Manual Number: MCWMAA01
Edition (ECN): 2022395

Installation, Parts, and Service

MWF27J8, MWF27Z8

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

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1 General Service and Safety Related Components

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PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

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

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

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

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

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

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

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

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How to Get the Necessary Repair Components

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

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

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

To write to the Milnor® factory:

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

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

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Trademarks

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

Table 1. Trademarks

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

Table 1 Trademarks (cont'd.)

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

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Safety — Suspended Washer Extractors

BNWSUS08.C01 0000348932 B.2 A.2 5/26/21, 11:48 AM Released

Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNWSUS01.C03 0000234965 B.2 A.2 A.4 1/2/20, 2:19 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.

Safety Alert Messages—Cylinder and Processing Hazards

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

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

- Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.

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

WARNING: **Crush Hazards —** Contact with the turning cylinder can crush your limbs. The cylinder will repel any object you try to stop it with, possibly causing the object to strike or stab you. The turning cylinder is normally isolated by the locked cylinder door.

- Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- Do not place any object in the turning cylinder.
- Do not operate the machine with a malfunctioning door interlock.
- Open pocket machines only—Keep yourself and others clear of cylinder and goods during jogging operation.
- Do not operate the machine with malfunctioning two-hand manual controls.

WARNING: **Confined Space Hazards —** Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not attempt unauthorized servicing, repairs, or modification.

WARNING: **Explosion and Fire Hazards —** Flammable substances can explode or ignite in the cylinder, drain trough, or sewer. The machine is designed for washing with water, not any other solvent. Processing can cause solvent-containing goods to give off flammable vapors.

- Do not use flammable solvents in processing.
- Do not process goods containing flammable substances. Consult with your local fire department/public safety office and all insurance providers.

Safety Alert Messages—Unsafe Conditions

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Damage and Malfunction Hazards

BNWSUS04.C02 0000235001 B.2 A.2 A.3 12/10/20, 4:36 PM Released

Hazards Resulting from Inoperative Safety Devices

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

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

WARNING: **Multiple Hazards —** Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.

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

- Do not unlock or open electric box doors.

WARNING: **Entangle and Crush Hazards —** Guards, covers, and panels—Operating the machine with any guard, cover, or panel removed exposes moving components.

- Do not remove guards, covers, or panels.

Hazards Resulting from Damaged Mechanical Devices

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WARNING: **Multiple Hazards —** Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- Do not operate a damaged or malfunctioning machine. Request authorized service.

WARNING: **Explosion Hazards —** Cylinder—A damaged cylinder can rip apart during extraction, puncturing the shell and discharging metal fragments at high speed.

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

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

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

Careless Use Hazards

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

BNWSUS04.C06 0000234997 B.2 A.2 A.4 12/10/20, 4:36 PM Released

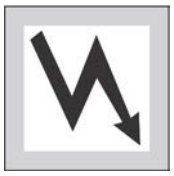
WARNING: **Multiple Hazards —** Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- 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.

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

BNWSUS04.C07 0000234996 B.2 A.2 A.4 12/10/20, 4:36 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: **Confined Space Hazards —** Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not enter the cylinder until it has been thoroughly purged, flushed, drained, cooled, and immobilized.

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Installation Tag Guidelines

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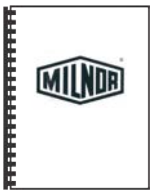
MWF27J8	MWF27Z8	MWF36J8	MWF36Z8
MWF45J8	MWF45Z8	MWF63C7	MWF63J7
MWF63Y7	MWF63Z7	MWF77C7	MWF77J7
MWF77Y7	MWF77Z7	MWF100C7	MWF100J7
MWF100Y7	MWF100Z7	MWF125C7	MWF125J7
MWF125Y7	MWF125Z7		

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

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

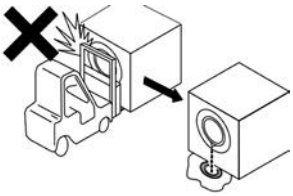
The following entries explain the installation tags. Each entry includes: 1) the tag illustration, 2) the tag part number at the bottom of the tag, and 3) the meaning of the tag.

Display or Action	Explanation
	Read the manuals before proceeding. This symbol appears on most tags. The machine ships with safety, operator, and routine maintenance guides for customer use. Milnor dealer manuals for installing, commissioning, and servicing the machine are also available from the Milnor Parts department.
	B2TAG88005: This carefully built product was tested and inspected to meet Milnor performance and quality standards by (identification mark of tester).

B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies.

B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine is first tested, the electrical hookup is incorrect and must be reversed as explained in the schematic manual.

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

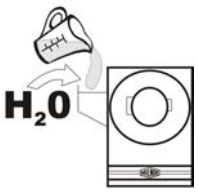


B2TAG94099: Do not strike the shell door when fork-lifting. This can cause the door to leak.

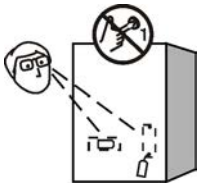
B2T2001013: Hot water connection.

B2T2001014: Cold water connection.

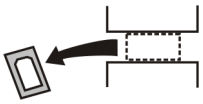
B2T2001015: Reuse (third) water connection. (Optional)



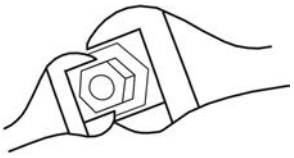
B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.



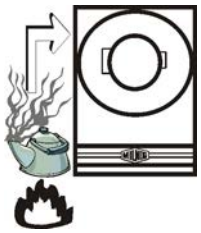
B2T2001028: Look for tags inside the machine. These tags may identify shipping restraints to be removed or components to be installed. Do not start the machine until these actions are completed.



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.



B2T2003001: Hold the side of the connection stationary with a wrench as you tighten the connection with another wrench. Otherwise, you may twist components, such as valves, damaging them.



B2T2004027: Steam connection. (Optional)

B2T2008007: Do not exceed 160° Fahrenheit (71° Celsius) water temperature. Excessive temperature can damage the water valves in this machine. Eliminate water hammer on the water lines to this machine. Water hammer can rupture the water inlet valves on this machine. Follow applicable codes when installing water hammer arresters. Maintain incoming water pressure between 10 and 75 psi (between 0.7 and 5.1 bar). Pressures outside this range can damage the water valves in this machine.

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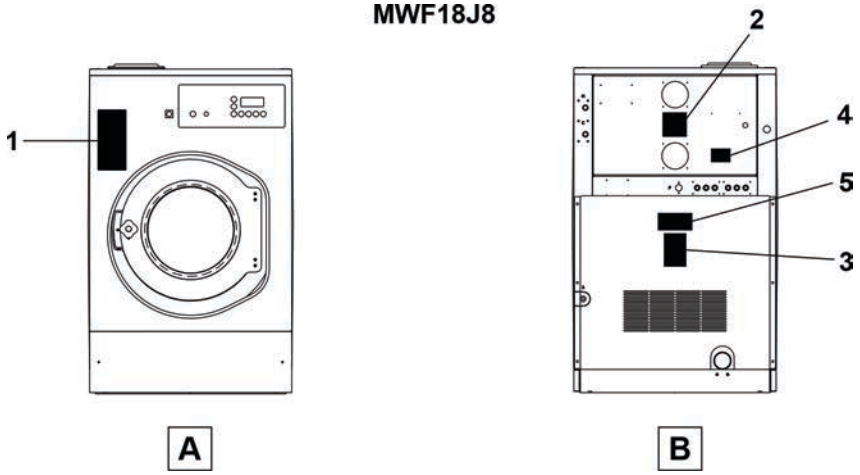
Safety Placards and Locations

3 Sheet

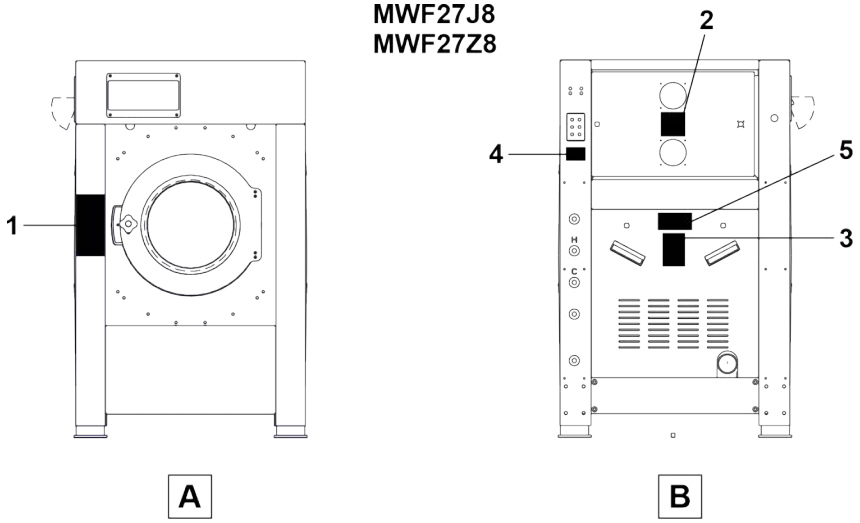
MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

NOTICE: 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.

MWF18J8



MWF27J8
MWF27Z8



Legend

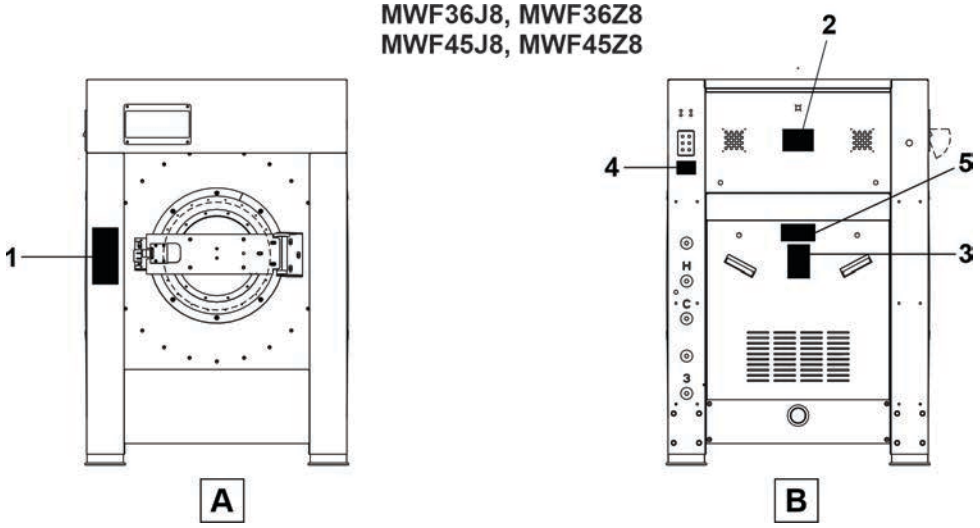
A . . . Front view
B . . . Rear view

Safety Placards and Locations

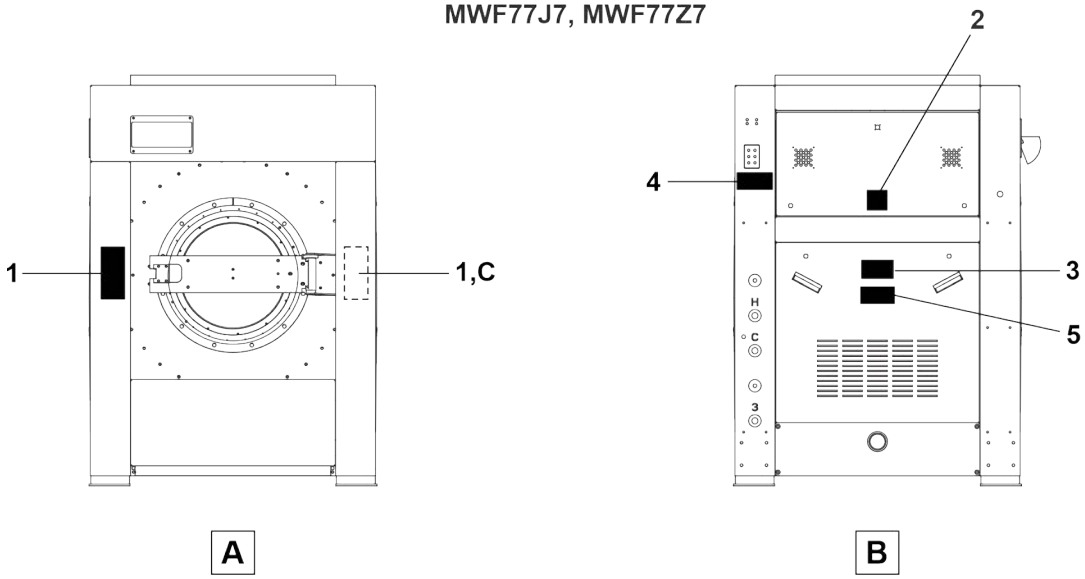
3 Sheet

MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

MWF36J8, MWF36Z8
MWF45J8, MWF45Z8



MWF63J7, MWF63Z7
MWF77J7, MWF77Z7



Legend

A . . . Front view
B . . . Rear view
C . . . Alternate location

Safety Placards and Locations

3 Sheet

MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

Table 2. Parts List—Safety Placards

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	01 10631B	NMPLT:SHELLFNT WARN MWF->TACATA	
all	2	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	3	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	
all	4	01 10710A	NPLT:CAUTION CHEMICAL SYSTEM	
all	5	01 10689A	NPLT:BELT HAZARD SM TCATA	

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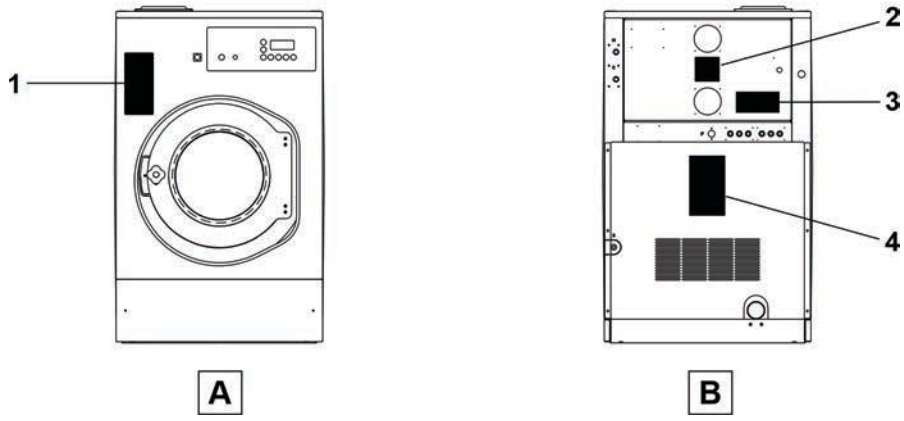
Safety Placards and Locations ISO

3 Sheet

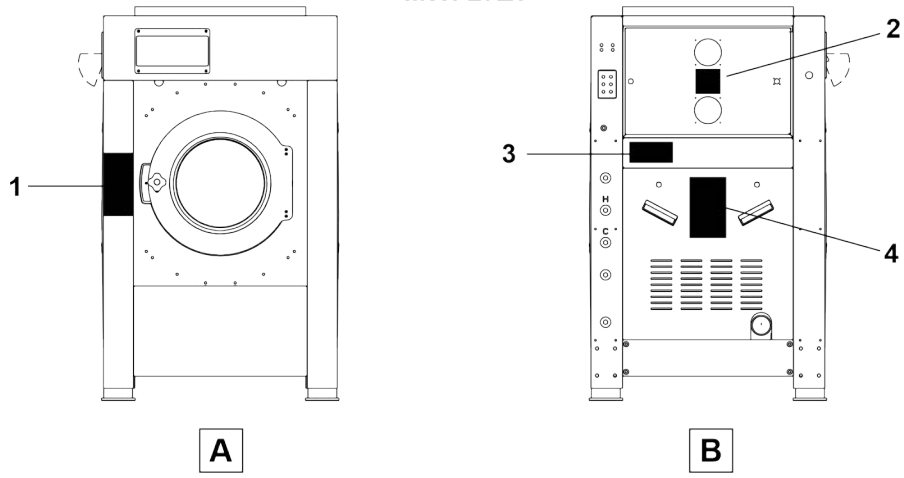
MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

NOTICE: 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.

MWF18J8



MWF27J8
MWF27Z8



Legend

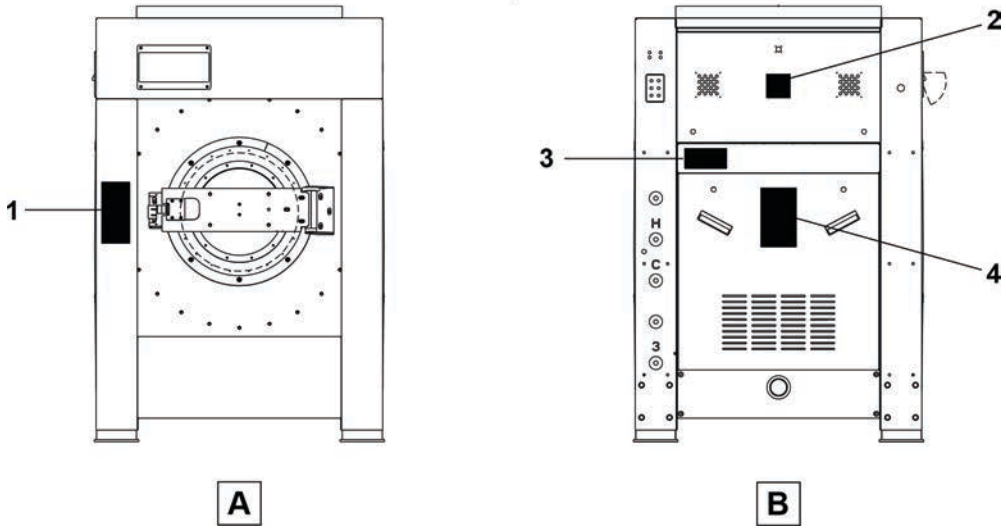
A . . . Front view
B . . . Rear view

Safety Placards and Locations ISO

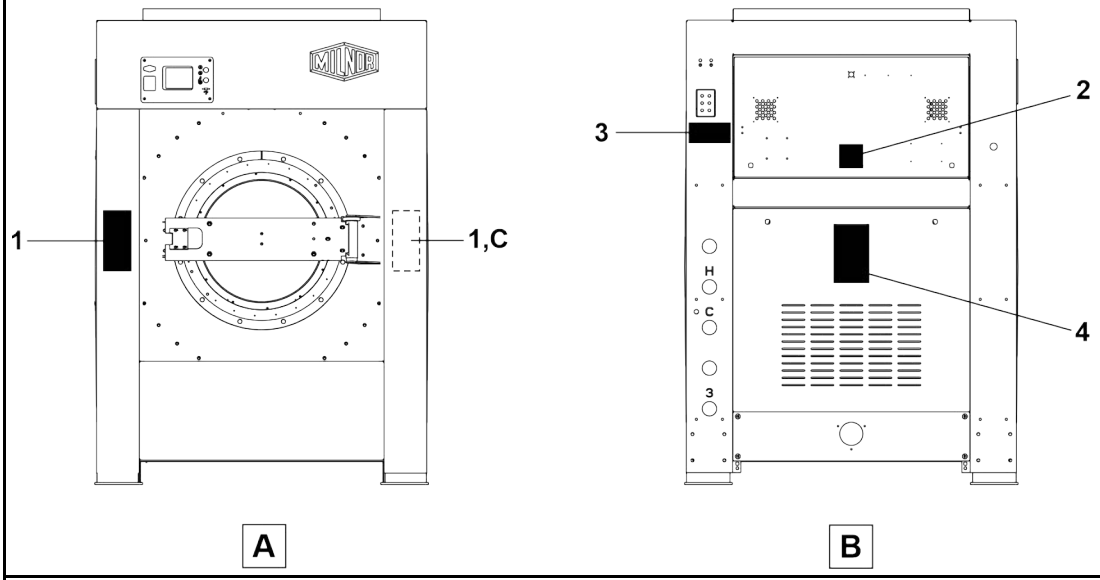
3 Sheet

MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

MWF36J8, MWF36Z8
MWF45J8, MWF45Z8



MWF63J7, MWF63Z7
MWF77J7, MWF77Z7



Legend

A . . . Front view
B . . . Rear view
C . . . Alternate location

Safety Placards and Locations ISO

3 Sheet

MWF18J8; MWF27J8/Z8; MWF36J8/Z8; MWF45J8/Z8; MWF63J7/Z7; MWF77J7/Z7

Table 3. Parts List—Safety Placards 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	1	01 10631Y	NPLT:SHELL FRT WARN NOTILT-ISO	
all	2	01 10377	NPLTE:"WARNING" 4X4	
all	3	01 10710A	NPLT:CAUTION CHEMICAL SYSTEM	
all	4	01 10628X	NPLT:NONTILT W/E WARNING SIDE	

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Covers

3 Sheets

MWF27J8, MWF27Z8

Legend

A . . . All covers are the same color as the frame (pre-production model shown).

