



Manual Number: MCWMYM01
Edition (ECN): 2022393

Mechanical Parts and Service

MWF18J8



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1 General Service & 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, NEGLIGENCE, 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

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

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Safety Alert Messages—Internal Electrical and Mechanical Hazards

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



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



- ▶ Do not unlock or open electric box doors.
- ▶ Do not remove guards, covers, or panels.
- ▶ Do not reach into the machine housing or frame.
- ▶ Keep yourself and others off of machine.
- ▶ Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.



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



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

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

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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.

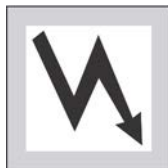


WARNING: Multiple Hazards — Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- ▶ 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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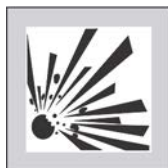


WARNING: Multiple Hazards — Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- ▶ 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)

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

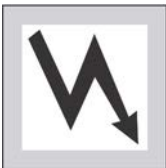
- ▶ Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- ▶ Do not operate a damaged or malfunctioning machine. Request authorized service.
- ▶ Do not attempt unauthorized servicing, repairs, or modification.
- ▶ Do not 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)

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WARNING: Electrocutation 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.



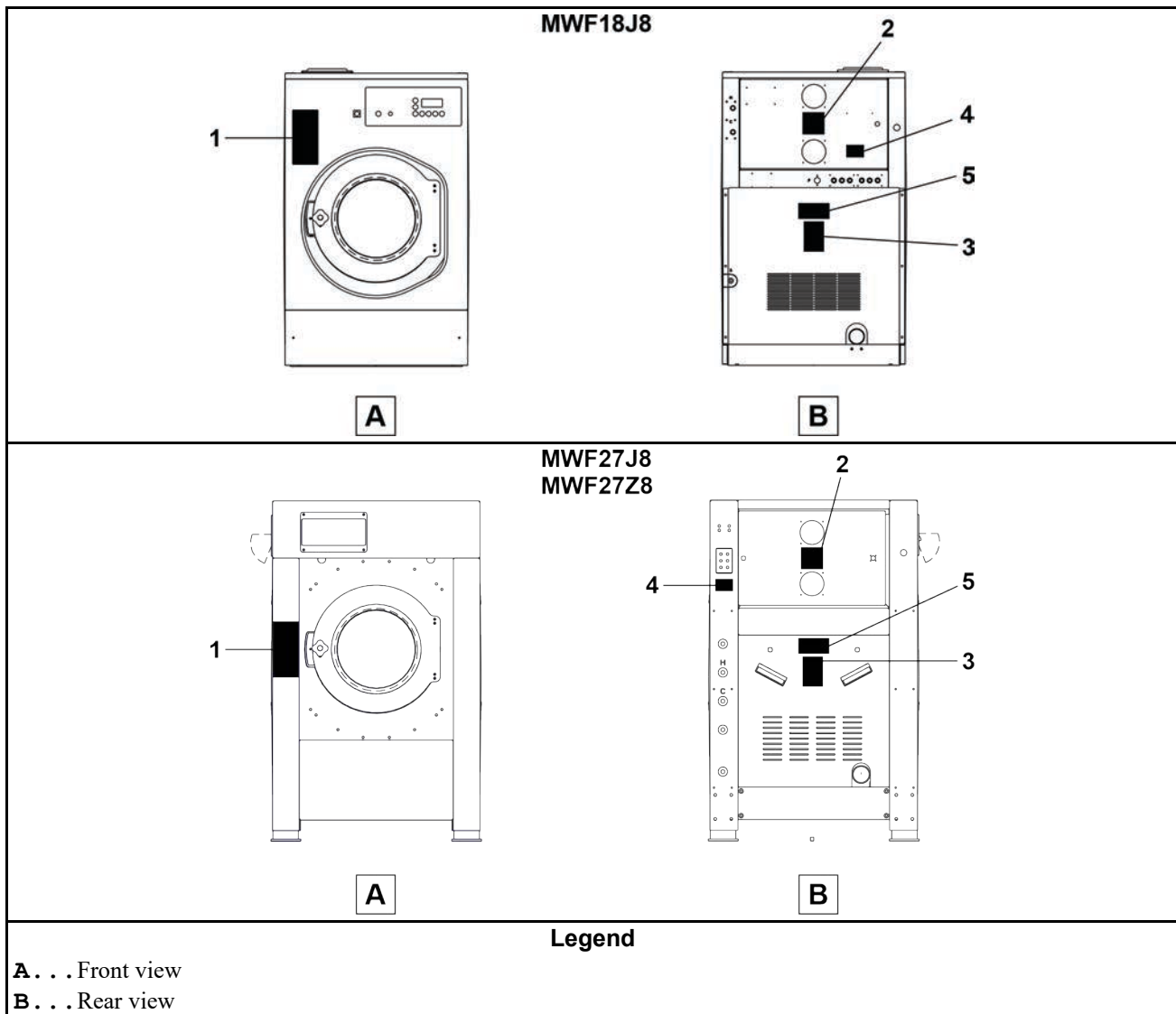
- ▶ Do not enter the cylinder until it has been thoroughly purged, flushed, drained, cooled, and immobilized.

Safety Placards and Locations

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



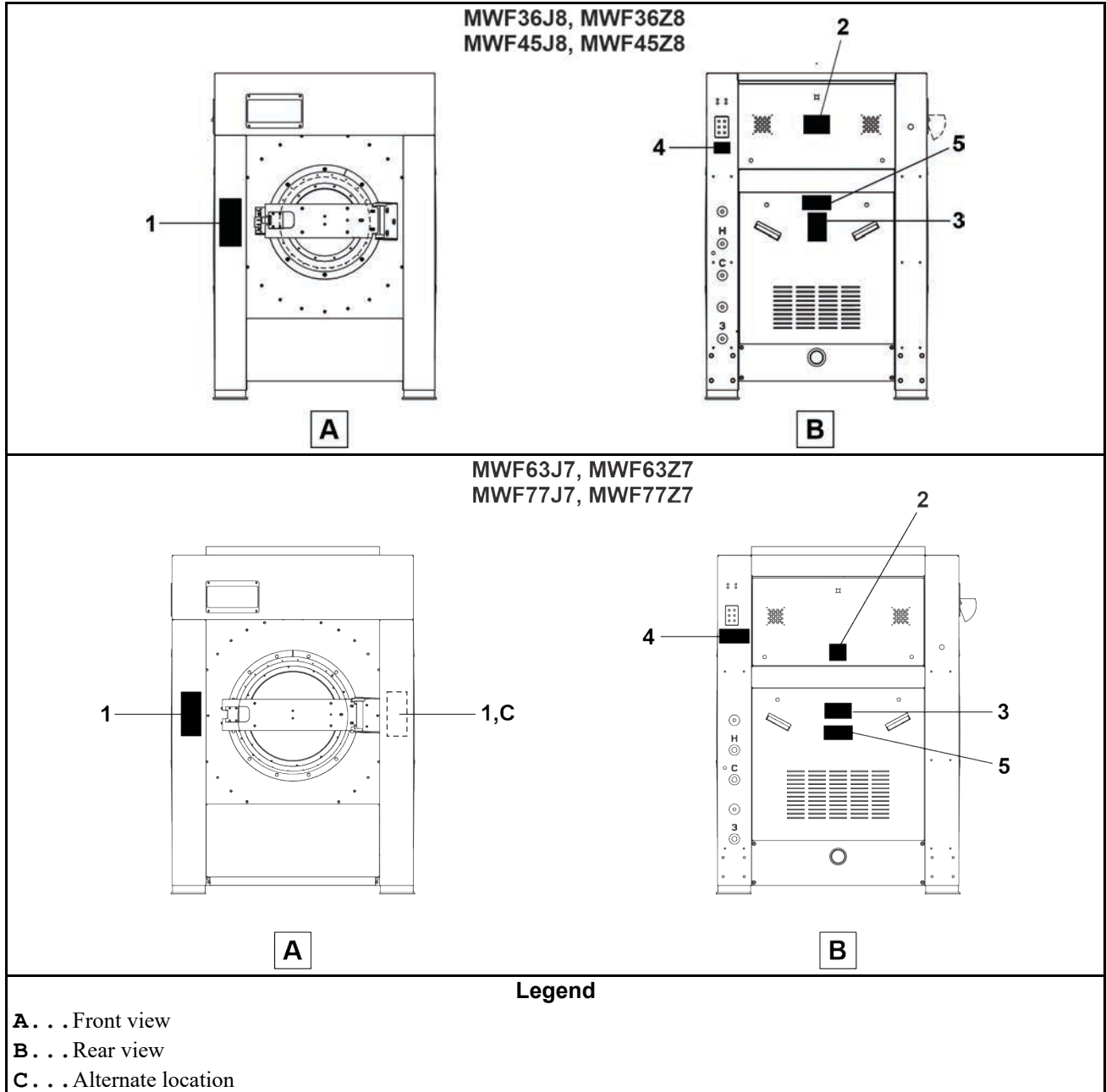
NOTICE: Replace placard immediately, if removed or unreadable. Approximate locations of placards are shown. If aluminum placard, mounting holes are provided on machine. Use #8 self-tapping screws.



