Manual Number: MCWXAA01
Edition (ECN): 2025305

Installation, Parts, and Service

30022X8J, 30022X8R

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 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.

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

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

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1.1 How to Get the Necessary Repair Components

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

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

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

To write to the Milnor® factory:

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

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

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1.2 Trademarks

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

Table 1. Trademarks

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

Table 1 Trademarks (cont'd.)

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

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1.3 Safety — Suspended Washer Extractors

BNWSUS08.C01 0000348932 A.2 F.4 5/26/21, 11:48 AM Released

1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

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

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

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

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

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

1.3.2 Safety Alert Messages—Cylinder and Processing Hazards

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

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

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

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

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

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

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

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

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

1.3.3 Safety Alert Messages—Unsafe Conditions

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1.3.3.1 Damage and Malfunction Hazards

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

1.3.3.1.1 Hazards Resulting from Inoperative Safety Devices

BNWSUS04.C03 0000235000 A.2 A.6 F.4 12/10/20, 4:36 PM Released

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

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

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

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

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

- Do not unlock or open electric box doors.

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

- Do not remove guards, covers, or panels.

1.3.3.1.2 Hazards Resulting from Damaged Mechanical Devices

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

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

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

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

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

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

1.3.3.2 Careless Use Hazards

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1.3.3.2.1 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.

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

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

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.

- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

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

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

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

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

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1.4 Installation Tag Guidelines

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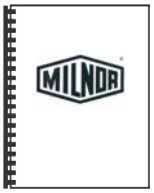
30022X8J	30022X8R	36026X8J	36026X8R
42026X7J	42026X7R	42032X7J	42032X7R

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

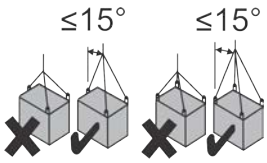
Paper tags on the machine provide installation guidelines and precautions. The tags can be tie-on or adhesive. You can remove tie-on tags and white, adhesive tags after installation. Yellow adhesive tags must remain on the machine.

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

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

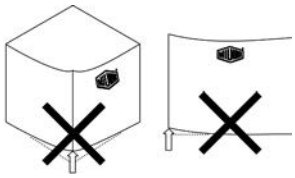
B2TAG88005: This carefully built product was tested and inspected to meet Milnor performance and quality standards by (identification mark of tester).

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

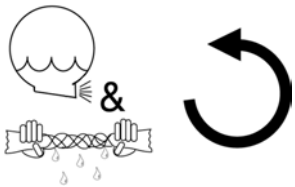


B2TAG94079: Rig for crane lifting (either 3-point or 4-point, depending on the number of lifting eyes provided) using a steep angle on the chains (closer to vertical than horizontal).

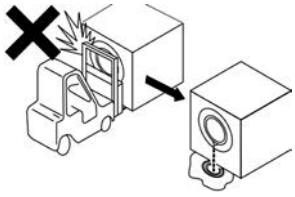
B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine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



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

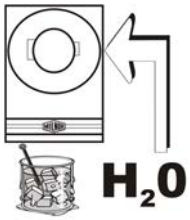


B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.



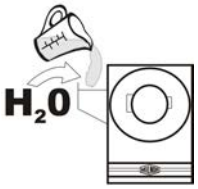
B2TAG94099: Do not strike the shell door when fork-lifting. This can cause the door to leak.

B2T2001013: Hot water connection.

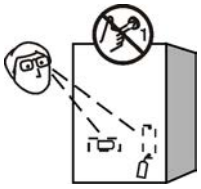


B2T2001014: Cold water connection.

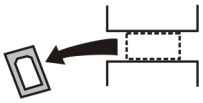
B2T2001015: Reuse (third) water connection. (Optional)



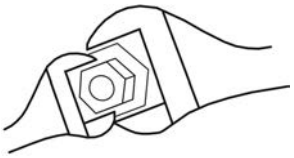
B2T2001016: Flushing water connection. This is the water that goes into the supply compartment or pumped chemical manifold to flush chemicals into the machine.



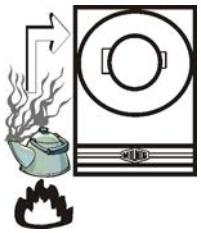
B2T2001028: Look for tags inside the machine. These tags may identify shipping restraints to be removed or components to be installed. Do not start the machine until these actions are completed.



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)

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Safety Placards and Locations

2 Sheets

30022 and 36026 X8J/X8R and 42026 and 42032 X7J/X7R

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

Figure 1. 30022 X8J/X8R

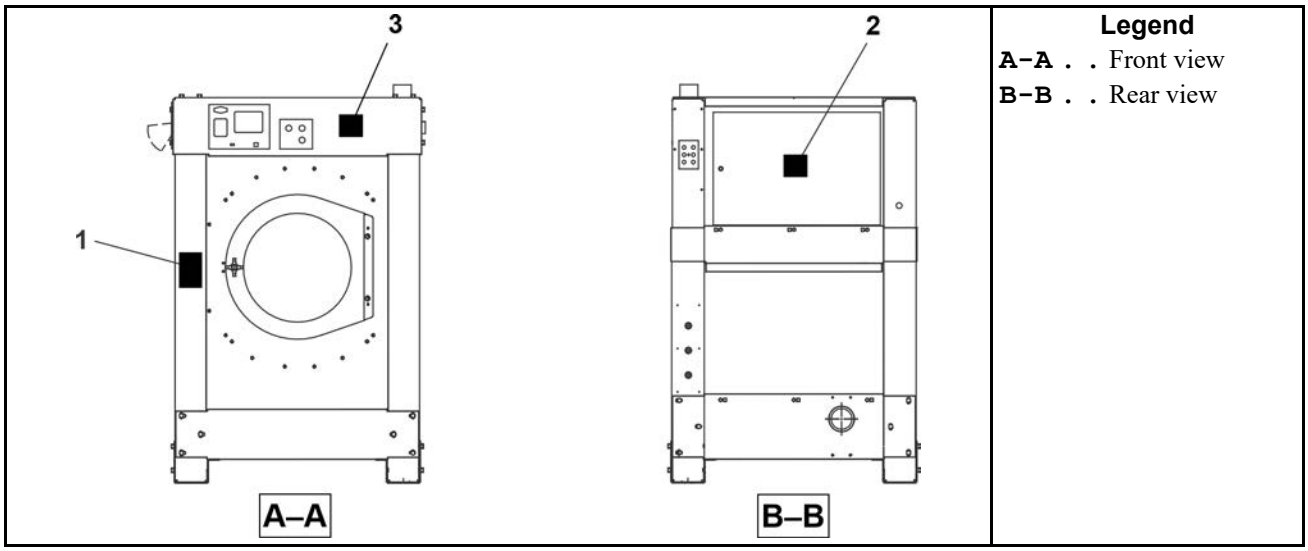
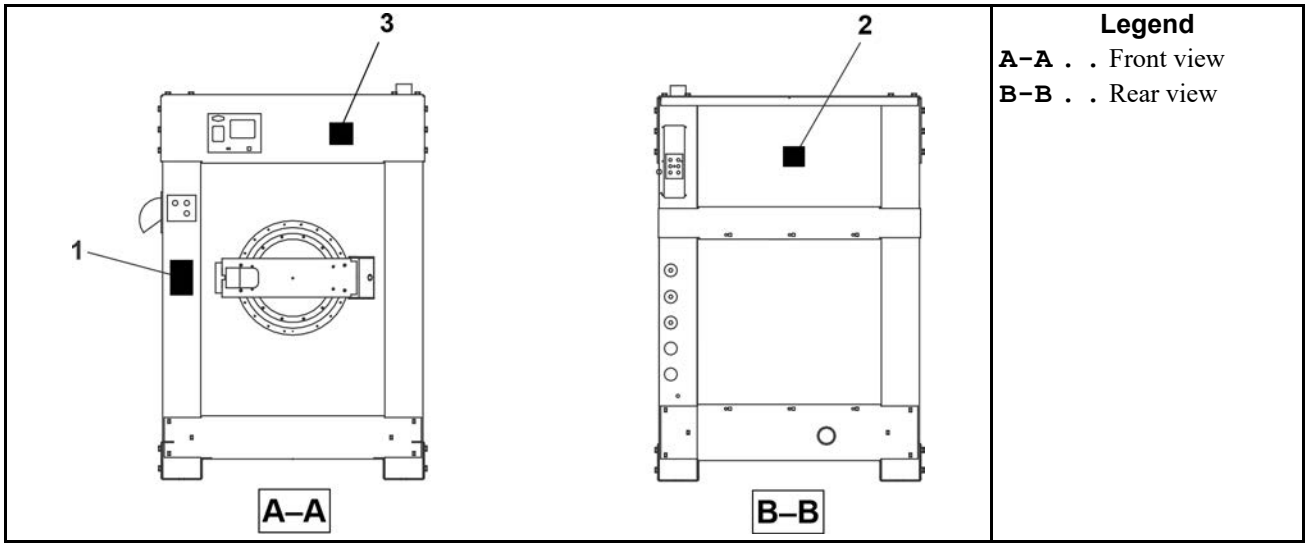


Figure 2. 36026 X8J/X8R



Safety Placards and Locations

2 Sheets

30022 and 36026 X8J/X8R and 42026 and 42032 X7J/X7R

Figure 3. 42026 and 42032 X7J/X7R

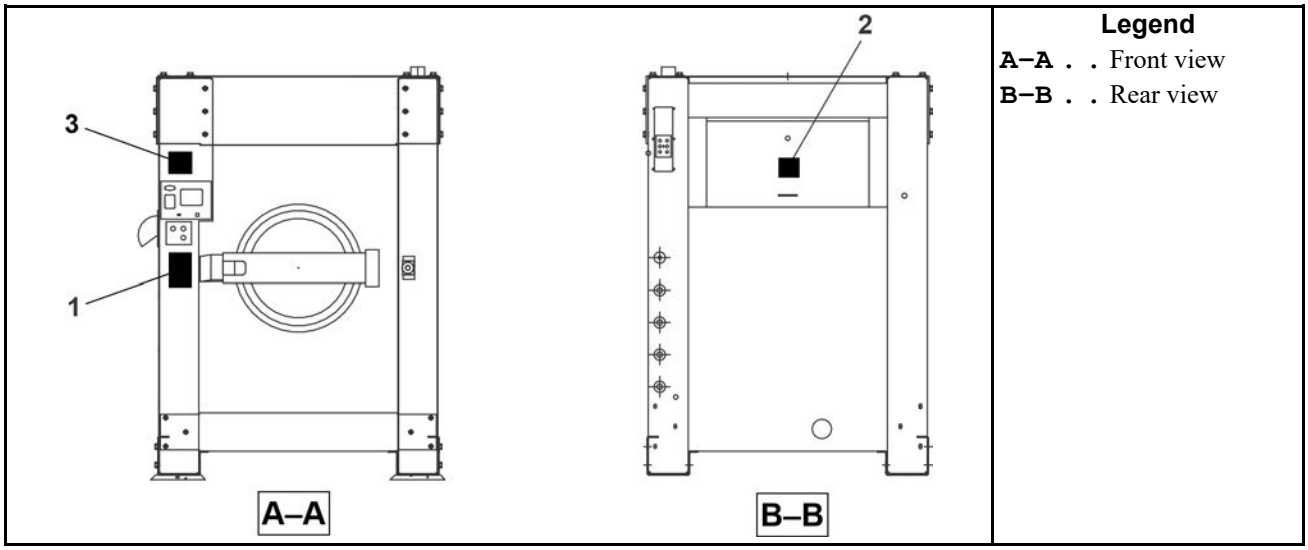


Table 2. Parts List—Safety Placards and Locations

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 10631A	NPLT:SHELL FRT WARN NOTILT-TCA	
all	2	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	3	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	

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Safety Placards and Locations – ISO

2 Sheets

30022 and 36026 X8J/X8R and 42026 and 42032 X7J/X7R

NOTE: This document is for placards that agree with ISO. Replace placard immediately, if removed or unreadable. Approximate locations of placards are shown. If aluminum placard, mounting holes are provided on the machine. Use #8 self-tapping screws.

Figure 4. 30022 X8J/X8R

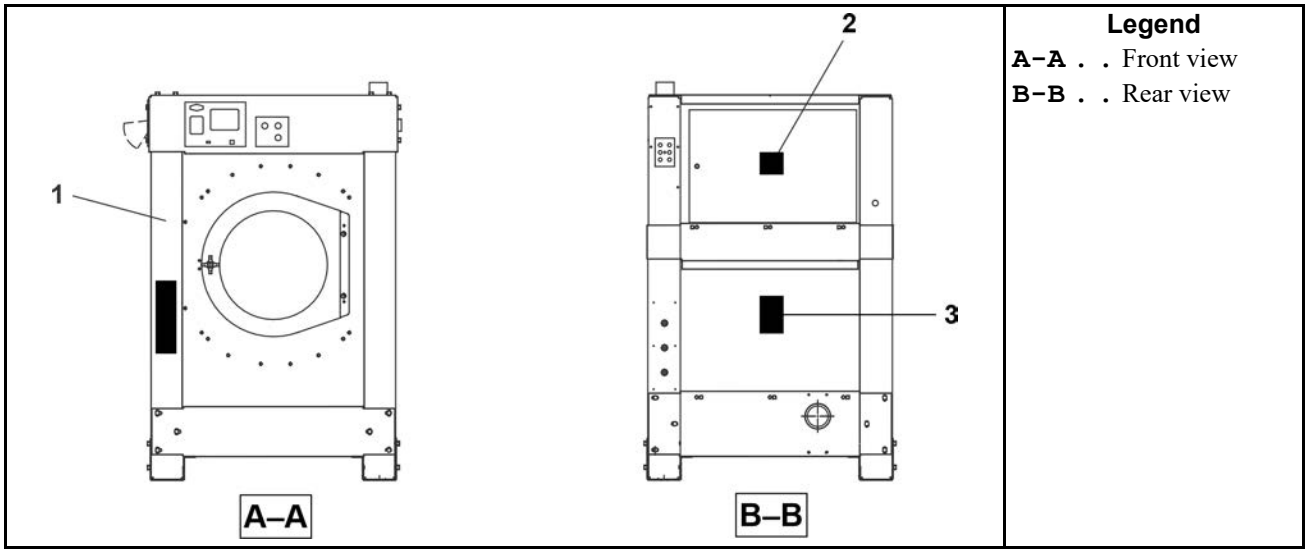
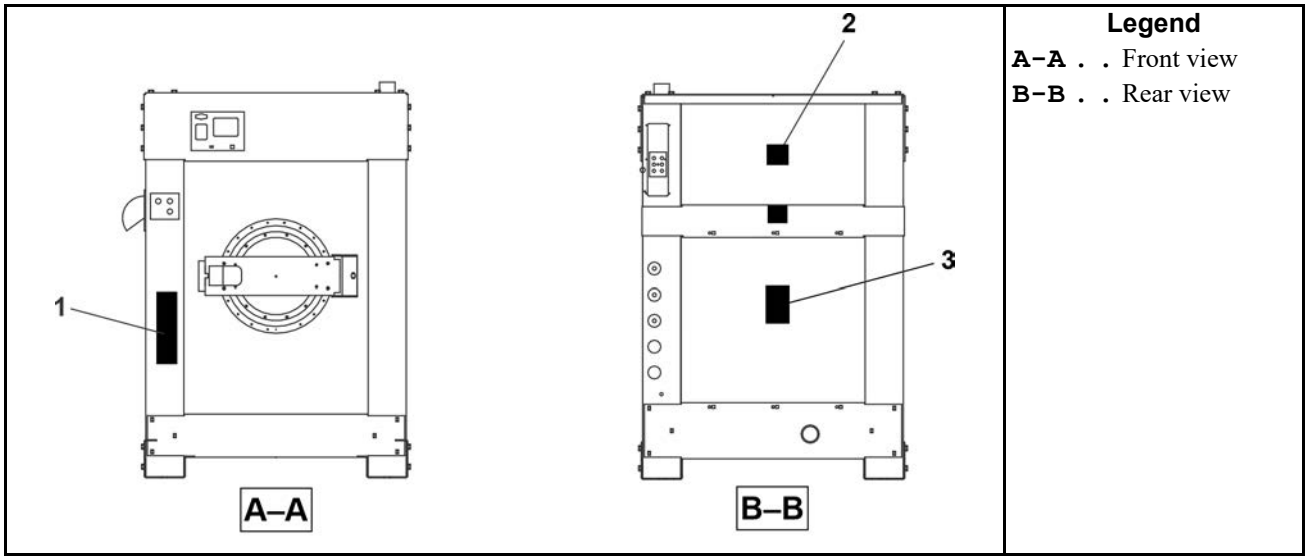


Figure 5. 36026 X8J/X8R



Safety Placards and Locations – ISO

2 Sheets

30022 and 36026 X8J/X8R and 42026 and 42032 X7J/X7R

Figure 6. 42026 and 42032 X7J/X7R

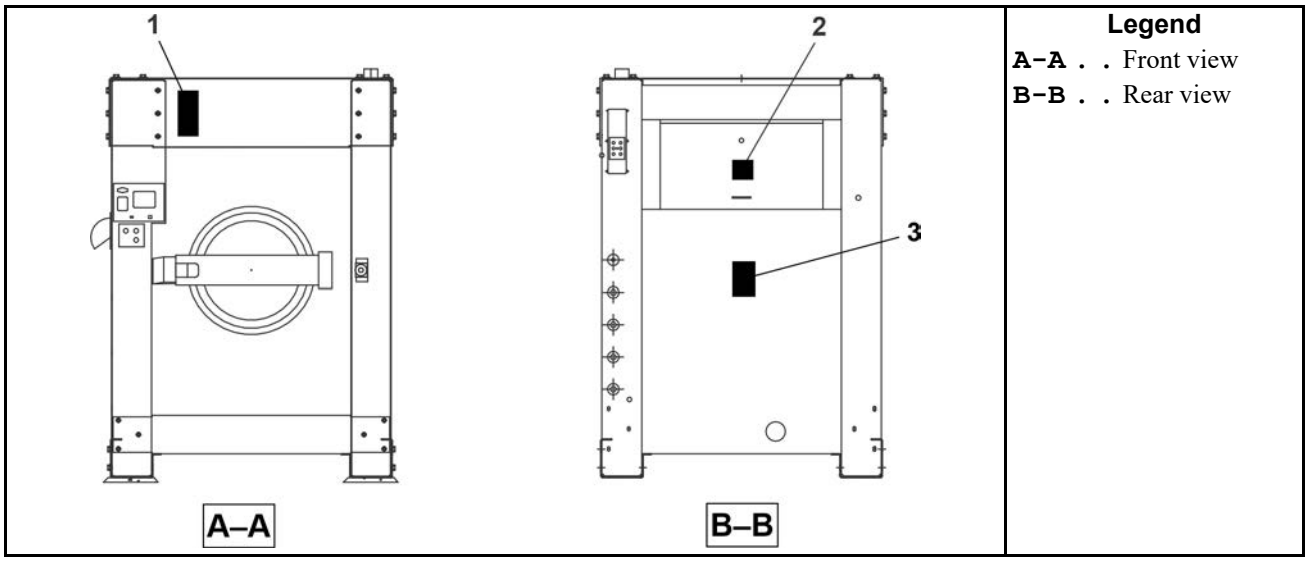


Table 3. Parts List—Safety Placards and Locations – ISO

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**
none				
Components				
A	1	01 10631X	NPLT:WE1-NONTILT WARNINGS FRT	30022 and 36026 X8J/X8R
B	1	01 10631Y	NPLT:SHELL FRT WARN NOTILT-ISO	42026 and 42032 X7J/X7R
all	2	01 10377	NPLTE:"WARNING" 4X4	
all	3	01 10628X	NPLT:NONTILT W/E WARNING SIDE	

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Panels and Covers

2 Sheets

Figure 7. General Views

Panels and Covers

2 Sheets

Table 4. Parts List—Panels and Covers

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GGS3022X8	INSTALL COVER 3022X8J	
Components				
all	1	02 02925	COVER= SIDE 3022X8	
all	2	02 02929	COVER REAR 3022X8J	
all	3	02 02931	COSM TOP COVER 3022X8	
all	4	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	5	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	

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Shipping Brackets

1 Sheet

30022X8J, 30022X8W, 30022X8R

NOTE: Shipping brackets must be used to move the machine. Before operating the machine, remove all shipping brackets (painted red). For further instructions, see BNWUUI03, Washer Extractor Installation.

Legend

A . . . 4, 5, 6, Typical
B . . . 7, Typical

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	W2 02937	ANGLE SHIPPING WELD	
all	2	02 02936	SHELL SHIPPING STRAP	
all	3	02 23543	BRKT=SHIP LOWER FRNT	
all	4	15K129	HEXFLGSCR 1/2-13X1-1/4ZN. GR 5	
all	5	15G222B	HEXFLGNUT 1/2-13 ZINC	
all	6	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	7	15K154G	INDHEXFLGSCR 1/2-13X1+3/4GR5 Z	

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1.5 Torque Requirements for Fasteners

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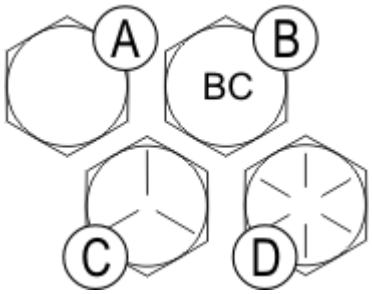
The document about the assembly gives the torque requirements for other fasteners. **If fastener torque specifications or threadlocker requirements in an assembly document are different from this document, use the assembly document.**

Figure 8. The Bolts in Milnor® Equipment

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

1.5.1 Torque Values

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

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

1.5.1.1 Fasteners Made of Carbon Steel

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1.5.1.1.1 Without a Threadlocker

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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

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
3/14 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

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
3/14 x 16	144	192	223	297	315	420	–	–
7/8 x 9	125	166	322	430	455	606	398	531
7/8 x 14	138	184	355	474	501	668	–	–
1 x 8	188	250	483	644	682	909	597	796
1 x 12	205	274	528	716	746	995	–	–
1 x 14	210	280	542	735	765	1037	–	–
1 1/8 x 7	266	354	595	807	966	1288	845	1126
1 1/8 x 12	298	404	668	890	1083	1444	–	–
1 1/4 x 7	375	500	840	1120	1363	1817	1192	1590
1 1/4 x 12	415	553	930	1261	1509	2013	–	–
1 3/8 x 6	491	655	1102	1470	1787	2382	1564	2085
1 3/8 x 12	559	758	1254	1672	2034	2712	–	–
1 1/2 x 6	652	870	1462	1982	2371	3161	2075	2767
1 1/2 x 12	733	994	1645	2194	2668	3557	–	–

1.5.1.1.2 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)

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	–	–
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	–	–

1.5.1.2 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

1.5.2 Preparation

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

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

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

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

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

1.5.3 How to Apply a Threadlocker

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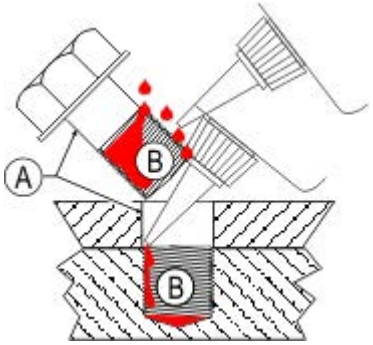
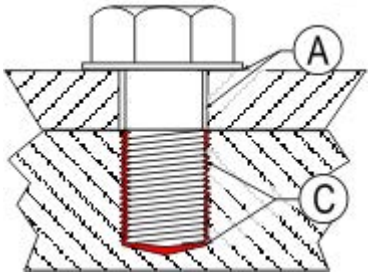
CAUTION: Malfunction Hazard — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

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

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

Figure 9. Apply Threadlocker in a Blind Hole

Application	Coverage
	

Legend

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

1.5.3.1 Blind Holes

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1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table (Table 10: Threadlocker by the Diameter of the Bolt (see below Note), page 27 to Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 29).

1.5.3.2 Through Holes

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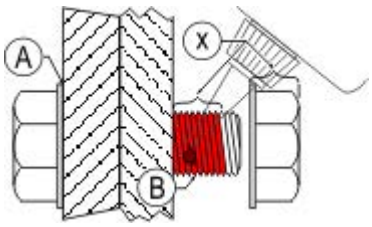
1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.
3. Tighten the bolt to the value shown in the correct table (Table 10: Threadlocker by the Diameter of the Bolt (see below Note), page 27 to Table 16: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 29).

Figure 10. Apply Threadlocker in a Through Hole

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

1.5.3.3 Disassembly

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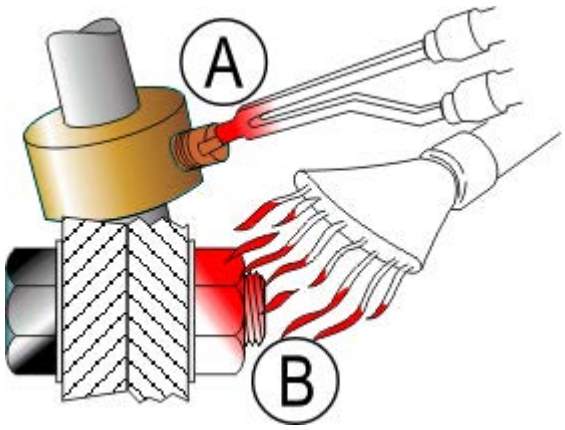
For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

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

Figure 11. Use heat for disassembly of fasteners with threadlocker.

Apply Heat to a Small Area	Legend
	**A . . .** How to apply heat to a small fastener **B . . .** How to apply heat to a large fastener

2 Important Installation Precautions

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2.1 External Fuse/Breaker, Wiring, and Disconnect Requirements

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

2.1.1 Fuse or Circuit Breaker Size

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

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

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

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

2.1.2 Wire Size

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

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

2.1.3 Ground

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

2.1.4 Disconnect Switch for Lockout/Tagout

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

2.1.5 Using GFCI (Ground Fault Circuit Interrupter) Device

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

Use a GFCI with a higher trip level.

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

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

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

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This document replaces Milnor® document BIWUUI02.

All laundering machines impart static and dynamic forces to the supporting structures (foundation and soil, floor, and building). Static forces include the machine weight plus the weight of the goods and water. Dynamic forces are those imparted by various machine movements as explained in Section 2.2.2 : Major Design Considerations, page 35. The dynamic forces imparted to supporting structures can cause vibration and noise outside of the laundry room if supporting structures are inadequate.

2.2.1 Disclaimer of Responsibility

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

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

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

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

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

2.2.2 Major Design Considerations

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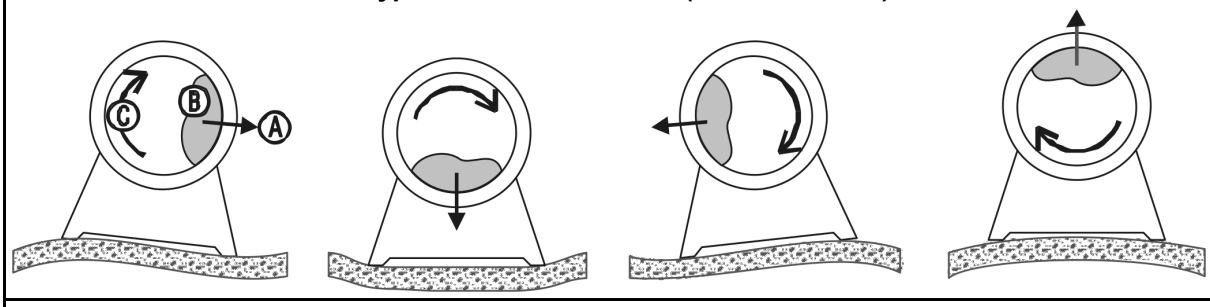
- Vibration and/or noise can be felt or heard outside of the laundry room as a result of the following, if supporting structures are not sufficiently rigid:
  - Extraction (the spinning cylinder) in washer-extractors and centrifugal extractors, imparts sinusoidal forces to supporting structures as shown in Figure 12: How Rotating Forces Act On the Foundation, page 36 . 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 12. How Rotating Forces Act On the Foundation



Legend

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

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

2.2.3 Primary Information Sources

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

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

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

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2.3 Prevent Damage from Chemical Supplies and Chemical Systems

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

Chemical supply companies usually:

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

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

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

2.3.1 How Chemical Supplies Can Cause Damage

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

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

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

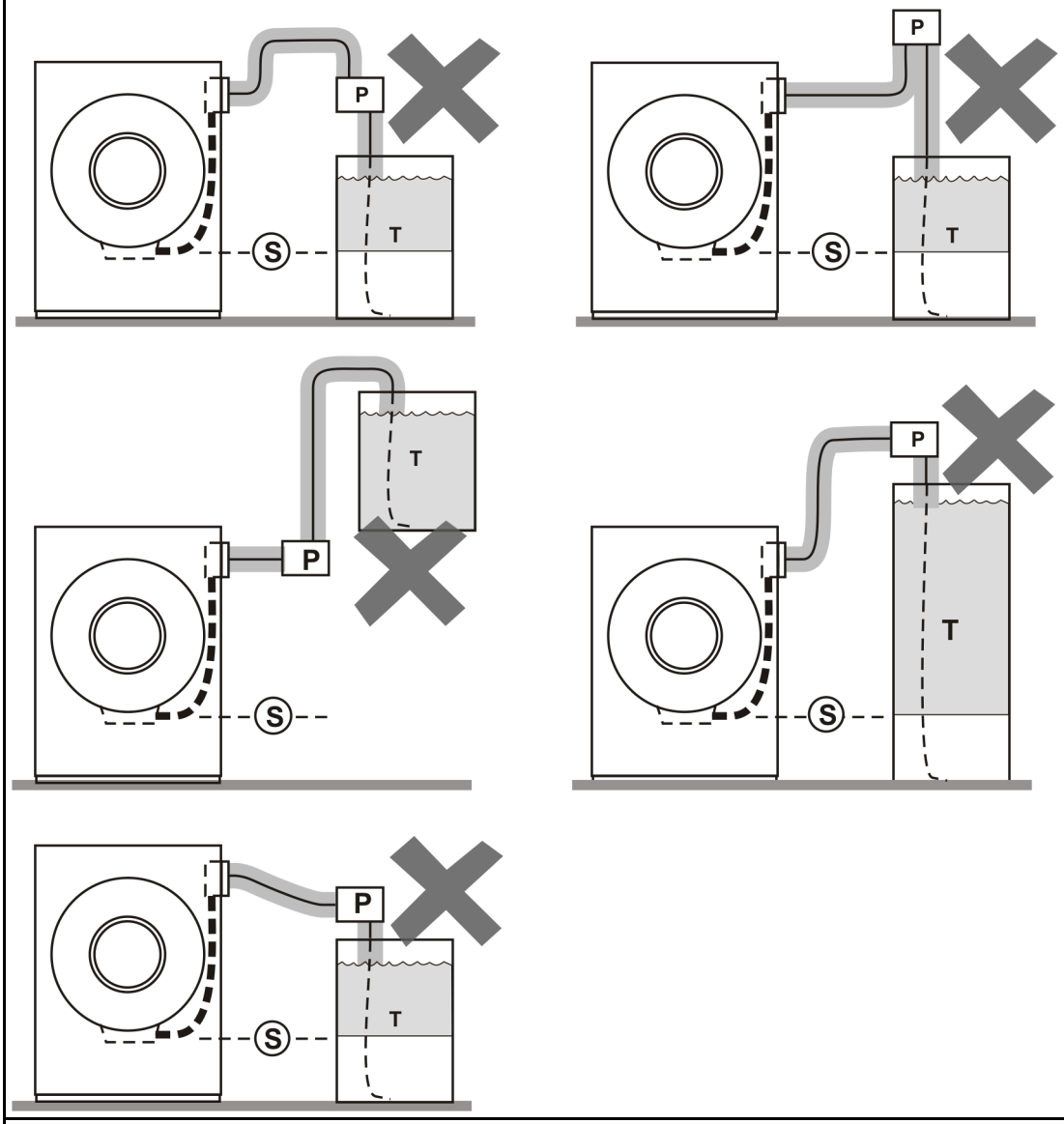
Incorrect Configuration or Connection of Equipment — Many chemical systems:

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

Damage will occur if a chemical supply can go in the machine when the chemical system is off. Some configurations of components can let the chemical supplies go in the machine by a siphon (Figure 13, page 38). Some can let chemical supplies go in the machine by gravity (Figure 14, page 39).

Figure 13. Incorrect Configurations That Let the Chemical Supply Go In the Machine by a Siphon

Schematic Views

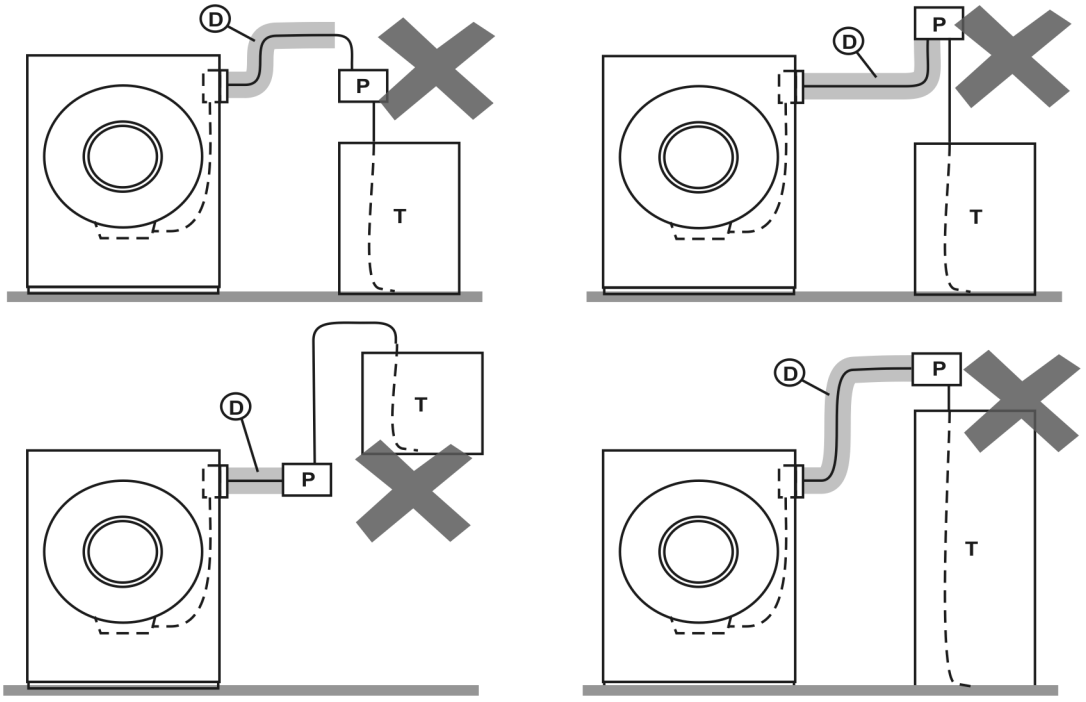


Legend

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

Schematic Views



Legend

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

2.3.2 Equipment and Procedures That Can Prevent Damage

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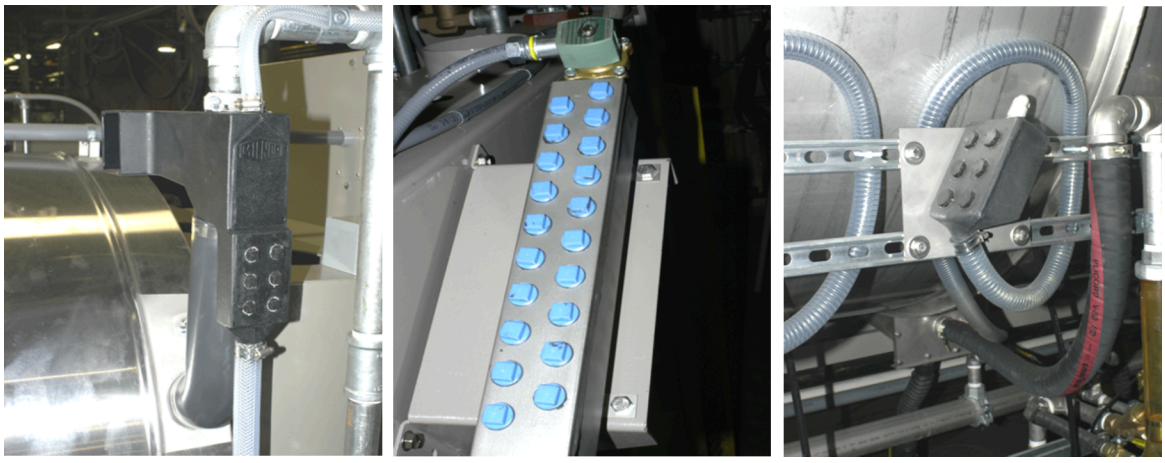
Use the chemical manifold supplied. — There is a manifold on the machine to attach chemical tubes from a chemical pump system. The manifold has a source of water to flush the chemical supplies with water.

