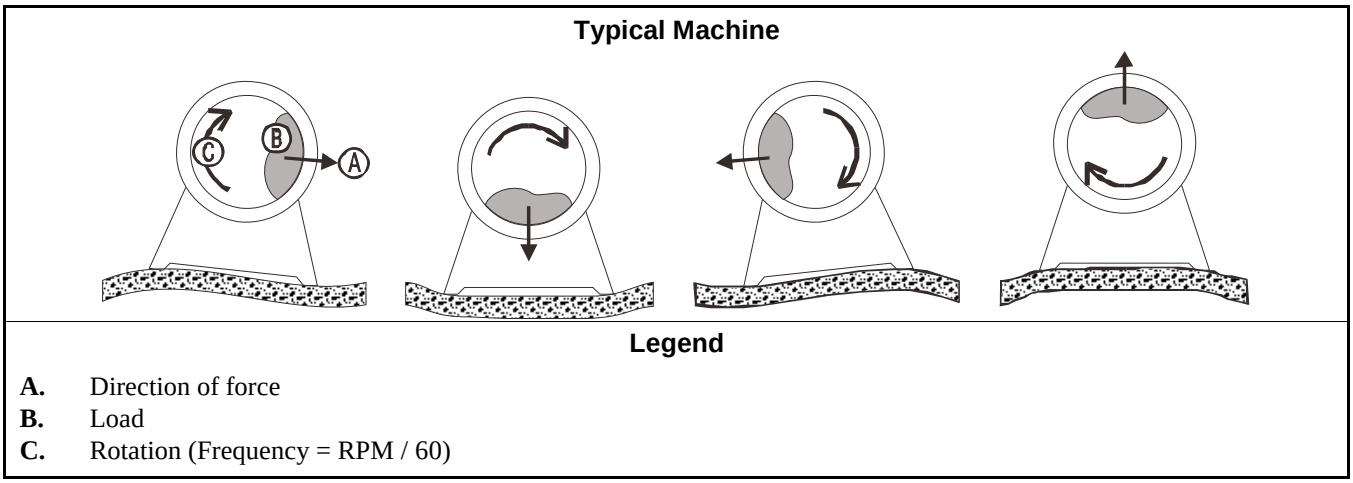



Figure 1 above is intended to depict both on-grade and above-grade installations and is equally applicable to flexibly-mounted washer-extractors, as well as to rigid models installed either directly on a floor slab or on a foundation poured integrally with the slab. Current machine data is available from Milnor® upon request. All data is subject to change without notice and may have changed since last printed. It is the sole responsibility of every potential owner to obtain written confirmation that any data furnished by Milnor® applies for the model(s) and serial number(s) of the specific machines.

— End of BIWUUI02 —

BIUUUI02PE (Published) Book specs- Dates: 20160712 / 20160712 / 20160712 Lang: ENG01 Applic: PEU

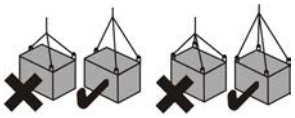
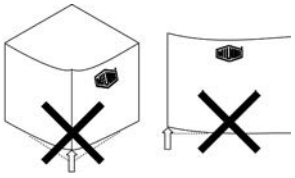
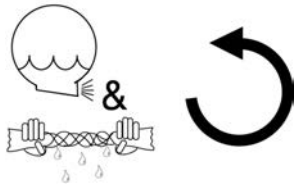
# Tag Guidelines for the Models Listed Below

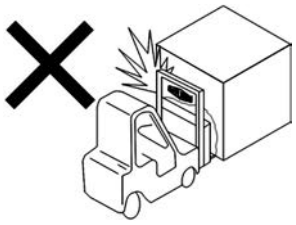
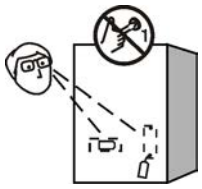
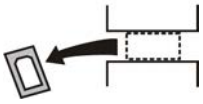
| | | | | | | |
|---|---|---|---|---|---|---|
| **M7V4232C** | **M7V4232L** | **M7V4232R** | **M7V4836C** | **M7V4836L** | **M7V4836R** | **M7V4840C** |
| **M9S4232C** | **M9S4232L** | **M9S4232R** | **M9V4232C** | **M9V4232L** | **M9V4232R** | **M9V4840C** |
| **M9V4840L** | **M9V4840R** | **MMS4232C** | **MMS4232L** | **MMS4232R** | **MMV4232C** | **MMV4232L** |
| **MMV4232R** | **MXS4232C** | **MXS4232L** | **MXS4232R** | **MXV4232C** | **MXV4232L** | **MXV4232R** |

**Notice 1:** This information may apply to models in addition to those listed above. It applies to paper tags. It does not apply to the vinyl or metal safety placards, which must remain permanently affixed to the machine and replaced if no longer readable.

Paper tags on the machine provide installation guidelines and precautions. The tags can be tie-on or adhesive. You can remove tie-on tags and white, adhesive tags after installation. Yellow adhesive tags must remain on the machine.

The following entries explain the installation tags. Each entry includes: 1) the tag illustration, 2) the tag part number displayed st the bottom of the tag, and 3) the meaning of the tag.

| Display or Action | Explanation |
|---|---|
|  | Read the manuals before proceeding. This symbol appears on most tags. The machine ships with safety, operator, and routine maintenance guides for customer use. Milnor dealer manuals for installing, servicing, and commissioning this machine are also available from the Milnor Parts department. |
|  | B2TAG88005: This carefully built product was tested and inspected to meet Milnor® performance and quality standards by (identification mark of tester). |
|  | B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies. |
|  | B2TAG94079: Rig for crane lifting (either 3-point or 4-point, depending on the number of lifting eyes provided) using a steep angle on the chains (closer to vertical than horizontal). |
|  | B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine is first tested, the electrical hookup is incorrect and must be reversed as explained in the schematic manual. |
|  | B2TAG94084: Do not lift from one corner of the machine, as this can cause the frame to rack, damaging it. |
|  | B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual. |

| Display or Action | Explanation |
| --- | --- |
|  | B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside. |
|  | B2T2001028: Look for tags inside the machine. These tags may identify shipping restraints to be removed or components to be installed. Do not start the machine until these actions are completed. |
|   | B2T2002013: Do not start the machine until shipping restraints are removed. This tag will appear on the outside of the machine to alert you to the presence of internal shipping restraints. A tag will also appear on the restraint to help identify it. Most, but not all shipping restraints display the color red. Some shipping restraints are also safety stands. Do not discard these. |

— End of BIUUUI02 —

# Safety Placard Use and Placement

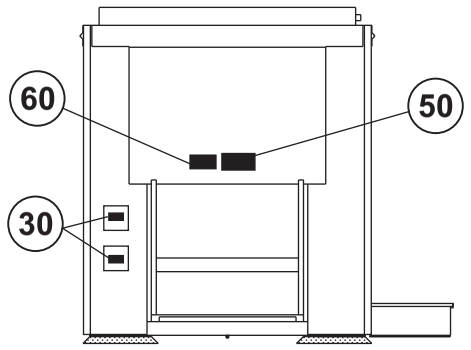
M9V4232C,L,R, **MXS4232C,L,R** & M**9**V4840C,L,R



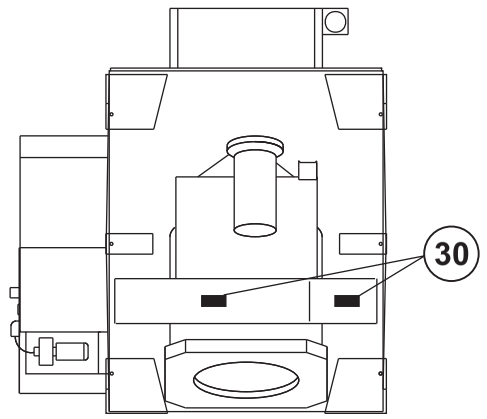
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

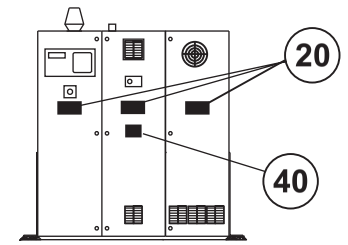
**Notes:**
1. **Replace placard immediately, if removed or unreadable.**
2. **Approximate locations of placards are shown. Mounting holes are provided on machine. If aluminum placard use #8 self-tapping screws.**



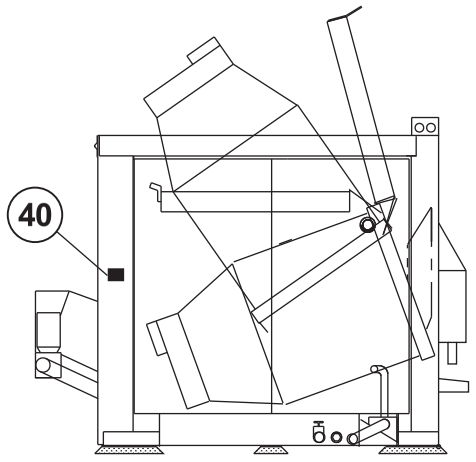

**REAR VIEW**



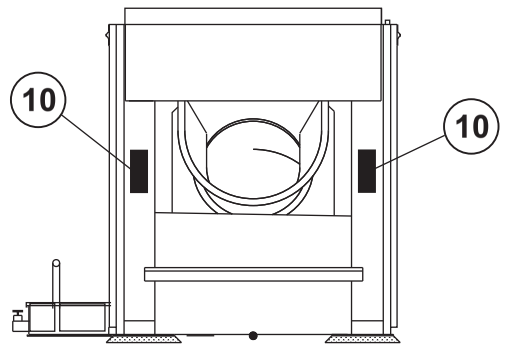

**PLAN VIEW**



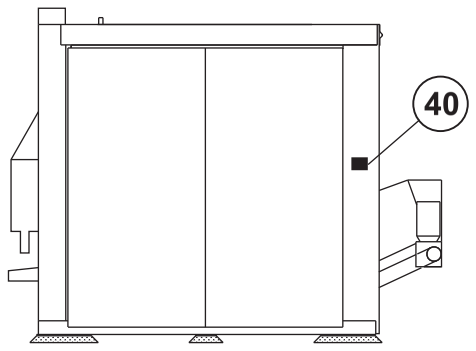

**CONTROLS FRONT VIEW**




**LEFT VIEW**




**FRONT (LOAD END) VIEW**




**RIGHT VIEW**

Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

## Parts List—Safety Placard Placement

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| ---------- | ---------- | ---------- | ----------ASSEMBLIES---------- | ---------- |
| | | | none | |
| ---------- | ---------- | ---------- | ----------COMPONENTS---------- | ---------- |
| all | 10 | 01 10583A | NPLT:64/72 W/E WARN FRT-TCATA | |
| all | 20 | 01 10377A | NPLT:ELEC HAZARD LG-TCATA | |
| all | 30 | 01 10375B | NPLT:ELEC HAZARD SMALL-TCATA | |
| all | 40 | 01 10699B | NPLT:SERV HZRD-ALUM-TCATA | |
| all | 50 | 01 10634A | NPLT:CONVEYOR HAZARDS-TCATA | |
| all | 60 | 01 10630A | NPLT:TILT CRUSH HAZARD-TCATA | |

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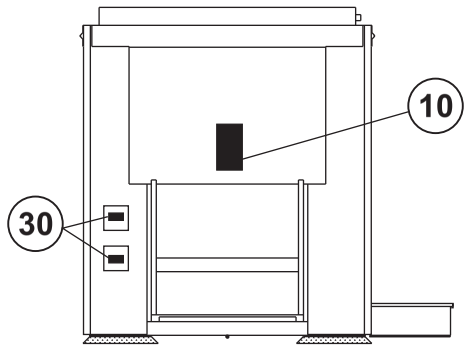
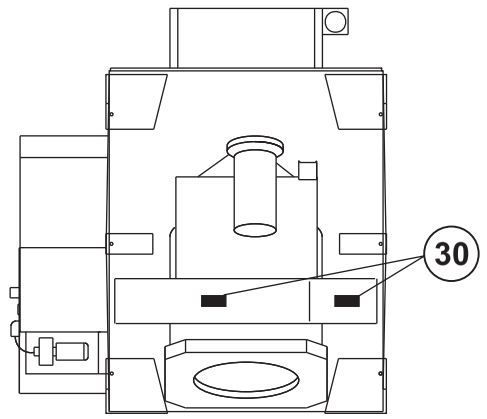
## ISO Placards shown on this page

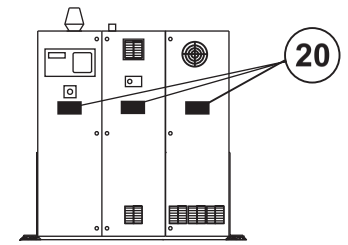
**Notes:**
1. **Replace placard immediately, if removed or unreadable.**
2. **Approximate locations of placards are shown. Mounting holes are provided on machine. If aluminum placard use #8 self-tapping screws.**



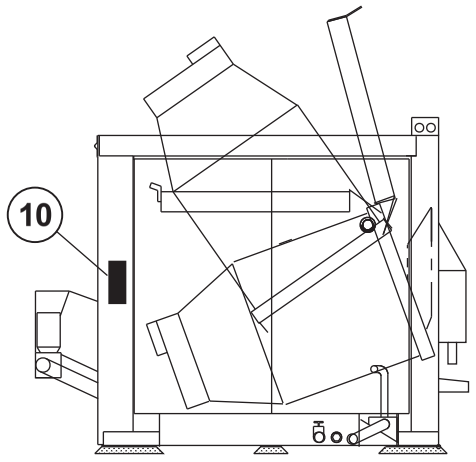

**REAR VIEW**



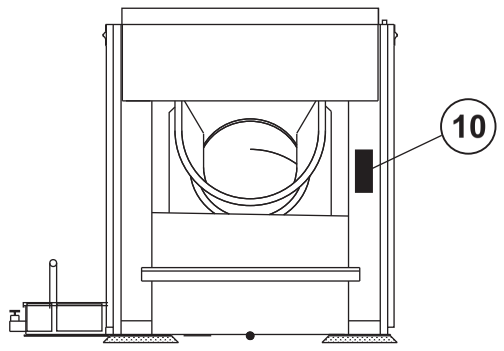

**PLAN VIEW**



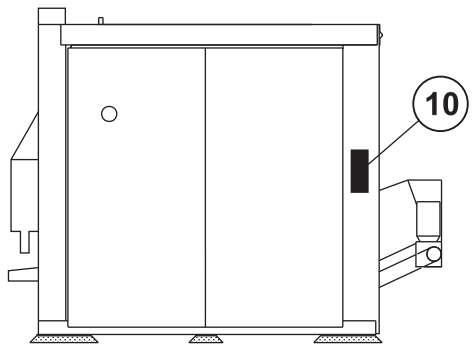

**CONTROLS FRONT VIEW**




**LEFT VIEW**




**FRONT (LOAD END) VIEW**




**RIGHT VIEW**

Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

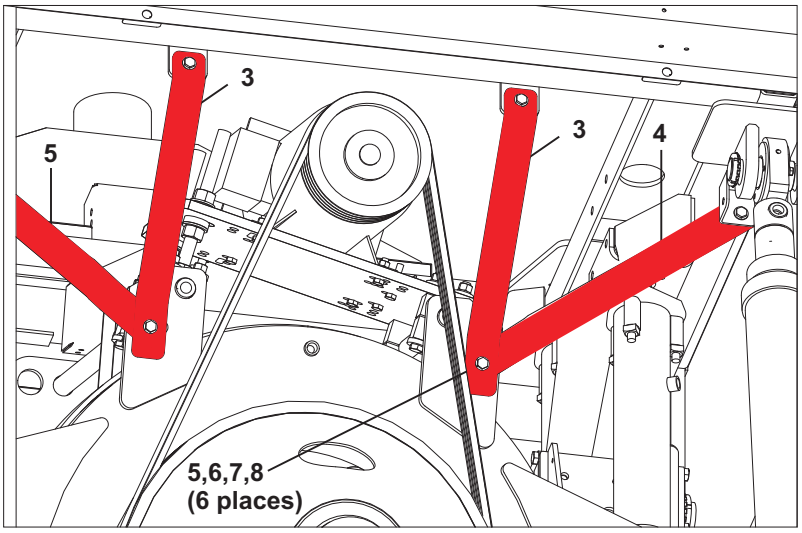
## Parts List—Safety Placard Placement

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

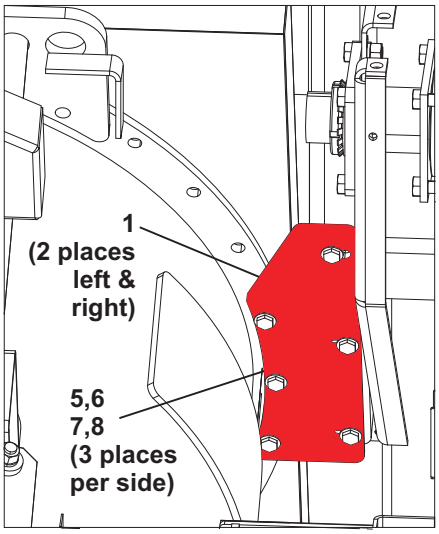
| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| ---------- | ---------- | ---------- | ----------ASSEMBLIES---------- | ---------- |
| | | | none | |
| ---------- | ---------- | ---------- | ----------COMPONENTS---------- | ---------- |
| all | 10 | 01 10588X | NPLT:M7E EXTRACTOR WARNG ISO | |
| all | 20 | 01 10377 | NPLTE:"WARNING" 4X4 | |
| all | 30 | 01 10375 | NPLTE:"WARNING" 2X2 | |

# Shipping Bracket Installation

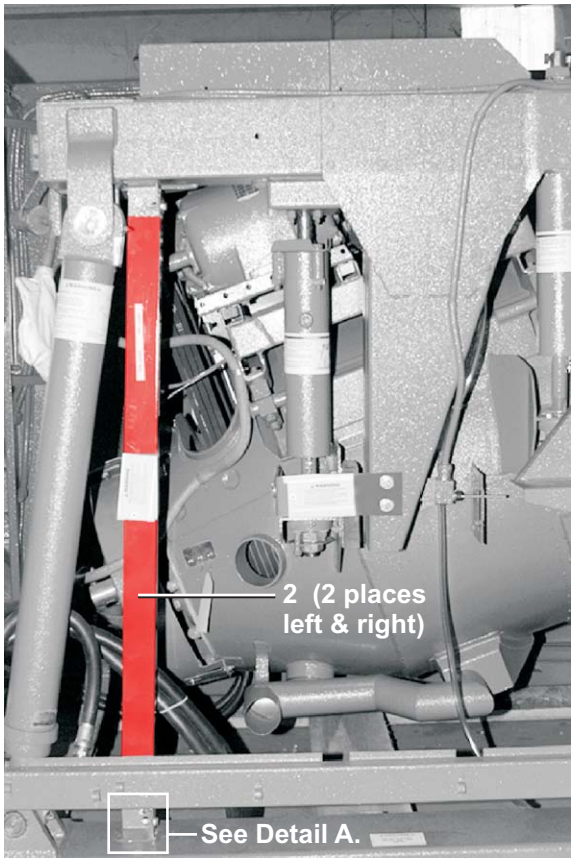
**MXT4232C,L,R MMT4232C,L,R**



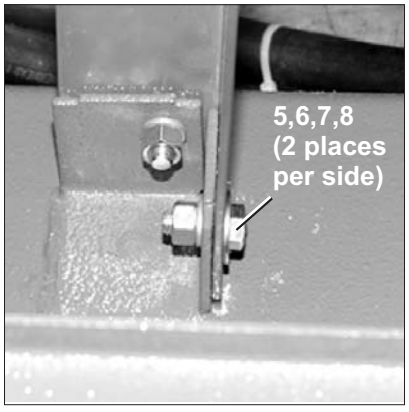

Shellback to Frame Sway Braces (4 places)




Rear View Shellfront to Frame




Vertical Rear Shipping Columns

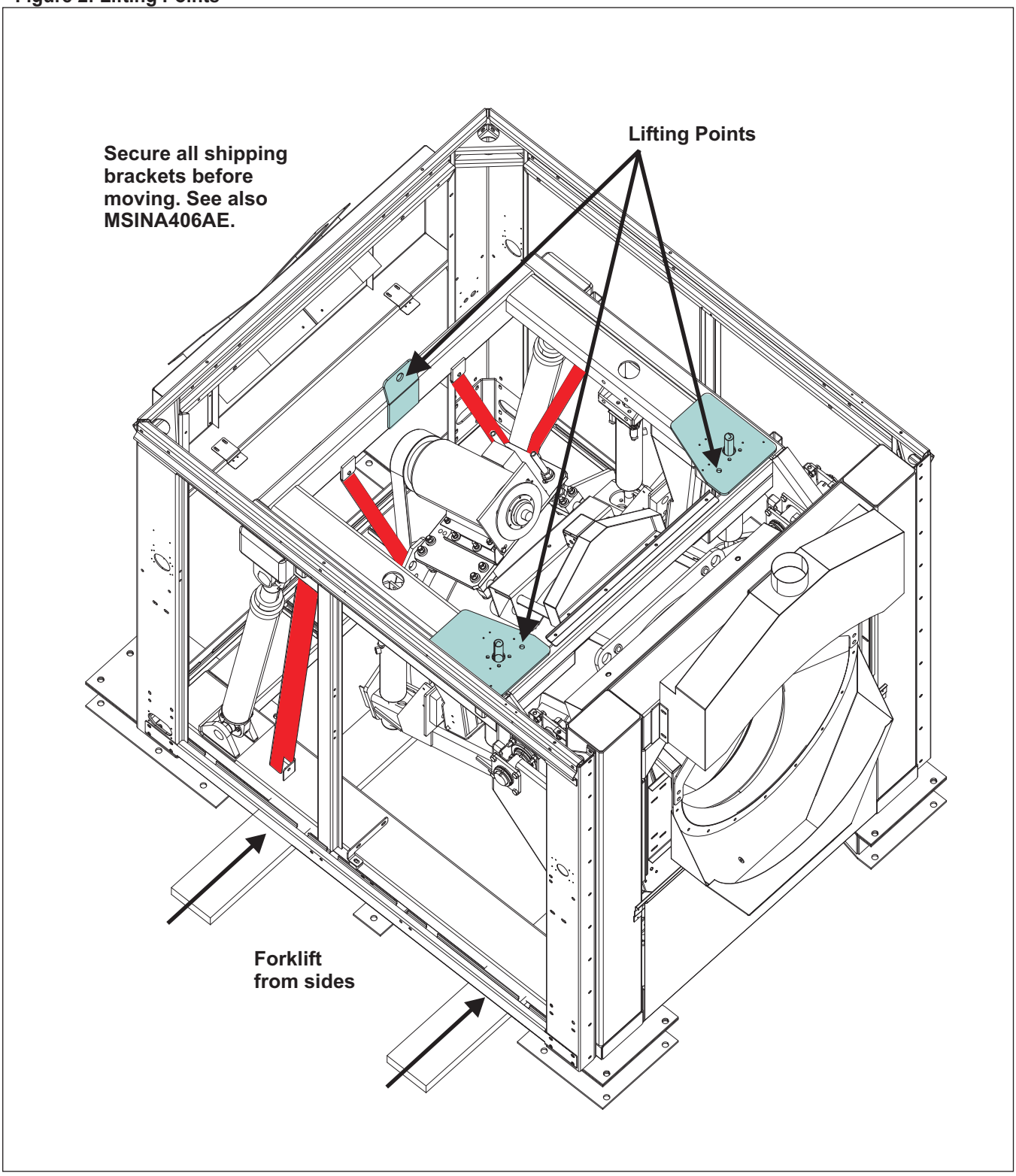



Detail A (4 places)

# Shipping Bracket Installation

**MXT4232C,L,R MMT4232C,L,R**

**Figure 2: Lifting Points**



# Shipping Bracket Installation

**MXT4232C,L,R MMT4232C,L,R**

**Parts List—XX**

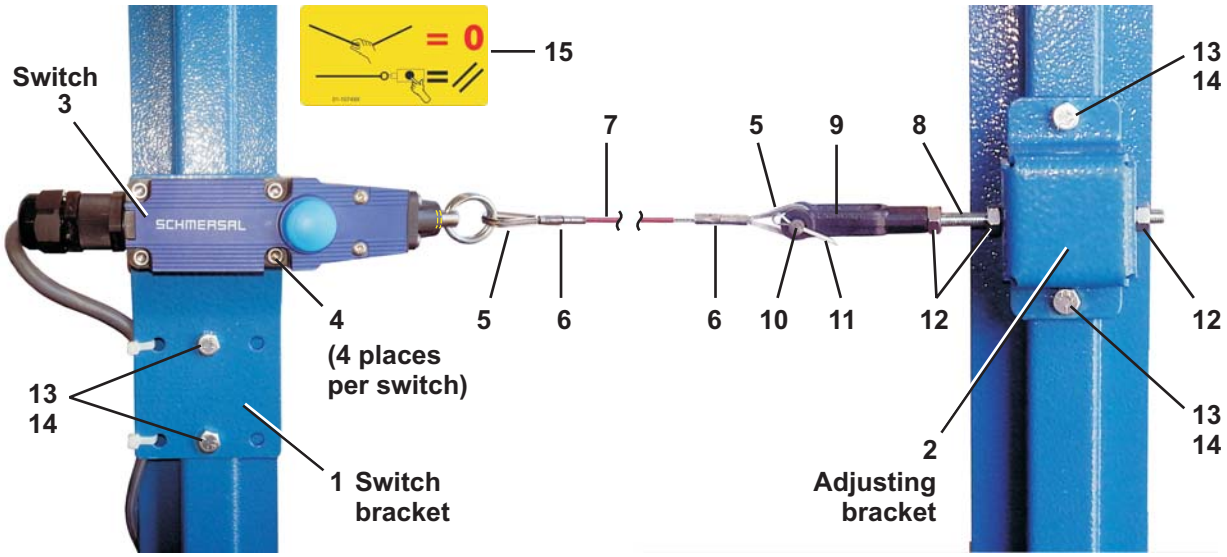
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| . | | | | |
| | | | ----------ASSEMBLIES---------- | |
| | A | GHS16003 | INSTL=HOUSE SHIPPING MXT4232 | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 03 16496 | SHIPPING BRKT SHELL FRONT-42MXT | |
| all | 2 | 03 16300B | VERT REAR SHIP COLUMN-MXT4232 | |
| all | 3 | 03 16373 | UPPER SHIP MNT BRKT-42M9S | |
| all | 4 | 03 16374 | SHIPPING BRKT SWAY BRACE-LF | |
| all | 5 | 03 16374A | SHIPPING BRKT SWAY BRACE-RT | |
| all | 6 | 15K147 | HXCAPSCR 1/2-13UNC2X1 GR5 ZINC | |
| all | 7 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| all | 8 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 9 | 15U280 | FL+WASHER(USS STD)1/2 ZNC PL+D | |

# Pull-wire Stop Switch

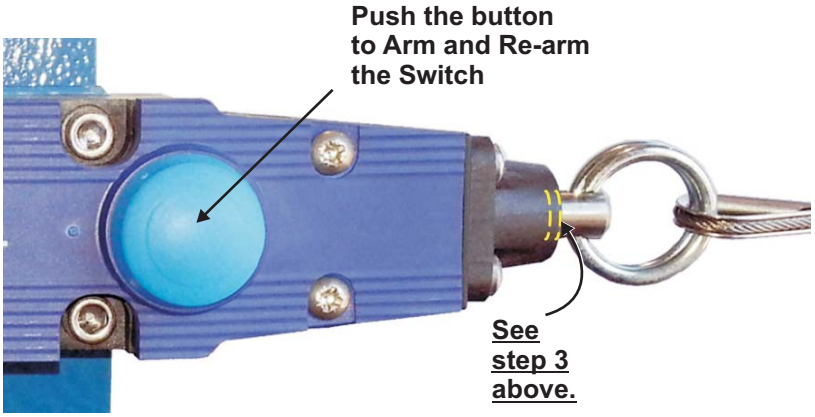
**All Conveyors**

**Figure 1: Pull-wire Stop Switch Installation**




**Installation and operation:**

1. Install the switch bracket, switch, and adjusting bracket to the conveyor side supports as shown. (Install pull-wire stop switch to both sides of all conveyors.)
For long spans, intermediate wire supports are required every 2 m to 5 m (6 ft to 16 ft). Sufficient space must be provided so that maximum perpendicular force on the wire to activate the switch is 200 N (45 pounds) and the maximum deflection of the wire is 400 mm (15”).
2. Assemble and install the cable (pull cord), thimbles, and sleeves so that the cable is tight but does not begin to move the switch shaft.
3. Adjust the position of the threaded rod (item 8) so that the cable pulls the switch shaft out until the first of two notches on the shaft is visible but the second notch is not.
4. Tighten the nuts on the threaded rod (item12) to hold it at this position.




5. Press the button on the switch to ARM. The button should remain depressed. If it does not, the switch shaft is not in the correct position.
6. Press the button to RE-ARM the switch after the wire has been tripped.

# Pull-wire Stop Switch

**All Conveyors**

## Parts List—Pull-wire Stop Switch

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ALC40005E | PULL-WIRE STOP SWITCH ASSY | |
| | | | ----------COMPONENTS---------- | |
| | 1 | 04 20066 | WIREPULL SWITCH BRACKET | CONVEYORS PLUS CONWA/CONLO |
| | 1 | 04 24128 | SAFETY SW MTG PLATE-4232M | EXTRACTOR CONVEYORS |
| all | 2 | 04 20067 | WIREPULL ADJUSTING BRKT | |
| all | 3 | 09RS0002 | PULL-WIRE SW SCHMERSAL#ZQ 700-11 | |
| all | 4 | 15K022B | SOKCPSCR 10-24UNC X 1+1/2"LG SS18 | |
| all | 5 | 27A951 | 1/16" SS WIRE ROPE THIMBLE | |
| all | 6 | 27A952 | 1/16" OVAL SLEEVE S/S | |
| all | 7 | 27A953 | CABLE-AIRCRAFT 1/16SS7X7REDCV | |
| all | 8 | 17R015 | THRD ROD 1/4-28UNFX4.5" ZNC PL | |
| all | 9 | 17A004 | ADJ YOKE END 1/4-28 XYLAN COAT | |
| all | 10 | 17A004A | CLEVIS PIN 1/4"X3/4"DRILLED SS | |
| all | 11 | 15H031 | STDCOTTERPIN 3/32X3/4 SS18-8 | |
| all | 12 | 15G177 | HXNUT 1/4-28UNF2B SAE ZINC GR2 | |
| all | 13 | 15K038B | 1/4-20X 1/2 HEXFLANGE SCREW | |
| all | 14 | 15G178 | 1/4"-20 HEXFLANGE NUT ZINC | |
| all | 15 | 01 10749X | NPLT:PULL TO STOP+RESET>ISO | |

# Service and Maintenance 2

BIPV7M01 (Published) Book specs- Dates: 20040324 / 20040324 / 20040324 Lang: ENG01 Applic: PV7

# Centrifugal Extractor Preventive Maintenance

As required by warranty, and to achieve optimum performance and service life from your Milnor machine, your machine must be maintained in strict accordance with this instruction.

## 1. Lubrication Precautions [Document BIUUUM01]

**CAUTION 1: Machine Damage Hazard**—Improper lubrication can damage machine components and cause the machine to malfunction.

- Do not mix petroleum and synthetic based lubricants.
- Do not use an unspecified lubricant without consulting the lubricant manufacturer.
- Do not apply grease with a pneumatic grease gun. Use only a hand-operated grease gun.
- Do not over-lubricate.
- Always clean grease fittings before adding grease. Clean off excess grease.
- Ensure that lubricants do not drip onto belts, brake shoes or drums.

**WARNING 2: Entangle and Crush Hazards**—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Lock out and tag out power at the main machine disconnect before servicing, or in accordance with factory service procedures.
- Do not service machine unless qualified and authorized.

**1.1. Pumping Grease**—Pump grease slowly, taking 10-12 seconds to complete each stroke. A grease gun can build up extremely high pressure which will force seals out of position and cause them to leak.

**1.2. Grease Quantity**—Apply the quantity of grease called for in the checklist. Over-lubrication can be as damaging as under-lubrication. Where quantities are stated in strokes, one stroke of the grease gun is assumed to provide .0624 fluid oz. (1.77 grams) (by volume) of grease. Therefore, one fluid ounce (28.3 grams) of grease would be provided by 16 stokes of the grease gun. Determine the flow rate of your grease gun by pumping one ounce into a calibrated container. If fewer than 16 stokes are required, all quantities in strokes in the chart should be reduced accordingly, and if more than 16 strokes are required, the number of strokes should be increased. Before starting lubrication, make sure your grease gun is working and that you get a full charge of grease with every stroke.

**1.3. Greasing Seals and Bearings**—Grease seals and bearings with the cylinder turning at wash speed.

**WARNING 3: Entangle and Crush Hazards**—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Use extreme care when working near moving components.

Grease seals and main bearing as follows:

1. Locate the seal and bearing grease fittings.
2. Enable the clockwise wash output as described in the reference manual.

3. With the cylinder turning, grease the seals and bearings as called for on the “Preventive Maintenance Checklist.”

**1.4. Lubricant Specifications**—Lubricant specifications are provided in the preventive maintenance checklist. Lubricants should be purchased locally. If a specified lubricant is not available locally, it is permissible to substitute a product that has been specified as equivalent by the lubricant manufacturer. If you cannot obtain either the specified lubricant or a valid equivalent locally, contact the Milnor Service Department for assistance.

## 2. Centrifugal extractor main bearing and seal greasing instructions

**WARNING 4: Entangle and Crush Hazards**—“Bypass door interlocks” position bypasses door interlocks and permits access to extractor during both manual and automatic operation. To prevent SERIOUS INJURY OR DEATH:

- Use extreme care when working near moving components.
- Never use “Bypass door interlocks” position during normal operation.

Although centrifugal extractors follow the same general seal and bearing grease instructions stated above, they are equipped with a “bypass door switch” (Figure 1), and require a slightly different procedure as follows:

1. Lock out and tag out power to the machine at the wall disconnect.
2. Locate the bypass door switch in the belt box.
3. Move switch to the “By pass door interlocks” position.
4. Remove left side cosmetic door (as viewed from front of machine).
5. Restore power and place machine in a wash step.
6. With cylinder turning, grease the bearings and seals as called for on the “Preventive Maintenance Checklist.”
7. Lock out and tag off power at the wall disconnect.
8. Replace the door and return bypass switch to automatic.
9. Restore power and resume normal operations.

**Figure 1: Bypass door switch**

# 3. Centrifugal Extractor Preventive Maintenance

**Table 1: Lubricant specifications**

| Assembly | Components | Specifications |
|---|---|---|
| **Main bearing (Figure 3)** | Seals and bearings | Shell Alvania EP (or equivalent) |
| **Hydraulic system (Figures 2 and 4)** | Pivot, hydraulic cylinder and pump grease fittings | Shell Alvania EP (or equivalent) |
| | Hydraulic fluid reservoir | Shell Tellus 68 (or equivalent) |
| **Hydrocushions (Figure 2)** | M7V Cylinder oil | Shell Turbo 220 (or equivalent) |
| | M9V Cylinder oil | Shell Tellus 32 (or equivalent) |
| | Grease fittings | Shell Alvania EP (or equivalent) |
| **Motor (Figure 2)** | Motor bearing grease fittings (if so equipped) | Shell Alvania EP (or equivalent) |
| **Brake (Figure 3)** | Brake reservoir | DOT 3 brake fluid |
| **Conveyor** | Grease fittings | Shell Alvania EP (or equivalent) |
| **Optional inflatable ribs (Figure 8)** | Rotary coupling | Chevron SRI |

**Table 2: Centrifugal Extractor Preventive Maintenance Checklist**

| Components | Action | Frequency (hours of operation) | Figure |
|---|---|---|---|
| **General** | | | |
| **Entire machine** | Remove soil build-up | Monthly/200 hours | |
| **Motor** | | | |
| **Extract motor (if equipped with grease fittings)** | See Note 1 below | | Figure 2 |
| **Hydrocushions** | | | |
| **Cylinders** | Check oil level at plug, add oil if required | Once every 3 months | Figure 2 |
| | Drain and fill | Annually | |
| **Upper and lower ball joint grease fittings** | 0.12 ounces (3.54 grams), two strokes at eight locations | Monthly | |
| **Drive belts and pulley sheaves** | | | |
| **Drive belts and pulley sheaves** | Check belt tension and wear, replace as required (See Notes 3 and 4) | Monthly (See Table 3) | Figure 2 |
| **Bearing Housing** | | | |
| **Front bearing grease fittings** | Slowly grease: 0.62 ounces (17.7 grams), ten strokes at one location | Monthly (See "Centrifugal extractor main bearing and seal greasing instructions," above and Note 2 below) | Figure 3 |
| **Rear bearing grease fittings** | Slowly grease: 0.31 ounces (8.8 grams), five strokes at one location | | |
| **Seals** | Slowly grease: 0.19 ounces (5.31 grams), three strokes at one location | | |
| **Foundation** | | | |
| **Anchor bolts and grout** | Inspect anchor bolts and grout | Monthly | |
| **Brake** | | | |
| **Pads** | Check for wear, replace as required | Monthly | Figure 3 |
| **Reservoir** | Check levels, add fluid as required | | |
| **Hydraulic components** | | | |
| **Pivot** | 0.12 ounces (3.54 grams), two strokes at two locations | Monthly | Figure 2 |
| **Hydraulic cylinders** | 0.12 ounces (3.54 grams), two strokes at six locations | Monthly | |
| **Shell stops** | Check for wear, replace as required | Semi-annually | |

| Components | Action | Frequency (hours of operation) | Figure |
|---|---|---|---|
| **Reservoir level and temperature gauge** | Check level, add if below black mark on gauge (non-tilted), operating temperature (120-130 F) (49-54 C) | Daily | Figure 4 |
| **Reservoir** | Replace fluid, 60 U.S. Gallons (227.12 Liters) | Annually | Figure 4 |
| **Filter** | Replace | Semi-annually | Figure 4 |
| **Filter pressure gauge** | Check pressure with machine tilted, 30 - 60 psi (2 - 4 Bar) | Daily | Figure 4 |
| **Line pressure gauge** | Check pressure with machine tilted, 400-600 psi (27.5 - 41.3 Bar) | Daily | |
| **All hoses/couplings** | Check for leaks, cracks and bulges | Monthly | |
| **Pump** | See Note 1 below | | |
| **Reuse water systems** | | | |
| **Drip pan and tank strainer** | Check and clean | Daily | Figure 5 |
| **Reuse pump strainer** | | Weekly | |
| **Drains** | | | |
| **Load chute drain** | Check and clean | Daily | Figure 5 |
| **Conveyor components** | | | |
| **Bearings** | 0.12 ounces (3.54 grams), two strokes at nine locations | Monthly | Figure 6 |
| **Drive chain** | Inspect chain and gears for wear and lubrication | Monthly | Figure 7 |
| **Belt** | Check belt tracking, slipping and general condition | Daily | Figure 6 |
| **Optional inflatable rib** | | | |
| **Rotary coupling** | 0.12 ounces (3.54 grams), two strokes | Once every 3 months (See Note 5) | Figure 8 |
| **Diffusion bag** | Clean | Once every 3 months | |
| **Inflatable rib** | Check for cracks in ribs | Weekly | |
| **Muffler** | Visually inspect for rust particles, replace as needed | Once every 3 months | |
| | Check air pressure. Replace muffler if required. (See Note 6) | Bi-annually | |

**Note 1:** See “BALDOR MOTOR MAINTENANCE”...MSSM0274AE, in this manual. If motor manufacturers instructions conflict with manual section above, follow the manufacturers instructions. Motors are warranted by the manufacturers, not Milnor.

**Note 2:** The main bearings are prepacked with lubricant at the factory. Do not add grease for the first 30 days of operation. During the first month of operation and every time the bearings are re-lubricated, surplus grease will seep out of the spring loaded relief fittings after a few hours running time. This is normal. Relief

fittings permit excess grease to escape, preventing over-heating problems. Do not replace this excess lubricant. Normal bearings can run hot enough to make it very uncomfortable for a person to hold his hand on the bearing housing for more than a few seconds.

**Note 3:** Check and tighten the drive V-belts (if required);
After the first 24 hours of operation (three 8 hour days).
After the first 80 hours of operation (ten 8 hour days).
After the first 160 hours of operation (twenty 8 hour days).

**Note 4:** All V-belts are not alike. “Super” or “High Capacity” V-belts may have considerably higher capacities than “Standard” belts. Sometimes, a particular manufacturer's V-belts is more suitable for a certain application than another manufacturer, in spite of the fact that both manufacturer's V-belts are reputedly “interchangeable.” Because of this, it is best to purchase replacement belts from the original manufacturer of the equipment. If you do not wish to do this, we suggest that when you replace the belts, you purchase the exact style and type belts with which the machine was originally equipped. This is the best way to achieve belt life on your replacement belts equal to the life of the original belt. (If you are not satisfied with the life of the original set, you should ask our factory if a better belt has been developed for the specific application).

**Note 5:** Rotating unions equipped with grease fittings should be lubricated with a good quality ball bearing grease. We recommend Chevron Oil Company SRI grease for temperatures up to 350 F (177 C). Only enough grease should be applied to the ball bearings to replace that which has been dissipated. Over-greasing can be as damaging to the union as under-greasing. Particularly in high RPM applications, grease should be used sparingly.

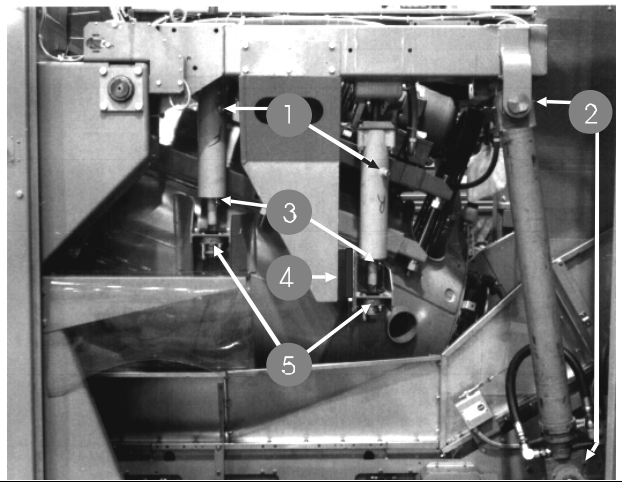
**Note 6:** A relief valve in the rib inflation circuit prevents rib damage by bleeding off excess air pressure through a muffler. Test the relief valve by connecting a manometer to the “T” as shown in Figure 8. Verify that the manometer indicates 3.5 - 4.5 inches when the ribs are inflated. Pressures beyond this indicate that the muffler is clogged and must be replaced.

**Table 3: Belt Tension Specifications**

| Belt | Hertz | Deflection (inches) | Initial tension (pounds) | Final tension (pounds) |
|---|---|---|---|---|
| **Main** | 50 Hz | 31/64 | 10.5 - 14.3 | 8.1 - 11.0 |
| | 60 Hz | 15/32 | | |

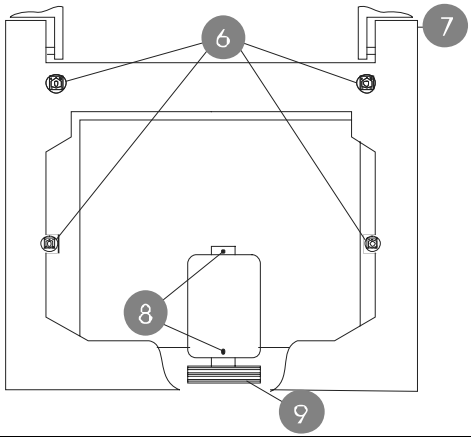
**Figure 2: Hydraulic, Hydrocushion and Motor Maintenance Points**

**Hydraulic cylinder and hydrocushion maintenance points**

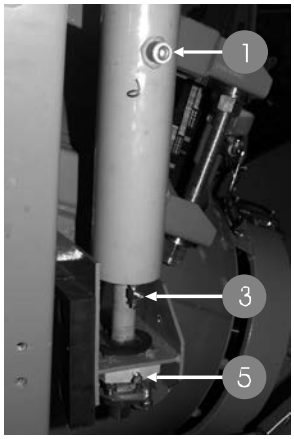



**Pivot grease point**


**Upper hydrocushion grease points**




**Hydrocushion maintenance points**

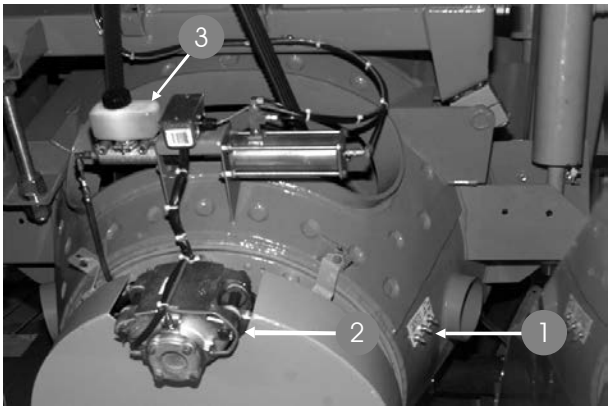



**Legend**

1. Hydrocushion oil fill (two locations)
2. Hydraulic cylinder grease points (six locations)
3. Hydrocushion oil drain (four locations)
4. Shell stops (two locations)
5. Lower hydrocushion grease points (four locations)
6. Upper hydrocushion grease points (four locations)
7. Pivot grease points (two locations)
8. Motor grease points (if so equipped)
9. Drive belts and pulley sheaves

**Figure 3: Main Bearing and Brake Maintenance Points**

**Main bearing and brake system maintenance points**

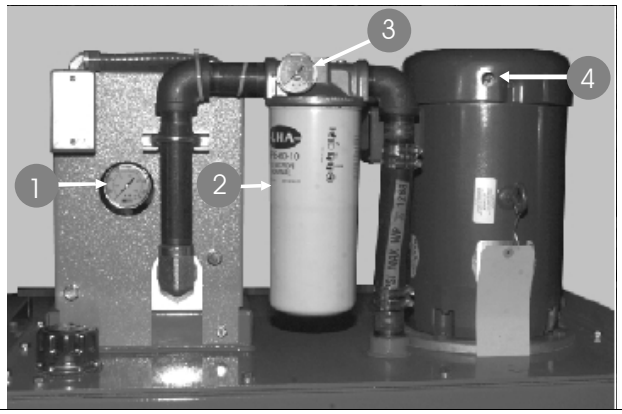



**Legend**

1. Main bearing and seal grease plate
2. Brake pads
3. Reservoir

**Figure 4: Hydraulic System Maintenance Points**

**Pressure gauges, system filter and pump**




**Legend**

1. Line pressure gauge
2. Filter
3. Filter pressure gauge
4. Pump
5. Reservoir level and temperature gauge

**Oil level and temperature gauge**

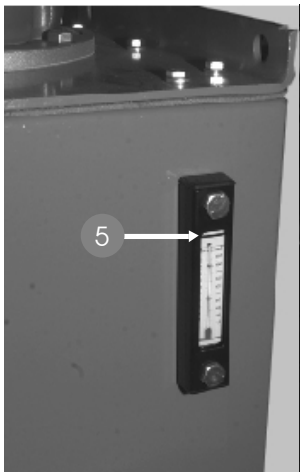
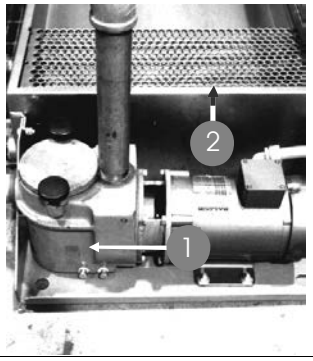
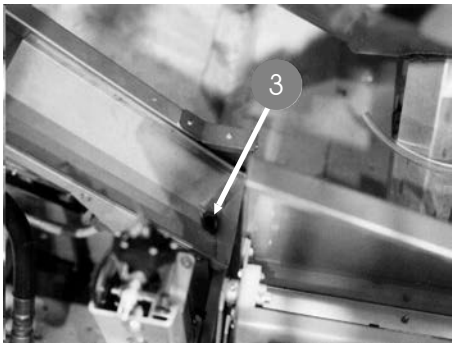


**Figure 5: Reuse Water and Drain System Maintenance Points**

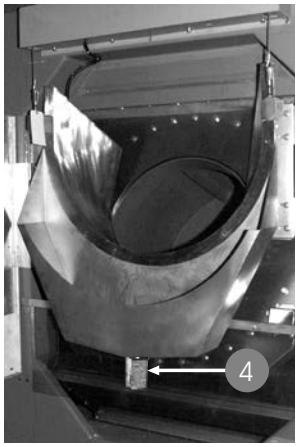
**Reuse pump and tank strainers**




**Drip pan**




**Load chute drain**

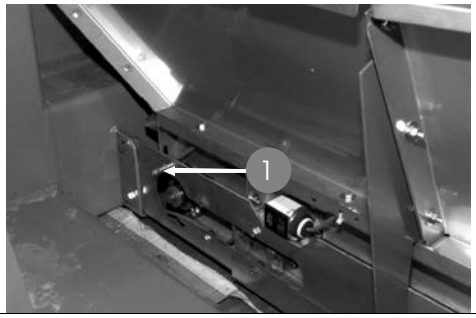



**Legend**

1. Pump strainer
2. Tank strainer
3. Drip pan drain
4. Load chute drain

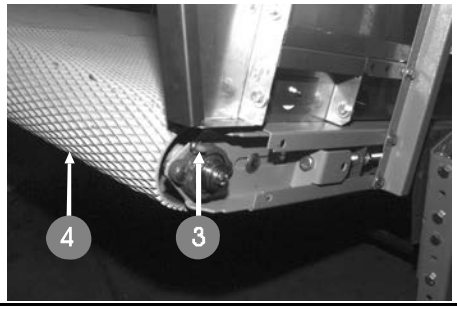
**Figure 6: Conveyor Maintenance Points**

**Front roller grease point**




**Middle roller and drive chain grease fittings**


**Rear roller grease point (2 locations)**




**Legend**

1. Front roller grease point (2 locations)
2. Grease fittings for middle rollers and drive chain (2 locations)
3. Rear roller grease point (2 locations)
4. Belt (2 locations)

**Figure 7: Conveyor Drive Chain Maintenance**

**Drive chain cover**

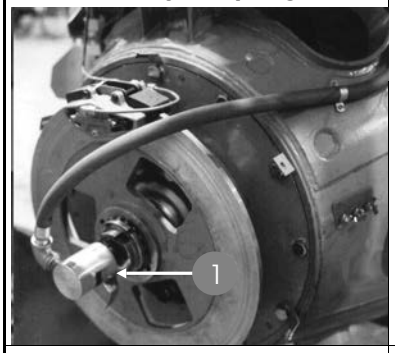

**Drive chain**


**Legend**

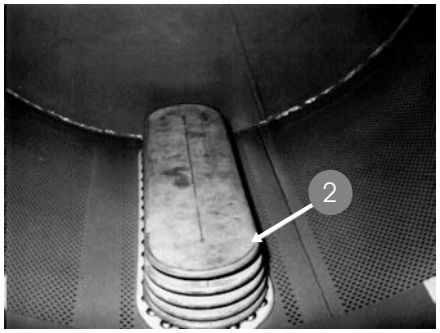
**1.** Chain under cover
**2.** Drive chain

**Figure 8: Optional Inflatable Rib Components**

**Rotary coupling**

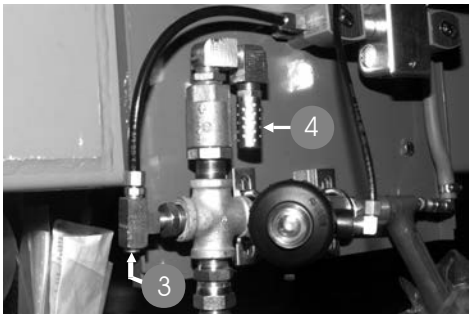



**Inflatable rib**




**Diffusion Bag**


**Manometer Test Point/Muffler**




**Legend**

**1.** Rotary coupling
**2.** Inflatable rib
**3.** Manometer test point
**4.** Muffler

— End of BIPV7M01 —

BIUUUM03 (Published) Book specs- Dates: 20111018 / 20111018 / 20120629 Lang: ENG01 Applic: UUU

# Motor Maintenance

This document uses Simplified Technical English.
Learn more at http://www.asd-ste100.org.

This document is for motors used on Milnor® machines that have grease fittings. If the motor manufacturer supplies maintenance instructions, use them. If not, use this document.

**NOTICE P1:** "Remove power from the machine" means use the necessary safety procedure for your location. In the USA, this is the OSHA lockout/tagout (LOTO) procedure. More local requirements can also apply.

**WARNING 2: Risk of Severe Injury**—A machine in operation without safety guards can pull in and mutilate your body.

- You must be an approved maintenance technician.
- Replace guards and covers that you remove for maintenance.

**WARNING 3: Risk of Severe Injury**—The machine has electrical power when the Master switch ($_M$) on the control panel is off or on.

- **Remove power from the machine (see Notice P1).**

## 1. Necessary Maintenance

**1.1. Keep the motors clean.**—Examine and clean motors each 500 hours of operation or a minimum of each three months. Keep the motors free of dirt, oil, grease, and water. Contamination that prevents good airflow will cause too much heat and cause motor damage.

**1.2. Examine a motor that shows unusual symptoms.** —Examine a motor that becomes too hot, makes noise, makes smoke, smells unusual, or opens the circuit breaker frequently. Examine a motor if the inverter gives errors. Make sure that all electrical connections are tight. Make sure that the wire insulation is good. Use a low resistance ohmmeter. Disassemble the motor to clean it fully If necessary.

**1.3. Lubricate the motors.**—This document gives the lubricant frequency, quantity, type, and procedure. These are all important. See the related section in document BIIFUM02 which gives the calibration procedures for grease guns.

## 2. How to Find the Interval and Quantity of Grease to Add

**frame code**—codes for the standard motor dimensions used by motor manufacturers.

**standard interval**—the number of hours that a motor can operate in typical conditions before you must add grease.

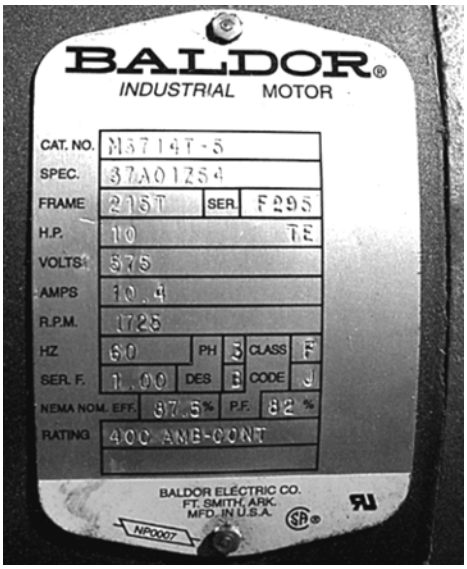
**operation conditions**—the conditions that can decrease the life of the motor and make it necessary to lubricate more frequently.

**rating**—One of three levels of operation conditions: typical, bad, very bad.

**multiplication number**—a decimal number given to the rating. Typical = 1.0, bad = 0.5, and very bad = 0.2.

This section gives the steps you use to find the interval and quantity of grease to add. The examples use the motor data plate shown in Figure 1.

**Figure 1: Typical Data Plate on a Motor**




1. Find the frame code and RPM on the motor data plate. Example:

   *Frame code = 215T,  RPM = 1725*

2. Find the standard interval in Table 1. Example:

   *Standard interval = 12,000 hours*

3. Find the rating and multiplication number in Table 2 for your worst operation condition. Example: ambient temperature = 102°F (39°C). Moderate contamination.

   *Rating = bad,  Multiplication number = 0.5*

4. Calculate the correct interval (the number of hours of operation before it is necessary to add grease). Example:

   *12,000 x 0.5 =* ***6,000 hours***

   Where:
   12,000 is the standard interval
   0.5 is the multiplication number for a rating = bad.

5. Find the quantity of grease for the frame code for your motor in Table 3. You can use the bearing data in the table to do maintenance. Do not use this data to adjust the quantity of grease. Example:

   *grease volume =* ***0.16 ounces (4.7 grams)***
   *grease gun cycles =* ***2.5***

**Table 1: Standard Interval**

| NEMA (IEC)** Range of Frame Codes | | Interval in Hours for the Given RPM | | | |
|---|---|---|---|---|---|
| | | 3600 RPM* | 1800 RPM* | 1200 RPM* | 900 RPM* |
| Up to 215 (132) | | 5500 | 12000 | 18000 | 22000 |
| 254 to 286 (160 - 180) | | 3600 | 9500 | 15000 | 18000 |
| 324 to 365 (200 - 225) | | 2200 | 7400 | 12000 | 15000 |
| 404 to 5000 (280 - 315) | 6313 or 6314 bearings | 2200 | 3500 | 7400 | 10500 |
| | Roller bearings | 1100 | 1750 | 3700 | 5250 |

*** Use this column if this is near or the same RPM as your motor.**

**** Frame codes given by the IEC are shown in parentheses.**

**Table 2: Operation Condition and Multiplication Number**

| Operation Conditions* | | | Rating | Multiplication Number |
|---|---|---|---|---|
| Maximum Ambient Temperature | Or Atmospheric Contamination | Or Bearing Type | | |
| 104°F (40°C) | Clean, not much corrosion | Ball bearing with a groove of large depth | Typical | 1.0 |
| 122°F (50°C) | Moderate dirt, corrosion | Ball thrust, roller | Bad | 0.5 |
| >122°F (>50°C) | Much dirt, abrasive dust, corrosion | n.a. | Very bad | 0.1 |

* The worst condition sets the rating.

**Table 3: Grease Quantity (total quantity for all bearings in the motor)**

| NEMA (IEC) Range of Frame Codes | Largest Bearing Dimension in Range | | | Quantity of Grease * | | Cycles of the Grease Gun |
|---|---|---|---|---|---|---|
| | Category of Bearing | Outer Diameter (mm) | Width (mm) | (Ounces) | (Grams) | |
| 0 thru 215 (132) | 6307 | 80 | 21 | 0.16 | 4.7 | 2.5 |
| 254 to 286 (160 - 180) | 6311 | 120 | 29 | 0.32 | 9.1 | 5 |
| 324 to 365 (200 - 225) | 6313 | 140 | 33 | 0.43 | 12.2 | 7 |
| 404 to 5000 (280 - 315) | NU322 | 240 | 50 | 1.11 | 31.5 | 18 |

*** This is the quantity for the two bearings.**

## 3. Grease Types and Procedures

**Table 4: Type of Grease**

| Rating from Table 2 | Type of Grease |
|---|---|
| **Typical** | Shell Dolium R, Chevron SRI, or equivalent |
| **Bad** | |
| **Very Bad** | Darmex 707 or equivalent |

**CAUTION 4: Damage and Malfunction Risks**—Too much grease gun pressure can put grease in the motor and cause electrical components to burn out. If grease touches a brake or a clutch surface, this can cause a malfunction.

- Apply grease carefully.

Apply grease as follows:

1. **Remove power from the machine (see Notice P1).**
2. Clean grease fittings.
3. If the motor has a grease outlet plug, remove it.
4. Add the recommended quantity of grease (See Item 5). Stop immediately if you see new grease around the motor shaft, wires or the grease outlet plug.
5. If the motor has a grease outlet plug, replace it.

— End of BIUUUM03 —

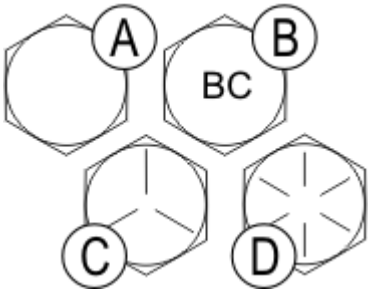
BIUUUM04 (Published) Book specs- Dates: 20180109 / 20180109 / 20180109 Lang: ENG01 Applic: UUU

# Torque Requirements for Fasteners

This document uses Simplified Technical English. Learn more at http://www.asd-ste100.org.

The document about the assembly gives the torque requirements for other fasteners. **If fastener torque specifications or threadlocker requirements in an assembly document are different from this document, use the assembly document.**

**Figure 1: The Bolts in Milnor® Equipment**

| The Marks on Bolt Heads | Legend |
|---|---|
|  | **A.** SAE Grades 1 and 2, ASTM A307, and stainless steel<br>**B.** Grade BC, ASTM A354<br>**C.** SAE Grade 5, ASTM A449<br>**D.** SAE Grade 8 and ASTM A354 BD |



## 1. Torque Values

These tables give the standard dimension, grade, threadlocker, and torque requirements for fasteners frequently used on Milnor® equipment.

**Note 1:** Data from the Pellerin Milnor® Corporation "Bolt Torque Specification" (bolt_torque_milnor.xls/2002096).

### 1.1. Fasteners Made of Carbon Steel

#### 1.1.1. Without a Threadlocker

**Table 1: Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-Inches | N-m | Pound-Inches | N-m | Pound-Inches | N-m | Pound-Inches | N-m |
| **1/4 x 20** | 66 | 7 | 101 | 11 | 143 | 16 | 126 | 14 |
| **1/4 x 28** | 76 | 9 | 116 | 13 | 163 | 18 | -- | -- |
| **5/16 x 18** | 136 | 15 | 209 | 24 | 295 | 33 | 258 | 29 |
| **5/16 x 24** | 150 | 17 | 232 | 26 | 325 | 37 | -- | -- |

**Table 2: Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| **3/8 x 16** | 20 | 27 | 31 | 42 | 44 | 59 | 38 | 52 |
| **3/8 x 24** | 23 | 31 | 35 | 47 | 50 | 68 | -- | -- |
| **7/16 x 14** | 32 | 43 | 49 | 66 | 70 | 95 | 61 | 83 |
| **7/16 x 20** | 36 | 49 | 55 | 75 | 78 | 105 | -- | -- |
| **1/2 x 13** | 49 | 66 | 75 | 102 | 107 | 145 | 93 | 126 |
| **1/2 x 20** | 55 | 75 | 85 | 115 | 120 | 163 | -- | -- |
| **9/16 x 12** | 70 | 95 | 109 | 148 | 154 | 209 | 134 | 182 |
| **9/16 x 18** | 78 | 106 | 121 | 164 | 171 | 232 | -- | -- |
| **5/8 x 11** | 97 | 131 | 150 | 203 | 212 | 287 | 186 | 252 |
| **5/8 x 18** | 110 | 149 | 170 | 231 | 240 | 325 | -- | -- |
| **3/4 x 10** | 172 | 233 | 266 | 361 | 376 | 510 | 329 | 446 |
| **3/14 x 16** | 192 | 261 | 297 | 403 | 420 | 569 | -- | -- |
| **7/8 x 9** | 167 | 226 | 429 | 582 | 606 | 821 | 531 | 719 |
| **7/8 x 14** | 184 | 249 | 473 | 641 | 668 | 906 | -- | -- |
| **1 x 8** | 250 | 339 | 644 | 873 | 909 | 1232 | 796 | 1079 |
| **1 x 12** | 274 | 371 | 704 | 954 | 994 | 1348 | -- | -- |
| **1 x 14** | 281 | 381 | 723 | 980 | 1020 | 1383 | -- | -- |
| **1 1/8 x 7** | 354 | 480 | 794 | 1077 | 1287 | 1745 | 1126 | 1527 |
| **1 1/8 x 12** | 397 | 538 | 891 | 1208 | 1444 | 1958 | -- | -- |
| **1 1/4 x 7** | 500 | 678 | 1120 | 1519 | 1817 | 2464 | 1590 | 2155 |
| **1 1/4 x 12** | 553 | 750 | 1241 | 1682 | 2012 | 2728 | -- | -- |
| **1 3/8 x 6** | 655 | 888 | 1469 | 1992 | 2382 | 3230 | 2085 | 2827 |
| **1 3/8 x 12** | 746 | 1011 | 1672 | 2267 | 2712 | 3677 | -- | -- |
| **1 1/2 x 6** | 869 | 1178 | 1949 | 2642 | 3161 | 4286 | 2767 | 3751 |
| **1 1/2 x 12** | 979 | 1327 | 2194 | 2974 | 3557 | 4822 | -- | -- |

**Table 3: Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-Inches | N-m | Pound-Inches | N-m | Pound-Inches | N-m | Pound-Inches | N-m |
| **1/4 x 20** | 49 | 6 | 76 | 9 | 107 | 12 | 95 | 11 |
| **1/4 x 28** | 56 | 6 | 88 | 10 | 122 | 14 | -- | -- |
| **5/16 x 18** | 102 | 12 | 156 | 18 | 222 | 25 | 193 | 22 |
| **5/16 x 24** | 113 | 13 | 174 | 20 | 245 | 28 | -- | -- |

**Table 4: Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| **3/8 x 16** | 15 | 20 | 23 | 31 | 33 | 44 | 29 | 38 |
| **3/8 x 24** | 17 | 23 | 26 | 35 | 37 | 49 | -- | -- |
| **7/16 x 14** | 24 | 32 | 37 | 50 | 52 | 71 | 46 | 61 |
| **7/16 x 20** | 27 | 36 | 41 | 55 | 58 | 78 | -- | -- |
| **1/2 x 13** | 37 | 49 | 56 | 76 | 80 | 106 | 70 | 93 |
| **1/2 x 20** | 41 | 55 | 64 | 85 | 90 | 120 | -- | -- |
| **9/16 x 12** | 53 | 70 | 81 | 110 | 115 | 153 | 101 | 134 |
| **9/16 x 18** | 59 | 79 | 91 | 122 | 128 | 174 | -- | -- |
| **5/8 x 11** | 73 | 97 | 113 | 150 | 159 | 212 | 139 | 186 |
| **5/8 x 18** | 83 | 110 | 127 | 172 | 180 | 240 | -- | -- |
| **3/4 x 10** | 129 | 173 | 200 | 266 | 282 | 376 | 246 | 329 |
| **3/14 x 16** | 144 | 192 | 223 | 297 | 315 | 420 | -- | -- |
| **7/8 x 9** | 125 | 166 | 322 | 430 | 455 | 606 | 398 | 531 |
| **7/8 x 14** | 138 | 184 | 355 | 474 | 501 | 668 | -- | -- |
| **1 x 8** | 188 | 250 | 483 | 644 | 682 | 909 | 597 | 796 |
| **1 x 12** | 205 | 274 | 528 | 716 | 746 | 995 | -- | -- |
| **1 x 14** | 210 | 280 | 542 | 735 | 765 | 1037 | -- | -- |
| **1 1/8 x 7** | 266 | 354 | 595 | 807 | 966 | 1288 | 845 | 1126 |
| **1 1/8 x 12** | 298 | 404 | 668 | 890 | 1083 | 1444 | -- | -- |
| **1 1/4 x 7** | 375 | 500 | 840 | 1120 | 1363 | 1817 | 1192 | 1590 |
| **1 1/4 x 12** | 415 | 553 | 930 | 1261 | 1509 | 2013 | -- | -- |
| **1 3/8 x 6** | 491 | 655 | 1102 | 1470 | 1787 | 2382 | 1564 | 2085 |
| **1 3/8 x 12** | 559 | 758 | 1254 | 1672 | 2034 | 2712 | -- | -- |
| **1 1/2 x 6** | 652 | 870 | 1462 | 1982 | 2371 | 3161 | 2075 | 2767 |
| **1 1/2 x 12** | 733 | 994 | 1645 | 2194 | 2668 | 3557 | -- | -- |

### 1.1.2. With a Threadlocker

**Table 5: Threadlocker by the Diameter of the Bolt (see Note 2)**

| | Dimension | | | |
|---|---|---|---|---|
| LocTite Product | 1/4-inch | 1/4- to 5/8-inch | 5/8- to 7/8-inch | 1-inch + |
| **LocTite 222** | OK | | | |
| **LocTite 242** | | OK | | |
| **LocTite 262** | | | OK | |
| **LocTite 272** | | | High temperature | |
| **LocTite 277** | | | | OK |

**Note 2:** The acceptable bolt size ranges for various LocTite® threadlocking products is the LocTite manufacturer's **general** recommendation. Specific applications sometime require that a LocTite product is applied to a bolt size outside the ranges shown here. For example, Milnor specifies LocTite 242 for use on certain 1" bolt applications and has confirmed this usage with the LocTite manufacturer. You may see variances such as this in the documentation for specific machine assemblies.