Safety Placards and Locations

3 Sheet

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



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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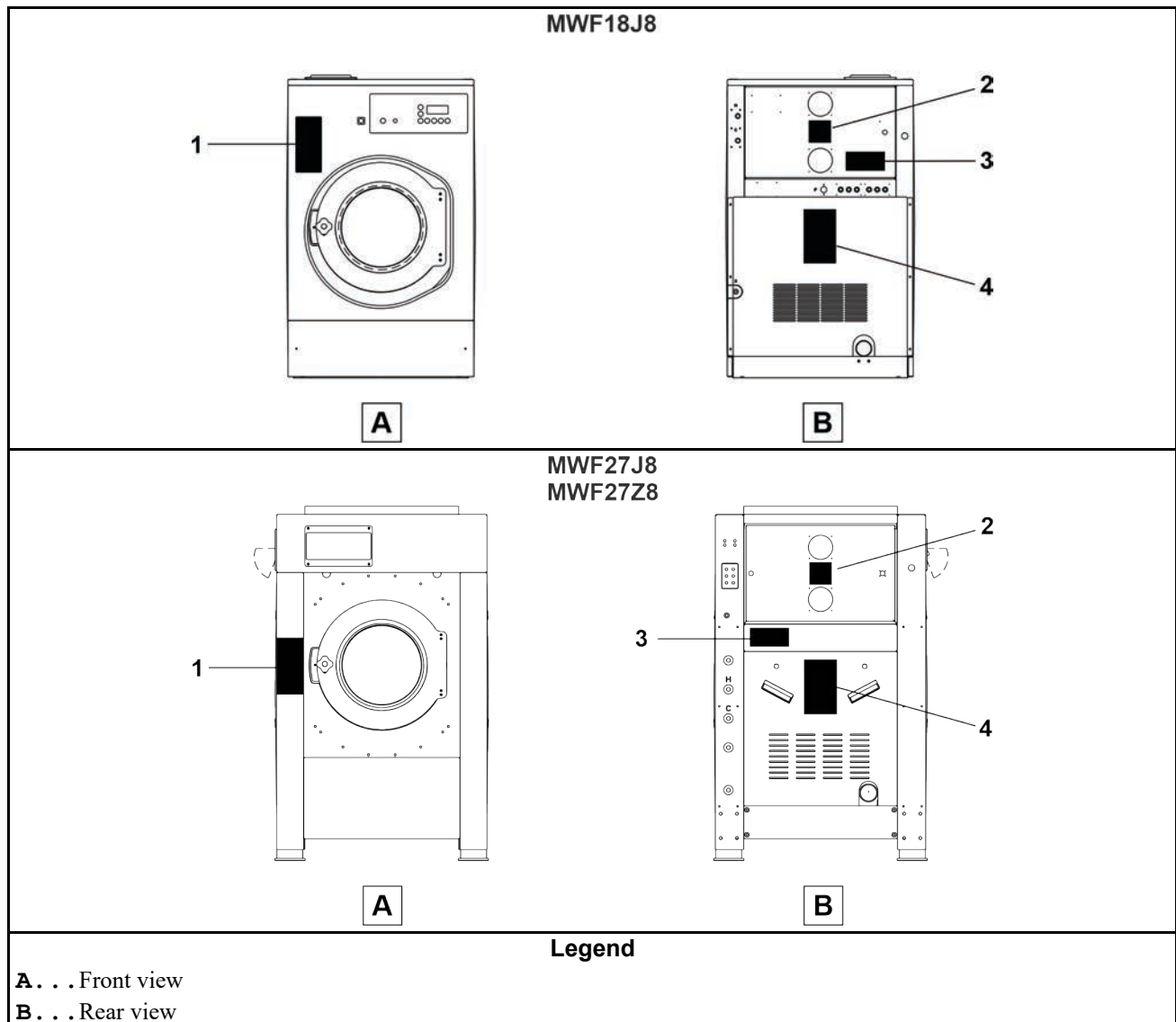
Safety Placards and Locations ISO

3 Sheet

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

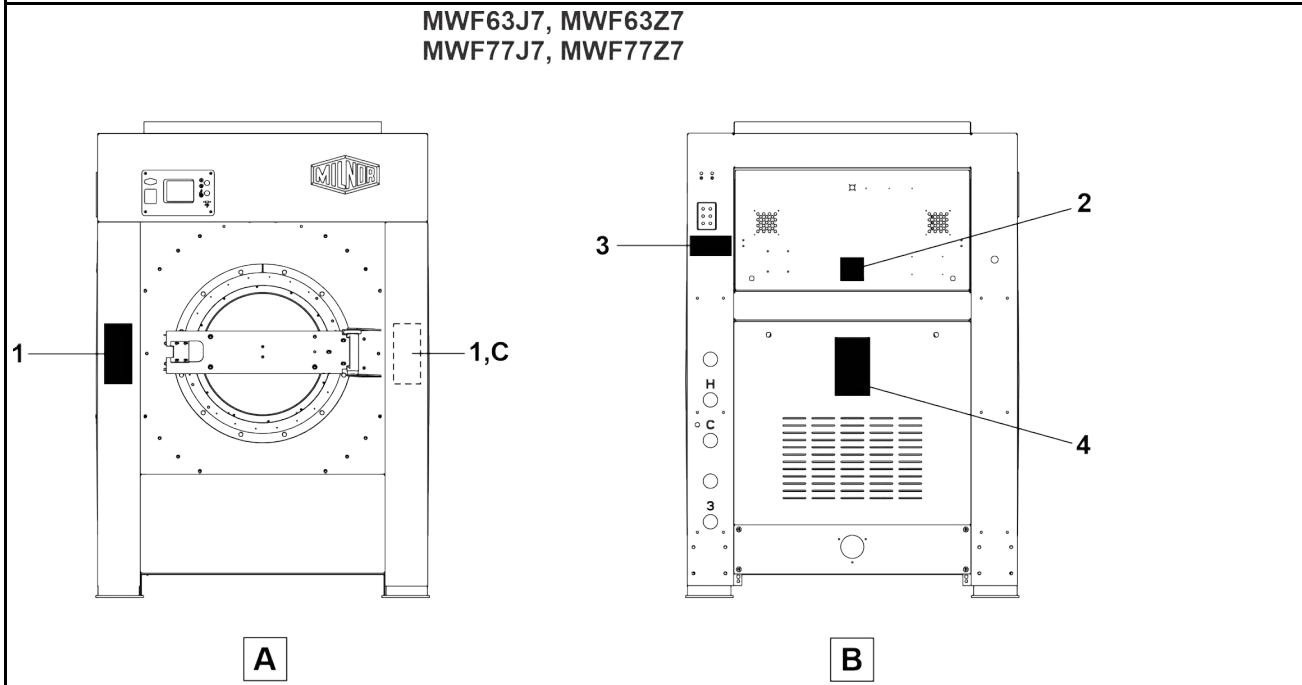
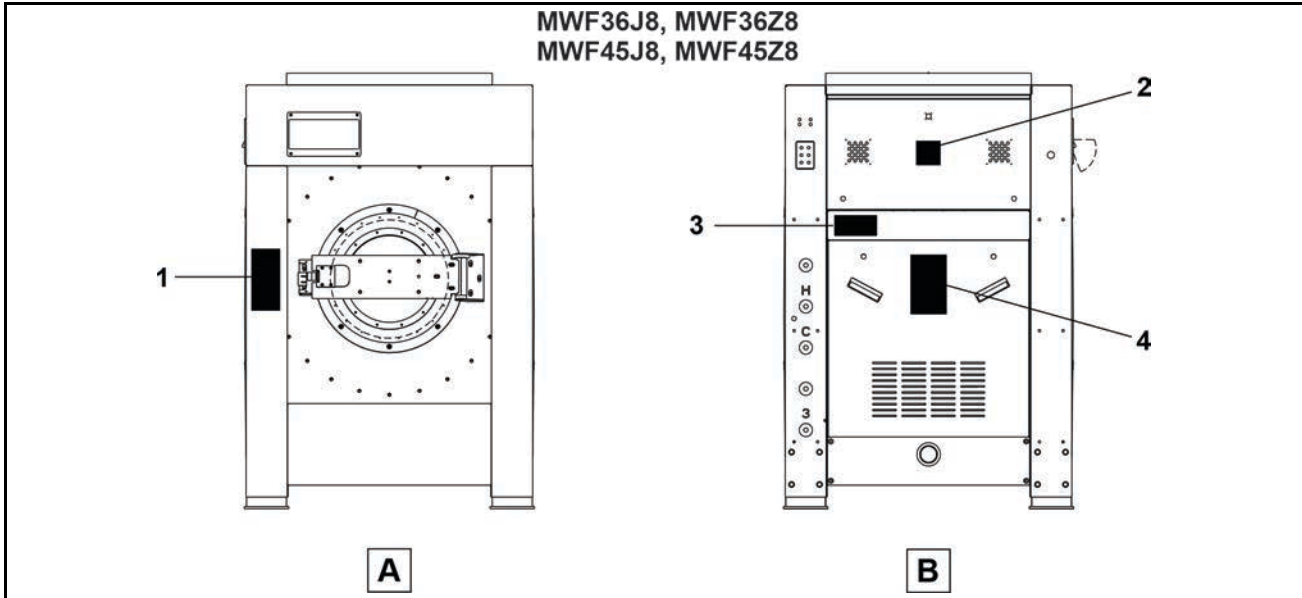


NOTICE: Replace placard immediately, if removed or unreadable. Approximate locations of placards are shown. If aluminum placard, mounting holes are provided on machine. Use #8 self-tapping screws.



Safety Placards and Locations ISO

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



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	

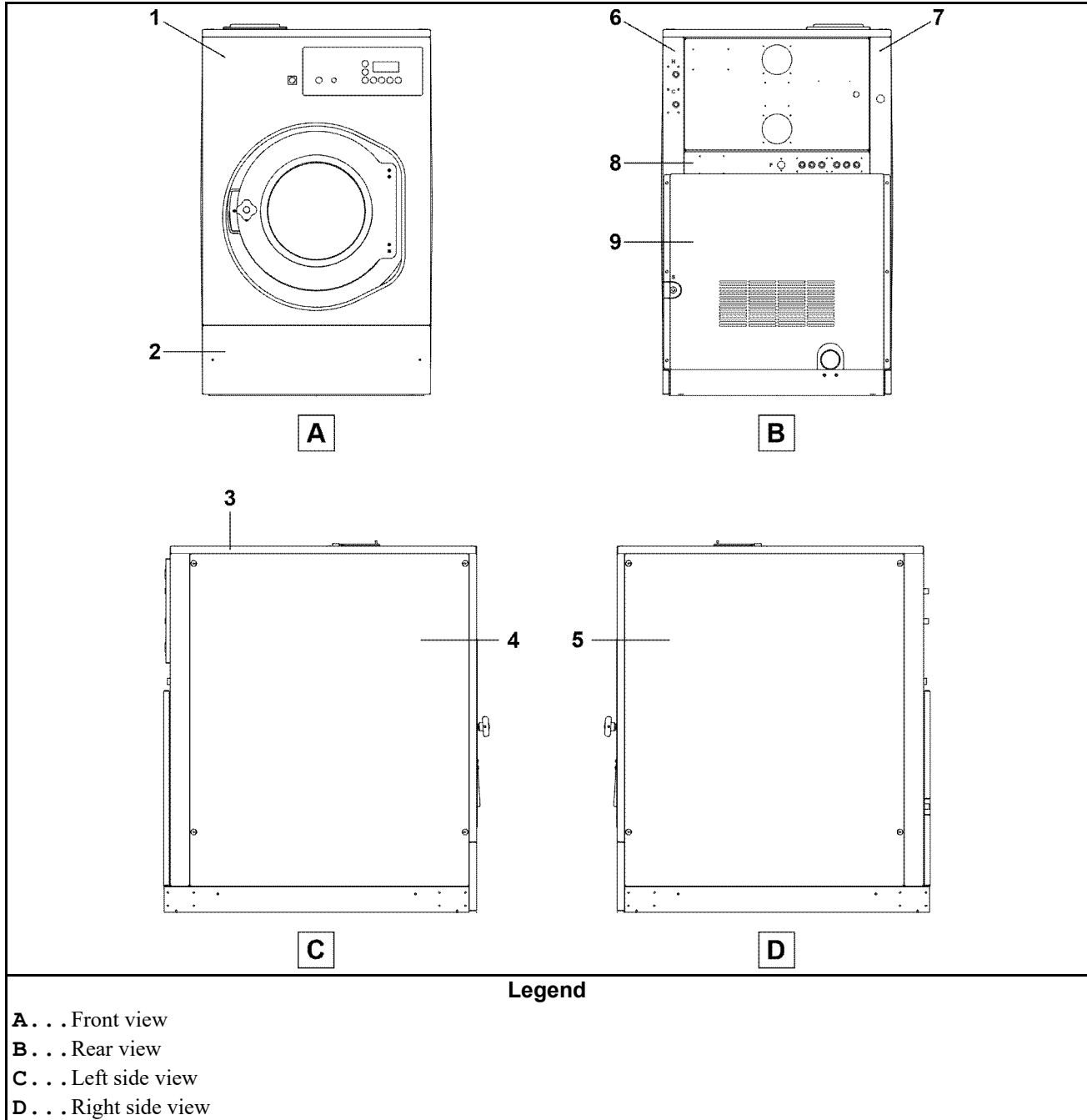
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Guards and Covers

