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Edition (ECN): 2025033A



# **Mechanical Parts and Service — 30015 & 30022 T6X, VRJ, V8Z, VZZ**





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# 1 General Service & Safety Related Components

## **PELLERIN MILNOR CORPORATION LIMITED STANDARD WARRANTY**

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

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

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

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

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

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

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

BMP720097/19036



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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

**BNUUUU02 / 2023296**

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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™	RecircONE®
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 — Rigid Washer Extractors

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### 1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNWRUS01.C03 0000234538 B.1 B.3 8/27/24, 1:25 PM Released

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



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

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



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

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

### 1.3.2 Safety Alert Messages—Cylinder and Processing Hazards

BNWRUS03.C03 0000234586 B.1 A.4 B.3 1/2/20, 2:19 PM Released

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



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

- ▶ Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- ▶ Do not touch goods inside or hanging partially outside the turning cylinder.
- ▶ Do not operate the machine with a malfunctioning door interlock.
- ▶ 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.



**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

BNWRUS04.C02 0000234584 B.1 A.3 B.3 1/2/20, 2:19 PM Released

#### 1.3.3.1.1 Hazards Resulting from Inoperative Safety Devices

BNWRUS04.C03 0000234583 B.1 B.3 B.4 1/2/20, 2:19 PM Released



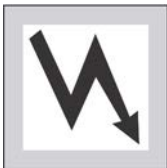
**DANGER: Entangle and Sever Hazards** — Cylinder door interlock— Operating the machine with a malfunctioning door interlock can permit opening the door when the cylinder is turning and/or starting the cycle with the door open, exposing the turning cylinder.

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



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

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



**WARNING: Electrocutation 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

BNWRUS04.C05 0000234651 A.2 B.1 B.3 1/2/20, 2:19 PM Released

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

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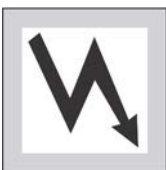


**WARNING: Multiple Hazards** — Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- ▶ 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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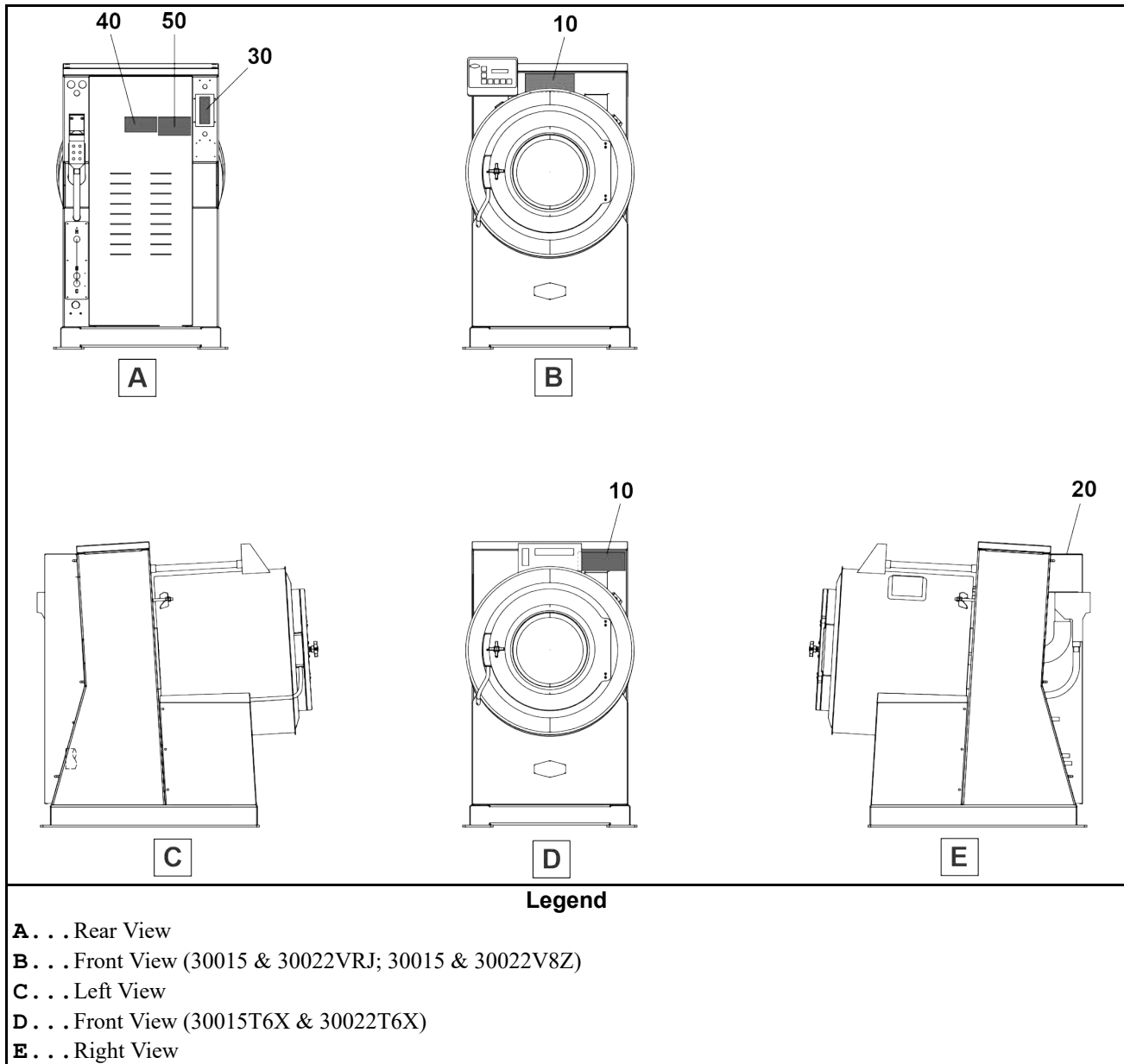
## Safety Placards Use and Placement

2 Sheets

30015T6X, VRJ, V8Z, VZZ and 30022T6X, VRJ, V8Z, VZZ



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





## Safety Placards Use and Placement

2 Sheets

30015T6X, VRJ, V8Z, VZZ and 30022T6X, VRJ, V8Z, VZZ

**Table 2. Parts List—Safety Placards Use and Placement**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
none				
Components				
all	10	01 10635B	NPLT:HAZ CENTER FNT RIDGID-TCATA	
all	20	01 10375B	NPLT:ELEC HAZARD SMALL-TCATA	
all	30	01 10375C	NPLT:E-HAZARD SM VERTCL-TCATA	
all	40	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	50	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	

## Safety Placards Use and Placement—ISO

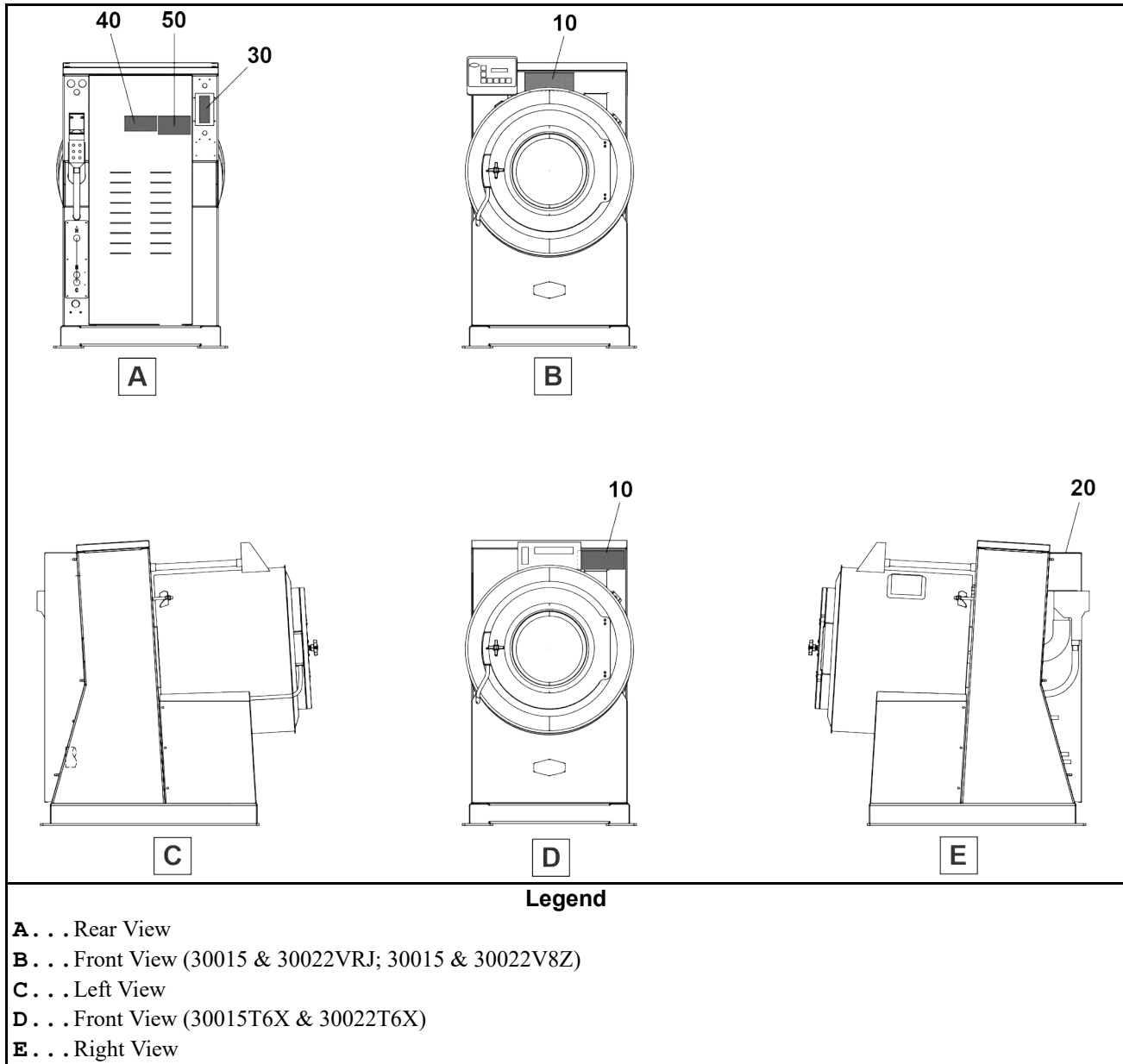
2 Sheets

30015T6X, VRJ, V8Z, VZZ and 30022T6X, VRJ, V8Z, VZZ

ISO Placards are shown on this page.



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



## Safety Placards Use and Placement—ISO

2 Sheets

30015T6X, VRJ, V8Z, VZZ and 30022T6X, VRJ, V8Z, VZZ

**Table 3. Parts List—Safety Placards Use and Placement—ISO**

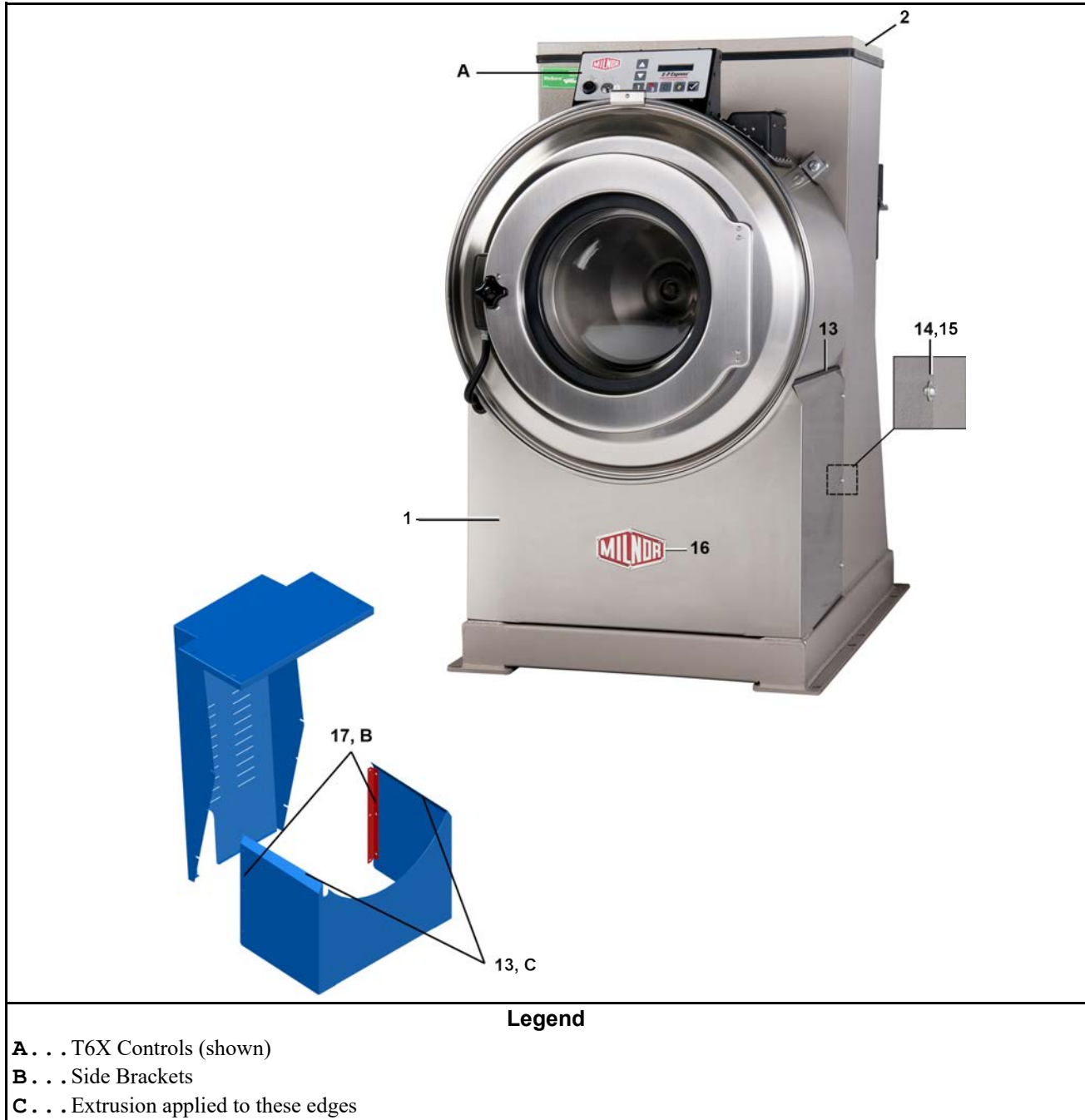
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
none				
Components				
all	10	01 10635Y	NPLT:30"CNTR FRNT RIDGID>ISO	
all	20	01 10375A	NPLT:VDE VOLTAGE WARN 1.25"	
all	30	01 10375	NPLTE:"WARNING" 2X2	

## Guards & Covers

3 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

Figure 1. Guards and Covers on Machine Front



**Guards & Covers**

3 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Figure 2. Guards and Covers on Machine Rear**



**Legend**

- D . . . Dust Cover (within)
- E . . . 4 instances
- F . . . 8 instances
- G . . . Rear belt guard

**Guards & Covers**

3 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Table 4. Parts List—Guards & 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	GG30005	3022T6X GUARD+COVER INSTALL	3015/3022T6X
		GG30004	3015/VRJ/V8Z GUARD COVER INSTALL	3015VRJ,V8Z,VZZ
		GG30003	30VRJ/V8Z GUARD COVER INSTALL	3022VRJ,V8Z,VZZ (WITH SINGLE DRAIN)
	B	GG30002A	INST=GUARDS=CONVERS30V8/VRJ DUAL DRN	3015/3022T6X, VRJ,V8Z (WITH DUAL DRAIN OPTION)
Components				
all	1	02 04548E	FRONT COSMETIC COVER 3022 SHORT BASE	
all	2	AGS30003	TOP COVER ASSY 3022V8	
A	3	AGS30004	BELTGUARD ASSY 3022V8	
B	3	AGS30004A	30V8Z/VRJ REAR BELT GUARDS ASSY DUAL DRAIN	
all	4	17N070AP	RETAIN NUT#S10222-27	
all	5	15K092Z	HEXFLGSCR 3/8-16X1 GR5 ZINC	
all	6	12P1ARHP1	PLUG PRY-OUT .875 HEYCO#3083	
all	7	15P201	TRDCUT-F HXWASHD 3/8-16X1N1K	
all	9	17N071	NUT J-TYP #C33896-3816-3B 3/8"	
all	10	03 BF5X7T	COVER:V6Z V8Z ELECT CONNECTION ACCESS	
all	11	12P1ARHP	HOLEPLUG 7/8" BLK HEYCO #2703	
all	12	03 C1824Z	DUST COVER=30"V#Z BELT	
all	13	02 02087D	EXTRUSION=30" SHORT FRAME COSMETIC	
all	14	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	15	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	16	01 10020	NPLT SMALL "MILNOR" LOGO	
all	17	02 04553	SIDE COSMETIC SUPPORT BRKT 3022V8	

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## 1.4 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 3. The Bolts in Milnor® Equipment**

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

### 1.4.1 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).

#### 1.4.1.1 Fasteners Made of Carbon Steel

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##### 1.4.1.1.1 Without a Threadlocker

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

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	66	7	101	11	143	16	126	14
1/4 x 28	76	9	116	13	163	18	–	–
5/16 x 18	136	15	209	24	295	33	258	29
5/16 x 24	150	17	232	26	325	37	–	–

**Table 6. Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	20	27	31	42	44	59	38	52
3/8 x 24	23	31	35	47	50	68	–	–
7/16 x 14	32	43	49	66	70	95	61	83
7/16 x 20	36	49	55	75	78	105	–	–
1/2 x 13	49	66	75	102	107	145	93	126
1/2 x 20	55	75	85	115	120	163	–	–
9/16 x 12	70	95	109	148	154	209	134	182
9/16 x 18	78	106	121	164	171	232	–	–
5/8 x 11	97	131	150	203	212	287	186	252
5/8 x 18	110	149	170	231	240	325	–	–
3/4 x 10	172	233	266	361	376	510	329	446
3/4 x 16	192	261	297	403	420	569	–	–
7/8 x 9	167	226	429	582	606	821	531	719
7/8 x 14	184	249	473	641	668	906	–	–
1 x 8	250	339	644	873	909	1232	796	1079
1 x 12	274	371	704	954	994	1348	–	–
1 x 14	281	381	723	980	1020	1383	–	–
1 1/8 x 7	354	480	794	1077	1287	1745	1126	1527
1 1/8 x 12	397	538	891	1208	1444	1958	–	–
1 1/4 x 7	500	678	1120	1519	1817	2464	1590	2155
1 1/4 x 12	553	750	1241	1682	2012	2728	–	–
1 3/8 x 6	655	888	1469	1992	2382	3230	2085	2827
1 3/8 x 12	746	1011	1672	2267	2712	3677	–	–
1 1/2 x 6	869	1178	1949	2642	3161	4286	2767	3751
1 1/2 x 12	979	1327	2194	2974	3557	4822	–	–

**Table 7. 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 8. Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	15	20	23	31	33	44	29	38
3/8 x 24	17	23	26	35	37	49	–	–
7/16 x 14	24	32	37	50	52	71	46	61
7/16 x 20	27	36	41	55	58	78	–	–
1/2 x 13	37	49	56	76	80	106	70	93
1/2 x 20	41	55	64	85	90	120	–	–
9/16 x 12	53	70	81	110	115	153	101	134
9/16 x 18	59	79	91	122	128	174	–	–
5/8 x 11	73	97	113	150	159	212	139	186
5/8 x 18	83	110	127	172	180	240	–	–
3/4 x 10	129	173	200	266	282	376	246	329
3/4 x 16	144	192	223	297	315	420	–	–
7/8 x 9	125	166	322	430	455	606	398	531
7/8 x 14	138	184	355	474	501	668	–	–
1 x 8	188	250	483	644	682	909	597	796
1 x 12	205	274	528	716	746	995	–	–
1 x 14	210	280	542	735	765	1037	–	–
1 1/8 x 7	266	354	595	807	966	1288	845	1126
1 1/8 x 12	298	404	668	890	1083	1444	–	–
1 1/4 x 7	375	500	840	1120	1363	1817	1192	1590
1 1/4 x 12	415	553	930	1261	1509	2013	–	–
1 3/8 x 6	491	655	1102	1470	1787	2382	1564	2085
1 3/8 x 12	559	758	1254	1672	2034	2712	–	–
1 1/2 x 6	652	870	1462	1982	2371	3161	2075	2767
1 1/2 x 12	733	994	1645	2194	2668	3557	–	–

**1.4.1.1.2 With a Threadlocker**

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**Table 9. 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 10. Torque Values if You Apply LocTite 222**

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

**Table 11. Torque Values if You Apply LocTite 242**

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

**Table 12. Torque Values if You Apply LocTite 262**

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

**Table 13. Torque Values if You Apply LocTite 272 (High-Temperature)**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 8	350	475	901	1222	1272	1725	1114	1510
1 x 12	383	519	986	1337	1392	1887	–	–

**Table 13 Torque Values if You Apply LocTite 272 (High-Temperature) (cont'd.)**

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 14	393	533	1012	1372	1428	1936	–	–
1-1/8 x 7	496	672	1111	1506	1802	2443	1577	2138
1-1/8 x 12	556	754	1247	1691	2022	2741	–	–
1-1/4 x 7	700	949	1568	2126	2544	3449	2226	3018
1-1/4 x 12	774	1049	1737	2355	2816	3818	–	–
1-3/8 x 6	917	1243	2056	2788	3335	4522	2919	3958
1-3/8 x 12	1044	1415	2341	3174	3797	5148	–	–
1-1/2 x 6	1217	1650	2729	3700	4426	6001	3873	5251
1-1/2 x 12	1369	1856	3071	4164	4980	6752	–	–

**Table 14. 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	–	–

### 1.4.1.2 Stainless Steel Fasteners

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**Table 15. 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 16. 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

## 1.4.2 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.

### 1.4.3 How to Apply a Threadlocker

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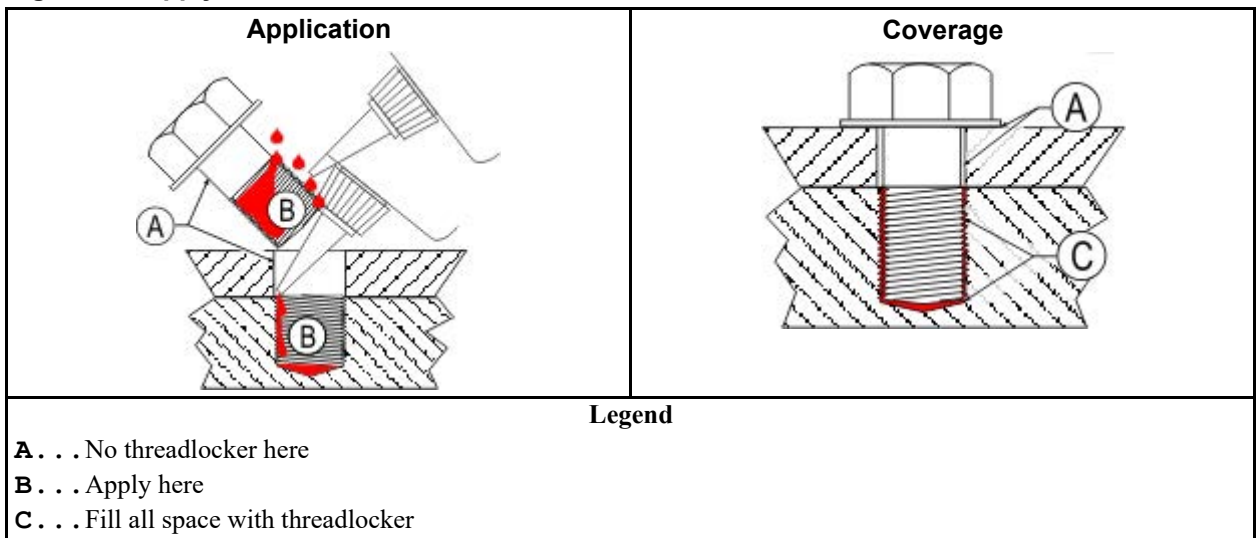


**CAUTION: Malfunction Hazard** — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

- ▶ 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 4. Apply Threadlocker in a Blind Hole**



#### 1.4.3.1 Blind Holes

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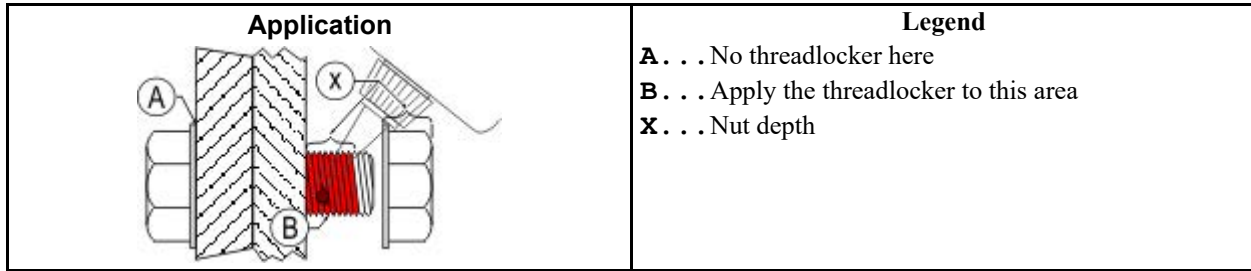
1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table ([Table 9: Threadlocker by the Diameter of the Bolt \(see below Note \), page 23](#) to [Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 25](#) ).

#### 1.4.3.2 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 9: Threadlocker by the Diameter of the Bolt \(see below Note \), page 23](#) to [Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 25](#) ).

**Figure 5. Apply Threadlocker in a Through Hole**



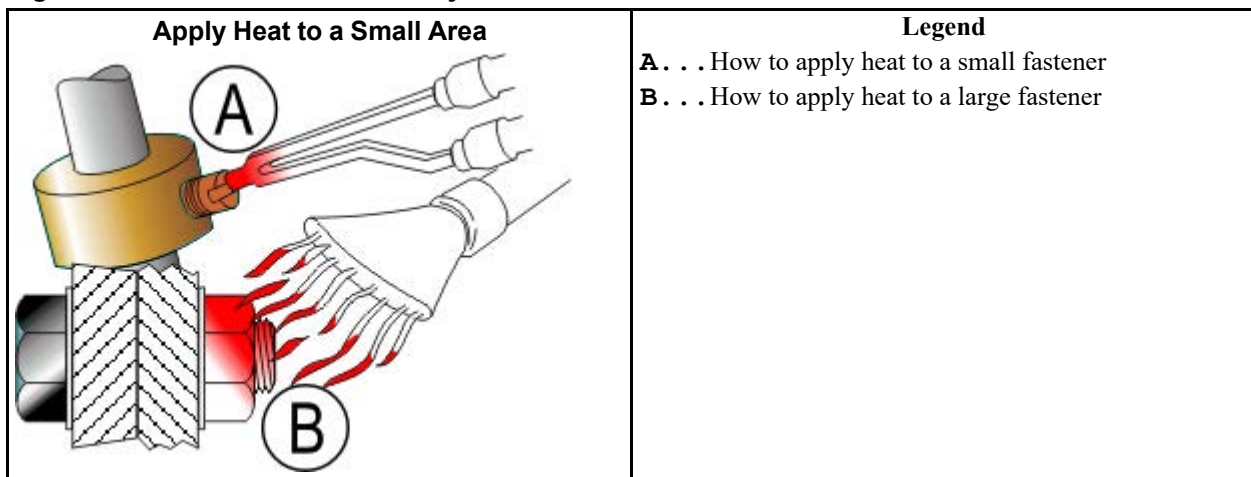
### 1.4.3.3 Disassembly

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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.