**Table 6: Torque Values if You Apply LocTite 222**

| Dimension | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| | Pound-inches | N-m | Pound-inches | N-m | Pound-inches | N-m | Pound-inches | N-m |
| **1/4 x 20** | 60 | 7 | 96 | 11 | 132 | 15 | 108 | 12 |
| **1/4 x 28** | 72 | 8 | 108 | 12 | 144 | 16 | -- | -- |

**Table 7: Torque Values if You Apply LocTite 242**

| Dimension | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| **5/16 x 18** | 11 | 15 | 17 | 23 | 25 | 34 | 22 | 30 |
| **5/16 x 24** | 13 | 18 | 19 | 26 | 27 | 37 | 27 | 37 |
| **3/8 x 16** | 20 | 27 | 31 | 42 | 44 | 60 | 38 | 52 |
| **3/8 x 24** | 23 | 31 | 35 | 47 | 50 | 68 | -- | -- |
| **7/16 x 14** | 32 | 43 | 49 | 66 | 70 | 95 | 61 | 83 |
| **7/16 x 20** | 36 | 49 | 55 | 75 | 78 | 106 | -- | -- |
| **1/2 x 13** | 49 | 66 | 75 | 102 | 107 | 145 | 93 | 126 |
| **1/2 x 20** | 55 | 75 | 85 | 115 | 120 | 163 | -- | -- |
| **9/16 x 12** | 70 | 95 | 109 | 148 | 154 | 209 | 134 | 182 |
| **9/16 x 18** | 78 | 106 | 121 | 164 | 171 | 232 | -- | -- |
| **5/8 x 11** | 97 | 132 | 150 | 203 | 212 | 287 | 186 | 252 |
| **5/8 x 18** | 110 | 149 | 170 | 230 | 240 | 325 | -- | -- |

**Table 8: Torque Values if You Apply LocTite 262**

| Dimension | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| **3/4 x 10** | 155 | 210 | 240 | 325 | 338 | 458 | 296 | 401 |
| **3/4 x 16** | 173 | 235 | 267 | 362 | 378 | 512 | -- | -- |
| **7/8 x 9** | 150 | 203 | 386 | 523 | 546 | 740 | 477 | 647 |
| **7/8 x 14** | 165 | 224 | 426 | 578 | 601 | 815 | -- | -- |

**Table 9: Torque Values if You Apply LocTite 272 (High-Temperature)**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| 1 x 8 | 350 | 475 | 901 | 1222 | 1272 | 1725 | 1114 | 1510 |
| 1 x 12 | 383 | 519 | 986 | 1337 | 1392 | 1887 | -- | -- |
| 1 x 14 | 393 | 533 | 1012 | 1372 | 1428 | 1936 | -- | -- |
| 1-1/8 x 7 | 496 | 672 | 1111 | 1506 | 1802 | 2443 | 1577 | 2138 |
| 1-1/8 x 12 | 556 | 754 | 1247 | 1691 | 2022 | 2741 | -- | -- |
| 1-1/4 x 7 | 700 | 949 | 1568 | 2126 | 2544 | 3449 | 2226 | 3018 |
| 1-1/4 x 12 | 774 | 1049 | 1737 | 2355 | 2816 | 3818 | -- | -- |
| 1-3/8 x 6 | 917 | 1243 | 2056 | 2788 | 3335 | 4522 | 2919 | 3958 |
| 1-3/8 x 12 | 1044 | 1415 | 2341 | 3174 | 3797 | 5148 | -- | -- |
| 1-1/2 x 6 | 1217 | 1650 | 2729 | 3700 | 4426 | 6001 | 3873 | 5251 |
| 1-1/2 x 12 | 1369 | 1856 | 3071 | 4164 | 4980 | 6752 | -- | -- |

**Table 10: Torque Values if You Apply LocTite 277**

| | The Grade of the Bolt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Grade 2 | | Grade 5 | | Grade 8 | | Grade BC | |
| Dimension | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m | Pound-feet | N-m |
| 1 x 8 | 325 | 441 | 837 | 1135 | 1181 | 1601 | 1034 | 1402 |
| 1 x 12 | 356 | 483 | 916 | 1242 | 1293 | 1753 | -- | -- |
| 1 x 14 | 365 | 495 | 939 | 1273 | 1326 | 1798 | -- | -- |
| 1-1/8 x 7 | 461 | 625 | 1032 | 1399 | 1674 | 2270 | 1464 | 1985 |
| 1-1/8 x 12 | 516 | 700 | 1158 | 1570 | 1877 | 2545 | -- | -- |
| 1-1/4 x 7 | 650 | 881 | 1456 | 1974 | 2362 | 3202 | 2067 | 2802 |
| 1-1/4 x 12 | 719 | 975 | 1613 | 2187 | 2615 | 3545 | -- | -- |
| 1-3/8 x 6 | 851 | 1154 | 1909 | 2588 | 3097 | 4199 | 2710 | 3674 |
| 1-3/8 x 12 | 970 | 1315 | 2174 | 2948 | 3526 | 4781 | -- | -- |
| 1-1/2 x 6 | 1130 | 1532 | 2534 | 3436 | 4110 | 5572 | 3597 | 4877 |
| 1-1/2 x 12 | 1271 | 1723 | 2852 | 3867 | 4624 | 6269 | -- | -- |

## 1.2. Stainless Steel Fasteners

**Table 11: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller**

| | 316 Stainless | | 18-8 Stainless | | 18-8 Stainless with Loctite 767 | |
|---|---|---|---|---|---|---|
| Dimension | Pound-Inches | N-m | Pound-Inches | N-m | Pound-Inches | N-m |
| 1/4 x 20 | 79 | 9 | 76 | 9 | 45 | 5 |
| 1/4 x 28 | 100 | 11 | 94 | 11 | 56 | 6 |
| 5/16 x 18 | 138 | 16 | 132 | 15 | 79 | 9 |
| 5/16 x 24 | 148 | 17 | 142 | 16 | 85 | 10 |

**Table 12: Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch**

| | 316 Stainless | | 18-8 Stainless | | 18-8 Stainless with Loctite 767 | |
|---|---|---|---|---|---|---|
| **Dimension** | **Pound-feet** | **N-m** | **Pound-feet** | **N-m** | **Pound-feet** | **N-m** |
| **3/8 x 16** | 21 | 28 | 20 | 27 | 12 | 16 |
| **3/8 x 24** | 23 | 31 | 22 | 29 | 13 | 18 |
| **7/16 x 14** | 33 | 44 | 31 | 42 | 19 | 25 |
| **7/16 x 20** | 35 | 47 | 33 | 45 | 20 | 27 |
| **1/2 x 13** | 45 | 61 | 43 | 58 | 26 | 35 |
| **1/2 x 20** | 47 | 64 | 45 | 61 | 27 | 37 |
| **9/16 x 12** | 59 | 81 | 57 | 77 | 34 | 46 |
| **9/16 x 18** | 66 | 89 | 63 | 85 | 38 | 51 |
| **5/8 x 11** | 97 | 131 | 93 | 125 | 56 | 75 |
| **5/8 x 18** | 108 | 150 | 104 | 141 | 62 | 84 |
| **3/4 x 10** | 132 | 179 | 128 | 173 | 77 | 104 |
| **3/4 x 16** | 130 | 176 | 124 | 168 | 75 | 101 |
| **7/8 x 9** | 203 | 275 | 194 | 263 | 116 | 158 |
| **7/8 x 14** | 202 | 273 | 193 | 262 | 116 | 157 |
| **1 x 8** | 300 | 406 | 287 | 389 | 172 | 233 |
| **1 x 14** | 271 | 367 | 259 | 351 | 156 | 211 |
| **1-1/8 x 7** | 432 | 586 | 413 | 560 | 248 | 336 |
| **1-1/8 x 12** | 408 | 553 | 390 | 529 | 234 | 317 |
| **1-1/4 x 7** | 546 | 740 | 523 | 709 | 314 | 425 |
| **1-1/4 x 12** | 504 | 683 | 480 | 651 | 288 | 390 |
| **1-1/2 x 6** | 930 | 1261 | 888 | 1204 | 533 | 722 |
| **1-1/2 x 12** | 732 | 992 | 703 | 953 | 422 | 572 |

## 2. Preparation

**WARNING 2: Fire Hazard**—Some solvents and primers are flammable.

- Use threadlocker and primers with sufficient airflow.
- Do not use flammable material near ignition sources.

1. Clean all threads with a wire brush or a different tool.
2. Remove the grease from the fasteners and the mating threads with solvent. Make the parts dry.

   **Note 3:** LocTite 7649 Primer™ or standard solvents will remove grease from parts.

3. Apply a spray of LocTite 7649 Primer™ or equal on the fasteners and the mating threads. Let the primer dry for one minute minimum.

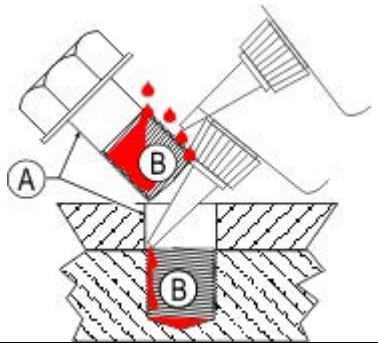
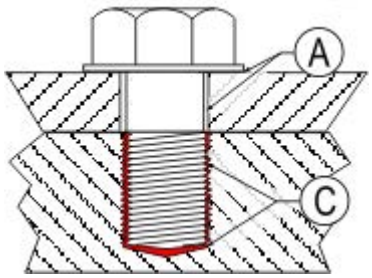
## 3. How to Apply a Threadlocker

**CAUTION 3: Malfunction Hazard**—Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

- Read the threadlocker manufacturer's instructions and warnings. Obey these instructions.

Apply the threadlocker only to the areas where the fastener threads and the mating threads engage.

**Figure 2: Blind Hole**

| Application | Coverage |
|---|---|
|  |  |

**Legend**

**A.** No threadlocker here
**B.** Apply here
**C.** Fill all space with threadlocker

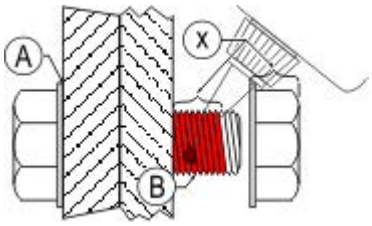
## 3.1. Blind Holes

1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table (Table 5 to Table 11).

## 3.2. Through Holes

1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.
3. Tighten the bolt to the value shown in the correct table (Table 5 to Table 11).

**Figure 3: Through Hole**

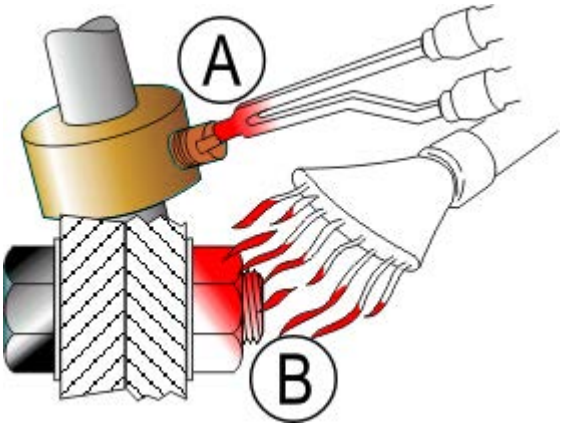
| Application | Legend |
|---|---|
|  | **A.** No threadlocker here<br>**B.** Apply the threadlocker to this area<br>**x.** Nut depth |

**3.3. Disassembly**—For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

For low-strength and moderate-strength threadlocker, disassemble with hand tools.

**Figure 4: Disassembly**

**Apply Heat to a Small Area**




**Legend**

**A.** How to apply heat to a small fastener
**B.** How to apply heat to a large fastener

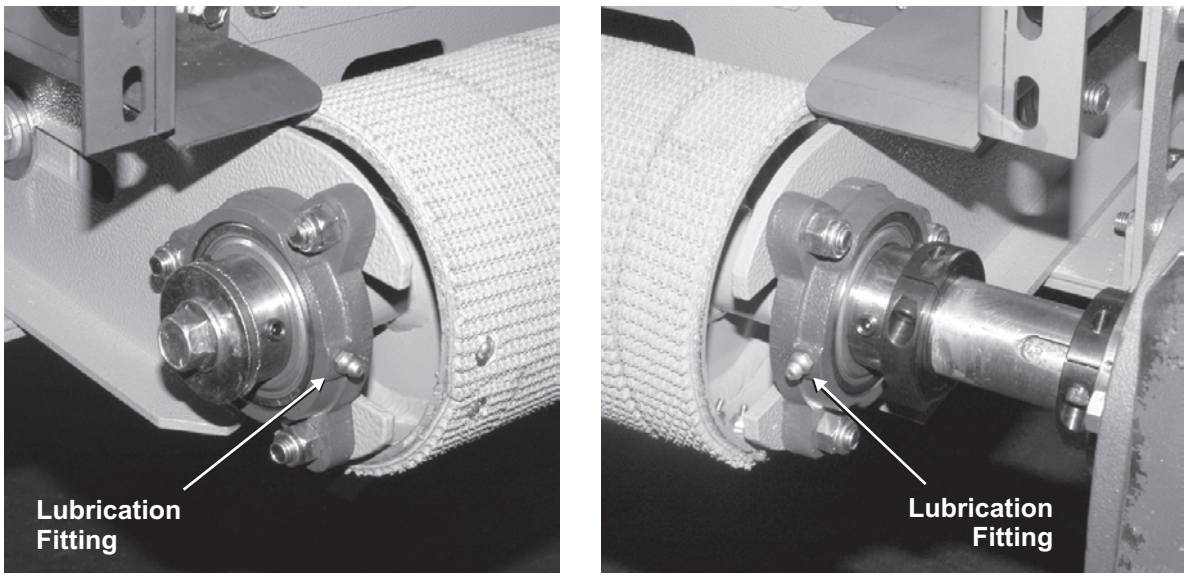
— End of BIUUUM04 —

# Conveyor Lubrication & Chain Adjustment

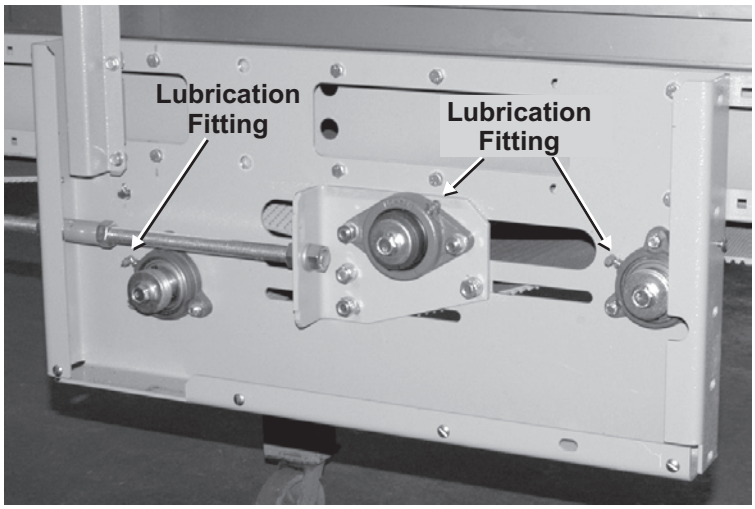
**Flatbelt, Pod, Load, and Extractor Conveyors**

CONVEYOR LUBRICATION:

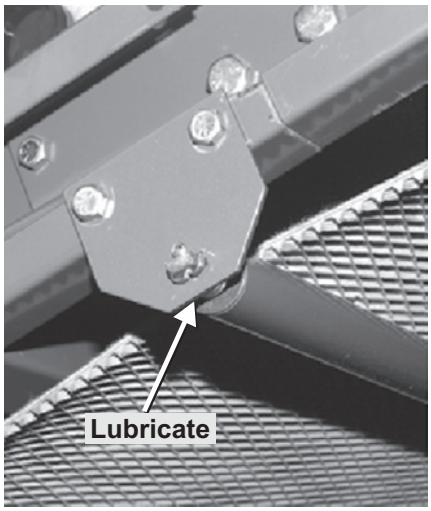
Every three months, all CONVEYOR ROLLER BEARINGS should be lubricated with bearing lubricant, Shell Alvania EP2 Lithium Grease or equivalent, using a hand pressure grease gun. Lubrication fittings are located on the bearings when they are easily accessible or they are remotely located to a position on the conveyor bed frame, if the bearing cannot be reached easily.




**Roller Bearings**



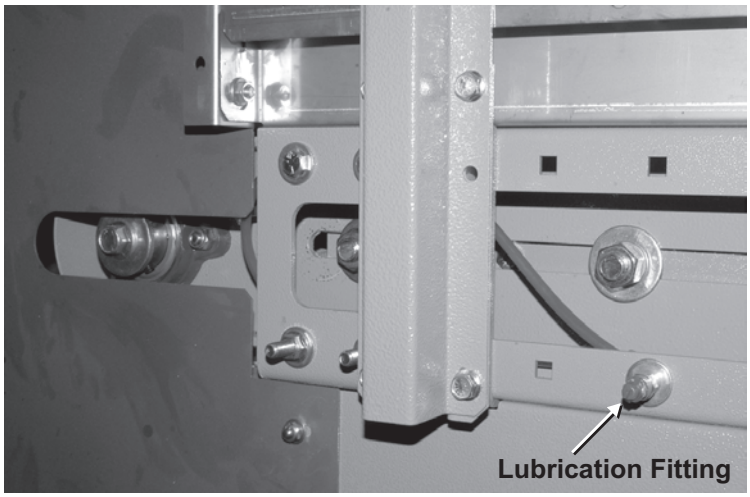

**Underdrive**




**Idler Roller**

# Conveyor Lubrication & Chain Adjustment

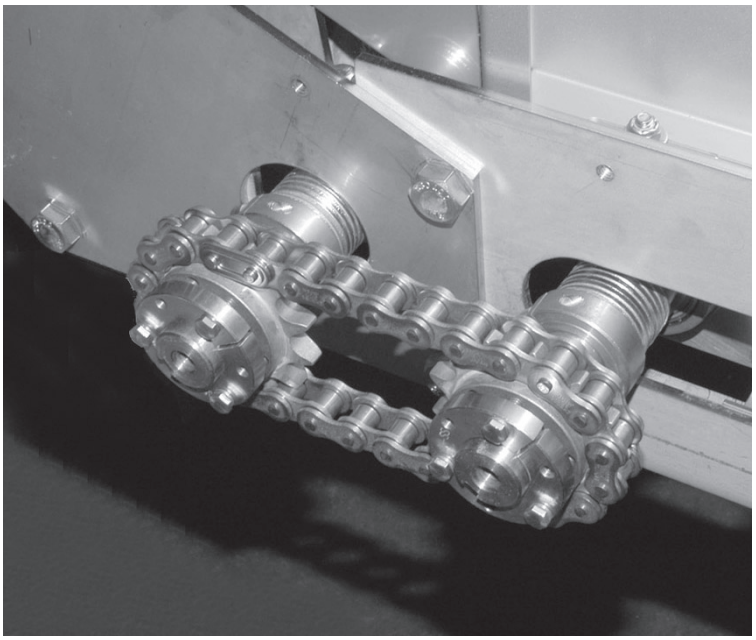
**Flatbelt, Pod, Load, and Extractor Conveyors**




**Remote Lubrication Points**

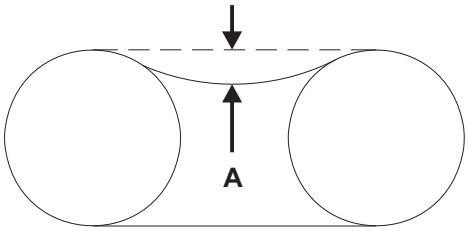
CHAIN LUBRICATION:

Every thirty days of operation, CHAIN DRIVES should be lubricated with bearing lubricant, Shell Alvania EP2 Lithium Grease or equivalent. Chain drives are covered by a safety cover and their lubrication fitting are remotely mounted where they are easily accessible.



CHAIN ADJUSTMENTS:

Every thirty days of operation, chain drives should be checked for proper adjustment.




Dimension A

| | |
|---|---|
| New Chain | 0-.125" (0-3MM) |
| After 48 hours | .125"-.25" (3MM-6MM) |

# Conveyor Adjustment Procedures



Pellerin Milnor Corporation
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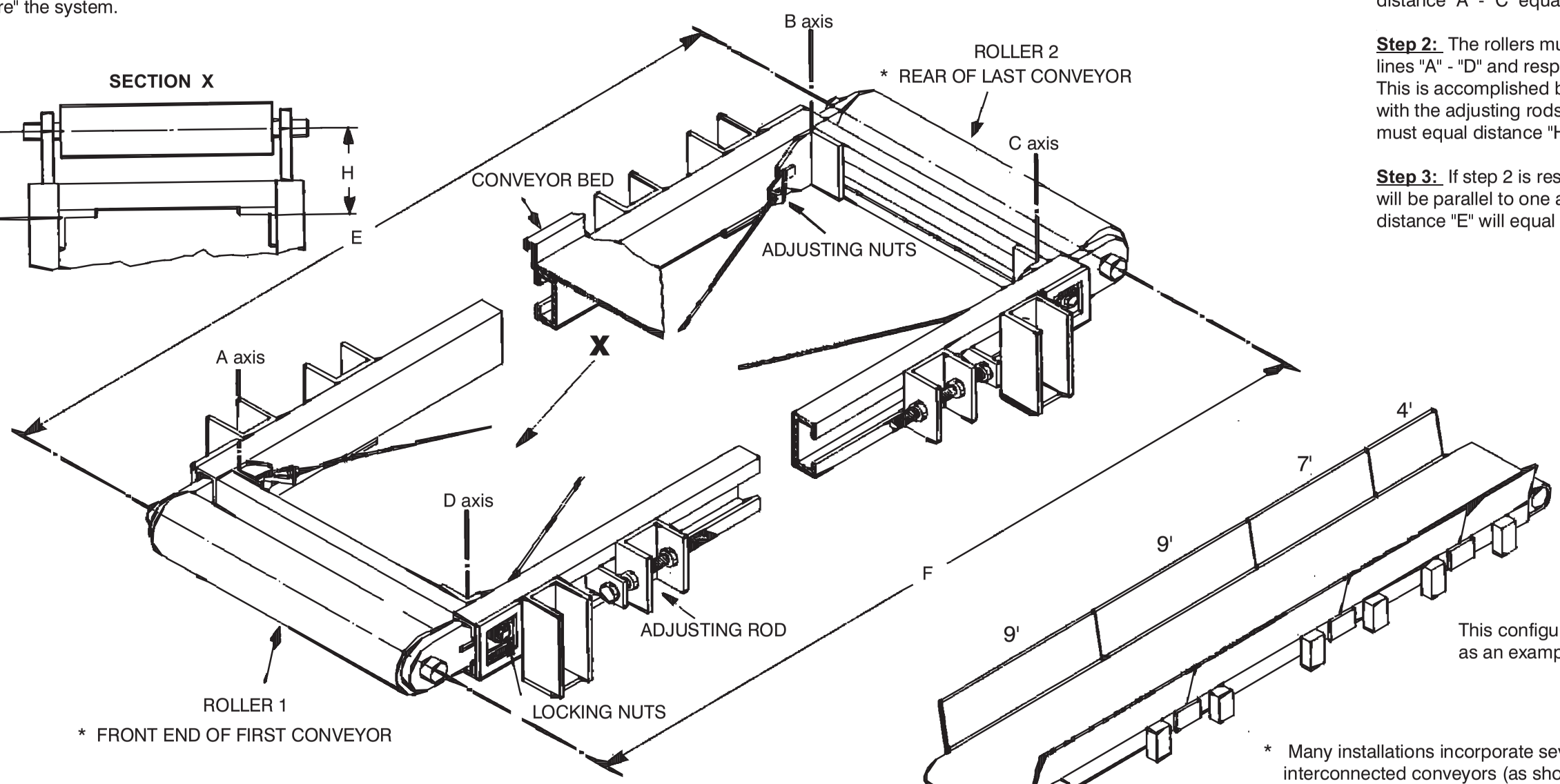
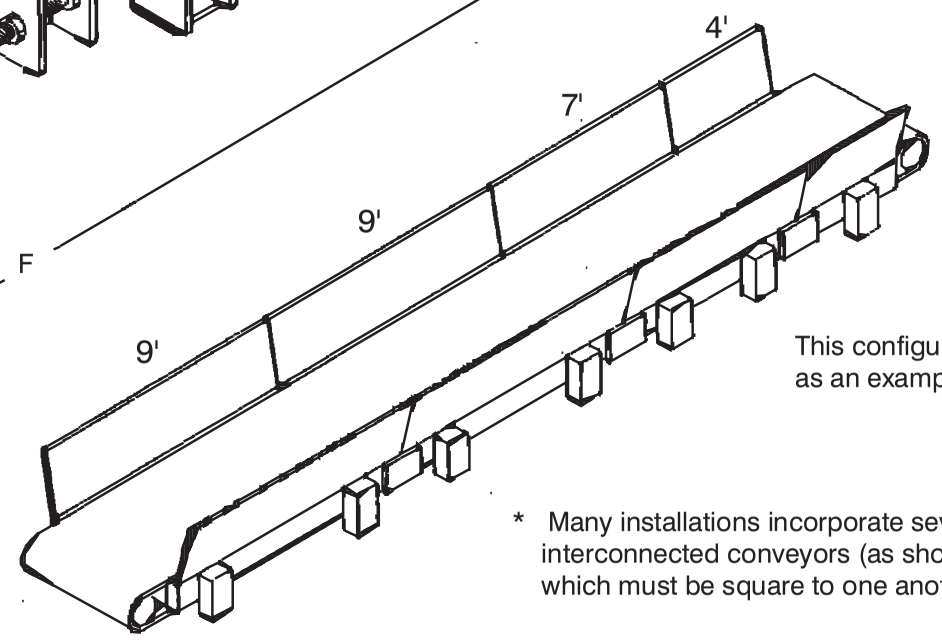
Litho in U.S.A.



**Comments:**
To provide optimum durability of the conveyor belt, it is essential that the conveyor is properly "squared". These instructions define the procedures to "square" the system.




This configuration is shown as an example only.

* Many installations incorporate several interconnected conveyors (as shown above) which must be square to one another.

**Step 1:** The conveyor frame must be "square". This is accomplished by adjusting the tie rods between points "A" - "C" and "B" - "D". The frame is "square" if and only if met: distance "A" - "C" equals distance "B" - "D".

**Step 2:** The rollers must be parallel to the lines "A" - "D" and respectively "B" - "C". This is accomplished by moving the rollers with the adjusting rods. Therefore distance "G" must equal distance "H".

**Step 3:** If step 2 is respected the rollers will be parallel to one another, therefore distance "E" will equal distance "F".

# Conveyor Adjustment Procedures



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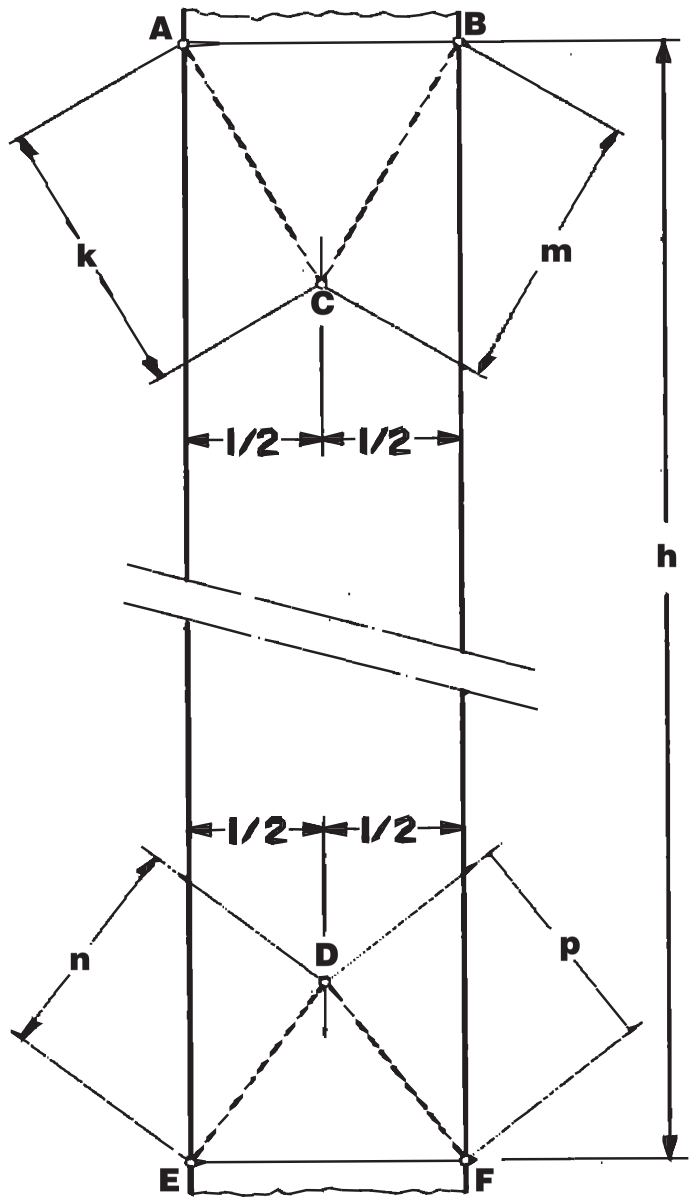
Litho in U.S.A.






**Step 1:** At some point well back from the end of the belt, measure and carefully mark a point (C) at the exact center of the belt width.

**Step 2:** Measure from this centerpoint two equal lengths (k and m) and mark points (A and B) along the edges and near the end of the belt. Be sure length "k" equals length "m".

**Step 3:** Meausre the total desired length (h) from point "B" to point "F" and mark that point.

**Step 4:** At some point well back from this end of the belt, mark a point (D) at the exact center of the belt width.

**Step 5:** Repeat step 2 to find point "E". Be sure that length "n" equals length "p".

**Step 6:** Cut along lines "A" - "B" and "E" - "F". Cuts must be straight so that the ends may be laced together without causing the belt material to warp.

(THIS PROCEDURE TO BE USED IF A BELT IS TO BE CUT AND LACED IN THE FIELD.)

# Conveyor Adjustment Procedures



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Litho in U.S.A.

**Step 1:** Check the conveyor frame to make sure it is square in accordance with illustration 1. Make sure the ends of the belt are square and laced properly in accordance with illustration 2.

**Step 2:** Run the conveyor for enough revolutions to indicate what direction it tracks.
Example: If the belt tracks to the right, adjust the right side non driven end adjusting rod (for double ended drives pick one end to adjust only) by following these steps:

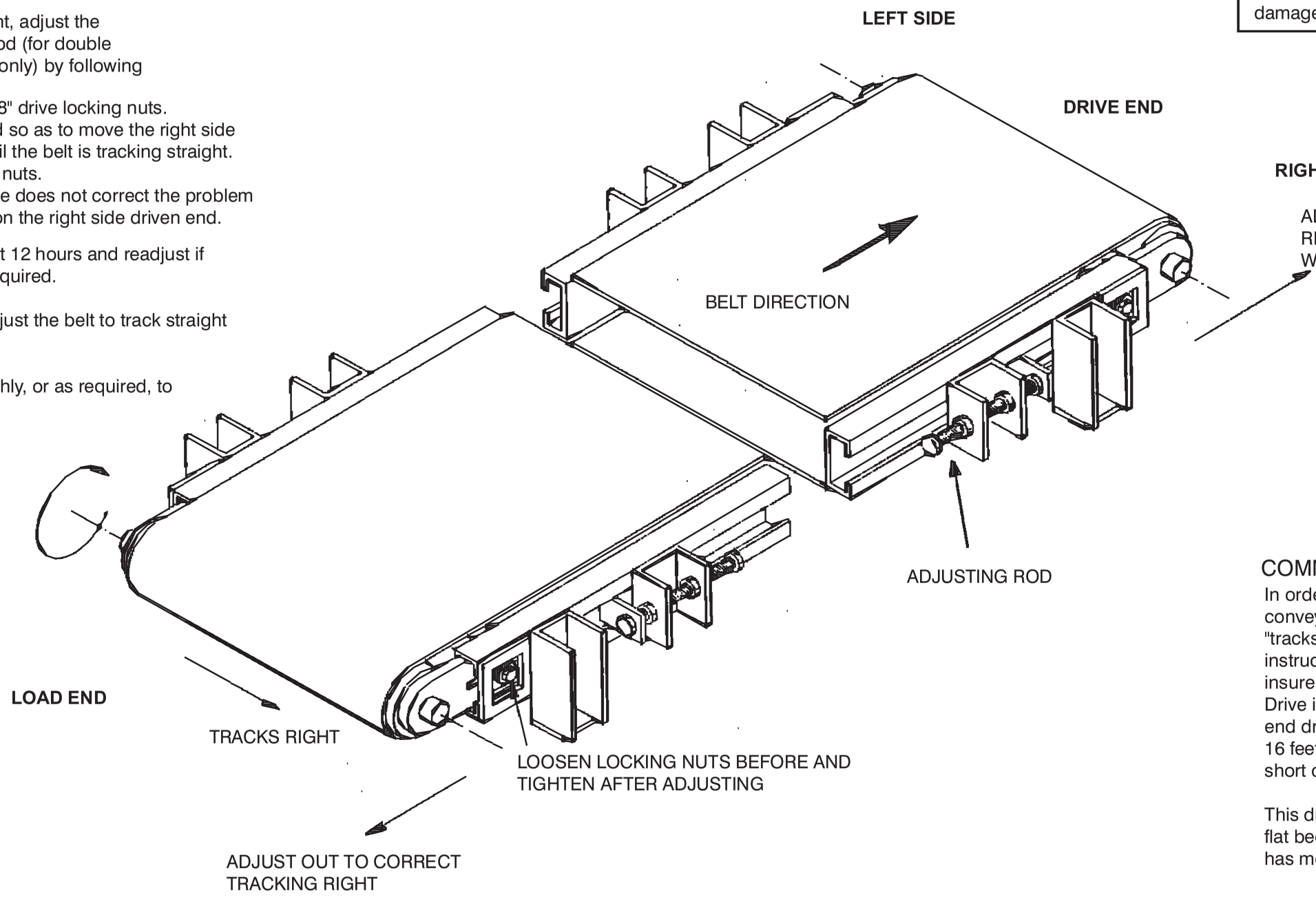
- **Step 2a:** Loosen the two (2) 5/8" drive locking nuts.
- **Step 2b:** Turn the adjusting rod so as to move the right side non-driven end out until the belt is tracking straight.
- **Step 2c:** Retighten the locking nuts.
- **Step 2d:** If the above procedure does not correct the problem apply the same steps on the right side driven end.

**Step 3:** Run the conveyor for at least 12 hours and readjust if necessary. Frequent inspection is required.

**Step 4:** After 72 hours operating, adjust the belt to track straight if required.

**Step 5:** Check the belt at least monthly, or as required, to insure straight tracking.

**WARNING:**
When moving conveyor, never allow frame to twist; such as would occur if one corner were raised higher than the others. Misalignment and damage to the frame may occur.




COMMENTS:

In order to insure optimum durablity of Milnor conveyor belts, it is essential that the belt "tracks" straight on the conveyor frame. These instructions provide step by step procedures to insure proper belt tracking.
Drive is normally located on discharge end. Double end drives are used on reversing conveyors over 16 feet long. Drive may be located on load end of short conveyors (4 feet).

This drawing intended for use with both flat bed and loading conveyor. Loading conveyor has metal dividers on belt, not shown here.

# INCLINED CONVEYOR ASSEMBLY INSTRUCTIONS

**APPLICABILITY: Inclined Conveyor**

**SCOPE: How to assemble**

**NOTE:** Storage conveyors are generally shipped fully assembled or in various stages of assembly depending on special site conditions.

## General

It is recommended to assemble inclined conveyors in the following sequence:

**1.** Join beds.

**2.** Install plastic anti-friction strips.

**3.** Install adjustment leg mounts.

**4.** Install belt to conveyor bed.

**5.** Install load end legs.

**6.** Install unloading end legs.

**7.** Install middle legs.

**8.** Install cross members.

**9.** Anchor bolt legs to floor where applicable.

**10.** Mount motor to gear reducer where applicable.

**11.** Make electrical connection and extend safety shut-off switch wires.

## Installation Procedure

### Joining Beds

Each conveyor bed is comprised of one or more 4, 7, or 9 foot section.

The connection between bed sections is made by eight 3/8" carriage bolts at each corner of the middle section or junction of two beds. (Combination: nut, bolt, lockwasher, and flatwasher.) Six on the side and two underneath.

When bolting sections together make sure all butting surfaces are flush and the conveyor is level along the entire length.

## Install Plastic Anti-Friction Strips

The polymer anti-friction strips shipped with your conveyor must be installed after the conveyor sections have been joined together. These strips which run continuously along the entire conveyor length, prevent the conveyor belt from adhering to the bed and straining the motor when the conveyor is started.

Attach anti-friction strips as shown in the figure next page using the flat head bolts and self-locking nuts supplied. Note that the strips and conveyor bed were pre-drilled. Bolt heads must be countersunk slightly below the top surface of the strip to assure that bolt head doesn't cut into belt material.

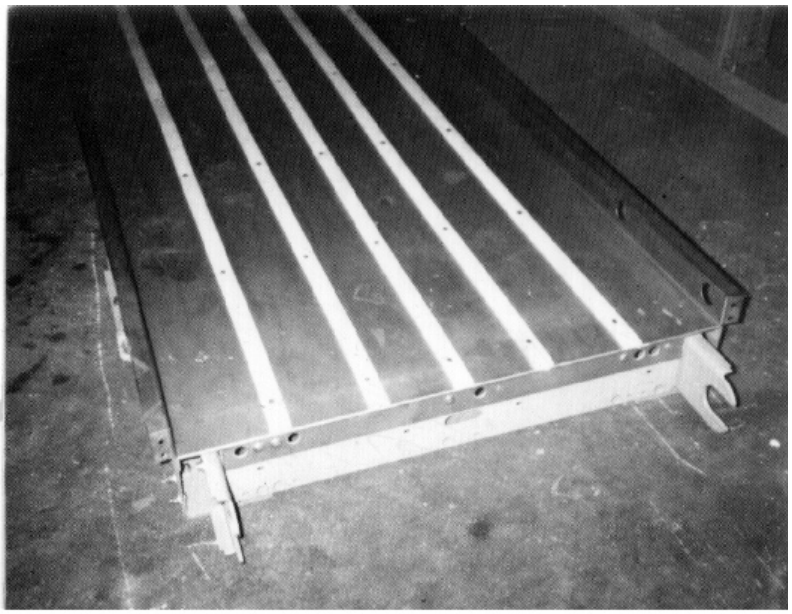


*FIGURE 1: Install Anti-Friction Strips*

## Install Adjustment Leg Mounts

In order to raise conveyor from resting on floor, it is recommended to mount the adjustment leg mounts to the sides of the conveyor. Adjustment leg mount locations are marked with tags or illustrated by a shop sketch for positioning. Mounts are bolted to the conveyor bed in four places, as shown in the photo right, and figure next page.

**Note:** All bolts for attaching leg adjustment mounts, legs, and cross members are 1/2". All nuts have full threads and are used in a combination of bolt, lockwasher, and nut. Flatwashers are added where slotted holes are being used.

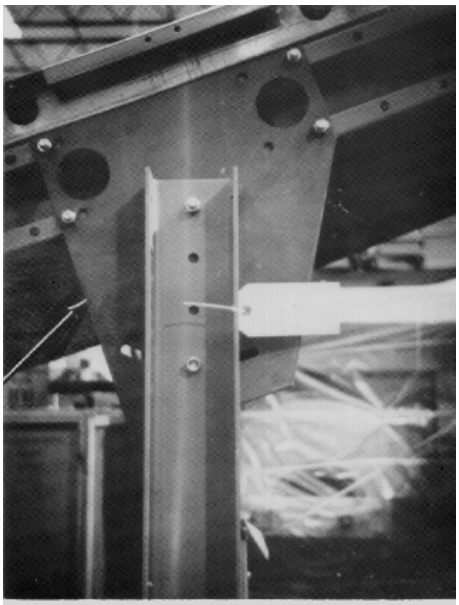


*FIGURE 2: Adjustment Leg Mount*

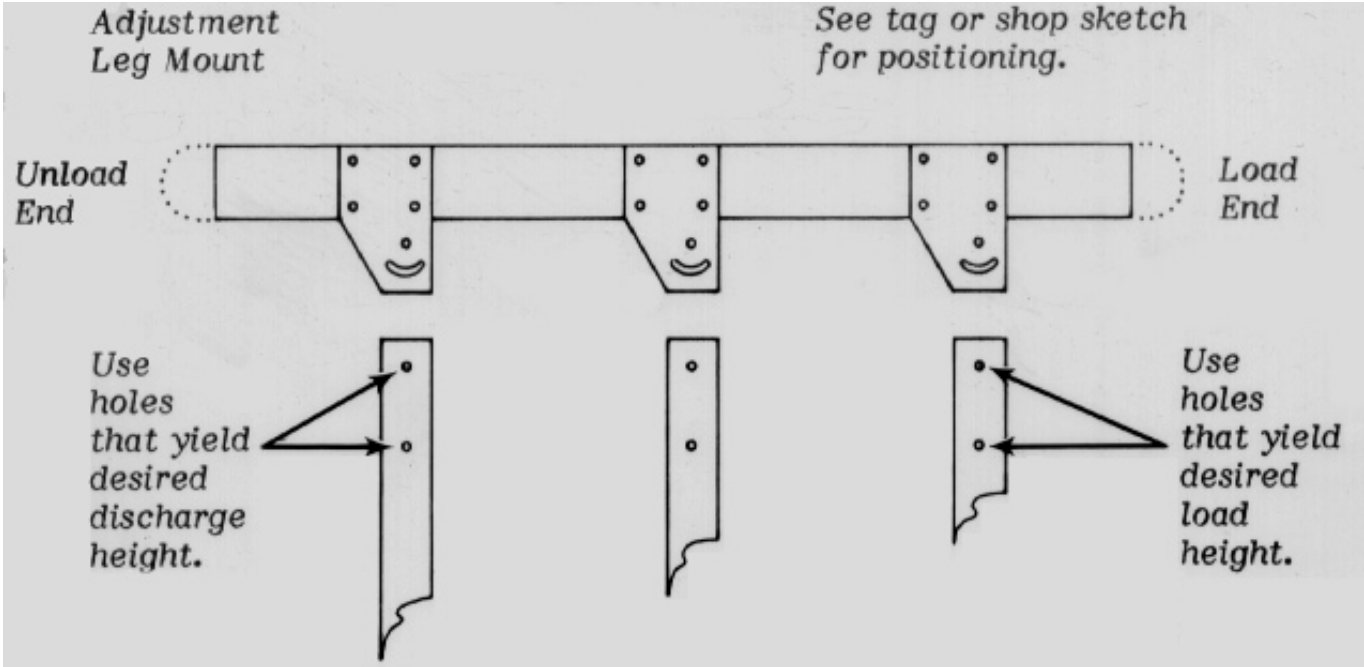



FIGURE 3: Adjustment Leg Mount & Leg Placement

## Install Belt

Belt tension adjustments are made on the idler (load) end. The bearing carrier is attached loosely to adjust tension after belt is on.

## Install Load End Legs

Raise load end of conveyor to load height. Position legs on adjustment leg mounts (see illustration above) and secure loosely.

## Install Unloading End Legs

Raise unloading end of conveyor to discharge height and secure legs to adjustment leg mounts.

**CAUTION:** Do not lift conveyor from roller. This may damage the roller or belt. Lift from connecting bracket or conveyor bed.

### Install Middle Legs

Install middle legs to adjustment leg mount and secure. Go back and adjust all legs vertically and tighten all bolts.

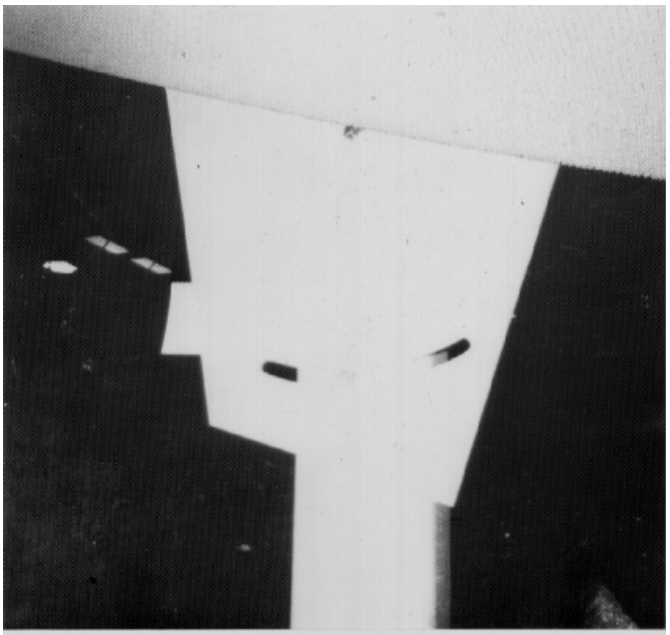


FIGURE 4: Backview Leg Connection

## Install Crossmembers

Cross members are used in pairs, bracing legs front and back. Shorter legs ranging from 9" to 26" do not require crossmembers, whereas legs ranging from 27" to 145" require cross-bracing approximately 13" from the bottom of the leg using pre-drilled holes. Taller legs, ranging from 40" to 145" require a second pair of cross braces placed near the top of the legs where bolt holes are available. (See photo right.)

## Anchor to Foundation

Use one 1 anchor bolt per leg. Anchor bolt hardware not supplied by Pellerin Milnor Corporation.

## Mount Motors

All conveyors are shipped with gear reducers mounted to the drive roller (unloading end). Motors may need to be mounted to the gear reducer if shipped detached.

**Note:** No adjustment is needed on the drive end of the system.

## Additional Connections

Make electrical connection and extend safety shut-off switch wires.

*FIGURE 5: Crossmembers, one of two shown.*

# Shell and Door Assemblies 3

# Shell Assembly

**M7E4232C,L,R  M9E4232C,L,R  M7V4232C,L,R  M9V4232C,L,R**



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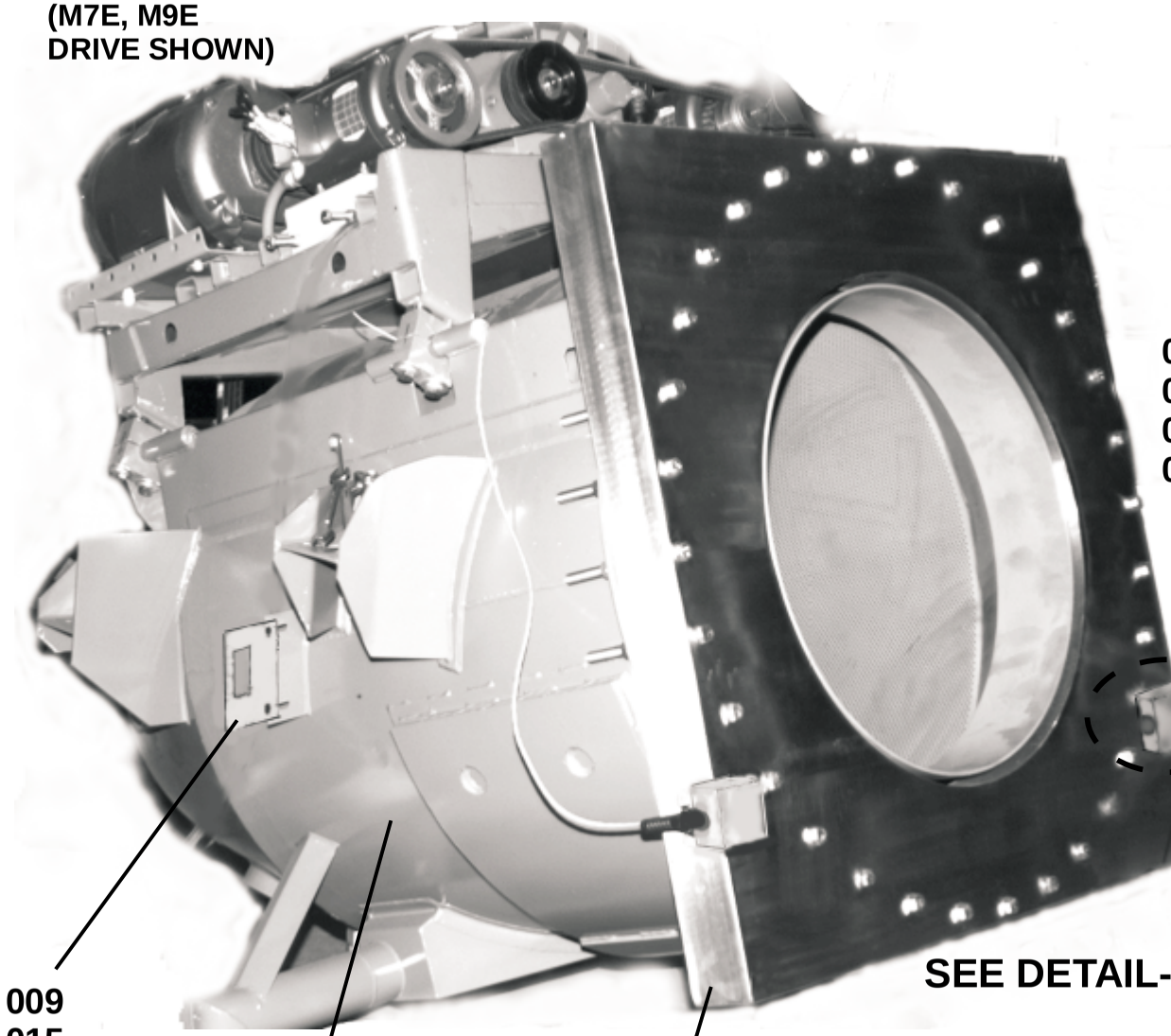
(M7E, M9E
DRIVE SHOWN)



009
015
016
017
018

002

001

SEE DETAIL-A

REAR VIEW OF SHELLFRONT

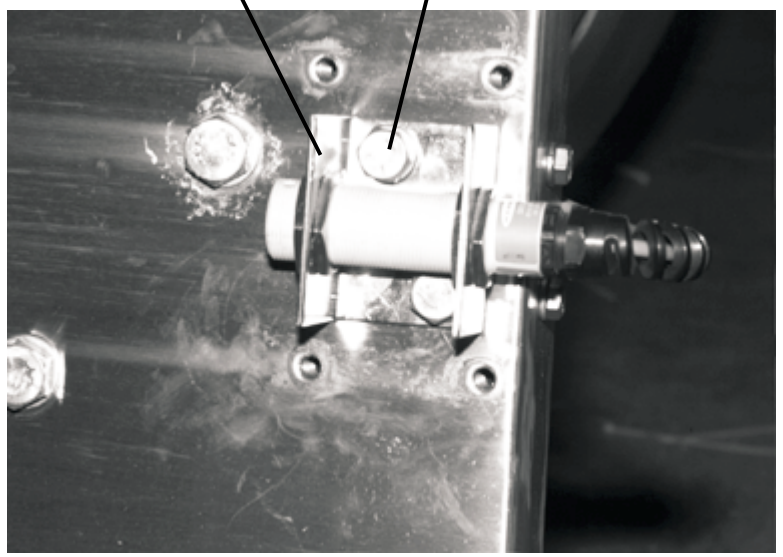
004
005
006
007

003,005,006,007

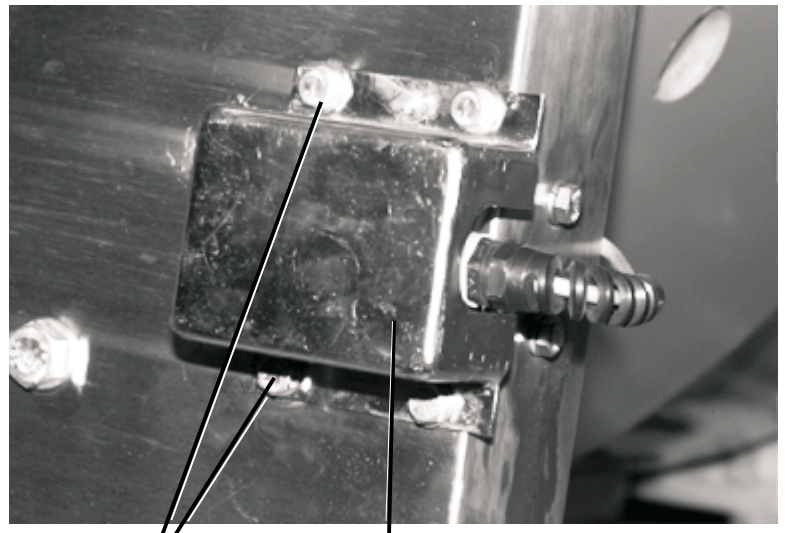
008

011A

021,022



**DETAIL-A**
**ASSEMBLY PRIOR TO MOUNTING COVER-ITEM 011 AS SHOWN BELOW**



019,020

011

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Litho in U.S.A.

