Manual Number: MCWH4A01
Edition (ECN): 2023355A

Installation, Parts, and Service

48040M7K

PELLERIN MILNOR CORPORATION Post Office Box 400, Kenner, Louisiana 70063–0400, U.S.A.

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1 General Service and Safety-Related Components

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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.

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1.1 How to Get the Necessary Repair Components

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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: 504-712-7775
Fax: 504-469-9777
Email: parts@milnor.com

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1.2 Trademarks

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

Table 1. Trademarks

AutoSpot™	GreenFlex™	MilMetrix®	PulseFlow®
CBW®	GearTrace™	MilTouch™	RAM Command™
Drynet™	GreenTurn™	MilTouch-EX™	Recirc*ONE*®
E-P Express®	Hydro-cushion™	MilRAIL®	RinSave®
E-P OneTouch®	Mentor®	Miltrac™	SmoothCoil™

Table 1 Trademarks (cont'd.)

E-P Plus®	Mildata®	MilVision™	Staph Guard®
Gear Guardian®	Milnor®	PBW™	

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1.3 Tilting Washer Extractors

BNWHTS08.C01 0000349891 B.6 A.2 6/8/21, 3:00 PM Released

1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

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

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

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

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

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

1.3.2 Safety Alert Messages—Cylinder and Processing Hazards

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

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

- Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- Do not touch goods inside or hanging partially outside the turning cylinder.
- Do not operate the machine with a malfunctioning door interlock.
- Open pocket machines only—Do not jog the cylinder and pull the goods at the same time.
- Open pocket machines only—Keep yourself and others clear of cylinder and goods during jogging operation.
- Do not operate the machine with malfunctioning two-hand manual controls.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.

WARNING: **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.
- Open pocket machines only—Keep yourself and others clear of cylinder and goods during jogging operation.
- Do not operate the machine with malfunctioning two-hand manual controls.

WARNING: **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: **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.

1.3.3 Safety Alert Messages—Unsafe Conditions

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1.3.3.1 Damage and Malfunction Hazards

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1.3.3.1.1 Hazards Resulting from Inoperative Safety Devices

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DANGER: **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: **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: **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: **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.

WARNING: **Crush Hazards —** Down limit switches (machines with front and rear tilt cylinders)—Failure of both front or both rear limit switches allows the seated tilt wheels on a tilted machine to lift from their cradles. The housing will fall and lunge forward or rearward.

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

1.3.3.1.2 Hazards Resulting from Damaged Mechanical Devices

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WARNING: 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: 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: 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

1.3.3.2 Careless Use Hazards

BNWHTS04.C05 0000235045 B.6 A.2 1/2/20, 2:19 PM Released

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

BNWHTS04.C06 0000235044 B.6 A.2 A.3 1/2/20, 2:19 PM Released

WARNING: 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.

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

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

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

WARNING: **Crush Hazards —** Tilting machines with front and rear tilt cylinders—The housing will fall and lunge forward or rearward if the tilt wheels on the non-tilted end lift out of their cradles, even with safety supports in place.

- Understand the consequences of operating manually.

WARNING: **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.

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1.4 Installation Tag Guidelines

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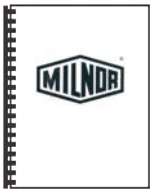
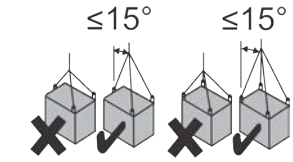
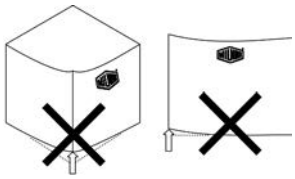
48040M7K (with and without Dryell) 68036M5K 72046M5K

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.

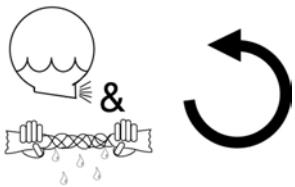
Paper tags on the machine provide installation guidelines and precautions. The tags can be tie-on or adhesive. You can remove tie-on tags and white, adhesive tags after installation. Yellow adhesive tags must remain on the machine.

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.

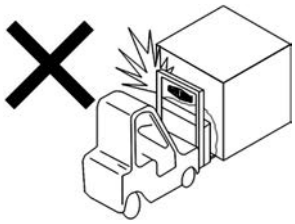
Symbol	Explanation
	Read the manuals before proceeding. This symbol appears on most tags. The machine ships with safety, operator, and routine maintenance guides for customer use. Milnor dealer manuals for installing, commissioning, and servicing the machine are also available from the Milnor Parts department.
	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.

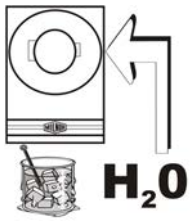


B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.



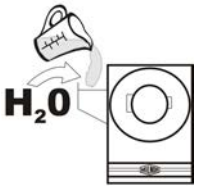
B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside.

B2T2001013: Hot water connection.

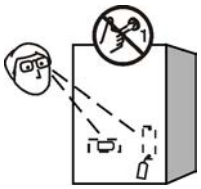


B2T2001014: Cold water connection.

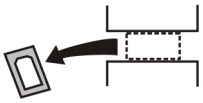
B2T2001015: Reuse (third) water connection. (Optional)



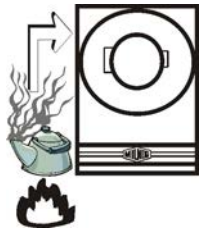
B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.



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. (Optional)

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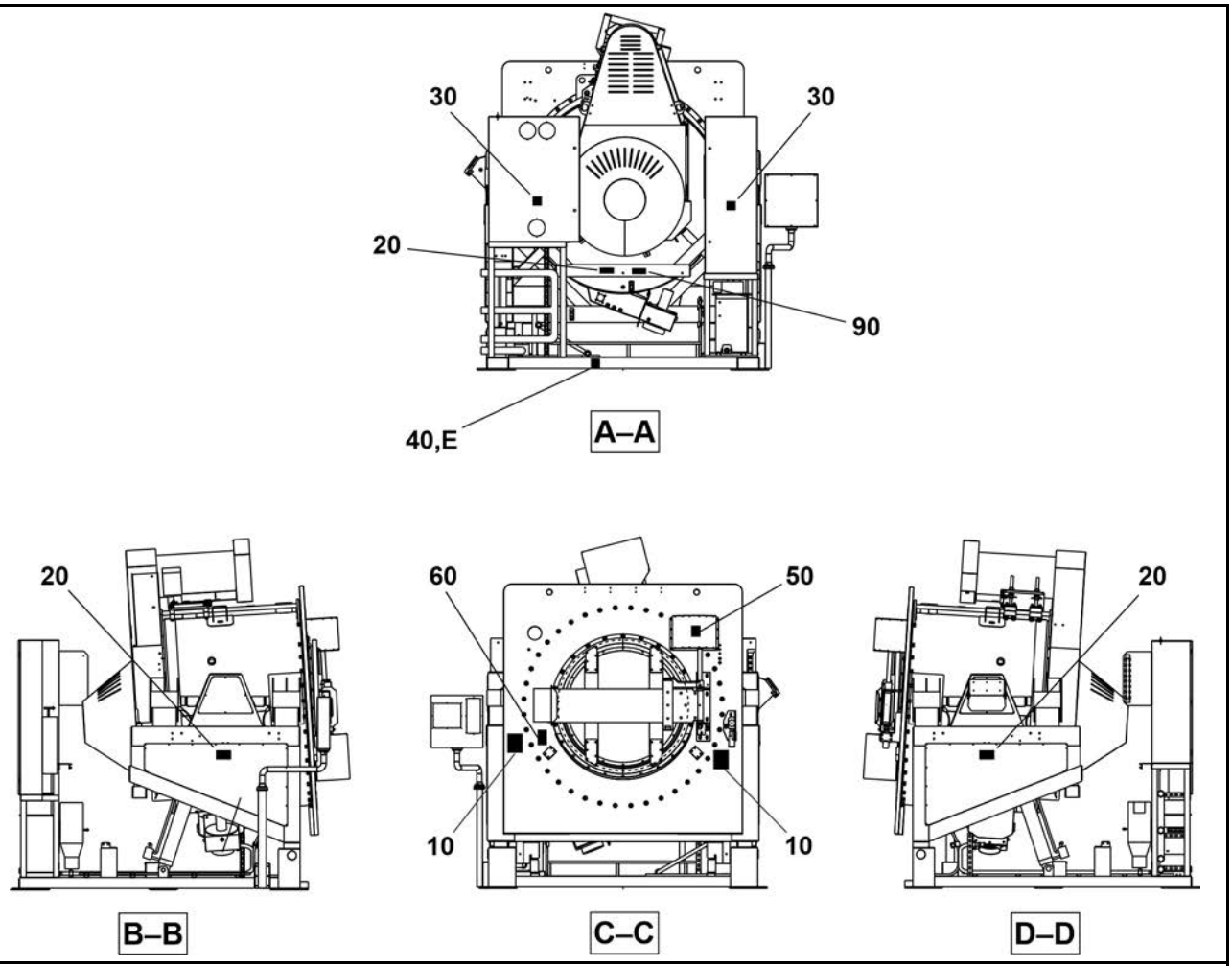
Safety Placard Use and Placement

2 Sheets

48040M7K, 68036M5K, 72046M5K

NOTE: Replace placard immediately, if removed or unreadable. Approximate locations of placards are shown. If aluminum placard, mounting holes are provided on machine. Use #8 self-tapping screws.



Legend

A–A . . Rear view
B–B . . Left view
C–C . . Front view
D–D . . Right view
E . . . On steam pipe if equipped

Safety Placard Use and Placement

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 2. Parts List—Safety Placard Use and Placement

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	10	01 10583A	NPLT:64/72 W/E WARN FRT-TCATA	
all	20	01 10630A	NPLT:TILT CRUSH HAZARD-TCATA	
all	30	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	40	01 10685A	NPLT:BURN HAZARD WARN-TCATA	
all	50	01 10648A	NPLT:GEAR HAZARD-TCATA	
all	60	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	
all	90	01 10761X	NPLT:M#K SAFETY STANDS	

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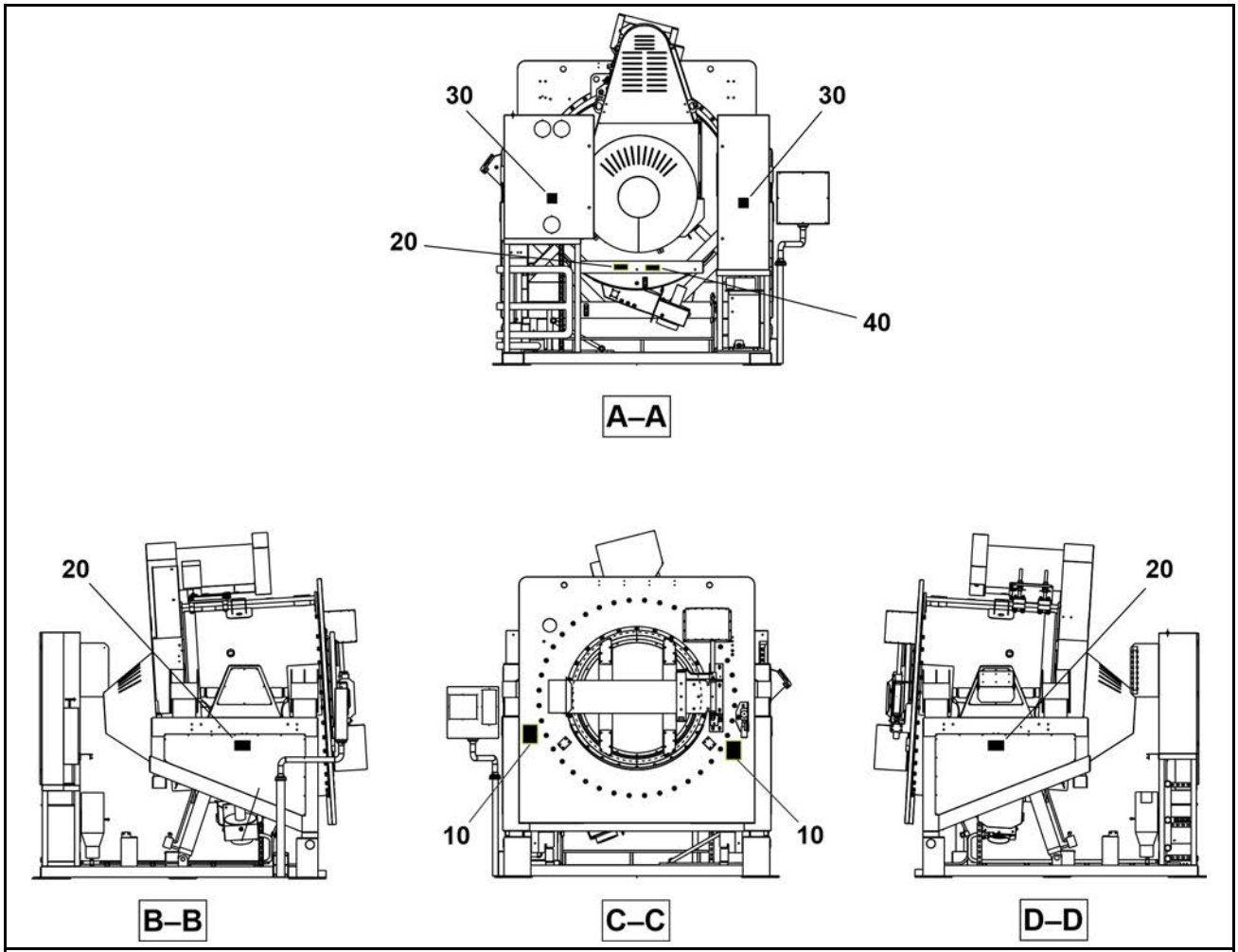
Safety Placard Use and Placement ISO

2 Sheets

48040M7K, 68036M5K, 72046M5K

NOTE: Replace placard immediately, if removed or unreadable. Approximate locations of placards are shown. If aluminum placard, mounting holes are provided on machine. Use #8 self-tapping screws.



Legend

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

Safety Placard Use and Placement ISO

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 3. Parts List—Safety Placard Use and Placement ISO

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	10	01 10629Z	NPLT TILT M#K WARN FRT ISO	
all	20	01 10630Y	NPLT TILT CRUSH HAZARD - ISO	
all	30	01 10377	NPLTE:"WARNING" 4X4	
all	40	01 10761X	NPLT:M#K SAFETY STANDS	

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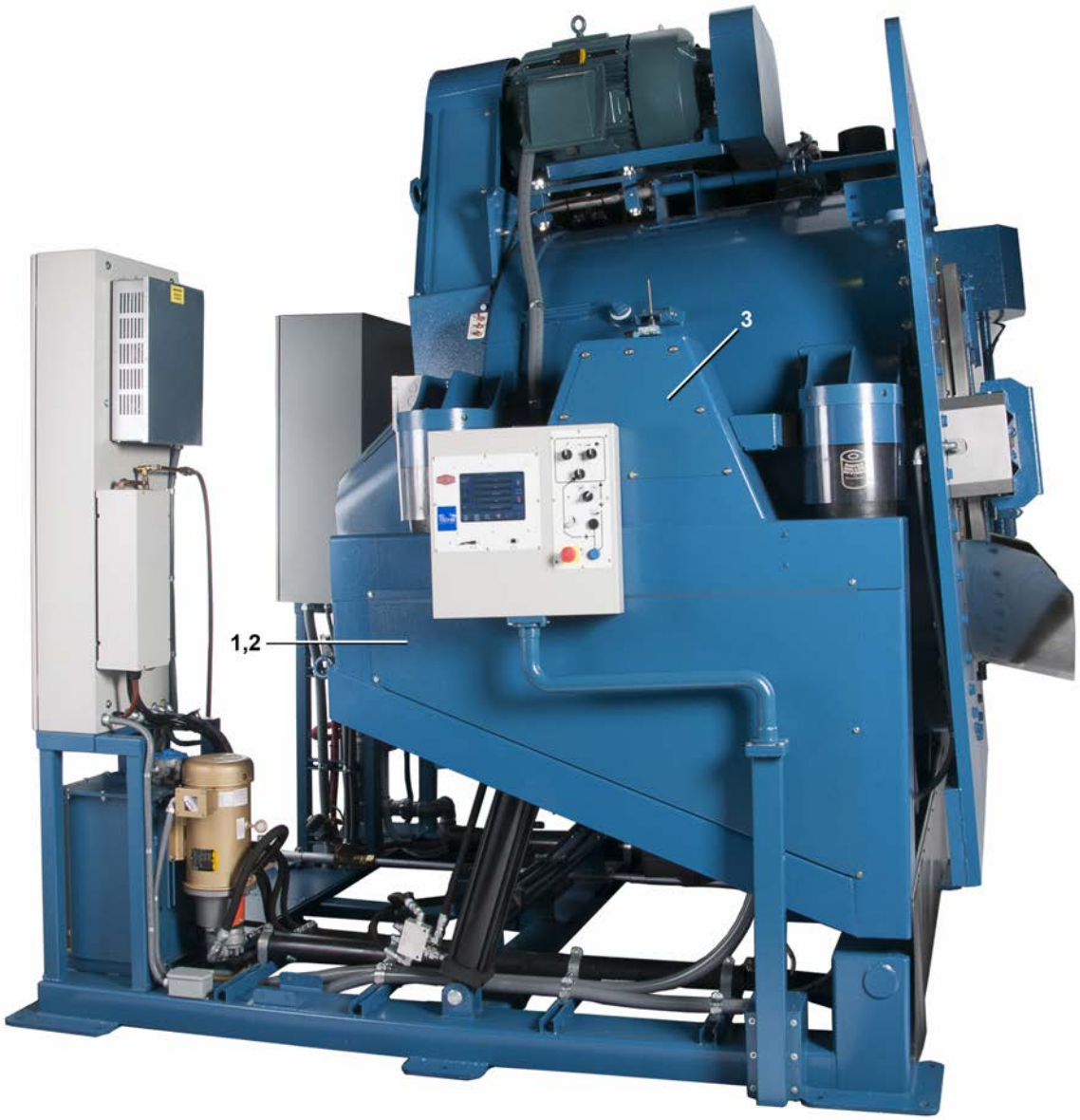
Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 1. Installed View

6836M5K Shown



Guards and Covers

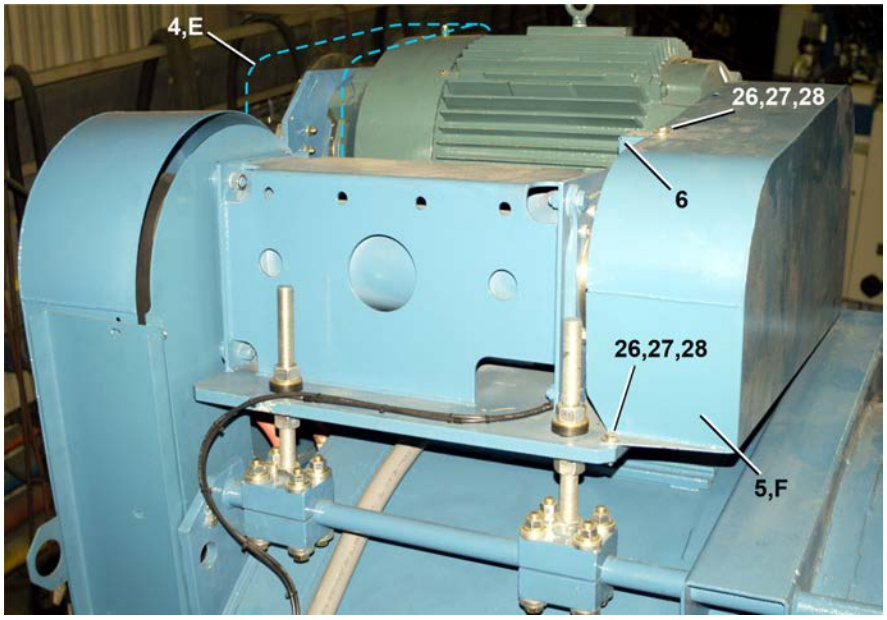
6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 2. Drive Covers

6836M5K Drive Covers

7246M5K Drive Covers



Legend

D . . . Brake cover
E . . . Brake cover not shown
F . . . Jackshaft and motor cover

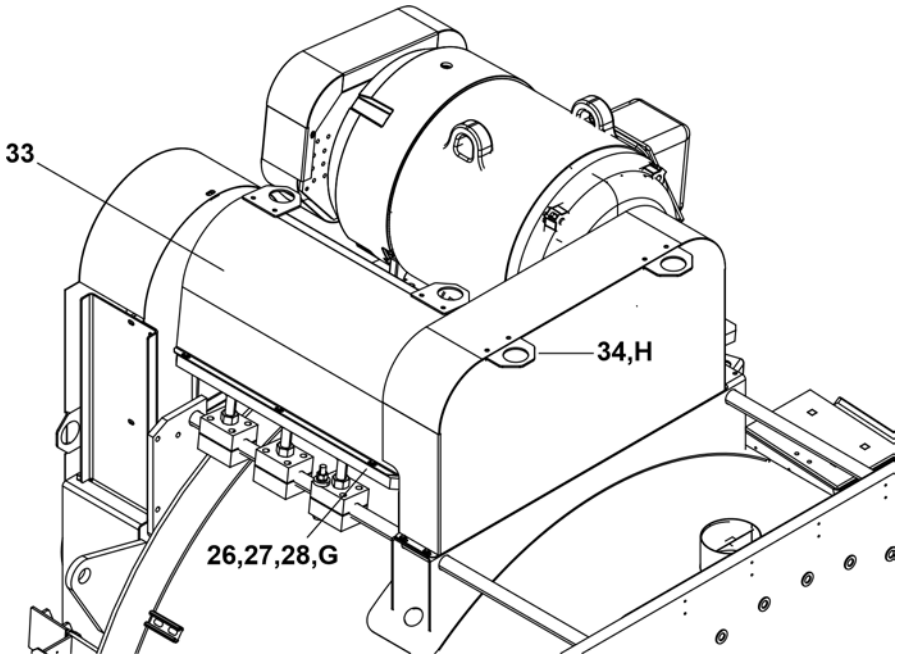
Guards and Covers

6 Sheets

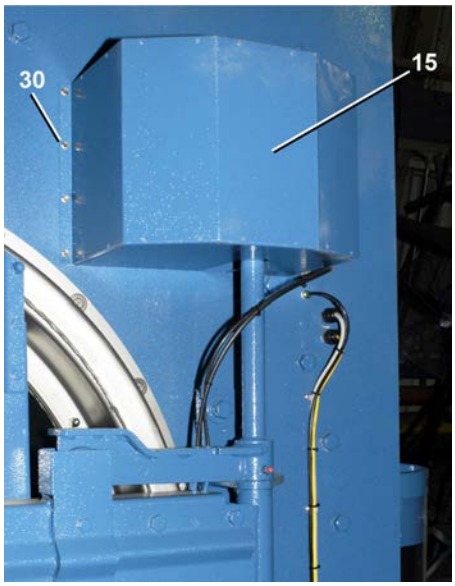
48040M7K, 68036M5K, 72046M5K.

Figure 3. Drive Covers, Rear Belt Guard

Jackshaft Cover 7246M5K (used after 6/29/16)



Torque Motor Cover



Legend

G . . . 6 instances
H . . . 4 instances

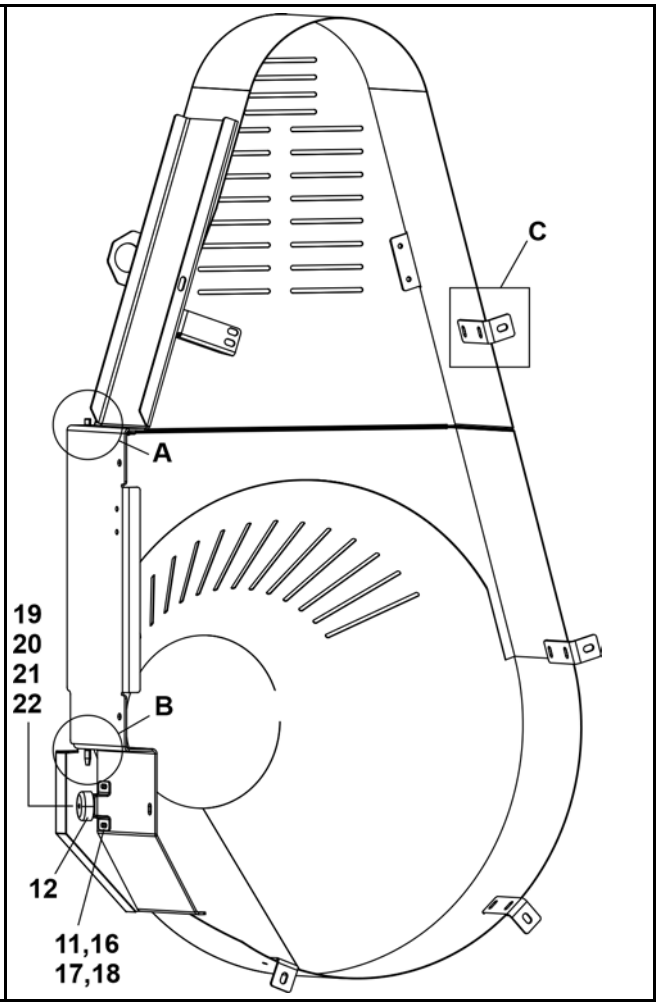
Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 4. Rear Belt Guard

7246M5K Shown



Legend

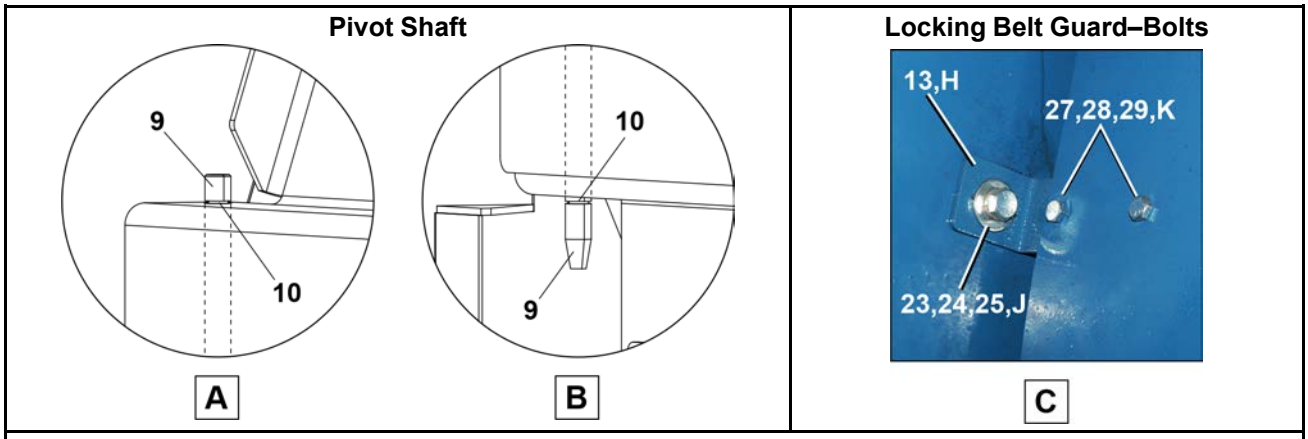
A . . . See detail A
B . . . See detail B
C . . . See detail C

Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 5. Rear Belt Guard Details



Legend

A . . . Detail view A
B . . . Detail view B
C . . . Detail view C
H . . . 4 instances
J . . . Locking bolts
K . . . Typical

Table 4. Parts List—Guards and Covers

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GGS68004	6836M5K HYD CYLINDER GUARDS	68036M5K
	B	GGS72003	7246M5K HYD CYINLDER GUARDS	72046M5K
	C	GGS48012	4840M7K HYD CYLINDER GUARDS	48040M7K
			Components	
A	1	W2 22693	6836M5K SIDEPANEL WLMT RT	
B	1	W2 25014	7246M5K SIDEPANEL WLMT RT	
C	1	W2 24044	4840M7K SIDEPANEL WLMT RT	
A	2	W2 22693A	6836M5K SIDEPANEL WLMT LT	
B	2	W2 25014A	7246M5K SIDEPANEL WLMT LT	
C	2	W2 24044A	4840M7K SIDEPANEL WLMT LT	
all	3	02 22692	6836M5K TILT FRAME PYRAMID COVER	
A	4	W2 22758	6836M5K BRAKE COVER WLMT	
B	4	W2 25118	7246M5K BRAKE COVER WLMT	
all	5	W2 25108	7246M5K MOTOR/JACKSHAFT BELTGUARD WLMT	
all	6	02 25109	7246M5K MOTOR/JACK BELTGUARD STIFFENER	

Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Table 4 Parts List—Guards and Covers (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
A	7	AGS68002	6836M5K REAR BELT GUARD ASSEMBLY	
B	7	AGS72001	7246M5K REAR BELT GUARD ASSY	
A	8	02 22677	6836M5K BELT COVER MOUNT BRKT	
B	8	02 25106	7246M5K BELT COVER MOUNT BRK	
all	9	X2 22700	6836M5K BELT COVER PIVOT SHAFT	
all	10	17B012	EXTRETRING IND#1000-50-ST-ZD Z	
A	11	02 22775	6836M5K TRUCK BUMPER BRKT	
B	11	02 25107	7246M5K TRUCK BUMPER BRKT	
all	12	60B075	DFW56-33PMSP RUBB CONN.	
all	13	02 22676	6836M5K BELT COVER LOCK BRKT	
all	14	02 25121A	7246M5K BELTGUARD UPPER FILLER	
AB	15	AGS75001L	COVER=GEARTRAIN LH	
C	15	02 21968A	EXTENDED COVER=CHAIN COUPLING, 4840F	TORQUE MOTOR BELOW DOOR
all	16	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	17	15G198	HXFLGNUT 3/8-16 ZINC	
all	18	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
all	19	15K117	HEXCAPSCR 3/8-16X1+3/4 GR 5 PL	
all	20	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	21	15U516	FLTWSHR 2.5ODX17/32"IDX.25"THI	
all	22	15G201	HXLOKNUT 3/8-16 NYL/SS TYPE NE	
all	23	15K145	HXCAPSCR 1/2-13UNC2AX3/4 GR5 P	
all	24	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	25	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	26	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	
all	27	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
all	28	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	29	15K083V	BUTSOKCAPSCR 3/8-16X3/4 SS18-8	
all	30	15P185	TRDCUT-F HXHD 1/4-20UNC2AX3/4	
C	31	02 24056	4840M7K BELTGUARD APEX	
B	32	W2 25134	7246M5K JACKSHAFT COVER WLMT	
AB	33	02 22706	6836M5K BELT COVER LIFT PLATE	

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1.5 Use the Red Safety Supports for Maintenance — 48040M7K, 68036M5K, 72044M5K

BNWHUH02.C02 0000373217 B.6 A.5 A.3 8/17/21, 11:08 AM Released

1.5.1 What Safety Supports are Provided and Why

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These machines are provided with two, permanently attached safety stands that can be folded down from within a channel on the shell (drum) when the machine is in the wash position. If the machine has a load chute for automatic loading, it is also provided with a safety bar that can be inserted when the load chute is raised. The safety supports provide protection against the drifting down of the vertically moving portion of the machine during maintenance in the event of a leak in the hydraulic system. They are not intended to restrain the machine from coming down under power. Use the safety support(s) whenever the maintenance to be performed requires you to place any part of your body in or near the path of the vertically moving portion of the machine.

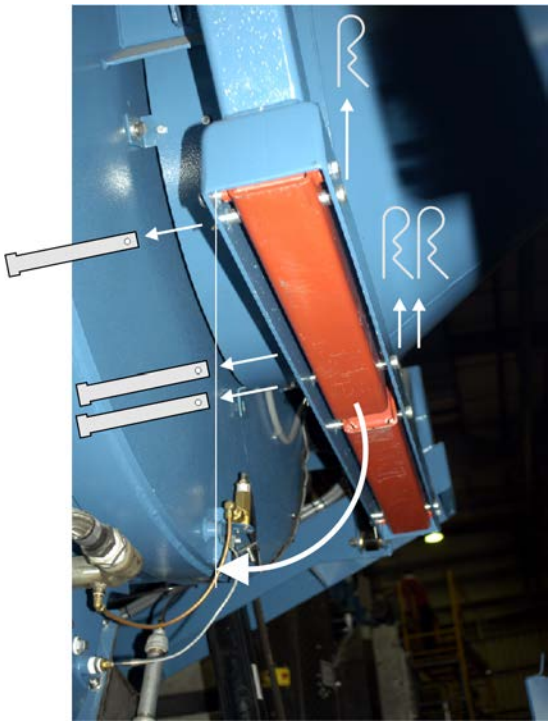
WARNING: **Incorrect use of the safety supports** — can cause the machine to descend and crush you.

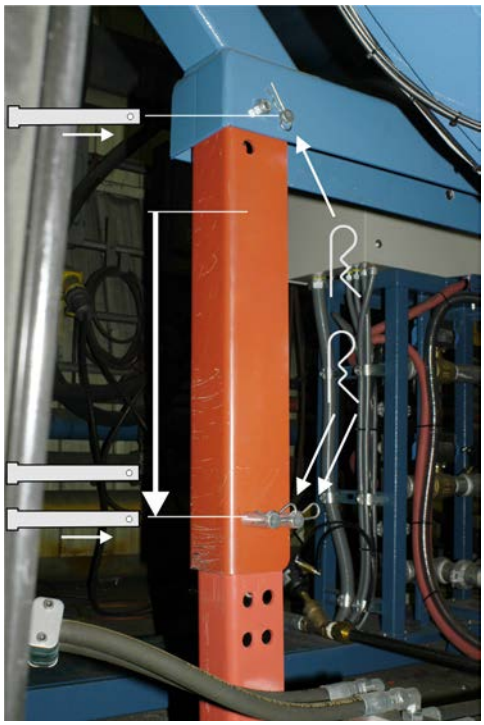
- Never work near the path of the vertically moving portion of the machine unless the safety supports are deployed and power is removed from the machine.
- Do not use power to close a small gap between the machine and the safety supports. Use care not to lower the machine with the safety supports deployed.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

1.5.2 How To Deploy the Safety Stands — 68036M5K, 72044M5K

BNWHUH02.T02 0000373375 B.6 A.5 A.4 8/18/21, 4:03 PM Released

1. Use the Manual mode to put the machine in the wash position (shell is horizontal).
2. Remove the clevis pins and allow the stands to pivot down completely. See the illustration below left.



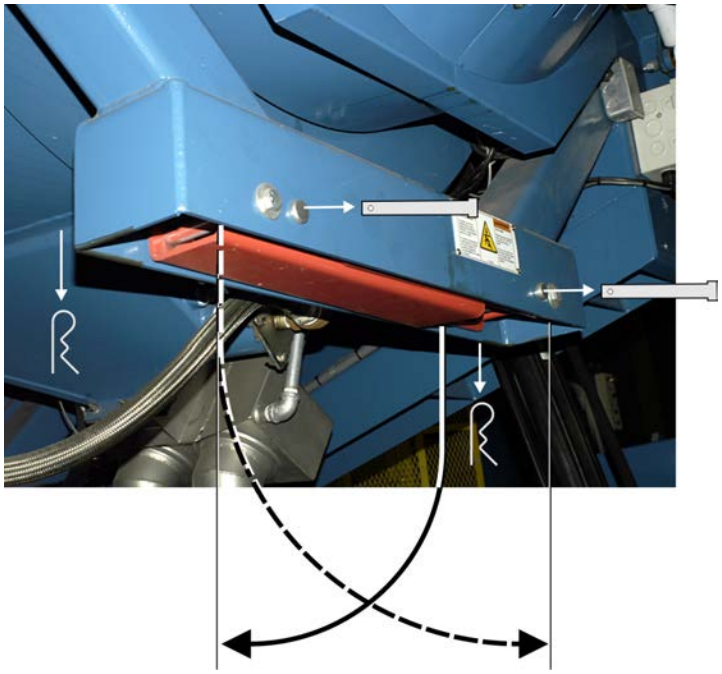


3. Extend the legs, insert the clevis pins and secure them with the cotter pins. See the illustration above right.
4. Remove electric power from the machine.

1.5.3 How To Deploy the Safety Stands — 48040M7K

BNWHUH02.T01 0000373179 B.6 A.5 A.6 8/18/21, 4:13 PM Released

1. Use the Manual mode to put the machine in the wash position (shell is horizontal).
2. Remove the clevis pins and allow the stands to pivot down completely. See the illustration below left.

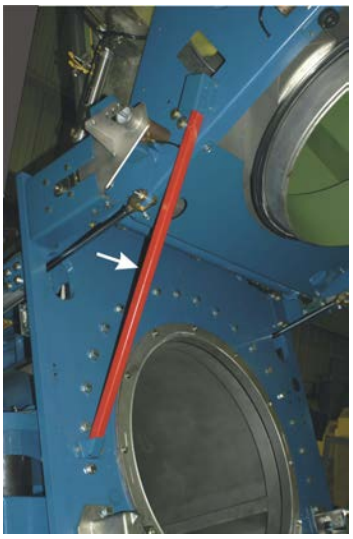


3. Insert the clevis pins and secure them with the cotter pins. See the illustration above right.
4. Remove electric power from the machine.

1.5.4 How to Deploy the Load Chute Safety Bar

BNWHUH02.T03 0000373443 B.6 A.5 A.6 8/18/21, 4:18 PM Released

1. Use the Manual mode to raise the load chute completely.
2. See the illustration at right. Insert one end of the safety bar in the holding bracket on the load chute, then the other end in the bracket on the front of the machine.
3. Remove electric power from the machine.



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Safety Stands

2 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 6. Safety Stands 68036M5K, 72046M5K

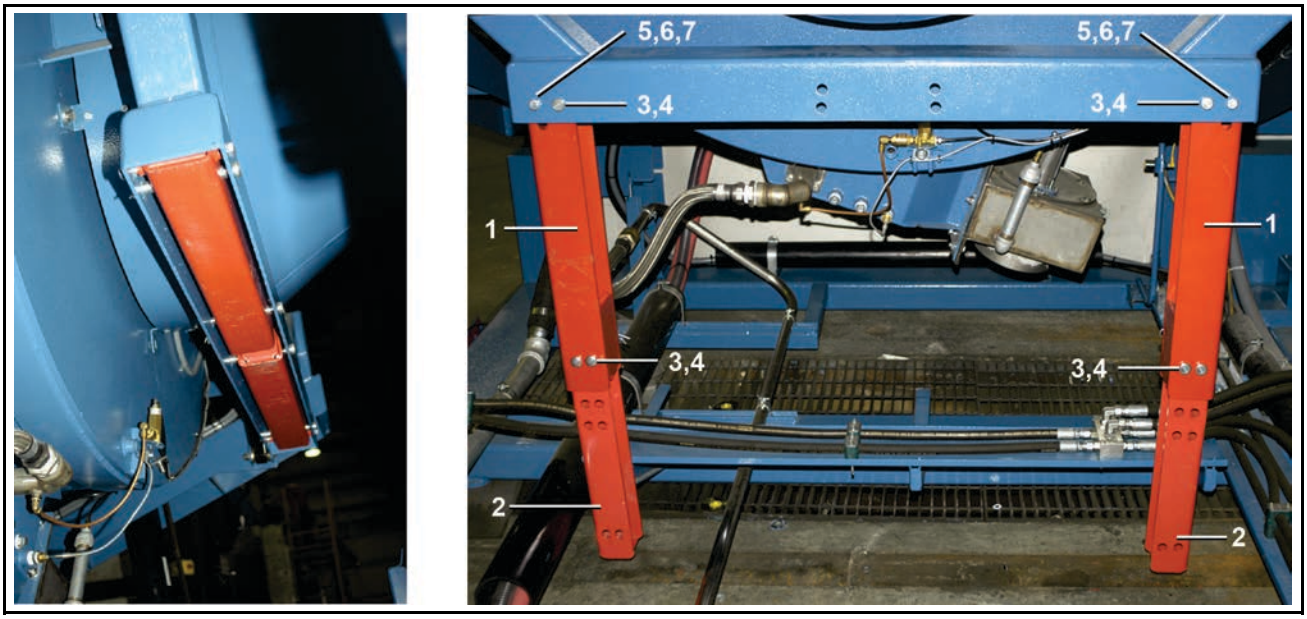
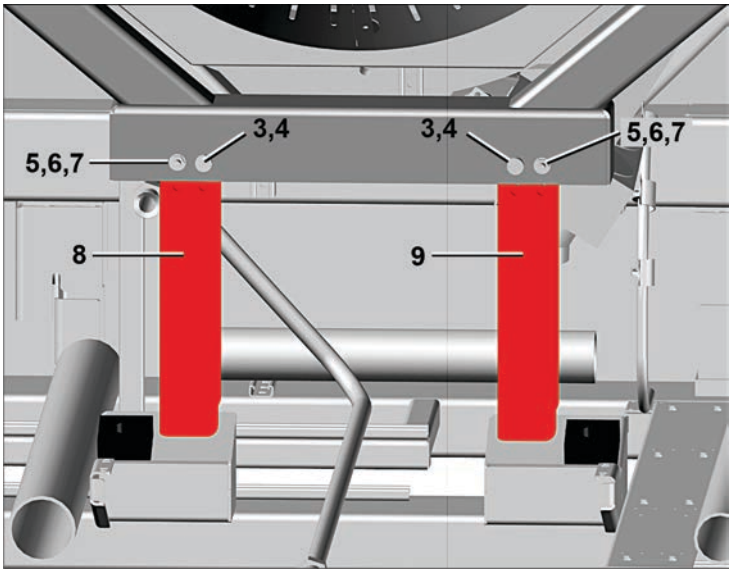


Figure 7. Safety Stands 48040M7K



Safety Stands

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 5. Parts List—Safety Stands

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GSB68002	6836M5K SHIPPING/SAFETY BRACKETS INSTL	68036M5K
	B	GSB72001	7246M5K SHIPPING/SAFETY BRACKETS INSTL	72046M5K
	C	GSB48004	4840M7K SHIPPING/SAFETY BRACKETS INSTL	48040M7K
Components				
AB	1	W2 25098	7246M5K KICKSTAND OUTER WLMT	
AB	2	02 25098A	7246M5K KICKSTAND INNER	
all	3	17A057	CLEVIS PIN 3/4"X6.5"	
all	4	15H062	3/4" COTTERPIN REMOVABLE	
all	5	15K203TA	HEXCAPSCR 1/2-13X6.5 GR8 ZINC	
all	6	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	7	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
C	8	W2 24074	4840M7K KICKSTAND RIGHT	
C	9	W2 24074A	4840M7K KICKSTAND LEFT	

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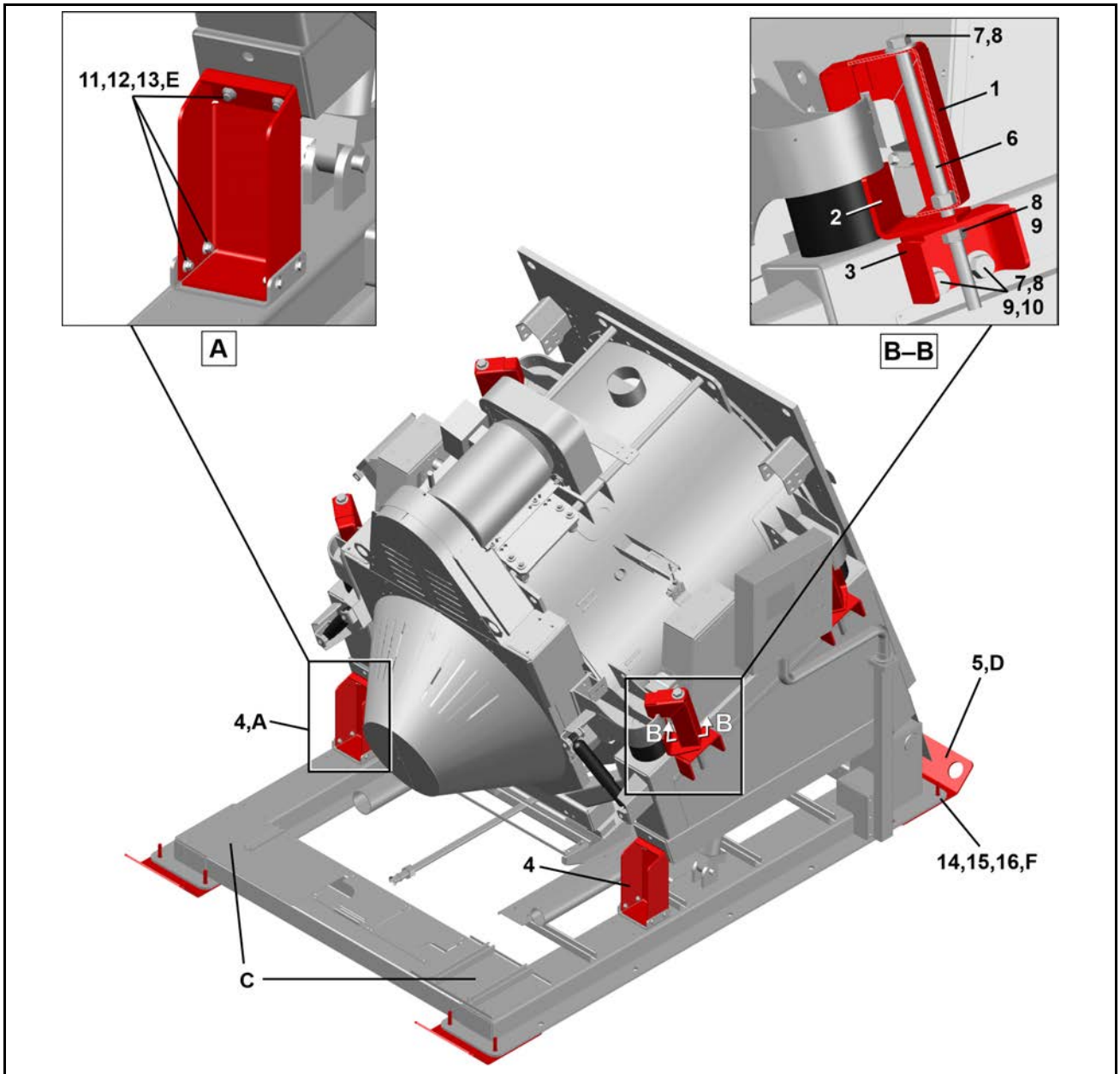
Shipping Brackets

2 Sheets

48040M7K, 68036M5K, 72046M5K



Legend

A . . . Detail view A, tilt frame to base (2 instances)
B–B . . Detail view B–B, shell to tilt frame (4 instances)
C . . . Electric boxes, water inlets, and hydraulic tank are not shown
D . . . 4 instances
E . . . 6 instances per stand
F . . . 8 instances

Shipping Brackets

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 6. Parts List—Shipping Brackets

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GSB48004	4840M7K SHIPPING/SAFETY BRACKETS INSTL	48040M7K
	B	GSB68002	6836M5K SHIPPING/SAFETY BRACKETS INSTL	68036M5K
	C	GSB72001	7246M5K SHIPPING/SAFETY BRACKETS INSTL	72046M5K
			Components	
A	1	W2 24151	4840M7K SHELL HOLD DOWN WLMT-SHIPPING	
BC	1	W2 22832	SHELL HOLD DOWN WLMT-SHIPPING	
A	2	02 24152	4840M7K SHELL HOLD DOWN SPACER-SHIPPING	
B	2	02 22834	SHELL HOLD DOWN SPACER-SHIPPING	
A	3	02 24153	4840M7K SHELL HOLD DOWN SHELF	48040 ONLY
A	4	02 24050	4840M7K LOCK DOWN FRAME BRKT	
B	4	02 22710	6836M5K LOCK DOWN FRAME BRKT	
C	4	02 25120	7246M5K LOCK DOWN FRAME BRKT	
all	5	W2 22811	6836M5K SHIPPING TIE DOWN POINT WLMT	
all	6	17R031A19A	THRD ROD 1-8 X 19" GR8 ZNPL	
all	7	15U390P	FLATWASHER(USS STD) 1" ZNC P	
all	8	15G250	HXNUT 1-8UNC2B SAE ZNC GR2	
all	9	15U400	LOCKWASHER MEDIUM 1" ZINCPL	
all	10	15K255ZN	HXCPSCR1"-8UNCX1.5"L GR5 ZNPLT	
all	11	15K129	HEXFLGSCR 1/2-13X1-1/4ZN. GR 5	
all	12	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	13	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	14	15G240	HXNUT 3/4-10UNC2B SAE ZINC GR2	
all	15	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	16	15U320P	FLATWASHER(USS STD) 3/4" ZNC P	

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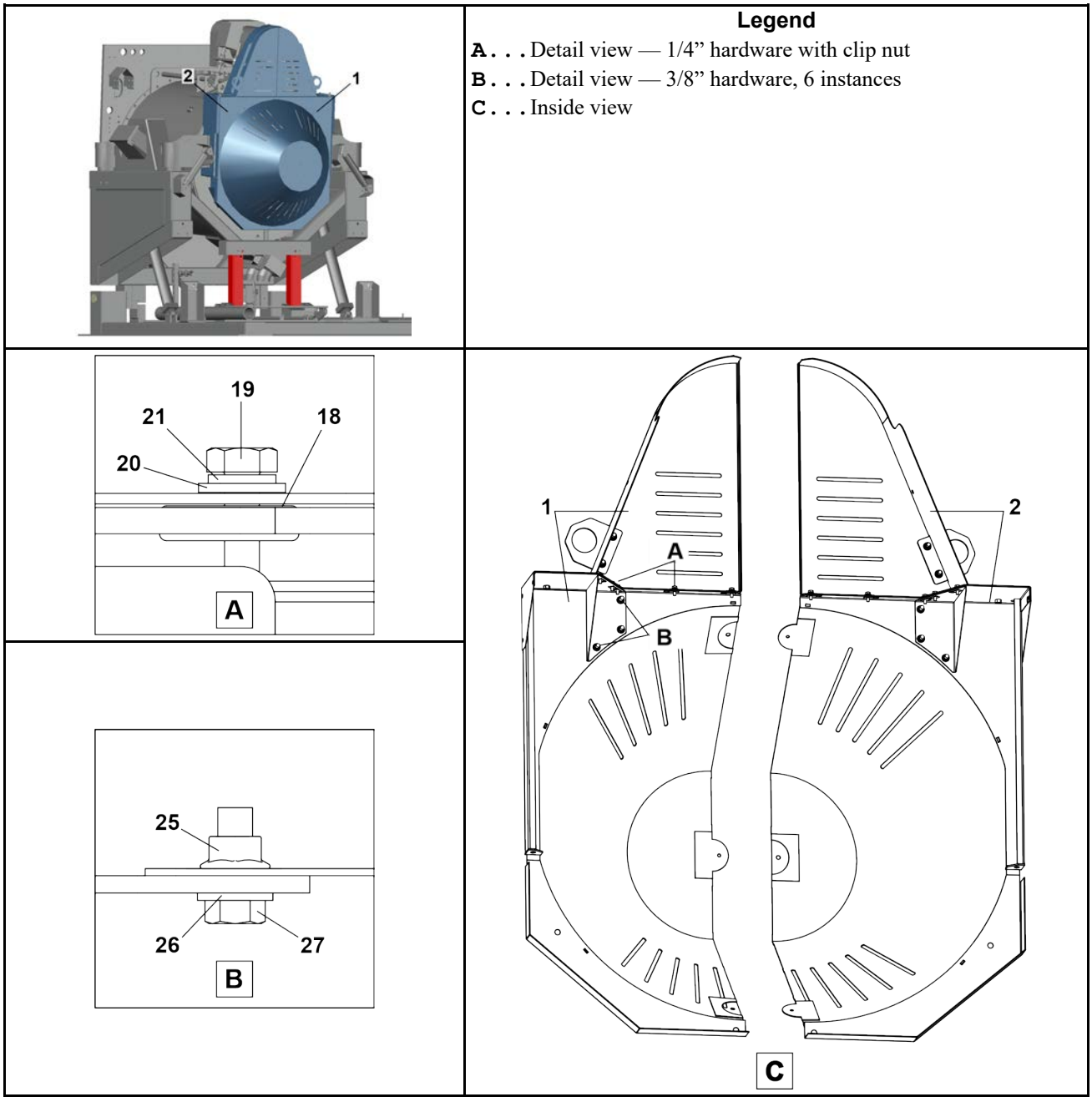
Dual Door Rear Belt Guard

5 Sheets

48040M7K

Figure 8. Rear Belt Guard Doors

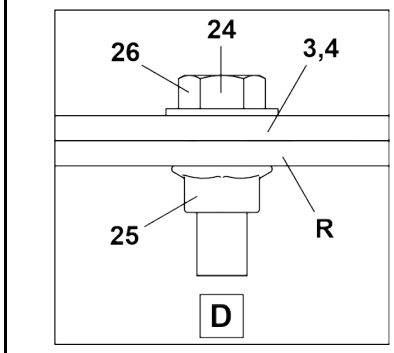


Dual Door Rear Belt Guard

5 Sheets

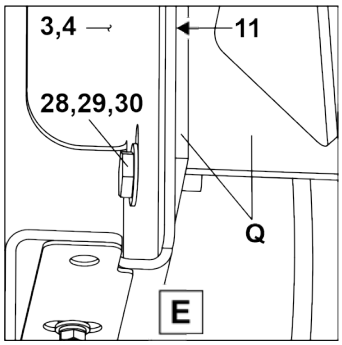
48040M7K

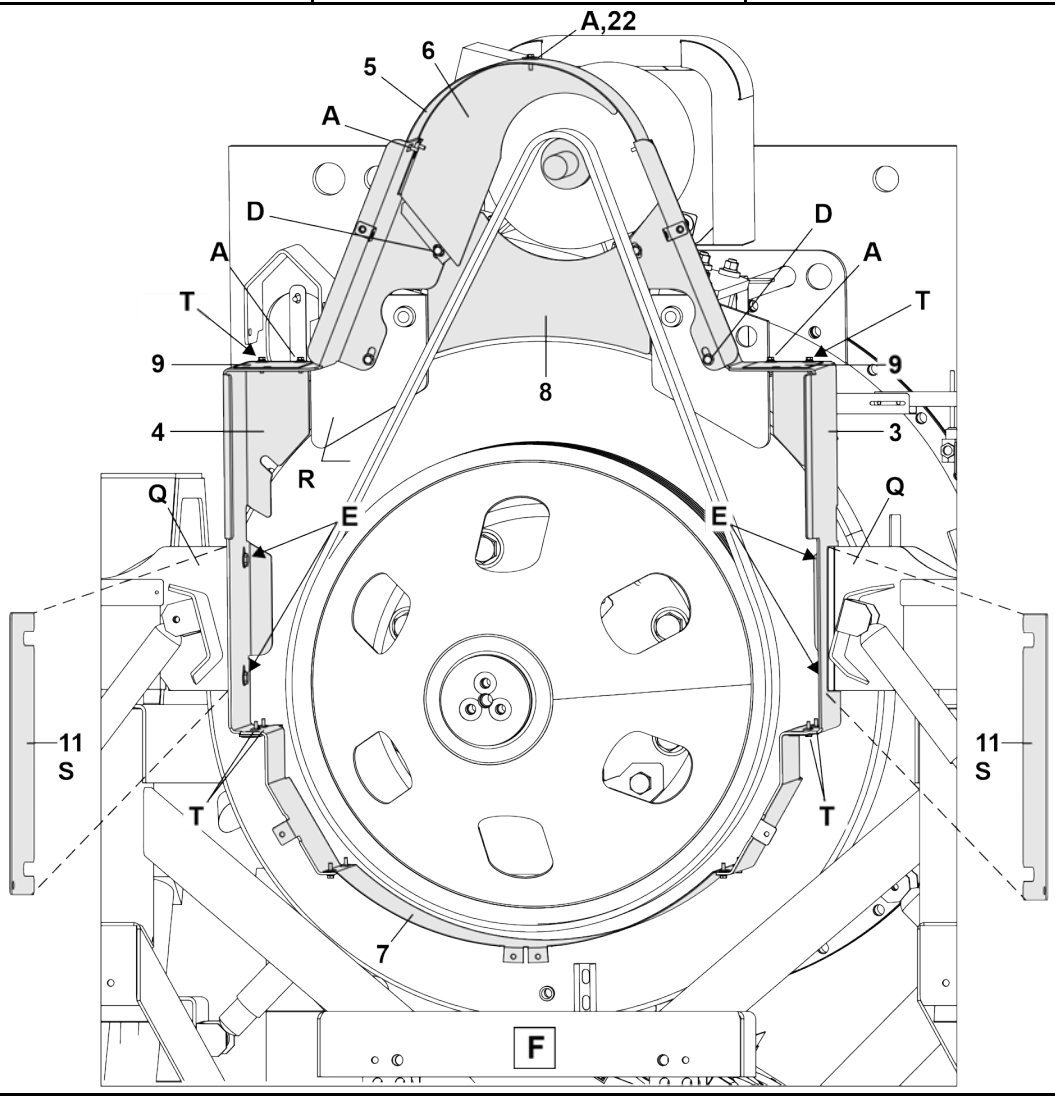
Figure 9. Rear Belt Guard Frame



Legend

- **A . . .** See detail view A.
- **D . . .** Detail view 3/8" hardware, 2 instances
- **E . . .** Detail view 1/2" hardware , 4 instances
- **F . . .** Rear view of belt guard frame assembly
- **Q . . .** Shell rear side mount
- **R . . .** Shell rear
- **S . . .** Shims
- **T . . .** Adjustment bolts, 6 instances, see detail A.



