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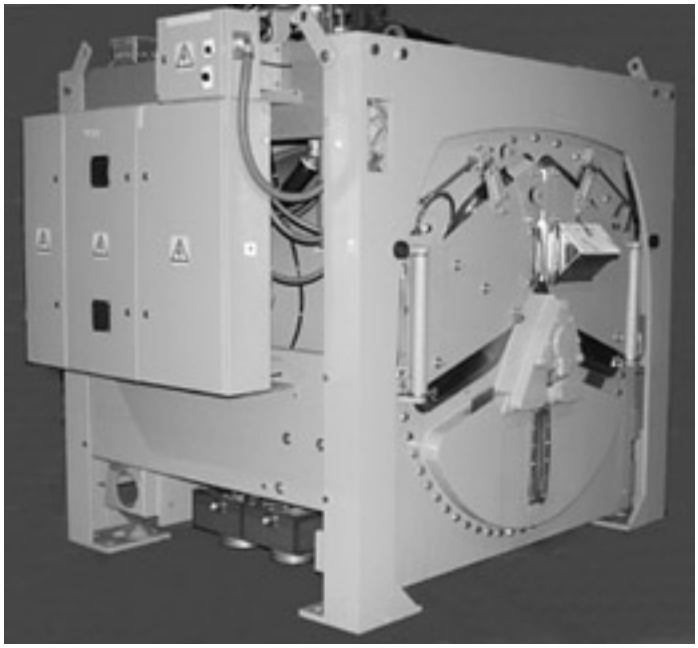
Service

60044WP2, WP3 SM
60044WR2, WR3
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, EX Factory (labor and freight specifically NOT included). We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

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

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

ANY SALE OR FURNISHING OF ANY EQUIPMENT BY MILNOR IS MADE ONLY UPON THE EXPRESS UNDERSTANDING THAT MILNOR MAKES NO EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR ANY OTHER WARRANTY IMPLIED BY LAW INCLUDING BUT NOT LIMITED TO REDHIBITION. MILNOR WILL NOT BE RESPONSIBLE FOR ANY COSTS OR DAMAGES ACTUALLY INCURRED OR REQUIRED AS A RESULT OF: THE FAILURE OF ANY OTHER PERSON OR ENTITY TO PERFORM ITS RESPONSIBILITIES, FIRE OR OTHER HAZARD, ACCIDENT, IMPROPER STORAGE, MIS-USE, NEGLECT, POWER OR ENVIRONMENTAL CONTROL MALFUNCTIONS, DAMAGE FROM LIQUIDS, OR ANY OTHER CAUSE BEYOND THE NORMAL RANGE OF USE. REGARDLESS OF HOW CAUSED, IN NO EVENT SHALL MILNOR BE LIABLE FOR SPECIAL, INDIRECT, PUNITIVE, LIQUIDATED, OR CONSEQUENTIAL COSTS OR DAMAGES, OR ANY COSTS OR DAMAGES WHATSOEVER WHICH EXCEED THE PRICE PAID TO MILNOR FOR THE EQUIPMENT IT SELLS OR FURNISHES.

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.

BMP720097/19036

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

How to Get the Necessary Repair Components

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

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

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

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

To write to the Milnor factory:

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

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

— End of BIUUUD19 —

Trademarks

BNUUUU02.R01 0000158093 A.2 7/13/17 1:11 PM Released

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

Table 1 Trademarks

AutoSpot™	GreenTurn™	Milnor®	PulseFlow®
CBW®	GreenFlex™	MilMetrix®	PurePulse®
Drynet™	Hydro-cushion™	MilTouch™	Ram Command™
E-P Express®	Linear Costa Master™	MilTouch-EX™	RecircONE®
E-P OneTouch®	Linear Costo™	Miltrac™	RinSave®
E-P Plus®	Mentor®	MultiTrac™	SmoothCoil™
Gear Guardian®	Mildata®	PBW™	Staph Guard®

End of document: BNUUUU02

Safety—Divided Cylinder and Staph-Guard™ 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—External Mechanical Hazards [Document BIUUUS12]

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

WARNING 3: Crush Hazards—Suspended machines only—Spaces between the shell and housing can close and crush or pinch your limbs. The shell moves within the housing during operation.

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

4. Safety Alert Messages—Cylinder and Processing Hazards

[Document BIUUUS13]

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

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.
- Divided cylinder machines only—Keep yourself and others clear of cylinder and goods during inching or Autospot operation.
- Do not operate the machine with malfunctioning two-hand manual controls.

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.

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

5.1. Damage and Malfunction Hazards

5.1.1. 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.

5.1.2. 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—Inner door latches (divided cylinder machines)—A damaged or improperly seated latch can cause the inner door to open during operation, damaging the cylinder and shell. A damaged cylinder can rip apart during extraction, puncturing the shell and discharging metal fragments at high speed.

- Ensure that the inner door is securely latched when loading and unloading.
- Do not operate the machine with any evidence of damage or malfunction.

WARNING 14: 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

5.2. Careless Use Hazards

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

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

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

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

WARNING 16: 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 17: 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 18: 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

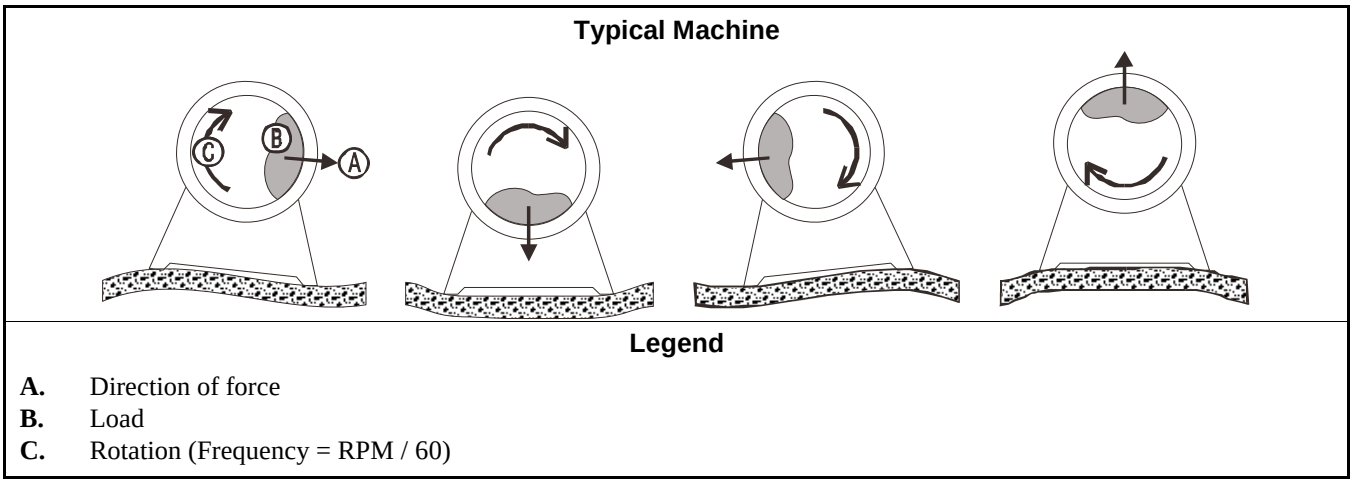


Figure 1 above is intended to depict both on-grade and above-grade installations and is equally applicable to flexibly-mounted washer-extractors, as well as to rigid models installed either directly on a floor slab or on a foundation poured integrally with the slab. Current machine data is available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

BIUUUI02HD (Published) Book specs- Dates: 20160713 / 20160713 / 20160713 Lang: ENG01 Applic: HDU

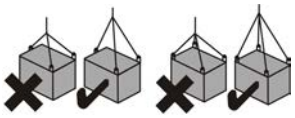
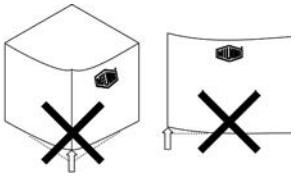
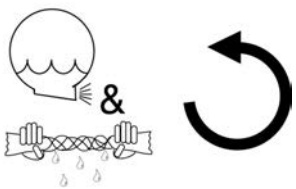
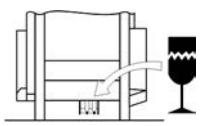
Tag Guidelines for the Models Listed Below

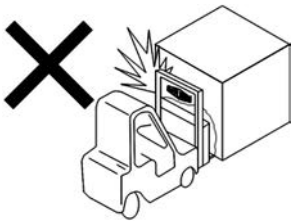
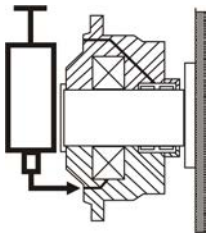
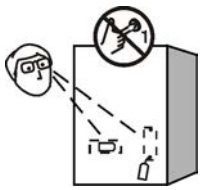
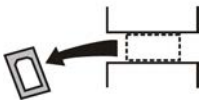
42044CP2 42044NP2 42044SP2 42044SP3 42044WP2 42044WP3 60044SP2 60044SP3 60044WP2 60044WP3 72044SP2 72044SP3 72044WP2 72044WP3

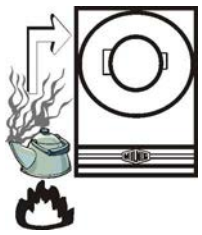
Notice 1: This information may apply to models in addition to those listed above. It applies to paper tags. It does not apply to the vinyl or metal safety placards, which must remain permanently affixed to the machine and replaced if no longer readable.

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

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

Display or Action	Explanation
	Read the manuals before proceeding. This symbol appears on most tags. The machine ships with safety, operator, and routine maintenance guides for customer use. Milnor dealer manuals for installing, servicing, and commissioning this machine are also available from the Milnor Parts department.
	B2TAG88005: This carefully built product was tested and inspected to meet Milnor® performance and quality standards by (identification mark of tester).
	B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies.
	B2TAG94079: Rig for crane lifting (either 3-point or 4-point, depending on the number of lifting eyes provided) using a steep angle on the chains (closer to vertical than horizontal).
	B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine is first tested, the electrical hookup is incorrect and must be reversed as explained in the schematic manual.
	B2TAG94084: Do not lift from one corner of the machine, as this can cause the frame to rack, damaging it.
	B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.
	B2TAG94117: The brake assembly under the machine is fragile. Fork lift only under main structural supports.

Display or Action	Explanation
	B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside.
	B2TAG96007: Add grease here. Refer to the preventive maintenance schedule in the service manual.
	B2T2001013: Hot water connection.
	B2T2001014: Cold water connection.
	B2T2001028: Look for tags inside the machine. These tags may identify shipping restraints to be removed or components to be installed. Do not start the machine until these actions are completed.
 	B2T2002013: Do not start the machine until shipping restraints are removed. This tag will appear on the outside of the machine to alert you to the presence of internal shipping restraints. A tag will also appear on the restraint to help identify it. Most, but not all shipping restraints display the color red. Some shipping restraints are also safety stands. Do not discard these.

Display or Action	Explanation
	B2T2004027: Steam connection (optional)

— End of BIUUUI02 —

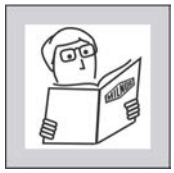
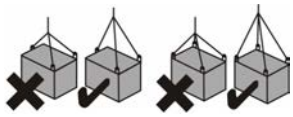
Installation Tag Guidelines

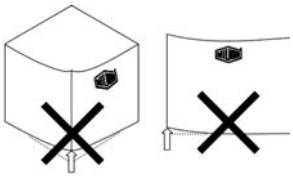
42044SR2	42044SR3	42044WR2	42044WR3
60044SR2	60044SR3	60044WR2	60044WR3
72044SR2	72044SR3	72044WR2	72044WR3

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

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

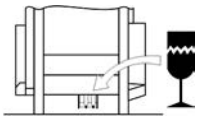
The following entries explain the installation tags. Each entry includes: 1) the tag illustration, 2) the tag part number at the bottom of the tag, and 3) the meaning of the tag.

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

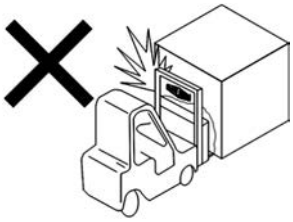


B2TAG94084: Do not lift from one corner of the machine, as this can cause the frame to rack, damaging it.

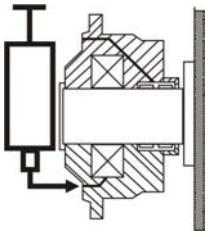
B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.



B2TAG94117: The brake assembly under the machine is fragile. Fork lift only under main structural supports.

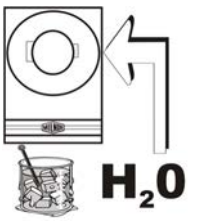


B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside.



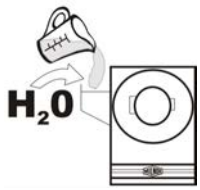
B2TAG96007: Add grease here. Refer to the preventive maintenance schedule in the service manual.

B2T2001013: Hot water connection.

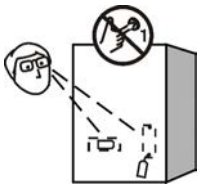


B2T2001014: Cold water connection.

B2T2001015: Reuse (third) water connection. (Optional)

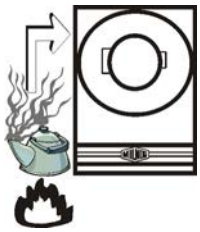


B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.



B2T2001028: Look for tags inside the machine. These tags may identify shipping restraints to be removed or components to be installed. Do not start the machine until these actions are completed.

B2T2002013: Do not start the machine until shipping restraints are removed. This tag will appear on the outside of the machine to alert you to the presence of internal shipping restraints. A tag will also appear on the restraint to help identify it. Most, but not all shipping restraints display the color red. Some shipping restraints are also safety stands. Do not discard these.



B2T2004027: Steam connection.

End of document: BNWG4I01

Safety Placard Use and Placement

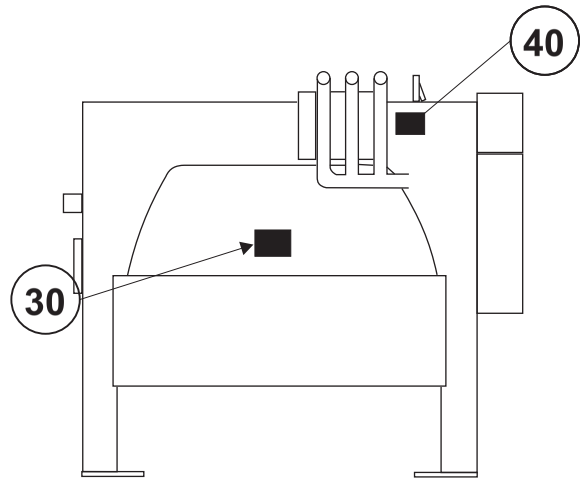
6044WP2, **6044WR2, 7244WP2, 7244WR2**

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

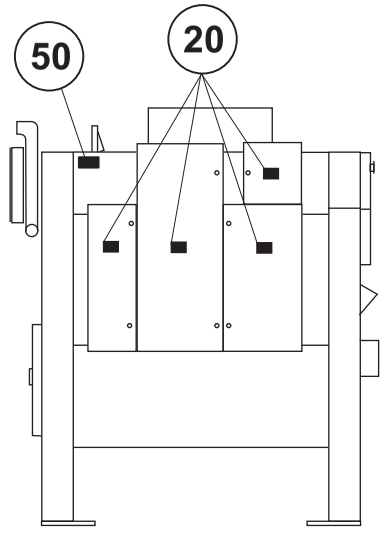
Litho in U.S.A.

Notes:

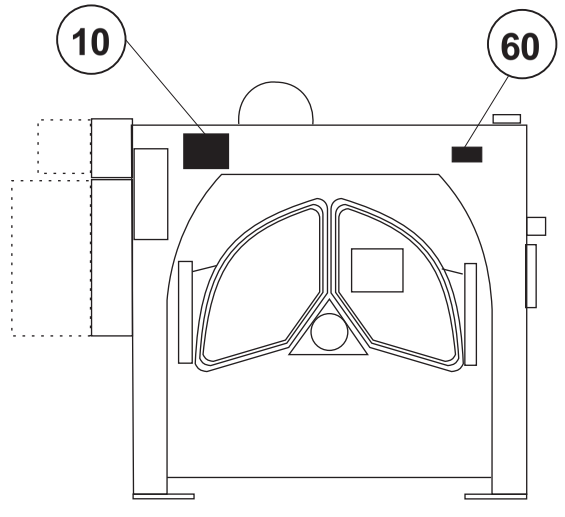
1. **Replace placard immediately, if removed or unreadable.**
2. **Approximate locations of placards are shown. Mounting holes are provided on machine. Use #8 self-tapping screws.**



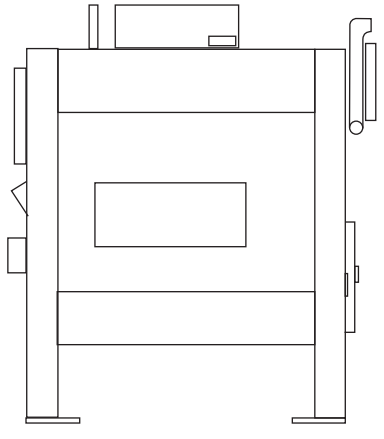
REAR VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

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

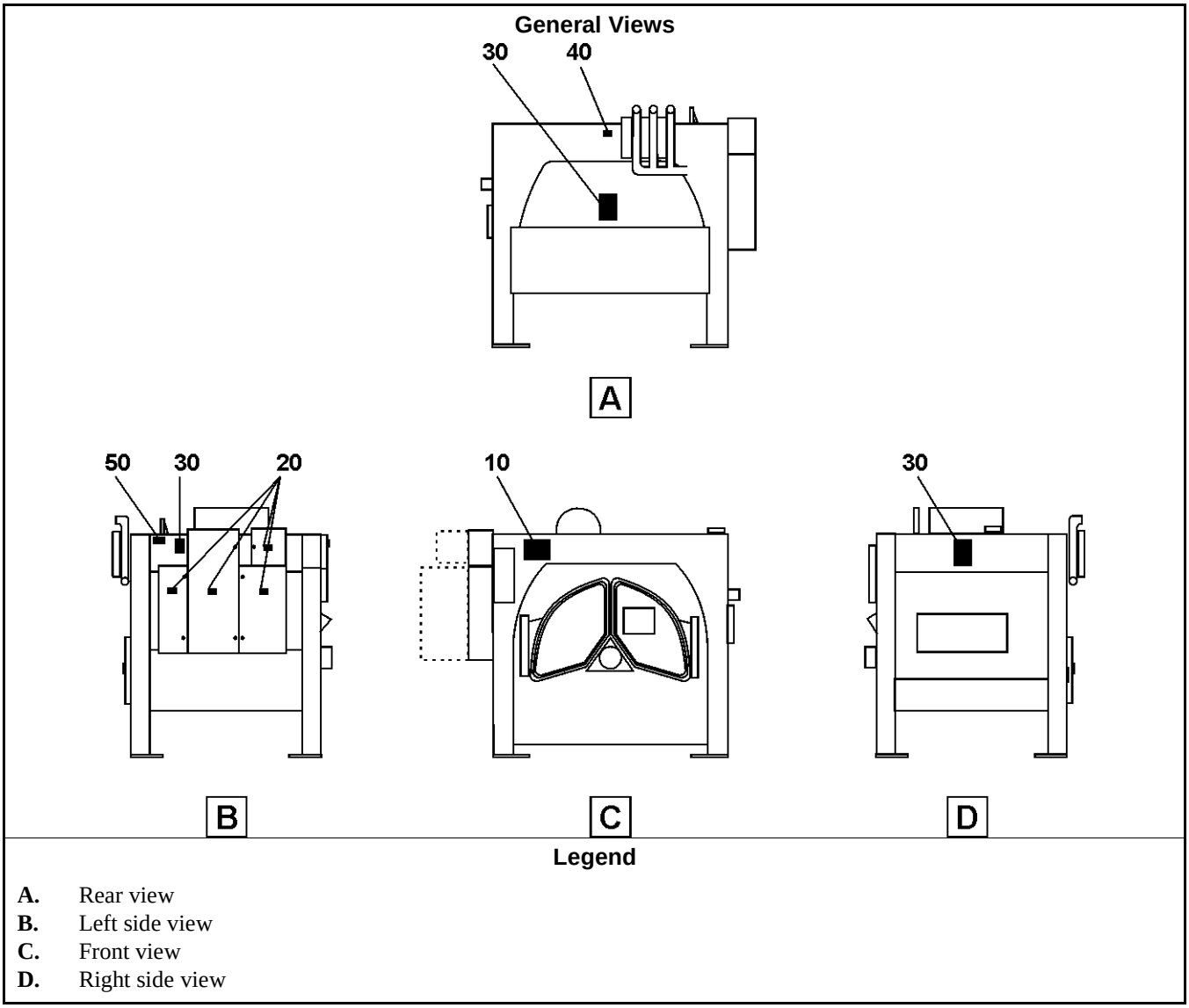
Parts List—Safety Placard Placement

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 10627A	NPLT:DIV-CYL/STAPH WARN-TCATA	
all	20	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	30	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	40	01 10648A	NPLT:GEAR HAZARD-TCATA	
all	50	01 10685A	NPLT:BURN HAZARD-TCATA	
all	60	01 10699A	NPLT:SERV HZRD-ALUM-TCATA	

Safety Placards and Locations— ISO: 6044WP2, 6044WR2, 7244WP2, 7244WR2

Figure 1: Safety Placards and Locations— ISO: 6044WP2



Legend

A. Rear view
B. Left side view
C. Front view
D. Right side view

- This document is for placards that agree with: ISO
- If the placard is removed or you cannot read it, replace the placard immediately.
- If the placard is aluminum, the mounting holes are on the machine. Use #8 self-tapping screws. If the placard is vinyl, put the placard in the approximate location shown.

Table 1: Parts List—Safety Placards and Locations— ISO: 6044WP2

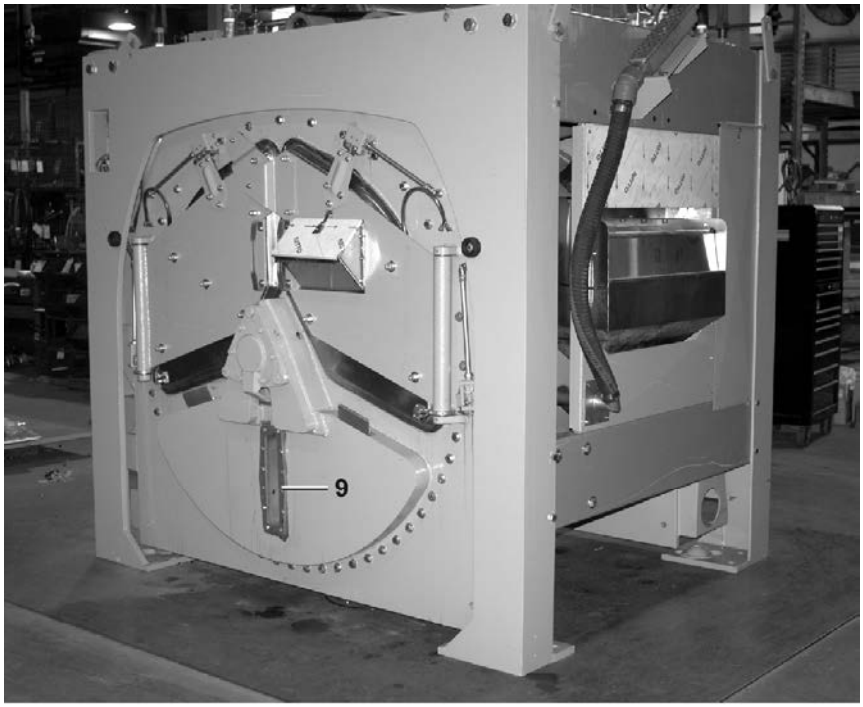
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.

Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
none				
Components				
all	10	01 10627X	Dataplate, Warning, ISO	
all	20	01 10377	Dataplate, Warning, ISO	
all	30	01 10628X	Dataplate, Warning, ISO	
all	40	01 10648X	Dataplate, Warning, ISO	
all	50	01 10649X	Dataplate, Warning, ISO,	Used on the steam inlet

— End of BIHDBM01 —

Panels and Covers: 6044WP2, 6044WR2, 7244WP2, 7244WR2

Figure 1: General Views



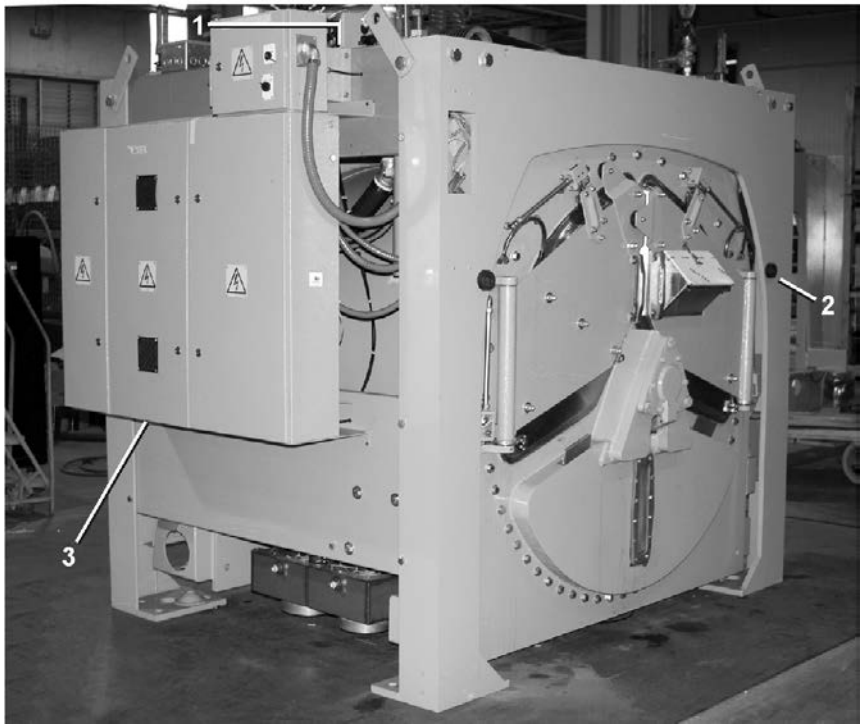


Figure 2: Rear view

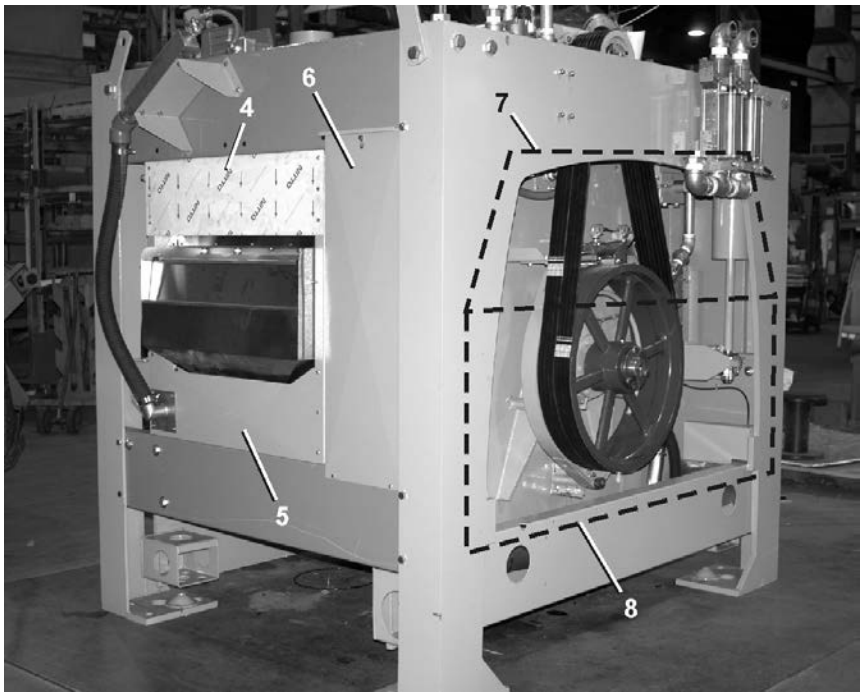


Table 1: Parts List— Panels and Covers: 6044WP2, 7244WP2

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
none				
Components				
all	1	03 CL721K	Cover	
all	2	60C075	Rubber bumper	
all	3	05 20296D	Cover, Left hand, Rear	
all	4	02 18824C	Cover	
all	5	02 18824D	Cover	
all	6	05 20296C	Cover	
6044WP2	7	02 175174	Belt guard, Upper	
7244WP2	7	03 06380	Belt guard, Upper	
6044WP2	8	02 175175	Belt guard, Lower	
7244WP2	8	03 06385	Belt guard, Lower	
6044WP2	9	AD 28 111	Assembly, Sight glass	
7244WP2	9	AD 36 004	Assembly, Sight glass	

— End of BIHDBM02 —

Service and Maintenance

1

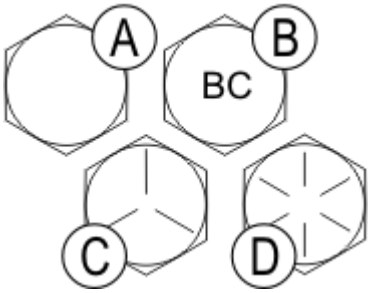
BIUUUM04 (Published) Book specs- Dates: 20180109 / 20180109 / 20180109 Lang: ENG01 Applic: UUU

Torque Requirements for Fasteners

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

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

Figure 1: The Bolts in Milnor® Equipment

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

1. Torque Values

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

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

1.1. Fasteners Made of Carbon Steel

1.1.1. Without a Threadlocker

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

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

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

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

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

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

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

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

1.1.2. With a Threadlocker

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

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

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

Table 6: Torque Values if You Apply LocTite 222

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

Table 7: Torque Values if You Apply LocTite 242

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

Table 8: Torque Values if You Apply LocTite 262

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

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

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

Table 10: Torque Values if You Apply LocTite 277

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

1.2. Stainless Steel Fasteners

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

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

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

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

2. Preparation

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

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

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

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

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

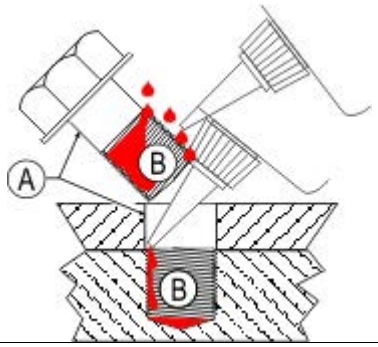
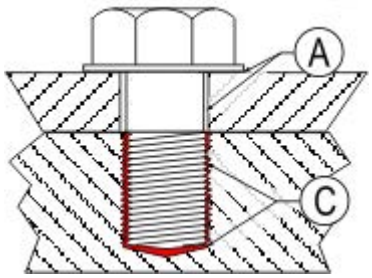
3. How to Apply a Threadlocker

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

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

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

Figure 2: Blind Hole

Application	Coverage
	

Legend

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

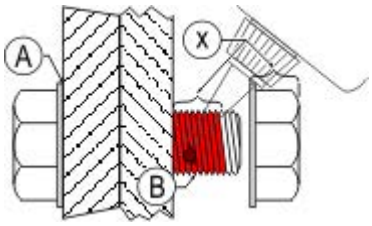
3.1. Blind Holes

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

3.2. Through Holes

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

Figure 3: Through Hole

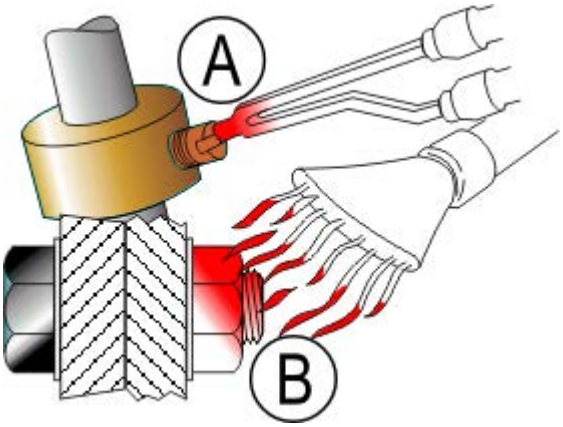
Application	Legend
	**A.** No threadlocker here **B.** Apply the threadlocker to this area **x.** Nut depth