Figure 15. Examples of Manifolds for Chemical Tubes. Your equipment can look different.



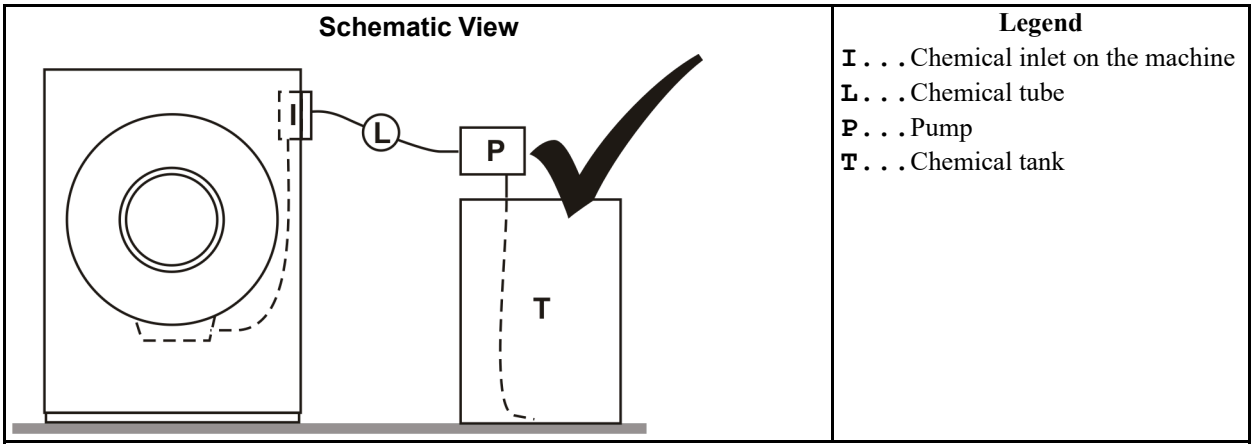
Close the line. — If the pump does not always close the line when it is off, use a shutoff valve to do this.

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



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

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

3 Installation Procedures

3.1 Handling a Washer-extractor from Delivery to Final Location

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

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

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

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

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

3.1.1 Notices

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

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

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

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

3.1.2 Facility Prerequisites

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

3.1.3 Rigger Precautions

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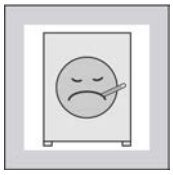
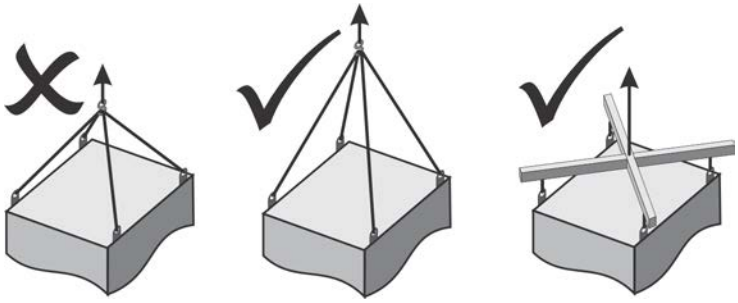
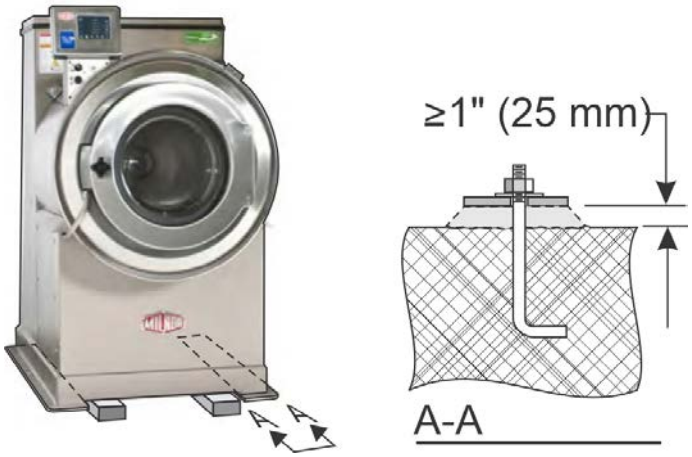


CAUTION: Incorrect rigging — can cause mishaps and costly machine damage.

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

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

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

3.1.4 Technician Precautions

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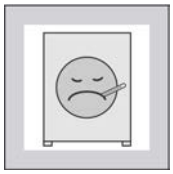
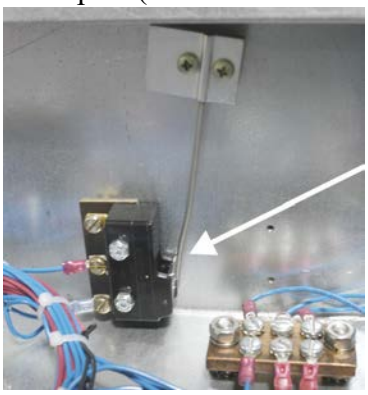
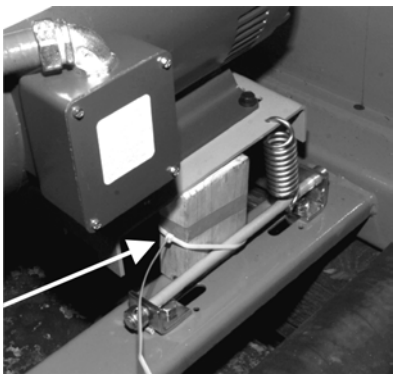
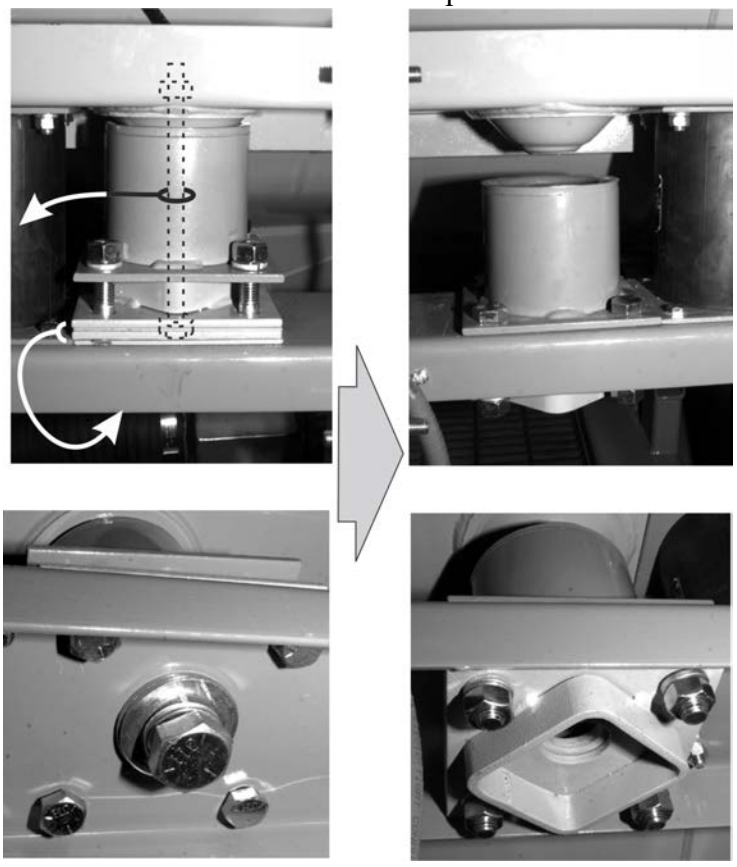


CAUTION: Overlooked or mishandled shipping restraints — can cause costly machine damage.

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

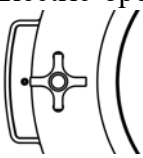
Precaution	Explanation
Leave all internal shipping restraints in place until the machine is anchored.	The machine can have one or more internal shipping restraints to help protect components from damage until the machine is anchored. These are located inside the housing or inside electric cabinets.
Check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

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

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

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

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

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

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3.2 Connection Precautions for Washer-extractors

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

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

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

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

3.2.1 Notices

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

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

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

3.2.2 Utility Requirements and Related Information

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

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

3.2.3 Plumber Precautions

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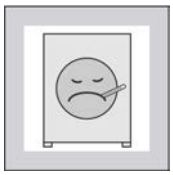

CAUTION: Machine damage and code violations — can occur as a result of incorrect plumbing.

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

Precaution	Explanation
Confirm the reliability of the piped utilities.	Water and any other piped fluids (steam, compressed air) needed by the machine must be within the specified pressure range and not prone to frequent interruptions when the machine operates. See Section 3.2.2 : Utility Requirements and Related Information, page 47.
Maintain connection point diameter.	The piping between the utility tap and the fitting on the machine must be as large or larger than the fitting. Drain piping or tubing, if any, must provide an unrestricted flow to the sump.
Flush fluid lines.	Foreign material such as debris in air lines, trapped air in water lines, and condensate in steam lines can damage machine components.
Do not twist valve bodies.	Hold a wrench on the valve side of a pipe connection to prevent the valve from twisting when you tighten the connection.

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

3.2.4 Electrician Precautions

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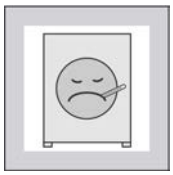

CAUTION: Machine damage, machine malfunctions, and code violations — can occur as a result of incorrect electrical connections.

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

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

3.2.5 Chemical Supplier Precautions

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

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

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

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

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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.

3.3.1 Disassembly

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3.3.1.1 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 17: Door Handle Spoke Set Screw, page 52 .
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 18: Handle Spoke Spring and Ball, page 52 . Shake the handle if necessary, to work the components free.

Figure 17. Door Handle Spoke Set Screw

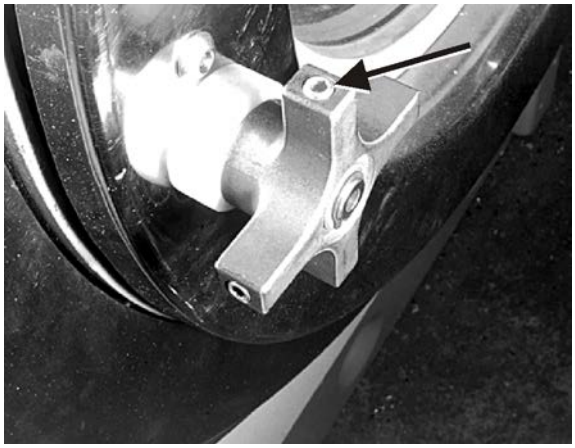
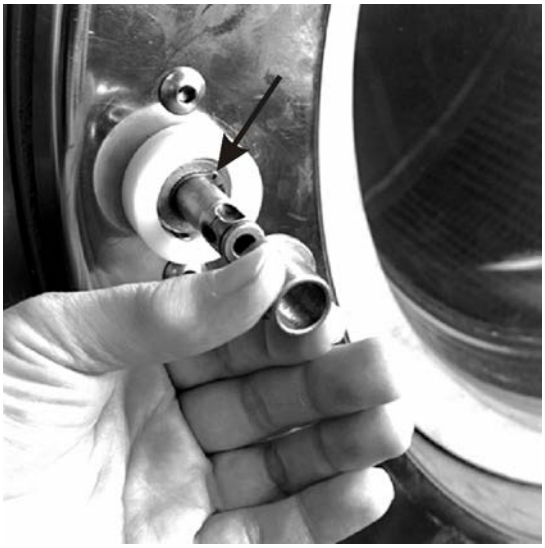


Figure 18. Handle Spoke Spring and Ball

4. Remove the front retaining clip and thrust washer (Figure 19: Front Retaining Clip and Thrust Washer, page 53), 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 20: Rear Flange Bearing (being removed) and Retaining Clip (arrow), page 53 . Remove the rear retaining clip. Push against the door to release the retaining clip.

Figure 19. Front Retaining Clip and Thrust Washer

Figure 20. 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 21: Return Spring After Separation from Shaft Cam, page 53 .

Figure 21. Return Spring After Separation from Shaft Cam

3.3.1.2 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 22: Door Lock Slider Pin in the Door Lock Mechanism, page 54).
2. Using a screwdriver, push down the door lock slider pin (Figure 22, page 54) and rotate the shaft (Figure 23: Removing the Shaft from the Lock Mechanism, page 54) counterclockwise to remove it from the lock mechanism.

Figure 22. Door Lock Slider Pin in the Door Lock Mechanism

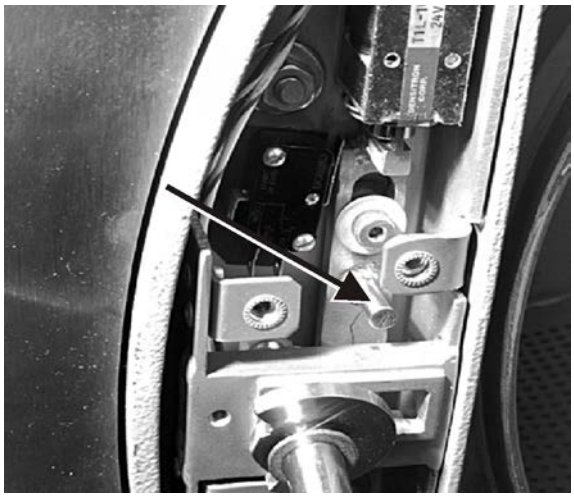
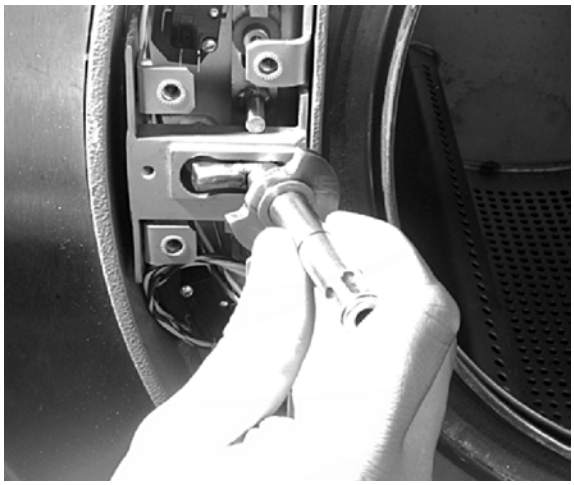


Figure 23. Removing the Shaft from the Lock Mechanism



3.3.2 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 24: Shaft in the 9 o'clock Position Showing Spring Retaining Hole, page 55 and Figure 25: Shaft with Return Spring Installed, page 55).

Figure 24. Shaft in the 9 o'clock Position Showing Spring Retaining Hole

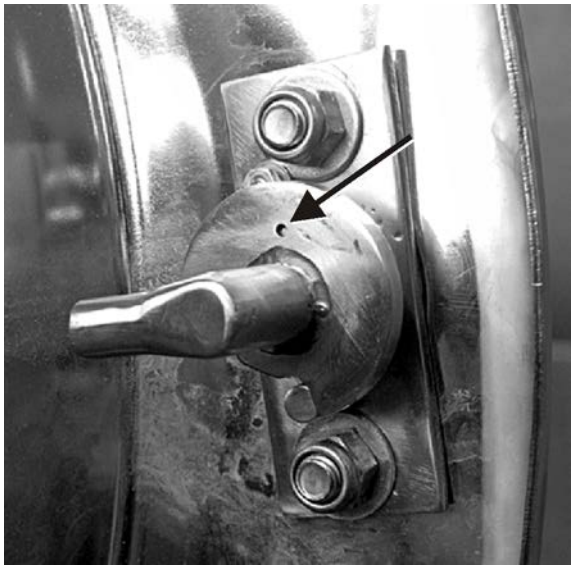
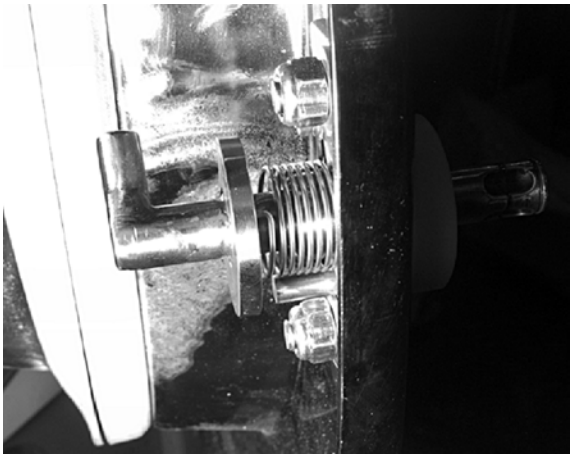


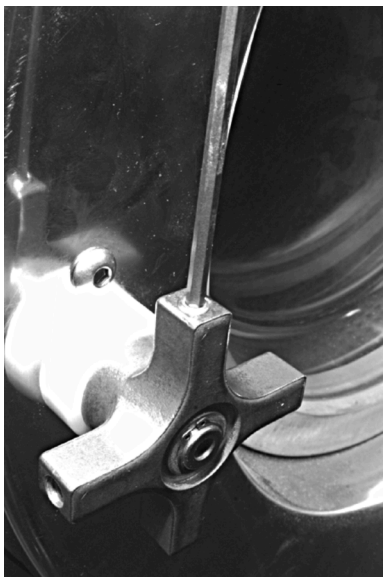
Figure 25. Shaft with Return Spring Installed



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 26: Inserting Ball and Spring in Handle Spoke, page 56 and Figure 27: Adjusting Set Screw, page 56):
   a. Drop the ball into the hole of door handle top spoke, followed by the spring, as shown in Figure 26, page 56.
   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 26. Inserting Ball and Spring in Handle Spoke

Figure 27. 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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3.4 Setting Door Interlock Switches

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3.4.1 How The Door Interlock Switches Work

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

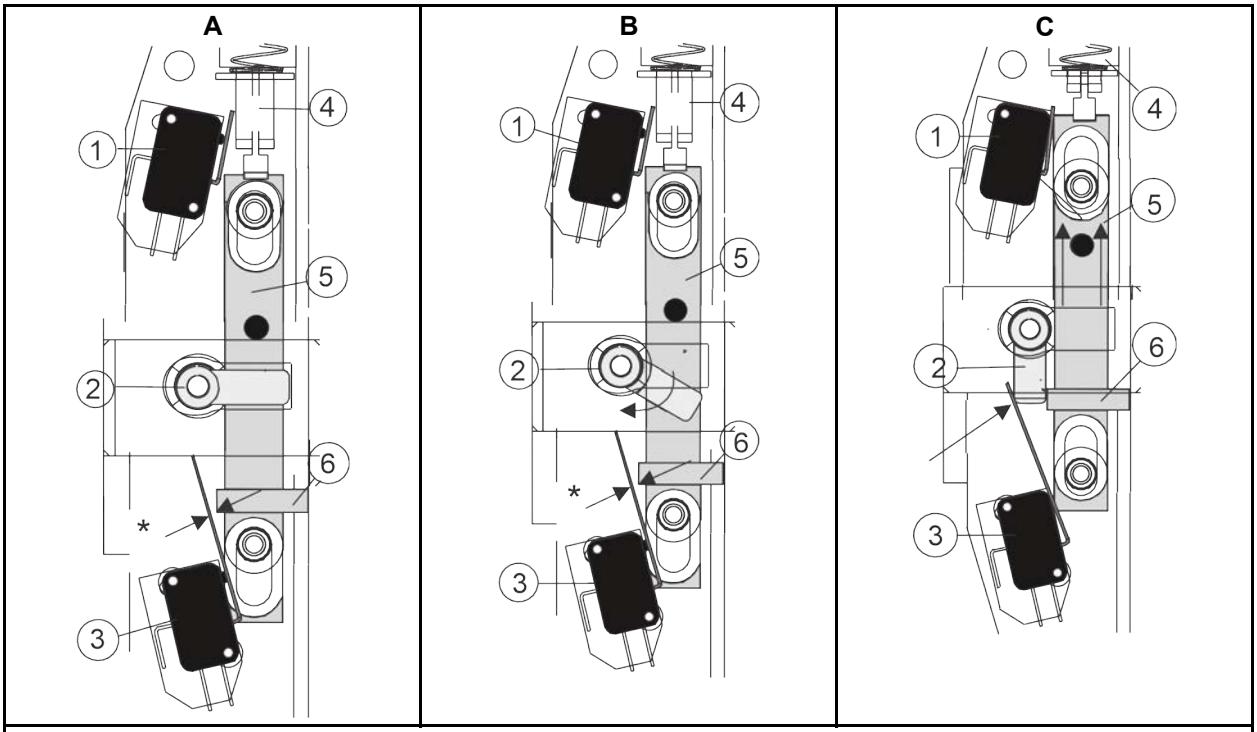
- Do not permit this machine to be operated unless door interlock switch SMD (Figure 28: Door locking sequence, page 57 item 3) is set according to these instructions.
- Do not operate this machine if a visual inspection of the unlocked door shows door lock switch SMD touching the door lock slider, or 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 28, page 57while 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 28. 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

3.4.2 Adjusting the Door Interlock Switches

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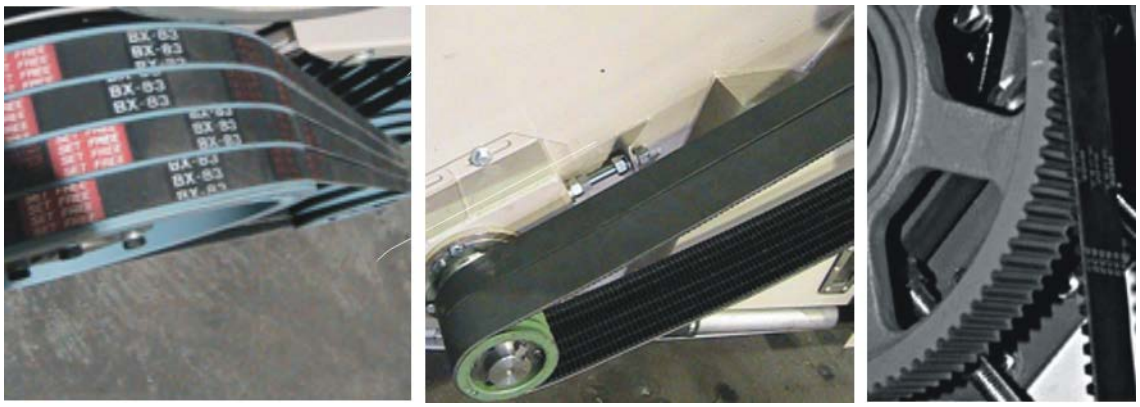
Periodically inspect the door locking assembly for wear and proper functioning as follows:

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

4.1 Drive Pulley and Belt Maintenance

Figure 29. Examples of drives this instruction applies to: one or more V-belts, attached V-belts and tooth belts



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

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

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

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

4.1.1 Pulley Requirements

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

- Keep run-out in tolerance.

4.1.1.1 Condition of Grooves on Pulleys

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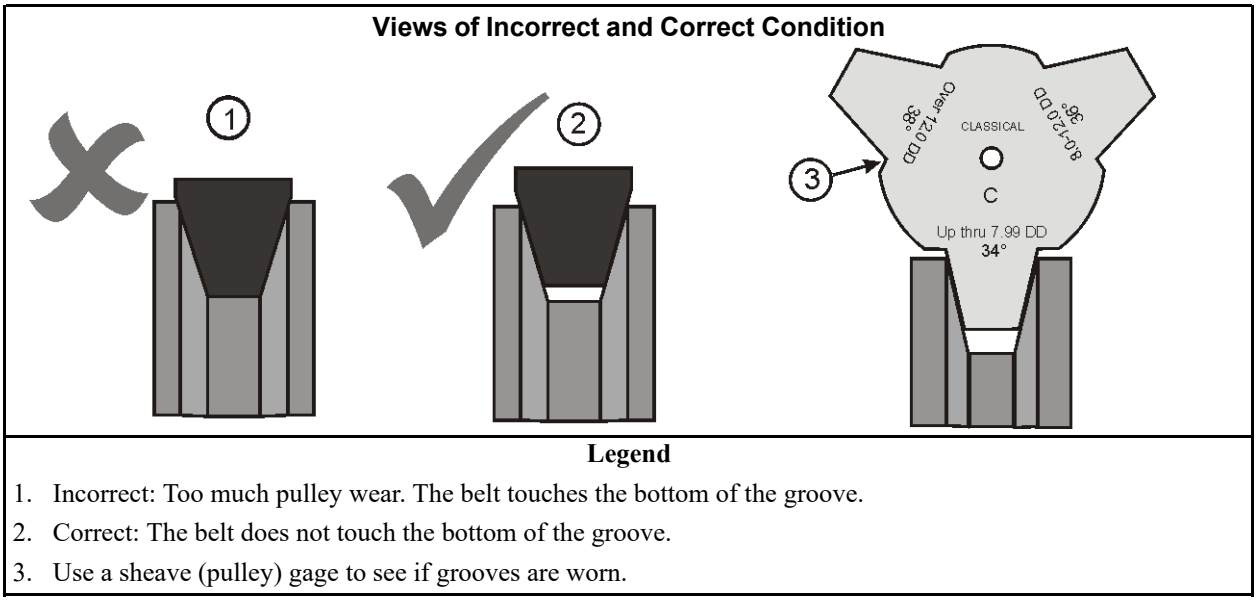
Replace a pulley if:

- the grooves have burrs, cracks, or worn areas that can cause damage to the belts.
- the belts touch the bottom of the groove at any point (Figure 30, page 60).

Figure 30. Pulley Groove Condition



Legend

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

4.1.1.2 Pulley and Shaft Position

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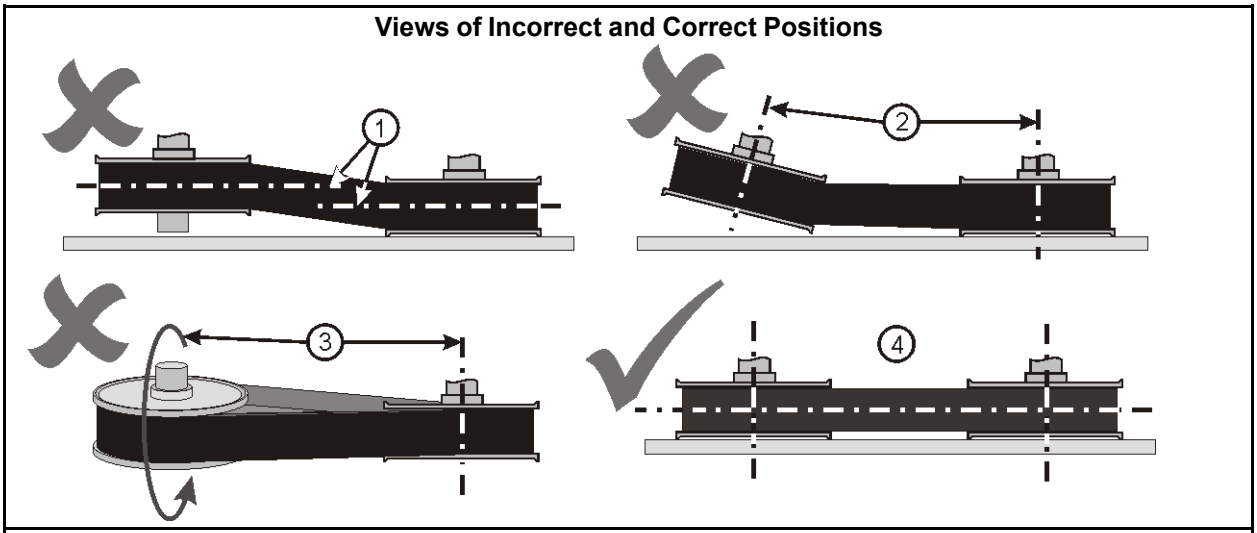
Align To adjust parts until they are in a correct position to other parts.

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

Figure 31. Pulley and Shaft Position



Legend

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

4.1.1.3 Keep Run-Out in Tolerance

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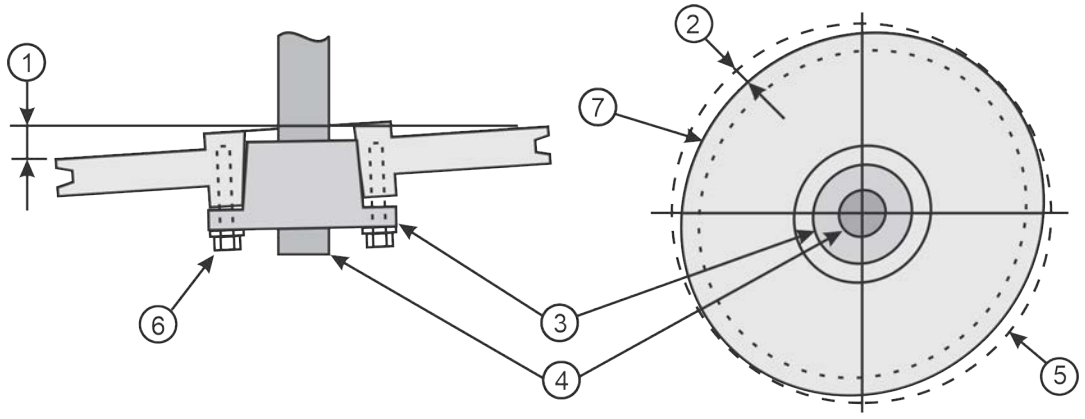
Axial run-out The difference between the minimum and maximum distance between the face of a pulley and a plane perpendicular to the pulley shaft (Figure 32, page 62, item 1). Incorrect installation or damage can cause a pulley to be not at a 90 degree angle to the shaft.

Radial run-out The difference between the minimum and maximum diameter in one turn (Figure 32, page 62, item 2). If a force causes damage to a pulley, it can bend. It will not have a circular shape.

Figure 32. Run-out

Views of Axial and Radial Run-out

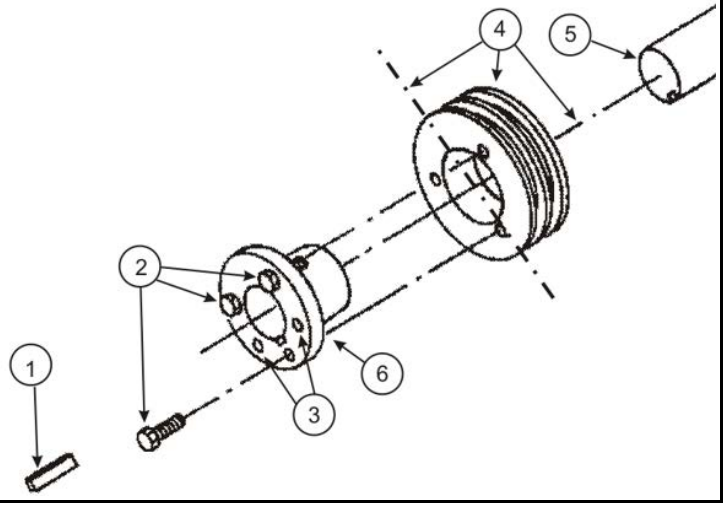


Legend

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

Figure 33. Typical Pulley Assembly

View of Pulley Components



Legend

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

4.1.2 Belt Requirements

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- Replace damaged belts.
- The pulleys must stay aligned when you adjust the belt tension.

- Do not use belts made from cut belts.
- For a drive with more than one belt:
  - Replace all of the belts together.
  - Do not mix new and used belts.
  - Do not mix belts from more than one manufacturer.

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

▶ Do not push the belt on with a tool.

4.1.2.1 Condition of Belts

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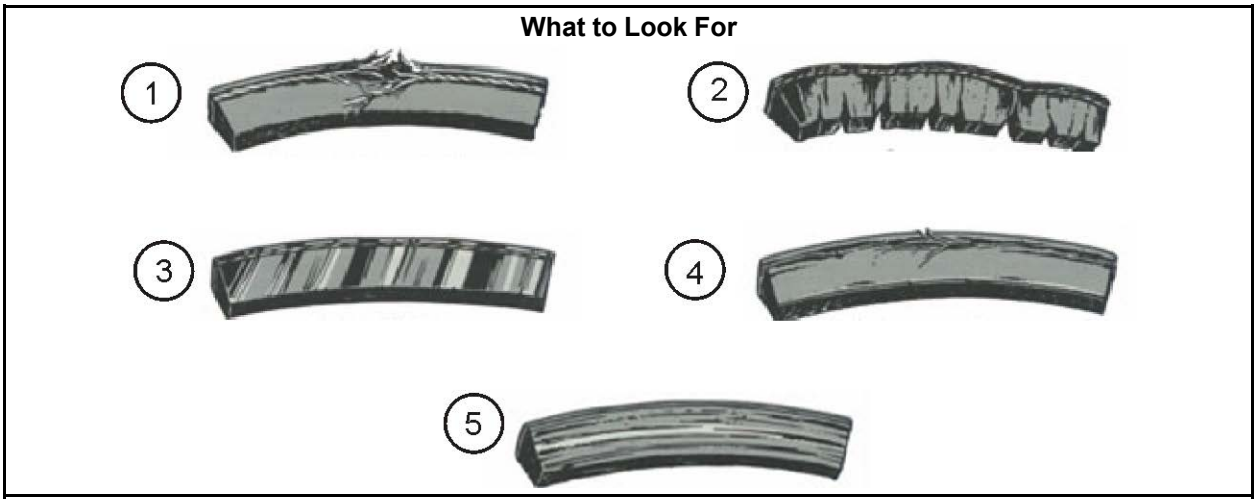
Slippage when the pulley turns more quickly than the belt can move

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

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

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

Figure 34. Types of Belt Damage



Legend

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

4.1.2.2 Tension of Belts

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

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

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

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

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

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

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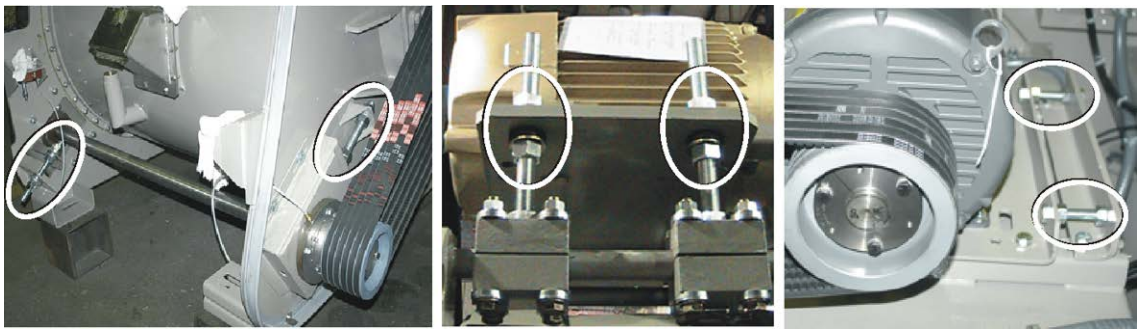
Some tension mechanisms do not have an effect on pulley and shaft requirements. Pulleys will stay aligned when you adjust them. Figure 35, page 65 is an example of these. Where tension mechanisms are a pair of threaded rods, you must adjust the nut, on each rod carefully. If not, the pulleys will not stay aligned. Examples of this type are shown in Figure 36, page 65.