Covers

3 Sheets

MWF27J8, MWF27Z8

Legend

B . . . Typical

Covers

3 Sheets

MWF27J8, MWF27Z8

Table 4. Parts List—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**
Components				
all	1	98MW02915	COVER, SIDE MWF27	
all	2	98MW02933	COVER, TOP MWF27	
all	3	98MW02916	COVER, REAR MWF27	
all	4	98CX902470	KEY LOCK	

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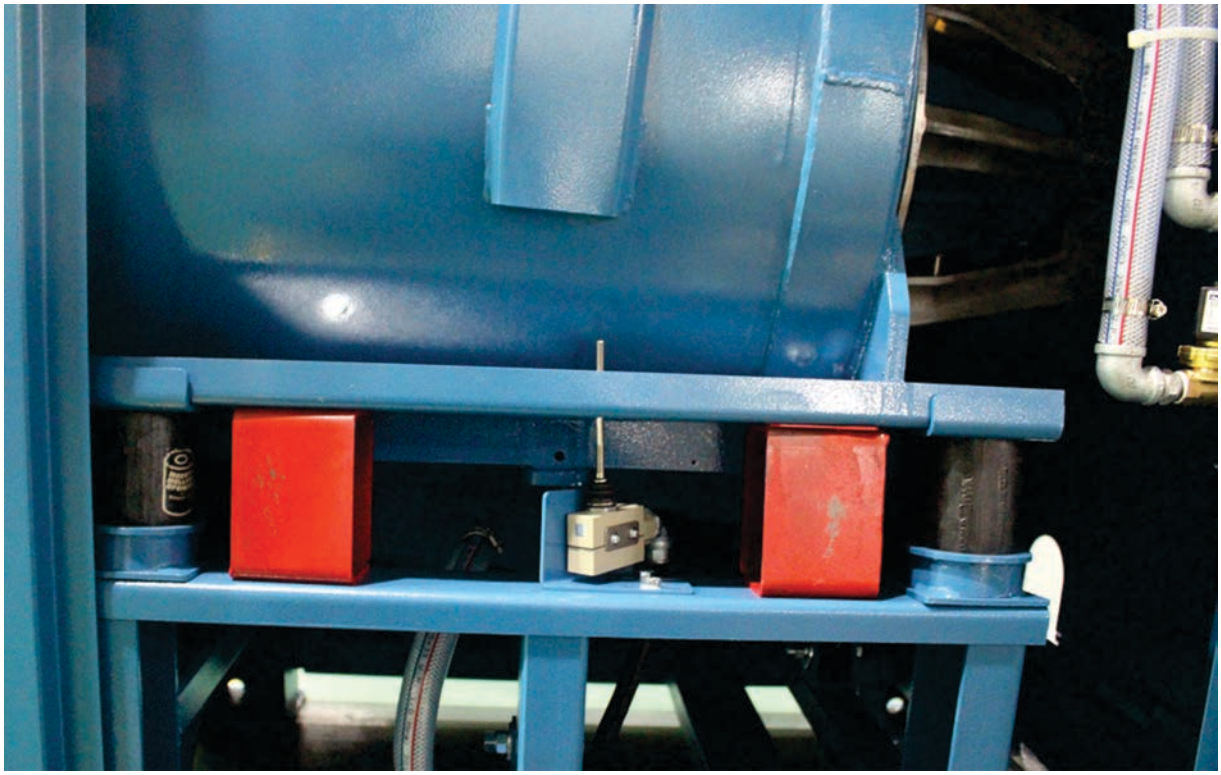
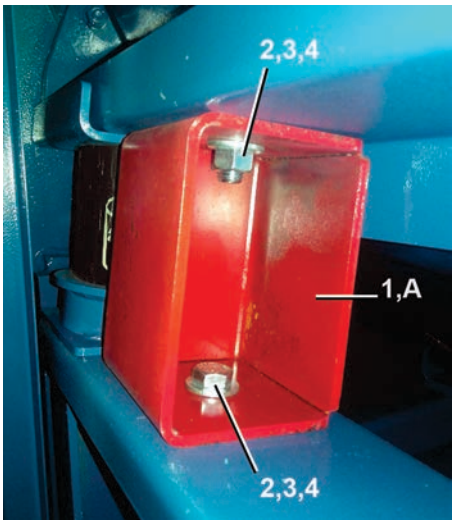
Shipping Brackets

2 Sheets

MWF27J8, MWF27Z8

NOTE: Before operating, remove the shipping brackets (painted red). The shipping brackets may be retained in the event the machine must be moved. See BNWUUI03.





Legend

A. . . Typical 4 instances

Shipping Brackets

2 Sheets

MWF27J8, MWF27Z8

Table 5. 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**
Components				
all	1	98MW02936W	SHIPPING BRACKET MWF27	
all	2	98CX770147	HEXCAPSCR M12X30, ZINC8.8	
all	3	98CX773113	HEXNUTM12, ZINC	
all	4	98CX773513	FLATWASHER, D12 ZINCNW	

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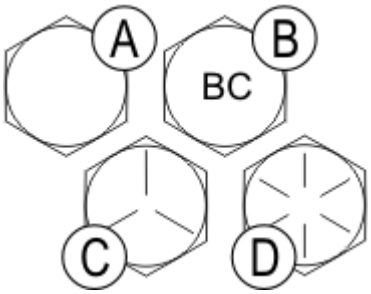
Torque Requirements for Fasteners

BNUUUN02.C01 0000222451 B.2 B.3 A.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 1. The Bolts in Milnor® Equipment

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

Torque Values

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

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

Fasteners Made of Carbon Steel

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

Without a Threadlocker

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

Table 6. 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 7. 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 8. 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 9. 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	–	–

With a Threadlocker

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Table 10. 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 11. 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 12. 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 13. 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 14. 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 14 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 15. 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	–	–

Stainless Steel Fasteners

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Table 16. 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 17. 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

Preparation

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

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

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

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

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

How to Apply a Threadlocker

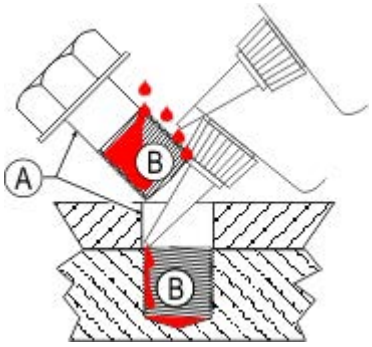
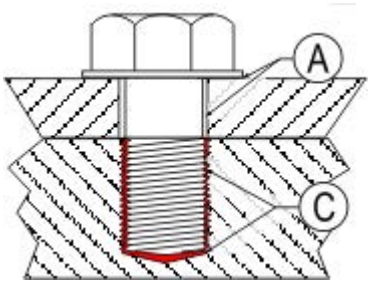
BNUUUN02.T02 0000222508 B.2 B.3 A.3 11/26/19, 2:48 PM Released

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 2. Apply Threadlocker in a Blind Hole

Application	Coverage
	

Legend

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

Blind Holes

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1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table (Table 10: Threadlocker by the Diameter of the Bolt (see below Note), page 30 to Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 32).

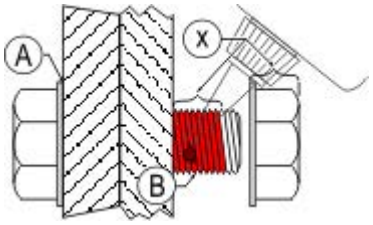
Through Holes

BNUUUN02.T04 0000222506 B.2 B.3 A.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 10: Threadlocker by the Diameter of the Bolt (see below Note), page 30 to Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 32).

Figure 3. Apply Threadlocker in a Through Hole

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

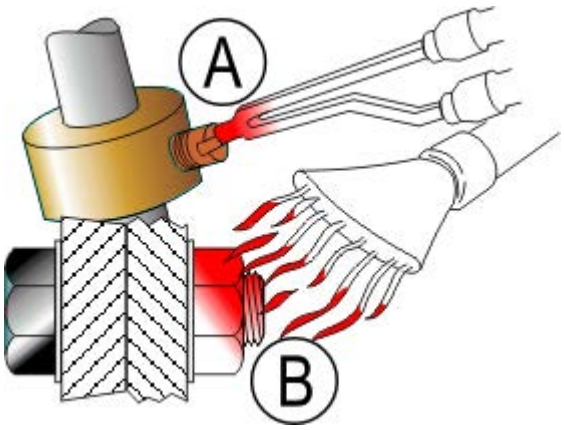
Disassembly

BNUUUN02.C07 0000222444 B.2 B.3 A.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 4. 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 / 2019405 BNUUUF01 0000109243 C.6 3/4/21, 9:27 AM Released

External Fuse/Breaker, Wiring, and Disconnect Requirements

BNUUUF01.C01 0000109242 B.2 C.6 A.4 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).

Fuse or Circuit Breaker Size

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

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

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

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

Wire Size

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

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

Ground

BNUUUF01.R03 0000109239 B.2 C.6 A.4 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.

Disconnect Switch for Lockout/Tagout

BNUUUF01.R04 0000109238 B.2 C.6 A.5 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.

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

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

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

This document replaces Milnor® document BIWUUI02.

All laundering machines impart static and dynamic forces to the supporting structures (foundation and soil, floor, and building). Static forces include the machine weight plus the weight of the goods and water. Dynamic forces are those imparted by various machine movements as explained in Section : Major Design Considerations, page 38. The dynamic forces imparted to supporting structures can cause vibration and noise outside of the laundry room if supporting structures are inadequate.

Disclaimer of Responsibility

BNUUUI01.C02 0000189359 B.2 C.3 B.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.

Major Design Considerations

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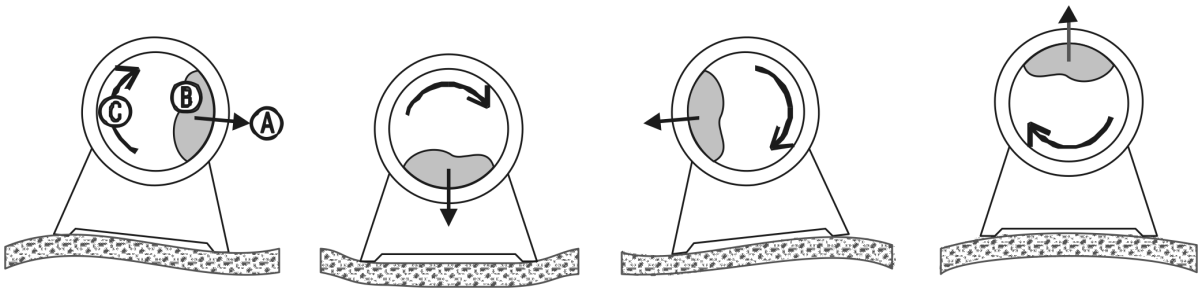
- Vibration and/or noise can be felt or heard outside of the laundry room as a result of the following, if supporting structures are not sufficiently rigid:
  - Extraction (the spinning cylinder) in washer-extractors and centrifugal extractors, imparts sinusoidal forces to supporting structures as shown in Figure 5: How Rotating Forces Act On the Foundation, page 39 . 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 5. 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.

Primary Information Sources

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

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

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

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Prevent Damage from Chemical Supplies and Chemical Systems

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

Chemical supply companies usually:

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

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

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

How Chemical Supplies Can Cause Damage

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

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

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

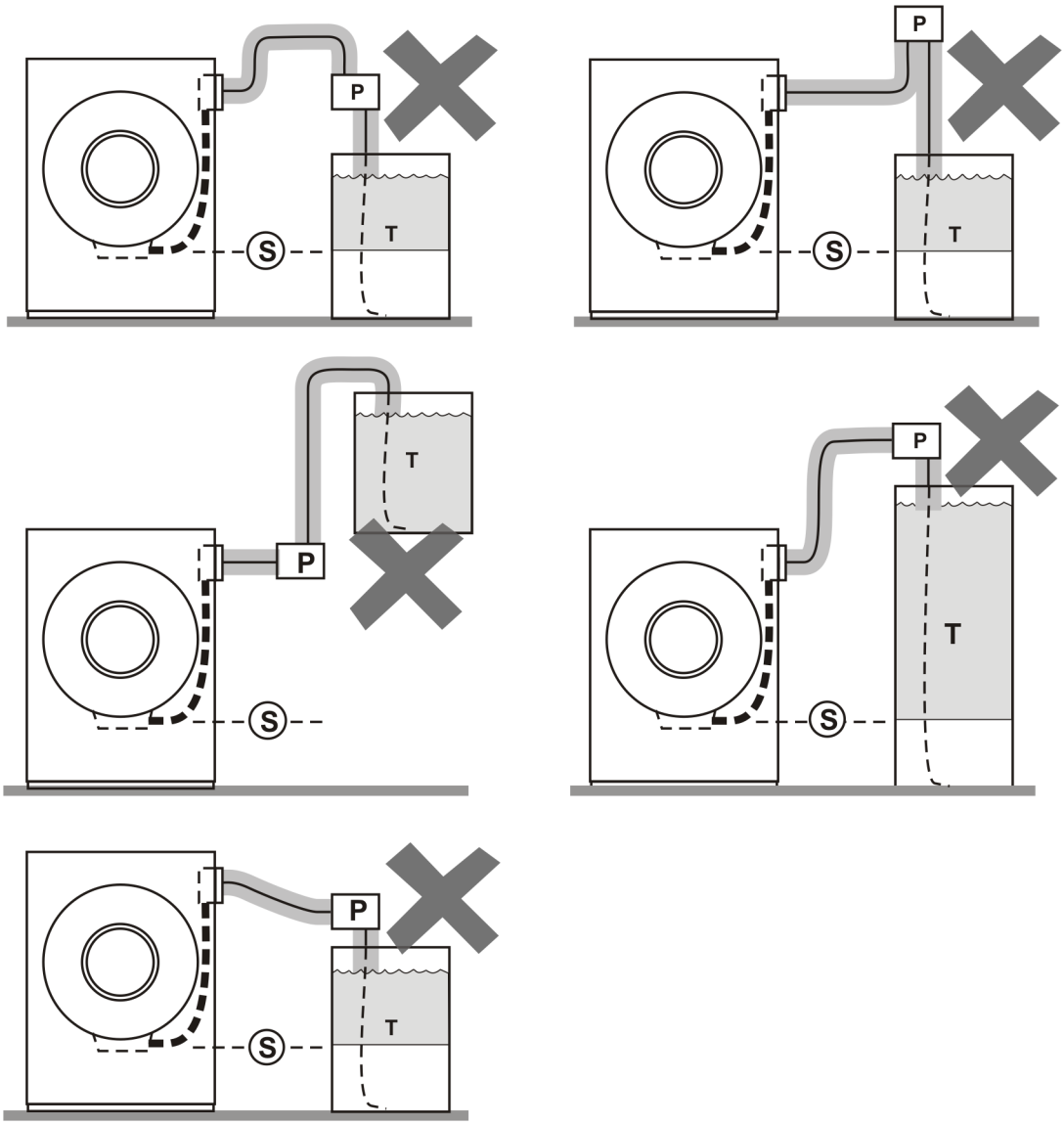
Incorrect Configuration or Connection of Equipment — Many chemical systems:

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

Damage will occur if a chemical supply can go in the machine when the chemical system is off. Some configurations of components can let the chemical supplies go in the machine by a siphon (Figure 6, page 41). Some can let chemical supplies go in the machine by gravity (Figure 7, page 42).

Figure 6. Incorrect Configurations That Let the Chemical Supply Go In the Machine by a Siphon

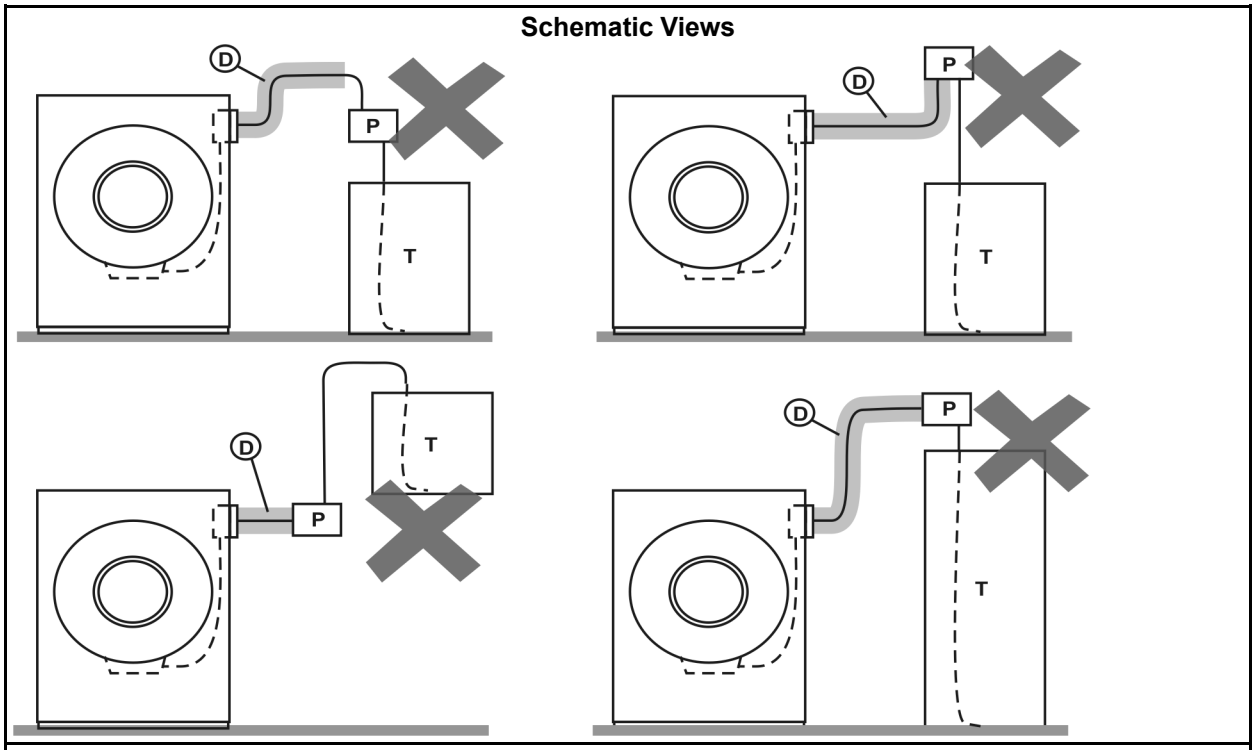
Schematic Views



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



Legend

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

Equipment and Procedures That Can Prevent Damage

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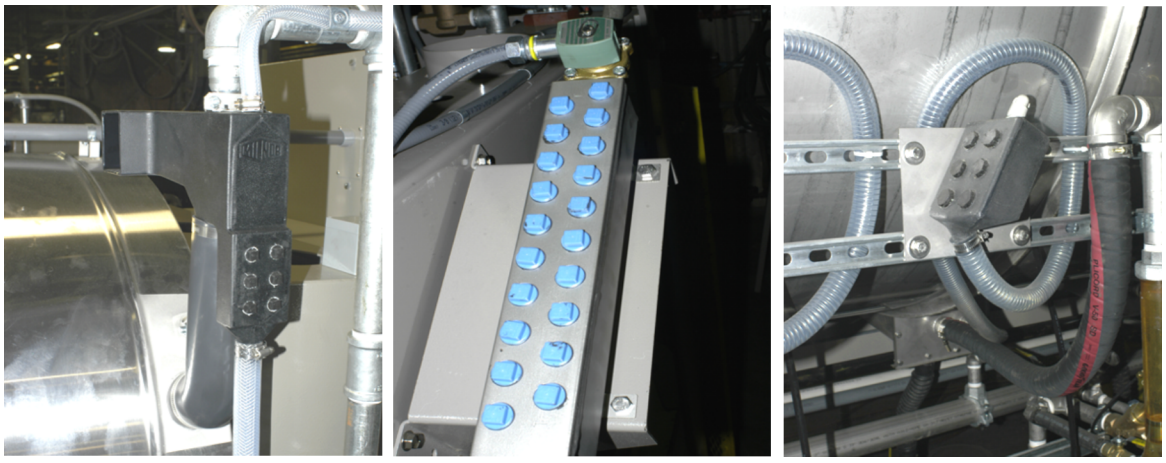
Use the chemical manifold supplied. — There is a manifold on the machine to attach chemical tubes from a chemical pump system. The manifold has a source of water to flush the chemical supplies with water.

Figure 8. Examples of Manifolds for Chemical Tubes. Your equipment can look different.



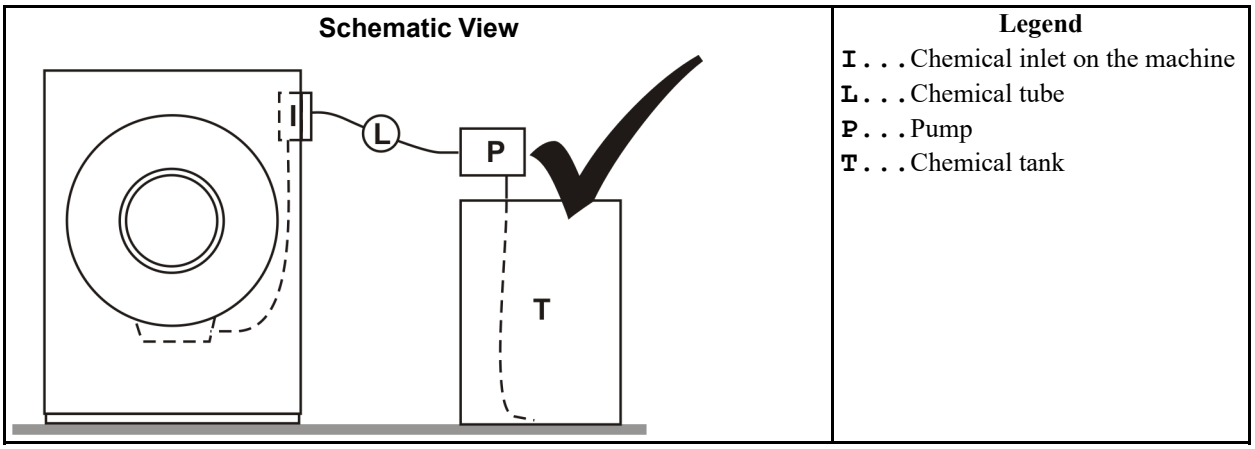
Close the line. — If the pump does not always close the line when it is off, use a shutoff valve to do this.

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



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

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

3 Installation Procedures

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Handling a Washer-extractor from Delivery to Final Location

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

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

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

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

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

Notices

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

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

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

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

Facility Prerequisites

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

Rigger Precautions

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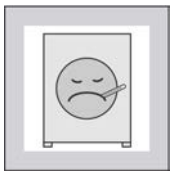
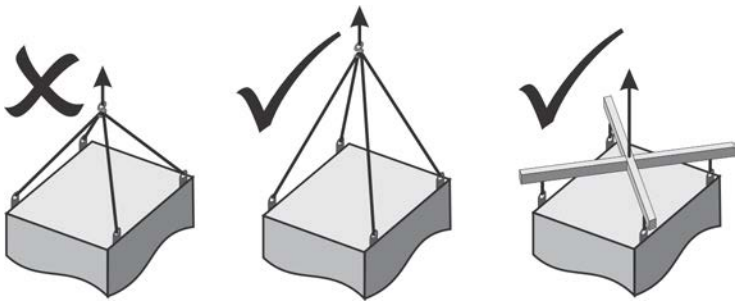
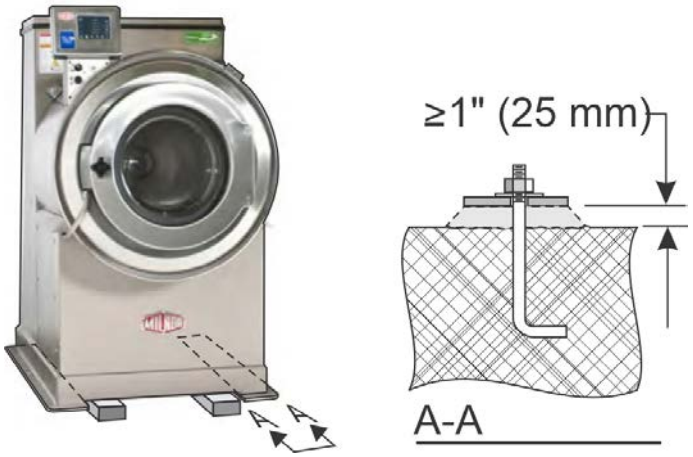
CAUTION: **Incorrect rigging** — can cause mishaps and costly machine damage.



