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Service

30015 and 30022Txx, Vxx Washer-Extractors

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

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

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PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

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

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will at our option repair or replace the defective part or parts, 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 tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

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

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

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THE PROVISIONS ON THIS PAGE REPRESENT THE ONLY WARRANTY FROM MILNOR AND NO OTHER WARRANTY OR CONDITIONS, STATUTORY OR OTHERWISE, SHALL BE IMPLIED.

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

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

How to Get the Necessary Repair Components

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

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

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

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

To write to the Milnor factory:

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

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

— End of BIUUUD19 —

BIUUUS27 (Published) Book specs- Dates: 20051111 / 20051111 / 20060322 Lang: ENG01 Applic: RUU

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

- Do not unlock or open electric box doors.

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

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

WARNING 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 —

About the Forces Transmitted by Milnor® Washer-extractors

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

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

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

1. Rigid Machines

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

2. Flexibly-mounted Machines

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

3. How Strong and Rigid?

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

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

Figure 1: How Rotating Forces Act on the Foundation

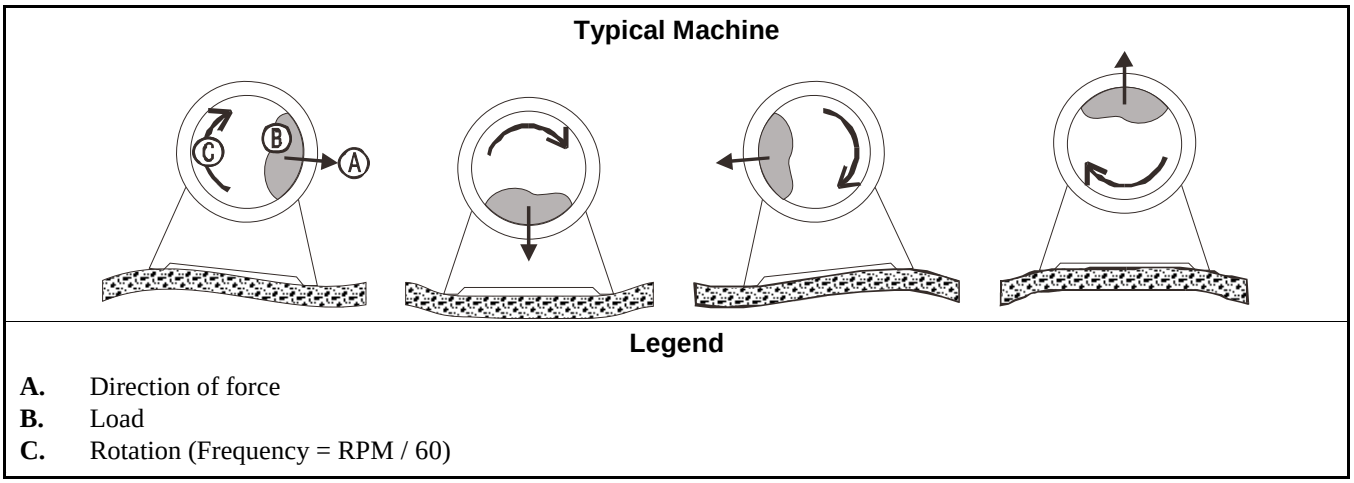


Figure 1 above is intended to depict both on-grade and above-grade installations and is equally applicable to flexibly-mounted washer-extractors, as well as to rigid models installed either directly on a floor slab or on a foundation poured integrally with the slab. Current machine data is available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

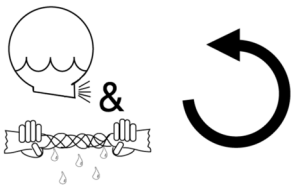
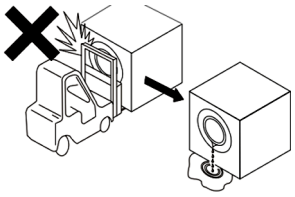
— End of BIWUUI02 —

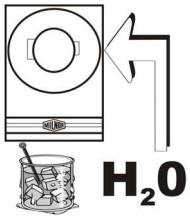
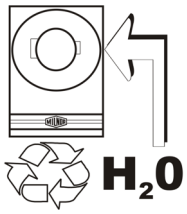
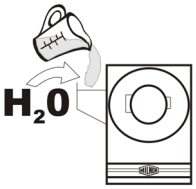
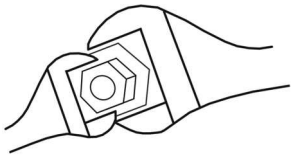
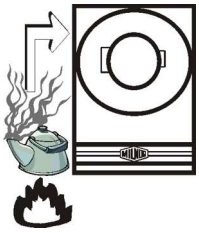
Understanding the Tag Guidelines for the Models Listed Below

30015T5E 30015T5J 30015T5X 30015V7J 30022T5E 30022T5J 30022T5X 30022V6J 30022V8Z 30022VRJ

Several installation guidelines and precautions are displayed symbolically, on tags placed at the appropriate locations on the machine. Some are tie-on and others are adhesive tags. Tie-on tags and white, adhesive tags may be removed after installation. Yellow adhesive tags must remain on the machine.

Most tags contain only symbols (no words). A few are worded. The explanations below, start with the tag part number (displayed on the tag). If a tag contains no words, the meaning of the tag is explained below. If the tag contains words, the explanation below simply repeats the wording.

Display or Action	Explanation
	Read the manual before proceeding. This symbol appears on most tags. The machine ships with a complete set of manuals. The safety, installation, and electrical schematic manuals are particularly important to installers.
	B2TAG88005: This carefully built product was tested and inspected to meet Milnor® performance and quality standards by
	B2TAG93013: This bearing housing was lubricated at the Milnor factory before shipment.
	
	B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine is first tested, the electrical hookup is incorrect and must be reversed as explained in the schematic manual.
	B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.
	B2TAG94099: Do not strike the shell door when fork-lifting. This can cause the door to leak.
	B2T2001013: Hot water connection.

Display or Action	Explanation
	B2T2001014: Cold water connection.
	B2T2001015: Reuse (third) water connection.
	B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.
	B2T2003001: Hold the side of the connection stationary with a wrench as you tighten the connection with another wrench. Otherwise, you may twist components, such as valves, damaging them.
	B2T2004027: Steam connection (optional)
	B2T2006012: Retain the motor mount spring adjustment sleeve provided with certain machine models. This sleeve is used to increase drive belt tension as the belt wears. Instructions are provided in the maintenance guide. (Used only on 30022V8Z & VRJ models.)

— End of BIUUUI02 —

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.

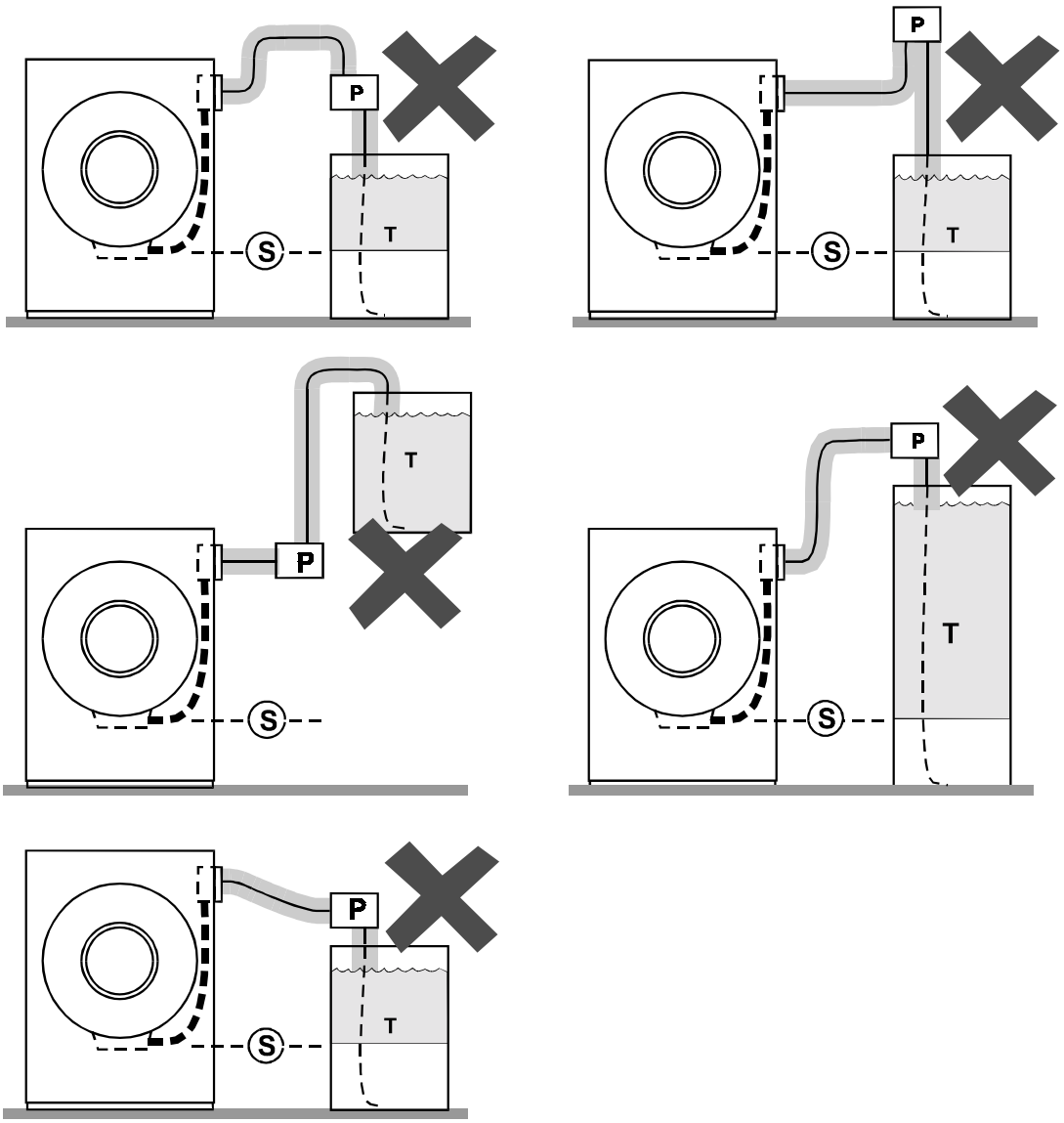
2. Requirements for Chemical Systems Used With Milnor Machines

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

Examples

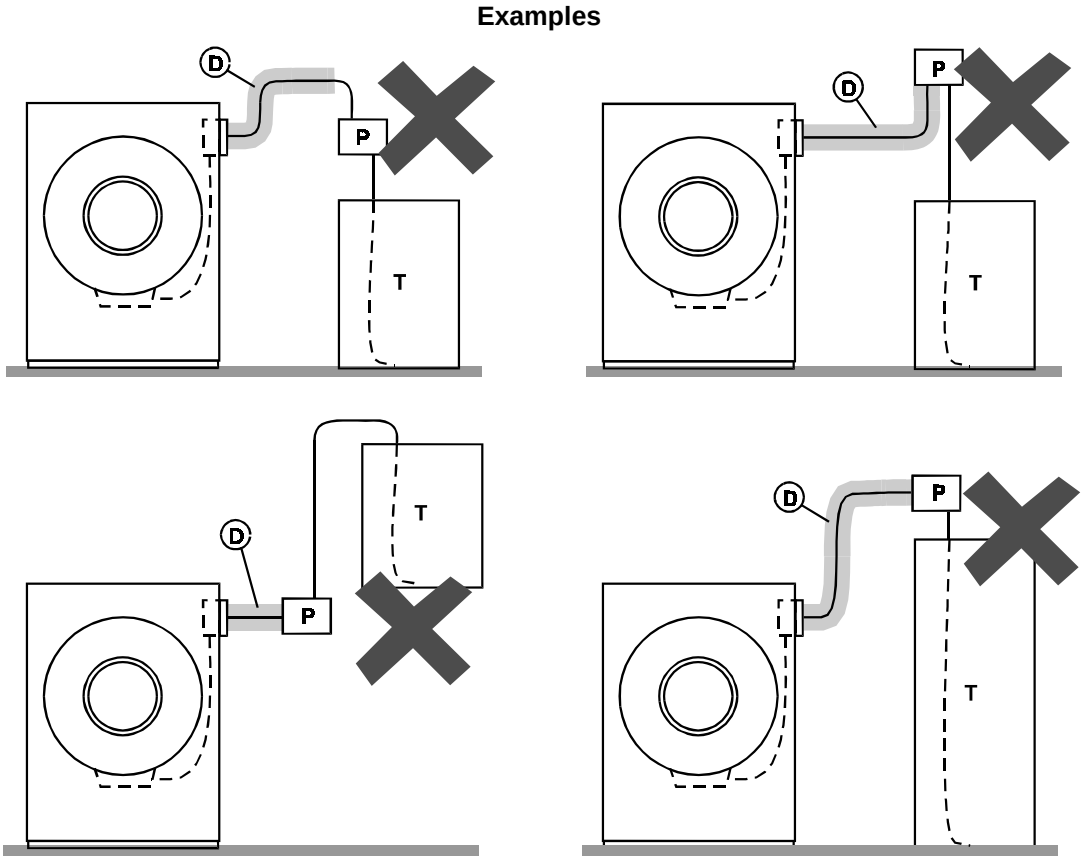


Legend

P. Pump
S. Siphon level. Shading indicates the chemical delivery line and tank content that can siphon into the machine.
T. Chemical tank

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)



Legend

D. Portion of supply line, the contents of which can dribble into the machine
P. Pump
T. Chemical tank

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.

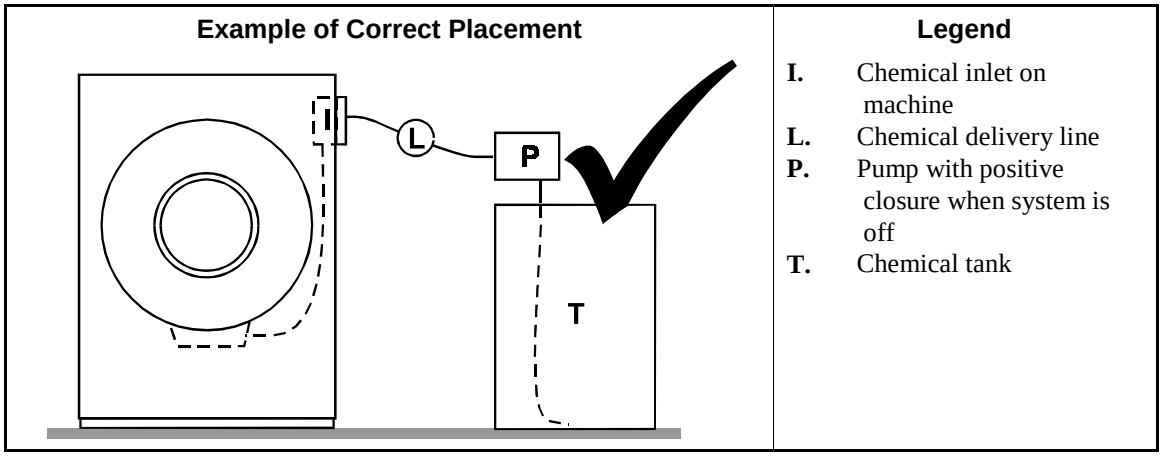
3.1. Siphoning: Positively close the line.—If the pump does not provide positive closure when the system is off, employ a shutoff valve in the line to serve this purpose.

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 —

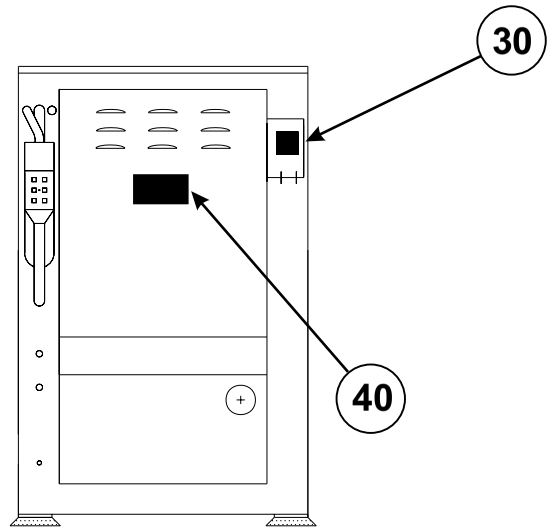
Safety Placard Use and Placement

30015, 30022Txx & Vxx

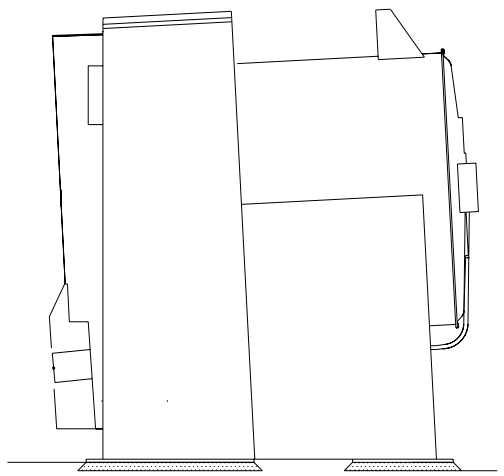
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

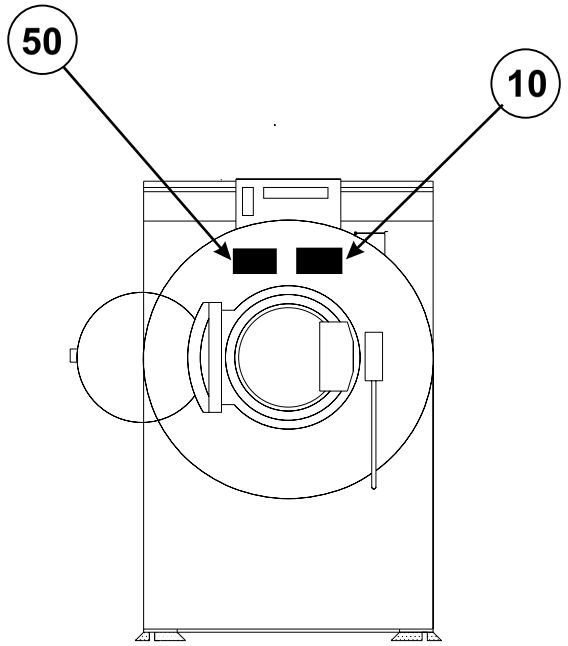
Notes:
1. **Replace placard immediately, if removed or unreadable.**
2. **Approximate locations of placards are shown. Mounting holes are provided on machine. Use #8 self-tapping screws.**



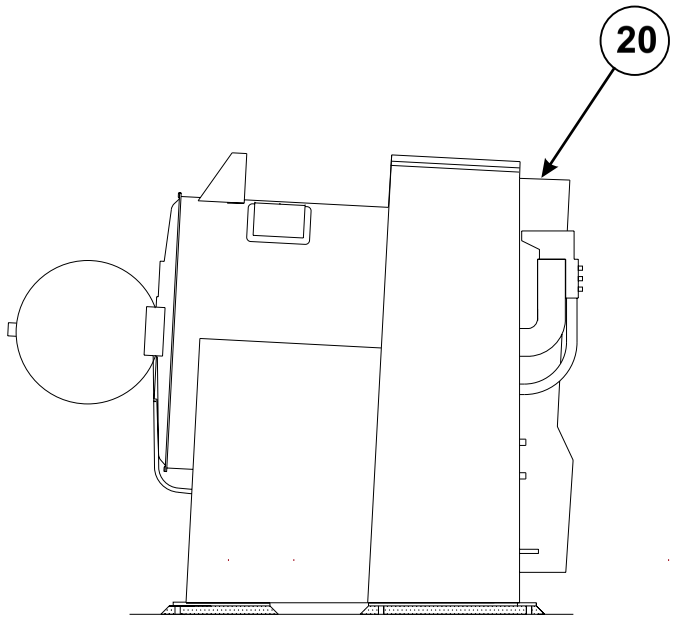
REAR VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

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

Parts List—Safety Placard Placement

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

Used In	Item	Part Number	Description	Comments
.				
			----------ASSEMBLIES----------	
			none	
			----------COMPONENTS----------	
all	10	01 10635A	NPLT:SHELL FORNT RIDGID-TCATA	
all	20	01 10375B	NPLT:ELEC HAZARD SMALL-TCATA	
all	30	01 10375C	NPLT:E-HAZARD SM VERTCL-TCATA	
all	40	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	50	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	

Safety Placard Use and Placement ISO

30015, 30022Txx & Vxx

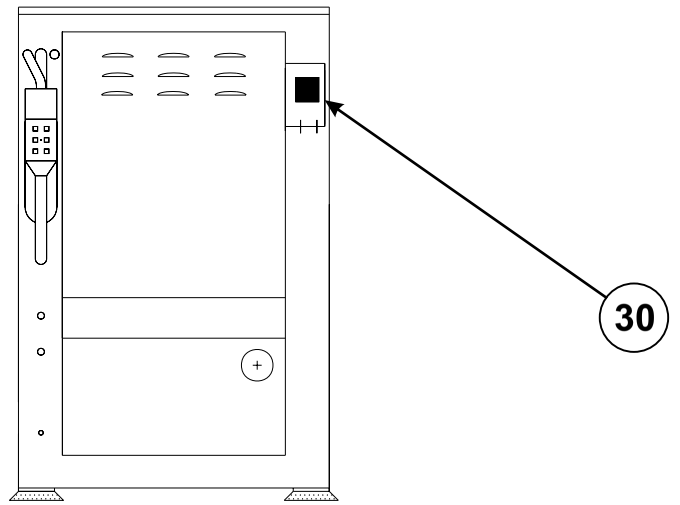
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

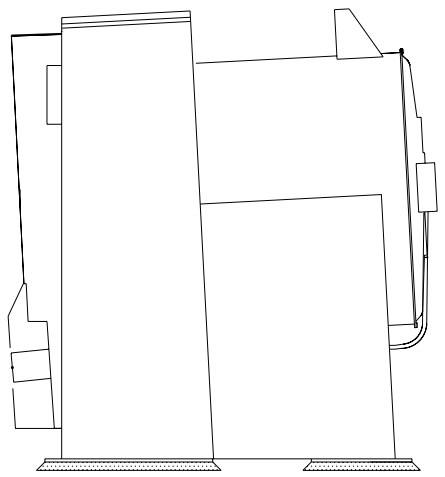
ISO Placards shown on this page

Notes:

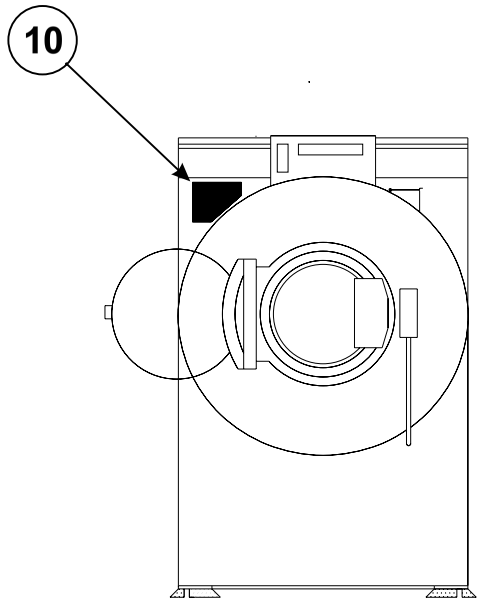
1. **Replace placard immediately, if removed or unreadable.**
2. **Approximate locations of placards are shown. Mounting holes are provided on machine. If aluminum placard use #8 self-tapping screws.**



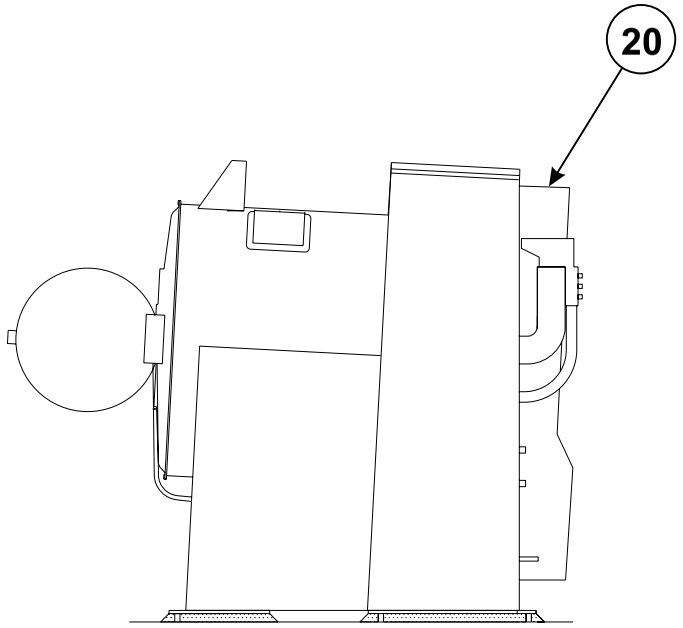
REAR VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

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

Parts List—Safety Placard Placement

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

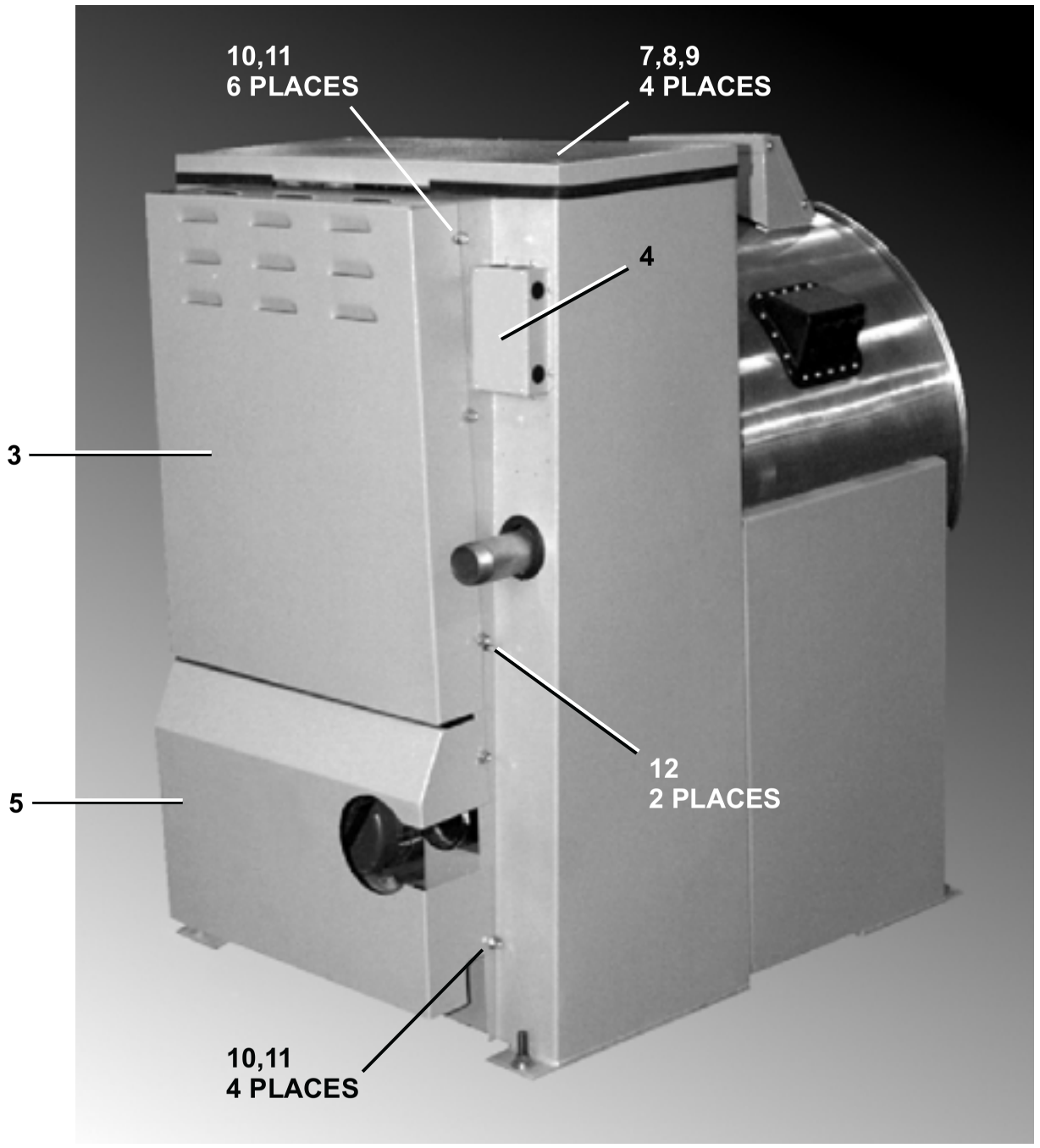
Used In	Item	Part Number	Description	Comments
.				
			----------ASSEMBLIES----------	
			none	
			----------COMPONENTS----------	
all	10	01 10635X	NPLT:30"WE RIGID WARNING ISO	
all	20	01 10375A	NPLT:VDE VOLTAGE WARN 1.25"	
all	30	01 10375	NPLTE:"WARNING" 2X2	

Guards and Covers

30015V7J, T5J,T5E 30022V6J, T5J, T5E

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

Litho in U.S.A.