Figure 35. A Tension Mechanism that will not Change the Angle of the Pulleys

Figure 36. Some Pairs of Tension Mechanisms that Can Change the Angle of the Pulleys



4.1.4 How to Do Maintenance on Pulleys and Belts

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Table 18. Typical Tools for Pulley and Belt Maintenance

Tool	Function	Related Data
Torque wrench	Make the bushing bolts the same torque to get the minimum axial run-out.	Figure 33, page 62, item 2
Laser, straight edge, or string	Align pulleys	Tools are listed in order of preference. Section 4.1.1.2 , page 60 and Figure 37, page 67
Bubble level	Align shafts	Section 4.1.1.2 , page 60 and Figure 38, page 68
Dial indicator	Measure run-out	Section 4.1.1.3 , page 61 and Figure 39, page 68
Sheave (pulley) gage	Examine pulley wear	Figure 30, page 60.
Infrared thermometer	Examine belt temperature	Section 4.1.2.1 , page 63.

4.1.4.1 Typical Steps to Replace Pulleys and Belts

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Preparation Remove power from the machine.

Belt removal Use the belt tension mechanism to decrease the distance between the pulleys until you have sufficient clearance. Figure 35, page 65 and Figure 36, page 65 show typical belt tension mechanisms.

Pulley removal On the typical type of pulley and bushing shown in Figure 33, page 62, use the push-off holes to remove the pulley easily. On special types of pulleys (example: large drive pulley and cone), look at the parts document in the maintenance manual for more data. Some pulleys are too heavy for only one person to hold.

Pulley installation Figure 33, page 62 shows the typical pulley and bushing components. Make sure that you keep run-out tolerances when you assemble and tighten the components.

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

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

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

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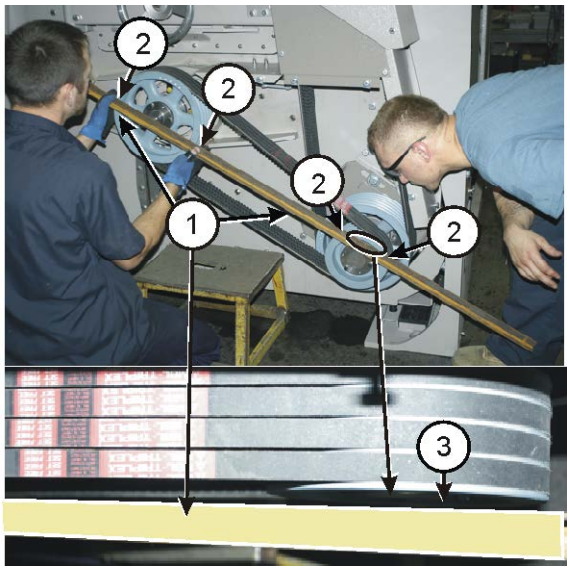
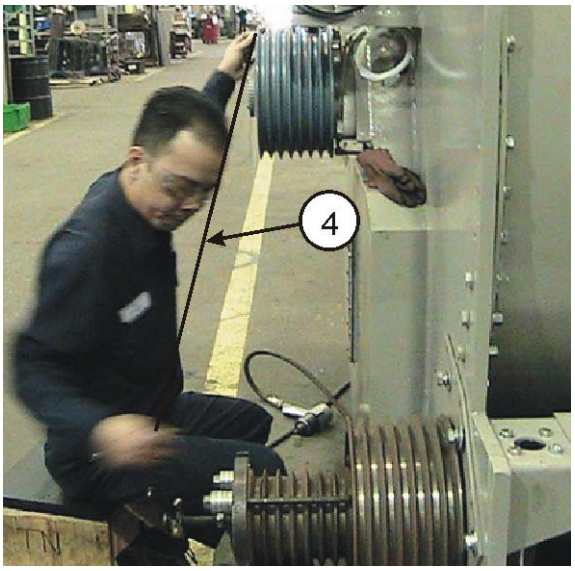
Figure 37. Use a straight edge, a string, or a laser to make sure that all pulleys are in the same plane.

Straight edge



String



Legend

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

Laser

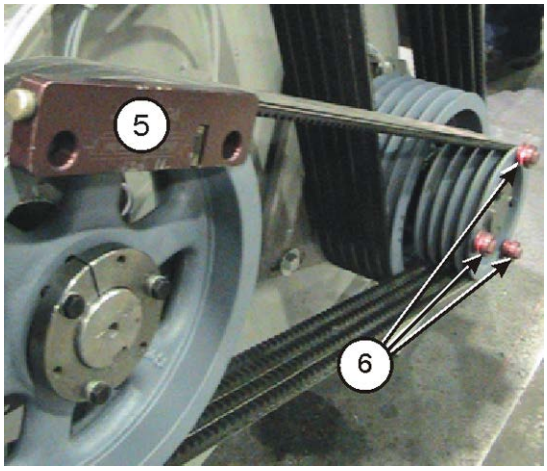


Figure 38. Use a level to make sure that the pulleys are at the same slope.

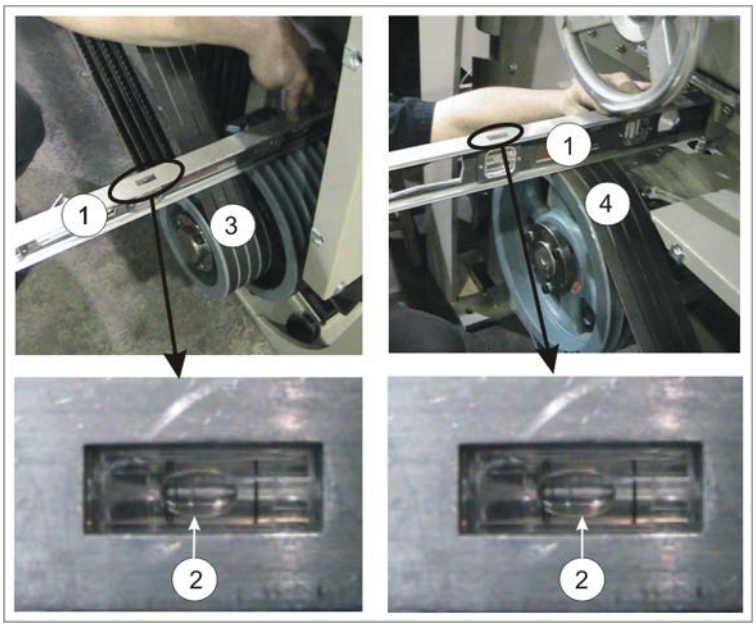
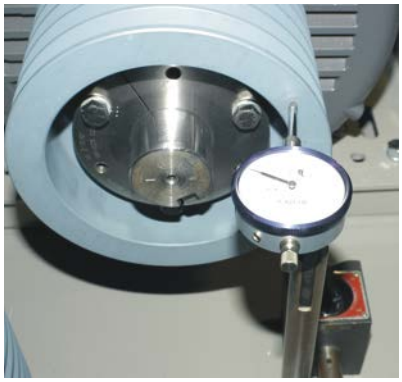
A level on the top of two pulleys	Legend
	1. Bubble level: Use this tool to make sure that the slopes of pulleys are equal. This is to make sure that you do not have the condition in Figure 31, page 61, item 3. Mechanisms shown in Figure 36, page 65 can change the pulley slopes. 2. If the slopes of the pulleys are equal, the bubble will be in the same position for each pulley. The bubbles do not have to be in the center of the level. 3. A pulley 4. A second pulley on the same drive

Figure 39. Dial indicator used to find the axial and radial run-out of a pulley.

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

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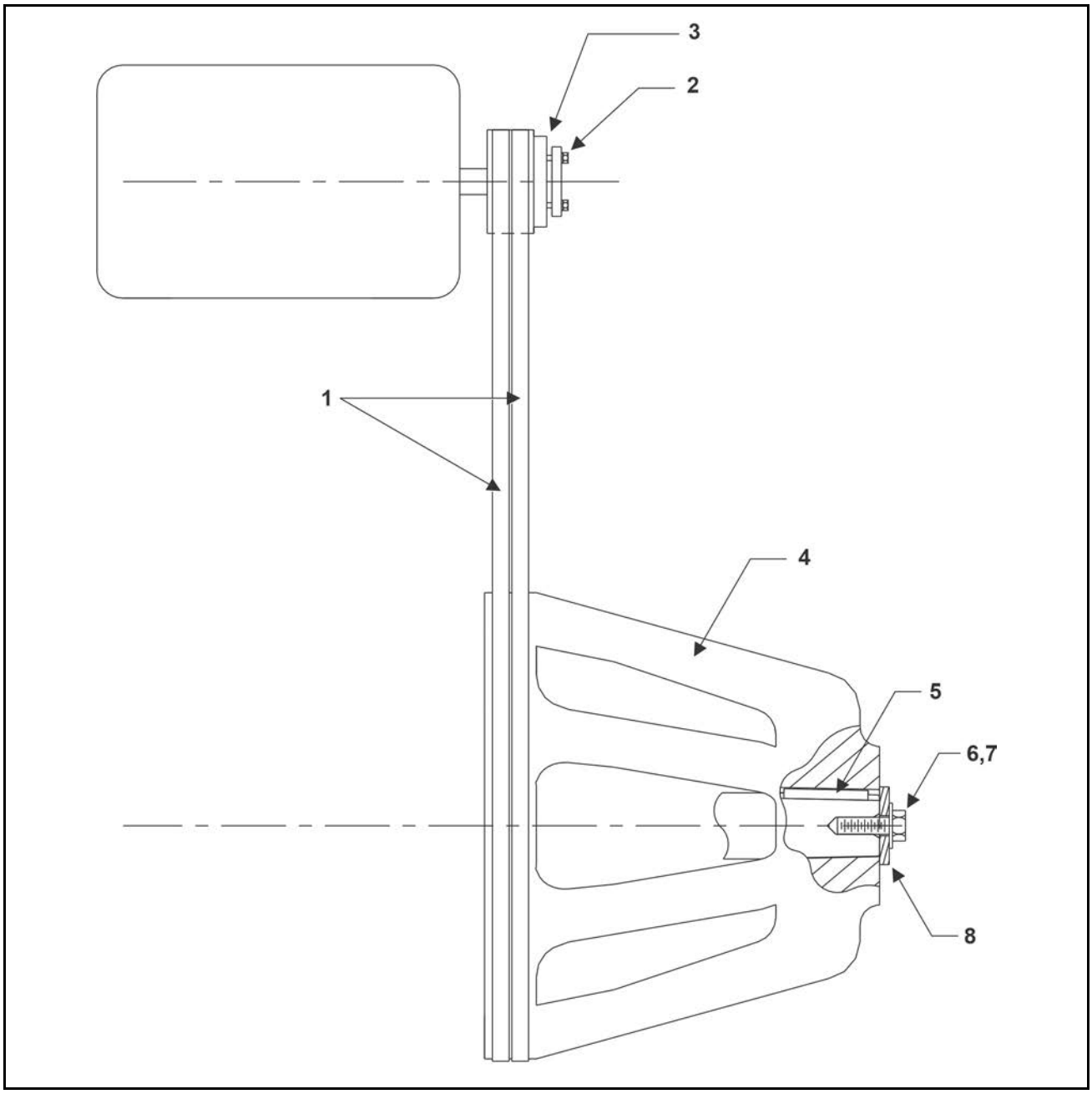
Drive Components Identification

2 Sheets

Figure 40. General View



Drive Components Identification

2 Sheets

Table 19. Parts List—Drive Components Identification

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	D33 03550	DRIVE CHART 3022X8 VSP50/60	
Components				
all	1	56VB082XM2	VBELT BX82 EA=1BELT	
all	2	56Q1CH	1+1/8"BUSH VPULTYP H,D,QT OR L	
all	3	56030B2H	VPUL 2B3.0/A2.6 2BK32H OR EQUAL	
all	4	X2 03830	MACH=MAIN BEARING PULLEY	
all	5	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	
all	6	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	7	15U321H	FLTWASH 3/4 HARD ASTM F436	
all	8	02 14359A	SHAFT RETNR SPACER 2+3/4" SQ	

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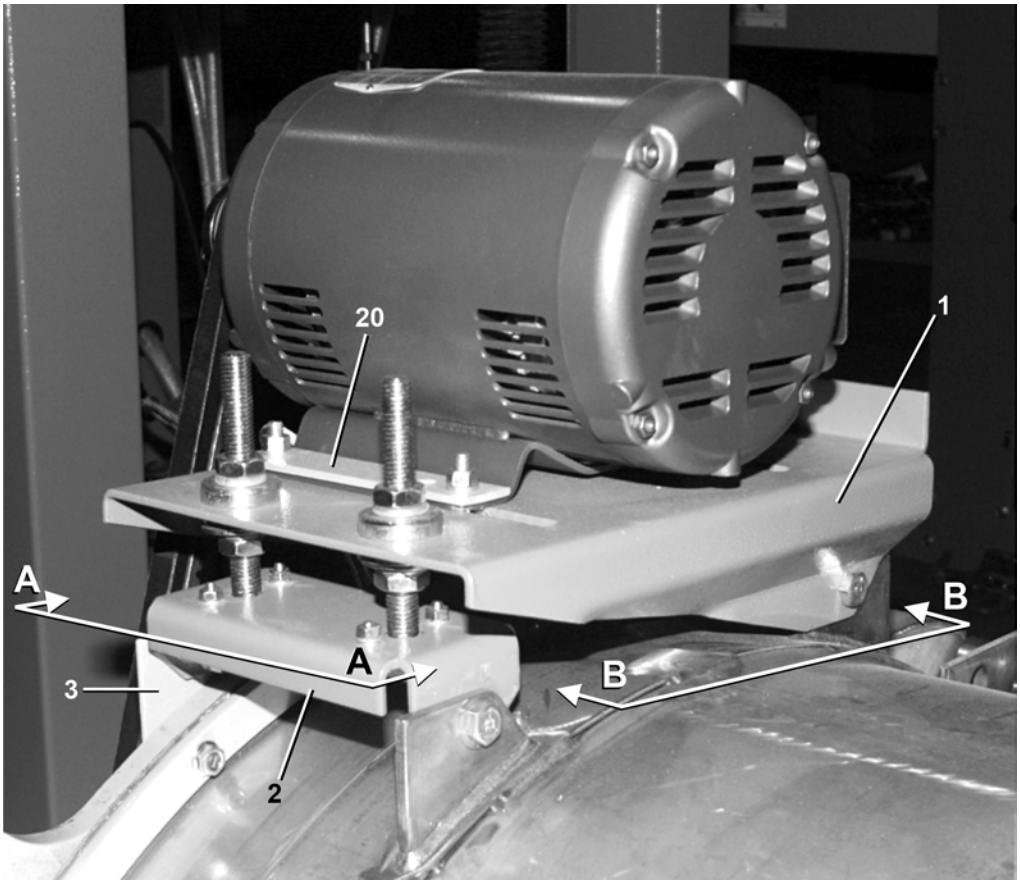
Drive Motor Installation

3 Sheets

Figure 41. Drive Motor Installation

General View



Legend

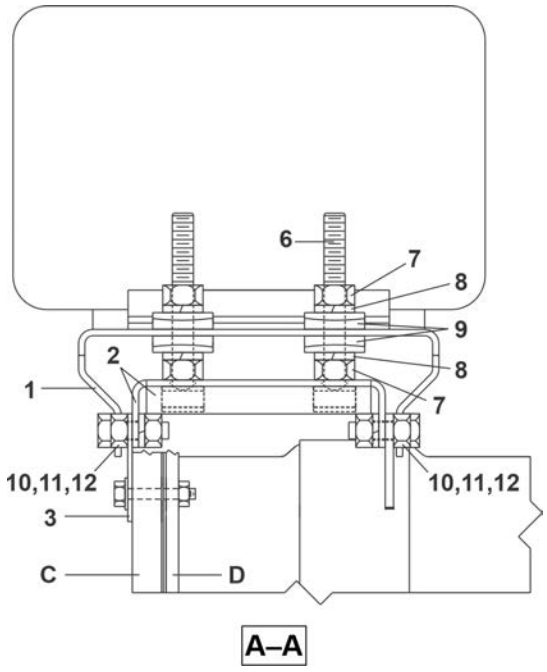
A–A . . See detail view
B–B . . See detail view

Drive Motor Installation

3 Sheets

Figure 42. Detail View

Right Side View

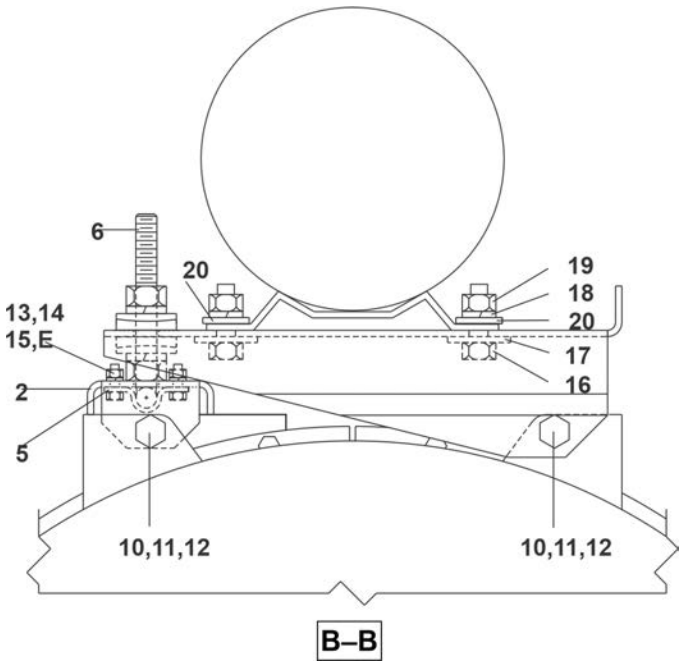


Legend

C . . . Shell front
D . . . Doubler

Figure 43. Detail View

Rear View



Legend

E . . . 4 instances

Drive Motor Installation

3 Sheets

Table 20. Parts List—Drive Motor Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ADB3022X8	ASSY=MOTOR MOUNT 3022X8J	
Components				
all	1	02 02904D	MOTOR MT PLATE 3022X8J	
all	2	02 02905	BRACKET MOTOR MTG ADJ 3022X8J	
all	3	02 02904E	MOTOR MT BKT LF/RT 3022X8	
all	5	02 03828	STRAP=MOTOR MNT TEEBOLT	
all	6	02 03829	TEEBOLT=MTR MNT ADJ 3022F8	
all	7	15G236C	HXFINJAMNUT 5/8-11UNC2B ZINC G	
all	8	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	9	17W030	SPHERICAL WASHER SET 5/8 M/F	
all	10	15K162	HXCAPSCR 1/2-13UNC2AX1.5 GR5 P	
all	11	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	12	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	13	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	14	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	15	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
all	16	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	17	15U241SZ	FLATWASHER 1.5 ODX.406 IDX.25T	
all	18	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	19	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	20	02 03839B	PLATE=MTR MNT REINFORCEMENT	

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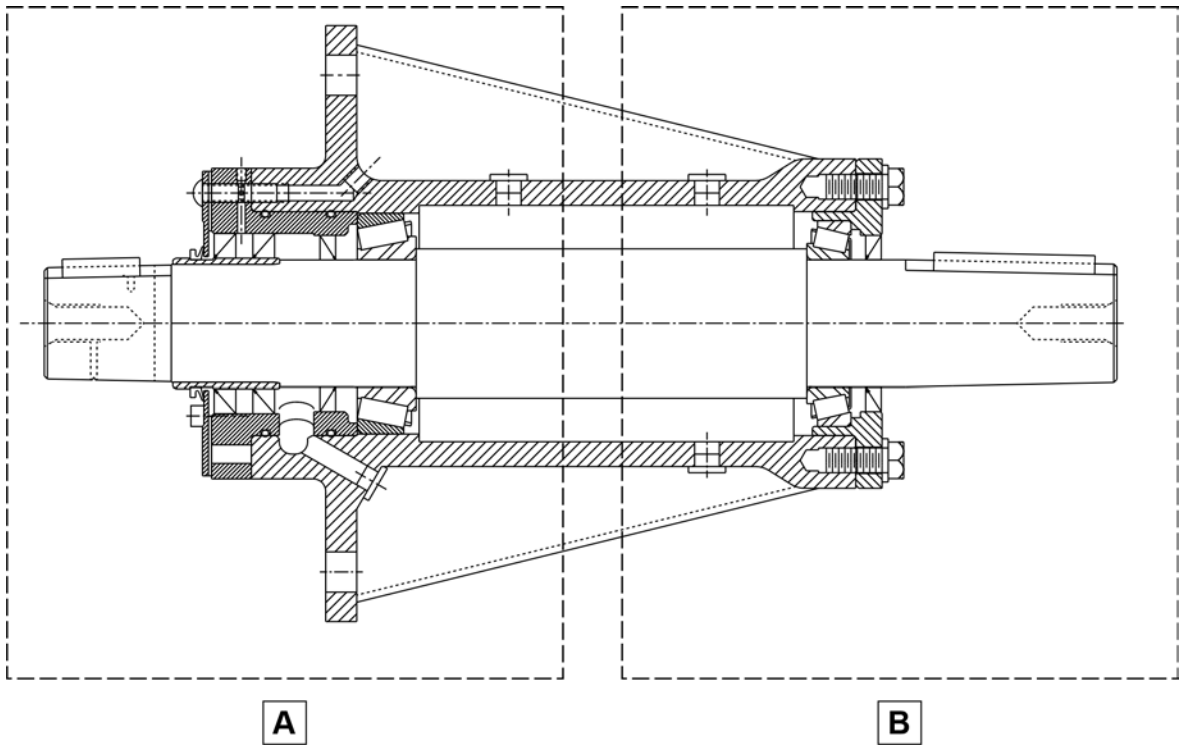
Bearing Housing Components

4 Sheets

Figure 44. Bearing Housing



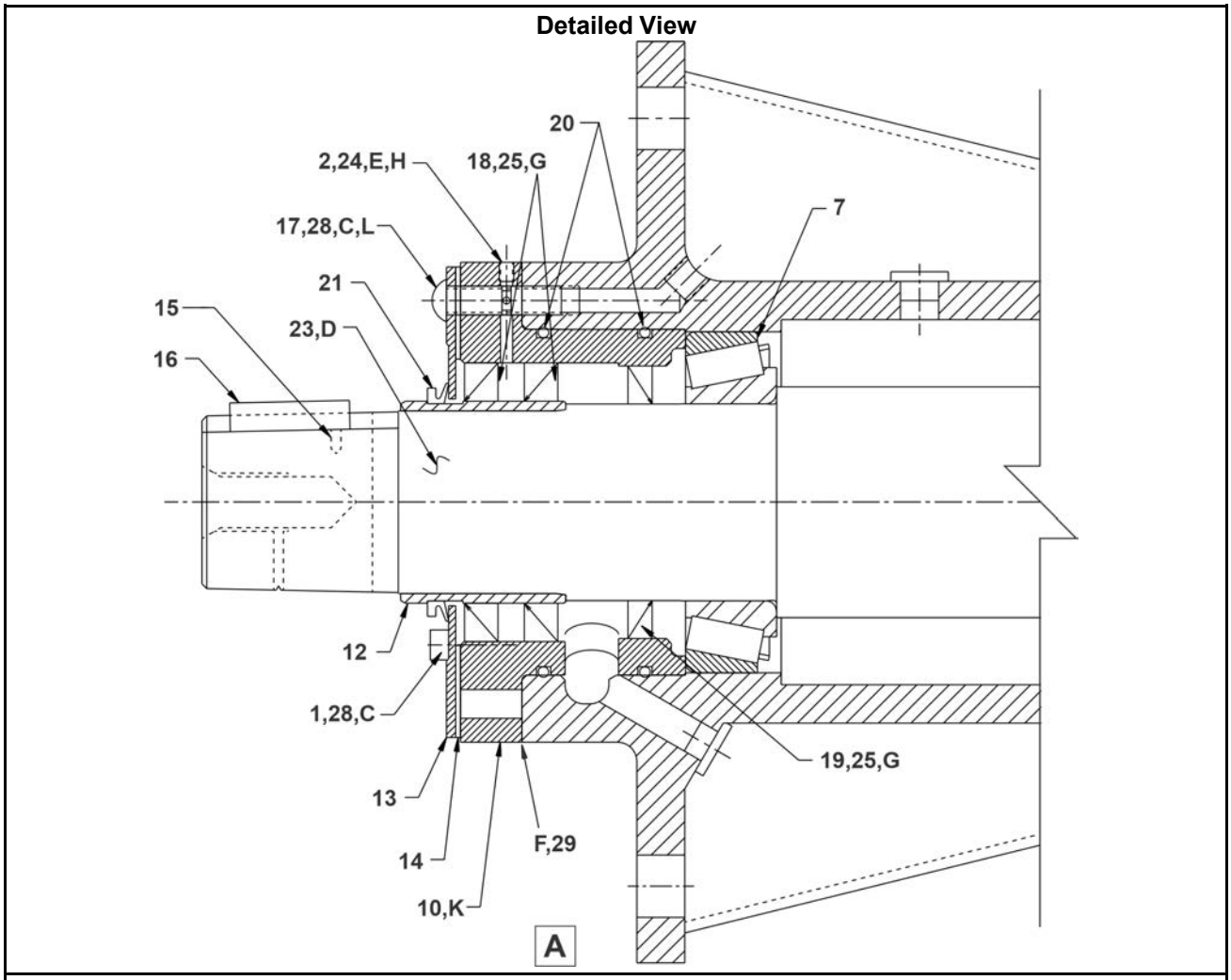
Legend

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

Bearing Housing Components

4 Sheets

Figure 45. Bearing Housing Front



Legend

A . . . Detail view of the bearing housing front

C . . . Apply antiseize compound to the bolt.

D . . . Clean the shaft and 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 bolt.

F . . . Add shims to a thickness of .004 inches-.005 inches.

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.

H . . . Set the setscrew to be flush with the outer edge of the seal holder.

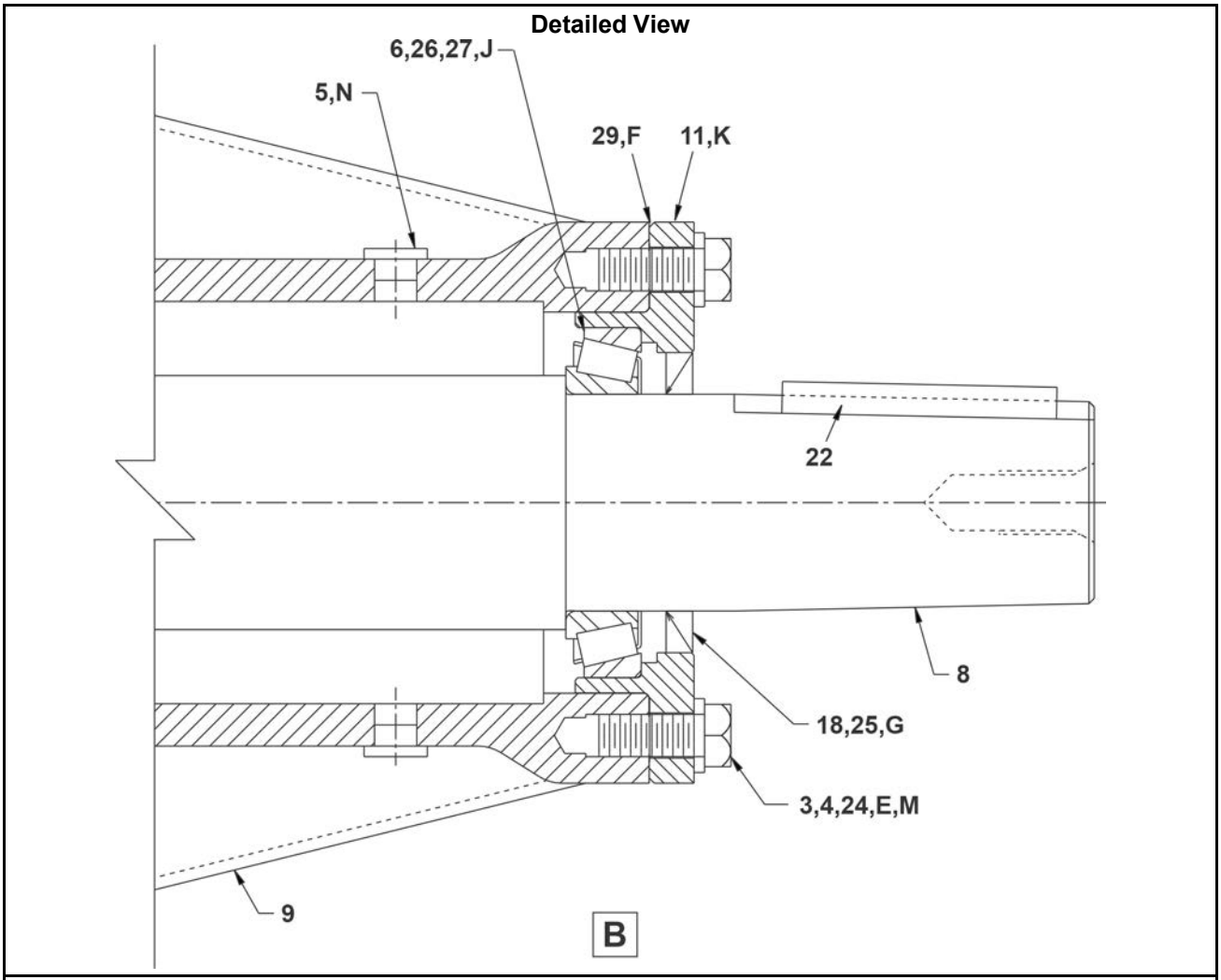
K . . . The seal holders must be fully down before you tighten the fasteners.

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

4 Sheets

Figure 46. 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.
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 . . . 8 instances
N . . . 4 instances

Bearing Housing Components

4 Sheets

Table 21. Parts List—Bearing Housing Components

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ABM3022XA	MAIN BEAR ASSY 3022X 54A593597	
	B	ABM3022XB	BRING ASSY VIT 3022X 54A593597	
Components				
all	1	15K143D	SOCHDCAPSCR 7/16-14X1.5 SS	
all	2	15Q068A	SOKSETSCR CUP10-32X1/4 SS	
all	3	15K154A	HEXCAPSCR 1/2-13X1.5 G8 ZN	
all	4	15U317B	FLWASH,1.062ODX.531IDX.115 TH	
all	5	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	6	54A915916	TIM#JLM710949C/JLM710910-2.5"BORE	
all	7	54A593597	SET=TIMKEN CUP# 39521(OR CUP# 39520)/CONE# 39590=2.625"BORE (EA=SET)	
all	8	X2 03833B	MACH=SHAFT, 3022X8 54A593597	
all	8	X2 03232A	MACH=SHAFT, 3022H7 54A593597	
all	9	X2 03840H	MACH=MAIN BRNG HOUSING,3022H	
all	10	X2 03831	MACH=FRONT SEAL HOLDER 3022F	
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	17	15K106FA	BUTSKCAPSC 3/8-16X1.5 SSNYPT	
A	18	24S053	SEAL 2.625X3.625X.437#10051L5	
B	18	24S053V	SEAL 2.625X3.625X.437#10050H5L	
A	19	24S052A	SEAL 2.559X3.55X.315 CR#25430	
B	19	24S052V	SEAL 2.559X3.55X.315VTCR#25431	
all	20	60C151A	ORING 4+1/4ID1/8CS BUNA70#244	
all	21	24S105FN	SEAL 2.48X2.68X2.28X.20V65A-N	
all	22	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	
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	

Bearing Housing Components

4 Sheets

Table 21 Parts List—Bearing Housing Components (cont'd.)

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

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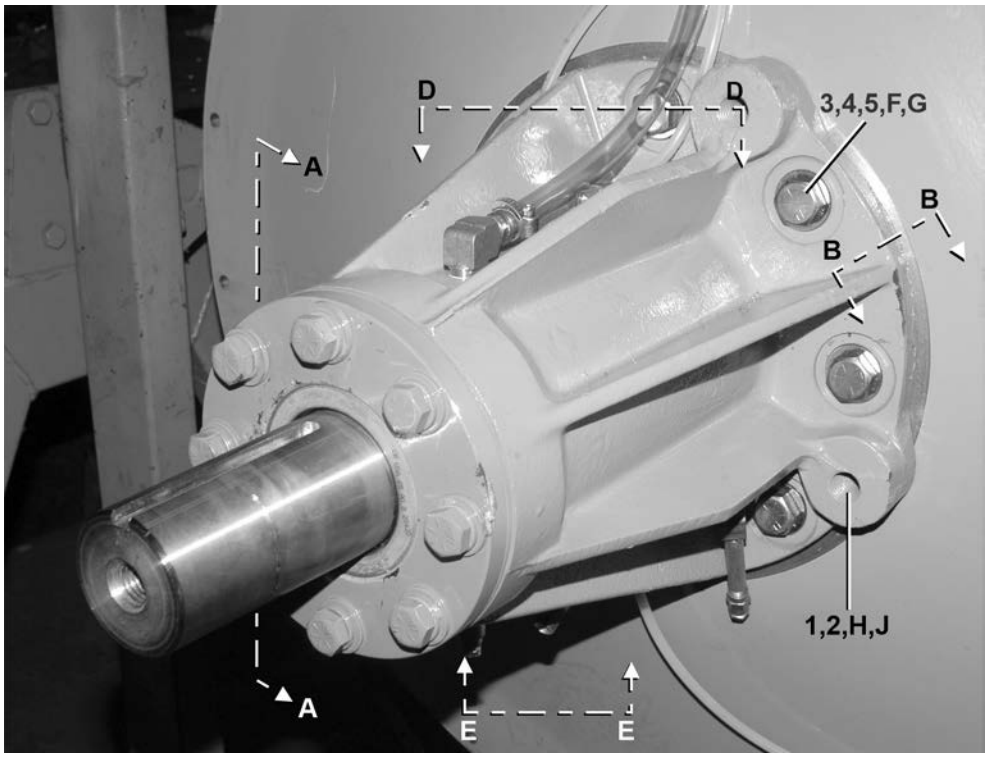
Bearing Housing Components and Installation

4 Sheets

Pulley and related parts are not shown for clarity.

