Manual Number: MCWD6M01
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Mechanical Parts and Service

60044WR2, WR3

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

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1 General Service & Safety-Related Components

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

PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

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

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

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

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

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

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

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

BMP720097/19036

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

1.1 How to Get the Necessary Repair Components

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

1.2 Trademarks

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

Table 1. Trademarks

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

Table 1 Trademarks (cont'd.)

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

BNWVUS08 / 2020122 BNWVUS08 0000279016 A.2 3/16/20, 3:40 PM Released

1.3 Safety — Divided Cylinder and Staph Guard® Washer-Extractors

BNWVUS08.C01 0000279015 C.2 A.2 3/16/20, 3:40 PM Released

1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNWVUS01.C03 0000235064 C.2 A.2 A.3 1/2/20, 2:19 PM Released

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

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

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

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

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

1.3.2 Safety Alert Messages—External Mechanical Hazards

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The following are instructions about hazards around the front, sides, rear or top of the machine.

WARNING: **Crush Hazards —** Suspended machines only—Spaces between the shell and housing can close and crush or pinch your limbs. The shell moves within the housing during operation.

- Do not reach into the machine housing or frame.
- Keep yourself and others clear of movement areas and paths.

1.3.3 Safety Alert Messages—Cylinder and Processing Hazards

BNWVUS03.C03 0000235094 C.2 A.2 A.3 1/2/20, 2:19 PM Released

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

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.
- Divided cylinder machines only—Keep yourself and others clear of cylinder and goods during inching or Autospot operation.
- Do not operate the machine with malfunctioning two-hand manual controls.

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

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

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

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

1.3.4 Safety Alert Messages—Unsafe Conditions

BNWVUS04.C01 0000235093 C.2 A.2 A.3 12/11/20, 8:32 AM Released

1.3.4.1 Damage and Malfunction Hazards

BNWVUS04.C02 0000235092 C.2 A.2 A.3 12/11/20, 8:32 AM Released

1.3.4.1.1 Hazards Resulting from Inoperative Safety Devices

BNWVUS04.C03 0000235091 C.2 A.2 A.4 12/11/20, 8:32 AM Released

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

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

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

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

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

- Do not unlock or open electric box doors.

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

- Do not remove guards, covers, or panels.

1.3.4.1.2 Hazards Resulting from Damaged Mechanical Devices

BNWVUS04.C04 0000235090 C.2 A.2 A.4 12/11/20, 8:32 AM Released

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

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

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

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

WARNING: **Explosion Hazards** — Inner door latches (divided cylinder machines)—A damaged or improperly seated latch can cause the inner door to open during operation, damaging the cylinder and shell. A damaged cylinder can rip apart during extraction, puncturing the shell and discharging metal fragments at high speed.

- Ensure that the inner door is securely latched after loading and unloading.
- 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

1.3.4.2 Careless Use Hazards

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

BNWVUS04.C06 0000235126 C.2 A.2 A.4 12/11/20, 8:32 AM Released

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

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- Do not operate a damaged or malfunctioning machine. Request authorized service.
- Do not attempt unauthorized servicing, repairs, or modification.
- Do not use the machine in any manner contrary to the factory instructions.
- Use the machine only for its customary and intended purpose.
- Understand the consequences of operating manually.

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

BNWVUS04.C07 0000235125 C.2 A.2 A.4 12/11/20, 8:32 AM Released

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

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

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

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

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

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

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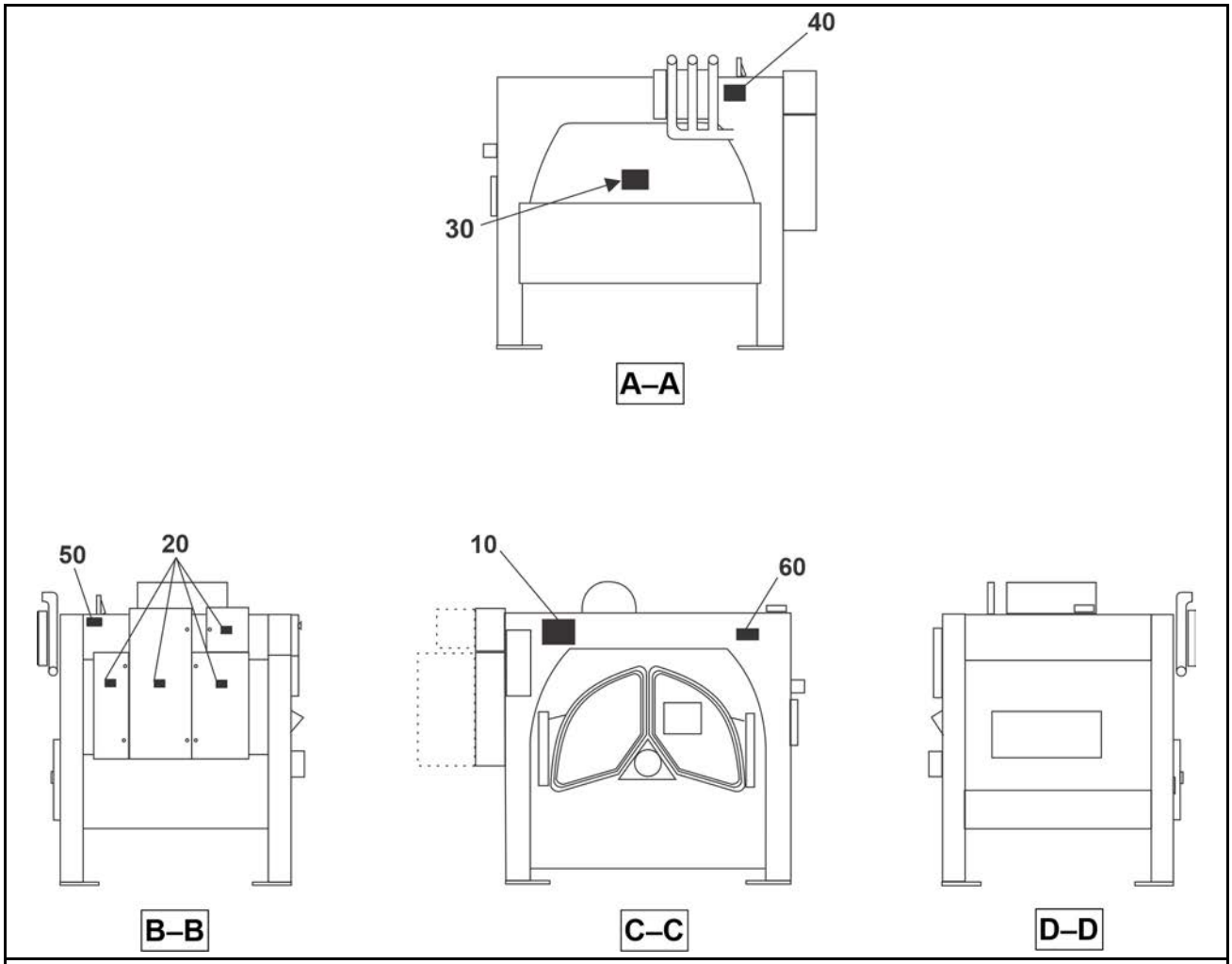
Safety Placard Use and Placement

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

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



Legend

A–A . . Rear View
B–B . . Left view
C–C . . Front View
D–D . . Right view

Safety Placard Use and Placement

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

Table 2. Parts List—Safety Placard Use and Placement

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	10	01 10627A	NPLT:DIV-CYL/STAPH WARN-TCATA	
all	20	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	30	01 10689A	NPLT:BELT HAZARD SM TCATA	
all	40	01 10648A	NPLT:GEAR HAZARD-TCATA	
all	50	01 10685A	NPLT:BURN HAZARD-TCATA	
all	60	01 10699A	NPLT:SERV HZRD-ALUM-TCATA	

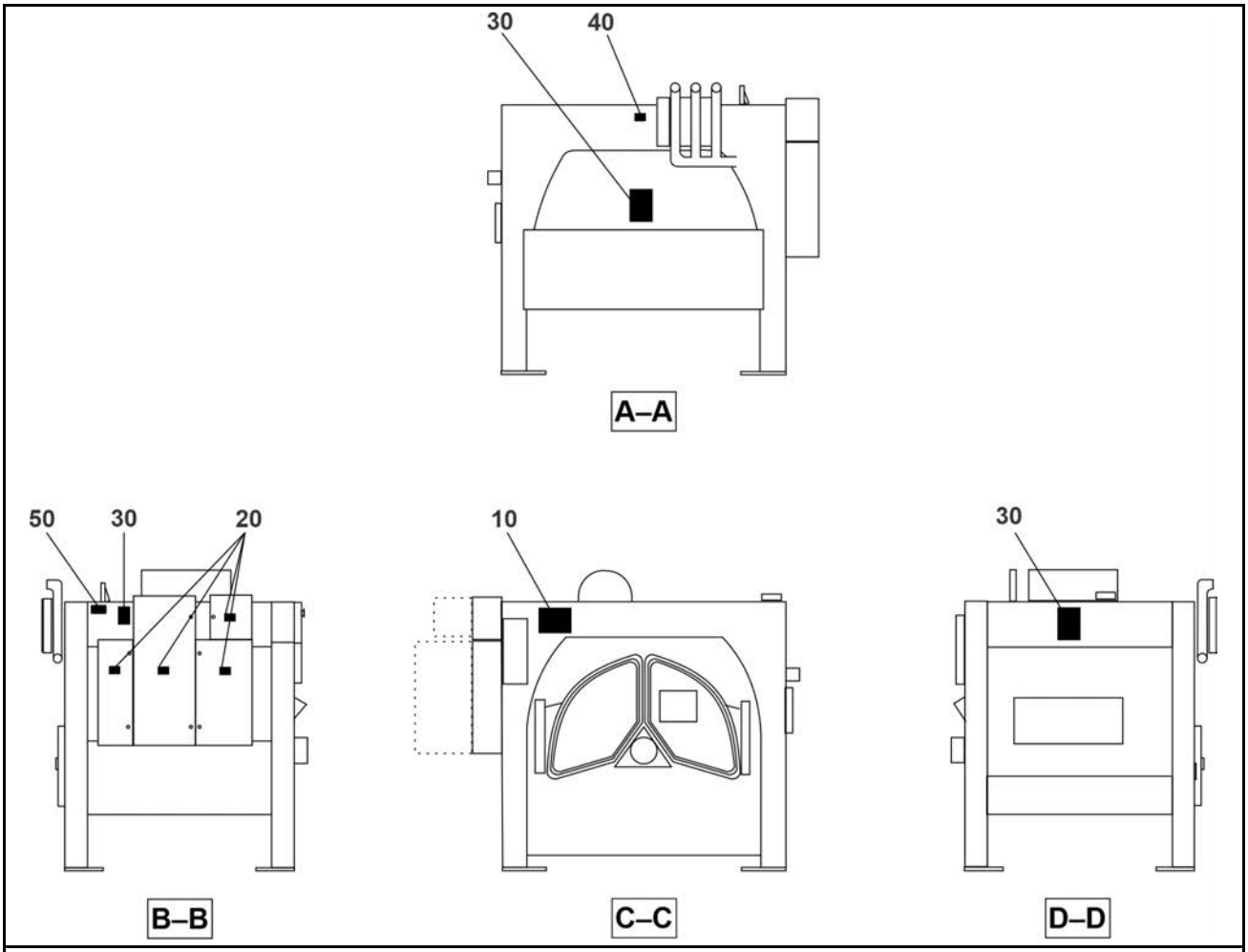
BPWD6M02 / 2020293 BPWD6M02.1 0000303200 C.2 A.4 7/14/20, 11:33 AM Released

Safety Placards and Locations ISO

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

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



Legend

A–A . . Rear view
B–B . . Left view
C–C . . Front view
D–D . . Right view

Safety Placards and Locations ISO

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

Table 3. Parts List—Safety Placards and Locations ISO

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	10	01 10627X	NPLT:DIVCYL SG WARNING FRT ISO	
all	20	01 10377	NPLTE:"WARNING" 4X4	
all	30	01 10628X	NPLT:NONTILT W/E WARNING SIDE	
all	40	01 10648X	NPLT:ACTUATED VALVE WARN-ISO	
all	50	01 10649X	NPLT:HOT BEHIND CVR WARN-ISO	Used on the steam inlet

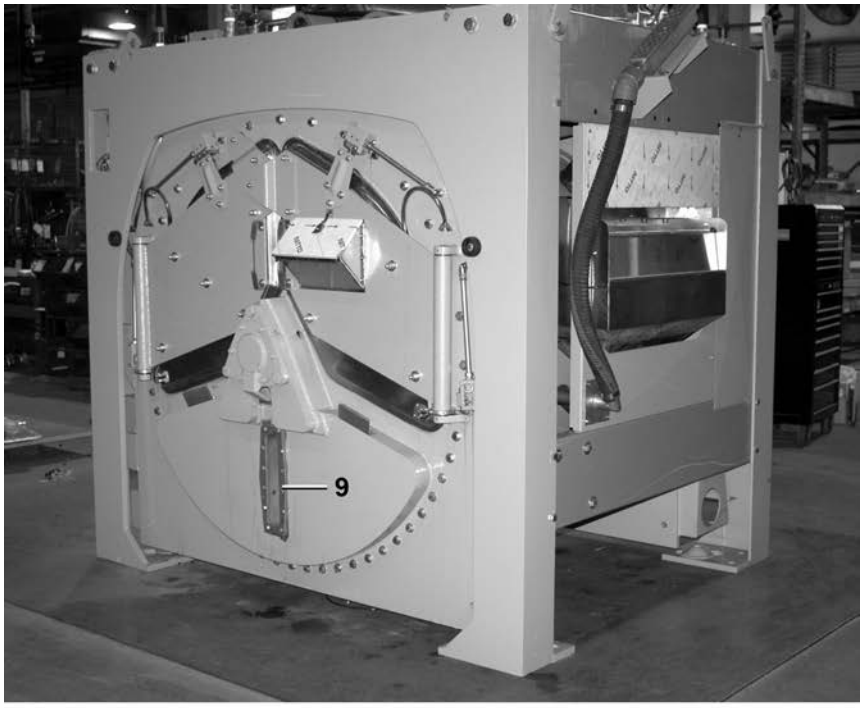
BPWD6M03 / 2020293 BPWD6M03.1 0000303197 C.2 A.3 7/14/20, 11:36 AM Released

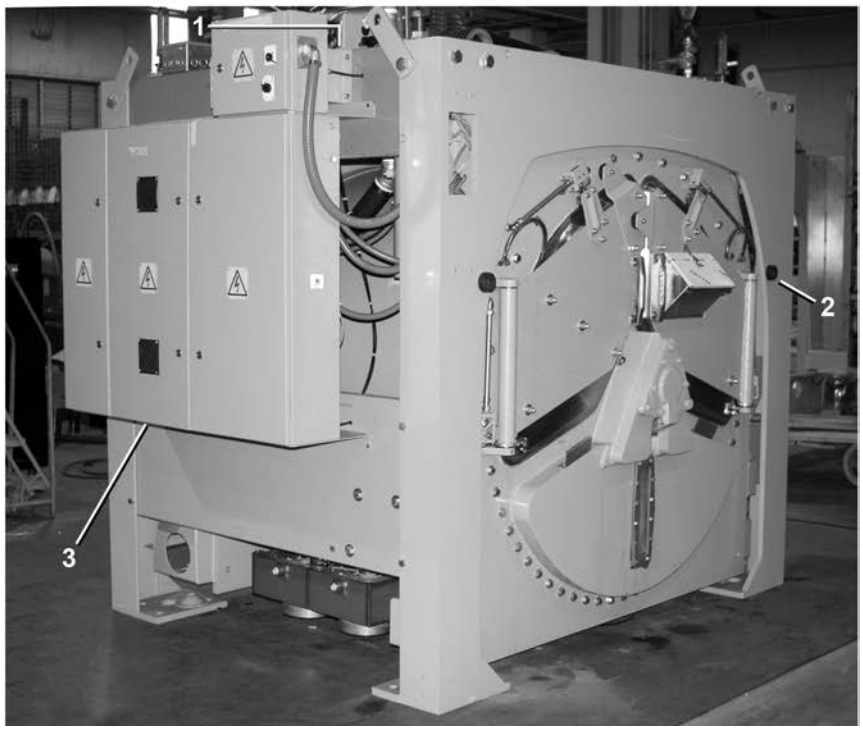
Panels and Covers

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

Figure 1. General Views





Panels and Covers

2 Sheets

6044WP2, 6044WR2, 7244WP2, 7244WR2

Figure 2. Rear View

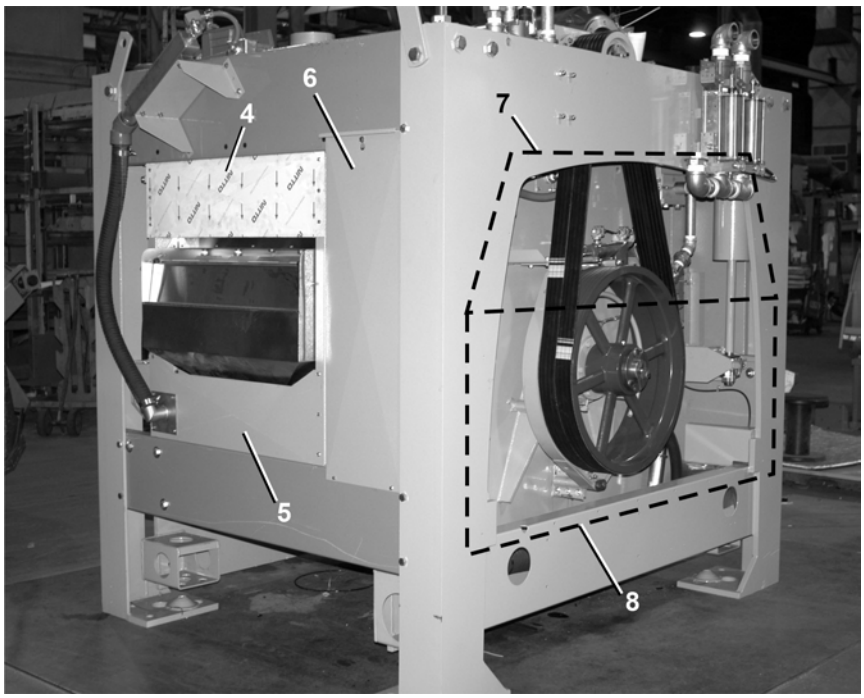


Table 4. Parts List—Panels and Covers

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	1	03 CL721K	COVER:W/E DYE MICRO VAL SET	
all	2	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	3	05 20296D	+LEFT REAR COSMETIC COVER	
all	4	02 18824C	COVER=UPPER SUP INJ 6044SG	
all	5	02 18824D	COVER=SUP INJ LO SUP 6044SG	
all	6	05 20296C	+RIGHT REAR COSMETIC COVER	
all	7A	02 175174	BELTGUARD UPREAR 60WE	6044WP2
all	7B	03 06380	GUARD=UPPER BELT-72WE	7244WP2
all	8A	02 175175	BELTGUARD,LO-REAR 60WE	6044WP2
all	8B	03 06385	GUARD=LOWER BELT-72WE	7244WP2
all	9A	AD 28 111	SIGHT GLASS ASSY=WED + WEH	6044WP2
all	9B	AD 36 004	SIGHT GLASS ASSY=72WED	7244WP2

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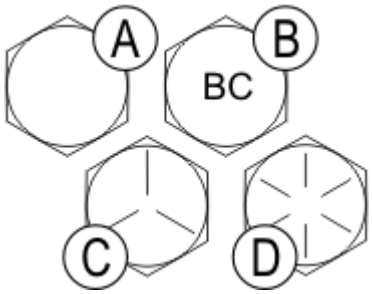
1.4 Torque Requirements for Fasteners

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

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

Figure 3. The Bolts in Milnor® Equipment

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

1.4.1 Torque Values

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

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

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

1.4.1.1 Fasteners Made of Carbon Steel

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

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

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

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

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

Table 7. Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	49	6	76	9	107	12	95	11
1/4 x 28	56	6	88	10	122	14	–	–
5/16 x 18	102	12	156	18	222	25	193	22
5/16 x 24	113	13	174	20	245	28	–	–

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

1.4.1.1.2 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

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

Table 11. Torque Values if You Apply LocTite 242

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

Table 12. Torque Values if You Apply LocTite 262

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

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

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

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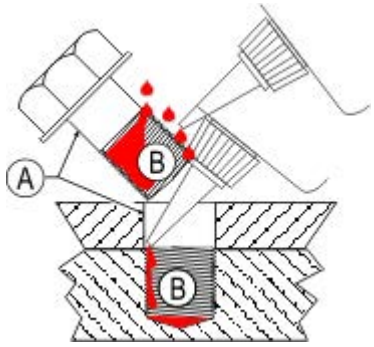
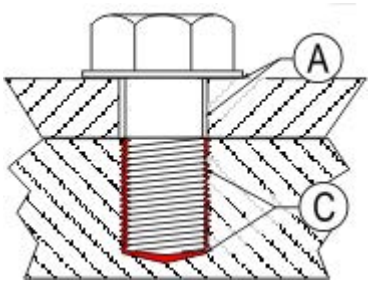
CAUTION: **Malfunction Hazard** — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

▶ 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

Application	Coverage
	

Legend

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

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 24 to Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 26).

1.4.3.2 Through Holes

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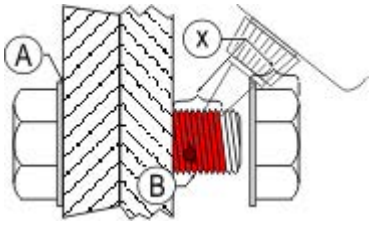
1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.

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 24 to Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 26).

Figure 5. Apply Threadlocker in a Through Hole

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

1.4.3.3 Disassembly

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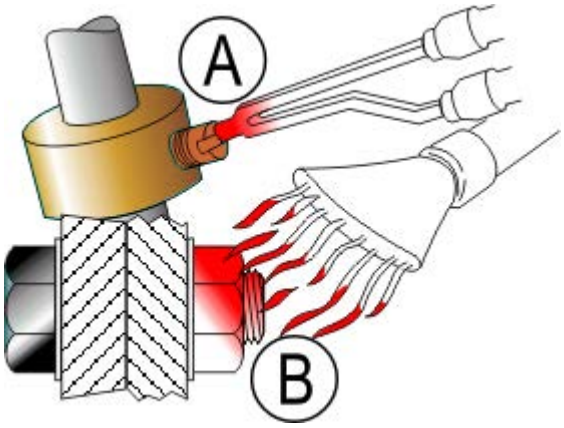
For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

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

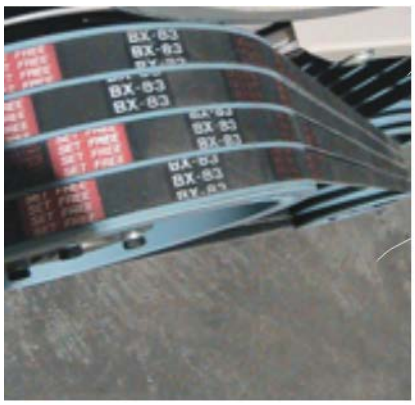
Figure 6. Use heat for disassembly of fasteners with threadlocker.

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

2 Drive Assemblies

2.1 Drive Pulley and Belt Maintenance

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`) 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

- 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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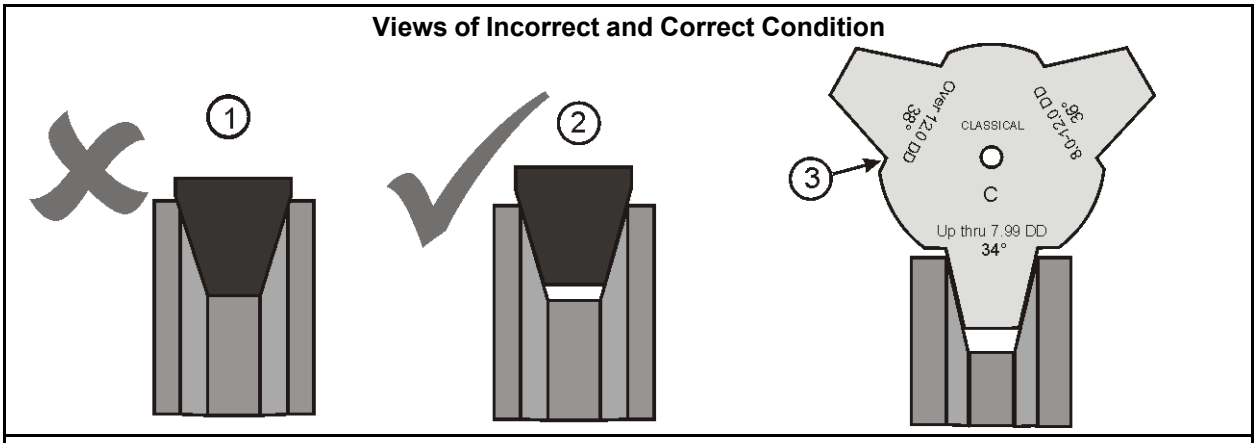
Replace a pulley if:

- 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 31).

Figure 8. Pulley Groove Condition



Legend

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

2.1.1.2 Pulley and Shaft Position

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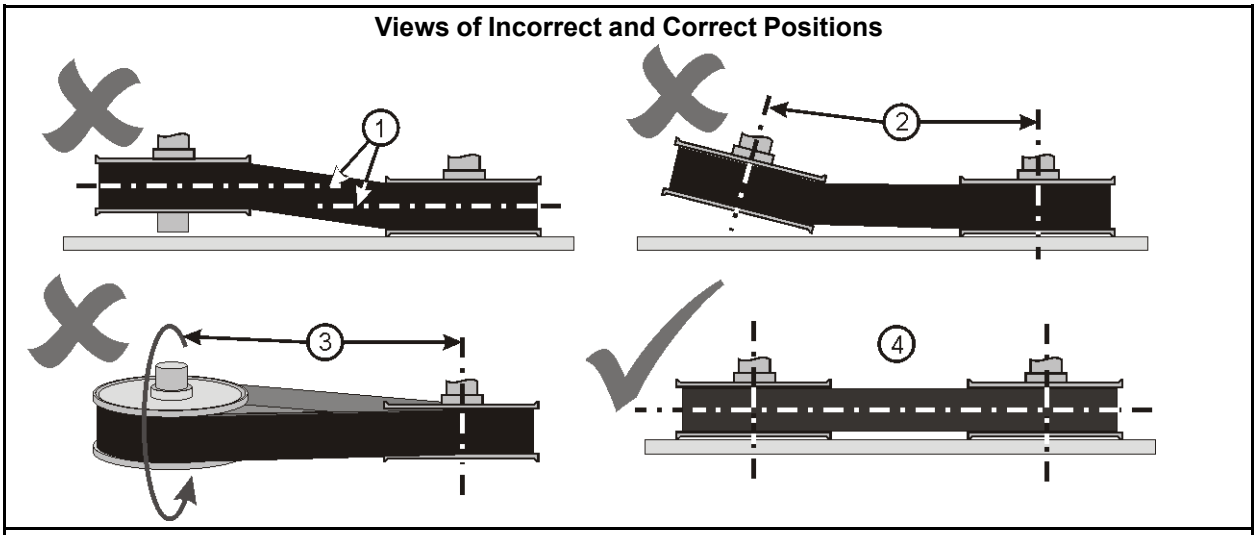
Align To adjust parts until they are in a correct position to other parts.

- 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



Legend

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

2.1.1.3 Keep Run-Out in Tolerance

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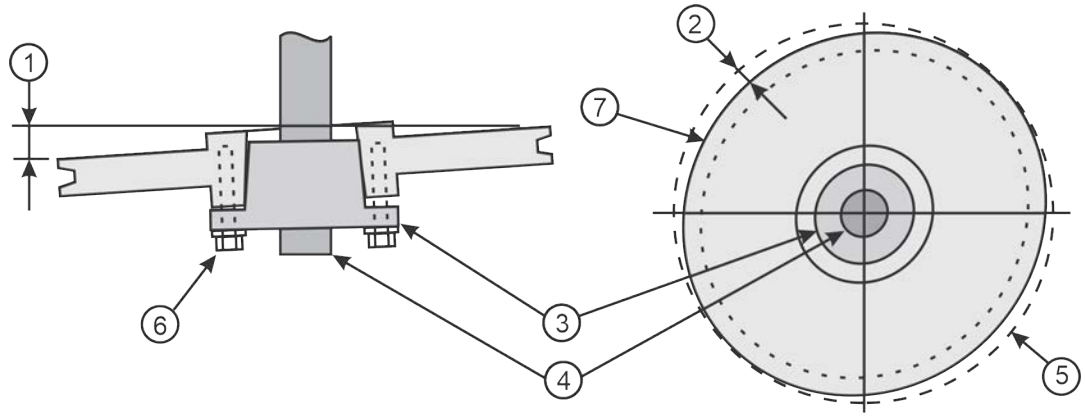
Axial run-out The difference between the minimum and maximum distance between the face of a pulley and a plane perpendicular to the pulley shaft (Figure 10, page 33, item 1). Incorrect installation or damage can cause a pulley to be not at a 90 degree angle to the shaft.

Radial run-out The difference between the minimum and maximum diameter in one turn (Figure 10, page 33, item 2). If a force causes damage to a pulley, it can bend. It will not have a circular shape.

Figure 10. Run-out

Views of Axial and Radial Run-out

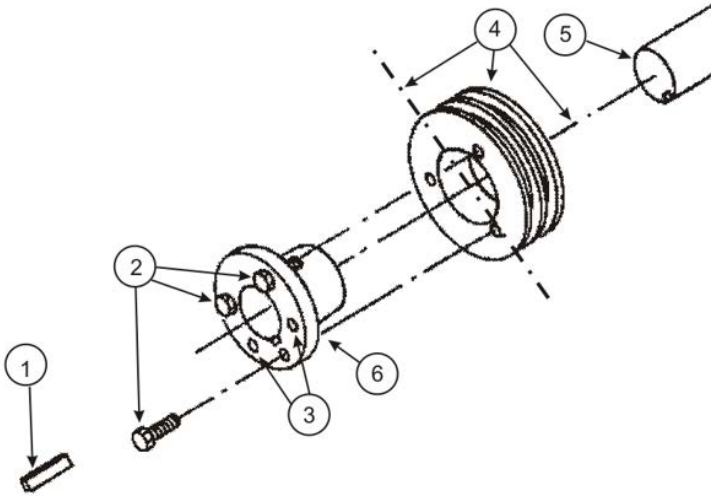


Legend

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

Figure 11. Typical Pulley Assembly

View of Pulley Components



Legend

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

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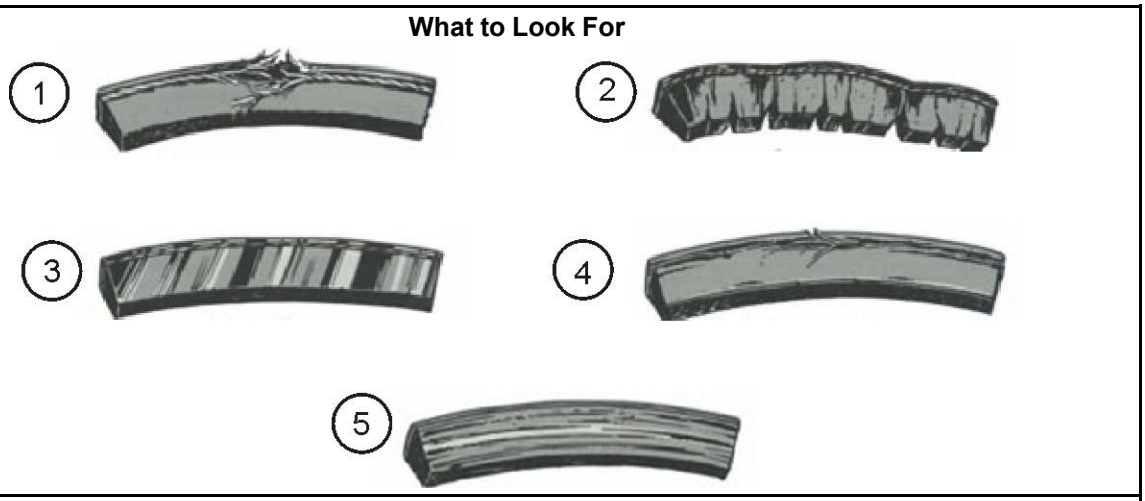
Slippage when the pulley turns more quickly than the belt can move

Slippage occurs if belts are not aligned (see Section 2.1.1.2 , page 31) or by incorrect tension explained in Section 2.1.1.2 , page 31. 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



Legend

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

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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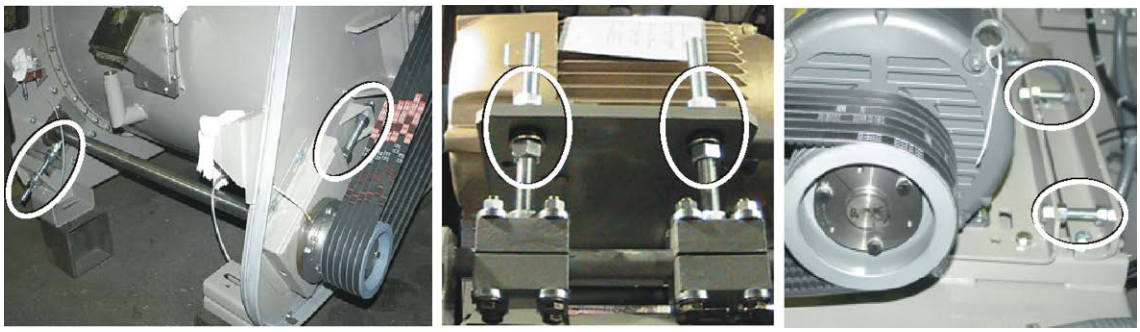
Some tension mechanisms do not have an effect on pulley and shaft requirements. Pulleys will stay aligned when you adjust them. Figure 13, page 36 is an example of these. Where tension mechanisms are a pair of threaded rods, you must adjust the nut, on each rod carefully. If not, the pulleys will not stay aligned. Examples of this type are shown in Figure 14, page 36.

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 17. 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 33, item 2
Laser, straight edge, or string	Align pulleys	Tools are listed in order of preference. Section 2.1.1.2 , page 31 and Figure 15, page 38
Bubble level	Align shafts	Section 2.1.1.2 , page 31 and Figure 16, page 39
Dial indicator	Measure run-out	Section 2.1.1.3 , page 32 and Figure 17, page 39

Table 17 Typical Tools for Pulley and Belt Maintenance (cont'd.)

Tool	Function	Related Data
Sheave (pulley) gage	Examine pulley wear	Figure 8, page 31.
Infrared thermometer	Examine belt temperature	Section 2.1.2.1 , page 34.

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 36 and Figure 14, page 36 show typical belt tension mechanisms.

Pulley removal On the typical type of pulley and bushing shown in Figure 11, page 33, 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 33 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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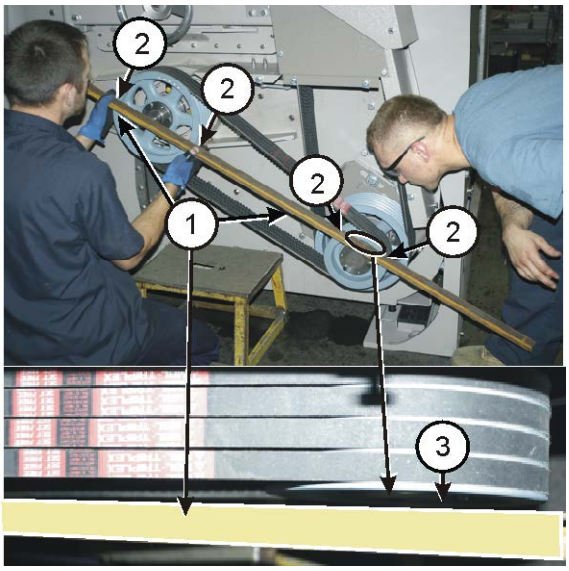
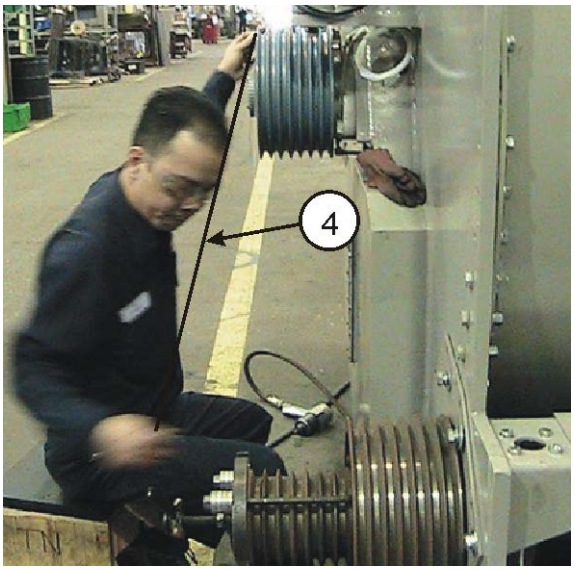
Figure 15. Use a straight edge, a string, or a laser to make sure that all pulleys are in the same plane.

Straight edge



String



Legend

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

Laser

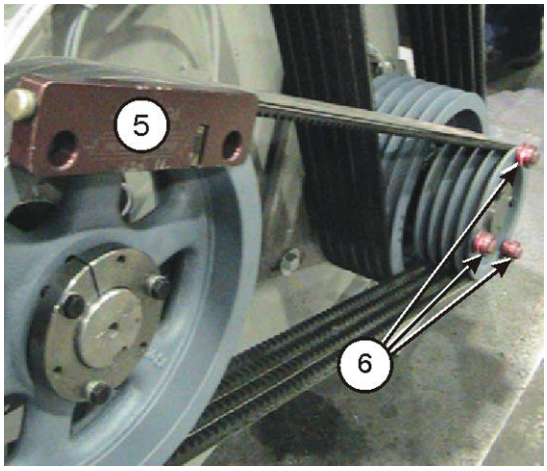
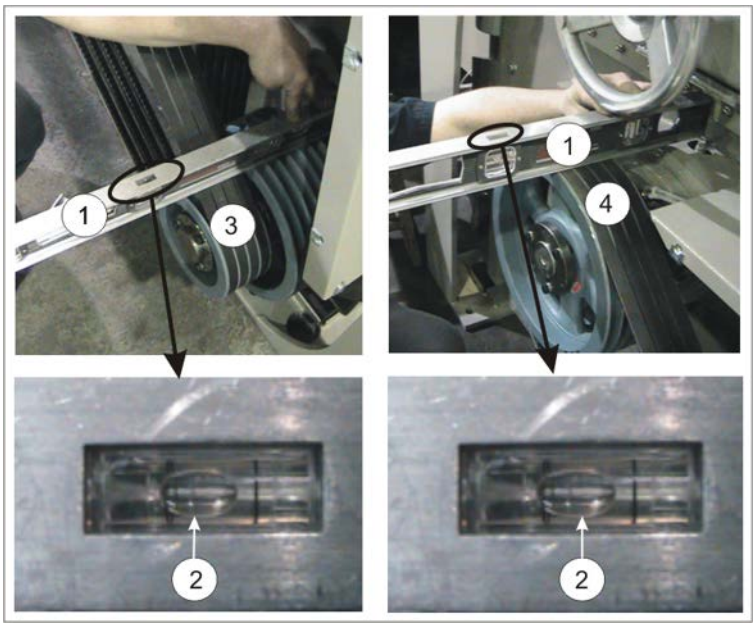


Figure 16. Use a level to make sure that the pulleys are at the same slope.