## Parts List—Shell Assembly

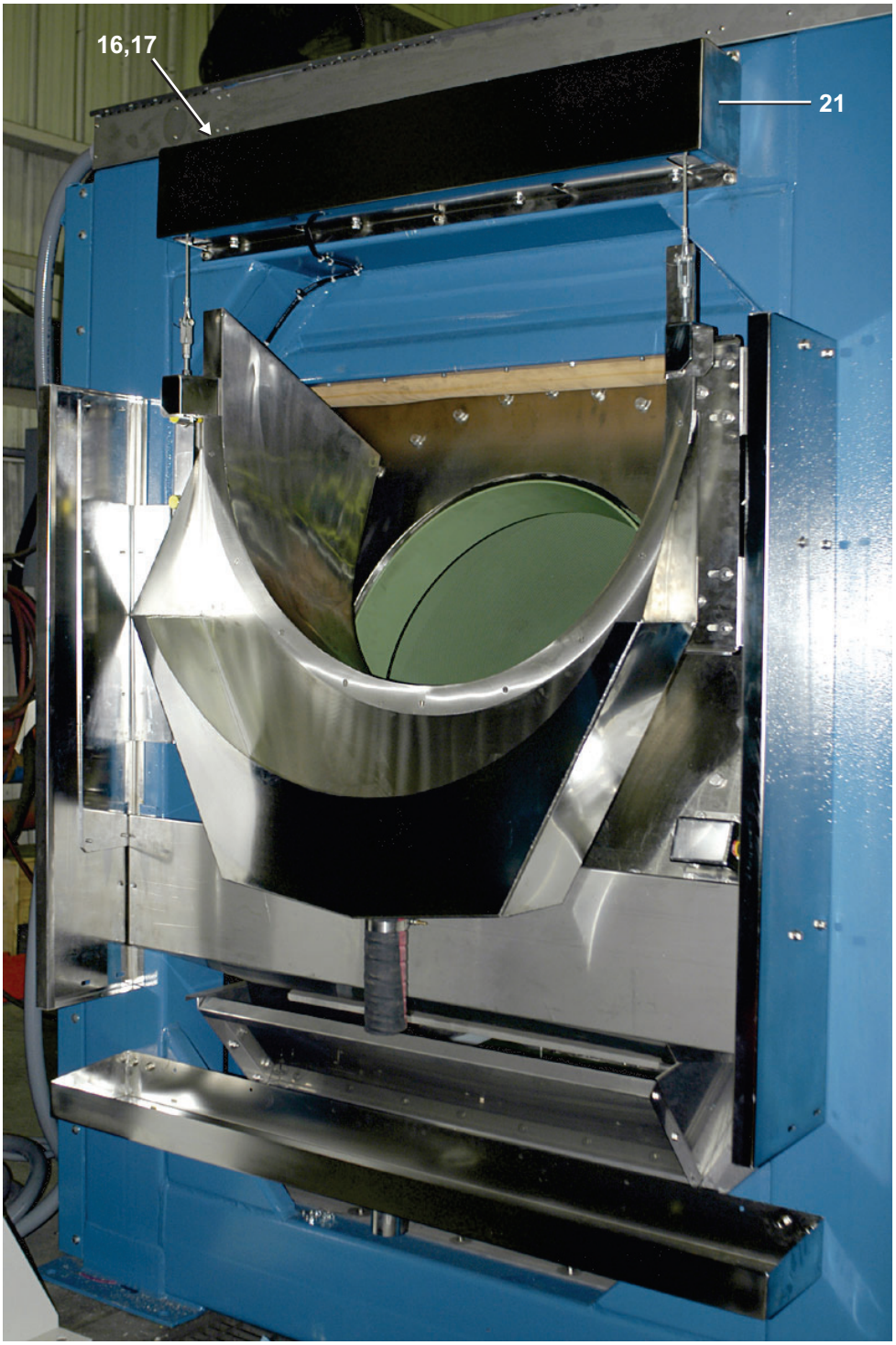
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ASE16001 | *SHELL ASSY 4232 M7E | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | W3 16073 | *WLDMT=SHELLFRONT 42M7E | |
| all | 2 | W3 16027 | *SHELL WELDMENT 42M7E | |
| all | 3 | 15K227M | HEXCPSCR 5/8-11 X 8.5 SS | |
| all | 4 | 15K227G | HEXCAPSCR 5/8-11X5+1/2 SS-18-8 | |
| all | 5 | 15U318S | FLATWASH 1.12ODX.656IDX.09T 30 | |
| all | 6 | 15U315S | LOKWASHER MEDIUM 5/8 18-8 S/S | |
| all | 7 | 15G236B | HEX NUT 5/8-11UNC2B BRASS | |
| all | 8 | 02 11153A | GASKET=46"BCX1/8THK=4/42Q+D | |
| all | 9 | 03 16313A | EXCURSION SW PLT 42M7E | |
| all | 11 | W3 16431 | *WLMT=PHOTOEYE COVER 42M7E | |
| all | 11 | 03 16432 | PHOTOEYE MNT BRKT 42M7E | |
| all | 12 | 15U245 | FLTWASH 3/8 STD COMM 18-8 SS | |
| all | 13 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 14 | 15K083S | HXCAPSCR 3/8-16NCX1/2 SS18-8 | |
| all | 15 | 15K084 | TRUSS HXSOK 3/8-16 X 23/32SS | |
| all | 16 | 15U240 | FLATWASHER(USS STD) 3/8" ZNC P | |
| all | 17 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |
| all | 18 | 15G205 | HXNUT 3/8-16UNC2B ZINC GR2 | |
| all | 19 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 20 | 15K096 | HEXCAPSCR 3/8-16UNC2X1SS18-8 | |
| all | 21 | 15K146 | HEX CAP SCR 1/2-13 UNC2 X 1 SS | |
| all | 22 | 15U310 | LOKWASHER REGULAR 1/2 SS18-8 | |
| all | 23 | 09RPELKNUT | LOCKNUT MICRO SWITCH #925NZ30 | |

# Load Chute

**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

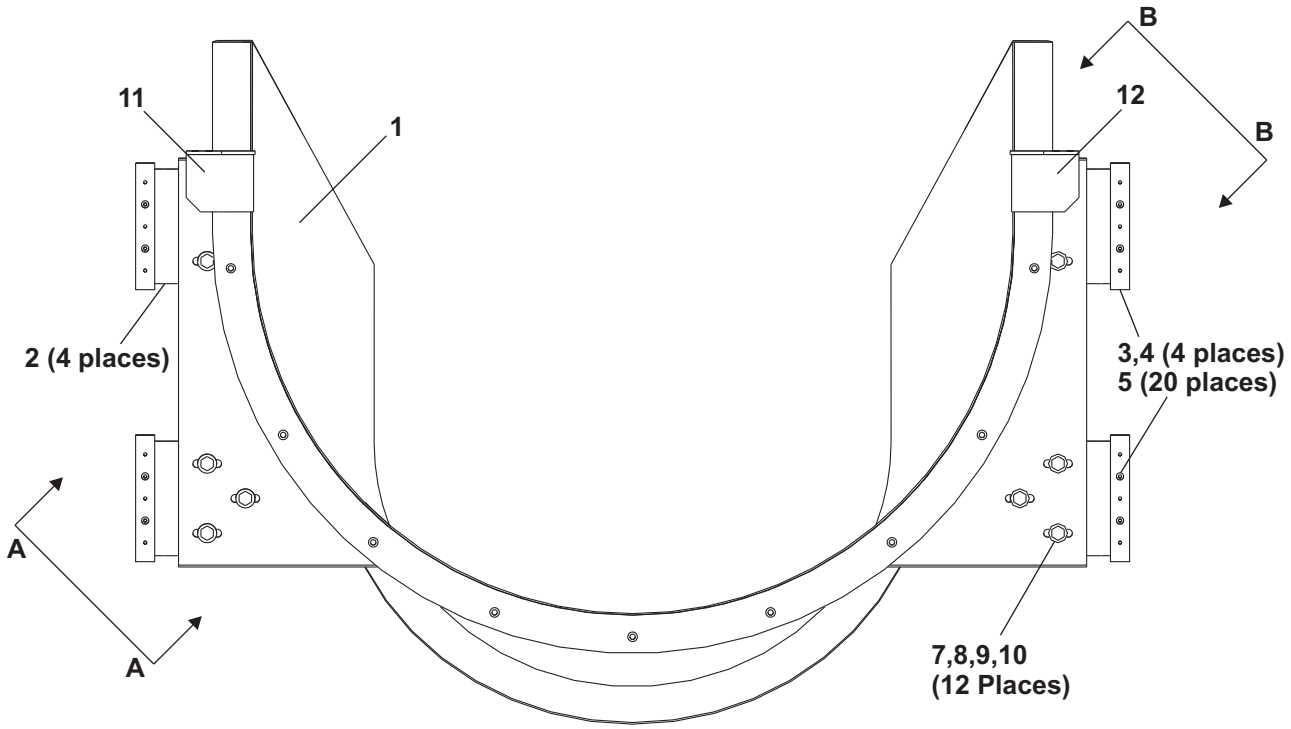
**Figure 1: Load Chute Installed**

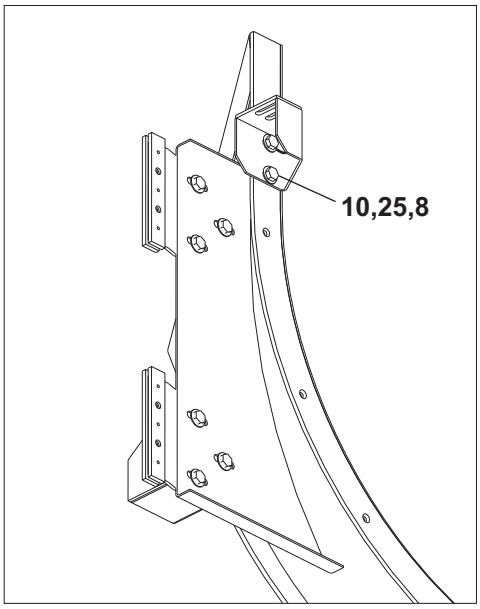


# Load Chute

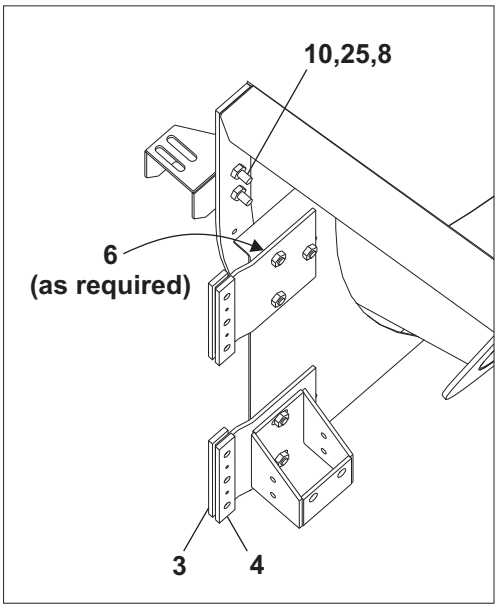
**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

**Figure 2: Load Chute Assembly**




View A-A

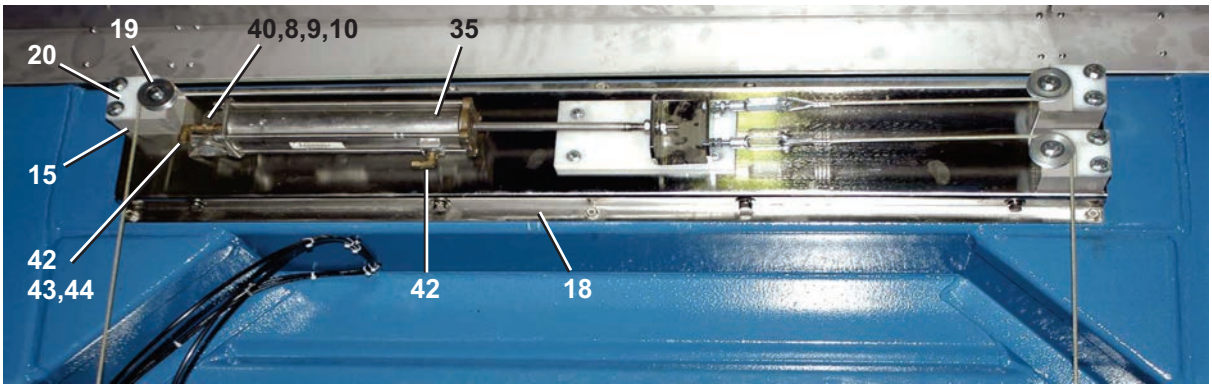


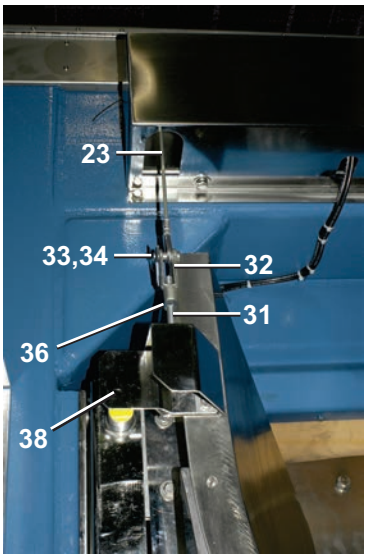

View B-B

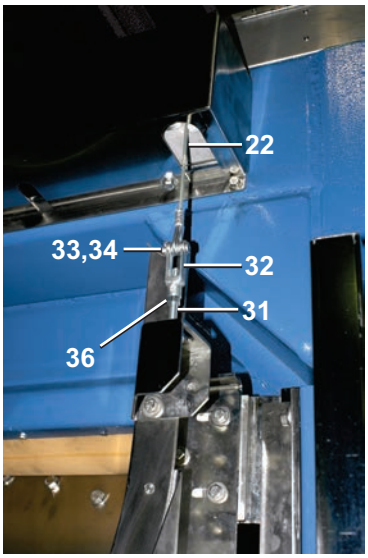
# Load Chute

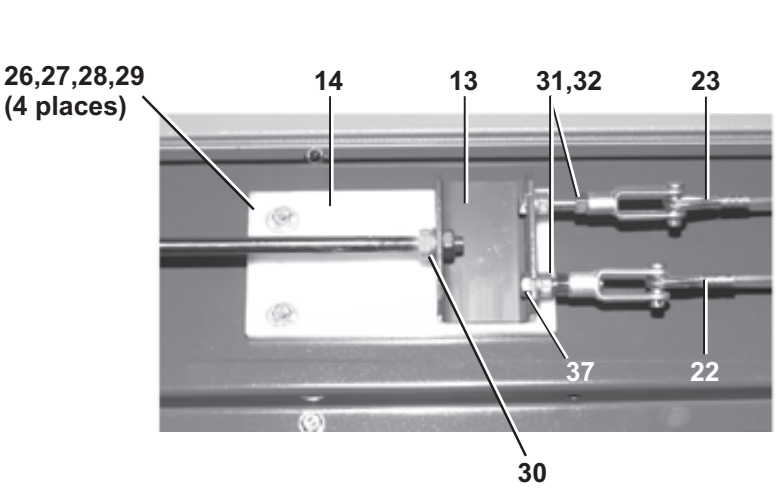
**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

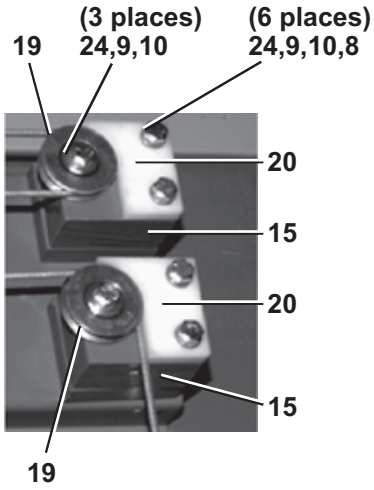
**Figure 3: Load Chute Lifting**



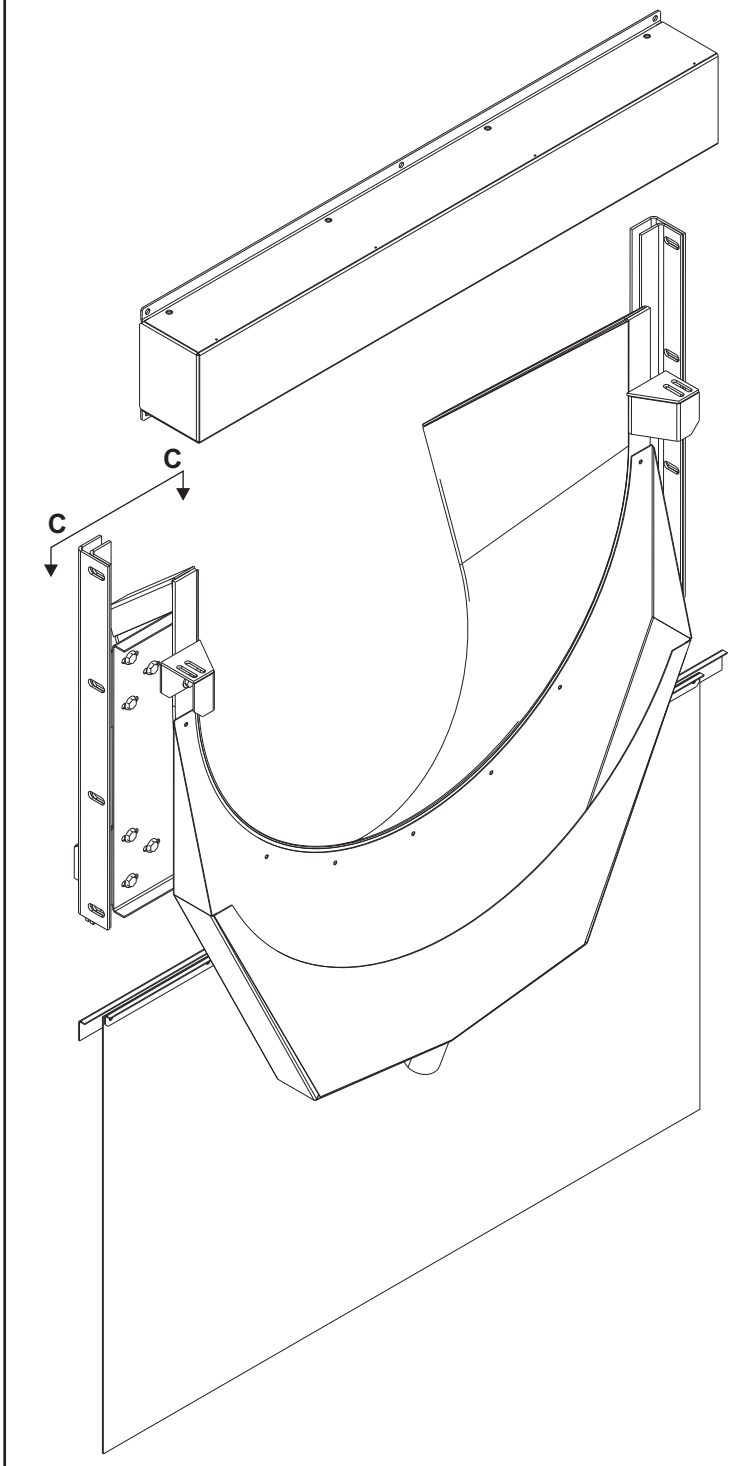



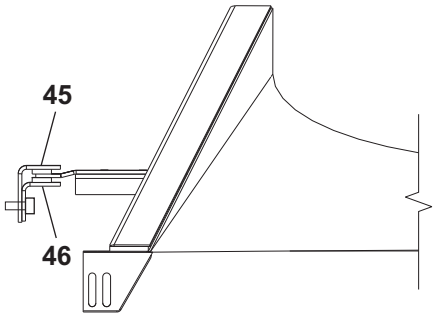



# Load Chute

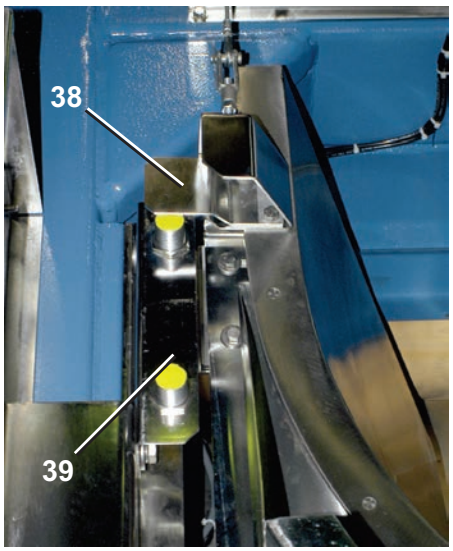
**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

**Figure 4: Load Chute Installation**




View C-C



# Load Chute

**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

## Parts List—Load Chute

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | -------ASSEMBLIES---------- | |
| | A | GCL16002S | INST=LD CHUTE(CABLE)S/S 42M7 | |
| | B | ACL16001 | ASSY=LOAD CHUTE 42M7E | |
| | | | -------COMPONENTS---------- | |
| all | 1 | W3 16201 | *WLMT=LOAD CHUTE SCOOP 42M7E | |
| all | 2 | 03 16211 | RAIL ADJUST PLATE 42M7E | |
| all | 3 | 03 16212 | NYLON SLIDE STRIP FRONT 42M7E | |
| all | 4 | 03 16213 | NYLON SLIDE STRIP BACK 42M7E | |
| all | 5 | 15J051AL | POPRIVET 1/8DIAX.765L | |
| all | 6 | 03 16332 | SCOOP= MTG BRKT SHIMS | |
| all | 7 | 15K083S | HXCAPSCR 3/8-16NCX1/2 SS18-8 | |
| all | 8 | 15U245 | FLTWASH 3/8 STD COMM 18-8 SS | |
| all | 9 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 10 | 15G206 | HEXNUT 3/8-16 UNC2 SS 18-8 | |
| all | 11 | W3 16533 | *WLMT=LD CHT LIFT BKT-L | |
| all | 12 | W3 16533A | *WLMT=LD CHT LIFT BKT-R | |
| all | 13 | 03 16535 | AIR CYL TO CABLE BRKT | |
| all | 14 | 03 16536 | UHMW AIR CYL BRKT GUIDE | |
| all | 15 | 03 16537 | LOAD CHUTE LIFT PULLEY SPACER | |
| all | 16 | 03 16538 | LOAD CHUTE LIFT COVER-TOP | |
| all | 17 | 15P003 | TRDCUT-F FLATHD 6-32UNC2X3/8 Z | |
| all | 18 | W3 16539 | *WLMT=LD CHUTE LIFT MTG PLATE | |
| all | 19 | 27A965 | PULLEY ZINC PLATE #CPS6150 | |
| all | 20 | 07 40935A | UHMW PULLEY CABLE GUIDE PRES | |
| all | 21 | W3 16542 | *WLMT=LD CHT LIFT COVER | |
| all | 22 | ASC16001 | ASSY= SCOOP SS LIFT CBLE SHT | |
| all | 23 | ASC16001A | ASSY= SCOOP SS LIFT CABLE LG | |
| all | 24 | 15K140S | HEXCAPSCR 3/8-16 X 4 SS 18-8 | |
| all | 25 | 15K100 | HEXCAPSCR 3/8-16X1+1/4 SS18-8 | |
| all | 26 | 15K041S | HEXCAPSCR 1/4-20UNC2AX1 SS18-8 | |
| all | 27 | 15G170 | HEXNUT 1/4-20UNC2 SS18-8 | |
| all | 28 | 15U310 | LOKWASHER REGULAR 1/2 SS18-8 | |
| all | 29 | 15U188 | FLTWASH 1/4 STD COMM SS18-8 | |
| all | 30 | 15G231S | HXFINJAMNUT 1/2-13UNC2B SS18-8 | |
| all | 31 | 15B107 | HEXTAPBOLT 3/8-16UNC2X3+1/2 ZN | |
| all | 32 | 17A010 | ADJ YOKE 3/8-16 EMPIGARD COAT | |

# Load Chute

**M9V4232C,L,R MXS4232C,L,R MXT4232C,L,R**

## Parts List—Load Chute

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 33 | 15H040S | STDCOTTERPIN 1/8X3/4 SS | |
| all | 34 | 17A030 | CLEVIS PIN 3/8"X1+3/32"DRIL SS | |
| all | 35 | AAC03001 | AIRCYL DBL ACT=S/S HWD | |
| all | 36 | 15G215S | HEXFINTHIN JAM NUT 3/8-24UNF S | |
| all | 37 | 15G214 | HXJAMNUT 3/8-16UNC2B SAE ZINC | |
| all | 38 | 03 16195 | TARGET=LOAD CHUTE 42M7 | |
| all | 39 | 03 16196 | PROX MNT=LOAD CHUTE 42M7 | |
| all | 40 | 15K096 | HEXCAPSCR 3/8-16UNC2X1SS18-8 | |
| all | 41 | 15K119 | HXCAPSCR 3/8-16X1+3/4 SS18-8 | |
| all | 42 | 53A031XB | BODY-EL90MALE.25X25 #269C-4-4B | |
| all | 43 | 5N0ECLSBE2 | NPT NIP 1/4XCLS TBE BRASS 125# | |
| all | 44 | 5SCC0EBE | NPT COUP 1/4 BRASS 125# W/HEX | |
| all | 45 | 03 16218 | OUTER RAIL BRKT=LOAD CHUTE | |
| all | 46 | 03 16217 | INNER RAIL BRKT=LOAD CHUTE | |
| all | 47 | 03 16327 | SCOOP=FRNT PLASTIC GRD 42M7E | |

# Extractor Auto Load Door

M7E4232C,L,R M9E4232C,L,R M7V4232C,L,R M9V4232C,L,R **MXS4232C,L,R**



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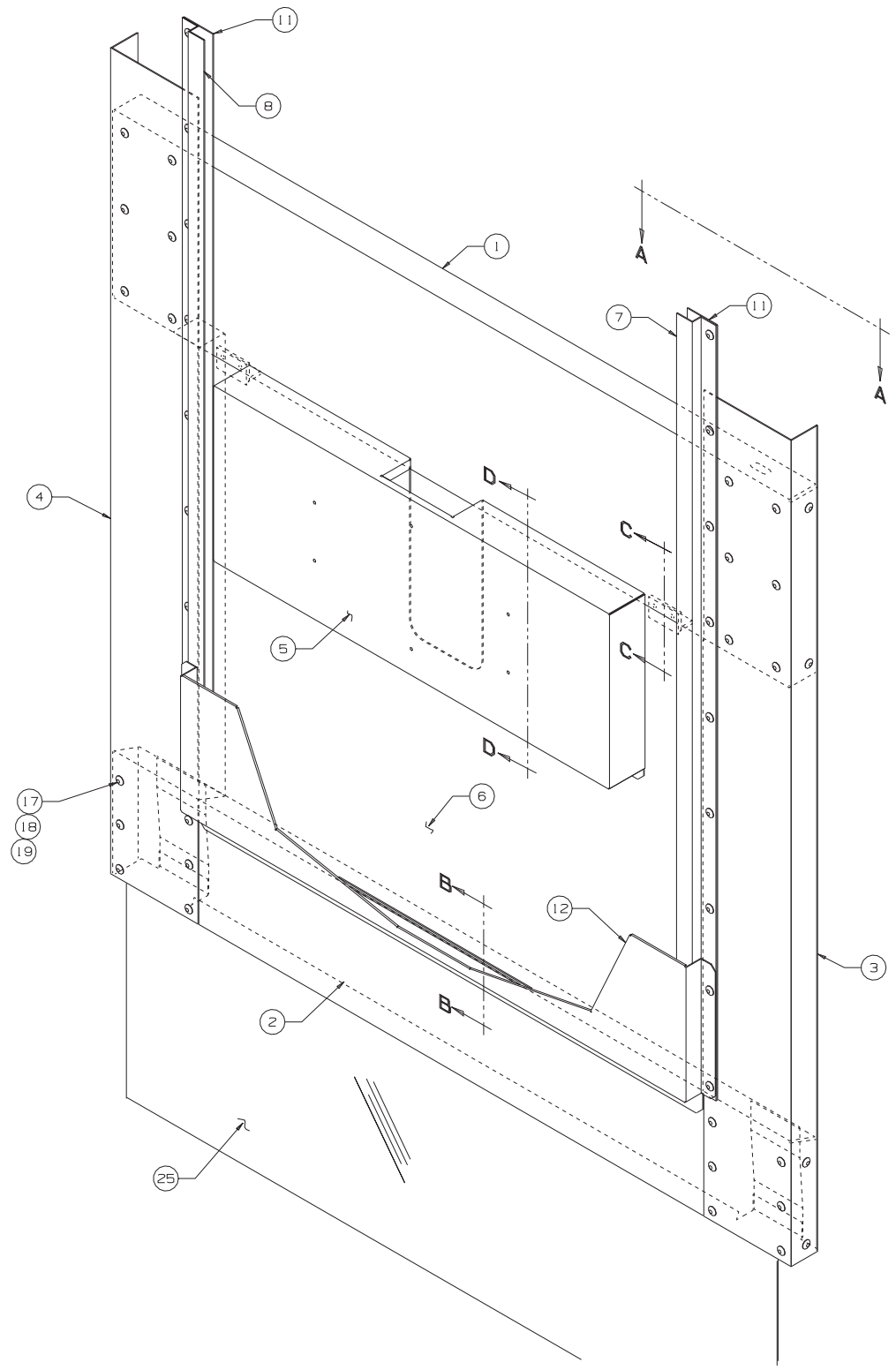


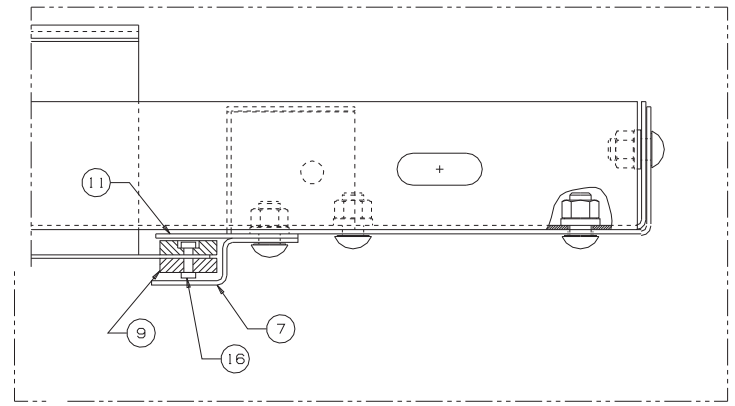


VIEW A-A
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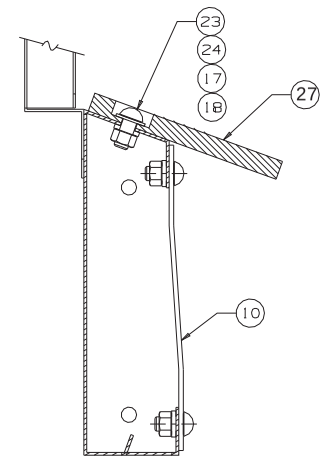
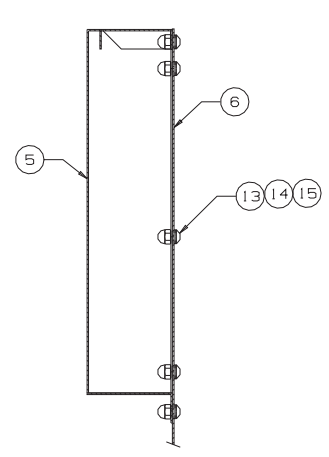



SECTION B-B
SCALE = .50




SECTION D-D
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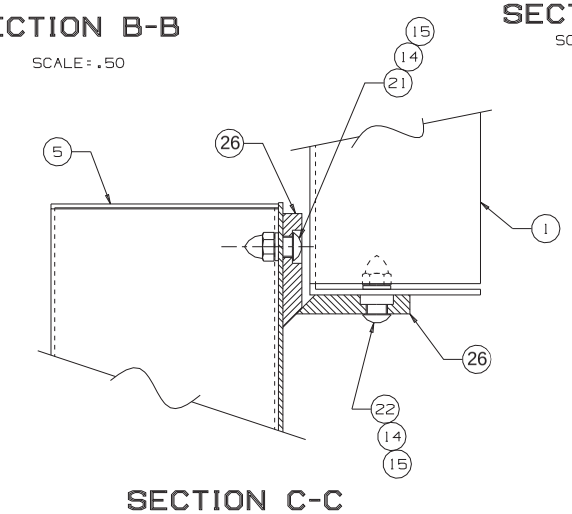


SECTION C-C
SCALE = FULL

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## Parts List—Auto Load Door

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ASD16000 | EXTRACTOR DOOR ASSY 42M7E | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 03 16289 | EXTR DOOR TOP PLATE 42M7E | |
| all | 2 | 03 16290 | EXTR DOOR BOTT CHNL 42M7E | |
| all | 3 | 03 16291 | EXTR DOOR RT SIDE CHNL 42M7E | |
| all | 4 | 03 16291A | EXTR DOOR LF SIDE CHNL 42M7E | |
| all | 5 | 03 16292 | EXTR DOOR COVER 42M7E | |
| all | 6 | 03 16293 | EXTR DOOR 42M7E | |
| all | 7 | 03 16294 | EXTR DOOR GUIDE CHNL RT 42M7 | |
| all | 8 | 03 16294A | EXTR DOOR GUIDE CHNL LFT 42M | |
| all | 9 | 03 16297 | EXTR DOOR PLASTIC STRIPS | |
| all | 10 | 03 16310 | DOOR=BOTTOM SILL STFNR 42M7E | |
| all | 11 | 03 16311 | DOOR= GUIDE CHNL REAR 42M7E | |
| all | 12 | 03 16316 | DOOR=FRONT SCUPPER | |
| all | 13 | 15K032 | BUTSOKCAPSCR 1/4-20X3/8 SS18-8 | |
| all | 14 | 15G140S | HEXCAPNUT(ACORN) 1/4-20 SS 18- | |
| all | 15 | 15U181 | LOCKWASHER MEDIUM 1/4 SS18-8 | |
| all | 16 | 15J051 | POPRIVET 1/8DIAX.265 LONG S/S | |
| all | 17 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 18 | 15G206 | HEXNUT 3/8-16 UNC2 SS 18-8 | |
| all | 19 | 15K083V | BUTSOKCAPSCR 3/8-16X3/4 SS18-8 | |
| all | 20 | 15K086 | HXCAPSCR 3/8-16NCX3/4 SS18-8 | |
| all | 21 | 15K031 | BUTSOKCAPSCR 1/4-20X1/2 SS18-8 | |
| all | 22 | 15K180S | HXCAPSCR 1/2-13UNCAX2 18-8SS | |
| all | 23 | 15K091F | BUTSOKCAPSCR 3/8-16X1 BRASS E= | |
| all | 24 | 15U245 | FLTWASH 3/8 STD COMM 18-8 SS | |
| all | 25 | 03 16287A | PLASTIC FRNT GUARD 24X55.25 | |
| all | 26 | 03 16338 | DOOR = UHMW WEDGE | |
| all | 27 | 03 16290A | DOOR TRANSFER UHMW | |
| all | 28 | 27C215 | AIR CYL 1.5"BORE X 34" STROKE | |
| all | 29 | 15G239 | HXNUT 3/4-16UNF2B SAE ZINC GR2 | |
| all | 30 | 15G214 | HXJAMNUT 3/8-16UNC2B SAE ZINC | |
| all | 31 | 15U238 | LOKWAS INTOOTH 3/8" (US STD) 4 | |
| All | 32 | 96N0013HU | SHUTLVLV 1/4” 4WAY CENTER-OFF | |

# Cosmetic Covers

**M7E4232C,L,R M9E4232C,L,R M7V4232C,L,R M9V4232C,L,R**



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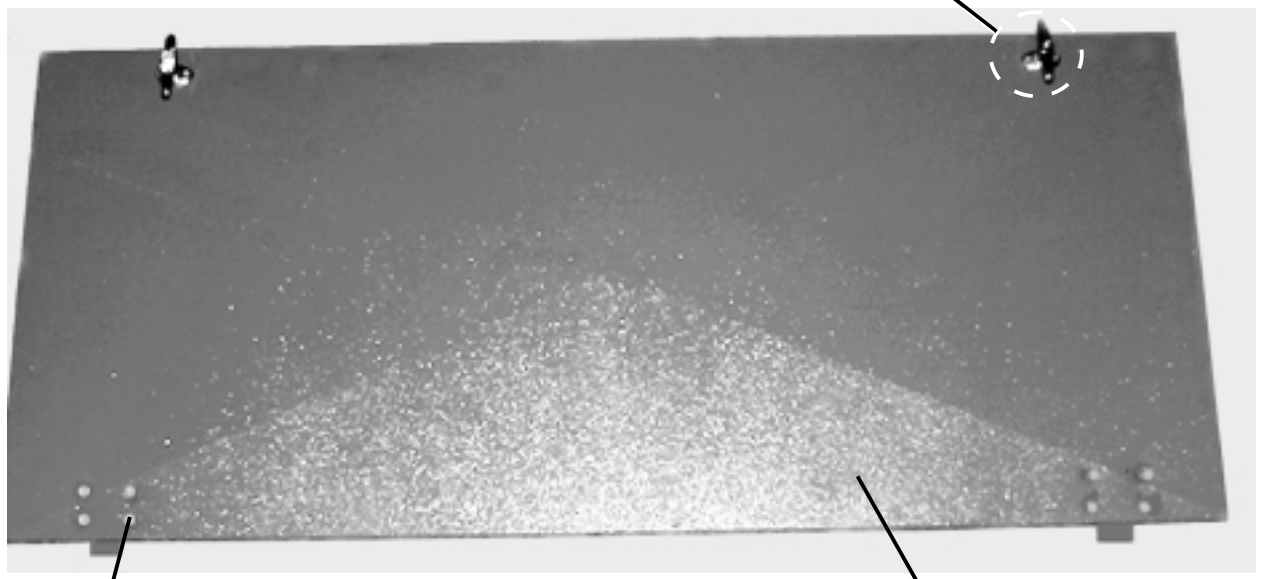
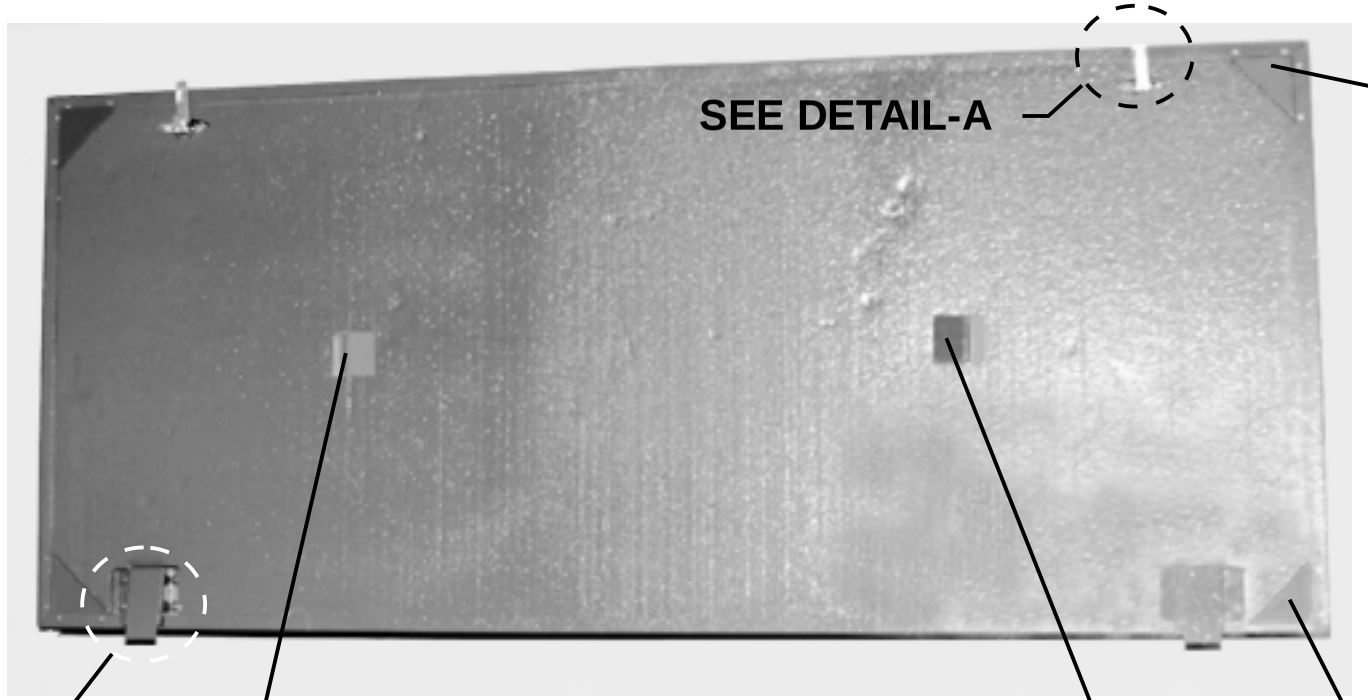
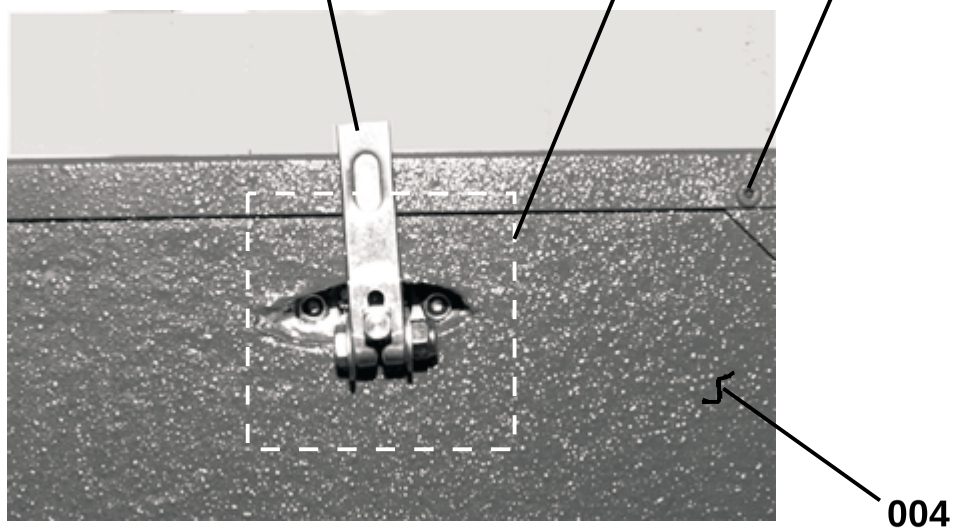


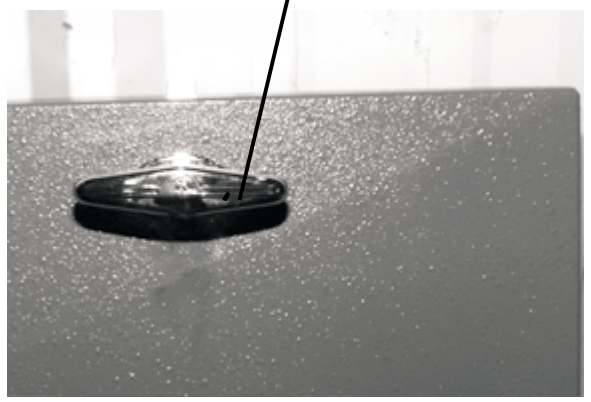

OUTSIDE OF DOOR



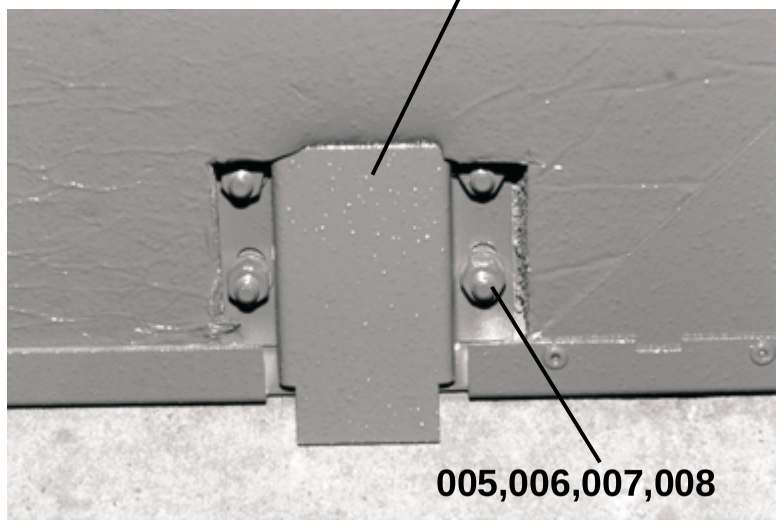

INSIDE OF DOOR




DETAIL-A




DETAIL-B




DETAIL-C

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## Parts List—Cosmetic Covers

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| ---------- | ---------- | ---------- | ----------ASSEMBLIES---------- | ---------- |
| | A | AGS16000 | ASSY=COSM COVER 79.19X40.81 | |
| | B | AGS16003 | ASSY=COSM COVER 69.50X40.81 | |
| | C | AGS16004 | ASSY=COSM COVER 65.48X28.25 | |
| | D | AGS16006 | ASSY=COSM COVER 32.62X80.06 | |
| | E | AGS16007 | ASSY=COSM COVER 34.06X79.19 | |
| ---------- | ---------- | ---------- | ----------COMPONENTS---------- | ---------- |
| A | 1 | 03 16266 | COSM=LARGE DOOR 42M7E | |
| B | 1 | 03 16266A | COSM=LFT LARGE DOOR 42M7E | |
| C | 1 | 03 16267 | COSM=SMALL DOOR 42M7E | |
| D | 1 | 03 16436 | SIDE UNLOAD COSM REAR DOOR | |
| E | 1 | 03 16435 | UNLOAD SIDE LONG DOOR | |
| all | 3 | 02 11378 | CORNER GUSSET=COVER | |
| all | 4 | 98P050 | INSULATION BRD 4X8X1+1/16E= | |
| all | 5 | 15K095 | HXCPSCR 3/8-16UNC2AX1 GR5 ZINC | |
| all | 6 | 15U240 | FLATWASHER(USS STD) 3/8" ZNC P | |
| all | 7 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |
| all | 8 | 15G205 | HXNUT 3/8-16UNC2B ZINC GR2 | |
| all | 9 | 02 11424 | INSULTN RETNR=50 COVRS 42QHE | |
| all | 10 | 02 11807 | STIFF=COSMETIC COVER | |
| all | 11 | 27A012LTKL | LOCK"T"HANDL,L.LTCH&MTGHDW | |
| all | 12 | 15J050AL | POPRIVET 1/8DIA X.328LONG ALUM | |
| all | 13 | 07 70134A | 3" BASE=COVER HANGER BRKT | |

# Drive Assemblies 4

# Drive Chart

M9V4232C,L,R **MMV4232C,L,R MXV4232C,L,R**



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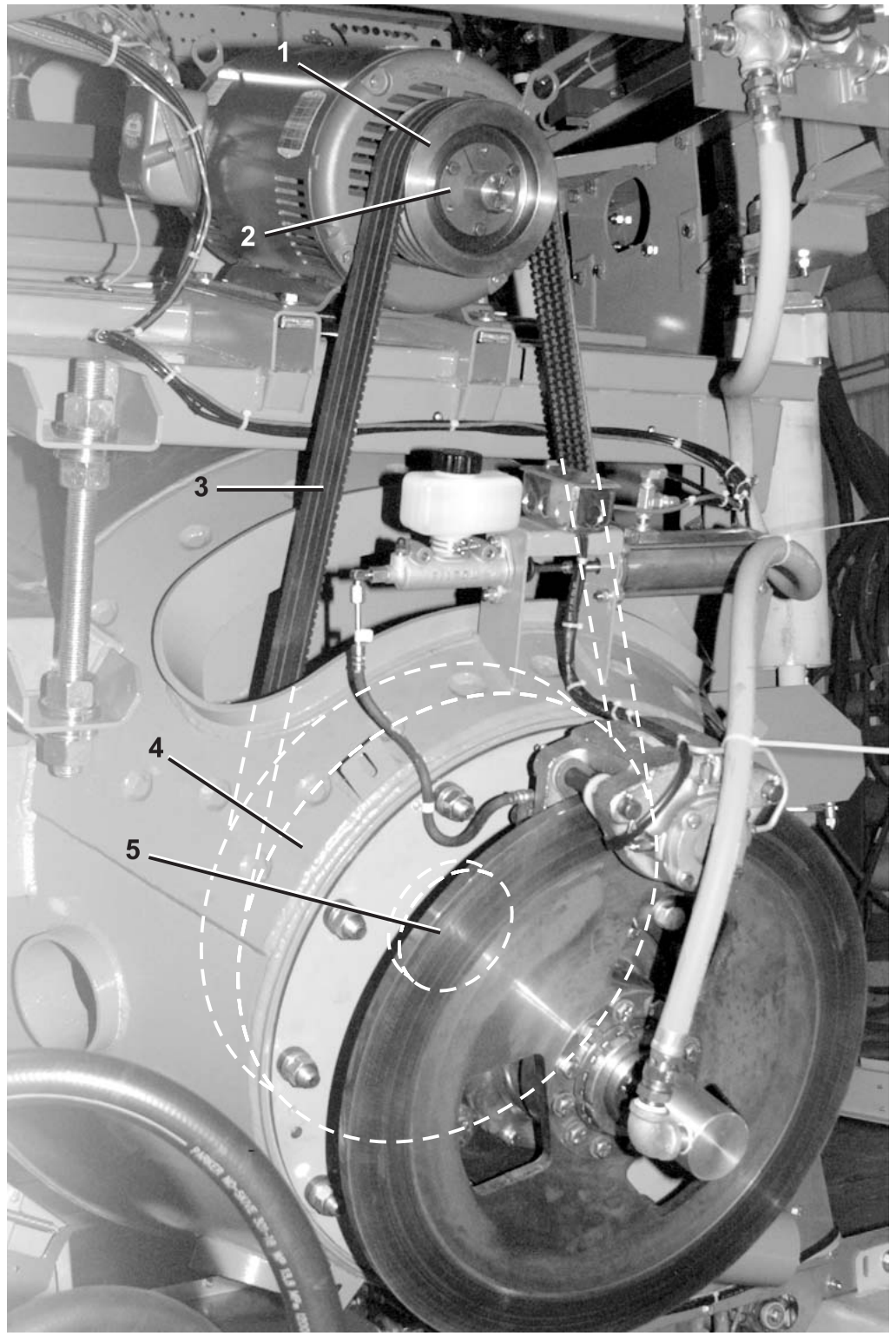


## Parts List—Drive Chart

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ADB16002 | DRIVE BASE ASY 42E7P SINGL MTR | M9V4232C,L,R |
| | B | ADB16003 | DRIVE BASE ASSY 42MXV SM | MMV4232C,L,R<br>MXV4232C,L,R |
| | | | ----------COMPONENTS---------- | |
| A | 1 | 56070B4SK | VPUL 4B7.0/A6.6 (SK) TYPE QD | |
| B | 1 | 56070B4SKD | VPUL 4B7.0/A6.6 (SK)QD DUCTILE | |
| A | 2 | 56Q1MSK | 1+5/8" BUSH VPUL QD TYPE SK | |
| B | 2 | 56Q1RSK | 1+7/8" BUSH VPUL QD TYPE SK | |
| all | 3 | 56VB112WB4 | VBAND RBP112-4 WRAP | |
| A | 4 | X3 16216 | VPUL 4GB 21.65 - MHUB | |
| B | 4 | X3 16216A | VPUL 4GB 21.65-MHUB-DUCTIRON | |
| all | 5 | 56Q5EM | 5+1/4" BUSH VPUL QD TYPE M | |

# Drive Base Assembly

**M7V4232C,L,R  M9V4232C,L,R  MXV4232C**



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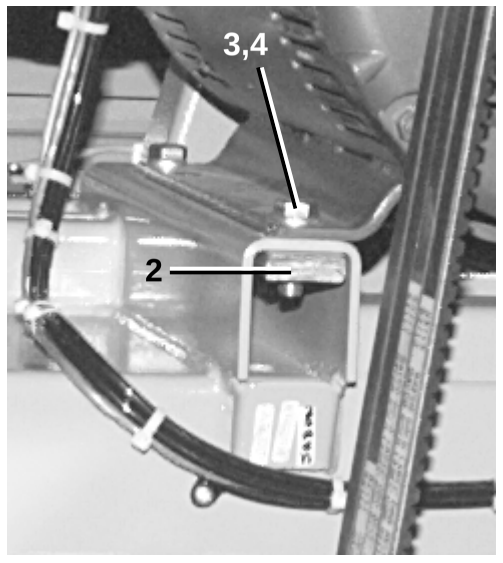
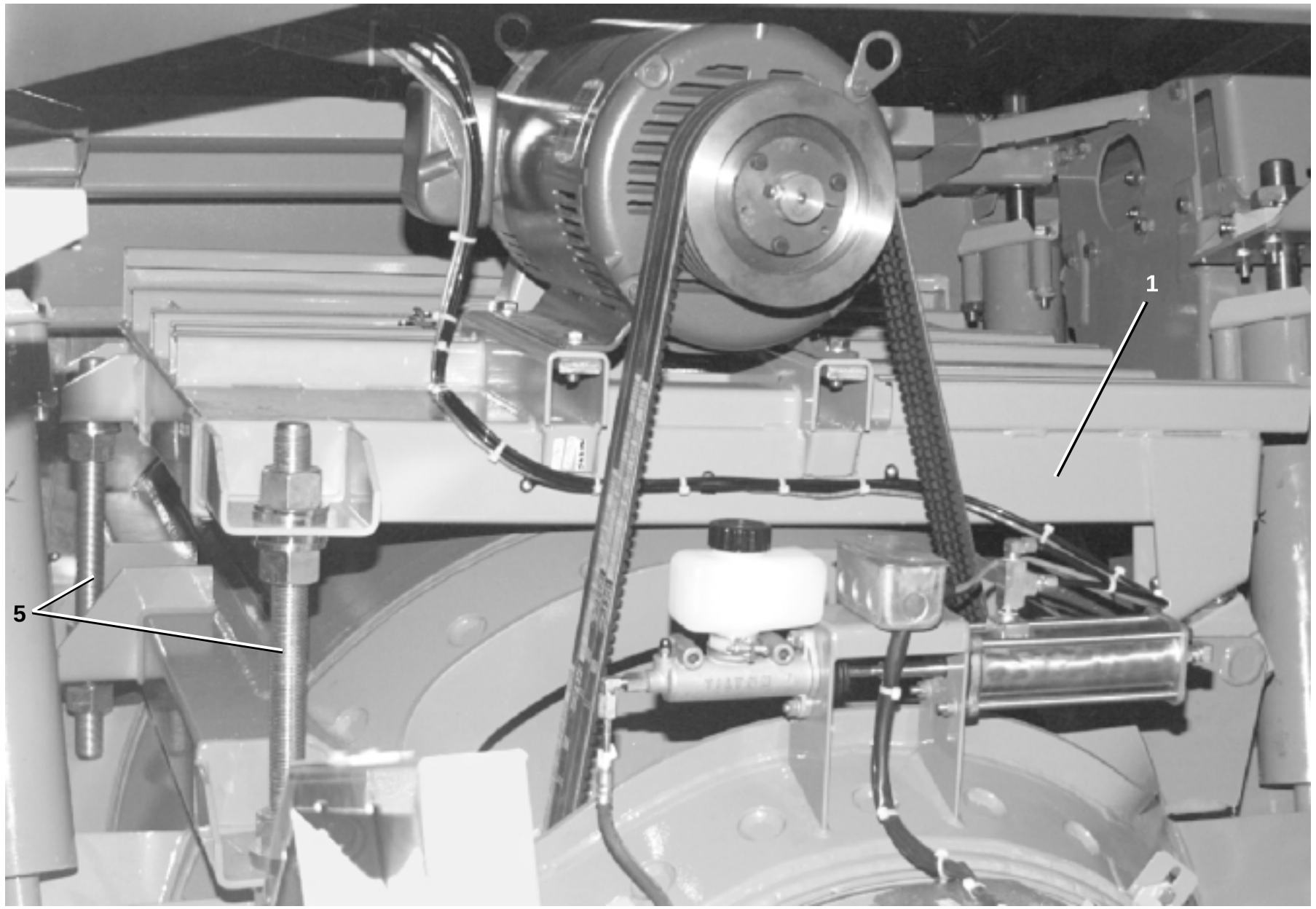
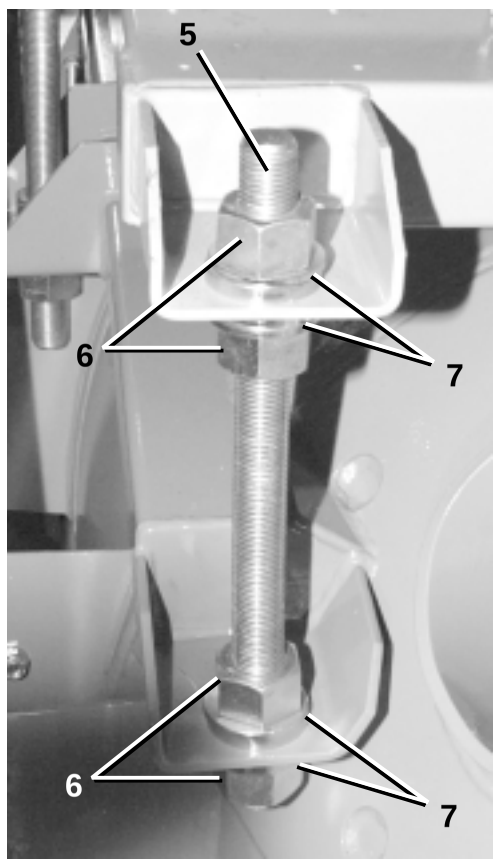
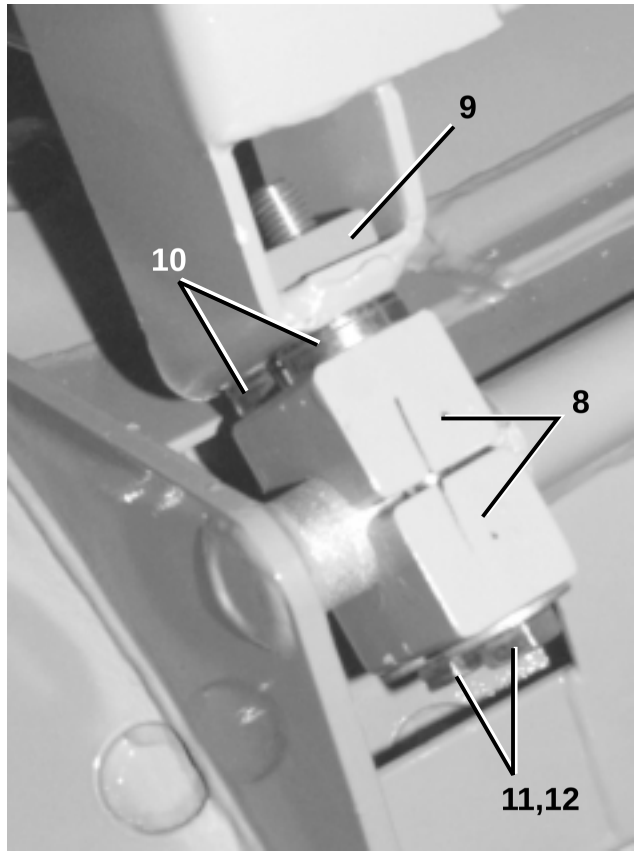



TYPICAL MOTOR INSTALLATION




TYPICAL 2 PLACES




TYPICAL 2 PLACES

# Drive Base Assembly

**M7V4232C,L,R M9V4232C,L,R MXV4232C**



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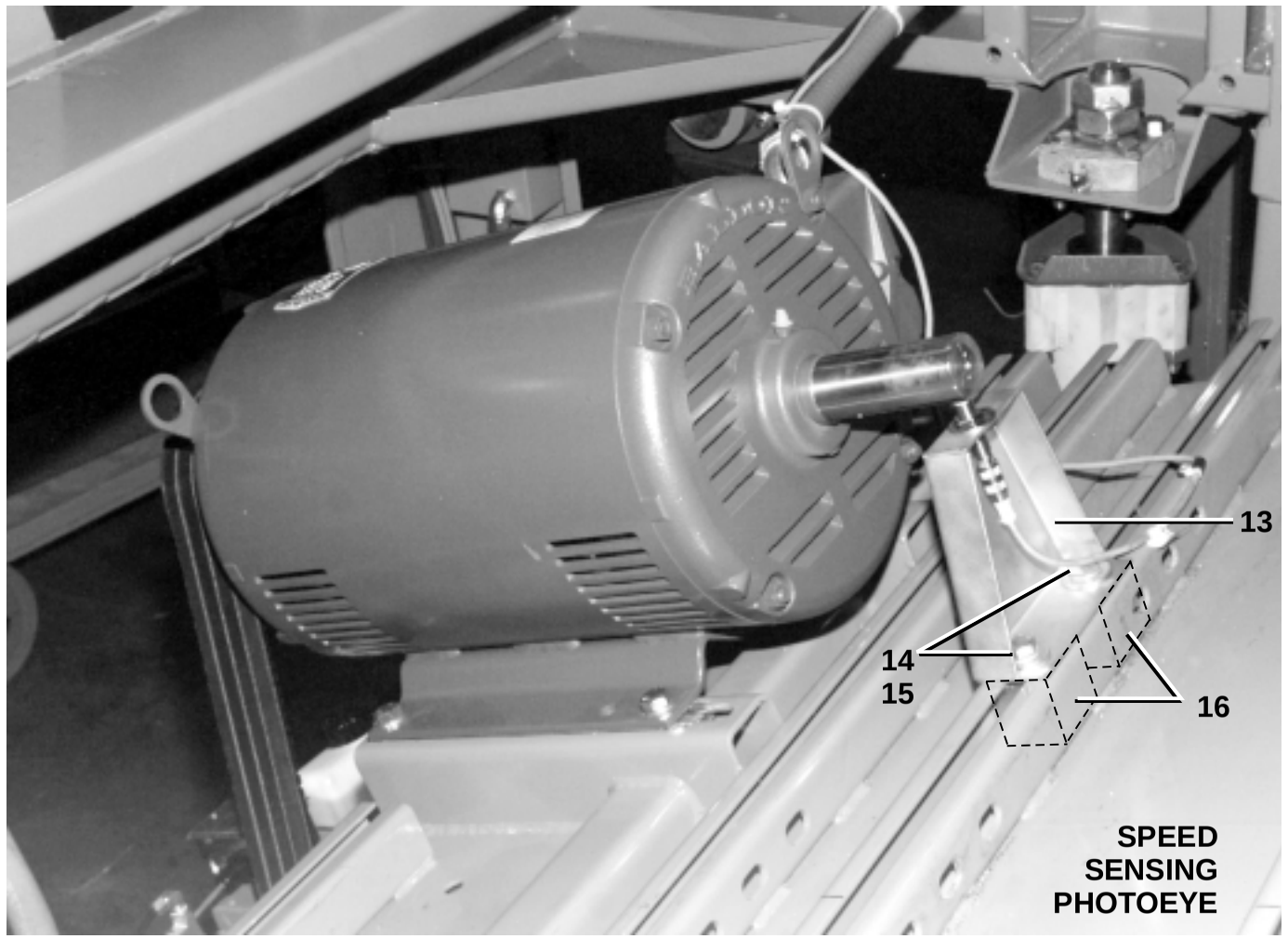



## Parts List—Drive Base Assembly

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ADB16002 | DRIVE BASE ASY 42E7P SINGL MTR | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | W3 16138 | *MTR MNT WLDMT 4232 M7E | |
| all | 2 | 02 16322 | TAP STRIP-MOTOR MTG | |
| all | 3 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 4 | 15K173A | HXCAPSCR 1/2-13UNC2AX1.75 GR5 | |
| all | 5 | 17R125A17K | STUD=DRIVEBASEADJ 1+1/4X17.5 | |
| all | 6 | 15G261 | HVHXNUT 1+1/4-8UNC2B ZINC GR2H | |
| all | 7 | 17W125 | 1+1/4"SPHERICAL WASHER SET | |
| all | 8 | C2 11311B | 2007033 CAST=MOTOR PIVOT CLAMP, 6836F | |
| all | 9 | 03 48138 | TAP STRIP=MOTOR MNT BRKT 48" | |
| all | 10 | 17W050 | SPHERICALWASHER SET 7/8 M/F | |
| all | 11 | 15K227D | HXCPSC 5/8-11X6 GR8 ZNC PLT | |
| all | 12 | 15U314 | FLATWASHER(USS STD) 5/8" ZNC P | |
| all | 13 | 03 16143 | DRIVE MTR PROX BRKT | |
| all | 14 | 15K162 | HXCAPSCR 1/2-13UNC2AX1.5 GR5 P | |
| all | 15 | 15U280 | FL+WASHER(USS STD)1/2 ZNC PL+D | |
| all | 16 | 02 19283 | NUT=1/2-13UNCX1+1/25Q SPEC | |

BIPV7M02 (Published) Book specs- Dates: 20080923 / 20080923 / 20080923 Lang: ENG01 Applic: PV7

# M7V4232x Belt Replacement

This document explains how to replace the drive belt on M7x4232x centrifugal extractors. The other documents referred to in this document can be found in the extractor service manual MAPM7E42BE.

**CAUTION 1: Crush Hazards**—This procedure requires handling heavy components.

- Handle components with suitable lifting equipment.
- Use the safety stands. (See document BIUUUS06.)

## 1. Resources and Equipment Needed

- Torque wrench to measure 727 Ft-Lbs
- Loctite 242 Thread locker

## 2. Set up

1. Set the shell at the horizontal position and install the short safety stands.
2. Lockout/tagout power and shut off main air.
3. Temporarily support the front of the cylinder (basket) within the shell by tightly inserting six wedges in the gap between the shell front and cylinder door ring. Secure the wedges with large C-clamps equally spaced 60 degrees apart all around the opening (see Shell Assembly document BMP940020). The wedges must prevent the cylinder from moving during the procedure.

## 3. Remove Obstructions

1. Disconnect the air supply line to the rotary coupling on the rear of the main shaft. Then separate the rotary coupling from the shaft by unscrewing the pipe that connects it to the shaft (see Drive Chart, document BMP000039).
2. Remove the disc brake and disc (see Disc Brake Installation, document BMP940018).

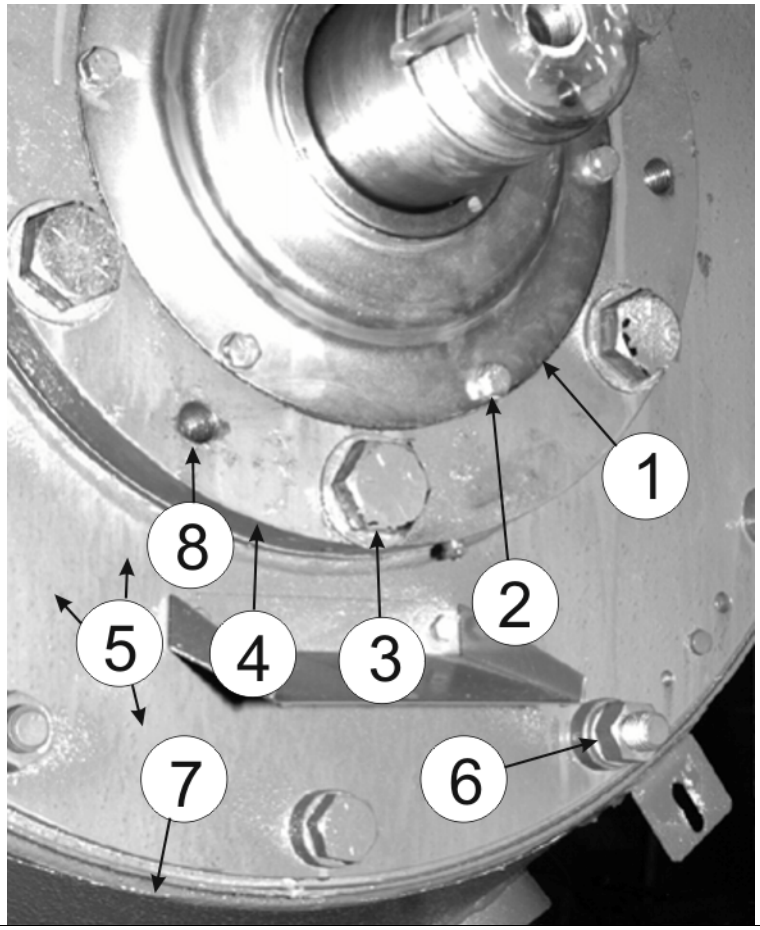
## 4. Remove the Rear Bearing Housing but not the Bearing

Refer to Bearing Assembly & Installation, document BMP940031. Remove the rear bearing housing as follows:

1. Work through the hand holes in the cone to unbolt the rear bearing front seal holder (Item 128).
2. Work through the hand holes in the cone to remove the rear bearing grease line and fittings (Items 130 through 135).
3. Unscrew the six bolts (Figure 1, item 3) from the rear bearing housing (Figure 1, item 4) and the plate attached to the rear of the cone (Figure 1, item 5).
4. Insert two of the mounting bolts from the outside, into the threaded push-off holes (Figure 1, item 8) and push the bearing housing (Figure 1, item 4) from the plate (Figure 1, item 5). The bearing will remain on the shaft.
5. Leave the bearing on the shaft. Cover it with a clean rag to protect it from debris.

**Figure 1: Components Involved in Disassembly**

**View of Cone Rear Plate**




**Legend**

1. Rear bearing seal holder (document BMP940031, item 121 )
2. 3/8" -16 bolt (document BMP940031, item 114)
3. 1"-8 bolt (document BMP940031, item 108)
4. Rear bearing housing (document BMP940031, item 117)
5. Plate attached to the rear of the cone by item 6
6. Do not remove these nuts.
7. Cone ring of shell
8. Threaded push-off holes

## 5. Replace the belt

1. Remove the belt guards on top of the machine.
2. Before lowering the drive base, tape the topmost nuts on the drive base adjustment studs to prevent them from moving (see Drive Base Assembly, document BMP000041).
3. Lower the drive base by loosening and lowering the adjustment nuts.
4. Remove the old belt if it is still in place.
5. Install the new belt.

- Pass the belt through the small gap between the rear bearing (document BMP940031, item 129) and the cone ring plate (Figure 1, item 5) .
- Use care to protect the bearing from debris.

## 6. Reassembly

1. Raise the drive base with the adjustment nuts until the base is again tight against the upper nuts. Provided the upper nuts did not move, the belt will be properly tensioned.
2. Replace all other components in reverse order of removal.

   **Note 1:** When replacing the bearing housing, be sure to apply Loctite 242 thread locker and torque the bolts to 727 Ft-Lbs as specified in note 1 at the top of document BMP940031.

