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Service—

36026V5J, 36026V7J/V7W 42026V6J/V6W Washer-Extractors



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



Please Read

About the Manual Identifying Information on the Cover

The front cover displays pertinent identifying information for this manual. Most important, are the published manual number (part number) /ECN (date code). Generally, when a replacement manual is furnished, it will have the same published manual number, but the latest available ECN. This provides the user with the latest information applicable to his machine. Similarly all documents comprising the manual will be the latest available as of the date the manual was printed, **even though older ECN dates for those documents may be listed in the table of contents.**

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References to Yellow Troubleshooting Pages

This manual may contain references to "yellow pages." Although the pages containing troubleshooting procedures are no longer printed on yellow paper, troubleshooting instructions, if any, will be contained in the easily located "Troubleshooting" chapter or section. See the table of contents.

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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 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, FOB our factory. 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 repaired or altered in any way without MILNOR's written consent.

Parts which require routine replacement due to normal wear – such as gaskets, contact points, brake and clutch linings and similar parts – are not covered by this warranty, nor are parts damaged by exposure to weather or to chemicals.

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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BMP720097
92732A

How to order repair parts

Repair parts may be ordered either from the authorized dealer who sold you this machine, or directly from the MILNOR factory. In most cases, your dealer will have these parts in stock.

When ordering parts, please be sure to give us the following information:

1. Model and serial number of the machine for which the parts are required
2. Part number
3. Name of the part
4. Quantity needed
5. Method of shipment desired
6. In correspondence regarding motors or electrical controls, please include all nameplate data, including wiring diagram number and the make or manufacturer of the motor or controls.

All parts will be shipped C.O.D. transportation charges collect only.

Please read this manual

It is strongly recommended that you read the installation and operating manual before attempting to install or operate your machine. We suggest that this manual be kept in your business office so that it will not become lost.

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P.O. BOX 400, KENNER, LA., 70063-0400, U.S.A.

FAX: Administration 504/468-9307, Engineering 504/469-1849, Service 504/469-9777

BMP720097R
72332A

Safety—Rigid Washer Extractors

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.

3. Safety Alert Messages—Cylinder and Processing Hazards

[Document BIUUUS13]

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



DANGER 3: Entangle and Sever Hazards—Contact with goods being processed can cause the goods to wrap around your body or limbs and dismember you. The goods are normally isolated by the locked cylinder door.

- 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.
- Do not operate the machine with a malfunctioning door interlock.
- 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 4: 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. The turning cylinder is normally isolated by the locked cylinder door.

- Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- Do not place any object in the turning cylinder.
- Do not operate the machine with a malfunctioning door interlock.



WARNING 5: 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 6: 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.
- Do not process goods containing flammable substances. Consult with your local fire department/public safety office and all insurance providers.

4. Safety Alert Messages—Unsafe Conditions [Document BIUUUS14]

4.1. Damage and Malfunction Hazards

4.1.1. Hazards Resulting from Inoperative Safety Devices



DANGER 7: Entangle and Sever Hazards—Cylinder door interlock—Operating the machine with a malfunctioning door interlock can permit opening the door when the cylinder is turning and/or starting the cycle with the door open, exposing the turning cylinder.

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



WARNING 8: 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 9: Electrocutation 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 10: 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.

4.1.2. Hazards Resulting from Damaged Mechanical Devices



WARNING 11: 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 12: 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.



WARNING 13: Explosion Hazards—Clutch and speed switch (multiple motor machines)—A damaged clutch or speed switch can permit the low speed motor to engage during extract. This will over-speed the motor and pulleys and can cause them to rip apart, discharging metal fragments at high speed.

- Stop the machine immediately if any of these conditions occur: • abnormal whining sound during extract • skidding sound as extract ends • clutches remain engaged or re-engage during extract

4.2. Careless Use Hazards

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



WARNING 14: 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.

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



WARNING 15: Electrocutation 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 16: 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 17: 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 —

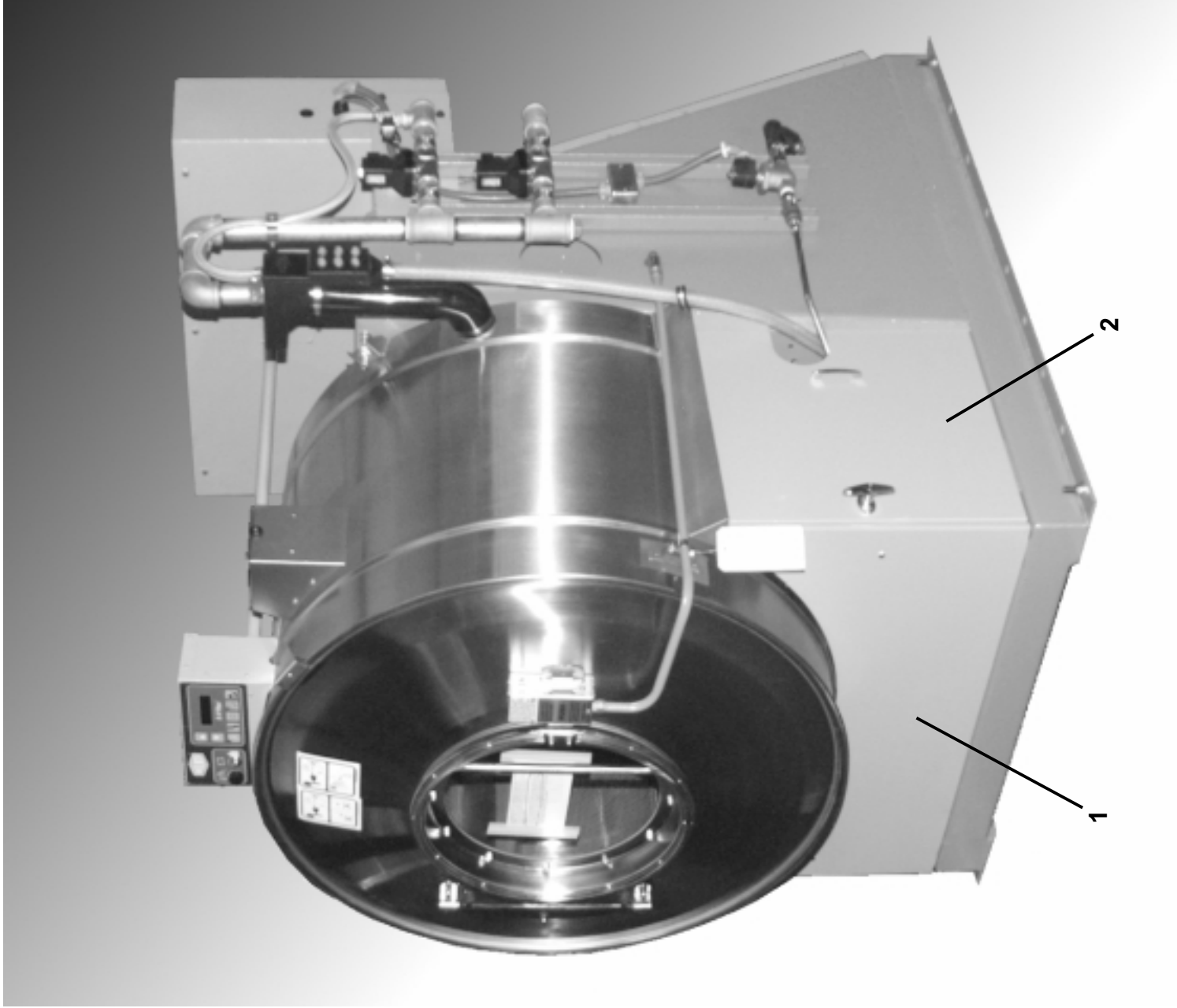
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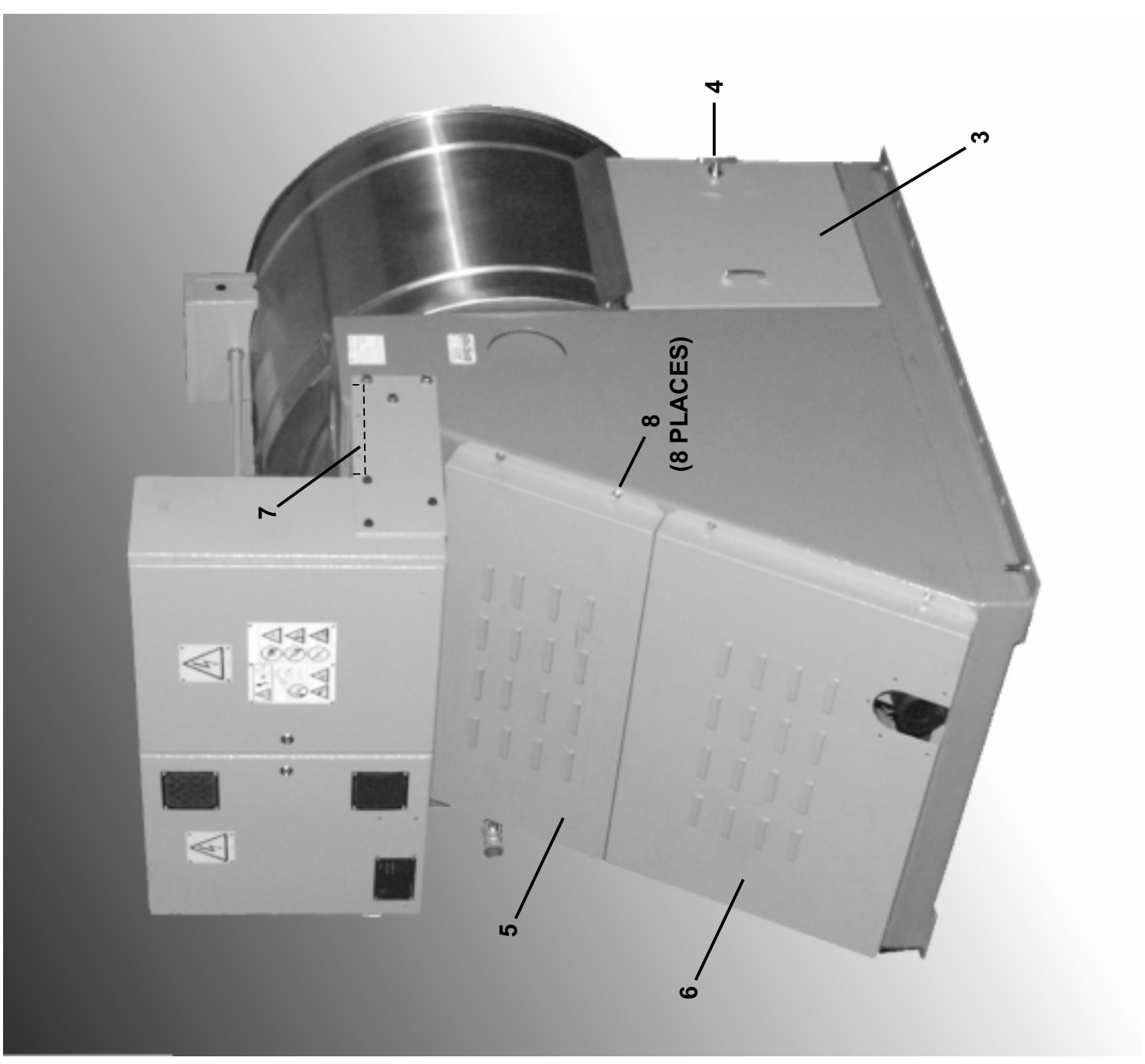


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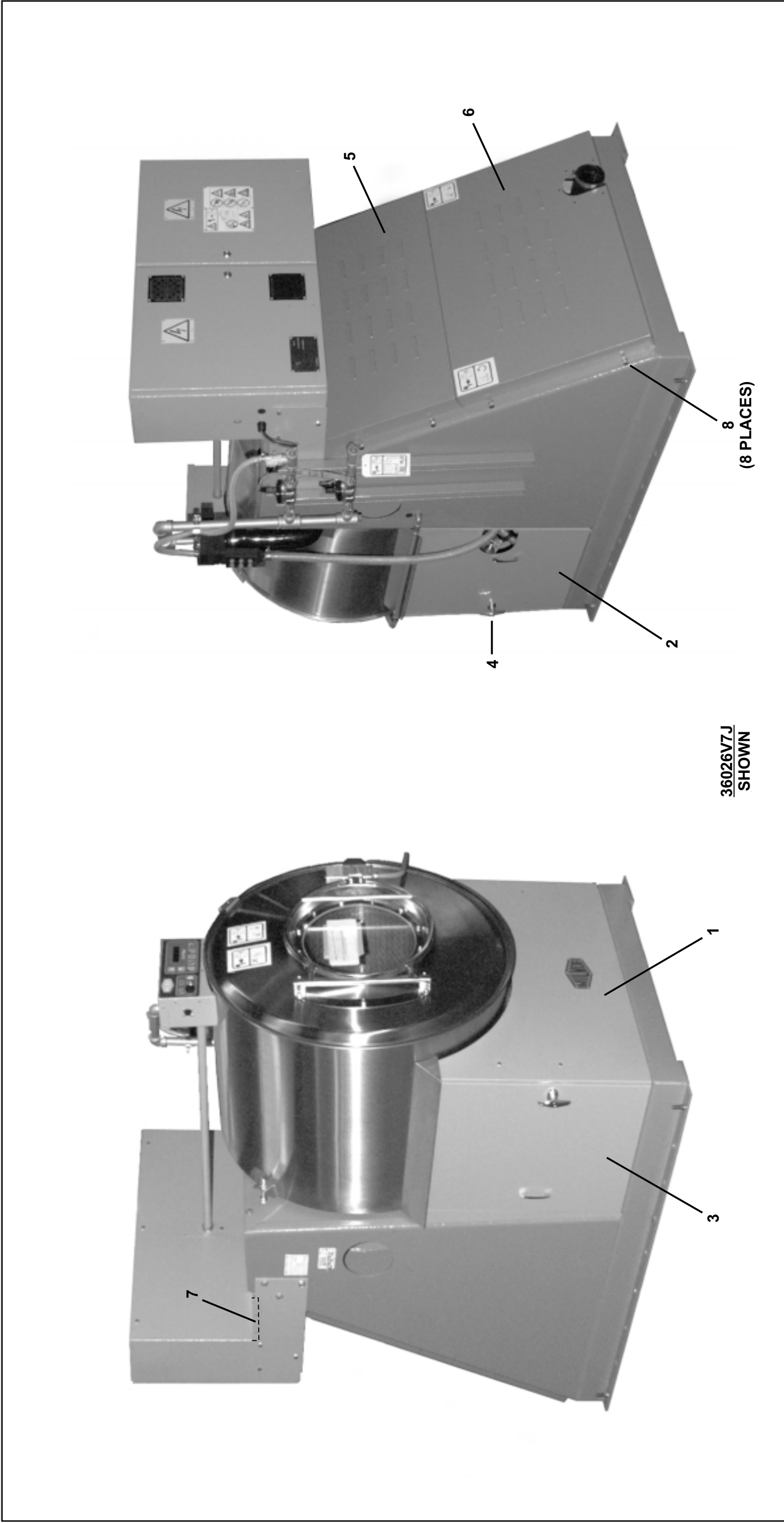
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Parts List—Guards & Covers

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	GG5119001S	COVER ASSY 42R6P&G	
	B	AGS119001S	ASSY SIDECOVER +HANDLES	
	C	GG5119003V	REAR COVER ASSY 4226V	
	D	GG514801S	GUARDS+COVER ASSY 36R7P&G	
	E	AGS14801S	GUARDS&COVERS ASSY 36Q	
-----COMPONENTS-----				
all	1	02 11908E	+COVER=FRONT COSMETIC 42QU	
all	1	02 14821A	+FRONT COSMETIC 36Q	
all	2	02 11908H	+COSM=RT/DOOR	
all	2	02 14821B	+COSMETIC RIGHT DOOR 36Q	
all	3	02 11908I	+COSM=LFT/DOOR	
all	3	02 14821C	+COSMETIC LEFT SIDE 36Q	
all	4	27A012LTKS	LOCK"T"HANDL,S.LTCH&MTGHDW	
all	5	03 11071	REAR COVER UP 36V7/42V6	
all	6	03 11070	REAR COVER LOW 36V7/42V6	
all	7	03 11069	COVUPREAR CNTLBOX 36V7/42V6	
all	8	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	

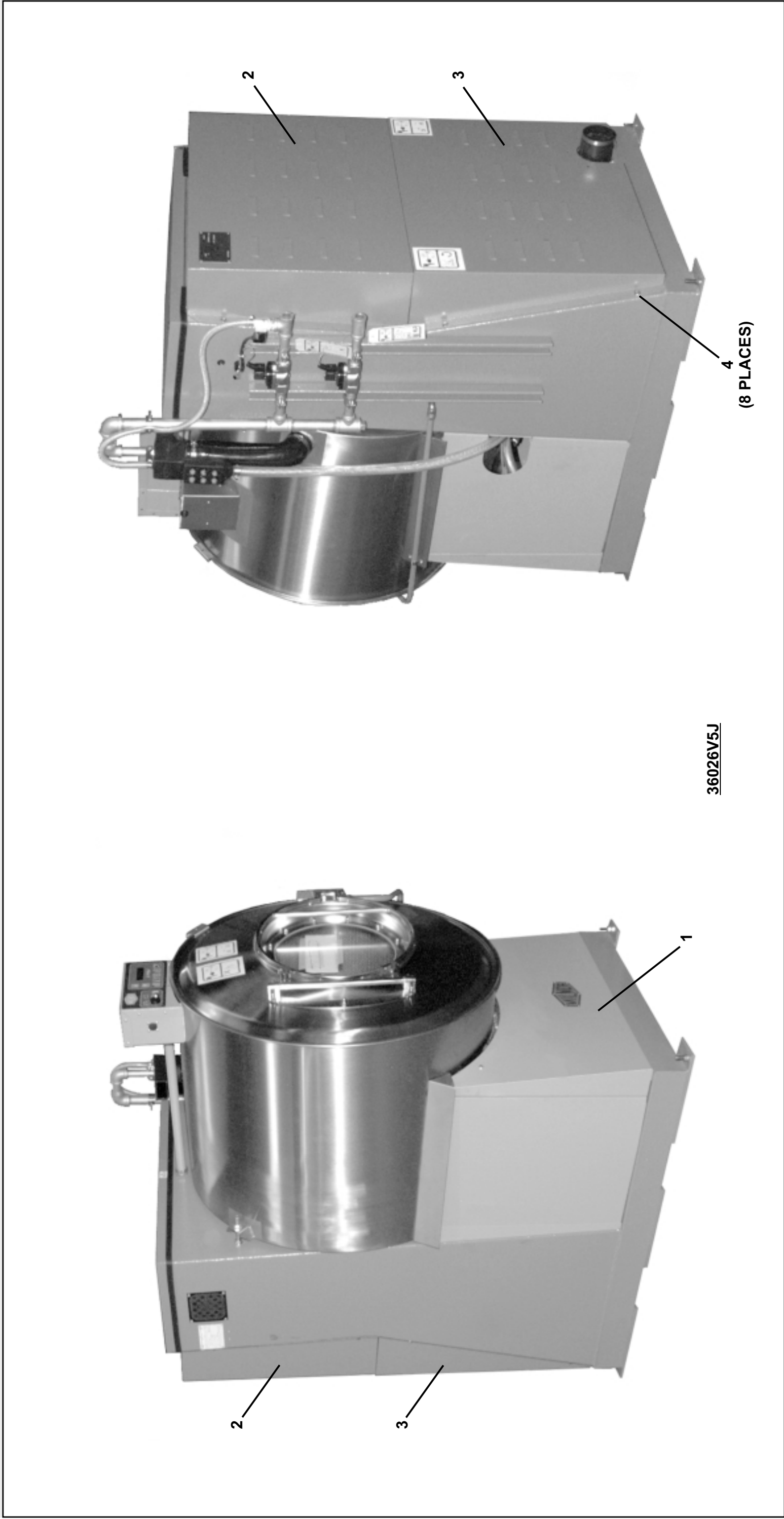
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Parts List—Guards and Covers

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Used In	Item	Part Number	Description	Comments
			-----ASSEMBLIES-----	
	A	GG514808	GUARD + COVER INSTALL 36V5 Mk2	
			-----COMPONENTS-----	
all	1	AGS14808	FRONT COVER ASSY 36V5	
all	2	03 11064	BELTGD-UPPER REAR 36V5	
all	3	03 11065	BELTGD-LOWER REAR 36V5	
all	4	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	

About the Forces Transmitted by Milnor® Washer-extractors

Document BIWUUI02
Specified Date 20001108
As-of Date 20001108
Access Date 20001108

Applicability.....WUU

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 360° 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 360° 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

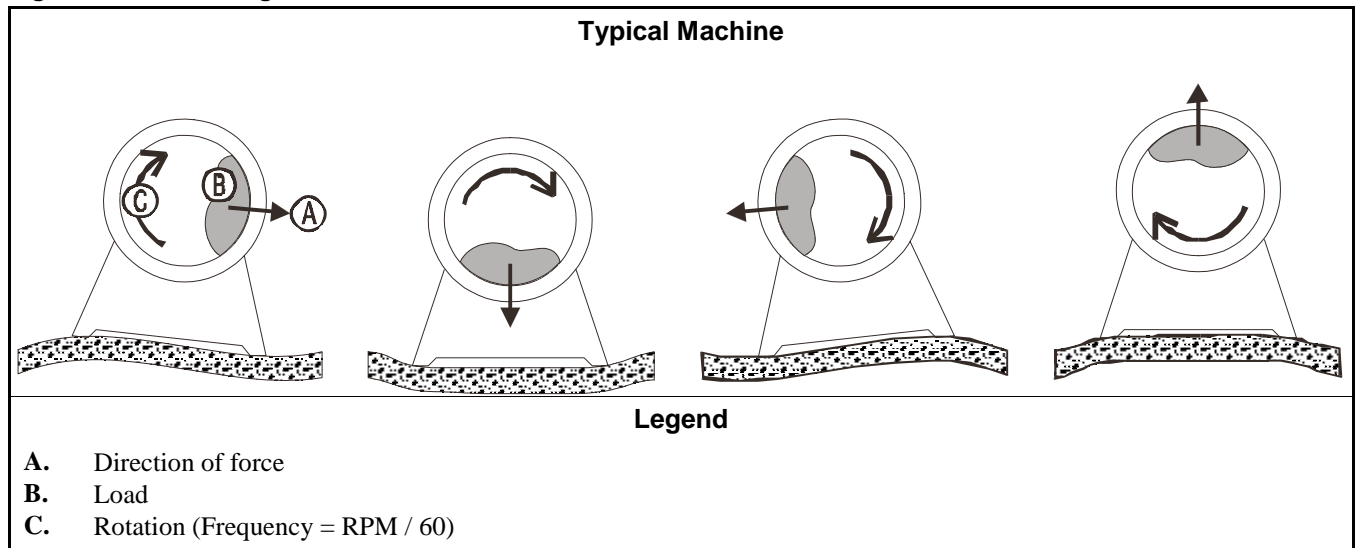
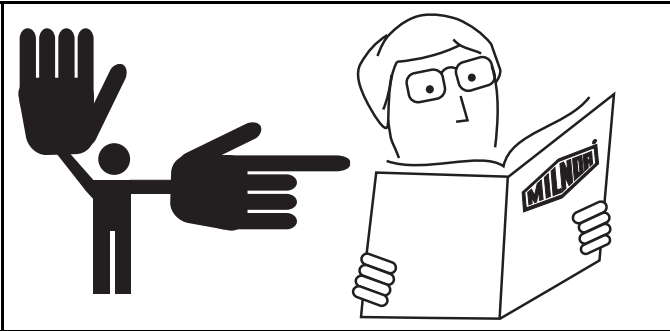
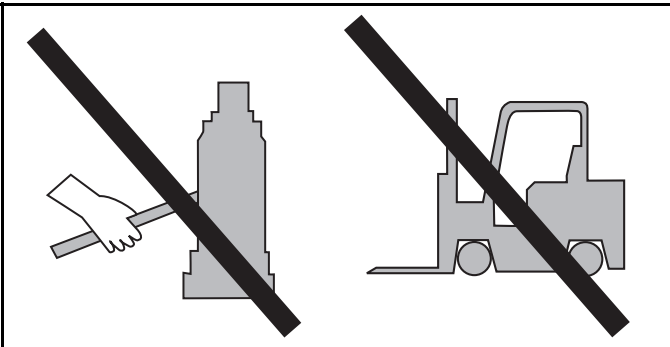
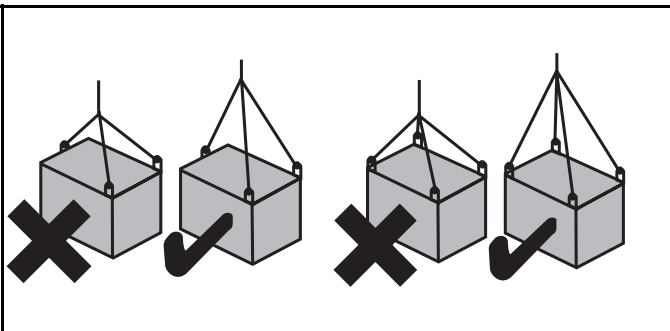
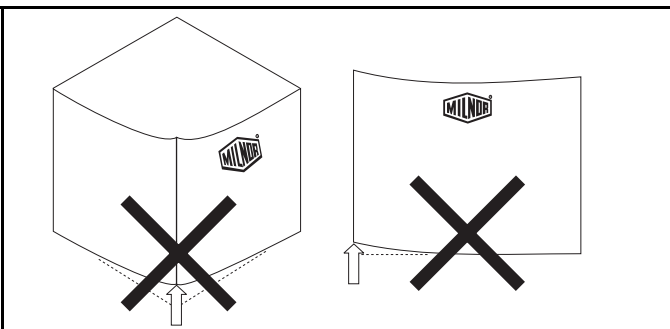


Figure 1 above is intended to depict both on-grade and above-grade installations and is equally applicable to flexibly-mounted washer-extractors, as well as to rigid models installed either directly on a floor slab or on a foundation poured integrally with the slab. Current machine data is available 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.

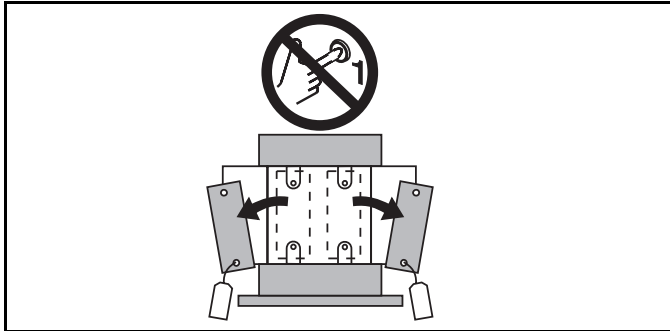
Glossary of Tag Illustrations— F-Style, Q-Style, 36" & 42" V-Style, and X-Style Washer-Extractors

MSIUUQTGAE/2003045V

Illustration	Explanation
	Stop! Read the manual first for complete instructions before continuing.
	Do not jack the machine here. Do not lift the machine here.
	Use three point or four point lifting as determined by the lifting eyes furnished. Rig the load using lifting cables of sufficient size and length to ensure cables are not over-stressed.
	Do not lift the machine from one corner or one side edge.

Illustration

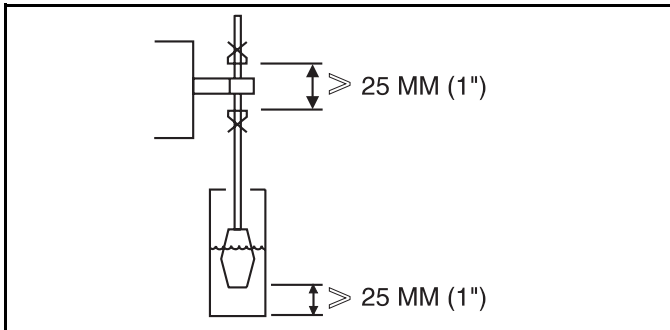
Explanation



Do not start this machine until the packing materials, lifting brackets, etc. with this tag attached or behind this panel are removed. These materials are painted red. Safety stands or brackets (also painted red) may be provided with this machine. Do not discard safety stands or brackets



Do not step or stand on this machine part.



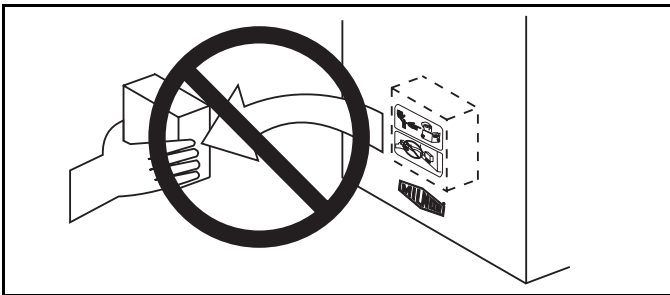
Maintain a 25 mm. (1") minimum clearance between float clips. Set "low level" so that the bottom of the float is always at least 25mm (1") above the bottom of the float tube.



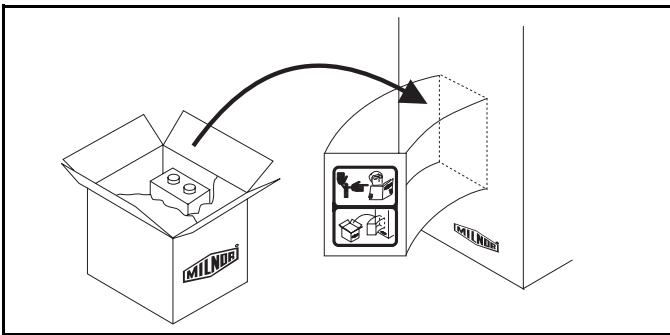
This motor or pump should rotate in the direction of the arrow.



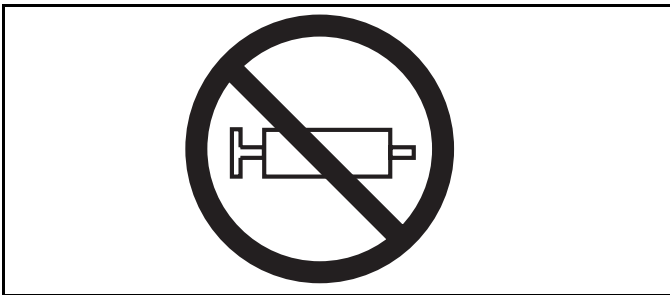
Do not start this machine until the part with this tag is installed on the machine.



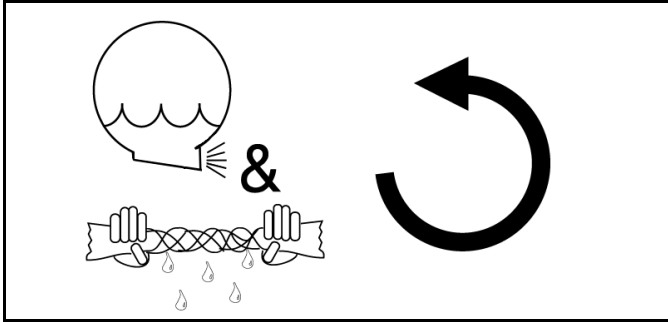
Do not remove this component from the machine.



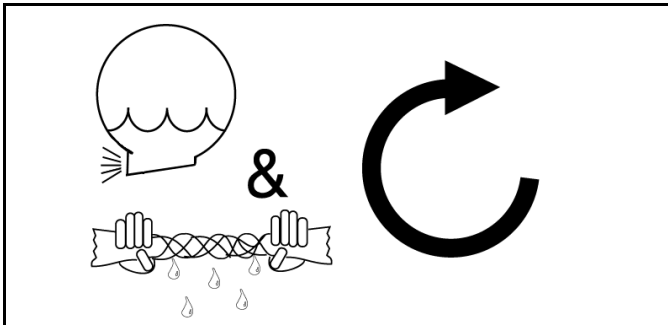
Install the appropriate part here before operating the machine.



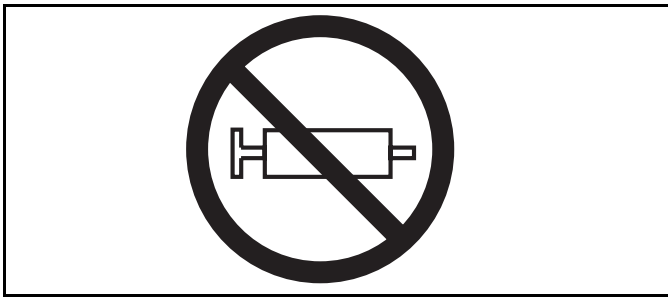
Do not pump grease here.



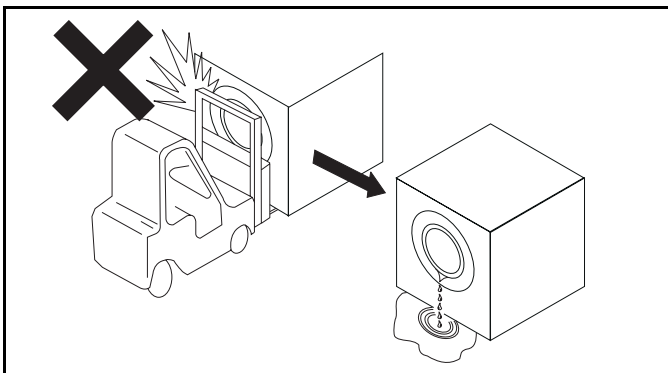
During drain and extract, the cylinder must rotate counterclockwise when viewed from here (rear of machine).



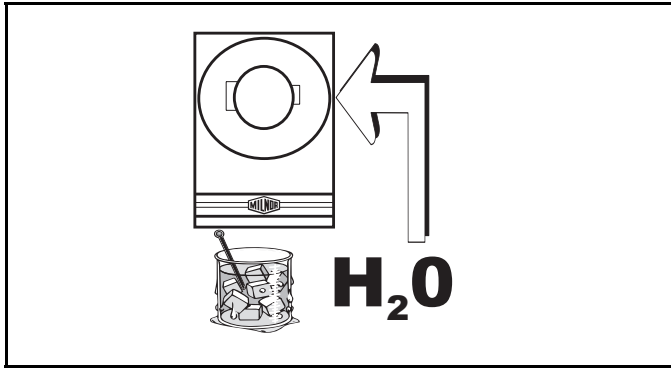
During drain and extract, the cylinder must rotate clockwise when viewed from here (front of machine).



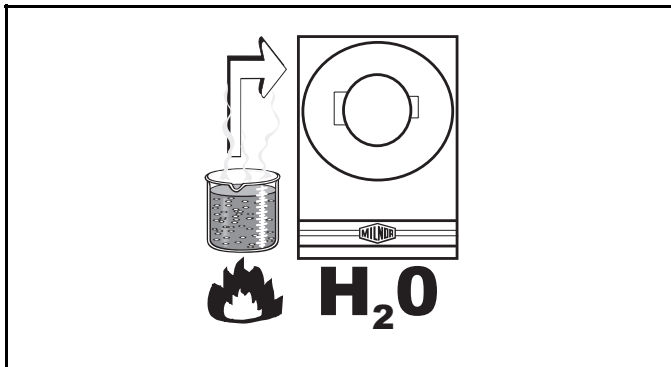
Do not pump grease here.



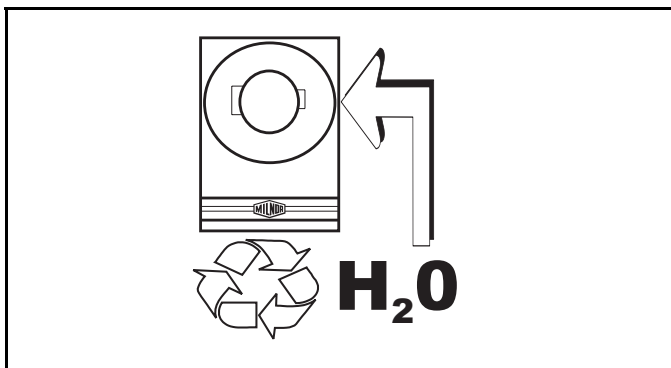
Do not strike shell front of washer-extractors during fork lifting. Striking shell front will cause door to leak.



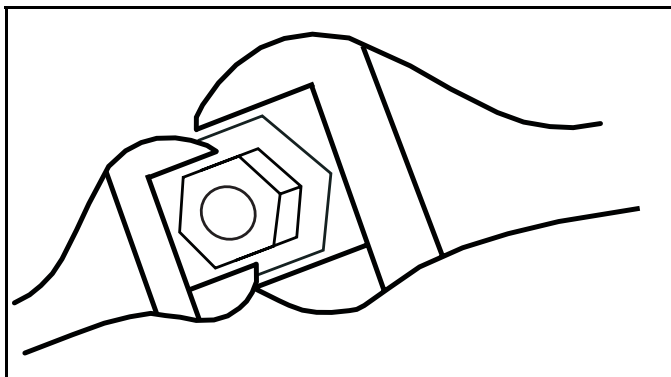
Make cold water connection here.



Make hot water connection here.



Make third (reuse) water connection here.



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

Avoiding Damage From Allied Remote Chemical Delivery Systems

Milnor® does not manufacture or supply remote chemical delivery systems and this document is meant only to illustrate some of the possible problems that can be minimized during installation of such systems by the chemical supply company. Milnor washer-extractors and CBW® batch washers (tunnels) are available with convenient inlets for such systems (see Figure 1). Most common of the types of systems currently used in commercial laundering operations are pumped chemical systems. Other types, such as constant pressure, re-circulating ring main systems have also been, and may continue to be used with Milnor equipment.

This document warns about some of the possible hazards posed by chemical systems and lists certain requirements needed to minimize those hazards. The procedures for interfacing with allied chemical systems and information pertinent to chemical use in general are provided elsewhere in the product manuals (see Note 1).

Figure 1: Pumped Chemical Inlets on CBW Batch Washer



Note 1: Misuse of laundering chemicals (such as injecting excessive concentrations of chlorine bleach or permitting acid sours to react with hypo chlorite) due to incorrect formulation can also be hazardous. Information pertinent to chemical use is provided elsewhere in the product manuals.

1. How a Chemical System Can Damage the Machine It Serves

Milnor has manufactured washer-extractors and tunnel washers with the same stainless steel specification since its founding. Every batch of steel used is certified and documented by the steel mill. Testing of samples damaged by corrosion have, in every case, proven the steel to be well within the AISI 304 specification.

Chemical products commonly found in the laundry industry, when used in **established** dosages and proper operating parameters, under the auspices of an experienced chemical specialist, should produce satisfactory results, with no consequential detrimental effects. The industry has published standards in Riggs and Sherrill, “Textile Laundering Technology”. However, the stainless steel can be damaged and even destroyed by **abnormal** contact with chlorine bleach, hydrofluosilicic acid and other commonly used chemicals, as will occur if chemicals are unintentionally leaked into the machine, particularly when it is no longer in use and especially when machine surfaces are dry.

Some chemical systems have been found to permit chemicals to dribble from the supply lines, or worse, to siphon from the supply tank into the machine, during operation and long after the system is shut down—as after working hours and during weekends. If this occurs, **deterioration (rusting) of the stainless steel and damage to any textiles therein will inevitably result. If this condition goes undetected, machine damage is likely to be catastrophic.** No machine is immune to such damage.