A level on the top of two pulleys

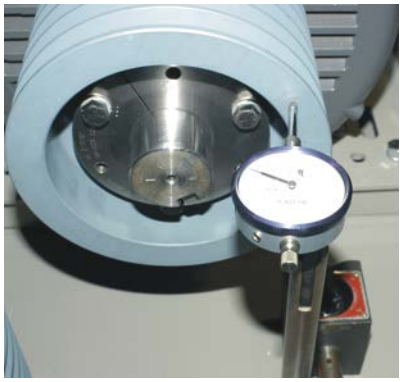


Legend

1. Bubble level: Use this tool to make sure that the slopes of pulleys are equal. This is to make sure that you do not have the condition in Figure 9, page 32, item 3. Mechanisms shown in Figure 14, page 36 can change the pulley slopes.
2. If the slopes of the pulleys are equal, the bubble will be in the same position for each pulley. The bubbles do not have to be in the center of the level.
3. A pulley
4. A second pulley on the same drive

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

Axial Run-out (1)



Radial Run-out (2)

Legend

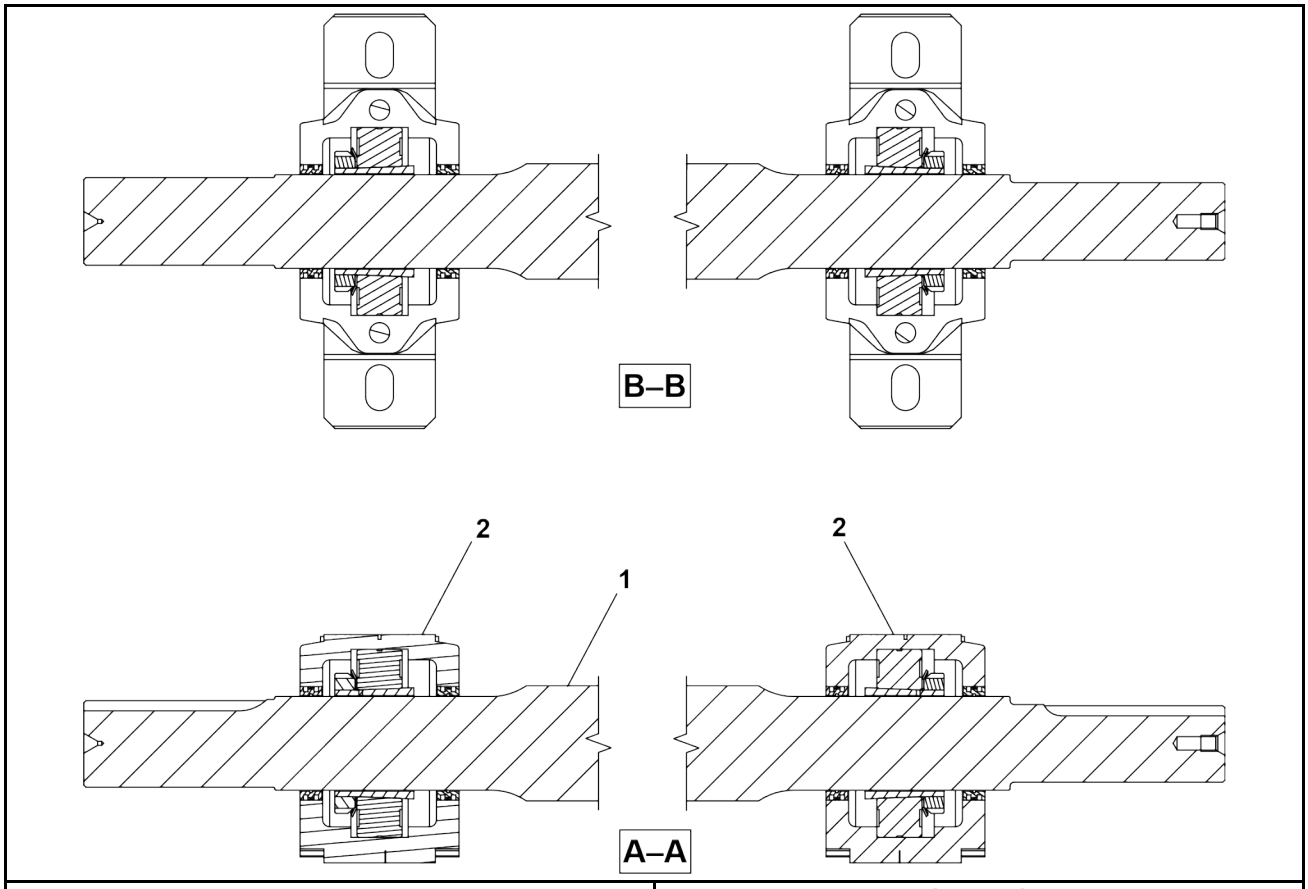
1. Dial indicator in position to measure axial run-out
2. Dial indicator in position to measure radial run-out

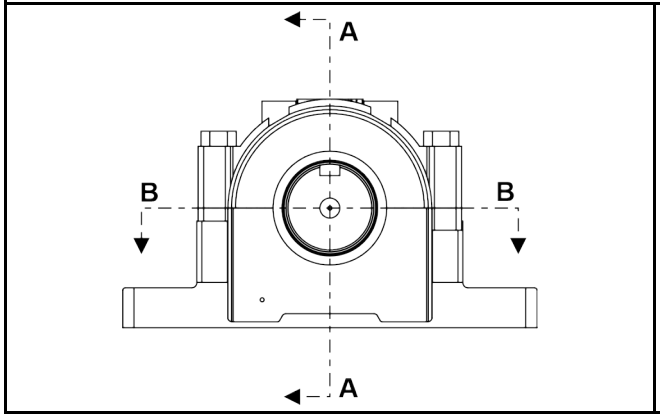
BPWG6I03 / 2023164A BPWG6I03.1 0000279524 C.2 4/19/23, 10:25 AM Released

Jackshaft

2 Sheets

42044WR2, 42044SR2, 60044WR2, 60044SR2





Legend

A–A . . Detail view A–A
B–B . . Detail view B–B

Jackshaft

2 Sheets

42044WR2, 42044SR2, 60044WR2, 60044SR2

Table 18. Parts List—Jackshaft

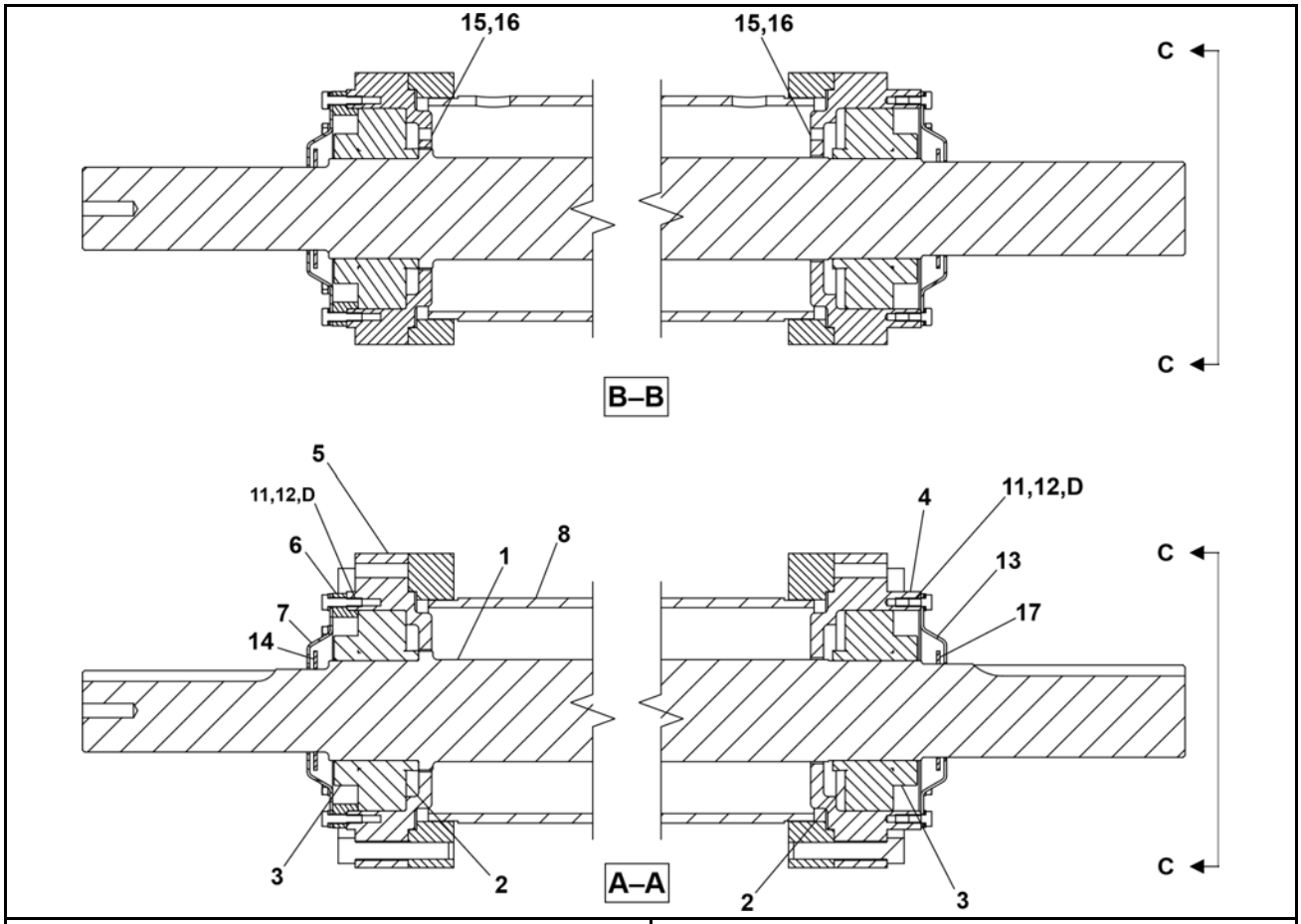
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	ABJ25006B	JACKSHAFT-PILLOW BLK BRG	2.75”SHAFT 6044WR2 EFFECTIVE 2015193 (5/5/2015) 6044SR2, 4233WR2,& 4244SR2 EFFECTIVE 2016163 (4/12/2016)
Components				
all	1	X2 18711M	6044WP JACKSHAFT: PILLOW BLOCK/SPHRCL 2.75 BORE	
all	2	56S22217A	SPHEROLBRG 22217EK/C3 SAF517 PILLOW BLK 3.346"ID	

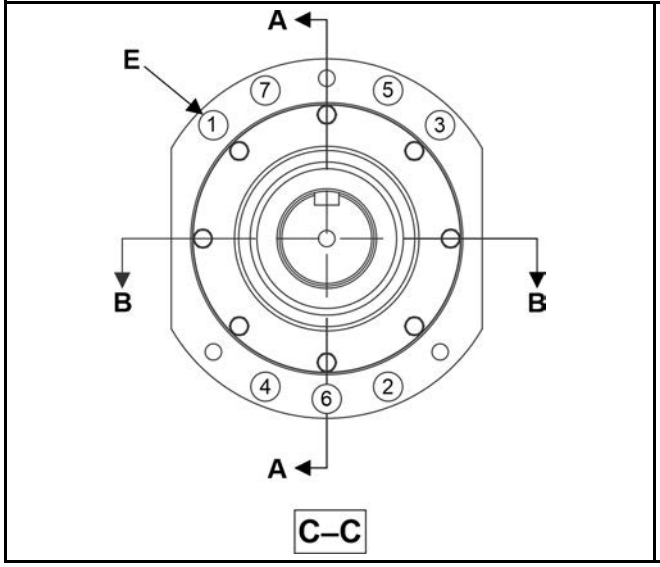
BPWD4I05 / 2020343 BPWD4I05.1 0000304249 C.2 A.5 8/18/20, 10:12 AM Released

Jackshaft

2 Sheets

42044WP2, 42044WR2, 6044WP2 (PRIOR TO 5/5/15)





Legend

D . . . Locktite 242

E . . . Insert all 1/2” fasteners hand tight. Then torque in the sequence shown. Torque front to back.

Jackshaft

2 Sheets

42044WP2, 42044WR2, 6044WP2 (PRIOR TO 5/5/15)

Table 19. Parts List—Jackshaft

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	ABJ25006	JKSHFT 4244SG/WE 1 MOTOR SPHRCL	4244WP2 & 6044WP2 2.0” SHAFT 200524 (6/22/05) TO 2010052 (1/25/10)
	B	ABJ25007	JKSHFT 6044SG/WE MOTOR SPHRCL	4244WP2 & 6044WP2 2.75” SHAFT 2010052 (1/25/10) TO 2012456 (11/18/12)
	C	ABJ25006A	JKSHFT 4244WE SPHRCL BRG 1 MOTOR	4244WP2 & 6044WP2 2.75” SHAFT 2012456 (11/8/12) TO 2015193 (5/5/15)
	D	ABJ25007A	JKSHFT 6044WE SPHRCL BRG 1 MOTOR	6044WP2 REPLACED BY ABJ25006A
			Components	
all	1	X2 18711L	JACKSHAFT=6044WE SPHRCL 2.75 BORE	
all	2	54A988	SKF BRNG #22217EK/C3	
all	3	54A989	17 X 2.938 SNW ADAPTER ASSY	
all	4	X2 19381D	BRNG HOLDER=SPHRCL BRNG-REAR	
all	5	X2 19381C	BRNG HOLDER=SPHRCL BRNG-FRT	
all	6	X2 15702A	RETAINER-SPHRCL BRNG	
all	7	02 19384	COVER=BRG HOUSE FT+REAR	
AB	8	X2 19378	BRGHSG SUP=TIMKENS MACHINED	
CD	8	X2 19391	BRNGHSG MACHINED=6044WE	
all	9	15K193	SOKCAPSCR 1/2-13X2.75GR8 HK	
all	10	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	11	15K030	HEXCAPSCR 1/4-20UNC2X1/2 GR5 Z	
all	12	15K041	HXCAPSCR 1/4-2OUNC2AX1 GR 5 ZI	
all	13	02 19384B	COVER BRG HOUSE REAR	
all	14	02 19196	RING=GREASE SLNGR JKSHFT BLK	
all	15	51A001	ADAPTER 1/8 PT BRASS	
all	16	5SL0CBEC	NPTELB 90DEG STRT 1/8 BRASS125	
A	17	02 19198	JACKSHAFT GREASE SLNGR RING - 2.00 DIA	
BCD	17	02 19196A	JACKSHAFT GREASE SLNGR RING - 2.75 DIA	

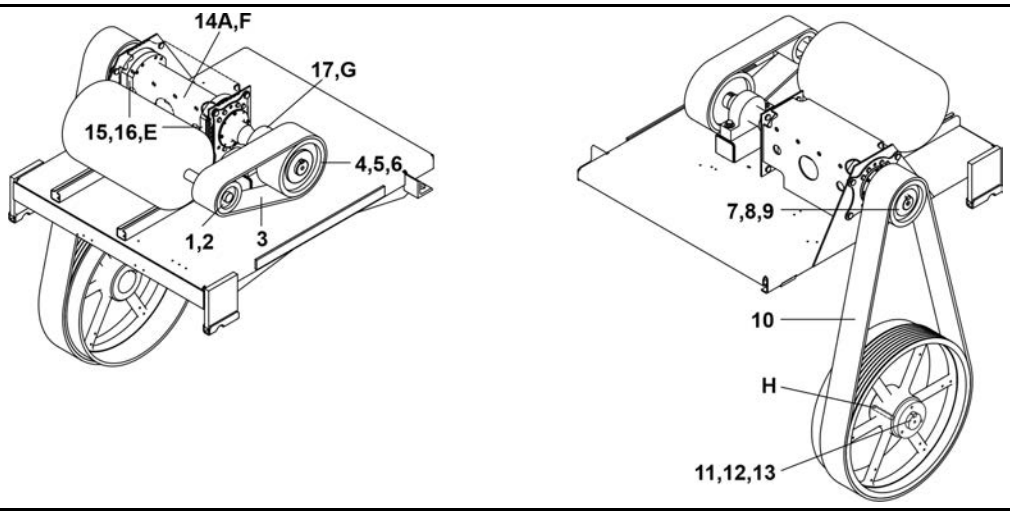
BPWD6I02 / 2020314 BPWD6I02.1 0000303733 C.2 A.5 7/29/20, 11:10 AM Released

Single Motor Drive

3 Sheets

6044WP2, 6044WR2

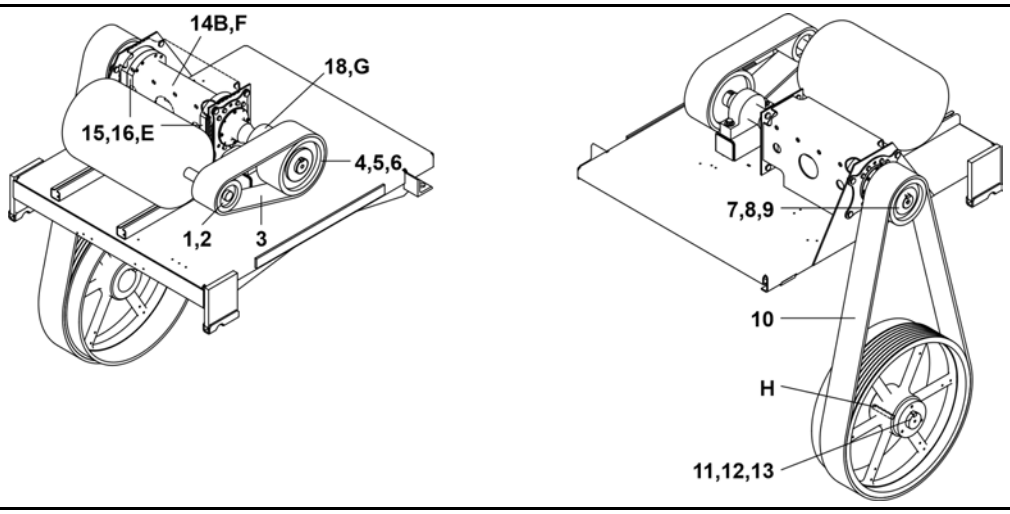
Figure 18. Jackshaft A: Effective 2005264 (6/22/05) to 2010052 (1/25/10) 2.0” diameter jackshaft with 2 spherical bearings and 1 spherical pillow block bearing.



Legend

E . . . Spherical bearings
F . . . See BPWD4I05
G . . . Pillow block bearing
H . . . Bushing to pulley key comes with bushing

Figure 19. Jackshaft B: Effective 2010052 (1/25/10) to 2012456 (11/8/12) 2.75” diameter jackshaft with 2 spherical bearings and 1 spherical pillow block bearing.



Legend

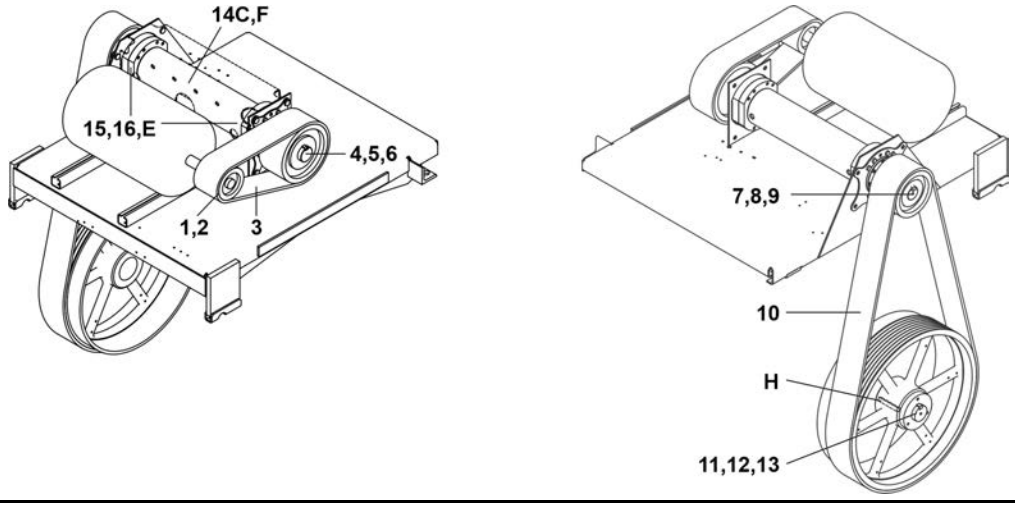
E . . . Spherical bearings
F . . . See BPWD4I05
G . . . Pillow block bearing
H . . . Bushing to pulley key comes with bushing

Single Motor Drive

3 Sheets

6044WP2, 6044WR2

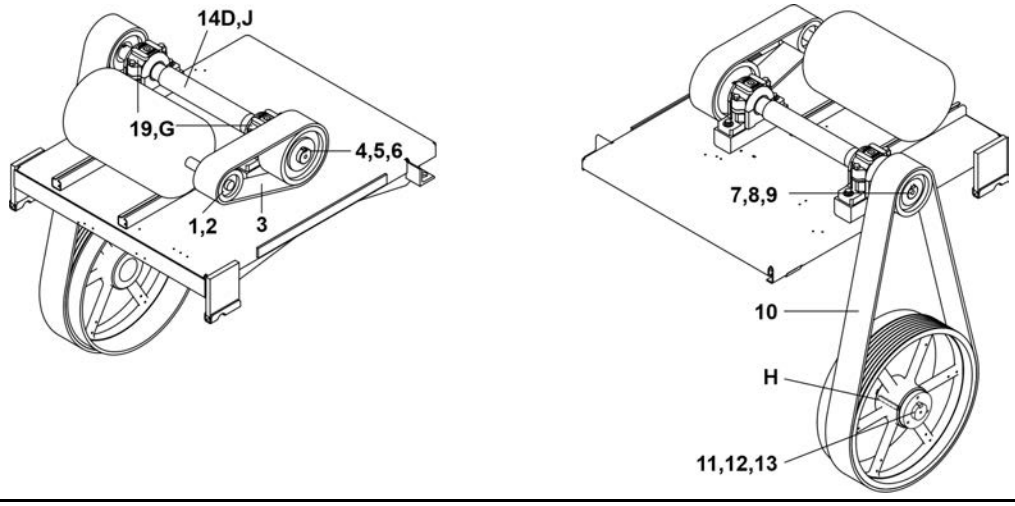
Figure 20. Jackshaft C: Effective 2012456 (11/8/12) to 2015045 (1/22/15) 2.75” diameter jackshaft with extended housing and 2 spherical bearings.



Legend

E . . . Spherical bearings
F . . . See BPWD4I05
H . . . Bushing to pulley key comes with bushing

Figure 21. Jackshaft D: Effective 2015193 (5/5/15) 2.75” diameter jackshaft with no housing and 2 pillow block bearings.



Legend

G . . . Pillow block bearing
H . . . Bushing to pulley key comes with bushing
J . . . See BPWG6I03

Single Motor Drive

3 Sheets

6044WP2, 6044WR2

Table 20. Parts List—Single Motor Drive

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	Y	D29 00260S	DRIVECHART=60WE 1 MOTOR	
	Z	SA 28 103S	DRIVE BASE ASSY 60WE 1 MOTOR	
	A	GBJ28001S	JKSHFT ASSY 60W3 1 MOTOR	2.0”DIA 6/29/05–1/25/10
	B	GBJ28001S	JKSHFT ASSY 60W3 1 MOTOR	2.75”DIA 1/25/10–11/8/12
	C	GBJ25003B	JACKSHAFT INSTALL 60WE 1 MOTOR	SPHER 11/8/12–1/22/15
	D	GBJ25003C	6044WP JKSHFT INSTALL-PILLOW BLK BRG	2 PILLBLK 1/22/15
			Components	
AB	1	56060B8SF	VPUL 8B6.0 (SF) TYPE QD	PRIOR TO 1/1/2007 8 GROVE PULLEY
BCD	1	56060B9SF	BALANCED SET - VPUL 9B6.0 (SF) TYPE QD/(56Q1RSF) + 1+7/8" BUSH VPUL QD TYPE SF	EFFECTIVE 1/1/2007 9 GROVE PULLEY & BUSHING
AB	2	56Q1RSF	1+7/8" BUSH VPUL QD TYPE SF	PRIOR TO 1/1/2007
AB	3	56VB060X	VBELT BX60 COG (EACH = 1 SINGLE BELT)	8 USED 6/29/05–2/9/12
CD	3	56VB060XB3	VBAND 3RBX60 EACH=1	3 USED FROM 2/9/12
AB	4	5608B110	PULLEY 8B11.0 TYPE E	6/29/05–1/1/07, 8 GROOVE
BCD	4	56110B9E	BALANCED SET - VPUL 9B11.0 (E) TYPE QD/(56Q2PE)+ 2-3/4" BUSHING VPUL QD TYPE E	EFFECTIVE 1/1/07, 9 GROOVE PULLEY & BUSHING
A	5	56Q2AE	2.0" BUSHING VPUL QD TYPE "E"	6/29/05
B	5	56Q2PE	2+3/4" BUSHING VPUL QD TYPE E	PRIOR TO 1/1/2007
A	6	02 15794	KEY-1/2X2+1/2 4231-4244SGH	6/29/05–4/5/10
B	6	15E241	SQMACHKEY 5/8X2+1/2	4/5/10–6/28/12
D	6	02 175121	KEY=5/8SQ1	6/28/12
ABCD	7	02 18531	VPU2 865V8.7 (R2) SPECIAL	
ABCD	8	56Q2HR2S	2+7/16" SPLITBUSH -SAWCUT TO MAKE 56Q2HR2	
ABCD	9	02 175121	KEY=5/8SQ	
Y	10	56VS1505W4	V-BAND SET OF 2 WRAP 4R5V1505	SET OF 2 BELTS
Y	11	02 18561	VPUL+BRAKDRUM 8G5V30.OPD 60W	
Y	12	56Q2TS2S	2+15/16" SPLIT BUSH BROWN "S2"	
Y	13	02 175021	KEY-3/4"SQX6+1/2"LONG-60WE	
A	14A	ABJ25006	JKSHFT 4244SG/WE 1 MOTOR SPHRCL	2.0” DIA 6/29/05–1/25/10
B	14B	ABJ25007	JKSHFT 6044SG/WE MOTOR SPHRCL	2.75”DIA 1/25/10–11/18/12
C	14C	ABJ25006A	JKSHFT 4244WE SPHRCL BRG 1 MOTOR	SPHER 11/8/12–1/22/15
D	14D	ABJ25006B	6044WP JACKSHAFT-PILLOW BLK BRG	PILLBLK 1/22/15
ABC	15	54A988	SKF BRNG #22217EK/C3	
ABC	16	54A989	17 X 2.938 SNW ADAPTER ASSY	

Single Motor Drive

3 Sheets

6044WP2, 6044WR2

Table 20 Parts List—Single Motor Drive (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	17	54AF22210	PILLBLK BRG - BALDOR DODGE IMPERIAL 2" #069439 P2B-IP-200RE	
B	18	54AF22215	PILLOW BLOCK BRG 2-3/4"=DODGE P2B-1P-212R	3/29/10–3/17/13
D	19	56S22217A	SPHEROLBRG 22217EK/C3 SAF517 PILLOW BLK 3.346"ID	

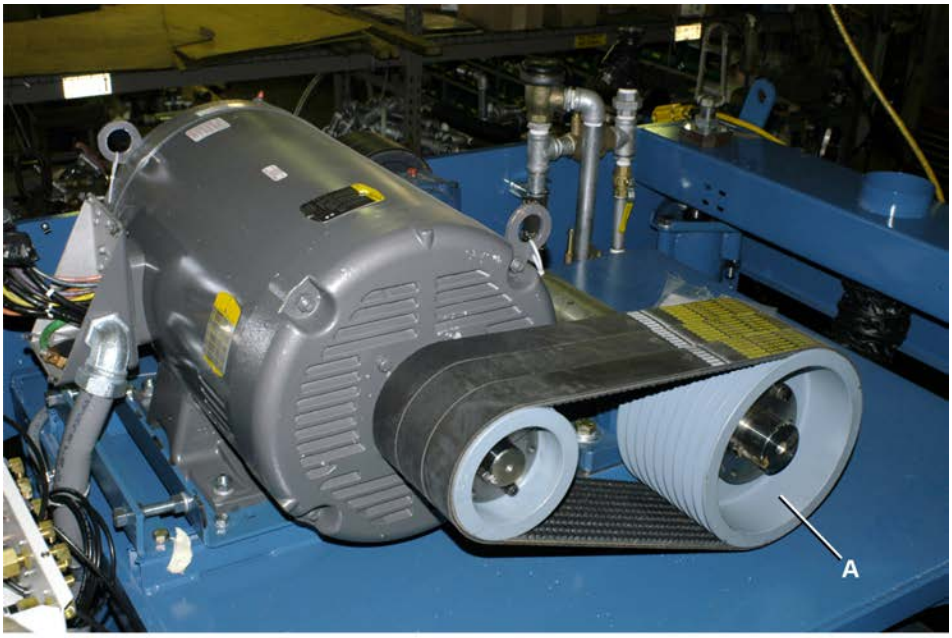
BPWD6I01 / 2020323 BPWD6I01.1 0000303741 C.2 A.4 8/4/20, 5:31 PM Released

Drive Base Installation

5 Sheets

6044WR2

Figure 22. Motor mount, drive shaft, and pillow block bearings



Legend

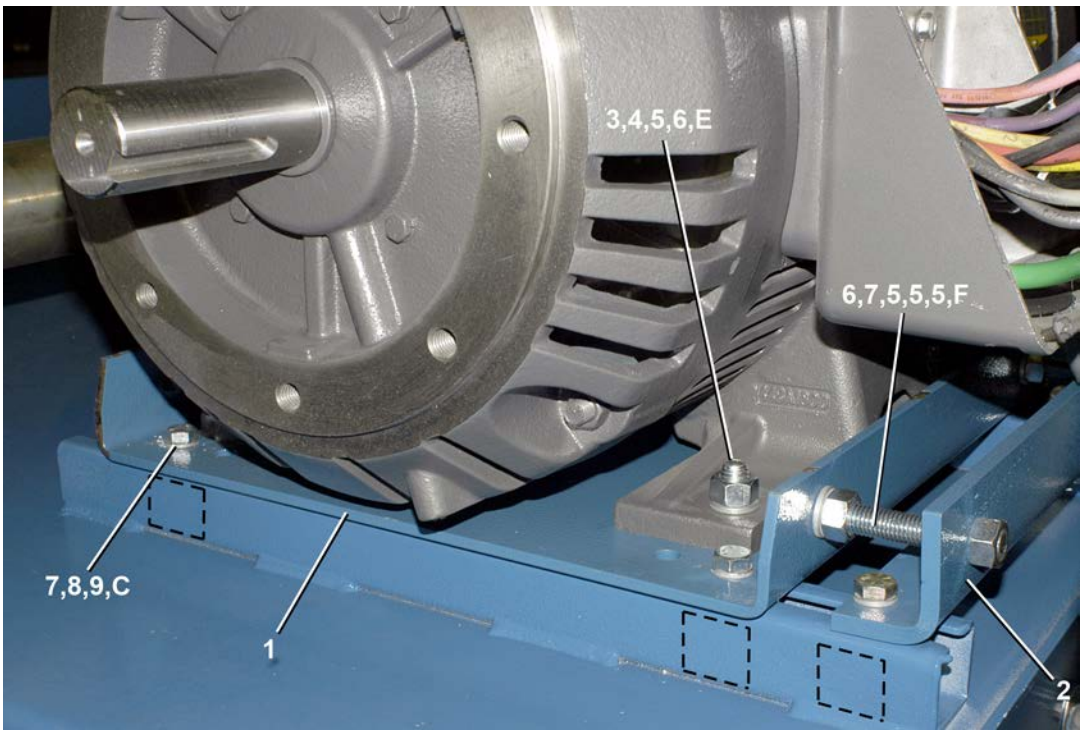
A . . . Drive Components, see BPWD6I02
B . . . Jackshaft, see BPWG6I03

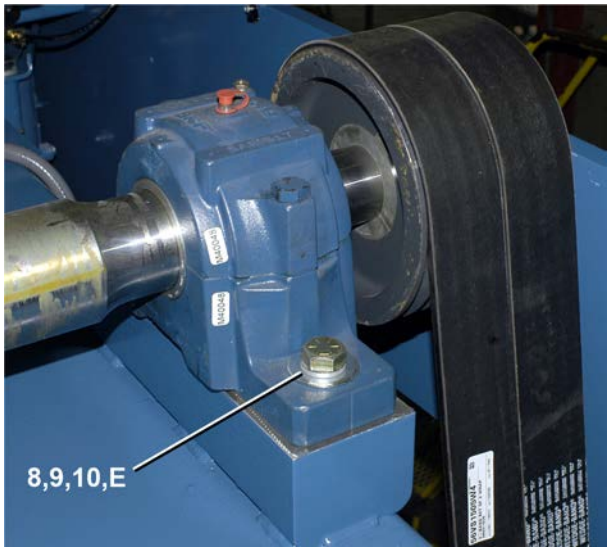
Drive Base Installation

5 Sheets

6044WR2

Figure 23. Motor mount, drive shaft, and pillow block bearings





Legend

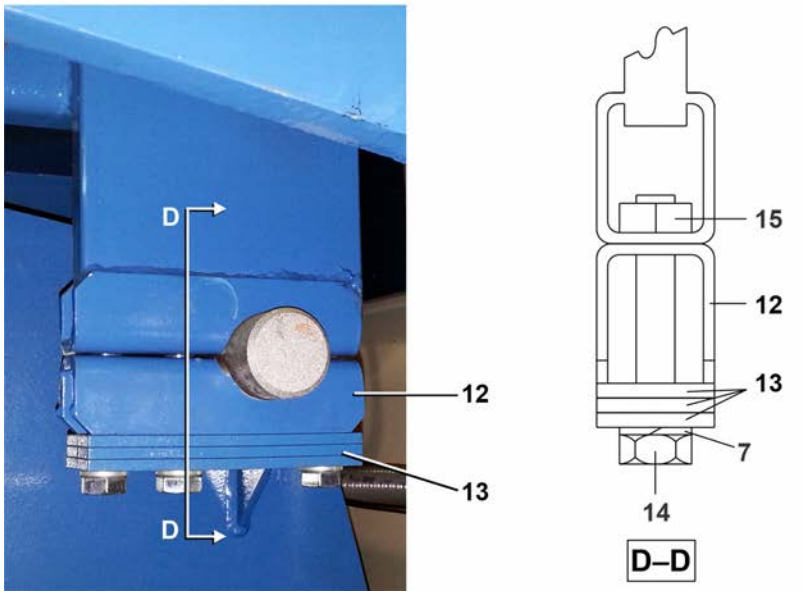
C . . . 6 instances
E . . . 4 instances
F . . . 2 instances

Drive Base Installation

5 Sheets

6044WR2

Figure 24. Hinge clamps



Legend

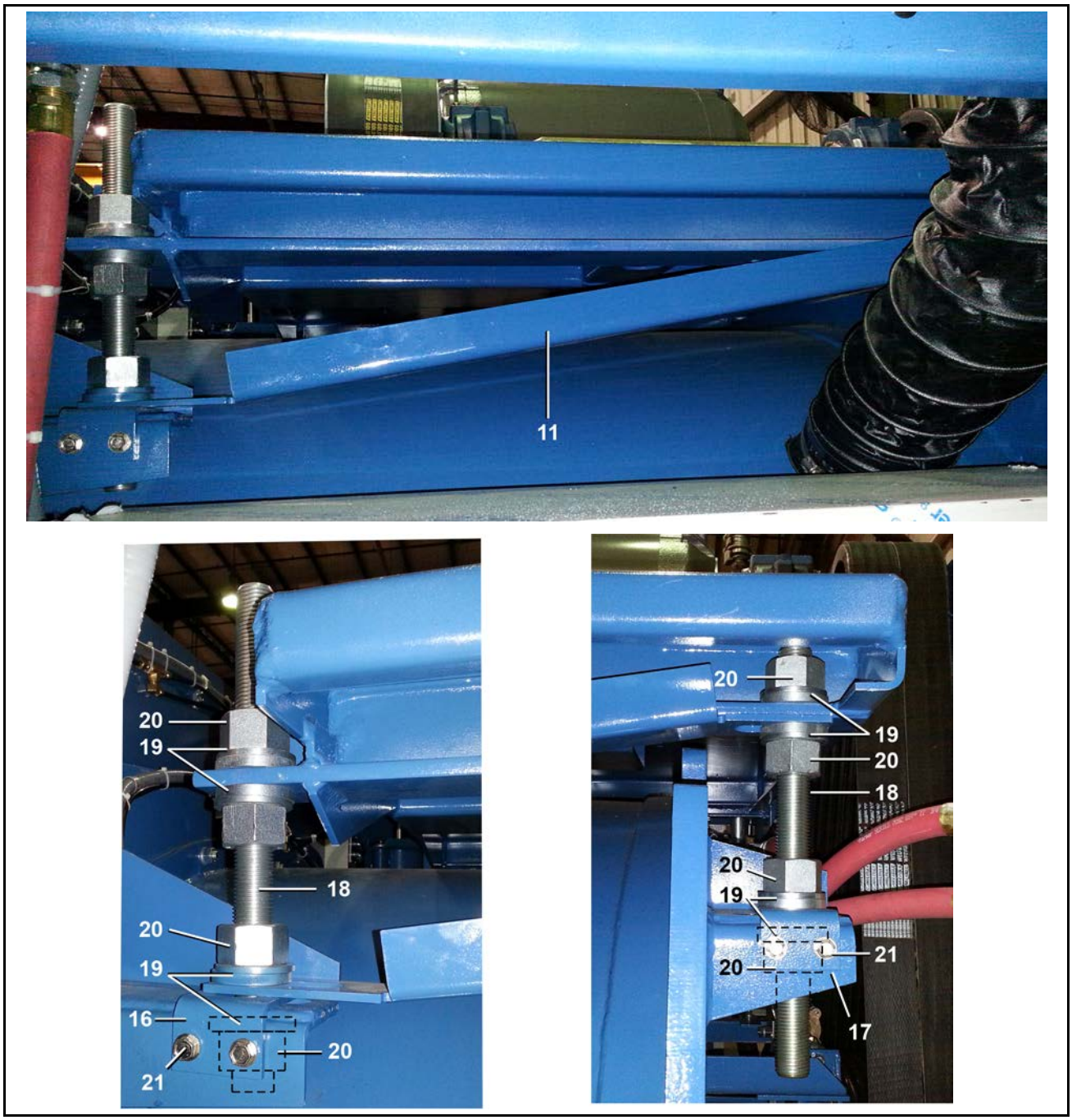
F . . . Hinge clamps
G . . . 2 instances

Drive Base Installation

5 Sheets

6044WR2

Figure 25. Adjustable bolts



Drive Base Installation

5 Sheets

6044WR2

Table 21. Parts List—Drive Base Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	SA 28 103S	DRIVE BASE ASSY 60WE 1 MOTOR	
Components				
all	1	05 20131E	MTRPLATE 6044SG 1 MOTOR	
all	2	02 19577	ADJ ANGLE MOTOR	
all	3	15K221	HEXCAPSCR 5/8-11 UNC2X2GR5 ZIN	
all	4	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	5	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	6	15B186	HEXTAPBLT FLT 5/8-11UNCX7	
all	7	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	8	15K235AB	HXCAPSCR 3/4-10UNC2AX3"GR8 ZIN	
all	9	15U320	FLATWASHER(USS STD) 3/4" UNPLT	
all	10	15U340	LOCKWASH MEDIUM 3/4 ZINCPL	
all	11	02 18701A	SWAY BRACE = WE DRIVE BASE A	
all	12	X2 18634	CLAMP=MACHINED DR HINGPIN	
all	13	02 18706	REINFORCEMENT=HINGE PINCLAMP	
all	14	15K227	HXCAPSCR 5/8-11UNC2AX4 GR5 ZIN	
all	15	15G236	SQNUT 5/8-11UNC2B SAE ZINC GR2	
all	16	02 18702	FORK=ADJ SCREW-MOTOR MT-FRT	
all	17	03 25626	FORK=MTR MNT ADJ SCREW 52	
all	18	17R125A15K	STUD=DRIVEBASEADS 1+1/4X15.5 8UN	
all	19	17W125	1+1/4"SPHERICAL WASHER SET	
all	20	15G261	HVHXNUT 1+1/4-8UNC2B ZINC GR2H	
all	21	15P200	TRDCUT-F HXWASHD 3/8-16X3/4NIK	

BPWD6I03 / 2020363 BPWD6I03.1 0000304639 C.2 A.7 9/1/20, 4:06 PM Released

Brake Components and Installation

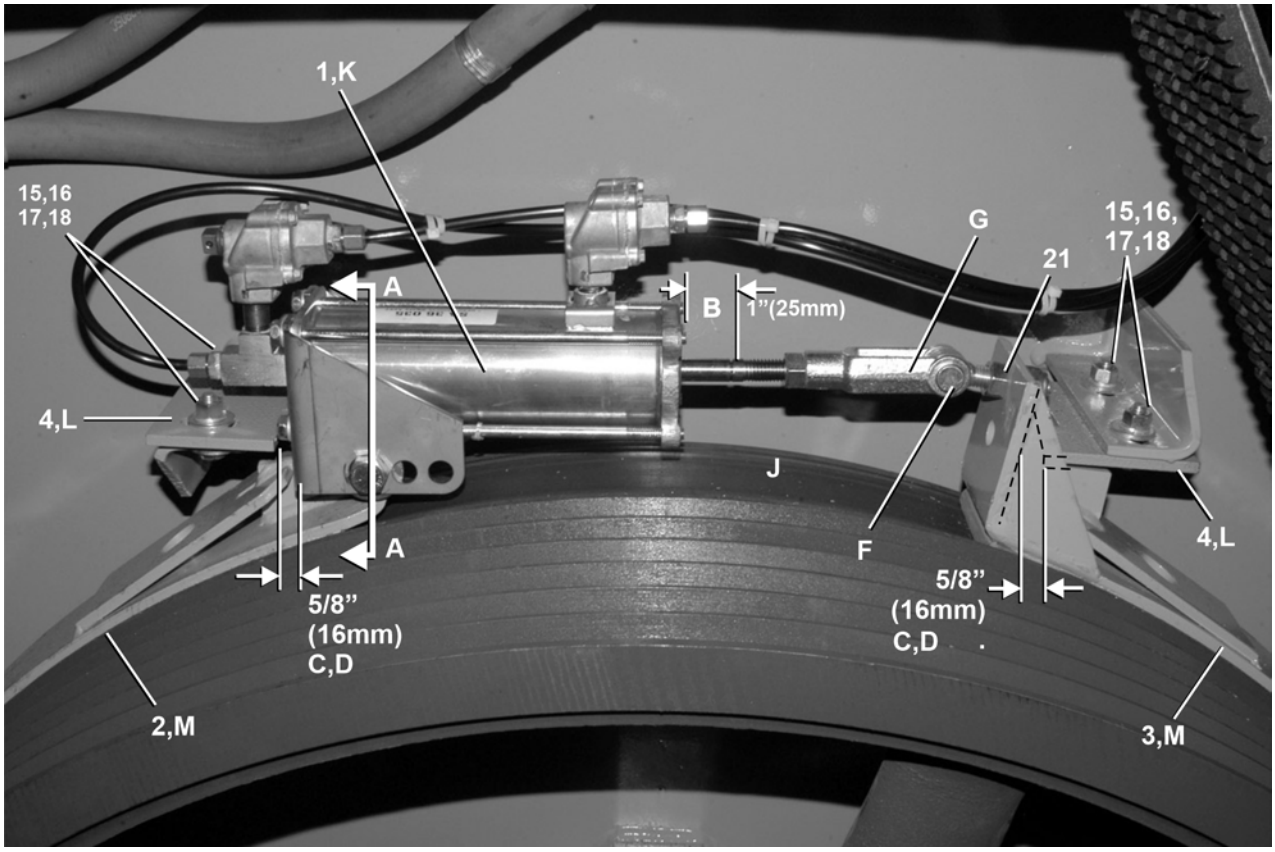
5 Sheets

6044WP2, 6044WP3, 7244WP2, 7244WP3

NOTE: The 6044WP2 or 6044WP3 model is shown. The air cylinder and mounting brackets are opposite for the 7244WP2 or 7244WP3 model.