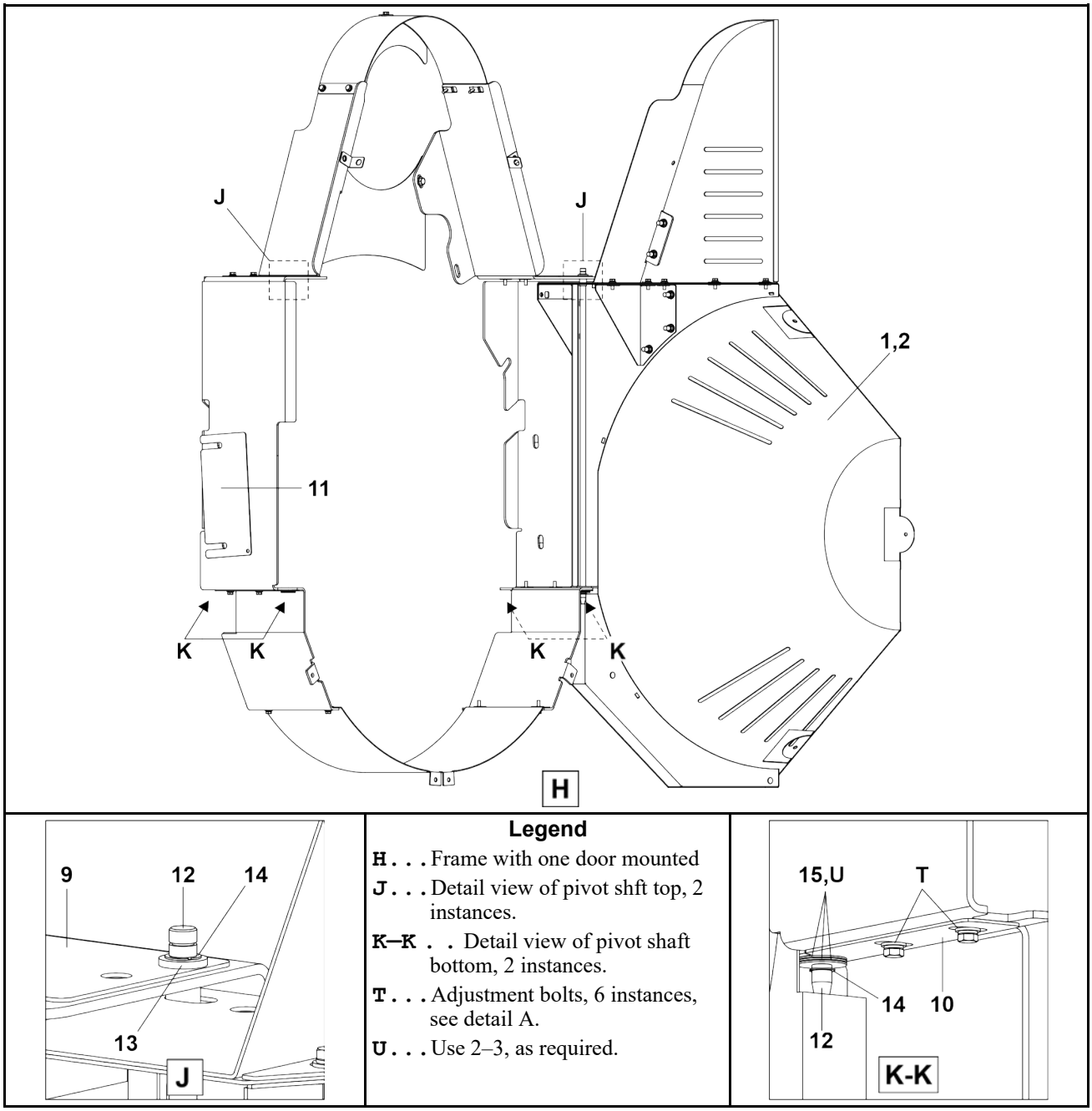


Dual Door Rear Belt Guard

5 Sheets

48040M7K

Figure 10. Belt Guard Mounting Frame

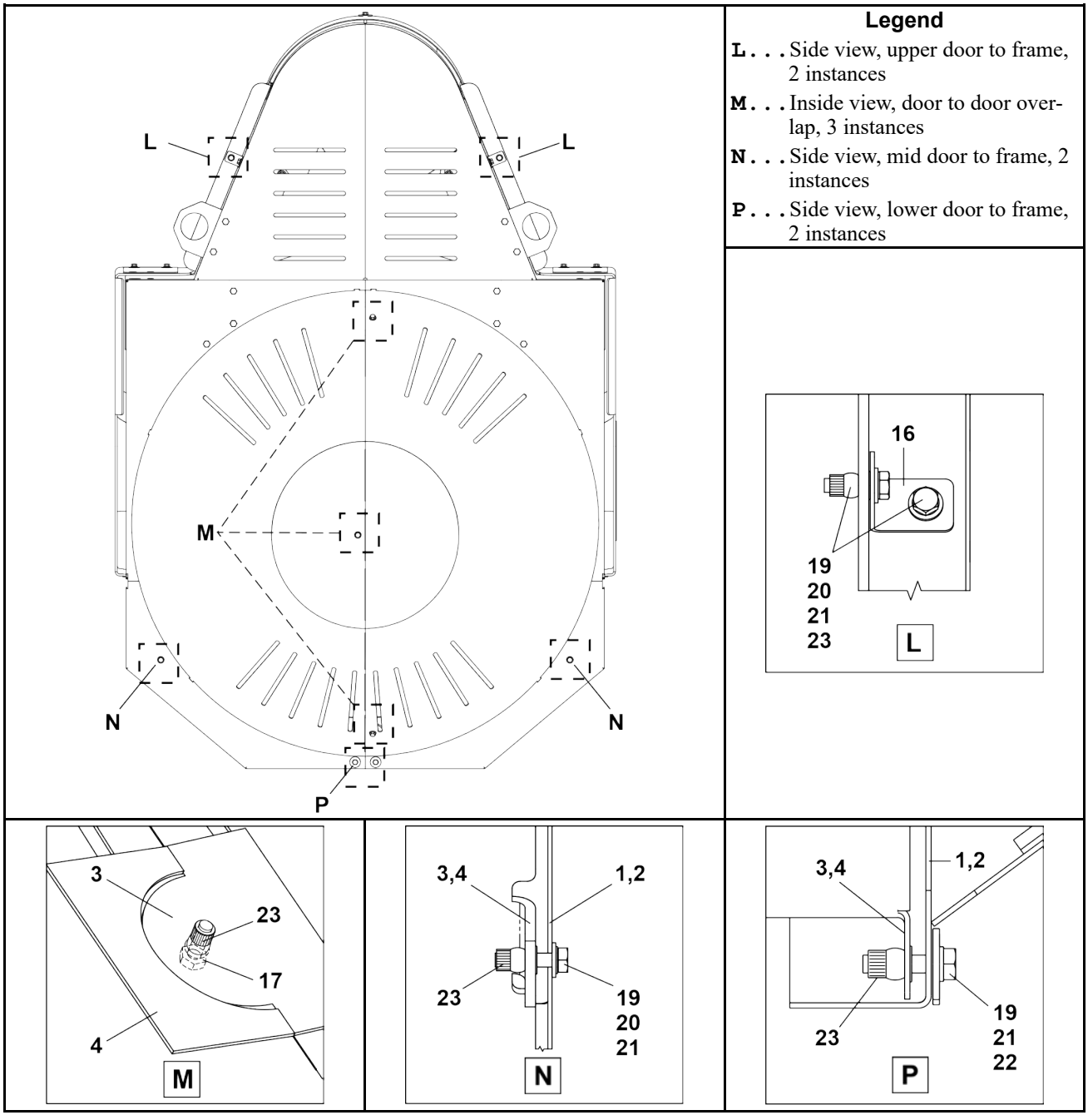


Dual Door Rear Belt Guard

5 Sheets

48040M7K

Figure 11. Removable Bolts for Maintenance



Dual Door Rear Belt Guard

5 Sheets

48040M7K

Table 7. Parts List—Dual Door Rear Belt Guard

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GGS48010	4840M7K REAR BELT GUARD INSTALL	
Components				
all	1	AGS48010	4840M7K BELTGUARD ASSY LEFT	
all	2	AGS48010A	4840M7K BELTGUARD ASSY RIGHT	
all	3	02 24041	4840M7K BELTGUARD MOUNT BRKT LT	
all	4	02 24041A	4840M7K BELTGUARD MOUNT BRKT RT	
all	5	02 24056	4840M7K BELTGUARD APEX	
all	6	02 24076	4840M7K BELTGUARD MAIN FILLER	
all	7	02 24030	4840M7K BELTGUARD BOTTOM	
all	8	02 24064	4840M7K BELTGUARD CENTER FILLER	
all	9	02 24052	4840M7K BLTGRD PIVOT SHFT ADJ PLATE	
all	10	02 24052A	4840M7K BLTGRD PIVOT SHFT ADJ PLATE LOWER	
all	11	02 24015A	4840M7K SHELL MOUNT REAR PLATE SPACER	
all	12	X2 22700	6836M5K BELT COVER PIVOT SHAFT	
all	13	54E013	FLGBRG 1/2X5/8X1 BOSTON #FB810-8	
all	14	17B012	EXTRETRING IND#1000-50-ST-ZD Z	
all	15	15U348A	FLTWASH NYLON 1+1/4"ODX1/2"ID	
all	16	02 24041B	MD48 UPPER BOLT ON RATTLE BRACKET	
all	17	15N186	HXCAPSCR 1/4-20X3/4 SS18-8	
all	18	15G004HD	1/4-20 USHORT NUT P/R .025-.15	
all	19	15K041	HXCAPSCR 1/4-2OUNC2AX1 GR 5 ZI	
all	20	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	21	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	22	17N059	KNURRIVNUT 1/4-20 ZN.027"-.165 .386 (13/32 HOLE)	
all	24	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	25	15G198	HXFLGNUT 3/8-16 ZINC	
all	26	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	27	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	28	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	29	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	30	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	

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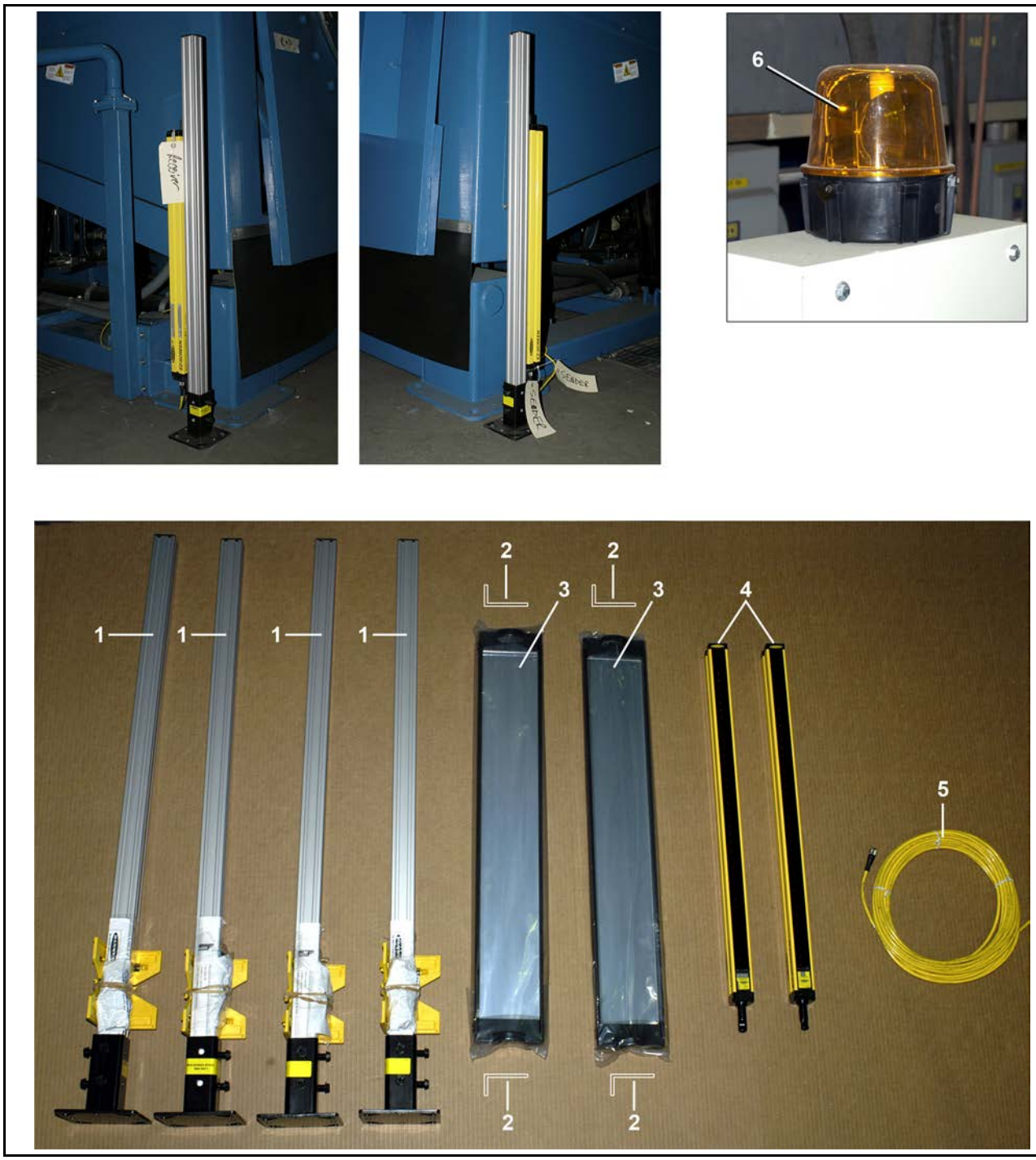
Safety Light Screen Components and Installation

3 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 12. Replacement Parts



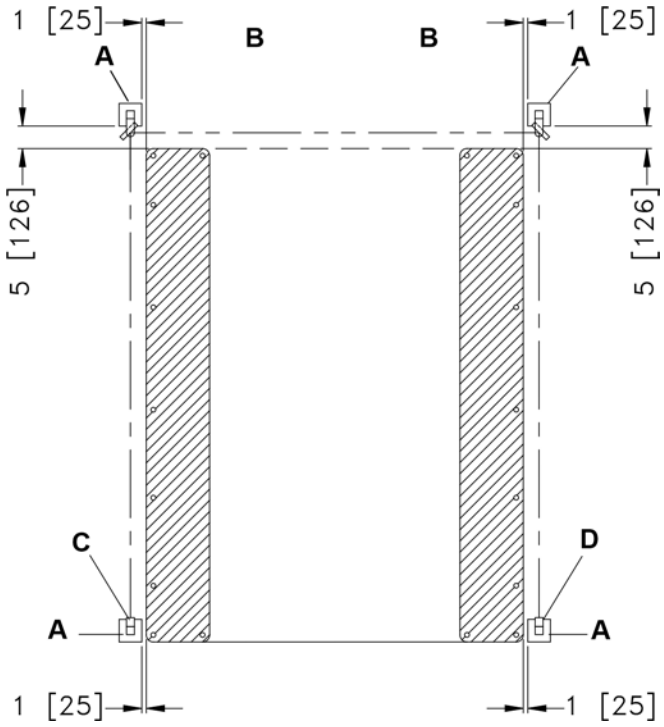
Safety Light Screen Components and Installation

3 Sheets

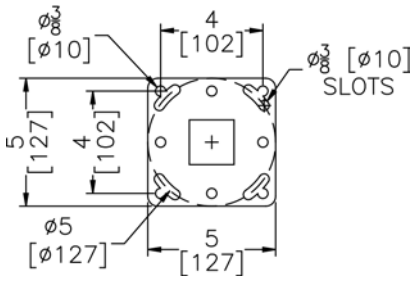
48040M7K, 68036M5K, 72046M5K

Figure 13. Safety Light Screen Installation

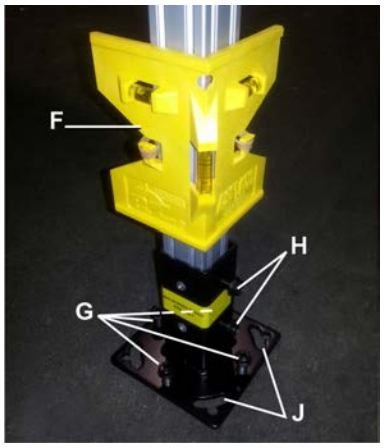
Detail: Stand Placement



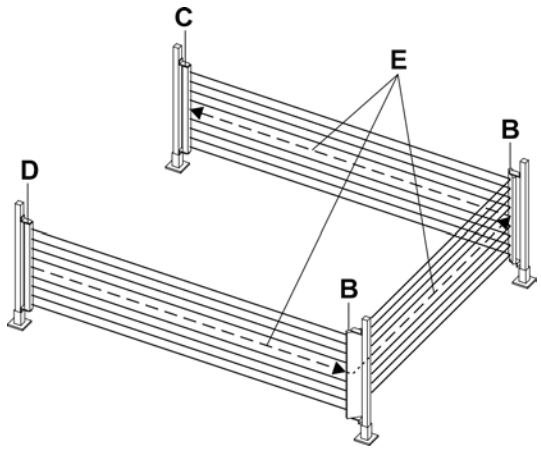
Detail: Stand base mounting hole pattern



Leveling



Mirror Alignment



Legend

A . . . Stand
B . . . Mirror
C . . . Receiver
D . . . Emitter
E . . . Midpoint
F . . . Post level (supplied)
G . . . Base leveling bolts, 4 instances (supplied)
H . . . Pole leveling bolts, 4 instances (supplied)
J . . . Mounting hardware (not supplied)

NOTE: Position the stands as shown in the detail. The poles are to be exactly parallel to each other and truly vertical.

NOTE: The midpoint of the mirrors must be directly in line within the midpoint of the sensor's defined area. The upper and lower limits of the defined area are dimensioned in the light screen instruction manual supplied with parts.

Safety Light Screen Components and Installation

3 Sheets

48040M7K, 68036M5K, 72046M5K

Table 8. Parts List—Safety Light Screen 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**
Components				
all	1	09RPE018LBG	STND FOR SENDER , RECEIVER, MIRROR	
all	2	09RPE018LBF	CORNER MIRROR BRACKETS	
all	3	09RPE018LBE	CORNER MIRROR FOR SAFETY BEAM	
all	4	09RPE018LBA	LITE BEAM EMITTER/RECEIVER 600MM BANNER	
all	5	09RPE018LBB	LITE BEAM CORDSET 15.3 METER	
all	6	09H025V71	BEACON ROTARY 6"DIA AMBER	
all	7	09RPE018LBC	LITE BEAM MUTING RELAY MODULE	NOT SHOWN
all	8	09RPE018LBD	LITE BEAM SAFETY RATING 24VDC POWER SUPPLY	NOT SHOWN
all	9	09N127C	KEYSW SPST 7A120VAC SCREW TERM	NOT SHOWN
all	10	01 10760X	NPLT:LIGHT CURTAIN BYPASS>ISO	NOT SHOWN

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1.6 Torque Requirements for Fasteners

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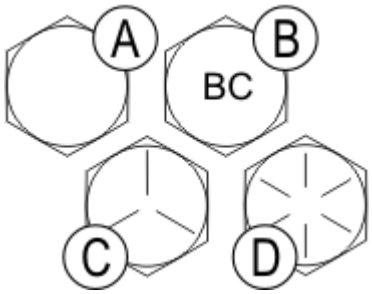
The document about the assembly gives the torque requirements for other fasteners. **If fastener torque specifications or threadlocker requirements in an assembly document are different from this document, use the assembly document.**

Figure 14. 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

1.6.1 Torque Values

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

NOTE: Data from the Pellerin Milnor® Corporation “Bolt Torque Specification” (bolt_torque_milnor.xls/2002096).

1.6.1.1 Fasteners Made of Carbon Steel

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1.6.1.1.1 Without a Threadlocker

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Table 9. 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 10. 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 11. 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 12. Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant

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
3/8 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	–	–

1.6.1.1.2 With a Threadlocker

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Table 13. Threadlocker by the Diameter of the Bolt (see below Note)

LocTite Product	Dimension			
	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: 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 14. Torque Values if You Apply LocTite 222

	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	60	7	96	11	132	15	108	12
1/4 x 28	72	8	108	12	144	16	–	–

Table 15. Torque Values if You Apply LocTite 242

	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
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 16. Torque Values if You Apply LocTite 262

	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
3/4 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 17. 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	–	–

Table 17 Torque Values if You Apply LocTite 272 (High-Temperature) (cont'd.)

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
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 18. Torque Values if You Apply LocTite 277

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
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	–	–

1.6.1.2 Stainless Steel Fasteners

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Table 19. Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller

Dimension	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
	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 20. Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch

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

1.6.2 Preparation

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WARNING: 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: 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.

1.6.3 How to Apply a Threadlocker

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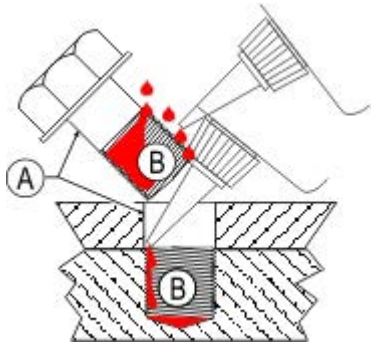
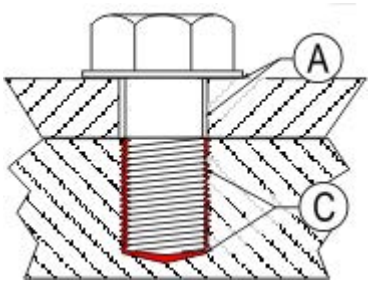
CAUTION: **Malfunction Hazard** — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

▶ 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 15. Apply Threadlocker in a Blind Hole

Application	Coverage
	

Legend

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

1.6.3.1 Blind Holes

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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 13: Threadlocker by the Diameter of the Bolt (see below Note), page 48 to Table 19: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 50).

1.6.3.2 Through Holes

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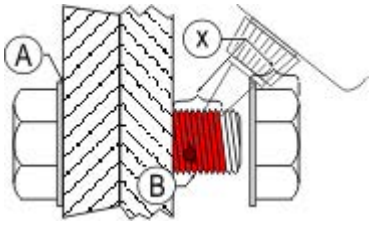
1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.

3. Tighten the bolt to the value shown in the correct table (Table 13: Threadlocker by the Diameter of the Bolt (see below Note), page 48 to Table 19: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 50).

Figure 16. Apply Threadlocker in a Through Hole

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

1.6.3.3 Disassembly

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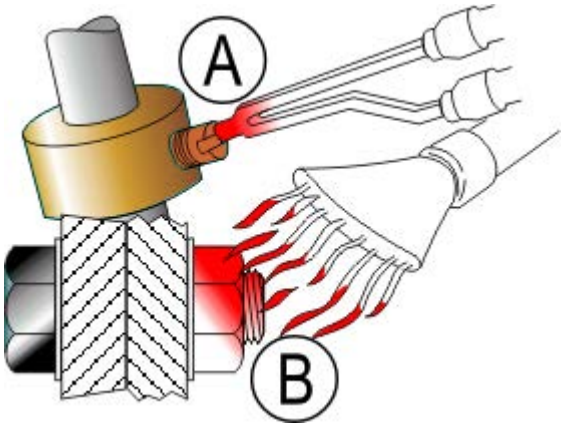
For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

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

Figure 17. Use heat for disassembly of fasteners with threadlocker.

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

2 Important Installation Precautions

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2.1 External Fuse/Breaker, Wiring, and Disconnect Requirements

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An external fuse **or** circuit breaker and a disconnect switch must be provided in the facility for (and dedicated to) the machine. These may be in the same or separate, **permanently mounted** electric boxes. Electric power and ground connections will be made between the incoming power junction box on the machine and this external box (or one of the boxes).

2.1.1 Fuse or Circuit Breaker Size

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Refer to the “External Fuse and Wire Sizes...” document for your machine model. This document will be found in the machine's installation manual, available from the parts department. Choose the fuse or circuit breaker from the appropriate column of the table provided, as follows:

If a fuse is used — Match the fuse listed in the “Fuse” column for your machine's voltage. The specified fuse sizes are consistent with the USA National Electric Code (NEC), section 430-52, exception No. 2, Part B, which states: “The rating of a time-delay (dual-element) fuse shall be permitted to be increased, but shall in no case exceed 225 percent of the full-load current.”

If a standard circuit breaker is used — Match the amperage rating listed in the “Breaker” column for your machine's voltage.

If an inverse time circuit breaker is used — Match the characteristics (amperage rating) of the fuse listed in the “Fuse” column for your machine's voltage. When applied to an inverse time circuit breaker, the specified fuse sizes are consistent with the USA National Electric Code (NEC), section 430-52, exception No. 2, Part C, which states: “The rating of an inverse time circuit breaker shall be permitted to be increased, but shall in no case exceed 400 percent for full-load currents of 100 amperes or less.”

2.1.2 Wire Size

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Use wiring no smaller than that listed for your machine's voltage in the “Wire size... ”column in the “External Fuse and Wire Sizes...” document. The table value applies to runs up to 50 feet (15 meters). Use the next larger size for runs 50 to 100 feet (15 to 30 meters). Use wire two sizes larger for runs greater than 100 feet (30 meters). If an inverse time circuit breaker is used and local codes require a larger wire size than that specified by Milnor, abide by the local code.

NOTICE: The specified wire size may appear too small for the fuse or circuit breaker shown. However, it is consistent with both the load imposed and with the USA National Electric Code.

2.1.3 Ground

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The ground wire and connections must ensure a reliable earth ground (zero potential). Use wiring of at least as large a gauge as that required for incoming power. Do not rely on conduit, machine anchorage, etc. Use the ground lug provided in the incoming power junction box on the machine.

2.1.4 Disconnect Switch for Lockout/Tagout

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The disconnect switch must permit personnel to disconnect and lockout/tagout electric power from the machine. In the USA, refer to OSHA standard 1910.147 “The control of hazardous energy (lockout/tagout)”. Refer to the USA National Electric Code for requirements on locating the switch. In other locales, abide by these standards if no other local codes apply.

2.1.5 Using GFCI (Ground Fault Circuit Interrupter) Device

BNUUUF01.R05 0000571262 B.6 D.2 A.2 4/26/23, 10:44 AM Released

The AC Drive will most likely cause the GFCI protection device to trip. The reason the AC Drive will cause this tripping of the GFCI is the Common Mode Current or Common Mode Noise (CM Noise) that the VFD is producing.

Use a GFCI with a higher trip level.

NOTE: Choose a GFCI designed specifically for an AC drive. The operation time should be at least 0.1 s with sensitivity amperage of at least 200 mA per drive. The output waveform of the drive may cause an increase in leakage current. This may in turn cause the leakage breaker to malfunction. Increase the sensitivity amperage or lower the carrier frequency to correct the problem.

Use a type B GFCI according to IEC/EN 60755.

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2.2 Vital Information About the Forces Imparted to Supporting Structures by Laundering Machines

BNUUUI01.C01 0000189336 B.6 C.3 A.5 1/2/20, 2:14 PM Released

This document replaces Milnor® document BIWUUI02.

All laundering machines impart static and dynamic forces to the supporting structures (foundation and soil, floor, and building). Static forces include the machine weight plus the weight of the goods and water. Dynamic forces are those imparted by various machine movements as explained in Section 2.2.2 : Major Design Considerations, page 56. The dynamic forces imparted to supporting structures can cause vibration and noise outside of the laundry room if supporting structures are inadequate.

2.2.1 Disclaimer of Responsibility

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Pellerin Milnor Corporation accepts no responsibility for damage or loss as a result of:

- inadequate supporting structures
- interference with the use of the facility caused by machine operation

The facility owner/operator is solely responsible to ensure that:

- supporting structures are strong enough, with a reasonable safety factor, to safely support the operating machine or group of machines
- supporting structures are rigid enough to isolate vibrations and noise to the laundry room

If the owner/operator does not possess the necessary expertise to ensure that the facility can safely and functionally accommodate the equipment, it will be necessary to consult the appropriate expert(s), such as a structural engineer, soils engineer, and/or architect.

2.2.2 Major Design Considerations

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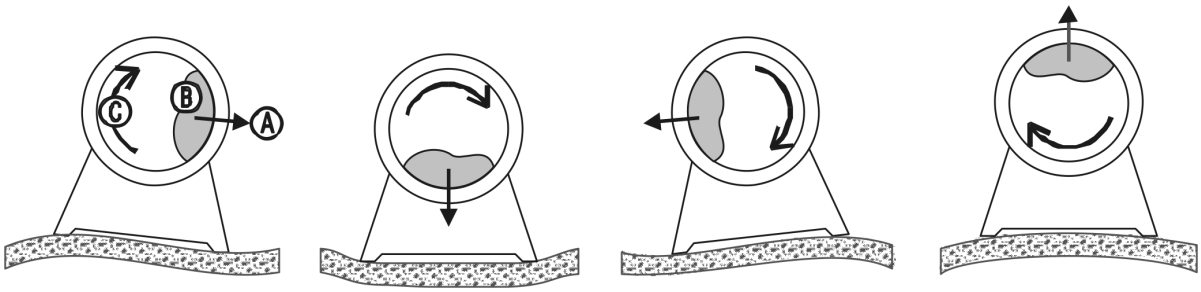
- Vibration and/or noise can be felt or heard outside of the laundry room as a result of the following, if supporting structures are not sufficiently rigid:
  - Extraction (the spinning cylinder) in washer-extractors and centrifugal extractors, imparts sinusoidal forces to supporting structures as shown in Figure 18: How Rotating Forces Act On the Foundation, page 57 . In rigid washer-extractors, these forces are up to 30 times that of suspended washer-extractors of the same capacity.
  - Extraction forces can be magnified many times if the rotation frequency matches the resonant frequency of supporting structures. To avoid this, supporting structures must have a natural resonant frequency many times greater than any possible rotation speed of the machine or combination of rotation speeds of all machines.
  - Each time goods fall in the rotating cylinder of a washer, washer-extractor, centrifugal extractor, or dryer, this can impart a force to the supporting structures.
  - The intermittent start and stop actions of large components inside the machine, particularly in a tilting washer-extractor, press-extractor, or centrifugal extractor, can impart intermittent forces to the supporting structures.
- The possibility of adverse consequences is significantly greater for upper floor installations than for installations at grade. Always consult a structural engineer for such an installation.
- The possibility of adverse consequences is significantly greater for installations at grade if subsidence causes a void between the foundation and the soil or if the soil itself does not provide adequate strength and rigidity. Some possible remedies are the addition of pilings or a deeper foundation, installed as to be monolithic with the existing foundation.
- Machine forces can cause damage to the machine or the floor without the correct anchorage.
- Applicable building codes, even when met, do not guarantee sufficient structural support and isolation of machine forces to the laundry room.

Figure 18. How Rotating Forces Act On the Foundation

Typical Washer-extractor (see note below)



Legend

A . . . Direction of force
B . . . Load
C . . . Rotation (frequency = RPM / 60)

NOTE: This figure applies to both rigid and suspended washer-extractors and to both at-grade and upper floor installations.

2.2.3 Primary Information Sources

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Milnor® provides, or can provide the following information of use to engineers and architects, for the given machine model:

- The machine dimensional drawing, found in the installation manual, specifies the machine's required anchorage.
- The Milnor® Service Department can provide static and dynamic load values and frequency (extract speed) values on request.

NOTICE: All data is subject to change without notice and may have changed since last printed. It is the responsibility of the potential owner/operator to obtain written confirmation that any data furnished by Milnor® applies for the model number(s) and serial number(s) of the purchased machine(s).

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2.3 Prevent Damage from Chemical Supplies and Chemical Systems

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All Milnor® washer-extractors and CBW® tunnel washers use stainless steel with the ANSI 304 specification. This material gives good performance when chemical supplies are correctly applied. If chemical supplies are incorrectly applied, this material can be damaged. The damage can be very bad and it can occur quickly.

Chemical supply companies usually:

- supply chemical pump systems that put the supplies in the machine,

- connect the chemical pump system to the machine,
- write wash formulas that control the chemical concentrations.

The company that does these procedures must make sure that these procedures do not cause damage. **Pellerin Milnor Corporation accepts no responsibility for chemical damage to the machines it makes or to the goods in a machine.**

2.3.1 How Chemical Supplies Can Cause Damage

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Dangerous Chemical Supplies and Wash Formulas — Some examples that can cause damage are:

- a very high concentration of chlorine bleach,
- a mixture of acid sour and hypo chlorite,
- chemical supplies (examples: chlorine bleach, hydrofluosilicic acid) that stay on the stainless steel because they are not quickly flushed with water.

The book “Textile Laundering Technology” by Charles L. Riggs gives data about correct chemical supplies and formulas.

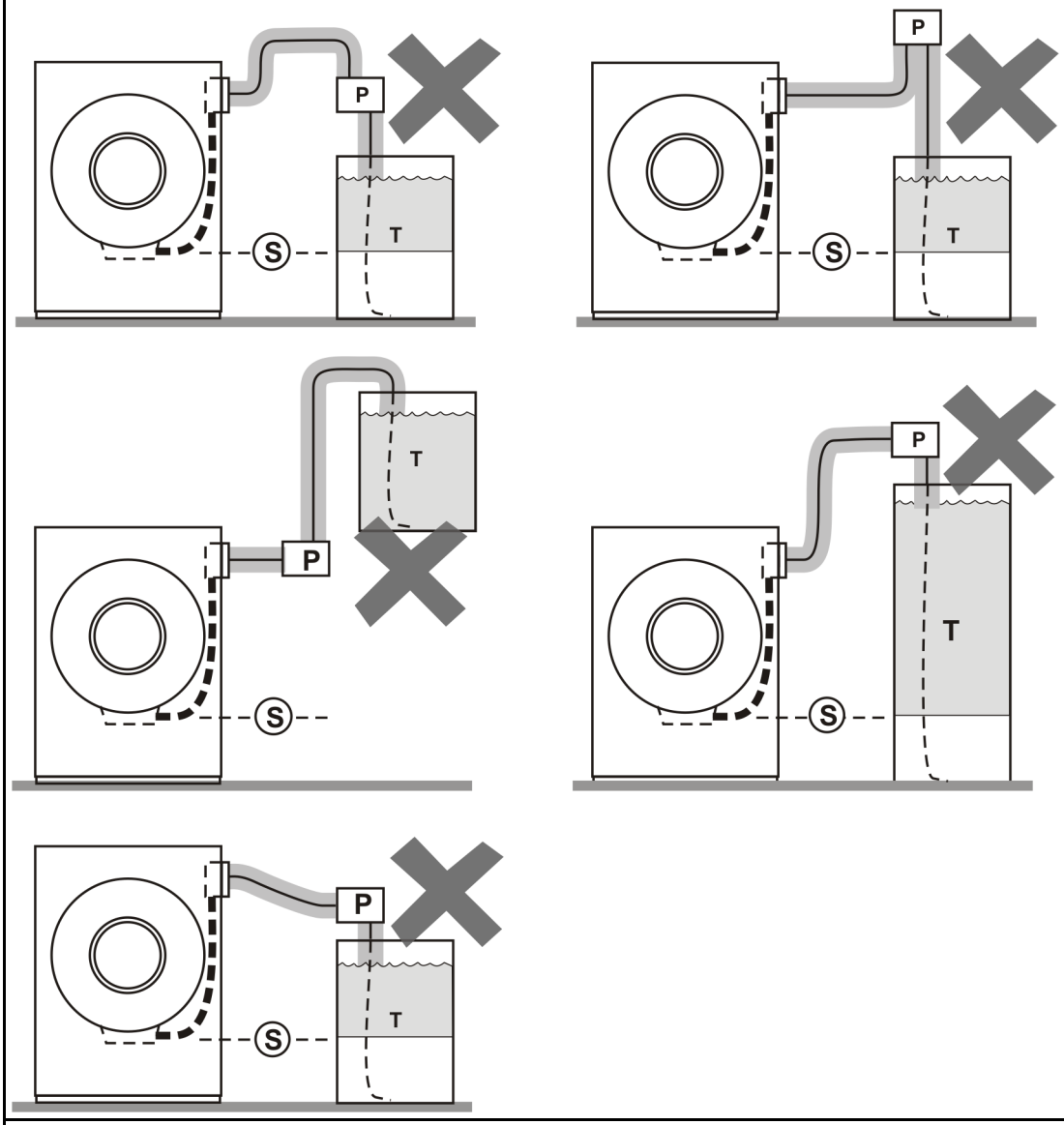
Incorrect Configuration or Connection of Equipment — Many chemical systems:

- do not prevent a vacuum in the chemical tube (for example, with a vacuum breaker) when the pump is off,
- do not prevent flow (for example, with a valve) where the chemical tube goes in the machine.

Damage will occur if a chemical supply can go in the machine when the chemical system is off. Some configurations of components can let the chemical supplies go in the machine by a siphon (Figure 19, page 59). Some can let chemical supplies go in the machine by gravity (Figure 20, page 60).

Figure 19. Incorrect Configurations That Let the Chemical Supply Go In the Machine by a Siphon

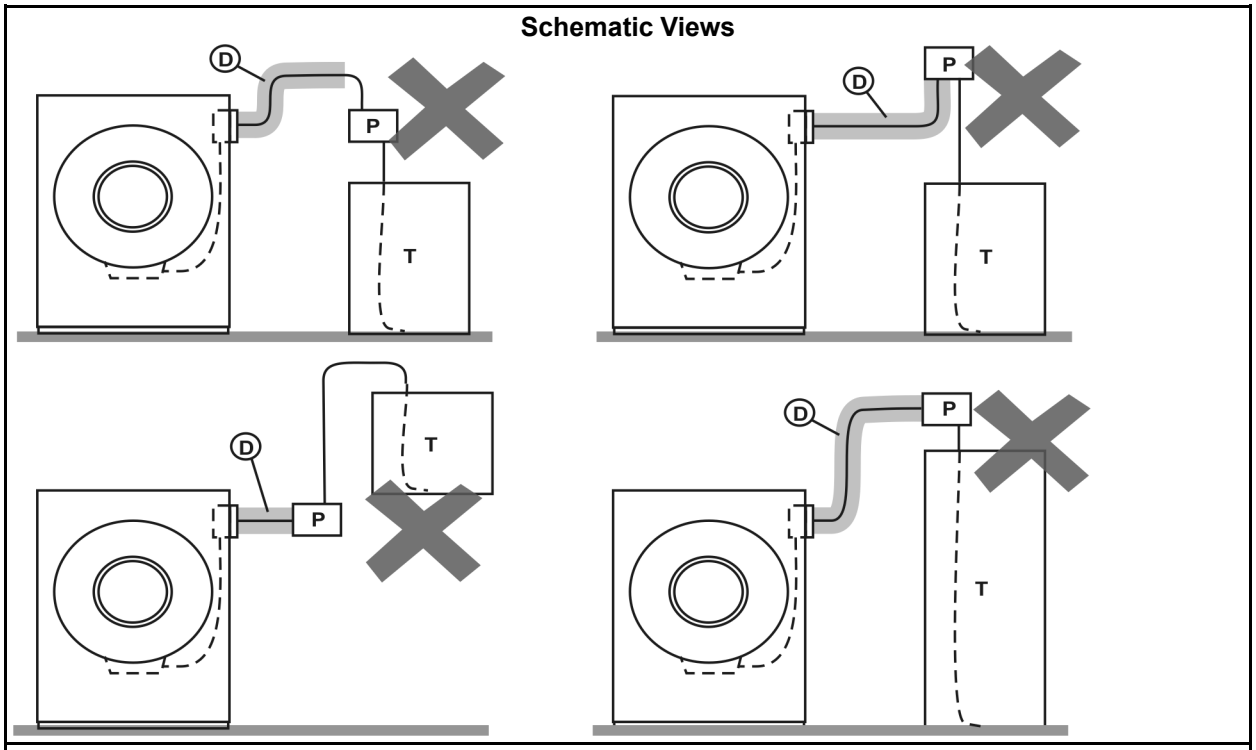
Schematic Views



Legend

P . . . Pump
T . . . Chemical tank
S . . . The siphon occurs above here. Liquid in the gray parts of the chemical tube and tank can go in the machine.

Figure 20. Incorrect Configurations That Let the Chemical Supply Go In the Machine by Gravity



Legend

P . . . Pump
T . . . Chemical tank
D . . . Chemical tube. Liquid in the gray areas can go in the machine.

2.3.2 Equipment and Procedures That Can Prevent Damage

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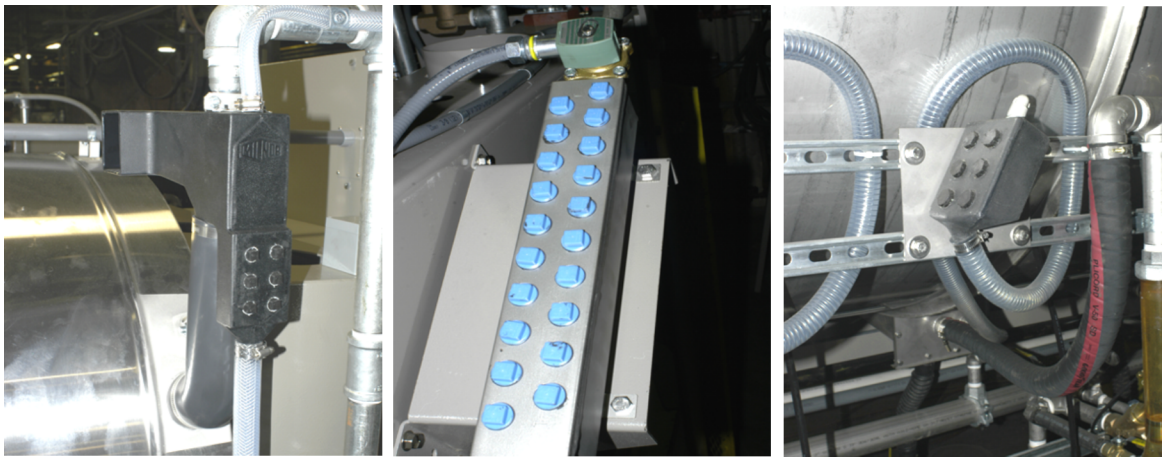
Use the chemical manifold supplied. — There is a manifold on the machine to attach chemical tubes from a chemical pump system. The manifold has a source of water to flush the chemical supplies with water.

Figure 21. Examples of Manifolds for Chemical Tubes. Your equipment can look different.



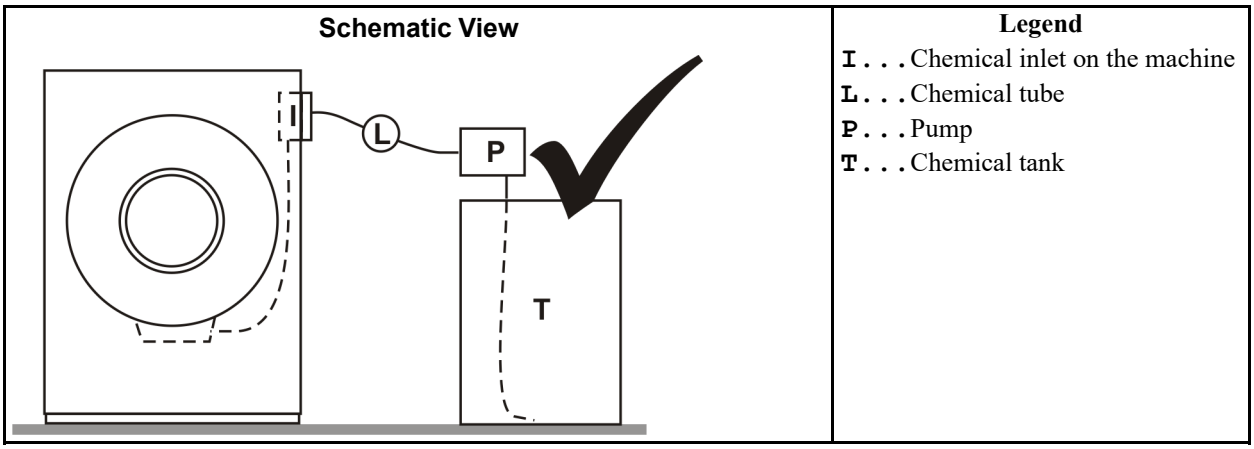
Close the line. — If the pump does not always close the line when it is off, use a shutoff valve to do this.

Do not let a vacuum occur. — Supply a vacuum breaker in the chemical line that is higher than the full level of the tank.

Flush the chemical tube with water. — If the liquid that stays in the tube between the pump and the machine can flow in the machine, flush the tube with water after the pump stops.

Put the chemical tube fully below the inlet. — It is also necessary that there is no pressure in the chemical tube or tank when the system is off.

Figure 22. A Configuration that Prevents Flow in the Machine When the Pump is Off (if the chemical tube and tank have no pressure)



Prevent leaks. — When you do maintenance on the chemical pump system:

- Use the correct components.
- Make sure that all connections are the correct fit.
- Make sure that all connections are tight.

3 Installation Procedures

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3.1 Handling a Washer-extractor from Delivery to Final Location

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This document supersedes documents BIIFLI01, BIRUUI01, MSIN0206AE, and MSIN0301AE as of October 1, 2019. It applies to all Milnor® washer-extractor models in production as of October 1, 2019.

owner/management the purchaser of the machine or their representative. Usually the consignee.

transportation company the person(s) or contractor(s) who transports the machine to the facility where it will be installed. The carrier.

rigger the person(s) or contractor(s) responsible to off-load the machine from the delivery vehicle, move it to its final location, and anchor it to the foundation. This can be the dealer but is often another company hired by the dealer.

technician a person trained in servicing Milnor® products and responsible to remove shipping restraints. This is usually a dealer employee.

3.1.1 Notices

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Qualified Personnel Only — Do not attempt to move, anchor, or remove restraints from the machine unless you are a rigger or technician, as defined above.

Disclaimer — **Pellerin Milnor Corporation is not responsible for damage to the machine after it leaves the factory.** Pellerin Milnor Corporation strongly recommends that the consignee (usually the owner/management) carefully inspect the machine in its protective wrapping before off-loading and inspect the uncovered machine after off-loading. If damage occurred in transit, ensure that the transportation company acknowledges the damage in writing. Submit a damage claim as soon as possible.

Other Tasks — This document addresses common tasks that the rigger and technician will perform. Other tasks, not explained here, can be needed. Information about other tasks is usually provided by the dealer, the Milnor® Applications Engineering department, or the Milnor® Service department. Examples are:

- Placement of the machine on a platform, such as for laundry cart clearance or to accommodate unusual drain conditions.
- Partial disassembly and reassembly, possible on some models, for movement through small spaces.

3.1.2 Facility Prerequisites

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Required Condition	Supporting Information
structural support	See document BNUUUI01 "Vital Information About the Forces Imparted to Supporting Structures by Laundering Machines" which can be found in the installation manual and also at https://milnor.sharefile.com/d-s8408ba617d244d98.
protected storage	If the machine must be stored temporarily, it must be protected from dampness and excessive temperatures.
access to the final location	See the machine dimensional drawing, which can be found at the end of the installation manual, for overall dimensions. Partial disassembly is sometimes possible. Contact the Milnor® Service department.
clearances for machine movement and maintenance	See the dimensional drawing.
operational clearances	Adequate clearance around controls and for movement of laundry equipment such as carts. See the dimensional drawing.
available utilities	See the dimensional drawing and the external fuse and wire document.
available drain(s)	See the dimensional drawing. The drain valve(s) must have unrestricted access to a drain trough of sufficient capacity in the foundation.
laundry room ventilation	The machine will contribute heat and vapors to the laundry room, which must provide adequate ventilation.

3.1.3 Rigger Precautions

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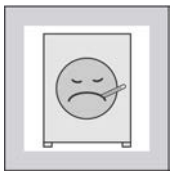
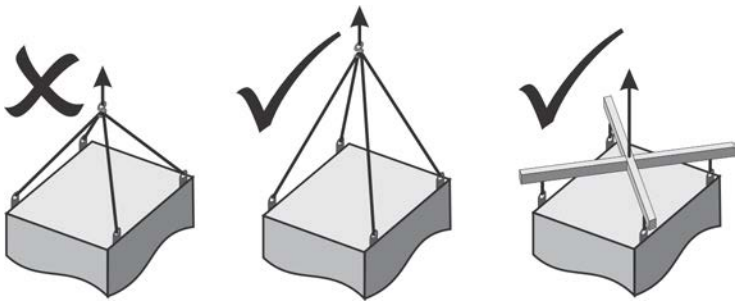
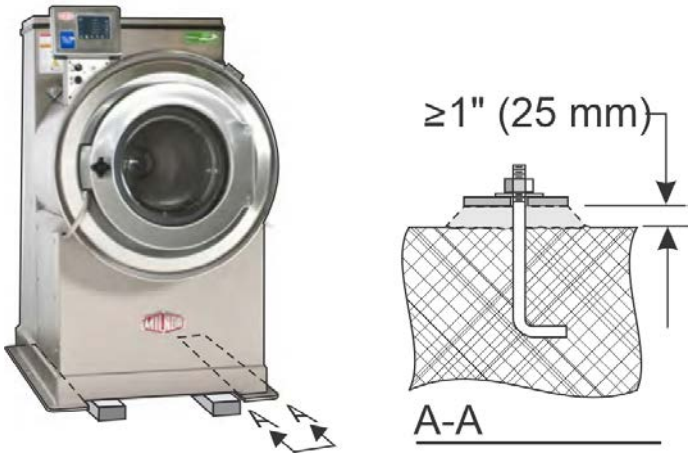
CAUTION: **Incorrect rigging** — can cause mishaps and costly machine damage.