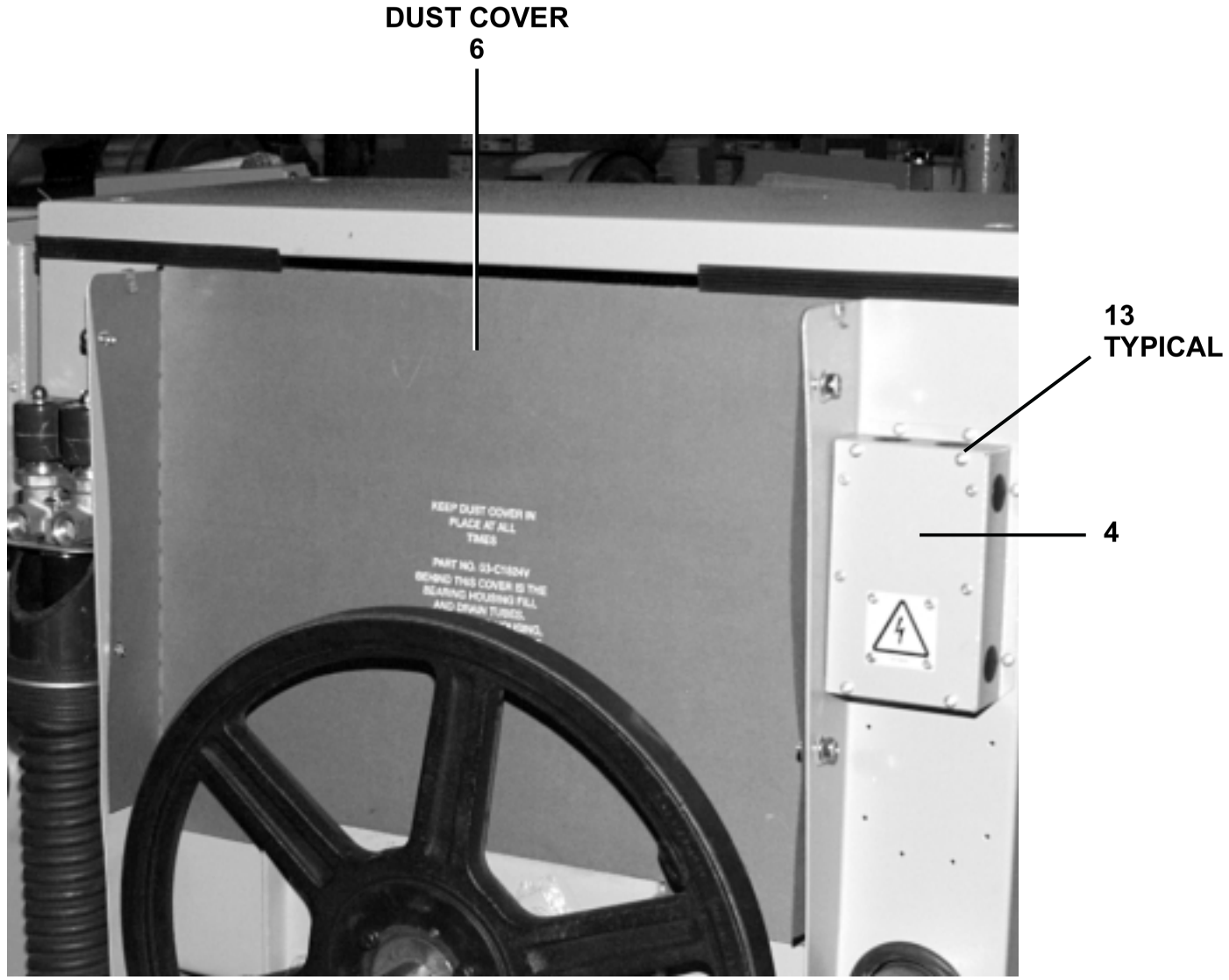
Guards and Covers

30015V7J, T5J,T5E 30022V6J, T5J, T5E

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

Litho in U.S.A.

NOTE: KEEP DUST COVER IN PLACE AT ALL TIMES. REMOVE FOR SERVICING. BEHIND THIS COVER ARE THE BEARING HOUSING FILL AND DRAIN TUBES.



Parts List—Guards and 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
			----------COMPONENTS----------	
all	1	W2 03699A	*CONSOLE TOP WELDMENT	
all	2	02 03344	TRIM=REAR CONSOLE TOP 7FT/PC	
all	3	X2 03497A	GUARD REAR BELT	
all	4	03 C4X7	COVER:SYSTEM 7 LIQUID SUPPLY	
all	5	W2-03795B	00342# *WLMT=LOWER COVER-STEAM F0141	
all	6	03 C1824V	DUST COVER-30"V6J BELT	
all	7	15K120	HXCAPSCR 3/8-16UNC2AX2 GR5 ZIN	
all	8	02 03344	TRIM=REAR CONSOLE TOP 7FT/PC	
all	9	17N070P	RETAIN NUT 3/8-16 #S10100-27	
all	10	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	
all	11	15U346	FLAWASH 7/8X3/8X.030 NATURAL N	
all	12	15P185	TRDCUT-F HXHD 1/4-20UNC2AX3/4	
all	14	15P010	PHILPAN TRDCUTSCRTYP10-24X1/2S	

Service and Maintenance

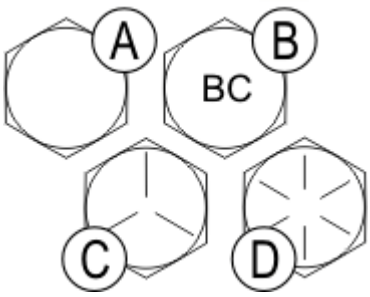
1

BIUUUM04 (Published) Book specs- Dates: 20080506 / 20080506 / 20080506 Lang: ENG01 Applic: UUU

Fastener Torque Requirements

Torque requirements for other fasteners are specified in the specific document which describes the assembly. **If fastener torque specifications or threadlocking compound requirements in an assembly document vary from the specifications in this document, use the assembly document.**

Figure 1: Common Bolts Used in Milnor Equipment

Bolt Head Identifying Marks	Legend
	**A.** SAE Grades 1 and 2, ASTM A307, and stainless steel **B.** ASTM A354 Grade BC **C.** SAE Grade 5, ASTM A449 **D.** SAE Grade 8 and ASTM A354 BD

1. Torque Values

The tables below list the standard size, grade, threadlocking compound, and torque requirements for fasteners commonly used on Milnor® equipment.

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

1.1. Carbon Steel Fasteners

1.1.1. Without Threadlocking Compound

Table 1: Torque Values for Dry Fasteners 5/16-inch and Smaller

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

Table 2: Torque Values for Dry Fasteners Larger Than 5/16-inch

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

Table 3: Torque Values for Plated Fasteners 5/16-inch and Smaller

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

Table 4: Torque Values for Plated Fasteners Larger Than 5/16-inch

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

1.1.2. With Threadlocking Compound

Table 5: Threadlocking Compound Selection by Bolt Size

	Bolt Size			
LocTite Product	1/4"	1/4" – 5/8"	5/8" – 7/8"	1" +
LocTite 222	OK			
LocTite 242		OK		
LocTite 262			OK	
LocTite 272			High temperature	
LocTite 277				OK

Table 6: Torque Values for Applications of LocTite 222

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

Table 7: Torque Values for Applications of LocTite 242

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

Table 8: Torque Values for Applications of LocTite 262

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

Table 9: Torque Values for Applications of LocTite 272 (High Temperature)

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

Table 10: Torque Values for Applications of LocTite 277

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

1.2. Stainless Steel Fasteners

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

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

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

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

2. Preparation

WARNING 1: Fire Hazard—Some solvents and primer products are flammable.

- Use in a well ventilated area.
- Do not use flammable products near ignition sources.

1. Clean all threads with a wire brush, a tap, or a die.
2. Degrease the fasteners and the mating threads with a cleaning solvent. Wipe the parts dry.

   Note 2: LocTite 7649 Primer N™ will remove grease from parts, but it costs more than a standard organic or petroleum solvent.

3. Prime the fasteners and the mating threads with LocTite 7649 Primer N™ or equal. Allow the primer to dry for at least one minute.

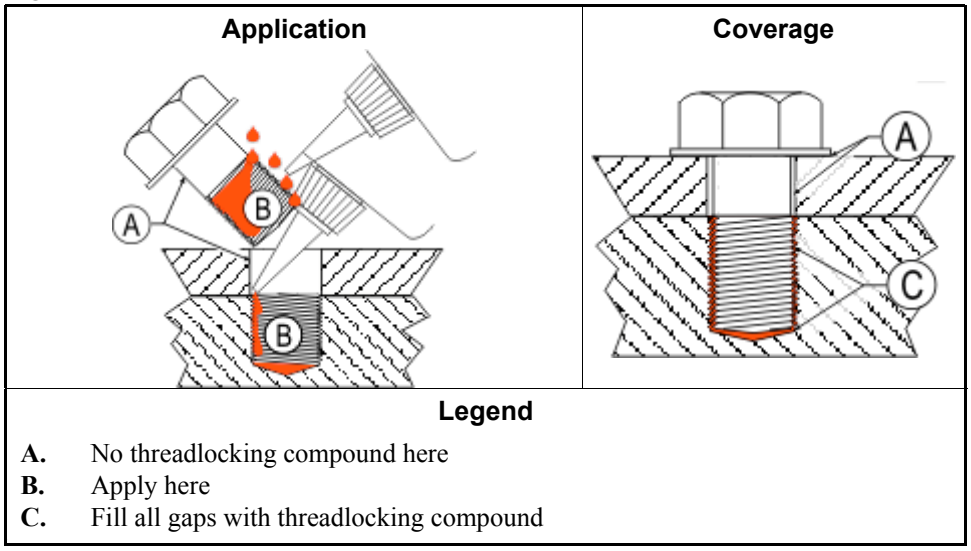
3. Application of Threadlocking Compound

CAUTION 2: Malfunction Hazard—Improper application of threadlocking compounds may result in fasteners becoming loose from impact, heat, or vibration. Loose fasteners can cause the equipment to malfunction.

- Read and follow the threadlocking compound manufacturer's instructions and warnings.

Apply threadlocking compound to the thread engagement areas of fasteners and mating threads only.

Figure 2: Blind Hole



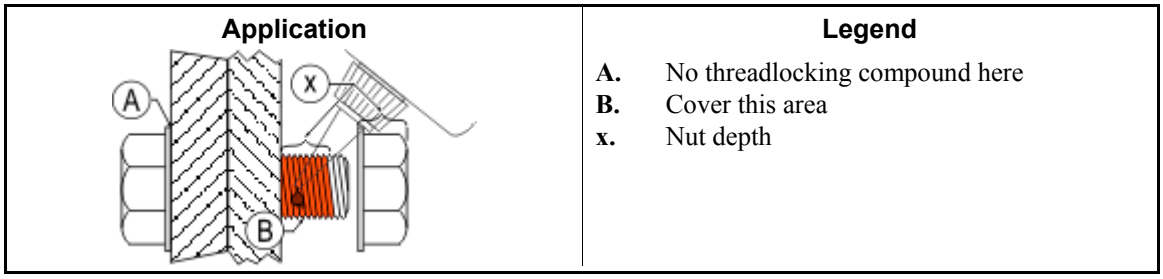
3.1. Blind Holes

1. Apply several drops of threadlocking compound down the female threads to the bottom of the hole.
2. Apply several drops of threadlocking compound to the bolt.
3. Tighten bolt to value shown in the appropriate table (Table 5 through Table 11).

3.2. Through Holes

1. Insert bolt through assembly.
2. Apply several drops of threadlocking compound to the bolt thread area that will engage the nut.
3. Tighten bolt to value shown in the appropriate table (Table 5 through Table 11).

Figure 3: Through Hole

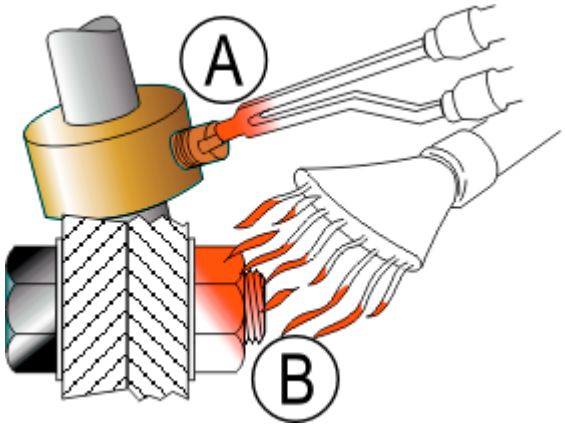


3.3. Disassembly—For low-strength and medium-strength products, disassemble with hand tools.

For high-strength products, apply localized heat for five minutes. Disassemble with hand tools while the parts are still hot.

Figure 4: Disassembly

Use Localized Heat



Legend

A. Soldering gun heating small fastener
B. Torch heating large fastener

— End of BIUUUM04 —

Drive Assemblies 2

Drive Chart

30015T5J,T5E & 30022T5J,T5E

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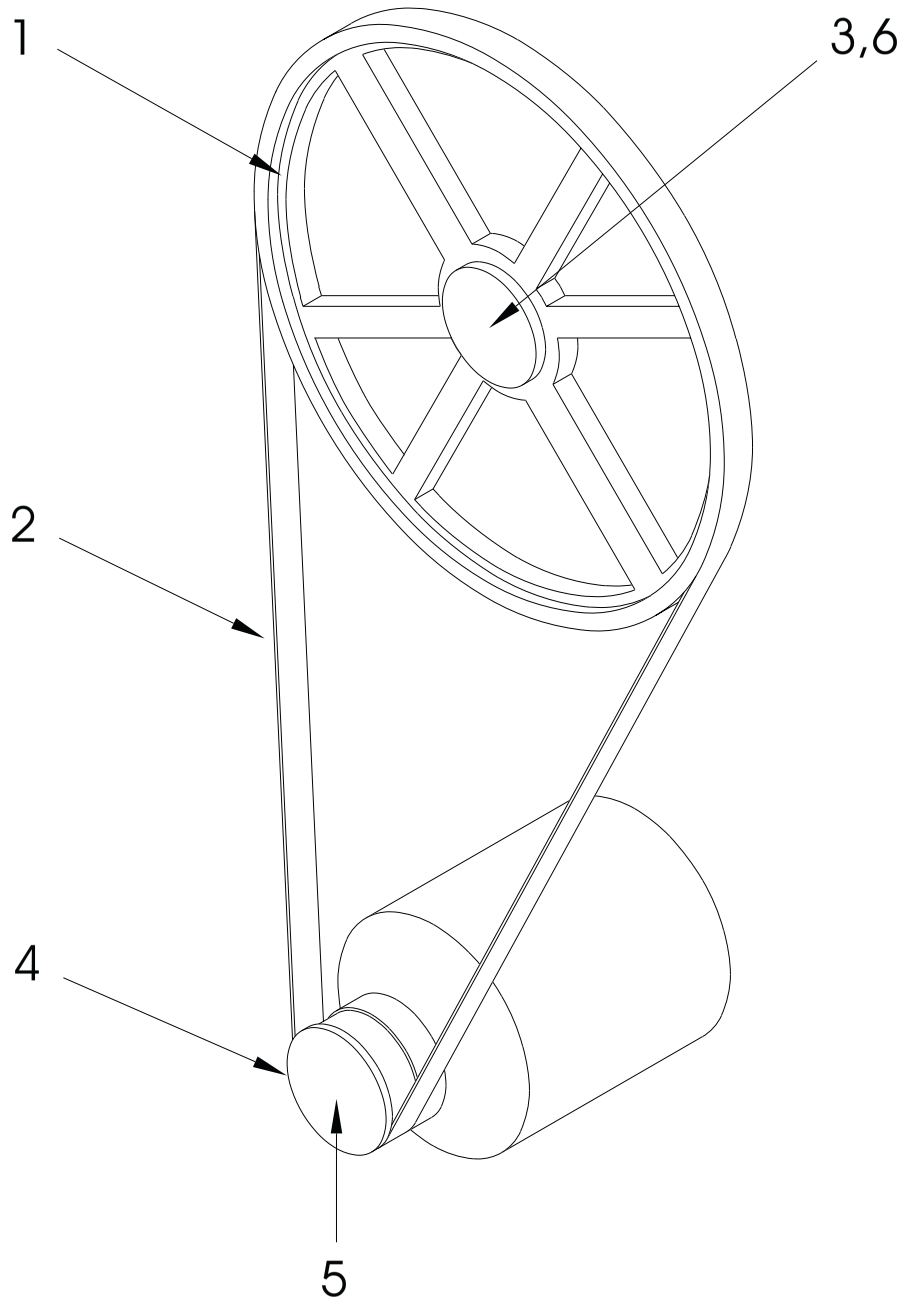

Parts List—Drive Chart

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

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	D33 03260	94000Z DRIVE CHART-3015/22V4 60CYC	30015 & 30022T5J
			----------COMPONENTS----------	
all	1	562240R3SF	VPUL 3G3V22.4 (SF) MTO SPECIAL	
all	2	56VR082XB3	VBAND 3R3VX820 EA = 1 BELT	
all	3	56Q1KSF	1+1/2" BUSH VPUL QD TYPE SF	
all	4	560260R3JA	VPUL 3G3V2.60 QD TYPE JA	
all	5	56Q0RJA	7/8" BUSHING VPUL QD TYPE "JA"	
all	6	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	

Drive Chart

30015V7J & 30022V6J

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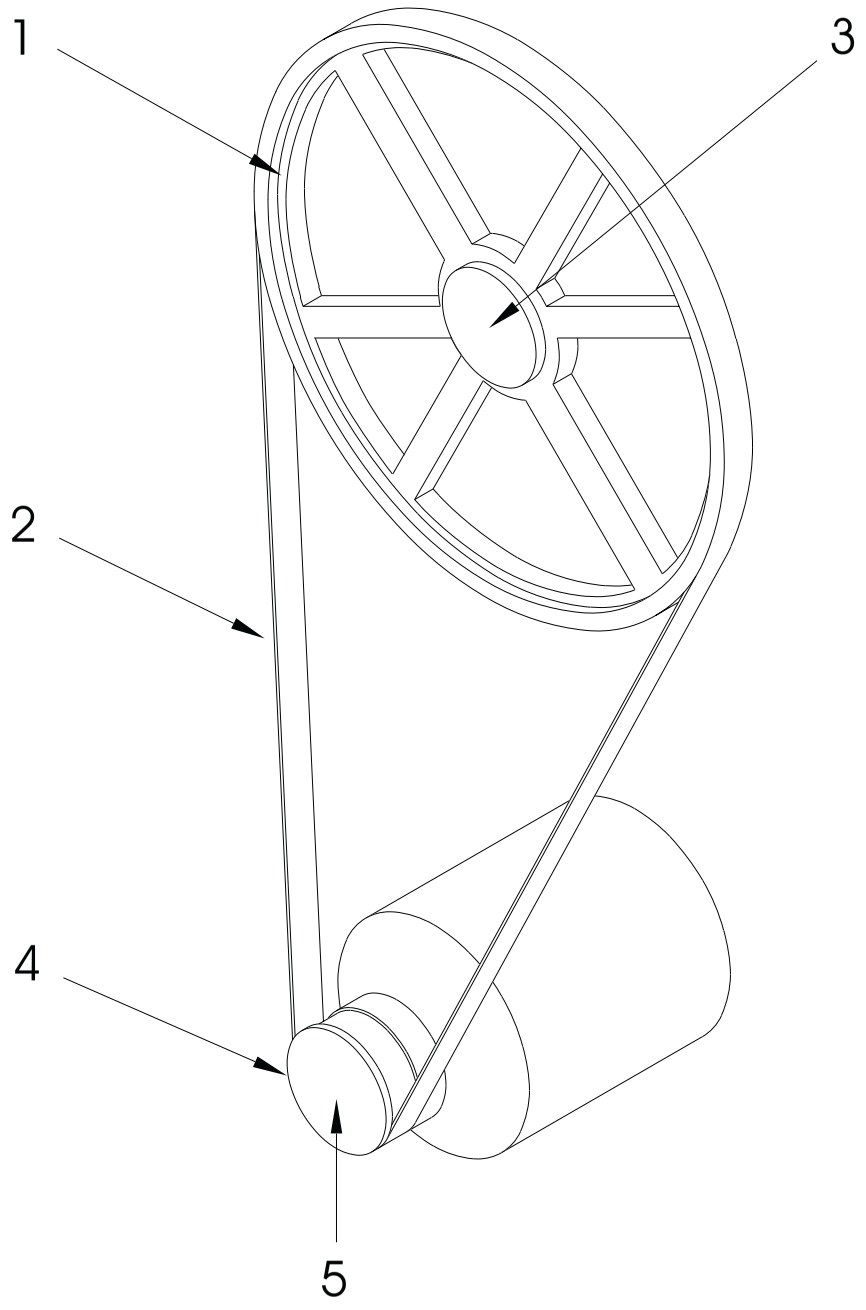


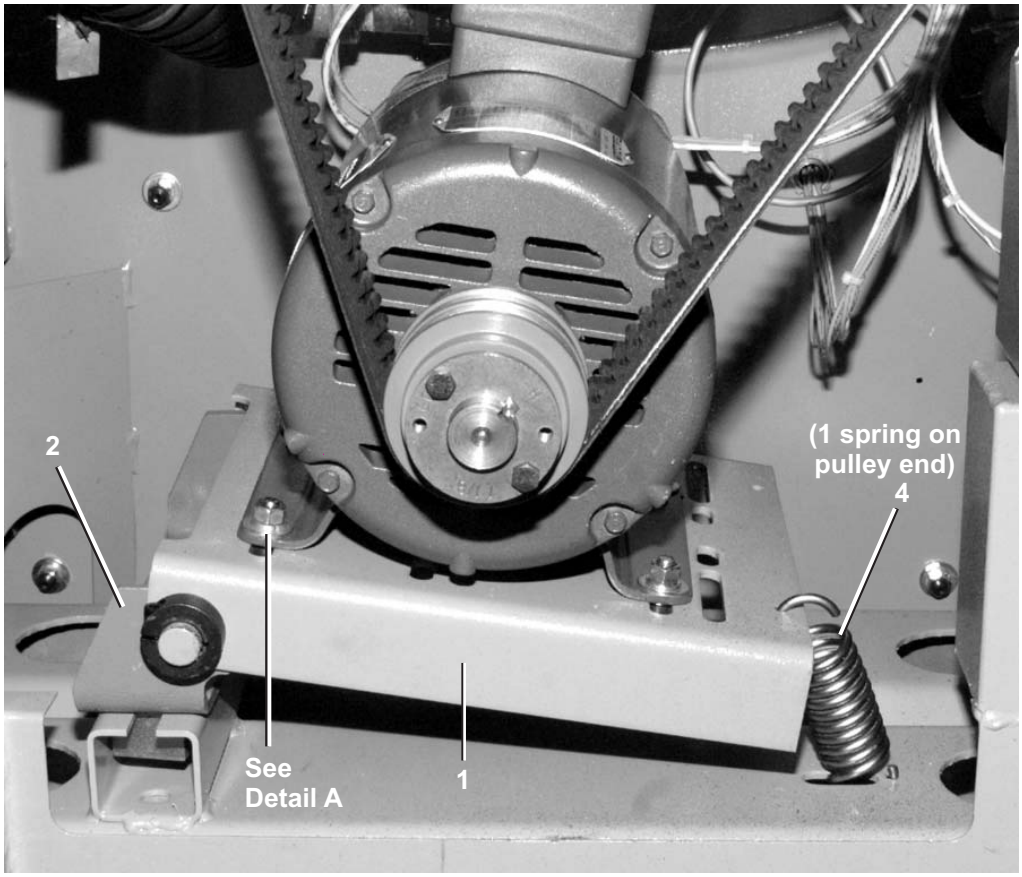
Parts List— Drive Chart

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

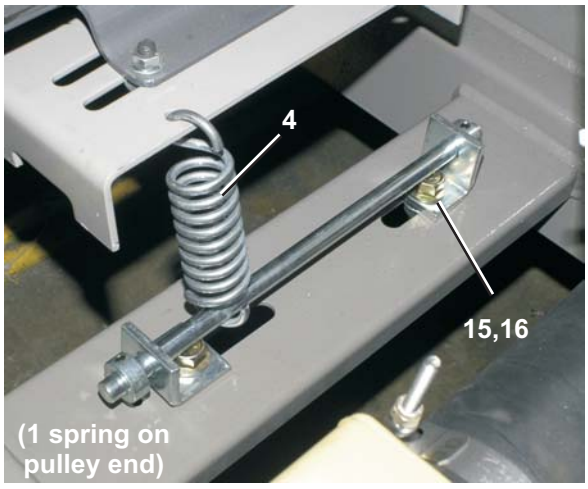
Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	D33 02850	93000Z DRIVE CHART=3022V7 VSP 50CYC	30015V7J & 30022V6J 50 CYCLE
	B	D33 02860	93000Z DRIVE CHART=3022V7 VSP 60CYC	30015V7J & 30022V6J 60 CYCLE
			----------COMPONENTS----------	
all	1	561825B2SD	VPUL 2B18.25 (SD) MTO	
all	2	56VB071XM2	VBELT BX71 MATCHSET2 EA=1BELT	2 BELT SET
all	3	56Q1KSD	1+1/2" BUSH VPUL QD TYPE SD	
all	4	56030B2H	VPUL 2B3.0/A2.6 2BK32H R EQUAL	
all	5	56Q1CH	1+1/8" BUSH VPUL TYP H,D,OR QT	

Motor Mount

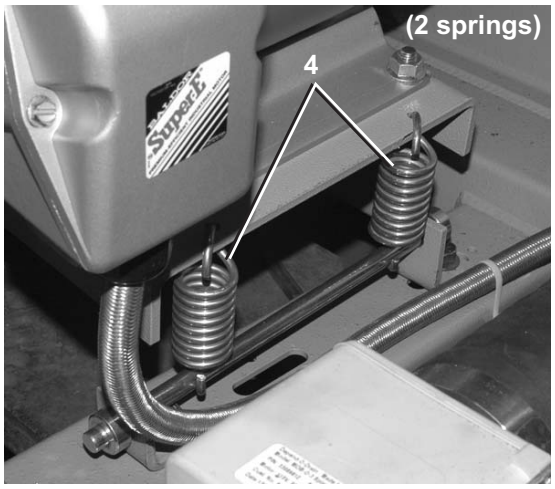
30015, 30022, 36021, 36026, 42026, & 42030Vxx,Txx



Hardware for all models; 30015V7J/Z, 30022V6J/Z Spring



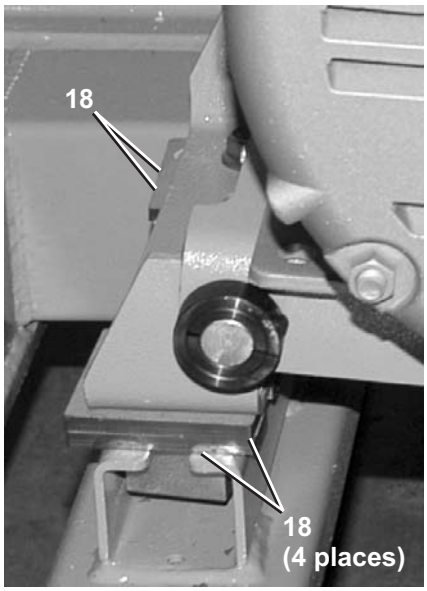
36021V5J/Z, 36026V5J/Z Spring



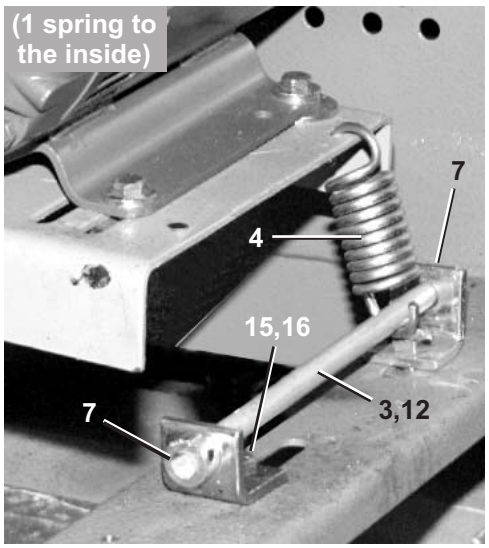
42030V6J/Z Springs

Motor Mount

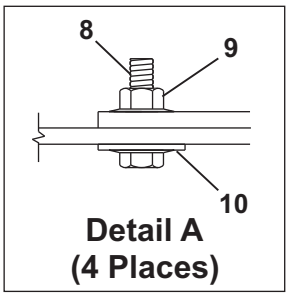
30015, 30022, 36021, 36026, 42026, & 42030Vxx,Txx



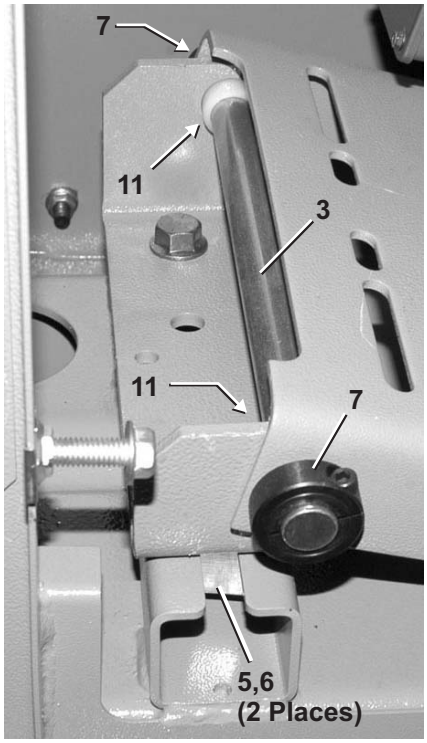
42030V6J/Z only



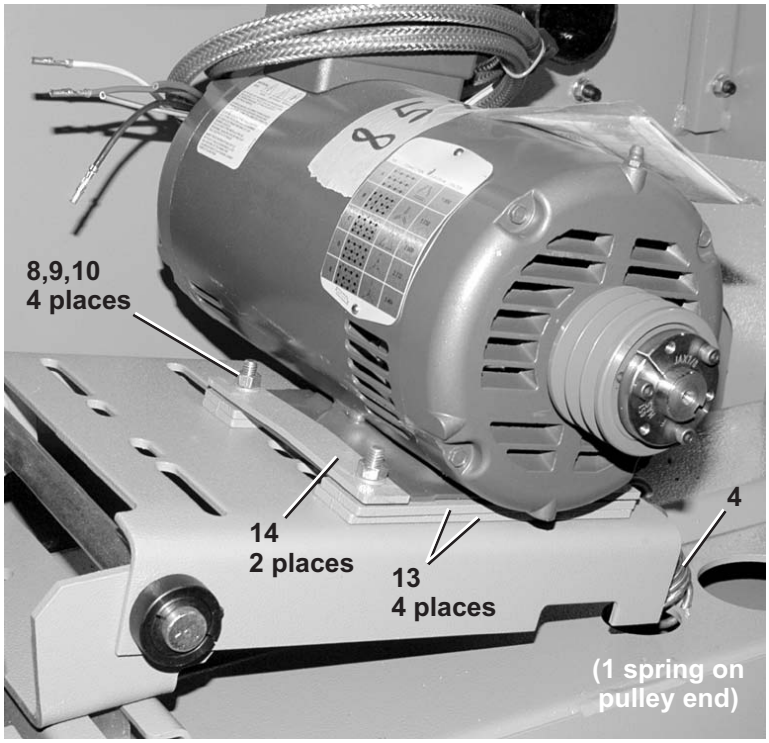
36026V7J/Z & 42026V6J/Z Spring



Item 12, tube, slides over the shaft to tighten the belt.