Figure 26. Brake Components

Installed View



Legend

A–A . . Air cylinder cross section. See Figure 27: Brake Band, page 54

B . . . With the brake applied, the groove on the air cylinder stem must be 1 inch [25mm] from the air cylinder stem. Adjust the rod end and the yoke to set this dimension.

C . . . With the brake applied, the brake stops must be 5/8 inch +/-1/16 inch [16mm+/- .5mm] from the brake bands.

D . . . When you release the brake, the brake band and the air cylinder must be tight and square against the stops.

F . . . Pivot bolt. See Figure 28: Air Cylinder, page 54

G . . . Yoke. Keep the two yoke arms in a horizontal plane.

J . . . See Figure 27: Brake Band, page 54

K . . . See BPWD6P03 Air Cylinder Assemblies

L . . . Brake stop

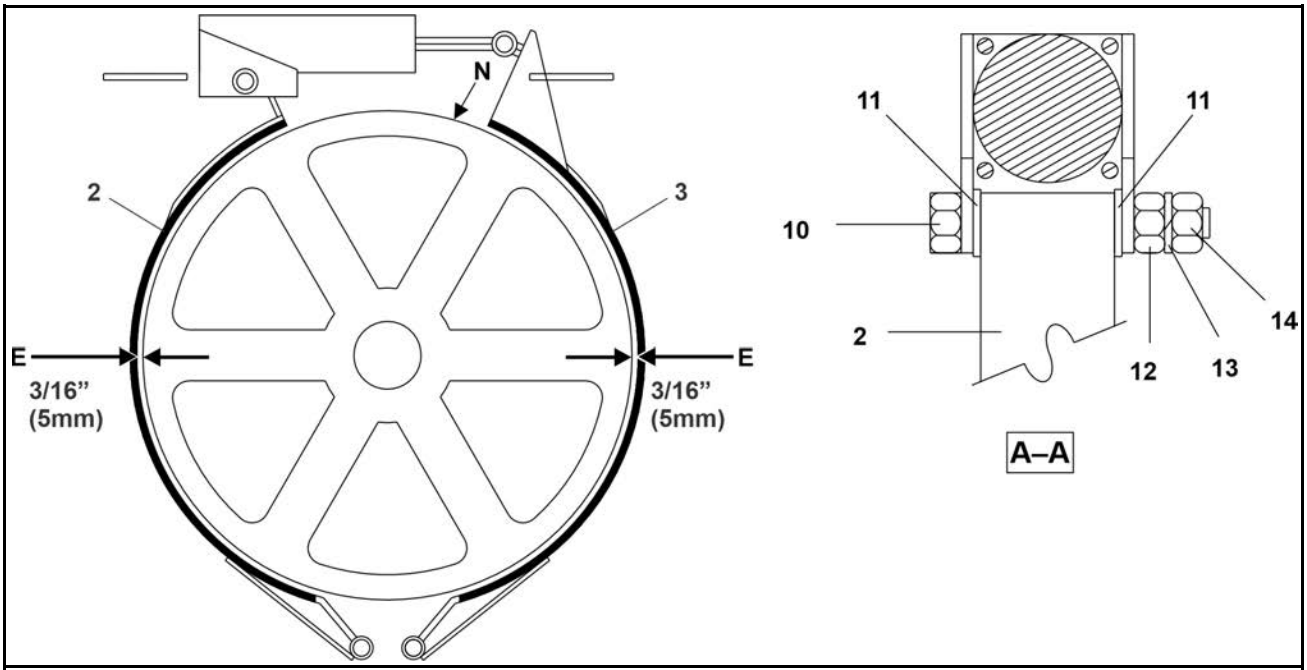
M . . . Brake band. See Figure 27: Brake Band, page 54

Brake Components and Installation

5 Sheets

6044WP2, 6044WP3, 7244WP2, 7244WP3

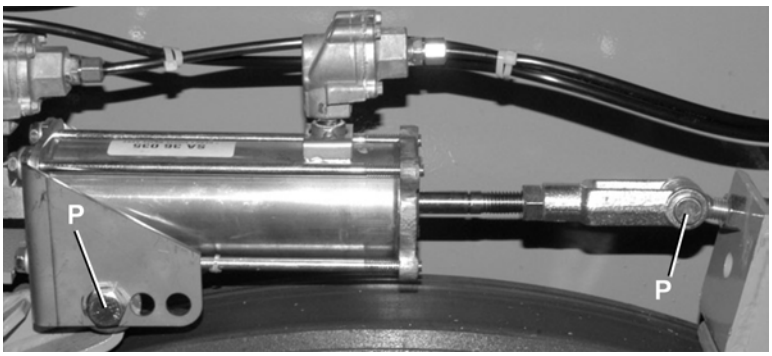
Figure 27. Brake Band



Legend

E . . . When you release the brake, there must be 3/16 inch [5mm] clearance between the brake band and the drum.
N . . . Do not get grease or oil on the brake drum.

Figure 28. Air Cylinder



Legend

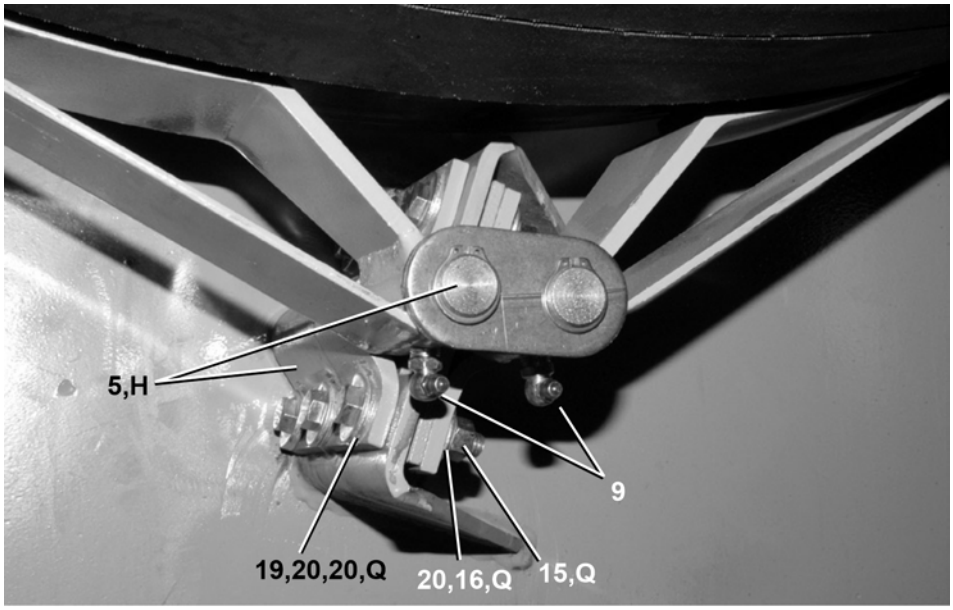
P . . . Do not tighten the pivot bolt too much. The air cylinder must move easily around the bolt.

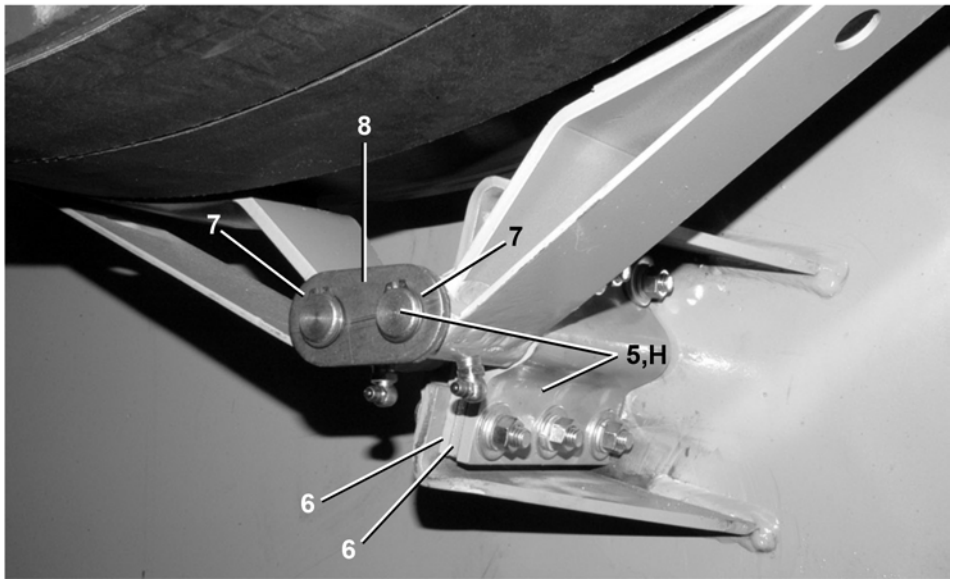
Brake Components and Installation

5 Sheets

6044WP2, 6044WP3, 7244WP2, 7244WP3

Figure 29. Brake Band Hinge Pins





Legend

H . . . Hinge pins. Brake bands must move easily about the hinge pins

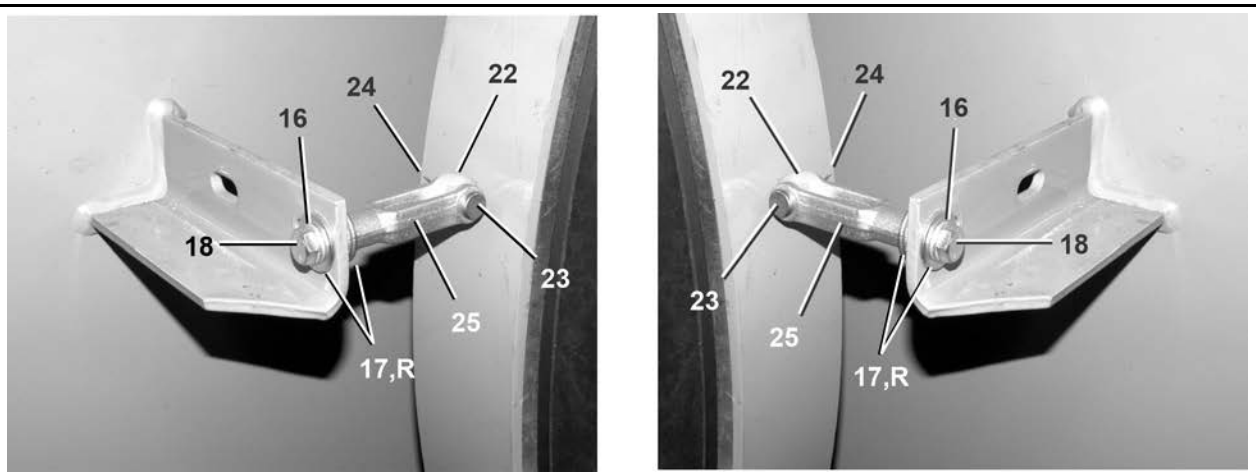
Q . . . Typical 6 instances

Brake Components and Installation

5 Sheets

6044WP2, 6044WP3, 7244WP2, 7244WP3

Figure 30. Roller (Models: 7244WP2, 7244WP3)



Legend

R . . . As required

Table 22. Parts List—Brake Components and Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	AD 28 151	BRAKE INSTALLATION=WED + WEH	
	B	AD 36 043	BRAKE INSTALLATION=7244WED	
			Components	
all	1	SA 28 152	* BRAKE AIRCYL 2-WAY 60WE2+3	
all	1	SA 36 035	* AIRCYL=BRAKE ASSY	
all	2	SA 28 153N	*BRAKEBAND RT(NON-ASB)52+60WE	
all	2	SA 36 008N	*BRAKEBAND RT(NON-ASB)72W+T+D	
all	3	SA 28 154N	*BRAKEBAND LT(NON-ASB)52+60WE	
all	3	SA 36 007N	*BRAKEBAND LT(NON-ASB)72W+T+D	
all	4	02 175080	PLATE-BRAKE STOP	
all	5	W2 18661	* WELDMENT=BRAKE HINGE PIN	
all	6	02 18786	SHIM=BRAKE BAND 60+72WE	
all	7	17B062	EXTRETRING S/S INDUST#3100-75-	
all	8	02 18516B	WASHER=BRAKE BAND PIN +$10SU	
all	9	54M025	HYDFIT 1/8"-90 ALEMITE 1613-B	
all	10	15D119	HXTAPSCR 1/2-13X4 GR5 ZNC FTL	
all	11	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	12	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	

Brake Components and Installation

5 Sheets

6044WP2, 6044WP3, 7244WP2, 7244WP3

Table 22 Parts List—Brake Components 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	13	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	14	15G231	HXFINJAMNUT 1/2-13UNC2B ZINC G	
all	15	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	16	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	17	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	18	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	19	15K117	HEXCAPSCR 3/8-16X1+3/4 GR 5 PL	
all	21	15G234N	HXLOCKNUT NYL 1/2-13UNC2 STL/Z	
all	22	02 18689	ROLLER-BRAKE ADJUST (NYLON)	
all	23	17A030	CLEVIS PIN 3/8"X1+3/32"DRIL SS	
all	24	15H030	STDCOTTERPIN 3/32X3/4 ZINCPL	
all	25	17A010	ADJ YOKE 3/8-16 EMPIGARD COAT	

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2.2 Main Bearing and Seal Replacement for Divided Cylinder Machines

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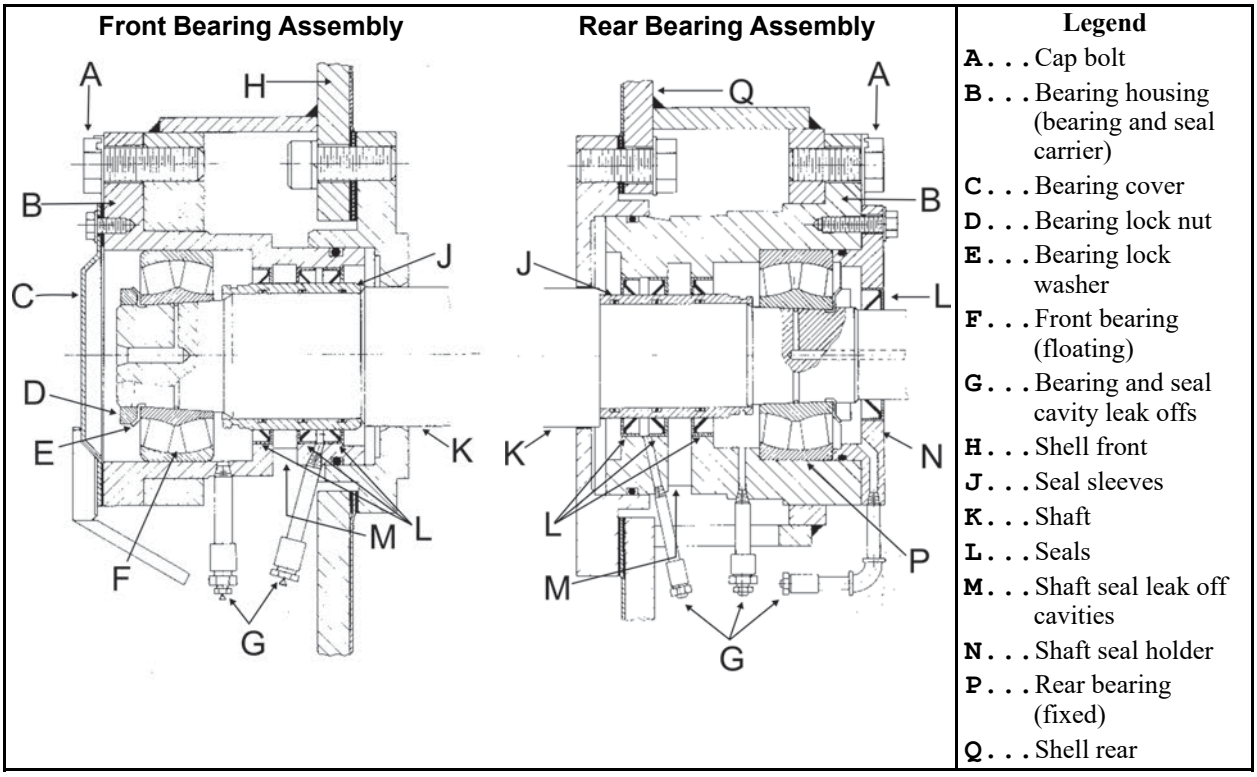
This section applies to the front and rear cylinder shaft bearings of all divided cylinder machines (Rapid Load, Staph Guard®, dye machines, etc.). It does not apply to jackshaft bearings, idler shaft bearings or bearings on open pocket machines.

The bearings covered by this section are double row, spherical roller, self aligning bearings; Koya, SKF, FMC, Torrington or equal. Referring to Figure 31, page 58, the rear (clean side on Staph Guard® models) bearing is firmly held in the bearing housing (bearing and seal carrier) by the shaft seal holder, preventing axial movement. The front (soil side on Staph Guard® models) bearing is free to move axially in the bearing housing to accommodate thermal expansion of the shaft during operation and is thus the “floating” bearing. Both bearings are held in place on the tapered portion of the shaft by a bearing lock washer and lock nut.

The front and rear bearings are each protected from contamination from wash water by three spring loaded, lip type seals and a shaft seal leak off cavity (that carries off any water that leaks past the main water seals) as shown in Figure 31, page 58.

Figure 31. Cross Section View of Front and Rear Bearing Assemblies (Bearing Assembly for 60" and 72" WED Shown. Others similar.)



Access to the bearings and seals for lubrication is provided by the various grease passages. Excess lubricant is excreted through the bearing and seal cavity leak offs as shown on Figure 31, page 58. The bearings and seals must be lubricated regularly and the leak off cavities flushed out

periodically through the plugged cleanout connections, in strict accordance with the preventive maintenance procedures elsewhere.

If bearing replacement becomes necessary due to wear, it is essential that the bearings **and seals** are replaced. Seal replacement requires removal of the bearing housing and seal sleeve. (In rare instances where the seals are known to be in good condition, it is not necessary to remove the bearing housing, seals or seal sleeve when a bearing is replaced.) **A pulling fixture is required to remove the bearing housing. A set of guide rods, a seal sleeve setting fixture and a bearing setting fixture are required for reinstallation of the housing.** These tools are available for rental or purchase from the Milnor® factory and are pictured elsewhere in this section. Contact the factory two weeks in advance of repairs, when ordering these tools.

This maintenance is performed in the following order:

1. Remove old bearing(s). When removing both bearings, remove the front (soil side) bearing first.
2. Remove bearing housings, seal sleeves, and seals.
3. If both bearings were removed, install the bearing housing, seal sleeve, seals, and new bearing on the rear (clean side).
4. Install the bearing housing, seal sleeve, seals, and new bearing on the front (soil side).
5. Tighten bearing(s).

See the Main Bearing Assembly drawing for your machine for bearing component part numbers.

2.2.1 Removing the Bearing (Front or Rear)

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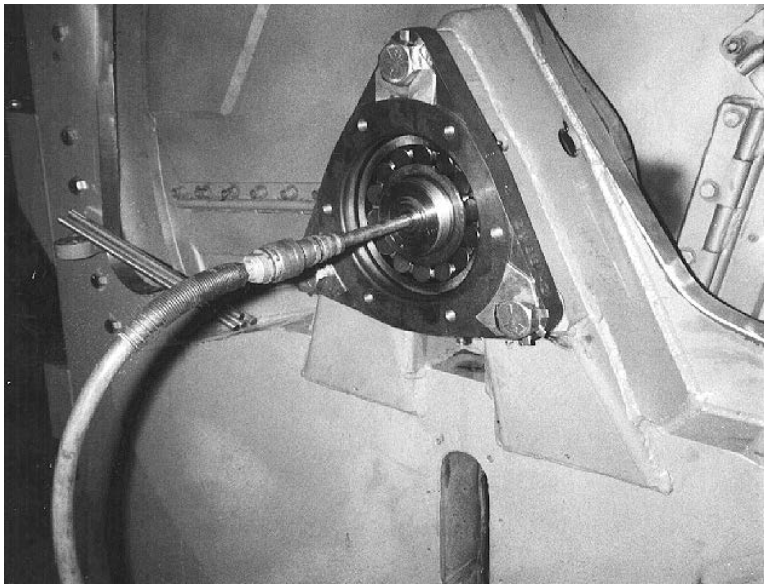
1. Loosen, then remove the main drive belts and cylinder shaft pulley (if applicable) by lowering the drive base with the jacking bolts. Do not attempt to pry belts off with a pry bar or by rolling the sheave. Remove the bearing cover (or shaft seal holder) to expose the bearing.
2. Bend back the locking tang on the bearing lock washer then remove the lock nut and lock washer.
3. The center tapped hole in the shaft end is an oil passage through which oil may be forced between the tapered shaft and the bearing inner race. Install a pipe fitting into this tapped hole as shown in Figure 32: Connection From Hydraulic Pump to Assist in Bearing Removal, page 60 . Using a “Porta Power” or similar hand operated hydraulic pump, force fluid into the passage. Pump hard to build up fluid pressure. This pressure will cause the inner race to expand slightly; just enough to free the tapered surfaces and allow the bearing to slip off easily. If the bearing is not readily removed, remove the front water level inspection plate and use a timber to pry up the cylinder to remove cylinder weight from the bearings. Once the bearing is removed, the cylinder drops only approximately 1/32" before the shaft comes to rest on the shaft support.
4. Slide the bearing off of the shaft and if it is to be reused, place it on a clean surface and cover with a clean, lint free cloth.

Figure 32. Connection From Hydraulic Pump to Assist in Bearing Removal



2.2.2 Removing the Bearing Housing (Bearing and Seal Carrier), Seal Sleeve, and Seals (Front or Rear)

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These procedures require the use of a pulling fixture and guide rods available from the Milnor® factory. With the bearing cover (or shaft seal holder) and the bearing removed, proceed as follows:

1. Remove the three bearing housing cap bolts and the grease lines from the bearing housing front plate. Install guide rods in two of the bolt holes, as shown in Figure 33, page 60.
2. Install the pulling fixture as shown in Figure 34, page 60, by placing each of the four threaded rods through a hole in the steel plate with hexnuts to the outside of the plate then screwing each rod into the appropriate tapped hole in the bearing housing (same holes as used to mount the bearing cover or shaft seal holder).

Figure 33. Two Bearing Housing Guide Rods in Position

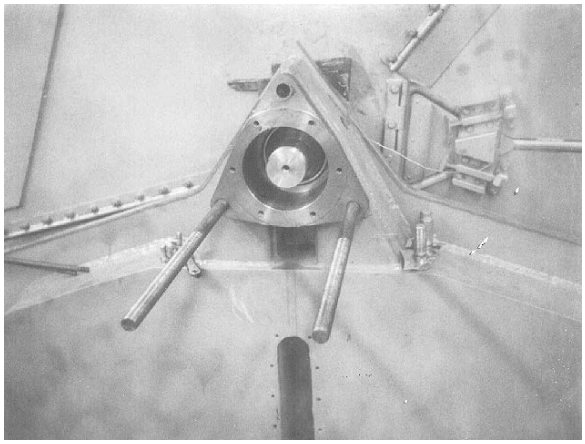
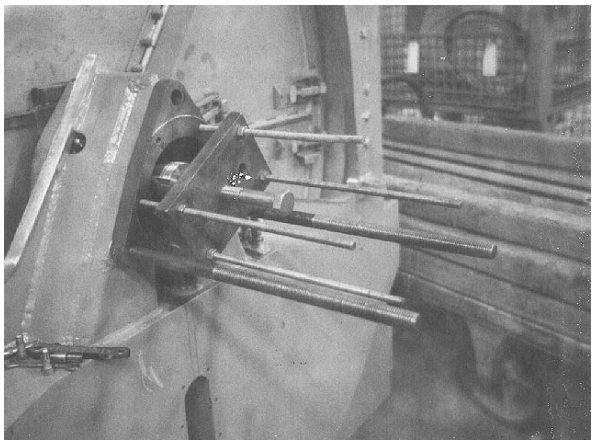


Figure 34. Bearing Housing Pulling Fixture in Position



NOTE: Step 2a or 2b below will cause the bearing housing to slide away from the shell. Shims were placed under one or more of the three bearing housing pads during factory assembly to align the housing and insure its being exactly parallel with the shaft. **When removing the bearing housing, be sure to keep these shims separate and identified so that they may be returned to their proper location, otherwise the bearing and seal will be out of line and may be damaged after a short operating period.** As a precaution in case the shims are lost during disassembly, you will find stamped next to the bearing housing the proper thickness of shims required (if any) under each adjacent bearing housing pad. The stamped number indicates the shim thickness in thousandths of an inch. For example, the number "38" indicates that 38/1000 (.038") shims would be required under this pad.

a. Tighten all four hex nuts on the threaded rods such that the pulling fixture plate is pressed against the shaft end. With an impact wrench, tighten down on the center bolt until the housing slides out, or

b. If no impact wrench is available, simply continue to tighten down on each of the four hex nuts behind the pulling fixture plate, alternately and progressively, until the housing slides out. It may be necessary to place a spacer (approx. two inches long) between the plate and the shaft to provide enough clearance between the plate and the bearing housing.

3. Once the bearing housing is free of the shell, carefully slide it off of the guide rods and place on a clean work surface.
4. The seal sleeve will almost always remain on the shaft when the housing is removed. Remove the seal sleeve **taking care not to damage or scar it** and place it on a clean work surface.

2.2.3 Precautions for Bearing Replacement

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The most important ingredient in successful bearing and seal installation is **cleanliness**. The bearing housing must be free of all **foreign** matter. The grease and leak off passages must be blown clear and all **foreign** matter removed. You must have a clean work area. Keep your hands and tools free from grit and grime. Wash your hands before starting and as required during these procedures. **Foreign** matter is, without doubt, the most frequent cause of bearing failure, and one over which the manufacturer has no control.

Where cleaning is required, bearings, bearing housings and seal sleeves may be cleaned with the following solvents or cleaning agents (in strict accordance with the manufacturer's recommendations as such substances are generally toxic and/or explosive under certain conditions):

Benzene	Gasoline	Naptha
Chlorethane	Kerosene	Tricholorethylene
Freons	Mineral Spirts	

Do not, however, expose any components to the above substances for more than 24 hours and only use at room temperature. Never use the following solvents or cleaning agents: alcohols, cresols, phenols, flouro propanols, or other similar chemicals or mixtures.

NOTE: Hammer blows, overheating, or improper use of force can damage precision parts.

2.2.4 Replacing the Bearing Housing, Seal Sleeve, and Seals (Front or Rear)

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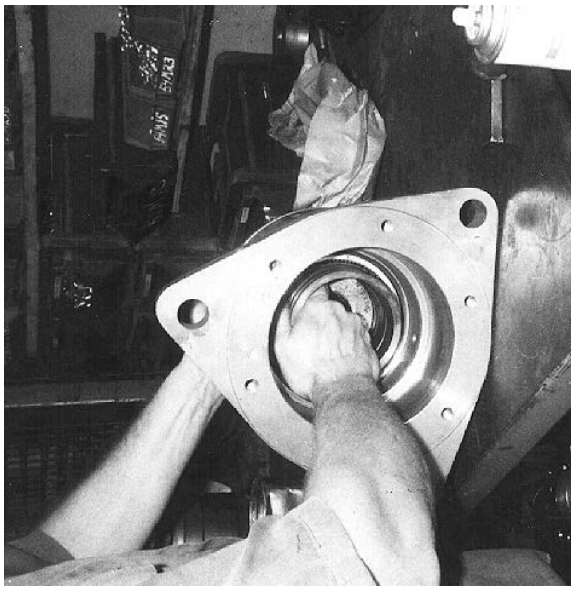
1. With the seal sleeve removed, press all old seals out of the bearing housing. Remove the large o-ring from the outside of the housing. Thoroughly clean the bearing housing and flush out all grease passages to make certain they are unblocked. Remove the o-rings from the inside of the seal sleeve and clean the seal sleeve.
2. While the bearing housing is disassembled, charge all grease passages with grease. This will assure that there are no blockages.
3. Replace the o-rings in the seal sleeve and the large o-ring on the outside of the bearing housing. Replace with new o-rings if the old ones are worn.
4. Press new seals into the bearing housing. You may gently work the seals in with a mallet and metal drift as shown in Figure 35, page 62.

   CAUTION: Each seal must be of the proper material and face the proper direction. The type of material and direction the seal faces may differ from one seal to another within the same bearing housing and also from one type of machine to another. It is essential to consult the Main Bearing Assembly drawing for your machine for the proper part number and direction to face each seal.
5. Slip the seal sleeve into the bearing housing as shown in Figure 36, page 62, using care not to damage or fold under any of the seal lips. Be sure to insert the sleeve in the proper direction (see Bearing Assembly drawing).

Figure 35. Installing Seals in Bearing Housing

Figure 36. Installing Seal Sleeve in Bearing Housing

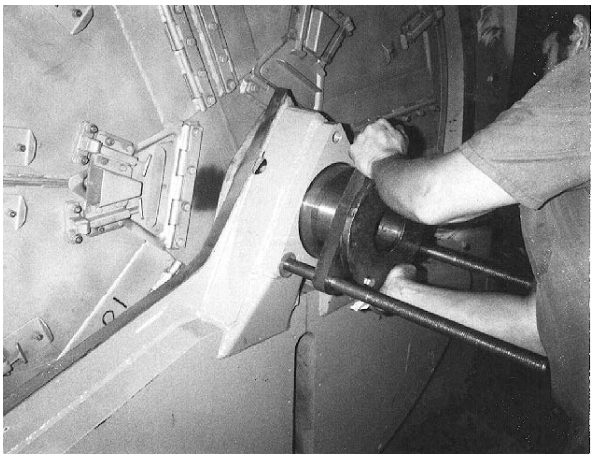


NOTE: If both housings are being installed, install the rear housing first.

6. With two of the three temporary guide rods in position on the shell, place the bearing housing onto the guide rods and install the seal sleeve setting fixture on to the bearing housing as shown in Figure 37, page 63. The seal sleeve setting fixture prevents the seal sleeve from being pushed out of the housing as the housing is inserted into the shell. Note that the seal sleeve setting fixture and the bearing setting fixture are very similar, but the seal sleeve setting fixture has a longer hub.
7. With a clean, lint free cloth, apply a coating of light machine oil to the outside of the housing, to assist in installation. Push the housing into the shell as shown in Figure 38, page 63. Once the housing is far enough into the shell to support itself, place any shims back into position between the housing and the shell. Remove, then replace guide rods if required to place shims under bearing housing pads.

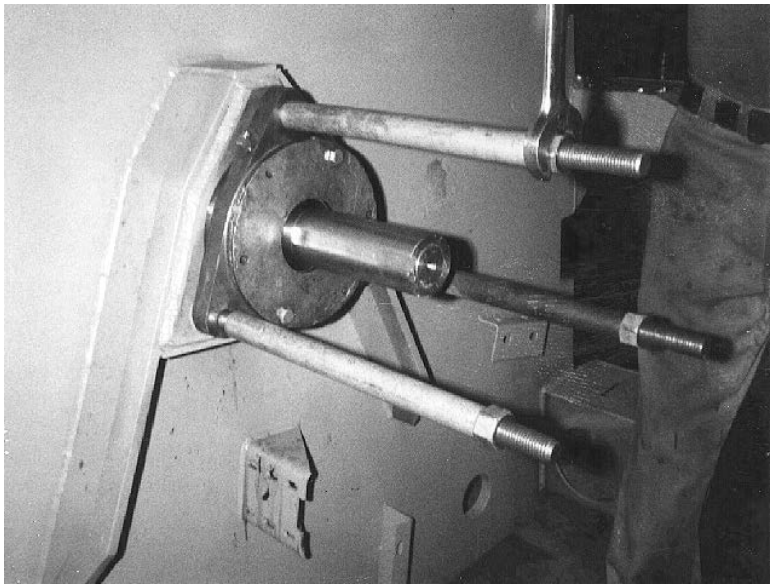
Figure 37. Installing the Bearing Housing Setting Fixture onto Housing (42" machine shown)

Figure 38. Pushing the Bearing Housing into the Shell (60" Rapid-load machine shown)



8. Install the third guide rod, spacers if required, and hex nuts, using these to seat the housing fully, as shown in Figure 39, page 64. Remove the seal sleeve setting fixture.

Figure 39. Tightening the Bearing Housing into the Shell (42" machine shown)



9. Remove the guide rods and install the bearing housing cap bolts. See “Bolt Torque Requirements” elsewhere, for proper torques.
10. With the grease gun, pump grease into the inner portion of the bearing cavity, such that when the bearing is installed, the space between the bearing and the seals will be approximately 1/3 full of grease.
11. Proceed to Section 2.2.5 : Measuring Unmounted Clearance and Setting Bearing (Front or Rear), page 64, even if both the front and rear bearings are being replaced. Once the rear bearing is installed, the bearing housing replacement procedures may then be repeated for the front (soil side) bearing housing.

2.2.5 Measuring Unmounted Clearance and Setting Bearing (Front or Rear)

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The bearings used on Milnor® washer and dye extractors are the very best anti-friction devices available for these applications. However, the anti-frictional characteristics of the bearings will be reduced if they are not properly installed. It is of critical importance when installing these tapered roller bearings, to accomplish the following (A step by step procedure follows this synopsis):

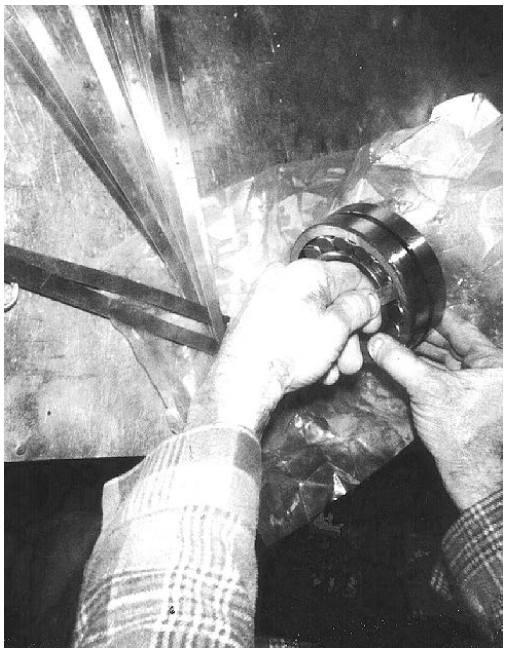
1. Accurately measure the unmounted internal clearance of the bearing (gap between the rollers and outer race before the bearing is installed). This is an essential quality control measure.
2. Calculate the final internal clearance by subtracting the specified clearance reduction (amount that the internal clearance must be reduced when the bearing is tightened onto the tapered shaft) from the unmounted clearance.
3. Tighten the bearing onto the shaft until the final internal clearance as calculated is achieved and verified by measurement.

These measurements are taken in thousandths of an inch. Although this requires precise work, attention to detail and a good set of feeler gauges, it is the only way to insure that the bearing will be tightened onto the shaft to precisely the right tension. If you have any questions on performing the measurements or adjustments described below, your local bearing supplier or the Milnor® factory can assist you. Although these procedures require precision over and above that normally required for laundry room maintenance, they are standard in bearing installation and absolutely essential:

NOTE: Step 4 requires a good set of feeler gauges including .001" through .010" in thousandths of an inch increments. Contact your local bearing supplier.

4. When you are ready to proceed (and not before), remove the new bearing from it's box or protective wrapping. Do not attempt to clean the bearing or wash out the preservative coating. On a clean work surface, stand the bearing on edge and insert a .003 feeler gauge into the bearing as shown in Figure 40, page 65. The gauge should be inserted just inside the outer race between two rollers and worked through to the opposite row of rollers. Rotate the inner race of the opposite row so that the end of the feeler gauge is caught between a roller and the outer race.

Figure 40. Measuring Bearing Unmounted Clearance (bridge for 42" machine shown)



5. Try to pull the gauge straight out. If it comes out, increase the size of the gauge by .001". If it does not come out, decrease the gauge by .001". The thickest feeler gauge that will come out is the unmounted internal clearance of the bearing.
6. Compare the measured clearance with the "Unmounted Clearance" in Table 23: Table of Bearing Clearances, page 66 . If the measured clearance is not within the range shown, do not use the bearing. Contact your bearing supplier for an exchange.

NOTE: The clearances listed in the chart are industry standards and therefore apply to all brands of bearings supplied by Milnor®. If other sources of bearings are used, refer to the manufacturer's instructions for proper clearances.

NOTE: To locate your bearing on the chart, match the first five characters of the manufacturer's part number (**not the** Milnor® **part number**) with those in the chart. For example, for a manufacturer's part number 22217LBK, find under "Manufacturer Part Number" the line "22217 . . ."

Table 23. Table of Bearing Clearances

Manufacturer Part Number	Unmounted Clearance		Clearance Reduction	
	Minimum	Maximum	Minimum	Maximum
22330...	.0071	.0091	.002	.003
22213...	.0030	.0039	.001	.002
22216...	.0028	.0037	.001	.002
22217...	.0044	.0057	.0015	.0025
22312...	.0030	.0039	.001	.002
22316...	.0037	.0049	.001	.002
22320...	.0044	.0057	.0015	.0025
22328...	.0063	.0081	.002	.003
23220...	.0044	.0057	.0015	.0025

7. Calculate and record the final internal clearance by deducting the "Clearance Reduction" for your bearing (see Table 23, page 66) from the measured clearance. For example, if you measured .004 and the clearance reduction is .001 to .002, then the final internal clearance should be between .002 and .003.
8. Hand pack the bearing with grease by rotating the inner race and rollers, forcing grease between all rollers.

NOTE: The bearing will be set into position in Step 9. If both front and rear bearings are being installed, the rear (clean side on Staph Guard® models) bearing should be set in position first because it is the fixed bearing.

9. Set the bearing into the housing (with the taper facing the proper direction) and seat the bearing using the bearing setting fixture. This fixture is installed in similar fashion to the seal sleeve setting fixture. If you have just set the rear bearing and the front bearing housing is yet to be installed, leave the bearing setting fixture in place for now.
10. If you have just set the rear bearing and the front bearing housing is yet to be installed, repeat all steps in bearing housing installation, measuring unmounted clearance and setting bearing, for the front bearing and housing. The bearing setting fixture should not be removed from the rear housing until it is needed to seat the front bearing. This will prevent rear bearing components from being pushed out of position by the shaft as the front housing components are seated. Remove the bearing setting fixture from the front housing once the bearing is seated.

2.2.6 Tightening Bearing(s) (Front and/or Rear)

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1. Once both bearings are seated, or if only one bearing was replaced, install the bearing lock washer(s) and lock nut(s). Use a hammer and a metal drift as shown in Figure 41, page 67, to tighten the lock nut. **It is imperative to only tap lightly and to assure that metal chips from the drift or lock nut do not fall off and contaminate the bearing.** If both bearings are

being tightened, work between the front and rear bearings and turn the basket by hand periodically, while tightening the lock nut(s).

2. After tightening the bearing(s) onto the tapered shaft, check the internal clearance as pictured in Figure 42, page 67, by working a feeler gauge between the outer race and a roller of the outer row then between the outer race and a roller of the inner row.

   NOTE: Sometimes, when setting the bearings, all the load is taken by only one row of rollers (although the load would quickly equalize on both rows after the machine has run for only a few minutes). If all the load is taken by one row, you will get an erroneous clearance reading. It is therefore, necessary to use the feeler gauge to measure the **clearance of both rows of rollers**. With the bearing in place on the machine it is admittedly rather difficult to get a feeler gauge back past the first row of rollers to measure the second **but it must be done**.

3. If one row of rollers is tight but the other has measurable clearance, tap lightly on the end of the shaft nearest the tight row of rollers to cause the shaft to shift axially and equalize the roller loading. Adjust the bearing tightness to achieve the internal clearance previously calculated.

4. When the proper internal clearance has been attained, lock the nut by bending over the matching tang on the lock washer, making sure that all unused tangs are bent as near the nut as possible so that they will not rub against the bearing roller cage.