General View



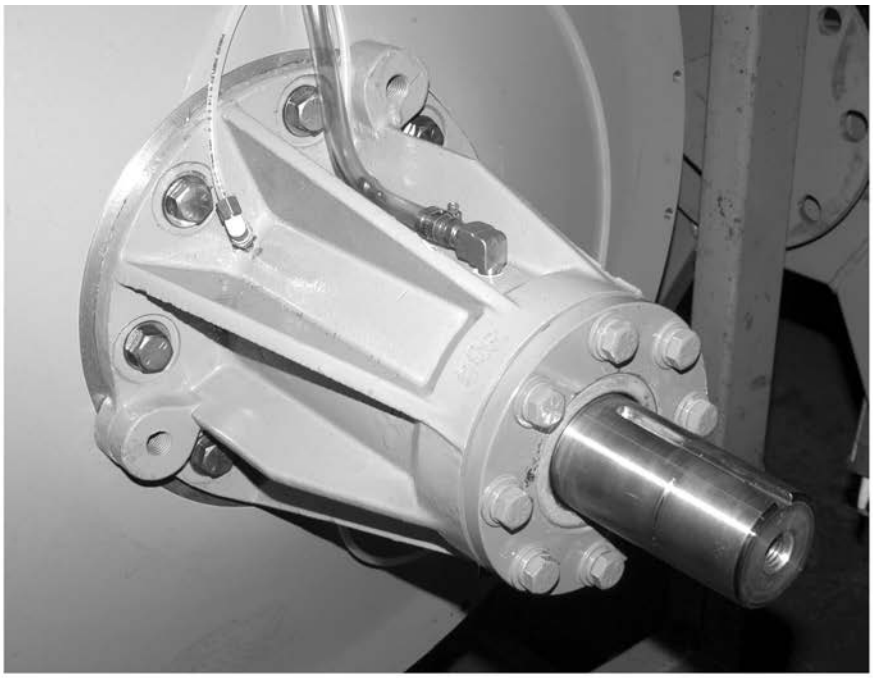
Legend

A-A . . Right side
B-B . . Connection between the shell rear and the bearing housing
D-D . . Top view
E-E . . Bottom view
F . . . 8 instances
G . . . Apply adhesive to the bolt, torque to 200 FT.LBS.
H . . . 3 instances
J . . . Use the bolts to push the bearing housing off the shell rear to disassemble

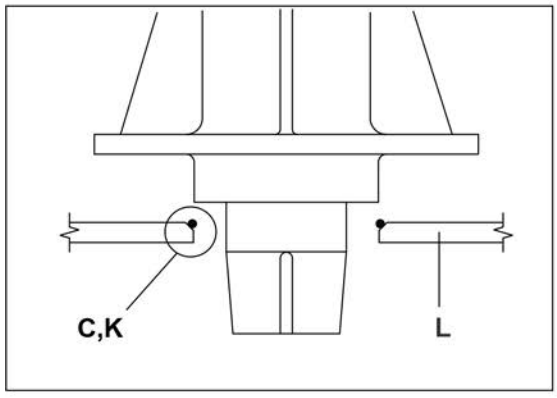
Bearing Housing Components and Installation

4 Sheets

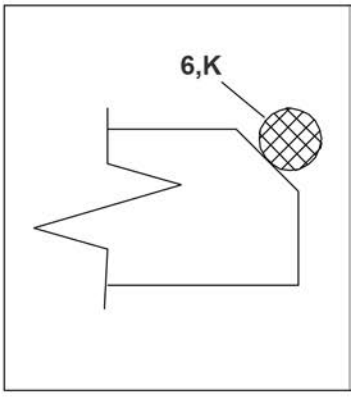
Detail Views



A–A



B–B



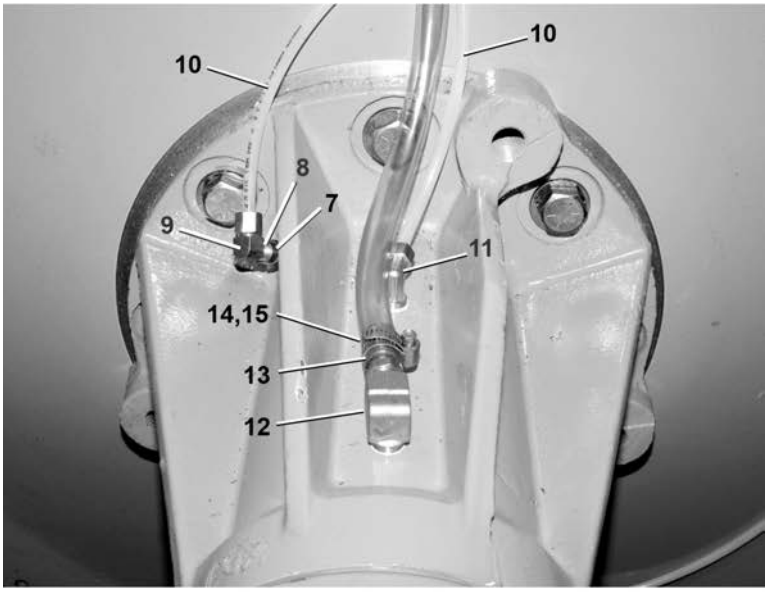
C

Legend

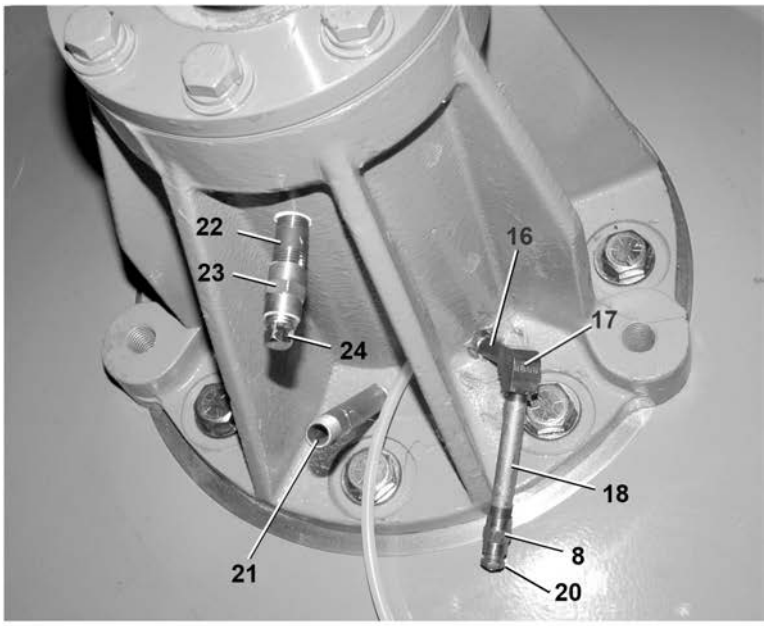
C . . . Enlarged view
K . . . To install the bearing housing, first apply a .25" [6mm] bead of silicone to this edge of the shell rear.
L . . . Shell rear

Bearing Housing Components and Installation

4 Sheets



D–D



E–E

Legend

D–D . . Top view
E–E . . Bottom view

Bearing Housing Components and Installation

4 Sheets

Table 22. Parts List—Bearing Housing Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GBM3022X8	INSTALL=MAINBRG ASSY 3022X8	
	B	ABM3022XA	MAIN BEAR ASSY 3022X 54A593597	
Components				
all	1	15K231	HEXCAPSCR 3/4-16X1+1/2 GR8 ZIN	
all	2	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	3A	15K215	HXCAPSCR 5/8-18X1.5 ZNCFULL TH	
all	3B	15K225M	HEXCAPSCR M16-2.0X40CLS10.9 Z	Metric
all	4	15U316	FLTWASH 5/8 HARD ASTM F436	
all	5	20C008C	THDLKSEAL LCT24241 RMUBL250CC	
all	6	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	7	5N0CCLSB42	NPT NIP 1/8XCLS TBE BRASS STD	
all	8	5SCC0CBE	NPT COUP 1/8 BRASS 125# 103A-A	
all	9	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	10	60E004TC	TUBING NYL(NAT)1/4"ODX.17ID	
all	11	53A031XB	BODY-EL90MALE.25X25 #269C-4-4B	
all	12	5SL0EBEC	NPTELB 90DEG STRT 1/4 BRASS125	
all	13	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	14	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
all	15	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	16	5N0C02ABE2	NPT NIP 1/8X2 TBE BRASS STD	
all	17	5SL0CBEA	NPTELB 90DEG 1/8 BRASS 125#	
all	18	5N0C03AG42	NPT NIP 1/8X3 TBE GALSTL SK40	
all	20	54M029	RELIEFFIT 1/8STR ALEMITE 47200	
all	21	5N0E05AG42	NPT NIP 1/4X5 TBE GALSTL SK40	
all	22	5N0E01KBE2	NPT NIP 1/4X1.5TBE BRASS STD.	
all	23	5SCC0EBE	NPT COUP 1/4 BRASS 150#PSI W/HEX	
all	24	5SP0EFFSSM	NPT PLUG 1/4 SQSLDMAGNET BLKST	

5 Cylinder and Shell Assemblies

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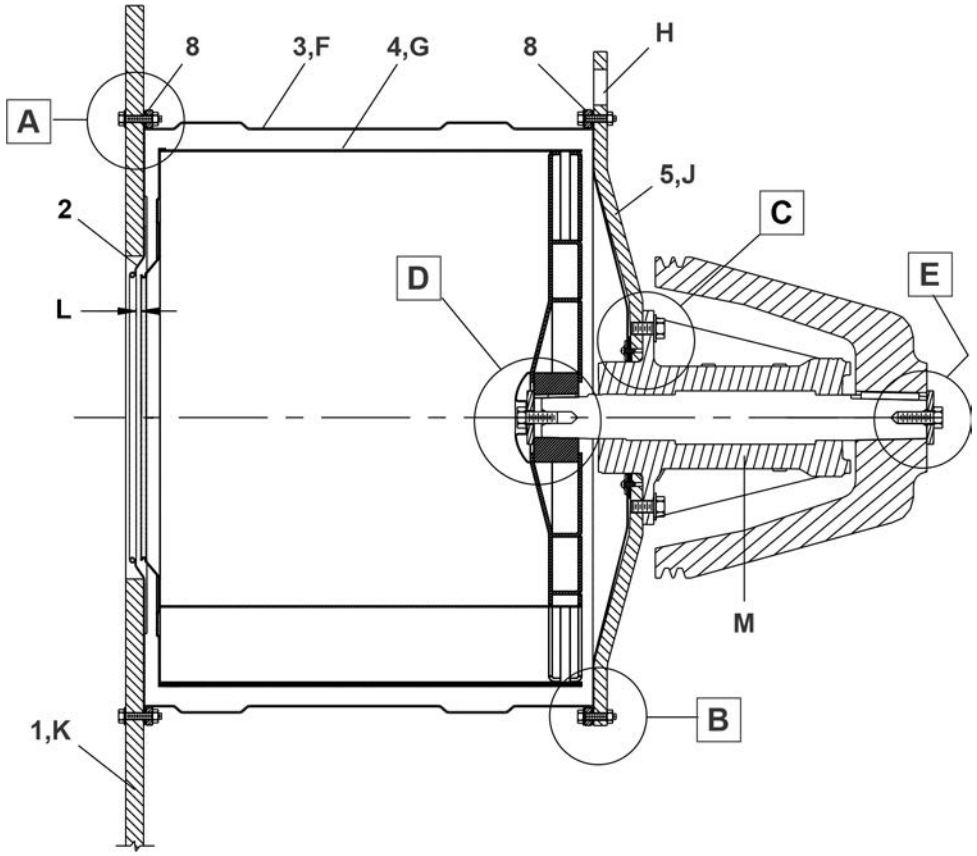
Cylinder Installation

4 Sheets

Figure 47. Cylinder Installation

Cross Section



Legend

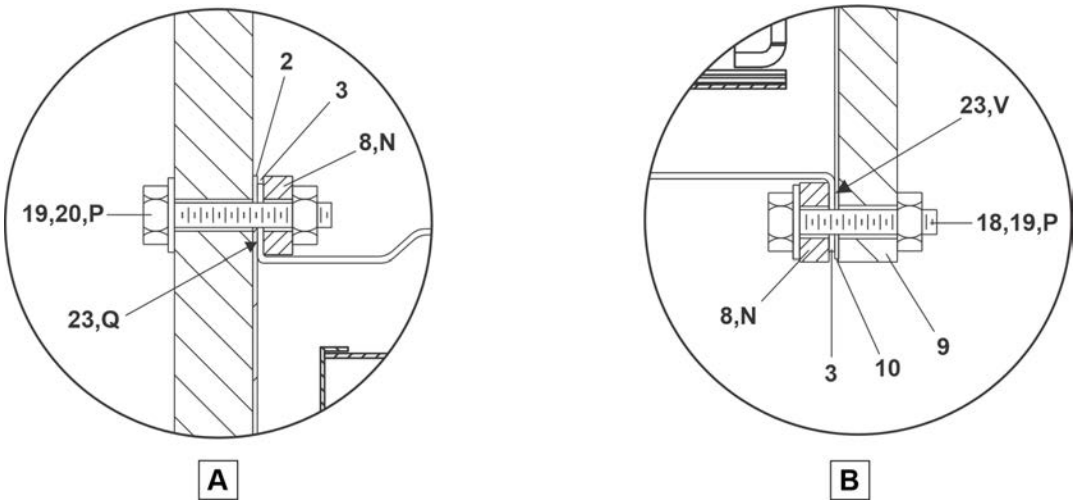
A . . . Top connection between the shell front and the shell side sheet
B . . . Bottom connection between the shell front and the shell side sheet
C . . . Connection between the shell rear and the bearing housing
D . . . Connection between the cylinder rear and the bearing housing
E . . . Connection between the bearing housing and the pulley
F . . . Shell
G . . . Cylinder
H . . . Holes to lift the machine
J . . . Shell rear
K . . . Shell front
L . . . The dimension must be in this range: .25 inches [6mm]-.625 inches [15mm].
M . . . Bearing Housing Components and Installation; refer to the document BPWXAB02

Cylinder Installation

4 Sheets

Figure 48. Cylinder Installation

Detailed View

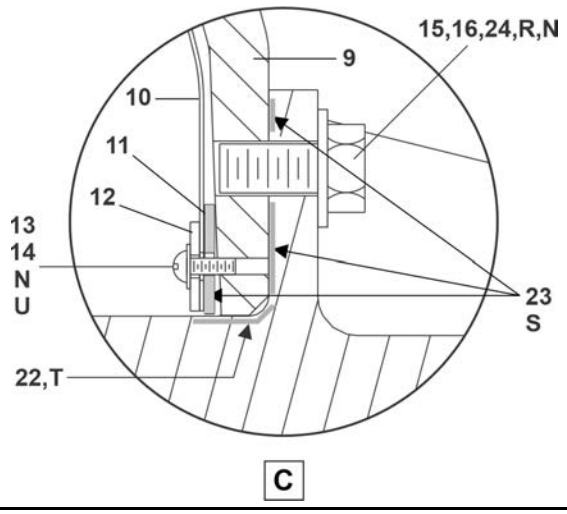


Legend

A . . . Top connection between the shell front and the shell side sheet
B . . . Bottom connection between the shell front and the shell side sheet
N . . . 8 instances
P . . . 24 instances
Q . . . Apply silicone between the inner shell front and the shell, fully around the hole pattern.
V . . . Apply silicone between the lining and the shell, fully around the hole pattern.

Figure 49. Cylinder and Bearing Installation

Detailed View



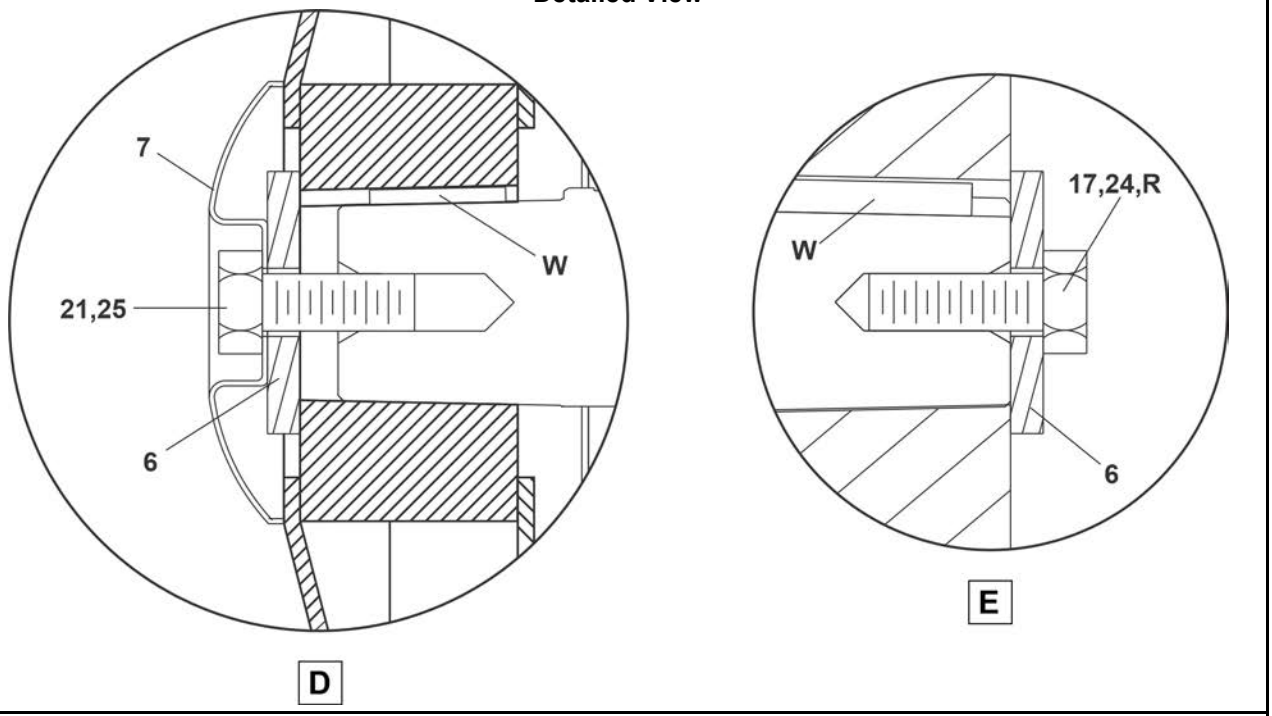
Legend

C . . . Connection between the shell rear and the bearing housing
N . . . 8 instances
R . . . Apply adhesive to the bolt, torque to 200 FT.LBS
S . . . Apply silicone between the bearing housing and the shell rear, to two sides of the gasket, fully around the hole pattern
T . . . Apply adhesive to the circumference.
U . . . Torque to 75 IN.LBS.

Cylinder Installation

4 Sheets

Figure 50. Cylinder and Bearing Installation



Legend

D . . . Connection between the cylinder rear and the bearing housing
E . . . Connection between the bearing housing and the pulley
R . . . Apply adhesive to the bolt, torque to 350 FT.LBS.
W . . . Key; refer to document BPWXAB01

Cylinder Installation

4 Sheets

Table 23. Parts List—Cylinder Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GSC3022X8	INST=CYL/SHELL/BACK 3022X8J	
Components				
all	1	X2 02904	SHELLFRONT DRILLED 3022X8J	
all	2	X2 02903	INNER SHELL FRONT S/S 3022X8J	
all	3	W2 02901	WELDMENT SHELL 3022X8J	
all	4	ACA3022F8	*ASSY=CYLINDER 3022 F8J/G/P	
all	5	A33 03211	ASSY=SHELL BACK, 3022H7	
all	6	02 14359A	SHAFT RETNR SPACER 2+3/4" SQ	
all	7	02 11196	COVER=SHAFT RETAINER=304S/S	
all	8	02 03208	SHELL FLANGE DOUBLER, 3022H7	
all	9	Y2 03211	MACH=SHELLBACK, 3022H7	
all	10	02 03212	SHELLBACK LINER, 3022H7	
all	11	02 03258	GASKET=SHELLBACK LINER,3022H	
all	12	02 03279	DOUBLER=SHELLBK LINER,3022H	
all	13	15K040T	1/4-20X3/4 TAMPTORXBUTHDN/P SS	
all	14	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	15	15K215	HXCAPSCR 5/8-18X1.5 ZNCFULL TH	
all	16	15U316	FLTWASH 5/8 HARD ASTM F436	
all	17	15K232A	HEXCAPSCR 3/4-10X2 GR8 ZINC	
all	18	15K116	HEXFLGSCR 3/8-16X1.75 GR8 ZINC	
all	19	15G198	HXFLGNUT 3/8-16 ZINC	
all	20	15K127A	HEXFLGSCR 3/8-16 X2.5 GR8 ZINC	
all	21	15B208	HEXCAPSCR 3/4-10X2+1/4 SS18-8	
all	22	20C005	ADH/SEALANT 50CC LCT#271-31	
all	23	20C040B	SUPERFLEX CLR RTV SIL 10.1OZ	
all	24	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	25	15U350	LOCKWASHER 3/4 MED SS18-8	

6 Door Assemblies

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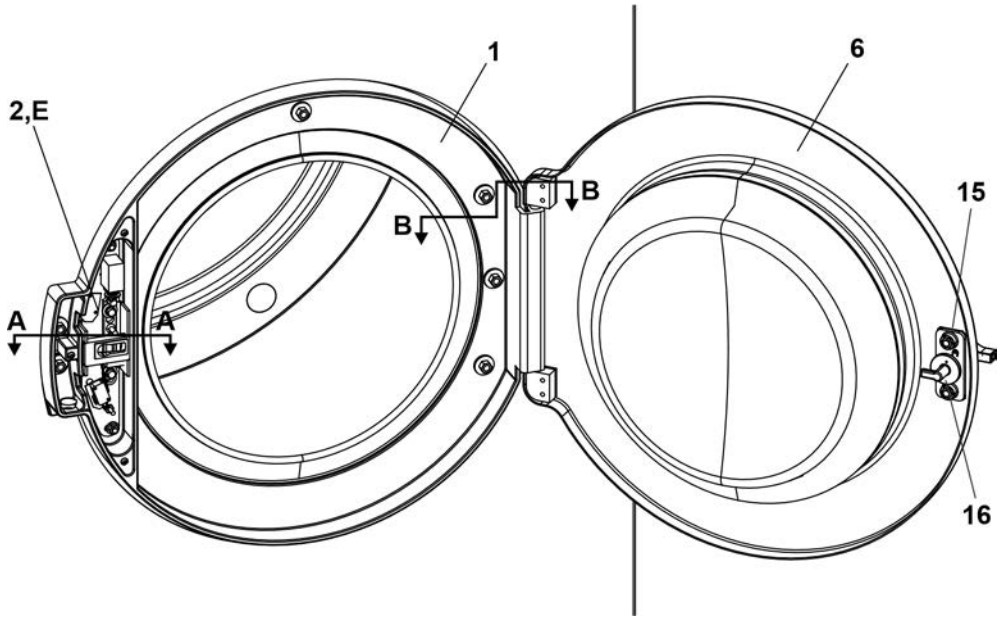
Door Assembly and Installation

4 Sheets

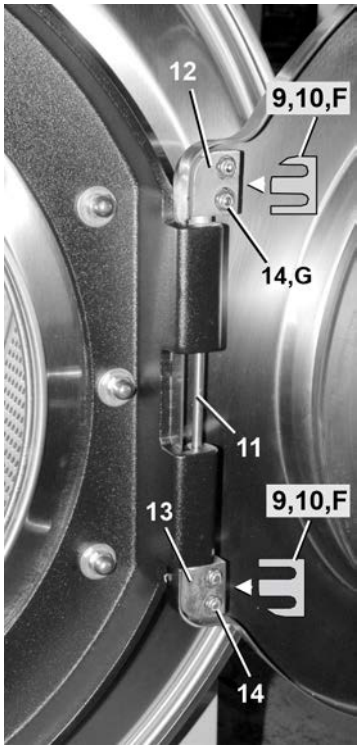
30022 X8J/X8R

Door Installation



Door Lock Cover

Hinge



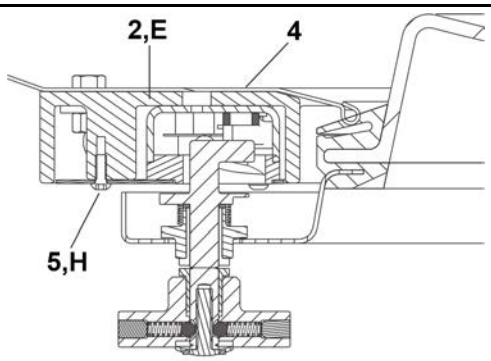
Legend

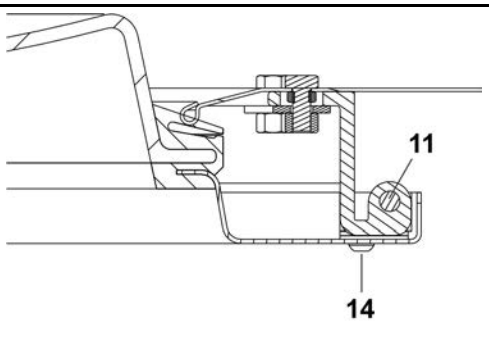
A–A . . See detail
B–B . . See detail
E . . . See BPWOAD03
F . . . Add or remove shims until the door locks properly and seals.
G . . . 4 instances

Door Assembly and Installation

4 Sheets

30022 X8J/X8R





Legend

A-A . . Detail view
B-B . . Detail view
E . . . See BPWOAD03
H . . . 6 instances

Door Assembly and Installation

4 Sheets

30022 X8J/X8R

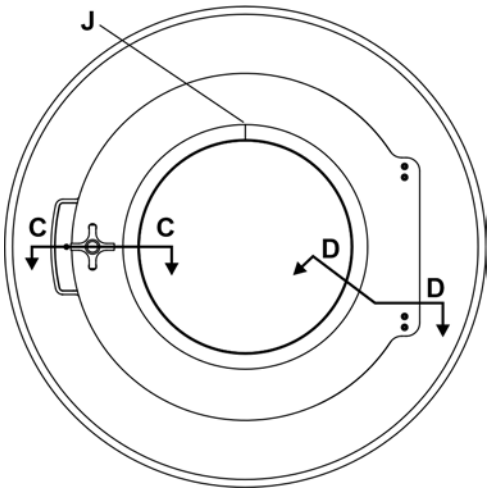
Legend

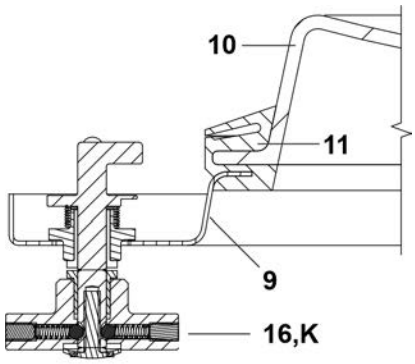
C-C . . Detail view
D-D . . Detail view
J . . . Ensure that the gasket joint is at top-dead-center.
K . . . See BPWOAD01

Steps

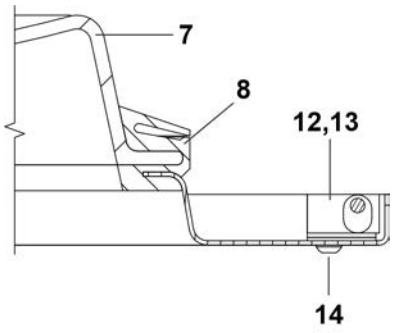
S1 . . Apply a continuous bead of silicone completely around the rubber seal, in the area where the glass is to be seated.
S2 . . Install the gasket into the door before installing the glass. Observe the location of the rubber seal joint line and adjust if necessar
S3 . . While installing the glass into the rubber seal, ensure that no silicone is exposed on outer surface of the rubber seal.

Door Assembly





C–C



D–D

Door Assembly and Installation

4 Sheets

30022 X8J/X8R

Table 24. 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**
Reference Assemblies				
	A	A33 10100X	3022XA FLAT SHELL FRONT/DOOR ASSY 30"	
	B	A33 07100G	ASSY=DOOR, 30" FLAT SHELLFRONT	
Components				
all	1	02 03261A	3022XA 30" DOOR FRAME MACHINED	
all	2	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	
all	3	02 03228D	DOOR LOCK BOX COVER 3022V8	
all	4	17S2500A	DOUBLE END 1/4-20X1-1/8 STUD 1/4 ONE END AND 3/4 ONE END CS PRECOTE 85 PATCH	
all	5	15K017	BUTSOKCAPSCR 10-24X1/2 SS	
all	6	02 03229A	30" SHELL DOOR	
all	7	02 03200	DOOR GASKET, 3022H7	
all	8	02 03251	DOOR GLASS, 3022H7	
all	9	02 03297	30" DOOR HINGE SPACER 14GA	
all	10	02 03297A	30" DOOR HINGE SPACER 16GA	
all	11	X2 03296B	HING PIN 3022V8	
all	12	02 03260A	30" DOOR HINGE UPPER	
all	13	02 03260	30" SHELL DOOR HINGE LOWER	
all	14	15K033	BUTSOKCAPSCR 1/4-20X5/8 SS18-8	
all	15	02 04192A	.015 SHIM=DOOR MNT PL,3022H7	
all	16	98CMCR0925	ASSY=DR HNDL MECH	

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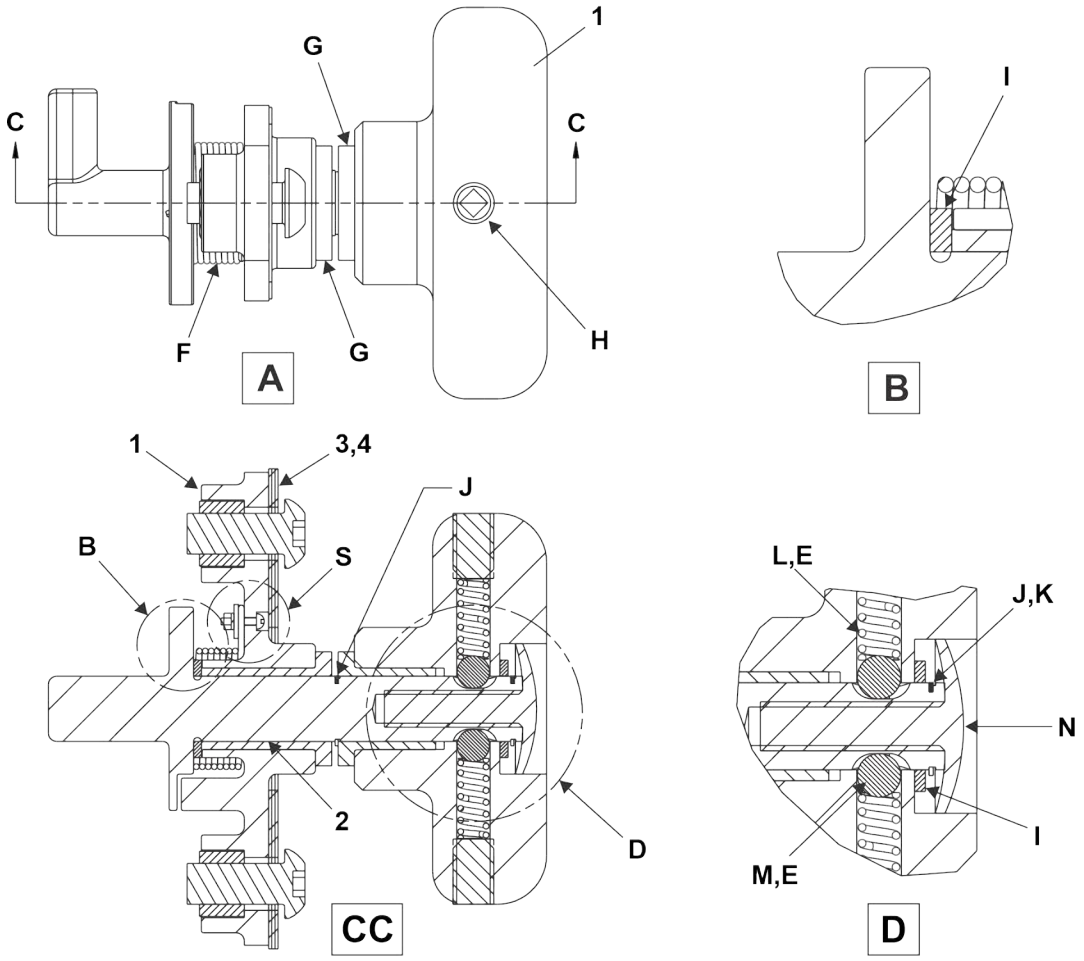
Door Handle and Lock Actuator

3 Sheets

Figure 51. Door Handle and Lock Actuator



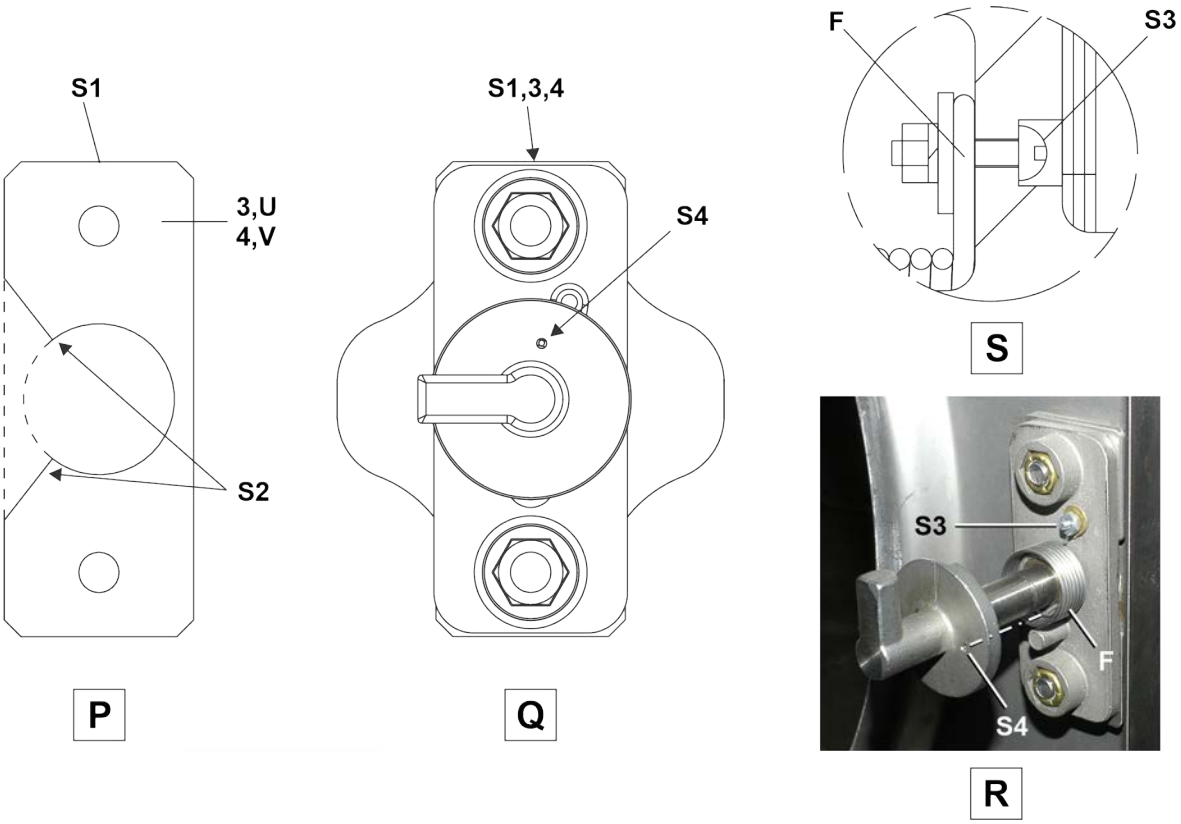
Legend

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 52. 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 25. Parts List—Door Handle and Lock Actuator

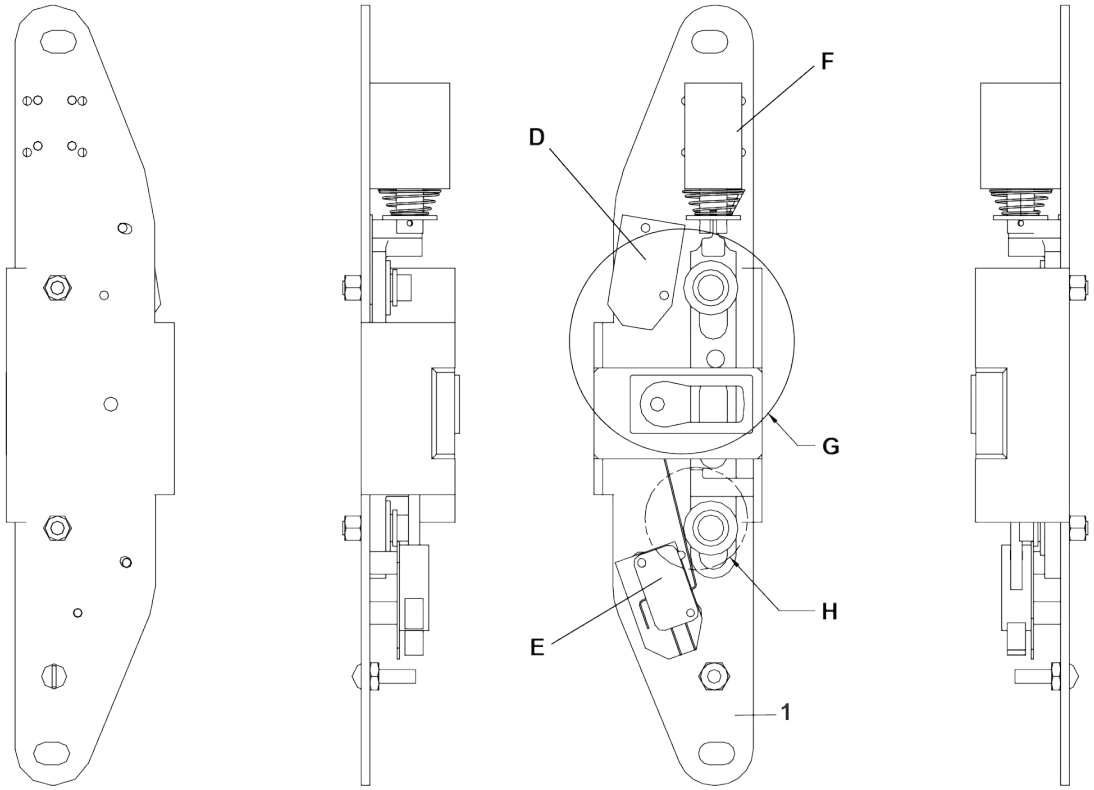
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**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