CAUTION 1: **Equipment and Textile Damage Hazards**—Chemicals leaked into the machine, particularly when it is idle can destroy machine components and textiles left in the machine. **Pellerin Milnor Corporation accepts absolutely no responsibility for damage to its equipment or to textiles therein from abnormal contact with chemicals.**

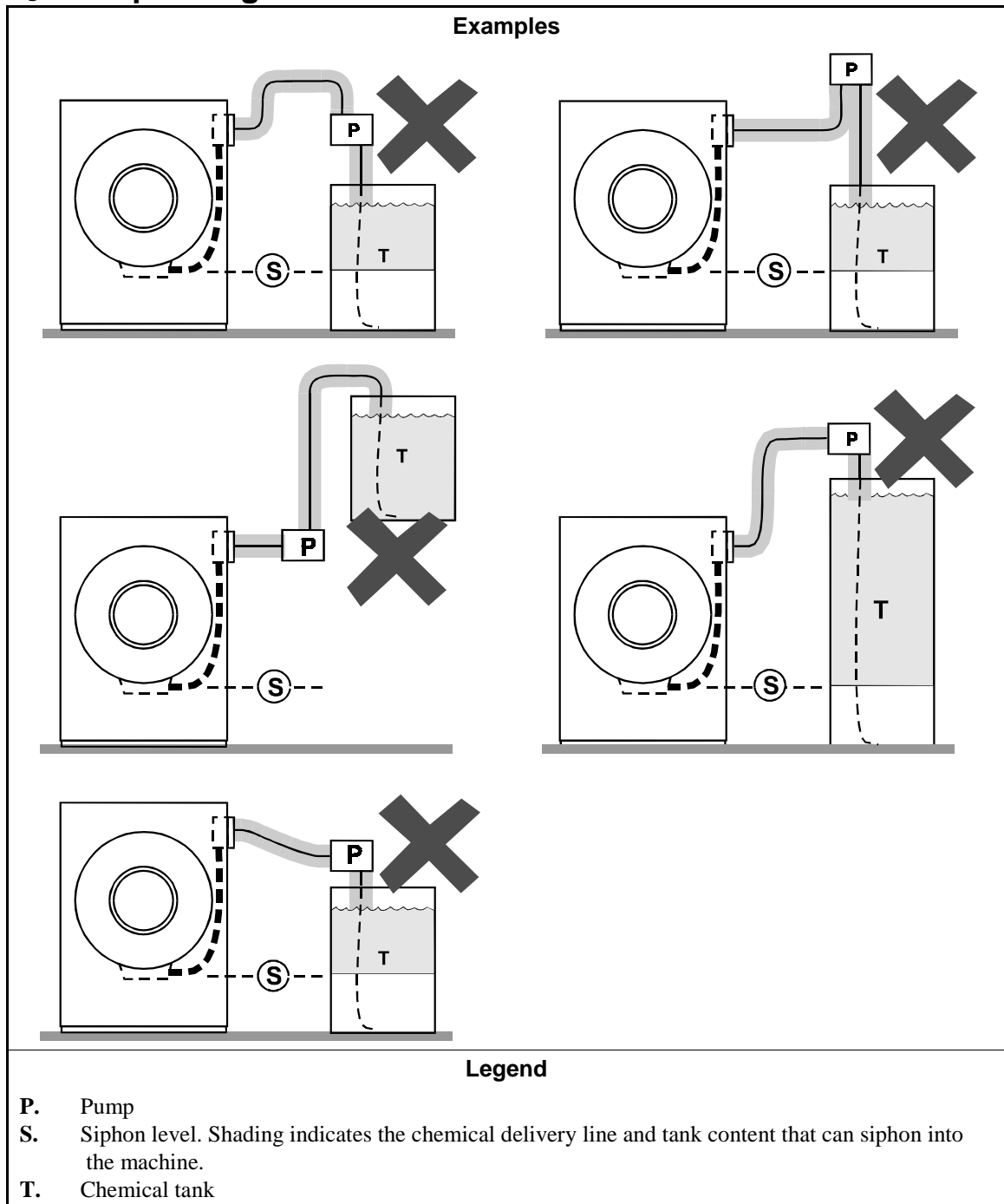
- Ensure that the chemical system prevents unintentional release of chemicals.
- Inspect regularly for proper operation and evidence of damage.

2. Requirements for Chemical Systems Used With Milnor Machines

It is the responsibility of the chemical system manufacturer and supplier to ensure that their system is safe for personnel and equipment. Some important points are described below.

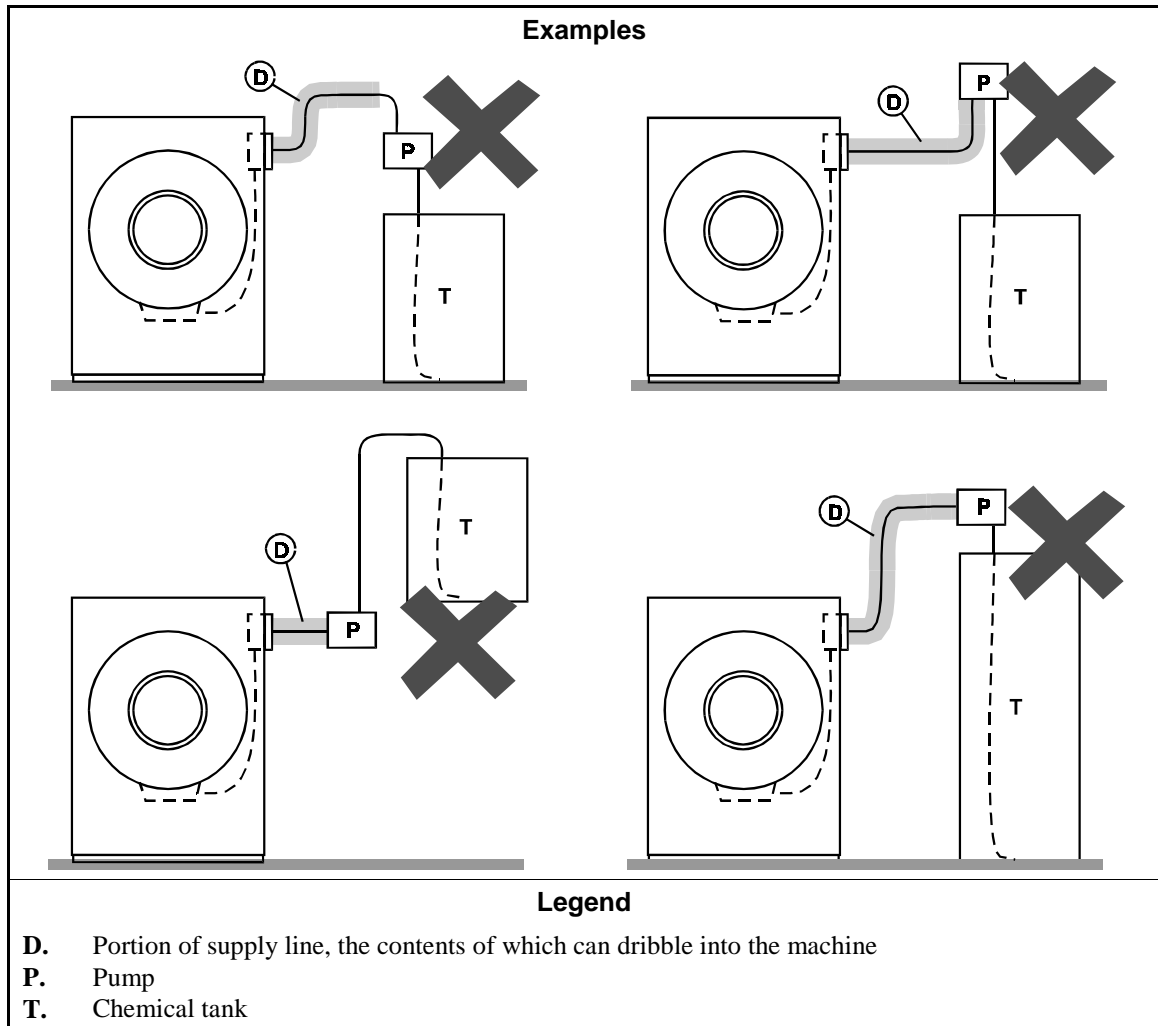
- 2.1. **Ensure the System Cannot Siphon.**—The supply system must be designed to counteract any siphoning that could occur as a result of having a sealed supply line between the bottom of the chemical tank and the internal machine connection at the drain trough. As shown in the Figure 2 examples, if the pump (P) and/or the valving does not provide positive closure and there is no vacuum breaker protection, siphoning is likely to occur. In each of the Figure 2 illustrations, the volume of chemical in the tank above the siphon level (S), and indicated by shading, will flow into the machine.

Figure 2: Siphoning From the Chemical Tank into the Machine



2.2. **Ensure the Chemical Lines Cannot Dribble**—The pumped chemical system may provide a means of positively closing the chemical line at the pump location, but not at the injection site. Hence, any concentrated chemical that remains in the injection line between the pump and the machine is free to flow into the machine. Some examples of this are shown in Figure 3.

Figure 3: Dribbling From Chemical Supply Line Into Machine (assumes positive closure at the pump)



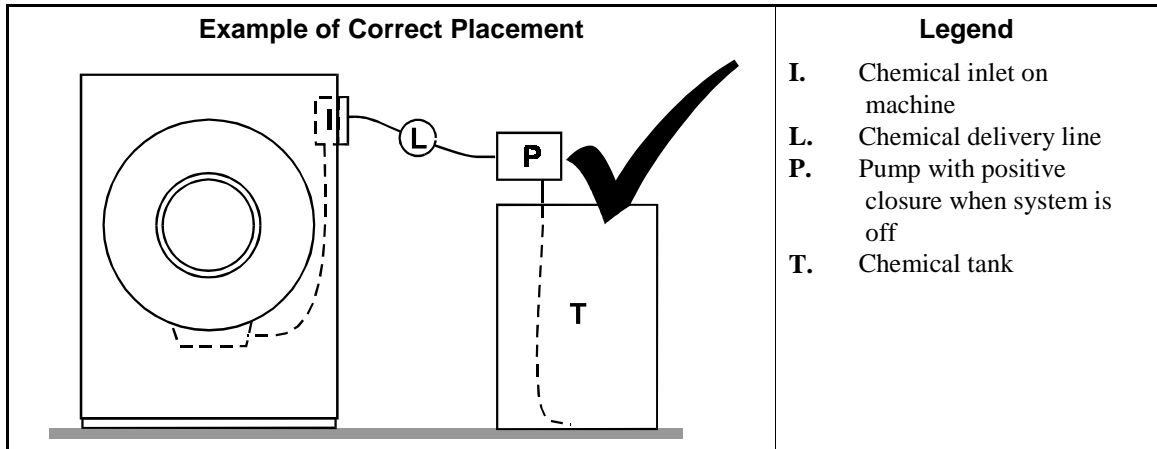
3. Design and Installation Recommendations

It is the responsibility of the chemical system manufacturer and supplier to use whatever measures are necessary to ensure that their system is safe for personnel and equipment. The following are some of the possible methods the manufacturer or supplier may wish to use, as appropriate.

- 3.1. **Siphoning: Positively close the line.**—If the pump does not provide positive closure when the system is off, employ a shutoff valve in the line to serve this purpose.
- 3.2. **Siphoning: Break the siphon.**—Provide an air gap or vacuum breaker in the chemical delivery line. This must be located above the “full” line of the tank.
- 3.3. **Dribbling: Flush the entire chemical delivery line.**—If any concentrated chemical that remains in the injection line between the pump and the machine is free to flow into the machine, employ a system that flushes the entire line between the pump and the injection point with fresh water after each injection.

- 3.4. **Dribbling: Locate the entire chemical line below the machine inlet.**— Assuming the chemical system does not retain any line pressure and that the pump provides positive closure when the system is off, locate the entire chemical delivery line below the level of the chemical inlet. An example of this is shown in Figure 4.

Figure 4: Locating a Pumped Chemical System With Positive Closure To Protect Against Machine Damage



4. Guarding Against Leaks

All personnel who may work with the chemical system (e.g., chemical system manufacturer, chemical system supplier, chemical supplier, operator, maintenance personnel) should be vigilant in observing for leaks in the system. When connecting, or reconnecting chemical lines, whether at installation, after taking samples, or when replacing components, at a minimum ensure that:

1. the proper components are used,
2. all connections are the proper fit, and
3. all components are securely connected.



CAUTION [2]: Injury and Damage Hazards—Chemicals leaking from a chemical system may be corrosive or toxic. Such chemicals can injure personnel and damage equipment.

- Use care when connecting chemical lines.
- Inspect regularly for leaks.

— End of BIWUUI03 —

Safety Placard Use and Placement

36026V5J, 36021CPE, NSP & V5J

BMP020109/2002145V
(Sheet 1 of 2)

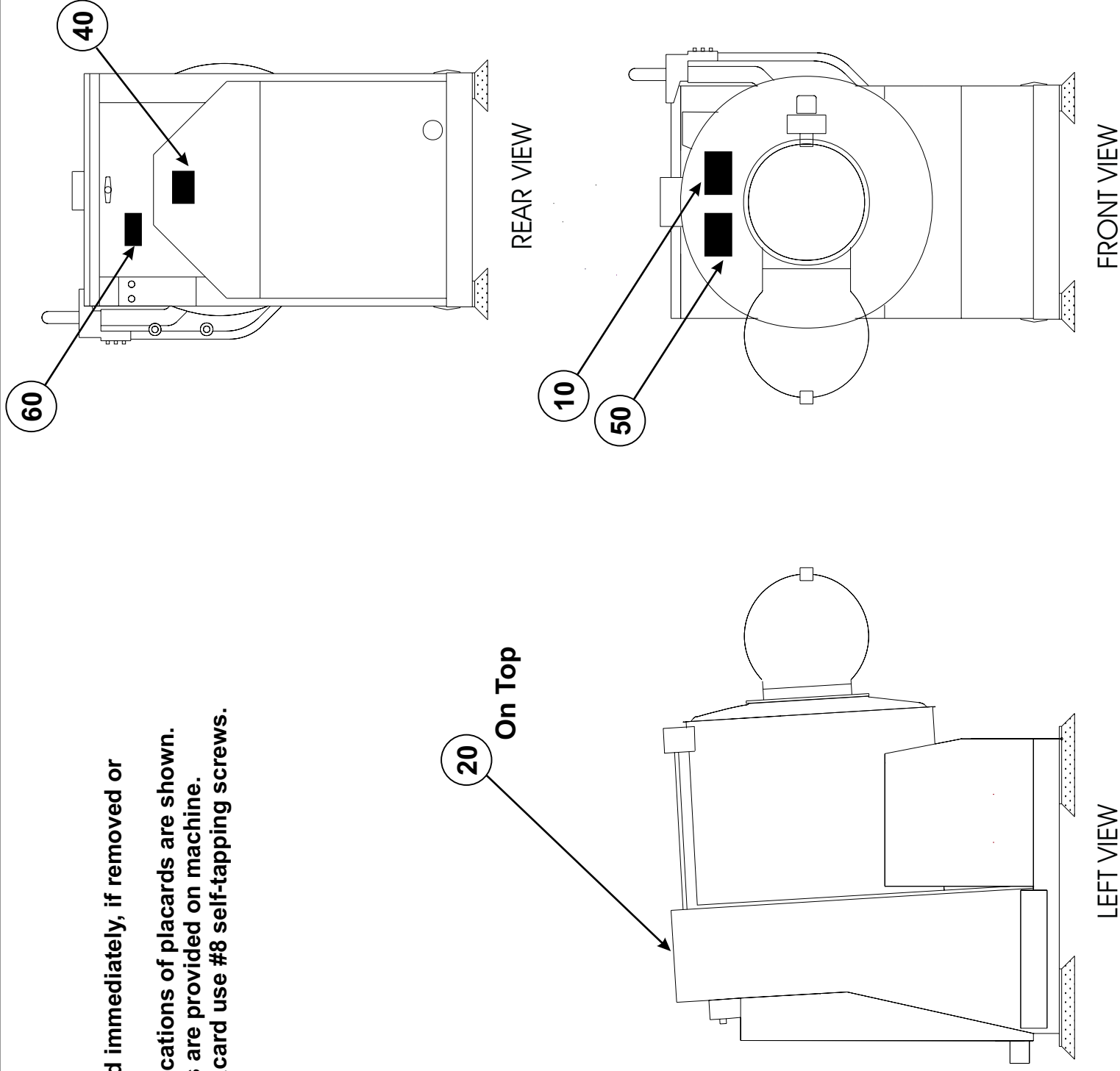


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Litho in U.S.A.

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.





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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 10635A	NPLT:SHELL FRONT RIDGID-TCATA	
all	20	01 10375B	NPLT:ELEC HAZARD SMALL-TCATA	
all	40	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	50	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	
all	60	01 10377A	NPLT:ELEC HAZARD LG-TCATA	

Safety Placard Use and Placement ISO 36026V5J, 36021CPE, NSP & V5J

BMP020110/2002145V
(Sheet 1 of 2)



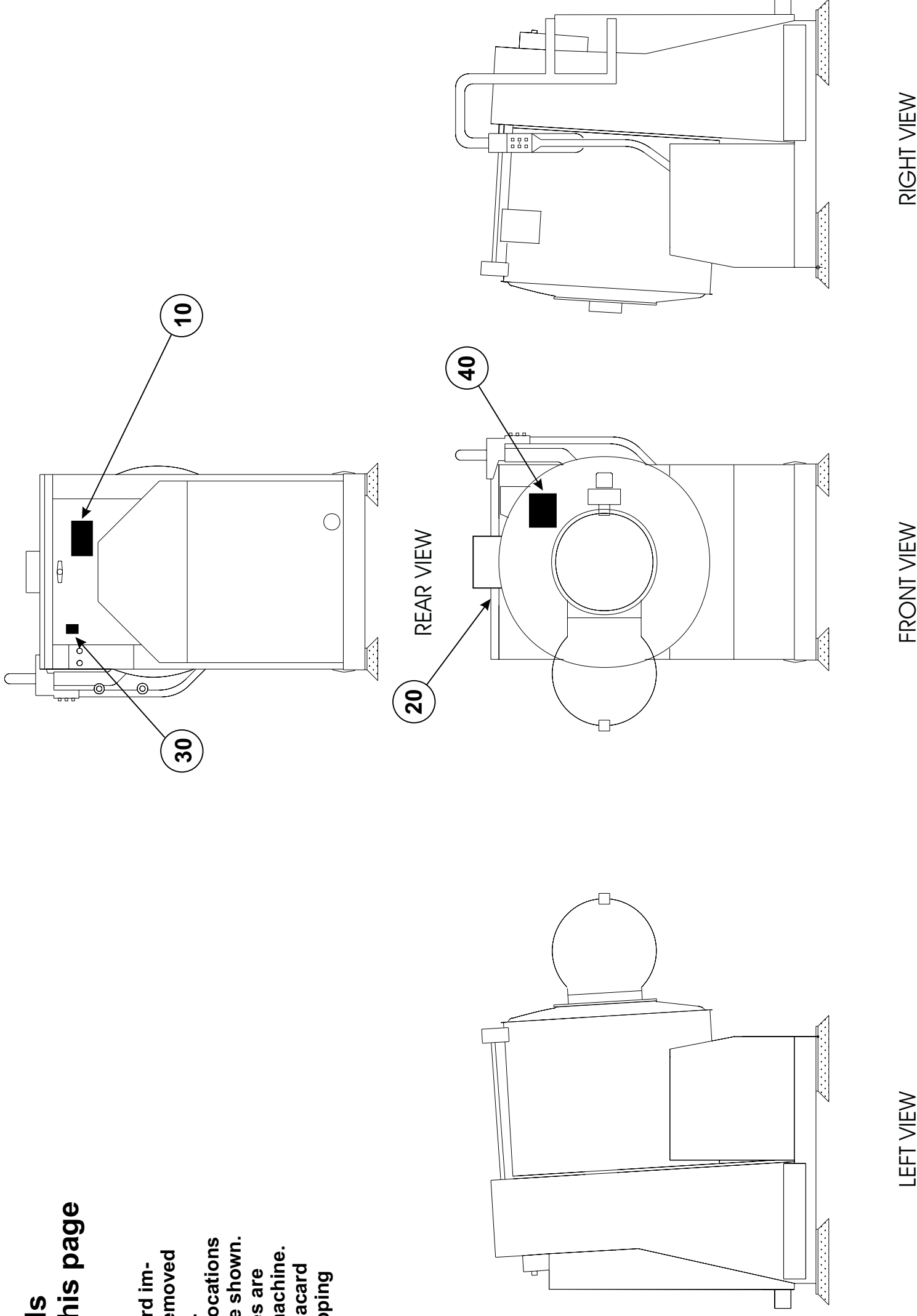
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Litho in U.S.A.

ISO Placards shown on this page

Notes:

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RIGHT VIEW

FRONT VIEW

LEFT VIEW



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Parts List—Safety Placard Placement

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Used In	Item	Part Number	Description	Comments
-----ASSEMBLIES-----				
none				
-----COMPONENTS-----				
all	10	01 10632X	NPLT:WE1 RIGID WARNINGS FR	
all	20	01 10375	NPLTE:"WARNING" 2X2	
all	30	01 10377	NPLTE:"WARNING" 4X4	
all	40	01 10632Y	NPLT:WE1 RIGID WARNINGS POLY	

Safety Placard Use and Placement

36026V7J/W & 42026V6J/W

BMP020111/2002145V
(Sheet 1 of 2)

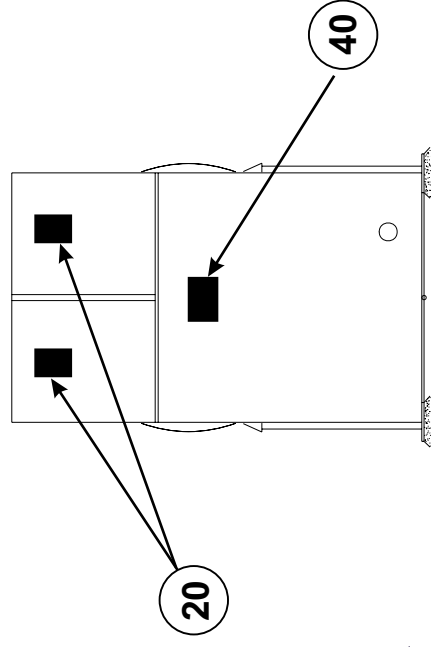


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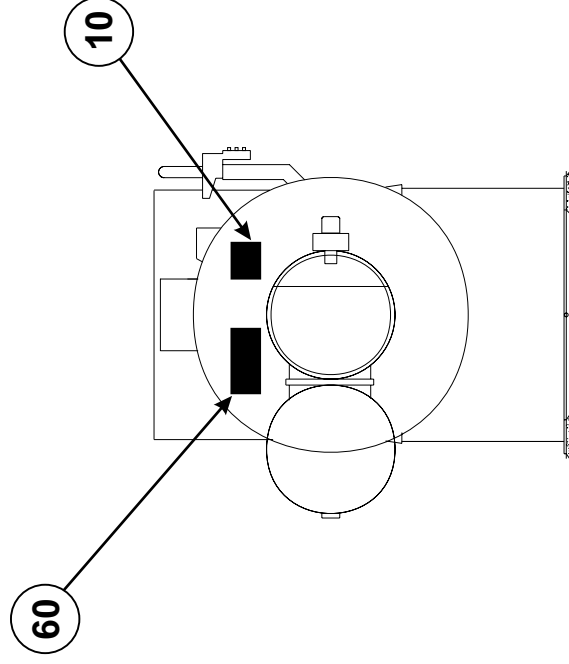
Litho in U.S.A.

Notes:

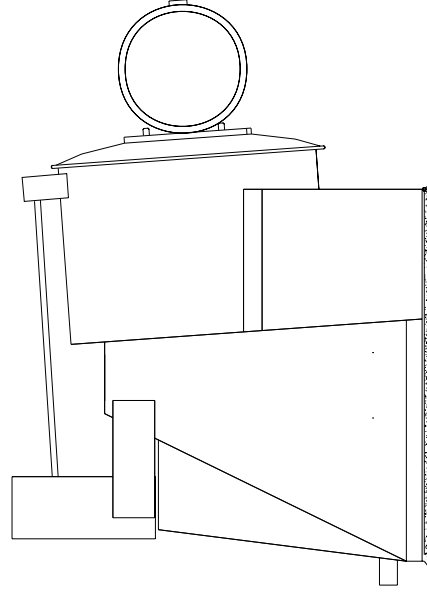
1. Replace placard immediately, if removed or unreadable.
2. Approximate locations of placards are shown. Mounting holes are provided on machine. Use #8 self-tapping screws.



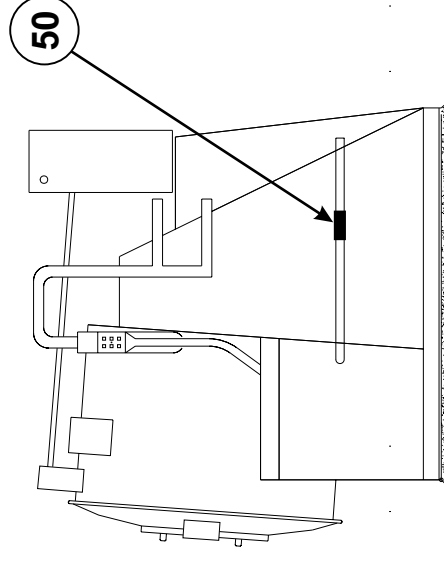
REAR VIEW



FRONT VIEW



LEFT VIEW



RIGHT VIEW



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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 10635A	NPLT:SHELL FORNT RIDGID-TCATA	
all	20	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	40	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	50	01 10685A	NPLT:BURN HAZARD WARN-TCATA	
all	60	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	

Safety Placard Use and Placement ISO 36026V7J/W & 42026V6J/W

BMP020112/2002145V
(Sheet 1 of 2)



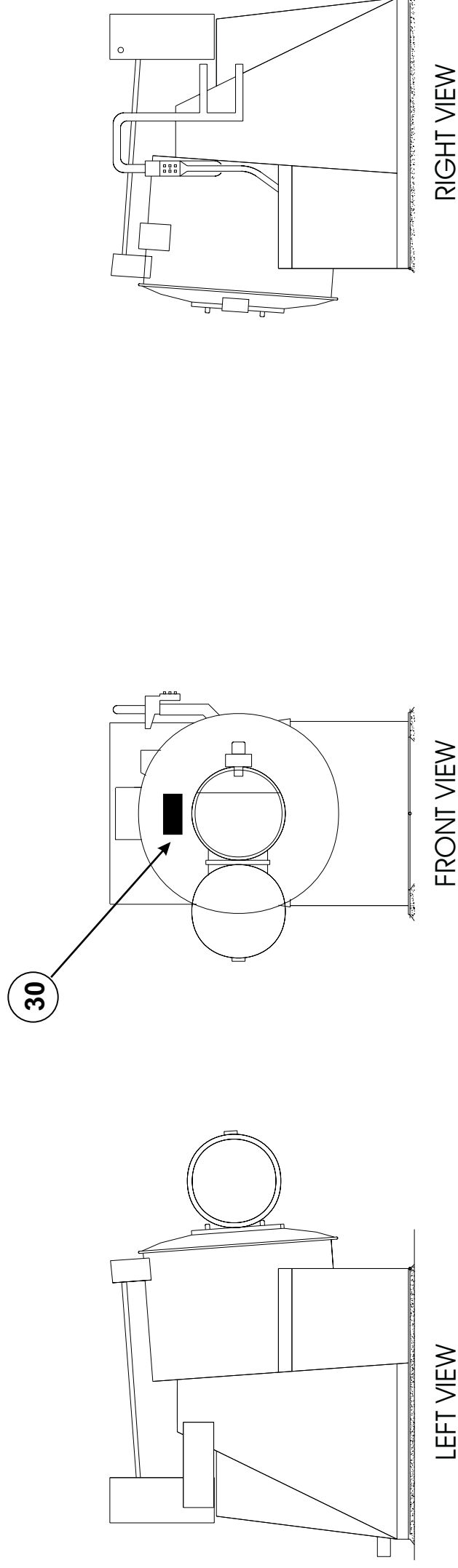
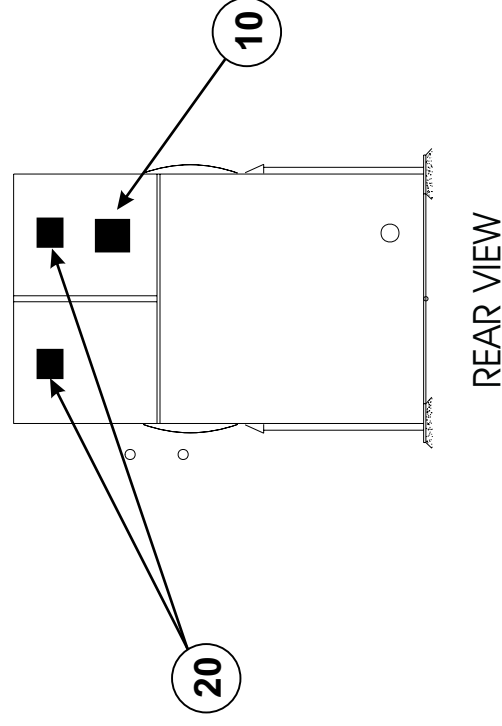
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Litho in U.S.A.

ISO Placards shown on this page

Notes:

1. Replace placard immediately, if removed or unreadable.
2. Approximate locations of placards are shown. If Aluminum Placard Mounting holes are provided on machine. Use #8 self-tapping screws.





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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 10632X	NPLT:WE1 RIGID WARNINGS FR	
all	20	01 10377	NPLTE:"WARNING" 4X4	
all	30	01 10632Y	NPLT:WE1 RIGID WARNINGS POLY	

Section

1

Service and Maintenance

Preventive Maintenance

1. Lubrication Guidelines

As required by the warranty, to ensure safe operation, and to achieve optimum performance and service life from Milnor® washer-extractors, the schedules, instructions, and precautions herein must be strictly followed.



WARNING [1]: Entangle and Crush Hazard—Belts and pulleys can entangle and crush body parts.

- Lock OFF and tag out power at the wall disconnect before servicing, except where specifically instructed otherwise in this section.
- Insure belt and pulley guards are in place during service procedures.
- Permit only qualified maintenance personnel to perform these procedures.

2. 36026V5J Main Bearing Maintenance

36026V5J main bearing housings are oil-filled and require periodic draining and refilling (see below). 42026V6J bearing housings are grease filled and require periodic greasing of seals and bearings (See “Lubrication Precautions” and “42026V6J Main Bearing Maintenance” below).

See the appropriate “MAIN BEARING ASSEMBLY” (see Table of Contents) during this procedure.

1. Remove the drain plug on the bottom of the main bearing housing and allow the bearing housing to drain completely (Figure 4). Inspect the leak-off, drained oil, and magnetic drain plug for water and/or metal particles. Install the drain plug. Water and/or metal particles can indicate worn or damaged seals and bearings.
2. Locate the two 1/2" plastic tubes secured to the electrical control chassis (Figure 5). Clean the surrounding area and remove the cork stoppers from each.
3. Strictly following lubrication specifications, refill the bearing housing. After refilling the bearing housing, re-install the cork stoppers and clean any excess lubricant from the machine.

3. Lubrication Precautions (42026V6J only)



CAUTION [2]: Bearing and Seal Damage Hazard—Mixing different base greases can cause bearing and seal damage.

- Consult lubricant manufacturer before using non-specified lubricants.



WARNING [3]: Entangle and Crush Hazard—Belts and pulleys can entangle and crush body parts. Power is ON and cylinder is turning during the following procedure.

- Insure belt and pulley guards are in place during service procedure.
1. Do not use a pneumatic grease gun. Pump grease slowly while cylinder is rotating. Take 10-12 seconds to complete each stroke. A grease gun can build up extremely high pressure which will force the seals out of position and cause them to leak, even though both the seal and bearing cavities are equipped with spring loaded relief plugs.
 2. 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 ounce (by volume) (1.77 grams) of grease. Therefore, one fluid ounce (28.3 grams) of grease would be provided by 16 strokes of the grease gun.

Preventive Maintenance

Determine the flow rate of your grease gun by pumping one ounce into a calibrated container. If fewer than 16 strokes are required, all quantities of 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 grease gun is working and that you get a full charge of grease with every stroke.

3. Do not pump grease in until it oozes out of the spring loaded relief plugs. Plugs bleed out excess grease and help prevent abnormal pressures from building up in the housing during operation (especially when the machine is first commissioned and after each lubrication). Plugs will not protect against over-lubrication.

4. **42026V6J Main Bearing Maintenance**

See the appropriate “MAIN BEARING ASSEMBLY” (see Table of Contents) during this procedure.

1. Locate the seal and bearing grease fittings (Figure 8).
2. Place the machine in a wash step (see operating manual).
3. With the cylinder turning, grease the seals and bearings as called for in the Preventive Maintenance Checklist.

5. Preventive Maintenance Schedule

Table 1: Preventive Maintenance Checklist

Component		Action	Frequency	Specifications/Figure
Bearing Housing	Oil	Remove fill, vent and drain stoppers. Refill 22 ounces (634 grams)	Every four months	High quality SAE 30 to 50 (ISO 100 - 220) single weight heavy duty motor oil (non-detergent if available). See "Oil Drain and Water Leak-off" and also see "30022C4x,..Fill/Vent Hoses"
	Seals	One stroke 0.06 ounces (1.77 grams) at one location	Monthly (see Note 1)	Shell Alvania (or equivalent) See "42026V6J Grease Points"
	Bearings	Two strokes, 0.12 ounces (3.54 grams) at two locations	Monthly	
Drive Train	Belts and pulleys	Check for wear, replace as required	Monthly	See "Drive Train Pulleys and Belts"
	Motors (if equipped with grease fittings) (See Note 2)	See "Baldor Motor Maintenance...", in this manual (See Note 3)	Every three Months	See motor nameplate. If not specified, use Shell Alvania (or equivalent). See "Motor Grease Points"
Drive Inverter	Inverter	Verify fan operation. Vacuum out inverter vents.	Monthly	See "Inverter Maintenance Points"
Hoses, Clamps, and Connections	Inlet, drain, and chemical hoses and connections	Check for leaks, cracks and bulges	Monthly	
Bolts	Foundation	Check bolt tightness and wear	Monthly	See dimensional drawings
	Rear bearing reinforcement plate and throughout machine			See "30022C4x,..Rear Reinforcement Plate" for 36021C4E and 36026V5J machines, or "42026V6J Rear Reinforcement Plate" for 42026V6J machines.

Note 1: Monthly/200 hours = Once a month or once every 200 operating hours, whichever comes first.

Note 2: Do not over-lubricate motors. Over-lubrication of a motor can seriously damage it by forcing grease into motor windings.

Note 3: If motor manufacturer's instructions conflict with manual section MSSM0274AE, follow manufacturers instructions. Motors are warranted by the manufacturers, not by Milnor.

6. Correcting Belt Slippage

The drive train has a special belt tension sleeve, allowing additional tension to be applied to a worn, slipping belt to extend the drive belt life. Replace the belt when the belt starts to slip again after installing the belt tension sleeve.

1. Slacken and slip the drive belts off of the motor pulley by placing a 2 X 4 under the motor platform and pulling upward against the spring as shown in Figure 1.
2. Remove both shaft collars and slip the motor mount shaft out of its brackets (Figure 1).

3. Reinsert the motor mount shaft, slipping the belt tension sleeve over the motor mount shaft during installation as shown in Figure 2.