   NOTE: Check each unused tab individually to insure this.

Figure 41. Tightening the Bearing Lock nut (42" machine shown)

Figure 42. Measuring the Mounted Internal Clearance of the Bearing (42" machine shown)

5. With the grease gun, fill the space between the bearing and the front of the housing 1/3 full of grease.

6. Install the bearing cover plate or shaft seal holder, as appropriate. When installing the shaft seal holder, take care not to damage the seal as it is gently pushed over the shaft. Cover the keyway on the end of the shaft with tape to prevent the sharp corners of the keyway from cutting the seal lip. Also, make sure that the seal lip does not turn over as it passes over rough areas.

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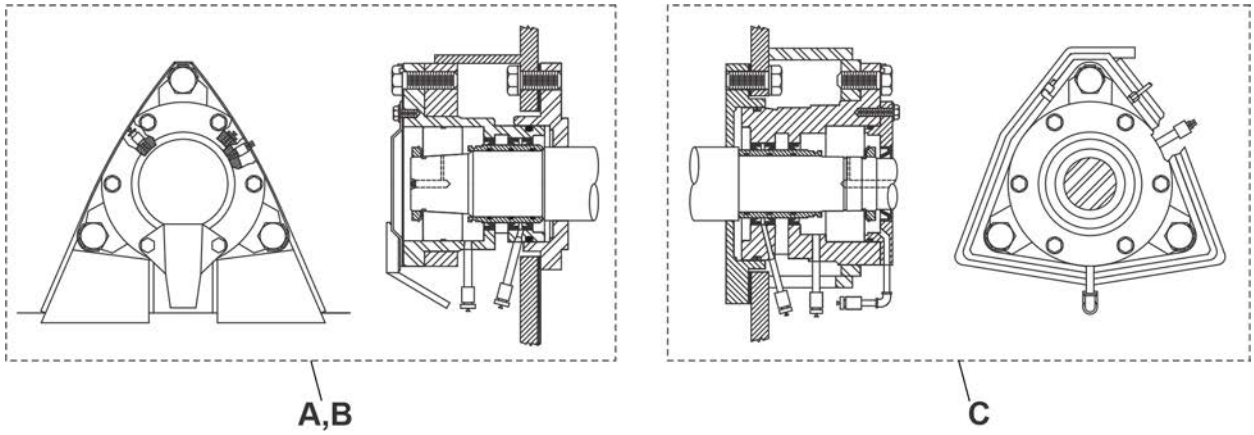
Shaft and Bearing Components

4 Sheets

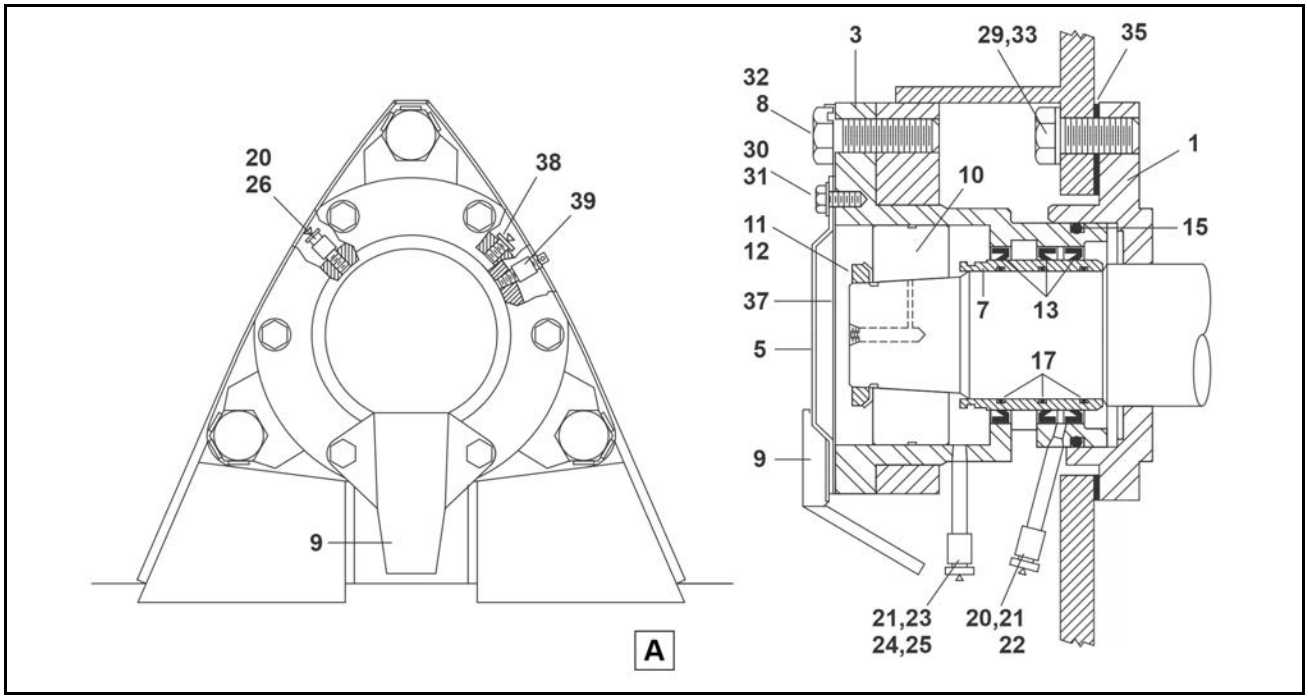
Figure 43. Shaft and Bearing Components



Legend

A . . . Front bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3)
B . . . Front bearing (Models: 6044SP2, 6044SP3, 6044SR2, 6044SR3
C . . . Rear bearing

Figure 44. Front Bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3)



Shaft and Bearing Components

4 Sheets

Figure 45. Front Bearing (Models: 6044SP2, 6044SP3, 6044SR2, 6044SR3

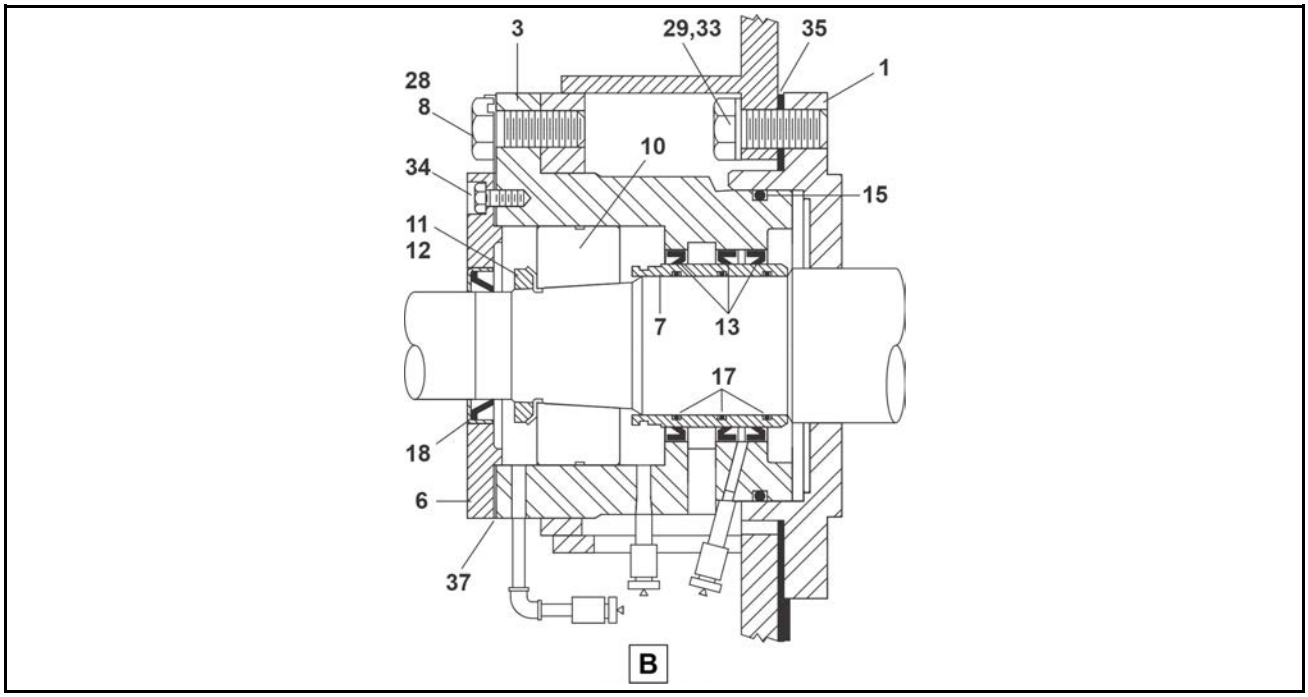
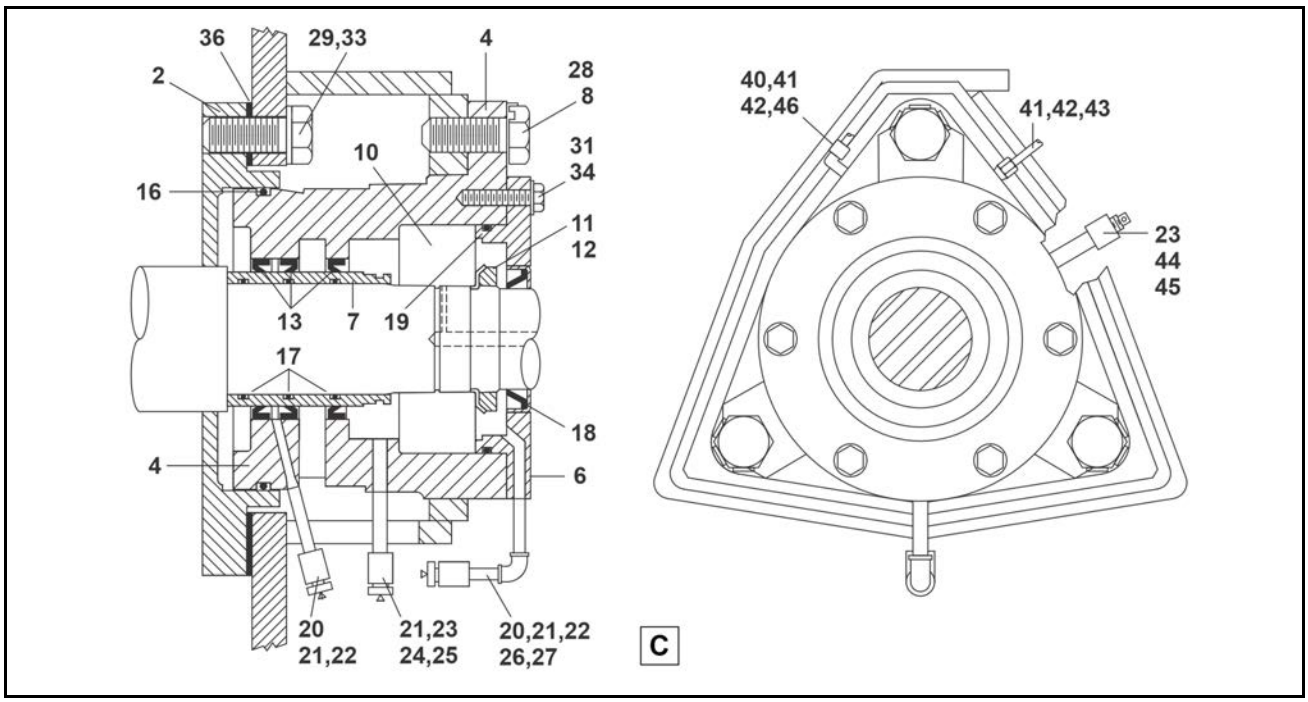


Figure 46. Rear Bearing (Models: 6044WP2, 6044WP3, 6044WR2, 6044WR3 & 6044SP2, 6044SP3, 6044SR2, 6044SR3)



Shaft and Bearing Components

4 Sheets

Table 24. Parts List—Shaft and Bearing Components

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	AD 29 032	Installation Group, Bearing housing	60044WP2/WP3, 6044WR2/WR3
	B	AD 29 032V	Installation Group, Bearing housing, Viton	60044WP2/WP3(Viton), 6044WR2/WR3(Viton)
	C	G28 15700	Installation Group, Bearing housing	6044SP2/SP3, 6044SR2/SR3
			Components	
all	1	X2 175008	Shaft support, Front	
all	2	X2 175009	Shaft support, Rear	
AB	3	X3 06005	Bearing housing, Front	
C	3	X2 175005	Bearing housing, Front	
all	4	X2 175007	Bearing housing, Rear	
all	5	02 18618A	Cover	
AB	6	X2 18190	Seal holder	
C	6	X2 175053	Seal holder	
all	7	X3 06006	Seal sleeve	
all	8	02 18219	Washer, lock	
all	9	02 18928	Grease shield	
all	10	56S22316T	Bearing	
all	11	56AHN16	Bearing Locknut	
all	12	56AHW16	Washer	
AC	13	24S114	Seal, 4.5X5.5X.50	
B	13	24S114V	Seal, 4.5X5.5X.50, Viton	
A	15	60C161	O-ring, 6"X1/4	
B	15	60C161V	O-ring, 6"X1/4, Viton	
C	16	60C172	O-ring, 8"X1/4	
B	16	60C172V	O-ring, 8"X1/4, Viton	
AC	17	60C154	O-ring, 3+7/8X3/16	
B	17	60C154V	O-ring, 3+7/8X3/16, Viton	
all	18	24S111	Seal, 3X4.00X.437	
all	19	60C160J	O-ring, 6+1/4X1/8	
all	20	5SCC0CBE	Coupling, 1/8	
all	21	54M029	Pipe Fitting, 1/8	
all	22	5N0C03AG42	Pipe nipple, 1/8X3	
all	23	5SCC0EBE	Coupling, 1/4	

Shaft and Bearing Components

4 Sheets

Table 24 Parts List—Shaft and Bearing Components (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	24	5N0E02KG42	Pipe nipple, 1/4X2.5	
all	25	5SB0E0CBEO	Hexbrush, 1/4X1/8	
all	26	5N0CCLSB42	Pipe nipple, 1/8XCLS	
all	27	5SL0CBEA	Elbow, 1/8	
all	28	15B243	Bolt, 1-8X2+1/2	
all	29	15U400	Washer, Lock 1"	
all	30	15K145	Bolt, 1/2-13X3/4	
all	31	15U300	Washer, Lock, 1/2	
all	32	15B236	Bolt, 1-8X3	
all	33	15K236	Bolt, 1-8X2.75	
all	34	15K162	Bolt, 1/2-13X1.5	
all	34	15K147C	Bolt, 1/2-13X1	
all	35	02 18870	Gasket	
all	36	02 18768D	Gasket	
all	37	02 18105	Gasket	
all	38	54M015	Pipe fitting, Lubricant	
all	39	5SP0CFESSV	Plug, 1/8	
all	40	53A039B	Elbow, 5/16X1/8	
all	41	53A508	Flexible tubing, Adapter, 5/16"	
all	42	53A509	Flexible tubing, Adapter, 5/16" X .53"	
all	43	53A019B	Pipe Fitting, 5/16X1/8	
all	44	5N0E01KBE2	Pipe nipple, 1/4X1.5	
all	45	51P008B	Plug, 1/4"	
all	46	53A060A	Nut, 5/16"	

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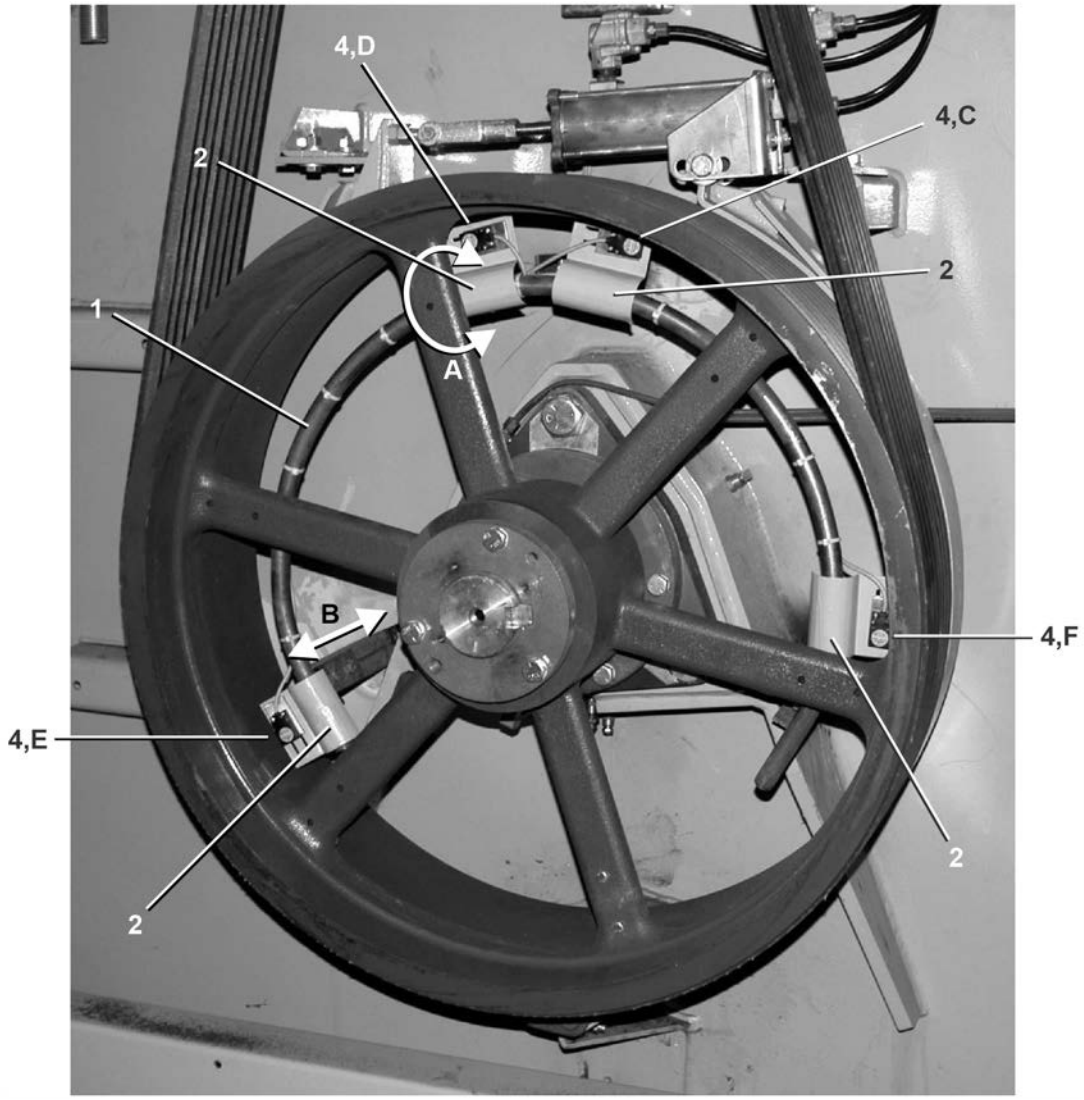
Autospot Components

2 Sheets

6044WP2 (One motor drive)

Figure 47. Autospot Components

Installed View



Legend

A . . . Make sure the switch face is parallel to the target.
B . . . The distance from the target and the switch sensor must be 3/16 inch [9mm].
C . . . Speed sensor
D . . . The load position for pockets one and two.
E . . . The discharge position for pocket one.
F . . . The discharge position for pocket two.

Autospot Components

2 Sheets

6044WP2 (One motor drive)

Figure 48. Proximity Switch Mounting Bracket

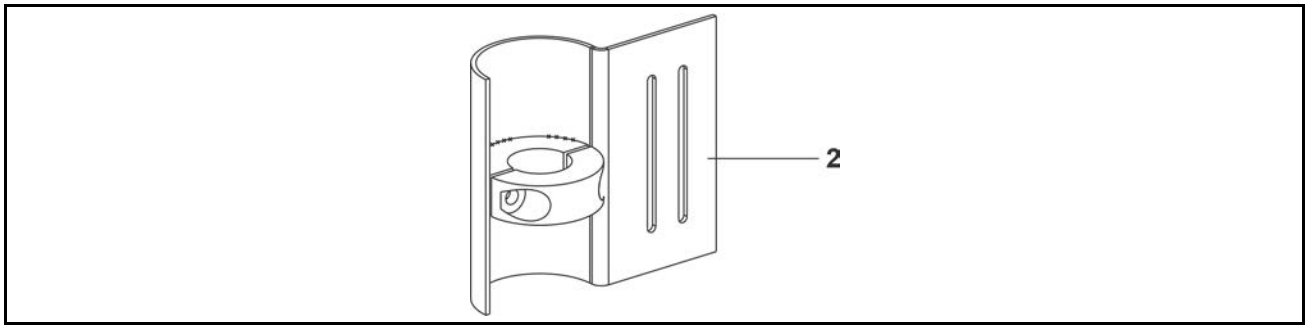


Figure 49. Target Plate

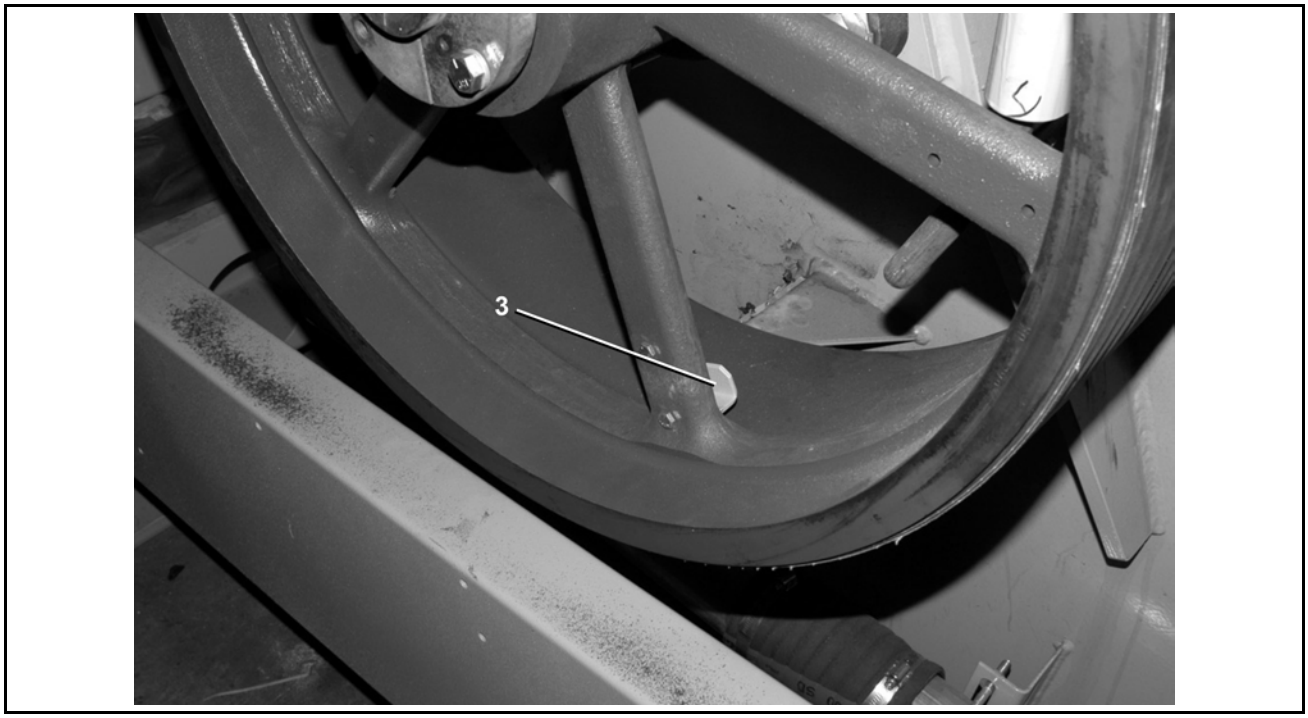


Table 25. Parts List—Autospot Components

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	G28 16201	INST=60" S/M AUTOSPOT	
Components				
all	1	W2 19580	WLMT=PROX GUDE MNT	
all	2	W3 60220C	WLMT=PROX MNT 60" AUTOSPOT	

Autospot Components

2 Sheets

6044WP2 (One motor drive)

Table 25 Parts List—Autospot Components (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	3	03 65224D	TARGET=HYDRO AUTOSPOT	
all	4	09RPS07RDS	7MM SENSING RECTANGULAR SHLD POTTED-IN CABLE	

3 Frame & Suspension

3.1 Suspension Adjustments for Divided Cylinder Machines

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The suspension system on Milnor® Hydro-cushion™ machines is adjusted and thoroughly tested at the factory. It should not require subsequent adjustment unless the machine is distorted during shipment or installation or unless some component of the system, such as a Hydro-cushion™ cylinder is replaced.

There are two primary objectives when adjusting the suspension system on any Hydro-cushion™ machine model:

1. To position the shell in the proper location within the frame (hanging dimensions) to maximize freedom of movement of the shell and to insure proper draining, and
2. To adjust the length of up and down travel at each of the push-down locations (push down travel) so that the shell will not be distorted (racked) when pushed down.

All Milnor® Hydro-cushion™ machines contain the following suspension system components:

1. Hydro-cushion™ cylinder—which suspend the shell and cylinder within the frame and provide vibration damping during extraction.
2. Pneumatic push down devices (air bags)—which when inflated, force the shell downward where it is held against rigid pads during loading, unloading, washing, and draining.
3. Metal or rubber pads—some rigidly fixed to the shell and some rigidly fixed to the frame, which come in contact when the shell is pushed down.

The actual configuration of these components varies from model to model.

3.1.1 How Shell Adjustments are Made

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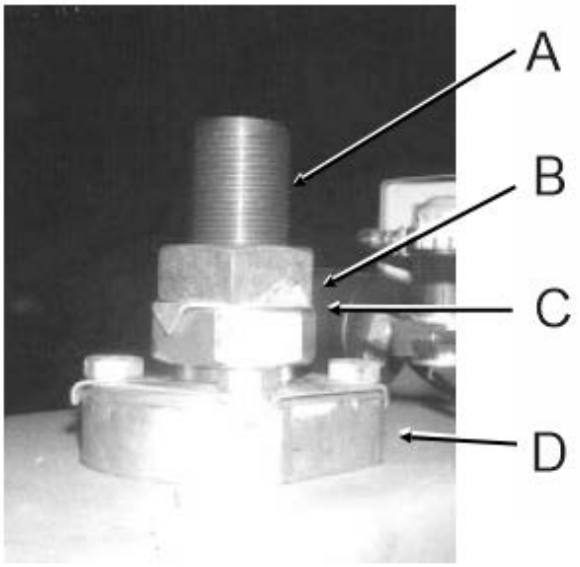
Regardless of machine model, repositioning of the shell is always accomplished by adjusting the nuts at the top of the upper Hydro-cushion™ shafts. To move the shell up or down at the location of any Hydro-cushion™, see Figure 50: Hydro-cushion™ Upper Shaft and Adjusting Nuts, page 76 and proceed as follows:

CAUTION: These procedures should be accomplished with power to the machine locked off.

1. Straighten the tongues on the keyed lock washer using pliers, screw driver, etc.
2. Loosen the lock nut (upper hex nut) and move it all the way up to the top of the shaft, but do not remove it.

3. Use the adjusting nut (lower hex nut) to “crank” the shaft up or down as required.
4. Once final adjustment is made, while holding the adjusting nut to prevent it from turning, re-tighten the lock nut against the adjusting nut (with the lock washer between).
5. Rebend the tongues on the lockwasher as before, to prevent movement of the nuts.

Figure 50. Hydro-cushion™ Upper Shaft and Adjusting Nuts



Legend

A . . . Hydro-cushion™shaft
B . . . Locknut
C . . . Keyed lockwasher
D . . . Adjusting nut

3.1.2 Shell Hanging Dimensions and Adjustment Procedures

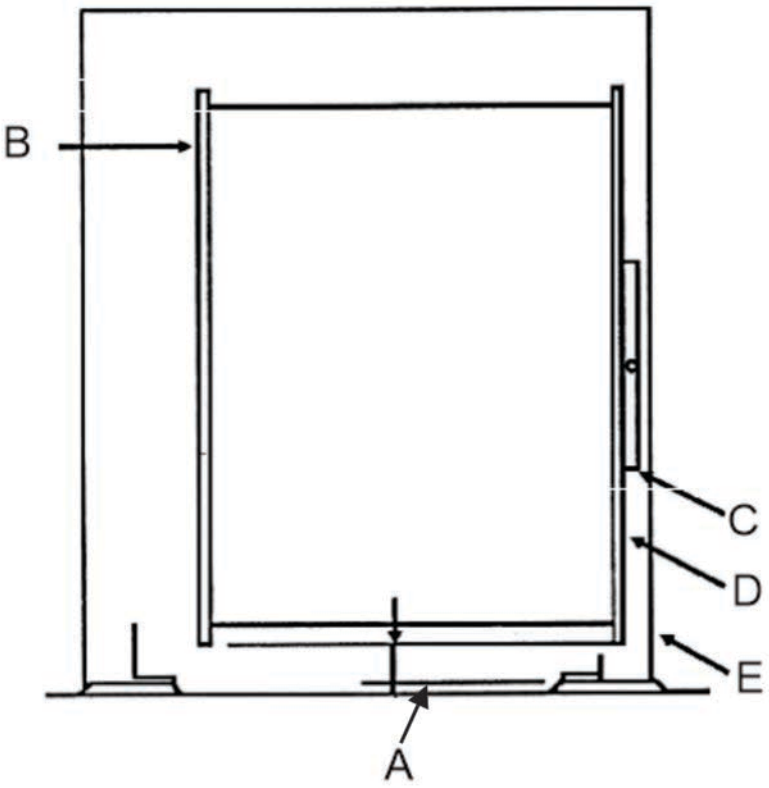
BNWVUM01.T02 0000278201 C.2 B.2 2/5/21, 9:25 AM Released

To adjust the shell of a divided cylinder machine, proceed as follows:

1. Locate the shell hanging dimension for your machine in Table 26: Hanging Dimensions, page 77 and adjust your machine accordingly. Take measurements on the left and right sides of the shell, to assure that the shell is horizontal, left to right.
2. The shell and cylinder should be level front to back. Check this with a bubble level, as shown in Figure 51: Shell Hanging for Divided Cylinder Machines (Left side view of 60044WE shown), page 77 .
3. If further adjustment is required in order to level the cylinder, make small adjustments at all four corners. For example, if the cylinder slopes down to the front, try raising the two front corners by 1/16" (2mm) and lowering the two rear corners by 1/16" (2mm). Always split the difference.

NOTE: Only slight deviations from the dimensions shown should be used to level the shell. If large deviations are required, this may indicate that the frame is out of level. If so, this condition must be corrected before attempting to level the shell.

Figure 51. Shell Hanging for Divided Cylinder Machines (Left side view of 60044WE shown)



Legend

A . . . Hanging Dimensions
B . . . Shell back
C . . . Bubble level
D . . . Shell front
E . . . Frame

Table 26. Hanging Dimensions

Machine Model	Dimension A
42031WE	4 1/8" (105)
42031SG	4 1/8" (105)
44044WE	4 1/8" (105)
42044SG	4 1/8" (105)
60031WE	3 5/8" (92)
60031SG	3 5/8" (92)
60044WE	3 5/8" (92)
60044SG	3 5/8" (92)
72044SG	3 3/4" (95)
72044WE	3 3/4" (95)

3.1.3 Push-Down Travel Dimensions and Adjustment Procedures

BNWVUM01.C02 0000278454 C.2 B.2 A.2 3/5/20, 1:08 PM Released

CAUTION: Some of the following procedures require power to the machine. Take the necessary precautions to assure that no one operates the machine controls while personnel are adjusting the push-down components.

3.1.3.1 42" Divided Cylinder Machines

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The push-down stops on these machines consist of brackets attached to the shell and rubber rest pads, mounted atop the base pads (see Figure 52: Push-down Travel Adjustment: 42" Div-cyls (42" Staph Guard®), page 79) which make contact when the shell pushes down. The rubber rest pads sit in metal pans and are raised or lowered by adding metal shims to or removing the shims from inside the pans. Extra shims and adhesive for securing the shims were supplied with your machine.

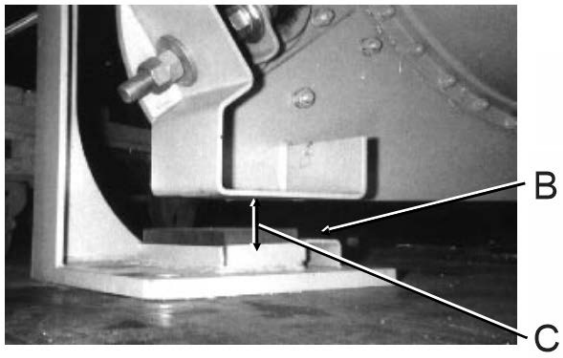
There is no specific push-down travel dimension for these machines; however, length of travel must be adjusted as follows:

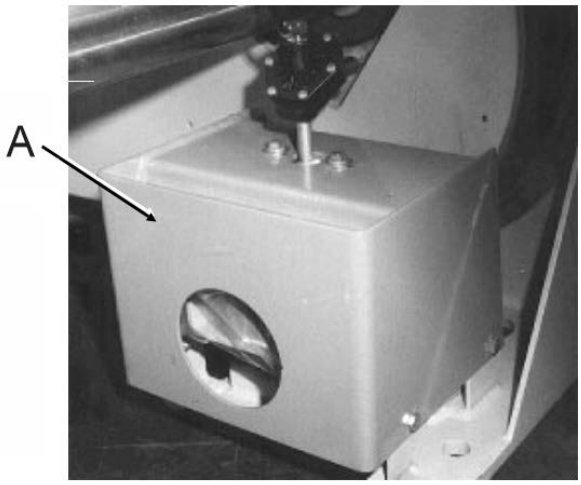
1. With the **Master switch** set to **off**, and the shell hanging free, measure the gap between each bracket and base pad.
2. Add or remove shims from the appropriate pads as required to make all four gaps equal and to insure that no rest pad protrudes completely from its metal pan.

Test for equal length of travel at all four locations as follows:

3. With four sheet metal shims of **equal** thickness, set one shim **on top of** each rubber rest pad, such that at least a one inch length of the shim overhangs the outside edge of the pad.
4. Set the **Master switch** to **manual**, causing the shell to push-down.

Figure 52. Push-down Travel Adjustment: 42" Div-cyls (42" Staph Guard®)





Legend

A . . . Push-down housing (rest pads and brackets within)
B . . . Rubber rest pad (shim between rubber pan and metal pan)
C . . . Gaps must be equal.

5. With the shell pushed down, attempt to pull each test shim out from between the bracket and rubber pad. The test shims should all be tight. If any shim(s) are not pinched tightly between the bracket and pad, take note of which one(s) are not.

   Make final adjustments as follows:

6. Set the **Master switch** to **off**, remove the test shims and make the necessary changes to the shims below the rubber pads as indicated by the above test.
7. Repeat Steps 3 through 6 as required, until this test is successful.
8. Once the adjustments are completed, secure all shims and rubber rest pads with the adhesive provided.

3.1.3.2 60" Divided Cylinder Machines

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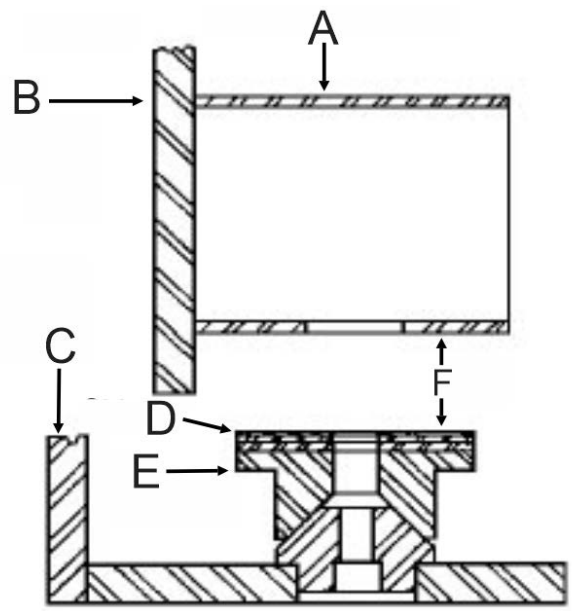
These machines have push-down stops on the four corners of the frame which appear as shown in Figure 53: Ring Weldments, page 80 . When pushed down, the ring weldments (which move with the shell) must seat firmly onto the plugs which are mounted atop the base pads. The push-down travel dimension must assure that 1) the ring weldments and plugs are far enough apart when the shell is not pushed down, so as not to interfere with the free movement of the shell, and 2) that all four stops are in solid contact when the shell is pushed down. To accomplish this, proceed as follows:

1. With the **Master switch** set to **off** and the shell hanging free, remove the bolts securing the ring weldments to the mounting brackets. Set each ring weldment on top of its respective plug, removing any shims which may have been used and placing them next to the ring weldment.

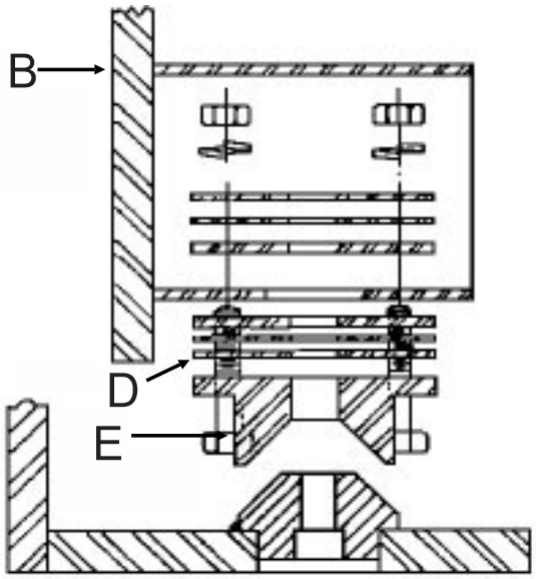
2. Measure the gap between the top of the ring weldment and the bottom of the mounting bracket, at each location.

Figure 53. Ring Weldments

Shimming Ring Weldments



Reconnecting Ring Weldments



Legend

A . . . Mounting bracket
B . . . Shell (hanging free)
C . . . Frame
D . . . Shims
E . . . Ring weldment
F . . . 2"

3. Stack shims on top of the ring weldment as required to make each gap **exactly 2 inches** as shown in the left side of Figure 53: Ring Weldments, page 80 . If the gap at any location is less than 2 inches without shims, the shell must then be raised in the frame, using the procedures previously described.
4. Once the proper arrangement of shims is made, remount the ring weldment and shims to the mounting bracket (see the right side of Figure 53: Ring Weldments, page 80). Any extra shims may be stacked on the top side of the mounting bracket plate to which the ring weldment is attached.

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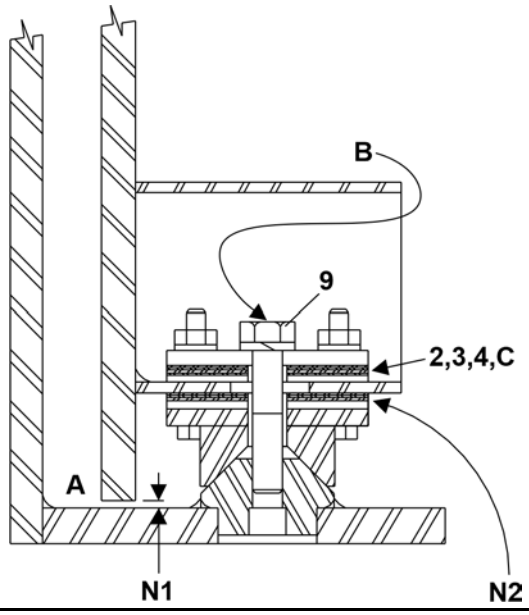
Hold Down Adjustment

2 Sheets

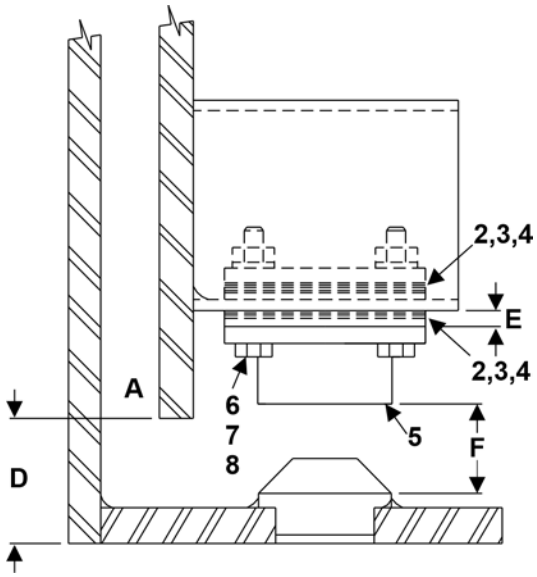
6044SR2/SR3, 6044WR2/WR3, 72044SR2/SR3, 72044WR2/WR3

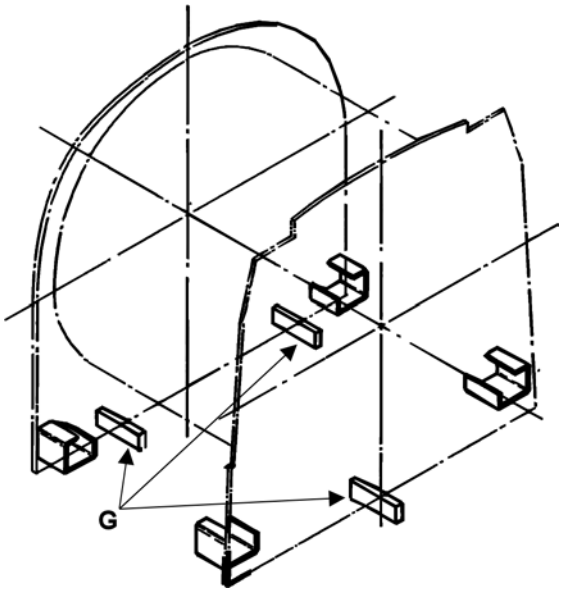
NOTE: For instruction: push down travel dimensions and adjustment procedures, see BNWVUM01

Cross Section: Machine Locked down for Shipment



Adjustment Complete, Machine Up





Legend

A . . . Machine Shell

B . . . Remove shipping bolt before running machine. See instructions for Adjustment of Hold Down

C . . . Place extra shims above

D . . . Unloaded 3-3/4”

E . . . 1/2” approx.