All models



30015 & 30022T5E,T5X Motor Mount and Spring

Motor Mount

30015, 30022, 36021, 36026, 42026, & 42030Vxx,Txx

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	ADB30001	30” DRIVE BASE SNGL MTR ASSY	30015 & 30022T5E/T5X
	B	ADB30007	ASSY=3015/22V DRIVE BASE	3015V7_, 3022V6_
	C	ADB3621V5	ASSY=DRIVE BASE 3621V5	3621V5J WITH STARPLATE
	D	ADB3626V5	ASSY=DRIVE BASE 36V5	3626V5J WITH STARPLATE
	E	ADB3022T5	ASSY=DRIVE 36V7/42V6	3621V7_, 3626V7_, 4426V6_
	F	ADB12001	DRIVE ASSY 4230V	4230V6J_
			----------COMPONENTS----------	
ABCDE	1	02 04256	PLATE=MOTOR MNT, 3022S4	
F	1	02 04256D	MOTOR MOUNT PLATE 4230V	
AB	2	02 04257A	BRKT=MOTOR MOUNT 30V	
CD	2	02 04257B	BRKT=MOTOR MOUNT 36V5	
EF	2	02 04257	BRKT=MOTOR MOUNT, 36V7/42V6	
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+1/2SQ SPEC	
ABE	6	15K154H	INDHEXFLGSCR ½-13X1+3/4GR8ZN W/LOCTITE	
EF	6	15K162	HXCAPSCR 1/2-13UNC2AX1.5 GR5 P	
all	7	54JH10750C	SHFTCOLLAR 3/4"CLPTYP(SGLSPLT)	
all	8	15K092Z	HEXFLGSCR 3/8-16X1 GR5 ZINC	
all	9	15G198	HXFLGNUT 3/8-16 ZINC	
all	10	15U241	FLATWASHER 13/32IDX1+3/4ODX14G	
CDEF	11	54E226	FLBRNYL 3/4"X1"X1";EA=1 FLGBRG	
CDEF	12	02 04258B	TUBE=MOTOR MOUNT SPRING ADJ	
A	13	02 03839B	PLATE=MTR MNT REINFORCEMENT	
A	14	02 04256A	DOUBLER=MOTOR	
CDEF	15	15K153H	INDHEXFLGSCR1/2-13X1+1/4GR8ZN W/LOCTITE	
CDEF	16	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
CDEF	17	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
F	18	02 02822C	SPACER=MOTOR MT 36V5	4230V6J/Z ONLY

Bearing Assemblies 3

Cylinder, Shell, Bearing, and Console Installation

30015V7J,T5E,T5X; 30022V6J,T5J,T5E,T5X

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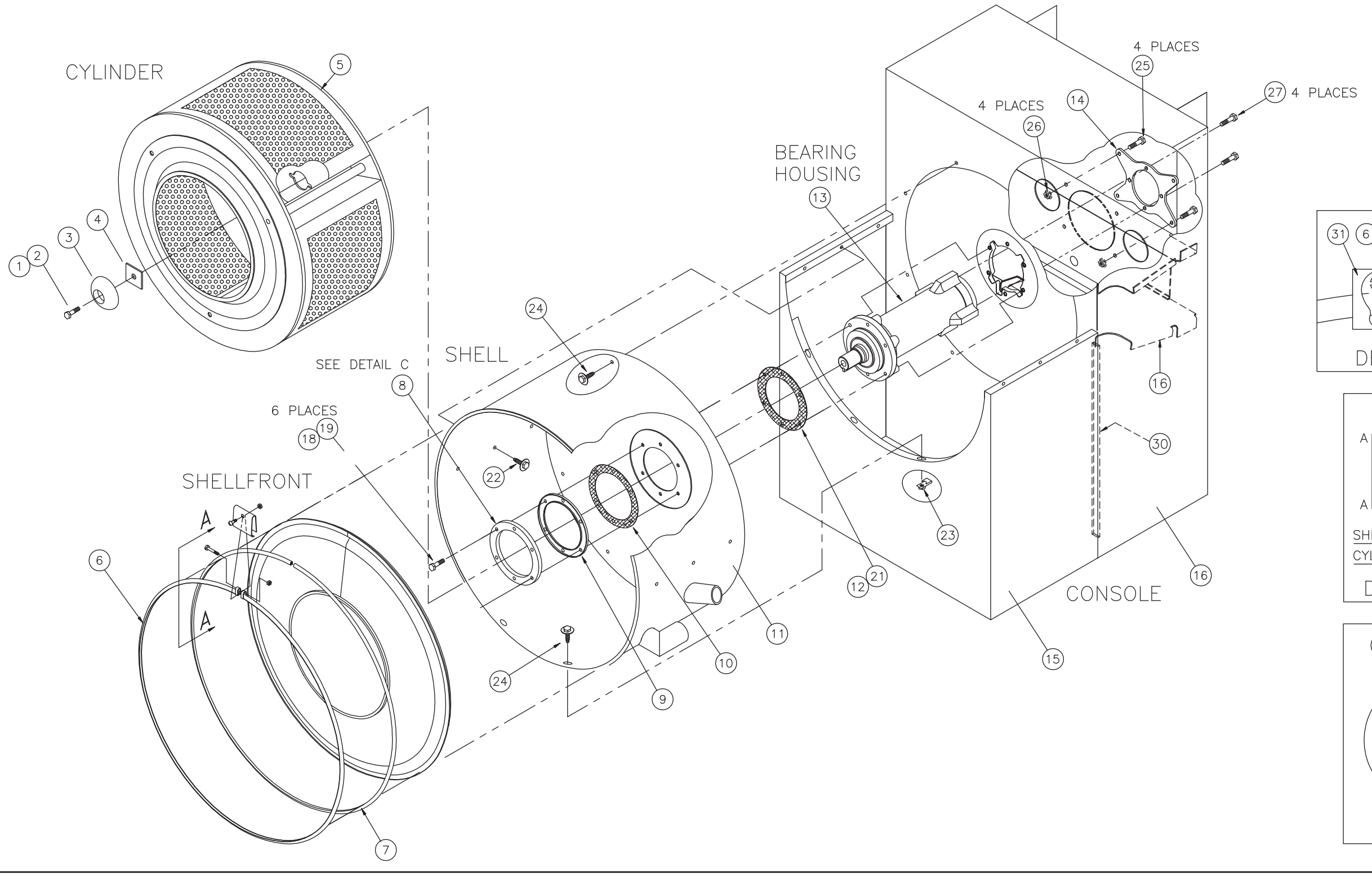

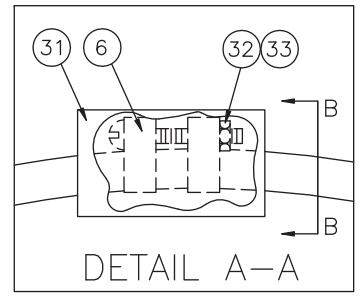

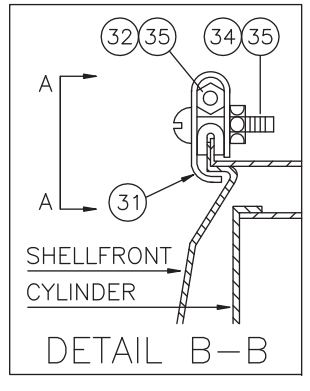

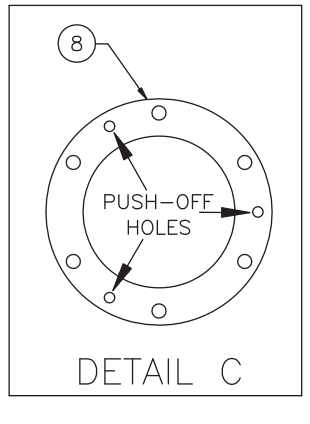

Cylinder, Shell, Bearing, and Console Installation

30015V7J,T5E,T5X; 30022V6J,T5J,T5E,T5X

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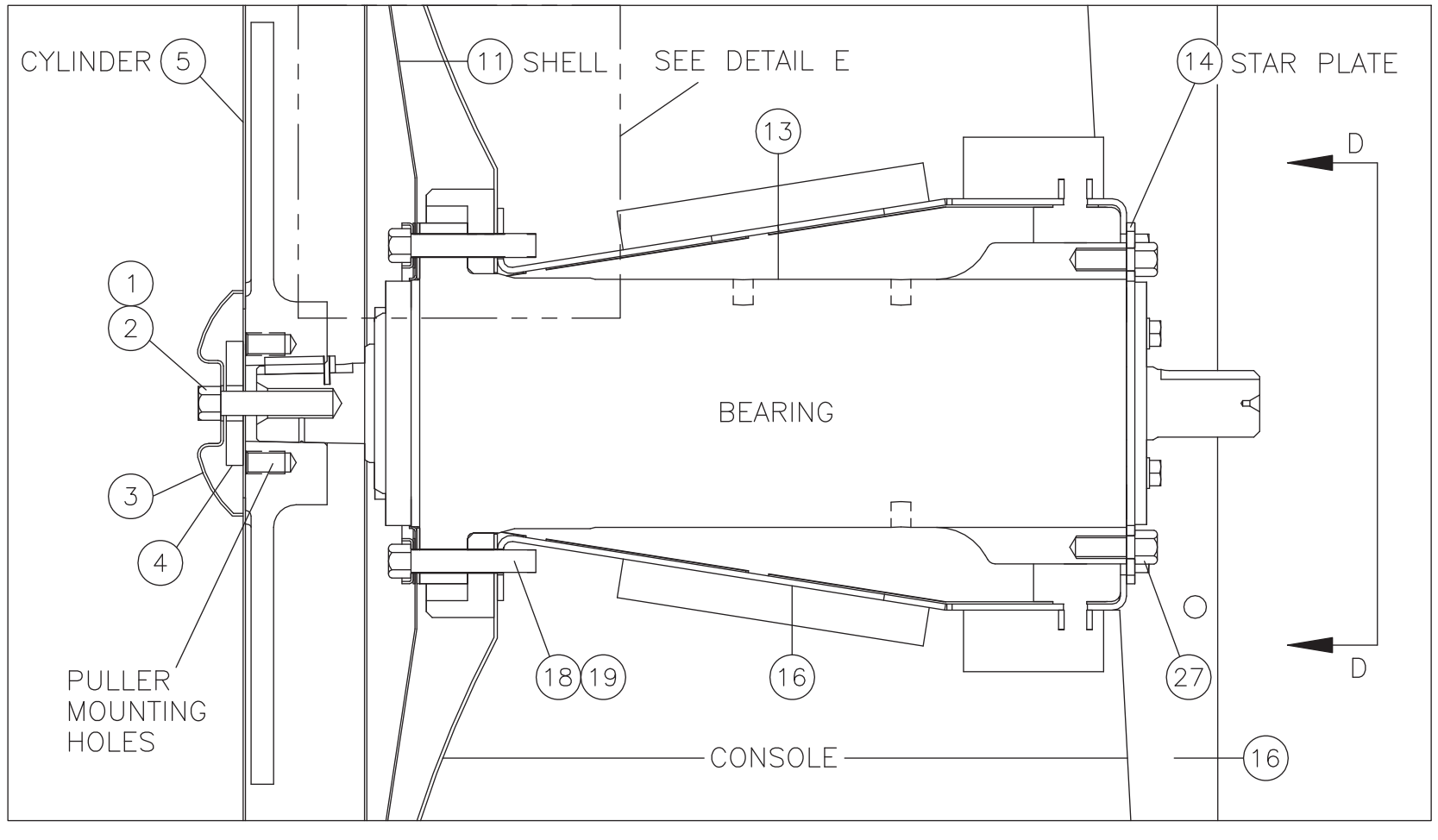

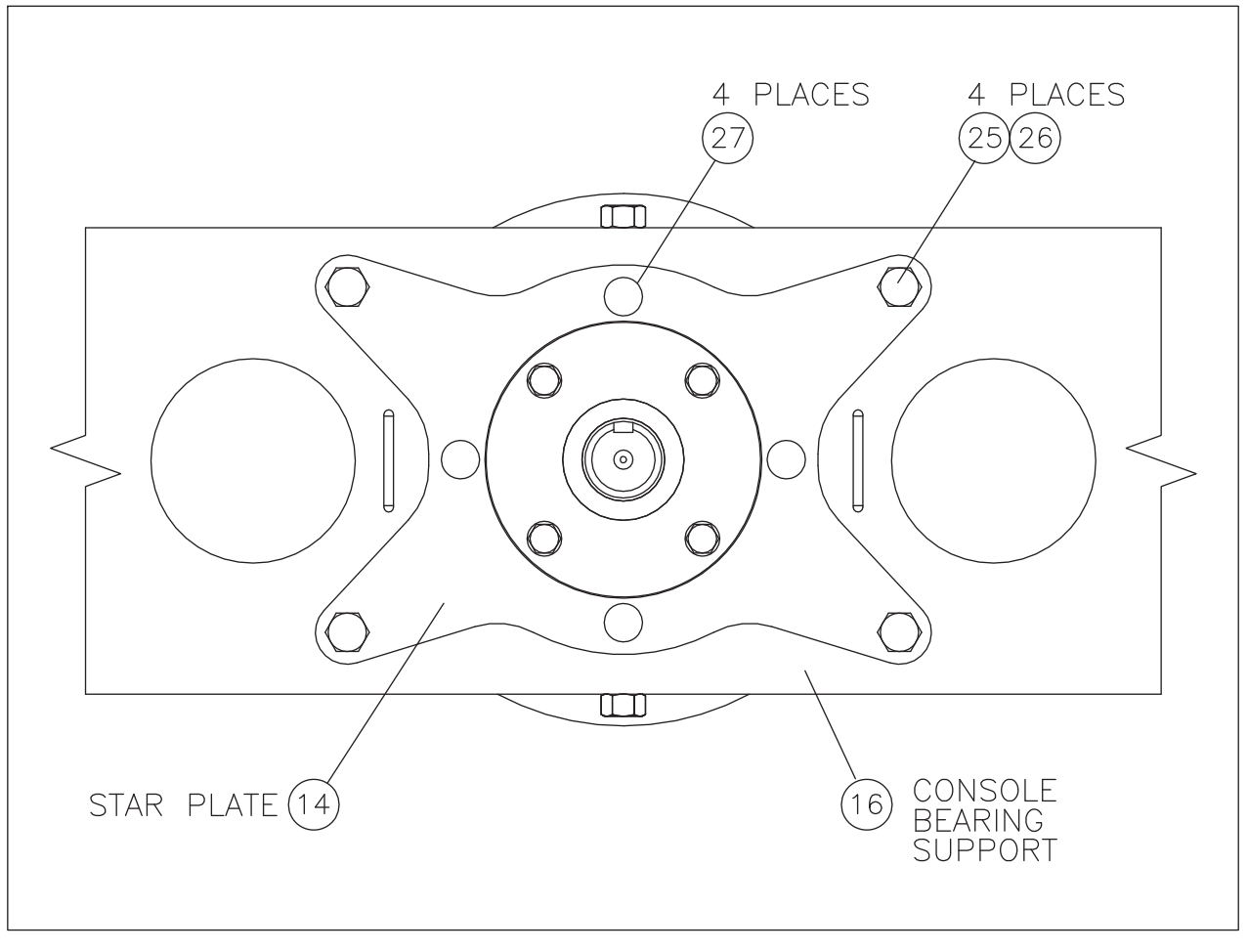

Cylinder, Shell, Bearing, and Console Installation

30015V7J,T5E,T5X; 30022V6J,T5J,T5E,T5X

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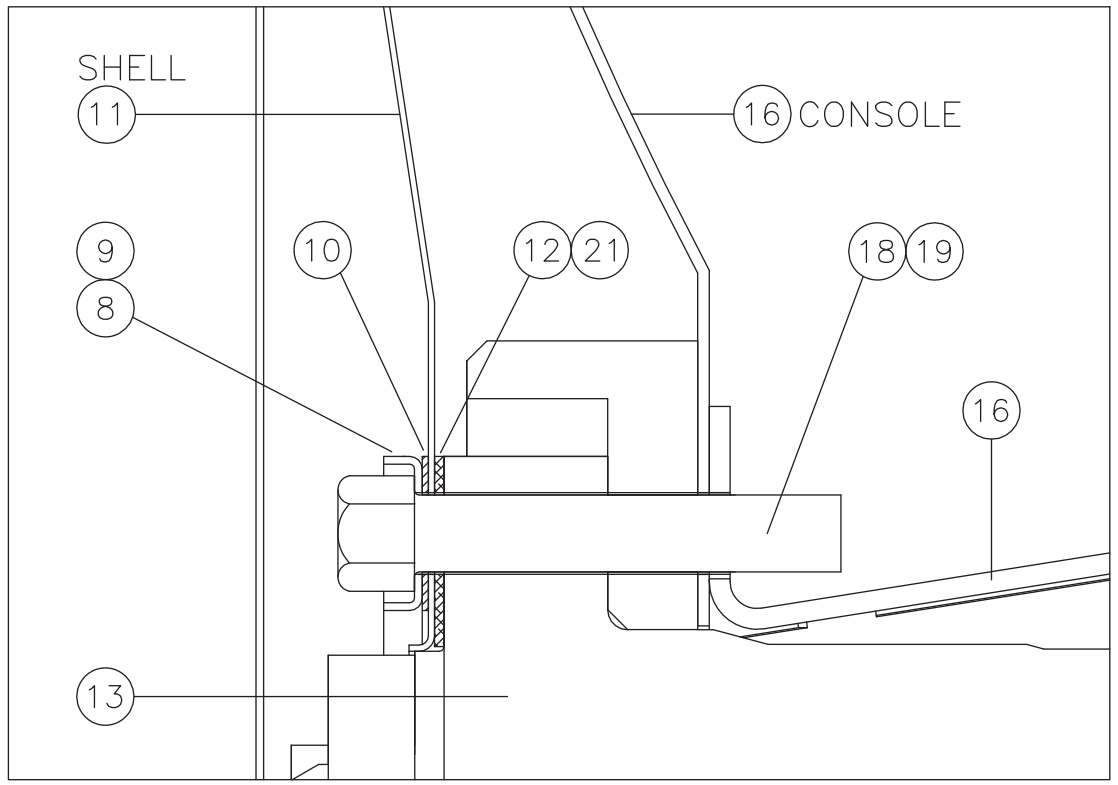

DETAIL E: ENLARGED VIEW

Parts List—Cylinder, Shell, Bearing, Console Installation

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

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	ASC30002A	3015C4E FRONT/RR CONW/STARPLATE ASY	3015C4E
	B	GSC30005T	3015T5 FRNT/REAR W/STARPLATEINSTALL	5105T5E, 3015T5X
	C	ASH33040S	SHELL+CONSOLE 3015V7 REAR H20 W/STAR	3015V7J
	D	ASC30001A	3022C4E FRONT/REAR CONSOLE W/STARPL	3022C4E
	E	GSC30004S	3022T5 FRONT/REAR CNSL W/STARPLATE	3022T5E, 3022T5X
	F	ASH3022S	3022V SHELL+CONSOLE ASSY W/STARPLATE	3022V6J
			----------COMPONENTS----------	
all	1	15B200	HEXCAPSCR 3/4-10X1+3/4 SS18-8	
all	2	15U350	LOCKWASHER 3/4 MED SS18-8	
all	3	02 11196	COVER=SHAFT RETAINER=304S/S	
all	4	02 14359A	SHAFT RETNR SPACER 2+3/4" SQ	
A,B	5	ACA02CWE	CYL ASSY=3015CWE/NMA/C4M/OE	
C	5	ACA33C6M	* CYL ASSY=3015C6M	
D,E,F	5	ACA3022M5	*CYL ASSY=3022 M5/C/K/S	
all	6	Y2 02059	*SHELL CLAMP RING=30" MACHINE	
all	7	02 02087C	EXTRUSION-SHELL=30"MACHINES	
all	8	X2 03576	RING=SHELL BACK CLAMP=1/C6M	
all	9	02 03444	RING=SHELL BACK CLAMP	
all	10	02 03575	GASKET=SHELLBAKCLAMPRING=CWM	
A	11	ASH30002	3015C4E SHELL/DRAIN ASSY	
B	11	ASH33016B	ASSY=SHLL&DRN 3015T5E REAR H20	
C	11	ASH33016A	ASSY=SHLL&DRN 3015M6 REAR H20	
D	11	ASH30001	3022C4E SHELL/DRAIN ASSY	
E	11	ASH33011D	ASSY=SHELL+DRAIN 3022 TIMER	
F	11	ASH33011B	ASSY=SHELL+DRAIN 3022VT	
all	12	02 03574	GASKET=MAIN BEARINGHOUSE=CWM	
A,B	13	SA 33 030S	BEARING ASSY MAIN 3015T/C W/STARPLATE	
C	13	SA 33 048S	BEARING ASSY MAIN 3015V W/STARPLATE	
D,E,F	13	A33 09901S	BEARING ASSY MAIN 3022 W/STARPLATE	
all	14	02 11340	3022 BEARING SPT SPIDER PLATE	
A	15	W2 03707	3015C4E STD FRONT CONSOLE WELD	
B,C	15	W2 03698R	WLMT=FRNT CNSLE EMBOSS 3015+DR CBL	
D	15	W2 03698Y	302C4E STD FRONT CONSOLE WLMT	
E,F	15	W2 03698X	WLMT=FRNT CNSLE EMBOSS 3022+DR CBL	
A	16	W2 03769S	3015C4E REAR CONSOLE W/STARPLATE WE	
B	16	W2 03770T	WLMT REAR CNSL, 3015T W/STARPLATE	

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Parts List—Document Name

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
C,E,F	16	W2 03770S	WLMT REAR CNSL, 3022V/T, 3015V W/STARPL	
D	16	W2 03771S	WLMT=3022C4E REAR CONSOLE W/STARPLA	
A,B	18	15K180S	HXCAPSCR 1/2-13UNCAX2 18-8SS	
C,D,E,F	18	15K196	HEXCAPSCR 1/2-13UNC2X3 18-8SS	
all	19	20C013C	GSKT ELIM SEAL LCT#50441 250CC	
all	21	20C036A	GASKET SEAL NO 2C 7FL OZ	
all	22	15B101	3/8-16X3/4HXCPWPLASTISOL SS	
all	23	17N071	NUT J-TYP #C33896-3816-3B 3/8"	
all	24	15B102	3/8-16X1 UNSLTINDHEXTYF SS	
all	25	15K153H	INDHEXFLGSCR1/2-13X1+1/4GR8ZN W/LOCTI	
all	26	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	27	15K147C	SKCPSC 1/2-13X1 BLK	
A,B	30	02 03749	BAR=REINF STRIP 3015	
all	31	02 02181	GUARD=SHELL MOUNT RING CLIP	
All	32	15N200	FILMACSCR 1/4-20UNCX2 SS18-8 S	
all	33	15G170	HEXNUT 1/4-20UNC2 SS18-8	
all	34	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
all	35	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	

.

Main Bearing Assembly

3015C4E, T5E, T5X, V7J, 3022C4E, T5E, T5X, V6J

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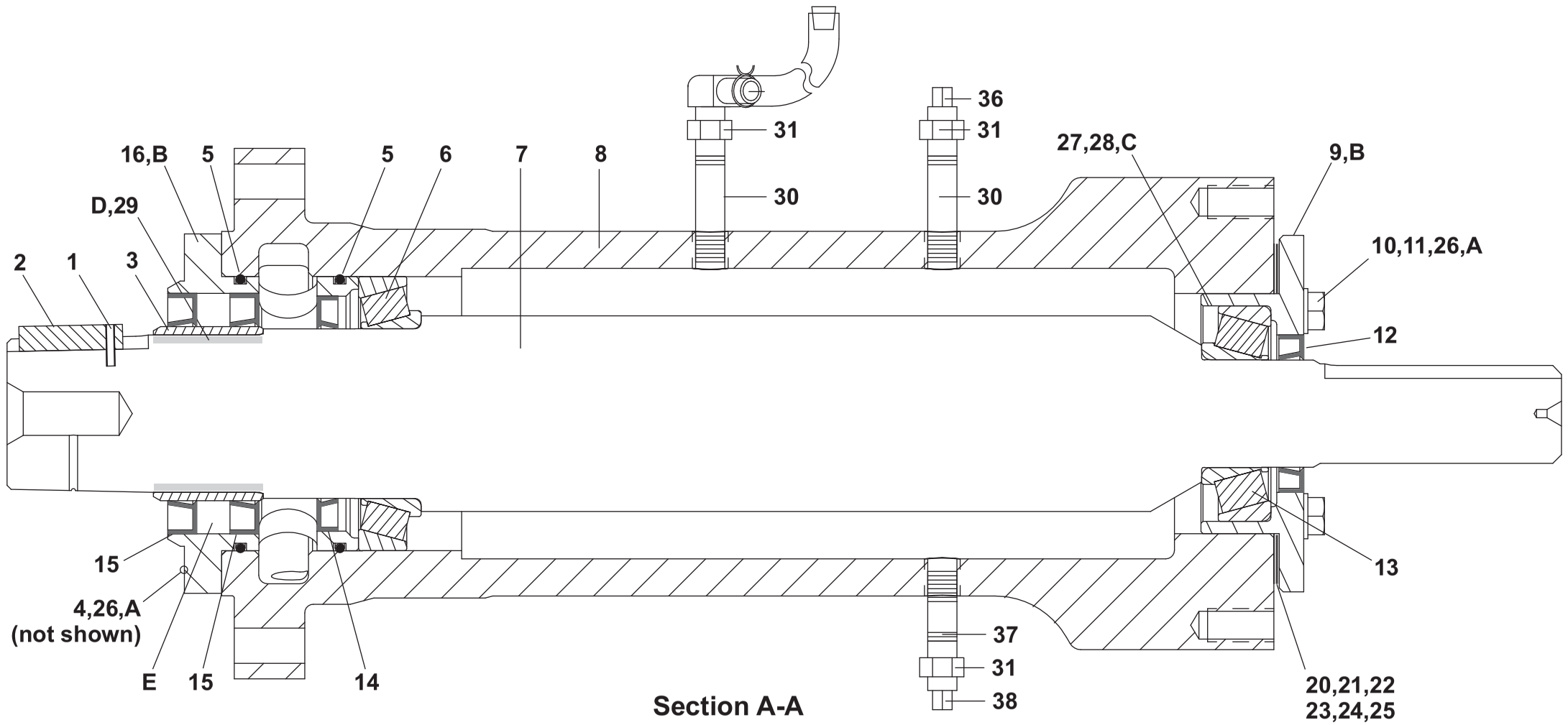
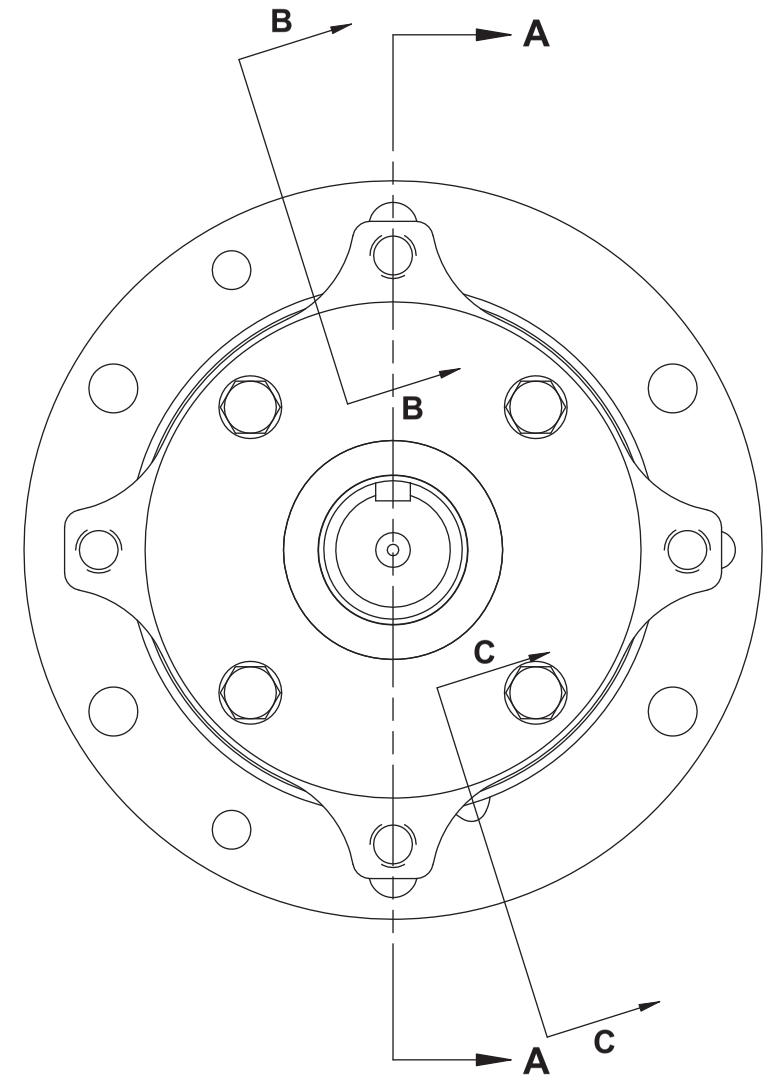
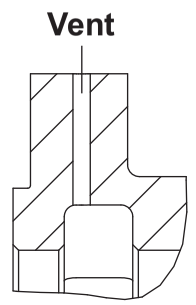
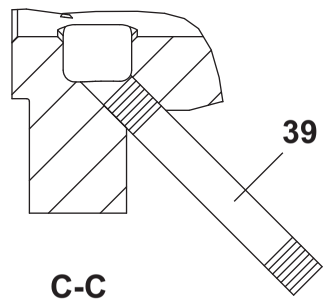


Section A-A





B-B
Vent



C-C
Leak-off
from Seals

Notes:

A. Apply adhesive to the bolt.
B. The seal holder must be fully down before you tighten the fasteners.
C. Apply primer and adhesive to the rear bearing cup and holder housing.
D. Clean the shaft and inner sleeve. Make sure that they are clean and free from oil. Apply adhesive to the shaft, then apply the sleeve. Make sure of a bond on a minimum of 75% of the surface.
E. Pack grease between these two seals during assembly.
F. Item 17 is not shown. These plugs are used temporarily to prevent dirt from entering unfilled holes.

