Manual Number: MCWH6A01
Edition (ECN): 2023394A

Installation, Parts, and Service

68036M5K & 72046M5K

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

Contents

Figures

Tables

1 General Service and Safety-related Components

BMP720097 / 19036 BRUUUM01.1 0000229985 C.2 D.6 12/5/19, 11:43 AM Released

PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

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

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

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

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

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

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

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

BMP720097/19036

BNUUUM01 / 2019342 BNUUUM01 0000250121 B.3 1/2/20, 2:14 PM Released

1.1 How to Get the Necessary Repair Components

BNUUUM01.C01 0000250120 A.3 C.2 B.3 1/2/20, 2:14 PM Released

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

BNUUUU02 / 2023296 BNUUUU02 0000158094 G.2 7/20/23, 10:58 AM Released

1.2 Trademarks

BNUUUU02.R01 0000158093 C.2 G.2 F.2 7/20/23, 10:57 AM Released

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™	

BNWHTS08 / 2021243 BNWHTS08 0000349892 C.2 6/8/21, 3:00 PM Released

1.3 Tilting Washer Extractors

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

1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNWHTS01.C03 0000235031 B.1 A.2 C.2 1/20/20, 12:08 PM Released

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

BNWHTS03.C03 0000235025 A.2 A.3 C.2 1/2/20, 2:19 PM Released

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

BNWHTS04.C01 0000235024 A.2 C.2 1/2/20, 2:19 PM Released

1.3.3.1 Damage and Malfunction Hazards

BNWHTS04.C02 0000235048 A.2 C.2 1/2/20, 2:19 PM Released

1.3.3.1.1 Hazards Resulting from Inoperative Safety Devices

BNWHTS04.C03 0000235047 A.2 A.3 C.2 1/2/20, 2:19 PM Released

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

BNWHTS04.C04 0000235046 A.2 A.3 C.2 1/2/20, 2:19 PM Released

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 A.2 C.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 A.2 A.3 C.2 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)

BNWHTS04.C07 0000235043 A.2 A.3 C.2 1/2/20, 2:19 PM Released

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.

BNWH4I01 / 2023354 BNWH4I01 0000200223 C.2 8/30/23, 5:14 PM Released

1.4 Installation Tag Guidelines

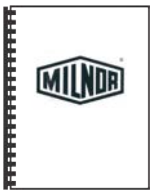
BNWH4I01.R01 0000200221 B.2 C.2 8/30/23, 5:14 PM Released

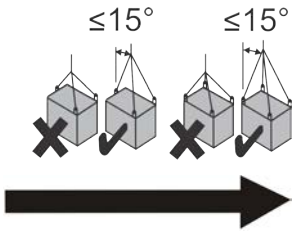
48040M7K (with and without Dryell) 68036M5K 72046M5K

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.

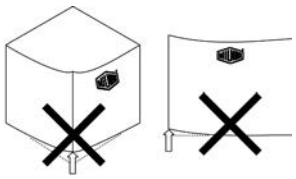
The following entries explain the installation tags. Each entry includes: 1) the tag illustration, 2) the tag part number at the bottom of the tag, and 3) the meaning of the tag.

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.

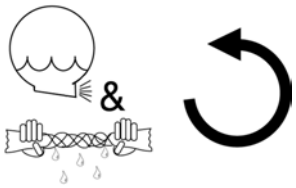


B2TAG94079: Rig for crane lifting (either 3-point or 4-point, depending on the number of lifting eyes provided) using a steep angle on the chains (closer to vertical than horizontal).

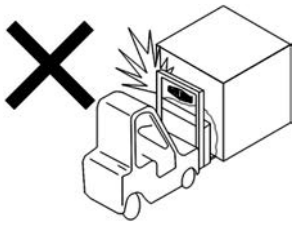
B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine 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.

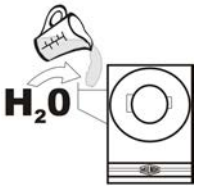


B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside.

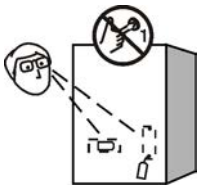
B2T2001013: Hot water connection.

B2T2001014: Cold water connection.

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

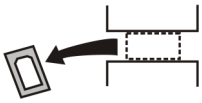


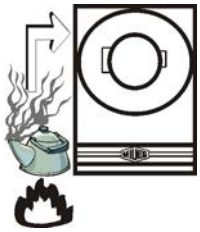
B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.



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)

This page intentionally blank

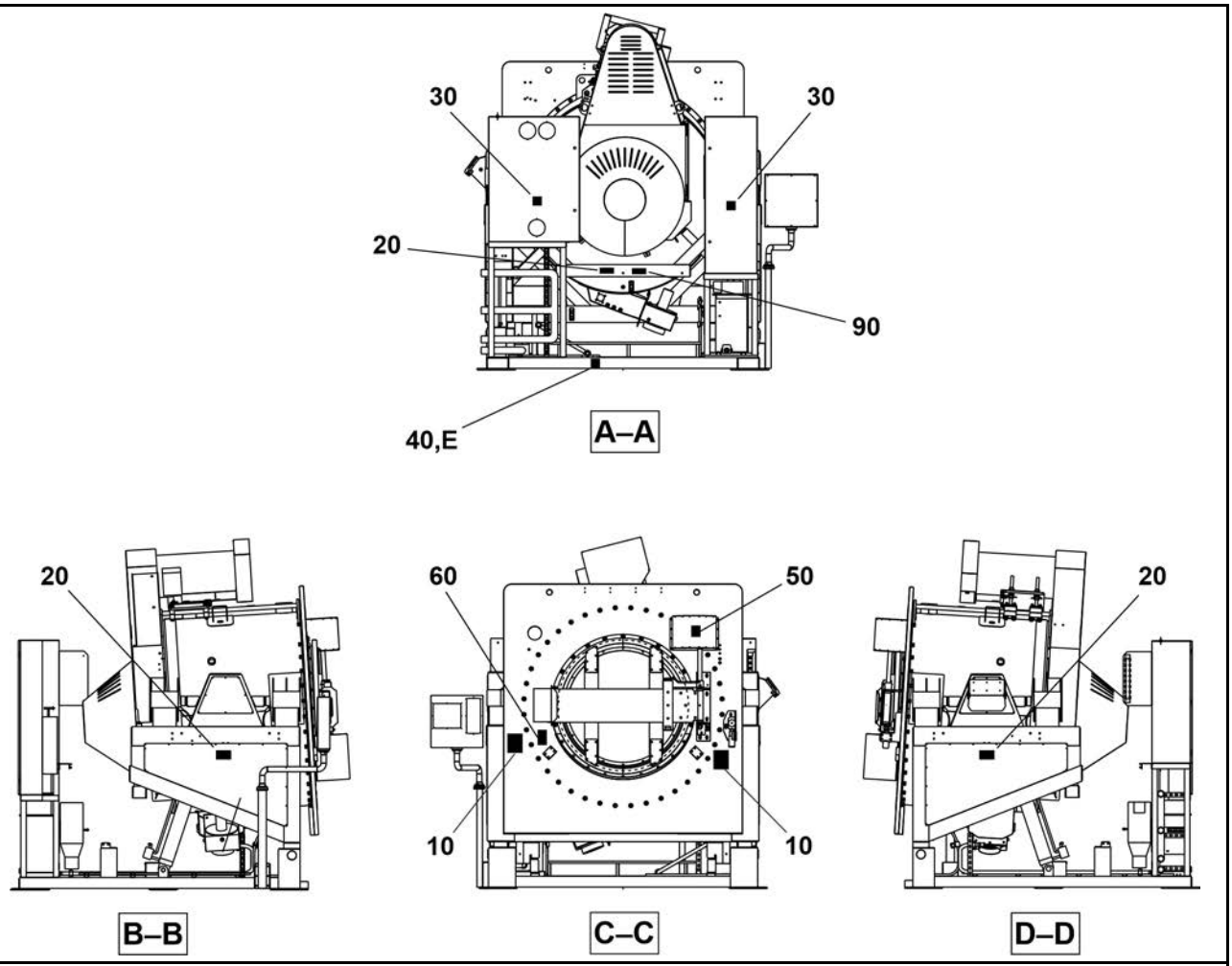
BPWH4M01 / 2021205 BPWH4M01.1 0000346182 C.2 A.4 5/13/21, 2:01 PM Released

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	

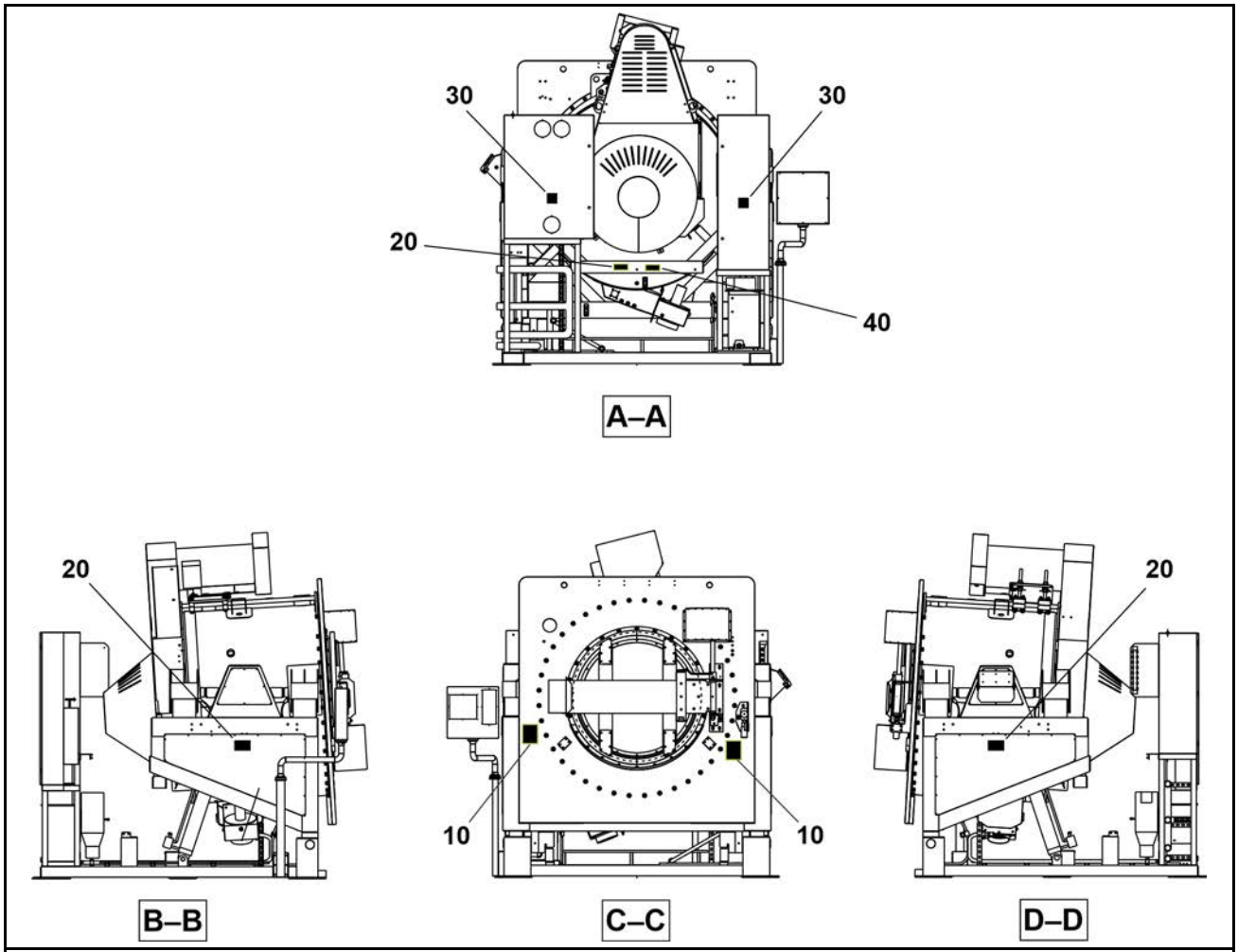
BPWH4M02 / 2021205 BPWH4M02.1 0000346179 A.3 C.2 5/13/21, 2:42 PM Released

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	

BPWH4M03 / 2021323A BPWH4M03.1 0000347624 B.2 C.2 8/3/21, 10:15 AM Released

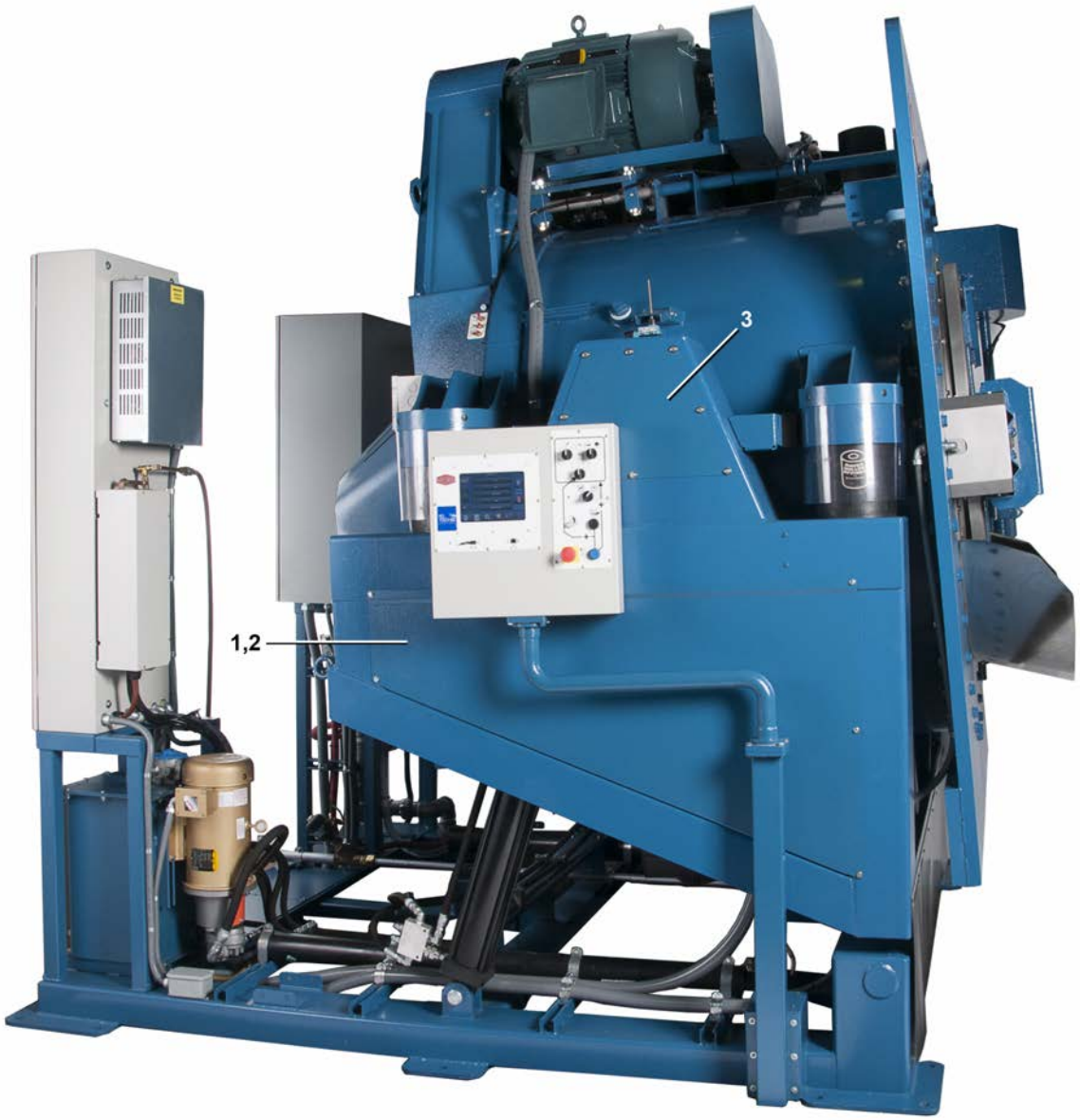
Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 1. Installed View

6836M5K Shown



Guards and Covers

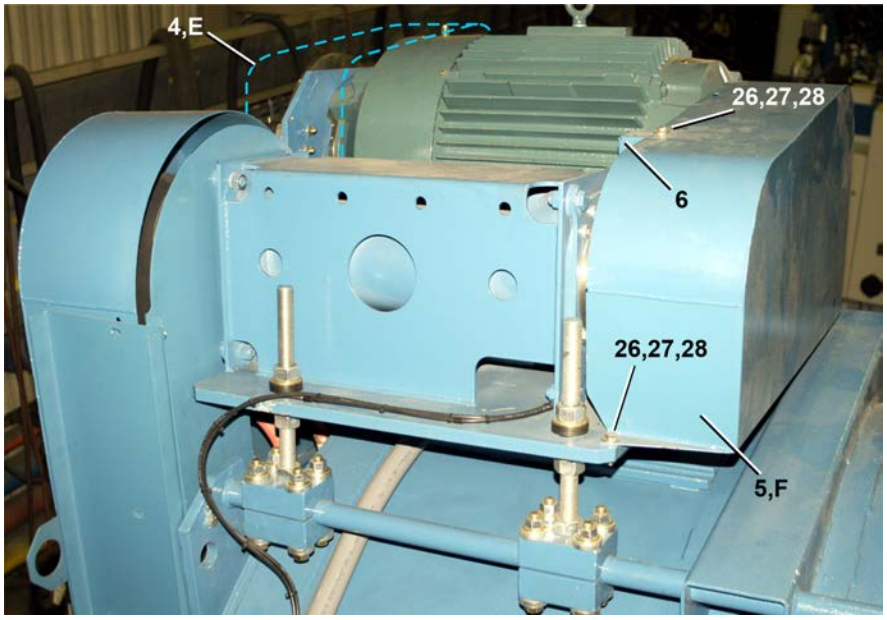
6 Sheets

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

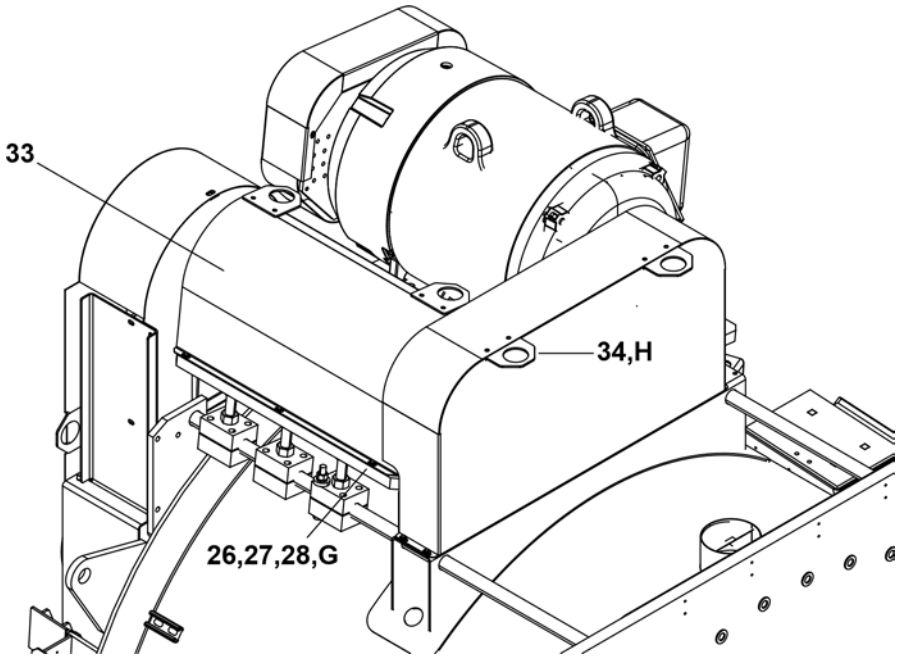
Guards and Covers

6 Sheets

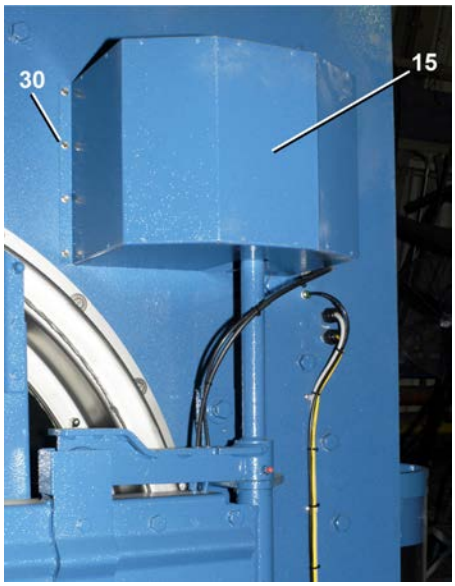
48040M7K, 68036M5K, 72046M5K.

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

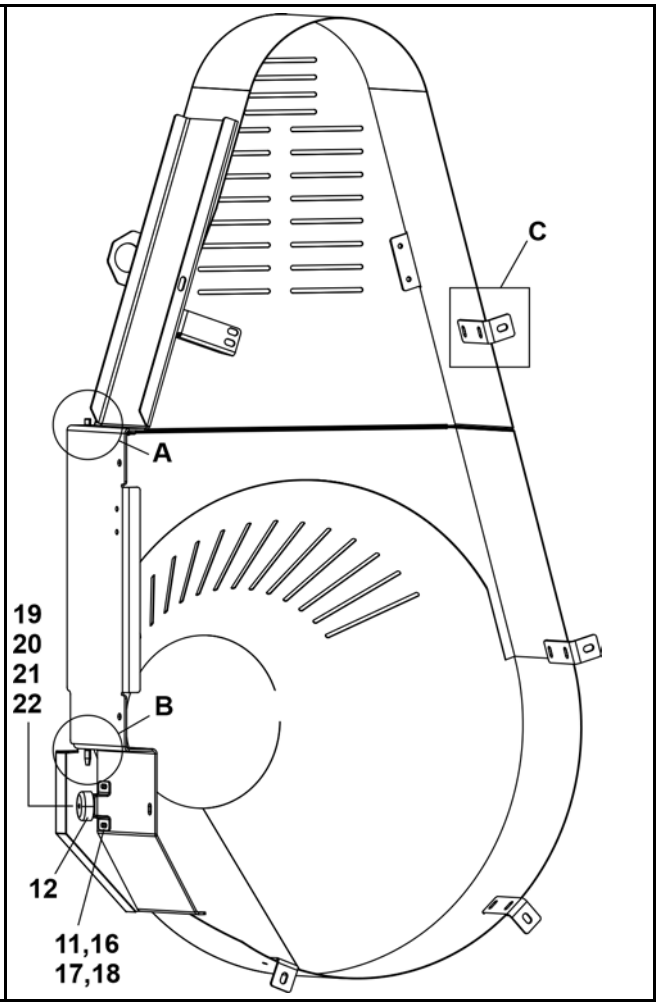
Guards and Covers

6 Sheets

48040M7K, 68036M5K, 72046M5K.

Figure 4. Rear Belt Guard

7246M5K Shown



Legend

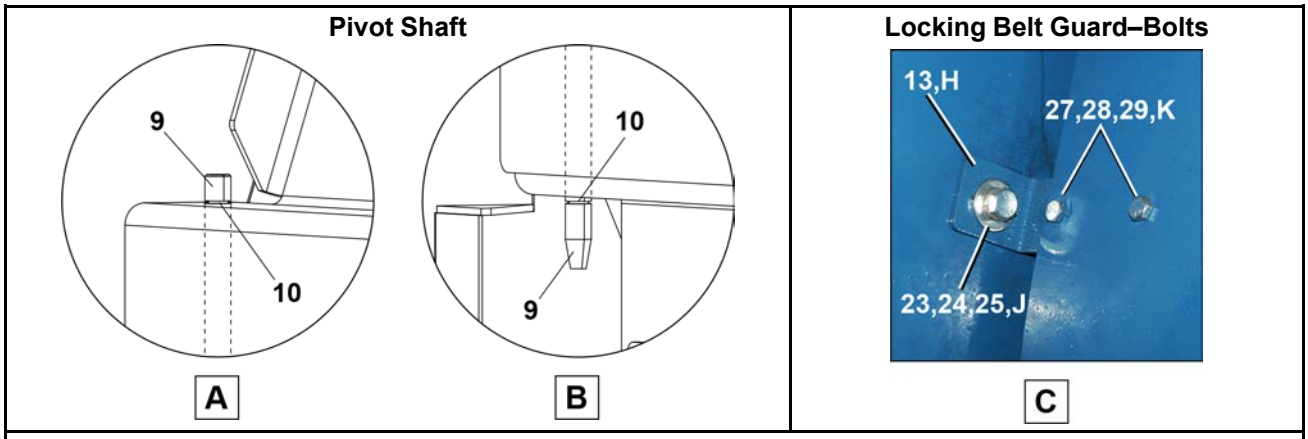
A . . . See detail A
B . . . See detail B
C . . . See detail C

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	

BNWHUH02 / 2021344 BNWHUH02 0000369527 A.5 8/18/21, 4:18 PM Released

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

BNWHUH02.C02 0000373217 A.3 C.2 A.5 8/17/21, 11:08 AM Released

1.5.1 What Safety Supports are Provided and Why

BNWHUH02.C01 0000373218 C.2 A.5 A.6 8/18/21, 3:40 PM Released

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.

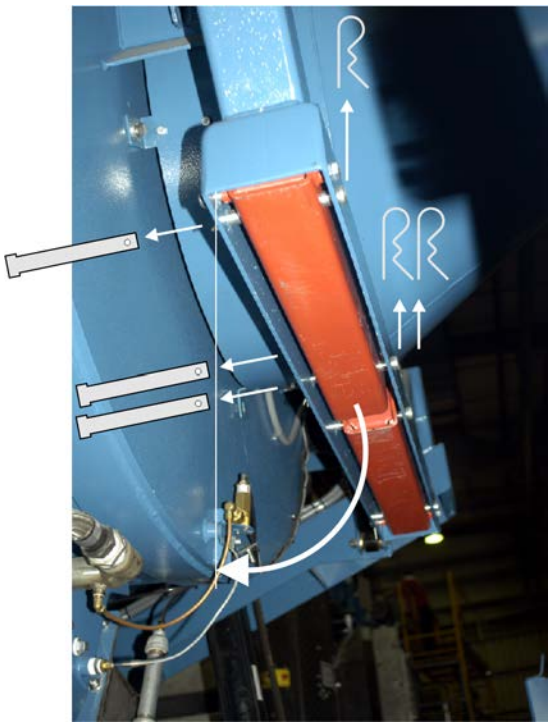
WARNING: Incorrect use of the safety supports — can cause the machine to descend and crush you.

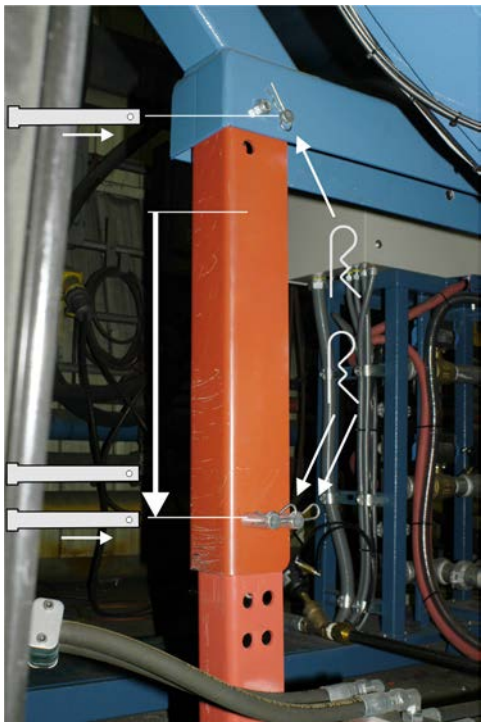
- Never work near the path of the vertically moving portion of the machine unless the safety supports are deployed and power is removed from the machine.
- Do not use power to close a small gap between the machine and the safety supports. Use care not to lower the machine with the safety supports deployed.
- 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 C.2 A.4 A.5 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.



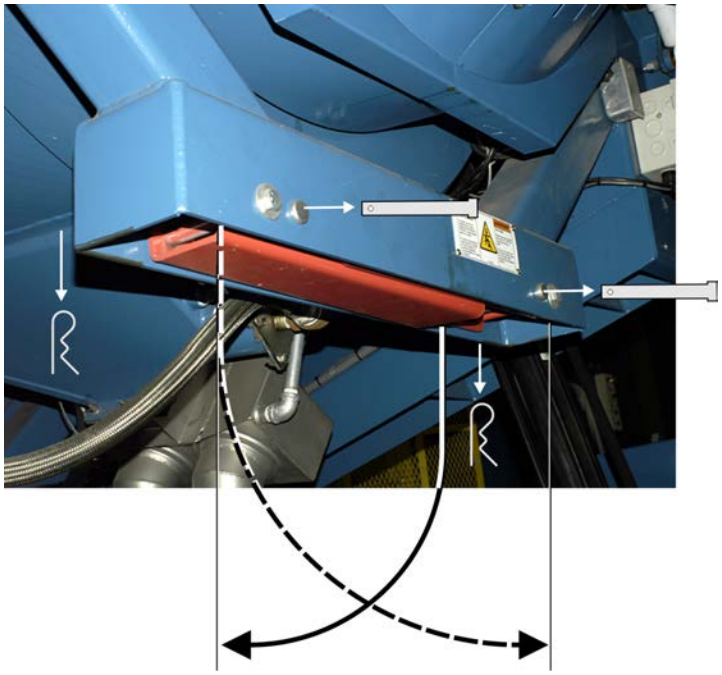


3. Extend the legs, insert the clevis pins and secure them with the cotter pins. See the illustration above right.
4. Remove electric power from the machine.

1.5.3 How To Deploy the Safety Stands — 48040M7K

BNWHUH02.T01 0000373179 C.2 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.

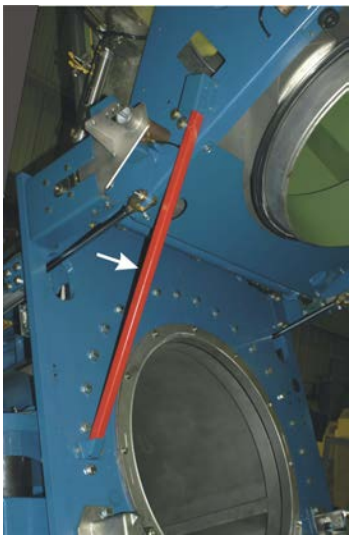


3. Insert the clevis pins and secure them with the cotter pins. See the illustration above right.
4. Remove electric power from the machine.

1.5.4 How to Deploy the Load Chute Safety Bar

BNWHUH02.T03 0000373443 C.2 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.



This page intentionally blank

BPWH4K01 / 2021336 BPWH4K01.1 0000347775 C.2 B.3 8/20/21, 10:54 AM Released

Safety Stands

2 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 6. Safety Stands 68036M5K, 72046M5K

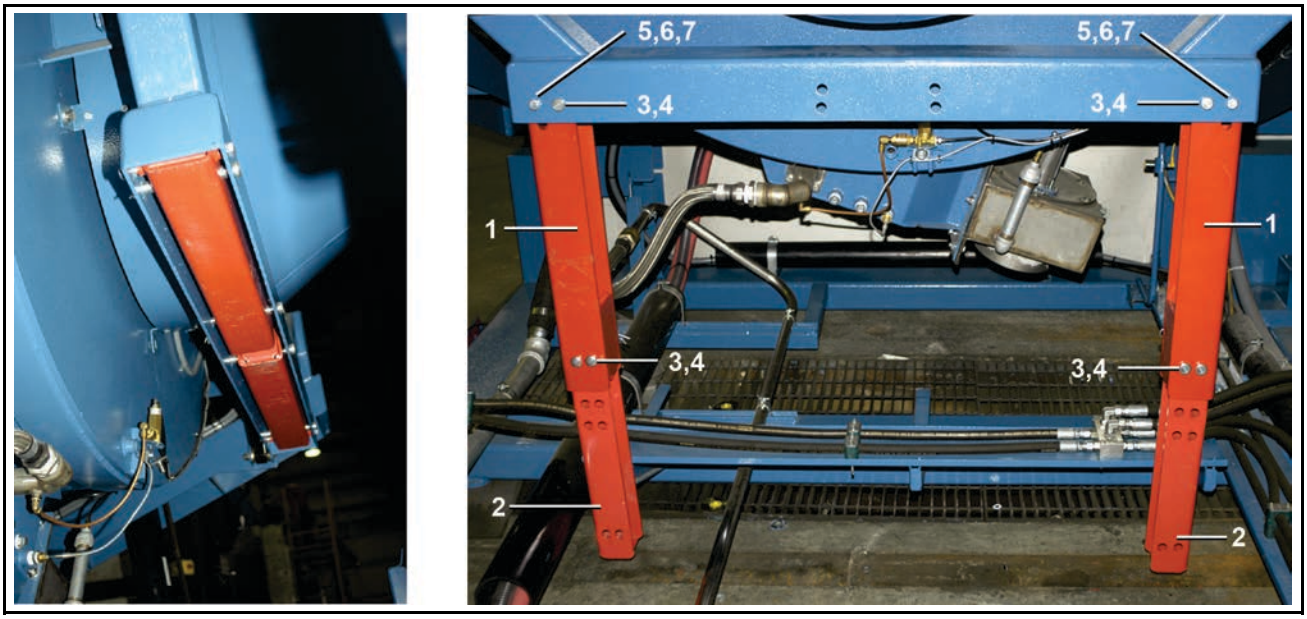
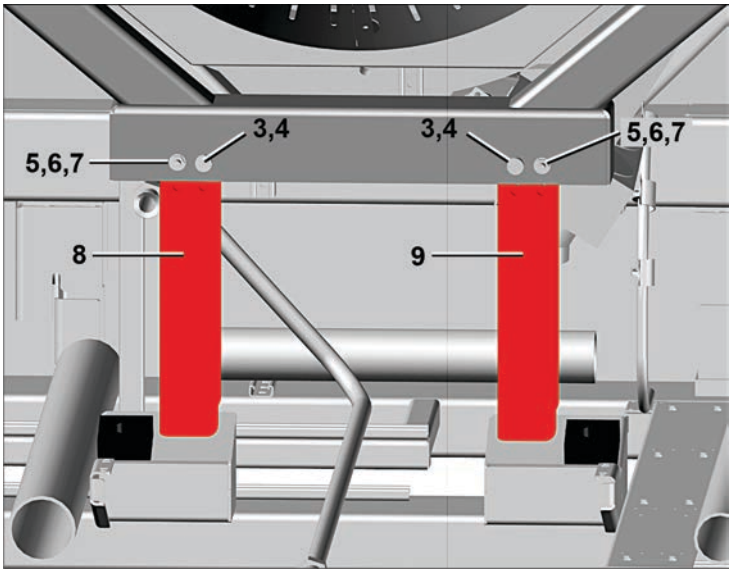


Figure 7. Safety Stands 48040M7K



Safety Stands

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 5. Parts List—Safety Stands

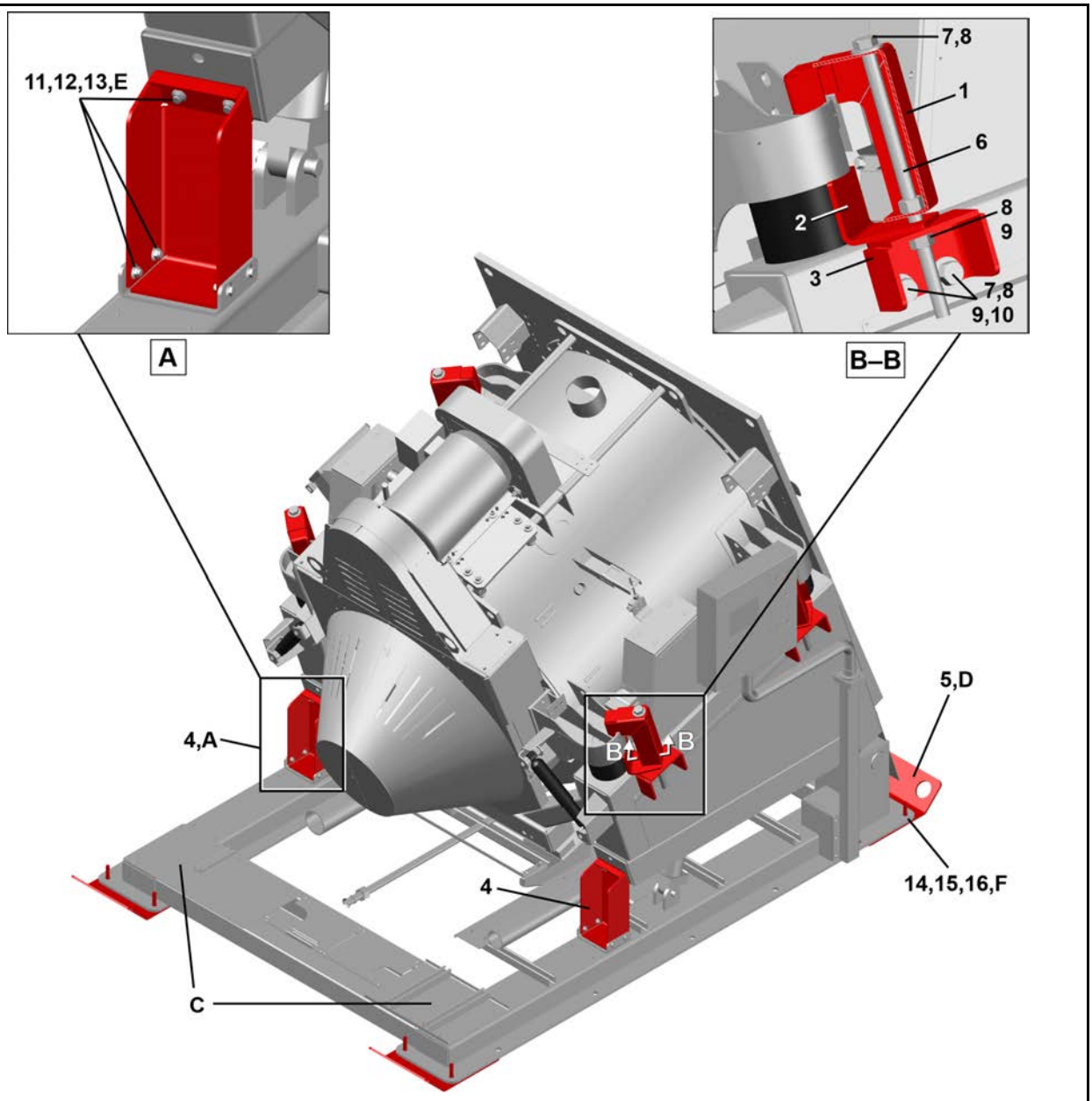
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**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

BPWH4K03 / 2021223 BPWH4K03.1 0000348094 A.3 C.2 5/26/21, 8:26 AM Released

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	

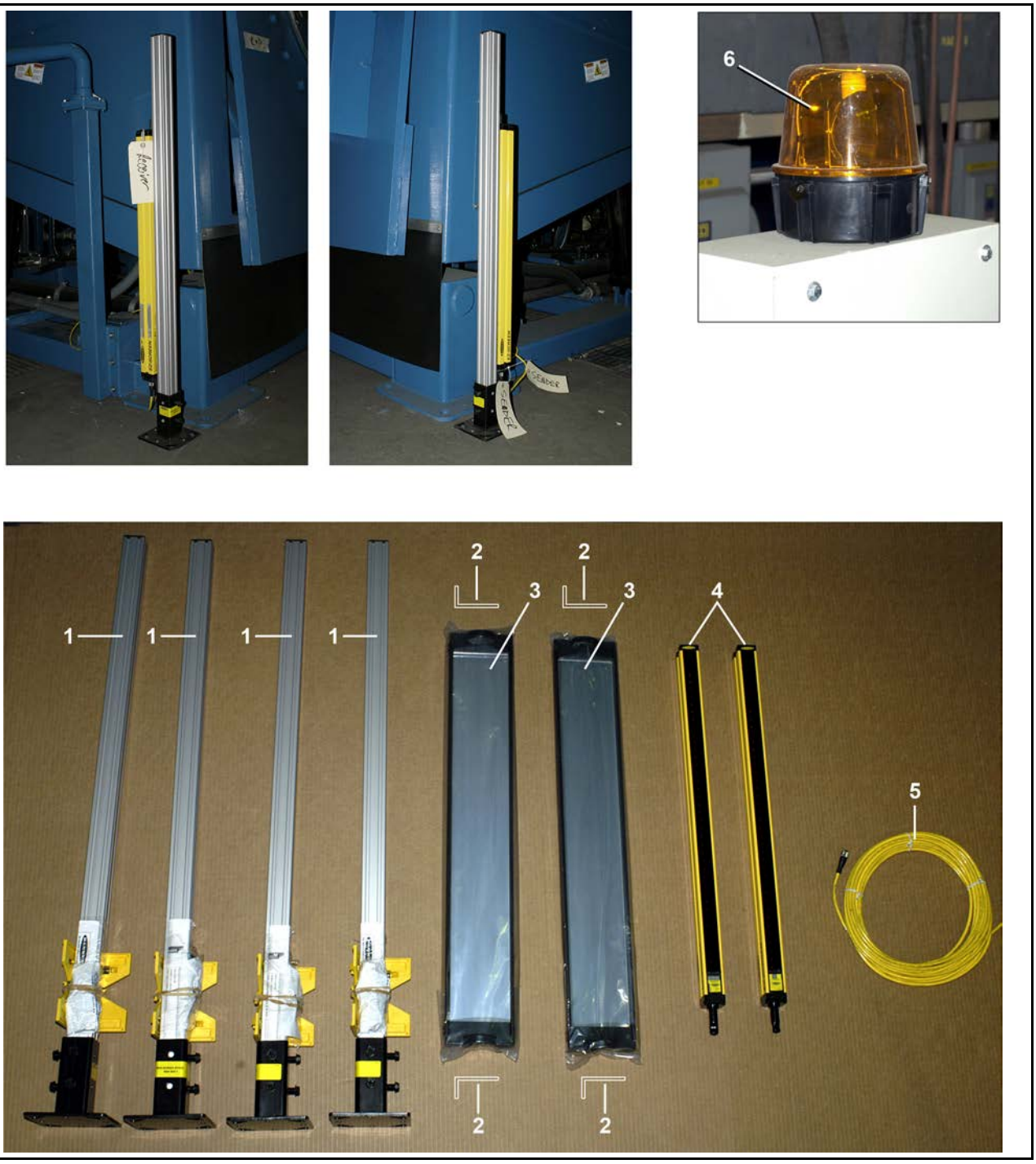
BPWH4K02 / 2021223 BPWH4K02.1 0000347815 C.2 A.4 5/26/21, 8:05 AM Released

Safety Light Screen Components and Installation

3 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 8. Replacement Parts



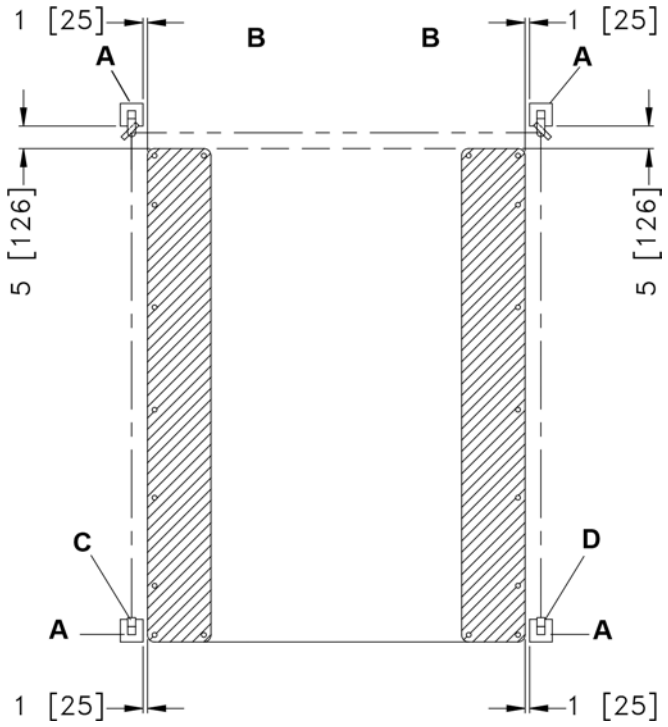
Safety Light Screen Components and Installation

3 Sheets

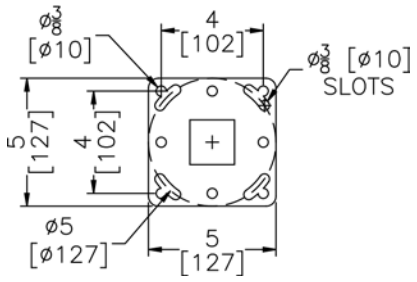
48040M7K, 68036M5K, 72046M5K

Figure 9. Safety Light Screen Installation

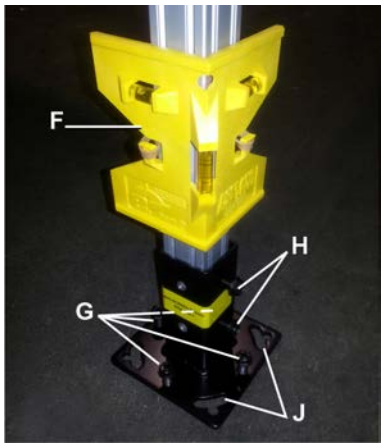
Detail: Stand Placement



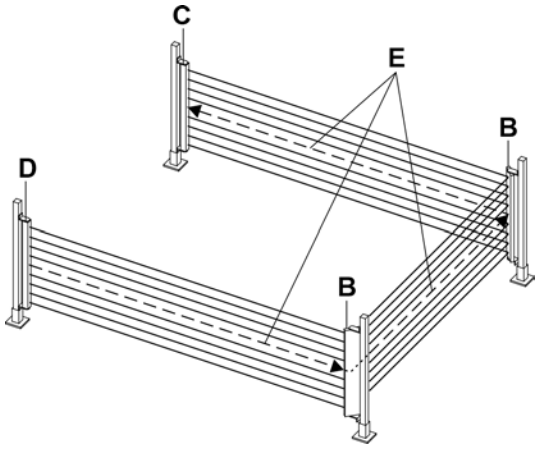
Detail: Stand base mounting hole pattern



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 7. 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

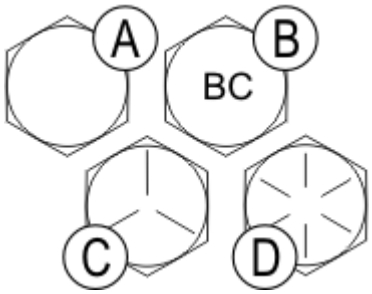
BNUUUN02 / 2019125 BNUUUN02 0000222452 B.3 1/2/20, 2:14 PM Released

1.6 Torque Requirements for Fasteners

BNUUUN02.C01 0000222451 A.3 C.2 B.3 1/2/20, 2:14 PM Released

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 10. 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

BNUUUN02.C02 0000222449 A.3 C.2 B.3 1/2/20, 2:14 PM Released

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

BNUUUN02.C03 0000222448 A.3 C.2 B.3 1/2/20, 2:14 PM Released

1.6.1.1.1 Without a Threadlocker

BNUUUN02.C04 0000222447 A.3 C.2 B.3 1/2/20, 2:14 PM Released

Table 8. 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 9. 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 10. 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 11. 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

BNUUUN02.C05 0000222446 A.3 C.2 B.3 1/2/20, 2:14 PM Released

Table 12. 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 13. 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 14. 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 15. 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 16. 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 16 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 17. 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

BNUUUN02.C06 0000222445 A.3 C.2 B.3 1/2/20, 2:14 PM Released

Table 18. 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 19. 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

BNUUUN02.T01 0000222511 B.2 C.2 B.3 4/20/23, 9:05 AM Released

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

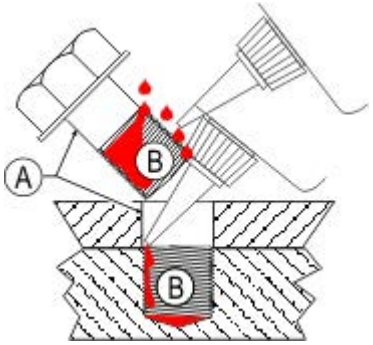
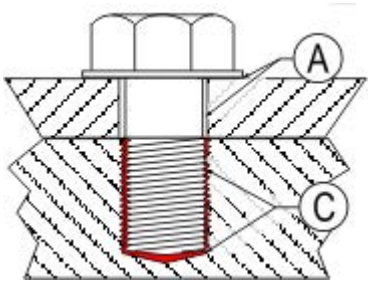
BNUUUN02.T02 0000222508 B.2 C.2 B.3 4/20/23, 9:09 AM Released

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 11. 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

BNUUUN02.T03 0000222507 A.3 C.2 B.3 1/2/20, 2:14 PM Released

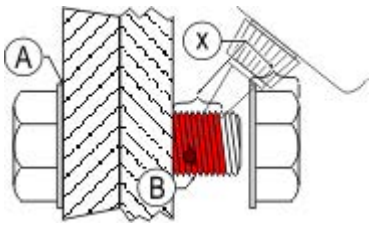
1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table (Table 12: Threadlocker by the Diameter of the Bolt (see below Note), page 43 to Table 18: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 45).

1.6.3.2 Through Holes

BNUUUN02.T04 0000222506 A.3 C.2 B.3 11/26/19, 2:51 PM Released

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 12: Threadlocker by the Diameter of the Bolt (see below Note), page 43 to Table 18: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 45).

Figure 12. Apply Threadlocker in a Through Hole

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

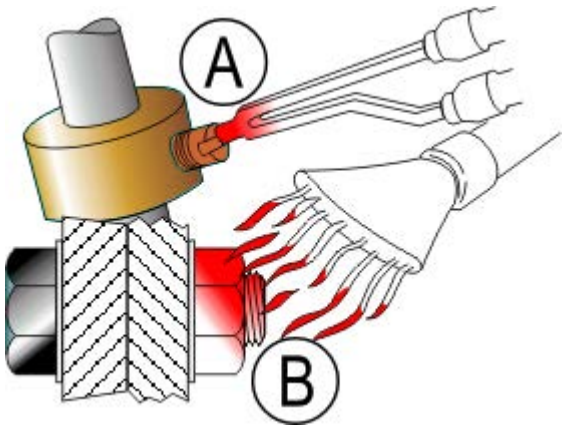
1.6.3.3 Disassembly

BNUUUN02.C07 0000222444 A.3 C.2 B.3 11/26/19, 2:59 PM Released

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 13. 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

BFUUUF01 / 2023174 BNUUUF01 0000109243 D.2 4/26/23, 10:44 AM Released

2.1 External Fuse/Breaker, Wiring, and Disconnect Requirements

BNUUUF01.C01 0000109242 C.2 A.4 D.2 1/2/20, 2:14 PM Released

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

BNUUUF01.R01 0000109241 C.2 A.4 D.2 1/2/20, 2:14 PM Released

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

BNUUUF01.R02 0000109240 C.2 A.4 D.2 1/2/20, 2:14 PM Released

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

BNUUUF01.R03 0000109239 C.2 A.4 D.2 1/2/20, 2:14 PM Released

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

BNUUUF01.R04 0000109238 C.2 A.5 D.2 1/2/20, 2:14 PM Released

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 A.2 C.2 D.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.

BNUUUI01 / 2019392 BNUUUI01 0000189337 C.3 1/2/20, 2:14 PM Released

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

BNUUUI01.C01 0000189336 C.2 A.5 C.3 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 51. 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

BNUUUI01.C02 0000189359 C.2 B.3 C.3 1/2/20, 2:14 PM Released

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.

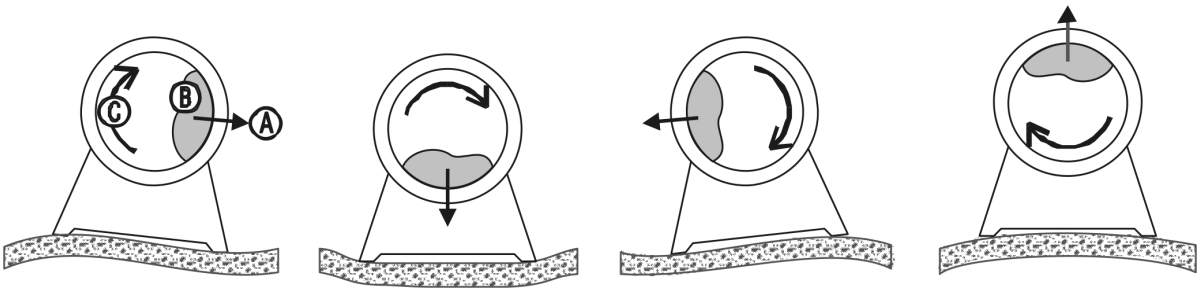
2.2.2 Major Design Considerations

BNUUUI01.C03 0000189358 C.2 A.5 C.3 1/2/20, 2:14 PM Released

- 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 14: How Rotating Forces Act On the Foundation, page 52 . 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 14. 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

BNUUUI01.C04 0000189357 C.2 A.5 C.3 1/2/20, 2:14 PM Released

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).