3. Remove the cylinder wedges.
4. Apply power and main air. Remove the safety stands.

— End of BIPV7M02 —

# Belt Guard Installation

## M7V4232C,L,R  M9E4232C,L,R



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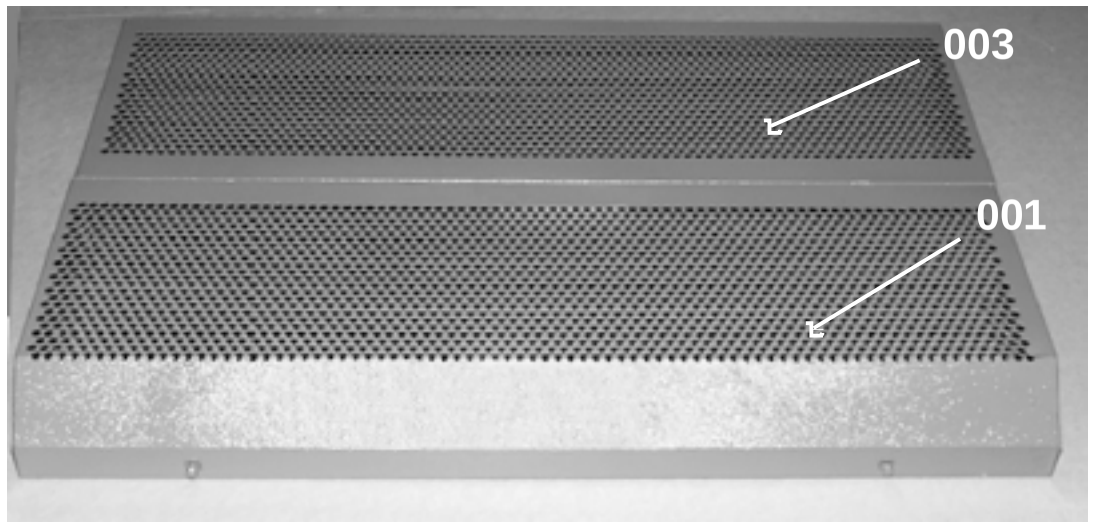


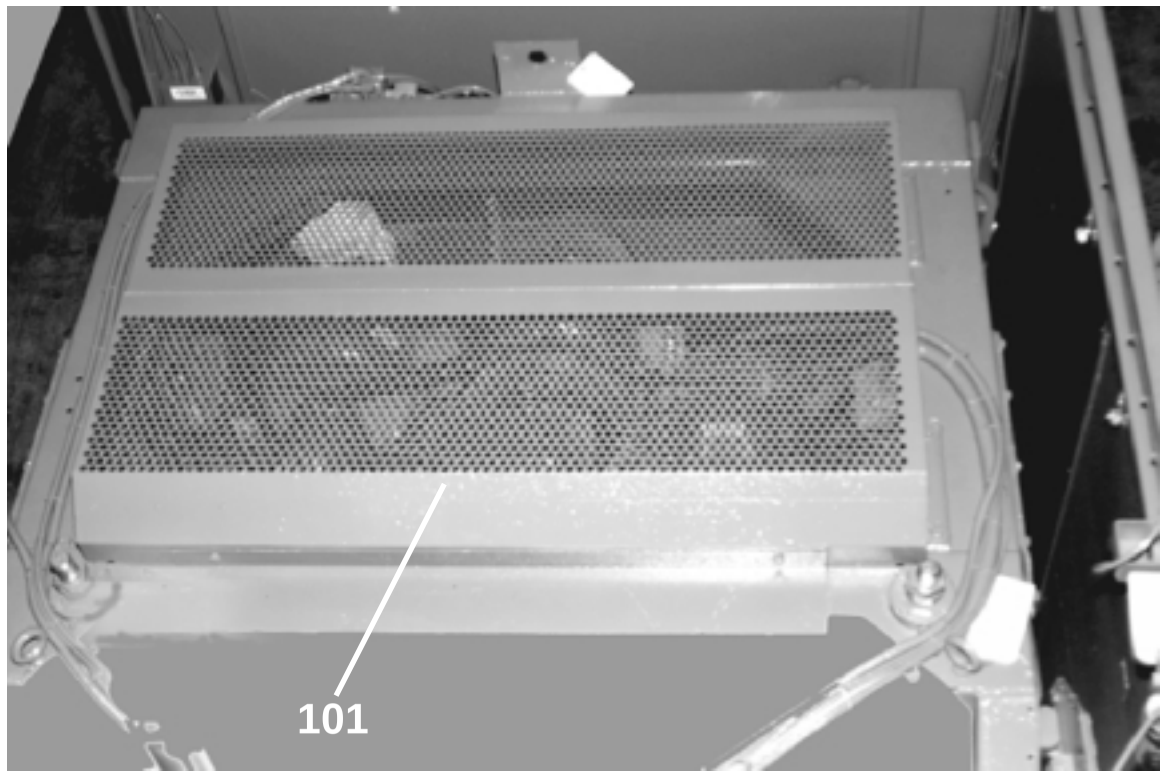


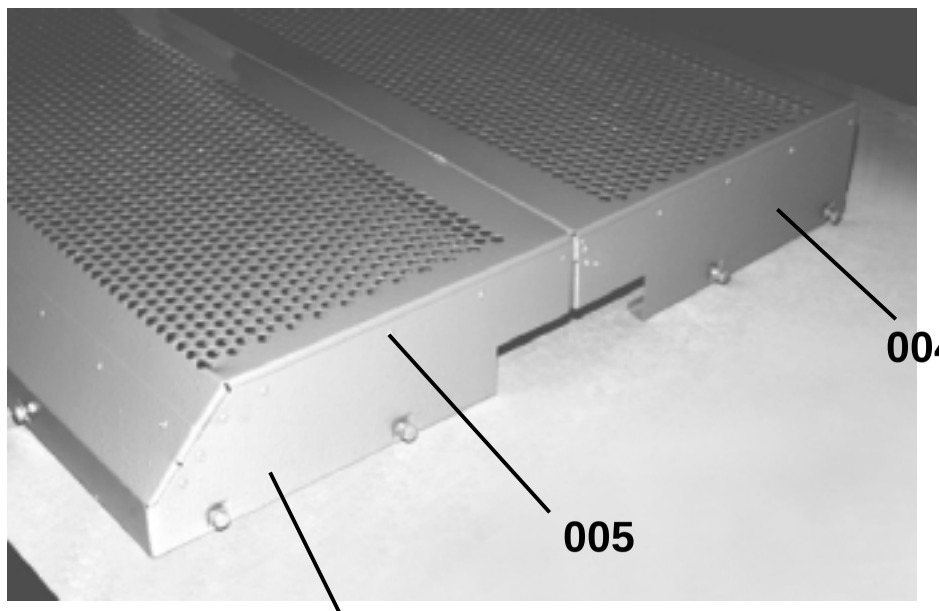


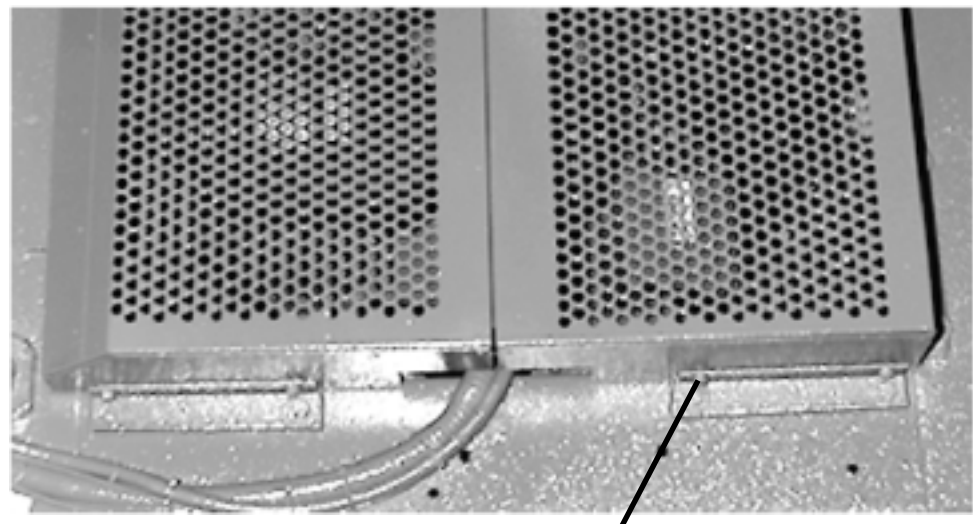

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## Parts List—Belt Guard Installation

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GGS16001 | BELTGUARD INSTLL 42E7P | INSTALLATION |
| | B | AGS16005 | DRIVE ENCL ASSY=4232M7E | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 03 16319 | BLTGD= FRONT TOP 42M7E | |
| all | 2 | 03 16320 | BLTGD= FRONT BOTTOM 42M7E | |
| all | 3 | 03 16321 | BLTGD= REAR TOP 42M7E | |
| all | 4 | 03 16322 | BLTGD=REAR BOTTOM 42M7E | |
| all | 5 | 15J051 | POPRIVET 1/8DIAX.265 LONG S/S | |
| all | 101 | AGS16005 | DRIVE ENCL ASSY=4232M7E | |
| all | 102 | 15K162 | HXCAPSCR 1/2-13UNC2AX1.5 GR5 P | |
| all | 103 | 15U310 | LOKWASHER REGULAR 1/2 SS18-8 | |

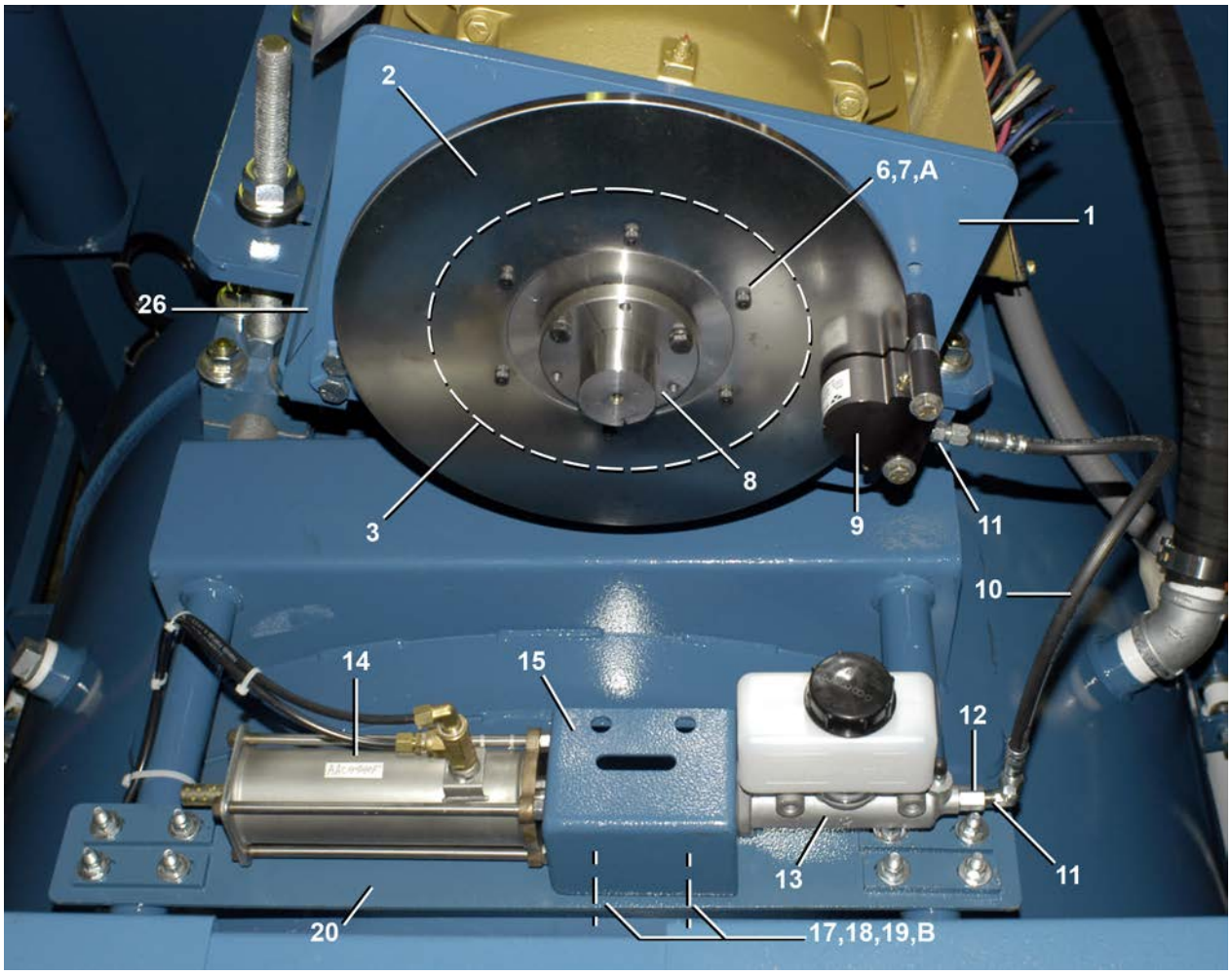
# Brake Components and Installation



**48040F7_, 48040H7_; MXS4232_; MXT4232_**

**Figure 1. Brake Components**

**General View: 48040F7_, 48040H7_; MXS4232_**




**Legend**

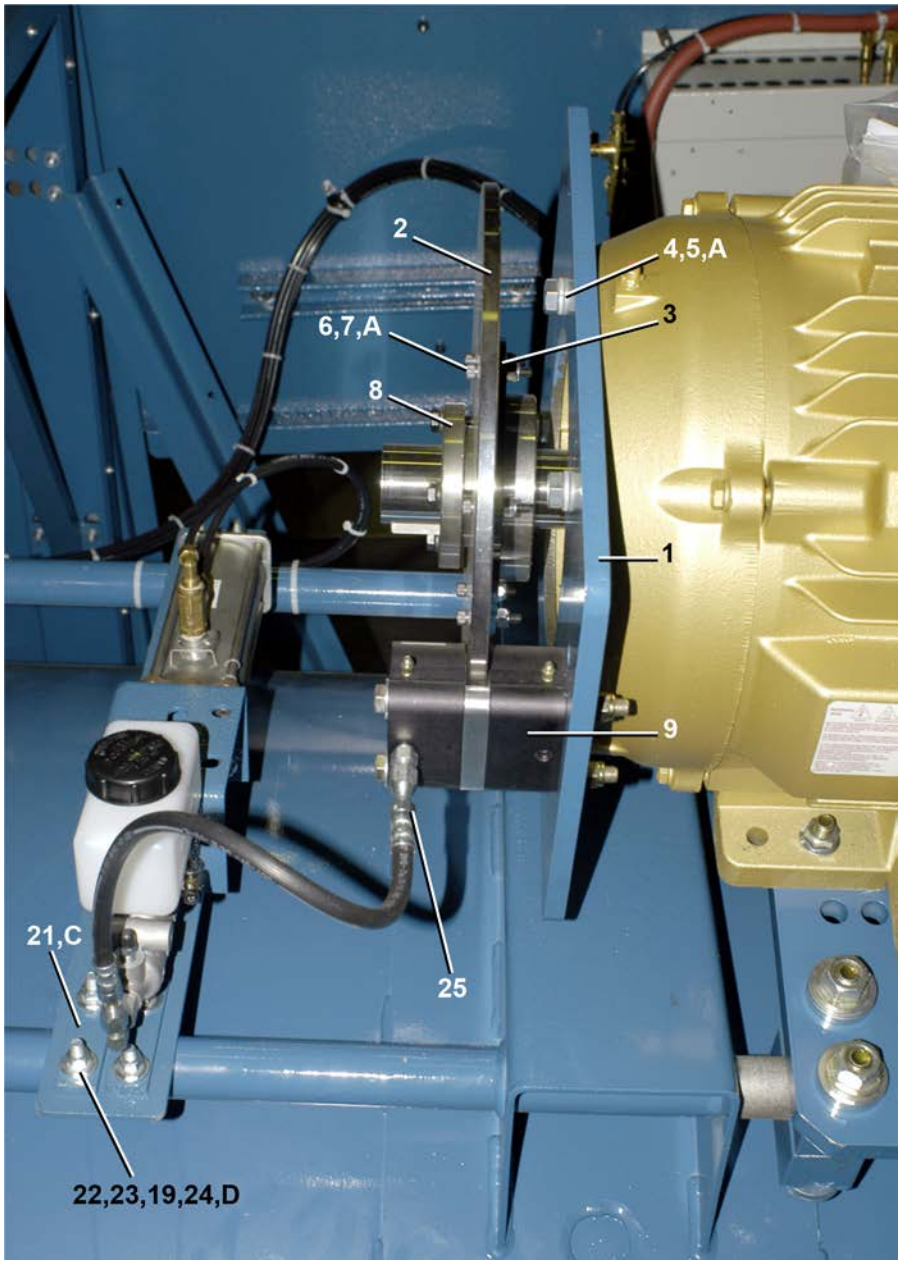
**A . . .** 6 instances
**B . . .** 2 instances

# Brake Components and Installation

**48040F7_, 48040H7_; MXS4232_; MXT4232_**

**Figure 2. Brake Components**

**General View**




**Legend**

**A** . . . 6 instances
**C** . . . 4 instances
**D** . . . 8 instances

# Brake Components and Installation



**48040F7_, 48040H7_; MXS4232_; MXT4232_**

### Table 1. Parts List—Brake Components and Installation

**Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.**

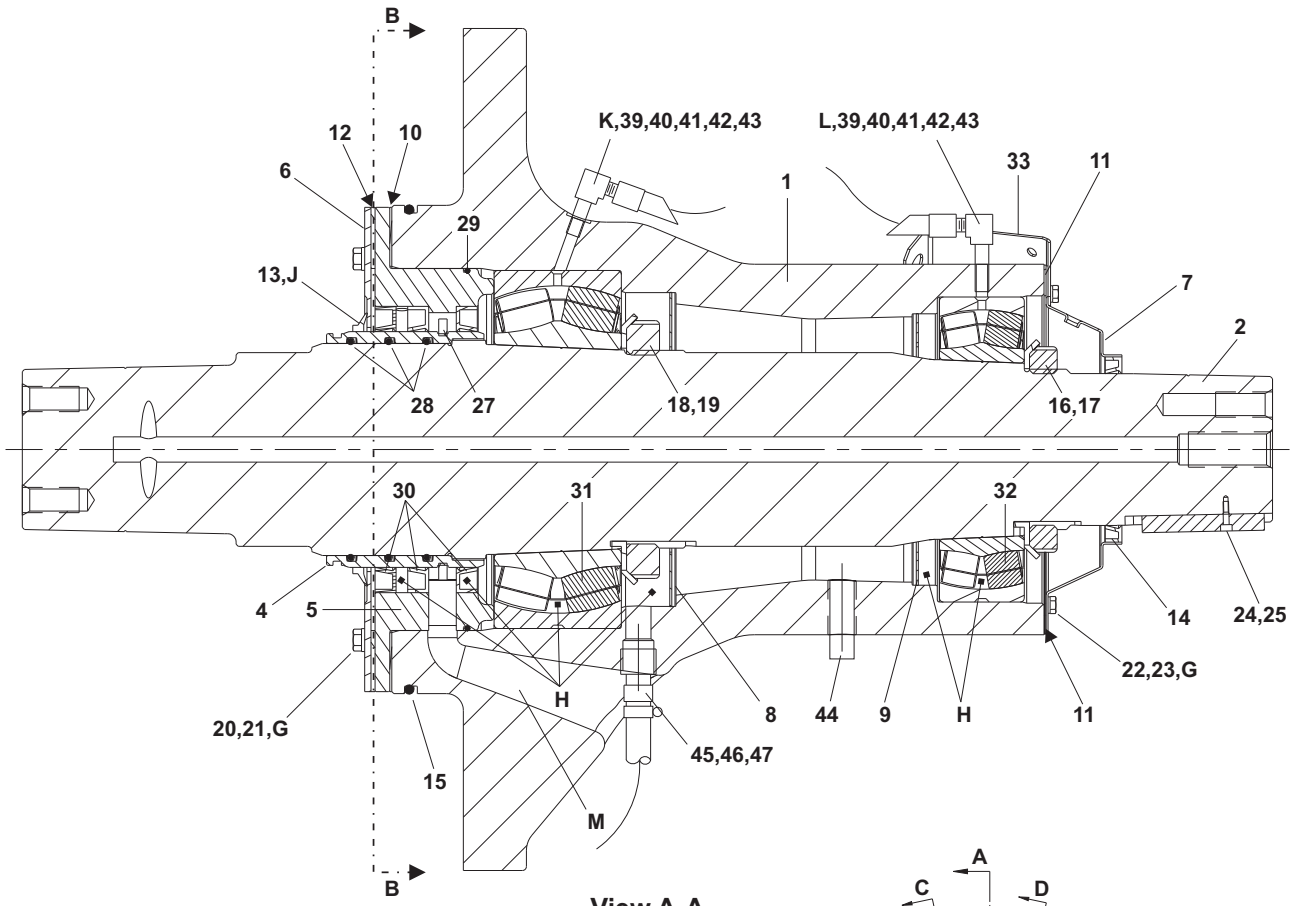
| Used In | Item | Part Number | Description/Nomenclature | Comments |
|---|---|---|---|---|
| | | | Reference Assemblies | |
| | A | ABR4840F | DISC BRAKE ASSY, 4840F | |
| | | | Components | |
| all | 1 | X2 21858 | MACH=BRK CALPR MNT PLT,4840 | |
| all | 2 | X2 21866 | MACH=CALIPER DISK, 4840F | |
| all | 3 | X2 21867 | MACH=CALIPER DISK HUB,4840F | |
| all | 4 | 15K151 | HXCAPSCR 1/2-13UNC2AX1.25 GR5 | |
| all | 5 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 6 | 15K041B | SKCPSCR 1/4-20X1"BLK | |
| all | 7 | 15G166A | HXLOKNUT NYL1/4-20 UNC2A STL/Z | |
| all | 8 | 56Q1RSK | 1+7/8" BUSH VPUL QD TYPE SK | |
| all | 9 | 54KC7974 | CALIPER HYD D/A 3/8 DISC RETRACT | |
| all | 10 | 54KC7961BG | BRAKE HOSE=1/8"X18"OAL # 50612 (FEMXFEM) | |
| all | 11 | 52AY0ER003 | STR.1/4"MJICX1/8"MP#2404-4-2 | |
| all | 12 | 52XY0ER004 | STRADTUN3/16MJX1/8FP#2405-3-2 | |
| all | 13 | 54KMC1125U | MASTER CYL = WILWOOD # 260-3380 | |
| all | 14 | AAC4840F | AIRCYL=BRAKE ASSY, 4840F7 | |
| all | 15 | W3 65238 | *WLMT=MASTER BRAKE CYL BRKT | |
| all | 16 | 02 21943 | BRKT=ADJUST PROX SWT, 4840F | |
| all | 17 | 15K095 | HXCPSCR 3/8-16UNC2AX1 GR5 ZINC | |
| all | 18 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |
| all | 19 | 15G205 | HXNUT 3/8-16UNC2B ZINC GR2 | |
| all | 20 | 02 22417 | 48M7 BRAKE+PROX MNT BRKT | |
| all | 21 | 02 10539 | SPACER FOR PIPE ZINC PLATED | |
| all | 22 | 27A031C | UBOLT 1.25PIPE 5/16-18 ZINC | |
| all | 23 | 15U240 | FLATWASHER(USS STD) 3/8" ZNC P | |
| all | 24 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 25 | 54KC7961BSEAL | SEAL WASHER CONICAL,BRAKE HOSE | |
| all | 26 | 02 21859C | BRAKE TORQUE ARM, 4840 CAST | |

# Bearing Assemblies 5

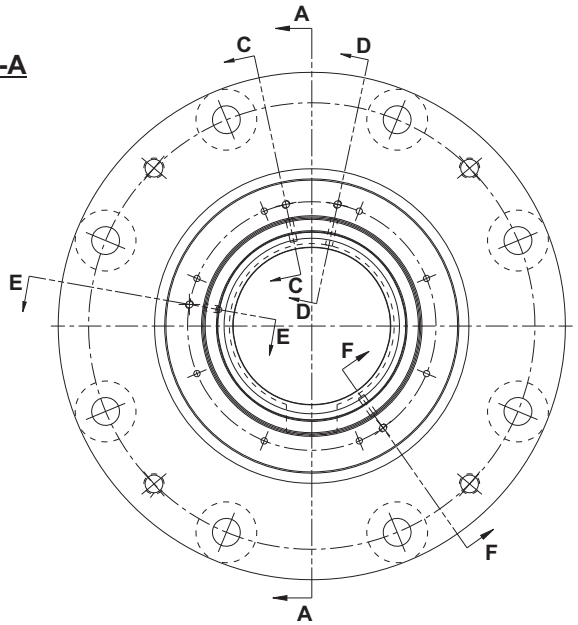
# Bearing Housing

**MXS4232C,L,R; MXT4232C,L,R**

**Figure 1: Bearing housing**




View A-A



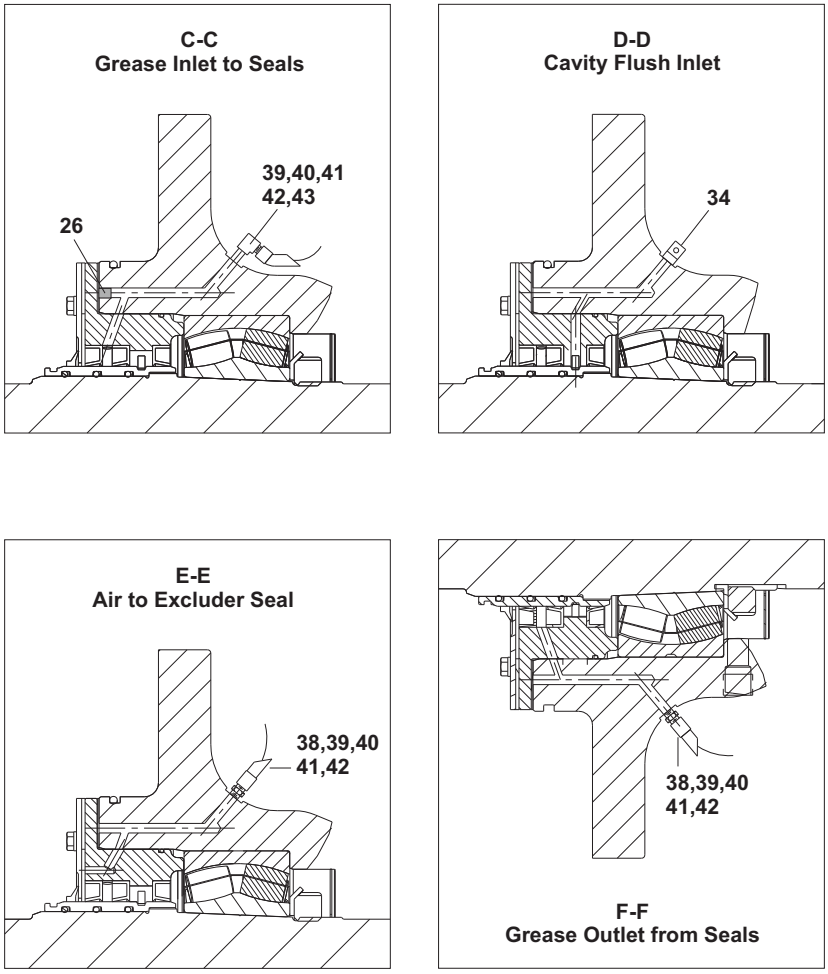

View B-B

**AA. Cross section**
**CC. Grease inlet for the seals**
**DD. Fluid inlet to flush the space between the seals**
**EE. Air inlet to outer seal**
**FF. Grease outlet for seals**
**G. Use Locktite 242.**
**H. Fill this space with grease.**
**J. Outer seal**
**K. Grease inlets for the front bearing**
**L. Grease inlet for the rear Bearing**
**M. Leak-off from seals**

# Bearing Housing

**MXS4232C,L,R**

**Figure 2: Section views**



# Bearing Housing

**MXS4232C,L,R; MXT4232C,L,R**

## Parts List—Bearing Housing

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GBM4232M9S | INSTL=BEARING HOUSING 4232M | MXS4232C,L,R; MXT4232C,L,R |
| | B | ABM4232M9S | ASSY=BRN HOUSING, 4232M9S | |
| | C | ABN4232M9S | ASSY=ABM-HSG&SHFT, 4232M9S | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | X3 17330 | MACH=MAIN BRG HSG, 4232M9/MX | |
| all | 2 | X3 17331 | MACH = MAIN SHAFT 4232M9V | |
| all | 4 | X2 21802 | SHAFT SEAL SLEEVE, 4840F7 | |
| all | 5 | Y3 17332 | MACH=FNT SEAL HLD,FAB,4232M | |
| all | 6 | X2 21804 | PLATE=EXCLUDER SEAL, 4840F7 | |
| all | 7 | 02 21805 | REAR SEAL HOLDER, 4840F7 | |
| all | 8 | 02 21806 | FRONT GREASE SHIELD, 4840F7 | |
| all | 9 | 03 17335 | REAR GREASE SHIELD, 42M | |
| all | 10 | 02 21810 | GASKET=FRNT SEAL HLDR,4840F7 | |
| all | 11 | 02 21811 | GASKET=REAR SEAL HLDR,4840F7 | |
| all | 12 | 02 21812 | GASKET=EXCLUDER SEAL, 4840F7 | |
| all | 13 | 24S146 | SEAL 7.0X8.0X.437 TYPE SSW NIT | |
| all | 14 | 24S114 | SEAL 4.5X5.5X.50 JM# 9170 LUP | |
| all | 15 | 60C190 | ORING 14.0ID 1/4CS BUNA70-457 | |
| all | 16 | 56AHN24 | AN24 BEARING LOCKNUT | |
| all | 17 | 56AHW124 | TW124 BEARING LOCKWASHER | |
| all | 18 | 56AHW30 | W30 BEARING LOCKWASHER | |
| all | 19 | 56AHN30 | AN30 BEARING LOCKNUT | |
| all | 20 | 15K112 | HXCAPSCR 3/8-16X1+1/2 SS18-8 | |
| all | 21 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 22 | 15K039 | HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z | |
| all | 23 | 15U180 | LOCKWASHER MEDIUM 1/4 ZINCPL | |
| all | 24 | X2 21816 | MACH=PULLEY KEY, 4840F | |
| all | 25 | 15N091 | PANHDMACHSCR 8/32UNC2X1/2 S/S | |
| all | 26 | 5SP0CBEHS | NPT PLUG 1/8 HXCTRSNK BRASS | |
| all | 27 | 02 21817 | SLINGER=BRG FRNT SEAL,4840F | |
| all | 28 | 60C160DB | ORING 6.25ID3/16CS BUNA70 -362 | |
| all | 29 | 60C275 | ORING 10.5ID 1/8CS BUN70-275 | |
| all | 30 | 24S148 | SEAL 7.0X8.5X.625#07009304LUPN | |
| all | 31 | 56S23230T | SPHEROLBRG SKF#23230CCK/C3W33 | |

# Bearing Housing

**MXS4232C,L,R; MXT4232C,L,R**

## Parts List—Bearing Housing

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 32 | 56S22226T | SPHEROLBRG SKF#22226 EK/C3 | |
| all | 33 | 02 04456 | PULLEY PHOTOEYE BRKT, 6836E | |
| all | 34 | 5SP0CFESSV | NPTPLUG1/8SQSLDBLKSTL LVENT125 | |
| all | 35 | 20C003A | ADHESIVE BLK MAX 1OZ LOC#38050 | |
| all | 36 | 5N0C01KG42 | NPT NIP 1/8X1.5 TBE GALSTL S40 | |
| all | 37 | 5SL0CBEA | NPTELB 90DEG 1/8 BRASS 125# | |
| all | 38 | 53A005B | BODYMALCON1/4X1/8COMP #B68A-4A | |
| all | 39 | 53A501 | TUBE INSERT .163"OD #63PT-4-40 | |
| all | 40 | 53A500 | SLEEVE DELRIN 1/4"OD#60PT-4 | |
| all | 41 | 53A059A | NUT 1/4"BR.HOLYOKE AND #61A-4 | |
| all | 42 | 60E004TC | TUBING NYL(NAT)1/4"ODX.17ID | |
| all | 43 | 53A031B | BODY-EL90MALE.25X1/8 #269C-42B | |
| all | 44 | 5SP0KGFSS | NPT PLUG 1/2 SOSOLID GALSTL | |
| all | 45 | 51E511 | HOSESTEM BRASS 3/4MP X HOSEID | |
| all | 46 | 27A044S | HOSECLAMP 11/16-1.25SSCR#64012 | |
| all | 47 | 60E008A | TUBINGNYLREINF.75"IDX1.025"OD | |

# Cylinders and Cotton Mod Piping

**M9V4232C/L/R, MXV4232C/L/R, MMV4232C/L/R  M9S4232C/L/R, MXS4232C/L/R, MMS4232C/L/R  M9V4840C/L/R**



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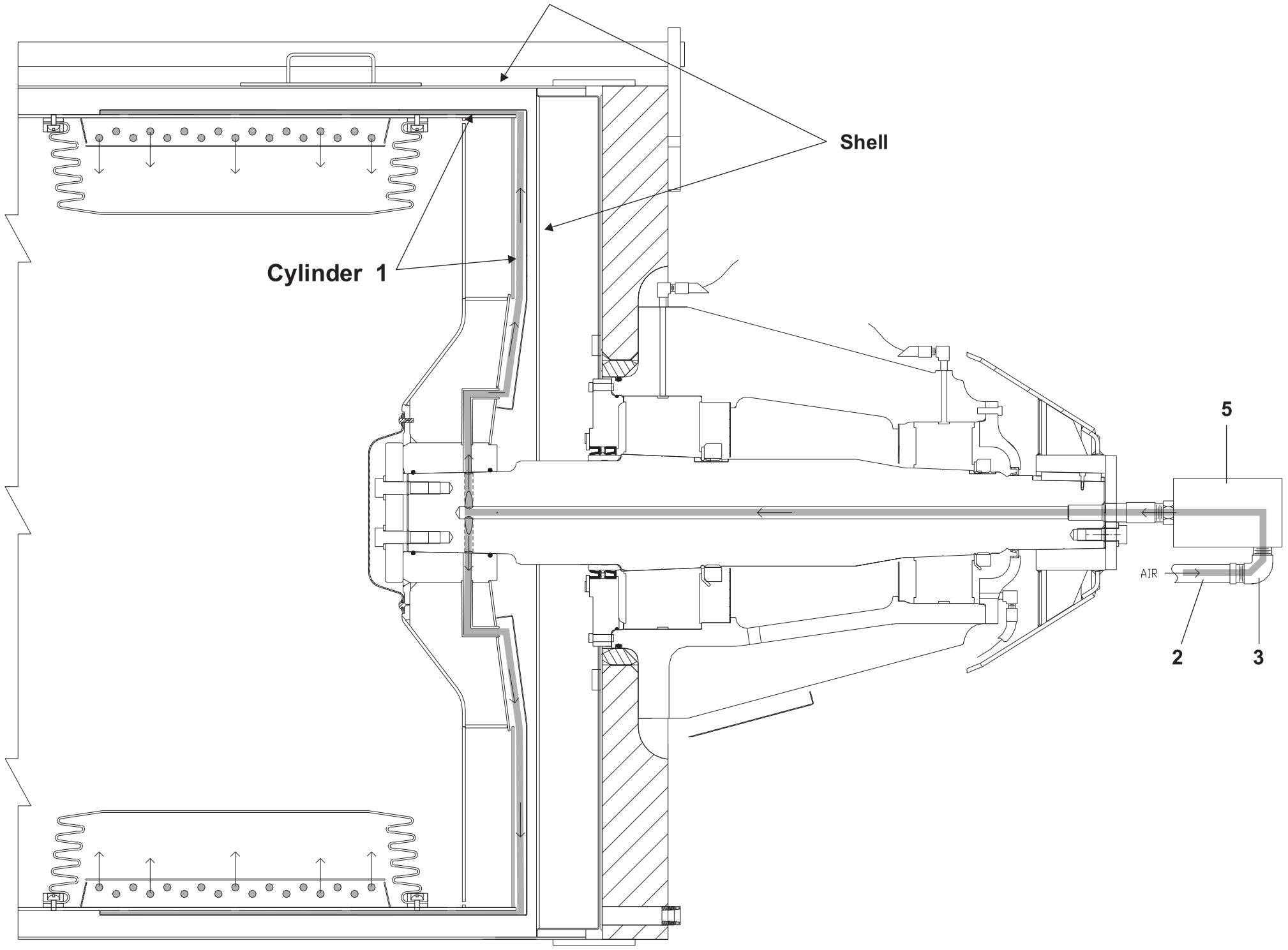
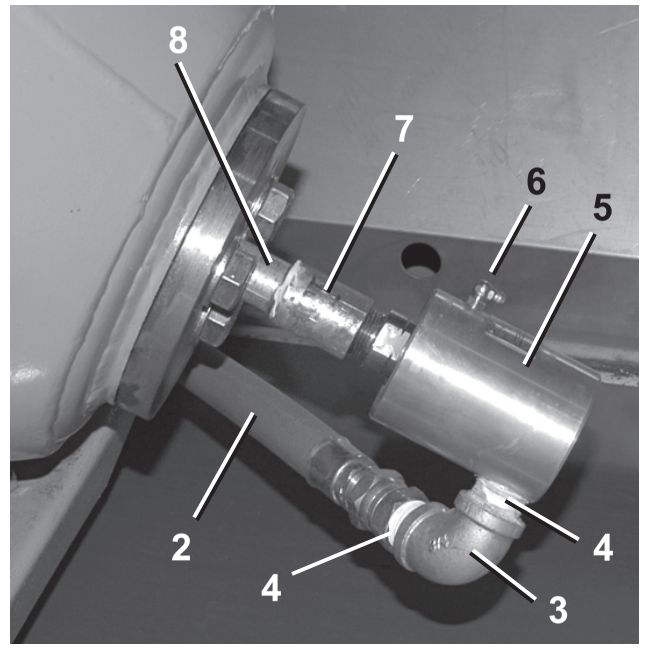



Inflatable rib assembly (See BMP110048.)




Air through bearing to cylinder ribs

# Cylinders and Cotton Mod Piping

**M9V4232C/L/R, MXV4232C/L/R, MMV4232C/L/R  M9S4232C/L/R, MXS4232C/L/R, MMS4232C/L/R  M9V4840C/L/R**



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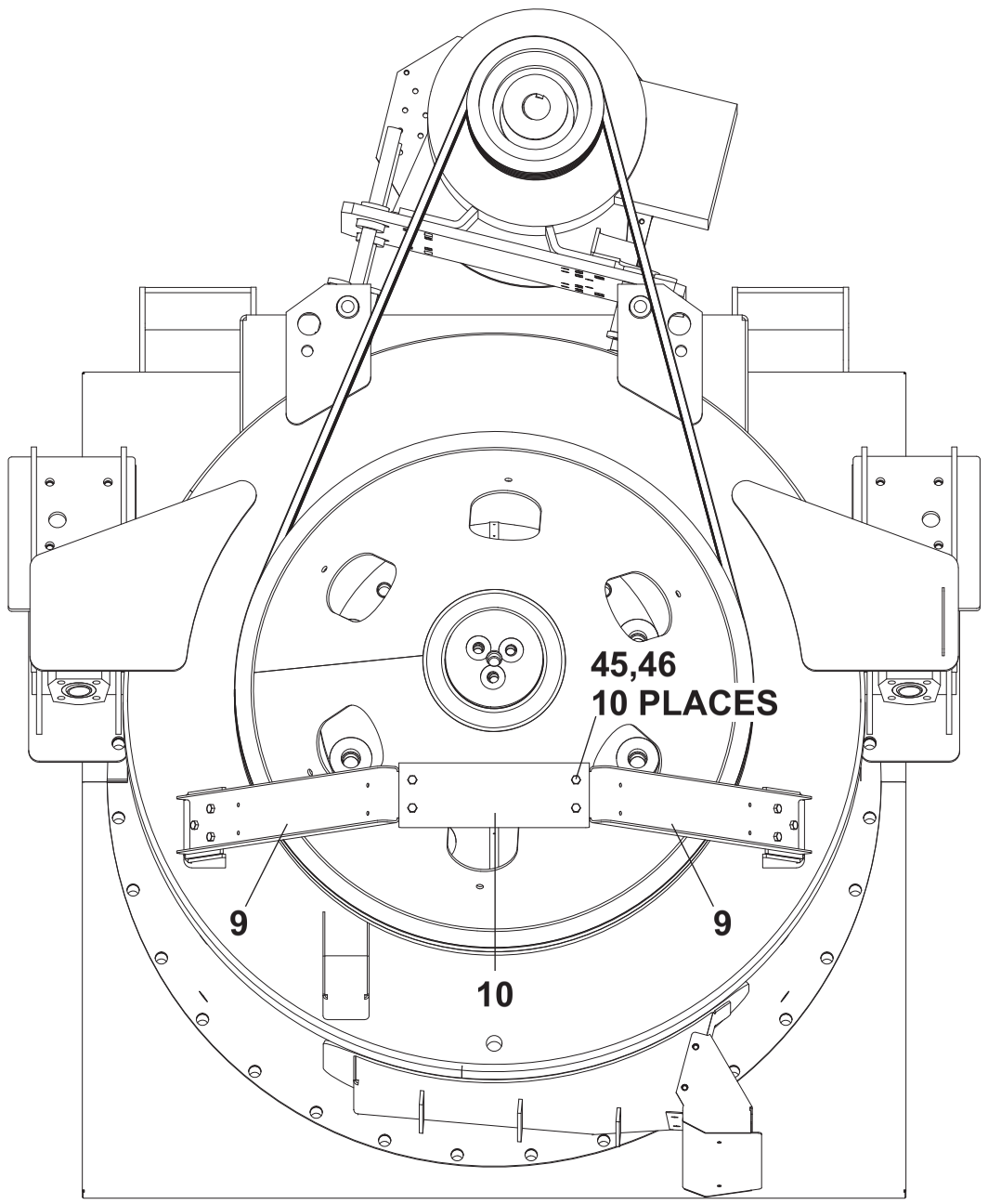


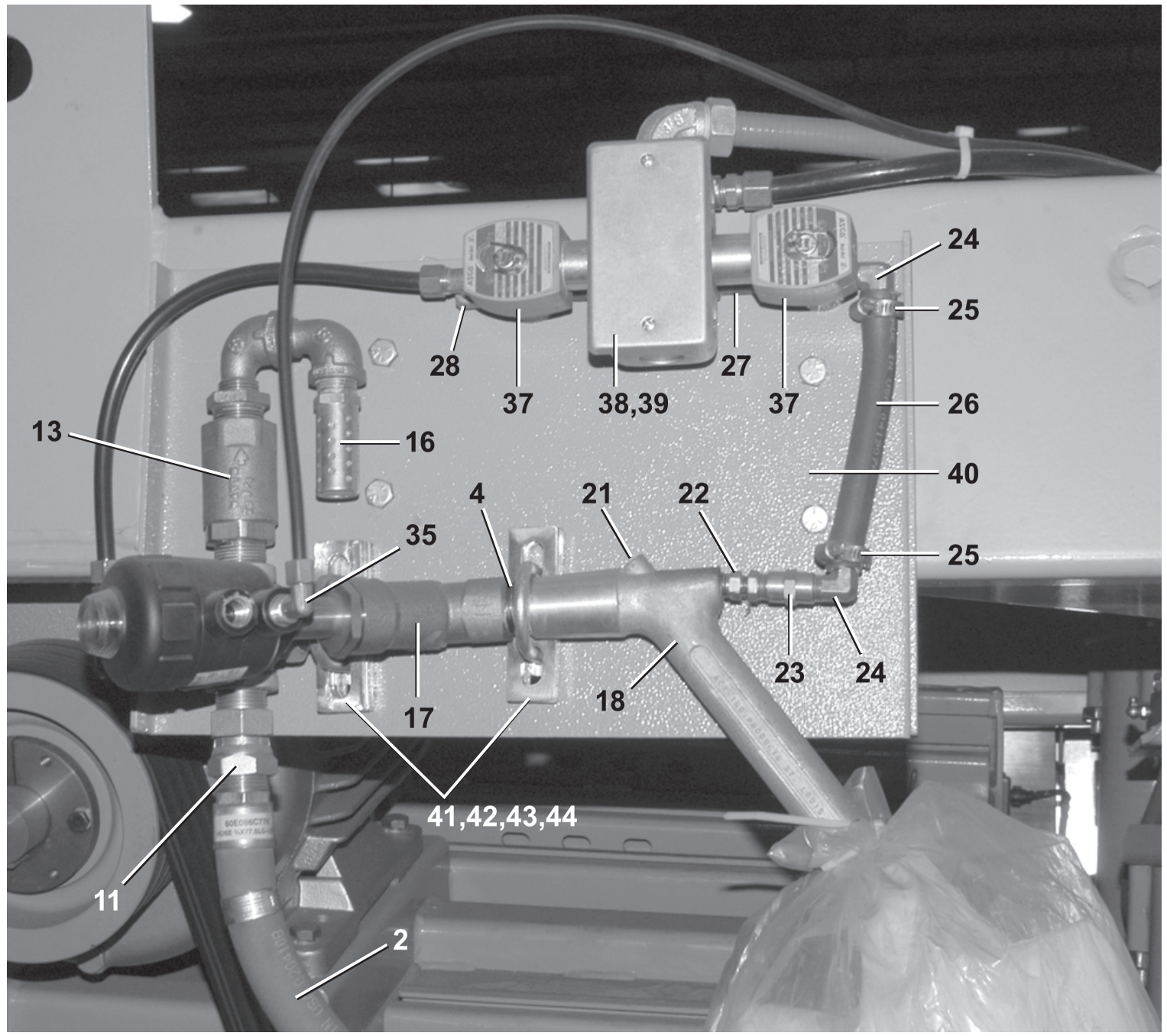


**Cotton Mod Piping**

# Cylinders and Cotton Mod Piping

**M9V4232C/L/R, MXV4232C/L/R, MMV4232C/L/R  M9S4232C/L/R, MXS4232C/L/R, MMS4232C/L/R  M9V4840C/L/R**



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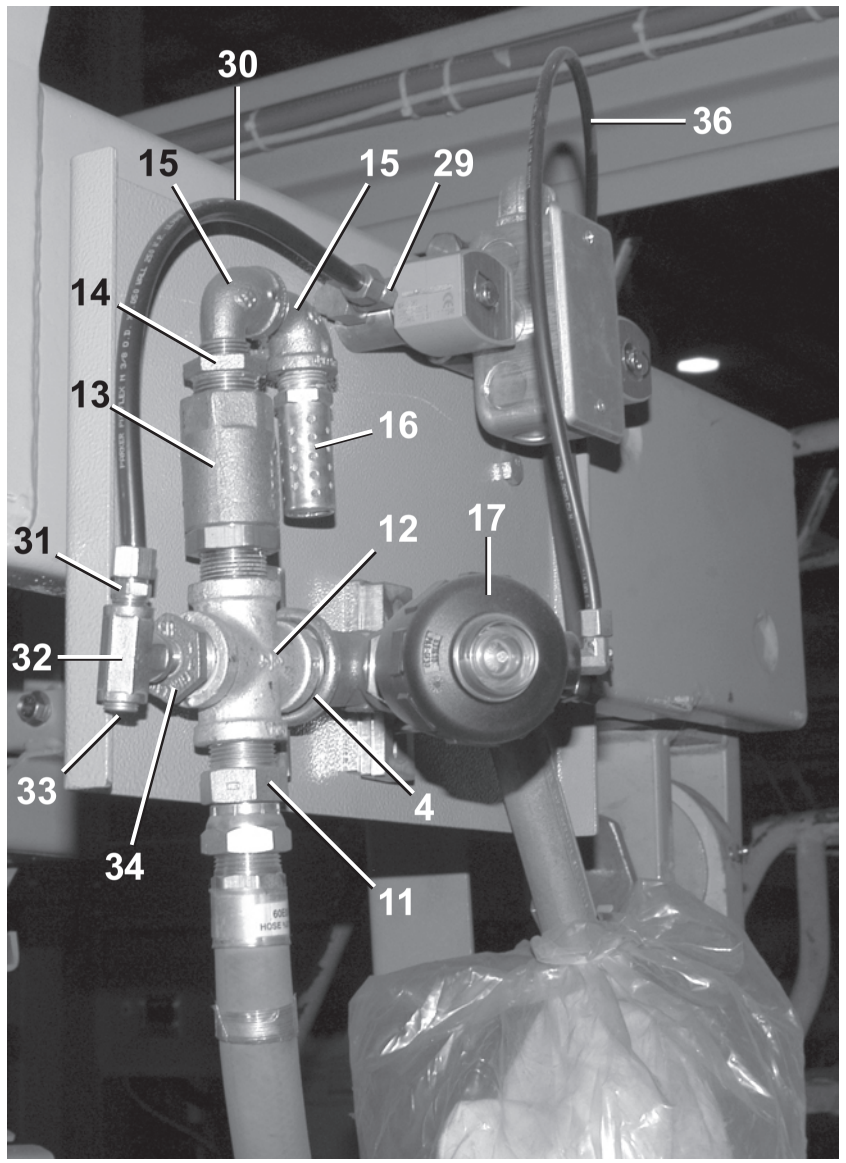
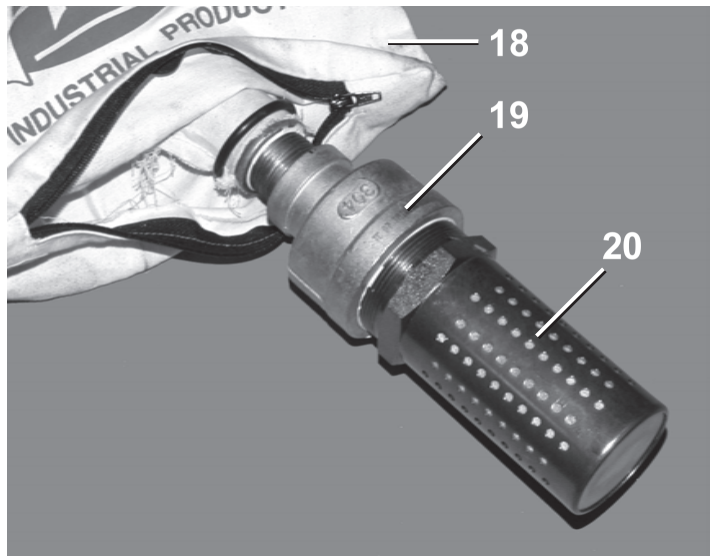
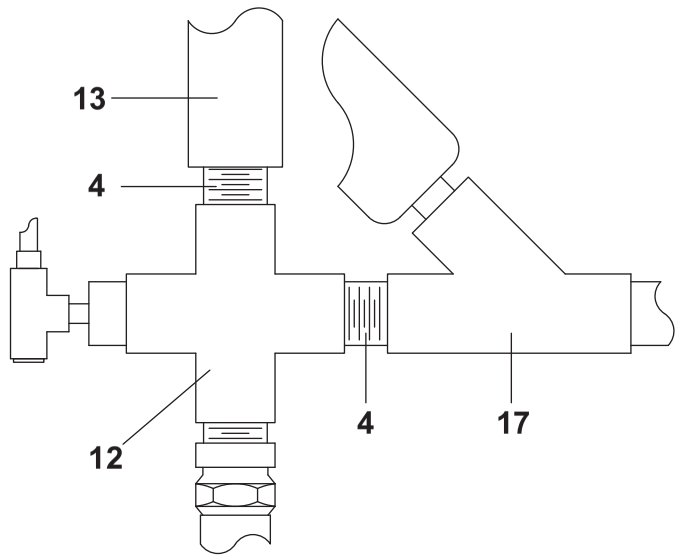



Cotton Mod Piping




Vacuum and muffler




Detail: Cross tee

## Parts List—Cylinders and Cotton Mod Piping

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------REFERENCE ASSEMBLIES---------- | |
| | A | ACM16001 | COTTON MOD PIPING ASSY | M9V4232, MXV4232<br>M9S4232, MXS4232<br>MMV4232, MMS4232 |
| | B | ACM17002 | CYLINDER BELT LINER ASSY-4840M | M9V4840 |
| | | | ----------COMPONENTS---------- | |
| all | 1 | ACA42CTM9E | *7GA CYL COTTON MOD 4232M9E | M9E4232 COT CYLINDER |
| all | 1 | ACA4232C01 | ASSY=7GA CYLINDER COT MOD, 4232M9/MX | M9S/MXS4232 COT CYL. |
| all | 1 | ACA42TFMXV | 7GA CYL TEFLON 4232MXV COT | MXV4232 COT TEFLON |
| all | 1 | ACA42TFMMV | ASSY=CYL COT TEFLON 4232MMV | MMV4232 COT CYLINDER |
| all | 1 | ACA4232MV1 | ASSY=7GA CYL TEF COT MOD, 4232MMS | MMS4232 COT TEFLON |
| all | 1 | ACA4840COT | CYL ASSY COTTON 4840M | M9V4840 COT CYLINDER |
| A | 2 | 60E086C77K | WATERHOSE=.75"X77.5" LG + 2 EN | |
| B | 2 | 60E086C106 | HOSE ASSY=3/4"X106"LG+ENDS | |
| all | 3 | 5SL0PNFA | NPTELB 90DEG 3/4 GALMAL 150# | |
| all | 4 | 5N0PCLSG42 | NPT NIP 3/4XCLS TBE GALSTL S40 | |
| all | 5 | 24S075 | ROTUNION 3/4" | |
| all | 6 | 54M021 | GRSFIT 1/8PIPE X 1/4STR 1607-B | |
| all | 7 | 5SCC0PNF | NPT COUP 3/4 GALMAL 150# | |
| all | 8 | 5N0P03AG42 | NPT NIP 3/4X3 TBE GALSTL SK40 | |
| A | 9 | 03 17059 | 4840M AIR HOSE BAR | |
| B | 10 | 03 17039 | 4840M AIR SUPPORT BRKT | |
| all | 11 | 51X019 | UNIONSTRADT 3/4"#0107-12-12 | |
| all | 12 | 5SX0PNF | NPT CROSS 3/4" GALMAL 150# | |
| all | 13 | 96D046 | CK VAL 3/4"W/S | |
| all | 14 | 5SB0P0KBEO | NPTHEXBUSH 3/4X1/2 BRASS 125# | |
| all | 15 | 5SL0KBEC | NPTELB 90DEGSTRT 1/2 BRASS 125 | |
| all | 16 | 27A005B | MUFFLER 1/2" | |
| all | 17 | 96D0009E | 3/4"NPTBRZ N/C STEAMVAL ANGBOD | |
| all | 18 | X3 16201T | AIR VAC #80-201 TAPPED ENDS | |
| all | 19 | 5SR2A1ASF | NPT RED 2X1 SS304 150# | |
| all | 20 | 27A005C | MUFFLER 1" | |

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## Parts List—Cylinders and Cotton Mod Piping

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 21 | 51T020 | STRAINER 1/4 AND.BRASS#234S-L | |
| all | 22 | 5SB0E0CBEO | NPTHEXBUSH 1/4X1/8 BRASS 125# | |
| all | 23 | 5SCC0EBE | NPT COUP 1/4 BRASS 150#PSI W/HEX | |
| all | 24 | 51E504EB | ELB HOSESTEM 3/8HX1/4NPT BRASS | |
| all | 25 | 27A040 | HOSECLAMP 7/16-25/32SS W/SCREW | |
| all | 26 | 6.00E+78 | HOSE AIR-WATER 3/8"#7134-381 | |
| all | 27 | 5N0E02ABE2 | NPT NIP 1/4X2TBE BRASS 125# | |
| all | 28 | 5SL0EBEC | NPTELB 90DEG STRT 1/4 BRASS125 | |
| all | 29 | 53A043G | EL90 3/8X1/4COMP.AND#69A-6B | |
| all | 30 | 60E005B | TUBING NYL.3/8"OD X.275"ID | |
| all | 31 | 53A043A | BULKHDUNION 3/8"COMP.BODY ONLY | |
| all | 32 | 5S0EBEA0G | NPT TEE 1/4X1/4X3/8 BRASS 125# | |
| all | 33 | 51P013 | PLUG HXCNTRSUNK 1/4"BRASS | |
| all | 34 | 5SB0P0EBEO | HEXBUSH 3/4X1/4 BRASS 125# | |
| all | 35 | 53A031B | BODY-EL90MALE.25X1/8 | |
| all | 36 | 60E004TE | 1/4"OD X.170"ID NYL(BLK)TUBING | |
| all | 37 | 96TBC2BA37 | 1/4" N/C 2WAY 120V50/60C VALVE | |
| all | 38 | 12H050D | HANDYBOX 4X2+1/8 X 2+1/8 | |
| all | 39 | 12H095 | HANDY BOX COVER 4+2+1/8 | |
| all | 40 | 03 16353 | AIR SUCT CONTROL BRKT | |
| all | 41 | 27A031B | UBOLT 1"PIPE 5/16-18X3 5/8LG | |
| all | 42 | 15U210 | LOKWASHER MEDIUM 5/16 ZINCPL | |
| all | 43 | 15G185 | HXNUT 5/16-18UNC2B SAE ZINC GR | |
| all | 44 | 02 10539S | SPACER PIPE DAS | |
| all | 45 | 15K146 | HEX CAP SCR 1/2-13 UNC2 X 1 SS | |
| all | 46 | 15G225H | HEXFLGNUT 1/2-13 SERRATED 18-8 | |

# Inflatable Rib Assembly
## MXS4232, M9V4232, M9V4840, M9T4840



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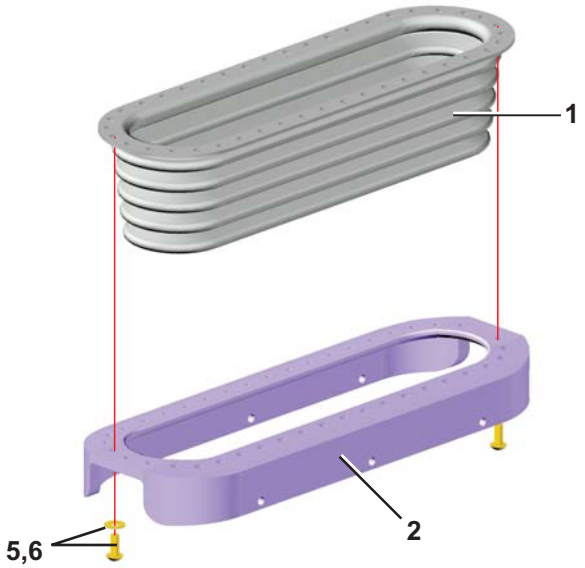
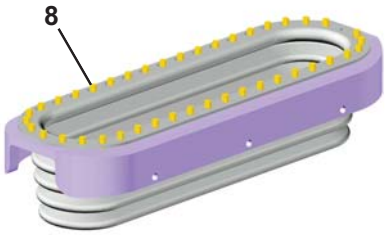
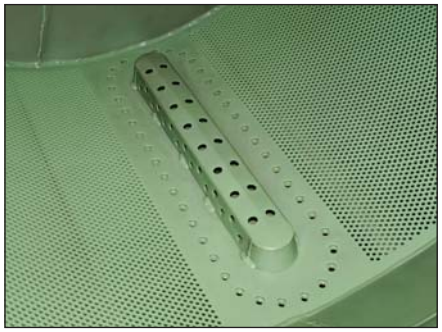


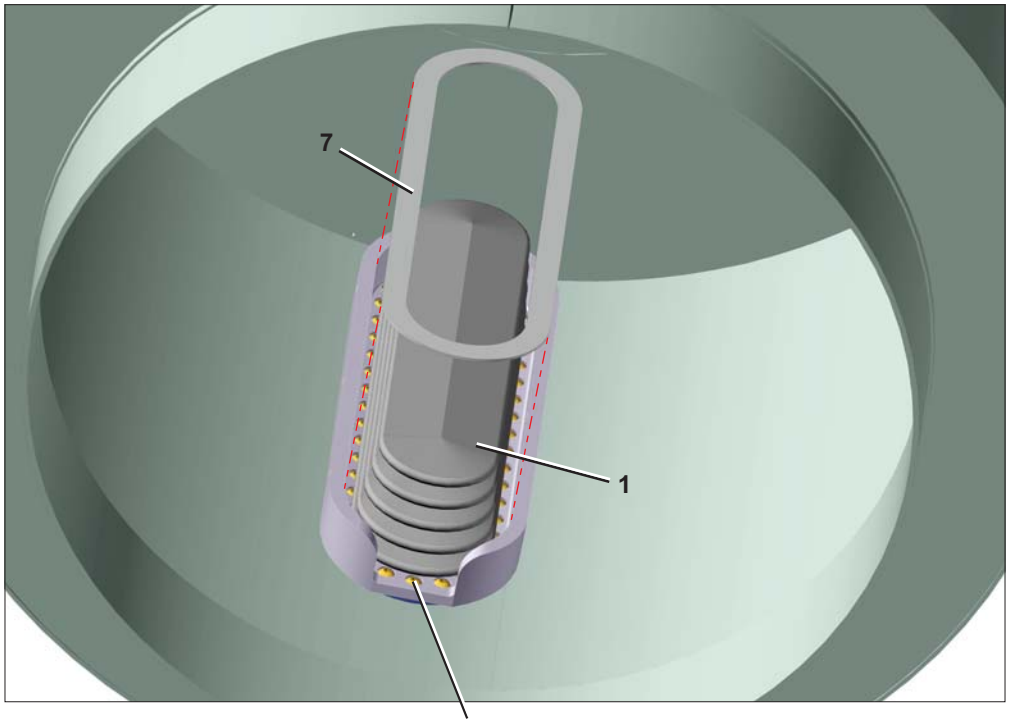

Pre-assemble the inflatable ribs, uhmw trays, and the gaskets (2 assemblies). Insert all 82 bolts (item 5).

Apply thread locker, item 8, to the ends of the bolts.



Cylinder with Cotton Modifications




Install the inflatable rib assemblies to the cylinder. Tighten the bolts to 10 ft-lbs of torque. Cover the bolts with EPDM gasket (item 7) and position it under the inflatable rib (item 1).

# Inflatable Rib Assembly

## MXS4232, M9V4232, M9V4840, M9T4840



Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

### Parts List—Inflatable Rib Assembly

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | KQM-E00202 | M7E 42EXT=INFLAT RIBS .165THK | AVAILABLE KIT INCLUDES ALL PARTS LISTED BELOW, ALL 4232 & 4840 EXTRACTORS |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 03 16014E | EXTRACTOR INFLATABLE RIB-.25 FLANGE | |
| all | 2 | 03 16494B | RIB BOLT DOWN 4"W SLOT-UHMW | |
| all | 5 | 15K090 | BUTSOKCAPSCR 3/8-16UNC2X1" BRASS | |
| all | 6 | 15U242S | FLATWASH .453IDX.750ODX.032SS0 | |
| all | 7 | 03 16488C | RIB BOLTDOWN EPDM GASKET | |
| all | 8 | 20C007G | THDLOCKSEAL LCT24231 RMUBL50CC | |

# Frame, Pivots and Suspension 6

# Pivot Ball Bushing Assembly

**M7V4840C,M7V4836C**



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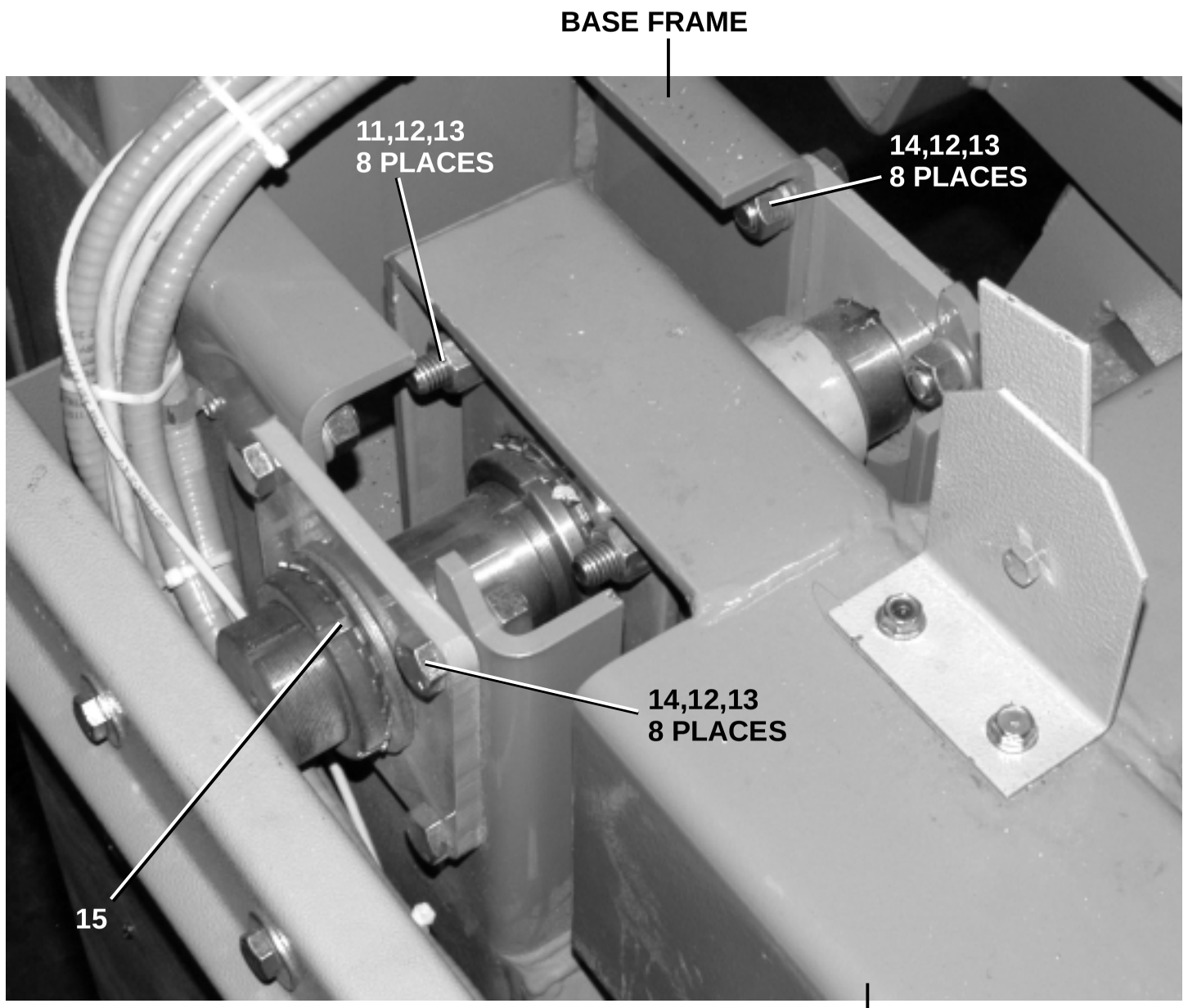
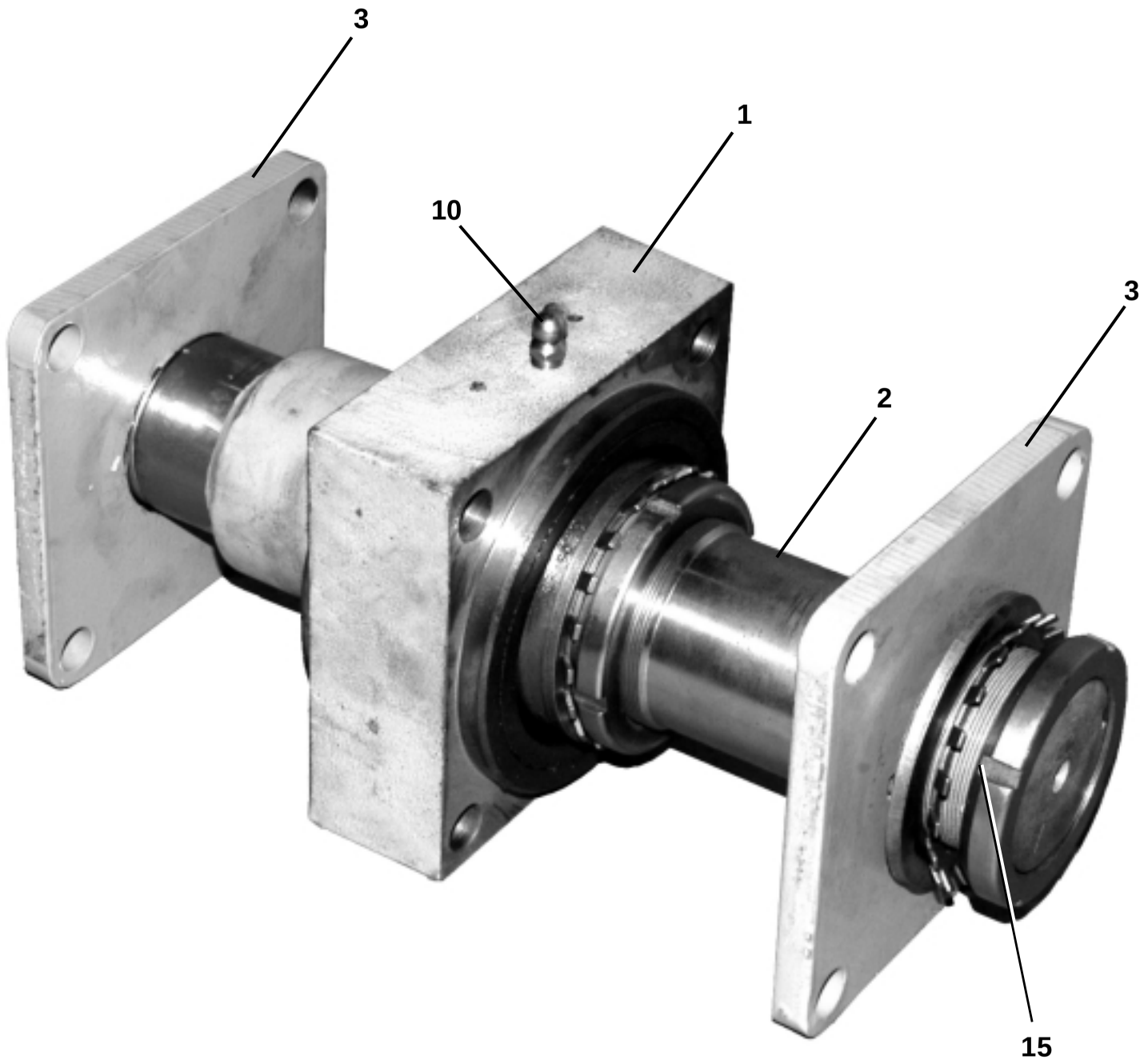



RIGHT PIVOT (SHOWN)
LEFT IS OPPOSITE



# Pivot Ball Bushing Assembly

**M7V4840C**



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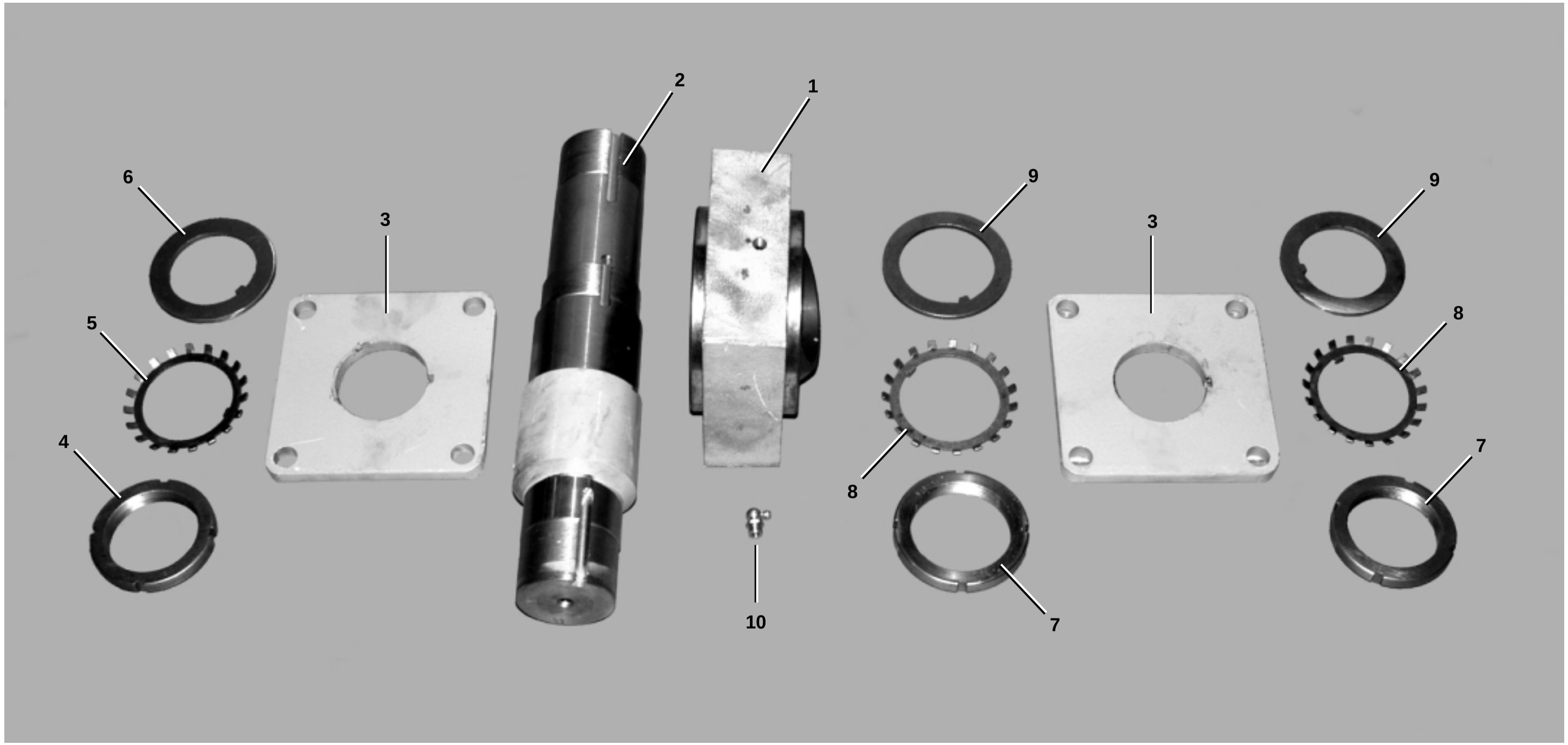
Litho in U.S.A.