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Parts List—Main Bearing 3015/3022

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 33 030S	BEARING ASSY MAIN 3015T/C W/STARPLATE	3015C4E, 3015T5E, 3015T5X
	B	SA 33 048S	BEARING ASSY MAIN 3015V W/STARPLATE	3015V7J
	C	A33 09901S	BEARING ASSY MAIN 3022 W/STARPLATE	3022C4E, 3022T5E, 3022V6J
			----------COMPONENTS----------	
All	1	15H089S	SPRINGPIN 1/8"DIA X 5/8" LONG	
all	2	02 02294A	SHAFT KEY 3/8 X 3/8	
all	3	02 13143	SEALSLEEVE=SWE-1/SWE	
all	4	15B080	HEXCAPSCR 5/16 X1+1/4 SS-18-8	
all	5	60C151	ORING 3+7/8ID1/8CS BUNA70#241	
all	6	54A915916	TIM#JLM710949C/JLM710910-2.5"B	
A	7	X2 03314T	MACH=MAIN SHAFT, 3015V/C W/STARPLATE	
B	7	X2 03314S	MACH=MAIN SHAFT, 3015V W/STARPLATE	
C	7	X2 13103S	MACH=MAIN SHAFT, 3022 W/STARPLATE	
all	8	X2 03573S	MACH=BEARING HOUSING, 3022 W/STARPLATE	
all	9	X2 03659S	HOUSE=SEAL+BRG 30M,V7 W/STARPLATE	
all	10	15K121A	HXCPSC 3/8-16X2 GR8 ZC	
all	11	15U152A	FLTWSHR .680OD,.375ID,.0625T	
all	12	24S048AAA	SEAL 1.625X2.375X.375 CS/BUNA	
all	13	54A307308	TIM M802011 2-24/M802048=1.625	
all	14	24S052A	SEAL 2.559X3.55X.315 CR#25430	
all	15	24S053	SEAL 2.625X3.625X.437#10051L5	
all	16	X2 13144A	HOLDER=SHFT SEAL(05=24S052A)	
all	17	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	20	02 03323	SHIM=.003 CRS GREEN	
all	21	02 03323A	SHIM=.005 CRS BLUE	
all	22	02 03323B	SHIM=.010 CRS RED	
all	23	02 03323C	SHIM=.0075 CRS BLACK	
all	24	02 03323D	SHIM=,020 CRS WHITE	
all	25	02 03323E	SHIM=.050 CRS CLEAR	
all	26	20C007H	THDLK REMVBL-#24221	
all	27	20C011B	RETAIN CMPD ADH LCT#60905 .5CC	

Parts List, cont.—Main Bearing 3015/3022

Used In	Item	Part Number	Description	Comments
all	28	20C006P	PRIMER-N #7649 LCT#21348-4	
all	29	20C009	THRDLKSEAL LCT#27731 50CC	
all	30	5N0E03ABE2	NPT NIP 1/4X3 TBE BRASS STD	
all	31	5SCC0EBE	NPT COUP 1/4 BRASS 125# W/HEX	
all	32	5SL0EBEC	NPTELB 90DEG STRT 1/4 BRASS125	
all	33	27A043A	HOSECLAMP.562"DIA.SPRG#HC9STZD	
all	34	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
all	35	27A106	CORK SIZE 4 XXX E=1	
all	36	51P013	PLUG HXCNTRSUNK 1/4"BRASS	
all	37	5N0E01KBE2	NPT NIP 1/4X1.5TBE BRASS STD.	
all	38	5SP0EFFSSM	NPT PLUG 1/4 SQSLDMAGNET BLKST	
all	39	5N0E05AG42	NPT NIP 1/4X5 TBE GALSTL SK40	

Shell and Door Assemblies

4

Shellfront Assembly, Conduit, & Interlock

3010 / 3015 G5E,G5X,CGE

30015 V7J,T5J,C4A,C4E & 30022 V6J,T5J,C4A,C4E

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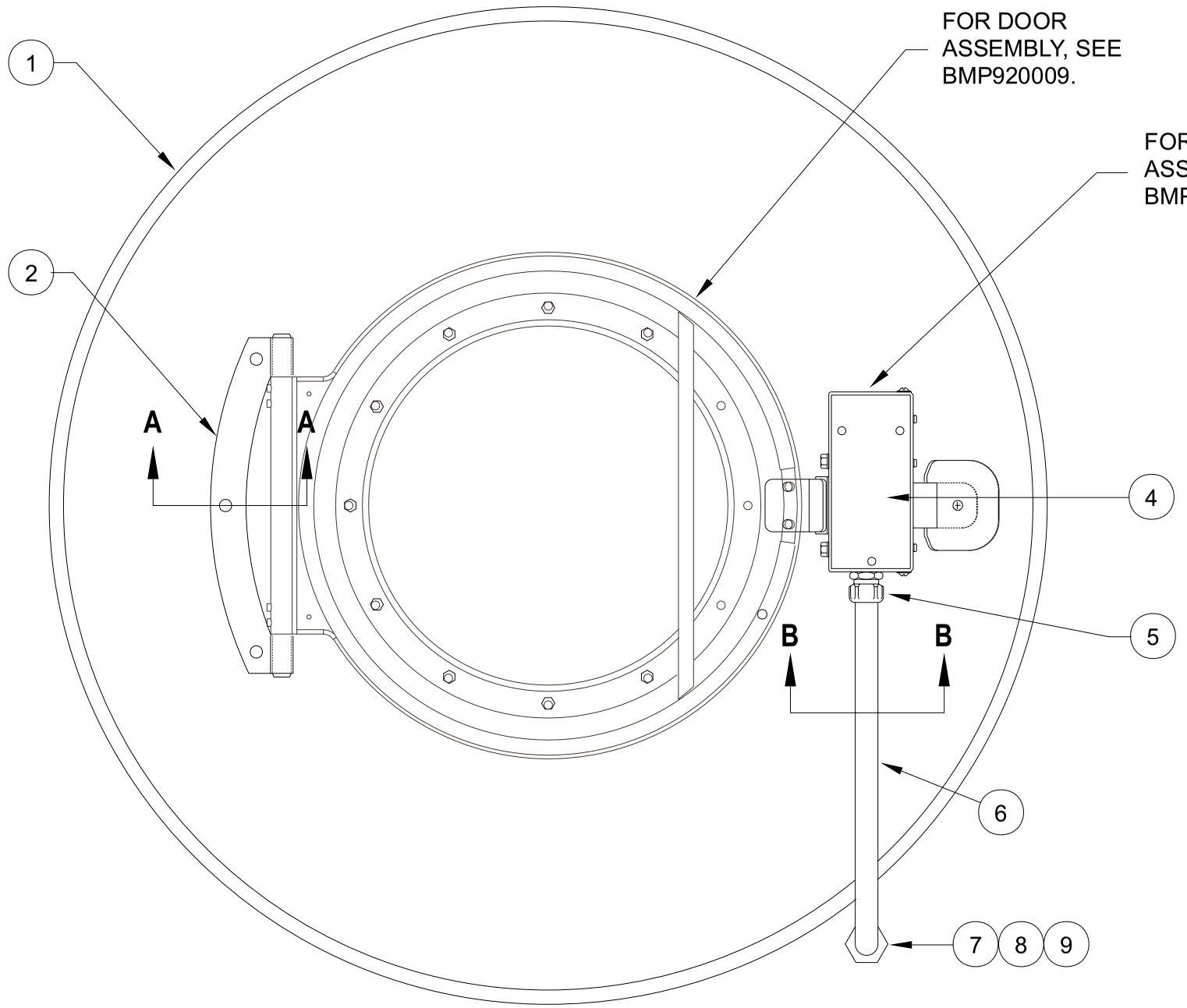
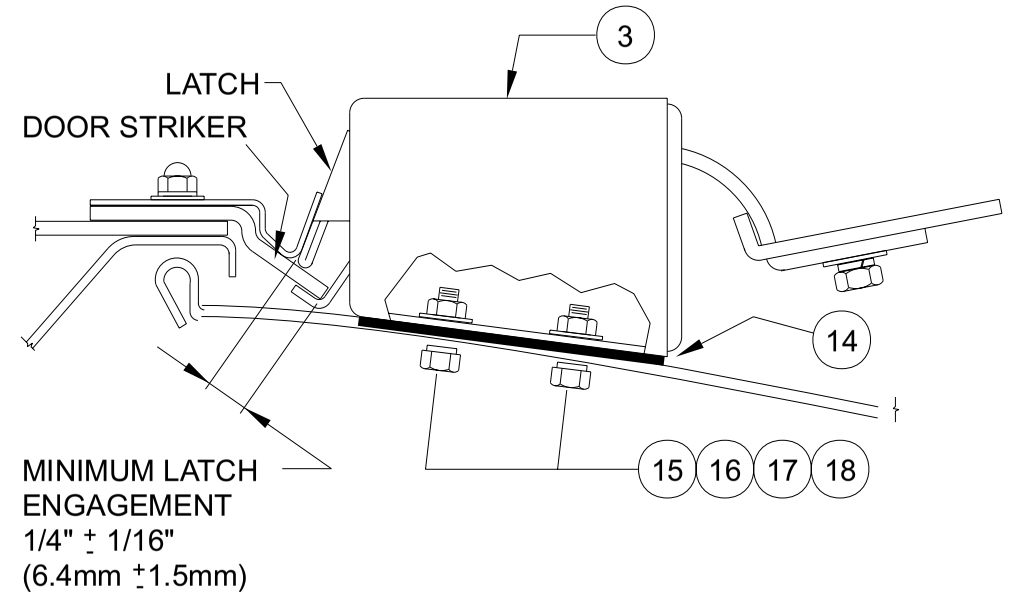
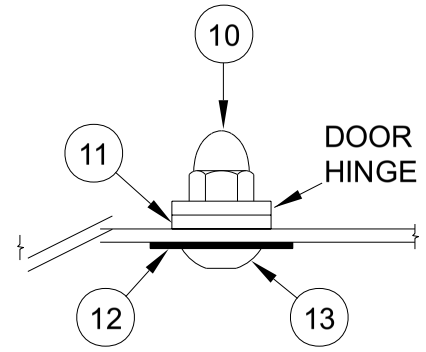




VIEW "B-B"



VIEW "A-A"

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 & 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	A33 10100C	*SHLASSY (IDNT) UNLOK N4P	3015M4G/J/P, M6J,D4A 3022M5G/J
	B	A33 10100H	SHELL FRONT ASSY 3015/20M4A	3015M4A,C4T,M4T,M6A,M6T 3022M5T,3022C4T
	C	A33 10100M	SHLASSY N/LOCK 3015/22S#G/J	3022S4J,S4G,S5J 3015K4A,S4J,S5G,S5J
	D	A33 10100N	SHLASSY N/LOCK 3015/22V/T	**3010G5E,G5X** **3015G5E,G5X,V7J,T5E,T5J,T5X** **3022V6J,T5E,T5J,T5X**
	E	A33 10100F	*SHLASSY (IDNT) UNLOK C4A	**3015C4A, 3022C4A**
	F	A33 10100G	SHLFRTASY N/O ILOK W/PROX	**3010CGE,3015CGE,30015C4E** **30022C4E**
			----------COMPONENTS----------	
ABCDE	1	X2 02361B	SHELLFRONT,30",ELECTRIC LOCK	
F	1	X2 02361C	2002296D SHELLFRT=30" ILOC W/PROX	
A.C,D	2	A33 07100C	*DRASSY(INDNT)LK,LOGO N4,5,6P	
B	2	A33 07100H	95027 DOOR ASY 3015/3020M4A	
EF	2	A33 07100F	95027# DRASSY (INDNT)LK,LOGO C4A	
A,B	3	EDL00171	INTRLKHSG ASSY=N/UNLOCK 240V	
C	3	EDL00371	INTERLKHSG=N/LOCK+SWITCH240V	
D	3	EDL00271	INTRLKHSG ASSY=N/LOCK 220V	
F	3	EDL00171C	INTRLKHSG ASSY=N/O W/ PROX 240	
all	4	01 10422	NPLATE:DOOR ILOC->N4,5,6 P	
all	5	12K040	1/2"COND.EMT COND. PECO #260B	
All	6	03 01446	1/2 EMT CONDUIT 900D=DR INTR	
all	7	10Y71M4GEX	*M4G EXTERNAL CONNECTIONS	
all	8	12K040	1/2"COND.EMT COND. PECO #260B	
all	9	12P1ASSB	SNAPBUSH 7/8"MH X 11/16	
all	10	15G200C	HXCPNUT HI 3/8-16 BRASS NIK PL	
all	11	02 02819C	SPACER-SHELLFRONT/HINGE	
all	12	02 02293	DOOR HANDLE NUT GASKET	
all	13	15K084	TRUSS HXSOK 3/8-16 X 23/32SS	
ABCDE	14	02 03669	GASKET=INTRLK HOUSING	
F	14	02 03669C	GASKET=INTRLK HOUSING 8" LONG	
all	15	15N174	HXCAPSCR 1/4-20UNC2X5/8SS18-8	
all	16	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	17	24G020N	ROLLED WASH.252ID NYLTITE 25W	

Parts List, cont.—Shellfront, Conduit & Interlock

Used In	Item	Part Number	Description	Comments
All	18	15G168	SQNUT 1/4-20UNC2 SS18-8	

Door Assembly

30015 & 30022 Rigid Mount

BMP920009/2008232B
(Sheet 1 of 2)

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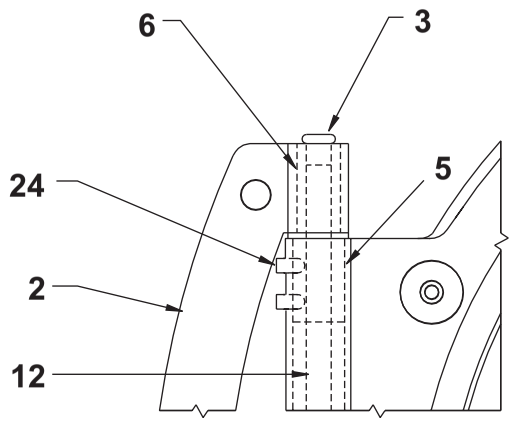
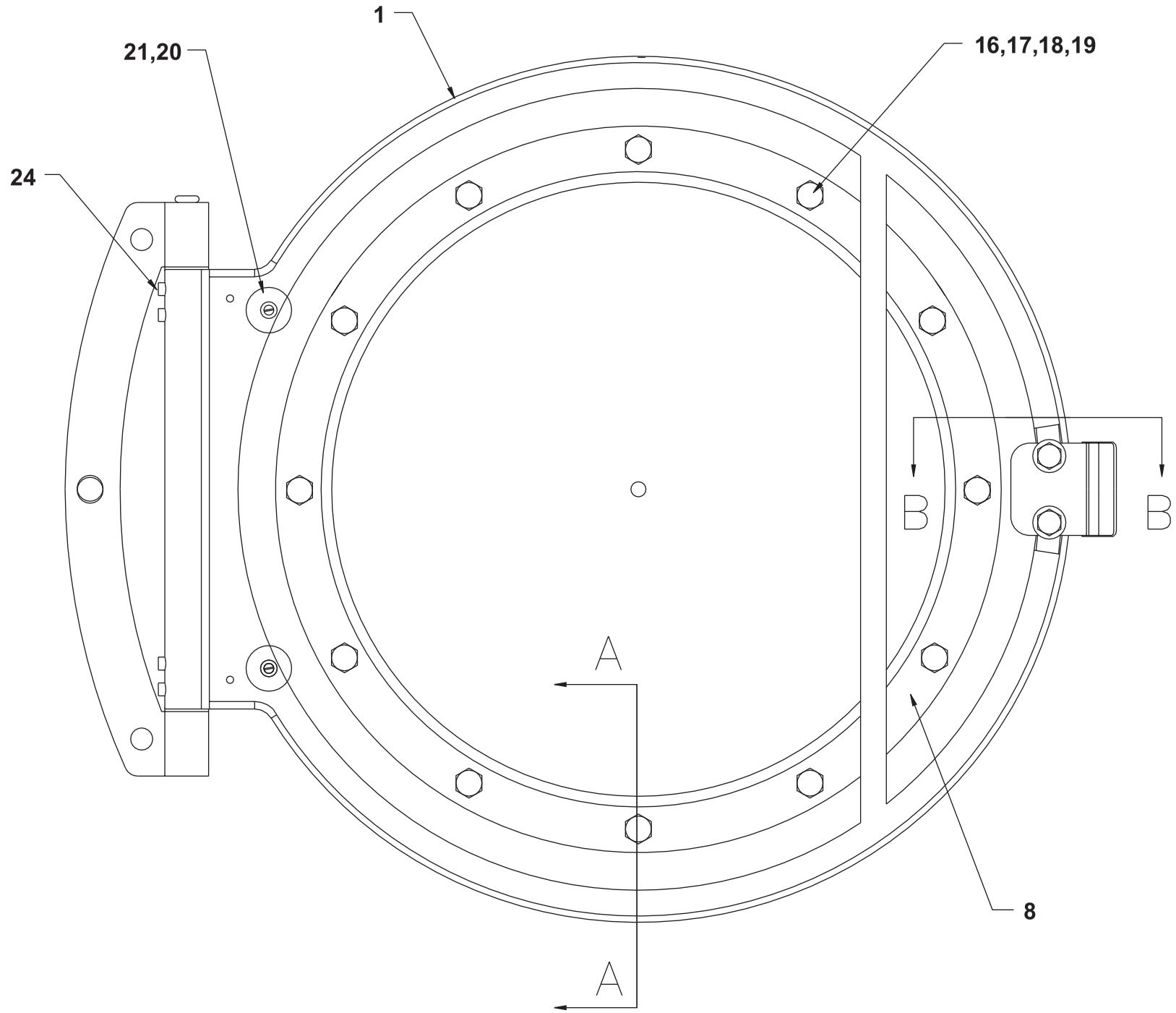
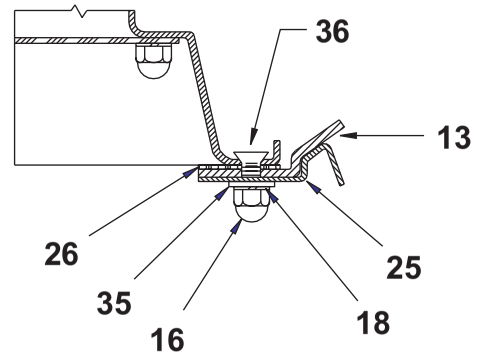
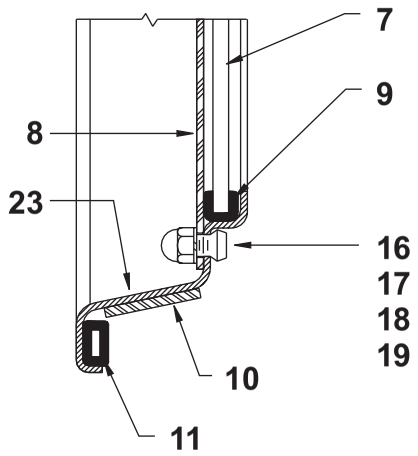


HINGE DETAIL





VIEW B–B



VIEW A–A

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Parts List—Door 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	A33 07100C	*DRASSY(INDNT)LK,LOGO N4,5,6P	**30015V7J,T5J,T5E** **3022V6J,T5J,T5E** 3015V7G/V7J;3022V7G/V7J 3015M4G/J/P,M6J,D4A 3022M5G/J 3022S4J,S4G,S5J 3015K4A,S4J,S5G,S5J
	B	A33 07100H	DOOR ASY 3015/3020M4A	30015M4A+30020M4A ONLY
	C	A33 06900F	ASSY=DOOR W/MLOGO DKRED 3022	3022F8J/F8P/F8W
----------			----------COMPONENTS----------	----------
all	1	X2 02814F	MACH=SHELLDOOR DRAWN, 30XX	
all	2	02 02819	HINGE=STAMPED DOOR 25#	
all	3	12P1AGHP1	HOLEPLUG 3/8"BLACK LPE	
all	5	02 02815	PLAIN BRG=DOOR HINGE-NYLON	
all	6	02 02817	FLANGE BRG=DOOR HINGE-NYLON	
A,C	7	02 09215	DRGLASS 12 3/8DIA SS STAMPED	
B	7	02 09215A	DORGLAS=DRAW W/MILNOR LOGO	
all	8	02 09021	RING=DOOR GLASS PRESSURE	
all	9	02 02366	GASKET DOORGLAS GTR52-5220-3	
all	10	02 10545	EXTR BAND-STAMPED SS CYLDOOR	
all	11	02 10342G	GASKET 15" DOOR-BLACK	
all	12	02 02764	HINGEPIN=SHELLDOOR L=10+5/8"	
all	13	03 01420	PLATE=DOOR STRIKER=ILOC	
all	16	15G140	HXCPNT 1/4-20 #C250=20 NKLPLT	
all	17	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	18	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	19	24G020N	ROLLED WASH.252ID NYLTITE 25W	
all	20	60C080	RECESS BUMPER RUBBERLAVELLE #7	
all	21	15P103	TRDCUT-F RDHDSLOT 8-32UNCX1/2	
all	22	15N173A	FLTMACSCR 1/4-20 UNCX5/8 UCUTS	
all	23	20C018	ADHESIVE-3M #1357-QT CN	
all	24	15Q077	SOKSETSCR 1/4-20X1/4 ZINC ALLE	
all	25	03 01423J	LATCH GUARD ILOC	
A,B	26	02 11904K	SHIM=DOOR HANDLE=4226RWP	
all	35	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	36	15N163A	FLTMACSCR 1/4-20UNCX 1/2 UCUTS	
,				

Interlock Assembly

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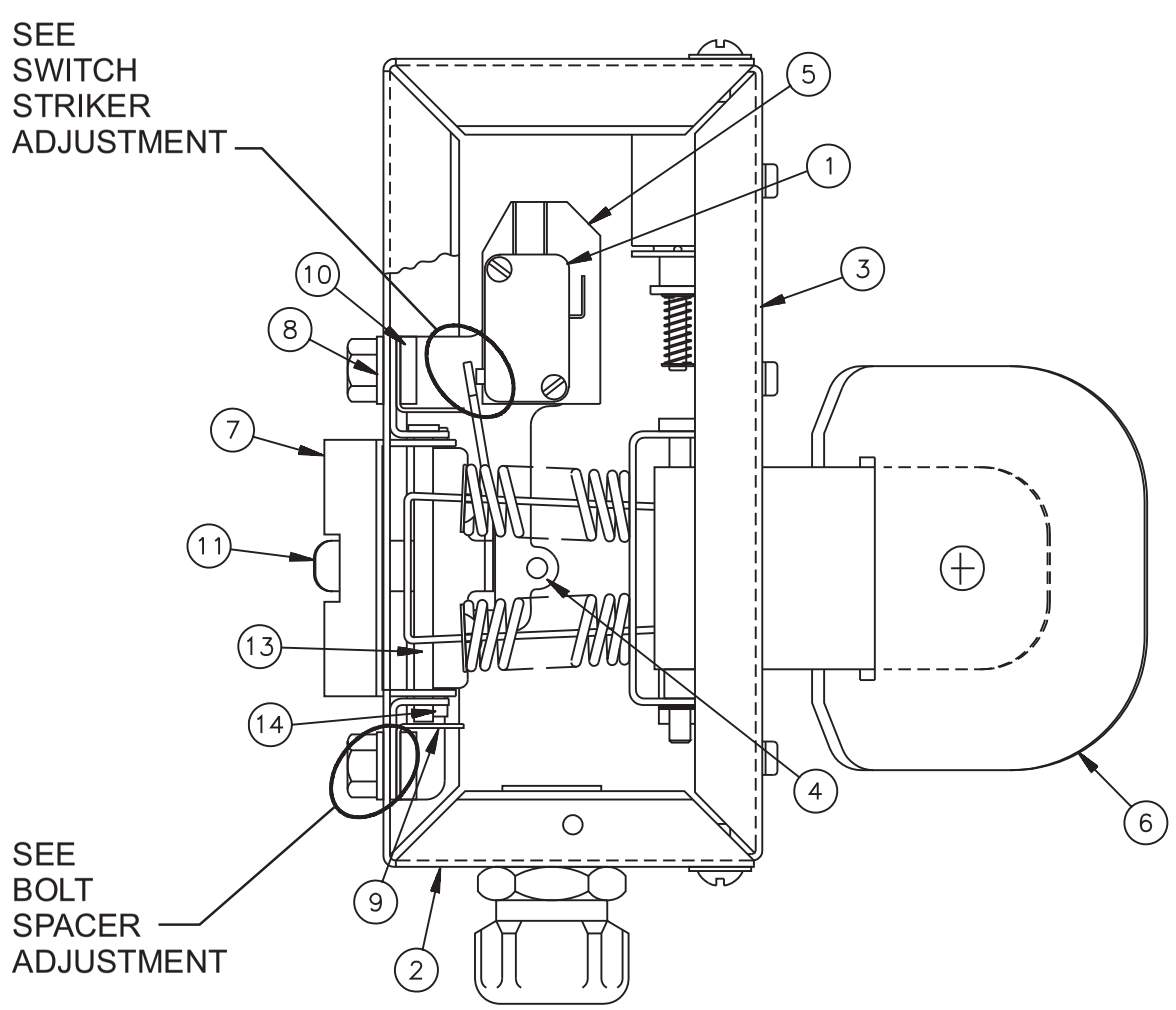
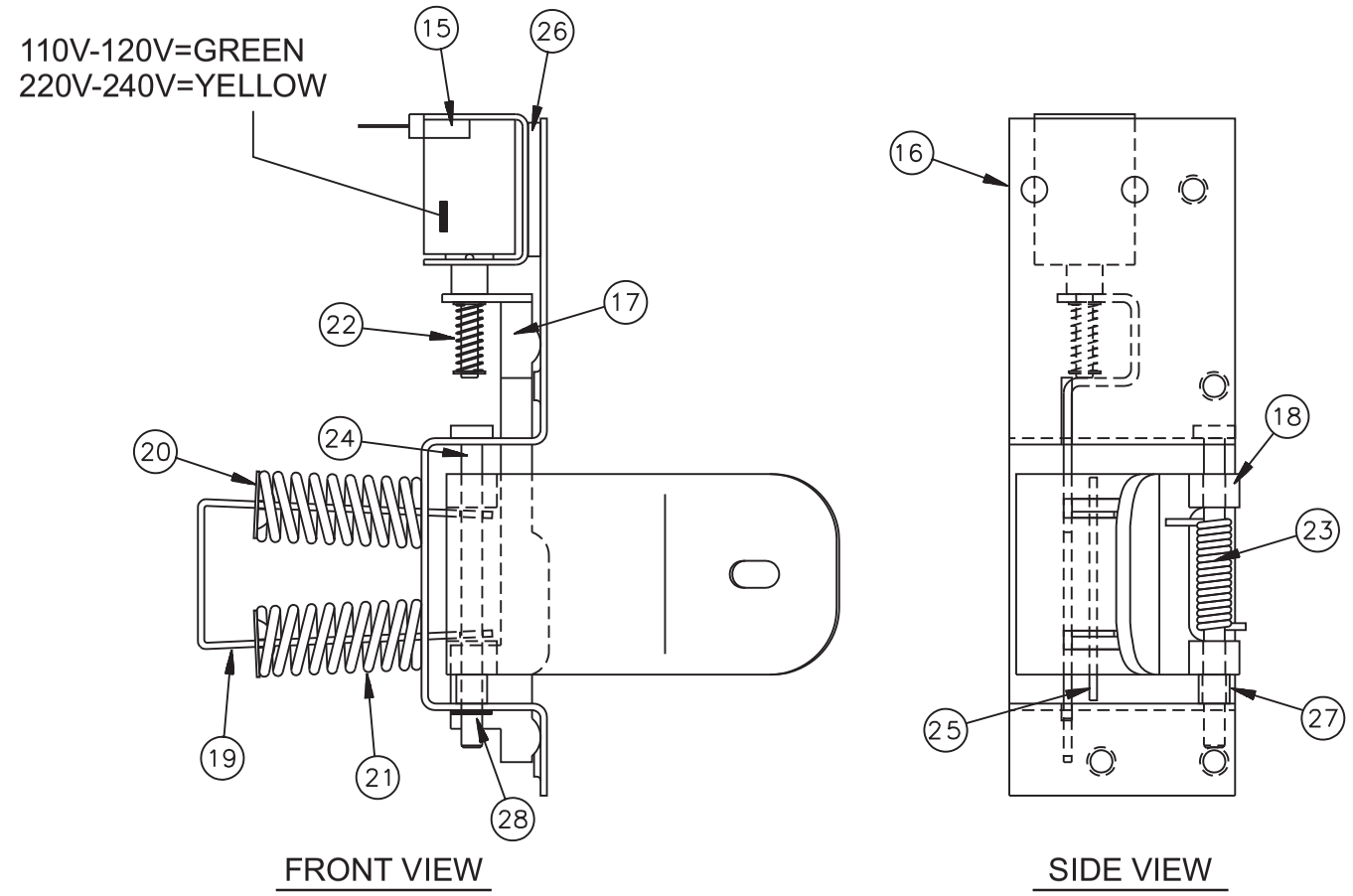
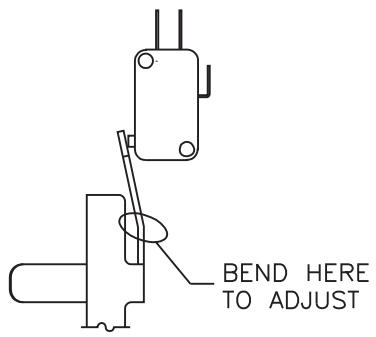