BIWUUI03 / 2019296 BNUUUR02 0000160550 E.3 1/2/20, 2:14 PM Released

2.3 Prevent Damage from Chemical Supplies and Chemical Systems

BNUUUR02.C01 0000160549 C.2 B.3 E.3 1/2/20, 2:14 PM Released

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

BNUUUR02.R01 0000160548 C.2 B.5 E.3 10/1/21, 11:24 AM Released

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.

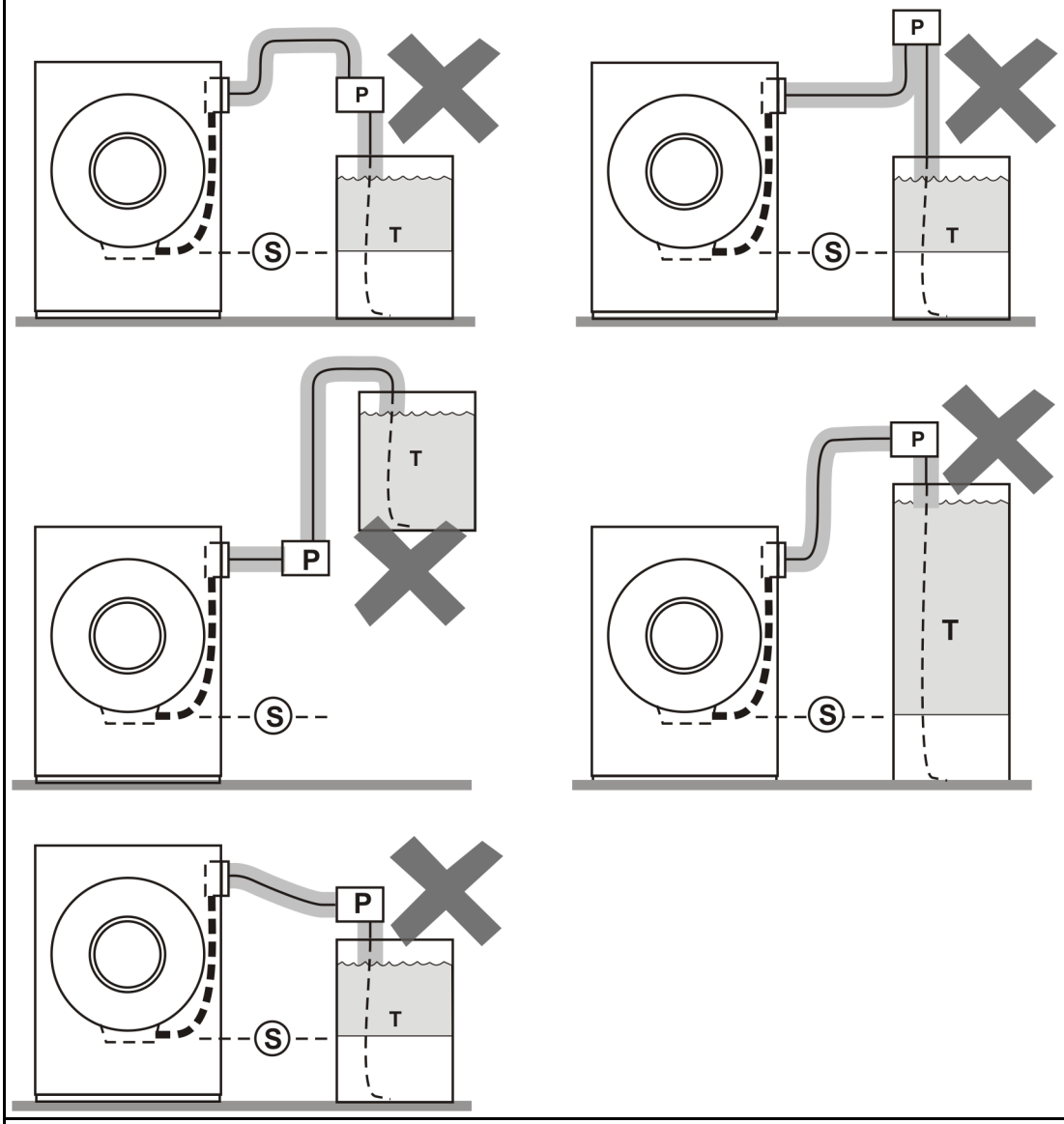
Incorrect Configuration or Connection of Equipment — Many chemical systems:

- 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 15, page 54). Some can let chemical supplies go in the machine by gravity (Figure 16, page 55).

Figure 15. Incorrect Configurations That Let the Chemical Supply Go In the Machine by a Siphon

Schematic Views

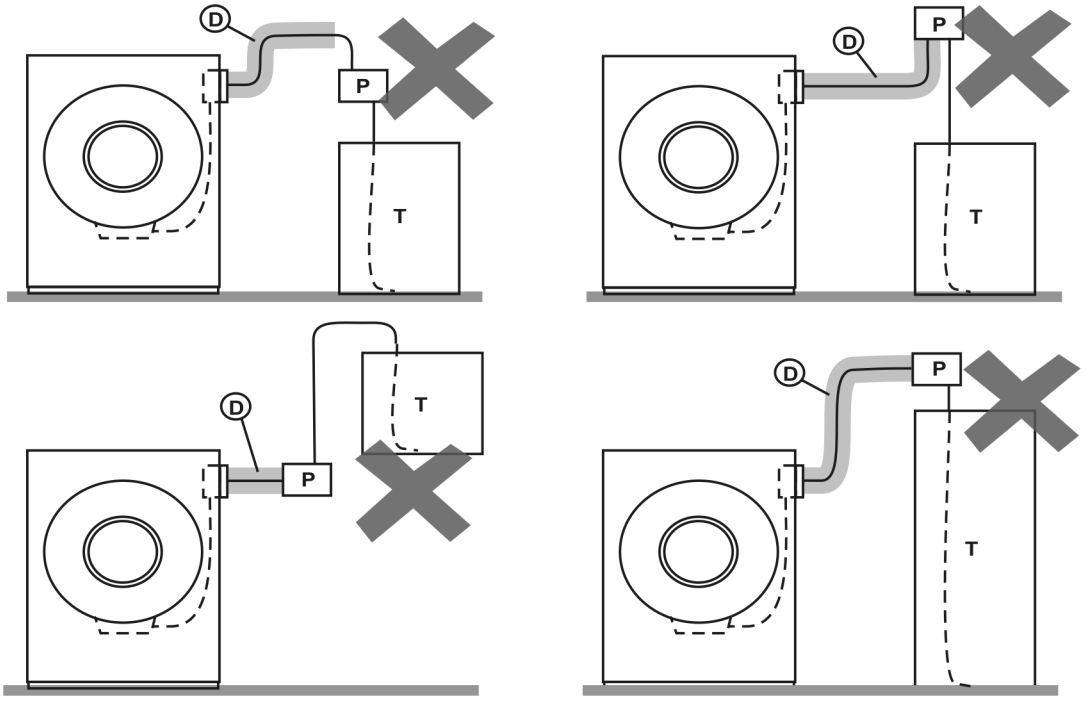


Legend

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

Schematic Views



Legend

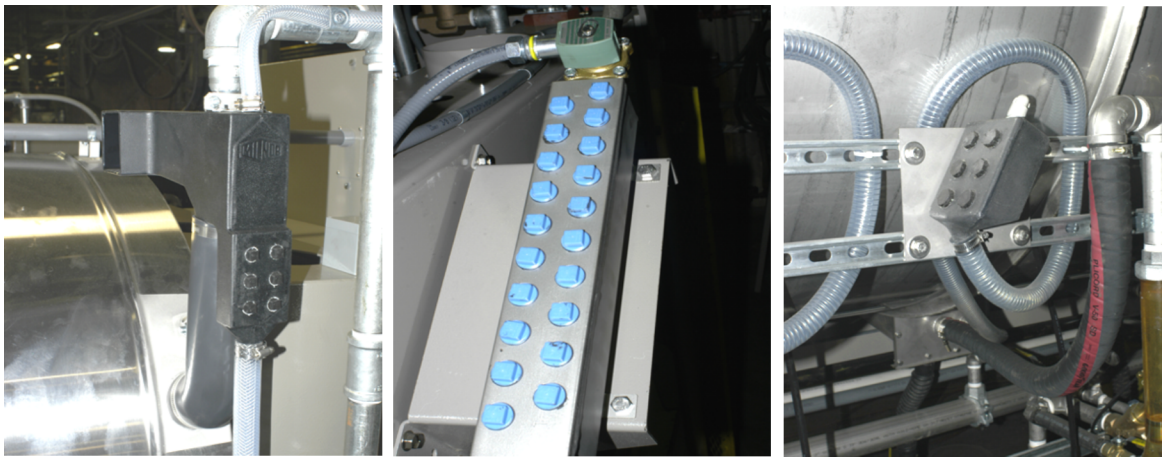
P . . . Pump
T . . . Chemical tank
D . . . Chemical tube. Liquid in the gray areas can go in the machine.

2.3.2 Equipment and Procedures That Can Prevent Damage

BNUUUR02.R02 0000160545 C.2 B.3 E.3 1/2/20, 2:14 PM Released

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



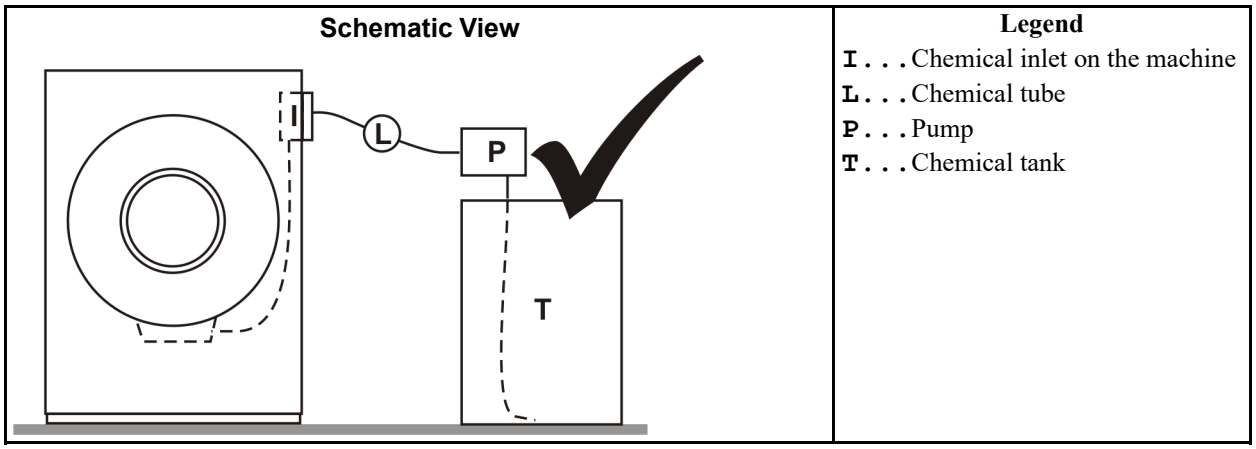
Close the line. — If the pump does not always close the line when it is off, use a shutoff valve to do this.

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 18. 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

3.1 Handling a Washer-extractor from Delivery to Final Location

BNWUUI03.C01 0000254787 C.2 C.5 B.7 1/2/20, 2:19 PM Released

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

BNWUUI03.R04 0000257899 C.2 A.4 B.7 1/2/20, 2:19 PM Released

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.

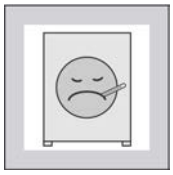
3.1.2 Facility Prerequisites

BNWUUI03.R01 0000254786 C.2 B.4 B.7 1/2/20, 2:19 PM Released

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.

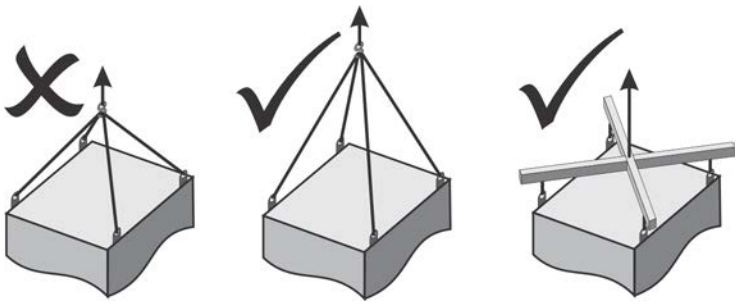
3.1.3 Rigger Precautions

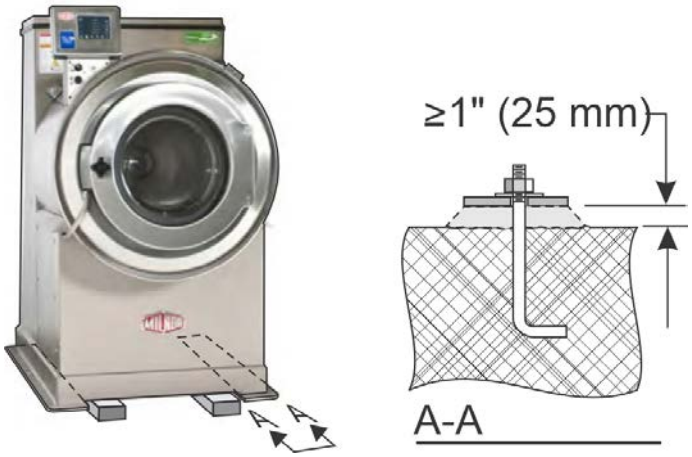
BNWUUI03.R02 0000254785 C.2 B.6 B.7 1/2/20, 2:19 PM Released



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

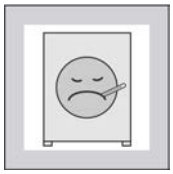
- Know and accommodate the machine shipping weight.
- Use only lifting eyes for crane lifting.
- Use long cables or a spreader bar for crane lifting.
- Leave the machine skidded as long as possible.
- Protect fragile or sensitive machine components.
- Prepare the foundation and install anchor bolts correctly.
- 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.

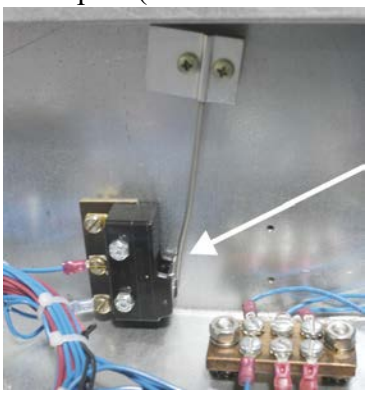
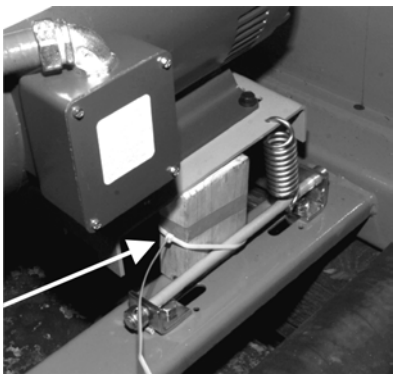
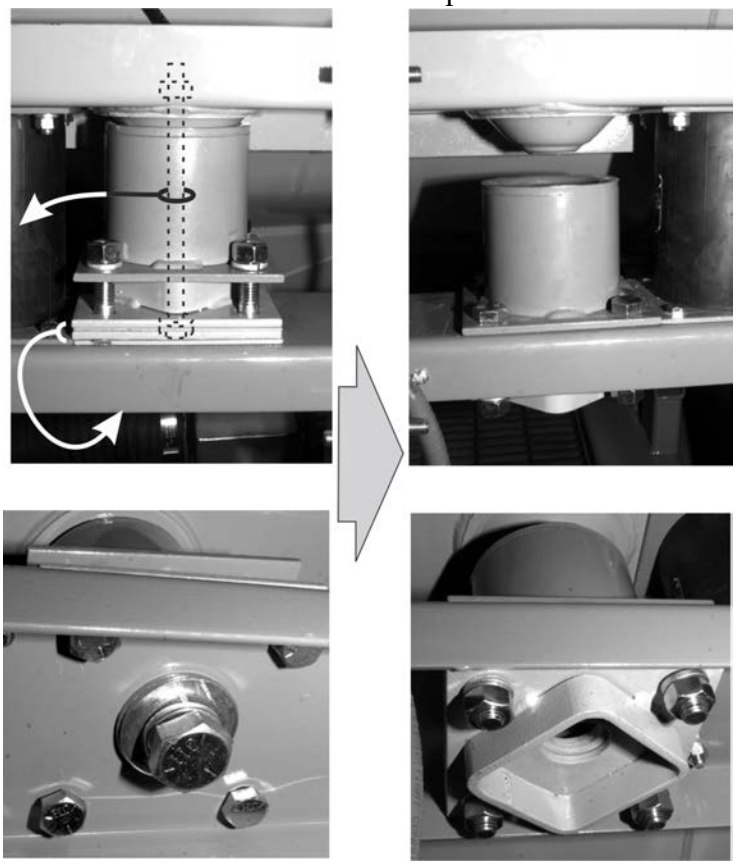
3.1.4 Technician Precautions

BNWUUI03.R03 0000257735 C.2 A.5 B.7 1/2/20, 2:19 PM Released



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.

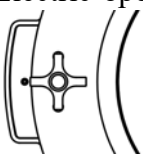
Precaution	Explanation
Leave all internal shipping restraints in place until the machine is anchored.	The machine can have one or more internal shipping restraints to help protect components from damage until the machine is anchored. These are located inside the housing or inside electric cabinets.
Check 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.

BNWUUI04 / 2021322 BNUUUF01 0000255072 8/2/21, 10:05 AM Released

3.2 Connection Precautions for Washer-extractors

BNWUUI04.C01 0000255071 B.2 C.2 8/2/21, 10:05 AM Released

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

BNWUUI04.R03 0000255231 C.2 A.7 1/2/20, 2:19 PM Released

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

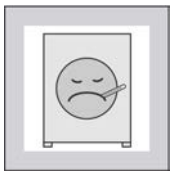
BNWUUI04.R05 0000255583 A.12 C.2 1/2/20, 2:19 PM Released

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

BNWUUI04.R01 0000255070 C.2 A.9 1/2/20, 2:19 PM Released



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

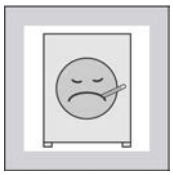
- Confirm the reliability of the piped utilities.
- Maintain connection point diameter.
- Flush fluid lines.
- Do not twist valve bodies.
- Never interchange water valve electrical connections.
- Install any vacuum breaker(s) provided or required.
- Install any water strainer(s) provided or required.
- 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 63.
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

BNWUUI04.R02 0000255232 C.2 A.7 1/2/20, 2:19 PM Released



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

BNWUUI04.R04 0000255482 C.2 A.5 1/2/20, 2:19 PM Released

Injury and severe machine damagecan occur as a result of incorrect chemical system installation.

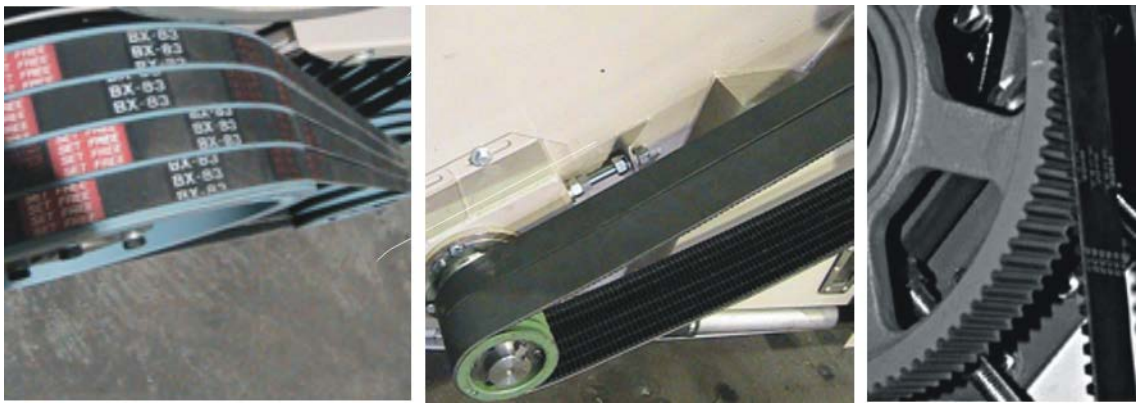
- Understand and comply with the published connection precautions.
- Understand the machine controller.

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

4.1 Drive Pulley and Belt Maintenance

Figure 19. 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

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

- Keep run-out in tolerance.

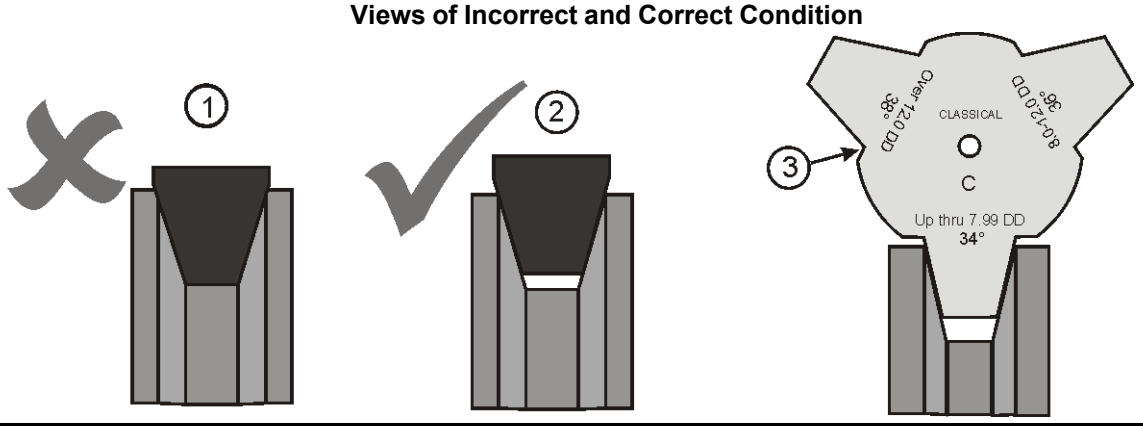
4.1.1.1 Condition of Grooves on Pulleys

BNUUUM02.C03 0000274611 A.2 B.2 C.2 2/4/20, 8:08 AM Released

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 20, page 68).

Figure 20. 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.

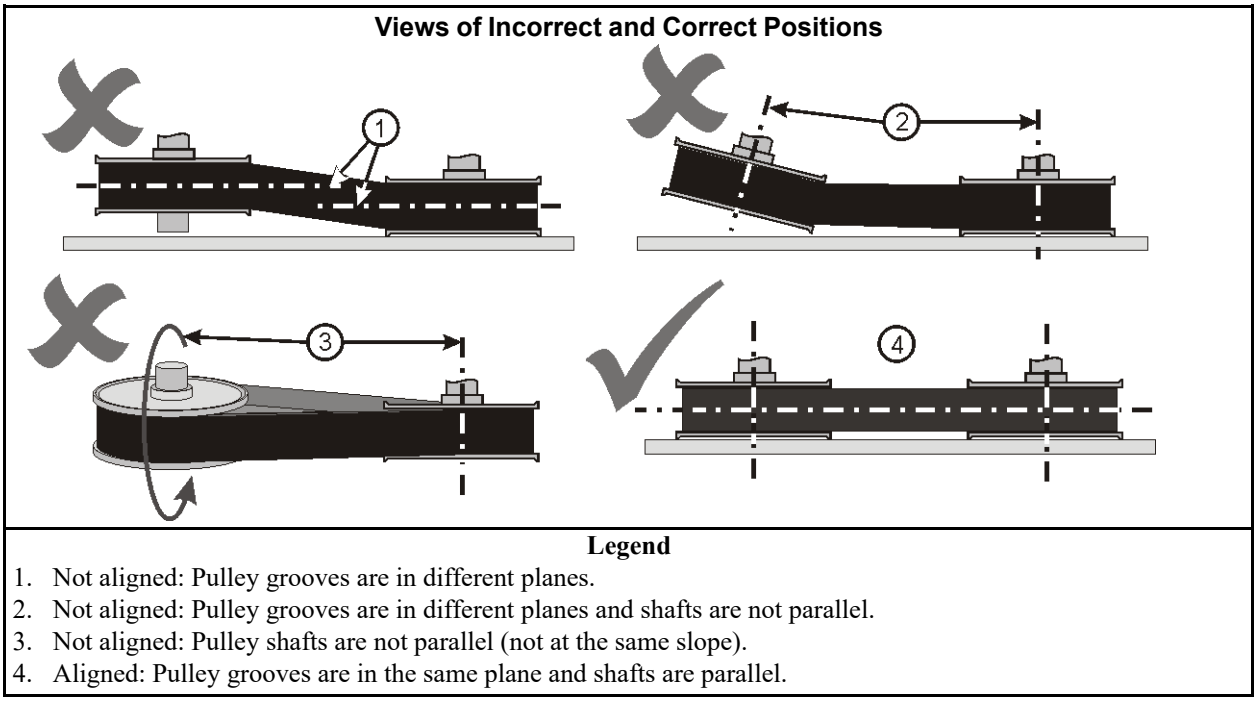
4.1.1.2 Pulley and Shaft Position

BNUUUM02.C04 0000274609 A.2 B.2 C.2 2/4/20, 8:08 AM Released

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 21. 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

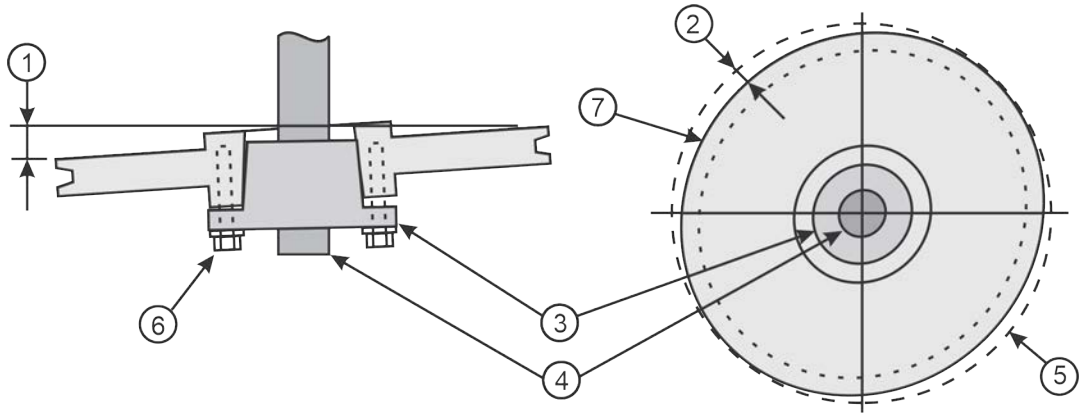
BNUUUM02.C05 0000274606 A.2 B.2 C.2 2/4/20, 8:08 AM Released

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 22, page 70, 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 22, page 70, item 2). If a force causes damage to a pulley, it can bend. It will not have a circular shape.

Figure 22. Run-out

Views of Axial and Radial Run-out

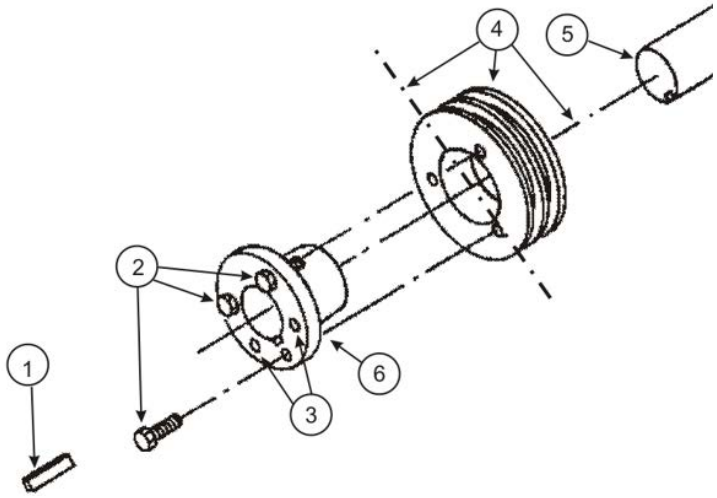


Legend

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 23. 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

BNUUUM02.C06 0000274605 A.2 B.2 C.2 2/4/20, 8:08 AM Released

- 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

BNUUUM02.C07 0000274604 A.2 B.2 C.2 2/4/20, 8:08 AM Released

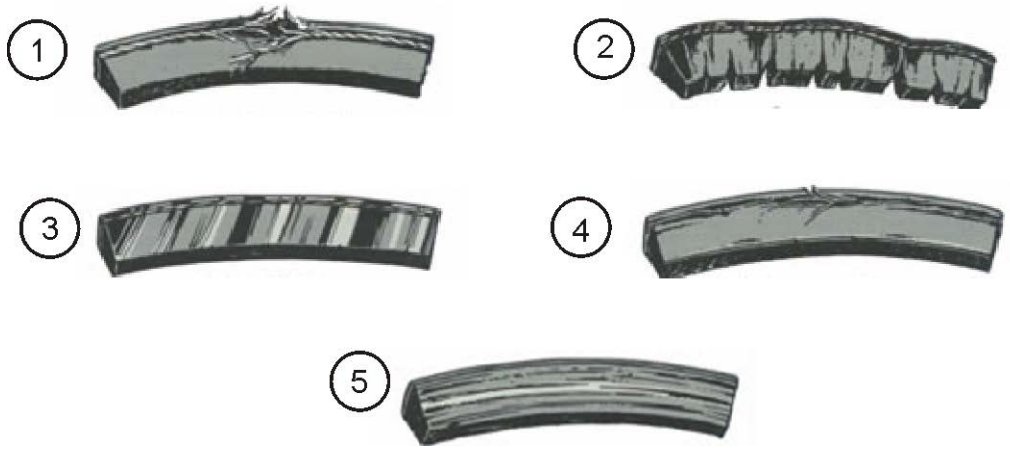
Slippage when the pulley turns more quickly than the belt can move

Slippage occurs if belts are not aligned (see Section 4.1.1.2 , page 68) or by incorrect tension explained in Section 4.1.1.2 , page 68. 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 24. Types of Belt Damage



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

BNUUUM02.C08 0000274657 A.2 B.2 C.2 2/4/20, 8:08 AM Released

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.

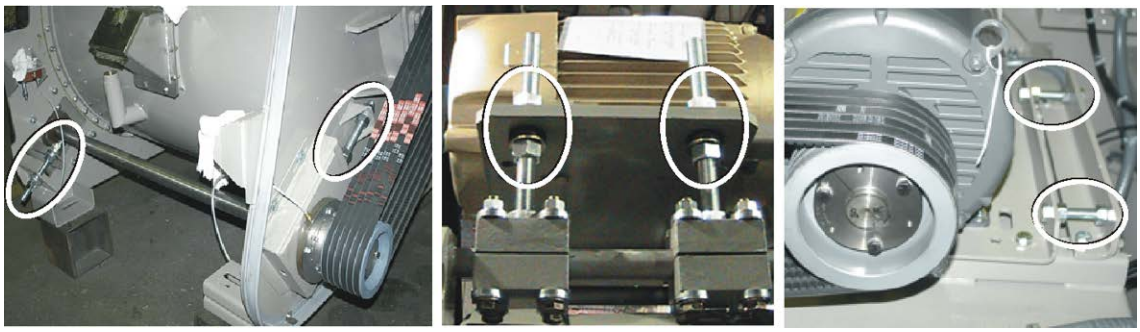
4.1.3 The pulleys must stay aligned when you adjust the belt tension

BNUUUM02.C09 0000274654 A.2 B.2 C.2 2/4/20, 8:08 AM Released

Some tension mechanisms do not have an effect on pulley and shaft requirements. Pulleys will stay aligned when you adjust them. Figure 25, page 73 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 26, page 73.

Figure 25. A Tension Mechanism that will not Change the Angle of the Pulleys

Figure 26. Some Pairs of Tension Mechanisms that Can Change the Angle of the Pulleys



4.1.4 How to Do Maintenance on Pulleys and Belts

BNUUUM02.C10 0000274653 B.2 C.2 8/23/23, 9:45 AM Released

Table 20. 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 23, page 70, item 2
Laser, straight edge, or string	Align pulleys	Tools are listed in order of preference. Section 4.1.1.2 , page 68 and Figure 27, page 75
Bubble level	Align shafts	Section 4.1.1.2 , page 68 and Figure 28, page 76
Dial indicator	Measure run-out	Section 4.1.1.3 , page 69 and Figure 29, page 76

Table 20 Typical Tools for Pulley and Belt Maintenance (cont'd.)

Tool	Function	Related Data
Sheave (pulley) gage	Examine pulley wear	Figure 20, page 68.
Infrared thermometer	Examine belt temperature	Section 4.1.2.1 , page 71.

4.1.4.1 Typical Steps to Replace Pulleys and Belts

BNUUUM02.C11 0000274652 A.2 B.2 C.2 2/4/20, 8:08 AM Released

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 25, page 73 and Figure 26, page 73 show typical belt tension mechanisms.

Pulley removal On the typical type of pulley and bushing shown in Figure 23, page 70, 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 23, page 70 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.

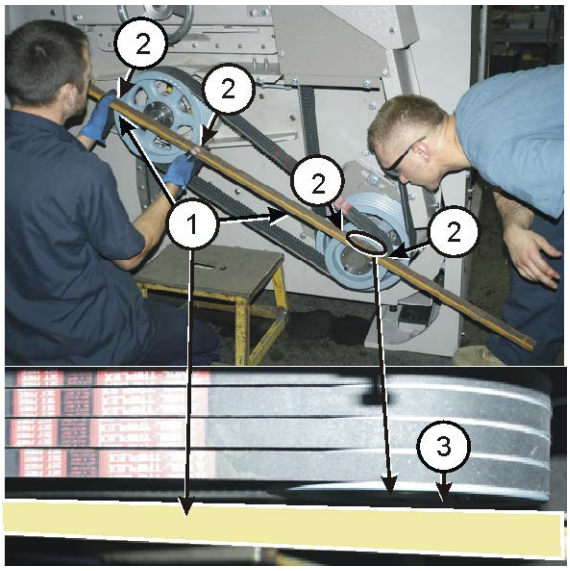
Test Before you connect power again, make sure that you remove all tools. Operate the machine with a full load. If the belts slip, increase belt tension with the machine shut down and power removed. Then test again. Make sure that the machine is safe before you put it into regular operation.

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

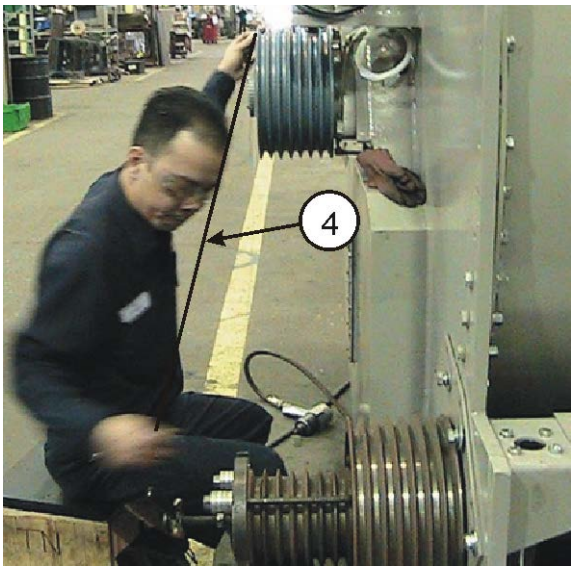
BNUUUM02.C12 0000274686 A.3 B.2 C.2 3/6/20, 4:49 PM Released

Figure 27. 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

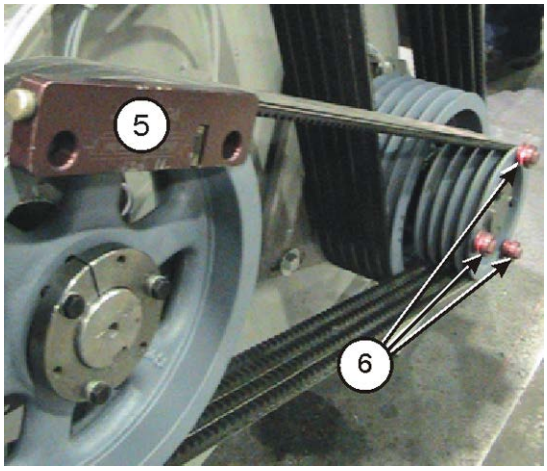


Figure 28. Use a level to make sure that the pulleys are at the same slope.

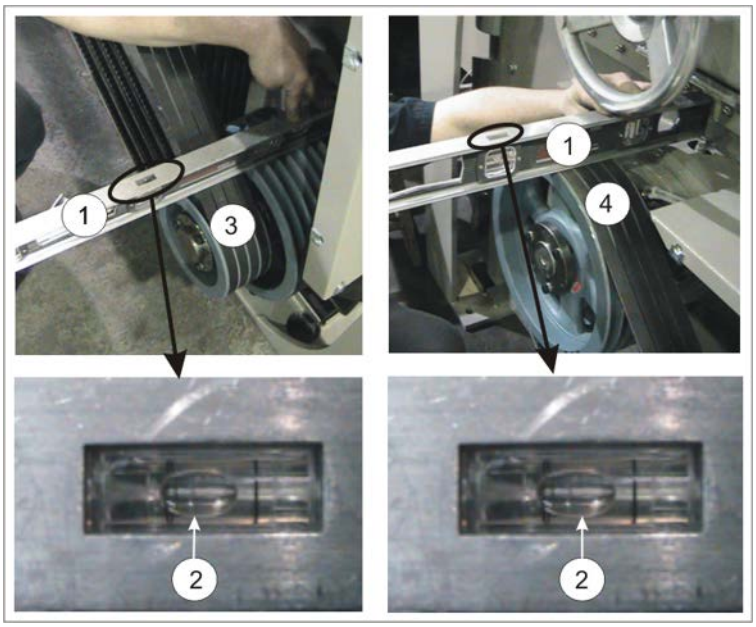
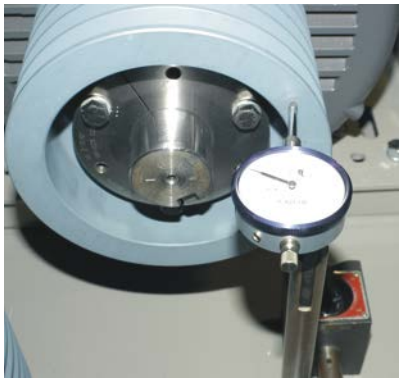
A level on the top of two pulleys	Legend
	1. Bubble level: Use this tool to make sure that the slopes of pulleys are equal. This is to make sure that you do not have the condition in Figure 21, page 69, item 3. Mechanisms shown in Figure 26, page 73 can change the pulley slopes. 2. If the slopes of the 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 29. 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

BNWUUM03 / 2020125 BNWUUM03 0000277540 A.7 3/19/20, 8:51 AM Released

4.2 Disk Brake Maintenance

BNWUUM03.C01 0000277539 A.2 C.2 A.7 2/27/20, 1:48 PM Released

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 88 tells how to operate the disk brakes. You can use it in some of the types of maintenance in this procedure.

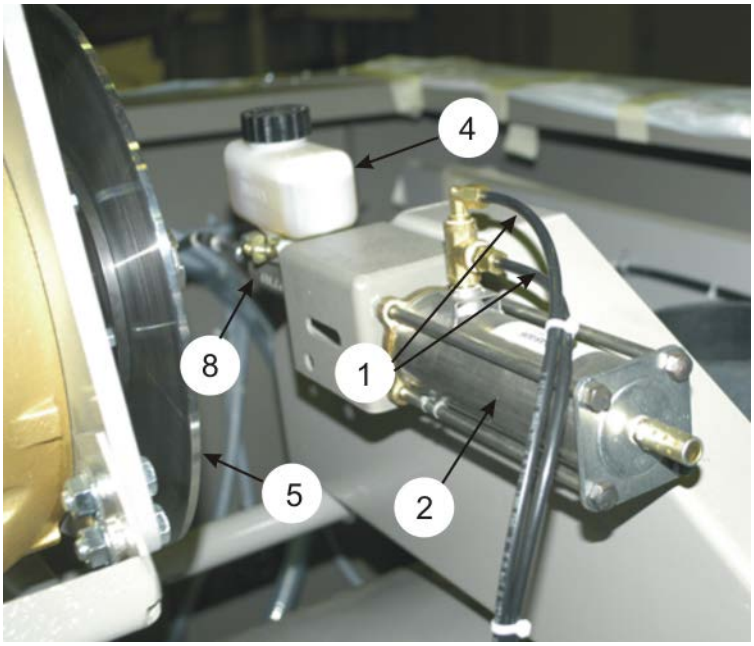
WARNING: Risk of injury or death — A machine in operation without safety guards is dangerous.

- 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 30. A typical hydraulic brake system

The air cylinder

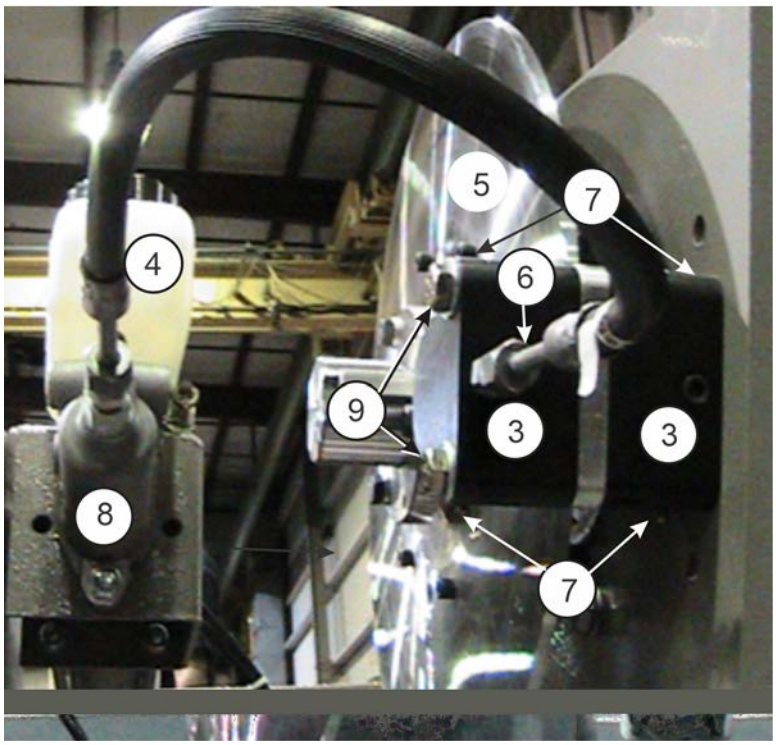


Legend

1. Tubing for air
2. Air cylinder
3. Caliper body halves (Figure 31, page 81, 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 31, page 81, item 1)

A typical hydraulic brake system (cont'd.)

The hydraulic cylinder and the caliper



4.2.1 The Inspection of the Brake

BNWUUM03.T01 0000277536 A.3 C.2 A.7 3/17/20, 11:57 AM Released

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 82.

   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 30: A typical hydraulic brake system, page 77 , item 5). Replace the disk if it is worn or if it is not flat.

3. Examine the brake pads (Figure 31: The Caliper Components, page 81 , 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 81 and Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 82.

a. **Remove power from the machine (see above notice).**
b. Remove the bolts (Figure 30, page 77, item 9) that attach the caliper halves (Figure 30, page 77, 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 79 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 31, page 81, item 14) above the mounting screw (Figure 31, page 81, 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 82.
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

BNWUUM03.T02 0000277566 C.2 A.5 A.7 3/17/20, 11:57 AM Released

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 82.
3. Remove the two bolts that attach the caliper (Figure 30, page 77, item 9) and the two caliper halves (Figure 30, page 77, item 3) to get access to the friction pads. Do not disconnect the hydraulic line (Figure 30, page 77, item 6).
4. If there are leaks, see Section 4.2.3 : How to Do a Caliper Overhaul, page 81 before you continue.
5. Replace each friction pad:
   a. Remove the brass screw (Figure 31, page 81, 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.

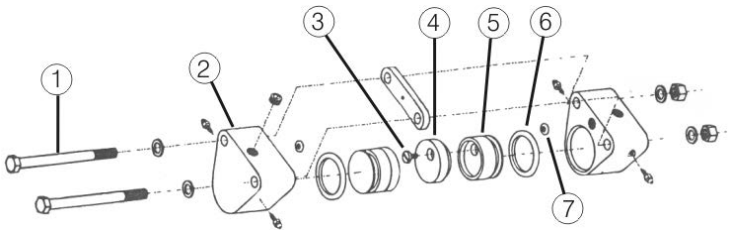
6. Make sure that the connection o-rings are clean and in their positions (Figure 31, page 81, item 7).
7. Put the caliper halves in their positions on the brake assembly. Tighten the mounting bolts to 30 foot-pounds (41 Newton-meters).
8. Bleed the brake. See Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 82.
9. Supply electrical power to the machine.

4.2.3 How to Do a Caliper Overhaul

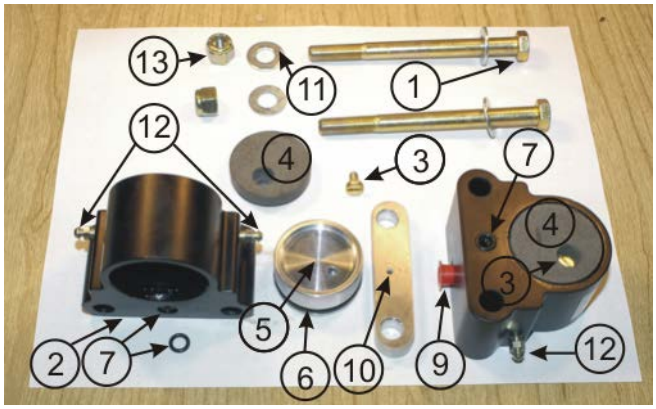
BNWUUM03.T03 0000277561 A.3 C.2 A.7 3/17/20, 11:57 AM Released

Figure 31. 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 30, page 77, item 9)
2. Caliper body halves (Figure 30, page 77, 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 31, page 81, item 7) and the hole in the spacer (Figure 31, page 81, 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 79).
3. Do an overhaul on each caliper:
   a. Remove and discard the connection O-rings (Figure 31, page 81, item 7) on the caliper bodies.
   b. Apply compressed air to the fitting for the hydraulic inlets (see Figure 31, page 81, item 8) to push the pistons out.
   c. Replace the piston O-rings (Figure 31, page 81, 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 31, page 81, item 7)
   f. Replace the friction pads (see Section 4.2.2 : How to Do a Friction Pad Replacement, page 79).
4. Replace the caliper halves as specified in Section 4.2.2 : How to Do a Friction Pad Replacement, page 79.
5. Bleed the brake circuit (see Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 82).
6. Supply electrical power to the machine.

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

BNWUUM03.T04 0000277589 A.3 C.2 A.7 3/17/20, 11:57 AM Released

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 32: Pumps Used to Remove Hydraulic Fluid Quickly, page 84)
  - with pressure in the hydraulic cylinder and gravity (see Figure 33: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 84)

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 32, page 84, follow the manufacturer's instructions.
- If you use the tools as shown in Figure 33, page 84, follow the instructions in Section 4.2.4 : How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit , page 82.

Figure 32. Pumps Used to Remove Hydraulic Fluid Quickly

Alternative Pumps for Suction of Hydraulic Fluid

1

2

Legend

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

Figure 33. 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 31, page 81, item 12)
4. a suction device to remove brake fluid from the reservoir

1. Use the tools in Figure 33: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 84 to remove the used hydraulic fluid and clean the line. Do these steps:
   a. Use a suction tool (Figure 33, page 84, item 4) to remove the used fluid from the reservoir. Clean the contamination.
   b. Connect the tubing (Figure 33, page 84, item 2) and container (Figure 33, page 84, item 1) to the valve on the caliper (Figure 30, page 77, 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 88) 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 33: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid, page 84 .

   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 33, page 84, item 1).
   e. Do these steps for each bleed valve (Figure 30, page 77, 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 33, page 84, 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 88).
      - Open the bleed valve. (Figure 31, page 81, 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.

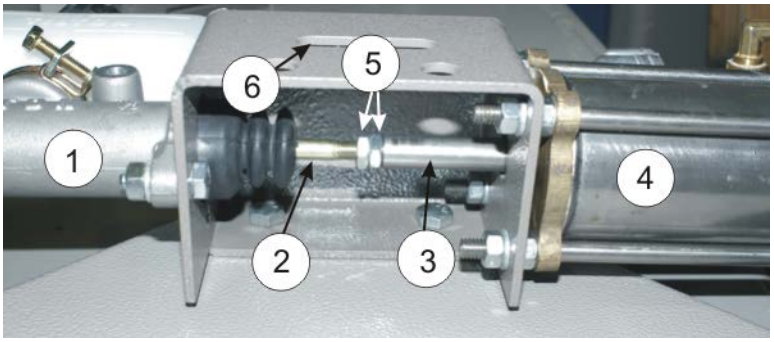
4.2.5 How to Adjust the Connection between the Brake Cylinder and the Air Cylinder

BNWUUM03.T05 0000277686 C.2 A.4 A.7 3/17/20, 2:24 PM Released

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

Figure 34. The Connection between the Brake Cylinder and the Air Cylinder

A view of the brake rod and related components

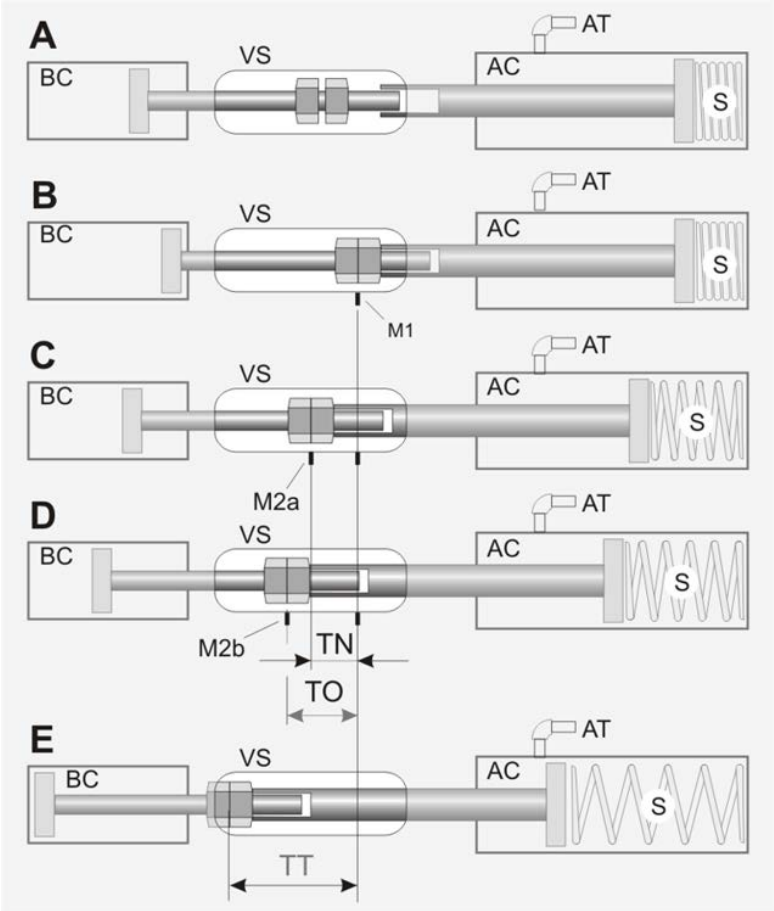


Legend

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 35. The Adjustment between the Brake Rod and the Air Cylinder

Schematic Views of Different Conditions



Legend

AC . . Air cylinder (Figure 34, page 86, item 4)
BC . . Brake cylinder (Figure 34, page 86, item 1)
VS . . Slot to see the nuts (Figure 34, page 86, item 6)
A . . . Before travel adjustment—Rods not locked by nuts (Figure 34, page 86, 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 89)
C . . . Brake applied—NEW pads (See Section 4.2.6.1 : How to Apply the Brake for Machines with a "Break Release" Output, page 88)
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 30: A typical hydraulic brake system, page 77 , 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 36: A Typical First and Second Brake on a Divided Cylinder Machine, page 89 , 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 34, page 86, item 5) are loose.
   d. Release the brake (see Section 4.2.6 : Operation of Brake Systems, page 88). Let the air cylinder rod fully retract into the air cylinder as shown in Figure 35, page 87, 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 35, page 87, item B.
   f. Lock the brake rod (Figure 34, page 86, item 2) to the air cylinder rod (Figure 34, page 86, item 3) with two nuts (Figure 34, page 86, 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 35, page 87, item M1).
   b. Apply the brake. See Section 4.2.6 : Operation of Brake Systems, page 88.
   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 35, page 87, item E (dimension TT).