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

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

Figure 4: Disassembly

Apply Heat to a Small Area



Legend

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

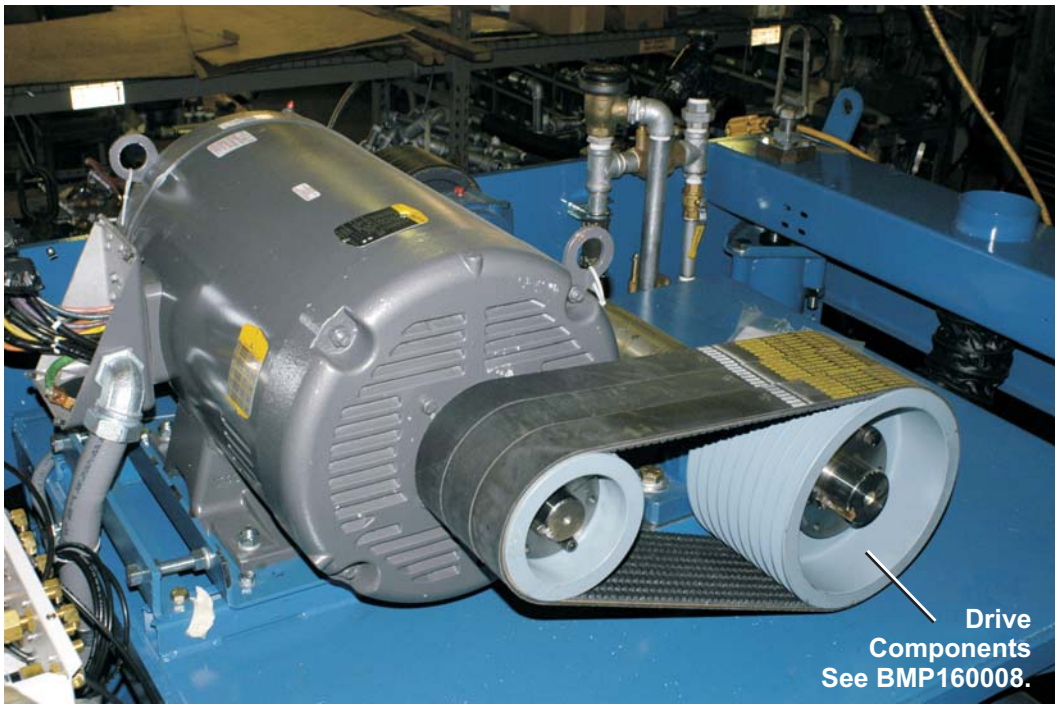
— End of BIUUUM04 —

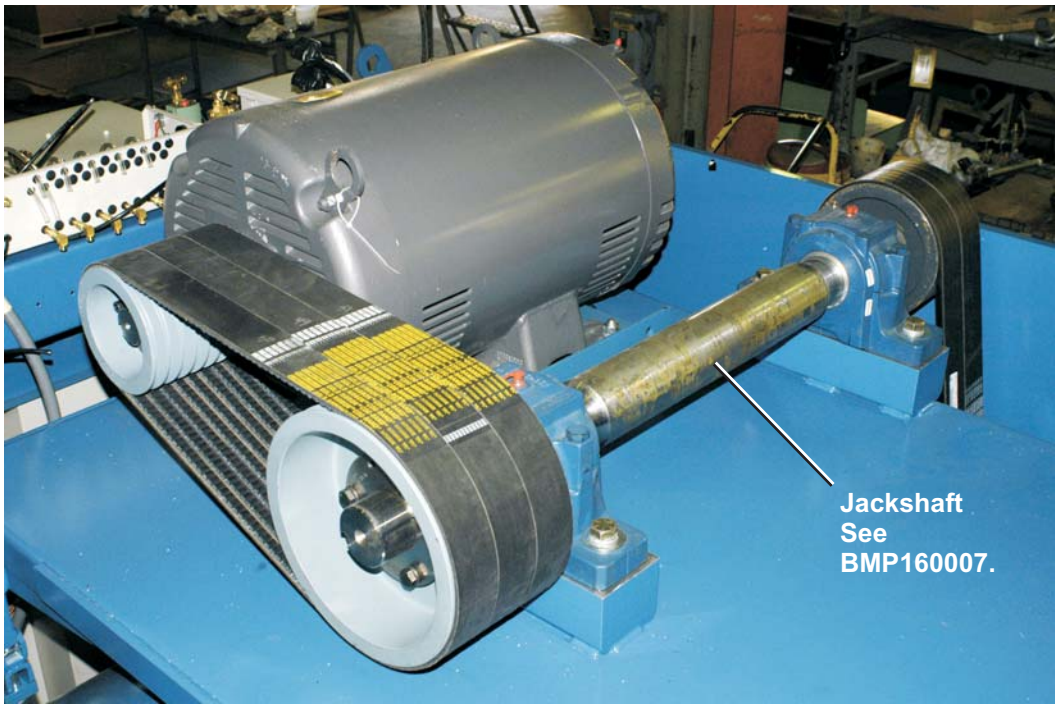
Drive Assemblies 2

Drive Base Installation

6044WR2

Figure 1: Motor mount, drive shaft, and pillowblock bearings

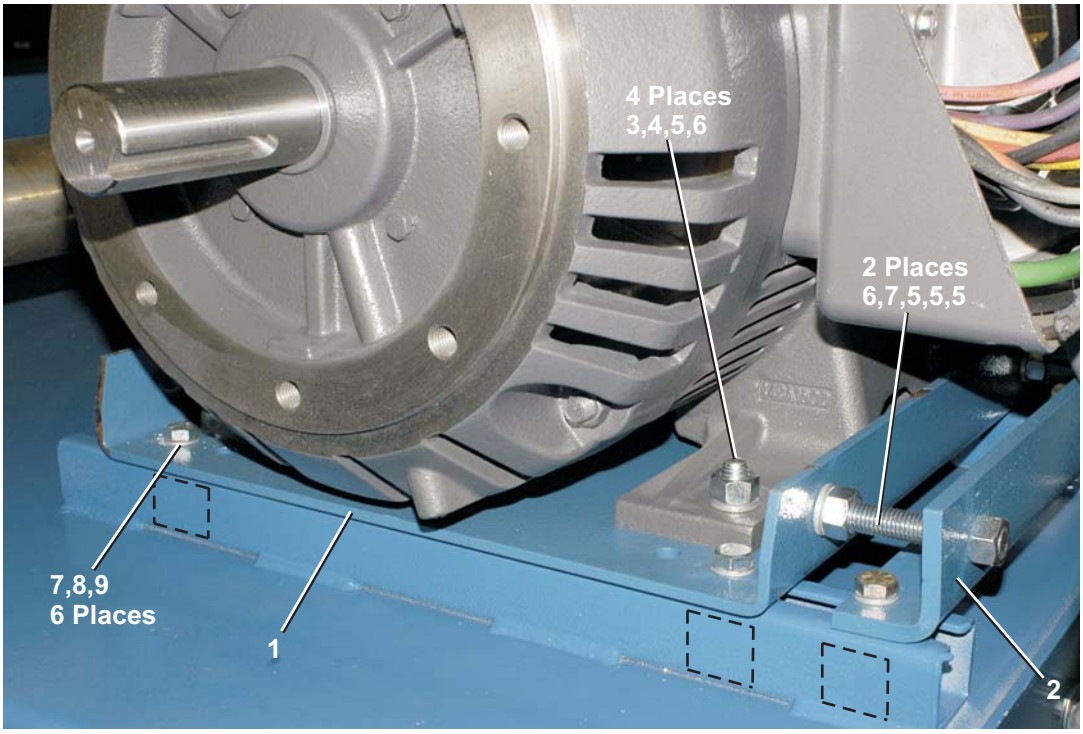


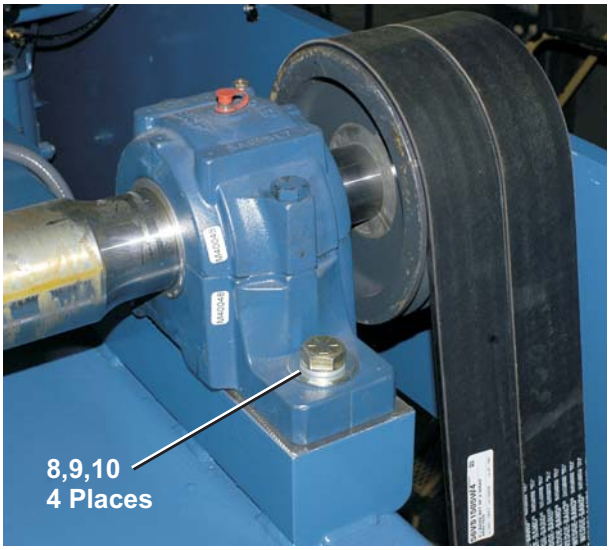


Drive Base Installation

6044WR2

Figure 2: Motor mount, drive shaft, and pillowblock bearings

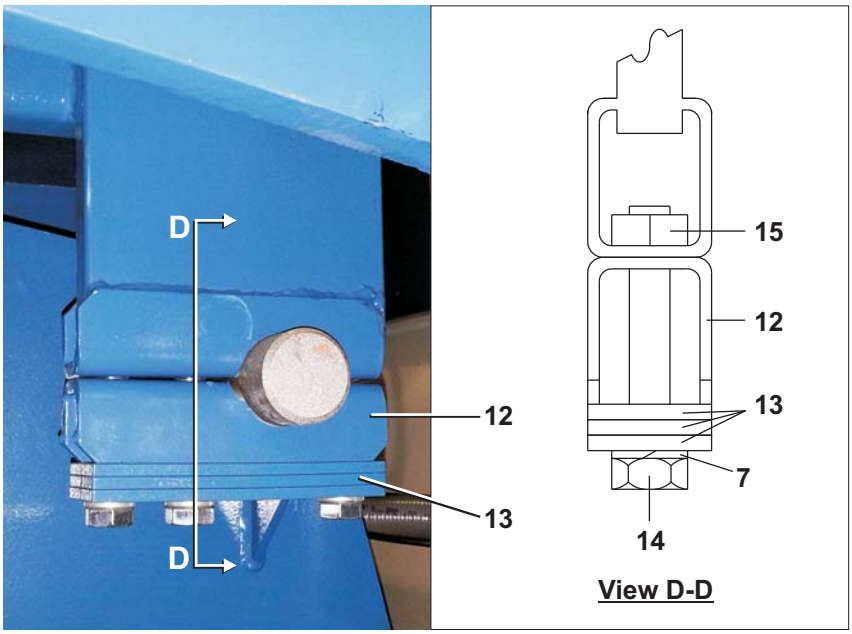




Drive Base Installation

6044WR2

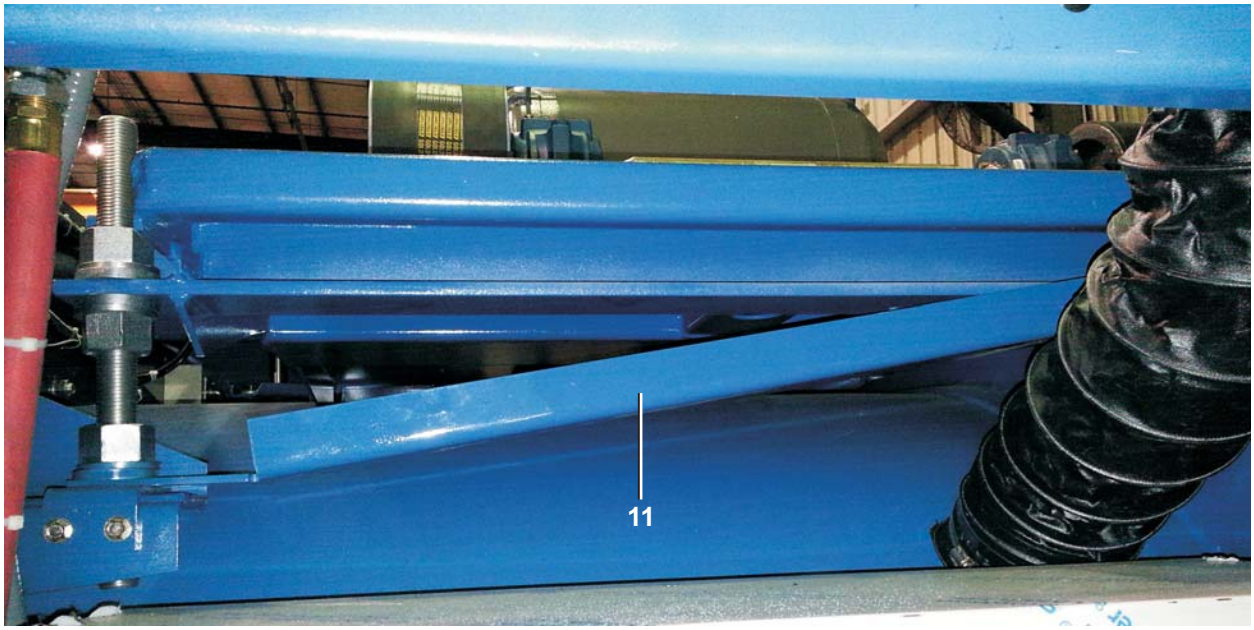
Figure 3: Hinge clamps

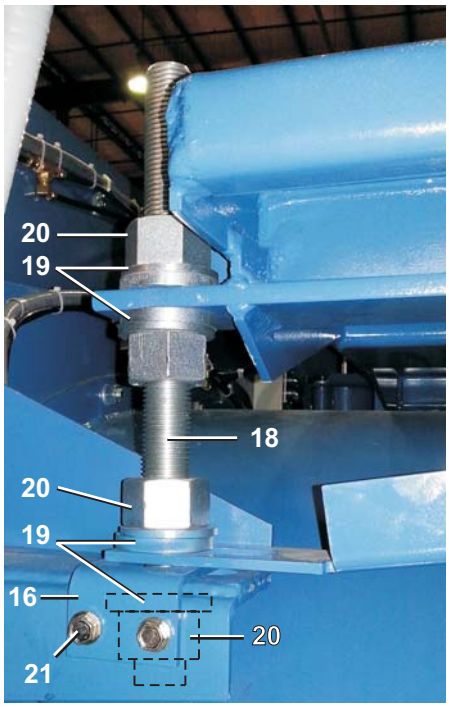


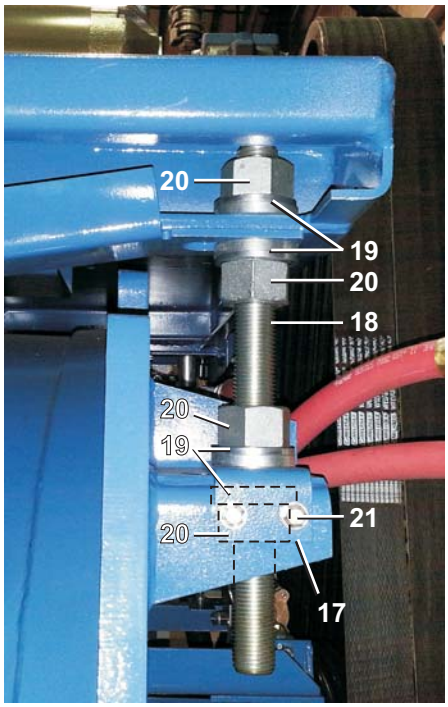
Drive Base Installation

6044WR2

Figure 4: Adjustable bolts







Drive Base Installation

6044WR2

Parts List—Drive Base Installation

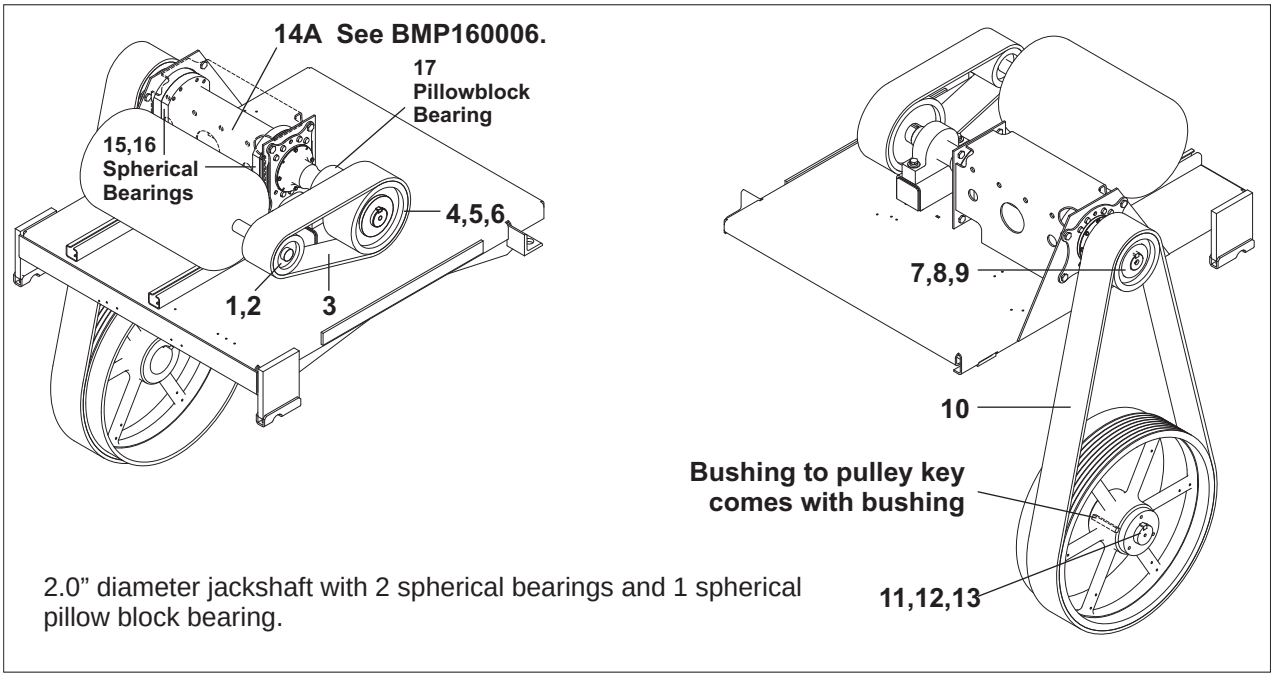
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	SA 28 103S	DRIVE BASE ASSY 60WE 1 MOTOR	
			----------COMPONENTS----------	
all	1	05 20131E	MTRPLATE 6044SG 1 MOTOR	
all	2	02 19577	ADJ ANGLE MOTOR	
all	3	15K221	HEXCAPSCR 5/8-11 UNC2X2GR5 ZIN	
all	4	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	5	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	6	15B186	HEXTAPBLT FLT 5/8-11UNCX7	
all	7	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	8	15K235AB	HXCAPSCR 3/4-10UNC2AX3"GR8 ZIN	
all	9	15U320	FLATWASHER(USS STD) 3/4" UNPLT	
all	10	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	11	02 18701A	SWAY BRACE = WE DRIVE BASE A	
all	12	X2 18634	CLAMP=MACHINED DR HINGPIN	
all	13	02 18706	REINFORCEMENT=HINGE PINCLAMP	
all	14	15K227	HXCAPSCR 5/8-11UNC2AX4 GR5 ZIN	
all	15	15G236	SQNUT 5/8-11UNC2B SAE ZINC GR2	
all	16	02 18702	FORK=ADJ SCREW-MOTOR MT-FRT	
all	17	03 25626	FORK=MTR MNT ADJ SCREW 52	
all	18	17R125A15K	STUD=DRIVEBASEADS 1+1/4X15.5 8UN	
all	19	17W125	1+1/4"SPHERICAL WASHER SET	
all	20	15G261	HVHXNUT 1+1/4-8UNC2B ZINC GR2H	
all	21	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	

Single Motor Drive

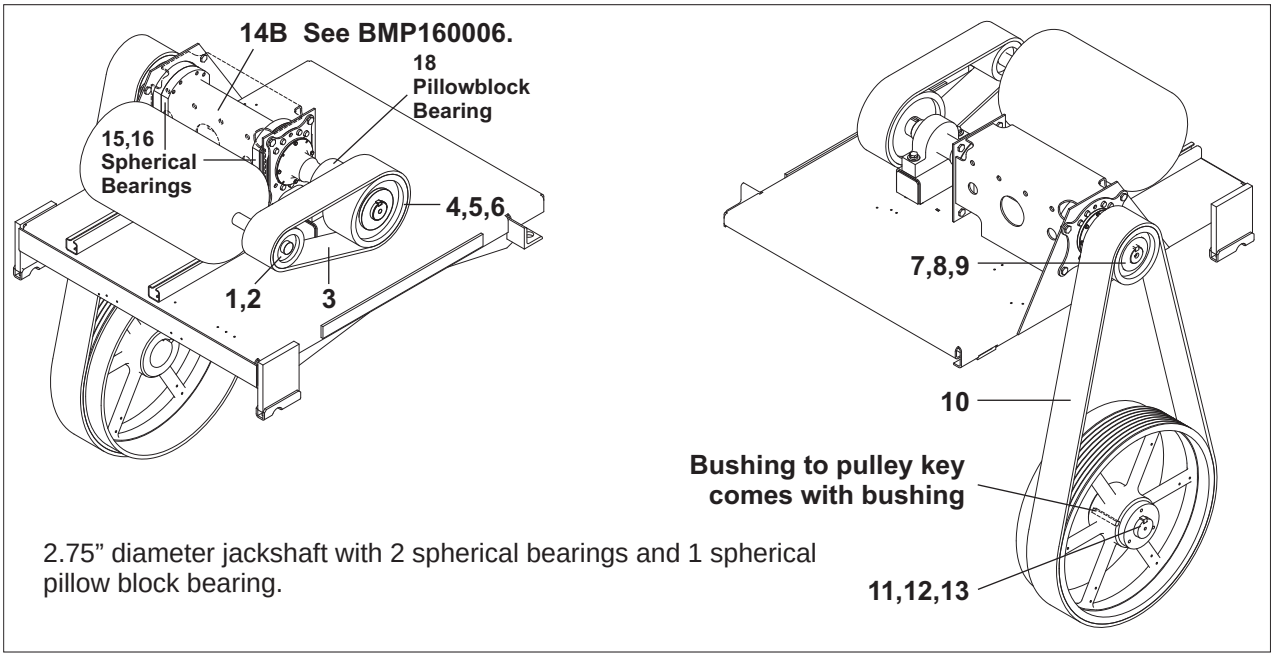
6044WP2, 6044WR2

A : Effective 2005264(6/22/05) to 2010052(1/25/10)



2.0” diameter jackshaft with 2 spherical bearings and 1 spherical pillow block bearing.

B : Effective 2010052(1/25/10) to 2012456(11/8/12)

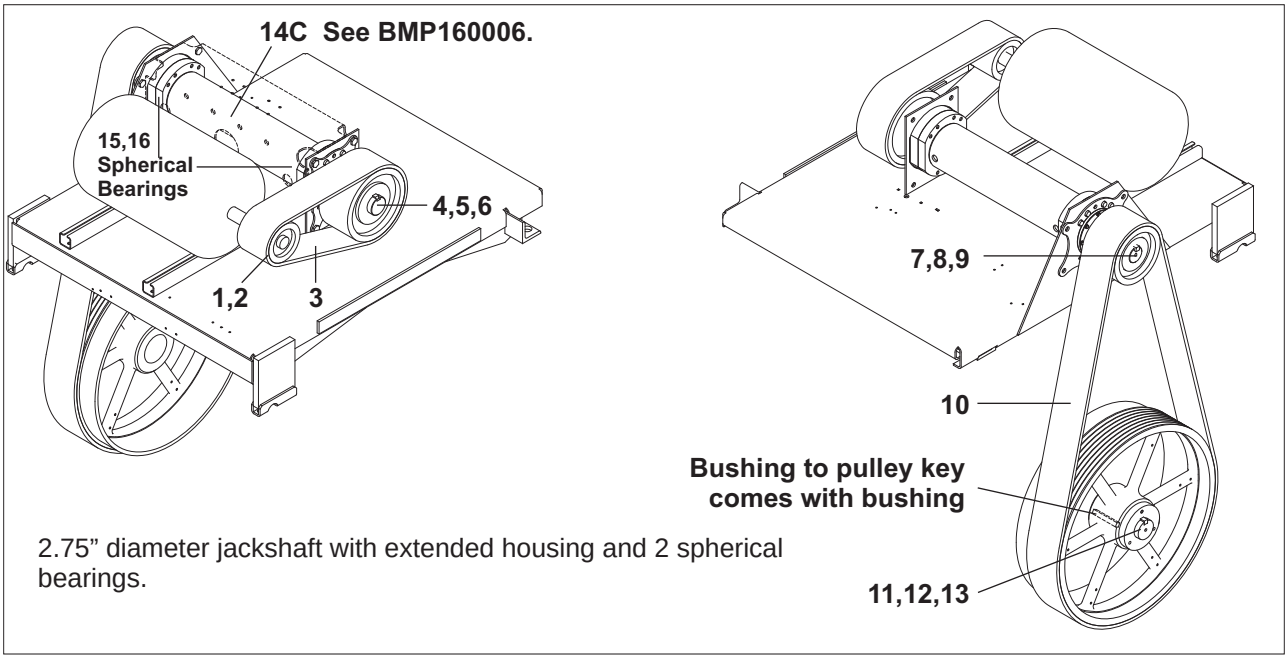


2.75” diameter jackshaft with 2 spherical bearings and 1 spherical pillow block bearing.

Single Motor Drive

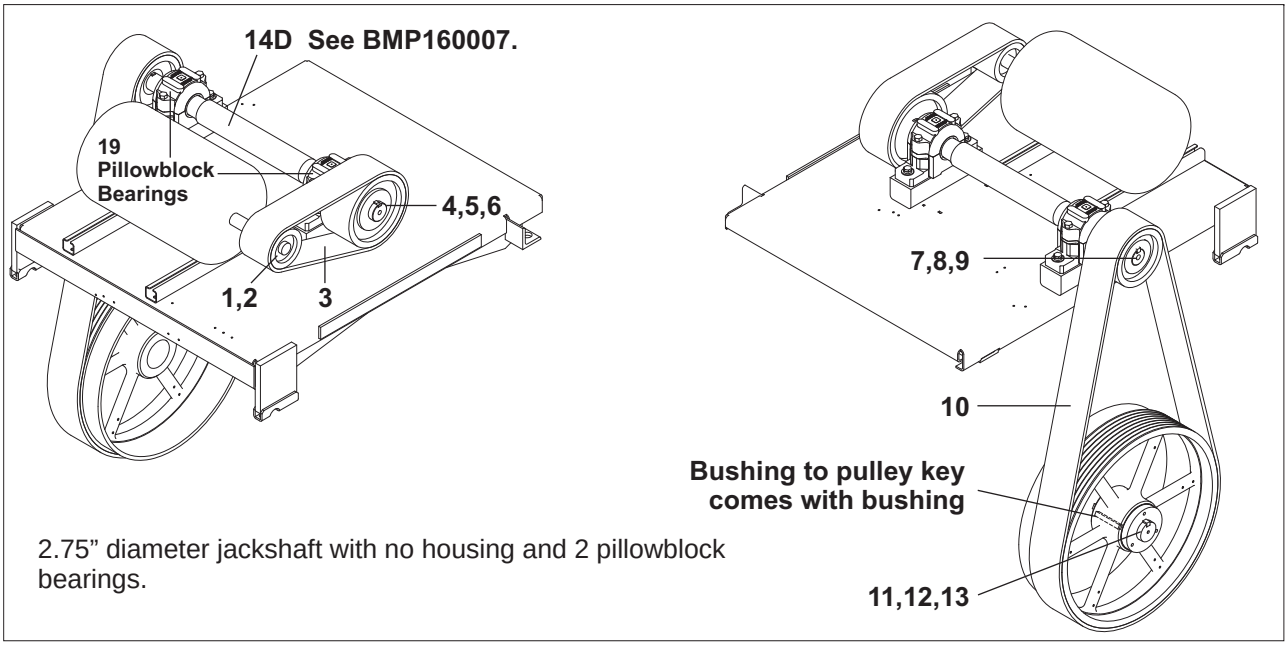
6044WP2, 6044WR2

C : Effective 2012456(11/8/12) to 2015045(1/22/15)



2.75” diameter jackshaft with extended housing and 2 spherical bearings.

D : Effective 2015193(5/5/15)



2.75” diameter jackshaft with no housing and 2 pillowblock bearings.

Single Motor Drive

6044WP2, 6044WR2

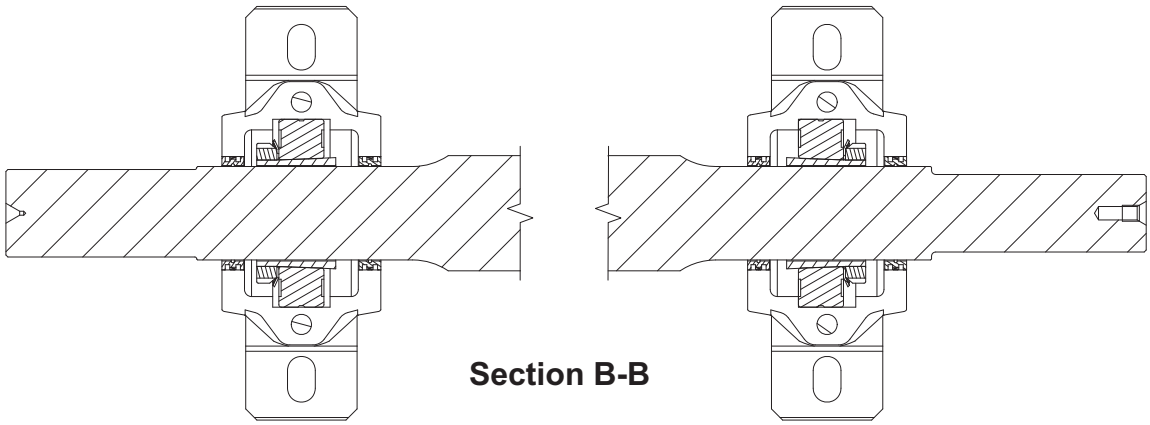
Parts List—Single Motor Drive

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

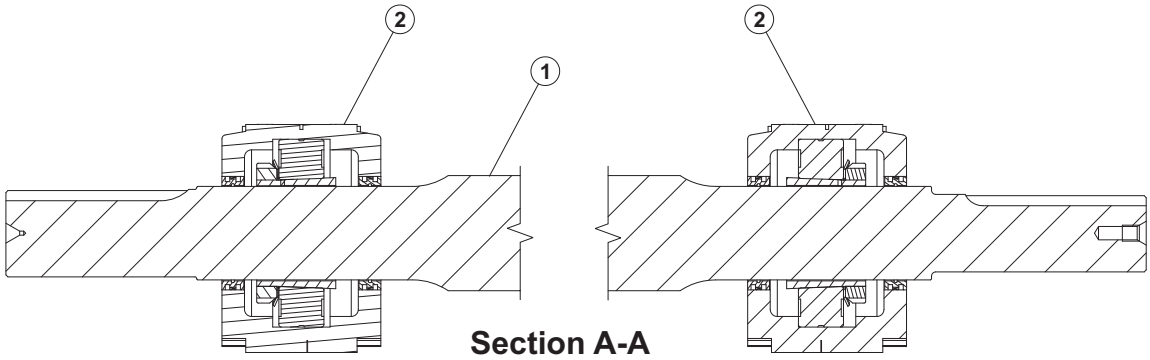
Used In	Item	Part Number	Description	Comments
			----------REFERENCE ASSEMBLIES----------	
	Y	D29 00260S	DRIVECHART=60WE 1MOTOR	
	Z	SA 28 103S	DRIVE BASE ASSY 60WE 1 MOTOR	
	A	GBJ28001S	JKSHFT ASSY 60W3 1 MOTOR	2.0"DIA 6/29/05-1/25/10
	B	GBJ28001S	JKSHFT ASSY 60W3 1 MOTOR	2.75"DIA 1/25/10-11/8/12
	C	GBJ25003B	JACKXHAFT INSTALL 60WE 1 MOTOR	SPHER. 11/8/12-1/22/15
	D	GBJ25003C	6044WP JKSHFT INSTALL-PILLOW BLK BRG	2 PILLBLK 1/22/15
			----------COMPONENTS----------	
AB	1	56060B8SF	VPUL 8B6.0 (SF) TYPE QD	PRIOR TO 1/1/2007 8 GROOVE PULLEY
BCD	1	56060B9SF	BALANCED SET - VPUL 9B6.0 (SF) TYPE QD/ (56Q1RSF)+ 1+7/8" BUSH VPUL QD TYPE SF	EFFECTIVE 1/1/2007 9 GROOVE PULLEY & BUSHING
AB	2	56Q1RSF	1+7/8" BUSH VPUL QD TYPE SF	PRIOR TO 1/1/2007
AB	3	56VB060X	VBELT BX60 COG (EACH = 1 SINGLE BELT)	8 USED 6/29/05-2/9/12
CD	3	56VB060XB3	VBAND 3RBX60 EACH=1	3 USED, FROM 2/9/12
AB	4	5608B110	PULLEY 8B11.0 TYPE E	6/29/05 - 1/1/07 8 GROOVE
BCD	4	56110B9E	BALANCED SET - VPUL 9B11.0 (E) TYPE QD/ (56Q2PE)+ 2-3/4" BUSHING VPUL QD TYPE E	EFFECTIVE 1/1/07 9 GROOVE PULLEY & BUSHING
A	5	56Q2AE	2.0" BUSHING VPUL QD TYPE "E"	6/29/05
B	5	56Q2PE	2+3/4" BUSHING VPUL QD TYPE E	PRIOR TO 1/1/2007
A	6	02 15794	KEY-1/2X2+1/2 4231-4244SGH	6/29/05-4/05/10
B	6	15E241	SQMACHKEY 5/8X2+1/21	4/05/10-6/28/12
D	6	02 175121	KEY=5/8SQ1	6/28/12
ABCD	7	02 18531	VPU2 865V8.7 (R2) SPECIAL	
ABCD	8	56Q2HR2S	2+7/16" SPLITBUSH -SAWCUT TO MAKE 56Q2HR2	
ABCD	9	02 175121	KEY=5/8SQ	
Y	10	56VS1505W4	V-BAND SET OF 2 WRAP 4R5V1505	SET OF 2 BELTS
Y	11	02 18561	VPUL+BRAKDRUM 8G5V30.OPD 60W	
Y	12	56Q2TS2S	2+15/16" SPLIT BUSH BROWN "S2"	
Y	13	02 175021	KEY-3/4"SQX6+1/2"LONG-60WE	
A	14	ABJ25006	JKSHFT 4244SG/WE 1 MOTOR SPHRCL	2.0" DIA. 6/29/05-1/25/10
B	14	ABJ25007	JKSHFT 6044SG/WE MOTOR SPHRCL	2.75"DIA. 1/25/10-11/8/12
C	14	ABJ25006A	JKSHFT 4244WE SPHRCL BRG 1 MOTOR	SPHER 11/8/12-1/22/15
D	14	ABJ25006B	6044WP JACKSHAFT-PILLOW BLK BRG	PILLBLK 1/22/15
ABC	15	54A988	SKF BRNG #22217EK/C3	
ABC	16	54A989	17 X 2.938 SNW ADAPTER ASSY	
A	17	54AF22210	PILLBLK BRG - BALDOR DODGE IMPERIAL 2" #069439 P2B-IP-200RE	
B	18	54AF22215	PILLOW BLOCK BRG 2-3/4"=DODGE P2B-1P-212R	3/29/10-3/17/13
D	19	56S22217A	SPHEROLBRG 22217EK/C3 SAF517 PILLOW BLK 3.346"ID	

Jackshaft

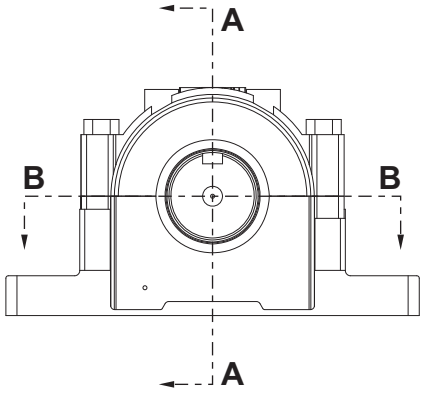
60044WR2, 60044SR2



Section B-B



Section A-A



Jackshaft

60044WR2, 60044SR2

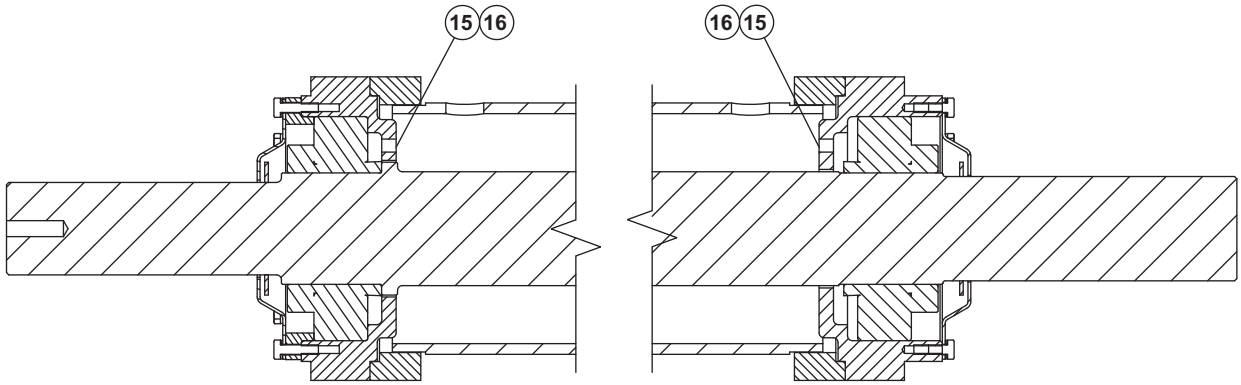
Parts List—Jackshaft

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.

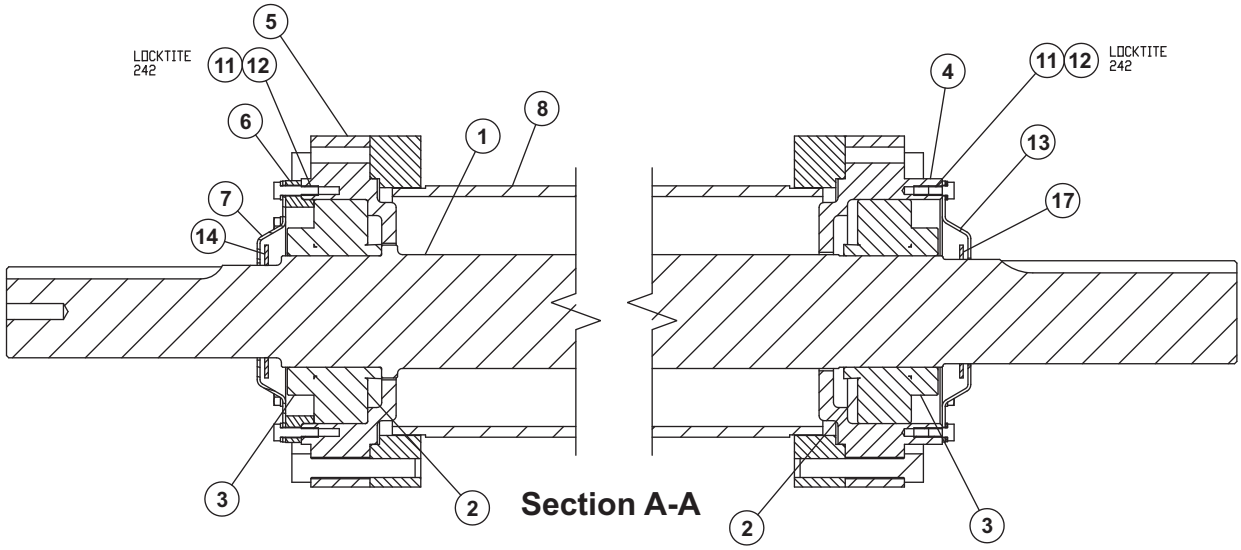
Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
	A	ABJ25006B	6044WP JACKSHAFT-PILLOW BLK BRG	6044WR2, 2.75” SHAFT EFFECTIVE 2015193 (5/5/2015) & 6044SR2 2.75” SHAFT EFFECTIVE 2016163 (4/12/2016)
			----------COMPONENTS----------	
all	1	X2 18711M	6044WP JACKSHAFT: PILLOW BLOCK/SPHRCL 2.75 BORE	
all	2	56S22217A	SPHEROLBRG 22217EK/C3 SAF517 PILLOW BLK 3.346"ID	

Jackshaft

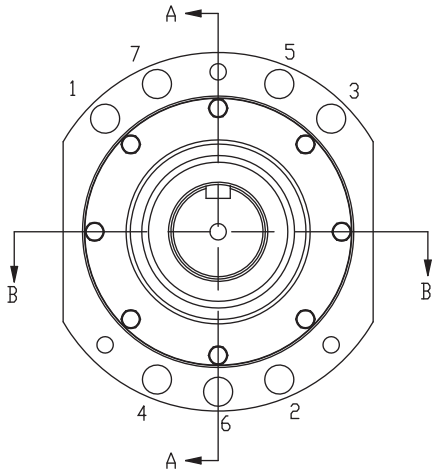
42044WP2, 42044WR2, 6044WP2 (PRIOR TO 5/5/15)



Section B-B



Section A-A



Insert all 1/2” fasteners hand tight. Then torque in the sequence shown. Torque front and back.

Jackshaft

42044WP2, 42044WR2, 6044WP2

Parts List—Jackshaft

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	ABJ25006	JKSHFT 4244SG/WE 1 MOTOR SPHRCL	4244WP2 & 6044WP2 2.0" SHAFT 2005264 (6/22/05) TO 2010052 (1/25/10)
	B	ABJ25007	JKSHFT 6044SG/WE MOTOR SPHRCL	4244WP2 & 6044WP2 2.75" SHAFT 2010052 (1/25/10) TO 2012456 (11/8/12)
	C	ABJ25006A	JKSHFT 4244WE SPHRCL BRG 1 MOTOR	4244WP2 & 6044WP2 2.75" SHAFT 2012456 (11/8/12) TO 2015193 (5/5/15)
	D	ABJ25007A	JKSHFT 6044WE SPHRCL BRG 1 MOTOR	6044WP2 REPLACED BY ABJ25006A
			----------COMPONENTS----------	
all	1	X2 18711L	JACKSHAFT=6044WE SPHRCL 2.75 BORE	
all	2	54A988	SKF BRNG #22217EK/C3	
all	3	54A989	17 X 2.938 SNW ADAPTER ASSY	
all	4	X2 19381D	BRNG HOLDER=SPHRCL BRNG-REAR	
all	5	X2 19381C	BRNG HOLDER=SPHRCL BRNG-FRT	
all	6	X2 15702A	RETAINER-SPHRCL BRNG	
all	7	02 19384	COVER=BRG HOUSE FT+REAR	
AB	8	X2 19378	BRGHSG SUP=TIMKENS MACHINED	
CD	8	X2 19391	BRNGHSG MACHINED=6044WE	
all	9	15K193	SOKCAPSCR 1/2-13X2.75GR8 HK	
all	10	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	11	15K030	HEXCAPSCR 1/4-20UNC2X1/2 GR5 Z	
all	12	15K041	HXCAPSCR 1/4-2OUNC2AX1 GR 5 ZI	
all	13	02 19384B	COVER BRG HOUSE REAR	
all	14	02 19196	RING=GREASE SLNGR JKSHFT BLK	
all	15	51A001	ADAPTER 1/8 PT BRASS	
all	16	5SL0CBEC	NPTELB 90DEG STRT 1/8 BRASS125	
A	17	02 19198	JACKSHAFT GREASE SLNGR RING - 2.00 DIA	
BCD	17	02 19196A	JACKSHAFT GREASE SLNGR RING - 2.75 DIA	

Brake Components and Installation : 6044WP2, 6044WP3, 7244WP2, 7244WP3

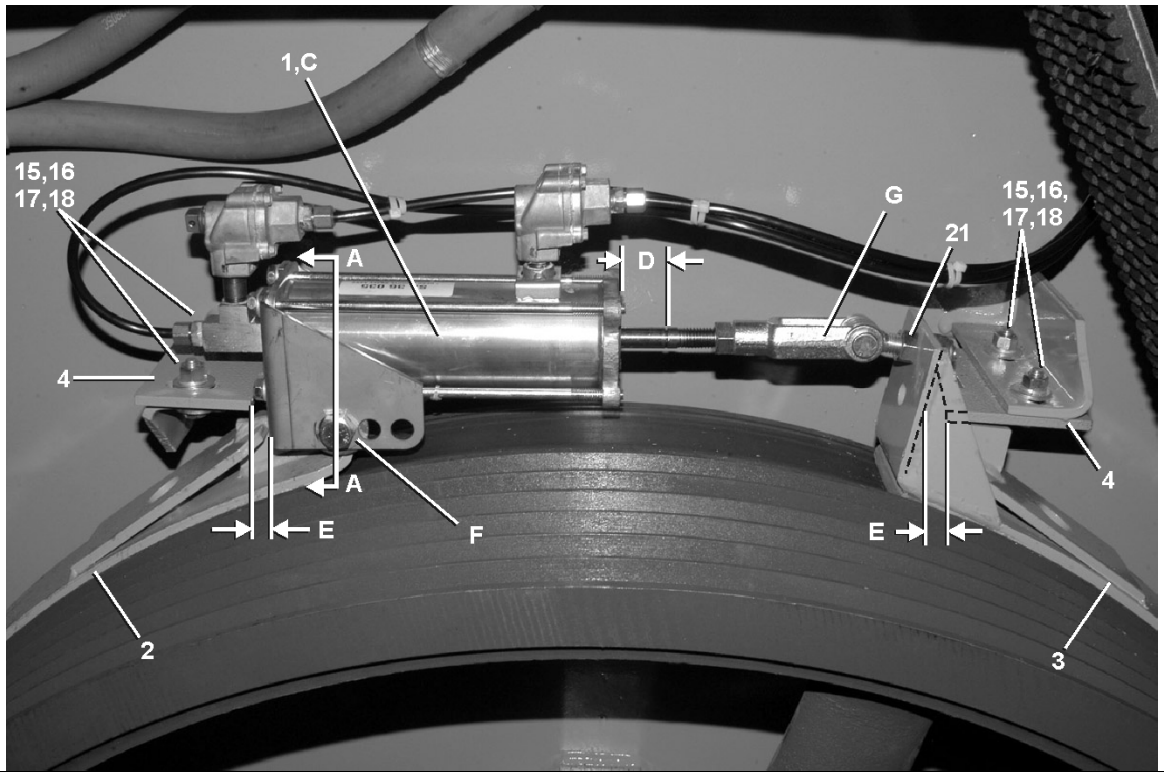
1. Band Brake Assembly Instructions (Notes:)

1. With the brake applied, the groove on the air cylinder stem must be 1 inch [25mm] from the air cylinder stem. Adjust the rod end and the yoke to set this dimension.
2. With the brake applied, the brake stops must be 5/8 inch +/-1/16 inch [16mm+/- .5mm] from the brake bands.
3. When you release the brake, the brake band and the air cylinder must be tight and square against the stops.
4. When you release the brake, there must be 3/16 inch [5mm] clearance between the brake band and the drum.
5. Do not tighten the pivot bolt too much. The air cylinder must move easily around the bolt.
6. Keep the two yoke arms in a horizontal plane.
7. Brake bands must move easily about the hinge pins.
8. Do not get grease or oil on the brake drum.

2. Brake Components

Figure 1: Brake Components

Installed view

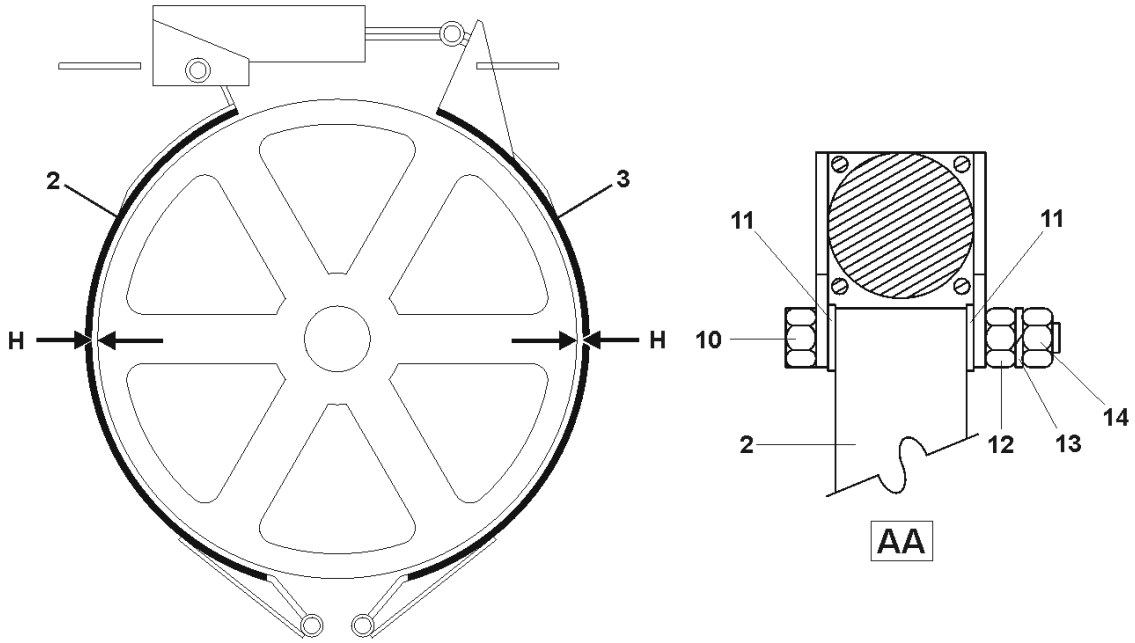


Legend

AA. Air cylinder, Cross Section
B. The 6044WP2 or 6044WP3 model is shown. The air cylinder and mounting brackets are opposite for the 7244WP2 or 7244WP3 model.
C. See the document BMP830078
D. 1 inch [25mm]. See note 1.
E. 5/8 inch [16mm]. See note 2 & 3.
F. See note 5.
G. See note 6.

Figure 2: Band brake

Detailed views

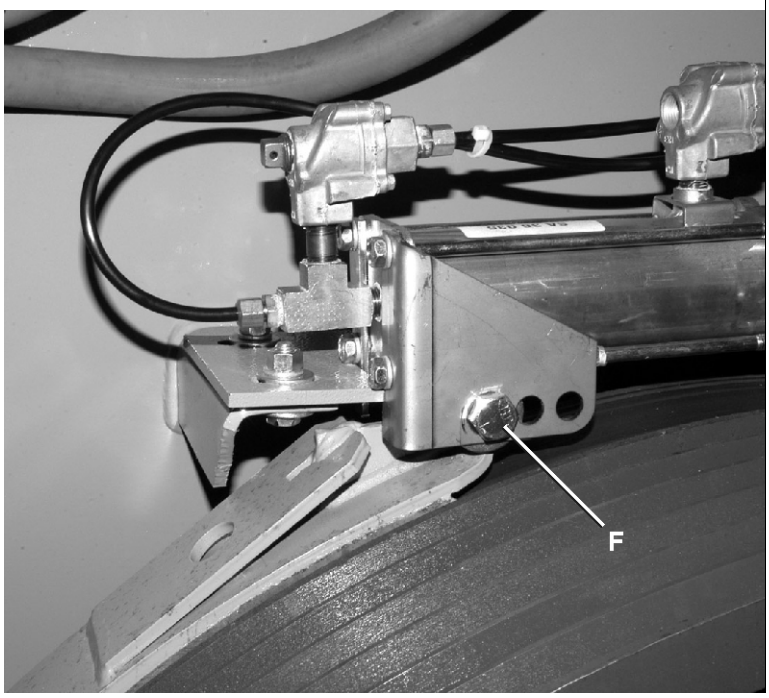


Legend

AA. Air cylinder, Cross Section
H. 3/16 inch [5mm] See note 4.