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

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

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

Technician Precautions

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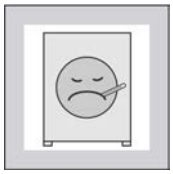
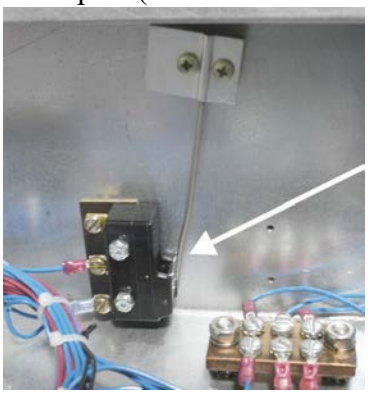
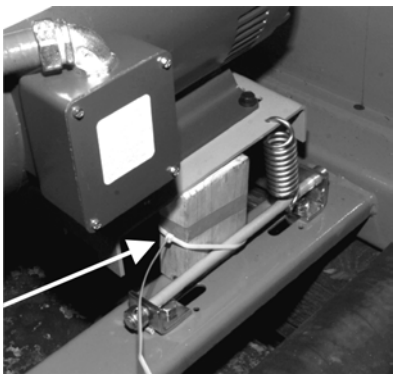
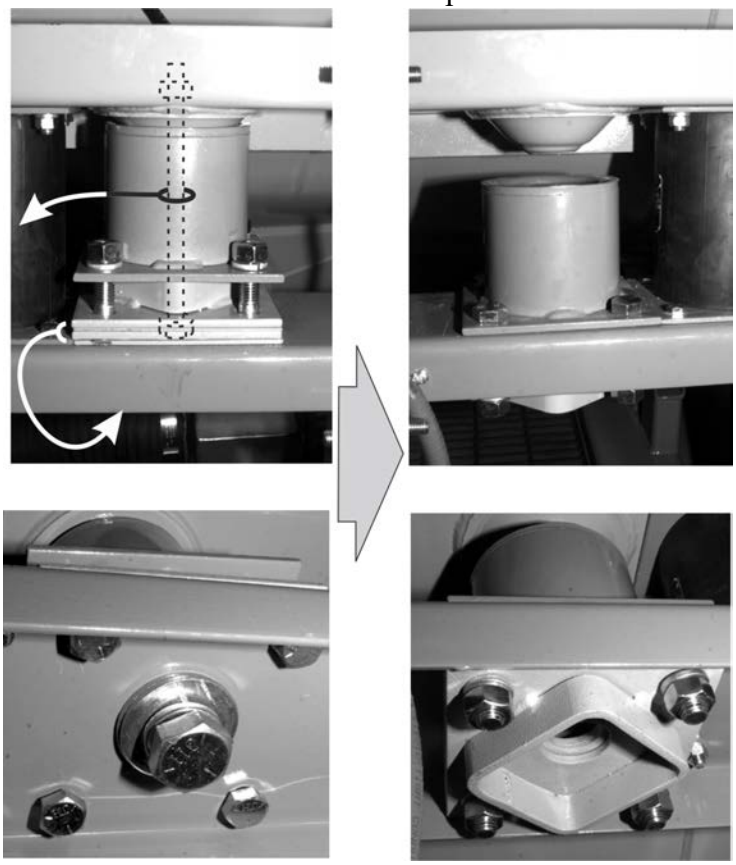
CAUTION: **Overlooked or mishandled shipping restraints —** can cause costly machine damage.



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

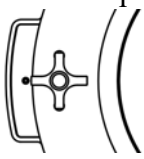
Precaution	Explanation
Leave all internal shipping restraints in place until the machine is anchored.	The machine can have one or more internal shipping restraints to help protect components from damage until the machine is anchored. These are located inside the housing or inside electric cabinets.
Check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

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

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

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

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

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

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Connection Precautions for Washer-extractors

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

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

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

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

Notices

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

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

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

Utility Requirements and Related Information

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

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

Plumber Precautions

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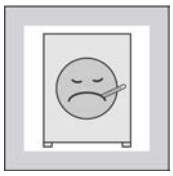
CAUTION: **Machine damage and code violations —** can occur as a result of incorrect plumbing.



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

Precaution	Explanation
Confirm the reliability of the piped utilities.	Water and any other piped fluids (steam, compressed air) needed by the machine must be within the specified pressure range and not prone to frequent interruptions when the machine operates. See Section : Utility Requirements and Related Information, page 50.
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.

Electrician Precautions

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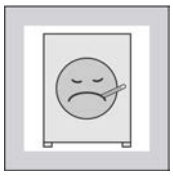
CAUTION: **Machine damage, machine malfunctions, and code violations —** can occur as a result of incorrect electrical connections.



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

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

Chemical Supplier Precautions

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

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

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

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Servicing the Door to Open it with Power Off or with a Malfunctioning Door Lock

BNWUUI05.C01 0000327775 B.2 A.2 12/8/20, 10:09 AM Released

NOTE: This document supersedes document MSSM0288AE and applies to all washer-extractors with four-spoke door handles, including 30022Hxx, MCRxxxxx models. The photographs in this document show the older style bare metal door handles but the instructions apply, as well, to newer machines with black, coated handles.

The door is designed to lock as soon as the machine starts a wash cycle. If electrical power to the machine is interrupted during the washing cycle, or if the door interlock mechanism fails to unlock, the door can be opened by **qualified, service personnel** by removing the door handle and a few related components. These components must be properly reinstalled for safe operation.

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.

- Service the machine only if qualified and authorized.
- Lock out and tag out power at the main machine disconnect before reaching into the cylinder.

DANGER: **Amputation hazard —** If the door interlock mechanism does not function properly, an operator may be able to open the door and reach into the machine during operation. Goods in the rotating cylinder can wrap around a person's arm and twist it off.

- Verify proper door lock function during machine operation, before returning the machine to normal service.

Disassembly

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Removing the Handle and Opening the Door

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The handle is held in place on the shaft with a thrust washer and retaining clip in front of the handle and a flange bearing and retaining clip behind the handle. The amount of turning force the handle can exert on the shaft is adjustable with the four set screws, springs and steel balls—one within each spoke of the handle. The steel balls seat into depressions in the shaft. When properly adjusted, the set screws will apply sufficient spring tension so that the handle will reliably operate the latch, but the handle will ratchet if turned counterclockwise or if too much turning force is applied.

Remove the handle from the shaft as follows:

1. Gently pry the black plastic cap from the center of the handle with a small screwdriver.
2. Attempt to ratchet the handle by turning it counterclockwise by hand. If this is not possible, the springs have too much tension applied. Back off on the four set screws just enough for the

handle to ratchet. Typically this happens when the set screws are flush with the surface of the handle spoke as is the case in Figure 10: Door Handle Spoke Set Screw, page 55 .

3. Repeat the following sub-steps four times to remove all set screws, springs, and steel balls:
   a. Remove the set screw from the topmost handle spoke.
   b. Hold a finger over the hole, then, while keeping your finger on the hole, ratchet the handle counterclockwise until the hole is pointing down.
   c. Hold one hand or a cup under the handle to catch the contents, then remove your finger, allowing the spring and ball to fall out, as in Figure 11: Handle Spoke Spring and Ball, page 55 . Shake the handle if necessary, to work the components free.

Figure 10. Door Handle Spoke Set Screw

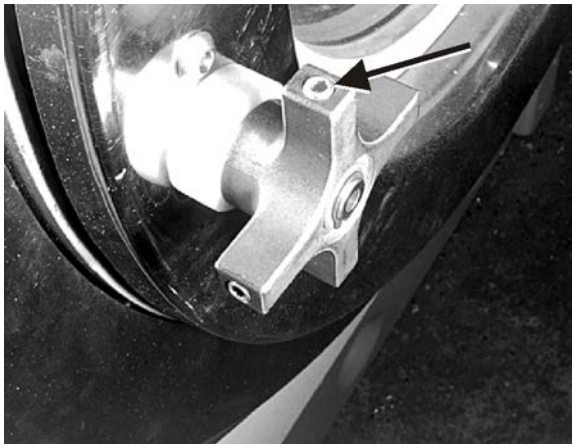

Figure 11. Handle Spoke Spring and Ball

4. Remove the front retaining clip and thrust washer (Figure 12: Front Retaining Clip and Thrust Washer, page 56), then pull the handle off of the shaft.
5. Normally, the flange bearing will come off with the handle, but if not, remove it as shown in Figure 13: Rear Flange Bearing (being removed) and Retaining Clip (arrow), page 56 . Remove the rear retaining clip. Push against the door to release the retaining clip.

Figure 12. Front Retaining Clip and Thrust Washer

Figure 13. Rear Flange Bearing (being removed) and Retaining Clip (arrow)

NOTICE: Risk of component damage—The *return* spring is located around the shaft, between the door and the shaft cam. The end of the spring is inserted into a small hole in the shaft cam. The spring can stretch and be damaged if it does not separate from the shaft cam.

- Be prepared to work the end of the spring out of the hole in the shaft cam as the door is opened.

6. Slowly open the door. Allow the door latch shaft, which is still captive within the door lock mechanism, to slide out of the door. Watch to be sure the return spring separates from the shaft cam and remains with the door, as shown in Figure 14: Return Spring After Separation from Shaft Cam, page 56 .

Figure 14. Return Spring After Separation from Shaft Cam

Removing the Door Latch Shaft from the Door Lock Mechanism

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TIP: It is easier and more reliable to remove the shaft from the door lock mechanism then to attempt to reinsert the shaft into the door and replace the handle while the shaft is still captive in the door lock.

1. Remove the cover (not shown) from the door lock mechanism (Figure 15: Door Lock Slider Pin in the Door Lock Mechanism, page 57).
2. Using a screwdriver, push down the door lock slider pin (Figure 15, page 57) and rotate the shaft (Figure 16: Removing the Shaft from the Lock Mechanism, page 57) counterclockwise to remove it from the lock mechanism.

Figure 15. Door Lock Slider Pin in the Door Lock Mechanism

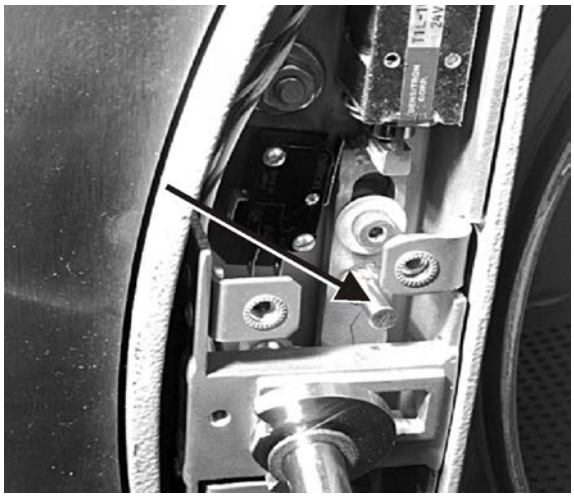
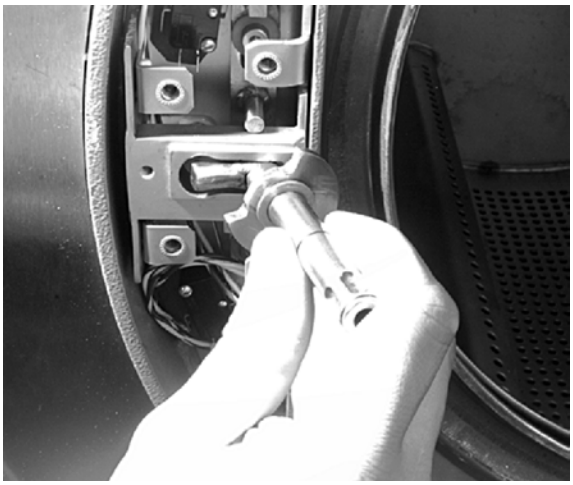


Figure 16. Removing the Shaft from the Lock Mechanism



Reinstalling the Shaft and Door Handle

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Once the goods have been removed from the machine and any malfunction of the door lock mechanism, such as a burned out coil or mechanical interference, has been identified and re-paired, reinstall the components as follows:

1. Install the cover on the door lock mechanism.
2. Insert the shaft into the open door and seat the end of the return spring into retaining hole in door shaft cam (Figure 17: Shaft in the 9 o'clock Position Showing Spring Retaining Hole, page 58 and Figure 18: Shaft with Return Spring Installed, page 58).

Figure 17. Shaft in the 9 o'clock Position Showing Spring Retaining Hole

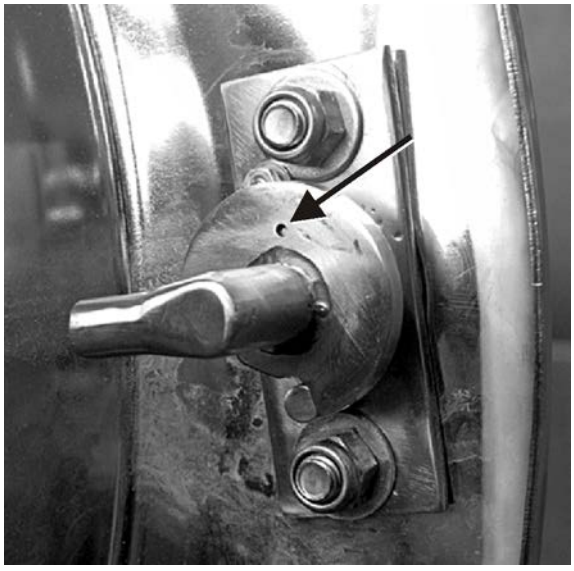
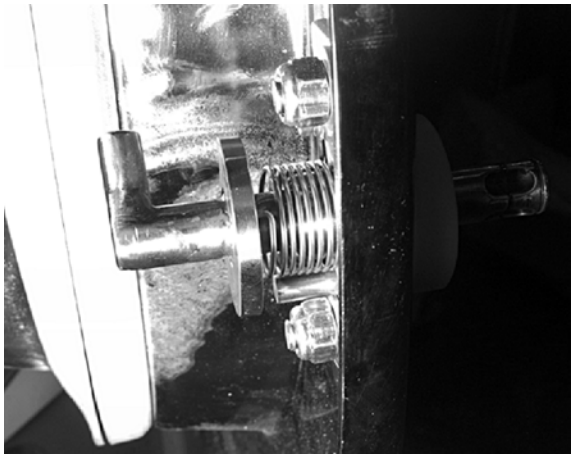


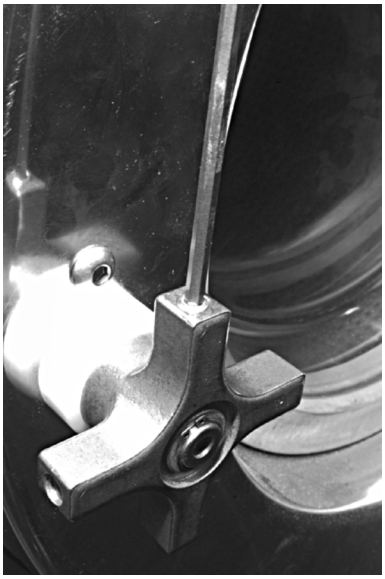
Figure 18. Shaft with Return Spring Installed



3. Looking at the rear of the door, rotate the shaft counterclockwise about 90 degrees, until the shaft fully seats into the door. When properly seated, the shaft finger (the latch) will align with the key way on the door lock mechanism.
4. Install the rear retaining clip on the shaft.
5. Slide the door handle and flange bearing onto the shaft.
6. Install the front thrust bearing and retaining clip on the shaft.
7. Repeat the following sub-steps four times—once for each ball, spring, and set screw: (Figure 19: Inserting Ball and Spring in Handle Spoke, page 59 and Figure 20: Adjusting Set Screw, page 59):
   a. Drop the ball into the hole of door handle top spoke, followed by the spring, as shown in Figure 19, page 59.
   b. Install the set screw. As previously stated, the handle should ratchet if more turning force than necessary is applied or if turned counterclockwise. Tighten the set screw until the set screw is flush with the handle. This will provide roughly the correct spring tension.
   c. Rotate door handle counterclockwise 90 degrees to ratchet it to the next position (with the next spoke on top).

Figure 19. Inserting Ball and Spring in Handle Spoke

Figure 20. Adjusting Set Screw



8. When all four set screws are in place, check to be sure the handle will ratchet if turned counterclockwise, or if latched with more force than necessary. Make 1/4 turn adjustments to all four set screws if necessary to achieve the proper tension.
9. Install the black plastic cap over the center of the handle.

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Setting Door Interlock Switches

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How The Door Interlock Switches Work

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DANGER: **Amputation Hazard** — Turning cylinder can twist off arms.

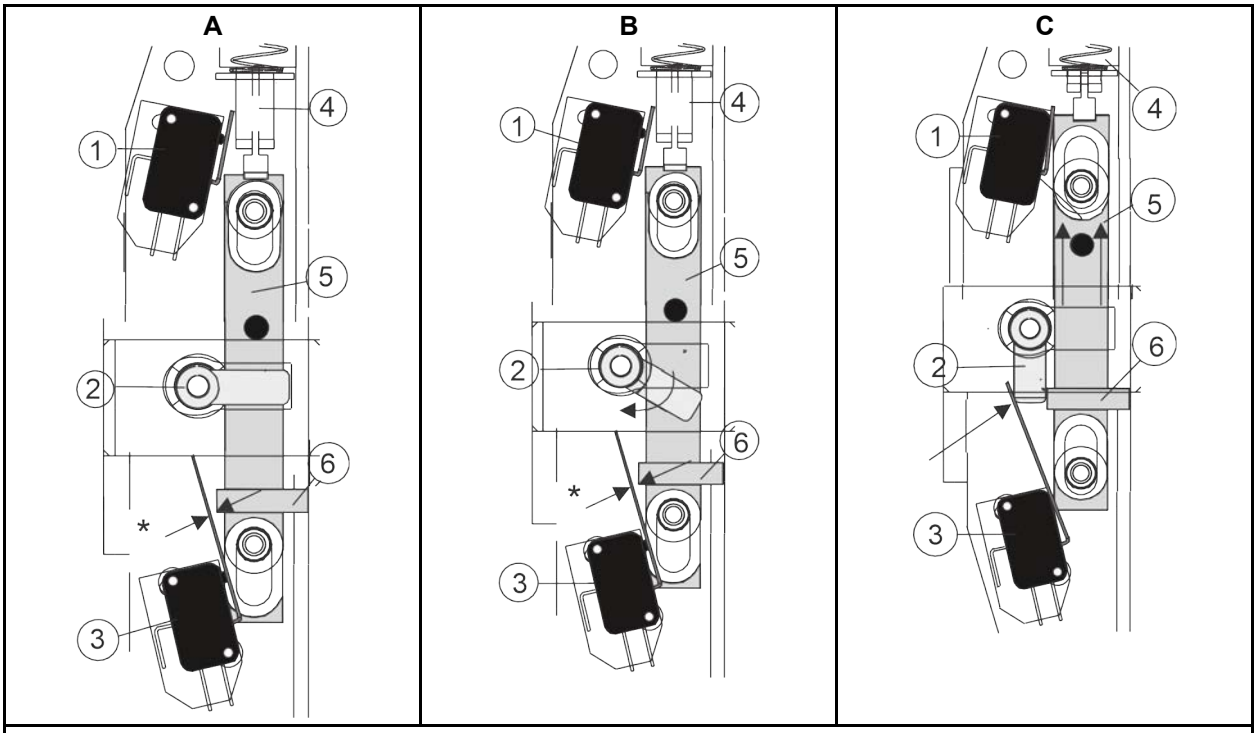
- Do not permit this machine to be operated unless door interlock switch SMD (Figure 21: Door locking sequence, page 60 item 3) is set according to these instructions.
- Do not operate this machine if a visual inspection of the unlocked door shows door lock switch SMD touching the door lock slider, or if the machine operates with the door open.
- Verify that all components of this system are in good working order.

NOTE: Study the illustrations in Figure 21, page 60while reading the following explanation.

After the door is shut, the turning door catch (item 2) physically contacts door interlock switch SMD (item 3). Actuating this switch tells the microprocessor that the door is closed. Note that the door handle is not locked in place and the door can be opened if needed. The machine can be programmed but cannot start the wash program or allow manual actuation of outputs.

Immediately after the start switch 1 is pushed, the microprocessor energizes solenoid EMDL (item 4), pulling up the door lock slider. The raised door lock slider mechanically locks the door handle in place and actuates door interlock switch SME (item 1). Actuating this interlock switch confirms that the door is closed and locked, allowing the machine to start the wash program.

Figure 21. Door locking sequence



Legend

A . . . Door pushed shut, door handle (item 2) in unlocked position, door lock slider down (item 5), interlock switch SMD (item 3) and SME (item 1) not actuated. (Note the minimum sixteenth of an inch (1.6 mm) gap between the lever on interlock switch SMD and the door lock slider.)

B . . . Door shut, door handle (item 2) being turned to the locked position. The door lock slider (item 5) is down, interlock switch SMD (item 3) and SME (item 1) not actuated.

C . . . Door shut, door handle (item 2) in the locked position. The door lock slider (item 5) is up, locking the door handle in place, interlock switch SMD (item 3) and SME (item 1) are both actuated.

1 . . . Door interlock switch SME

2 . . . Door catch

3 . . . Door interlock switch SMD

4 . . . Solenoid EMDL

5 . . . Door lock slider

6 . . . Raised section of door lock slider

Adjusting the Door Interlock Switches

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Periodically inspect the door locking assembly for wear and proper functioning as follows:

1. Remove the cover plate. Manually push the door slider assembly (item 5) down until it stops. Check for a minimum of one sixteenth of an inch clearence (1.6 mm), between the raised portion of the door slider (item 6), and the lever of interlock switch SMD (item 3).

2. Manually push the door slider assembly up until it stops. Check that the rising slider depresses interlock switch SME (item 1), “making” the switch.