4.2.6 Operation of Brake Systems

BNWUUM03.T06 0000277789 A.3 C.2 A.7 3/17/20, 11:57 AM Released

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

BNWUUM03.T07 0000279004 A.2 C.2 A.7 3/17/20, 11:57 AM Released

1. Turn the "brake release" control output off to de-energize the air valve to remove air pressure to the air cylinder (Figure 30: A typical hydraulic brake system, page 77 , item 1).
2. With no air pressure, a spring in the air cylinder will apply force to the hydraulic cylinder (Figure 30: A typical hydraulic brake system, page 77 , item 8). This will apply pressure to the brake pads (Figure 31: The Caliper Components, page 81 , item 4) against the rotor disk (Figure 30: A typical hydraulic brake system, page 77 , item 5). (Figure 35: The Adjustment between the Brake Rod and the Air Cylinder, page 87 , 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

BNWUUM03.T08 0000279003 A.2 C.2 A.7 3/17/20, 11:57 AM Released

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 35: The Adjustment between the Brake Rod and the Air Cylinder, page 87 , item B)

4.2.6.3 How to Apply and then Release the Brake Quickly

BNWUUM03.T09 0000279002 A.2 C.2 A.7 3/17/20, 11:57 AM Released

There are two air tubes at (Figure 30: A typical hydraulic brake system, page 77 , 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.

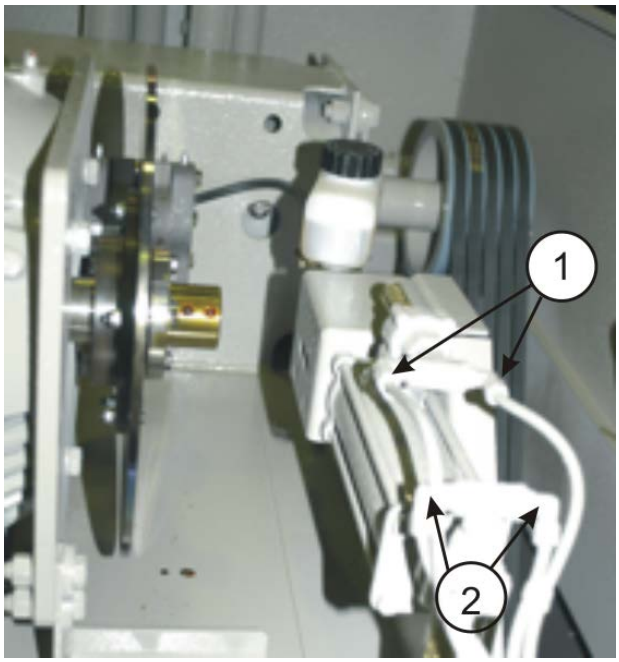
1. Disconnect the air tubing (Figure 30: A typical hydraulic brake system, page 77 , item 1).
2. Turn the "brake release" output on. The air valve will supply compressed air to one of the tubes. (Figure 30: A typical hydraulic brake system, page 77 , item 1).
3. Quickly move one of the compressed air tubes (Figure 30: A typical hydraulic brake system, page 77 , 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

BNWUUM03.T10 0000279001 A.2 C.2 A.7 3/17/20, 11:57 AM Released

Figure 36. 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 36: A Typical First and Second Brake on a Divided Cylinder Machine, page 89 , 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 36: A Typical First and Second Brake on a Divided Cylinder Machine, page 89 , item 2 and the spring apply the brake.

4.2.6.5 The Second Brake

BNWUUM03.T11 0000279000 A.2 C.2 A.7 3/17/20, 11:57 AM Released

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 36: A Typical First and Second Brake on a Divided Cylinder Machine, page 89 , item 2) to 10 – 12 PSI (0.7-0.84 kg/cm-cm).

This page intentionally blank

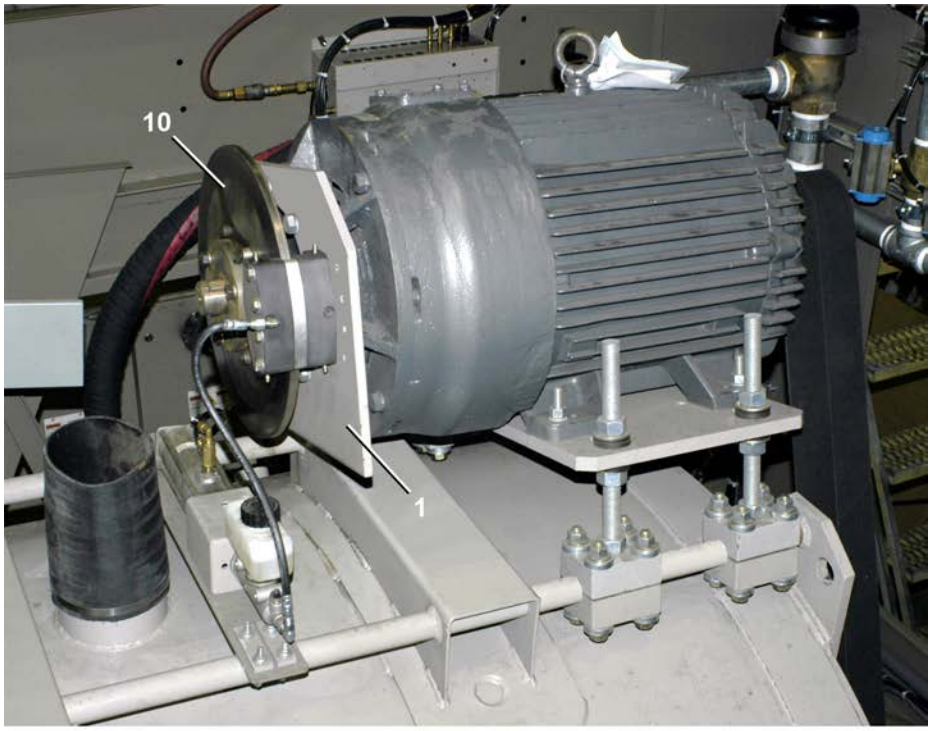
BPWH4I03 / 2021244 BPWH4I03.1 0000348479 C.2 A.4 6/9/21, 3:40 PM Released

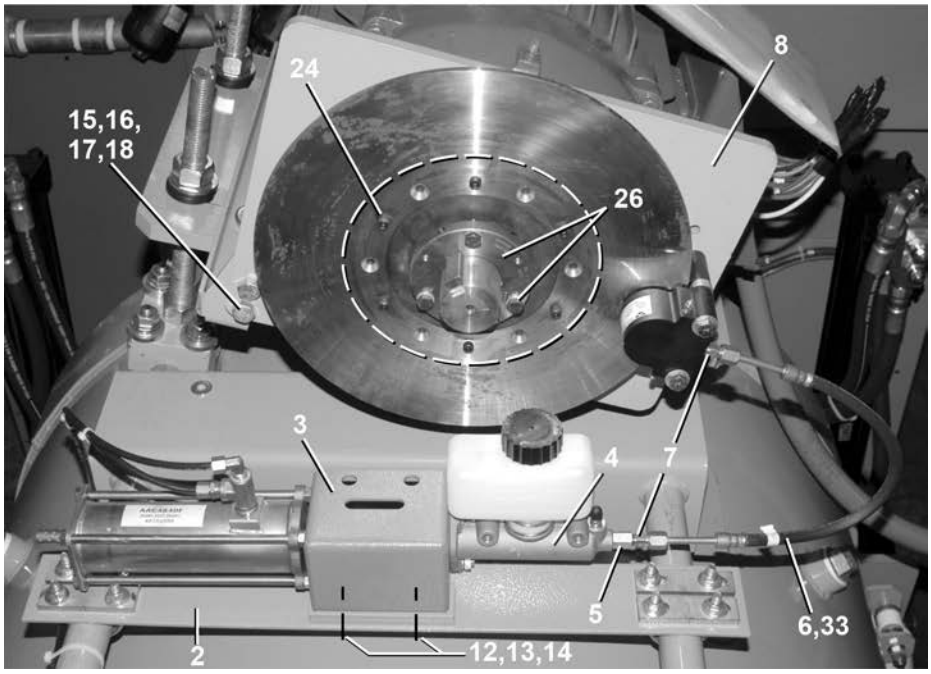
Disc Brake

4 Sheets

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

6836H5N Shown

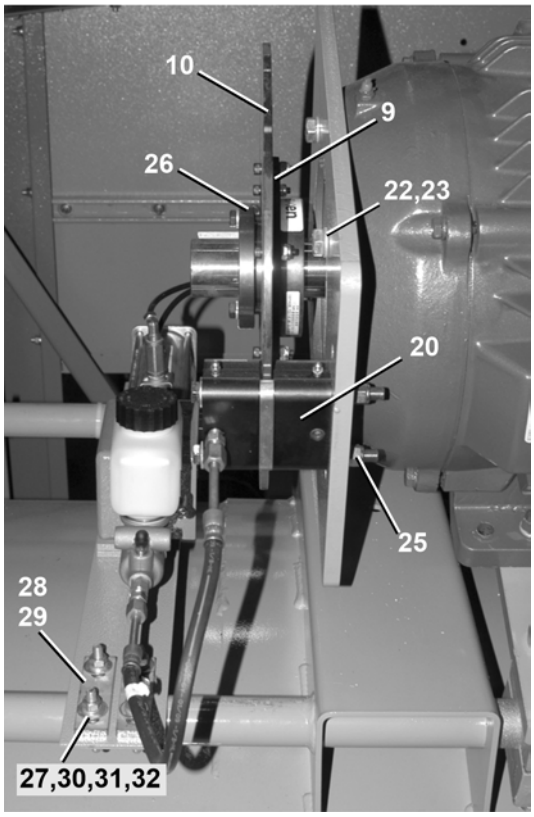




Disc Brake

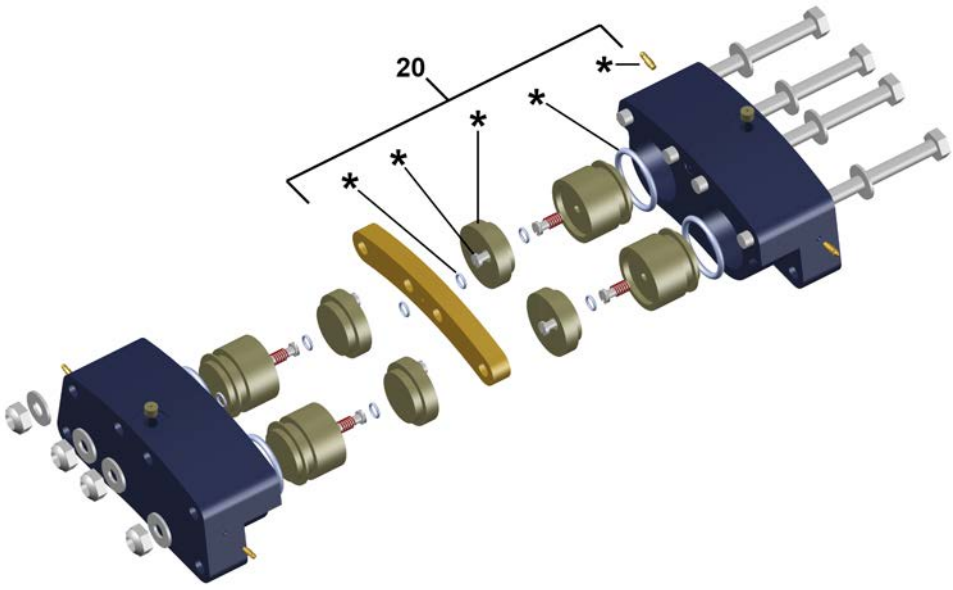
4 Sheets

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



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

Caliper Repair Kit



Disc Brake

4 Sheets

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

Table 21. 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 21 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	

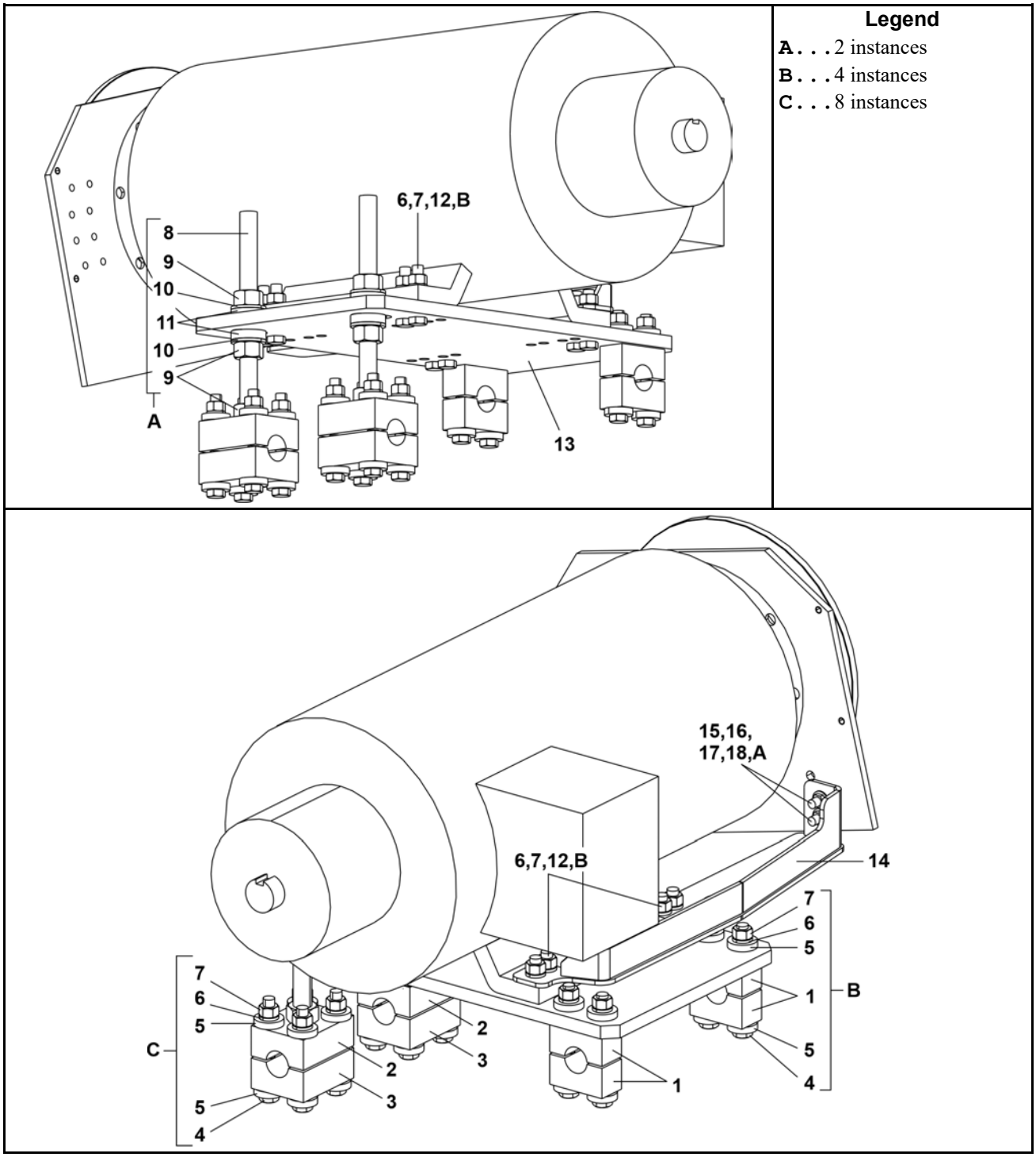
BPWH4I02 / 2021235 BPWH4I02.1 0000348158 C.2 A.4 6/4/21, 3:17 PM Released

Motor Mount

3 Sheets

48040M7K, 68036M5K

Figure 37. 68036M5K



Motor Mount

3 Sheets

48040M7K, 68036M5K

Figure 38. 48040M7K

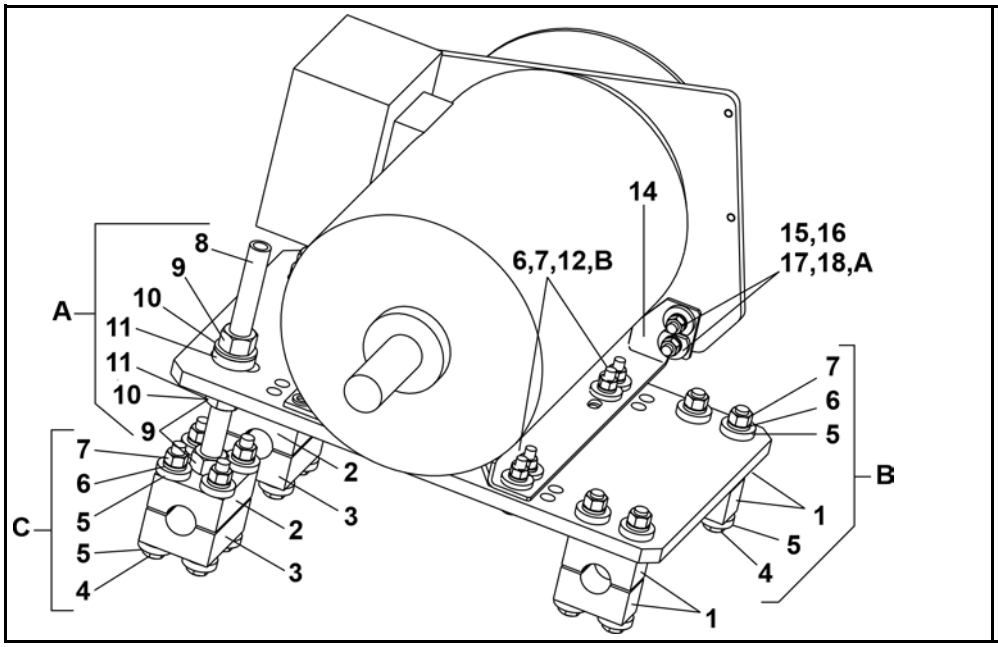


Table 22. Parts List—Motor Mount

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 22 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	

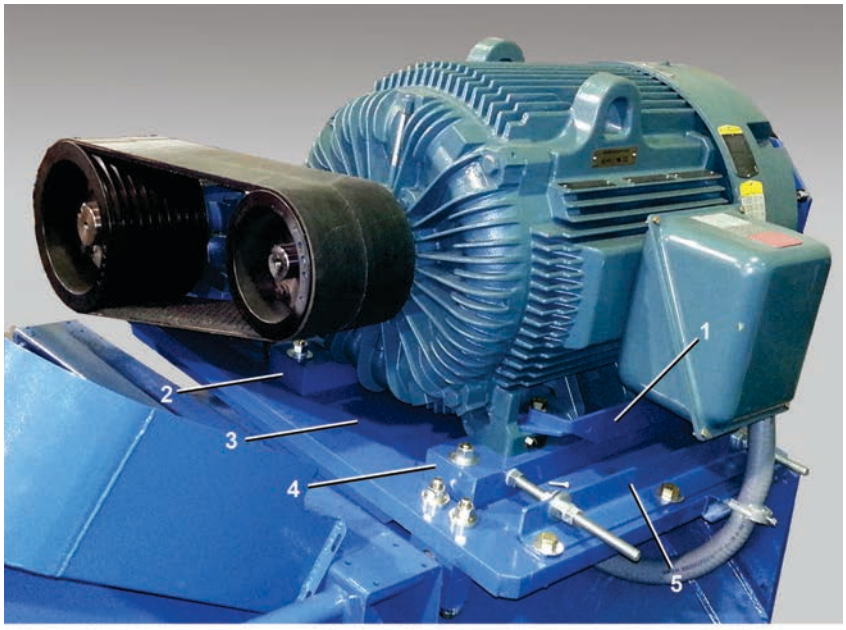
BPWH7I02 / 2021456 BPWH7I02.1 0000399394 C.2 A.4 11/8/21, 7:37 AM Released

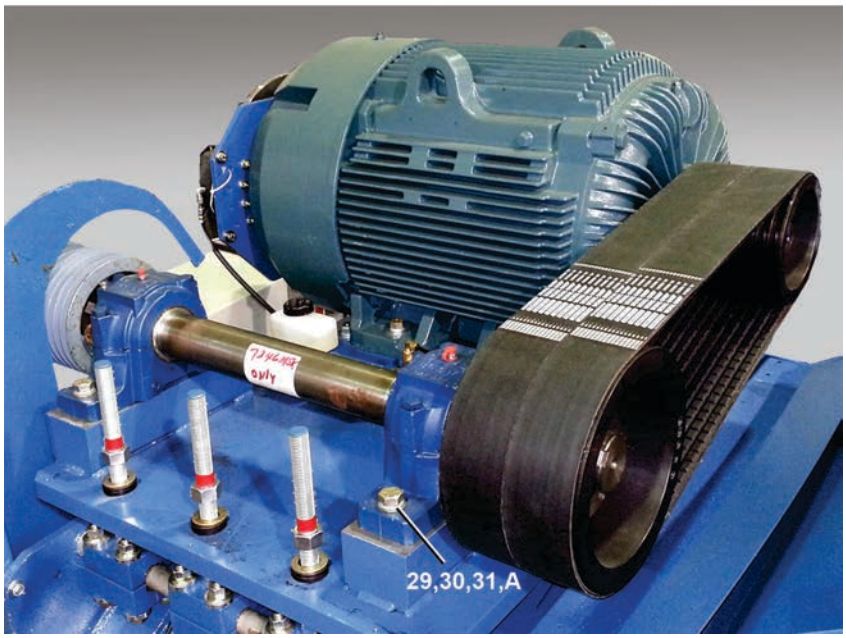
Motor Mount Assembly

3 Sheets

7246M5K

NOTE: Motor mount, torque arm, and jackshaft design used since 6/29/16. For prior design see BMP150037.





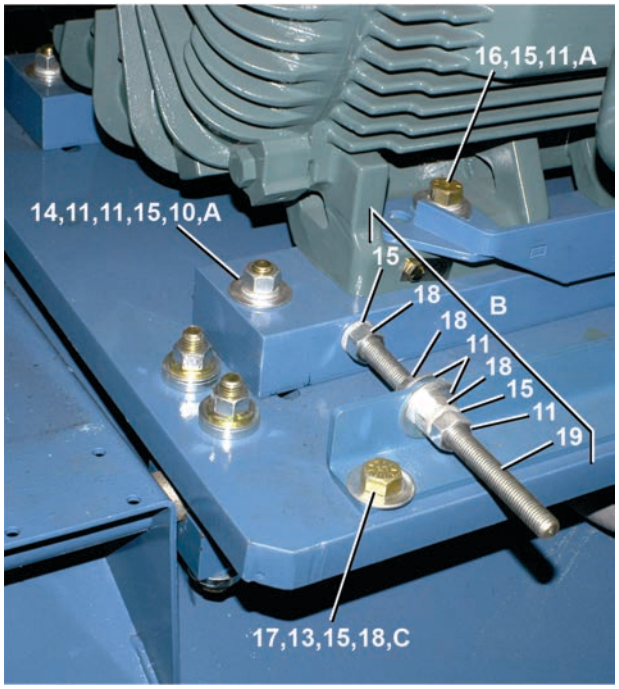
Legend

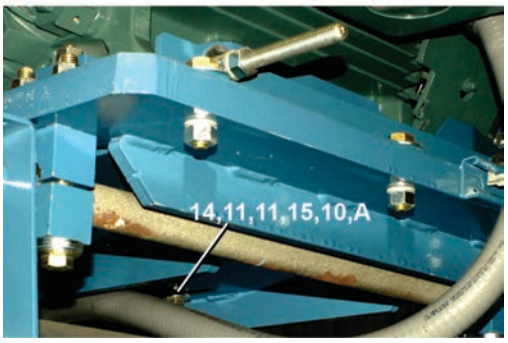
A . . . 4 instances

Motor Mount Assembly

3 Sheets

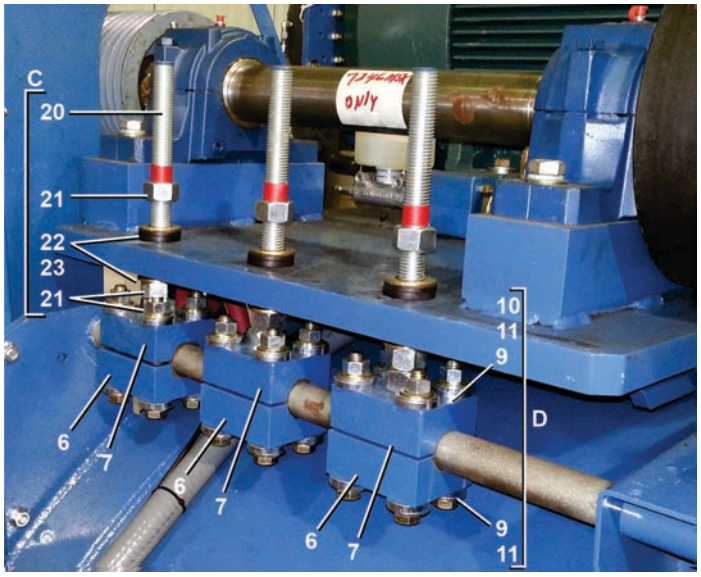
7246M5K

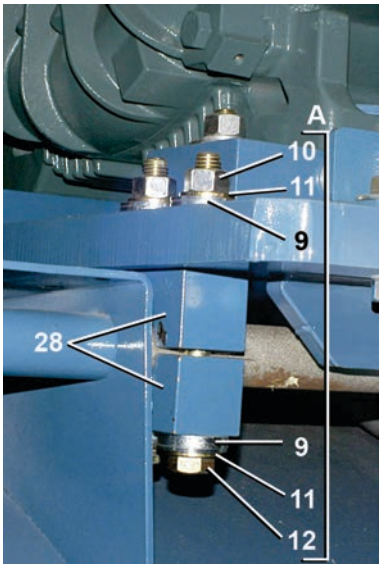




Jack Bolt Clamps

Pivot Clamps





Legend

A . . . 4 instances
B . . . 2 instances
C . . . 3 instances
D . . . 12 instances

Motor Mount Assembly

3 Sheets

7246M5K

Table 23. Parts List—Motor Mount Assembly

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	GDB72001	7246M5K DRIVE BASE INSTALL	REFERENCE
	B	ADB72001	7246M5K DRIVE BASE ASSY	REFERENCE
			Components	
all	1	W3 17142	BRAKE TEFC MOTOR TORQARM-4840M	
all	2	X2 25072A	7246M5K MOTOR MOUNT	
all	3	W2 25070A	7246M5K DR BASE WLMT	
all	4	X2 25072	7246M5K MOTOR MOUNT-ADJ	
all	5	02 25079	7246M5K MOTOR TENSION BRKTS	
all	6	C2 11311C	CAST=JACKBOLT CLAMP, 6836F	
all	7	X2 11311P	PAINT=JACKBOLT CLAMP, 6836F	
all	8	15K227B	HEXCAPSC 5/8-11X5.5 GR8 ZINC	
all	9	17W030	SPHERICAL WASHER SET 5/8 M/F	
all	10	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	11	15U316	FLTWASH 5/8 HARD ASTM F436	
all	12	15K227I	HEXCAPSCR 5/8-11 X 7 G8 Y ZN	
all	13	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	14	15K227A	HXCAPSCR 5/8-11X4.5 GR8 ZINC	
all	15	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	16	15K226L	HEXCAPSCW 5/8-11X3.5 GR8 ZINC	
all	17	15K225A	HEXCAPSCR 5/8-11X2.5 GR9 ZINC	
all	18	15G238B	HEXFINNUT 5/8-11UNC2 GR8 ZINC	
all	19	17R024A	THREADED ROD 5/8-11X11" ZINC P	
all	20	17R031A13A	THRD ROD 1-8 X 13" GR8 ZNPL	
all	21	15G250	HXNUT 1-8UNC2B SAE ZNC GR2	
all	22	15U393	FLTWASH 1" HARD ASTM F436	
all	23	17W060	SPHERICALWASHER SET 1" M/F	
all	24	15K171B	HEXCAPSCR 1/2-13X1+3/4 GR8 ZIN	
all	25	02 11603A	WASHER DBLR=2" W/CUTOFF SIDE	
all	26	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	27	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	28	02 11311B	MTR BASE PIVOT CLAMP	
all	29	15K235AB	HXCAPSCR 3/4-10UNC2AX3"GR8 ZIN	

Motor Mount Assembly

3 Sheets

7246M5K

Table 23 Parts List—Motor Mount Assembly (cont'd.)

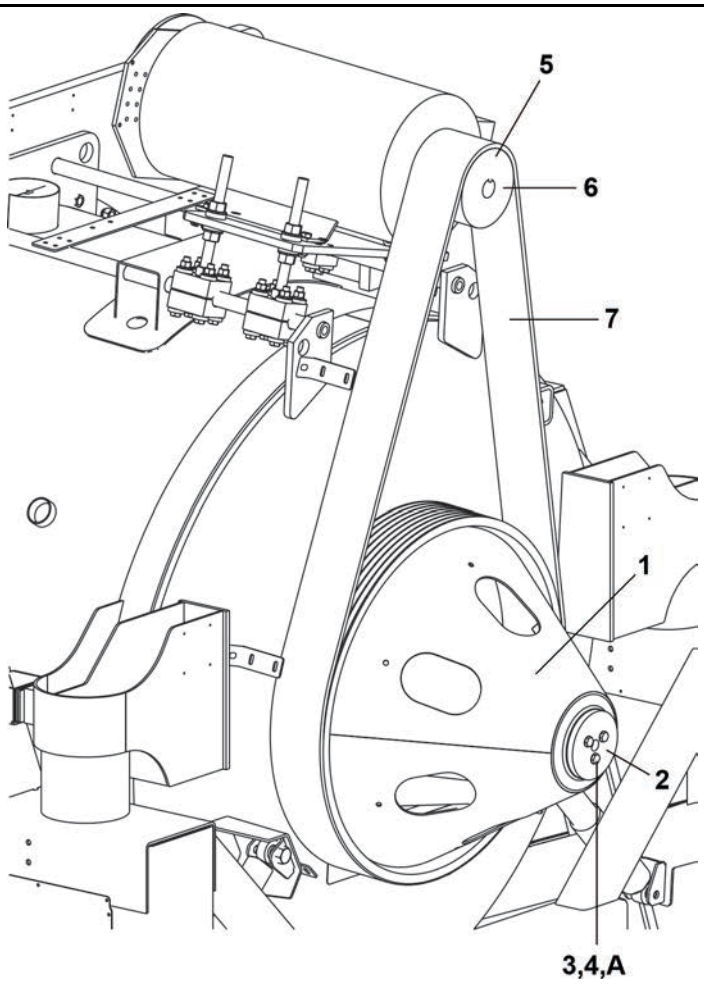
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	30	15U320	FLATWASHER(USS STD) 3/4" UNPLT	
all	31	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	

BPWH6I02 / 2021443 BPWH6I02.1 0000399297 A.3 C.2 10/26/21, 3:53 PM Released

Drive Chart

1 Sheet

6836M5K



Legend

A. . . 3 instances

Table 24. Parts List—Drive Chart

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	X2 04428A	MACH=PULLEY, FAB, 8 GROOVE	
all	2	X2 21923	PLATE=PULLEY PULL UP, 4840F	
all	3	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	4	15U321H	FLTWASH 3/4 HARD ASTM F436	
all	5	56050B8SK	VPUL 8G5.0B TYPE SK(MASKA 8B54) WT.14LBS	
all	6	56Q2CSK	2+1/8" BUSHING VPUL QD TYPE SK (SPLIT BUSHING)	
all	7	56VB171XB4	VBAND 4RBX171 EACH =1	

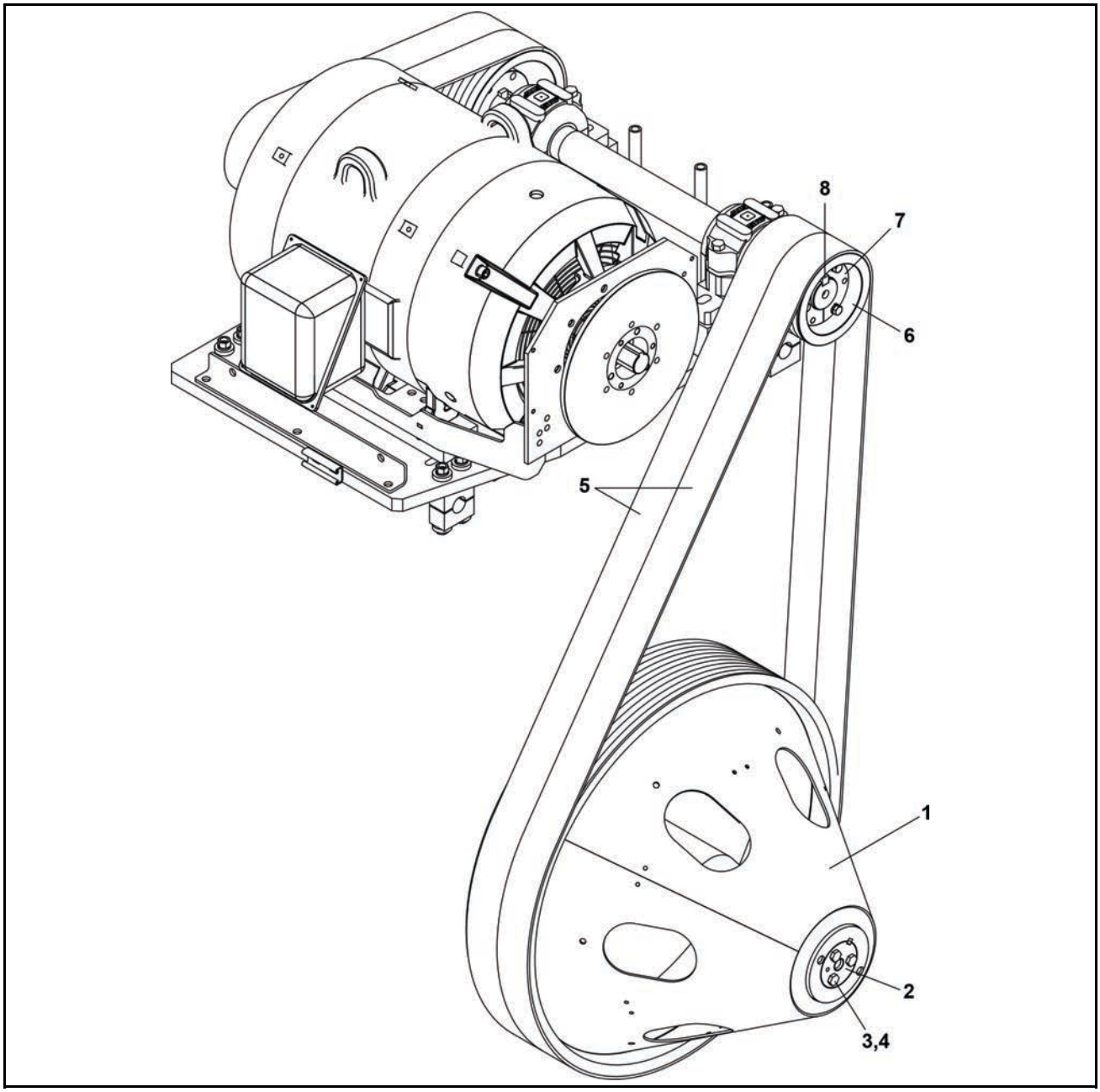
BPWH7I01 / 2021456 BPWH7I01.1 0000399399 C.2 A.4 11/8/21, 7:32 AM Released

Drive Chart

2 Sheets

7246M5K

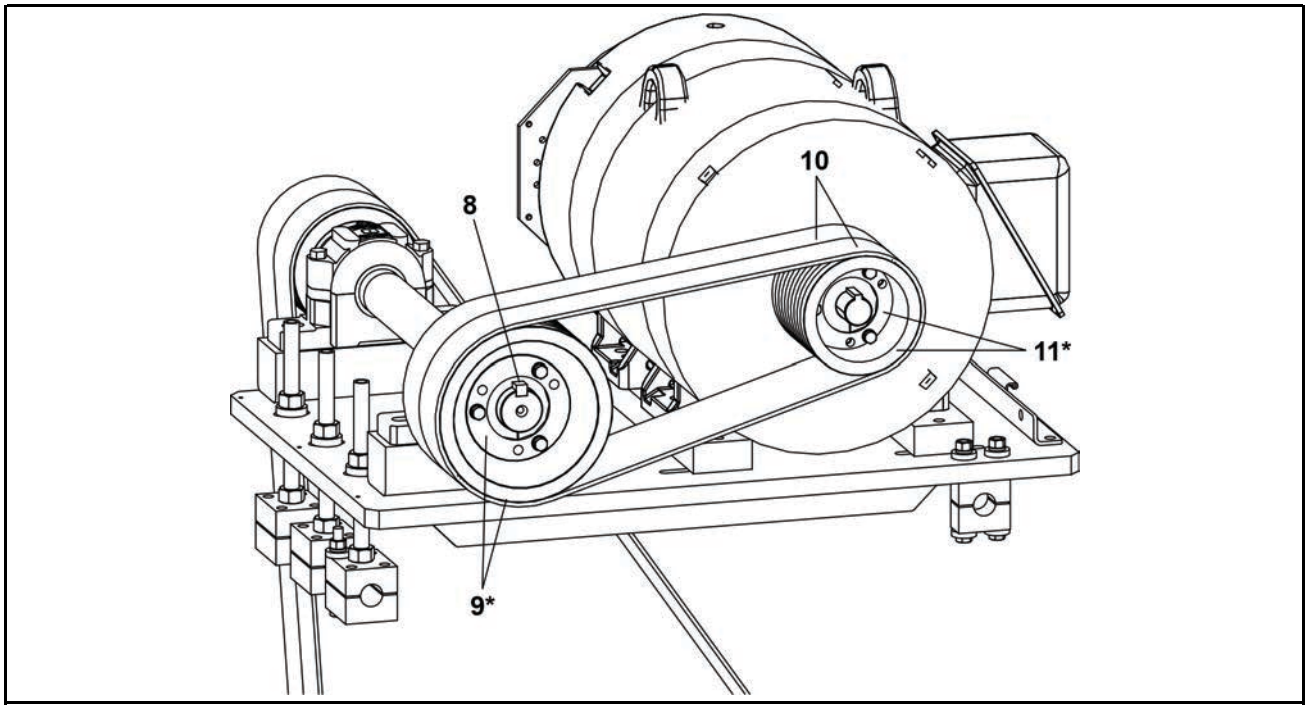
NOTE: This drawing is for 7246M5K models built after 6/29/16. For prior design see BMP150035.



Drive Chart

2 Sheets

7246M5K



*Pulley and bushing are a balanced set.

Table 25. Parts List—Drive Chart

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.

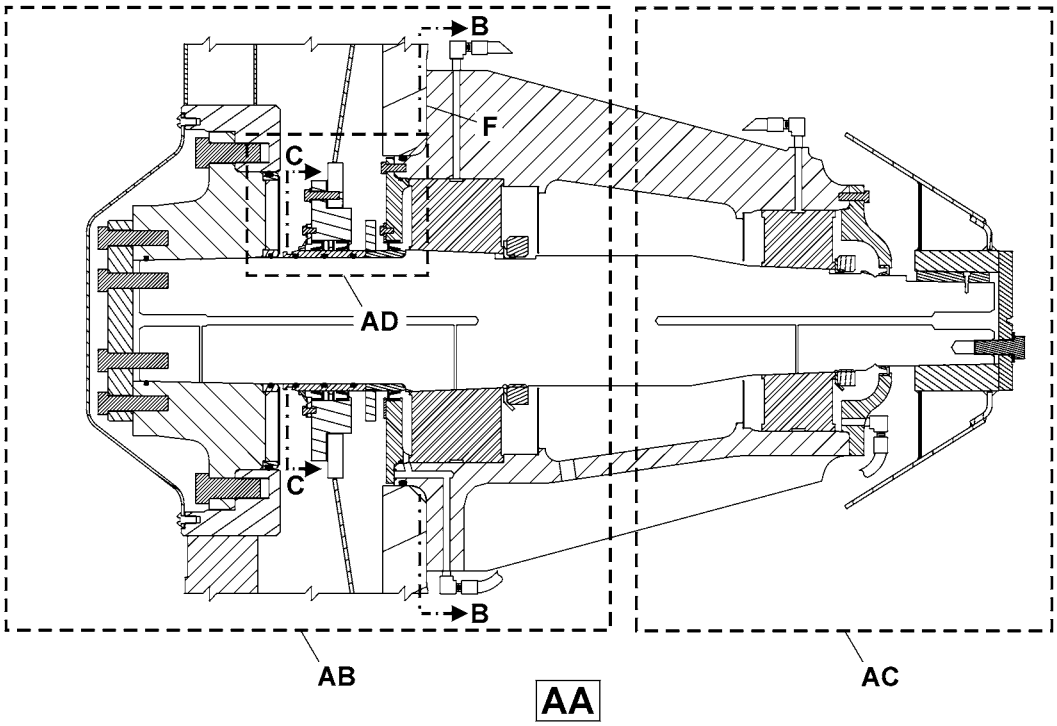
Used In	Item	Part Number	Description/Nomenclature	Comments
			Components	
all	1	X2 25071	7246M5K PULLEY, FAB, 10 GROOVE	
all	2	X2 21923	PLATE=PULLEY PULL UP, 4840F	
all	3	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	4	15U321H	FLTWASH 3/4 HARD ASTM F436	
all	5	56VS1800X5	VBAND 5VX1800, 5 RIB	
all	6	56Q2RE	2+7/8" BUSH VPUL QD TYPE E	
all	7	560840S10E	VPUL 10G5V8.4PD/8.50D E QD	
all	8	15E239	3/4" X 3/4" X 5.00" KEY	
all	9	56118S10FX	PULLEY 5V-10G-11.8" BALANCED 7500FPM	*INCLUDES F BUSHING
all	10	56VS780X5	VBAND 5VX780, 5 RIB EA=1 BELT	
all	11	56080S10EX	PULLEY 5V-10G-8" BALANCED 7500FPM	*INCLUDES E BUSHING

BPWH6B01 / 2019042A BPWH6B01.1 0000171095 C.2 D.5 3/22/22, 10:06 AM Released

Bearing Housing

6 Sheets

Figure 39. Overview Cylinder, Shell, Bearing and Pulley



Legend

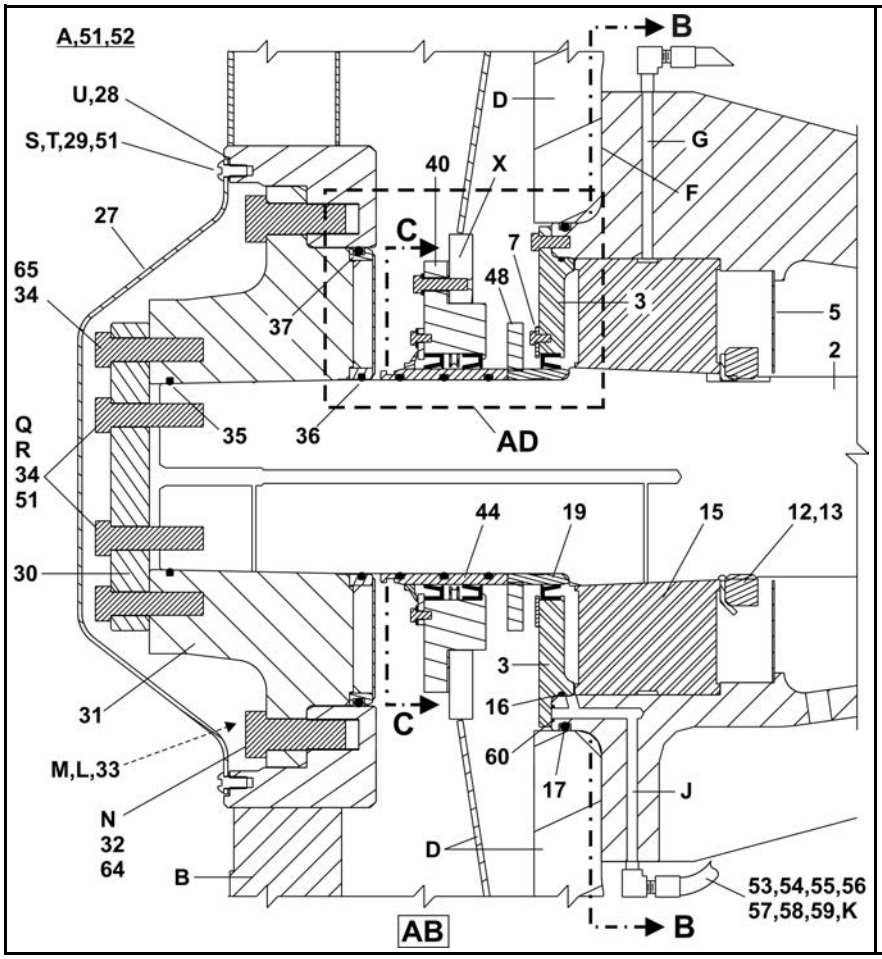
AA. Cross Section, Cylinder, Shell, Bearing and Pulley
AB. Cross Section, Detail view of the bearing housing front
AC. Cross Section, Detail view of the bearing housing rear
AD. Detailed view, Seal sleeve
F. Refer to the document, BPWH6B02

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Figure 40. Detail View of the Bearing Housing Front



Legend

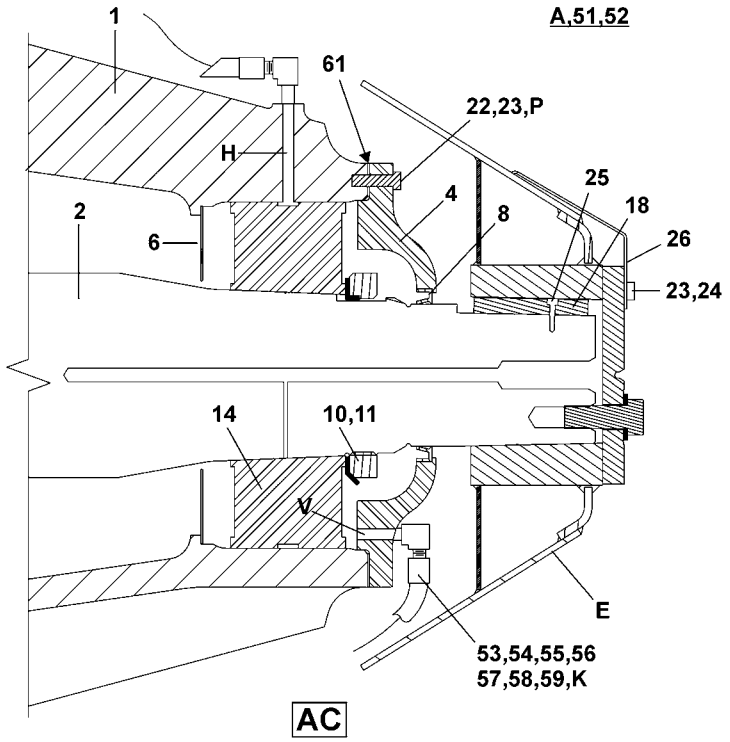
A.	Apply primer and adhesive to all bolts.
AB.	Cross section, Detail view of the bearing housing front
AD.	Detailed view, Seal sleeve.
B.	Cylinder
D	Shell rear
G.	Grease inlet for the front bearing
J.	Grease outlet for the front bearing
K.	5 instances
L.	not shown
M.	4 instances
N.	8 instances
Q.	12 instances
R.	Torque to 375+/- 10 Ft. Lbs.
S.	20 instances
T.	Torque to 8 +/- .5 Ft. Lbs or 96 +/- 5 In. Lbs.
U.	Apply silicone to the hub side of the gasket.
X.	Static ring of the shell rear

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

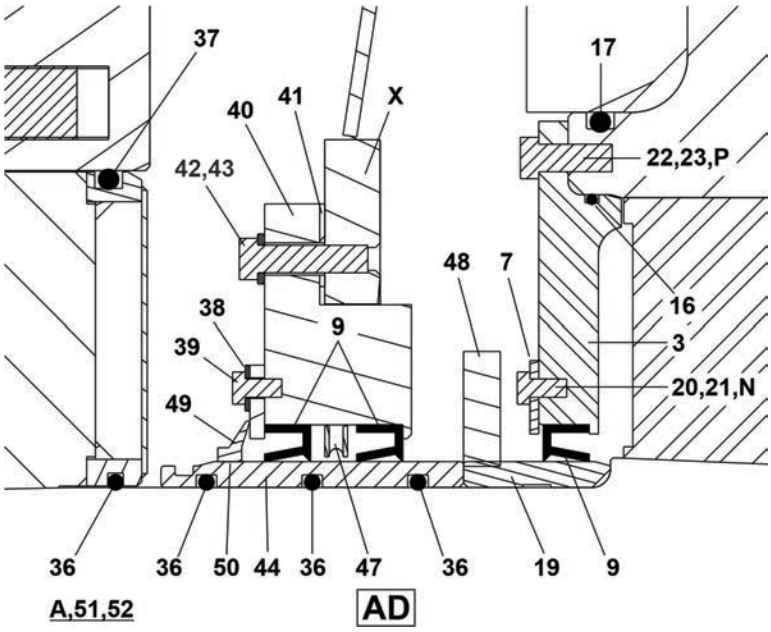
Figure 41. Detail View of the Bearing Housing Rear



Legend

A.	Apply primer and adhesive to all bolts.
AC.	Detailed view, Bearing housing rear
E.	Pulley
H.	Grease inlet for the rear bearing
J.	Grease outlet for the rear bearing
K.	instances 5
L.	not shown
M.	instances 4
P.	instances 10
V.	Grease outlet for the rear bearing

Figure 42. Seal Sleeve



Legend

A.	Apply primer and adhesive to all bolts.
AD.	Detail view, Seal sleeve
N.	instances 8
P.	instances 10
X.	Static ring of the shell rear

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Figure 43. Bearing Housing Lubrication and Air Ports