F . . . 2” travel of empty basket

G . . . Setting blocks for adjustment. Blocks must hold shell approximately 3/8” above base pads when machine is pushed down.

N1 . . Be sure shell does not bottom on basepad, there must be clearance at this point. Check each corner

N2 . . Place shims here to adjust ring weldment so that all four corners seat simultaneously.

Hold Down Adjustment

2 Sheets

6044SR2/SR3, 6044WR2/WR3, 72044SR2/SR3, 72044WR2/WR3

Table 27. Parts List—Hold Down Adjustment

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
none				
Components				
all	2	03 06216A	SHIM=HOLDOWN 1/4"THICK	
all	3	03 06216B	SHIM=HOLDOWN 10GA THICK	
all	4	03 06216C	SHIM=HOLDOWN 16GA THICK	
all	5	W3 06406	*RING=HOLD DOWN CENT-STAMPED	
all	6	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	7	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	8	15D125	HXTAPSCR 5/8-11X4-FLTHRD GR5	
all	9	15K300	HXCAPSCR 1-8UNC2A X4.5 SAE GR5	

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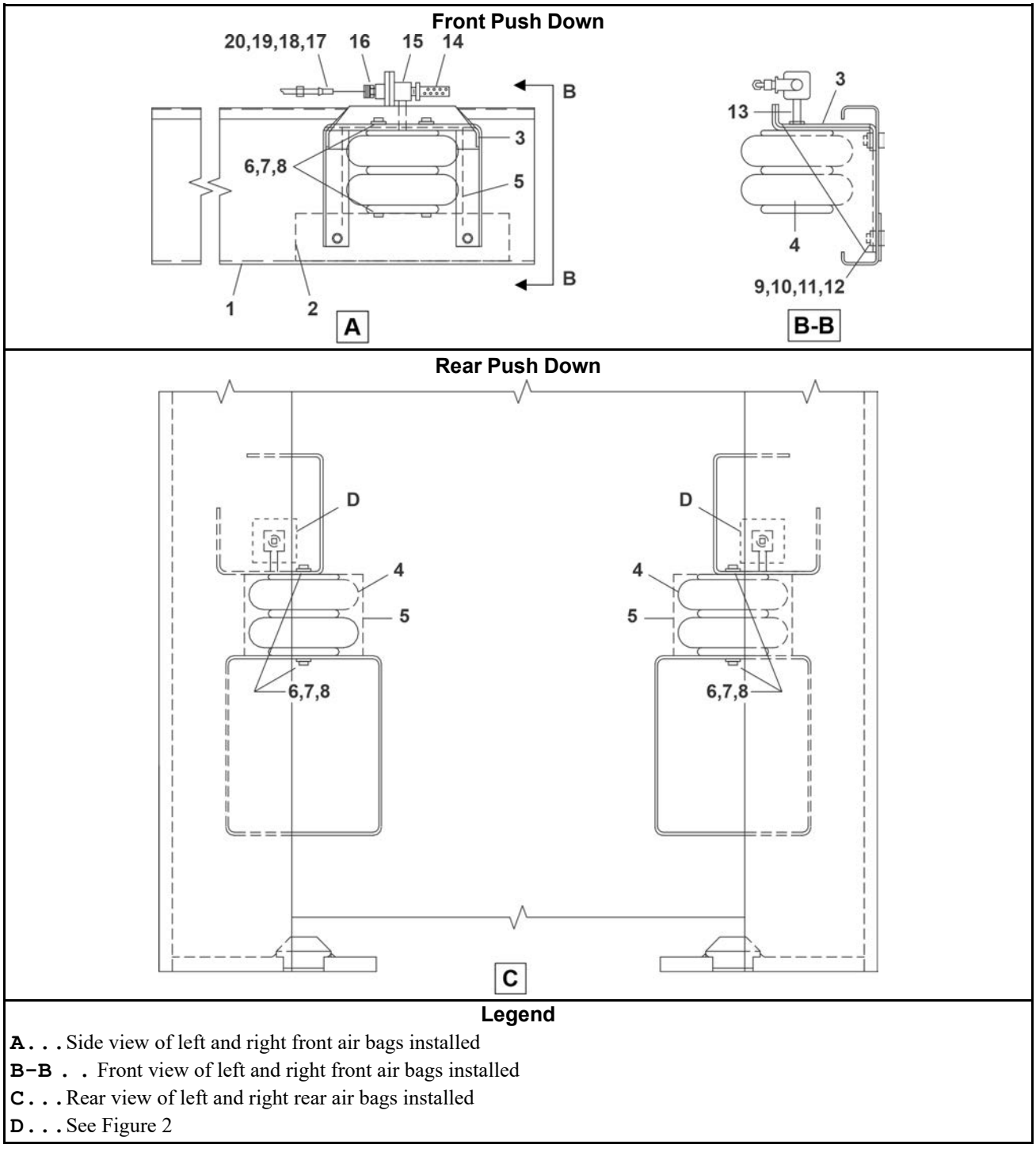
Push Down Components

3 Sheets

6044WR2, 6044WR3

Figure 54. Push Down



Legend

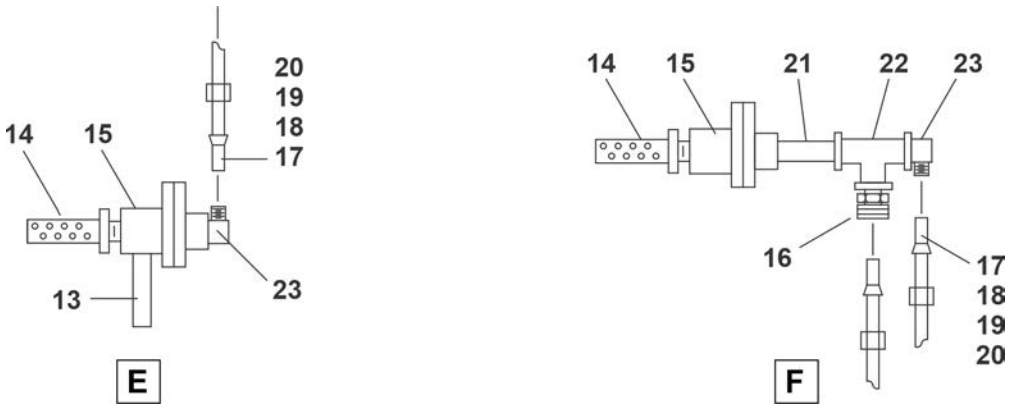
A . . . Side view of left and right front air bags installed
B-B . . Front view of left and right front air bags installed
C . . . Rear view of left and right rear air bags installed
D . . . See Figure 2

Push Down Components

3 Sheets

6044WR2, 6044WR3

Figure 55. Quick Exhaust Valve and Muffler, 4 Instances



Legend

E . . . Typical side view
F . . . Typical top view

Table 28. Parts List—Push Down Components

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	G29 05000	XBRACE ASSY-LOWER RT 6044WE	
	B	G29 04900M	XBRACE ASSY-LOFF 6044WP2/WP3	
	C	G28 17100	PUSH DOWN ASSY=REAR-60"WEU	
			Components	
A	1	02 19245	X-BRACE LOWER RT 6044WE	
B	1	02 19246A	XBRACE-LOW LEFT 6044WP2/WP3	
B	2	02 19246B	XBRACE-STIFFENER 6044WP2/WP3	
all	3	W2 175087	*WLDMNT BRACKET-PUSH DOWN=TOP (CS)	
all	4	60B120	AIRMT S-20 2CONV F#W013586910	
all	5	69C050A	POLYETHYLENE BAG 9X6X13X.005	
all	6	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	7	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	8	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	9	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
all	10	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	11	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	12	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	13	5N0E02KG42	NPT NIP 1/4X2.5 TBEGALSTL SK40	

Push Down Components

3 Sheets

6044WR2, 6044WR3

Table 28 Parts List—Push Down Components (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	14	96M055	DELTROL QUICK EXHAUST VLV.1/4"	
all	15	27A005	MUFFLER 3/8" BANTAM B38	
all	16	53A020B	BODYMALECON5/16X.25COM#B68A-5B	
all	17	53A509	TUBE INSERT 5/16"OD X .53"LG.	
all	18	53A508	SLEEVE DELRIN 5/16"OD#60PT-5	
all	19	53A060A	NUT BRASS 5/16 COMP#61A-5	
all	20	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	21	5N0ECLSBE2	NPT NIP 1/4XCLS TBE BRASS 125#	
all	22	51V015	TEE 1/4 FGDBRASS 101T7-444	
all	23	53A040B	BODY=EL90MALE5/16X.25#B69A-5B	

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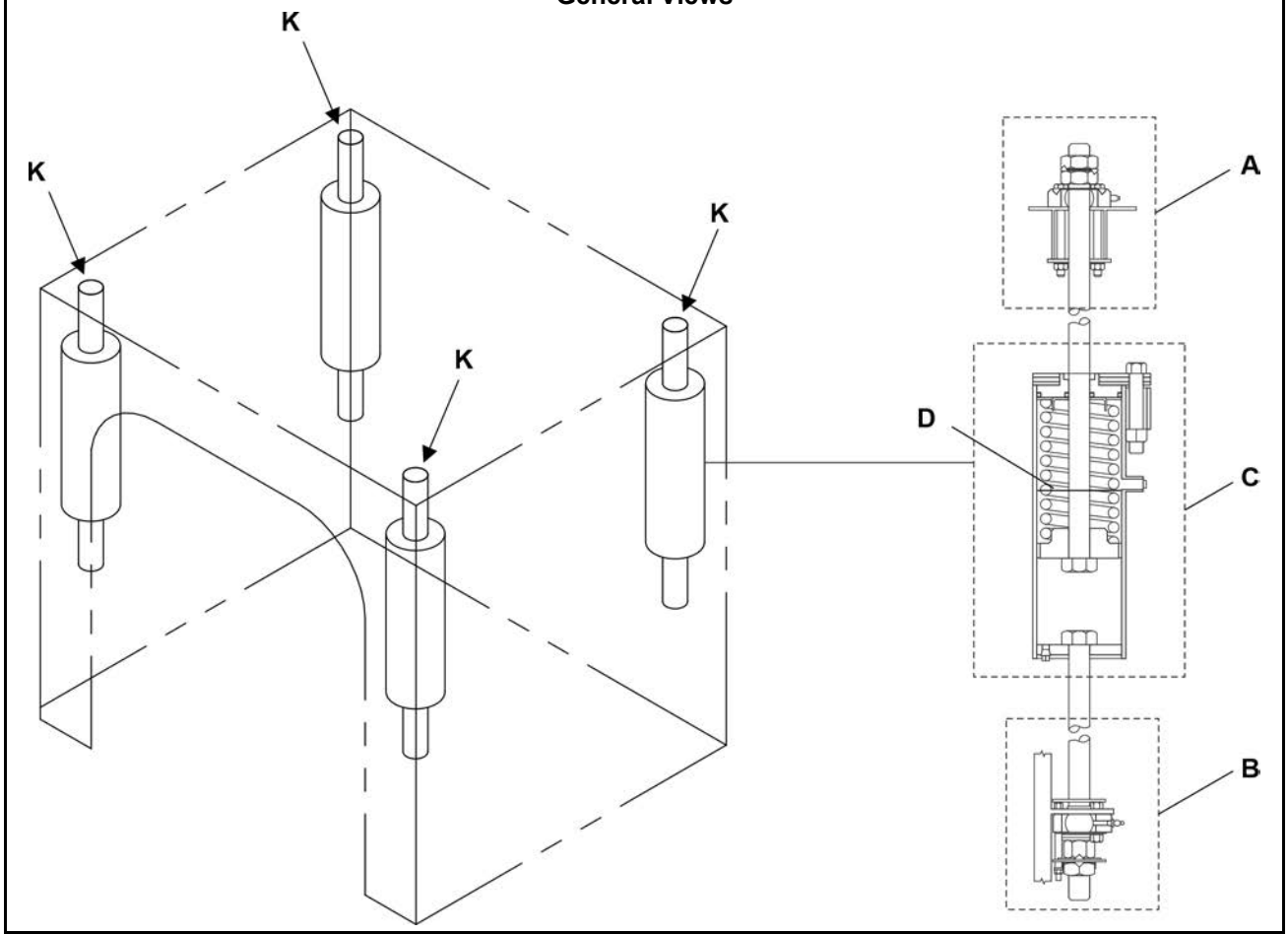
Suspension Cylinders

3 Sheets

6044WP2, 6044WP3

Figure 56. Suspension Cylinders

General Views



Legend

A . . . Ball bushing, upper
B . . . Ball bushing, lower
C . . . Suspension cylinder
D . . . Oil level
K . . . Cylinder identification letter: K

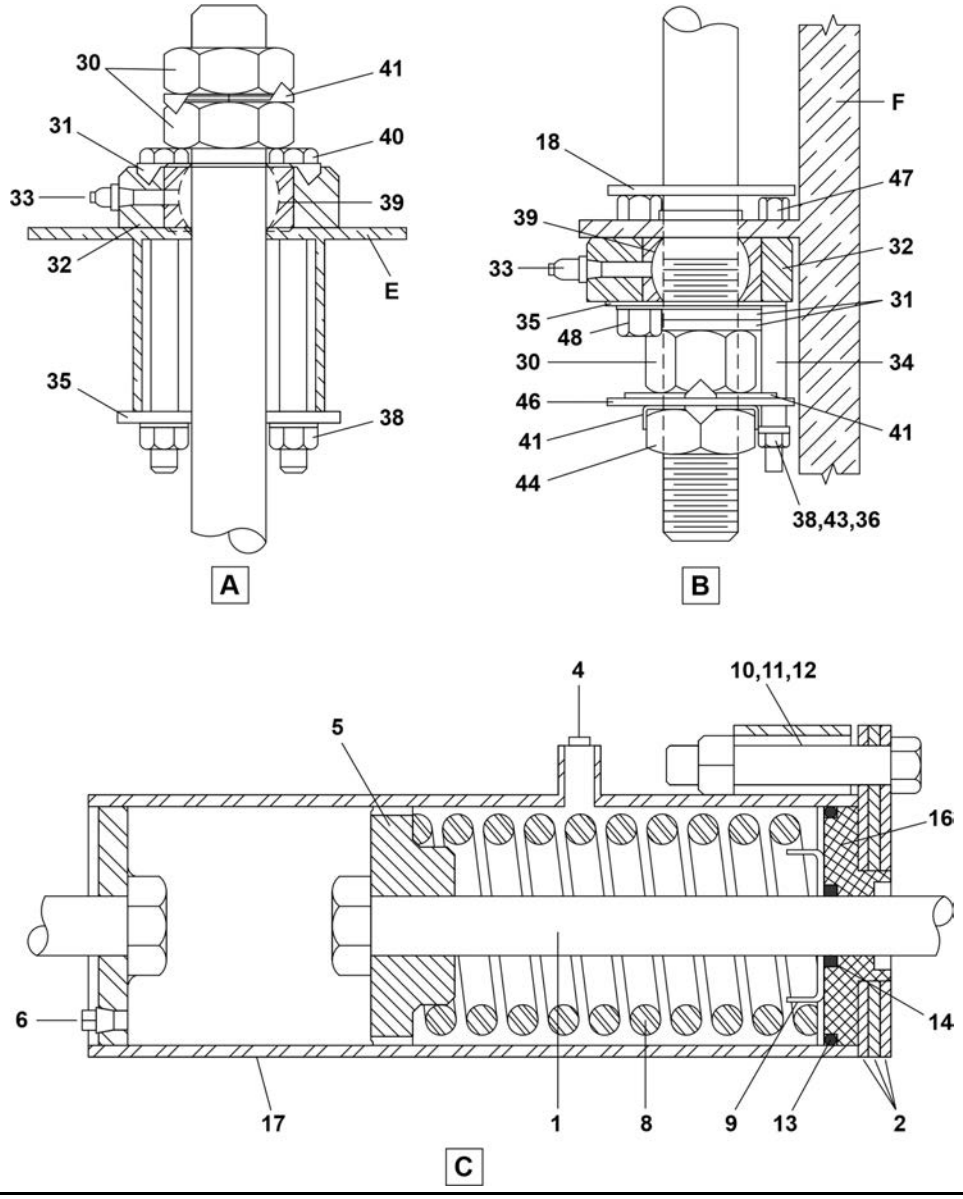
Suspension Cylinders

3 Sheets

6044WP2, 6044WP3

Figure 57. Mounting Components

Cross Sections



Legend

A . . . Ball bushing, upper
B . . . Ball bushing, lower
C . . . Suspension cylinder
E . . . Cross brace
F . . . Shell

Suspension Cylinders

3 Sheets

6044WP2, 6044WP3

Table 29. Parts List—Suspension Cylinders

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 29 031K	*HYDROCUSHION CYL ASSY-"K"	
Components				
all	1	02 18244	BOLT=HYDCYL 27+7/8LG+KEYWAY	
all	2	02 18840A	UPCAP=HYDROCYL 42+52+60	
all	4	5SP0KGFSS	NPT PLUG 1/2 SQSOLID GALSTL	
all	5	X2 18228	PISTON=HYDROCYL 6"- 3 NOTCH	
all	6	5SP0GHFHKM	NPT PLUG 3/8"-HEXCSMAGNETIC ZN	
all	8	03 09016	MAIN SPRING 1035LB/IN BLUE	
all	9	02 18619	BUSHING RETAINER + CAD	
all	10	15B237	HXCAPSCR 1-8UNC2AX5.5 SAEGR5 Z	
all	11	15G255A	SQNUT 1-8UNC2B SAE ZINC GR2	
all	12	15U400	LOCKWASHER MEDIUM 1" ZINCPL	
all	13	60C159A	ORING 5+1/2ID 1/4CS BN70 #433	
all	14	24S040	SEAL URETHNE 1-7/16 2.25 13/32	
all	16	02 18839A	MACHBUSH HYDRCYL CAP #433-OR	
all	17	W2 18233	*HYDCUSH CYL WLDMT 20"X22"	
all	18	02 175034	SHIELD-BALLBUSH-4/HYDRO MACH	
all	30	15G268	HXFINJAMNUT 1+1/2-12UNF2B ZINC	
all	31	02 18571A	PISTON ROD WASHER-.25"TK	
all	32	X3 06252	RETAINER-BALBUSH=4/72WEDU	
all	33	54M025	HYDFIT 1/8"-90 ALEMITE 1613-B	
all	34	27B240	SPCRROLL.5ID.813L.062T STLZNC	
all	35	02 18534	HOLDPLATE= BALLBUSH ZNC/CAD	
all	36	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
all	38	15K203	HXTAPSCR TFL 1/2-13X5 GR5 ZINC	
all	39	54A705	SPHPLNBRG 1.5"= ROLLBRG#B24-L	
all	40	15N037	HXCAPSCR 1/2-13UNC2AX6.5 GR5 Z	
all	41	02 18256	LOKWASH=TONGUE HYDROCUSHION	
all	43	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	46	02 18795B	WASH-TIMING=HYDRO CYL 75DEG	
all	47	15K191	HXCAPSCR 1/2-13UNC2AX2.5 GR5 Z	
all	48	15G231	HXFINJAMNUT 1/2-13UNC2B ZINC G	

4 Shell, Cylinder & Door

BNWD6M01 / 2020125 BNWD6M01 0000278868 A.5 3/19/20, 3:37 PM Released

4.1 Door Seal Replacement on Rapid Load Models

BNWD6M01.C09 0000279103 C.2 A.5 A.1 3/17/20, 2:50 PM Released

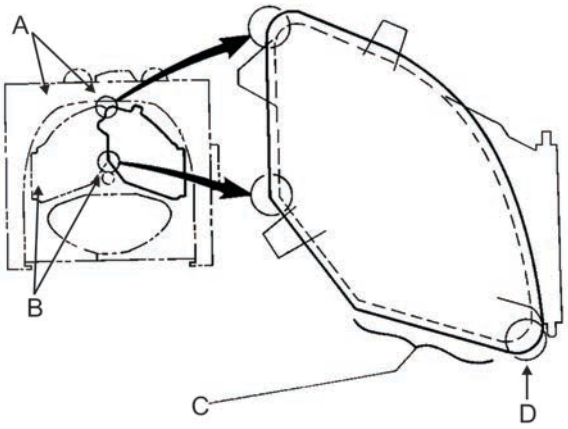
4.1.1 Door Seal Replacement

BNWD6M01.T01 0000278867 C.2 A.5 A.3 3/17/20, 4:36 PM Released

The seal components referred to herein are contained in kits K28 0005R (for 60" machines) or K36 0003R (for 72" machines).

1. Remove old seal from the door cavity and carefully pull air tubing out of inner door so as not to cut tubing.
2. Remove as much as possible of the old adhesive from the rubber filler strip inside door cavity.
3. Carefully remove old seal from the air tubing fittings and attach new seal.
4. Carefully stretch new seal around door and into cavity. Because the new seal is fabric reinforced it is slightly narrower than the old style rubber seal; the wall is thinner and it does not stretch as easily. It will therefore feel much tighter than the all rubber seal when stretching it over the edge of the door.
5. After new seal is fitted and aligned into the door cavity, close both doors and inflate. Check to see that seals contact each other along the seam between the doors and that the seal contacts the shell front all around. To check this, attempt to slide a piece of paper between these surfaces.
6. If the seal does not contact the shell at locations A or D (see Figure 58: Door Seal Checks, page 91), open the doors and stretch the seal toward these points.
7. If seals do not contact each other or the shell front in other areas, install rubber shims (part number 02 175267) between seal and filler strip as required to bring the seal further out from the door. Use adhesive (part number 20C015A) to attach shims to filler strip.
8. If seals do not contact each other at locations A and B, (see Figure 58: Door Seal Checks, page 91), then at these points, glue tapered patches (part number 02 175134), as required, to the outside of seal (using adhesive 20C080C) to add thickness.
9. After seal has been completely fitted, roll seal up on one side, and with a small brush, paint adhesive (part number 20C015A) on filler strip to hold seal in place.

Figure 58. Door Seal Checks



Legend

A . . . Location A—Seals must contact each other and shell front.

B . . . Location B—Seals must contact each other and shell front.

C . . . Location C—Seals must not drag against shell when door opens.

D . . . Location D—Seal must contact shell front.

4.1.2 Door Seal

BNWD6M01.C01 0000278865 C.2 A.5 A.2 3/13/20, 2:01 PM Released

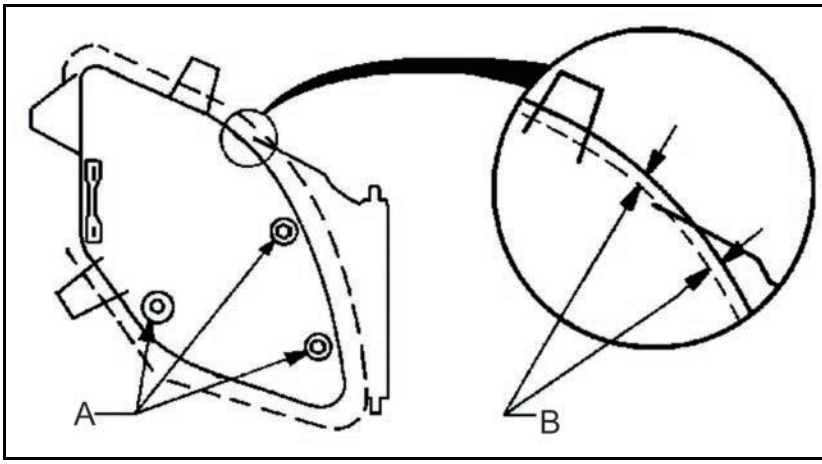
Preventive Maintenance

4.1.2.1 Check Door Alignment About the Shell Opening

BNWD6M01.C02 0000278864 C.2 A.5 A.4 3/19/20, 8:22 AM Released

Each door must be centered in its respective shell front opening. If the doors are not centered, the inflatable door seals will drag on the sealing edge of the shell front as the doors are opened and closed. The doors can be moved in any direction for centering by loosening the 1/2" hex cap nuts which hold the door assembly to the hinge cross brace as shown Figure 59, page 91.

Figure 59. Door Alignments



Legend

A . . . Adjusting 1/2" hex cap nuts.

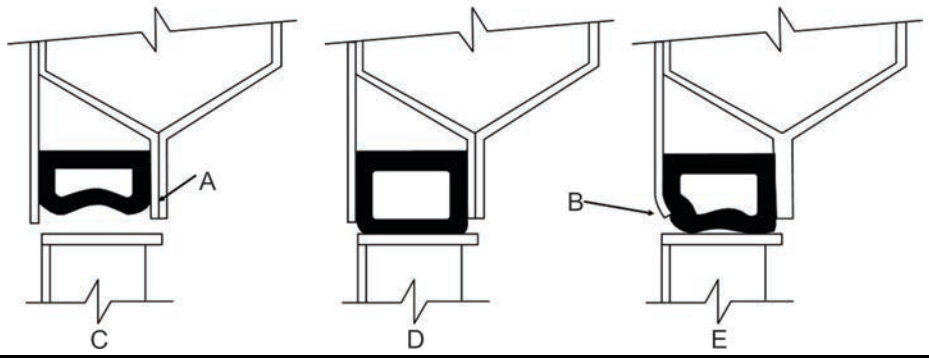
B . . . Equal distance around entire door.

4.1.2.2 Check Condition of Door Seal Channel

BNWD6M01.C03 0000278863 C.2 A.5 A.4 3/19/20, 8:22 AM Released

Be certain the sides of the channel in which the door seal fits are straight and that mainly the inner edge is not bent. See Figure 60: Door Alignment, page 92 . Because outer edge is double thickness, it is not likely to be bent out of shape. But it is possible for the inner edge to become bent as shown in Figure 60, page 92.

Figure 60. Door Alignment



Legend

A . . . Double thickness
B . . . Bent retaining channel
C . . . Normal deflated
D . . . Normal inflated
E . . . Abnormal inflated condition

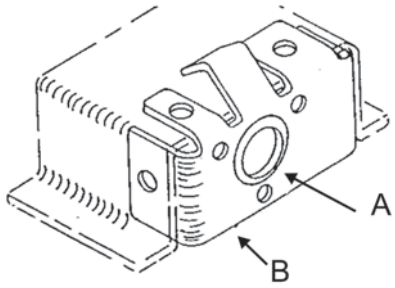
4.1.2.3 Replace Worn Striker Plates

BNWD6M01.C04 0000278892 C.2 A.5 A.3 3/17/20, 4:36 PM Released

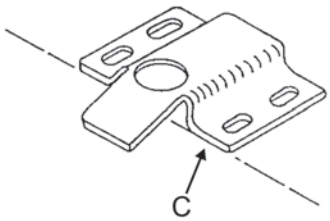
Each of the outer doors are securely held in the closed position by air latches. These air latches snap into striker plates bolted to the shell front. If the hole in these striker plates becomes worn, the shell doors will be allowed to move while the machine is in operation. It will look as though the doors are “breathing.” This will cause rapid wear and premature seal failure. Striker plate components are shown in Figure 61, page 92.

Figure 61. Worn Striker Plate

60”+72” Rapid Load 2–pocket



72” Rapid Load 2–pocket only



Legend

A . . . Nylon brushing 02 18954
B . . . Upper door striker plate, right 02 18978; left 02 18953
C . . . Lower door striker plate 03 06209

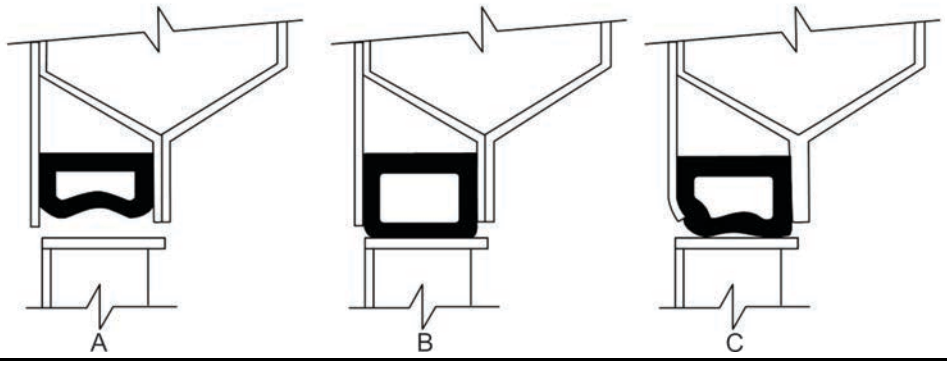
4.1.2.4 Check Door Alignment In and Out

BNWD6M01.C05 0000278891 C.2 A.5 A.2 3/13/20, 2:01 PM Released

Misalignment of the doors in and out of the shell front opening can be most often attributed to worn striker plates as described above. The doors should be adjusted so that, with one door open and one door closed, the closed door’s inflatable seal channel will be centered on the shell front sealing surface when viewed edgewise (see Figure 62, page 93). If the door latch mechanism is loose, worn, or mismounted the door can travel too far into the machine, with the result that the

inflatable seal can protrude past the door channel and the shell front sealing surface and be scissored when the door is reopened.

Figure 62. Door Seals



Legend

A... Normal inflated condition
B...Wrong.. : door too far in shell front
C...Wrong.. : door too far out in shell front opening

4.1.2.5 Check Seal Air Pressure

BNWD6M01.C06 0000278889 C.2 A.5 A.2 3/13/20, 2:01 PM Released

Air pressure on these inflatable door seals should be set and maintained at 25 to 28 PSI. Too high air pressure will cause blowouts and too low air pressure will cause not enough contact between seal and shell front, thus movement and rapid wear. Kit K28 0011, which contains a fixed at 25 to 28 PSI regulator, plus a pressure gauge is available from the Milnor® factory. If yours is inoperative, it should be replaced.

4.1.2.6 Check Door Bumper

BNWD6M01.C07 0000278888 C.2 A.5 A.2 3/13/20, 2:01 PM Released

Be sure large rubber bumper (part number 60C075) on right hand door is in place and not worn.

4.1.3 Seal Vacuum Pump Feature

BNWD6M01.C08 0000278887 C.2 A.5 A.2 3/13/20, 2:01 PM Released

Since approximately June of 1980, all production machines have a vacuum pump which delays the opening of the door by 7.5 seconds and during that time literally sucks the air from the inflatable door seal. This is the single greatest extender of the life of the inflatable door seal. This feature is retrofitable to all 60" and 72" WE2 machines manufactured prior to June 1980. Order retrofit kit, part number K28 0013.

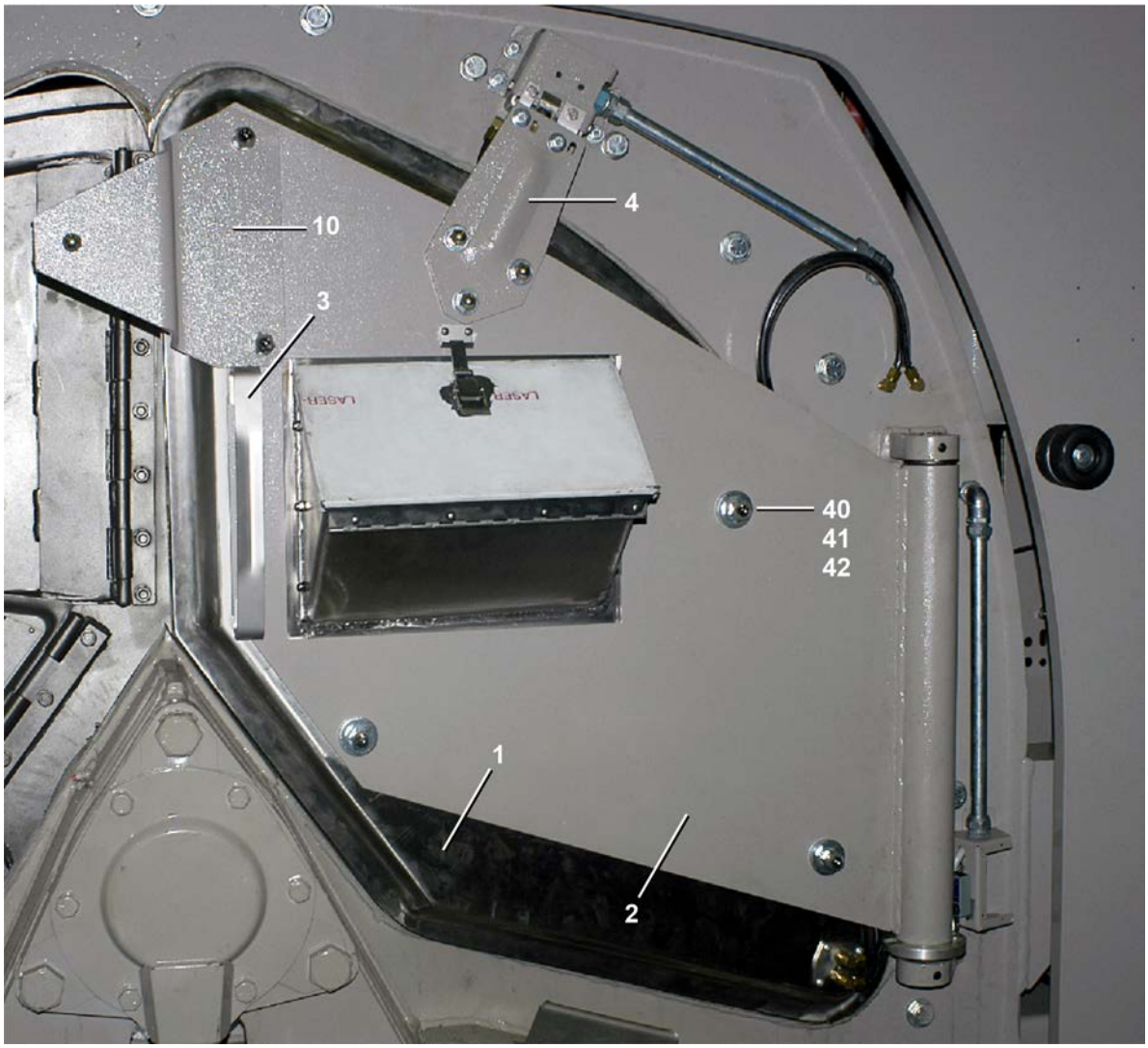
BPWD6D01 / 2020356 BPWD6D01.1 0000305537 C.2 A.3 8/28/20, 4:44 PM Released

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Figure 63. General View



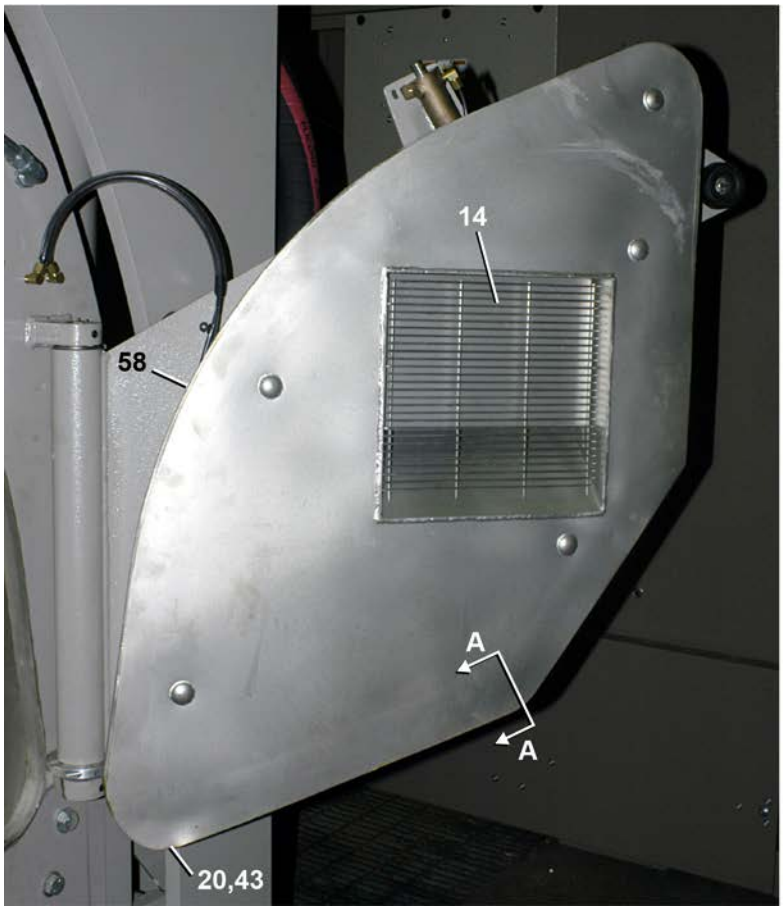
Components, Shell Doors

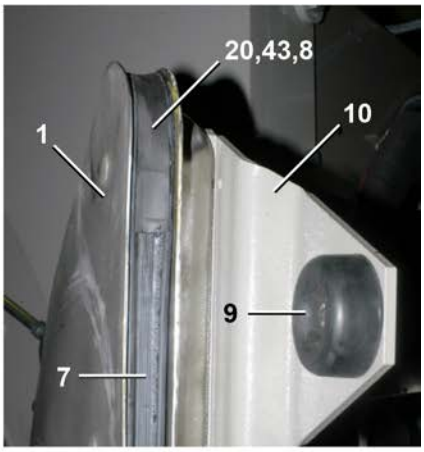
7 Sheets

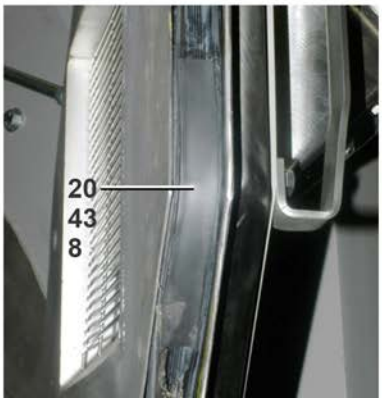
6044WR2, 7244WR2

Figure 64. Shell doors

Inside View, Detailed Views







Legend

A–A . . Cross section: door seal

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Figure 65. Door Seal

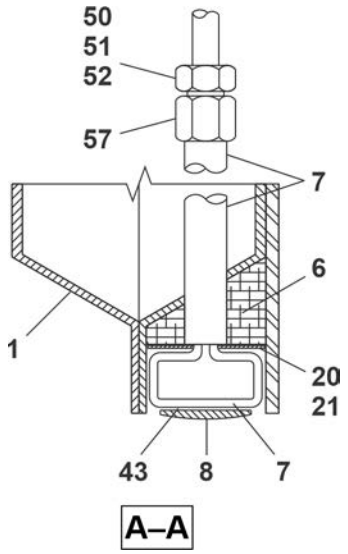
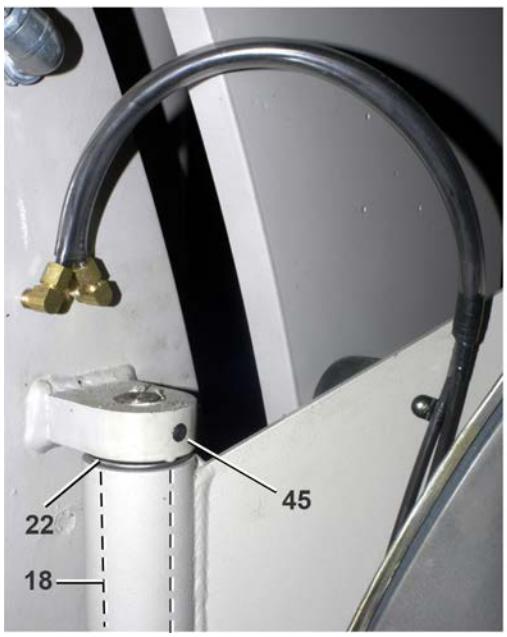
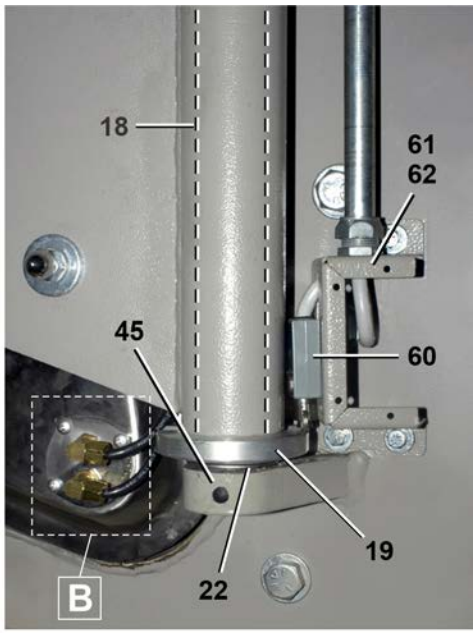