Pellerin Milnor Corporation
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Litho in U.S.A.

## Parts List—Pivot Ball Bushing

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GBM16003 | INSTL=BAL BUSH PIVOT M7E/E6N | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | ABM16003 | ASSY=BAL BUSH PIV 42M7E64E6N | |
| all | 2 | X3 65150 | SHAFT=3" BALL BUSH PIVOT | |
| all | 3 | X3 65153 | MNT PLT=3" BALL BUSH PIVOT | |
| all | 4 | 56AHN13 | N13 BEARING LOCKNUT | |
| all | 5 | 56ATW13S | TONGUEWASHER SPECIAL FOR N13 | |
| all | 6 | 56AHW13 | W13 BEARING LOCKWASHER | |
| all | 7 | 56AHN14 | N14 BEARING LOCKNUT | |
| all | 8 | 56ATW14 | TONGUE WASH TIM K91514 FOR N14 | |
| all | 9 | 56AHW114 | TW114 BEARING LOCWASHER | |
| all | 10 | 54M023 | GRSFIT 45DEG ALEMITE 1688-B | |
| all | 11 | 15K227A | HXCAPSCR 5/8-11X4.5 GR8 ZINC | |
| all | 12 | 15U315 | LOKWASHER MEDIUM 5/8 ZINCPL | |
| all | 13 | 15G238B | HEXFINNUT 5/8-11UNC2 GR8 ZINC | |
| all | 14 | 15K214E | HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z | |
| all | 15 | 15E212 | STDSQMACHKEY 5/16X2+1/2 C1018 | |

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|

# Ball Bushing

## 64046E6N/J6N, 72046E5N/J5N, 72058J2N/J5N, 42032M7E, M7V4840C, M7V4836C



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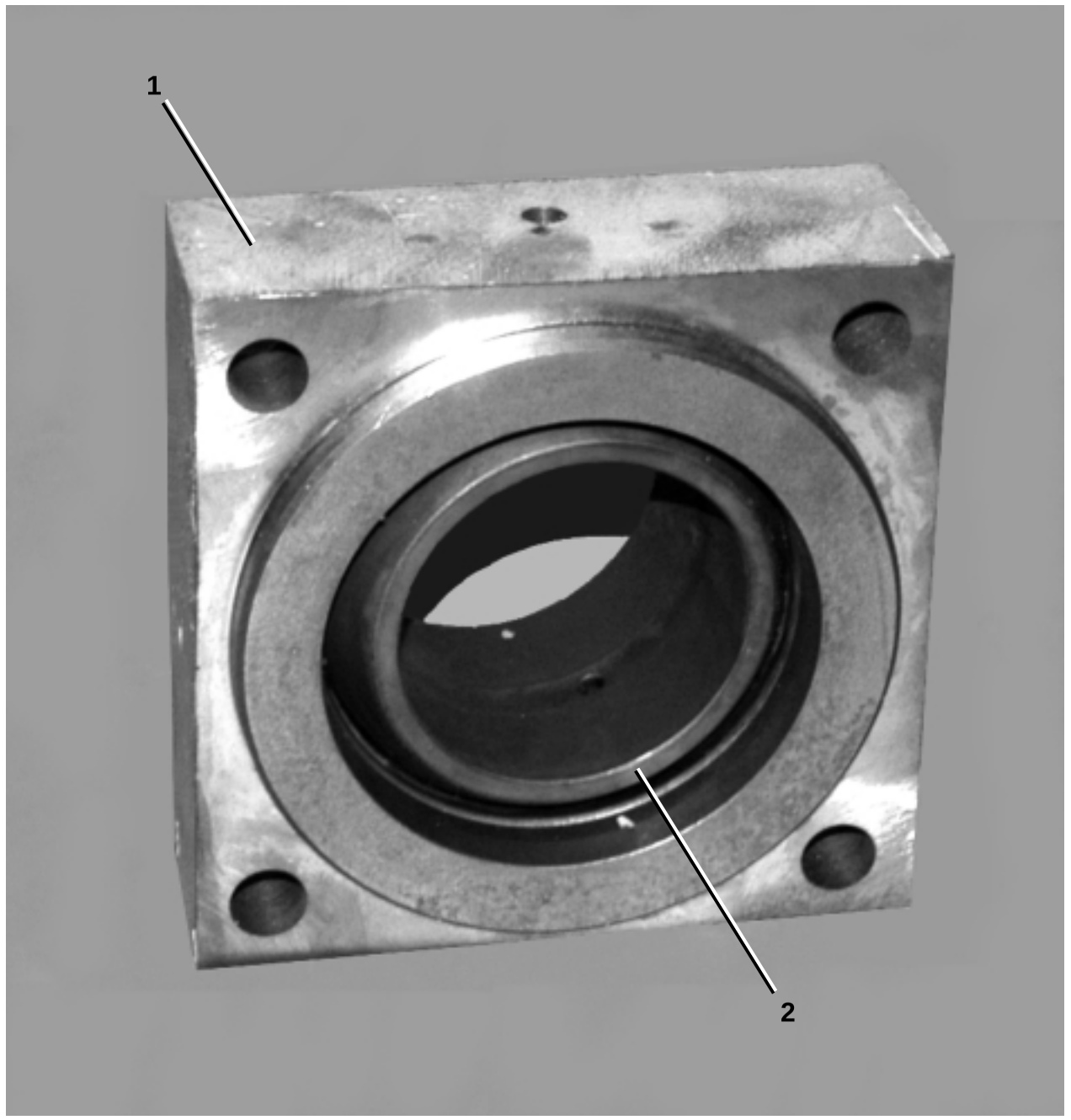


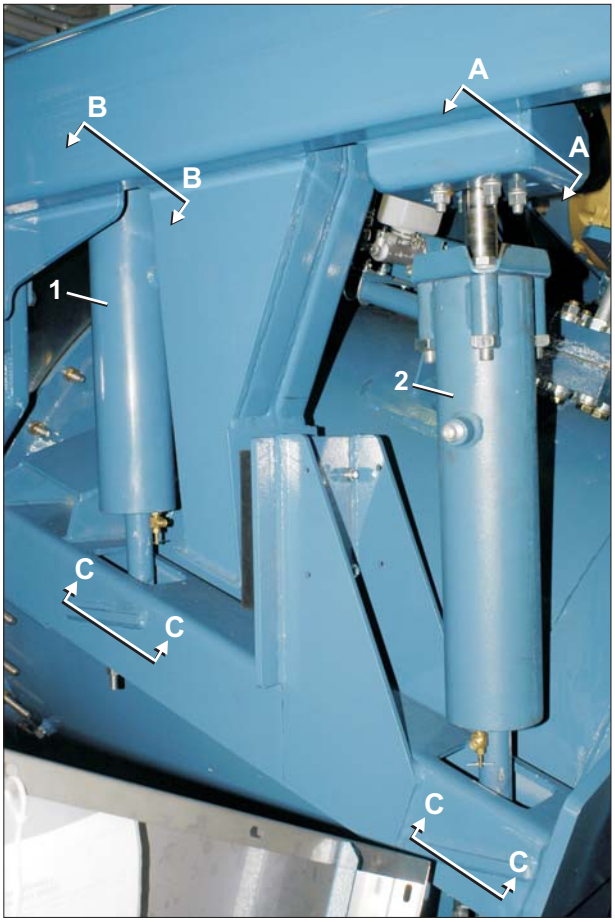

### Parts List—Assembly Ball Bushing

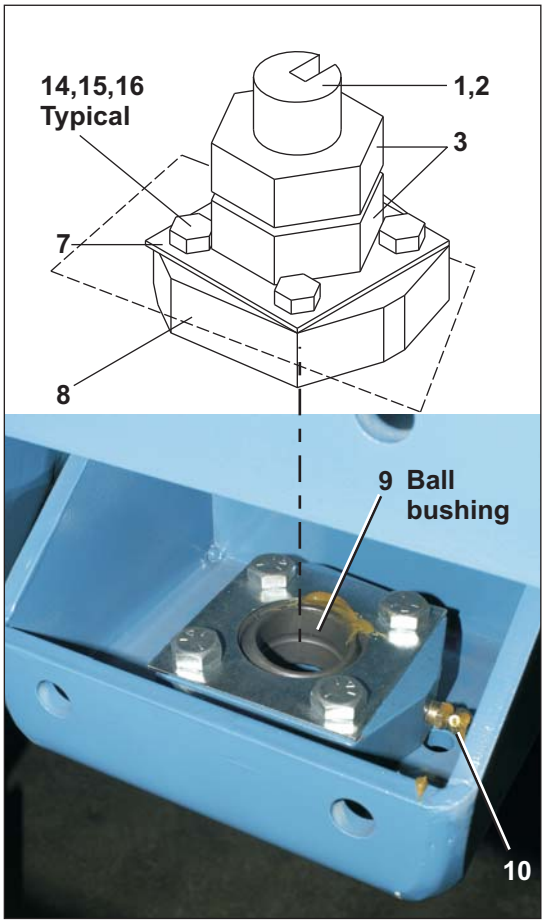
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ABM16003 | ASSY=BAL BUSH PIV 42M7E64E6N | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | X3 65151 | MNT BLOCK=3" BALL BUSH PIVOT | |
| all | 2 | 54A707 | BALL BUSHING 3" RBC# B48-L | |

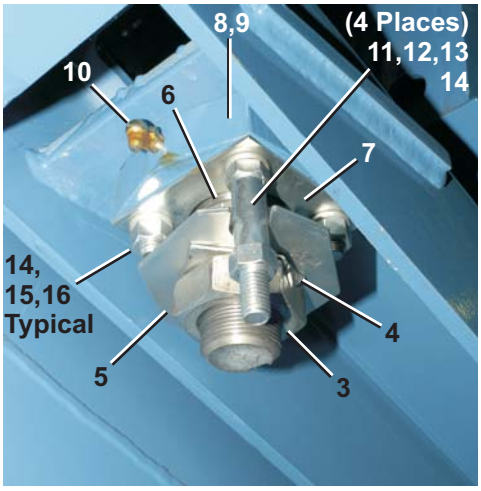
# Hydrocushion Cylinder Installation

**MXS4232C,L,R**

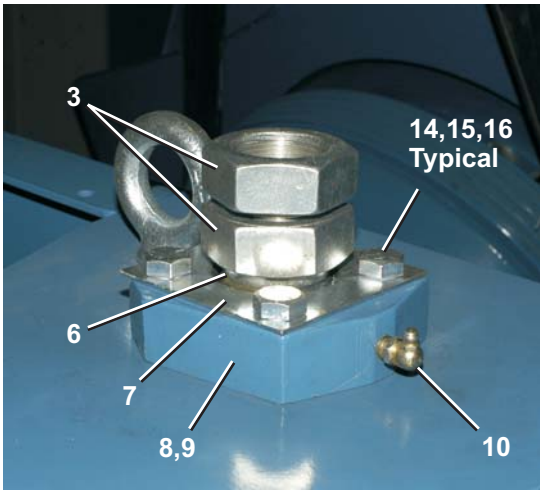



View A-A: (2 Places)




View C-C: (4 Places)




View B-B: (2 Places)

# Hydrocushion Cylinder Installation

**MXS4232C,L,R**

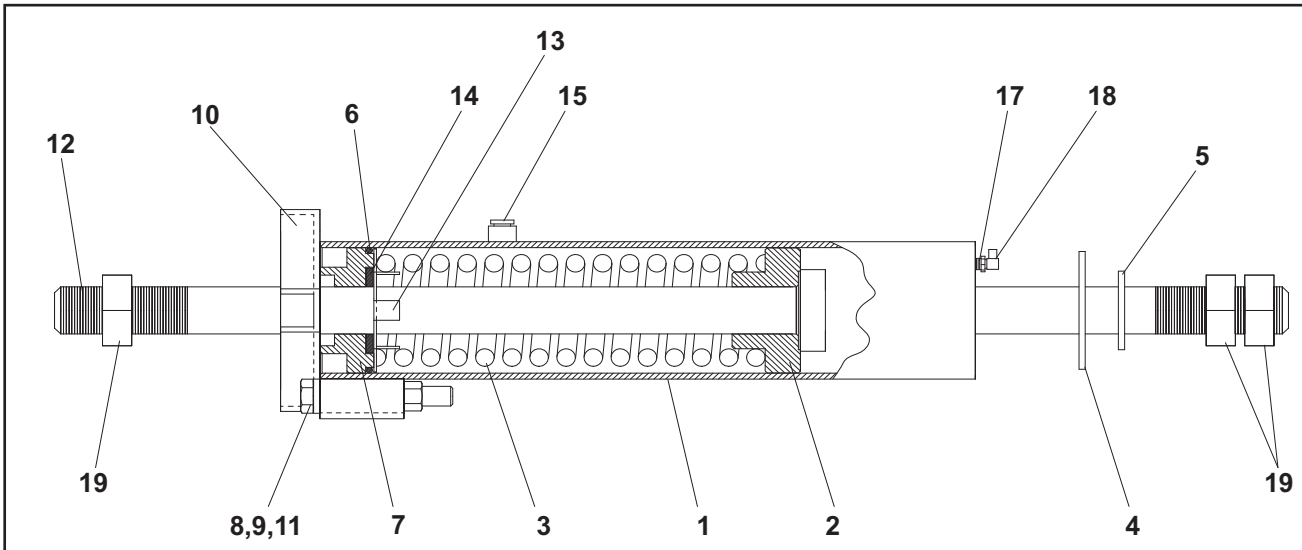
## Parts List—Hydrocushion Cylinder Installation

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GHC16000 | HYDRCUSH CYL INSTL 42M7E | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | AHC16000F | HYDRCUSH CYL ASSY FRNT 42M7E | |
| all | 2 | AHC16000B | HYDRCUSH CYL ASSY REAR 42M7E | |
| all | 3 | 15G268 | HXFINJAMNUT 1+1/2-12UNF2B ZINC | |
| all | 4 | 02 18256 | LOKWASH=TONGUE HYDROCUSHION | |
| all | 5 | 02 18795A | WASH-TIMING=HYDRO CYL 45DEG | |
| all | 6 | 02 18571A | PISTON ROD WASHER-.25"TK | |
| all | 7 | 02 18534 | HOLDPLATE= BALLBUSH ZNC/CAD | |
| all | 8 | X3 06253 | RETAINER-BALBUSH 72WE STEEL | |
| all | 9 | 54A705 | SPHPLNBRG 1.5"= ROLLBRG#B24-L | |
| all | 10 | 54M025 | HYDFIT 1/8"-90 ALEMITE 1613-B | |
| all | 11 | 27B250 | SPCRROLL.5ID1.5L.062T STLZNC | |
| all | 12 | 15D119 | HXTAPSCR 1/2-13X4 GR5 ZNC FTL | |
| all | 13 | 15G231 | HXFINJAMNUT 1/2-13UNC2B ZINC G | |
| all | 14 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 15 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| all | 16 | 15K191 | HXCAPSCR 1/2-13UNC2AX2.5 GR5 Z | |

# Hydrocushion Cylinders

**M9V4232C,L,R MXS4232C,L,R**




## Parts List—Hydrocushion Cylinders

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | AHC16000B | HYDRCUSH CYL ASSY REAR 42M7E | REAR CYLINDERS |
| | B | AHC16000F | HYDRCUSH CYL ASSY FRNT 42M7E | FRONT CYLINDERS |
| | | | ----------COMPONENTS---------- | |
| all | 1 | W3 48065 | *HYDROCUSHION WLMT 4" DIA | |
| A | 2 | X3 48069A | PISTON=HYDROCUSHION CYL 4" | |
| B | 2 | X3 48069B | PISTON=HYDROCUSHION CYL 4" | |
| A | 3 | 03 48070B | SPRING=3.485 OD 838 #/IN | |
| B | 3 | 03 48070C | SPRING=3.25 OD 513 #/IN | |
| all | 4 | 02 175034 | SHIELD-BALLBUSH-4/HYDRO MACH | |
| all | 5 | 02 02230 | 6 WATER BARRIER (NEOPRENE) | |
| all | 6 | 60C145 | ORING 3+1/2ID3/16CS BUNA70#341 | |
| all | 7 | M3 48068 | BUSHING PISTON ROD MOLDED | |
| all | 8 | 15K227 | HXCAPSCR 5/8-11UNC2AX4 GR5 ZIN | |
| all | 9 | 15U315 | LOKWASHER MEDIUM 5/8 ZINCPL | |
| all | 10 | 03 48071 | CAP=UPPER CYL END 4"HYDCUSH | |
| all | 11 | 15G236 | SQNUT 5/8-11UNC2B SAE ZINC GR2 | |

# Hydrocushion Cylinders

**M9V4232C,L,R MXS4232C,L,R**

## Parts List—Hydrocushion Cylinder

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 12 | 02 18243 | BOLT=HYDCYL 22+1/8LG+KEYWAY | |
| A | 13 | 03 48072A | RETAINER=4"HYDROCUSHION SEAL | |
| B | 13 | 03 48072B | RETAINER=4"HYDROCUSHION SEAL | |
| all | 14 | 24S040 | SEAL URETHNE 1-7/16 2.25 13/32 | |
| all | 15 | 5SP0KDEHK | NPT PLUG 1/2 HXCTRSNK GALSTL | |
| all | 17 | 5SB0E0CBEO | NPTHEXBUSH 1/4X1/8 BRASS 125# | |
| all | 18 | 96H020 | ANGLE NEEDLE VLV 5/16TX1/8MP | |
| all | 19 | 15G268 | HXFINJAMNUT 1+1/2-12UNF2B ZINC | |

# Hydraulic Piping and Devices

7

# Hydraulic Schematic

M**XS**4232**,** M**9**V4232, M**9**V4840, M**7**V4836



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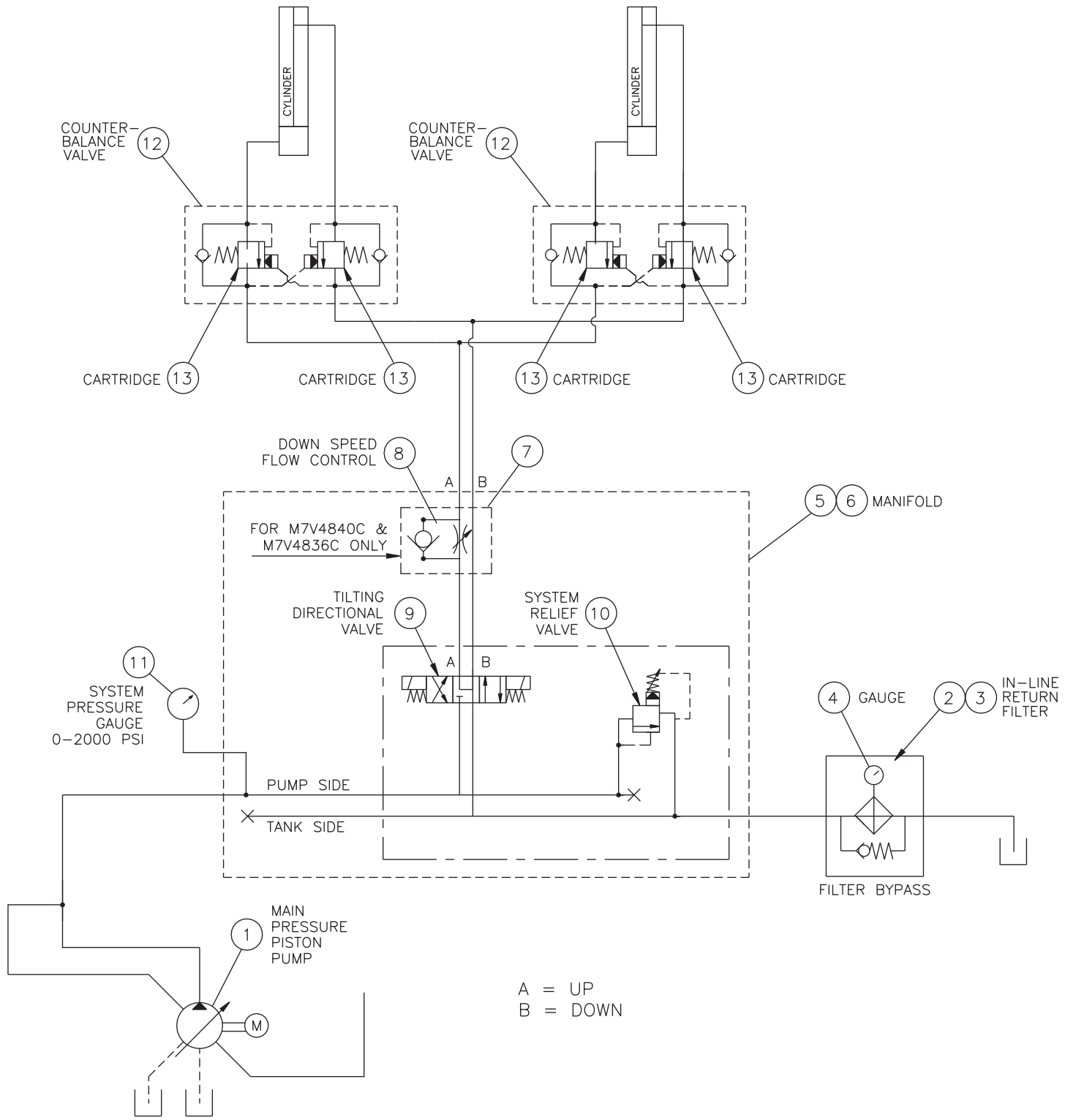



## Parts List—Hydraulic Schematic

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

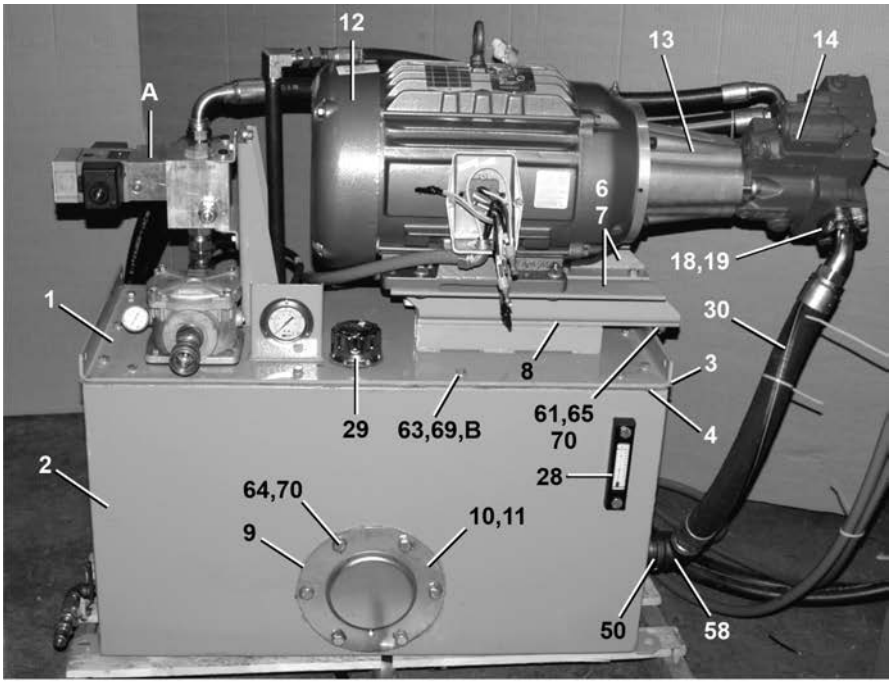
| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | AHT16004A | MXV=HYDR POWER UNIT UNIVOLT | MXS4232, M9V4232 |
| | B | AHT17000A | 4840M7=HYDR POWER UNIT UNIVOLT | M9V4840, M7V4836 |
| | | | ----------COMPONENTS---------- | |
| A | 1 | 27E550566 | PISTON PUMP-KAWASAKI(50BAR) K3VL 80/B | |
| B | 1 | 27E550466 | PISTON PUMP-KAWASAKI=35-BAR | |
| all | 2 | 27E7106 | IN-LINE RETURN FILTER | |
| all | 3 | 27E7106A | FILTER ELEMENT-REPLACEMENT | |
| all | 4 | 27E7103A | GAUGE=WIKA 1/8NPT(ON 27E7103) | |
| all | 5 | 27E5506E | DAMAN MANIFOLD #AD05HP013S/S | |
| B | 6 | 96DH490D | RETAINER/SEAL,SUN#990120009 | |
| B | 7 | 96DH490B | BODY, SUN #DJD | |
| B | 8 | 96DH490C | CARTRIDGE, SUN #NCFB-LCN | |
| all | 9 | 96RH711E37 | DIRECTIONAL CONT. VLV.D05-NG10 | |
| all | 10 | 27E5506F | SUN HYD. CARTRIDGE #RDFA-LAN | |
| all | 11 | 30N125G | GAUGE 0-2000PSI\BAR 1\4 BACK | |
| all | 12 | 96DH472 | C0UNTERBALANCE VALVE-SUN BODY | |
| All | 13 | 96DH472A | CARTRIDGE, COUNTERBALANCE VLV. | |

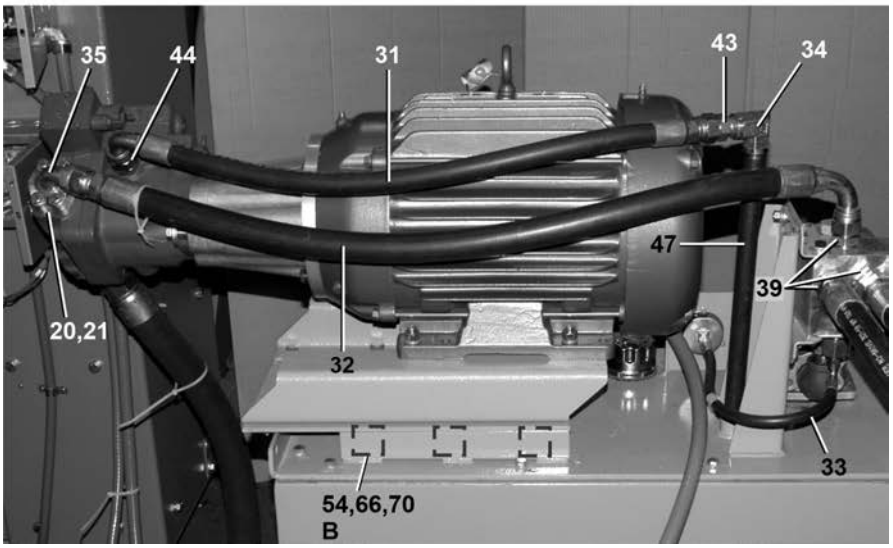
# Hydraulic Tank



**MXT4232_**

**NOTE:** This drawing represents Hydraulic tanks for MXT4232 Extractors produced after March 5, 2020. For Hydraulic tanks used before this date, see BMP130011.




**Legend**

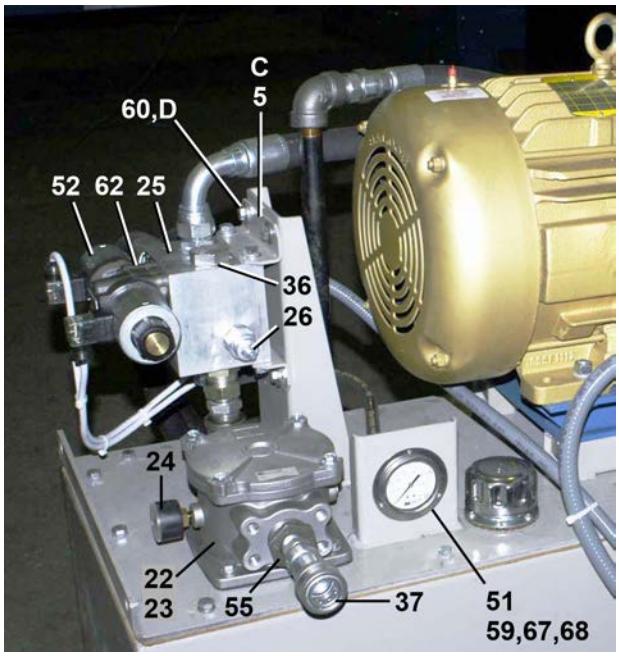
**A . . .** Subplate shown is used only on M7T4840 and M9T4840 models only.

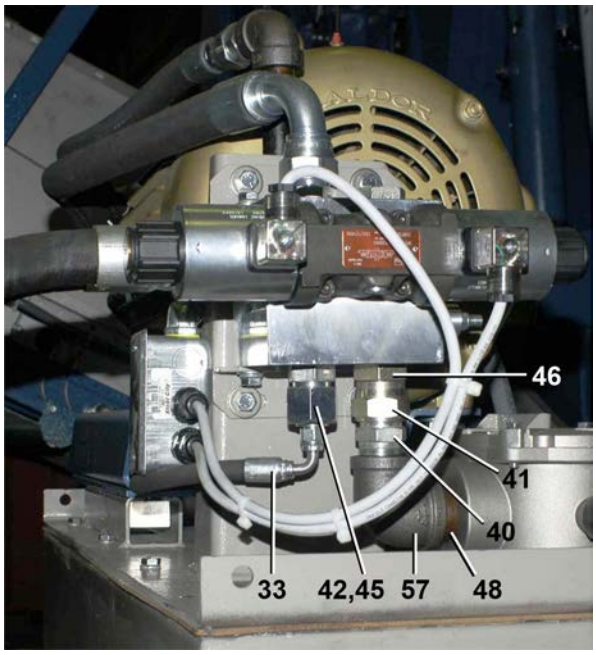
**B . . .** Typical

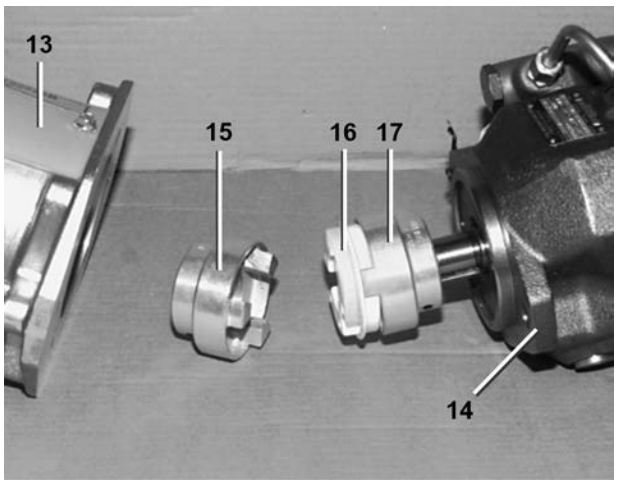
# Hydraulic Tank



**MXT4232_**



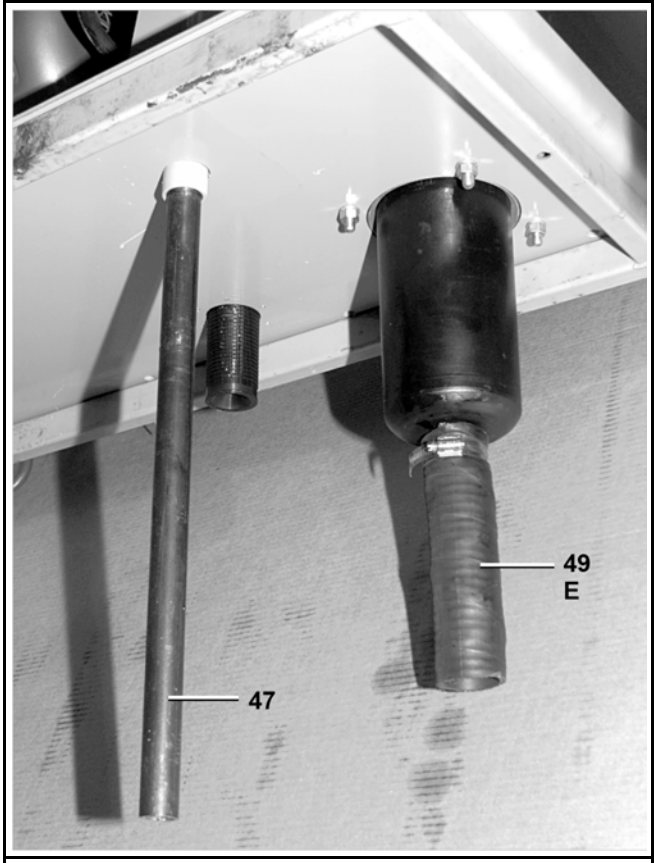

**Legend**

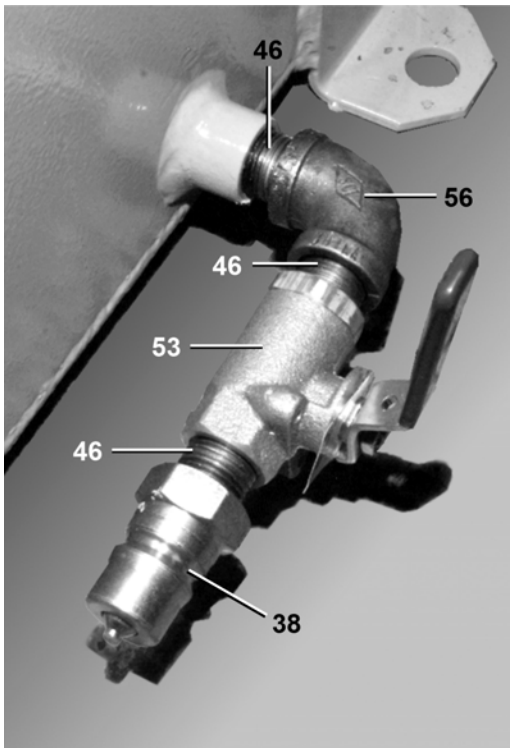
**C . . .** 2 instances
**D . . .** 4 instances

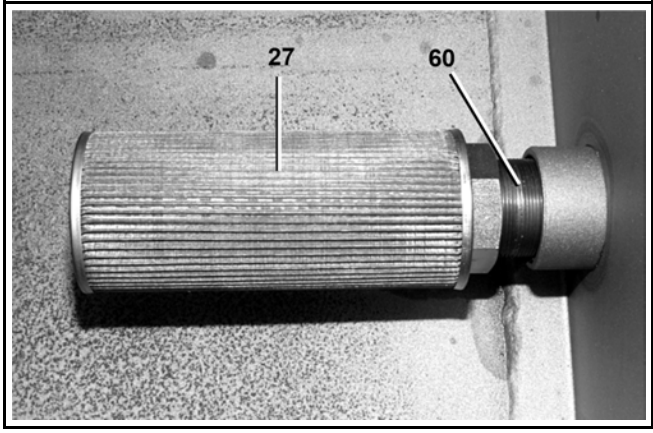
# Hydraulic Tank



**MXT4232_**




**Legend**

**E . . .** Nipple pipe is now used instead of hose. See parts list.

**Table 1. Parts List—**

| Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations. | | | | |
|---|---|---|---|---|
| **Used In** | **Item** | **Part Number** | **Description/Nomenclature** | **Comments** |
| Assemblies | | | | |
| | A | AHT17001A | 4232M=HYDR POWER UNIT UNIVOL | |

# Hydraulic Tank

**MXT4232_**

### Parts List— (cont'd.)

**Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.**

| Used In | Item | Part Number | Description/Nomenclature | Comments |
|---|---|---|---|---|
| | | | Components | |
| all | 1 | W7 10225 | WLMT=OIL RESEVOIR TOP | |
| all | 2 | W3 16523A | WLMT=HYDR TANK | |
| all | 3 | 03 16532 | HYDR TANK SM TOP GASKET | |
| all | 4 | 03 16531 | HYDR TANK LG TOP GASKET | |
| all | 5 | 07 10241 | PRESSURE MANIFOLD MTG ANGLE | |
| all | 6 | 07 10275 | MOTOR MTN BRKT-RT 47BAR | |
| all | 7 | 07 10275A | MOTOR MTN BRKT-LF 47BAR | |
| all | 8 | 07 10276 | MOTOR MOUNT PLATE-47BAR | |
| all | 9 | 02 18105A | HYD TANK COVER GASKET | |
| all | 10 | 5SP0CGFSS | NPT PLUG 1/8 SQ SOLID GALSTL | |
| all | 11 | 02 18618 | COVER=BEARHOUSE | |
| all | 12 | 39T150ACU | 15HP 4P TEFC UNIVOLT | |
| all | 13 | 27E5504D | PUMP-TO-MOTOR MT. | |
| all | 14 | 27E550466 | PISTON PUMP 45CC | |
| all | 15 | 27E5510 | COUP.ASSY.=1+5/8"BOREX3/8"KEYWAY | |
| all | 16 | 27E5510B | HYTREL INSERT-MAGNA#M370H5 | |
| all | 17 | 27E5504E | COUP.ASSY.1"BX1/4KW #M30010008 | |
| all | 18 | 27E5504AB | O-RING FOR (27E5504A) | |
| all | 19 | 27E5504A | SUCT.SPLIT FLANGE FOR VAR.PUMP | |
| all | 20 | 27E5504BA | O-RING FOR (27E5504B) | |
| all | 21 | 27E5504B | PRESS.SPLITFLANGE FOR VAR.PUMP | |
| all | 22 | 27E7106A | FILTER ELEMENT-REPLACEMENT 10 MICRON P163903 | |
| all | 23 | 27E7106 | IN-LINE RETURN FILTER W/ 3 MICRON | |
| all | 24 | 27E7103A | GAUGE=WIKA 1/8NPT(ON 27E7103) | |
| all | 25 | 27E5506E | DAMAN MANIFOLD #AD05HP013S/S | |
| all | 26 | 27E5506F | SUN HYD. CARTRIDGE #RDFA-LAN | |
| all | 27 | 27E7108 | SUCTION STRAINER 2" PORT | |
| all | 28 | 27E7301 | SIGHTGAUGE-FLUID:STAUFF#SNA-127-S-T-12 | |
| all | 29 | 27E7201 | FILLER-BREATH-FILT.LHA#ABB-40N | |
| all | 30 | 60EH86C22 | ASSY=HYDRALIC HOSE 1.5X22 | |
| all | 31 | 60EH50C28A | ASSY=HYD HOSE 3/4"X28"LG | |
| all | 32 | 60EH80C36K | ASSY=HYDRAULIC HOSE 1"X36"LG | |
| all | 33 | 60EH21C18A | ASSY=HYDRALIC HOSE 1/4X18 LG | |
| all | 34 | 52JY0PRC06 | ELB90 3/4FPT #5504-12-12 | |
| all | 35 | 52JY1AR013 | EL90COD61 1"MJXFLG.#1704-16-16 | |
| all | 36 | 52PY1AR001 | HEX PLUG 1"OR #6408-16-0 | |
| all | 37 | 52XY0KP00X | 1/2"QUICK DISCONN.FEM#H4-62 | |
| all | 38 | 52XY0KP00Y | 1/2"QUICK DISCONN.MALE #H4-63 | |
| all | 39 | 52XY0KR050 | STRDPT 3/4MX1"MJ#6400-16-12-0 | |
| all | 40 | 52XY1AP010 | STRADPT 1"MXMJIC #2404-16-16 | |
| all | 41 | 52XY1AP012 | STRADAPT1"MORXFJS#6402-16-16-0 | |

# Hydraulic Tank

**MXT4232_**

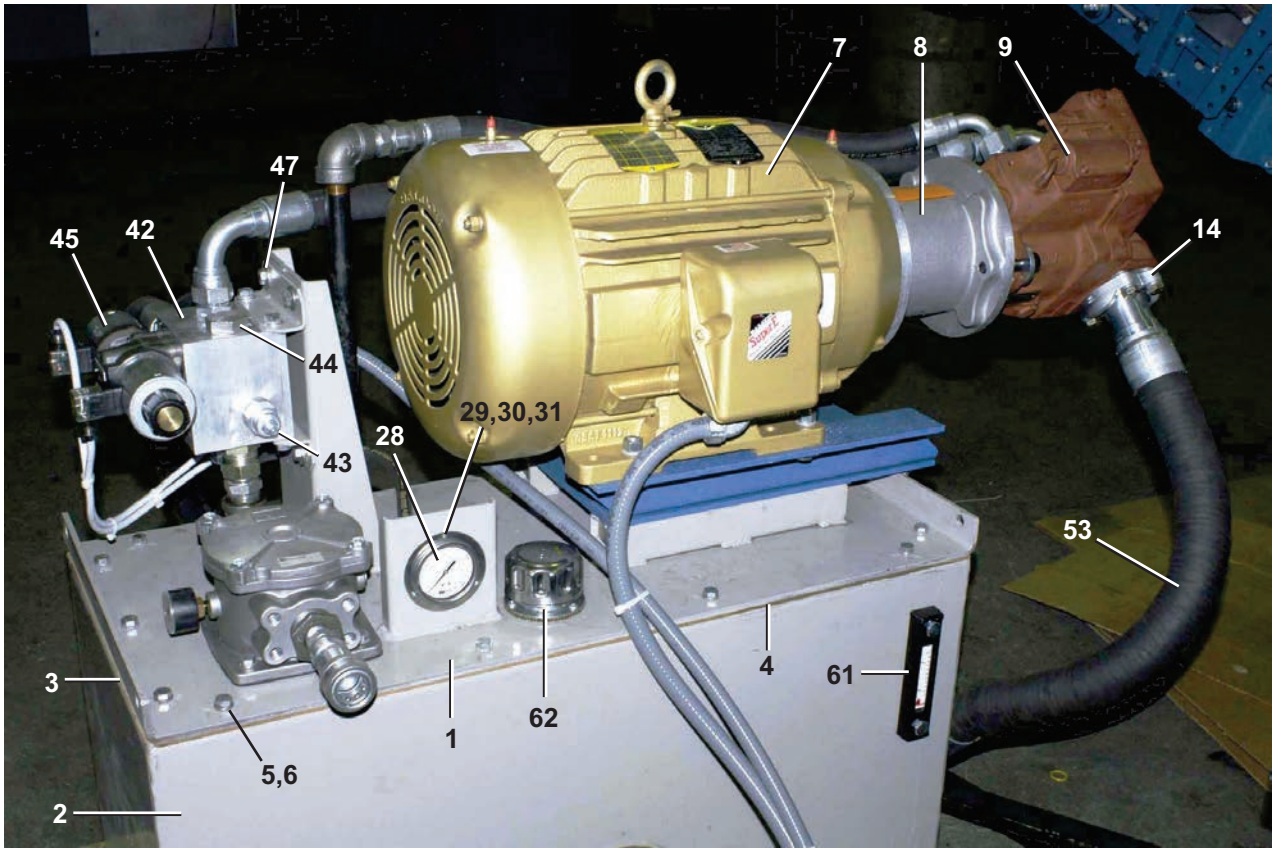
### Parts List— (cont'd.)

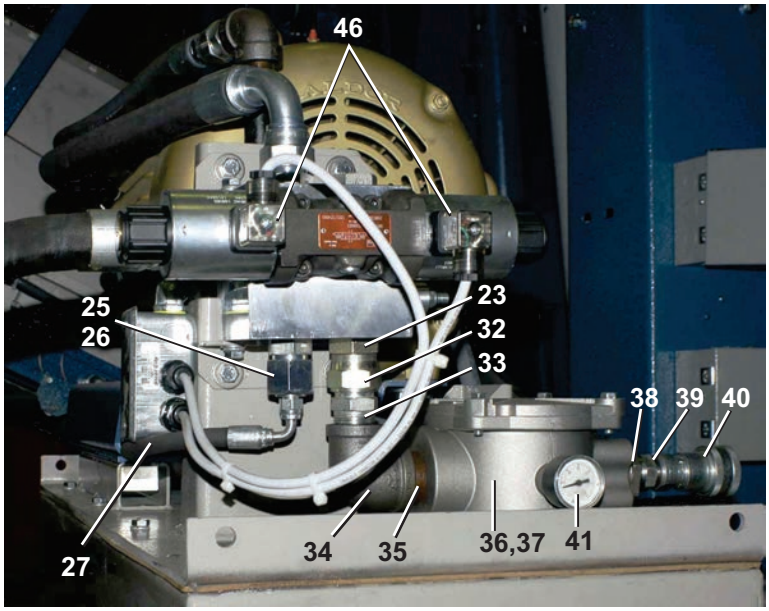
**Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.**

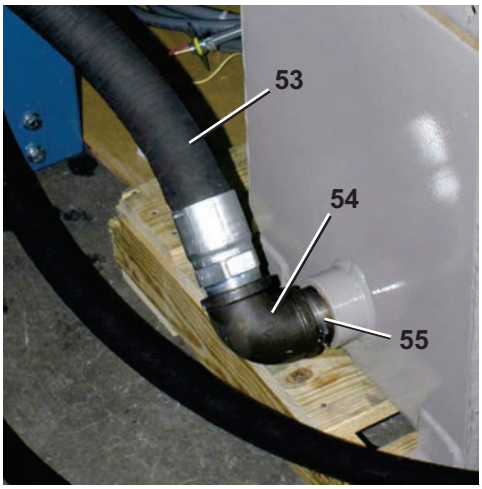
| Used In | Item | Part Number | Description/Nomenclature | Comments |
|---|---|---|---|---|
| all | 42 | 52ZC00S003 | TUBEFIT STRTHDCN3/4"#12 F5OLO-S | |
| all | 43 | 52ZC0PS001 | TUBEFITSTR3/4"#12-FLO-S | |
| all | 44 | 52ZCF50L0S | TUBEFITSTR3/4X1/2"#12-8 F5OLO-S | |
| all | 45 | 52ZL00S006 | TUBEFIT 3/4FORX1/4MOR #12-4 TRLON-S | |
| all | 46 | 5N0KCLSF42 | NPT NIP 1/2XCLS TBE BLKSTL S40 | |
| all | 47 | 5N0P18AF42 | NPT NIPPLE 3/4X18 TBE BLKSTL S | |
| all | 48 | 5N1ECLSF42 | NPT NIP 1.25XCLS TBE BLKSTLS40 | |
| all | 49 | 5N1K07AF42 | NPT NIP 1.5X7 TBE BLKSTL SK40 | |
| all | 50 | 5N2ACLSB42 | NPT NIP 2XCLS TBE BLKSTL SK40 | |
| all | 51 | 30N125G | GAUGE 0-2000PSI\BAR 1\4 BACK | |
| all | 52 | 96RH711E37 | DIRECTIONAL CONT. VLV.D05-NG10 | |
| all | 53 | 96D034 | BALLVALVE 1/2" WATTS #6400-SS | |
| all | 54 | 17N070AP | RETAIN NUT#S10222-27 | |
| all | 55 | 5SB1E0KMFO | NPTHEXBUSH 1.25X1/2BLKMAL 150# | |
| all | 56 | 5SL0KMFA | NPT ELBOW 90DEG 1/2" BLKMAL 15 | |
| all | 57 | 5SL1EMFA1A | NPT ELBOW 90DEG 1.25X1" BLKMAL | |
| all | 58 | 5SL2AMFA1K | NPT ELB 90DEG 2X1.5 BLKMAL150# | |
| all | 59 | 15G075 | HEX MACH SCREW NUT 6-32UNC2 S | |
| all | 60 | 15G198 | HXFLGNUT 3/8-16 ZINC | |
| all | 61 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| all | 62 | 15K049F | SOKCAPSCR 1/4-20X4 BLK GR8 | |
| all | 63 | 15K095 | HXCPSCR 3/8-16UNC2AX1 GR5 ZINC | |
| all | 64 | 15K145 | HXCAPSCR 1/2-13UNC2AX3/4 GR5 P | |
| all | 65 | 15K147 | HXCAPSCR 1/2-13UNC2X1 GR5 ZINC | |
| all | 66 | 15K171B | HEXCAPSCR 1/2-13X1+3/4 GR8 ZIN | |
| all | 67 | 15N050 | RDMACSCR 6-32UNC2X1/2 SS18-8 | |
| all | 68 | 15U102 | LOCKWASHER MEDIUM #6 SS18-8 | |
| all | 69 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |
| all | 70 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |

# Hydraulic Tank

**M9V4232C,L,R MXS4232C,L,R**

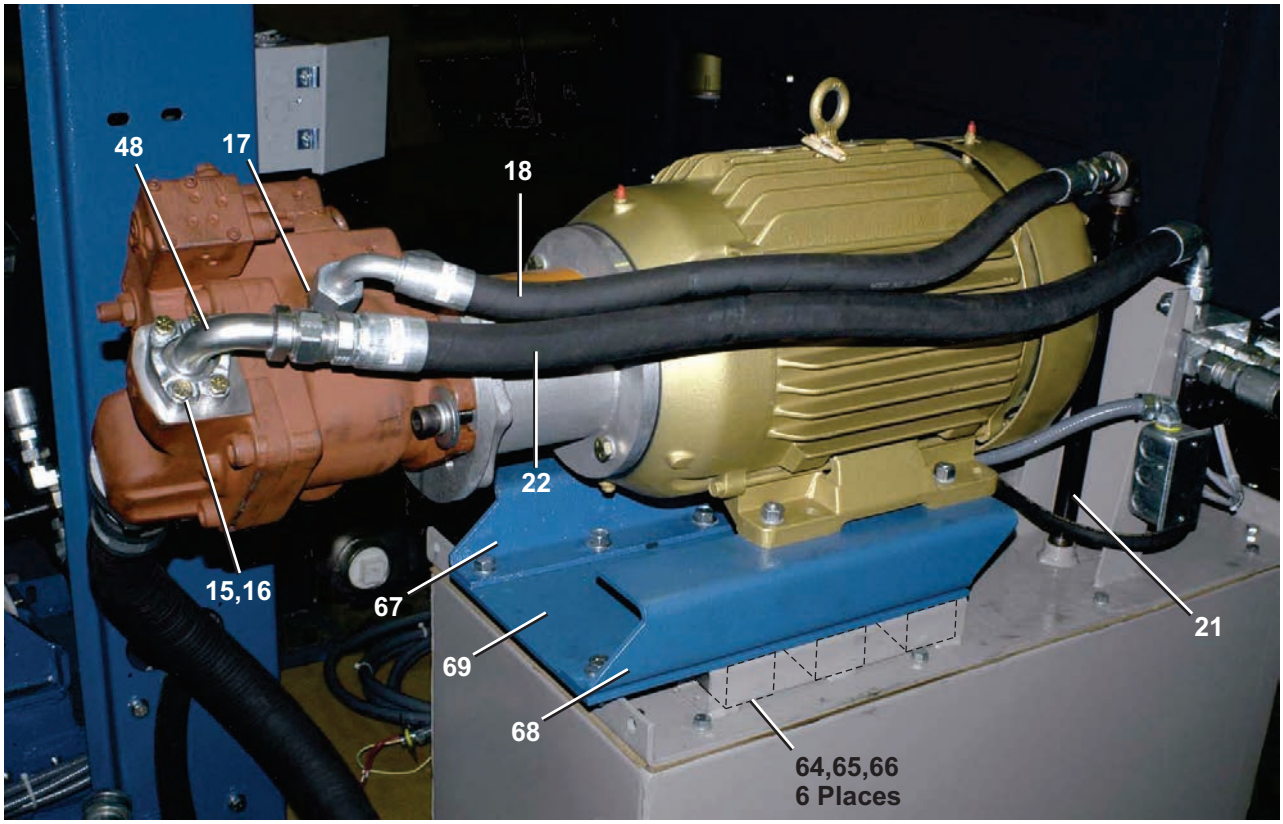


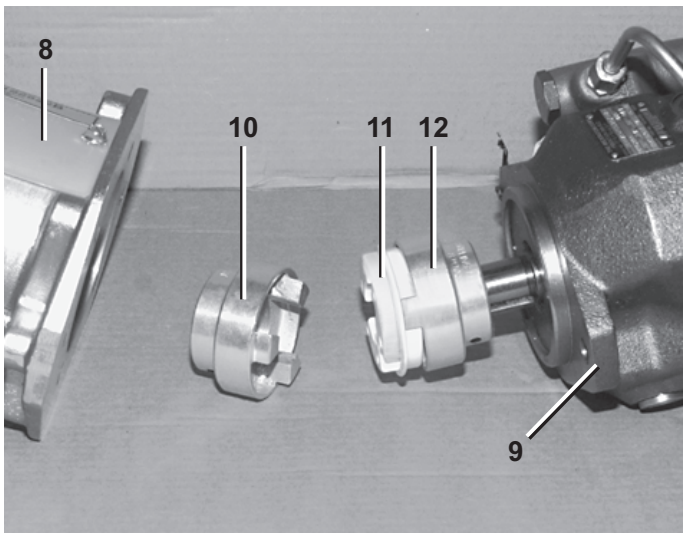



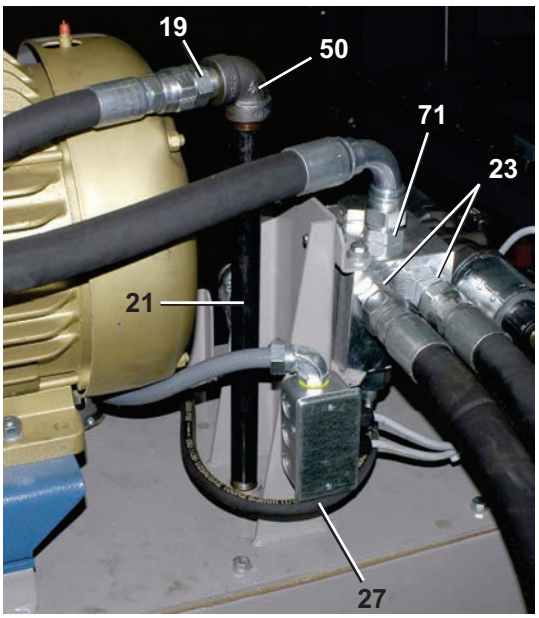



# Hydraulic Tank

**M9V4232C,L,R MXS4232C,L,R**

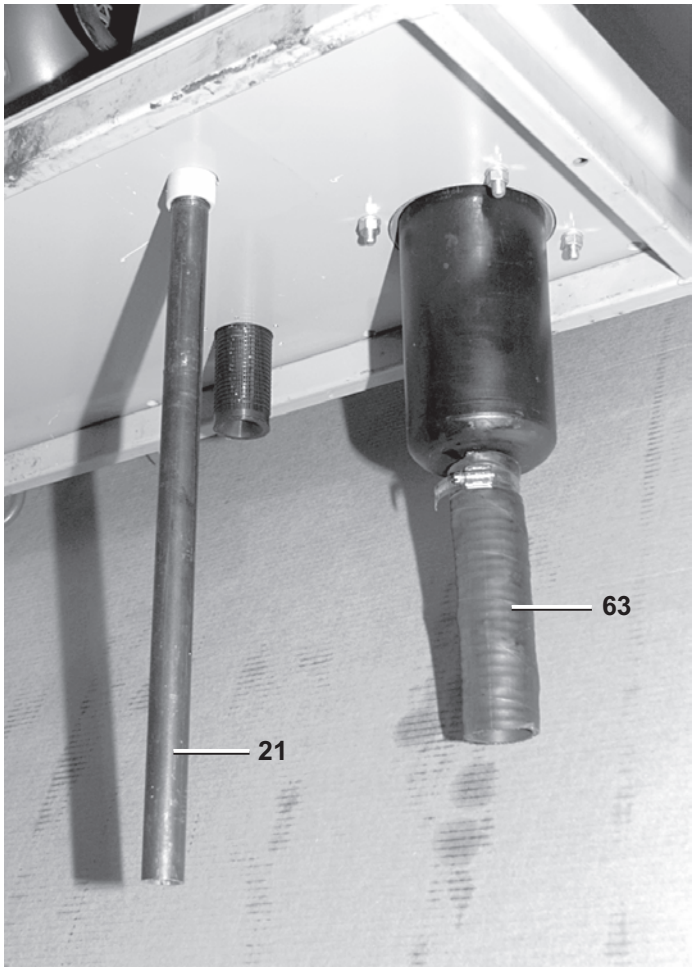


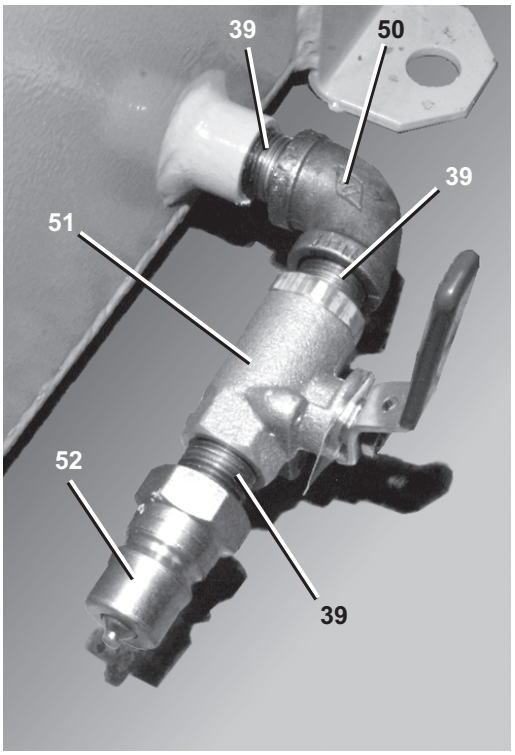



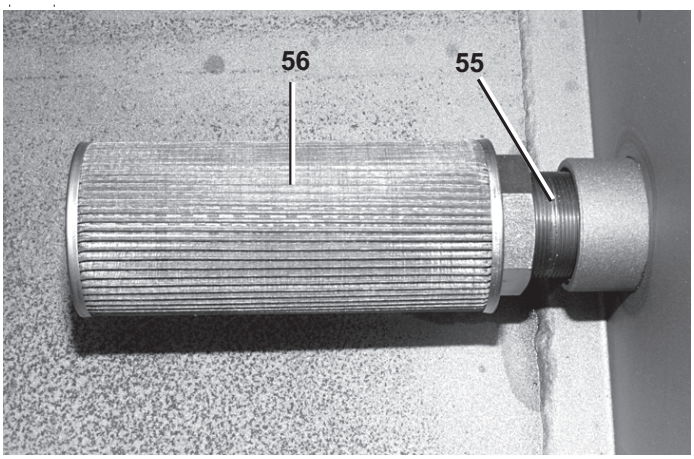



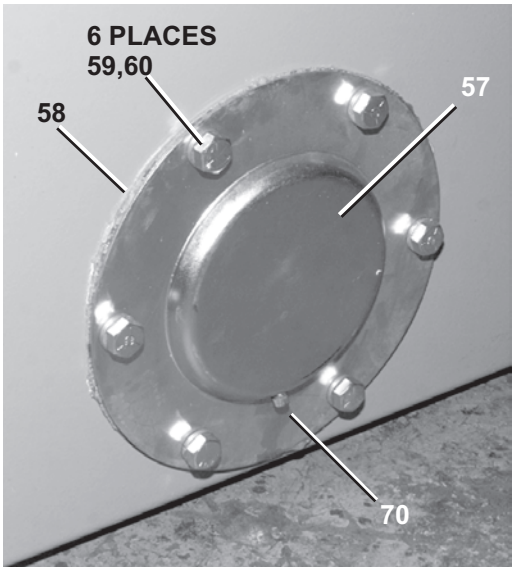
# Hydraulic Tank

**M9V4232C,L,R MXS4232C,L,R**



# Hydraulic Tank

**M9V4232C,L,R MXS4232C,L,R**

## Parts List—Hydraulic Tank

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | AHT16004A | MXV=HYDR POWER UNIT UNIVOLT | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | W7 10225 | WLMT=OIL RESEVOIR TOP | |
| all | 2 | W3 16523A | WLMT=HYDR TANK | |
| all | 3 | 03 16532 | HYDR TANK SM TOP GASKET | |
| all | 4 | 03 16531 | HYDR TANK LG TOP GASKET | |
| all | 5 | 15K095 | HXCPSCR 3/8-16UNC2AX1 GR5 ZINC | |
| all | 6 | 15K255 | HEXCAPSCR 3/4-10X6 GR8/2C | |
| all | 7 | 39T150ACU | 15HP 4P TEFC UNIVOLT | |
| all | 8 | 27E5510C | PUMP-TO-MOTOR MOUNT 6.00"LG. | |
| all | 9 | 27E550566 | PISTON PUMP-KAWASAKI(50BAR) K3VL 80/B | |
| all | 10 | 27E5510 | COUP.ASSY.=1+5/8"BOREX3/8KW | |
| all | 11 | 27E5510B | HYTREL INSERT-MAGNA#M370H5 | |
| all | 12 | 27E5510A | COUP.ASSY.=1+1/4"BOREX5/16KW | |
| all | 14 | 27E5505C | SPLIT FLANGE-2" | |
| all | 15 | 27E5504BA | O-RING FOR (27E5504B) | |
| all | 16 | 27E5504B | PRESS.SPLITFLANGE FOR VAR.PUMP | |
| all | 17 | 52ZCF50L0S | TUBEFITSTR3/4X1/2"#12-8F50LOS | |
| all | 18 | 60EH50C28A | ASSY=HYD HOSE 3/4"X28"LG | |
| all | 19 | 52ZC0PS001 | TUBEFITSTR3/4"#12-FLO-S | |
| all | 21 | 5N0P16AF42 | NPT NIP 3/4X16 TBE BLKSTL SK40 | |
| all | 22 | 60EH80C36K | ASSY=HYDRAULIC HOSE 1"X36"LG | |
| all | 23 | 52XY0KR050 | STRDPT 3/4MX1"MJ#6400-16-12-0 | |
| all | 24 | 07 10241 | PRESSURE MANIFOLD MTG ANGLE | |
| all | 25 | 52ZC00S003 | TUBEFIT STRTHDCN3/4"#12F5OLO-S | |
| all | 26 | 52ZL00S006 | TUBEFITENDRED3/4TX1/4T FACESL | |
| all | 27 | 60EH21C18A | ASSY=HYDRALIC HOSE 1/4X18 LG | |
| all | 28 | 30N125G | GAUGE 0-2000PSI\BAR 1\4 BACK | |
| all | 29 | 15U102 | LOCKWASHER MEDIUM #6 SS18-8 | |
| all | 30 | 15G075 | HEX MACH SCREW NUT 6-32UNC2 S | |
| all | 31 | 15N050 | RDMACSCR 6-32UNC2X1/2 SS18-8 | |
| all | 32 | 52XY1AP012 | STRADAPT1"MORXFJS#6402-16-16-0 | |
| all | 33 | 52XY1AP010 | STRADPT 1"MXMJIC #2404-16-16 | |
| all | 34 | 5SL1EMFA1A | NPT ELBOW 90DEG 1.25X1" BLKMAL | |
| all | 35 | 5N1ECLSF42 | NPT NIP 1.25XCLS TBE BLKSTLS40 | |