4 Drive Assemblies

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Drive

2 Sheets

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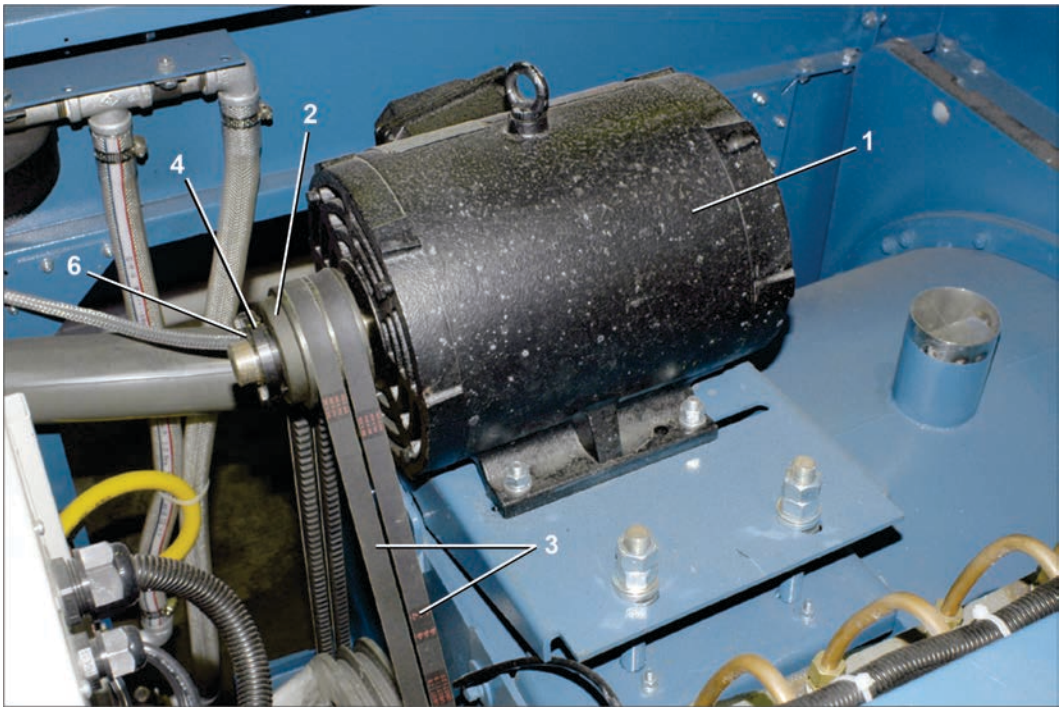

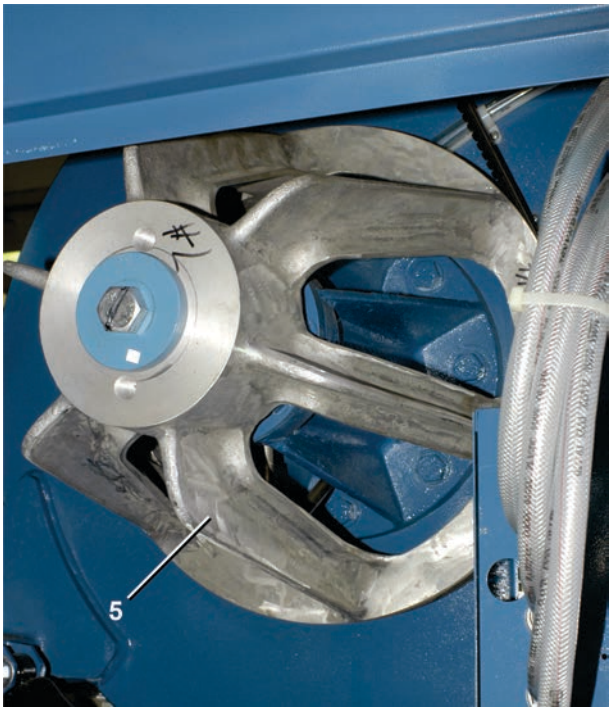

Drive

2 Sheets

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Table 18. Parts List—Drive

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	98CMCR0404	5HP 220/380/440V 50/60HZ 3022X CASTIC	
all	2	98CX030B2H	SMALL PULLEY	
all	3	56VB082XM2	VBELT BX82 EA=1BELT	
all	4	98CXQ1CH	1+1/8"BUSH VPULTAPER LOCK	
all	5	98CX03830	MACH=18" MAIN PULLEY 2B, 30X	
all	6	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	

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Bearing parts MWF27

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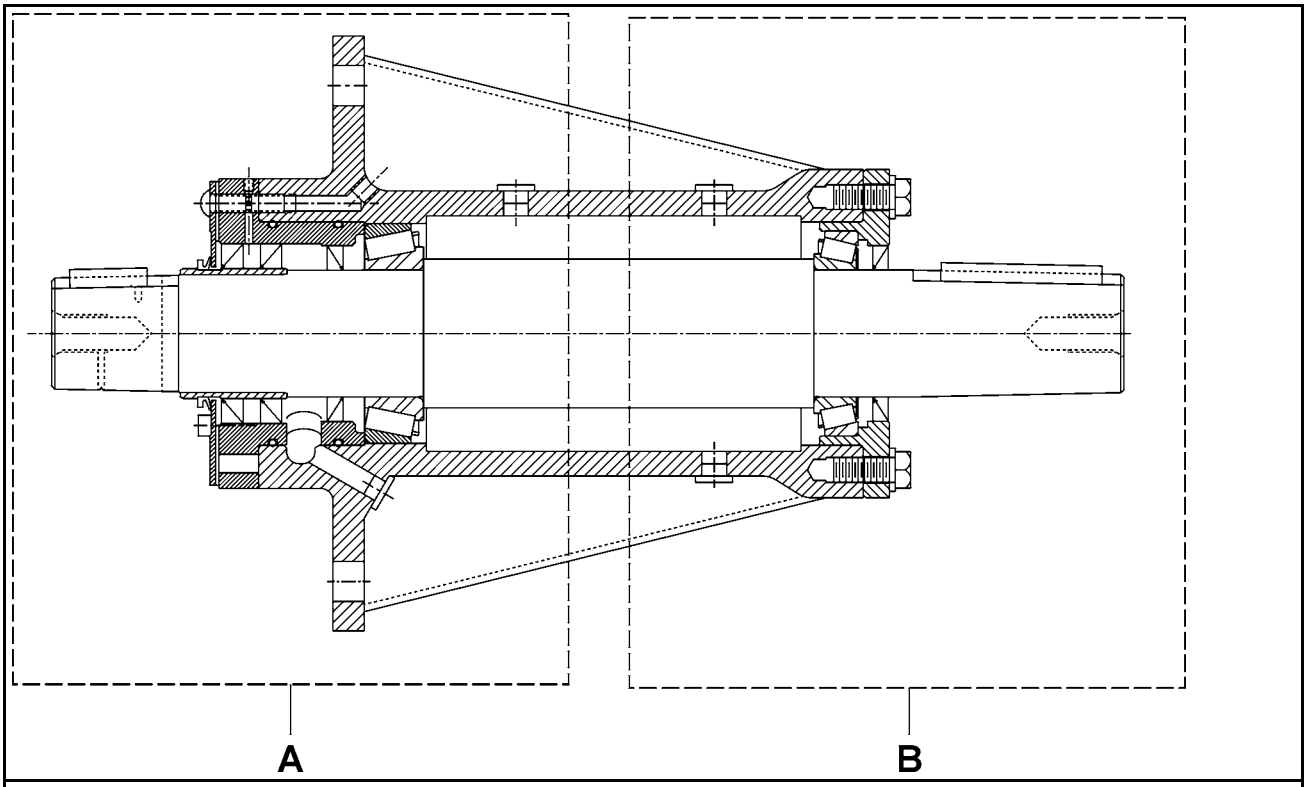
Figure 22. Bearing Assembly Cross Section



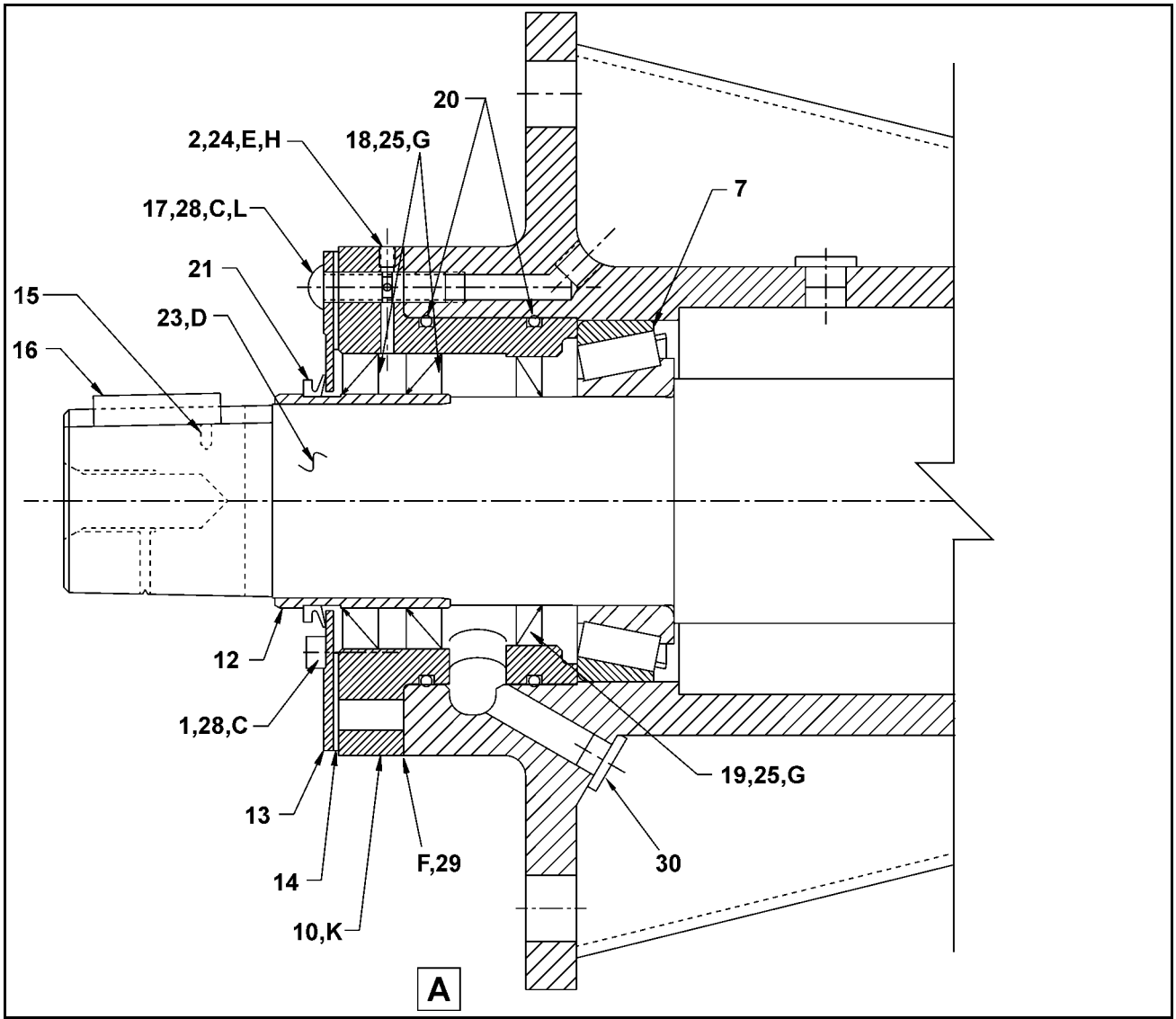
Legend

A. Detail view of the bearing housing front
B. Detail view of the bearing housing rear

Bearing Housing Components MWF27

4 Sheet

Figure 23. Bearing Housing Front



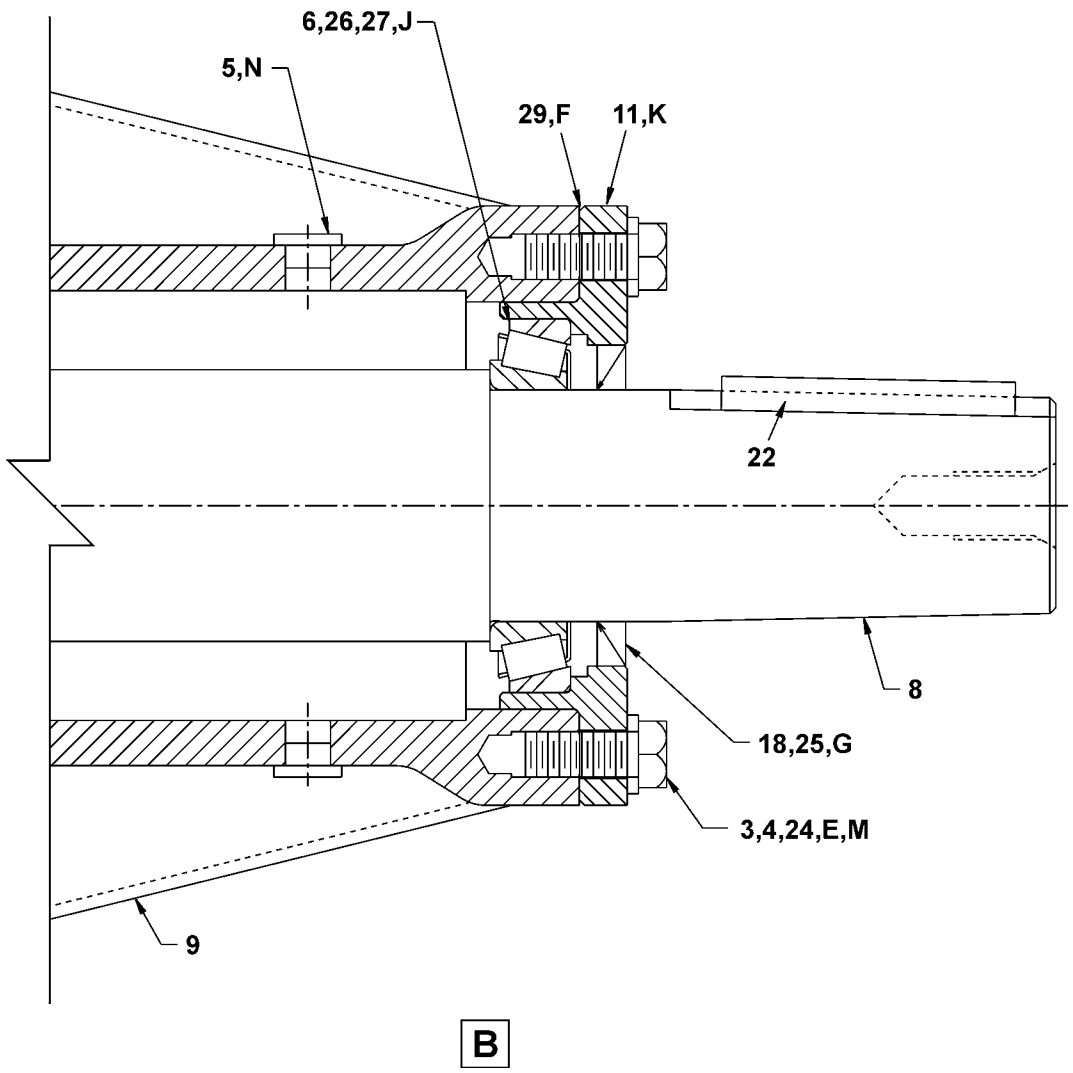
Legend

A. Detail view of the bearing housing front.
C. Apply anti-seize compound to the bolt.
D. Clean the shaft and the inner sleeve. Make sure that they are clean and free from oil. Apply adhesive, then the sleeve. Make sure of a bond on a minimum of 75% of the surface.
E. Apply adhesive to the bolt.
F. Add shims to a thickness of .004 inches — .005 inches. The shaft must turn in the housing. For details of the recommended procedure, refer to the document MSSM0261AE.
G. Apply adhesive to the outer circumference of the seals. Let the adhesive dry 24 hours. Make sure that all surfaces are clean and free from oil before you assemble.
H. Set the set screw to be flush with the outer edge of the seal holder.
K. The seal holders must be fully down before you tighten the fasteners.
L. When you change the seal holder, torque item 17 to 150 IN. LBS. This bolt has a nylon insert and a hole to let grease to the water seals. Torque all remaining bolts to the standard torque.

Bearing Housing Components MWF27

4 Sheet

Figure 24. Bearing Housing Rear



Legend

B. Detail view of the bearing housing rear
E. Apply adhesive to the bolt.
F. Add shims to a thickness of .004 inches — .005 inches. The shaft must turn in the housing. For details of the recommended procedure, refer to the document MSSM0261AE.
G. Apply adhesive to the outer circumference of the seals. Let the adhesive dry for 24 hours. Make sure that all applicable surfaces are clean and free from oil before you assemble.
J. Apply primer and adhesive to the rear bearing cup and holder housing.
K. The seal holders must be fully down before you tighten the fasteners.
M. instances 8
N. instances 4

Bearing Housing Components MWF27

4 Sheet

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	
	Z	98CMCR3015	MAIN BEARING ASSY=30X8	COMPLETE ASSEMBLY
			Components	
all	2	15Q068A	SOKSETSCR CUP10-32X1/4 SS	
all	4	98CX773513	FLATWASHER, D12 ZINC	
all	5	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	6	54A915916	TIM#JLM710949C/JLM710910-2.5"BORE	
all	7	54A593597	TIMKEN CUP# 39521(OR CUP# 39520)/CONE# 39590= 2.625"BORE (EA=SET)	
all	8	98CMCR3021	30X8 MAIN SHAFT, METRIC	
all	9	98CMCR3020	30X8 BEARING HOUSING, METRIC	
all	10	98CMCR3022	30X8 FRONT SEAL HOLDER, METRIC	
all	11	X2 03832	MACH=REAR SEAL HOLDER 3022F	
all	12	02 03825	SLEEVE=BEARING SHAFT 3022F	
all	13	02 03826	COVER=V-RING SEAL 3022F	
all	14	02 03823A	GASKET=3022F V-RING SEAL	
all	15	15H089S	SPRINGPIN 1/8"DIA X 5/8" LONG	
all	16	02 02294A	SHAFT KEY 3/8 X 3/8	
all	18	24S053	SEAL 2.625X3.625X.437#10051L5	BUNA
all	18	24S053V	SEAL 2.625X3.625X.437#10050H5L	VITON
all	19	24S052A	SEAL 2.559X3.55X.315 CR#25430	BUNA
all	19	24S052V	SEAL 2.559X3.55X.315VTCR#25431	VITON
all	20	60C151A	ORING 4+1/4ID1/8CS BUNA70#244	
all	21	24S105FN	SEAL 2.48X2.68X2.28X.20V65A-N	
all	23	20C009	THRDLKSEAL LCT#27731 50CC	
all	24	20C007H	THDLK REMVBL-#24221	
all	25	20C012D	RETAINCMPD ADH LCT#1835205 10CC	
all	26	20C011B	RETAIN CMPD ADH LCT#60905 .5CC	
all	27	20C006P	PRIMER-N #7649 LCT#21348-4	
all	28	20C020	ANTISEIZE TEFLON SEALANT 50ML	
all	29A	02 03818J	SHIM=.003 CRS GREEN	
all	29B	02 03818K	SHIM=.005 CRS BLUE	
all	29C	02 03818L	SHIM=.0075 CRS BLACK	
all	29D	02 03818M	SHIM=.010 CRS RED	
all	30	98CX961708	GREASE FITTING, 1/8BSP ZINC	

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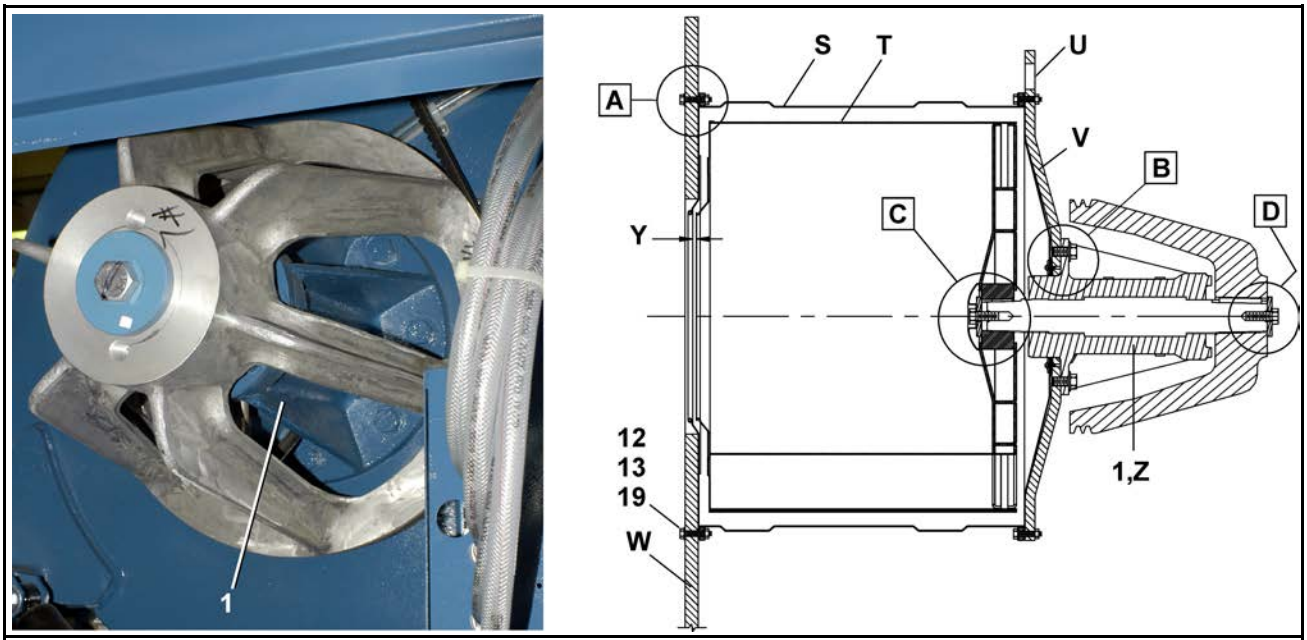
Bearing Installation MWF27

4 Sheet

Figure 25. Cross Section: Shell, Cylinder, Bearing, Pulley



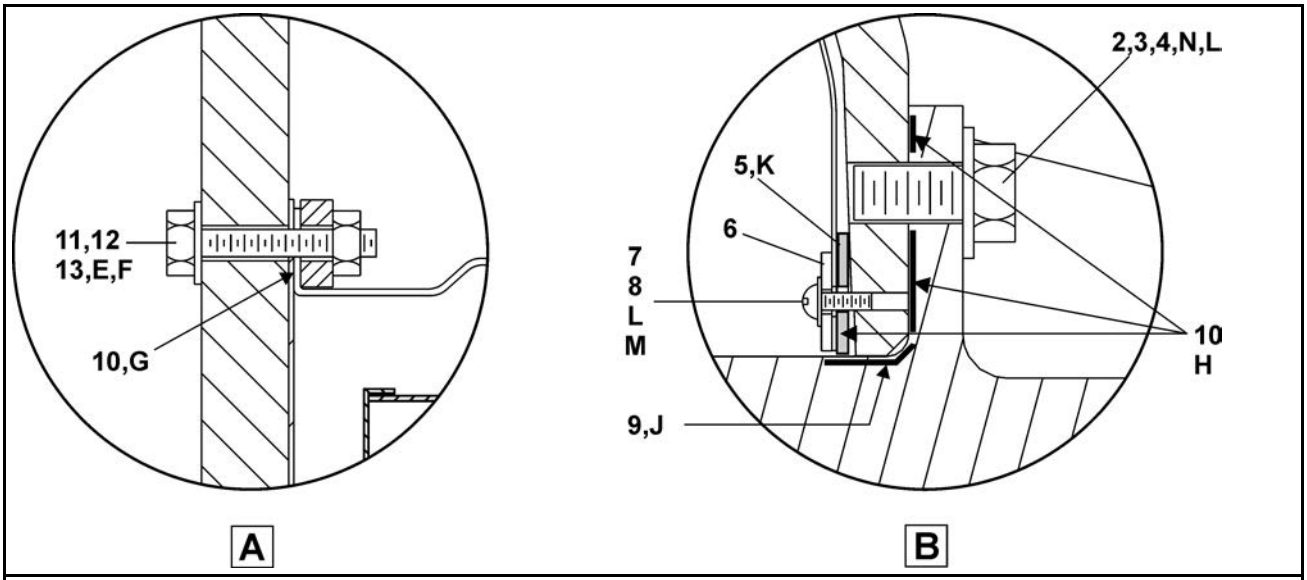
Legend

A. Top connection between the shell front and the shell side sheet.
B. Connection between the shell rear and the bearing housing
C. Connection between the cylinder rear and the bearing housing
D. Connection between the bearing housing and the pulley
S. Shell
T. Cylinder
U. Holes to lift the machine
V. Shell rear
W. Shell front
Y. This dimension must be in this range: .25 inches [6mm] — .625 inches [15mm].
Z. Bearing Housing Components, see BPWMAB03.