Figure 66. Door Hinge

Detailed Views





Legend

B . . . Detailed View: Compressed Air Lines

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Figure 67. Compressed Air Lines, Door Latch

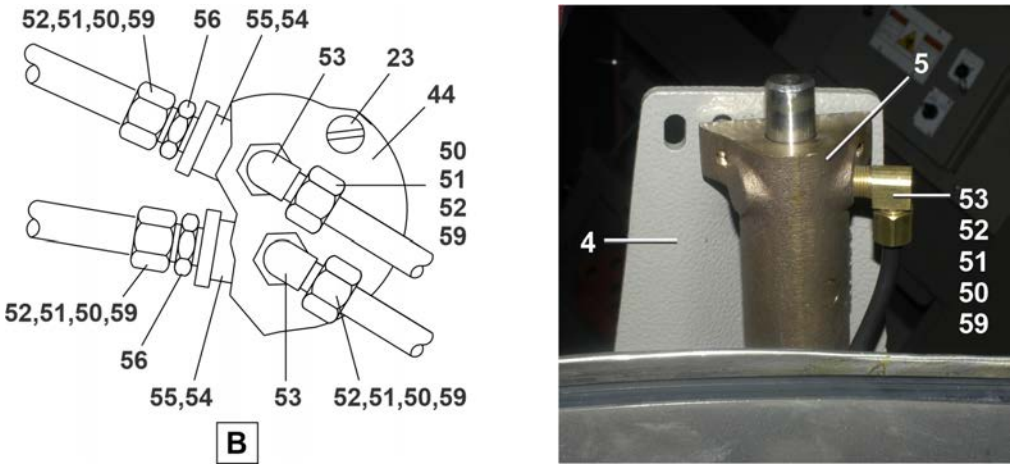
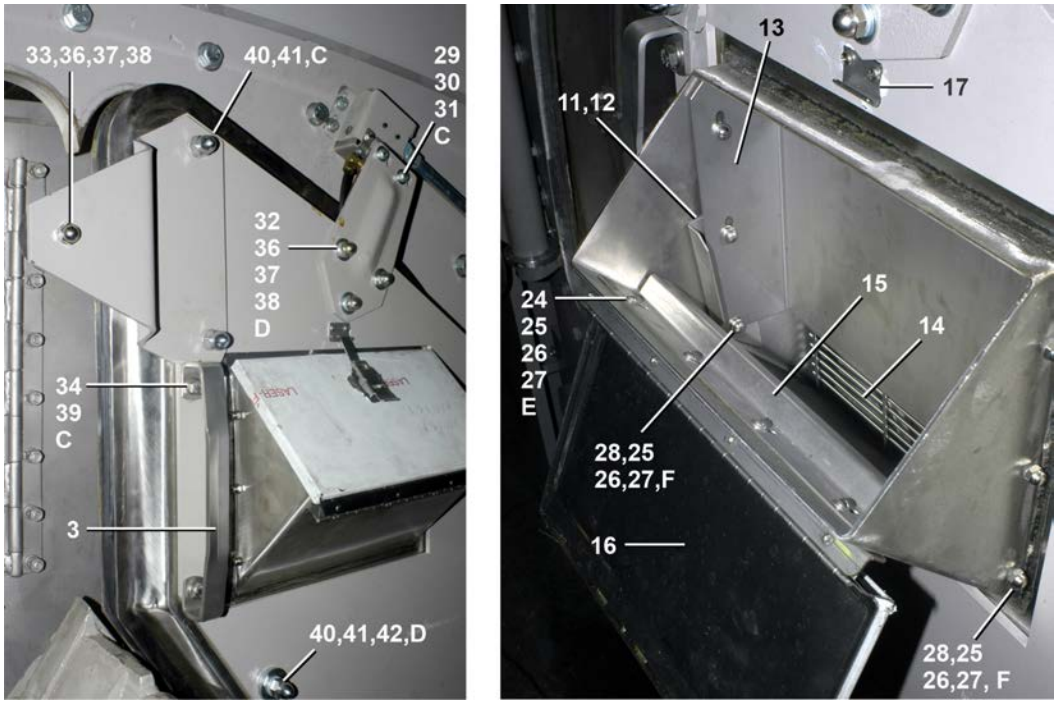


Figure 68. Shell Door, Soap Chute

General View



Legend

C . . . 2 instances
D . . . 3 instances
E . . . 4 instances
F . . . 6 instances

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Figure 69. Components of Kit, Door Seal

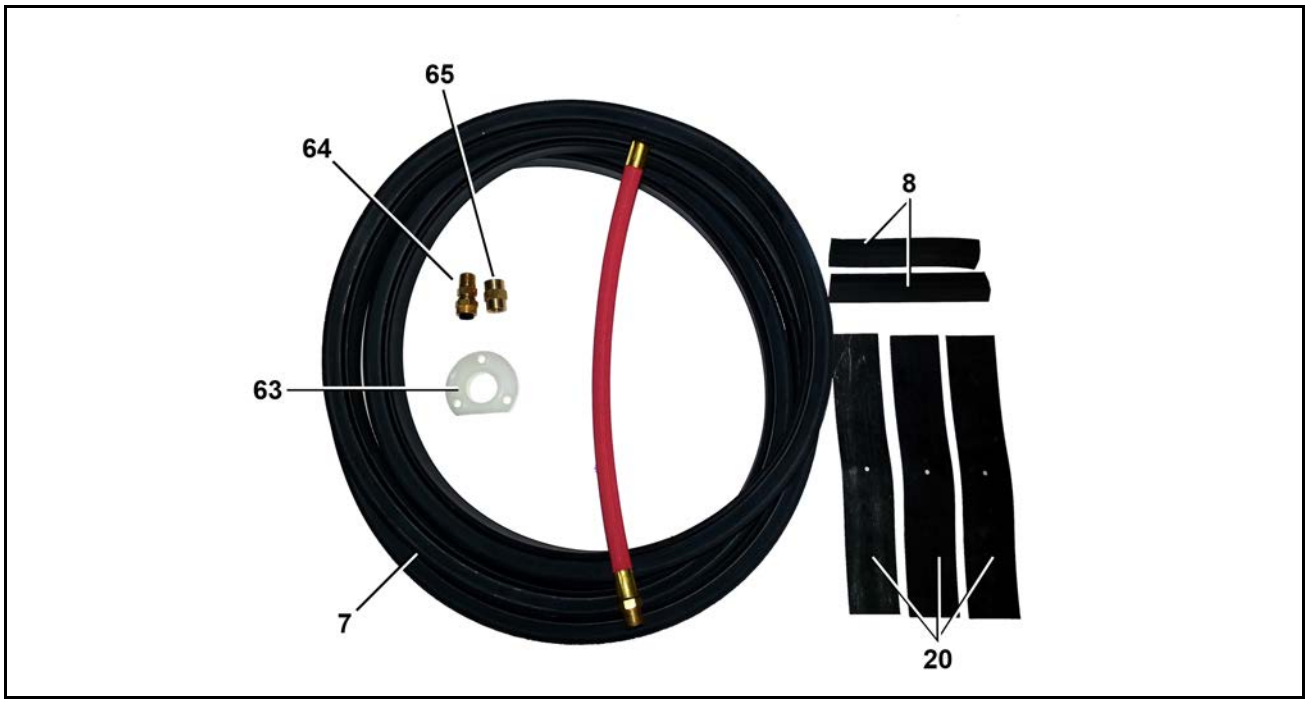


Table 30. Parts List—Components, Shell Doors

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
			Reference Assemblies	
	A	SA 28 122	*SHELL DOOR ASY 60WE2 RIGHT	60044WP2, WR2 Right Door
	B	SA 28 119	*SHELL DOOR ASY 60WE2 LEFT	60044WP2, WR2 Left Door
	C	SA 36 010	*SHELL DOOR ASY 72WE2 RIGHT	72044WP2, WR2 Right Door
	D	SA 36 011	*SHELL DOOR ASY 72WE2 LEFT	72044WP2, WR2 Left Door
	E	K28 0005R	KIT INFLATABLE DOOR SEAL 6044	60044WP2, WR2
	F	K36 0003R	KITINFLATABLE DOOR SEAL 7244	72044WP2, WR2
			Components	
A	1	W2 18960	* SHELL DOOR-60"WED-RIGHT	
B	1	W2 18959	* SHELL DOOR WELD-LEFT=WED	
C	1	W3 06061	* SHELLDOOR WELDMENT-RITE=WED	
D	1	W3 06060	* SHELLDOOR WELDMENT-LEFT=WED	
A	2	W2 18874	* HINGEPLATE WELDMNT-RITE=WED	
B	2	W2 18873	* HINGEPLATE WELDMNT-LEFT=WED	
C	2	W3 06063	* HINGE PLATE WELDMENT-RIGHT	

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Table 30 Parts List—Components, Shell Doors (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
D	2	W3 06062	* HINGE PLATE WELDMENT-LEFT	
all	3	02 175037	HANDLE=SHELDOR=WED-SS	
all	4	02 175131	PLATE-LATCH MOUNT RT 60+72WE	
all	5	SA 10 020	* DOORLATCH ASSY-SMALL	
all	6	02 18888	DOORFILLER RUBBER 75FT/COIL*	
ABE	7	02 18889B	60"DORSEAL,G-28-6X100"	
CDF	7	03 06050B	72"DORSEAL,G-28-6X124+1/2"	
all	8	02 175134	PATCH=SHELL DOOR GASKET	
all	9	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
AB	10	02 18961	PLATE=DOOR OPENING 60WED	
CD	10	03 06068	PLATE=DOOR OPENING 1/72WED	
all	11	02 18916H	LF SIDE SPLAS DEF=7244 WE2	
all	12	02 18916J	RT SIDE SPLAS DEF=7244 WE2	
all	13	02 18916L	UPPER SPLASH DEF=7244 WE2	
all	14	02 19308	GUARD=60+72WE SOAP CHUTE	
all	15	02 18916K	LOWER SPLASH DEF=7244 WE2	
all	16	SA 28 125A	*LID ASSY=SOAP CHUTE-GASKETED	
all	17	02 18640	HOOK=SOAPCHUTE LATCH	
AB	18	02 18878	PIN-HINGE=SHELL DOOR 60WED	
CD	18	03 06067	PIN=DOOR HINGE 72WED	
all	19	54JH13562B	HINGE COL SPLIT 3.56 FL TOP	
all	20	02 175267	RUBBER STRIP=CORNERS+DR STEM	
all	21	20C017	FUEL RESCOAT 3M#EC776 QUART	
all	22	54A716	FLGBRG 1"ID SEAL SCHATZ#TW-25	
all	23	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	24	15N130	RDMACSCR 10-24UNC2A X 1/2 SS18	
all	25	15U135	FLATWASH#10 .4370DX.203IDX.04T	
all	26	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	27	15G121	HXCAPNUT 10-24UNC2 #3266BR NKL	
all	28	15N141	RDMACSCR 10-24NCX3/4 SLOTTED S	
all	29	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	30	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	31	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	32	15K097	PLOWSCR-#3 3/8-16NCX1 BLK GR5	

Components, Shell Doors

7 Sheets

6044WR2, 7244WR2

Table 30 Parts List—Components, Shell Doors (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	33	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC	
all	34	15K084S	HXCAPSCR 3/8-16NCX5/8 SS18-8	
all	35	15P100	#8 X 3/8 PHILPANHD TYPE B SMS	
all	36	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	37	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	38	15G200	HXCPNUT 3/8-16 UNC2A 5/8X1/2	
all	39	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	40	15G228	HXCPNUT 1/2-13 UNC GR-2	
all	41	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	42	15U490	FLTWASH 1+1/2X17/32X1/4 ZINC	
all	43	20C018B	3M INDUS ADH 5OZ #4799	
all	44	02 18956	COVRPLAT=WED SHELDOR AIRLINE	
all	45	15Q140	SOKSETSCR CUP 3/8-16X1/2 BLK	
all	50	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	51	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	52	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	53	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	54	15U243	FLTWASHER 7/8ODX33/64IDX16GA Z	
all	55	5SL0EBEA	NPTELB 90DEG 1/4 BRASS 125#	
all	56	53A008B	BODYMALECON.25X.25COMP#B68A-4B	
all	57	53A005F	BODYFEMCON.25X1/8COMP#B66A-4A	
all	58	12P1AGSB	SNAPBUSH 3/8"MH X 1/4" T=1/8	
all	59	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	60	09RM02212S	CAPSW 12' 180DEG ROLLER SILVER	
all	61	02 19139	BRKT=60/72WE3 2ND DR SW RT	
all	61	02 19139B	BRKT=60/72WE3 2ND DR SW LF	
all	62	02 19139A	COV=60/72WE3 2ND DR SW	
EF	63	02 18954	BUSHING LIBTXT	
EF	64	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
EF	65	5SCC0CBE	NPT COUP 1/8 BRASS 125# 103A-A	

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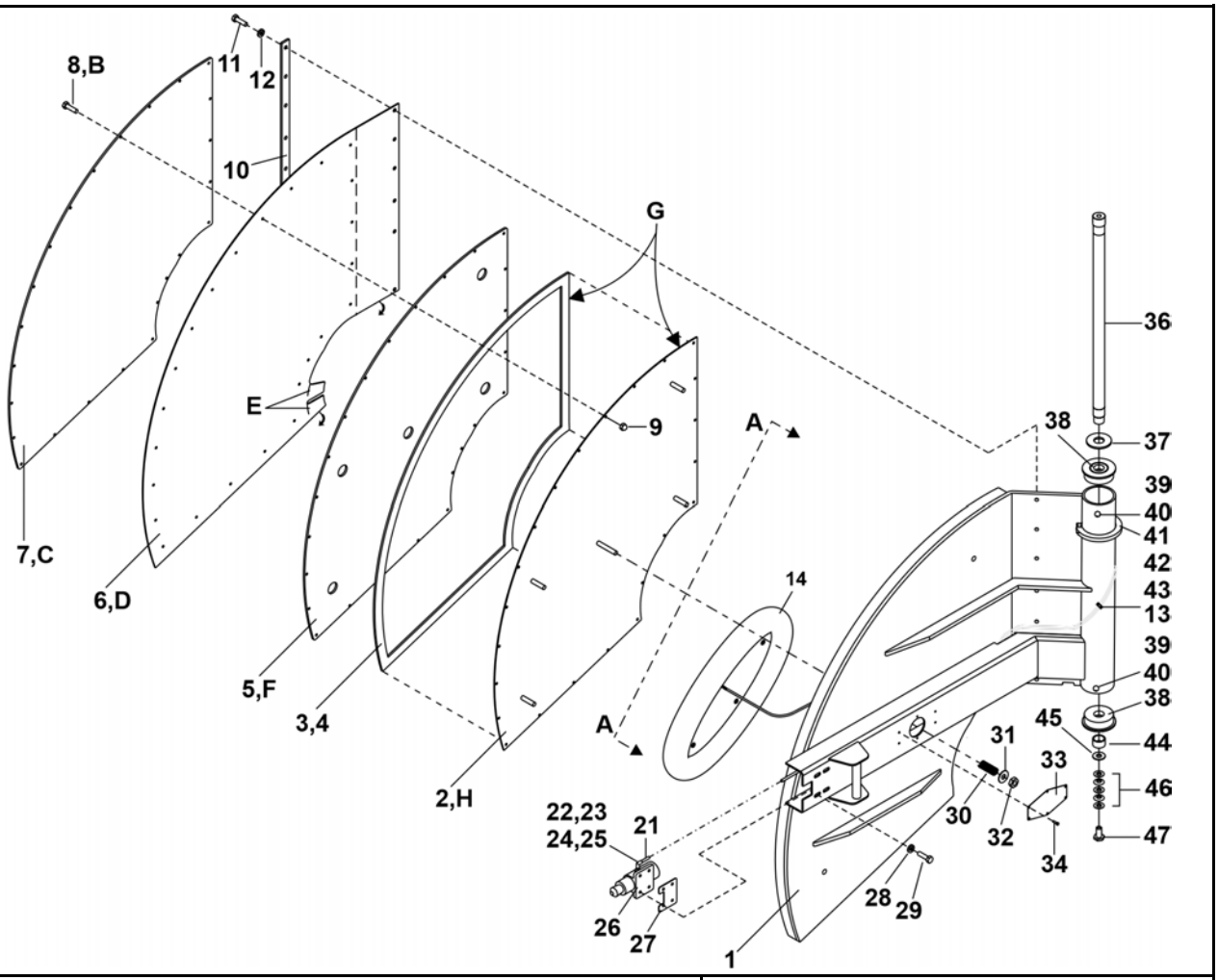
Shell Doors

4 Sheets

60044SR2, 60044SR3, 6044WR3

Figure 70. Exploded Views



Adjust the Pressure Plate

1 . . . With the inner tubes deflated, tighten the tension nut (item 32), until two threads extend beyond the nut.

2 . . . Check the spring with air pressure applied to the inner tubes. Verify that the spring is not over compressed. If the spring height is only 3/4”, it will be necessary to loosen the tension nut.

NOTE: If the spring is compressed too much, the air bags will not be able to inflate and properly seal the door.

Legend

A . . . Detail view A–A

B . . . 24 instances

C . . . Liner

D . . . Door gasket

E . . . Tabs. Fold gasket tabs over the edge of the door and anchor with holding strips (item 35) and screws on the final assembly.

F . . . Fill plate

G . . . Apply glue (4) to both surfaces.

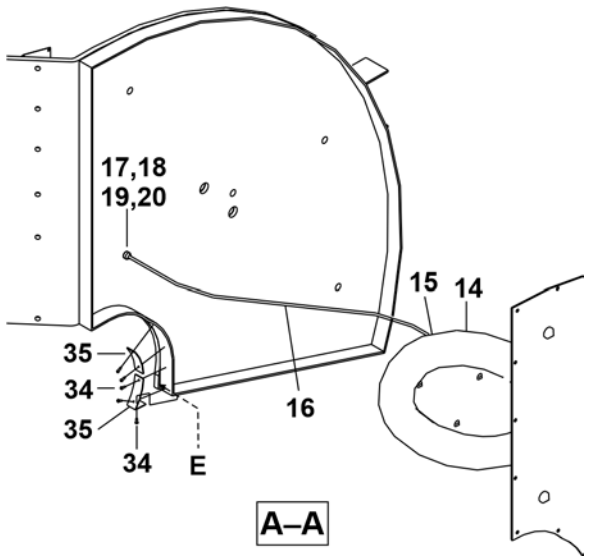
H . . . Pressure plate

Shell Doors

4 Sheets

60044SR2, 60044SR3, 6044WR3

Figure 71. Detail View



Legend

A–A . . Detail view A–A

E . . . Tabs. Fold gasket tabs over the edge of the door and anchor with holding strips (item 35) and screws on the final assembly.

Table 31. Parts List—Shell Doors

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	SA 28 118	*SHELL DOOR ASY 60SG2 SOIL	6044SR2 SOIL SIDE
	B	SA 28 117	*SHELL DOOR ASY 60SG2 CLEAN	6044SR2 CLEAN SIDE
	C	SA 28 043	SHELLDOOR ASSY 60"SG3SOIL	6044SR3 SOIL SIDE
	D	SA 28 044	SHELL DOOR ASY 60SG3 CLEAN	6044SR3 CLEAN SIDE
	E	SA 28 017	SHELLDOOR ASSY 60"WE3	6044WR3
	F	SA 28 172	LINER ASSY SHELLDOOR 60SGD SS	A
	G	SA 28 171	LINER ASSY SHELLDOOR 60SGD CS	B
	H	SA 28 159	LINER ASSY=SHELLDOOR=WEH+SGH	CE
	J	SA 28 160	LINER ASSY=SHELLDOOR=SGH-CS	D
			Components	
A	1	W2 18846	* SHELDOR WELD 60SG2 SOILSIDE	SR2
B	1	W2 18847	* SHELDOR WELD 60SG2 CLEANSID	SR2
C	1	W2 18316	SHELDOR WELD 60SG3 SOILSIDE	SR3
D	1	W2 18319	SHELDOR WELD 60SG3 CLEANSID	SR3
E	1	W2 18143	SHELLDOOR WELDMT 60WE3 ONLY	WR3
F	2	W2 18861C	PRESSPLT WELD SHELDR 60SGD SS	
G	2	W2 18861E	PRESSPLT WELD SHELDR 60SGD CS	

Shell Doors

4 Sheets

60044SR2, 60044SR3, 6044WR3

Table 31 Parts List—Shell Doors (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
H	2	W2 18152A	PRESPLT WELD=SHLDR60SG3SS+WE	
J	2	W2 18152B	PRESSPLT WELD=SHLDR60SG3 CS	
all	3	60A006P	PORON STRIP .25X1 1/4# W EA=FT	
all	4	20C044	RUB/GASKET ADH 3M#EC1300 PINTS	
FG	5	02 18860A	FILLER=PLATE SHELLDOOR SGD	
HJ	5	X2 18367	PLATE=DOOR FILLER	
FG	6	02 175180	GASKET=SHELLDOOR 2/60SGD	
HJ	6	02 175169	GASKET=SHELLDOOR 1/WE3	
F	7	02 18862A	LINER=SHELL DOOR RT 60SGD	
G	7	02 18862B	LINER=SHELL DOOR LT 60SGD	
HJ	7	02 18150	LINER=DOOR BACK	
all	8	15K039A	BUTSOKCPSCR 1/4-20X7/8 SS 18-8	
all	9	15G164	HX THIN LOCKNUT NYL1/4-20 SS	
all	10	02 175149	STRIP=RUBBER DOOR GASKET-SG	
all	11	15N174	HXCAPSCR 1/4-20UNC X5/8SS18-8	
all	12	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	13	12P016	CABLE CLMP-BLACK UL APPROVED	
ACE	14	02 18982G	DOOR TUBE-60WEHU-PRES TUB	SOIL SIDE AND WP3
BD	14	02 18981G	DOOR TUBE-60SGH-PRES TUBE	CLEAN SIDE
all	15	02 18181	FITTING-BRASS FOR INNER TUBE	
all	16	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	17	53A040B	BODY=EL90MALE5/16X.25#B69A-5B	
all	18	53A060A	NUT BRASS 5/16 COMP#61A-5	
all	19	53A060	SLEEVE 5/16 COMP IMP#60-F	
all	20	53A509	TUBE INSERT 5/16"OD X .53"LG.	
all	21	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	22	53A059A	NUT 1/4"BR.HOLYOKE AND #61A-4	
all	23	53A500	SLEEVE DELRIN 1/4"OD#60PT-4	
all	24	53A501	TUBE INSERT .163"OD #63PT-4-40	
all	25	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
all	26	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	27	02 15633S	ADJPLATE=DOORLATCH SS	
all	28	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	29	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	

Shell Doors

4 Sheets

60044SR2, 60044SR3, 6044WR3

Table 31 Parts List—Shell Doors (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	30	02 18187	SPRING=OUTER DOOR 60 WEHU	
all	31	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	32	15G234	LOKNUT 1/2-13NC CAD FLXLOC#21F	
all	33	01 10020	NPLT SMALL "MILNOR" LOGO	
all	34	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	35	02 175231	PLATE=SHELL DOOR GASKET	
all	36	03 06145	HINGE PIN 60 SG2,SG3,WE2&WE3	
all	37	03 06136	WASHER,BRG BACKUP 72SG	
all	38	54A974975	TIM #L68111/L68149-1.3775"BORE	
all	39	X3 06146	BEARING ADAPTER 60&72 SG DR.	
all	40	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	
E	40	54M015	GREASEFIT 60X36/60X44 1610BL	
all	41	54JH15500A	HINGE COL SPLIT 5.50 FL TOP	
all	42	15K045E	SKCPSCR 1/4-20X2 BLK	
all	43	15Q091	SOKSETSCR CUP1/4-20X5/8BLK	
AB	44	03 06132	BUSHING,HINGE PIN 60&72 SG	2 POCKET SR2
CDE	44	03 06148	BUSHING,HINGE PIN 60 SG3PWE3	3 POCKET WR3, SR3
all	45	15U314	FLATWASHER(USS STD) 5/8" ZNC P	
all	46	15U521	SPRINGWSHR.630ID 1.250D.051T	
all	47	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
E	47	51P034	SCREWSOCSET 5/8-11X5/8 PLASTIC	

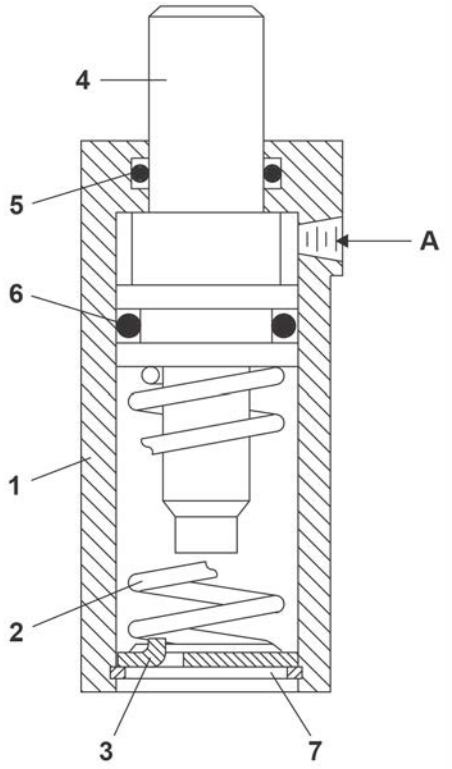
BPWD6D02 / 2020356 BPWD6D02.1 0000305578 C.2 A.3 8/28/20, 4:54 PM Released

Door Latch

1 Sheet

Figure 72. Door Latch

Cross Section



Legend

A . . . Compressed air

Table 32. Parts List—Door Latch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	SA 10 020	* DOORLATCH ASSY-SMALL	
Components				
all	1	02 10188	CYLINDER=DOORLATCH OUR MATL	
all	2	02 10222	SPRING=DOOR LATCH=BALCOM	
all	3	02 10221	RETAINER-DOORLATCH SPRING	
all	4	Y2 10314	* PLUNGER=DOOR INTERLOCK	
all	5	60C112	ORING 5/8IDX3/32CS BUNA70 #114	
all	6	60C115	ORING 3/4IDX1/8CS BUNA70 #210	
all	7	17B014	INTRETRING IND#3000-X100-ST-ZD	

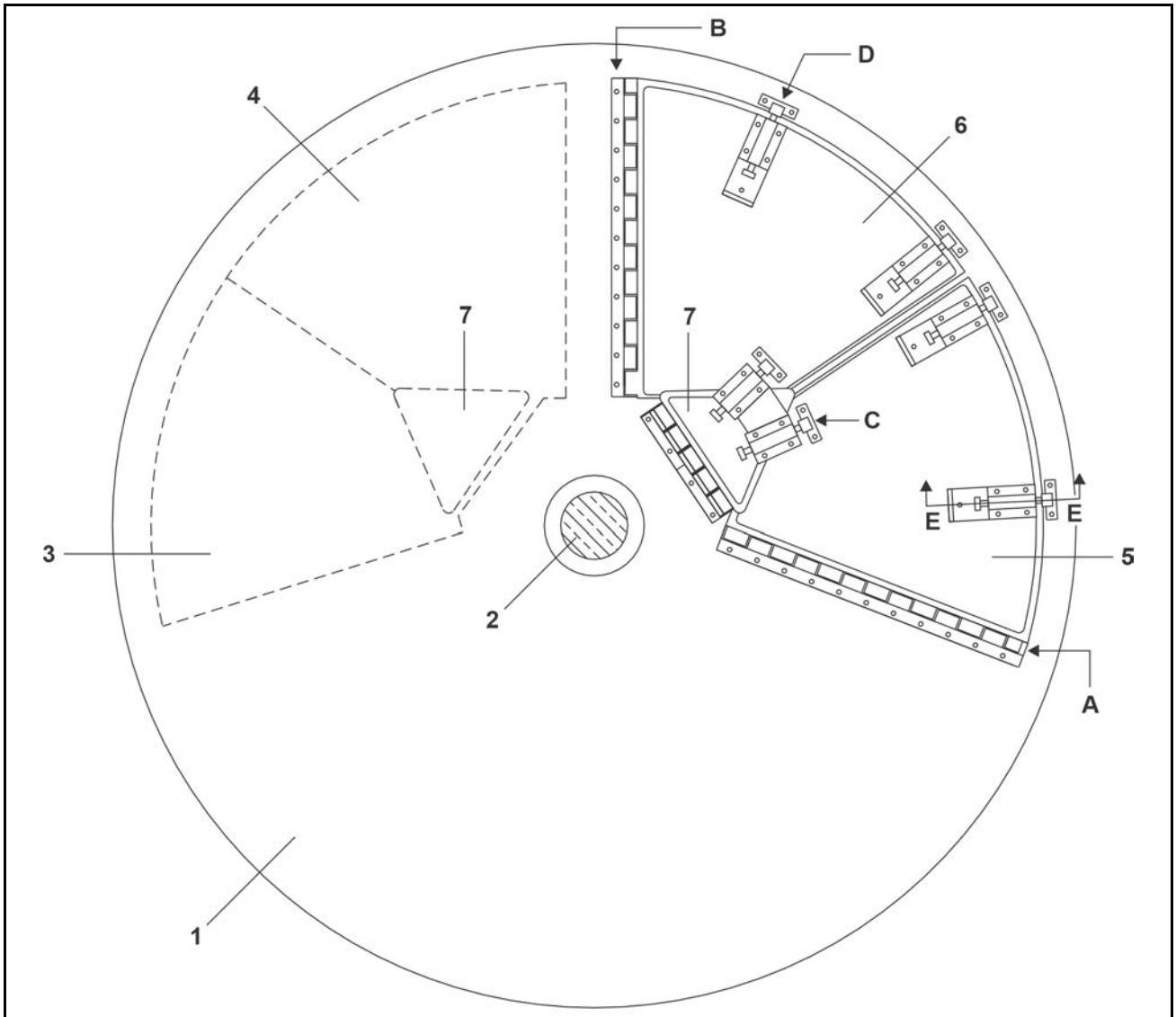
BPWD6D03 / 2020356 BPWD6D03.1 0000305605 C.2 A.3 8/28/20, 4:59 PM Released

Cylinder Assembly and Cylinder Door Installation

3 Sheets

60044WR2, 72044WR2

Figure 73. Cylinder Assembly and Cylinder Door Installation



Legend

A . . . Detailed view, door hinge
B . . . Detailed view, door hinge
C . . . Detailed view, door latch
D . . . Detailed view, door latch
E-E . . Cross section, door latch

Cylinder Assembly and Cylinder Door Installation

3 Sheets

60044WR2, 72044WR2

Figure 74. Door Details, Installed View

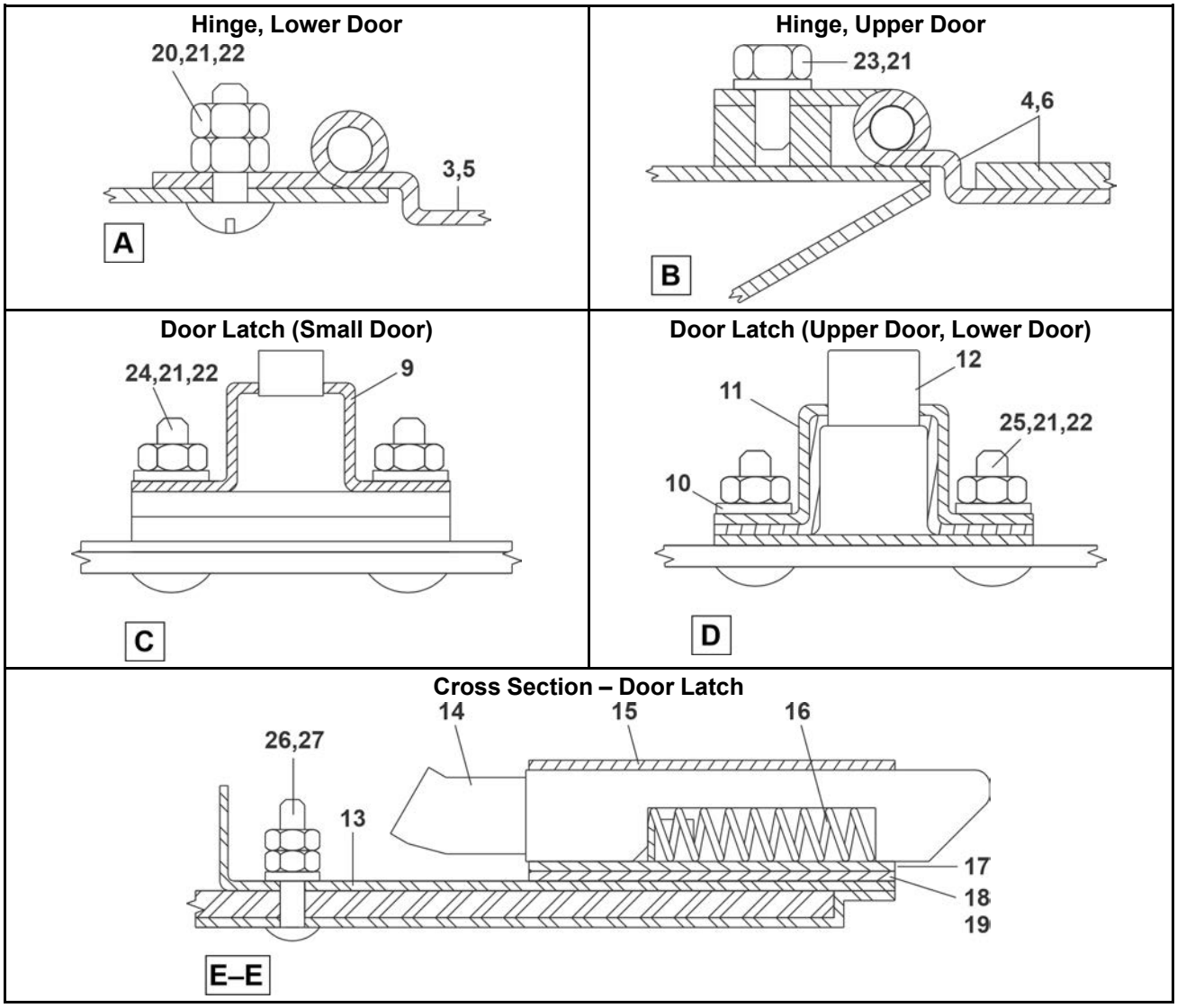


Table 33. Parts List—Cylinder Assembly and Cylinder Door Installation

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	ABS29010A	CYL+SHELL+BEAR 6044WE2 ONLY	6044WR2
	B	ABS36010A	CYL+SHELL+BEAR 7244WE2 ONLY	7244WR2
Components				
A	1	ACA19WE2A	* CYL ASSY=6044WE2 WELD/SHAFT	

Cylinder Assembly and Cylinder Door Installation

3 Sheets

60044WR2, 72044WR2

Table 33 Parts List—Cylinder Assembly and Cylinder Door Installation (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
B	1	ACA36WE2A	* CYL ASSY=7244WE2 WELD/SHAFT	
A	2	Y2 19216	MAINSHAFT 6044	
B	2	Y3 06368	MAINSHAFT 7244WE2+3	
A	3	SA 28 110	CYLDOOR LOLT 60WE2+ MIN-REIF	
B	3	SA 36 003	CYLDOOR LOLT 72WE2+ MAX-REIF	
A	4	SA 28 111	CYLDOOR UPLT 60WE2+ MIN-REIF	
B	4	SA 36 004	CYLDOOR UPLT 72WE2+ MAX-REIF	
A	5	SA 28 112	CYLDOOR LORT 60WE2+ MIN-REIF	
B	5	SA 36 001	CYLDOOR LORT 72WE2+ MAX-REIF	
A	6	SA 28 113	CYLDOOR UPRT 60WE2+ MIN-REIF	
B	6	SA 36 002	CYLDOOR UPRT 72WE2+ MAX-REIF	
all	7	SA 28 114	CYLDOOR ASY,SMALL =60+72WE2	
all	9	X2 15201	KEEPER=CYLDOOR LATCH(MONEL)	
all	10	03 06174	KEEPER=DOORLATCH REINFORCE	
all	11	03 06167	COVER-LARGE CYLDOOR KEEPER	
all	12	X3 06166	KEEPER=CYL DOOR LATCH(MONEL)	
all	13	02 18869	SPACER-LATCH PULL BND@PRNT	
all	14	X3 06150	PLUNGER=LARGE CYLDOOR(CAST)	
all	15	03 06151	LATCHBODY-LARGE=CYLDOOR	
all	16	03 06156	SPRING=LARGE CYLDOOR LATCH	
all	17	X3 06152	PLATE = LARGE DOORLATCH	
all	18	03 06172	SHIM=DOOR LATCH-18GA	
all	19	03 06173A	SHIM=DOOR LATCH-11GA	
all	20	15A010	CARRSCR 3/8-16UNC2X1 SS SPECIAL	
all	21	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	22	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
all	23	15K084S	HXCAPSCR 3/8-16NCX5/8 SS18-8	
all	24	15K106E	BUTSOKCAPSCR 3/8-16NCX1+1/2 SS	
all	24	15A015	CARRSCR 3/8-16X1+1/4 18-8 SS	
all	26	15K042K	BUTSOKCAPSCR 1/4-20UNCX1+1/4 S	
all	27	15G170	HEXNUT 1/4-20UNC2 SS18-8	

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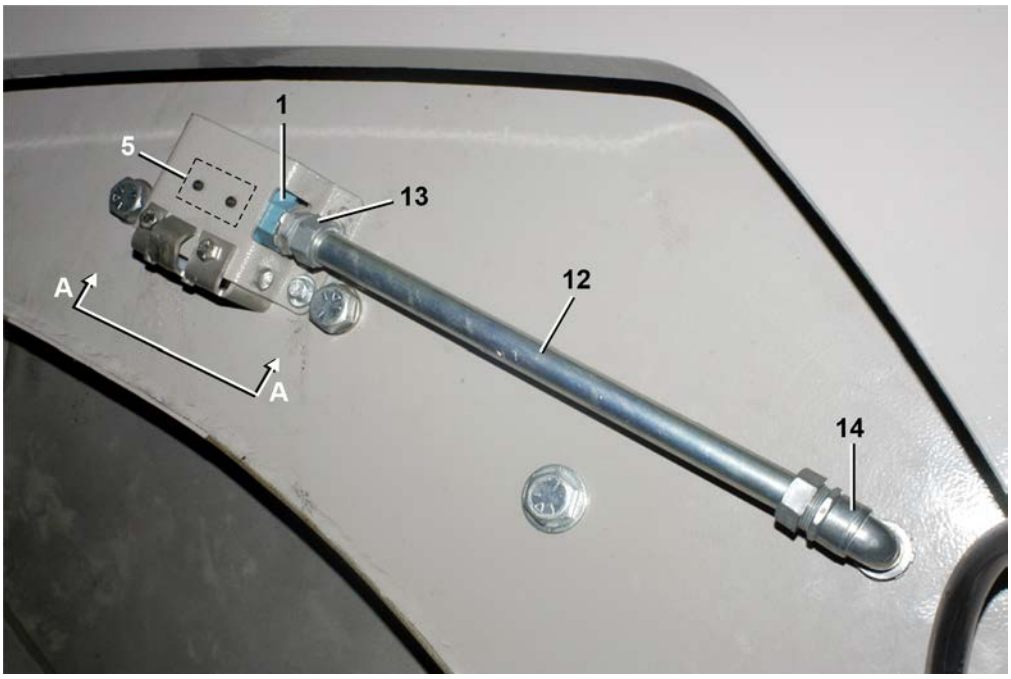
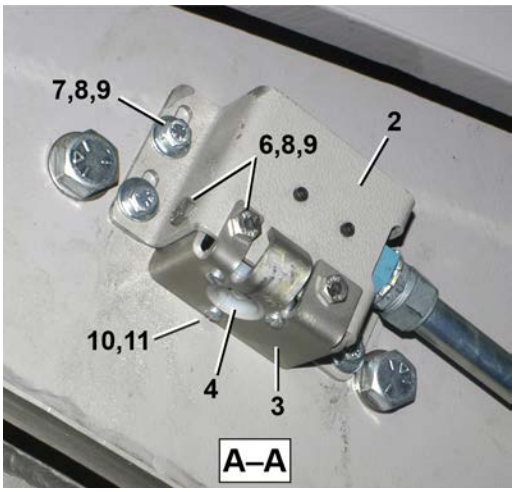
Door Interlock Switch