Figure 1: Correcting Belt Slippage

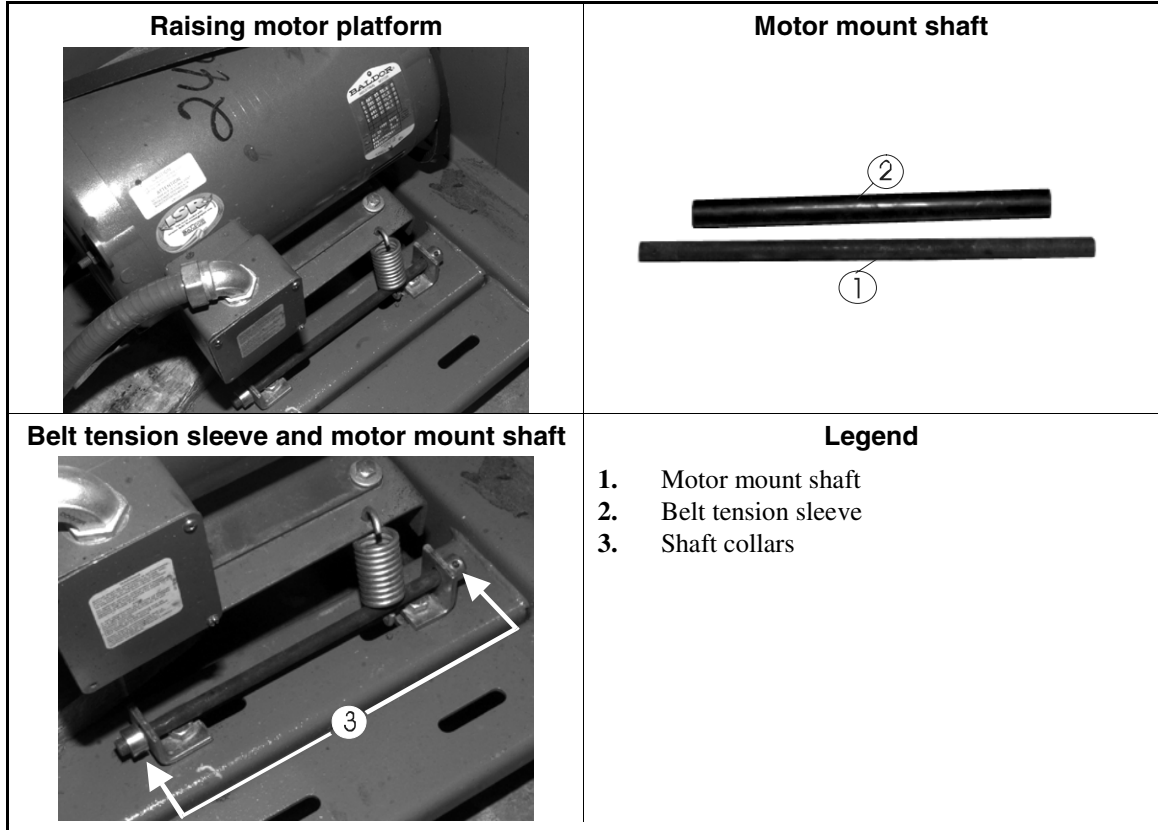


Figure 2: Belt Tension Sleeve Over Motor Mount Shaft

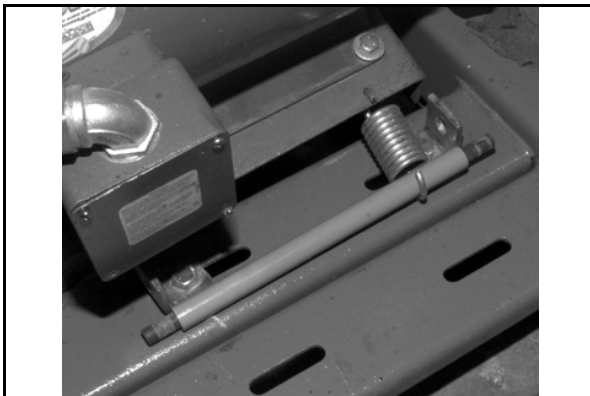
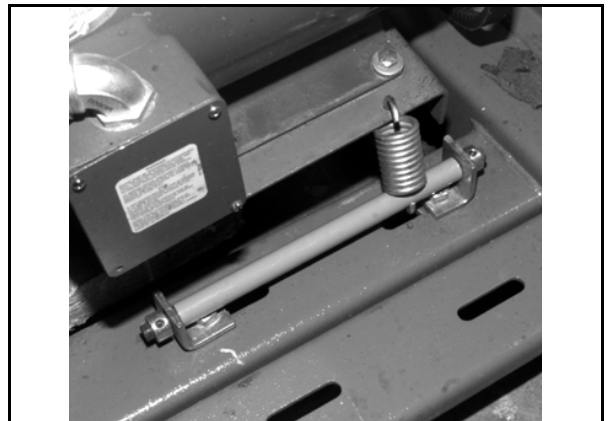


Figure 3: Assembled Sleeve Over Motor Shaft



7. Maintenance Points

Figure 4: 30022C4x, 30022T5x, 36021C4E and 36026V5J Oil Drain and Water Leak-off

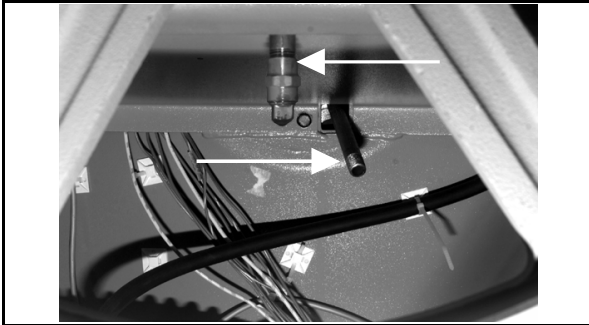


Figure 5: 30022C4x, 30022T5x, 36021C4E and 36026V5J Oil Fill/Vent Hoses (use either hose for filling)

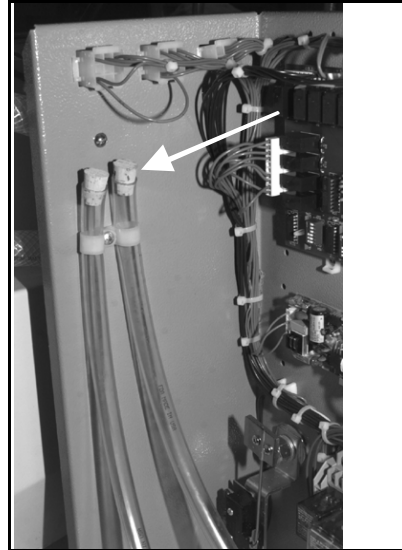


Figure 6: Drive Train Pulleys and Belts (30022V6J shown)

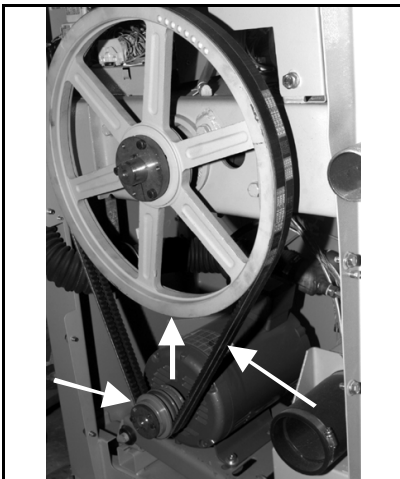
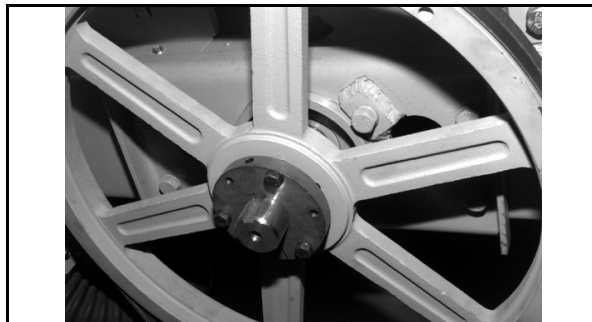


Figure 7: 30022C4x, 30022T5x, 30022V6J, 36021C4E and 36026V5J Rear Bearing Reinforcement Plate (30022VxJ shown)



Preventive Maintenance

Figure 8: 42026V6J Grease Points

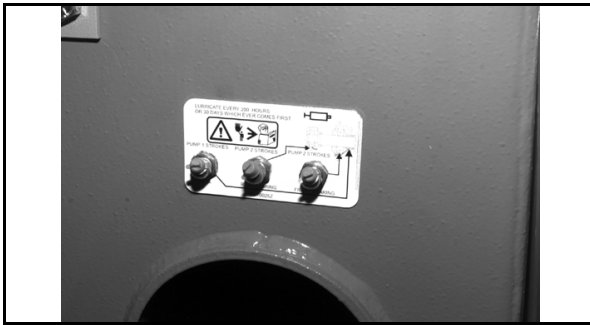


Figure 9: Motor Grease Points if so equipped, (42026V6J shown)

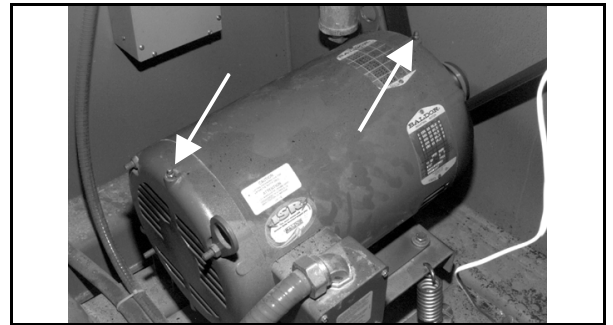


Figure 10: 42026V6J Rear Reinforcement Plate

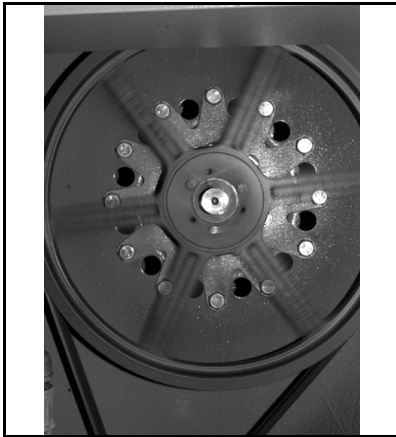
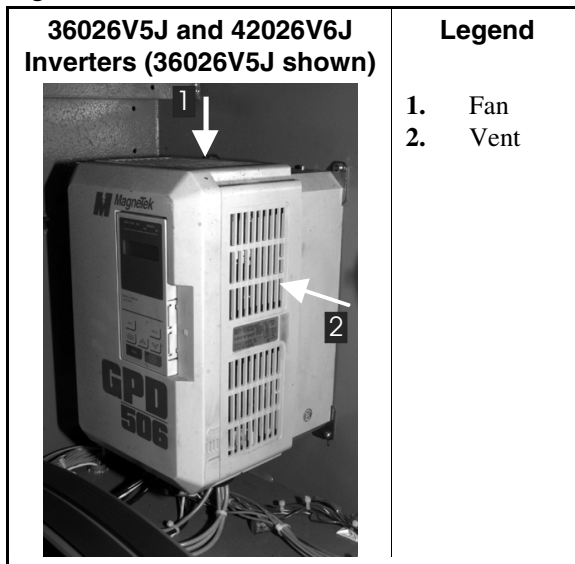


Figure 11: Inverter Maintenance Points



— End of BIRQUM01 —

Aligning 36 and 42Vxx Motor Mount Plate with the Drive Pulley

Document..... BIRQVM01
Specified Date..... 20010822
As-of Date..... 20010822
Access Date..... 20010822

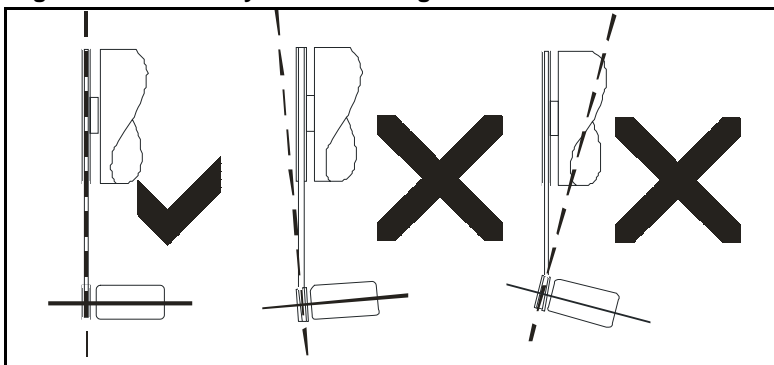
Applicability..... RQV
Language Code..... ENG01

The motors on 36 and 42Vxx machines rest on a spring tensioned motor mount plate. Any misalignment between this motor mount and the drive pulley results in excessive drive belt twist and stress, greatly reducing belt life. Check motor mount to drive pulley alignment whenever excessive drive train dust is noted, or whenever any type of drive train service (belt replacement, main bearing or motor replacement) is required.

WARNING 1: Entangle and Sever 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.

Figure 1: Drive Pulley and Motor Alignment



1. Required Tools

This procedure requires a 4' contractors square and hand tools.

2. Alignment Kit

Shims are available under the following part number; 02 02822-(0.78").

3. Adjustment Procedure

1. Lock out and tag out power to the machine.
2. Remove rear pulley cover.
3. Set the angle of the contractors square at 90 degrees.
4. Hold the square flush against the drive pulley (Figure 2 and Figure 3).
5. If the bottom straight edge of the contractors square does not rest flush against the motor (as shown in the Figure 4 example), note which end of the motor must be shimmed to eliminate the gap.
6. Loosen the bolt securing the motor mount plate to the channel weldment. Bolt should be just loose enough to allow shims to be inserted between the motor platform and the channel weldment beneath (Figure 5).

Aligning 36 and 42Vxx Motor Mount Plate with the Drive Pulley

7. The shims are made in a u-shape to fit around the bolt. Estimate the thickness needed and slip the appropriate number of shims around the bolt.
8. Tighten bolt and measure again with the contractors square. Repeat steps 7 and 8, adding or subtracting shims as required until the straight edge touches the motor top at all points (or as close as possible with the shims used).

Figure 2: Checking Pulley/Motor Alignment

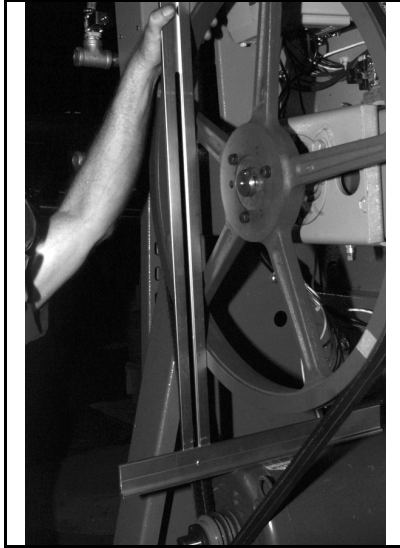


Figure 3: Contractors Square Touching Both Sides of the Pulley

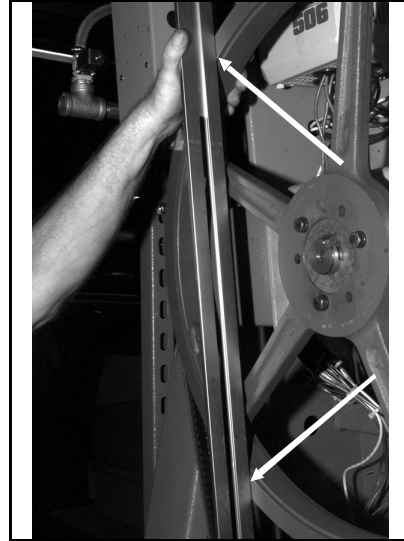
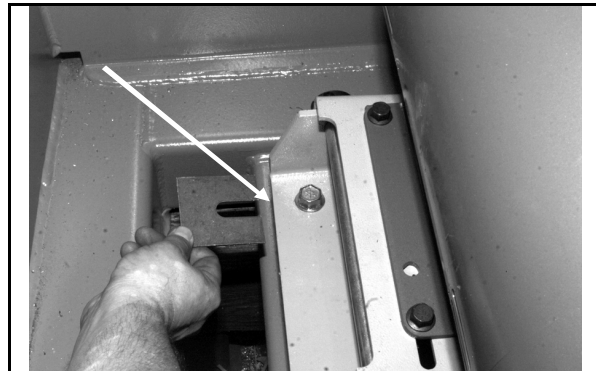


Figure 4: Close-up of Contractors Square Showing Degree of Motor Misalignment



Figure 5: Inserting Shims Between Motor Mount Plate and Channel Weldment



FASTENER TORQUE REQUIREMENTS

The specifications in this section apply to 1/4 inch and larger Unified National fine and coarse fasteners used on Milnor[®] machines. This information is to be used only when torque specifications are not stated in the installation or service instructions.

When tightening applicable fastener, abide by the following precautions:

1. Always use new fasteners. Replace bolts, nuts, flat washers, and lock washers in the order shown on the parts drawing.
2. Unless otherwise specified, use:
 - Loctite[®] 271 threadlocker or equivalent for bearing housing mounting bolts from one half to one inch in diameter.
 - Loctite[®] 277 threadlocker or equivalent for bearing housing mounting bolts of one inch diameter or larger.
 - Loctite[®] 242 threadlocker for all other fasteners requiring thread locking compound.
3. Use a torque wrench to assure proper tightness.
4. Never lubricate fasteners. The values specified herein are maximum recommended torques and are calculated from published ASTM and SAE data. Actual allowable torques are application dependent and can vary for many reasons, (joint types, gaskets, etc.). Use these values as a guide.
5. Although FIGURE 1 depicts hex head bolts, the table applies to all head types.

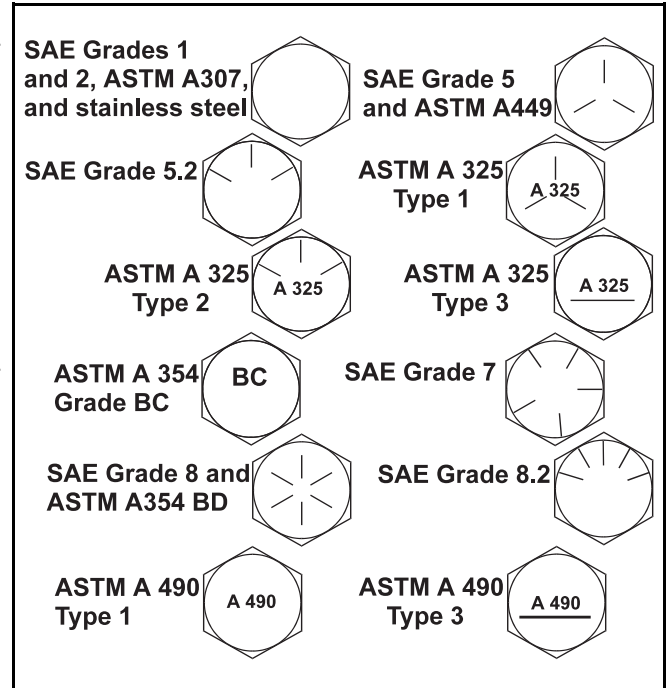


FIGURE 1 (MSSM0101CE)
Fastener Grade Markings

Fasteners and Threadlocker

How Fasteners Loosen—Standard threaded fasteners are manufactured with a clearance fit for easy assembly. With the fastener at the proper torque, 85% of the tightening torque is absorbed in the threads and under the fastener head. The remaining 15% provides the friction that prevents the thread from slipping. When this friction is overcome (by bending, thermal expansion, internal pressures, functional loads, or impact) the thread slips and loosens. Although higher torques reduce the likelihood of thread slippage, if slippage occurs, the threads unwind and the fastener loosens. Once thread slippage begins, vibration increases the rate of loosening.

Preventing Loosening—The most effective way to prevent loosening of threaded parts is by proper application of a threadlocking compound. Threadlocker provides lubrication during assembly, then hardens to seal the threads against corrosion and provide resistance to thread slippage.

Applying Threadlocker

NOTE: The following threadlocker information and illustrations are excerpts from the Loctite® User's Guide and are used with permission.

For maximum strength, threadlocker must fill the thread voids completely, as shown in FIGURE 2. Organic or petroleum solvent will remove excess uncured adhesive from joints. Consult information below for the specific fastener application.

Bolts and Nuts—See FIGURE 3.

1. Clean all threads (bolt and nut) with cleaning solvent.
2. Spray all threads with Loctite® Primer N. Allow to dry.
3. Insert bolt into through hole assembly.
4. Apply several drops of threadlocker onto bolt engagement area.
5. Assemble and tighten nut to correct torque for the threadlocker.

Blind Holes—See FIGURE 4.

1. Clean all threads (bolt and nut) with cleaning solvent.
2. Spray all threads with Loctite® Primer N. Allow to dry.
3. Squirt several drops down female threads into bottom of hole.
4. Apply several drops to bolt.
5. Tighten to correct torque for the threadlocker.

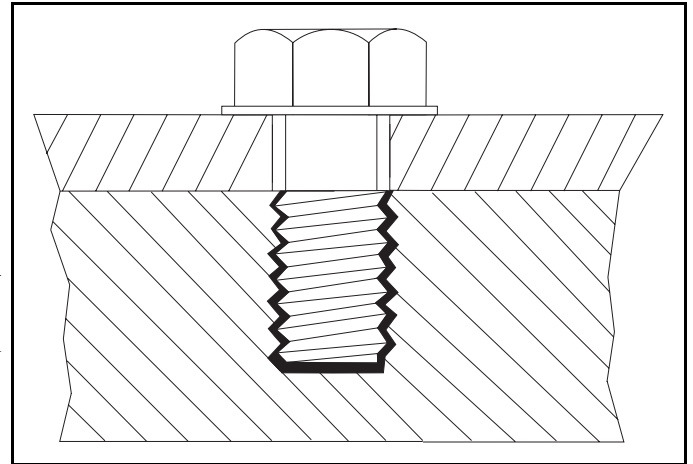


FIGURE 2 (MSSM0101CE)
Correct Threadlocker Use

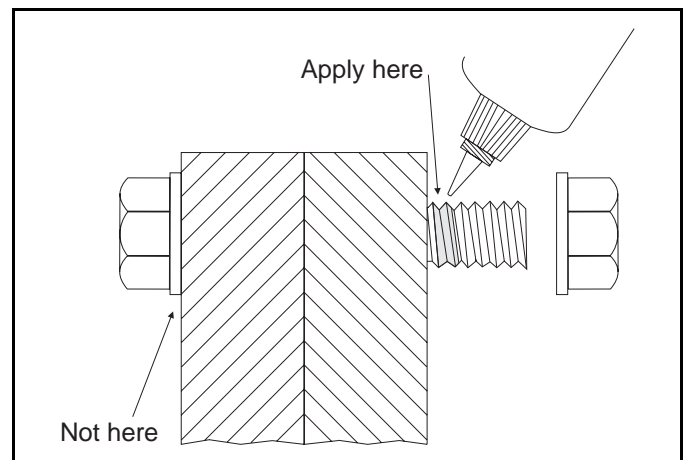


FIGURE 3 (MSSM0101CE)
Applying Threadlocker to Through Hole

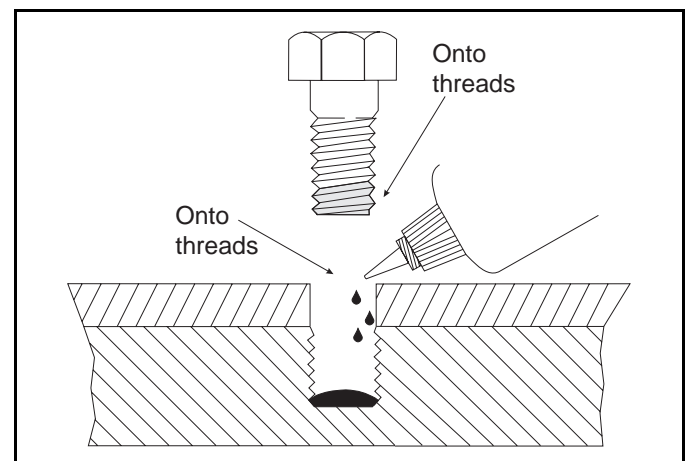


FIGURE 4 (MSSM0101CE)
Applying Threadlocker to Blind Holes

Removing Fasteners

High strength threadlockers like Loctite[®] 271 (or equivalent) may be weakened by heating to at least 500° F (260° C) as follows.

1. Apply localized heat to fastener as shown in FIGURE 5.
2. Disassemble while hot. Once disassembled, the cured adhesive can be removed with Loctite[®] Gasket Remover #790 (or equivalent).

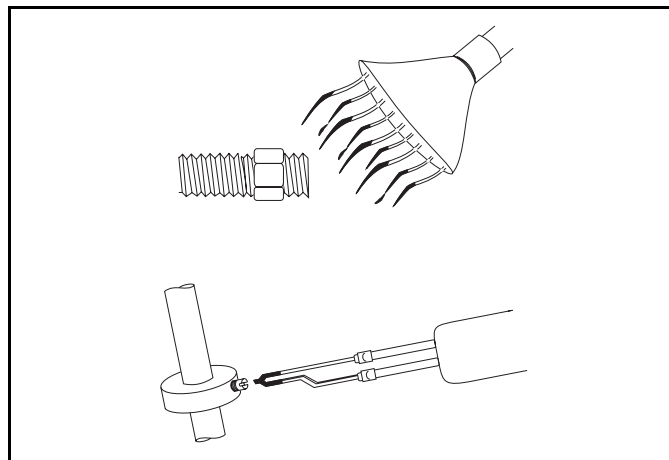


FIGURE 5 (MSSM0101CE)
Removing High Strength Threadlocker

Carbon Steel Fasteners

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1/4 - 20	SAE Grade 1 ASTM A307	2.5 (3.39)	3.0 (4.06)	3.3 (4.47)	3.6 (4.88)	4.6 (6.23)	4.3 (5.83)	3.3 (4.47)
	SAE Grade 2	4.1 (5.56)	4.9 (6.64)	5.5 (7.45)	6.0 (8.13)	7.7 (10.44)	7.1 (9.63)	5.5 (7.46)
	SAE Grade 4	4.8 (6.50)	5.8 (7.86)	6.4 (8.67)	7.0 (9.49)	9.0 (12.20)	8.3 (11.25)	6.4 (8.67)
	SAE Grade 5 ASTM A449	6.3 (8.54)	7.6 (10.3)	8.4 (11.38)	9.3 (12.60)	11.8 (15.99)	11.0 (14.91)	8.4 (11.39)
	SAE Grade 7	7.9 (10.7)	9.4 (12.7)	10.5 (14.23)	11.5 (15.59)	14.7 (19.93)	13.6 (18.44)	10.5 (14.23)
	SAE Grade 8 ASTM A354 Grade BD	8.9 (12.0)	10.7 (14.5)	11.9 (16.13)	13.1 (17.76)	16.6 (22.50)	15.4 (20.88)	11.9 (16.13)
	ASTM A354 Grade BC	7.9 (10.7)	9.4 (12.7)	10.5 (14.23)	11.5 (15.59)	14.7 (19.93)	13.6 (18.44)	10.5 (14.23)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1/4 - 28	SAE Grade 1 ASTM A307	2.8 (3.80)	3.4 (4.61)	3.8 (5.15)	4.1 (5.56)	5.3 (7.18)	4.9 (6.64)	3.8 (5.15)
	SAE Grade 2	4.7 (6.37)	5.6 (7.60)	6.3 (8.54)	6.9 (9.36)	8.8 (11.93)	8.1 (10.98)	6.3 (8.54)
	SAE Grade 4	5.5 (7.46)	6.6 (8.95)	7.3 (9.90)	8.1 (10.98)	10.3 (13.96)	9.5 (12.88)	7.3 (9.90)
	SAE Grade 5 ASTM A449	7.3 (9.90)	8.7 (11.80)	9.7 (13.15)	10.7 (14.50)	13.6 (18.44)	12.6 (17.08)	9.7 (13.15)
	SAE Grade 7	8.9 (12.07)	10.7 (14.50)	11.9 (16.13)	13.1 (17.76)	16.6 (22.51)	15.4 (20.88)	11.9 (16.13)
	SAE Grade 8 ASTM A354 Grade BD	10.2 (13.83)	12.2 (16.54)	13.6 (18.44)	15.0 (20.34)	19.0 (25.76)	17.7 (23.99)	13.6 (18.44)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
5/16 - 18	SAE Grade 1 ASTM A307	5.1 (6.91)	6.2 (8.40)	6.8 (9.22)	7.5 (10.17)	9.6 (13.02)	8.9 (12.07)	6.8 (9.22)
	SAE Grade 2	8.5 (11.52)	10.2 (13.83)	11.3 (15.32)	12.5 (16.95)	15.9 (21.56)	14.7 (19.93)	11.3 (15.32)
	SAE Grade 4	10.0 (13.56)	12.0 (16.27)	13.3 (18.03)	14.6 (19.79)	18.6 (25.22)	17.3 (23.46)	13.3 (18.03)
	SAE Grade 5 ASTM A449	13.0 (17.63)	15.6 (21.15)	17.4 (23.60)	19.1 (25.90)	24.3 (32.95)	22.6 (30.64)	17.4 (23.60)
	SAE Grade 7	16.1 (21.83)	19.3 (26.17)	21.5 (29.15)	23.6 (31.99)	30.1 (40.81)	27.9 (37.83)	21.5 (29.15)
	SAE Grade 8 ASTM A354 Grade BD	18.5 (25.08)	22.1 (29.96)	24.6 (33.35)	27.1 (36.74)	34.5 (46.78)	32.0 (43.39)	24.6 (33.35)
	ASTM A354 Grade BC	16.1 (21.83)	19.3 (26.17)	21.5 (29.15)	23.6 (31.99)	30.1 (40.81)	27.9 (37.83)	21.5 (29.15)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
5/16 - 24	SAE Grade 1 ASTM A307	5.6 (7.59)	6.7 (9.08)	7.4 (10.03)	8.2 (11.12)	10.4 (14.10)	9.6 (13.01)	7.4 (10.03)
	SAE Grade 2	9.4 (12.74)	11.3 (15.32)	12.5 (16.94)	13.8 (18.71)	17.5 (23.73)	16.3 (22.09)	12.5 (16.94)
	SAE Grade 4	11.0 (14.91)	13.2 (17.90)	14.6 (19.79)	16.1 (21.83)	20.5 (27.79)	19.0 (25.76)	14.6 (19.79)
	SAE Grade 5 ASTM A449	14.4 (19.52)	17.2 (23.32)	19.1 (25.90)	21.1 (28.60)	26.8 (36.35)	24.9 (33.76)	19.1 (25.90)
	SAE Grade 7	17.9 (24.27)	21.4 (29.01)	23.8 (32.27)	26.2 (35.52)	33.4 (45.28)	31.0 (42.03)	23.8 (32.27)
	SAE Grade 8 ASTM A354 Grade BD	20.4 (27.66)	24.4 (33.08)	27.1 (36.74)	29.9 (40.54)	38.0 (51.52)	35.3 (47.86)	27.1 (36.74)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
3/8 - 16	SAE Grade 1 ASTM A307	9.0 (12.20)	10.8 (14.64)	12.0 (16.27)	13.1 (17.76)	16.7 (22.64)	15.5 (21.01)	12.0 (16.27)
	SAE Grade 2	14.9 (20.20)	17.9 (24.27)	19.9 (26.98)	21.9 (29.69)	27.9 (37.83)	25.9 (35.11)	19.9 (26.98)
	SAE Grade 4	17.8 (24.13)	21.3 (28.88)	23.7 (32.13)	26.0 (35.25)	33.1 (44.87)	30.8 (41.76)	23.7 (32.13)
	SAE Grade 5 ASTM A449	23.2 (31.45)	27.8 (37.69)	30.9 (41.89)	34.0 (46.09)	43.3 (58.70)	40.2 (54.50)	30.9 (41.89)
	SAE Grade 7	28.7 (38.91)	34.4 (46.64)	38.2 (51.79)	42.0 (56.94)	53.5 (72.54)	49.7 (67.39)	38.2 (51.79)
	SAE Grade 8 ASTM A354 Grade BD	32.7 (44.33)	39.2 (53.15)	43.6 (59.11)	48.0 (65.08)	61.0 (82.70)	56.7 (76.87)	43.6 (59.11)
	ASTM A354 Grade BC	28.7 (38.91)	34.4 (46.64)	38.2 (51.79)	42.0 (56.94)	53.5 (72.54)	49.7 (67.39)	38.2 (51.79)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
3/8 - 24	SAE Grade 1 ASTM A307	10.2 (13.83)	12.2 (16.54)	13.6 (18.44)	15.0 (20.33)	19.0 (25.76)	17.7 (24.00)	13.6 (18.44)
	SAE Grade 2	16.9 (22.91)	20.3 (27.52)	22.5 (30.52)	24.8 (33.62)	31.5 (42.70)	29.3 (39.73)	22.5 (30.50)
	SAE Grade 4	20.0 (27.11)	24.0 (32.54)	26.7 (36.20)	29.4 (39.86)	37.4 (50.70)	34.7 (47.04)	26.7 (36.20)
	SAE Grade 5 ASTM A449	26.2 (35.52)	31.4 (42.57)	34.9 (47.32)	38.4 (52.06)	48.9 (66.30)	45.4 (61.55)	34.9 (47.32)
	SAE Grade 7	32.3 (43.79)	38.8 (52.60)	43.1 (58.44)	47.4 (64.26)	60.4 (81.89)	56.1 (76.06)	43.1 (58.43)
	SAE Grade 8 ASTM A354 Grade BD	36.9 (50.02)	44.3 (60.06)	49.2 (66.70)	54.1 (73.35)	68.9 (93.41)	64.0 (86.77)	49.2 (66.70)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
7/16 - 14	SAE Grade 1 ASTM A307	14.0 (18.98)	17.0 (23.04)	19.14 (25.95)	21.0 (28.47)	27.0 (36.60)	25.0 (33.89)	19.0 (25.76)
	SAE Grade 2	24.0 (32.54)	28.8 (39.05)	32.0 (43.39)	35.2 (47.72)	44.8 (60.74)	41.6 (56.40)	32.0 (43.39)
	SAE Grade 4	28.3 (38.37)	34.0 (46.10)	37.7 (51.11)	41.5 (56.27)	52.8 (71.59)	49.1 (66.57)	37.7 (51.11)
	SAE Grade 5 ASTM A449	37.1 (50.30)	44.5 (60.33)	49.5 (67.11)	54.4 (73.76)	69.3 (93.96)	64.3 (87.18)	49.5 (67.11)
	SAE Grade 7	45.9 (62.23)	55.1 (74.70)	61.3 (83.11)	67.4 (91.38)	85.8 (116.33)	79.6 (107.92)	61.3 (83.11)
	SAE Grade 8 ASTM A354 Grade BD	52.5 (71.18)	63.0 (85.41)	70.0 (94.90)	77.0 (104.40)	98.0 (132.87)	91.0 (123.38)	70.0 (94.90)
	ASTM A354 Grade BC	45.7 (61.96)	54.9 (74.43)	61.0 (82.70)	67.1 (90.97)	85.4 (115.79)	79.3 (107.52)	61.0 (82.70)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
7/16 - 20	SAE Grade 1 ASTM A307	16.0 (21.70)	19.2 (26.03)	21.3 (28.88)	23.5 (31.86)	29.9 (40.54)	27.7 (37.56)	21.3 (28.88)
	SAE Grade 2	26.9 (36.48)	32.2 (43.66)	35.8 (48.54)	39.4 (53.42)	50.1 (67.93)	46.6 (63.18)	35.8 (48.54)
	SAE Grade 4	31.6 (42.84)	37.9 (51.39)	42.1 (57.08)	46.3 (62.77)	59.0 (79.99)	54.7 (74.16)	42.1 (57.08)
	SAE Grade 5 ASTM A449	41.4 (56.13)	49.7 (67.38)	55.2 (74.84)	60.8 (82.43)	77.3 (104.80)	71.8 (97.35)	55.2 (74.84)
	SAE Grade 7	51.3 (69.55)	61.5 (83.38)	68.4 (92.74)	75.2 (101.96)	95.7 (129.75)	88.9 (120.53)	68.4 (92.74)
	SAE Grade 8 ASTM A354 Grade BD	58.2 (78.90)	69.9 (94.77)	77.7 (105.35)	85.4 (115.78)	108.7 (147.37)	101.0 (136.94)	77.7 (105.35)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1/2 - 13	SAE Grade 1 ASTM A307	22.0 (29.83)	26.0 (35.25)	29.38 (39.83)	32.0 (43.39)	41.0 (55.59)	38.0 (51.52)	29.0 (39.32)
	SAE Grade 2	36.6 (49.62)	43.9 (59.52)	48.8 (66.16)	53.6 (72.67)	68.3 (92.60)	63.4 (85.96)	48.8 (66.16)
	SAE Grade 4	43.1 (58.44)	51.8 (70.23)	57.5 (77.96)	63.3 (85.82)	80.5 (109.14)	74.8 (101.42)	57.5 (77.96)
	SAE Grade 5 ASTM A449	56.7 (76.87)	68.1 (92.33)	75.6 (102.5)	83.2 (112.80)	105.9 (143.58)	98.3 (133.27)	75.6 (102.50)
	SAE Grade 7	69.8 (94.64)	83.8 (113.62)	93.1 (126.23)	102.4 (138.84)	130.4 (176.80)	121.1 (164.19)	93.1 (126.23)
	SAE Grade 8 ASTM A354 Grade BD	79.7 (108.05)	95.6 (129.62)	106.3 (144.12)	116.9 (158.50)	148.8 (201.75)	138.1 (187.24)	106.3 (144.12)
	ASTM A354 Grade BC	69.8 (94.64)	83.8 (113.62)	93.1 (126.23)	102.4 (138.84)	130.4 (176.80)	121.1 (164.19)	93.1 (126.23)

All values in foot pounds and (Newton meters)