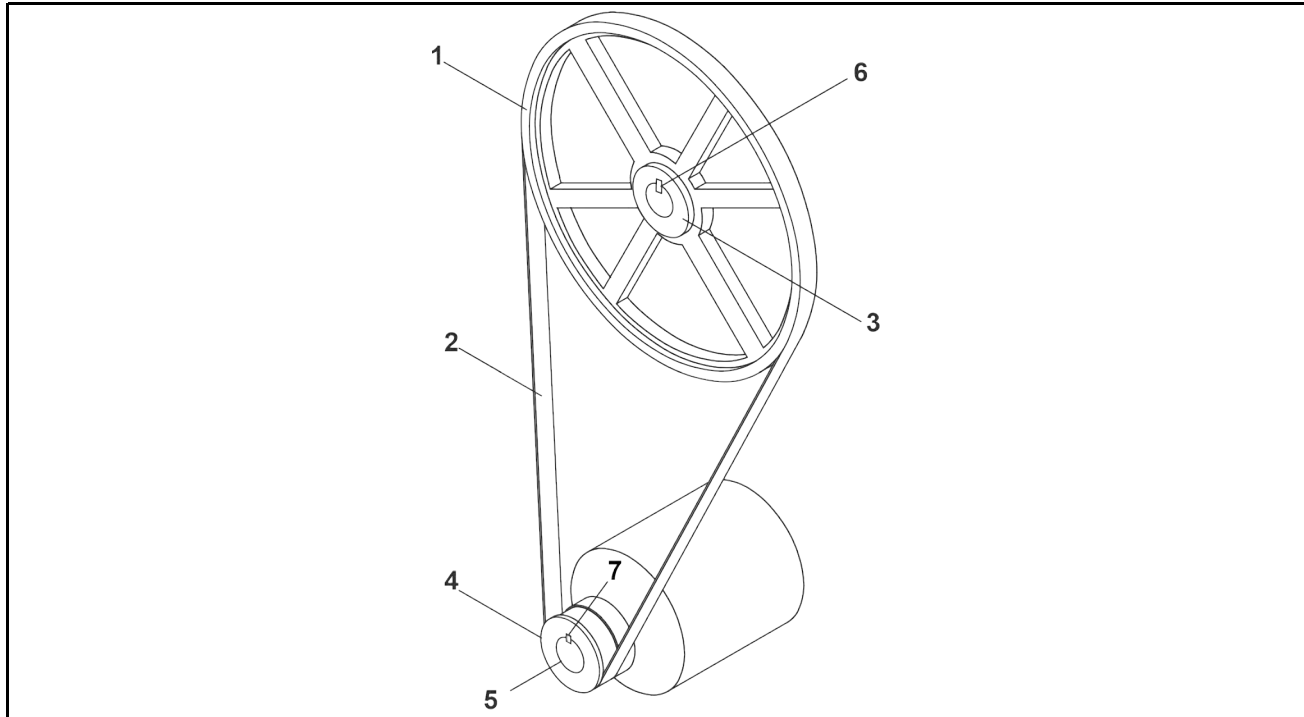
**Figure 6. Use heat for disassembly of fasteners with threadlocker.**



# 2 Drive Assemblies

**Drive Chart**

30015T6X, 30022T6X



**Table 17. Parts List—Drive Chart 30”T6X**

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	GDB30009	3022T6X DRIVE BASE INSTALL	Spring Tension Motor Mount, Prior 1/8/2025
	B	GDB30009C	30T6X ADJ DRIVE INSTALL	Adjusting Bolt Motor Mount , Effective 1/8/2025
Components				
all	1	56190R3SF	VPUL 3G3V19.0 (SF)	
all	2	56VR075XB3	WEDGE COG BAND 3R3VX750 EA = 1 BELT	
all	3	56Q1KSF	1+1/2" BUSH VPUL QD TYPE SF	
all	4	560260R3JA	VPUL 3G3V2.60 QD TYPE JA (2.65"OD)	
all	5	56Q1CJA	1+1/8" BUSH VPUL QD TYPE "JA" W/SETSCREW	
all	6	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	
all	7	15E195	SQMACHKEY 3/16X1+1/2 NOTAPER	



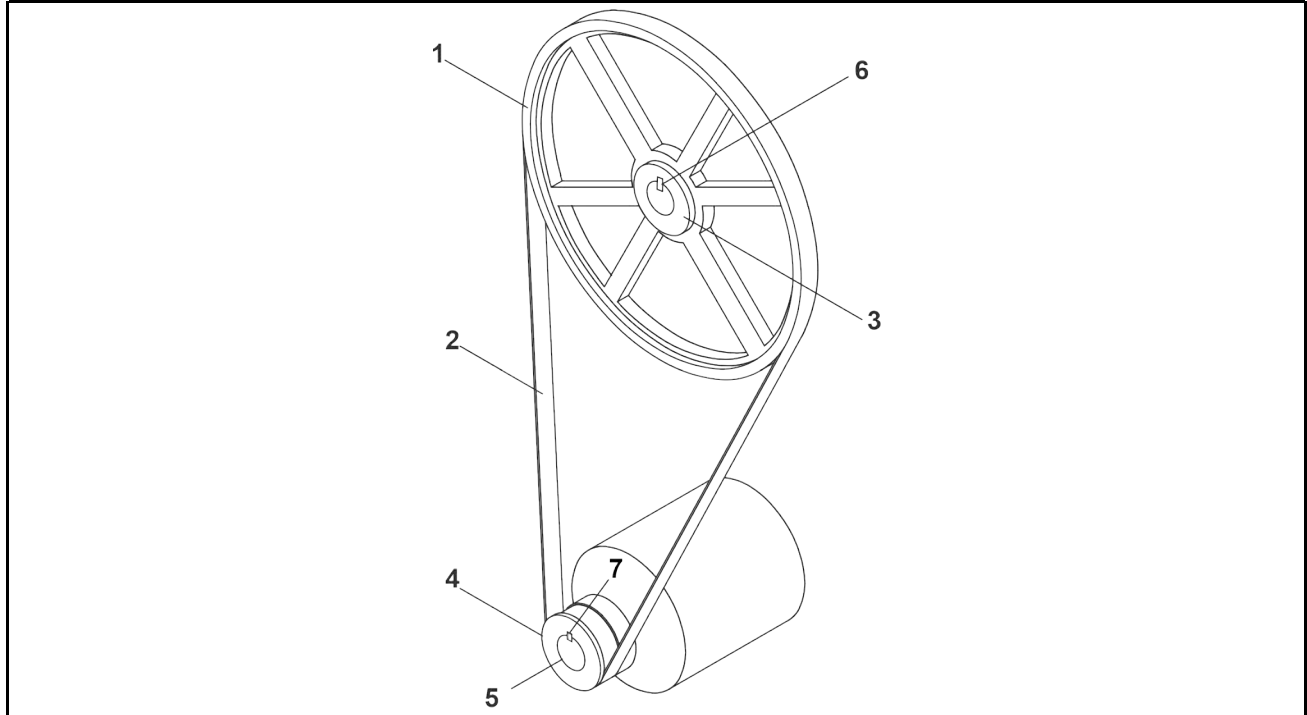
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**Drive Chart**

1 Sheet

30015T6X, 30022T6X



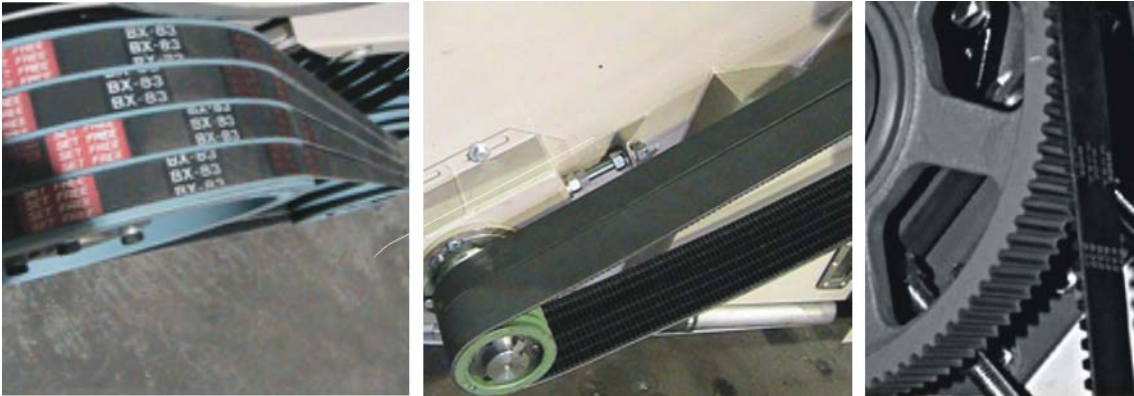
**Table 18. Parts List—Drive Chart 30”T6X**


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	GDB30009	3022T6X DRIVE BASE INSTALL	Spring Tension Motor Mount, Prior 1/8/2025
	B	GDB30009C	30T6X ADJ DRIVE INSTALL	Adjusting Bolt Motor Mount , Effective 1/8/2025
Components				
all	1	56190R3SF	VPUL 3G3V19.0 (SF)	
all	2	56VR075XB3	WEDGE COG BAND 3R3VX750 EA = 1 BELT	
all	3	56Q1KSF	1+1/2" BUSH VPUL QD TYPE SF	
all	4	560260R3JA	VPUL 3G3V2.60 QD TYPE JA (2.65"OD)	
all	5	56Q1CJA	1+1/8" BUSH VPUL QD TYPE "JA" W/SETSCREW	
all	6	15E230	STRMACHKEY 3/8SQX2+1/2 TOL.+0	
all	7	15E195	SQMACHKEY 3/16X1+1/2 NOTAPER	



## 2.1 Drive Pulley and Belt Maintenance

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**Figure 7. 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](http://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."

### 2.1.1 Pulley Requirements

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

#### 2.1.1.1 Condition of Grooves on Pulleys

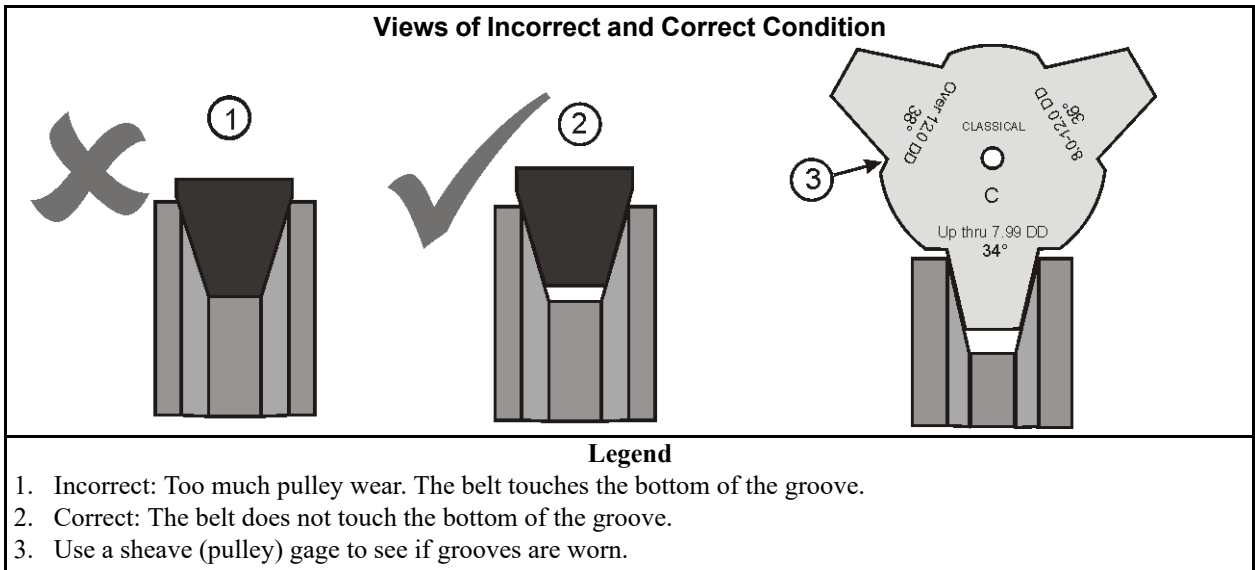
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Replace a pulley if:

- 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 8, page 33).

**Figure 8. Pulley Groove Condition**



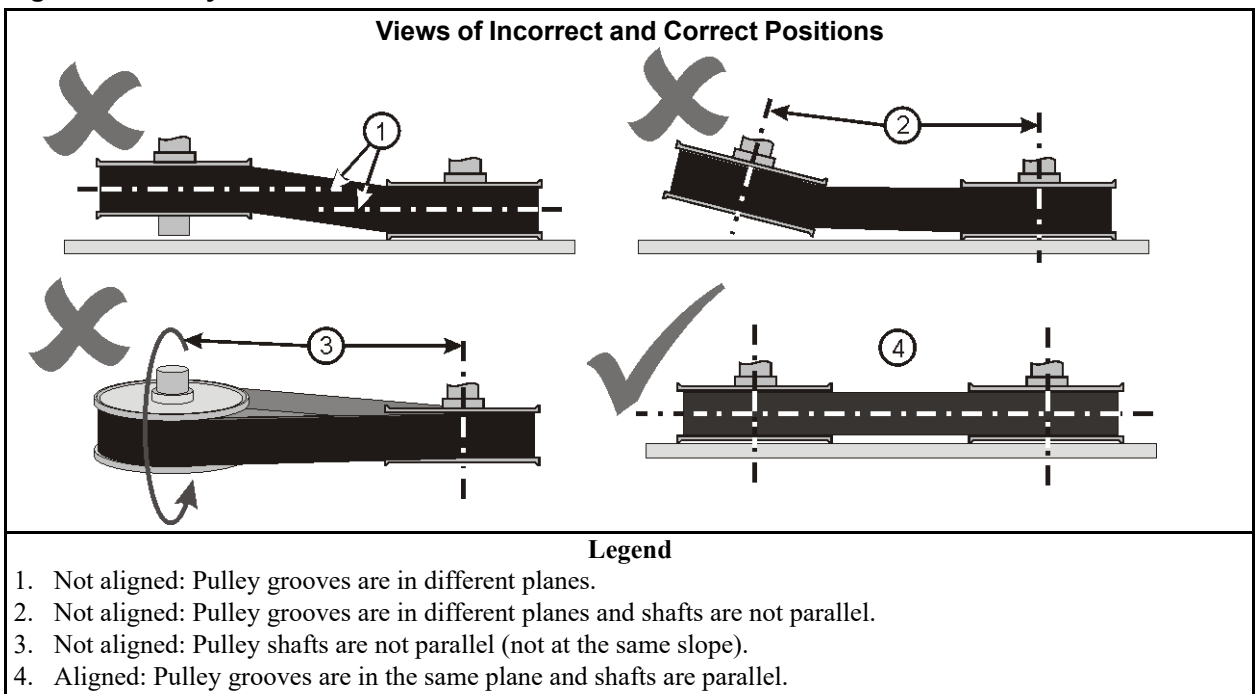
### 2.1.1.2 Pulley and Shaft Position

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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 9. Pulley and Shaft Position**



### 2.1.1.3 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 10, page 34, 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 10, page 34, item 2). If a force causes damage to a pulley, it can bend. It will not have a circular shape.

Figure 10. Run-out

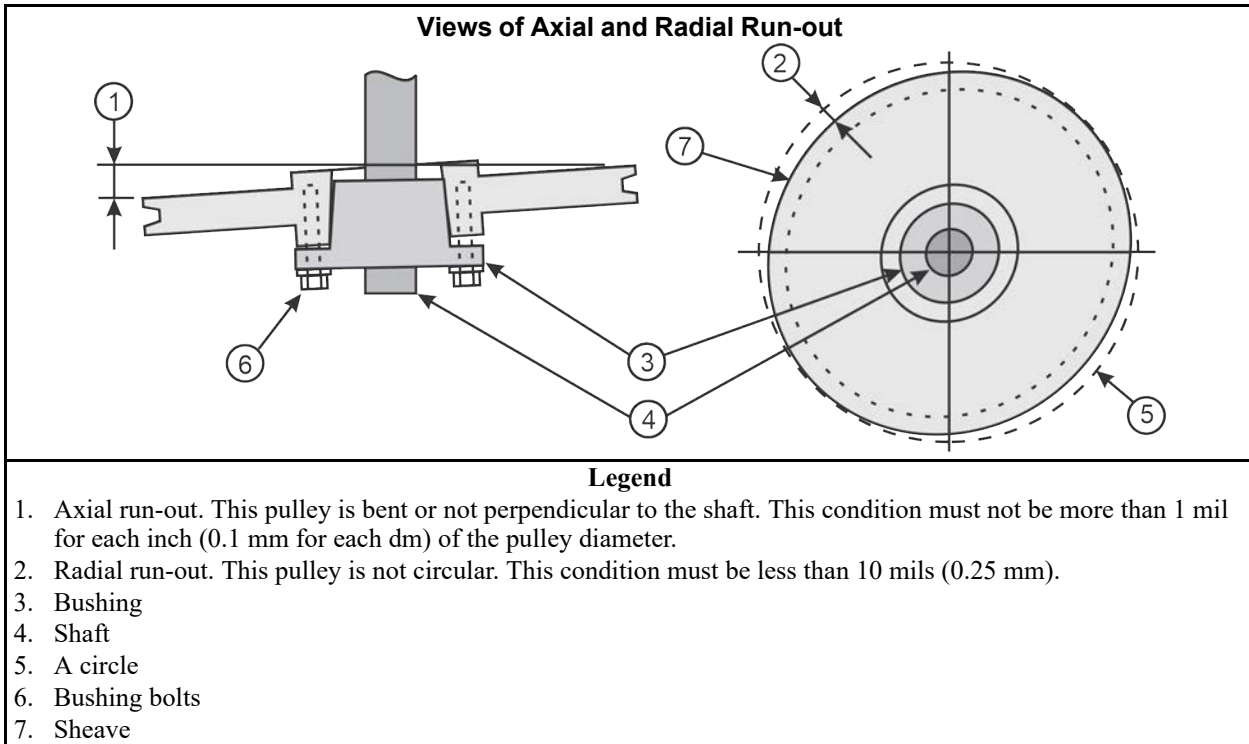
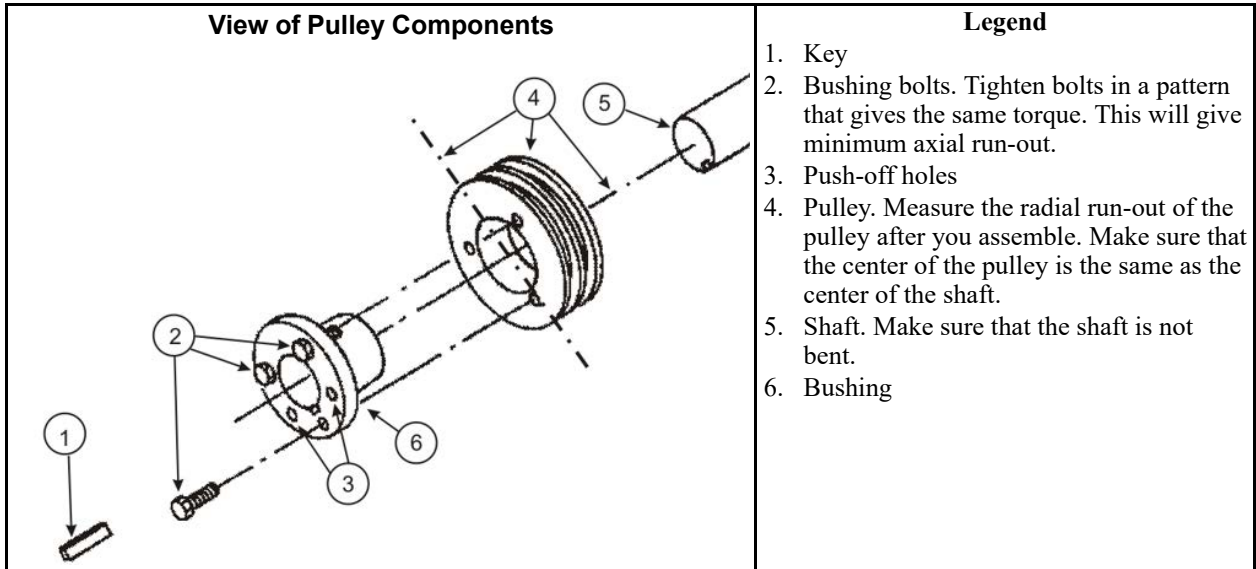


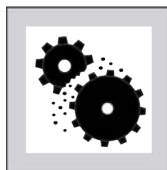
Figure 11. Typical Pulley Assembly



## 2.1.2 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.

### 2.1.2.1 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 2.1.1.2](#), page 33) or by incorrect tension explained in [Section 2.1.1.2](#), page 33. Slippage can cause belts to become too hot. Belts must not have a temperature more than than 140F (60° C).

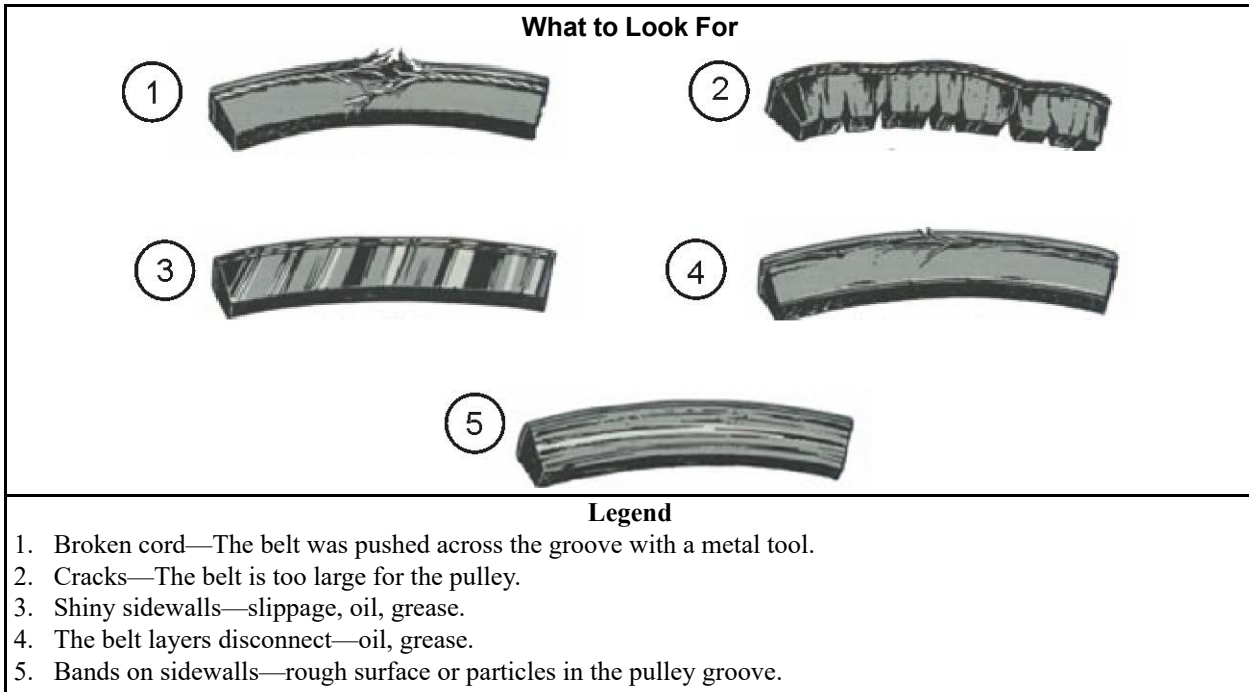


**TIP:** The belt storage area must be cool and dry with no sun light.



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

**Figure 12. Types of Belt Damage**



### 2.1.2.2 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.

### 2.1.3 The pulleys must stay aligned when you adjust the belt tension

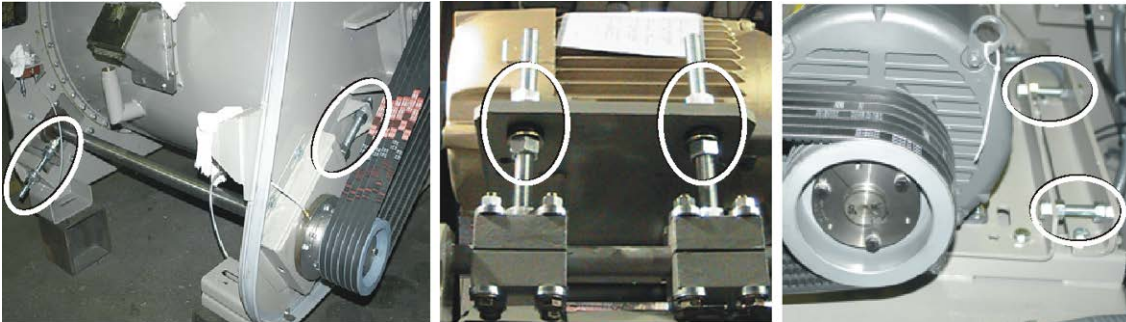
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Some tension mechanisms do not have an effect on pulley and shaft requirements. Pulleys will stay aligned when you adjust them. [Figure 13, page 37](#) is an example of these. Where tension mechanisms are a pair of threaded rods, you must adjust the nut, on each rod carefully. If not, the pulleys will not stay aligned. Examples of this type are shown in [Figure 14, page 37](#).

**Figure 13. A Tension Mechanism that will not Change the Angle of the Pulleys**



**Figure 14. Some Pairs of Tension Mechanisms that Can Change the Angle of the Pulleys**



## 2.1.4 How to Do Maintenance on Pulleys and Belts

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**Table 19. 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 11, page 35, item 2
Laser, straight edge, or string	Align pulleys	Tools are listed in order of preference. Section 2.1.1.2 , page 33 and Figure 15, page 39
Bubble level	Align shafts	Section 2.1.1.2 , page 33 and Figure 16, page 40
Dial indicator	Measure run-out	Section 2.1.1.3 , page 34 and Figure 17, page 40
Sheave (pulley) gage	Examine pulley wear	Figure 8, page 33.
Infrared thermometer	Examine belt temperature	Section 2.1.2.1 , page 35.

### 2.1.4.1 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 13, page 37 and Figure 14, page 37 show typical belt tension mechanisms.

**Pulley removal** On the typical type of pulley and bushing shown in Figure 11, page 35, 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 11, page 35 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.