2 Sheets

6044WP2, 7244WP2





Legend

A–A . . Detailed view, door interlock switch

Door Interlock Switch

2 Sheets

6044WP2, 7244WP2

Table 34. Parts List—Door Interlock 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	AD 29 024L	*DOORINTERLOCK SW ASSY LEFT	
	B	AD 29 024R	*DOORINTERLOCK SW ASSY RIGHT	
Components				
all	1	09R012	MICSW SPDT PAINTED BZE6-RN 01	
A	2	02 18952	BRACKET=DOOR 60 WED	
B	2	02 18979	BRACKET=DORSW-RT-WED	
A	3	02 18953	STRIKER-DORSW=60" WED	
B	3	02 18978	STRIKER-DORSW RT-WED-SS	
all	4	02 18954	BUSHING=60"WEDU	
all	5	20A015GA	SHIM=FRICTION=CWU DOORSWITCH	
all	6	15K030	HEXCAPSCR 1/4-20UNC2X1/2 GR5 Z	
all	7	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
all	8	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
all	9	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
all	10	15N092A	SLPANHDMACSCR 8-32UNC2AX1/2 ZC	
all	11	15G164	HX THIN LOCKNUT NYL1/4-20 SS	
all	12	12C050	TUBING 1/2 EMT THIN WALL 10RML	
all	13	12K040	1/2"COND.EMT COND. PECO #260B	
all	14	12K054	1/2"HDY CORNER ELBOW PECO #670	

5 Control & Sensing

BPWD6Z01 / 2020362 BPWD6Z01.1 0000305752 C.2 A.3 8/31/20, 2:30 PM Released

Excursion Switch (Unwanted Movement Switch) Components and Installation

1 Sheet

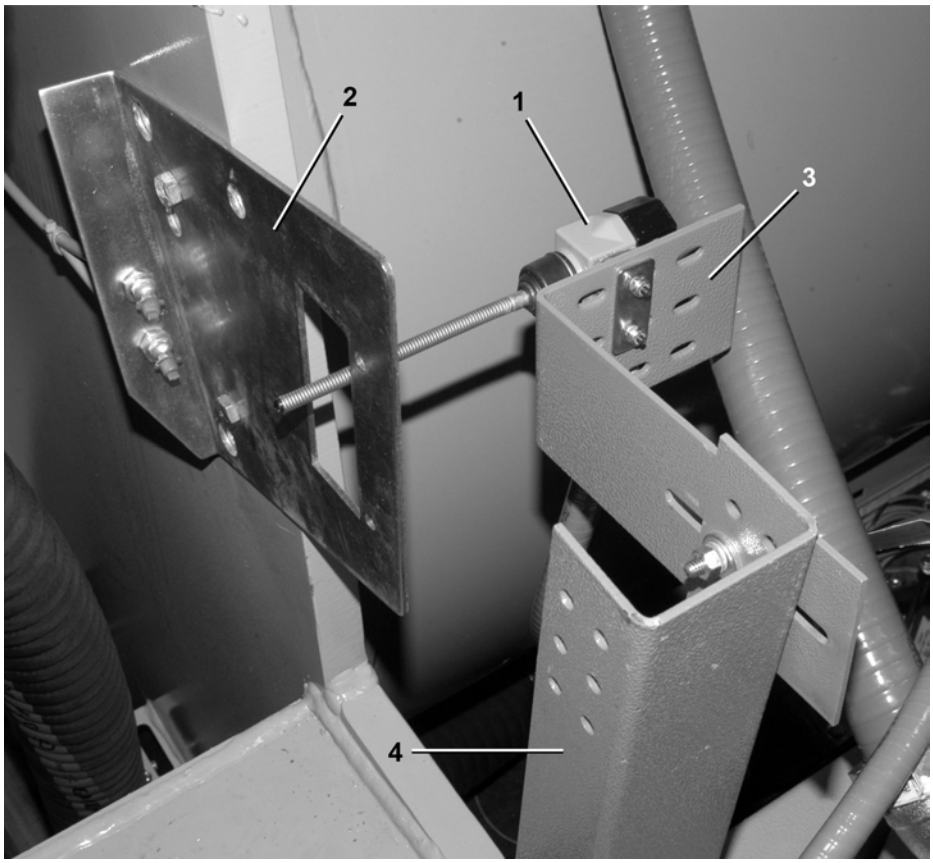


Table 35. Parts List—Excursion Switch

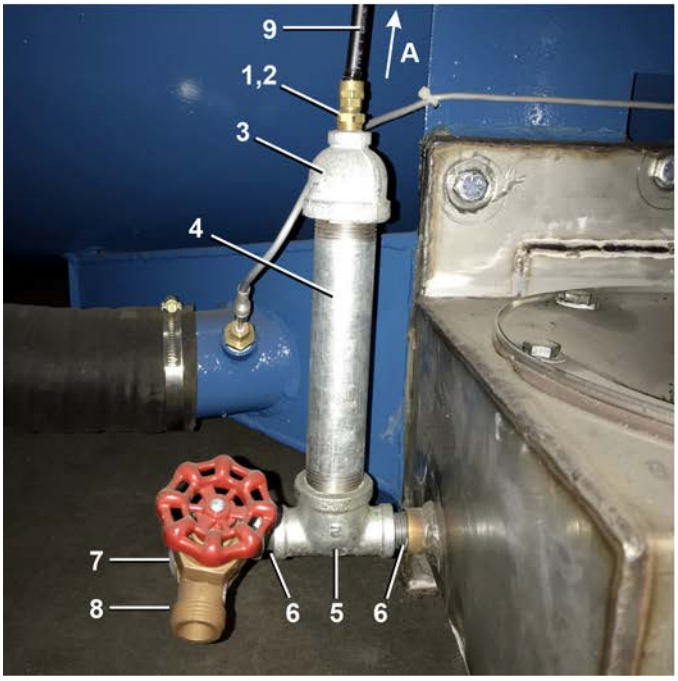
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Components				
all	1	09R008ASTD	* 09R008A+MOUNTING HDWRE+INST	
all	2	02 18542A	ACTUATOR=EXCURSION SW SHELMT	
all	3	02 18784E	EXCURSION SW MOUNT BKT\	
all	4	02 18784D	BRACKET=EXCURSION SW	6044WR2/3 ONLY

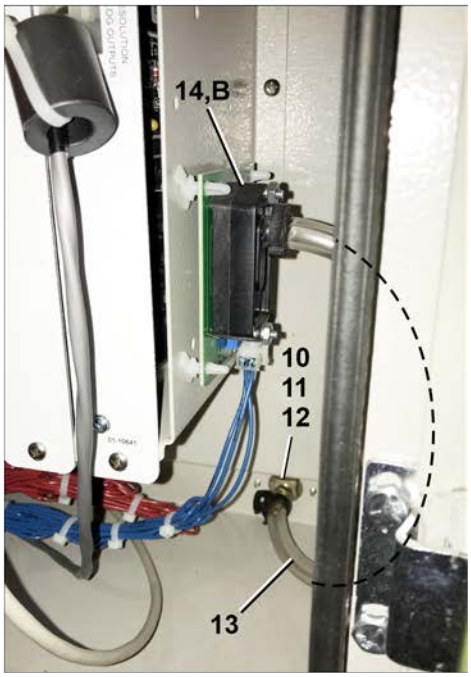
BPWVUZ01 / 2020043 BPWVUZ01.1 0000267913 C.2 A.3 1/21/20, 10:27 AM Released

Air Chamber Level Switch

1 Sheet

42044WR2,WR3,SR2,SR3; 6044WR2,WR3,SR2, SR3; 72044WR2, WR3, SR2, SR3





Legend

A . . . To transducer
B . . . Transducer

Table 36. Parts List—Air Chamber Level 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	AD 15 090A	AIRCHAMBER PRESWITCH INSTALL	
			Components	
all	1	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	2	53A047H	MALCON 5/16X1/8POLY PH#68P-5-2	
all	3	5SR1A0ENF	NPT RED 1X1/4 GALMAL 150#	
all	4	5N1A07AG42	NPT NIP 1X7 TBE GALSTL SK40	
all	5	5S0KNFA1A	NPT TEE 1/2X1/2X1" GALMAL 150#	
all	6	5N0KCLSG42	NPT NIP 1/2XCLS TBE GALSTLSK40	
all	7	5SL0PNFC0K	NPT 90D STREET 3/4X1/2 GAL150#	
all	8	96DB0PNA	HOSEBIBB 3/4" MALEINLT 45DEG. ACETAL	
all	9	60E005	TUBING BLK.POLY.5/160DX3/16ID	
all	10	51V010A	TEE 1/8"BRSEXTR BLOCTYP#2203P2	
all	11	51E502A	HOSESTEM BRASS 1/8MPT X3/16	

Air Chamber Level Switch

1 Sheet

42044WR2,WR3,SR2,SR3; 6044WR2,WR3,SR2, SR3; 72044WR2, WR3, SR2, SR3

Table 36 Parts List—Air Chamber Level Switch (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	12	5SP0CBEHS	NPT PLUG 1/8 HXCTRSNK BRASS	
all	13	60E004NA	TUBING CLEAR PVC 3/16"IDX5/16"OD	
all	14	08BNLTT	LEVEL TRANSDUCER BD->TEST	

BPWVUZ03 / 2020195 BPWVUZ03.1 0000290654 C.2 A.3 5/7/20, 9:15 AM Released

Temperature Probe

1 Sheet

6044WR2,WR3,SR2 72044WR2,WR3,SR3

Table 37. 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	

BNWUUM01 / 2019345 BNWUUM01 0000250244 11/7/19, 10:43 AM Released

5.1 Vibration Safety Switch Adjustments

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

5.1.1 What the Vibration Safety Switch Does

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

The **vibration safety switch** in Figure 75: Vibration Switch, page 118 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 38, page 117 below illustrates the effect of the **vibration safety switch** actuation.

Table 38. 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

5.1.2 Adjustments

BNWUUM01.C03 0000250240 C.2 B.2 11/7/19, 10:43 AM Released

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

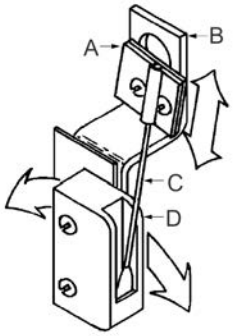
Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown in Figure 75: Vibration Switch, page 118 , 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 75. Vibration Switch



Legend

A . . . Eccentric weight (adjusts up and down)
B . . . Mounting bracket
C . . . Actuating arm
D . . . Microswitch (adjusts side to side)

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

BPWOAZ03 / 2019375 BPWOAZ03.1 0000252209 C.2 B.3 1/2/20, 2:25 PM Released

Vibration Safety Switch

1 Sheet

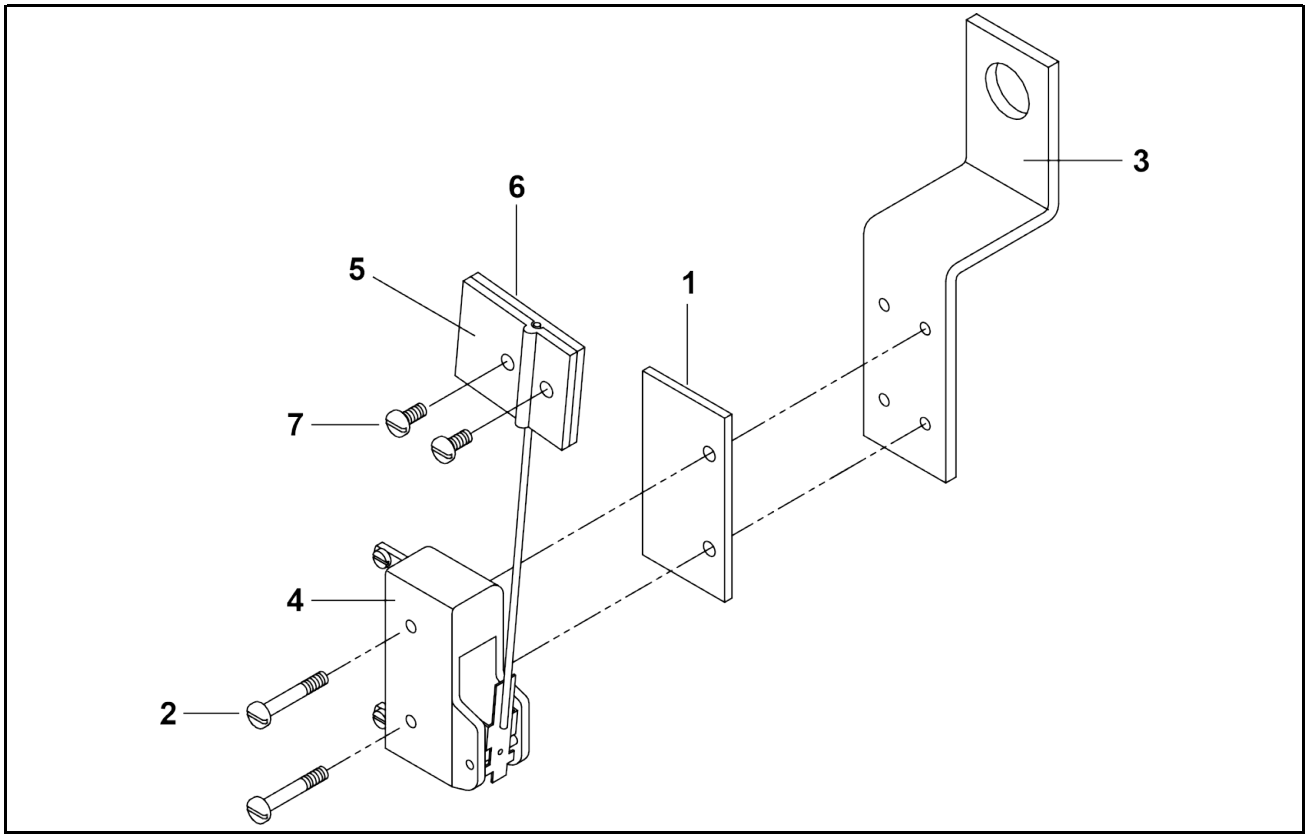


Table 39. Parts List—Vibration Safety Switch

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	

6 Chemical Supply Devices

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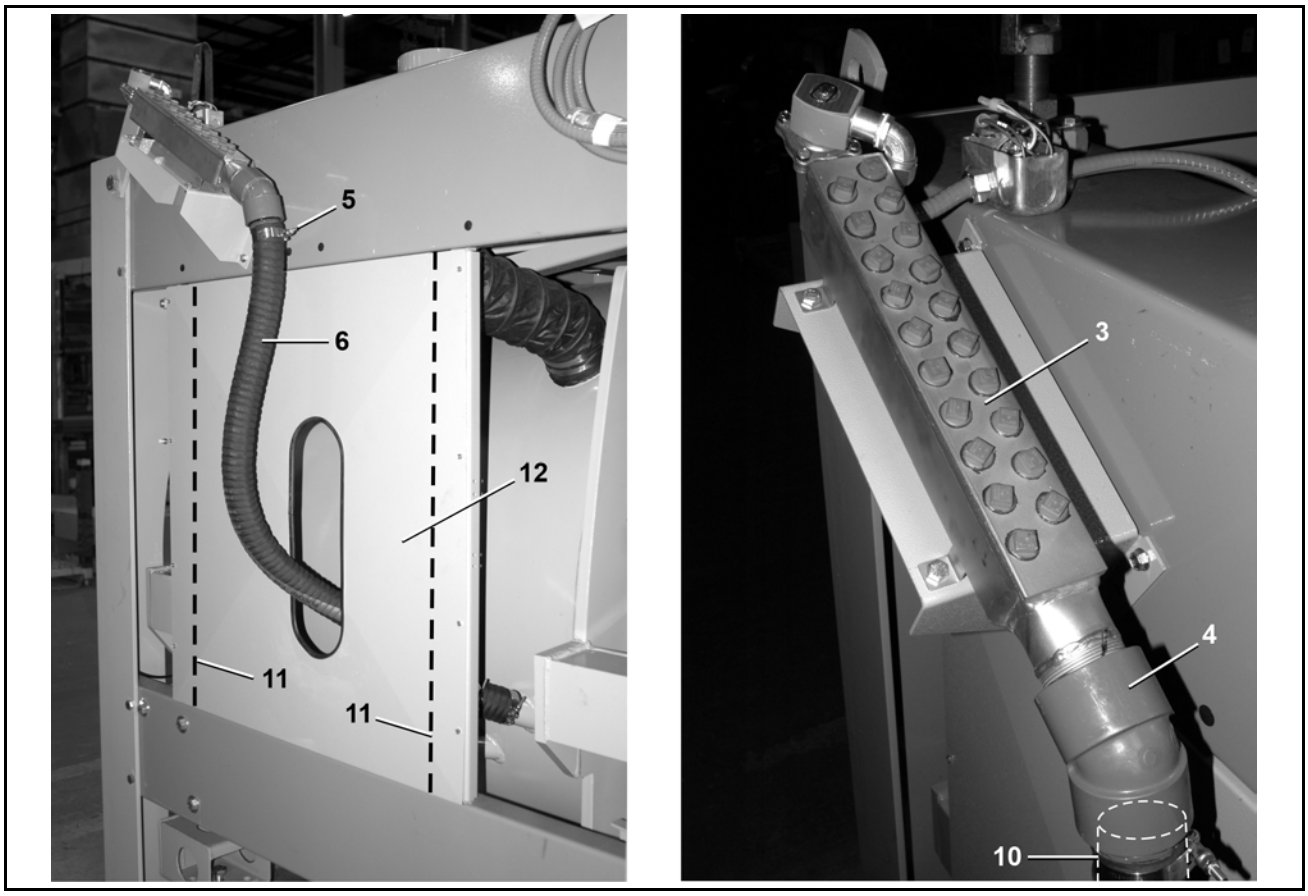
BPWD6C01 / 2020362 BPWD6C01.1 0000305746 C.2 A.3 8/31/20, 3:12 PM Released

Chemical Supply Inlets

2 Sheets

Figure 76. Inlet Manifold



Chemical Supply Inlets

2 Sheets

Figure 77. Mounting Bracket, Hose

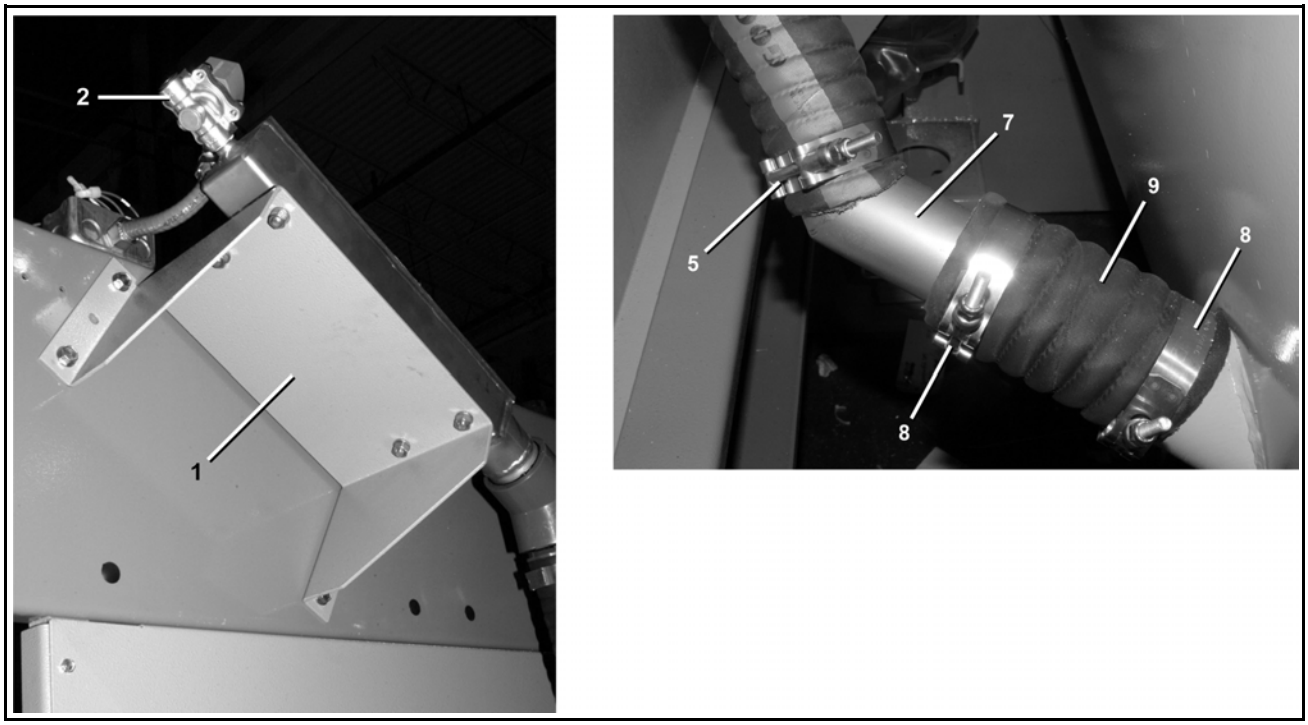


Table 40. Parts List—Chemical Supply Inlets

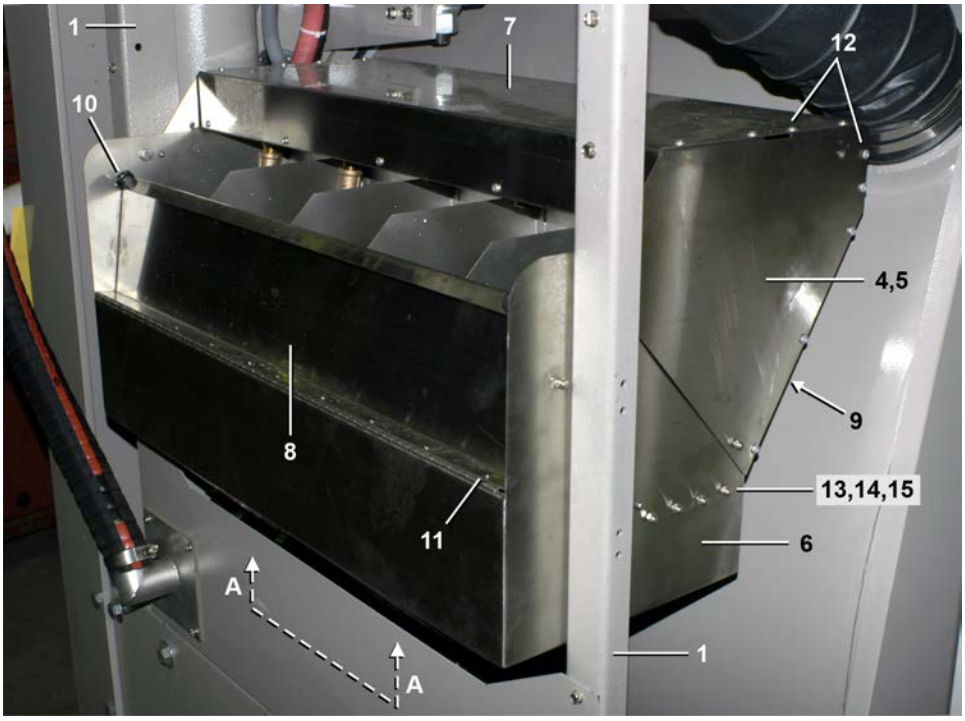
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	GWL28005	INST=PARASTALTIC CONNECT 60 NO SUPPLY	
Components				
all	1	03 25267E	PERISTALTIC MOUNTING BRACKET	
all	2	96TDC2AA37	1/2"N/C2WY120V50/60C VLV(DRYVC)	
all	3	W8 01254	*ASSY=PERIST CONNECT 20 HOLES	
all	4	5SL2AP8K	NPT EL45DEG 2"PVC SH80 FPTXFPT	
all	5	27A072	T-BOLT HOSECLAMP2.16-2.47CADSC	
all	6	60E255A70A	HOSE=2"ID X 70"LG(NO DWG)	
all	7	W2 15265A	*WLMT=PERISTAL CONN TRAN	
all	8	27A075	T-BOLT HOSECLAMP 2.78-3.09"	
all	9	60E301A04A	HOSE= *2.5"ID PE X4"	
all	10	51AB2AN2AA	HOSE INSERT X MPT 2"PVC40	
all	11	02 18538	SUPPORT=SUPPLY INJ LH/RH	
all	12	02 19327B	COVER=6044 W/PERISTAL RTSIDE	

BPWVUC02 / 2020206 BPWVUC02.1 0000291991 C.2 A.4 5/15/20, 9:43 AM Released

Five Compartments for Dry Chemical Supplies

4 Sheets

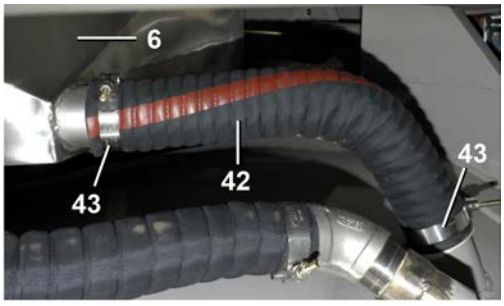
Figure 78. Five Compartments for Dry Chemical Supplies



Legend

A–A . . Bottom view (hose)

Figure 79. Right Side View (Covers), Bottom View (Hose)



A–A

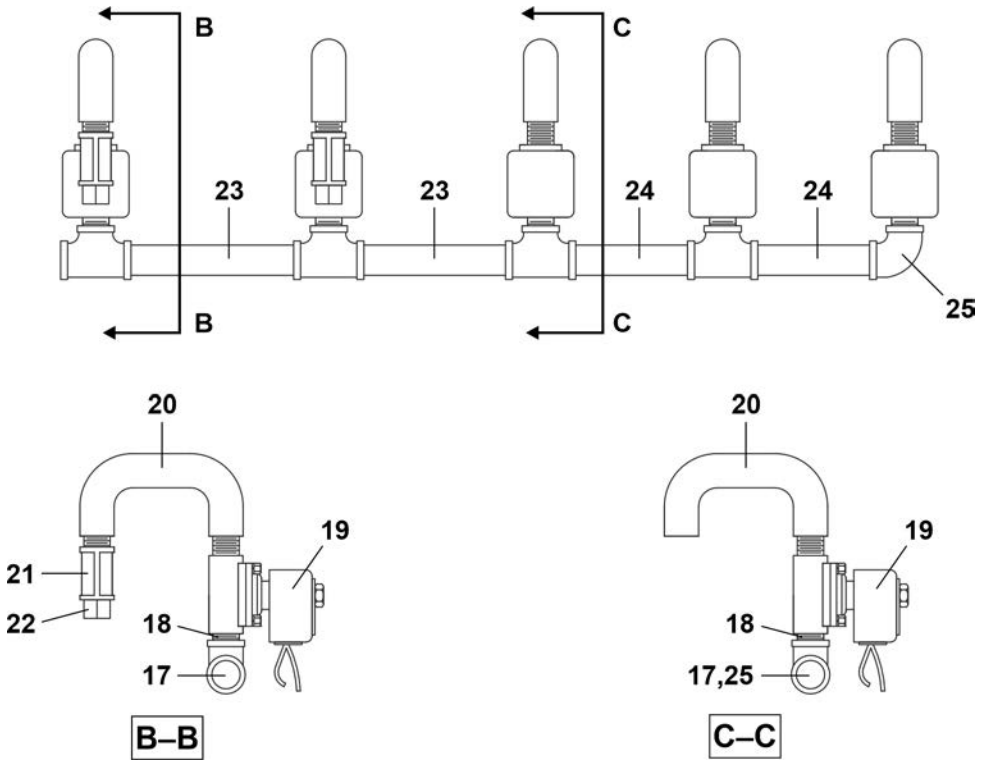
Legend

A–A . . Bottom view (hose)

Five Compartments for Dry Chemical Supplies

4 Sheets

Figure 80. Valve Manifold



Legend

B-B . . Detailed view, 2 instances
C-C . . Detailed view, 3 instances

Five Compartments for Dry Chemical Supplies

4 Sheets

Figure 81. Hot Water Inlet, Pressure Regulator Assembly

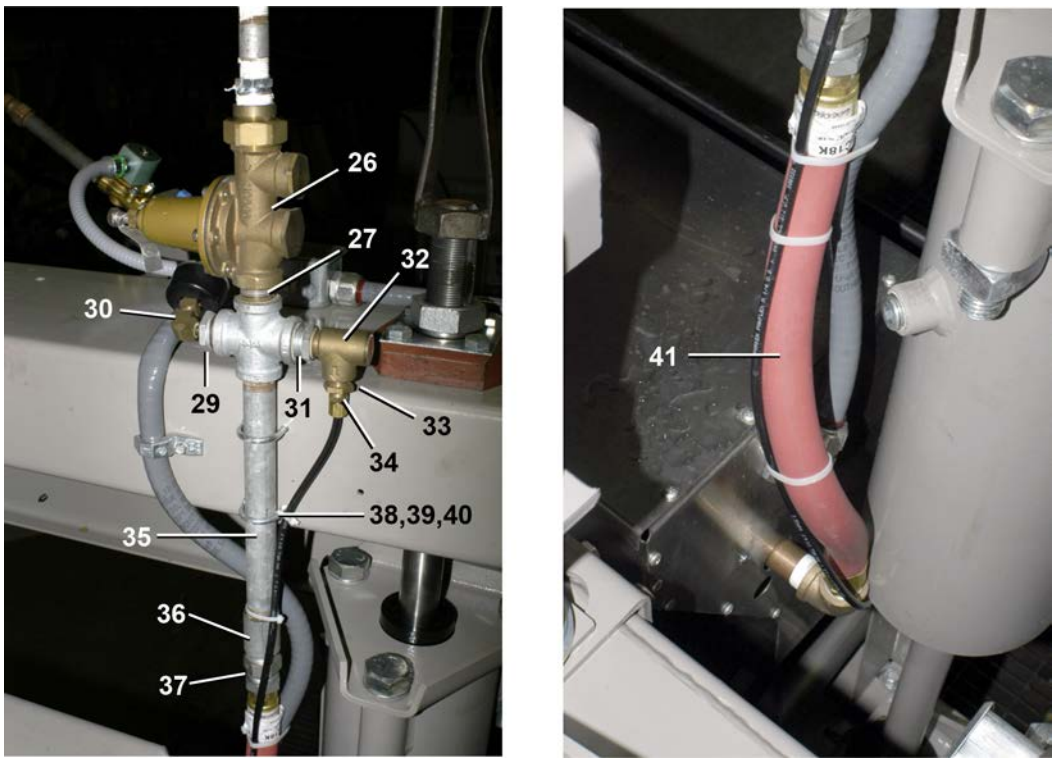


Table 41. Parts List—Five Compartments for Dry Chemical Supplies

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Reference Assemblies				
	A	SA 28 085B	*ASSY,5FLUSH SUPINJ=6044WP+SP	
	B	A28 18600B	* PIPING+VALVE=SUP INJ ASSY	
	C	SA 28 084	*INLET ASSY=SUPPINJ	
	D	AD 28 059	LOCATION=SUPPINJ INLET PIPNG	
Components				
all	1	02 18538	SUPPORT=SUPPLY INJ LH/RH	
all	2	02 18824C	COVER=UPPER SUP INJ 6044SG	
all	3	02 18824D	COVER=SUP INJ LO SUP 6044SG	
all	4	02 18024	FRONT VALVE CLOZ	
all	5	02 18025	REAR VALVCLOZ YOUR MATL	
all	6	W2 18559	* SUP-CHUTE 5-FLUSH=6044W+S+ (SS)	
all	7	02 18564	ENCLOSURE=SUPPLY INJ VALVE	

Five Compartments for Dry Chemical Supplies

4 Sheets

Table 41 Parts List—Five Compartments for Dry Chemical Supplies (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
all	8	SA 28 086	* COVER ASSY=SUPPINJ	
all	9	02 18777A	SUPPLY INJECTOR COVER = 6044	
all	10	60C001	RUBBER BUMPER-BLKW/WASHER #698	
all	11	15P100	#8 X 3/8 PHILPANHD TYPE B SMS	
all	12	15P010	TRDCUT PHILPANHDSCR 10-24X1/2S	
all	13	15N117	RDMACSCR 10-24UNC2X3/8SS18-8	
all	14	24G018N	ROLLED WASH.194ID NYLTITE 10W	
all	15	15G121	HXCAPNUT 10-24UNC2 #3266BR NKL	
B	17	5S0PBEA0K	NPT TEE 3/4X3/4X1/2 BRASS 125#	
B	18	5N0KCLSBE2	NPT NIP 1/2XCLS TBE BRASS STD	
B	19	96TDC2AA37	1/2"N/C2WY120V50/60C VLV(DRYVC)	
B	20	02 19307	PIPE-"U" SUPPLY INJECT BRASS	
B	21	5SCC0KBE	NPT COUP 1/2 BRASS 125#	
B	22	27A001	NOZZLE BRASS 1/2" SPRAYSYSTEMS	
B	23	5N0P06ABE2	NPT NIP 3/4X6 TBE BRASS STD	
B	24	5N0P05AB42	NPT NIPPLE 3/4X5 TBE BRASS STD	
B	25	5SL0PBEA0K	NPTELB 90DEG 3/4X1/2 BRASS150#	
C	26	96J031D	3/4"PRESSREG SET 28# FEMXUN=WATTS#LF25AUB-ZB	
C	27	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	
C	28	5S0PNFB	NPT SIDEOUT TEE 3/4" GALMAL	
C	29	5SB0P0CNFA	NPTHEXBUSH 3/4X1/8GALV150#CORD	
C	30	30N100	PRESSGAUGE 1/8"BACKCN.0-30PSI	
C	31	5SB0P0KNFO	NPTHEXBUSH 3/4X1/2 GALMAL 150#	
C	32	96M001	1/2X3/8" RELIEF VALVE SET31#	
C	33	5SB0G0EDEO	NPTHEXBUSH 3/8X1/4 GALCI 125#	
C	34	53A008B	BODYMALECON.25X.25COMP#B68A-4B	
C	35	5N0P10AG42	NPT NIP 3/4X10 TBE GALSTL SK4	
C	36	5SCC0PNF	NPT COUP 3/4 GALMAL 150#	
C	37	51X019	UNIONSTRADT 3/4"#0107-12-12	
D	38	27A030B	UBOLT 3/4PIPE 1/4-20 THD ZINC	
D	39	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
D	40	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
D	41	60E086C18K	*WATERHOSE 3/4"=18"LG+ENDS	

Five Compartments for Dry Chemical Supplies

4 Sheets

Table 41 Parts List—Five Compartments for Dry Chemical Supplies (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
all	42	60E301A12A	HOSE= *2.5"ID PE X12"	
all	43	27A075	T-BOLT HOSECLAMP 2.78-3.09"	

7 Water & Steam

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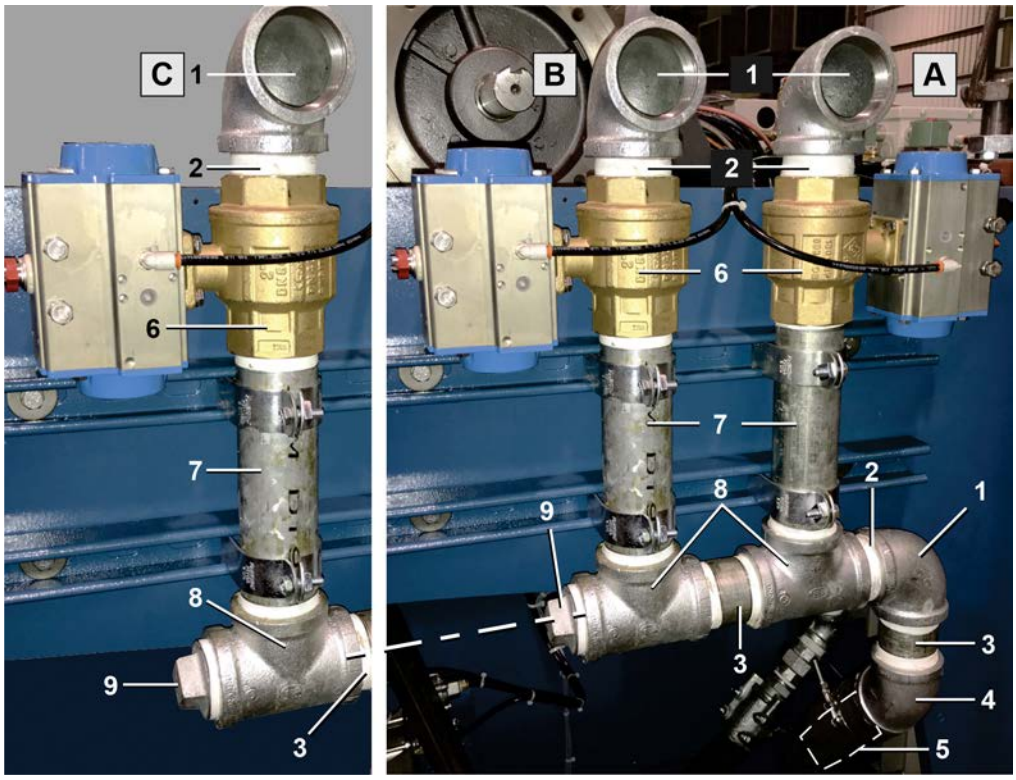
Water Inlets

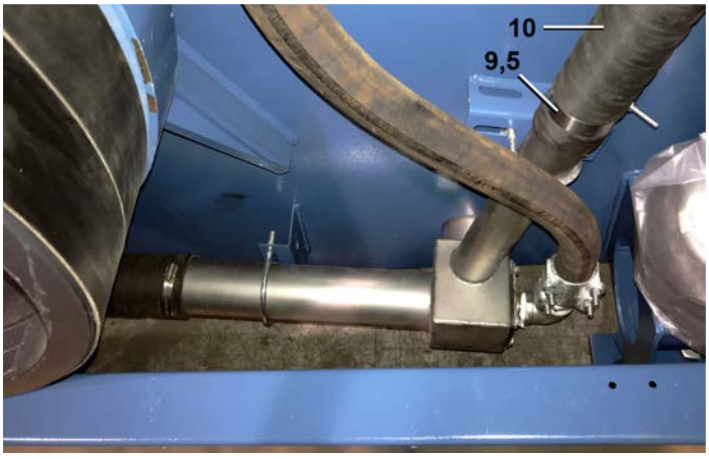
2 Sheet

60044WR2, 60044WR3



Legend

A . . . Hot water inlet
B . . . Cold water inlet
C . . . Third or Reuse water inlet



Water Inlets

2 Sheet

60044WR2, 60044WR3

Table 42. Parts List—Water 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	GVW28021	H2O INLTS:MTG.HDWRE,NO SB60WE	
	B	AVW28022B	60WP HOT+COLD INLET PIPING & VALVES	
	C	AVW28023B	60WP +1 FRESH WATER BONOMI VALVE	
Components				
all	1	5SL2ANFA	NPT ELBOW 90DEG 2" GALMAL 150#	
all	2	5N2ACLSG42	NPT NIP 2XCLS TBE GALSTL SK40	
all	3	5N2A03AG42	NPT NIPPLE 2X3 TBE GALSTL SK40	
all	4	5SL2ANFK	NPTELB 45DEG 2"GALMAL 150#	
all	5	51E098B	KINGREDNIP2.5"IDX2"NPT#STC3025	
all	6	96D088FBA	2" BALVAL+ACT BRS N/C BONOMI (SPRING RET)	
all	7	5N2A09AG42	NPT NIP 2X9 TBE GALSTL SK40	
all	8	5S2ANFA	NPT TEE 2" GALMAL 150#	
all	9	51P060	PLUG PIPE SQ 2"GALCORED CI 125	
all	10	27A075	T-BOLT HOSECLAMP 2.78-3.09"	
all	11	60E301A33A	HOSE= *2.5"ID PE X33"	
all	12	27A0200	CLP-RGDSTL PS#1100-2 10/BAG	

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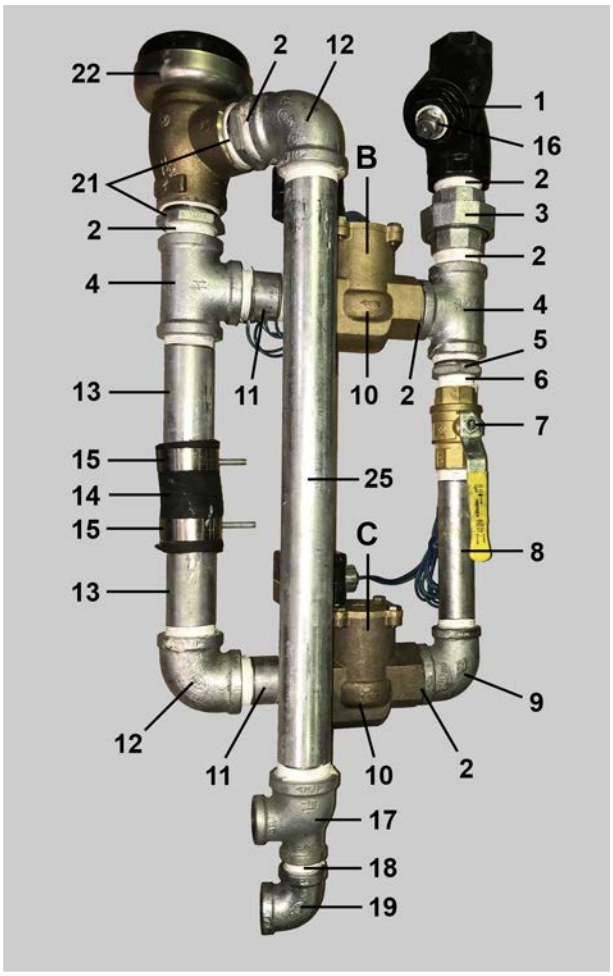
Cooldown