Nominal bolt size	Standard and Grade Designation	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1/2 - 20	SAE Grade 1 ASTM A307	24.8 (33.62)	29.8 (40.40)	33.1 (44.88)	36.4 (49.35)	46.4 (62.91)	43.1 (58.44)	33.1 (44.88)
	SAE Grade 2	41.3 (56.00)	49.5 (67.11)	55.0 (74.57)	60.5 (82.02)	77.0 (104.40)	71.5 (96.94)	55.0 (74.57)
	SAE Grade 4	48.8 (66.16)	58.5 (79.32)	65.0 (88.13)	71.5 (96.94)	91.0 (123.38)	84.5 (114.57)	65.0 (88.13)
	SAE Grade 5 ASTM A449	63.8 (86.50)	76.5 (103.72)	85.0 (115.24)	93.5 (126.77)	119.0 (161.34)	110.5 (149.82)	85.0 (115.24)
	SAE Grade 7	78.8 (106.84)	94.5 (128.12)	105.0 (142.36)	115.5 (156.60)	147.0 (199.30)	136.5 (185.07)	105.0 (142.36)
	SAE Grade 8 ASTM A354 Grade BD	90.0 (122.02)	108.0 (146.43)	120.0 (162.70)	132.0 (179.00)	168.0 (227.78)	156.0 (211.51)	120.0 (162.70)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
9/16 - 12	SAE Grade 1 ASTM A307	32.0 (43.39)	38.0 (51.52)	42.19 (57.20)	46.0 (62.37)	59.0 (80.00)	55.0 (74.57)	42 (56.94)
	SAE Grade 2	52.7 (71.45)	63.3 (85.82)	70.3 (95.31)	77.3 (104.80)	98.4 (133.41)	91.4 (123.92)	70.3 (95.31)
	SAE Grade 4	62.2 (84.33)	74.7 (101.28)	83.0 (112.53)	91.3 (123.79)	116.2 (157.55)	107.9 (146.30)	83.0 (112.53)
	SAE Grade 5 ASTM A449	81.7 (110.77)	98.1 (133.00)	109.0 (147.78)	119.9 (162.56)	152.6 (206.90)	141.7 (192.17)	109.0 (147.78)
	SAE Grade 7	100.7 (136.53)	120.9 (163.92)	134.3 (182.09)	147.7 (200.25)	188.0 (254.89)	174.6 (236.73)	134.3 (182.09)
	SAE Grade 8 ASTM A354 Grade BD	115.0 (155.92)	138.0 (187.10)	153.3 (207.85)	168.6 (228.59)	214.6 (290.96)	199.3 (270.21)	153.3 (207.85)
	ASTM A354 Grade BC	100.7 (136.53)	120.9 (163.92)	134.3 (182.09)	147.7 (200.25)	188.0 (254.89)	174.6 (236.73)	134.3 (182.09)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
9/16 - 18	SAE Grade 1 ASTM A307	35.3 (47.86)	42.4 (57.49)	47.1 (63.86)	51.8 (70.23)	66.0 (89.48)	61.2 (82.98)	47.1 (63.86)
	SAE Grade 2	59.1 (80.13)	70.9 (96.13)	78.8 (106.84)	86.6 (117.41)	110.3 (149.55)	102.4 (138.84)	78.8 (106.84)
	SAE Grade 4	69.6 (94.36)	83.5 (113.21)	92.8 (125.82)	102.1 (138.43)	129.9 (176.12)	120.7 (163.65)	92.8 (125.85)
	SAE Grade 5 ASTM A449	91.2 (123.65)	109.5 (148.46)	121.6 (164.87)	133.8 (181.40)	170.3 (230.90)	158.1 (214.36)	121.6 (164.87)
	SAE Grade 7	112.3 (152.26)	134.8 (182.76)	149.8 (203.10)	164.7 (223.30)	209.7 (284.32)	194.7 (263.98)	149.8 (203.10)
	SAE Grade 8 ASTM A354 Grade BD	128.7 (174.61)	154.4 (209.34)	171.6 (232.66)	188.7 (255.84)	240.2 (325.67)	223.0 (302.35)	171.6 (232.66)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
5/8 - 11	SAE Grade 1 ASTM A307	44 (59.66)	52 (70.50)	58.2 (78.90)	64 (86.77)	81 (109.82)	76 (103.04)	58 (78.64)
	SAE Grade 2	72.7 (98.57)	87.2 (118.23)	96.9 (131.38)	106.6 (144.53)	135.6 (183.85)	125.9 (170.70)	96.9 (131.38)
	SAE Grade 4	86.1 (116.74)	103.4 (140.19)	114.8 (155.65)	126.3 (171.24)	160.8 (218.02)	149.3 (202.42)	114.8 (155.65)
	SAE Grade 5 ASTM A449	112.5 (152.53)	135.0 (183.04)	150.0 (203.37)	165.0 (223.71)	210.0 (284.72)	195.0 (264.38)	150.0 (203.37)
	SAE Grade 7	138.9 (188.32)	166.6 (225.88)	185.2 (251.10)	203.7 (276.18)	259.2 (351.43)	240.7 (326.35)	185.2 (251.10)
	SAE Grade 8 ASTM A354 Grade BD	158.8 (215.30)	190.5 (258.28)	211.7 (287.03)	232.9 (315.77)	296.4 (401.86)	275.2 (373.12)	211.7 (287.03)
	ASTM A354 Grade BC	139.2 (188.73)	167.0 (226.42)	185.5 (251.50)	204.1 (276.72)	259.8 (352.24)	241.2 (327.02)	185.5 (251.50)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
5/8 - 18	SAE Grade 1 ASTM A307	49.5 (67.11)	59.4 (80.54)	66.0 (89.48)	72.6 (98.43)	92.4 (125.27)	85.8 (116.33)	66.0 (89.48)
	SAE Grade 2	82.6 (112.00)	99.1 (134.36)	110.2 (149.41)	121.2 (164.33)	154.2 (209.07)	143.2 (194.15)	110.2 (149.41)
	SAE Grade 4	97.3 (131.92)	116.7 (158.22)	129.7 (175.85)	142.7 (193.48)	181.6 (246.22)	168.6 (228.59)	129.7 (175.85)
	SAE Grade 5 ASTM A449	127.7 (173.14)	153.3 (207.85)	170.3 (230.90)	187.3 (253.95)	238.4 (323.23)	221.4 (300.18)	170.3 (230.90)
	SAE Grade 7	157.6 (213.68)	189.1 (256.39)	210.2 (285.00)	231.2 (313.47)	294.2 (398.88)	273.2 (370.41)	210.2 (285.00)
	SAE Grade 8 ASTM A354 Grade BD	179.9 (243.91)	215.9 (292.72)	239.8 (325.13)	263.8 (357.66)	335.8 (455.28)	311.8 (422.74)	239.8 (325.13)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
3/4 - 10	SAE Grade 1 ASTM A307	77 (104.40)	93 (126.09)	103.1 (139.78)	113 (153.20)	144 (195.24)	134 (181.68)	103 (139.65)
	SAE Grade 2	129.4 (175.44)	155.3 (210.55)	172.5 (233.88)	189.8 (257.33)	241.5 (327.43)	224.3 (304.11)	172.5 (233.88)
	SAE Grade 4	152.6 (206.90)	183.1 (248.25)	203.4 (275.77)	223.8 (303.43)	284.8 (386.14)	264.5 (358.61)	203.4 (275.77)
	SAE Grade 5 ASTM A449	199.7 (270.76)	239.6 (324.85)	266.3 (361.05)	292.9 (397.12)	372.8 (505.45)	346.1 (469.25)	266.3 (361.05)
	SAE Grade 7	246.8 (334.62)	296.2 (401.60)	329.1 (446.20)	362.0 (490.13)	460.7 (624.63)	427.8 (580.02)	329.1 (446.20)
	SAE Grade 8 ASTM A354 Grade BD	282.0 (382.34)	338.3 (458.67)	375.9 (509.65)	413.5 (560.63)	526.3 (713.57)	488.7 (662.59)	375.9 (509.65)
	ASTM A354 Grade BC	246.4 (334.07)	295.7 (400.92)	328.6 (445.53)	361.5 (490.13)	460.0 (623.67)	427.2 (579.20)	328.6 (445.53)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
3/4 - 16	SAE Grade 1 ASTM A307	86.5 (117.28)	103.8 (140.73)	115.3 (156.33)	126.8 (171.92)	161.4 (218.83)	149.9 (203.24)	115.3 (156.33)
	SAE Grade 2	144.1 (195.37)	173.0 (234.56)	192.2 (260.59)	211.4 (286.62)	269.1 (364.85)	249.8 (338.68)	192.2 (260.59)
	SAE Grade 4	170.2 (230.76)	204.2 (276.86)	226.9 (307.64)	249.6 (338.41)	317.6 (430.61)	294.9 (399.15)	226.9 (307.64)
	SAE Grade 5 ASTM A449	222.9 (302.21)	267.5 (362.68)	297.2 (402.95)	326.9 (443.22)	416.1 (564.16)	386.3 (523.75)	297.2 (402.95)
	SAE Grade 7	275.6 (373.66)	330.8 (448.50)	367.5 (498.26)	404.3 (548.16)	514.5 (697.57)	477.8 (647.81)	367.5 (498.26)
	SAE Grade 8 ASTM A354 Grade BD	315.0 (427.08)	378.0 (512.50)	420.0 (569.44)	462.0 (626.39)	588.0 (797.22)	546.0 (740.28)	420.0 (569.44)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
7/8 - 9	SAE Grade 1 ASTM A307	124.7 (169.07)	149.6 (202.83)	166.3 (225.47)	182.9 (247.98)	232.8 (315.63)	216.1 (293.0)	166.3 (225.47)
	SAE Grade 2	124.7 (169.07)	149.6 (202.83)	166.3 (225.47)	182.9 (247.98)	232.8 (315.63)	216.1 (293.00)	166.3 (225.47)
	SAE Grade 4	246.1 (333.67)	295.3 (400.37)	328.1 (444.84)	360.9 (489.32)	459.4 (622.86)	426.6 (578.40)	328.1 (444.84)
	SAE Grade 5 ASTM A449	322.4 (437.11)	386.9 (524.57)	429.8 (582.73)	472.8 (641.03)	601.8 (815.93)	558.8 (757.63)	429.8 (582.73)
	SAE Grade 7	397.9 (539.48)	477.4 (647.27)	530.5 (719.26)	583.5 (791.12)	742.7 (1007.00)	689.6 (935.00)	530.5 (719.26)
	SAE Grade 8 ASTM A354 Grade BD	454.5 (616.22)	545.3 (739.33)	605.9 (821.49)	666.5 (903.65)	848.3 (1150.14)	787.7 (1067.98)	605.9 (821.49)
	ASTM A354 Grade BC	397.9 (539.48)	477.4 (647.27)	530.5 (719.26)	583.5 (791.12)	742.7 (1007.00)	689.6 (935.00)	530.5 (719.26)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
7/8 - 14	SAE Grade 1 ASTM A307	137.8 (186.83)	165.4 (224.25)	183.8 (249.20)	202.1 (274.01)	257.3 (348.85)	238.9 (323.90)	183.8 (249.20)
	SAE Grade 2	137.8 (186.83)	165.4 (224.25)	183.8 (249.20)	202.1 (274.01)	257.3 (348.85)	238.9 (323.90)	183.8 (249.20)
	SAE Grade 4	271.5 (368.11)	325.8 (441.73)	362.0 (490.80)	398.2 (539.89)	506.8 (687.13)	470.6 (638.05)	362.0 (490.80)
	SAE Grade 5 ASTM A449	355.2 (481.59)	426.2 (577.85)	473.6 (642.12)	521.0 (706.38)	663.0 (898.91)	615.7 (834.78)	473.6 (642.12)
	SAE Grade 7	438.0 (593.85)	525.7 (712.75)	584.1 (791.93)	642.5 (871.11)	817.7 (1108.65)	759.3 (1029.47)	584.1 (791.93)
	SAE Grade 8 ASTM A354 Grade BD	501.2 (679.54)	601.5 (815.53)	668.3 (906.09)	735.1 (996.66)	935.6 (1268.50)	868.8 (1177.94)	668.3 (906.09)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for:					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1 - 8	SAE Grade 1 ASTM A307	187.5 (254.22)	225.0 (305.06)	250.0 (338.95)	275.0 (372.85)	350.0 (474.54)	325.0 (440.64)	250.0 (338.95)
	SAE Grade 2	187.5 (254.22)	225.0 (305.06)	250.0 (338.95)	275.0 (372.85)	350.0 (474.54)	325.0 (440.64)	250.0 (338.95)
	SAE Grade 4	369.4 (500.84)	443.3 (601.03)	492.5 (667.74)	541.8 (734.58)	689.5 (934.84)	640.3 (868.13)	492.5 (667.74)
	SAE Grade 5 ASTM A449	482.8 (654.59)	579.4 (785.56)	643.8 (872.88)	708.1 (960.05)	901.3 (1222.00)	836.9 (1134.69)	643.8 (872.88)
	SAE Grade 7	596.3 (808.47)	715.5 (970.09)	795.0 (1077.88)	874.5 (1185.66)	1113.0 (1509.03)	1033.5 (1401.24)	795.0 (1077.88)
	SAE Grade 8 ASTM A354 Grade BD	681.6 (924.13)	817.9 (1108.92)	908.8 (1232.17)	999.6 (1355.28)	1272.3 (1725.00)	1181.4 (1601.77)	908.8 (1232.17)
	ASTM A354 Grade BC	596.7 (809.01)	716.1 (970.90)	795.6 (1078.69)	875.2 (1186.61)	1113.9 (1510.25)	1034.3 (1402.32)	795.6 (1078.69)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1 - 12	SAE Grade 1 ASTM A307	205.3 278.35	246.4 (334.07)	273.8 (371.22)	301.1 (408.24)	383.3 (519.69)	355.9 (482.54)	273.8 (371.22)
	SAE Grade 2	205.3 (278.35)	246.4 (334.07)	273.8 (371.22)	301.1 (408.24)	383.3 (519.69)	355.9 (482.54)	273.8 (371.22)
	SAE Grade 4	404.1 (547.88)	484.9 (657.44)	538.8 (730.52)	592.6 (803.46)	754.3 (1022.70)	700.4 (949.62)	538.8 (730.52)
	SAE Grade 5 ASTM A449	528.8 (716.96)	634.5 (860.27)	705.0 (955.85)	775.5 (1051.44)	987.0 (1338.19)	916.5 (1242.61)	705.0 (955.85)
	SAE Grade 7	652.5 (884.67)	783.0 (1061.60)	870.0 (1179.56)	957.0 (1297.52)	1218.0 (1651.39)	1131.0 (1533.42)	870.0 (1179.56)
	SAE Grade 8 ASTM A354 Grade BD	746.3 (1011.85)	895.5 (1214.14)	995.0 (1349.04)	1094.5 (1483.49)	1393.0 (1888.66)	1293.5 (1753.73)	995.0 (1349.04)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1 - 14	SAE Grade 1 ASTM A307	210.0 (284.72)	252.0 (341.66)	280.0 (379.63)	308.0 (417.60)	392.0 (531.48)	364.0 (493.52)	280.0 (379.63)
	SAE Grade 2	210.0 (284.72)	252.0 (341.66)	280.0 (379.63)	308.0 (417.60)	392.0 (531.48)	364.0 (493.52)	280.0 (379.63)
	SAE Grade 4	413.4 (560.50)	496.1 (672.62)	551.3 (747.46)	606.4 (822.17)	771.8 (1046.42)	716.6 (971.58)	551.3 (747.46)
	SAE Grade 5 ASTM A449	540.9 (733.36)	649.1 (880.06)	721.3 (977.95)	793.4 (1075.70)	1009.8 (1369.10)	937.6 (1271.22)	721.3 (977.95)
	SAE Grade 7	668.4 (906.23)	802.1 (1087.50)	891.3 (1208.44)	980.4 (1329.25)	1247.8 (1691.79)	1158.6 (1570.85)	891.3 (1208.44)
	SAE Grade 8 ASTM A354 Grade BD	764.1 (1035.98)	916.9 (1243.15)	1018.8 (1381.31)	1120.6 (1519.33)	1426.3 (1933.80)	1324.4 (1795.65)	1018.8 (1381.30)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/8 • 7	SAE Grade 1 ASTM A307	265.8 (360.37)	318.9 (432.37)	354.4 (480.50)	389.8 (528.50)	496.1 (672.62)	460.7 (624.63)	354.4 (480.50)
	SAE Grade 2	265.8 (360.37)	318.9 (432.37)	354.4 (480.50)	389.8 (528.50)	496.1 (672.62)	460.7 (624.63)	354.4 (480.50)
	SAE Grade 4	523.1 (709.23)	627.8 (851.18)	697.5 (945.68)	767.3 (1040.32)	976.5 (1323.96)	906.8 (1229.46)	697.5 (945.68)
	SAE Grade 5 ASTM A449	595.9 (807.93)	715.1 (969.55)	794.5 (1077.20)	874.0 (1184.99)	1112.3 (1508.07)	1032.9 (1400.43)	794.5 (1077.20)
	SAE Grade 7	844.8 (1145.40)	1013.8 (1374.53)	1126.4 (1527.20)	1239.0 (1679.86)	1577.0 (2138.13)	1464.3 (1985.33)	1126.4 (1527.20)
	SAE Grade 8 ASTM A354 Grade BD	966.1 (1309.86)	1159.3 (1571.80)	1288.1 (1746.43)	1416.9 (1921.06)	1803.4 (2445.08)	1674.6 (2270.46)	1288.1 (1746.43)
	ASTM A354 Grade BC	844.8 (1145.40)	1013.8 (1374.53)	1126.4 (1527.20)	1239.0 (1679.86)	1577.0 (2138.13)	1464.3 (1985.33)	1126.4 (1527.20)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/8 • 12	SAE Grade 1 ASTM A307	297.4 (403.22)	356.9 (483.89)	396.6 (537.72)	436.2 (591.40)	555.2 (752.75)	515.5 (698.93)	396.6 (537.72)
	SAE Grade 2	297.4 (403.22)	356.9 (483.89)	396.6 (537.72)	436.2 (591.40)	555.2 (752.75)	515.5 (698.93)	396.6 (537.72)
	SAE Grade 4	586.4 (795.05)	703.7 (954.09)	781.9 (1060.12)	860.1 (1166.14)	1094.6 (1484.08)	1016.4 (1378.06)	781.9 (1060.12)
	SAE Grade 5 ASTM A449	667.6 (905.14)	801.1 (1086.15)	890.2 (1206.95)	979.2 (1327.62)	1246.2 (1689.62)	1157.2 (1568.95)	890.2 (1206.95)
	SAE Grade 7	948.2 (1285.58)	1137.8 (1542.65)	1264.2 (1714.02)	1390.6 (1855.40)	1769.9 (2399.66)	1643.5 (2228.30)	1264.2 (1714.02)
	SAE Grade 8 ASTM A354 Grade BD	1083.2 (1468.62)	1299.8 (1762.30)	1444.2 (1958.07)	1588.6 (2153.85)	2021.9 (2741.33)	1877.5 (2545.55)	1444.2 (1958.07)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/4 • 7	SAE Grade 1 ASTM A307	375.0 (508.43)	450.0 (610.11)	500.0 (677.91)	550.0 (745.70)	700.0 (949.07)	650.0 (881.28)	500.0 (677.91)
	SAE Grade 2	375.0 (508.43)	450.0 (610.11)	500.0 (677.91)	550.0 (745.70)	700.0 (949.07)	650.0 (881.28)	500.0 (677.91)
	SAE Grade 4	738.3 (1001.00)	885.9 (1201.12)	984.4 (1334.67)	1082.8 (1468.08)	1378.1 (1868.45)	1279.7 (1735.04)	984.4 (1334.67)
	SAE Grade 5 ASTM A449	840.2 (1139.16)	1008.3 (1367.07)	1120.3 (1518.93)	1232.3 (1670.78)	1568.4 (2126.47)	1456.4 (1974.62)	1120.3 (1518.93)
	SAE Grade 7	1191.8 (1615.87)	1430.2 (1939.09)	1589.1 (2154.53)	1748.0 (2369.97)	2224.7 (3016.30)	2065.8 (2800.85)	1589.1 (2154.53)
	SAE Grade 8 ASTM A354 Grade BD	1362.9 (1847.85)	1635.5 (2217.44)	1817.2 (2463.80)	1998.9 (2710.15)	2544.1 (3449.34)	2362.3 (3202.85)	1817.2 (2463.80)
	ASTM A354 Grade BC	1192.4 (1616.68)	1430.9 (1940.04)	1589.8 (2155.48)	1748.8 (2371.05)	2225.8 (3017.78)	2066.8 (2802.20)	1589.8 (2155.48)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/4 • 12	SAE Grade 1 ASTM A307	414.8 (562.40)	497.8 (674.93)	553.1 (749.90)	608.4 (824.88)	774.4 (1049.95)	719.1 (974.97)	553.1 (749.90)
	SAE Grade 2	414.8 (562.40)	497.8 (674.93)	553.1 (749.90)	608.4 (824.88)	774.4 (1049.95)	719.1 (974.97)	553.1 (749.90)
	SAE Grade 4	816.8 (1107.43)	980.2 (1328.97)	1089.1 (1476.62)	1198.0 (1624.27)	1524.7 (2067.22)	1415.8 (1919.57)	1089.1 (1476.62)
	SAE Grade 5 ASTM A449	930.5 (1261.60)	1116.6 (1513.90)	1240.6 (1682.03)	1364.7 (1850.29)	1736.9 (2354.92)	1612.8 (2186.66)	1240.6 (1682.03)
	SAE Grade 7	1320.7 (1790.63)	1584.8 (2148.70)	1760.9 (2387.46)	1937.0 (2626.22)	2465.3 (3342.50)	2289.2 (3103.74)	1760.9 (2387.46)
	SAE Grade 8 ASTM A354 Grade BD	1509.4 (2046.47)	1811.3 (2455.80)	2012.5 (2728.59)	2213.8 (3001.51)	2817.5 (3820.02)	2616.3 (3547.23)	2012.5 (2728.58)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-3/8 • 6	SAE Grade 1 ASTM A307	491.1 (665.84)	589.4 (799.12)	654.8 (887.79)	720.3 (976.60)	916.8 (1243.00)	851.3 (1154.21)	654.8 (887.80)
	SAE Grade 2	491.1 (665.84)	589.4 (799.12)	654.8 (887.79)	720.3 (976.60)	916.8 (1243.00)	851.3 (1154.21)	654.8 (887.80)
	SAE Grade 4	968.1 (1312.57)	1161.7 (1575.06)	1290.8 (1750.10)	1419.9 (1925.13)	1807.1 (2450.10)	1678.0 (2275.07)	1290.8 (1750.09)
	SAE Grade 5 ASTM A449	1102.1 (1494.25)	1322.6 (1793.20)	1469.5 (1992.38)	1616.5 (2191.68)	2057.3 (2789.33)	1910.4 (2590.16)	1469.5 (1992.38)
	SAE Grade 7	1563.6 (2119.96)	1876.4 (2544.06)	2084.8 (2826.61)	2293.3 (3109.30)	2918.8 (3957.37)	2710.3 (3674.68)	2084.8 (2826.61)
	SAE Grade 8 ASTM A354 Grade BD	1786.6 (2422.30)	2144.0 (2906.88)	2382.2 (3229.83)	2620.4 (3552.79)	3335.1 (4521.80)	3096.8 (4198.70)	2382.2 (3229.83)
	ASTM A354 Grade BC	1563.6 (2119.96)	1876.4 (2544.06)	2084.8 (2826.61)	2293.3 (3109.30)	2918.8 (3957.37)	2710.3 (3674.68)	2084.8 (2826.61)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-3/8 • 12	SAE Grade 1 ASTM A307	559.5 (758.58)	671.3 (910.16)	745.9 (1011.30)	820.5 (1112.45)	1044.3 (1415.88)	969.7 (1314.74)	745.9 (1011.30)
	SAE Grade 2	559.5 (758.58)	671.3 (910.16)	745.9 (1011.30)	820.5 (1112.45)	1044.3 (1415.88)	969.7 (1314.74)	745.9 (1011.30)
	SAE Grade 4	1102.1 (1494.25)	1322.6 (1793.21)	1469.5 (1992.38)	1616.5 (2191.68)	2057.3 (2789.33)	1910.4 (2590.16)	1469.5 (1992.38)
	SAE Grade 5 ASTM A449	1254.3 (1700.60)	1505.1 (2040.64)	1672.3 (2267.34)	1839.6 (2494.16)	2341.3 (3174.38)	2174.0 (2947.55)	1672.3 (2267.34)
	SAE Grade 7	1780.2 (2413.63)	2136.2 (2896.30)	2373.6 (3218.17)	2611.0 (3540.04)	3323.0 (4505.39)	3085.7 (4183.65)	2373.6 (3218.17)
	SAE Grade 8 ASTM A354 Grade BD	2034.1 (2757.87)	2441.0 (3309.56)	2712.2 (3677.25)	2983.4 (4044.95)	3797.1 (5148.18)	3525.8 (4780.35)	2712.2 (3677.25)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/2 • 6	SAE Grade 1 ASTM A307	652.5 (884.67)	783.0 (1061.60)	870.0 (1179.56)	957.0 (1297.52)	1218.0 (1651.39)	1131.0 (1533.43)	870.0 (1179.56)
	SAE Grade 2	652.5 (884.67)	783.0 (1061.60)	870.0 (1179.56)	957.0 (1297.52)	1218.0 (1651.39)	1131.0 (1533.43)	870.0 (1179.56)
	SAE Grade 4	1283.9 (1740.74)	1540.7 (2088.91)	1711.9 (2321.03)	1883.1 (2553.14)	2396.6 (3249.36)	2225.4 (3017.24)	1711.9 (2321.03)
	SAE Grade 5 ASTM A449	1462.5 (1982.88)	1755.0 (2379.46)	1950.0 (2643.85)	2145.0 (2908.23)	2730.0 (3701.39)	2535.0 (3437.00)	1950.0 (2643.85)
	SAE Grade 7	2074.2 (2812.24)	2489.1 (3374.77)	2765.6 (3749.66)	3042.2 (4124.67)	3871.9 (5249.60)	3595.3 (4874.58)	2765.6 (3749.66)
	SAE Grade 8 ASTM A354 Grade BD	2370.9 (3214.51)	2845.1 (3857.44)	3161.3 (4286.15)	3477.4 (4714.73)	4425.8 (6000.58)	4109.6 (5571.88)	3161.3 (4286.15)
	ASTM A354 Grade BC	2074.9 (2813.20)	2489.9 (3375.85)	2766.6 (3751.01)	3043.2 (4126.03)	3873.2 (5251.36)	3596.5 (4876.20)	2766.6 (3751.01)

All values in foot pounds and (Newton meters)

Nominal bolt size	Grade Designation and Standard	Zinc or Cadmium Plated	If instructions call for :					
			Loctite 222 or 262	Loctite 242	Loctite 271	Loctite 272	Loctite 277	Bare
1-1/2 • 12	SAE Grade 1 ASTM A307	734.1 (995.30)	880.9 (1194.34)	978.8 (1327.07)	1076.6 (1459.67)	1370.3 (1857.88)	1272.4 (1725.14)	978.8 (1327.07)
	SAE Grade 2	734.1 (995.30)	880.9 (1194.34)	978.8 (1327.07)	1076.6 (1459.67)	1370.3 (1857.88)	1272.4 (1725.14)	978.8 (1327.07)
	SAE Grade 4	1445.6 (1959.97)	1734.8 (2352.07)	1927.5 (2613.34)	2120.3 (2874.33)	2698.5 (3658.68)	2505.8 (3397.41)	1927.5 (2613.34)
	SAE Grade 5 ASTM A449	1645.3 (2230.73)	1974.4 (2676.93)	2193.8 (2974.40)	2413.1 (3271.73)	3071.3 (4164.13)	2851.9 (3866.66)	2193.8 (2974.40)
	SAE Grade 7	2334.4 (3165.02)	2801.3 (3798.06)	3112.5 (4219.99)	3423.8 (4642.05)	4357.5 (5907.98)	4046.3 (5486.05)	3112.5 (4219.99)
	SAE Grade 8 ASTM A354 Grade BD	2667.7 (3616.92)	3201.2 (4340.25)	3556.9 (4822.51)	3912.6 (5304.78)	4979.6 (6751.44)	4623.9 (6269.17)	3556.9 (4822.51)
	ASTM A354 Grade BC	—	—	—	—	—	—	—

Other Fastener Torque Specifications

All values in foot-pounds and (Newton-meters)

Nominal bolt size	18 - 8 Stainless Steel	316 Stainless Steel	Brass	Aluminum 2024 - T4
1/4 - 20	6.3 (8.54)	6.6 (8.95)	5.1 (6.91)	3.8 (5.15)
1/4 - 28	7.8 (10.57)	8.3 (11.25)	6.4 (8.67)	4.8 (6.50)
5/16 - 18	11.0 (14.90)	11.5 (15.60)	8.9 (12.06)	6.7 (9.08)
5/16 - 24	11.8 (16.00)	12.3 (16.67)	9.7 (13.15)	7.2 (9.76)
3/8 - 16	19.7 (26.71)	20.6 (27.93)	16.0 (21.70)	11.9 (16.13)
3/8 - 24	21.6 (29.28)	22.6 (30.64)	17.7 (24.00)	13.1 (17.76)
7/16 - 14	31.3 (42.44)	32.8 (44.47)	26.4 (35.80)	19.0 (25.76)
7/16 - 20	33.3 (45.15)	34.8 (47.18)	27.3 (37.00)	20.2 (27.38)
1/2 - 13	43.1 (58.43)	45.2 (61.28)	35.2 (47.72)	26.1 (35.38)
1/2 - 20	45.1 (61.14)	47.1 (63.86)	36.9 (50.00)	27.3 (37.00)
9/16 - 12	56.8 (77.00)	59.4 (80.53)	46.5 (63.04)	34.4 (46.64)
9/16 - 18	62.7 (85.00)	65.6 (88.94)	51.3 (69.55)	38.0 (51.52)
5/8 - 11	92.5 (125.41)	96.7 (131.10)	75.6 (102.50)	59.6 (80.80)
5/8 - 18	103.7 (140.60)	108.4 (146.97)	84.7 (114.84)	66.5 (90.16)
3/4 - 10	127.5 (172.86)	131.8 (178.70)	104.1 (141.14)	81.7 (110.77)
3/4 - 16	124.2 (168.39)	129.8 (175.98)	101.7 (137.88)	79.8 (108.19)

Other Fastener Torque Specifications

All values in foot-pounds and (Newton-meters)

Nominal bolt size	18 - 8 Stainless Steel	316 Stainless Steel	Brass	Aluminum 2024 - T4
7/8 - 9	194.0 (263.03)	202.5 (274.55)	158.8 (215.30)	124.6 (168.93)
7/8 - 14	193.2 (261.94)	201.7 (273.47)	157.9 (214.08)	124.2 (168.40)
1 - 8	286.7 (388.71)	299.6 (406.20)	234.6 (318.07)	183.8 (249.20)
1 - 14	259.2 (351.43)	270.8 (367.16)	212.1 (287.57)	166.3 (225.47)
1-1/8 • 7	413.0 (559.95)	432.0 (585.71)	337.0 (456.91)	265.0 (359.29)
1-1/8 • 12	390.0 (528.77)	408.0 (553.17)	318.0 (431.15)	251.0 (340.31)
1-1/4 • 7	523.0 (709.09)	546.0 (740.28)	428.0 (580.30)	336.0 (455.55)
1-1/4 • 12	480.0 (650.80)	504.0 (683.33)	394.0 (534.19)	308.0 (417.60)
1-1/2 • 6	888.0 (1203.97)	930.0 (1260.91)	727.0 (985.68)	570.0 (772.82)
1-1/2 • 12	703.0 (953.14)	732.0 (992.46)	575.0 (779.60)	450.0 (610.12)

BALDOR MOTOR MAINTENANCE

MSSM0274AE/9731AV

Most of the information in this document is taken from the *Baldor Electric Company Instruction, Operation, and Maintenance Manual*, and provides a means of more accurately determining motor lubrication requirements based on local conditions.

General Maintenance

Inspect, clean, and test motors at regular intervals— approximately every 500 operating hours or every three months, whichever comes first. Lubricate motors at the intervals determined herein. Keep accurate maintenance records.

DANGER: Electrocuting and Electrical Burn Hazards



Contact with high voltage will electrocute or burn you. Power switches on the machine and the control box do not eliminate these hazards. High voltage is present at the machine unless the main power is off. Electrical power can cause death or severe injury.

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

DANGER: Entangle and Crush Hazard



Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

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

Clean—Keep the exterior of the motor free of dirt, oil, grease, water, etc. Keep ventilation openings clear. Oily vapor, paper pulp, textile lint, etc., can accumulate and block ventilation, causing overheating and early motor failure.

Test—Periodically, check the motor and winding insulation integrity using a “megger.” Record the megger readings and immediately investigate any significant drop in insulation resistance. Check all electrical connectors to be sure they are tight.

Lubricate—Determine the proper lubrication interval for your motor as explained in “How to Determine Lubrication Interval” in this section, and lubricate accordingly.

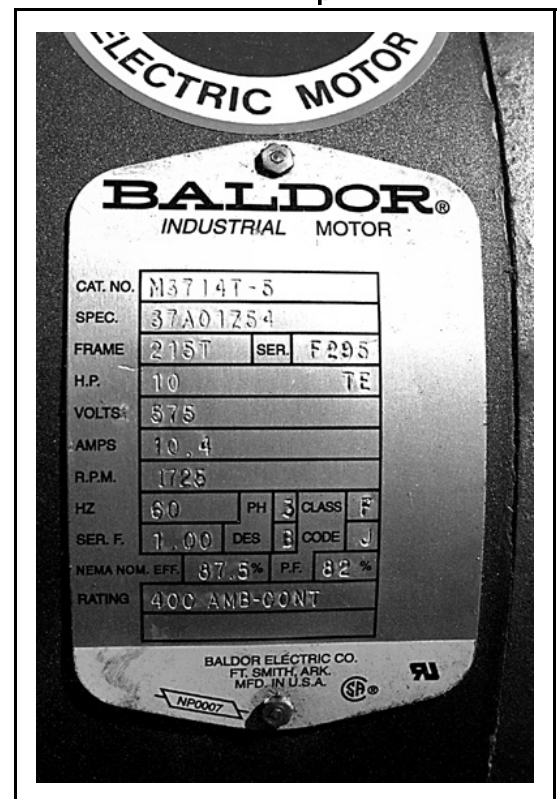


FIGURE 1 (MSSM0274AE)
Typical Motor Data Plate

How to Determine Lubrication Interval—The useful life of antifriction bearing grease can be estimated, based on service conditions, frame type, and motor rpm. An example of determining the correct lubrication interval is provided below.

Ex: A fan motor, operating at an ambient temperature of 109°F (43°C) in a moderately corrosive atmosphere. The motor has a NEMA 286T/(IEC 180) frame and is rated at 1750 rpm.

1. Table 1 classifies the service condition as “severe.”
2. Table 2 specifies a 0.5 service condition multiplier value for “severe” service condition.
3. Table 3 specifies 9500 hours as the recommended lubrication interval for frame sizes 254 to 286 (see nameplate), given standard service conditions.
4. Multiply .5 (*service condition multiplier value*) by 9500 hours (*recommended lubrication interval*) = 4750 hours (*calculated lubrication interval*).
5. Table 4 shows that the amount of grease to be added is 0.32 ounces (9.1 grams).

Table 1 — Determining the Service Condition

Severity of Service	Maximum Ambient Temperature	Atmospheric Contamination	Type of Bearing
Standard	104°F (40°C)	Clean, little corrosion	Deep groove ball bearing
Severe	122°F (50°C)	Moderate dirt, corrosion	Ball thrust, Roller
Extreme	>122°F (>50°C) or Class H Insulation (Note 1)	Severe dirt, abrasive dust, corrosion	All bearings
Low Temperature	-22°F (-30°C) (Note 2)		

Note 1: Special high temperature grease is recommended.

Note 2: Special low temperature grease is recommended.

Table 2 — Service Condition Multiplier Value

Operating Condition	Multiplier
Standard	1.0
Severe	0.5
Extreme	0.1

Table 3 — Recommended Lubrication Intervals at Standard Service Conditions

NEMA (IEC) Frame Size	Rated Speed - RPM			
	3600	1800	1200	900
Up to 215 (132)	5500 Hrs.	12000 Hrs.	18000 Hrs.	22000 Hrs.
254 to 286 (160 - 180)	3600 Hrs.	9500 Hrs.	15000 Hrs.	18000 Hrs.
324 to 365 (200 - 225)	2200 Hrs.(Note 3)	7400 Hrs.	12000 Hrs.	15000 Hrs.
404 to 5000 (280 - 315)	2200 Hrs.(Note 3)	3500 Hrs.	7400 Hrs.	10500 Hrs.

Note 3: Bearings in 404 through 5000 frame, 2 pole motors are either 6313 or 6314 bearings and the lubrication interval is shown in the table. **If roller bearings are used, the bearings must be lubricated more frequently. Divide the listed lubrication interval by two.**

Table 4 — Lubrication Amounts per Frame

NEMA (IEC) Frame Size	Bearing Description					
	These are the “Large” bearings (Shaft End) in each frame size (Note 4)					
	Largest bearing in size category	OD D mm	Width B mm	Grease gun strokes (Note 5)	Volume of grease to be added	
ounces					grams	
Up to 215 (132)	6307	80	21	2.5	0.16	4.7
254 to 286 (160 - 180)	6311	120	29	5.0	0.32	9.1
324 to 365 (200 - 225)	6313	140	33	7.0	0.43	12.2
404 to 5000 (280 - 315)	NU322	240	50	18.0	1.11	31.5

Note 4: Smaller bearings in size category may require reduced amounts of grease.

Note 5: See “Correct Grease Gun Procedures” for information on estimating the output of hand-operated grease guns.

Lubrication Recommendations

Type of Grease—Use Shell Dolium R (factory installed) or Chevron SRI greases for standard service conditions. The extreme and low temperature conditions are not normally encountered in the laundry. However, for extreme conditions, use Darmex 707 and for low temperature conditions, use Arrowsell 7. Contact Baldor for equivalents, if necessary.

Correct Grease Gun Procedures

1. Use hand-operated grease gun, not a pneumatic grease gun. Pump grease slowly, taking 10 to 12 seconds to complete each stroke.
2. Apply quantity of grease called for. 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 strokes of the grease gun. Determine the flow rate of your grease gun by pumping one ounce into a calibrated container. If fewer than 16 strokes are required, all quantities in strokes in the chart should be reduced accordingly. 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.**
3. Do not over-lubricate motors. Over-lubrication of a motor can seriously damage it by forcing grease into motor windings. Over-lubrication of the extract motor can force grease into the centrifugal switch causing it to malfunction.
4. Do not allow grease to drip on the brake disk or clutch tire/drum during lubrication. This will reduce the braking action considerably, and may permit the cylinder to creep while loading and unloading.

Lubrication Procedure

	NOTICE: Motor Damage
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To avoid damage to motor bearings, grease must be kept free of dirt. For an extremely dirty environment, contact your Baldor distributor or an authorized Baldor Service Center for additional information.

1. Clean grease fittings.
2. Remove grease outlet plug.
3. Add recommended amount of grease. Be sure grease to be added is compatible with the grease already in motor. Consult your Baldor distributor or an authorized Baldor Service Center if grease other than recommended is to be used. Stop when new grease appears at shaft hole in the endplate or grease outlet plug.
4. Replace grease outlet plug.

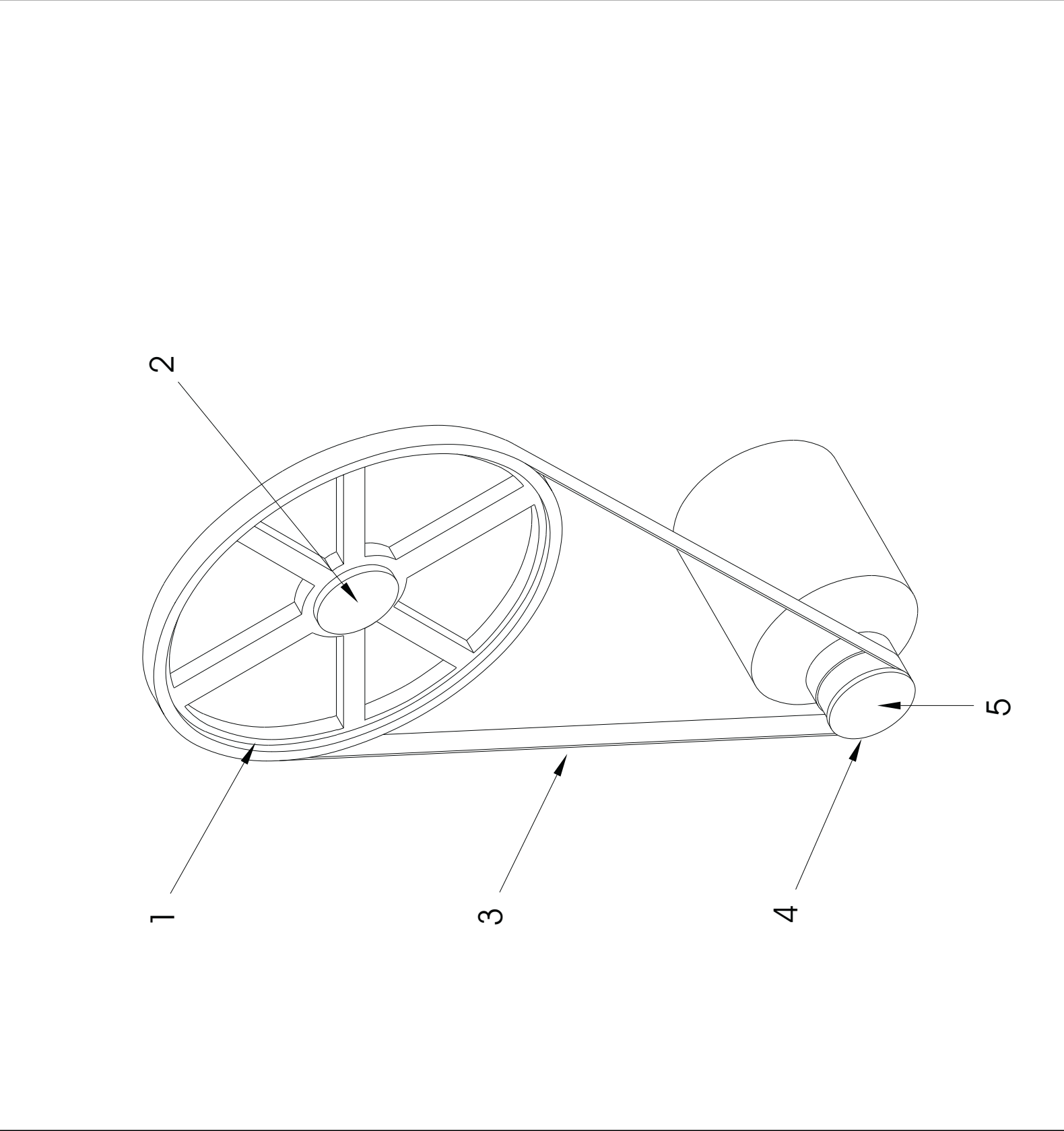
Section
Drive Assemblies

2



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

Litho in U.S.A.