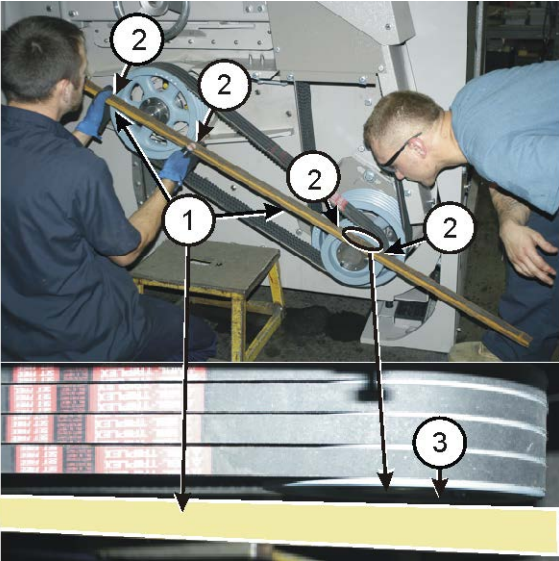
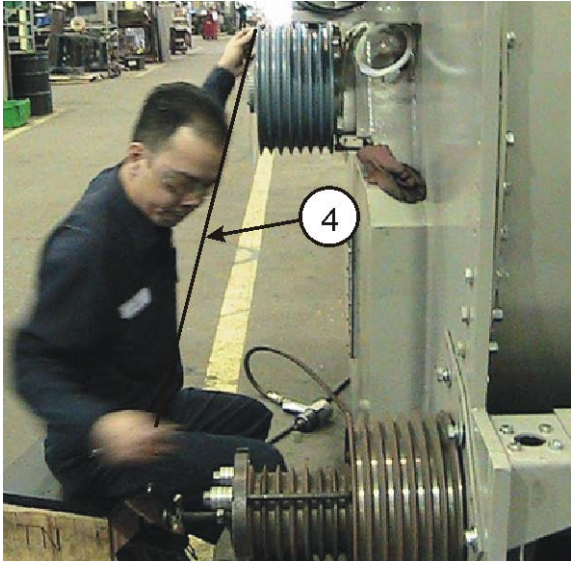
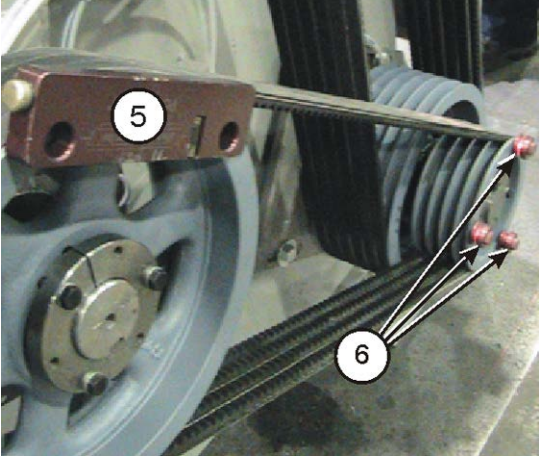
**Test** Before you connect power again, make sure that you remove all tools. Operate the machine with a full load. If the belts slip, increase belt tension with the machine shut down and power removed. Then test again. Make sure that the machine is safe before you put it into regular operation.



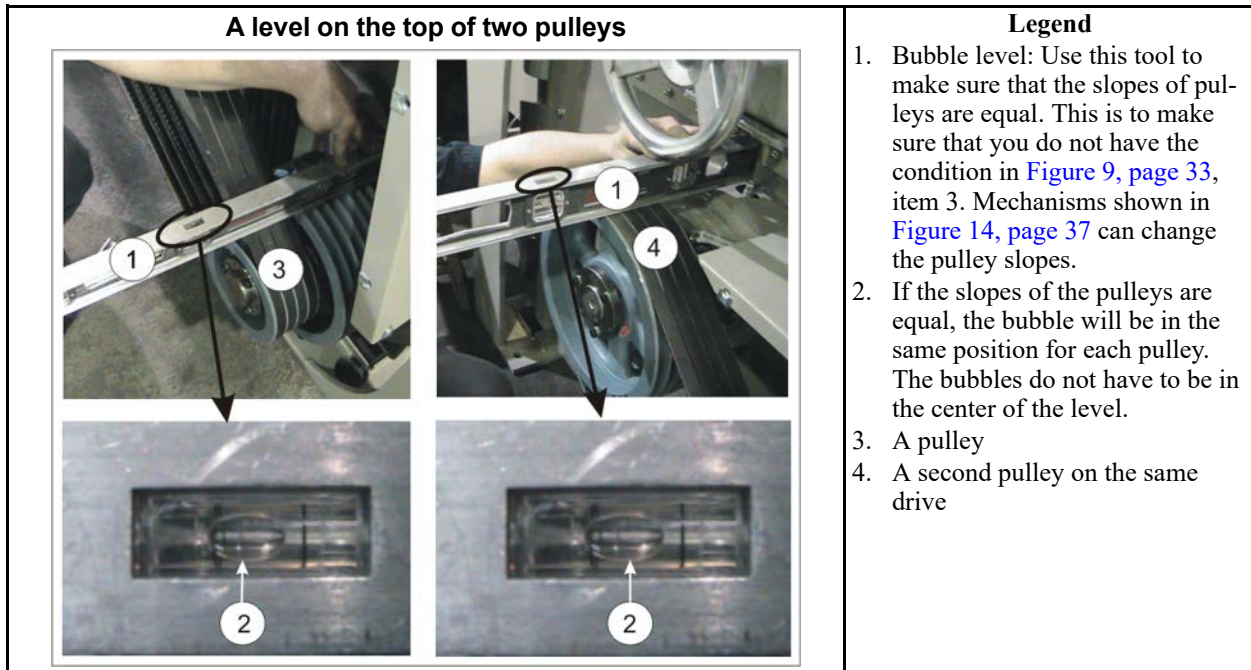
### 2.1.4.2 Examples of Procedures Used at the Milnor® Factory to Align Pulleys

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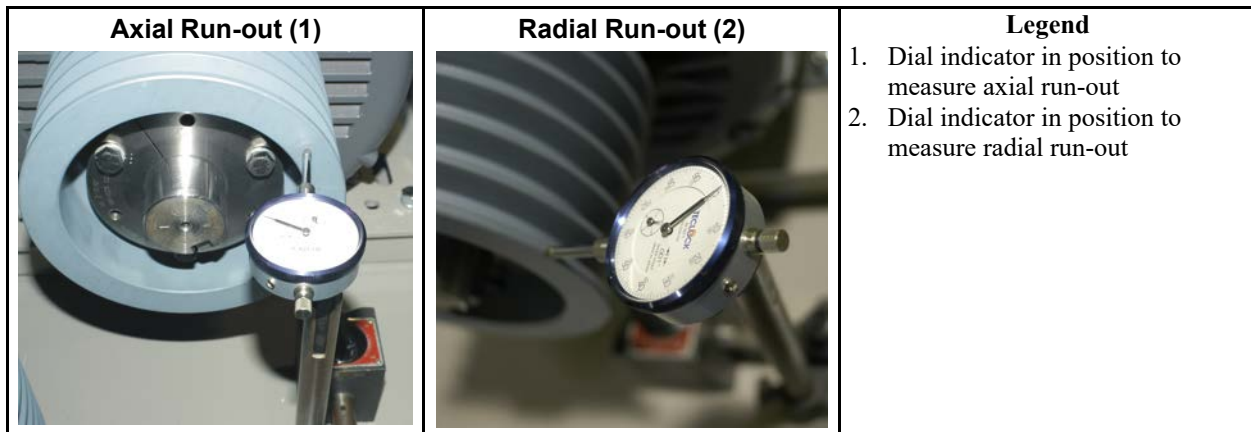
**Figure 15.** Use a straight edge, a string, or a laser to make sure that all pulleys are in the same plane.

<p style="text-align: center;"><b>Straight edge</b></p> 	<p style="text-align: center;"><b>String</b></p> 
<p style="text-align: center;"><b>Legend</b></p> <ol style="list-style-type: none"> <li>1. Straight edge.</li> <li>2. Four points where the straight edge must touch the pulleys.</li> <li>3. Space between the straight edge and the pulley. This shows that the pulleys are not in the same plane.</li> <li>4. You can use a string as a straight edge if you hold it tight.</li> <li>5. Magnet-mounted laser</li> <li>6. Three targets to point the laser at.</li> </ol>	<p style="text-align: center;"><b>Laser</b></p> 

**Figure 16. Use a level to make sure that the pulleys are at the same slope.**



**Figure 17. Dial indicator used to find the axial and radial run-out of a pulley.**



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# Motor Mount

1 Sheet

30015/30022T6X, VRJ, V8Z, VZZ

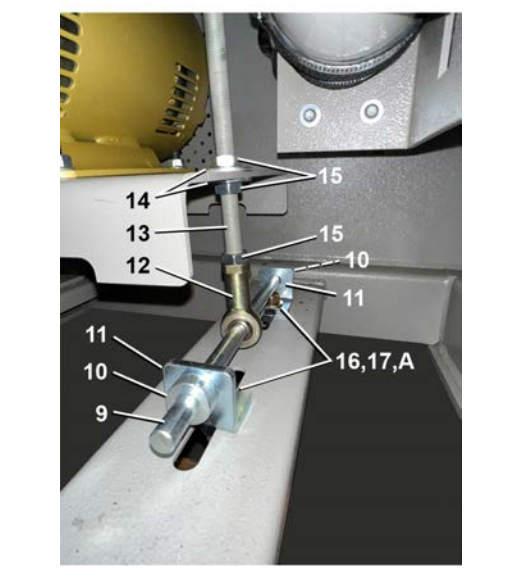


**NOTE:** This adjusting rod design has been effective since 1/8/2025. For the prior spring tensioning design, see BPWOAI03.



**Legend**

A . . . 4 places



**Motor Mount**

30015/30022T6X, VRJ, V8Z, VZZ

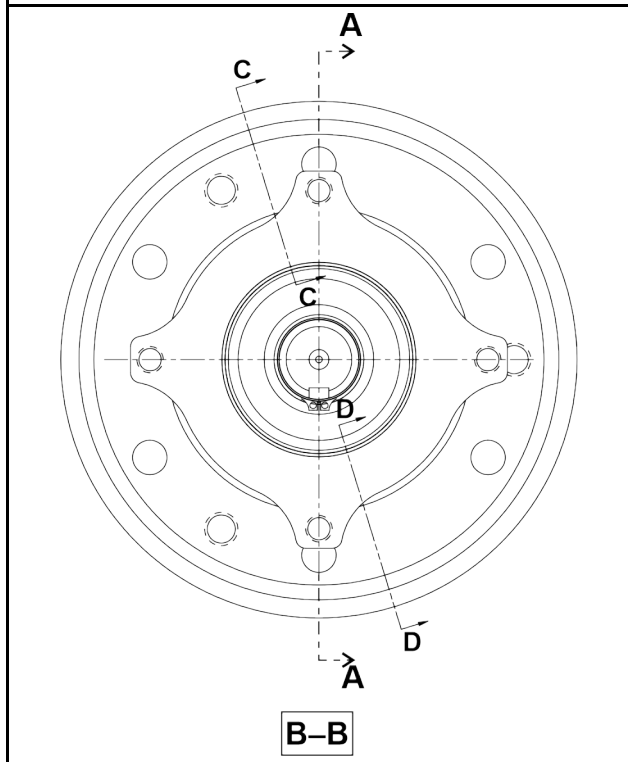
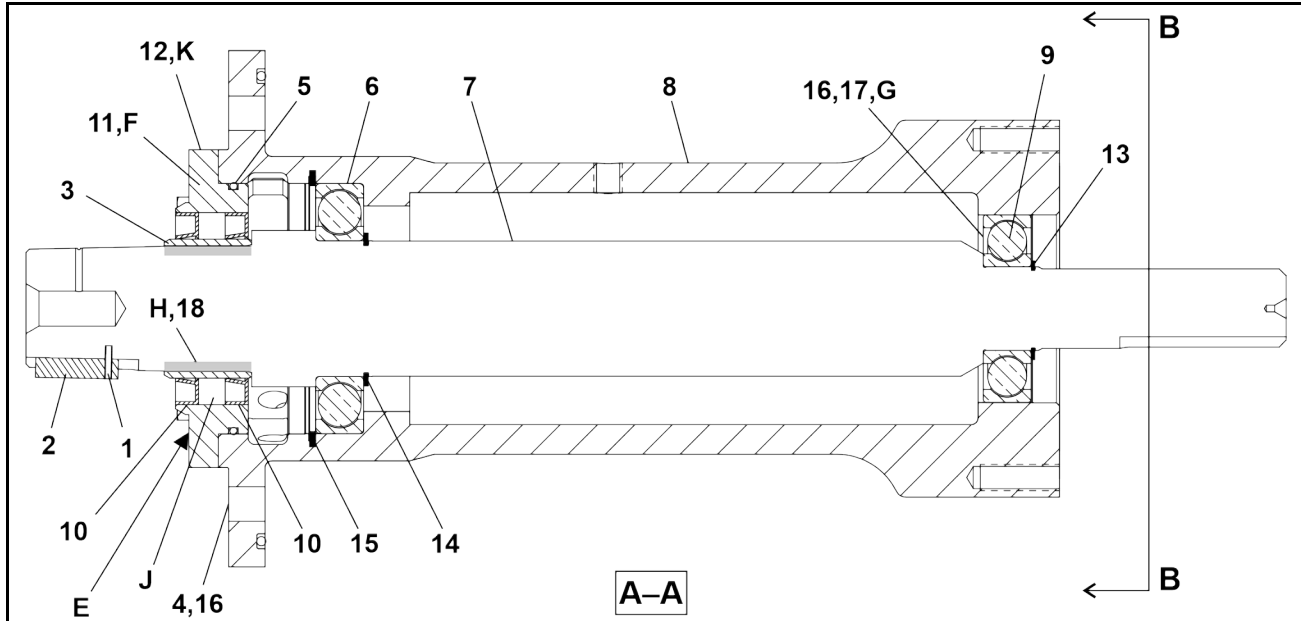
**Table 20. Parts List—Motor Mount**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	ADB30009C	30T6X ADJUSTABLE DRIVE ASSY	30015/30020 T6X
	B	ADB30008D	3022V8 ADJ DRIVE ASSY	30015/30020 VRJ,V8Z,VZZ
Components				
all	1	02 04256L	PLATE=MOTOR MOUNT, 3022T6X	
all	2	02 04258	SHAFT=MOTOR MOUNT, 3022S4	
all	3	54JH10750C	SHFTCOLLAR 3/4"CLPTYP(SGLSPLT)	
all	4	54E226	FLBRNYL 3/4"X1"X1";EA=1 FLGBRG	
all	5	02 04551	BRKT=MOTOR MOUNT 3022V8	
all	6	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	7	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	8	15G198	HXFLGNUT 3/8-16 ZINC	
all	9	02 04258A	ROD=MOTOR MOUNT SPRING	
all	10	54J010	SHFTCOLL G#1F506 1/2"ID EA=1PC	
all	11	02 19288	BRACKET=ADJUSTING-1.5X1.75	
all	12	54AA00KFRE	FEM ROD END ALIN#VF-8G 1/2"-20	
all	13	17R023A09A	THREADED ROD 1/2-20UNF X 9" ZNC	
all	14	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	15	15G235	HEXNUT 1/2-20UNF2B SAE ZINC GR	

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Main Bearing

30015T6X and 30022T6X



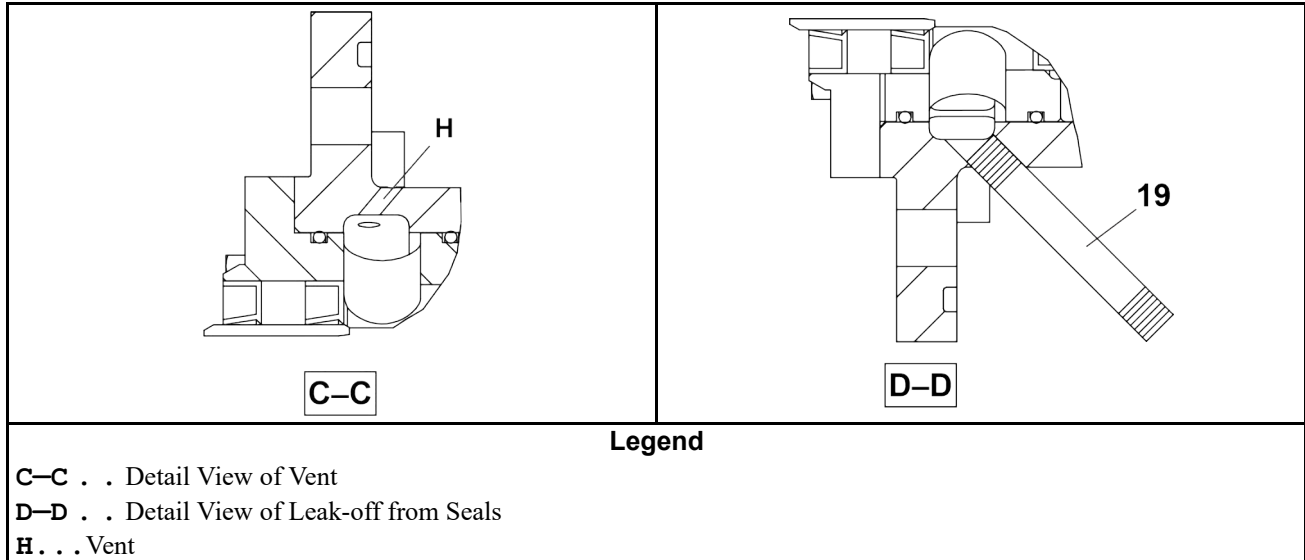
**Legend**

**A-A** . . . Cross Section View of Bearing  
**B-B** . . . Rear View of Bearing  
**C-C** . . . Detail View of Vent  
**D-D** . . . Detail View of Leak-off from Seals  
**E** . . . Apply adhesive to the bolts into the seal holder (not shown).  
**F** . . . The seal holder must be fully down before you tighten the fasteners.  
**G** . . . Apply primer and adhesive to the rear bearing cup and holder housing.  
**H** . . . Clean the shaft and inner sleeve. Make sure that they are clean and free from oil. Apply adhesive to the shaft, then apply the sleeve. Make sure of a bond on a minimum of 75% of the surface.  
**J** . . . Pack grease between these two seals during assembly.  
**K** . . . Item 12 is not shown. These plugs are used temporarily to prevent dirt from entering unfilled holes.

# Main Bearing

2 Sheets

30015T6X and 30022T6X



**Table 21. Parts List—Main Bearing**

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 09908	3015/22T6X + 3015VRJ BEARING ASSY MAIN	
Components				
all	1	15H089S	SPRINGPIN 1/8"DIA X 5/8" LONG	
all	2	02 02294A	SHAFT KEY 3/8 X 3/8	
all	3	02 13143	SEALSLEEVE=SWE-1/SWE	
all	4	15B080	HEXCAPSCR 5/16 X1+1/4 SS-18-8	
all	5	60C152D	ORING 4+1/2 1/8CS BUNA #246	
all	6	54A126	BALLBEAR 65MM ID (2.56"ID) #SKF 6213-2Z	
all	7	X2 13106A	3015/22T6X + 3015VRJ MAIN SHAFT MACH	
all	8	X2 03573Y	3015/22T6X + 3015VRJ BEARING HOUSING MACH	
all	9	54A125	BALLBEAR 40MM ID (2.56"ID) #SKF 6308-2Z	
all	10	24S053	SEAL 2.625X3.625X.437#10051L5	
all	11	X2 13144X	3015/22T6X + 3015VRJ SHAFT SEAL HOLDER	
all	12	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	13	17B001	EXTRET RING GLH#DSH-040	
all	14	17B001C	EXTRET RING 65MM (2.559) ROTORCLIP #SH-255 .078 THICK	
all	15	17B021	INTRETRING 120MM	

## Main Bearing

2 Sheets

30015T6X and 30022T6X

**Table 21 Parts List—Main Bearing (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	16	20C011B	RETAIN CMPD ADH LCT#60905 .5CC	
all	17	20C006P	PRIMER-N #7649 LCT#21348-4	
all	18	20C009	THRDLKSEAL LCT#27731 50CC	
all	19	5N0E03ABE2	NPT NIP 1/4X3 TBE BRASS STD	



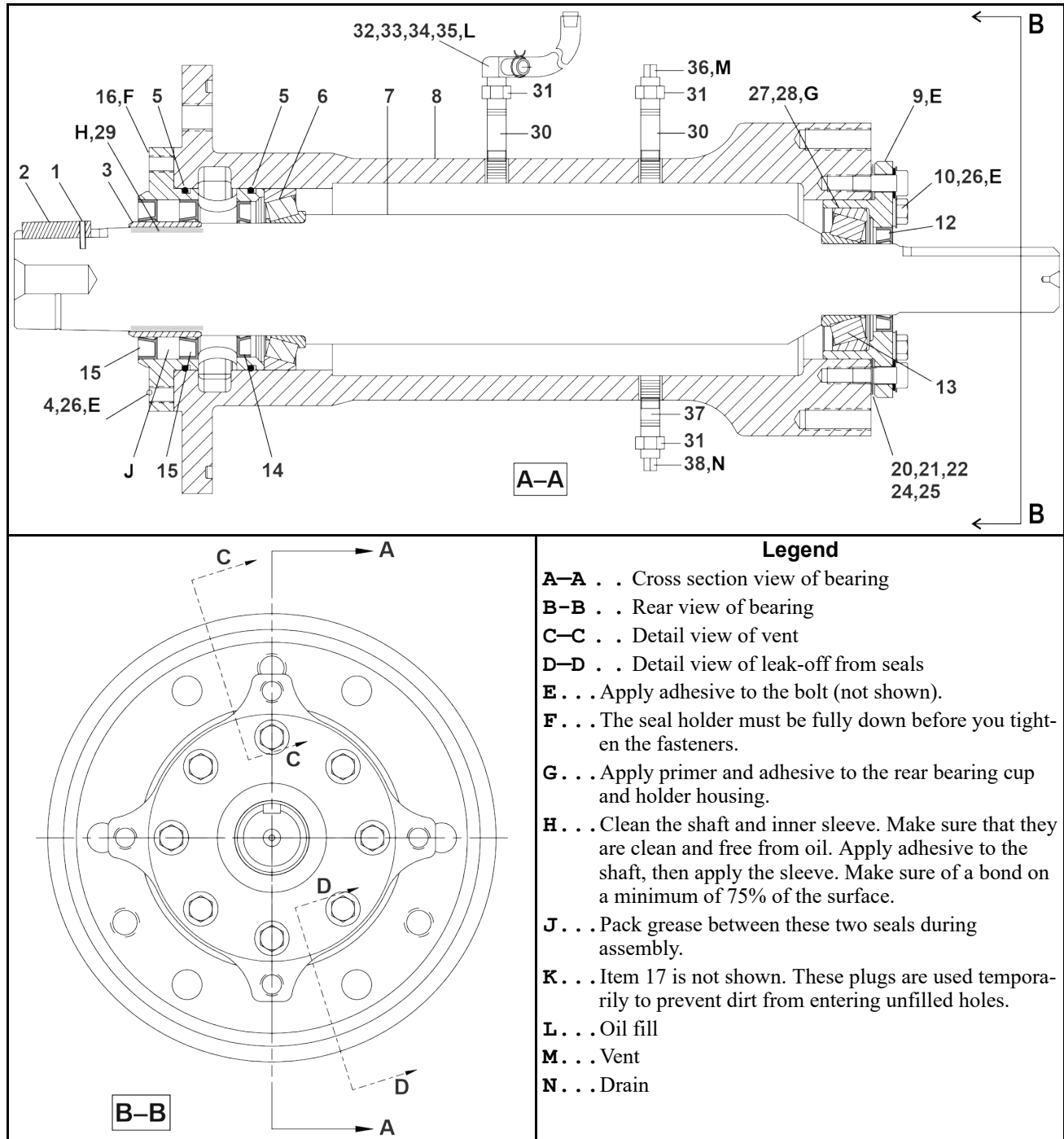
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# Main Bearing

3 Sheets

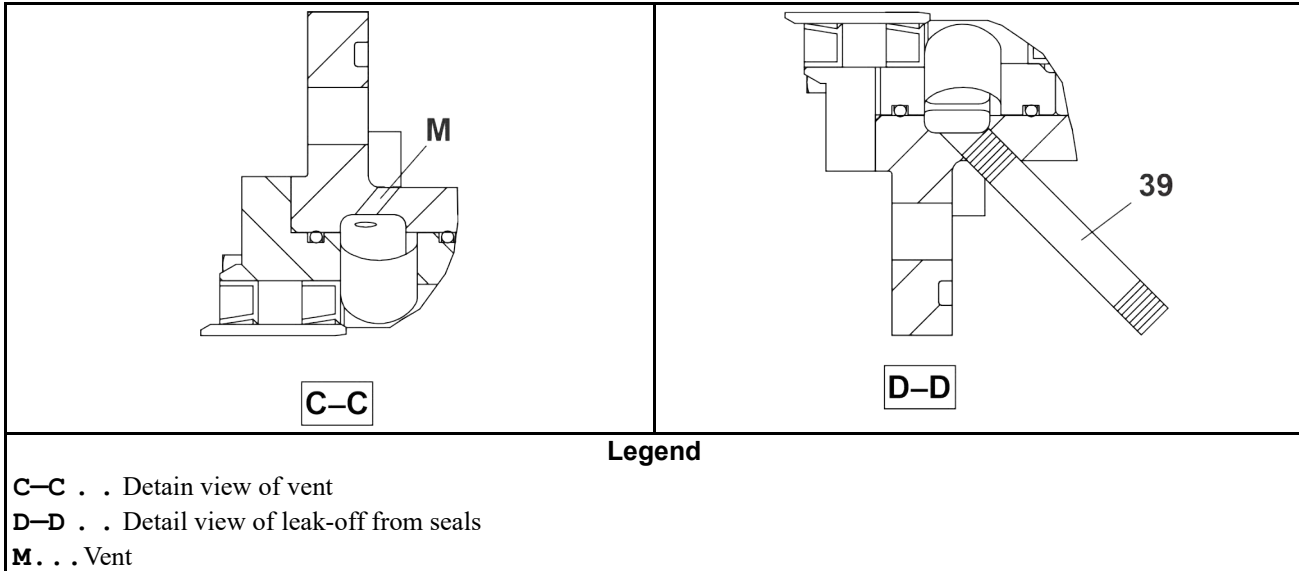
30015VRJ and 30022VRJ



# Main Bearing

3 Sheets

30015VRJ and 30022VRJ



**Table 22. Parts List—Main Bearing**

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 09903	BEARING ASSY MAIN 3022V6	
	B	A33 09903V	BEARING ASSY MAIN VITON 3022V6	
Components				
all	1	15H089S	SPRINGPIN 1/8"DIA X 5/8" LONG	
all	2	02 02294A	SHAFT KEY 3/8 X 3/8	
all	3	02 13143	SEALSLEEVE=SWE-1/SWE	
all	4	15B080	HEXCAPSCR 5/16 X1+1/4 SS-18-8	
all	5	60C151	ORING 3+7/8ID1/8CS BUNA70#241	
all	6	54A915916	TIM#JLM710949C/JLM710910-2.5"BORE	
all	7	X2 13103T	MACH=MAIN SHAFT 30VRJ	
all	8	X2 03573U	MACH=BEARING HOUSING, 3022 V6	
all	9	X2 03659T	HOUSE=SEAL+BRG 30M,V6	
all	10	15K092B	HEXFLGSCR 3/8-16X1 GR8 ZN WITH 242 PATCH	
all	11	15U152A	FLTWSHR .680OD, .375ID, .0625T	
all	12	24S048AAA	SEAL 1.625X2.375X.375 CS/BUNA	
all	13	54A307308	TIM M802011 2-24/M802048=1.625	
all	14	24S052A	SEAL 2.559X3.55X.315 CR#25430	
A	15	24S053	SEAL 2.625X3.625X.437#10051L5	