2 Sheet

MWF18J8



Guards and Covers

2 Sheet

MWF18J8

Table 4. Parts List—Guards and Covers

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	98MW02241	CABINET FRONT MWF18	
all	2	98MW02243	LOWER FRONT COVER MWF18	
all	3	98MW02244	CABINET TOP MWF18	
all	4	98MW02242A	RIGHT PANEL SIDE MWF18	
all	5	98MW02242	LEFT PANEL SIDE MWF18	
all	6	98MW02246A	REAR RIGHT POST MWF18	
all	7	98MW02246B	REAR LEFT POST MWF18	
all	8	98MW02247	REAR MIDDLE SUPPORT MWF18	
all	9	98MW02245	CABINET REAR GUARD MWF18	

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Shipping Brackets

1 Sheet

MWF18J8

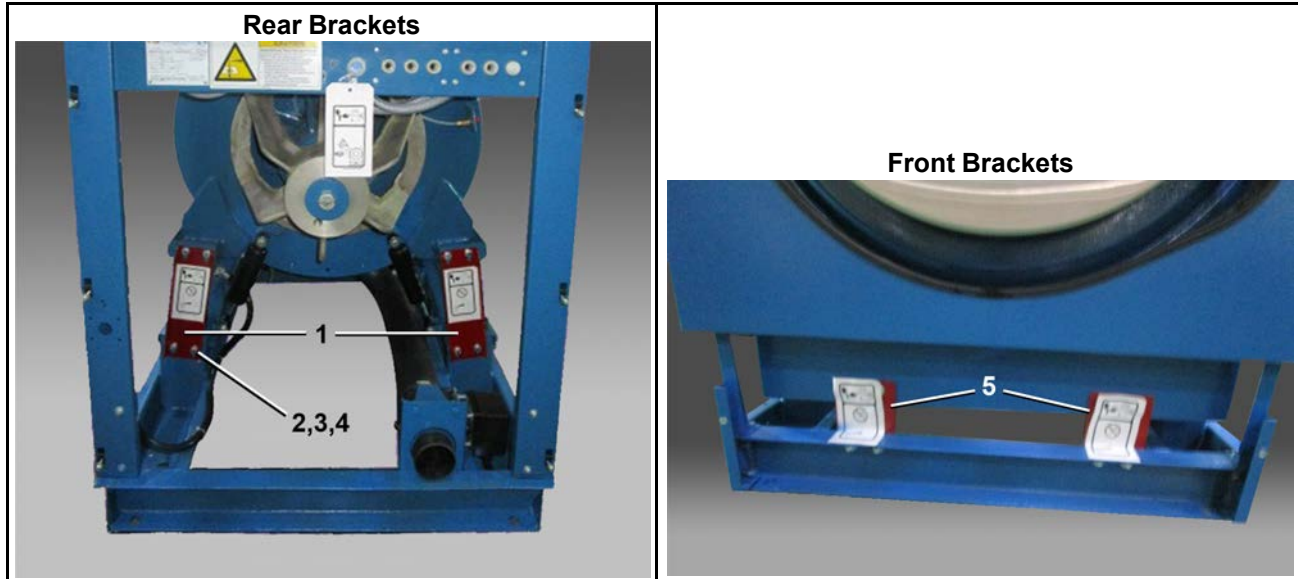


Table 5. Parts List—Shipping Brackets

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	98MW02239	REAR SHIPPING BRACKET MWF18	
all	2	15K100M	HXCAPSCREW M10X30 8.8 ZINC	
all	3	15G206M	HEX NUT M10 ZINC	
all	4	15U266M	FLTWSHR D10 ZINC	
all	5	98MW02236	FRONT SHIPPING BRACKET MWF18	

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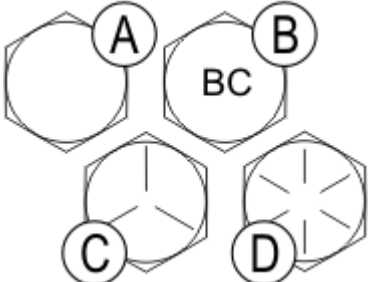
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Torque Requirements for Fasteners

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

Figure 1. The Bolts in Milnor® Equipment

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

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

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Without a Threadlocker

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Table 6. Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	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

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	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
3/4 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

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	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
3/4 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

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

Table 12. Torque Values if You Apply LocTite 242

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

Table 13. Torque Values if You Apply LocTite 262

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

Table 14. Torque Values if You Apply LocTite 272 (High-Temperature)

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	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.

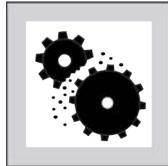
3. Apply a spray of LocTite 7649 Primer™ or equal on the fasteners and the mating threads. Let the primer dry for one minute minimum.

How to Apply a Threadlocker

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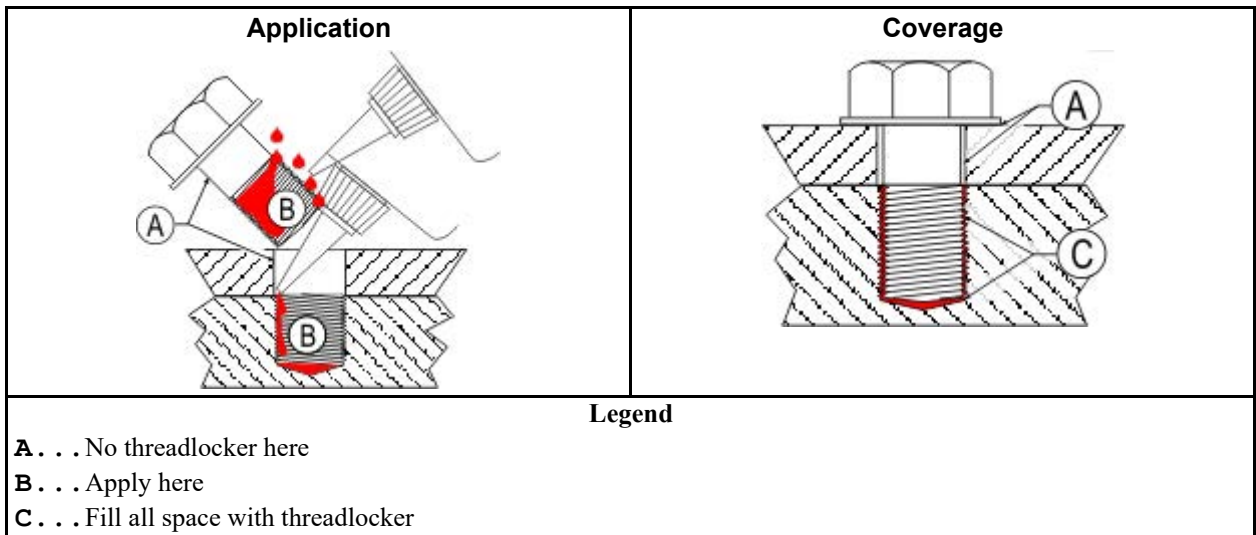
CAUTION: Malfunction Hazard — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.



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

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

Figure 2. Apply Threadlocker in a Blind Hole



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 23 to [Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller](#), page 25).

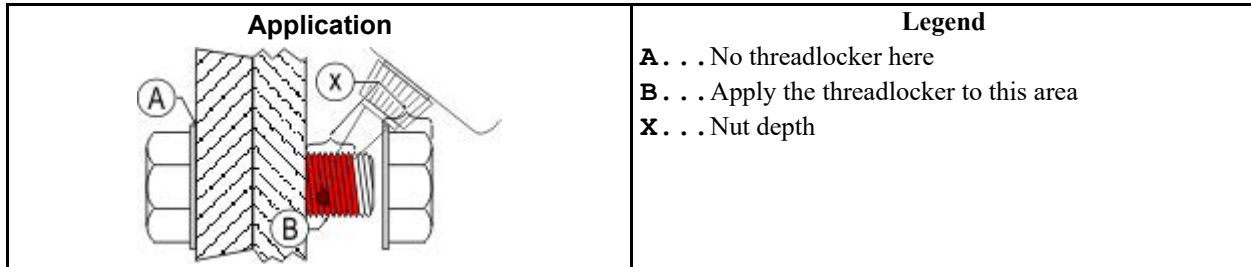
Through Holes

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

- Tighten the bolt to the value shown in the correct table ([Table 10: Threadlocker by the Diameter of the Bolt](#) (see below Note), page 23 to [Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller](#), page 25).

Figure 3. Apply Threadlocker in a Through Hole



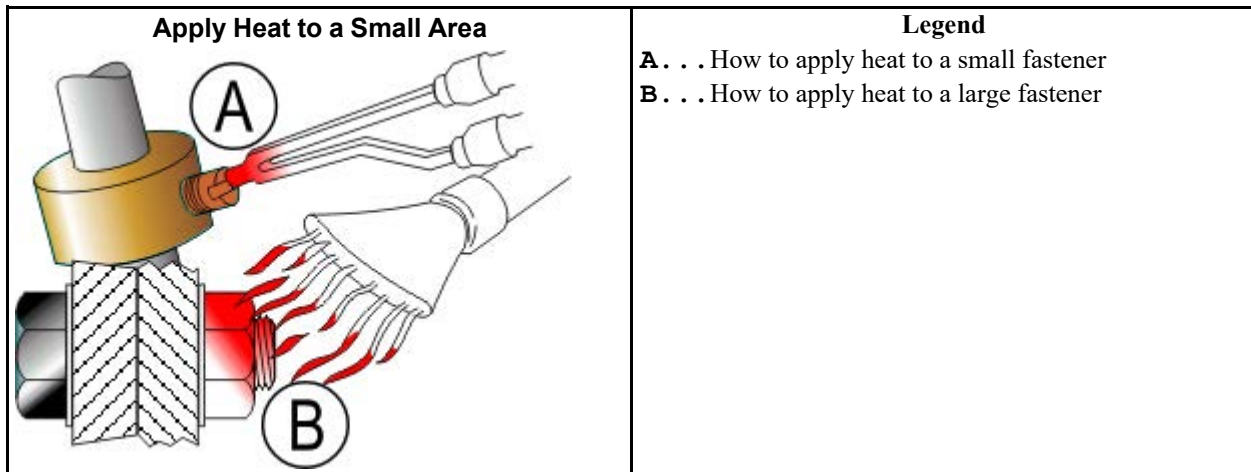
Disassembly

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

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

Figure 4. Use heat for disassembly of fasteners with threadlocker.