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
	A	D13 00960	ASSEMBLIES *DRIVECHART=3626V5 50/60HZ	36026V5J
			COMPONENTS	
all	1	56250B3SF	VPUL 3B25.0 (SF) TYPE QD	
all	2	56Q1KSF	1+1/2" BUSH VPUL QD TYPE SF	
all	3	56VB095X	VBELT BX95 RAWEDGE COG	3 REQUIRED
all	4	56030B3SH	VPUL 3B3.0/A2.6 3BK32SH (MTO)	
all	5	56Q1GSH	1+3/8" BUSH VPUL QD TYPE SH	

Drive Chart 36026V7J

BMP000010/2000455V
(Sheet 1 of 1)



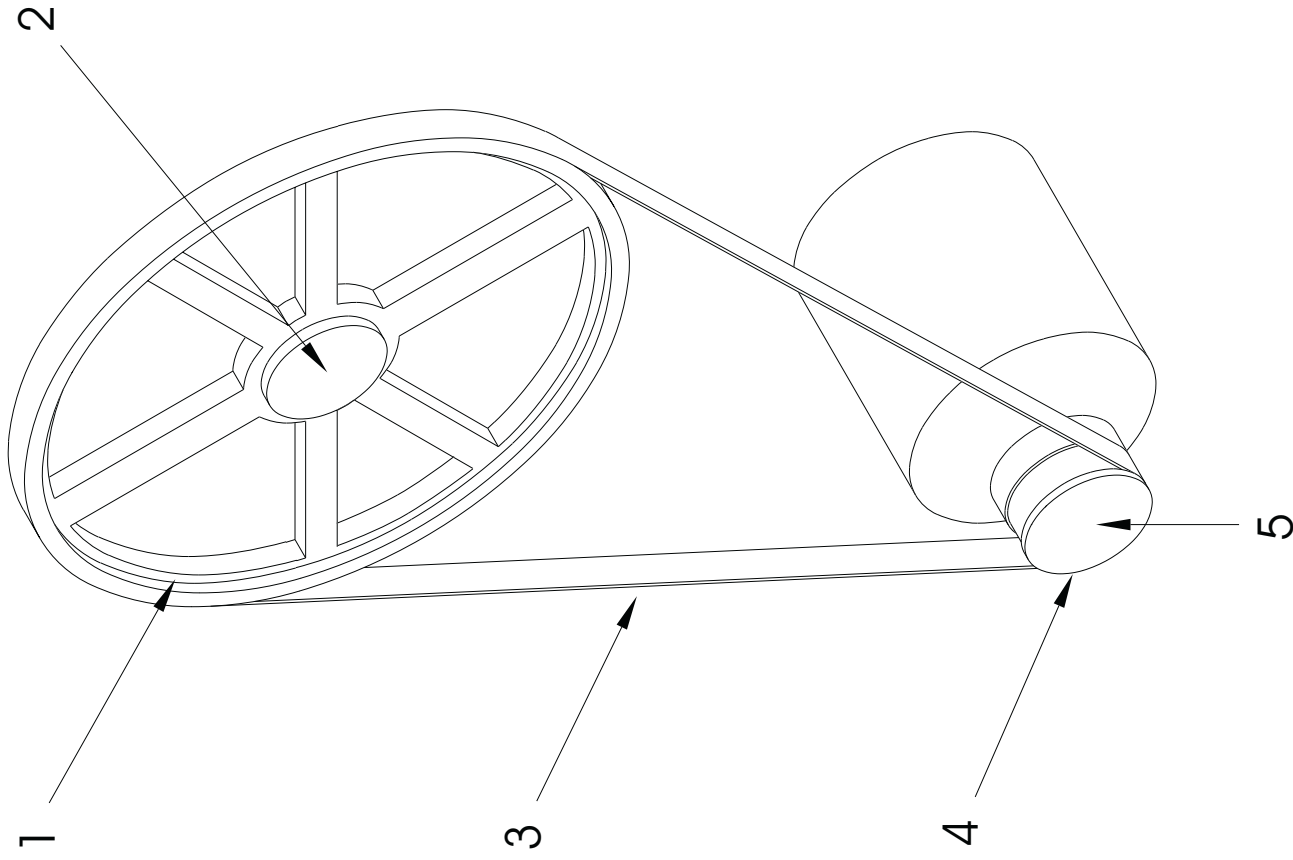
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

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
	A	D13 02960	ASSEMBLIES 95000Z DRIVECHART=3626V7 50/60HZ	36026V7J
			COMPONENTS	
all	1	56250B3SF	VPUL 3B25.0 (SF) TYPE QD	
all	2	56Q1PSF	1+3/4" BUSH VPUL QD TYPE SF	
all	3	56VB093X	VBELT BX93 RAWEDGE COG	3 REQUIRED
all	4	56030B3SH	VPUL 3B3.0/A2.6 3BK32SH (MTO)	
all	5	56Q1GSH	1+3/8" BUSH VPUL QD TYPE SH	



Drive Chart 42026V6J

BMP000011/2000455V
(Sheet 1 of 1)



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Litho in U.S.A.

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
	A	D13 01960	95000 DRIVECHART=4226V6 60CYC	42026V6J
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
all	1	56250B3SF	VPUL 3B25.0 (SF) TYPE QD	
all	2	56Q1PSF	1+3/4" BUSH VPUL QD TYPE SF	
all	3	56VB093X	VBELT BX93 RAWEDGE COG	3 REQUIRED
all	4	56030B3SH	VPUL 3B3.0/A2.6 3BK32SH (MTO)	
all	5	56Q1GSH	1+3/8" BUSH VPUL QD TYPE SH	

Motor Mount

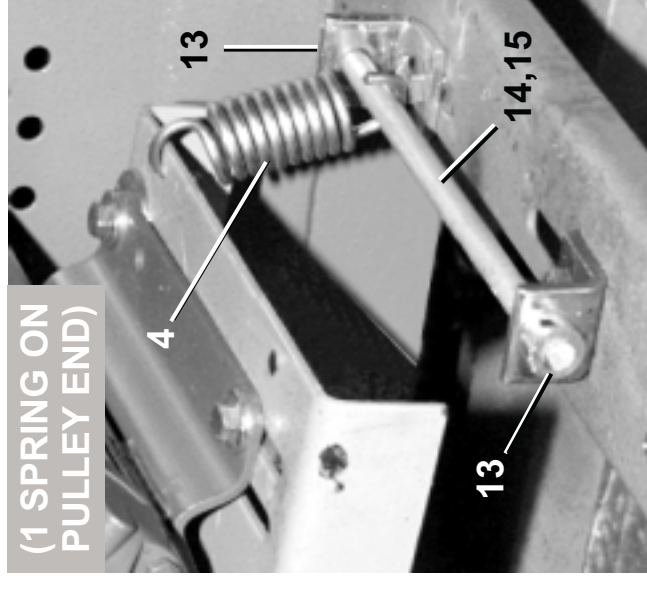
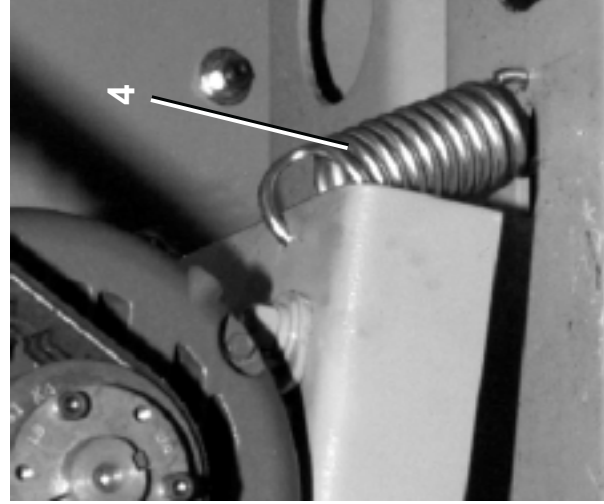
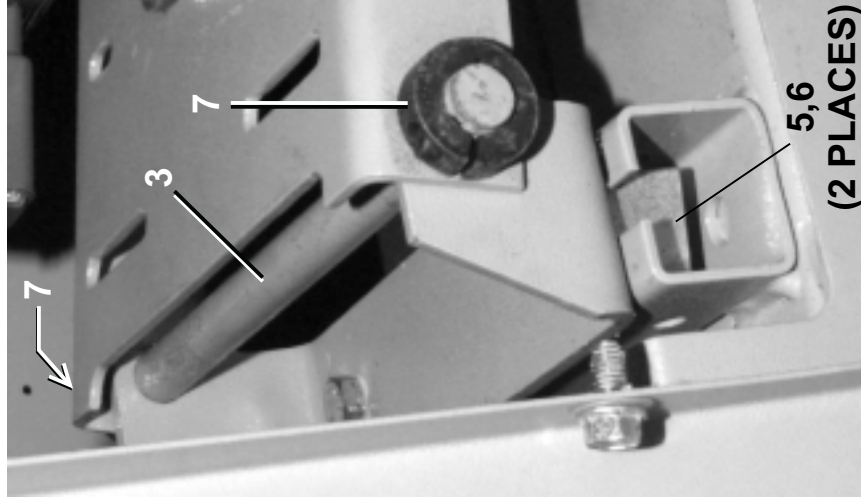
30015, 30022, 36026, & 42026Vxx,Txx



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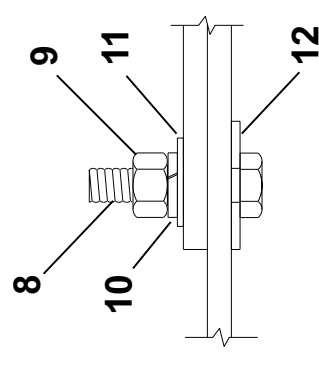
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(Sheet 1 of 2)

Litho in U.S.A.



36026V5J, V7J, & 42026V6J MOUNTING

(ITEM 15, TUBE, SLIDES
OVER SHAFT TO
TIGHTEN BELT)



DETAIL A
(4 PLACES)



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Parts List—Motor Mount

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	ADB3022S4	ASSY=DRIVE BASE, 3022S4	30015V7J,T5J,T5E 30022V6J,T5J,T5E 36026V5J,V7J ,42026V6J
-----COMPONENTS-----				
all	1	02 04256	PLATE=MOTOR MNT, 3022S4	
all	2	02 04257	BRKT=MOTOR MOUNT, 3022S4	
all	3	02 04258	SHAFT=MOTOR MOUNT, 3022S4	
all	4	02 04259	SPRNG/MOT MOUNT/3022S4#SPC2690	
all	5	02 19283	NUT=1/2-13UNCX1+1/25Q SPEC	
all	6	15K162	HXCAPSCR 1/2-13UNC2AX1.5 GR5 P	
all	7	54JH10750C	SHFTCOLLAR 3/4" CLPTYP CFG#12S	
all	8	15K095	HXCPCSCR 3/8-16UNC2AX1 GR5 ZINC	
all	9	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	10	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	11	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	12	15U241	FLATWASHER 13/32IDX1+3/4ODX14G	
All	13	54JH10750C	SHFTCOLLAR 3/4" CLPTYP CFG#12	
All	14	02 04258	2000142B SHAFT=MOTOR MOUNT, 3022S4	
All	15	02 04258B	2000342B TUBE MOTOR MOUNT SPRING ADJ	

Section
Bearing Assemblies

3

Main Bearing, Shell, Cylinder Installation

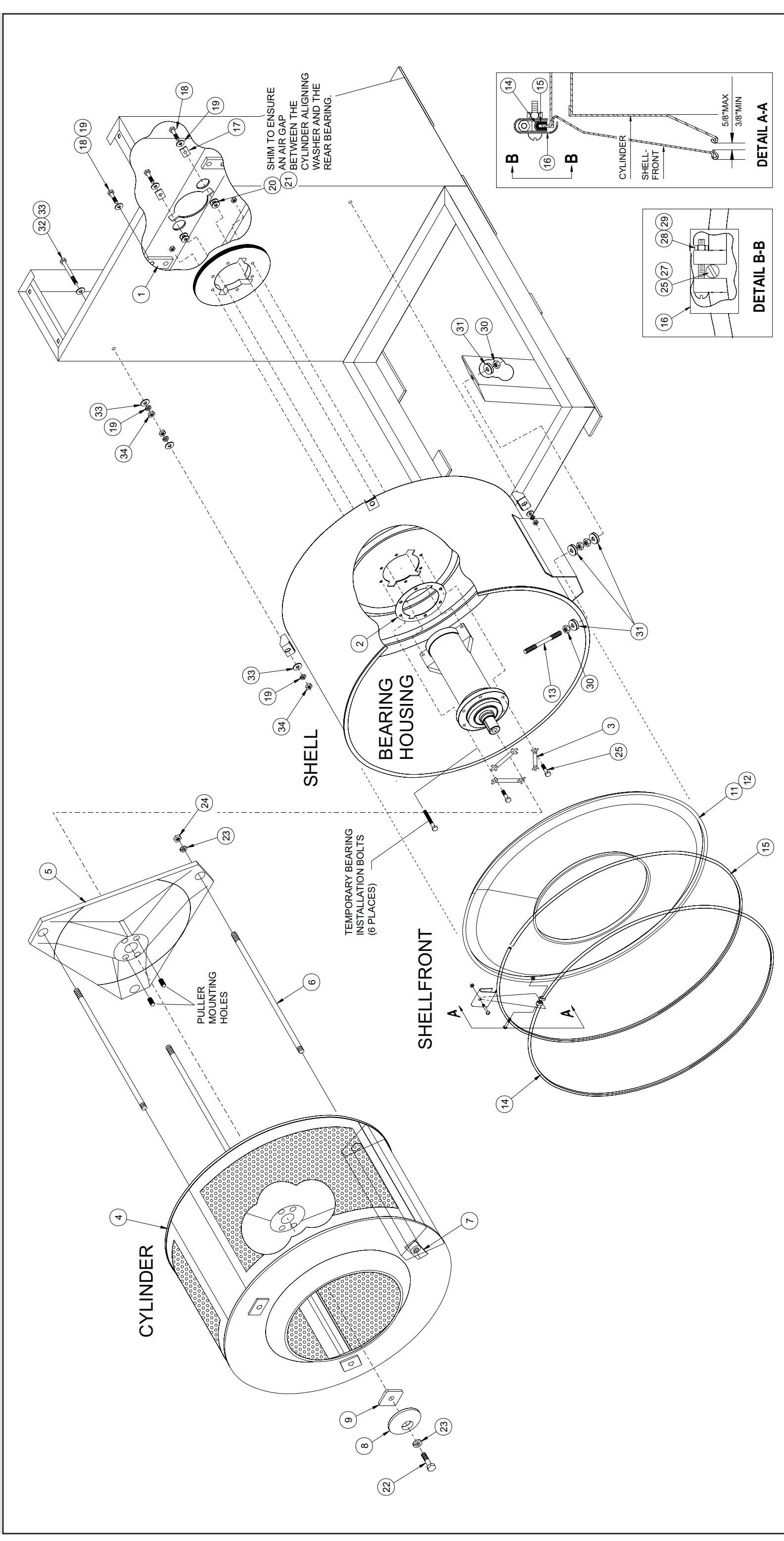
36021Q4G/Q4J/Q4P/C4E 36026Q4G/Q4J/Q4P 36026V5J

BMP930004/2003483V
(Sheet 1 of 2)



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Parts List—Main Bearing 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	GBM13002	BRG INSTALL 3621/26F	36021Q4X,36026Q4X 36026V5J
	B	GCA3621Q4	CYL INSTL 3621 Q4	36021Q4X,C4E
	C	GCA3626Q4	CYLINDER INSTALL 3626Q4	36026Q4X,36026V5J
	D	GSF14804	*INST=SHEL+BASE+FRME 3621F	36021Q4X
	E	GSF14805	*INST=SHEL+BASE+FRME 3626F	36026Q4X
	F	GSF14806	INST=SHELL+BASE+FRM 3626V5	36026V5J
			-----COMPONENTS-----	
all	1	02 03560	TAPSTRIP=BEARING SUPPORT	
all	2	02 13139	GASKET=MAINBROUS--1/3626SWE	
all	3	02 03629	LOCKSTRAP=BEAR HOUS S/S	
B	4	ACA3621Q4	*CYL ASSY 3621 Q4	(CONTAINS ITEMS 5-7)
C	4	ACA3626Q4	*CYLINDER ASSY 3626Q4	(CONTAINS ITEMS 5-7)
all	5	X2 13112A	SPIDER=3626SWE+QWE W/3/4"ROD	
B	6	02 14561	CYL TIE ROD 24.25LG 3621RWP	
C	6	02 12012	CYLTIEROD=4226W	
all	7	02 13138A	PLATE CYLFRONT REINF=3/4"ROD	
all	8	02 11196	COVER=SHAFT RETAINER=304S/S	
all	9	02 14359	SPACER SHT RETNR-LG OUR MATL	
all	11	ASF14801	*SHELL FRONT ASSY=3621RWP	CONTAINS ITEM 12
all	12	X2 14195A	SHELLFRONT ALL 36" W/LOCK	
all	13	17R024A07A	THREADED ROD 5/8-11X7" ZNPL GR	
all	14	Y2 09031	*SHELL CLAMP RING=36" MACHINE	
all	15	02 02087A	EXTRUS*ION-SHELL=36"MACHINES (
all	16	02 02181	GUARD=SHELL MOUNT RING CLIP	
all	17	02 03397	CYLINDER ALIGNING WASHER	
all	18	15K173A	HXCAPSCR 1/2-13UNC2AX1.75 GR5	
all	19	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	20	15U312	FLAWASHER 3/4ODX33/64IDX11GA Z	
all	21	15U243	FLAWASHER 7/8ODX33/64IDX16GA Z	

Used In	Item	Part Number	Description	Comments
all	22	15B200	HEXCAPSCR 3/4-10X1+3/4 SS18-8	
all	23	15U350	LOCKWASHER 3/4 MED SS18-8	
all	24	15G243	HEXNIUT 3/4-10UNC2 SS18-8	
all	25	15K180S	HXCAPSCR 1/2-13UNCAX2 18-8SS	
all	26	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	
all	27	15G130	HEXMACHSCRNIUT 10-24UNC2 SS18-8	
all	28	15K046S	HEXCAPSCR 1/4-20UNC2A X 2.25 S	
all	29	15G170	HEXNIUT 1/4-20UNC2 SS18-8	
all	30	15G238	HXNIUT 5/8-11UNC2B SAE ZINC GR2	
all	31	17W030	SPHERICAL WASHER SET 5/8 M/F	
all	32	15K203	HXCAPSCR TFL 1/2-13X5 GR5 ZINC	
all	34	15G230	HXNIUT 1/2-13UNC2B SAE ZINC GR2	

Main Bearing Assembly

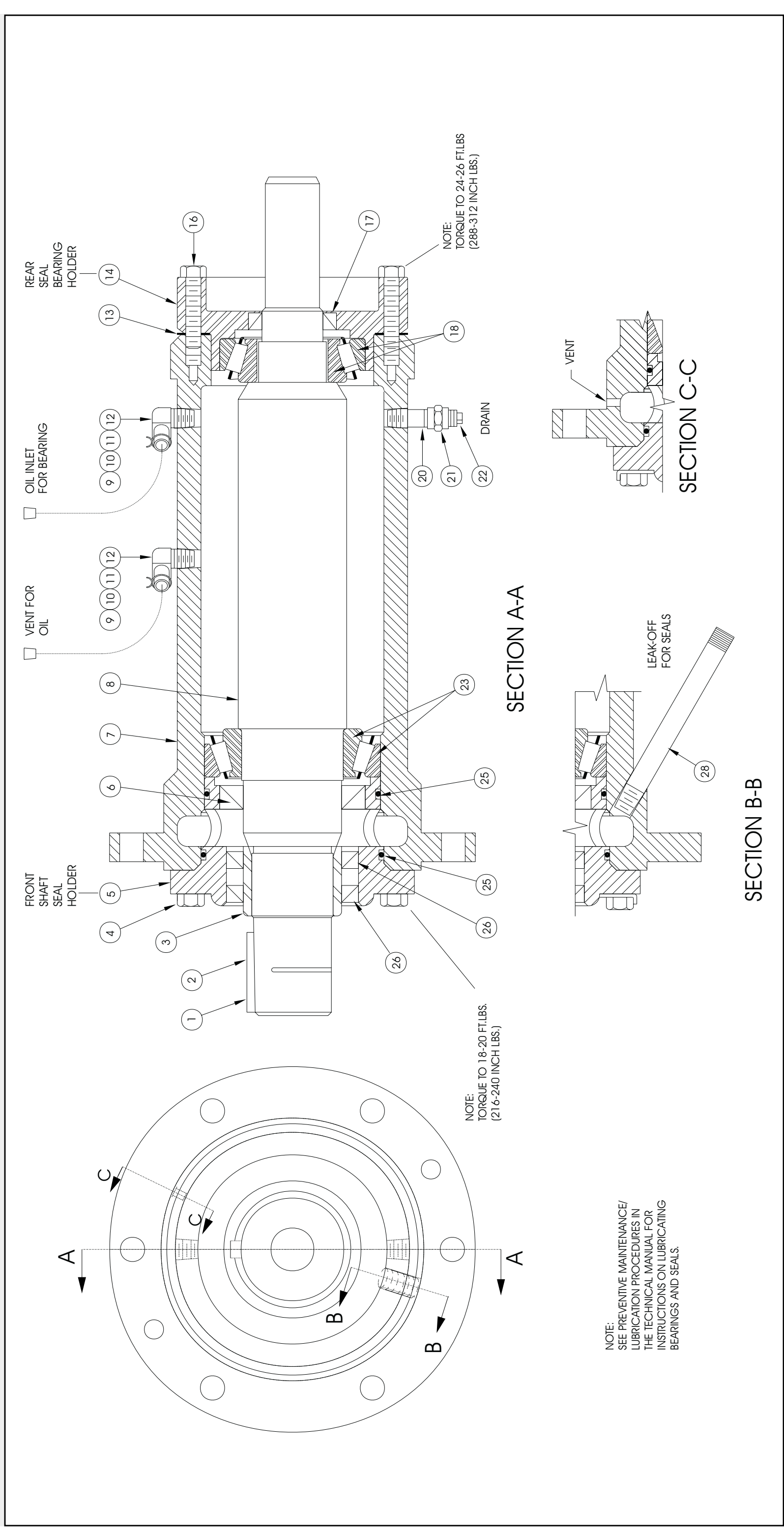
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BMP930001/2003276V
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NOTE:
SEE PREVENTIVE MAINTENANCE/
LUBRICATION PROCEDURES IN
THE TECHNICAL MANUAL FOR
INSTRUCTIONS ON LUBRICATING
BEARINGS AND SEALS.



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Parts List—Bearing 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	SA 13 012A	*BEARING ASSY-MAIN 36Q4 LIGHT	36021Q4G/Q4J/Q4P 36026Q4G/Q4J/Q4P 36026V5J 3621C4E
			-----COMPONENTS-----	
all	1	02 09126	SHAFTKEY-SS303=OEWS 2+5/8"L	
all	2	15N082	FILMACSCR 8-32UNC2X3/8SS18-8	
all	3	02 13143	SEALSLEEVE=SWE-1/SWE	
all	4	15K062	HEXCAPSCR 5/16-18X1 18-8SS	
all	5	X2 13144A	HOLDER=SHFT SEAL(05=24S052A)	
all	6	24S052A	SEAL 2.559X3.55X.315 CR#25430	
all	7	X2 13105B	HOUSING = MAIN BEARING	
all	8	X2 13103	MAINSHAFT=1/3626SWE	
all	9	5SLOEBEC	NPTLNB 90DEG STRT 1/4 BRASS125	
all	10	5N0E01KBE2	NPT NIP 1/4X1.5TBE BRASS STD.	
all	11	27A043A	HOSECLAMP.562"DIA.SPRG#HC9STZD	
all	12	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
all	13	02 03320B	SHIM .003 ARTUS GREEN	
all	13	02 03320C	SHIM .005 ARTUS BLUE	
all	13	02 03320D	SHIM .010 ARTUS BROWN	
all	13	02 03320G	SHIM .0075 ARTUS TRANSMATTE	
all	14	X2 03659A	HOUSE=SEAL+BRG 30M,V7	
all	16	15K078	HXCAPSCR 5/16-18 UNC2A X 2" GR	
all	17	24S048AAA	SEAL 1.625X2.375X.375 CS/BUNA	
all	18	54A307308	TIMK M802011 2-24/M802048 2-24	
all	20	5SP0EFFSS	NPT PLUG 1/4 SQ SOLID BLKSTL	
all	21	5N0E01KBE2	NPT NIP 1/4X1.5TBE BRASS STD.	
all	22	5SCC0EBE	NPT COUP 1/4 BRASS 125# W/HEX	
all	23	54A915916	TIM###JLM710949C/TIM###JLM710910	
all	25	60C151	ORING 3+7/8ID1/8CS BUNA70#241	
all	26	24S053	SEAL 2.625X3.625X.437#10050LUP	
all	28	5N0E05AG42	NPT NIP 1/4X5 TBE GALSTL SK40	

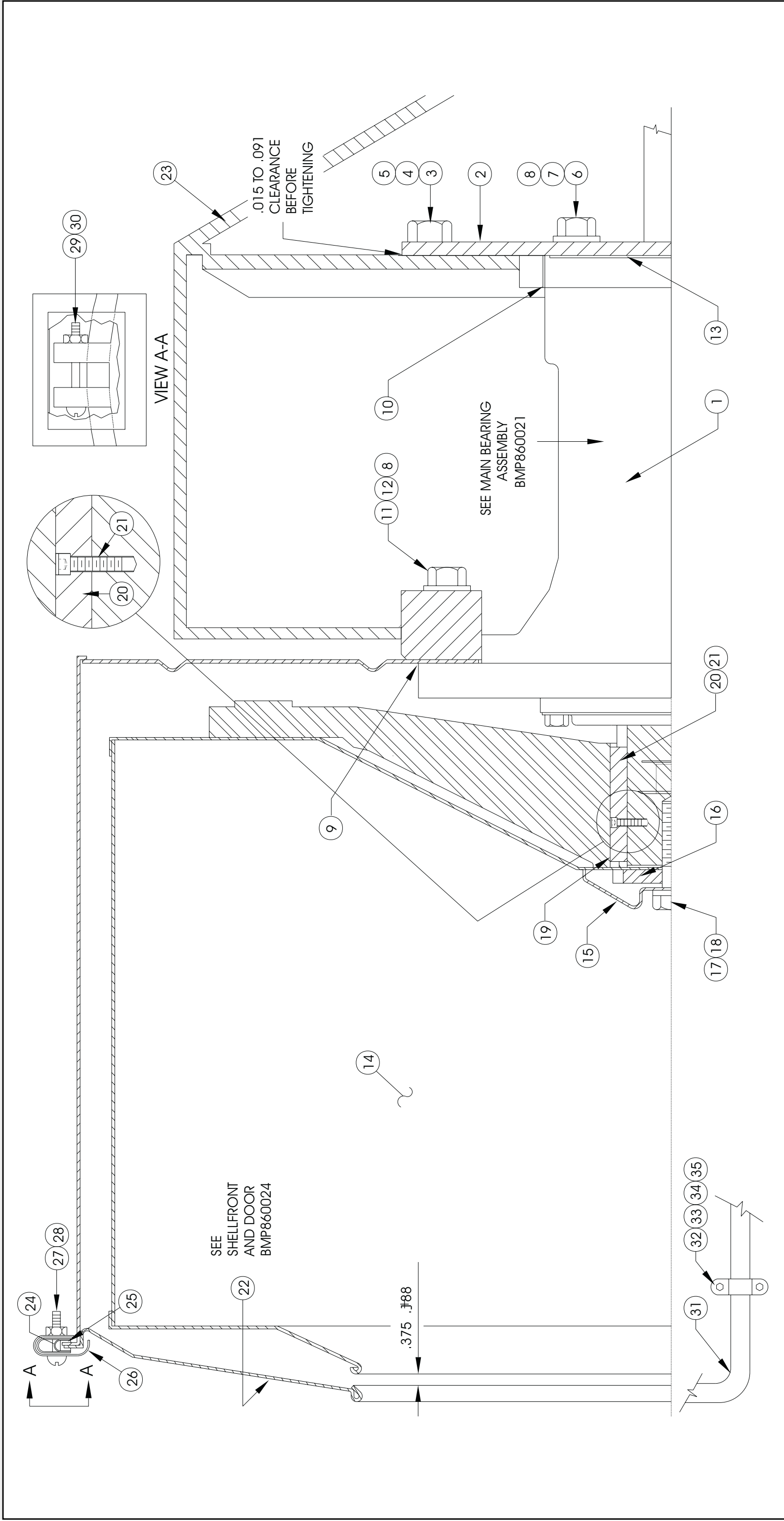
Main Bearing, Shell, & Cylinder Installation
36021Q6G/J/P, 36026Q6G/J/P, 36026V7J, 42026Q4G/J/P, 42026Q6G/J/P, 42026V6J

BMP900047/2000455V
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Parts List—Main Bearing, Shell, 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
			ASSEMBLIES	
A		GBM14802	BRNG INSTL 36QJ/P STD	36026Q6X
B		GBM14803	BEARING INSTAL 36 3626V6J	36026V7J
C		GBM119001A	MAIN BRG INSTAL 4226Q6P&G	42026Q4X,Q6X,V6J
D		GCA3621Q6	CYLINDER INSTALL 3621Q6	36021Q6X,V6J
E		GCA3626Q6	CYLINDER INSTALL 3626Q6	36026Q6X,V7J,J6P
F		GCA119002	CYL INSTL 4226QU	42026Q4X,Q6X,V6J
G		GSF14803	*SHELL+BASE+FRAME INST 3621QU	36021Q6X,V6J
H		GSF14802B	FRONT+SHELL+BASE 36Q	36026Q4X,Q6X,J6P
J		GSF14802C	FRONT+SHELL+BASE=36V7	36026V7J
K		GSF119001A	FRONT+SHELL+BASE 42R6P+G	42026Q4X,Q6X
L		GSF119001V	FRONT+SHELL+BASE 4226V	42026V6J
			COMPONENTS	
A	1	ABN14802	MAIN BRNG ASSY 36QJ/P STD	
B	1	ABN14801	36RWPIE BRG ASSY=PARTS	
C	1	ABN119001A	MAIN BEARING ASSY 4226Q6P/G	
C	1	ABN119002A	MAIN BEARING ASSY 4226V6P/G	
aIl	2	Y2 11320	SPIDER WLDMT=MACHINED 42QHE	
aIl	3	15K232A	HXCPCS 3/4-10X2 GR8 ZC	
aIl	4	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
aIl	5	15G240A	HEXNUT 3/4-10UNC2B SAE GR8 ZIN	
aIl	6	15K225A	HXCPCSR-5/8-11X2.5 GR9 ZINC	
aIl	7	15U316	FLTWASH 5/8 ZNC DICR	
aIl	8	20C007	THDLOCK CMPD-10CC LCT#222-21	
aIl	9	20C040B	SILSEAL RTV CLR10.2 OZ #59575	
aIl	10	20C009	ADH/SEALANT-50CC LCT#277-31	
aIl	11	15U316	FLTWASH 5/8 ZNC DICR	
aIl	12	15K225A	HXCPCSR-5/8-11X2.5 GR9 ZINC	
aIl	13	X2 11158C	SHIM=BRGHOUSE MTG 24GA	
D	14	ACA3621Q6	*CYLINDER ASSY 3621Q6	
E	14	ACA3626Q6	*CYL ASSY 3626Q6	
F	14	ACA4226RWP	*CYL ASSY 4226RWP	
aIl	15	02 11196	COVER=SHAFT RETAINER=304S/S	
D,E	16	02 14359	SPACER SHT RETNR-LG OUR MATL	
F	16	02 11186	RETAINER+SPACER-SHAFT=4226	
D,E	17	15B200	HEXCAPSCR 3/4-10X1+3/4 SS18-8	
F	17	15B208	HEXCAPSCR 3/4-10X2+1/4 SS18-8	

Used In	Item	Part Number	Description	Comments
aIl	18	15U350	LOCKWASHER 3/4 MED SS18-8	
aIl	19	98E006	HI TECH HAND SOAP PINK 4GL/CS	
aIl	20	02 09126	SHAFTKEY-SS303=OEWS 2+5/8"L	
aIl	21	15N082	FILMACSCR 8-32UNC2X3/8SS18-8	
G,H,J	22	ASF14801	*SHELL FRONT ASSY=3621RWP	
K,L	22	ASF119001	*SHELL FRONT+DOORASSY 4226RWP	
G	23	ASE14803	*SHELL+BASE+FRAME ASSY 3621QU	
H	23	ASE14802B	*SHELL+BASE+FRAME ASSY 3626Q7	
J	23	ASE14802C	SHELL+BASE+FRAME=36V7	
K	23	ASE119001A	SHELL+H FRAME ASSY 42R6P&G	
L	23	ASE119001E	SHELL+H FRAME 4226V	
G,H,J	24	Y2 09031	*SHELL CLAMP RING=36" MACHINE	
K,L	24	Y2 12053	*SHELLCLAMP RING=42" MACHINE	
G,H,J	25	02 02087A	EXTRUS*ION-SHELL=36" MACHINES (
K,L	25	02 02087B	EXTRUS*ION-SHELL=42"OEWS (12.5	
aIl	26	02 02181	GUARD=SHELL MOUNT RING CLIP	
aIl	27	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	
aIl	28	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
aIl	29	15K046S	HEXCAPSCR 1/4-20UNC2A X 2.25 S	
aIl	30	15G170	HEXNUT 1/4-20UNC2 SS18-8	
G,H,J	31	G13 3626QR	CONDUIT ASSY, 3626QXP,J,G	
K,L	31	G13 4226QR	CONDUIT ASSY, 4226QXP,J,G	
aIl	32	12K077	STRAP 1/2" HVY CONDUIT 2-HOLE	
aIl	33	15K037	HEXCAPSCR 1/4-20UNC2A X5/8 GR5	
aIl	34	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
aIl	35	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	

Main Bearing Assembly

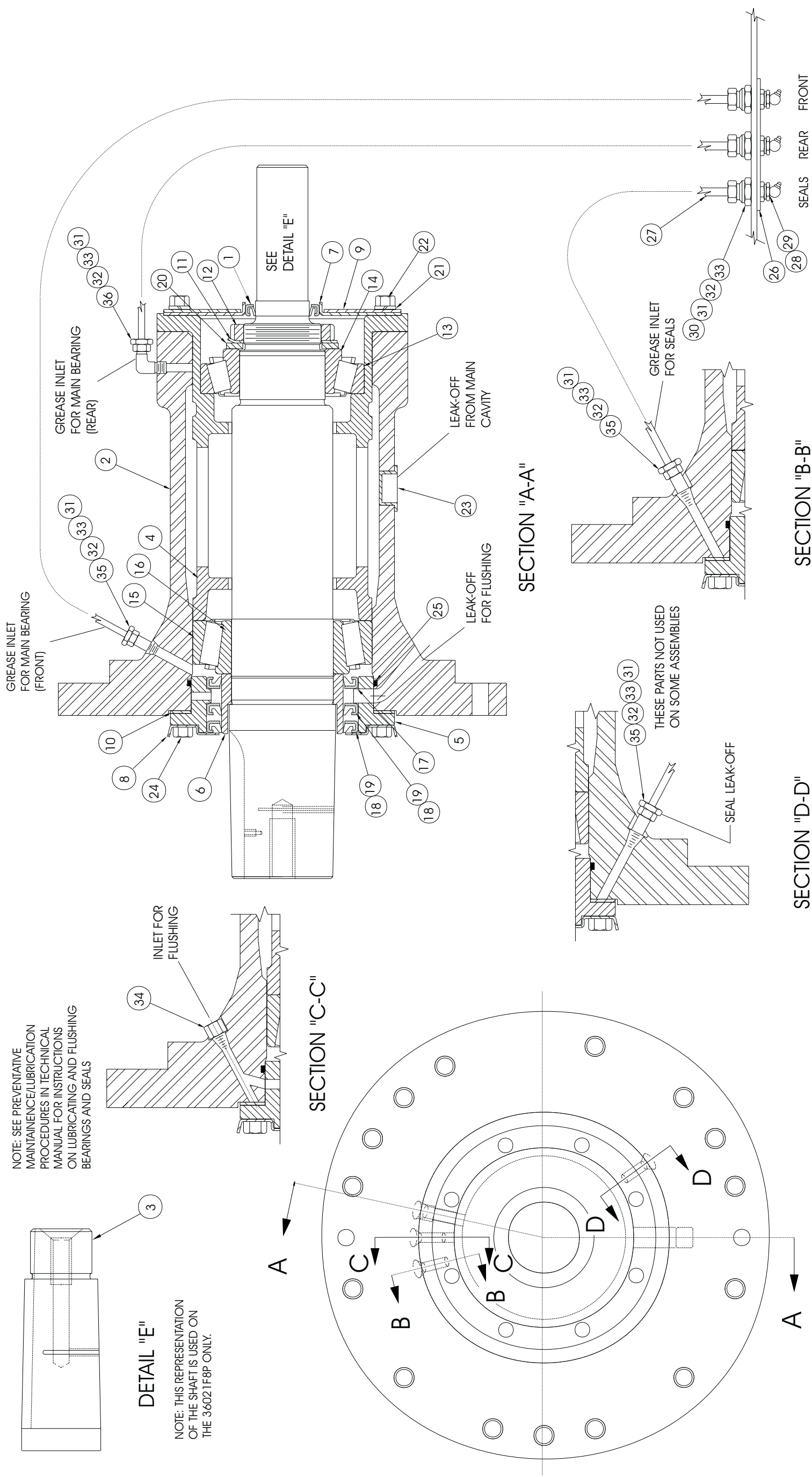
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Parts List—Main Bearing Assembly
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The 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		ABM14007	MAIN BEARING ASSY 3621F8P	36021F8P
B		ABM14802	BEARING ASSY 36QJ/P	36026Q6P
C		ABM14801	MAINBRG ASSY 3621/26RWPIE	36026V7J
D		ABM119001A	MAIN BEARING ASSY 4226Q6P&G	42026Q6P/G, 42026V6P/G
			COMPONENTS	
all	1	24S104	SEAL 1.75X2.378X.312 CS/BUNA	
all	2	X2 14220L	MAIN BRG HOUSE 4226RWP	
A	3	X2 14628	MAINSHAFT 3621QH/P	36021F8P
B	3	X2 14562	MAINSHAFT 3621-26 Q6P	36036Q6P
C	3	X2 14560	MAINSHAFT 3621-26 RWP	36026V7J
D	3	X2 11185	MAINSHAFT=4226 QWE	42026Q6P/G
D	3	X2 11185B	MAIN SHAFT=4226RWP	42026V6P/G
all	4	X2 14227A	CARRIER=REAR BRG+SPCR-3621	
all	5	X2 14229L	MACH=SEAL HOLDER 4226RWP	
all	6	02 14228A	SEALSLEEVE+SPACER=2.90LG	
all	7	X2 11158	SEALHOLDER-REAR=SUPPORT MOD	
all	8	02 14214L	WASHER=SEAL RETAIN &LOCKING	
all	9	X2 11158A	SPACER=SEALHOLDER-REAR SUPT	
all	9	X2 11158C	SHIM=BRGHOUSE MTG 24GA	
all	10	02 14216L	GASKET=SEAL HOLDER 1/16 THK	
all	11	56AHW113	TW113 BEARING LOCKWASHER	
all	12	56AHN13	N13 BEARING LOCKNUT	
all	13	54A335	CUP H414210 TIM 2-24 1/BX+PT#	
all	14	54A465	CONE H414249 TIMK 2-51 1BX+PT#	
all	15	54A325	CUP TIM #742 1/BX+PART#	
all	16	54A426	CONE TIM #749 1/BX+PART#	
all	17	24S125	SEAL 4X5X.4 JM#19583 NITRILE	
all	18	24S125	SEAL 4X5X.4 JM#19583 NITRILE	

Used In	Item	Part Number	Description	Comments
all	19	24S125V	SEAL 4X5X.4 JM#19583 VITON	OPTIONAL VITON SEALS
all	21	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	22	15K113	HXCPCSC 3/8 16X1+1/2 GR8 Z	
all	23	51P046	PLUGCAPTAPERED NOTHD PLAS.#54	
all	24	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
all	25	60C160E	ORING 5.984ID1/8CS BUNA70 #258	
all	26	01 10025Z	NPLT:BEARING&SEAL LUB-42" & 36"	
all	27	60E004TE	1/4"OD X.170"ID NYL TUBING	
all	28	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	29	54M020	GREASEFIT 30DEG 1611-B ALEMITE	
all	30	53A007B	BODYFEMCON.25X.25COMP#B66A-4B	
all	31	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	32	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	33	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	34	5SP0CFESSV	NPTPLUG1/8SQSLDBLKSTL LVENT125	
all	35	53A005B	BODYMALCON1/4X1/8COMP #B68A-4A	
all	36	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	37	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	38	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	39	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	