BPWOAD03 / 2025293 BPWOAD03.1 0000255709 O.3 F.4 7/15/25, 2:47 PM Released

Door Lock Mechanism

3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 30022 X8J/X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6J, V6Z



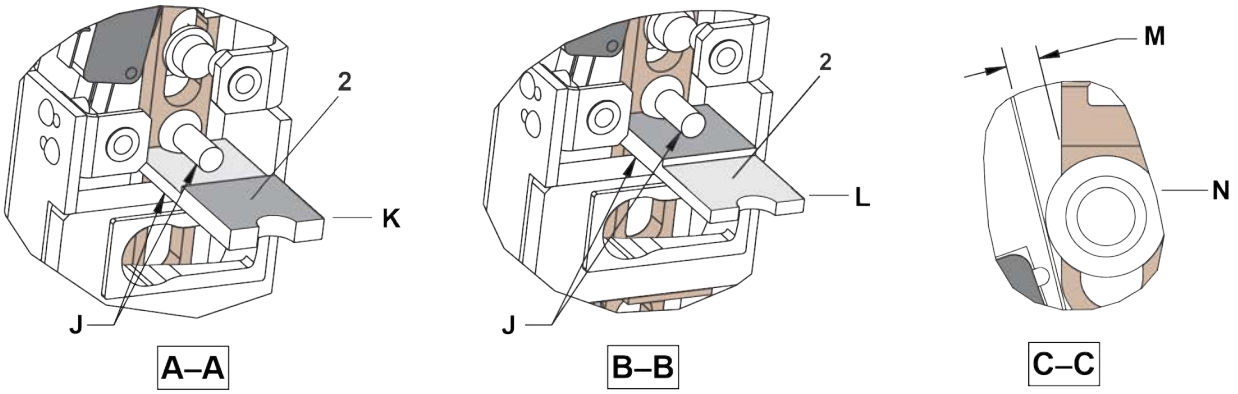
Legend

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

Door Lock Mechanisms

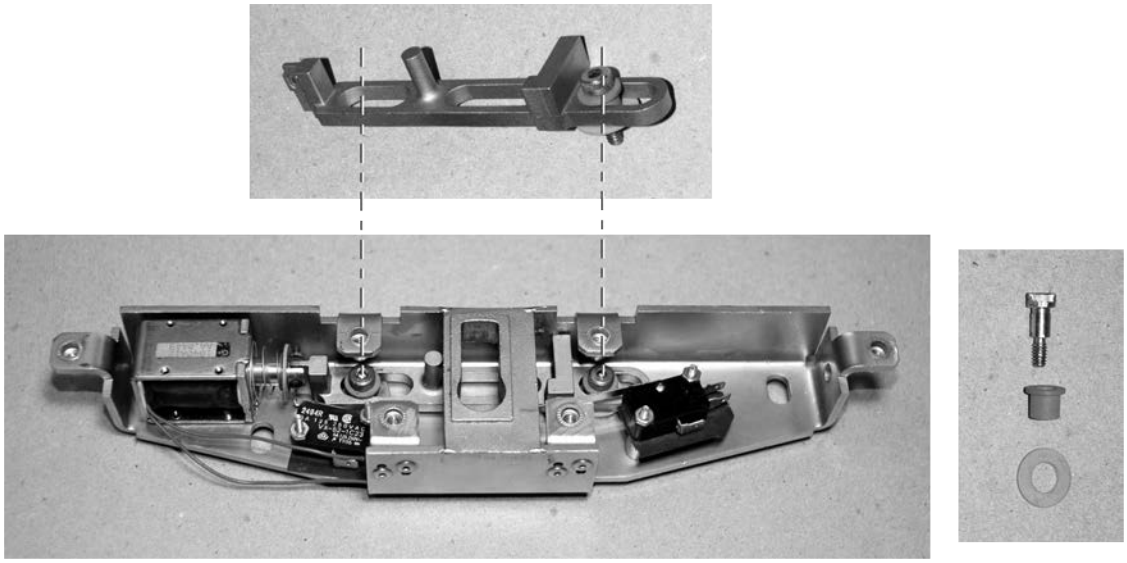
3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 30022 X8J/X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6J, V6Z



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; 30022 X8J/X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6J, V6Z

Table 26. 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, 36021V_, 36026V_, 42026V_, 42030V_
all	2	X2 03306A	MACH=GAGE DR LOCK SWITH, MCR	

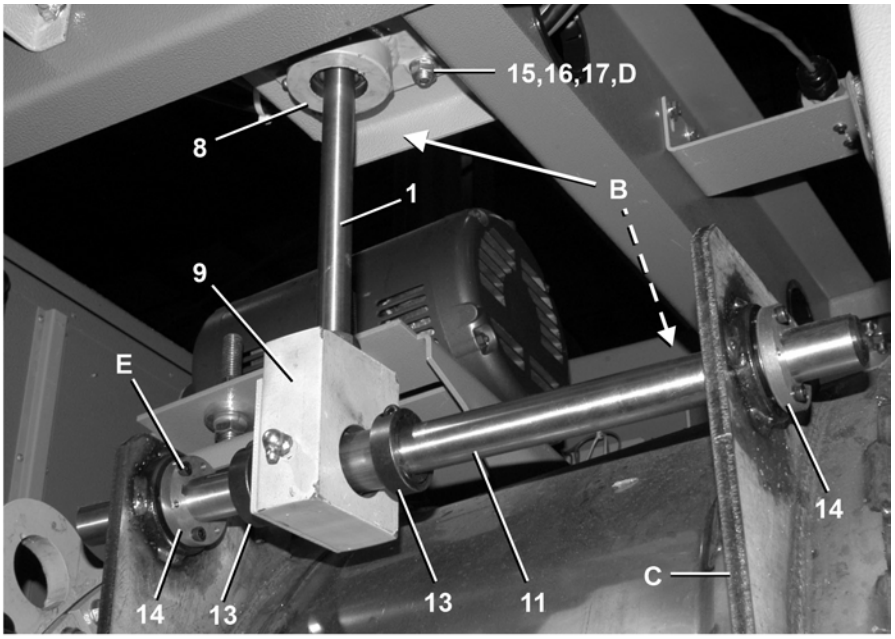
7 Suspension

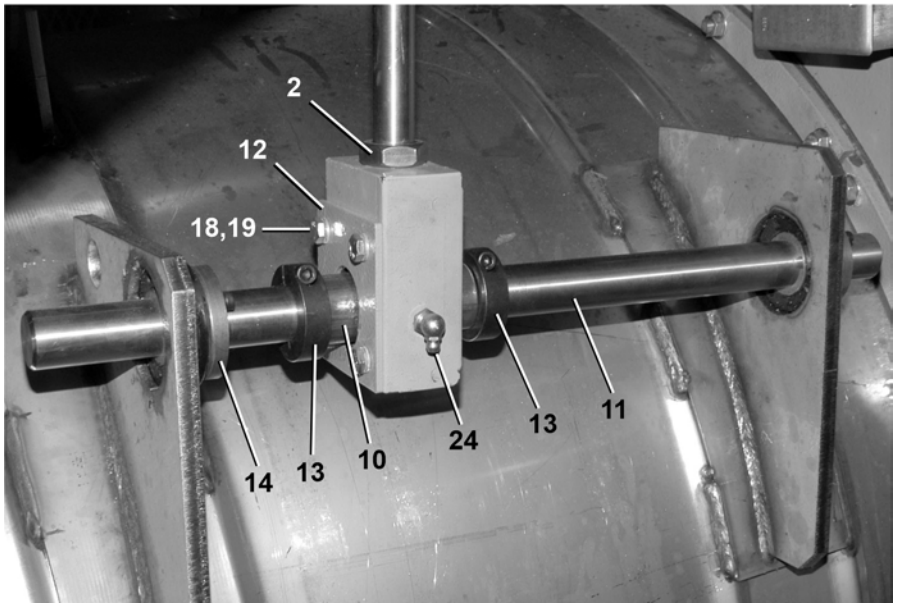
BPWXAJ01 / 2021024 BPWXAJ01.1 0000330007 A.3 F.4 1/6/21, 5:16 PM Released

Suspension Components and Installation

3 Sheets

General Views





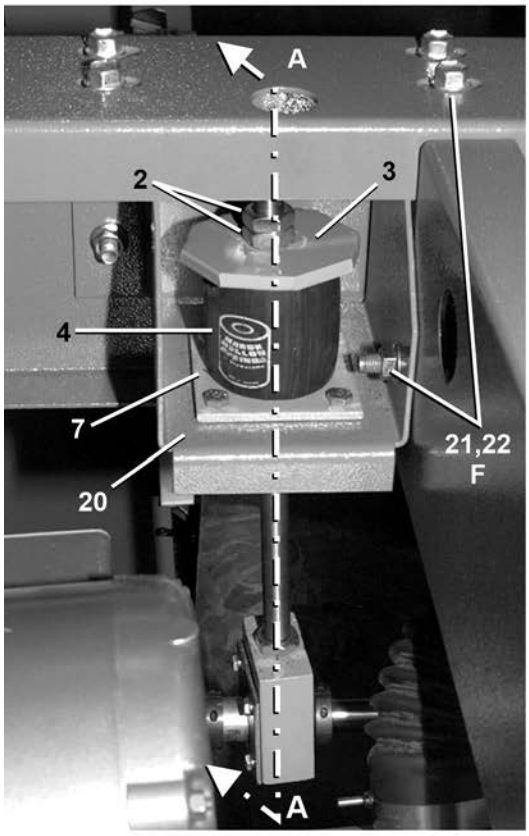
Legend

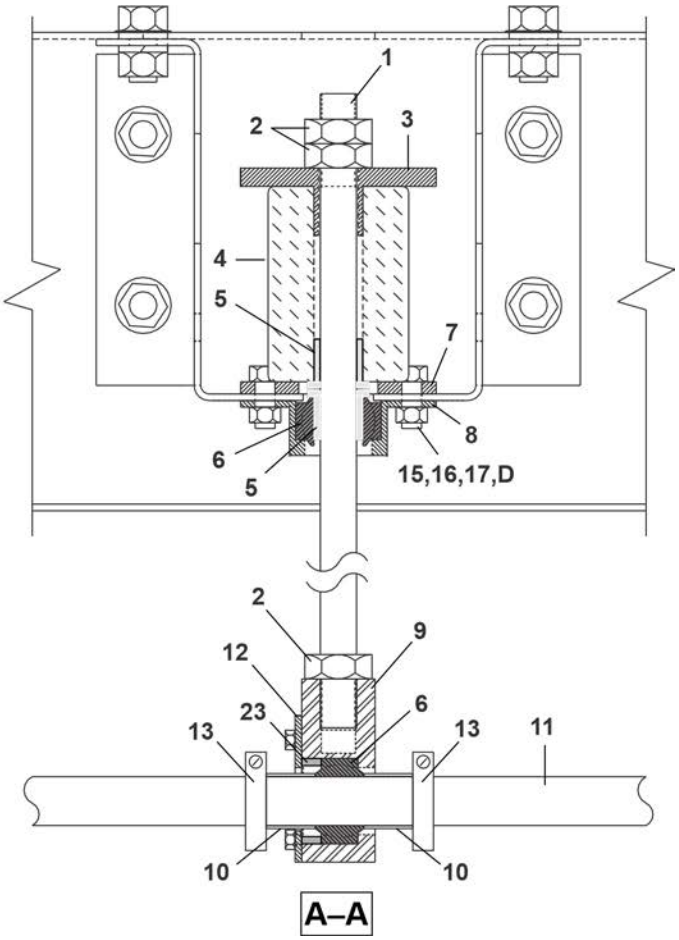
B . . . The two sides use the same suspension.
C . . . Shell
D . . . 4 instances
E . . . Torque to 60 IN. LBS

Suspension Components and Installation

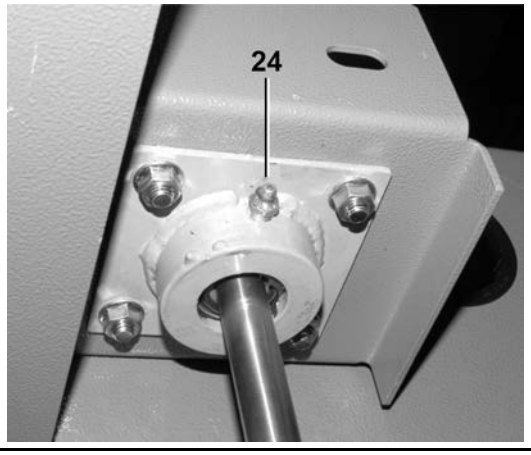
3 Sheets

Detailed Views





Bottom View



Legend

A–A . . Cross Section
D . . . 4 instances
F . . . 9 instances

Suspension Components and Installation

3 Sheets

Table 27. Parts List—Suspension Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GMS3022X8	INSTAL SUPENSION 3022X8J	
Components				
all	1	98CX02921G	ROD=SHELL SUPEN MT, CSM 3022FLATBACK	
all	2	15G239S	HEXJAMNUT 3/4-16UNF2 SS18-8	
all	3	W2 02924C	TOP ISOLATOR GUIDE	
all	4	60B135	MM SPRG 3X1X4 F#W223580047	
all	5	54E022	FBRGGTEF3/4X1X1BNT#BJ4F121608	
all	6	54A709	BALL BUSH 1" AURORA COM16	
all	7	02 02923	PLATE TOP MT 3022X8J	
all	8	W2 02922	WELDMENT BALLBUSH MT 3022X8J (CS)	
all	9	X2 02921E	LOWER BALL BUSH MT	
all	10	02 02921H	SPACER=BUSHING LOCKING	
all	11	X2 02921F	ROD=SHELL SUPEN MT	
all	12	02 02921G	PLATE COVER SUPENSION	
all	13	54JH11000C	SHAFTCOLLAR SPLIT 1" CG#16S	
all	14	56Q1RJA	1" BUSH. QD TYPE JA D#120340	
all	15	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	16	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	17	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	18	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	19	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	20	02 02912	SUPPORT SUPENSION 3022X8J	
all	21	15K153H	INDHEXFLGSCR1/2-13X1+1/4GR8ZN W/LOCTITE	
all	22	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	23	02 02921J	SPACER=BALL BUSH	
all	24	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	

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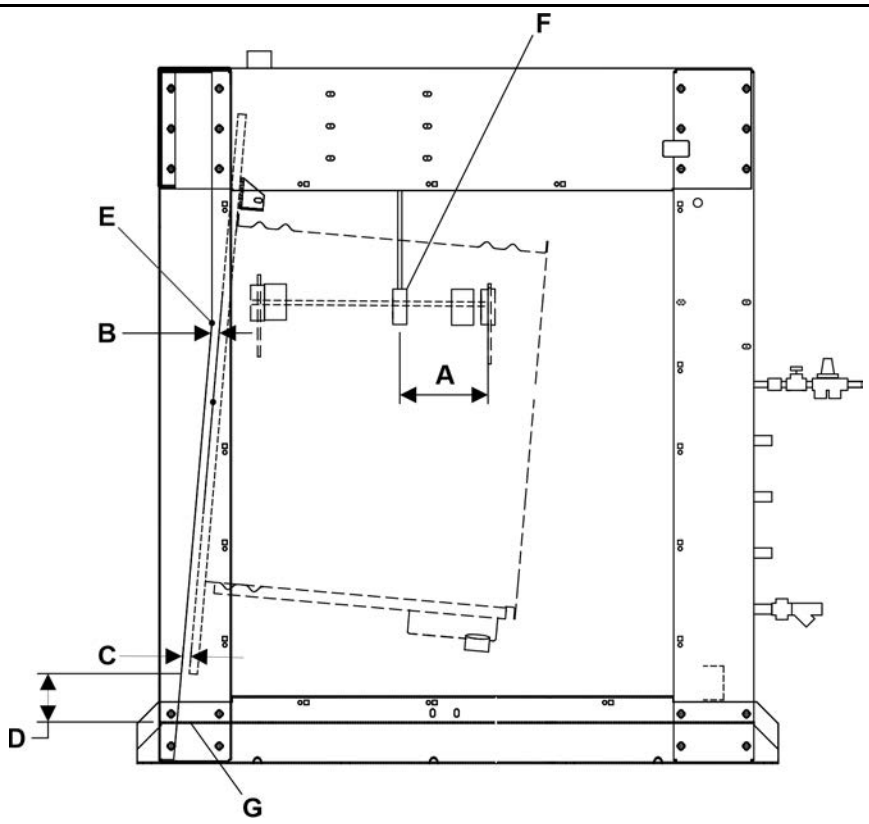
Suspension Settings

2 Sheets

3022X_, 3626X8_, 4226X7_, 4232X7_



Legend

A . . . Initially set the lower ball bushing [A] 11” [279] from the shell mounting bracket.

B . . . The space between the shell front and the point on the front corner posts where the angle changes should be [B] 1.50” +/- .125”.

C . . . The space between the lower shell front and the angle on the corner posts should be [C] 1.25” +/- .125”.

D . . . The height from the bottom of the shell front to the top of the inside base channel should be [D] 6” +/- .5”

E . . . The point on the front corner posts where the angle changes

F . . . Lower ball bushing

G . . . The top of the inside base channel

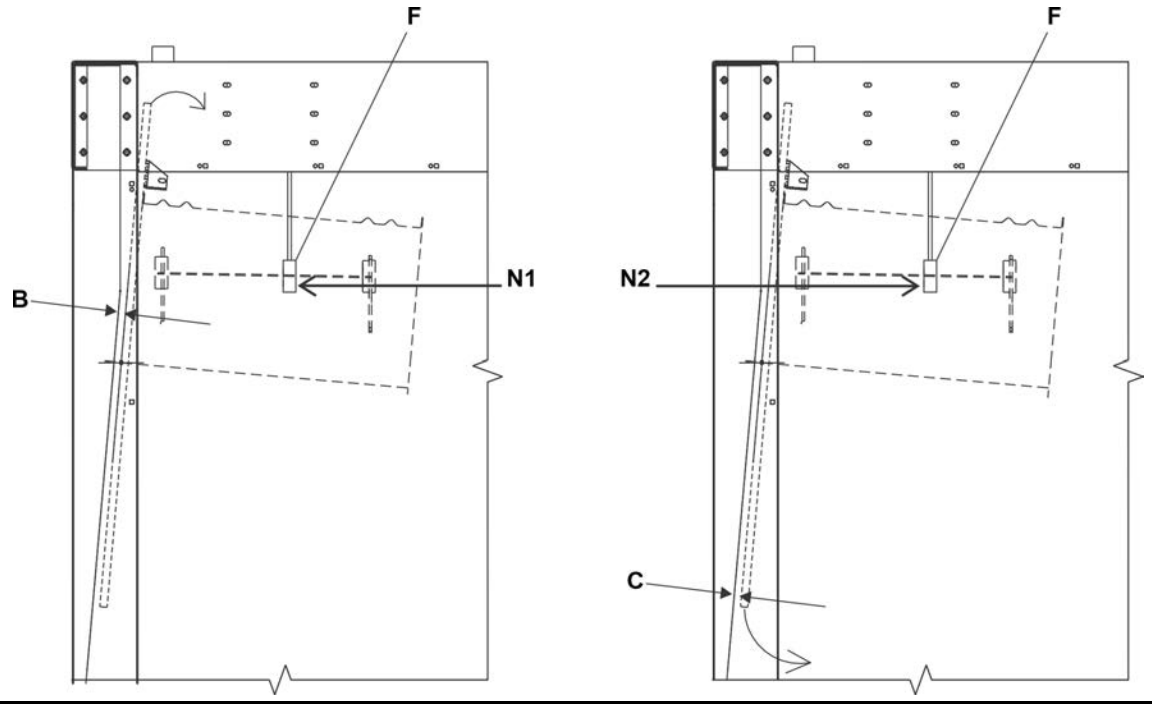
MODELS:	[A]
3022X_	4-1/2”[114]
3626X_	6-1/2”[165]
4226X_	8”[203]
4232X7_	11”[279]

Suspension Settings

2 Sheets

3022X_, 3626X8_, 4226X7_, 4232X7_

Adjusting the Shell Front Position



Legend

B . . . The space between the shell front and the point on the front corner posts where the angle changes should be [B] 1.50” +/- .125”.

C . . . The space between the lower shell front and the angle on the corner posts should be [C] 1.25” +/- .125”.

F . . . Lower ball bushing

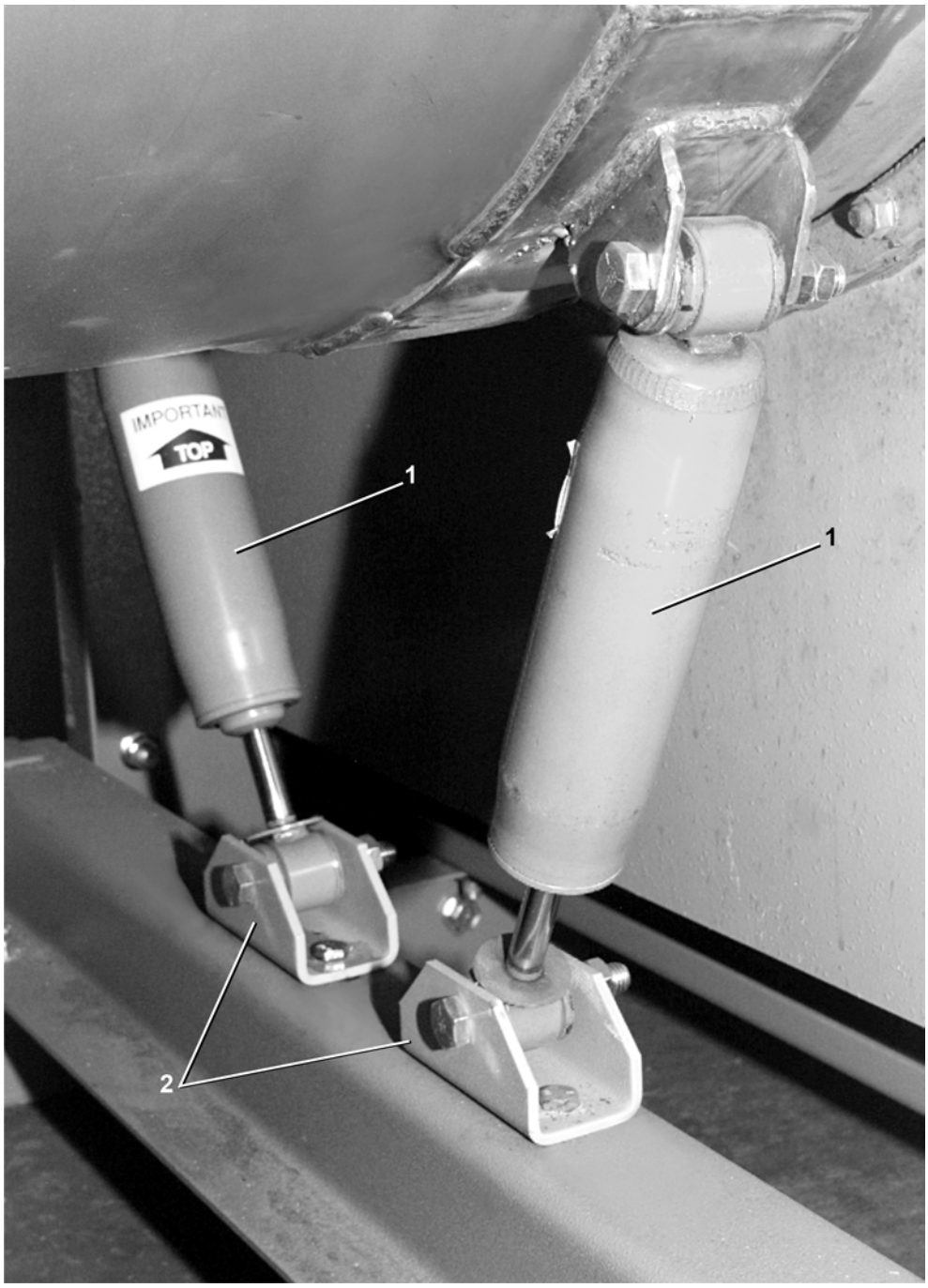
N1 . . Tapping the ball bushing forward increases the space [B], between the upper shell front and the angle of the corner posts.

N2 . . Tapping the ball bushing rearward increases the space [C], between the lower shell front and the angle of the corner posts.

BPWXAJ03 / 2021024 BPWXAJ03.1 0000330057 A.3 F.4 1/6/21, 3:57 PM Released

Shock Absorbers

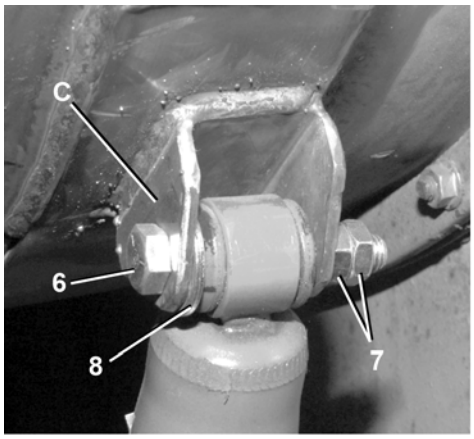
2 Sheets

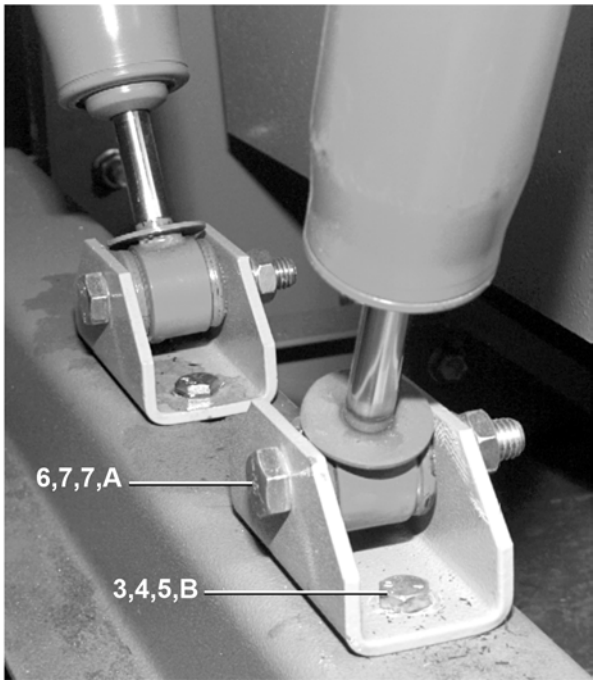


Shock Absorbers

2 Sheets

Detailed Views





Legend

A . . . 2 instances
B . . . 4 instances
C . . . The two sides use the same suspension.

Table 28. Parts List—Shock Absorbers

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GIC3022X8	INSTALL SHOCK ABSORBER 3022X8J	
Components				
all	1	60BS6838	SHOCK ABSORBER = ARVIN #65907340E	
all	2	02 02901B	BKT=SHOCKMT BASE	
all	3	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	4	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	5	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	6	15K201A	HXCAPSCR 1/2"-13X4" GRD 8 ZINC	
all	7	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	8	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	

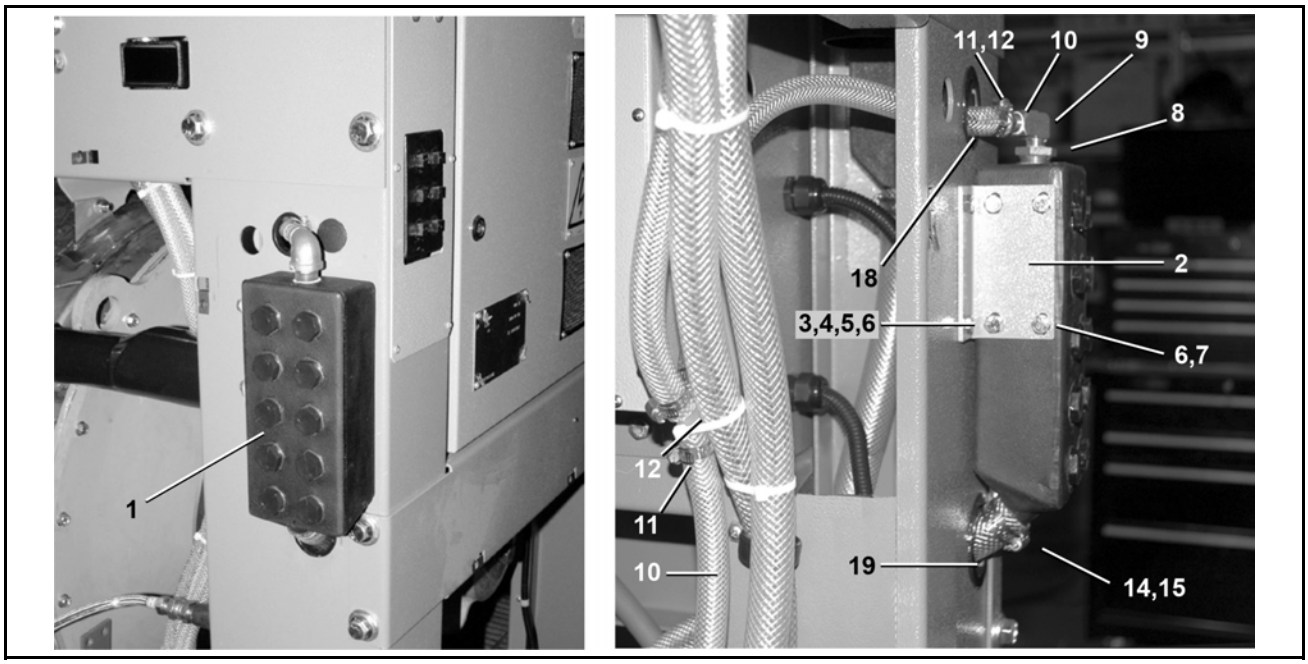
8 Chemical Supply Devices

BPWXAC02 / 2021055 BPWXAC02.1 0000334937 A.4 F.4 2/2/21, 2:38 PM Released

Inlet for 10 Peristaltic Chemical Supplies

3 Sheets

Figure 53. Installed Views

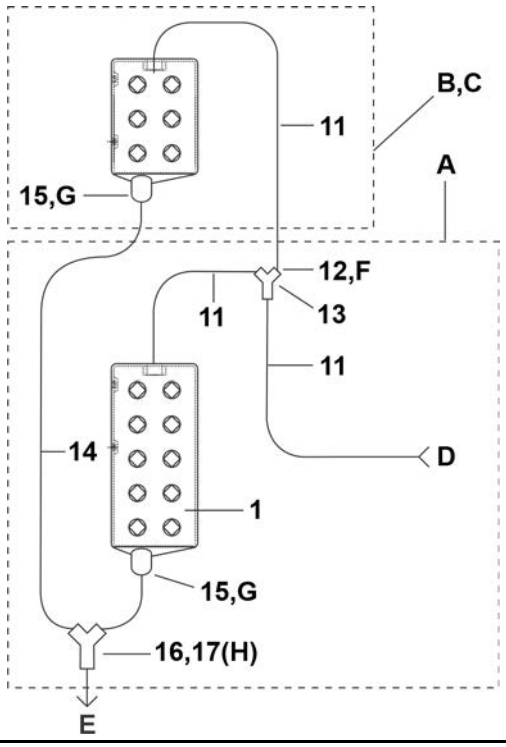


Inlet for 10 Peristaltic Chemical Supplies

3 Sheets

Figure 54. 10 Inlets for Peristaltic Liquid Chemical Systems

Schematic



Legend

A . . . 10 inlets for peristaltic liquid chemical systems
B . . . Six inlets for peristaltic liquid chemical systems
C . . . Refer to the document BPWXAW02
D . . . Hot water to flush the chemical supply manifolds
E . . . Water and chemical supplies to the shell
F . . . 5 instances
G . . . 4 instances
H . . . 3 instances

Inlet for 10 Peristaltic Chemical Supplies

3 Sheets

Figure 55. Inlet Manifold

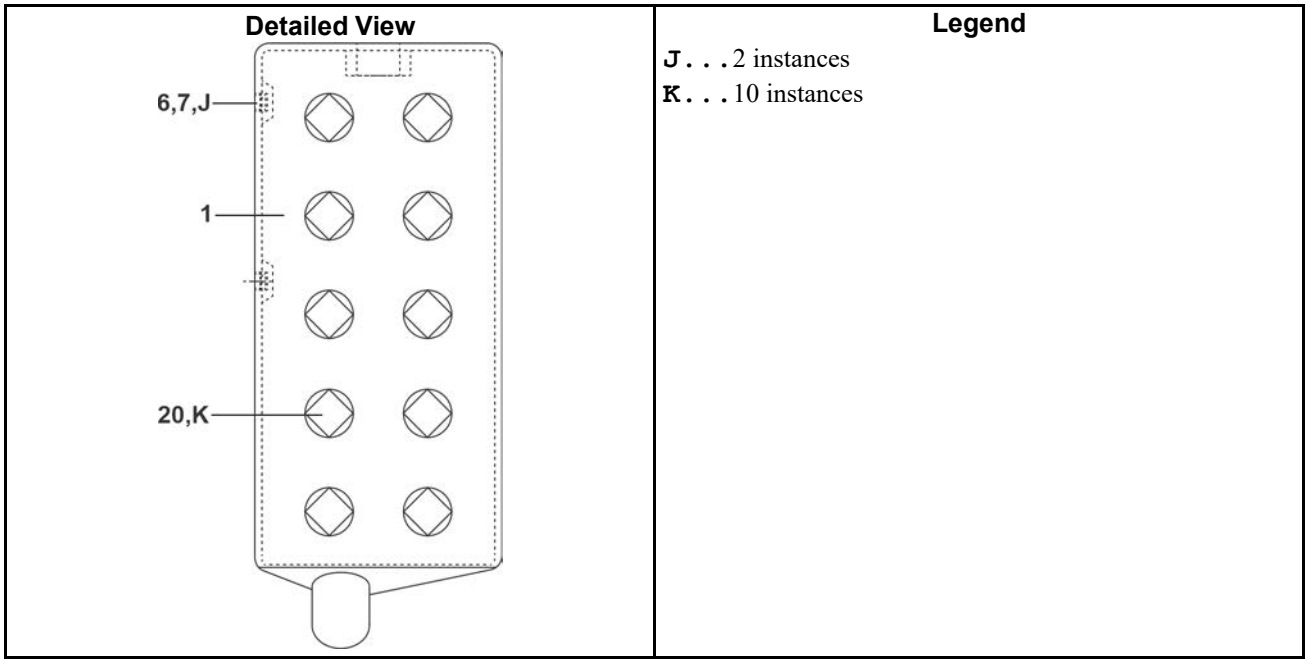


Table 29. Parts List—Inlet for 10 Peristaltic Chemical Supplies

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GWL3022X	INST=PERISTALL 10 PORT	
Components				
all	1	02 03589O	MOLDED LIQ SUPPLY MANFOLD=10	
all	2	02 02946	BRKT=CHEM INJECT 3022X	
all	3	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	4	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
all	5	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	6	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	7	15K030	HEXCAPSCR 1/4-20UNC2X1/2 GR5 Z	
all	8	5SB0K0GBEO	NPTHEXBUSH 1/2X3/8 BRASS 125#	
all	9	5SL0GBEA	NPTELB 90DEG 3/8 BRASS 125#	
all	10	51E507A	HOSESTEM BRASS 3/8MPX1/2HOSEID	
all	11	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	12	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	13	51E505Y	3/8" HOSE BARB Y CONNECTOR	