2 Drive Assemblies

BPWMI01 / 2022383A

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Drive Components

2 Sheet

MWF18J8



Drive Components

2 Sheet

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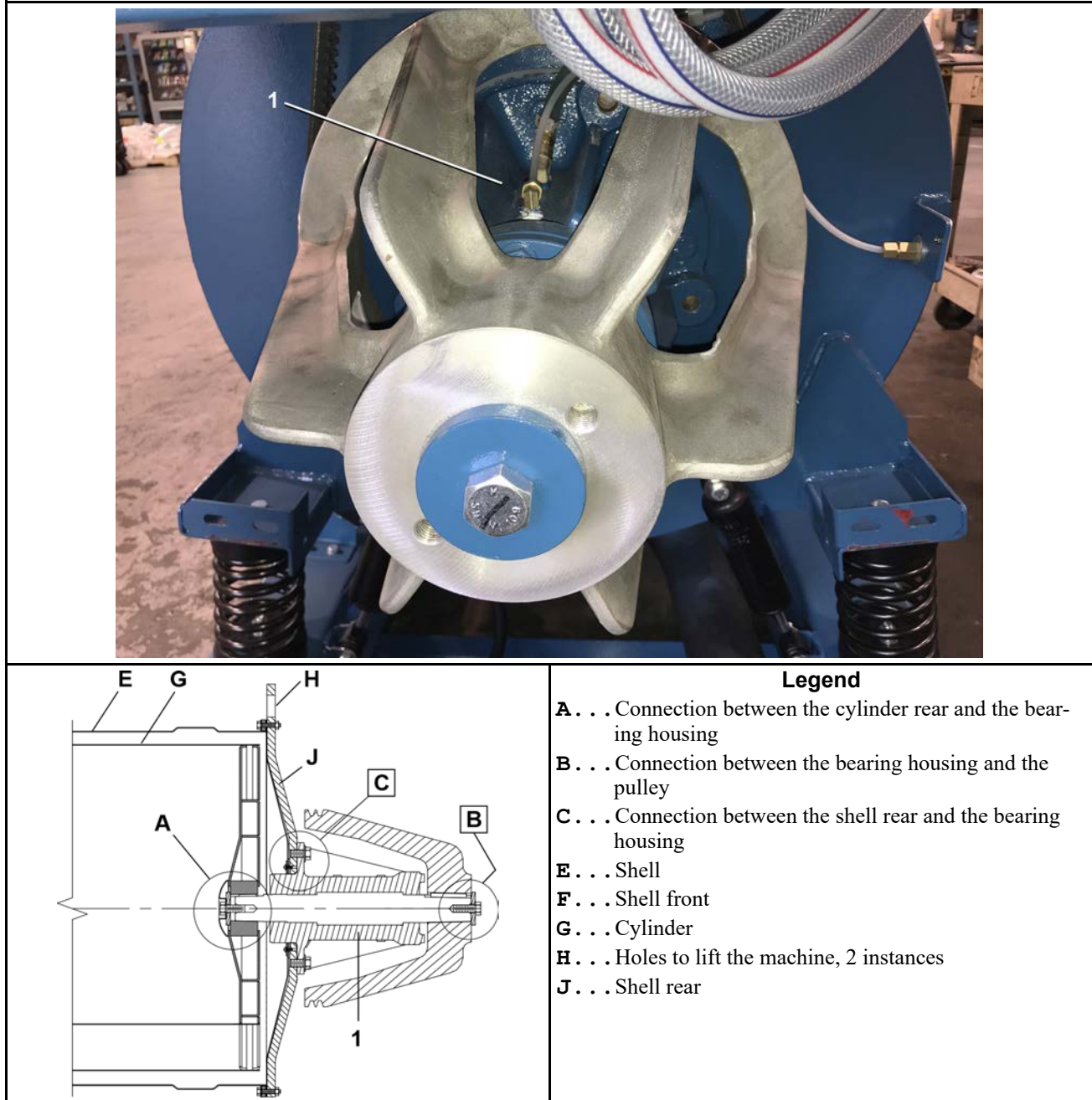
Table 18. Parts List—Drive Components

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
none				
Components				
all	1	98CMCR0404	5HP 220/380/440V 50/60HZ 3022X CASTIC	
all	2	98CX030B2H	SMALL PULLEY	
all	3	98CXQ1CH	1+1/8"BUSH VPULTAPER LOCK	
all	4	1.50E+231	STRMACHKEY 3/8SQX2+1/2 TOL.+0	
all	5	56VB078X	VBELT BX78 RAWEDGE COG	
all	6	98CX03830	MACH=18" MAIN PULLEY 2B, 30X	

Bearing Installation

MWF18J8

Figure 5. Cylinder, Shell, and Bearing

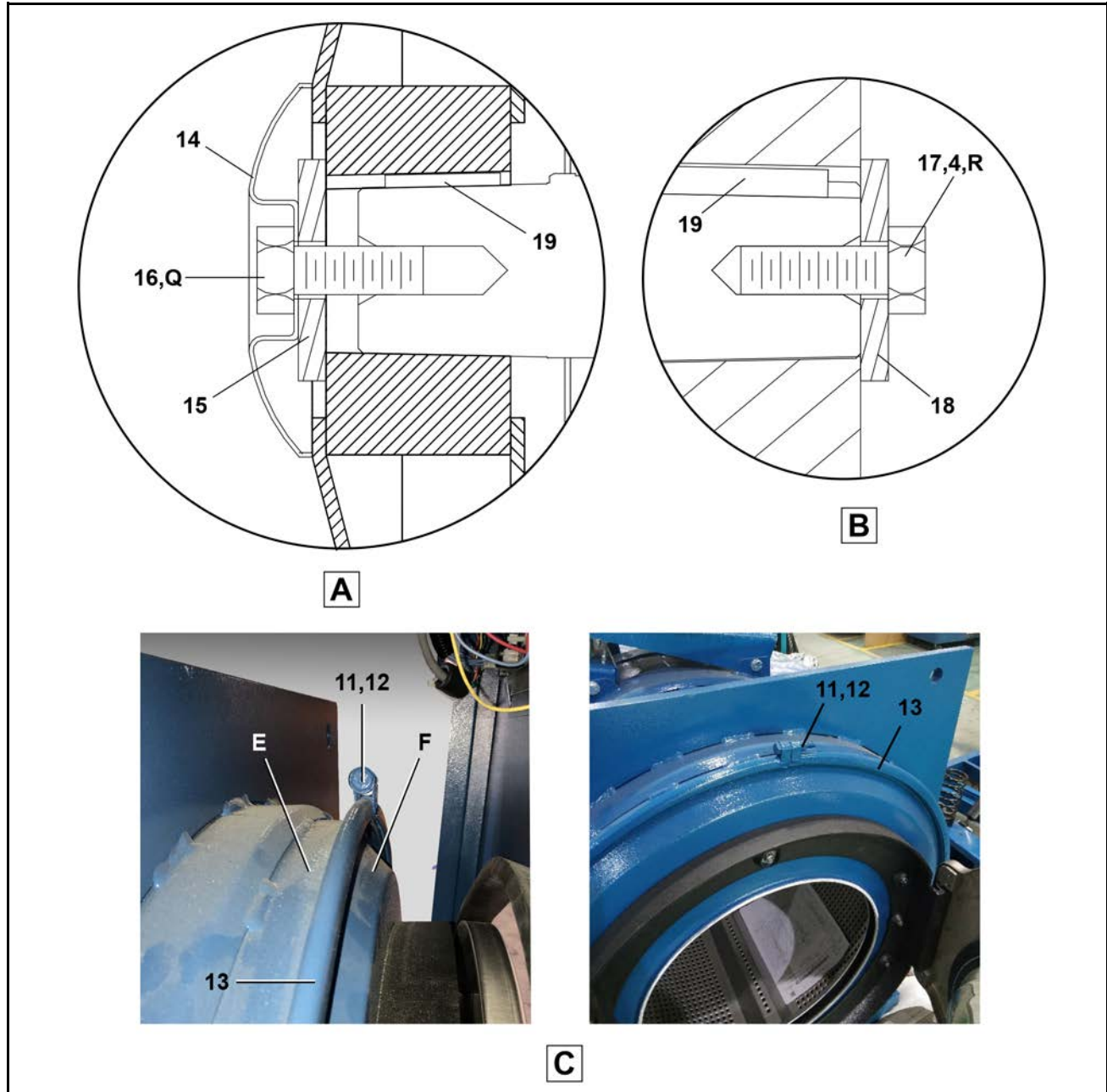


Bearing Installation

4 Sheets

MWF18J8

Figure 6. Details: Bearing to Cylinder and Pulley, Shell front to Shell



Legend

- A** . . .Detail: Connection between the cylinder rear and the bearing housing
- B** . . .Detail: Connection between the bearing housing and the pulley
- C** . . .Detail: Connection between the shell front and the shell
- Q** . . .Apply adhesive to the bolt, torque to 236 FT.LBS.
- R** . . .Apply adhesive to the bolt, torque to 361 FT.LBS.