Section

4

Shell and Door Assemblies

Shellfront Assembly, Conduit, and Interlock

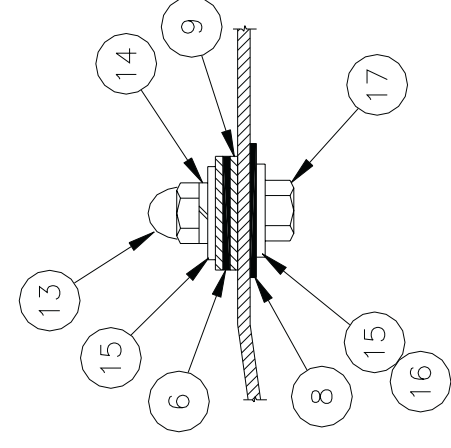
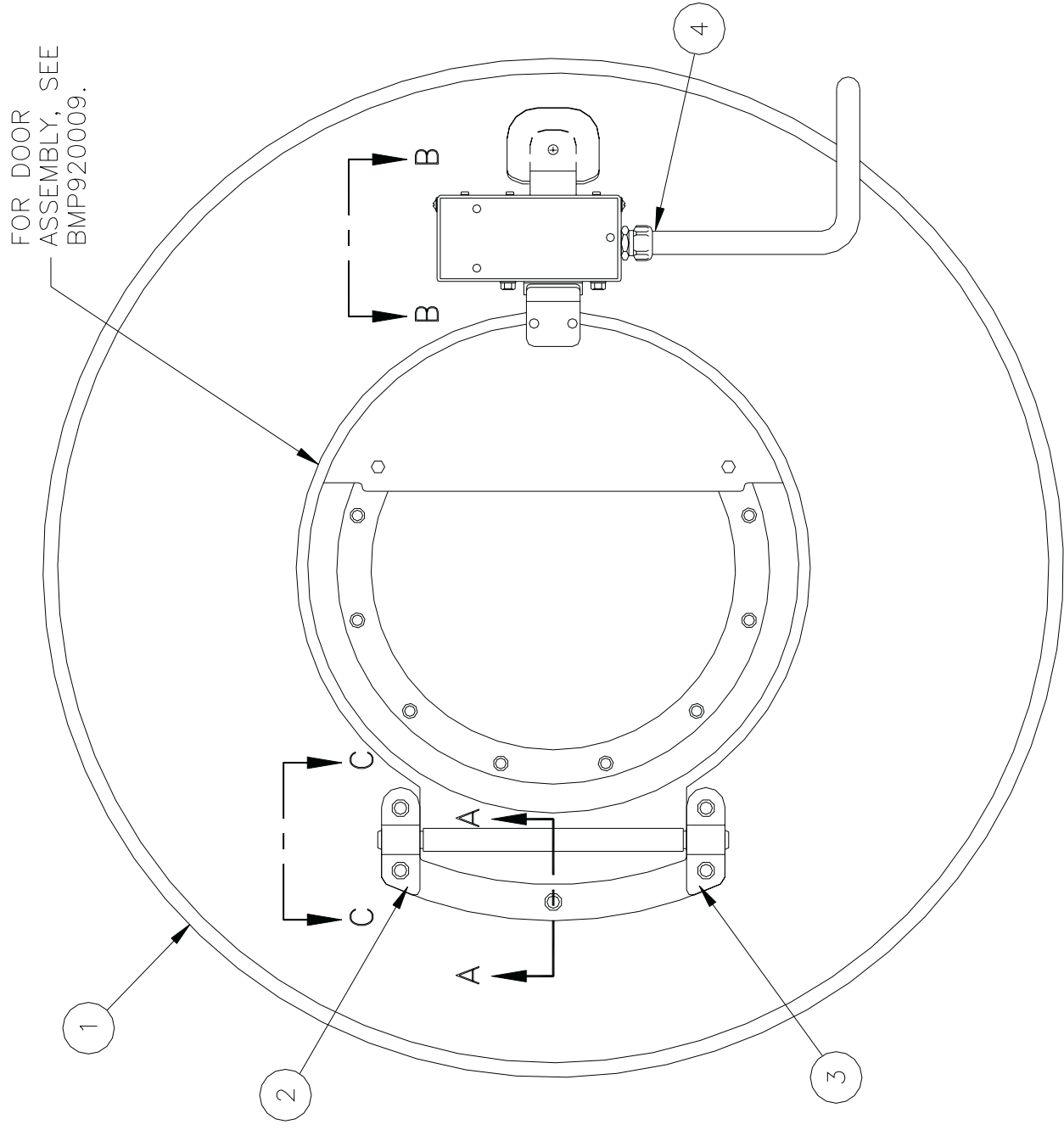
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(Sheet 1 of 2)

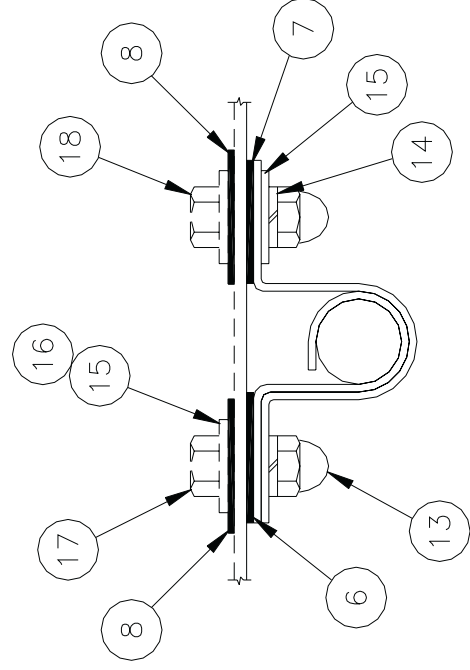
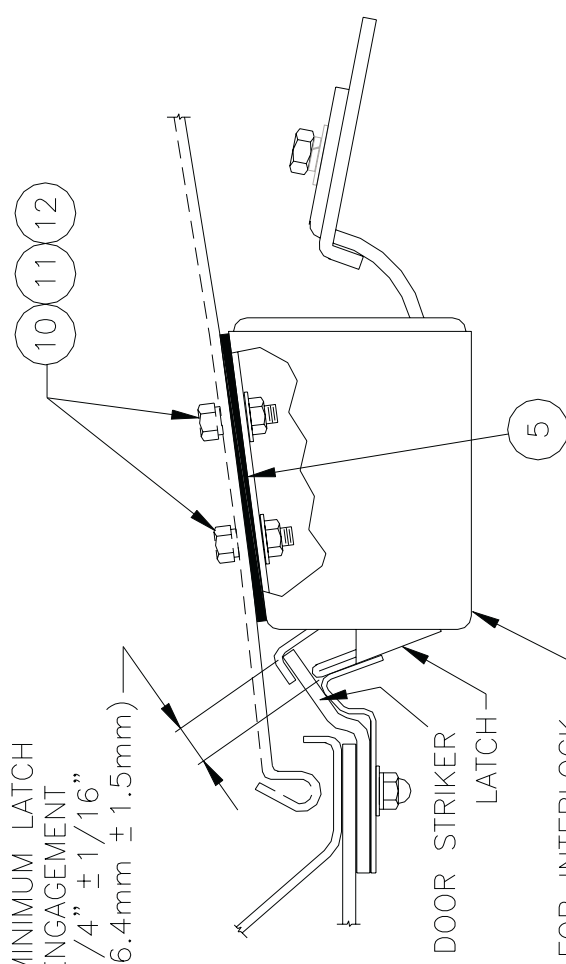


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MINIMUM LATCH ENGAGEMENT
1/4" ± 1/16"
(6.4mm ± 1.5mm)



ADJUSTMENTS:

1. ADJUST DOOR STRIKER SO THAT IT TOUCHES THE LATCH SQUARELY AND EVENLY.
2. ADJUST THE LATCH SO THAT THE MINIMUM ENGAGEMENT WITH THE DOOR FULLY CLOSED EQUALS 1/4" ± 1/16" (6.4mm ± 1.5mm).



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Parts List—Shellfront, Conduit, and Interlock
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		GSF14804	*INST=SHEL+BASE+FRME 3621F	36021Q4X
B		GSF14803	*SHELL+BASE+FRAME INST 3621QU	36026Q4X
C		GSF14805	*INST=SHEL+BASE+FRME 3626F	36021Q6X
D		GSF14806	INST=SHELL+BASE+FRM 3626V5	36026Q6X
E		GSF14802B	FRONT+SHELL+BASE 36Q	36026Q4,Q6,J6P
F		GSF14802C	FRONT+SHELL+BASE=36V7	36026V7J
G		GSF119001A	FRONT+SHELL+BASE 42R6P+G	42026Q4G,J,P
H		GSF119001V	FRONT+SHELL+BASE 4226V	
J		ASF14801	*SHELL FRONT ASSY=3621RWP	USED IN A-D
K		ASF119001	*SHELL FRONT+DOORASSY 4226RWP	USED IN E
L		GSF14808A	3621 SHELLFRONT INSTALL	3621C4E
M		ASF14801A	3621C4 SHELLFRONT ASSY	USED IN L
			-----COMPONENTS-----	
F	1	X2 14195A	SHELLFRONT ALL .36" W/ILLOCK	
G	1	X2 11904R	SHELLFRONT STAMPING 42RWP	
M	1	X2 14195B	SHELLFRONT I-LOC W/PROX	
all	2	02 09223	DOUBLER=UPPER S/S DOOR HINGE	
all	3	02 09224	DOUBLE=LOWER S/S DOOR HINGE	
A-B	4	G13 3626QR	CONDUIT ASSY;3626QM/7JW	
C-D,L	4	G13 3626FR	CONDUIT ASSY;3626QM,LT FRAME	
all	5	02 03669	GASKET=INTRLK HOUSING	
M	5	02 03699C	GASKET=INTRLK HOUSING 8" LONG	
all	6	02 09221G	SPACER GASKET=HINGE	
all	7	02 11944	DOOR HINGE DOUBLER=SPACER42Q	
all	8	02 02293	DOOR HANDLE NUT GASKET	
all	9	03 11054A	SPACER=DOOR HINGE/4226	
all	10	15N174	HXCAPSCR 1/4-20UNC2X5/8SS18-8	
all	11	24G020N	ROLLED WASH.252ID NYLTITE 25W	
all	12	15G168	SQ Nut 1/4-20UNC2 SS18-8	
all	13	15G200	HXCPNUT 3/8-16 UNC2A 5/8X1/2	
all	13	15G200C	HXCPNUT HI 3/8-16 BRASS NIK PL	
all	14	15U238	LOKWAS INTOOTH 3/8" (US STD) 4	
all	15	15U245	FLTWASH 3/8 STD COMM 18-8 SS	

Used In	Item	Part Number	Description	Comments
all	16	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	17	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	
all	17	15K086D	HXCAPSCR 3/8-16 UNC2A X 7/8" 1	
all	18	15K083V	BUTSOKCAPSCR 3/8-16X3/4 SS18-8	

Door Assembly

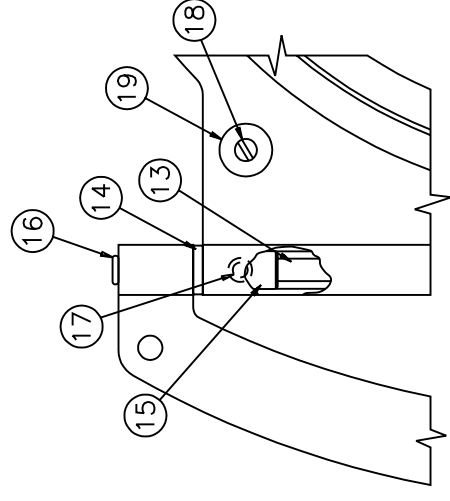
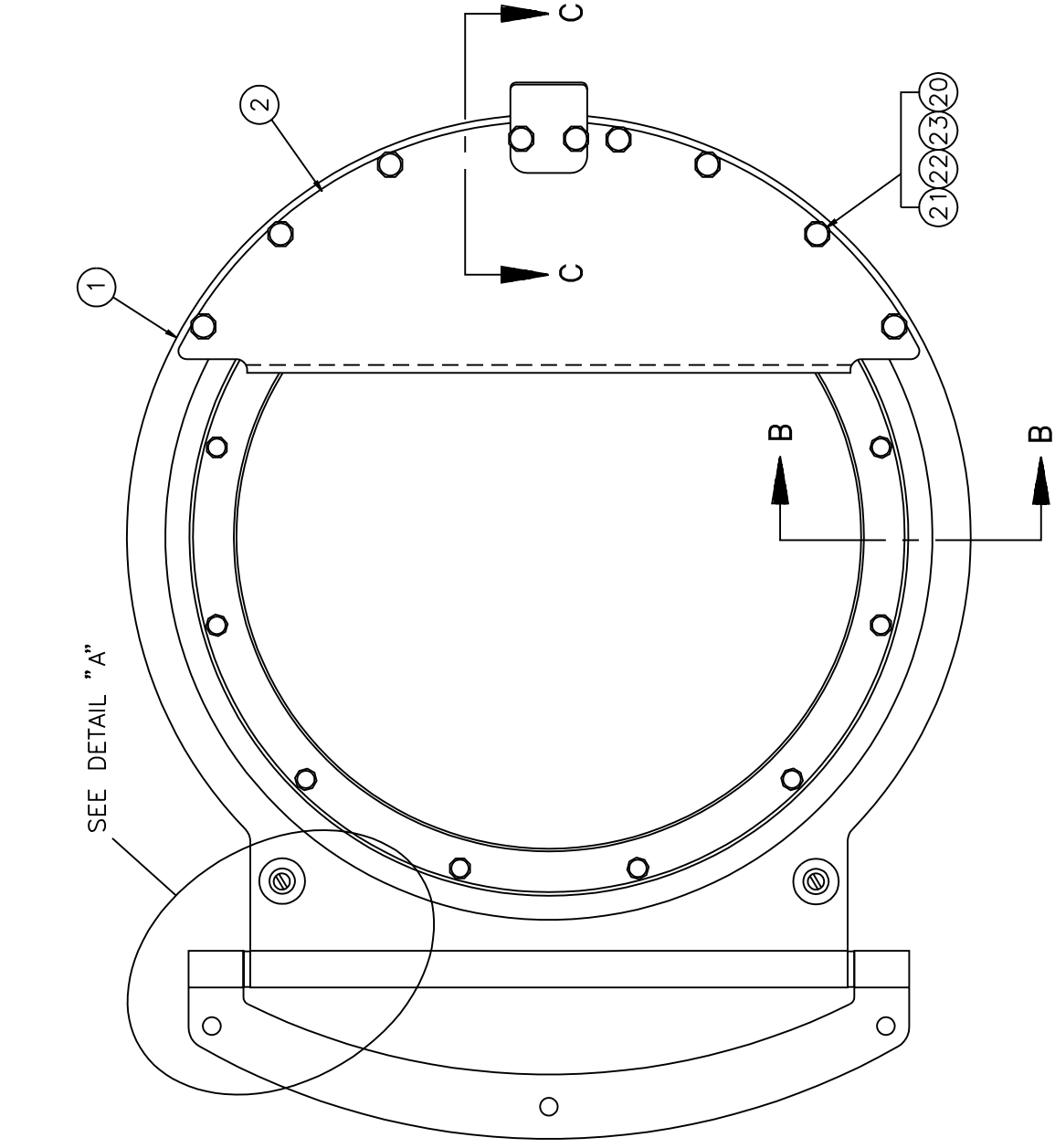
36021/36026/42026Qxx,Vxx 36030F8J,F8P,F8W,F8S,F8R 3621C4E

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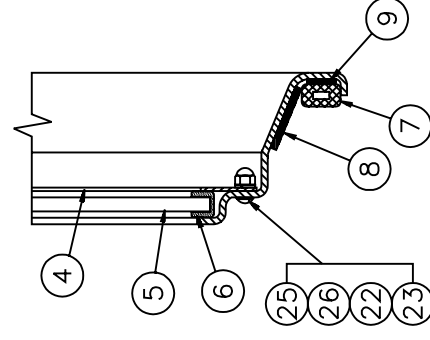


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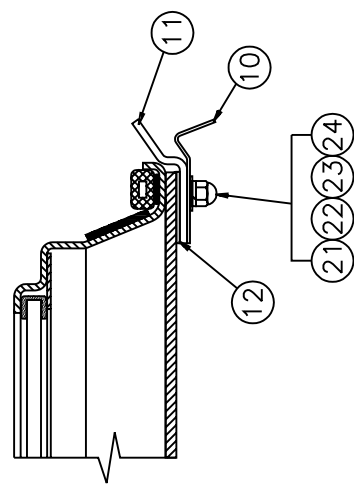
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DETAIL "A"



SECTION "B-B"



SECTION "C-C"



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Used In	Item	Part Number	Description	Comments
	A	A13 03500C	* SHELLDOOR ASSY, DRAWN =36QWE	36021,36026QXX, 36030F8
	B	ASD119001	*DOOR ASSY-DRAWN=4226 RWP	42026QXX
	C	A13 03500G	ASSY=SHELLDOOR DRAWN, 36XX	3621C4E
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
A	1	X2 09220C	SHELL DOOR DRWN-QWE ILOC	
B	1	W2 11904T	*DOOR WELDMNT=4226 RWP/E	
C	1	X2 09220G	MACH=SHELLDOOR DRAWN, 36XX	
A	2	02 14857	DOOR HANDLE=3626/3621 RWP	
B	2	02 11904E	DOOR HANDLE=ILOC 4226 RWP	
all	3	02 09221	HINGE=SHELL DOOR 18" DRAWN S	
A,C	4	02 09129	RING=DOOR GLASS PRESS-18"OPG	
B	4	02 11904P	RING=GLASS RETAINER-4226RWP	
A,C	5	02 09219	DRGLASS 14+13/16"36W+DRWN DR	
B	5	02 12008	DOORGLASS 17"DIA=4226W DOOR	
A,C	6	02 09141	A GASKET-DORGLAS GTR52-5220-1	
B	6	02 12054	DOOR GLASS GASKET	
A,C	7	02 14168	SPONGE DOORGASKET=BLACK	
B	7	02 11904V	DOOR GASKET 4226RWP MED BLACK	
A,C	8	02 14431	EXTR BAND STAMPED SS CYLDOOR	
B	8	02 11904U	BUMPER=CYL DOOR STAMPED42RWP	
B only	9	60A003B	NEO RUBBER STRIP 1/8" X 1" CLS	
A,B	10	03 01423C	LATCH GUARD ILOC 3015-20	
C	10	03 01423H	LATCH GUARD = ILOC 3015-20	
A,B	11	03 01420A	DOOR STRIKER=ILOC	
C	11	03 01420G	DOOR STRIKER = ILOC	
A,B	12	02 11904K	SHIM=DOOR HANDLE=4226RWP	
C	12	02 09263	SHIM=SHELLDOOR LATCH, 36XX	
all	13	02 12144	PIN-HINGE=20+18" DOORS	
all	14	02 02817	FLANGE BRG=DOOR HINGE-NYLON	
all	15	02 02815	PLAIN BRG=DOOR HINGE-NYLON	
all	16	12P1AGHP1	HOLEPLUG 3/8"BLACK LPE	
all	17	15Q077	SOKSETSCR 1/4-20X1/4 ZINC ALLE	
A,C	18	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	

Parts List, cont.—Door Assembly

Used In	Item	Part Number	Description	Comments
A,C	19	60C080	RECESS BUMPER RUBBERLAVELLE #7	
A,C	20	15N176	FLATMACSCR 1/4-20NCX3/4SS18-8	
B	20	15N173A	FLTMACSCR 1/4-20 UNCX5/8 UCUTS	
all	21	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	22	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	23	15G140	HXCAPNT 1/4-20 #C250=20 NKLPLT	
all	24	15N191	FLATMACHSCR 1/4-20X7/8 SS18-8	
all	25	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	26	24G020N	ROLLED WASH.252ID NYLTITE 25W	

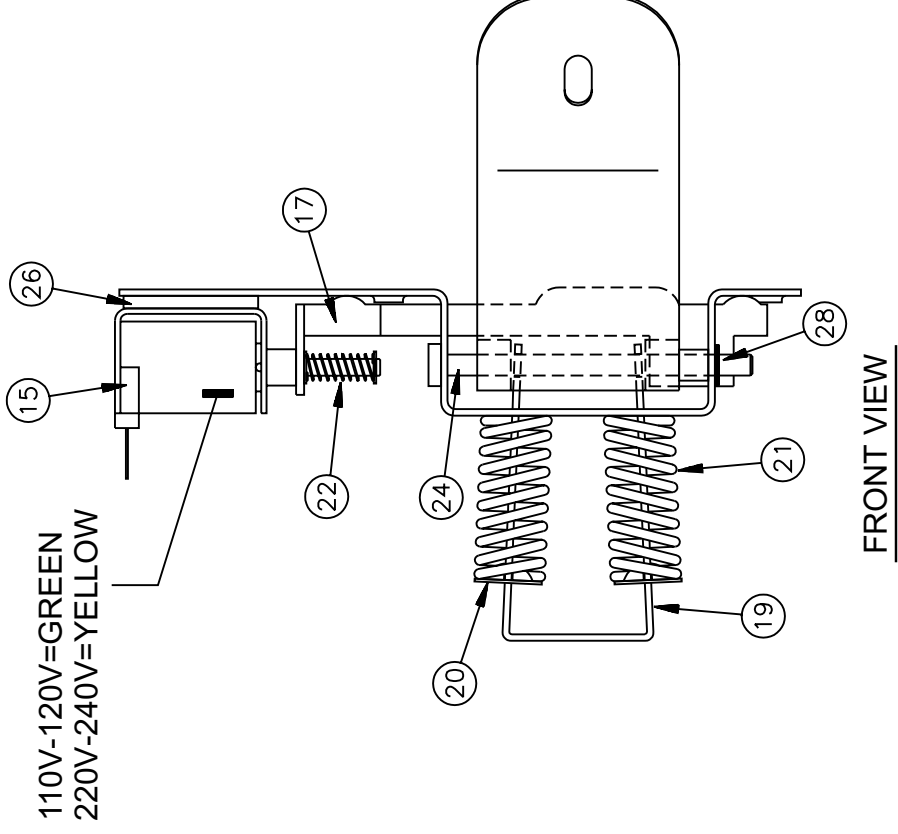
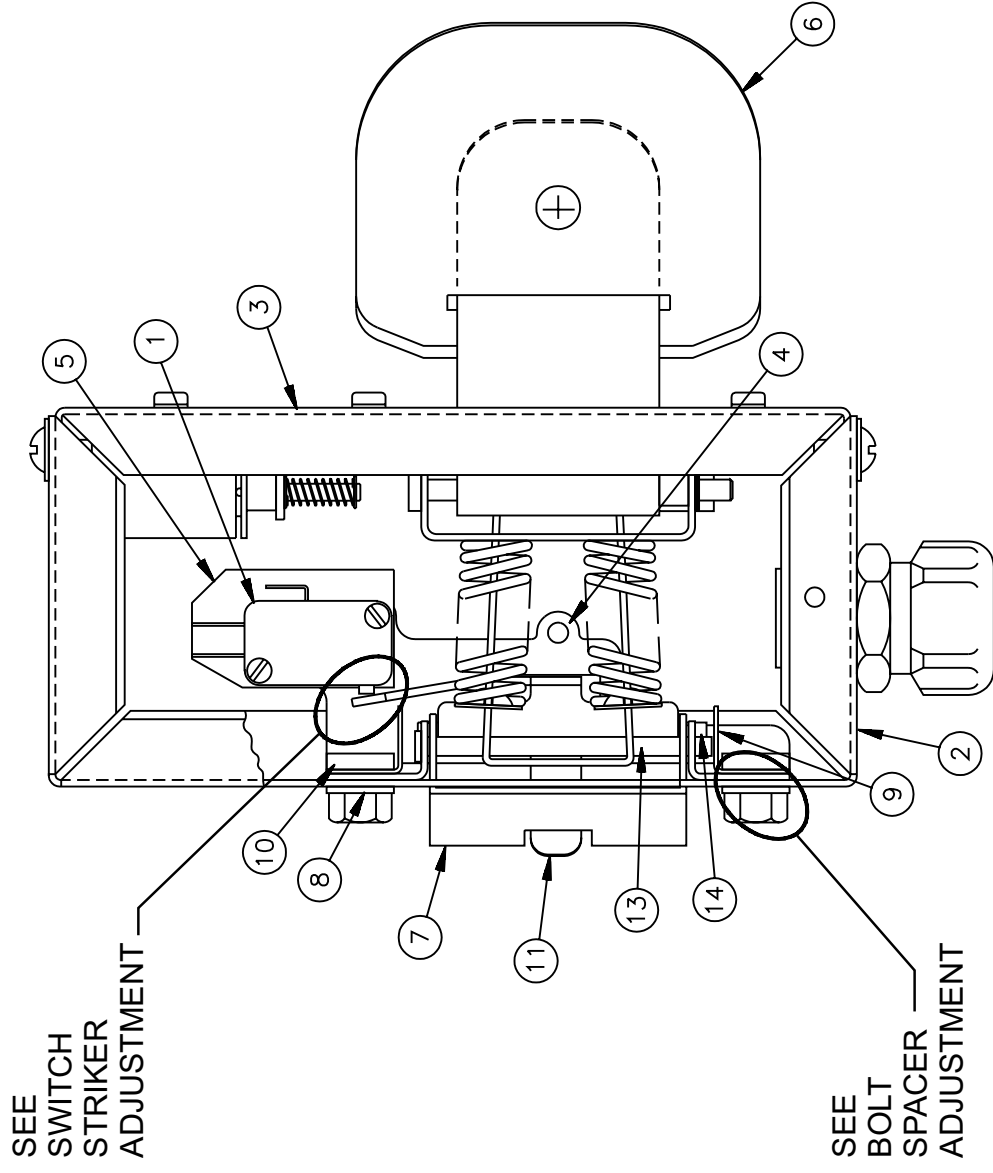
Interlock Assembly

BMP750046/2001036V
(Sheet 1 of 2)



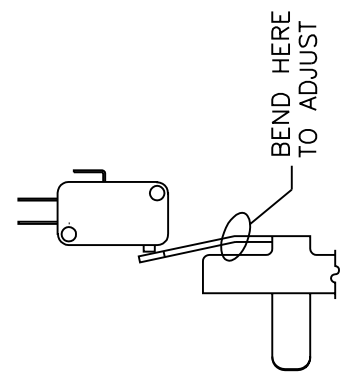
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ASSEMBLIES 00AA,00BB,00CC,00DD

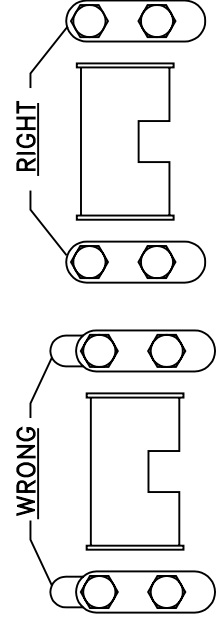
SWITCH STRIKER ADJUSTMENT



Adjust the switch striker arm by bending as shown so that :

- 1) The switch is activated when the door is closed
- 2) The switch does not actuate when the unlatching lever is fully depressed with the door open
- 3) The arm does not over travel and hit the switch housing when the door is closed and the switch is actuated.

BOLT SPACER ADJUSTMENT



Bolt Spacer Adjustment

- 1) On a new machine the slots on the front housing should not show a gap past the bolt spacers.
- 2) The spacers should be installed with the long side toward the shellfront



Parts List—Interlock 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	EDL00171		88093# INTRLKHSG ASSY=N/UNLOCK 240V	30015V7J,T5J,T5E 3015/20/22 Mxx,Cxx,Vxx
AA	EDL00171A		93207@ RR PIVOT PL ASSY=N/UNLOCK240V	USED ON 00A (CONTAINS ITEMS 15-28)
B	EDL00221		96411 INTRLKHSG ASSY=N/LOCK 220V	3022F8J/PW 3630F8J/PW/S
BB	EDL00271A		93207#*RR PIVOT PL ASSY=N/LOCK 220V	USED ON 00B (CONTAINS ITEMS 15-28)
C	EDL00337		88093#*INTRLKHSG ASSY=N/LOCK 120V	36&42QXX,BWP 3015D4A 36021V6J, 36026V5J 36026V7J, 42026V6J
CC	EDL00337A		93207# RR PIVOT PL ASSY=N/LOCK 120V	USED ON 00C (CONTAINS ITEMS 15-28)
D	EDL00371		94000Z INTERLKHSG=N/LOCK+SWITCH240V	3022V6J,T5J 3022S4J,S4G,S5J 3015K4A,S4J,S5G,S5J
DD	EDL00271A		93207#*RR PIVOT PL ASSY=N/LOCK 220V	USED ON 00D & 00E (CONTAINS ITEMS 15-28)
E	EDL00271		88093#INTRLKHSG ASSY=N/LOCK 220V	30022T5E
			COMPONENTS	
all	1	09R014A	05ZMIMI-SW SPDT STAKON #V15G1C26K	
all	2	03 01426	77201D HOUSING=FRONT=ILOC	
D only	2	03 01426A	94186D HOUSING=FRONT= ILOC W/UNLATCH	
all	3	03 01427A	77181C HOUSING=REAR=ILOC (C-7)	
D only	3	03 01427B	94186D HOUSING=REAR=ILOC W/UNLATCH	
all	4	03 01429	75479C PLATE=FNT PIVOT=ILOC	
all	5	03 01335	INSULATOR=AUTOSPOT	
all	6	03 01425A	92683C DOOR HANDLE EXTENSION	
all	7	03 01423	75736B LATCH = INTERLOCK	
all	8	03 01417	75100B PLATE=SPACER=ILOC	
all	9	03 01418B	75194B KEEPER=LATCH PIN/NOTCH	
all	10	03 01418	75100B TAP STRIP=ILOC	

Parts List, cont.—Interlock Assembly

Used In	Item	Part Number	Description	Comments
all	11	03 01424A	90501B STRIKER=SWITCH=LONG TAB	
all	12	03 01442	92697B SOLENOID INSULATION=DR INTRK	(NOT SHOWN)
all	13	03 01443	84251AFLATHDRIVET 5/32X2+5/16 ZINC	
all	14	15H091	01Z STRGHTPIN 5/32"X2.25 LG ZINC	
AA,BB,DD	15	09K062B71	04Z SOLENOID 240/60--220/50 = ILOC	
CC	15	09K062B37	03Z SOLENOID(C-7)120/60--110/50	
all	16	03 01428A	93207C PLATE=REAR PIVOT=ILOC (C-7)	
AA	17	03 01421B	93207B SLIDE=NORMALLY OPEN(C7 SOL)	
BB,DD	17	03 01421A	75736B SLIDE=NORMALLY LOCKED=ILOC	
CC	17	03 01421D	77341B SLIDE=NORMALLY LOCKED(C7-S)	
all	18	03 01425	75479B HANDLE=ILOC	
all	19	03 01422	94256C KEEPER=SPRING=ILOC	
all	20	03 01444A	77503B SPRING CUP = ILOC	
all	21	03 01444	82293ASPRING .51/1.69/46+CADPL	
all	22	03 01445	88481ASPRING .2/.625/.319+CADPL	
all	23	03 01445B	75935B TORQUE SPRING (.53 IN#)CDPL	
all	24	03 01443	84251AFLATHDRIVET 5/32X2+5/16 ZINC	
all	25	15H090I	STRAIGHT PIN 5/32"DIA X1.75"LG ZINC	
AA only	26	03 S1X1	88172B SHIM:DOOR INTLK SOLENOID N4P	
all	27	27B205080Z	SPCROLL.177ID.218L.027T STLZC	
B	27	27B205080E	01ZSPCRRROLL.177ID.25L.027TK CSZNC	
BB,CC,DD	28	03 01418C	75736B KEEPER=NORMLOCKED SLIDE=ILOC	

Section
Control and Sensing

5

VIBRATION SAFETY SWITCH ADJUSTMENTS

B What the Vibration Safety Switch Does

The *vibration safety switch* pictured below is an important safety feature. If properly adjusted, the switch will momentarily actuate as a result of repeated machine movement caused by an out-of-balance condition. Table A below illustrates the effect of the *vibration safety switch* actuation.

Table A—Effect of Tripping Vibration Safety Switch

Machine Model	Function of Vibration Safety Switch
30015, 30020, and 30022	Disables high speed extract
All microprocessor-controlled washer-extractors not listed above, and all dye machines	De-energizes three-wire relay, effectively terminating machine operation

Adjustments

When the machine leaves Milnor[®], the actuator arm is tie-wrapped to prevent damage (except on 30015, 30020, and 30022 models). **This tie wrap must be removed after the machine is set into position but before the machine is operated.**

Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown at right in FIGURE 1, the unit consists of a *sensitive micro-switch* with an extended actuating arm supporting an eccentric weight. The weight may be adjusted by moving it up and down on the arm and by rotating it on the arm. In addition, the *micro-switch* itself may be tilted from side to side.

The sensitivity of the switch increases as the eccentricweight is raised on the actuating arm and decreases as the weight is lowered.

The unit should be adjusted so that the actuating arm will always reset by itself, this being accomplished by rotating either the switch or the weight to give just enough bias to cause the switch to reset. Check the adjustment by moving the arm to the left then slowly releasing it. Make sure the micro-switch clicks when the arm is **slowly** released, thus indicating

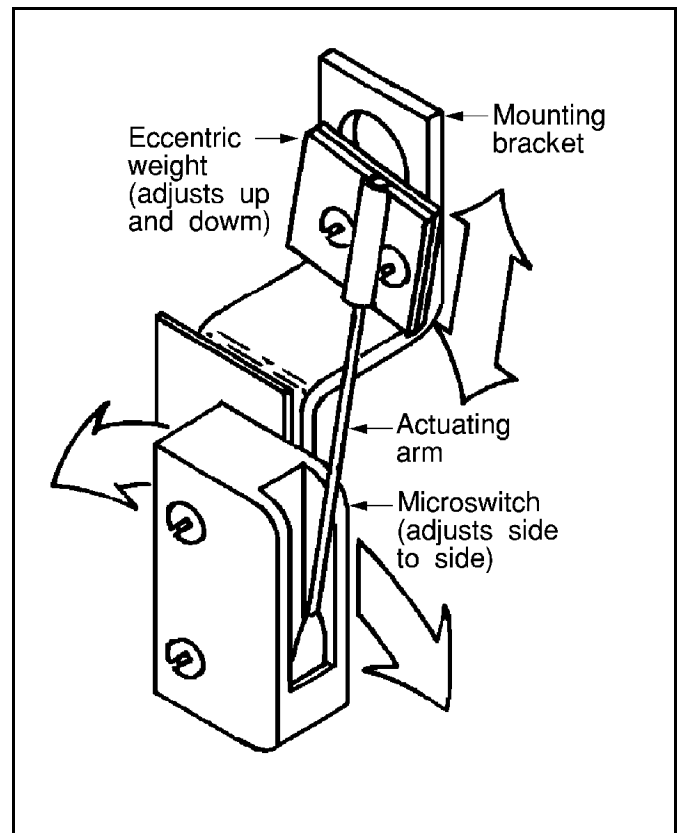


FIGURE 1 (MSSMA408BE)
Vibration Switch

that it has reset. In the released position the arm should rest **lightly** but definitely against the stop on the *micro-switch* case that prevents any further arm movement to the left.

For machines with rigid mounted shells, where the machine is bolted to a very substantial foundation, very little machine movement will occur for a given degree of out-of-balance. Under such conditions it may be better to adjust the switch to be very sensitive. With less substantial foundations (e.g., ones where the sub-soil is mushy or springy or otherwise not as desirable), considerably greater machine movement will occur for a given degree of out-of-balance, in which case a less sensitive *vibration switch* setting may be indicated.