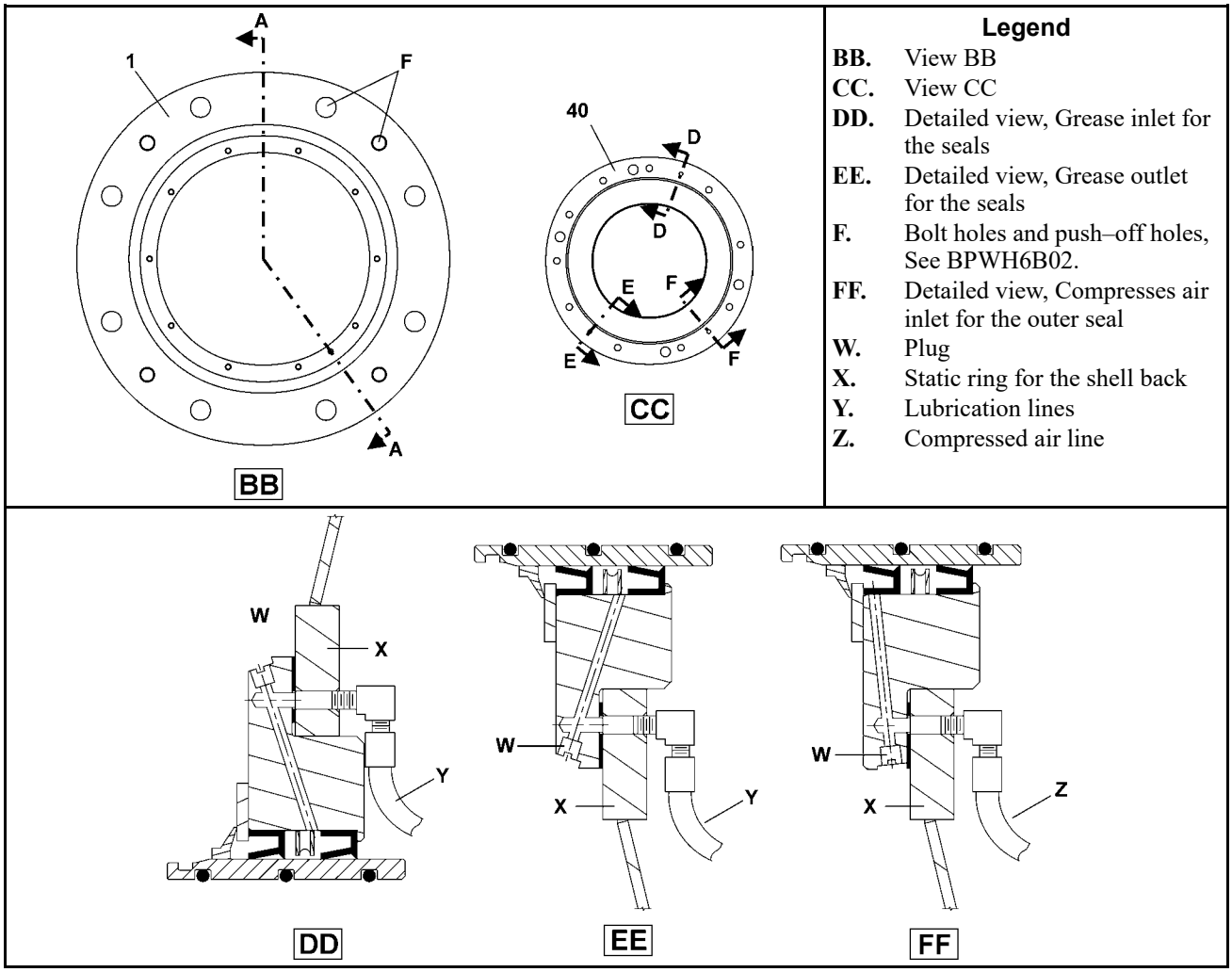


Table 26. Parts List—Bearing Housing

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	GBM6836E	INST=MAIN BRG HSE, 6836E	All Models
	B	ABM6836E	ASSY=BRN HOUSE, STD, 6836E	All Models
	C	ABM60010HS	PRTS=STNRD CYL/SHAFT MNT HUB	All Models
	D	ABM60010SS	PRTS=STANDARD FRONT SEALS	All Models
	E	ABM6836EV	ASSY=BRN HOUSE,VITON,6836E	Viton, All Models
	F	ABM60010HV	PRTS=VITON CYL/SHAFT MNT HUB	Viton, All Models

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 26 Parts List—Bearing Housing (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**
	G	ABM60010SV	PRTS=VITON FRONT SEALS	Viton, All Models
			Components	
all	1	X2 04390	MACH=BEARING HOUSING, 6836E	
all	2	X2 04391	MACH=MAIN SHAFT, 6836E	
all	3	X2 04392	MACH=FRONT SEAL HOLDER,6836E	
all	4	X2 04395	MACH=REAR SEAL HOLDER, 6836E	
all	5	02 04393	FRONT GREASE SHIELD, 6836E	
all	6	02 04394	REAR GREASE SHIELD, 6836E	
all	7	02 04396	SEAL RETAINER, HOUSING,6836E	
all	8	24S114	SEAL 4.5X5.5X.50 JM# 9170 LUP	
all	8	24S114V	SEAL 4.5X5.5X.50 JM#9170LUP-V	
B	9	24S130	SEAL 7.0X8.0X.625 JM#6862 NITR	
E	9	24S130V	SEAL 7.0X8.0X.625JM#19636LUPVI	
all	10	56AHN26	AN26 BEARING LOCKNUT	
all	11	56AHW26	W26 BEARING LOCKWASHER	
all	12	56AHN34	AN34 BEARING LOCKNUT	
all	13	56AHW34	W34 BEARING LOCKWASHER	
all	14	56S22326C3	SPHROLGRG SKF #22326 CCK/C3W33	
all	15	56S22334C4	SPHROLGRG SKF#22334 CCK/C4W33	
B	16	60C280	ORING 14.0ID 1/8CS BN70-280	
E	16	60C280V	ORING 14.0ID 1/8CS VITON-280	
all	17	60C461	ORING 16.0ID 1/4CS BN70-461	
all	18	X2 21816	MACH=PULLEY KEY, 4840F	
all	19	X3 60084	SLEEVE=GREASE SEAL PRESSFIT	
all	20	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	21	15N158	HEXCAPSCR 1/4-20NCX1/2SS18-8	
all	22	15K095B	HEXCAPSCR 3/8-16X1" GRADE8 ZIN	
all	23	15U240L9	FLTWASH 3/8 HARD ASTM F436	
all	24	15K095C	HXCAPSCR 3/8-16X1.25 GR.8 ZN.	
all	25	15N091	PANHDMACHSCR 8/32UNC2X1/2 S/S	
all	26	02 04456	PULLEY PHOTOEYE BRKT, 6836E	
all	27	X3 60085	COVER CYL/SHAFT MNT HUB	
all	28	03 60085A	GASKT=CVR CYL/SHT HUB	
all	29	15K086E	BUTSOKCAPSCR 3/8-16X3/4SS NYPT	

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 26 Parts List—Bearing Housing (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	30	X3 60089	MACH=WASHER CYL/SHAFT MNT HUB	
all	31	Y3 60082R	MACH=CYL/SHFT MNT HUB-REMAN	
all	32	15K235K	HEXCAPSCR 1-14X3 GR 8 ZINC	
all	33	15Q125A	GRUB SCREW NYLON 1-8X5/8	
all	34	15K233A	HEXCAPSCR 3/4-16X2.5 GR8 ZINC	
B	35	60C159W	ORING 6.0ID 3/16CS BUNA70#361	
E	35	60C159X	ORING 6.0IDX3/16 VITON70 -361	
B	36	60C160DB	ORING 6.25ID3/16CS BUNA70 -362	
E	36	60C160DV	ORING 6.25ID3/16CS VITON70#362	
B	37	60C190	ORING 14.0ID 1/4CS BUNA70-457	
E	37	60C190D	ORING 14.0ID 1/4CS VITON -457	
all	38	X3 60088	MACH=EXCLUDER WEAR PLT	
all	39	15K031A	BUTSOKLOKCAPSCR 1/4-20X1/2 188	
all	40	X3 60087	MACH=FRONT SEAL HOLDER	
all	41	03 60087A	GSKT=FRNT SEAL HOLDER	
all	42	15U250	SEALWASHER 3/8" S/S PARKER #60	
all	43	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	44	X3 60084A	SLEEVE=H2O SEAL O-RING	
all	47	24S130LR	LANTERN RING=7X8X.313	
all	48	03 60106	SLINGER=BRG FRNT SEALS	
B	49	24S146	SEAL 7.0X8.0X.437 TYPE SSW NIT	
E	49	24S146V	SEAL 7.0X8.0X.437 TYPE SSW VIT	
all	50	20C003A	ADHESIVE BLK MAX 1OZ LOC#38050	
all	51	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	52	20C006N	PRIMER LOCQUIC-N 60Z #76456	
all	53	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	54	53A501	TUBE INSERT.163"OD #63PT-4-40	
all	55	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	56	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	57	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	58	53A007B	BODYFEMCON.25X.25COMP#B66A-4B	
all	59	60E004TC	TUBING NYL(NAT)1/4"ODX.17ID	
all	60	60C107	ORING 3/8ID 1/16CS BUNA70#012	
all	61	03 17190	GASKET=REAR SEAL, 4840M7	

Bearing Housing

6 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 26 Parts List—Bearing Housing (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	62	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	63	5SP0CBEHS	NPT PLUG 1/8 HXCTRSNK BRASS	
all	64	15U393	FLTWASH 1" HARD ASTM F436	
all	65	15U321H	FLTWASH 3/4 HARD ASTM F436	

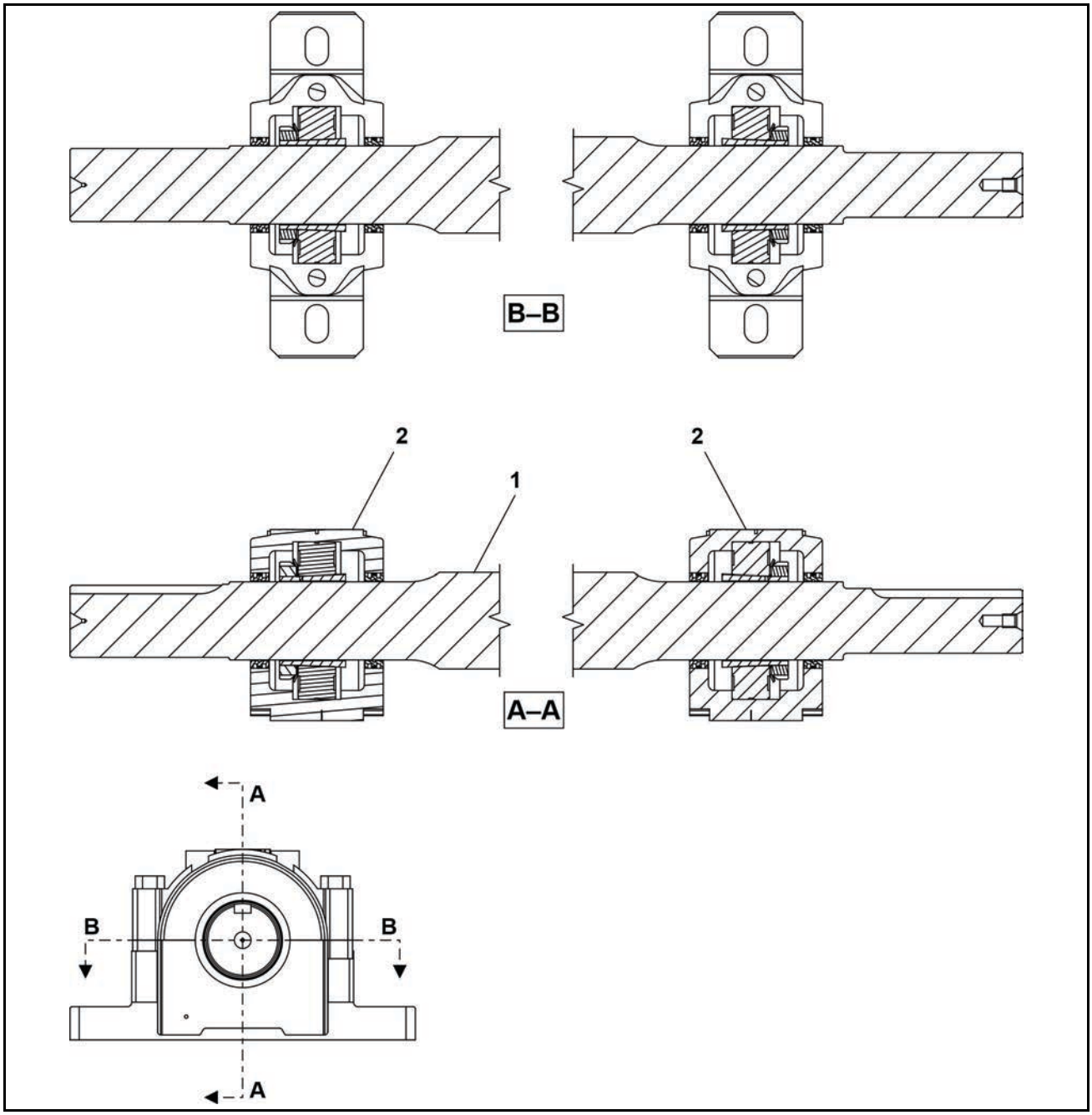
This page intentionally blank

BPWH7I03 / 2021456 BPWH7I03.1 0000399676 C.2 A.4 11/8/21, 7:42 AM Released

Jackshaft

2 Sheets

7246M5K



Jackshaft

2 Sheets

7246M5K

Table 27. Parts List—Jackshaft

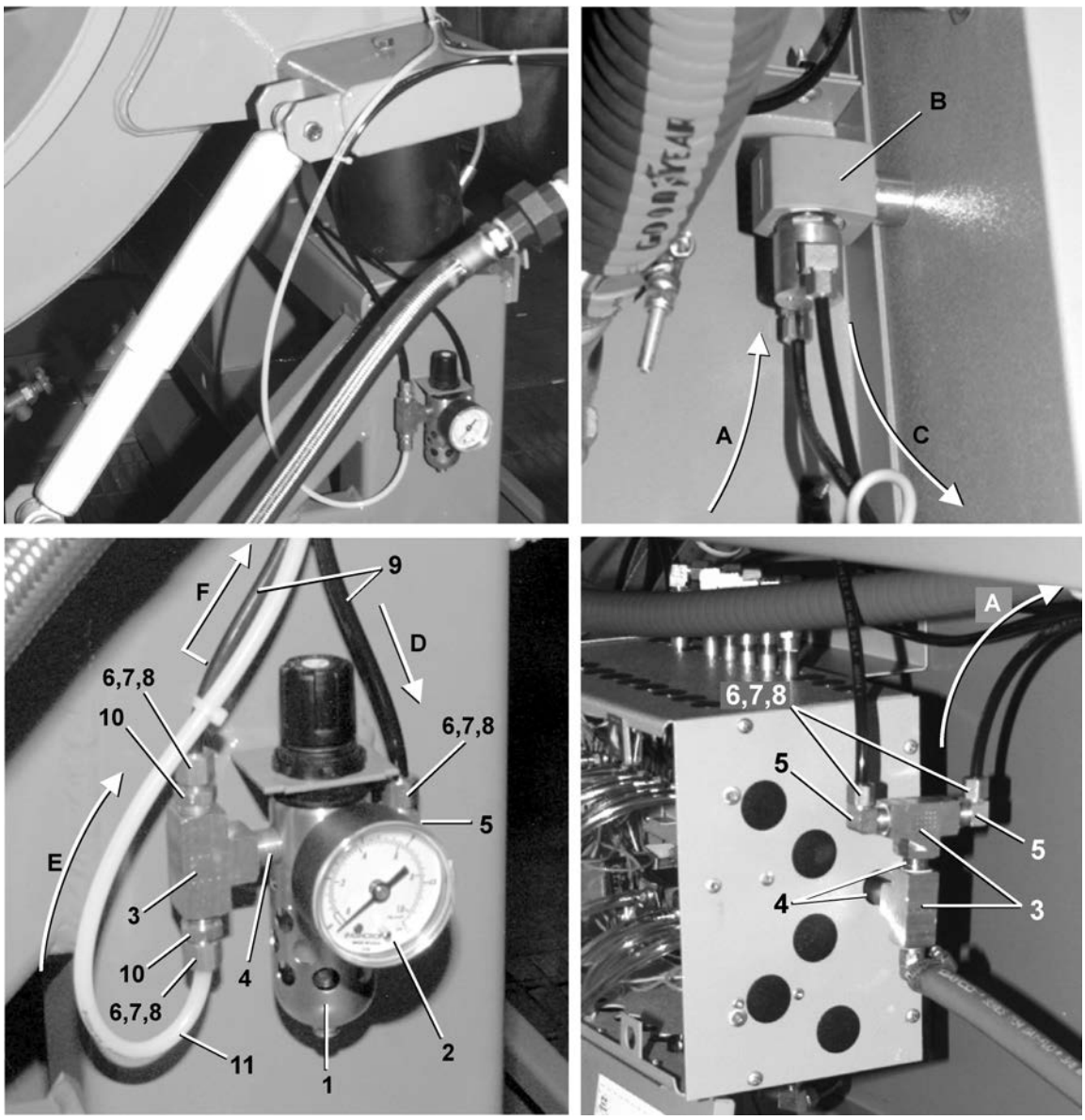
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ABJ25008A	7246M5K JACKSHAFT-PILLOW BLK BRG	7246M5K SHAFT WITH PILLOW BLOCK BEARING, EFFECTIVE 6/21/16
Components				
all	1	X2 25077A	7246M5K JACKSHAFT: PILLOW BLOCK/SPHRCL	
all	2	56S22217A	SPHEROLBRG 22217EK/C3 SAF517 PILLOW BLK 3.346"ID	

BPWH6B02 / 2018064A BPWH6B02.1 0000176010 C.2 B.5 3/17/22, 11:01 AM Released

Air Inject

2 Sheet

Figure 44. Air Flow Components



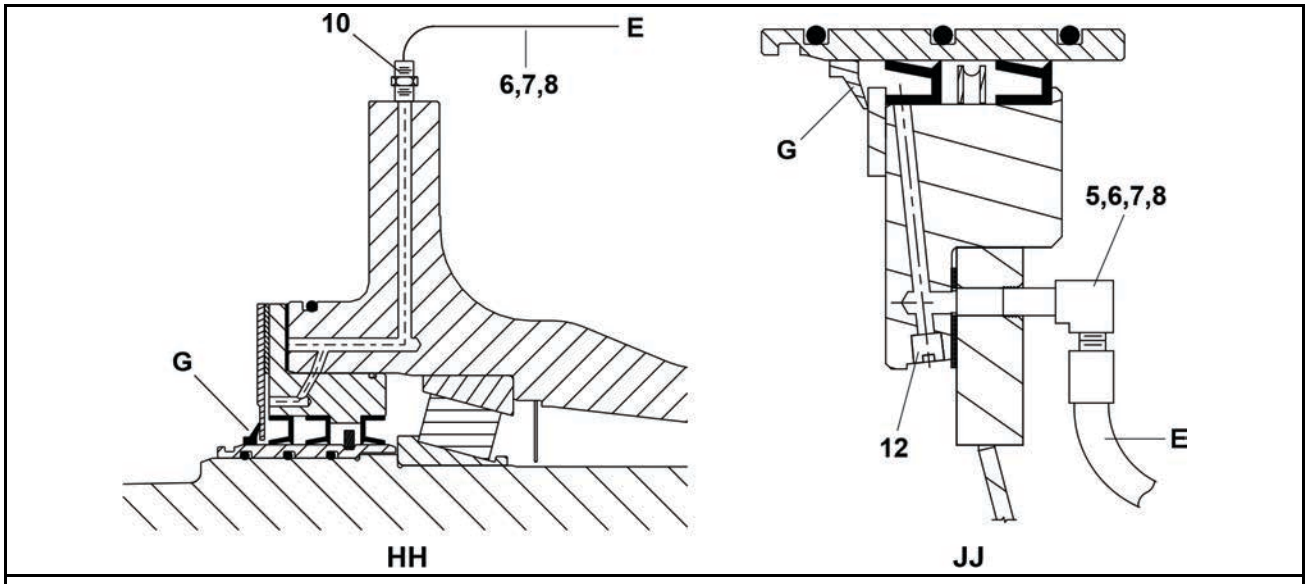
Legend

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 Sheet

Figure 45. Air Flow in the Bearing Housing



Legend

E. Compressed air to the outer seal.
G. Outer seal
HH. Cross section view of the bearing's air port (Models: 48040F7N, F7B, F7W, F7N)
JJ. Cross section view of the bearing's air port (Models: 68036F5N, H5N, H5K, M5K & 72046M5K)

Table 28. 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
Assemblies				
	A	AIR58003	AIR58003 AIR INJECT ASSY=BNG HOUSE	
Components				
all	1	96J019G	96J019G 1/4"FILTERREG 0-60PSI	
all	2	30N095	30N095 PRESSGAUGE 1/8"BACKCN.0-15PSI	
all	3	51V015	51V015 TEE 1/4 FGDBRASS 101T7-444	
all	4	5N0ECLSBE2	5N0ECLSBE2 NPT NIP 1/4XCLS TBE BRASS 125#	
all	5	53A031B	53A031B BODY-EL90MALE.25X1/8 #269C-42B	
all	6	53A059A	53A059A NUT 1/4"BR.HOLYOKE AND #61A-4	
all	7	53A500	53A500 SLEEVE DELRIN 1/4"OD#60PT-4	
all	8	53A501	53A501 TUBE INSERT .163"OD #63PT-4-40	
all	9	60E004TE	60E004TE 1/4"OD X.170"ID NYL(BLK)TUBING	
all	10	53A005B	53A005B BODYMALCON1/4X1/8COMP #B68A-4A	
all	11	60E004TC	60E004TC TUBING NYL(NAT)1/4"ODX.17ID	

5 Frame and Tilt

This page intentionally blank

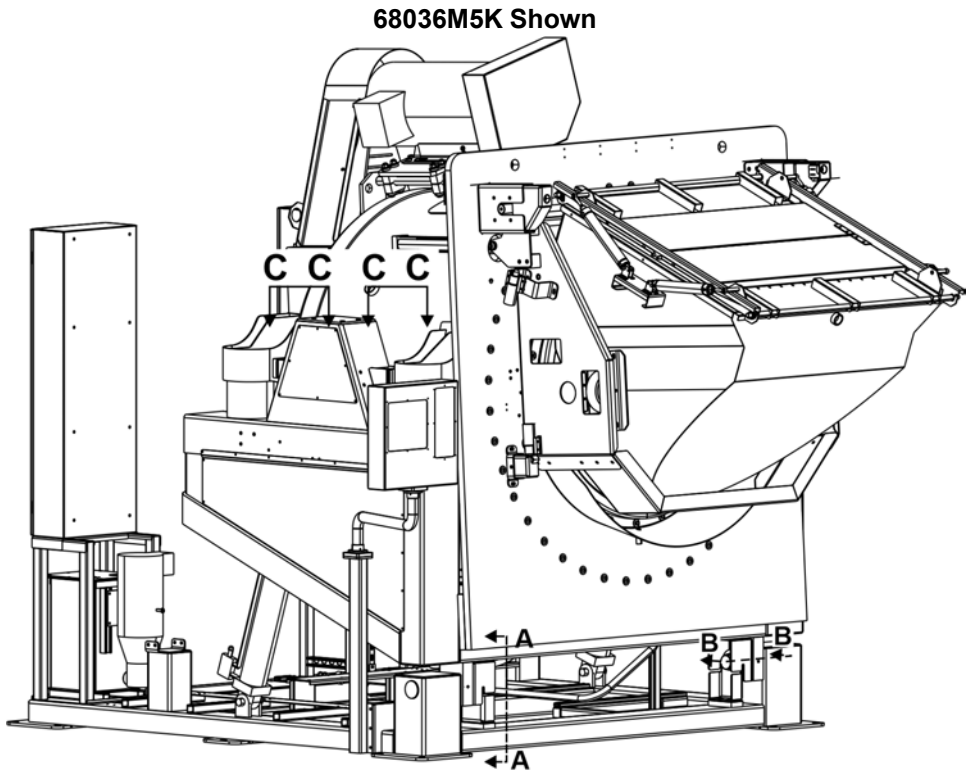
BPWHUF01 / 2021244 BPWHUF01.1 0000349698 C.2 A.4 6/9/21, 4:02 PM Released

Frame Pivots and Tilt Stops

4 Sheets

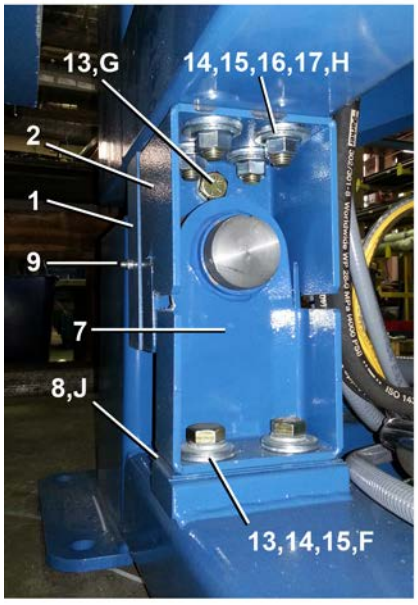
48040M7K, 68036M5K, 72046M5K

Figure 46. Frame Pivots

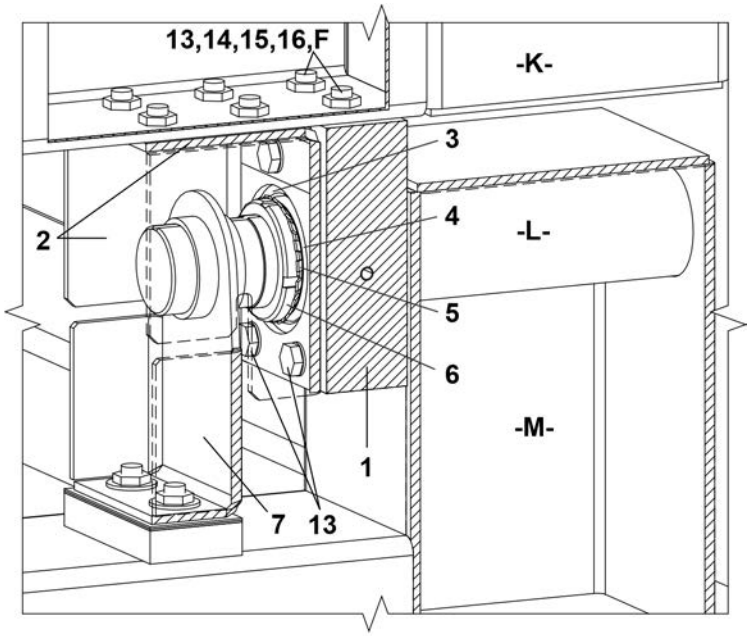


Legend

- **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

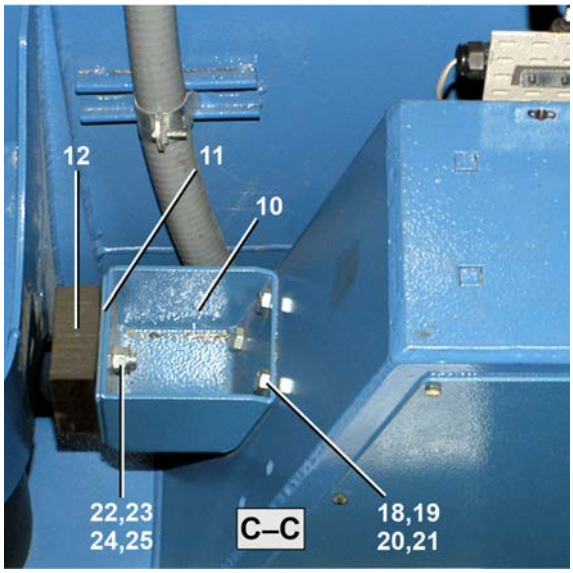
Frame Pivots and Tilt Stops

4 Sheets

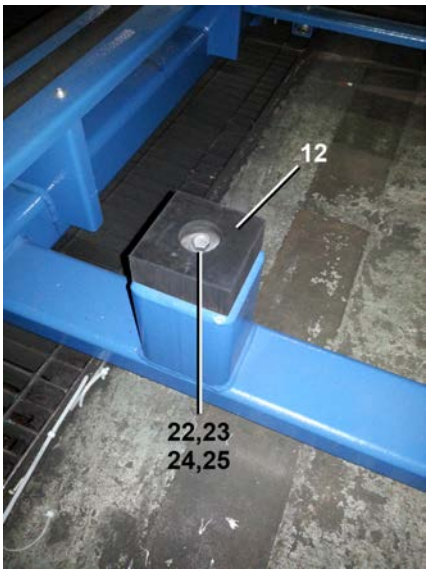
48040M7K, 68036M5K, 72046M5K

Figure 47. Tilt Stops

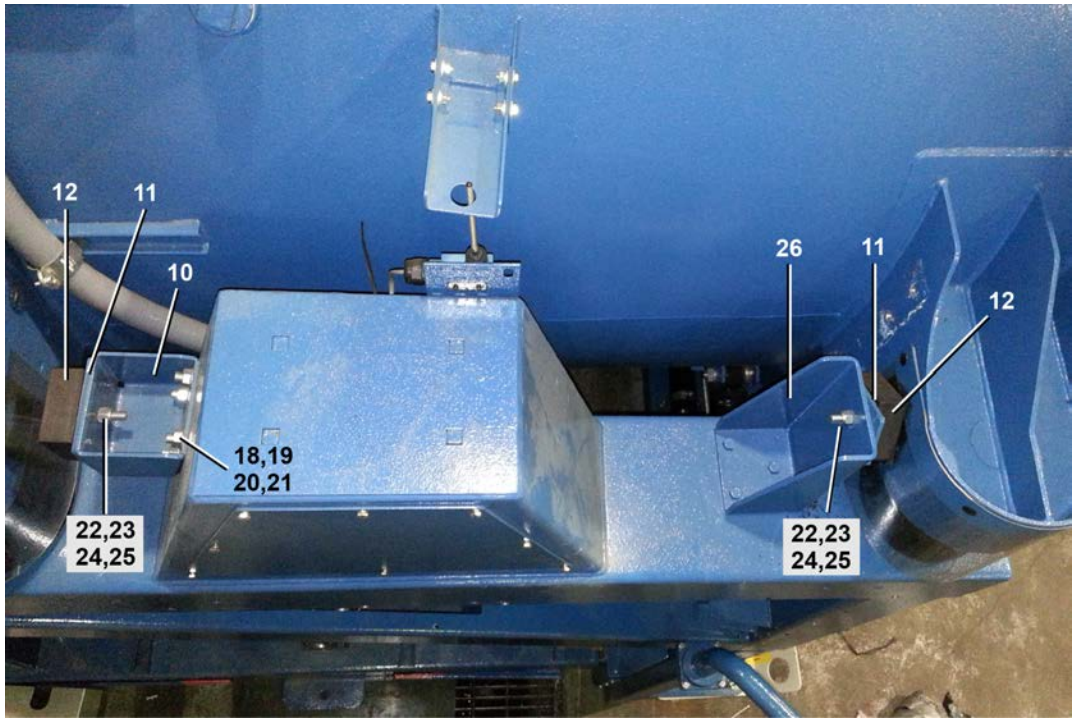
Tilt stops 68036M5K



Center back tilt stop



Tilt Stops 72046M5K



Legend

C–C . . Detail view

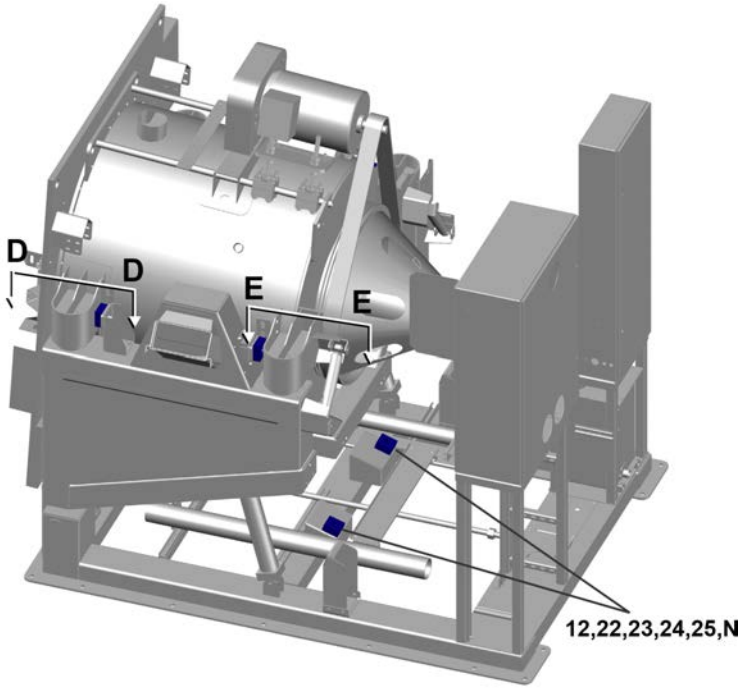
Frame Pivots and Tilt Stops

4 Sheets

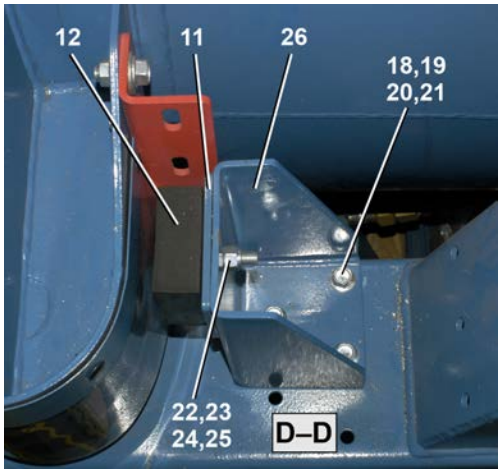
48040M7K, 68036M5K, 72046M5K

Figure 48. Tilt Stops

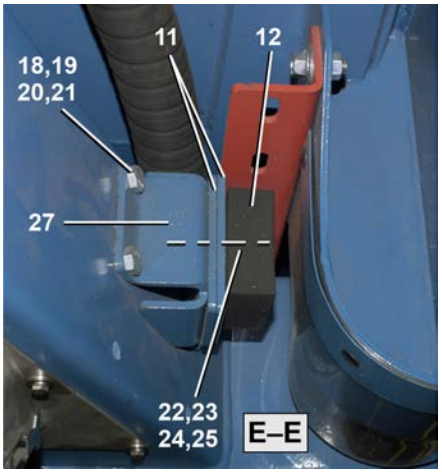
48040M7K Shown



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 29. 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	

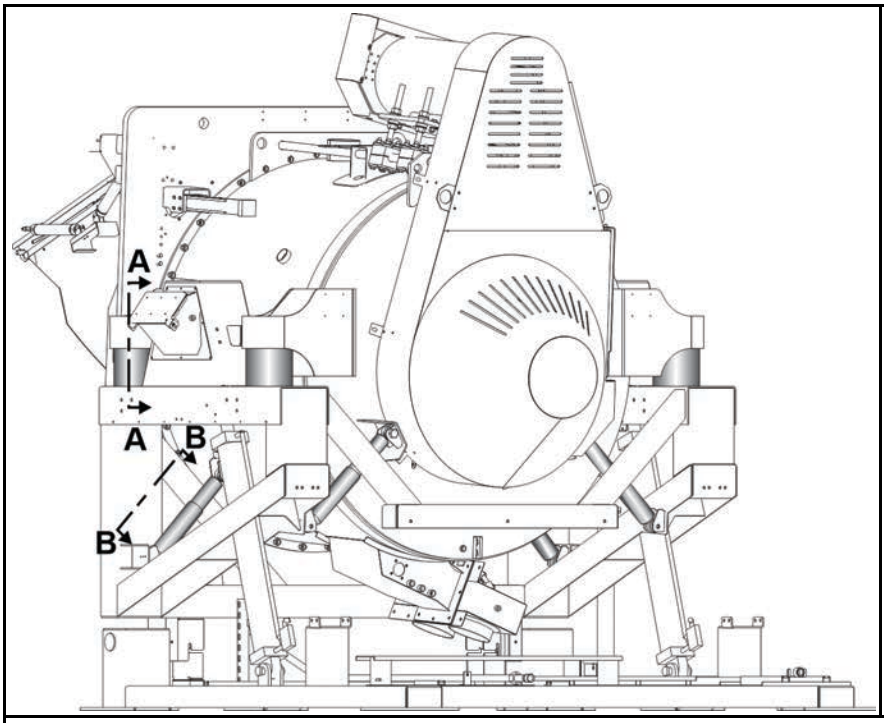
BPWHUF02 / 2021263 BPWHUF02.1 0000350840 C.2 A.5 6/24/21, 8:40 AM Released

Suspension: Marshmellow Springs and Shocks

3 Sheets

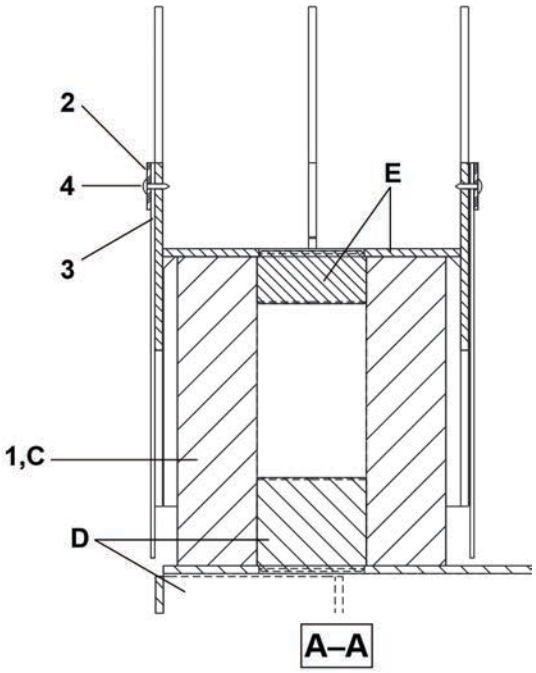
48040M7K, 68036M5K, 72046M5K

Figure 49. Marshmellow Springs



Legend

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

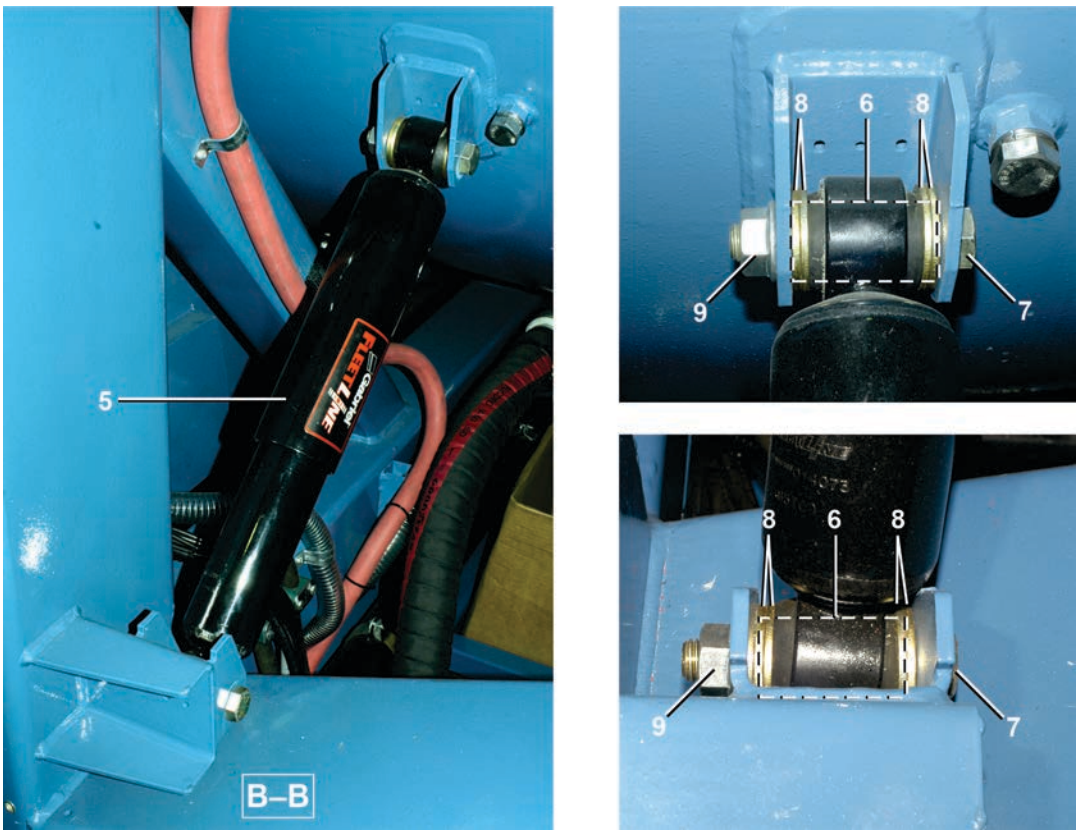


Suspension: Marshmellow Springs and Shocks

3 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 50. Shock Absorbers



Legend

B–B . . Shock Absorbers (4 instances)

Table 30. 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 30 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

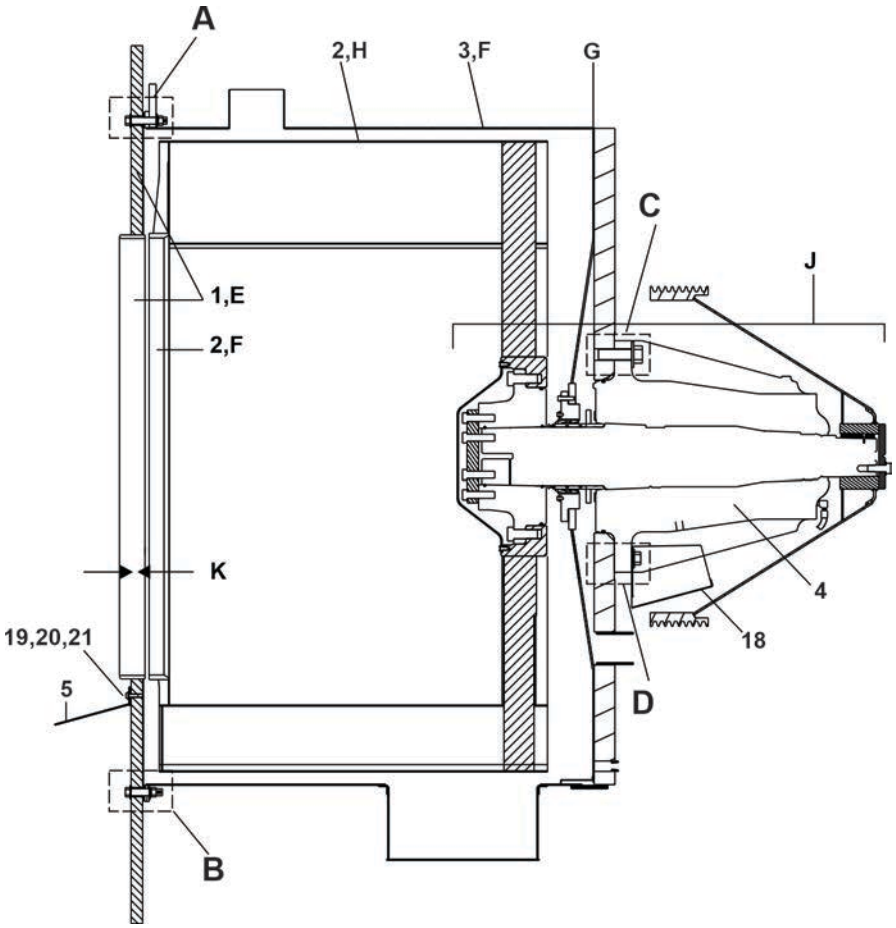
BPWH6Y01 / 2021472 BPWH6Y01.1 0000399673 C.2 A.7 11/16/21, 8:26 AM Released

Cylinder Installation

4 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Cross Section



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, top
D . . . Detailed view, connection between the shell rear and the bearing housing, bottom
E . . . Shell front
F . . . Cylinder
G . . . Shell rear
H . . . Shell
J . . . Cylinder and bearing installation, see the document BPWH6B01.
K . . . This dimension must be in this range: 0.3125 inches [8mm] - 0.375 inches [10mm].

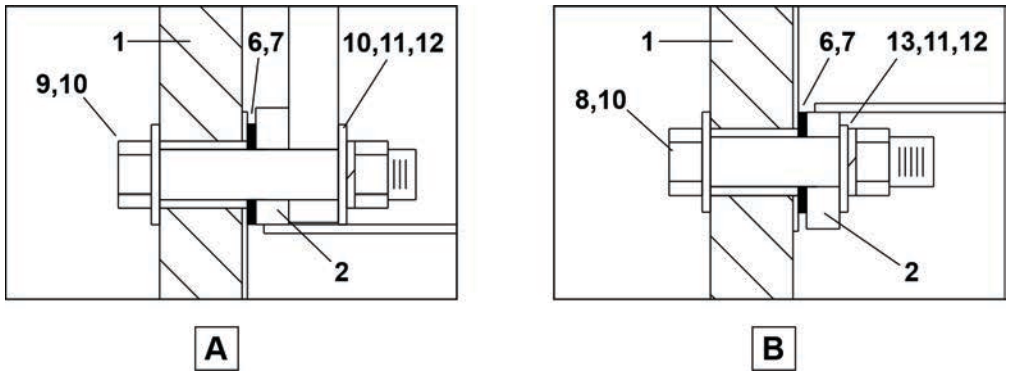
Cylinder Installation

4 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Figure 51. Shell Front, Shell, Cylinder

Detail Views



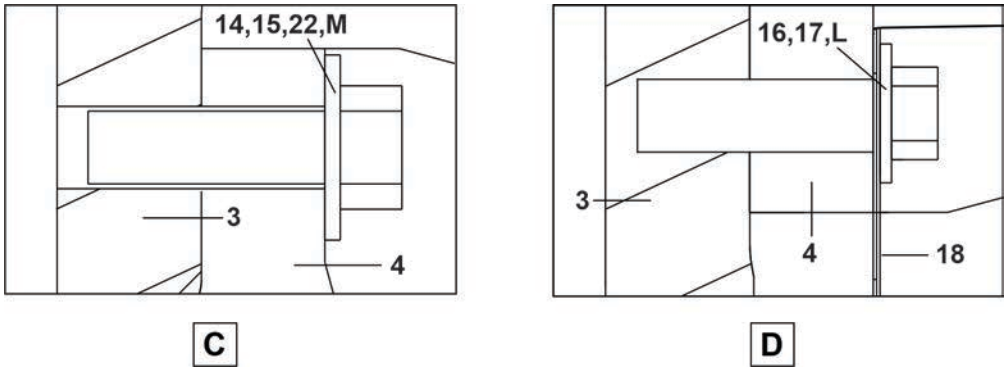
Legend

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

Figure 52. Shell Rear, Bearing Housing

Detail Views



Legend

C . . . Detailed view, connection between the shell rear and the bearing housing, top

D . . . Detailed view, connection between the shell rear and the bearing housing, bottom

L . . . 2 instances

M . . . 8 instances

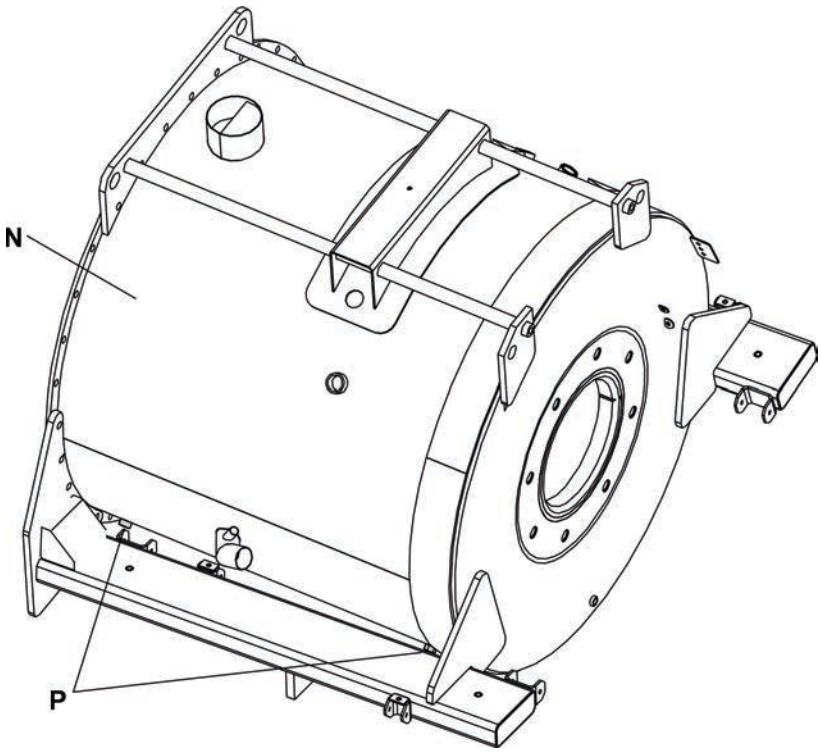
Cylinder Installation

4 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Figure 53. Shell

Top View



Legend

N . . . Shell

P . . . There are 4 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 31. 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	GSF68002	INST=SHELLFRNT W/48DOOR, 6836	68036F5N/H5K/M5K
	B	GSF72001	7246M5K SHELLFRONT INSTALL	72046M5K
Components				
A	1	W2 04445A	WLMT=SHELL FRNT 48-DR, 6836	
B	1	W2 25045	7246M5K SHELLFRONT WLMT	
A	2	ACA6836LDS	ASSY=CYL NO-BAL 48"DR, 6836F	
B	2	ACA7246M5K	7246M5K CYLINDER ASSEMBLY	
A	3	W2 04430A	WLMT=SHELL NO-BAL, 6836F	

Cylinder Installation

4 Sheets

68036F5N, 68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 31 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
B	3	W2 25020A	7246M5K JACK SHELL WELDMENT	
AB	4	GBM6836E	INST=MAIN BRG HSE, 6836E	
all	5	W3 65338A	*WLMT=LOAD/UNLOAD SCOOP W/TUB	
A	6	02 04449A	GSKT=73+1/2BC 6836 1/16 THK	
B	6	02 25049A	7246M5K SHELLFRONT GASKET=1/16" THK	
A	7	02 04449B	GSKT=73+1/2BC 6836 1/8 THK	
B	7	02 25049	7246M5K SHELLFRONT GASKET=1/8" THK	
all	8	15B211	HXCAPSCR 3/4-10X3+1/2 GRD.8 ZN	24 PLACES
all	9A	15K235CA	HXCAPSCR 3/4-10X4 GR8 ZINC	15 PLACES
all	9B	15K235G	HEXCAPSCR 3/4-10UNC2AX5" GR8	1 PLACE
all	10	15U492	FLTWSH1+15/32ODX13/16IDX.125ZC	
all	11	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	12	15G240	HXNUT 3/4-10UNC2B SAE ZINC GR2	
all	13	15U494	3/4SAE CLPFW.812IDX1.5ODX.135T	
all	14	15K309	HEXCAPSCR 1.25-7UNC X 4.0 ZINC	
all	15	15U600	FLTWASH 1+1/4 HARD ASTM F436	
all	16	15U393	FLTWASH 1" HARD ASTM F436	
all	17	15K255ZN	HXCPSCR1"-8UNCX1.5"L GR5 ZNPLT	
all	18	02 04398	SHIELD=BEARING DRIP, 6836E	
all	19	15U241	FLATWASHER 13/32IDX1+3/4ODX14G	
all	20	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	21	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	22	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	

7 Door Assemblies

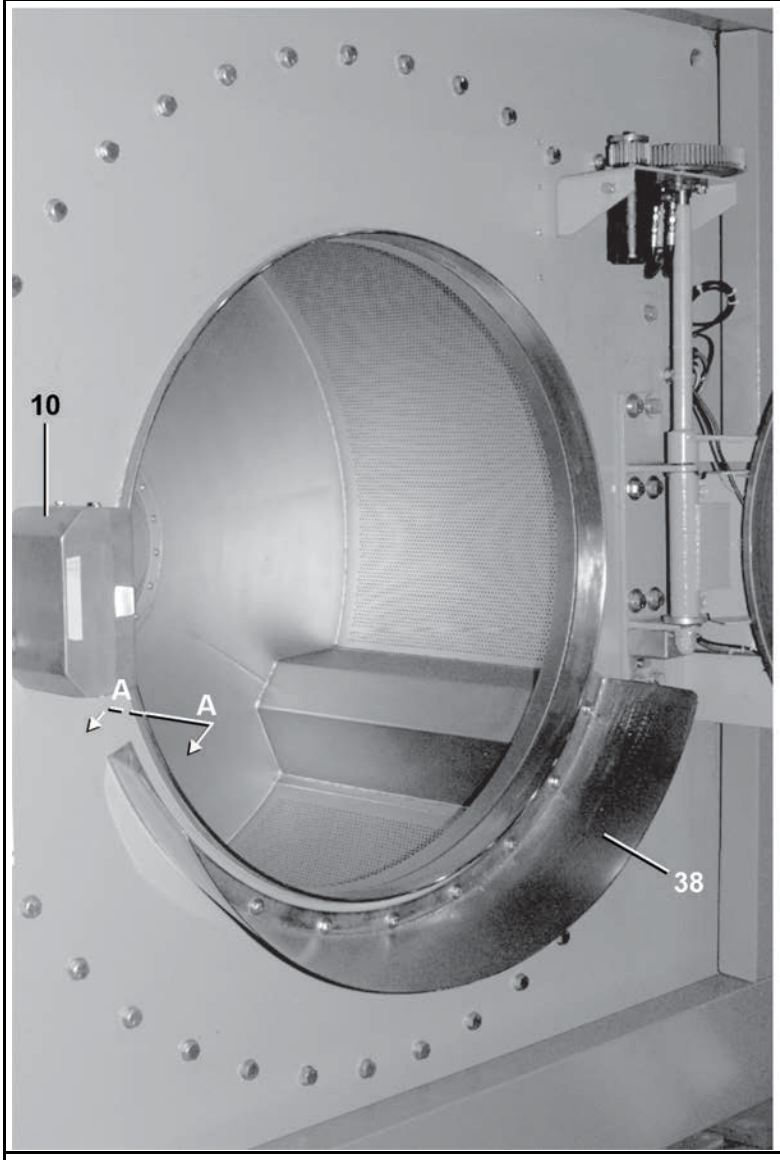
This page intentionally blank

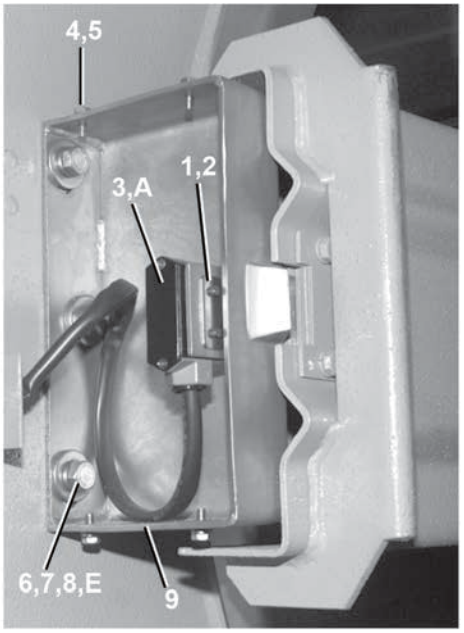
BPWHBD01 / 2021474 BPWHBD01.1 0000400290 C.2 A.5 11/17/21, 1:13 PM Released