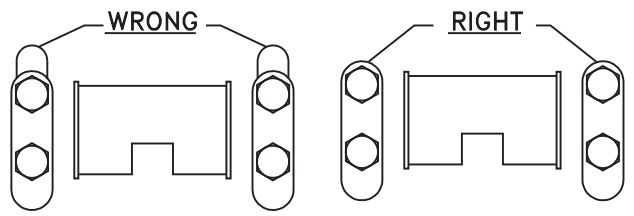
ASSEMBLIES 00AA,00BB,00CC,00DD

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

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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/UNLOK240V	USED ON 00A (CONTAINS ITEMS 15-28)
	B	EDL00221	96411 INTRLKHSG ASSY=N/LOCK 220V	3022F8J/P/W 3630F8J/P/W/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, 3621V5J, 3626V5J** **36026V7J, 42026V6J** **42030V6J**
	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 D only	2 2	03 01426 03 01426A	77201D HOUSING=FRONT=ILOC 94186D HOUSING=FRONT= ILOC W/UNLATC	
all D only	3 3	03 01427A 03 01427B	77181C HOUSING=REAR=ILOC (C-7) 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 CC	15 15	09K062B71 09K062B37	04Z SOLENOID 240/60--220/50 = ILOC 03Z SOLENOID(C-7)120/60--110/50	
all	16	03 01428A	93207C PLATE=REAR PIVOT=ILOC (C-7)	
AA BB,DD CC	17 17 17	03 01421B 03 01421A 03 01421D	93207B SLIDE=NORMALLY OPEN(C7 SOL) 75736B SLIDE=NORMALLY LOCKED=ILOC 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"DIAX1.75"LG ZINC	
AA only	26	03 S1X1	88172B SHIM:DOOR INTLK SOLENOID N4P	
all B	27 27	27B205080Z 27B205080E	SPCRROLL.177ID.218L.027T STLZC 01ZSPCRROLL.177ID.25L.027TK CSZNC	
BB,CC,DD	28	03 01418C	75736B KEEPER=NORMLOCKED SLIDE=ILOC	

Chemical Supply Devices 5

Soap Chute Installation

3010 & 3015G5E,G5X 3010 & 3015CGE

30015V7J,T5J,T5E,C4A,C4T,C4E 30022V6J,V8Z,VRJ,T5J,T5E,C4A,C4T,C4E

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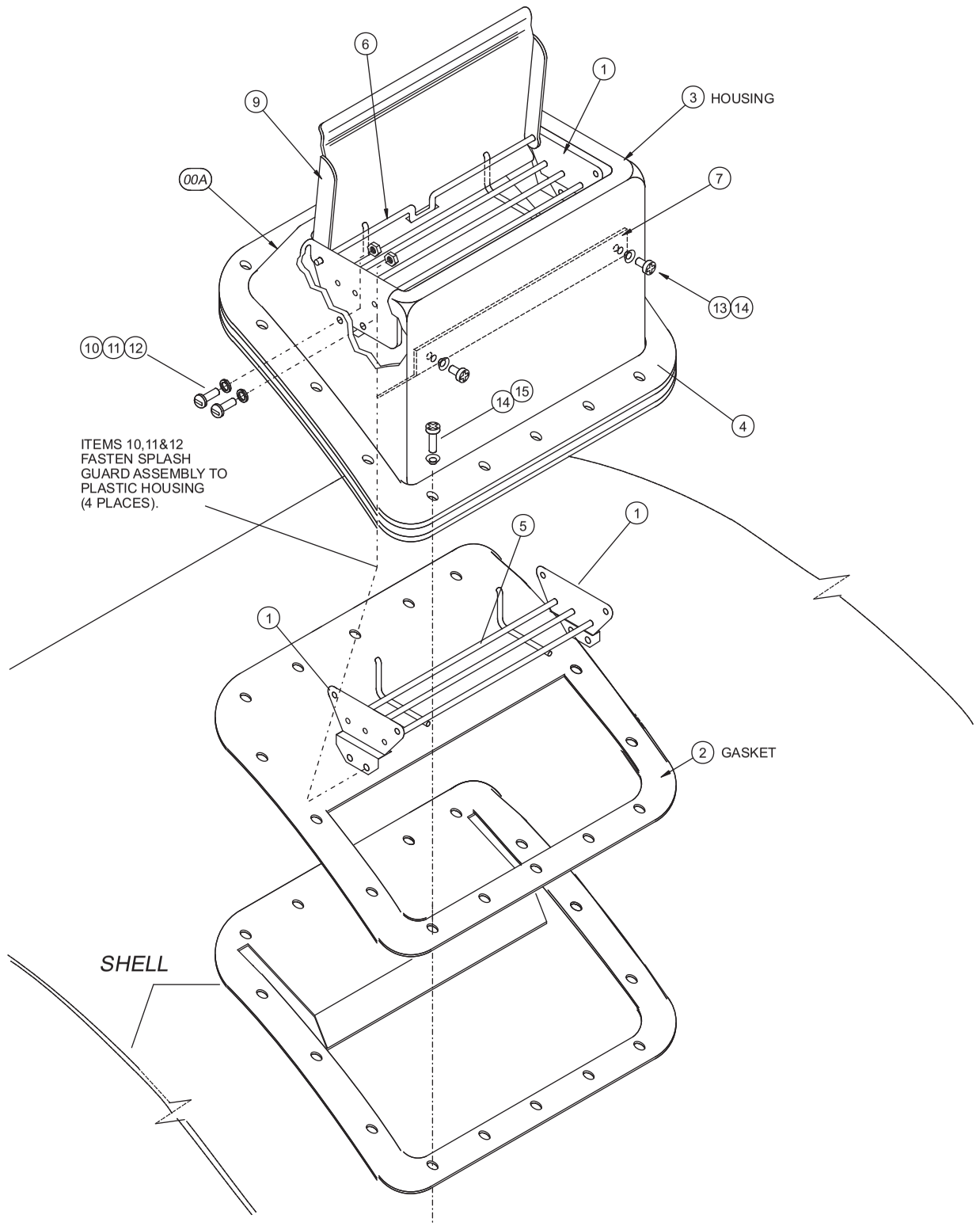

Parts List—Soap Chute Installation

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

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	SA 33 058M	94000Z ASSY=PLSTC SOAP INLET	
			----------COMPONENTS----------	
all	1	02 03130	BRACKET=PLASTIC SOAP INLET	
all	2	02 03304D	GASKET=SOAPCHUTE 1/8"EPDM BL	
all	3	02 03589I	PLASTIC SHELLSIDE SOAP INLET	
all	4	02 03589T	BACKING RING=PLSTC CHEM INLT	
all	5	02 03594	GUARD SOAP CHUTE=CWU	
all	6	02 03595	PIN SOAP CHUTE HINGE=CWU	
all	7	02 03630A	SPLASH GUARD= SOAP CHUTE	
All	9	02 03593	89432B LID-SOAPCHUTE CWE TY304 SS	
all	10	15N133	RDMACSCR 10-24UNCZA X5/8" SS18	
all	11	15U160	LOCKWASHER MEDIUM #10 SS18-8	
all	12	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
all	13	15P050	PHDCUT-F PANHD 10-32X3/4 SS410	
all	14	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	15	15P051	TRDFRM AB HOLTHD 10-16X3/4SS41	

Peristaltic Supply Inlet

30015T5E,T5X,V7J 30022T5E,T5X,V6J 30022V8Z,VRJ

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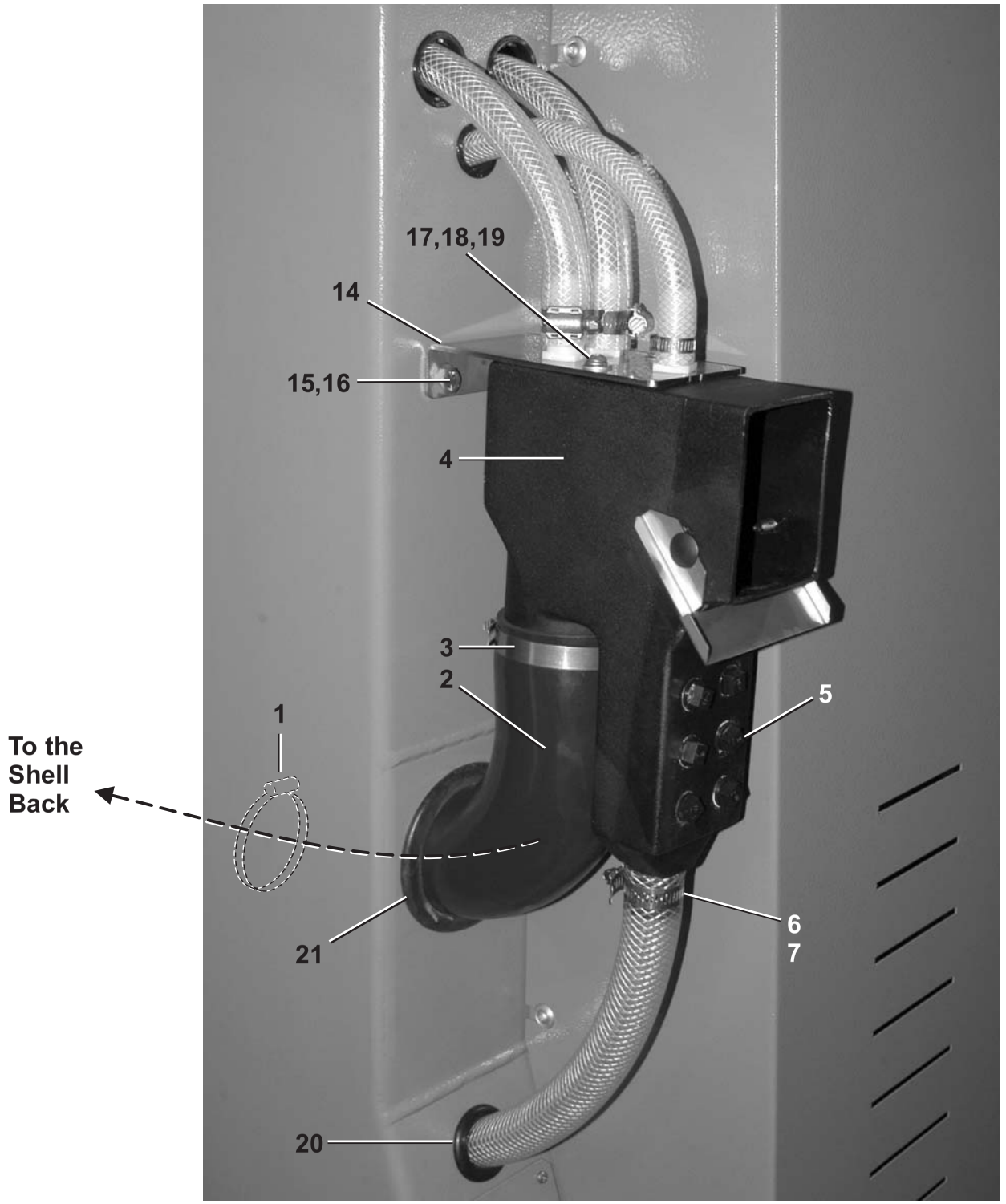

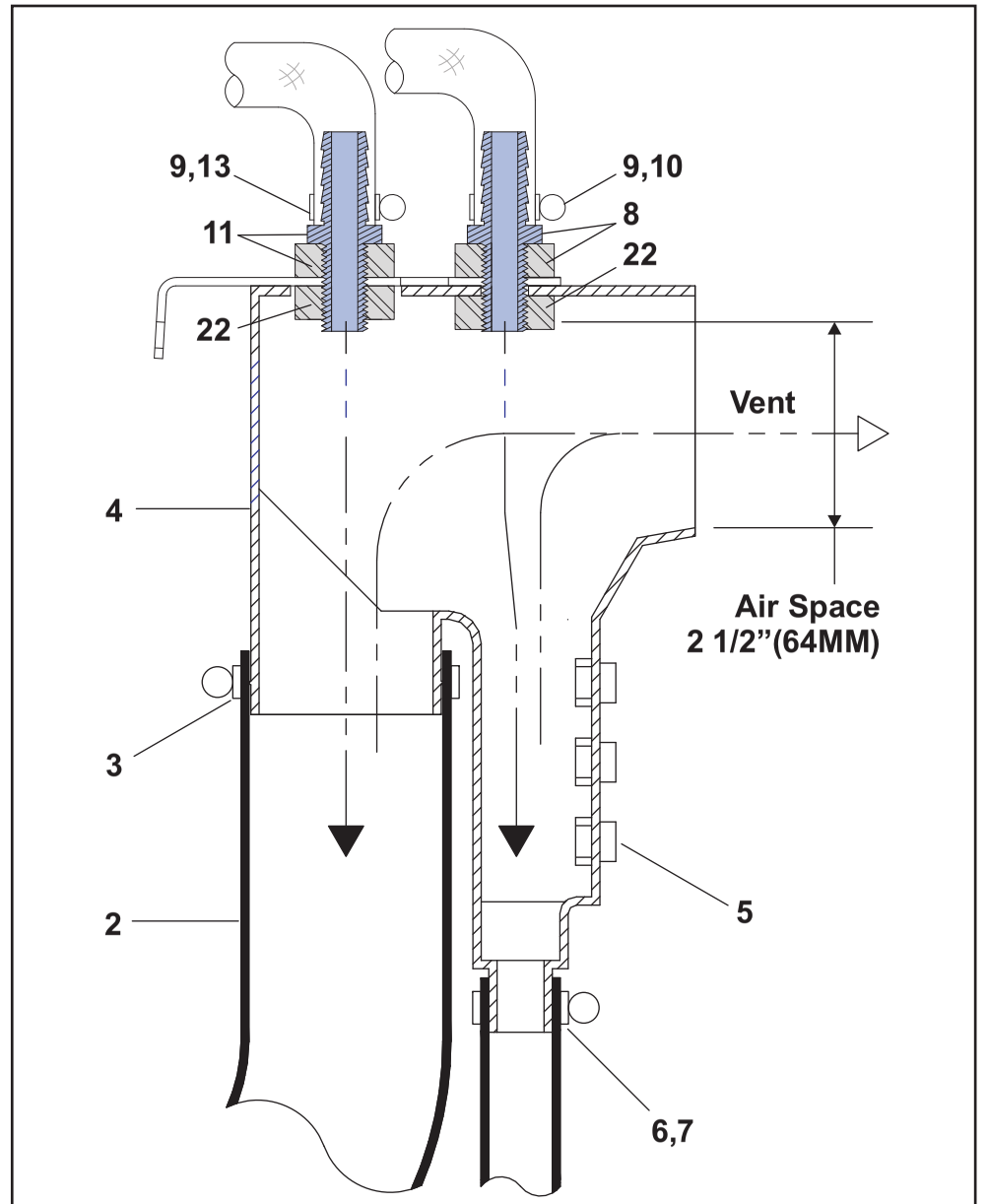

Detail: Air Gap

Peristaltic Supply Inlet

30015T5E,T5X,V7J 30022T5E,T5X,V6J 30022V8Z,VRJ

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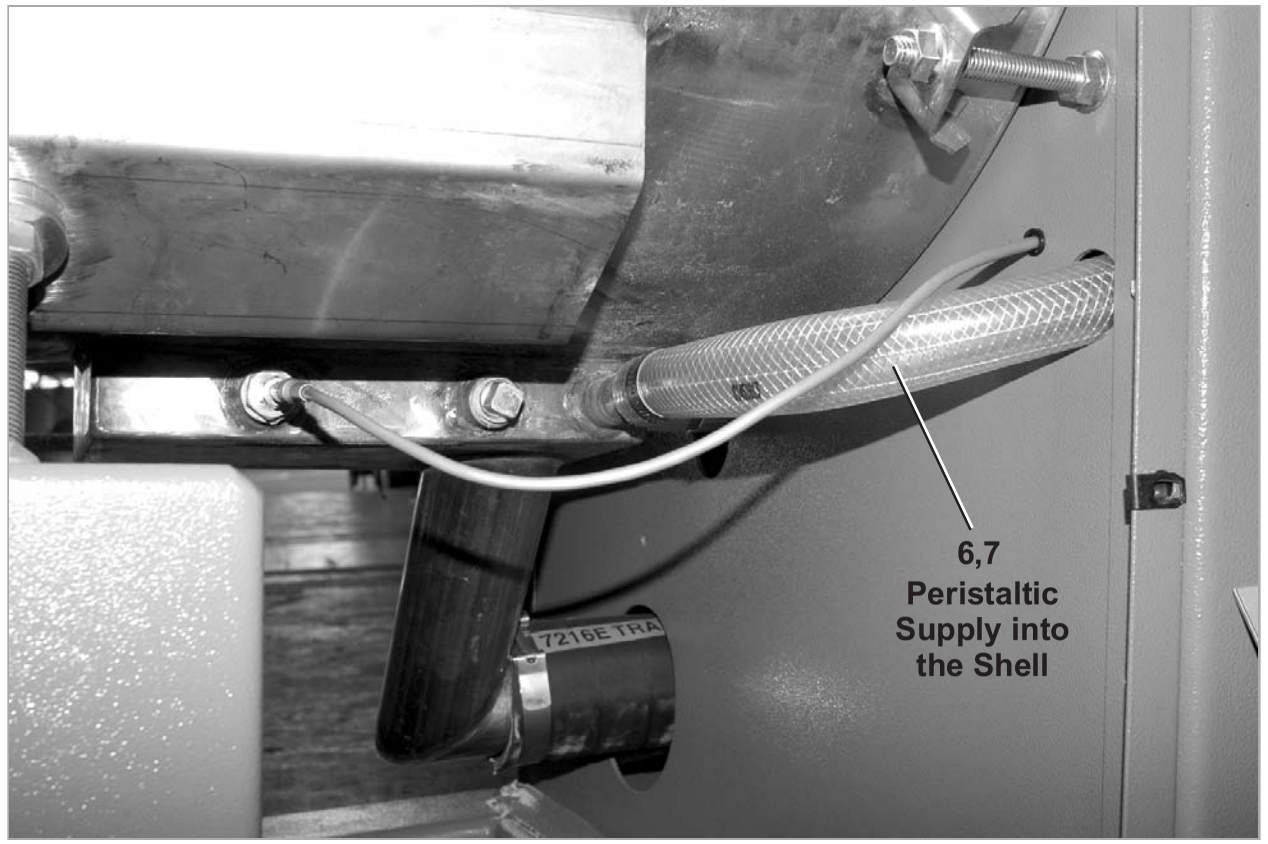

Parts List—Peristaltic Supply Inlet

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 33 057	ASSY=PLSTC PERSTL REAR INLET 3022V8	3022V8Z, VRJ
	B	SA 33 058Q	ASSY=PLSTC PERSTL REAR INLET	3015 T5E, T5X, V7J 3022 T5E, T5X, V67J
			----------COMPONENTS----------	
all	1	27A074S	HOSECLAMP 2+1/16-3"SSSCR#64040	
A	2	02 03585D	3022V8 PARISTALTIC/WATER INLET HOSE	
B	2	02 03585C	PARISTALTIC/WATER INLET SHORT HOSE	
all	3	27A082S	HOSECLAMP 2+9/16-3.5SS305SCR	
all	4	02 03585A	PARISTALTIC/WATER INLET 30	
all	5	51PB0GN	PLUG PIPE 3/8"NPT P-38 HD POLY	
all	6	27A090S	HOSECLAMP 13/16-1.5"SS#64016B	
all	7	60E010	TUBINGPOLYBRAID 1"X1.312	
all	8	51E510N	HOSEADP 1/2"HX11/16 W/NUT=NYL	
all	9	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	
all	10	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	11	51E513N	HOSEADPT3/4"HX11/16 W/NUT=NYL.	
all	13	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
A	14	02 03585G	3022V8 PERIST MTG BRKT	
B	14	02 03585F	PERIST MTG BRKT	
all	15	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	16	15G198	HXFLGNUT 3/8-16 ZINC	
all	17	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	18	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	19	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	20	12P11JSB	SNAPBUSH 1.50"MH X 1.312 HEYCO#2240	
all	21	60C121	GROMMET-FILLTUBE3015/22	
all	22	51E513NU	NUT 11/16 THRD.#64138 US PLAST	

3 Compartment Supply

3015V7J, 3022V6J, 3022V8Z

BMP770149/2013025B
(Sheet 1 of 2)

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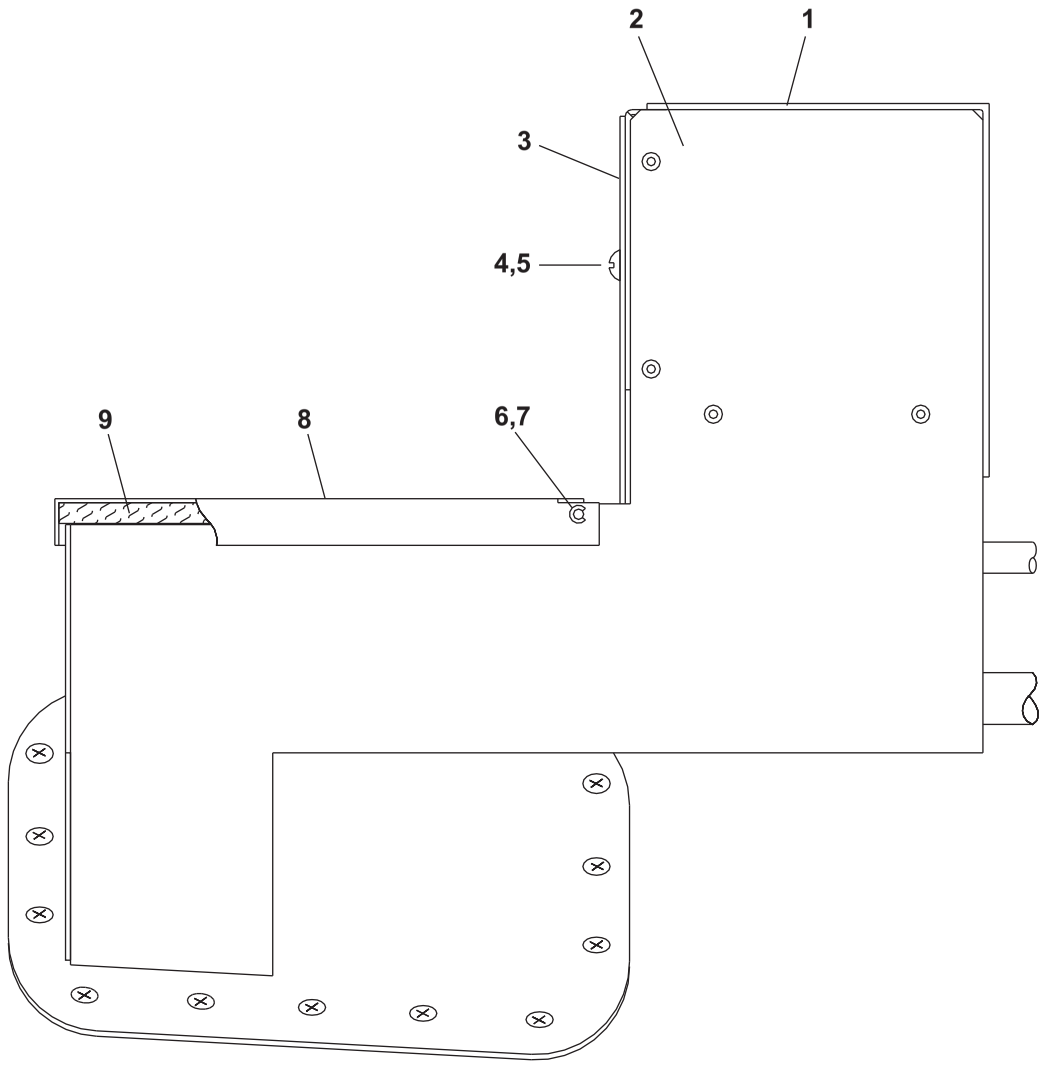