# Hydraulic Tank

**M9V4232C,L,R MXS4232C,L,R**

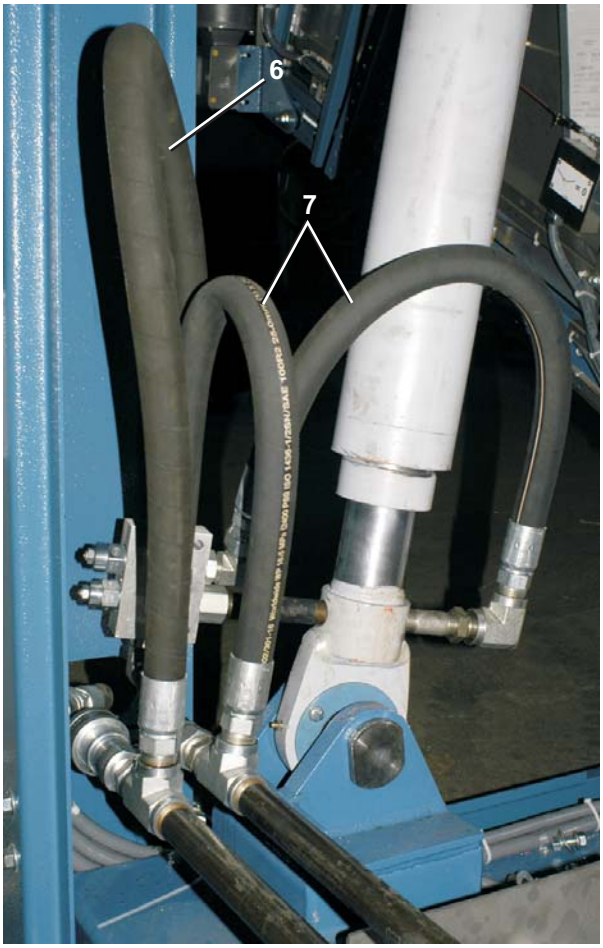
## Parts List—Hydraulic Tank

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

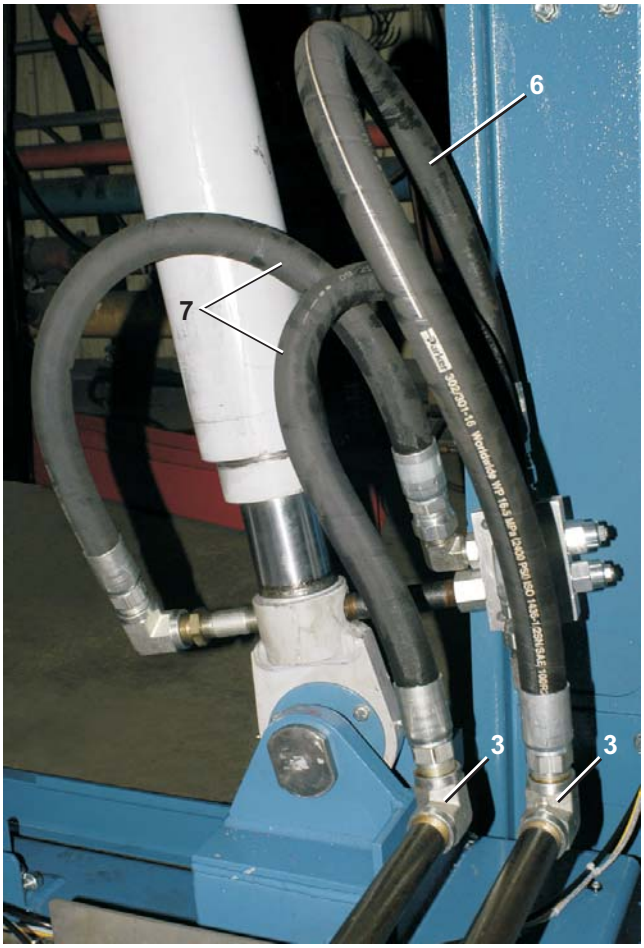
| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 36 | 27E7106A | FILTER ELEMENT-REPLACEMENT | |
| all | 37 | 27E7106 | IN-LINE RETURN FILTER | |
| all | 38 | 5SB1E0KMFO | NPTHEXBUSH 1.25X1/2BLKMAL 150# | |
| all | 39 | 5N0KCLSF42 | NPT NIP 1/2XCLS TBE BLKSTL S40 | |
| all | 40 | 52XY0KP00X | 1/2"QUICK DISCONN.FEM#H4-62 | |
| all | 41 | 27E7103A | GAUGE=WIKA 1/8NPT(ON 27E7103) | |
| all | 42 | 27E5506E | DAMAN MANIFOLD #AD05HP013S/S | |
| all | 43 | 27E5506F | SUN HYD. CARTRIDGE #RDFA-LAN | |
| all | 44 | 52PY1AR001 | HEX PLUG 1"OR #6408-16-0 | |
| all | 45 | 96RH711E37 | DIRECTIONAL CONT. VLV.D05-NG10 | |
| all | 46 | 12M3240V3F | SOLE.CONN.100-240VAC 3FT | |
| all | 47 | 15G198 | HXFLGNUT 3/8-16 ZINC | |
| all | 48 | 52JY1AR013 | EL90COD61 1"MJXFLG.#1704-16-16 | |
| all | 50 | 5SL0KNFA | NPTELB 90DEG 1/2 GALMAL 150# | |
| all | 51 | 96D034 | BALLVALVE 1/2" WATTS #6400-SS | |
| all | 52 | 52XY0KP00Y | 1/2"QUICK DISCONN.MALE #H4-63 | |
| all | 53 | 60EH95C30A | ASSY=HYDRAULIC HOSE 2"X30LG | |
| all | 54 | 5SL2AMFA1K | NPT ELB 90DEG 2X1.5 BLKMAL150# | |
| all | 55 | 5N2ACLSB42 | NPT NIP 2XCLS TBE BLKSTL Sk40 | |
| all | 56 | 27E7108 | SUCTION STRAINER 2" PORT | |
| all | 57 | 02 18618 | COVER=BEARHOUSE | |
| all | 58 | 02 18105A | HYD TANK COVER GASKET | |
| all | 59 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 60 | 15K145 | HXCAPSCR 1/2-13UNC2AX3/4 GR5 P | |
| all | 61 | 27E7301 | SIGHTGAUGE-FLUID:STAUFF#SNA-2T | |
| all | 62 | 27E7201 | FILLER-BREATH-FILT.LHA#ABB-40N | |
| all | 63 | 5N1K07AF42 | NPT NIP 1.5X7 TBE BLKSTL SK40 | |
| all | 64 | 02 19283 | NUT=1/2-13UNCX1+1/2SQ SPEC | |
| all | 65 | 15K171B | HEXCAPSCR 1/2-13X1+3/4 GR8 ZIN | |
| all | 67 | 07 10275 | MOTOR MTN BRKT-RT 47BAR | |
| all | 68 | 07 10275A | MOTOR MTN BRKT-LF 47BAR | |
| all | 69 | 07 10276 | MOTOR MOUNT PLATE-47BAR | |
| all | 70 | 5SP0CGFSS | NPT PLUG 1/8 SQ SOLID GALSTL | |
| all | 71 | 52ZC1AS006 | TUBEFITSTR1X3/4#16-12 F5OLO-S | |

# Hydraulic Hoses & Piping

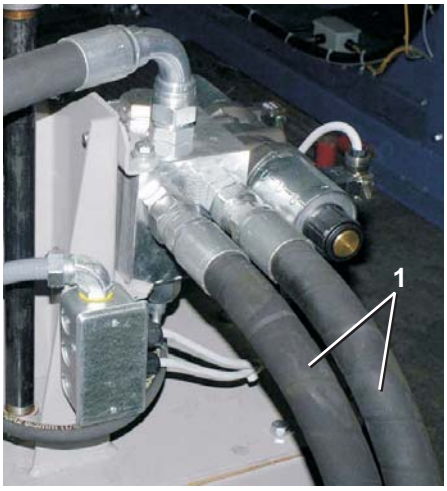
**M9V4232C,L,R M9S4232C,L,R MXS4232C,L,R**




**Right Cylinder**



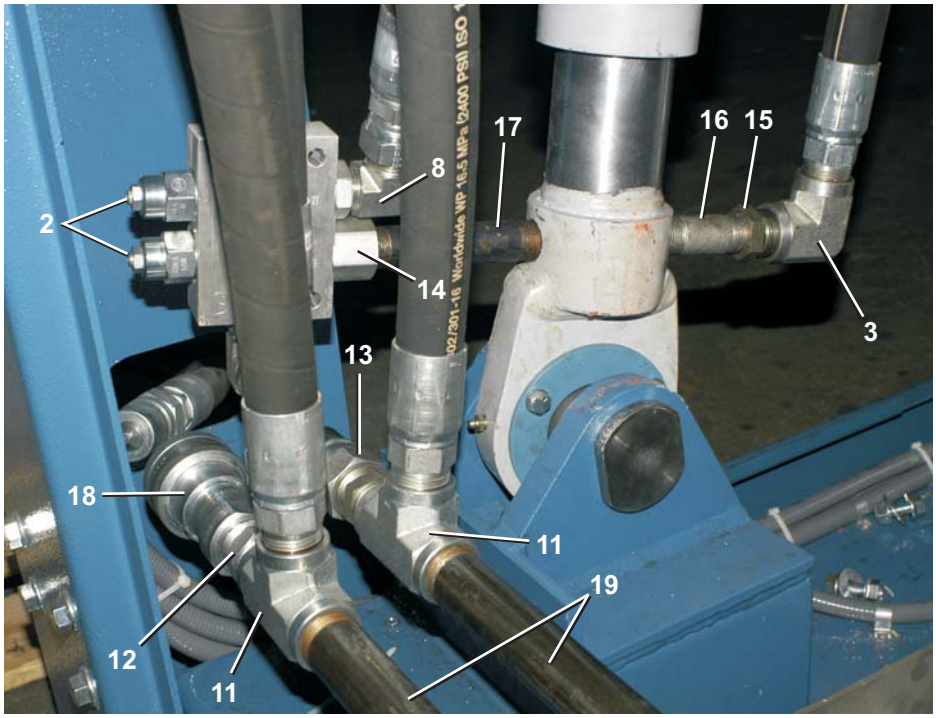

**Left Cylinder**



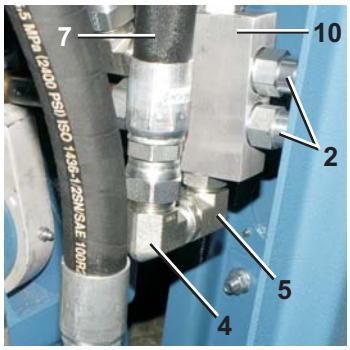

**Manifold**

# Hydraulic Hoses & Piping

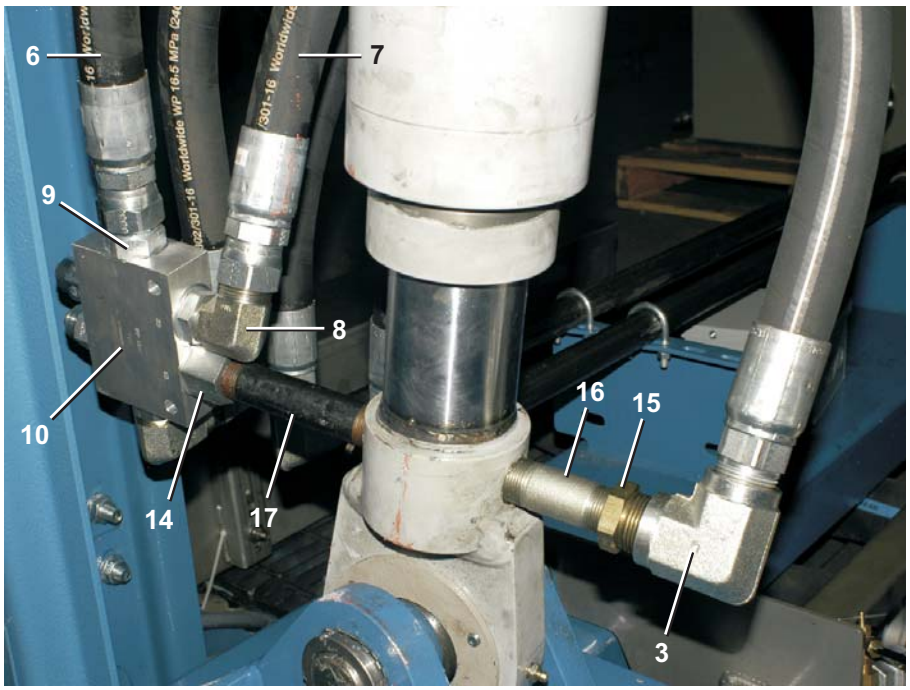
**M9V4232C,L,R M9S4232C,L,R MXS4232C,L,R**




Right Cylinder




Typical (2 places)




Left Cylinder

# Hydraulic Hoses & Piping

**M9V4232C,L,R M9S4232C,L,R MXS4232C,L,R**

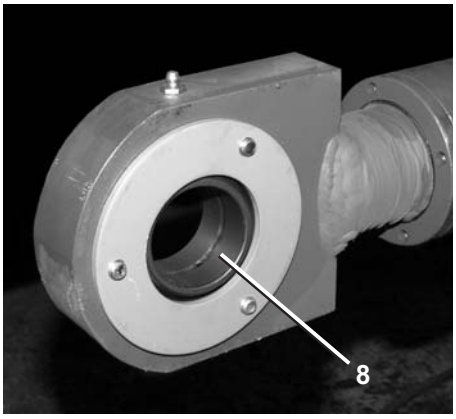
## Parts List—Hydraulic Hoses & Piping

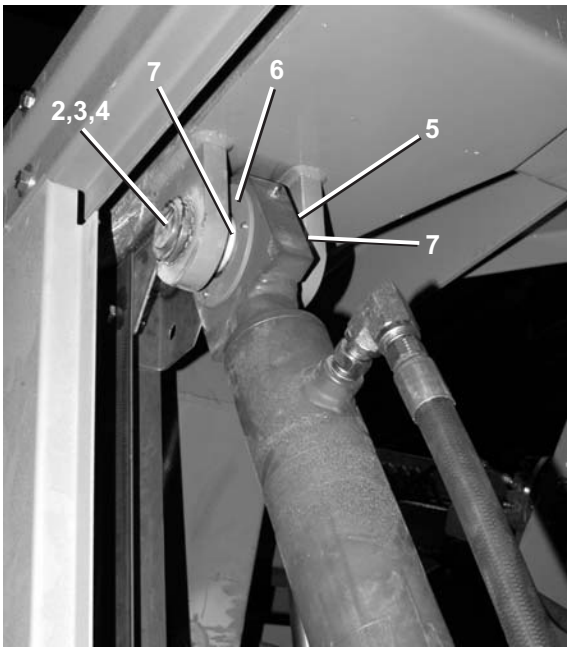
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | AHT16000 | HYDRAULIC HOSES&PIPING ASSY. | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 60EH80C96A | ASSY=HYDRAULIC HOSE 1"X96"LG | |
| all | 2 | 96DH472A | CARTRIDGE, COUNTERBALANCE VLV. | |
| all | 3 | 52JY1AR006 | ELBOW 90DEG 1" FEM #5504-16 | |
| all | 4 | 52JY0PR010 | ELB 3/4M X1"MJIC #2501-16-12 | |
| all | 5 | 52JY0PR008 | ELB.3/4MORXF #6805-12-12NWO | |
| all | 6 | 60EH80C44A | ASSY=HYDRAULIC HOSE 1"X44"LG | |
| all | 7 | 60EH80C34A | ASSY=HYDRAULIC HOSE 1"X34"LG | |
| all | 8 | 52JY0PR011 | ELB-3/4MORX1MJIC#6801-16-12NW0 | |
| all | 9 | 52XY0KR050 | STRDPT 3/4MX1"MJ#6400-16-12-0 | |
| all | 10 | 96DH472 | C0UNTERBALANCE VALVE-SUN BODY #YAL | |
| all | 11 | 52VY1AR006 | TEE 1"FP #5605-16-16-16 | |
| all | 12 | 52LY1AR003 | HEXPIPNIP 1"=#5404-16-16 | |
| all | 13 | 52XY1AP001 | 1"QUICKDISCONNECT#H8-62COUPLER | |
| all | 14 | 52XY0KR045 | STRDPT 3/4M0RXF #6405-12-12-0 | |
| all | 15 | 52AY01R005 | HEXPTPEBUSH 1"MX3/4F5406-16-12 | |
| all | 16 | 52LY0PR003 | HEXPIPNIP 3/4X3"HEXBODY | |
| all | 17 | 5N0P06AF82 | NPT NIP 3/4X6 TBE BLKSTL SK80 | |
| all | 18 | 52XY1AP002 | 1"QUICKDISCONNECT #H8-63NIPPLE | |
| all | 19 | 5N1A52AF82 | NPT NIP 1X52 TBE BLKSTL SK80 | |

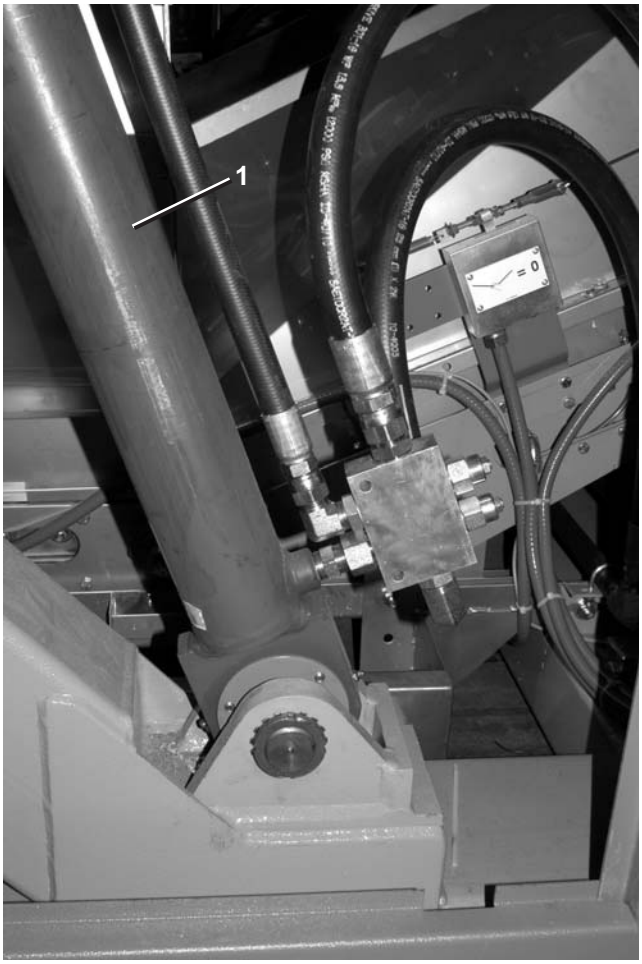
# Hydraulic Tilt Cylinders

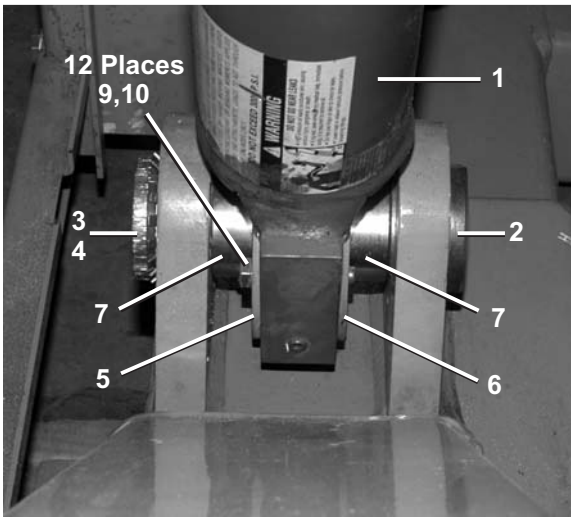
**M9V4232, MXS4232, M7V4836, M9V4840**




Typical Hydraulic Tilt Cylinder



# Hydraulic Tilt Cylinders

**M9V4232, MXS4232, M7V4836, M9V4840**

## Parts List—Hydraulic Tilt Cylinders

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GHT17010 | ASSY=4840M HYDRAULICS | M7V4836_, M7V4840_, M9S4840_ |
| | B | GHT16000 | HYD.MOTOR&PUMP ASSY 4232 M7E | M9V4232_, MXS4232_ |
| | | | ----------COMPONENTS---------- | |
| A | 1 | 27E163A56A | HYD.CYL.3.25"X2.5"X56"STK. | |
| B | 1 | 27E1647A64 | HYD.CYL.2-STAGE 64"STROKE | |
| all | 2 | X3 65141 | BOLT=2.00 SFTDIA X 5.25L HYD | |
| all | 3 | 56AHN09 | N09 BEARING LOCKNUT | |
| all | 4 | 56AHW09 | W09 BEARING LOCKWASHER | |
| all | 5 | 03 65142 | WASH=HYD4.75ODX2.62IDW/HOLES | |
| all | 6 | X3 65142A | WASH=HYD4.75ODX2.62IDW/TAP | |
| all | 7 | X3 65145 | SPCR=HYDCYL MNT2"BALBUSH SM | |
| all | 8 | 54A705A | SPHERICAL PLAIN BEARING=2"ROLLBRG#B32-L | |
| all | 9 | 15K120 | HXCAPSCR 3/8-16UNC2AX2 GR5 ZIN | |
| all | 10 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |

# Assuring Proper Counterbalance Valve Operation-Hydraulic Tilting Washer-Extractors and Centrifugal Extractors

Various conditions, such as a non-functioning or misadjusted limit switch, a seized pivot ball bushing or, a counterbalance valve failure, can cause erratic or uneven up/down movement of the hydraulic tilt cylinders. This document addresses normal counterbalance valve operation and adjustment.

In most cases, it is not possible to perform counterbalance valve adjustments without entering the housing and/or reaching under the raised cylinder.

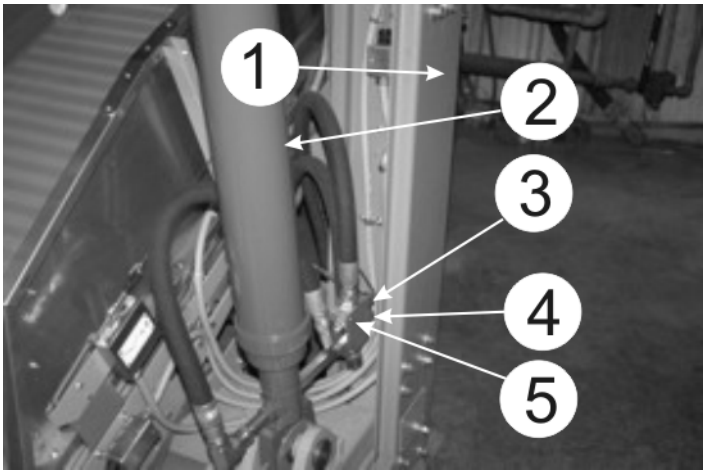
**WARNING 1: Entangle and Crush Hazard**—The machine shell will crush your body or limbs if it descends or falls while you are under it. The housing can descend with power off or on. Manual operation of tilting valves overrides safety interlocks. Improper operation of manual tilting valves may cause the shell to descend.

- Never operate the manual tilting with anyone under the machine.
- Use the safety stands as appropriate. If used, follow instructions in the manual.
- Read the SAFETY ALERT on use of the *access panel interlock safety bypass* switch in the service manual before setting the maintenance key switch to "Maintenance Only "
- After adjustments, return the key switch to "Safe Operation" and remove the key to a secure area before resuming normal operation.

## 1. Observing Tilt Cylinder Operation

**Figure 1: Right Cylinder and associated Counterbalance Valves**

**Components of Hydraulic Manifold**




**Legend**

1. Right rear corner of machine
2. Tilt cylinder
3. Upper counterbalance screw-in cartridge valve (controls the ascending speed of a tilt cylinder)
4. Lower counterbalance screw-in valve cartridge (controls the descending speed of a tilt cylinder)
5. Counterbalance valve manifold body

### 1.1. Setup

1. Remove the left and right door side panels and identify the components shown in Figure 1.
2. Set the *access panel interlock safety bypass key* switch to the "Maintenance Only" position.

### 1.2. Observations

Use the key pad controls, as explained in the manuals, to manually raise and lower the shell several times as described below, and verify the following proper operation.

1. Carefully move the shell from full down to full up. Verify that the cylinders move in unison and reach the top at approximately the same time.
2. Raise the shell fully and release the controls. Observe the machine for at least 3 minutes to assure that the shell does not drift down.
3. Manually lower the shell completely. Verify that the tilt cylinders move in unison and reach the bottom at approximately the same time.
4. If the cylinders exhibit any erratic movement that can be attributed to the counterbalance valves, perform the service explained below.

## 2. Tilt Cylinder Hydraulic Components and Functions

The hydraulic schematic provided in the service manual titled "Hydraulic Schematic " shows the counterbalance circuitry.

**2.1. Components**—Figure 1, item 5 shows one of the two counterbalance manifolds. Each manifold has two screw-in counterbalance valve cartridges (items, 3 and 4). Referring to Figure 2, each counterbalance valve cartridge has the following:

- A base nut (item 5) used to screw the valve into the manifold.
- A lock nut which must be turned slightly using an open-end wrench (item 1).
- An adjustment screw, (item 3) which must be turned with a hex key wrench.

### 2.2. Functions of Components

**Manifold (Milnor P/N 96DH472)**—Provides feedback between the two counterbalance valves

**Counterbalance valve (Milnor P/N 96DH472A)**—Provides the following:

- Permits unrestricted flow into a cylinder, while controlling exhaust flow from the cylinder.
- Protects against cylinder drifting down
- Reduces flow when lowering to limit speed
- Provides speed adjustment so cylinders can be made to travel in unison
- Pilot action locks machine shell from coming down if pressure is lost due to leaks

**Tip:** For an in-depth explanation of these components, see www.sunhydraulics.com or download Sun´s virtual counterbalance valve simulation (www.e4training.com/hyd03/sitemap.htm).

## 3. Counterbalance Valve Adjustments

Use this procedure on all four counterbalance valves if you observes any erratic movements listed above.

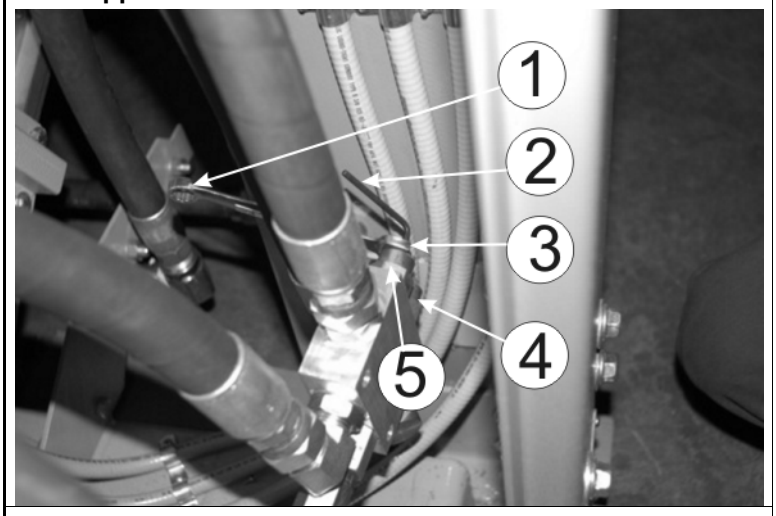
**3.1. Coarse Adjustments**—Referring to Figure 2,

1. Loosen the lock nut with a 9/16" open end wrench ( item 1 ) .
2. Using a 5/32" hex key wrench (Allen wrench, Unbrako key), screw the adjustment nut (Figure 2, item 2) in fully.

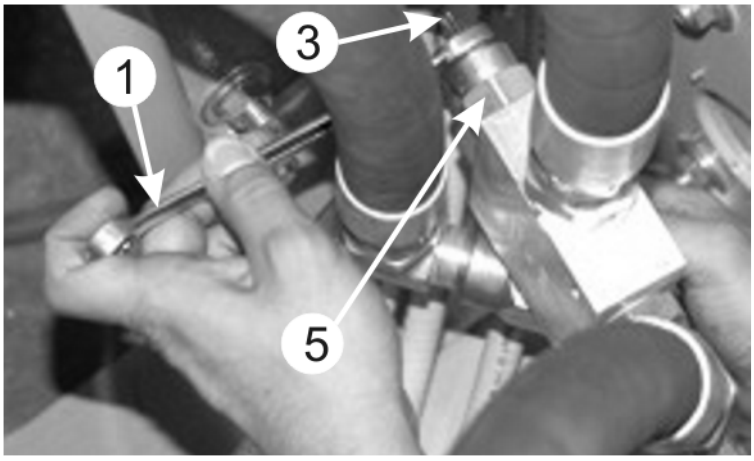
3. Back off the adjustment screws
   a. upper valve -- one full turn (360 degrees)
   b. lower valve -- 3/4 turn (270 degrees)
4. While holding the adjustment nut stationary, tighten the lock nut.

**Figure 2: Right Side Hydraulic Manifold**

**Upper and lower counterbalance valve locations**




**Adjusting the Upper Counterbalance Valve**




**Legend**

1. 9/16" open end wrench connected to lock nut on upper counterbalance valve
2. 5/32" hex key wrench (Allen wrench, Unbrako key) in adjustment screw
3. Adjustment screw (recessed socket for hex key wrench)
4. Lower counterbalance valve
5. Base nut screwed into hydraulic manifold

**3.2. Fine Adjustments**—By making small adjustments of about a 1/4 of a turn to either counterbalance valve, you should be able to get the two cylinders to move up and down in unison so that both sides reach end of travel at approximately the same time. Be careful to hold the adjustment screw (Figure 2, item 3) stationary, while tightening the lock nut (Figure 2, item 1). Screw out the adjustment (Figure 2, item 3) to slow downward movement. Screw in the adjustment (Figure 2, item 3) to increase speed.

## 4. Return Machine to Normal Operation

Remove the tilt safety stands if they were used.

1. Manually tilt the shell down.

2. Replace the door side panels. Return the key switch to "safe operations" and move the key to a secure area.

— End of BIPEUM01 —

# Control and Sensing Devices

8

# Door Safety Switch Installation

**M7E4232C,L,R M7V4232C,L,R  M9E4232C,L,R M9V4232C,L,R**



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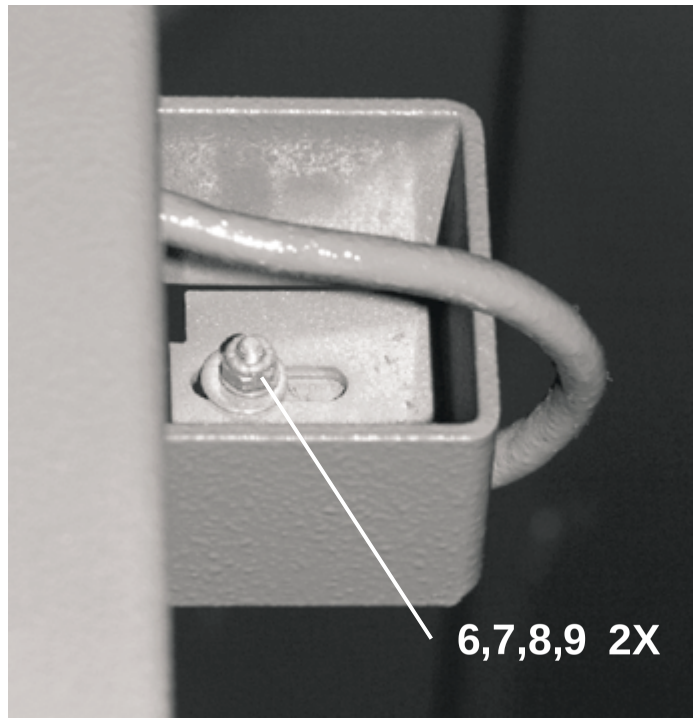
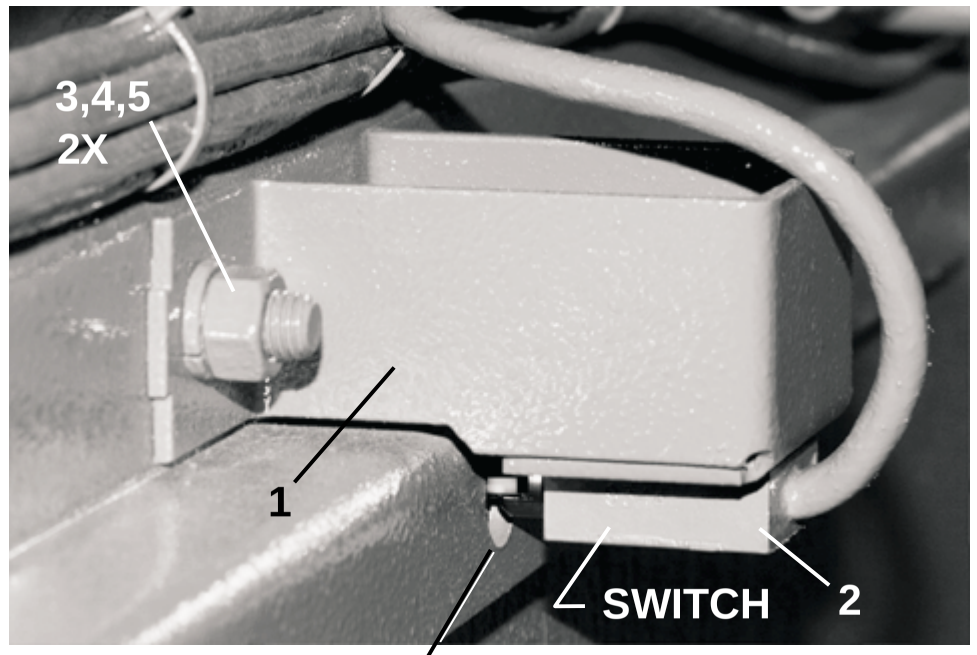
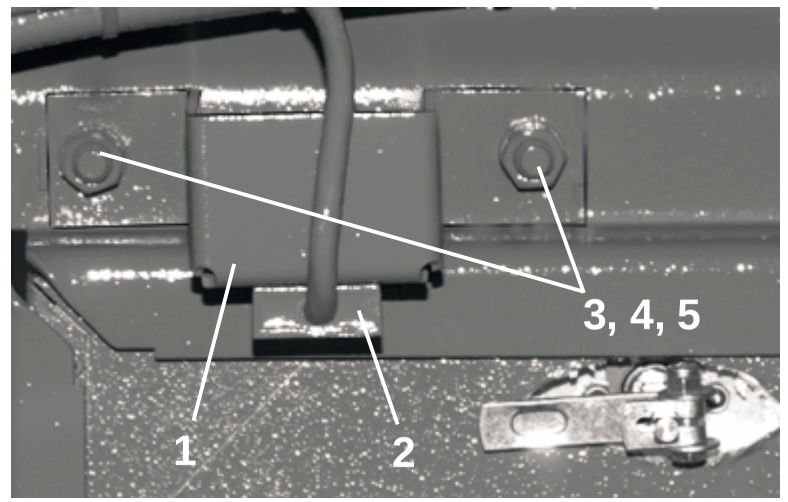
## THIS INSTALLATION IS TYPICAL FOR ALL DOOR PANELS



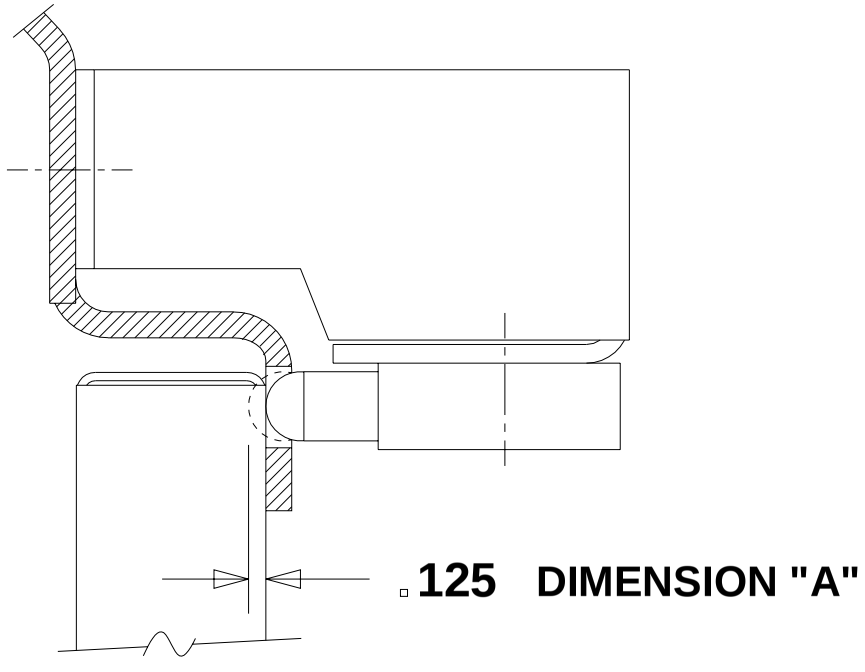




FIGURE 1

**SWITCH IS ENGAGED WHEN THE DOOR PANEL STRIKES THE ROLLER PLUNGER THROUGH THE ACCESS HOLE.**

**SEE DIMESION "A" SHOWN IN FIGURE 1 FOR LOCATION WHEN INSTALLING SWITCH. ANYTHING LESS OR GREATER THAN DIM. "A" WILL RENDER THIS SAFETY DEVICE INOPERABLE!**

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## Parts List—Door Safety Switch Installation

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | GGS16006 | INSTL=DOOR SAFETY SW. 42M7E | INSTALLATION |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 03 16264B | COSMETIC DOOR SAFETY SW/BRKT | |
| all | 2 | 09RM01418G | CAPSW 18'ROTARY ACTUATE GOLD | |
| all | 3 | 15K162 | HXCAPSCR 1/2-13UNC2AX1.5 GR5 P | |
| all | 4 | 15U300 | LOKWASHER REGULAR 1/2 ZINC PLT | |
| all | 5 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| all | 6 | 15K041 | HXCAPSCR 1/4-2OUNC2AX1 GR 5 ZI | |
| all | 7 | 15U185 | FLATWASHER(USS STD) 1/4" ZNC P | |
| all | 8 | 15G177 | HXNUT 1/4-28UNF2B SAE ZINC GR2 | |
| all | 9 | 15U180 | LOCKWASHER MEDIUM 1/4 ZINCPL | |

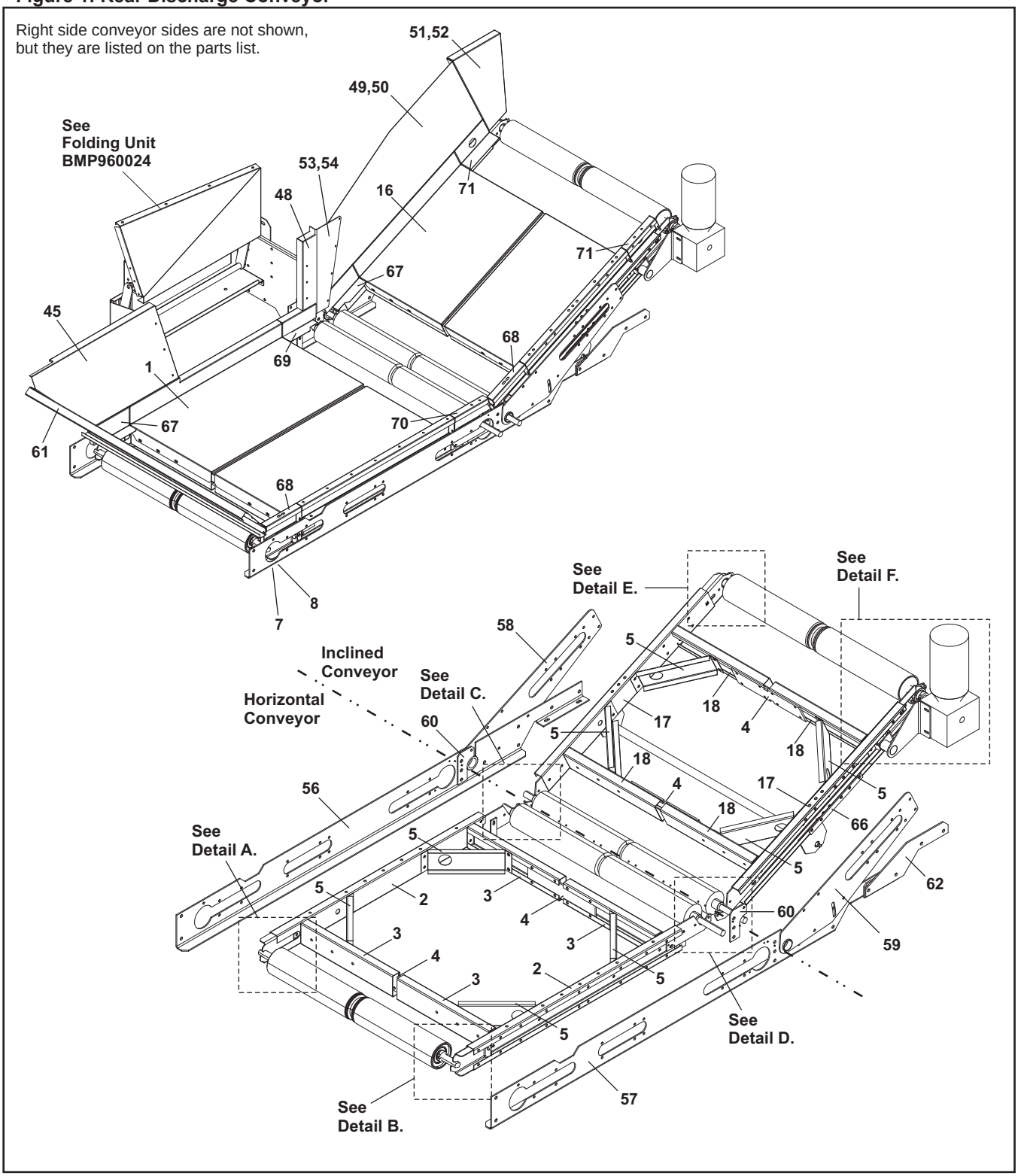
# Conveyor Assemblies

9

# Extractor Conveyor - 25° Rear Discharge

**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

**Figure 1: Rear Discharge Conveyor**

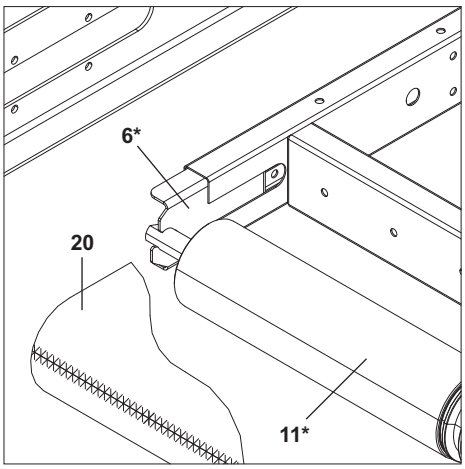


# Extractor Conveyor - 25° Rear Discharge

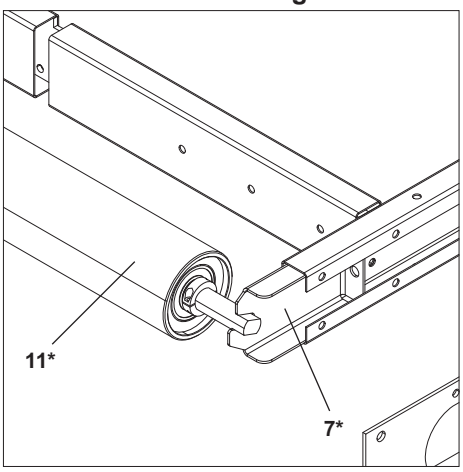
**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

**Figure 2: Rollers and Bearings**

**Detail A: Idler Roller Left**



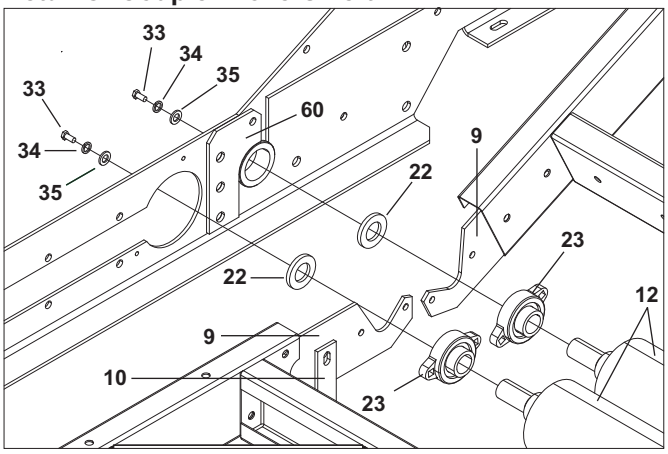

**Detail B: Idler Roller Right**



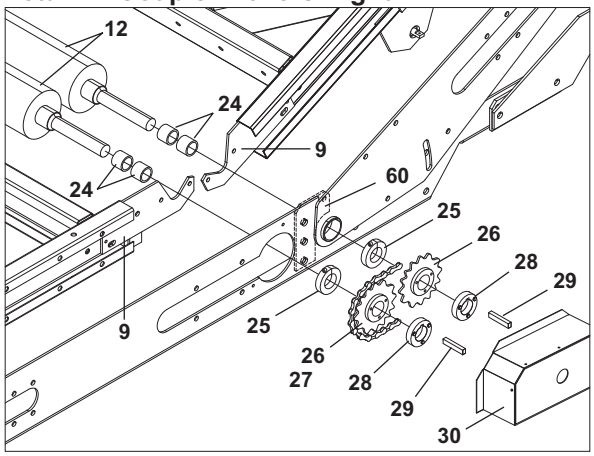

* NOTE: When replacing the Idler Rollers for machines produced before 2005, you must replace both the entire roller assembly and the roller bearing supports (items 6,7, and 11).

BELT LENGTHS:
Horizontal – = 40”x123”
Inclined –
0” extention = 40”x104”
24” extention = 40”x152”
48” extention = 40”x202”

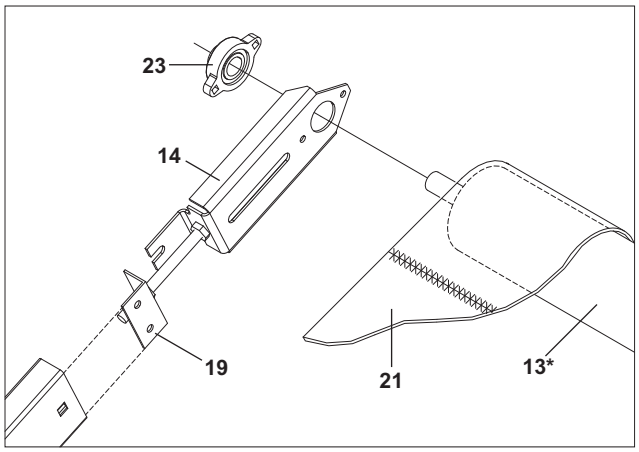
**Detail C: Coupler Rollers Left**



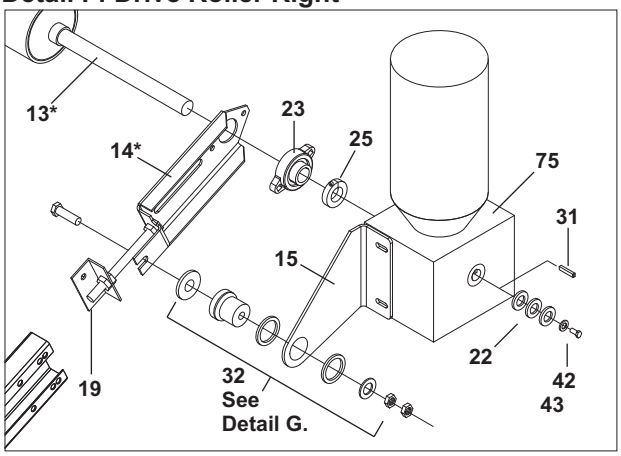

**Detail D: Coupler Rollers Right**




**Detail E: Drive Roller Left**



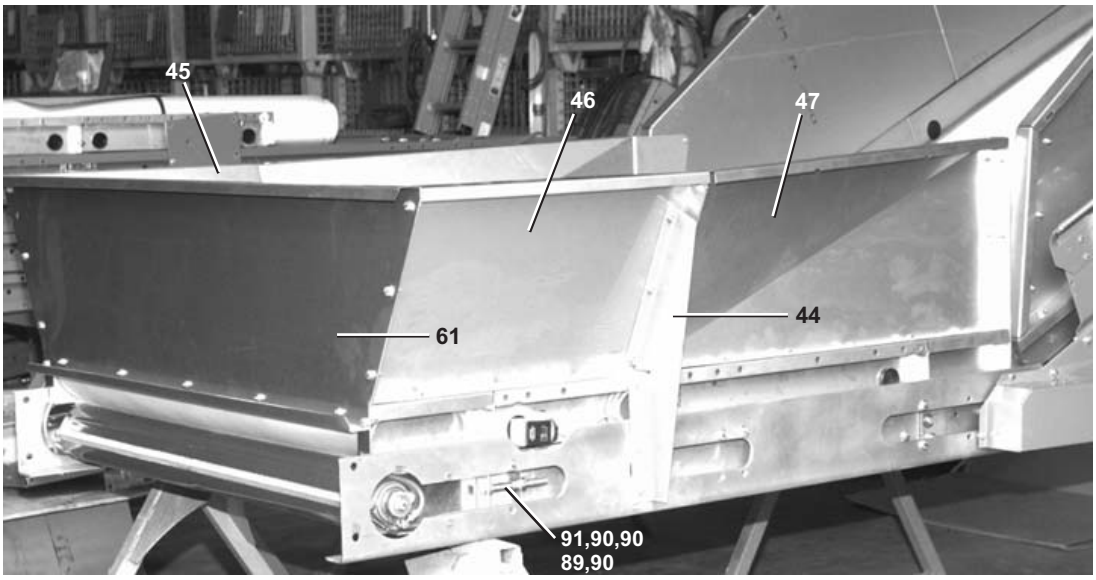

**Detail F: Drive Roller Right**

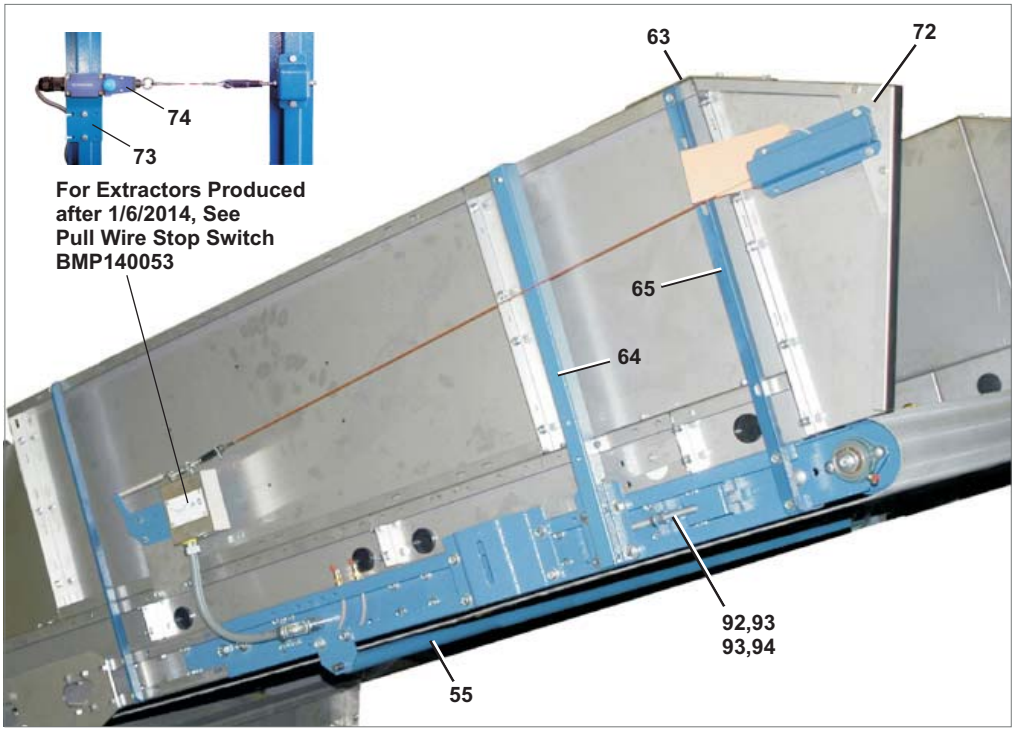


# Extractor Conveyor - 25° Rear Discharge

**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

**Figure 3: Sides**

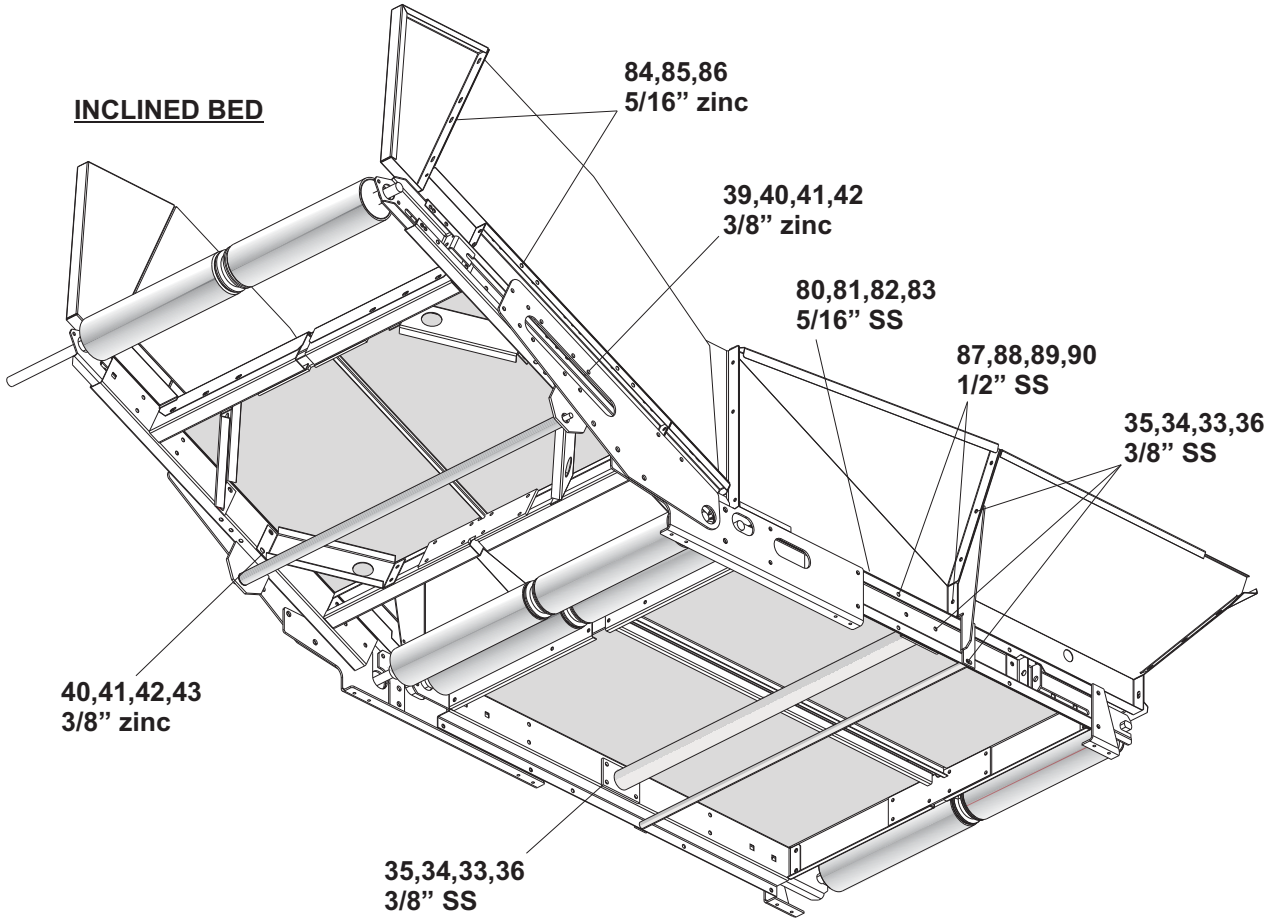


# Extractor Conveyor - 25° Rear Discharge

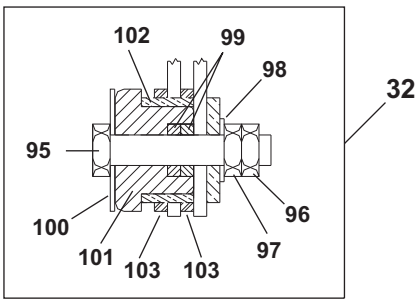
**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

**Figure 4: Standard Hardware (shown on MXS4232C conveyor)**




**Bottom View: Extractor Conveyor**

**DETAIL G**



# Extractor Conveyor - 25° Rear Discharge

**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ALC50062 | 25 DEG REAR DISC M7E CONVEY | REFERENCE |
| | B | ALC500035A | CONVEY BED-DISC REAR-HORZ | HORIZONTAL BED |
| | C | ALC500036 | CONVEY BED-DISC REAR-25DEG | INCLINED BED |
| | | | ----------COMPONENTS---------- | |
| all | 1 | 04 20804C | CONV BED 41X50 W/NOTCH | |
| all | 2 | 04 20802B | CONV SIDE FRAME 4"X45.5 S/S | |
| all | 3 | 04 20803A | CROSS MBR SECTION CONV (S/S) | |
| all | 4 | 04 20809S | BED JOINER PLATE S/S | |
| all | 5 | 04 20810A | CORNER BRACE CONV 4" (S/S) | |
| all | 6 | 04 20801F | BRNG SUPPORT LOADEND-LF | |
| all | 7 | 04 20801G | BRNG SUPPORT LOADEND-RT | |
| B | 8 | 04 20808A | BEARING ADJ BRKT CONV (S/S) | |
| C | 8 | 04 20808 | BRNG ADJ BRKT CONV (COLOR=AZURE BLUE) | |
| all | 9 | 04 22907 | BRG SUPPORT PLATE-9.63 LG | |
| all | 10 | 04 22909 | ROLLER SUPPORT FLATBAR | |
| all | 11 | ALC50114A | IDLER ROLLER 35MM BRNG SS-EXTCONV | |
| all | 12 | Y4 20832C | EXT-CONV COUPLER ROLLER-MACH | |
| all | 13 | Y4 20832E | DRVROLLER 4.50D X 53" OAL | |
| all | 14 | 04 22131 | BRNG SUPPORT UNLOAD END | |
| all | 15 | 04 22132 | TORQARM 25DEG EXTCONV-RT | |
| all | 16 | 04 20804G | CONV BED 40WX28L GROOVE | |
| all | 17 | 04 20802K | CONV SIDE FRAME 4"X40"LG | |
| all | 18 | 04 20803A | CROSS MBR SECTION CONV (S/S) | |
| all | 19 | 04 20808 | BRNG ADJ BRKT CONV | |
| B | 20 | 54C401000J | BELT 40" X 123" GREEN V-GUIDE W/CLEAT | |
| C | 21 | 54C401000B | BELT 40" X 104" V-ROUGH TOP | 0” EXTENTION |
| C | 21 | 54C401000C | BELT 40" X 152" V-ROUGH TOP | 24” EXTENTION |
| C | 21 | 54C401000D | BELT 40" X 200" V-ROUGH TOP | 48” EXTENTION |
| all | 22 | 15U241MB | FLAT WASHER-1.50D 1+1/32ID 10G | |
| all | 23 | 54AF10001 | FLG BRG 1" BROWN#VF2S-116M (2BOLT FLG) | |
| all | 24 | 02 02921H | SPACER=BUSHING LOCKING | |
| all | 25 | 54JH11000A | SHAFTCOLLAR 1" CLPTYPE CFG#16A | |
| all | 26 | 54N050JA13 | SPRKT MARTIN #50JA13SS MTO-NO BUSH | |
| all | 27 | 54G050SS28 | ROLCHN 5/8P 50SS1R EXTR=28PTCH | |
| all | 28 | 56Q1AJA | 1.0" BUSHING M#JA-1-304SS MTO | |
| all | 29 | 15E197 | 1/4X1/4X1SQMACHKEY N0 TAPR/HD | |

# Extractor Conveyor - 25° Rear Discharge

**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 30 | ALC500040 | CHAIN GUARD ASSEMBLY | |
| all | 31 | 15E227 | MACHINE KEY .250X.219X4.50LG | |
| all | 32 | ALC420063 | TORQUE ARM BUSHING ASSEMBLY | |
| all | 33 | 15K096 | HEXCAPSCR 3/8-16UNC2X1SS18-8 | |
| all | 34 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 35 | 15U245 | FLTWASH 3/8 STD COMM 18-8 SS | |
| all | 36 | 15G206 | HEXNUT 3/8-16 UNC2 SS 18-8 | |
| all | 37 | 15K100 | HEXCAPSCR 3/8-16X1+1/4 SS18-8 | |
| all | 38 | 15K086 | HXCAPSCR 3/8-16NCX3/4 SS18-8 | |
| all | 39 | 15K095 | HXCPSCR 3/8-16UNC2AX1 GR5 ZINC | |
| all | 40 | 15U240 | FLATWASHER(USS STD) 3/8" ZNC P | |
| all | 41 | 15U255 | LOCKWASHER MEDIUM 3/8 ZINCPL | |
| all | 42 | 15G205 | HXNUT 3/8-16UNC2B ZINC GR2 | |
| all | 43 | 15K091H | HEXFLGSCR 3/8-16X3/4 ZN GRD.5 | |
| all | 44 | 04 22062 | FLAIRSIDE ENDGATE SUPPORT | |
| all | 45 | 04 21992 | FLAIRSIDE ENDGATE LF | |
| all | 46 | 04 21992A | FLAIRSIDE ENDGATE RT | |
| all | 47 | 04 21990 | FLAIRSIDE STATIONARY | |
| all | 48 | 04 21991 | SIDE EXT FILLER 3.5L X 15.OH | |
| all | 49 | 04 22133A | SIDE EXT REAR UNLOAD-LF | |
| all | 50 | 04 22133 | SIDE EXT REAR UNLOAD-RT | |
| all | 51 | 04 22134A | SIDE EXT DISC END-LF | |
| all | 52 | 04 22134 | SIDE EXT DISC END-RT | |
| all | 53 | 04 22135A | SIDE EXT INCLINE ADP-LF | |
| all | 54 | 04 22135 | SIDE EXT INCLINE ADP-RT | |
| all | 55 | AIC40002 | COINC 40W IDLER ASSY | |
| all | 56 | 04 22033B | BED FRAME SUPPORT LF-30DEG | |
| all | 57 | 04 22033C | BED FRAME SUPPORT RT-30DEG | |
| all | 58 | W4 23149A | *BED SUPPORT-LF WLMT 30DEG | |
| all | 59 | W4 23149 | *BED SUPPORT-RT WLMT 30DEG | |
| all | 60 | 04 23175 | BED SUPT DOUBLER PLATE-25DEG | |
| all | 61 | ALC500041 | REAR-UNLOAD ENDGATE ASSY | |
| all | 62 | 04 23150 | HYD PIPE SUPPORT PLATE | |
| all | 63 | 04 21987 | SIDE EXTENSION STIFFENER | |
| all | 64 | 04 21988 | SIDE EXTENSION SUPPORT BRKT | |