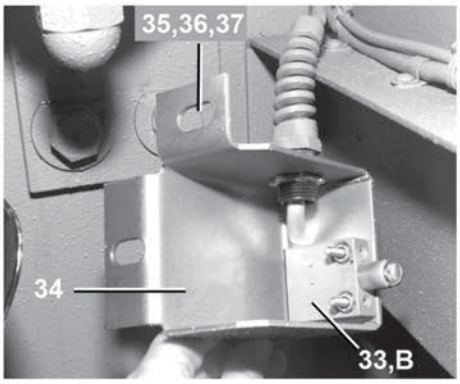
Door Installation Components

4 Sheets

68036M5K, 72046M5K







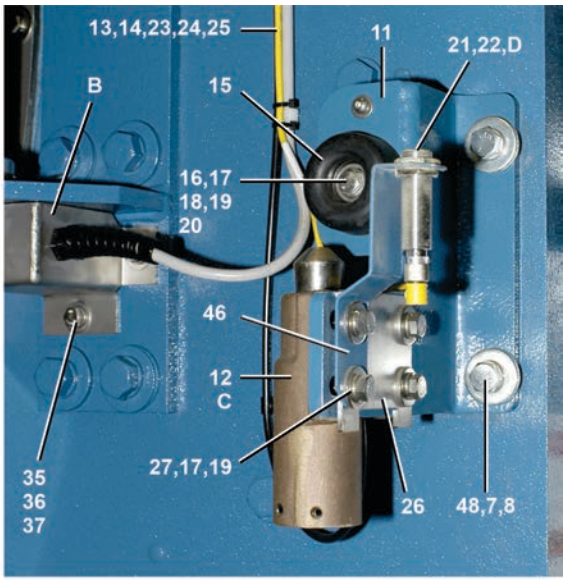
Legend

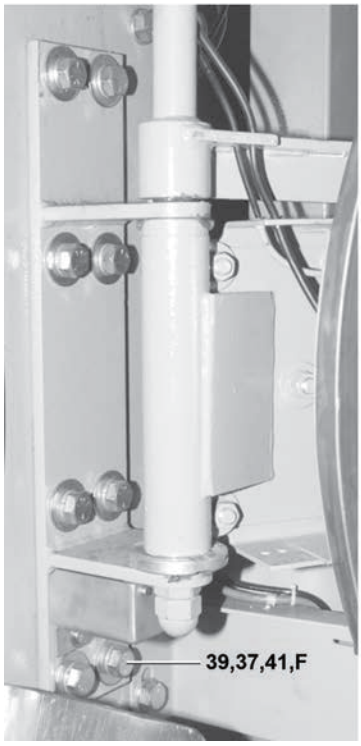
A . . . Door locked switch (Interlock switch)
B . . . Second door switch
E . . . 3 instances

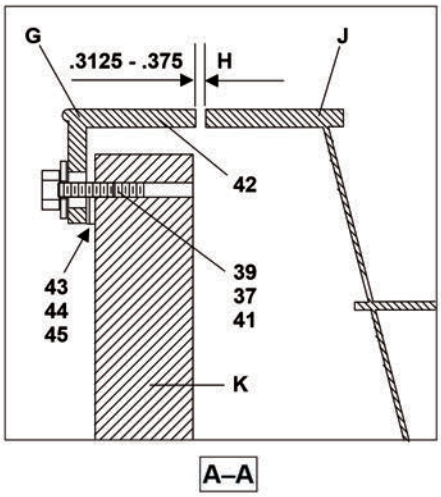
Door Installation Components

4 Sheets

68036M5K, 72046M5K







Legend

B . . . Second door switch
C . . . Door open latch, see BPWG4D02
D . . . Door full open switch
F . . . 8 instances
G . . . Knife edge
H . . . Gap clearance
J . . . Cylinder
K . . . Shellfront

Door Installation Components

4 Sheets

68036M5K, 72046M5K

Table 32. Parts List—Door Installation 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	ADL68001A	6836M5K 40DR CLOSED STRKR CENTER CUT	
	B	ADL68012	6836M5K DOOR OPEN 180DEG LATCH/BUMP	
	C	ADS60001	PRTS=40DRLG SECONDARY DR SW-RH	
	D	GSD68004	6836M5K 48" DOOR RH	
	F	GKE60002A	INST=48"DOOR KNIFE 6836F	
			Components	
all	1	02 10391	COVER STRIP=MICRO SW #6-8	
all	2	20A015GA	SHIM=FRICTION=CWU DOORSWITCH	
all	3	09R008BSTD	* 09R008B+MOUNTING HDWRE+INST	
all	4	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	5	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	6	15K173A	HXCAPSCR 1/2-13UNC2AX1.75 GR5	
all	7	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	8	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	9	W3 60775	WLMT=LATCH STRIK 40"DR LG	
all	10	W3 60778B	6836M5K STRKR CVR 40" DOOR CENTER CUT	
all	11	W2 22714	6836M5K OPEN DOOR LATCH/BUMPER WLMT	
all	12	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	13	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	14	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	15	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	16	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	17	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	18	15U245A	FLTWASH 25/64IDX1.25ODX3/32 S/	
all	19	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	20	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	21	09RPS18CAS	PRXSW QKCO 18M NO-AC SHLD	
all	22	09RPTAC095	CONN. 90 FEM 3-PIN AC 3A 5M	
all	23	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	24	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	25	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	26	02 15633S	ADJPLATE=DOORLATCH SS	
all	27	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	

Door Installation Components

4 Sheets

68036M5K, 72046M5K

Table 32 Parts List—Door Installation Components (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	09RM02212S	CAPSW 12' 180DEG ROLLER SILVER	
all	34	03 60782A	SECOND DR SWTCH BKT-HVY HNGE	
all	35	15K084S	HXCAPSCR 3/8-16NCX5/8 SS18-8	
all	36	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
all	37	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	38	W3 65338F	6836M5K UNLOAD TRAY WLMT	
all	39	15K112	HXCAPSCR 3/8-16X1+1/2 SS18-8	
all	41	15U491	FLTWASH 1.439OD.394ID.120TH188	
all	42	Y5 75860	MACH=KNIFE EDGE 48" DOOR, 6836	
all	43	03 60864	1/8"GASKET=KNIFE RING 48"DR	
all	44	03 60864A	1/16"GASKET=KNIFE RING 48"DR	
all	45	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	46	02 22807	6836M5K DOOR OPEN PROX MOUNT	
all	47	96M055	DELTROL QUICK EXHAUST VLV.1/4"	

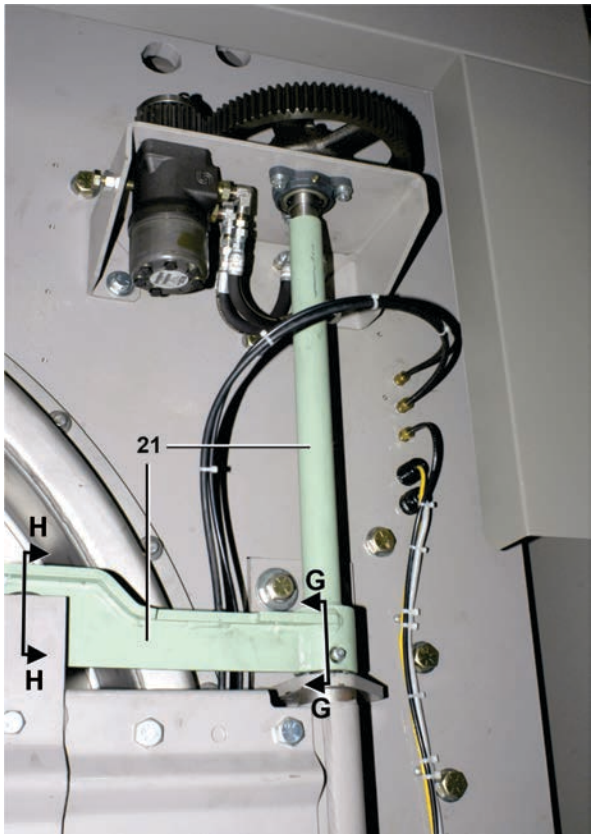
BPWHBD02 / 2021472 BPWHBD02.1 0000400420 C.2 A.4 11/16/21, 8:55 AM Released

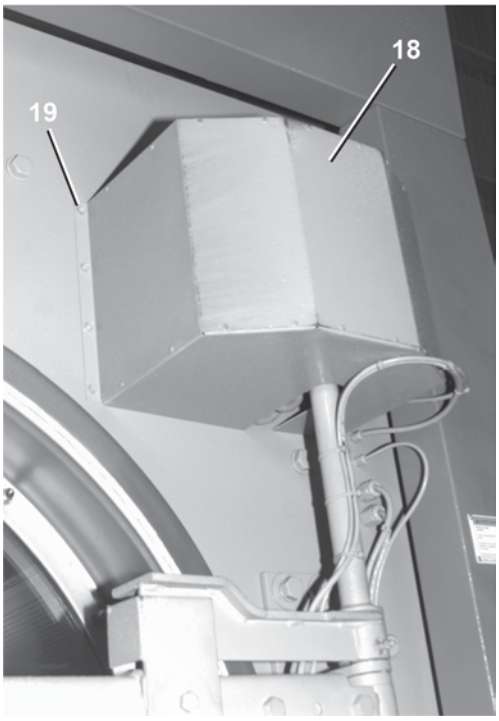
48 inch Door Hydraulic Components

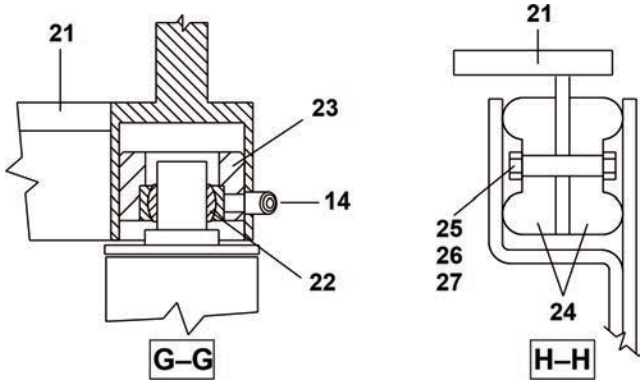
5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

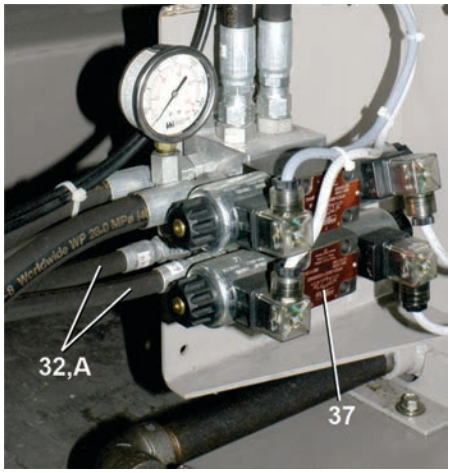
6836H5K Shown







6836H5K Shown



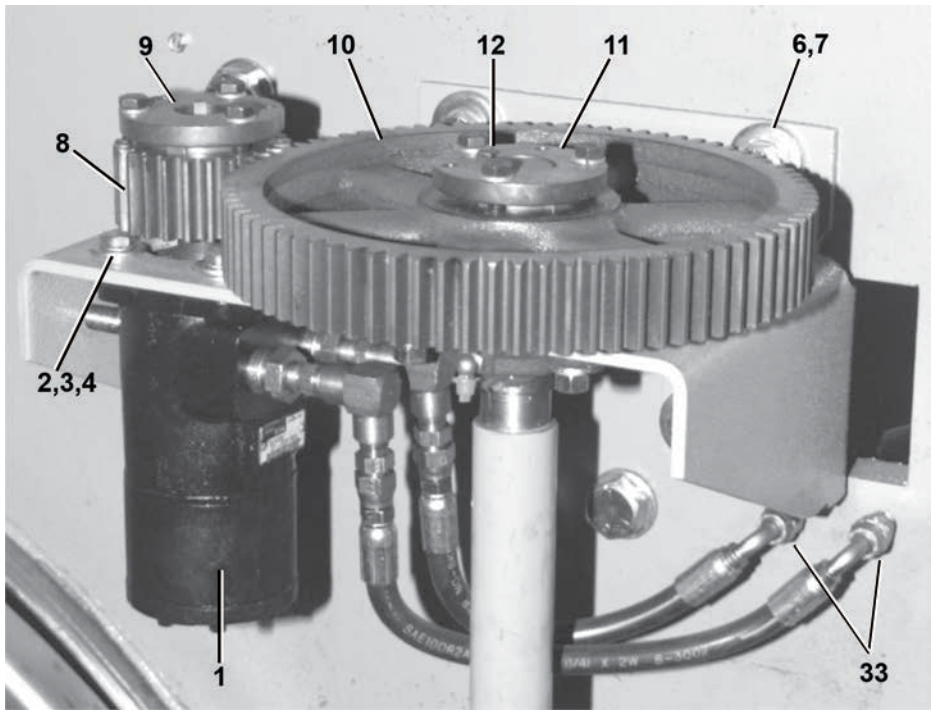
Legend

A . . . Door lines

48 inch Door Hydraulic Components

5 Sheets

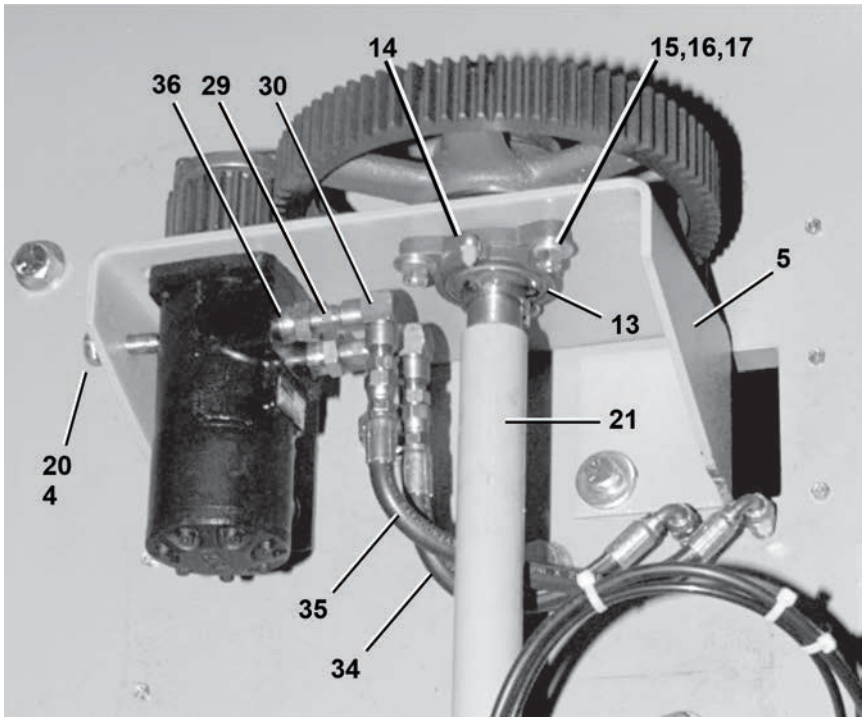
68036H5N, 68036H5K, 68036M5K, 72046M5K



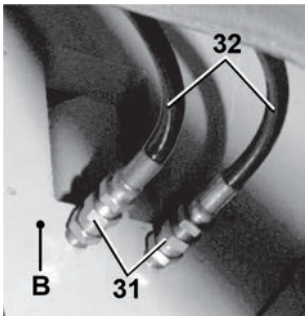
Legend

B . . . Inner shellfront

6836H5K Shown



6836H5K Shown

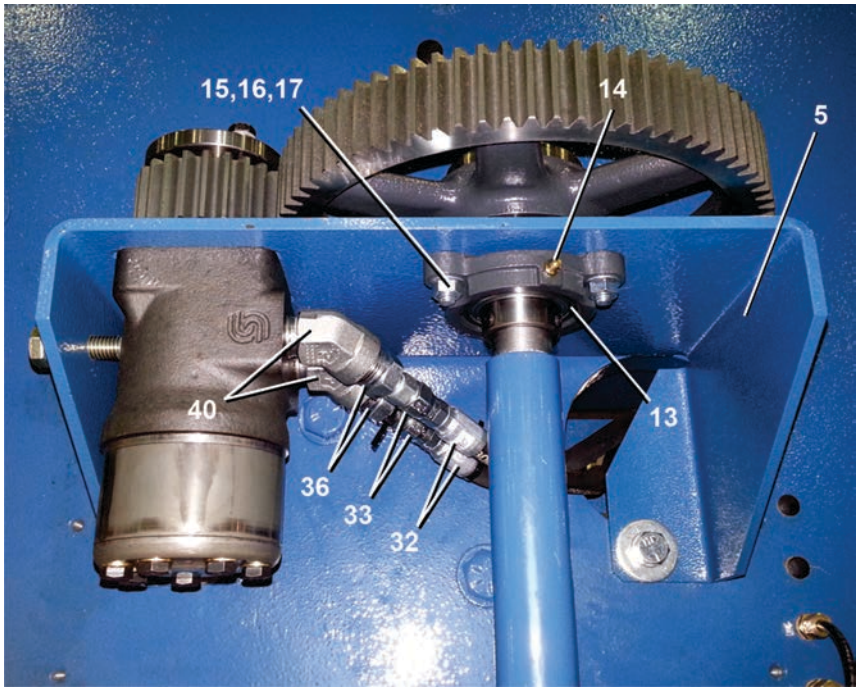


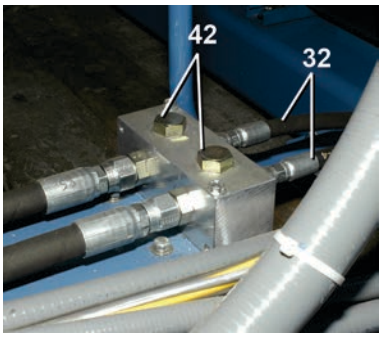
48 inch Door Hydraulic Components

5 Sheets

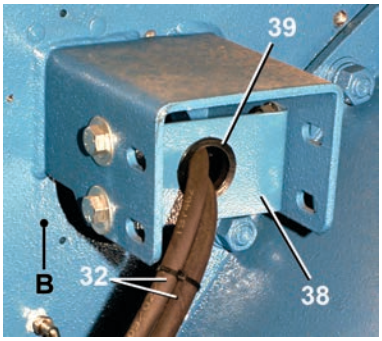
68036H5N, 68036H5K, 68036M5K, 72046M5K

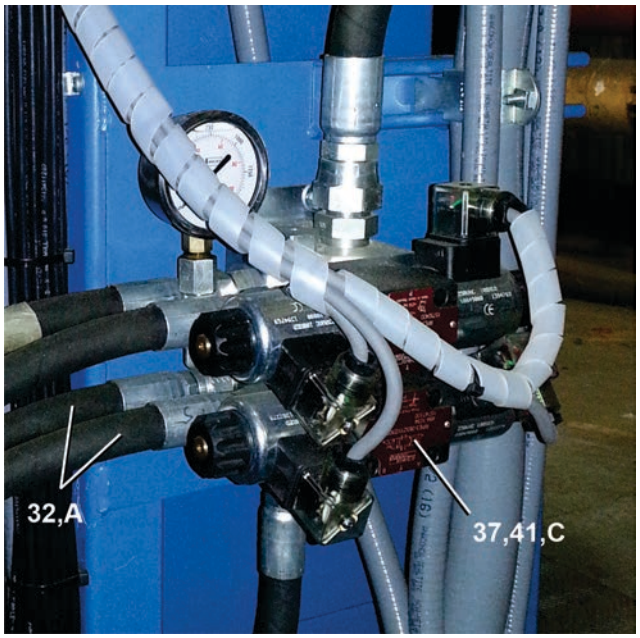
6836M5K Shown





6836M5K Shown





Legend

A . . . Door lines
B . . . Inner shellfront
C . . . Control valve

48 inch Door Hydraulic Components

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 33. Parts List—48 inch Door Hydraulic 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	GHT68001	INST=HYD MTR/TORQARM RH-6836	68036H5N, 68036H5K
	B	GHT68005	6836M5K HYD MTR/TORQARM	68036M5K, 72046M5K
Components				
all	1	27E320025	TDRQMOTOR- HYDRAULIC	
all	2	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	3	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	4	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
A	5	03 60789	AUTODOOR HYD MNT BRKT RH-6836	
B	5	02 22716	6836M5K AUTODOOR HYD MNT BRKT	
all	6	15K173A	HXCAPSCR 1/2-13UNC2AX1.75 GR5	
all	7	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	8	54N090	SPURGEAR B#YSS8-24 P1 PE-5064	
all	9	56Q1AP1	1.0" BUSH VPUL BROWNING P1	
all	10	54N095	SPURGR 8P80T20PA 1.5F YCS8P80	
all	11	56Q1EP1	1+1/4" BUSH VPUL BROWNING P1	
all	12	15E210	SQMACHKEY 1/4X2 NOTAPER-NOHEAD	
all	13	54A718	FLGBRG 1+1/4" 3-BOLT;#FB150 X 1.25"; S=124609	
all	14	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	
all	15	15K088	HEXCAPSCR 3/8-16NCX7/8 GR 5 ZI	
all	16	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	17	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	18	AGS75001L	COVER=GEARTRAIN LH	
all	19	15P185	TRDCUT-F HXHD 1/4-20UNC2AX3/4	
all	20	15K162	HXCAPSCR 1/2-13UNC2AX1.5 GR5 P	
all	21	W3 25328	WELD=TORQARM RH DOOR-6836	
all	22	54AA00PBB	SPHERICAL PLAIN BRG BALL BUSHING 3/4 RBC-B12L	
all	23	03 25604	ADAPTER FOR B12-L BUSHING	
all	24	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	25	15K120	HXCAPSCR 3/8-16UNC2AX2 GR5 ZIN	
all	26	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	27	15G218	HXLOKNUT NYL 3/8-16 STL/ZNC	
A	29	52LY0ER001	HEXPIPNIP 1/4X1/4 #5404-4-4	
A	30	52JY0ER003	ELB90 1/4"FEM.#5504-4-4	

48 inch Door Hydraulic Components

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 33 Parts List—48 inch Door Hydraulic Components (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.

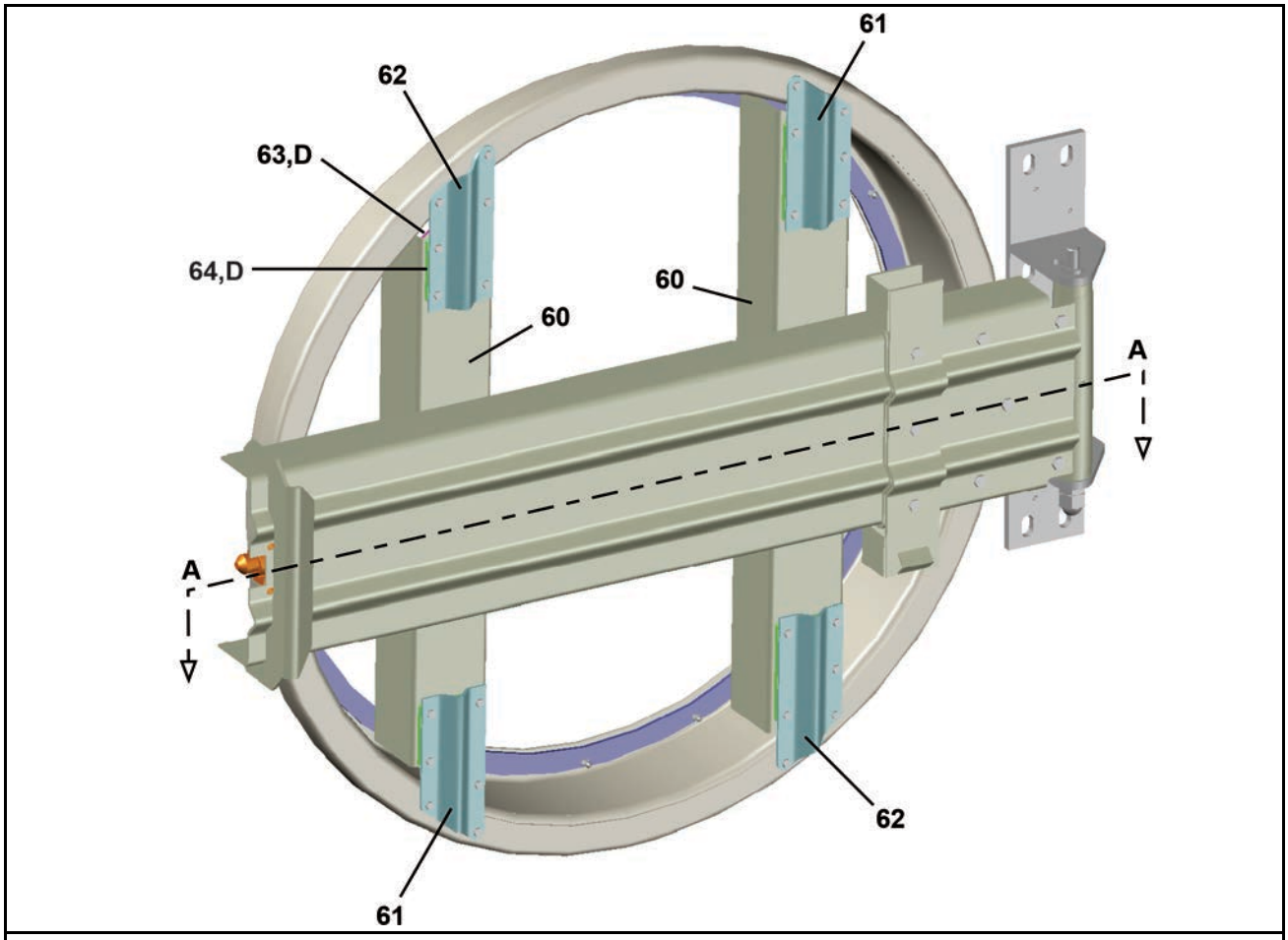
Used In	Item	Part Number	Description/Nomenclature	Comments
A	31	52XY0ER008	STRADAPT 1/4" #1404-4-4	
A	32	60EH21C248	HYD HOSE 1/4" +2 X FORSW=248	
B	32	60EH21C190	HYD HOSE=1/4" X 190"	
all	33	52ZC0ES001	TUBEFIT 1/4"STR.#4-4 FLO-S	
A	34	60EH21C08S	ASSY=HYD HOSE 1/4"X8" SHORT	
A	35	60EH21C10L	ASSY=HYD HOSE 1/4"X10" LONG	
all	36	52AY0KR004	HEXPTPEBUSH 1/2MX1/4F#0102-8-4	
A	37	96RH714E71	CONTROL VALVE HYTOS RPE3-063Y11-23050E5	
B	37	96RH706E71	VLVPARKER 220V50/240V60 7GPM	
B	38	02 22805	6836M5K DOOR HYD HOSE HOLDER	
B	39	12P11PSB	SNAPBUSH 1-3/4X1.375HEYCO#2300	
B	40	52ZJ00S017	ELBOW 45 1/2" STREET #1/2 CD45-S	
B	41	96RH712A04	ORIFICE D1 1.0MM(.039) #15845600	
B	42	52PY0KR001	HEXPLUG 1/2"OR #6408-08-0	

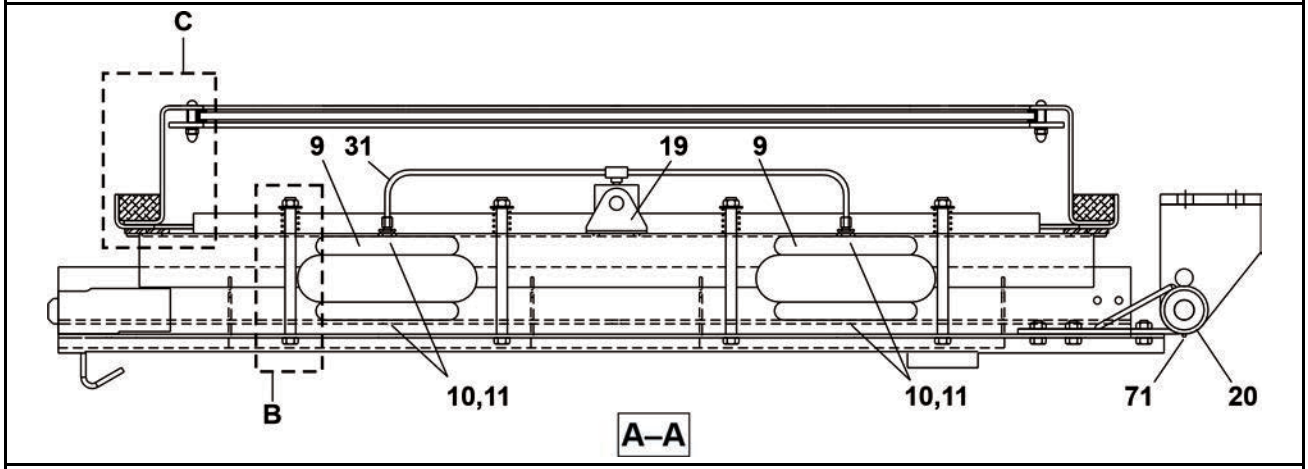
BPWHBD03 / 2021472 BPWHBD03.1 0000400512 C.2 A.4 11/16/21, 9:02 AM Released

48 inch Door

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K





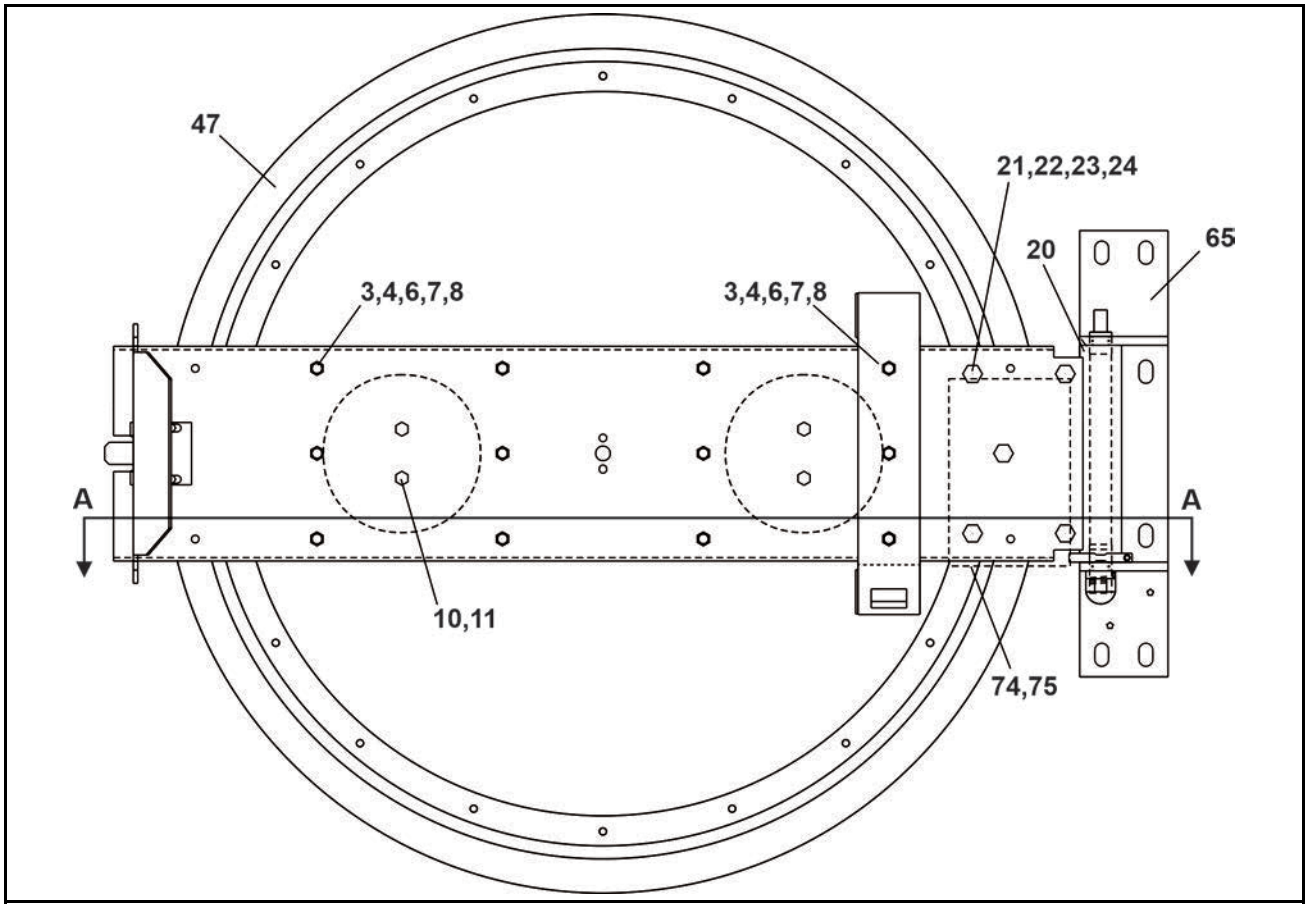
Legend

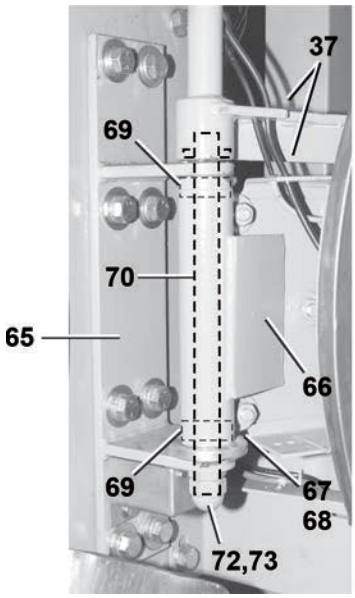
D . . . 4 instances

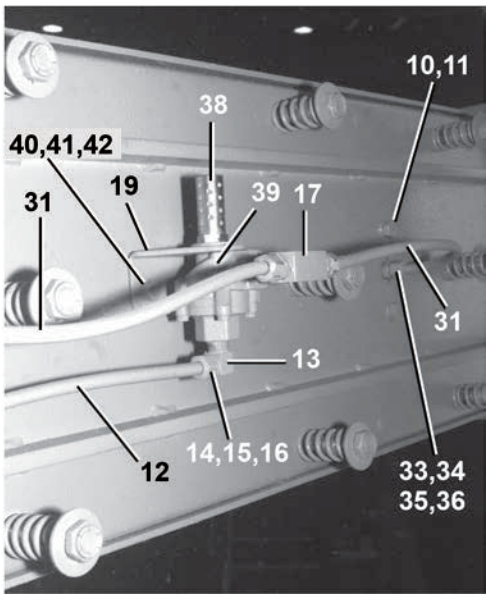
48 inch Door

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K



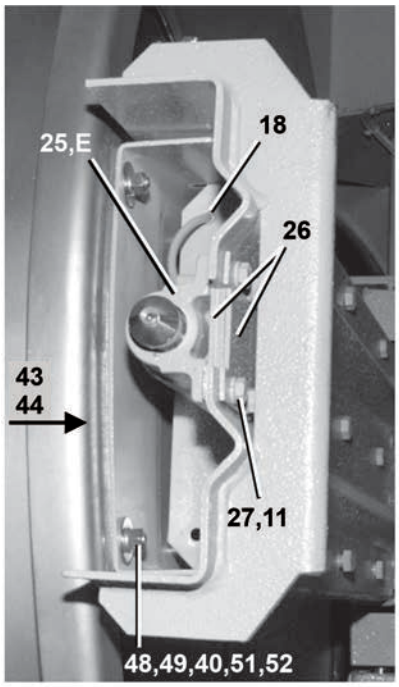


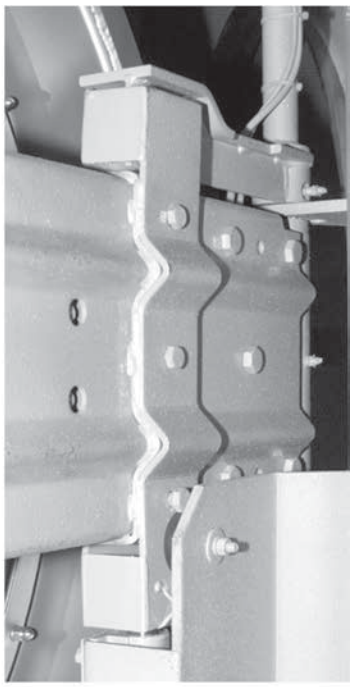


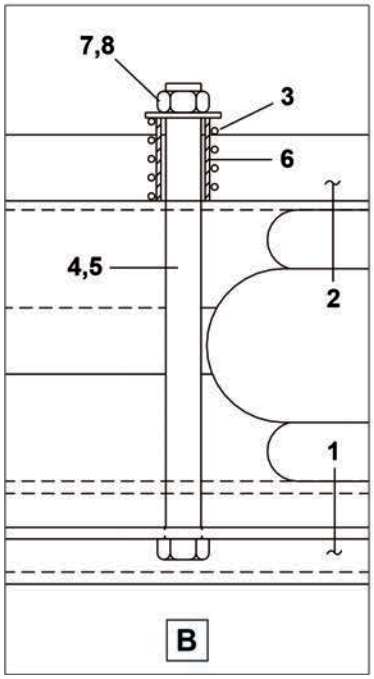
48 inch Door

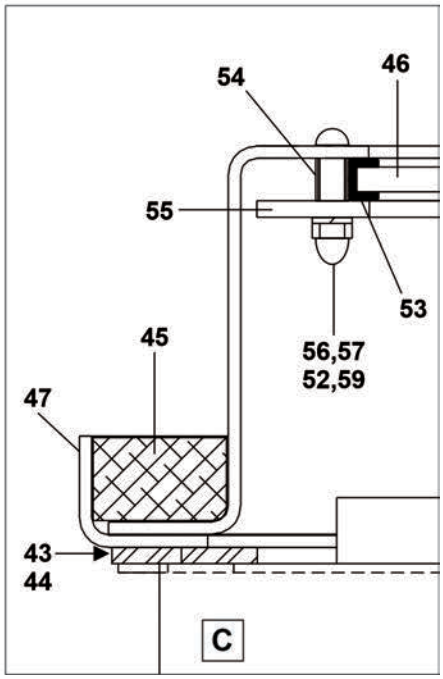
5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K









Legend

E . . . See BPWG4D02

48 inch Door

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 34. Parts List—48 inch 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	ADC60002	ASSY=48"DOOR CHN W/2AIR BSK	
	B	ASD60002	ASSY=48"DOOR 304 W/GLASS	
	C	ADG60002	PRTS=48"DR LG GLASS MNT 304	
			Components	
all	1	W3 60865	WLMT=OUTER CHANNEL 48"DR LG	
all	2	W3 60866	WLMT=INNER CHNL 48" DR MD1	
all	3	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	4	15K203T	HEXCAPSCR 1/2-13X6 GR5 ZINC	
all	5	15K203TA	HEXCAPSCR 1/2-13X6.5 GR8 ZINC	
all	6	27B2750L0T	SPC RROLL.562ID.937L.048T ZNK	
all	7	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	8	15G234	LOKNUT 1/2-13NC CAD FLXLOC#21F	
all	9	60B100	AIRMT S116B 1CONV F#W01-358-7564	
all	10	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	11	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	12	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	13	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	14	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	15	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	16	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	17	51V015	TEE 1/4 FGDBRASS 101T7-444	
all	18	12P1AGSB	SNAPBUSH 3/8"MH X 1/4" T=1/8	
all	19	03 60886	BRKT=EXAUST VALVE/48"DOOR	
all	20	ADH60001	PRTS=40"DR LG HINGE CRB	
all	21	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
all	22	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	23	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	24	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	25	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	26	02 15633S	ADJPLATE=DOORLATCH SS	
all	27	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	31	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	32	53A040B	BODY=EL90MALE5/16X.25#B69A-5B	

48 inch Door

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 34 Parts List—48 inch 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	53A020B	BODYMALECON5/16X.25COM#B68A-5B	
all	34	53A060A	NUT BRASS 5/16 COMP#61A-5	
all	35	53A508	SLEEVE DELRIN 5/16"OD#60PT-5	
all	36	53A509	TUBE INSERT 5/16"OD X .53"LG.	
all	37	12P1AHSB	SNAPBUSH .437"MH X .312" T=1/8	
all	38	27A005	MUFFLER 3/8" BANTAM B38	
all	39	96M055	DELTROL QUICK EXHAUST VLV.1/4"	
all	40	15K041	HXCAPSCR 1/4-2OUNC2AX1 GR 5 ZI	
all	41	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	42	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
all	43	03 60869	48"DOOR-SHIM=1/8"	
all	44	03 60869A	48" DOOR SHIM=1/4"	
all	45	03 60851	GASKET=48"DOOR EPDM	
all	46	03 60855	GLASS=48"DR 3/8T X 41.75 OD	
all	47	X3 60850	MACH=48" DOOR	
all	48	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
all	49	15N223A	FLATMACHSCR 3/8-16X1+1/2 SS SL	
all	50	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
all	51	15U245B	FLATWASH SPECIAL DOOR 52+72	
all	52	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	53	03 60856	GASKET=GLASS 48"DOOR 42.06DIA	
all	54	27B2400K0L	SPACER ROLL.43ID.562L.03T SS	
all	55	X3 60857	MACH=48"DR GLSS MNT RING LG	
all	56	15G200	HXCPNUT 3/8-16 UNC2A 5/8X1/2	
all	57	15K106B	BUTSOKCAPSCR 3/8-16NCX1+3/8 SS	
all	59	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	60	03 60867	VERT CHANNEL 48" DOOR	
all	61	03 60868	LFT MNT PLATE=VERT CHN/48"DR	
all	62	03 60868A	RT MNT PLATE=VERT CHN/48"DR	
all	63	03 60868B	NUT PLATE=VERT CHN/48"DOOR	
all	64	03 60868C	SPACER=VERT CHNL/48"DOOR	
all	65	W3 60780A	WLMT=48" DOOR HINGE BRKT	
all	66	W5 20017	* WELDMENT=40" DOOR HINGE	
all	67	54JH13562B	HINGE COL SPLIT 3.56 FL TOP	

48 inch Door

5 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 34 Parts List—48 inch 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.

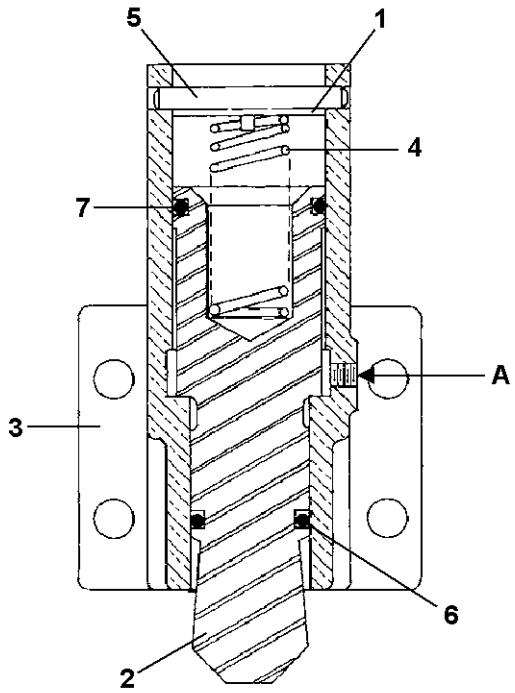
Used In	Item	Part Number	Description/Nomenclature	Comments
all	68	15K041E	SKCPSCR 1/4-20X1+1/4"BLK	
all	69	54A976977	TIMKN #L44610/L44643=1.00"BORE	
all	70	05 20140A	PIN-DOOR HINGE 15.625LG 72T	
all	71	54M015	GREASEFIT 60X36/60X44 1610BL	
all	72	15G248	HXJAMNUT 1-14UNF2B ZINC GR2	
all	73	15G249	HXCAPNUT L-CROWN 1-14UNF2B ZIN	
all	74	05 20017E	SHIM=DOOR HINGE 11 GA 64D	
all	75	05 20017F	SHIM=DOOR HINGE 16 GA 64D	

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

Door Latch

1 Sheet

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 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	

8 Chemical Supply Devices

This page intentionally blank

BPWHUC02 / 2021282 BPWHUC02.1 0000351936 A.3 C.2 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

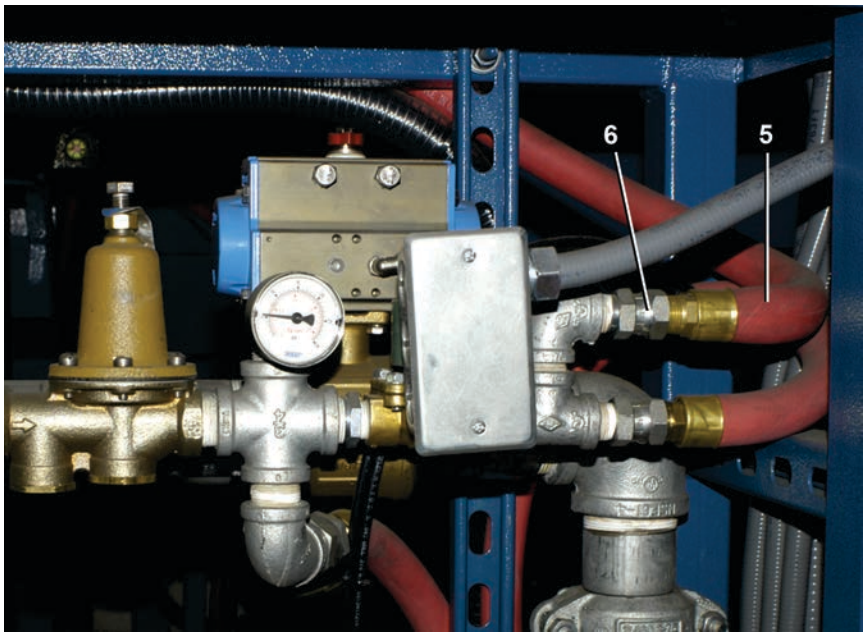


Table 36. Parts List—Eight Port Peristaltic Supply Manifold

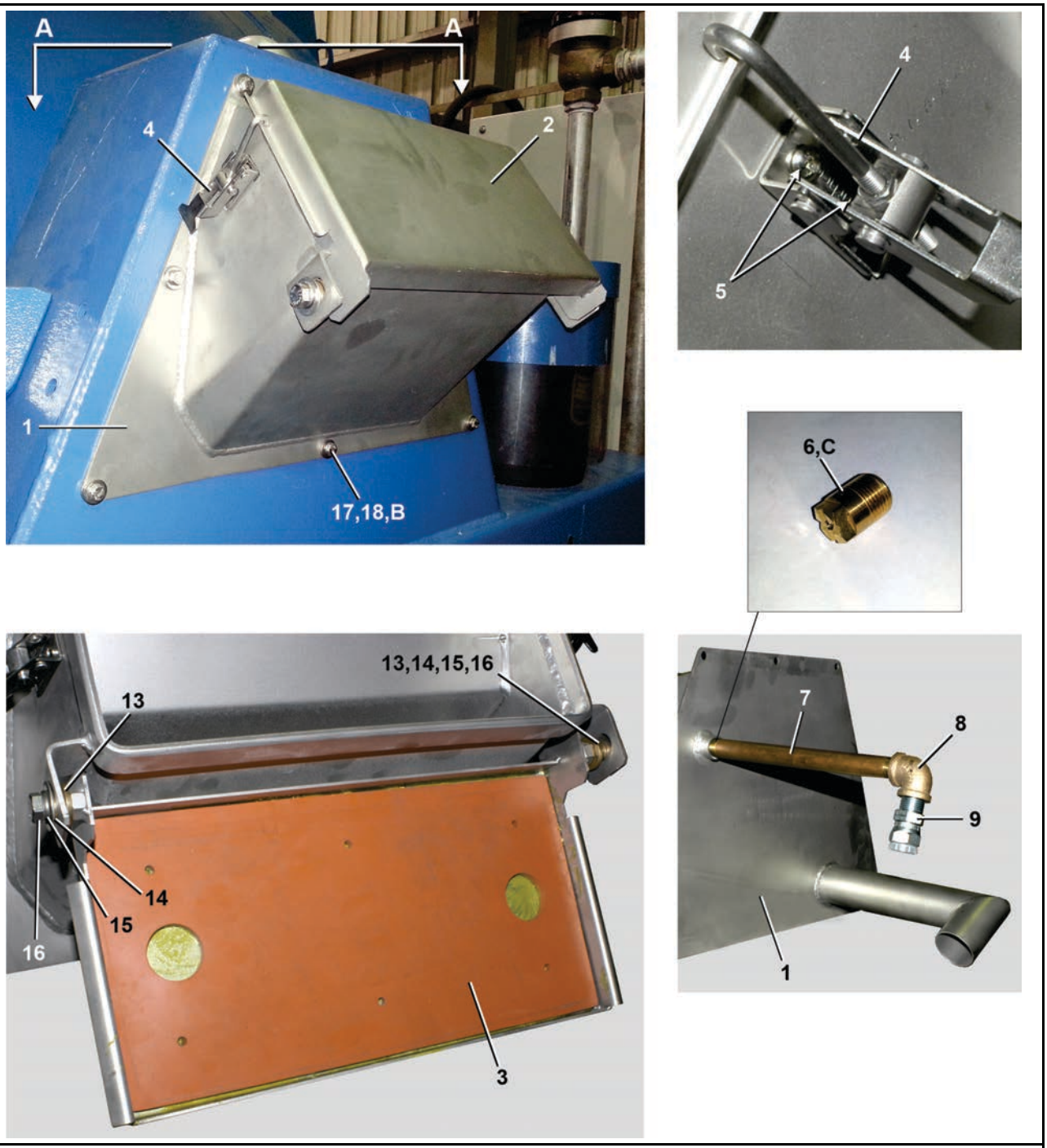
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**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 C.2 A.4 7/6/21, 3:51 PM Released

Soap Chute

2 Sheets

48040M7K, 68036M5K, 72046M5K



Legend

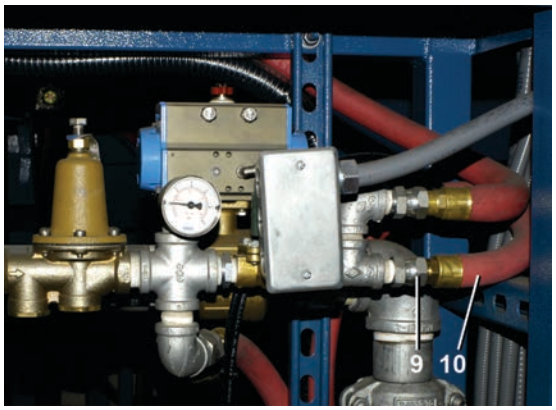
B . . . 6 instances
C . . . Nozzle within