Bearing Installation

MWF18J8

Figure 7. Detail: Bearing to Shell rear

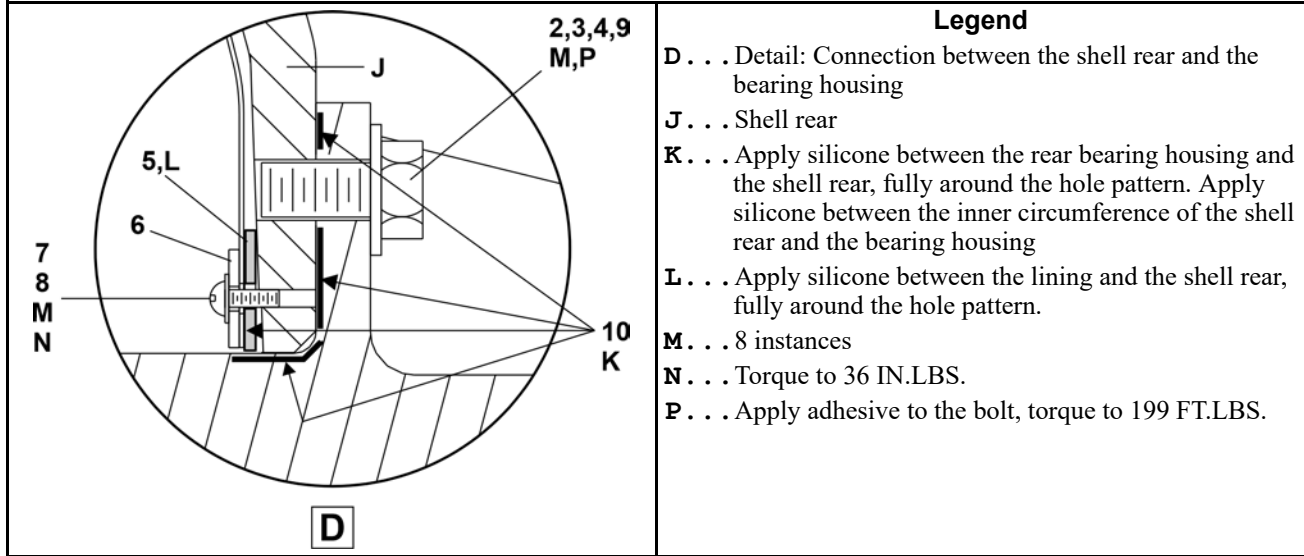


Table 19. Parts List—Bearing Installation

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	98CMCR3015	MAIN BEARING ASSY=30X8	
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	15K121M	HXCAPSCREW M8X50 8.8 FULTH	
all	12	15G004M	HEXNUT M8X1.25 ZINC	
all	13	W3 40232	CLAMP RING WELD 2818	
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	

Bearing Installation

4 Sheets

MWF18J8

Table 19 Parts List—Bearing 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	18	98CMCR3023	SHAFT RETNR SPACER=3022X CSM	
all	10	02 02294A	SHAFT KEY 3/8 X 3/8	

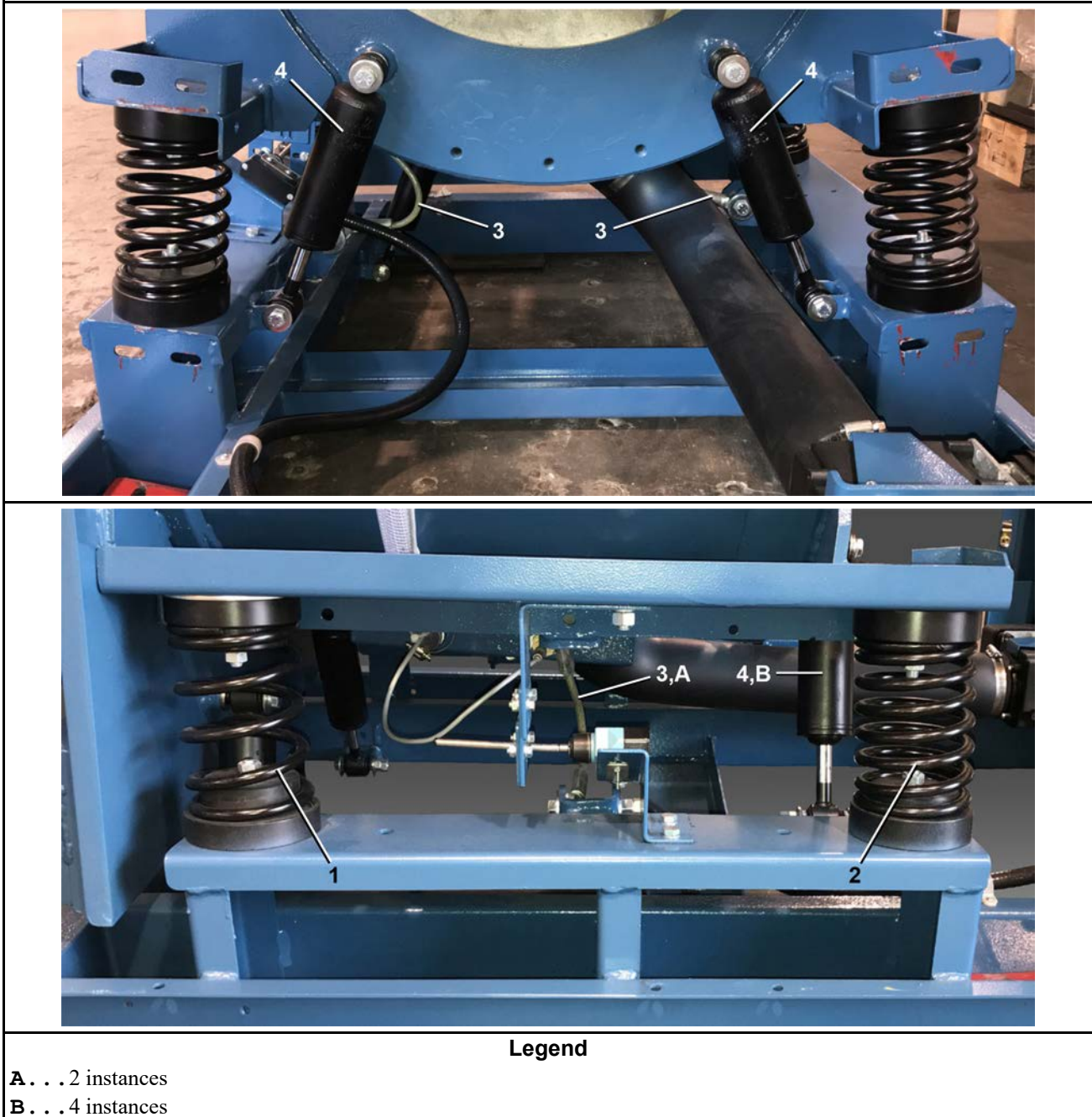
3 Suspension

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Suspension

MWF18J8

Figure 8. Springs and Shocks



Suspension

2 Sheet

MWF18J8

Figure 9. Cable Assembly

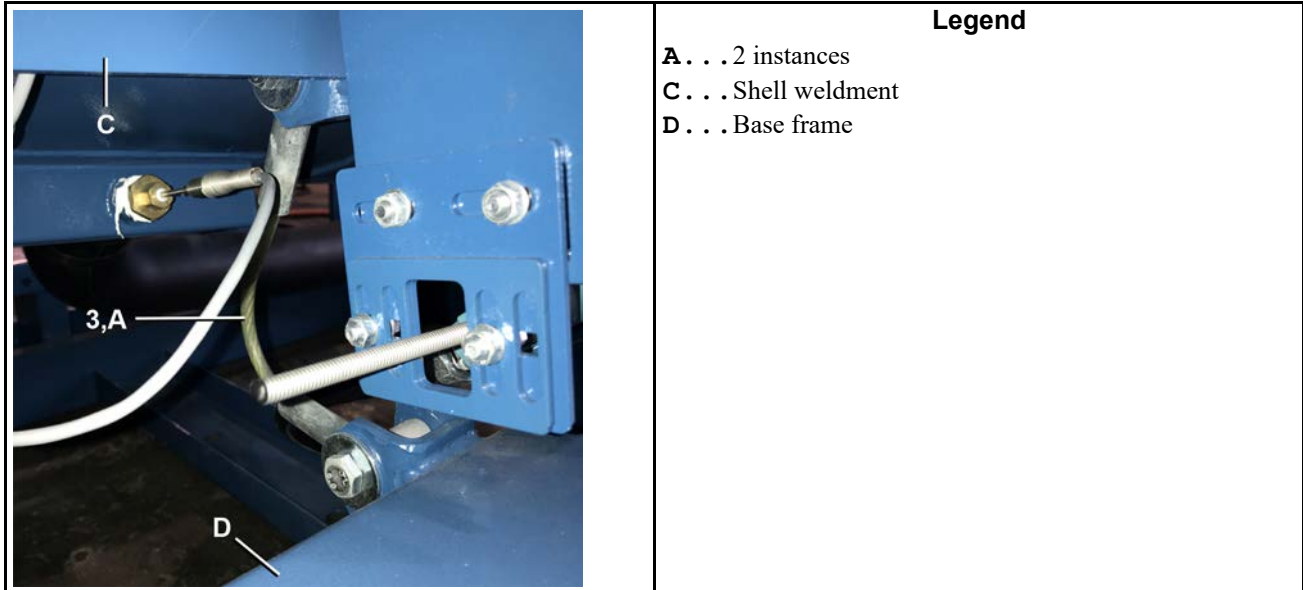


Table 20. Parts List—Suspension

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	98MW489418	FRONT SPRING,MWF27	
all	2	98MW489417	REAR SPRING,MWF27	
all	3	27A969	CABLE ASSY SAVA#205801	
all	4	60BS6836	SHOCK G#65480540E ERING EA END	