**Main Bearing**

3 Sheets

30015VRJ and 30022VRJ

**Table 22 Parts List—Main Bearing (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
B	15	24S053V	SEAL 2.625X3.625X.437#10050H5L	VITON
all	16	X2 13144T	HOLDER=SHAFT SEAL 3022V6	
all	17	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	20	02 03324	SHIM=.003 CRS GREEN 3022V8	
all	20	02 03323F	8 HOLE SHIM=.003 CRS GREEN	
all	21	02 03323G	8 HOLE SHIM=.005 CRS BLUE	
all	24	02 03323K	8 HOLE SHIM=.020 CRS WHITE	
all	26	20C007H	THDLK REMVBL-#24221	
all	27	20C011B	RETAIN CMPD ADH LCT#60905 .5CC	
all	28	20C006P	PRIMER-N #7649 LCT#21348-4	
all	29	20C009	THRDLKSEAL LCT#27731 50CC	
all	30	5N0E03ABE2	NPT NIP 1/4X3 TBE BRASS STD	
all	31	5SCC0EBE	NPT COUP 1/4 BRASS 150#PSI W/HEX	
all	32	5SL0EBEC	NPTEL B 90DEG STRT 1/4 BRASS125	
all	33	27A043A	HOSECLAMP.562"DIA.SPRG#HC9STZD	
all	34	60E005P	PVC TUBING 1/2"ID X 5/8"OD	
all	35	27A106	CORK SIZE 4 XXX E=1	
all	36	51P013	PLUG HXCNTRSUNK 1/4"BRASS	
all	37	5N0E01KBE2	NPT NIP 1/4X1.5TBE BRASS STD.	
all	38	5SP0EFFSSM	NPT PLUG 1/4 SQSLDMAGNET BLKST	
all	39	5N0E05AG42	NPT NIP 1/4X5 TBE GALSTL SK40	

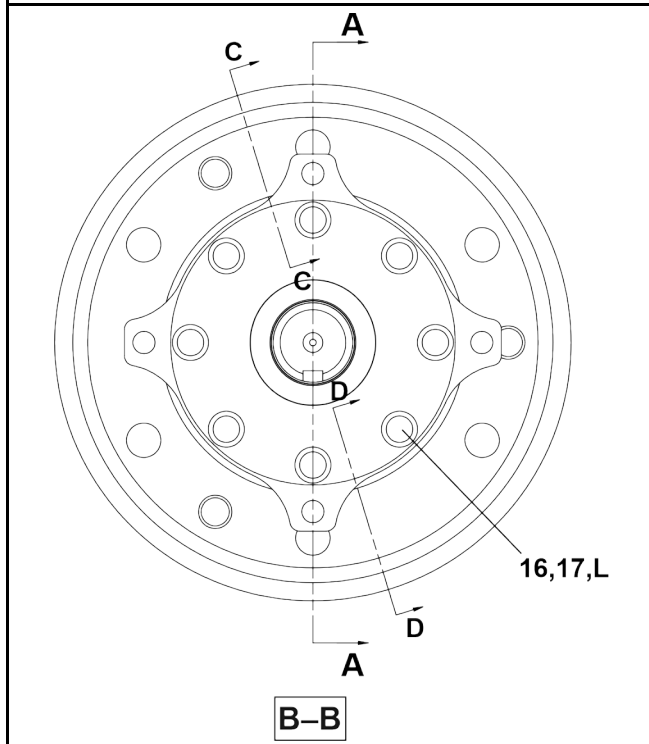
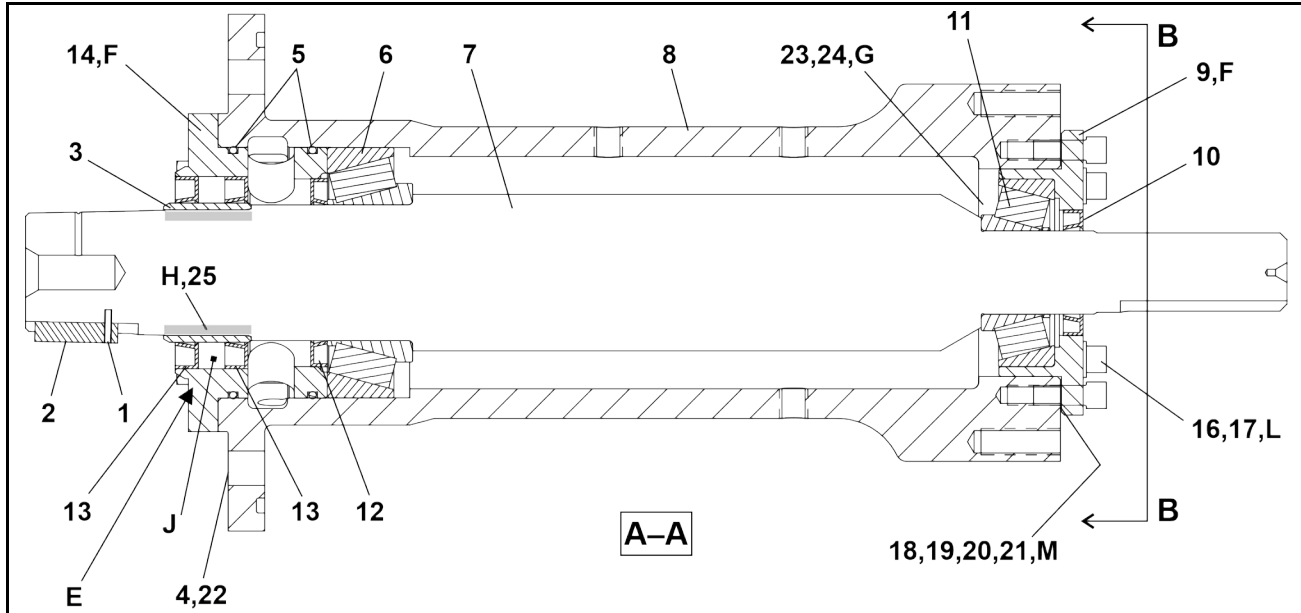
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# Main Bearing

3 Sheets

30015V8Z,VZZ and 30022V8Z,VZZ



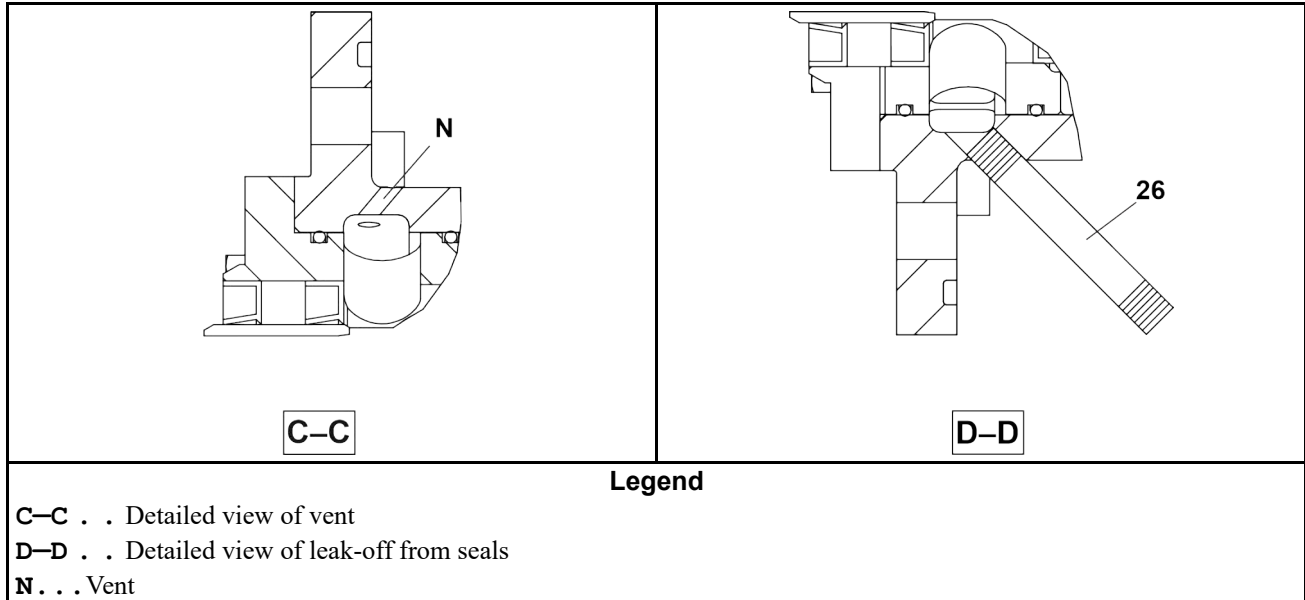
### Legend

- A-A** . . Cross section view of bearing
- B-B** . . Rear view of bearing
- C-C** . . Detailed view of vent
- D-D** . . Detailed view of leak-off from seals
- E** . . . Apply adhesive to the bolt (not shown).
- F** . . . The seal holder must be fully down before you tighten the fasteners.
- G** . . . Apply primer and adhesive to the rear bearing cup and holder housing.
- H** . . . Clean the shaft and inner sleeve. Make sure that they are clean and free from oil. Apply adhesive to the shaft, then apply the sleeve. Make sure of a bond on a minimum of 75% of the surface.
- J** . . . Pack grease between these two seals during assembly.
- K** . . . Item 15 is not shown. These plugs are used temporarily to prevent dirt from entering unfilled holes.
- L** . . . 8 instances
- M** . . . As needed

# Main Bearing

3 Sheets

30015V8Z,VZZ and 30022V8Z,VZZ



**Table 23. Parts List—Main Bearing**

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 09904	BEARING ASSY MAIN 8 BOLTS SEAL HOLDER V8Z	
	B	A33 09904V	BEARING ASSY MAIN (VITON) 8 BOLT SEAL HOLDER V8Z	VITON
Components				
all	1	15H089S	SPRINGPIN 1/8"DIA X 5/8" LONG	
all	2	02 02294A	SHAFT KEY 3/8 X 3/8	
all	3	02 13143	SEALSLEEVE=SWE-1/SWE	
all	4	15B080	HEXCAPSCR 5/16 X1+1/4 SS-18-8	
all	5	60C152D	ORING 4+1/2 1/8CS BUNA #246	
all	6	54A311312	FAG 33213(CUP & CONE)= 65MM BORE, 120MM O.D. (EA=SET)2.56"BORE	
all	7	X2 13106	MACH=MAIN SHAFT, 3022V8	
all	8	X2 03573X	MACH=BEARING 3022HS W/STARPLATE	
all	9	X2 03659W	HOUSE=SEAL+BRG 3022V8	
all	10	24S15840	SEAL SKF 15840, P#CR40X60X8 CRW1 R	
all	11	54A309310	FAG 32308A(CUP & CONE)=40MM BORE, 90MM O.D. (EA=SET)1.58"ID	
all	12	24S052A	SEAL 2.559X3.55X.315 CR#25430	
all	13	24S053	SEAL 2.625X3.625X.437#10051L5	

# Main Bearing

30015V8Z,VZZ and 30022V8Z,VZZ

**Table 23 Parts List—Main Bearing (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	13	24S053V	SEAL 2.625X3.625X.437#10050H5L	VITON
B	14	X2 13144W	HOLDER=SHAFT SEAL 3022V8	
all	15	27A253	PLUG FOR 1/2BOLTHOLE CAPLUG #4	
all	16	15K108	SKCPSC 3/8-16 UNC 3X1 BLK	
all	17	15U152A	FLTWSHR .680OD,.375ID,.0625T	
all	18	02 03324	SHIM=.003 CRS GREEN 3022V8	
all	19	02 03324A	SHIM=.005 CRS BLUE 3022V8	
all	20	02 03324D	SHIM=.020 CRS WHITE 3022V8	
all	21	02 03324E	SHIM=.050 CRS CLEAR 3022V8	
all	22	20C007H	THDLK REMVBL-#24221	
all	23	20C011B	RETAIN CMPD ADH LCT#60905 .5CC	
all	24	20C006P	PRIMER-N #7649 LCT#21348-4	
all	25	20C009	THRDLKSEAL LCT#27731 50CC	
all	26	5N0E03ABE2	NPT NIP 1/4X3 TBE BRASS STD	

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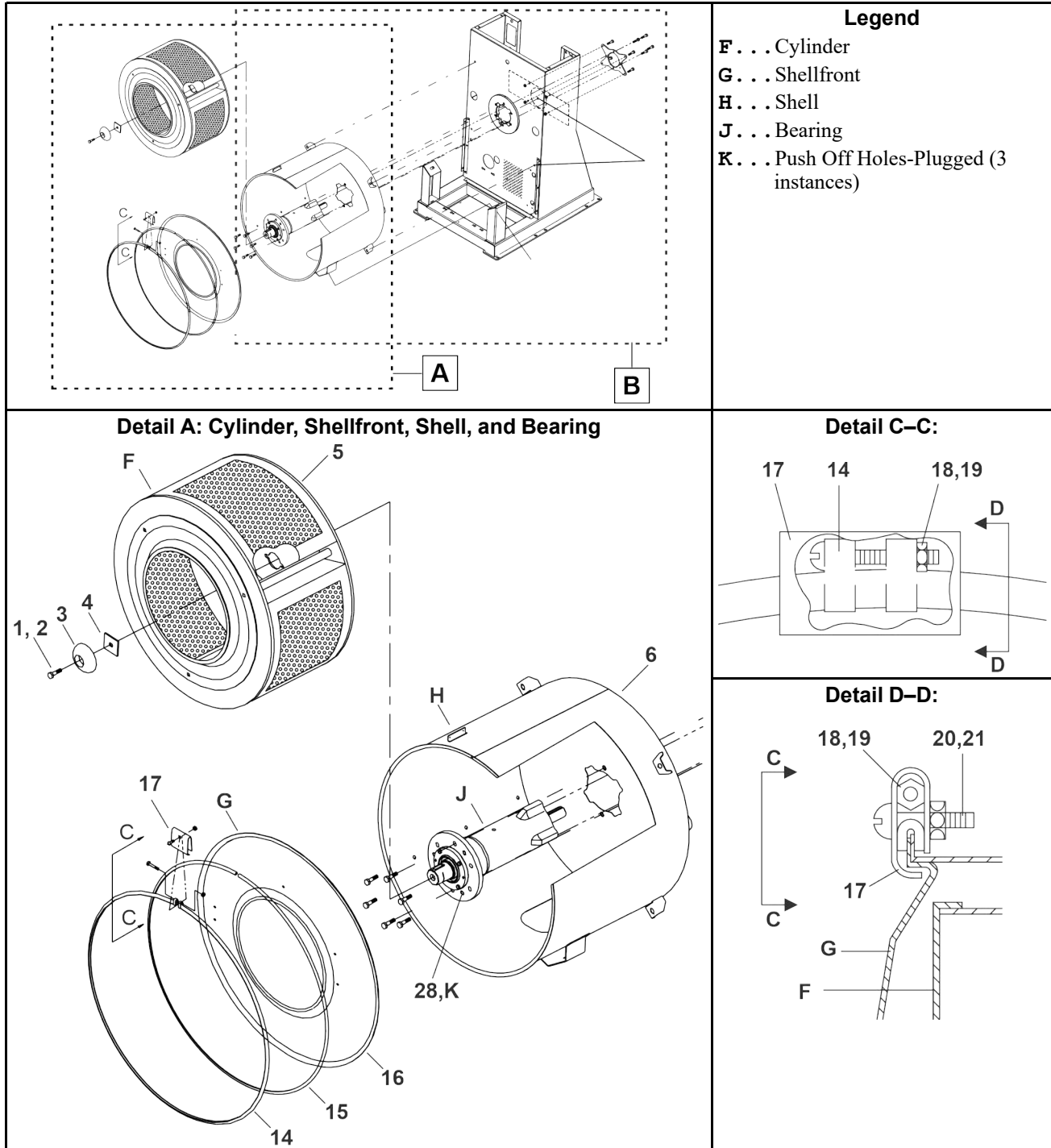
BPWOAB02 / 2019122

BPWOAB02.1 0000222083 B.1 E.3 11/12/19, 10:45 AM Released

# Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015T6X, 30022T6X

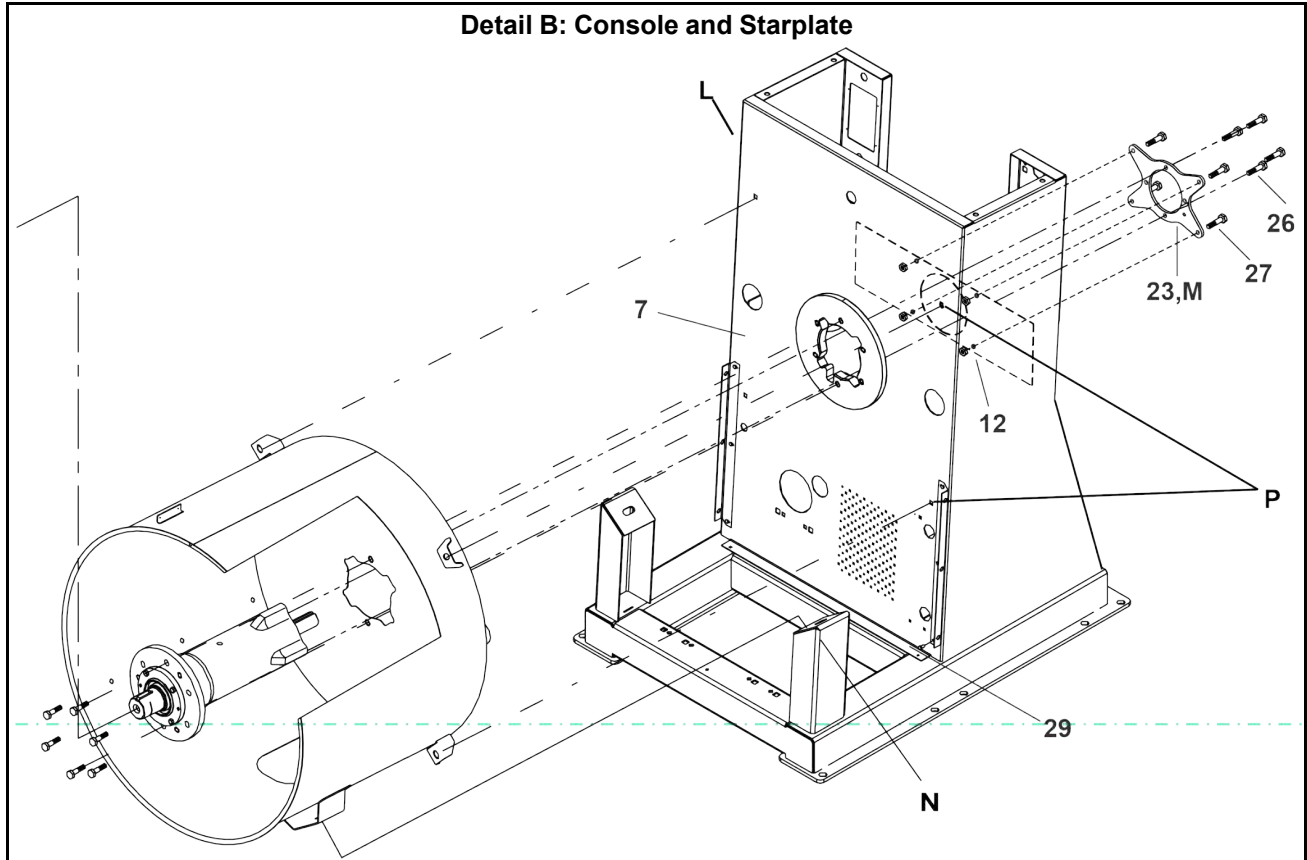




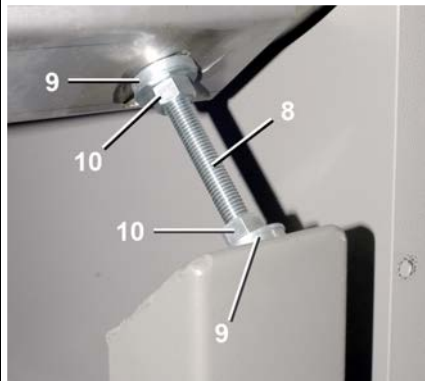
# Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015T6X, 30022T6X



**Detail N: Shell to Frame Alignments Bolts (2 instances)**



**Detail P: Rear Shell to Console Mounting Bolts (4 instances)**



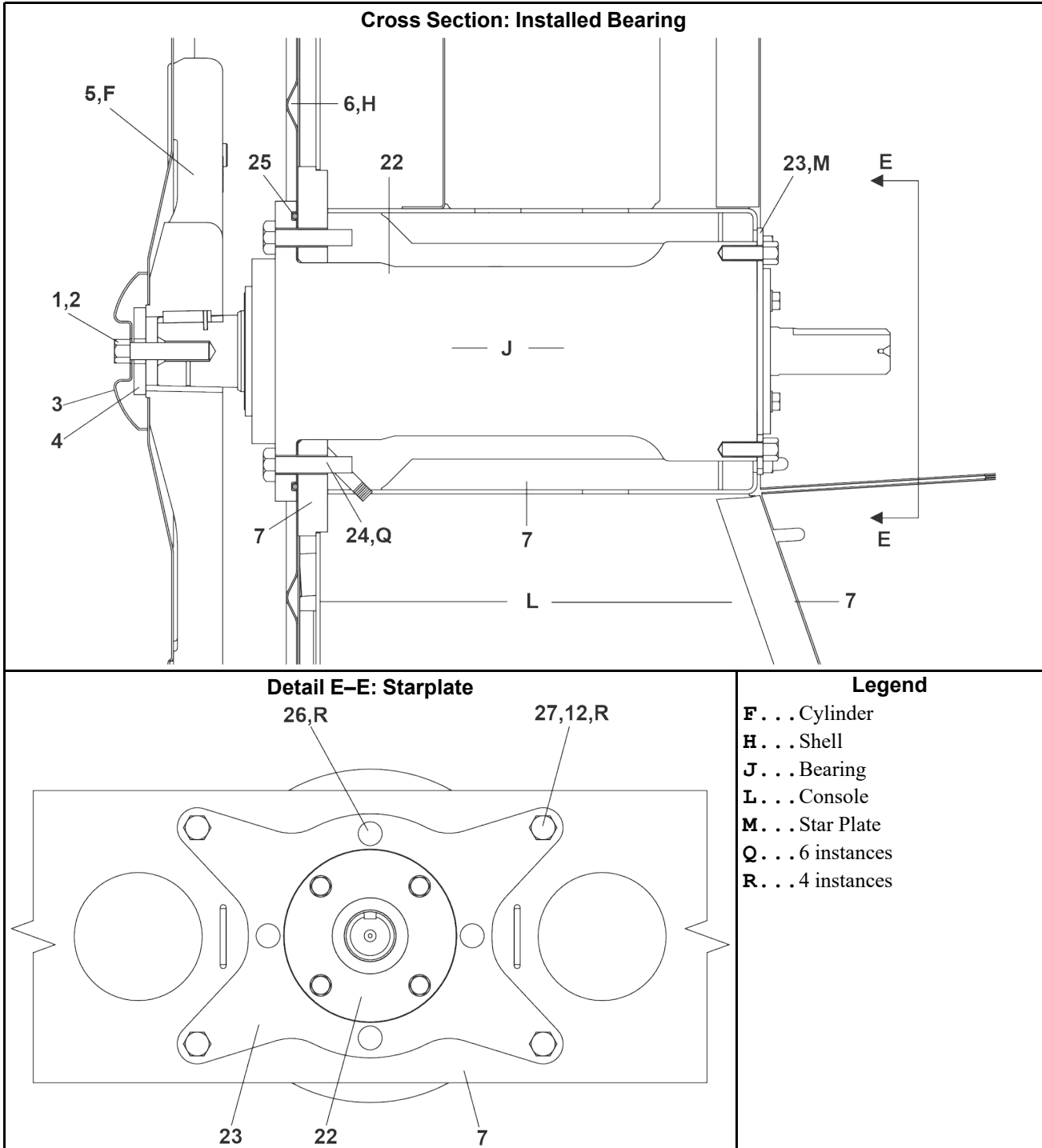
**Legend**

- L** . . . Console
- M** . . . Star Plate
- N** . . . See detail N
- P** . . . See detail P

# Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015T6X, 30022T6X



## Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015T6X, 30022T6X

Table 24. Parts List—Cylinder, Shell, Bearing and Console 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	GCA30006	3015V8Z/VRJ/T6X ROBO CYLINDER INSTALL	30015T6X
	B	GCA30003	3022V8 CYLINDER INSTALL	30022T6X
	C	ASH30017	3015T6X SHELL+CONSOLE ASSY SHORT BASE	30015T6X
	D	ASH30011	3022T6X SHELL+ CONSOLE ASSY	30022T6X
	E	GBM30015	30T6X BEARING HOUSE INSTALL	30015T6X, 30022T6X
Components				
A	1	15B209	HEXCAPSCR 3/4-10X2.75 18-8SS	
B	1	15B200	HEXCAPSCR 3/4-10X1+3/4 SS18-8	
all	2	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	3	02 11196	COVER=SHAFT RETAINER=304S/S	
all	4	02 14359A	SHAFT RETNR SPACER 2+3/4" SQ	
A	5	ACA3015R02	WLMT=ROBO CYL 3015	
B	5	ACA3022R02	WLMT=ROBO CYL, 3022H/X RETRO	
C	6	W2 04554H	3015 T6X SHELL WELDMENT SH0RT BASE	
D	6	W2 04554E	3022T6X SHELL WELDMENT	
all	7	W2 04529A	FRAME-BASE-WLMT-30T6X	
all	8	17R024A08K	THREADED ROD 5/8-11 X 8.5 ZNCPLG	
all	9	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	10	15G238C	HEXFLGNUT 5/8-11 ZINC SERRATED	
all	11	15D119	HXTAPSCR 1/2-13X4 GR5 ZNC FTL	
all	12	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	14	Y2 02059	*SHELL CLAMP RING=30" MACHINE	
all	15	02 02087C	EXTRUSION-SHELL=30"MACHINES	
all	16	X2 02361G	SHELLFRONT = 30" ELECTRIC LOCK	
all	17	02 02181	GUARD=SHELL MOUNT RING CLIP	
all	18	15N200	FILMACSCR 1/4-20UNCX2 SS18-8 S	
all	19	15G170	HEXNUT 1/4-20UNC2 SS18-8	
all	20	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
all	21	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	
all	22	A33 09908	3015/22T6X BEARING ASSY MAIN	
all	23	02 11340	3022 BEARING SPT STARPLATE	
all	24	15K221SL	5/8-11X2 18-8 HHCS W/PRECOAT 85 PATCH	
all	25	60C171	ORING 8.5"IDX 3/16CS BUNA70 #371	

## Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015T6X, 30022T6X

**Table 24 Parts List—Cylinder, Shell, Bearing and Console Installation (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	26	15K147C	SKCPSC 1/2-13X1 BLK	
all	27	15K153H	INDHEXFLGSCR1/2-13X1+1/4GR8ZN W/LOCTITE	
all	28	15N205A	SLTRDMACHSCR 3/8-16X1/2 NYLON	
all	29	15P175	TRDCUT-F HXHD 1/4-20UNC2AX1/2	