# Extractor Conveyor - 25° Rear Discharge

**M7E4232C, M7V4232C, M9V4232C, MXV4232C, MZV4232C, and MXT4232C**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| all | 65 | 04 22416 | SIDE SUPT BRKT | |
| all | 66 | 04 22072 | BED FRAME SUPPORT SHIM | |
| all | 67 | 04 22032A | SPACER BLOCK 9"LG-LF | |
| all | 68 | 04 22032B | SPACER BLOCK 9"LG-RT | |
| all | 69 | 04 22032C | SPACER BLK 30DEG HORZ MID LF | |
| all | 70 | 04 22136 | SPACER BLOCK 4"X8.56LG-RT | |
| all | 71 | 04 22137 | SPACER BLOCK 4"X7.94LG | |
| all | 72 | 04 22165 | SAFETY WIRE-PULL BRKT-EXTRCONV | |
| all | 73 | 04 24128 | SAFETY SW MTG PLATE-4232M | |
| all | 74 | ALC40005E | PULL-WIRE STOP SWITCH ASSY | |
| all | 75 | 54STB3183R | REDCR30 B#SF718-30T-B5-G +OIL | |
| all | 80 | 15K052 | HXCAPSCR 5/16-18UNC2AX3/4 SS18 | |
| all | 81 | 15U189 | FLTWASH 9/32IDX3/40DX.063THK S | |
| all | 82 | 15U205 | LOCKWASHER MEDIUM 5/16" 18-8SS | |
| all | 83 | 15G186 | HEXNUT 5/16-18UNC2 SS18-8 | |
| all | 84 | 15K063 | HXCPSC 5/16 18X1 GR8 ZC | |
| all | 85 | 15U210 | LOKWASHER MEDIUM 5/16 ZINCPL | |
| all | 86 | 15U185 | FLATWASHER(USS STD) 1/4" ZNC P | |
| all | 87 | 15K145D | HXCAPSCR 1/2-13UNC2AX3/4 SS18- | |
| all | 88 | 15U285 | FLATWASHER 1/2 STD COMM SS18-8 | |
| all | 89 | 15U310 | LOKWASHER REGULAR 1/2 SS18-8 | |
| all | 90 | 15G225 | HEXNUT 1/2-13UNC2 SS18-8 | |
| all | 91 | 15K203 | HXTAPSCR TFL 1/2-13X5 GR5 ZINC | |
| all | 92 | 15K205 | HXCAPSCR 1/2-13UNC2AX8.5GR5 ZI | |
| all | 93 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| all | 94 | 15G222B | HEXFLGNUT 1/2-13 ZINC SERRATED | |
| all | 95 | 15K144C | HEXCAPSCR 7/16-14UNC X 2.5 GR | PART OF ITEM 32 |
| all | 96 | 15G222 | HXFINJAMNUT 7/16-14UNC2B ZINC | PART OF ITEM 32 |
| all | 97 | 15G222C | HEXNUT 7/16-14UNC2B ZINC GR2 | PART OF ITEM 32 |
| all | 98 | 15U271 | LOKWASH INTOOTH 7/16ZN | PART OF ITEM 32 |
| all | 99 | 15U312 | HARD FWASH 3/4ODX33/64IDX.115 | PART OF ITEM 32 |
| all | 100 | 15U202 | FLATWSHR.50ID1.75OD11GA ZNC | PART OF ITEM 32 |
| all | 101 | 60B065 | RUBBER MNT CTR BONDED 40 DURO | PART OF ITEM 32 |
| all | 102 | 04 20796 | SLEEVE=TORQUE ARM BUSHING | PART OF ITEM 32 |
| all | 103 | 02 18571A | PISTON ROD WASHER-.25"TK | PART OF ITEM 32 |

# Folding Unit

## Extractor Conveyors with Rear Discharge



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P. O. Box 400, Kenner, LA 70063-0400



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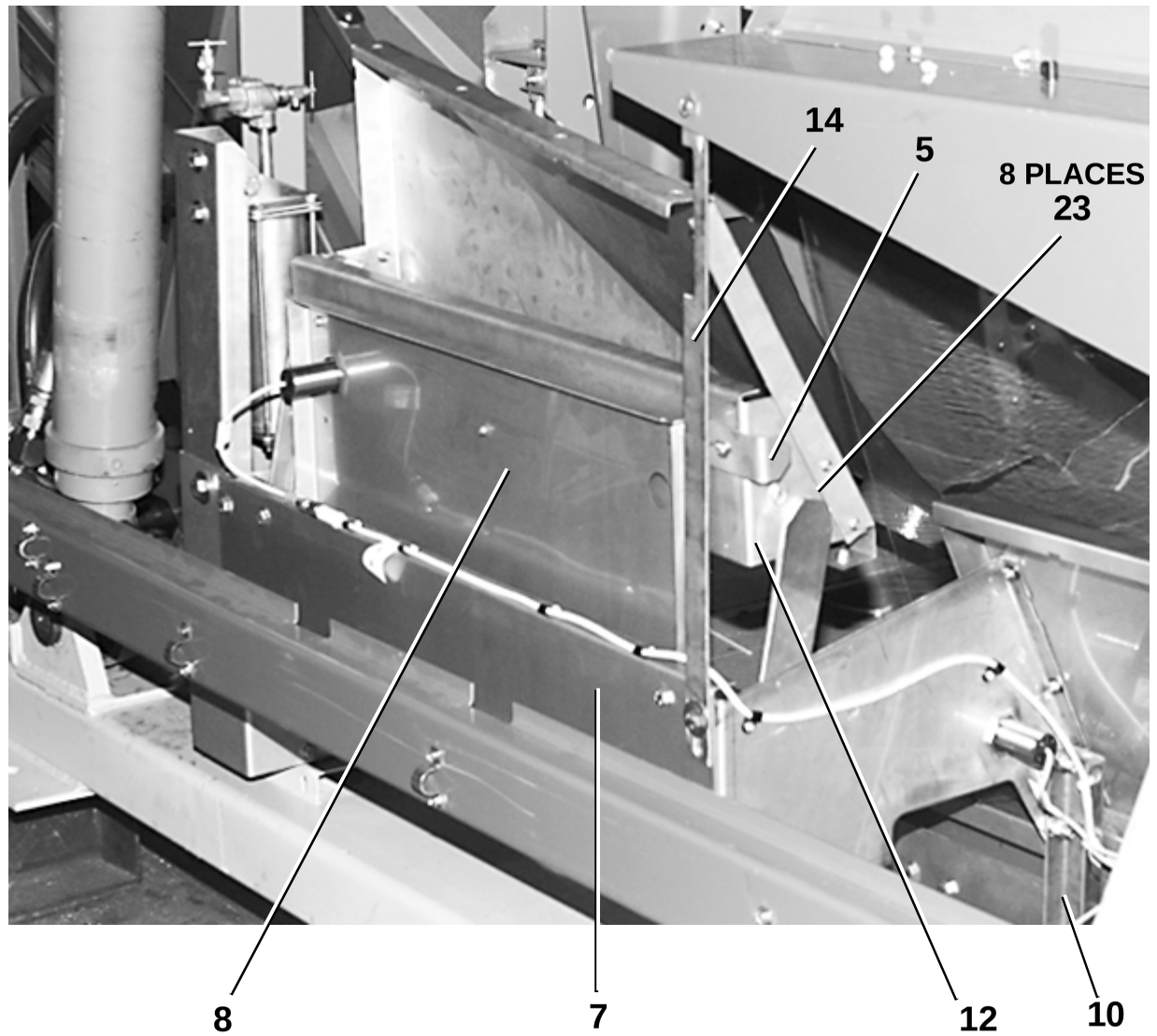


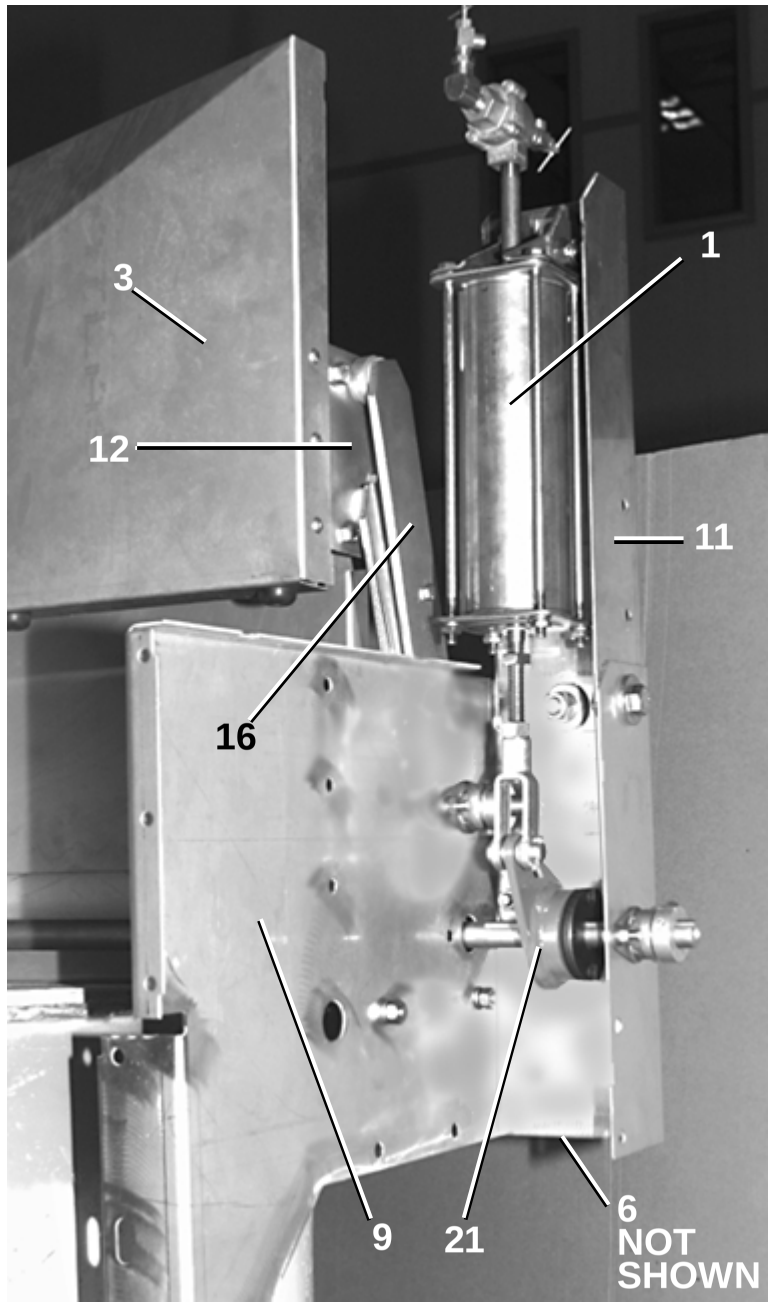


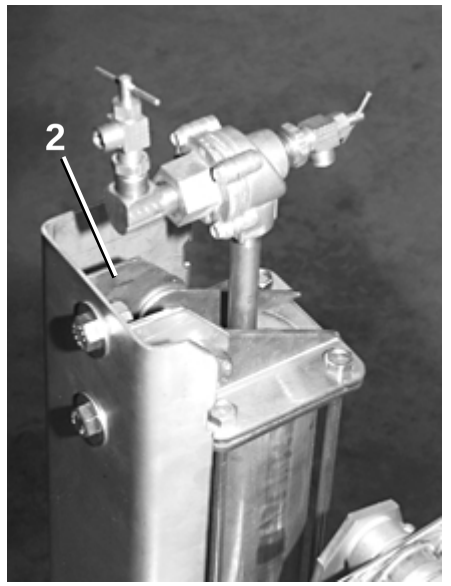


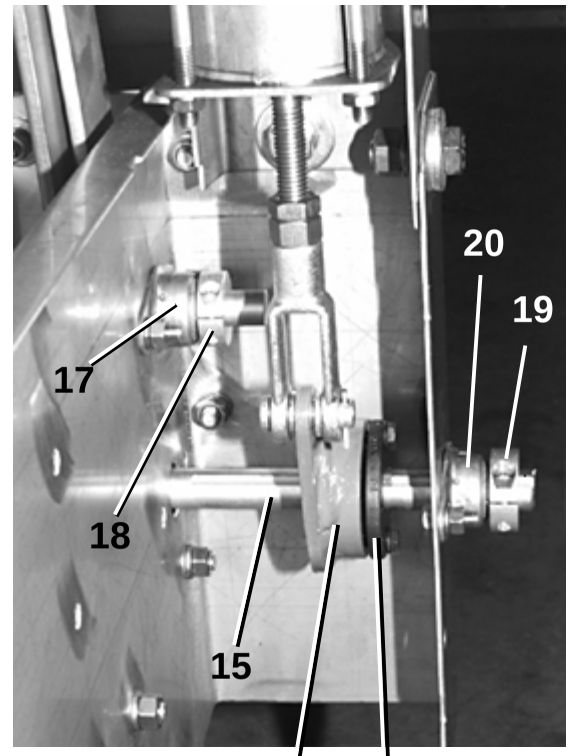

# Folding Unit

## Extractor Conveyors with Rear Discharge



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BMP960024/96473V (2 of 3)

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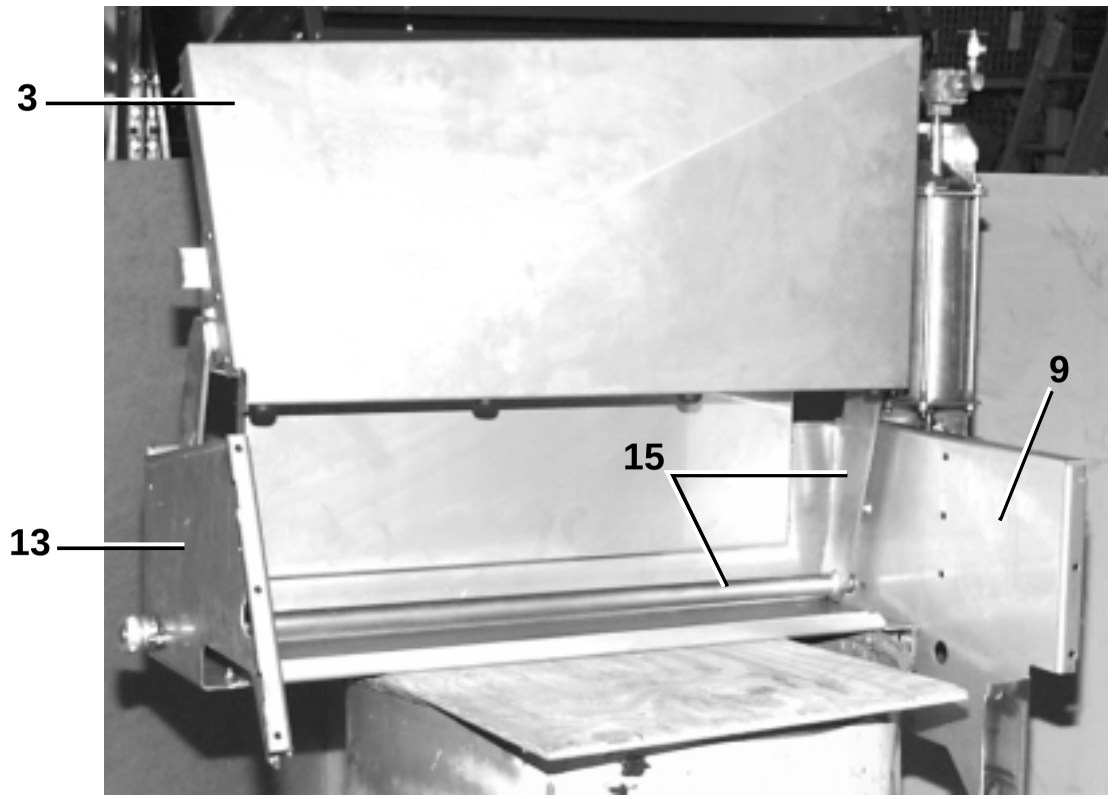


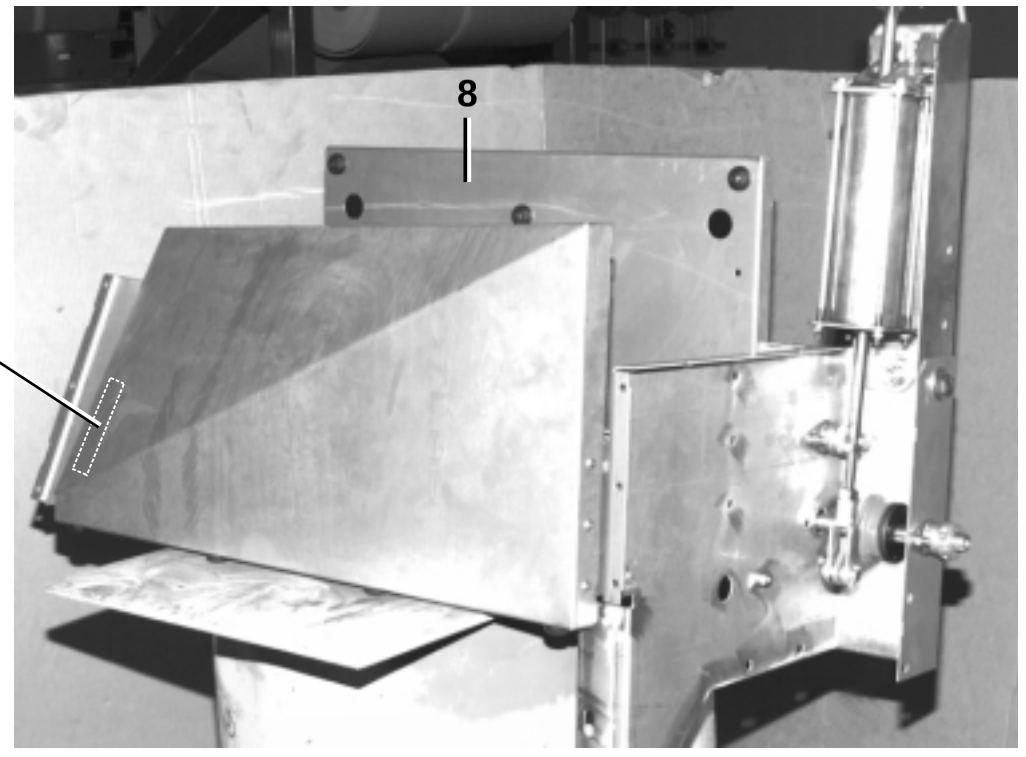


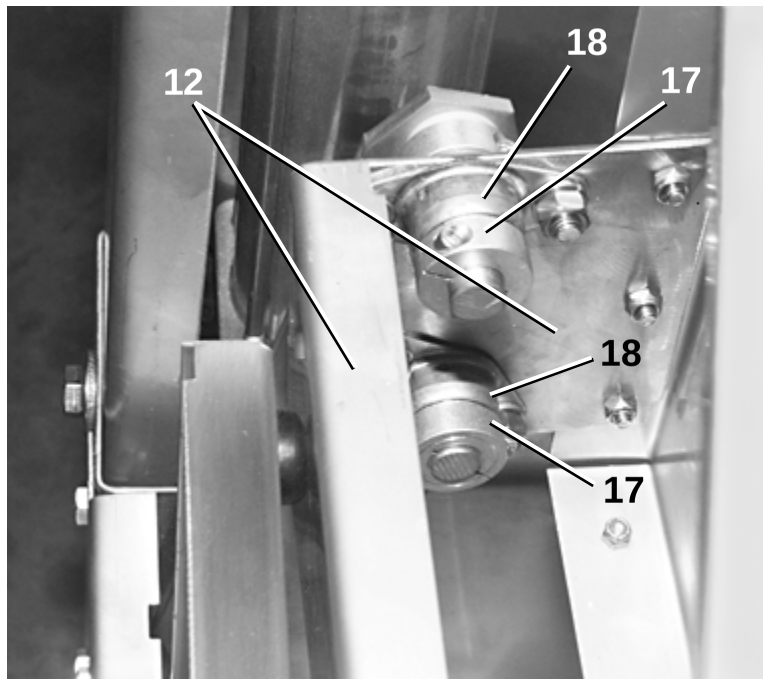


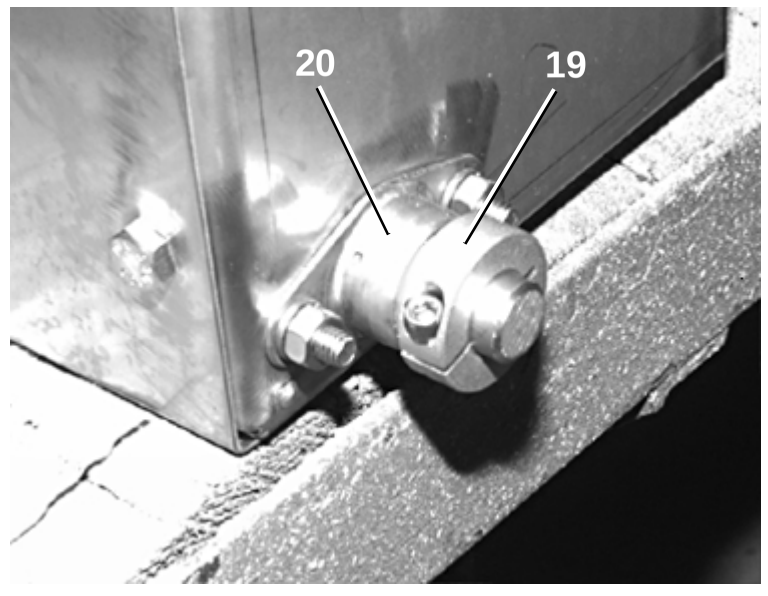


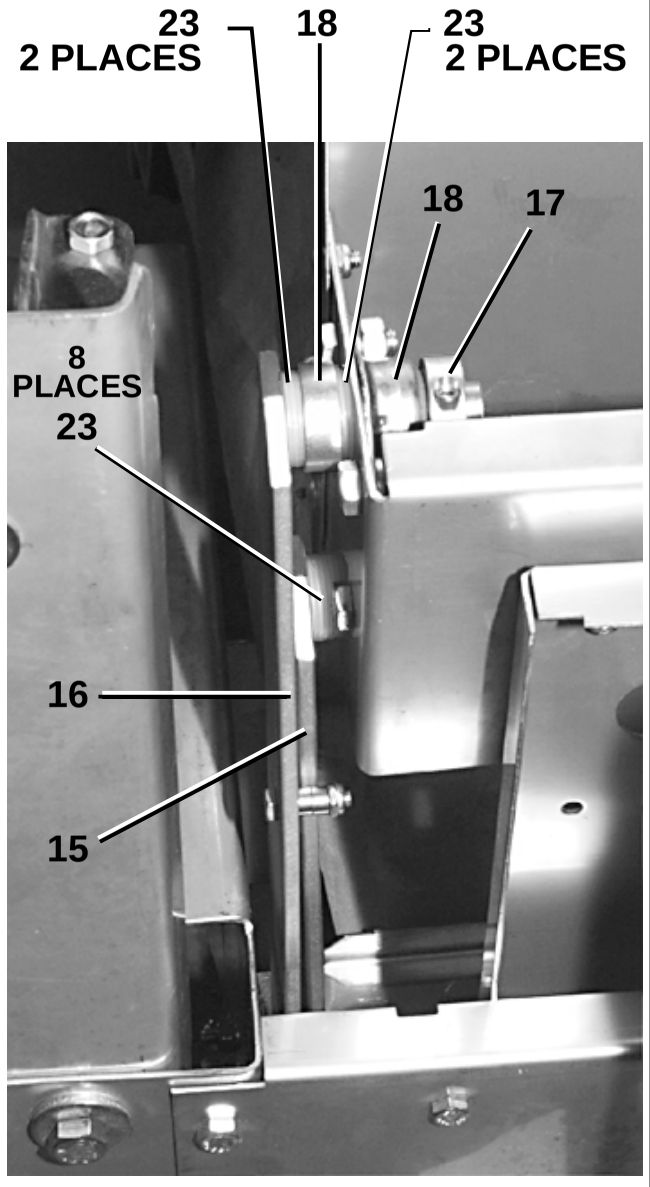

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## Parts List—Folding Unit

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ALC500039 | 92000Z EXT/REAR-UNLOAD FOLDING UNIT | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | SA 10 057D | 95222# AIRCYL=3.0ODX3.89ST171/176SS | |
| all | 2 | 04 22026A | 94162B AIR CYL PIVOT MTG | |
| all | 3 | 04 21989 | 94391D FLAIRSIDE FOLDING | |
| all | 4 | 04 24032 | 93061B FOLDING SIDE SHIM | |
| all | 5 | 04 22073 | 92682B RUNL FOLDING ASSY TARGET | |
| all | 6 | 03 16284 | 92413C CONV FOLDSIDE SUPT 42M7E | |
| all | 7 | 04 22008 | 93061D FOLDSIDE SIDE SUPPORT | |
| all | 8 | 04 22009 | 93313D FOLDSIDE BACK STOP | |
| all | 9 | 04 22010 | 93061D FOLDSIDE MAIN SUPPORT | |
| all | 10 | 04 22025 | 93061D FOLDSIDE MTG END CHANNEL | |
| all | 11 | 04 22026 | 93061D AIR CYLINDER MTG BRKT | |
| all | 12 | 04 22027 | 93061D FOLDSIDE MTG BRKT | |
| all | 13 | 04 22006 | 95363D FOLDSIDE END SUPPORT | |
| all | 14 | 04 22128 | 93142C FOLDING DOOR SUPPORT LEG | |
| all | 15 | W4 22060 | 92517C*FOLDSIDE DRIVE ARM WLMT | |
| all | 16 | W4 22061A | 93347C*FOLDSIDE IDLER ARM WLMT | |
| all | 17 | 54JH10625A | 01Z SHAFTCOLLAR 5/8 CLPTYPE CFG#10A | |
| all | 18 | 54E009BM | 00Z FLMTBRG 5/8"ALL BRZ T#FL7191 | |
| all | 19 | 54JH10750A | 01Z SHAFTCOLLAR 3/4 CLPTYPE CFG#12A | |
| all | 20 | 54E015BM | 00Z FLMTBRG 3/4"ALL BRZ T#FL7190. | |
| all | 21 | W7 50678 | 87016B*LEVER/HUB WELDMENT-L/R FRONT | |
| all | 22 | 56Q0PH | 3/4" BUSHING VPUL TYPE H,D,OR QT | |
| all | 23 | 15U345B | FLAWSH 101NYL 41/64IDX1.125ODX.062 | |

# 10 Water and Steam Piping and Assemblies

# Reuse Tank Assembly

**M7E4232C,L,R M7V4232C,L,R  M9E4232C,L,R M9V4232C,L,R**



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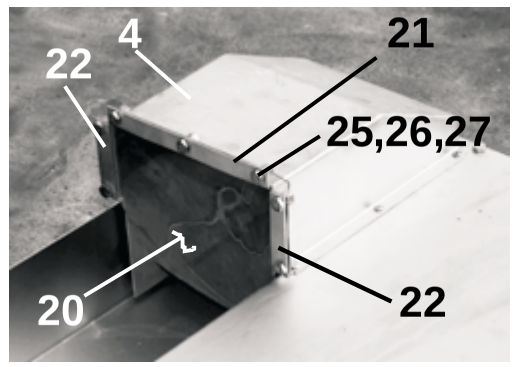


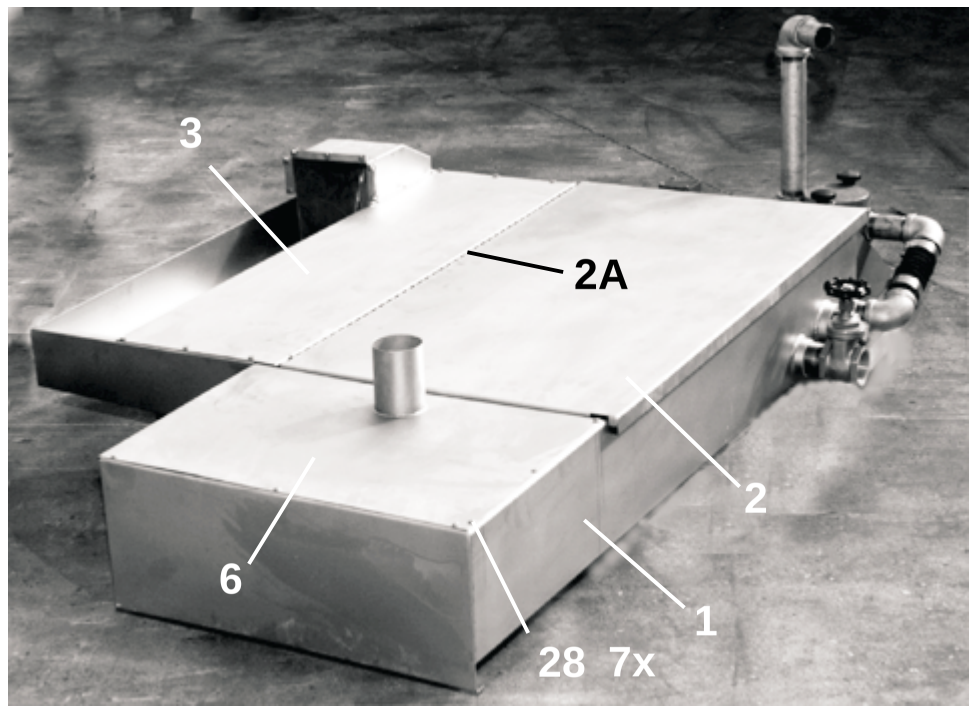


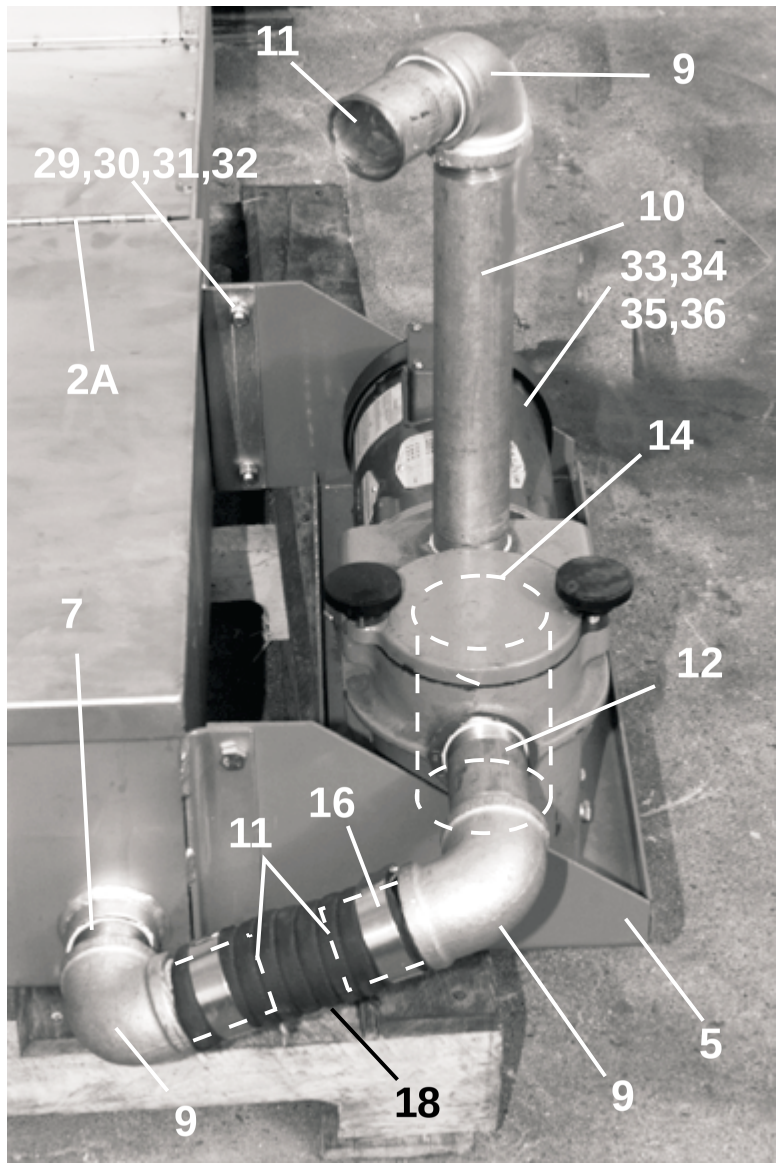


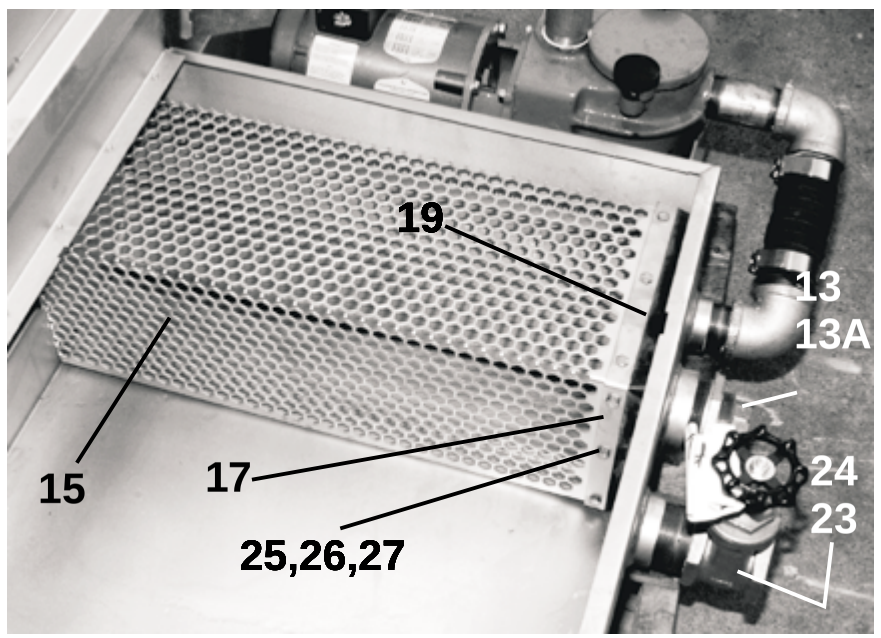


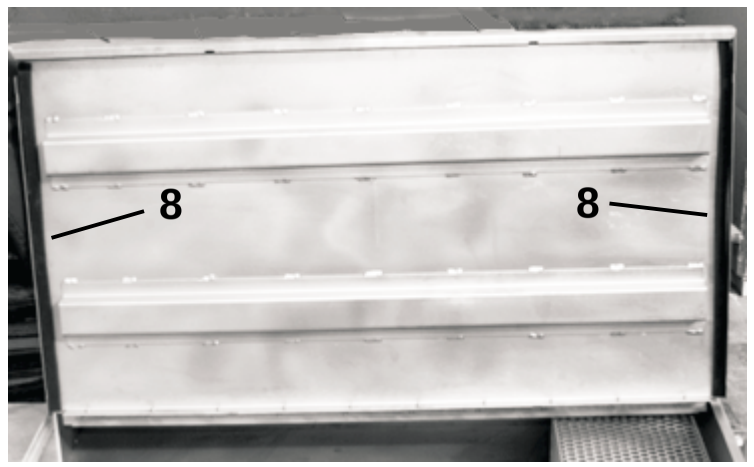

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## Parts List—Reuse Tank Assembly

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ----------ASSEMBLIES---------- | |
| | A | ARF16001 | ASSY=REUSE TANK 4232M7E | |
| | | | ----------COMPONENTS---------- | |
| all | 1 | W3 16239 | *WLMT=REUSE TANK 42M7E | |
| all | 2 | W3 16241 | *WLMT=REUSE TANK LID 42M7E | |
| all | 2 | 07 50074 | DOOR FRONT PANEL HINGE | |
| all | 3 | 03 16242 | REUSE TANK TOP 42M7E | |
| all | 4 | W3 16242 | *WLMT=REUSE TANK PIPE CVR | |
| all | 5 | 03 16244A | REUSE PUMP MOTOR BKT 42M7E | |
| all | 6 | W3 16243 | *WLMT=FLOAT TUBE/LID 42M7E | |
| all | 7 | 5N1KCLSG42 | NPT NIP 1.5XCLS TBE GALSTLSK40 | |
| all | 8 | 60A006B | NEO RUBBER STRIP 1/4"X1"W/PSA | |
| all | 9 | 5SL1KNFA | NPT ELBOW 90DEG 1.5" GALMAL 15 | |
| all | 10 | 5N1K16AG42 | NPT NIP 1.5X16 TBE GALSTL SK40 | |
| all | 11 | 5N1K03AG41 | NPT NIP 1.5X3 TOE GALSTL SK40 | |
| all | 12 | 5N1K03AG42 | NPT NIP 1.5X3 TBE GALSTL SK40 | |
| all | 13 | 5SR3A2ANF | NPT RED 3X2 GALMAL 150# | |
| all | 13 | 5SCA2ANF | NPT CAP 2" GALMAL 150# | |
| all | 14 | 27E955K00B | *MILNOR STRAINER BASKET=MARLO | |
| all | 15 | W3 16364 | *WLMT=REUSE PERF GUARD | |
| all | 16 | 27A077 | T-BOLT HOSECLAMP 2.438"-2.75" | |
| all | 17 | 03 16366 | REUSE GSKT BACKING PLATE | |
| all | 18 | 60E255 | HOSE 2" WATER CORRUGATED(V50) | |
| all | 19 | 03 16368 | REUSE RUBBER GSKT | |
| all | 20 | 03 16243C | REUSE TANK PLASTIC PLATE | |
| all | 21 | 03 16243D | PIPE CVR BACKING PLATE | |
| all | 22 | 03 16243E | PIPE CVR BACKING SMALL | |
| all | 23 | 96D220 | 2" GATE VALVE BRONZE | |
| all | 24 | 5N2ACLSG42 | NPT NIP 2XCLS TBE GALSTL SK40 | |
| all | 25 | 15K041S | HEXCAPSCR 1/4-20UNC2AX1 SS18-8 | |
| all | 26 | 15G170 | HEXNUT 1/4-20UNC2 SS18-8 | |
| all | 27 | 15U181 | LOCKWASHER MEDIUM 1/4 SS18-8 | |
| all | 28 | 15K021A | SOKCAPSCR 10-24UNCX1" LG S/S | |
| all | 29 | 15K096 | HEXCAPSCR 3/8-16UNC2X1SS18-8 | |
| all | 30 | 15G206 | HEXNUT 3/8-16 UNC2 SS 18-8 | |
| all | 31 | 15U260 | LOCKWASHER MEDIUM 3/8 SS18-8 | |
| all | 32 | 15U245 | FLTWASH 3/8 STD COMM 18-8 SS | |
| all | 33 | 15U172 | FLATWASHER 3/16 (US STD) ZNC | |
| all | 34 | 15K065 | HEXCAPSCR 5/16-18UNC2AX1 GR5 Z | |
| all | 35 | 15G185 | HXNUT 5/16-18UNC2B SAE ZINC GR | |
| all | 36 | 15U210 | LOKWASHER MEDIUM 5/16 ZINCPL | |

# SERVICING AIR CYLINDERS

This is the general procedure for rebuilding an air cylinder using a Milnor® furnished repair kit, once the air cylinder has been removed from the machine. See the specific air cylinder and major assembly parts drawing(s) for component identification and removal/replacement information.

Maintenance procedures require:

- Two threaded rods and nuts, twice the length of the tie bolts.
- The appropriate repair kit.

**⚠ CAUTION ⚠**

**EXPLOSION HAZARD—Spring tension can cause air cylinder to burst apart with great force during dissassembly. You can be struck by air cylinder parts.**

☞ **Follow maintenance instructions carefully.**

☞ **Wear eye protection.**

**NOTE**: Use a new locknut when re-assembling air cylinder (see the appropriate parts drawing).

**1.** Replace two diagonally opposite tie bolts with threaded rods and nuts as shown in FIGURE 1.

**2.** Tighten nuts on the threaded rods until they contact the air cylinder.

**3.** Remove the other two tie bolts and the nuts, washers, clips, and actuators from the external end of piston stem.

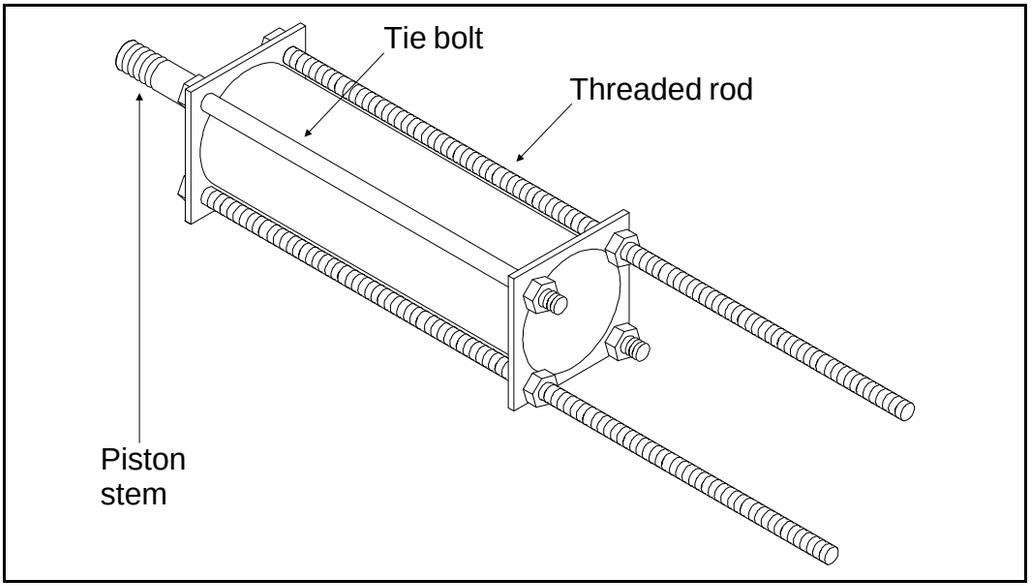


**FIGURE 1** (MSSM0130AE)
**Using Threaded Rods**

**4.** Loosen nuts on threaded rods evenly, permitting cylinder heads to separate. Use only a few turns on one nut before moving to the other one. Continue until springs have no tension.

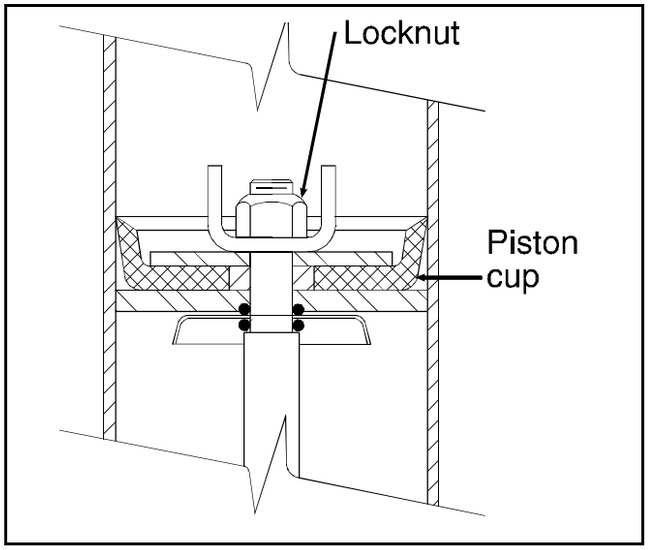


**FIGURE 2** (MSSM0130AE)
**Correct Piston Cup Shape**

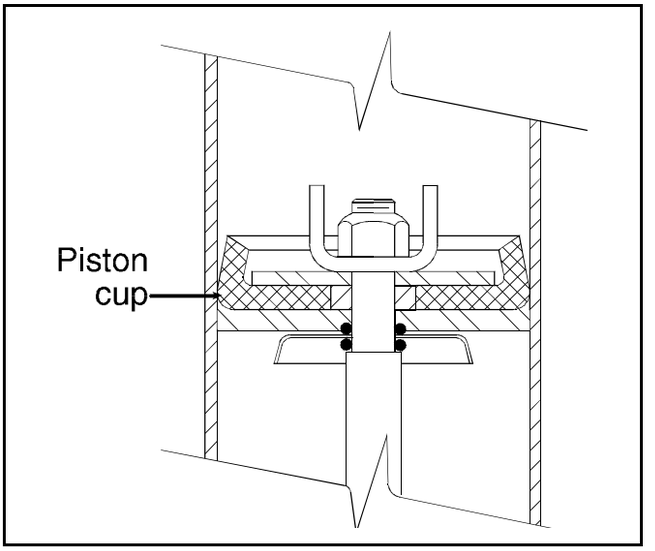


**FIGURE 3** (MSSM0130AE)
**Distorted Piston Cup Shape**

**5.** Note position and orientation of piston cup(s), washers, and springs. Replace worn parts, then reassemble in reverse order. Tighten locknut until it is just barely possible to turn the piston cup and washer assembly on the stem. Correct piston cup shape is shown in FIGURE 2. **DO NOT** overtighten, as this causes the piston cup to deform to the shape shown in FIGURE 3 and may cause piston to bind in cylinder.

# 11 Pneumatic Piping and Assemblies

# Air Cylinder Assemblies



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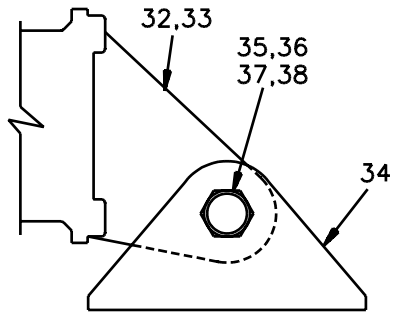
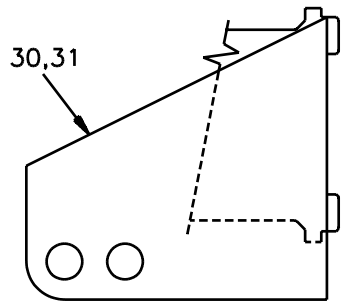
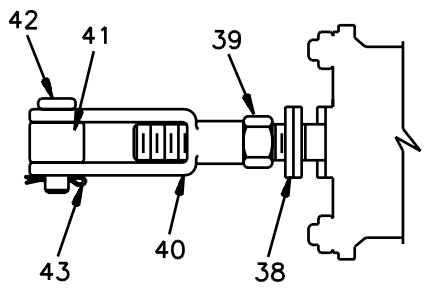
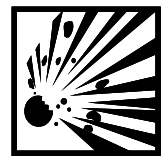


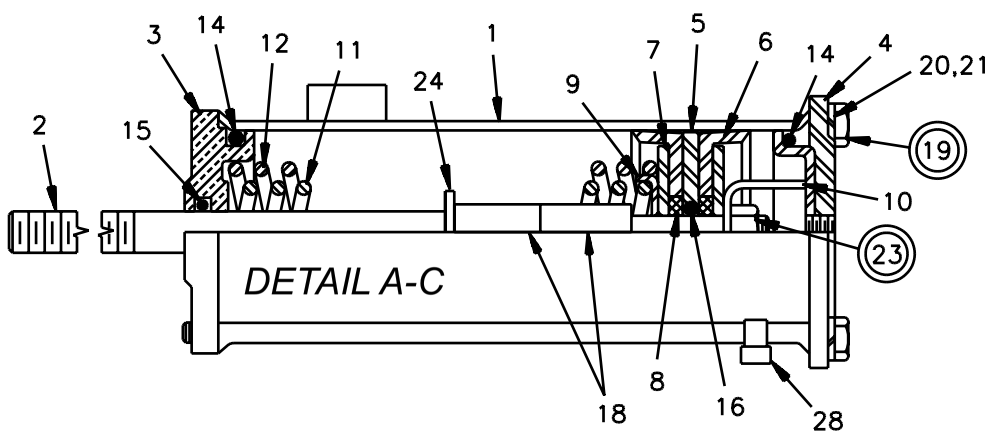



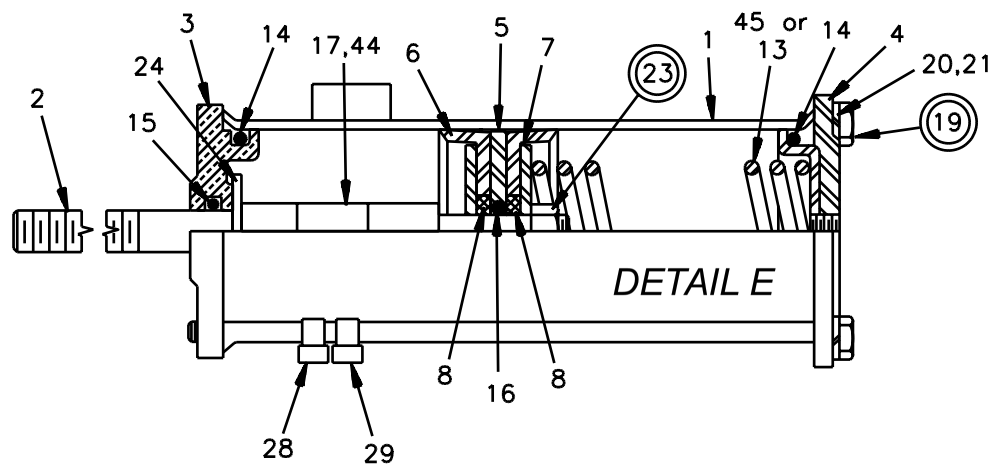

AIR CYLINDER MOUNTING HARDWARE

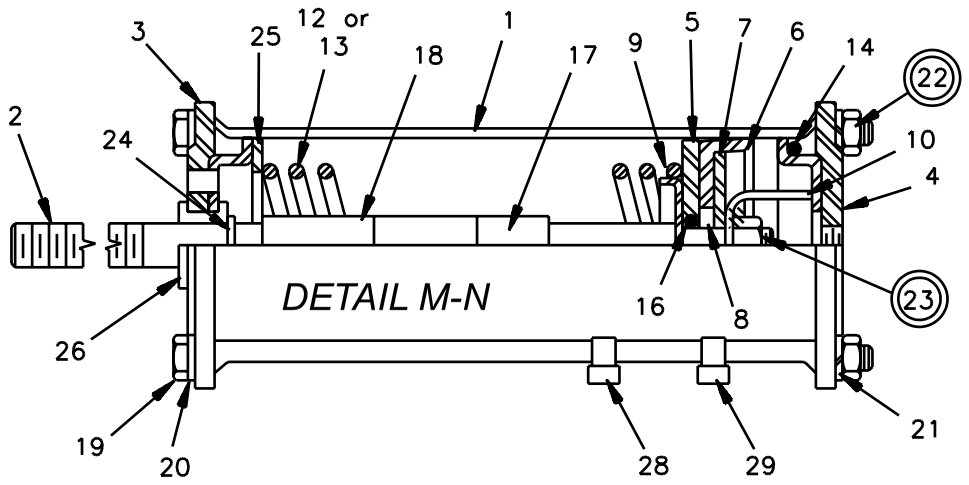
**⚠ WARNING ⚠**

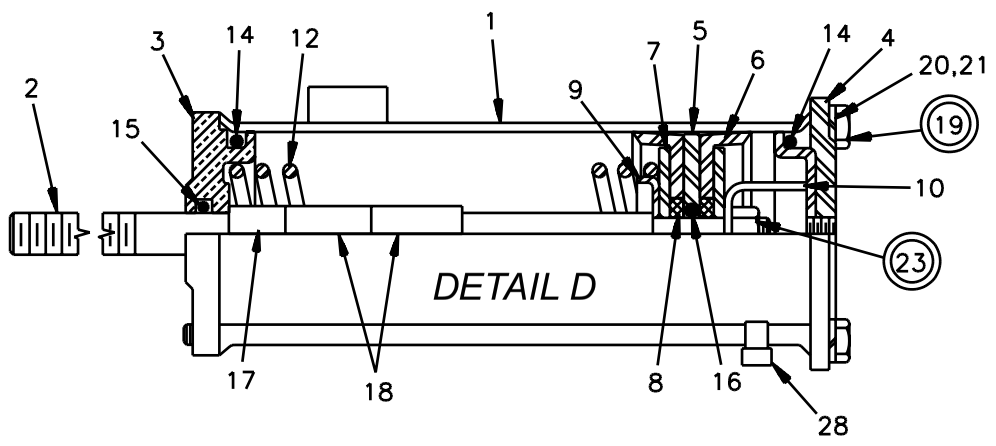


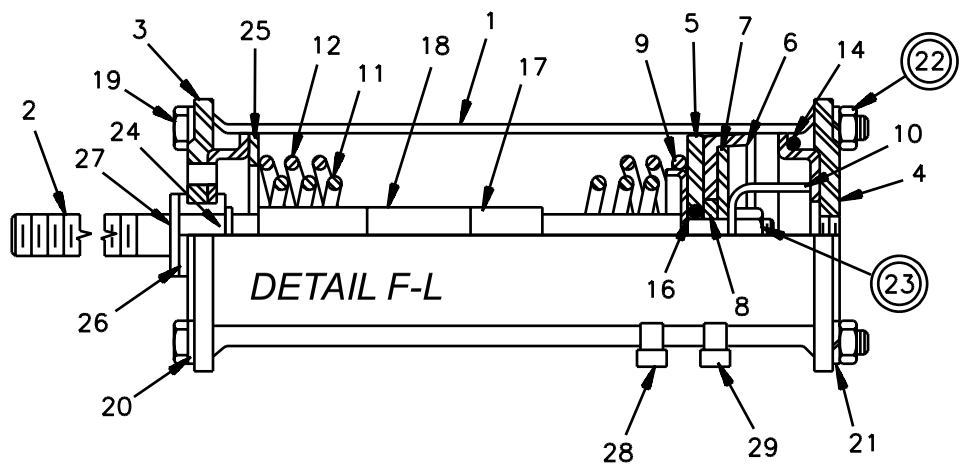
**EXPLOSION HAZARD - Air cylinder can burst apart with great force.**
**Circled items are under high spring tension.**
**Follow maintenance instructions MSSM0130AE carefully.**

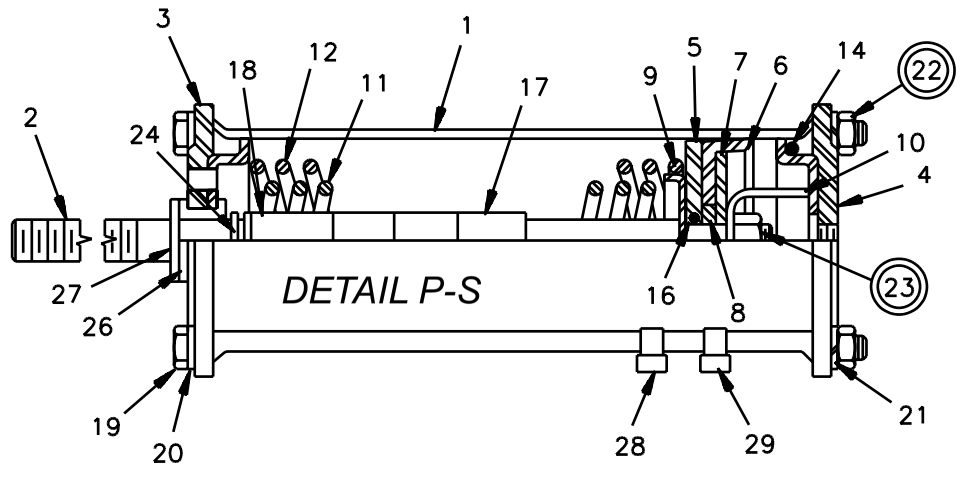


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## Parts List—Air Cylinder Assemblies

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| | | | ASSEMBLIES | |
| | A | SA 36 035 | 89483V* AIRCYL=BRAKE ASSY | 72WP2,WP3,WE3 |
| | B | SA 28 128 | 89483T* BRAKE AIRCYL 2-WAY 60+72SGU | 60+72SP2,SP3 |
| | C | SA 28 152 | 89483V* BRAKE AIRCYL 2-WAY 60WE2+3 | 60WP2,WP3,D3A,DA3 |
| | D | SA 10 019A | 89483U* BRAKE AIRCYL,2-WAY=42WE+DAU | 4231/4244 WP2/WP3 CP2/CP3 NP2/NP3 SP2/SP3 |
| | F | A52 00200 | 89463U* BRAKE AIRCYL=7244 TILT ONLY | 72DA1/L/N,DBN, WTL/N,WP1 |
| | G | SA 10 019Q | 89483T*BRAKE CYL ASSY=4226QWE+DYA | 4226DP1,DA1,DYP,D5P |
| | H | AAC14001A | 90000Z AIRCYL-LONG= 42S6PSG | 3621+26Q6X 4226Q4X,Q6X |
| | I | A76AC001A | 89463T AIR CYL.2-3/8 BORE 2"STROKE | 5840TG2,TS1,TT1 |
| | J | A76AC001B | 89463@ AIR CYL.2-3/8 BORE 3"STROKE | 5840TG2,TS1,TT1 |
| | K | A75 01200 | 89463T*AIR CYL. DAMPER = 3"STROKE | 5858+80TG1/2,TS1,TT1 |
| | L | A75 01300 | 89463U*AIR CYL. DAMPER = 2"STROKE | 5858+80TG1/2,TS1,TT1 |
| | M | SA 10 019 | 89497U* BRAKE AIRCYL=BALCOM+DIVCYL | |
| | N | AAC14001 | 90041U*AIRCYL=RATE 50-91 STRK 2.09 | 3621F8P |
| | P | A25 00600 | 89457V* BRAKE AIRCYL=52WE1 +52TILT | 52LWN/H,WTL/N,WP/E1,DYA |
| | Q | AAC64001 | 894613*AIRCYL=BRAKE ASSY 6442 | 64BTL,BTN,BHP, DA1,DAL,DAN |
| | R | AAC65001 | 93481B AIRCYL=BRAKE ASSY 6446E6N | 6446,7246,7258,M7E 4244SP2 SM |
| | S | AAC58001 | 95000Z AIRCYL=BRAKE ASSY 7258J2N | 7258J2N |
| | | | COMPONENTS | |
| A-D | 1 | W2 18646 | 93344L*CYLINDER-AIR=DOUBLEACT BRAKE | |
| F-S | 1 | 02 02068 | 94266A AIRCYL-STAINLESS=DUMPVALVE | |
| A-D,F-G,S, I-K,M-Q | 2 | 02 18650 | 96431B STEM=2 WAY AIRCYLINDER BRAKE | |
| H | 2 | 03 06313A | 96431# STEM=AIR CYL 304SS | |
| L | 2 | 02 18650A | 96417B STEM-AIRCYL.UPLOCK PRESS | |
| R | 2 | 02 18650B | 97362B STEM=2WAY AIRCYL BRAKE 7.88L | |
| A-D | 3 | 02 18660 | CYLHEAD-BRASS=2WAY AIRCYL | |
| F-Q | 3 | 02 02546 | CYLHEAD=SLIDESTEM | |
| R | 3 | 06 20702E | 91227B FLOW NOT ACTUATOR CYL HEAD | |
| S | 4 | 02 02101 | 71334A CYLHEAD W/TAPPED HOLE | |
| ALL | 5 | 02 02105 | 91522A PISTON CUP WASHER STNLS STL | |
| S | 5 | 02 02105B | 92253B 2.38"ACYL BRASS PISCUP WASHR | |
| ALL | 6 | 02 02194 | 93217B PISTONCUP=DUMPVALVE 2+3/8" | |
| ALL | 7 | 02 02085 | 75161A UP WASHER=2"OD=PISTONCUP | |

## Parts List, cont.—Air Cylinder Assemblies

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| ALL | 8 | 02 02185 | 79237A WASHER=PISTON CUP COMP LIMIT | |
| A-D,F-Q,S | 9 | 02 18651 | 73171A WASHER=2WAY BRAKECYL | |
| A-D,F-Q,S | 10 | 03 01313 | 70219A STOP=AIR CYL W/2+11/16STROKE | |
| A-C,F-L,P-Q S | 11 | 02 15880 | 96471B SPRING=BRAKE1.5OD10.3FL17#/" | |
| A,D,F-M,Q,S | 12 | 02 15881 | 96471# SPRING=BRAKE2.1OD11FL15.5#/" | |
| N | 13 | 02 17023 | 83392B SPRING-SS=DUMP 1.5OD8FL21#/" | |
| ALL | 14 | 60C132 | ORING 2"IDX3/16CS BUNA70 #329 | |
| A-D | 15 | 60C110 | ORING 1/2IDX3/32CS BUNA70 #112 | |
| ALL | 16 | 60C106 | ORING 5/16ID 1/16CS BUNA70#011 | |
| D,G-J,L-N Q,S | 17 | 27B240 | SPCRROLL.5ID.813L.062T STLZNC | |
| A,C-D,F-Q,L S | 18 | 27B250 | SPCRROLL.5ID1.5L.062T STLZNC | |
| S | 19 | 02 10585E | 91142# TIE BOLT=5/16-18X8.25LG PLTD | |
| ALL | 19 | 02 10585E | 91142# TIE BOLT=5/16-18X8.25LG PLTD | |
| R ONLY | 19 | W6 20702F | 90293B*FLOW NOT VLV=AIR-CYL ROD WLD | |
| ALL | 20 | 15U200 | FLATWASHER(USS STD) 5/16"ZNC PLT | |
| ALL | 21 | 15U210 | LOKWASHER MEDIUM 5/16 ZINCPL | |
| F-Q | 22 | 15G185 | HXNUT 5/16-18UNC2B SAE ZINC GR2 | |
| ALL | 23 | 15G220 | 02Z LTHX THIN LOKNUT 3/8-24 SSNTE | |
| A,C,F-G,I-J L,Q,S | 24 | 15U243 | FLAWASHER 7/8ODX33/64IDX16GA ZINCPL | |
| F-N | 25 | 15U520 | FLAT WASHER 2+3/8X1+41/64X12GA ZINC | |
| F-Q,S | 26 | 54E220 | NYLNR 8L2FF BUSH 1/2X9/16X.140 | |
| F,K,I-J,Q,S | 27 | 17B012 | EXTRETRING IND#1000-50-ST-ZD ZINC | |
| A | 28 | 20L601R | ID TAG NAT'L #1614 ALUM EMB LET "R" | |
| B | 28 | 20L601U | ID TAG NAT'L #1614 ALUM EMB LET "U" | |
| C | 28 | 20L601P | ID TAG NAT'L #1614 ALUM EMB LET "P" | |
| D | 28 | 20L601X | ID TAG NAT'L #1614 ALUM EMB LET "X" | |
| S | 28 | 20L601J | ID TAG NAT'L #1614 ALUM EMB LET "J" | |
| F,H,Q,S | 28 | 20L601A | ID TAG NAT'L #1614 ALUM EMB LET "A" | |
| G | 28 | 20L601Q | ID TAG NAT'L #1614 ALUM EMB LET "Q" | |
| M | 28 | 20L601F | ID TAG NAT'L #1614 ALUM EMB LET "F" | |
| N | 28 | 20L601D | ID TAG NAT'L #1614 ALUM EMB LET "D" | |
| P | 28 | 20L601V | ID TAG NAT'L #1614 ALUM EMB LET "V" | |
| K | 28 | 20L601V | ID TAG NAT'L #1614 ALUM EMB LET "V" | |
| I-J,L | 28 | 20L601E | ID TAG NAT'L #1614 ALUM EMB LET "E" | |
| F,I-L | 29 | 20L601A | ID TAG NAT'L #1614 ALUM EMB LET "A" | |
| G-H | 29 | 20L601F | ID TAG NAT'L #1614 ALUM EMB LET "F" | |

Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400
Litho in U.S.A.