Figure 3: Air cylinder

General View

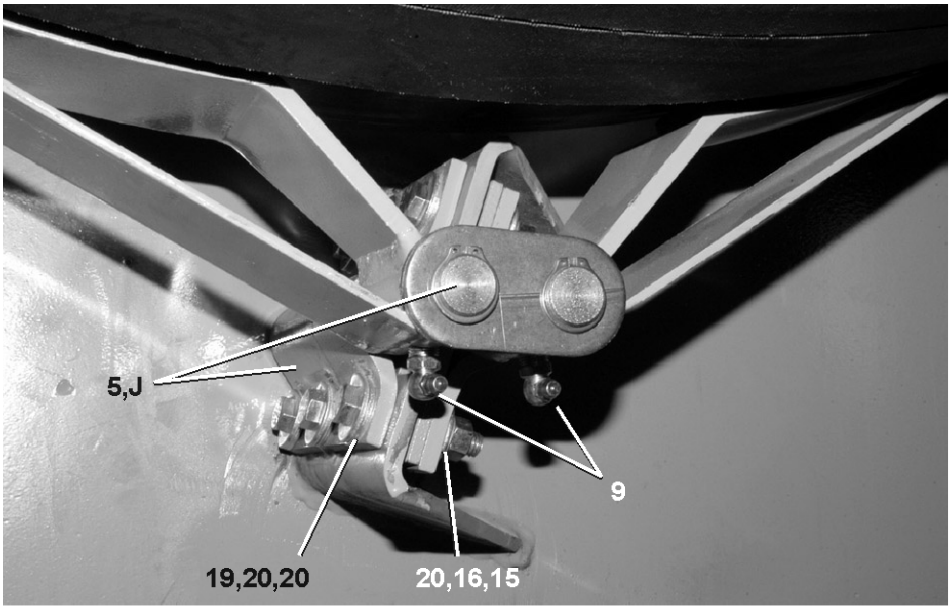


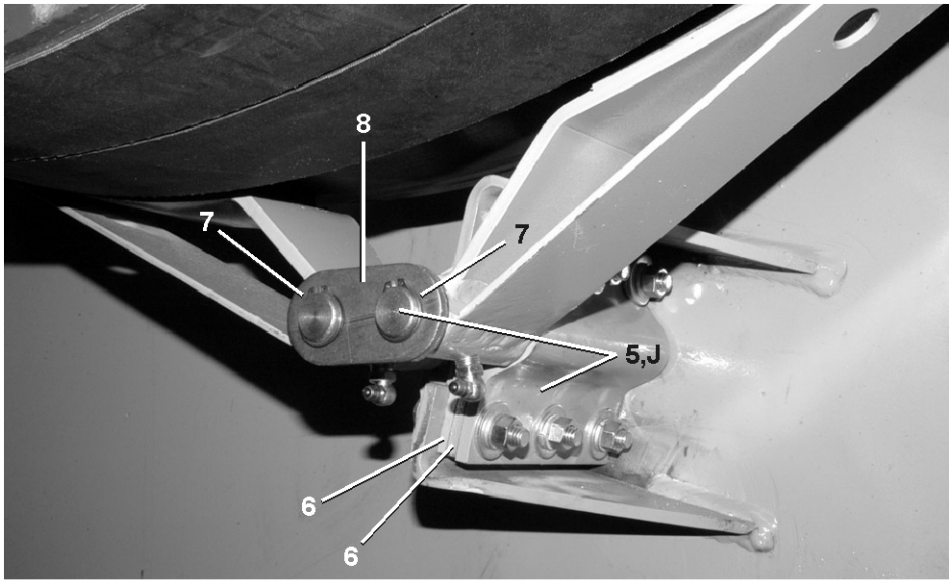
Legend

F. See note 5.

Figure 4: Band brake hinge pins

Installed views





Legend

J. See note 8.

Figure 5: Roller (Models: 7244WP2, 7244WP3)

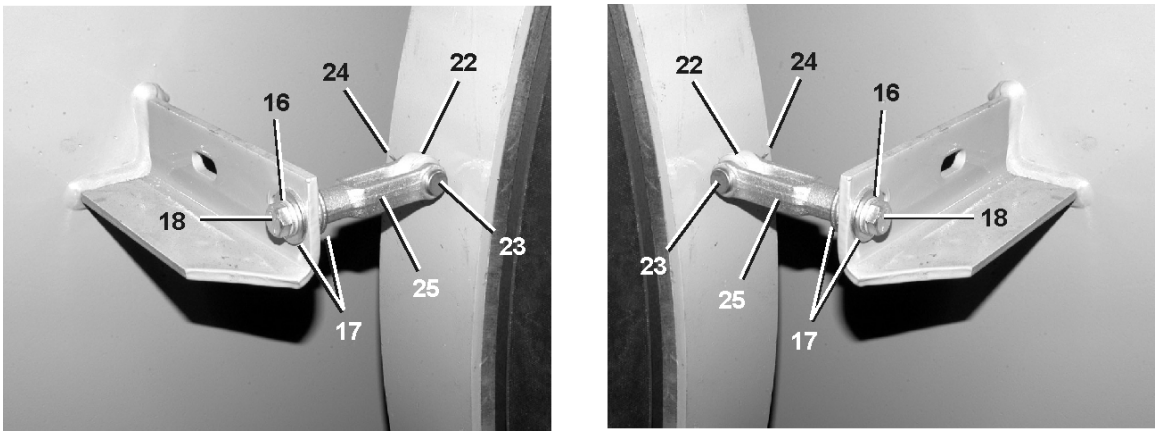


Table 1: Parts List—Brake Components

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	AD 28 151	Installation Group, Band brake, 6044	
	B	AD 36 043	Installation Group, Band brake, 7244	
			Components	
A	1	SA 28 152	Air cylinder, 6044	
B	1	SA 36 035	Air cylinder, 7244	
A	2	SA 28 153N	Brake band, Right hand 6044	
B	2	SA 36 008N	Brake band, Right hand 7244	
A	3	SA 28 154N	Brake band, Left hand	
B	3	SA 36 007N	Brake band, Left hand	
all	4	02 175080	Stop	
all	5	W2 18661	Hinge pin	
all	6	02 18786	Shim	
all	7	17B062	Retainer ring	
all	8	02 18516B	Washer	
all	9	54M025	Elbow, 1/8"	
all	10	15D119	Bolt, 1/2-13X4	
all	11	15U280	Washer, Flat, 1/2	
all	12	15G230	Nut, 1/2-13	
all	13	15U300	Washer, Lock, 1/2	
all	14	15G231	Nut,1/2-13	
all	15	15G205	Nut, 3/8-16	
all	16	15U255	Washer, Lock, 3/8	
all	17	15U240	Washer, Flat, 3/8"	
all	18	15K105	Bolt, 3/8-16X1.25	
all	19	15K117	Bolt, 3/8-16X1+3/4	
all	21	15G234N	Nut, Nylon lock, 1/2-13	
all	22	02 18689	Roller	
all	23	17A030	Clevis pin, 3/8"X1+3/32"DRIL SS	
all	24	15H030	Cotter pin, 3/32X3/4	
all	25	17A010	Yoke, 3/8-16	

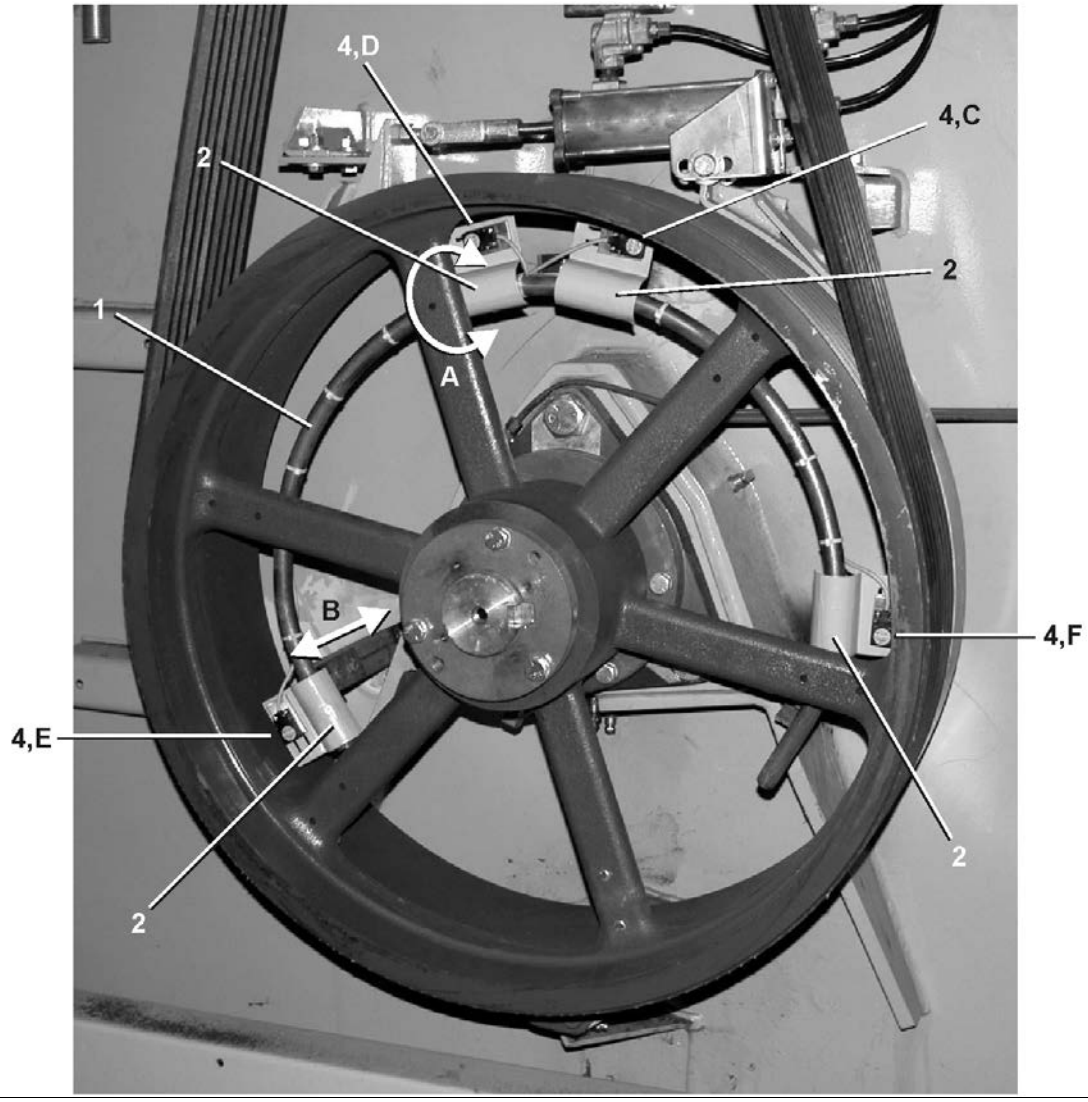
— End of BIHDBM11 —

BIHDBM14 (Published) Book specs- Dates: 20100913 / 20100913 / 20120629 Lang: ENG01 Applic: HDB

Autospot Components: 6044WP2 (One motor drive)

Figure 1: Autospot Components

Installed view



Legend

A. Make sure the switch face is parallel to the target.
B. The distance from the target and the switch sensor must be 3/16 inch [9mm].
C. Speed sensor
D. The load position for pockets one and two.
E. The discharge position for pocket one.
F. The discharge position for pocket two.

Figure 2: Proximity switch mounting bracket

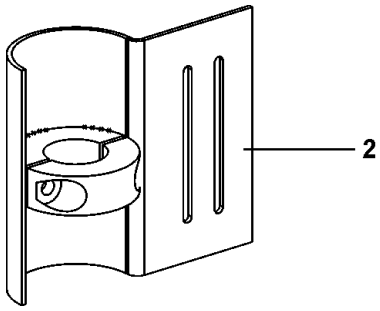


Figure 3: Target plate

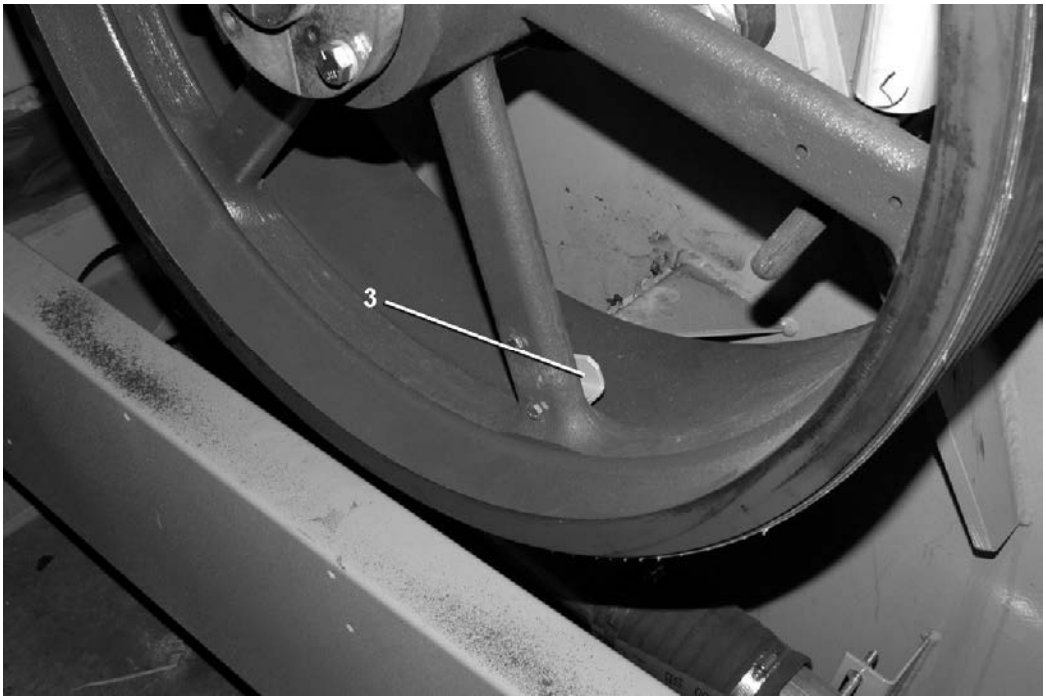


Table 1: Parts List—Autospot Components

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
	A	G28 16201	Installation Group, Autospot	
Components				
all	1	W2 19580	Mounting ring	
all	2	W3 60220C	Mounting bracket	
all	3	03 65224D	Target plate	
all	4	09RPS07RDS	Proximity switch	

— End of BIHDBM14 —

Bearing Assemblies 3

MAIN BEARING AND SEAL REPLACEMENT FOR DIVIDED CYLINDER MACHINES

This section applies to the front and rear cylinder shaft bearings of all divided cylinder machines (Rapid Load, Staph-guard®, dye machines, etc.). It does not apply to jackshaft bearings, idler shaft bearings or bearings on open pocket machines.

The bearings covered by this section are double row, spherical roller, self aligning bearings; Koya, SKF, FMC, Torrington or equal. Referring to FIGURE 1, the rear (clean side on Staph-guard® models) bearing is firmly held in the bearing housing (bearing and seal carrier) by the shaft seal holder, preventing axial movement. The front (soil side on Staph-guard® models) bearing is free to move axially in the bearing housing to accommodate thermal expansion of the shaft during operation and is thus the "floating" bearing. Both bearings are held in place on the tapered portion of the shaft by a bearing lockwasher and locknut.

The front and rear bearings are each protected from contamination from wash water by three spring loaded, lip type seals and a shaft seal leak-off cavity (that carries off any water that leaks past the main water seals) as shown in FIGURE 1.

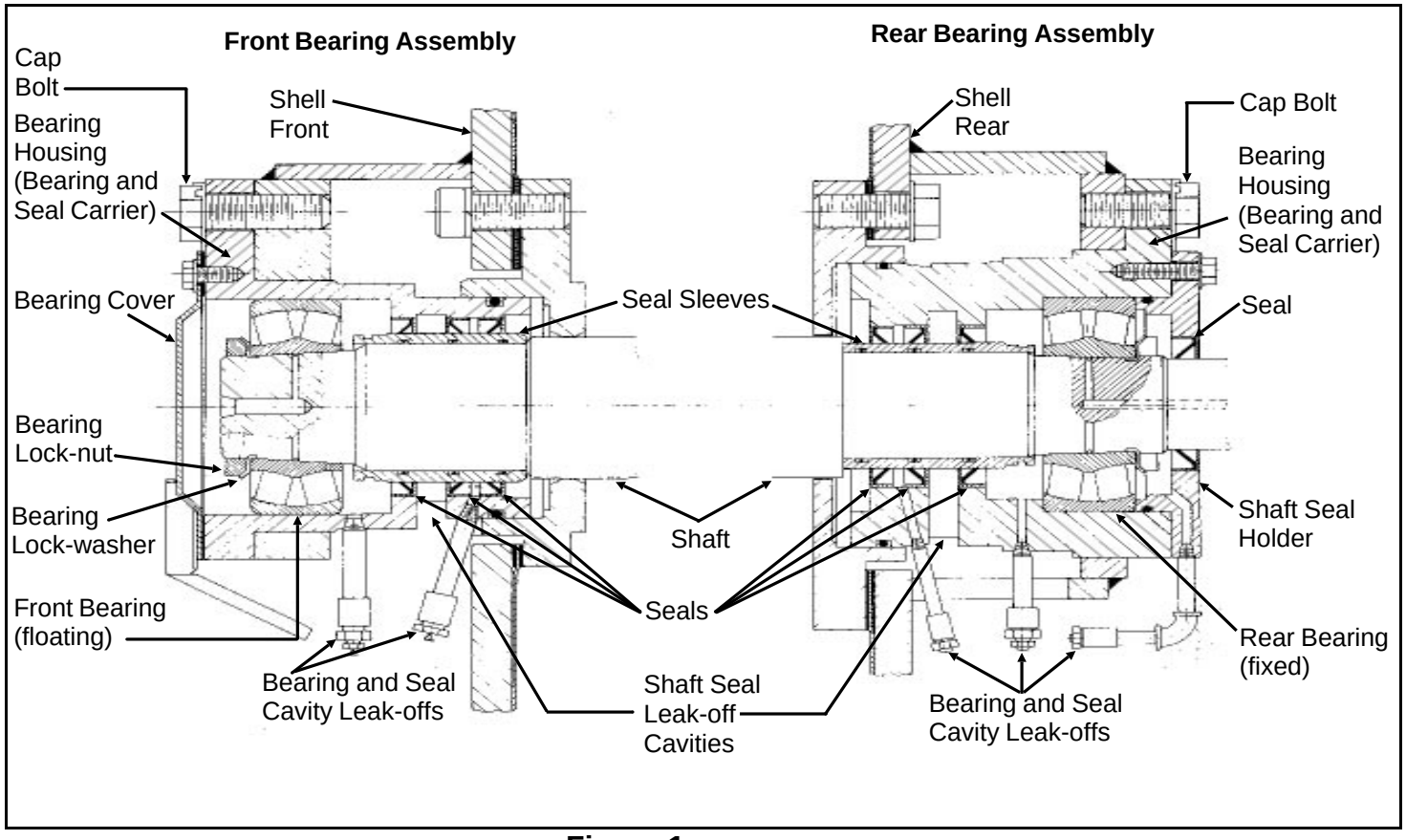


Figure 1 (MSSM0303AE)
Cross Section View of Front and Rear Bearing Assemblies
(Bearing Assembly for 60" and 72" WED Shown. Others similar.)

Access to the bearings and seals for lubrication is provided by the various grease passages. Excess lubricant is excreted through the bearing and seal cavity leak-offs as shown on FIGURE 1. The bearings and seals must be lubricated regularly and the leak-off cavities flushed out periodically through the plugged cleanout connections, in strict accordance with the preventive maintenance procedures elsewhere.

If bearing replacement becomes necessary due to wear, it is essential that the bearings *and seals* are replaced. Seal replacement requires removal of the bearing housing and seal sleeve. (In rare instances where the seals are known to be in good condition, it is not necessary to remove the bearing housing, seals or seal sleeve when a bearing is replaced.) **A pulling fixture is required to remove the bearing housing. A set of guide rods, a seal sleeve setting fixture and a bearing setting fixture are required for reinstallation of the housing.** These tools are available for rental or purchase from the Milnor® factory and are pictured elsewhere in this section. Contact the factory two weeks in advance of repairs, when ordering these tools.

This maintenance is performed in the following order:

1. Remove old bearing(s). When removing both bearings, remove the front (soil side) bearing first.
2. Remove bearing housings, seal sleeves, and seals.
3. If both bearings were removed, install the bearing housing, seal sleeve, seals, and new bearing on the rear (clean side).
4. Install the bearing housing, seal sleeve, seals, and new bearing on the front (soil side).
5. Tighten bearing(s).

See the Main Bearing Assembly drawing for your machine for bearing component part numbers.

Removing the Bearing (Front or Rear)

1. Loosen, then remove the main drive belts and cylinder shaft pulley (if applicable) by lowering the drive base with the jacking bolts. Do not attempt to pry belts off with a pry bar or by rolling the sheave. Remove the bearing cover (or shaft seal holder) to expose the bearing.
2. Bend back the locking tang on the bearing lockwasher then remove the locknut and lockwasher.
3. The center tapped hole in the shaft end is an oil passage through which oil may be forced between the tapered shaft and the bearing inner race. Install a pipe fitting into this tapped hole as shown in figure to the right. Using a “Porto-Power” or similar hand operated hydraulic pump, force fluid into the passage. Pump hard to build up fluid pressure. This pressure will cause the inner race to expand slightly; just enough to free the tapered surfaces and allow the bearing to slip off easily. If the bearing is not readily removed, remove the front water level

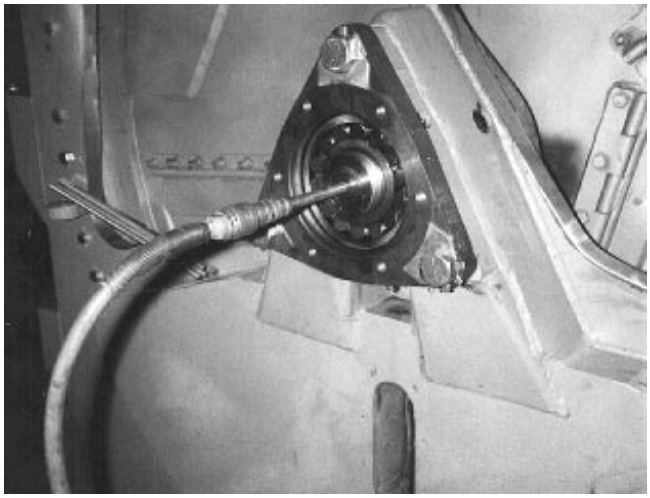


FIGURE 2 (MSSM0303AE)
Connection From Hydraulic Pump to Assist in Bearing Removal

inspection plate and use a timber to pry up the cylinder to remove cylinder weight from the bearings. Once the bearing is removed, the cylinder drops only approximately 1/32" before the shaft comes to rest on the shaft support.

4. Slide the bearing off of the shaft and if it is to be reused, place it on a clean surface and cover with a clean, lint free cloth.

Removing the Bearing Housing (Bearing and Seal Carrier), Seal Sleeve, and Seals (Front or Rear)

These procedures require the use of a pulling fixture and guide rods available from the Milnor® factory. With the bearing cover (or shaft seal holder) and the bearing removed, proceed as follows:

1. Remove the three bearing housing cap bolts and the grease lines from the bearing housing front plate. Install guide rods in two of the bolt holes, as shown in FIGURE 3.

2. Install the pulling fixture as shown in FIGURE 4, by placing each of the four threaded rods through a hole in the steel plate with hexnuts to the outside of the plate then screwing each rod into the appropriate tapped hole in the bearing housing (same holes as used to mount the bearing cover or shaft seal holder).

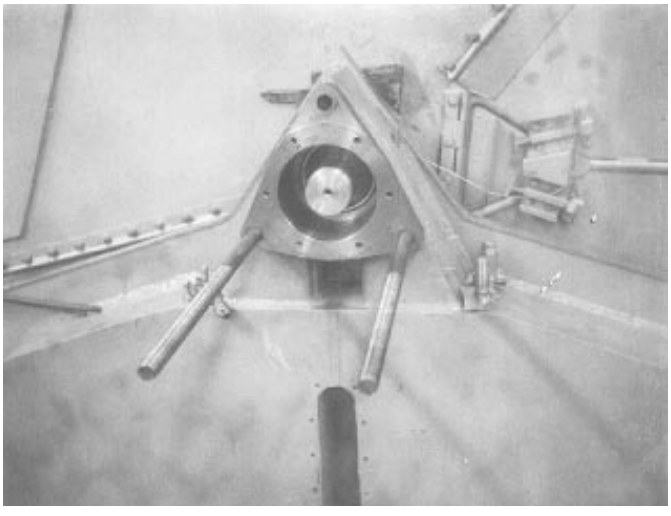


FIGURE 3 (MSSM0303AE)
Two Bearing Housing Guide Rods in Position

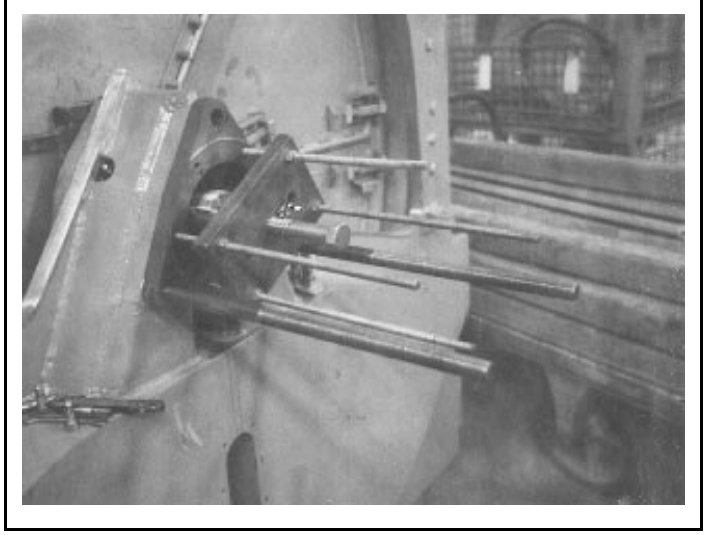


FIGURE 4 (MSSM0303AE)
Bearing Housing Pulling Fixture in Position

NOTE: Step 2a or 2b below will cause the bearing housing to slide away from the shell. Shims were placed under one or more of the three bearing housing pads during factory assembly to align the housing and insure its being exactly parallel with the shaft. **When removing the bearing housing, be sure to keep these shims separate and identified so that they may be returned to their proper location, otherwise the bearing and seal will be out of line and may be damaged after a short operating period.** As a precaution in case the shims are lost during disassembly, you will find stamped next to the bearing housing the proper thickness of shims required (if any) under each adjacent bearing housing pad. The stamped number indicates the shim thickness in thousandths of an inch. For example, the number "38" indicates that 38/1000 (.038") shims would be required under this pad.

2a. Tighten all four hexnuts on the threaded rods such that the pulling fixture plate is pressed against the shaft end. With an impact wrench, tighten down on the center bolt until the housing slides out, or

2b. If no impact wrench is available, simply continue to tighten down on each of the four hexnuts behind the pulling fixture plate, alternately and progressively, until the housing slides out. It may be necessary to place a spacer (approx. two inches long) between the plate and the shaft to provide enough clearance between the plate and the bearing housing.

3. Once the bearing housing is free of the shell, carefully slide it off of the guide rods and place on a clean work surface.

4. The seal sleeve will almost always remain on the shaft when the housing is removed. Remove the seal sleeve *taking care not to damage or scar it* and place it on a clean work surface.

Precautions for Bearing Replacement

The most important ingredient in successful bearing and seal installation is *cleanliness.* The bearing housing must be free of all foreign matter. The grease and leak-off passages must be blown clear and all *foreign* matter removed. You must have a clean work area. Keep your hands and tools free from grit and grime. Wash your hands before starting and as required during these procedures. Foreign matter is, without doubt, the most frequent cause of bearing failure, and one over which the manufacturer has no control.

Where cleaning is required, bearings, bearing housings and seal sleeves may be cleaned with the following solvents or cleaning agents (in strict accordance with the manufacturer's recommendations as such substances are generally toxic and/or explosive under certain conditions):

Benzene	Gasoline	Naptha
Chlorethane	Kerosene	Tricholorethylene
Freons	Mineral Spirts	

Do not, however, expose any components to the above substances for more than 24 hours and only use at room temperature. Never use the following solvents or cleaning agents: alcohols, cresols, phenols, flouro propanols, or other similar chemicals or mixtures.

NOTE: Hammer blows, overheating, or improper use of force can damage precision parts.

Replacing the Bearing Housing, Seal Sleeve, and Seals (Front or Rear)

1. With the seal sleeve removed, press all old seals out of the bearing housing. Remove the large o-ring from the outside of the housing. Thoroughly clean the bearing housing and flush out all grease passages to make certain they are unblocked. Remove the o-rings from the inside of the seal sleeve and clean the seal sleeve.

2. While the bearing housing is dissassembled, charge all grease passages with grease. This will assure that there are no blockages.

3. Replace the o-rings in the seal sleeve and the large o-ring on the outside of the bearing housing. Replace with new o-rings if the old ones are worn.

4. Press new seals into the bearing housing. You may gently work the seals in with a mallet and metal drift as shown in FIGURE 5.

⚠ CAUTION ⚠

Each seal must be of the proper material and face the proper direction. The type of material and direction the seal faces may differ from one seal to another within the same bearing housing and also from one type of machine to another. It is essential to consult the Main Bearing Assembly drawing for your machine for the proper part number and direction to face each seal.

5. Slip the seal sleeve into the bearing housing as shown in FIGURE 6 below right, using care not to damage or fold under any of the seal lips. Be sure to insert the sleeve in the proper direction (see Bearing Assembly drawing).

FIGURE 5 (MSSM0303AE)
Installing Seals in Bearing Housing

FIGURE 6 (MSSM0303AE)
Installing Seal Sleeve in Bearing Housing

NOTE: If both housings are being installed, install the rear housing first.

6. With two of the three temporary guide rods in position on the shell, place the bearing housing onto the guide rods and install the seal sleeve setting fixture on to the bearing housing as shown in FIGURE 7. The seal sleeve setting fixture prevents the seal sleeve from being pushed out of the housing as the housing is inserted into the shell. Note that the seal sleeve setting fixture and the bearing setting fixture are very similar, but the seal sleeve setting fixture has a longer hub.

7. With a clean, lint free cloth, apply a coating of light machine oil to the outside of the housing, to assist in installation. Push the housing into the shell as shown in FIGURE 8. Once the housing is far enough into the shell to support itself, place any shims back into position between the housing and the shell. Remove, then replace guide rods if required to place shims under bearing housing pads.

FIGURE 7 (MSSM0303AE)
Installing the Bearing Housing Setting Fixture onto Housing (42" machine shown)

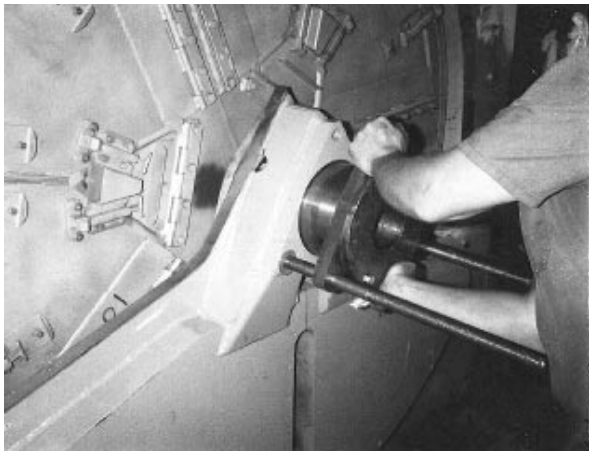


FIGURE 8 (MSSM0303AE)
Pushing the Bearing Housing into the Shell (60" Rapid-load machine shown)

8. Install the third guide rod, spacers if required, and hexnuts, using these to seat the housing fully, as shown in FIGURE 9. Remove the seal sleeve setting fixture.

9. Remove the guide rods and install the bearing housing cap bolts. See "BOLT TORQUE REQUIREMENTS" elsewhere, for proper torques.

10. With the grease gun, pump grease into the inner portion of the bearing cavity, such that when the bearing is installed, the space between the bearing and the seals will be approximately 1/3 full of grease.

11 Proceed to "Measuring Unmounted Clearance . . ." below, even if both the front and rear bearings are being replaced. Once the rear bearing is installed, the bearing housing replacement procedures may then be repeated for the front (soil side) bearing housing.

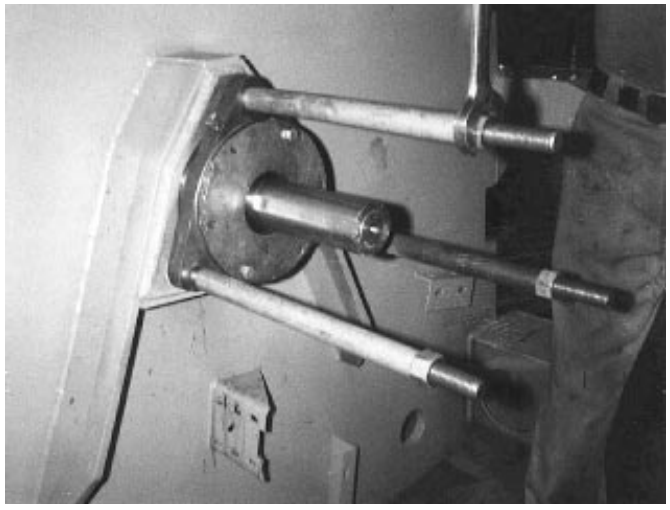


FIGURE 9 (MSSM0303AE)
Tightening the Bearing Housing into the Shell (42" machine shown)

Measuring Unmounted Clearance and Setting Bearing (Front or Rear)

The bearings used on Milnor® washer and dye extractors are the very best anti-friction devices available for these applications. However, the anti-frictional characteristics of the bearings will be reduced if they are not properly installed. It is of critical importance when installing these tapered roller bearings, to accomplish the following (A step by step procedure follows this synopsis):

1. Accurately measure the unmounted internal clearance of the bearing (gap between the rollers and outer race before the bearing is installed). This is an essential quality control measure.

2. Calculate the final internal clearance by subtracting the specified clearance reduction (amount that the internal clearance must be reduced when the bearing is tightened onto the tapered shaft) from the unmounted clearance.

3. Tighten the bearing onto the shaft until the final internal clearance as calculated is achieved and verified by measurement.

These measurements are taken in thousandths of an inch. Although this requires precise work, attention to detail and a good set of feeler gauges, it is the only way to insure that the bearing will be tightened onto the shaft to precisely the right tension. If you have any questions on performing the measurements or adjustments described below, your local bearing supplier or the Milnor® factory can assist you. Although these procedures require precision over and above that normally required for laundry room maintenance, they are standard in bearing installation and absolutely essential:

NOTE: Step 1 which follows, requires a good set of feeler gauges including .001" through .010" in thousandths of an inch increments. Contact your local bearing supplier.

1. When you are ready to proceed (and not before) remove the new bearing from it's box or protective wrapping. Do not attempt to clean the bearing or wash out the preservative coating. On a clean work surface, stand the bearing on edge and insert a .003 feeler gauge into the bearing as shown in FIGURE 10, at right. The gauge should be inserted just inside the outer race between two rollers and worked through to the opposite row of rollers. Rotate the inner race of the opposite row so that the end of the feeler gauge is caught between a roller and the outer race.

FIGURE 10 (MSSM0303AE)
Measuring Bearing Unmounted Clearance (bridge for 42" machine shown)

2. Try to pull the gauge straight out. If it comes out, increase the size of the gauge by .001". If it does not come out, decrease the gauge by .001". The thickest feeler gauge that will come out is the unmounted internal clearance of the bearing.

3. Compare the measured clearance with the "Unmounted Clearance" in the table below. If the measured clearance is not within the range shown, do not use the bearing. Contact your bearing supplier for an exchange.

NOTE 1: The clearances listed in the chart are industry standards and therefore apply to all brands of bearings supplied by Milnor®. If other sources of bearings are used, refer to the manufacturer's instructions for proper clearances.
NOTE 2: To locate your bearing on the chart, match the first five characters of the manufacturer's part number *(not the Milnor® part number)* with those in the chart. For example, for a manufacturer's part number 22217LBK, find under "Manufacturer Part Number" the line "22217 . . ."

Table of Bearing Clearances

Manufacturer Part Number	Unmounted Clearance		Clearance Reduction	
	Minimum	Maximum	Minimum	Maximum
22330 . . .	.0071	.0091	.002	.003
22213 . . .	.0030	.0039	.001	.002
22216 . . .	.0028	.0037	.001	.002
22217 . . .	.0044	.0057	.0015	.0025
22312 . . .	.0030	.0039	.001	.002
22316 . . .	.0037	.0049	.001	.002
22320 . . .	.0044	.0057	.0015	.0025
22328 . . .	.0063	.0081	.002	.003
23220 . . .	.0044	.0057	.0015	.0025

4. Calculate and record the final internal clearance by deducting the "Clearance Reduction" for your bearing (see above chart) from the measured clearance. For example, if you measured .004 and the clearance reduction is .001 to .002, then the final internal clearance should be between .002 and .003.

5. Hand pack the bearing with grease by rotating the inner race and rollers, forcing grease between all rollers.

NOTE: The bearing will be set into position in Step 6. If both front and rear bearings are being installed, the rear (clean side on Staph-guard® models) bearing should be set in position first because it is the fixed bearing.

6. Set the bearing into the housing (with the taper facing the proper direction) and seat the bearing using the bearing setting fixture. This fixture is installed in similar fashion to the seal sleeve setting fixture. If you have just set the rear bearing and the front bearing housing is yet to be installed, leave the bearing setting fixture in place for now.

7. If you have just set the rear bearing and the front bearing housing is yet to be installed, repeat all steps in bearing housing installation, measuring unmounted clearance and setting bearing, for the front bearing and housing. The bearing setting fixture should not be removed from the rear housing until it is needed to seat the front bearing. This will prevent rear bearing components from being pushed out of position by the shaft as the front housing components are seated. Remove the bearing setting fixture from the front housing once the bearing is seated.

Tightening Bearing(s) (Front and/or Rear)

1. Once both bearings are seated, or if only one bearing was replaced, install the bearing lockwasher(s) and locknut(s). Use a hammer and a metal drift as shown in FIGURE 11, to tighten the locknut. **It is imperative to only tap lightly and to assure that metal chips from the drift or locknut do not fall off and contaminate the bearing.** If both bearings are being tightened, work between the front and rear bearings and turn the basket by hand periodically, while tightening the locknut(s).
2. After tightening the bearing(s) onto the tapered shaft, check the internal clearance as pictured in FIGURE 12, by working a feeler gauge between the outer race and a roller of the outer row then between the outer race and a roller of the inner row.

   NOTE: Sometimes, when setting the bearings, all the load is taken by only one row of rollers (although the load would quickly equalize on both rows after the machine has run for only a few minutes). If all the load is taken by one row, you will get an erroneous clearance reading. It is therefore, necessary to use the feeler gauge to measure the *clearance of both rows of rollers.* With the bearing in place on the machine it is admittedly rather difficult to get a feeler gauge back past the first row of rollers to measure the second *but it must be done.*

3. If one row of rollers is tight but the other has measurable clearance, tap lightly on the end of the shaft nearest the tight row of rollers to cause the shaft to shift axially and equalize the roller loading. Adjust the bearing tightness to achieve the internal clearance previously calculated.
4. When the proper internal clearance has been attained, lock the nut by bending over the matching tang on the lockwasher, making sure that all unused tangs are bent as near the nut as possible so that they will not rub against the bearing roller cage.

Check each unused tab individually to insure this.

FIGURE 11 (MSSM0303AE)
Tightening the Bearing Locknut (42" machine shown)

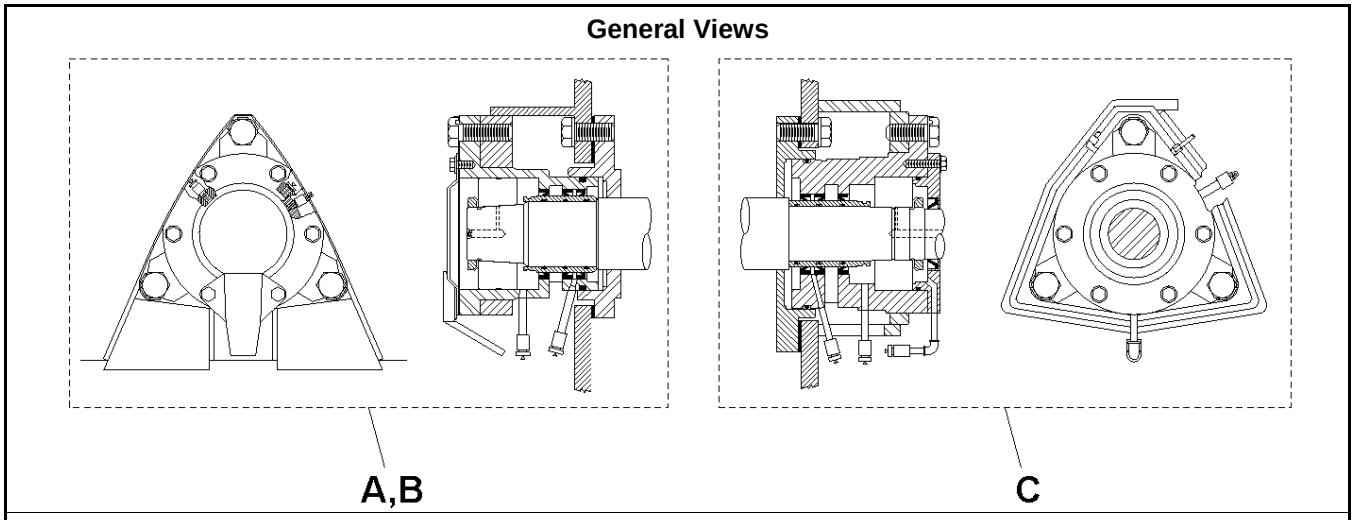
FIGURE 12 (MSSM0303AE)
Measuring the Mounted Internal Clearance of the Bearing (42" machine shown)

5. With the grease gun, fill the space between the bearing and the front of the housing 1/3 full of grease.
6. Install the bearing cover plate or shaft seal holder, as appropriate. When installing the shaft seal holder, take care not to damage the seal as it is gently pushed over the shaft. Cover the keyway on the end of the shaft with tape to prevent the sharp corners of the keyway from cutting the seal lip. Also, make sure that the seal lip does not turn over as it passes over rough areas.