Bearing Installation MWF27

4 Sheet

Figure 26. Details A & B: Shell front to Shell, Shell rear to Bearing



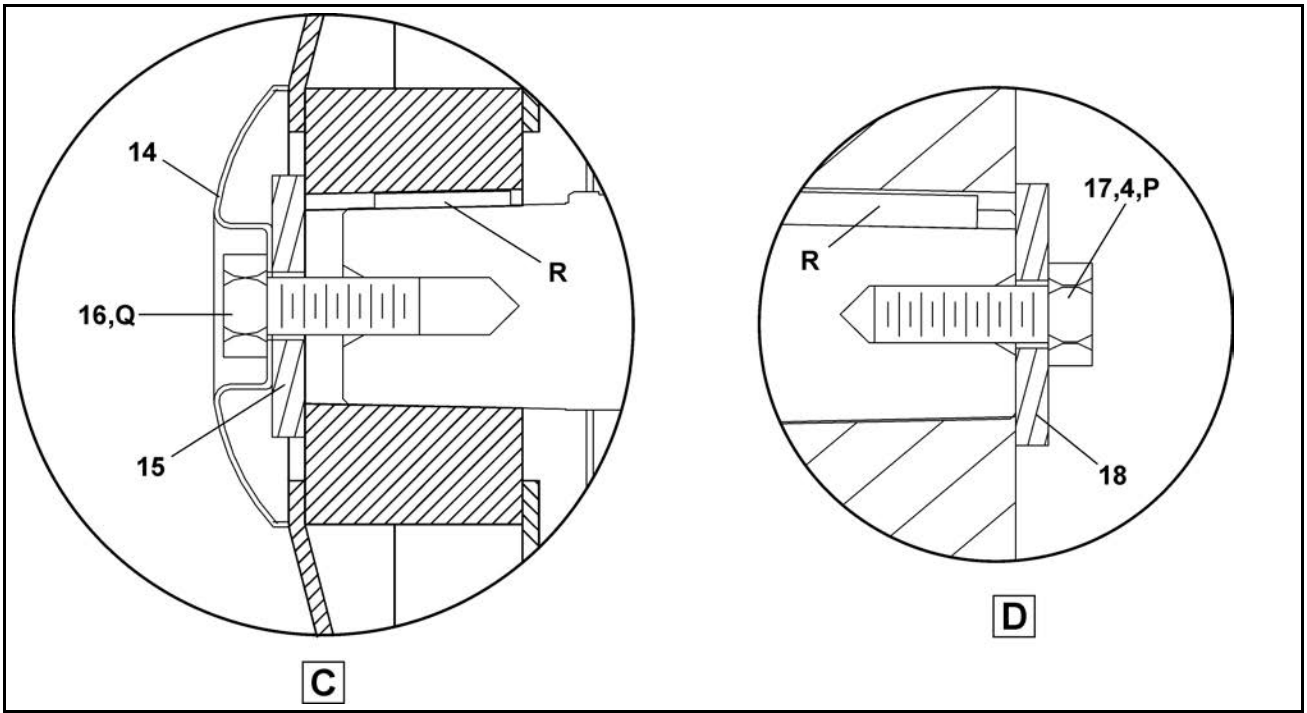
Legend

A. Top connection between the shell front and the shell side sheet
B. Connection between the shell rear and the bearing housing
E. instances 24
F. Apply adhesive to the bolt, torque to 44 FT. LBS.
G. Apply silicone between the inner shell front and shell, fully around the hole pattern.
H. Apply silicone between the rear bearing housing and the shell rear, fully around the hole pattern.
J. Apply adhesive to the circumference.
K. Apply silicone between the lining and the shell rear, fully around the hole pattern.
L. instances 8
M. Torque to 36 IN. LBS.
N. Apply adhesive to the bolt, torque to 199 FT. LBS.

Bearing Installation MWF27

4 Sheet

Figure 27. Details C & D: Shell rear to Bearing, Bearing to Pulley



Legend

C. Connection between the cylinder rear and the bearing housing
D. Connection between the bearing housing and the pulley
P. Apply adhesive to the bolt torque to 361 FT. LBS.
Q. Apply adhesive to the bolt, torque to 236 FT. LBS.
R. Key. See Bearing Housing Components, BPWMAB03.

Bearing Installation MWF27

4 Sheet

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	98CMCR3015	MAIN BEARING ASSY=30X8	BEARING ASSEMBLY
all	2	15K215M	CAPSCR M16X40 CLS 10.9 Z	
all	3	15U316M	FLTWASH D16 HARD HV200 D16 Z	
all	4	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	5	02 03258	GASKET=SHELLBACK LINER,3022H	
all	6	02 03279	DOUBLER=SHELLBK LINER,3022H	
all	7	15K032MS	BUTSOKCAP SCR M6*20 SS	
all	8	15U137	FLTWSHR M6-1 18-8 SS	
all	9	20C005	ADH/SEALANT 50CC LCT#271-31	
all	10	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	11	15K180M	M10-1.5X50HX HD CAP SCR DIN931	
all	12	15U266	FLATWASHER 1"0DX7/16"IDX3/16"	
all	13	15G206M	HEX NUT M10 ZINC	
all	14	98CMCR0949	COVER SHAFT RETAINER METRIC	
all	15	98CMCR0950	SHAFT RETNR SPACER METRIC	
all	16	15B201	HEXCAPSCR M20-2.5 X 50M 18-8	
all	17	15K232	HEXCAPSCR 3/4-10UNC2X2 GR5 ZIN	
all	18	98CMCR3023	SHAFT RETNR SPACER=3022X CSM	
all	19	15K127M	HEXFLGSCR 3/8-16 X2.5 GR8 ZINC	

5 Suspension

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Marshmallow Suspension

2 Sheets

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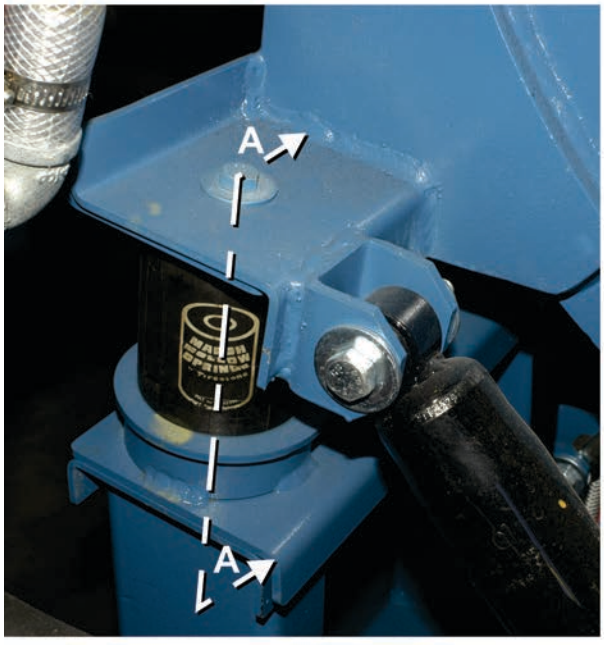

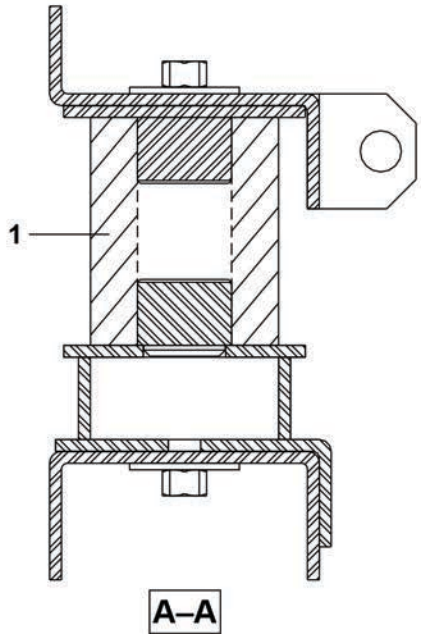

Legend

A–A . . 4 instances

Marshmallow Suspension

2 Sheets

MWF27J8, MWF27Z8

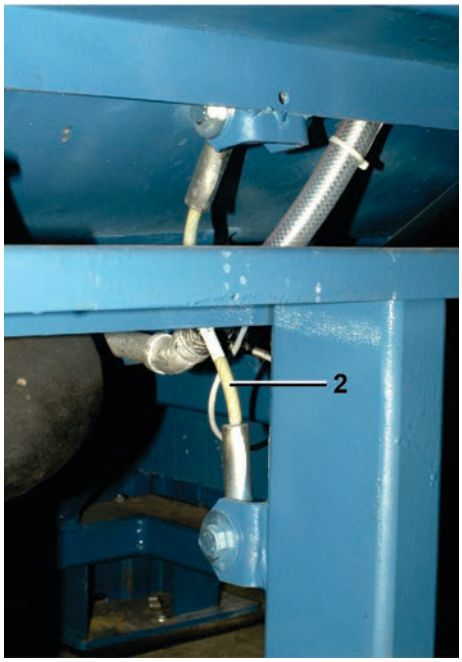

Table 19. Parts List—Marshmallow Suspension

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	60B135	MM SPRG 3X1X4 F#W223580047	
all	2	27A969	CABLE ASSY SAVA#205801	

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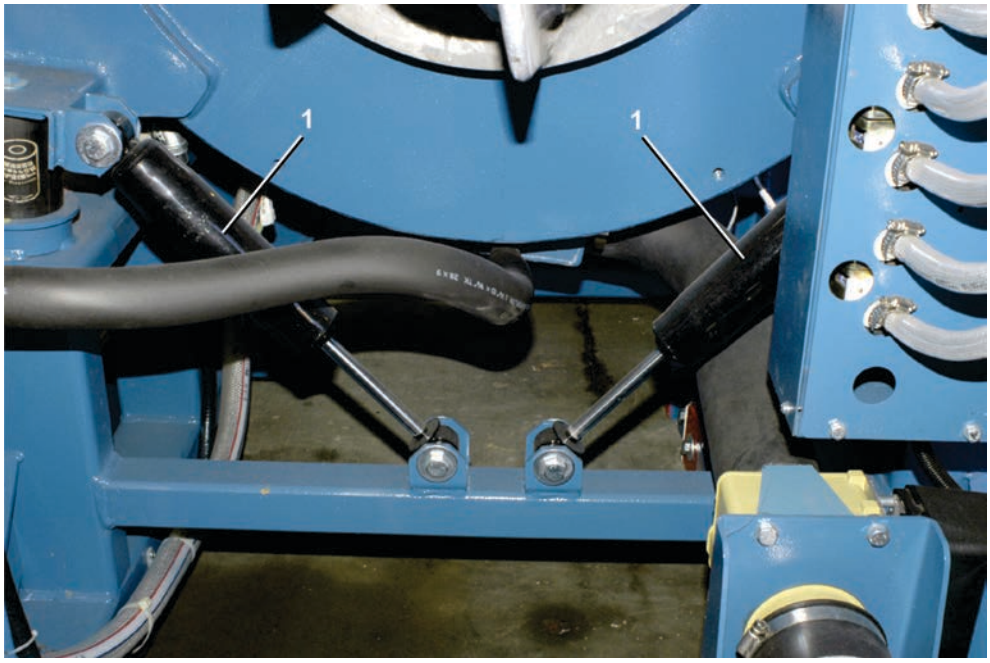
Shocks

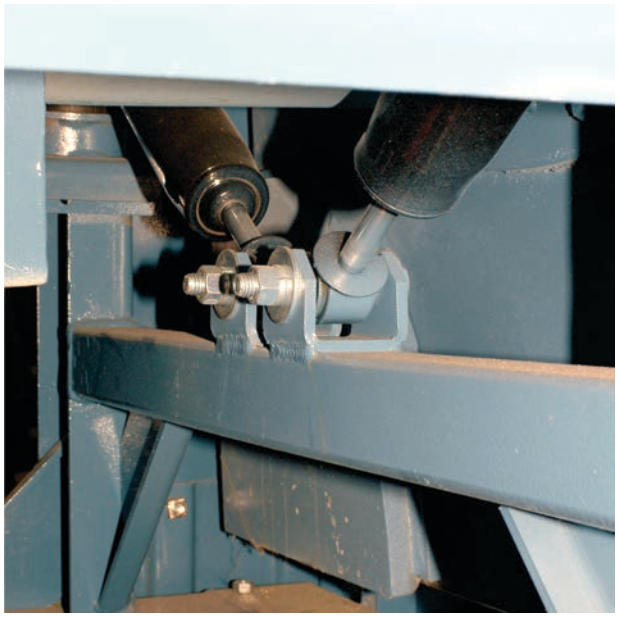
2 Sheets

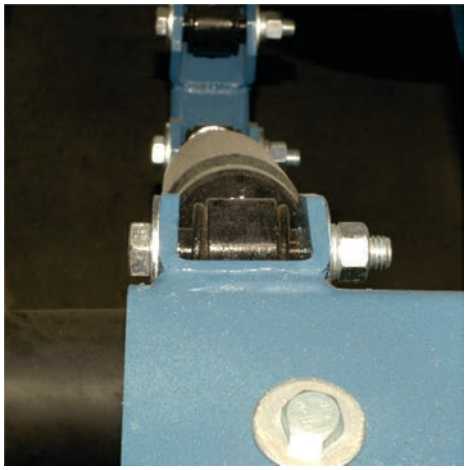
MWF27J8, MWF27Z8

Rear Shocks



Front Shocks





Shocks

2 Sheets

MWF27J8, MWF27Z8

Table 20. Parts List—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**
Components				
all	1	60BS6838	SHOCK ABSORBER = ARVIN #65907340E	

6 Door Assemblies

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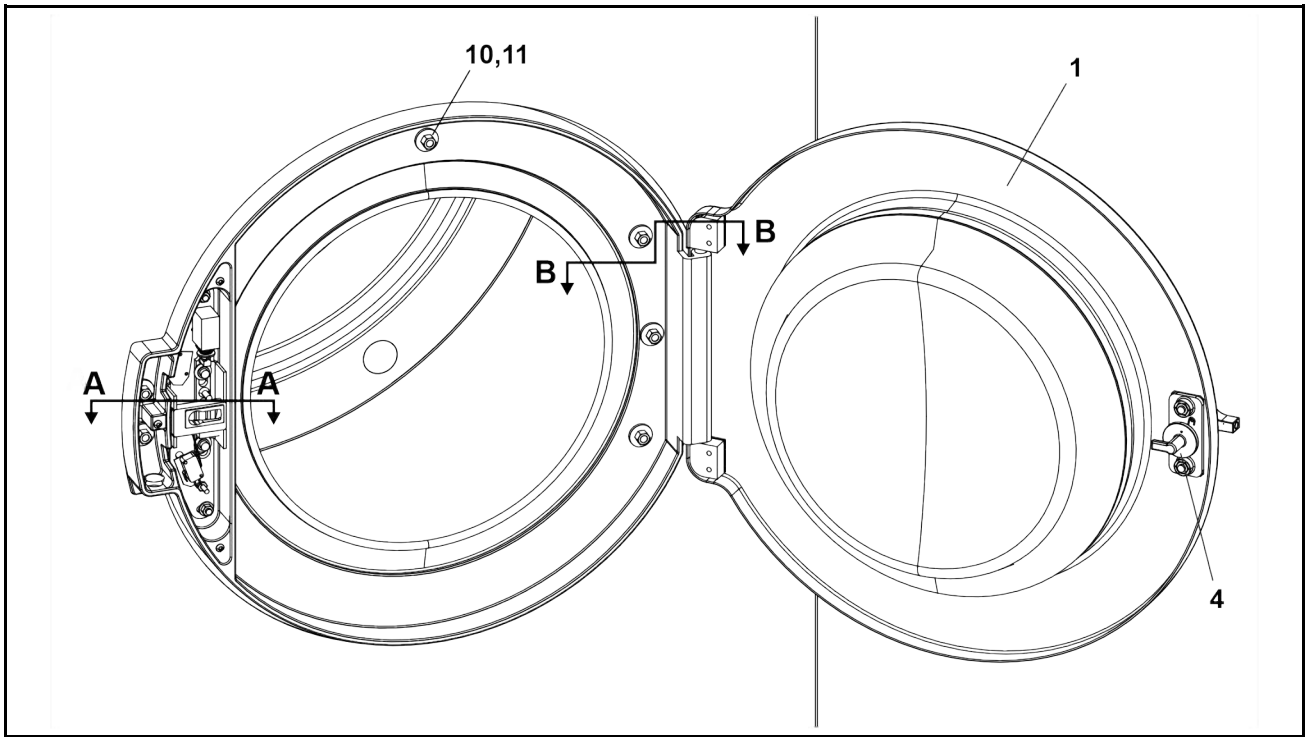
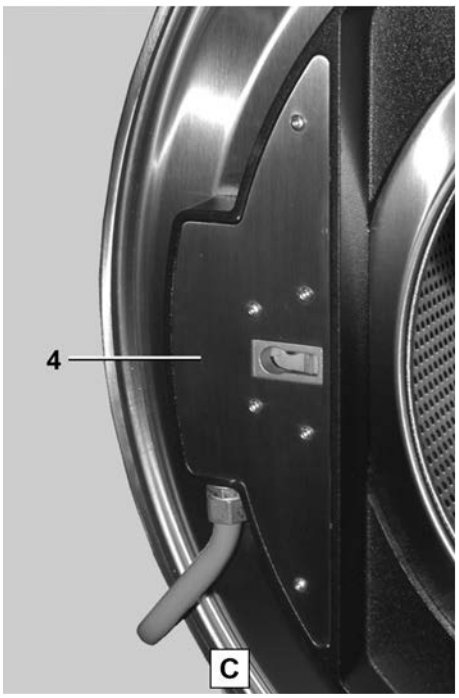
Door Assembly and Installation

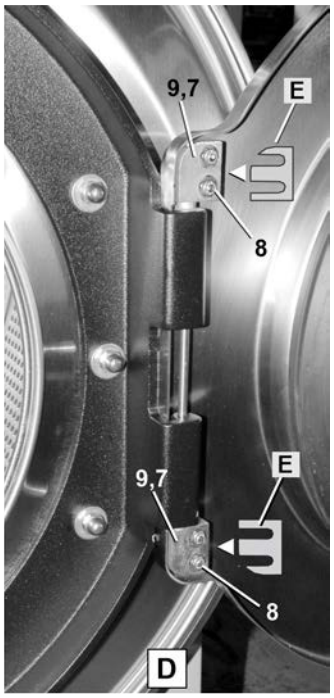
4 Sheet

MWF18J8, MWF27J8, MWF27Z8

Figure 28. Door Installation







Legend

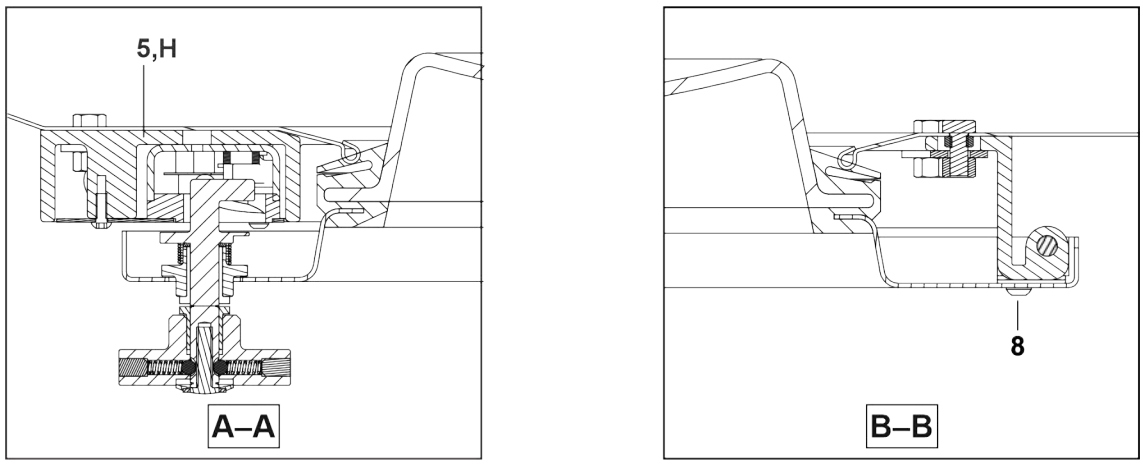
A—A . . See Section A-A.
B—B . . See Section B-B.
C . . . View of Door Lock Mechanism
D . . . View of Hinge
E . . . Shims, add or remove shims until the door locks and seals correctly.