Inlet for 10 Peristaltic Chemical Supplies

3 Sheets

Table 29 Parts List—Inlet for 10 Peristaltic Chemical Supplies (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	14	60E010	TUBINGPOLYBRAID 1"X1.312	
all	15	27A090	HOSECLAMP 13/16-1.5"CADSC#HS16	
all	16	5KY0P4A	3/4" PVC WYE SCH40 SLIPXSLXSL	
all	17	02 02932	NIPPLE=3/4" PVC WYE	
all	18	12P12ASB	SNAPBUSH 2"X1.75HEYCO#2406	
all	19	12P12KSB	SNAPBUSH 2.5"MH X 1+31/32"	
all	20	5SP0KXFHS	HEXHD PIPE PLUG 1/2"POLYPRO	

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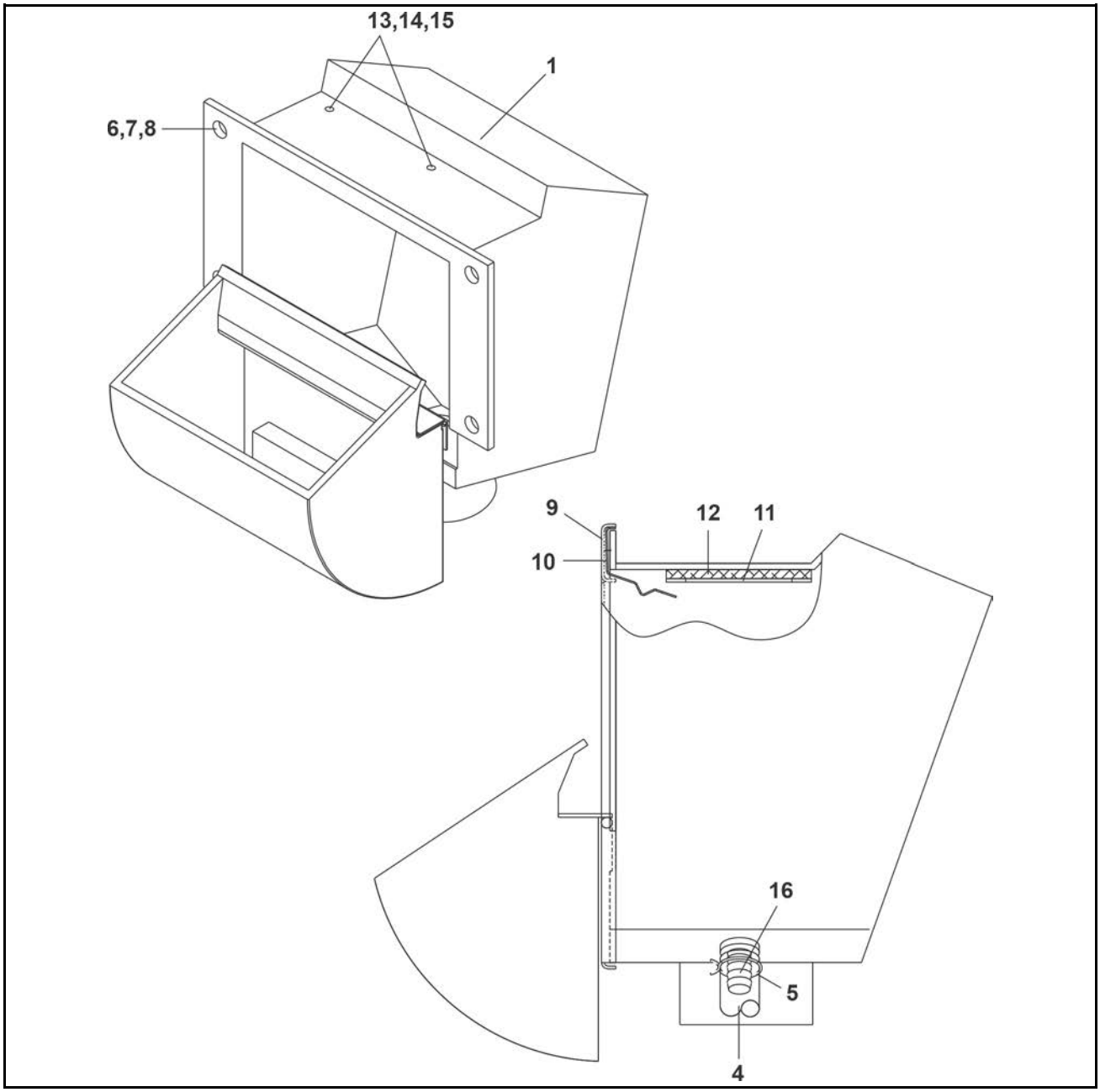
Soap Chute Components and Installation

3 Sheets

3022X_

Figure 56. Soap Chute



Soap Chute Components and Installation

3 Sheets

3022X_

Figure 57. Installed Views

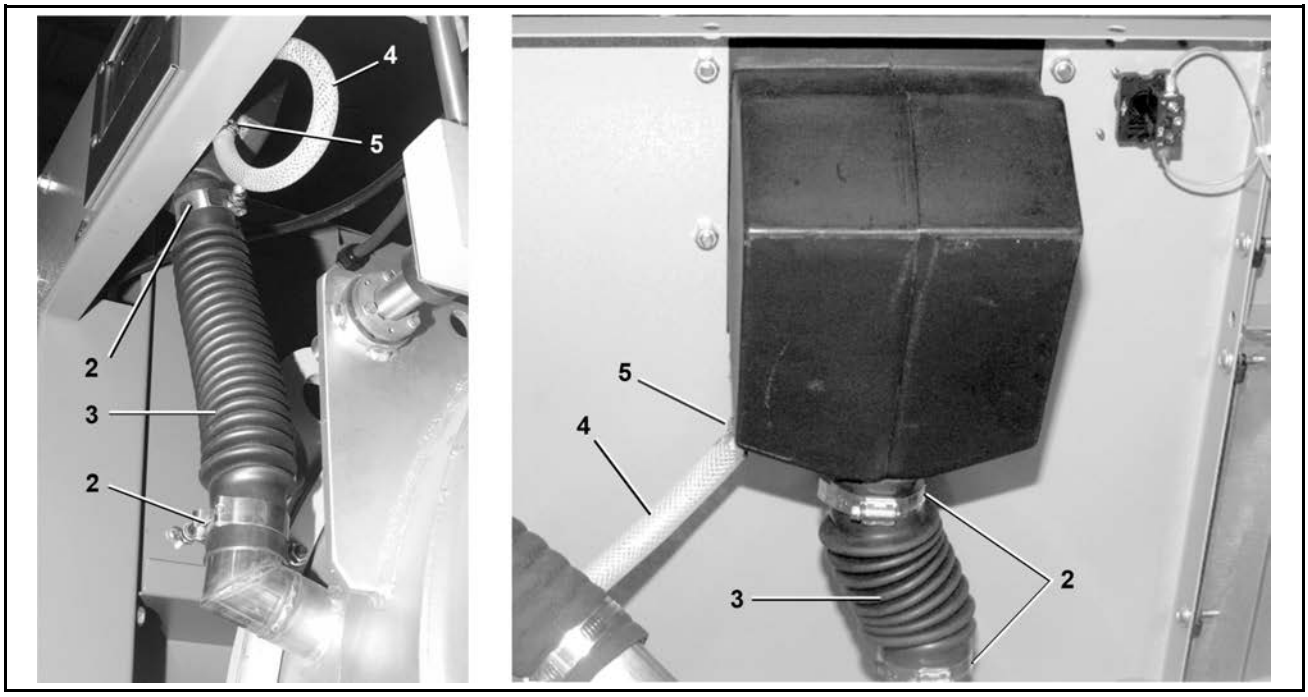
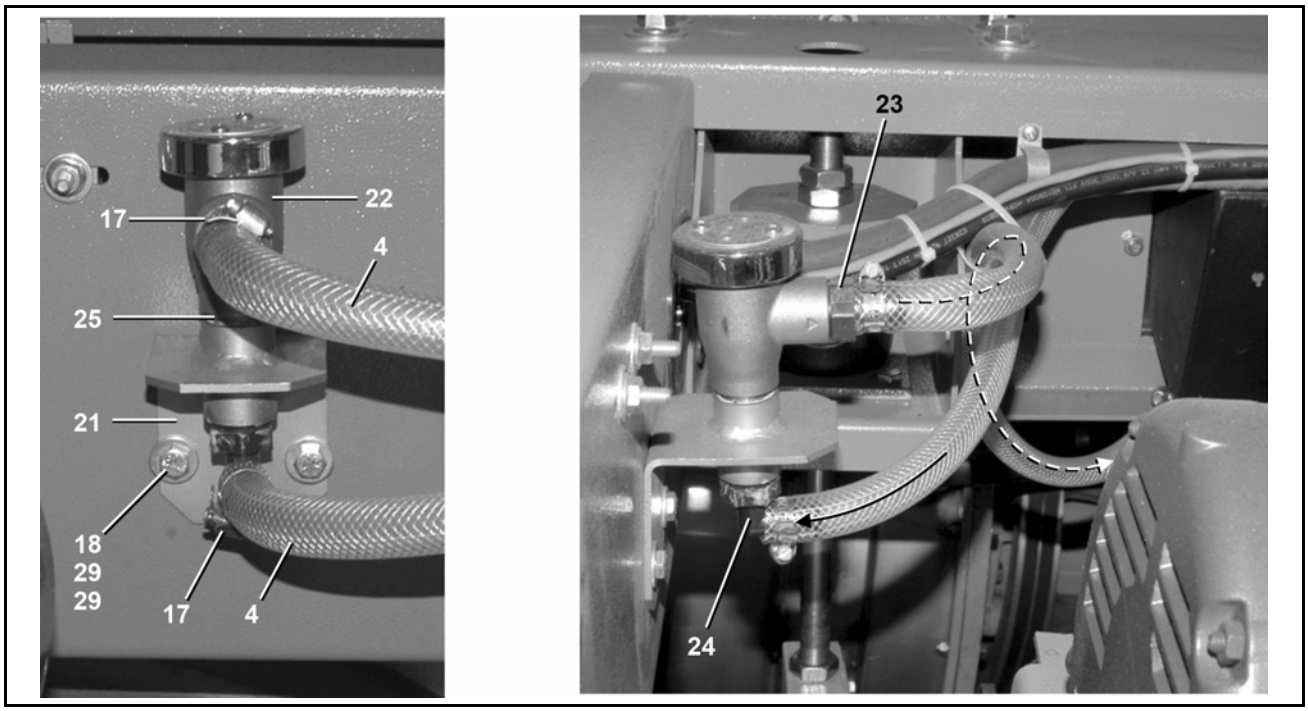


Figure 58. The Vacuum Breaker and Related Components



Soap Chute Components and Installation

3 Sheets

3022X_

Table 30. Parts List—Soap Chute Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GWS3022X8	INST=SOAP CHUTE ASSY 3022X8J	
	B	GVB00001	INST=SIPHON SOAP CHUTE FLUSH	
	C	AVB00001	ASSY=SIPHON SOAP CHUTE FLUSH	
Components				
A	1	AWS30211A	PLASTIC SOAP ASSY	
A	2	27A070	T-BOLT HOSECLAMP 1.94"-2.25"	
A	3	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	
A	4	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
A	5	27A045	HOSECLAMP .750"DIA SPRINGTYPE	
A	6	15K053	BUTSOKCAPSCR 5/16-18X3/4 SS18-	
A	7	15G188	HEXLOKNUT 5/16-18 BRASS	
A	8	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR	
A	9	02 04215	PLASTIC SOAP CHUTE BEZEL	
A	10	02 04217	PLASTIC SOAP CHUTE LATCH	
A	11	02 04216	SOAP CHUTE SPLASH GUARD	
A	12	98A002AT	PAD 6"X9"REG.DUTY,TURCO#A90551	
A	13	15G105	HEXMACSCRNUT 8-32UNC2 SS18-8	
A	14	15N095	RDMACSCR 8-32UNC2X3/4 SS18-8	
A	15	15U120B	LOCKWASHER MEDIUM #8 SS18-8	
A	16	51BB0KN00B	BULKHD FITT 1/2"BARBED,POLYPRO	
A	17	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
B	18	15K037	HEXCAPSCR 1/4-20UNC2AX5/8 GR5	
B	19	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
B	20	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
B	21	W2 03199	WLMT=SIPHON MOUNT	
C	22	96M021	1/2"VAC BREAKER #LF288A	
C	23	51E509PB	HOSEADAPT 1/2HXNPT POLYETHL	
C	24	51E509PBA	1/2HX1/2NPT HOSE ADAPT 90ELB	
C	25	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	

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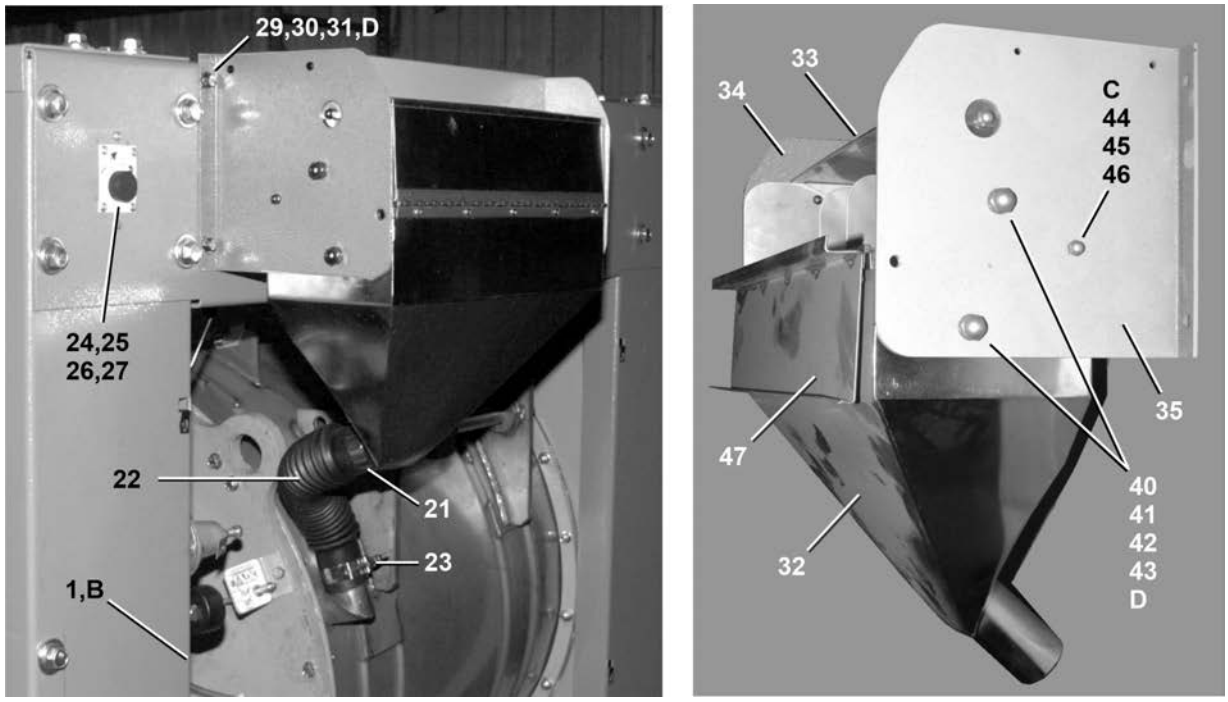
Five Compartments for Dry Chemical Supplies

5 Sheets

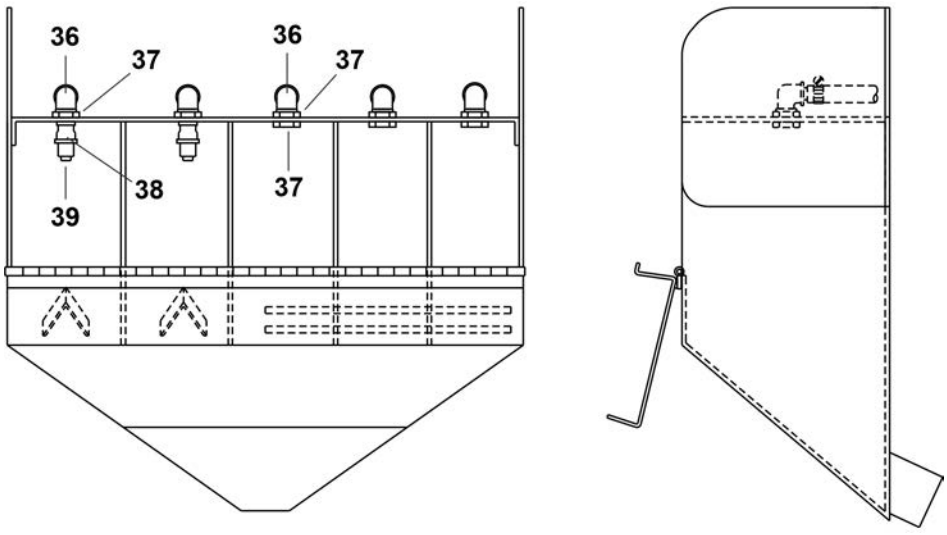
Figure 59. General Views



Legend

B . . . Cover, not shown
C . . . 2 instances
D . . . 4 instances

Figure 60. Detail View

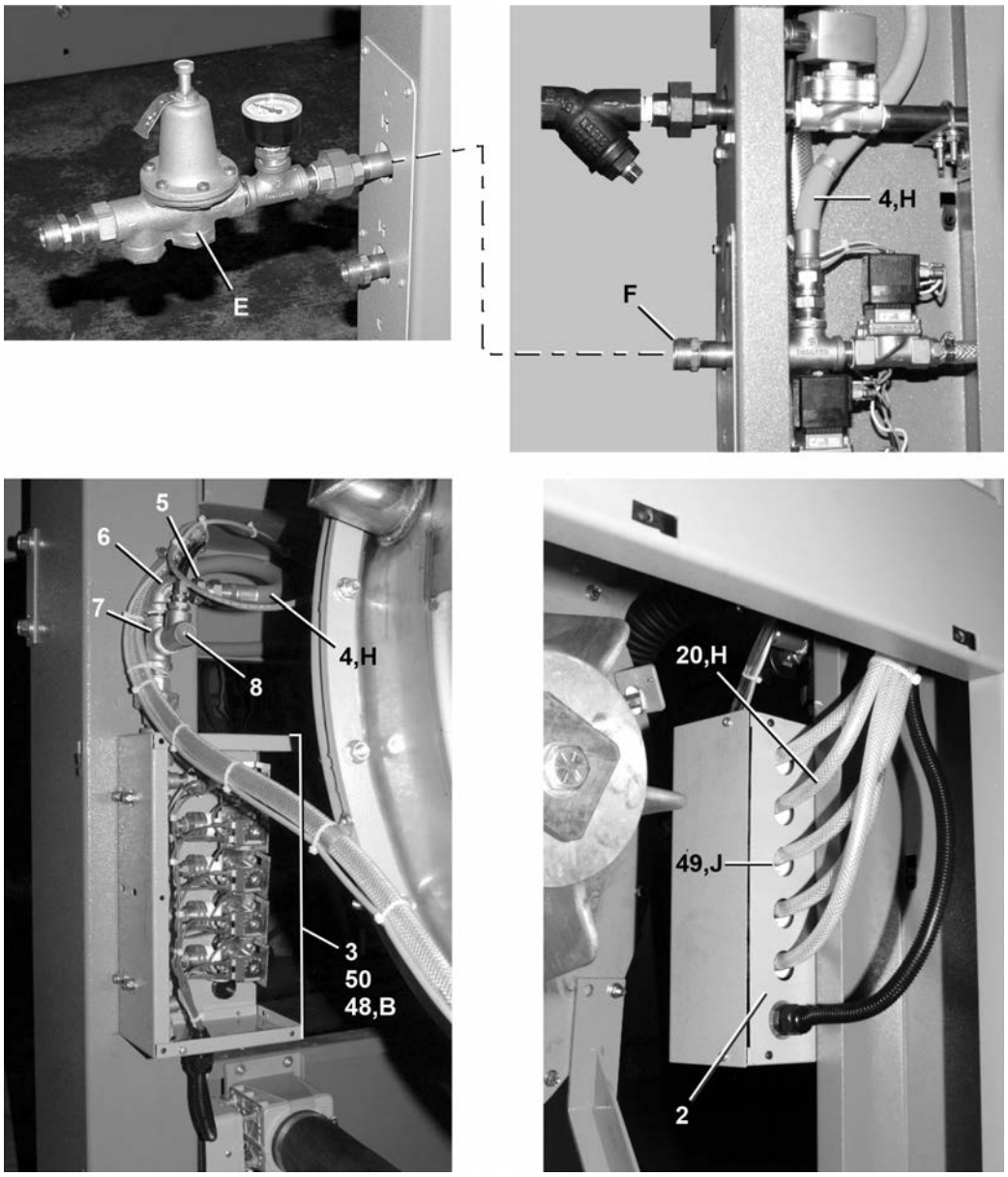


Five Compartments for Dry Chemical Supplies

5 Sheets

Figure 61. Water to the Five Compartments for Dry Chemical Supplies

Installed View



Legend

B . . . Cover, not shown
E . . . Pressure regulator assembly
F . . . Hot water to flush the chemical supplies
H . . . Hot water line for the 5 chemical supply compartments
J . . . 5 instances

Five Compartments for Dry Chemical Supplies

5 Sheets

Figure 62. Valve Manifold

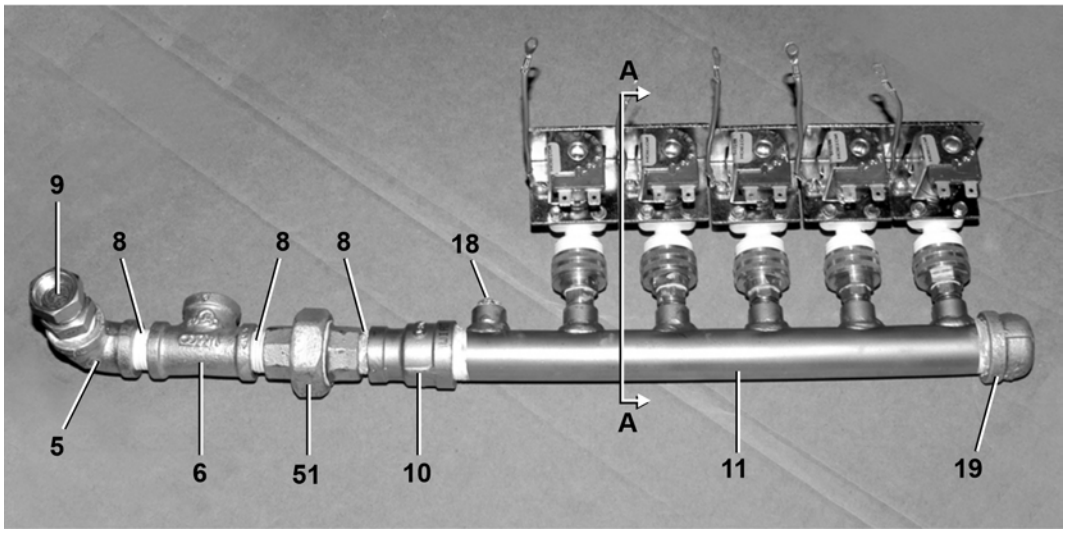
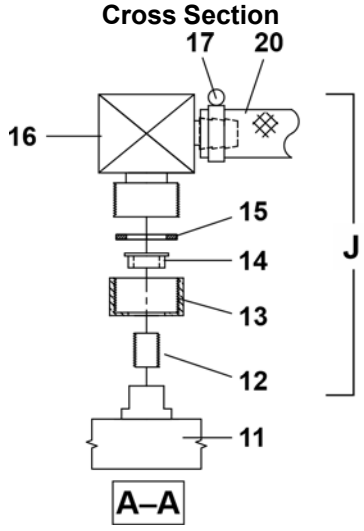


Figure 63. Valve Assembly



Legend

A–A . . Cross section

J . . . 5 instances

Five Compartments for Dry Chemical Supplies

5 Sheets

Table 31. Parts List—Five Compartments for Dry Chemical Supplies

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	GWS3022X	3022X8 5COMP SUPPLY ASSY	
	B	AWS3022X	ASSY 3022X8 5COMP SUPPLY	
	C	AWS30221A	5VLV SUPPLY MANIFOLD 3022X	
			Components	
all	1	02 02925A	COVER SIDE LF SUPPLY	
C	2	02 03129A	COVER=5COMP SUPPLY 3022X	
C	3	02 03992	HOUSING=SUPPLY MANIFOLD 3022	
all	4	60E085C54A	HOSE ASSY=1/2" X 54"LG	
all	5	5SL0KNFA	NPTELB 90DEG 1/2 GALMAL 150#	
all	6	5S0KNFA	NPT TEE 1/2" GALMAL 150#	
all	7	96M001	1/2X3/8" RELIEF VALVE SET31#	
all	8	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
C	9	51X017	UNIONSTRADT 1/2"#1404-8-8	
C	10	5SR0P0KNF	NPT RED 3/4X1/2 GALMAL 150#	
C	11	W2 03990A	*WLMT=MANIFOLD SUPPLYINJ 6VLV	
C	12	53A026A	HEXPIPNIP.25X.25 AND#122A-B	
C	13	53A060H	KNURLHOSENUT 3/4"PW#94GH-12	
C	14	02 03732Z	ADAPTER HOSETHD 3/4"X1/4 NPT	
C	15	53A060HA	WASHER=HOSE #901GH-12	
C	16	96P013B71	3/4" 2WAYPLASTICVAL 240V60C W/L-BRACKET	
C	17	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
C	18	51P013	PLUG HXCNTRSUNK 1/4"BRASS	
C	19	5SCA0PBE	NPT CAP 3/4 BRASS 125#	
A	20	60E006B	PVC TUBING (BRAID)3/8IDX.60D	
A	21	27A082	HOSECLAMP 2.5625-3.5CADSC#HS48	
A	22	02 03870D	FLEXTUBE=2"ID X 14"LG W/CUFFS	
A	23	27A070	T-BOLT HOSECLAMP 1.94"-2.25"	
A	24	01 10094X	NAMEPLATE: MANUAL FLUSH-ISO	
all	25	09N401BASE	MOUNT COLLAR ONLY #ZB5AZ009	
all	26	09N401CBNO	CONT BLOCK 1-NO #ZBE101	
all	27	09N401PBBK	PUSH BUTTON OPR. BK/BK	
A	29	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
A	30	15G205	HXNUT 3/8-16UNC2B ZINC GR2	

Five Compartments for Dry Chemical Supplies

5 Sheets

Table 31 Parts List—Five Compartments for Dry Chemical Supplies (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
A	31	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
B	32	W2 03611C	SUPPLY CHUTE WELD 3022X (SS)	
B	33	02 03996	LID=3022F8 5COMP. SUPPLY	
B	34	02 03997C	5COMP REAR MOUNT PLT 3022X	
B	35	02 03998C	5COMP FRONT MOUNT PLT 3022X	
B	36	51E504EB	ELB HOSESTEM 3/8HX1/4NPT BRASS	
B	37	17N200B	1/4 NPT HEX LOCKNUT X1/4THICK	
B	38	5SR0G0EBF	NPT RED 3/8X1/4 BRASS 125#	
B	39	27A002	NOZZLE BRASS 3/8" SPRAYSYSTEMS	
B	40	15K086B	HEXCAPSCR 3/8-24X1 SS18-8	
B	41	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
B	42	24G030N	ROLLED WASH.379ID NYLTITE 37W	
B	43	15G211	HXCPNUT 3/8-24 UNF2 SS18-8	
B	44	15K041S	HEXCAPSCR 1/4-20UNC2AX1 SS18-8	
B	45	15U160	LOCKWASHER MEDIUM #10 SS18-8	
B	46	15G140	HXCAPNT 1/4-20 #C250=20 NKLPLT	
all	47	SA 02 066	*COVER ASSY=SUPPINJ	
all	48	02 03991	MANIFOLD HOUSING COVER PLATE	
C	49	12P11CSB	SNAPBUSH 1.093"MH X .94"ID HEYCO#2166	
C	50	12P11PHP	HOLEPLUG 1+3/4" BLK HEYCO#2773	
all	51	5SU0PNF	NPT UNION 3/4" GALMAL 150#	

9 Water and Steam

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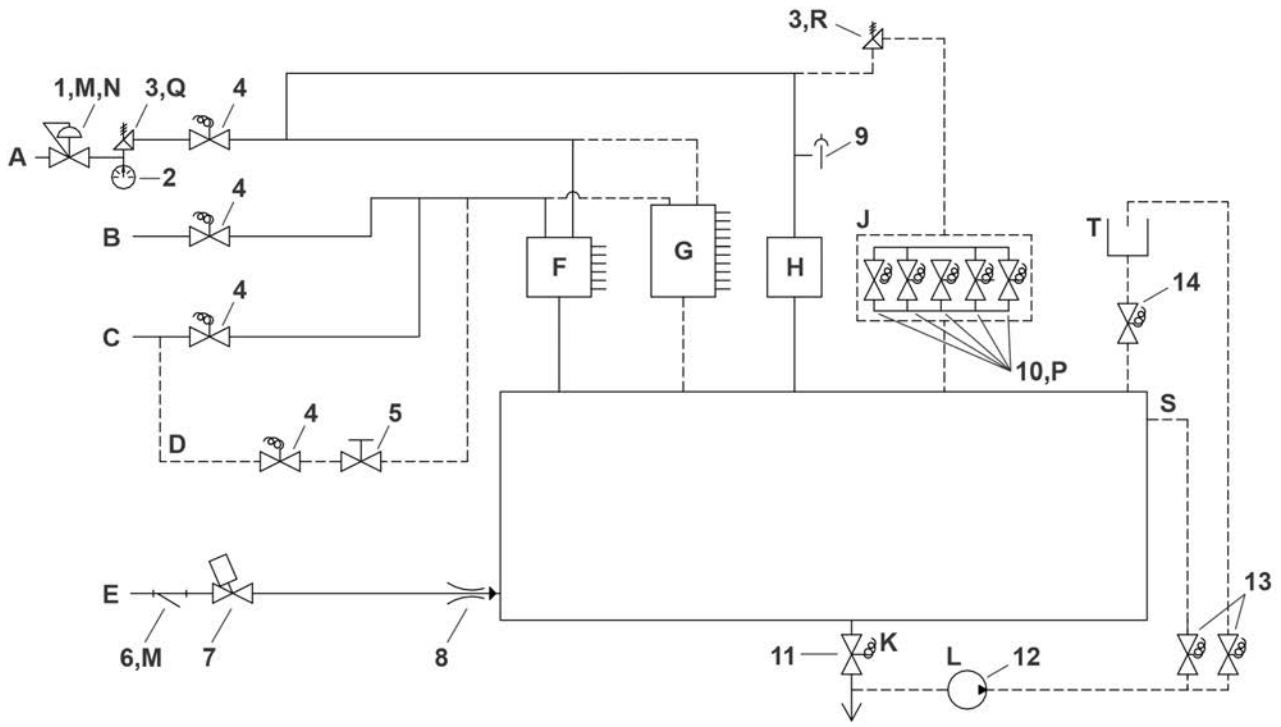
Water and Steam Schematic and Primary Components

2 Sheets

3022X__

Schematic



Legend

A . . . Hot water to flush the chemical supplies
B . . . Hot water inlet
C . . . Cold water inlet
D . . . Cool down water line (optional)
E . . . Steam inlet (optional)
F . . . Six inlets for peristaltic liquid chemical systems (optional)
G . . . 10 inlets for peristaltic liquid chemical systems
H . . . Soap chute
J . . . Five compartments to flush in chemical supplies (optional)
K . . . Drain valve
L . . . Recirculation pump (optional)
M . . . Keep this component clean.
N . . . Keep this component set to the correct pressure. 28 LBS.
P . . . 5 instances
Q . . . The standard location of the pressure relief valve.
R . . . The alternative location of the pressure relief valve for the five compartments to flush chemical supplies.
S . . . Reuse water through the recirculation pump to the door (optional)
T . . . Reuse tank (optional)

Water and Steam Schematic and Primary Components

2 Sheets

3022X__

Table 32. Parts List—Water and Steam Schematic and Primary 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
all	1	96J030D	1/2"PRESSREG SET28# FEMXUN #LF25AUB-Z5 #0009255	
all	2	30N100	PRESSGAUGE 1/8"BACKCN.0-30PSI	
all	3	96M001	1/2X3/8" RELIEF VALVE SET31#	
all	4	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6 - BURKERT	
all	5	96D034	BALL VLV - BONOMI 1/2" 171S SS BALL/STEM	
all	6	51T025	Y-STRAINER 1/2" CAST IRON=WATTS#77S-M1 40;EDP-220308	
all	7	96TDC2BA71	1/2" N/C 2WAY 240V50/60C STEAM	
AB	8A	W2 02555A	WELD X-MACH PIPE NOZZLE 3/8D	
all	8B	98CX02555A	STEAM SPARGER 42X	
all	9	96M021	1/2"VAC BREAKER #LF288A	
all	10	96P013B71	3/4" 2WAYPLASTICVAL 240V60C W/L-BRACKET	
all	11	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER DEPENDO	
all	12	27E955M96	3/4HP 3P PMP 240/420/480 5/6C	
all	13	96D087WE	ANGBODVLV 1.5"N/C H2O BURK BRZ=(BURKERT# 468162)	
all	14	96D087FBA	1.5"BALVAL+ACT BRS N/C BONOMI (SPRING RET)	