BIHDBM12 (Published) Book specs- Dates: 20170424 / 20170424 / 20170424 Lang: ENG01 Applic: HDB

Shaft and Bearing Components

Figure 1: Shaft and Bearing Components



Legend

A. Front bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3)
B. Front bearing (Models: 6044SP2, 6044SP3, 6044SR2, 6044SR3)
C. Rear bearing

Figure 2: Front bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3)

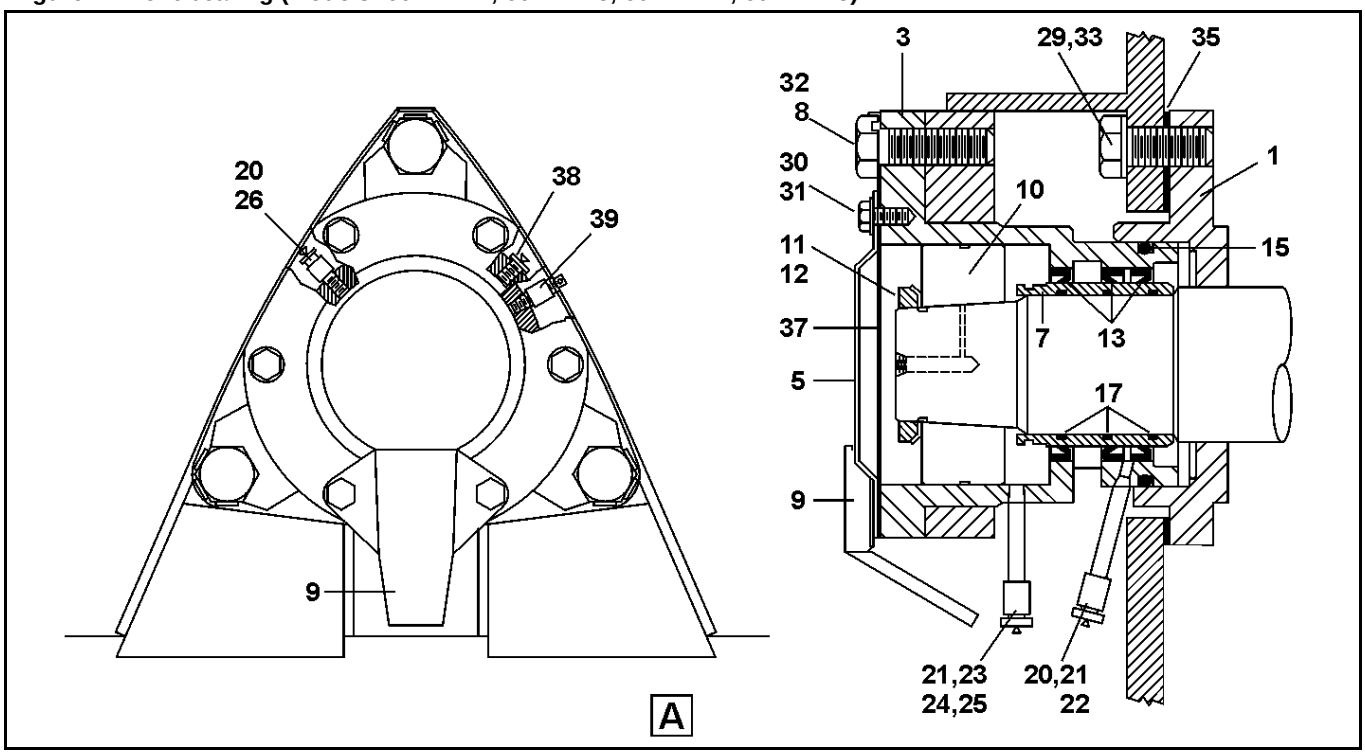


Figure 3: Front bearing (Models: 6044SP2, 6044SP3, 6044SR2, 6044SR3)

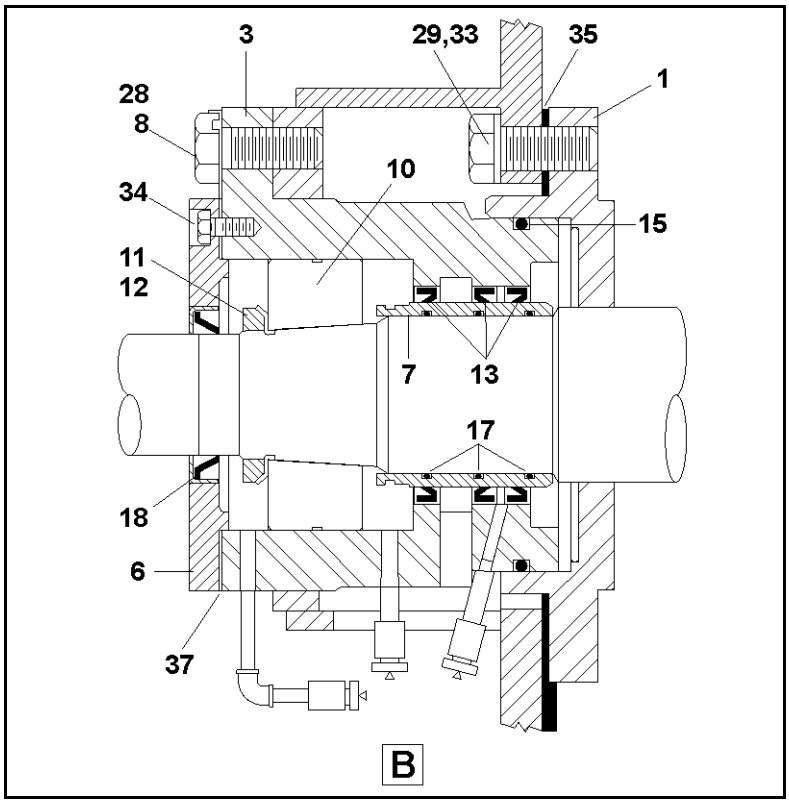


Figure 4: Rear bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3 & 6044SP2, 6044SP3, 6044SR2, 6044SR3)

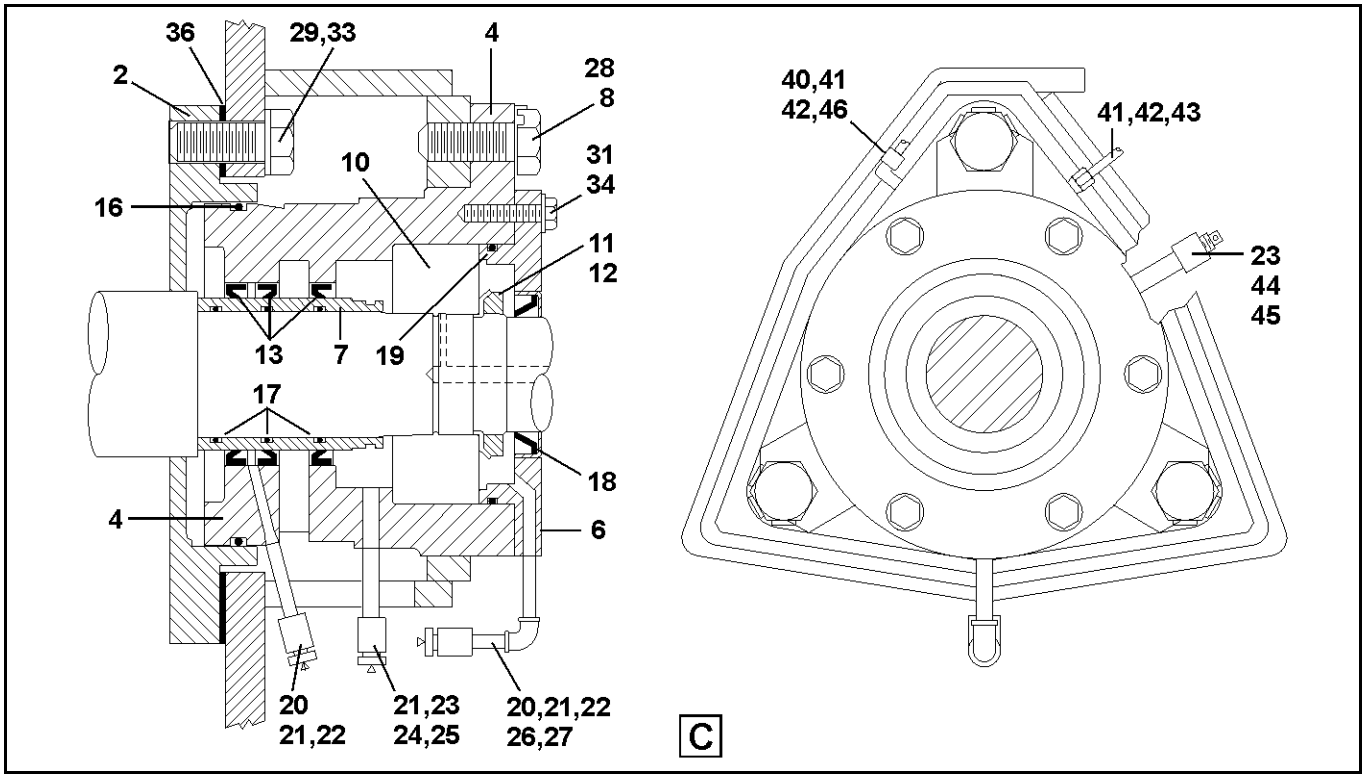


Table 1: Parts List—Shaft and Bearing Components

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	AD 29 032	Installation Group, Bearing housing	6044WP2/WP3, 6044WR2/WR3
	B	AD 29 032V	Installation Group, Bearing housing, Viton	6044WP2/WP3(Viton), 6044WR2/WR3(Viton)
	C	G28 15700	Installation Group, Bearing housing	6044SP2/SP3, 6044SR2/SR3
			Components	
all	1	X2 175008	Shaft support, Front	
all	2	X2 175009	Shaft support, Rear	
AB	3	X3 06005	Bearing housing, Front	
C	3	X2 175005	Bearing housing, Front	
all	4	X2 175007	Bearing housing, Rear	
all	5	02 18618A	Cover	
AB	6	X2 18190	Seal holder	
C	6	X2 175053	Seal holder	
all	7	X3 06006	Seal sleeve	
all	8	02 18219	Washer, Lock	
all	9	02 18928	Grease shield	
all	10	56S22316T	Bearing	
all	11	56AHN16	Bearing Locknut	
all	12	56AHW16	Washer	
AC	13	24S114	Seal, 4.5X5.5X.50	
B	13	24S114V	Seal, 4.5X5.5X.50, Viton	
A	15	60C161	O-Ring, 6"X1/4	
B	15	60C161V	O-Ring, 6"X1/4, Viton	
C	16	60C172	O-Ring, 8"X1/4	
B	16	60C172V	O-Ring, 8"X1/4, Viton	
AC	17	60C154	O-Ring, 3+7/8X3/16	
B	17	60C154V	O-Ring, 3+7/8X3/16	
all	18	24S111	Seal, 3X4.00X.437	
all	19	60C160J	O-Ring, 6+1/4X1/8	
all	20	5SCC0CBE	Coupling, 1/8	
all	21	54M029	Pipe Fitting, 1/8	
all	22	5N0C03AG42	Pipe nipple, 1/8X3	
all	23	5SCC0EBE	Coupling, 1/4	
all	24	5N0E02KG42	Pipe nipple, 1/4X2.5	
all	25	5SB0E0CBEO	Hexbush, 1/4X1/8	
all	26	5N0CCLSB42	Pipe nipple, 1/8XCLS	
all	27	5SL0CBEA	Elbow, 1/8	
all	28	15B243	Bolt, 1-8X2+1/2	
all	29	15U400	Washer, Lock, 1"	
all	30	15K145	Bolt, 1/2-13X3/4	

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	31	15U300	Washer, Lock, 1/2	
all	32	15B236	Bolt, 1-8X3	
all	33	15K236	Bolt, 1-8X2.75	
all	34	15K162	Bolt, 1/2-13X1.5	
all	34	15K147C	Bolt, 1/2-13X1	
all	35	02 18870	Gasket	
all	36	02 18768D	Gasket	
all	37	02 18105	Gasket	
all	38	54M015	Pipe fitting, Lubricant	
all	39	5SP0CFESSV	Plug, 1/8	
all	40	53A039B	Elbow, 5/16X1/8	
all	41	53A508	Flexible tubing, Adapter, 5/16"	
all	42	53A509	Flexible tubing, Adapter, 5/16"X .53"	
all	43	53A019B	Pipe Fitting, 5/16X1/8	
all	44	5N0E01KBE2	Pipe nipple, 1/4X1.5	
all	45	51P008B	Plug, 1/4"	
all	46	53A060A	Nut, 5/16	

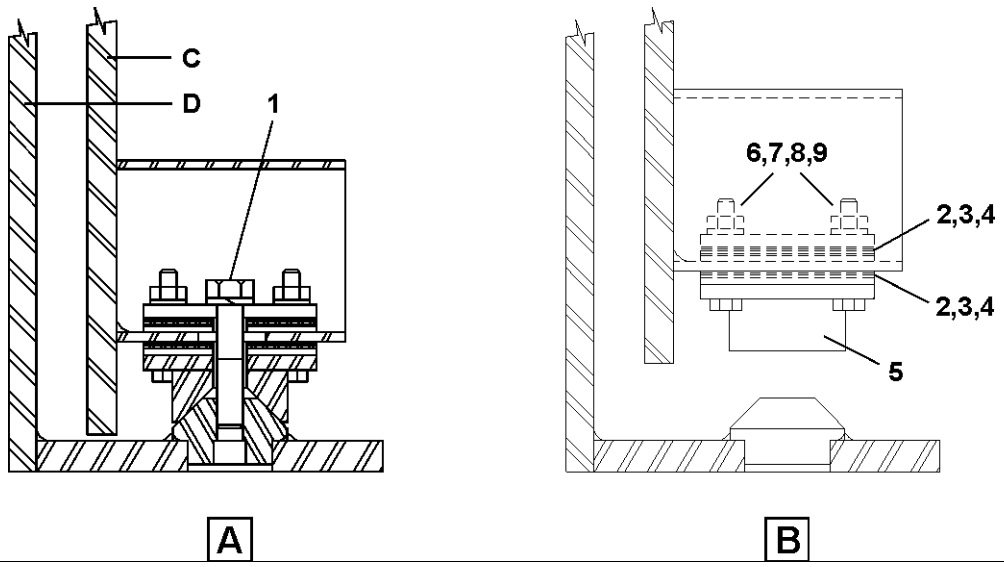
— End of BIHDBM12 —

Suspension 4

BIHDBM15 (Published) Book specs- Dates: 20100922 / 20100922 / 20120629 Lang: ENG01 Applic: HDB

Hold Down Components

Figure 1: Hold Down Components



Legend

A. The machine is locked down before shipment.
B. The bolt is shown removed for machine operation.
C. Shell
D. Frame

Table 1: Parts List— Hold Down Components

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	G28 17900	Installation Group, Hold down	
Components				
all	1	15K300	Bolt, 1-8X4.5	
all	2	03 06216A	Shim, 1/4"	
all	3	03 06216B	Shim, 10GA	
all	4	03 06216C	Shim, 16GA	
all	5	W3 06406	Holddown ring	
all	6	15K226K	Bolt, 5/8-11X3.5	
all	7	15U314	Washer, Flat, 5/8"	
all	8	15U315	Washer, Lock, 5/8	
all	9	15G238	Nut, 5/8-11	

— End of BIHDBM15 —

BIHDBM16 (Published) Book specs- Dates: 20100907 / 20120629 / 20120629 Lang: ENG01 Applic: HDB

Push Down Components: 6044WP2, 6044WP3

Figure 1: Push down, Front (Left hand, Right hand)

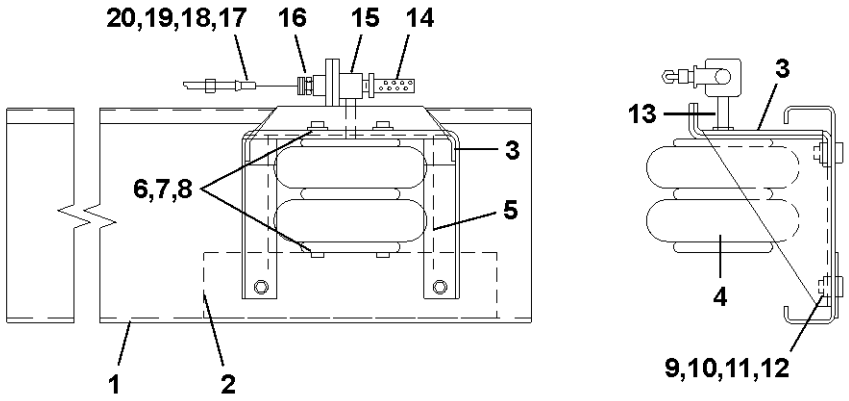
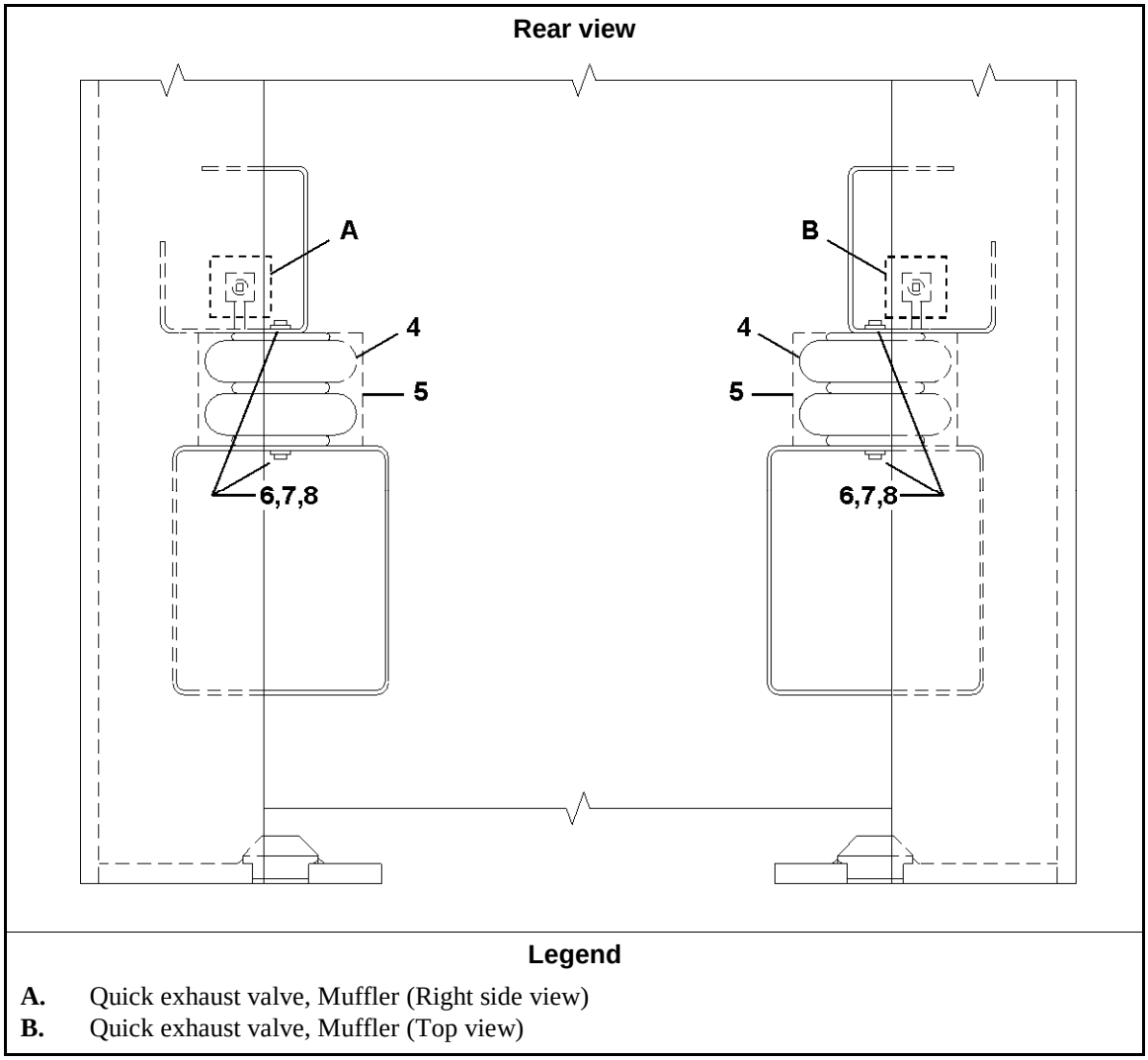


Figure 2: Push down, Rear



Legend

A. Quick exhaust valve, Muffler (Right side view)
B. Quick exhaust valve, Muffler (Top view)

Figure 3: Quick exhaust valve, Muffler (Right side view)

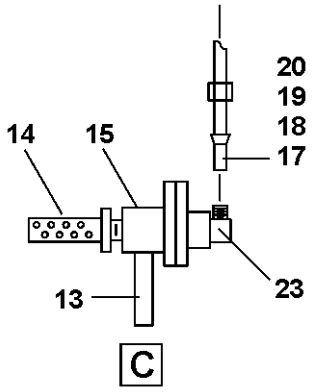


Figure 4: Quick exhaust valve, Muffler (Top view)

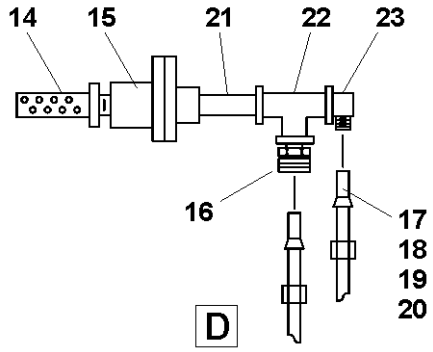


Table 1: Parts List— Push Down Components

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

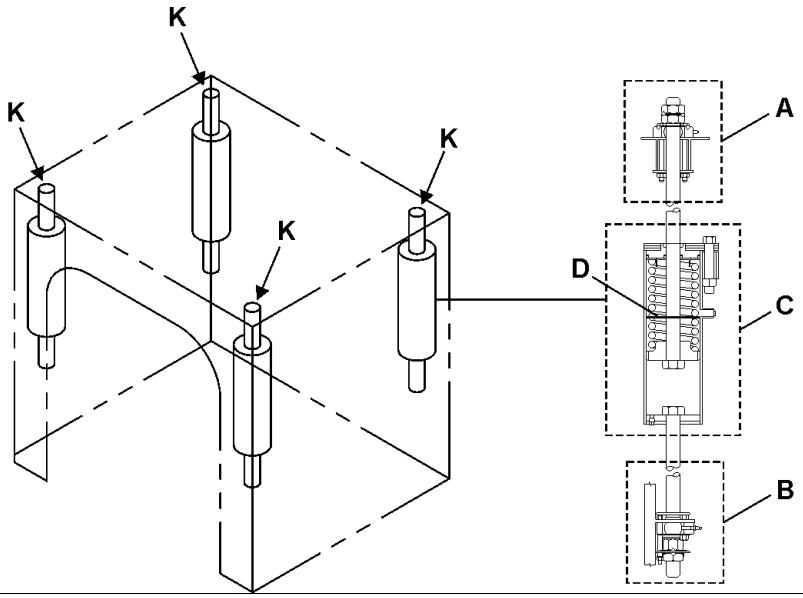
Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	G29 05000	Installation GroupPush down, Front, Right hand	
	B	G29 04900M	Installation GroupPush down, Front, Left hand	
	C	G28 17100	Installation GroupPush down, Rear	
			Components	
A	1	02 19245	Frame, Piece part	
B	1	02 19246A	Frame, Piece part	
B	2	02 19246B	Piece part	
all	3	W2 175087	Bracket	
all	4	60B120	Pneumatic bag	
all	5	69C050A	Plastic bag, 9X6X13X.005	
all	6	15K095	Bolt, 3/8-16X1	
all	7	15U255	Washer, Lock, 3/8	
all	8	15U240	Washer, Flat, 3/8"	
all	9	15K214E	Bolt, 5/8-11X1.5	
all	10	15U315	Washer, Lock, 5/8	
all	11	15U314	Washer, Flat, 5/8"	
all	12	15G238	Nut, 5/8-11	
all	13	5N0E02KG42	Pipe nipple, 1/4X2.5	
all	14	96M055	Quick exhaust valve, 1/4"	
all	15	27A005	Muffler, 3/8"	
all	16	53A020B	Pipe Fitting, 5/16X.25	
all	17	53A509	Flexible tubing, Adapter, 5/16"	
all	18	53A508	Flexible tubing, Adapter, 5/16"	
all	19	53A060A	Nut, 5/16	
all	20	60E005	Flexible tubing, 5/16	
all	21	5N0ECLSBE2	Pipe nipple, 1/4XCLS	
all	22	51V015	Tee, 1/4	
all	23	53A040B	Pipe Fitting, 5/16X.25	

— End of BIHDBM16 —

BIHDBM17 (Published) Book specs- Dates: 20101118 / 20101118 / 20120629 Lang: ENG01 Applic: HDB

Suspension Cylinders: 6044WP2, 6044WP3

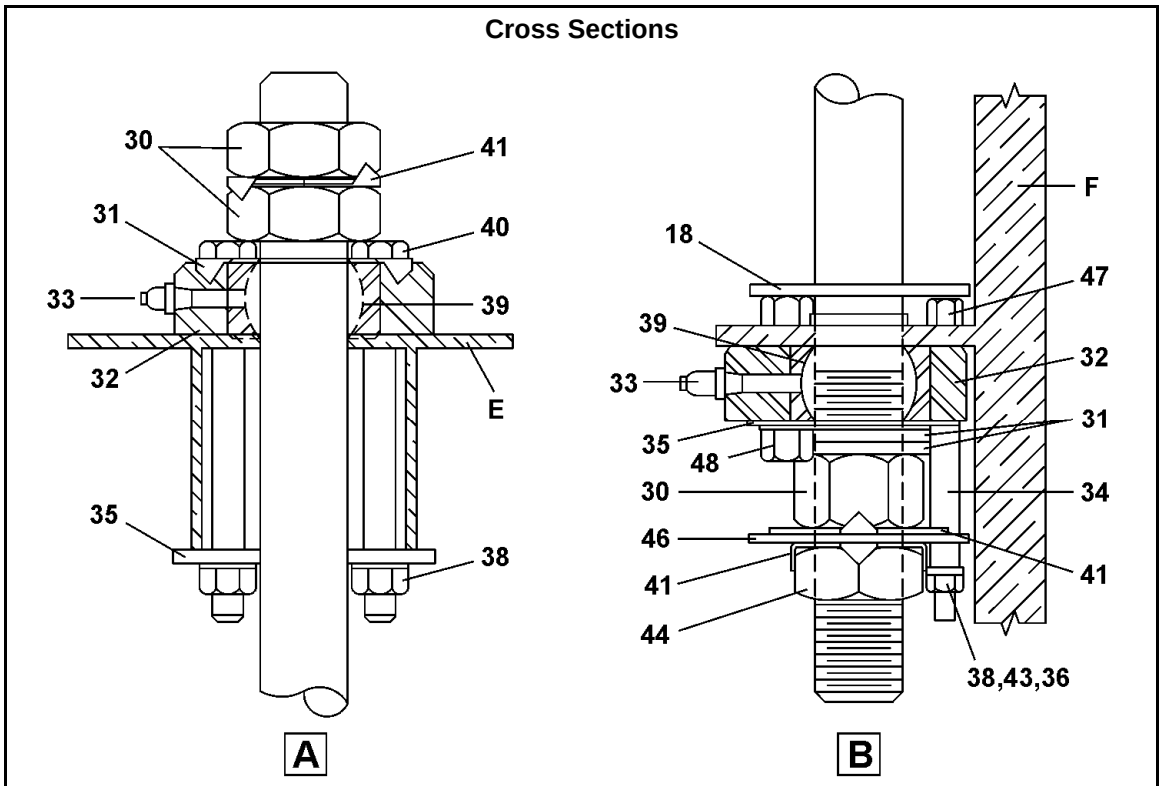
Figure 1: Suspension Cylinders



Legend

A. Ball bushing, Upper
B. Ball bushing, Lower
C. Suspension cylinder
D. Oil level
K. Cylinder identification letter: K

Figure 2: Mounting components



Legend

A. Ball bushing, Upper
B. Ball bushing, Lower
E. Cross brace
F. Shell

Figure 3: Suspension cylinder

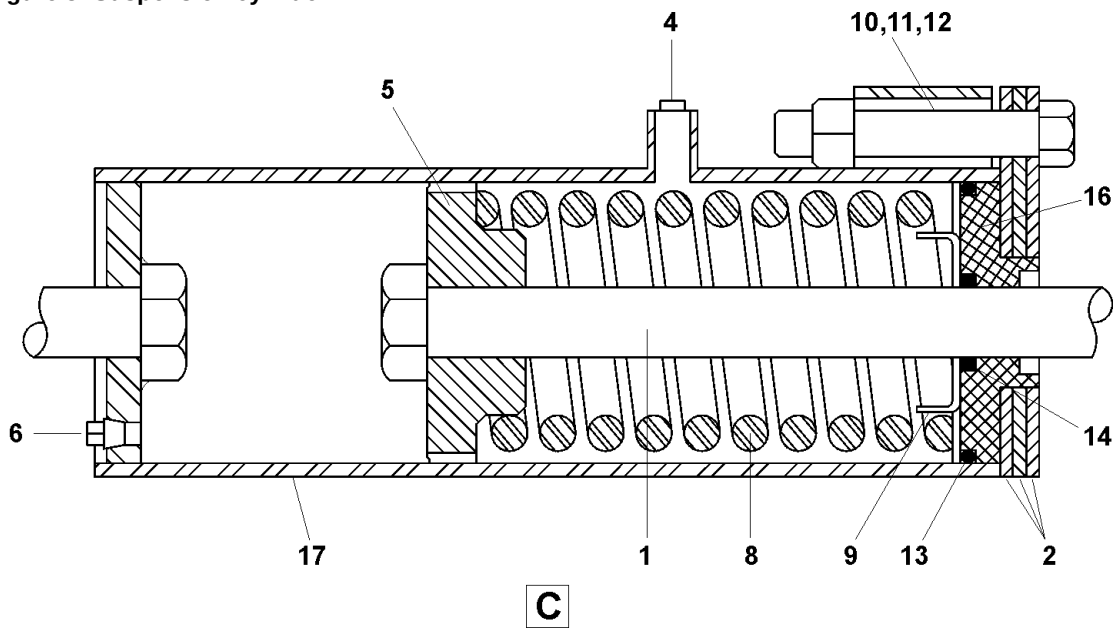


Table 1: Parts List—Suspension Cylinders

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	SA 29 031K	Installation Group, Suspension cylinder, Assembly-"K"	
			Components	
all	1	02 18244	Bolt, 27+7/8	
all	2	02 18840A	End cap	
all	4	5SP0KGFSS	Plug, 1/2	
all	5	X2 18228	Piston, 6"	
all	6	5SP0GHFHKM	Pipe Fitting, Plug, 3/8"	
all	8	03 09016	Spring	
all	9	02 18619	Retaining Ring	
all	10	15B237	Bolt, 1-8X5.5	
all	11	15G255A	Nut, Square, 1-8	
all	12	15U400	Washer, Lock, 1"	
all	13	60C159A	O-Ring, 5+1/2X1/4	
all	14	24S040	Seal, 1-7/16X2.25X13/32	
all	16	02 18839A	Bushing	
all	17	W2 18233	Housing	
all	18	02 175034	Plate, Rubber, neoprene	
all	30	15G268	Nut, Jam, 1+1/2-12	
all	31	02 18571A	Washer, Specialized	
all	32	X3 06252	Retainer	
all	33	54M025	Pipe Fitting, Lubricant, 1/8"	
all	34	27B240	Spacer, .5X.813X.062	
all	35	02 18534	Plate	
all	36	15G230	Nut, 1/2-13	
all	38	15K203	Bolt, 1/2-13X5	
all	39	54A705	Ball bushing, 1.5	
all	40	15N037	Bolt, 1/2-13X6.5	
all	41	02 18256	Washer, Specialized	
all	43	15U300	Washer, Lock, 1/2	
all	46	02 18795B	Washer, Specialized	
all	47	15K191	Bolt, 1/2-13X2.5	
all	48	15G231	Nut, 1/2-13	

— End of BIHDBM17 —

Shell and Door Assemblies 5

BIHDBM03 (Published) Book specs- Dates: 20160601 / 20160601 / 20160610 Lang: ENG01 Applic: HDB

Components, Shell Doors

Figure 1: General View 6044WR2, 7244WR2

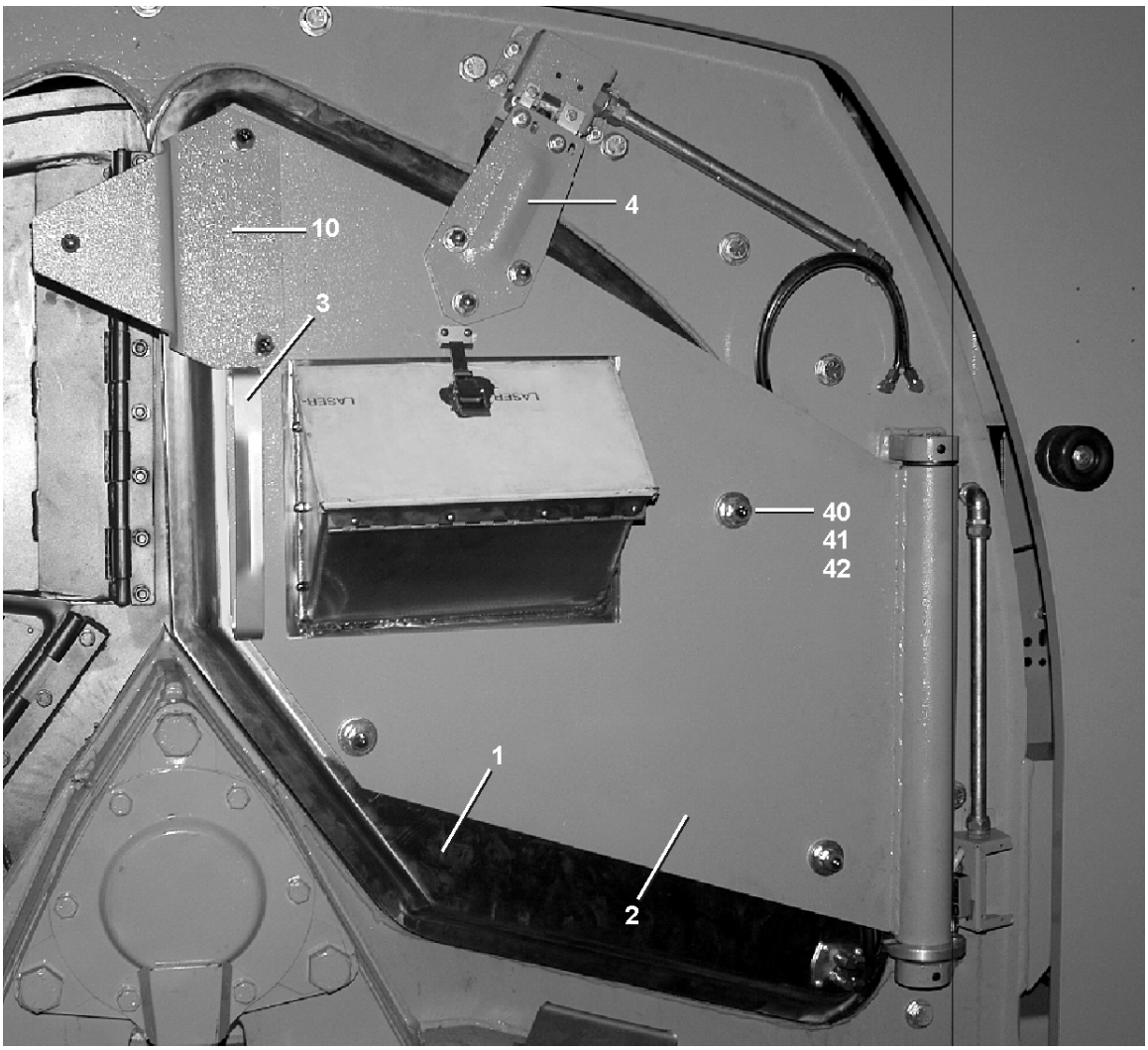
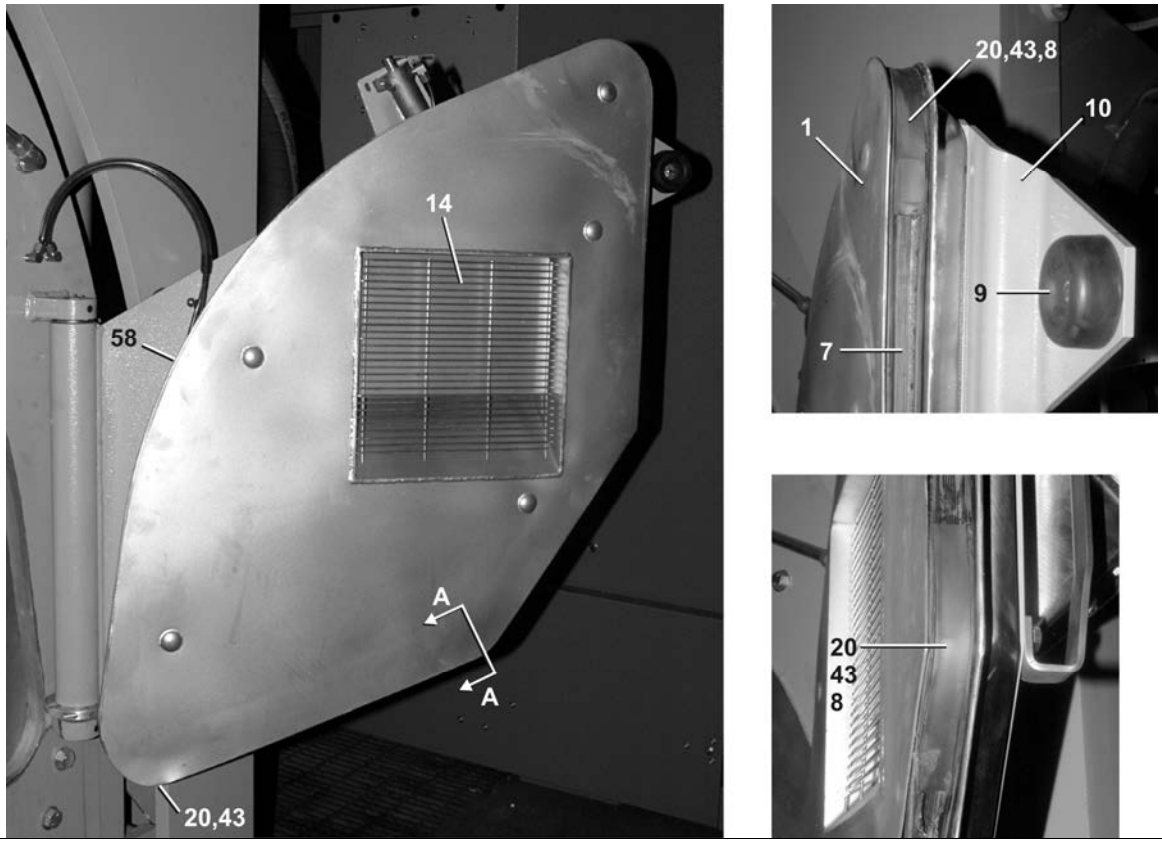


Figure 2: Shell doors

Inside view, Detailed views



Legend

AA. Cross Section: Door seal

Figure 3: Door seal

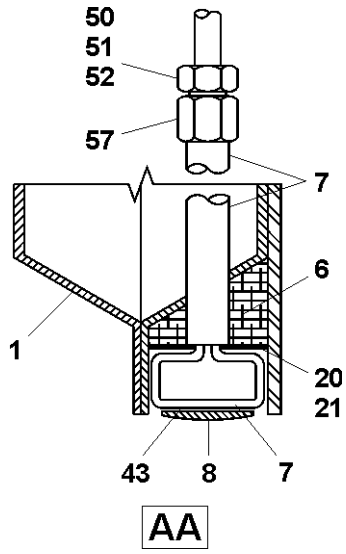
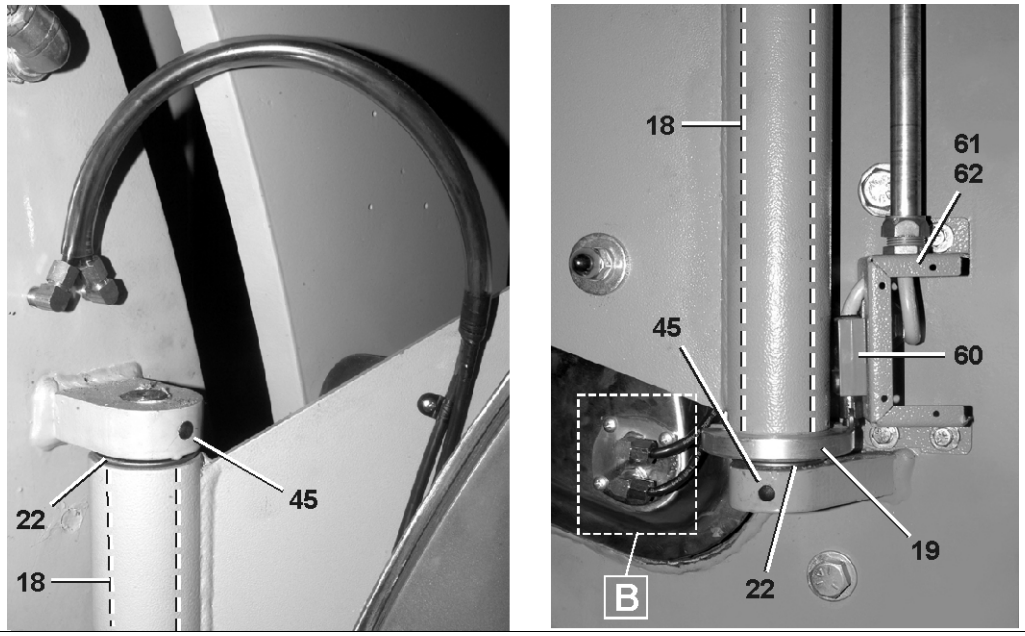


Figure 4: Door hinge

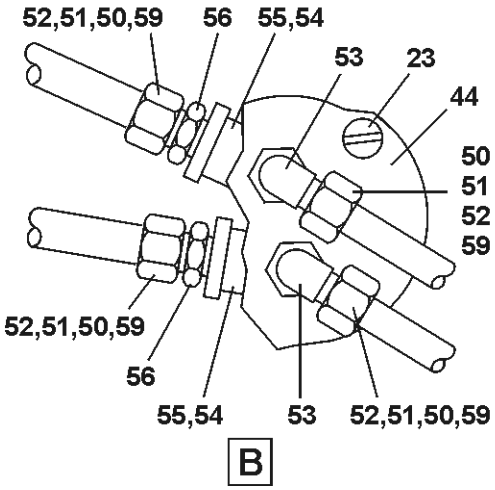
Detailed views



Legend

B. Detailed view: Compressed air lines

Figure 5: Compressed air lines, Door Latch



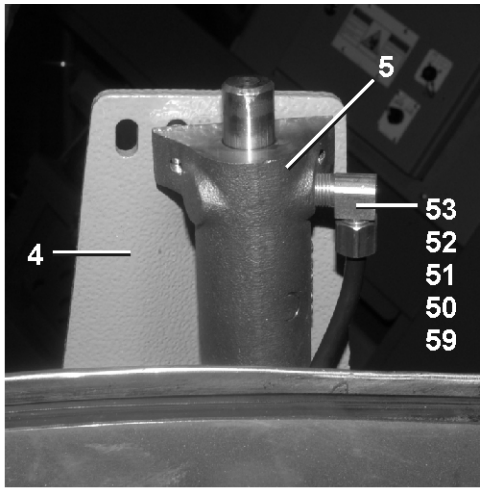
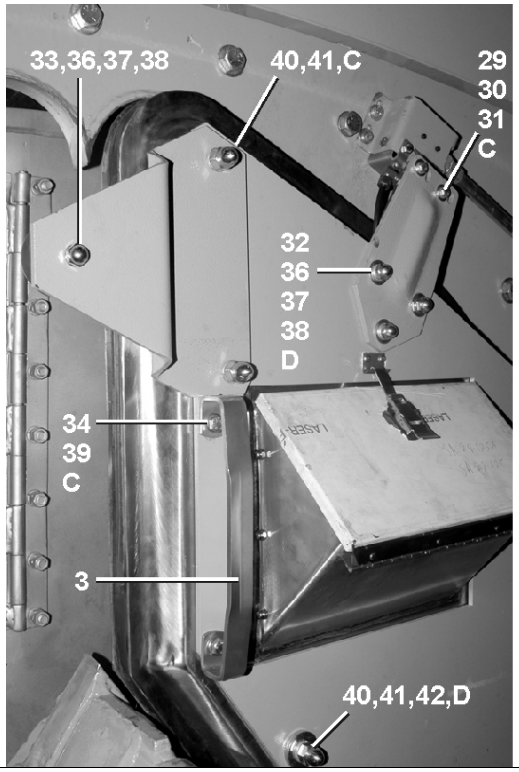
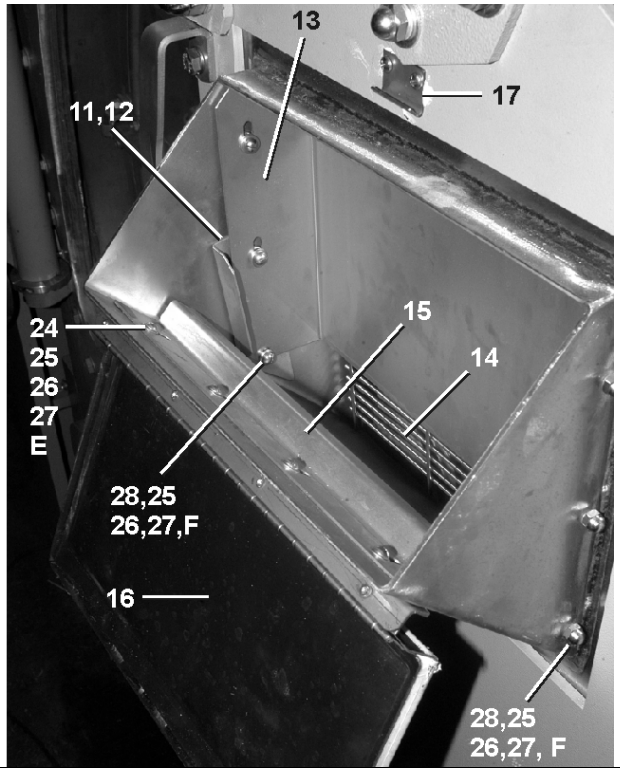


Figure 6: Shell door, Soap chute

General Views





Legend

C. instances, 2
D. instances, 3
E. instances, 4
F. instances, 6

Figure 7: Components of Kit, Door seal

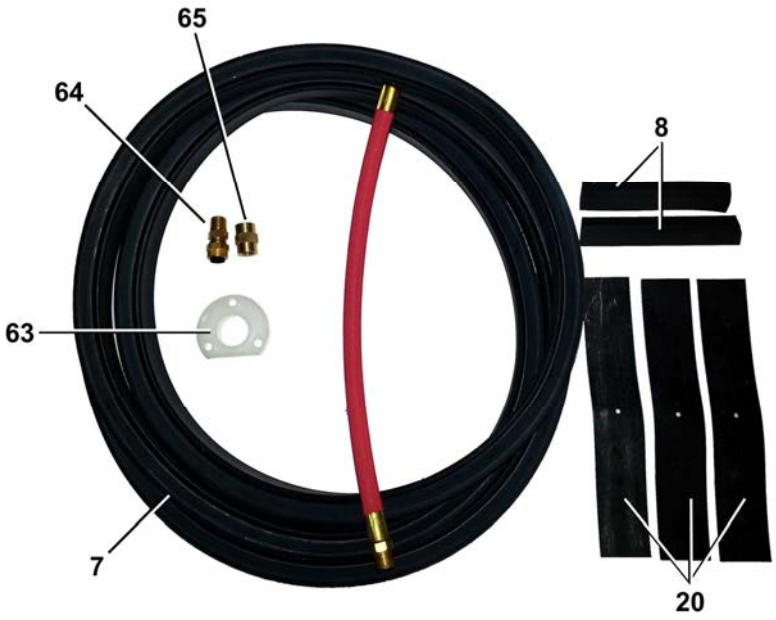


Table 1: Parts List—

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
	A	SA 28 122	*SHELL DOOR ASY 60WE2 RIGHT	60044WP2, WR2 Right Door
	B	SA 28 119	*SHELL DOOR ASY 60WE2 LEFT	60044WP2, WR2 Left Door
	C	SA 36 010	*SHELL DOOR ASY 72WE2 RIGHT	72044WP2, WR2 Right Door
	D	SA 36 011	*SHELL DOOR ASY 72WE2 LEFT	72044WP2, WR2 Left Door
	E	K28 0005R	KIT INFLATABLE DOOR SEAL 6044	60044WP2, WR2
	F	K36 0003R	KIT INFLATABLE DOOR SEAL 7244	72044WR2, WP2
Components				
A	1	W2 18960	* SHELL DOOR-60"WED-RIGHT	
B	1	W2 18959	* SHELL DOOR WELD-LEFT=WED	
C	1	W3 06061	* SHELLDOOR WELDMENT-RITE=WED	
D	1	W3 06060	* SHELLDOOR WELDMENT-LEFT=WED	
A	2	W2 18874	* HINGEPLATE WELDMNT-RITE=WED	
B	2	W2 18873	* HINGEPLATE WELDMNT-LEFT=WED	
C	2	W3 06063	* HINGE PLATE WELDMENT-RIGHT	
D	2	W3 06062	* HINGE PLATE WELDMENT-LEFT	
all	3	02 175037	HANDLE=SHELDOR=WED-SS	
all	4	02 175131	PLATE-LATCH MOUNT RT 60+72WE	
all	5	SA 10 020	* DOORLATCH ASSY-SMALL	
all	6	02 18888	DOORFILLER RUBBER 75FT/COIL*	
ABE	7	02 18889B	60"DORSEAL,G-28-6X100"	
CDF	7	03 06050B	72"DORSEAL,G-28-6X124+1/2"	
all	8	02 175134	PATCH=SHELL DOOR GASKET	
all	9	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
AB	10	02 18961	PLATE=DOOR OPENING 60WED	
CD	10	03 06068	PLATE=DOOR OPENING 1/72WED	
all	11	02 18916H	LF SIDE SPLAS DEF=7244 WE2	
all	12	02 18916J	RT SIDE SPLAS DEF=7244 WE2	
all	13	02 18916L	UPPER SPLASH DEF=7244 WE2	
all	14	02 19308	GUARD=60+72WE SOAP CHUTE	
all	15	02 18916K	LOWER SPLASH DEF=7244 WE2	
all	16	SA 28 125A	*LID ASSY=SOAP CHUTE-GASKETED	
all	17	02 18640	HOOK=SOAPCHUTE LATCH	
AB	18	02 18878	PIN-HINGE=SHELL DOOR 60WED	
CD	18	03 06067	PIN=DOOR HINGE 72WED	
all	19	54JH13562B	HINGE COL SPLIT 3.56 FL TOP	
all	20	02 175267	RUBBER STRIP=CORNERS+DR STEM	
all	21	20C017	FUEL RESCOAT 3M#EC776 QUART	
all	22	54A716	FLGBRG 1"ID SEAL SCHATZ#TW-25	
all	23	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	24	15N130	RDMACSCR 10-24UNC2A X 1/2 SS18	
all	25	15U135	FLATWASH#10 .4370DX.203IDX.04T	