Door Assembly and Installation

4 Sheet

MWF18J8, MWF27J8, MWF27Z8

Figure 29. Door Installation Details



Legend

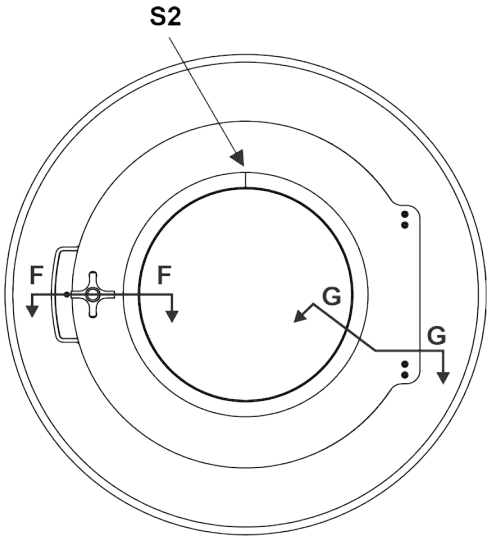
A—A . . Section View: Door Lock Mechanism to Shell Front
B—B . . Section View: Door Frame to Shell Front
H . . . Door Lock Mechanism, see BPWOAD03.

Door Assembly and Installation

4 Sheet

MWF18J8, MWF27J8, MWF27Z8

Figure 30. Door Assembly, Seal and Glass Installation



Legend

F–F . . Section View Door Frame, Handle, and Door Glass Seal.

G–G . . Section View Door Glass Seal and Hinge

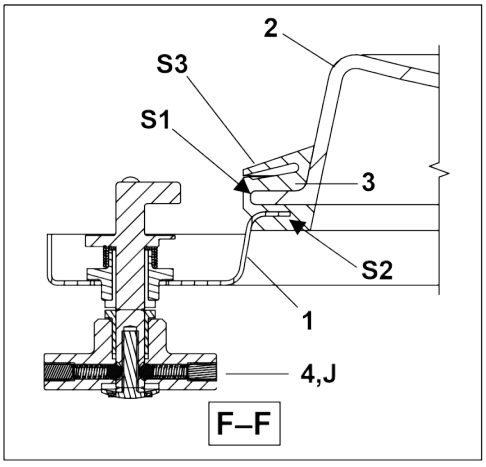
J . . . Door Handle and Lock Actuator, see BPWOAD01.

Steps

S1 . . Apply a continuous bead of silicone completely around the rubber seal, in the area where the glass is to be seated.

S2 . . Install the gasket into the door before installing the glass. Observe the location of the rubber seal joint line. Position the gasket joint at top-dead-center. Adjust if necessary.

S3 . . While installing the glass into the rubber seal, ensure that no silicone is exposed on the outer surface of the rubber seal.



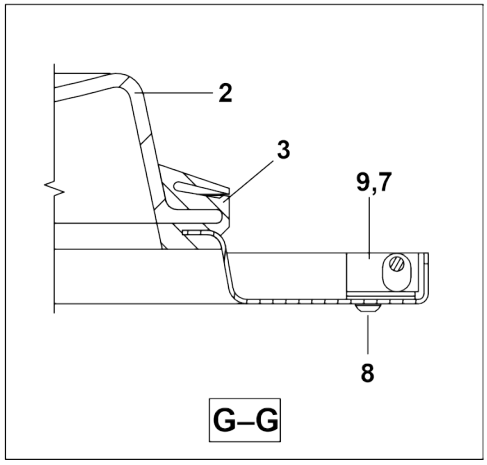


Table 21. Parts List—Door Assembly and Installation

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	02 03229A	30" SHELL DOOR	
all	2	02 03251	DOOR GLASS, 3022H7	
all	3	02 03200	DOOR GASKET, 3022H7	
all	4	98CMCR0925	ASSY=DR HNDL MECH	
all	5	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	
all	7	02 03260	30" SHELL DOOR HINGE LOWER	

Door Assembly and Installation

4 Sheet

MWF18J8, MWF27J8, MWF27Z8

Table 21 Parts List—Door Assembly and Installation (cont'd.)

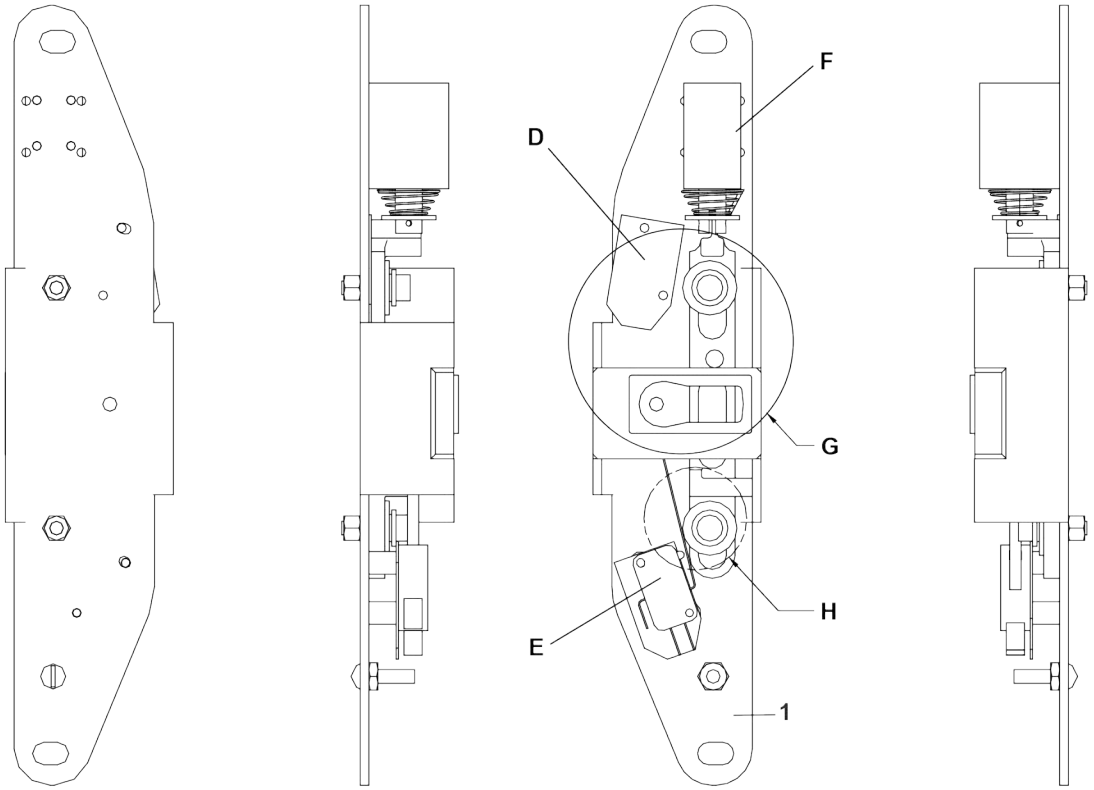
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	8	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	9	02 03260A	30" DOOR HINGE UPPER	
all	10	27A271	.843"ID X 1.496" BASE CAP NCS36	
all	11	27A270	.843"ID X 1.496" BASE NCS35	

BPWOAD03 / 2021204A BPWOAD03.1 0000255709 B.2 J.1 5/17/22, 3:23 PM Released

Door Lock Mechanism

3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 3621V5/V7, 3626V7, 4226V6



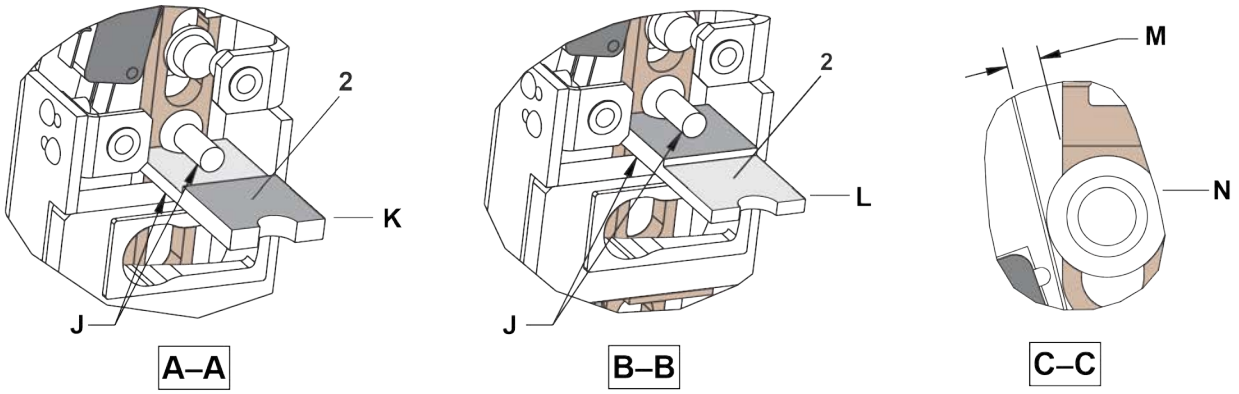
Legend

D . . . Door lock switch
E . . . Door closed switch
F . . . Door lock solenoid
G . . . See details A & B
H . . . See detail C

Door Lock Mechanisms

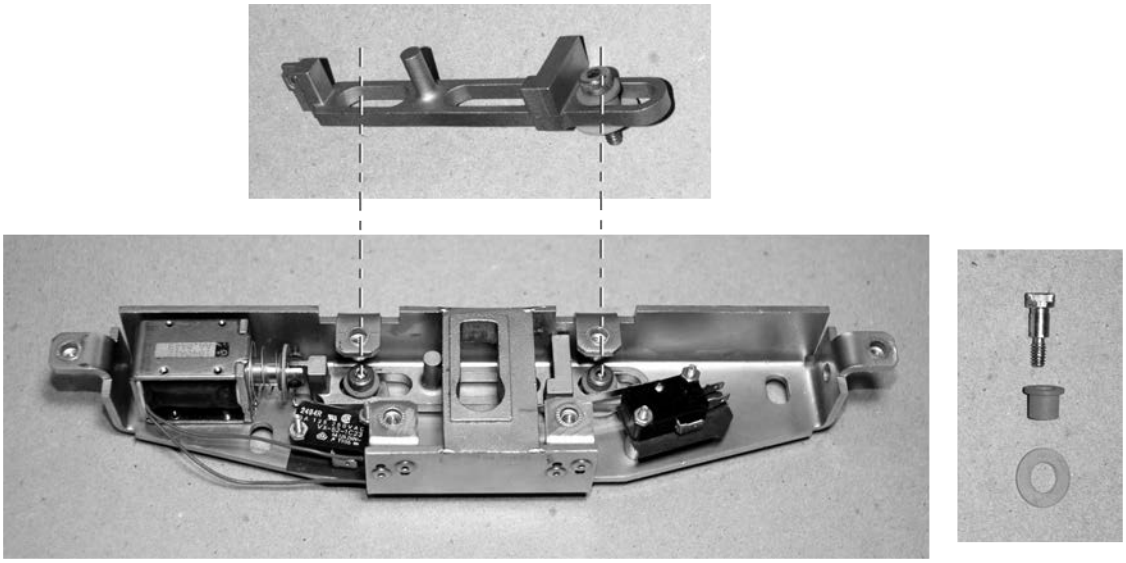
3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 3621V5/V7, 3626V7, 4226V6



Legend

A–A . . Door lock switch “OFF”
B–B . . Door lock switch “ON”
C–C . . Door closed switch
J . . . No air gap
K . . . Insert item 2, thin side. Adjust the switch to “OFF.”
L . . . Insert item 2, thick side. Adjust the switch to be “ON.”
M . . . 3/16” minimum clearance
N . . . Measure this while the slider is down.



Door Lock Mechanisms

3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 3621V5/V7, 3626V7, 4226V6

Table 22. Parts List—Door Lock Mechanisms

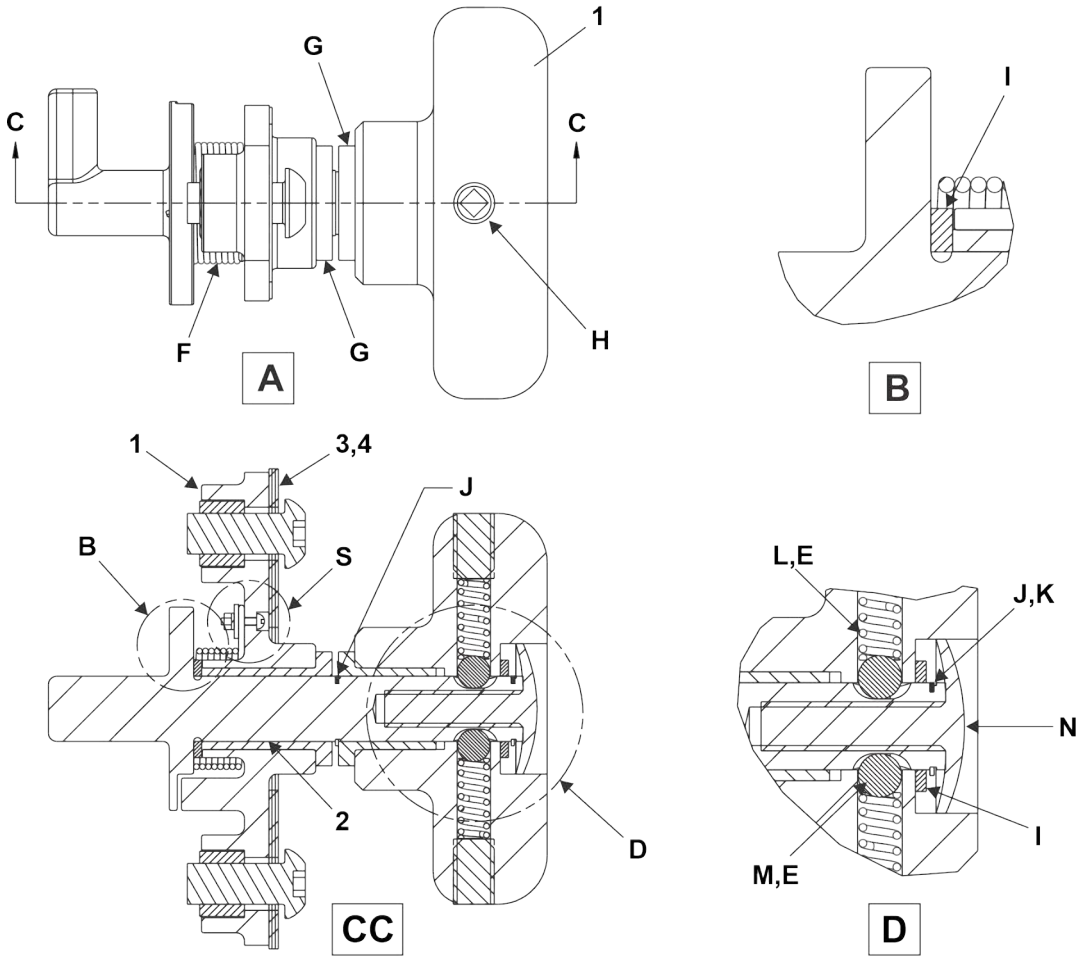
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
	1	98CMCR1206	DOOR INTERLOCK ASSY MCT12	MCR12, MCT16,
	1	98CMCR1205	DOOR INTERLOCK ASSY MWT12	MWT12, MWT16
	1	98CMCR0978	DOOR INTERLOCK ASSY MCT18	MCT18, MCT27
	1	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	MWF18, MWF27, MWT18, MWT27, MCR36E4, MWR36J4, 30015/22T6X,VRJ,V8Z,VZZ, 3621V5/V7, 3626V7, 4226V6
all	2	X2 03306A	MACH=GAGE DR LOCK SWITH, MCR	

BPWOAD01 / 2019354 BPWOAD01.1 0000250501 B.2 D.3 11/13/19, 1:32 PM Released

Door Handle and Lock Actuator

3 Sheets

Figure 31. Door Handle and Lock Actuator



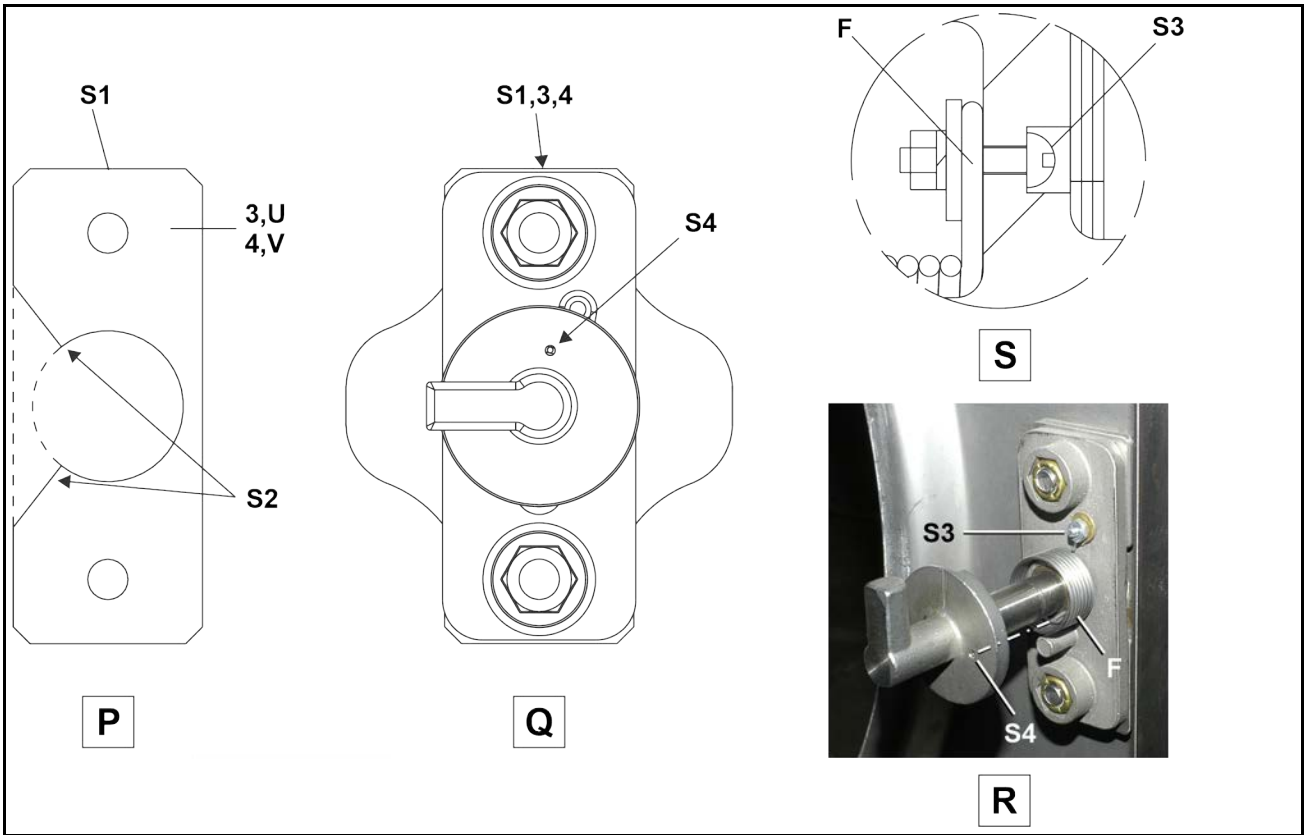
Legend

A . . . Top
B . . . Detailed view
CC . . Cross Section
D . . . Detailed view
E . . . 4 instances
F . . . Torsion spring
G . . . Flange bearing
H . . . Bolt
I . . . Thrust washer
J . . . Retainer ring
K . . . Do not open the ring more than necessary to get it on the shaft.
L . . . Spring
M . . . Roller ball
N . . . Retainer

Door Handle and Lock Actuator

3 Sheets

Figure 32. Shim Adjustment Steps



Steps

S1 . . Add shims to make the latch looser. Remove shims to make latch tighter. To add shims, add a notch to the shims as shown. Then you will not have to remove the handle assembly. When you remove or add shims, always start with the thinnest shim.

S2 . . Make a notch as shown.

S3 . . Put in the machine screw. Put the eye of the torsion spring on the screw then put the flat washer, lock washer, and nut on the screw to hold the eye. Tighten the nut.

S4 . . Put the free end of the spring into this hole.