- Know and accommodate the machine shipping weight.
- Use only lifting eyes for crane lifting.
- Use long cables or a spreader bar for crane lifting.
- Leave the machine skidded as long as possible.
- Protect fragile or sensitive machine components.
- Prepare the foundation and install anchor bolts correctly.
- Set the machine at the correct height and level.
- Apply machinery grout evenly so that support is distributed.
- Tighten anchors alternately so that the hold-down force is distributed.

Precaution	Explanation
Know and accommodate the machine shipping weight.	Use lifting and moving equipment appropriate for the machine shipping weight, as shown on the Bill of Lading. To obtain the shipping weight in advance, contact the Milnor® Transportation department.
Use only lifting eyes for crane lifting.	Machines designed for crane lifting are provided with lifting eyes either on the structural frame or on the shell, hidden behind cosmetic panels.
Use long cables or a spreader bar for crane lifting.	
Leave the machine skidded as long as possible.	If the machine is skidded, leave the machine on the skids until the machine is as close as possible to its final location. Use care to avoid contact between the fork lift forks and fragile machine components on the un-skidded machine.
Protect fragile or sensitive machine components.	After the machine is uncovered, carefully find and read all tags on the outside of the machine. White and manila paper tags are installation precautions. See the Installation Tag Guidelines in the installation manual for additional information.
Prepare the foundation and install anchor bolts correctly.	Anchor bolt sizes and locations are shown on the dimensional drawing in the back of the installation manual. However, Milnor® recommends to use the actual machine as a template to accurately locate where the anchor bolts are to be installed in the foundation. See the anchor bolt detail on the dimensional drawing. It is not permissible to omit anchor bolts.

Precaution	Explanation
Set the machine at the correct height and level.	Use blocking to get the machine base level and the base pads a minimum of 1” (25 mm) above the floor. Example: 
Apply machinery grout evenly so that support is distributed.	Fill all voids between the foundation and each base pad with industrial strength, non-shrinking grout. Allow the grout to fully cure per the grout instructions.
Tighten anchors alternately so that the hold-down force is distributed.	Raise the machine slightly and remove the wood blocking. Install a flat washer and nut on each anchor bolt and tighten incrementally in an alternating pattern. After tightening, check each anchor at least twice.

3.1.4 Technician Precautions

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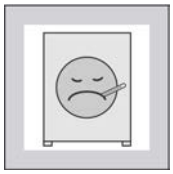
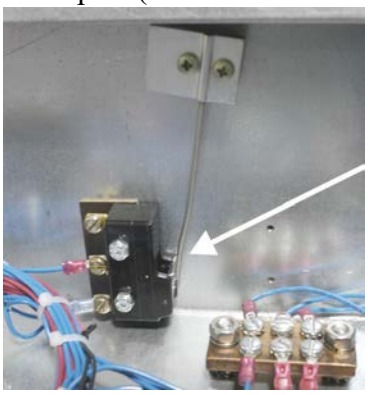
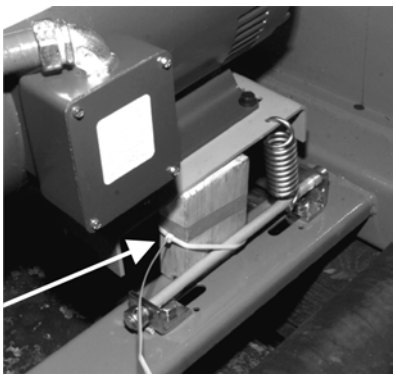
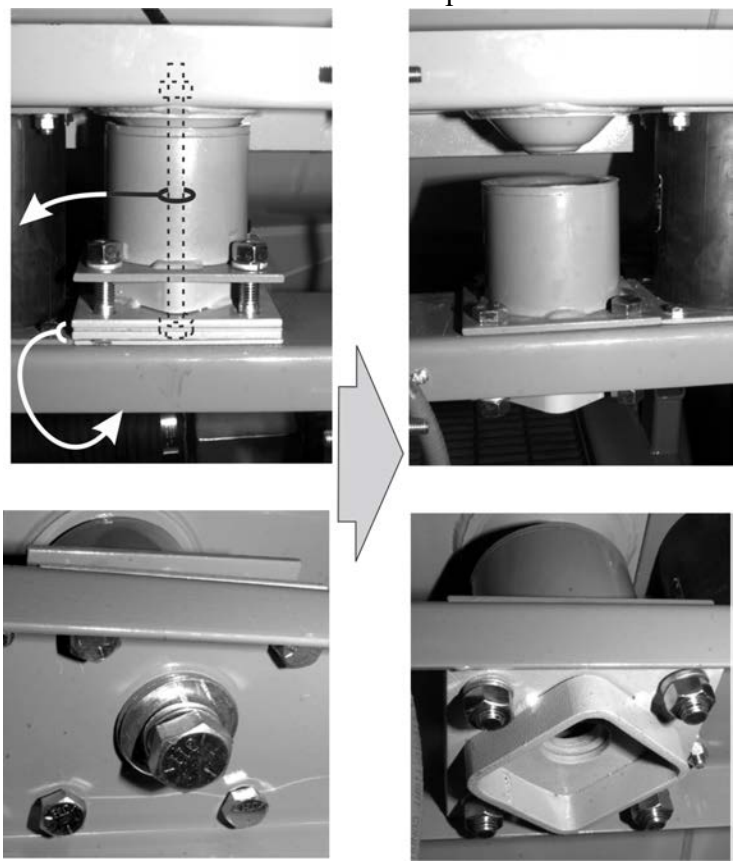
CAUTION: **Overlooked or mishandled shipping restraints —** can cause costly machine damage.



- Leave all internal shipping restraints in place until the machine is anchored.
- Check for and remove shipping tie wraps.
- Check for and remove suspension hold-down hardware, if applicable.
- Check for and remove red shipping brackets, if applicable.
- See the “Cylinder inspection” warning and inspect the cylinder for smoothness.

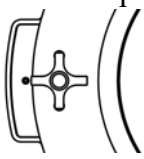
Precaution	Explanation
Leave all internal shipping restraints in place until the machine is anchored.	The machine can have one or more internal shipping restraints to help protect components from damage until the machine is anchored. These are located inside the housing or inside electric cabinets.
Check for and remove shipping tie wraps.	Examples (varies with machine model):  
Check for and remove suspension hold-down hardware, if applicable.	See also the service manual. Example: 
Check for and remove red shipping brackets, if applicable.	Shipping brackets are painted red. See the shipping brackets parts document in the service manual.

Precaution	Explanation
See the "Cylinder inspection" warning and inspect the cylinder for smoothness.	Inspect the cylinder and perforations for smoothness. **Pellerin Milnor Corporation cannot accept cylinder finish damage claims after the machine has been placed in service.** Machines are shipped with the shell door(s) closed. See the section below for information on how to open the shell door(s).

WARNING: Cylinder inspection — can trap you in the cylinder or seriously injure you.

- Never enter, or place body parts in the cylinder when power is supplied to the machine.
- If the machine is connected to power, lockout/tag-out power at the external disconnect switch.
- mechanically restrain the cylinder from turning.
- Have an assistant present in case of emergency.

Can the Door(s) Be Opened Before Utilities are Connected? — The shell doors on all Milnor® washer-extractors in current production, except for the side-loading, barrier models, have one of two types of door latch: electric-operated or air operated.

Door Type	How To Open
Electric-operated: 	The machine leaves the factory with the door latched closed but not locked. Turn the door knob to open the door even when the machine does not have power. If the door will not open, the door lock mechanism moved to the locked position due to shaking in transit. In this event, wait until the machine is connected to electric power and use the controls to open the door.
Air-operated: 	The machine leaves the factory with the door(s) closed and locked (with the door plunger extended). It is possible to temporarily replace the air line that retracts the door plunger with a source of compressed air to open the door when no other utilities are connected. Otherwise, wait until utilities are connected to the machine and use the controls to open the door.

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3.2 Connection Precautions for Washer-extractors

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This document supersedes documents BNWBUI01, BNWBUI02, BNWBUI03, BNWBUI04, BIRQVI01, BIMUUI02, and BIIFUI01. It applies to all Milnor® washer-extractor models in production as of October 1, 2019.

plumber the person(s) or contractor licensed or otherwise accepted by the local jurisdiction to perform the plumbing work described herein, and qualified to do so.

electrician the person(s) or contractor licensed or otherwise accepted by the local jurisdiction to perform the electrical work described herein, and qualified to do so.

chemical supplier the person(s) or contractor with detailed knowledge of 1) the machine controller configuration and operation, and 2) the pumped chemical delivery system, if such a system is to be used.

3.2.1 Notices

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Qualified Personnel Only — Do not attempt to connect utilities to the machine unless you are a plumber, electrician, or chemical supplier, as defined above.

Machine Must Be Anchored — Utility connections are to be made only after the machine has been anchored. See BNWUUI03 "Handling a Washer-extractor from Delivery to Final Location."

Other Tasks — This document and the documents it references address common tasks that the plumber, electrician, and chemical supplier will perform. Other tasks, not explained here, can be needed. Information about these tasks is usually provided by the dealer, the Milnor® Applications Engineering department, or the Milnor® Service department An example is electrical interfacing with a remote Mildata® data collection system.

3.2.2 Utility Requirements and Related Information

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Type of Information	Value or Where to Find
equipment list showing model and options purchased	For the dealer, see the order acknowledgement.
plumbing connection fitting types, sizes, and locations	See the standard and options dimensional drawings for your model located at the back of the installation manual.
water pressure range	10 – 75 psi (69 – 531 kPa) required
Cv value	See the specification sheet for your model available online at: https://www.milnor.com/specification-sheets/. The Cv value assists the piping designer in determining flow rates and pressures.
steam pressure range	30 – 115 psi (207 – 793 kPa) required, if applicable
compressed air pressure range	85 – 110 psi (586 – 758 kPa) required, if applicable
specified voltage	See the machine nameplate or the order acknowledgement.

Type of Information	Value or Where to Find
available voltages for this model	See the specification sheet for your model available online at: https://www.milnor.com/specification-sheets/.
multi-machine conditions that can interrupt utility service to a given machine	See dealer publication B22SL94011 “Sizing and Planning a Laundry” found online at:https://www.milnor.com/wp-content/uploads/2016/01/Sizing-and-Planning-a-Laundry_18323.pdf
approved plumbing materials	Plumbing materials must comply with applicable codes. The Milnor® factory makes no recommendations for inlet connection materials due to the many variables such as water conditions, materials cost and availability, and ongoing advances in materials technology. When drains must be piped, as apposed to a simple air drop to a sump, rubber hose and PVC are often used.

3.2.3 Plumber Precautions

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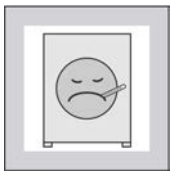
CAUTION: **Machine damage and code violations —** can occur as a result of incorrect plumbing.



- Confirm the reliability of the piped utilities.
- Maintain connection point diameter.
- Flush fluid lines.
- Do not twist valve bodies.
- Never interchange water valve electrical connections.
- Install any vacuum breaker(s) provided or required.
- Install any water strainer(s) provided or required.
- Install a union and a shutoff valve at each hard piped connection.
- Connect a dry supply injector flush inlet to hot water and regulate it.

Precaution	Explanation
Confirm the reliability of the piped utilities.	Water and any other piped fluids (steam, compressed air) needed by the machine must be within the specified pressure range and not prone to frequent interruptions when the machine operates. See Section 3.2.2 : Utility Requirements and Related Information, page 68.
Maintain connection point diameter.	The piping between the utility tap and the fitting on the machine must be as large or larger than the fitting. Drain piping or tubing, if any, must provide an unrestricted flow to the sump.
Flush fluid lines.	Foreign material such as debris in air lines, trapped air in water lines, and condensate in steam lines can damage machine components.
Do not twist valve bodies.	Hold a wrench on the valve side of a pipe connection to prevent the valve from twisting when you tighten the connection.

Precaution	Explanation
Never interchange water valve electrical connections.	On machines with air-operated water valves, it is permissible to exchange the pneumatic control lines, if the cold and hot connections were accidently plumbed in reverse.
Install any vacuum breaker(s) provided or required.	If vacuum (siphon) breaker(s) are provided for fresh water connection (s), but not already installed, install them as shown on the options dimensional drawing. If vacuum breakers are required by code, but not provided, obtain and install the required hardware.
Install any water strainers provided or required.	If water strainer(s) are provided for fresh water connections, install them between the machine and incoming water. For machines with garden hose type water inlets, use 40-mesh strainers.
Install a union and a shutoff valve at each hard-piped connection.	Obtain and install the necessary hardware to permit hard-piped connections to be shut off and disconnected at the machine for maintenance. For the valve, use a ball valve, not, for example, a globe valve.
Connect a dry supply injector flush inlet to hot water and regulate it.	If the machine has a dry supply injector with an external flush water connection and hot water is available, provide hot water to this inlet. The machine will be supplied with a pressure regulator. Install this hardware at the flush water connection and confirm that the regulator is set to 28 psi (193 kPa). Steam in the hot water line will cause the supply injector to malfunction.

3.2.4 Electrician Precautions

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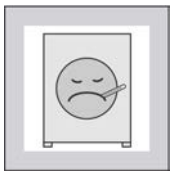
CAUTION: **Machine damage, machine malfunctions, and code violations —** can occur as a result of incorrect electrical connections.



- Know the machine electrical specifications.
- Comply with the published external fuse and wire requirements.
- Confirm the reliability of the electric service.
- Confirm the machine is phased in correctly.
- Confirm the correct line voltage setting on a selectable 240/208 volt machine.
- Attach the stinger leg, if any, only to L3.

Precaution	Explanation
Know the machine electrical specifications.	Refer to the nameplate affixed to the machine.
Comply with the published external fuse and wire requirements.	These requirements are given in document BGUUUF01 “External Fuse/Breaker, Wiring, and Disconnect Requirements” and the external fuse and wire document for your machine. These documents are found at the back of the installation manual. BGUUUF01 is also available at: https://milnor.sharefile.com/d-s5e1bad2885a447e8
Confirm the reliability of the electric service.	Voltage fluctuations of more than 10% above or below the specified voltage can damage electrical components, especially motors. The Milnor® factory strongly recommends that unreliable electric service is improved before the machine is put in use.
Confirm the machine is phased in correctly.	An installation tag on the machine shows the correct cylinder rotation at distribution (drain) or extract speed. If the cylinder turns in the wrong direction, reverse the wires connected to L1 and L2. Never move L3. Individual motors were phased in at the factory. Never reconnect individual motors or motor control devices.
Confirm the correct line voltage setting on a selectable 240/208 volt machine.	This precaution applies only if the nameplate voltage says 208/240V. It does not, for example, apply if the nameplate says 208V **or** 240V. The switch is near the incoming power transformer and must be in the position that matches the service voltage: 240 VAC or 208 VAC.
Attach the stinger leg, if any, only to terminal L3.	Never attach a stinger leg to terminal L1 or terminal L2.

3.2.5 Chemical Supplier Precautions

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Injury and severe machine damage — can occur as a result of incorrect chemical system installation.

- Understand and comply with the published connection precautions.
- Understand the machine controller.

Precaution	Explanation
Understand and comply with the published connection precautions.	The connection precautions are given in document BIWUUI03 “Prevent Damage from Chemical Supplies and Chemical Systems” in the installation manual. BIWUUI03 is also available at: https://milnor.sharefile.com/d-s79f12e8f11f42a9b
Understand the machine controller.	The machine controller is explained in detail in the reference manual for your machine, which is available from the Milnor® Parts department.

4 Drive Assemblies

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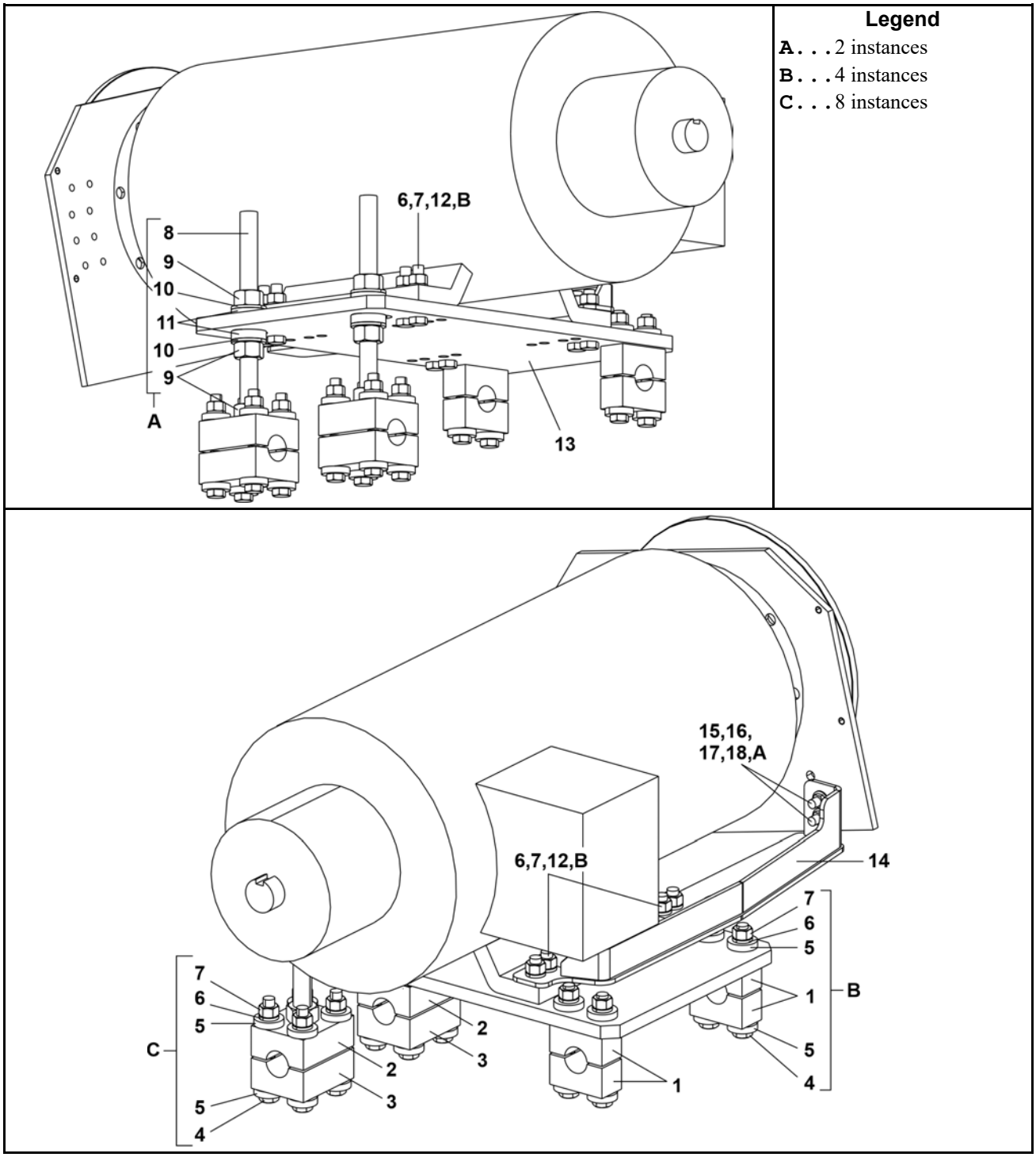
Motor Mount

3 Sheets

48040M7K, 68036M5K

Figure 23. 68036M5K

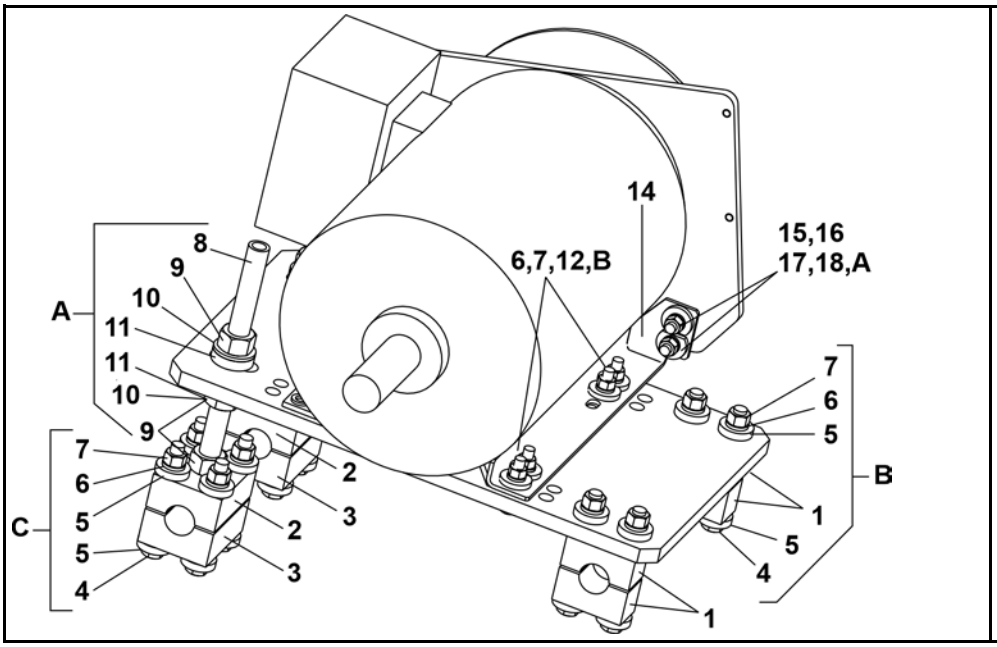


Motor Mount

3 Sheets

48040M7K, 68036M5K

Figure 24. 48040M7K



Legend

A . . . 2 instances
B . . . 4 instances
C . . . 8 instances

Table 21. Parts List—Motor Mount

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GDB68001	6836M5K DRIVE BASE	68036M5K
	B	GDB48003	4840M7K DRIVE BASE	48040M7K
			Components	
all	1	02 11311B	MTR BASE PIVOT CLAMP	
all	2	X2 11311P	PAINT=JACKBOLT CLAMP, 6836F	
all	3	C2 11311C	CAST=JACKBOLT CLAMP, 6836F	
all	4	15K227B	HEXCAPSC 5/8-11X5.5 GR8 ZINC	
all	5	17W030	SPHERICAL WASHER SET 5/8 M/F	
all	6	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	7	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	8	17R031A13A	THRD ROD 1-8 X 13" GR8 ZNPL	
all	9	15G250	HXNUT 1-8UNC2B SAE ZNC GR2	
all	10	15U393	FLTWASH 1" HARD ASTM F436	
all	11	17W060	SPHERICALWASHER SET 1" M/F	
all	12	15K226L	HEXCAPSCW 5/8-11X3.5 GR8 ZINC	
all	13	03 17130	4840M EXTRACTOR MOTOR PLATE	

Motor Mount

3 Sheets

48040M7K, 68036M5K

Table 21 Parts List—Motor Mount (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
A	14	W3 17142	BRAKE TEFC MOTOR TORQUE ARM-4840M	
B	14	02 21859C	BRAKE TORQUE ARM, 4840 CAST	
all	15	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	16	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	17	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	18	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	

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4.1 Drive Pulley and Belt Maintenance

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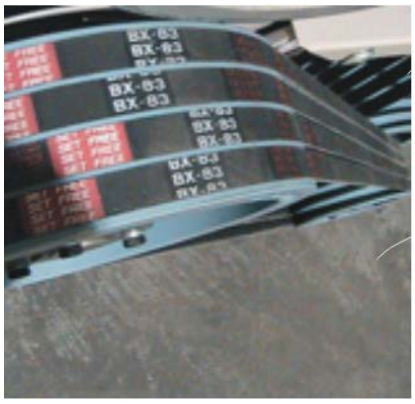
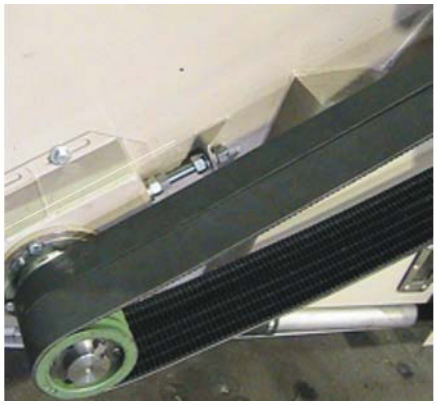
Figure 25. Examples of drives this instruction applies to: one or more V-belts, attached V-belts and tooth belts


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

WARNING: **Risk of Injury or death** — A machine in operation without safety guards is dangerous. Drive belts can pull in your body or clothing.

- Remove power from the machine when you do work on the mechanisms.
- Stay out of the machine frame when you do a test on the machine.
- Replace all covers before you put the machine into operation.

TIP: Read these documents from the Gates Corporation (`www.gates.com`) to know more about pulley and belt maintenance: "Belt Drive Preventive Maintenance & Safety Manual" and "Preserve your investment - Check Engine Belts Often."

4.1.1 Pulley Requirements

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- Keep pulleys free of dirt, oil and other contamination.
- Replace pulleys with groove damage.
- Align pulleys and shafts.
- Keep run-out in tolerance.

4.1.1.1 Condition of Grooves on Pulleys

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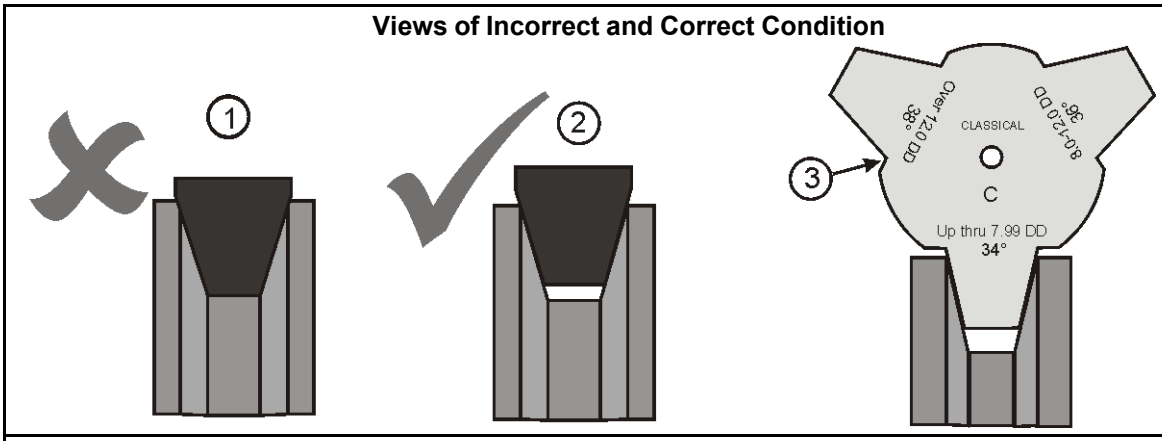
Replace a pulley if:

- the grooves have burrs, cracks, or worn areas that can cause damage to the belts.
- the belts touch the bottom of the groove at any point (Figure 26, page 77).

Figure 26. Pulley Groove Condition



Legend

1. Incorrect: Too much pulley wear. The belt touches the bottom of the groove.
2. Correct: The belt does not touch the bottom of the groove.
3. Use a sheave (pulley) gage to see if grooves are worn.

4.1.1.2 Pulley and Shaft Position

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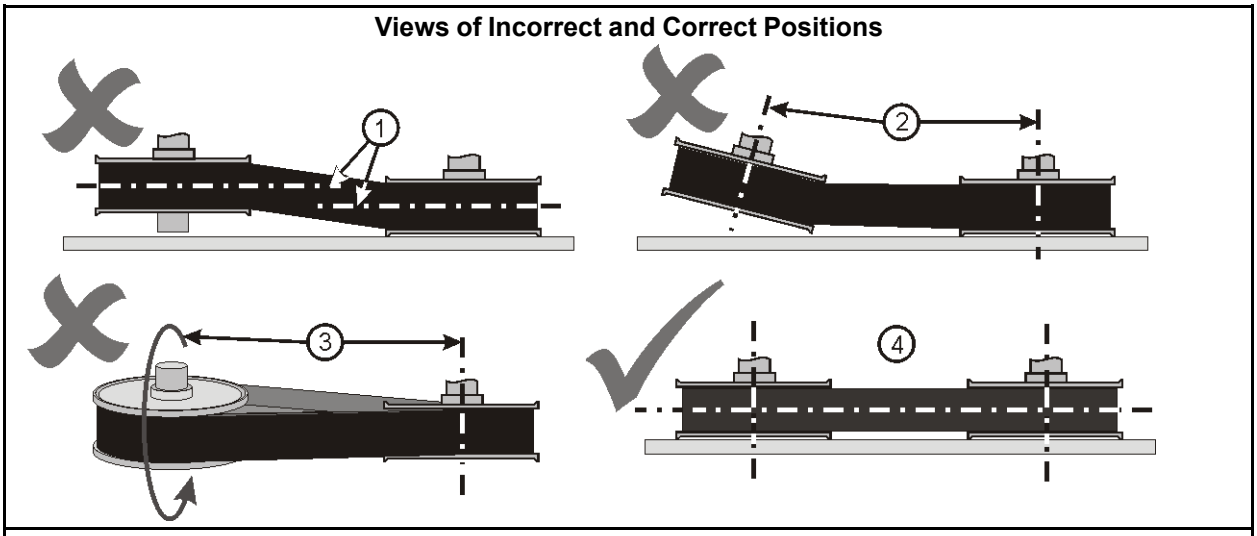
Align To adjust parts until they are in a correct position to other parts.

- Always align components when you replace a motor, bearing housing, pulley, or belt.
- The belts must not twist or make unusual noises or show vibration.

Figure 27. Pulley and Shaft Position



Legend

1. Not aligned: Pulley grooves are in different planes.
2. Not aligned: Pulley grooves are in different planes and shafts are not parallel.
3. Not aligned: Pulley shafts are not parallel (not at the same slope).
4. Aligned: Pulley grooves are in the same plane and shafts are parallel.

4.1.1.3 Keep Run-Out in Tolerance

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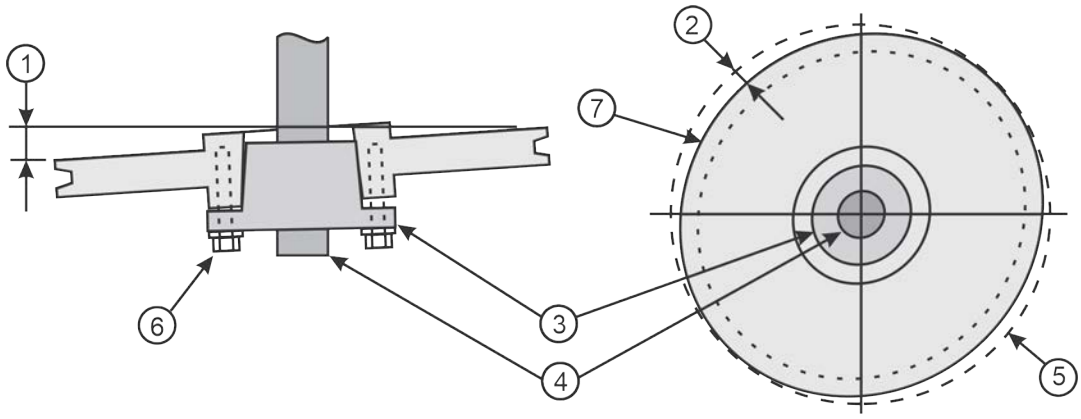
Axial run-out The difference between the minimum and maximum distance between the face of a pulley and a plane perpendicular to the pulley shaft (Figure 28, page 78, item 1). Incorrect installation or damage can cause a pulley to be not at a 90 degree angle to the shaft.

Radial run-out The difference between the minimum and maximum diameter in one turn (Figure 28, page 78, item 2). If a force causes damage to a pulley, it can bend. It will not have a circular shape.

Figure 28. Run-out

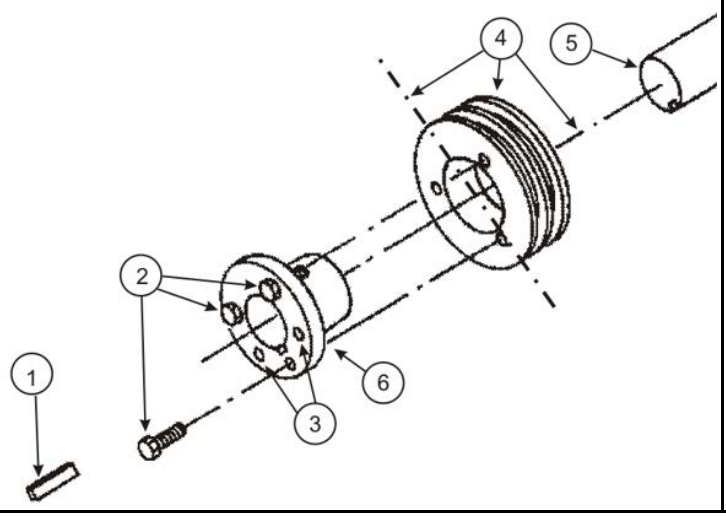


Legend

1. Axial run-out. This pulley is bent or not perpendicular to the shaft. This condition must not be more than 1 mil for each inch (0.1 mm for each dm) of the pulley diameter.
2. Radial run-out. This pulley is not circular. This condition must be less than 10 mils (0.25 mm).
3. Bushing
4. Shaft
5. A circle
6. Bushing bolts
7. Sheave

Figure 29. Typical Pulley Assembly

View of Pulley Components



Legend

1. Key
2. Bushing bolts. Tighten bolts in a pattern that gives the same torque. This will give minimum axial run-out.
3. Push-off holes
4. Pulley. Measure the radial run-out of the pulley after you assemble. Make sure that the center of the pulley is the same as the center of the shaft.
5. Shaft. Make sure that the shaft is not bent.
6. Bushing

4.1.2 Belt Requirements

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- Replace damaged belts.
- The pulleys must stay aligned when you adjust the belt tension.
- Do not use belts made from cut belts.
- For a drive with more than one belt:
  - Replace all of the belts together.
  - Do not mix new and used belts.
  - Do not mix belts from more than one manufacturer.

CAUTION: **Risk of damage —** A screwdriver or metal tool can cause damage to the belt.

▶ Do not push the belt on with a tool.

4.1.2.1 Condition of Belts

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Slippage when the pulley turns more quickly than the belt can move

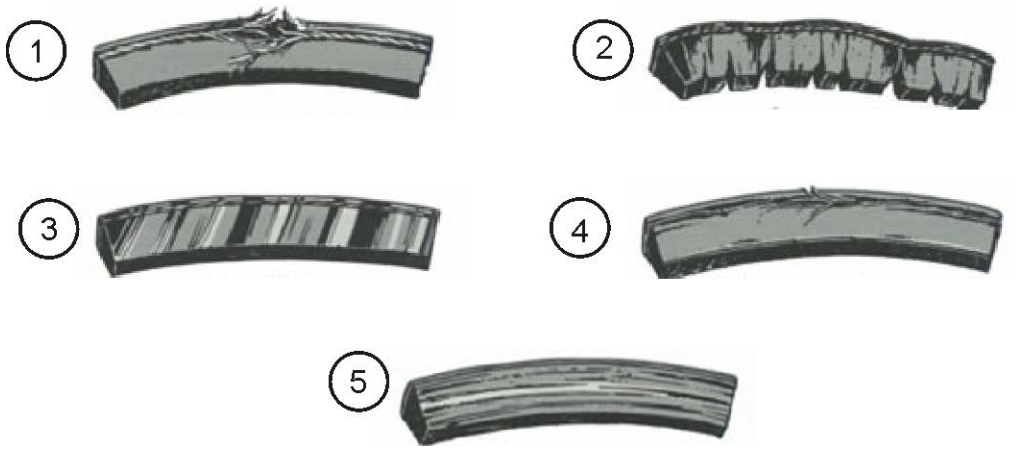
Slippage occurs if belts are not aligned (see Section 4.1.1.2 , page 77) or by incorrect tension explained in Section 4.1.1.2 , page 77. Slippage can cause belts to become too hot. Belts must not have a temperature more than than 140F (60° C).

TIP: The belt storage area must be cool and dry with no sun light.

TIP: New and used belts can look the same. These belts will have different strength properties and a small difference in length.

Figure 30. Types of Belt Damage

What to Look For



Legend

1. Broken cord—The belt was pushed across the groove with a metal tool.
2. Cracks—The belt is too large for the pulley.
3. Shiny sidewalls—slippage, oil, grease.
4. The belt layers disconnect—oil, grease.
5. Bands on sidewalls—rough surface or particles in the pulley groove.

4.1.2.2 Tension of Belts

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This data does not apply to belts where a spring holds the correct belt tension. Manual tension adjustment is not necessary for this type of drive.

The correct belt tension is the lowest tension that prevents belt slippage with a full load condition. If the belt is too tight, this can cause damage to the belt, the pulleys, bearings, and other drive components. If the belt is too loose, this can cause belt slippage. Incorrect belt tension or belt slippage can cause components to make an unusual noise.

When you install a new belt, use these rules to get the correct belt tension:

- Set the tension of the belt when you replace a motor, bearing housing, pulley, or belt.
- Replace all belts on a pair of pulleys when you replace one of them.
- After adjustment, operate the machine in all of its standard conditions to make sure that the belt operates correctly. For example, operate a washer-extractor in its full speed range with a full load of wet goods.
- Adjust the tension when you first install a belt. Do the adjustment again after 24 and 48 hours of operation. All belts will become longer after a short time. A V-belt will move down in the grooves of the pulleys. These conditions will cause the tension to decrease.

When you do scheduled maintenance, examine the belts for correct tension. With operation, belts become longer.

4.1.3 The pulleys must stay aligned when you adjust the belt tension

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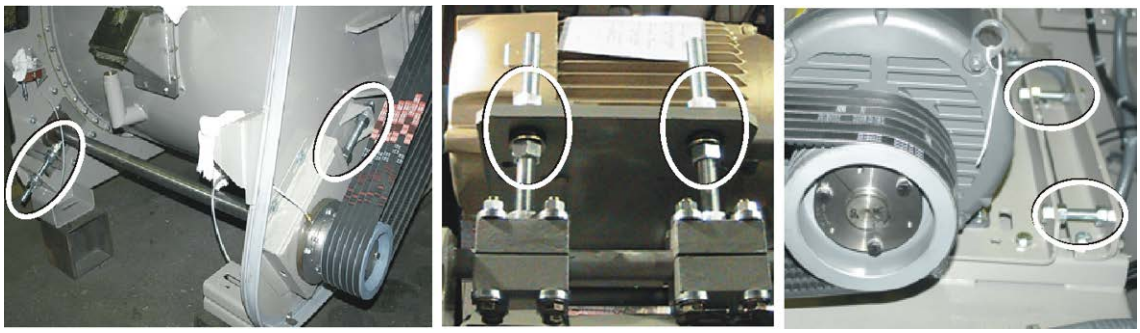
Some tension mechanisms do not have an effect on pulley and shaft requirements. Pulleys will stay aligned when you adjust them. Figure 31, page 81 is an example of these. Where tension mechanisms are a pair of threaded rods, you must adjust the nut, on each rod carefully. If not, the pulleys will not stay aligned. Examples of this type are shown in Figure 32, page 81.

Figure 31. A Tension Mechanism that will not Change the Angle of the Pulleys

Figure 32. Some Pairs of Tension Mechanisms that Can Change the Angle of the Pulleys



4.1.4 How to Do Maintenance on Pulleys and Belts

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Table 22. Typical Tools for Pulley and Belt Maintenance

Tool	Function	Related Data
Torque wrench	Make the bushing bolts the same torque to get the minimum axial run-out.	Figure 29, page 79, item 2
Laser, straight edge, or string	Align pulleys	Tools are listed in order of preference. Section 4.1.1.2 , page 77 and Figure 33, page 83
Bubble level	Align shafts	Section 4.1.1.2 , page 77 and Figure 34, page 84
Dial indicator	Measure run-out	Section 4.1.1.3 , page 78 and Figure 35, page 84
Sheave (pulley) gage	Examine pulley wear	Figure 26, page 77.
Infrared thermometer	Examine belt temperature	Section 4.1.2.1 , page 79.

4.1.4.1 Typical Steps to Replace Pulleys and Belts

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Preparation Remove power from the machine.

Belt removal Use the belt tension mechanism to decrease the distance between the pulleys until you have sufficient clearance. Figure 31, page 81 and Figure 32, page 81 show typical belt tension mechanisms.

Pulley removal On the typical type of pulley and bushing shown in Figure 29, page 79, use the push-off holes to remove the pulley easily. On special types of pulleys (example: large drive pulley and cone), look at the parts document in the maintenance manual for more data. Some pulleys are too heavy for only one person to hold.

Pulley installation Figure 29, page 79 shows the typical pulley and bushing components. Make sure that you keep run-out tolerances when you assemble and tighten the components.

Belt installation Decrease the distance between the pulleys to put the belt on easily. Assemble the components carefully. Make sure that the components are aligned. Adjust the belt tension so the belt is tight.

Test Before you connect power again, make sure that you remove all tools. Operate the machine with a full load. If the belts slip, increase belt tension with the machine shut down and power removed. Then test again. Make sure that the machine is safe before you put it into regular operation.

4.1.4.2 Examples of Procedures Used at the Milnor® Factory to Align Pulleys

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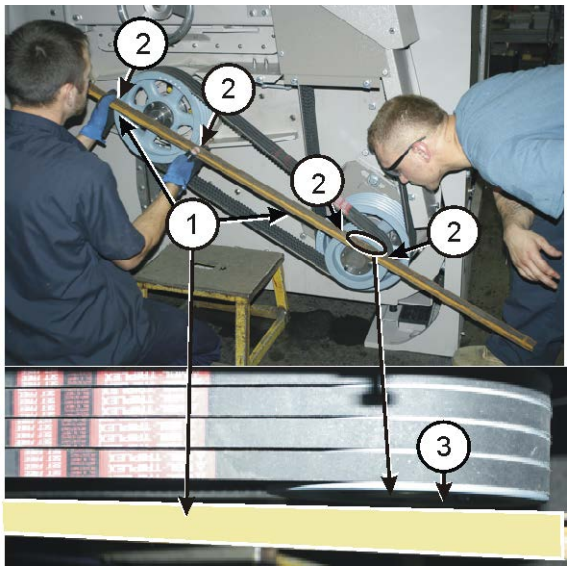
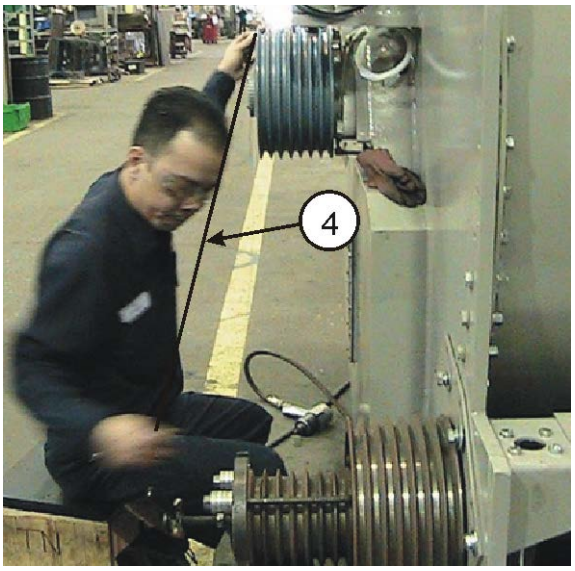
Figure 33. Use a straight edge, a string, or a laser to make sure that all pulleys are in the same plane.

Straight edge



String



Legend

1. Straight edge.
2. Four points where the straight edge must touch the pulleys.
3. Space between the straight edge and the pulley. This shows that the pulleys are not in the same plane.
4. You can use a string as a straight edge if you hold it tight.
5. Magnet-mounted laser
6. Three targets to point the laser at.

Laser

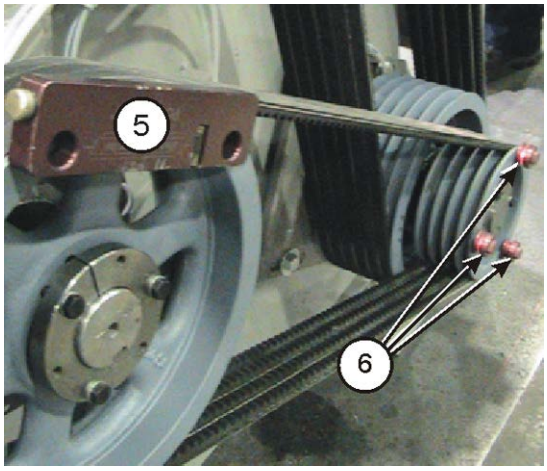


Figure 34. Use a level to make sure that the pulleys are at the same slope.

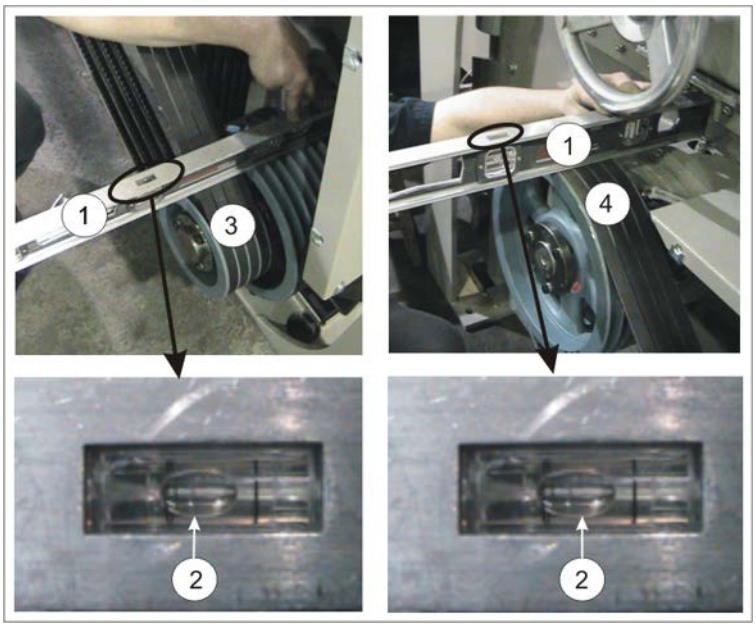
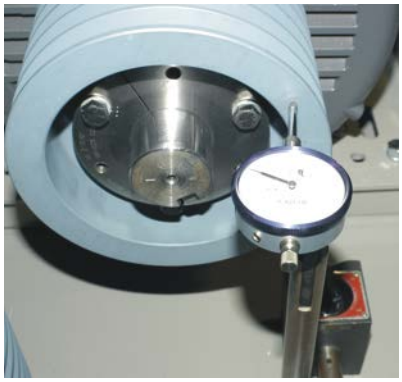
A level on the top of two pulleys	Legend
	1. Bubble level: Use this tool to make sure that the slopes of pulleys are equal. This is to make sure that you do not have the condition in Figure 27, page 77, item 3. Mechanisms shown in Figure 32, page 81 can change the pulley slopes. 2. If the slopes of the pulleys are equal, the bubble will be in the same position for each pulley. The bubbles do not have to be in the center of the level. 3. A pulley 4. A second pulley on the same drive

Figure 35. Dial indicator used to find the axial and radial run-out of a pulley.

Axial Run-out (1)	Radial Run-out (2)	Legend
		1. Dial indicator in position to measure axial run-out 2. Dial indicator in position to measure radial run-out

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4.2 Disk Brake Maintenance

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

You can do these types of maintenance on the disk brake:

- do an inspection of the brake as specified in the maintenance schedule,
- replace the friction pads,

- do an overhaul on the calipers,
- replace the hydraulic fluid,
- adjust the connection between the brake cylinder and the air cylinder.

For the first four types of maintenance, you must remove air from (bleed) the hydraulic circuit.

Section 4.2.6 : Operation of Brake Systems, page 96 tells how to operate the disk brakes. You can use it in some of the types of maintenance in this procedure.

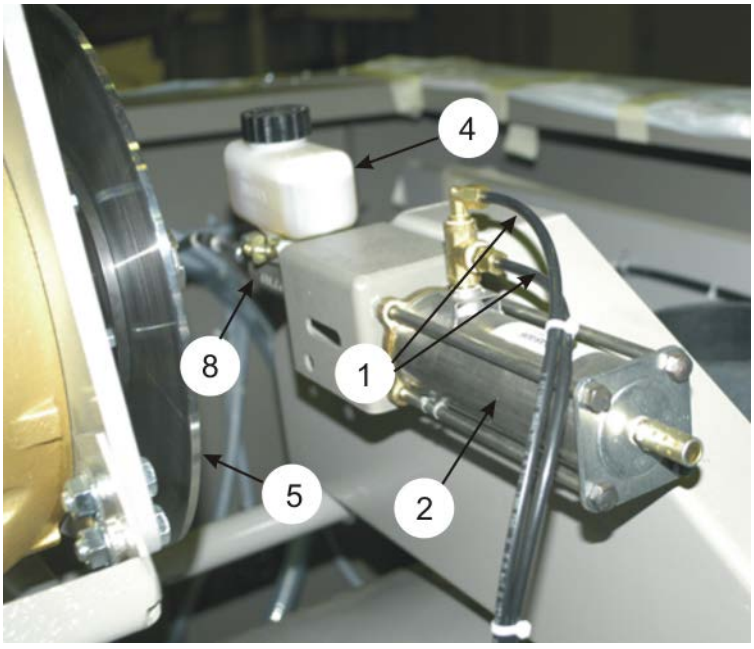
WARNING: **Risk of injury or death —** A machine in operation without safety guards is dangerous.

- ▶ You must be an approved maintenance technician.
- ▶ Use special caution when this instruction tells you to do work with electrical power on. Remove power from the machine for all other maintenance. Obey safety codes.
- ▶ Replace all guards and covers.

TIP: During parts of this procedure when you open up the calipers or hydraulic lines, put a cloth under the calipers to catch hydraulic fluid and parts that will fall. For safety, fully remove spilled hydraulic fluid after brake maintenance. This will help you easily identify leaks.

Figure 36. A typical hydraulic brake system

The air cylinder

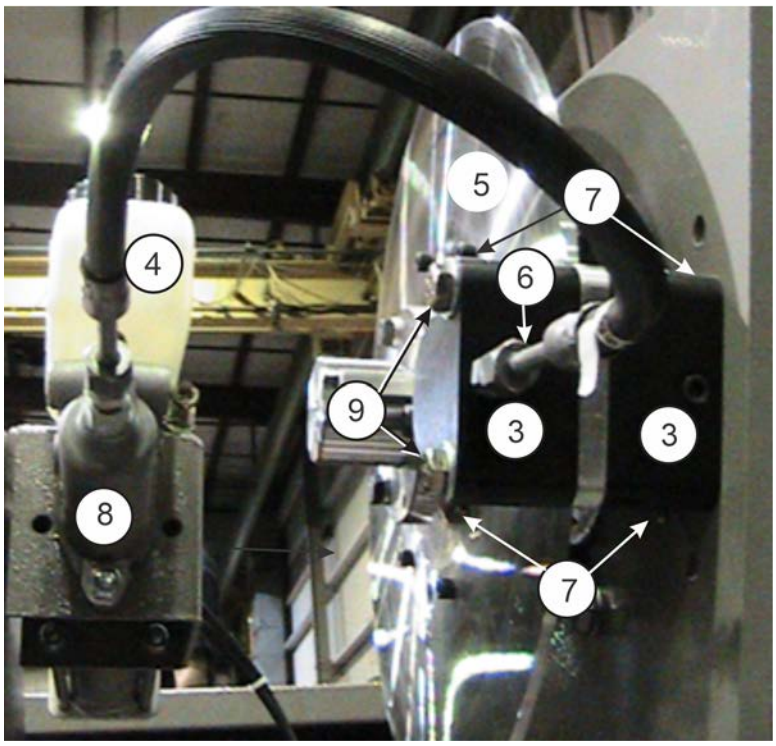


Legend

1. Tubing for air
2. Air cylinder
3. Caliper body halves (Figure 37, page 89, item 2)
4. Hydraulic reservoir
5. Rotor disk
6. Hydraulic inlet
7. Valves to drain fluid and bleed the brake
8. Hydraulic cylinder
9. Bolts to attach the caliper (Figure 37, page 89, item 1)

A typical hydraulic brake system (cont'd.)

The hydraulic cylinder and the caliper



4.2.1 The Inspection of the Brake

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NOTE: The brakes shown in this document can look different from your equipment.

NOTE: Do this inspection when the maintenance schedule tells it is necessary. Do this inspection after you replace friction pads or do a caliper overhaul.

1. Examine the fluid in the reservoir. Change the hydraulic fluid if it smells, has contamination, or has an unusual color. See Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.

   NOTE: Brake fluid can become defective from heat in the brake system. Brake fluid absorbs water from air. Water in the brake system causes corrosion.

   If necessary, add new DOT 3 fluid to 0.25 inch (6.35 millimeters) from the top of the reservoir. Follow the precautions on the container.

2. Examine the rotor disk surface (Figure 36: A typical hydraulic brake system, page 85 , item 5). Replace the disk if it is worn or if it is not flat.
3. Examine the brake pads (Figure 37: The Caliper Components, page 89 , item 4). To do this, you will remove/replace the calipers and bleed the hydraulic system. See Section 4.2.3 : How

to Do a Caliper Overhaul, page 89 and Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.

a. **Remove power from the machine (see above notice).**
b. Remove the bolts (Figure 36, page 85, item 9) that attach the caliper halves (Figure 36, page 85, item 7).
c. Remove the caliper halves.
d. Replace the pads as told in Section 4.2.2 : How to Do a Friction Pad Replacement, page 87 if
   - the pads make an unusual noise when you apply the brake
   - if the rotor is worn or damaged
   - if the pad thickness is less than 1/16 inches (2 mm) (Figure 37, page 89, item 14) above the mounting screw (Figure 37, page 89, item 3). Always replace the two brake pads at the same time.
e. Put the caliper halves in their positions on the brake assembly. Tighten the mounting bolts to 30 foot-pounds (41 Newton-meters).
f. Bleed the hydraulic systems as told in Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.
g. Supply electrical power to the machine.