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

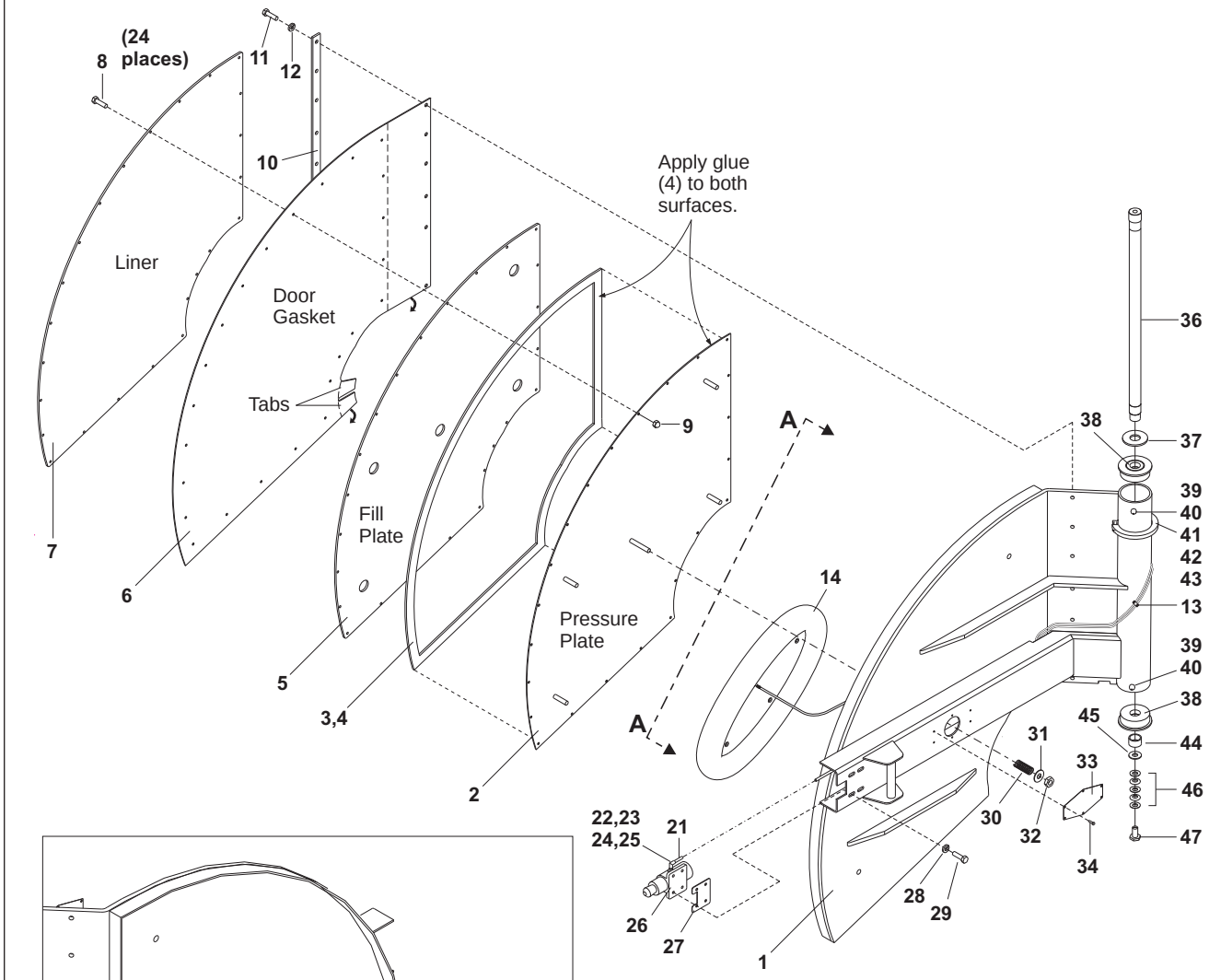
Used In	Item	Part Number	Description/Nomenclature	Comments
all	26	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	27	15G121	HXCAPNUT 10-24UNC2 #3266BR NKL	
all	28	15N141	RDMACSCR 10-24NCX3/4 SLOTTED S	
all	29	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	30	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	31	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	32	15K097	PLOWSCR-#3 3/8-16NCX1 BLK GR5	
all	33	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	34	15K084S	HXCAPSCR 3/8-16NCX5/8 SS18-8	
all	35	15P100	#8 X 3/8 PHILPANHD TYPE B SMS	
all	36	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	37	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	38	15G200	HXCPNUT 3/8-16 UNC2A 5/8X1/2	
all	39	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	40	15G228	HXCPNUT 1/2-13 UNC GR-2	
all	41	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	42	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	43	20C018B	3M INDUS ADH 5OZ #4799	
all	44	02 18956	COVRPLAT=WED SHELDOR AIRLINE	
all	45	15Q140	SOKSETSCR CUP 3/8-16X1/2 BLK	
all	50	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	51	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	52	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	53	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	54	15U243	FLTWASHER 7/8ODX33/64IDX16GA Z	
all	55	5SL0EBEA	NPTELB 90DEG 1/4 BRASS 125#	
all	56	53A008B	BODYMALECON.25X.25COMP#B68A-4B	
all	57	53A005F	BODYFEMCON.25X1/8COMP#B66A-4A	
all	58	12P1AGSB	SNAPBUSH 3/8"MH X 1/4" T=1/8	
all	59	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	60	09RM02212S	CAPSW 12' 180DEG ROLLER SILVER	
all	61	02 19139	BRKT=60/72WE3 2ND DR SW RT	
all	61	02 19139B	BRKT=60/72WE3 2ND DR SW LF	
all	62	02 19139A	COV=60/72WE3 2ND DR SW	
EF	63	02 18954	BUSHING LIBTXT	
EF	64	53A047H	MALECON 5/16X1/8POLY PH#68P-5-2	
EF	65	5SCC0CBE	NPT COUP 1/8 BRASS 125# 103A-A	

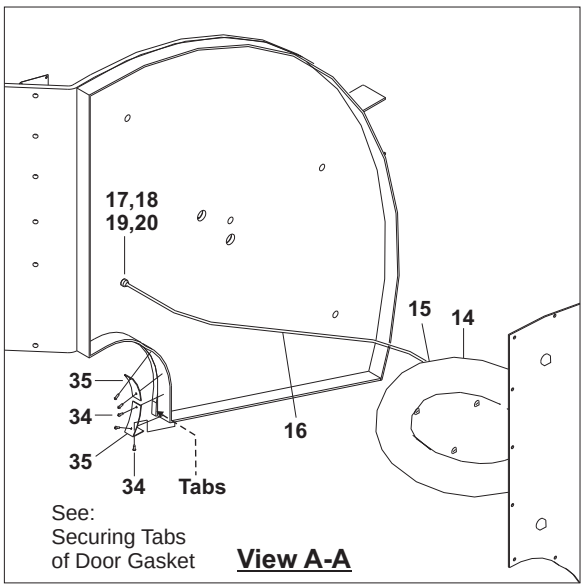
— End of BIHDBM03 —

Shell Doors

60044SR2, 60044SR3, 6044WR3

Figure 1: Exploded Views





Adjust the Pressure Plate as Follows:
1. With the inner tubes deflated, tighten the tension nut (item 32), until two threads extend beyond the nut.
2. The door spring should be slightly compressed. If the spring is compressed too much the air bags will not be able to inflate and properly seal the door.
3. Check the spring with air pressure applied to the inner tubes. Verify that the spring is not over compressed. If the spring height is only 3/4", it will be necessary to loosen the tension nut.

Securing Tabs of Door Gasket:
Fold gasket tabs over the edge of the door and anchor with holding strips (item 35) and screws on the final assembly.

Shell Doors

60044SR2, 60044SR3, 6044WR3

Parts List—Shell Door

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

Used In	Item	Part Number	Description	Comments
			----------REFERENCE ASSEMBLIES----------	
	A	SA 28 118	*SHELL DOOR ASY 60SG2 SOIL	6044SR2 SOIL SIDE
	B	SA 28 117	*SHELL DOOR ASY 60SG2 CLEAN	6044SR2 CLEAN SIDE
	C	SA 28 043	SHELLDOOR ASSY 60"SG3SOIL	6044SR3 SOIL SIDE
	D	SA 28 044	SHELL DOOR ASY 60SG3 CLEAN	6044SR3 CLEAN SIDE
	E	SA 28 017	SHELLDOOR ASSY 60"WE3	6044WR3
	F	SA 28 172	LINER ASSY SHELLDOOR 60SGD SS	A
	G	SA 28 171	LINER ASSY SHELLDOOR 60SGD CS	B
	H	SA 28 159	LINER ASSY=SHELLDOOR=WEH+SGH	CE
	J	SA 28 160	LINER ASSY=SHELLDOOR=SGH-CS	D
			----------COMPONENTS----------	
A	1	W2 18846	* SHELDOR WELD 60SG2 SOILSIDE	SR2
B	1	W2 18847	* SHELDOR WELD 60SG2 CLEANSID	SR2
C	1	W2 18316	SHELDOR WELD 60SG3 SOILSIDE	SR3
D	1	W2 18319	SHELDOR WELD 60SG3 CLEANSID	SR3
E	1	W2 18143	SHELLDOOR WELDMT 60WE3 ONLY	WR3
F	2	W2 18861C	PRESSPLT WELD SHELDR 60SGD SS	
G	2	W2 18861E	PRESSPLT WELD SHELDR 60SGD CS	
H	2	W2 18152A	PRESPLT WELD=SHLDR60SG3SS+WE	
J	2	W2 18152B	PRESSPLT WELD=SHLDR60SG3 CS	
all	3	60A006P	PORON STRIP .25X1 1/4# W E=FT	
all	4	20C044	RUB/GASKET ADH 3M#EC1300 PINTS	
FG	5	02 18860A	FILLER=PLATE SHELLDOOR SGD	
HJ	5	X2 18367	PLATE=DOOR FILLER	
FG	6	02 175180	GASKET=SHELLDOOR 2/60SGD	
HJ	6	02 175169	GASKET=SHELLDOOR 1/WE3	
F	7	02 18862A	LINER=SHELL DOOR RT 60SGD	
G	7	02 18862B	LINER=SHELL DOOR LT 60SGD	
HJ	7	02 18150	LINER=DOOR BACK	
all	8	15K039A	BUTSOKCPSCR 1/4-20X7/8 SS 18-8	
all	9	15G164	HX THIN LOCKNUT NYL1/4-20 SS	
all	10	02 175149	STRIP=RUBBER DOOR GASKET-SG	
all	11	15N174	HXCAPSCR 1/4-20UNC X5/8SS18-8	
all	12	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
All	13	12P016	CABLE CLMP-BLACK UL APPROVED	
ACE	14	02 18982G	DOORTUBE-60WEHU-PRES.TUB	SOIL SIDE AND WP3
BD	14	02 18981G	DOOR TUBE-60SGH-PRES.TUBE E	CLEAN SIDE
all	15	02 18181	FITTING-BRASS FOR INNER TUBE	
all	16	60E005	TUBING BLK.POLY.5/160DX3/16ID	
All	17	53A040B	BODY=EL90MALE5/16X.25#B69A-5B	
all	18	53A060A	NUT BRASS 5/16 COMP#61A-5	
all	19	53A060	SLEEVE 5/16 COMP IMP#60-F	

Shell Doors

60044SR2, 60044SR3, 6044WR3

Parts List—Shell Door

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

Used In	Item	Part Number	Description	Comments
all	20	53A509	TUBE INSERT 5/16"OD X .53"LG.	
all	21	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	22	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	23	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
All	24	53A501	TUBE INSERT .163"OD #63PT-4-40	
All	25	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	26	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	27	02 15633S	ADJPLATE=DOORLATCH SS	
all	28	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	29	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	30	02 18187	SPRING=OUTER DOOR 60 WEHU	
all	31	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	32	15G234	LOKNUT 1/2-13NC CAD FLXLOC#21F	
all	33	01 10020	NPLT SMALL "MILNOR" LOGO	
all	34	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	35	02 175231	PLATE=SHELL DOOR GASKET	
all	36	03 06145	HINGE PIN 60 SG2,SG3,WE2&WE3	
all	37	03 06136	WASHER,BRG BACKUP 72SG	
all	38	54A974975	TIM #L68111/L68149-1.3775"BORE	
all	39	X3 06146	BEARING ADAPTER 60&72 SG DR.	
all E	40 40	54M021 54M015	GRSFIT 1/8PIPE X 1/4STR 1607-B GREASEFIT 60X36/60X44 1610BL	
all	41	54JH15500A	HINGE COL SPLIT 5.50 FL TOP	
all	42	15K045E	SKCPSCR 1/4-20X2 BLK	
all	43	15Q091	SOKSETSCR CUP1/4-20X5/8BLK	
AB CDE	44 44	03 06132 03 06148	BUSHING,HINGE PIN 60&72 SG BUSHING,HINGE PIN 60 SG3PWE3	2 POCKET SR2 3 POCKET WR3,SR3
all	45	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	46	15U521	SPRINGWSHR.630ID 1.250D.051T	
all E	47 47	15K214E 51P034	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z SCREWSOCSET 5/8-11X5/8 PLASTIC	

BIHDBM04 (Published) Book specs- Dates: 20101119 / 20101119 / 20120629 Lang: ENG01 Applic: HDB

Door Latch

Figure 1: Door Latch

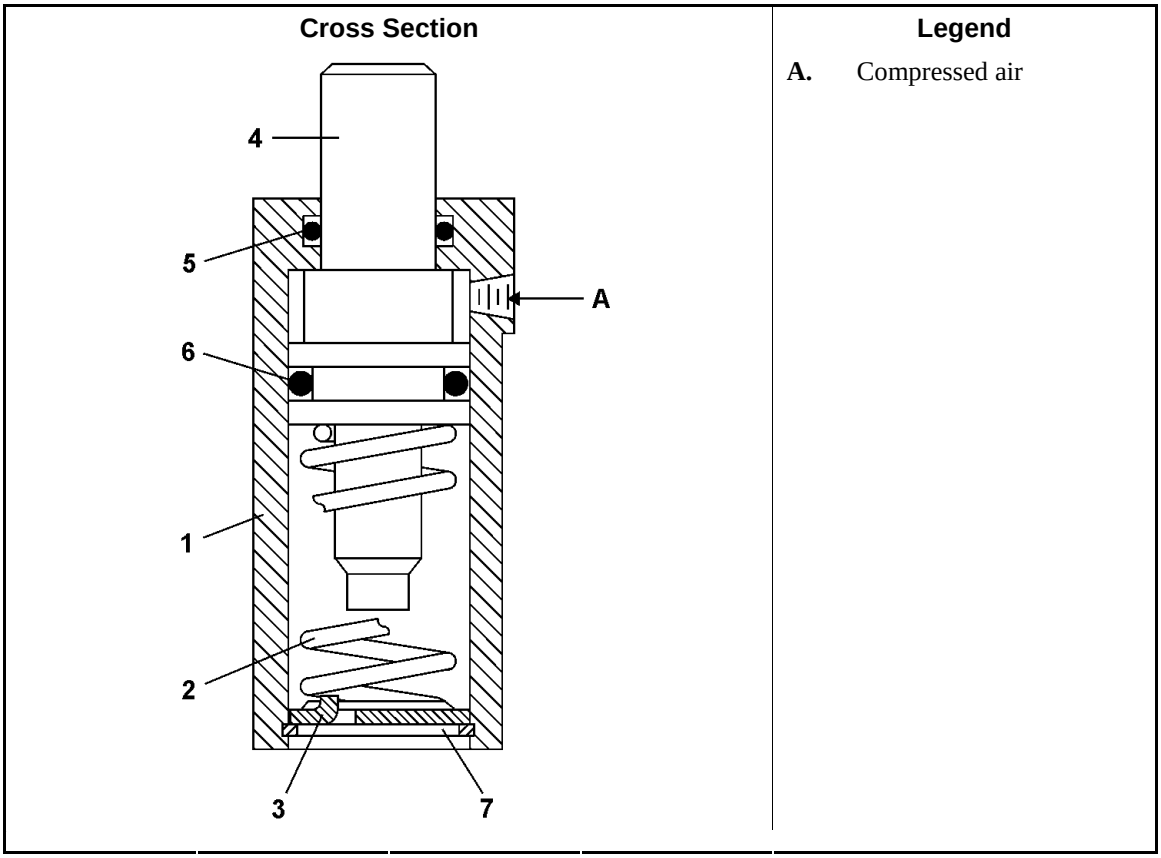


Table 1: Parts List—

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

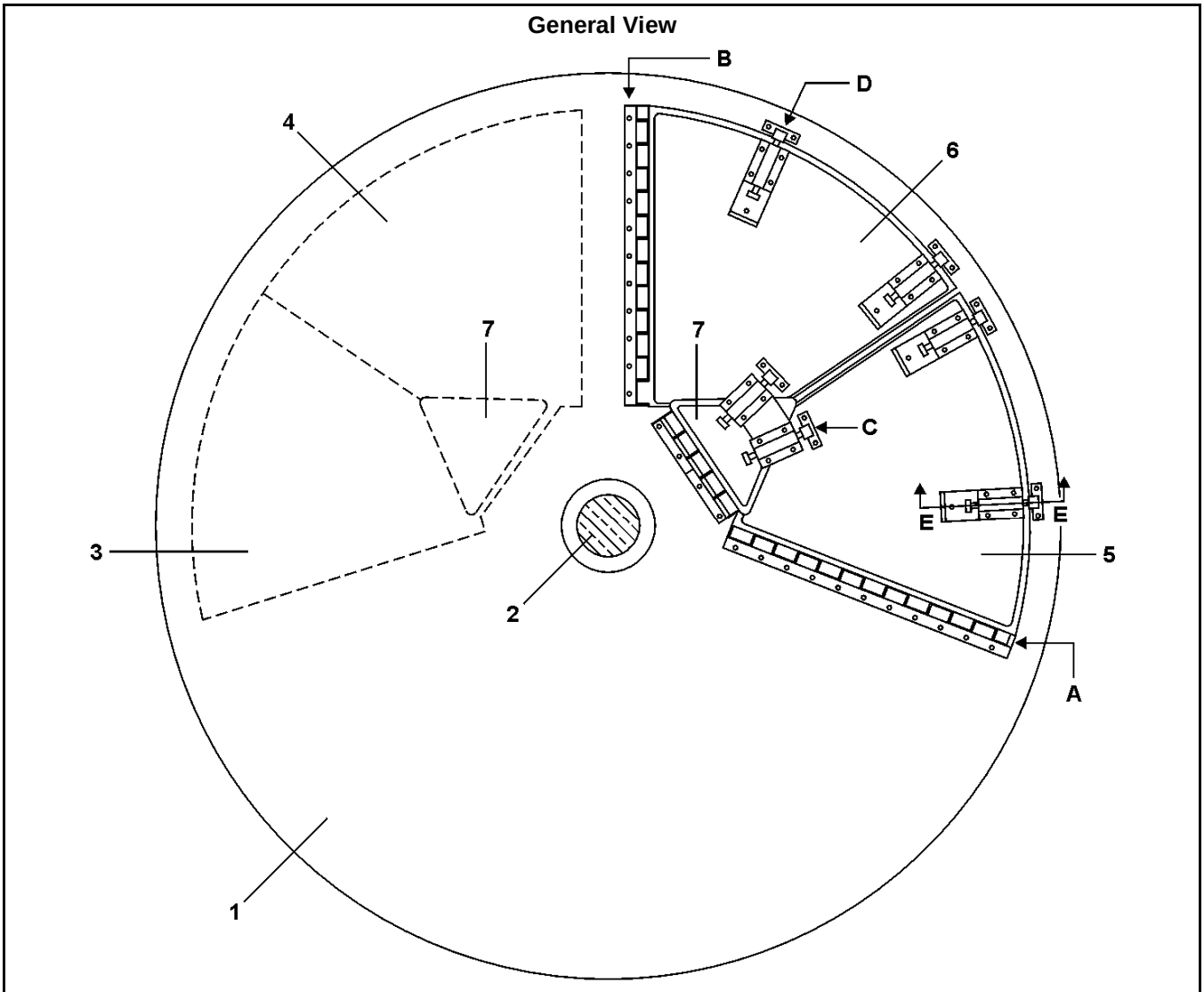
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	SA 10 020	Installation Group, Door latch	
Components				
all	1	02 10188	Cylinder	
all	2	02 10222	Spring	
all	3	02 10221	Retainer	
all	4	Y2 10314	Latch	
all	5	60C112	O-Ring, 5/8X3/32	
all	6	60C115	O-Ring, 3/4X1/8	
all	7	17B014	Retaining ring	

— End of BIHDBM04 —

BIHDBM06 (Published) Book specs- Dates: 20140430 / 20140430 / 20140430 Lang: ENG01 Applic: HDB

Cylinder Assembly and Cylinder Door Installation

Figure 1: Cylinder Assembly and Cylinder Door Installation 60044WR2, 72044WR2



Legend

A. Detailed view, Door hinge
B. Detailed view, Door hinge
C. Detailed view, Door latch
D. Detailed view, Door latch
EE. Cross Section, Door latch

Figure 2: Installed view- Hinge, Lower door

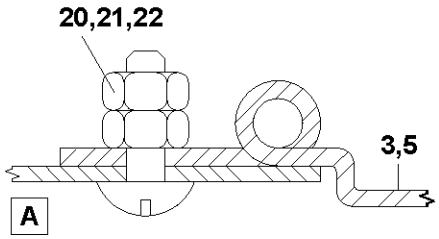


Figure 3: Installed view- Hinge, Upper door

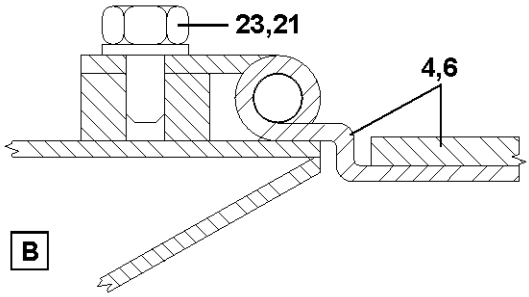


Figure 4: Installed view- Door latch (Small door)

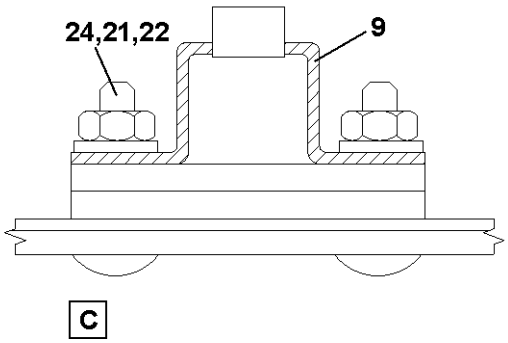


Figure 5: Installed view- Door latch (Upper door, Lower door)

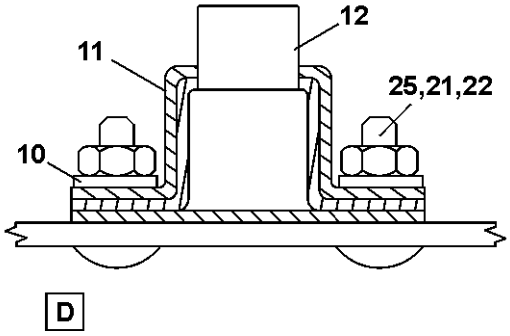


Figure 6: Cross Section- Door Latch

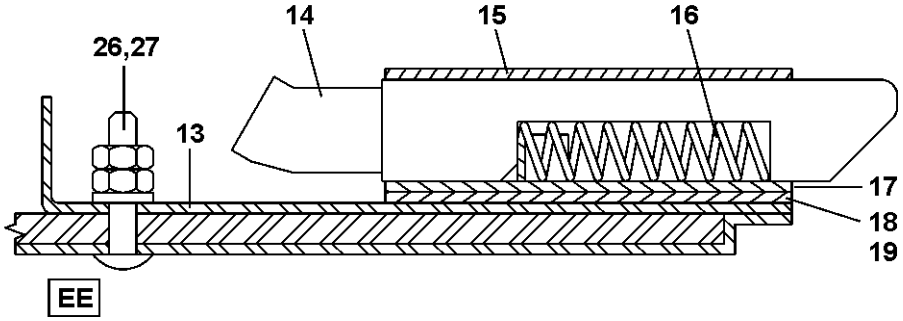


Table 1: Parts List—

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
	A	ABS29010A	Installation Group, Cylinder and Bearing Installation	6044WR2
	B	ABS36010A	Installation Group, Cylinder and Bearing Installation	7244WR2
Components				
A	1	ACA19WE2A	Cylinder	
B	1	ACA36WE2A	Cylinder	
A	2	Y2 19216	Shaft	
B	2	Y3 06368	Shaft	
A	3	SA 28 110	Assembly, Lower door, Left hand	
B	3	SA 36 003	Assembly, Lower door, Left hand	
A	4	SA 28 111	Assembly, Upper door, Left hand	
B	4	SA 36 004	Assembly, Upper door, Left hand	
A	5	SA 28 112	Assembly, Lower door, Right hand	
B	5	SA 36 001	Assembly, Lower door, Right hand	
A	6	SA 28 113	Assembly, Upper door, Right hand	
B	6	SA 36 002	Assembly, Upper door, Right hand	
all	7	SA 28 114	Assembly, Small door	
all	9	X2 15201	Striker	
all	10	03 06174	Striker	
all	11	03 06167	Cover	
all	12	X3 06166	Striker	
all	13	02 18869	Spacer	
all	14	X3 06150	Latch	
all	15	03 06151	Piece part	
all	16	03 06156	Spring	
all	17	X3 06152	Plate	
all	18	03 06172	Shim, 18GA	
all	19	03 06173A	Shim, 11GA	
all	20	15A010	Bolt, 3/8-16X1	
all	21	15U260	Washer, Lock, 3/8	
all	22	15G206	Nut, 3/8-16	
all	23	15K084S	Bolt, 3/8-16X5/8	
all	24	15K106E	Bolt, 3/8-16X1+1/2	
all	24	15A015	Bolt, 3/8-16X1+1/4	
all	26	15K042K	Bolt, 1/4-20X1+1/4	
all	27	15G170	Nut, 1/4-20	

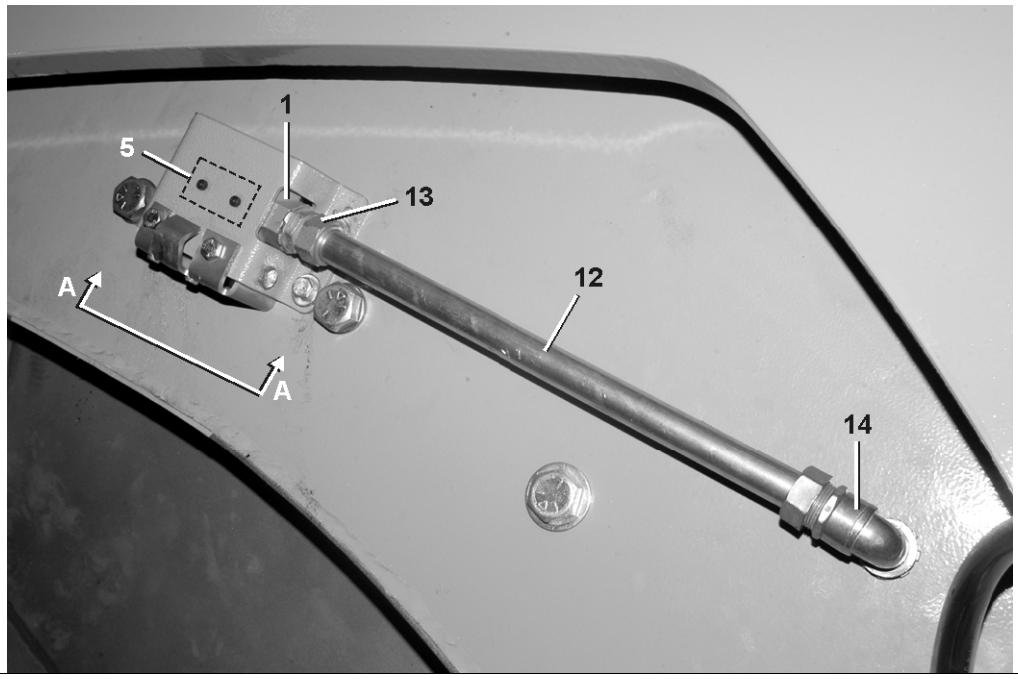
— End of BIHDBM06 —

BIHDBM07 (Published) Book specs- Dates: 20100910 / 20100910 / 20120629 Lang: ENG01 Applic: HDB

Door Interlock Switch: 6044WP2, 7244WP2

Figure 1: Door Interlock Switch

General View



Legend

AA. Detailed view, Door Interlock Switch

Figure 2: Detailed view, Door Interlock Switch

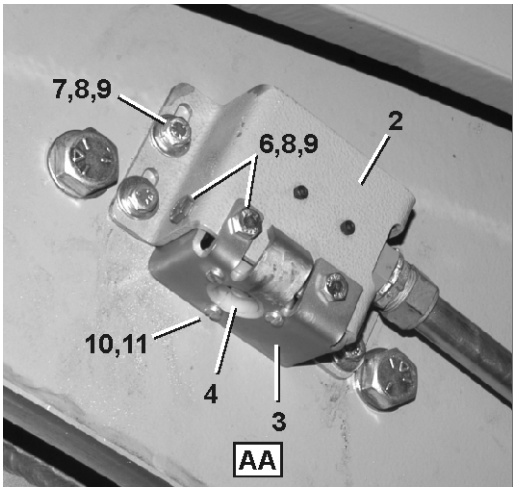


Table 1: Parts List— Door Interlock Switch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	AD 29 024L	Installation Group, Door interlock, Left hand	
	B	AD 29 024R	Installation Group, Door interlock, Right hand	
			Components	
all	1	09R012	Interlock switch	
A	2	02 18952	Bracket	
B	2	02 18979	Bracket	
A	3	02 18953	Striker	
B	3	02 18978	Striker	
all	4	02 18954	Bushing, Nylon	
all	5	20A015GA	Shim	
all	6	15K030	Bolt, 1/4-20X1/2	
all	7	15K039	Bolt, 1/4-20X3/4	
all	8	15U180	Washer, Lock, 1/4	
all	9	15U185	Washer, Flat, 1/4"	
all	10	15N092A	Bolt, 8-32X1/2	
all	11	15G164	Nut, 1/4-20 SS	
all	12	12C050	Pipe nipple, 1/2"	
all	13	12K040	Adapter, 1/2"	
all	14	12K054	Elbow, 1/2"	

— End of BIHDBM07 —

6 Control and Sensing Assemblies

Excursion Switch (Unwanted Movement Switch) Components and Installation

Figure 1: Excursion switch 6044WR2, 6044WR3, 7244WR2

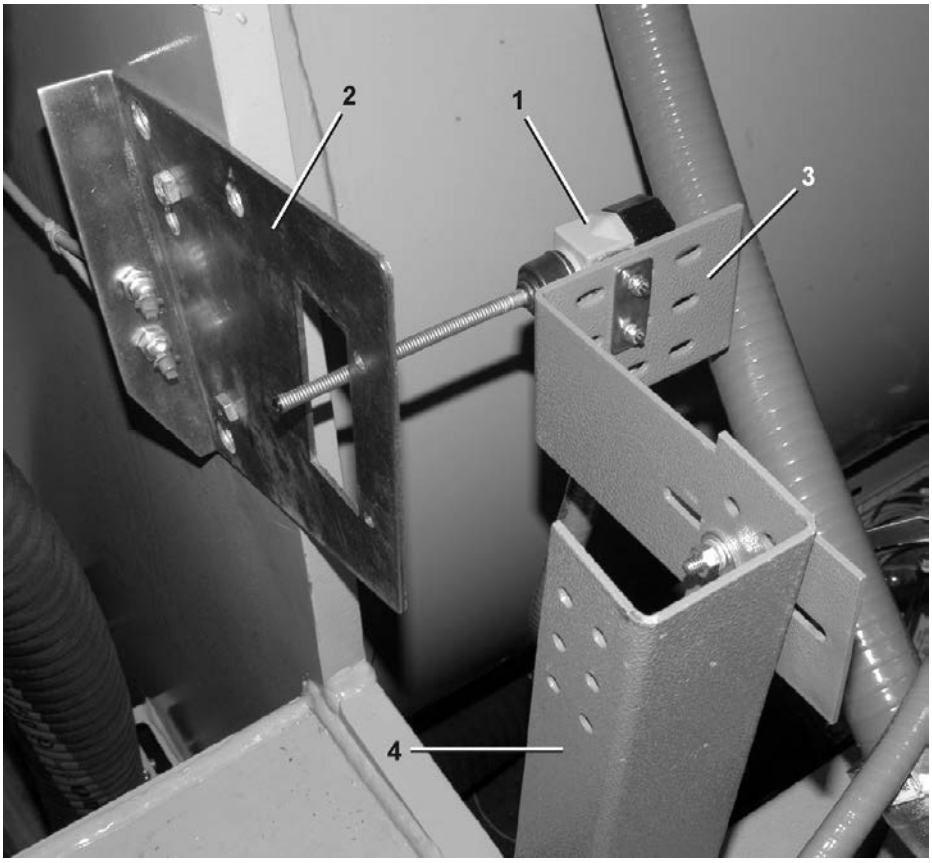


Table 1: Parts List—Excursion switch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
none				
Components				
all	1	09R008ASTD	Switch	
all	2	02 18542A	Bracket	
all	3	02 18784E	Bracket	
all	4	02 18784D	Bracket	6044WR2/3 ONLY

— End of BIHDBM18 —

BIHDBM19 (Published) Book specs- Dates: 20120928 / 20120928 / 20120928 Lang: ENG01 Applic: HDB

Vibration Safety Switch

Figure 1: Vibration Safety Switch

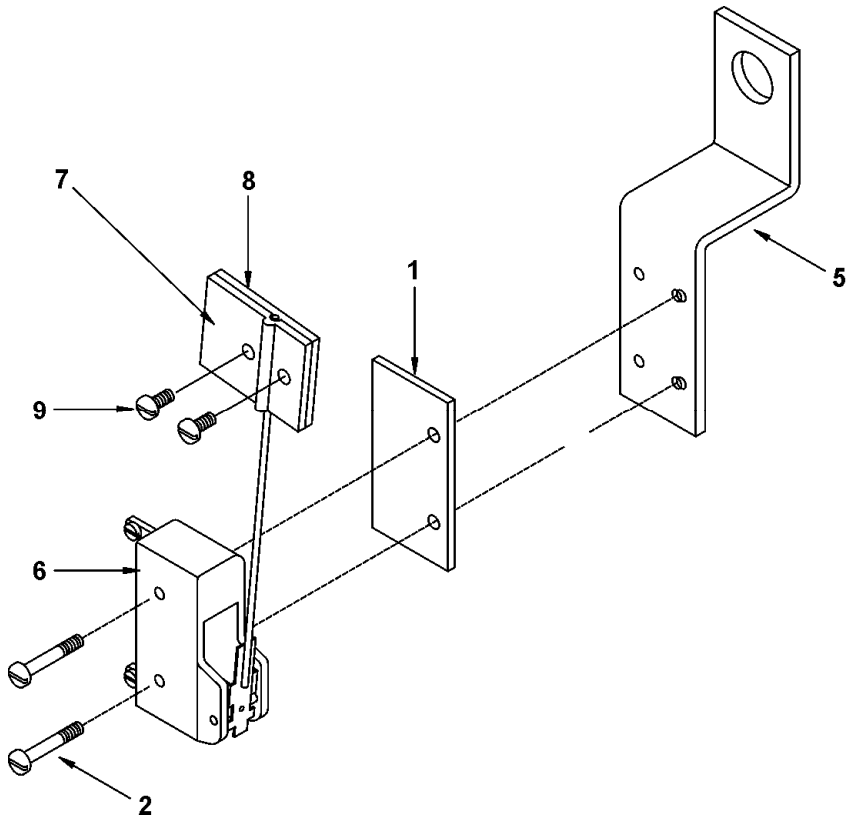


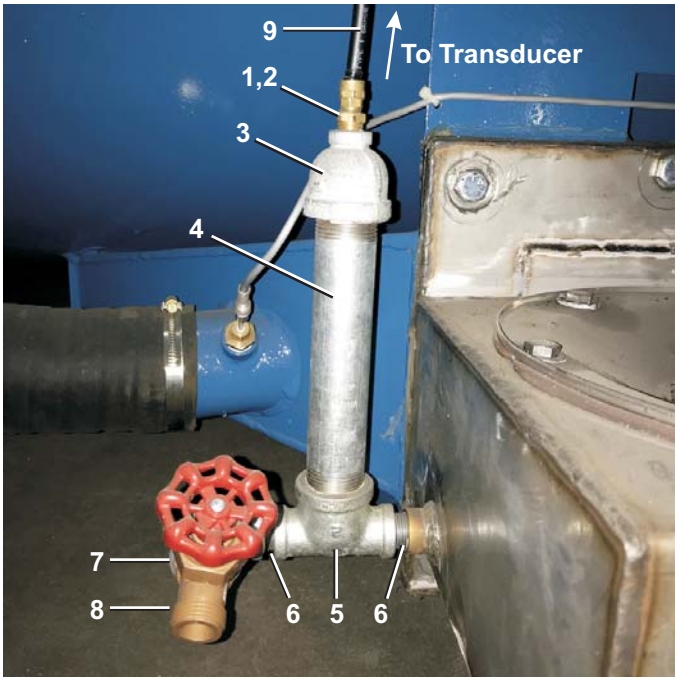
Table 1: Parts List—Vibration Safety Switch

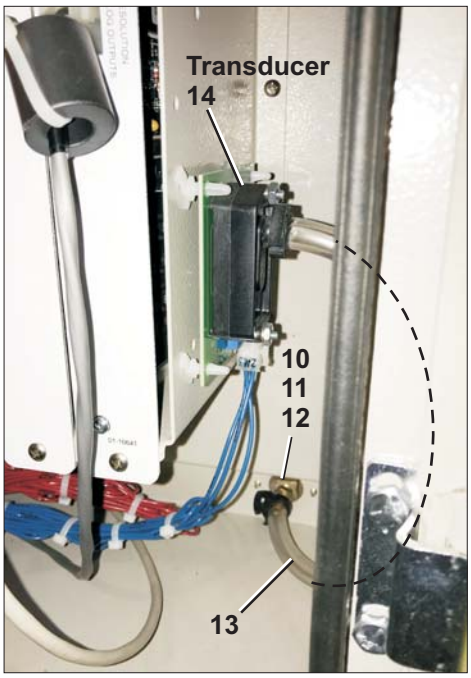
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
	A	SAE03 151	Installation Group, Vibration safety switch	
Components				
all	1	02 02038	Insulator	
all	2	15P008	Bolt, 6-32X1	
all	5	02 15119	Bracket	
all	6	09R020	Switch	
all	7	03 01059	Mounting plate	
all	8	03 01058	Weight	

— End of BIHDBM19 —

Air Chamber Level Switch

42044WR2,WR3,SR2,SR3 6044WR2,WR3,SR2





Parts List

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	AD 15 090A	AIRCHAMBER PRESWITCH INSTALL	
			COMPONENTS	
all	1	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	2	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
all	3	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	
all	4	5N1A07AG42	NPT NIP 1X7 TBE GALSTL SK40	
all	5	5S0KNFA1A	NPT TEE 1/2X1/2X1" GALMAL 150#	
all	6	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
all	7	5SL0PNFC0K	NPT 90D STREET 3/4X1/2 GAL150#	
all	8	96DB0PNA	HOSEBIBB 3/4" MALEINLT 45DEG. ACETAL	
all	9	6.00E+06	TUBING BLK.POLY.5/160DX3/16ID	
all	10	51V010A	TEE 1/8"BRSEXTR BLOCTYP#2203P2	
all	11	51E502A	HOSESTEM BRASS 1/8MPT X3/16	
all	12	5SP0CBEHS	NPT PLUG 1/8 HXCTRSNK BRASS	
all	13	60E004NA	TUBING CLEAR PVC 3/16"IDX5/16"OD	
all	14	08BNLTT	LEVEL TRANSDUCER BD->TEST	

Temperature Probe

6044WR2,WR3,SR2 72044WR2,WR3,SR3

Parts List

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	30R0043PB	TEMPERATURE PROBE ASSY=BRASS	

Chemical Supply Devices

7

BIHDBM21 (Published) Book specs- Dates: 20100913 / 20100913 / 20120629 Lang: ENG01 Applic: HDB

Chemical Supply Inlets

Figure 1: Inlet manifold

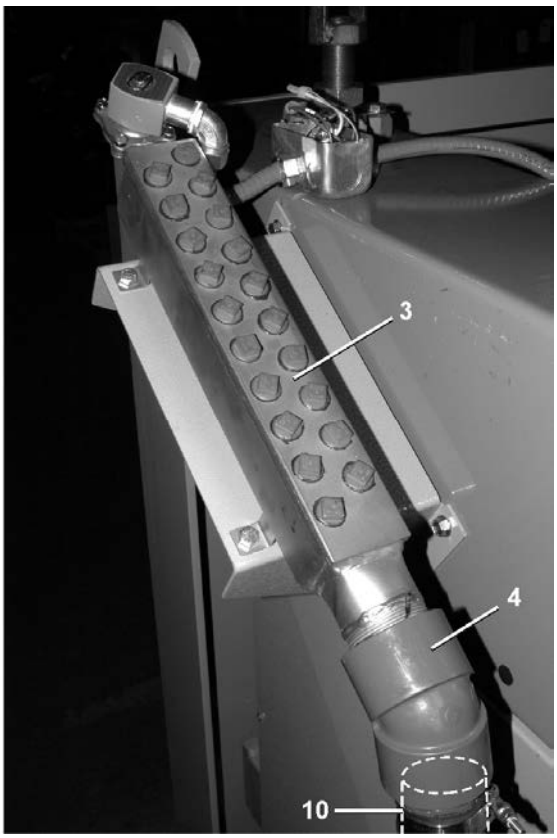
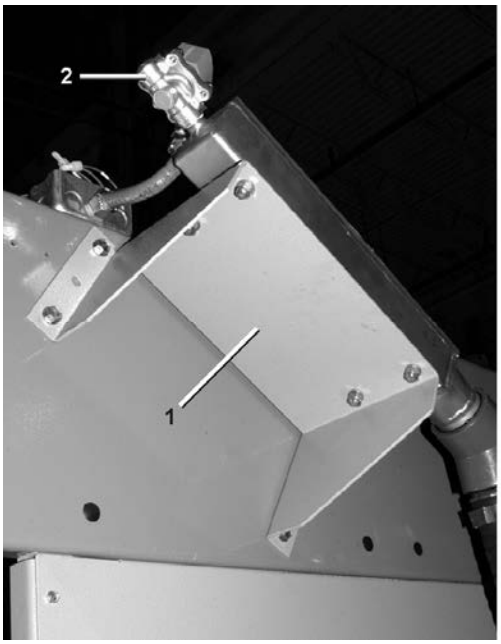