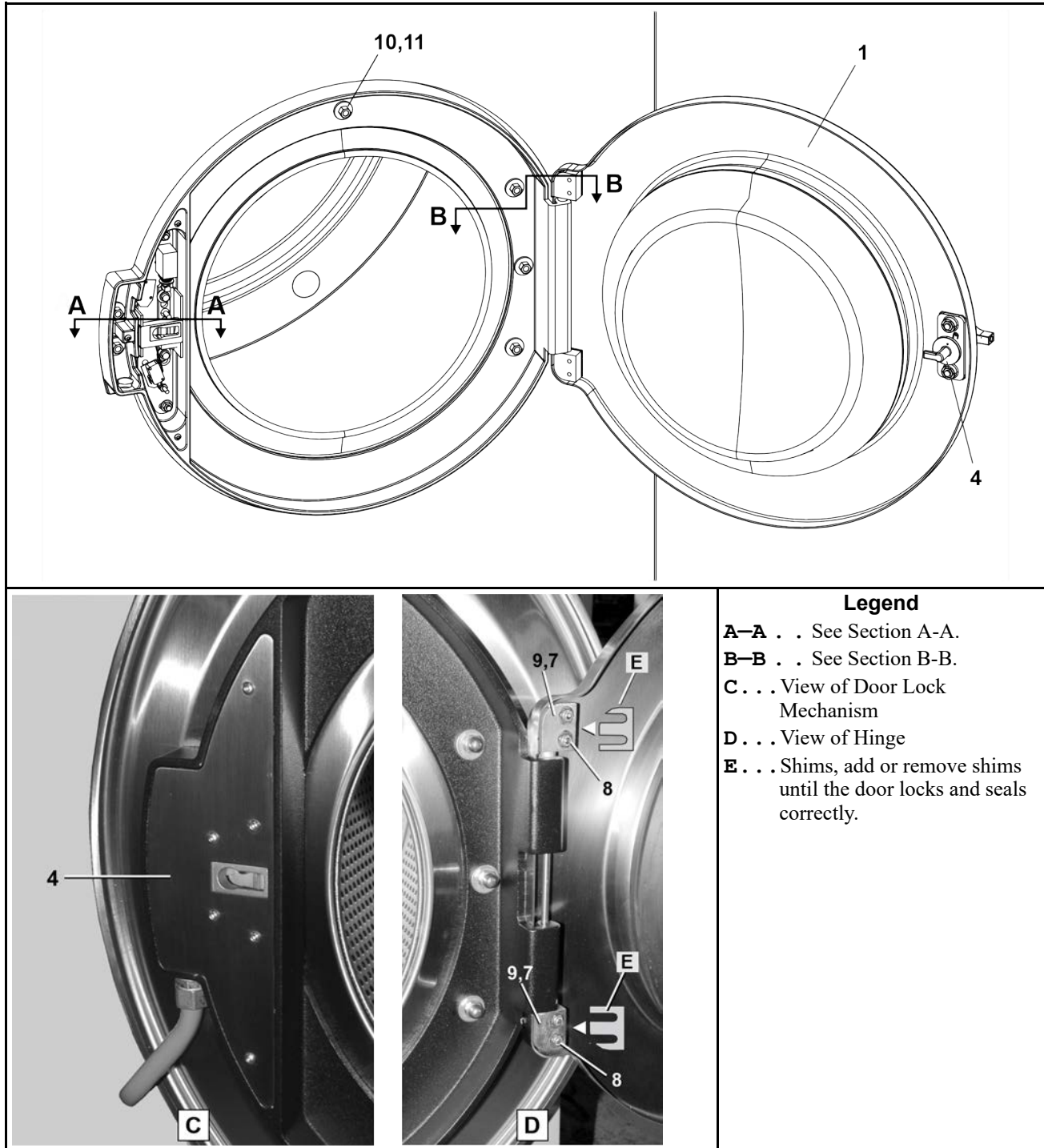
4 Door Assemblies

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Door Assembly and Installation

MWF18J8, MWF27J8, MWF27Z8

Figure 10. Door Installation

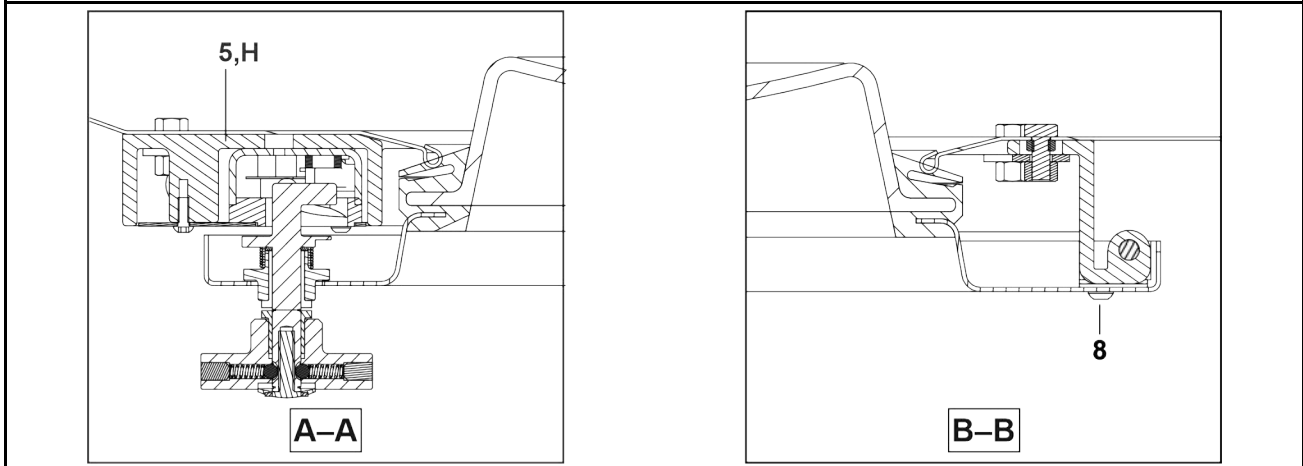


Door Assembly and Installation

4 Sheet

MWF18J8, MWF27J8, MWF27Z8

Figure 11. 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

MWF18J8, MWF27J8, MWF27Z8

Figure 12. 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	

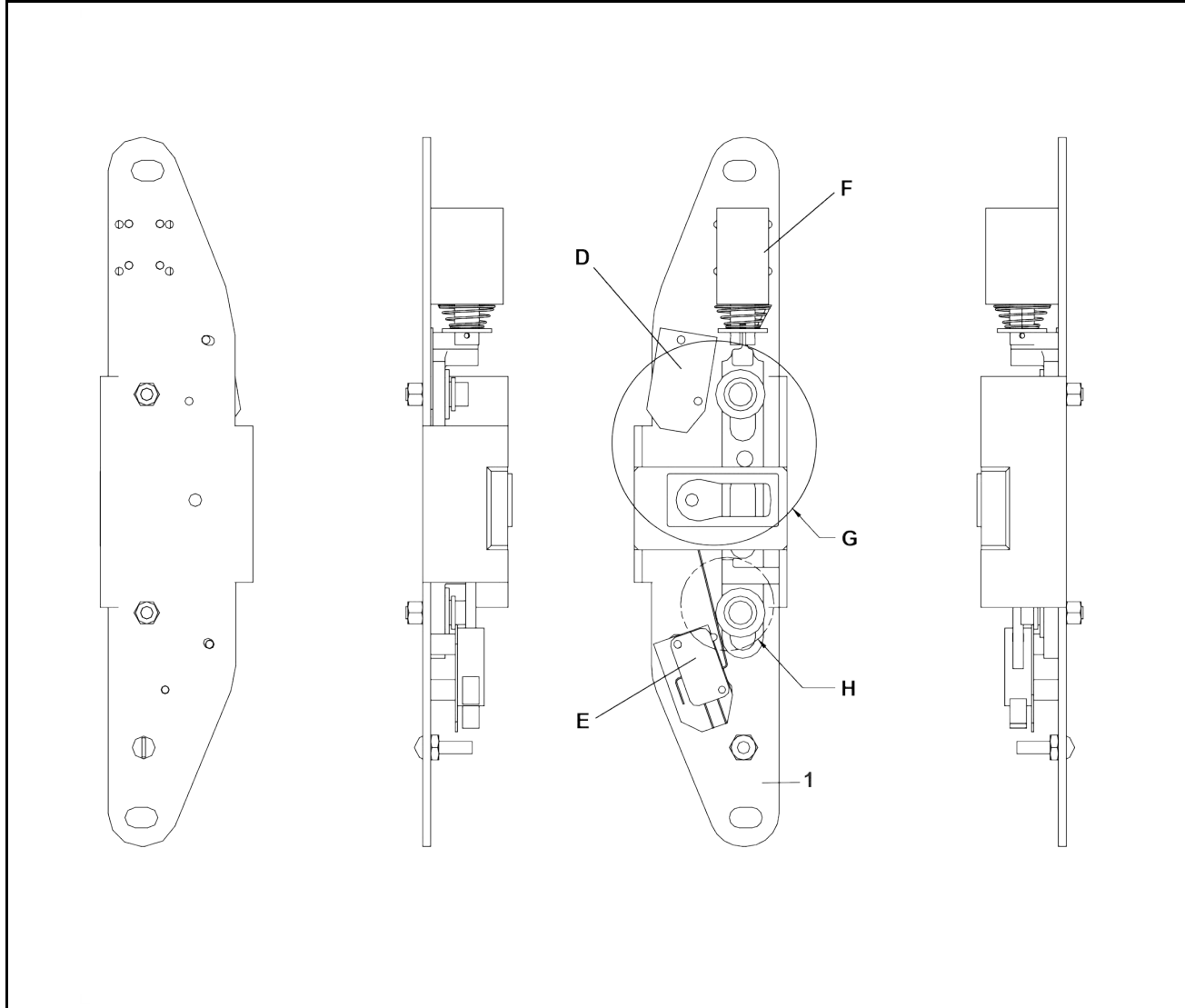
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Door Lock Mechanism