4. Examine the condition of all of the brake system.
   a. Make sure that brake mounting components are tightly installed.
   b. Make sure that fittings are tight. Make sure that there are no leaks.

4.2.2 How to Do a Friction Pad Replacement

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You must have the necessary replacement friction pads for your machine. Refer to the brake parts document in your machine manual. You will find part numbers for components or overhaul/repair kits. The overhaul/repair kit contains O-rings, pads, and other components.

1. **Remove power from the machine (see above notice).**
2. Remove the used fluid. See Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.
3. Remove the two bolts that attach the caliper (Figure 36, page 85, item 9) and the two caliper halves (Figure 36, page 85, item 3) to get access to the friction pads. Do not disconnect the hydraulic line (Figure 36, page 85, item 6).
4. If there are leaks, see Section 4.2.3 : How to Do a Caliper Overhaul, page 89 before you continue.
5. Replace each friction pad:
   a. Remove the brass screw (Figure 37, page 89, item 3) that attaches the pad to the piston.
   b. Attach the new pad to the piston. Tighten the screw.
   c. Make sure that the screw head is fully in the recess in the pad.

6. Make sure that the connection o-rings are clean and in their positions (Figure 37, page 89, item 7).
7. Put the caliper halves in their positions on the brake assembly. Tighten the mounting bolts to 30 foot-pounds (41 Newton-meters).
8. Bleed the brake. See Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.
9. Supply electrical power to the machine.

4.2.3 How to Do a Caliper Overhaul

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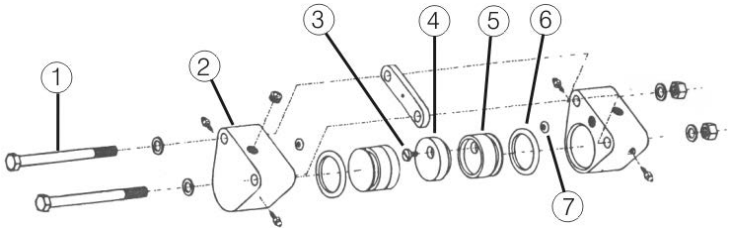
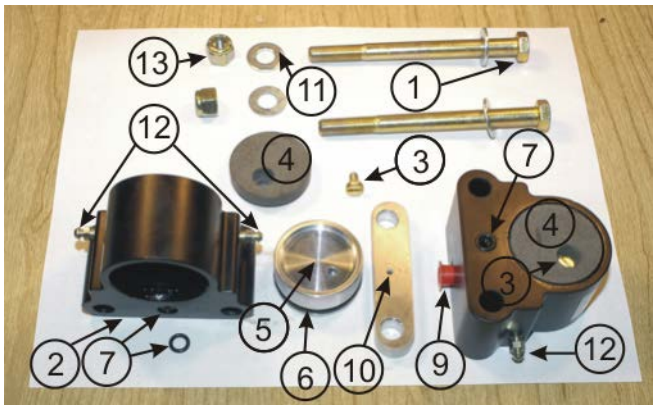
Figure 37. The Caliper Components

The Expanded View (Shows the Piston and the O-rings)



The Caliper and the Pad



Legend

1. The bolts to attach the caliper (Figure 36, page 85, item 9)
2. Caliper body halves (Figure 36, page 85, item 3)
3. Brass screw
4. Friction pad
5. Piston
6. The Piston O-ring
7. The connection O-ring and its position
8. Plug for the hydraulic inlet
9. A hydraulic inlet (connected on one caliper, a plug (item 8) on the other)
10. The hole in the spacer
11. Washer
12. One of the four valves to bleed the fluid
13. Nut
14. The pad thickness must be more than than 1/16 inches (2 mm) above item 3

Fittings for the Hydraulic Inlet

Look at the pad thickness above the top of the screw

TIP: Hydraulic fluid flows from one caliper to the other caliper. Fluid flows through the connection O-rings (Figure 37, page 89, item 7) and the hole in the spacer (Figure 37, page 89, item 10). When you disconnect the calipers, hydraulic fluid can flow from the hole at the connection O-rings. Air can get in the line. After you connect the calipers, you must bleed the system.

You must have the necessary kit for the overhaul of your machine. Refer to the brake parts document in your machine's manual.

1. **Remove power from the machine (see above notice).**
2. Get access to the caliper halves (see Section 4.2.2 : How to Do a Friction Pad Replacement, page 87).
3. Do an overhaul on each caliper:
   a. Remove and discard the connection O-rings (Figure 37, page 89, item 7) on the caliper bodies.
   b. Apply compressed air to the fitting for the hydraulic inlets (see Figure 37, page 89, item 8) to push the pistons out.
   c. Replace the piston O-rings (Figure 37, page 89, item 6).
   d. Put the pistons in the caliper body. Carefully tap the pistons with a wood or rubber hammer to install it.
   e. Replace the connection O-rings. (Figure 37, page 89, item 7)
   f. Replace the friction pads (see Section 4.2.2 : How to Do a Friction Pad Replacement, page 87).
4. Replace the caliper halves as specified in Section 4.2.2 : How to Do a Friction Pad Replacement, page 87.
5. Bleed the brake circuit (see Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90).
6. Supply electrical power to the machine.

4.2.4 How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit

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Risks and Precautions

WARNING: **Risk of injury** — Machine power must be on for these procedures.

- Stay away from operating mechanisms.

CAUTION: **Risk of injury and damage** — This procedure releases pressurized brake fluid.

- Keep brake fluid out of your eyes and mouth. Wear eye protection.
- Follow procedures carefully to prevent damage to the face of the disk or the pistons.

CAUTION: **Risk of malfunction —** Air in hydraulic fluid will compress. Compressed air in the brake line will cause brake malfunctions.

▶ Remove (bleed) air from the brake circuit before you operate the machine.

Requirements—These personnel and items are necessary for this procedure:

- Two technicians
- An 8-ounce container of new brake fluid
- Alternative procedures to remove air and used brake fluid:
  - a suction pump (faster procedure) (see Figure 38: Pumps Used to Remove Hydraulic Fluid Quickly, page 92)
  - with pressure in the hydraulic cylinder and gravity (see Figure 39: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 92)

TIP: The Vacula suction pump can do the work more quickly than by gravity and pressure in the hydraulic cylinder. It is also cleaner because all of the hydraulic fluid goes into the container supplied. It helps you not spill the hydraulic fluid.

- If you use a suction pump as shown in Figure 38, page 92, follow the manufacturer's instructions.
- If you use the tools as shown in Figure 39, page 92, follow the instructions in Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 90.

Figure 38. Pumps Used to Remove Hydraulic Fluid Quickly

Alternative Pumps for Suction of Hydraulic Fluid

Legend

1. A manual suction pump
2. The Vacula suction pump uses compressed air and holds used hydraulic fluid.

Figure 39. Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid

These tools use gravity and pressure in the hydraulic cylinder

Legend

1. a clean 12 ounce container
2. a flexible hose to attach from the bleed valves to a container
3. a wrench for the bleed valves (Figure 37, page 89, item 12)
4. a suction device to remove brake fluid from the reservoir

1. Use the tools in Figure 39: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 92 to remove the used hydraulic fluid and clean the line. Do these steps:
   a. Use a suction tool (Figure 39, page 92, item 4) to remove the used fluid from the reservoir. Clean the contamination.
   b. Connect the tubing (Figure 39, page 92, item 2) and container (Figure 39, page 92, item 1) to the valve on the caliper (Figure 36, page 85, item 7).
   c. Open the valve.
   d. Add new fluid to flush out the lines.
   e. Apply/release the brake (see Section 4.2.6 : Operation of Brake Systems, page 96) approximately 5 to 15 times. This will flush the used fluid out of the lines.
   f. Close the valve.

   NOTE: These steps will cause air to go into the line.

2. Add new hydraulic fluid and remove (bleed) air from the brake circuit.

   NOTE: This procedure uses pressure in the hydraulic cylinder and the tools in Figure 39: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 92 .

   a. Fill the reservoir with new DOT 3 brake fluid. When you do the remaining steps, continue to add new fluid to the reservoir. Do not let the reservoir become more than half empty. You must make sure that the reservoir has fluid to prevent air flow into the system from the reservoir
   b. Apply electrical power to the machine. Release the brake.
   c. See the part of the machine reference manual that tells how to operate the outputs manually.
   d. Put a small quantity of new brake fluid (approximately inches (50 mm)) in the 12 ounce container (Figure 39, page 92, item 1).
   e. Do these steps for each bleed valve (Figure 36, page 85, item 1) . Two technicians are necessary. This will move the fluid in one direction and push air out of the line:
      - Attach a clean tube to the valve. Put the other end in the container (Figure 39, page 92, item 1) below the fluid.
      - Make sure that the reservoir is full of fluid.
      - Apply the brake (See Section 4.2.6 : Operation of Brake Systems, page 96).
      - Open the bleed valve. (Figure 37, page 89, item 12)
      - Look for air bubbles in the container when you push the air and fluid out through the tube.
      - Close the valve.
      - Release the brake.
      - Continue the steps above until no more air comes out of the line.

f. Add fluid to the top of the reservoir. Replace the cap.

g. Operate the brake many times. Make sure that it operates correctly.

4.2.5 How to Adjust the Connection between the Brake Cylinder and the Air Cylinder

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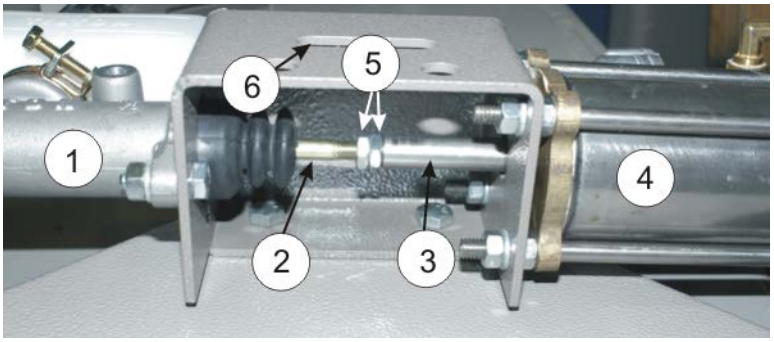
If you removed the brake cylinder or the air cylinder, you must adjust this connection.

Figure 40. The Connection between the Brake Cylinder and the Air Cylinder

A view of the brake rod and related components

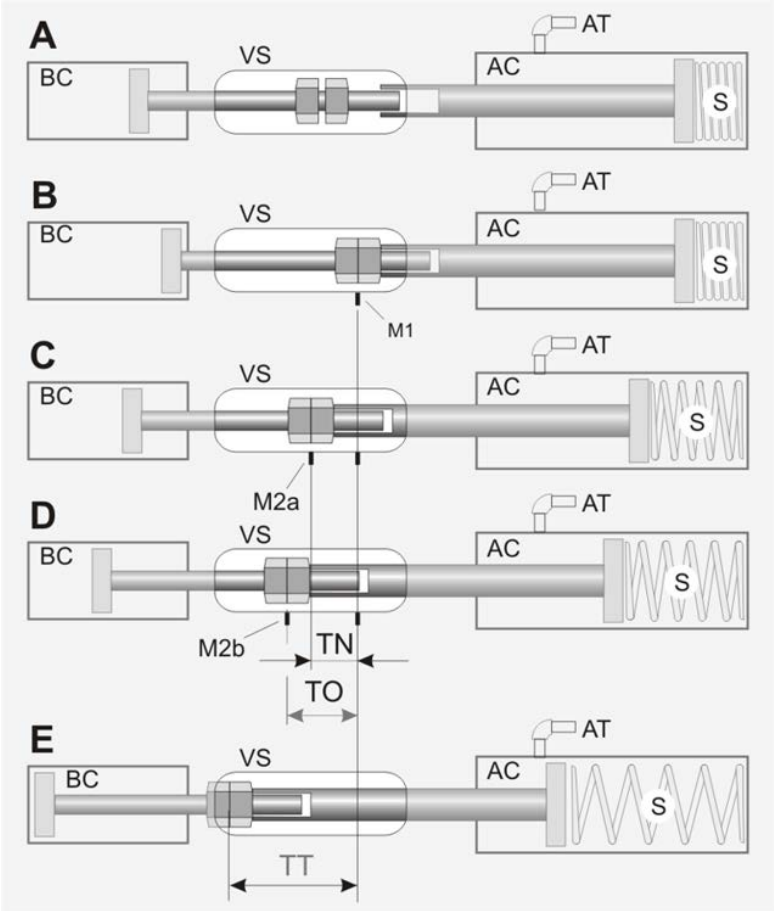


Legend

1. The brake cylinder
2. The rod for the brake cylinder
3. The rod for the air cylinder
4. The air cylinder
5. Two nuts to lock the rods together
6. The slot to see the nuts

Figure 41. The Adjustment between the Brake Rod and the Air Cylinder

Schematic Views of Different Conditions



Legend

AC . . Air cylinder (Figure 40, page 94, item 4)
BC . . Brake cylinder (Figure 40, page 94, item 1)
VS . . Slot to see the nuts (Figure 40, page 94, item 6)
A . . . Before travel adjustment—Rods not locked by nuts (Figure 40, page 94, item 5)
B . . . After travel adjustment—the brake released (See Section 4.2.6.2 : How to Release the Brake for Machines with a "Brake Release" Output, page 97)
C . . . Brake applied—NEW pads (See Section 4.2.6.1 : How to Apply the Brake for Machines with a "Break Release" Output, page 96)
D . . . Brake applied—OLD pads
E . . . This will occur if you apply the brake with the hydraulic line removed
TN . . Rod travel, new pads
TO . . Rod travel, very worn pads
TT . . Full travel with the hydraulic line removed
M1 . . First mark at the view slot—the brake released
M2a . . Second mark—one possible position—the brake applied
M2b . . Second mark—a different position—the brake applied
AT . . Air tubing (See Figure 36: A typical hydraulic brake system, page 85 , item1). Air releases the brake.
S . . . Spring applies the brake

1. Adjust for maximum rod travel.
   a. Operate the master switch to energize control power.
   b. Make sure that the air pressure that releases the brake (Figure 42: A Typical First and Second Brake on a Divided Cylinder Machine, page 97 , item 1) is 85 -100 PSI (5.95 - 07.0 kg/cm-cm).
   c. Make sure that the nuts that lock the rods together (Figure 40, page 94, item 5) are loose.
   d. Release the brake (see Section 4.2.6 : Operation of Brake Systems, page 96). Let the air cylinder rod fully retract into the air cylinder as shown in Figure 41, page 95, item A.
   e. Turn the brake rod into the air cylinder rod until the brake rod comes out of the brake cylinder fully. See Figure 41, page 95, item B.
   f. Lock the brake rod (Figure 40, page 94, item 2) to the air cylinder rod (Figure 40, page 94, item 3) with two nuts (Figure 40, page 94, item 5).
2. Make sure that the brake will continue to operate while the pads wear.
   a. Release the brake. On the view slot, put a mark at the position of the lock nuts. (Figure 41, page 95, item M1).
   b. Apply the brake. See Section 4.2.6 : Operation of Brake Systems, page 96.
   c. Put a mark at the position of the lock nuts when the brake is applied. This can be at position M2a, M2b, or between M2a and M2b. When the pads wear, this position will move.
   d. Make sure that the distance the rod moves when you apply the brake is 0.75 to 1.0 inches (19-25 mm). If the travel is more than this, the brake piston can hit the mechanical stop before the brake engages fully. This condition is shown in Figure 41, page 95, item E (dimension TT).

4.2.6 Operation of Brake Systems

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Look at the electrical schematics of your machine to find how your brake is controlled. Some machines release the brake when you close the door. Some machines have a control relay to release or apply the brake.

4.2.6.1 How to Apply the Brake for Machines with a "Break Release" Output

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1. Turn the "brake release" control output off to de-energize the air valve to remove air pressure to the air cylinder (Figure 36: A typical hydraulic brake system, page 85 , item 1).
2. With no air pressure, a spring in the air cylinder will apply force to the hydraulic cylinder (Figure 36: A typical hydraulic brake system, page 85 , item 8). This will apply pressure to the brake pads (Figure 37: The Caliper Components, page 89 , item 4) against the rotor disk (Figure 36: A typical hydraulic brake system, page 85 , item 5). (Figure 41: The Adjustment between the Brake Rod and the Air Cylinder, page 95 , item C,D)

NOTE: If electrical power or compressed air is missing, hydraulic pressure will apply the brake.

4.2.6.2 How to Release the Brake for Machines with a "Brake Release" Output

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1. Turn the control output called "brake release" on to energize the air cylinder valve.
2. Air pressure compresses the spring and releases the brake. (Figure 41: The Adjustment between the Brake Rod and the Air Cylinder, page 95 , item B)

4.2.6.3 How to Apply and then Release the Brake Quickly

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There are two air tubes at (Figure 36: A typical hydraulic brake system, page 85 , item 1). One supplies compressed air from an air valve. The other sends this compressed air to a pressure switch. If you remove one of the two tubes when compressed air is there, you will apply the brake.

1. Disconnect the air tubing (Figure 36: A typical hydraulic brake system, page 85 , item 1).
2. Turn the "brake release" output on. The air valve will supply compressed air to one of the tubes. (Figure 36: A typical hydraulic brake system, page 85 , item 1).
3. Quickly move one of the compressed air tubes (Figure 36: A typical hydraulic brake system, page 85 , item 1) on and off the air cylinder.
4. After you complete this procedure, connect the air tubing.

4.2.6.4 How the Brake Operates on Divided Cylinder Machines

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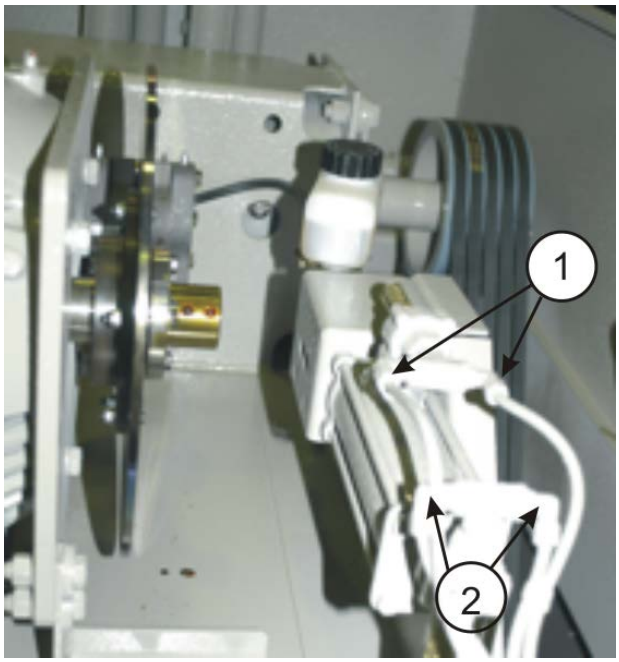
Figure 42. A Typical First and Second Brake on a Divided Cylinder Machine

Two pairs of air tubing connect to different ends of the air cylinder.



Legend

1. Tubing for air that releases the first brake (85 -100 PSI) (5.95 - 07.0 kg/cm-cm)
2. Tubing for air that applies the second brake (10 – 12 PSI) (0.7-0.84 kg/cm-cm)

- On divided cylinder machines, two pair of air tubes connect to different ends of the air cylinder.
- When the cylinder turns, air pressure at Figure 42: A Typical First and Second Brake on a Divided Cylinder Machine, page 97 , item 1 compresses the spring and releases the brake.
- When you operate the stop control, air pressure at 1 is removed. Then the spring in the air cylinder applies the brake.
- If you open the door, the 2nd brake is applied. Then the air pressure at Figure 42: A Typical First and Second Brake on a Divided Cylinder Machine, page 97 , item 2 and the spring apply the brake.

4.2.6.5 The Second Brake

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If your machine has a second brake which uses air pressure and spring pressure, it will have a pressure regulator. Make sure that you adjust the air pressure of the second brake (Figure 42: A Typical First and Second Brake on a Divided Cylinder Machine, page 97 , item 2) to 10 – 12 PSI (0.7-0.84 kg/cm-cm).

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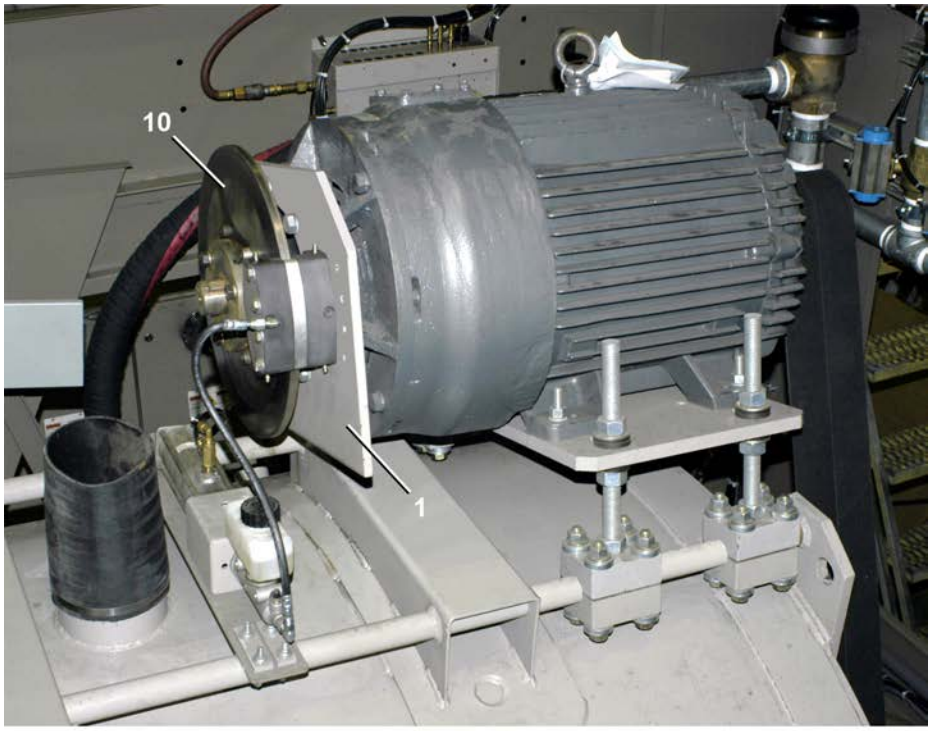
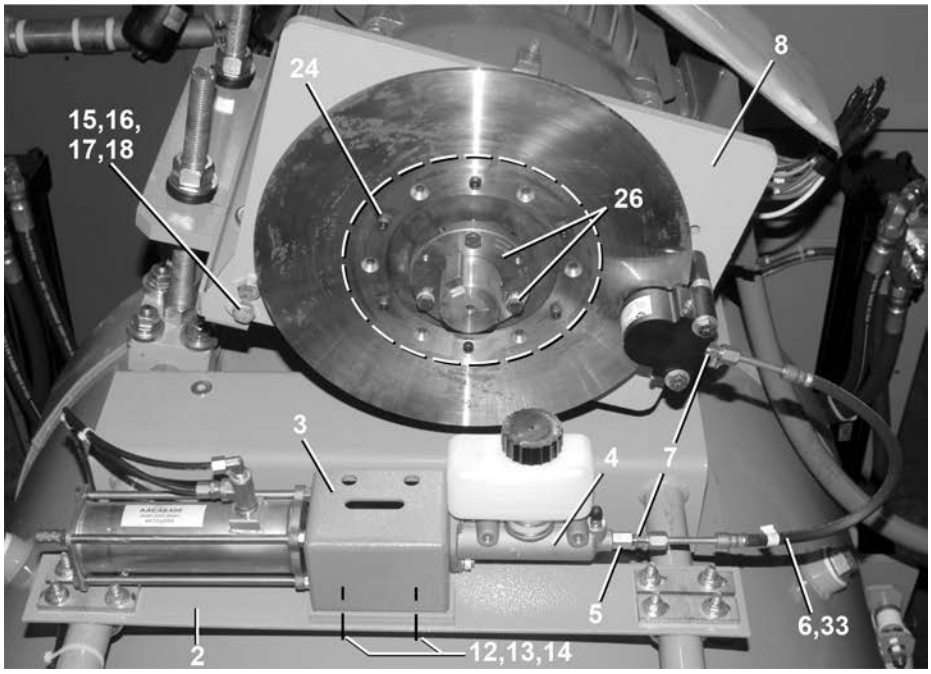
Disc Brake

4 Sheets

M9V4840_, M7V4836_, 68036F_, 68036H5_, 48040M7K, 68036M5K, 72046M5K

6836H5N Shown





Disc Brake

4 Sheets

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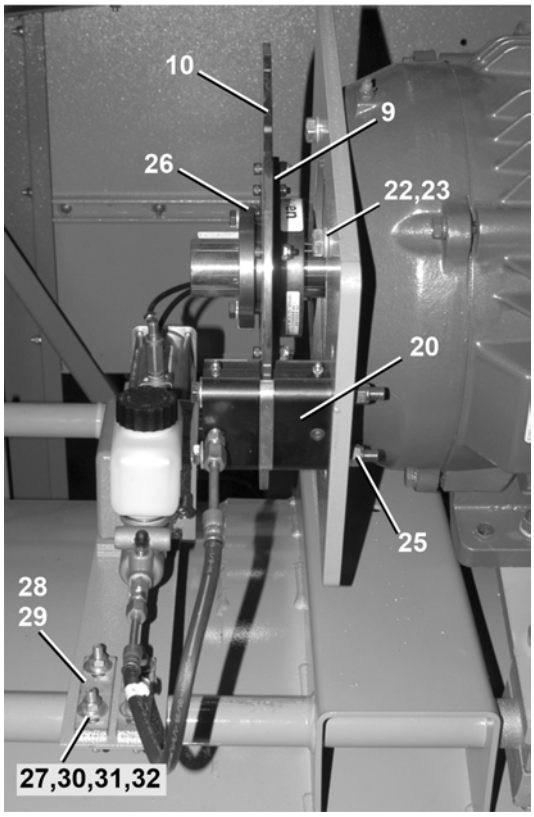
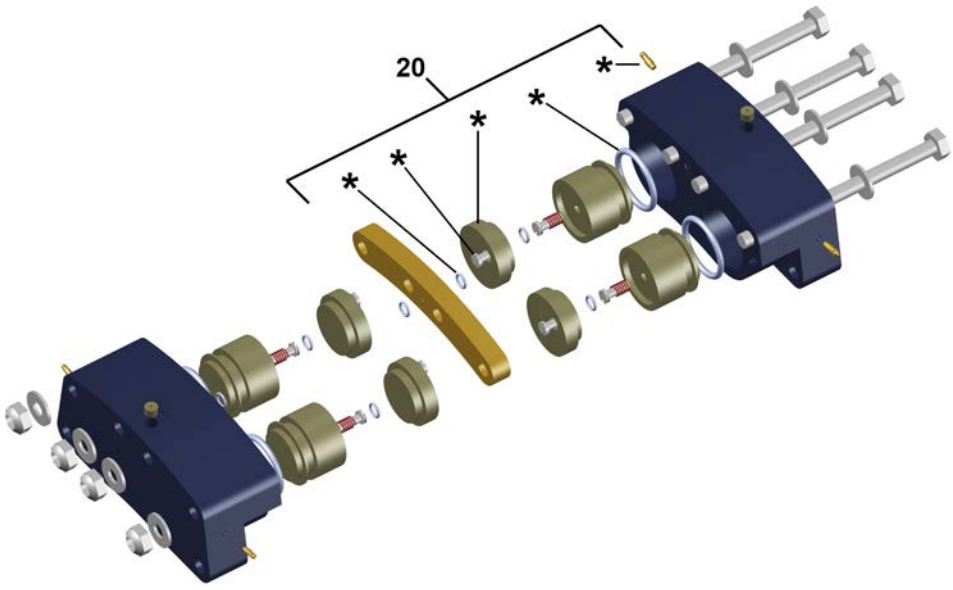


*** . . .** Astricks (*) denotes two per kit.

Caliper Repair Kit



Disc Brake

4 Sheets

M9V4840_, M7V4836_, 68036F_, 68036H5_, 48040M7K, 68036M5K, 72046M5K

Table 23. Parts List—Disc Brake

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GBR6836E	INST=DISC BRAKE 6836E	M9V4840, M7V4836 68036F_, 68036H5_
	B	GBR68002	6836M5K DISC BRAKE	68036M5K
	C	GBR72001	7246M5K DISC BRAKE	72046M5K
	D	GBR48003	4840M7K DISC BRAKE INSTALL	48040M7K
			Components	
A.D	1	AAC4840F	AIRCYL=BRAKE ASSY, 4840F7	
B.C	1	AAC68001	AIRCYL=BRAKE ASSY, 6836F5A	
all	2	02 22417	48M7 BRAKE+PROX MNT BRKT	
all	3	W3 65238	*WLMT=MASTER BRAKE CYL BRKT	
all	4	54KMC1125U	MASTER CYLINDER	
all	5	52XY0ER004	STRADTUN3/16MJX1/8FP#2405-3-2	
all	6	54KC7961BG	BRAKE HOSE=1/8"X18"OAL # 50612	
all	7	52AY0ER003	STR.1/4"MJICX1/8"MP#2404-4-2	
A,C	8	X2 04454	MACH=BRK CALPR MNT PLT,6836	
B	8	X2 04454A	6836M5K BRAKE CALIPER MOUNT PLATE	
ABC	9	X2 04458	BRAKE ROTOR HUB-6836E	
D	9	X2 21867	MACH=CALIPER DISK HUB,4840F	
ABC	10	X2 04459	BRAKE ROTOR-6836E	
D	10	X2 21866	MACH=CALIPER DISK, 4840F	
all	12	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	13	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	14	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	15	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	16	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	17	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	18	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
ABC	20	54KC7975	CALIPER HYD D/A 1/2"	
D	20	54KC7974	CALIPER HYD D/A 3/8 DISC RETRACT	
all	22	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
all	23	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	24	15K155A	SKCPSCR-1/2-13X1.5	
all	25	15K086G	HEXCAPSCR 3/8-24UNF X5" GRD. 8	

Disc Brake

4 Sheets

M9V4840_, M7V4836_, 68036F_, 68036H5_, 48040M7K, 68036M5K, 72046M5K

Table 23 Parts List—Disc Brake (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
ABC	26	56Q1RE	1+7/8" BUSH VPUL QD TYPE E	
D	26	56Q1RSK	1+7/8" BUSH VPUL QD TYPE SK	
all	27	27A031C	UBOLT 1.25PIPE 5/16-18 ZINC	
all	28	02 10539	SPACER FOR PIPE ZINC PLATED	
all	29	02 175057	SPACER=BALLVALVE MTG	
all	30	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	31	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
all	32	15G196	HXFLGNUT 5/16-18 ZINC	
all	33	54KC7961BSEAL	SEAL WASHER CONICAL,BRAKE HOSE	

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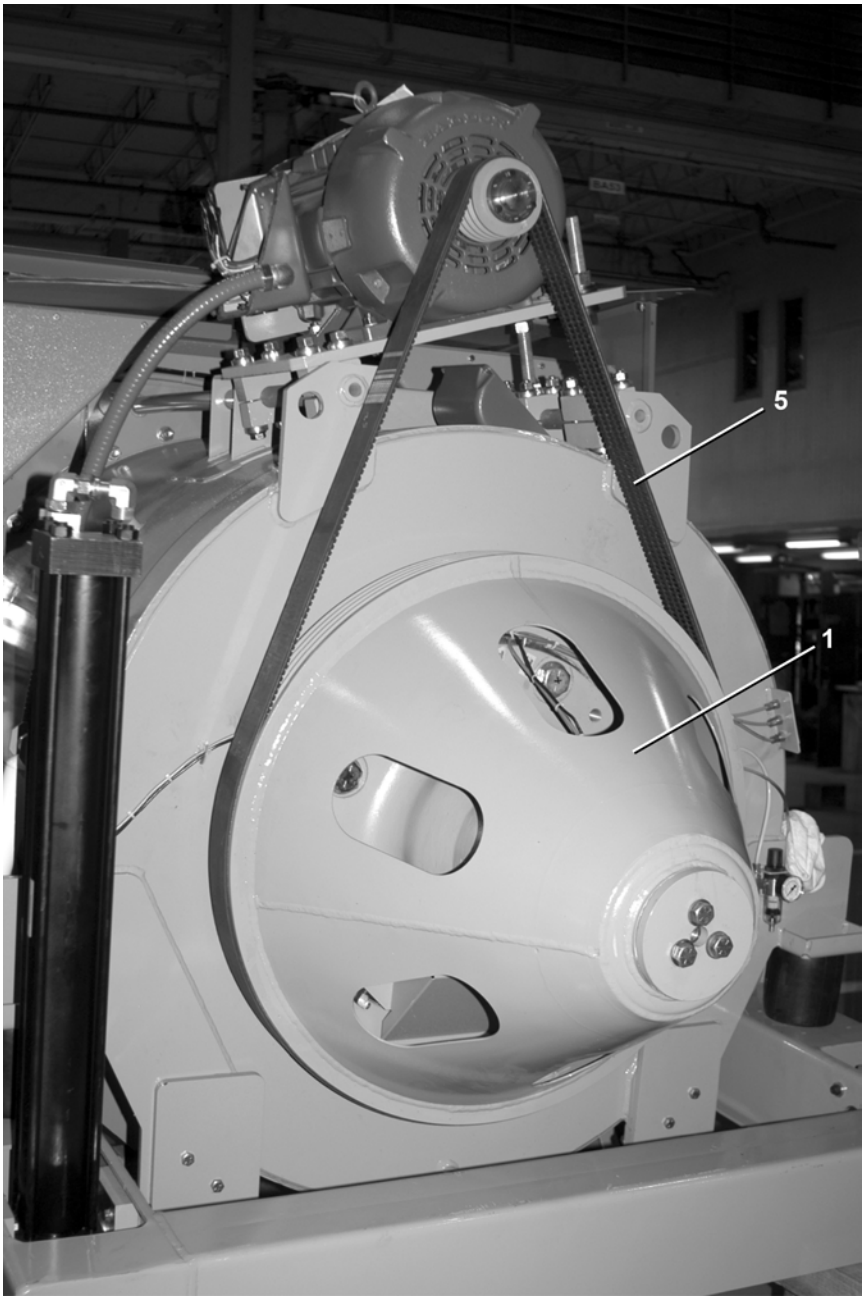
Drive Components and Belt Installation

3 Sheets

4840H7N, 4840H7W, 4840H7R, 4840H7K, 4840M7K

Figure 43. General View

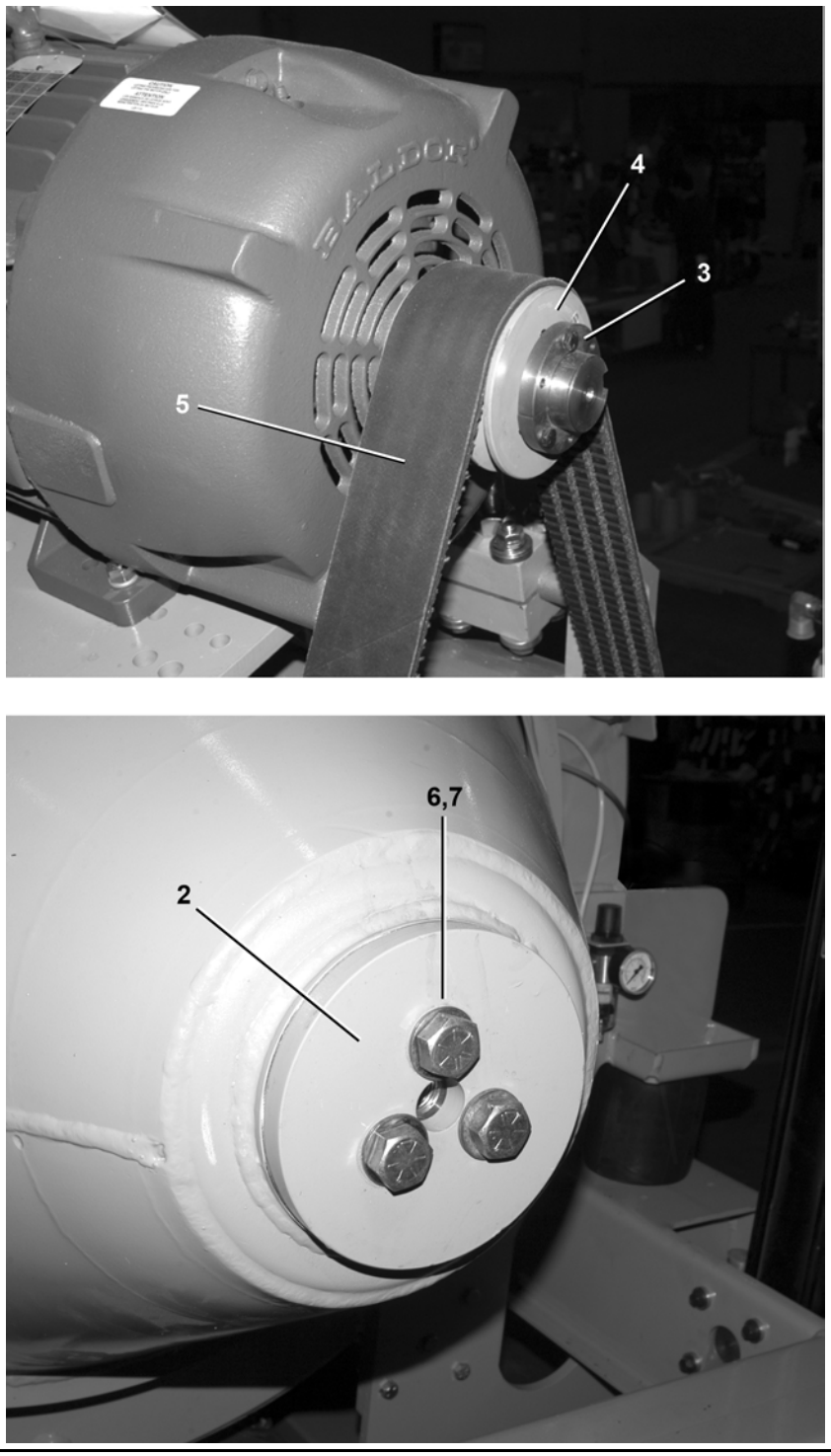


Drive Components and Belt Installation

3 Sheets

4840H7N, 4840H7W, 4840H7R, 4840H7K, 4840M7K

Figure 44. Detailed Views



Drive Components and Belt Installation

3 Sheets

4840H7N, 4840H7W, 4840H7R, 4840H7K, 4840M7K

Table 24. Parts List—Drive Components and Belt Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GDB48002	INSTL=DRIVE BASE #2, 4840F	4840H7N,4840H7W, 4840H7R,4840H7K,4840M7K
Components				
all	1	X2 21925	MACH=PULLEY, 4840F7	
all	2	X2 21923	PLATE=PULLEY PULL UP, 4840F	
all	3	56Q1RSD	1+7/8" BUSH VPUL QD TYPE SD	
all	4	56044B4SD	VPUL 4B44 QD TYPE (SD)	
all	5	56VB147XB4	VBAND 4RBX147 EACH = 1	
all	6	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	7	15U321H	FLTWASH 3/4 HARD ASTM F436	

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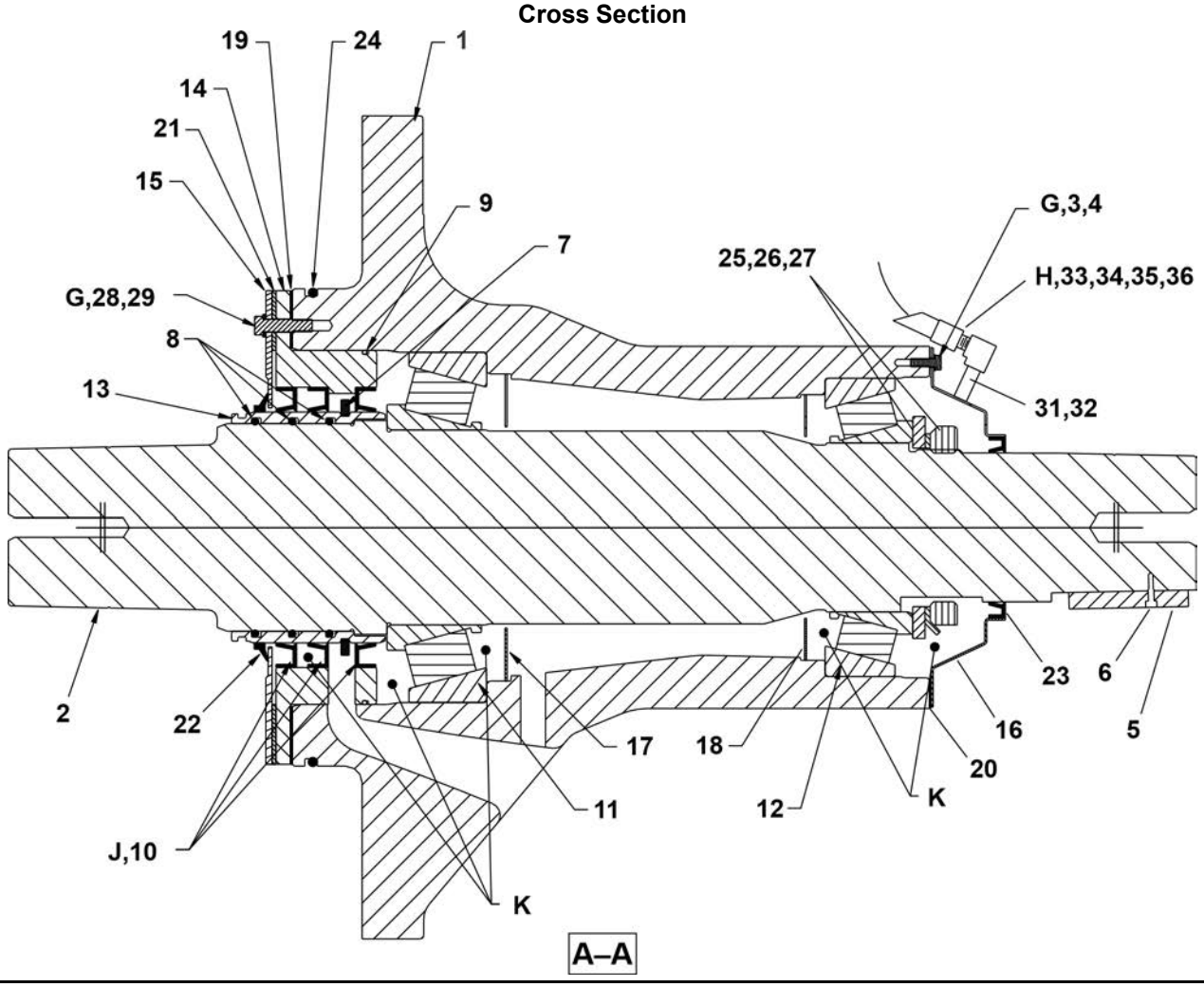
Bearing Housing Components and Installation

6 Sheets

Cross Section



Legend

A–A . . Cross section

G . . . Use Locktite 242.

H . . . Grease inlet for the rear bearing

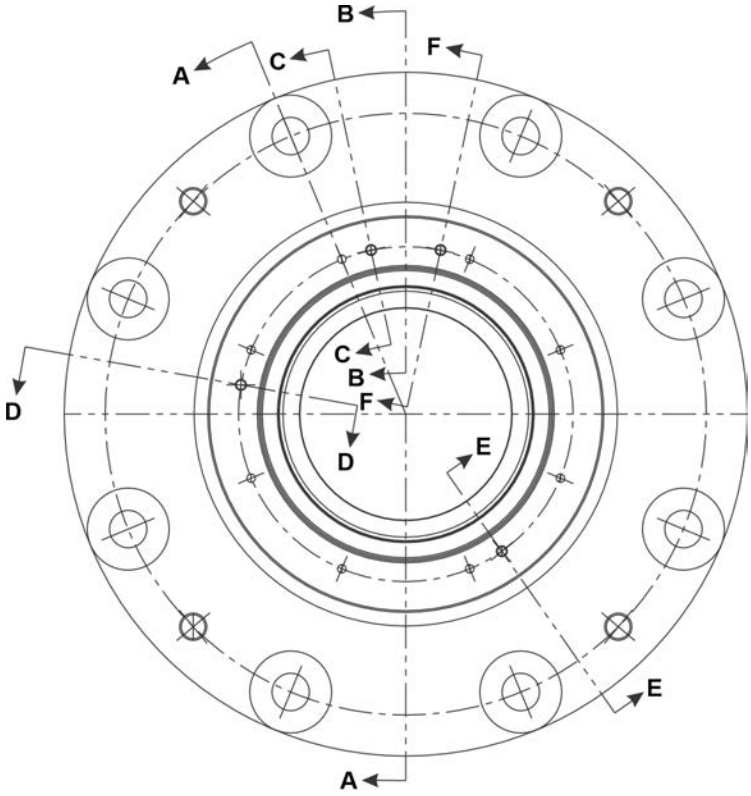
J . . . When you install new seals, make sure that the point in the direction shown. The installation sequence: Instal one seal into the rear of the seal holder. Install the seal holder. Install the two remaining seals.

K . . . Fill this space with grease.

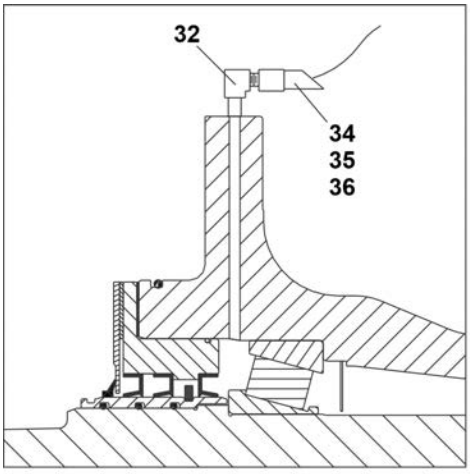
Bearing Housing Components and Installation

6 Sheets

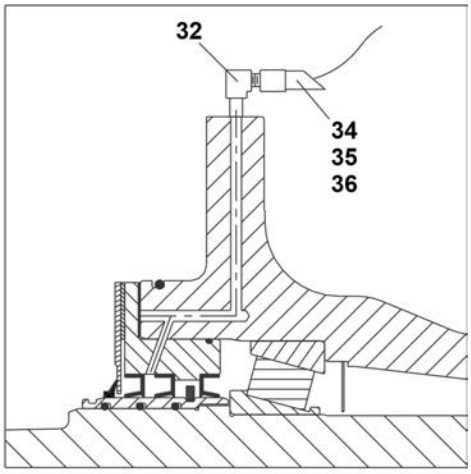
Front View



Detailed Views



B–B



C–C

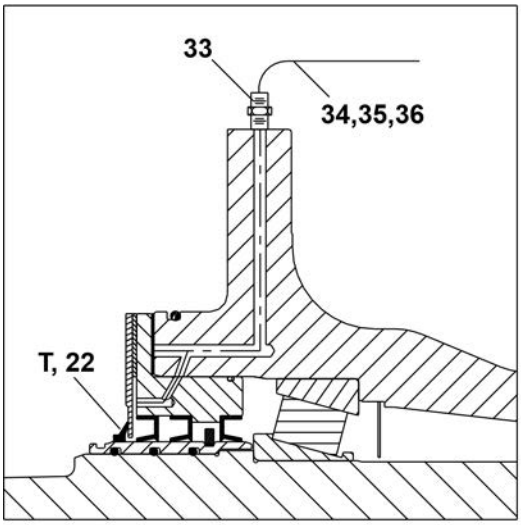
Legend

B–B . . Grease inlet for front bearing
C–C . . Grease inlet for the seals

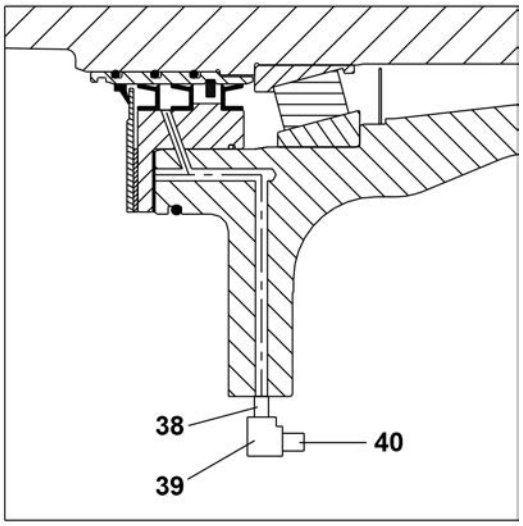
Bearing Housing Components and Installation

6 Sheets

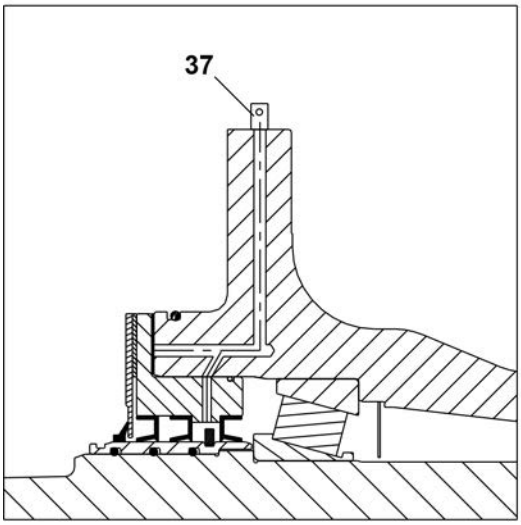
Detailed Views



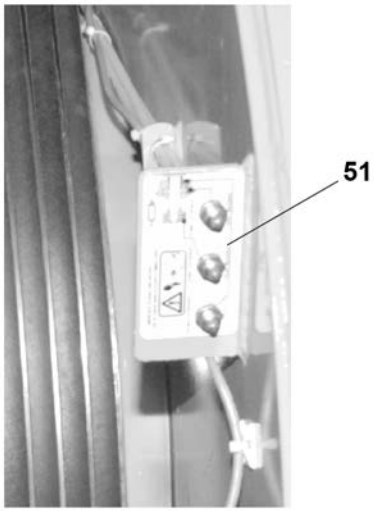
D–D



E–E



F–F



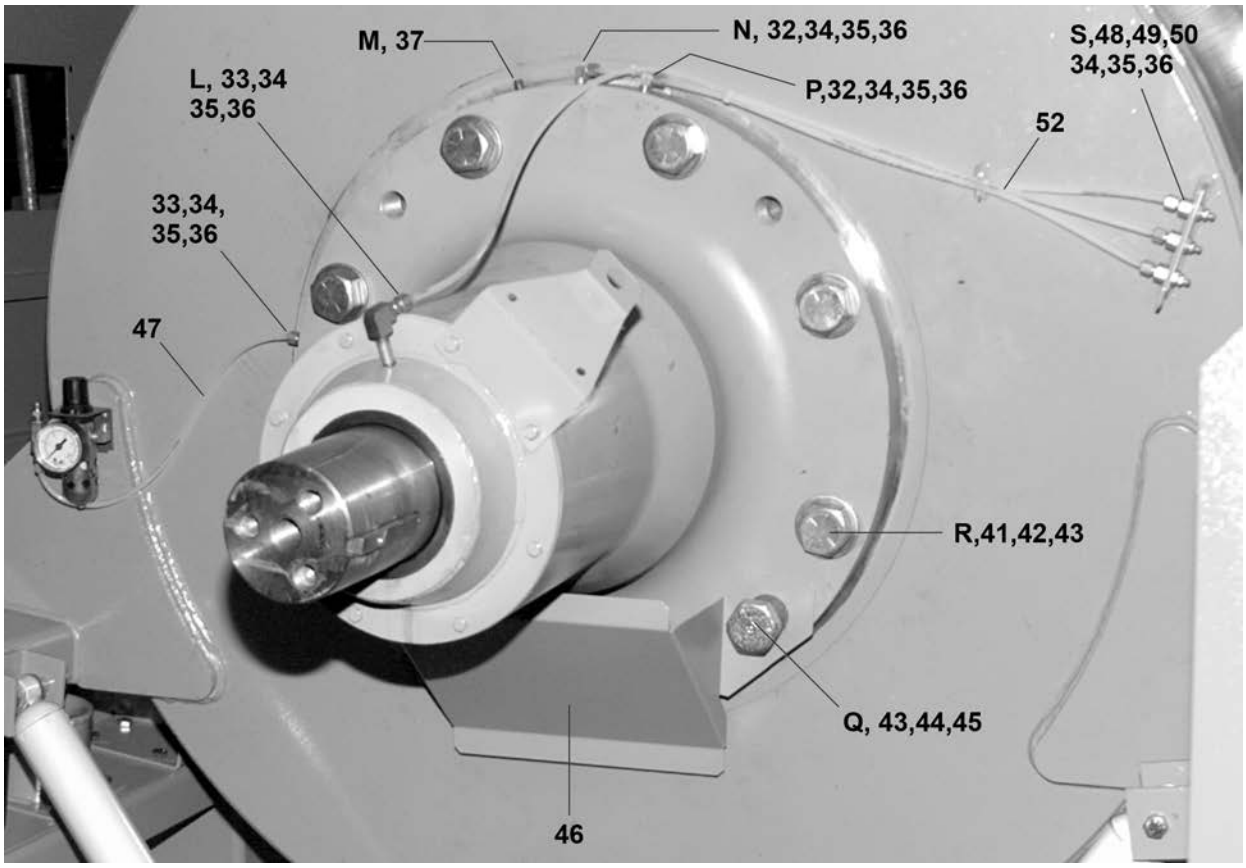
Legend

D–D . . Compressed air inlet for the outer seal
E–E . . Grease outlet for the seals
F–F . . Fluid inlet to flush the space between the seals