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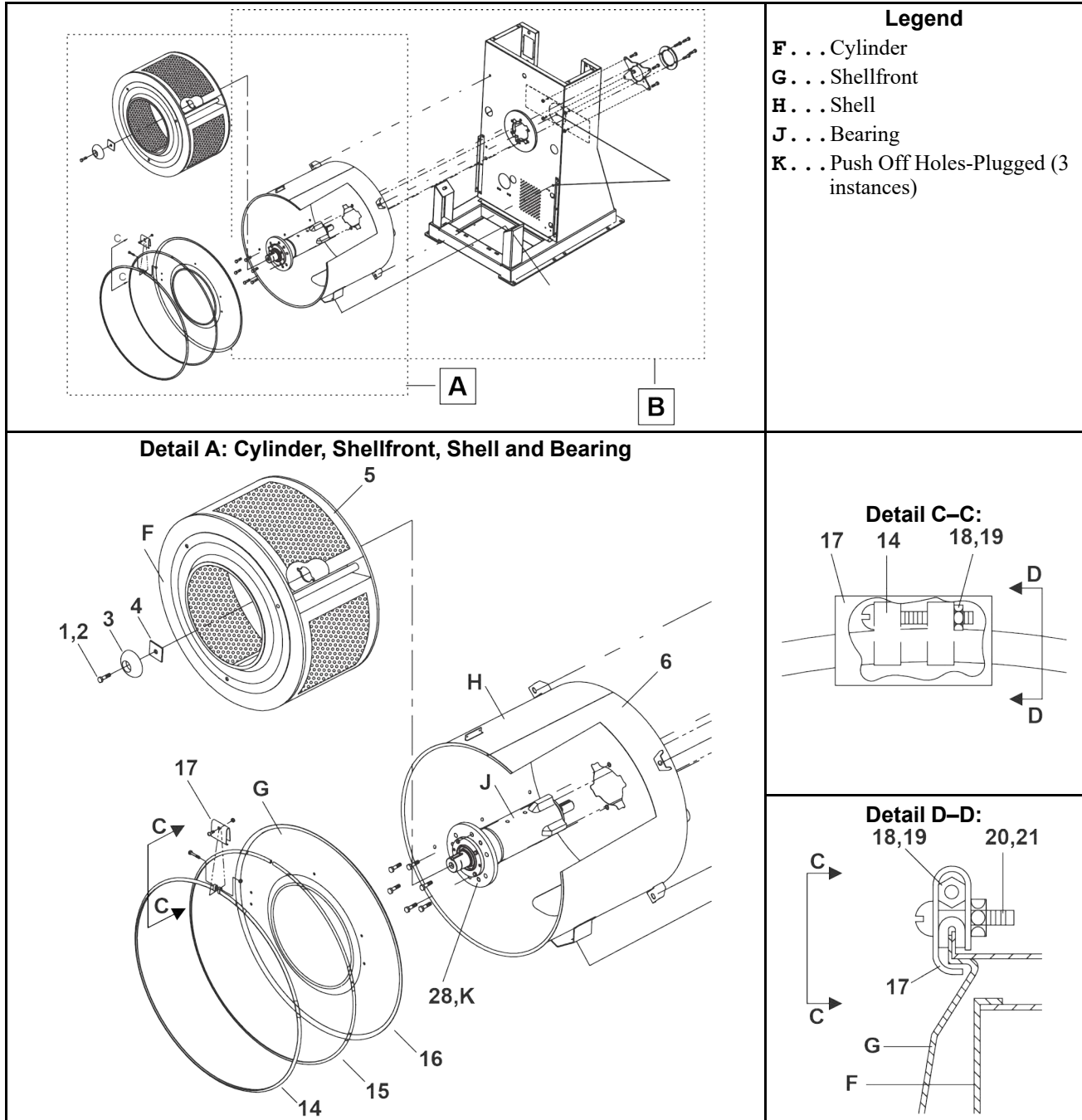
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# Cylinder, Shell, Bearing and Console Installation

4 Sheets

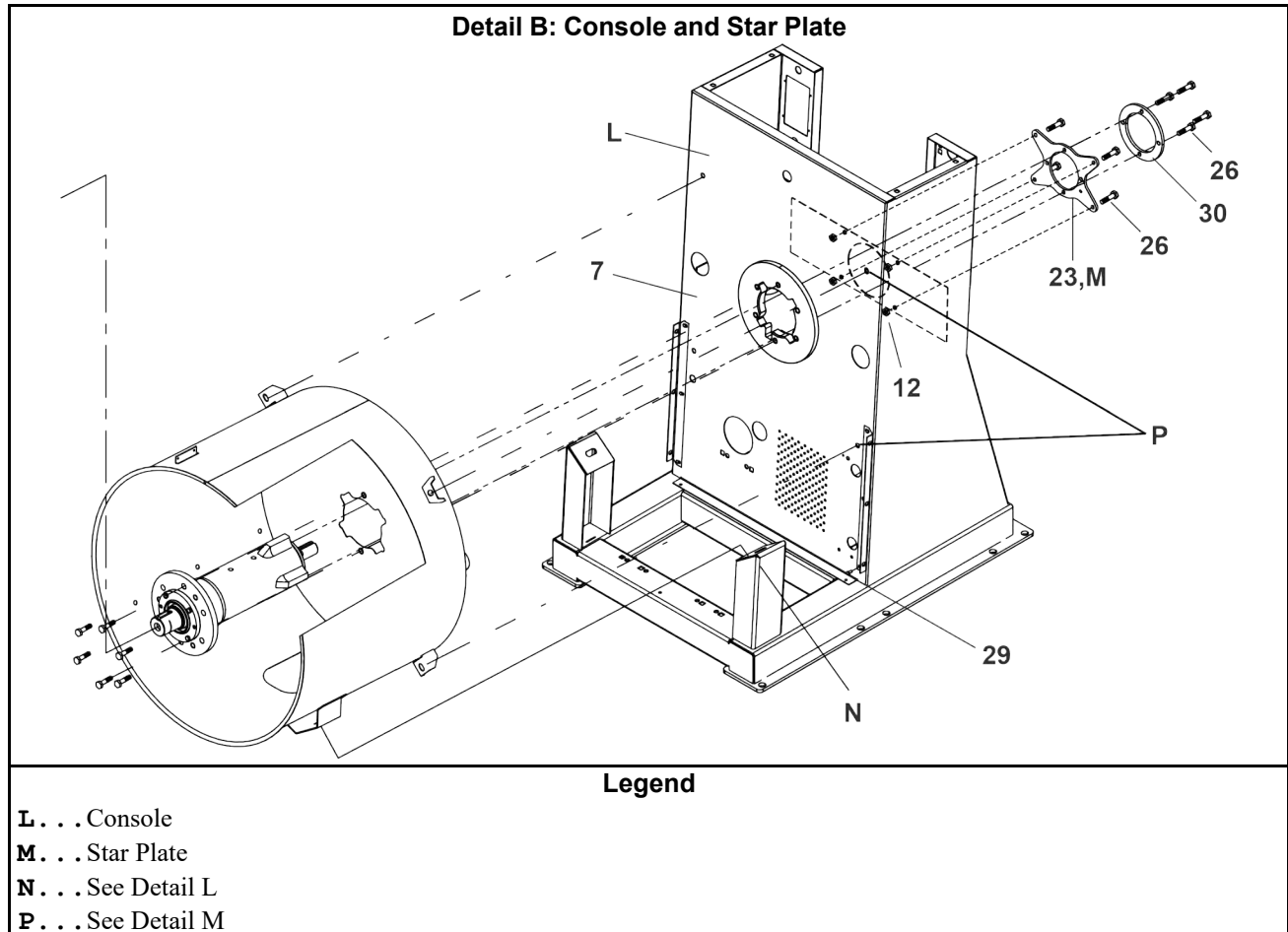
30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ



# Cylinder, Shell, Bearing and Console Installation

4 Sheets

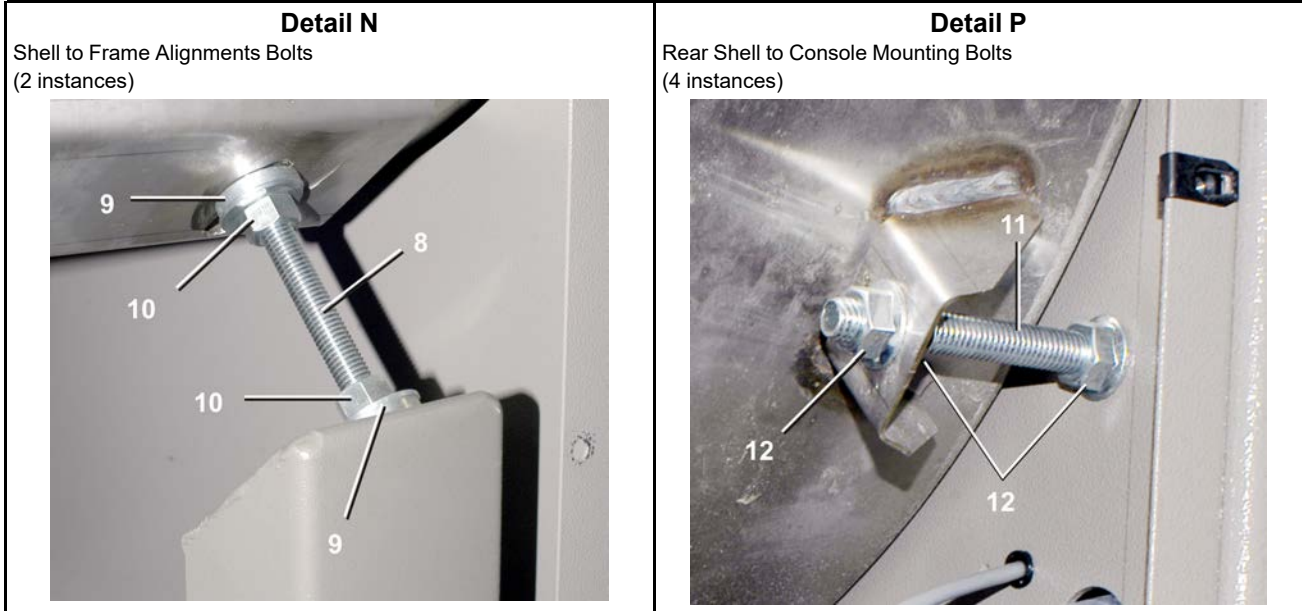
30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ



# Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ

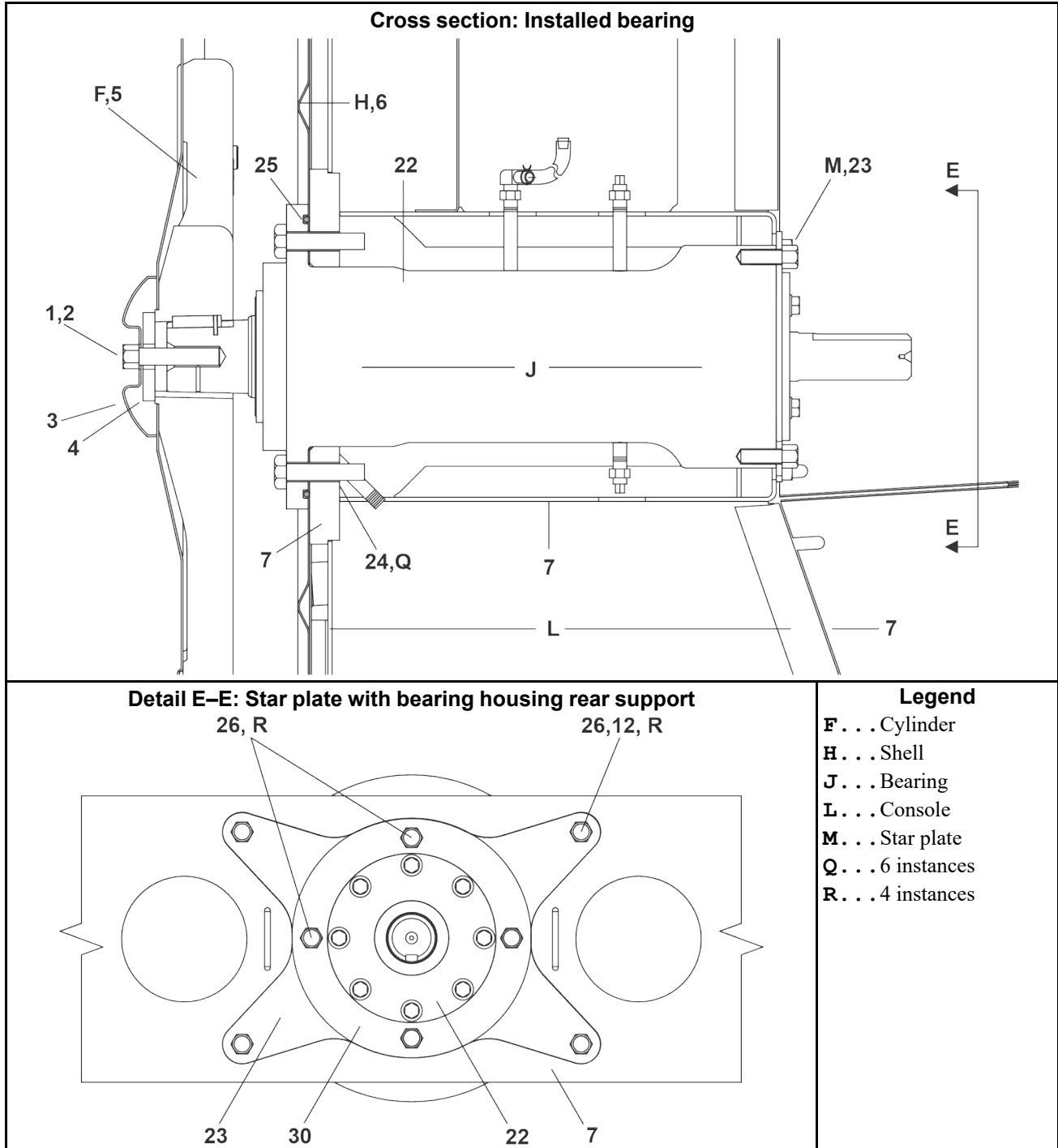




# Cylinder, Shell, Bearing and Console Installation

4 Sheets

30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ



**Cylinder, Shell, Bearing and Console Installation**

4 Sheets

30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ

**Table 25. Parts List—Cylinder, Shell, Bearing and Console 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	GCA30006	3015V8Z/VRJ/T6X ROBO CYLINDER INSTALL	3015VRJ,V8Z,VZZ
	B	GCA30003	3022V8 CYLINDER INSTALL	3022VRJ,V8Z,VZZ
	C	ASH30015	3015V8Z SHELL+CONSOLE	3015VRJ,V8Z
	D	ASH30016	3015VZ SHELL+CONSOLE	3015VZZ
	E	ASH30008A	3022VRJ/V8Z SHELL+CONSOLE SHORT FRAME	3022VRJ,V8Z
	F	ASH30008B	30VZ SHELL & CONSOLE	3022VZZ
	G	GBM30014	3022V8 BEARING HOUSE INSTALL	3015,3022VRJ 3015,3022V8Z 3015,3022VZZ
Components				
A	1	15B209	HEXTCAPSCR 3/4-10X2.75 18-8SS	
B	1	15B200	HEXCAPSCR 3/4-10X1+3/4 SS18-8	
all	2	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	3	02 11196	COVER=SHAFT RETAINER=304S/S	
all	4	02 14359A	SHAFT RETNR SPACER 2+3/4" SQ	
A	5	ACA3015R02	WLMT=ROBO CYL 3015	
B	5	ACA3022R02	WLMT=ROBO CYL, 3022H/X RETRO	
CD	6	W2 04554G	3015VRJ/V8Z SHELL WELDMENT	3015VRJ,V8Z,VZZ
EF	6	W2 04554F	3022VRJ/V8Z SHELL WELDMENT	3022VRJ,V8Z,VZZ
all	7	W2 04529H	WLMT=BASE FRAME 30VZ	10 HOLE BASE
all	8	17R024A08K	THREADED ROD 5/8-11 X 8.5 ZNCPLG	
all	9	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	10	15G238C	HEXFLGNUT 5/8-11 ZINC SERRATED	
all	11	15D119	HXTAPSCR 1/2-13X4 GR5 ZNC FTL	
all	12	15G222B	HEXFLGNUT 1/2-13 ZINC SERRATED	
all	14	Y2 02059	*SHELL CLAMP RING=30" MACHINE	
all	15	02 02087C	EXTRUSION-SHELL=30"MACHINES	
all	16	X2 02361G	SHELLFRONT = 30" ELECTRIC LOCK	
all	17	02 02181	GUARD=SHELL MOUNT RING CLIP	
all	18	15N200	FILMACSCR 1/4-20UNCX2 SS18-8 S	
all	19	15G170	HEXNUT 1/4-20UNC2 SS18-8	
all	20	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
all	21	15N146	RDMACHSCR 10-24UNC2X1 SS18-8	

**Cylinder, Shell, Bearing and Console Installation**

4 Sheets

30015VRJ,V8Z,VZZ 30022VRJ,V8Z,VZZ

**Table 25 Parts List—Cylinder, Shell, Bearing and Console Installation (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
A	22	A33 09903	BEARING ASSY MAIN 3022V6	3015/3022VRJ
B	22	A33 09904	BEARING ASSY MAIN 8 BOLTS SEAL HOLDER V8Z	3015/3022V8Z,VZZ
all	23	02 11340	3022 BEARING SPT STARPLATE	
all	24	15K221SL	5/8-11X2 18-8 HHCS W/PRECOAT 85 PATCH	
all	25	60C171	ORING 8.5"IDX 3/16CS BUNA70 #371	
all	26	15K153J	INDHEXFLGSCR 1/2-13 X 1+1/2 GRD8ZN PRECOTE 85 PATCH	
all	28	15N205A	SLTRDMACHSCR 3/8-16X1/2 NYLON	
all	29	15P175	TRDCUT-F HXHD 1/4-20UNC2AX1/2	
all	30	X2 03560	BRG HOUSING REAR SUPPORT	

# 3 Door Assemblies

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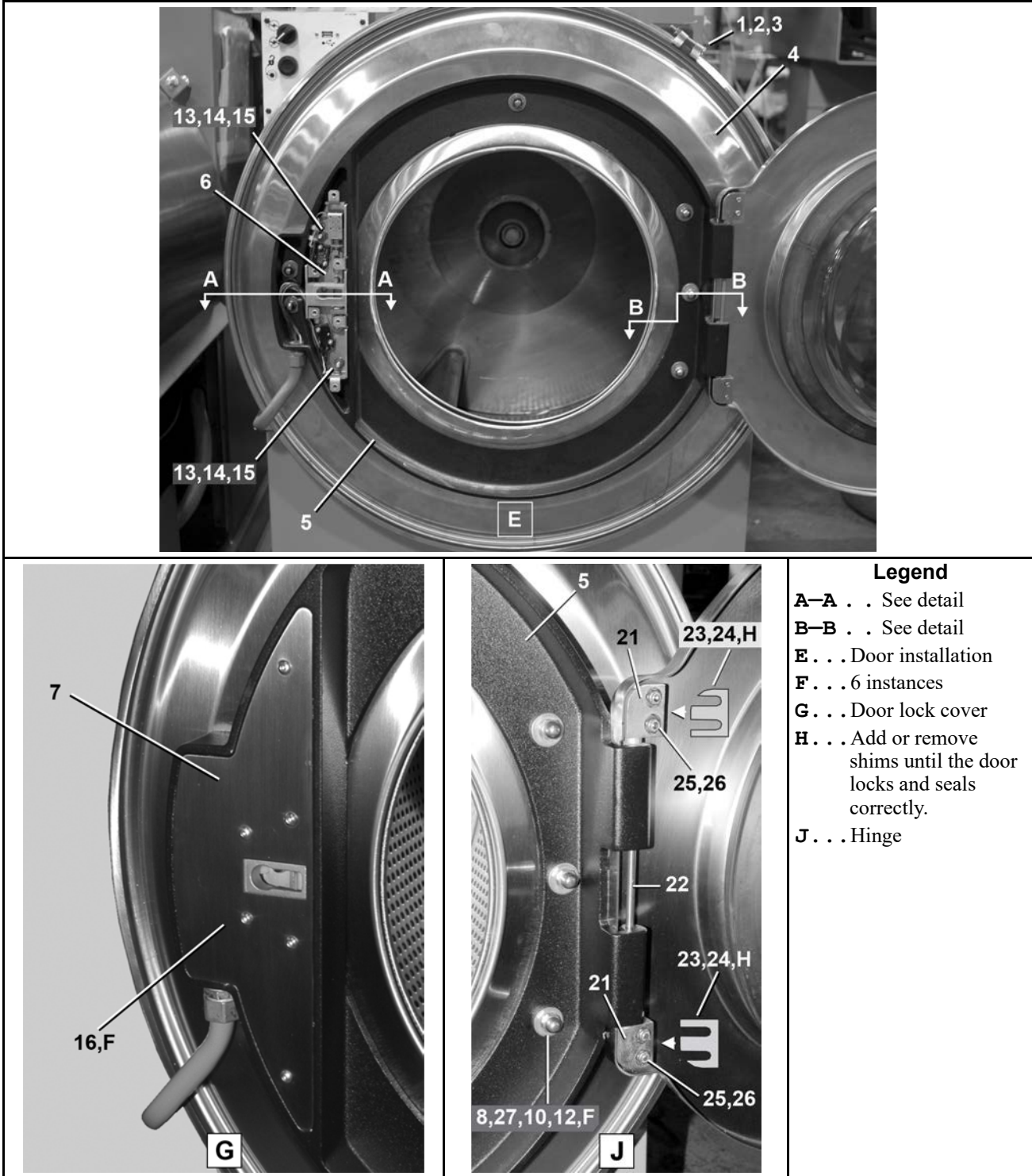
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**Door Assembly and Installation**

4 Sheets

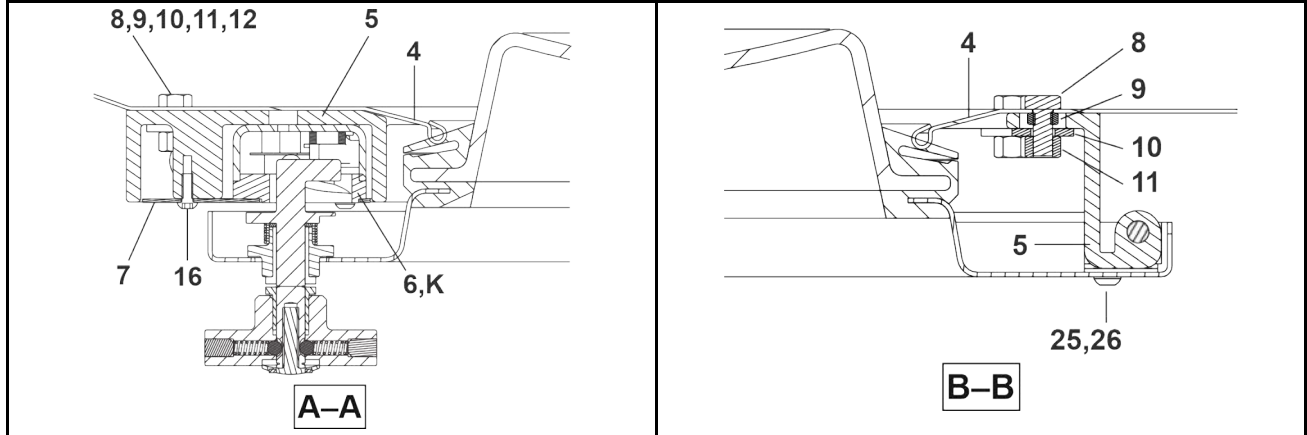
30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ



**Door Assembly and Installation**

4 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ



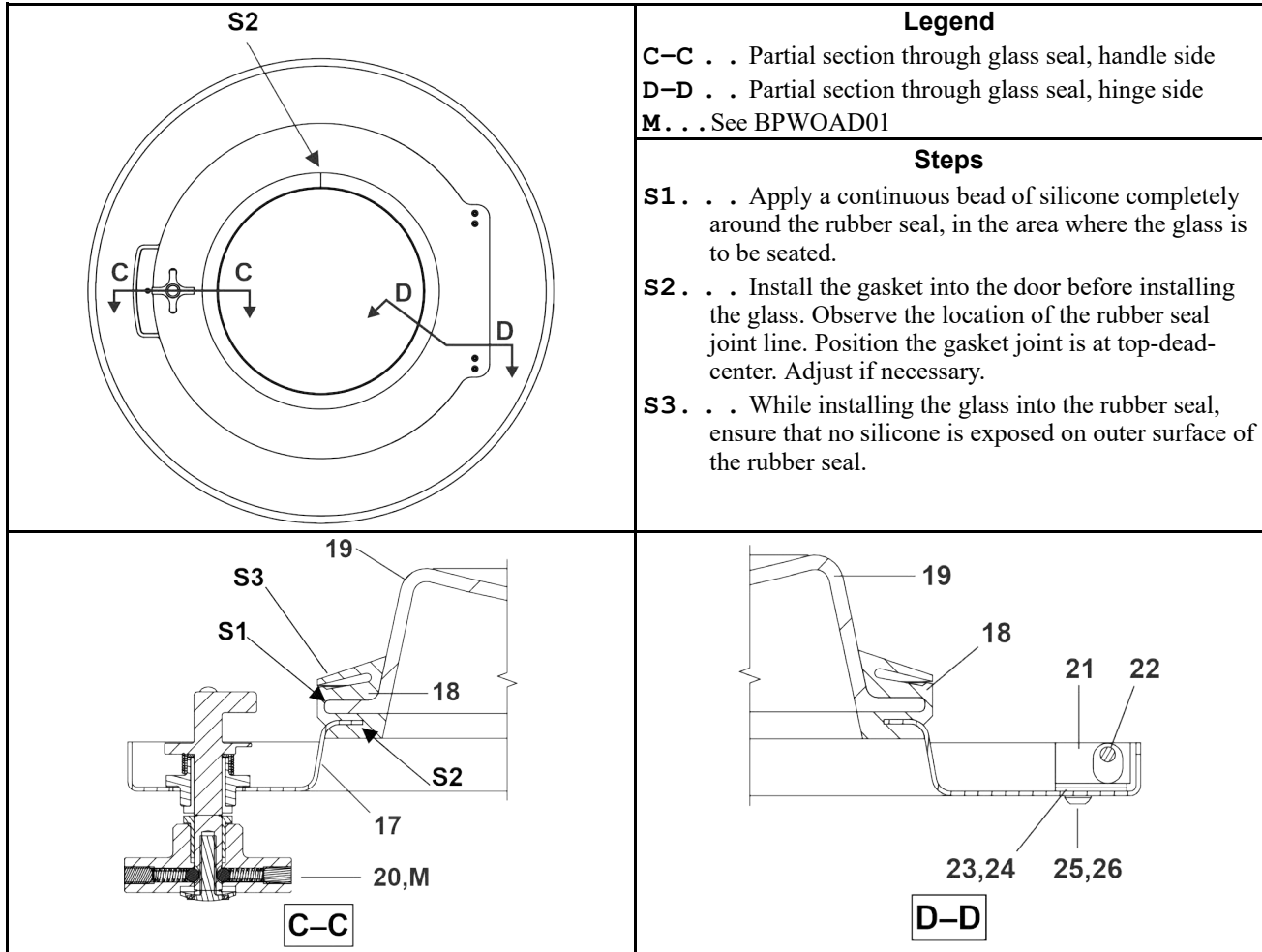
**Legend**

- A-A** . . . Partial section through door handle
- B-B** . . . Partial section through door hinge
- K** . . . See BPWOAD03

# Door Assembly and Installation

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Figure 18. Door Glass Installation Steps**



**Table 26. 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	G33 04001	SHELLFRONT + DOOR 3022V8	
	B	A33 10100V	FLAT SHELL FRONT/DOOR ASSY 30"	
	C	A33 07100G	ASSY=DOOR, 30" FLAT SHELLFRONT	
Components				
all	1	02 02087C	EXTRUSION-SHELL=30" MACHINES	
all	2	02 02181	GUARD=SHELL MOUNT RING CLIP	
all	3	Y2 02059	*SHELL CLAMP RING=30" MACHINE	