Figure 2: Mounting bracket, Hose



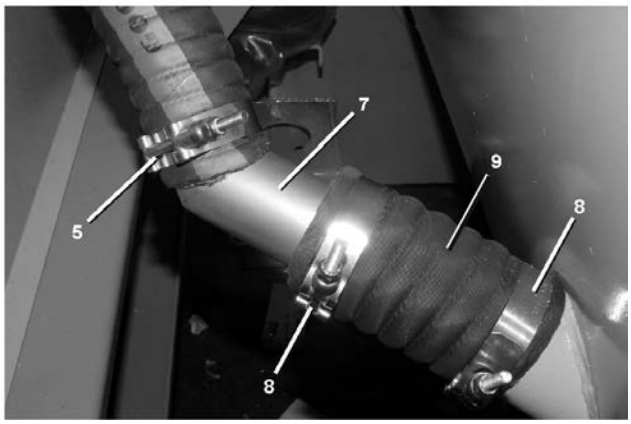


Table 1: Parts List—Chemical Supply Inlets

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	GWL28005	Installation Group, Chemical supply inlets	
			Components	
all	1	03 25267E	Bracket	
all	2	96TDC2AA37	Switch	
all	3	W8 01254	Manifold	
all	4	5SL2AP8K	Elbow, 2" PVC	
all	5	27A072	Hoseclamp, T-bolt, 2.16-2.47	
all	6	60E255A70A	Hose, 2" X 70"	
all	7	W2 15265A	Piece part	
all	8	27A075	Hoseclamp, T-bolt, 2.78-3.09"	
all	9	60E301A04A	Hose, 2.5"X4"	
all	10	51AB2AN2AA	Adapter, 2" PVC	
all	11	02 18538	Bracket	
all	12	02 19327B	Cover	

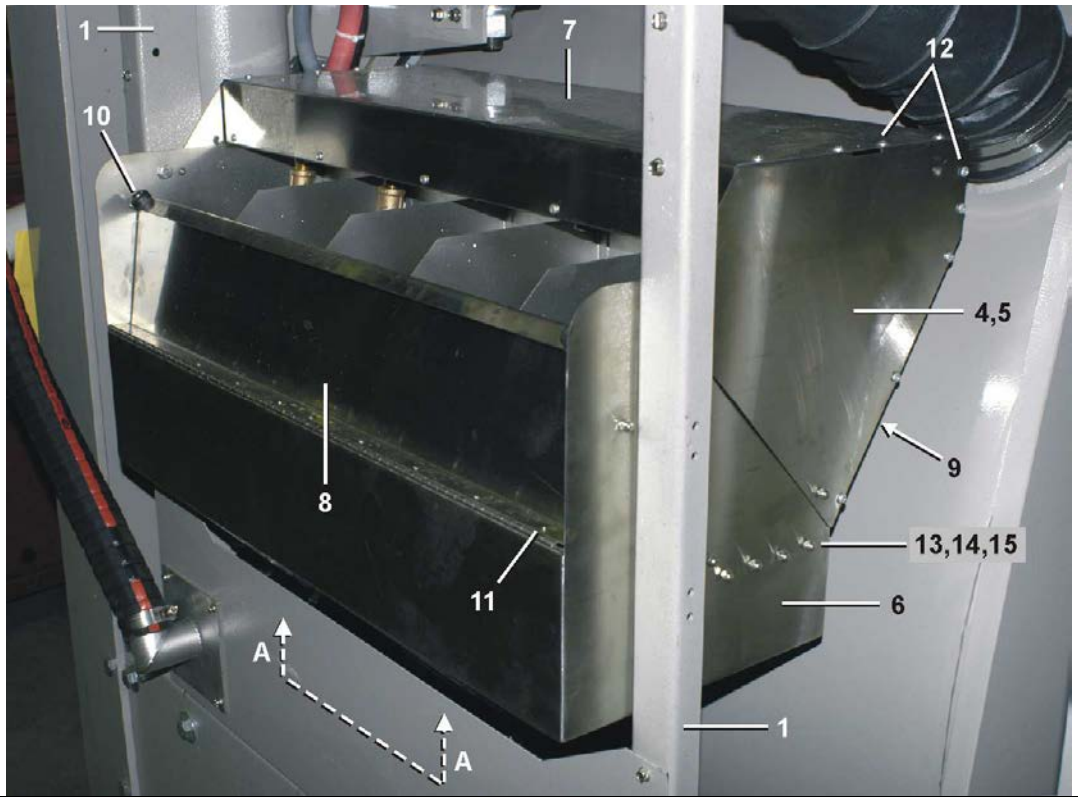
— End of BIHDBM21 —

BIHDBM22 (Published) Book specs- Dates: 20100915 / 20100915 / 20120629 Lang: ENG01 Applic: HDB

Five Compartments for Dry Chemical Supplies

Figure 1: Five Compartments for Dry Chemical Supplies

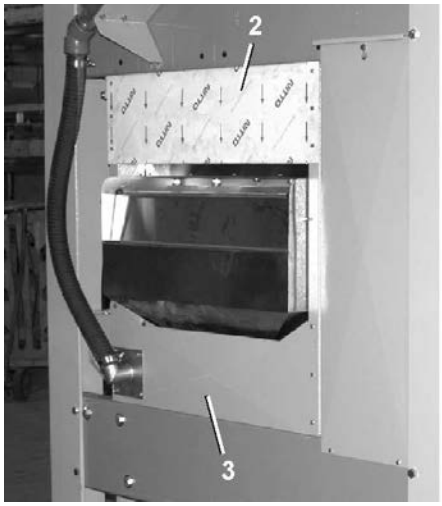
General View

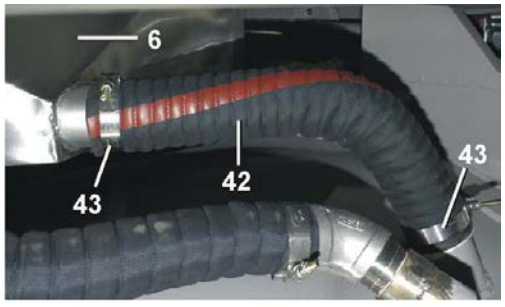


Legend

AA. Bottom view (Hose)

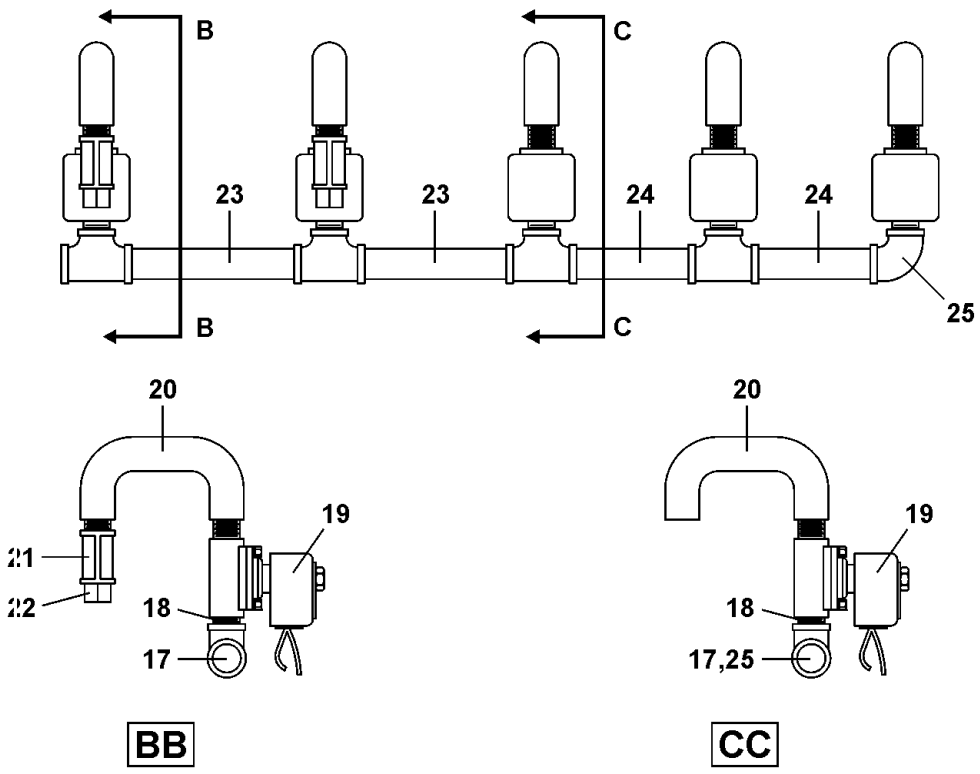
Figure 2: Right side view (Covers), Bottom view (Hose)





AA

Figure 3: Valve manifold



Legend

BB. Detailed view, instances 2
CC. Detailed view, instances 3

Figure 4: Hot water inlet - Pressure regulator assembly

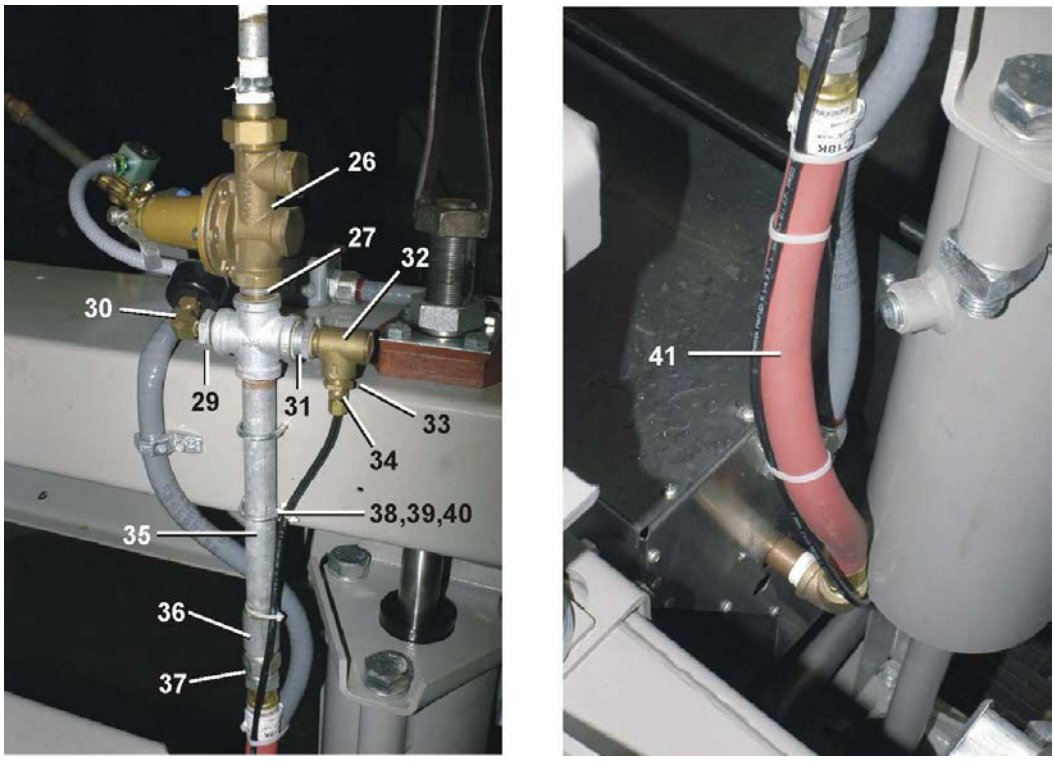


Table 1: Parts List— Five Compartments for Dry Chemical Supplies

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	SA 28 085B	Assembly, Five Compartments for Dry Chemical Supplies	
	B	A28 18600B	Assembly, Valve manifold	
	C	SA 28 084	Assembly, Pressure regulator assembly	
	D	AD 28 059	Installation Group, Pressure regulator assembly	
			Components	
all	1	02 18538	Piece part	
all	2	02 18824C	Cover	
all	3	02 18824D	Cover	
all	4	02 18024	Panel, Front	
all	5	02 18025	Panel, Rear	
all	6	W2 18559	Weldment	
all	7	02 18564	Panel, Top	
all	8	SA 28 086	Assembly, Cover	
all	9	02 18777A	Panel, Inside	
all	10	60C001	Bumper	
all	11	15P100	Bolt, #8 X 3/8	
all	12	15P010	Bolt, 10-24X1/2	
all	13	15N117	Bolt, 10-24X3/8	
all	14	24G018N	Washer, Nylon	
all	15	15G121	Nut, Cap, 10-24	
B	17	5S0PBEA0K	Tee, 3/4X3/4X1/2	
B	18	5N0KCLSBE2	Pipe nipple, 1/2XCLS	
B	19	96TDC2AA37	Water valve, 1/2"	
B	20	02 19307	Pipe Fitting	
B	21	5SCC0KBE	Coupling, 1/2	
B	22	27A001	Nozzle, 1/2"	
B	23	5N0P06ABE2	Pipe nipple, 3/4X6	
B	24	5N0P05AB42	Pipe nipple, 3/4X5	
B	25	5SL0PBEA0K	Elbow, 3/4X1/2	
C	26	96J031D	Pressure regulator, 3/4", 28#	
C	27	5N0PCLSG42	Pipe nipple, 3/4XCLS	
C	28	5S0PNFB	Tee, 3/4"	
C	29	5SB0P0CNFA	Hexbush, 3/4X1/8	
C	30	30N100	Pressure gauge, 1/8", .0-30PSI	
C	31	5SB0P0KNFO	Hexbush, 3/4X1/2	
C	32	96M001	Pressure relief valve, 1/2X3/8", 31#	
C	33	5SB0G0EDEO	Hexbush, 3/8X1/4	
C	34	53A008B	Pipe Fitting, .25X.25	
C	35	5N0P10AG42	Pipe nipple, 3/4X10	

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

Used In	Item	Part Number	Description/Nomenclature	Comments
C	36	5SCC0PNF	Coupling, 3/4	
C	37	51X019	Union, 3/4"	
D	38	27A030B	U-bolt, 3/4", 1/4-20	
D	39	15U180	Washer, Lock, 1/4	
D	40	15G165	Nut, 1/4-20	
D	41	60E086C18K	Hose, 3/4"X18.5"	
all	42	60E301A12A	Hose, 2.5"X12"	
all	43	27A075	Hoseclamp, T-bolt, 2.78-3.09"	

— End of BIHDBM22 —

8 Water and Steam Piping Assemblies

BIHDBM23 (Published) Book specs- Dates: 20120928 / 20120928 / 20120928 Lang: ENG01 Applic: HDB

Water Inlet Components and Installation

Figure 1: Water Inlet Components and Installation

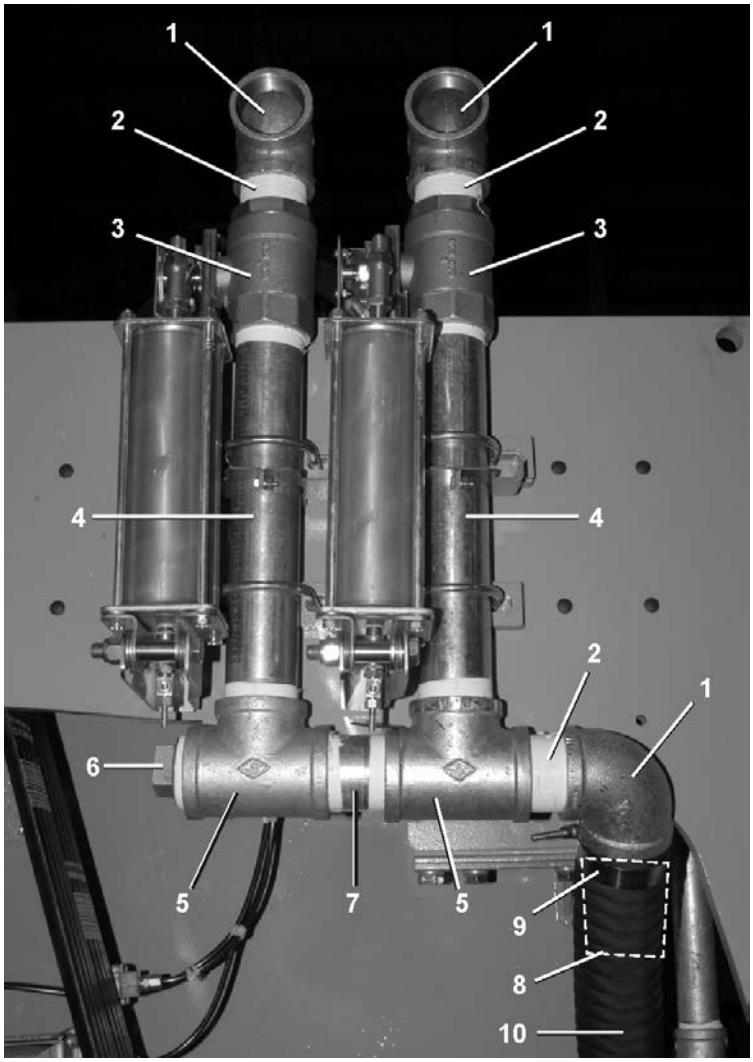
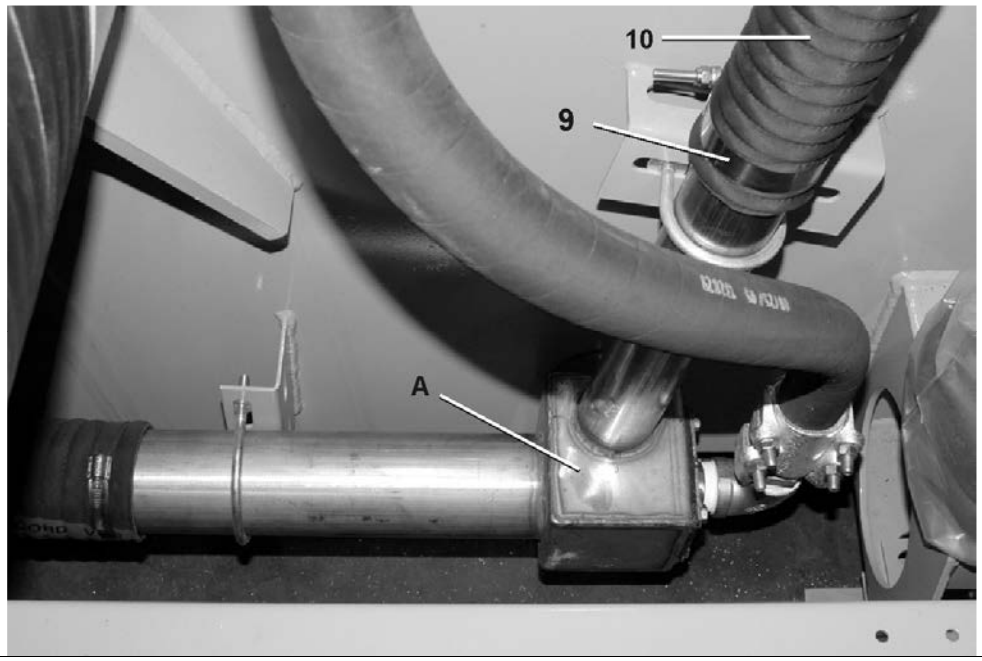


Figure 2: Inlet water mixes with steam.

Rear view



Legend

A. Steam pipe and nozzle

Table 1: Parts List— Water Inlet Components and Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	AVW28023	Assembly, Hot water inlet, Cold water inlet	
	B	AVW28024	Assembly, Third water inlet	
	C	AVW28022	Installation Group	
Components				
all	1	5SL2ANFA	Elbow, 2"	
all	2	5N2ACLSG42	Pipe nipple, 2XCLS	
all	3	96D088BCSR	Water valve, 2.00	
all	4	5N2A13PG42	Pipe nipple, 2X13.75	
all	5	5S2ANFA	Tee, 2"	
all	6	51P060	Plug, 2"	
all	7	5N2A03AG42	Pipe nipple, 2X3	
all	8	51E098B	Reducer, 2.5"X2"	
all	9	27A075	Hoseclamp, T-bolt, 2.78-3.09"	
all	10	60E301A33A	Hose, 2.5"X33"	

— End of BIHDBM23 —

BIHDBM24 (Published) Book specs- Dates: 20100917 / 20100917 / 20120629 Lang: ENG01 Applic: HDB

Cooldown Components and Installation

Figure 1: Cooldown Components and Installation

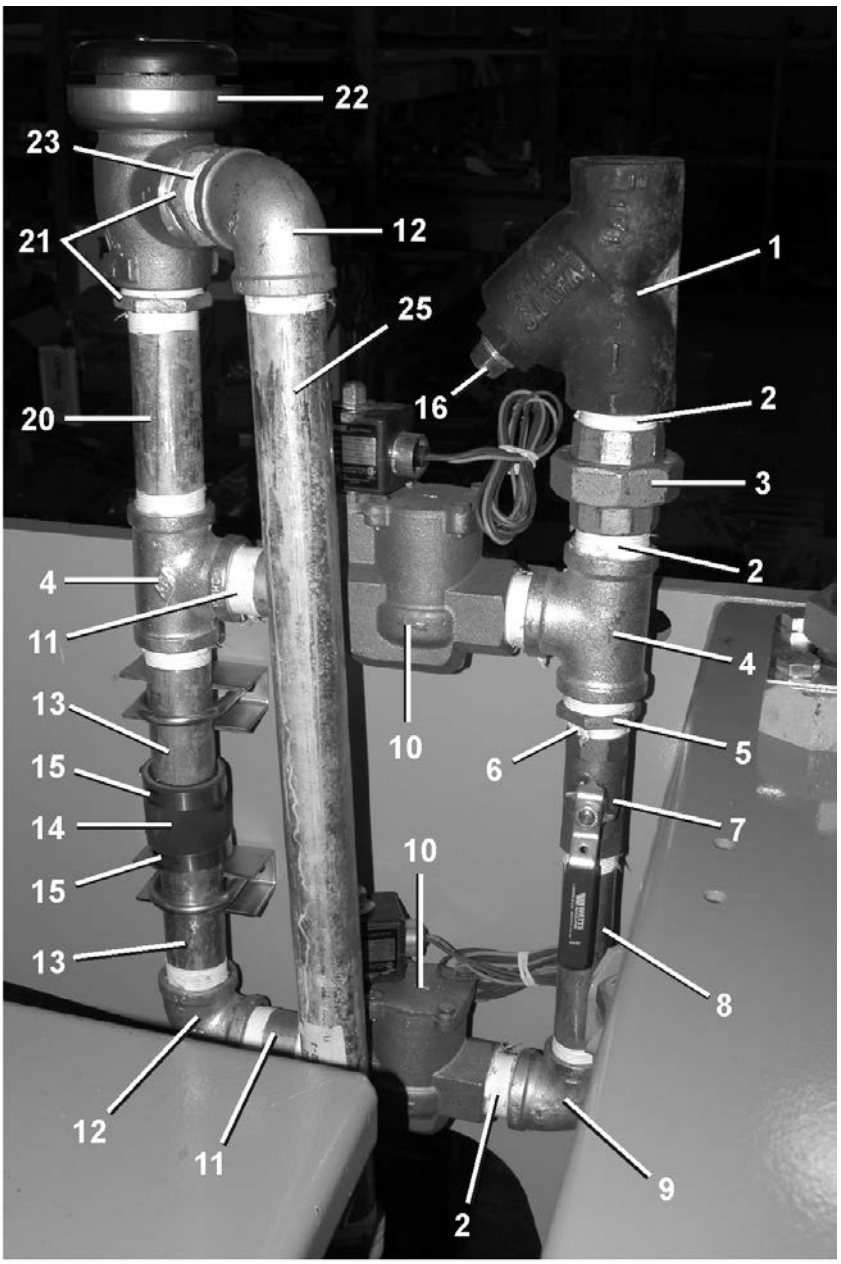
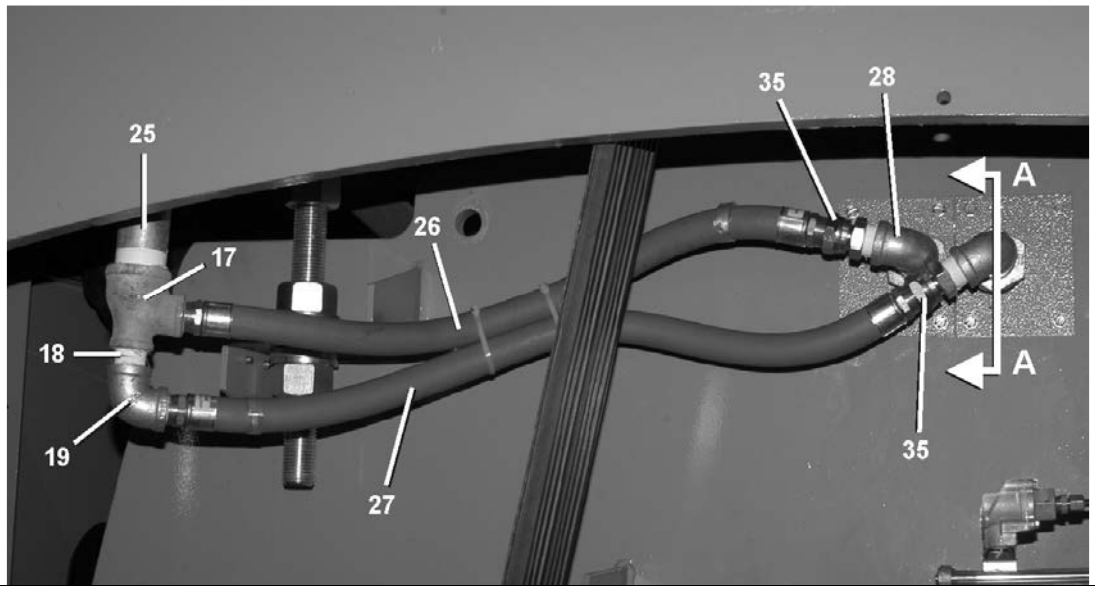


Figure 2: Cooldown Components and Installation

Rear view



Legend

AA. Cooldown water into the shell

Figure 3: Cooldown water into the shell

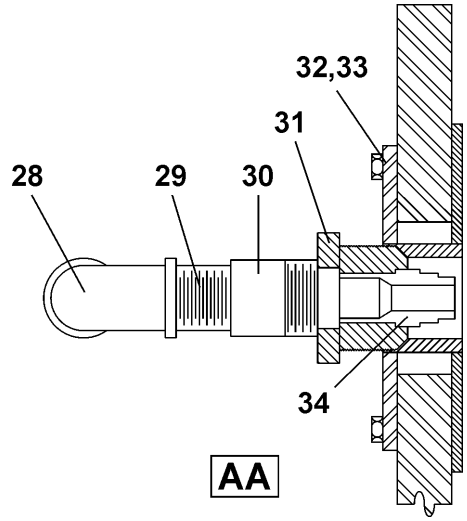


Table 1: Parts List— Cooldown Components and Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	AVW28031A	Assembly, Cooldown water line	
	B	GVW28025	Installation Group, Cooldown water line	
			Components	
all	1	51T060	Y-strainer, 1+1/4"	
all	2	5N1ECLSG42	Pipe nipple, 1.25XCLS	
all	3	5SU1ENF	Union, 1.25"	
all	4	5S1ENFA	Tee, 1.25"	
all	5	5SB1E1ADEO	Hexbush, 1.25X1"	
all	6	5N1ACLSG42	Pipe nipple, 1XCLS	
all	7	96D084	Water valve, 1"	
all	8	5N1A07AG42	Pipe nipple, 1X7	
all	9	5SL1ENFA1A	Elbow, 1.25X1	
all	10	96P151A37	Water valve, 1.25"	
all	11	5N1E03AG42	Pipe nipple, 1.25X3	
all	12	5SL1ENFA	Elbow, 1.25	
all	13	5N1E05AG41	Pipe nipple, 1.25X5	
all	14	60E015A06A	Hose, 1.62X2.12X6"	
all	15	27A060	Hoseclamp, 1+5/16-2.25	
all	16	5SP0PHFSS	Plug, 3/4	
all	17	5S1ENFA0P	Tee, 1.25X3/4X3/4	
all	18	5N0PCLSG42	Pipe nipple, 3/4XCLS	
all	19	5SL0PNFA	Elbow, 3/4	
all	20	5N1E08AG42	Pipe nipple, 1.25X8	
all	21	5SB1K1EDEO	Hexbush, 1.5X1.25	
all	22	SA 03 009	Vacuum breaker, 1.5"	
all	25	5N1E26AG42	Pipe nipple, 1.25X26	
all	26	60E086C18K	Hose, 3/4"X18.5"	
all	27	60E086C22K	Hose, 3/4"X22.5"	
all	30	51E037	Coupling, 3/4"X1"	
all	31	5SB1K1ADEO	Hexbush, 1.5X1	
all	32	15P175	Bolt, 1/4-20X1/2	
all	33	02 18965	Plate	
all	34	27A004	Nozzle, 3/4"	
all	35	51X019	Union, 3/4"	

— End of BIHDBM24 —

BIHDBM25 (Published) Book specs- Dates: 20100917 / 20100917 / 20120629 Lang: ENG01 Applic: HDB

Vacuum Breaker 1.5"

Figure 1: Vacuum Breaker 1.5"

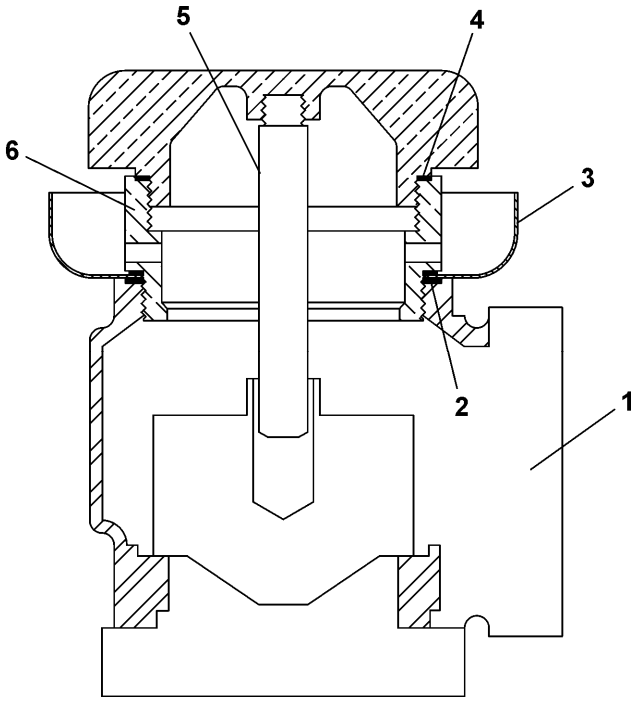


Table 1: Parts List— Vacuum Breaker 1.5"

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	SA 03 009	Assembly, Vacuum breaker, 1.5"	
Components				
all	1	96M031	Vacuum breaker, 1.5"	
all	2	60C130	O-Ring, 1+3/4X1/8	
all	3	03 01319	Scupper	
all	4	03 01318	Gasket	
all	5	03 01316A	Stem	
all	6	03 01317	Spacer	

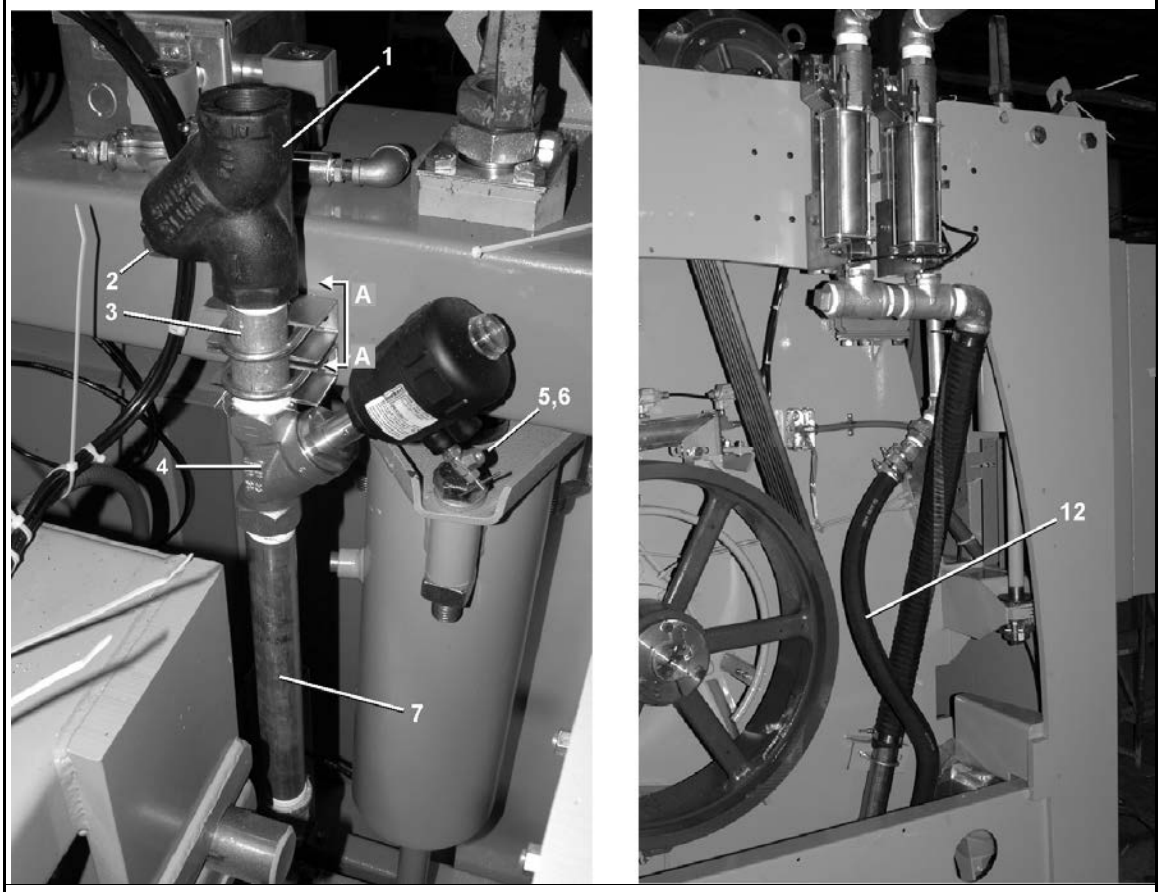
— End of BIHDBM25 —

BIHDBM26 (Published) Book specs- Dates: 20100920 / 20100920 / 20120629 Lang: ENG01 Applic: HDB

Steam Inlet Components and Installation

Figure 1: Steam inlet

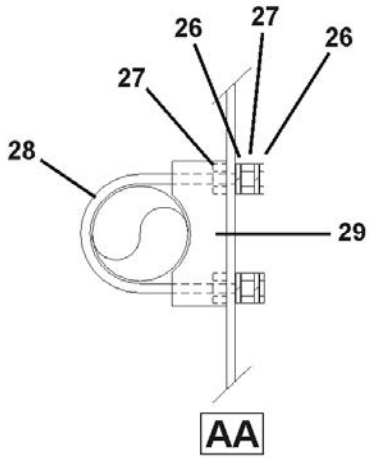
General Views



Legend

AA. Detailed view

Figure 2: Detailed view, Union



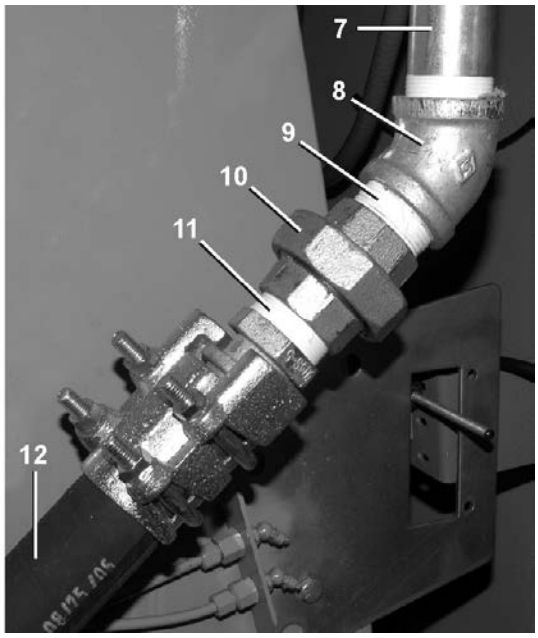
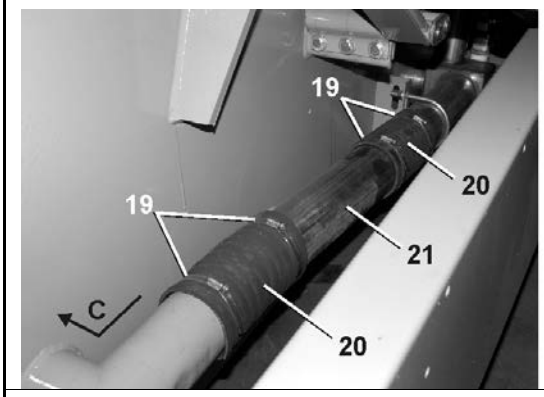
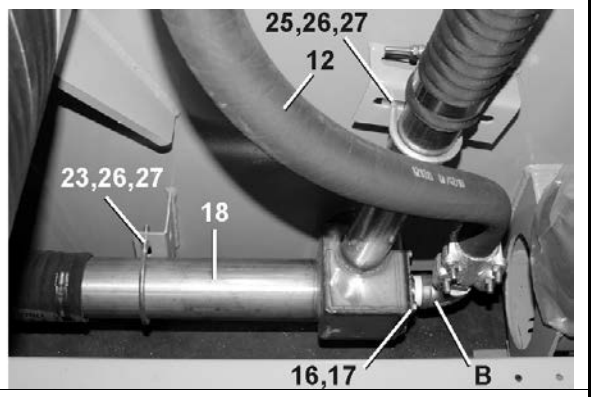


Figure 3: Steam line, Lower

Additional Views





Legend

B. Steam pipe and nozzle
C. Steam goes through the shell rear

Figure 4: Steam pipe and nozzle

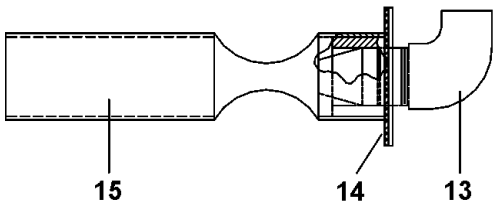
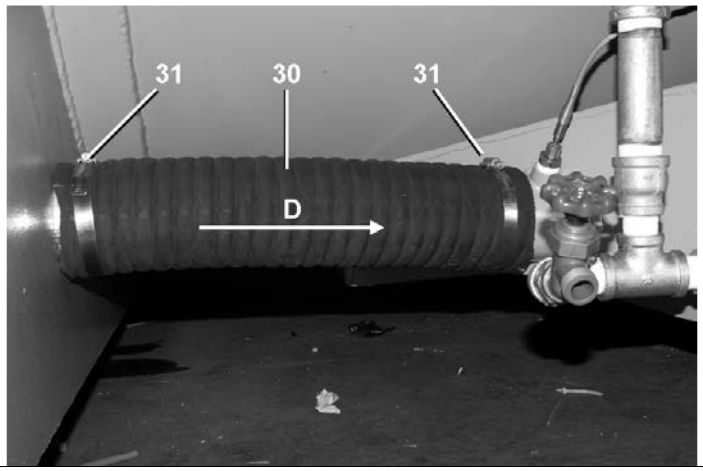


Figure 5: Steam line, Lower

Steam goes into the shell bottom



Legend

D. Steam goes into the shell bottom

Table 1: Parts List— Steam Inlet Components and Installation

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

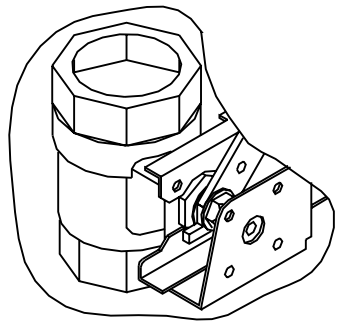
Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	GVS28001	Installation Group, Steam inlet	
	B	AVS28001	Assembly, Steam valve	
	C	ASS25001	Assembly, Steam pipe and nozzle	
			Components	
all	1	51T060	Y-strainer, 1+1/4"	
all	2	5SP0PHFSS	Plug, 3/4	
all	3	5N1E05AG42	Pipe nipple, 1.25X5	
all	4	96D0011E	Steam valve, 1.25"	
all	5	96H018	Needle valve, 1/4"X1/8	
all	6	5SB0E0CBEO	Hexbush, 1/4X1/8	
all	7	5N1E17AG42	Pipe nipple, 1.25X17	
all	8	5SL1ENFK	Elbow, 45 degree, 1.25	
all	9	5N1ECLSG42	Pipe nipple, 1.25XCLS	
all	10	5SU1ENF	Union, 1.25"	
all	11	51E096C	Hose stem, 1.25"	
all	12	60E096C42A	Hose, 1.25"X42"	
all	13	5SL1ESFA	Elbow, 1.25	
all	14	02 14647E	Gasket	
all	15	W3 64566B	Piece part	
all	16	15K096	Bolt, 3/8-16X1	
all	17	15U260	Washer, Lock, 3/8	
all	18	W2 19250C	Piece part	
all	19	27A084	Hose clamp, 3+9/16-4.5	
all	20	60E306A04K	Hose, 3.5"X4.5"	
all	21	87Z070018A	Unthreaded pipe, 3.5"X18"	
all	22	15U300	Washer, 1/2	
all	23	27A035	U-bolt, 3/8-16X3.625"	
all	24	15G235	Nut, 1/2-20	
all	25	27A032M	U-bolt, 3/8-16X3.5"	
all	26	15U255	Washer, Lock, 3/8	
all	27	15G205	Nut, 3/8-16	
all	28	27A031	U-bolt, 5/16-18X2+3/16	
all	29	02 16306A	Bracket	
all	30	60E306A18A	Hose, 3.5"X18"	

— End of BIHDBM26 —

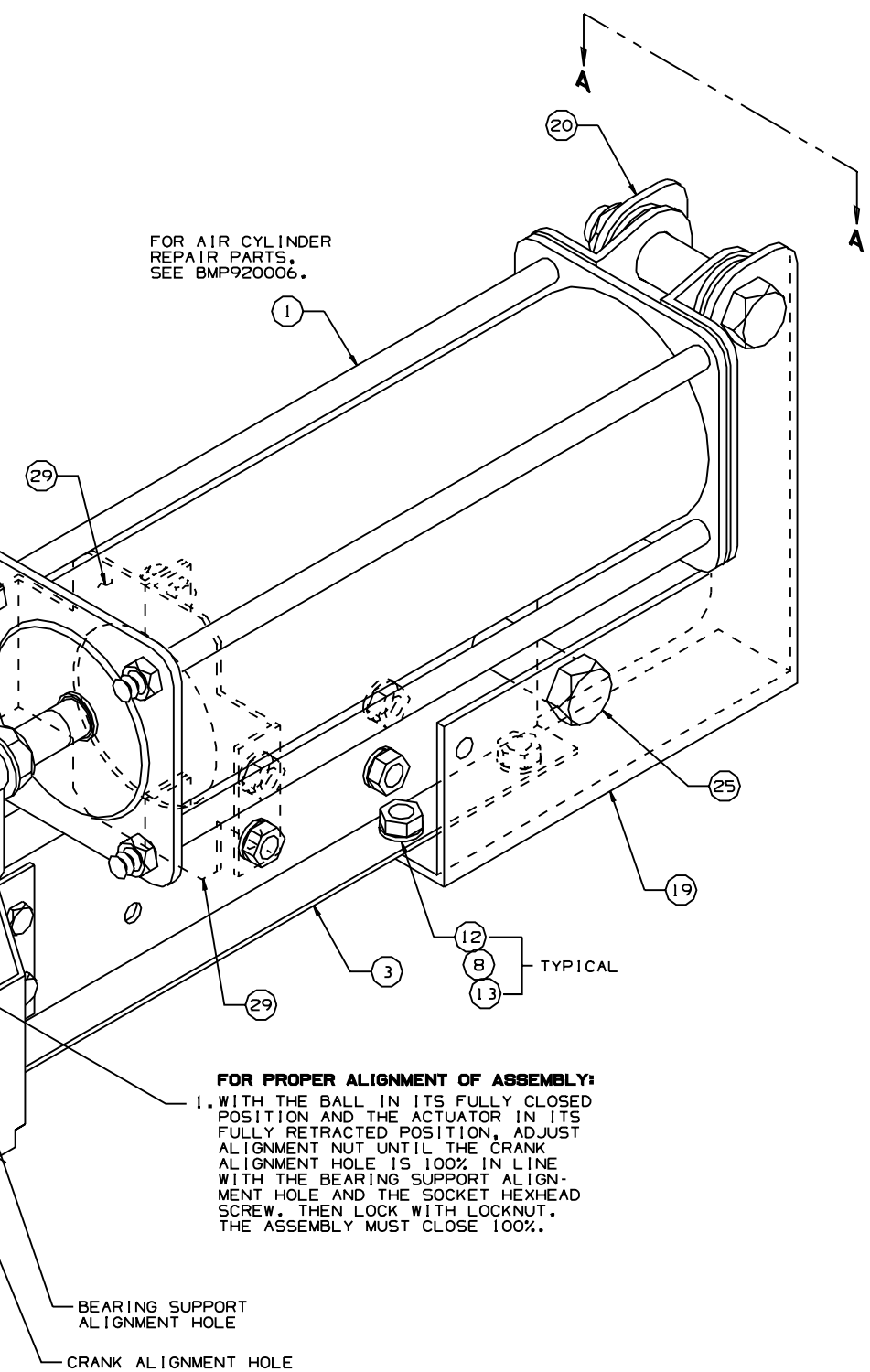
Universal Actuators & Mounting Hardware for Watts Ball Valves - New Pivot

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

Litho in U.S.A.