Bearing Housing Components and Installation

6 Sheets

Rear View



Legend

L . . . Grease inlet for rear bearing
M . . . Fluid inlet to flush the space between the seals
N . . . Grease inlet for the front bearing
P . . . Grease inlet for seals
Q . . . 2 instances
R . . . 8 instances
S . . . 3 instances
T . . . Outer seal

Bearing Housing Components and Installation

6 Sheets

Table 25. Parts List—Bearing Housing Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	ABM4840F	ASSY=BRN HOUSING,STD ,4840F	4840F_, 4840H_, 4840M7K
	B	ABM4840FV	ASSY=BRN HOUSING,VITON,4840F	4840F_, 4840H_, 4840M7K
	C	ABN4840F	ASSY=ABM-HSG,STD, 4840F	4840F_, 4840H_, 4840M7K
	D	ABN4840FV	ASSY=ABM-HSG,SFT,VITON,4840F	4840F_, 4840H_, 4840M7K
	E	GBM4840F	INSTL=MAIN BRG HSG, 4840F7	4840F_, 4840H_, 4840M7K
			Components	
AB	1	X2 21800	MACH=MAIN BRG HSG, 4840F7	
all	2	X2 21801	MACH=MAIN SHAFT, 4840F	
all	3	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	4	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	5	X2 21816	MACH=PULLEY KEY, 4840F	
all	6	15N091	PANHDMACHSCR 8/32UNC2X1/2 S/S	
all	7	02 21817	SLINGER=BRG FRNT SEAL,4840F	
AC	8	60C160DB	ORING 6.25ID3/16CS BUNA70 -362	
BD	8	60C160DV	ORING 6.25ID3/16CS VITON70#362	
AC	9	60C275	ORING 10.5ID 1/8CS BUN70-275	
BD	9	60C275V	ORING 10.5ID 1/8CS VITON-#275	
AC	10	24S148	SEAL 7.0X8.5X.625#07009304LUPN	
BD	10	24S148V	SEAL 7.0X8.5X.625#07009304LUPV	
all	11	54A986	TAPEROLBRG SKF#32230J2 SET	
all	12	54A987	TAPEROLBRG SKF#32226J2 SET	
all	13	X2 21802	SHAFT SEAL SLEEVE, 4840F7	
all	14	X2 21803	MACH=FRONT SEAL HLDR, 4840F7	
all	15	X2 21804	PLATE=EXCLUDER SEAL, 4840F7	
all	16	02 21805	REAR SEAL HOLDER, 4840F7	
all	17	02 21806	FRONT GREASE SHIELD, 4840F7	
all	18	02 21807	REAR GREASE SHIELD, 4840F7	
all	19	02 21810	GASKET=FRNT SEAL HLDR,4840F7	
all	20	02 21811	GASKET=REAR SEAL HLDR,4840F7	
all	21	02 21812	GASKET=EXCLUDER SEAL, 4840F7	
AC	22	24S146	SEAL 7.0X8.0X.437 TYPE SSW NIT	
BD	22	24S146V	SEAL 7.0X8.0X.437 TYPE SSW VIT	
AC	23	24S114	SEAL 4.5X5.5X.50 JM# 9170 LUP	

Bearing Housing Components and Installation

6 Sheets

Table 25 Parts List—Bearing Housing Components and Installation (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
BD	23	24S114V	SEAL 4.5X5.5X.50 JM#9170LUP-V	
AC	24	60C190	ORING 14.0ID 1/4CS BUNA70-457	
BD	24	60C190D	ORING 14.0ID 1/4CS VITON -457	
all	25	56AHN24	AN24 BEARING LOCKNUT	
all	26	56AHW124	TW124 BEARING LOCKWASHER	
all	27	56ATW24	TONGUE WASH TM K91524 FOR AN24	
all	28	15K112	HXCAPSCR 3/8-16X1+1/2 SS18-8	
all	29	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	30	20C003A	ADHESIVE BLK MAX 1OZ LOC#38050	
all	31	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	32	5N0C01KG42	NPT NIP 1/8X1.5 TBE GALSTL S40	
all	33	53A005B	BODYMALCON1/4X1/8COMP #B68A-4A	
all	34	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	35	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	36	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	37	5SP0CFESSV	NPTPLUG1/8SQSLDBLKSTL LVENT125	
all	38	5SL0CBEA	NPTELB 90DEG 1/8 BRASS 125#	
all	39	5N0CCLSB42	NPT NIP 1/8XCLS TBE BRASS STD	
all	40	54M029	RELIEFFIT 1/8STR ALEMITE 47200	
all	41	15K310	HEXCAPSCR 1+1/4-12X4 GR8 ZINC	Course thread. This part applies to machines made after 5/30/2008.
all	41	15K309	HEXCAPSCR 1.25-7UNC X 4.0 ZINC	Fine thread. This part applies to machines made after 5/30/2008.
all	42	15U600	FLTWASH 1+1/4 HARD ASTM F436	
all	43	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	44	15K255ZN	HXCPSCR1"-8UNCX1.5"L GR5 ZNPLT	
all	45	15U393	FLTWASH 1" HARD ASTM F436	
all	46	02 21818	BEARING DRIP SHIELD, 4840F	
all	47	AIR58003	AIR INJECT ASSY=BNG HOUSE	
all	48	53A007B	BODYFEMCON.25X.25COMP#B66A-4B	
all	49	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	50	54M015	GREASEFIT 60X36/60X44 1610BL	
all	51	01 10025Y	NPLT:BEARING & SEAL LUB-48"MACH	
all	52	60E004TC	TUBING NYL(NAT)1/4"ODX.17ID	

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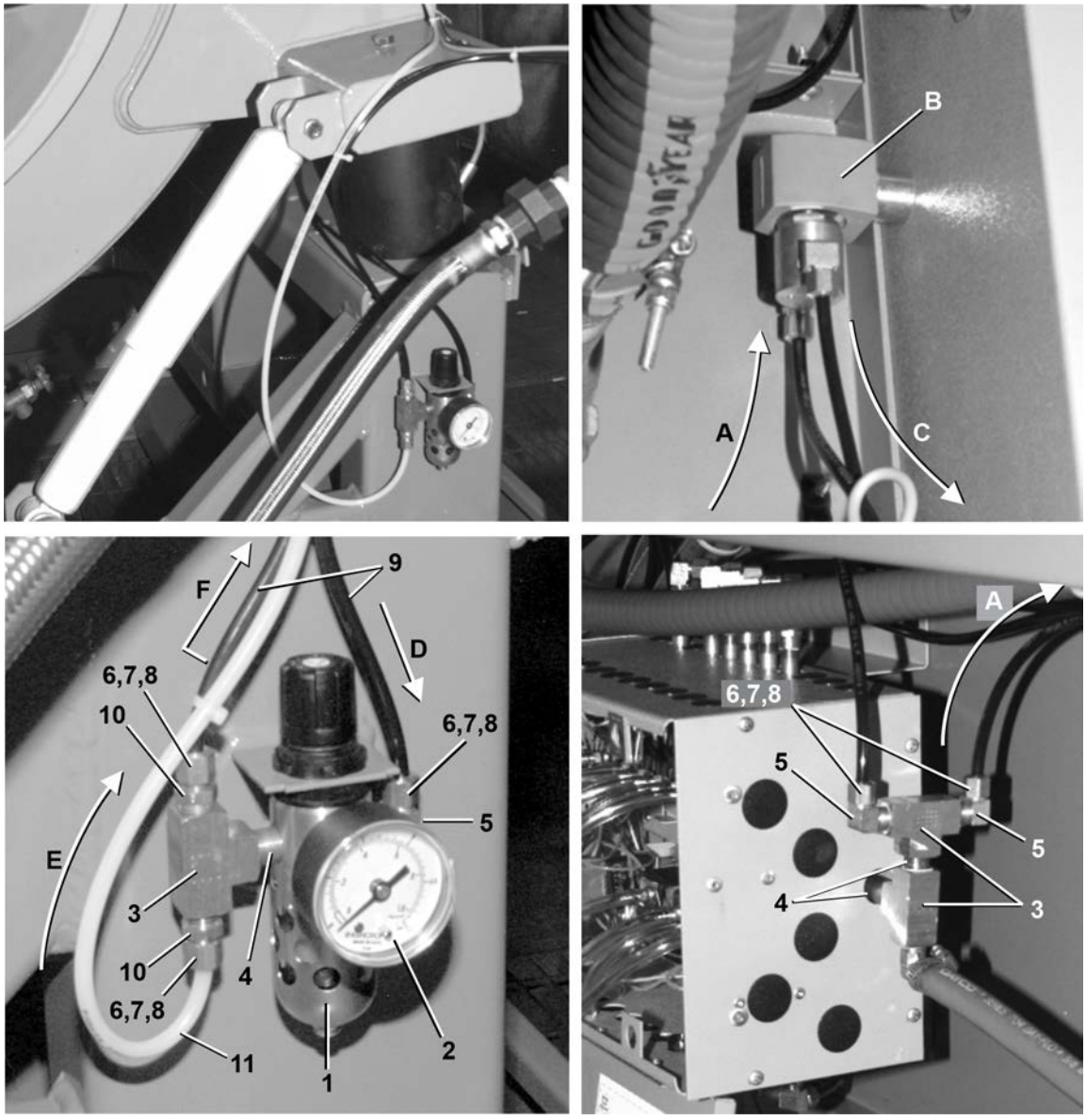
Air Injection Components

2 Sheets

Detailed Views



Legend

A . . . Compressed air to the bearing seal coil
B . . . Bearing seal coil
C . . . Compressed air to the pressure regulator
D . . . Compressed air from the bearing seal coil
E . . . Compressed air to the bearing
F . . . Compressed air to the bearing pressure switch

Air Injection Components

2 Sheets

Figure 45. Air Flow in the Bearing Housing

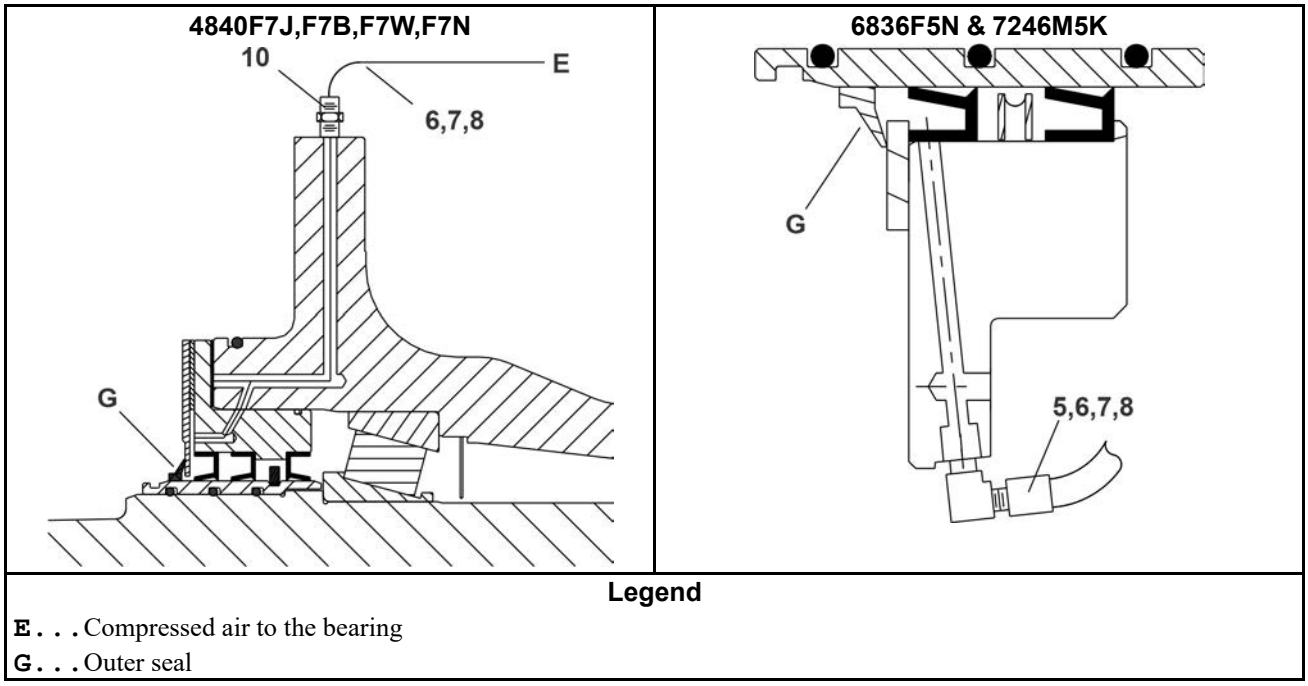


Table 26. Parts List—Air Injection Components

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**
Reference Assemblies				
	A	AIR58003	AIR INJECT ASSY=BNG HOUSE	
Components				
all	1	96J019G	1/4"FILTERREG 0-60PSI	
all	2	30N095	PRESSGAUGE 1/8"BACKCN.0-15PSI WIKA 50104951 SERIES 111.12 2"	
all	3	51V015	TEE 1/4 FGDBRASS 101T7-444	
all	4	5N0ECLSBE2	NPT NIP 1/4XCLS TBE BRASS 125#	
all	5	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	6	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	7	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	8	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	9	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	10	53A005B	BODYMALCON1/4X1/8COMP #B68A-4A	
all	11	60E004TC	TUBING NYL(NAT)1/4"ODX.17ID	

5 Frame and Tilt

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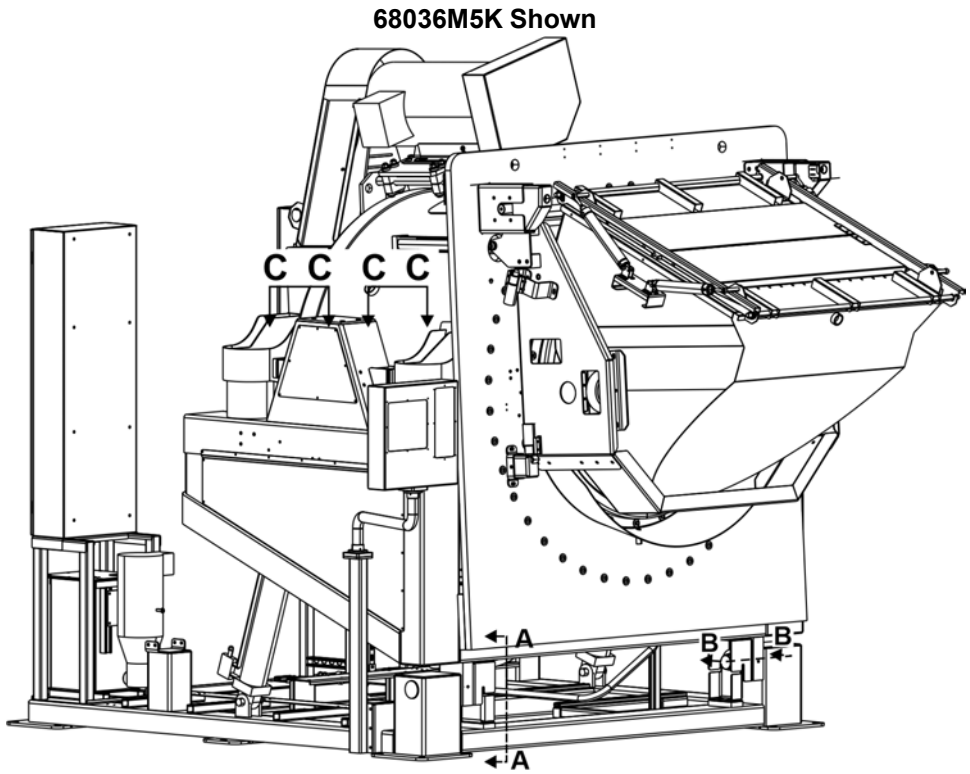
Frame Pivots and Tilt Stops

4 Sheets

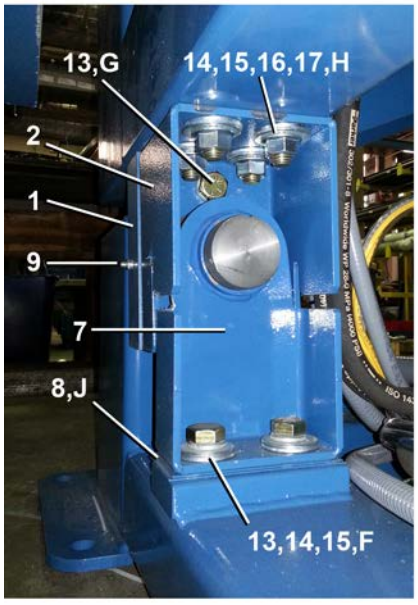
48040M7K, 68036M5K, 72046M5K

Figure 46. Frame Pivots

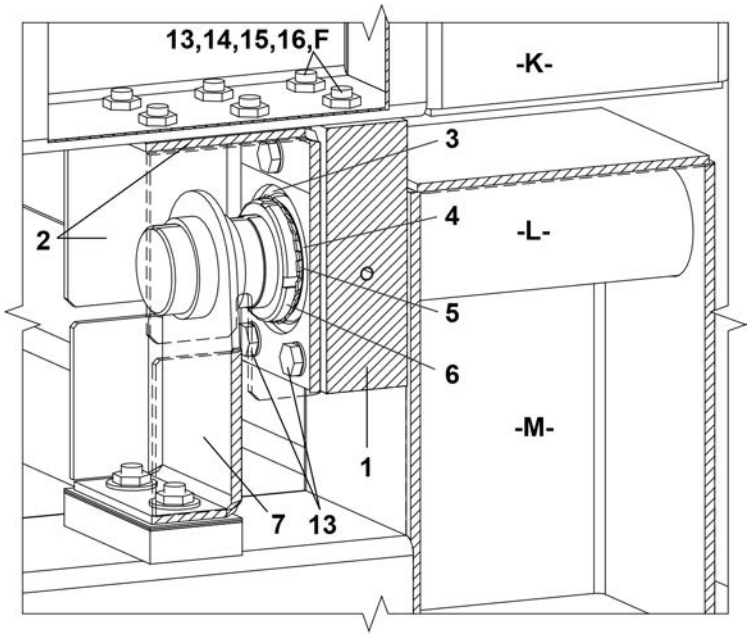


Legend

- **A–A . .** Detail view; frame pivots, left and right
- **B–B . .** Detail section view
- **F . . .** 2 instances
- **G . . .** 3 instances
- **H . . .** 4 instances
- **J . . .** Shims (2 per)
- **K . . .** Tilt frame
- **L . . .** Pivot shaft
- **M . . .** Base frame



A–A



B–B

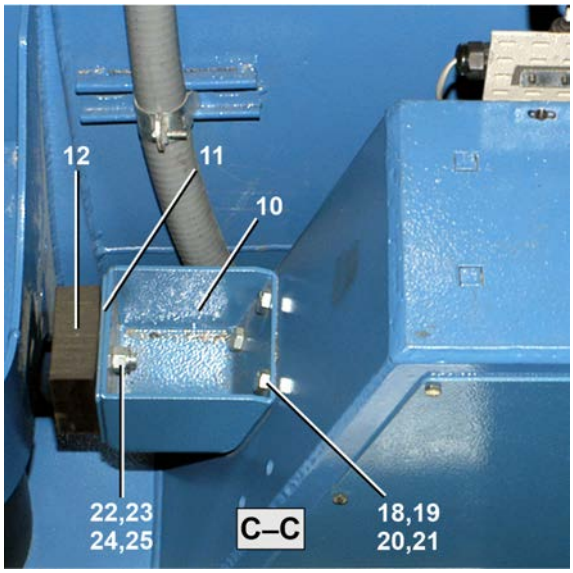
Frame Pivots and Tilt Stops

4 Sheets

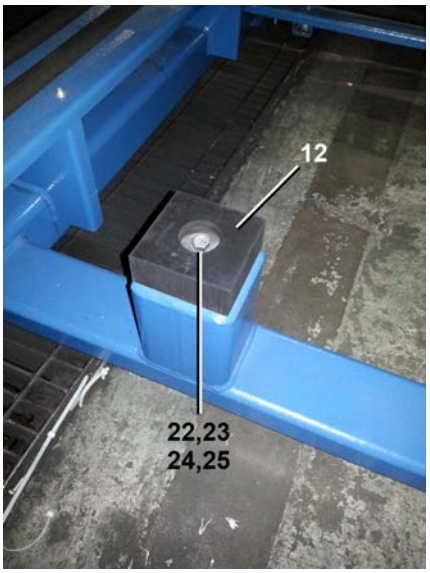
48040M7K, 68036M5K, 72046M5K

Figure 47. Tilt Stops

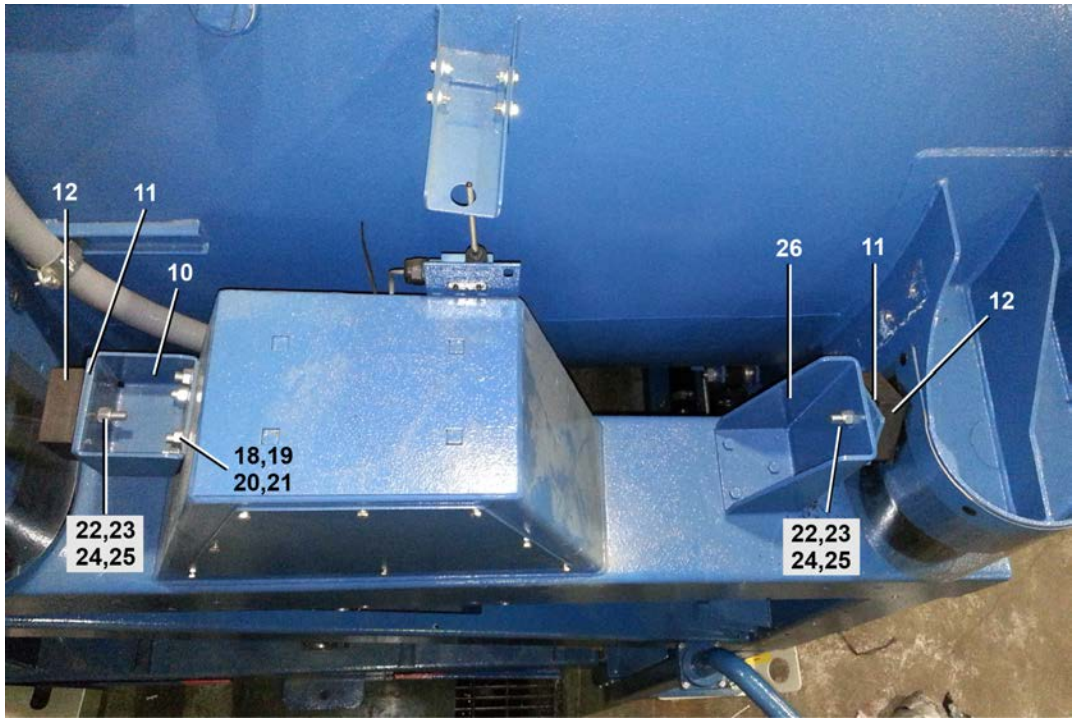
Tilt stops 68036M5K



Center back tilt stop



Tilt Stops 72046M5K



Legend

C–C . . Detail view

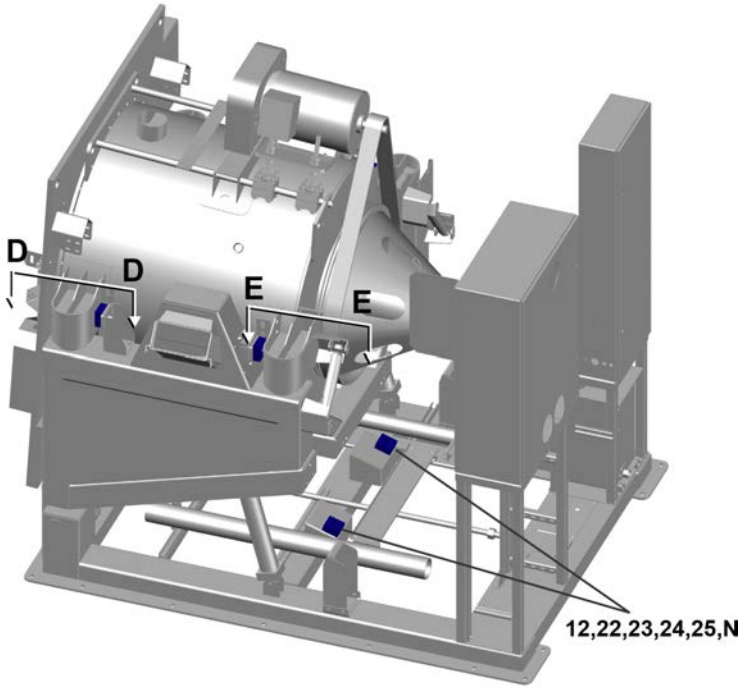
Frame Pivots and Tilt Stops

4 Sheets

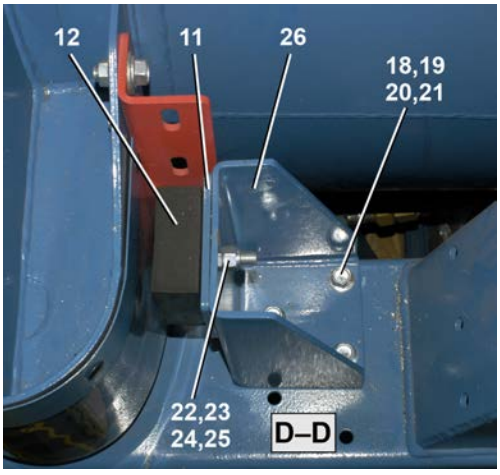
48040M7K, 68036M5K, 72046M5K

Figure 48. Tilt Stops

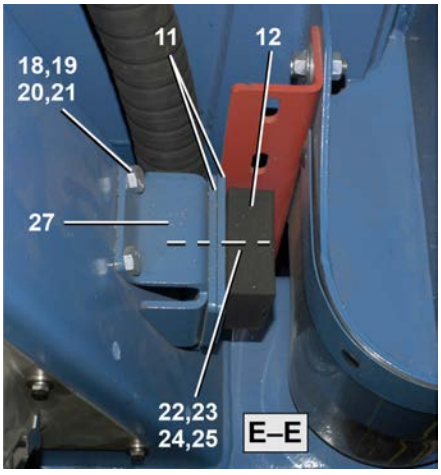
48040M7K Shown



48040M7K



48040M7K



Legend

D–D . . Detail view
E–E . . Detail view
N . . . Tilt frame rear stops

Frame Pivots and Tilt Stops

4 Sheets

48040M7K, 68036M5K, 72046M5K

Table 27. Parts List—Frame Pivots and Tilt Stops

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GHF68004	6836M5K FRAMES+PIVOT INSTALL	68036M5K
	B	GHF72001	7246M5K FRAMES+PIVOT INSTALL	72046M5K
	C	GHF48007	4840M7K FRAMES+PIVOT INSTALL	48040M7K
			Components	
all	1	X2 22655	6836M5K BALLBUSH HOUSING	
all	2	02 22659	6836M5K TILT FRAME PIVOT BRACKET	
all	3	54A707	SPHERICAL PLAIN BRG BALL BUSHING 3" RBC# B48-L	
all	4	56AHW114	TW114 BEARING LOCWASHER	
all	5	56ATW14	TONGUE WASH TIM K91514 FOR N14	
all	6	56AHN14	N14 BEARING LOCKNUT	
all	7	W2 22659A	6836M5K TILT FRAME SHAFT SUPPT WLMT	
all	8	02 22659B	6836M5K TILT FRAME SHAFT SUPPT 16GA SHIM	
all	9	54M025	HYDFIT 1/8"-90 ALEMITE 1613-B	
AB	10	02 22680	MD6836M5K TILT FRAME REAR STOP BRKT	
all	11	02 22680A	6836M5K TILT STOP DOUBLER	
all	12	02 22734	6836M5K TILT FRAME REAR STOP RESTPAD	
all	13	15K232B	HEXCAPSCR 3/4-10X1+1/2 GR8 ZINC	
all	14	15U321H	FLTWASH 3/4 HARD ASTM F436	
all	15	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	16	15G240A	HEXNUT 3/4-10UNC2B SAE GR8 ZIN	
all	17	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	18	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	19	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	20	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	21	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	22	15K121	HXTAPBOLT 3/8-16UNC2X2" GR5 ZI	
all	23	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	24	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	25	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
AB	26	02 25081	MD7246M5K TILT FRAME REAR STOP BRKT	
C	26	02 24049	4840M7K TILT STOP BRK	
C	27	02 24027A	4840M7K TILT STOP SHORT	

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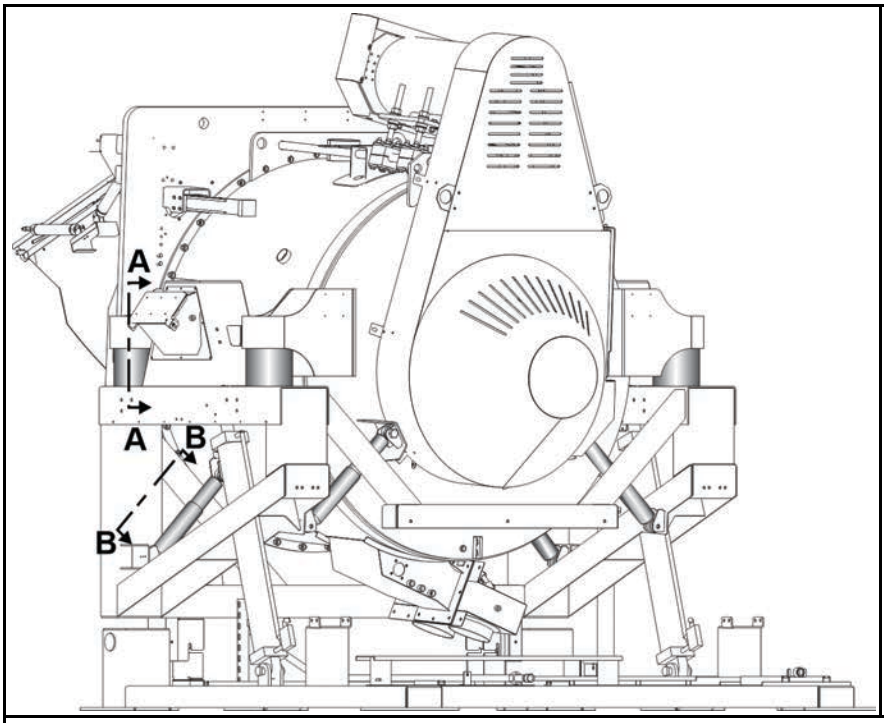
Suspension: Marshmellow Springs and Shocks

3 Sheets

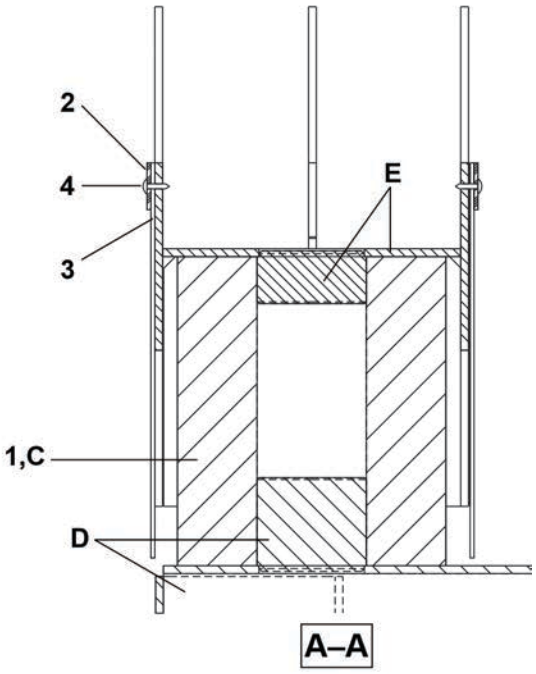
48040M7K, 68036M5K, 72046M5K

Figure 49. Marshmellow Springs



Legend

A–A . . Marshmellow Springs (4 instances)
C . . . Marshmellow spring
D . . . Tilt frame
E . . . Shell

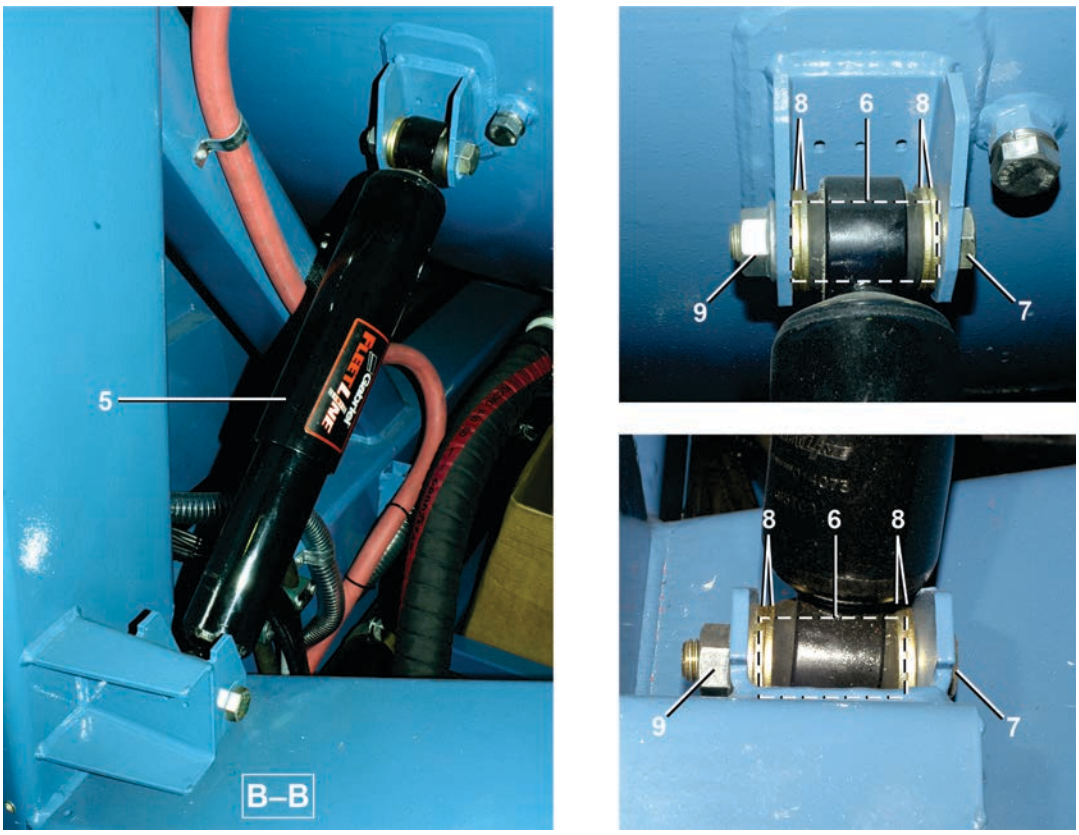


Suspension: Marshmellow Springs and Shocks

3 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 50. Shock Absorbers



Legend

B–B . . Shock Absorbers (4 instances)

Table 28. Parts List—Suspension: Marshmellow Springs and Shocks

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GSS68002	6836M5K SUSPENSION/SHOCK INSTALL	68036M5K, 72046M5K
	B	GSS48002	4840M7K SUSPENSION/SHOCK INSTALL	48040M7K
Components				
AB	1	60B144	MM SPRG 8X3.5X12 #W22-358-0228	
C	1	60B140	MM SPRG 6.5X3X8 F#W223580186	
AB	2	02 22801	6836M5K MARSHMELLOW COVER MOUNT	
C	2	02 24065	4840M7K MARSHMELLOW COVER MOUNT	
AB	3	02 22802	6836M5K MARSHMELLOW COVER	
C	3	02 24066	4840M7K MARSHMELLOW COVER	

Suspension: Marshmellow Springs and Shocks

3 Sheets

48040M7K, 68036M5K, 72046M5K

Table 28 Parts List—Suspension: Marshmellow Springs and Shocks (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	4	12P015B	TRW BLK NYL PUSH FAST	
AB	5	60BS6839	SHOCK ABSORBER #08575707Y	
C	5	60BS6832	SHOCK ABSORBR GABRIEL #65488440X	
AB	6	X2 04425	SPACER=SHOCK, 6836E	
C	6	05 20190	MTG-SPACER=SHOCK ABSORBER72T	
all	7	15K235CA	HXCAPSCR 3/4-10X4 GR8 ZINC	
all	8	15U393	FLTWASH 1" HARD ASTM F436	
all	9	15G244B	HEXFLGSER L/N 3/4-10 C/H ZINC	
C	10	05 20187C	SPACER=SHOCK ABSORBER	

6 Cylinder and Shell Assemblies

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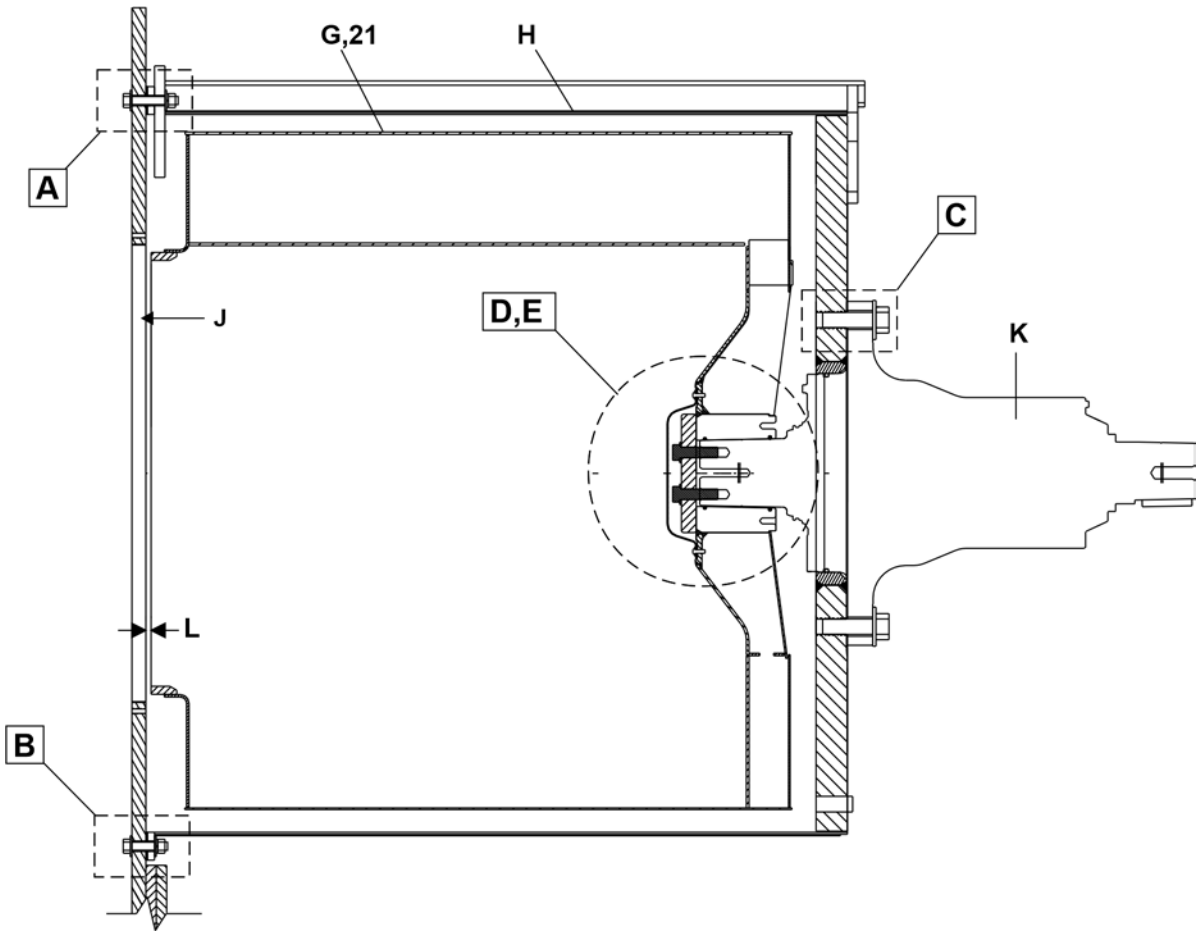
Cylinder Installation

4 Sheets

Figure 51. Shell and Cylinder



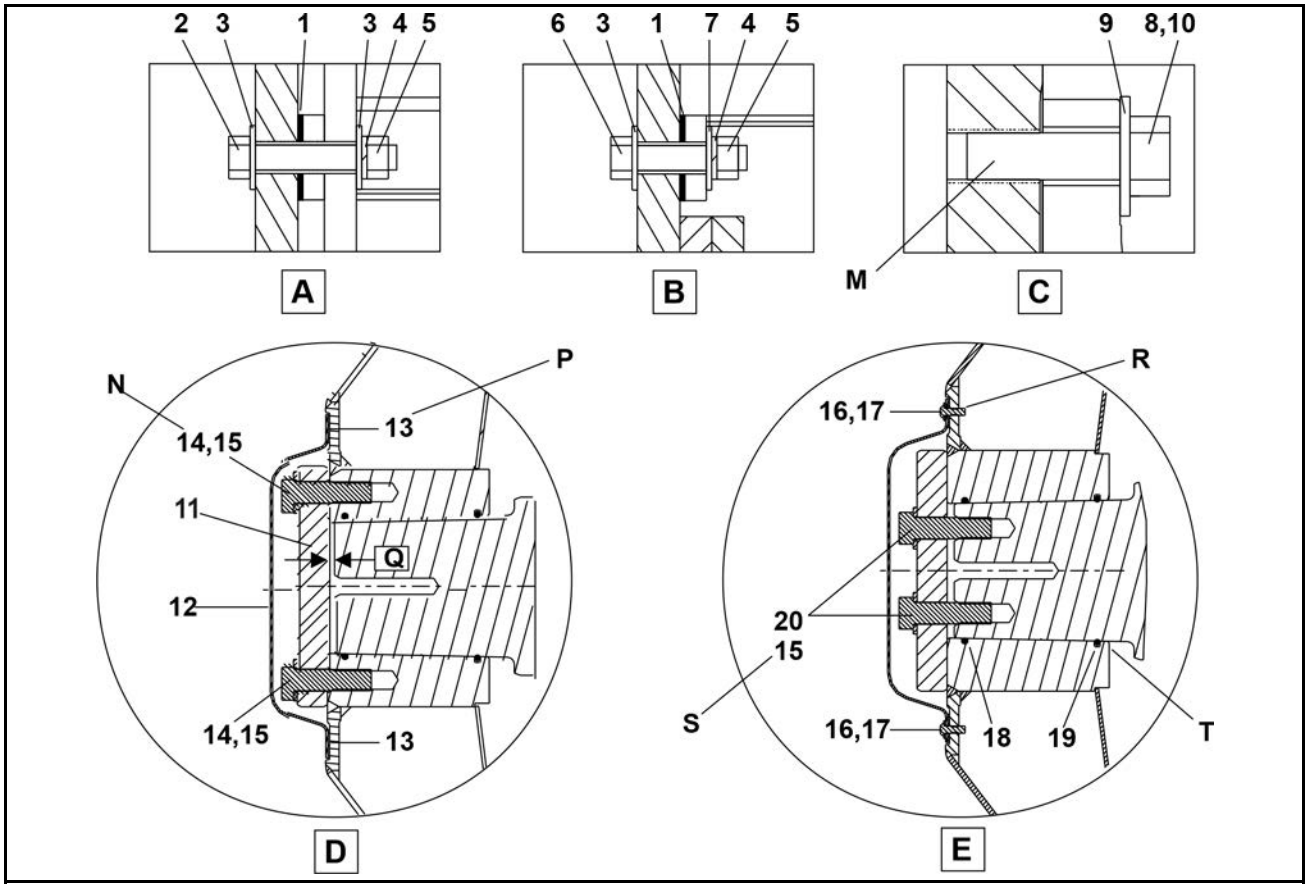
Legend

A . . . Detailed view – Top connection between the shell front and the shell side sheet
B . . . Detailed view – Bottom connection between the shell front and the shell side sheet
C . . . Detailed view – Connection between the shell rear and the bearing housing
D . . . Detailed view – Connection between the Pull-up plate and the Hub (outer bolts)
E . . . Detailed view – Connection between the Pull-up plate and the Shaft (inner bolts)
G . . . Cylinder
H . . . Shell
J . . . Shell front
K . . . Bearing housing
L . . . This dimension must be in this range: 0.3125 inches [8mm] – 0.375 inches [9.5mm].

Cylinder Installation

4 Sheets

Figure 52. Detailed Views



Legend

A . . . Top connection between the shell front and the shell side sheet

B . . . Bottom connection between the shell front and the shell side sheet

C . . . Connection between the shell rear and the bearing housing

D . . . Connection between the Pull-up plate and the Hub (outer bolts)

E . . . Connection between the Pull-up plate and the Shaft (inner bolts)

M . . . Use the thread lock compound Locktite 242. If item 8 has course threads, tighten to 1817 FT. LBS. If item 8 has fine threads, tighten to 2012 FT. LBS. (See Table 1)

N . . . Use the thread lock compound Locktite 242. Tighten items 14 and 15 to 376 FT. LBS. (4 instances).

P . . . Apply silicone to the Hub side of the gasket.

Q . . . 0.25 inches [6.3mm].

R . . . Use the thread lock compound Locktite 242. Tighten items 16 and 17 to 36 IN. LBS. (18 instances).

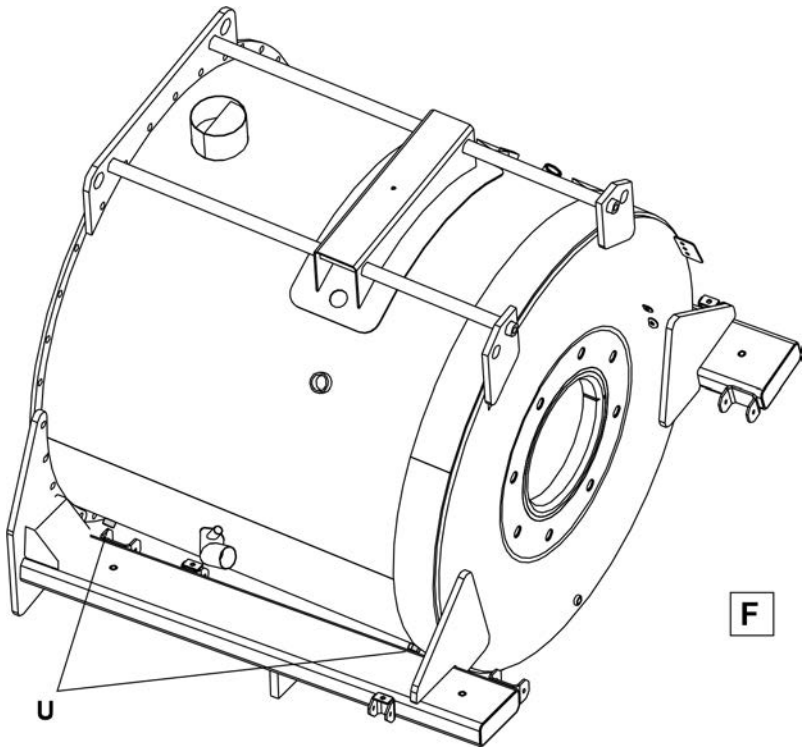
S . . . Use the thread lock compound Locktite 242. Torque items 20 and 15 to 376FT. LBS. (4 instances).

T . . . Apply oil to the o-rings before you assemble.

Cylinder Installation

4 Sheets

Figure 53. Shell



Legend

U . . . There are four plugs in the shell. There are two on each side of the shell. For maintenance, replace the plugs with the bolts that hold the cylinder.