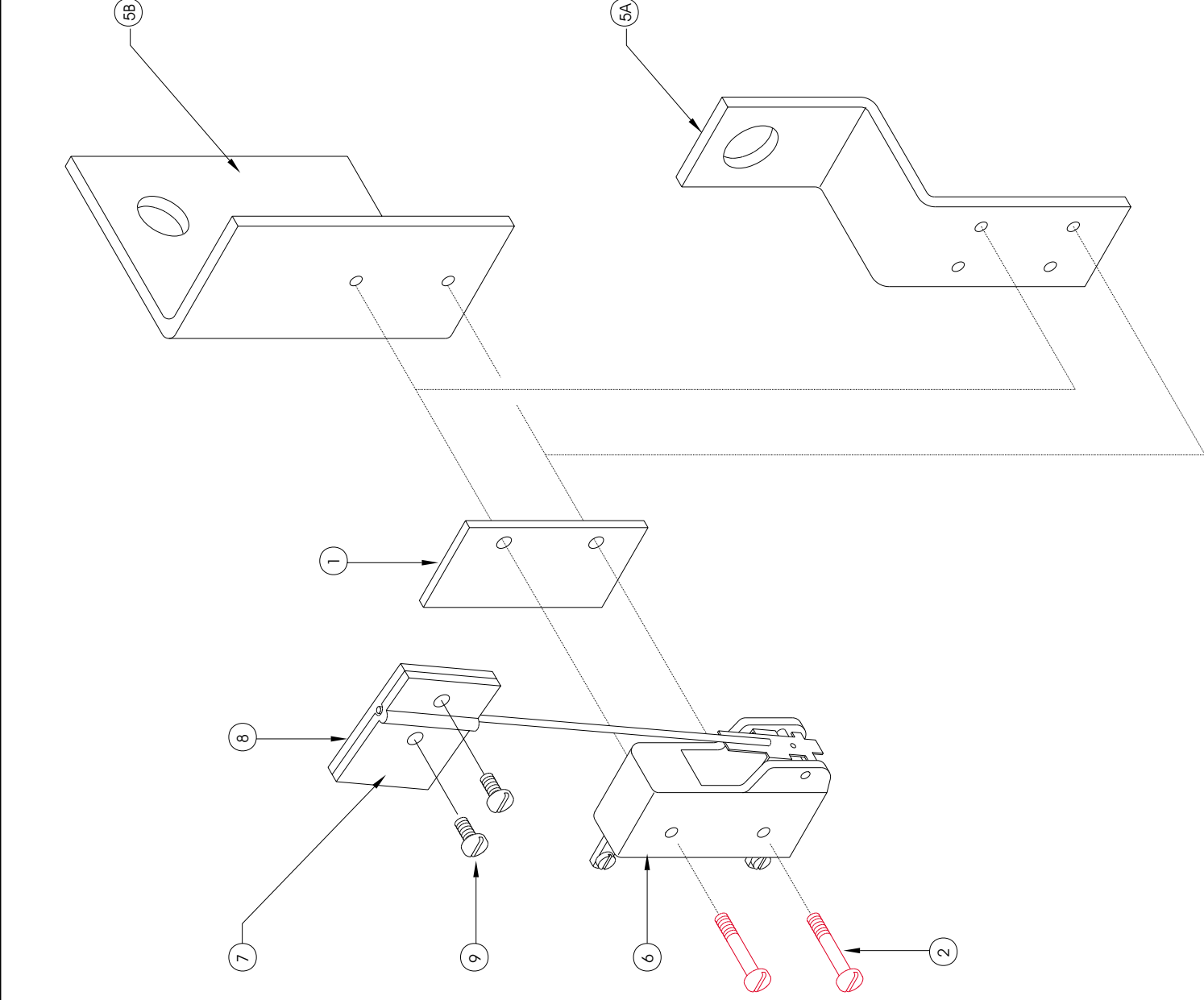
Vibration Safety Switch

BMP910038/2000302V
(Sheet 1 of 1)



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Parts List—Vibration Safety Switch

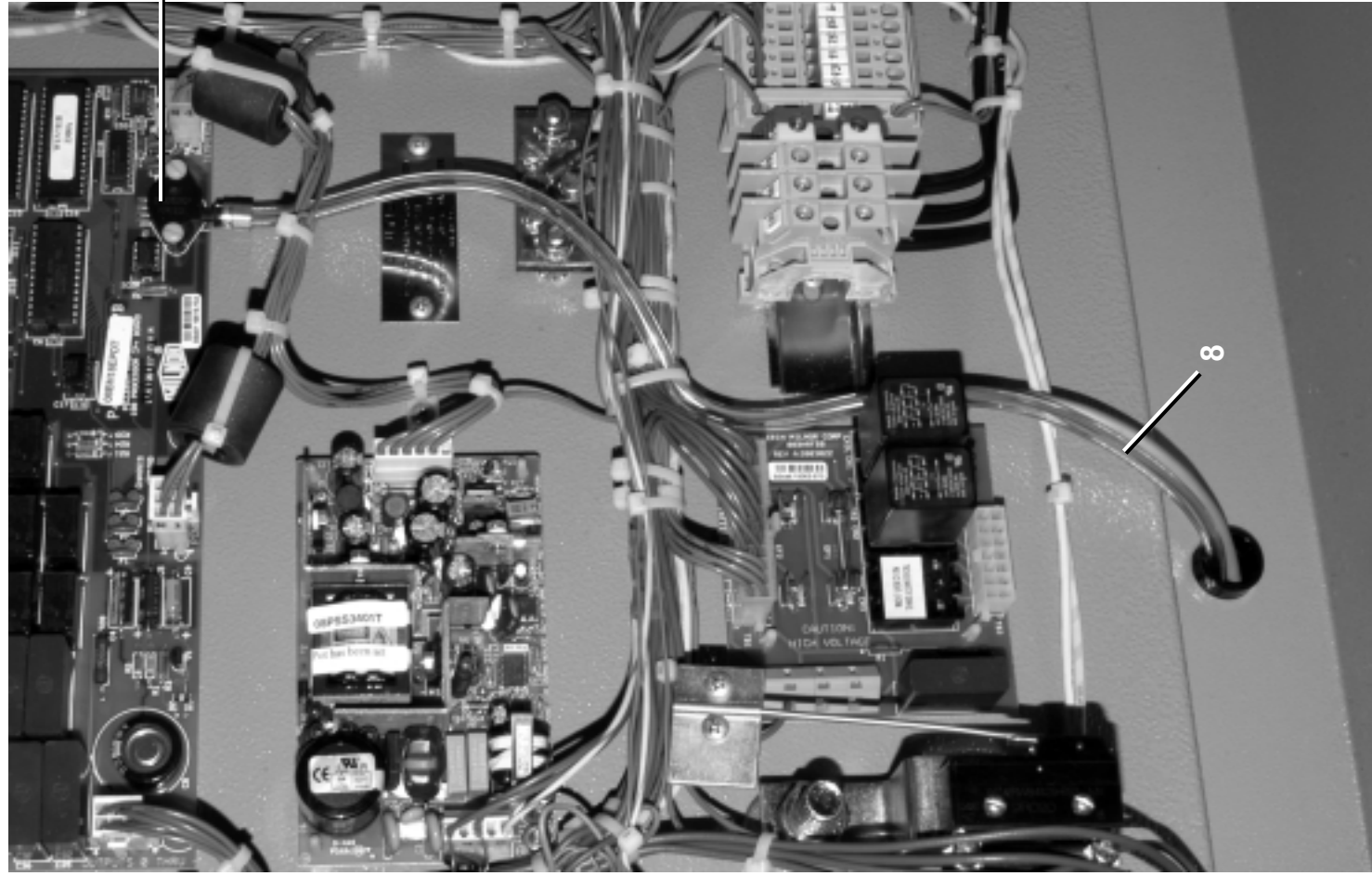
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			-----ASSEMBLIES-----	
A		SAE03 151	* ASSY-VIBRATION SWT=LG CONTR	(ALL MODELS EXCEPT BWP,CPE) CONTAINS 001,002, 005A-009
B		SAE03 151A	*ASSY-VIBRATION SWT=BALCOM	(MODELS 3621BWP,CPE ONLY) CONTAINS 001,002, 005B-009
			-----COMPONENTS-----	
all	1	02 02038	PLATE INSULATING SMALL9NOV51	
all	2	15P008	TRDCUT PANHD 6-32X1 NIKSTL +WA	
A	5	02 15119	BRACKET=VIBSW CAD	
B	5	02 10264	BRACKET=SAFESW CAD	
all	6	09R020	SWITCH NC VIBR#WZ-2RW84429-P52	
all	7	03 01059	VIBSWITCH CLAMP CADSTL	
all	8	03 01058	VIBSWITCH WEIGHT-CADSTL	
all	9	15P101	TRDCUT-F PANHD 8-32X3/8 NIKSTL	

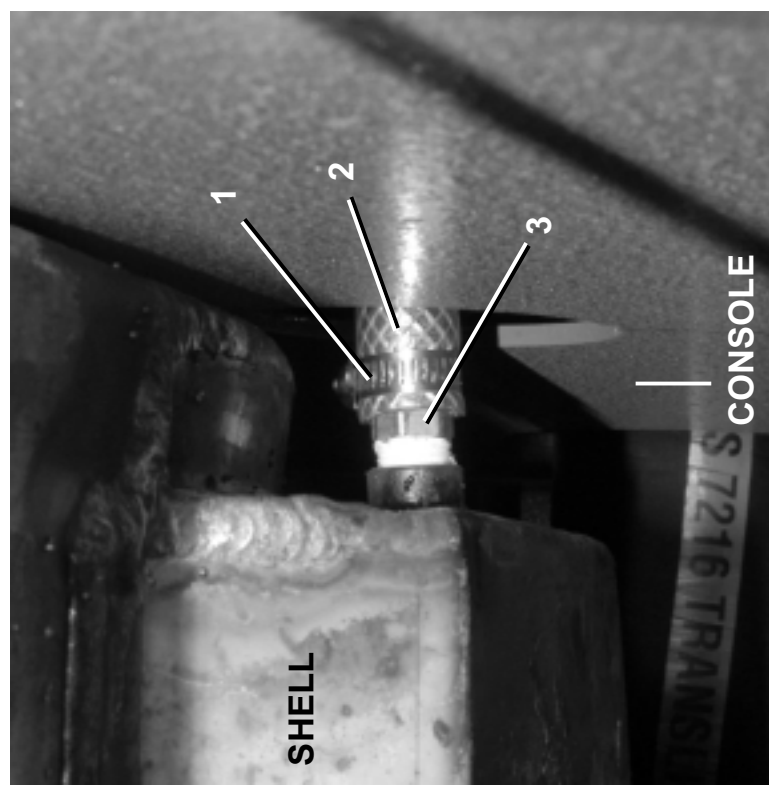
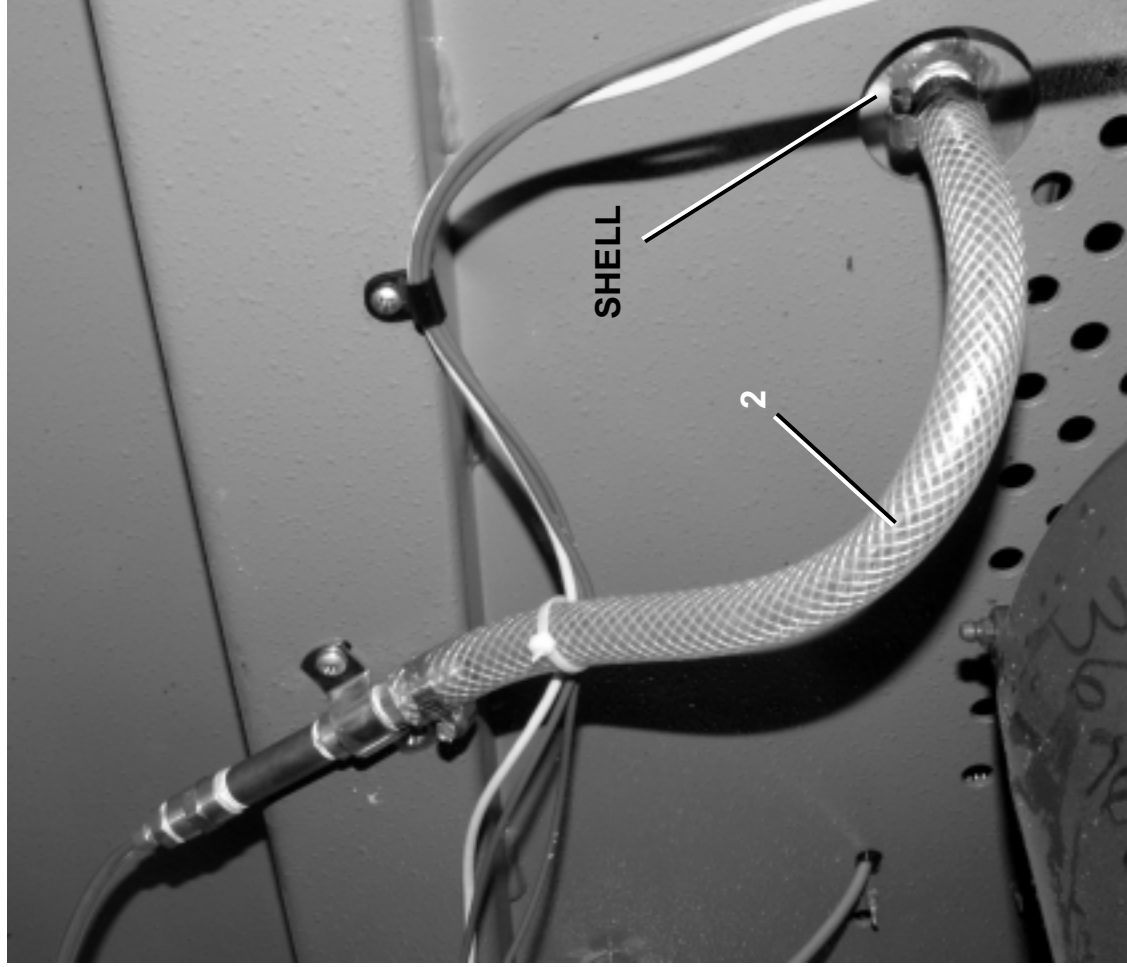
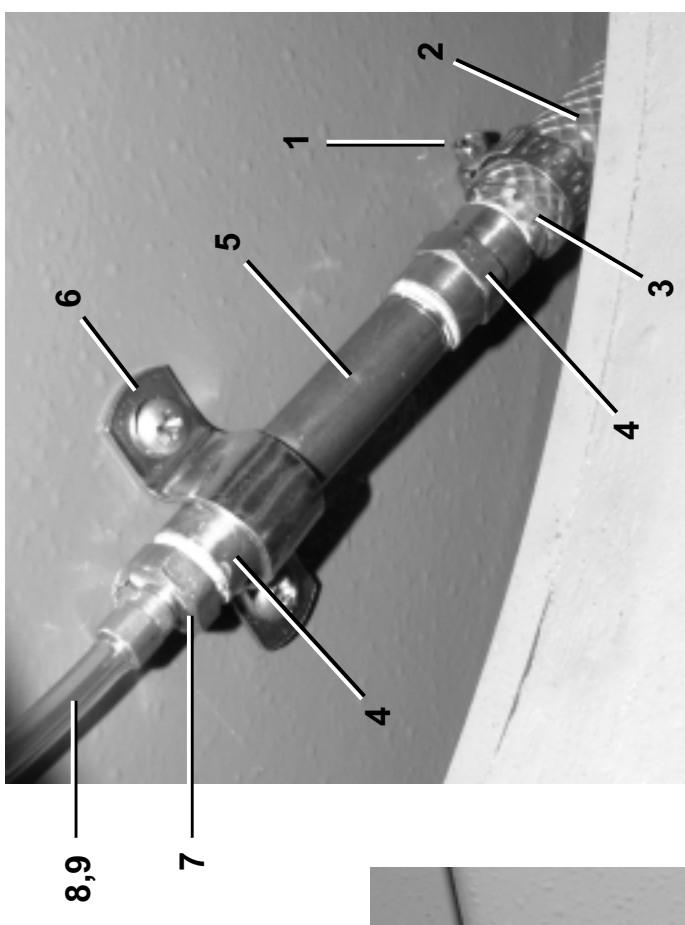


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TRANSUDUCER





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Parts List—Level Sensing

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	1	27A040	HOSECLAMP 5/16-7/8SSSSCR#3606	
all	2	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	3	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	4	5SCC0EBE	NPT COUP 1/4 BRASS 125# W/HEX	
all	5	5N0E02KBE2	NPT NIP 1/4X2.5 TBE BRASS STD	
all	6	12K076	STRAP 1/2"TW CONDUIT 2-HOLE	
all	7	51E502B	HOSESTEM BRASS 1/4MPX1/8HOSEID	
all	8	60E004NT	TUBING (NYL.)CLR.1/4"ODX1/8"	
all	9	12P016	CABLE CLMP-BLACK UL APPROVED	

Section

6

**Chemical and Supply
Devices**

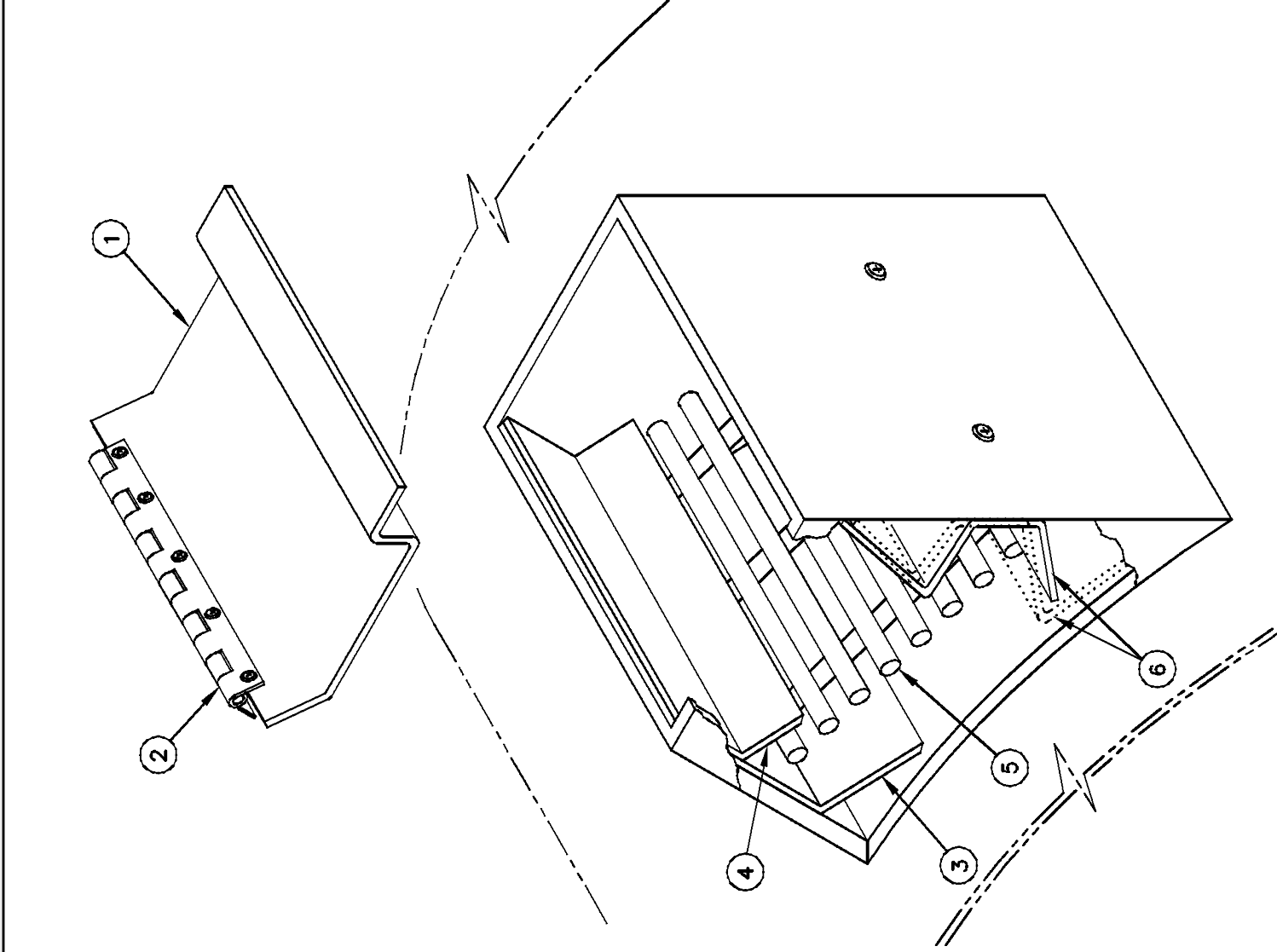
Soap Chute Assembly

BMP870042/2003276V
(Sheet 1 of 1)



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Parts List—Soap Chute 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	-
W		AD 02 013A	80182C SOAP CHUTE ASSY - BALCOM	36TMM,OEW,CPE,NSP,BWP
X		GG514804	89063# SOAP CHUTE INSTL 36RWP	36026V5J,V7J 36021/36026QXX 3621C4E
Y		GG5119002	89063D SOAP CHUTE INSTL 42RWP	42026V6J 42026QXX
Z		SA 02 065	81223B COVER ASSY=SOAP CHUTE	CONTAINS 1 & 2
-	-	-	COMPONENTS	-
Z	1	02 02739	91046B SOAP CHUTE COVER YOUR MATL	
Z	2	02 02706	87456A HINGE=SOAP CHUTE	
X,Y	3	02 10262A	78327B SPLASHPLATE,REAR=42Q SOAPCHT	
X,Y	4	02 11932	86361B PLATE-ANTI SPLASH 42 RWP	
W,X	5	02 02326A	78252B GUARD-BALCOM SOAP CHUTE	
Y	5	02 02326B	89063B GUARD-RWP SOAP CHUTE SPCL	
X	6	02 11936	87163C PLATE=ANTISPLASH RWP	
Y	6	02 11936A	89063C ANTI-SPLASH PLATE RWP SPCL	

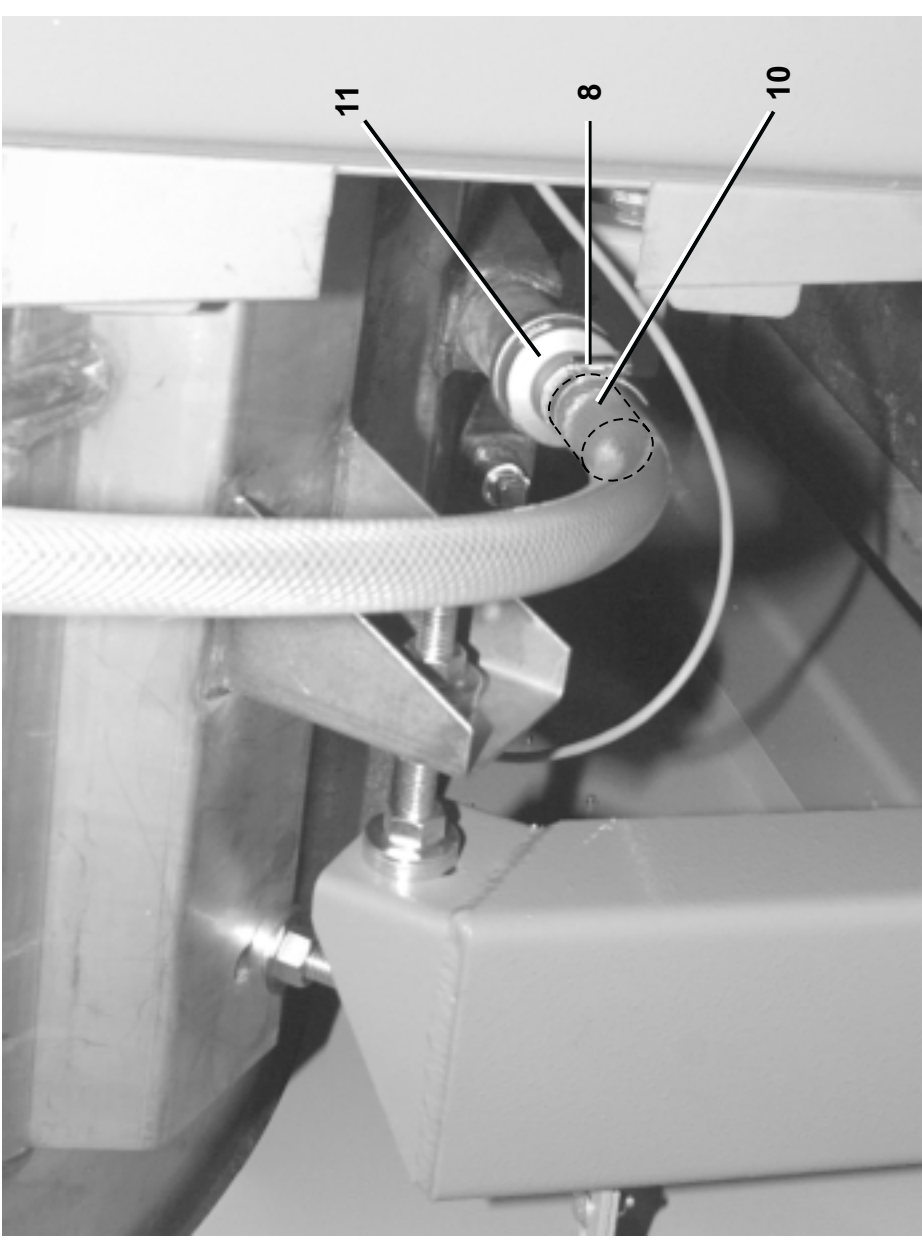
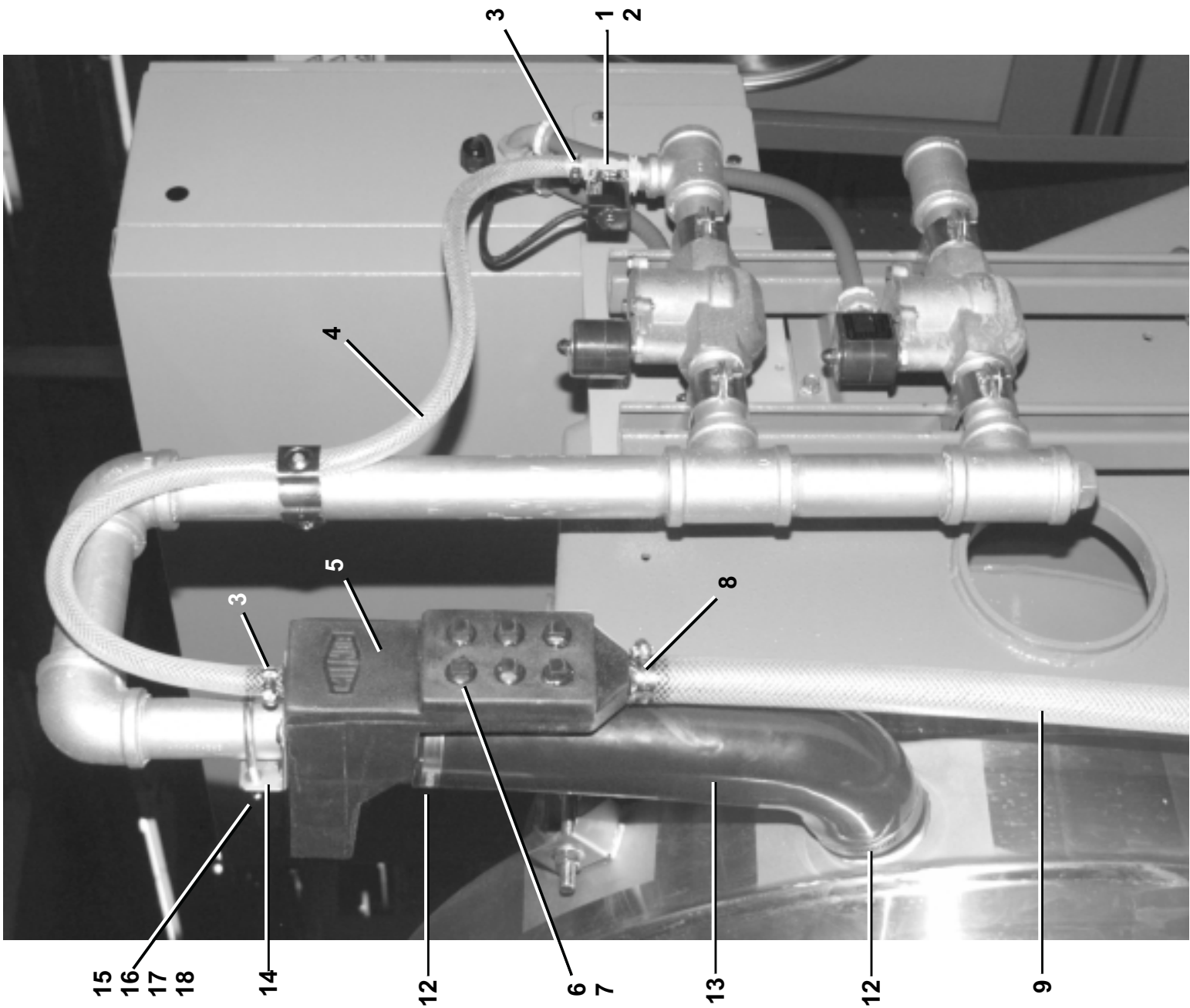
**Peristaltic Supply Assembly
36026V5J, 36026V7J, 42026V6J**

BMP000043/2001242V
(Sheet 1 of 2)



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

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Parts List—Peristaltic Supply 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	GA 33 058S	INST=H2O+PERSTAL INLET 36/42	
			-----COMPONENTS-----	
all	1	96P055A37	3/4"NPT INLET 1/2"OUTLET 120V	
all	2	96J061	FLOW REGULATOR #MR04-101	
all	3	27A040	HOSE CLAMP 5/16-7/8 SS SCR	
all	4	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	5	02 03588D	PARISTALTIC/WATER INLET 3642	
all	6	51PB0GN	PLUG PIPE 3/8"NPT P-38 HD POLY	
all	7	20C040	SIL SEAL RTV BLACK 85GR #59330	
all	8	27A044	HOSECLAMP 5/8"ID BREEZE#6706SS	
all	9	60E010	TUBINGPOLYBRAID 1"X1.312	
all	10	5N0P02AS81	NPT NIP 3/4X2 TOE 304SS SK80	
all	11	5SR1K0PSF	NPT RED 1.5X3/4 SS304 150#	
all	12	27A082S	HOSECLAMP 2+9/16-3.5SS305SCR	
all	13	02 03588C	3642 INLET	
all	14	02 03588L	36/42V PERISTALTIC BOX BRKT	
all	15	15K054	HXCAPSCR 5/16-18X3/4 GR5 XYLAN	
all	16	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	17	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
all	18	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR	

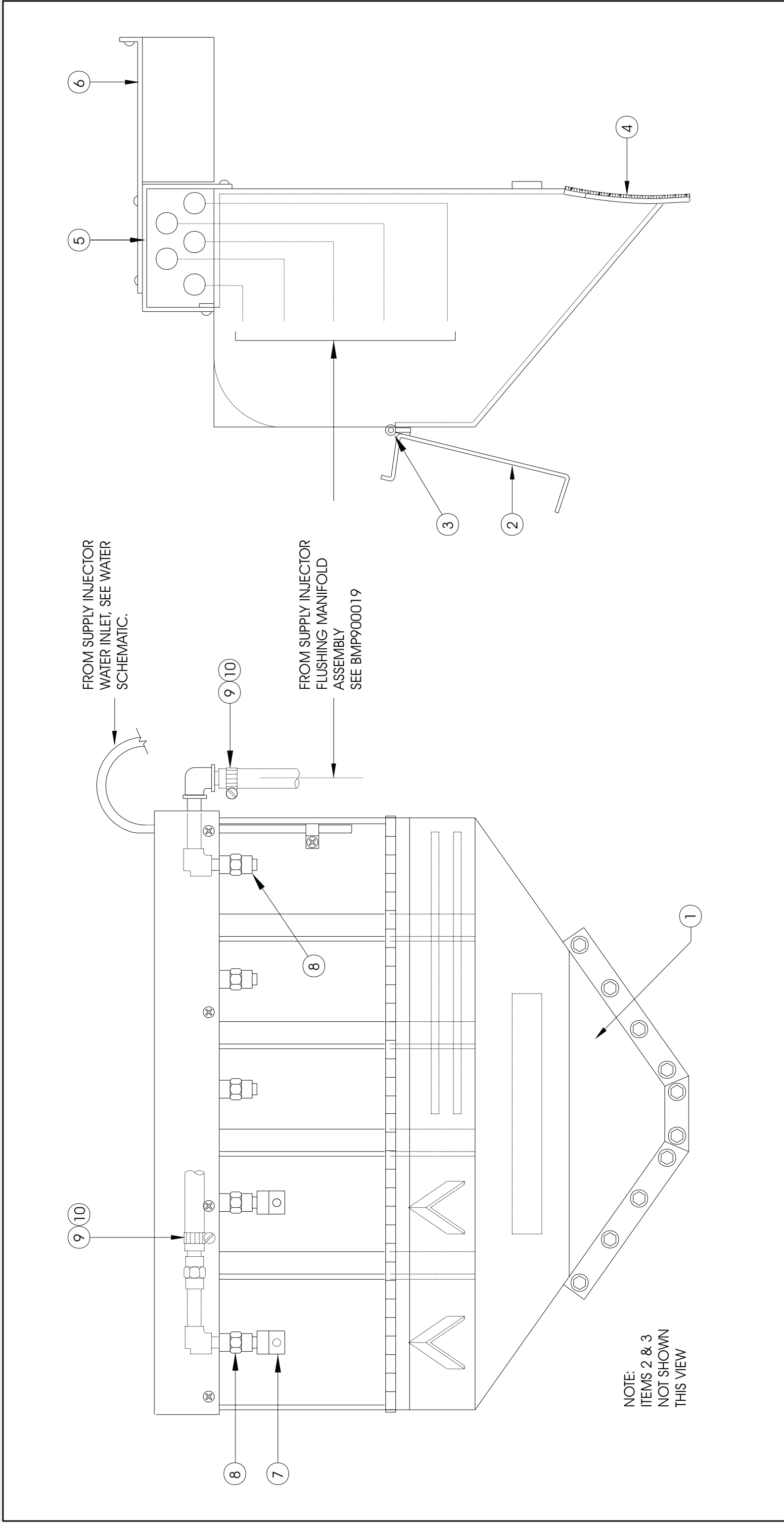
5 Compartment Supply
36021BWP, 36021/36026/42026Qxx, 36026/42026Vxx

BMP860026/2000333V
 (Sheet 1 of 2)



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Parts List—5 Compartment Supply

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-----				
	V	GWS119002	INSTAL=SUPPLY INV ASSY RWP	42026Qxx, 42026V6J
	W	GWS14802	INSTAL=SUPPLY INJ ASSY 36RWP	3602136026Qxx 36026V5J,V7J
	X	AWS119001A	SUPPLY INJ ASSY 3621Q	V-W , 36021BWP
	Y	AWI11007A	MANIFOLD=5 FLUSH 36/42Q'S	X
	Z	SA 09 047	COVER=SUPPLY INJECTOR	X (CONTAINS ITEMS 2-3)
-----COMPONENTS-----				
X	1	Y2 09096R	*SUP-CHOTE 5FLUSH RWP+	
Z	2	02 09182	LID=SUPPLY INJECTOR	
Z	3	02 09105	HINGE=VALVE ENCLOSURE STNSTL	
V,W	4	02 09113	SUPPLY CHUTE SHELL GASKET	
X	5	W2 11953	*WLDMT=INJECTOR TUBE ENCL RWP	
V	6	02 10266B	BRACE SUPPLY INJECTOR 42RWPE	
W	6	02 10266C	BRACE-SUPPLY INJECTOR 36RWPE	
	7	5SLOGBEL	NPTLNB 45DEG STRT 3/8 BRASS125	
	8	5SCC0GBE	NPT COUP 3/8 BRASS 125# 103A-C	
	9	27A040	HOSE CLAMP 5/16-7/8 SS SCR	
	10	51E505	HOSESTEM BRASS 3/8H XMPT	

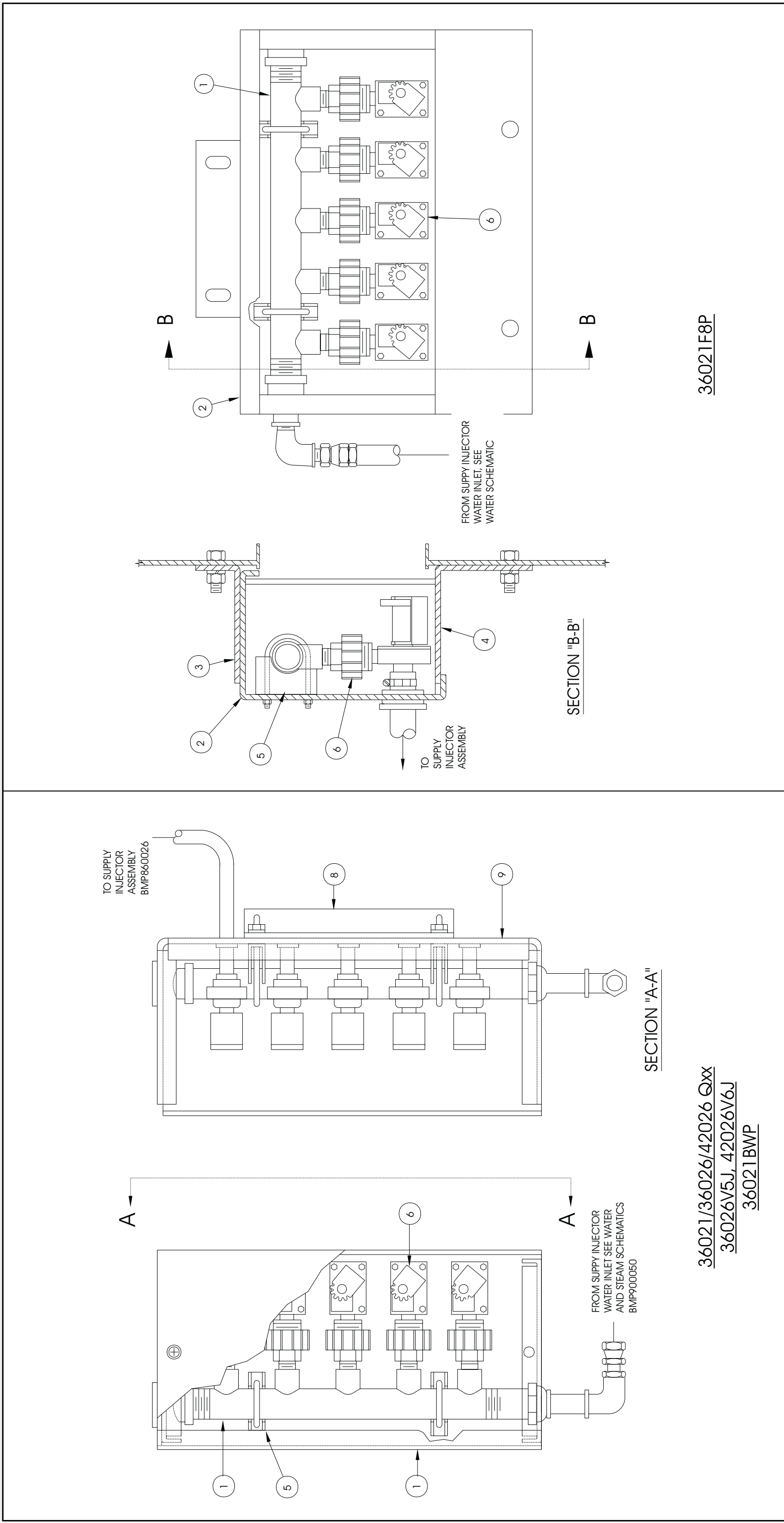
Flushing Manifold - 5 Compartment Supply
36021F8P, 36021BWP, 36021/36026/42026Qxx, 36026V5J,V7J 42026V6J

BMP900019/2000455V
 (Sheet 1 of 2)



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36021/36026/42026 Qxx
36026V5J, 42026V6J
36021BWP

36021F8P



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Parts List—Flushing Manifold

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-----				
	Y	AWI14001	ASSY=FLUSH MAN 5SUP F8P 120V	36021F8P
	Z	AWI11007A	MANIFOLD=5 FLUSH 36/42Q'S	36021/36026/42026QXX 36026V5J,V7J,42026V6J 3621BWP
-----COMPONENTS-----				
	1	W2 11950S	*WLDMT=MAINFOLD-SUPPLY INJ SS	
Y	2	02 11952	HOUSING-SUPPLY VALVES	
Y	3	02 14730	+FLUSH MNT BRKT TOP	
Y	4	02 14730A	+FLUSH MNT BRKT BOTTOM	
	5	02 11954	BKT-3/4" PIPE SUPPORT	
	6	96P013G37	3/4" 2WAYPLASTCVL 120V60C	
Z	7	02 11952	HOUSING-SUPPLY VALVES	
Z	8	02 14833	SUPPLY BRACE 3621 RWP	
Z	9	02 11955	REAR PL.-SUPPLY VALVE HSNG	

Section

7

Water Piping Assemblies

Schematic Symbols Key

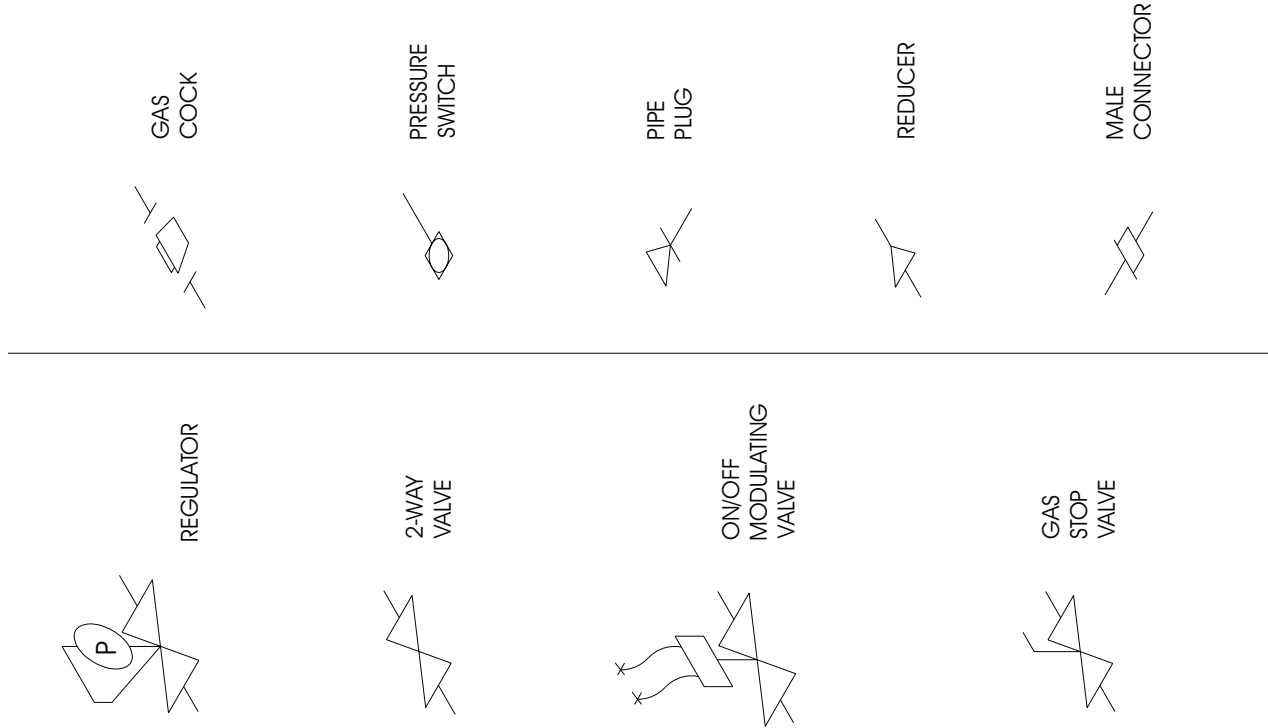
BMP920008/2000302V
(Sheet 1 of 1)