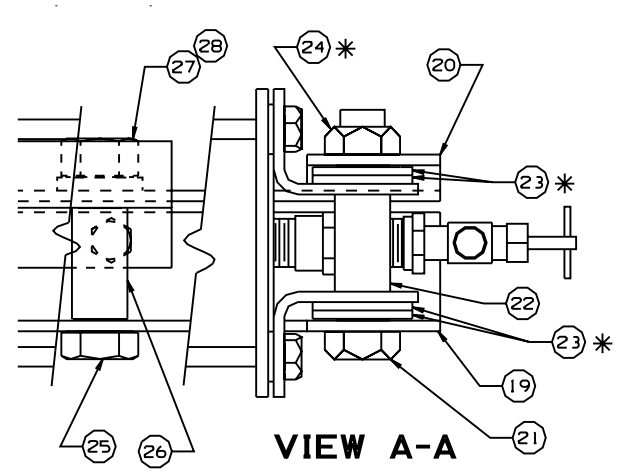


90° VALVE SET

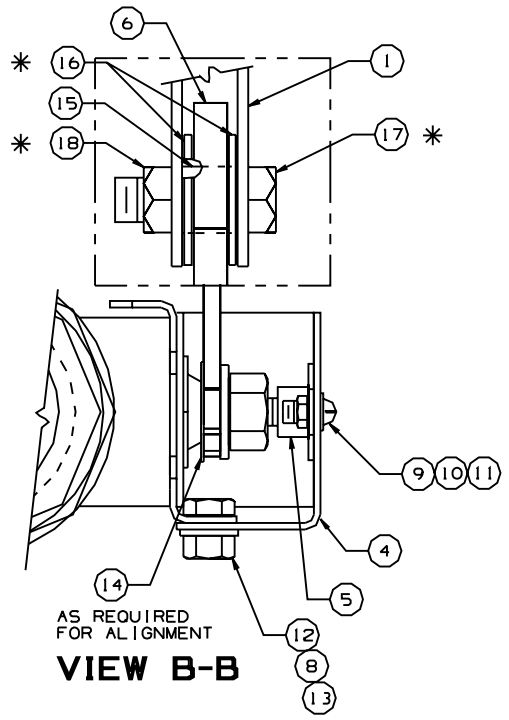


FOR PROPER ALIGNMENT OF ASSEMBLY:

1. WITH THE BALL IN ITS FULLY CLOSED POSITION AND THE ACTUATOR IN ITS FULLY RETRACTED POSITION, ADJUST ALIGNMENT NUT UNTIL THE CRANK ALIGNMENT HOLE IS 100% IN LINE WITH THE BEARING SUPPORT ALIGNMENT HOLE AND THE SOCKET HEXHEAD SCREW. THEN LOCK WITH LOCKNUT. THE ASSEMBLY MUST CLOSE 100%.

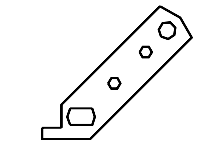


VIEW A-A

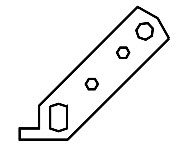


AS REQUIRED FOR ALIGNMENT

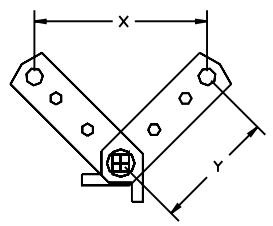
VIEW B-B



NORMALLY OPEN CRANK (ITEM 6)



NORMALLY CLOSED CRANK (ITEM 6)



STROKE DIMENSIONS

SIZE	X	Y
2" VALVES	3.89	2.75

NOTES:

1)RIGHT HAND ASSEMBLY IS SHOWN, LEFT HAND ASSEMBLY IS OPPOSITE.

2) FOR 90 DEGREE VALVE SET, VALVE IS ROTATED 90 DEGREES.

3) ASSEMBLE SO THAT THE LINKAGE IS FREE TO MOVE IN THE SPACER, THIS MEANS THAT THERE SHOULD BE DAYLIGHT BETWEEN THE CRANK AND EACH ADJACENT WASHER WITHOUT EXCESSIVE CLEARANCE.

Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400
BMP920005/96067V (2 of 3)
Litho in U.S.A.

Parts List—Actuators & Mounting Hardware for Watts Ball Valves

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----------	
	AA	96D085BCSL	92000Z 1.00WAT BVAL+ACT/BR/NC/ST/LH	
	AB	96D085BCSR	93513S 1.00WAT BVAL+ACT/BR/NC/ST/RH	
	AC	96D085BOSL	93513S 1.00WAT BVAL+ACT/BR/NO/ST/LH	
	AD	96D085BOSR	93513S 1.00WAT BVAL+ACT/BR/NO/ST/RH	
	AE	96D085SOSR	92000Z 1.00WAT BVAL+ACT/SS/NO/ST/RH	
	AF	96D085SCSR	92000Z 1.00WAT BVAL+ACT/SS/NC/ST/RH	
	BA	96D086BCSL	93513S 1.25WAT BVAL+ACT/BR/NC/ST/LH	
	BB	96D086BCSR	93513S 1.25WAT BVAL+ACT/BR/NC/ST/RH	
	BC	96D086BOSL	93513S 1.25WAT BVAL+ACT/BR/NO/ST/LH	
	BD	96D086BOSR	93513S 1.25WAT BVAL+ACT/BR/NO/ST/RH	
	BE	96D086SCNR	92000Z 1.25WAT BVAL+ACT/SS/NC/90/RH	
	BF	96D086SCSL	92000Z 1.25WAT BVAL+ACT/SS/NC/ST/LH	
	BG	96D086SCSR	92000Z 1.25WAT BVAL+ACT/SS/NC/ST/RH	
	BH	96D086SOSL	92000Z 1.25WAT BVAL+ACT/SS/NO/ST/LH	
	BJ	96D086SOSR	92000Z 1.25WAT BVAL+ACT/SS/NO/ST/RH	
	CA	96D087BCSL	93513S 1.50WAT BVAL+ACT/BR/NC/ST/LH	
	CB	96D087BCSR	93513S 1.50WAT BVAL+ACT/BR/NC/ST/RH	
	CC	96D087BOSR	93513S 1.50WAT BVAL+ACT/BR/NO/ST/RH	
	CD	96D087SCNR	92000Z 1.50WAT BVAL+ACT/SS/NC/90/RH	
	CE	96D087SCSR	92000Z 1.50WAT BVAL+ACT/SS/NC/ST/RH	
	CF	96D087SOSR	92000Z 1.50WAT BVAL+ACT/SS/NO/ST/RH	
	DA	96D088BCSR	92177S 2.00WAT BVAL+ACT/BR/NC/ST/RH	
	DB	96D088BCNR	92177S 2.00WAT BVAL+ACT/BR/NC/90/RH	
	DC	96D088BCSL	92177S 2.00WAT BVAL+ACT/BR/NC/ST/LH	
	DD	96D088BOSR	92177S 2.00WAT BVAL+ACT/BR/NO/ST/RH	
	DE	96D088SCNR	92177S 2.00WAT BVAL+ACT/SS/NC/90/RH	
	DF	96D088SCSR	92177S 2.00WAT BVAL+ACT/SS/NC/ST/RH	
	DG	96D088SOSR	92177S 2.00WAT BVAL+ACT/SS/NO/ST/RH	
	DH	96D088BCNL	92177S 2.00WAT BVAL+ACT/BR/NC/90/LH	
	DJ	96D088BOSL	92177S 2.00WAT BVAL+ACT/BR/NO/ST/LH	
	DK	96D088SCSL	92177S 2.00WAT BVAL+ACT/SS/NC/ST/LH	
	DL	96D088SOSL	92177S 2.00WAT BVAL+ACT/SS/NO/ST/LH	
			----------COMPONENTS----------	
AA-AD, BA-BD, CA-CC	1	SA 10 056F	92000Z AIRCYL=2.38ODX2.70STX20.5#CD	
AE-AF, BE-BJ, CD-CF	1	SA 10 056G	92000Z*AIRCYL=2.38ODX2.70STX20.5#SS	
DA-DD, DH-DJ	1	SA 10 057C	95222D AIRCYL=3.0ODX3.89ST171/176CD	
DE-DG, DK-DL	1	SA 10 057D	95222# AIRCYL=3.0ODX3.89ST171/176SS	
AA-AE	2	96D085WEXS	07Z BALVAL 1" BRZ WATTS#B6400SSZ107	
AF	2	96D085WSS	07Z BALVAL 1" SS WATTS S8000-Z107	
BA-BD	2	96D086WEXS	08Z BAVAL 1+1/4BRZ WATS#B6400SSZ107	
BE-BJ	2	96D086WSS	08Z BAVAL 1+1/4"SS WATTS S8000-Z107	
CA-CC	2	96D087WEXS	09Z BAVAL 1+1/2BRZ WATS#B6400SSZ107	

Parts List, cont.—Actuators & Mounting Hardware for Watts Ball Valves

Used In	Item	Part Number	Description	Comments
CD-CF	2	96D087WSS	08Z BAVAL 1+1/2"SS WATTS S8000-Z107	
DA-DD, DH-DJ	2	96D088WEXS	09Z BALVAL 2" BRZ WATTS#B6400SSZ107	
DE-DG, DK-DL	2	96D088WSS	09Z BALVAL 2" SS WATTS S8000-Z107	
AA,AC	3	03 01634A	94053# ACTUATOR CHANNL SUPPORT-LEFT	
AB,AD,AE, AF	3	03 01634	94053C ACTUATOR CHANNL SUPPORT 1.0"	
BA,BC,BF, BH,CA	3	07 20700L	88512# ACTUATOR ZEE SUPPORT-LEFT	
BB,BD,BE, BG,BJ,CB, CC,CE, CF	3	07 20700	88512D ACTUATOR ZEE SUPPORT	
CD	3	03 01633	92651C ACTUATOR SUPPORT BRKT 1.0"	
DA,DB, DD-DG	3	03 01628	92126D ACTUATOR ZEE SUP 3"AIRCYL	
DC,DH-DL	3	03 01628L	92126# ACT ZEE SUP 3" AIRCYL-LEFT	
AA,AC	4	03 01632A	90507# ACTUATOR BEARING SUPPRT-LEFT	
AB,AD-AF, CD	4	03 01632	90507C ACTUATOR BEARING SUPPORT-1"	
BA,BC,BF, BH,CA	4	07 20702L	88512# ACTUATOR BEARING SUPPORT-LFT	
BB,BD,BE, BG,BJ,CB, CC,CE, CF	4	07 20702A	88512C ACTUATOR BEARING SUPPORT	
DA,DB, DD-DG	4	03 01629	92023C ACTUATOR BEARING SUPPORT 3	
DC,DH-DL	4	03 01629L	92023# ACT BEARING SUPPORT 3"-LEFT	
AA-AF,CD	5	54E001PABA	89281B ASSY=1/4"PRESSBEARING	
BA-BJ, CA-CC,CF, DA-DL	5	54E002PABA	89281B ASSY=5/16"PRESSBEARING	
AA,AB,AF, CD	6	03 01631	91507B+VALVE CRANK N.C.WATTS 1.0"	
AC-AE	6	03 01631A	88381B VALVE CRANK N.O.WATTS-1.0"	
BA,BB,BE, BF,BG,CA, CB,CE	6	07 20703A	91507B VALVE CRANK N.C.WATTS 1.5"	
BC,BD,BH, BJ	6	07 20703B	88153B VALVE CRANK N.O.WATTS 1.5"	
DA,DC,DF, DK	6	03 01624B	92061B CRANK=NC 2"BALVAL .626 STEM	
DB,DD,DE, DG,DH,DJ, DL	6	03 01624C	92061B CRANK=NO 2"BALVAL .626 STEM	
all except CC,CD	7	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
CC,CD	7	15N117	RDMACSCR 10-24UNC2X3/8SS18-8	
all	8	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	9	15N130	RDMACHSCR 10-24UNC2A X 1/2 SS18-8	
all	10	15U135	FLATWASH#10 .4370DX.203IDX.04TSS188	

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Parts List, cont.—Universal Actuators & Mounting Hardware for Watts Ball Valves

Used In	Item	Part Number	Description	Comments
all	11	15G126	01Z HXLOCKNUT NYLON 10-24 UNC SS NM	
all	12	15N159	HEXCAPSCR 1/4-2OUNC2AX7/16 18-8SS	
all	13	15G170	HEXNUT 1/4-20UNC2 SS18-8	
AA-AF,BE, CD,DA-DL	14	07 20703D	89354B WASHER=2.00"WATTS CRANK	
BA-BD, BF-BJ, CA-CC,CE, CF	14	07 20703C	89354B WASHER=1.25-1.50 WATTS CRANK	
all	15	02 15893	92683B SPACER=BALL VALVE CRANK STEM	
all	16	15U188	01Z FLTWASH 1/4 STD COMM SS18-8	
all	17	15N186	HXCAPSCR 1/4-20UNC2X3/4SS18-8	
all	18	15G164	01Z HX THIN LOCKNUT NYL1/4-20 SS	
BA,BB,BE, BJ,CE	19	03 01661A	92271B BRKT=RHT AIR CYL SUPT-S/S	
DA,DB, DD-DG	19	03 01625A	92271B 3" AIR-CYL SPT BRK R-SIDE RT	
DC,DH-DL	19	03 01625B	92271# 3" AIR-CYL SPT BRK R-SIDE LT	
BE,BG,BJ, CE-CF	20	03 01662A	92271B BRKT=LFT AIR CYL SUPT-S/S	
DA,DB, DD-DG	20	03 01625C	92271B 3" AIR-CYL SPT BRK L-SIDE RT	
DC,DH, DJ-DL	20	03 01625D	92271# RIGHT=3"AIR CYL SUPT BRKT	
all	21	15K190S	HXCAPSCR 1/2-13UNC2AX2.5 FLTHRD SS	
all	22	27B24S0K1P	SPACER ROLL.5ID1.75L.062T 304 SS	
all	23	15U318S	FLATWASH 1.12ODX.656IDX.09T 304 SS	
AB,DA-DL	24	15G234NS	HXLOCKNUT NYL 1/2-13UNC2 SS18-8	
all	25	15K180S	HXCAPSCR 1/2-13UNCAX2 18-8SS	
all	26	27B24SSK1F	SPACER ROLL.5ID1.25L.062T S/S	
all	27	15U310	LOKWASHER REGULAR 1/2 SS18-8	
all	28	15G231S	HXFINJAMNUT 1/2-13UNC2B SS18-8	
AA-AF	29	03 01633	92651C ACTUATOR SUPPORT BRKT 1.0"	
BA-BJ	29	07 20771	88407C ACTUATOR SUPPORT BRKT 1.25"	
CA-CF	29	07 20770	88243B ACTUATOR SUPPORT BKT 1+1/2	
DA-DL	29	03 01626	89473B ACTUATOR SUPPORT BRKT 2"VAL	

Watts Ball Valves and Repair Kits

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BMP920007/96067V (1 of 2)
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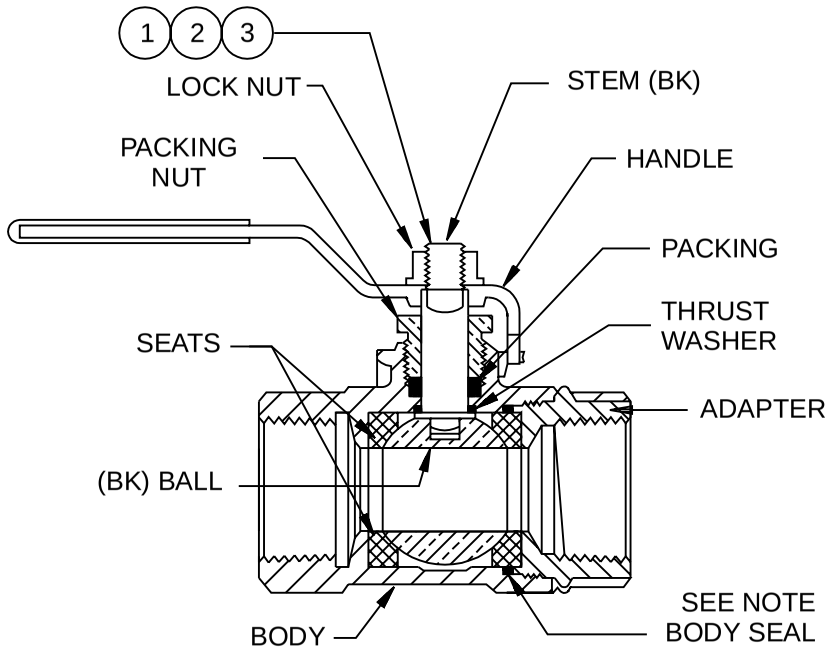
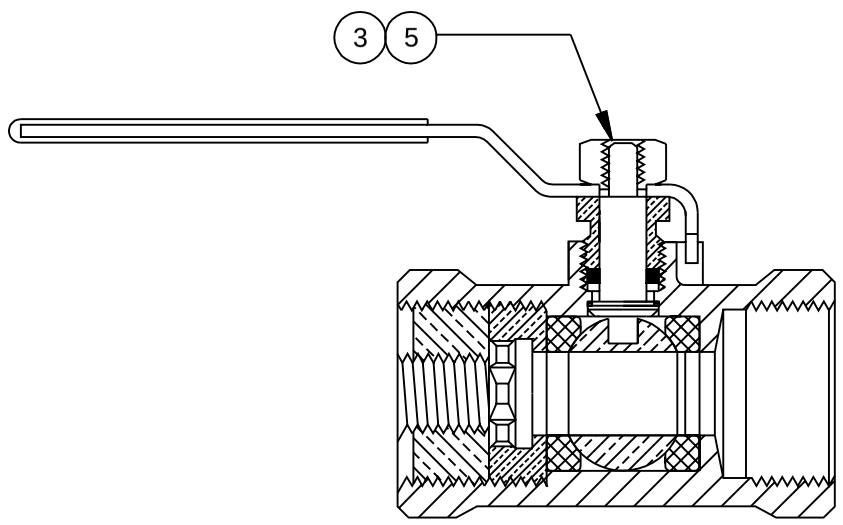
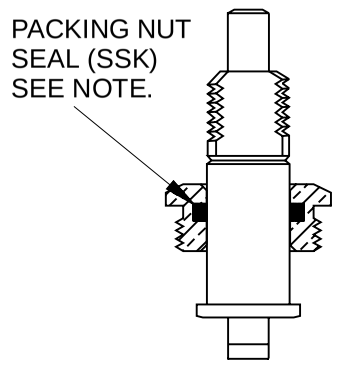
BALL VALVES WITHOUT ACTUATOR PADS FOR MANUAL OPERATION



1/2" BRONZE OR 1/2", 3/4" STAINLESS
NO REPAIR KITS

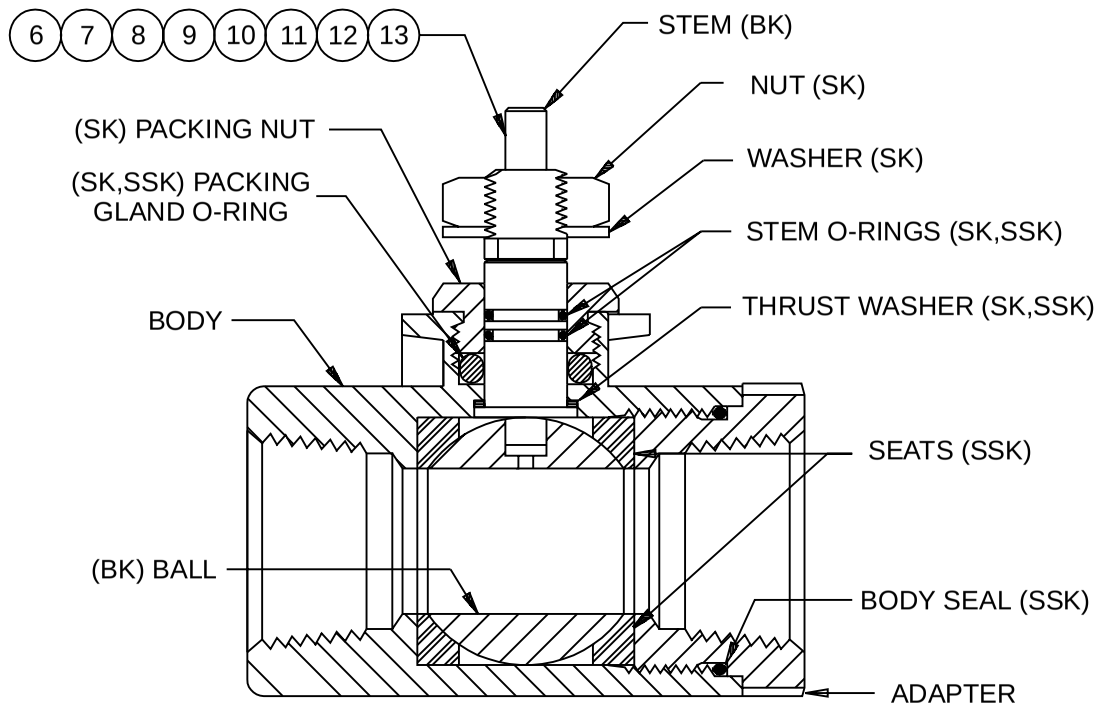


3/4",1"
BRONZE
NO REPAIR KITS



DETAIL
OLD STYLE STEM

AIR OPERATED BALL VALVES



1",1-1/4",1-1/2",2"
BRONZE & STAINLESS

(For Bracketry and Mounting Hardware, See BMP920005. For Air Cylinders that Operate Watts Ball Valves, See BMP920006.)

HOW TO USE THIS DRAWING:

The ball valves are separated by size, material, and type of operation. Find the cross section which shows your ball valve (example 1-1/2" bronze air operated). See the parts list for the item number which represents your ball valve (1-1/2" bronze air operated would be item 10 on the parts list). For valves that offer repair kits the internal parts are labled and marked as to which kit they are found in:

- (BK) part of Ball Kit
- (SK) part of Stem Kit
- (SSK) part of Seat/Seal Kit

For the part number of the Seat/Seal Kit for item 10 (1-1/2" bronze air operated valve) see the parts list and look for item 10SSK, likewise the Stem Kit will be 10SK.

NOTE:

AIR OPERATED VALVES: (SSK) kits for air operated ball valves include all parts required to repair either our old style or new style stems. A packing nut seal is provided to repair our old style stems which had a seal in the packing nut (see Detail). Our new style stem uses a double o-ring design.

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Parts List—Watts Ball Valves and Repair Kits

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

Used In	Item	Part Number	Description	Comments
----------ASSEMBLIES----------				
			none	
----------COMPONENTS----------				
all	1	96D034	04Z BALLVALVE 1/2" WATTS #6400-SS	1/2"BRONZE-MANUAL, NO KITS
all	2	96D040WSS	01Z 1/2" BALLVALVE S/S WATTS#S-8000	1/2"STAINLESS-MANUAL
all	002BK	96V040BK	BALL KIT WATTS #BV4SSA6	
all	002SSK	96V040SSK	01Z REPKIT 1/2"VAL WATTS#3SSK-02-RK	
all	3	96D050A	01Z 3/4"BALLVALVE BRZ WATTS#B6100	3/4"BRONZE-MANUAL, NO KITS
all	4	96D055WSS	01Z 3/4"BALLVALVE S/S WATTS#S-8000	3/4"STAINLESS-MANUAL
all	004BK	96V055BK	BALL & STEM KIT WATTS #4BSK-SSRK	
all	004SSK	96V055SSK	01Z REPKIT 3/4"VAL WATTS#4SSK-02-RK	
all	5	96D084	01Z BALL VALVE 1" WATTS#B6100 BRZ	1" BRONZE-MANUAL , NO KITS
all	6	96D085WEXS	07Z BALVAL 1" BRZ WATTS#B6400SSZ107	1" BRONZE-AIR OPERATED
all	006BK	96V085BK	BALL KIT WATTS #1-BALL-RK-Z107	
all	006SK	96V085SK	02Z STEM KIT 1" WATTS#1-ST-RK-Z107	
all	006SSK	96V085SSK	02Z REPKIT 1"BALVAL#1SSK-02-KK-Z107	
all	7	96D085WSS	07Z BALVAL 1" SS WATTS S8000-Z107	1" STAINLESS-AIR OPERATED
all	007BK	96V085BK	BALL KIT WATTS #1-BALL-RK-Z107	
all	007SK	96V085SK	02Z STEM KIT 1" WATTS#1-ST-RK-Z107	
all	007SSK	96V085SSK	02Z REPKIT 1"BALVAL#1SSK-02-KK-Z107	
all	8	96D086WEXS	08Z BAVAL 1+1/4BRZ WATS#B6400SSZ107	1-1/4"BRONZE-AIR OPERATED
all	008BK	96V086BK	BALL KIT WATTS #1.25-BALL-RK-Z107	
all	008SK	96V086A7SK	02Z STEMKIT 1.25-1.5-ST-RK-Z107	

Parts List, cont.—Watts Ball Valves and Repair Kits

Used In	Item	Part Number	Description	Comments
all	008SSK	96V086SSK	02Z REPKIT 1.25BALVALSSK-02-RK-Z107	
all	9	96D086WSS	08Z BAVAL 1+1/4"SS WATTS S8000-Z107	1-1/4"STAINLESS-AIR OPER.
all	009BK	96V086BK	BALL KIT WATTS #1.25-BALL-RK-Z107	
all	009SK	96V086A7SK	02Z STEMKIT 1.25-1.5-ST-RK-Z107	
all	009SSK	96V086SSK	02Z REPKIT 1.25BALVALSSK-02-RK-Z107	
all	10	96D087WEXS	09Z BAVAL 1+1/2BRZ WATS#B6400SSZ107	1-1/2"BRONZE-AIR OPERATED
all	010BK	96V087BK	BALL KIT WATTS #1.5-BALL-RK-Z107	
all	010SK	96V086A7SK	02Z STEMKIT 1.25-1.5-ST-RK-Z107	
all	010SSK	96V087SSK	02Z REPAIR KIT 1.5" BALL VALVE	
all	11	96D087WSS	08Z BAVAL 1+1/2"SS WATTS S8000-Z107	1-1/2"STAINLESS-AIR/ OPER.
all	011BK	96V087BK	BALL KIT WATTS #1.5-BALL-RK-Z107	
all	011SK	96V086A7SK	02Z STEMKIT 1.25-1.5-ST-RK-Z107	
all	011SSK	96V087SSK	02Z REPAIR KIT 1.5" BALL VALVE	
all	12	96D088WEXS	09Z BALVAL 2" BRZ WATTS#B6400SSZ107	2"BRONZE-AIR OPERATED
all	012BK	96V088BK	BALL KIT WATTS #2-BALL-RK-Z28	
all	012SK	96V088SK	03Z STEM KIT 2" WATTS#2-ST-RK-Z107	
all	012SSK	96V088SSK	02Z REPKIT 2"VAL WAT2SSK-02-RK-Z107	
all	13	96D088WSS	09Z BALVAL 2" SS WATTS S8000-Z107	2"STAINLESS-AIR OPERATED
all	013BK	96V088BK	BALL KIT WATTS #2-BALL-RK-Z28	
all	013SK	96V088SK	03Z STEM KIT 2" WATTS#2-ST-RK-Z107	
all	013SSK	96V088SSK	02Z REPKIT 2"VAL WAT2SSK-02-RK-Z107	

Drain Valve Body with One Valve: 4244WR2, 4244SR2, 6044WR2, 6044SR2, 7244WR2, 7244SR2

Figure 1: Cross Section (8 inch and 10 inch drain valves)

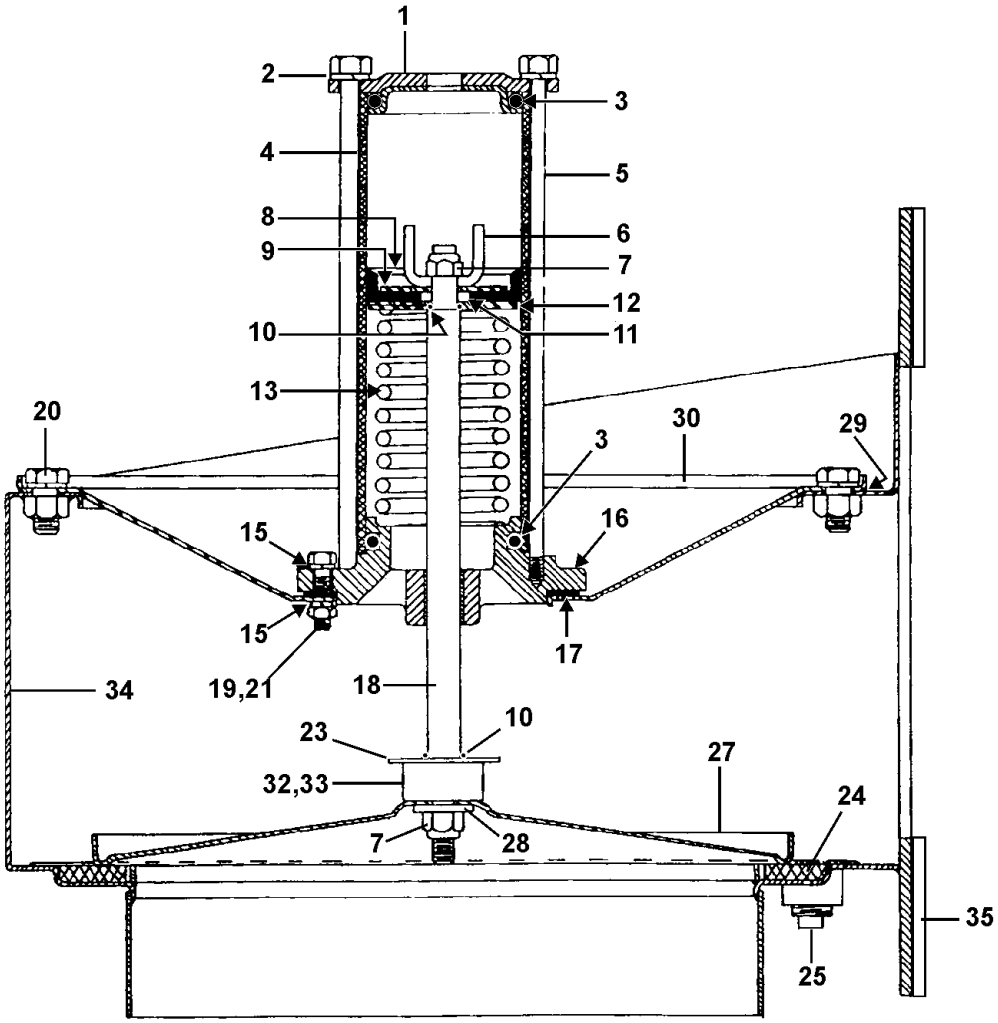

Table 1: Parts List— Drain Valve Body with One Valve

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Assemblies	
	A	SA 28 124	Assembly, 8 inch drain valve	4244WR2, 4244SR2, 6044WR2, 6044SR2
	B	SA 36 015	Assembly, 10 inch drain valve	7244WR2, 7244SR2
	C	SA 28 158	Bonnet Assembly	4244WR2, 4244SR2, 6044WR2, 6044SR2
	D	SA 36 044	Bonnet Assembly	7244WR2, 7244SR2
			Components	
all	1	02 02101	Cylinder head	
all	2	15U210	Washer, Lock, 5/16	
all	3	60C132	O-Ring, 2"X3/16	
all	4	02 02068	Housing	
all	5	02 10585D	Bolt, 5/16-18X7.875	
all	6	03 01313	Stop	
all	7	15G220	Nut, Lock, 3/8-24	
all	8	02 02194	Piston cup, 2+3/8"	
all	9	02 02085	Washer	
all	10	60C106	O-Ring, 5/16X1/16	
all	11	02 02185	Washer, Compression limit	
all	12	02 02105B	Washer, 2.38"	
all	13	03 06429	Spring, 2.11X6.5	
all	15	24G020N	Washer, Nylon, .252	
all	16	X2 02743	Bonnet	
all	17	02 18931F	Gasket	
all	18	02 16021I	Stem	
all	19	15G168	Nut, Square, 1/4-20	
all	20	15K086	Bolt, 3/8-16X3/4	
all	21	15K041S	Bolt, 1/4-20X1	
all	23	02 16021E	Washer, 3/8X1.25	
A	24	02 18068	Seal, Buna	
B	24	03 06084	Seal, Buna	
all	25	5SP0KGFSS	Plug, 1/2	
A	27	02 18796	Disk	
B	27	03 06083	Disk	
all	28	15U245	Washer, Flat, 3/8	
A	29	02 18104	Gasket	
B	29	03 06086G	Gasket	
A	30	02 18931E	Bonnet	
B	30	03 06086F	Bonnet	
all	32	02 16021C	Bumper	
all	33	02 16021D	Retainer	
A	34	W2 18931	Valve body	

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

Used In	Item	Part Number	Description/Nomenclature	Comments
B	34	W3 06086	Valve body	
A	35	02 18107	Gasket	
B	35	03 06085D	Gasket	

— End of BIHDBM28 —

9 Pneumatic Piping and Assemblies

SERVICING AIR CYLINDERS

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

Maintenance procedures require:

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

⚠ CAUTION ⚠

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

☞ **Follow maintenance instructions carefully.**

☞ **Wear eye protection.**

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

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

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

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

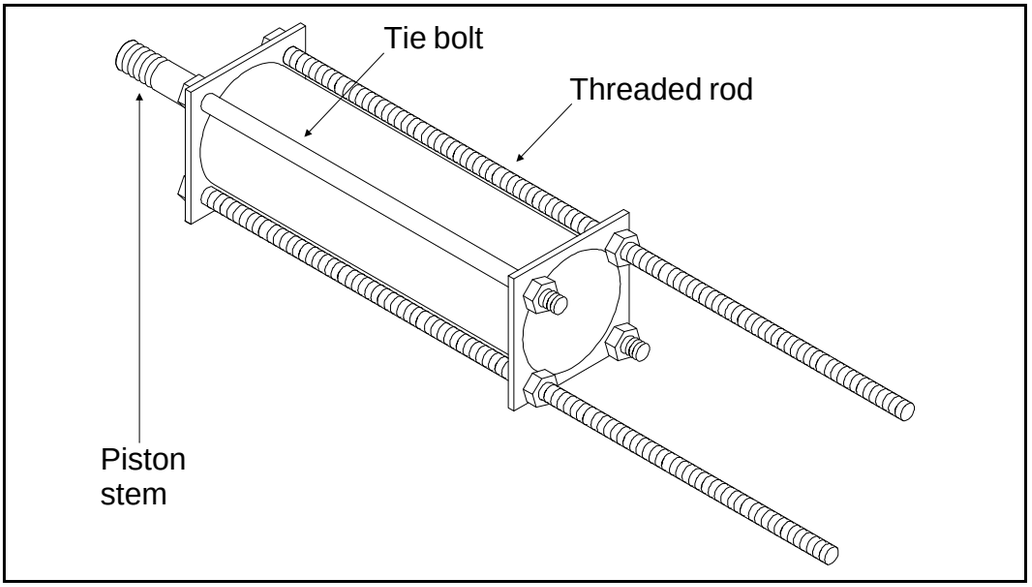

FIGURE 1 (MSSM0130AE)
Using Threaded Rods

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

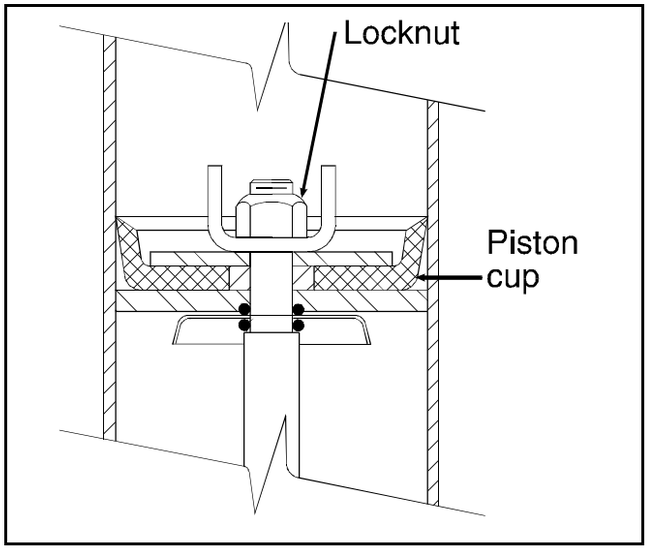

FIGURE 2 (MSSM0130AE)
Correct Piston Cup Shape

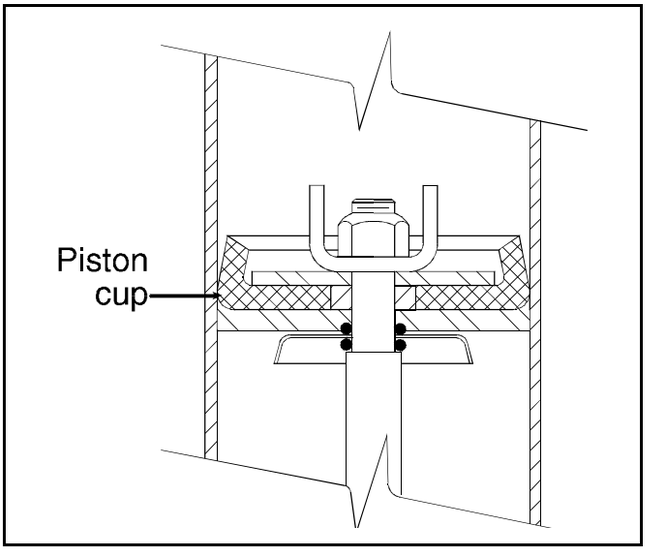

FIGURE 3 (MSSM0130AE)
Distorted Piston Cup Shape

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

Air Cylinder Assemblies

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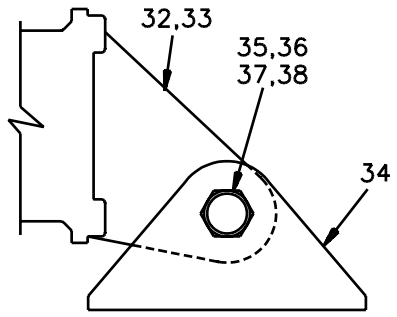
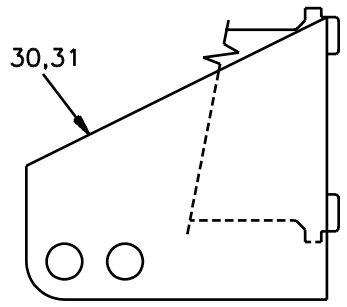
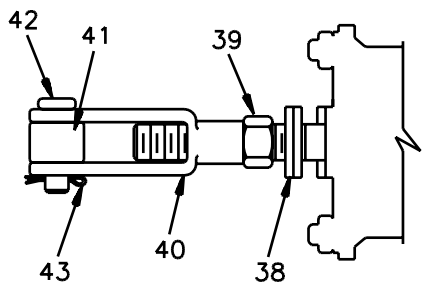
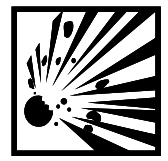




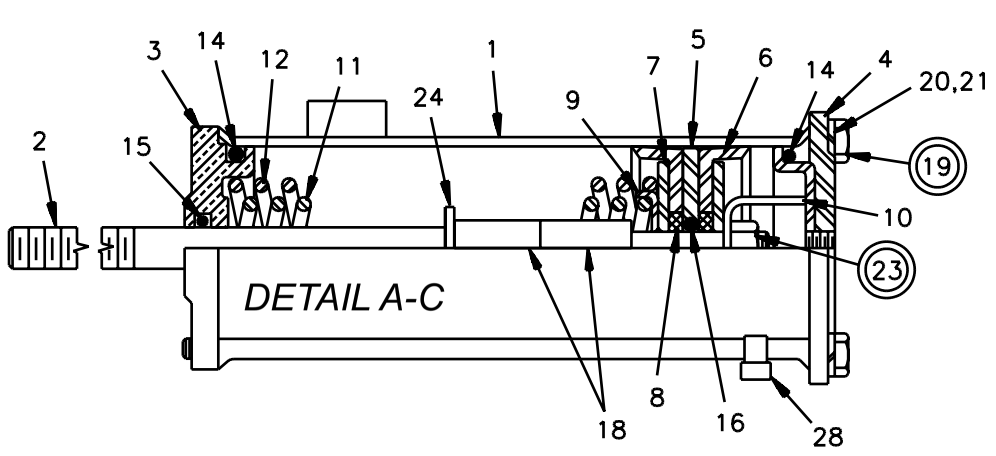


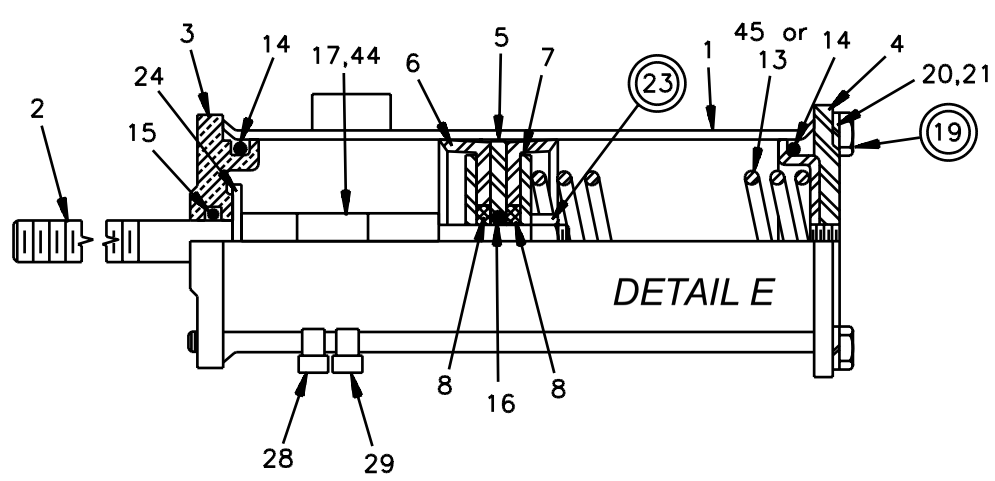
⚠ WARNING ⚠

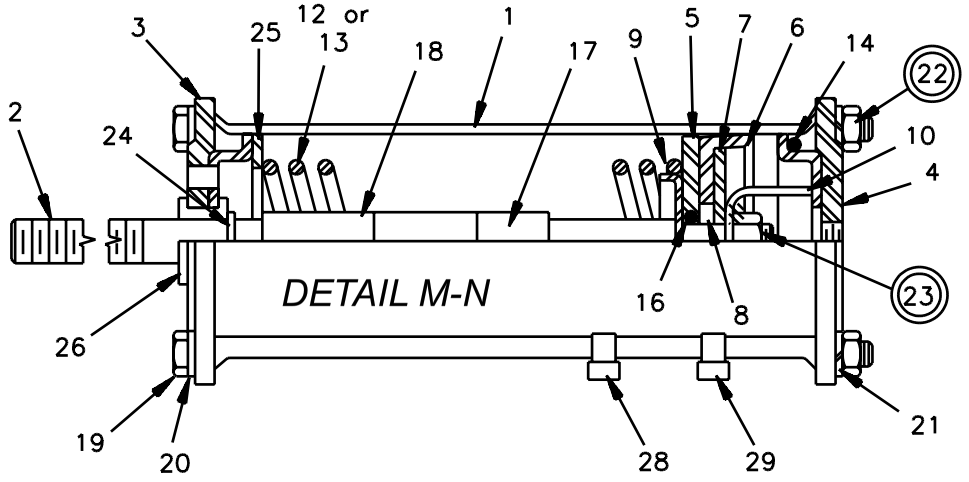


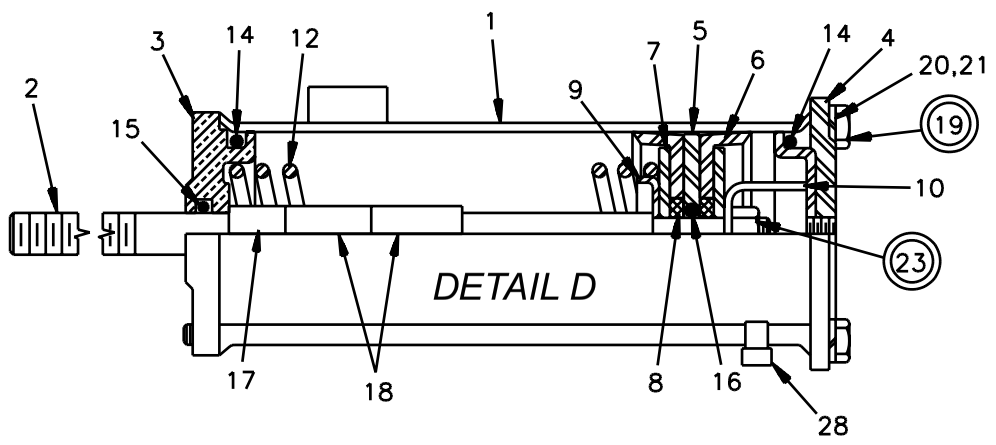
EXPLOSION HAZARD - Air cylinder can burst apart with great force.
Circled items are under high spring tension.
Follow maintenance instructions MSSM0130AE carefully.