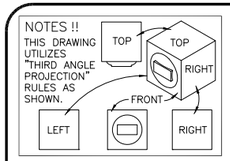
## Parts List, cont.—Air Cylinder Assemblies

| Used In | Item | Part Number | Description | Comments |
|---|---|---|---|---|
| N | 29 | 20L601C | ID TAG NAT'L #1614 ALUM EMB LET "C" | |
| Q | 29 | 20L601D | ID TAG NAT'L #1614 ALUM EMB LET "D" | |
| ALL | 30 | 03 06309 | 70310C RIGHTMOUNT=BRAKE CYL ZNC | RIGHT |
| ALL | 31 | 03 06308 | 70310C LEFTMOUNT=BRAKE CYL ZINC | LEFT |
| ALL | 32 | 02 02550 | 97437ABRKT=AIRCYL-RIGHT ZINC/CAD | RIGHT |
| ALL | 33 | 02 02547 | LT BRACKET=AIRCYL CAD | LEFT |
| ALL | 34 | 02 02556 | SUPPORT=AIRCYL CADSTL | |
| ALL | 35 | 27B2750L0T | 01Z SPC RROLL.562ID.937L.048T ZNK | |
| ALL | 36 | 15K206 | HEXCAPSCR M5-.8X40MM 18-8SS | |
| ALL | 37 | 15G235F | HXFNJAMNUT 9/16-12UNC2B ZINC GR2 | |
| ALL | 38 | 15U280 | 01Z FL+WASHER(USS STD)1/2 ZNC PL+D | |
| ALL | 39 | 15G230 | HXNUT 1/2-13UNC2B SAE ZINC GR2 | |
| ALL | 40 | 17A020 | ADJ CLEVIS MACHINED 1/2-13 ZINC PLT | |
| ALL | 41 | 17A065 | 01Z EYEEND 1/2-13 X2.25 ZINC | |
| ALL | 42 | 17A040 | CLEVISPIN 1/2"X1+3/8" DRILLED | |
| ALL | 43 | 15H030 | STDCOTTERPIN 3/32X3/4 ZINCPL | |
| ALL | 44 | 27B34010SZ | SPCRROLL.512ID.625L.062T STLZC | |
| ALL | 45 | 02 17024 | 94302B SPRING-SS=DUMP 1.5OD4FL40#/" | |

# Dimensional Drawings

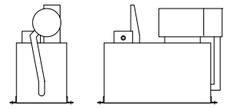
12

NOTES !!
THIS DRAWING UTILIZES "THIRD ANGLE PROJECTION" RULES AS SHOWN.

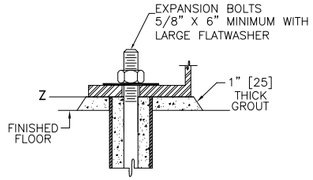



| DIMENSIONS THAT VARY WITH: | | | DISCHARGE CONVEYOR: | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CBW | A | | | B | | C STANDARD FOOT | | C +7" FOOT | |
| | INCHES | mm | | INCHES | mm | INCHES | mm | INCHES | mm |
| 76028 | 8 3/4 | 222 | 0" EXTENSION | 116 3/4 | 2968 | 25 3/4 | 653 | 32 3/4 | 830 |
| 76032 | 4 11/16 | 119 | 24" EXTENSION | 138 1/2 | 3520 | 35 3/4 | 910 | 42 3/4 | 1088 |
| 76039 | 8 3/4 | 222 | 48" EXTENSION | 160 1/4 | 4073 | 46 | 1168 | 53 | 1346 |

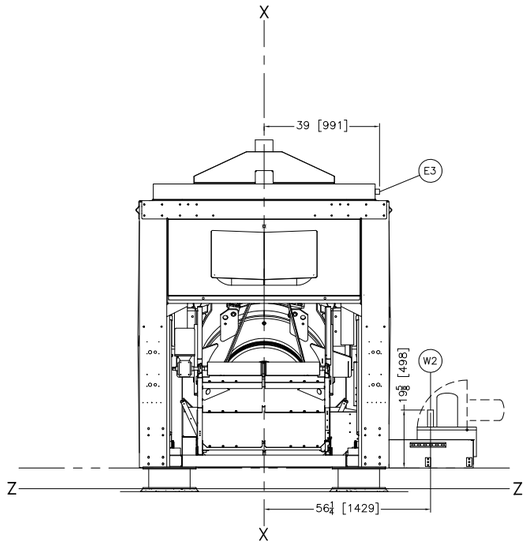
| FOOT SPECIFIED: | D | | E | | F | | G | |
|---|---|---|---|---|---|---|---|---|
| | INCHES | mm | INCHES | mm | INCHES | mm | INCHES | mm |
| STANDARD FOOT | 60 | 1524 | 40-15/16 | 1040 | 37-13/16 | 961 | 128-13/16 | 3272 |
| +7"(178) FOOT | 67 | 1702 | 47-15/16 | 1218 | 44-13/16 | 1139 | 135-13/16 | 3450 |



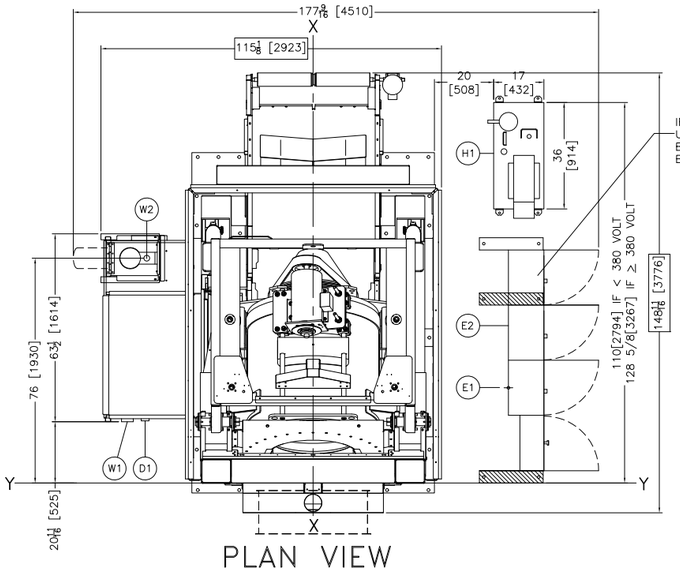
SIDE VIEWS: HYDRAULIC TANK



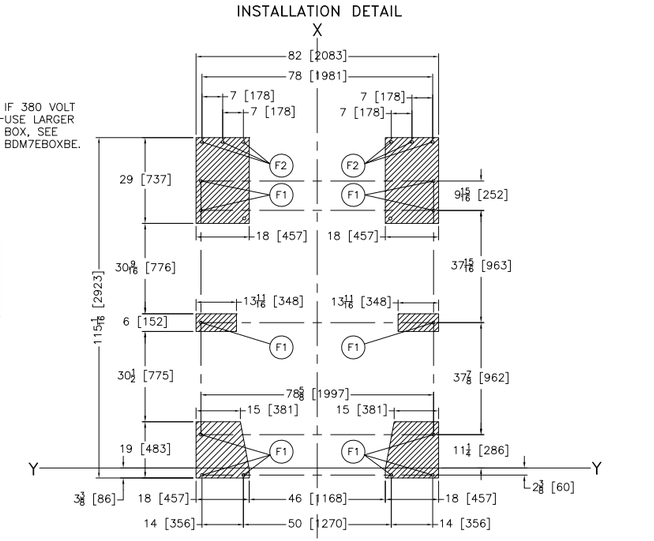

INSTALLATION DETAIL



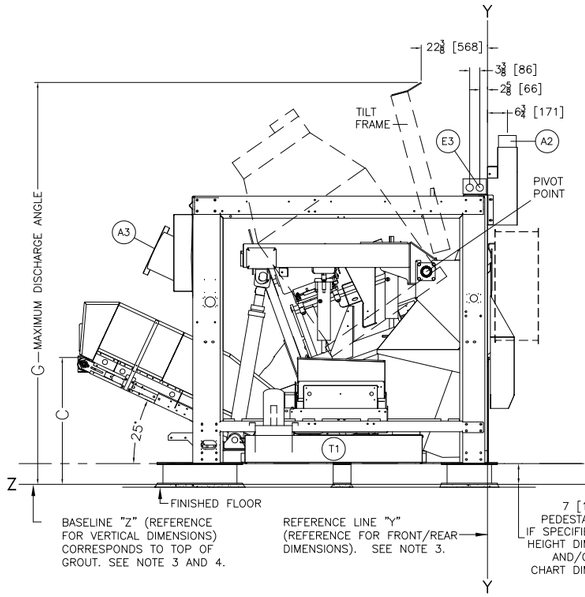

REAR VIEW



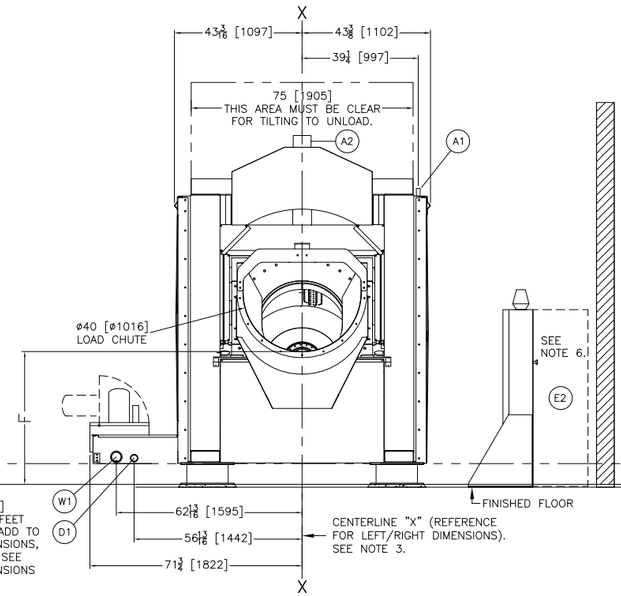

PLAN VIEW



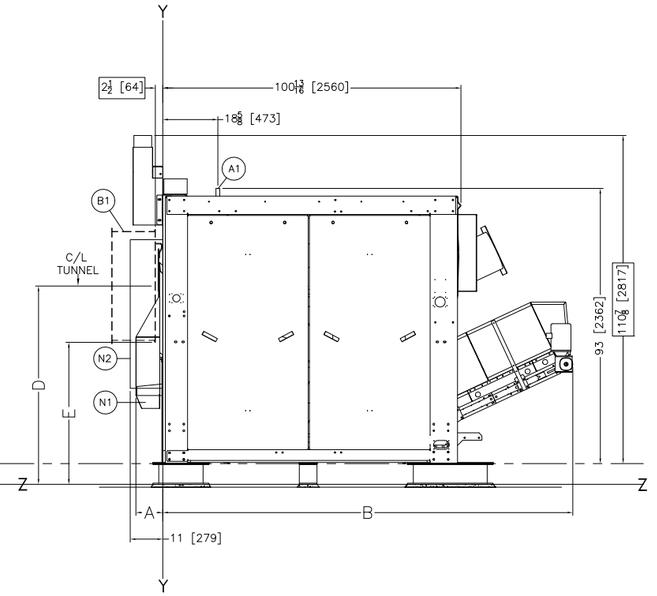

FOUNDATION PLAN VIEW




LEFT VIEW




FRONT VIEW




RIGHT VIEW

| ITEM | LEGEND |
|---|---|
| W2 | REUSE PUMP, WATER TO TUNNEL, 2" HOSE CONNECTION |
| W1 | REUSE WATER FROM LAST MODULE OF TUNNEL, 3" NPT, |
| | PIPING SUPPLIED BY PMC. |
| T1 | REUSE WATER TANK, MUST KEEP LEVEL AT ALL TIMES. |
| N2 | LOAD CHUTE GUARD (NOT USED 76032) |
| N1 | SCUPPER AND PAN ONLY USED WHEN DIRECTLY LOADED |
| | BY ANY MILNOR TUNNEL. |
| F2 | SIX, 1-1/16"[27] DIA. HOLES FOR SHIPPING |
| F1 | TWELVE, 1-1/16"[27] DIA. ANCHOR BOLT HOLES. USE 5/8" |
| | ANCHOR BOLTS MINIMUM. |
| H1 | HYDRAULIC BOX (REQUIRES NO EXTERNAL CONNECTIONS). |
| E3 | MAIN CABLE ENTRANCE COMING FROM CONTROL CONSOLE. |
| E2 | CONTROLS, SEE BDM7EBOXBE. |
| E1 | MAIN ELECTRIC SERVICE CONNECTION. REFER TO FACTORY |
| | FOR DETAIL OR WIRE SIZE AND FUSING REQUIREMENT. |
| D1 | TANK MANUAL DRAIN 1-1/2" PVC TO SEWER |
| B1 | TUNNEL DISCHARGE RING |
| A3 | FAN |
| A2 | HOOD VENT, 6"[152] DIAMETER, SEE NOTE 14. |
| A1 | COMPRESSED AIR INLET, 1" NPT, FEMALE CONNECTION. RUN |
| | MINIMUM 1" PIPE. FOR LINES LONGER THAN 75 FEET [23 |
| | METERS], RUN 1 1/4" PIPE. LOCATED ON SIDE OPPOSITE |
| | OF ELECTRICS. |

## NOTES

12 THE BEST PRACTICE IS TO PROVIDE TWO SEPARATE, POWERED VENTILATION UNITS THAT MEET THE FOLLOWING CONDITIONS:
A) THE TWO UNITS ARE ISOLATED FROM EACH OTHER TO AVOID HARMFUL CHEMICAL REACTIONS.
B) VENTILATION FANS HAVE SUFFICIENT POWER TO DRAW VAPORS AWAY FROM THE EQUIPMENT. MILNOR RECOMMENDS:
*500 SCFM PER CONNECTION POINT FOR THE OXIDATION ZONE
*750 SCFM PER CONNECTION POINT FOR THE FINISH ZONE AND PRESS ENCLOSURE.
C) FAN MOTORS SHOULD BE EQUIPPED WITH AN ALARM(EXAMPLE: INDICATOR LIGHT) TO ALERT PERSONNEL IF A MOTOR FAILS.

11 SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT UNDER BASEPADS. ANCHOR ALL ANCHOR BOLT HOLES, USE 5/8" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.

10 WHEN THE CENTRIFUGAL EXTRACTOR MUST BE RAISED ON A PEDESTAL BASE, IT IS ALSO NECESSARY TO RAISE THE REUSE WATER TANK THE SAME HEIGHT AS THE EXTRACTOR WITH PROPER SUPPORT.

9 EXTRACTOR WATER TANK AVAILABLE ONLY ON LEFT SIDE IF CENTER DISCHARGE.

8 DO NOT PRE-PIPE ANY CLOSER THAN 60 [1524].

7 ANCHOR BOLTS MUST BE INSTALLED FOR ALL MOUNTING HOLES. 1 [25] THICK GROUT UNDER ALL BASE PADS SHOWN SHADED IN PLAN VIEW.

6 AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
36 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL.
42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
48 [1219] IF OBJECT IS ANY LIVE PART.
CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.

5 CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.

4 BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS. ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVERSING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1"[25] THICK GROUT BED.

3 USE REFERENCE LINES "X", "Y", AND "Z" TO LOCATE ALL SERVICE CONNECTIONS.

2 NUMBERS IN BRACKETS [] DENOTE DIMENSIONS IN MILLIMETERS.

1 ALL DIMENSIONS SHOWN ARE APPROXIMATE, SUBJECT TO NORMAL MANUFACTURING TOLERANCES, AND TO OCCASIONAL CHANGES WITHOUT NOTICE THROUGH REDESIGN AND/OR RELOCATION OF COMPONENTS, ETC. DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED, AND IN NO EVENT PRE-PIPE CLOSER THAN FIVE FEET FROM MACHINE. FACTORY MUST BE CONSULTED FOR DIMENSIONS IF MACHINE IS TO BE MOVED THROUGH NARROW OR LOW CORRIDORS OR OPENINGS.

## ATTENTION

MOST REGULATORY AUTHORITIES (INCLUDING OSHA IN THE USA) HOLD THE OWNER/USER ULTIMATELY RESPONSIBLE TO MAINTAIN A SAFE WORKING ENVIRONMENT. ACCORDINGLY, THE OWNER/USER MUST RECOGNIZE ALL FORESEEABLE SAFETY HAZARDS, FURNISH SAFETY INSTRUCTIONS AND GUIDANCE TO ALL PERSONNEL WHO MAY COME IN CONTACT WITH THE INSTALLATION, AND PROVIDE ALL NECESSARY ADDITIONAL SAFETY GUARDS, FENCES, RESTRAINTS, DEVICES, ETC., NOT FURNISHED BY THE EQUIPMENT MANUFACTURER OR VENDOR.

## ATTENTION

THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS OPERATION. WRITE THE FACTORY FOR ADDITIONAL MACHINE DATA FOR USE BY A COMPETENT SOIL AND/OR STRUCTURAL ENGINEER.

MXT4232C, MMT4232C

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDMXT4232CAE
2018293D

PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3094, Email: milnorinfo@milnor.com

NOTES !!
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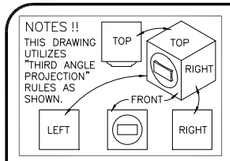


| DIMENSIONS THAT VARY WITH: | A | | DISCHARGE CONVEYOR: | B | | C STANDARD FOOT | | C +7" FOOT | |
|---|---|---|---|---|---|---|---|---|---|
| CBW | INCHES | mm | | INCHES | mm | INCHES | mm | INCHES | mm |
| 76028 | 8 3/4 | 222 | 0" EXTENSION | 62 1/2 | 1588 | 26 1/4 | 667 | 33 1/4 | 845 |
| 76032 | 4 11/16 | 119 | 24" EXTENSION | 84 1/4 | 2140 | 36 3/8 | 924 | 43 3/8 | 1102 |
| 76039 | 8 3/4 | 222 | 48" EXTENSION | 106 | 2692 | 46 9/16 | 1182 | 53 9/16 | 1360 |

| FOOT SPECIFIED: | D | | E | | F | | G | |
|---|---|---|---|---|---|---|---|---|
| | INCHES | mm | INCHES | mm | INCHES | mm | INCHES | mm |
| STANDARD FOOT | 60 | 1524 | 40-15/16 | 1040 | 37-13/16 | 961 | 128-13/16 | 3272 |
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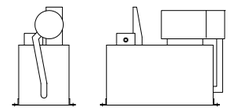
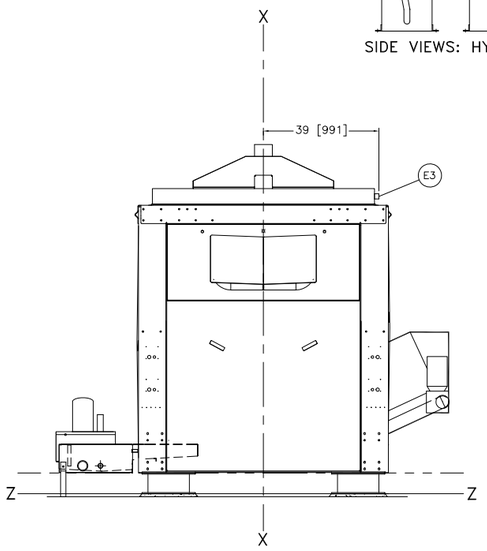
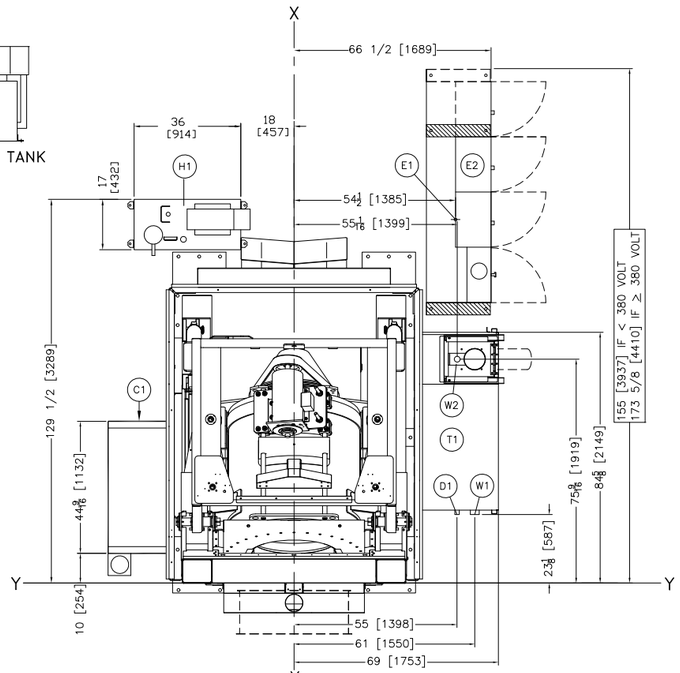
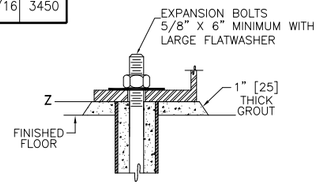


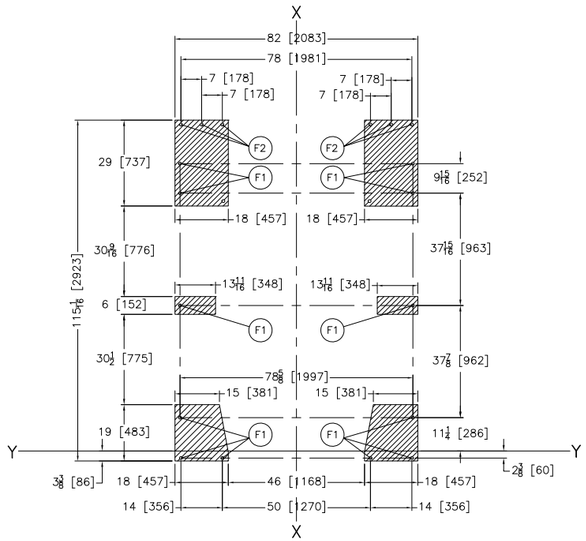

REAR VIEW



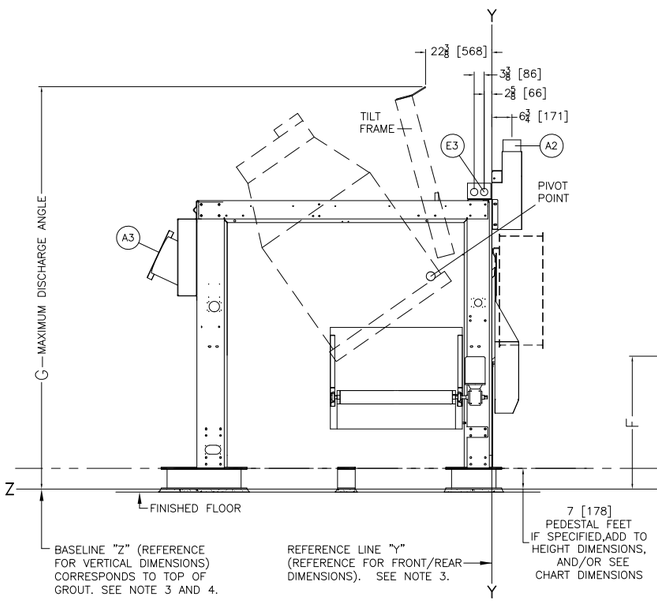

PLAN VIEW



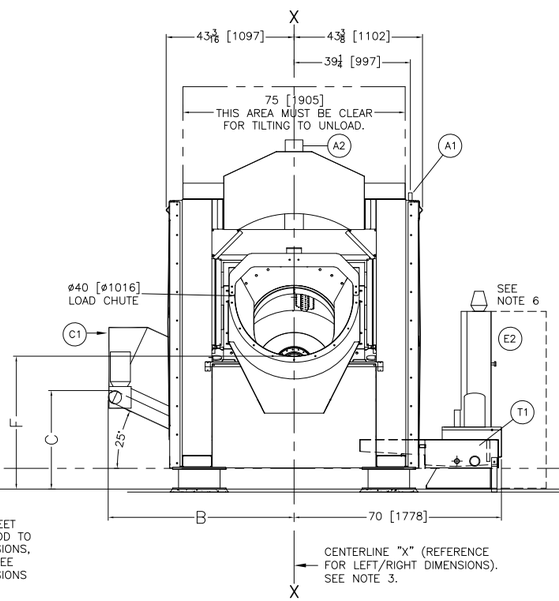

INSTALLATION DETAIL



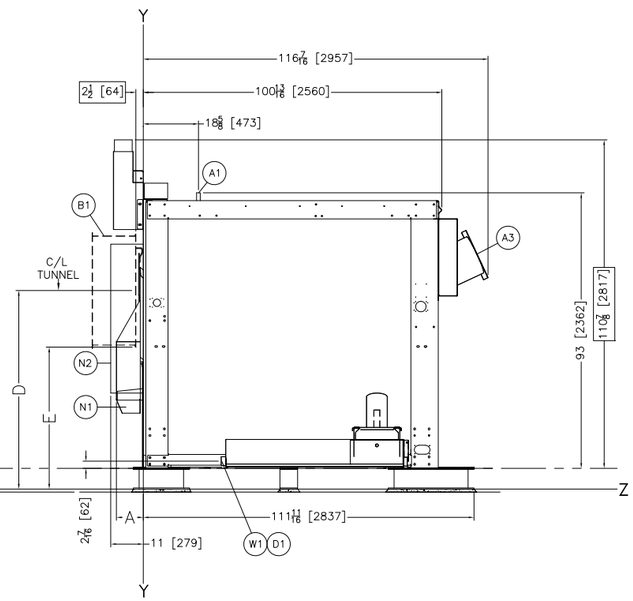

FOUNDATION PLAN VIEW




LEFT VIEW




FRONT VIEW




RIGHT VIEW

| ITEM | LEGEND |
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| W2 | REUSE PUMP, WATER TO TUNNEL, 2" HOSE CONNECTION |
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| F2 | SIX, 1-1/16"[27] DIA. HOLES FOR SHIPPING |
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| | ANCHOR BOLTS MINIMUM. |
| H1 | HYDRAULIC BOX (REQUIRES NO EXTERNAL CONNECTIONS). |
| E3 | MAIN CABLE ENTRANCE COMING FROM CONTROL CONSOLE. |
| E2 | CONTROLS, SEE BDM7EBOXBE. |
| E1 | MAIN ELECTRIC SERVICE CONNECTION. REFER TO FACTORY |
| | FOR DETAIL OR WIRE SIZE AND FUSING REQUIREMENT. |
| D1 | TANK MANUAL DRAIN 1-1/2" PVC TO SEWER |
| B1 | TUNNEL DISCHARGE RING |
| A3 | FAN |
| A2 | HOOD VENT, 6"[152] DIAMETER, SEE NOTE 12. |
| A1 | COMPRESSED AIR INLET, 1" NPT, FEMALE CONNECTION. RUN |
| | MINIMUM 1" PIPE. FOR LINES LONGER THAN 75 FEET [23 |
| | METERS], RUN 1 1/4" PIPE. LOCATED ON SIDE OPPOSITE |
| | OF ELECTRICS. |

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9 EXTRACTOR WATER TANK AVAILABLE ONLY ON LEFT SIDE IF CENTER DISCHARGE.

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4 BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS. ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVERSING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1"[25] THICK GROUT BED.

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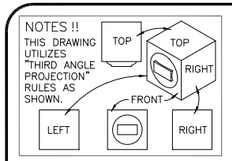
MXT4232L, MMT4232L

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDMXT4232LAE
2018293D

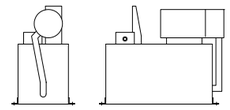
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3094, Email: milnorinfo@milnor.com

NOTES !!
THIS DRAWING UTILIZES "THIRD ANGLE PROJECTION" RULES AS SHOWN.

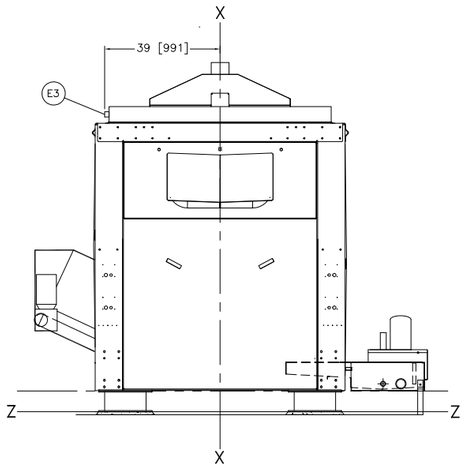



| DIMENSIONS THAT VARY WITH: | A | | DISCHARGE CONVEYOR: | B | | C STANDARD FOOT | | C +7" FOOT | |
|---|---|---|---|---|---|---|---|---|---|
| CBW | INCHES | mm | | INCHES | mm | INCHES | mm | INCHES | mm |
| 76028 | 8 3/4 | 222 | 0" EXTENSION | 62 1/2 | 1588 | 26 1/4 | 667 | 33 1/4 | 845 |
| 76032 | 4 11/16 | 119 | 24" EXTENSION | 84 1/4 | 2140 | 36 3/8 | 924 | 43 3/8 | 1102 |
| 76039 | 8 3/4 | 222 | 48" EXTENSION | 106 | 2692 | 46 9/16 | 1182 | 53 9/16 | 1360 |

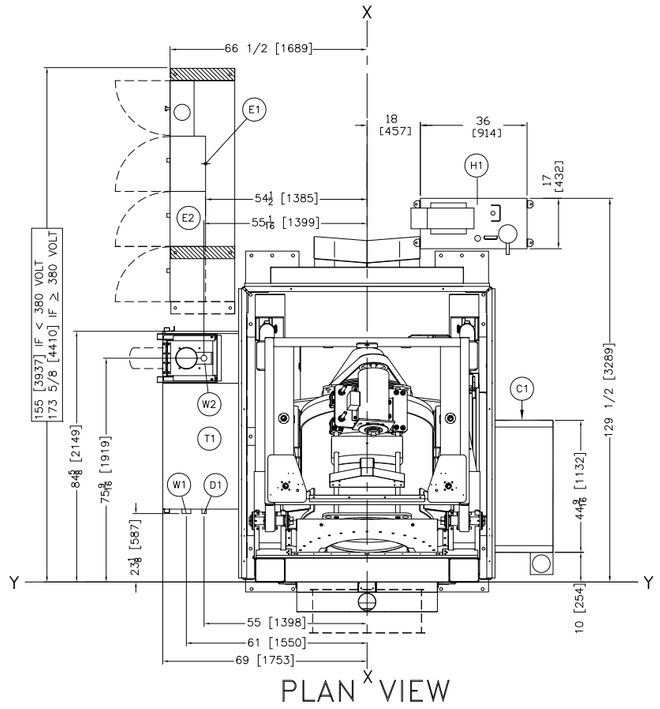
| FOOT SPECIFIED: | D | | E | | F | | G | |
|---|---|---|---|---|---|---|---|---|
| | INCHES | mm | INCHES | mm | INCHES | mm | INCHES | mm |
| STANDARD FOOT | 60 | 1524 | 40–15/16 | 1040 | 37–13/16 | 961 | 128–13/16 | 3272 |
| +7"(178) FOOT | 67 | 1702 | 47–15/16 | 1218 | 44–13/16 | 1139 | 135–13/16 | 3450 |



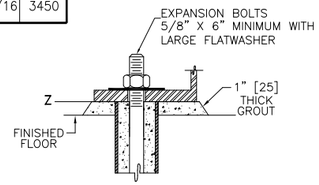
SIDE VIEWS: HYDRAULIC TANK



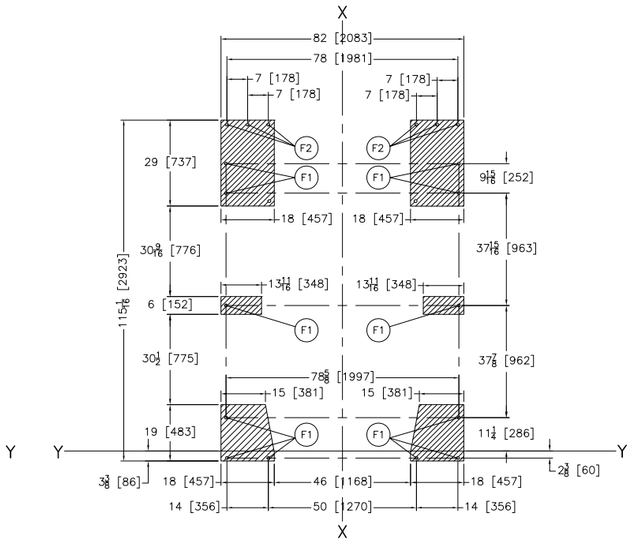

REAR VIEW



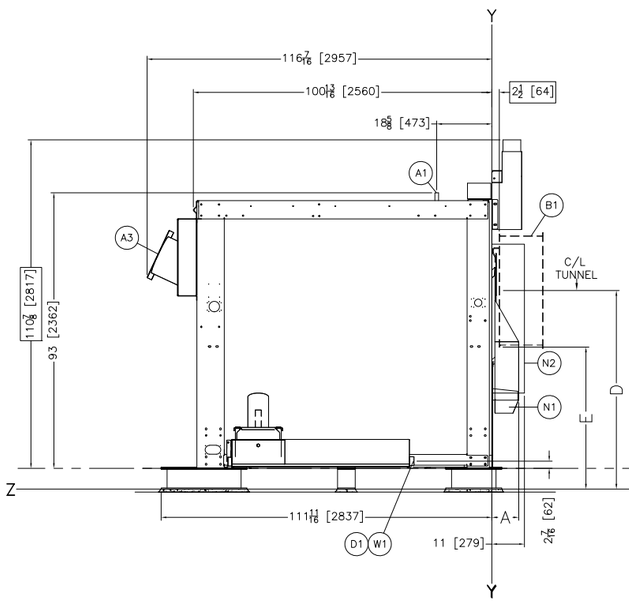

PLAN VIEW



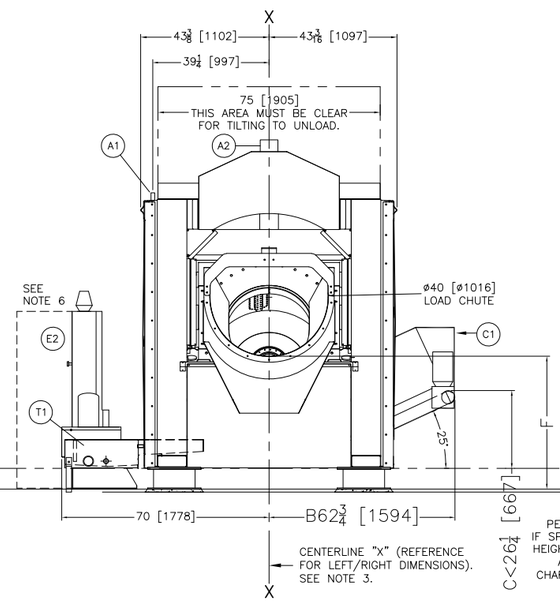

INSTALLATION DETAIL



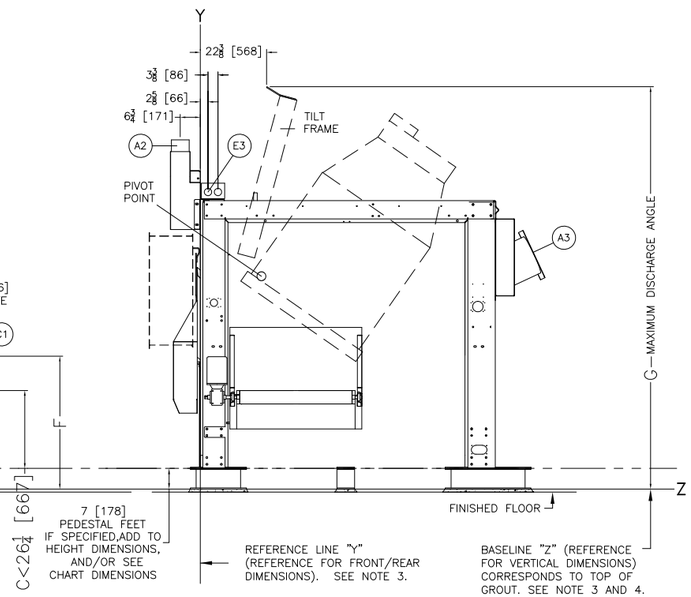

FOUNDATION PLAN VIEW




LEFT VIEW




FRONT VIEW




RIGHT VIEW

| ITEM | LEGEND |
|---|---|
| W2 | REUSE PUMP, WATER TO TUNNEL, 2" HOSE CONNECTION |
| W1 | REUSE WATER FROM LAST MODULE OF TUNNEL, 3" NPT, |
| | PIPING SUPPLIED BY PMC. |
| T1 | REUSE WATER TANK, MUST KEEP LEVEL AT ALL TIMES. |
| N2 | LOAD CHUTE GUARD (NOT USED 76032) |
| N1 | SCUPPER AND PAN ONLY USED WHEN DIRECTLY LOADED |
| | BY ANY MILNOR TUNNEL. |
| F2 | SIX, 1–1/16"[27] DIA. HOLES FOR SHIPPING |
| F1 | TWELVE, 1–1/16"[27] DIA. ANCHOR BOLT HOLES. USE 5/8" |
| | ANCHOR BOLTS MINIMUM. |
| H1 | HYDRAULIC BOX (REQUIRES NO EXTERNAL CONNECTIONS). |
| E3 | MAIN CABLE ENTRANCE COMING FROM CONTROL CONSOLE. |
| E2 | CONTROLS, SEE BDM7EBOXBE. |
| E1 | MAIN ELECTRIC SERVICE CONNECTION. REFER TO FACTORY |
| | FOR DETAIL OR WIRE SIZE AND FUSING REQUIREMENT. |
| D1 | TANK MANUAL DRAIN 1–1/2" PVC TO SEWER |
| B1 | TUNNEL DISCHARGE RING |
| A3 | FAN |
| A2 | HOOD VENT, 6"[152] DIAMETER, SEE NOTE 12. |
| A1 | COMPRESSED AIR INLET, 1" NPT, FEMALE CONNECTION. RUN |
| | MINIMUM 1" PIPE. FOR LINES LONGER THAN 75 FEET [23 |
| | METERS], RUN 1 1/4" PIPE. LOCATED ON SIDE OPPOSITE |
| | OF ELECTRICS. |

## NOTES

12 THE BEST PRACTICE IS TO PROVIDE TWO SEPARATE, POWERED VENTILATION UNITS THAT MEET THE FOLLOWING CONDITIONS:
A) THE TWO UNITS ARE ISOLATED FROM EACH OTHER TO AVOID HARMFUL CHEMICAL REACTIONS.
B) VENTILATION FANS HAVE SUFFICIENT POWER TO DRAW VAPORS AWAY FROM THE EQUIPMENT. MILNOR RECOMMENDS:
*500 SCFM PER CONNECTION POINT FOR THE OXIDATION ZONE
*750 SCFM PER CONNECTION POINT FOR THE FINISH ZONE AND PRESS ENCLOSURE.
C) FAN MOTORS SHOULD BE EQUIPPED WITH AN ALARM(EXAMPLE: INDICATOR LIGHT) TO ALERT PERSONNEL IF A MOTOR FAILS.

11 SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT UNDER BASEPADS. ANCHOR ALL ANCHOR BOLT HOLES, USE 5/8" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.

10 WHEN THE CENTRIFUGAL EXTRACTOR MUST BE RAISED ON A PEDESTAL BASE, IT IS ALSO NECESSARY TO RAISE THE REUSE WATER TANK THE SAME HEIGHT AS THE EXTRACTOR WITH PROPER SUPPORT.

9 EXTRACTOR WATER TANK AVAILABLE ONLY ON LEFT SIDE IF CENTER DISCHARGE.

8 DO NOT PRE–PIPE ANY CLOSER THAN 60 [1524].

7 ANCHOR BOLTS MUST BE INSTALLED FOR ALL MOUNTING HOLES. 1 [25] THICK GROUT UNDER ALL BASE PADS SHOWN SHADED IN PLAN VIEW.

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5 CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.

4 BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS. ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVERSING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1"[25] THICK GROUT BED.

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MXT4232R, MMT4232R

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDMXT4232RAE
2018293D

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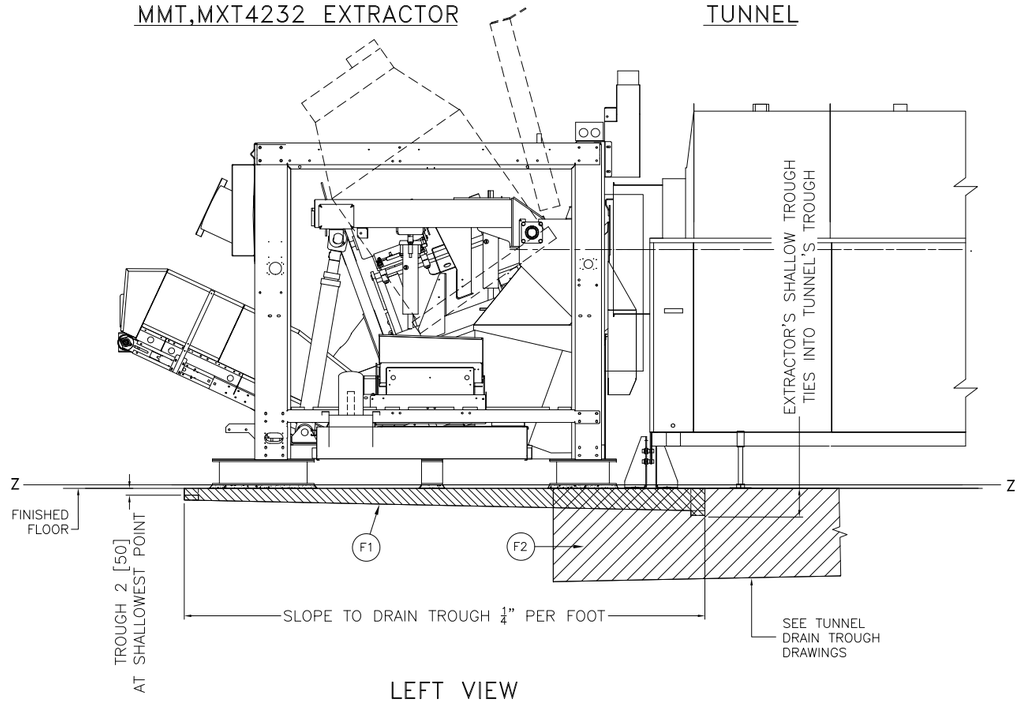
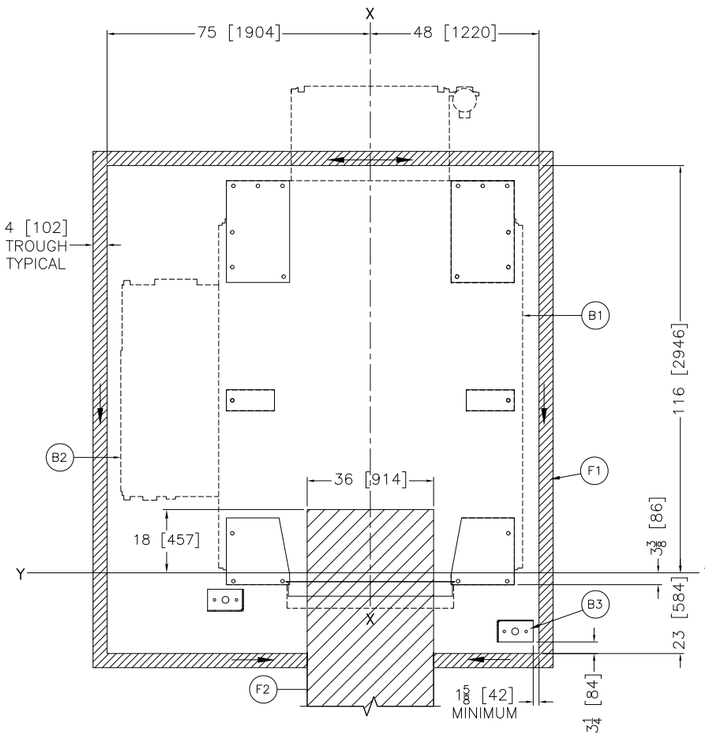
MMT,MXT4232 EXTRACTOR

TUNNEL




LEFT VIEW




PLAN VIEW

| ITEM | LEGEND |
|---|---|
| F2 | TUNNEL DRAIN TROUGH |
| F1 | EXTRACTOR TROUGH SLOPES TO TUNNEL DRAIN TROUGH |
| B3 | LAST MODULE TUNNEL, BOLT DOWN FEET |
| B2 | SIDE OF EXTRACTOR TANK |
| B1 | OUTER PERIMETER OF EXTRACTOR HOUSE |

NOTES

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# MMT,MXT4232 DRAIN TROUGH

DM 0 0.5M
INCHES 0 12 24

DWG# BDMXT42DRNAE 2024244D

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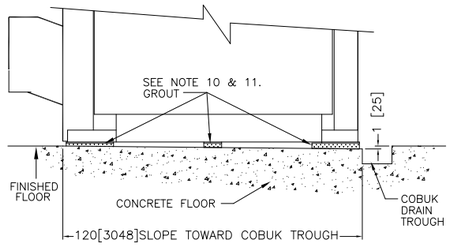
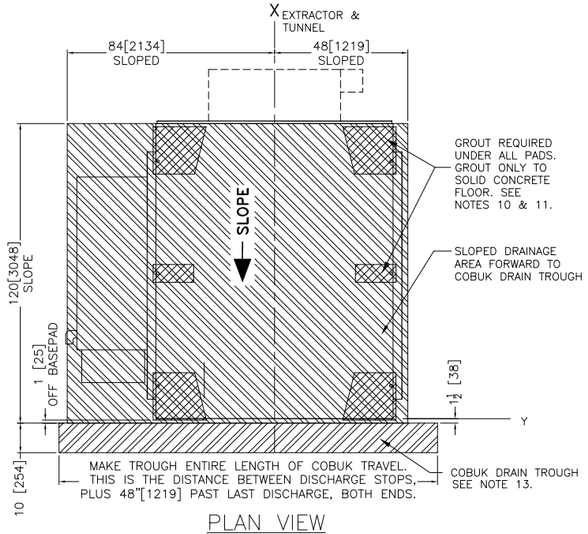


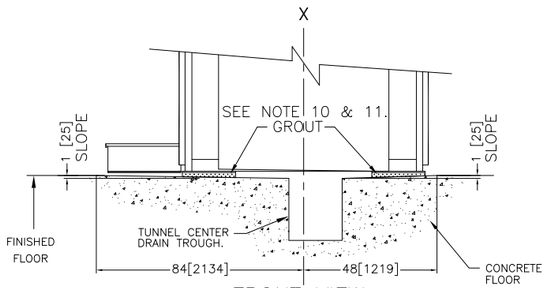

LEFT VIEW
COBUK TROUGH



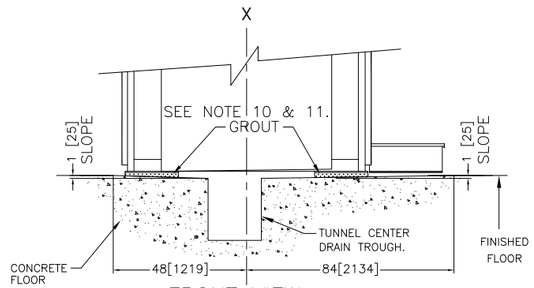

PLAN VIEW
COBUK TROUGH=SLOPES FORWARD
CENTER/LEFT DISCHARGE (SHOWN)
RIGHT DISCHARGE(OPPOSITE)

## NEW FOUNDATIONS

** FOR ALTERNATE "TOPICAL EPOXY METHOD" OF CREATING SLOPE, SEE BDM7EDRNAB.




FRONT VIEW

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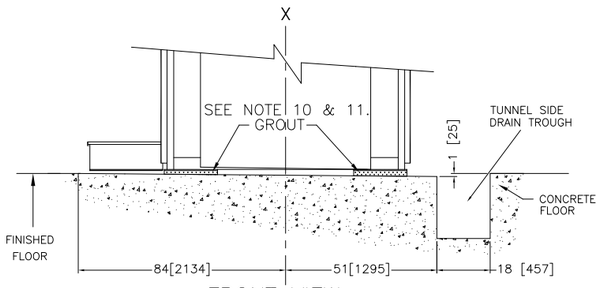


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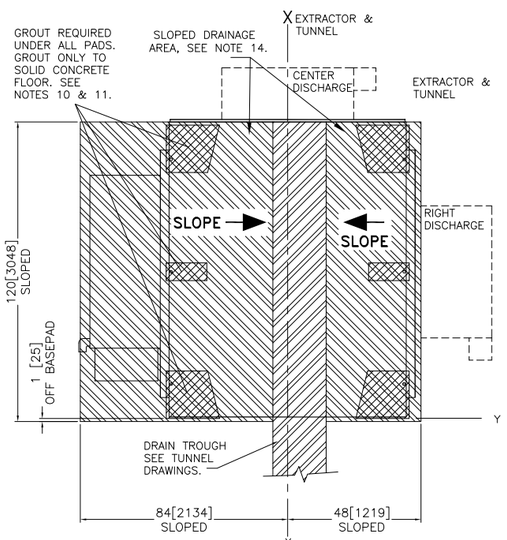
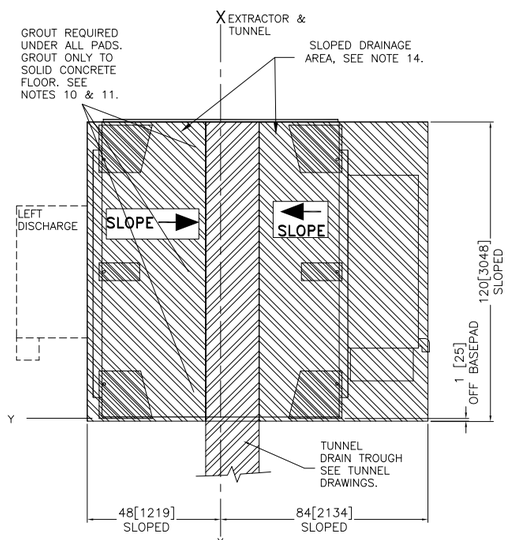
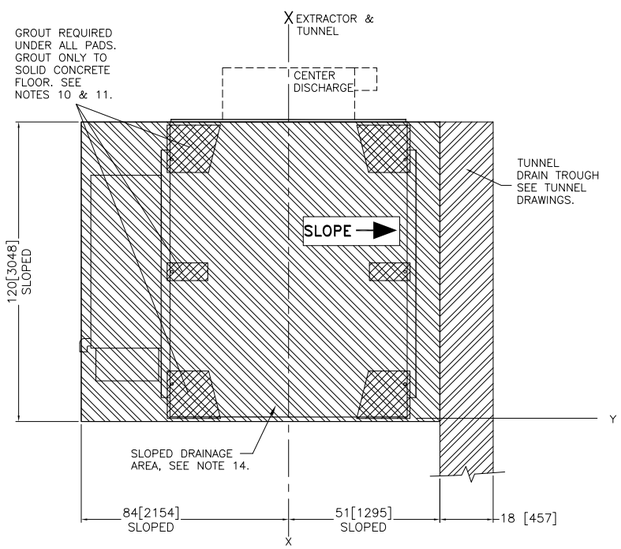



PLAN VIEW
CENTER TROUGH (TYPICAL)
CENTER OR RIGHT DISCHARGF




PLAN VIEW
CENTER TROUGH (TYPICAL)
LEFT DISCHARGE




PLAN VIEW
SIDE TROUGH
CENTER(SHOWN)/LEFT DISCHARGE
RIGHT DISCHARGE (OPPOSITE)

### NOTES

16 THIS DRAWING IS FOR ALL 4232 EXTRACTOR MODELS TO DATE (M7E, M9E, M7V, M9V, MMV, MXV, MMS, MXS, M9S, MMT, & MXT). USE WITH DRAWING BDM7EDRNAB.

15 SEE BDM7EDRNAB FOR ALTERNATE TOPICAL EPOXY METHOD OF CREATING SLOPE.

14 AREA UNDER EXTRACTOR IS SLOPED 1" [25] AND SLOPES TO TUNNEL DRAIN TROUGH OR COBUK DRAIN TROUGH.

13 WHEN COBUK UNLOADS TO MORE THAN ONE EXTRACTOR OR PRESS, MAKE SURE COBUK DRAIN TROUGH RUNS LENGTH OF COBUK PATH.

12 REUSE TANK MUST BE KEPT LEVEL AT ALL TIMES.

11 EXTRACTOR MUST BE GROUTED TO SOLID CONCRETE FLOOR, ALL 6 BASE PADS.

10 CENTRIFUGAL EXTRACTOR MUST BE KEPT LEVEL ON GROUT.

9 WHEN THE CENTRIFUGAL EXTRACTOR MUST BE RAISED ON A PEDESTAL BASE, IT IS ALSO NECESSARY TO RAISE THE REUSE WATER TANK THE SAME HEIGHT AS THE EXTRACTOR WITH PROPER SUPPORT.

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EXTRACTORS: SLOPE NEW FLOOR>TROUGH

DM 0 0.5M
INCHES 0 12 24

DWG# BDM7EDRNAE
2017345D

PELLERIN MILNOR CORPORATION
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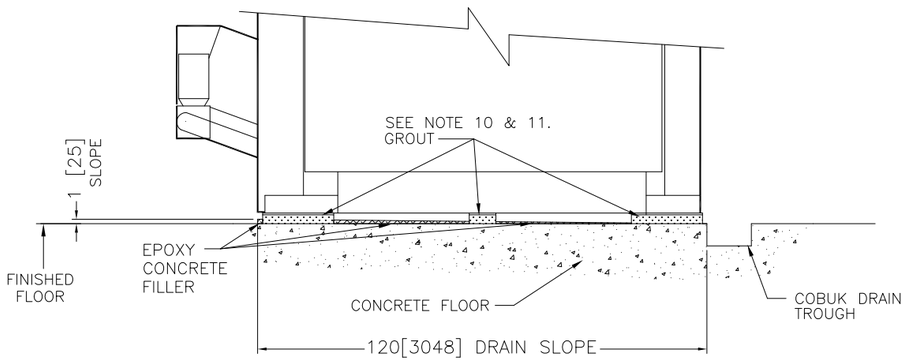
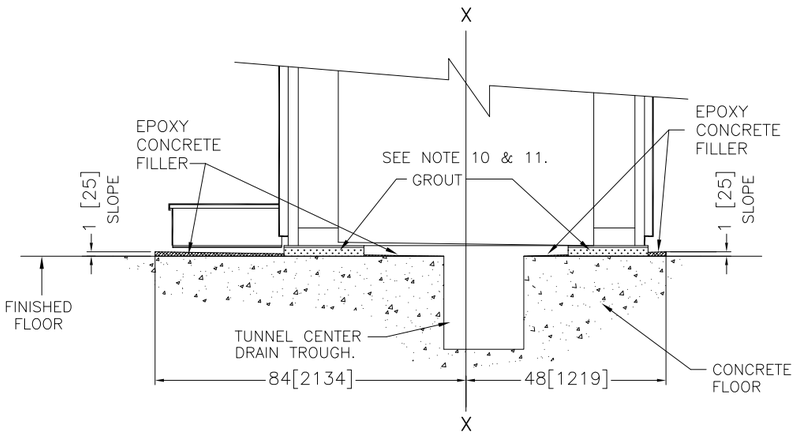
FAX 504/468-3094, Email: milnorinfo@milnor.com

# EXISTING & NEW FOUNDATIONS

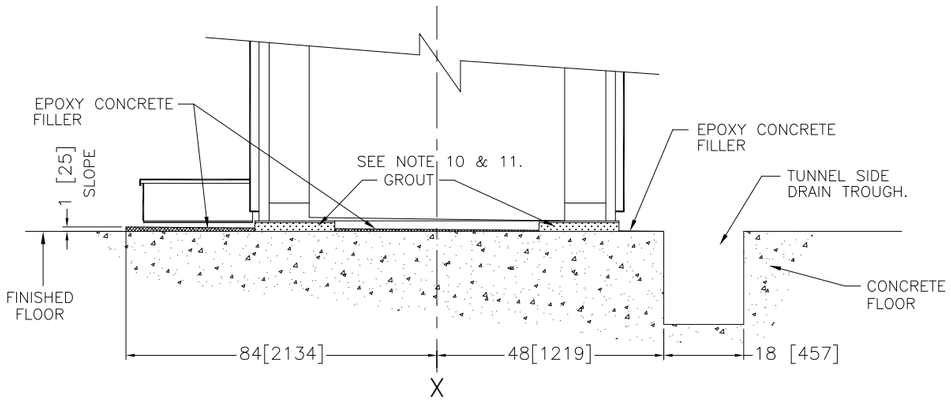
* FOR PLAN VIEWS OF AREAS TO BE SLOPED SEE, BDM7EDRNAE.




SLOPE TO COBUK TROUGH




SLOPE TO TUNNEL CENTER TROUGH (TYPICAL)




SLOPE TO TUNNEL SIDE TROUGH

## NOTES

16 THIS DRAWING IS FOR ALL 4232 EXTRACTOR MODELS TO DATE (M7E, M9E, M7V, M9V, MMV, MXV, MMS, MXS, M9S, MMT, & MXT). USE WITH DRAWING BDM7EDRNAE.

15 SEE BDM7EDRNAE FOR CONCRETE FORMING METHOD OF CREATING SLOPE.

14 AREA UNDER EXTRACTOR IS SLOPED 1" [25] AND SLOPES TO TUNNEL DRAIN TROUGH OR COBUK DRAIN TROUGH.

13 WHEN COBUK UNLOADS TO MORE THAN ONE EXTRACTOR OR PRESS MAKE SURE COBUK DRAIN TROUGH RUNS LENGTH OF COBUK PATH.

12 REUSE TANK MUST BE KEPT LEVEL AT ALL TIMES.

11 EXTRACTOR MUST BE GROUTED TO SOLID CONCRETE FLOOR.

10 CENTRIFUGAL EXTRACTOR MUST BE KEPT LEVEL ON GROUT.

9 WHEN THE CENTRIFUGAL EXTRACTOR MUST BE RAISED ON A PEDESTAL BASE, IT IS ALSO NECESSARY TO RAISE THE REUSE WATER TANK THE SAME HEIGHT AS THE EXTRACTOR WITH PROPER SUPPORT.

8 DO NOT PRE-PIPE ANY CLOSER THAN 60 [1524].

7 ANCHOR BOLTS MUST BE INSTALLED FOR ALL MOUNTING HOLES. 1 [25] THICK GROUT UNDER ALL BASE PADS SHOWN SHADED IN PLAN VIEW.

6 AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
36 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL.
42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
48 [1219] IF OBJECT IS ANY LIVE PART.
CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.

5 CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.

4 BASELINE "Z" IS THE SAME FOR ALL MILNOR MACHINES AND IS SHOWN ON ALL DIMENSIONAL DRAWINGS. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR MAY VARY (WITH CHANGES IN FLOOR HEIGHT) AS REQUIRED TO INSURE THAT BASELINE "Z" IS HORIZONTAL AND ALL COMPONENTS REQUIRING GROUT ARE SET ON A MINIMUM 1" [25] THICK GROUT BED.

3 USE REFERENCE LINES "X", "Y", AND "Z" TO LOCATE ALL SERVICE CONNECTIONS.

2 NUMBERS IN BRACKETS [] DENOTE DIMENSIONS IN MILLIMETERS.

1 ALL DIMENSIONS SHOWN ARE APPROXIMATE, SUBJECT TO NORMAL MANUFACTURING TOLERANCES, AND TO OCCASIONAL CHANGES WITHOUT NOTICE THROUGH REDESIGN AND/OR RELOCATION OF COMPONENTS, ETC. DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED, AND IN NO EVENT PRE-PIPE CLOSER THAN FIVE FEET FROM MACHINE. FACTORY MUST BE CONSULTED FOR DIMENSIONS IF MACHINE IS TO BE MOVED THROUGH NARROW OR LOW CORRIDORS OR OPENINGS.

## ATTENTION

MOST REGULATORY AUTHORITIES (INCLUDING OSHA IN THE USA) HOLD THE OWNER/USER ULTIMATELY RESPONSIBLE TO MAINTAIN A SAFE WORKING ENVIRONMENT. ACCORDINGLY, THE OWNER/USER MUST RECOGNIZE ALL FORESEEABLE SAFETY HAZARDS, FURNISH SAFETY INSTRUCTIONS AND GUIDANCE TO ALL PERSONNEL WHO MAY COME IN CONTACT WITH THE INSTALLATION, AND PROVIDE ALL NECESSARY ADDITIONAL SAFETY GUARDS, FENCES, RESTRAINTS, DEVICES, ETC., NOT FURNISHED BY THE EQUIPMENT MANUFACTURER OR VENDOR.

## ATTENTION

THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS OPERATION. WRITE THE FACTORY FOR ADDITIONAL MACHINE DATA FOR USE BY A COMPETENT SOIL AND/OR STRUCTURAL ENGINEER.

EXTRACTORS:SLOPE EXISTING FLOOR>TROUGH

DM 0 0.25M
INCHES 0 12

DWG# BDM7EDRNAB 20173450

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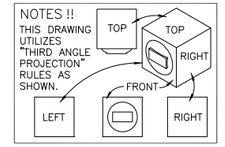
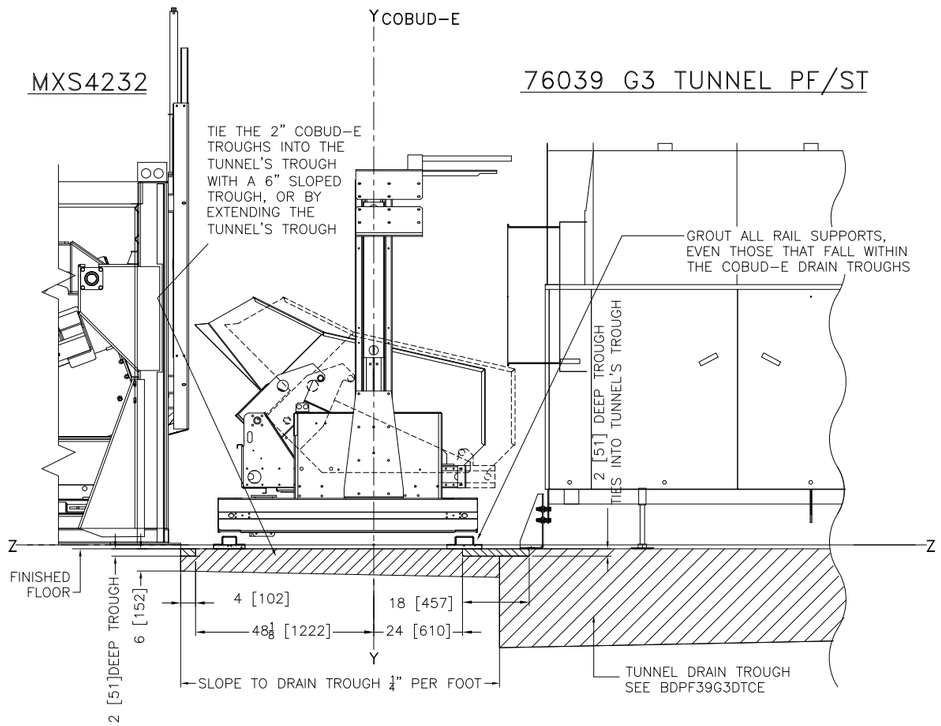
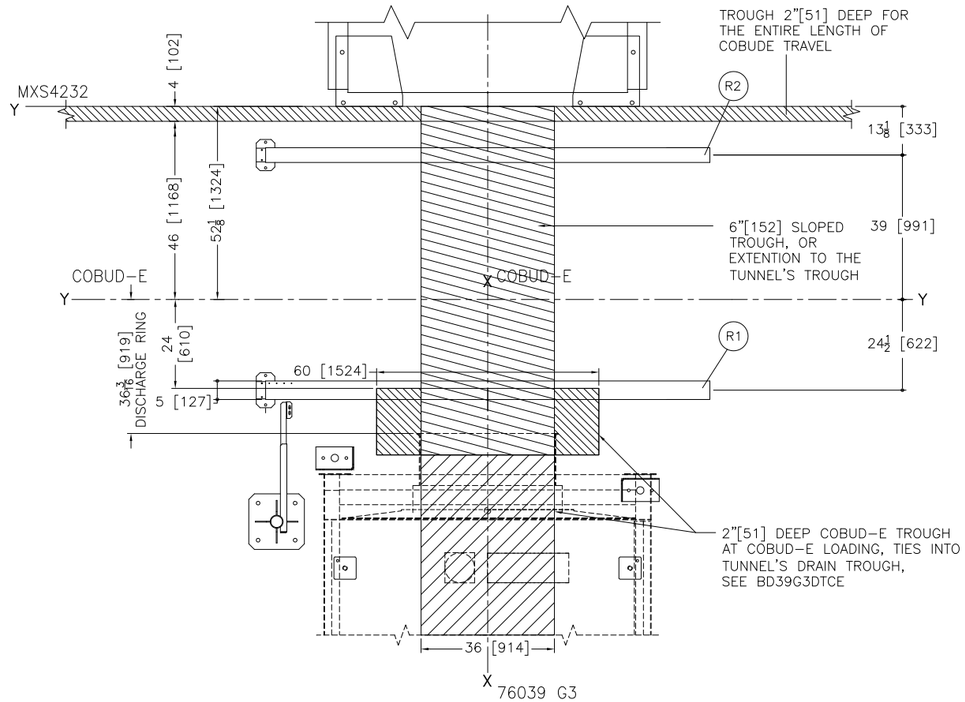
NOTES !!
THIS DRAWING UTILIZES "THIRD ANGLE PROJECTION" RULES AS SHOWN.




LEFT VIEW
COBUD-E DRAIN TROUGHS




PLAN VIEW
COBUD-E & 76039 G3
TROUGHS

| ITEM | LEGEND |
|---|---|
| R2 | 4" FLOOR DRIVE RAIL, DISCHARGE SIDE |
| R1 | 5" FLOOR DRIVE RAIL, LOAD SIDE |

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4 BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS. ON MACHINES WITH WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVERSING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1"[25] THICK GROUT BED.

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# DRAIN TROUGHS COBUD-E/MXS4232&M9S

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDCOBUDEAD
2013342D

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