## Door Assembly and Installation

4 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Table 26 Parts List—Door Assembly and Installation (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	4	X2 02361G	SHELLFRONT,30", FLAT FRONT	
all	5	02 03261	30" DOOR FRAME MACHINED	
all	6	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	
all	7	02 03228D	DOOR LOCK BOX COVER 3022V8	
all	8	15K052	HXCAPSCR 5/16-18UNC2AX3/4 SS18	
all	9	15G188	HEXLOKNUT 5/16-18 BRASS	
all	10	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
all	11	15G190	HEXFJAMNUT 5/16-18NC2 SS18-8	
all	12	15G192	HXCPNUT 5/16-18UNC2SS18-8 9/16	
all	13	17S2500A	DOUBLE END 1/4-20X1-1/8 STUD 1/4 ONE END AND 3/4 ONE END CS	
all	14	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	15	15G180	HEXNUT 1/4-20 BRASS	
all	16	15K017	BUTSOKCAPSCR 10-24X1/2 SS	
all	17	02 03229A	30" SHELL DOOR	
all	18	02 03200	DOOR GASKET, 3022H7	
all	19	02 03251	DOOR GLASS, 3022H7	
all	20	98CMCR0925	ASSY=DR HNDL MECH	
all	21	02 03260	30" SHELL DOOR HINGE RIGHT	
all	22	02 03260A	30" DOOR HINGE LEFT	
all	23	02 03297	30" DOOR HINGE SPACER 14GA	
all	24	02 03297A	30" DOOR HINGE SPACER 16GA	
all	25	X2 03296B	HING PIN 3022V8	
all	26	15K033	BUTSOKCAPSCR 1/4-20X5/8 SS18-8	
all	27	24G027N	ROLLED WASH.312ID NYLTITE 31W	

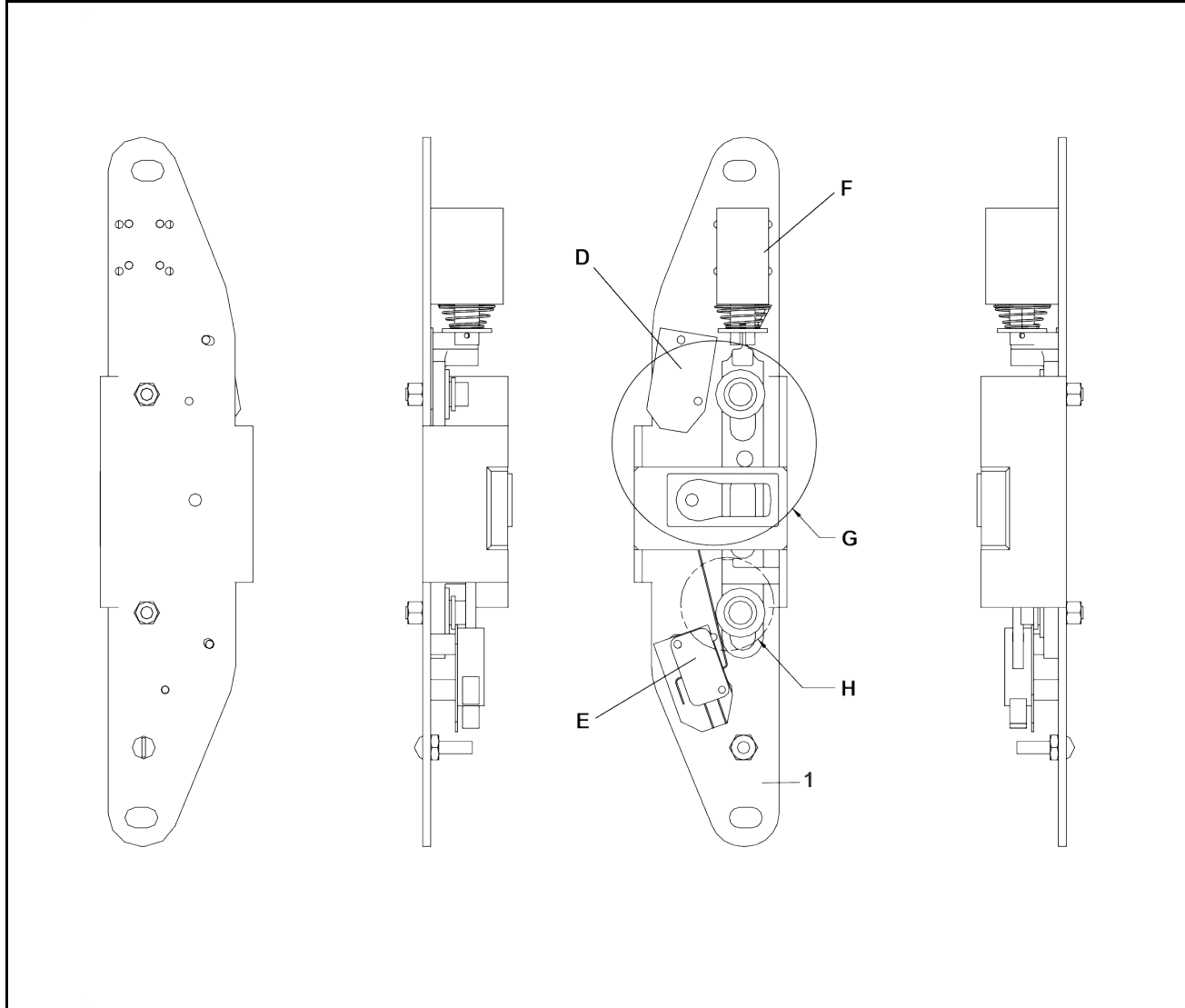
BPWOAD03 / 2024426

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**Door Lock Mechanism**

3Sheets

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



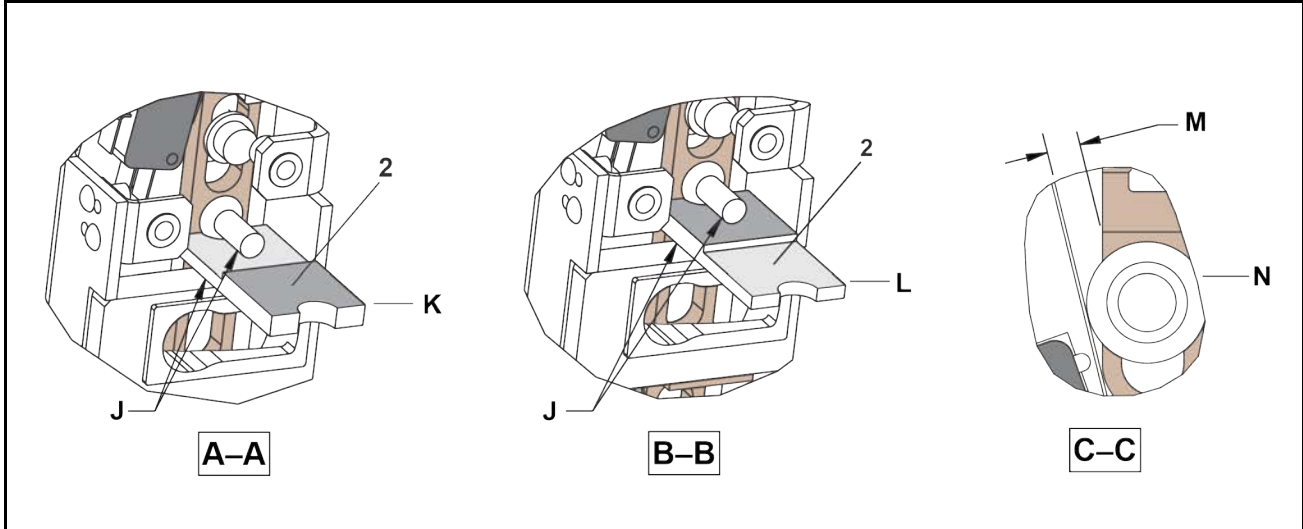
**Legend**

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

# Door Lock Mechanisms

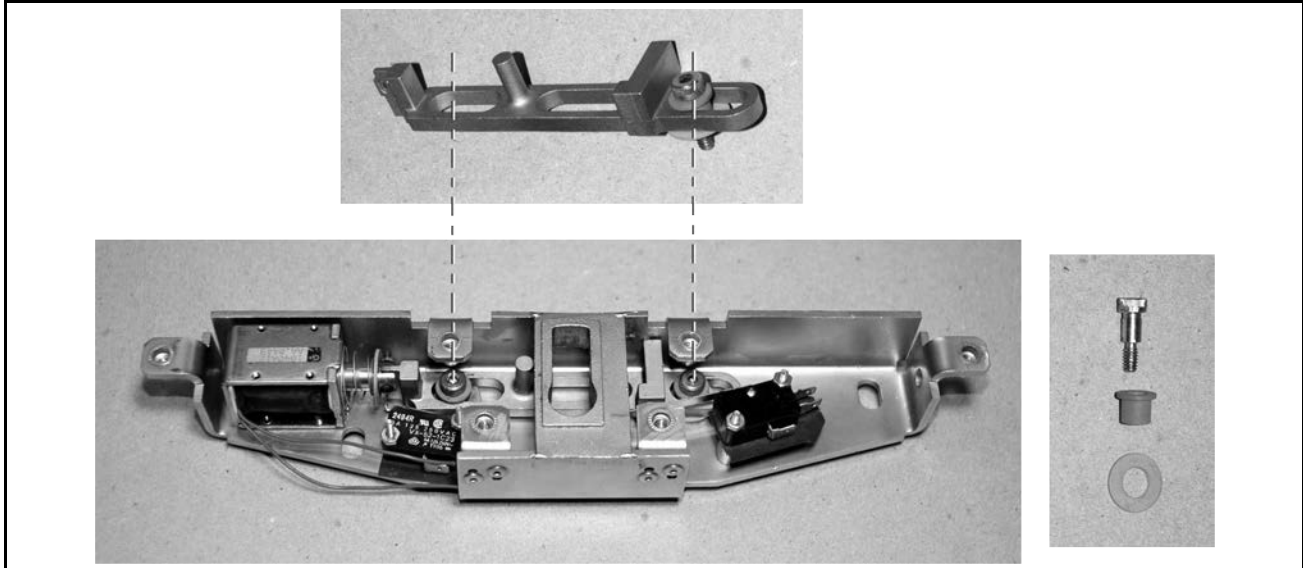
3Sheets

MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 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

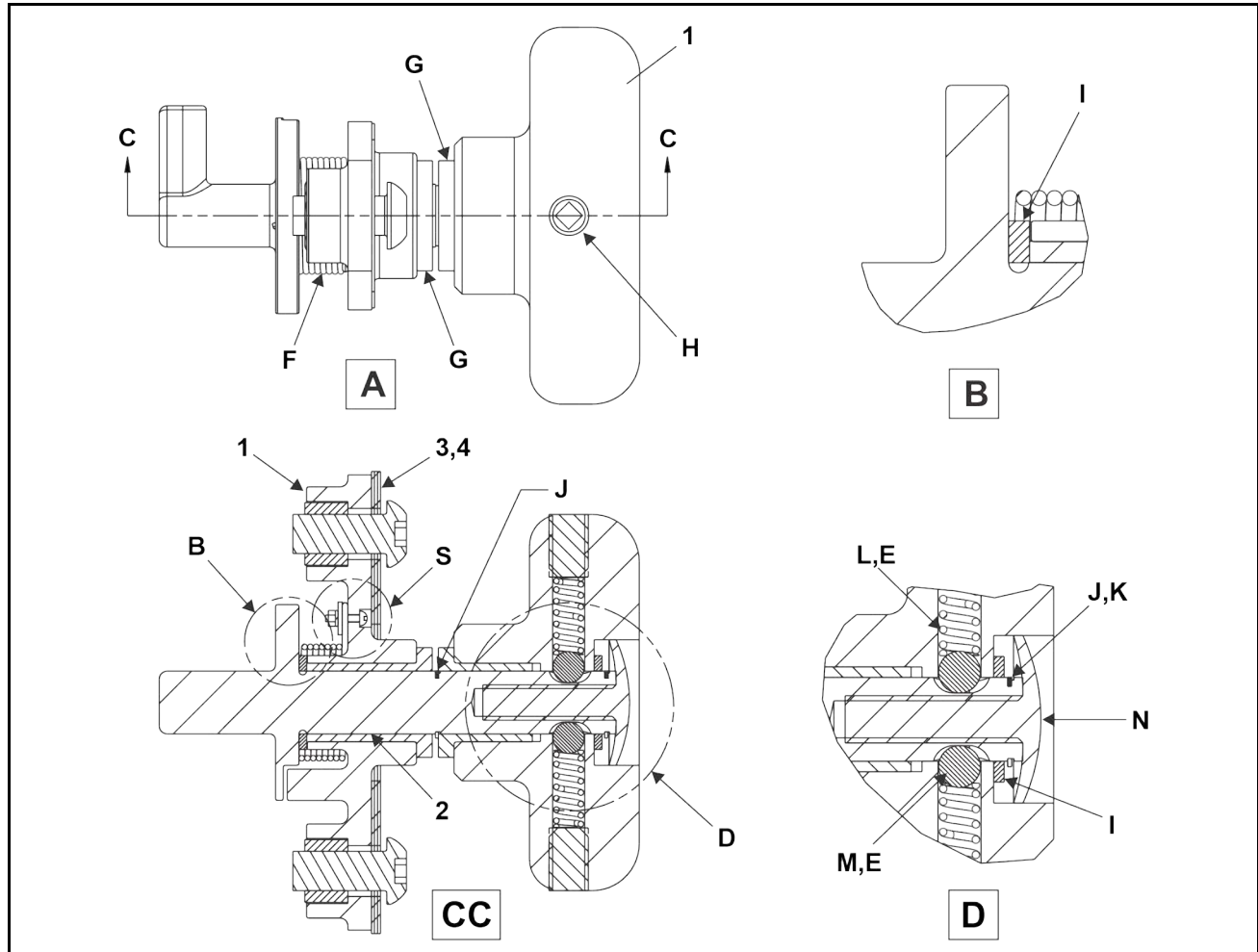
MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ;  
3022X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6J, V6Z

**Table 27. 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	

Door Handle and Lock Actuator

Figure 19. 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 20. 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 28. 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	

# 4 Chemical Supply Devices



BPWOAC02 / 2019385

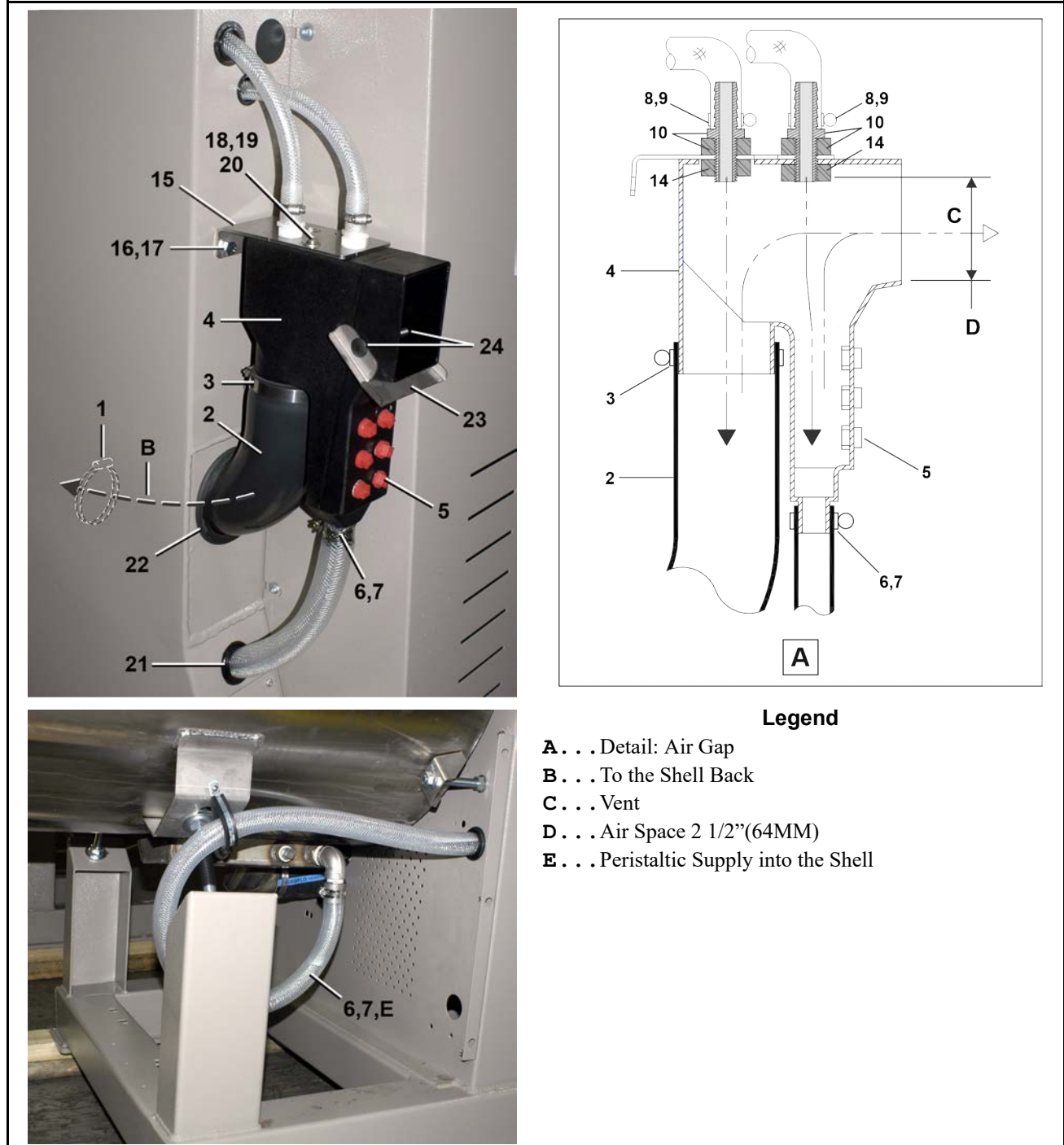
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### Peristaltic Supply Inlets

3 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

Figure 21. Peristaltic Inlets – 30015T6X and 30022T6X

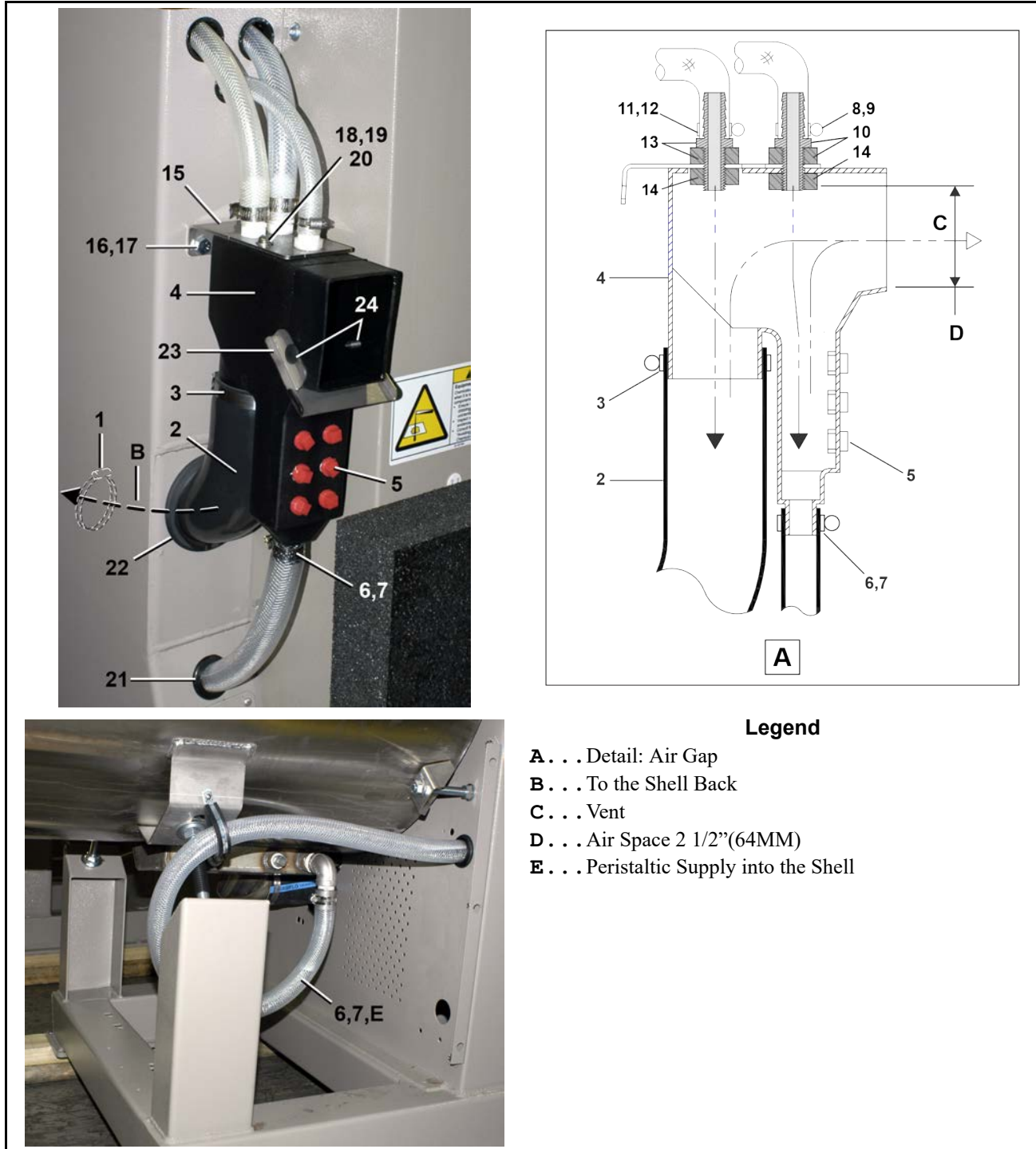


# Peristaltic Supply Inlets

3 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

Figure 22. Peristaltic Inlets – 30015VRJ,V8Z and 30022VRJ,V8Z



**Peristaltic Supply Inlets**

3 Sheets

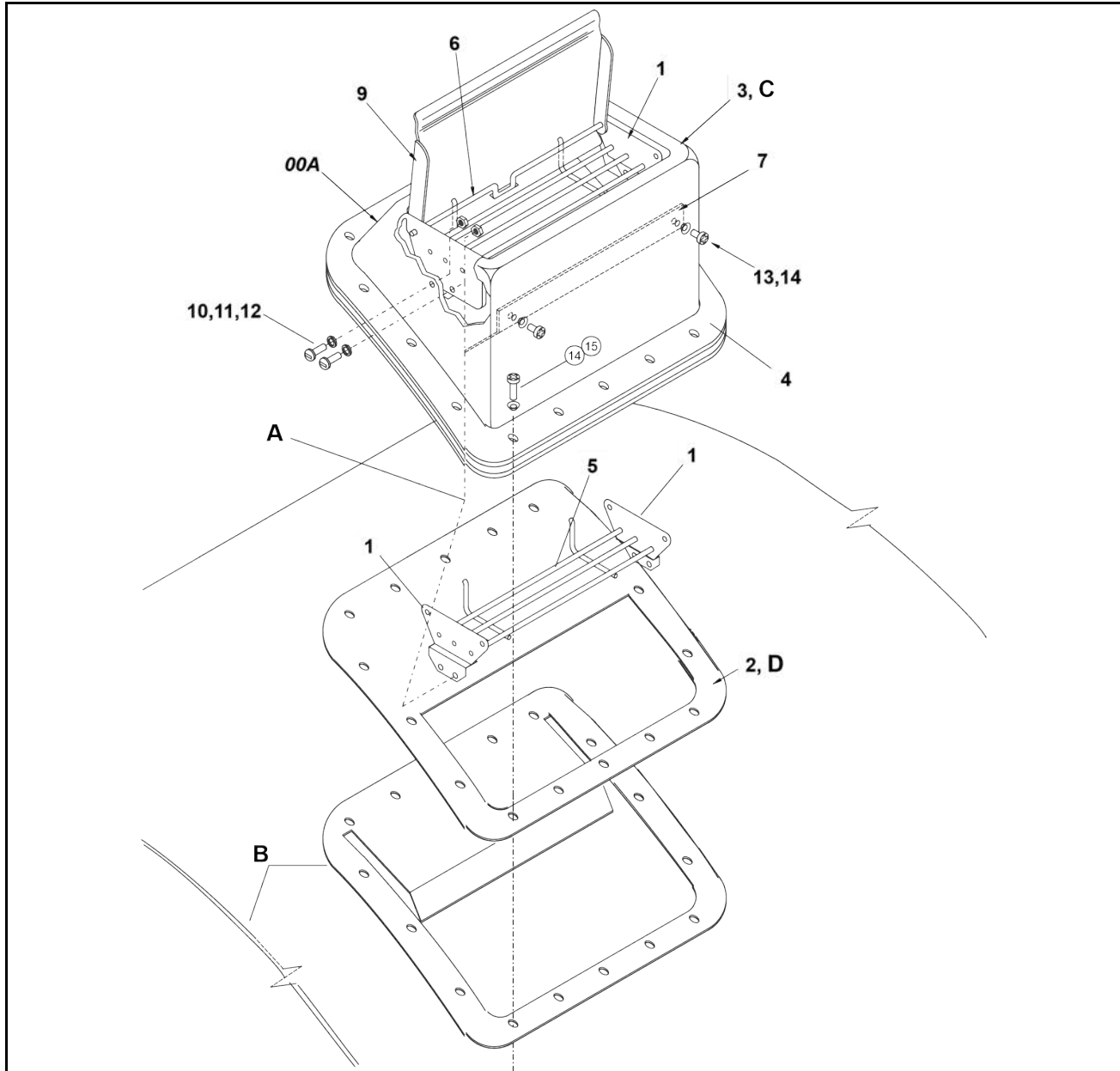
30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Table 29. Parts List—Peristaltic Supply Inlets**

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 33 057	ASSY=PLSTC PERSTL REAR INLET 3022V8	30015VRJ,V8Z 30022VRJ,V8Z
	B	SA 33 057B	30T6X PERISTALTIC REAR INLET ASSY	30015T6X 30022T6X
Components				
all	1	27A074S	HOSECLAMP 2+1/16-3"SSSCR#64040	
all	2	02 03585D	3022V8 PARISTALTIC/WATER INLET HOSE	
all	3	27A082S	HOSECLAMP 2+9/16-3.5SS305SCR	
all	4	02 03585A	PARISTALTIC/WATER INLET 30	
all	5	51PB0GNA	3/8" PVDF THRD PLUG	
all	6	27A090S	HOSECLAMP 13/16-1.5"SS#64016B	
all	7	60E010	TUBINGPOLYBRAID 1"X1.312	
all	8	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	9	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	10	51E510N	HOSEADP 1/2"HX11/16 W/NUT=NYL	
all	11	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	12	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	
all	13	51E513N	HOSEADPT3/4"HX11/16 W/NUT=NYL.	
all	14	51E513NU	NUT 11/16 THRD.#64138 US PLAST	
all	15	02 03585G	3022V8 PERIST MTG BRKT	
all	16	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	17	15G198	HXFLGNUT 3/8-16 ZINC	
all	18	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	19	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	20	15U188	FLTWASH 1/4 STD COMM SS18-8	
all	21	12P11JSB	SNAPBUSH 1.50"MH X 1.312 HEYCO#2240	
all	22	60C121	GROMMET-FILLTUBE3015/22	
all	23	02 03586	PERISTALTIC/WATER SPOUT	
all	24	12P015B	TRW BLK NYL PUSH FAST	
all	25	12P11AHP	HOLEPLUG LPE BLACK 1" #BPF	