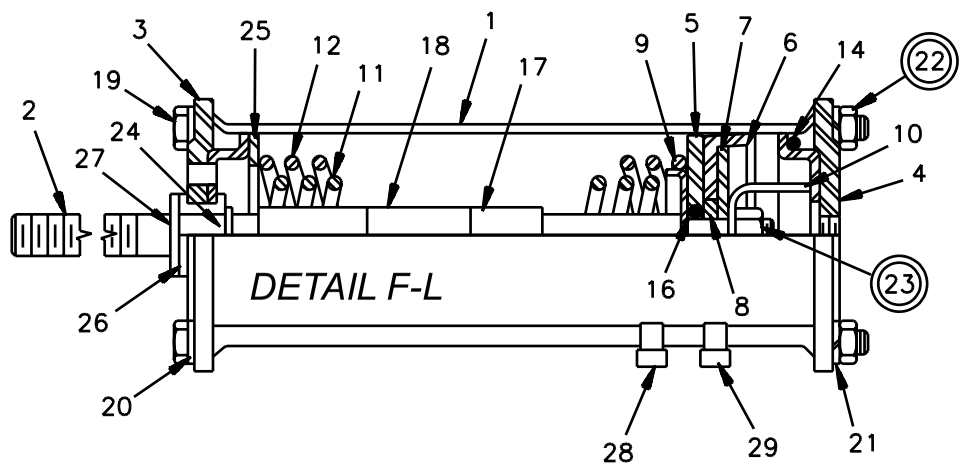
AIR CYLINDER MOUNTING HARDWARE

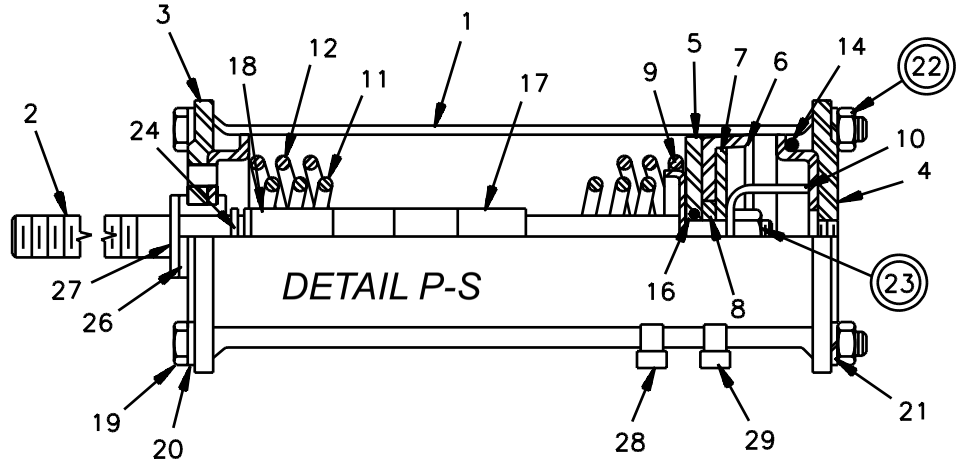












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Parts List—Air Cylinder Assemblies

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

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

Parts List, cont.—Air Cylinder Assemblies

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

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Parts List, cont.—Air Cylinder Assemblies

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

3-Way Pilot Valves

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BMP900032/91182V (1 of 1)
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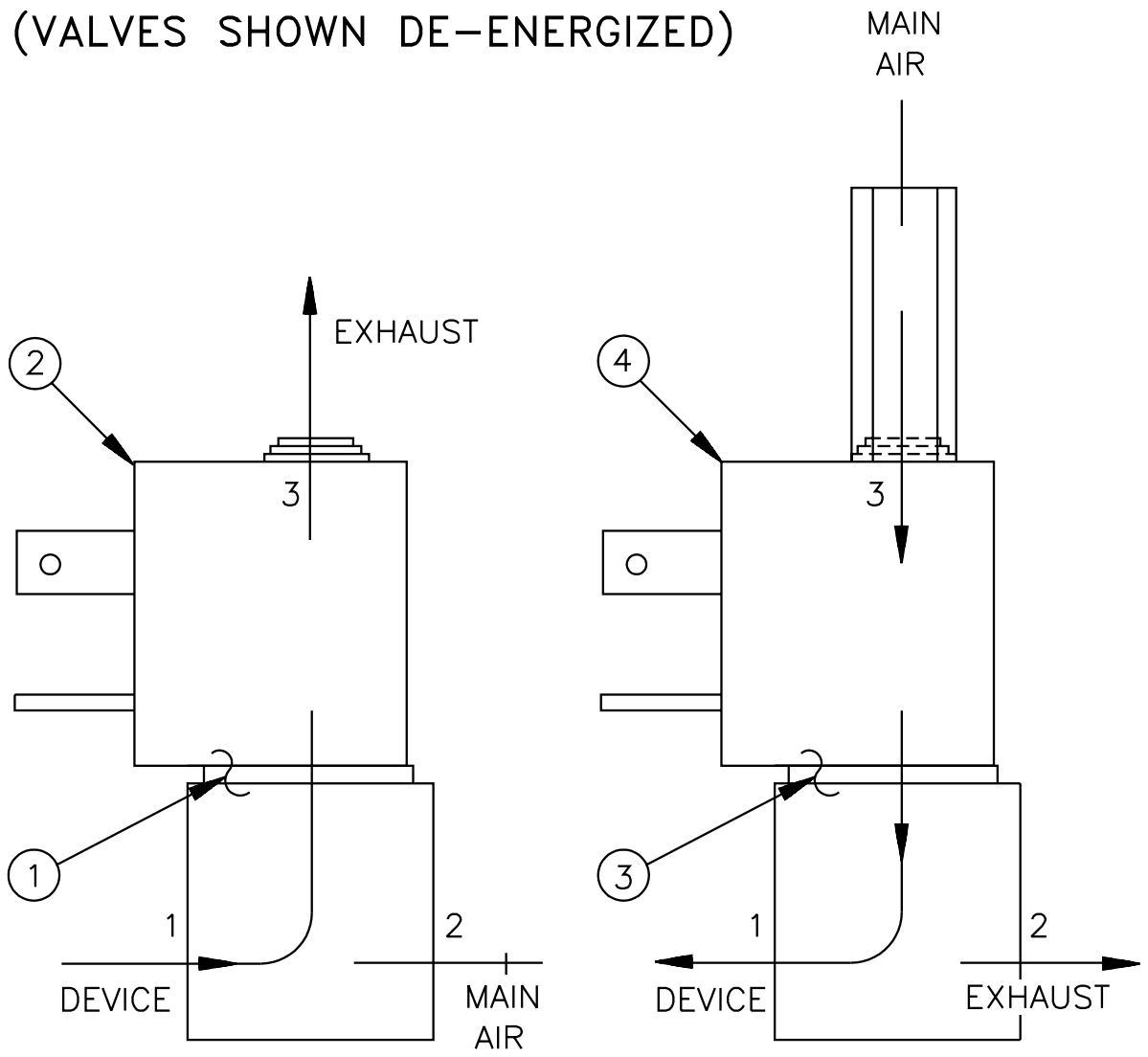

FOR REPAIR OR REPLACEMENT PARTS FOR PILOT VALVES USED ON WASHER EXTRACTORS GENERALLY PRIOR TO JUNE 1, 1985, SEE BMP701359.

Parts List—3-Way Pilot Valves

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

Used In	Item	Part Number	Description	Comments
			----------ASSEMBLIES----------	
			none	
			----------COMPONENTS----------	
all	1	96R301A37	05Z 1/8" AIRPILOT 3W NC 120V50/60	
all	1	96R301A24	06Z 1/8" AIRPILOT 3W NC 24V50/60	
all	3	96R302A37	06Z 1/8" AIRPILOT 3W NO 120V50/60	
all	3	96R302A24	07Z 1/8" AIRPILOT 3W NO 24V50/60	

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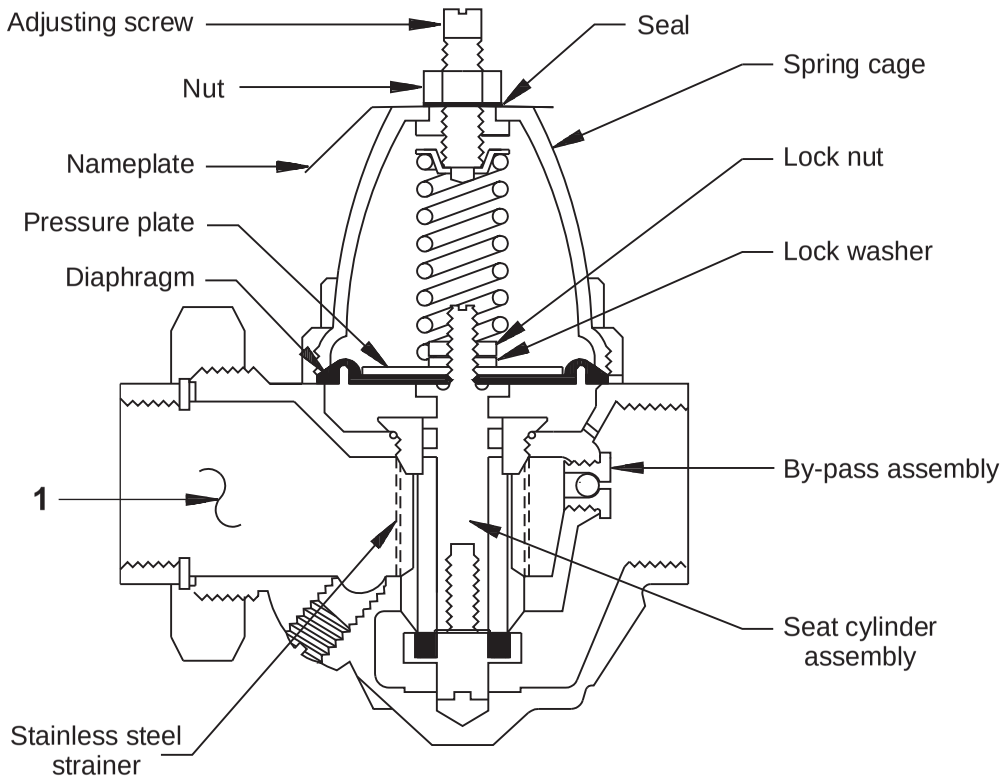


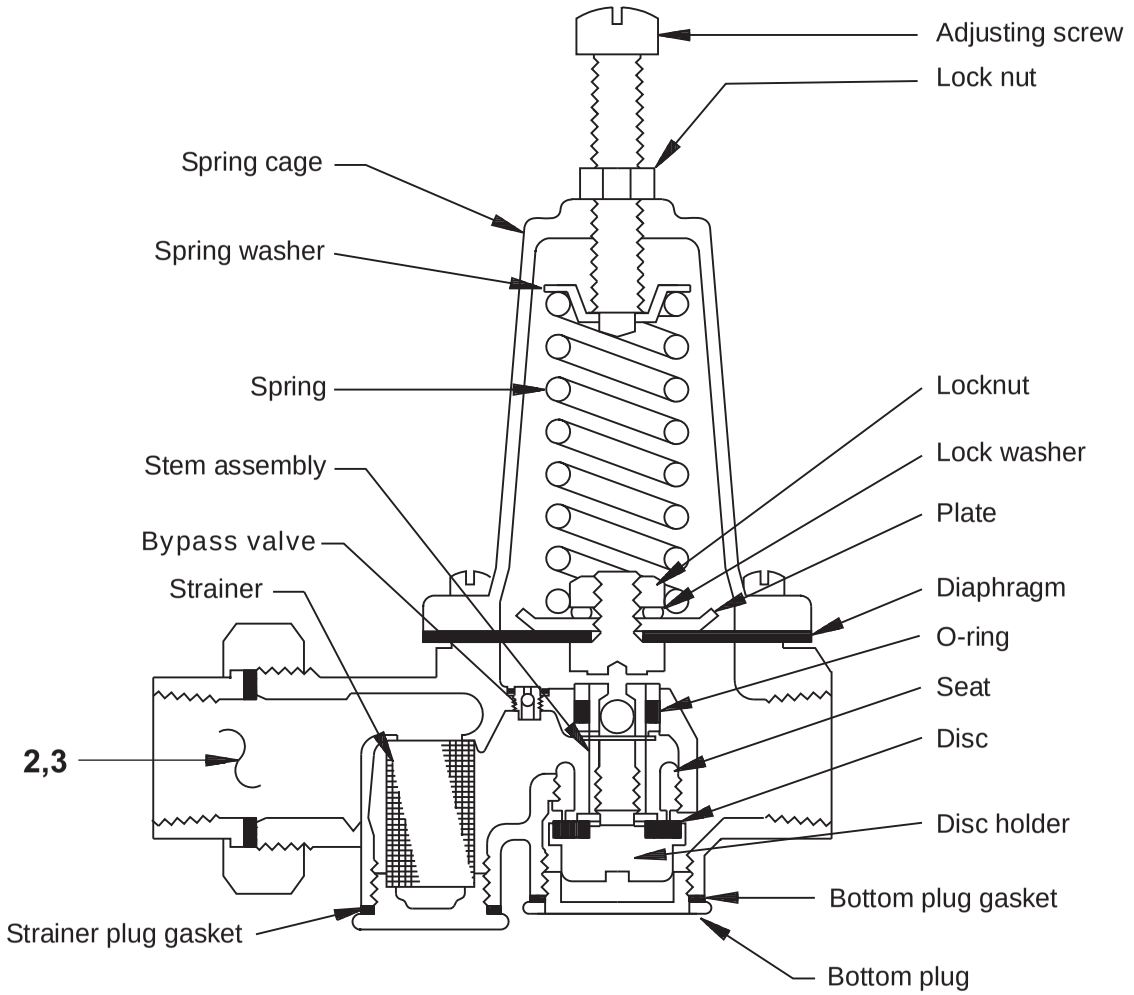
To clean:

1.Remove spring cage and all parts above diaphragm.

2. Loosen and remove diaphragm lock nut, lock washer, pressure plate, and diaphragm from valve stem.

3. Unscrew seat cylinder from body and remove entire assembly.

4. Open gate valve to flush out collected sediment.



To clean :

1. Remove bottom plug and gasket.

2. Loosen disc holder with screwdriver or socket wrench.

3. Inspect disc and clean.

4. Seat can be removed, if necessary, with an allen wrench or socket wrench.

5. Unscrew and remove adjusting screw, check nut, and spring cage screws. Lift off spring cage, spring washer and adjusting spring.

6. Loosen and remove lock nut, lock washer, plate, and diaphragm.

7. Lift stem assembly upwards to remove from body.

8. To reassemble valve follow above instructions in reverse. Tighten or loosen adjusting screw for the required pressure of 28 P.S.I.

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Parts List—Pressure Regulators

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----------	
	1	96J030FF	01Z 1/2"PRESS REG SET 28# FEM X FEM	½" REGULATOR 3621V ONLY
	2	96J030D	01Z 1/2" PRESREGULTR SET 28# FEM-UN	½" REGULATORS ALL OTHER MODELS
	3	96J031D	01Z 3/4" PRESREGULTR SET 28# FEM-UN	3/4" REGULATORS

Quick Exhaust Valves

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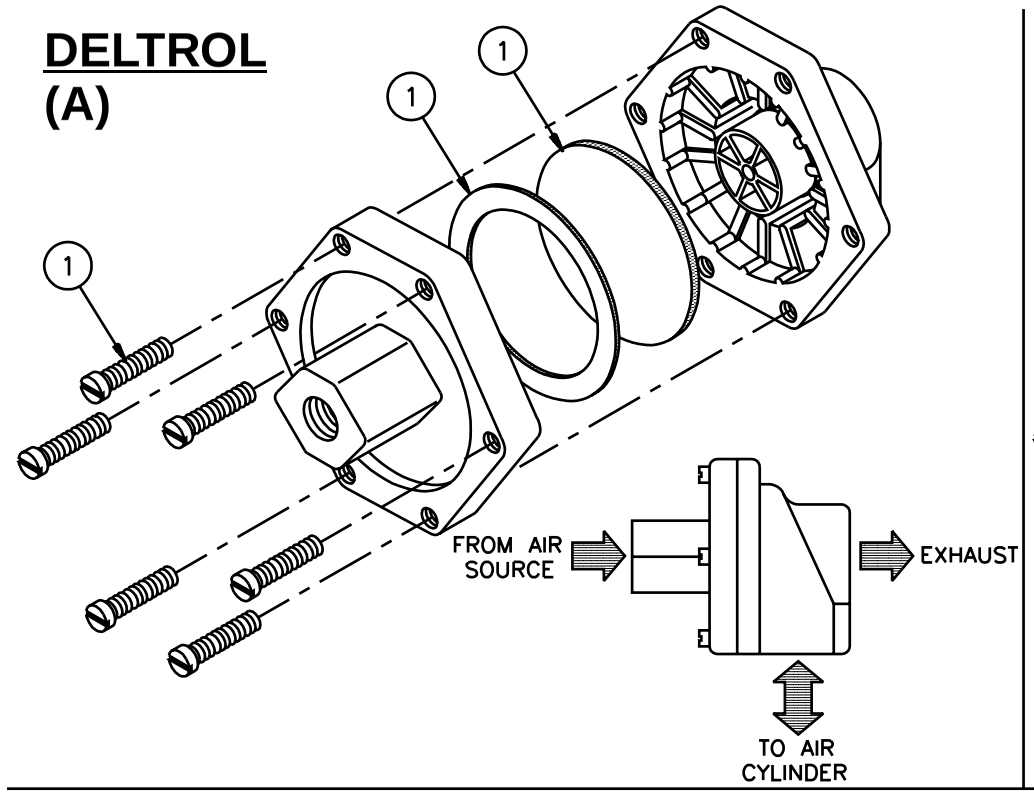
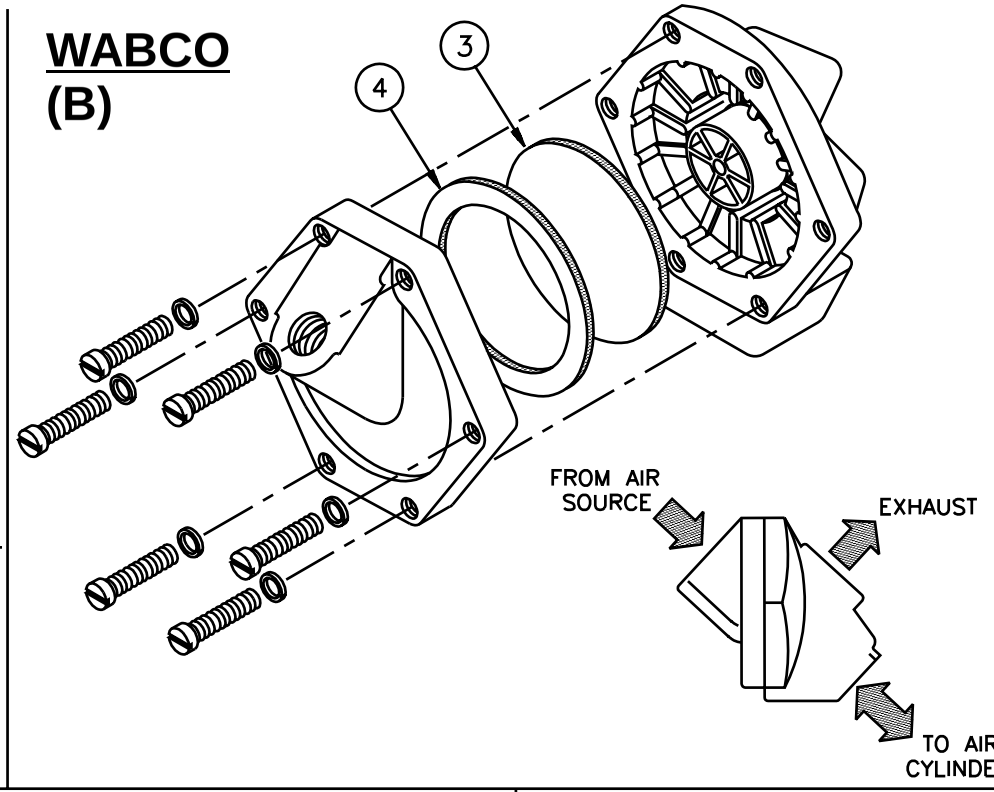
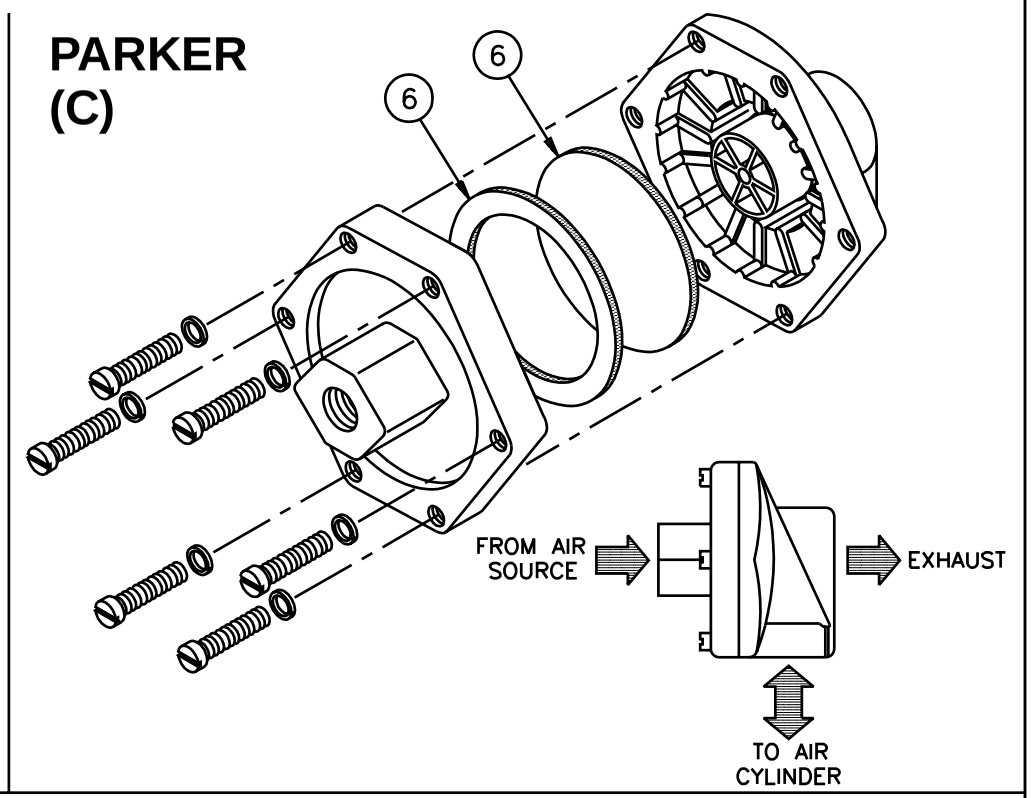
DELTROL
(A)



WABCO
(B)

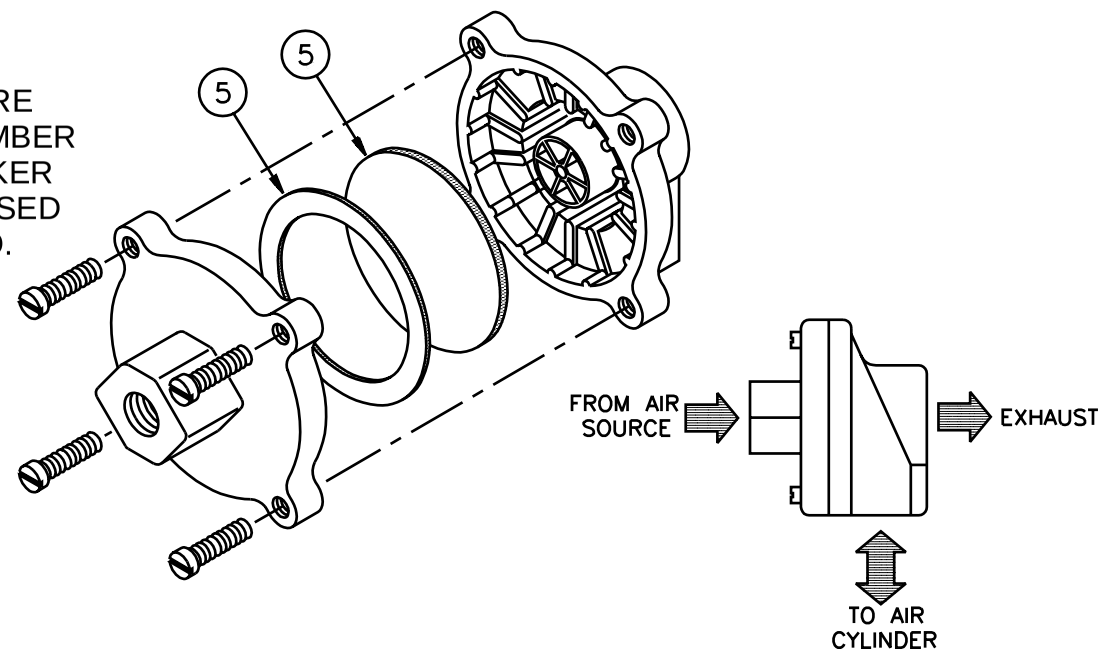


PARKER
(C)



ASCO
(D)

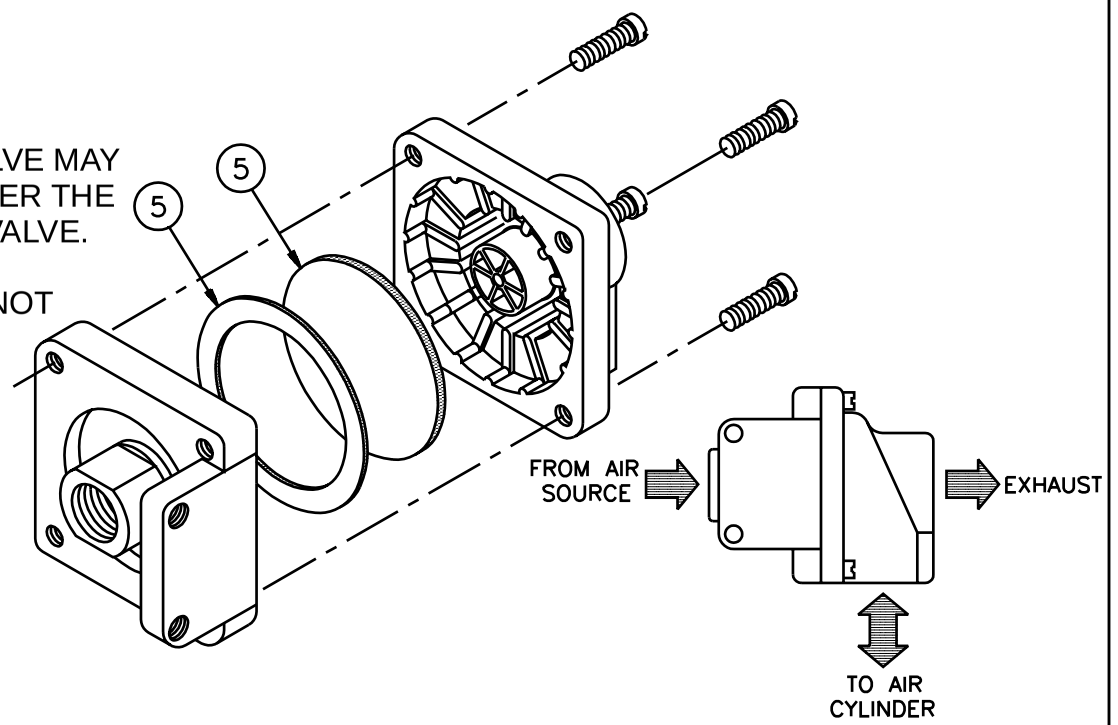
NOTE: ASCO VALVES ARE USED PRIOR TO NOVEMBER 1987. SINCE THEN PARKER VALVES HAVVE BEEN USED IN PLACE OF THE ASCO.



GOYEN
(E)

NOTE: THE GOYEN VALVE MAY BE REPLACES BY EITHER THE WABCO OR DELTROL VALVE.

THE GOYEN VALVE IS NOT TO BE USED IN PLACE OF THE WABCO OR DELTROL VALVE.



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Parts List—Quick Exhaust Valves

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	MESSAGE B2	REPAIR KITS ONLY <>	DELTROL
	B	96M051	USE KZK5B00100	WABCO
	C	96M054	QWIKEXHAUSTVLV 3/4"URETHANE	PARKER
	D	MESSAGE B1	PARTS NO LONGER SOLD	ASCO
	E	MESSAGE B2	REPAIR KITS ONLY <>	GOYEN
	F	96M055	QUICK EXHAUST VALVE 1/4”	DELTROL
			----------COMPONENTS----------	
all	1	96M053A	KIT,QWIKRELVLV EV20A#10091-18	DELTROL VALVE ONLY
all	3	96M051B	DIAPHRAM,QWIKREL WAB#PS112-12	WABCO VALVE ONLY
all	4	96M051A	GASKET,WABCO QUICK EXHAUST VLV	WABCO VALVE ONLY
all	5A	96M052A	REPKIT,QES#M1319 (FOR 96M052)	GOYEN VALVE ONLY
all	5B	96M055A	REPAIR KIT FOR 96M055# 10128-99	DELTROL VALVE ONLY
all	6	96M054K	REPKIT 3/4"QWIKEXHAUSTVLV	PARKER VALVE ONLY

Air Cylinders for **1", 1.25", 1.5" & 2"** Watts Ball Valves

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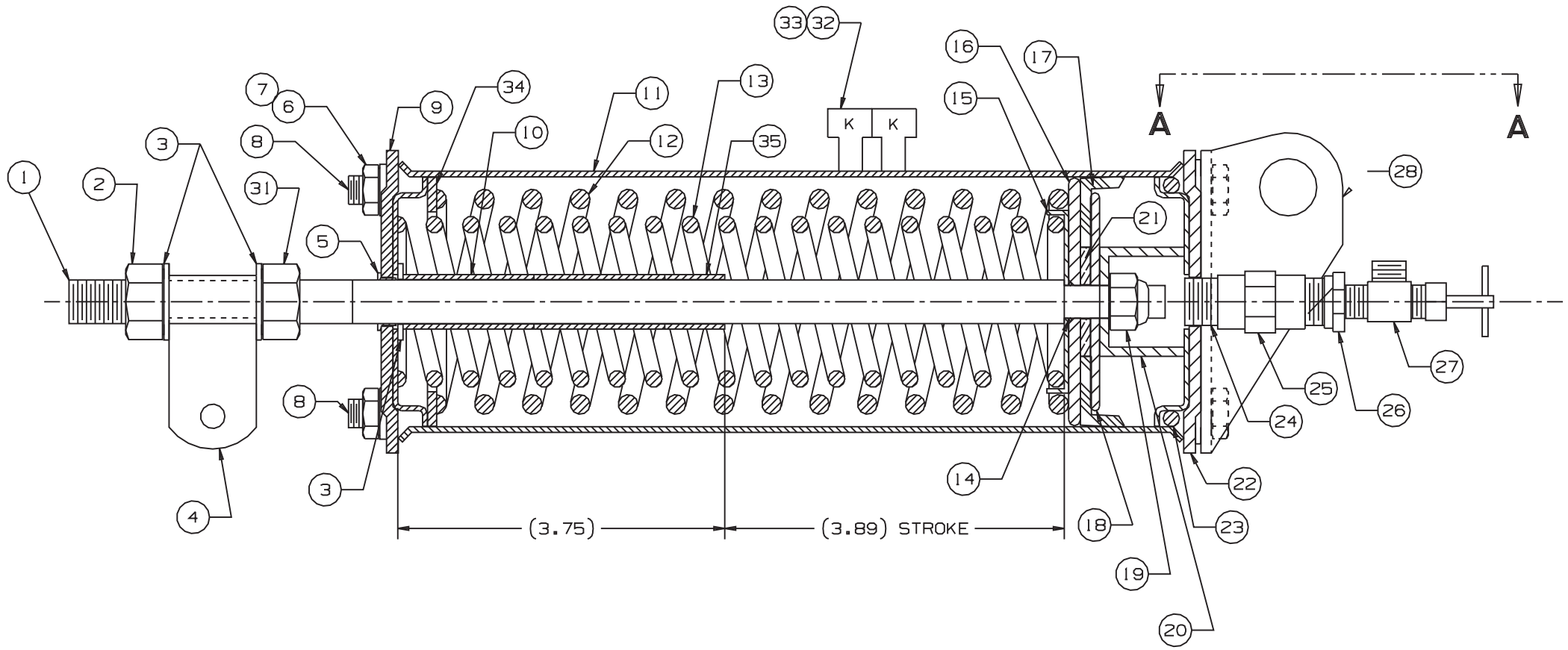

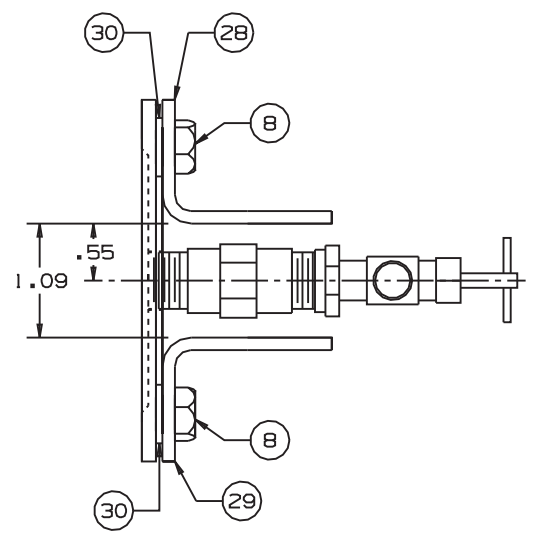

VIEW A-A

NOTES:

1. LUBRICATE SPRINGS WITH A LAYER OF GREASE BUT NOT SO MUCH AS TO CAUSE EXCESS TO LEAK OUT.
2. DO NOT GREASE THE CUP, ITEM 17! DOING SO WOULD BLOCK THE AIR LINES.

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Parts List—Air Cylinders for 2" Watts Ball Valves

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 10 057C	95222D AIRCYL=3.0ODX3.89ST171/176CD	FOR 2” BALLVALVES
	B	SA 10 057D	95222# AIRCYL=3.0ODX3.89ST171/176SS	FOR 2” STAINLESS BALLVALVES
	C	SA 10 056F	BRAKEAIRCYL=2.38ODX2.70STX20.5#CD	FOR 1,1.25,1.5 BALLVALVES
	D	SA 10 056G	*AIRCYL=2.38ODX2.70STX20.5#SS	FOR 1,1.25,1.5 STAINLESS BALLVALVES
			----------COMPONENTS----------	
A,B	1	03 01615	94191B PISTON STEM 3"AIRCYL	
C,D	1	02 18650	96461B STEM=2 WAY AIRCYLINDER	
all	2	15G234NS	HXLOCKNUT NYL 1/2-13UNC2 SS18-8	
all	3	15U243S	FLAWASHER 7/8ODX33/64IDX16GA 18-8SS	
all	4	03 01209A	92536B STEMCLIP H=1.313 BALVAL S/S	
all	5	54E220	NYLINER 8L2FF BUSHING 1/2X9/16X.140	
A	6	15G191	HXFINJAMNUT 5/16-24UNC2 ZINC GR2	
B,C,D	6	15G190	HEXFINJAMNUT 5/16-18NC2 SS18-8	
A	7	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
B,C	7	15U205	LOCKWASHER MEDIUM 5/16" 18-8SS	
D	7	15U200S	FLATWASHER US STD 5/16 SS18-8	
A	8	02 10585H	91142# TIE BOLT=5/16-18X10LNG PLTD	
B	8	02 10585G	91142# TIE BOLT=5/16-18X10LG (SS)	
C	8	02 10585E	91142# TIE BOLT=5/16-18X8.25LG PLTD	
D	8	02 10585A	91142# TIE ROD-5/16-18X8+1/4 (SS)	
A	9	03 01623	90351C CYLINDER HEAD 3"AIRCYLINDER	
Bl	9	03 01623A	90351# CYLHEAD 3"AIRCYLINDER-S/S	
C	9	02 02546	87341C CYLHEAD=SLIDESTEM	
D	9	02 02546S	87341# CYLINDER HEAD=SLIDE STEM SS	
all	10	27B32024SS	SPACER ROLL .51IDX.6250DX1.5L STN S	USES 2
A,B	11	03 01621	94266BTUBE 2+7/8 AIR CYLINDER 9"	
C,D	11	02 02068	94266A AIRCYL-STAINLESS=DUMPVALVE	
A,B	12	03 01617C	92133B SPRING=FL11.5SR23.5#MD2.368	
C	12	02 15881	96471# SPRING=BRAKE2.1OD11FL15.5#/”	
D	12	02 15881A	85504Z SPRING,02 -15881+HEAVY PAINT	
A,B	13	03 01616C	92133B SPRING=FL11.35SR20.5MD1.811	
C	13	02 15880	96471B SPRING=BRAKE1.5OD10.3FL17#/”	
D	13	02 15880A	85504Z SPRING,02-15880 +HEAVY PAINT	
all	14	60C106	ORING 5/16ID 1/16CS BN 70 DURO #011	
A,B	15	03 01620A	92133B 3"AIR CYL=SPRING RETAINER	

Parts List, cont.—Air Cylinders for 2" Watts Ball Valves

Used In	Item	Part Number	Description	Comments
C,D	15	02 18651	73171A WASHER=2 WAY BRAKE CYL	
A,B	16	X3 01619A	92066# MACH=3"ACYL BRASS PISCUP WSH	
C,D	16	02 02105B	92253B 2.38”ACYL BRASS PISCUP WASHR	
A,B	17	02 19302	93356B PISTON CUP 2+7/81D CYLINDER	
C,D	17	02 02194	93217B PISTONCUP=DUMPVALVE 2+3/8”	
A,B	18	03 01618	91522B PISTON CUP WASHER 3"AIRCYL	
C,D	18	02 02085	94092B UP WASHER=2”OD=PISTON CUP	
all	19	15G220	02Z LTHX THIN LOKNUT 3/8-24 SSNTE	
A,B,D	20	03 01313S	85506B+STOP=AIRCYL W/2+11/16STR.SS	
C	20	03 01313	70219A STOP=AIR CYL W/2+11/16STROKE	
A,B	21	03 01630	87506B 3"AIRCYL PSTN CUP COMPLMTWSH	
C,D	21	02 02185	79237A WASHER=PISTON CUP COMP LIMIT	
A	22	03 01622	88531# CYL HEAD TAPHOLE 3"AIRCYL SS	
B	22	03 01622A	88531# CYLHEAD TAPHOLE-3"ARCYL S/S	
C	22	02 02101	71334A CYLHEAD W/TAPPED HOLE	
D	22	02 02101S	88531B CYLINDER HEAD TAP HOLE (SS)	
A,Bl	23	60C134	ORING 2.5 ID 3/16CS BN 70 DURO #333	
C,D	23	60C132	ORING 2”IDX3/16CS BUNA70 #32	
all	24	5N0ECLSBE2	NPT NIPPLE 1/4XCLS TBE BRASS 125#	
all	25	5SCC0EBE	NPT COUP 1/4 BRASS 125# #103	
all	26	5SB0E0CBEO	HEXPIPBUSH 1/4 X 1/8 BRASS 125#	
all	27	96H018	NEEDLE VALVE	
A,B	28	03 01627B	92023# LEFT=3"AIR CYL MNTG BRKT	
C	28	03 01660C93231B	BRKT=AIR CYL MONUT LEFT	
D	28	03 01660A	92271B BRKT=AIR CYL MNT LFT-S/S	
A,B	29	03 01627A	92023B RIGHT=3"AIR CYL MNTG BRKT	
C	29	03 01660D	BRKT=AIR CYL MOUNT RIGHT	
D	29	03 01660B	92271# BRKT=AIR CYL MNT RHT-S/S	
all	30	15U200	FLATWASHER(USS STD) 5/16"ZNC PLT	
all	31	15G231S	HXFINJAMNUT 1/2-13UNC2B SS18-8	
A	32	20L601K	ID TAG NAT'L#1614 ALUM EMB "K"	USES 2
B	32	20L601E	ID TAG NAT'L#1614 ALUM EMB "E"	USES 2
CD	32	20L601G	ID TAG NAT'L#1614 ALUM EMB "G"	USES 2
C	33	20L601F	ID TAG NAT'L#1614 ALUM EMB "F"	USES 1
D	33	20L601V	ID TAG NAT'L#1614 ALUM EMB "V"	USES 1
all	34	03 01620E	92136B.WASHER=2.86ODX2.06IDX.105THK	
A,B	35	27B2400K0N	SPCRROLL.5ID.687L.062T SS	USES 1