Table 29. Parts List—Cylinder Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GSF4840F	INSTL=SHELL FRONT, 4840F	4840F_,4840H_,4840M7K
	B	GCA4840F	INSTL=CYLINDER, 4840F7	4840F_,4840H_,4840M7K
			Components	
all	1	03 48053B	GSKT=53+1/2BC 4840F 1/8 THK	
all	2	15K240	HXCAPSCR 3/4-10UNC2AX3 GR5 ZIN	
all	3	15U492	FLTWSH1+15/32ODX13/16IDX.125ZC	
all	4	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	5	15G240	HXNUT 3/4-10UNC2B SAE ZINC GR2	
all	6	15K250	HXCAPSCR 3/4-10UNC2AX4 GR5 ZIN	
all	7	15U494	3/4SAE CLPFW.812IDX1.5ODX.135T	

Cylinder Installation

4 Sheets

Table 29 Parts List—Cylinder Installation (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	8	15K310	HEXCAPSCR 1+1/4-12X4 GR8 ZINC	Course thread. This part applies to machines made after 05, 2008.
all	8	15K309	HEXCAPSCR 1.25-7UNC X 4.0 ZINC	Fine thread. This part applies to machines made after 05, 2008.
all	9	15U600	FLTWASH 1+1/4 HARD ASTM F436	
all	10	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	11	X2 21916	CYL PULL-UP PLATE, 4840F7	
all	12	X2 21917	COVER=CYL HUB, 4840F7 MACH	
all	13	02 21918	GASKET= CYL HUB COVER, 4840F7	
all	14	15K235AA	HEXHDSCR 3/4-10X2.75 GR8 ZINC	
all	14	15K234CA	HEXHDSCR 3/4-10X2.25 GR8 ZINC	
all	15	15U321H	FLTWASH 3/4 HARD ASTM F436	
all	16	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	17	15K040T	1/4-20X3/4 TAMPTORXBUTHDN/P SS	
all	18	60C155V	ORING 4.75ID3/16CS VITON75#351	
all	19	60C157V	ORING 4+7/8ID 3/16CS VITON-352	
all	20	15K235AA	HEXHDSCR 3/4-10X2.75 GR8 ZNCPL	
all	21	ACA4840F7B	ASSY=CYL 4840F7, 38" DOOR	Standard Cylinder — 38” door
all	21	ACA4840F7P	PICKFREE CYLINDER, 4840F	Pickfree Cylinder

7 Door Assemblies

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Installation 38 inch Hydraulic Door

4 Sheets

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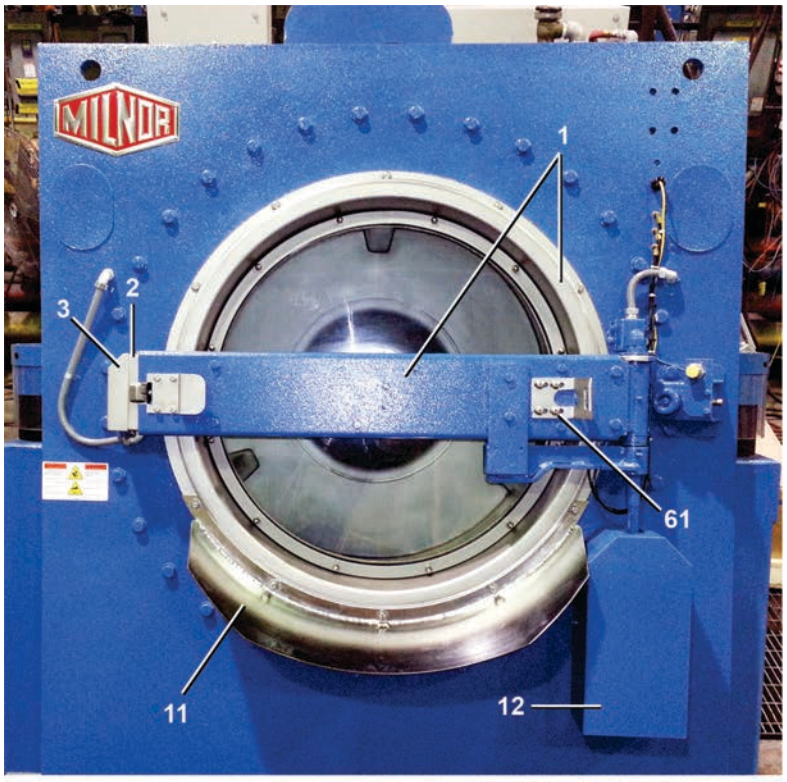

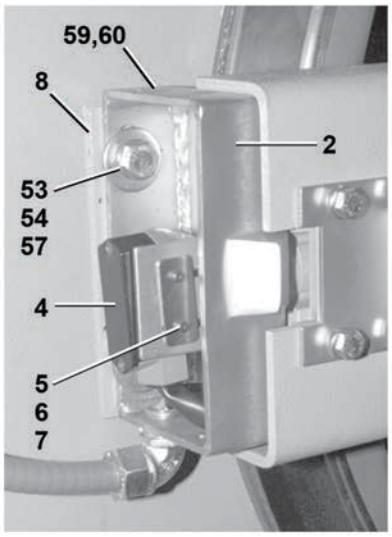

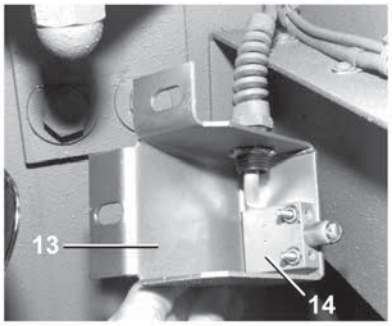

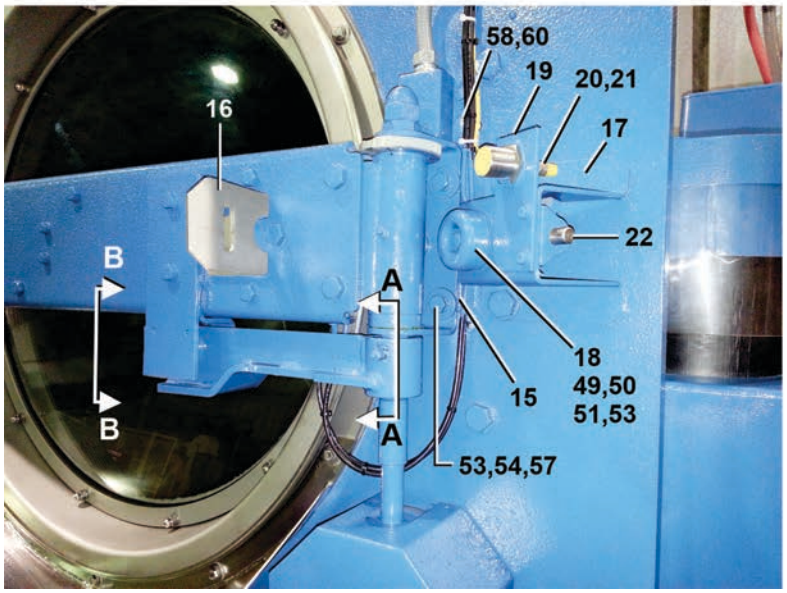

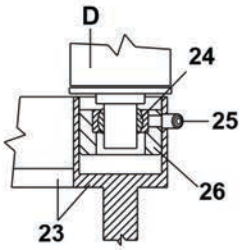

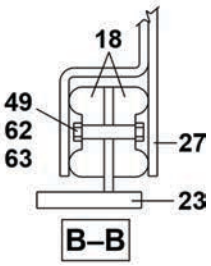

Legend

D . . . See BPWHAD04

Installation 38 inch Hydraulic Door

4 Sheets

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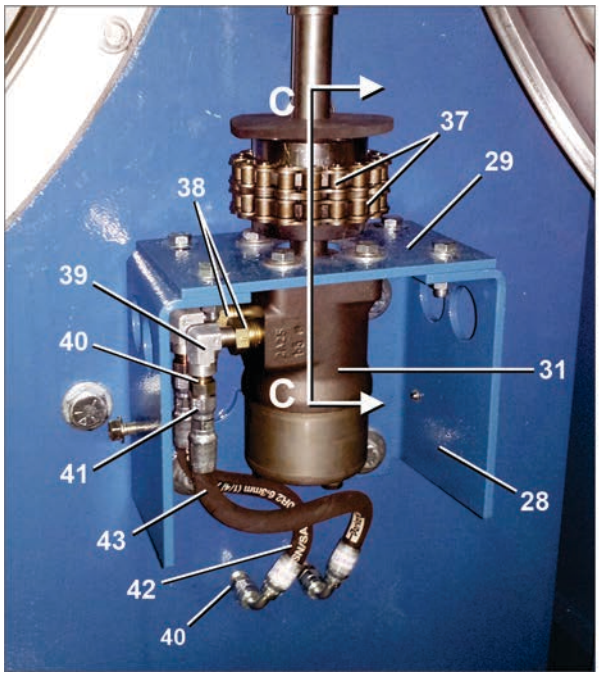

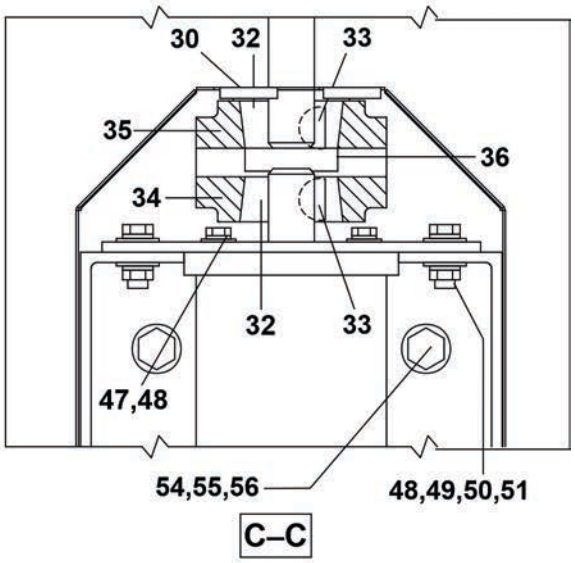

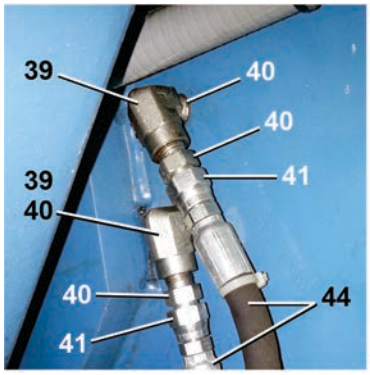

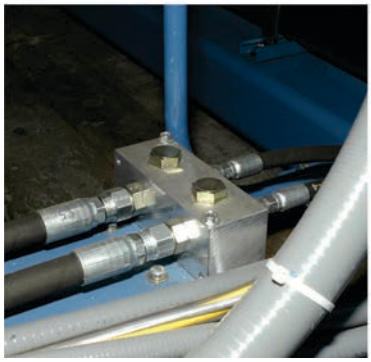

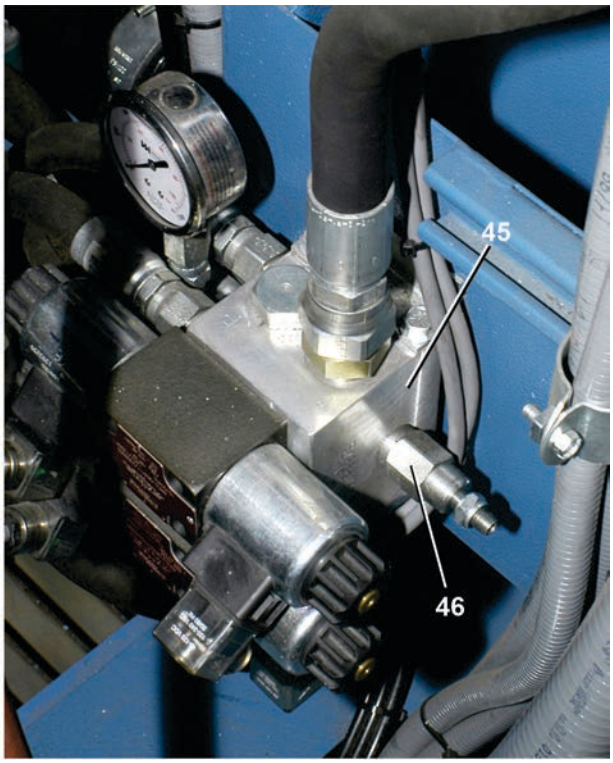

Installation 38 inch Hydraulic Door

4 Sheets

48040M7K

Table 30. Parts List—Installation 38 inch Hydraulic Door

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GSD4840FA	INSTL=SHELL 38" DOOR, 4840F	
	B	GHT48007	4840M7K HYD MTR/TORQARM	
			Components	
all	1	A25 00100A	4840F 38" X 4" SHELLDOOR	
all	2	W3 25159S	* WLMT,DOORSSTRIKER,SS =ALL52	
all	3	W3 25180	*COVER=SWITCH & DOOR STRIKER	
all	4	09R012STDG	* 09R012 +MOUNTING HDWRE+INST	
all	5	20A015GA	SHIM=FRICTION=CWU DOORSWITCH	
all	6	15K009	SKCPSCR 6-32 3A1 5/8 ALLOY	
all	7	15G072	HXCTRLOKNUT 6-32IFI100 ZINC GR	
all	8	03 25159W	SHIM=DOOR LATCH STRIKER=52WTB	
all	11	W3 25282B	38" DOOR TRAY WELDMENT	
all	12	02 21968A	EXTENDED COVER=CHAIN COUPLING, 4840F	
all	13	W3 25078B	4840M7K 2ND DRSW BRKT	
all	14	09RM01212S	CAPSW 12' 180DEG ROLLER SILVER	
all	15	03 25170A	SHIM=HINGE BKT BOLT-ON=52WTB	
all	16	02 21873A	38" DOOR OPEN STRICKER 4840F	
all	17	02 21874A	38" DOOR OPEN STOP 4840	
all	18	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	19	02 21967A	BRKT=38" AUTODOOR PROX 4840	
all	20	09RPS30CAS	PROXSW QK CONN 30M NO-AC SHLD	
all	21	09RPTAC092	CONN. 90 FEM 3-PIN AC 3A 2M	
all	22	SA 10 020	* DOORLATCH ASSY-SMALL	
all	23	W3 25300G	WLMT=TORQUE ARM,4840F OPPOSITE HAND	
all	24	54AA00PBB	SPHERICAL PLAIN BRG BALL BUSHING 3/4 RBC-B12L	
all	25	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	
all	26	03 25604	ADAPTER FOR B12-L BUSHING	
all	27	W3 25301	* BRACKET WELD=DOOR ACTUATOR	
all	28	03 25278	BRKT=MOTOR MOUNT AUTO DOOR	
all	29	03 25285	PLATE=MOTOR MOUNT AUTO DOOR	
all	30	02 09109	DISC=3"DUMP VALVE RIGID SEAT	
all	31	27E320025	TDRQMOTOR- HYDRAULIC DANFOSS DH400 11186130	
all	32	56Q1A1610	1.0" BUSH VPUL TPRLOCK1610TL	

Installation 38 inch Hydraulic Door

4 Sheets

48040M7K

Table 30 Parts List—Installation 38 inch Hydraulic Door (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	33	15E008	KEY#15 WOODRUF 1/4X1 NIC ALLOY	
all	34	54J220	DRCCOUPHALF C5018X1610 TBH	
all	35	27E5511D	FLEX.COUP.=5018TB-F COUPLING 1610	
all	36	02 175048	DRIPSHIELD=3"INLET VALVE	
all	37	27E5511C	FLEX.COUP.-CHAIN=5018CHN ASSY	
all	38	52AY0KR004	HEXPTPEBUSH 1/2MX1/4F#0102-8-4	
all	39	52JY0ER005	ELBOWPIPE 1/4 STR.#5502-4-4	
all	40	52ZC0ES001	TUBEFIT 1/4"STR.#4-4 FLO-S	
all	41	52XY0ER010	FEMPIPESWIV 1/4" #1405-4-4	
all	42	60EH21C08S	ASSY=HYD HOSE 1/4"X8" SHORT	
all	43	60EH21C10L	ASSY=HYD HOSE 1/4"X10" LONG	
all	44	60EH21C102	ASSY=HYD HOSE 1/4" + 2 X FORSW =102"	
all	45	96DH488A	BODY, SUN SANDWICH BODIES #GBA	
all	46	96DH487B	CARTRIDGE SUN #NCCB-LCN	
all	47	15K088	HEXCAPSCR 3/8-16NCX7/8 GR 5 ZI	
all	48	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	49	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	50	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	51	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	52	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	53	15U238	LOKWAS INTOOTH 3/8" (US STD) 4	
all	54	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	55	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	56	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	57	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	58	15P180	TRDCUT-F HXHD 1/4-20UNC2X5/8 S	
all	59	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	60	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	61	15K084	TRUSS HXSOK 3/8-16 X 23/32SS	
all	62	15K120	HXCAPSCR 3/8-16UNC2AX2 GR5 ZIN	
all	63	15G218	HXLOKNUT NYL 3/8-16 STL/ZNC	

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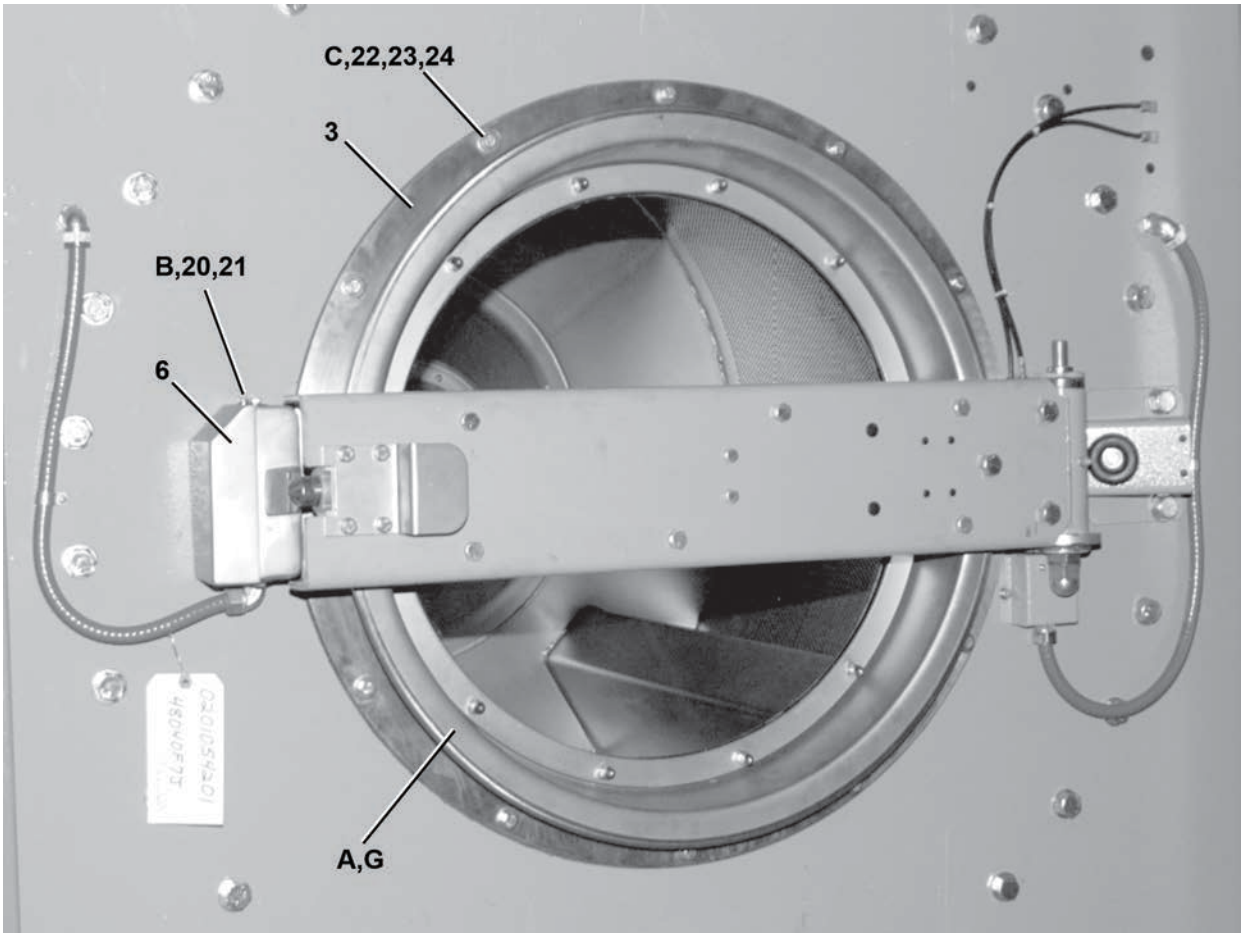
Manual Door Installation

3 Sheets

4840F_, 4840M7K

General View



Legend

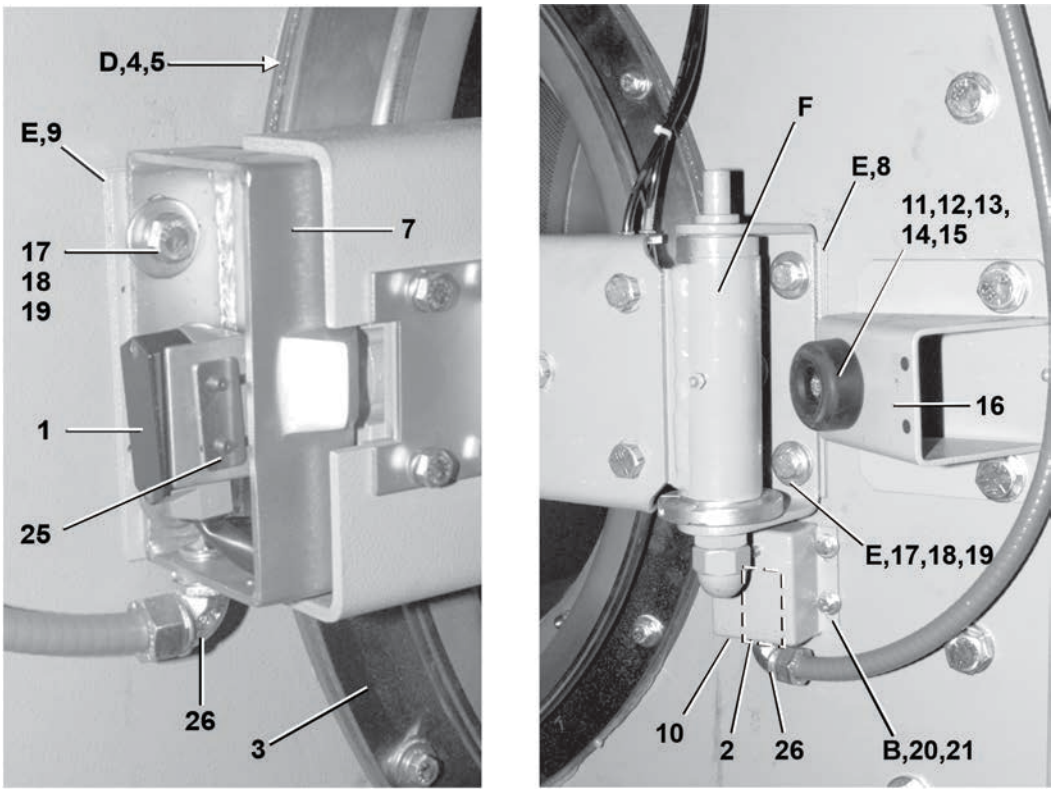
A . . . Refer to the related section in document BPWHAD03
B . . . 4 instances
C . . . 12 instances
G . . . 48040F_shown

Manual Door Installation

3 Sheets

4840F_, 4840M7K

Door Hinge



Legend

D . . . Put the gasket segments together, end to end, to make the full, circular gasket.

E . . . 3 instances

F . . . Refer to the related section in document BPWHAD04

Table 31. Parts List—Manual Door Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GSD4840F	INSTL=SHELL DOOR, 4840F	4840F_, 30” Door
	B	GSD4840FA	INSTL=SHELL 38" DOOR, 4840F	4840M7K, 38” Door
			Components	
all	1	E25 00100	* DOOR INTLK SWITCH ASSY	
all	2	09RM01212S	CAPSW 12' 180DEG ROLLER SILVER	
A	3	Y3 25084C	RING DOOR MACHINED=34.125BC	
B	3	Y3 25084E	RING DOOR MACHINED=38"DOOR	
A	4	03 25026D	GASKET=DOOR MTG RING=1/16"	

Manual Door Installation

3 Sheets

4840F_, 4840M7K

Table 31 Parts List—Manual Door Installation (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
B	4	03 25026F	GASKET= 38" DOOR MTG RING 1/16"	
A	5	03 25026E	GASKET=DOOR MTG RING=1/8"	
B	5	03 25026G	GASKET= 38" DOOR MTG RING 1/8"	
all	6	W3 25180	*COVER=SWITCH & DOOR STRIKER	
A	7	W3 25159S	* WLMT,DOORSSTRIKER,SS =ALL52	
B	7	02 21873A	38" DOOR OPEN STRICKER 4840F	
all	8	03 25170A	SHIM=HINGE BKT BOLT-ON=52WTB	
all	9	03 25159W	SHIM=DOOR LATCH STRIKER=52WTB	
A	10	W3 25078A	WELD=BRKT 2ND DRSWTCH, 4840F	
B	10	W3 25078B	4840M7K 2ND DRSW BRKT	
all	11	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	12	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	13	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	14	15U238	LOKWAS INTOOTH 3/8" (US STD) 4	
all	15	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
A	16	02 21874	DOOR OPEN STOP, 4840F	
B	16	02 21874A	38" DOOR OPEN STOP 4840	
all	17	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	18	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	19	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	20	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	21	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	22	15K100	HEXCAPSCR 3/8-16X1+1/4 SS18-8	
all	23	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	24	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
all	25	15K022	SOKCPSCR 10-24UNC2 X1+1/4 SS18	

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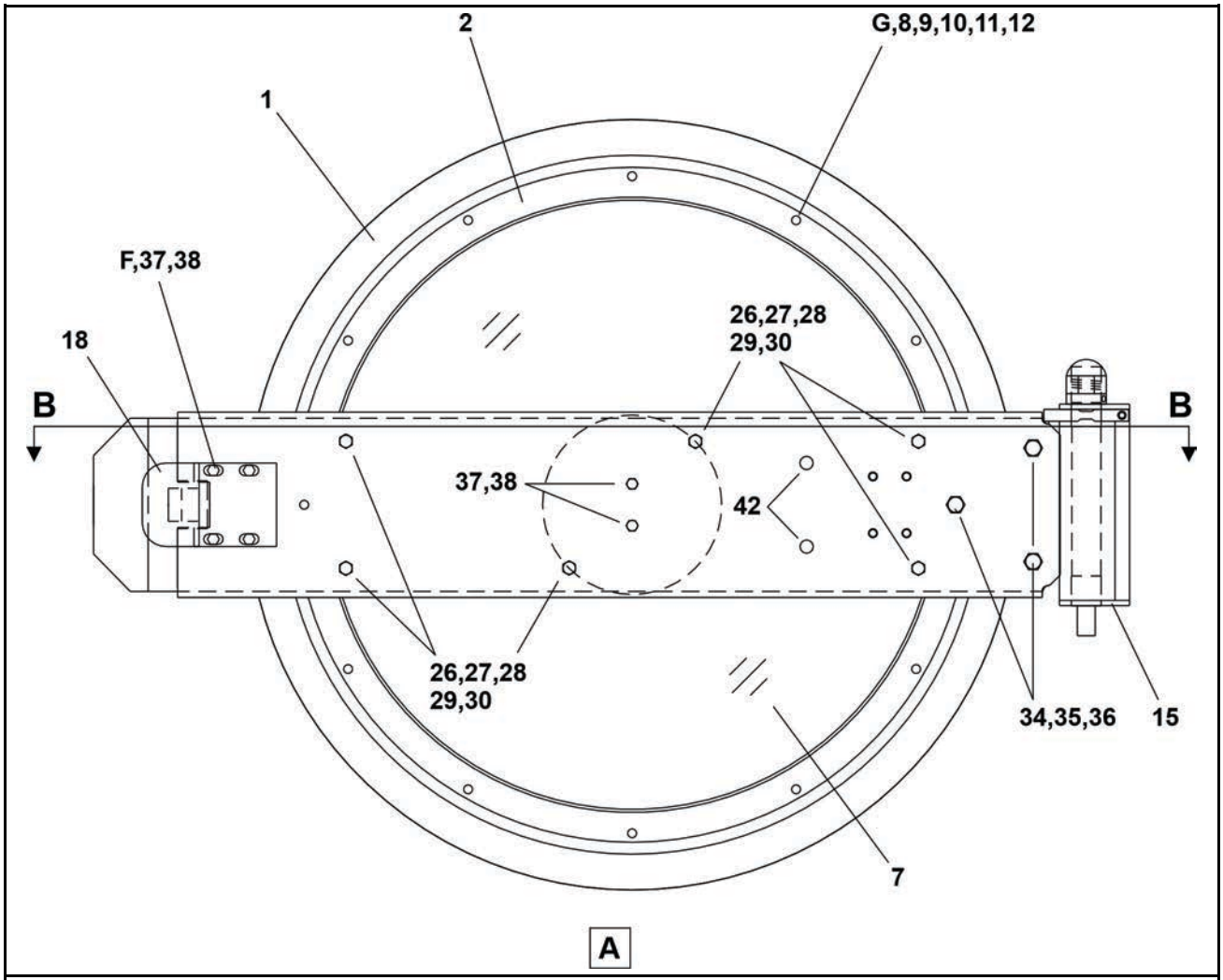
Manual Door 38 inch

4 Sheets

48040M7K

Figure 54. Manual Door Components, Front View



Legend

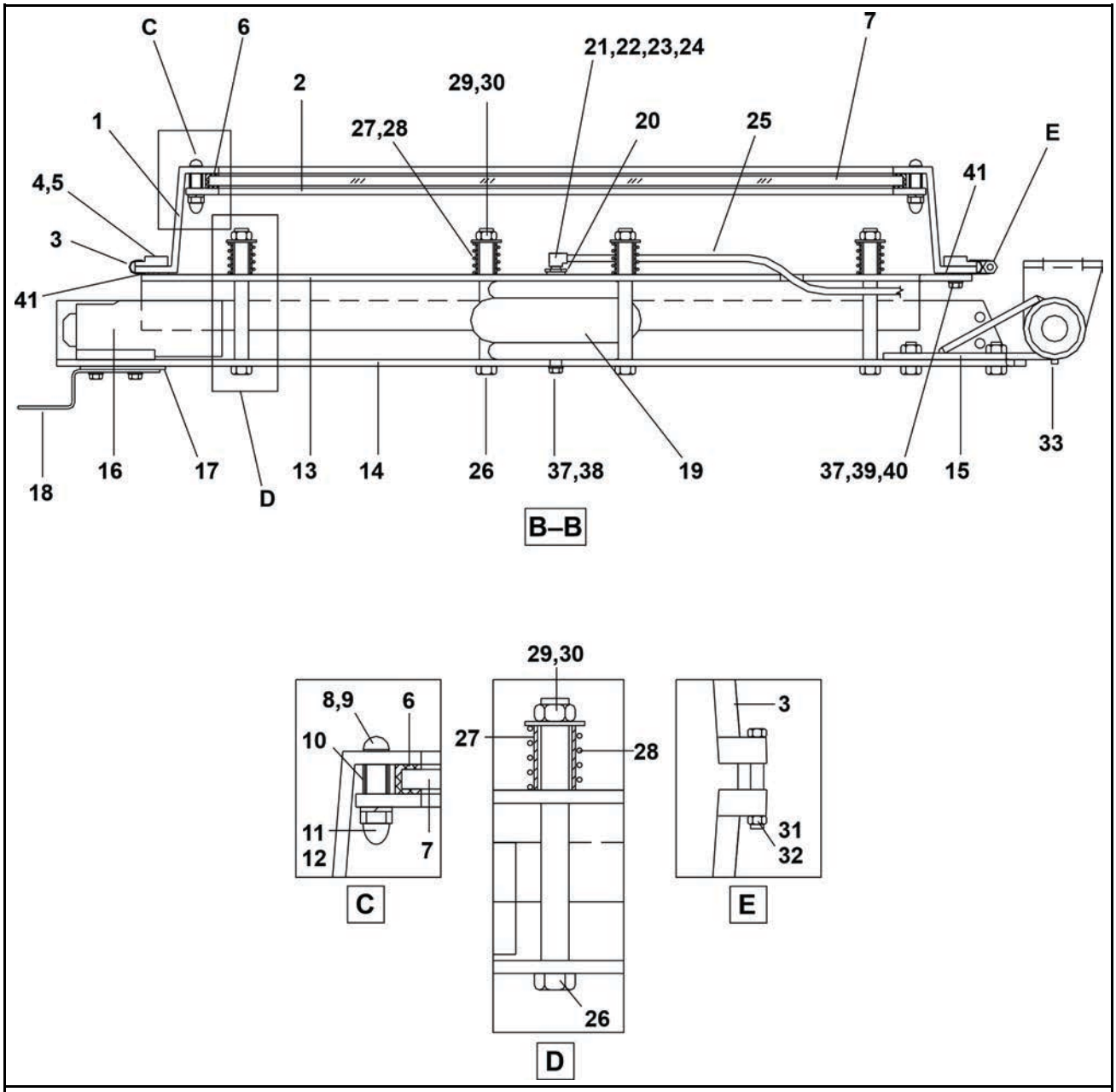
A . . . Front view
B-B . . Cross section view, refer to figure 2
F . . . 4 instances
G . . . 12 instances

Manual Door 38 inch

4 Sheets

48040M7K

Figure 55. Manual Door Components, Cross Section View



Legend

C . . . Door glass and gasket
D . . . Door channel bolts
E . . . Retainer ring

Manual Door 38 inch

4 Sheets

48040M7K

Table 32. Parts List—Manual Door 38 inch

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	A25 00100A	4840F 38" X 4" SHELLDOOR	
Components				
all	1	Y3 25060B	DOOR=DRILLED=38" TAPERED	
all	2	03 25058B	RING= 38" DOOR GLASS RETAINER	
all	3	W3 25085K	WLMT= 38" DOOR GASKET RETAINER	
all	4	03 25085H	GASKET=40 DURO 3/8 THICK FOR 38" DOOR	
all	5	20C047	ADHES.3M #1099 INDUST QUARTS	
all	6	03 25083B	GASKET FOR GLASS, 38" DOOR	
all	7	03 25013C	DOORGLASS-SIZE 33.94"	
all	8	15K106B	BUTSOKCAPSCR 3/8-16NCX1+3/8 SS	
all	9	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	10	27B2400K0L	SPACER ROLL.43ID.562L.03T SS	
all	11	15G200	HXCPNUT 3/8-16 UNC2A 5/8X1/2	
all	12	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	13	03 25061A	CHANNEL INNER=38" DOOR	
all	14	03 25089A	CHANNEL=OUTER=38" DOOR	
all	15	A25 04500A	38" DOOR - BEARING&HINGE PIN ASSY, 4840F	
all	16	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	17	02 15633B	ADJPLATE=DOORLATCH 16GA	
all	18	02 15633A	DOOR LATCH HANDLE 42Q	
all	19	60B090	AIRMT S-131 1CONV.F#W013587731	
all	20	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	21	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
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	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	26	15K202T	HEXCAPSCR 1/2-13 X 4.75 SS	
all	27	27B2750L0T	SPC RROLL.562ID.937L.048T ZNK	
all	28	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	29	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	30	15G234	LOKNUT 1/2-13NC CAD FLXLOC#21F	
all	31	15N200	FILMACSCR 1/4-20UNCX2 SS18-8 S	

Manual Door 38 inch

4 Sheets

48040M7K

Table 32 Parts List—Manual Door 38 inch (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	32	15G170	HEXNUT 1/4-20UNC2 SS18-8	
all	33	54M015	GREASEFIT 60X36/60X44 1610BL	
all	34	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
all	35	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	36	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	37	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	38	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	39	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	40	15N223	FLATMACSCR 3/8-16NC2 X 1+1/4 S	
all	41	15U245B	FLATWASH SPECIAL DOOR 52+72	
all	42	12P1ALHP	HOLEPLUG 9/16"NYLON HEYCO#2653	

BPWHAD04 / 2021282 BPWHAD04.1 0000351774 B.6 A.3 7/6/21, 8:04 AM Released

Door Hinge Components and Installation

1 Sheet

48040M7K

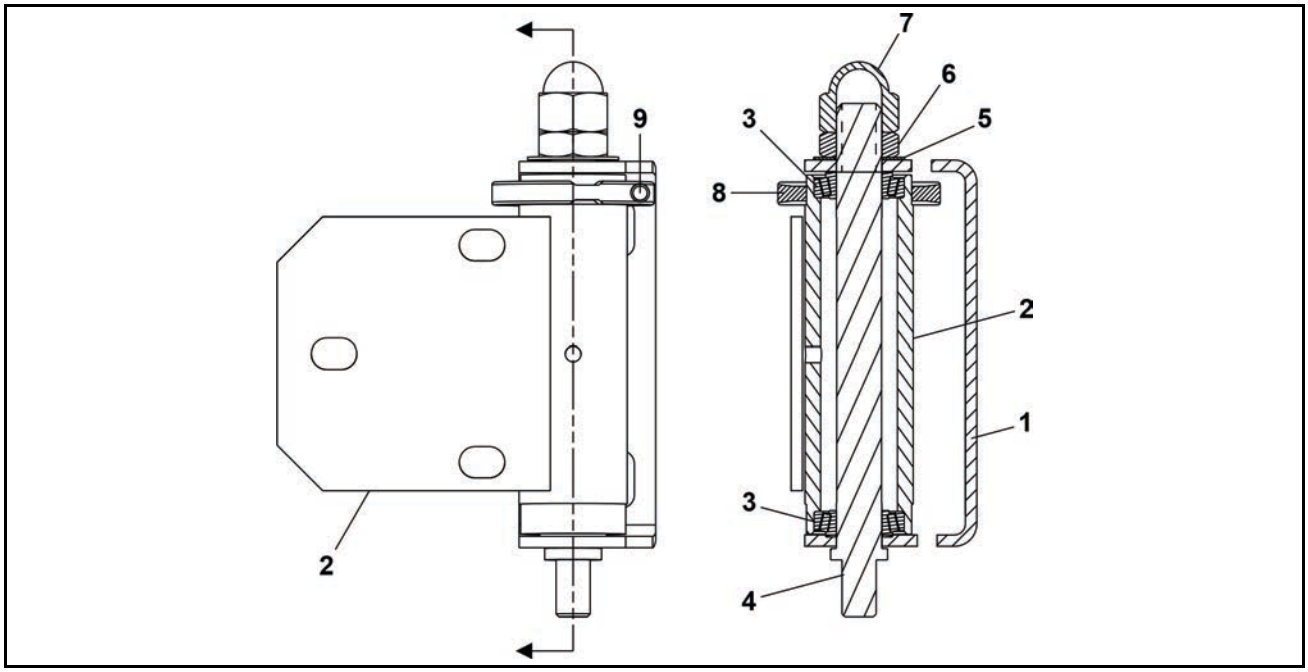


Table 33. Parts List—Door Hinge Components and Installation

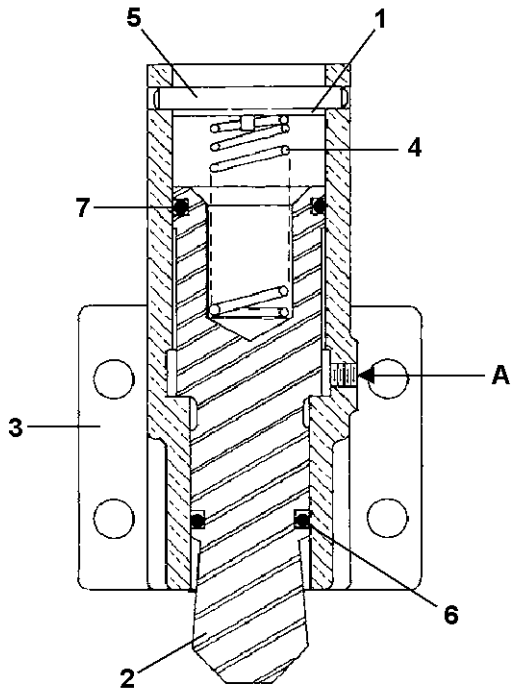
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	A25 04500A	38" DOOR - BEARING&HINIGE PIN ASSY, 4840F	
Components				
all	1	03 25170	HINGE BKT.BOLT-ON=52T BND@PT	
all	2	W3 25071	* HINGE WELDMENT-30"DOOR	
all	3	54A976977	TIMKN #L44610/L44643=1.00"BORE	
all	4	03 25302	PIN DOOR HINGE	
all	5	15U500	FLATWASH 2"0D X 1+1/16 X .060	
all	6	15G248	HXJAMNUT 1-14UNF2B ZINC GR2	
all	7	15G249	HXCAPNUT L-CROWN 1-14UNF2B ZIN	
all	8	54JH13562B	HINGE COL SPLIT 3.56 FL TOP	
all	9	15K022	SOKCPSCR 10-24UNC2 X1+1/4 SS18	

BPWG4D02 / 2020034 BPWG4D02.1 0000267678 B.6 A.2 1/15/20, 9:51 AM Released

Door Latch

1 Sheet

Cross Section



Legend

A . . . Compressed air

Table 34. Parts List—Door Latch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 15 028	Assembly, Door latch	
Components				
all	1	02 15105	RETAINER RING	
all	2	02 15297	STRIKER	
all	3	02 15298	CYLINDER	
all	4	02 15836	SPRING	
all	5	15H090	PIN	
all	6	60C122	O-RING, 1”X1/8	
all	7	60C128	O-RING, 1+3/8X1/8	

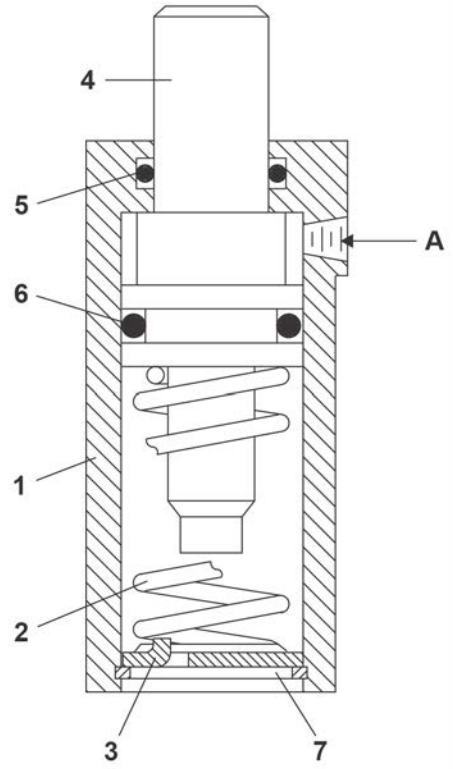
BPWD6D02 / 2020356 BPWD6D02.1 0000305578 B.6 A.3 8/28/20, 4:54 PM Released

Door Latch

1 Sheet

Figure 56. Door Latch

Cross Section



Legend

A . . . Compressed air

Table 35. Parts List—Door Latch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 10 020	* DOORLATCH ASSY-SMALL	
Components				
all	1	02 10188	CYLINDER=DOORLATCH OUR MATL	
all	2	02 10222	SPRING=DOOR LATCH=BALCOM	
all	3	02 10221	RETAINER-DOORLATCH SPRING	
all	4	Y2 10314	* PLUNGER=DOOR INTERLOCK	
all	5	60C112	ORING 5/8IDX3/32CS BUNA70 #114	
all	6	60C115	ORING 3/4IDX1/8CS BUNA70 #210	
all	7	17B014	INTRETRING IND#3000-X100-ST-ZD	

8 Chemical Supply Devices

BPWHUC02 / 2021282 BPWHUC02.1 0000351936 B.6 A.3 7/6/21, 8:27 AM Released

Eight Port Peristaltic Supply Manifold

2 Sheets

48040M7K, 68036M5K, 72046M5K

Eight Port Peristaltic Supply Manifold

2 Sheets

48040M7K, 68036M5K, 72046M5K

Hot Water for Flushing

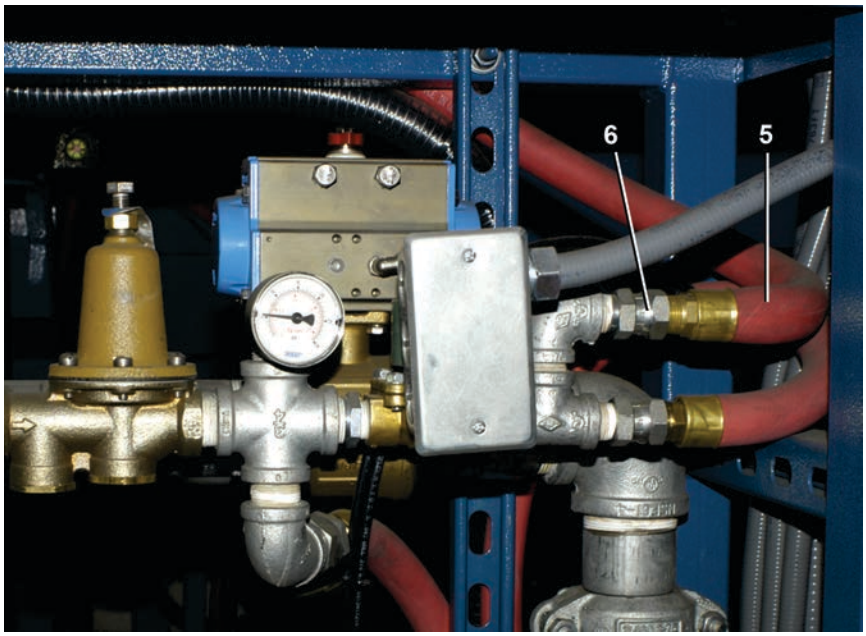


Table 36. Parts List—Eight Port Peristaltic Supply Manifold

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

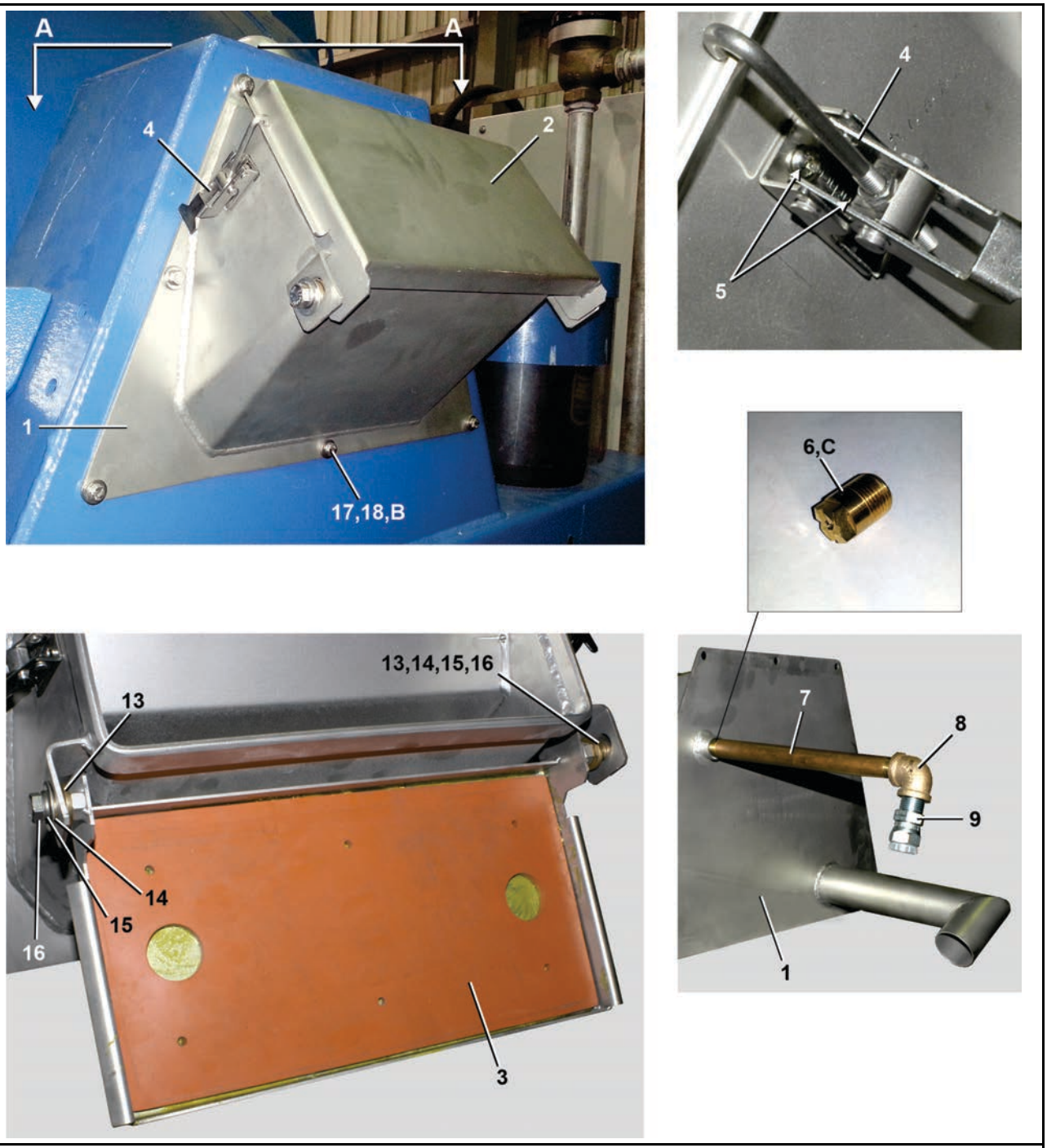
Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GWL68001	6836M5K PERISTALTIC INSTALL	68036M5K
	B	GWL72001	72M5K PERISTALTIC INSTALL	72046M5K
			Components	
all	1	02 22789A	8 PORT POLYPROP MANIFOLD 3/8" CHEM/1" WATER	
all	2	5SP0KXFHS	HEXHD PIPE PLUG 1/2"POLYPRO	
all	3	02 22727	68M5K PERISTALTIC SUPPT BRKT	
all	4	27A053	1-1/2" 316 SS CONDUIT HANGER	
all	5	60E086K83A	HOSE ASSY=3/4X83 + 1/2 ENDS	
all	6	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	7	5SL1KNFACK	NPTELB 90DEG 1X1/2 GALMAL 150#	
all	8	51ET1AE01	HOSEADAPT PVC 1"MT X 1" INSERT	
all	9	51E099SS	DIXON 1"KINGCOMBNIP S.S.#RST10	
A	10	60E010B174A	HOSE ASSY: POLYWIRECLR TUBING 1"ID X 174" NO ENDS	
B	10	60E010B228A	HOSE ASSY: POLYWIRECLR TUBING 1"ID X 228" NO ENDS	
all	11	27A090S	HOSECLAMP 13/16-1.5"SS#64016B	

BPWHUC01 / 2021282 BPWHUC01.1 0000351941 B.6 A.4 7/6/21, 3:51 PM Released

Soap Chute

2 Sheets

48040M7K, 68036M5K, 72046M5K



Legend

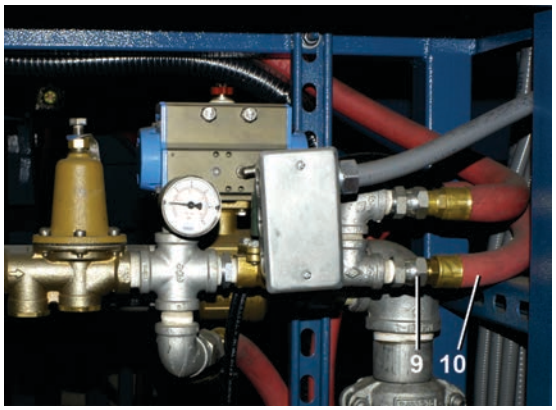
B . . . 6 instances
C . . . Nozzle within

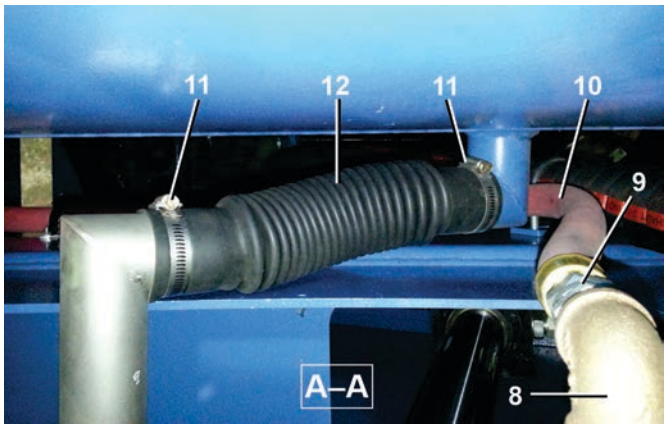
Soap Chute

2 Sheets

48040M7K, 68036M5K, 72046M5K

Hot Water for Flushing





Legend

A–A . . Detail view

Table 37. Parts List—Soap Chute

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	AWS68006	68/72M5K SOAP CHUTE ASSY	68036M5K, 72046M5K
	B	AWS48021	4840M7K SOAP CHUTE ASSY	48040M7K
			Components	
all	1	W3 65400C	WLMT=6836M5K SOAP CHUTE BODY	
all	1	W3 65400D	WLMT=4840M7K SOAP CHUTE BODY	
all	2	W3 65410A	WLMT=LID SOAP CHUTE 6836M5K	
all	3	03 65411	GASKT=SOAP CHUTE LID	
all	4	27A009C	LATCH-ADJUSTABLE 304 S/S	
all	5	15P100	#8 X 3/8 PHILPANHD TYPE B SMS	
all	6	27A002	NOZZLE BRASS 3/8" SPRAYSYSTEMS	
all	7	02 22806	6836M5K SUPPLY NOZZLE NIPPLE	
all	8	5SL0KBEA	NPTELB 90DEG 1/2 BRASS 125#	
all	9	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	10	60E086K226	3/4X226 WATER HOSE + 1/2 ENDS	
all	11	27A060	HOSECLAMP1+5/16-2.25CADSC#HS28	
all	12	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	
all	13	54E016M	FLGBRG 3/8X5/8X3/8BRZ#FB610-3	
all	14	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	15	15U185	FLATWASHER(USS STD) 1/4" ZNC P	

Soap Chute

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 37 Parts List—Soap Chute (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	16	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	17	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
all	18	15U245	FLTWASH 3/8 STD COMM 18-8 SS	

9 Water and Steam

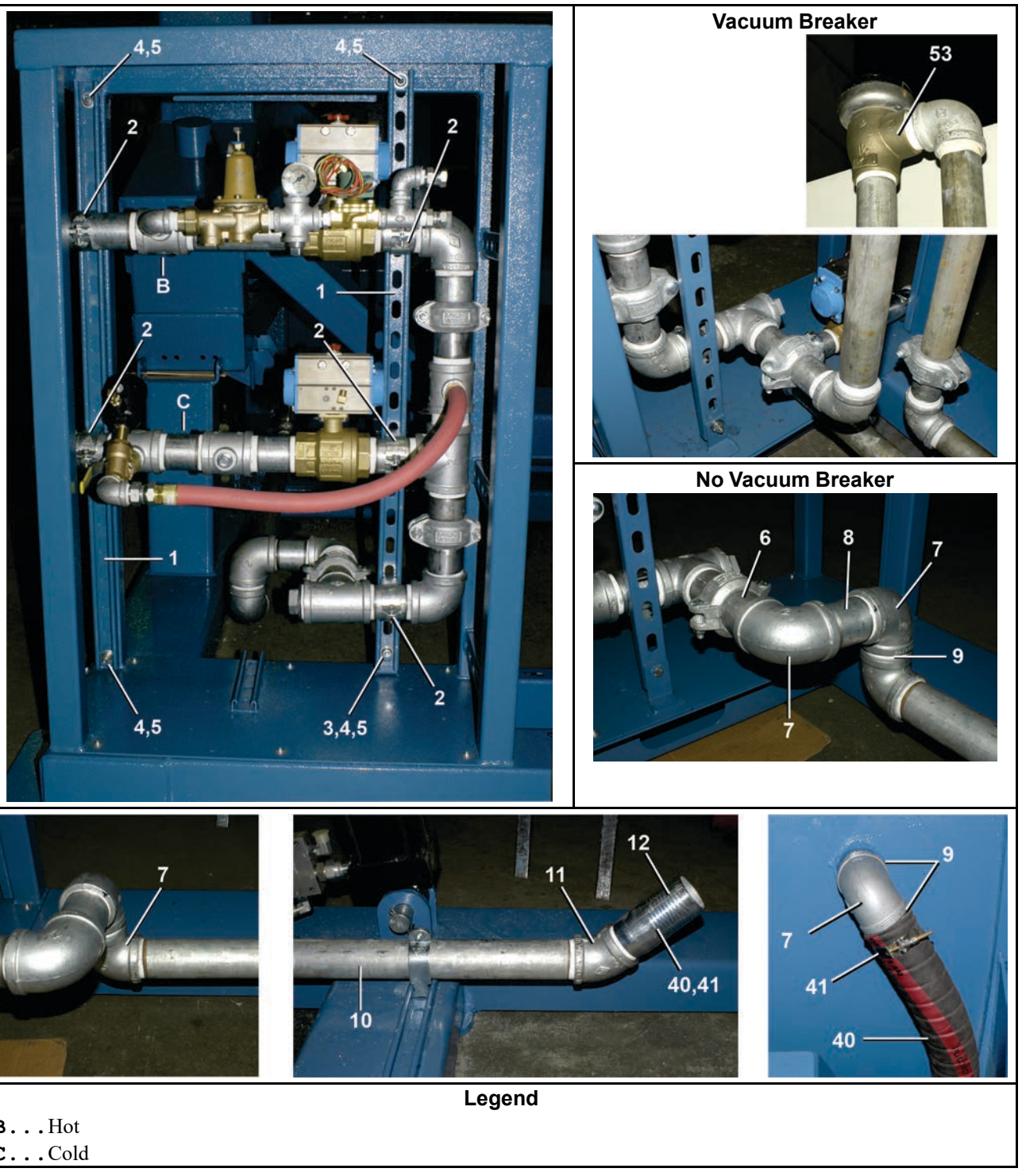
BPWH4W06 / 2021352 BPWH4W06.1 0000374447 B.6 A.4 8/23/21, 1:08 PM Released

Water

5 Sheets

48040M7K

Figure 57. Water valves installed



Legend

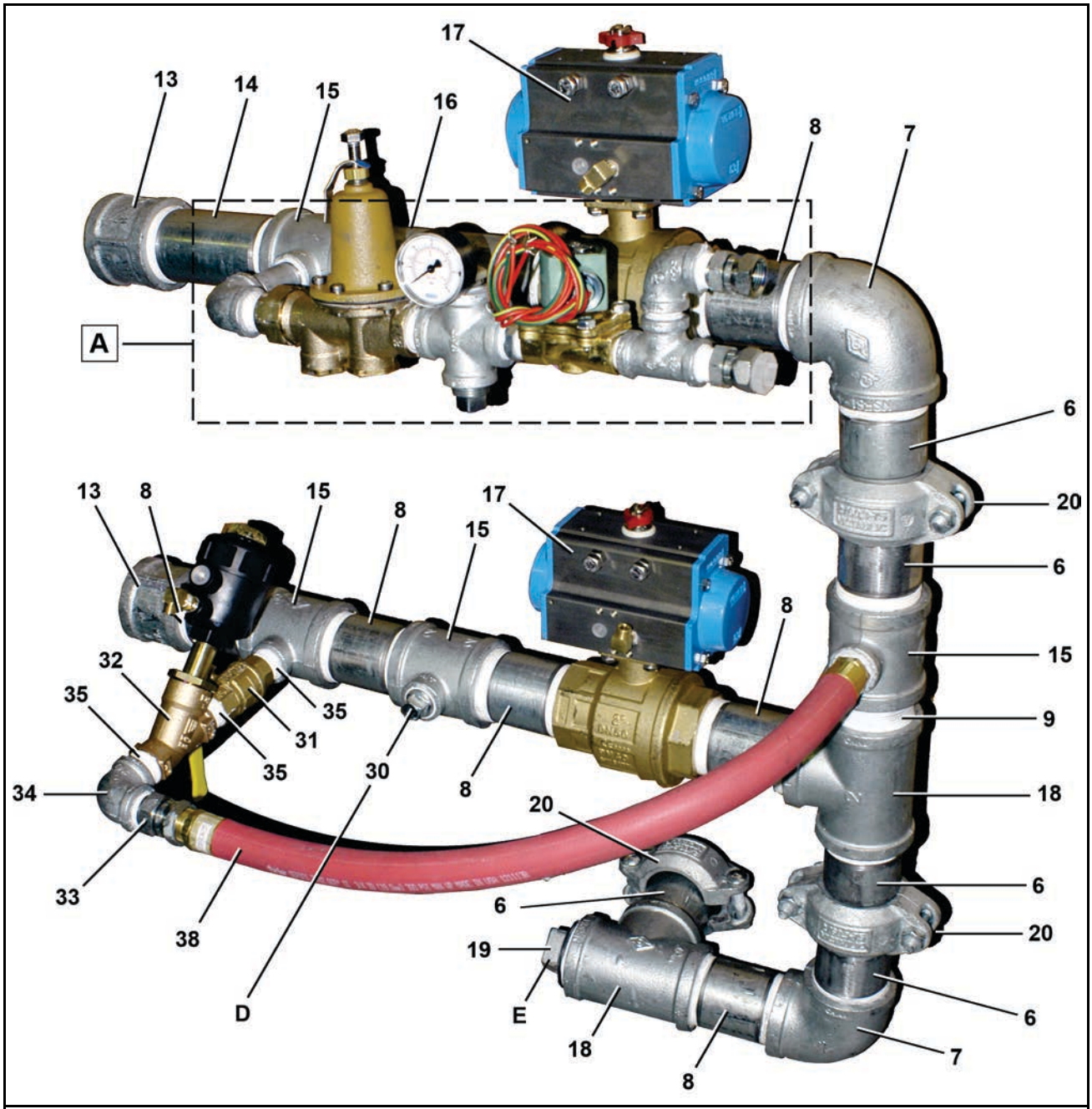
B . . . Hot
C . . . Cold

Water

5 Sheets

48040M7K

Figure 58. Hot and cold water valve assembly



Legend

A . . . See detail A
D . . . This port is for load chute flush.
E . . . This port is for third water.