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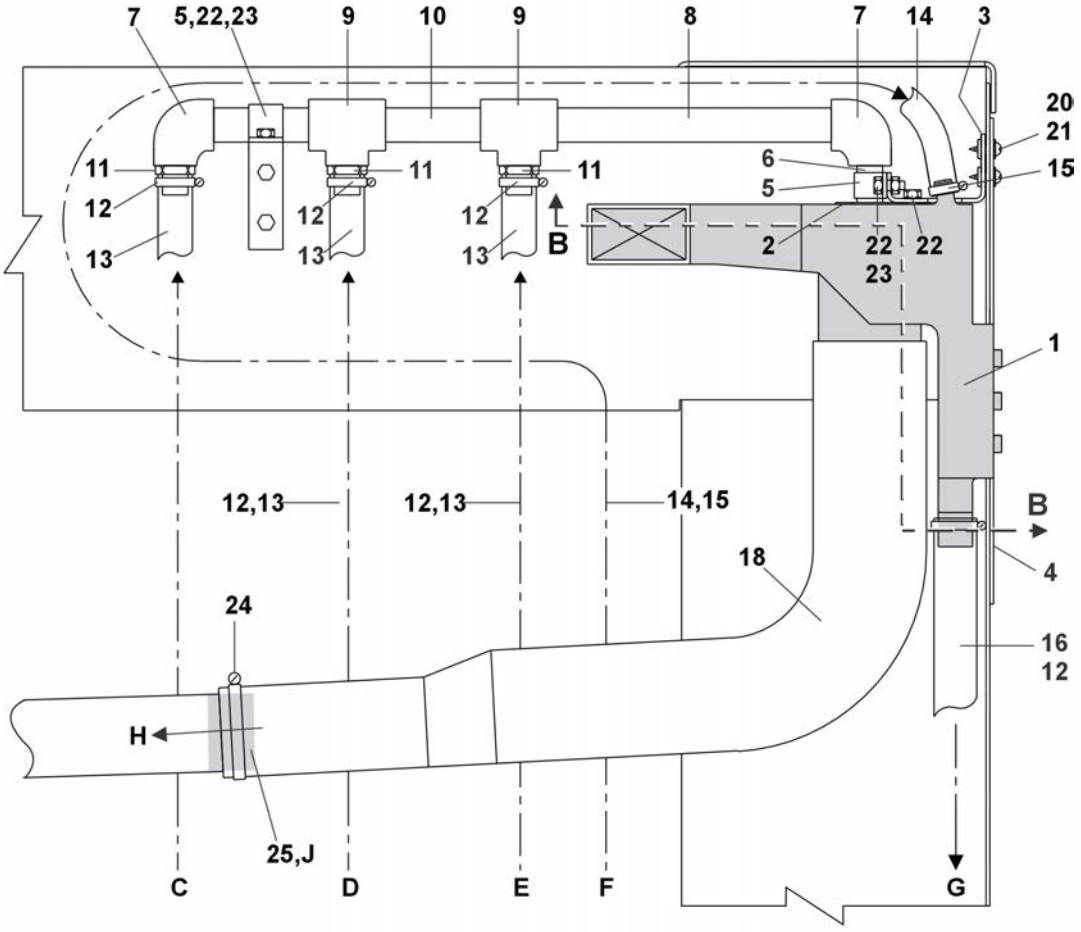
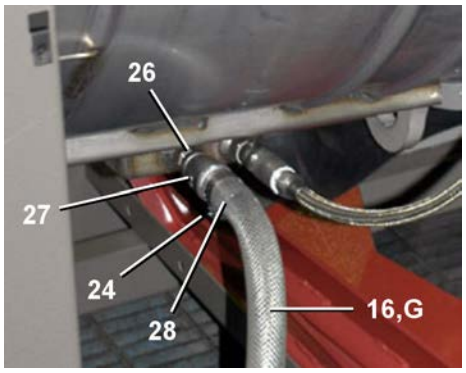
Water Manifold & Peristaltic Boxes

3 Sheets



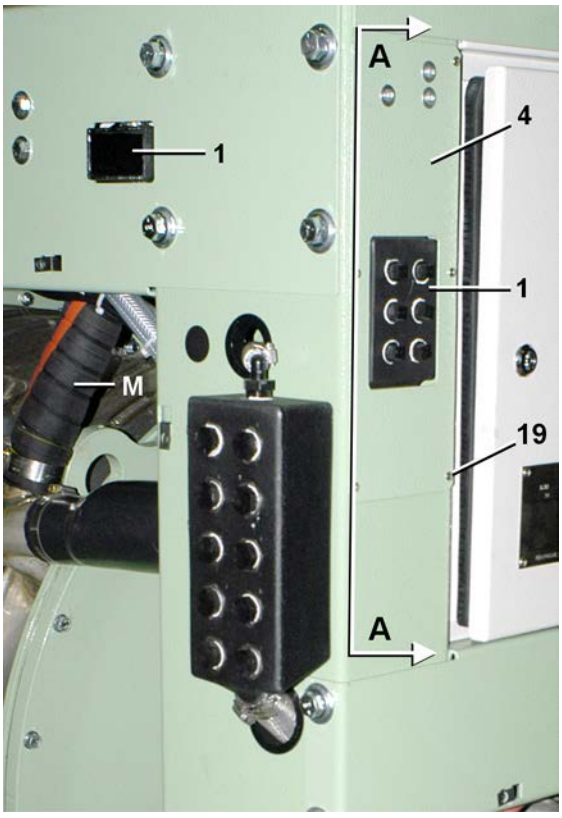
Legend

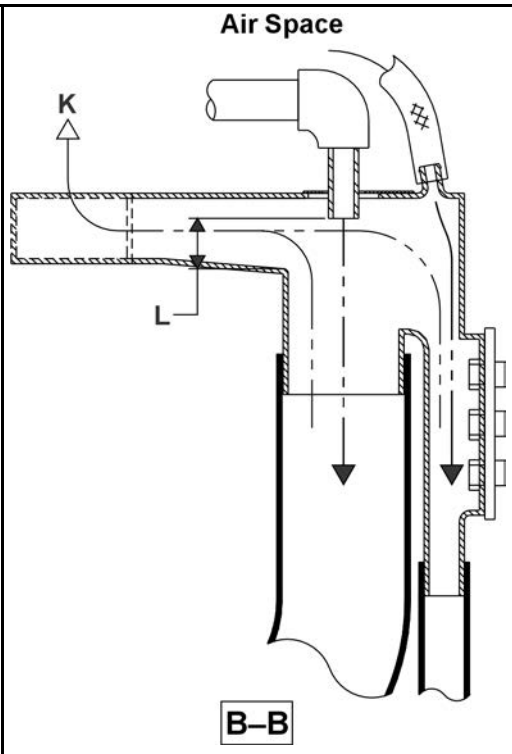
A–A . . Cross section
C . . . Cold water line
D . . . Cool down water line (optional)
E . . . Hot water line
F . . . Hot water to flush the chemical supplies
G . . . Water and chemical supplies to the shell
H . . . Hot and cold water to the shell
J . . . Apply adhesive to the surfaces that connect, then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



Water Manifold & Peristaltic Boxes

3 Sheets





Legend

B—B . . Cross Section, Air Space
K . . . Vent
L . . . Air Space, 1”[25MM]
M . . . 30022X8W with tank only

Table 33. Parts List—Inlet for Six Peristaltic Chemical Supplies and Water

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GA 33 058X	INST=H20+PERSTAL REAR INLET	
	B	SA 33 058X	ASSY=PLSTC PERSTL 3022X	
Components				
all	1	02 03588M	PERISTALTIC/WATER INLET 3022H	
all	2	02 03588K	36V PERISTALTIC BOX TOP COVER	
all	3	02 03195	PERISTL BOX MOUNT, 3022H8	
all	4	02 02930	PLATE MT PARESTALTIC	

Water Manifold & Peristaltic Boxes

3 Sheets

Table 33 Parts List—Inlet for Six Peristaltic Chemical Supplies and Water (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	5	12K077	STRAP 1/2" HVY CONDUIT 2-HOLE	
all	6	5N0P01PG41	NPT NIP 3/4X1.75 TOE GAL. S40	
all	7	5SL1ANFA0P	NPTELB 90DEG 1X3/4 GALMAL 150#	
all	8	5N1A08AG42	NPT NIP 1X8 TBE GALSTL SK40	
all	9	5S1ANFA0P1	NPT TEE 1X1X3/4" GALMAL 150#	
all	10	5N1A03AG42	NPT NIP 1X3 TBE GALSTL SK40	
all	11	51E511	HOSESTEM BRASS 3/4MP X HOSEID	
all	12	27A090	HOSECLAMP 13/16-1.5"CADSC#HS16	
all	13	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	14	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	15	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	16	60E010	TUBINGPOLYBRAID 1"X1.312	
all	18	02 03588B	PERISTALTIC/WATER INLET LONG HOSE	
all	19	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	20	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	21	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	22	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	23	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	24	27A074	HOSECLAMP 2+1/16-3"CADSC#62040	
all	25	20C009CA	LOCTITE 3032 ADHESIVE	
all	26	5N0KCLSS42	NPT NIP 1/2XCLS TBE 304SS SK40	
all	27	5SR0P0KSF	NPT RED 3/4X1/2 SS304 150#	
all	28	03 25429S	HOSE ADAPT=1"HOSE 3/4"NPT SS	

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Water Inlet Components and Installation

3 Sheets

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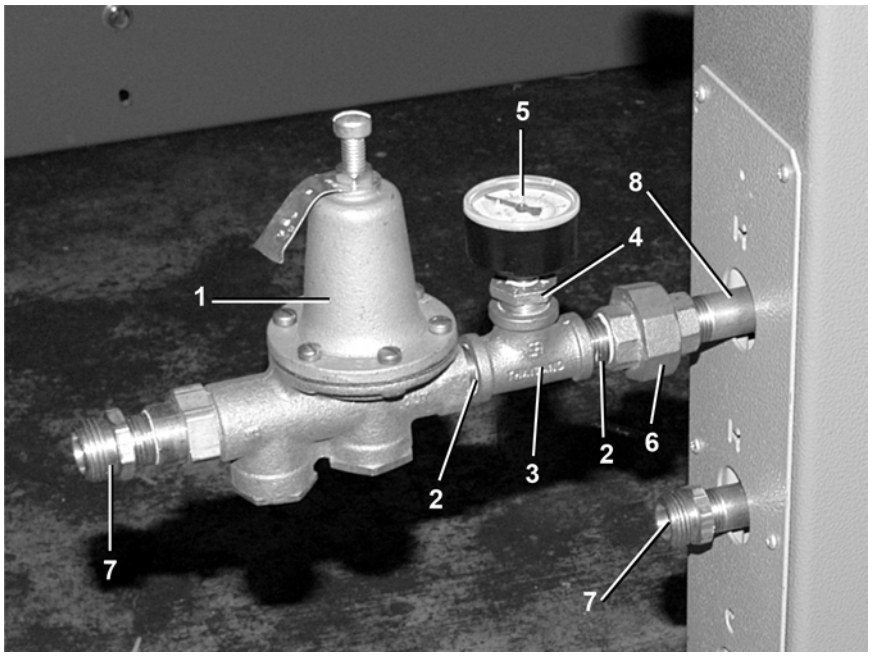
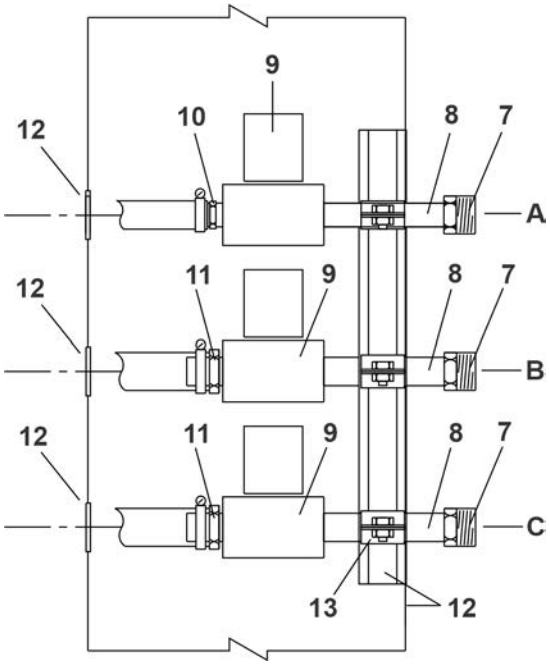
Pressure Regulator Assembly



Cross Section



Legend

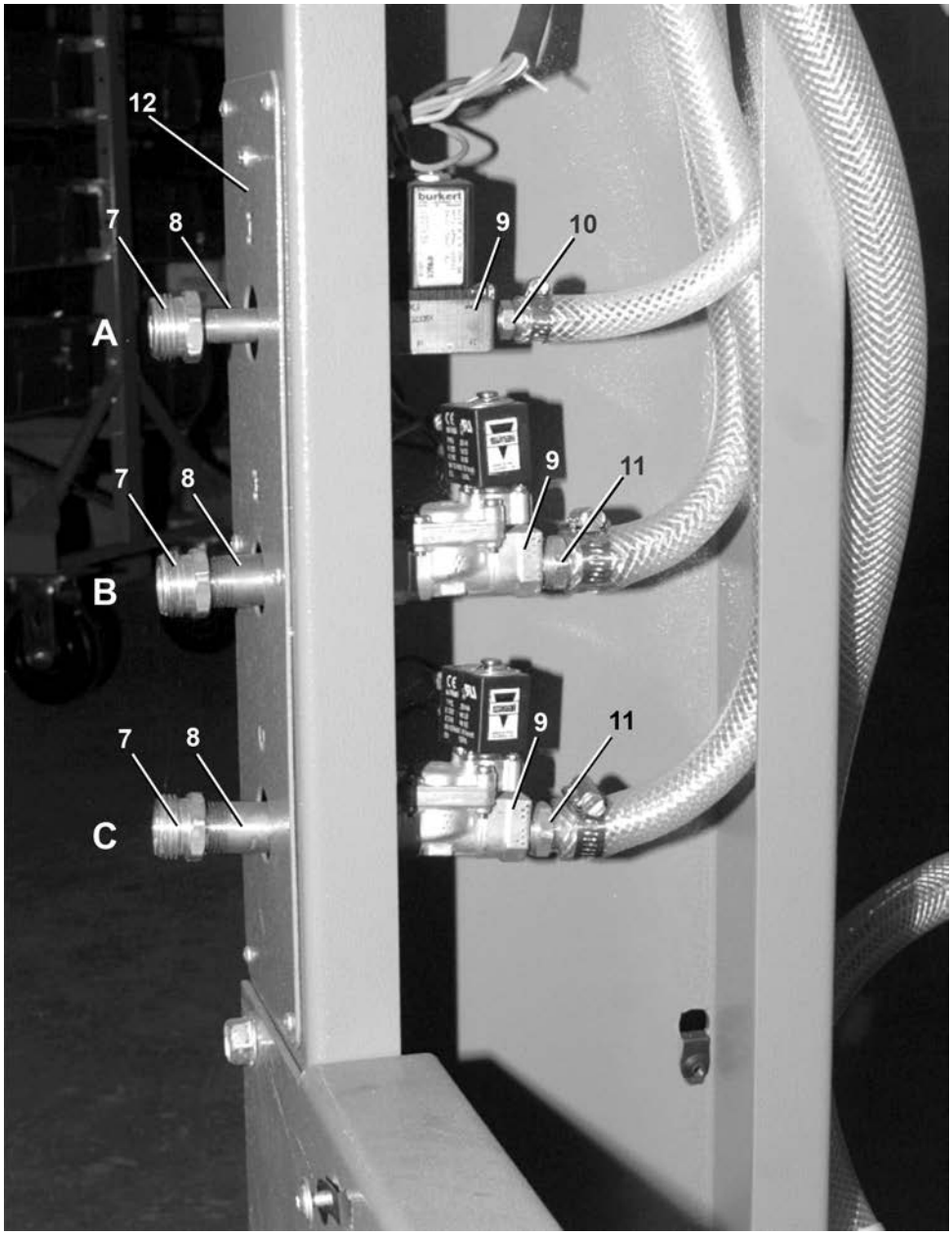
A . . . Hot water to flush the chemical supplies
B . . . Hot water inlet
C . . . Cold water inlet

Water Inlet Components and Installation

3 Sheets

3022X

General View



Legend

A . . . Hot water to flush the chemical supplies
B . . . Hot water inlet
C . . . Cold water inlet

Water Inlet Components and Installation

3 Sheets

3022X

Table 34. Parts List—Water Inlet Components and Installation

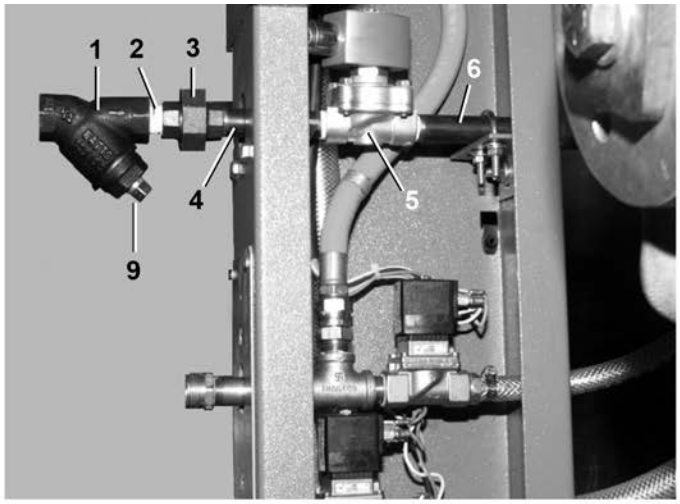
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	SA 33 058W	WATER VALVE ASSY 3022X	
Components				
all	1	96J030D	1/2"PRESSREG SET28# FEMXUN #LF25AUB-Z5 #0009255	
all	2	5N0KCLSBE2	NPT NIP 1/2XCLS TBE BRASS STD	
all	3	5S0KBEA	NPT TEE 1/2" BRASS 125#	
all	4	5SB0K0CBEO	NPTHEXBUSH 1/2X1/8 BRASS 125#	
all	5	30N100	PRESSGAUGE 1/8"BACKCN.0-30PSI	
all	6	5SU0KBE	NPT UNION 1/2" BRASS 125#	
all	7	51E513B	3/4"MHX1/2"FP PARKER#80GH-12-8	
all	8	5N0K03KB42	NPT NIP 1/2X3.5 TBE BRASS STD	
all	9	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6 - BURKERT	
all	10	51E509	HOSESTEM BRASS 1/2MPX1/2HOSEID	
all	11	51E510	HOSESTEM BRASS 1/2MPX3/4HOSEID	
all	12	W2 03588S	3015/22 BRASS H20 MNT WLMT (CS)	
all	13	27A0050	CLP-RGDSTL COND #PS1100-1/2	

BPWXAW05 / 2021044 BPWXAW05.1 0000334637 A.3 F.4 1/20/21, 1:38 PM Released

Steam Inlet Components and Installation

2 Sheets

General Views



Steam Inlet Components and Installation

2 Sheets

Table 35. Parts List—Steam Inlet Components and Installation

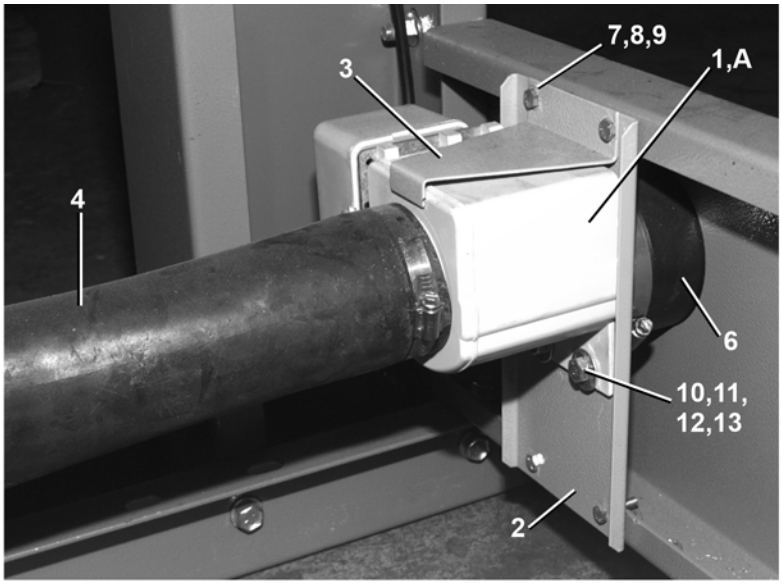
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GVS3022X	INST STEAM ASSY 3022X	
	B	AVS3022X	ASSY=STEAM 3022X	
Components				
all	1	51T025	Y-STRAINER 1/2" CAST IRON=WATTS#77S-M1 40;EDP-220308	
all	2	5N0KCLSF42	NPT NIP 1/2XCLS TBE BLKSTL S40	
all	3	5SU0KMF	NPT UNION 1/2" BLKMAL 150#	
all	4	5N0K04AF42	NPT NIP 1/2X4 TBE BLK SK 40	
all	5	96TDC2BA71	1/2" N/C 2WAY 240V50/60C STEAM	
all	6	5N0K05KF42	NPT NIP 1/2X5.5 TBE BLK SK 40	
all	7	5SCC0KMF	NPT COUP 1/2 BLKMAL 150#	
all	8	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	9	5SP0GGFSS	NPT PLUG 3/8 SQ SOLID GALSTL	
all	10	60E508E32A	HOSE SS BRAID 3/8+2ENDS=32LG	
all	11	5SCC0KSF1	NPTCOUP 1/2"SS304 150#BARSTOCK	
	12	W2 02555A	WELD X-MACH PIPE NOZZLE 3/8D	USA-made models only

BPWXAW06 / 2021055 BPWXAW06.1 0000334710 A.3 F.4 1/28/21, 2:21 PM Released

Drain Valve Installation

2 Sheets

General View



Legend

A . . . Refer to document BPWXAW07

Drain Valve Installation

2 Sheets

Table 36. Parts List—Drain Valve Installation

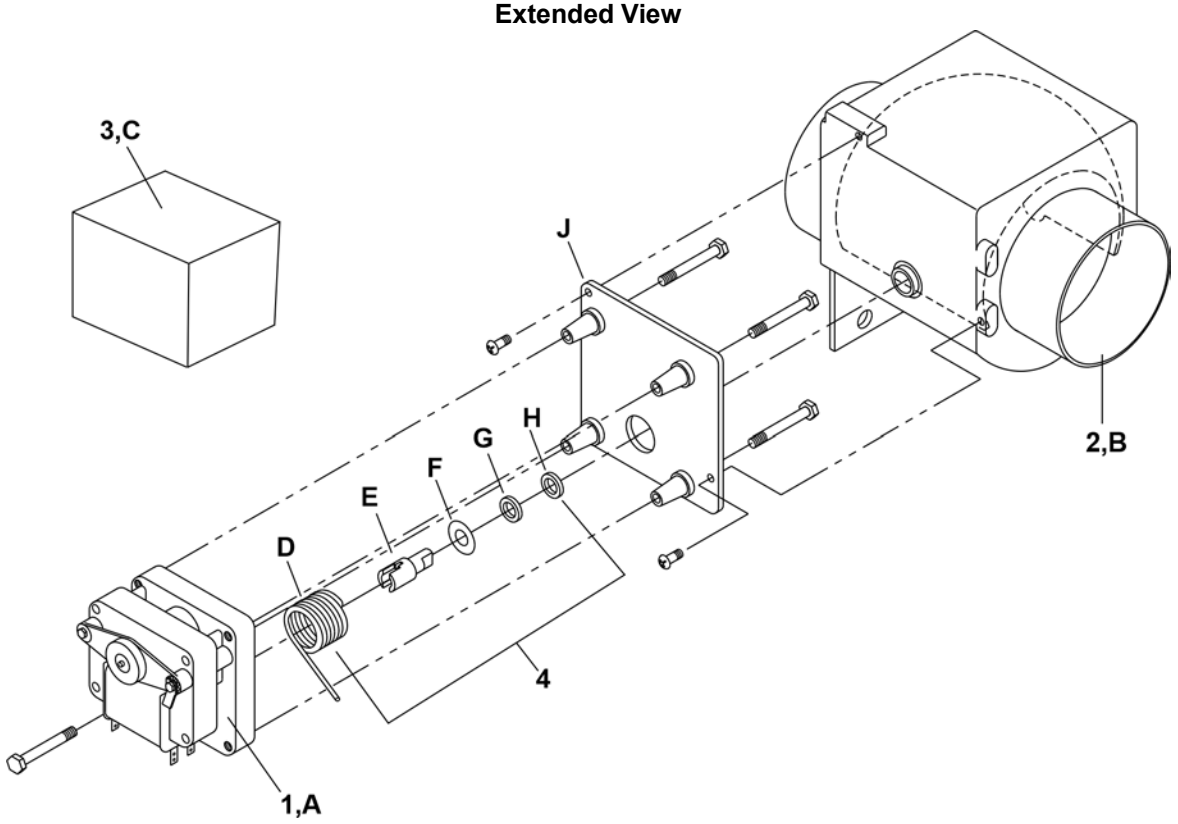
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GVD3022X8	INST=DRAINVALVE ASSY 3022X8J	
Components				
all	1	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER DEPENDO	
all	2	02 02934	BKT=DUMPVAL MT	
all	3	02 02934A	DUMPVAL BKT TOP	
all	4	02 03245	MOLDED DRAIN HOSE, 3022H	
all	5	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	6	60B075	DFW56-33PMSP RUBB CONN.	
all	7	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	8	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
all	9	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	10	15K143B	HEXCAPSCR 7/16-14UNCX1"GR5 ZIN	
all	11	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	12	15U278	LOCKWASHER MEDIUM 7/16 ZINCPL	
all	13	15G222C	HEXNUT 7/16-14UNC2B ZINC GR2	

BPWXAW07 / 2021055 BPWXAW07.1 0000334790 A.3 F.4 1/28/21, 1:55 PM Released

3 Inch Electrical Drain Valve

2 Sheets

Extended View



Legend

A . . . Motor
B . . . Valve body
C . . . Cover
D . . . Spring
E . . . Drive pin
F . . . Washer
G . . . Bearing
H . . . Seal
J . . . Motor installation plate

Table 37. Parts List—3 Inch Electrical Drain Valve

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER DEPENDO	
Components				

3 Inch Electrical Drain Valve

2 Sheets

Table 37 Parts List—3 Inch Electrical Drain Valve (cont'd.)

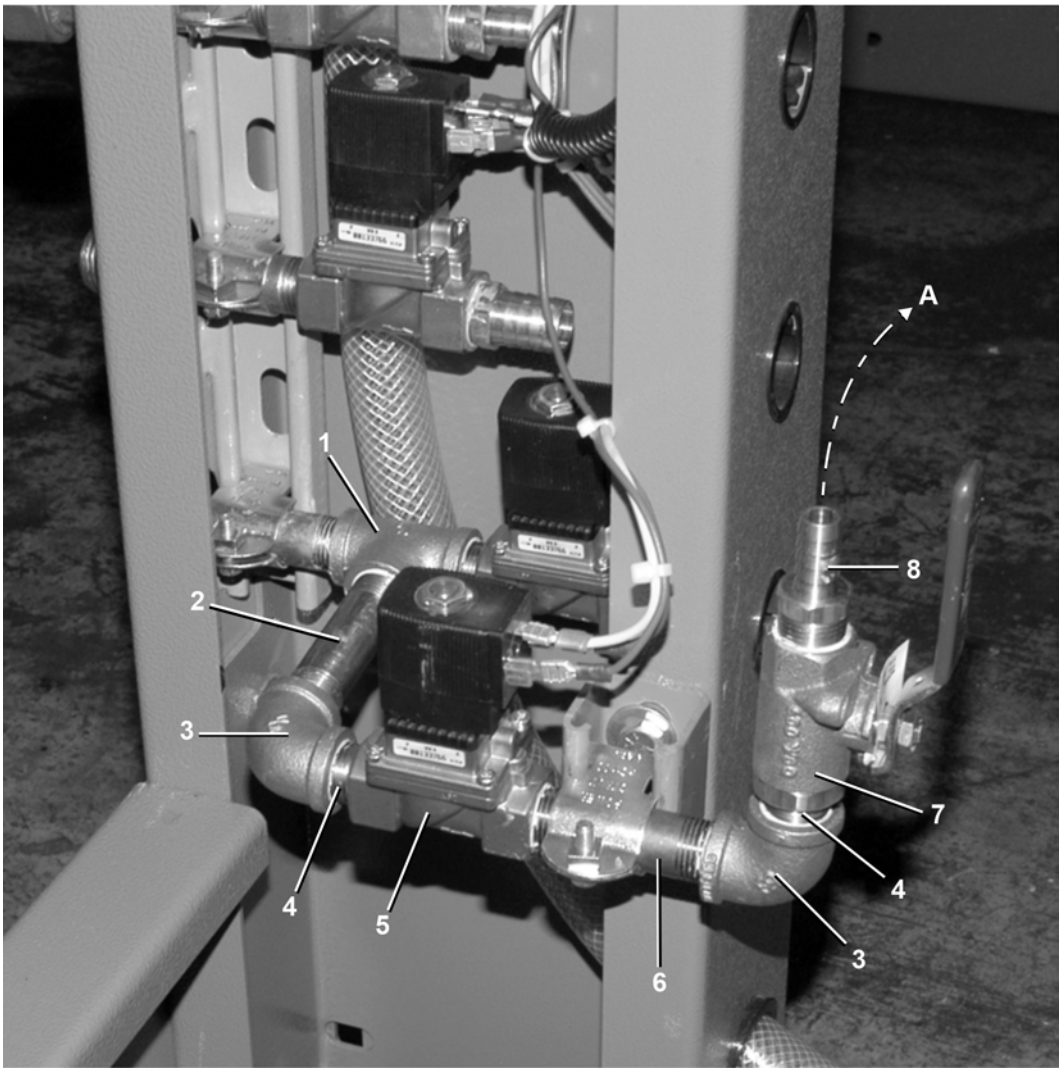
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	1	96D35MTR71	240V 50/60CMTR FOR 3"DRAINVAL	
all	2	96D35B0D	B0DY & BALL FOR 3" DRAIN VALVE (VLV HOUSING ONLY)	
all	3	96D35C0V	MTRCOVER 2-PCFOR 3"DRAINVAL-DEPENDO #90016105	
all	4	96D35PIN	DRIVE PIN KIT FOR 3" DRAIN VAL	

BPWXAW04 / 2021044 BPWXAW04.1 0000334627 A.3 F.4 1/20/21, 11:52 AM Released

Cool Down Components and Installation

2 Sheets

Installed View



Legend

A . . . Cold water to the peristaltic water inlet manifold

Cool Down Components and Installation

2 Sheets

Table 38. Parts List—Cool Down Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	AVC30X001	COOLDOWN ASSMBLY 3022X	
Components				
all	1	5S0KBEA	NPT TEE 1/2" BRASS 125#	
all	2	5N0K03KB42	NPT NIP 1/2X3.5 TBE BRASS STD	
all	3	5SL0KBEA	NPTELB 90DEG 1/2 BRASS 125#	
all	4	5N0KCLSBE2	NPT NIP 1/2XCLS TBE BRASS STD	
all	5	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6 - BURKERT	
all	6	5N0K03ABE2	NPT NIP 1/2X3 TBE BRASS STD	
all	7	96D034	BALL VLV - BONOMI 1/2" 171S SS BALL/STEM	
all	8	51E509	HOSESTEM BRASS 1/2MPX1/2HOSEID	

BPWXAQ01 / 2021055 BPWXAQ01.1 0000334787 A.3 F.4 1/28/21, 1:30 PM Released

Electric Heat

1 Sheet

3022X, 3626X, 4226X, 4232X

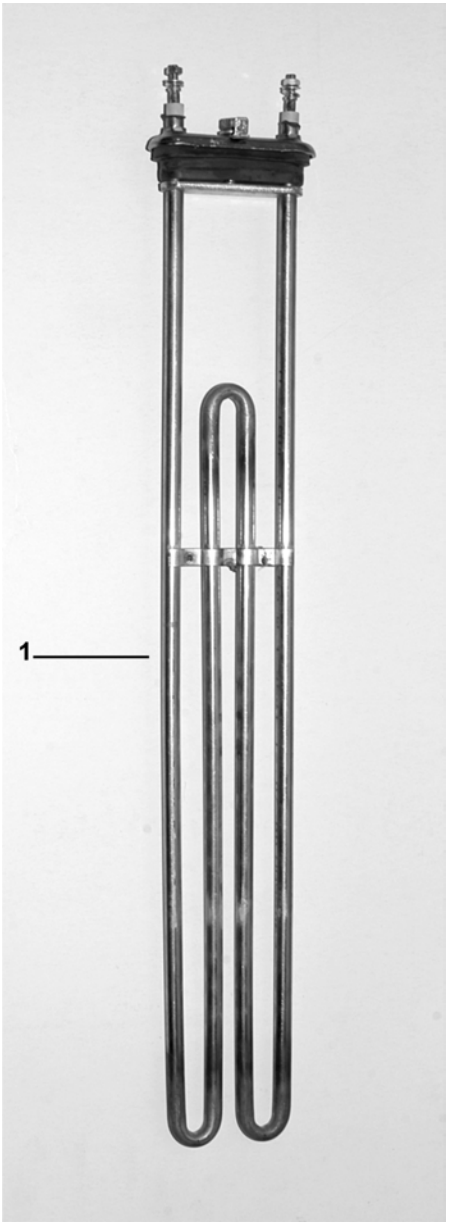


Table 39. Parts List—Electric Heat

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	98CMCR3605	ELECTRIC HEATER PROBE, 3KW 240V UL	

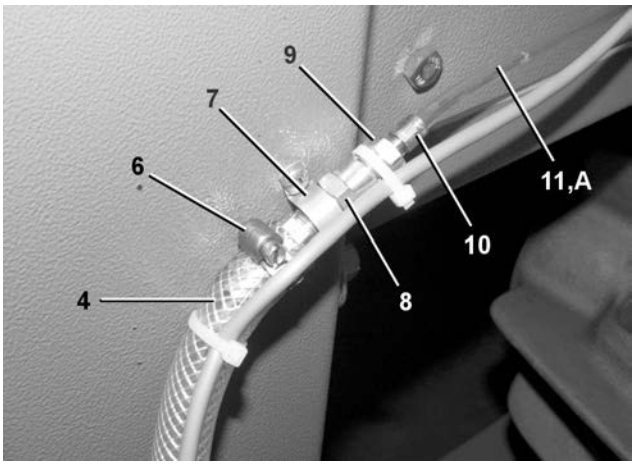
10 Control and Sensing

BPWXAZ01 / 2025313 BPWXAZ01.1 0000335306 D.2 F.4 7/29/25, 7:55 AM Released

Water Level Switch & Temperature Sensor

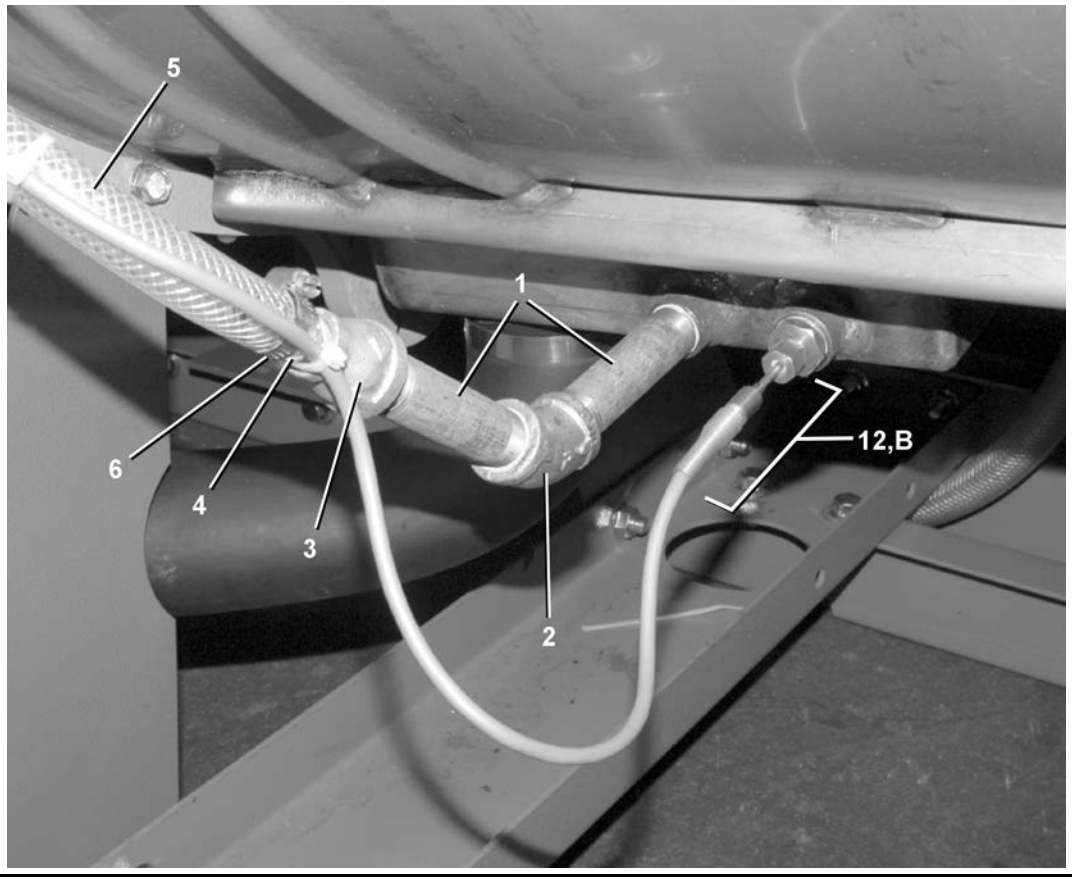
2 Sheets

3022X8J, 3022X8R



Legend

A . . . Pressure to transducer



Water Level Switch & Temperature Sensor

2 Sheets

3022X8J, 3022X8R

Table 40. Parts List—Water Level Switch & Temperature Sensor

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ALL30211	ASSY=3022H7J AIR CHAMBER	
Components				
all	1	5N0K04AG42	NPT NIP 1/2X4 TBE GALSTL SK40	
all	2	5SL0KNFK	NPTELB 45DEG 1/2 GALMAL 150#	
all	3	5SR0K0ENF	NPT RED 1/2X1/4 GALMAL 150#	
all	4	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	5	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	6	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	7	12P01410SZ	TUBE CLAMP 5/8 ZC	
all	8	5SCC0EBE	NPT COUP 1/4 BRASS 150#PSI W/HEX	
all	9	51E502B	HOSESTEM BRASS 1/4MPX1/8HOSEID	
all	10	27A047	HOSECLMP 1/8HOSEID CLIP	
all	11	60E004NT	TUBING (NYL.)CLR.1/4"ODX1/8"	
all	12	30R0043PB	TEMPERATURE PROBE ASSY=BRASS	