Legend

P . . . The shim with the added notch

Q . . . Rear view

R . . . Inside view

S . . . Detailed view

T . . . Torsion spring

U . . . The shim thickness is (.230 inches)

V . . . The shim thickness is (.015)

Door Handle and Lock Actuator

3 Sheets

Table 23. Parts List—Door Handle and Lock Actuator

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				
	1	98CMCR0925	Assembly	
all	2	20C007	Adhesive	
all	3	02 04192	Shim, .023	
all	4	02 04192A	Shim, .015	

7 Chemical Supply

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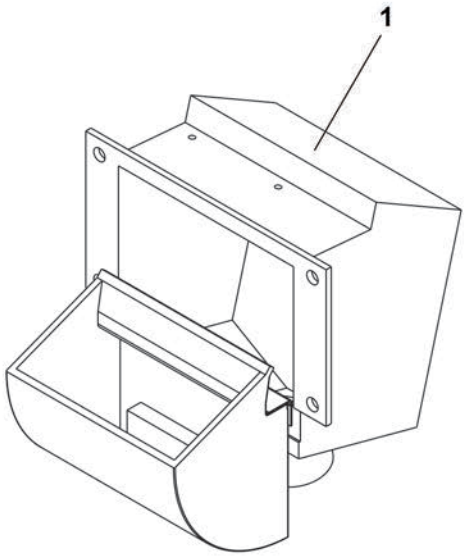
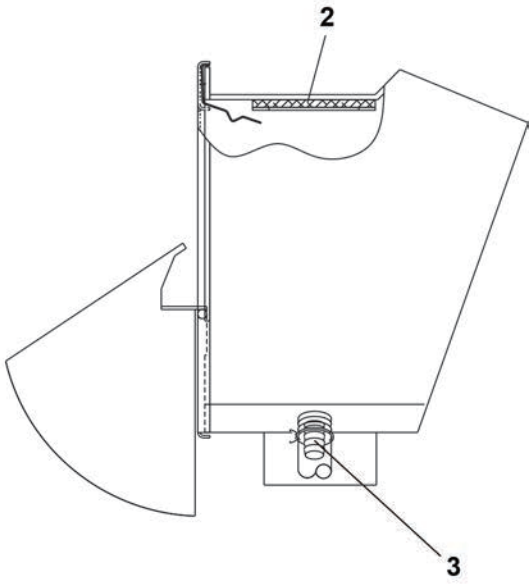
Soap Chute

2 Sheets

MWF27J8, MWF27Z8





Soap Chute

2 Sheets

MWF27J8, MWF27Z8

Table 24. 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**
Components				
all	1	AWS30211A	PLASTIC SOAP ASSY	
all	2	98CX972828	PAD=PLASTIC SOAPCHUTE	
all	3	51BB0KN00B	BULKHD FITT 1/2"BARBED,POLYPRO	
all	4	98CX489041	FLEXIBLE HOSE	
all	5	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	

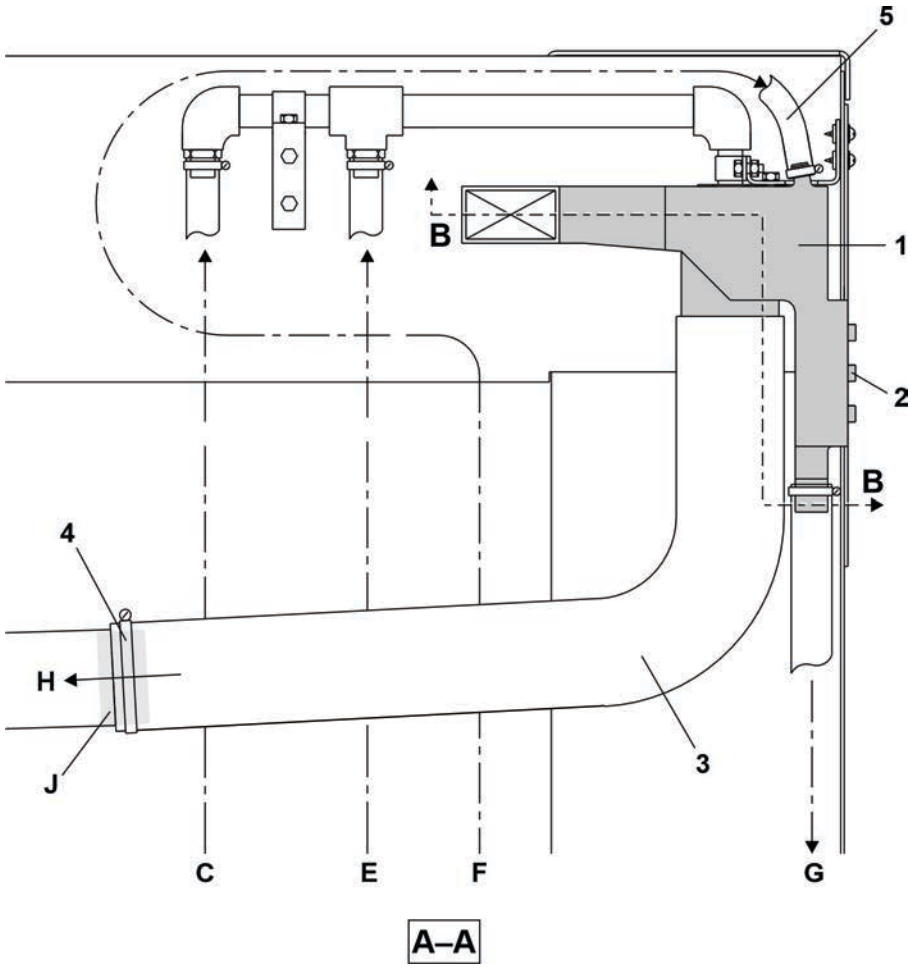
BPWMAC02 / 2022122 BPWMAC02.1 0000409756 B.2 3/17/22, 3:23 PM Released

Peristaltic Supply

3 Sheets

MWF27J8, MWF27Z8

Table 25. Cross Section Peristaltic Inlet



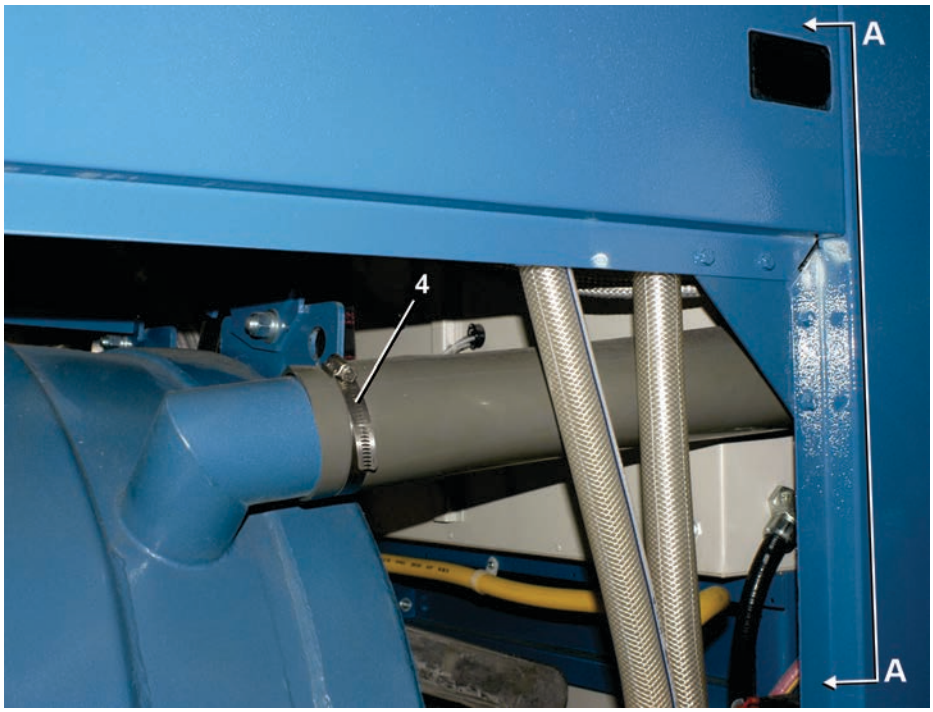
Legend

A–A . . Cross section
C . . . Cold water line
E . . . Hot water line
F . . . Hot water to flush the chemical supplies
G . . . Water and chemical supplies to the shell
H . . . Hot and cold water to the shell
J . . . Apply adhesive to the surfaces that connect, then tighten the clamp.

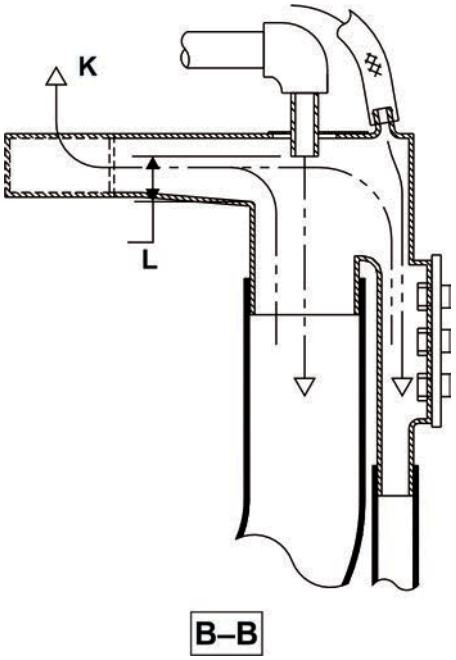
Peristaltic Supply

3 Sheets

MWF27J8, MWF27Z8



Cross Section



Legend

B–B . . Cross section
K . . . Vent
L . . . Air space: 1 inch (25MM)

Peristaltic Supply

3 Sheets

MWF27J8, MWF27Z8

Table 26. Parts List—Peristaltic Supply

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	02 03588M	PERISTALTIC/WATER INLET 3022H	
all	2	98CX489021	NPT PLASTIC PLUG,3/8	
all	3	98CX03588X	WATER INLET/PERISTALTIC HOSE,30X/36X/42X	
all	4	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	5	98CX910814	FLEXIBLE HOSE ID12XOD19X44M	

5 Compartment Supply

3 Sheets

MWF27J8, MWF27Z8

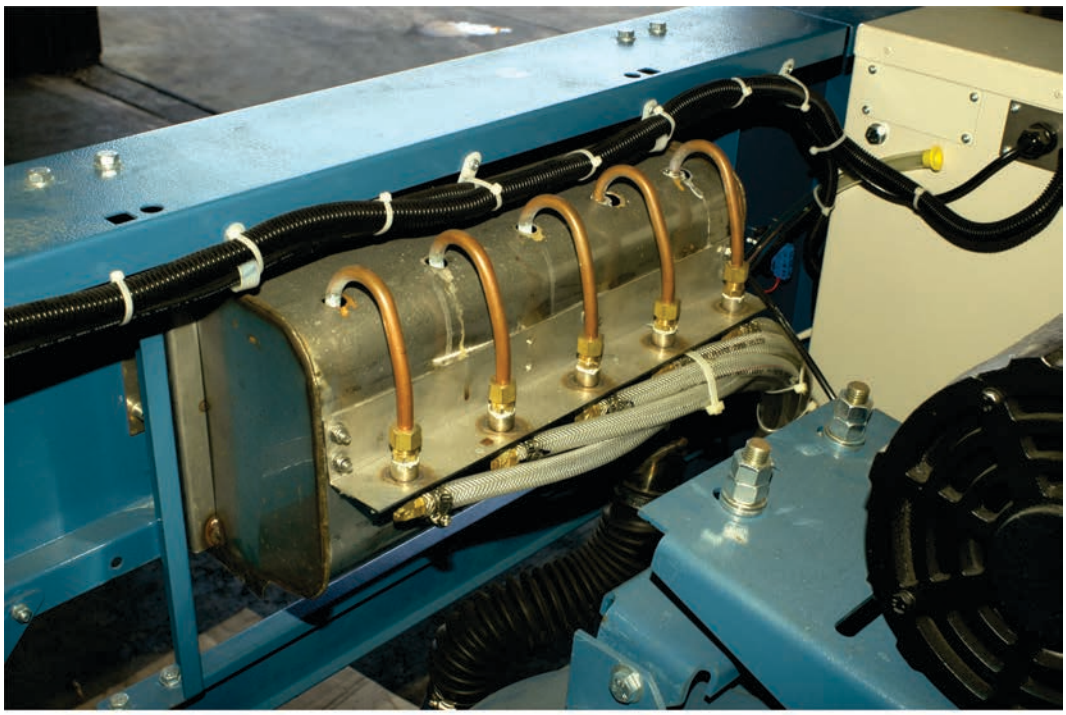
Figure 33. 5 Compartment Supply

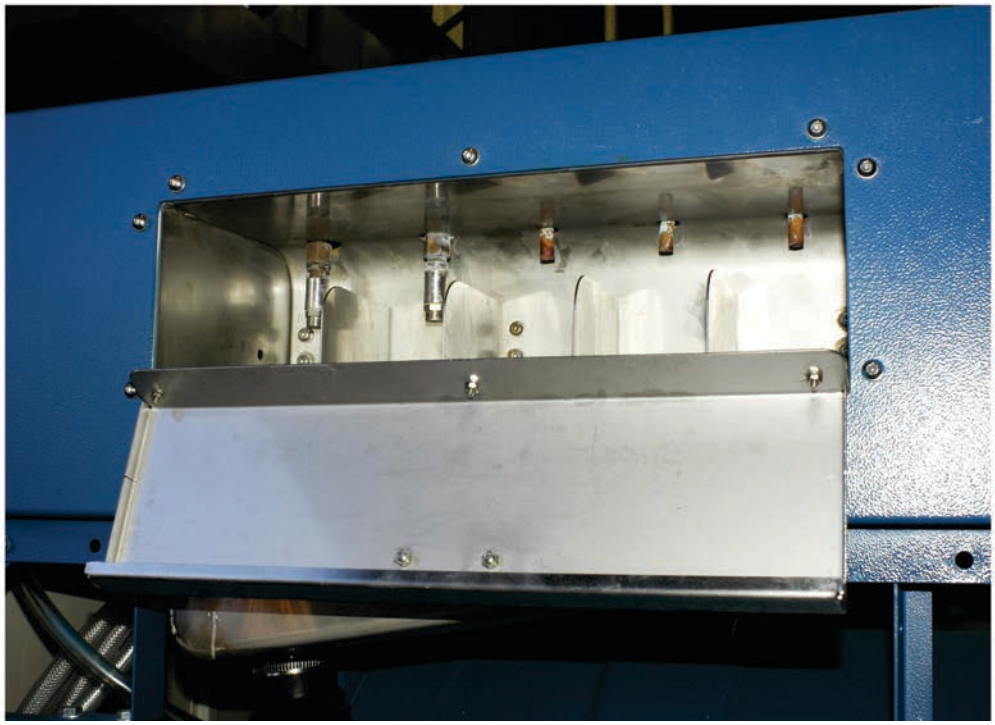
5 Compartment Supply

3 Sheets

MWF27J8, MWF27Z8

Figure 34. Water Nozzles





5 Compartment Supply

3 Sheets

MWF27J8, MWF27Z8

Figure 35. Valve Manifold

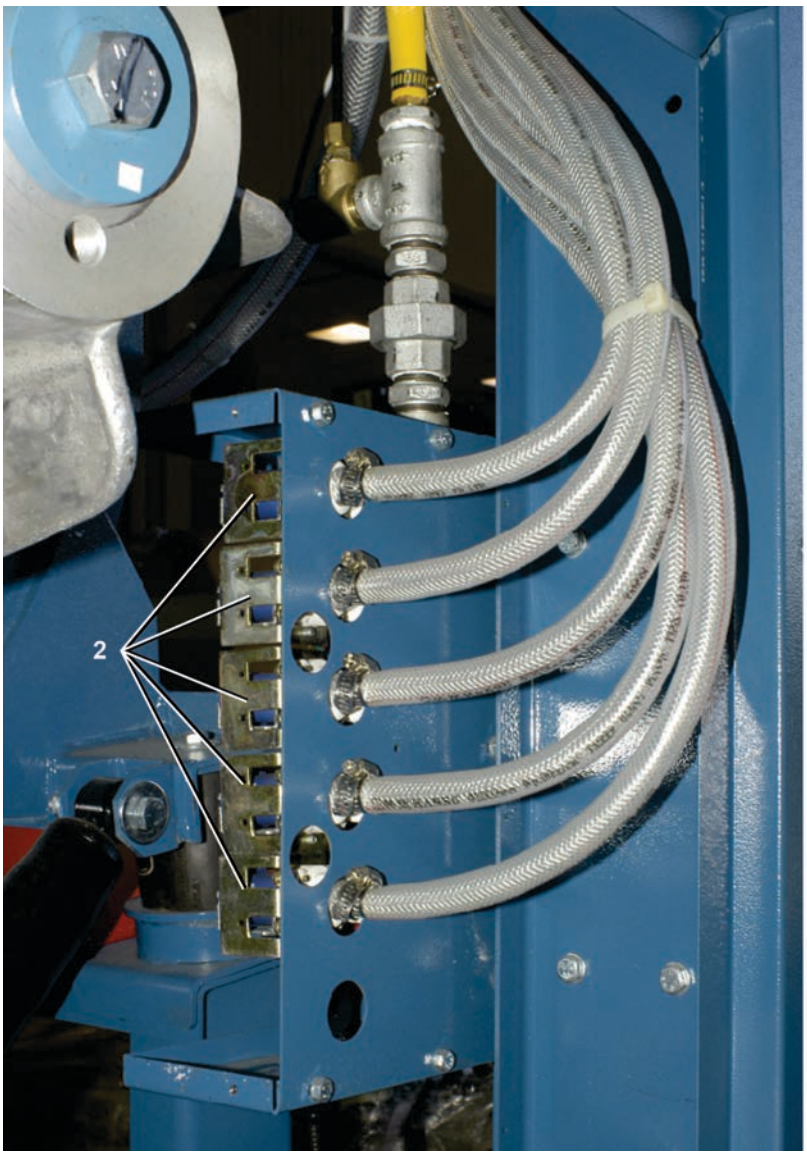


Table 27. Parts List—5 Compartment Supply

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	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	
all	2	96P013B71	3/4" 2WAYPLASTICVAL 240V60C W/L-BRACKET	

8 Water and Steam

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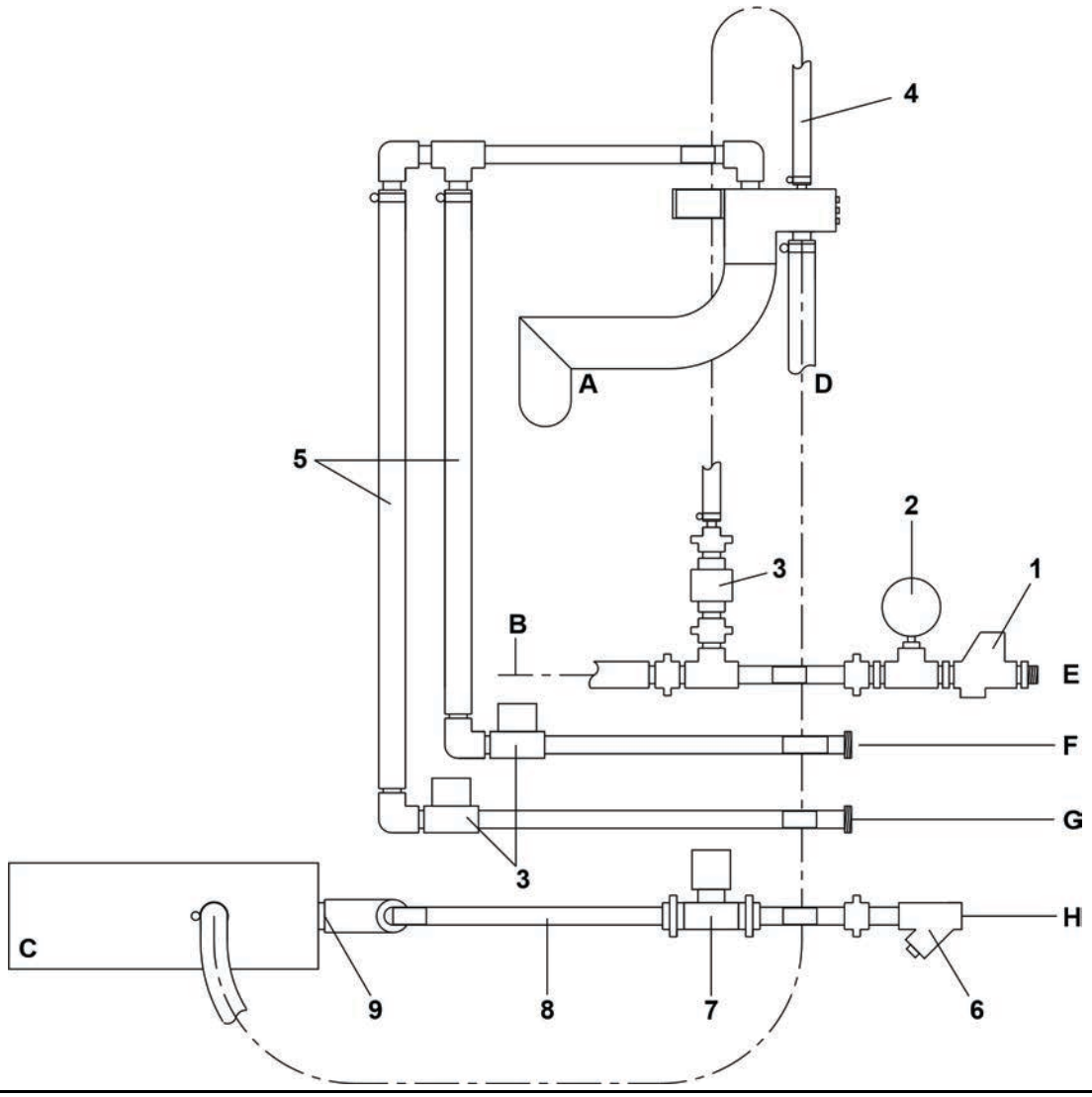
BPWMAW01 / 2022113 BPWMAW01.1 0000409531 B.2 A.4 3/8/22, 3:23 PM Released

Water & Steam Components

4 Sheets

MWF27J8, MWF27Z8

Figure 36. Water and Steam Schematic



Legend

A . . . To shell
B . . . To soap chute or 5 compartment supply
C . . . Drain trough
D . . . To drain trough
E . . . Hot water for supply
F . . . Hot
G . . . Cold
H . . . Steam