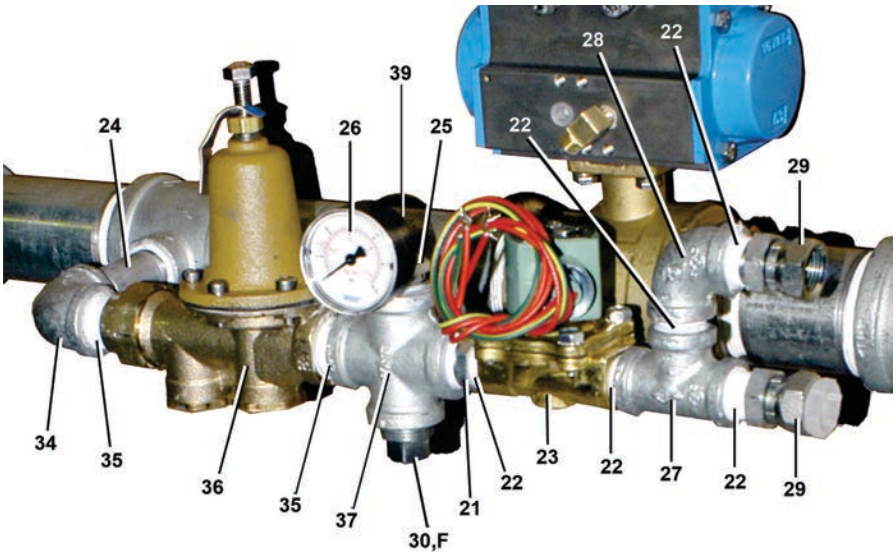
Water

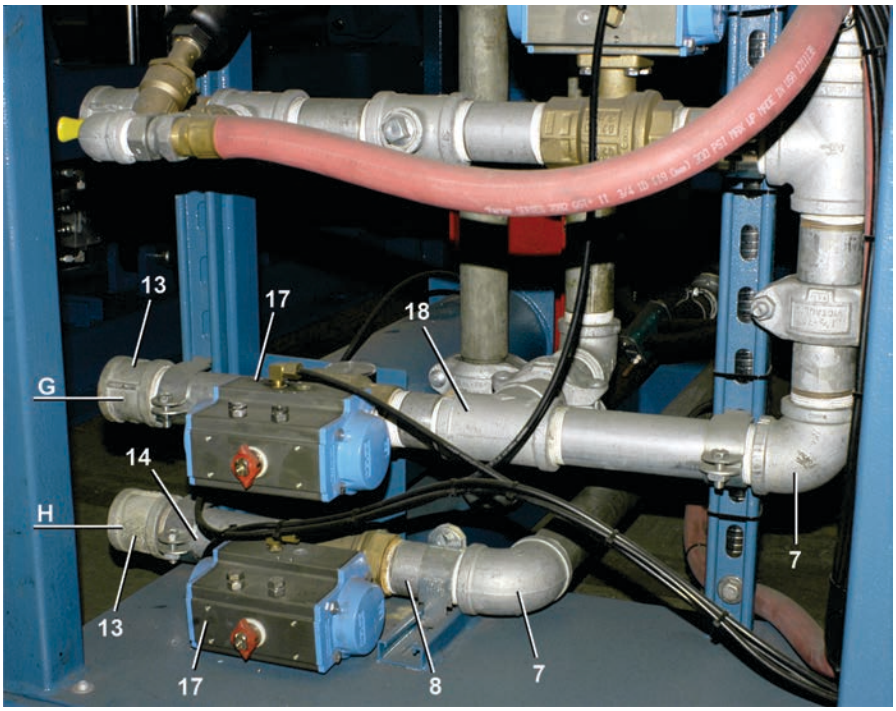
5 Sheets

48040M7K

Figure 59. Hot water for supply, third water, reuse water

Detail A: Hot Water for Supply





Legend

F . . . This port is for auto balancing valves.
G . . . Third
H . . . Reuse

Water

5 Sheets

48040M7K

Table 38. Parts List—Water

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GVW48026	4840M7K STD H20 HOT/COLD/COOLDOWN	
	B	AVW48026	4840M7K STD H20 HOT/COLD/COOLDOWN ASSY	
Components				
all	1	27A062640A	UNISTRUT 13/16HT X 40"LG	
all	2	27A0150	CLP-RGDSTL PS#1100-1+1/2	
all	3	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	4	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	5	15G198	HXFLGNUT 3/8-16 ZINC	
all	6	5P1KG4003K	1.5" X 3.5" SCH40 GALV" TOE/GOE	
all	7	5SL1KNFA	NPT ELBOW 90DEG 1.5" GALMAL 15	
all	8	5N1K04AG42	NPT NIP 1.5X4 TBE GALSTL SK40	
all	9	5N1KCLSG42	NPT NIP 1.5XCLS TBE GALSTLSK40	
all	10	5N1K37KG42	NPT NIP 1.5X37.5 TBE GALSTL SK40	
all	11	5SL1KNFK	NPT ELB 45DEG 1.5 GALMAL 150#	
all	12	51E098	KINGCOMNIP 1.5" IDXNPT #STC20	
all	13	5SCC1KNF	NPT COUP 1.5 GALMAL 150#	
all	14	5N1K06AG42	NPT NIP 1.5X6 TBE GALSTL SK40	
all	15	5S1KMGA0P	TEE 1.5X1.5X3/4 150# GALV	
all	16	5N1K08AG42	NPT NIP 1.5"X8 TBE GALSTL SK40	
all	17	96D087FBA	1.5"BALVAL+ACT BRS N/C BONOMI (SPRING RET)	
all	18	5S1KNFA	NPT TEE 1.5" GALMAL 150#	
all	19	51P058	PLUGPIPE 1+1/2"NPT POLY #57	
all	20	27E971D	VICT COUP 1.5"GALV #75	
all	21	5SB0P0KNFO	NPTHEXBUSH 3/4X1/2 GALMAL 150#	
all	22	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
all	23	96TDC2AA71	1/2"N/C2WY240V50/60C VLV(DRYVC)	
all	24	5N0P03AG42	NPT NIP 3/4X3 TBE GALSTL SK40	
all	25	5SB0P0CNFA	NPTHEXBUSH 3/4X1/8GALV150#CORD	
all	26	30N100	PRESSGAUGE 1/8"BACKCN.0-30PSI	
all	27	5S0KNFA	NPT TEE 1/2" GALMAL 150#	
all	28	5SL0KNFA	NPTELB 90DEG 1/2 GALMAL 150#	
all	29	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	30	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	

Water

5 Sheets

48040M7K

Table 38 Parts List—Water (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	31	96D050A	3/4"BALLVALVE BRZ = BONOMI 171N	
all	32	96D0009E	3/4"NPTBRZ N/C STEAMVAL ANGBOD	
all	33	51X019	UNIONSTRADT 3/4"#0107-12-12	
all	34	5SL0PNFA	NPTELB 90DEG 3/4 GALMAL 150#	
all	35	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	
all	36	96J031D	3/4"PRESSREG SET 28# FEMXUN=WATTS#LF25AUB-ZB	
all	37	5SX0PNF	NPT CROSS 3/4" GALMAL 150#	
all	38	60E086C023	ASSY=3/4"X23"LG+ENDS	
all	39	5SL0EBEC	NPTELB 90DEG STRT 1/4 BRASS125	
all	40	60E301	HOSE 2.5"WATER CORRUGATED(V50)	
all	41	27A082	HOSECLAMP 2.5625-3.5CADSC#HS48	
all	42	SA 03 009	1.5"SIPHONBRKR+SCUPPER ASSY	

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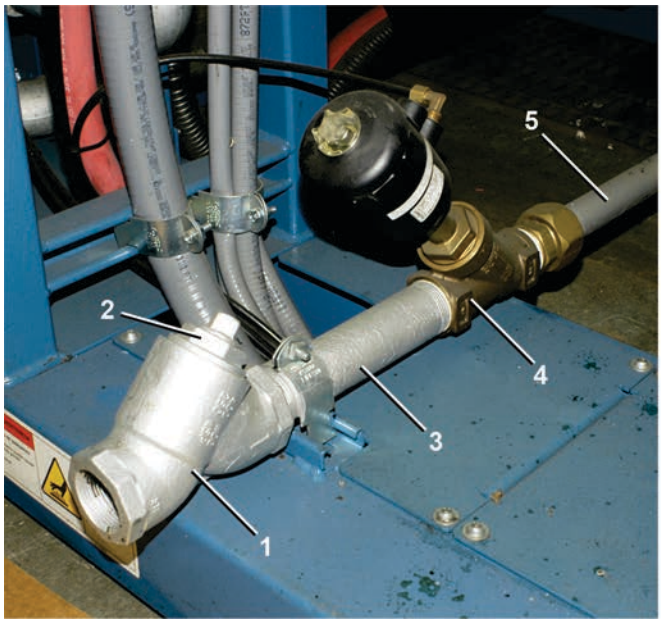
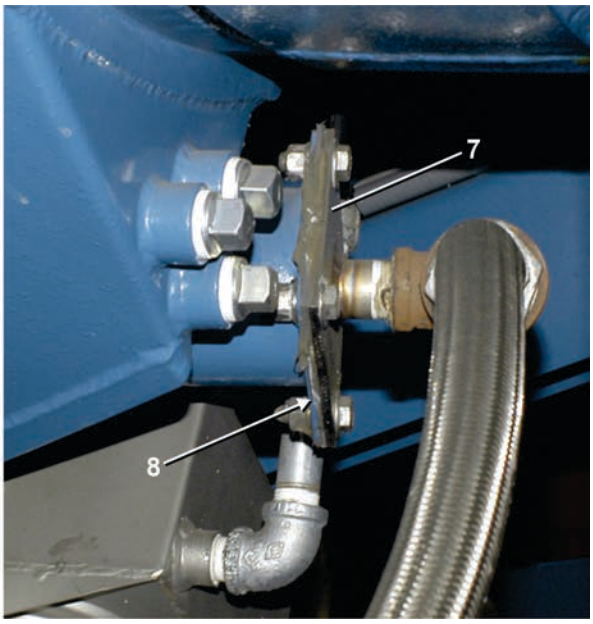
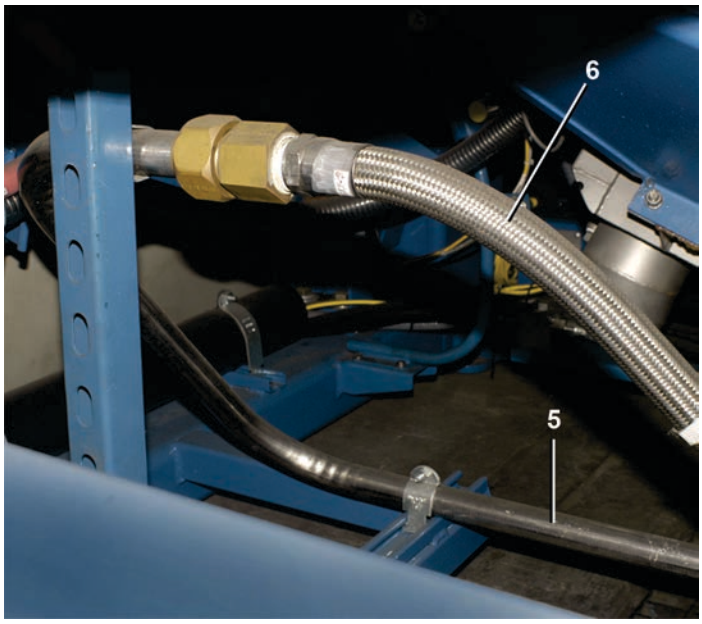
Steam

2 Sheets

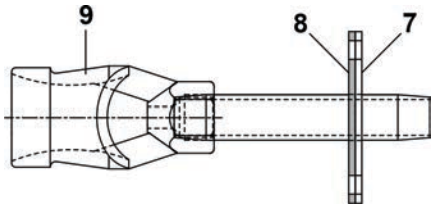
48040M7K







Sparger



Steam

2 Sheets

48040M7K

Table 39. Parts List—Steam

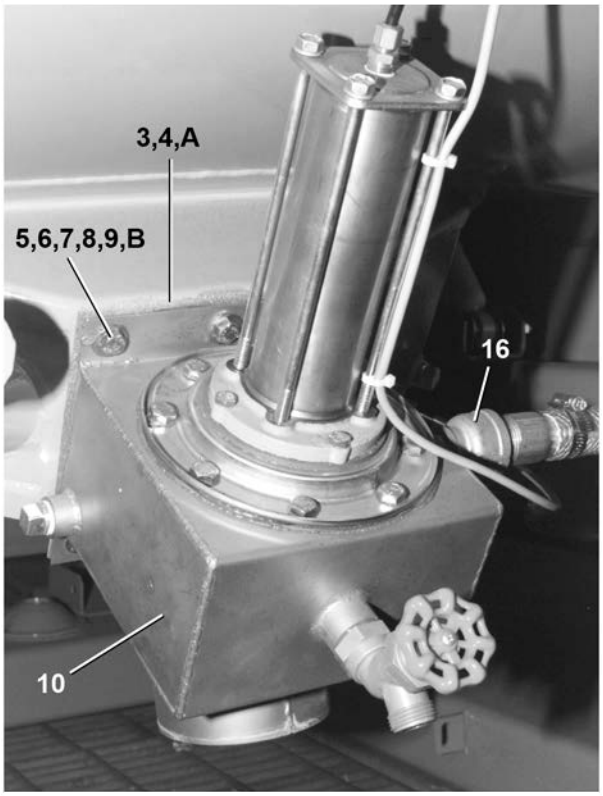
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GVS48004	4840M7K STEAM,BRASS VALVE INSTALL	
	B	AVS48400	ASSY=STEAM PIPE+NOZZLE,4840	
Components				
all	1	51T060	Y-STRAINER 1+1/4" CAST IRON	
all	2	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
all	3	5N1E12AF42	NPT NIP 1.25X12 TBE BLKSTL SK4	
all	4	96D0011E	1.25"NPTBRZ N/C STEAMVALANGBD	
all	5	02 22540A	1+1/4" STEAM TUBING 6836M5K HYD	
all	6	60E518C35A	STMHOSE SSFLEX 1"=35+2SSENDS	
all	7	W2 11365	*STEAM PIPE+FLANGE WLMT	
all	8	02 11369D	GASKET STEAM FLANGE MTG DYE	
all	9	X6 20247A	3/4" NPT .5" SPARGER MACH.	

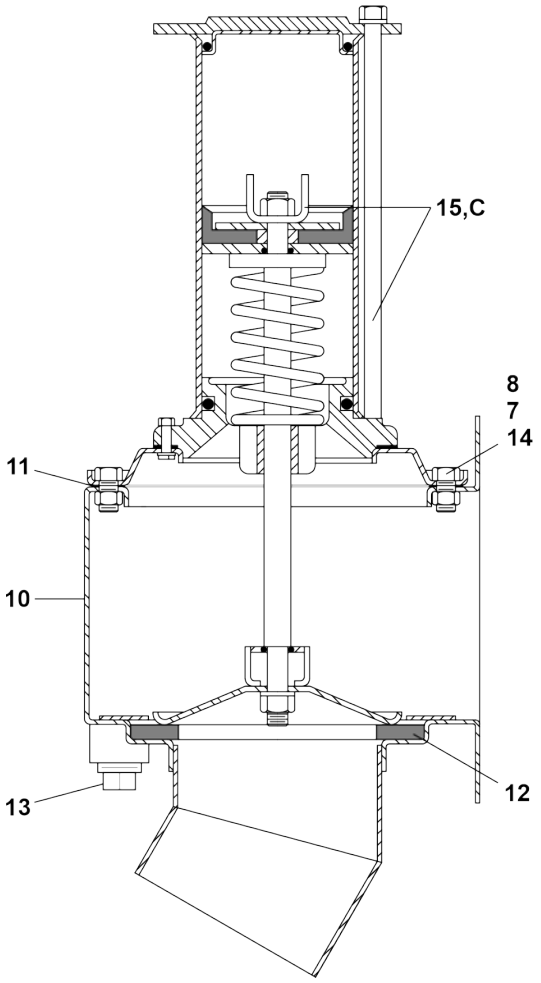
BPWH4W02 / 2021292A BPWH4W02.1 0000351898 B.6 A.5 7/13/21, 1:51 PM Released

Single 4 Inch Drain Valve Installation

2 Sheets

4840F7N, 4840H7N/K/W/R, 4840M7K





Legend

A . . . Place two gaskets together.
B . . . 6 instances
C . . . For components of the bonnet, see BPWH4W04.

Table 40. 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
			Reference Assemblies	
	A	GVD48400	INST=SINGLE DRAIN VLV, 4840F	Installation parts
	B	A14 06500B	*DUMP VALVE ASSY=4S/S 4226QHE	Assembly parts

Single 4 Inch Drain Valve

2 Sheets

4840F7N, 4840H7N/K/W/R, 4840M7K

Table 40 Parts List— (cont'd.)

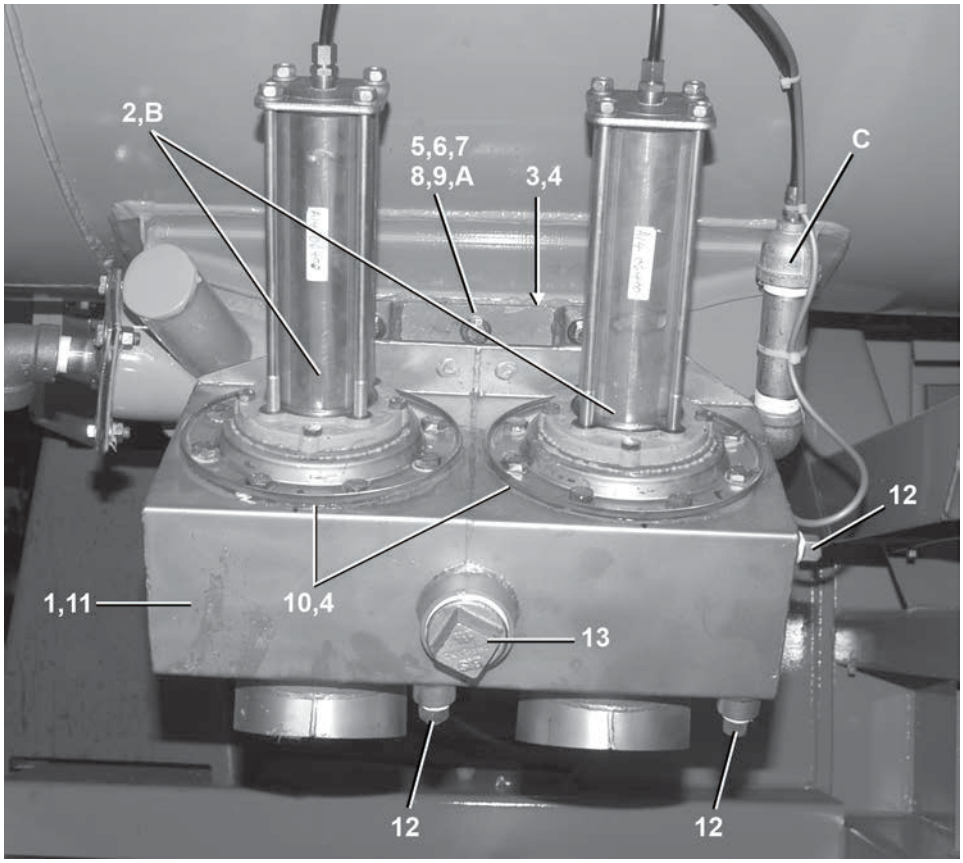
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
A	3	02 15026	GASKET-7"SQ=4"FLGDUMP VALVE	
A	4	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
A	5	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
A	6	15U201	FLATWASH 7/80DX3/8IDX.062THK S	
A	7	24G030N	ROLLED WASH.379ID NYLTITE 37W	
A	8	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
A	9	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
B	10	W2 11304	*DUMP VALVE BODY WELDMT 4226	
B	11	02 14443	GASKET-4"S/S DUMP VAL BONNET	
B	12	02 14166	SEAT 4" DUMP VALVE BUNA-N	
B	13	5SP0KGFSS	NPT PLUG 1/2 SQSOLID GALSTL	
B	14	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	
B	15	A14 06400	* BONNET+CYL=4"SS DIVCYL DUMP	
B	16	96DB0PNA	HOSEBIBB 3/4" MALEINLT 45DEG. ACETAL	

BPWH4W03 / 2021292A BPWH4W03.1 0000351895 B.6 A.6 7/13/21, 2:40 PM Released

Dual 4 Inch Drain Valves

2 Sheets

Installed View



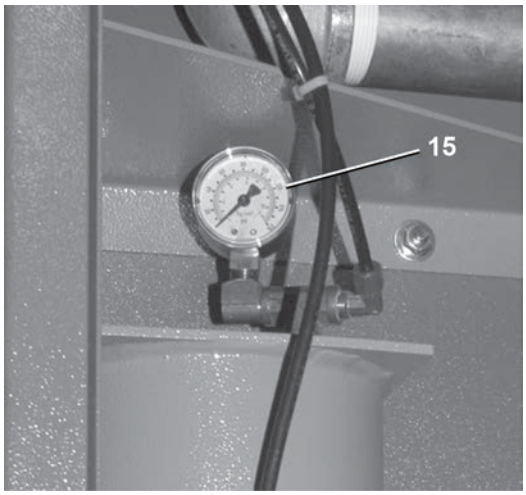
Legend

A . . . 3 instances
B . . . For bonnet components, see BPWH4W04.
C . . . For level chamber, see BPWH4W05.

Dual 4 Inch Drain Valves

2 Sheets

Pressure Gage



Compressed Air Tank

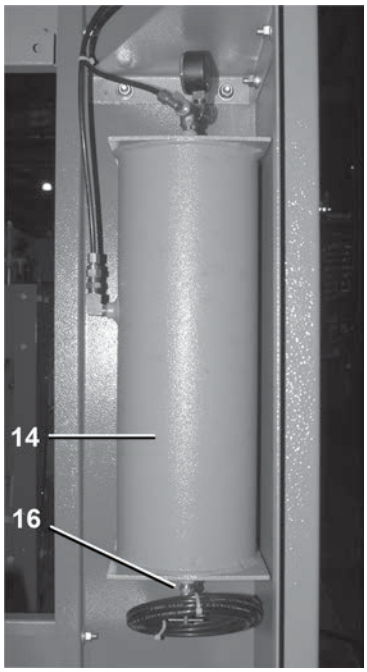


Table 41. Parts List—Drain Valve Body with Two Valves

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GVD48402	INST=DUAL DUMP VLV, 4840F	4840F7N, 4840H7N/K/W/R, 4840M7K
Components				
all	1	AVD48402	ASSY=DUAL DUMP VLV, 4840F7	
all	2	A14 06400	* BONNET+CYL=4"SS DIVCYL DUMP	
all	3	02 15026	GASKET-7"SQ=4"FLGDUMP VALVE	
all	4	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	5	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
all	6	15U201	FLATWASH 7/80DX3/8IDX.062THK S	
all	7	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	8	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	9	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
all	10	02 14443	GASKET-4"S/S DUMP VAL BONNET	
all	11	W2 11304C	*DUAL DUMP VALVE WLMT 4232	
all	12	5SP0KGFSS	NPT PLUG 1/2 SQSOLID GALSTL	

Dual 4 Inch Drain Valves

2 Sheets

Table 41 Parts List—Drain Valve Body with Two Valves (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	13	51P055	NPTPLUG 1.5 SQCORED GALCI 125#	
all	14	W3 25307D	*TANK=AIR PRESSURE RESERVE	
all	15	30N102	PRESSGAUGE 1/4BOTCON.0-150PSI	
all	16	96H018	ANGLE NEEDLE VLV 1/4"T X 1/8MP,PARKER#NV104C-5-2 W/PIN HANDLE	

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Bonnet 4 Inch Drain Valves

2 Sheet

Figure 60. 4840F7N, 4840H7N/K/W/R, 4840M7K

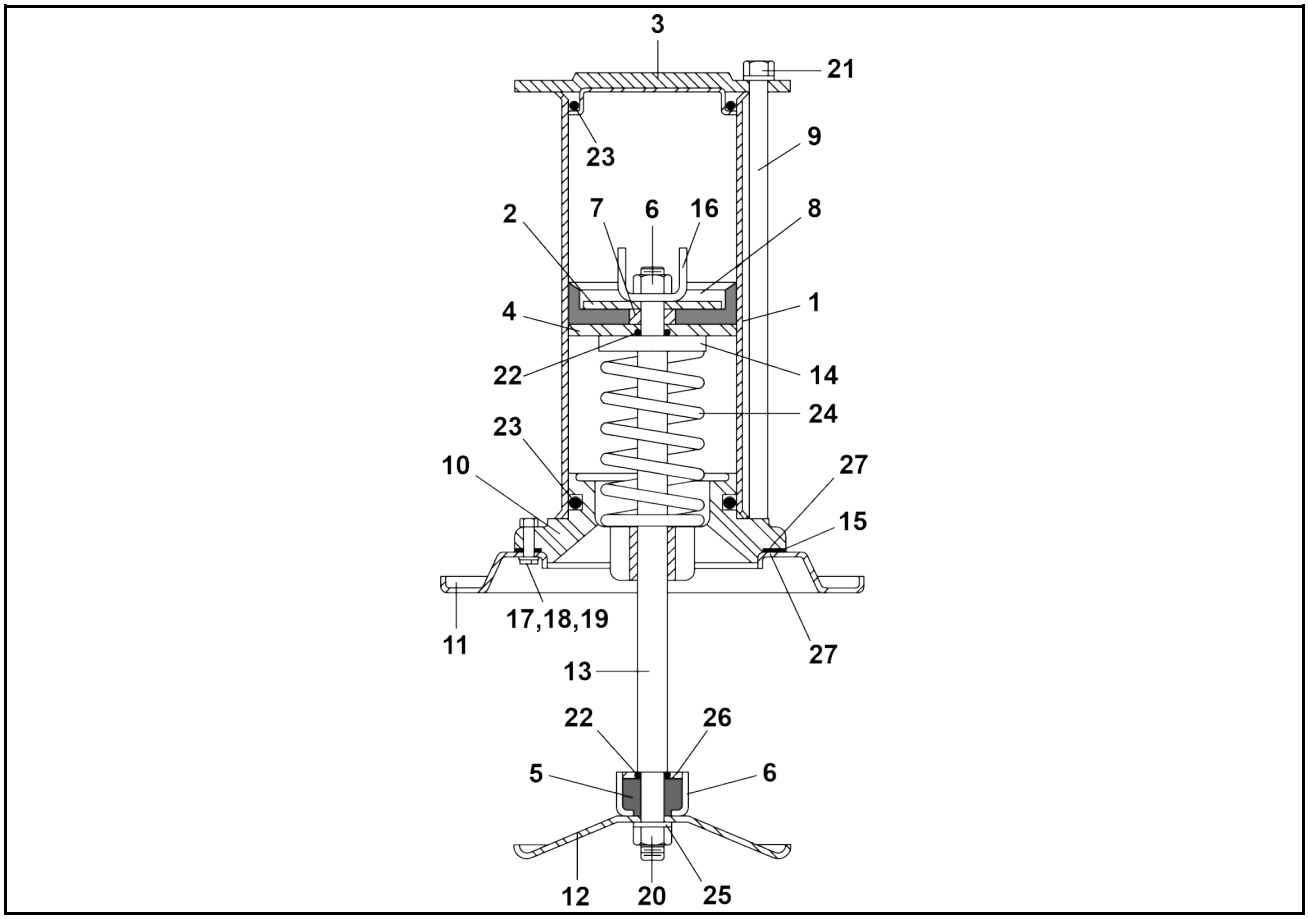


Table 42. Parts List—Bonnet 4 Inch Drain Valves

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	A14 06400	* BONNET+CYL=4"SS DIVCYL DUMP	
Components				
all	1	02 02068	AIRCYL-STAINLESS=DUMP VALVE	
all	2	02 02085	UP WASHER=2"OD=PISTON CUP	
all	3	02 02101	CYLHEAD W/TAPPED HOLE	
all	4	02 02105B	2.38"ACYL BRASS PISTONCUP WSHR	
all	5	02 16021C	BUMPER=DUMP VALVE BONNET	
all	6	02 16021D	DUMP VALVE BUMPER RETAINER	
all	7	02 02185	WASHER=PISTON CUP COMP LIMIT	

Bonnet 4 Inch Drain Valves

2 Sheet

Table 42 Parts List—Bonnet 4 Inch Drain Valves (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	8	02 02194	PISTON CUP=DUMPVALVE 2+3/8"	
all	9	02 10585D	TIE BOLT=5/16-18X7.875 PLTD	
all	10	X2 02743	BONNET=2"DUMP VALVE	
all	11	02 14447	BONNET=4"S/S DUMP VALVE	
all	12	02 14446	DISC-4"S/S DUMP VALVE	
all	13	02 16021I	DUMPVAL STEM-4"+8"316SS	
all	14	02 18651	WASHER=2 WAY BRAKE CYL	
all	15	02 18931F	GASKET=DUMPVALVE-1/60+72WEHU	
all	16	03 01313	STOP=AIR CYL W/2+11/16STROKE	
all	17	15G168	SQNUT 1/4-20UNC2 SS18-8	
all	18	15K041S	HEXCAPSCR 1/4-20UNC2AX1 SS18-8	
all	19	24G020N	ROLLED WASH.252ID NYLTITE 25W	
all	20	15G220	NUTLOK THINHX 3/8-24 SS/NYL	
all	21	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	22	60C106	ORING 5/16ID 1/16CSBUNA70#011	
all	23	60C132	ORING 2"IDX3/16CS BUNA70 #329	
all	24	02 17023	SPRING-SS=DUMP 1.5OD8FL21#/"	
all	25	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
all	26	02 16021E	WASHER 3/8IDX1.250D DUMPVAL	
all	27	20C018C	NEOPRENE HIGH PERFORMANCE CONTACT ADHESIVE 3M #1357 5OZ TUBE	

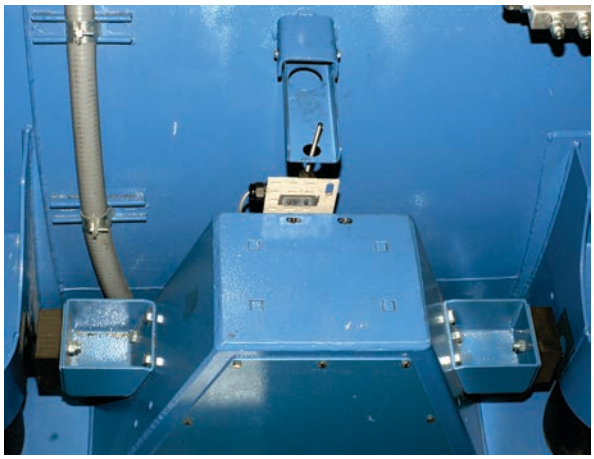
10 Control and Sensing

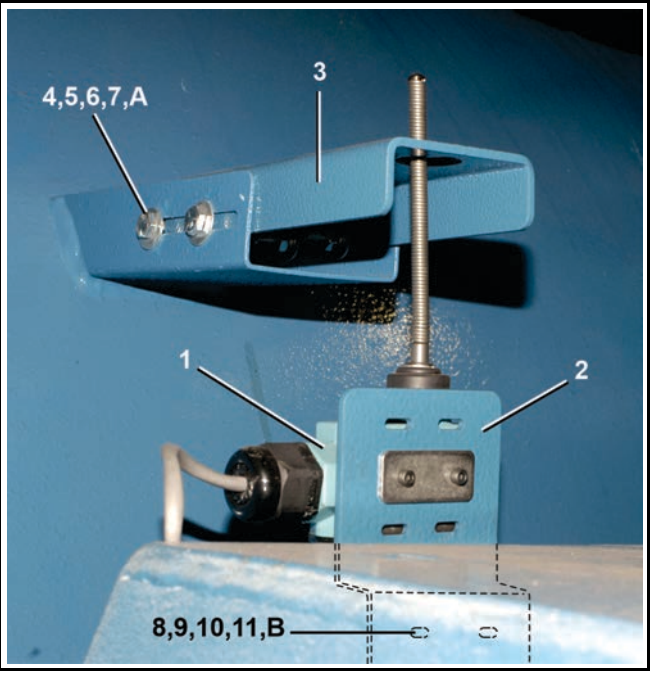
BPWHUZ03 / 2021282 BPWHUZ03.1 0000352036 B.6 A.3 7/6/21, 9:00 AM Released

Excursion Switch

1 Sheet

48040M7K, 68036M5K, 72046M5K





Legend

A . . . 4 instances
B . . . 2 instances

Table 43. 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
Reference Assemblies				
	A	GES68001	6836M5K EXCURSION SWITCH INSTALL	
Components				
all	1	09R008A	MICSW SPDT BZE6-2RN183	
all	2	02 22736	6836M5K EXCURSION SWITCH MOUNT BRKT	
all	3	02 22735	6836M5K EXCURSION SWITCH TARGET	
all	4	15K030	HEXCAPSCR 1/4-20UNC2X1/2 GR5 Z	
all	5	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	6	15G177	HXNUT 1/4-28UNF2B SAE ZINC GR2	
all	7	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	8	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	9	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	10	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	11	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	

BPWOAZ03 / 2019375 BPWOAZ03.1 0000252209 B.6 B.3 1/2/20, 2:25 PM Released

Vibration Safety Switch

1 Sheet

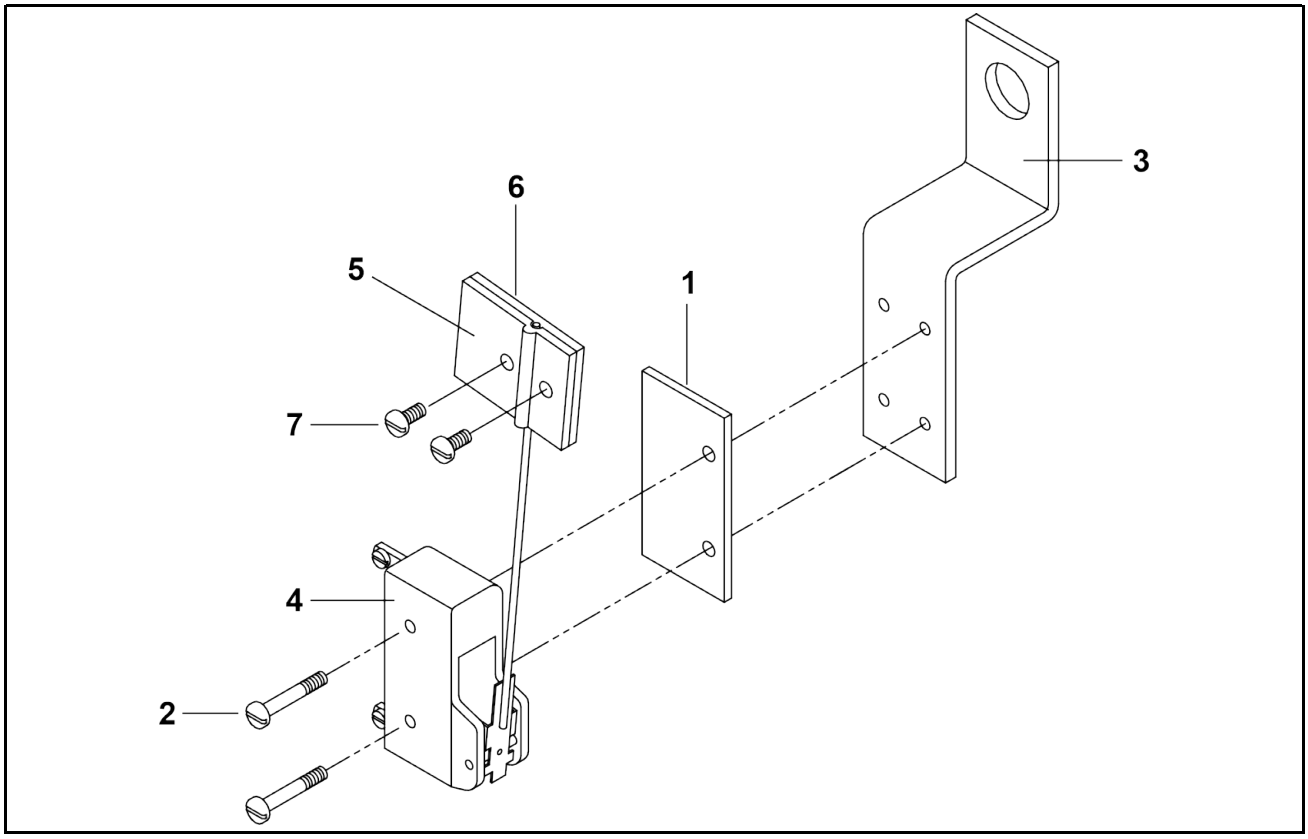


Table 44. Parts List—Vibration Safety Switch

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**
Reference Assemblies				
	A	SAE03 151	* ASSY-VIBRATION SWT=LG CONTR	
Components				
all	1	02 02038	PLATE INSULATING SMALL 9NOV51	
all	2	15P008	TRDCUT PANHD 6-32X1 NIKSTL +WA	
all	3	02 15119	BRACKET=VIBSW CAD	
all	4	09R020	SWITCH NC VIBR#WZ-2RW84429-P52	
all	5	03 01059	VIBSWITCH CLAMP CADSTL	
all	6	03 01058	VIBSWITCH WEIGHT-CADSTL	
all	7	15P101	TRDCUT-F PANHD 8-32X3/8 NIKSTL	

BNWUUM01 / 2019345 BNWUUM01 0000250244 C.2 11/7/19, 10:43 AM Released

10.1 Vibration Safety Switch Adjustments

BNWUUM01.C01 0000250243 B.6 C.2 A.3 1/2/20, 2:19 PM Released

10.1.1 What the Vibration Safety Switch Does

BNWUUM01.C02 0000250242 B.6 C.2 A.3 1/2/20, 2:19 PM Released

The **vibration safety switch** in Figure 61: Vibration Switch, page 174 is an important safety feature. If properly adjusted, the switch will momentarily actuate as a result of repeated machine movement caused by an out-of-balance condition. Table 45, page 173 below illustrates the effect of the **vibration safety switch** actuation.

Table 45. Effect of Tripping Vibration Safety Switch

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

10.1.2 Adjustments

BNWUUM01.C03 0000250240 B.6 C.2 B.2 11/7/19, 10:43 AM Released

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

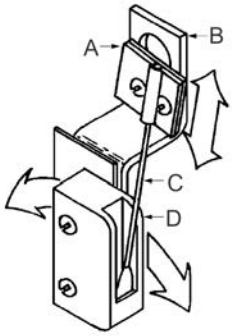
Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown in Figure 61: Vibration Switch, page 174 , the unit consists of a **sensitive micro-switch** with an extended actuating arm supporting an eccentric weight. The weight may be adjusted by moving it up and down on the arm and by rotating it on the arm. In addition, the **micro-switch** itself may be tilted from side to side.

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

The unit should be adjusted so that the actuating arm will always reset by itself, this being accomplished by rotating either the switch or the weight to give just enough bias to cause the switch to reset. Check the adjustment by moving the arm to the left then slowly releasing it. Make sure the micro-switch clicks when the arm is **slowly** released, thus indicating that it has reset. In the released position, the arm should rest **lightly** but definitely against the stop on the **micro-switch** case that prevents any further arm movement to the left.

Figure 61. Vibration Switch



Legend

A . . . Eccentric weight (adjusts up and down)
B . . . Mounting bracket
C . . . Actuating arm
D . . . Microswitch (adjusts side to side)

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

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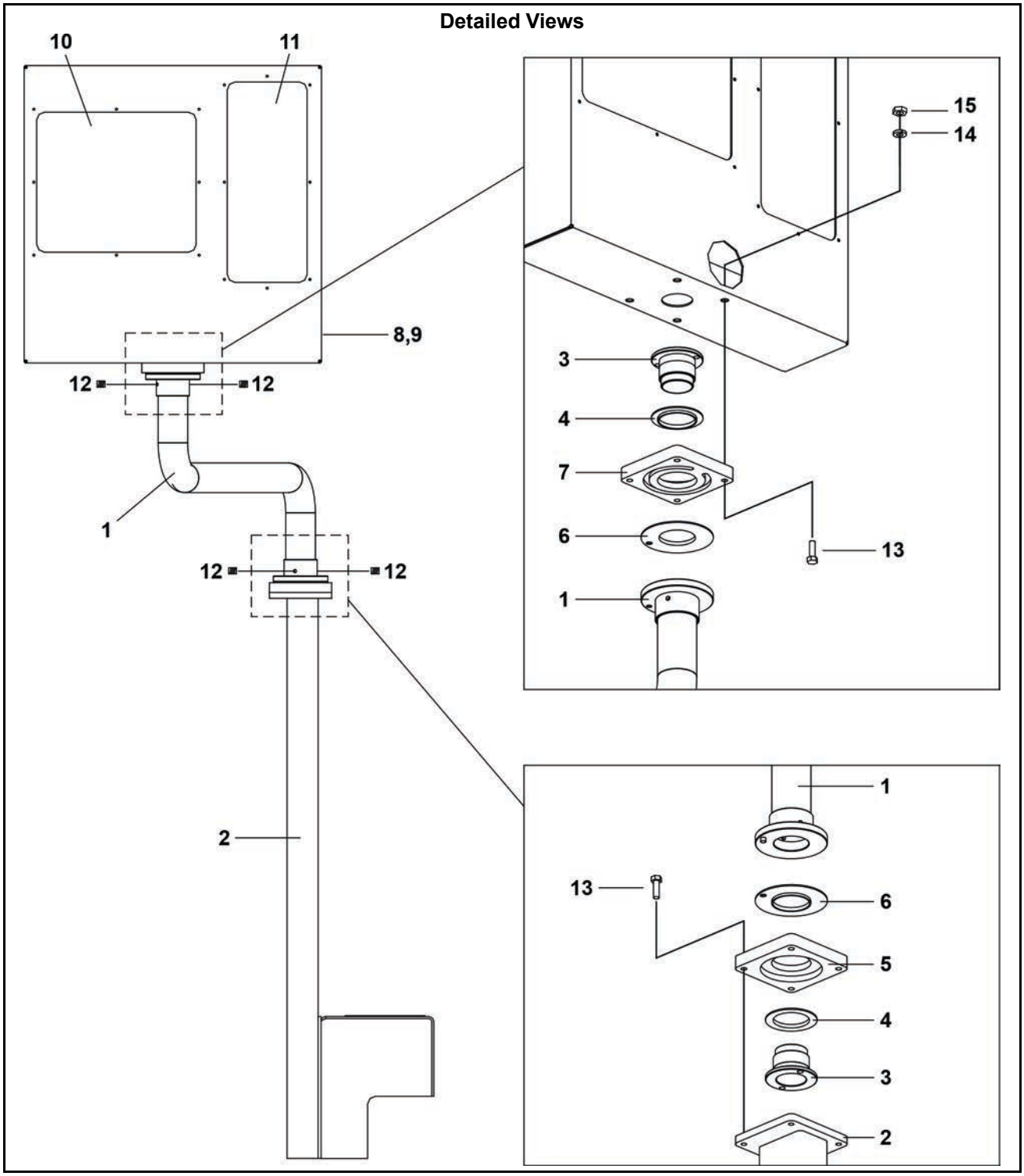
Switch Panel Pivot Arm

2 Sheets

48040M7K, 68036M5K, 72046M5K



Switch Panel Pivot Arm

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 46. Parts List—Switch Panel Pivot Arm

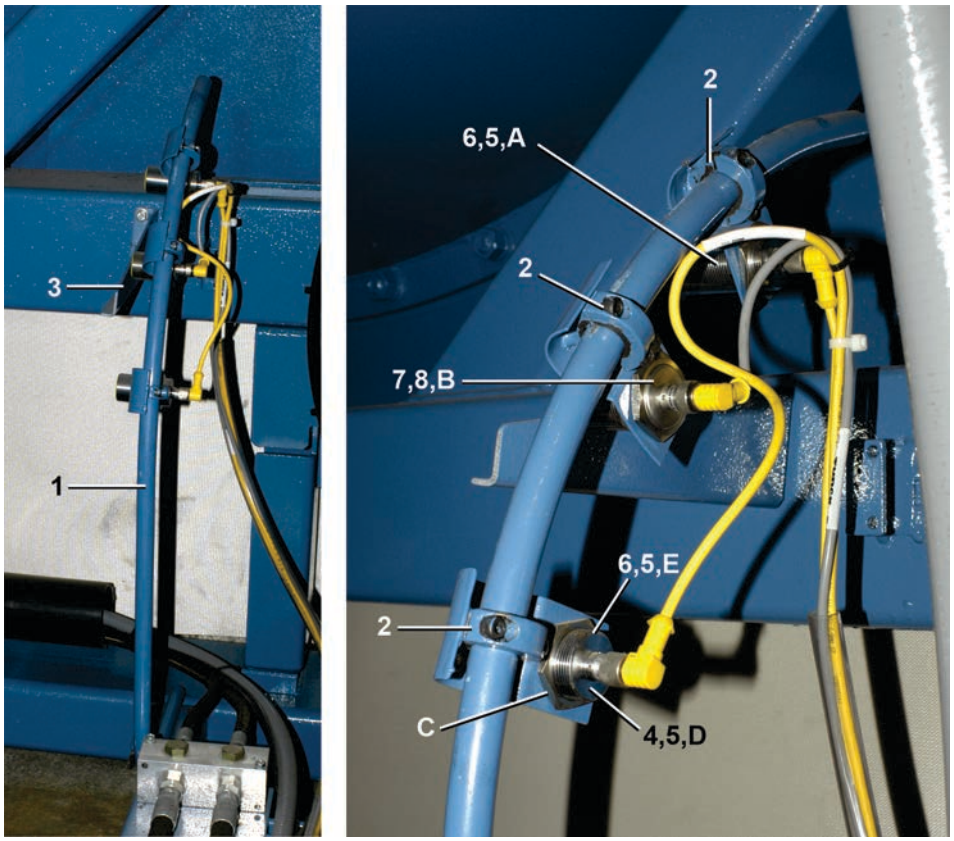
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ASP68001	6836M5K SWITCHPANEL BOX/ARM ASSY	
Components				
all	1	W2 22780	6836M5K SWITCHPANEL ARM WLMT	
all	2	W2 22790	WLMT=6836MK5 SWITCH PANEL ARM MOUNT	
all	3	02 22781	6836M5K SWTICHPANEL ADJUST BUSHING	
all	4	02 22744A	6836M5K SWTCHPNL PIVOT SLEEVE OUTER	
all	5	02 22743	6836M5K SWITCHPANEL PIVOT TRACK	
all	6	02 22744	6836M5K SWTCHPNL PIVOT SLEEVE INNER	
all	7	02 22743A	6836M5K SWITCHPANEL PIVOT TRACK UPPER	
all	8	W2 22701	WLMT=6836M5K SWITCH PANEL BOX	
all	9	02 22702	6836M5K SWITCH PNL/MILTOUCH OUTER	
all	10	ESP67MTX	SWPNL: MILTOUCH 8.4" SCREEN	
all	11	ESP67XNX	SWPNL:MILTOUCH+TILT CNTL-ISO	
all	12	15Q077	SOKSETSCR 1/4-20X1/4 ZINC ALLE	
all	13	15K065	HEXCAPSCR 5/16-18UNC2AX1 GR5 Z	
all	14	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	15	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR	

BPWHUZ02 / 2021282 BPWHUZ02.1 0000352017 B.6 A.4 7/6/21, 4:02 PM Released

Tilt Limit Switches

1 Sheet

48040M7K, 68036M5K, 72046M5K



Legend

A . . . Discharge (full-up)
B . . . Wash
C . . . Load (full-down)
D . . . Used with standard door
E . . . Used with integrated door chutes

Table 47. Parts List—Tilt Limit Switches

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GPS68001	6836M5K PROX SWITCH INSTALL	48040M7K, 68036M5K
	B	GPS72001	7246M5K PROX SWITCH INSTALL	72046M5K
			Components	
all	1	W2 22751	6836M5K PROXIMITY SWITCH MOUNT SHAFT WLMT	
all	1	W2 25083	7246M5K PROX SWITCH ADJST SHFT WLMT	
all	2	W3 60220B	PROX SW MTG WLMT 30MM, 6440	
all	3	02 22750	6836M5K PROX SWITCH TARGET	
all	4	09RPS30CAS	PROXSW QK CONN 30M NO-AC SHLD	
all	5	09RPTAC095	CONN. 90 FEM 3-PIN AC 3A 5M	
all	6	09RPS30DAS	PRXSW QK CONN 30M NC-AC SHLD	

Tilt Limit Switches

1 Sheet

48040M7K, 68036M5K, 72046M5K

Table 47 Parts List—Tilt Limit Switches (cont'd.)