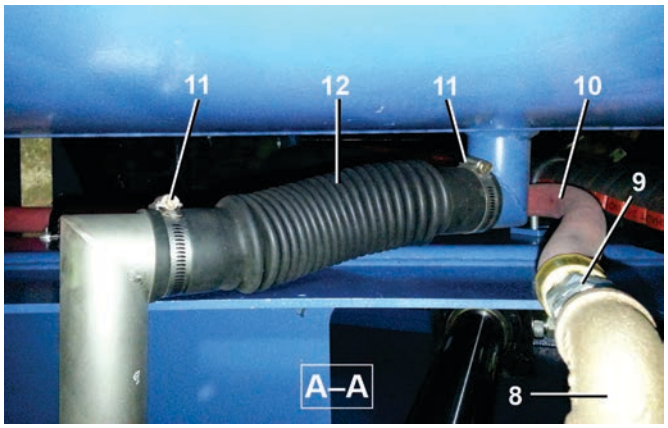
Soap Chute

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

BPWH6W01 / 2021474 BPWH6W01.1 0000400884 C.2 A.4 11/17/21, 1:34 PM Released

Water

6 Sheets

6836M5K, 7246M5K

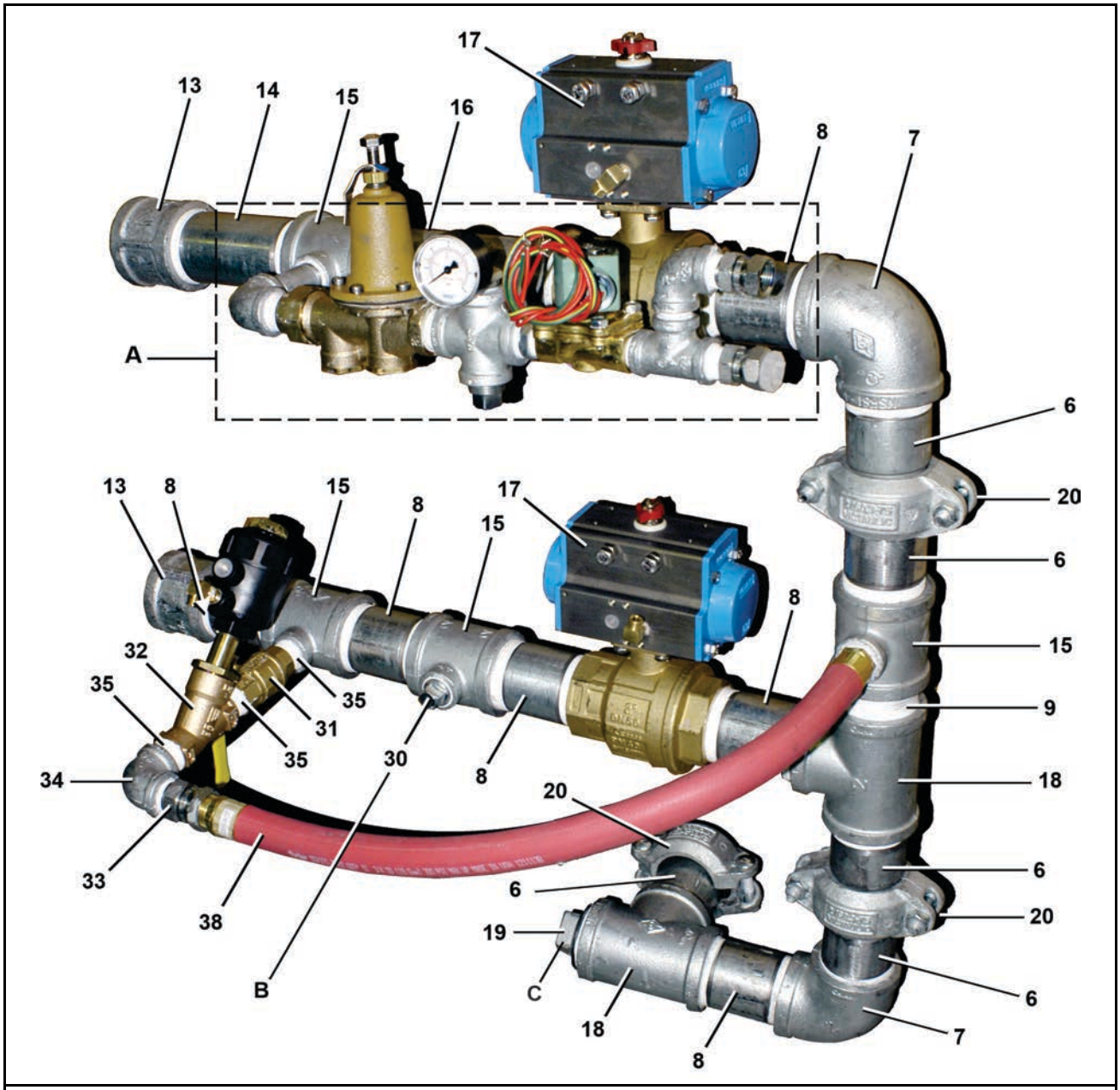
Figure 54. Water Valves Installed

Water

6 Sheets

6836M5K, 7246M5K

Figure 55. Water Valve Assembly



Legend

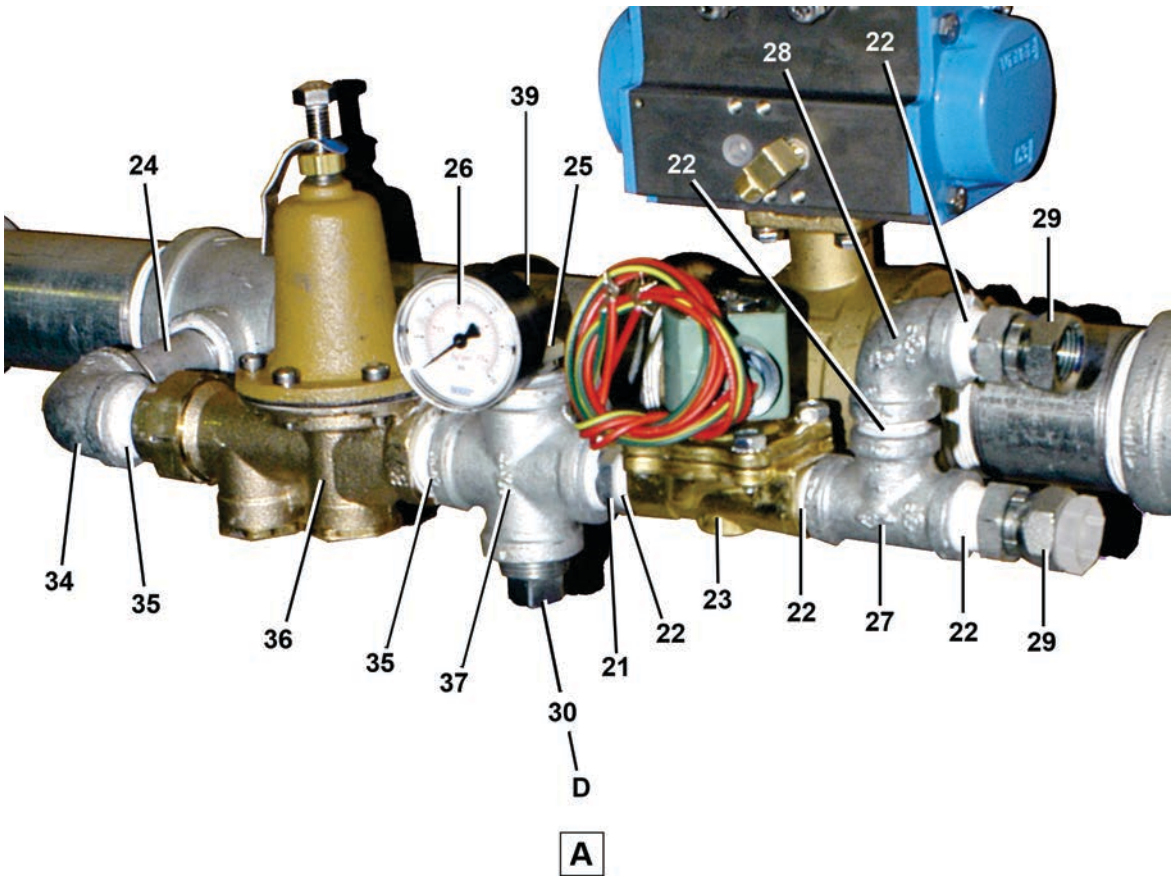
A . . . See detail A
B . . . This port is for door chute flush
C . . . This port is for third water

Water

6 Sheets

6836M5K, 7246M5K

Figure 56. Water Valve Assembly



Legend

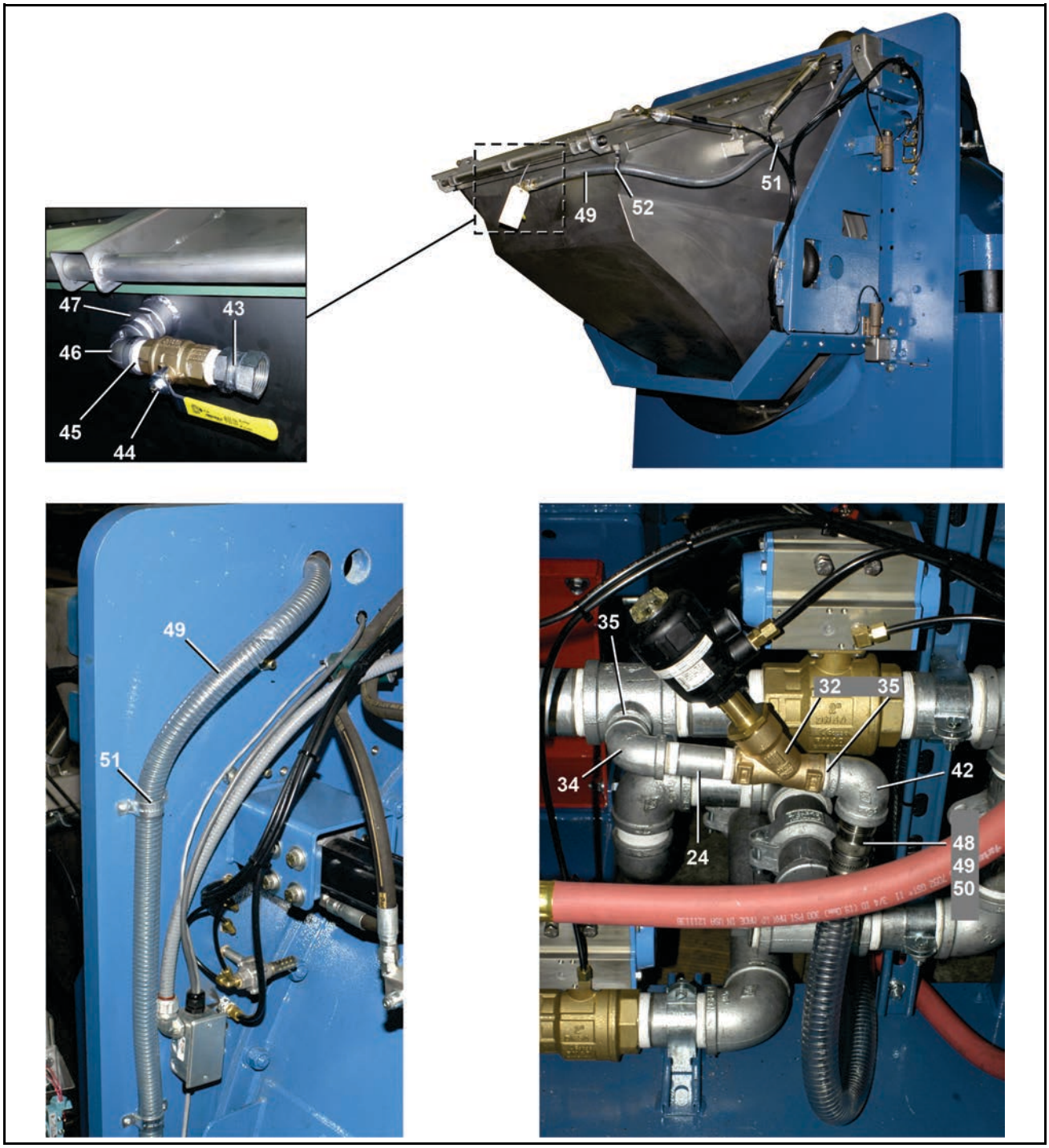
D . . . This port is for auto balancing valves

Water

6 Sheets

6836M5K, 7246M5K

Figure 57. Water for Flushing Optional Door Chute



Water

6 Sheets

6836M5K, 7246M5K

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	GVW68031	6836M5K STD H20 HOT/COLD/COOLDOWN	
	B	AVW68031	6836M5K STD H20 HOT/COLD/COOLDOWN ASSY	
	C	AVW68037	6836M5K DRYEL FLUSH ASSY	
			Components	
all	1	27A062640A	UNISTRUT 13/16HT X 40"LG	
all	2	27A0200	CLP-RGDSTL PS#1100-2 10/BAG	
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	5P2AG4003K	2" X 3.5" SCH40 GALV" TOE/GOE	
all	7	5SL2ANFA	NPT ELBOW 90DEG 2" GALMAL 150#	
all	8	5N2A04AG42	NPT NIP 2X4 TBE GALSTL SK40	
all	9	5N2ACLSG42	NPT NIP 2XCLS TBE GALSTL SK40	
all	10	5N2A37KG42	NPT NIP 2X37.5 TBE GALSTL SK40	
all	10	5N2A58AG42	NPT NIP 2X58 TBE GALSTL SK40	
all	11	5SL2ANFK	NPTELB 45DEG 2"GALMAL 150#	
all	12	51E098B	KINGREDNIP2.5"IDX2"NPT#STC3025	
all	13	5SCC2ANF	NPT COUP 2" GALMAL 150#	
all	14	5N2A06AG42	NPT NIP 2X6 TBE GALSTL SK40	
all	15	5S2ANFA0P1	NPT TEE 2X2X3/4" GALMAL 150#	
all	16	5N2A08AG42	NPT NIP 2X8 TBE GALSTL SK40	
all	17	96D088FBA	2" BALVAL+ACT BRS N/C BONOMI	
all	18	5S2ANFA	NPT TEE 2" GALMAL 150#	
all	19	51P060	PLUG PIPE SQ 2"GALCORED CI 125	
all	20	27E971C	VICT COUP 2"GALV #75W/E GASKET	
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#	

Water

6 Sheets

6836M5K, 7246M5K

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.

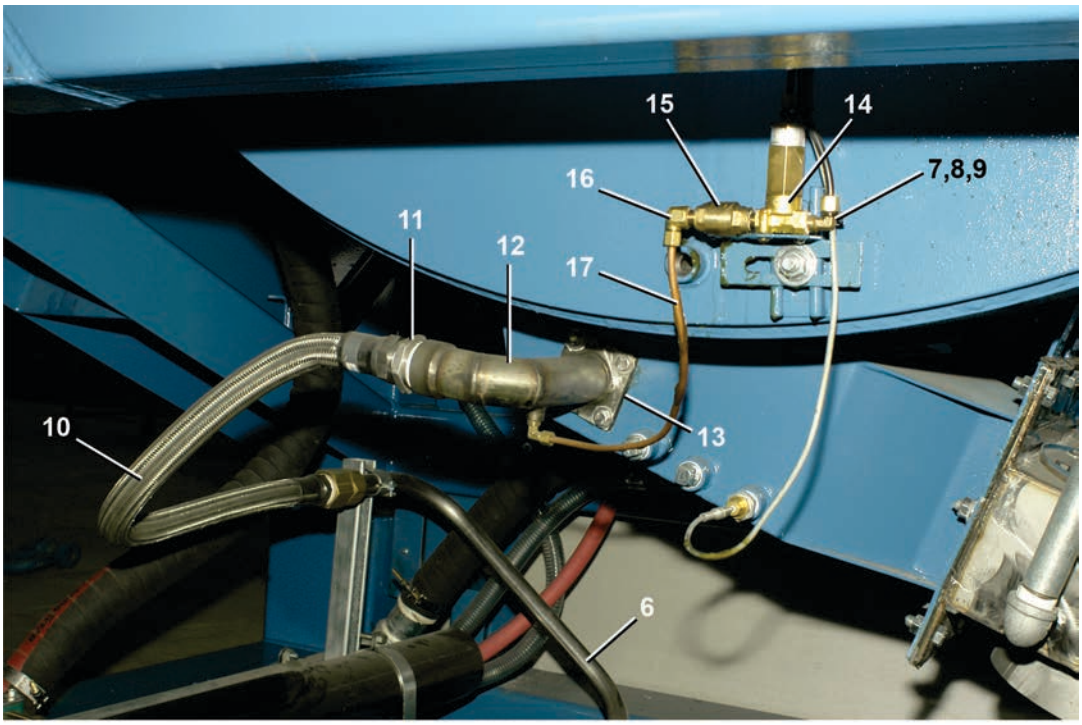
Used In	Item	Part Number	Description/Nomenclature	Comments
all	29	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	30	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
all	31	96D050A	3/4"BALLVALVE BRZ	
all	32	96D0009E	3/4"NPTBRZ N/C STEAMVAL ANGBOD	
all	33	51X019	UNIONSTRADT 3/4"#0107-12-12	
all	34	5SL0PNFA	NPTELB 90DEG 3/4 GALMAL 150#	
all	35	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	
all	36	96J031D	3/4"PRESSREG SET 28# FEMXUN	
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	5SL1ANFA0P	NPTELB 90DEG 1X3/4 GALMAL 150#	
all	43	51X031	UNIONSTRADT 1" PH#0107-16-16	
all	44	96D084	BALL VALVE BRZ 1"	
all	45	5N1ACLSS42	NPT NIP 1XCLS TBE 304SS SK 40	
all	46	5SL1ASFA	NPT ELBOW 90DEG 1" 304SS 150#	
all	47	5SB1K1ASFO	NPTHEXBUSH 1.5X1 304SS 150#	
all	48	51E091SS	BOSS MALESTEM 1"S.S.#RMS11	
all	49	60E010B367A	HOSE ASSY: POLYWIRECLR TUBING 1"ID X 367"+ENDS	
all	51	27A019	1"PIPESTRAP 2HOLE STAMPED GALV	
all	52	12P019A	CABLE CLAMP 1.25DIPPD #NE-20	

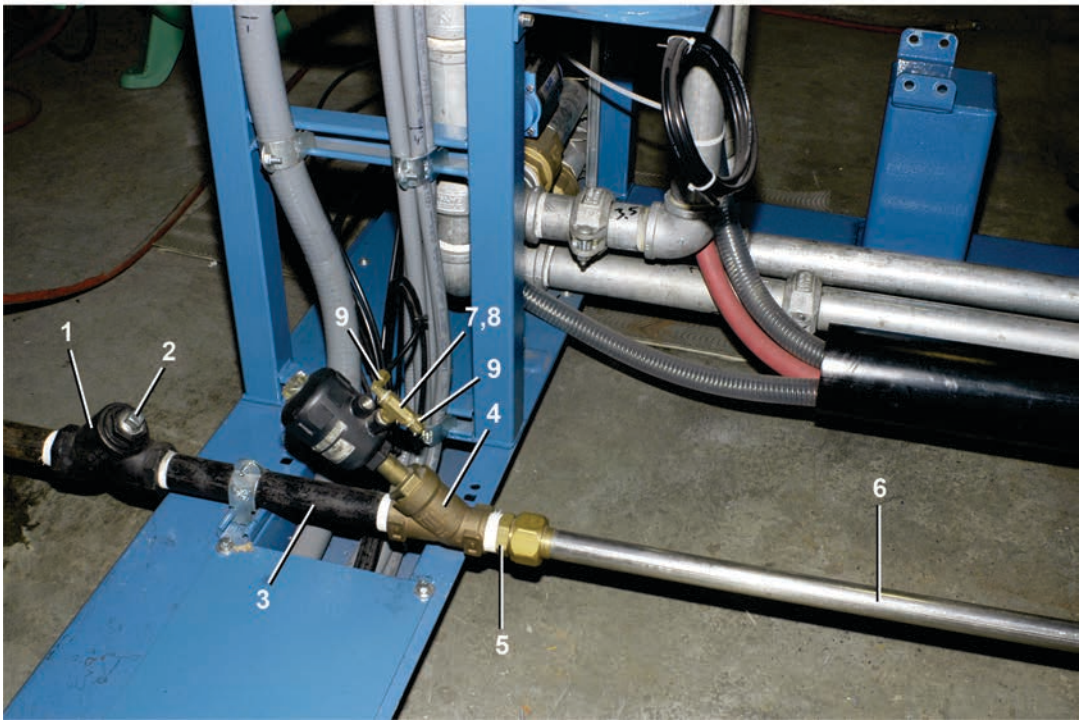
BPWH6W02 / 2023394A BPWH6W02.1 0000401175 C.2 9/27/23, 9:14 AM Released

Steam

2 Sheets

6836M5K, 7246M5K





Steam

2 Sheets

6836M5K, 7246M5K

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	GVS68002	INST=STEAM,BRASS VALVE 6836M5K	6836M5K
	B	GVS72000	INST=STEAM,BRASS VALVE 7246M5K	7246M5K
	C	AVS68002	6836M5K STEAM PIPE ASSEMBLY	6836M5K,7246M5K
	D	A64SV006	ASSY=STM AIR INJECT 64'S&72'S	6836M5K,7246M5K
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	52ZX00S005	TUBEFITMALCN1.25#20-FTX-B	
A	6	02 22540A	1+1/4" STEAM TUBING 6836M5K HYD	
B	6	02 22540C	1+1/4" STEAM TUBING 7246M5K HYD	
all	7	5N0ECLSBE2	NPT NIP 1/4XCLS TBE BRASS 125#	
all	8	51V015	TEE 1/4 FGDBRASS 101T7-444	
all	9	53A031XB	BODY-EL90MALE.25X25 #269C-4-4B	
A	10	60E096C42A	STEAMH*OSE=1.25"X42"+2ENDS=(NO	
B	10	60E096C47A	HOSE=1.25"X47"+2ENDS=(NO DRAW	
AB	12	W3 60132	WLMT=STM/SPGR/EL .75 ORF	
AB	13	02 14647G	GASKET=REDESIGN STM SPARGER	
all	14	96TBC2AA01	1/4" N/C 1WAY AIR-OP VLV POLYPRO(NO COIL)	
all	15	53A016A	AIR RESTRICTER=STEAM CBW	
all	16	96DG030	CHECKVLV, 1/4"WATTS-SERIES 600	
all	17	90A015	COPPERTUBE 1/4"O.D.X.030 X50'E	

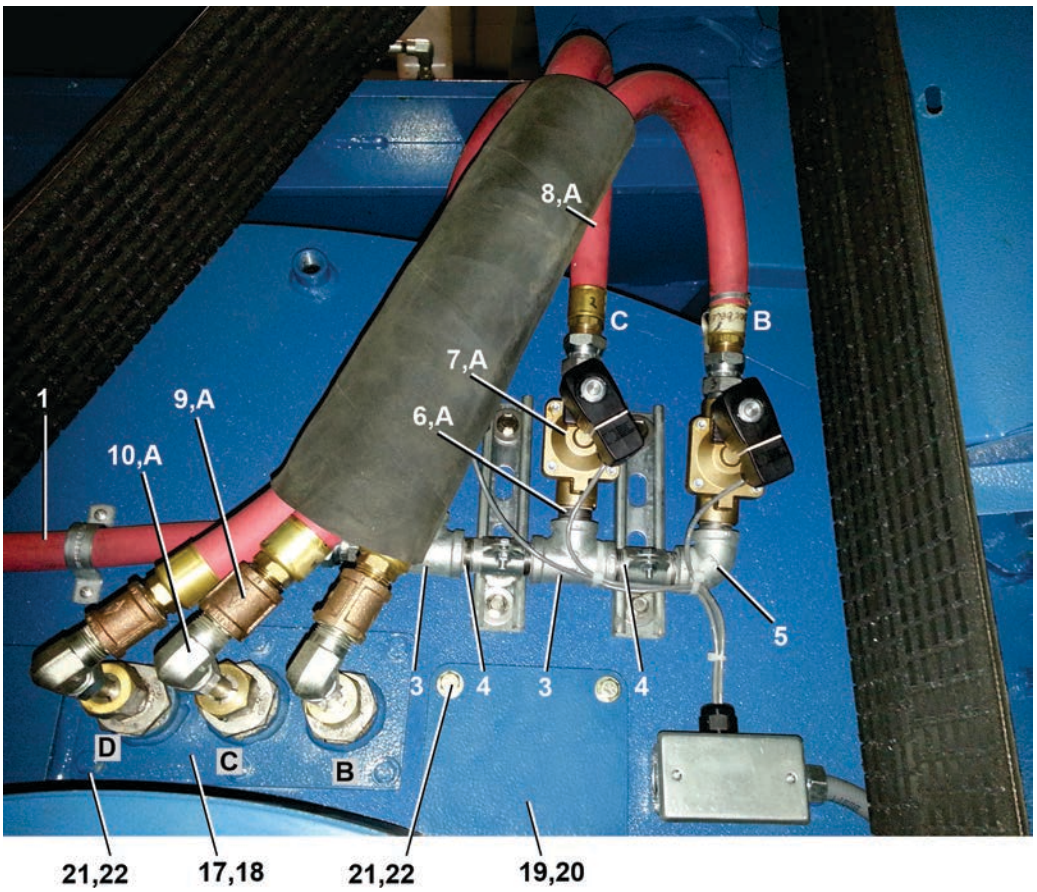
BPWH7W01 / 2021474 BPWH7W01.1 0000401149 C.2 A.4 11/17/21, 11:15 AM Released

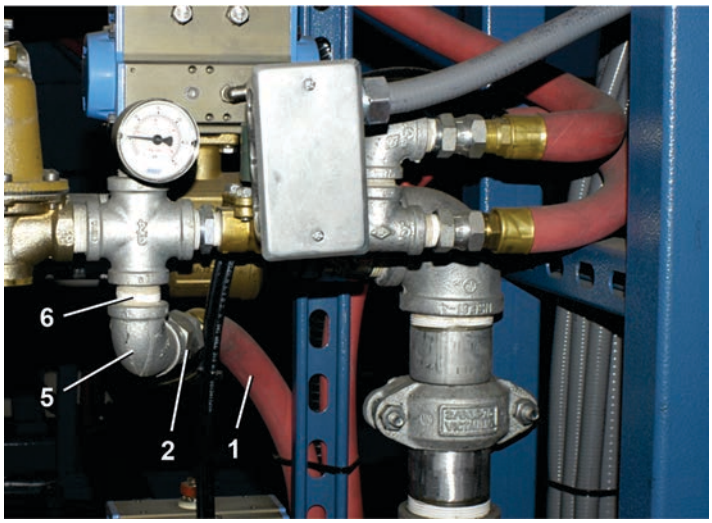
Balancing Valves

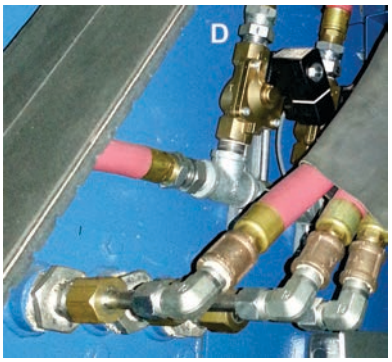
3 Sheets

7246M5K

Figure 58. Balancing Valves







Legend

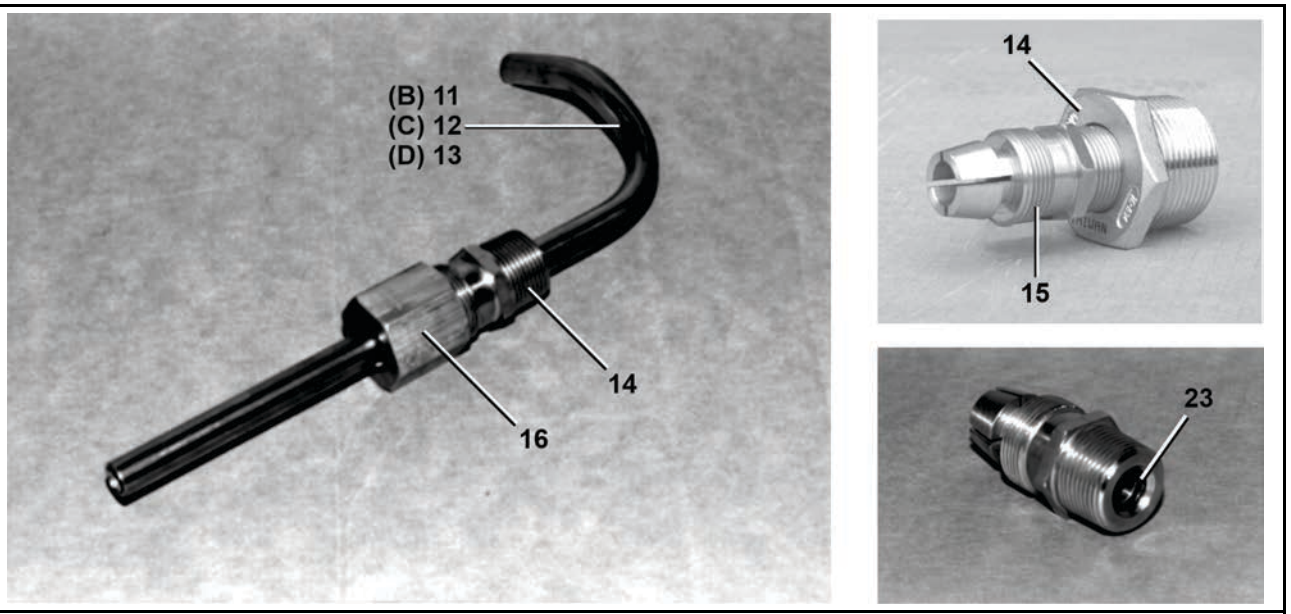
A . . . 3 instances
B . . . Rib 1
C . . . Rib 2
D . . . Rib 3

Balancing Valves

3 Sheets

7246M5K

Figure 59. Injector Nozzles



Legend

B . . . Rib 1
C . . . Rib 2
D . . . Rib 3

Table 40. Parts List—Balancing 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	AVW72012	7246M5K WATER TO AUTOBALANCE	7246M5K
	B	GVW72011	7246M5K BALANCING INSTALL	7246M5K
			Components	
all	1	60E086C296	WATERHOSE=3/4"X296"LG+ENDS	
all	2	51X019	UNIONSTRADT 3/4"#0107-12-12	
all	3	5S0PNFA	NPT TEE 3/4" GALMAL 150#	
all	4	5N0P04AG42	NPT NIP 3/4X4 TBE GALSTL SK40	
all	5	5SL0PNFA	NPTELB 90DEG 3/4 GALMAL 150#	
all	6	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	
all	7	96P056B71	3/4"NC 230V50/60 W/LEADS BURKERT	
all	8	60E086E27A	HOSE ASSY=3/4"X27"LG+1/2X3/4	
all	9	5SCC0KBE	NPT COUP 1/2 BRASS 125#	
all	10	53A046B	ELL90 1/2TUX1/2MPT #8-8CBU	

Balancing Valves

3 Sheets

7246M5K

Table 40 Parts List—Balancing 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	11	05 10004B	INJECTOR SHORT NOZLE LONG BDY	
all	12	05 10004E	INJECTOR SHORT HOOK	
all	13	05 10004F	INJECTOR LONG HOOK	
all	14	5SB1E0PSFO	NPTHEXBUSH 1.25X3/4 304SS 150#	
all	15	03 48062A	COLLET RETAINER=BAL NOZZLE	
all	16	03 48063A	NUT=BAL NOZZLE COLLET RTNR	
all	17	W2 25112	7246M5K AUTOBALANCE INLET	
all	18	02 25113	7246M5K AUTOBALANCE INLET GASKET	
all	19	02 25114	7246M5K AUTOBALANCE ACCESS COVER	
all	20	02 25115	7246M5K AUTOBALANCE ACCESS COVER GASKET	
all	21	15K095C	HXCAPSCR 3/8-16X1.25 GR.8 ZN.	
all	22	15U240L9	FLTWASH 3/8 HARD ASTM F436	
all	23	60C110	ORING 1/2IDX3/32CS BUNA70 #112	

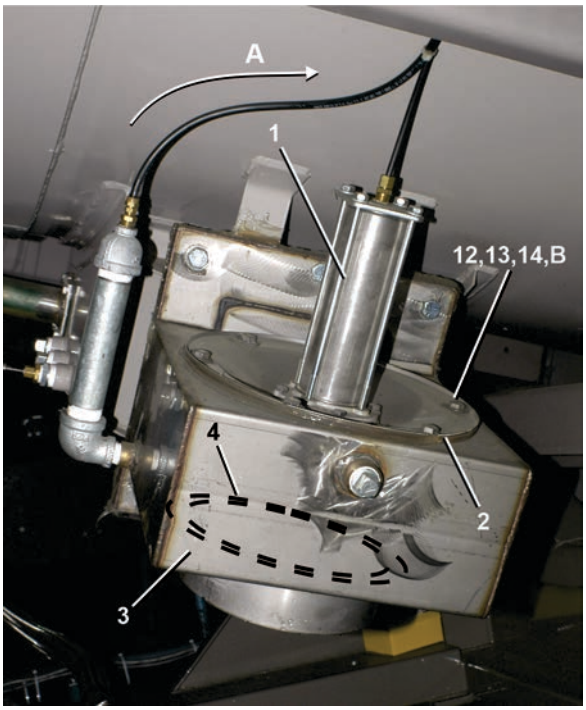
This page intentionally blank

BPWH6W03 / 2021474 BPWH6W03.1 0000401172 A.3 C.2 11/17/21, 10:43 AM Released

Single Drain Valve

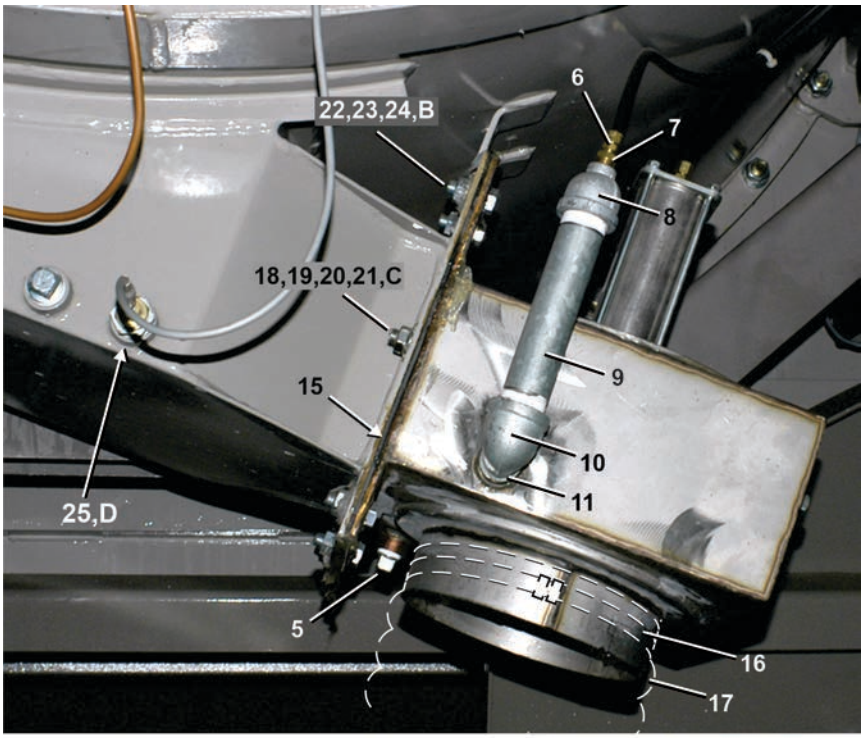
2 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K



Legend

A . . . To transducer
B . . . 6 instances
C . . . 2 instances
D . . . Temperature Probe



Single Drain Valve

2 Sheets

68036H5N, 68036H5K, 68036M5K, 72046M5K

Table 41. Parts List—Single Drain Valve

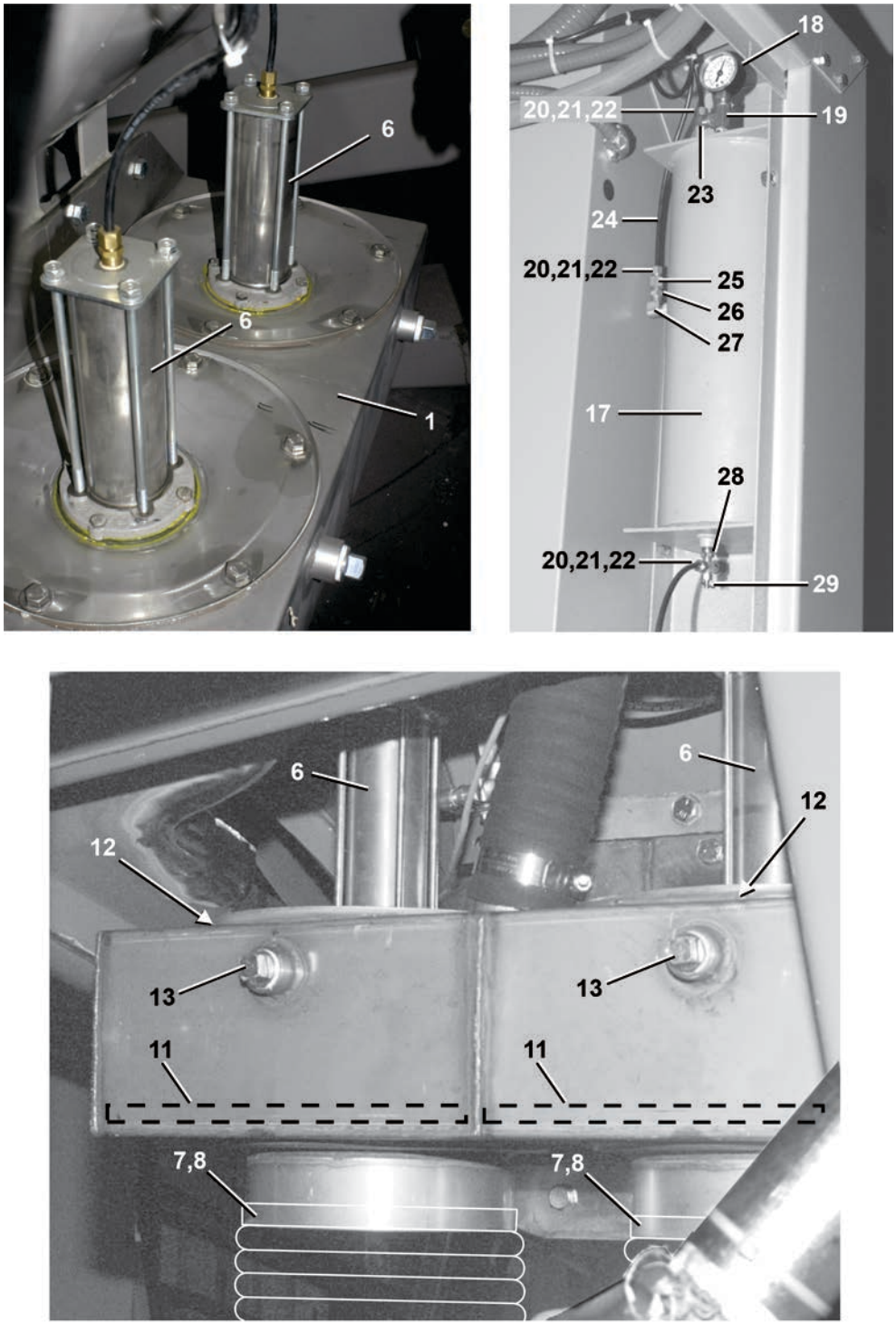
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GVD68001	INSTALL= 8"DUMPVAL 6836E	
	B	AVD68001	ASSY= 8" DUMPVAL 6836E	
	C	AD 15 090K	INSTALL=AIR CHAMBER PRESS/SW	
			Components	
all	1	SA 28 158	* BONNET+AIRCYL=8"SS DUMPVALV	
all	2	02 18104	GASKET=8"DUMP VALVE BONNET	
all	3	W2 18931	* BODY=8"DUMPVALV=4244,60,52	
all	4	02 18068	9 SEAT-RESILIENT=8"DUMPVALVE	
all	5	5SP0KGFSS	NPT PLUG 1/2 SQSOLID GALSTL	
all	6	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
all	7	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	8	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	
all	9	5N1A05AG42	NPT NIPPLE 1X5 TBE GALSTL SK40	
all	10	5SL1KNFACK	NPTELB 90DEG 1X1/2 GALMAL 150#	
all	11	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
all	12	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	13	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	
all	14	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
all	15	02 18107	GASKET=8"FLANGED DUMP VALVE	
all	16	60E328A18A	HOSE-8"1DX18"LONG TITAN ES115EX8000-18	
all	17	27A092	HOSECLAMP S.S.SCR 7+1/8-10"	
all	18	15K153	HXCAPSCR 1/2 -13 X 1 +1/4 SS	
all	19	24G032N	ROLLED WASH.500ID NYLTITE 50W	
all	20	15U310	LOKWASHER REGULAR 1/2 SS18-8	
all	21	15G225	HEXNUT 1/2-13UNC2 SS18-8	
all	22	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	23	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	24	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	25	30R0043PB	TEMPERATURE PROBE ASSY=BRASS	

BPWH6W04 / 2021475 BPWH6W04.1 0000401265 C.2 A.5 11/19/21, 8:18 AM Released

Drain Valve Body with Two Valves

3 Sheets

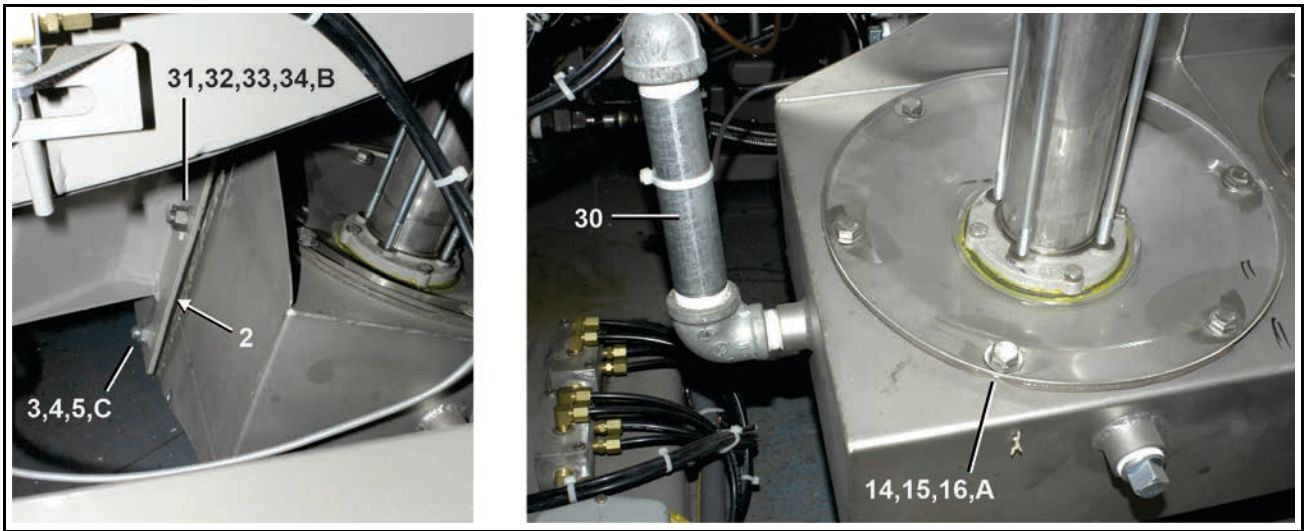
Figure 60. Installed Views



Drain Valve Body with Two Valves

3 Sheets

Figure 61. Drain Valve Body with Two Valves



Legend

A . . . 12 instances
B . . . 2 instances
C . . . 8 instances

Table 42. 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	GVD68002	INST= DUAL-DUMPVAL 6836E/F	
	B	AVD65003	ASSY=DUAL-DUMPVALVE 6440/50	
			Components	
all	1	W2 18932E	BODY, 8"DUALDUMP=6440/50	
all	2	02 18107	GASKET=8"FLANGED DUMP VALVE	
all	3	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	4	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	5	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	6	SA 28 158	* BONNET+AIRCYL=8"SS DUMPVALV	
all	7	27A092	HOSECLAMP S.S.SCR 7+1/8-10"	
all	8	60E328A18A	HOSE-8"1DX18"LONG TITAN ES115EX8000-18	
all	11	02 18068	9 SEAT-RESILIENT=8"DUMPVALVE	
all	12	02 18104	GASKET=8"DUMP VALVE BONNET	
all	13	5SP0PBESC	PLUG PIPE SQ 3/4" BRASS CORED	
all	14	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	

Drain Valve Body with Two Valves

3 Sheets

Table 42 Parts List—Drain Valve Body with Two Valves (cont'd.)

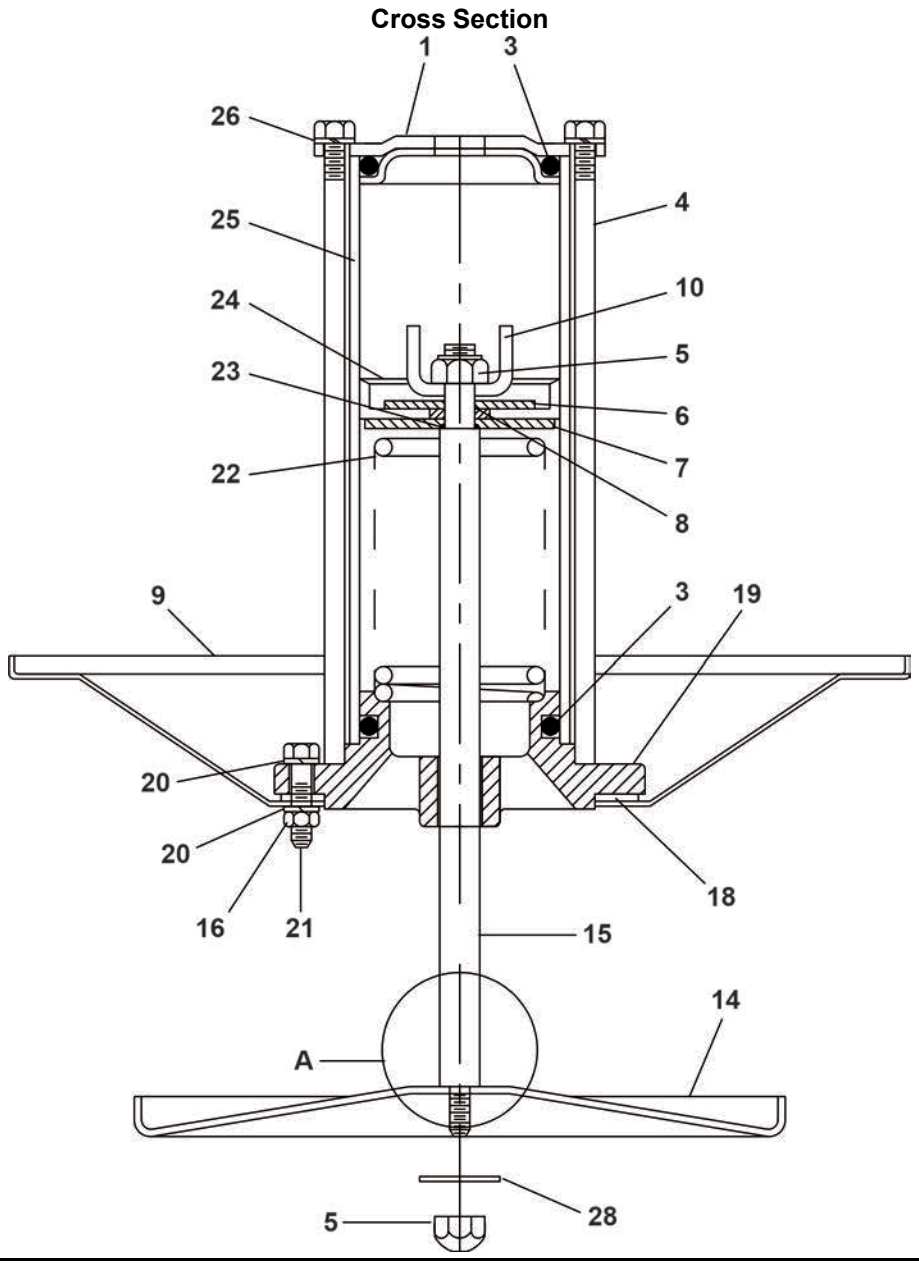
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	15	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	16	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
all	17	W3 25307D	*TANK=AIR PRESSURE RESERVE	
all	18	30N102	PRESSGAUGE 1/4BOTCON.0-150PSI	
all	19	51V015	TEE 1/4 FGDBRASS 101T7-444	
all	20	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	21	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	22	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	23	53A007B	BODYFEMCON.25X.25COMP#B66A-4B	
all	24	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	25	53A008B	BODYMALECON.25X.25COMP#B68A-4B	
all	26	96D047AAK	CHECK VALVE 1/4"DELT#CMMQ20B	
all	27	5SL0EBEC	NPTELB 90DEG STRT 1/4 BRASS125	
all	28	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	29	96H018	ANGLE NEEDLE VLV 1/4"T X 1/8MP,PARKER#NV104C-5-2 W/PIN HANDLE	
all	30	AD 15 090A	AIRCHAMBER PRESWITCH INSTALL	
all	31	15K153	HXCAPSCR 1/2 -13 X 1 +1/4 SS	
all	32	24G032N	ROLLED WASH.500ID NYLTITE 50W	
all	33	15U310	LOKWASHER REGULAR 1/2 SS18-8	
all	34	15G225	HEXNUT 1/2-13UNC2 SS18-8	

BPWH6W05 / 2021515 BPWH6W05.1 0000401353 C.2 A.7 12/17/21, 2:32 PM Released

Bonnet Assembly

3 Sheets

Figure 62. Bonnet and Air Cylinder



Legend

A . . . Detailed Views: Bumber, O-ring, Washer

Bonnet Assembly

3 Sheets

Figure 63. Bumper, O-Ring, Washer

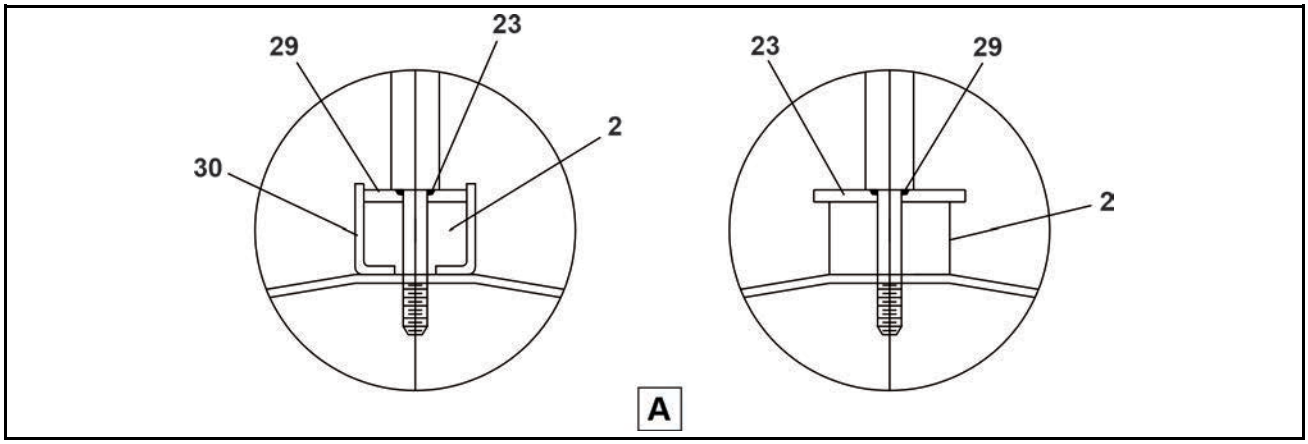


Table 43. Parts List—Bonnet Assembly

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 28 158	* BONNET+AIRCYL=8"SS DUMPVALV	
Components				
all	1	02 02101	CYLHEAD W/TAPPED HOLE	
all	2	02 16021C	BUMPER=DUMP VALVE BONNET	
all	3	60C132	ORING 2"IDX3/16CS BUNA70 #329	
all	4	02 10585D	TIE BOLT=5/16-18X7.875 PLTD	
all	5	15G220	NUTLOK THINHX 3/8-24 SS/NYL	
all	6	02 02085	UP WASHER=2"OD=PISTON CUP	
all	7	02 02105B	2.38"ACYL BRASS PISTONCUP WSHR	
all	8	02 02185	WASHER=PISTON CUP COMP LIMIT	
all	9	02 18931E	BONNET-8"DUMP VALVE	
all	10	03 01313	STOP=AIR CYL W/2+11/16STROKE	
all	14	02 18796	DISC-8" DUMP VALVE S/S	
all	15	02 16021I	DUMPVAL STEM-4"+8"316SS	
all	16	15G168	SQNUT 1/4-20UNC2 SS18-8	
all	18	02 18931F	GASKET=DUMPVALVE-1/60+72WEHU	
all	19	X2 02743	BONNET=2"DUMP VALVE	
all	20	24G020N	ROLLED WASH.252ID NYLTITE 25W	
all	21	15K041S	HEXCAPSCR 1/4-20UNC2AX1 SS18-8	
all	22	03 06429	SPRING=2.11ODX6.5FL 64#/"	
all	23	60C106	ORING 5/16ID 1/16CSBUNA70#011	

Bonnet Assembly

3 Sheets

Table 43 Parts List—Bonnet Assembly (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	24	02 02194	PISTON CUP=DUMPVALVE 2+3/8"	
all	25	02 02068	AIRCYL-STAINLESS=DUMP VALVE	
all	26	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
all	28	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
all	29	02 16021E	WASHER 3/8IDX1.250D DUMPVAL	
all	30	02 16021D	DUMP VALVE BUMPER RETAINER	

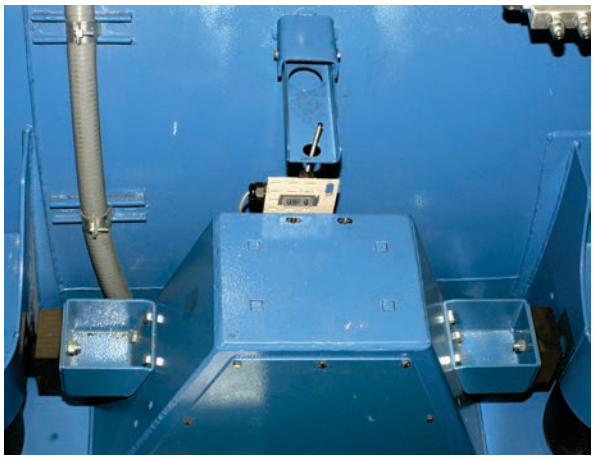
10 Control and Sensing

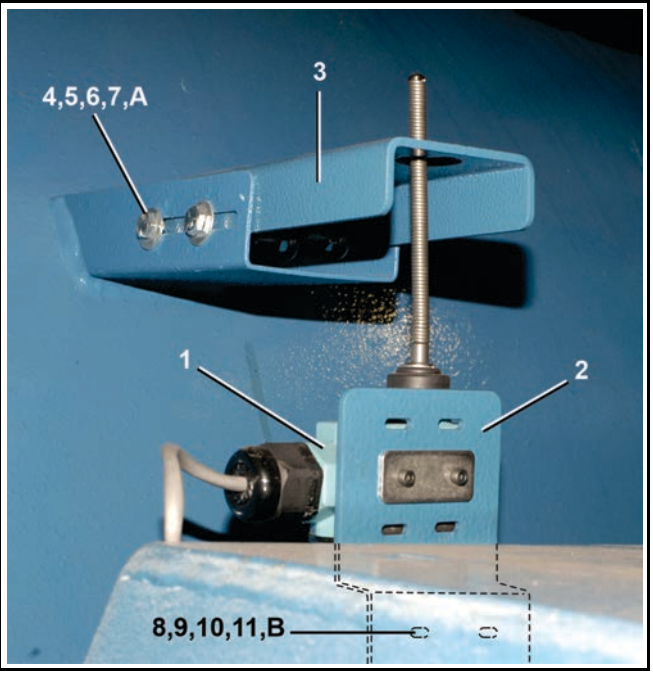
BPWHUZ03 / 2021282 BPWHUZ03.1 0000352036 A.3 C.2 7/6/21, 9:00 AM Released

Excursion Switch

1 Sheet

48040M7K, 68036M5K, 72046M5K





Legend

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

Table 44. 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 C.2 B.3 1/2/20, 2:25 PM Released

Vibration Safety Switch

1 Sheet

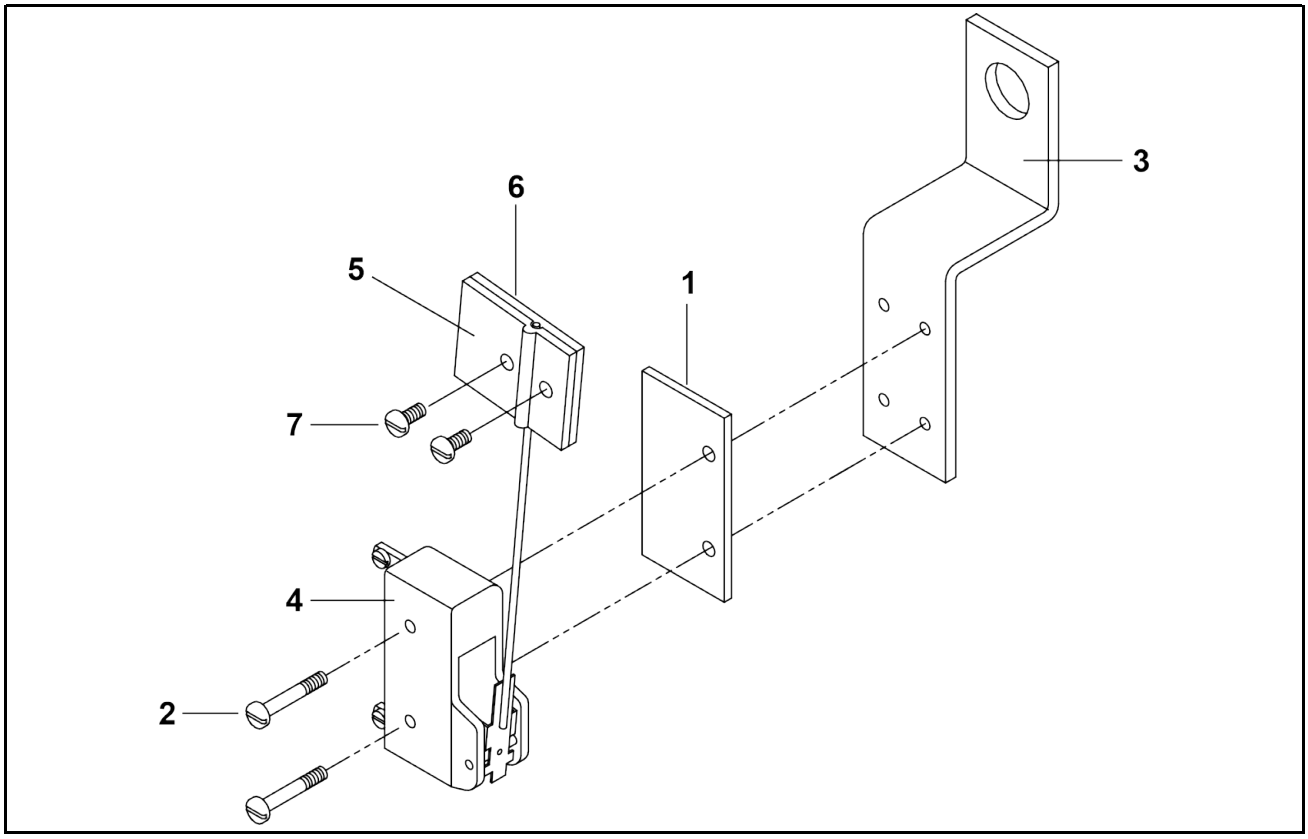


Table 45. Parts List—Vibration Safety Switch

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 11/7/19, 10:43 AM Released

10.1 Vibration Safety Switch Adjustments

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

10.1.1 What the Vibration Safety Switch Does

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

The **vibration safety switch** in Figure 64: Vibration Switch, page 182 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 46, page 181 below illustrates the effect of the **vibration safety switch** actuation.