11 Recirculation

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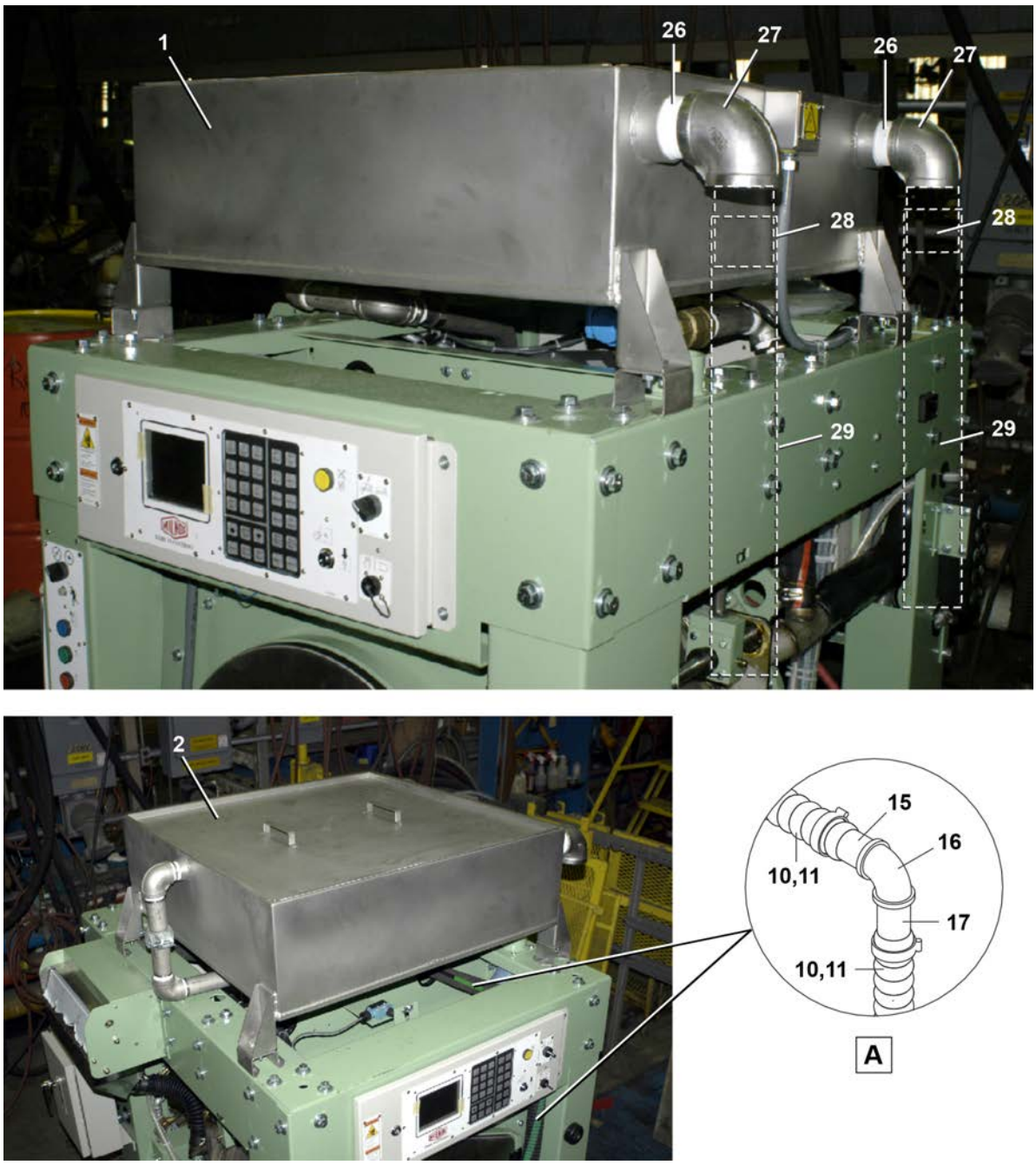
BPWXAW08 / 2021055 BPWXAW08.1 0000334868 B.2 F.4 8/29/23, 4:58 PM Released

Reuse Tank, Recirculation Pump, and Piping

4 Sheets

30022X8W, 30022X8R

Figure 64. Tank



Legend

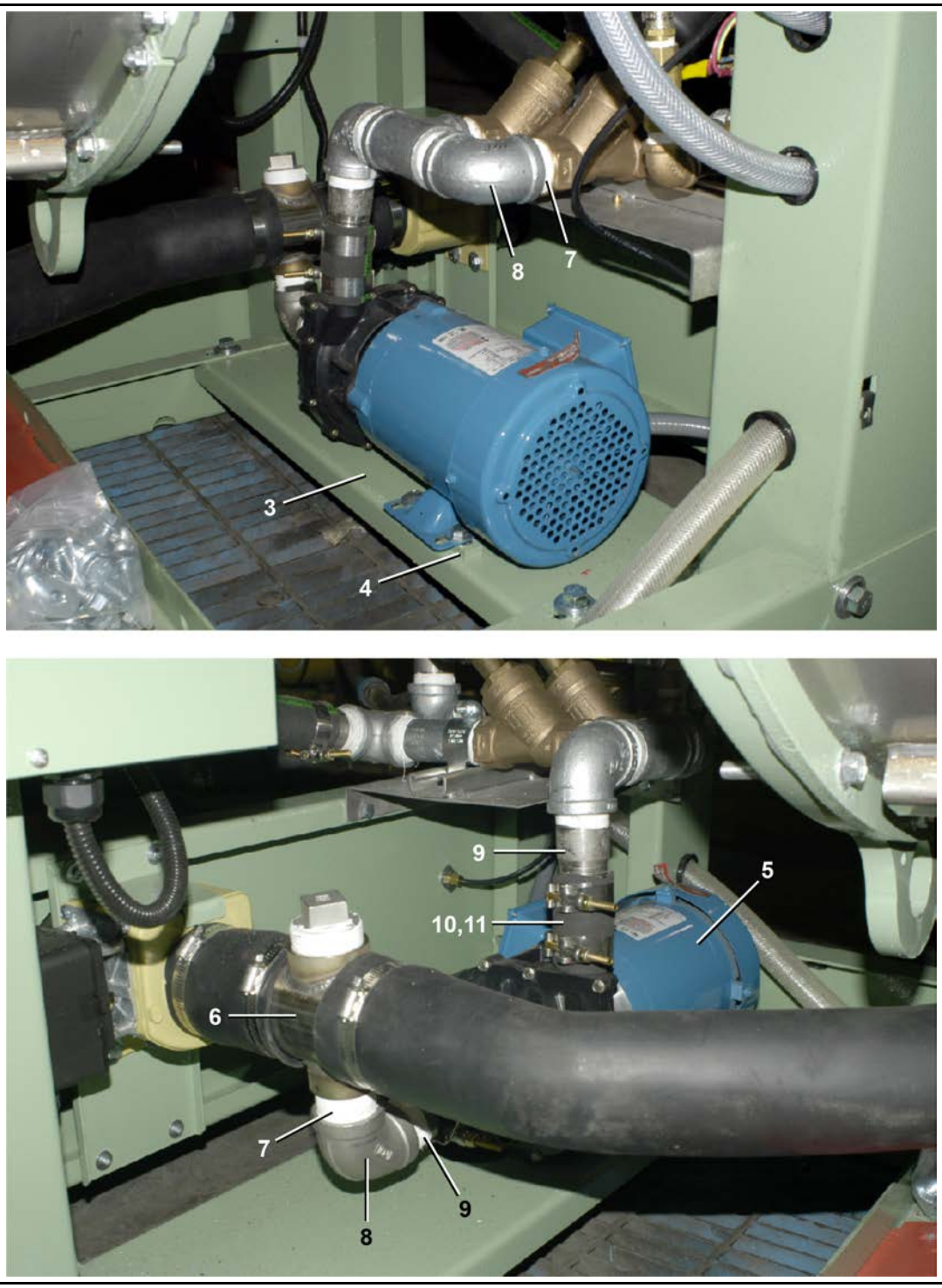
A . . . Recirculation to the door

Reuse Tank, Recirculation Pump, and Piping

4 Sheets

30022X8W, 30022X8R

Figure 65. Recirculation Pump

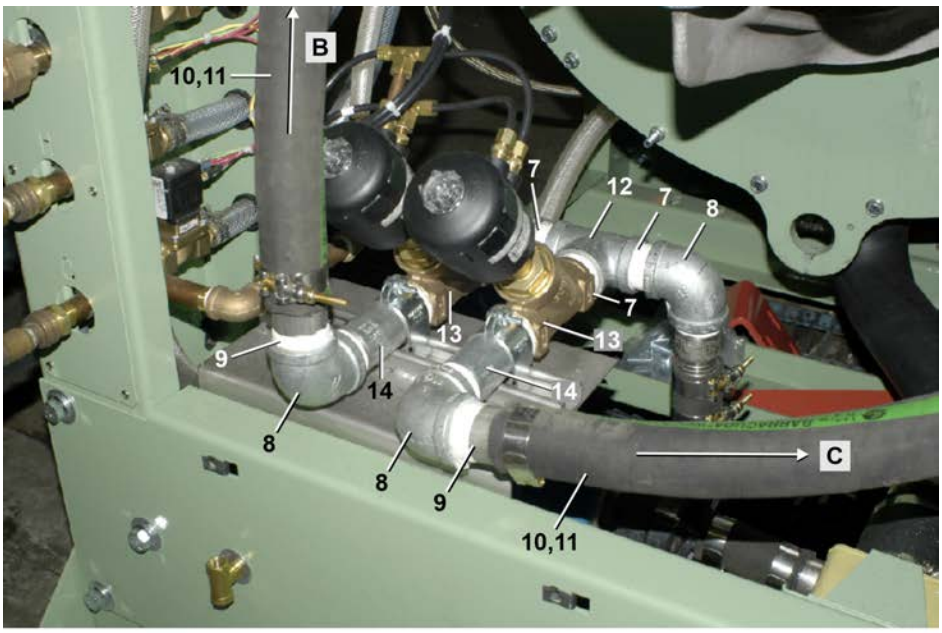


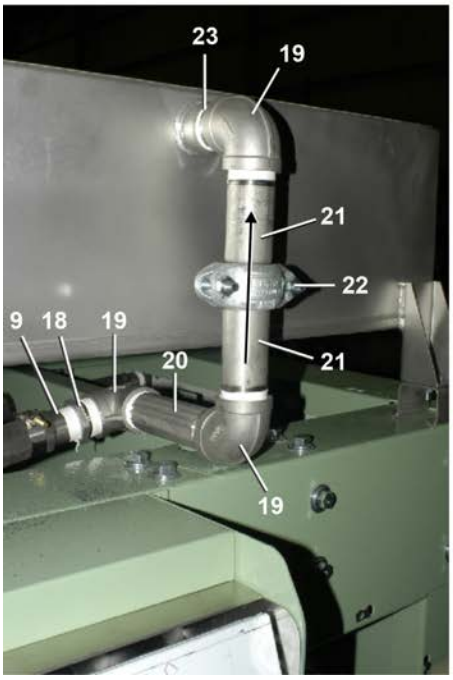
Reuse Tank, Recirculation Pump, and Piping

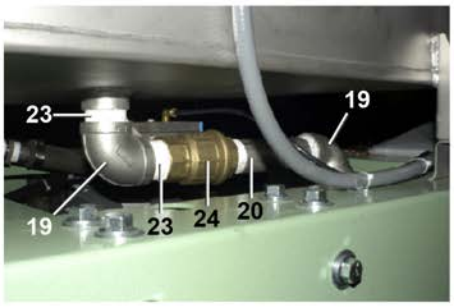
4 Sheets

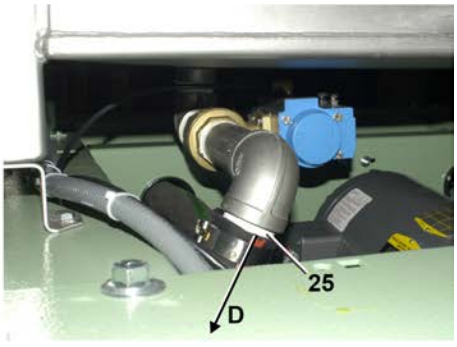
30022X8W, 30022X8R

Figure 66. Recirculation Piping









Legend

B . . . To the recirculation door
C . . . To fill the tank
D . . . To the cylinder

Reuse Tank, Recirculation Pump, and Piping

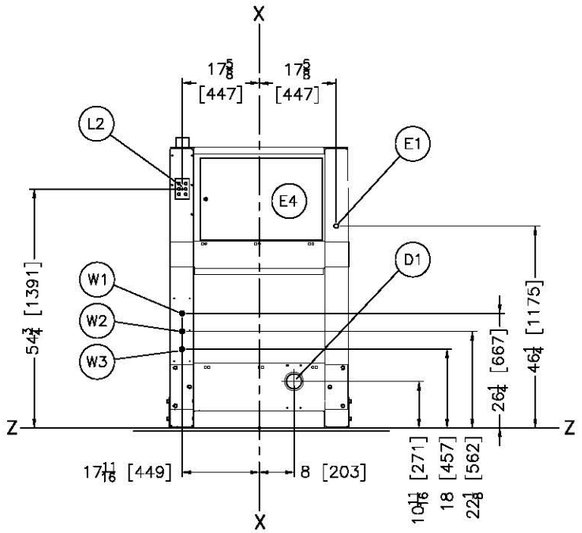
4 Sheets

30022X8W, 30022X8R

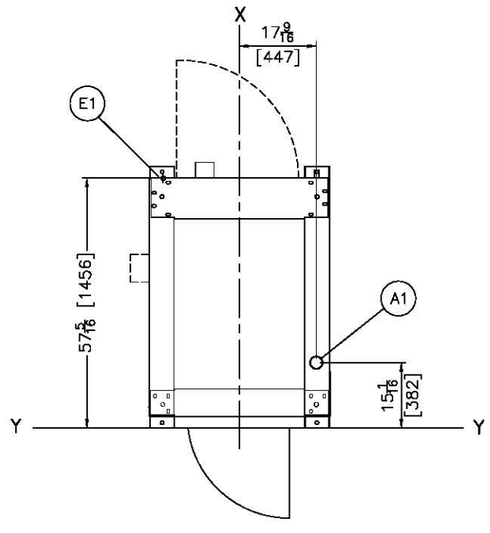
Table 41. Parts List—Reuse Tank, Recirculation Pump, and Piping

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	W2 03115	WLMT+OUTERWEAR REUSE TANK	
all	2	W2 03120	COVER REUSE TANK 3022X	
all	3	02 02947	3022X RECIRC PUMP MNT	
all	4	06 20730	SPACER = MOTOR TO BRKT	
all	5	27E955M96	3/4HP 3P PMP 240/420/480 5/6C	
all	6	W2 13546B	TUBE WELD RECIRC 3022X	
all	7	5SL1ENFA	NPT ELB 90DEG 1.25 GALMAL 150#	
all	8	5N1ECLSG42	NPT NIP 1.25XCLS TBE GALSTLS40	
all	9	51E098ASS	KINGREDNIP1.5IDX1.25MP#RST2015	
all	10	60E098	HOSE 1.5" WATER SUCTION HOSE	
all	11	27A066A	T-BOLT HOSECLAMP 1.66-1.97"	
all	12	5S1ENFA	NPT TEE 1.25" GALMAL 150#	
all	13	96D087WE	ANGBODVLV 1.5"N/C H2O BURK BRZ	
all	14	5N1E05AG42	NPT NIP 1.25X5 TBE GALSTL SK40	
all	15	5N1E06AS41	NPT NIP 1.25X6 TOE 304SS SK40	
all	16	5SL1ESFA	NPT ELB 90DEG 1.25 304SS 150#	
all	17	5N1E09AS41	NPT NIP 1.25X9 TOE 304SS SK40	
all	18	5SB1K1ESFO	NPTHEXBUSH 1.5X1.25 SS304 150#	
all	19	5SL1KSFA	NPT ELB 90DEG 1.5 304SS 150#	
all	20	5N1K07AS42	NPT NIP 1.5X7 TBE 304SS SK40	
all	21	5N1K06AS42	NPT NIP 1.5X6 TBE 304SS SK40	
all	22	27E971D	VICT COUP 1.5"GALV #75	
all	23	5N1KCLSS42	NPT NIP 1.5XCLS TBE 304SS SK40	
all	24	96D087FBA	1.5"BALVAL+ACT BRS N/C BONOMI	
all	25	5N1K03AS41	NPT NIP 1.5X3 TOE 304SS SK40	
all	25	5N2KCLSS42	NPT NIP 2.5XCLS TBE 304SS SK40	
all	27	5SL2KSFA	NPT ELBOW 90DEG 2.5 304SS 150#	
all	28	5N2K04AS41	NPT NIP 2.5X4 TOE 304SS SK40	
all	29	60E303F	HOSE 3"ID LAYFLAT HOSE	

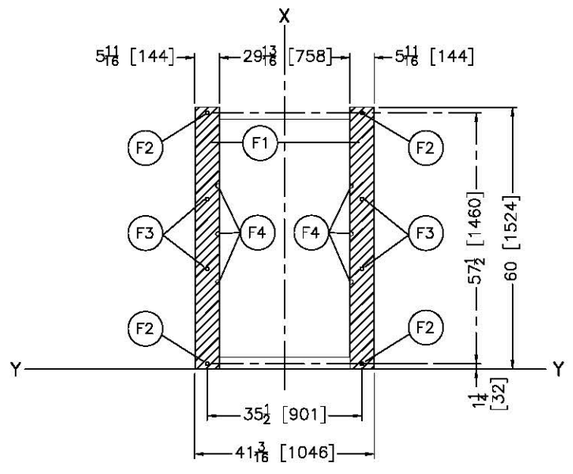
12 Dimensional Drawings



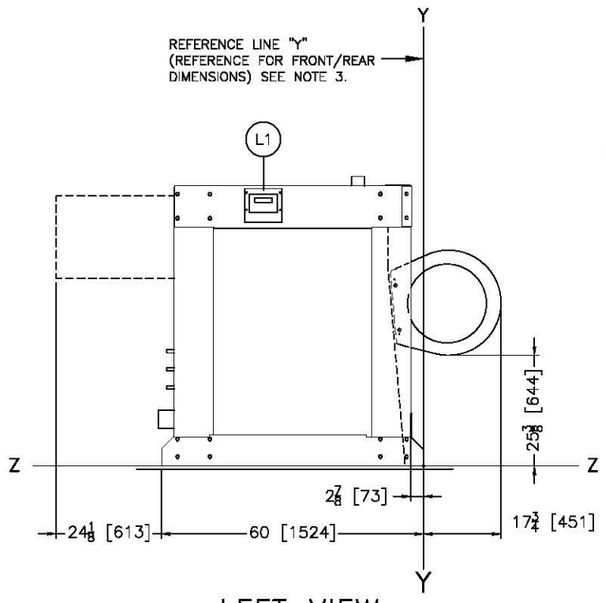
REAR VIEW



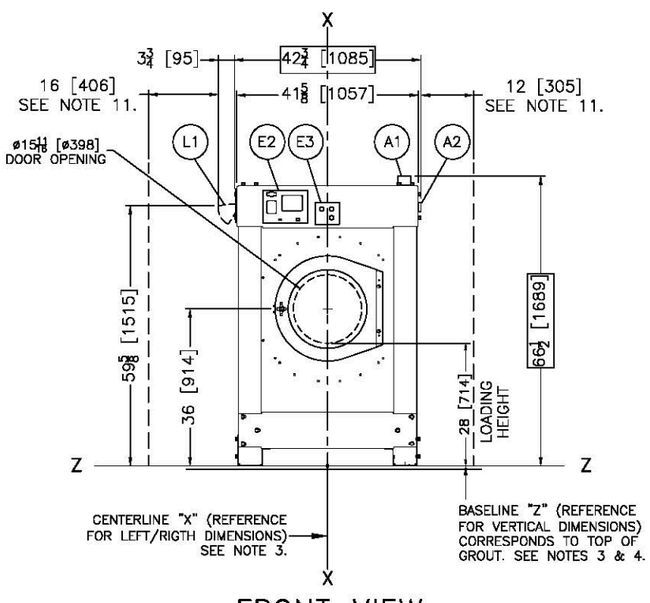
PLAN VIEW



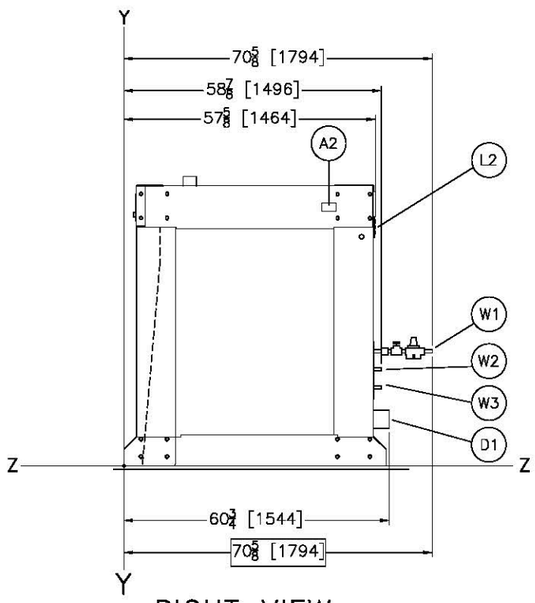
FOUNDATION PLAN



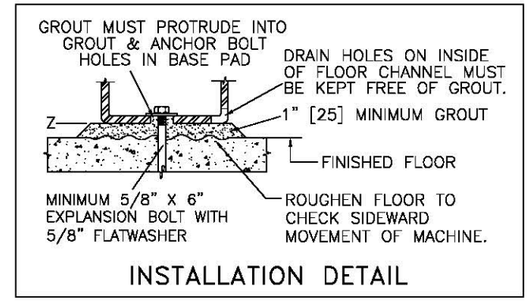
LEFT VIEW



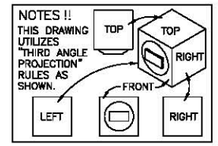
FRONT VIEW



RIGHT VIEW



INSTALLATION DETAIL



ITEM	LEGEND
W3	COLD WATER INLET, 3/4" GARDEN HOSE, MALE THREAD.
W2	HOT WATER INLET, 3/4" GARDEN HOSE, MALE THREAD.
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
F4	DRAIN HOLES
F3	GROUT HOLES
F2	(4) 1-1/16" DIAMETER ANCHOR BOLT HOLES, USE
	5/8" X 6" BOLTS MINIMUM.
F1	BASEPADS, SEE NOTE 8.
E4	MAIN ELECTRICAL CONTROL BOX
E3	SECONDARY (240 VOLT) CONTROL PANEL
E2	MilTouch-EX™ TOUCH SCREEN CONTROLLER (3022X8R);
	E-P PLUS™ CONTROLLER (3022X8J)
E1	MAIN ELECTRICAL CONNECTION
D1	DRAIN TO REAR, 3" PIPE SOCKET JOINT.
A2	VENT FOR LIQUID SUPPLY
A1	VENT 3"ø

NOTES

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.

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ATTENTION

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ATTENTION

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30022X8R, 30022X8J

DM 0 0.5M 1M
INCHES 0 12 24 36

BD3022X8CE
2025262D

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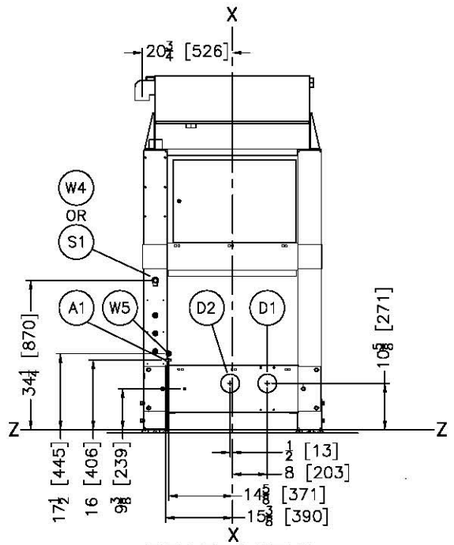
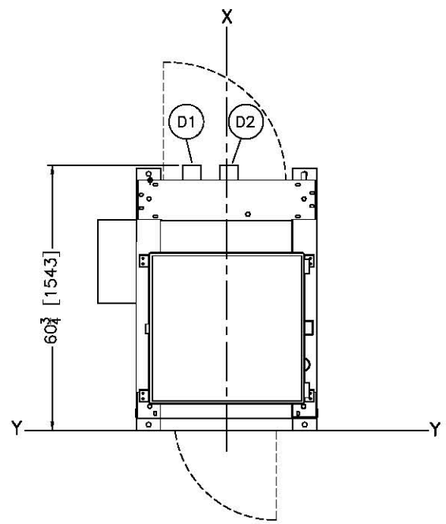
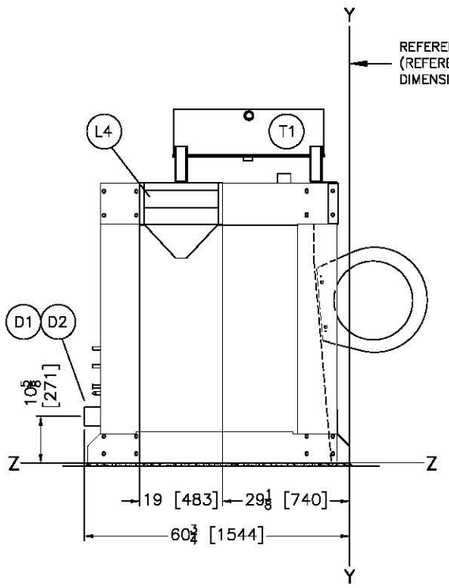


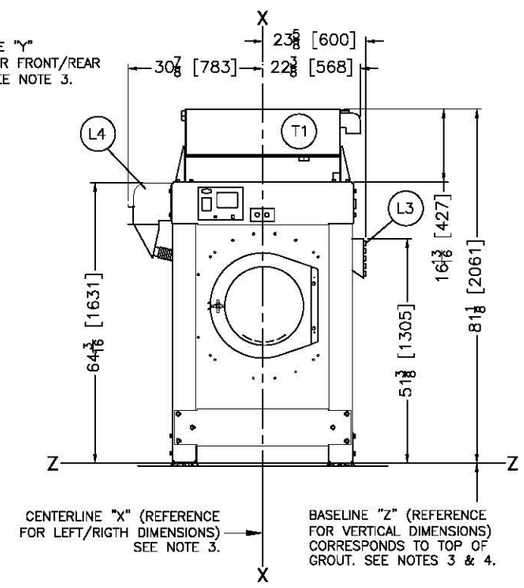
REAR VIEW



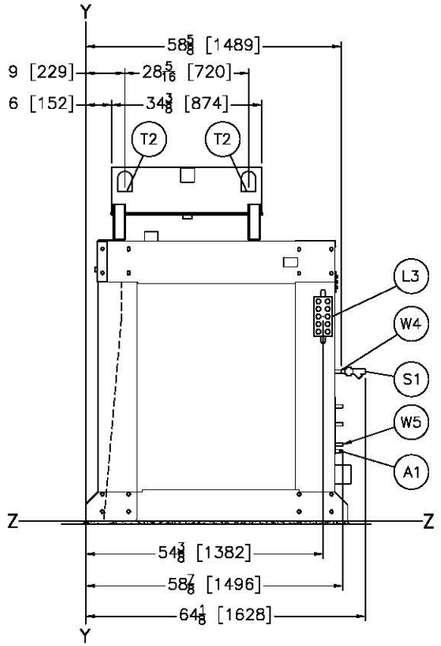
PLAN VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

W5	OPTIONAL AIROP REUSE (IF STEAM SUPPLIED), 1/2" NPT,
	(PART OF OPTIONAL DUAL DRAIN).
W4	OPTIONAL AIROP REUSE (IF NO STEAM), 1/2" NPT.
	(PART OF OPTIONAL DUAL DRAIN).
T2	OVERFLOW, 3" ID HOSE SUPPLIED
T1	OPTIONAL REUSE TANK, 3022X8W ONLY.
S1	OPTIONAL STEAM, 1/2" NPT
L4	5 COMPARTMENT SUPPLY
L3	ADDITIONAL LIQUID SUPPLY INLETS FOR 15 PORT PERISTALTIC
D2	DUAL DRAIN (REUSE), 3" PIPE SOCKET JOINT
D1	DRAIN DRAIN (SEWER), 3' PIPE SOCKET JOINT
A1	AIR CONNECTION 1/4" NPT, FOR REUSE WATER INLET(AIROP)
	(PART OF OPTIONAL DUAL DRAIN).
ITEM	LEGEND

NOTES

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.

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30022X8J, X8R OPTIONS

DM 0 0.5M
INCHES 0 12 24

BD3022X8CB
2025262D

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13 Dimensional Drawings: Pedestals

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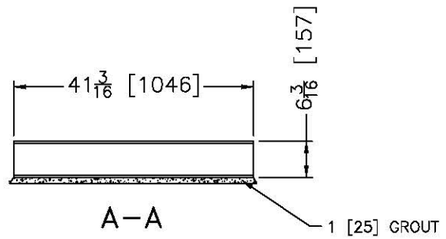
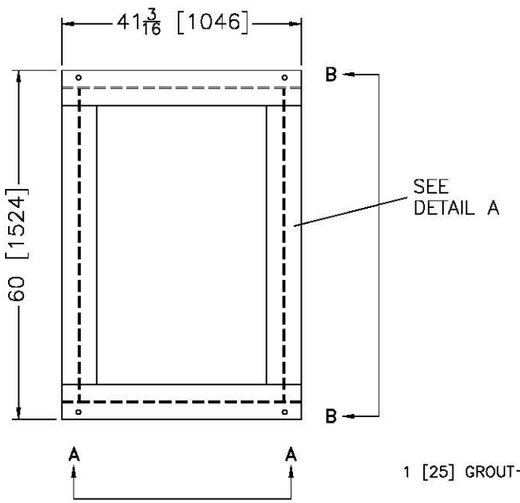
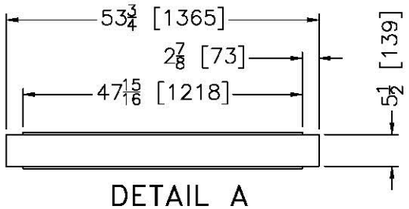
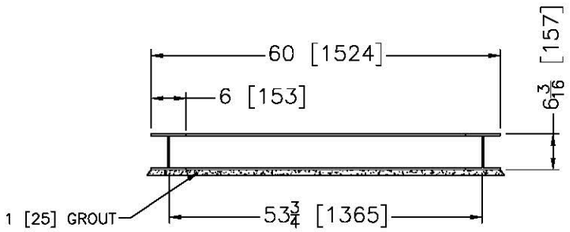


A–A

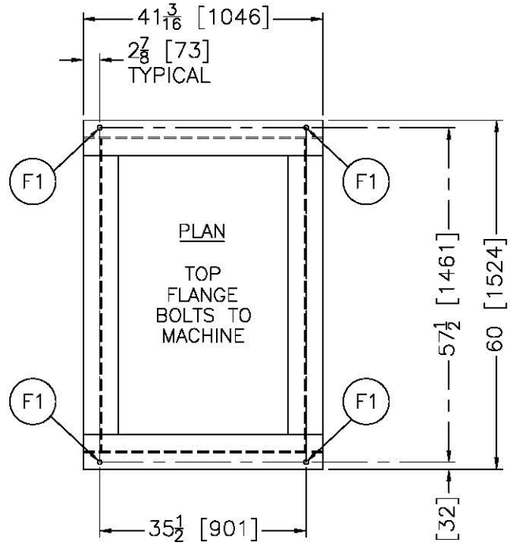




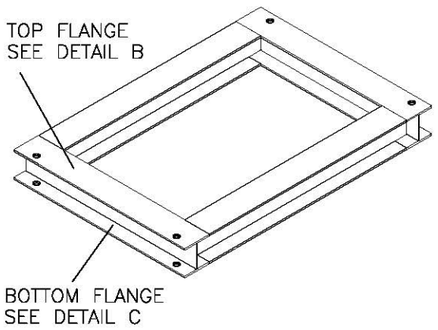
DETAIL A

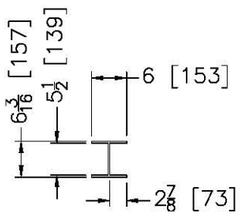


B–B

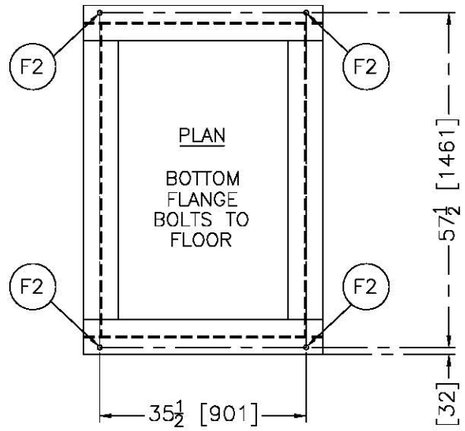


DETAIL B





6 W 20 RECOMMENDED



DETAIL C

F2	FOUR, 1–1/4"[32] ANCHOR BOLT HOLES BOLT TO FLOOR
F1	FOUR, 1–1/4"[32] ANCHOR BOLT HOLES BOLT TO MACHINE
ITEM	LEGEND

NOTES

3 WHEN INSTALLING MACHINE AND PEDESTAL BASE, IT IS RECOMMENDED TO LAY THE PEDESTAL ON A MINIMUM 1 [25] THICK GROUT BED AND BOLT THE MACHINE TO IT. ALTERNATELY, THE MACHINE MAY BE WELDED TO THE BASE, PROVIDED IT IS SHIMMED AS REQUIRED TO INSURE THERE IS NO DISTORTION OF THE MACHINE BASE PLATES OR FRAME.

2 THIS BASE MUST BE FABRICATED LOCALLY AND SHOULD BE MADE SQUARE AND LEVEL. IT IS NOT SUPPLIED BY PELLERIN MILNOR CORP. THIS DRAWING CONVEYS NO EXPRESS OR IMPLIED WARRANTY WITH REGARD TO THE CONSTRUCTION AND/OR SUITABILITY OF THIS ASSEMBLY.

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PEDESTAL BASE 30022X8J, X8R

SCALE: 1" = 1' 0"

DWG# BD3022XBASBE 2025262D

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