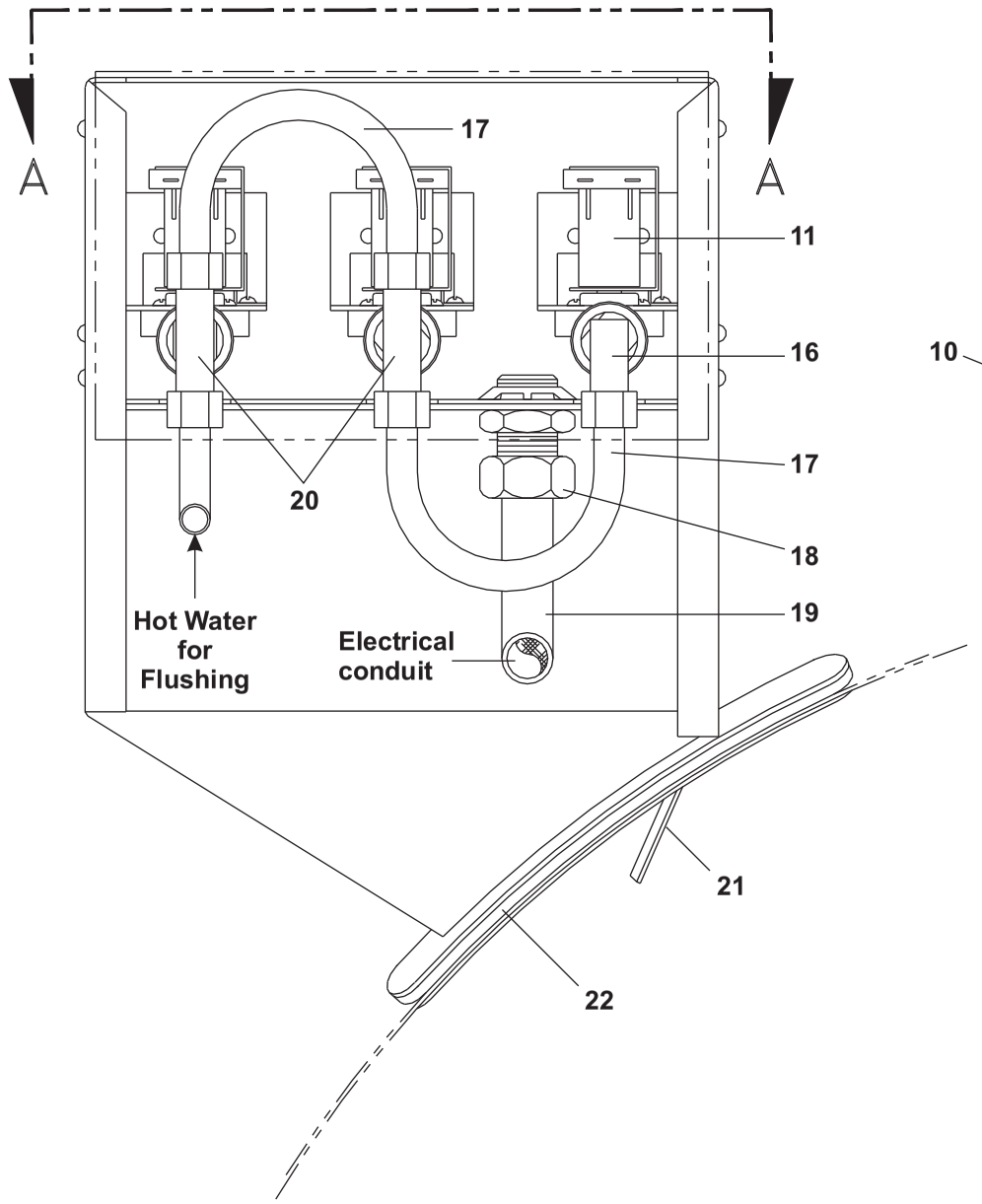

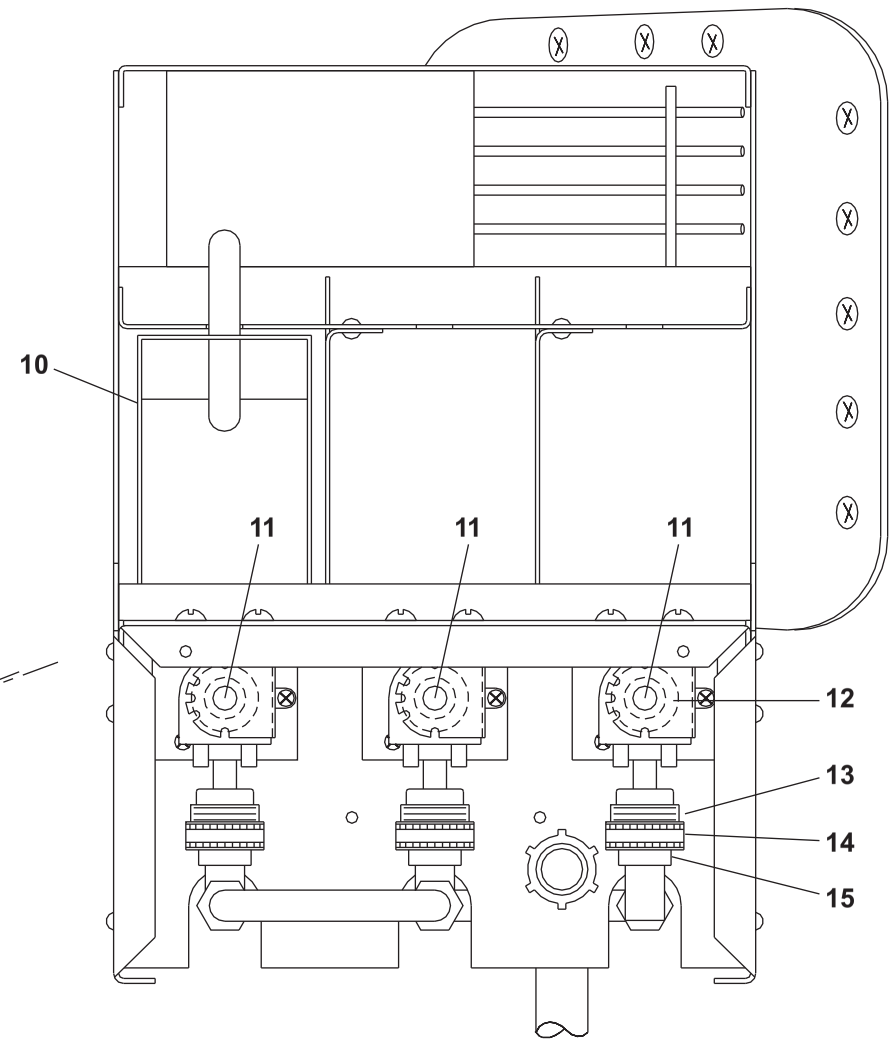

View A-A
Cover, lid, and gasket not shown for clarity

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Parts List—3 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----------	
	A	AWS33001B	*ASSY=3FLUSH SUP INJ SYSTEM 7	
			----------COMPONENTS----------	
all	1	02 03732B	COVER 4 COMP SUPPLY VALVES	
all	2	W2 03732	* SUPPLY INJECTOR 4 COMP SUPP	
all	3	01 10438Y	NPLT:3POCKET SUPPLY EP-PLUSISO	
all	4	15P090	TRDCUT-F PHILPANHD 8-32X1/4 S/	
all	5	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	6	02 03732S	HINGE PIN=LID 4 COMP SUPPLY	
all	7	17B012S	EXTRETRING IND#1200-12-SS2	
all	8	02 03732G	LID=4 COMPARTMENT SUPPLY	
all	9	02 03732U	GASKET=LID 4 COMP SUPPLY	
all	10	W2 03732A	* SUPPLY CUP WLMT 4 COMP SUPP	
all	11	96P013B71	3/4" 2WAYPLASTICVAL 240V60C	
all	12	60C007	RUBGROM#2861 1/2ID-13/16X1/8	
all	13	53A060HA	WASHER=HOSE #901GH-12	
all	14	53A060H	KNURLHOSENUT 3/4"PW#94GH-12	
all	15	02 03732Z	ADAPTER HOSETHD 3/4"X1/4 NPT	
all	16	53A043G	EL90 3/8X1/4COMP.AND#69A-6B	
all	17	02 03732T	TUBE COPPER-VALVE CONN. 3/8	
all	18	12K040	1/2"COND.EMT COND. PECO #260B	
all	19	03 CL2X3	1/2 CONDUIT=87 DEG 2X3	
all	20	53A043T	TEE=3/8TX3/8TX1/4MP #72A-6B	
all	21	02 03732F	TAPPED PLATE=SUPPLY MOUNT	
all	22	02 03304A	GASKET=SOAP CHUTE 1/8" EPDM	

6 Water and Steam Piping and Assemblies

Schematic Symbols Key

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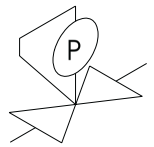
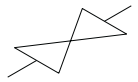
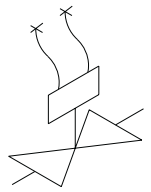
ISOMETRIC SYMBOLS



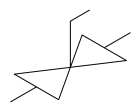
REGULATOR



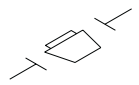
2-WAY VALVE



ON/OFF MODULATING VALVE



GAS STOP VALVE



GAS COCK

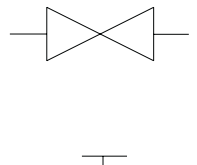
PRESSURE SWITCH

PIPE PLUG

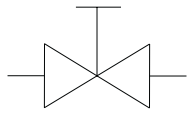
REDUCER

MALE CONNECTOR

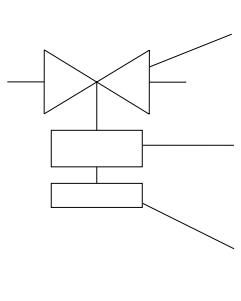
STANDARD SYMBOLS



INLINE VALVE NON-SPECIFIC



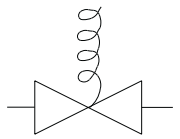
MANUAL BALLVALVE



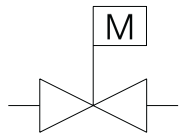
BALLVALVE (THERMAL)

PNEUMATIC ACTUATOR

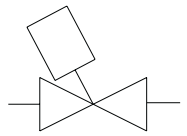
ELECTRIC VALVE POSITIONER



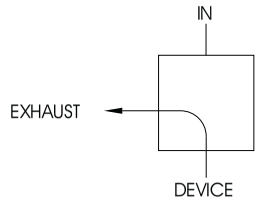
ELECTRICALLY OPERATED 2-WAY VALVE



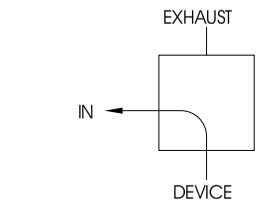
MOTOR OPERATED VALVE



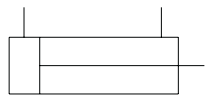
STEAM VALVE



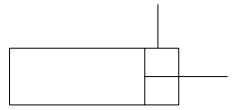
3-WAY N/C AIR PILOT VALVE



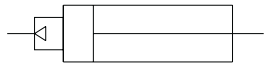
3-WAY N/O AIR PILOT VALVE



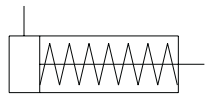
CYLINDER (DOUBLE ACTING)



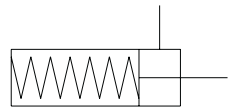
CYLINDER (SINGLE ACTING)



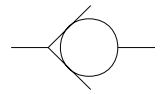
CYLINDER W/QUICK EXHAUST VALVE



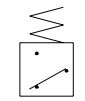
CYLINDER AIR EXTEND SPRING RETRACT



CYLINDER AIR RETRACT SPRING EXTEND



CHECK VALVE



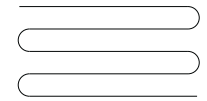
PRESSURE SWITCH

PRESSURE REGULATOR

RELIEF VALVE

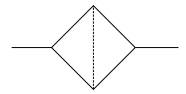
GAUGE

FLOW SENSOR

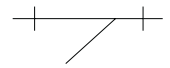


COIL

AIR LINE FILTER-AUTO

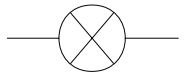


SPECIAL PURPOSE FILTER/STRAINER



Y-STRAINER

VACUUM BREAKER



STEAMTRAP

Water / Steam / Drain Schematics

30015V7J,T5E,T5X 30022V6J,T5E,T5X

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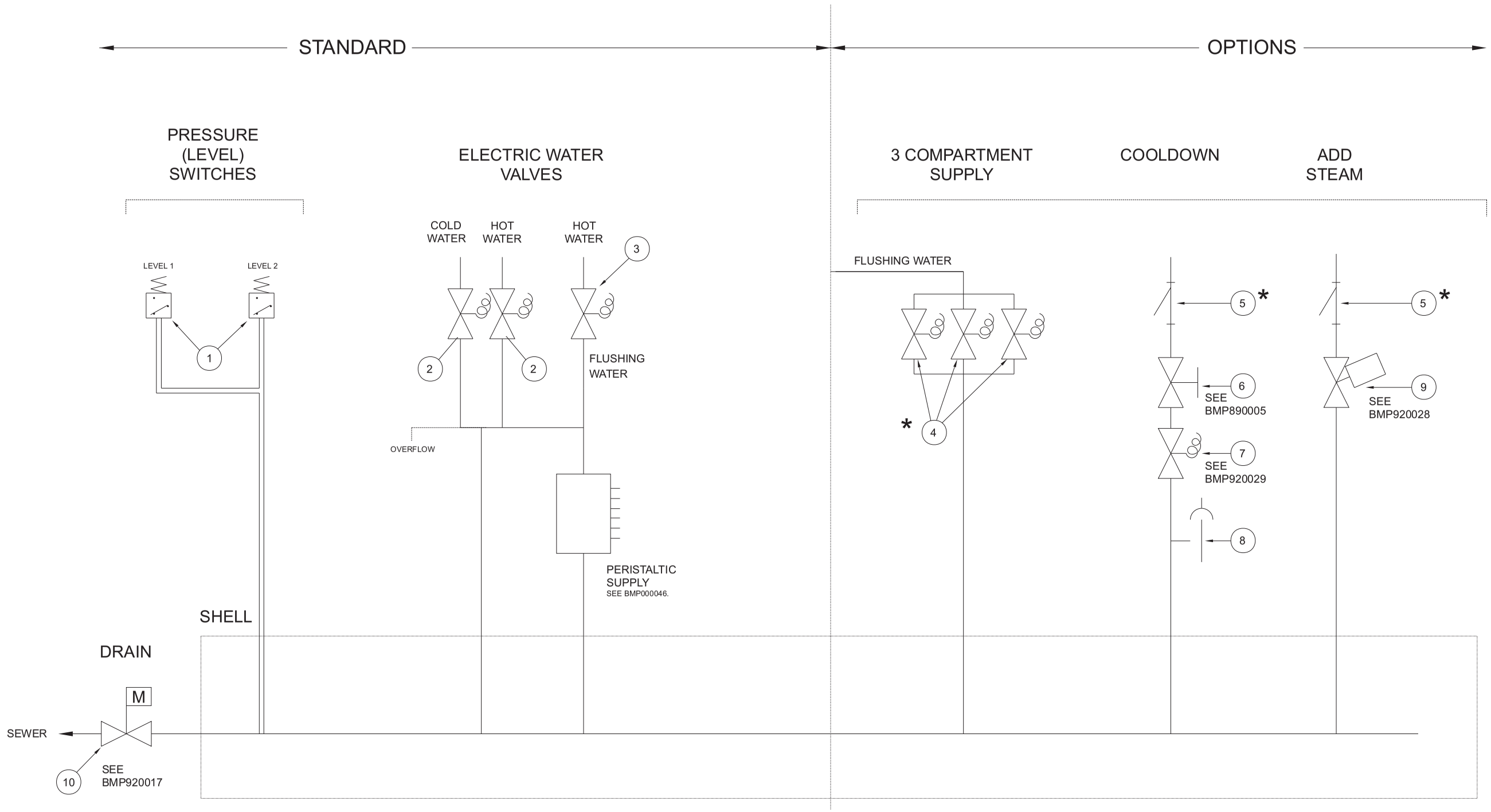

* - STRAINER MUST BE CLEANED, SEE "PREVENTIVE MAINTENANCE" IN THE TABLE OF CONTENTS.

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

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Parts List—Water/Steam/Drain 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	SA 33 058T	3015/22 BRASS WATER VALVE ASSY	3015V7J, 3022V6J
	B	SA 33 058V	3015/22 BRASS WATER VALVE ASSY PARKER	3015T5E, 3022T5E
	C	AWS33001B	*ASSY=3FLUSH SUP INJ SYSTEM 7	
			----------COMPONENTS----------	
all	1	09N086A	PRESS SW INVENSYS #738-761	
A	2	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6	
B	2	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER	
all	3	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6	
C	4	96P013B71	3/4" 2WAYPLASTICVAL 240V60C	
all	5	51T025	Y-STRAINER 1/2" CAST IRON	
all	6	96D034	BALLVALVE 1/2" WATTS #6400-SS	
all	7	96TDC2AA71	1/2"N/C2WY240V50/60C VLV	
all	8	96M021	1/2"VAC BREAKER #288A	
all	9	96P039A71	1/2"STEAMVAL240V50/60C 150PSI	
all	10	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C	

Water Inlet Assemblies with Peristaltic Supply

30015T5E, T5X, V7J 30022T5E, T5X, V6J

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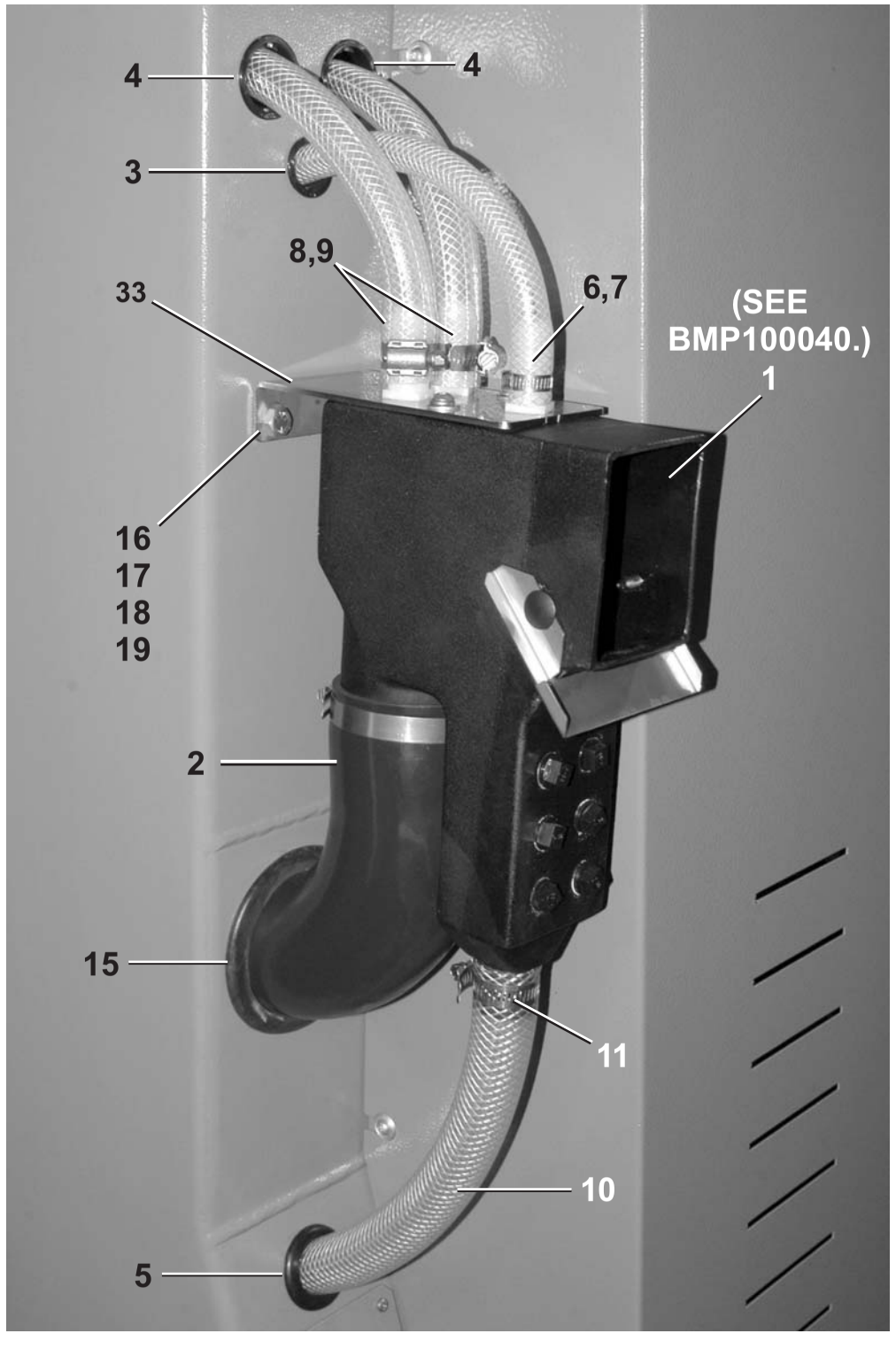

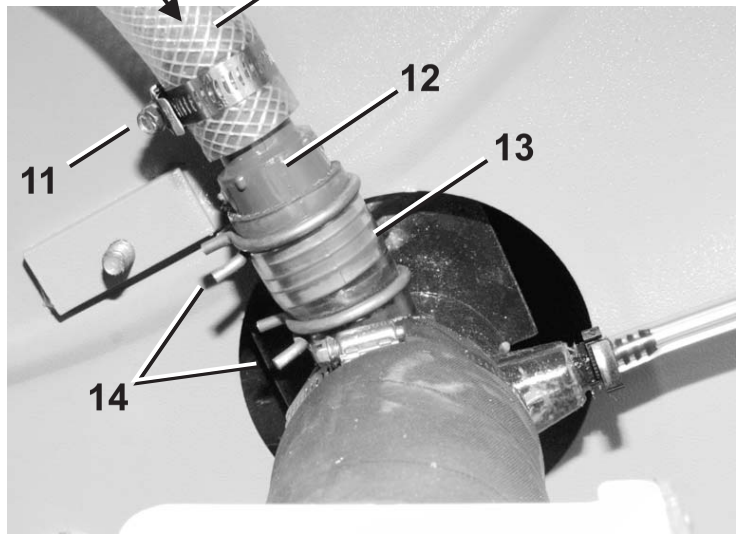

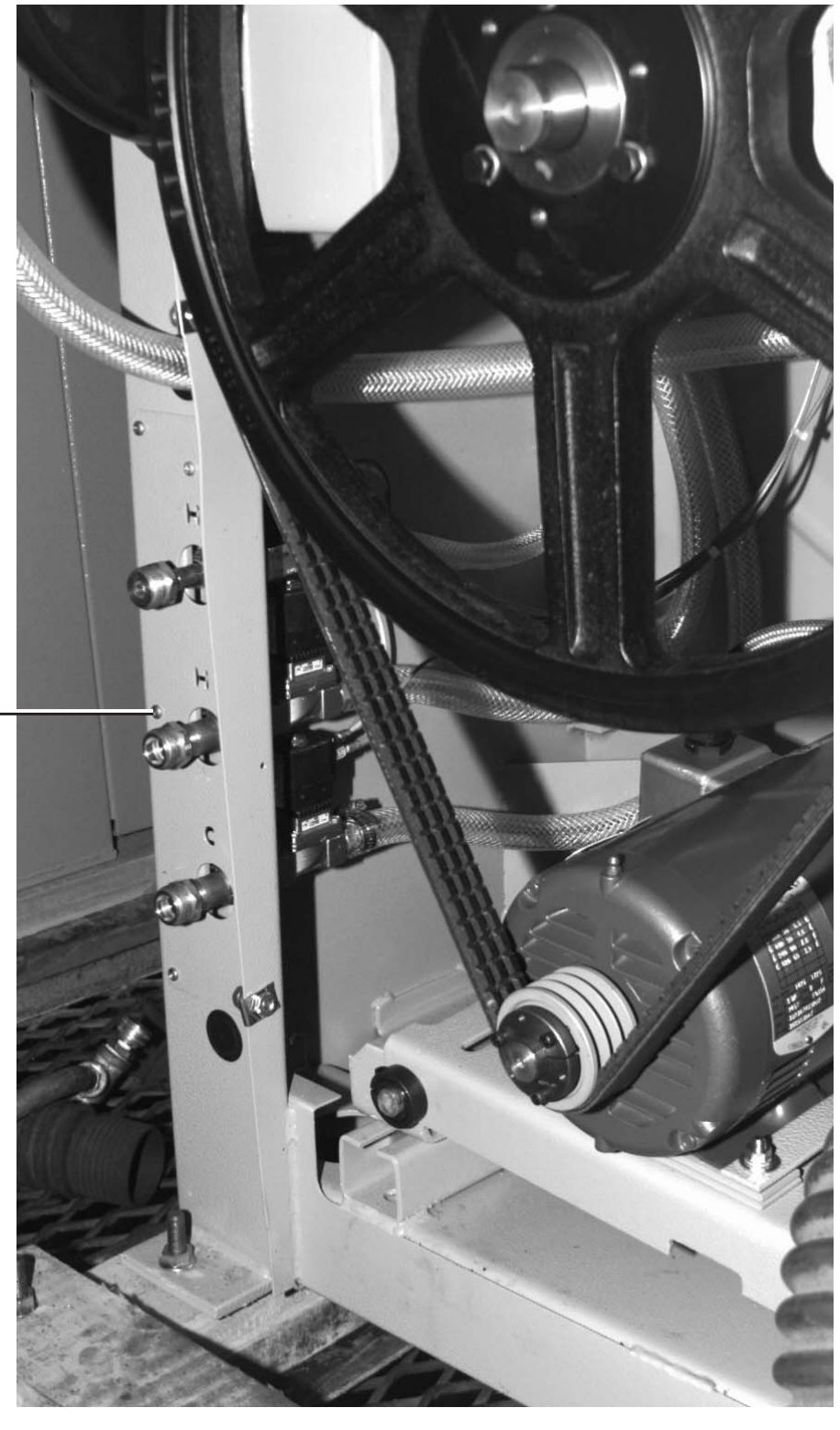

Water Inlet Assemblies with Peristaltic Supply

30015T5E, T5X, V7J 30022T5E, T5X, V6J

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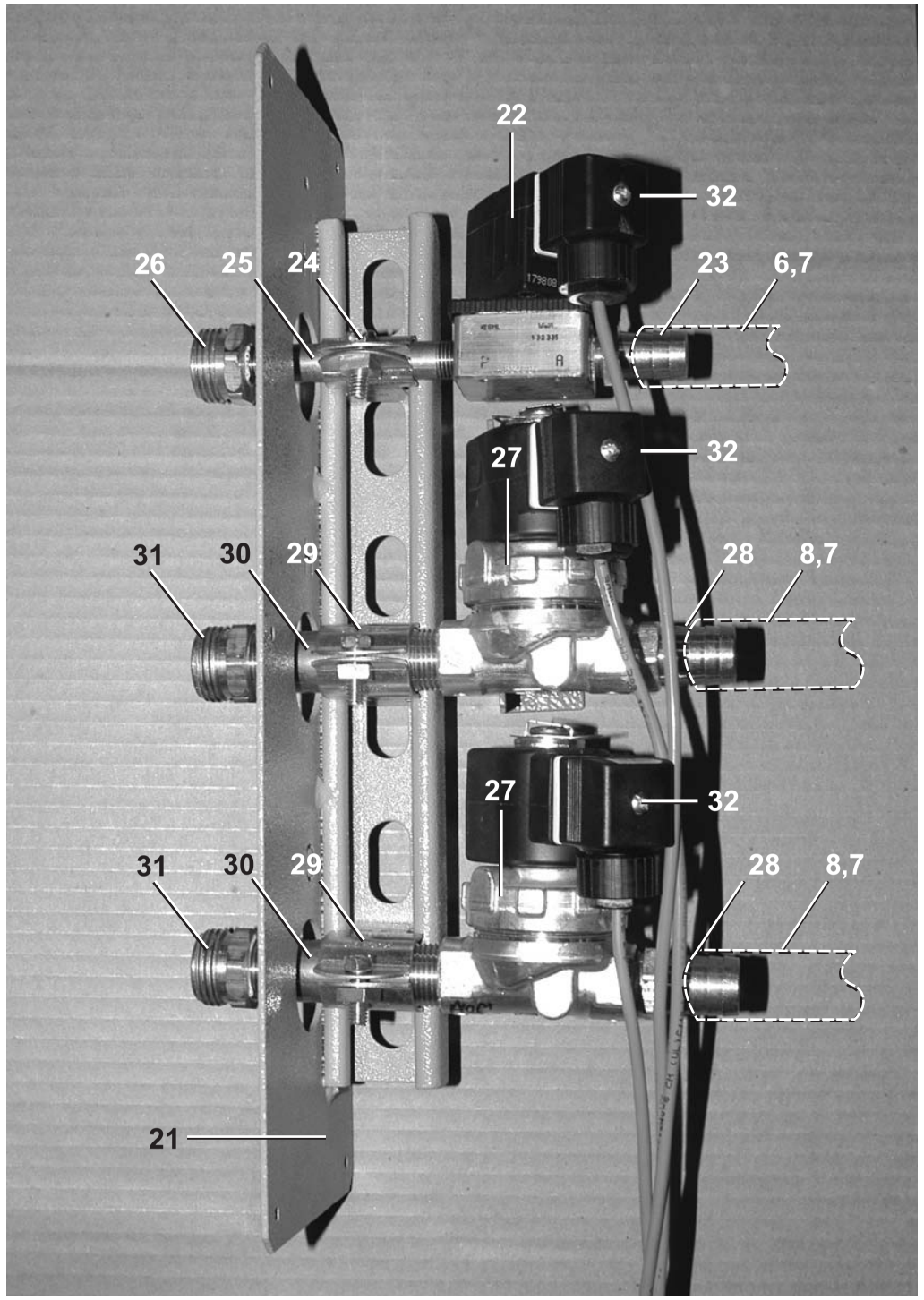
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.