Table 46. 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.2 C.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.**

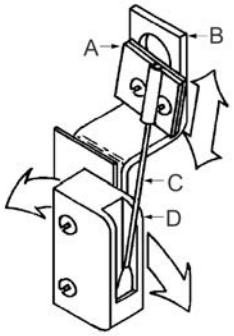
Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown in Figure 64: Vibration Switch, page 182 , 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 64. 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.

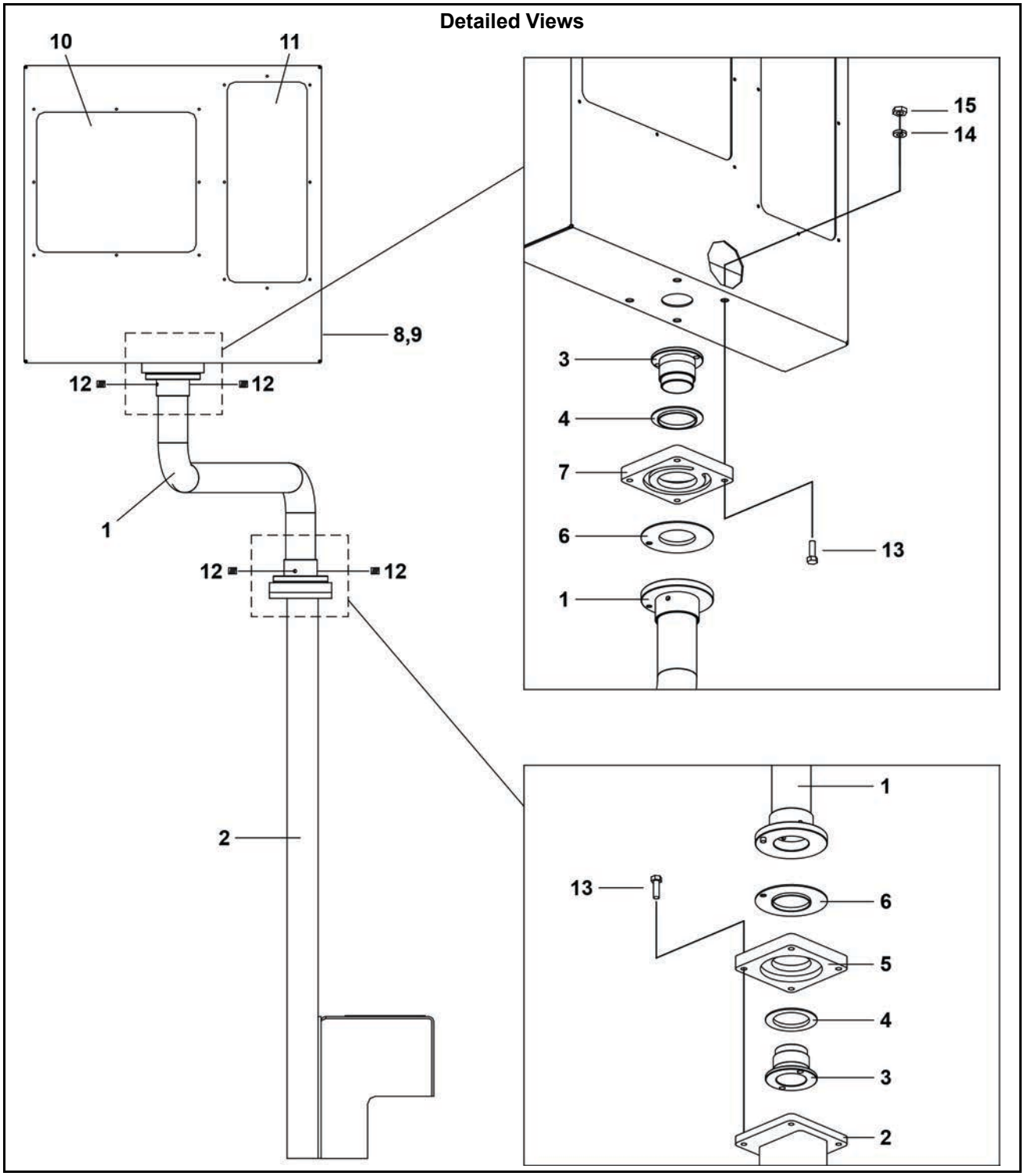
This page intentionally blank

BPWHUZ01 / 2021282 BPWHUZ01.1 0000351986 A.3 C.2 7/6/21, 8:47 AM Released

Switch Panel Pivot Arm

2 Sheets

48040M7K, 68036M5K, 72046M5K



Switch Panel Pivot Arm

2 Sheets

48040M7K, 68036M5K, 72046M5K

Table 47. Parts List—Switch Panel Pivot Arm

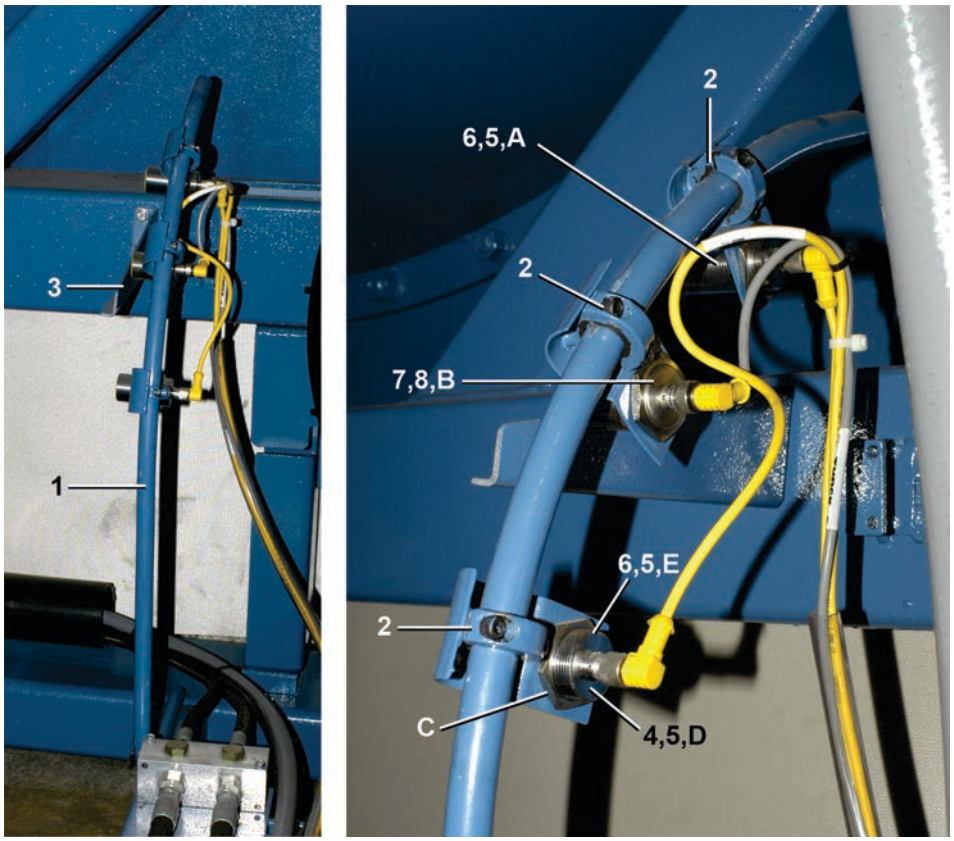
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**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 C.2 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 48. 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 48 Parts List—Tilt Limit Switches (cont'd.)

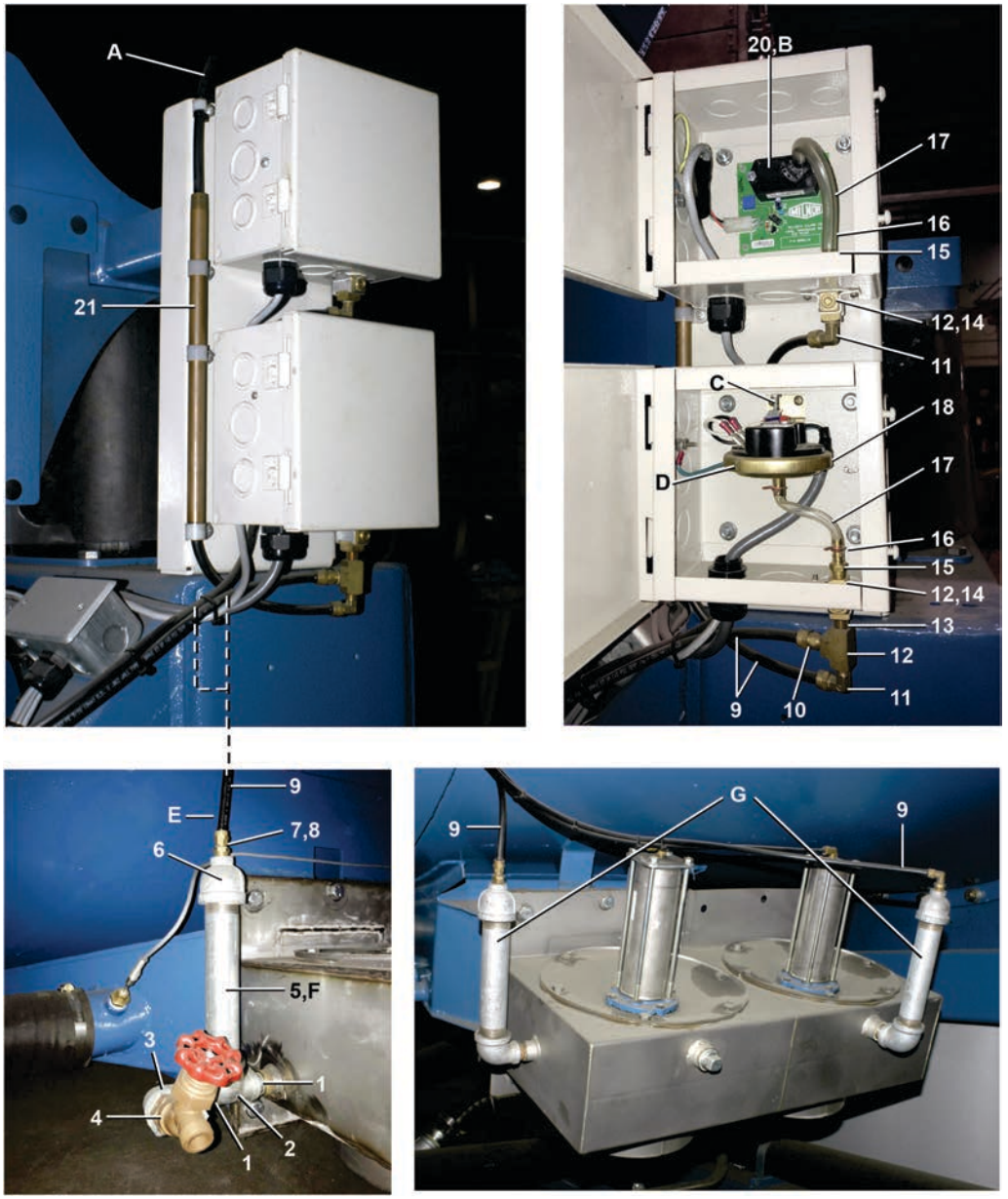
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**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.1 C.2 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 49. Parts List—Air Chamber Level Switch with Overflow Pressure Switch

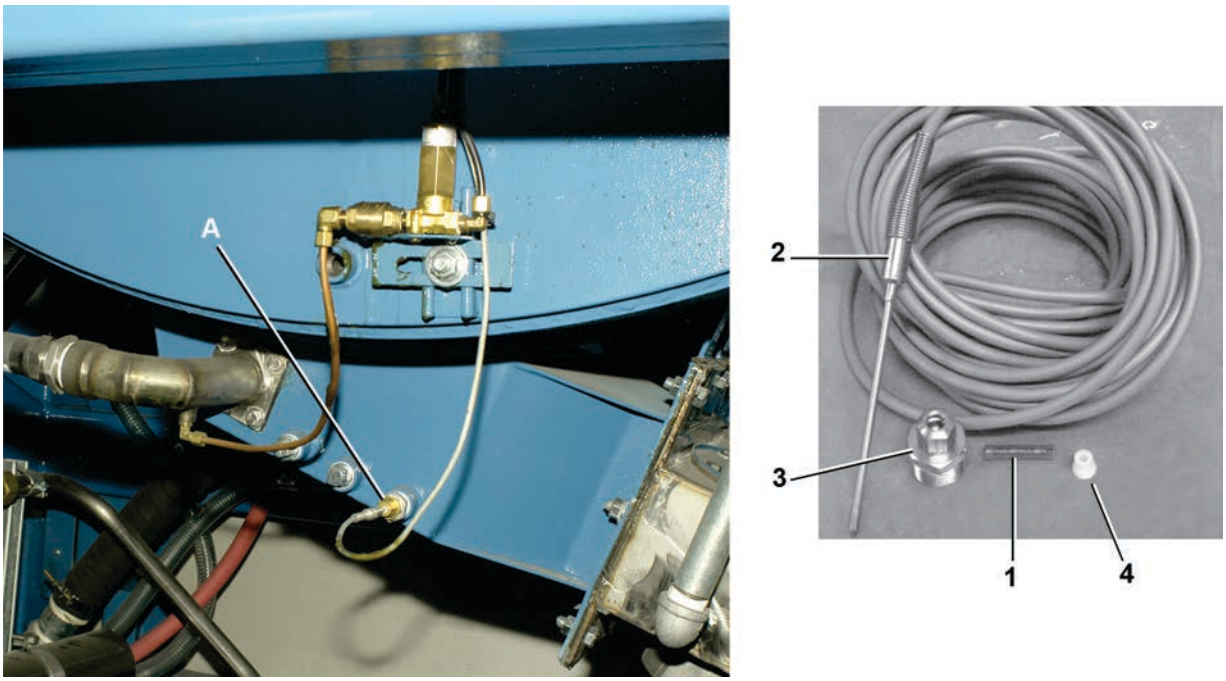
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**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

BPWHUZ04 / 2021282 BPWHUZ04.1 0000352067 A.3 C.2 7/6/21, 9:13 AM Released

Temperature Probe

1 Sheet

48040M7K, 68036M5K, 72046M5K



Legend

A . . . Temperature probe

Table 50. 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	

11 Hydraulic Assemblies

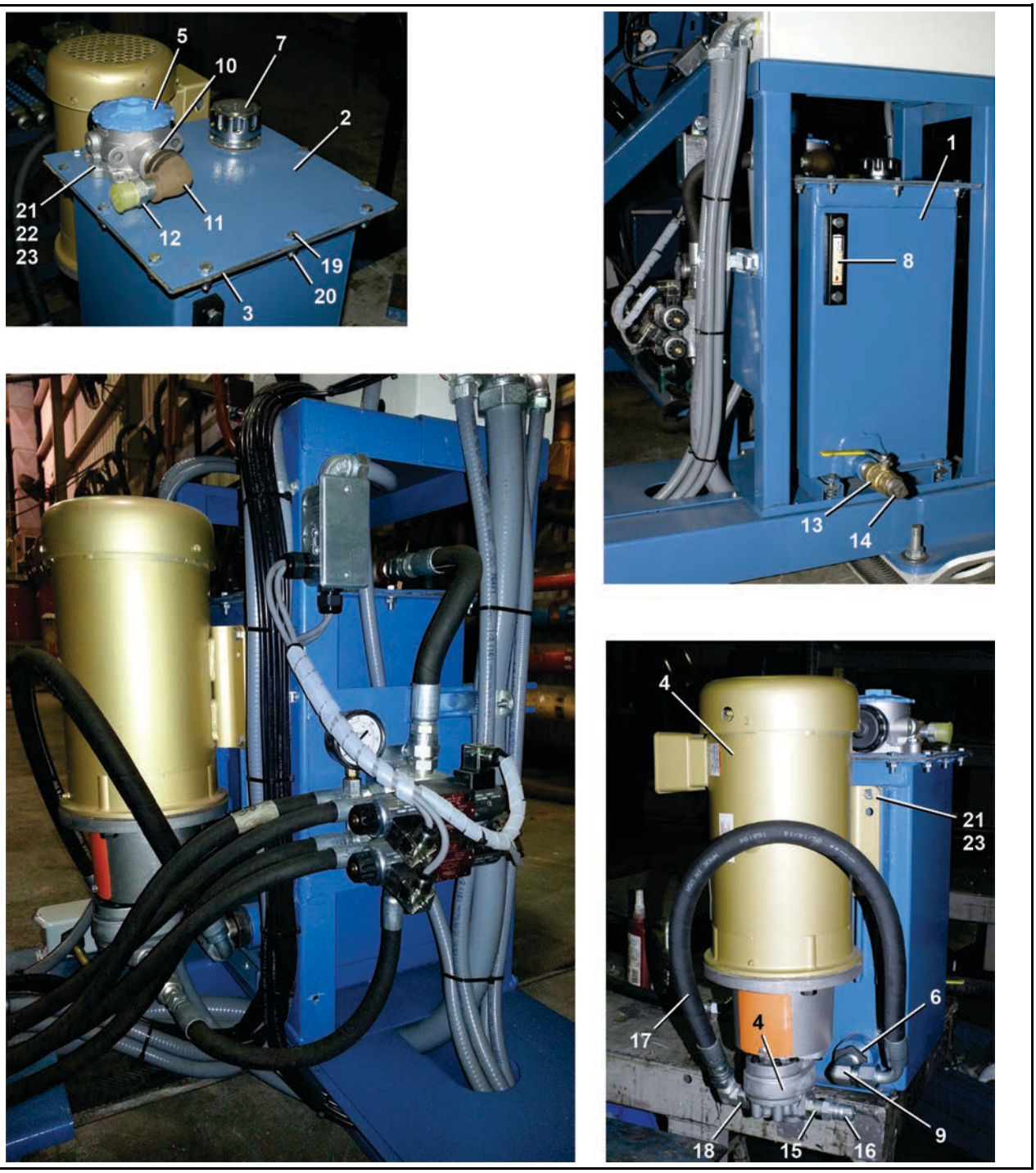
BPWHUH01 / 2021263 BPWHUH01.1 0000350883 C.2 A.4 6/24/21, 8:53 AM Released

Hydraulic Tank

2 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 65. 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	

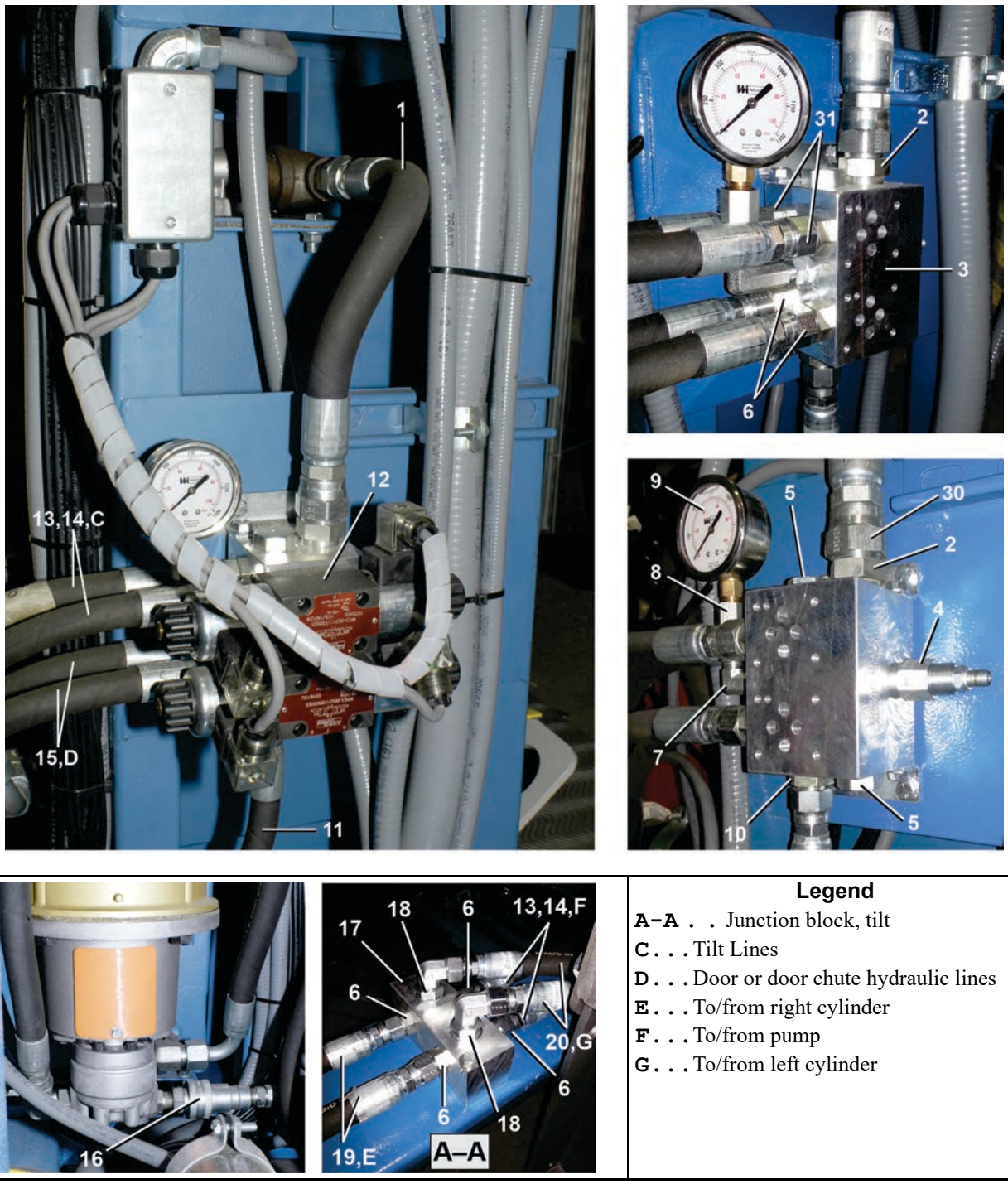
BPWHUH02 / 2021282 BPWHUH02.1 0000351222 C.2 A.4 7/6/21, 7:31 AM Released

Hydraulic Tilt Valves and Fittings

4 Sheets

48040M7K, 68036M5K, 72046M5K

Figure 66. Manifolds and Valves



Legend

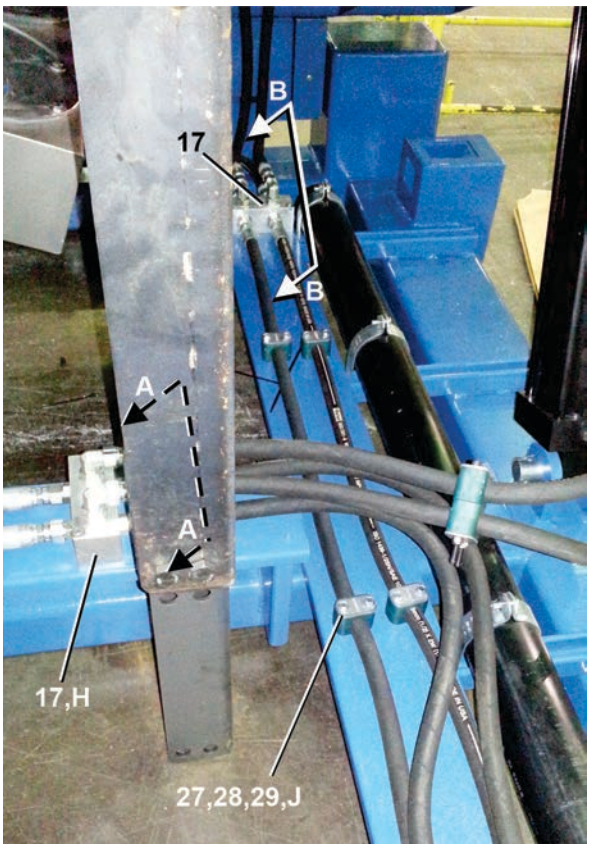
A–A . . Junction block, tilt
C . . . Tilt Lines
D . . . Door or door chute hydraulic lines
E . . . To/from right cylinder
F . . . To/from pump
G . . . To/from left cylinder

Hydraulic Tilt Valves and Fittings

4 Sheets

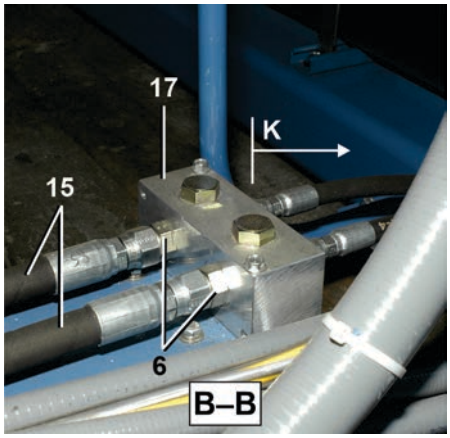
48040M7K, 68036M5K, 72046M5K

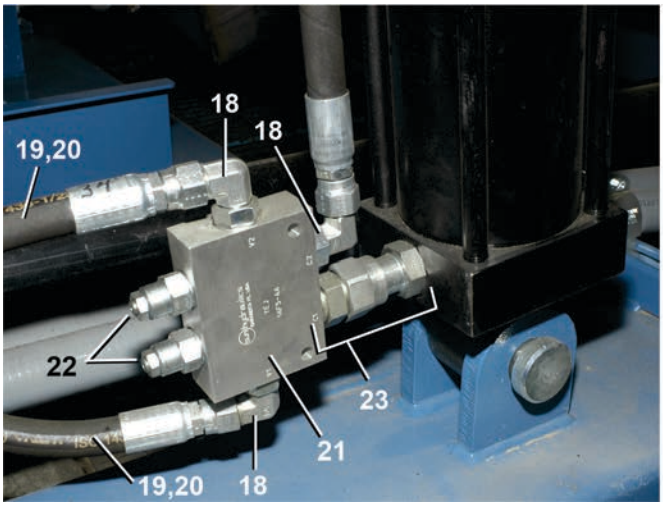
Figure 67. Junction Blocks and Counterbalance Valves

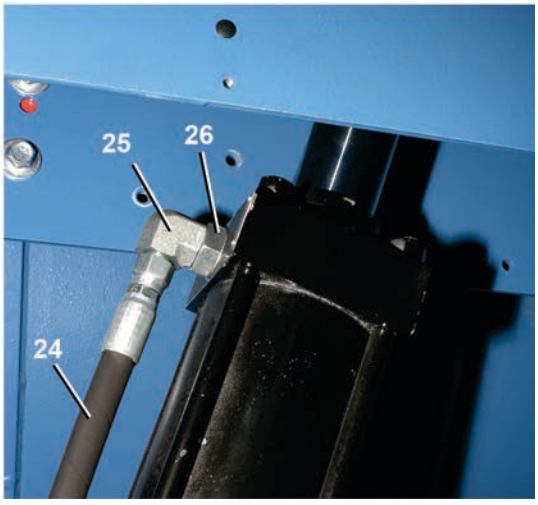


Legend

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.

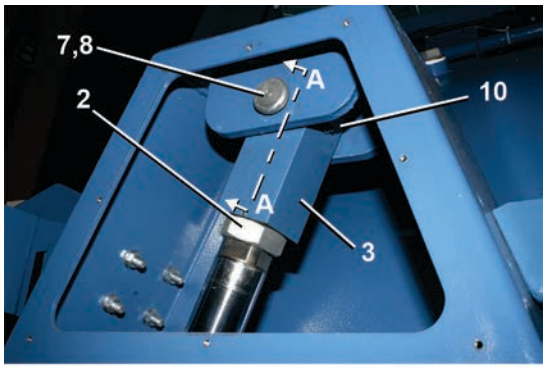
Used In	Item	Part Number	Description/Nomenclature	Comments
C	20	60EH40C25B	HYD HOSE 1/2" + 2 X FORSW=25"	
all	21	96DH471	COUNTERBALANCE VALVE-SUN BODY	
all	22	96DH471A	CARTRIDGE-COUNTERBAL.SUN	
all	23	52ZCF50L0S	TUBEFITSTR3/4X1/2"#12-8 F5OLO-S	
AB	24	60EH40C35P	HYD HOSE 1/2" + 2 X FORSW=35+3/4"	
C	24	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	

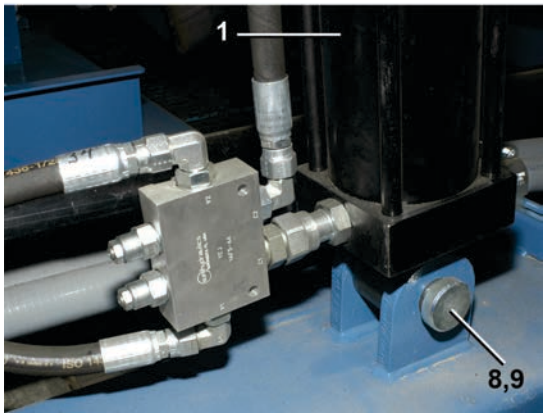
BPWHUH03 / 2021264 BPWHUH03.1 0000351325 A.3 C.2 6/24/21, 9:02 AM Released

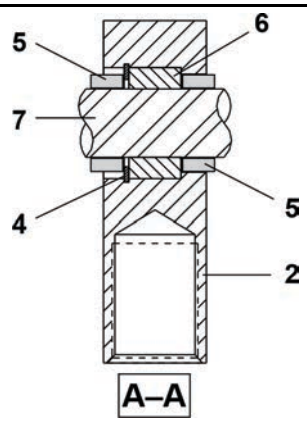
Hydraulic Cylinder

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 Door Chute

This page intentionally blank

BPWH6H01 / 2021474 BPWH6H01.1 0000400540 C.2 A.5 11/17/21, 1:29 PM Released

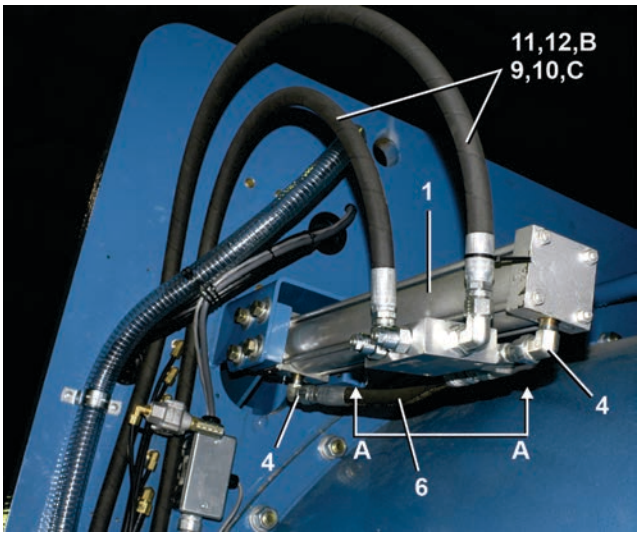
Door Chute Hydraulics

2 Sheets

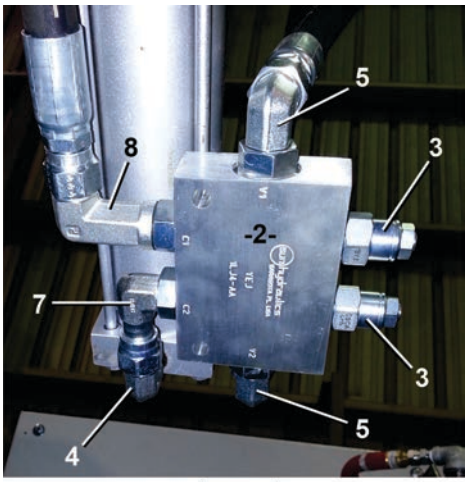
68036M5K, 72046M5K

Figure 68. Hydraulic Components for Door Chute Loading

Hydraulic Tilt Cylinders: Right & Left

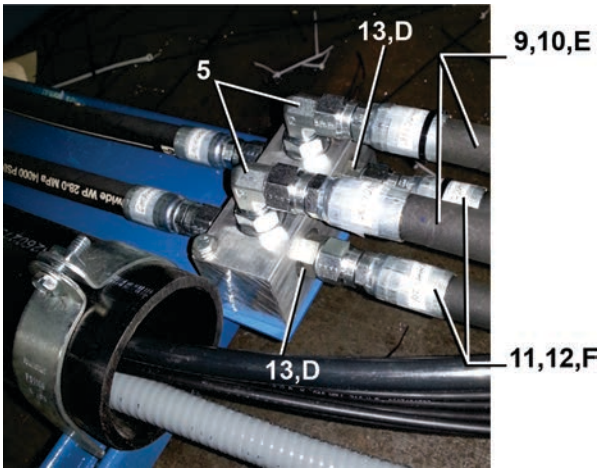


Counter-Balance Valves and Fittings

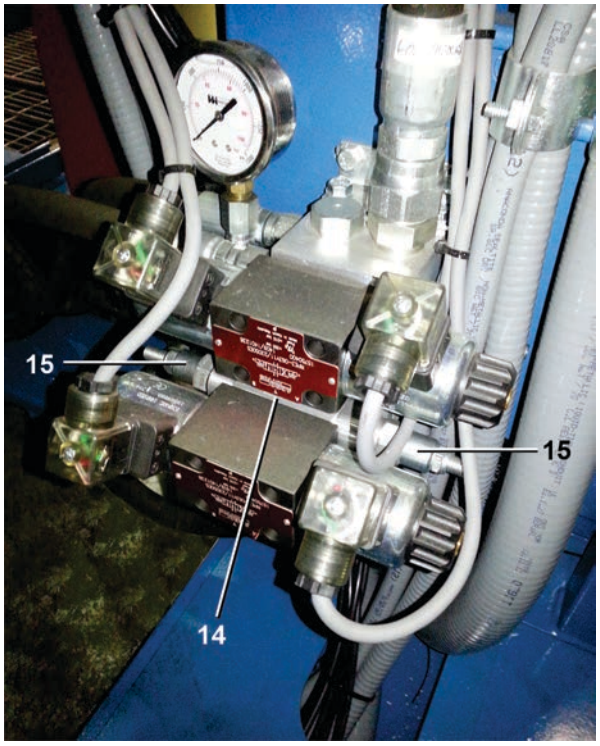


A–A

Block and Hydraulic Lines



Sub-Plate and Cartridges



Legend

B . . . Right
C . . . Left
D . . . Door chute and block
E . . . Left cylinder
F . . . Right cylinder

Door Chute Hydraulics

2 Sheets

68036M5K, 72046M5K

Table 54. Parts List—Door Chute Hydraulics

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	GHT68006	6836M5K DRYELL HYDRAULICS INSTALL	
Components				
all	1	27E162K17A	HYRDRAULIC CYL 2.5 BORE X 17"STROKE	
all	2	96DH471	COUNTERBALANCE VALVE-SUN BODY	
all	3	96DH471A	CARTRIDGE-COUNTERBAL.SUN	
all	4	52ZJ0KS001	TUBEFIT90EL.1/2X3/8#8-6 C5OLO-S	
all	5	52ZJ00S003	TUBEFIT 90EL 1/2"SWIVEL #8 C5OLO-S	
all	6	60EH40C11K	HYD HOSE 1/2" + 2 X FORSW=11.5"	
all	7	52ZJ00S024	ELBOW90 1/2FS X 1/2 ORB #8 AOEL6-S	
all	8	52ZJ00S025	TUBEFIT1/2"90ELFC#8 CC5OLO-S	
all	9	60EH40C135	HYD HOSE 1/2" + 2 X FORSW=135"	
all	10	60EH40C130	HYD HOSE 1/2" + 2 X FORSW=130"	
all	11	60EH40C206	HYD HOSE 1/2" + 2 X FORSW=206"	
all	12	60EH40C201	HYD HOSE 1/2" + 2 X FORSW=201"	
all	13	52ZC0PS008	TUBEFITSTR 8-1/2 F5OF-S	
all	14	96DH487A	BODY, SUN SANDWICH BODIES #GBY	
all	15	96DH487B	CARTRIDGE SUN #NCCB-LCN	

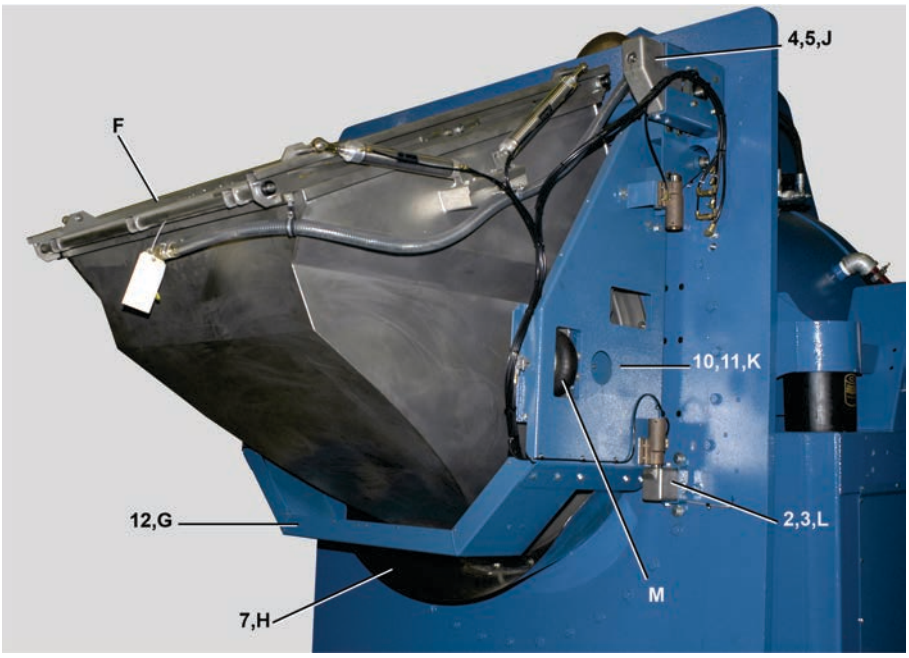
BPWH6D01 / 2021475 BPWH6D01.1 0000400723 C.2 A.5 11/18/21, 1:40 PM Released

Door Chute Loading

5 Sheets

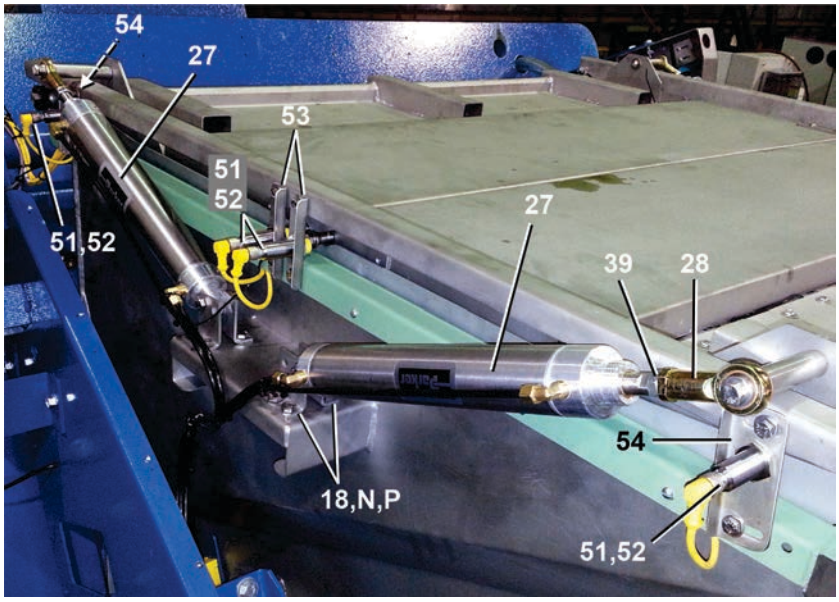
6836M5K, 7246M5K

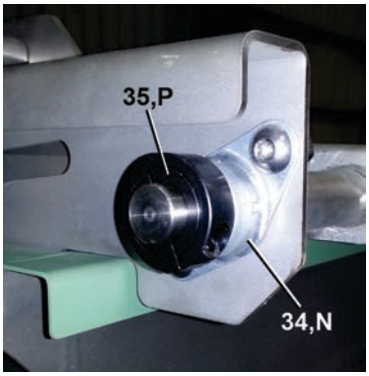
Figure 69. Components and folding doors



Legend

- **F . . .** Folding doors, see BPWH6D02
- **G . . .** Loadchute bottom frame
- **H . . .** Unload tray
- **J . . .** Upper latch receptacle
- **K . . .** Lifting frame
- **L . . .** Lower latch receptacle
- **M . . .** Door chute air seal
- **N . . .** Typical
- **P . . .** 4 instances



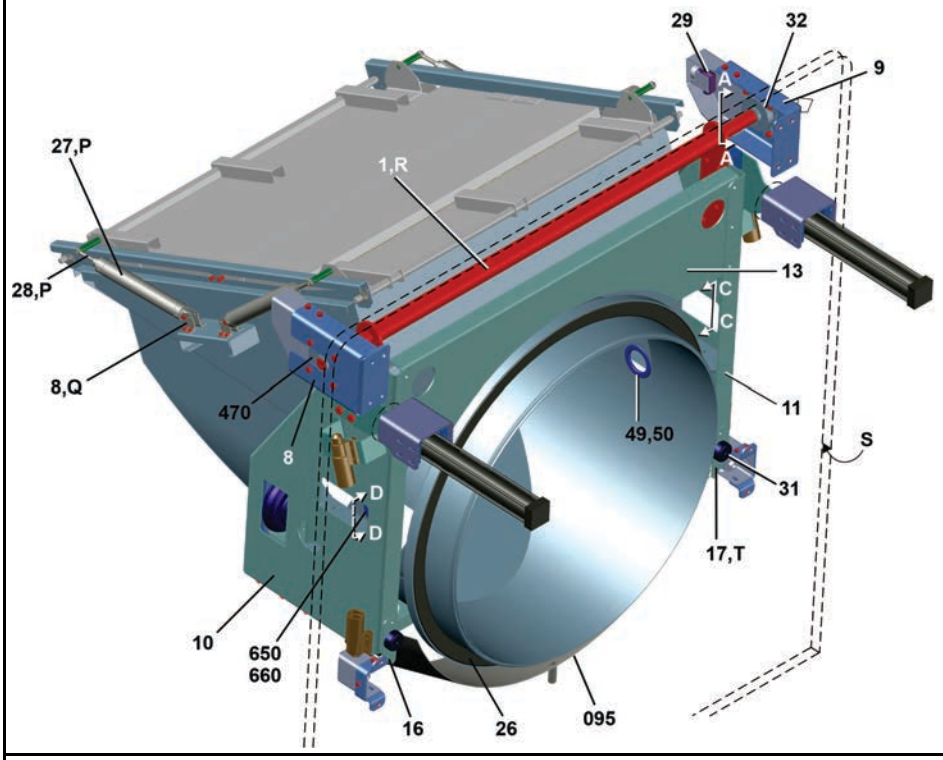


Door Chute Loading

5 Sheets

6836M5K, 7246M5K

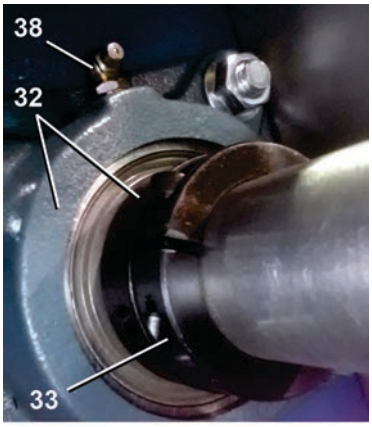
Figure 70. Door Chute Rear Isometric View



Legend

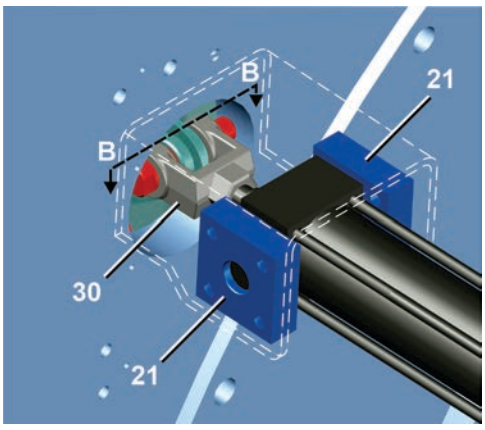
P . . . 4 instances
Q . . . 8 instances
R . . . Pivot shaft
S . . . Shellfront
T . . . Lower frame gusset

Door Chute Pivot Shaft and Flange Bearings

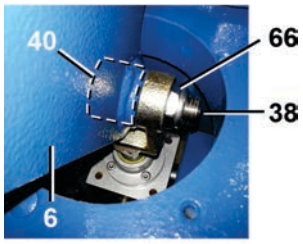


A–A

Cylinder Mounting: Right and Left



Yoke, Pin, and Ball Bushing



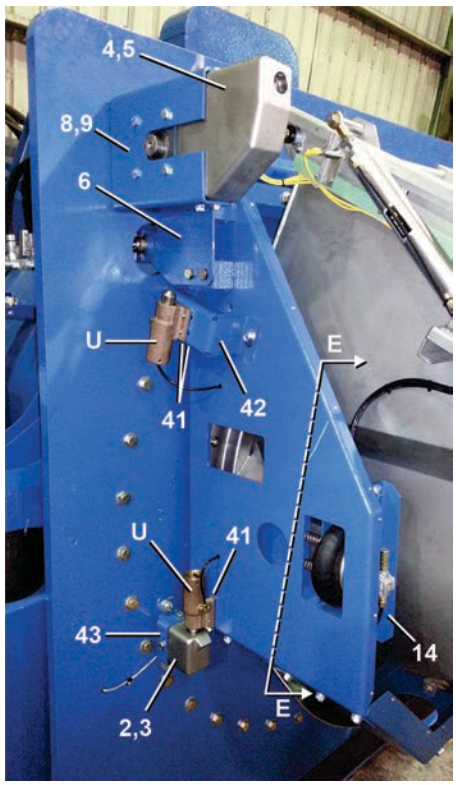
B–B

Door Chute Loading

5 Sheets

6836M5K, 7246M5K

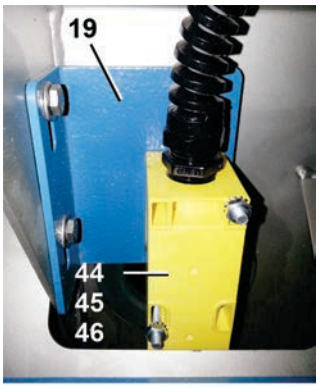
Figure 71. Air Seal and Latches



Legend

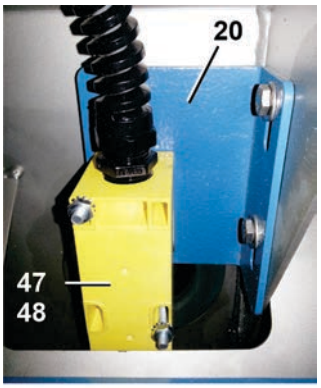
U . . . See BPWG4D02

Door Chute Photoeye Emitter

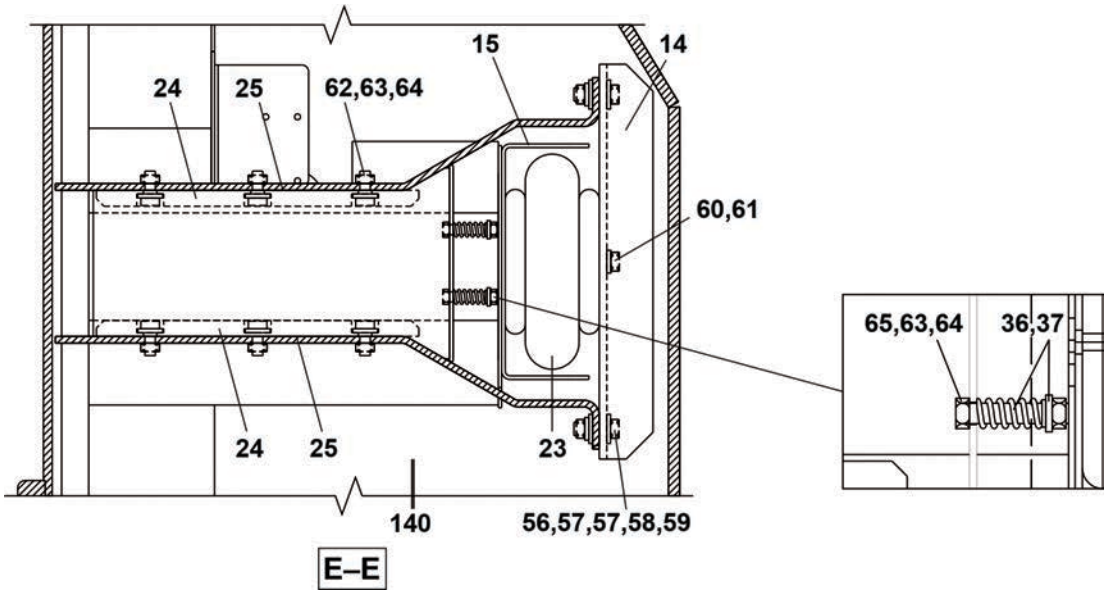


C–C

Door Chute Photoeye Receiver



D–D



E–E

Door Chute Loading

5 Sheets

6836M5K, 7246M5K

Table 55. Parts List—Door Chute Loading

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	GAD68002	6836M5K DRYEL INSTALL	
Components				
all	1	W2 25050	68M5K DRYEL PIVOT SHAFT AND ARM WLMT	
all	2	W2 22538	6836M5K DRYEL BOTTOM RECEPTACLE LT WLMT	
all	3	W2 22538A	6836M5K DRYEL BOTTOM RECEPTACLE RT WLMT	
all	4	W2 22527	6836M5K DRYEL UPPER RECEPTACLE WLMT RT	
all	5	W2 22527A	6836M5K DRYEL UPPER RECEPTACLE WLMT LT	
all	6	W2 22627	6836M5K DRYEL LIFTING FRAME CYLINDER WLMT	
all	7	W3 65338F	6836M5K UNLOAD TRAY WLMT	
all	8	02 22543	6836M5K DRYEL BEARING MOUNT BRKT RT	
all	9	02 22543A	6836M5K DRYEL BEARING MOUNT BRKT LT	
all	10	W2 22514	6836M5K DRYEL LIFTING FRAME RIGHT WLMT	
all	11	W2 22514A	6836M5K DRYEL LIFTING FRAME LEFT WLMT	
all	12	02 22515	LOADCHUTE BOTTOM FRAME	
all	13	02 22518	LOADCHUTE TOP FRAME	
all	14	02 22525	AIRMT MTG BRACKET	
all	15	02 22524	AIRMNT BACKING PLATE	
all	16	02 22544	6836M5K DRYEL LIFTING FRAME LOWER GUSSET RT	
all	17	02 22544A	6836M5K DRYEL LIFTING FRAME LOWER GUSSET LT	
all	18	07 30125	UNLOAD DOOR AIRCYL REAR MNT	
all	19	02 22545	6836M5K DRYEL BUCKET/FRAME BRKT RT	
all	20	02 22545A	6836M5K DRYEL BUCKET/FRAME BRKT LT	
all	21	X2 22626	6836M5K DRYEL HYDCYL TRUNION MOUNT	
all	22	X4 22046D	DRYEL LIFTING CLEVIS	
all	23	60B100	AIRMT S116B 1CONV F#W01-358-7564	
all	24	04 20850C	MK2 SLIDE PAD COSHA	
all	25	04 20850S	SHIM-SLIDE PAD COSHA	
all	26	03 60851	GASKET=48"DOOR EPDM	
all	27	27C216A	AIR CYL 2"BORE X 10"STROKE W/CUSHIONS	
all	28	54AA00KFRE	FEM ROD END ALIN#VF-8G 1/2"-20	
all	29	09R012	MICSW SPDT PAINTED BZE6-RN 01	
all	30	17A049Z	YOKE END 3/4-16UNF YELLOW ZINC	
all	31	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	

Door Chute Loading

5 Sheets

6836M5K, 7246M5K

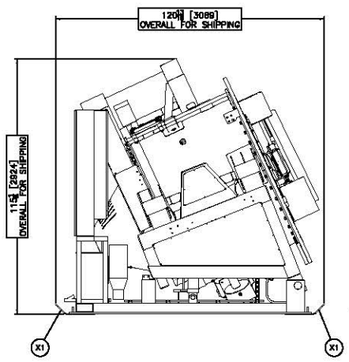
Table 55 Parts List—Door Chute Loading (cont'd.)