3Sheets

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



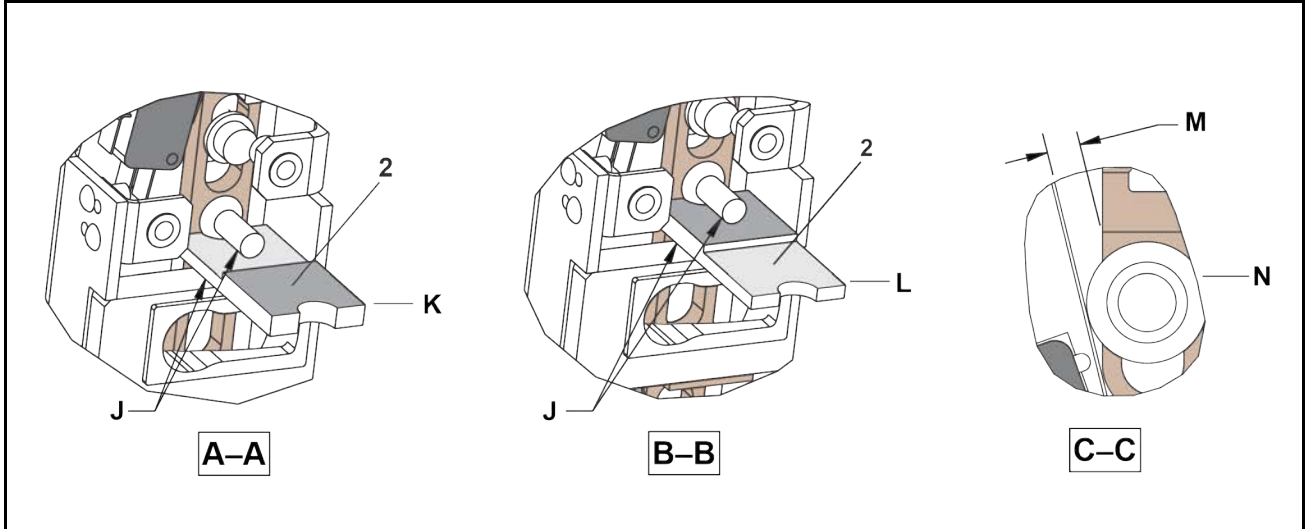
Legend

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

Door Lock Mechanisms

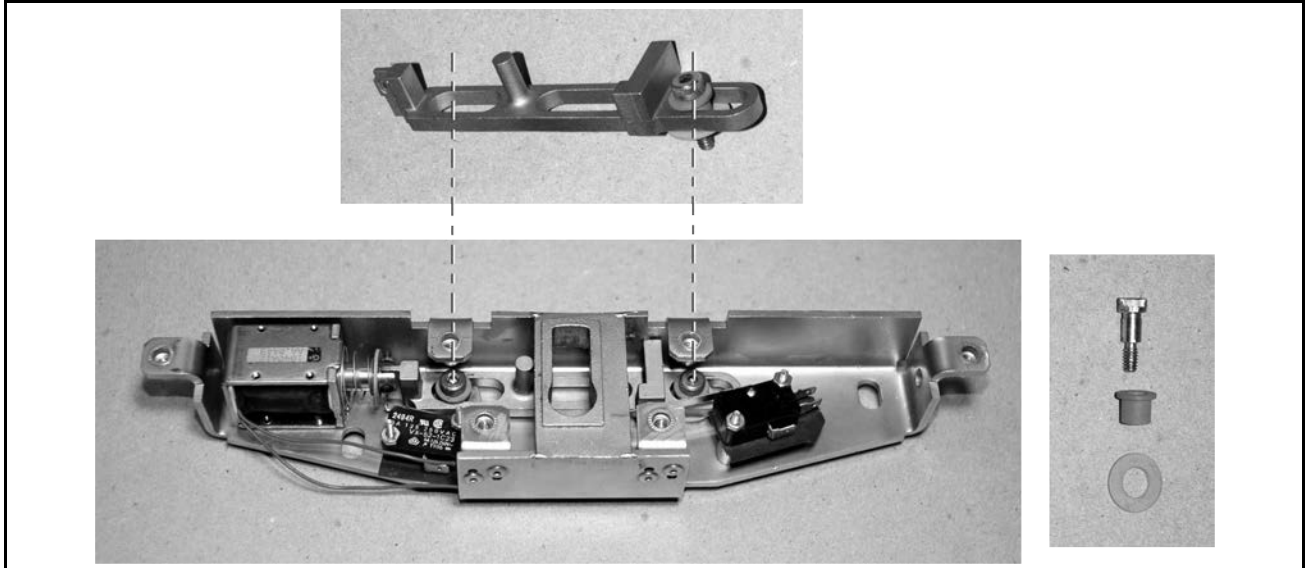
3Sheets

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

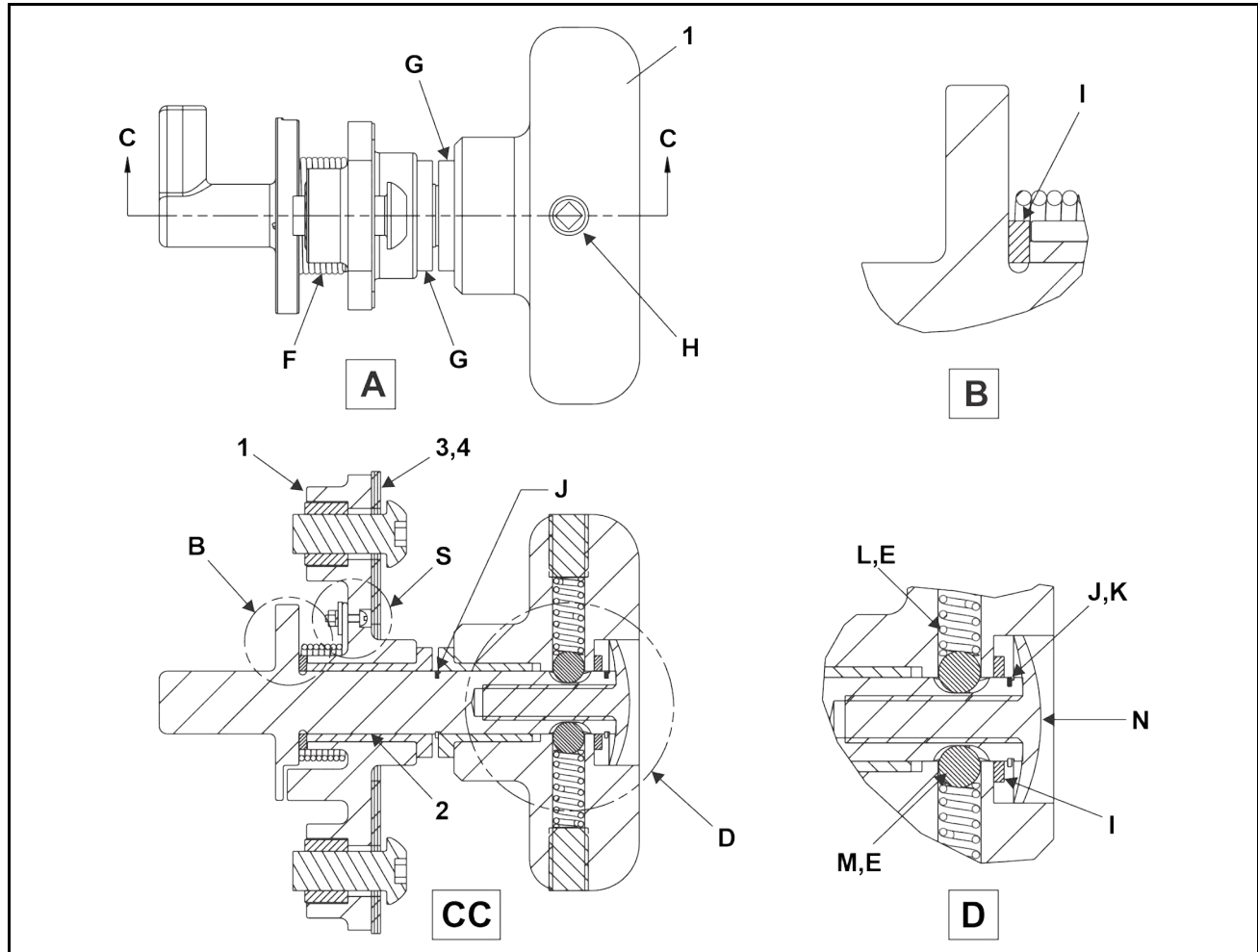
MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ;
3022X8R; 3621V5/V7, 3626V7, 4226V6

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	

Door Handle and Lock Actuator

Figure 13. 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 14. 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

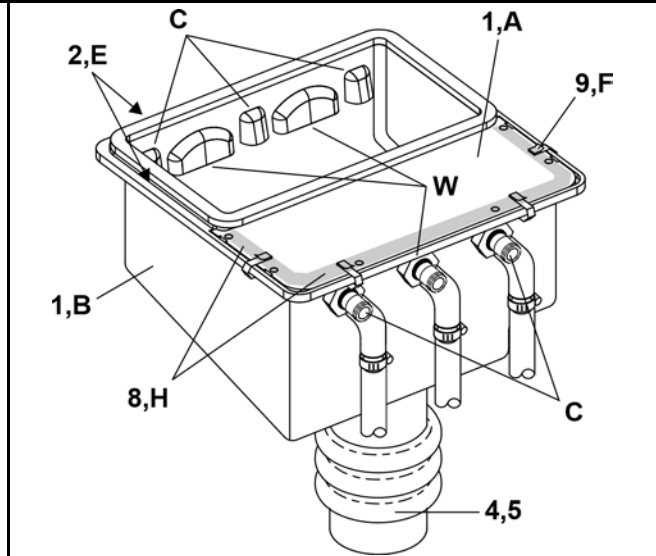
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
	1	98CMCR0925	Assembly	
all	2	20C007	Adhesive	
all	3	02 04192	Shim, .023	
all	4	02 04192A	Shim, .015	

5 Chemical Supply Devices

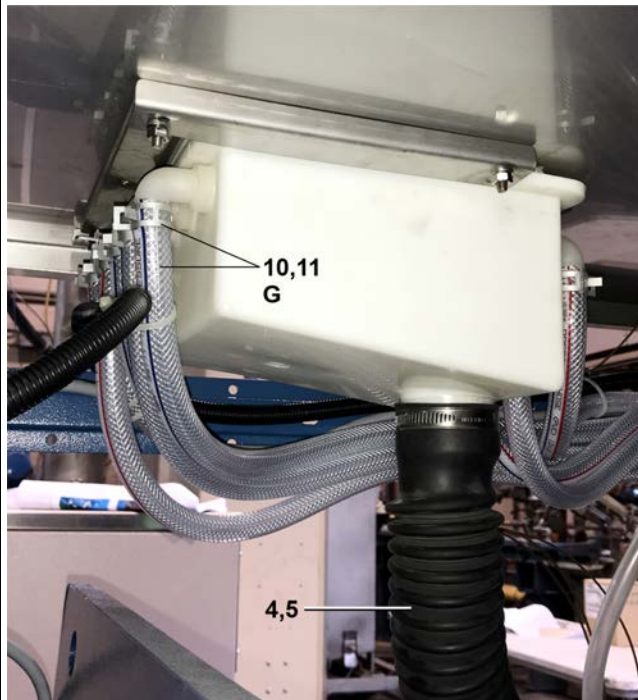
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Soap Chute

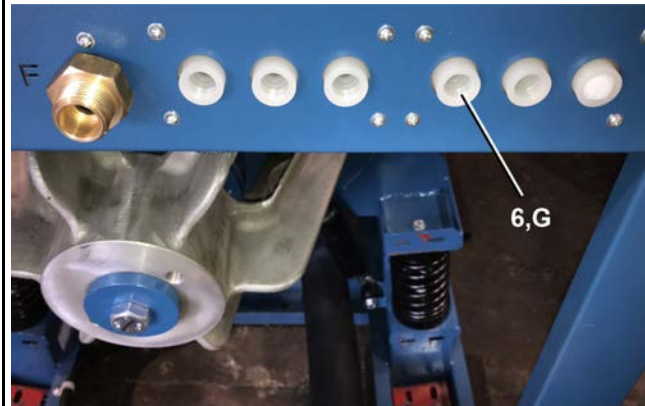
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Soap Chute Installed



Chemical Inlet Connections



Legend

- A . . . Soap chute cover
- B . . . Soap chute body
- C . . . Chemical port
- D . . . Water port
- E . . . Gasket (not shown)
- F . . . Clip, 4 instances
- G . . . Typical
- H . . . Apply silicone between the soap chute body and the soap chute cover.