Water & Steam Components

4 Sheets

MWF27J8, MWF27Z8

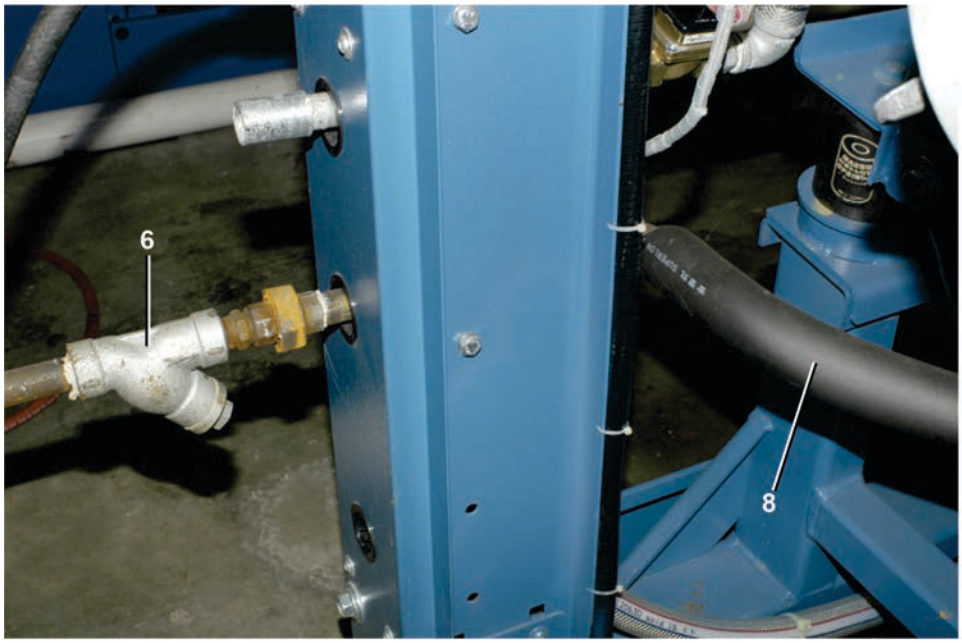
Figure 37. Water and Steam Inlets

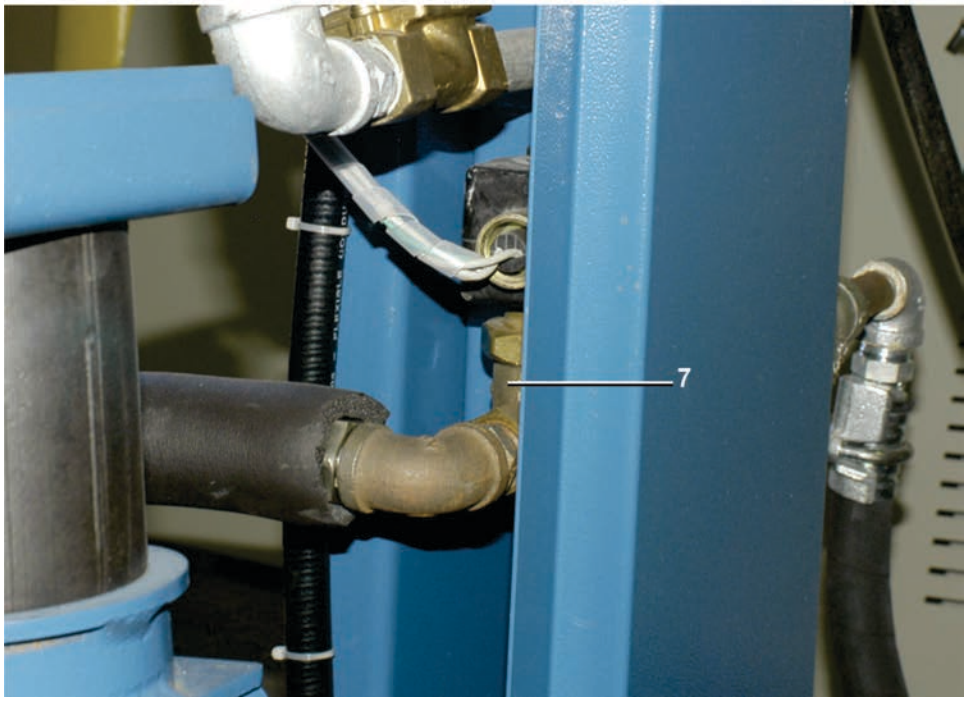
Water & Steam Components

4 Sheets

MWF27J8, MWF27Z8

Figure 38. Steam Inlet





Water & Steam Components

4 Sheets

MWF27J8, MWF27Z8

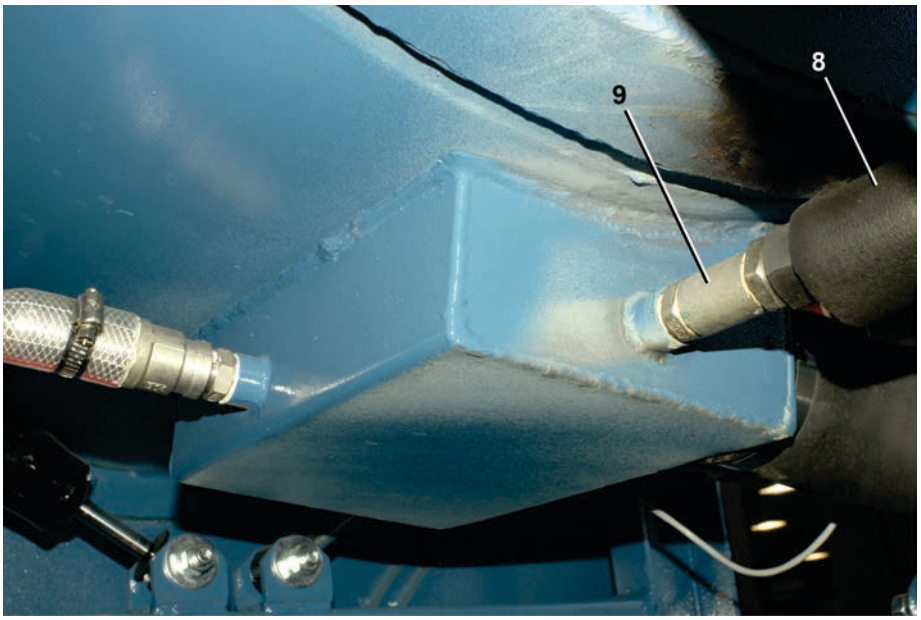


Table 28. Parts List—Water & Steam Components

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**
Components				
all	1	98CX820821	PRESSURE REGULATOR, 1/2 28PSI	
all	2	98CX902450	PRESSGAUGE R1/4",0-28PSI	
all	3	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER	
all	4	98CX489037	FLEXIBLE TUBING ID12MMXOD18MMX970	
all	5	98CX489038	FLEXIBLE TUBING ID 25MMXOD 33MMX900	
all	6	98CX820601	Y-STRAINER, 1/2	
all	7	96P039A71	1/2"STEAMVAL240V50/60C 150PSI	
all	8	98CX800416	STEAM HOSE 30X, 1/2	
all	9	98CX02555A	STEAM SPARGER 42X	

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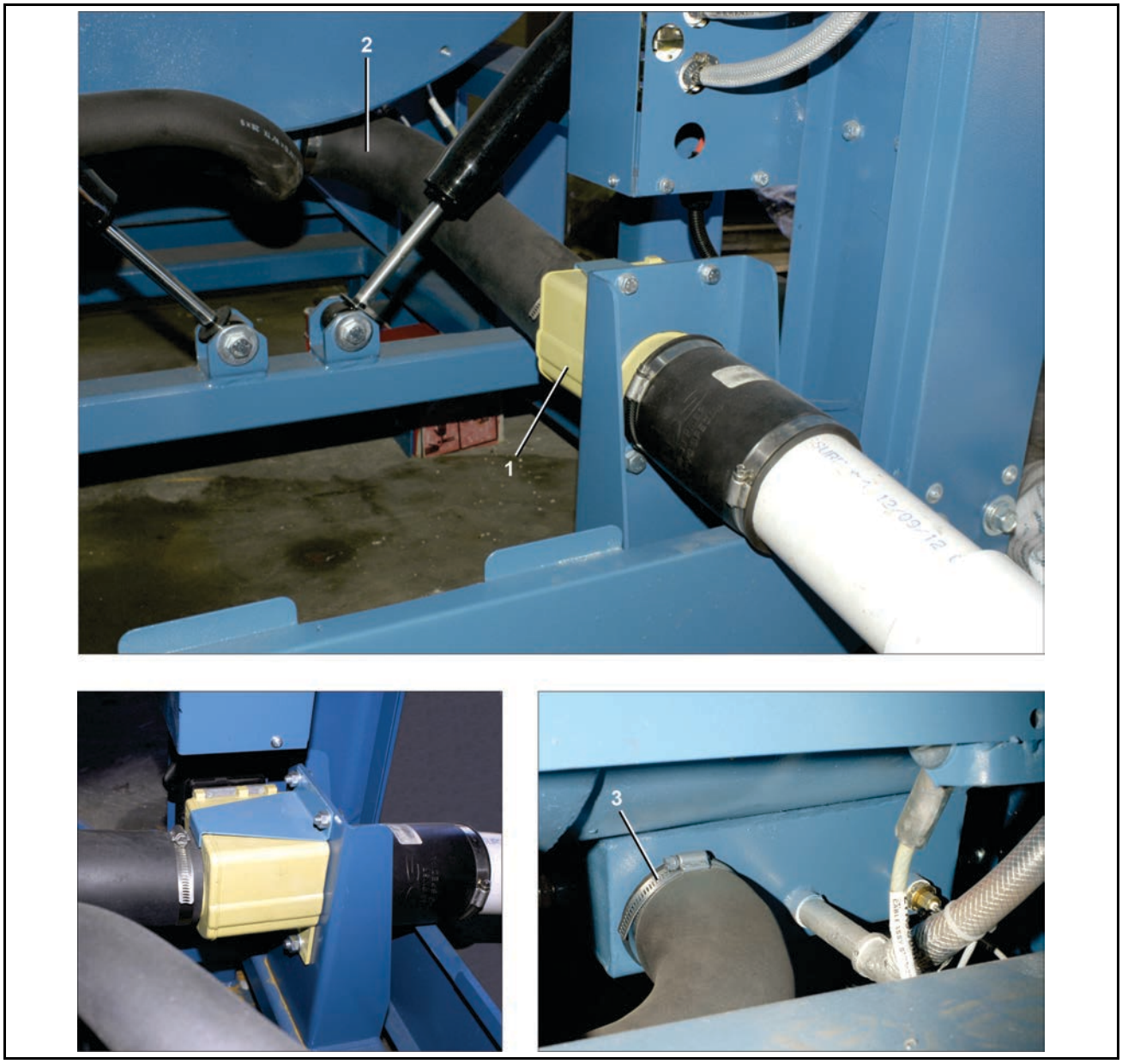
Drain

2 Sheets

MWF27J8, MWF27Z8



Drain

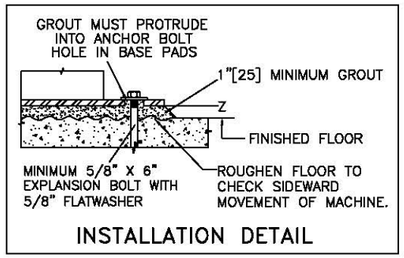
2 Sheets

MWF27J8, MWF27Z8

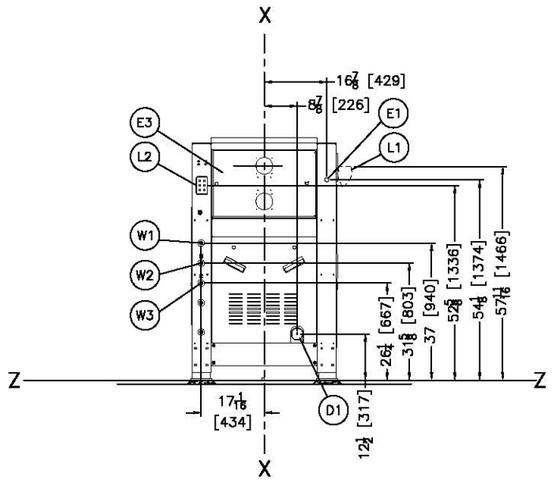
Table 29. Parts List—Drain

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	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER DEPENDO	
all	2	98CX03588C	DRAIN HOSE 3.06IDX.13WALL, 42X	
all	3	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	

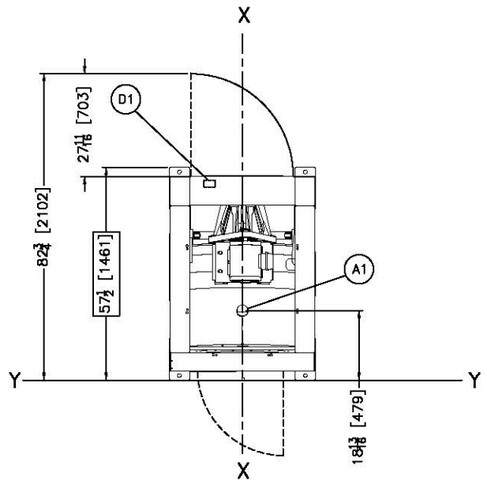
9 Dimensional Drawings



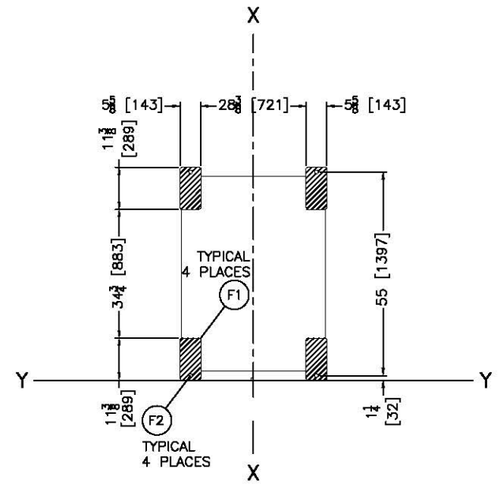
INSTALLATION DETAIL



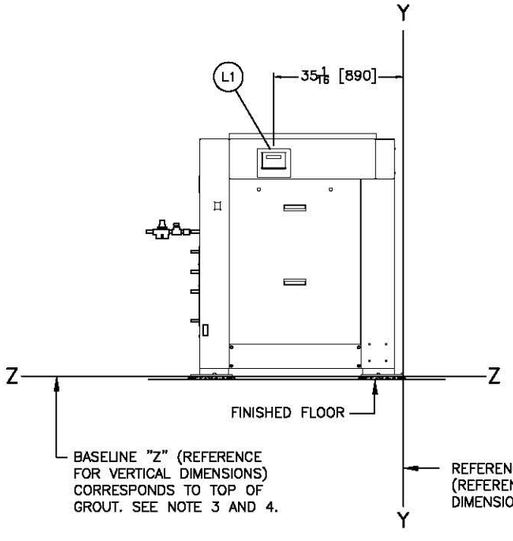
REAR VIEW



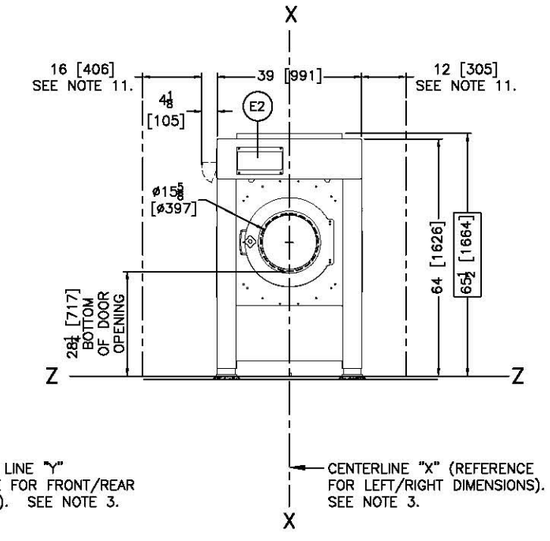
PLAN VIEW



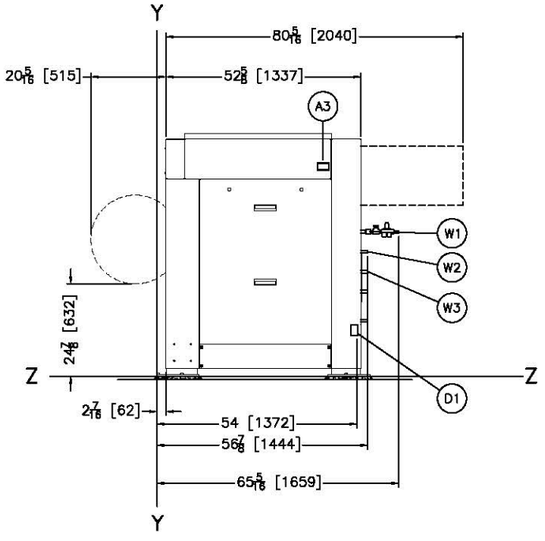
FOUNDATION PLAN



LEFT VIEW



FRONT VIEW



RIGHT VIEW

W3	COLD WATER INLET, 3/4" GARDEN HOSE, MALE THREAD CONNECTION. SEE NOTE 12.
W2	HOT WATER INLET, 3/4" GARDEN HOSE, MALE THREAD CONNECTION. SEE NOTE 12.
W1	HOT WATER FOR SUPPLY, 3/4" NPT CONNECTION, PRESSURE REGULATOR ASSEMBLY, REMOVED FOR SHIPPING, MUST BE ADDED AT INSTALLATION.
L2	STANDARD LIQUID SUPPLY INLETS. SEE NOTE 10.
L1	STANDARD SOAP CHUTE
F2	(4) 1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 5/8" X 6" BOLTS MINIMUM.
F1	BASEPADS, SEE NOTE 8.
E3	MICROPROCESSOR CONTROL BOX
E2	E-P Plus ® Controller – MWF27J8 MODELS, MilTouch ™ Controller – MWF27Z8 MODELS
E1	MAIN ELECTRICAL CONNECTION
D1	DRAIN TO REAR, ELECTRIC, 3" PIPE SOCKET JOINT.
A2	VENT FOR LIQUID SUPPLY
A1	VENT 3"ø
ITEM	LEGEND

NOTES

12 THIS MACHINE USES 1/2" WATER VALVES WITH 3/4" GARDEN HOSE CONNECTIONS. ADAPTERS ARE PROVIDED WITH 3/4" GARDEN HOSE, MALE THREAD, TO 1/2" FEMALE THREAD.

11 12"[305] MINIMUM CLEARANCE IS RECOMMENDED FOR SERVICE TO MACHINE ON SIDES NOT REQUIRING OPERATOR ACCESS. 16"[406] MINIMUM IS RECOMMENDED FOR OPERATOR ACCESS TO SOAP SUPPLY. SEE LOCAL ELECTRIC CODES FOR REQUIRED CLEARANCES.

10 STANDARD LIQUID SUPPLY INLETS COMES WITH THREE SETS OF FIVE FITTINGS. ONE SET OF 3/8" FITTINGS, ONE SET OF 1/2" FITTINGS, AND ONE SET OF PLUGS WHICH ARE SHIPPED ON MACHINE.

9 SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR ALL LABELED ANCHOR BOLT HOLES, USE 5/8" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.

8 SHADED AREA DENOTES BASE PADS WHICH MUST BE CONTINUOUSLY SUPPORT.

7 DO NOT PRE-PIPE ANY CLOSER THAN 60 [1524].

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.

MWF27J8, MWF27Z8

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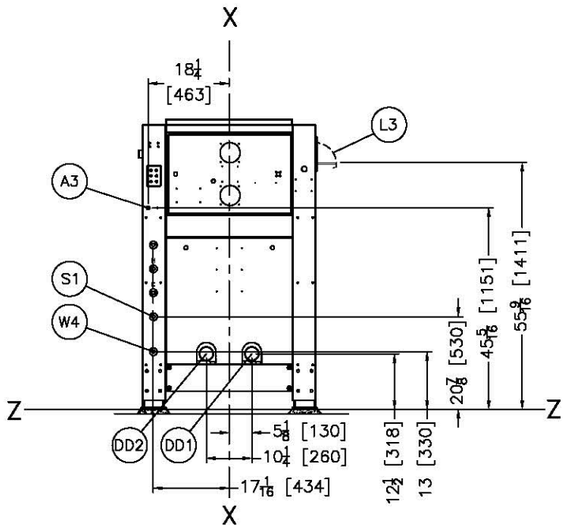
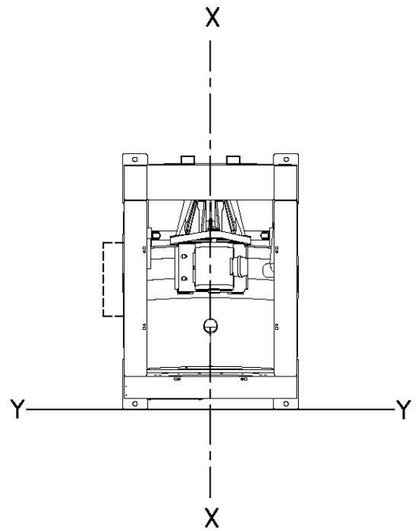
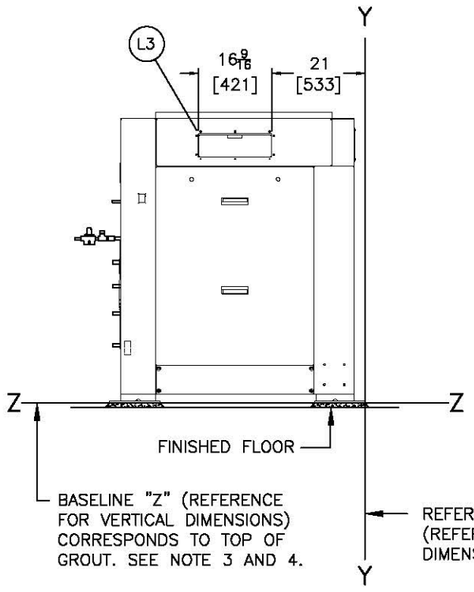
P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591,
FAX 504/468-3094, Email: milnorinfo@milnor.com



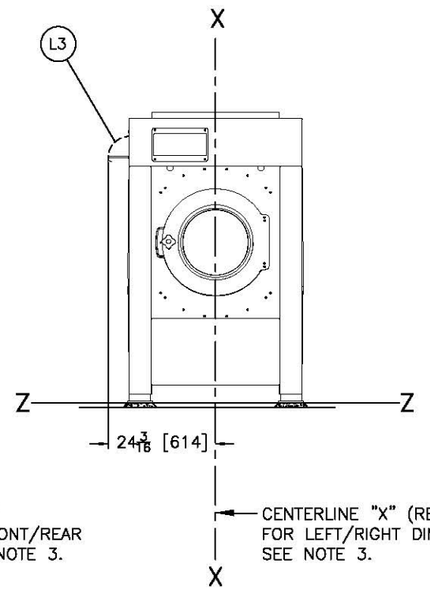
REAR VIEW



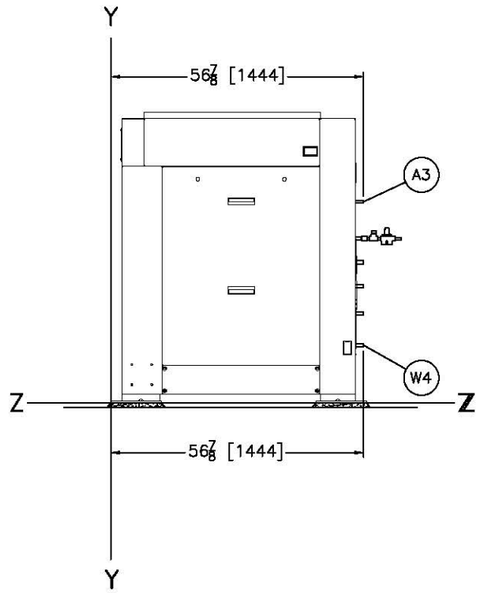
PLAN VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

W4	THIRD WATER INLET, 3/4" GARDEN HOSE, MALE
	THREAD CONNECTION.
S1	AIR-OPERATED STEAM INLET 1/2"NPT. CUSTOMER MUST
	SUPPLY A Y-STRAINER TO THIS INLET.
L3	5 COMPARTMENT SUPPLY
DD2	DUAL DRAIN TO REUSE 3"[76] HOSE CONNECTION
DD1	DUAL DRAIN TO SEWER 3"[76] HOSE CONNECTION
A3	1/4"NPT AIR INLET, USED WITH OPTIONAL AIR-OPERATED
	STEAM, CUSTOMER MUST SUPPLY AIR STRAINER.
ITEM	LEGEND

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MWF27J8, MWF27Z8 OPTIONS

DM 0 0.5M
INCHES 0 12 24

BDMWF27JAB
2022354D

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