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.

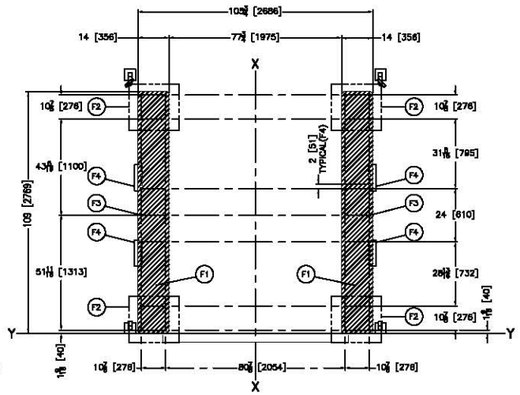
Used In	Item	Part Number	Description/Nomenclature	Comments
all	33	54AF1687	FLBRG 1.6875 NTN#UCF209-111T	
all	33	54JH11690C	SHAFTCOLLAR 1.687-SPECIAL	
all	34	540E015	FLGMTBRG 3/4 BORE BRZ #FLB12	
all	35	54JH10750C	SHFTCOLLAR 3/4"CLPTYP(SGLSPLT)	
all	36	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	37	X4 22046C	BALL BUSHING SPACER-COBUCK	
all	38	54M015	GREASEFIT 60X36/60X44 1610BL	
all	39	17B132	INDUSTRIAL RETAIN.RING 4000-12	
all	40	54AA00PBB	SPHERICAL PLAIN BRG BALL BUSHING 3/4 RBC-B12L	
all	41	02 15633S	ADJPLATE=DOORLATCH SS	
all	42	02 25051	6836M5K DRYEL UPPER LATCH MOUNT	
all	43	02 22624	6836M5K DRYEL BOTTOM RECEPTACLE MOUNT	
all	44	09RPE006B	PHOTOEYE RECEIVER 24/120V AC	
all	45	09RPE007C	P.E. PWR.BLK. NO-OUT 240V-IN	
all	46	09RPE006B2	PHOTOEYE ON/OFF LOGICMOD #LM3	
all	47	09RPE006A	PHOTOEYE EMITTER 24/120V AC	
all	48	09RPE007C1	P.E. PWR.BLK. 240V-OUT 240V-IN	
all	49	06 20739	EXTRUSION GLASS PROXSW	
all	50	06 20739A	GLASS=3.06 DIA PROXSW	
all	51	09RPS18CAU	PRXSW QK CONN 18M NO-AC UNSHLD	
all	52	09RPTAC095	CONN. 90 FEM 3-PIN AC 3A 5M	
all	53	02 22808	6836M5K DRYEL BIFOLD DOORS PROX MOUNT	
all	54	02 22808A	6836M5K DRYEL DOORS PROX MOUNT OUTER	
all	56	15K151	HXCAPSCR 1/2-13UNC2AX1.25 GR5	
all	57	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	58	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	59	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	60	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	61	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	62	15K083V	BUTSOKCAPSCR 3/8-16X3/4 SS18-8	
all	63	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	64	15G218	HXLOKNUT NYL 3/8-16 STL/ZNC	
all	65	15K133	HXCAPSCREW 3/8-16UNC2AX3 GR5 Z	
all	66	15G246NS	HXTHIN NYL LOKNUT 3/4-10UNC SS18-8	

13 Dimensional Drawings

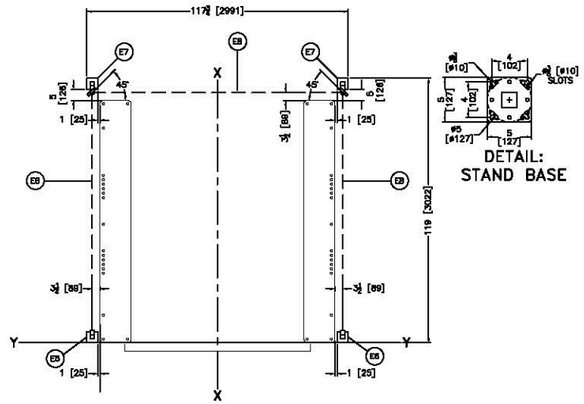
This page intentionally blank



LEFT SHIPPING VIEW

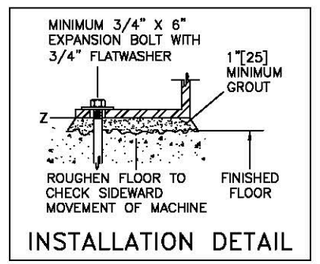


FOUNDATION PLAN

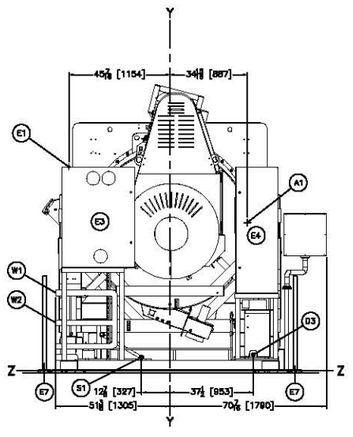


DETAIL: SAFETY SCREEN

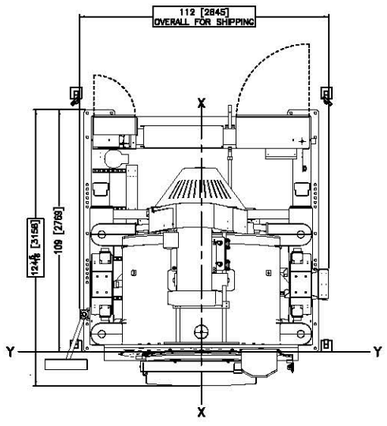
DETAIL: STAND BASE



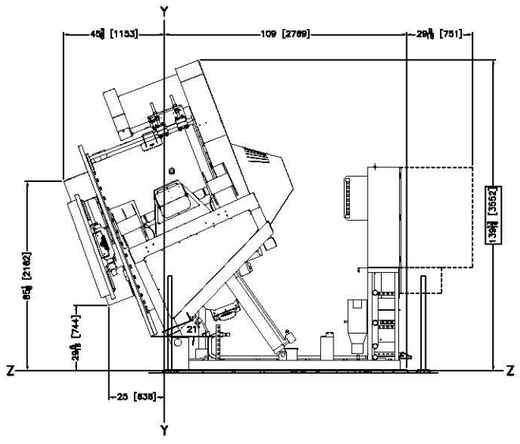
INSTALLATION DETAIL



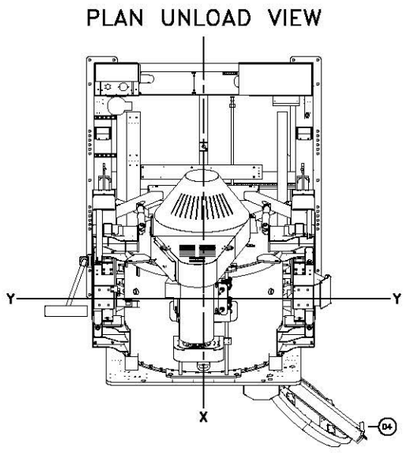
REAR VIEW



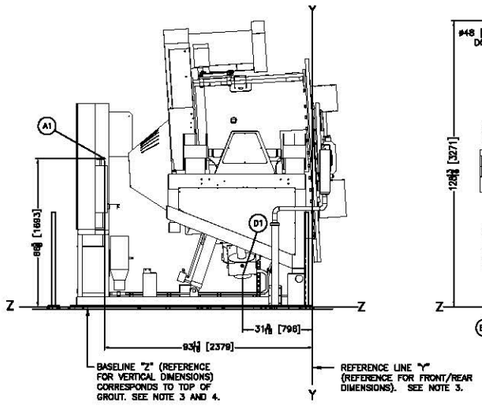
PLAN VIEW



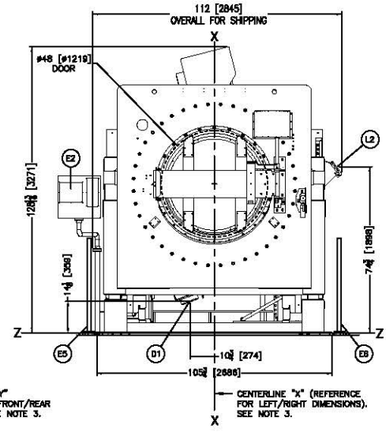
RIGHT UNLOAD VIEW



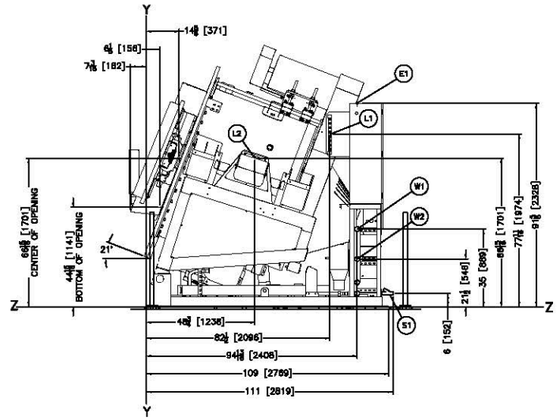
PLAN UNLOAD VIEW



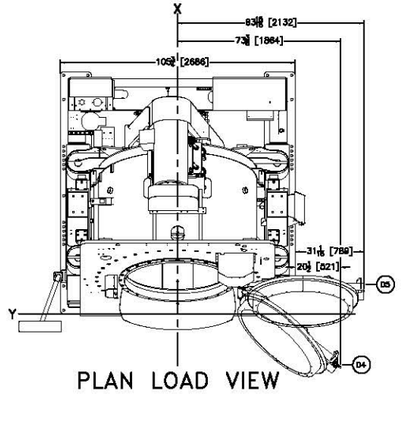
LEFT VIEW



FRONT VIEW



RIGHT LOAD VIEW



PLAN LOAD VIEW

ITEM	LEGEND
X1	SHIPPING TIE DOWN BRACKET
W2	COLD WATER INLET, 2" NPT
W1	HOT WATER INLET, 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	MillTouch-EX™ TOUCH SCREEN CONTROLLER
E1	MAIN ELECTRICAL CONNECTION
D5	DOOR OPEN 180 DEGREES
D4	DOOR OPEN 140 DEGREES, OPTION
D3	HYDRAULIC TANK, MANUAL DRAIN, 1" NPT
D1	DRAIN VALVE, 8" DIAMETER – STANDARD
B1	DOOR, 48"[1219]
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 PROMOTE ALL NECESSARY ADDITIONAL SAFETY GUARDS, FENCES, RESTRAINTS, DEVICES, ETC., NOT FURNISHED BY THE EQUIPMENT MANUFACTURER OR VENDOR.

ATTENTION

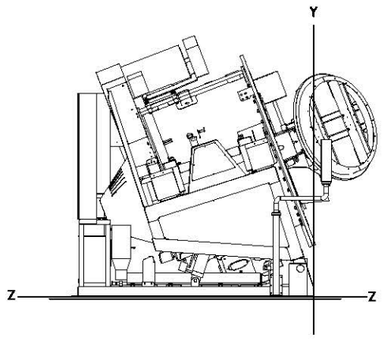
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

6836M5K

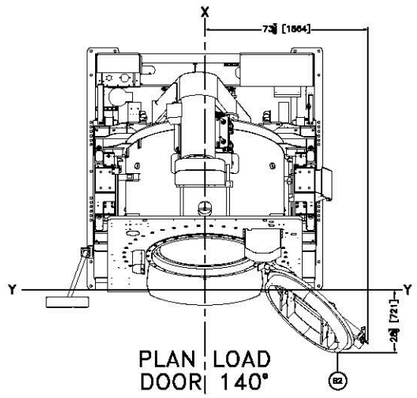
DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD6836M5KBE
2021094D

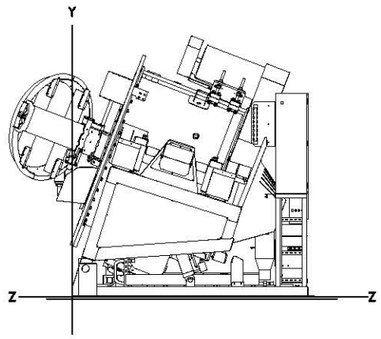
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA. Phone 504/467-9591,
FAX 504/468-3094. Email: milnorinfo@milnor.com



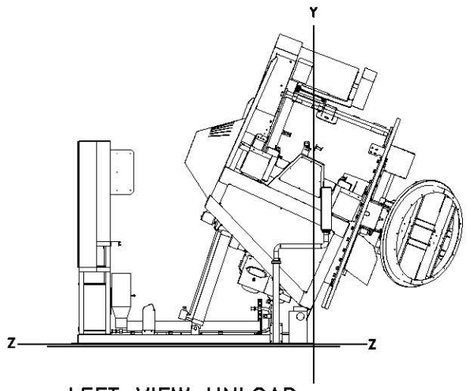
LEFT VIEW LOAD
DOOR 140°



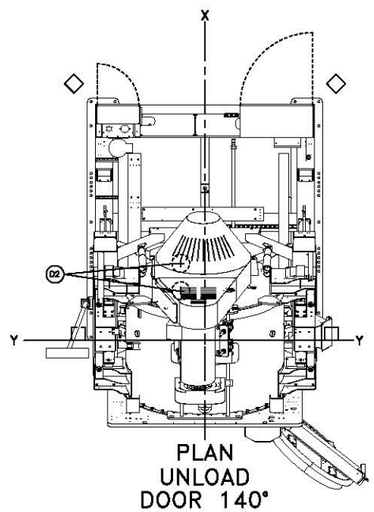
PLAN LOAD
DOOR 140°



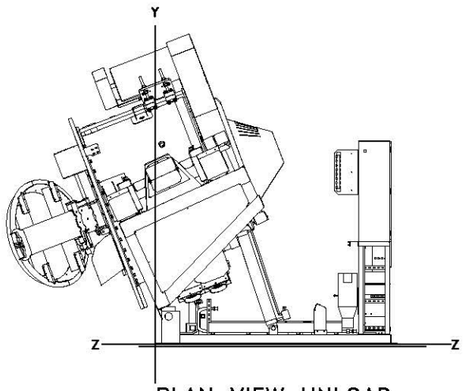
PLAN VIEW LOAD
DOOR 140°



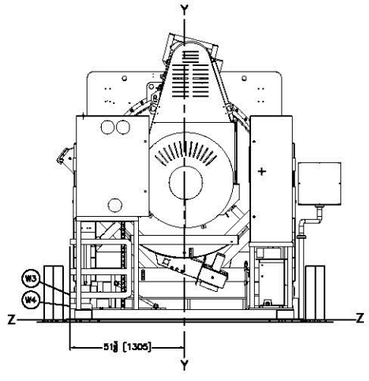
LEFT VIEW UNLOAD
DOOR 140°



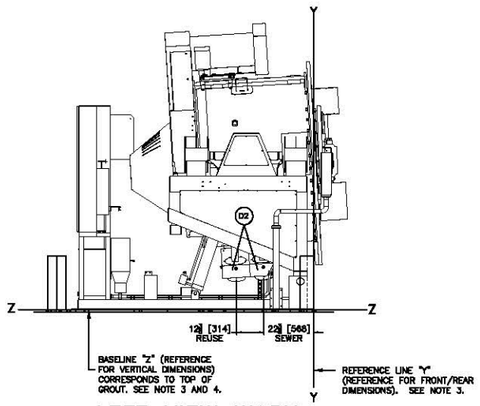
PLAN
UNLOAD
DOOR 140°



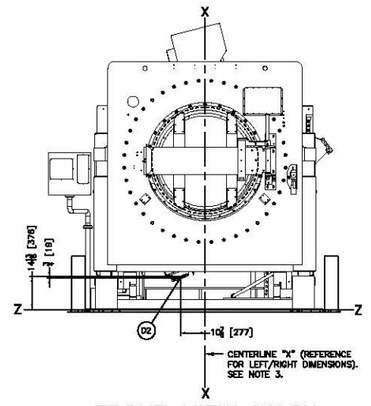
PLAN VIEW UNLOAD
DOOR 140°



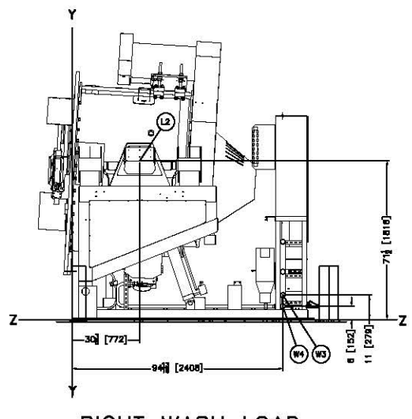
REAR VIEW



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT WASH LOAD

ITEM	LEGEND
W4	REUSE WATER INLET, 2" NPT, OPTIONAL, SEE NOTE 7.
W3	THIRD WATER INLET, 2" NPT, OPTIONAL, SEE NOTE 7.
D2	DUAL DRAIN VALVES (IN WASH POSITION) 8" DIAMETER.
	THE FRONT VALVE IS NORMALLY DRAIN TO SEWER. THE REAR
	VALVE IS DRAIN TO REUSE.
B2	48" DOOR OPTION, MAXIMUM OPEN 140° DEGREES

NOTES

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

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

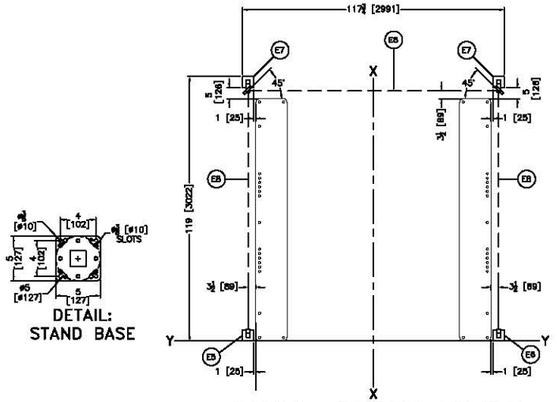
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

6836M5K OPTIONS

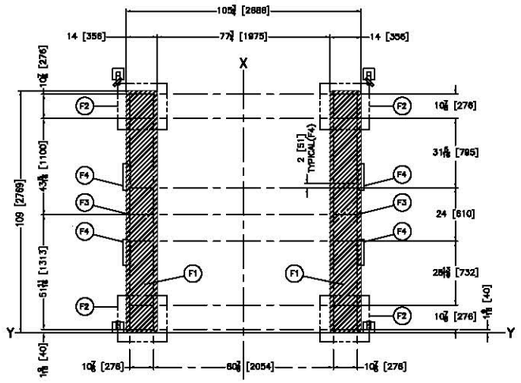
DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD6836M5KBB
2021094D

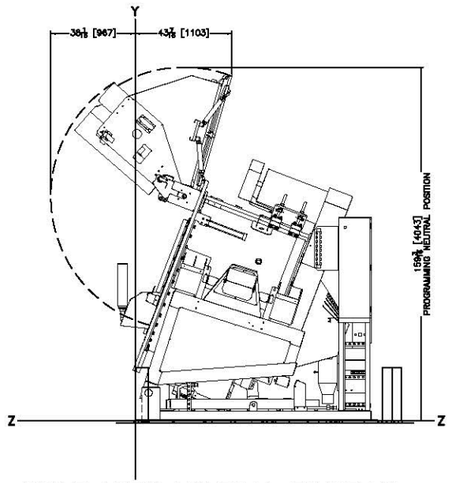
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/469-1849, Email: milnorinfo@milnor.com



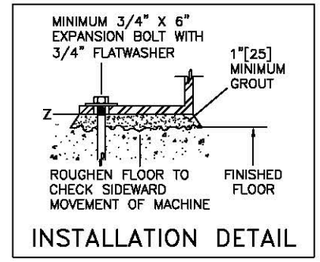
DETAIL: SAFETY SCREEN



FOUNDATION PLAN

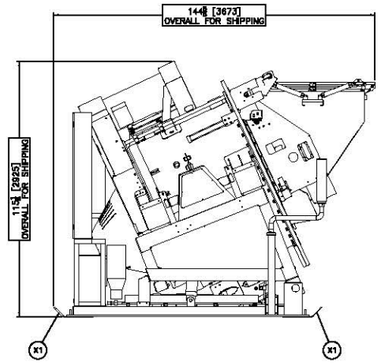


RIGHT VIEW NEUTRAL POSITION



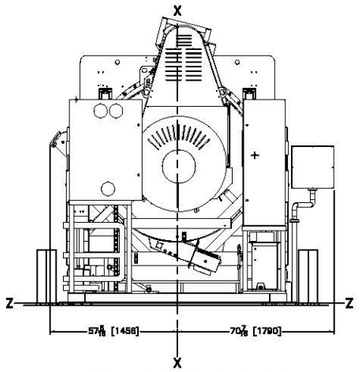
INSTALLATION DETAIL

DETAIL: STAND BASE

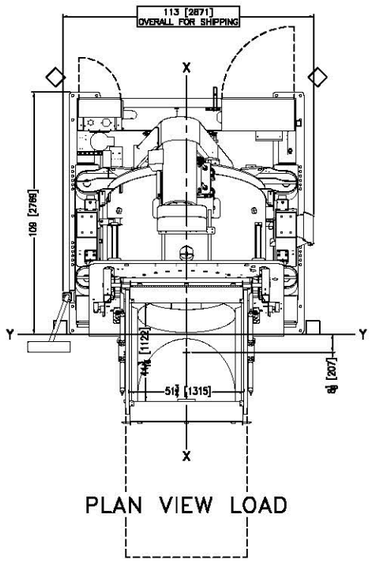


LEFT VIEW: SHIPPING

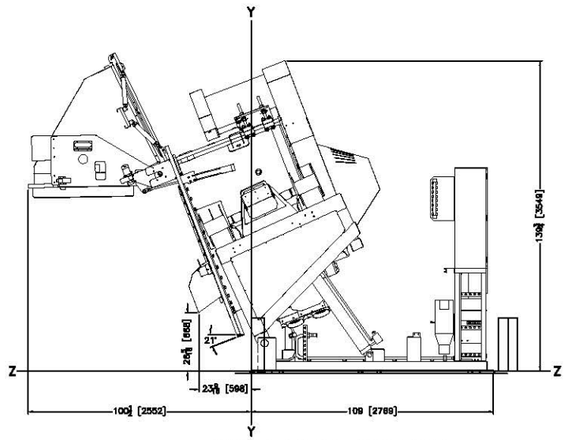
THIS DRAWING IS FOR THE DRYELL LOADING OPTION. USE THIS DRAWING WITH BD6836M5KAE AND BD6836M5KAB.



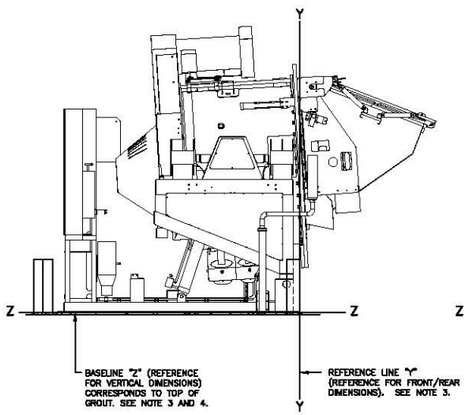
REAR VIEW WASH



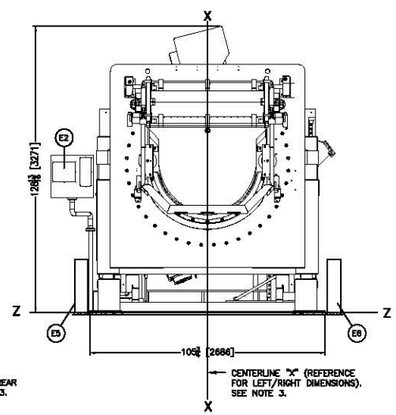
PLAN VIEW LOAD



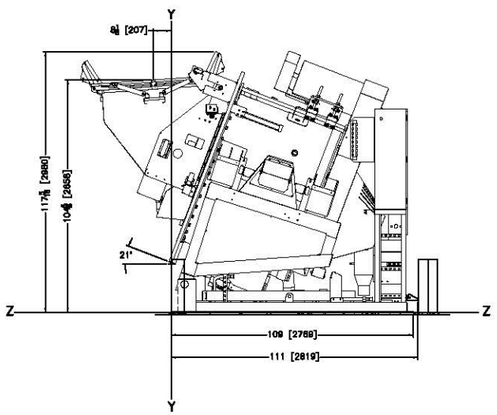
RIGHT VIEW UNLOAD



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT VIEW LOAD

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.
E7	SAFETY LIGHT SCREEN, DASHED
E7	SAFETY LIGHT SCREEN REFLECTOR (STANDARD)
E6	SAFETY LIGHT SCREEN RECEIVER (STANDARD)
E5	SAFETY LIGHT SCREEN EMITTER (STANDARD)
E2	MilTouch-EX™ TOUCH SCREEN CONTROLLER
B1	DRYELL LOADING, OPTIONAL
ITEM	LEGEND

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.

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

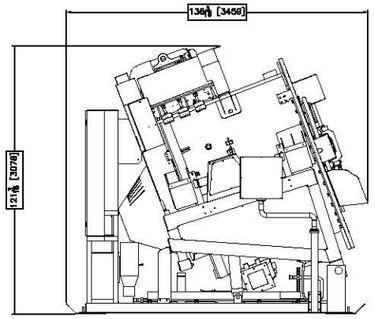
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

6836M5K with DRYELL

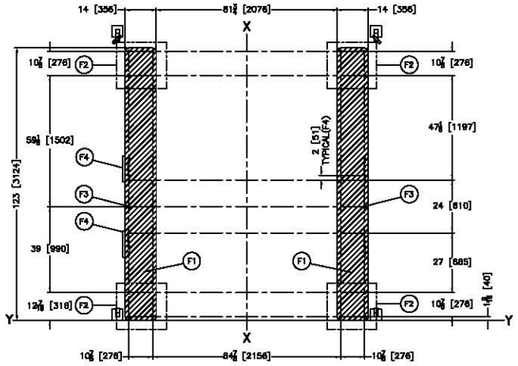
DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD6836M5KBC
2018033D

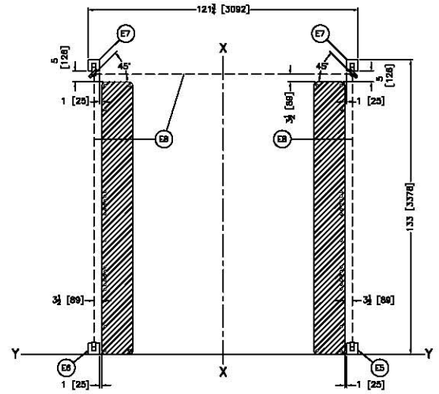
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA. Phone 504/467-9591,
FAX 504/469-1849. Email: milnorinfo@milnor.com



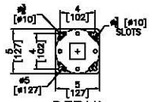
LEFT VIEW: SHIPPING



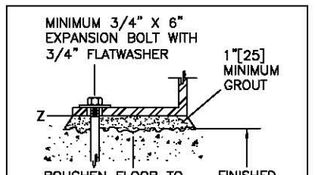
FOUNDATION PLAN



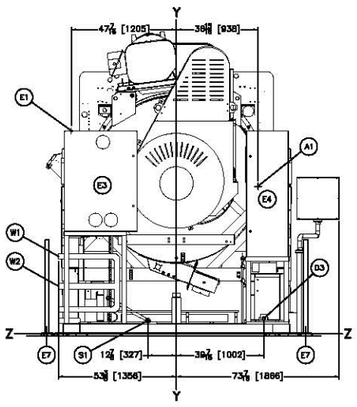
DETAIL: SAFETY SCREEN



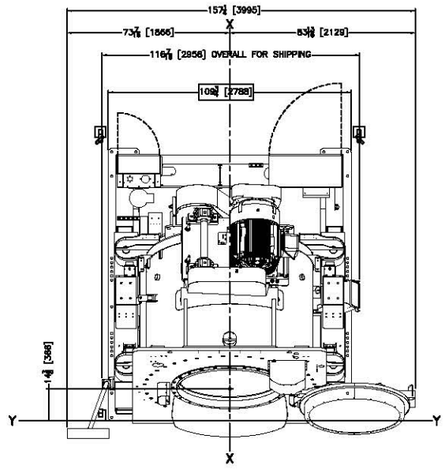
DETAIL: STAND BASE



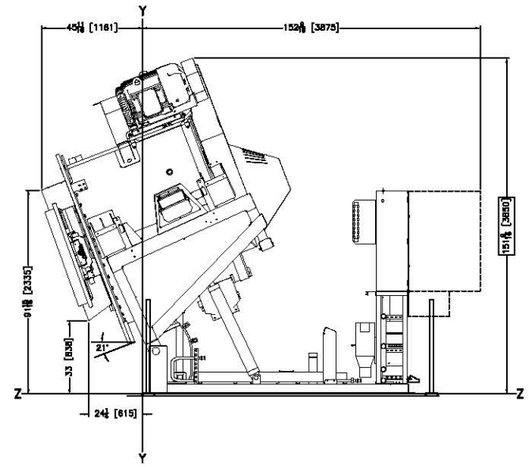
INSTALLATION DETAIL



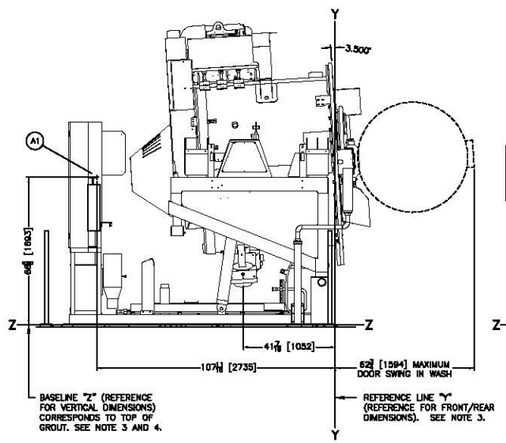
REAR VIEW WASH



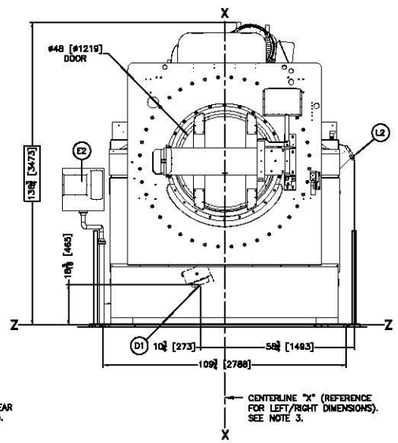
PLAN VIEW LOAD



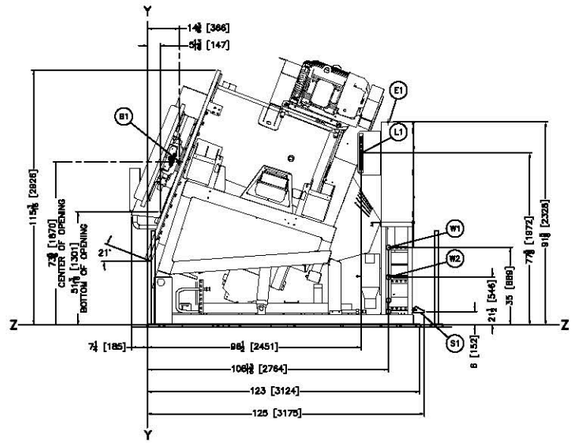
RIGHT VIEW UNLOAD



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT VIEW LOAD

ITEM	LEGEND
W2	COLD WATER INLET, 2" NPT
W1	HOT WATER INLET, 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.
E7	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, 8" DIAMETER - STANDARD
B1	DOOR, 48"[1219]
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

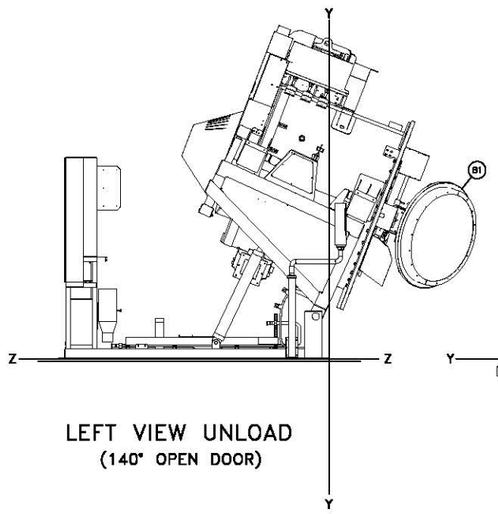
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

7246M5K

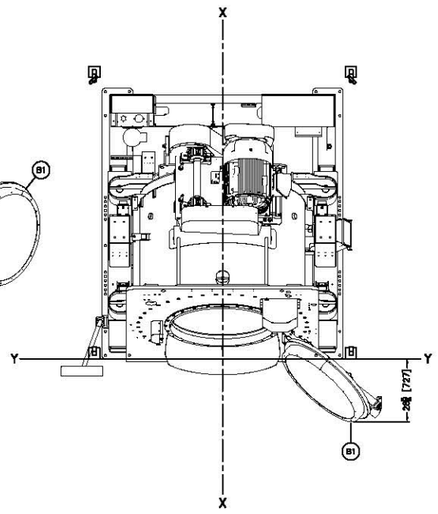
DM 0 0.5M 1M
MM
INCHES 0 12 24 36

DWG# BD7246M5KCE 2018075D

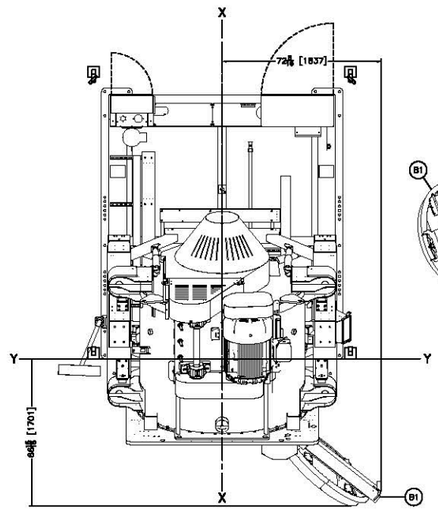
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3094, Email: milnorinfo@milnor.com



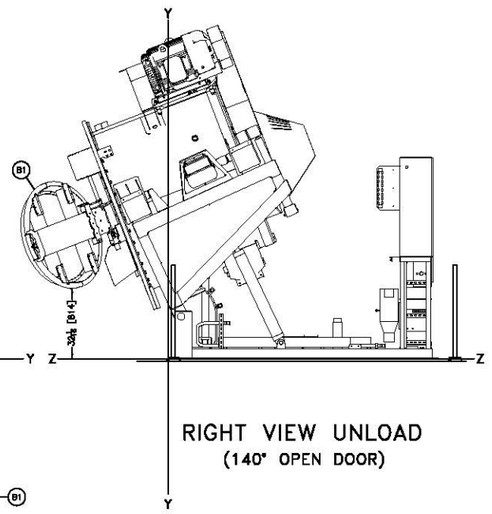
LEFT VIEW UNLOAD
(140° OPEN DOOR)



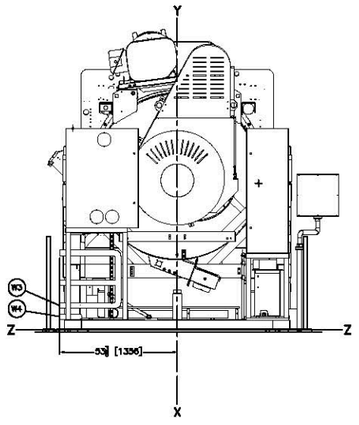
PLAN VIEW LOAD
(140° OPEN DOOR)



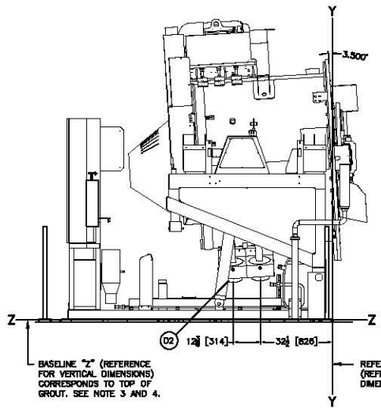
PLAN VIEW UNLOAD
(140° OPEN DOOR)



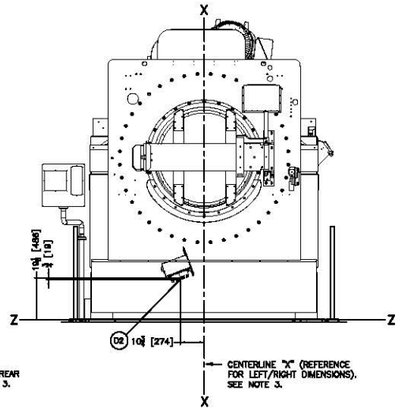
RIGHT VIEW UNLOAD
(140° OPEN DOOR)



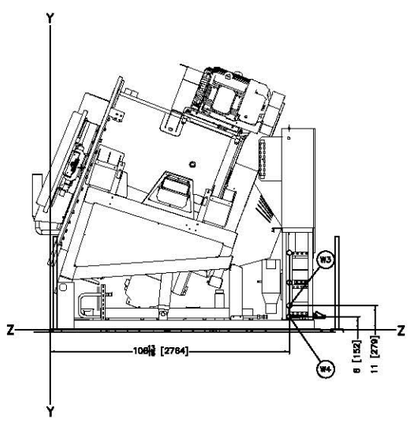
REAR VIEW WASH



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT VIEW LOAD

ITEM	LEGEND
B1	SPECIAL 140 DEGREE MAXIMUM OPENING DOOR
D2	DUAL DRAIN VALVE, 8" DIAMETER
W3	THIRD WATER INLET, 2" NPT, OPTIONAL, SEE NOTE 7.
W4	REUSE WATER INLET, 2" NPT, OPTIONAL, SEE NOTE 7.

NOTES

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

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 (ex. 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

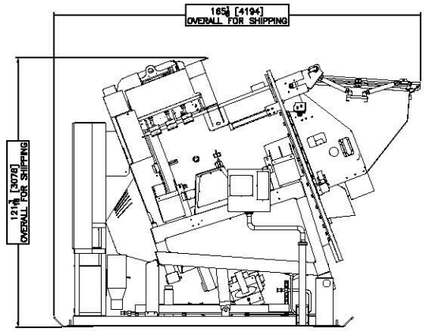
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS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

7246M5K OPTIONS

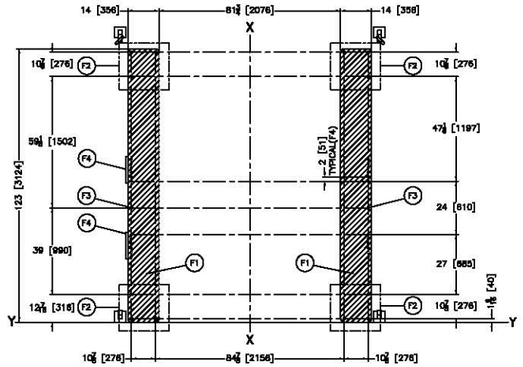
DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BD7246M5KCB
2018075D

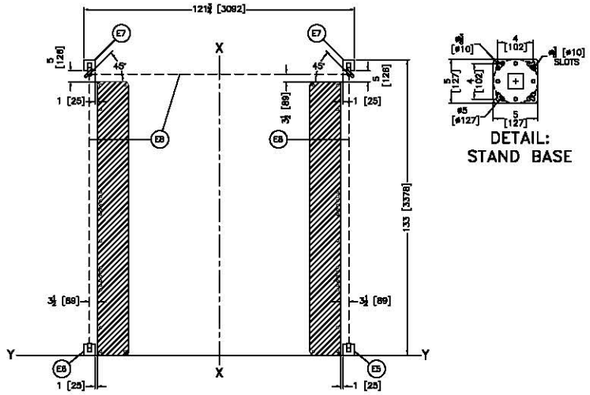
PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3094, Email: milnorinfo@milnor.com



LEFT VIEW: SHIPPING

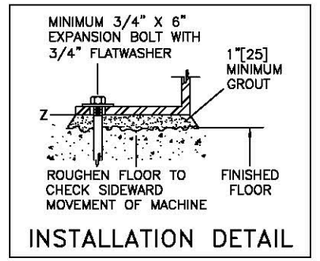


FOUNDATION PLAN



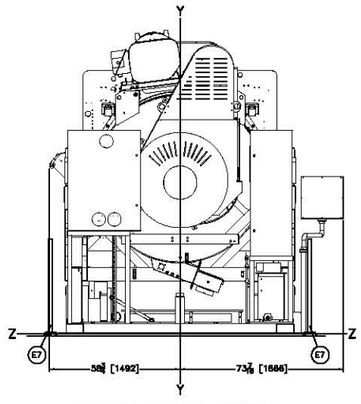
DETAIL: SAFETY SCREEN

DETAIL: STAND BASE

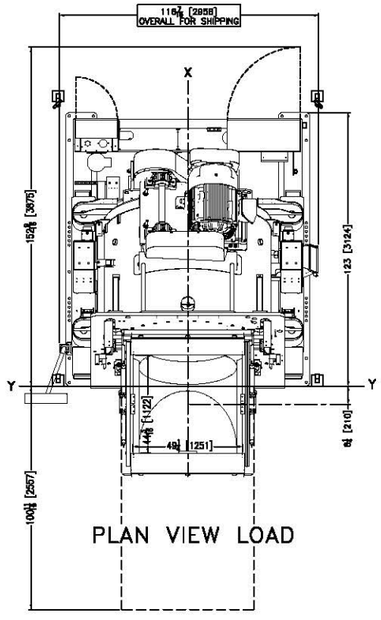


INSTALLATION DETAIL

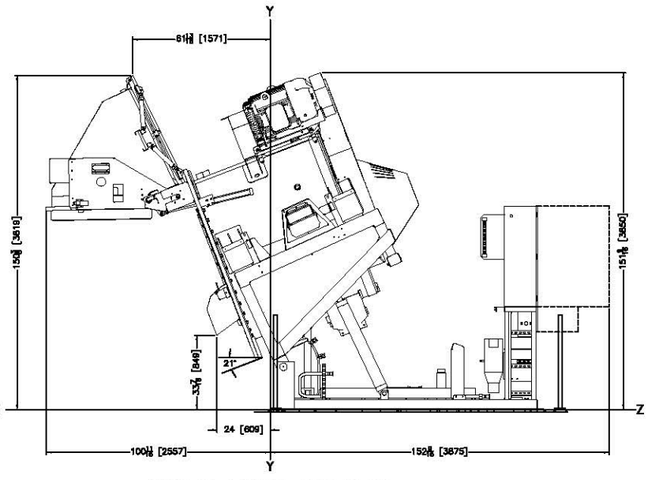
THIS DRAWING IS FOR THE DRYELL LOADING OPTION. USE THIS DRAWING WITH BD7246M5KCE AND BD7246M5KCB.



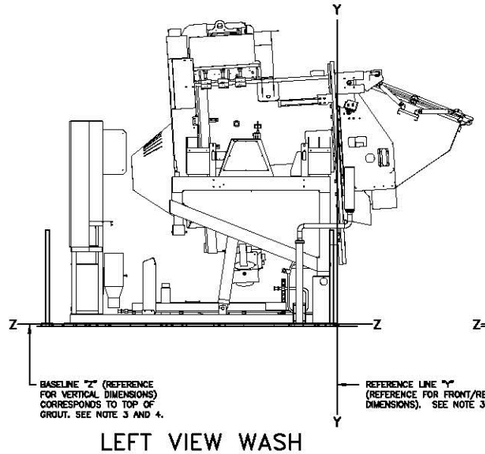
REAR VIEW WASH



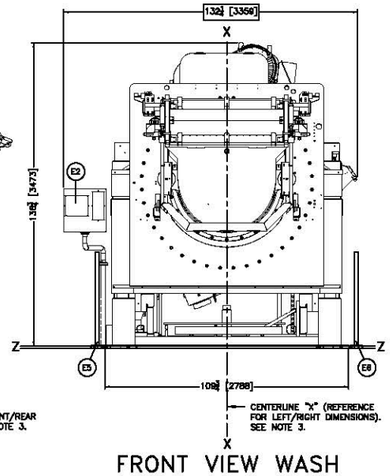
PLAN VIEW LOAD



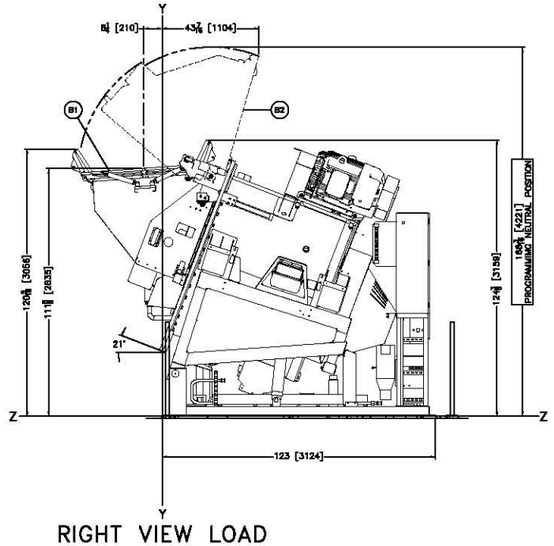
RIGHT VIEW UNLOAD



LEFT VIEW WASH



FRONT VIEW WASH



RIGHT VIEW LOAD

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.
E7	SAFETY LIGHT SCREEN, DASHED
E7	SAFETY LIGHT SCREEN REFLECTOR (STANDARD)
E6	SAFETY LIGHT SCREEN RECEIVER (STANDARD)
E5	SAFETY LIGHT SCREEN EMITTER (STANDARD)
E2	MilTouch–EX™ TOUCH SCREEN CONTROLLER
B2	PROGRAMMING NEUTRAL POSITION
B1	DRYELL LOADING, OPTIONAL
ITEM	LEGEND

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.

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.

7246M5K with DRYELL LOADING

DM 0 0.5M 1M
MM
INCHES 0 12 24 36

DWG# BD7246M5KCC
2018075D

PELLERIN MILNOR CORPORATION
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3084, Email: milnorinfo@milnor.com