Soap Chute

2 Sheet

MWF18J8

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	AWS33007	DRY/LIQ SUPPLY EP EXPRESS	
all	2	03 40039B	CSX GASKET SOAP CHUTE	
all	3	03 40039C	CSX COVER SOAP CHUTE	
all	4	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	
all	5	27A065	HOSECLAMP 1.56-2.5"Z.P.SCR#32	
all	0	03 40043B	CSX INLET SIX LIQUID SUPPLY	
all	7	98MW40041A	HINGE COVER=SOAP CHUTE MWF18	
all	8	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	9	12P015D	CABLE CLIP TINN#C23214-017	
all	10	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	11	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	

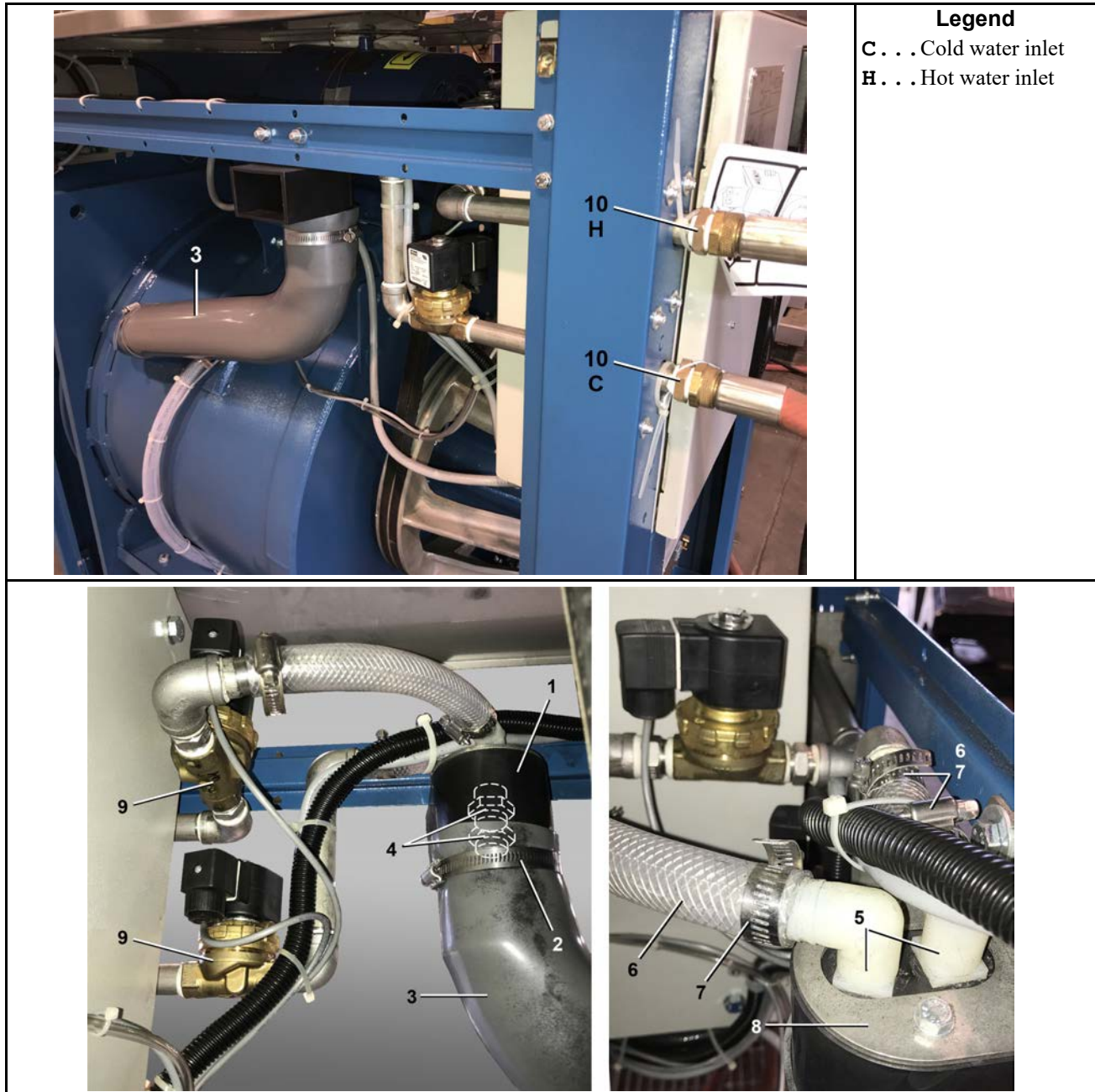
6 Water & Steam

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Water

MWF18J8

Figure 15. Hot and Cold Water Inlets



Water
MWF18J8

2 Sheet

Figure 16. Flushing Water

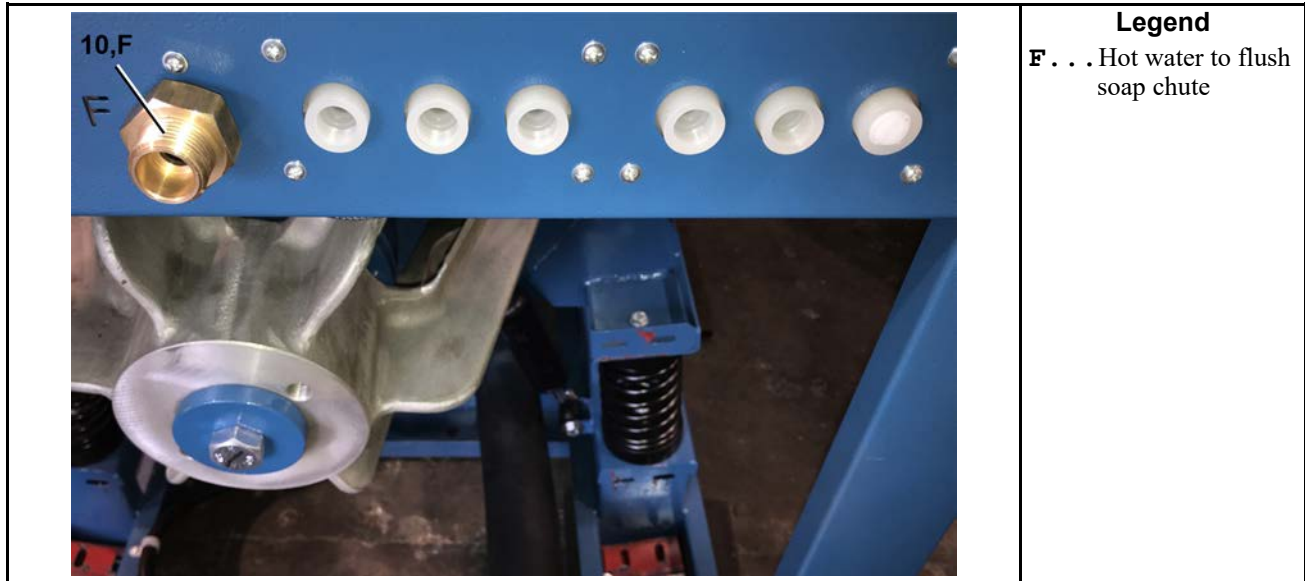


Table 25. Parts List—Water

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	98CMCR0939	VAC H20 BOX MCR/MWR	
all	2	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	3	98CX03588X	WATER INLET/PERISTALTIC HOSE,30X/36X/42X CSM, CUT TO SIZE	
all	4	51E513NU	NUT 11/16 THRD.#64138 US PLAST	
all	5	51E513EBN	3/4" 90DEG. ELBOW W/NUT	
all	6	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	7	27A049	HOSECLAMP 1.25"DIA SPRINGTYPE	
all	8	98MW40542	BRKT=PERISTALTIC/WATER INLET MWF18	
all	9	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER 08F25C2232ACFPH15 VITON SEALS/DIAPHRAGM	
all	10	98CMCR0938	3/4 INLET 13M 3 OUT 220/240V	

Drain

MWF18J8

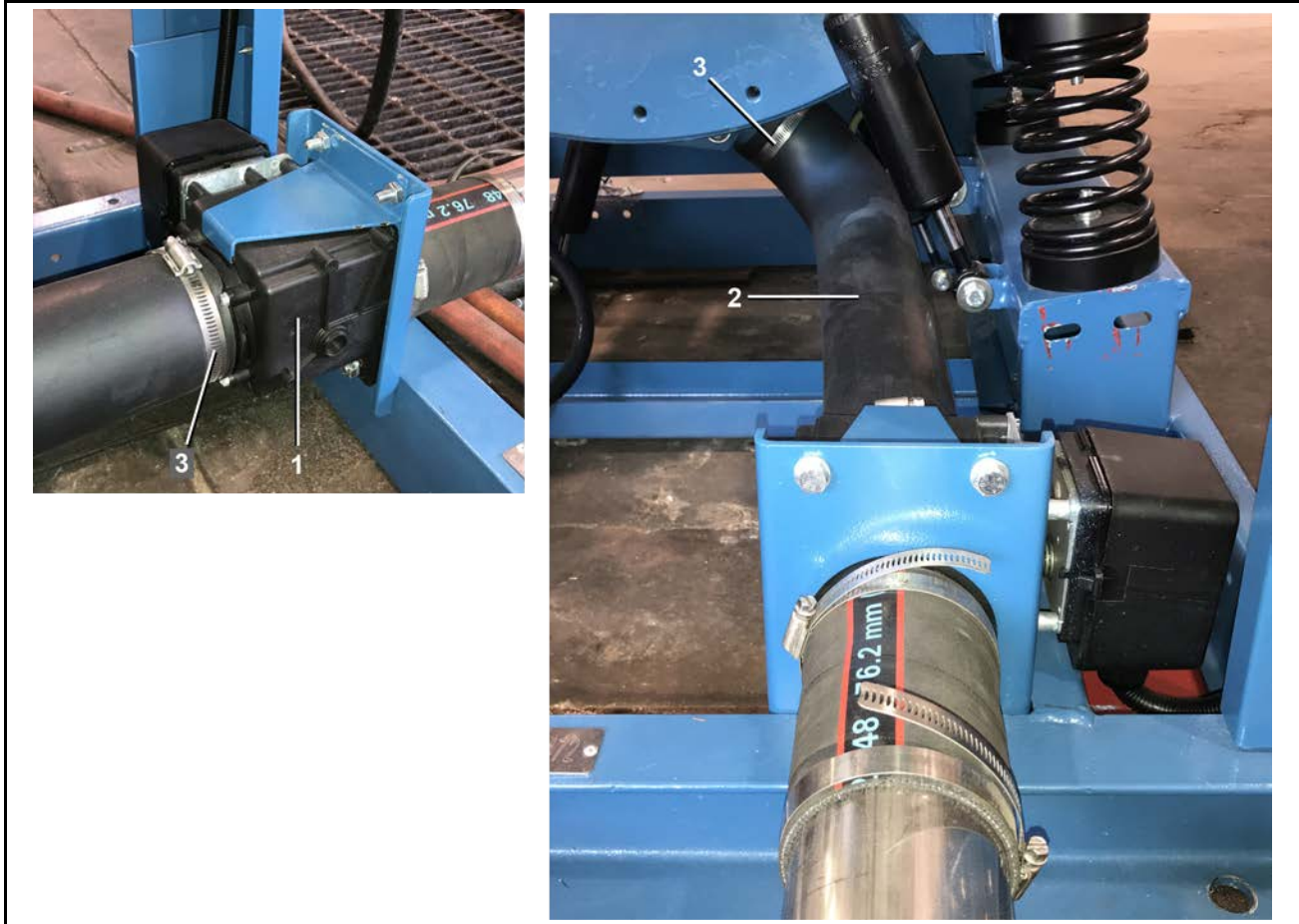


Table 26. Parts List—Drain Valve

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

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