Parts List—Water Inlet Assemblies

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

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	GA 33 058Q	INST=H2O+PERSTAL REAR INLET OPEN REAR	3015V7J, 3022V6J
	B	GWV3002A	H20+PRSTLTC INLET NONCOIN OPEN REAR	3015/3022 T5E,T5X
	C	SA 33 058Q	ASSY=PLSTC PERSTL REAR INLET	
	D	SA 33 058V	3015/22 BRASS WATER VALVE ASSY PARKER	
			----------COMPONENTS----------	
all	1	02 03585A	PERISTALTIC/WATER INLET 30	
all	2	02 03585C	PERISTALTIC/WATER INLET SHORT HOSE	
all	3	12P11CSB	SNAPBUSH 1.093"MH X .94"ID HEYCO#2166	
all	4	12P11KSB	SNAPBUSH 1.50" X 1.06" #22MP15017	
all	5	12P11JSB	SNAPBUSH 1.50"MH X 1.312 HEYCO#2240	
all	6	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	7	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	
all	8	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	10	60E010	TUBINGPOLYBRAID 1"X1.312	
all	11	27A090S	HOSECLAMP 13/16-1.5"SS#64016B	
all	12	51AB1EN1A	INSERT REDUCER PVC 1+1/4"X 1"	
all	13	60E014	TUBING VINYL CLR 1.25IDX1.50D	
all	14	27A052	HOSECLMP 1.5"DIA.SPRG#HC24STZD	
all	15	60C121	GROMMET-FILLTUBE3015/22	
all	16	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	17	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	18	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	19	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	20	15P011	TRDCUT-F PANHD 10-24X1/2 NIKST	
all	21	W2 03588S	3015/22 BRASS H20 MNT WLMT	
all	22	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6	
all	23	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	24	27A0650CLP	TUBING CLP 1/2"OD #PS1200-1/2	
all	25	5N0E03KBE2	NPT NIP 1/4X3.5 TBE BRASS STD	

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Parts List—Water Inlet Assemblies

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

Used In	Item	Part Number	Description	Comments
all	26	51E513A	3/4"MHX1/4"FP PARKER#78GH-12-4	
all	27	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER	
all	28	51E510	HOSESTEM BRASS 1/2MPX3/4HOSEID	
all	29	27A0050	CLP-RGDSTL COND #PS1100-1/2	
all	30	5N0K03KB42	NPT NIP 1/2X3.5 TBE BRASS STD	
all	31	51E513B	3/4"MHX1/2"FP PARKER#80GH-12-8	
all	32	10Y75V6JWVA	HARNESS FOR VALVES PARKER	
all	33	02 03585F	PERIST MTG BRKT	

Parts List—Water Inlet Assemblies

Used In	Item	Part Number	Description	Comments

Level Switches

30015V7J,T5J,T5E 30022V6J,T5J,T5E

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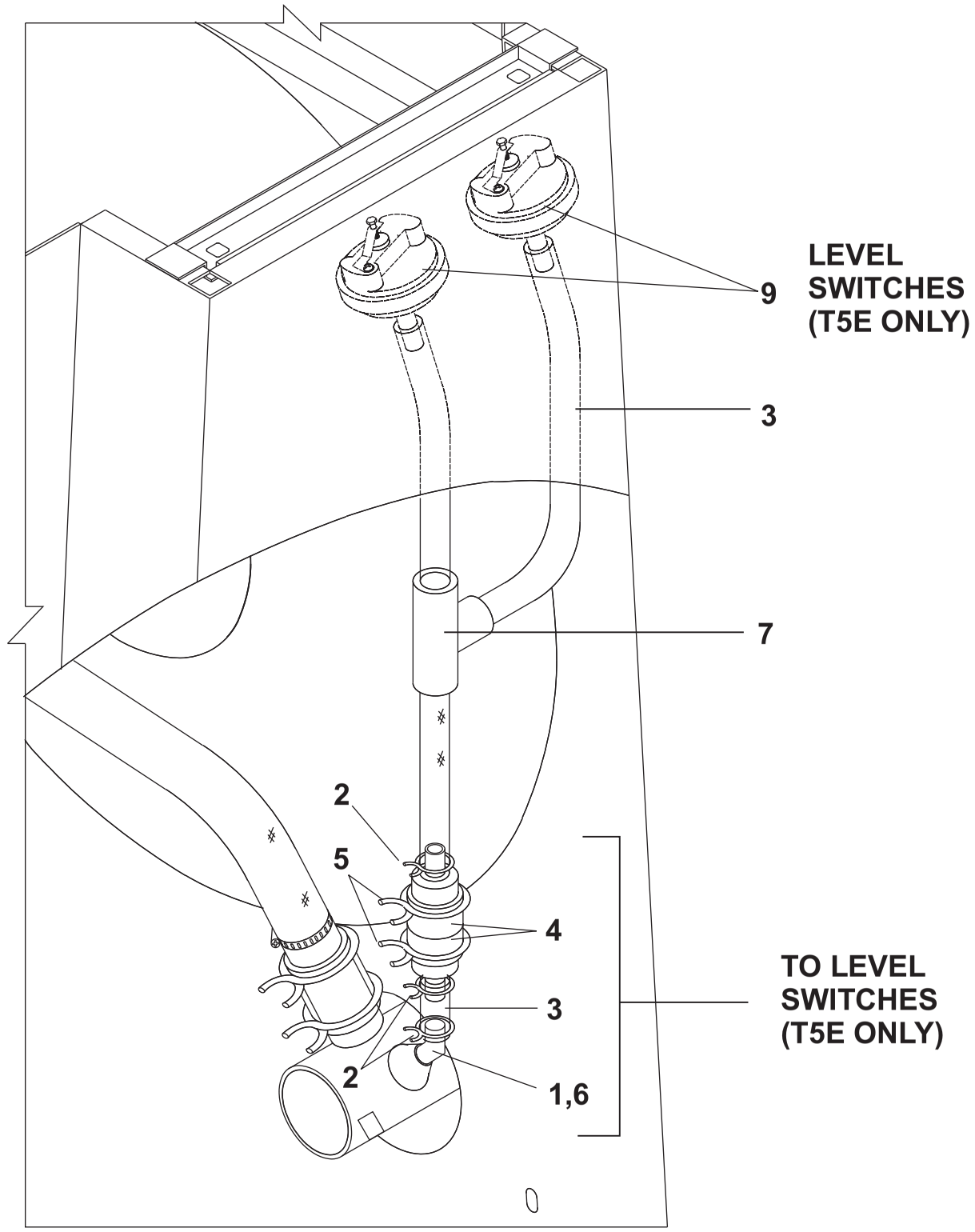

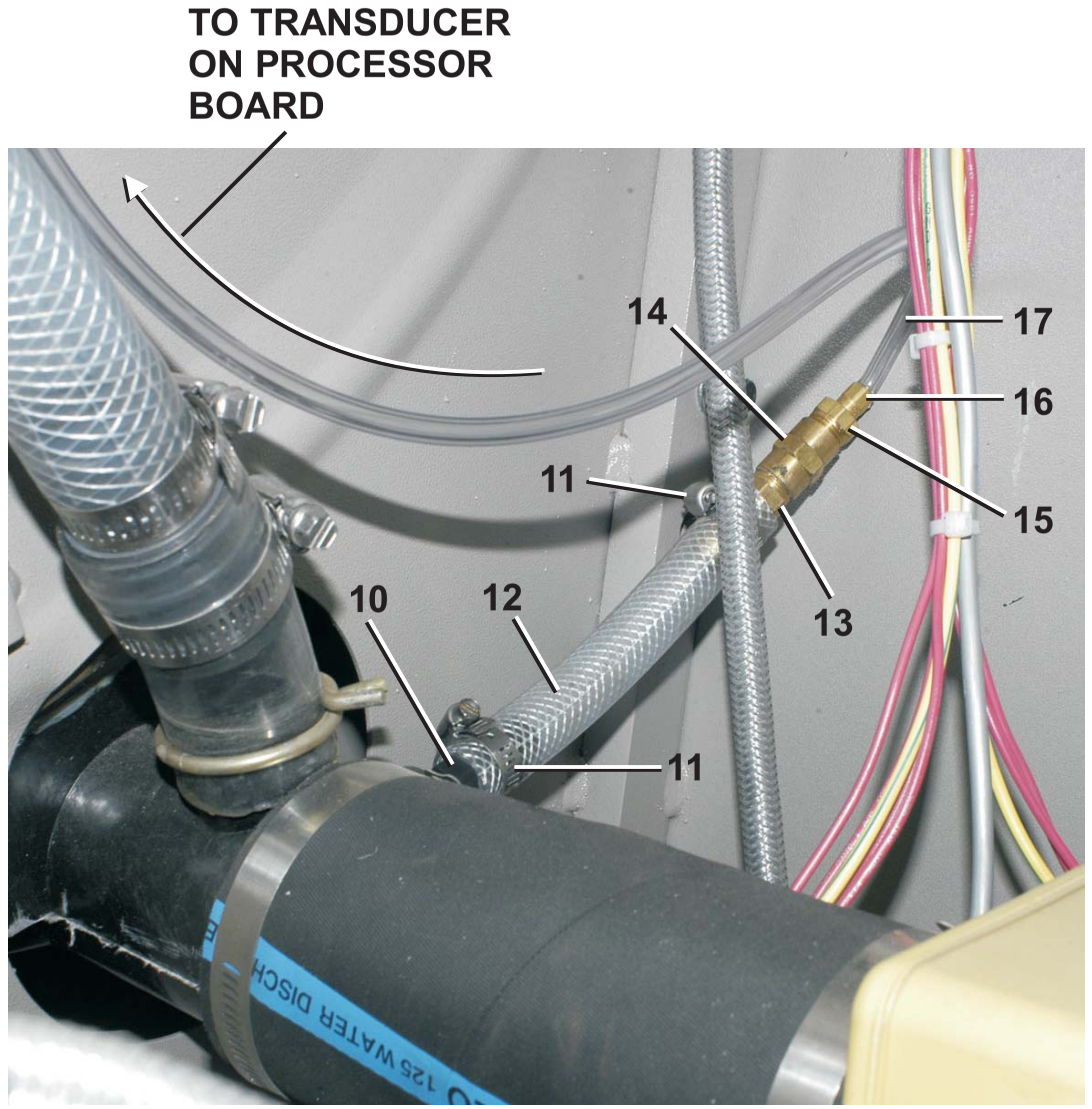

DETAIL A: TO TRANSDUCER
30015V7J/T5J, 30022V6J/T5J

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Parts List - Level Switches

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
.				
			----------COMPONENTS----------	
all	1	51E509	HOSESTEM BRASS 1/2MPX1/2HOSEID	
all	2	27A044A	HOSECLAMP.687"ID ROTOR#HC11STR	
all	3	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
all	4	02 03332C	AIRCHAMBER=PRESSWITH-CWU	
all	5	27A052	HOSECLAMP 1.5"DIA.SPRING#R24HC	
all	6	51E502P	HOSE ADPT.1/4"MPX3/16H POLY-E	
all	7	5S0KQ8A	TEE 1/2"SOC CTS CPVC BEIGE	
All	8	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
All	9	09N086A	PRESS SW INVENSYS #738-761	
All	10	51E507N	HOSESTEM NYLON 1/4MPX1/2HOSEID	
All	11	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
All	12	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
All	13	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
All	14	5SCC0EBE	NPT COUP 1/4 BRASS 125# W/HEX	
All	15	51E502B	HOSESTEM BRASS 1/4MPX1/8HOSEID	
All	16	27A047	HOSECLMP 1/8HOSEID CLIP#5000-2	
All	17	60E004NT	TUBING (NYL.)CLR.1/4"ODX1/8"	

1/2” & 3/4” Hayes Electric Steam Valves

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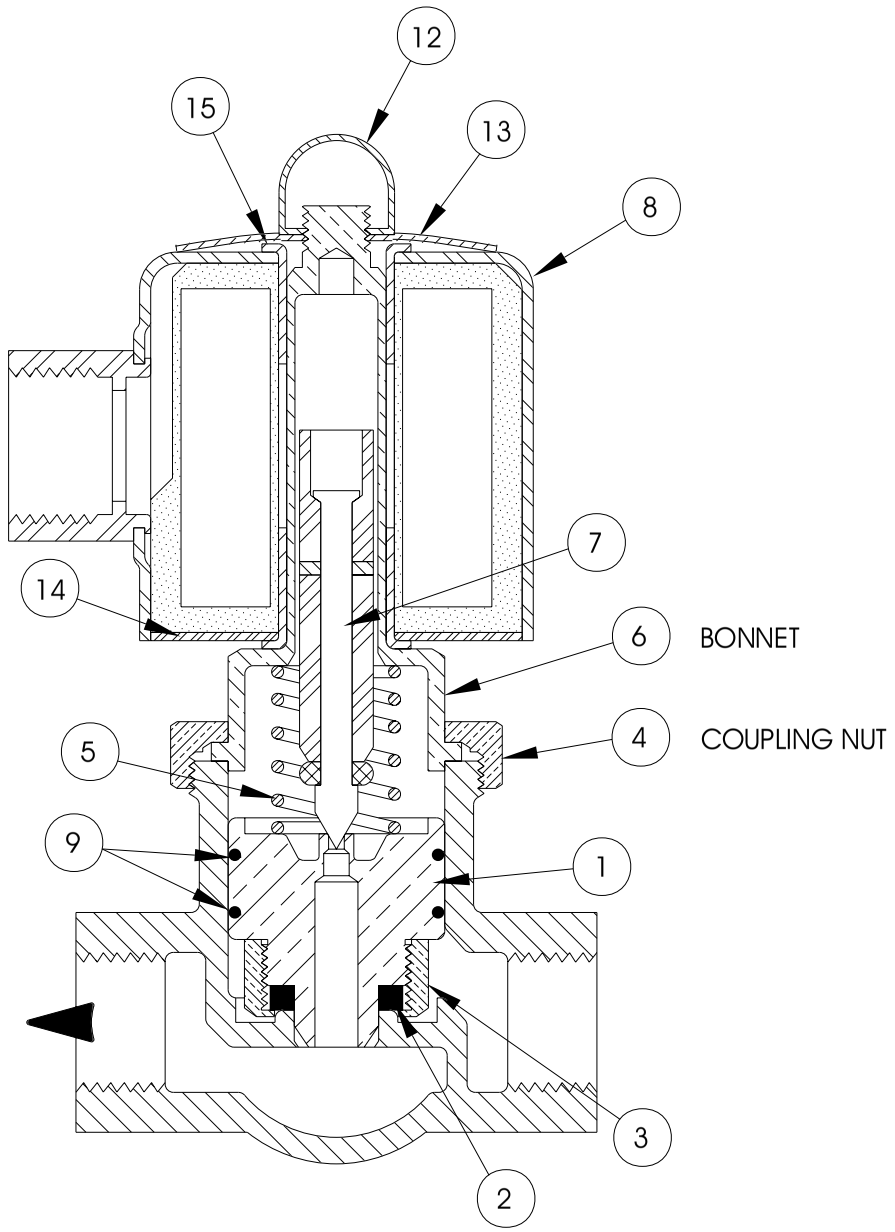

GENERAL MAINTENANCE:

1. COUPLING NUTS MUST NOT BE TIGHTENED EXCESSIVELY. USE A STEADY PULL WITH A 14" OR SMALLER WRENCH. DO NOT HAMMER ON NUT OR WRENCH. LIMIT MAXIMUM TORQUE ON COUPLING NUT TO 600LB/INCH. EXCESSIVE TIGHTENING OF COUPLING NUT WILL DISTORT VALVE BODY CAUSING THE PISTON BODY TO JAM AND THE VALVE TO SHUT OFF.

2. IF THE VALVE LEAKS BETWEEN THE BODY AND BONNET, LOOSEN THE COUPLING NUT AND TURN THE BONNET SLIGHTLY, THEN TIGHTEN THE COUPLING NUT. IF THE VALVE STILL LEAKS, REPEAT THE OPERATION. IN NO CASE MUST THE COUPLING NUT BE TIGHTENED EXCESSIVELY.

Parts List—Electric Steam 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	96P039	1/2"STEAMVAL 24V50/60C 150PSI	1/2" VALVE- 24 VOLT
	B	96P039A37	1/2"STEAMVAL120V50/60C 150PSI	1/2" VALVE- 120 VOLT
	C	96P039A71	1/2"STEAMVAL240V50/60C 150PSI	1/2" VALVE- 240 VOLT
	D	96P040E	3/4"STEAMVAL 24V50/60C 150PSI	3/4" VALVE- 24 VOLT
	E	96P040A37	3/4"STEAMVAL120V50/60C 150PSI	3/4" VALVE- 120 VOLT
			----------COMPONENTS----------	
A,B,C	1	96V224S	PISTON ASSY STEAMVAL HAYS #763	
D,E	1	96V224SA	PISTON ASSY STEAMVAL HAYS #777	
A,B,C	2	96V225S	PISTON SEAT WASHER HAYS #85553	
D,E	2	96V225SA	PISTON SEAT WASHER HAYS #85567	
A,B,C	3	96V248	SEATWASHER NUT HAYS#82222 96P0	
D,E	3	96V226	SEAT WASHER FOR 96P053 HAYS	
A,B,C	4	96V246	COUPLING NUT FOR 96P014&96P016	
D,E	4	96V254	COUPLING NUT HAYS #76028 = 9	
A,B,C	5	96V244	PISTON SPRING FOR HAYS 3/08	
D,E	5	96V222A	PISTON SPRING HAYS 82488	
A,B,C	6	96V242	BONNET FOR HAYS 3108 HAYS83021	
D,E	6	96V260	BONNET HAYS #83192 FOR 96P151	
all	7	96V223	PLUNGER HAYS #7319503	
A,D	8	96P040V24	COIL 1/2"&3/4" STEAMVALVE 24V5	
B,E	8	96P040V37	COIL 1/2"&3/4"STEAMVALVE 120V5	
C	8	96P040V71	COIL 1/2"&3/4" STEAMVALVE 240V	
A,B,C	9	96V222TS	TEFLONSPLIT RING HAYS #86334	
D,E	9	96V222TSA	TEFLON SPLITRING STEMVAL HAYS#	
all	12	96V250	PALNUT HAYS #3069-PC	
all	13	96V251	SPRING WASHER HAYS #83600	
all	14	96V264	BOTTOM PLATE (COIL) HAYS#8223	
all	15	96V262	FERRULE (COIL SLEEVE) HAYS #82	

2-Way Electric Water Valve

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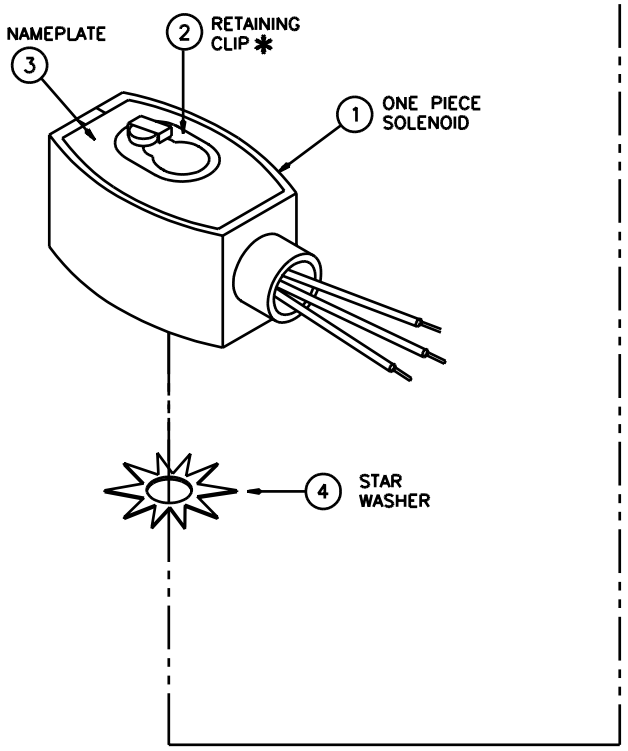
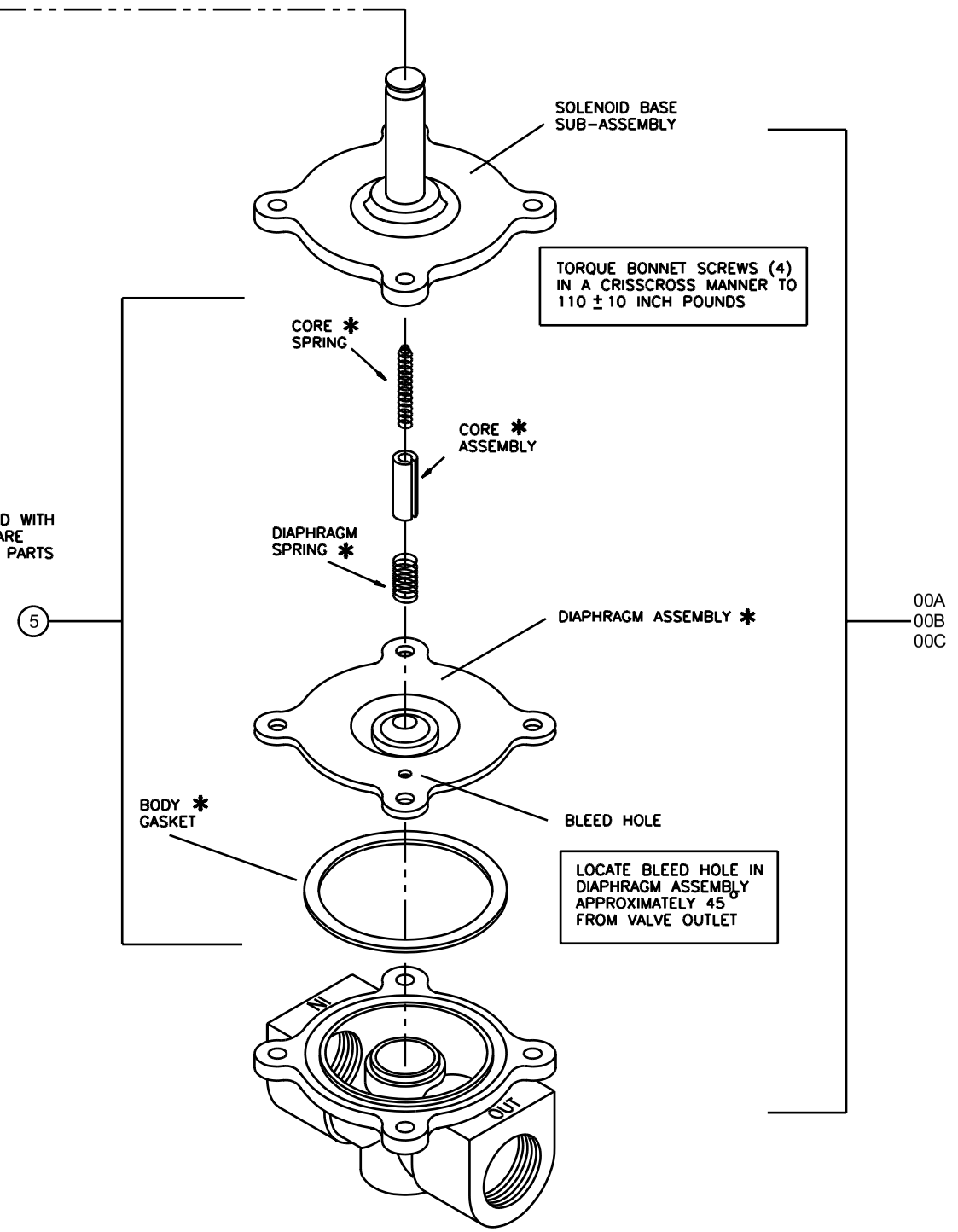


SOLENOID ASSEMBLY

NOTE:
ONLY PARTS MARKED WITH AN ASTERICKS (•) ARE INCLUDED IN VALVE PARTS KIT, ITEM 4.



VALVE ASSEMBLY

Identification and Description

Check nameplate for correct catalog number, pressure, voltage, and service.

Safety Instructions

⚠ DANGER ⚠

SHOCK HAZARD will cause death or severe injury.

☞ **Lock OFF and tag out power at wall disconnect before servicing. Power switches on machine and control box disable only control circuit power in electrical boxes.**

⚠WARNING⚠

EXPLOSION HAZARD may cause serious injury.

☞ **Release pressure to valve before disassembly.**

⚠ CAUTION ⚠

BURN HAZARD Solenoid enclosures become too hot to touch when energized for a long period. This will not damage the solenoid, but may cause a painful burn.

☞ **Allow solenoids to cool before servicing the valves.**

Maintenance

READ ALL SAFETY STATEMENTS ABOVE BEFORE PROCEEDING ANY FURTHER!

Coil Replacement

1. Remove retaining clip. NOTE: Whe metal retaining clip disengages, it springs upwards.
2. Slip yoke containg coil and sleeves off solenoid base sub-assembly.
3. Replace coil.
4. Reassemble in reverse order.

Valve Disassembly and Reassembly

1. Remove retaining clip.
2. Slip entire solenoid enclosure off the solenoid base sub-assembly.
3. Remove solenoid base sub-assembly, core assembly and core spring.
4. Remove diaphragm spring, diaphragm assembly and gasket.
5. Replace all worn or damaged parts.
6. Reassemble in reverse order.

Troubleshooting

Control Circuit: Listen for a metallic click when energizing the solenoid. Absence of the click indicates loss of power to the solenoid. Check for loose connections, blown fuses, open or grounded coil circuit, and broken lead wires.
Faulty coil: Check for open circuit in coil. Replace coil if necessary.
Low voltage: Voltage across coil leads must be at least 85% of nameplate rating for proper operation.
Incorrect pressure: Pressure to valve must be within range specified on nameplate.
Excess leakage: Disassemble valve and clean all parts. Replace all worn parts for best results.