**Soap Chute**

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ



**Legend**

- A . . . Fasten splash guard assembly to plastic housing, 4 instances. Items 10, 11, & 12
- B . . . Shell
- C . . . Housing
- D . . . Gasket

**Soap Chute**

2 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Table 30. Parts List—Soap Chute**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 33 058M	94000Z ASSY=PLSTC SOAP INLET	
Components				
all	1	02 03130	BRACKET=PLASTIC SOAP INLET	
all	2	02 03304D	GASKET=SOAPCHUTE 1/8" EPDM BL	
all	3	02 03589I	PLASTIC SHELLSIDE SOAP INLET	
all	4	02 03589T	BACKING RING=PLSTC CHEM INLT	
all	5	02 03594	GUARD SOAP CHUTE=CWU	
all	6	02 03595	PIN SOAP CHUTE HINGE=CWU	
all	7	02 03630A	SPLASH GUARD= SOAP CHUTE	
all	9	02 03593	89432B LID-SOAPCHUTE CWE TY304 SS	
all	10	15N133	RDMACSCR 10-24UNCZA X5/8" SS18	
all	11	15U160	LOCKWASHER MEDIUM #10 SS18-8	
all	12	15G130	HEXMACHSCRNUT 10-24UNC2 SS18-8	
all	13	15P050	PHDCUT-F PANHD 10-32X3/4 SS410	
all	14	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	15	15P051	TRDFRM AB HOLTHD 10-16X3/4SS41 PRECOAT 80 PATCH	

# 5 Water & Steam

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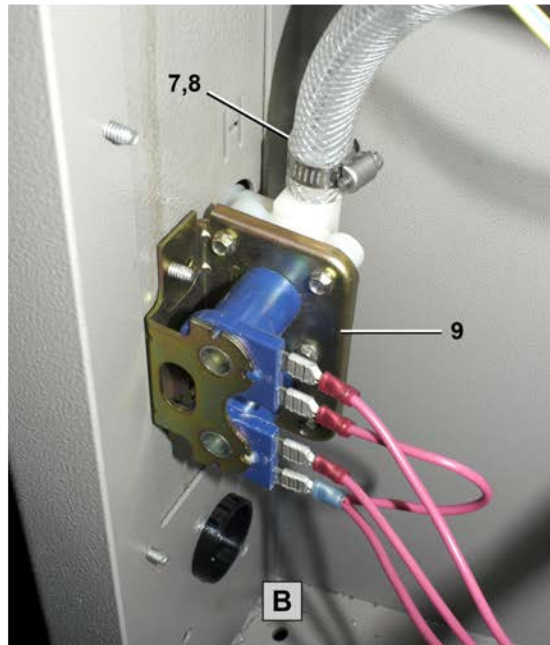
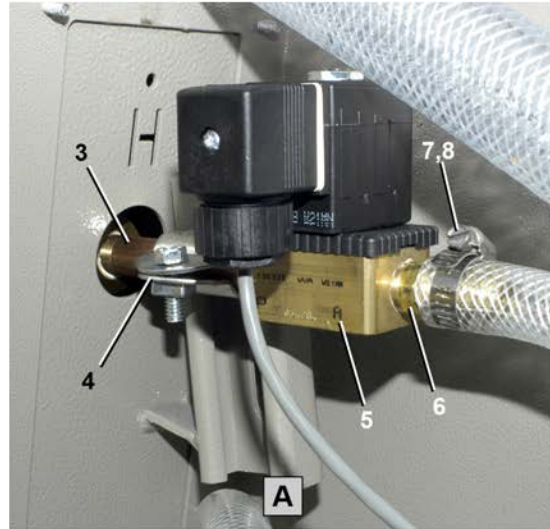
BPWOAW01 / 2019355

BPWOAW01.1 0000250855 B.1 D.2 11/7/19, 10:23 AM Released

# Duo-in Water Valve Assembly

2 Sheets

30015T6X, 30022T6X



## Legend

- A . . . Hot water for supply
- B . . . Hot and cold water inlet



**Duo-in Water Valve Assembly**

2 Sheets

30015T6X, 30022T6X

**Table 31. Parts List—Duo-in Water Valve Assembly**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 33 056B	30T6X DUO-IN WATER VALVE ASSY	
Components				
all	1	W2 30088	3022T6X DUO-IN H20 MNT WLMT	
all	2	51E513A	3/4"MHX1/4"FP PARKER#78GH-12-4	
all	3	5N0E03KBE2	NPT NIP 1/4X3.5 TBE BRASS STD	
all	4	27A0050	CLP-RGDSTL COND #PS1100-1/2	
all	5	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6-BURKERT	
all	6	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	7	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	8	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	9	96P060C71	3/4"DUO-IN 1/2"HOSE-OUT 240VHF ZYTEL NATURAL COLOR N50	

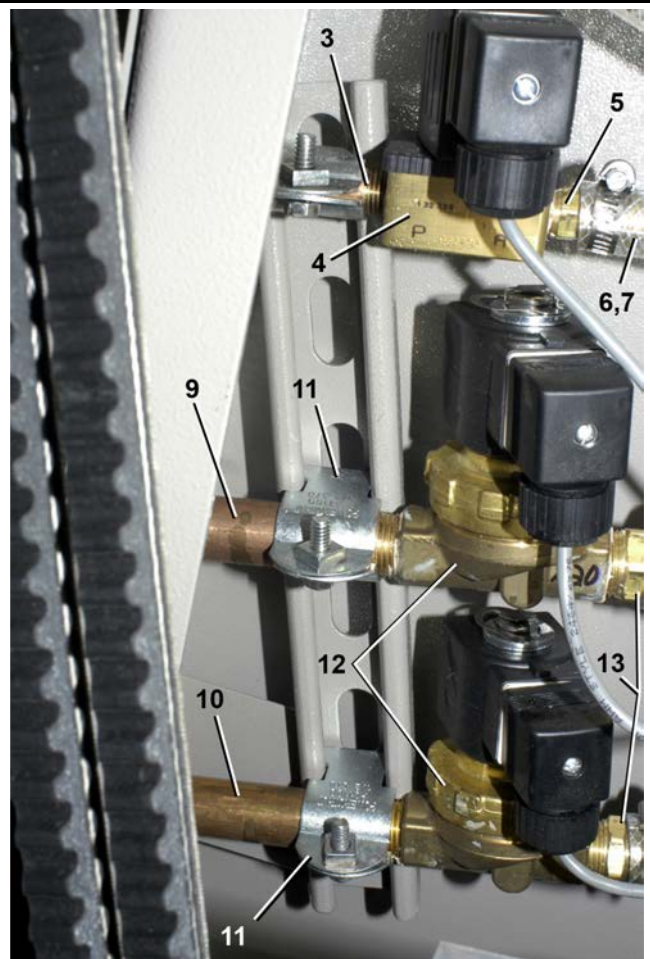
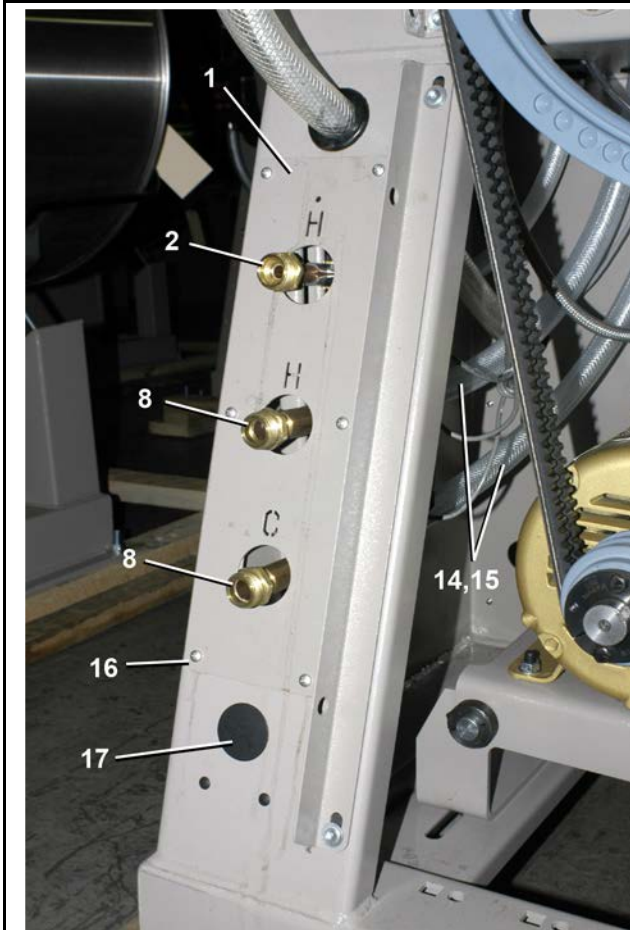
BPWOAW02 / 2019363

BPWOAW02.1 0000251191 B.1 D.2 11/7/19, 10:26 AM Released

# Brass Water Valves

2 Sheets

30015VRJ, 30022VRJ



**Brass Water Valves**

2 Sheets

30015VRJ, 30022VRJ

**Table 32. Parts List—Brass Water Valves**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 33 056A	30VRJ BRASS WATER VALVE ASSY	
Components				
all	1	W2 03588T	3022V8 BRASS H20 MNT WLMT	
all	2	51E513A	3/4"MHX1/4"FP PARKER#78GH-12-4	
all	3	5N0E03KBE2	NPT NIP 1/4X3.5 TBE BRASS STD	
all	4	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6-BURKERT	
all	5	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID	
all	6	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	7	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	8	51E513B	3/4"MHX1/2"FP PARKER#80GH-12-8	
all	9	5N0K05ABE2	NPT NIP 1/2X5 TBE BRASS STD	
all	10	5N0K06ABE2	NPT NIP 1/2X6 TBE BRASS STD	
all	11	27A0050	CLP-RGDSTL COND #PS1100-1/2	
all	12	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER	
all	13	51E510	HOSESTEM BRASS 1/2MPX3/4HOSEID	
all	14	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	15	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	
all	16	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	17	12P11AHP	HOLEPLUG LPE BLACK 1" #BPF	

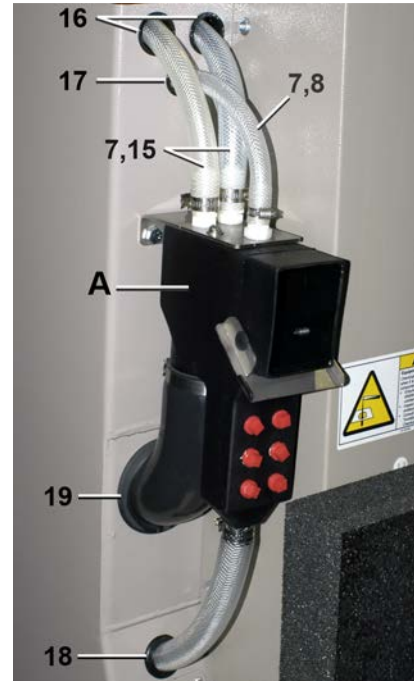
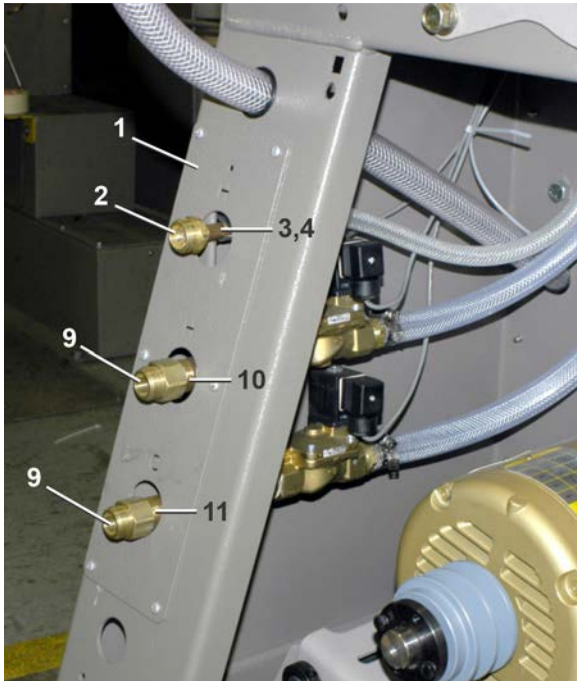
BPWOAW03 / 2019382

BPWOAW03.1 0000251222 B.1 D.2 11/7/19, 10:28 AM Released

# Brass Water Valve Assembly

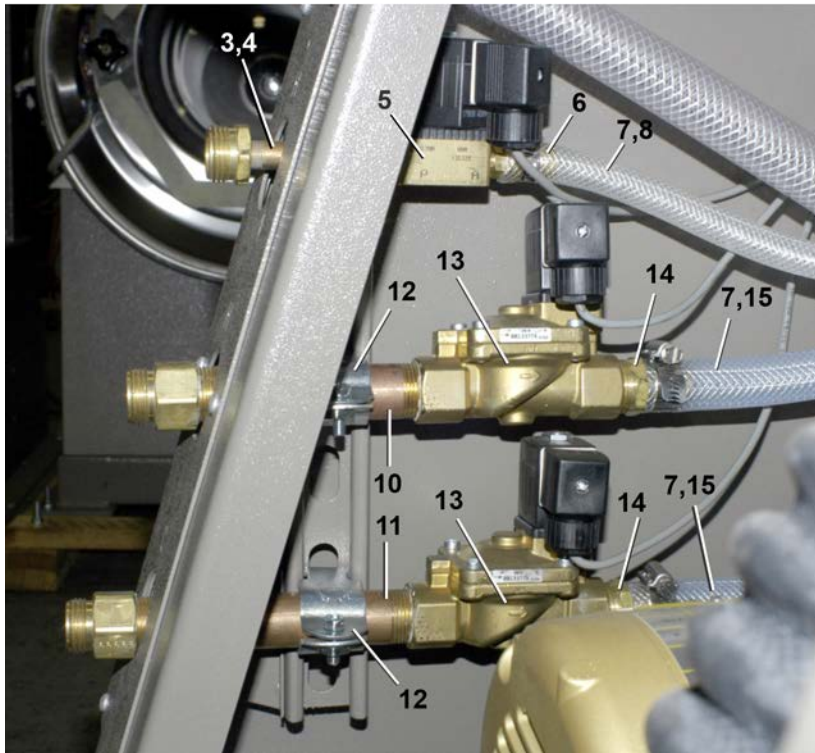
2 Sheets

30015V8Z, 30022V8Z



### Legend

A . . . See BPWOAC02



**Brass Water Valve Assembly**

2 Sheets

30015V8Z, 30022V8Z

**Table 33. Parts List—Brass Water Valve Assembly**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 33 056	3022V8 BRASS WATER VALVE ASSY	
Components				
all	1	W2 03588T	3022V8 BRASS H20 MNT WLMT	
all	2	51E513A	3/4"MHX1/4"FP PARKER#78GH-12-4	
all	3	5N0E03KBE2	NPT NIP 1/4X3.5 TBE BRASS STD	
all	4	27A0650CLP	TUBING CLP 1/2"OD #PS1200-1/2	
all	5	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6	
all	6	51E507D	HOSESTEM BRASS 1/4MPX5/8HOSEID	
all	7	27A044S	HOSECLAMP 11/16-1.25SSCR#64012	
all	8	60E007C	TUBING NYL.REINF.5/8"IDX.8750D	
all	9	51E513C	3/4"MHX3/4"FP-PARKER#81GH-12-12	
all	10	5N0P05AB42	NPT NIPPLE 3/4X5 TBE BRASS STD	
all	11	5N0P06ABE2	NPT NIP 3/4X6 TBE BRASS STD	
all	12	27A0050	CLP-RGDSTL COND #PS1100-1/2	
all	13	96P056B71	3/4"NC 230V50/60 W/LEADS BURKERT#5281	
all	14	51E511	HOSESTEM BRASS 3/4MP X HOSEID	
all	15	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	16	12P11KSB	SNAPBUSH 1.50" X 1.06" #22MP15017	
all	17	12P11CSB	SNAPBUSH 1.093"MH X .94"ID HEYCO#2166	
all	18	60C020	RUBGRO #2802 1-5/161DX1-5/8 X1/8	
all	19	60C121	GROMMET-FILLTUBE3015/22	

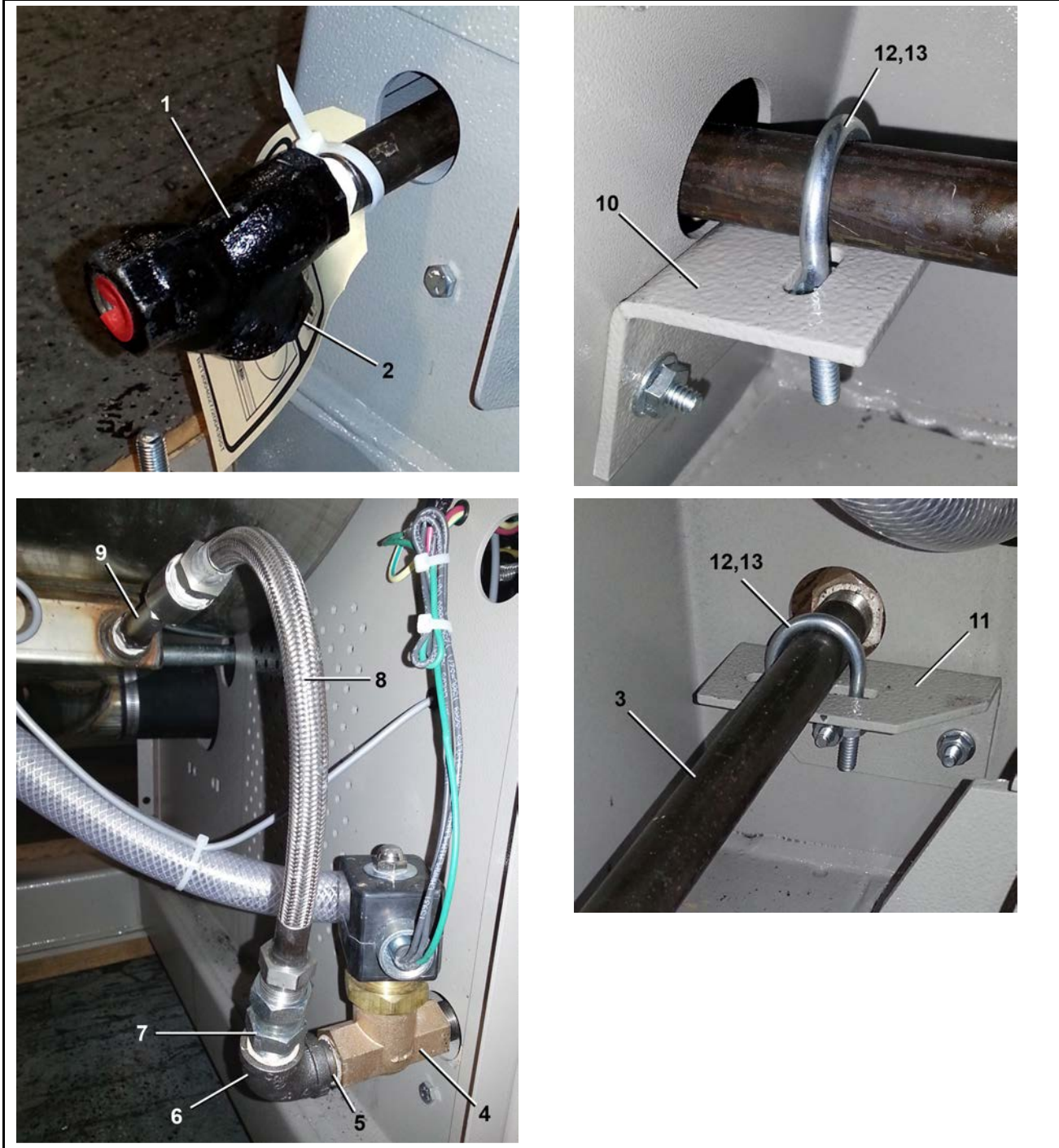
BPWOAW04 / 2019372

BPWOAW04.1 0000251293 B.1 D.2 11/7/19, 10:29 AM Released

### Steam

2 Sheets

30015VRJ,V8Z,VZZ and 30022VRJ,V8Z,VZZ



**Steam**

2 Sheets

30015VRJ,V8Z,VZZ and 30022VRJ,V8Z,VZZ

**Table 34. Parts List—Steam**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	G33 10500H	INST=STEAM 30V8Z	
	B	A33 10500H	ASSY=STEAM PIPING 30V8Z	
Components				
all	1	51T025	Y-STRAINER 1/2" CAST IRON	
all	2	5SP0GGFSS	NPT PLUG 3/8 SQ SOLID GALSTL	
all	3	5N0K23KF42	NPT NIP 1/2X23.5 TBE BLKSTL SK40	
all	4	96P039A71	1/2"STEAMVAL240V50/60C 150PSI	
all	5	5N0KCLSF42	NPT NIP 1/2XCLS TBE BLKSTL S40	
all	6	5SL0KMFA	NPT ELBOW 90DEG 1/2" BLKMAL 15	
all	7	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	8	60E508E09A	HOSE S/S BRAID 3/8+2ENDS=9LG	
all	9	W2 02555	NOZZLE=STEAM INJECTION	
all	10	03 11410	BRKT=STEAM MNT 30V8Z	
all	11	03 11414	BRKT=STEAM INSTALL FRONT 30V8Z	
all	12	27A030A	UBOLT 1/2 PIPE 1/4-20 THD	
all	13	15G178	1/4"-20 HEXFLANGE NUT ZINC	

BPWOAQ01 / 2019372

BPWOAQ01.1 0000251564 B.1 C.3 1/2/20, 2:25 PM Released

## Electric Heat

2 Sheets

30015 & 30022 T6X, VRJ, V8Z, VZZ



### Legend

A . . . Six heating elements used in machines produced since 2016.



## Electric Heat

2 Sheets

30015 & 30022 T6X, VRJ, V8Z, VZZ



**Table 35. 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
Reference Assemblies				
	A	W2 04557A	3022VRJ/V8 SHELL WELDMENT-ELEC HEAT	REFERENCE
Components				
all	1	02 04585	HEATER ELEMENT GUARD	
all	2	27F3000H62	HEAT ELEMENT 3000W 220V	
all	3	02 04586	HEATER ELEMENT SIGHT GLASS	
all	4	03 B0102	BAR:TERMINAL 6 POSITION	

# Drain with Bypass

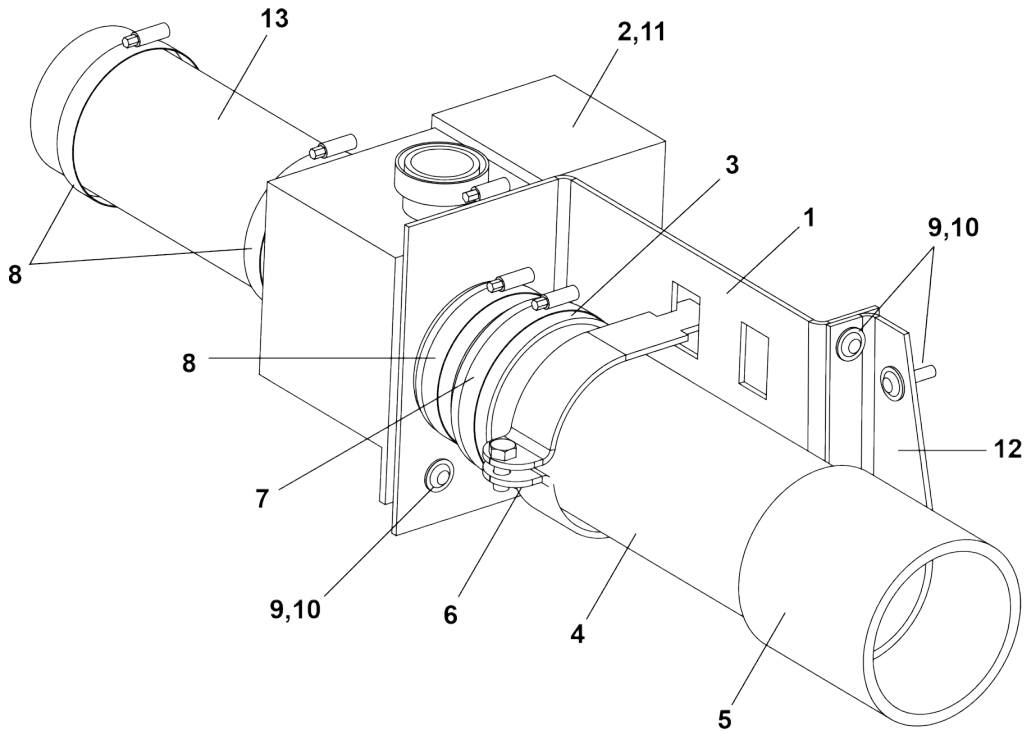
2 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ



### Legend

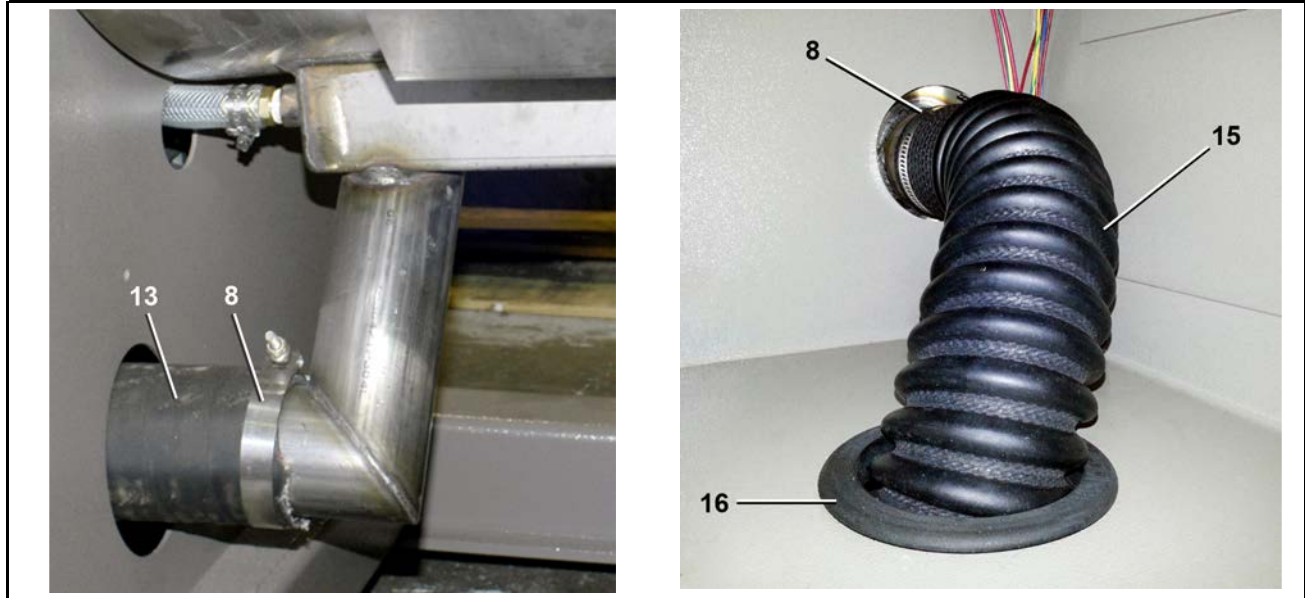
**A . . .** This drain valve is in use since January 2016. For drain valves used before January 2016, see BPWOAW06.