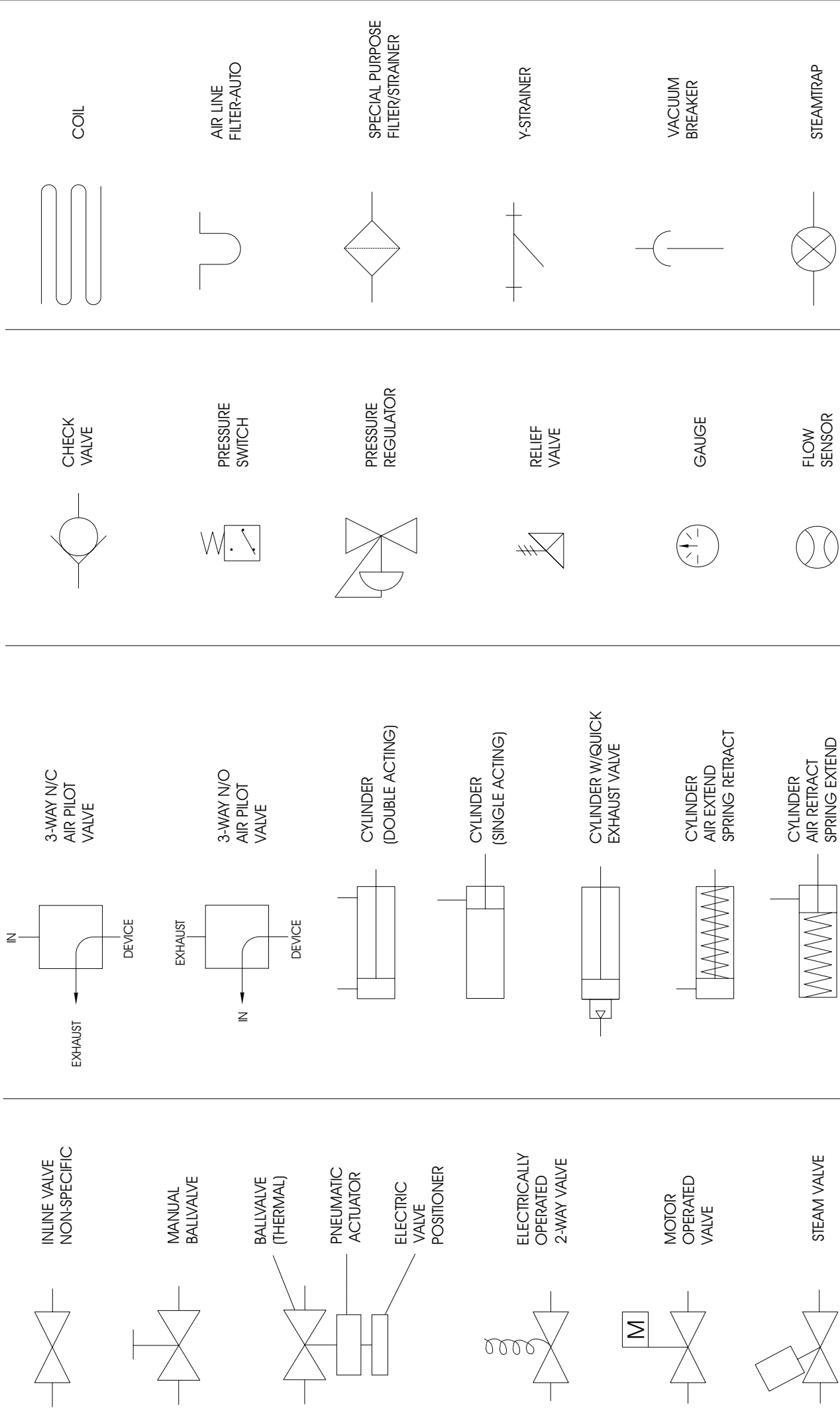
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ISOMETRIC SYMBOLS



STANDARD SYMBOLS



Water Schematic

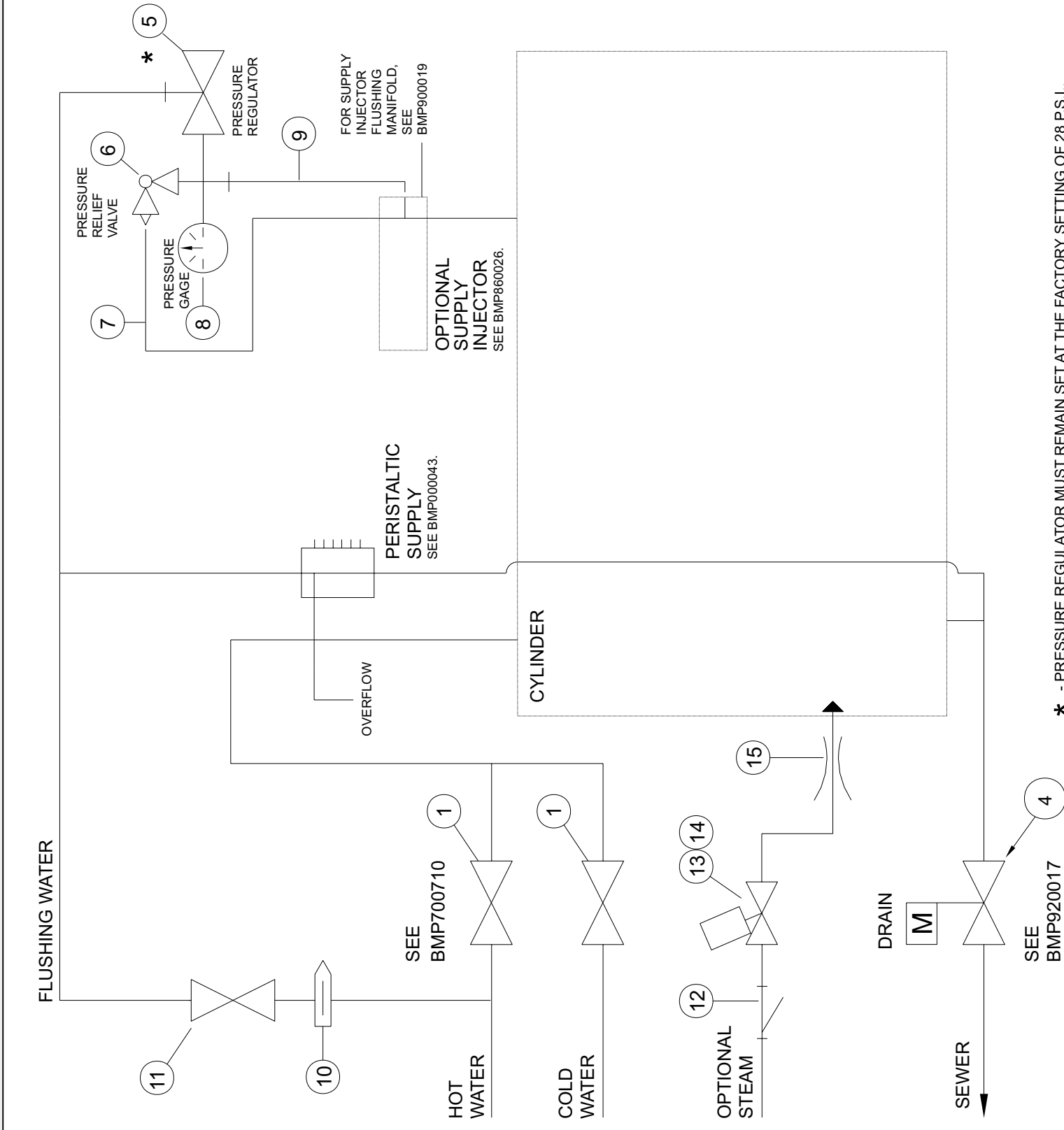
36026V5J,V7J 42026V6J



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BMP000045/2005234V
(Sheet 1 of 1)

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Parts List—Water 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	AVW11911V	4226V H+C H2O INLET 1.5"	42026V6J	
B	AVW11912V	4226V 1.25ELECT H2O VALVE ASSY	42026V6J	
C	AVW14822	36VU H+C H2O VALASSY-ELECT	36026V7J,V7W	
D	AVW14822A	36V5 H+C H2O VALASSY-ELECT	36026V5J	
			-----COMPONENTS-----	
AB	1	96P152A37	1+1/4"NC 110V W/LEADS BURK	
CD	1	96P056A37	3/4"NC 110V 50/60 W/LEADS BURK	
AB	2	27A070	T-BOLT HOSECLAMP 1.94"-2.25"	
CD	2	27A060	HOSECLAMP1+5/16-2.25CADSC#HS28	
all	3	60E210	HOSE 1.875"ID	
	4	96D350A37	DRINVAL 3"N/O MTRDR120V 50/60C	120 VOLT
	4	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C	240 VOLT
all	5	96J030FF	1/2"PRESSREG SET 28# FEMXFEM	
all	6	96M001	1/2X3/8" RELIEF VALVE SET31#	
all	7	60E004TE	1/4"OD X.170"ID NYL TUBING	
all	8	30N100	PRESSGAUGE 1/8"BACKCN.0-30PSI	
all	9	60E085C14E	HOSE ASSY=1/2"X14.25"LG+ENDS	
all	10	96J061	FLOW REGULATOR #MR04-101	
all	11	96P055A37	3/4"NPT INLET 1/2"HOSEOUT 120V	
All	12	51T030	Y-STRAINER 3/4" CAST IRON	
all	13	96P042A37	3/4"STEAMVAL 120V50/60 DINCOIL	
All	14	96P042VA37	DIN CONNECTOR 120V 6FT LEADS	
ABC	15	AVS14805	*STEAM NOZZLE ASSY 3/4"	
D	15	AVS14806	36V5J STEAM NOZZLE ASSY 3/4"	

* - PRESSURE REGULATOR MUST REMAIN SET AT THE FACTORY SETTING OF 28 P.S.I.,
SEE BMP900031 FOR MAINTENANCE PROCEDURES.

Water Inlet Assembly

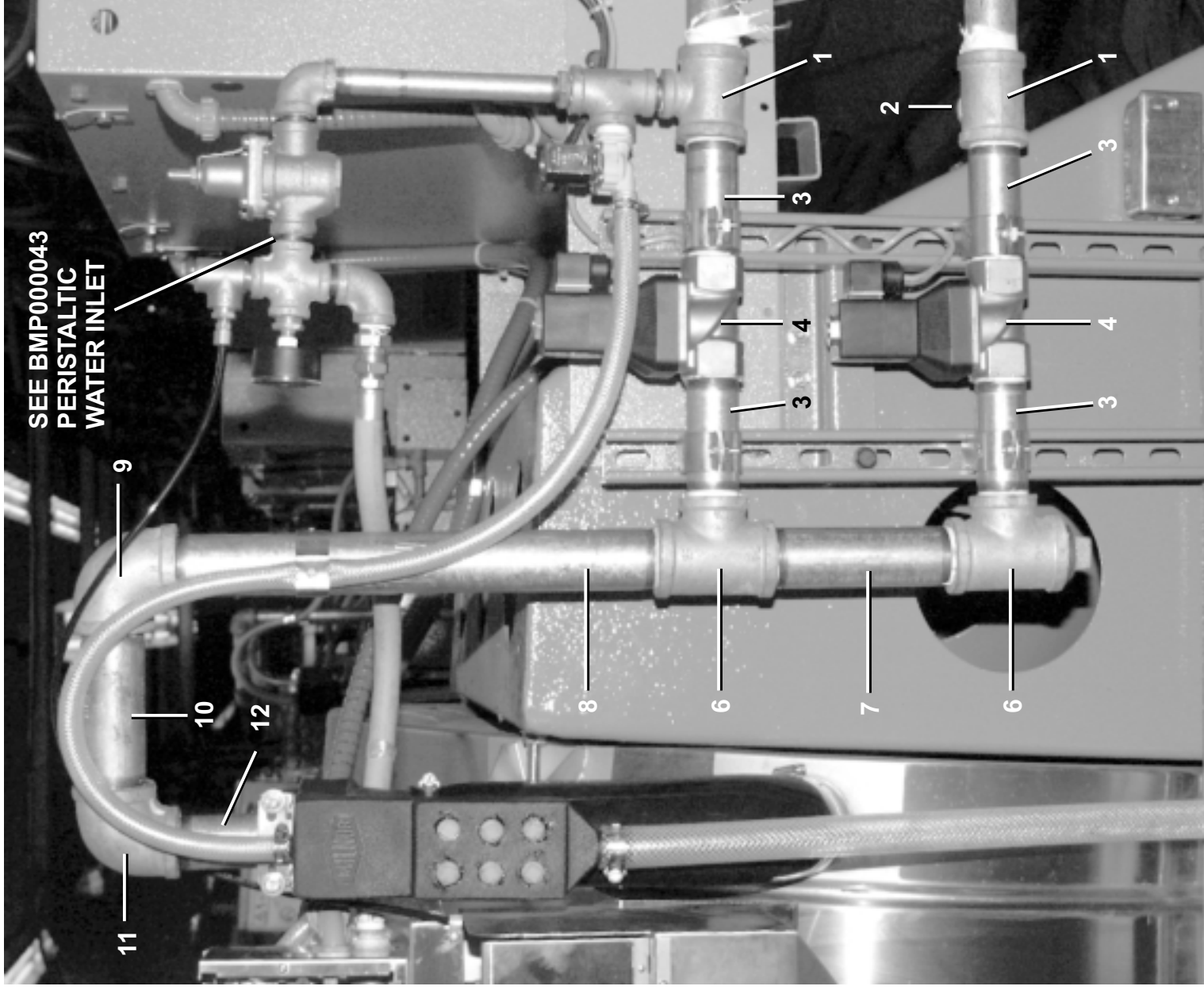
36026V5J,V7J 42026V6J

BMP000044/2005234V
(Sheet 1 of 1)



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SEE BMP000043
PERISTALTIC
WATER INLET

Parts List—Water Inlet 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	AVW11911V	4226V H+C H2O INLET 1.5"	4226V6J
	B	AVW11912V	4226V 1.25ELECT H2O VALVE ASSY	4226V6J
	C	AVW14822	36VU H+C H2O VALASSY-ELECT	3626V7J
	D	AVW14822A	36V5 H+C H2O VALASSY-ELECT	3626V5J
			COMPONENTS	
AB	1	5S1ENFA0P1	NPTTEE 1.25X1.25X3/4 GALMA150#	
CD	1	5S0PNFA	NPT TEE 3/4" GALMAL 150#	
all	2	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
AB	3	5N1E04AG42	NPT NIP 1.25X4 TBE GALSTL SK40	
CD	3	5N0P04AG42	NPT NIP 3/4X4 TBE GALSTL SK40	
AB	4	96P152A37	1+1/4"NC 110V W/LEADS BURK	
	4AA	96V605	1+1/4"REPKIT FOR BURKTYPE#6213	
	4AB	96V401	COIL 110V 50/60 FOR BURK 6211	
CD	4	96P056A37	3/4"NC 110V 50/60 W/LEADS BURK	
	4BA	96V604	3/4" REPAIRKIT BURK TYPE#6211	
	4BB	96V400	COIL 110V 50/60 FOR BURK 6211	
AB	5	51P055	NPTPLUG 1.5 SQCORED GALCI 125#	
CD	5	5SP1ADESC	NPT PLUG 1" SQ CORED GAL CI	
AB	6	5S1KNFA1E1	NPTTEE 1.5X1.5X1.25 GALMAL150#	
CD	6	5S1ANFA0P1	NPT TEE 1X1X3/4" GALMAL 150#	
AB	7	5N1K06AG42	NPT NIP 1.5X6 TBE GALSTL SK40	
C	7	5N1A08AG42	NPT NIP 1X8 TBE GALSTL SK40	
D	7	5N1K04AG42	NPT NIP 1.5X4 TBE GALSTL SK40	
AB	8	5N1K16AG42	NPT NIP 1.5X16 TBE GALSTL SK40	
C	8	5N1A17RG42	NPT NIP 1X17.875TBE GALSTL S40	
D	8	5N1A16AG42	NPT NIP 1"X16"GALVSTL SCH40	
AB	9	5SL1KNFA	NPT ELBOW 90DEG 1.5" GALMAL 15	
CD	9	5SL1ANFA	NPT ELBOW 90DEG 1" GALMAL 150#	
AB	10	5N1K07AG42	NPT NIP 1.5X7 TBE GALSTL SK40	
C	10	5N1A08AG42	NPT NIP 1X8 TBE GALSTL SK40	
D	10	5N1A06AG42	NPT NIP 1X6 TBE GALSTL SK40	
AB	11	5SL1KNFA1E	NPTTELB 90D 1.5X1.25GALMAL 150#	
CD	11	5SL1ANFA0P	NPTTELB 90DEG 1X3/4 GALMAL 150#	
AB	12	5N1E05AG41	NPT NIP 1.25X5 TOE GALSTL SK40	
CD	12	5N0P05AG41	NPT NIP 3/4"X5"TOE GALVSTL S40	

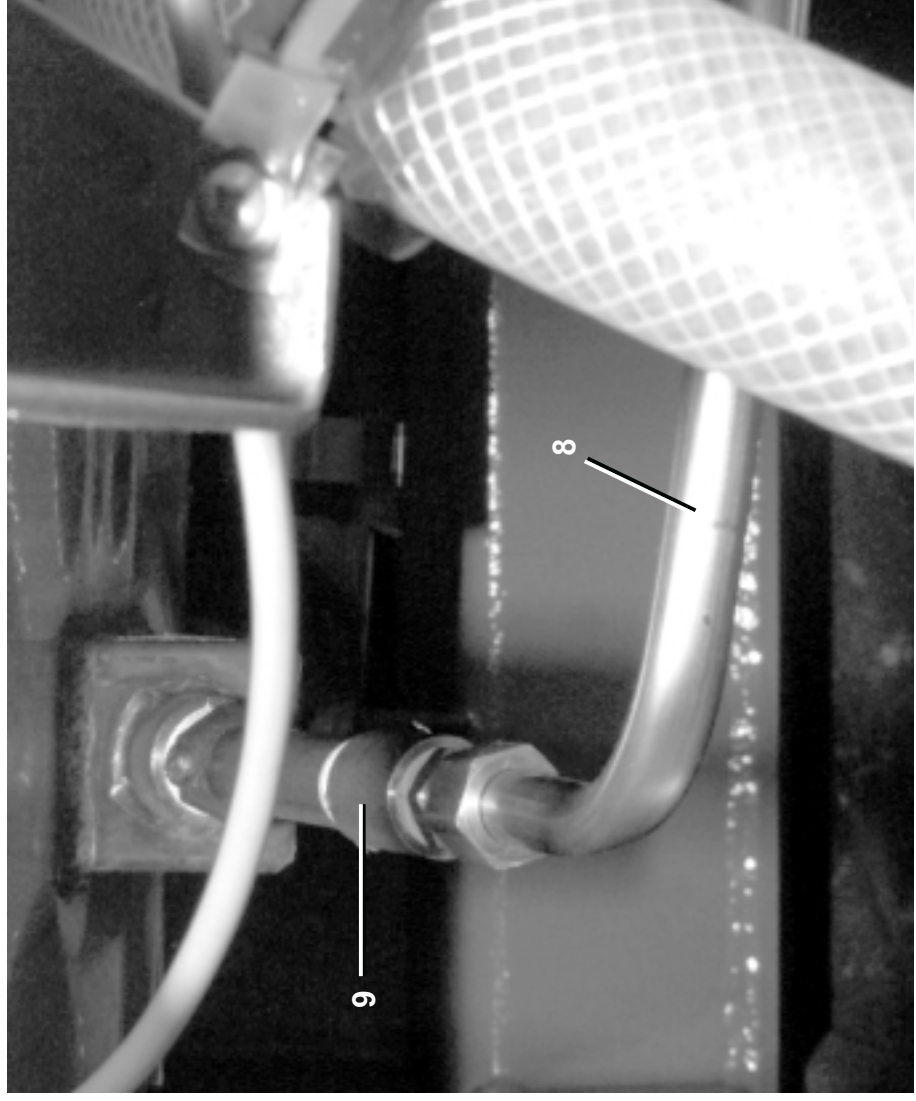
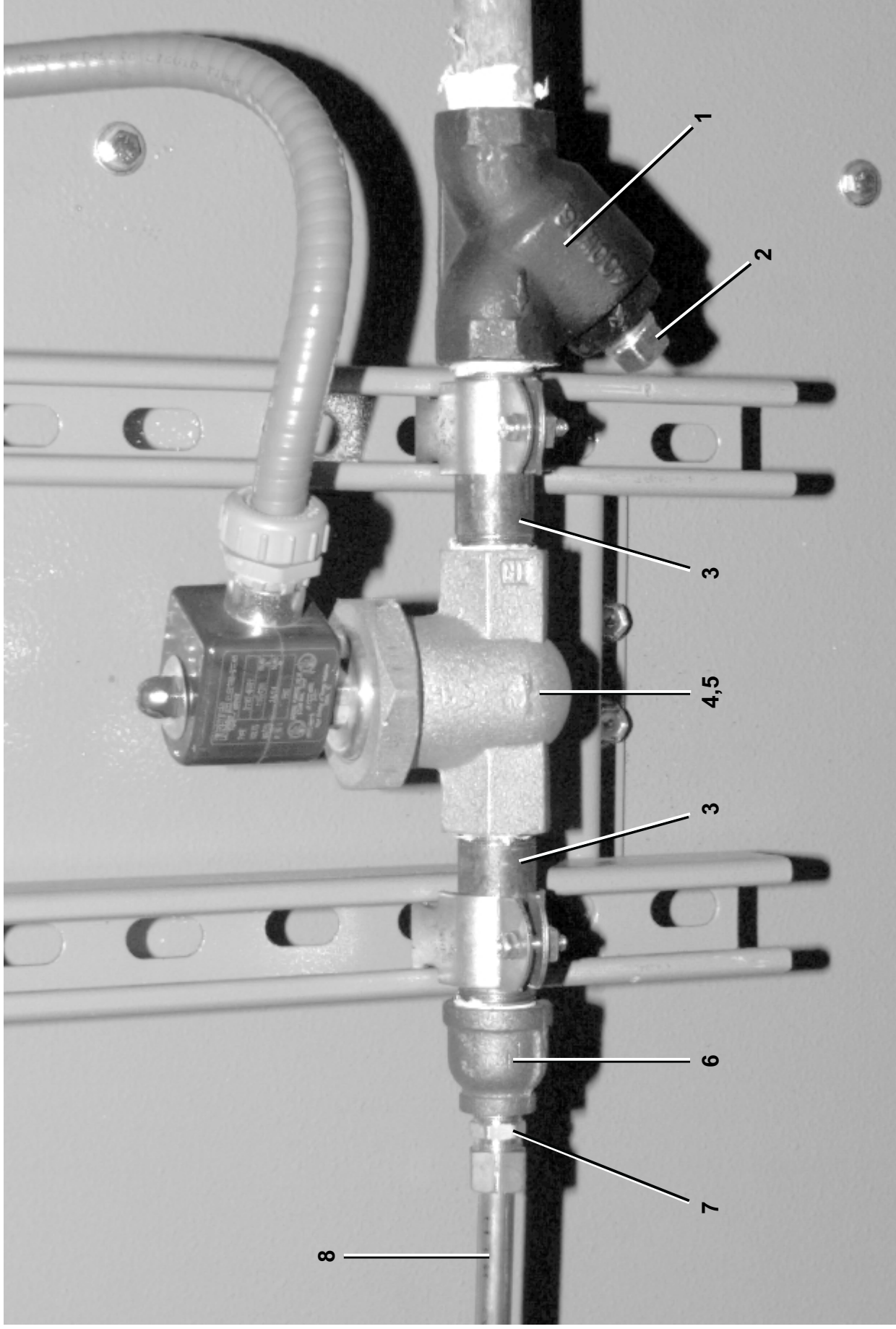
Steam Inlet Assembly 36026V5J,V7J 42026V6J

BMP010027/2002064V
(Sheet 1 of 2)



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Parts List—Steam Inlet 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-----				
none				
-----COMPONENTS-----				
all	1	51T030	Y-STRAINER 3/4" CAST IRON	
all	2	5SP0KGFSS	NPT PLUG 1/2 SOSOLID GALSTL	
all	3	5N0P03KF42	NPT NIP 3/4X3.5 TBE BLKSTLSK40	
all	4	96P042A37	3/4"STEAMVAL 120V50/60 DINCOIL	
all	5	96P042VA37	DIN CONNECTOR 120V 6FT LEADS	
all	6	5SR0P0GMF	NPT RED 3/4"X3/8" BLK 150#	
all	7	53A025	MALECON.5X3/8COMP PH#68C-8-6	
all	8	02 11967	TUBING=STEAM INLET 36QU	3626V5J,V7J
all	8	02 11966	TUBING=STEAM INLET 36 42QU	4226V6J
all	9	AVS14806	36V5J STEAM NOZZLE ASSY 3/4"	3626V5J
all	9	AVS14805	*STEAM NOZZLE ASSY 3/4"	3626V7J,4226V6J

Drain Valve Installation

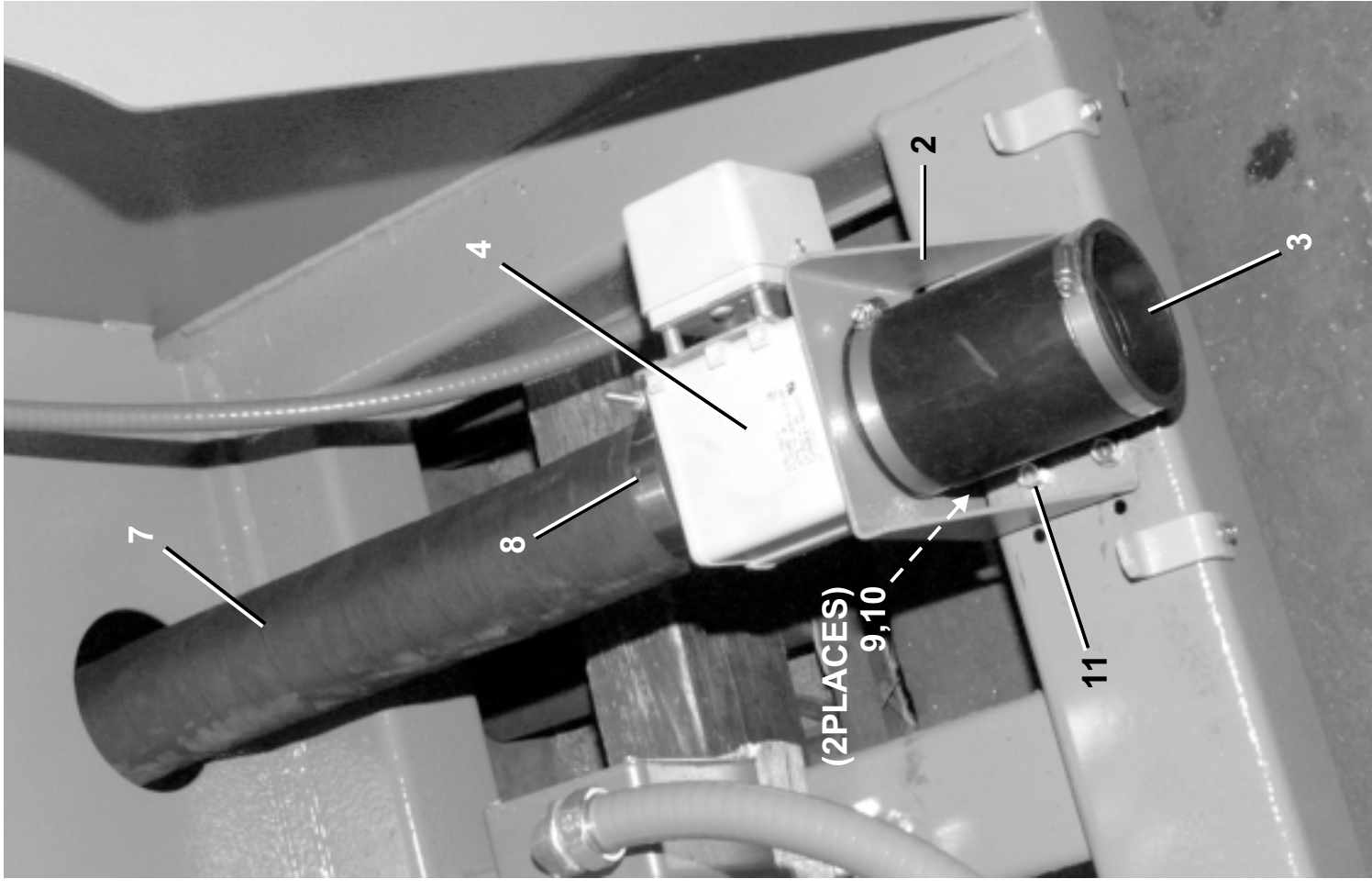
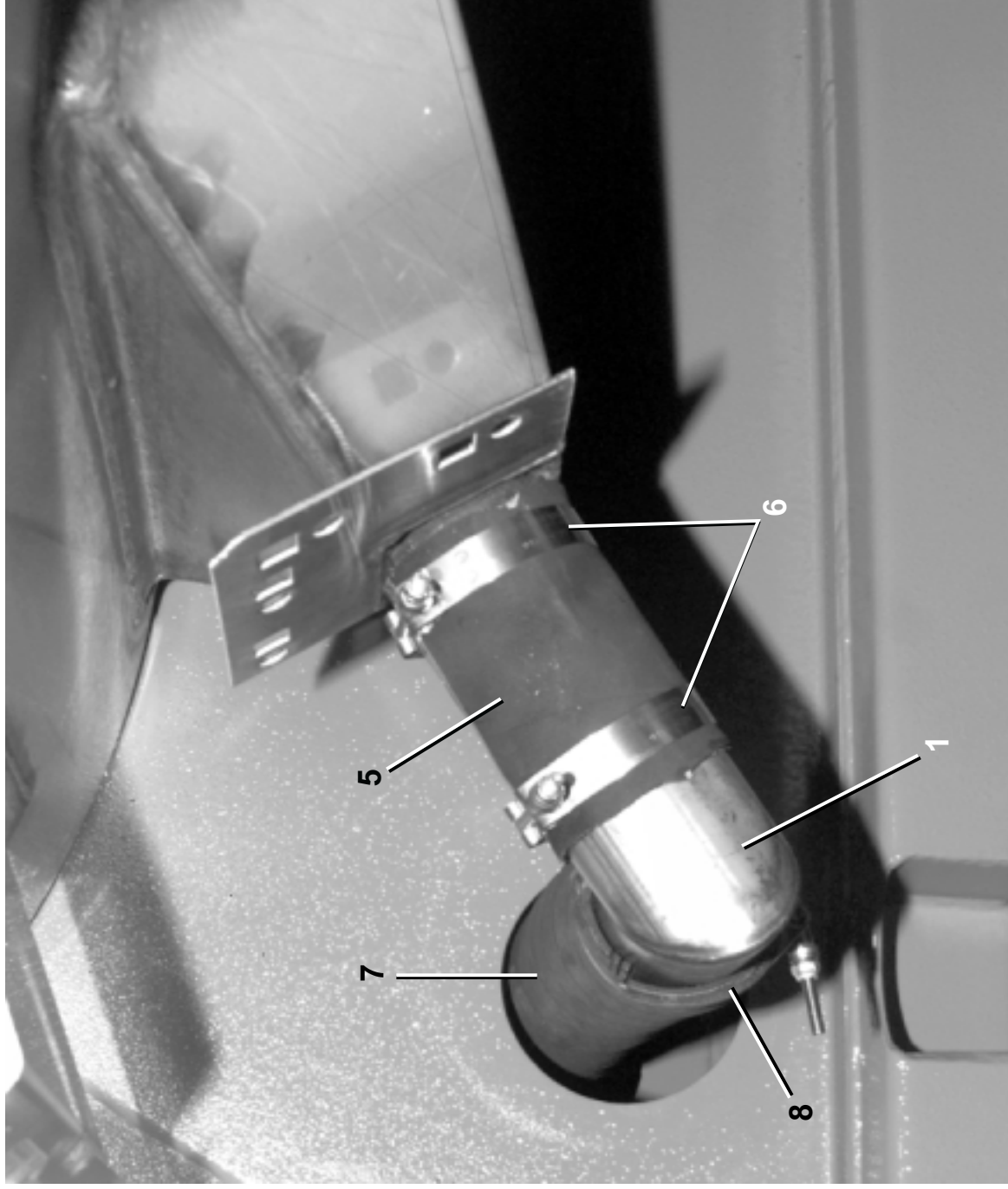
36026V5J,V7J 42026V6J

BMP010014/2002034V
(Sheet 1 of 2)



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Parts List—Drain Valve 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-----				
none				
-----COMPONENTS-----				
all	1	W2 03974A	*WLMT=3022F8 RIGID DRAIN PIPE	
all	2	02 03412	BRKT=DEPEND-O DUMPVAL MTG	
all	3	60B075	DFW56-33PMSP RUBB CONN.	
all	4	96D350A37	DRINVAL 3"N/O MTRDR120V 50/60C	
all	5	60E303C	HOSE 3"ID DAYCO #7216-3002	
all	6	27A075A	T-BOLT HOSECLAMP 3.03"T03.34"	
all	7	60E303W	HOSE 3"ID DRAIN-PLICORD 125	
all	8	27A077A	T-BOLT HOSECLAMP 3.37-3.68"SS	
all	9	15G198	HXFLGNUT 3/8-16 ZINC	
all	10	15K092	HEXFLGSCR 3/8-16X1 GR8 CS	
all	11	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	

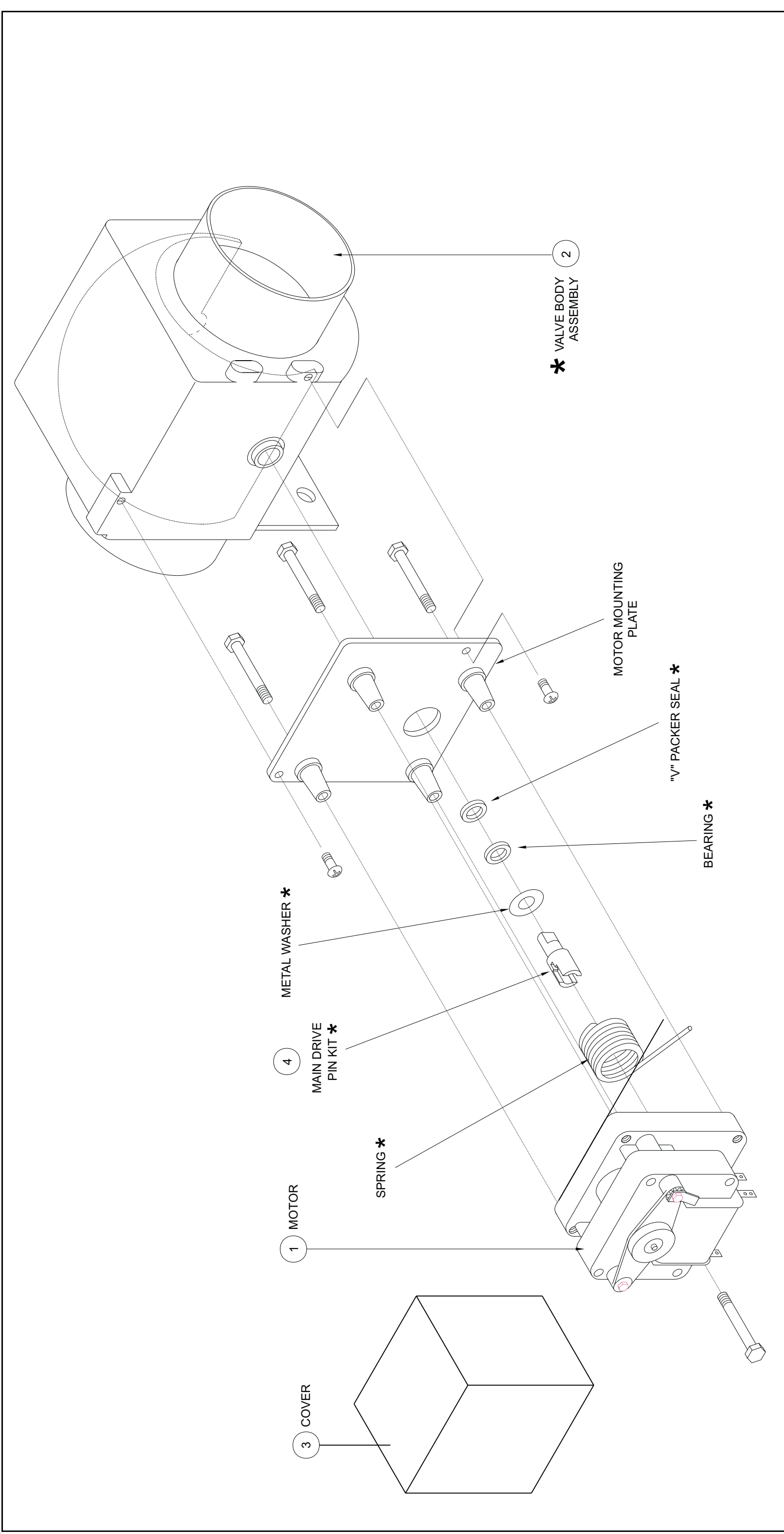
3" Electric Drain Valve

BMP920017/2002044V
(Sheet 1 of 2)



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Parts List—3" Electric Drain Valve

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	96D350A37	DRINVAL 3"N/O MTRDR120V 50/60C	
	B	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C	
-----COMPONENTS-----				
A	1	96D35MTR37	120V 50/60CMTR FOR 3"DRAINVAL	
B	1	96D35MTR71	240V 50/60CMTR FOR 3"DRAINVAL	
all	2	96D35B0D	BODY & BALL FOR 3" DRAIN VALVE	
all	3	96D35C0V	MTRCOVER 2-PCFOR 3"DRAINVAL	
all	4	96D35PIN	DRIVE PIN KIT FOR 3" DRAIN VAL	