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Parts List—2-Way Electric Water Valve

Used In	Item	Part Number	Description	Comments
.				
	00A	96TDC2AA24	03Z 1/2” N/C 2WAY 24V50/60C VALVE	VALVE ASSEMBLY
	00B	96TDC2AA37	03Z 1/2” N/C 2WAY 120V50/60C VALVE	VALVE ASSEMBLY
	00C	96TDC2AA71	03Z 1/2” N/C 2WAY 240V50/60C VALVE	VALVE ASSEMBLY
	001A	96T1001A24	SOLENOID 24V50/60C ASCO#260283-001	USED WITH 00A
	001B	96T1001A37	SOLENOID 120V50/60C ASCO#260283-002	USED WITH 00B
	001C	96T1001A71	SOLENOID 240V50/60C ASCO#260283-003	USED WITH 00C
	002	96V1001CLP	METAL CLIP M6	USED IN 00A, 00B, 00C
	003	96V1001PLT	NAMPLATE, BLANK REDHAT II COIL M6	USED IN 00A, 00B, 00C
	004	96V1001WSH	STAR WASHER REDHAT II COIL M6	USED IN 00A, 00B, 00C
	005	96V235B	PARTKIT ASCO #K258-120 FOR 8210D2	REPAIRS 00A, 00B, 00C

Steam Inlet

3015V6J, 3022V6J

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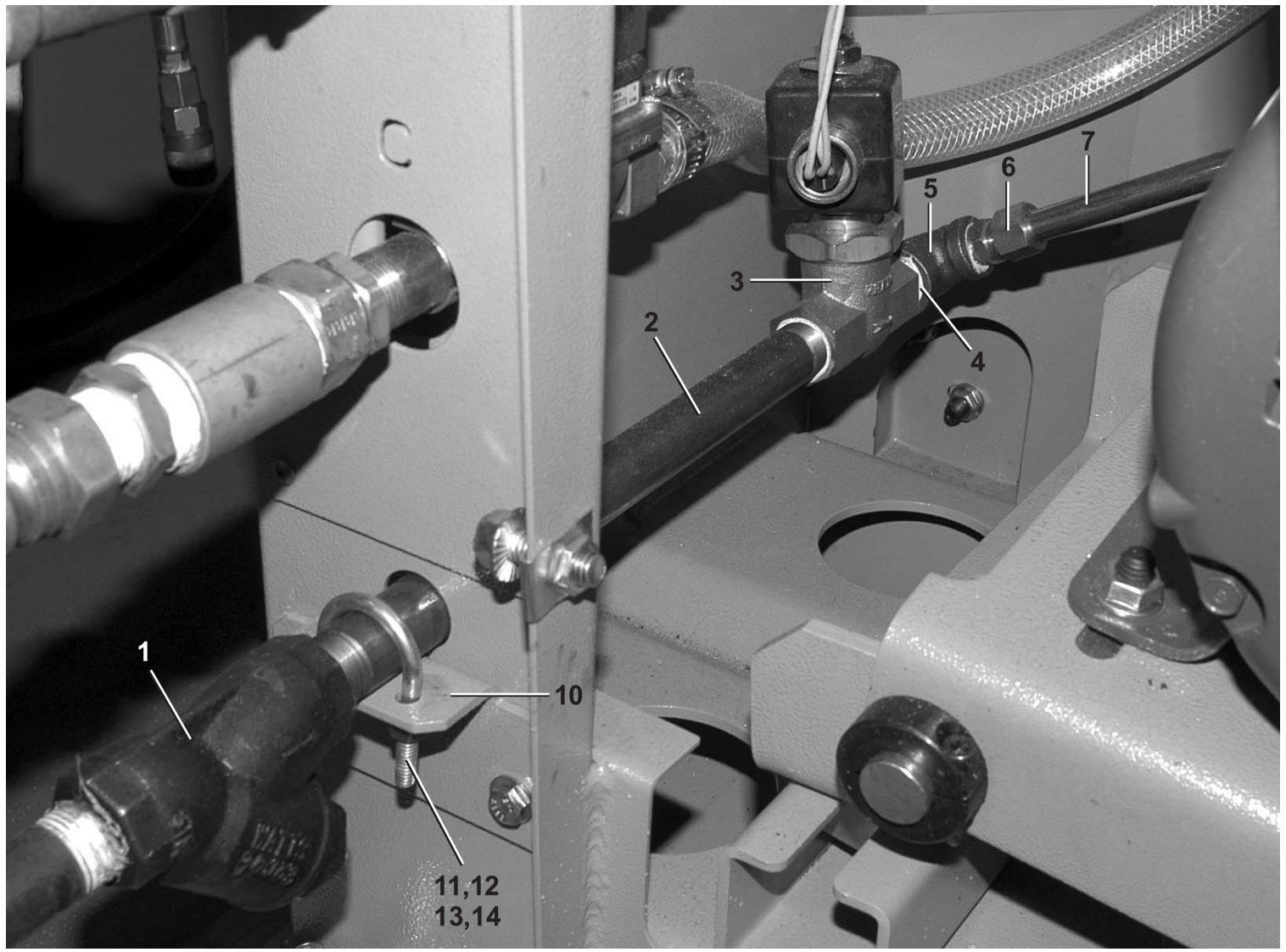

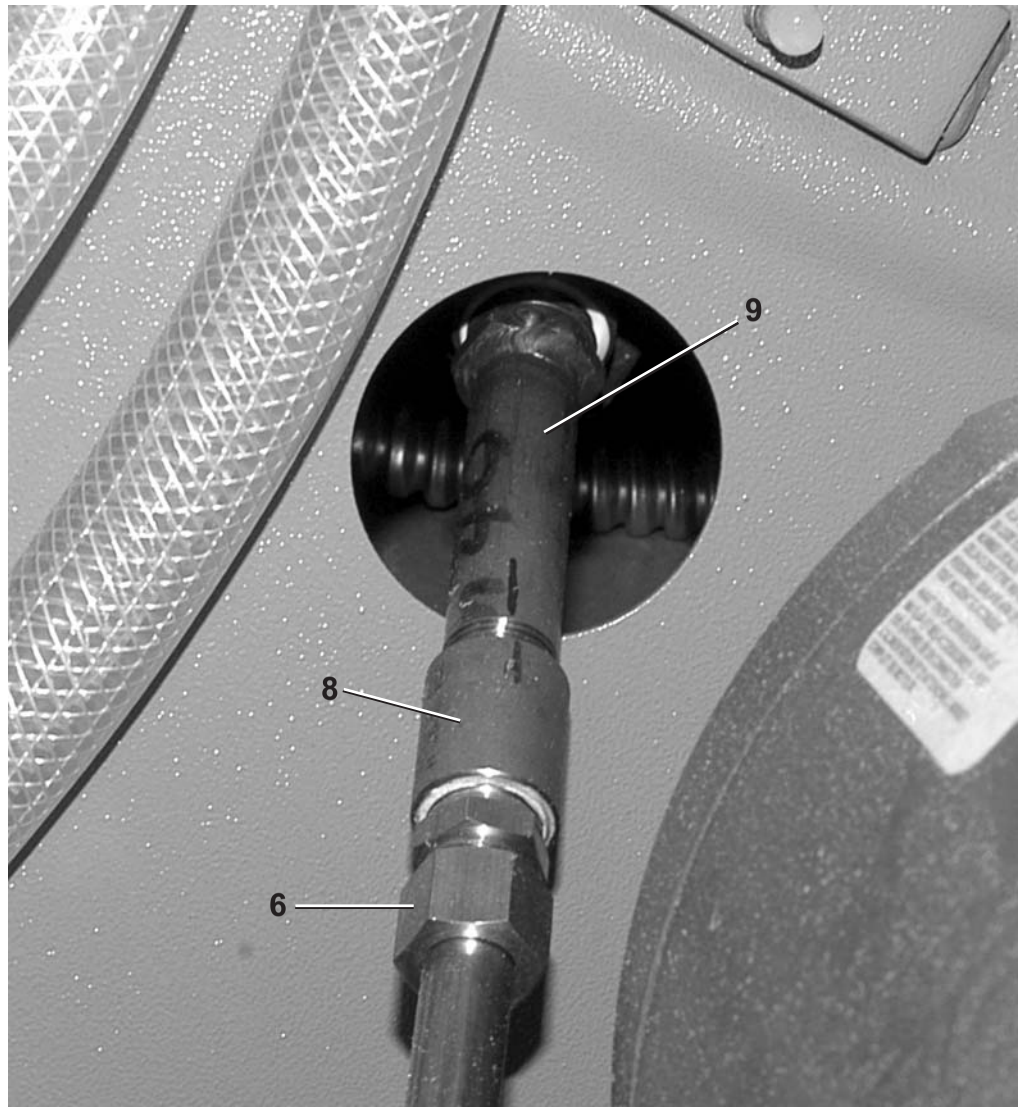

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Parts List—Steam Inlet

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	A33 10500G	STEAM INSTAL=3015/22V REAR H20	
			----------COMPONENTS----------	
all	1	51T025	Y-STRAINER 1/2" CAST IRON	
all	2	5N0K11AF42	NPT NIP 1/2X11 TBE BLKSTL SK40	
all	3	96P039A71	1/2"STEAMVAL240V50/60C 150PSI	
all	4	5N0KCLSF42	NPT NIP 1/2XCLS TBE BLKSTL S40	
all	5	5SL0KFA0G	NPTELB 90DEG 1/2 X 3/8 BLKSTL	
all	6	53A025	MALECON.5X3/8COMP PH#68C-8-6	
all	7	02 03607	3015/22 V STEAM INLET TUBE	
all	8	5SCC0GSF	NPT COUP 3/8 SS304 150#	
all	9	W2 02555	NOZZLE=STEAM INJECTION	
all	10	02 04199	BRKT=STEAM INJ INSTL, 3022H7	
all	11	27A030A	UBOLT 1/2 PIPE 1/4-20 THD	
all	12	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	13	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	14	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	

Drain Sump Installation

3010 G5E,G5X,CGE; 3015G5E,G5X,CGE

30015, 30022Vxx, Txx, C4A, C4T, C4E; 30015, 30020, 30022Qxx

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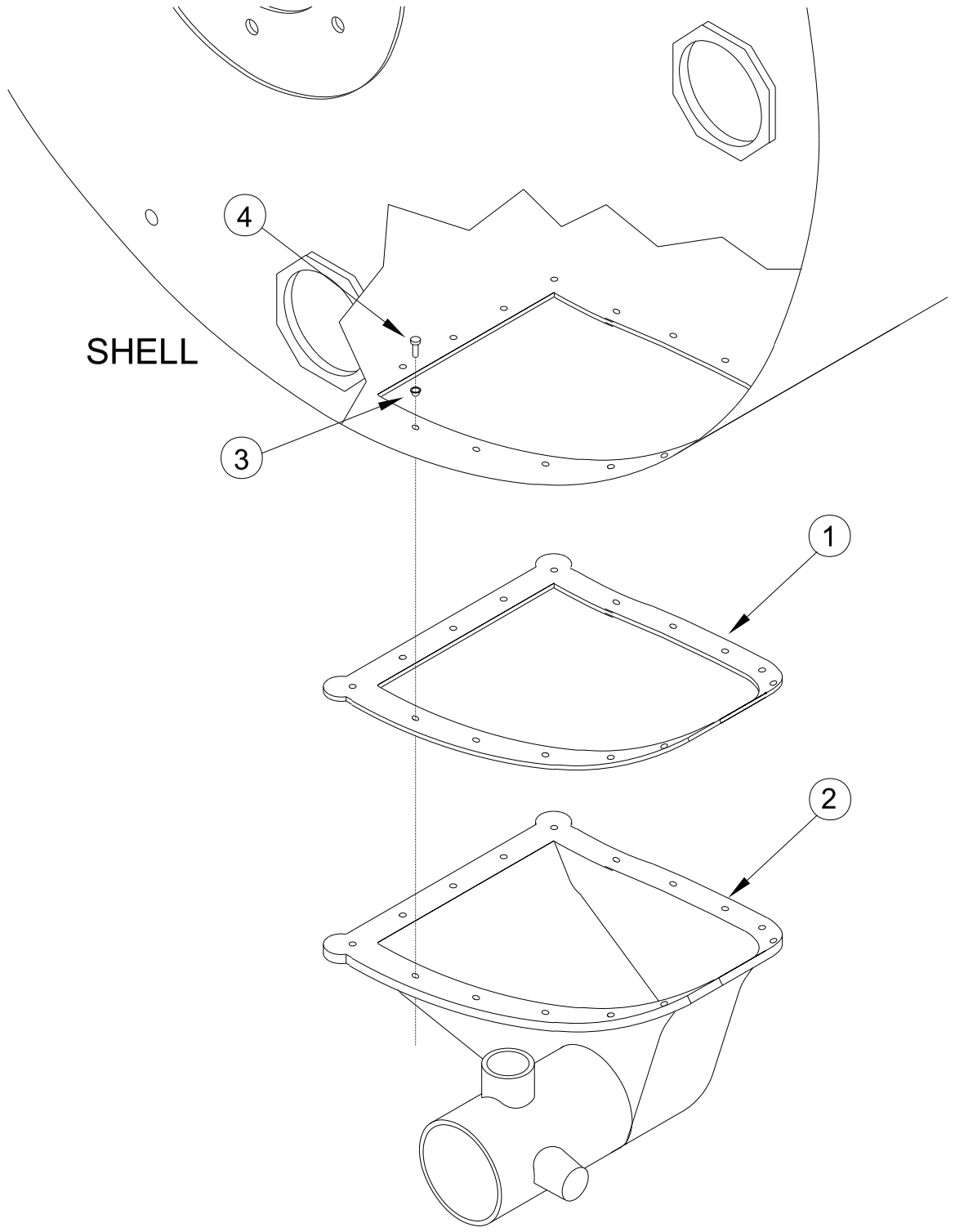

Parts List—Drain Sump Installation

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
----------COMPONENTS----------				
all	1	02 03366A	DRAIN SUMP GASKET 1/8"EPDM	
all	2	02 03332A	BODY=SUMP-1608 GLASTIC	
all	3	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	4	15P050	PHDCUT-F PANHD 10-32X3/4 SS410	

Drain Installation

3015V7J,T5E,T5X,C4E,CGE 3022V6J,T5E,T5X,C4E

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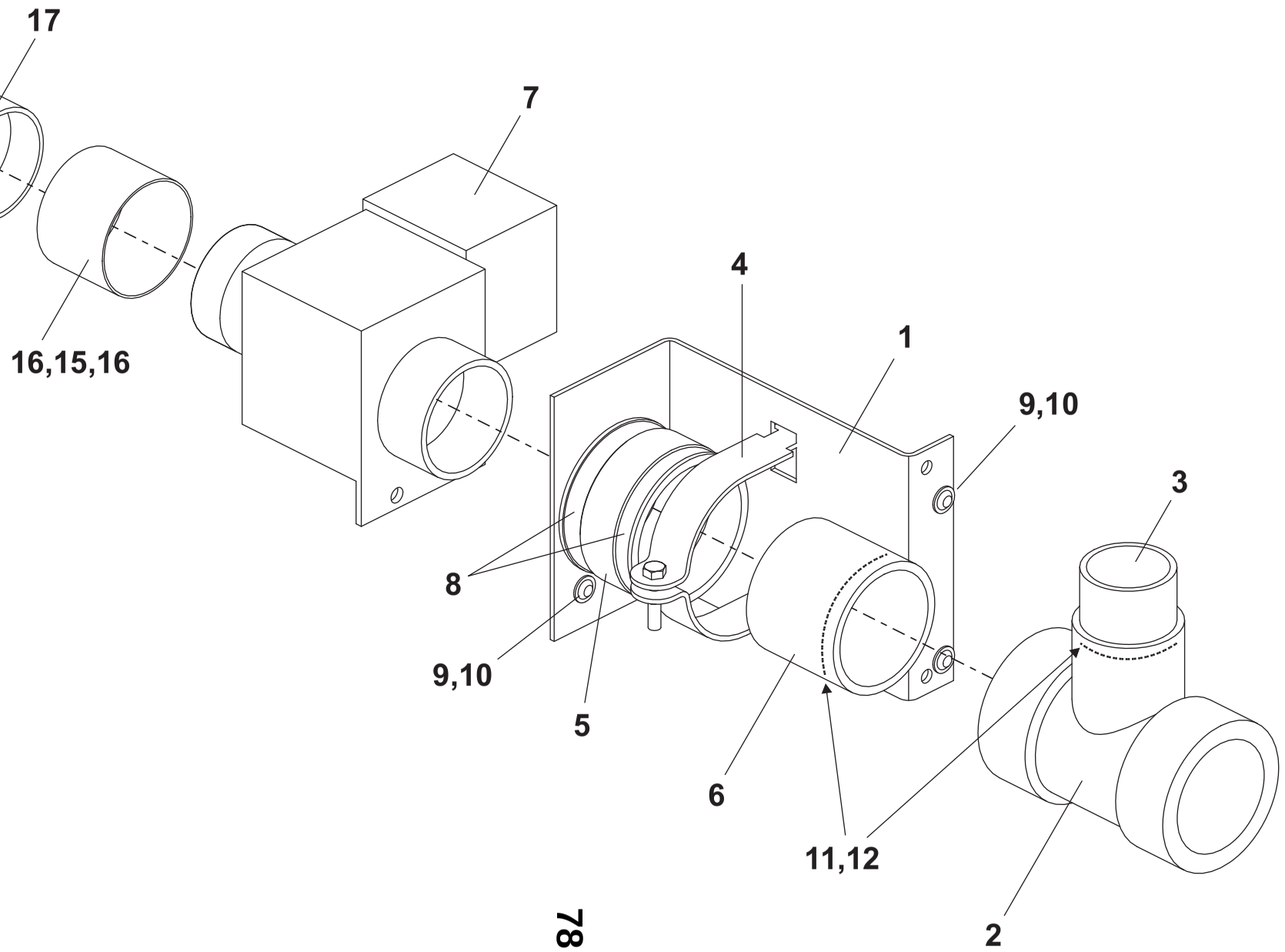

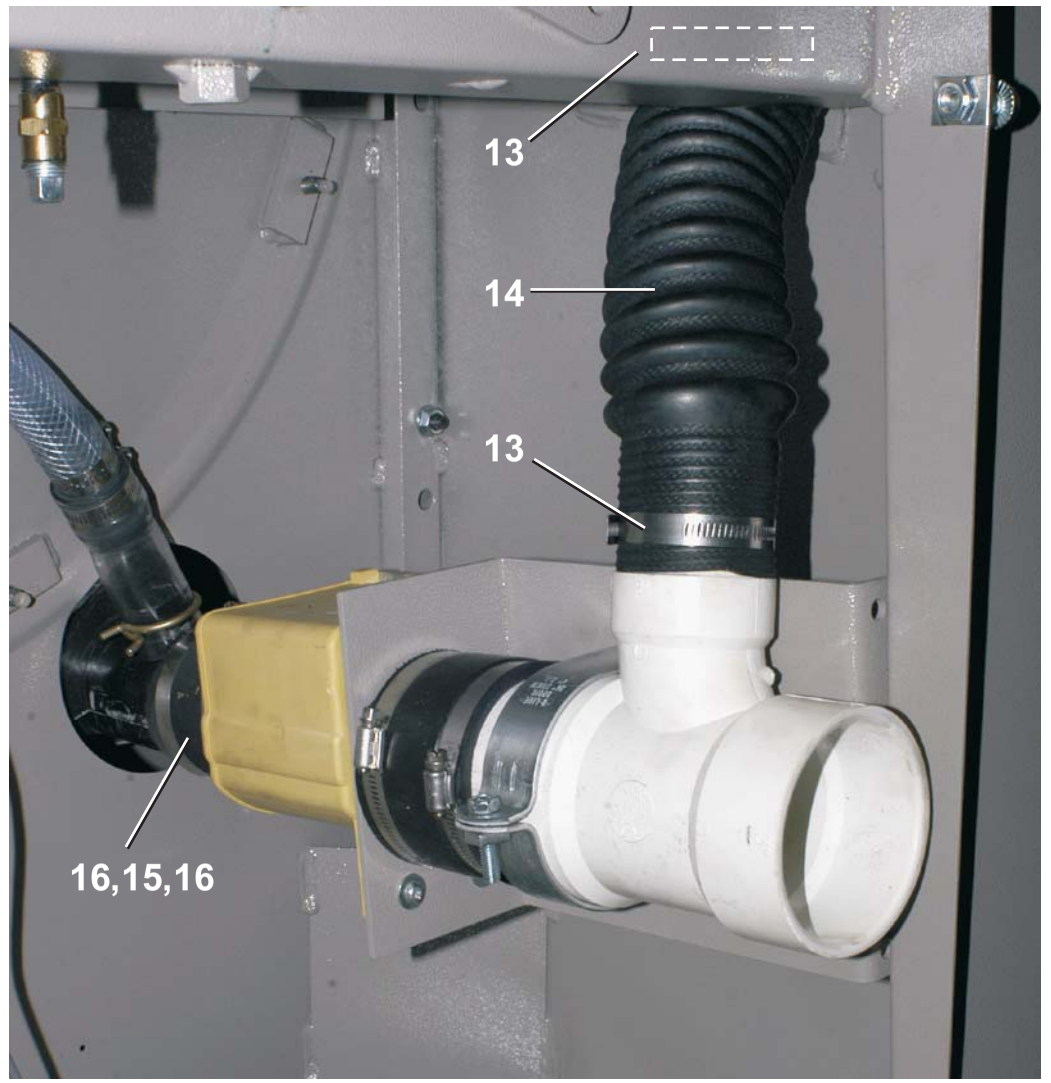

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Parts List—Drain Installation

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

Used In	Item	Part Number	Description	Comments
.----------			----------ASSEMBLIES----------	----------
	A	GDV30004	30"DRAINVALVE W/OVERFLOW	
	B	AVD30001	3"DUMPVAL ELEC W/OVERFLOW	
----------			----------COMPONENTS----------	----------
all	1	02 03412C	3015/3022 DRAIN VALVE BRKT/OVERFLOW	
all	2	5S3APFA2A1	REDUCING TEE 3 X 3X 2 PVC	
all	3	51LB2AN02K	NIPPLE PIPE 2 X 2-1/2 LG NO THD PVC	
all	4	27A0250	CLP-RGDSTL COND#P1100-2+1/2	
all	5	60B074	RUBBER CONN DFW BOOTH	
all	6	51LB3AN03A	NIPPLE PIPE 3 X 3LG NO THD PVC	
all	7	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C DEPENDO	
all	8	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	9	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	10	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	11	20C053C	PRIMER CLEAR P-70 PVC (QUART)	
all	12	20C052	CEMENT PVC 1/2 PINT CANS	
all	13	27A074S	HOSECLAMP 2+1/16-3"SSSCR#64040	
all	14	60E020	FLEXHOSE 2_3/8 X 28 LG CUFF	
all	15	60E303A02D	HOSE= 3" ID X 2+1/4LG	
all	16	27A082	HOSECLAMP 2.5625-3.5CADSC#HS48	
all	17	02 03412S	SLEEVE=DUMPVALVE HOSE	

3” Electric Drain Valve

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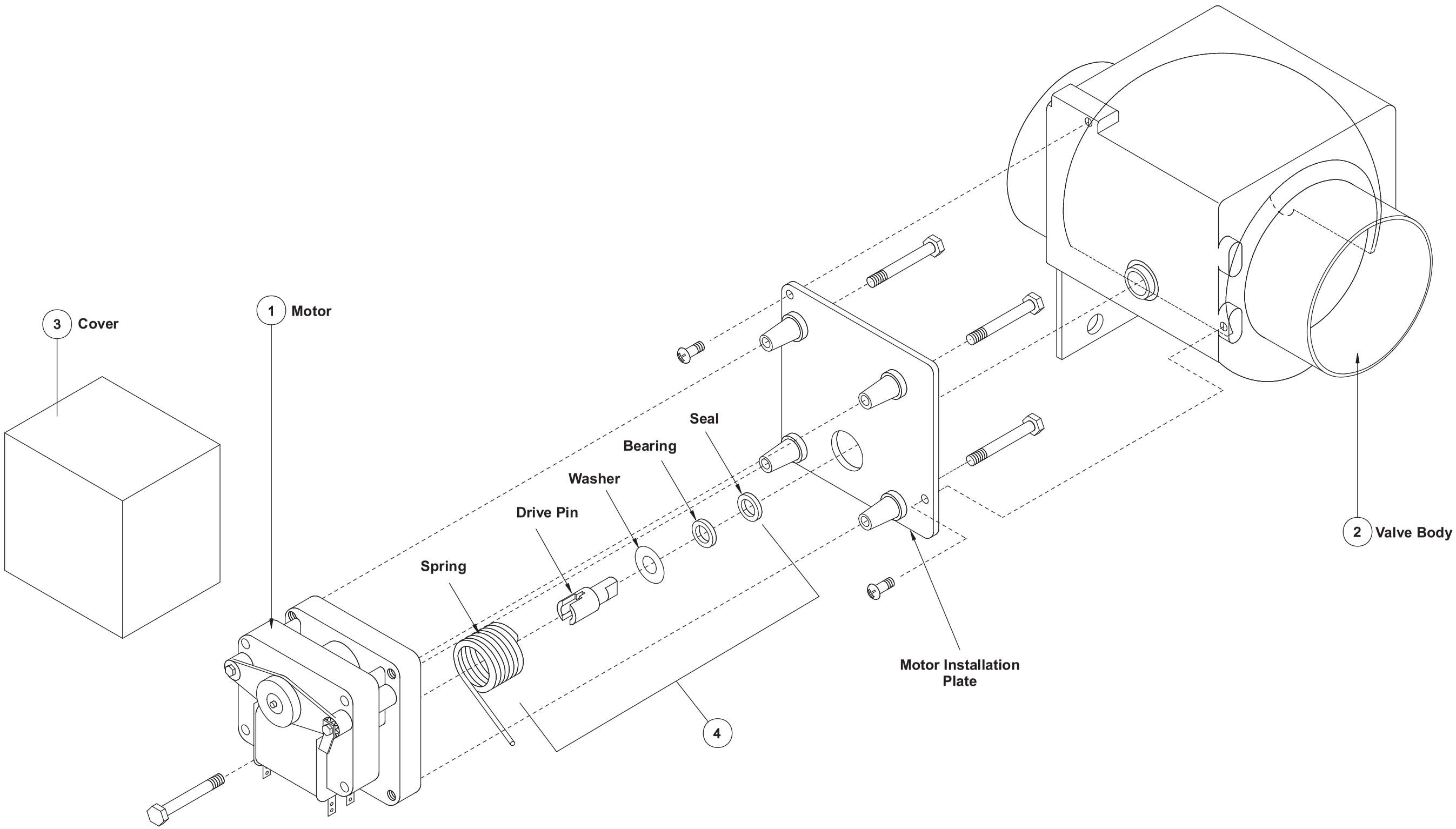

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Parts List—3” Electric Drain Valve

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	96D350A37C	DRNVAL 3"N/O 120V50/60C W/COVER	
	B	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C	
	C	96D350B71	DRINVAL 3"N/C MTRDR240V 50/60	
			----------COMPONENTS----------	
A	1	96D35MTR37	120V 50/60CMTR FOR 3"DRAINVAL	
BC	1	96D35MTR71	240V 50/60CMTR FOR 3"DRAINVAL	
all	2	96D35B0D	B0DY & BALL FOR 3" DRAIN VALVE	
all	3	96D35C0V	MTRCOVER 2-PCFOR 3"DRAINVAL	
all	4	96D35PIN	DRIVE PIN KIT FOR 3" DRAIN VAL	

7 Control and Sensing Assemblies

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 B 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 B 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 microswitch clicks when the arm is **slowly** released, thus indicating

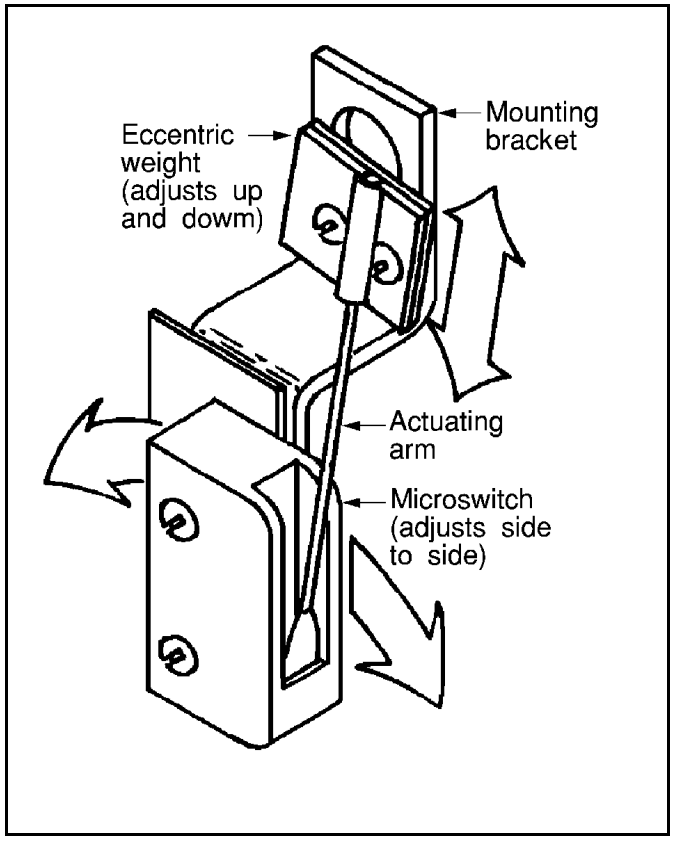

FIGURE 1 (MSSMA408BE)
Vibration Switch

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

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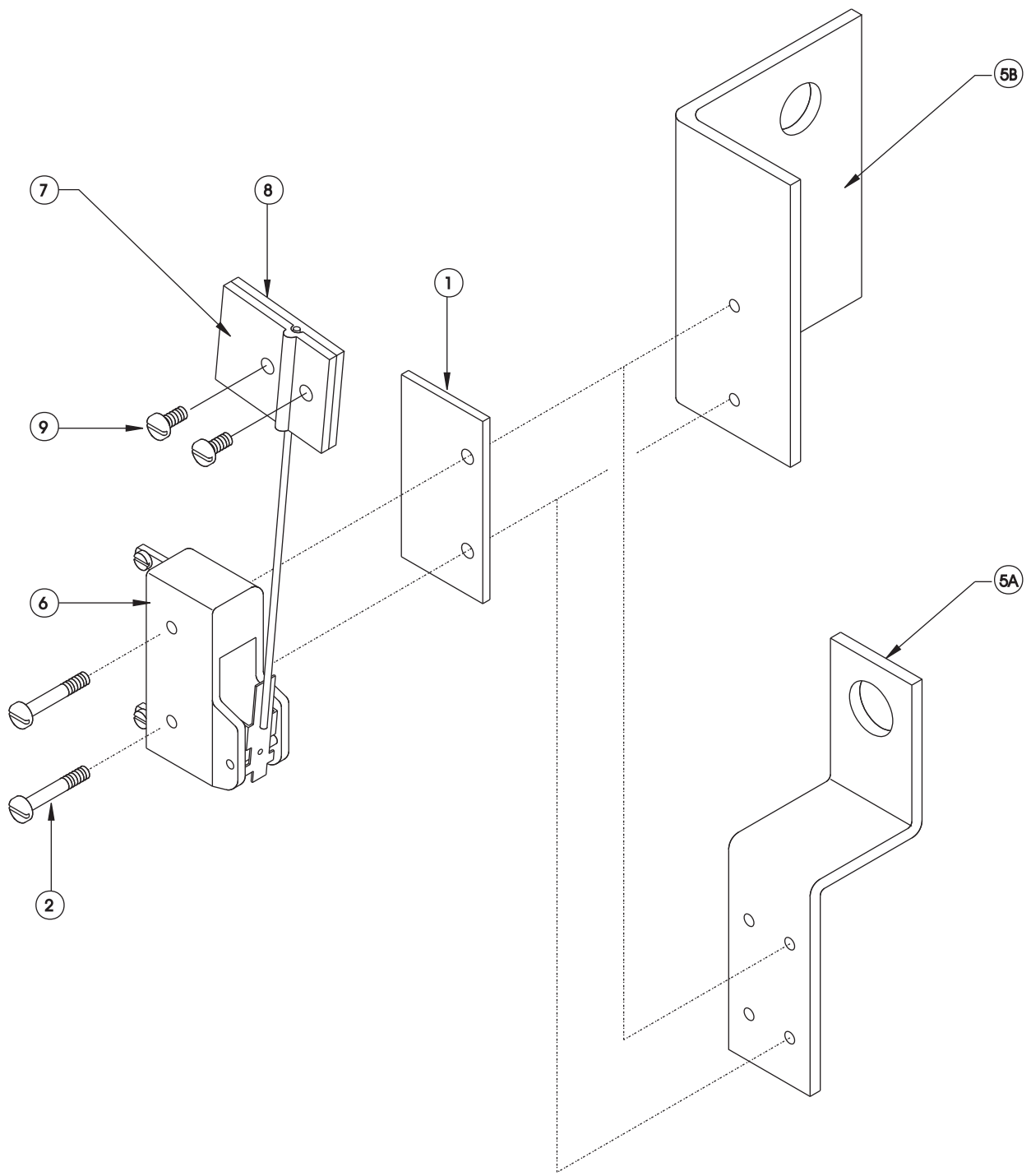

Parts List—Vibration Safety Switch

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) 3015/22 V/T/G/F 3022F,362F, 4232F 3621,3626,4226,4230V 3022X,3626X,4226X,4232X 4244, 6044,7244WP/SP 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	