## Drain with Bypass

2 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ



**Table 36. Parts List—Drain with Bypass**

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	GVD30002A	INST=DUMP VALVE 3" ELEC W/BYPASS	REFERENCE
	B	AVD30002A	ASSY=DUMP VALVE 3" ELEC W/BYPASS	ASSEMBLY
Components				
all	1	02 03412X	3015/22 DRAIN VALVE BRKT/OVERFLOW	
all	2	96D350A71A	DRAINVAL 3"N/O MTRDR240V 50/60C	
all	3	02 03429	TUBE REDUCER 3.13 ID X 3.50 ID;CP#4AM-3X0-XL0	
all	4	02 04521	NIPPLE PIPE=3" X 10.75" NO THREAD PVC	
all	5	5KC3AP4	SOK COUP 3" PVC SK40	
all	6	27A0300	CLP-RGDSTL PS#1100-3	
all	7	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	8	27A082S	HOSECLAMP 2+9/16-3.5SS305SCR	
all	9	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	10	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	11	96D35C0V	MTRCOVER 2-PCFOR 3"DRAINVAL	
all	12	02 03412Y	BKT=DUMP VAL MT 3022V8	
all	13	60E303A08A	HOSE=3" ID X 8.00 LONG	
all	14	27A060S	HOSECLAMP1+5/16-2.25SSSC#HSS28	

**Drain with Bypass**

2 Sheets

30015T6X,VRJ,V8Z,VZZ and 30022T6X,VRJ,V8Z,VZZ

**Table 36 Parts List—Drain with Bypass (cont'd.)**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	15	60E021	FLEXHOSE 2+3/8 X 1+1/2 X 24" LG CUFF	
all	16	60C121	GROMMET-FILLTUBE3015/22	

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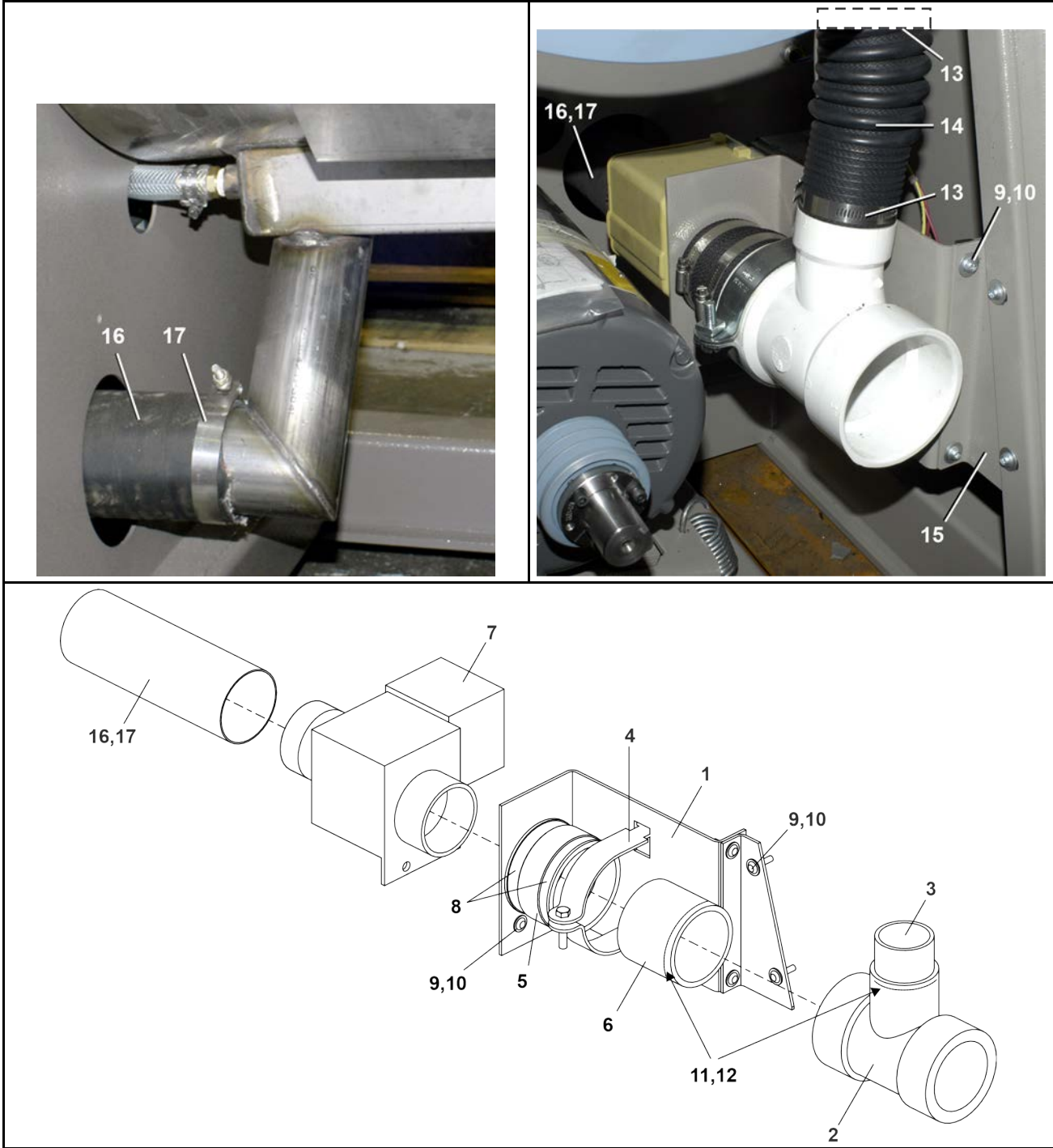
BPWOAW06 / 2019372

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# Drain Installation

2 Sheets

30015T6X,VRJ,V8Z and 30022T6X,VRJ,V8Z



**Drain Installation**

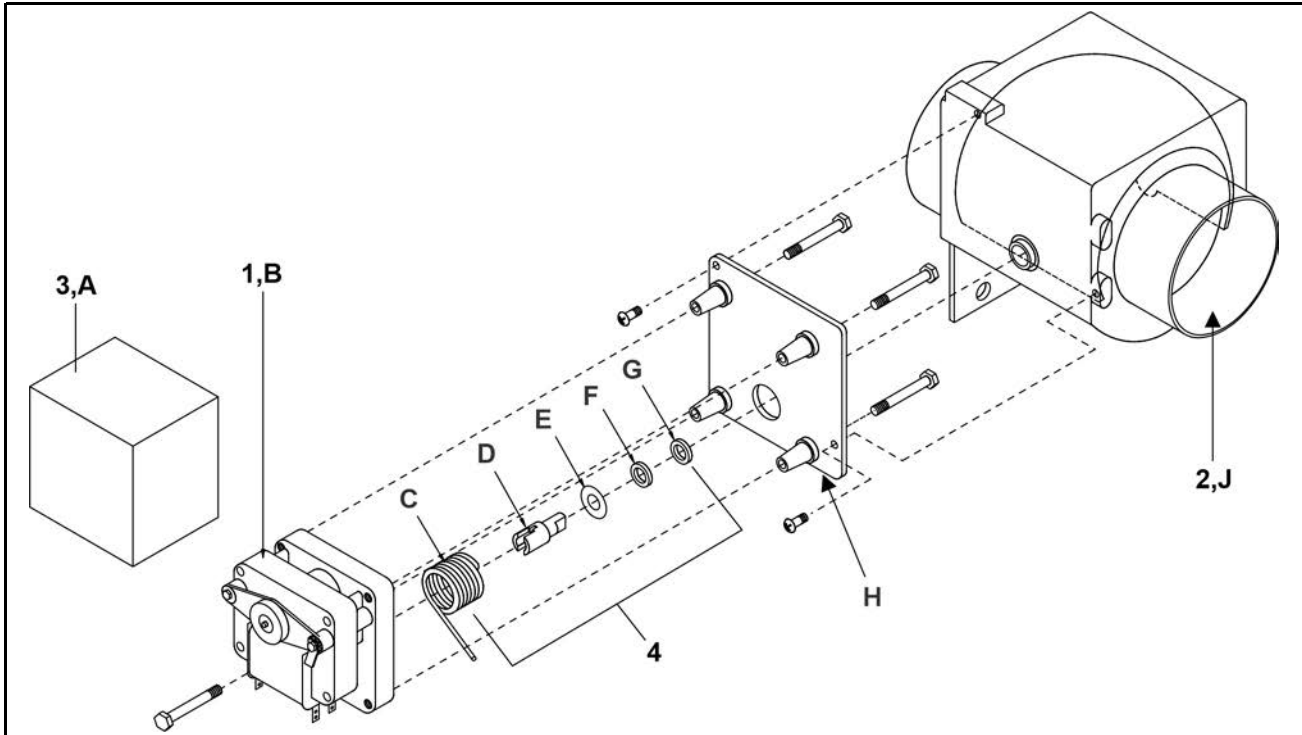
2 Sheets

30015T6X,VRJ,V8Z and 30022T6X,VRJ,V8Z

**Table 37. Parts List—Drain 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	GVD30002	INST=DUMPVAL-ELEC 3" W/OVERFLOW	30015,30022T6X 30015,30022VRJ 30015,30022V8Z
	B	AVD30001	3"DUMPVAL ELEC W/OVERFLOW	
Components				
all	1	02 03412C	3015/3022 DRAIN VALVE BRKT/OVERFLOW	
all	2	5S3APFA2A1	REDUCING TEE 3 X 3X 2 PVC	
all	3	51LB2AN02K	NIPPLE PIPE 2 X 2-1/2 LG NO THD PVC	
all	4	27A0250	CLP-RGDSTL COND#P1100-2+1/2	
all	5	60B074	RUBBER CONN DFW BOOTH	
all	6	51LB3AN03A	NIPPLE PIPE 3 X 3LG NO THD PVC	
all	7	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C DEPENDO	
all	8	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	9	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	10	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	11	20C053C	PRIMER CLEAR P-70 PVC (QUART)	
all	12	20C052	CEMENT PVC 1/2 PINT CANS	
all	13	27A074S	HOSECLAMP 2+1/16-3"SSSCR#64040	
all	14	60E020	FLEXHOSE 2_3/8 X 28 LG CUFF	
all	15	02 03412V	BKT=DUMP VAL MT 3022V8	
all	16	60E303A09K	HOSE 3" ID X 9-1/2 LG	
all	17	27A075A	T-BOLT HOSECLAMP 3.03-3.34"	

**3 Inch Electrical Drain Valve**



**Legend**

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



## 3 Inch Electrical Drain Valve

2 Sheets

**Table 38. 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	96D350A37C	DRNVAL 3"N/O 120V50/60C W/COVER (WT=4LBS)	
	B	96D350A37	DRINVAL 3"N/O MTRDR120V 50/60C NO COV/DEPENDO	
	C	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER DEPENDO	
	D	96D350B71	DRINVAL 3"N/C MTRDR240V 50/60 W/COVER	
Components				
AB	1	96D35MTR37	120V 50/60CMTR FOR 3"DRAINVAL	
CD	1	96D35MTR71	240V 50/60CMTR FOR 3"DRAINVAL	
B	2	96D35B0D	BODY & 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	

# 6 Control & Sensing

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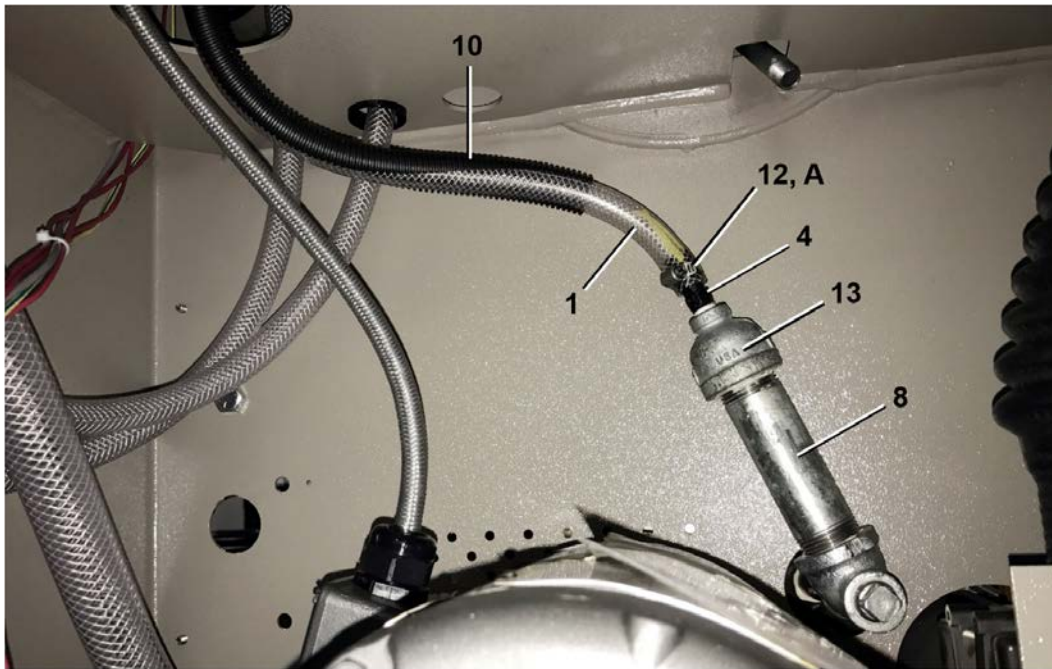
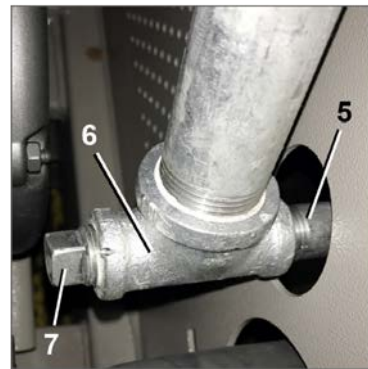
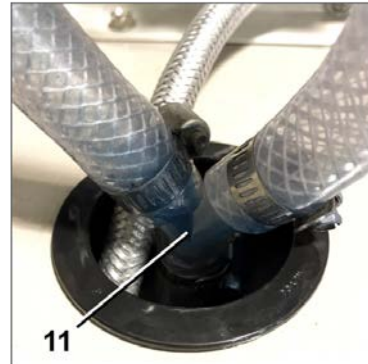
BPWOAZ04 / 2019375

BPWOAZ04.1 0000252201 B.1 D.2 11/7/19, 10:46 AM Released

# Level Sensing Components

2 Sheets

30015T6X, 30022T6X



Legend

## Level Sensing Components

2 Sheets

30015T6X, 30022T6X

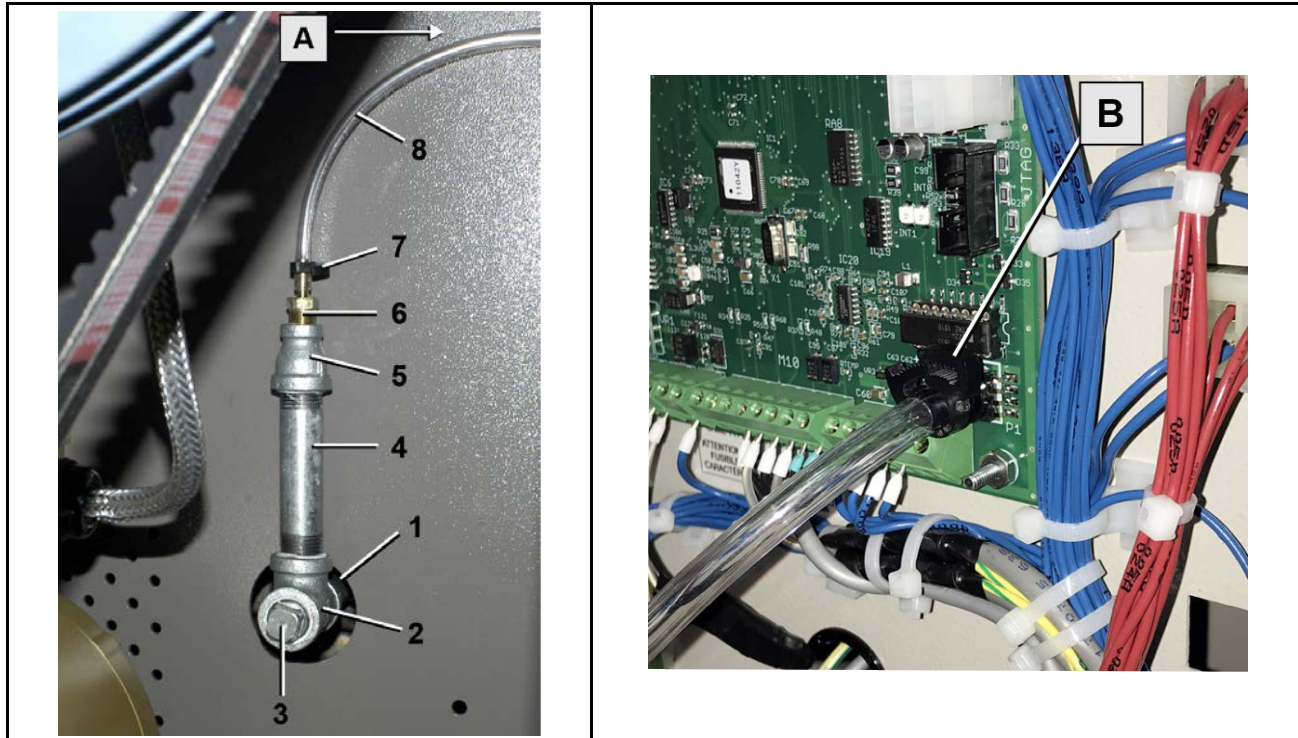
A . . . 6 instances

**Table 39. Parts List—Level Sensing**

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	ALL30213C	30T6X AIR CHAMBER ASSY REINFORCED VINYL	
Components				
all	1	02 03440H	TUBE PRESW .5IDX29"LG PVC REINFORCED	
all	2	02 03440J	TUBE PRESW .5 IDX 6"LG PVC REINFORCED	
all	3	02 03440K	TUBE PRESW .5IDX11.L5"LG PVC REINFORCED	
all	4	51E507N	HOSESTEM NYLON 1/4MPX1/2HOSEID	
all	5	5N0K04AG42	NPT NIP 1/2X4 TBE GALSTL SK40	
all	6	5S0KNFA1A	NPT TEE 1/2X1/2X1" GALMAL 150#	
all	7	5SP0KGFSS	NPT PLUG 1/2 SOSOLID GALSTL	
all	8	5N1A05AG42	NPT NIPPLE 1X5 TBE GALSTL SK40	
all	9	5SR0K0ENF	NPT RED 1/2X1/4 GALMAL 150#	
all	10	12F013ST	1/2" CORRUGATED LOOM TUBE	
all	11	51E509Y	Y-CONN1/2"HBARB PLAS.IND#64017	
all	12	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	13	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	

**Level Sensing**

30015VRJ,V8Z,VZZ and 30022VRJ,V8Z,VZZ



**Legend**

- A . . . To Transducer
- B . . . Transducer

**Table 40. Parts List—Level Sensing**

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	ALL30212A	30VRJ AIRCHAMBER ASSY	30015/30022VRJ
	B	ALL30212	30V8Z AIRCHAMBER ASSY	30015/30022V8Z 30015/30022VZZ
Components				
all	1	5N0K04AG42	NPT NIP 1/2X4 TBE GALSTL SK40	
all	2	5S0KNFA	NPT TEE 1/2" GALMAL 150#	
all	3	5SP0KGFSS	NPT PLUG 1/2 SOSOLID GALSTL	
all	4	5N0K05AG42	NPT NIP 1/2X5 TBE GALSTL SK 40	
all	5	5SR0K0ENF	NPT RED 1/2X1/4 GALMAL 150#	
A	6	51E502B	HOSESTEM BRASS 1/4MPX1/8HOSEID	
B	6	51E502D	HOSESTEM BRASS 1/4"MPX X 3/16"HOSE ID	
all	7	27A047A	HOSE CLAMP 5/16" NOMINIAL MIN .256",	

**Level Sensing**

1 Sheet

30015VRJ,V8Z,VZZ and 30022VRJ,V8Z,VZZ

**Table 40 Parts List—Level Sensing (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	8	60E004NT	TUBING (NYL.)CLR.1/4"ODX1/8"	
B	8	60E004NA	TUBING CLEAR PVC 3/16"IDX5/16"OD	

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### Temperature Probe

1 Sheet

30015VRJ,V8Z,VZZ, and 30022VRJ,V8Z,VZZ



**Table 41. Parts List—Temperature Probe**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	30R0043PB	TEMPERATURE PROBE ASSY=BRASS	



## 6.1 Vibration Safety Switch Adjustments

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### 6.1.1 What the Vibration Safety Switch Does

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The **vibration safety switch** in [Figure 23: Vibration Switch, page 112](#) is an important safety feature. If properly adjusted, the switch will momentarily actuate as a result of repeated machine movement caused by an out-of-balance condition. [Table 42, page 111](#) below illustrates the effect of the **vibration safety switch** actuation.

**Table 42. Effect of Tripping Vibration Safety Switch**

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

### 6.1.2 Adjustments

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

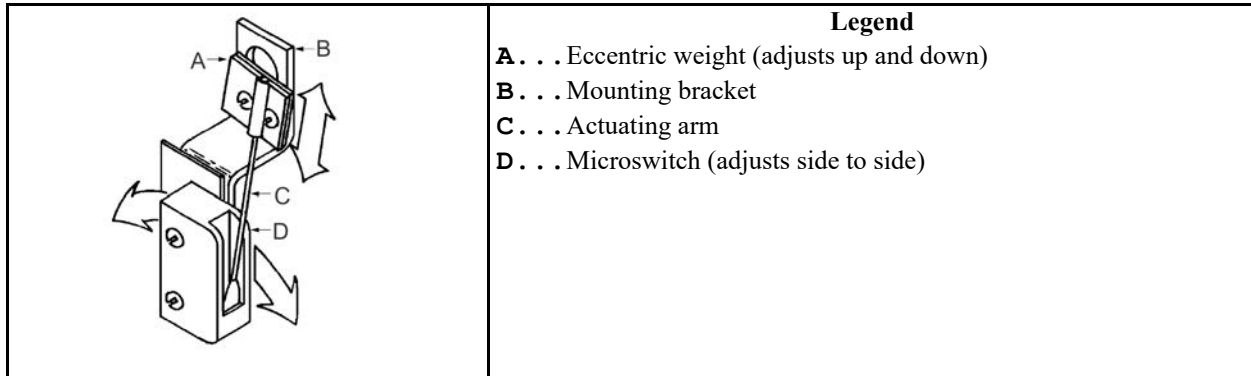
Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown in [Figure 23: Vibration Switch, page 112](#), the unit consists of a **sensitive micro-switch** with an extended actuating arm supporting an eccentric weight. The weight may be adjusted by moving it up and down on the arm and by rotating it on the arm. In addition, the **micro-switch** itself may be tilted from side to side.

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

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

**Figure 23. Vibration Switch**



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

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## Vibration Safety Switch

1 Sheet

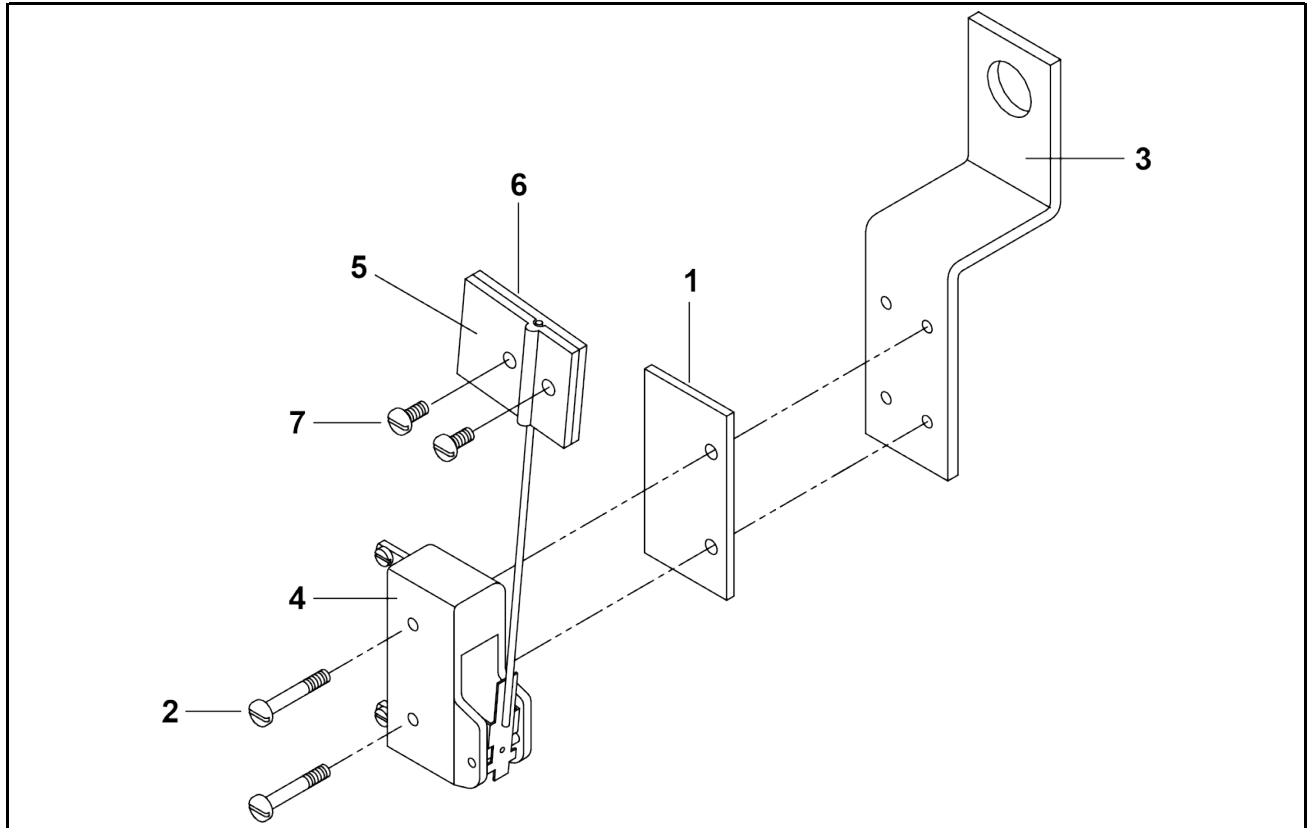


Table 43. Parts List—Vibration Safety Switch

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SAE03 151	* ASSY-VIBRATION SWT=LG CONTR	
Components				
all	1	02 02038	PLATE INSULATING SMALL 9NOV51	
all	2	15P008	TRDCUT PANHD 6-32X1 NIKSTL +WA	
all	3	02 15119	BRACKET=VIBSW CAD	
all	4	09R020	SWITCH NC VIBR#WZ-2RW84429-P52	
all	5	03 01059	VIBSWITCH CLAMP CADSTL	
all	6	03 01058	VIBSWITCH WEIGHT-CADSTL	
all	7	15P101	TRDCUT-F PANHD 8-32X3/8 NIKSTL	