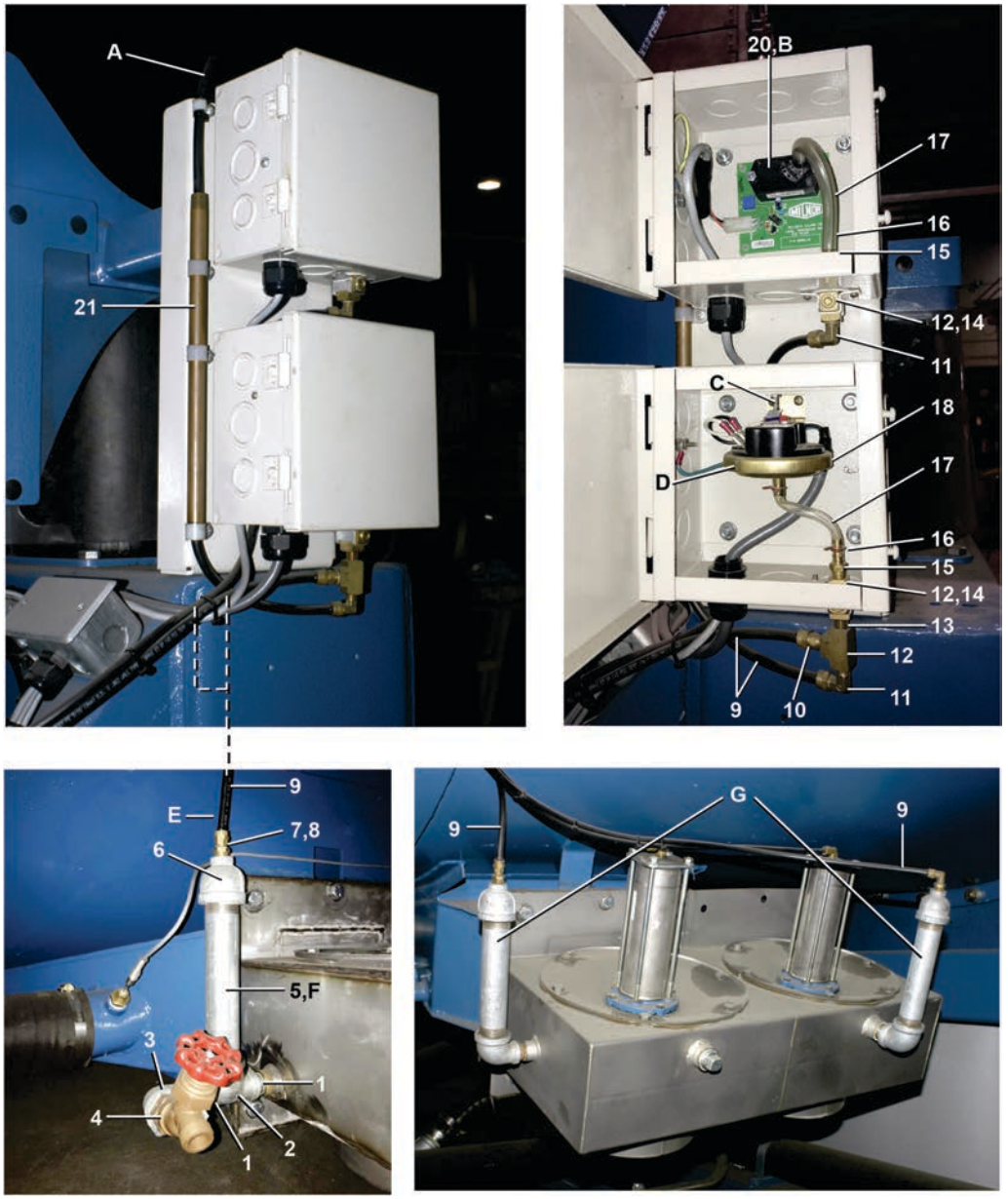
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	7	09RPS30ADS	PROX SW QK CONN 30M NO-DC SHLD	
all	8	09RPSDC095	CON.90DEG FEMALE DC 3A300V 5M	

BPWSUZ01 / 2021354 BPWSUZ01.1 0000374579 B.6 B.1 9/13/21, 9:53 AM Released

Air Chamber Level Switch with Overflow Pressure Switch

2 Sheets

72044WR2,WR3,SR3 72046M5K, 48040M7K



Legend

A . . . Vent
B . . . Transducer
C . . . Manual adjustment
D . . . Overflow pressure switch
E . . . If only one air chamber, the air line must tee off to both switches.
F . . . Air chamber (typical)
G . . . Dual drain with two air chambers

Air Chamber Level Switch with Overflow Pressure Switch

2 Sheets

72044WR2,WR3,SR3 72046M5K, 48040M7K

Table 48. Parts List—Air Chamber Level Switch with Overflow Pressure 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**
Reference Assemblies				
	A	ALS68002	72WP/SP PRESURE LEVEL SWITCH ASSY OVERFLOW	REFERENCE
	B	ALS48001	4840M7K LEVEL SWITCH ASSY	
Components				
all	1	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
all	2	5S0KNFA1A	NPT TEE 1/2X1/2X1" GALMAL 150#	
all	3	5SL0PNFC0K	NPT 90D STREET 3/4X1/2 GAL150#	
all	4	96DB0PNA	HOSEBIBB 3/4" MALEINLT 45DEG. ACETAL	
all	5	5N1A07AG42	NPT NIP 1X7 TBE GALSTL SK40	
all	6	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	
all	7	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	8	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
all	9	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	10	53A019B	BODYMALECON5/16X1/8COM#B68A-5A	
all	11	53A032	ELB90MAL5/16X1/8POLY #169P-5-2	
all	12	51V010A	TEE 1/8"BRSEXTR BLOCTYP#2203P2	
all	13	5N0CCLSB42	NPT NIP 1/8XCLS TBE BRASS STD	
all	14	5SP0CBEHS	NPT PLUG 1/8 HXCTRSNK BRASS	
all	15	51E502A	HOSESTEM BRASS 1/8MPT X3/16	
all	16	27A043	HOSECLAMP 5/16"DIA.SPRING#A-5S	
all	17	60E004NA	TUBING CLEAR PVC 3/16"IDX5/16"OD	
all	18	09N069	PRESS SW 4"WC INVENSYS 738-719	
all	19	27A047A	HOSE CLAMP 5/16" NOMINIAL MIN .256"	
all	20	08BNLTT	LEVEL TRANSDUCER BD->TEST	
all	21	5N0E11ABE2	NPT NIP 1/4X11 TBE BRASS STD	

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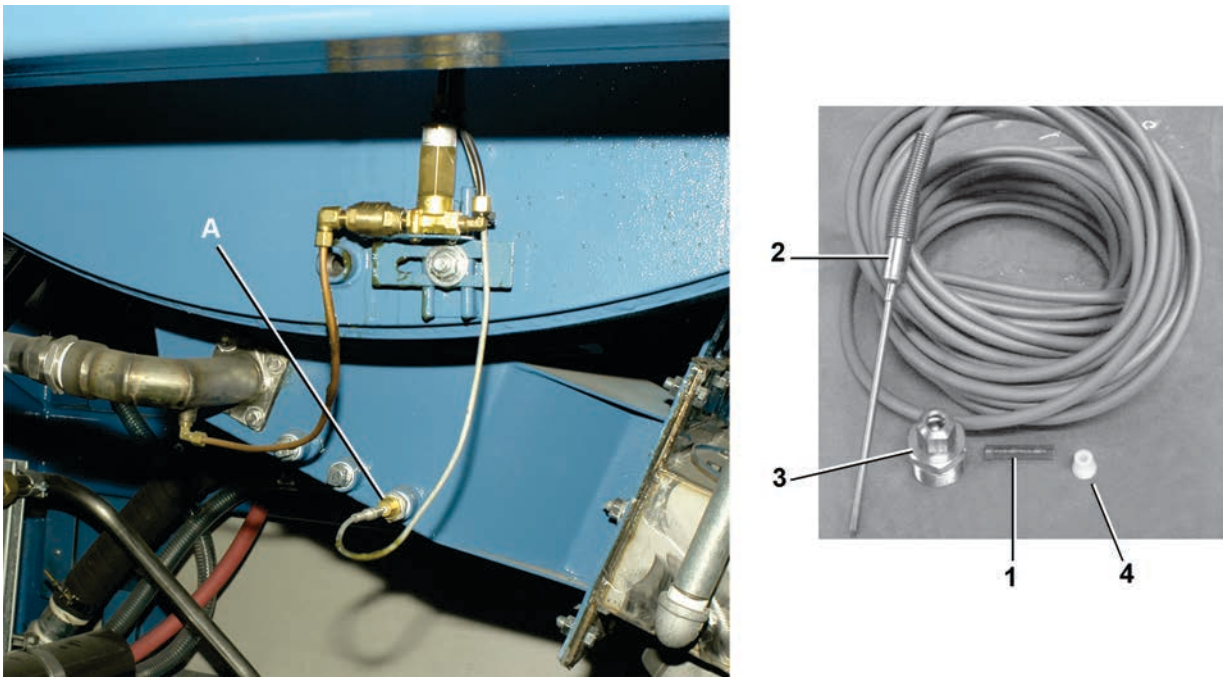
Temperature Probe

1 Sheet

48040M7K, 68036M5K, 72046M5K



Legend

A . . . Temperature probe

Table 49. Parts List—Temperature Probe

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	30R0043PB	TEMPERATURE PROBE ASSY=BRASS	
Components				
all	1	09B067	BUTTSPLICE(INS) RED 16-22GA.	
all	2	30R0043P	TEMP PROBE:THERMISTOR 30K OHMS	
all	3	51A026E	FLUID CONNECTOR 1/4TUBEX1/2MPT	
all	4	30R0043PF	FERRULE=TEMP PROB.25COMPFIT	

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Air Chamber for Pressure Switch

1 Sheet

4840M7K

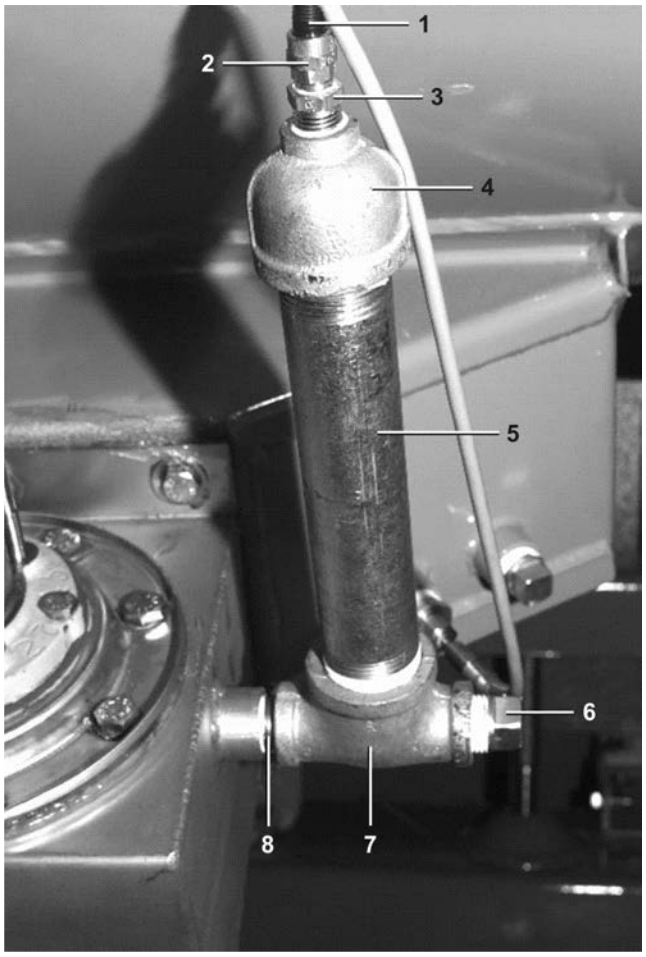


Table 50. Parts List—Air Chamber for Pressure Switch

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
Reference Assemblies				
	A	AD 15 090K	INSTALL=AIR CHAMBER PRESS/SW	
Components				
all	1	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	2	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
all	3	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	4	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	
all	5	5N1A07AG42	NPT NIP 1X7 TBE GALSTL SK40	
all	6	5SP0KGFSS	NPT PLUG 1/2 SQSOLID GALSTL	

Air Chamber for Pressure Switch

1 Sheet

4840M7K

Table 50 Parts List—Air Chamber for Pressure Switch (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	7	5S0KNFA1A	NPT TEE 1/2X1/2X1" GALMAL 150#	
all	8	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	

11 Hydraulic Assemblies

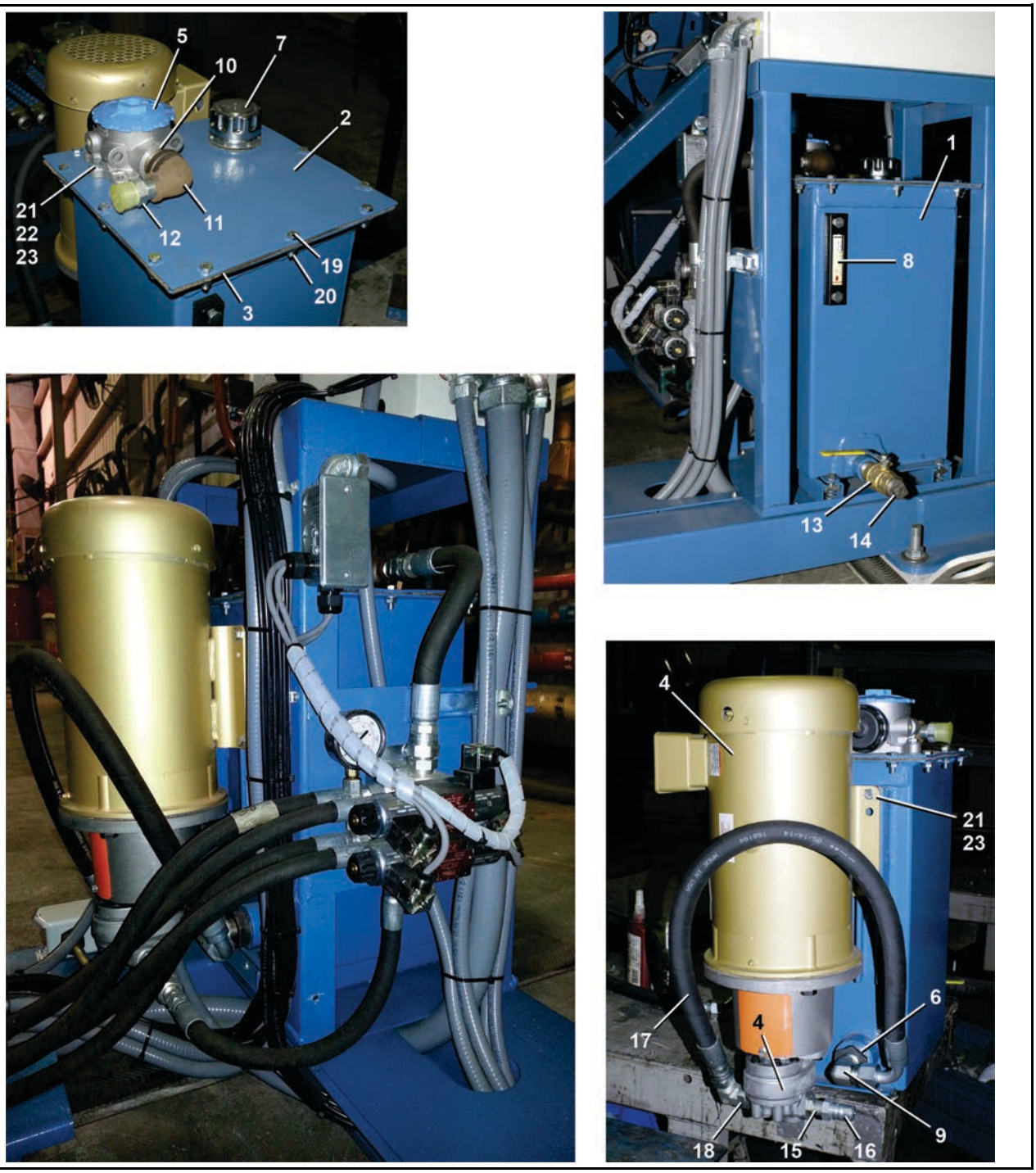
BPWHUH01 / 2021263 BPWHUH01.1 0000350883 B.6 A.4 6/24/21, 8:53 AM Released

Hydraulic Tank

2 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 62. Manifold and Valves



Hydraulic Tank

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 51. Parts List—Hydraulic Tank

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	AHT68005	6836M5K HYDRAULIC TANK ASSY	
Components				
all	1	W2 22731	6836M5K HYDRAULIC TANK WLMT	
all	2	02 22730	6836M5K HYD TANK LID	
all	3	02 22737	6836M5K HYDRAULIC TANK GASKET	
all	4	27E5506H	6836M5K PUMP/MOTOR ASSY	
all	5	27E7112	INTANK RETURN FILTER DONALDSON	
all	6	27E7111	SUCT.STRAINER=EZYFLO#S-15-100	
all	7	27E7201	FILLER-BREATH-FILT.LHA#ABB-40N	
all	8	27E7301	SIGHTGAUGE-FLUID:STAUFF#SNA-127-S-T-12	
all	9	52ZJ0PS002	ELBOW MALE ORFS/NPT #12-16 CLO-S	
all	10	5N1ECLSF42	NPT NIP 1.25XCLS TBE BLKSTLS40	
all	11	5SL1EFFA0P	NPTELB 90DEG 1.25X3/4BLKMAL150	
all	12	52ZC0PS001	TUBEFITSTR3/4"#12-FLO-S	
all	13	96D084	BALL VALVE BRZ 1"=BONOMI 171N	
all	14	5SP1ACESC	NPT PLUG 1" SQ CORED BLK CI	
all	15	52AY0MR001	STR MALE ADPT ORB/NPT #10-1/2 F50F-S	
all	16	52XY0KP00Y	1/2"QUICK DISCONN.MALE #H4-63	
all	17	60EH50C34A	HYD.HOSE 3/4" X 34" +90FSW + STRFSW	
all	18	52ZJ00S011	TUBEFIT 90EL 3/4"SWIVEL #12 C5OLO-S	
all	19	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	20	15G198	HXFLGNUT 3/8-16 ZINC	
all	21	15K095C	HXCAPSCR 3/8-16X1.25 GR.8 ZN.	
all	22	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	23	27A0625NLS	CLAMP NUT 3/8-16 W/SPRING	

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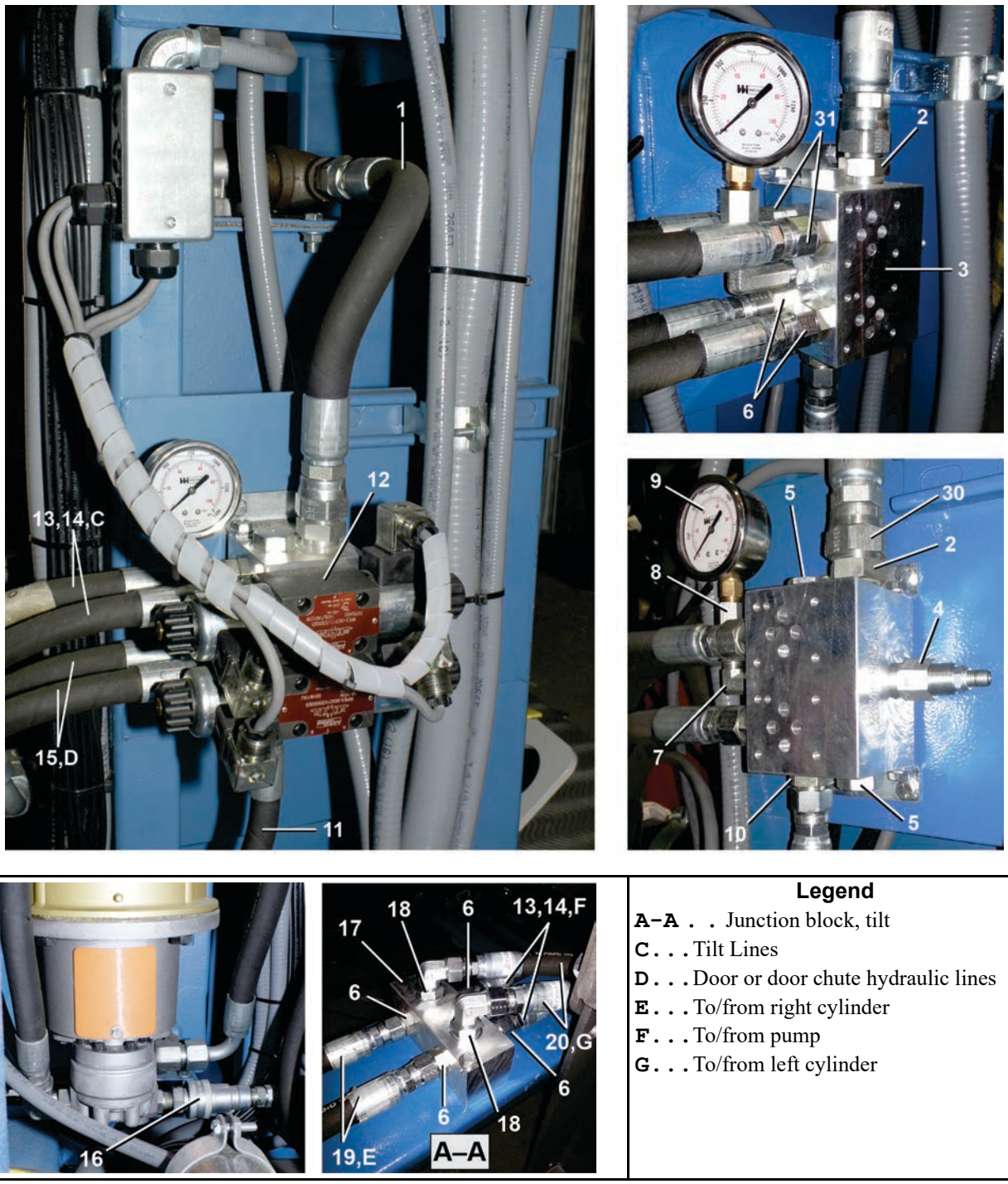
Hydraulic Tilt Valves and Fittings

4 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 63. Manifolds and Valves



Legend

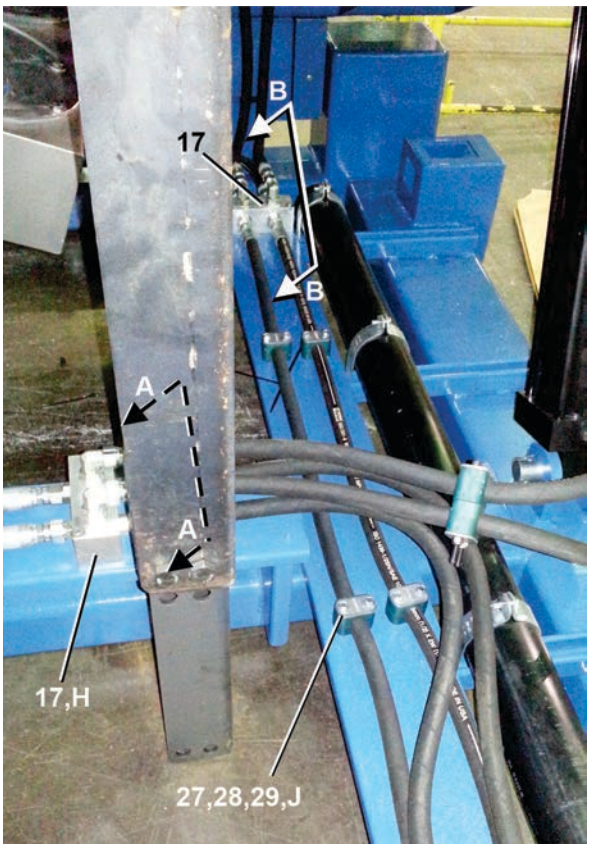
A–A . . Junction block, tilt
C . . . Tilt Lines
D . . . Door or door chute hydraulic lines
E . . . To/from right cylinder
F . . . To/from pump
G . . . To/from left cylinder

Hydraulic Tilt Valves and Fittings

4 Sheets

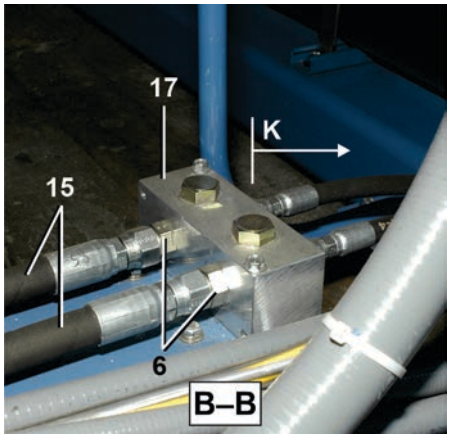
48040M7K, 68036M5K, 72046M5K

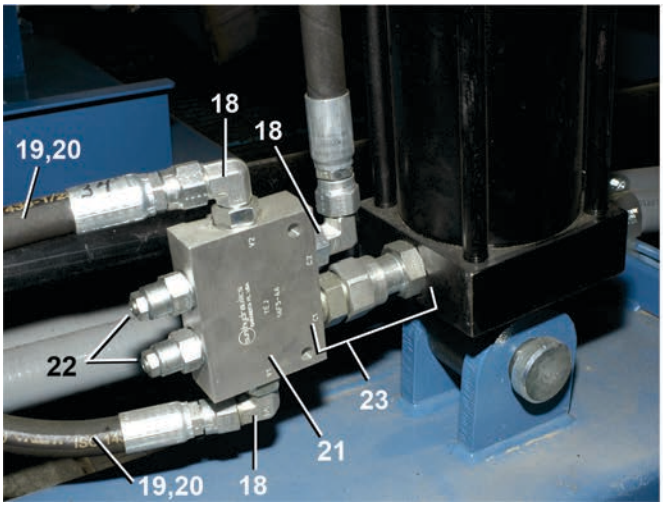
Figure 64. Junction Blocks and Counterbalance Valves

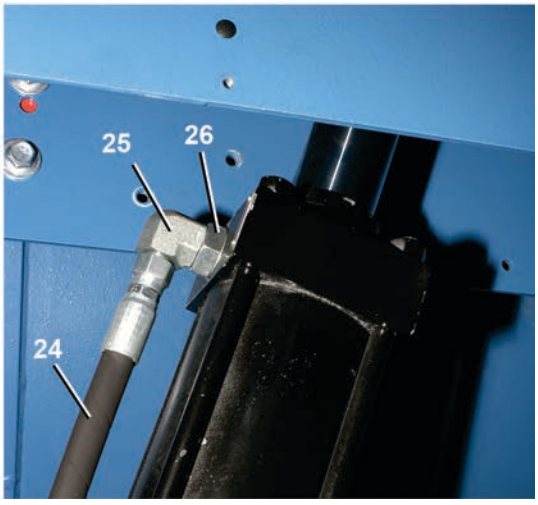


Legend

B–B . . Junction block, load
H . . . Tilt block
J . . . Typical
K . . . For hydraulic hoses from this point forward, see the Door or Door Chute pages.







Hydraulic Tilt Valves and Fittings

4 Sheets

48040M7K, 68036M5K, 72046M5K

Table 52. Parts List—Hydraulic Tilt Valves and Fittings

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	AHT68004	6836M5K HYDRAULIC HOSE & FITTING ASSY	68036M5K
	B	AHT72001	7246M5K HYDRAULIC HOSE & FITTING ASSY	72046M5K
	C	AHT48004	4840M7K HYDRAULIC HOSE & FITTING ASSY	48040M7K
			Components	
all	1	60EH50C12A	HYD.HOSE 3/4"+2 X FORSW=12"	
all	2	52ZC00S011	TUBESTRCON 1/2 X 5/8 #8-10 F5OLO-S	
all	3	96DH455C	MANIFOLD, DAMAN AD03P022S/S	
all	4	96DH455D	CART, RELIEF SUN# RDDA-LAN	
all	5	52PY0GR003	HEXPLUG 5/8" OR-SEAL #10-P50N-S	
all	6	52ZC00S012	TUBESTRCON 1/2 X 1/2 #8 F5OLO-S	
all	7	52JY0GR004	ELB90 3/80RXMJIC#6801LL-6-6NWO	
all	8	52AY0ER005	STR.1/4"FPX3/8"FJIC#6506-4-6	
all	9	27E731500	LIQFILL GAGE 0-1500PSI/BAR LF25 1-1500-4L	
all	10	52EY0KR003	COUP.STR5/8MORX1/2FPS	
all	11	60EH40C16A	HYD HOSE 1/2" + 2 X FORSW=16"	
all	12	96RH714E71	CONTROL VALVE HYTOS RPE3-063Y11-23050E5	
A	13	60EH40C50B	HYD HOSE 1/2" + 2 X FORSW=50"	
B	13	60EH40C58A	HYD HOSE 1/2" + 2 X FORSW=58"	
C	13	60EH40C38B	HYD.HOSE 1/2"+2 X FORSW=38	
A	14	60EH40C53K	HYD HOSE 1/2" + 2 X FORSW=53+1/2"	
B	14	60EH40C61K	HYD HOSE 1/2" + 2 X FORSW=61+1/2"	
C	14	60EH40C45A	HYD HOSE 1/2" + 2 X FORSW=45"	
A	15	60EH40C71A	HYD HOSE 1/2" + 2 X FORSW=71"	
B	15	60EH40C85B	HYD HOSE 1/2" + 2 X FORSW=85"	
C	15	60EH40C68A	HYD HOSE 1/2" + 2 X FORSW=68”	
all	16	52XY0KP00X	1/2"QUICK DISCONN.FEM#H4-62	
all	17	27E797A	JUNCTION BLOCK DAMAN #AJ2700208S	
all	18	52ZJ00S005	TUBFITTSTRTHD45ELFC#12 V5OLO-S	
A	19	60EH40C66A	HYD HOSE 1/2" + 2 X FORSW=66"	
B	19	60EH40C68A	HYD HOSE 1/2" + 2 X FORSW=68"	
C	19	60EH40C49A	HYD HOSE 1/2" + 2 X FORSW=49"	
A	20	60EH40C28B	HYD.HOSE 1/2"+2 X FORSW=28	
B	20	60EH40C34A	HYD HOSE 1/2" + 2 X FORSW=34"	

Hydraulic Tilt Valves and Fittings

4 Sheets

48040M7K, 68036M5K, 72046M5K

Table 52 Parts List—Hydraulic Tilt Valves and Fittings (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
C	20	60EH40C25B	HYD HOSE 1/2" + 2 X FORSW=25"	
all	21	96DH471	COUNTERBALANCE VALVE-SUN BODY	
all	22	96DH471A	CARTRIDGE-COUNTERBAL.SUN	
all	23	52ZCF50L0S	TUBEFITSTR3/4X1/2"#12-8 F5OLO-S	
AB	24	60EH40C35P	HYD HOSE 1/2" + 2 X FORSW=35+3/4"	
C	24	60EH40C31K	HYD HOSE 1/2" + 2 X FORSW=31.5"	
all	25	52ZJ00S016	TUBEFIT90ELBOW 1/2X3/4 #8-12 C5OLO-S	
all	26	52ZC0PS002	TUBEFITSTRSWIVEL 3/4"#12 F65OL-S	
all	27	27E5521	HOSECLAMP HALVES 1/2 PARK#H3205PP	
all	28	27E5522	CLAMP COVER PL 1/2 PARKER#CP-3	
all	29	15P062	1/4-14X4 HEX WASHER HEAD TEK SCREW ZINC	
all	30	52ZC00S005	TUBEFIT 3/4"X5/8"#12-10 F5OLO-S	
all	31	52ZC00S013	TUBESTRCON 1/2 X 1/2 #8 FF5OLO-S	

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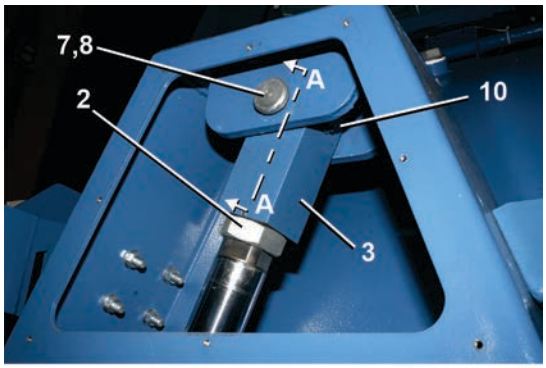
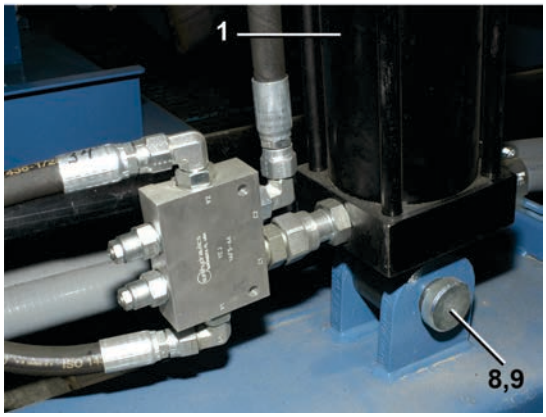
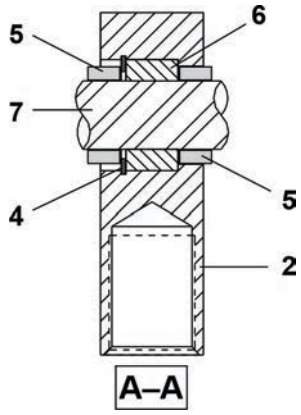
Hydraulic Cylinder

2 Sheets

48040M7K, 68036M5K, 72046M5K







Legend

A–A . . Cylinder Clevis

Table 53. Parts List—Hydraulic Cylinder

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GHC68004	6836M5K HYDRAULICS INSTALL	68036M5K
	B	GHC72001	7246M5K HYDRAULICS INSTALL	72046M5K
	C	GHC48004	4840M7K HYDRAULICS INSTALL	48040M7K
Components				
AB	1	27E164035A	HYDRAULIC CYL 4" BORE X 35" STROKE BLACK	
C	1	27E163C31A	HYDRAULIC CYL 3.25" BORE X 31" STROKE	
AB	2	15G277	HEXJAMNUT 1+7/8-12UNF GR5 ZINC	
C	2	15G264A	HEXJAMNUT 1+1/4-12UNF 2B ZINC	
AB	3	X2 22698	6836M5K HYDRAULIC CYLINDER CLEVIS END	
C	3	X2 24043	4840M7K HYDRAULIC CYLINDER CLEVIS END	
AB	4	17B182	INTRETRING 2+3/16 ENDRIES#QGCG	
C	4	17B181	RETRING;INT;1.725;ENDRIES HO162	

Hydraulic Cylinder

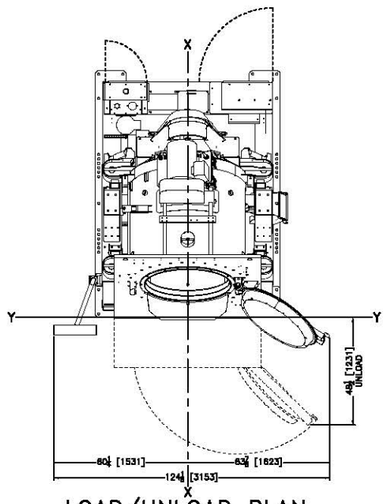
2 Sheets

48040M7K, 68036M5K, 72046M5K

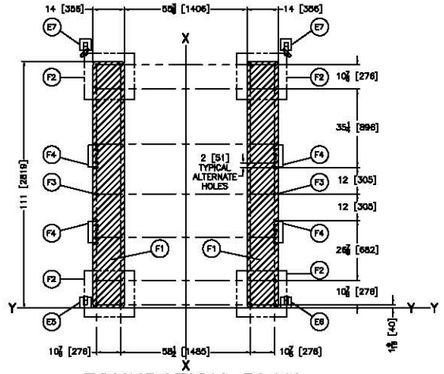
Table 53 Parts List—Hydraulic Cylinder (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
AB	5	02 22699	6836M5K CLEVIS END SPACER	
C	5	02 24071	4840M7K CLEVIS END SPACER	
AB	6	54A704	BALLBUSHING 1+3/8" NO SEALS-SKF#GEZ-106-ES	
C	6	54A702	SPHERICAL PLAIN BRG BALL BUSHING 1" RBC#B16-L= NO SEALS	
AB	7	17A129	CLEVIS PIN 1+3/8" X 6" PLAIN	
C	7	17A130	CLEVIS PIN 1" X 6" ZN PLATE	
all	8	15H060	STDCOTTERPIN 3/16X2 ZINCPL	
AB	9	17A128	CLEVIS PIN 1+3/8" X 5" ZN PLATE	
C	9	17A102	CLEVIS PIN 1"X4"DRILLED ZINC	
all	10	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	

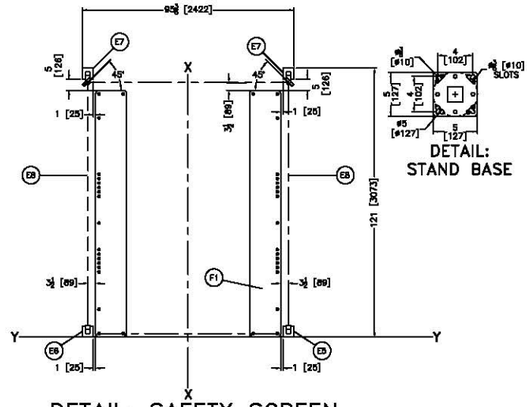
12 Dimensional Drawings



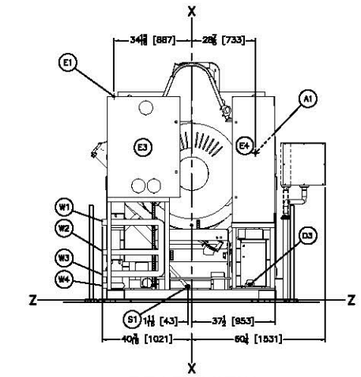
LOAD/UNLOAD PLAN



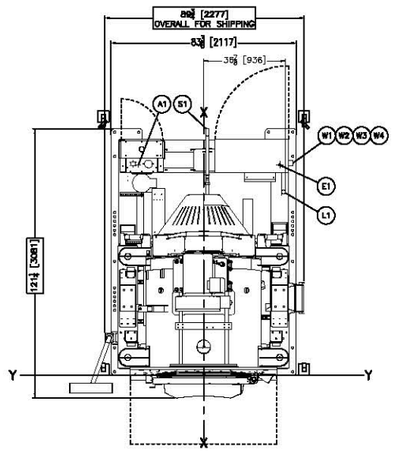
FOUNDATION PLAN



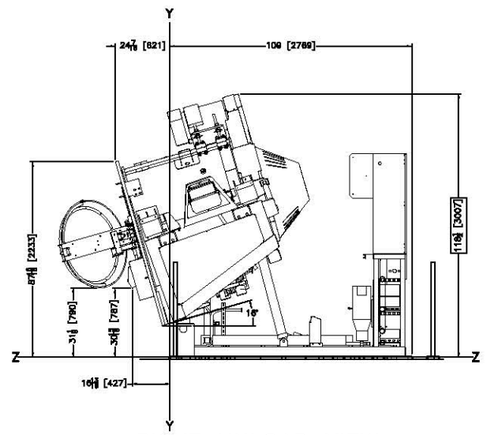
DETAIL: SAFETY SCREEN



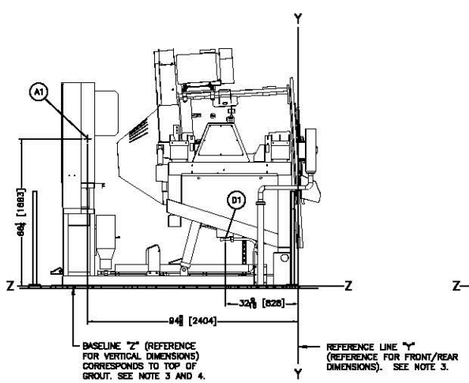
REAR VIEW



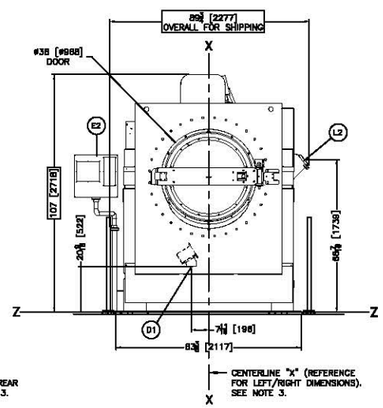
PLAN VIEW



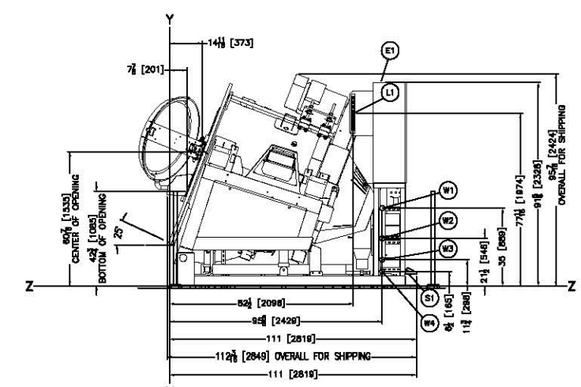
RIGHT UNLOAD VIEW



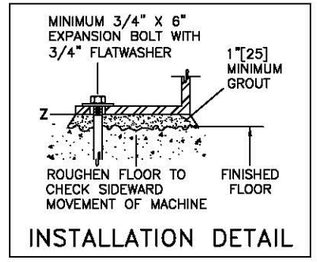
LEFT VIEW



FRONT VIEW



RIGHT LOAD VIEW



INSTALLATION DETAIL

ITEM	LEGEND
X1	SHIPPING TIE DOWN BRACKET
W4	REUSE WATER INLET, 1–1/2" NPT, OPTIONAL, SEE NOTE 9.
W3	THIRD WATER INLET, 1–1/2" NPT, OPTIONAL, SEE NOTE 9.
W2	COLD WATER INLET,1–1/2" NPT
W1	HOT WATER INLET, 1–1/2" NPT
S1	STEAM INLET 1–1/4" NPT
L2	DRY SUPPLY
L1	PERISTALTIC INLETS, 8 PORTS, STANDARD
F4	1–1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS MINIMUM. IF F3 HOLES ARE NOT USED, YOU MUST
	ANCHOR THE (2) F4 HOLES NEAREST TO F3, BOTH SIDES.
	ALTERNATE F4 HOLES ARE AVAILABLE TO ACCOMODATE DRAIN
	TROUGHS.
F3	1–1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS. YOU MUST ANCHOR THESE (2) F3 HOLES OR (4) F4
	HOLES.
F2	1–1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS MINIMUM. ANCHOR ONE OF THE 3 HOLES IN EACH
	BOXED AREA.
F1	BASEPADS, SEE NOTE 7.
E8	SAFETY LIGHT SCREEN, DASHED
E7	SAFETY LIGHT SCREEN MIRROR
E6	SAFETY LIGHT SCREEN RECEIVER
E5	SAFETY LIGHT SCREEN EMITTER
E4	LOW VOLTAGE BOX
E3	HIGH VOLTAGE & INVERTER BOX
E2	MilTouch–EX™ TOUCH SCREEN CONTROLLER
E1	MAIN ELECTRICAL CONNECTION
D3	HYDRAULIC TANK, MANUAL DRAIN, 1" NPT
D1	DRAIN VALVE, 4–1/2" DIAMETER
B1	DOOR
A1	MAIN AIR INLET, 1/4" NPT

NOTES

10 SAFETY LIGHT SCREEN MUST BE INSTALLED BEFORE OPERATING MACHINE.

9 SOFTWARE CAN ONLY USE 3 WATERS, YOU MAY HAVE OPTIONAL THIRD OR OPTIONAL REUSE. INLETS AS SHOWN.

8 SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR WITH ONE ANCHOR BOLT PER BASEPAD (F1). MINIMUM USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.

7 SHADED AREAS ARE BASE PLATES WHICH MUST BE CONTINUOUSLY SUPPORTED ON 1"[25] THICK GROUT.

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

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

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

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

2 NUMBERS IN BRACKETS [] DENOTE DIMENSIONS IN MILLIMETERS.

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

ATTENTION

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

ATTENTION

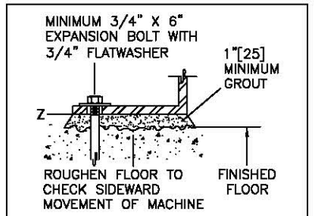
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

4840M7K

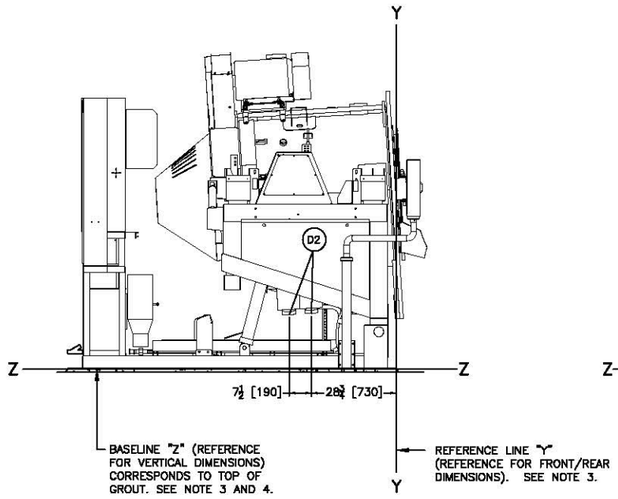
DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD4840M7KAE
2016326D

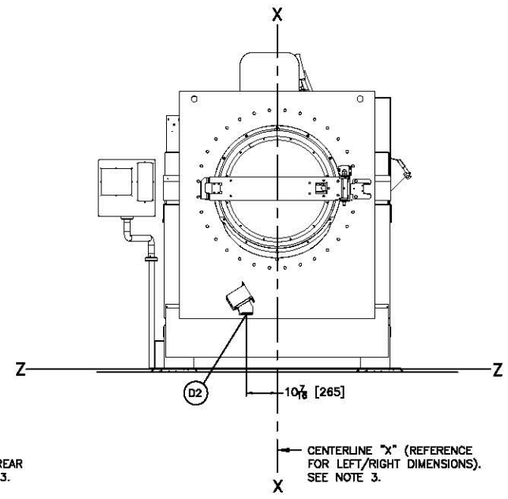
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA. Phone 504/467–9591.
FAX 504/469–1849. Email: milnorinfo@milnor.com



INSTALLATION DETAIL



LEFT VIEW



FRONT VIEW

ITEM	LEGEND
D2	DUAL DRAIN VALVES, TWO 4-1/2" DIAMETER CONNECTIONS

NOTES

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36 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL.
42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
48 [1219] IF OBJECT IS ANY LIVE PART.
CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.

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

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

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

2 NUMBERS IN BRACKETS [] DENOTE DIMENSIONS IN MILLIMETERS.

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ATTENTION

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

ATTENTION

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

4840M7K OPTIONS

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD4840M7KAB
2016253D

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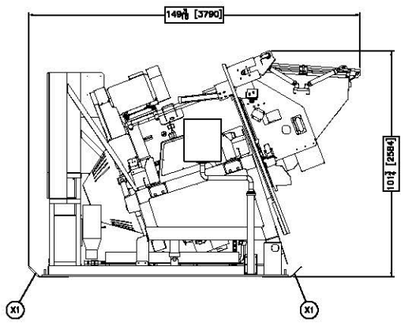
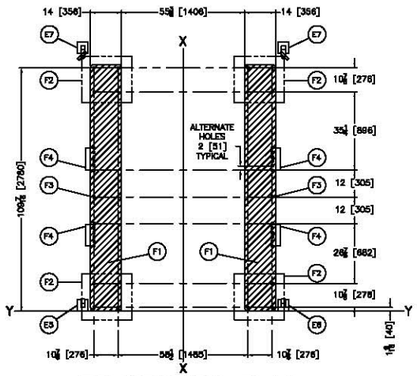
FAX 504/469-1849, Email: milnorinfo@milnor.com

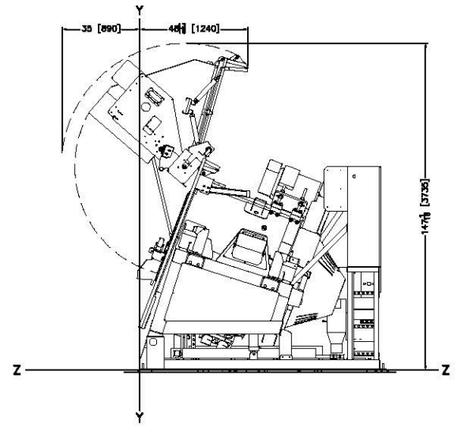
THIS DRAWING IS FOR THE DRYELL LOADING OPTION. USE THIS DRAWING WITH BD4840M7KAE



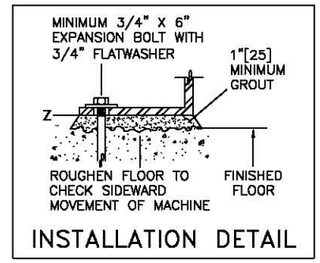
LEFT VIEW: SHIPPING



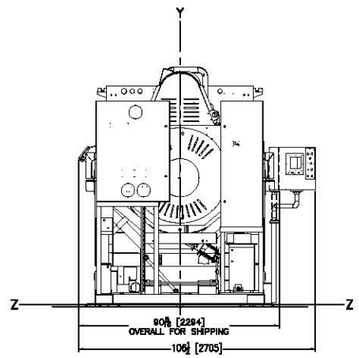
FOUNDATION PLAN



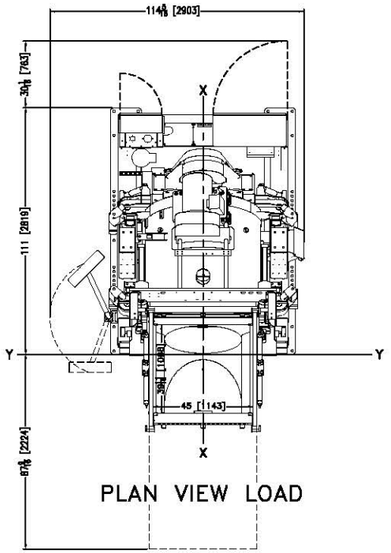
RIGHT VIEW LOAD POSITION ELBOW UP



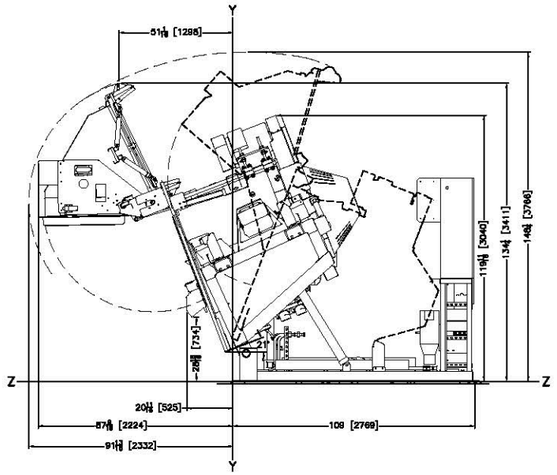
INSTALLATION DETAIL



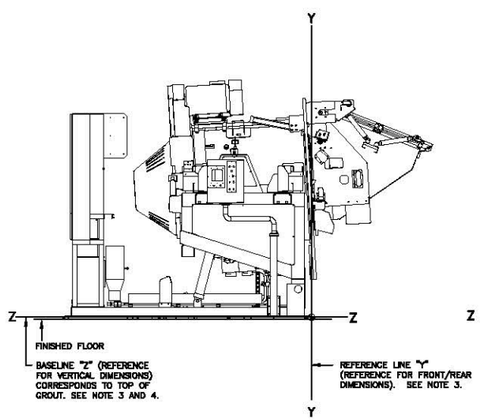
REAR VIEW WASH



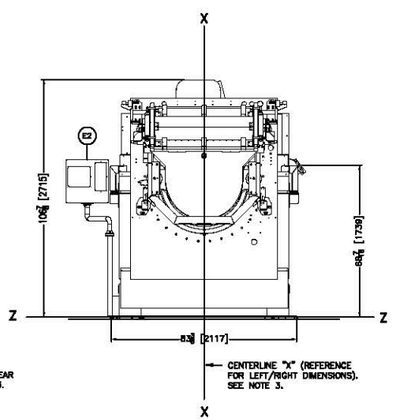
PLAN VIEW LOAD



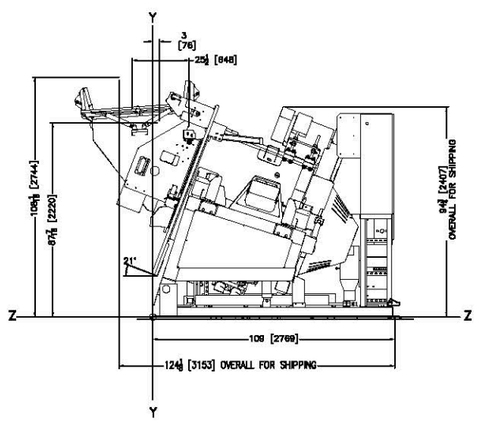
RIGHT VIEW UNLOAD & TRAVEL CLEARANCE



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT VIEW LOAD

ITEM	LEGEND
X1	SHIPPING TIE DOWN BRACKET
F4	1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS MINIMUM. IF F3 HOLES ARE NOT USED, YOU MUST
	ANCHOR THE (2) F4 HOLES NEAREST TO F3, BOTH SIDES.
	ALTERNATE F4 HOLES ARE AVAILABLE TO ACCOMODATE DRAIN
	TROUGHS.
F3	1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS. YOU MUST ANCHOR THESE (2) F3 HOLES OR (4) F4
	HOLES.
F2	1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6"
	BOLTS MINIMUM. ANCHOR ONE OF THE 3 HOLES IN EACH
	BOXED AREA.
F1	BASEPADS, SEE NOTE 7.
E8	SAFETY LIGHT SCREEN, DASHED
E7	SAFETY LIGHT SCREEN REFLECTOR (STANDARD)
E6	SAFETY LIGHT SCREEN RECEIVER (STANDARD)
E5	SAFETY LIGHT SCREEN EMITTER (STANDARD)
E2	MillTouch-EX™ TOUCH SCREEN CONTROLLER
B1	DRYELL LOADING, OPTIONAL

NOTES

8 SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR WITH ONE ANCHOR BOLT PER BASEPAD (F1), MINIMUM. USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.

7 SHADED AREAS ARE BASE PLATES WHICH MUST BE CONTINUOUSLY SUPPORTED ON 1"[25] THICK GROUT.

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4840M7K with DRYELL

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD4840M7KAC
2019126D

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