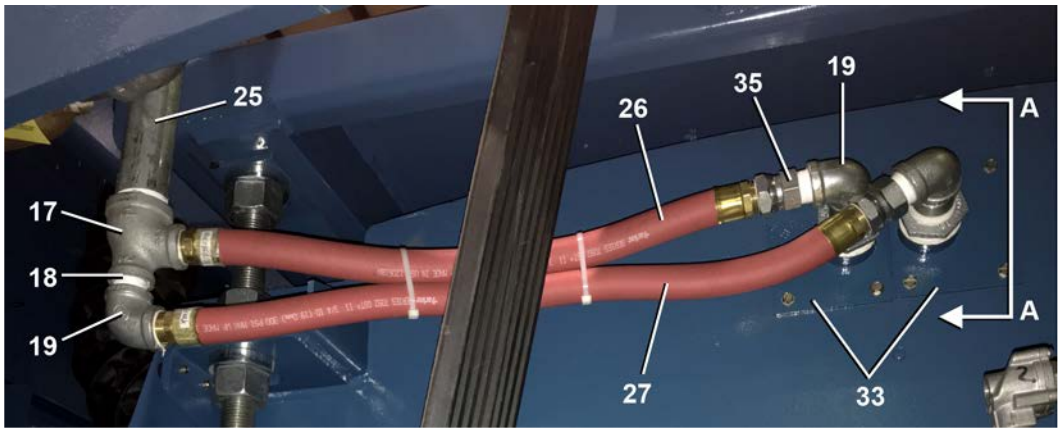
3 Sheet

60044WR2, 60044WR3

Legend

B . . . Spraydown valve
C . . . Cooldown valve





Cooldown

3 Sheet

60044WR2, 60044WR3

Figure 82. Cross Section of Cooldown Nozzle into the Shell (two instances)

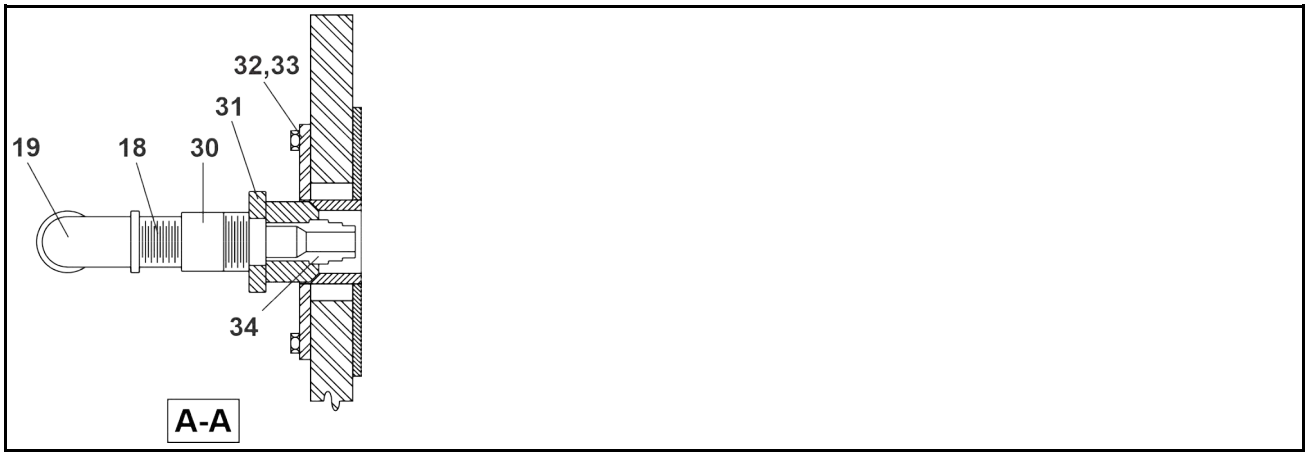


Table 43. Parts List—Cooldown

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	GVW28025	SPRY+CLDN:MTG.HDWE NO SB60WE	
	B	AVW28031A	INTL.PIP=SPRY+CLDN+VB 60WP2/3	
Components				
all	1	51T060	Y-STRAINER 1+1/4" CAST IRON	
all	2	5N1ECLSG42	NPT NIP 1.25XCLS TBE GALSTLS40	
all	3	5SU1ENF	NPT UNION 1.25" GALMAL 150#	
all	4	5S1ENFA	NPT TEE 1.25" GALMAL 150#	
all	5	5SB1E1ADEO	NPTHEXBUSH 1.25X1" GALCI 125#	
all	6	5N1ACLSG42	NPT NIP 1XCLS TBE GALSTL SK40	
all	7	96D084	BALL VALVE BRZ 1"=BONOMI 171N	
all	8	5N1A07AG42	NPT NIP 1X7 TBE GALSTL SK40	
all	9	5SL1ENFA1A	NPTELB 90DEG 1.25X1 GALM 150#	
all	10	96P151A37	1.25VAL 110V HAYS#9-2110IS-120	
all	11	5N1E03AG42	NPT NIP 1.25X3 TBE GALSTL SK40	
all	12	5SL1ENFA	NPT ELB 90DEG 1.25 GALMAL 150#	
all	13	5N1E05AG41	NPT NIP 1.25X5 TOE GALSTL SK40	
all	14	60E015A06A	HOSE= *1.62IDX2.12ODX6"LG PE	
all	15	27A060	HOSECLAMP1+5/16-2.25CADSC#HS28	
all	16	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
all	17	5S1ENFA0P	NPTTEE 1.25X3/4X3/4 GALMAL150#	
all	18	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	

Cooldown

3 Sheet

60044WR2, 60044WR3

Table 43 Parts List—Cooldown (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	19	5SL0PNFA	NPTELB 90DEG 3/4 GALMAL 150#	
all	21	5SB1K1EDEO	NPTHXBUSH 1.5X1.25GALMAL 150	
all	22	SA 03 009	1.5"SIPHONBRKR+SCUPPER ASSY	
all	25	5N1E20AG42	NPT NIP 1.25X20 TBE GALSTL SK4	
all	26	60E086C22K	*WATERHOSE 3/4"=22.5"LG+ENDS	
all	27	60E086C25K	*WATERHOSE 3/4"=25.5"LG+ENDS	
all	30	51E037	COUP 3/4"F W/1"M NPTONOD 304S	
all	31	5SB1K1ADEO	NPTHEXBUSH 1.5X1 GALCI 125#	
all	32	15P175	TRDCUT-F HXHD 1/4-20UNC2AX1/2	
all	33	02 18965	PLATE=SPRAYDOWN LOCATING	
all	34	27A004	NOZZLE SPRACO#H3/4U00350G	
all	35	51X019	UNIONSTRADT 3/4"#0107-12-12	

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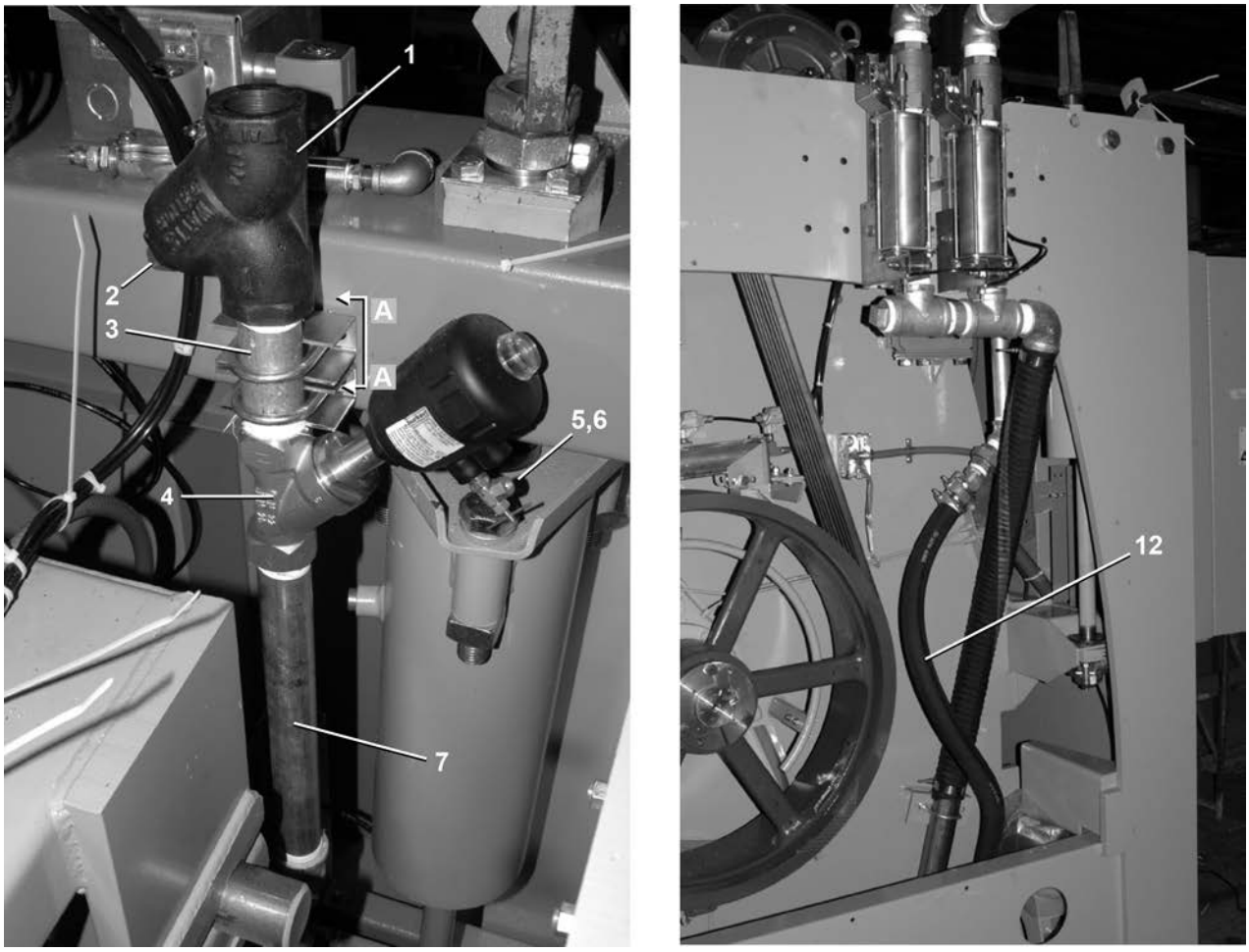
Steam Inlet Components and Installation

4 Sheets

Figure 83. Steam Inlet

General Views



Legend

A–A . . Detailed View

Steam Inlet Components and Installation

4 Sheets

Figure 84. Detailed View, Union

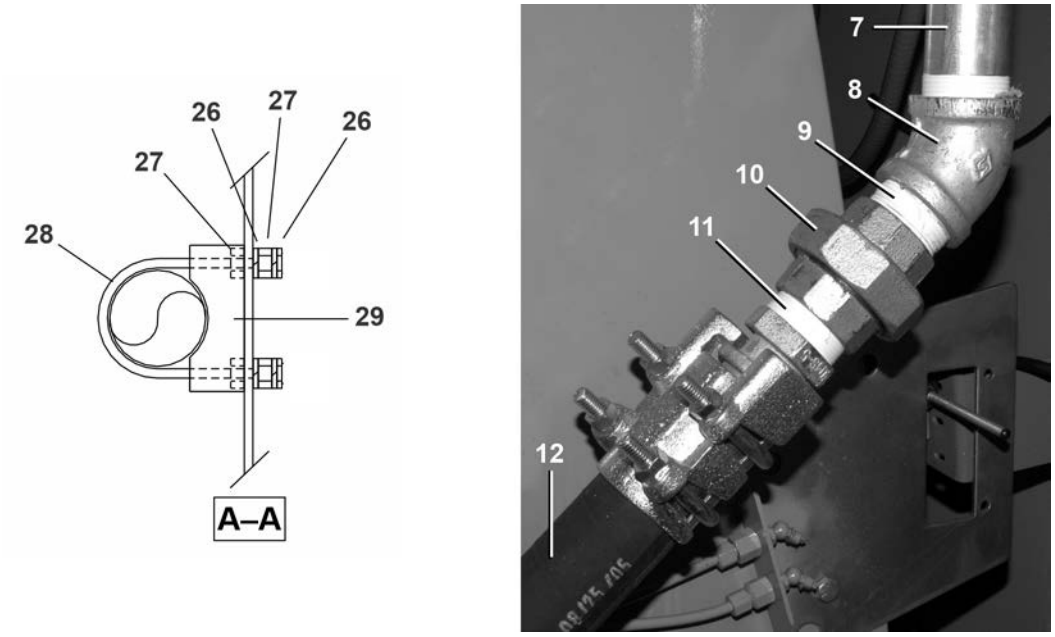
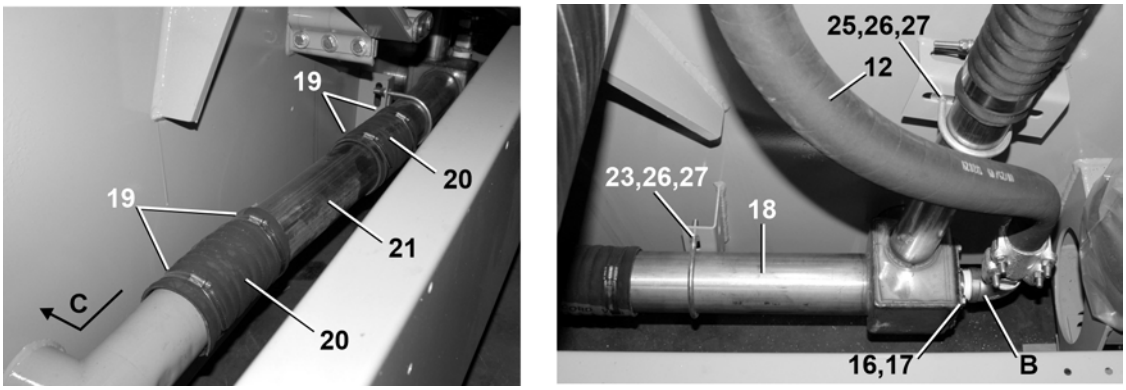


Figure 85. Steam Line, Lower

Additional Views



Legend

B . . . Steam pipe and nozzle
C . . . Steam goes through the shell rear

Steam Inlet Components and Installation

4 Sheets

Figure 86. Steam Pipe and Nozzle

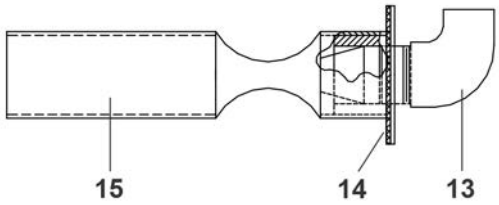
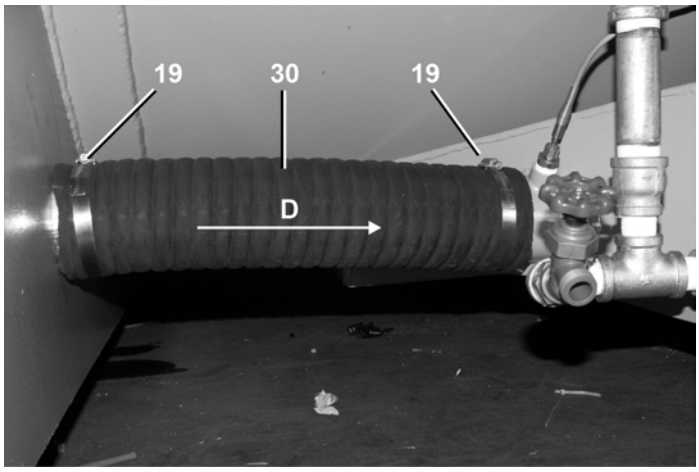


Figure 87. Steam Line, Lower



Legend

D . . . Steam goes into the shell bottom

Table 44. Parts List—Steam Inlet Components and Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
			Reference Assemblies	
	A	GVS28001	INSTALL=STEAM INLET 60"	
	B	AVS28001	1.25 BURKERT STEAM=60WE2+3	
	C	ASS25001	*52&60 STEAM SPARGER3/4ORFICE	
			Components	
all	1	51T060	Y-STRAINER 1+1/4" CAST IRON	
all	2	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
all	3	5N1E05AG42	NPT NIP 1.25X5 TBE GALSTL SK40	
all	4	96D0011E	1.25"NPTBRZ N/C STEAMVALANGBD	
all	5	96H018	ANGLE NEEDLE VLV 1/4"T X 1/8MP,PARKER#NV104C-5-2 W/PIN HANDLE	
all	6	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	

Steam Inlet Components and Installation

4 Sheets

Table 44 Parts List—Steam Inlet Components 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	7	5N1E17AG42	NPT NIP 1.25X17 TBE GALSTL SK4	
all	8	5SL1ENFK	NPT ELB 45DEG 1.25 GALMAL 150#	
all	9	5N1ECLSG42	NPT NIP 1.25XCLS TBE GALSTLS40	
all	10	5SU1ENF	NPT UNION 1.25" GALMAL 150#	
all	11	51E096C	MALESTEM 1.25"CADPL CAMP#IMS5	
all	12	60E096C42A	STEAMH*OSE=1.25"X42"+2ENDS=(NO	
all	13	5SL1ESFA	NPT ELB 90DEG 1.25 304SS 150#	
all	14	02 14647E	GASKET=DRNTRGH TO RECIRC BOX	
all	15	W3 64566B	*WLM=STM SPARGER .75 ORF-12"L	
all	16	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
all	17	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	18	W2 19250C	* STEAM+WATER INLET=60WE ONLY	
all	19	27A084	HOSECLAMP 3+9/16-4.5CADSC#HS64	
all	20	60E306A04K	HOSE=*3.5"1D PE X 4.5"	
all	21	87Z070018A	TUBE=3.5"OD X 18"LG SQ ENDS	
all	22	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	23	27A035	UBOLT 3/8-16 3.625"BETWEN LEGS	
all	24	15G235	HEXNUT 1/2-20UNF2B SAE ZINC GR	
all	25	27A032M	UBOLT 2"PIPE 3/8-16 ZNC3.5" LG	
all	26	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	27	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	28	27A031	UBOLT 1"PIPE 5/16-18X2+3/16LG	
all	29	02 16306A	BRKT=1+1/4"PIPE SUPPORT	
all	30	60E306A18A	HOSE= *3.5"ID PE X18"	

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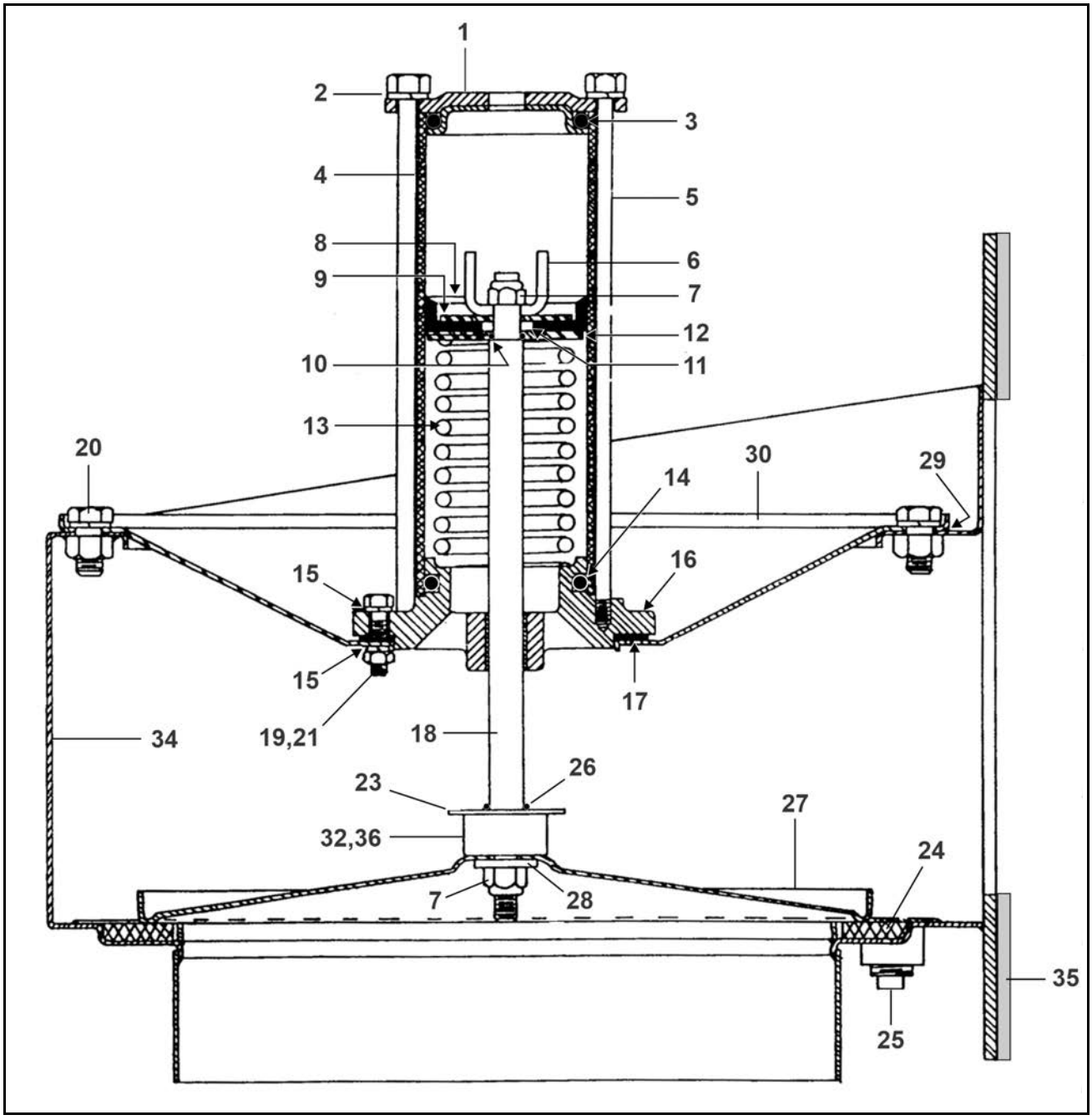
Stainless Dump Valve

3 Sheets

42044WR2/WR3/SR2/SR3; 60044WR2/WR3/SR2/SR3; 72044WR2/WR3/SR2/SR3



8”X10” Stainless Dump Valve

3 Sheets

42044WR2/WR3/SR2/SR3; 60044WR2/WR3/SR2/SR3; 72044WR2/WR3/SR2/SR3

Table 45. Parts List—8”X10” Stainless Dump 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	SA 28 124	*8"SGL.DUMPVALVE 4244+52+60	42044WR2/WR3 42044SR2/SR3; 60044WR2/WR3; 60044SR2/SR3
	B	SA 36 015	10"SGL.DUMP VALVE 72WE+SG+WT	72044WR2/WR3; 72044SR2/SR3
	C	SA 28 158	* BONNET+AIRCYL=8"SS DUMPVALV	8" DUMP VALVE
	D	SA 36 044	* BONNET+AIRCYL=10"SS DUMPVAL	10" DUMP VALVE
			Components	
CD	1	02 02101	CYLHEAD W/TAPPED HOLE	
CD	2	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
CD	3	60C132	ORING 2"IDX3/16CS BUNA70 #329	
CD	4	02 02068	AIRCYL-STAINLESS=DUMP VALVE	
CD	5	02 10585D	TIE BOLT=5/16-18X7.875 PLTD	
CD	6	03 01313	STOP=AIR CYL W/2+11/16STROKE	
CD	7	15G220	LTHX THIN LOKNUT 3/8-24 SSNTE	
CD	8	02 02194	PISTON CUP=DUMPVALVE 2+3/8"	
CD	9	02 02085	UP WASHER=2"OD=PISTON CUP	
CD	10	60C106	ORING 5/16ID 1/16CSBUNA70#011	
CD	11	02 02185	WASHER=PISTON CUP COMP LIMIT	
all	12	02 02105B	2.38"ACYL BRASS PISTONCUP WSHR	
CD	13	03 06429	SPRING=2.11ODX6.5FL 64#/"	
CD	14	60C132	ORING 2”IDX/316CS BUNA70 #329	
CD	15	24G020N	ROLLED WASH.252ID NYLTITE 25W	
CD	16	X2 02743	BONNET=2"DUMP VALVE	
CD	17	02 18931F	GASKET=DUMPVALVE-1/60+72WEHU	
CD	18	02 16021I	DUMPVAL STEM-4"+8"316SS	
CD	19	15G168	SQNUT 1/4-20UNC2 SS18-8	
all	20	15K086	HXCAPSCR 3/8-16NCX3/4 SS18-8	
CD	21	15K041S	HEXCAPSCR 1/4-20UNC2AX1 SS18-8	
CD	23	02 16021E	WASHER 3/8IDX1.250D DUMPVAL	
A	24	02 18068	9 SEAT-RESILIENT=8"DUMPVALVE	
B	24	03 06084	SEAT-RESILIENT=10"DUMPVALVE	
A	25	5SP0KGFSS	NPT PLUG 1/2 SOSOLID GALSTL	
CD	26	60C106	ORING 5/16ID 1/6CS BUNA70#011	
AC	27	02 18796	DISC-8" DUMP VALVE S/S	

8”X10” Stainless Dump Valve

3 Sheets

42044WR2/WR3/SR2/SR3; 60044WR2/WR3/SR2/SR3; 72044WR2/WR3/SR2/SR3

Table 45 Parts List—8”X10” Stainless Dump Valve (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
BD	27	03 06083	DISC-10"DUMP VALVE S/S	
all	28	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
A	29	02 18104	GASKET=8"DUMP VALVE BONNET	
B	29	03 06086G	GASKET=10" DUMP VALVE BONNET	
A	30	02 18931E	BONNET-8"DUMP VALVE	8" DUMP VALVE
B	30	03 06086F	BONNET=10"DUMP VALVE	10" DUMP VALVE
CD	32	02 16021C	BUMPER=DUMP VALVE BONNET	
CD	33	02 16021D	DUMP VALVE BUMPER RETAINER	
A	34	W2 18931	* BODY=8"DUMPVALV=4244,60,52	8" DUMP VALVE
B	34	W3 06086	*BODY=10"DUMP VALVE 72WE,SG,T	10" DUMP VALVE
A	35	02 18107	GASKET=8"FLANGED DUMP VALVE	8" DUMP VALVE
B	35	03 06085D	GASKET=10"FLANGEDUMP72D 8050	10" DUMP VALVE

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Vacuum Breaker 1.5 Inch

1 Sheet

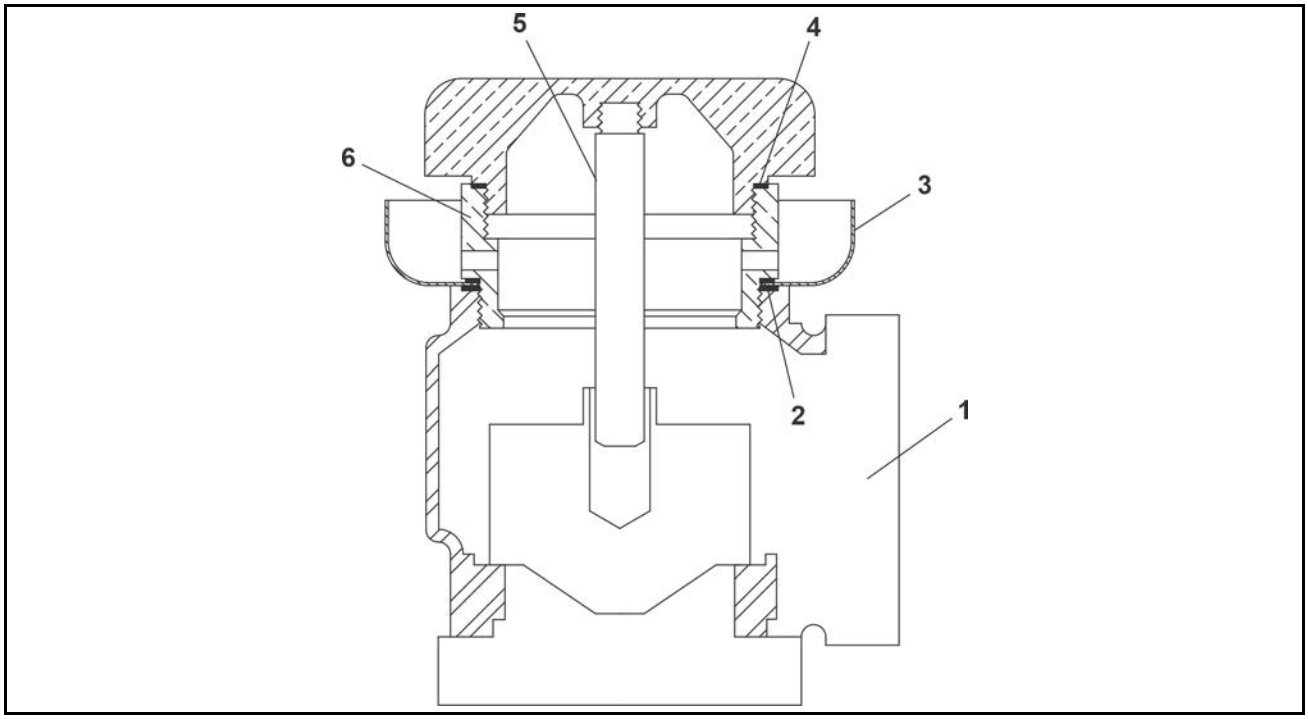


Table 46. Parts List—Vacuum Breaker 1.5"

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 03 009	1.5"SIPHONBRKR+SCUPPER ASSY	
Components				
all	1	96M031	1.5"VAC BREAKER WATTS LF288AM2	
all	2	60C130	ORING 1+3/4ID1/8CS BUNA70 #224	
all	3	03 01319	SCUPPER=1+1/2 SIPHON BREAKER	
all	4	03 01318	GASKET-RING=1+1/2"SIPHONBRKR	
all	5	03 01316A	GUIDE STM,1.5"SIPHBKR 1/4-40	
all	6	03 01317	SPCR=BON=1+1/2SIPBRK OURMATL	

8 Pneumatic

8.1 Servicing Air Cylinders

This is the general procedure for rebuilding an air cylinder using a Milnor® furnished repair kit, once the air cylinder has been removed from the machine. See the specific air cylinder and major assembly parts drawing(s) for component identification and removal/replacement information.

Maintenance procedures require:

- Two threaded rods and nuts, twice the length of the tie bolts.
- The appropriate repair kit.

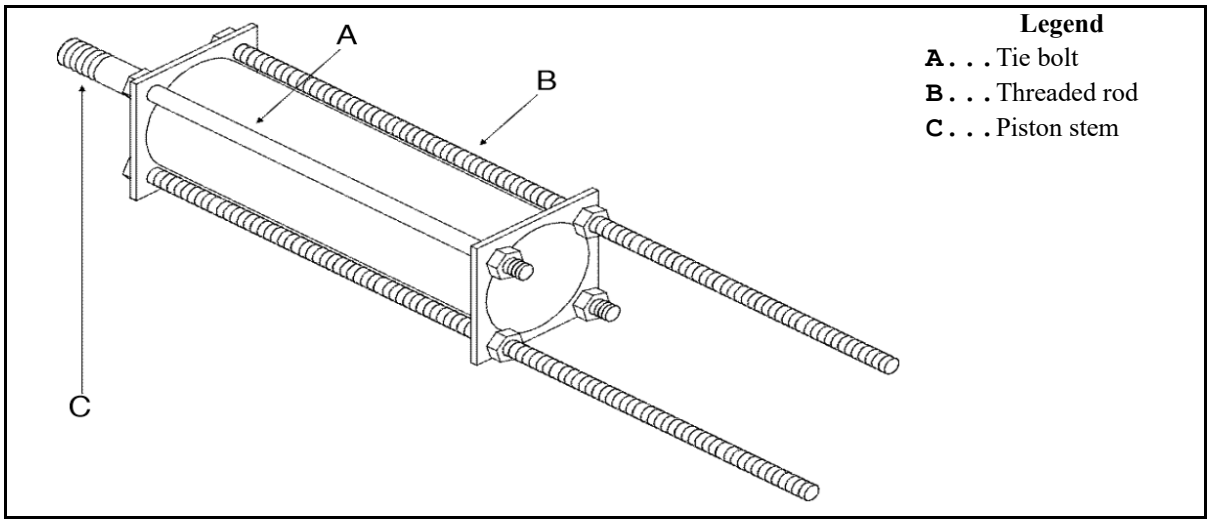
CAUTION: **EXPLOSION HAZARD —** Spring tension can cause air cylinder to burst apart with great force during dissassembly. You can be struck by air cylinder parts.

- ▶ Follow maintenance instructions carefully.
- ▶ Wear eye protection.

NOTE: Use a new locknut when re-assembling air cylinder (see the appropriate parts drawing).

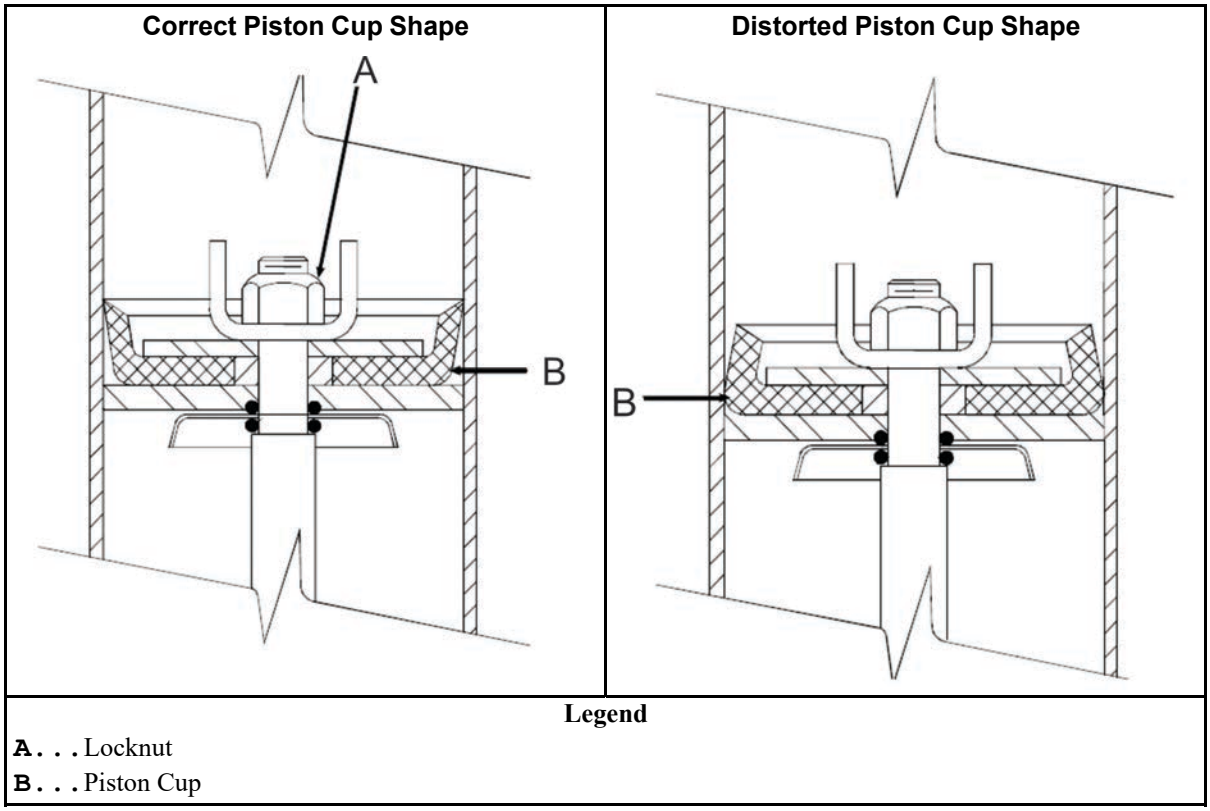
1. Replace two diagonally opposite tie bolts with threaded rods and nuts as shown in Figure 88: Using Threaded Rods, page 145 .
2. Tighten nuts on the threaded rods until they contact the air cylinder.
3. Remove the other two tie bolts and the nuts, washers, clips, and actuators from the external end of piston stem.

Figure 88. Using Threaded Rods



4. Loosen nuts on threaded rods evenly, permitting cylinder heads to separate. Use only a few turns on one nut before moving to the other one. Continue until springs have no tension.

Figure 89. Ensuring Correct Piston Cup Shape



5. Note the position and orientation of the piston cup(s), washers, and springs. Replace the worn parts, then reassemble them in reverse order. Tighten the locknut until it is just barely possible to turn the piston cup and washer assembly on the stem. The correct piston cup shape is shown on the left side of the above figure. **Do not** overtighten the locknut, as this causes the

piston cup to deform to the shape shown on the right side of the figure and may cause the piston to bind in the cylinder.

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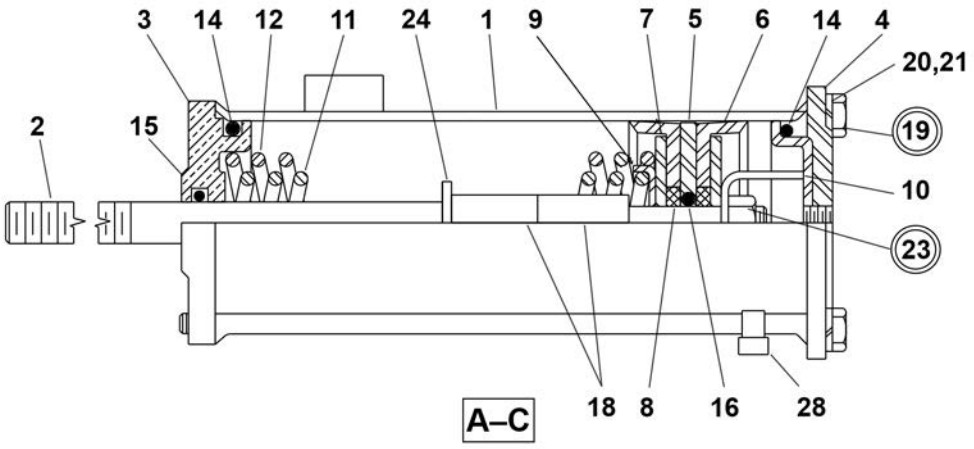
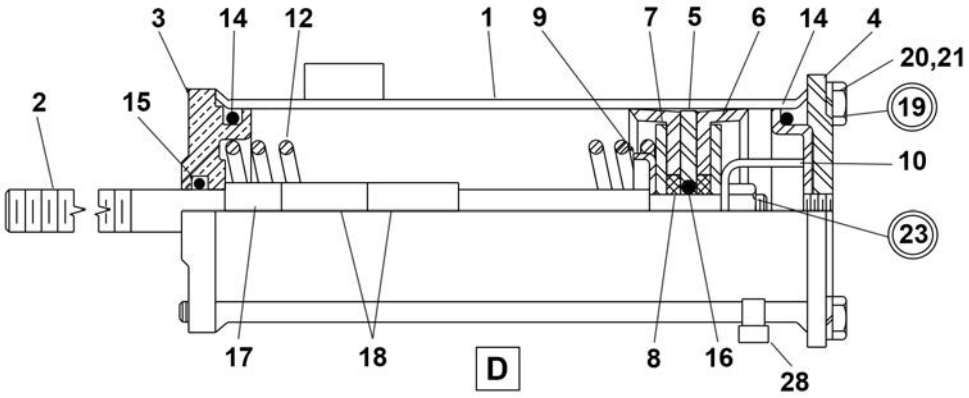
Air Cylinder Assemblies

6 Sheets

WARNING: **Explosion Hazards —** Air cylinder can burst apart with great force. Circled items are under high spring tension.

- Follow maintenance instructions BNWUUM02 carefully.



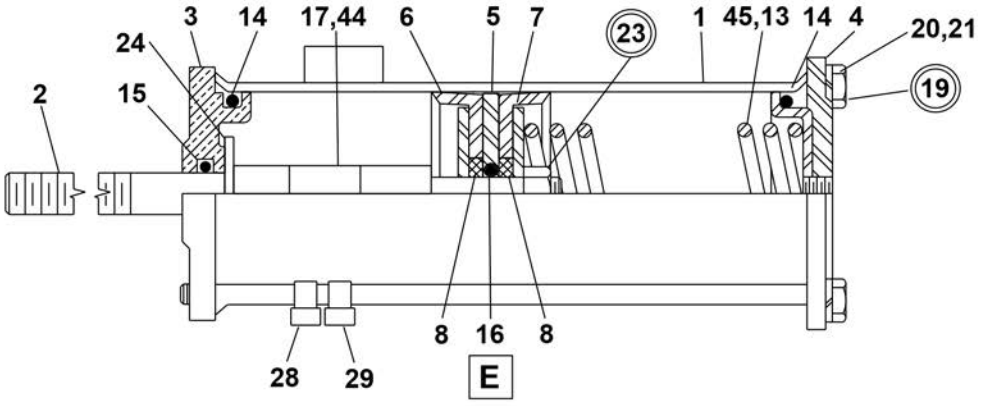


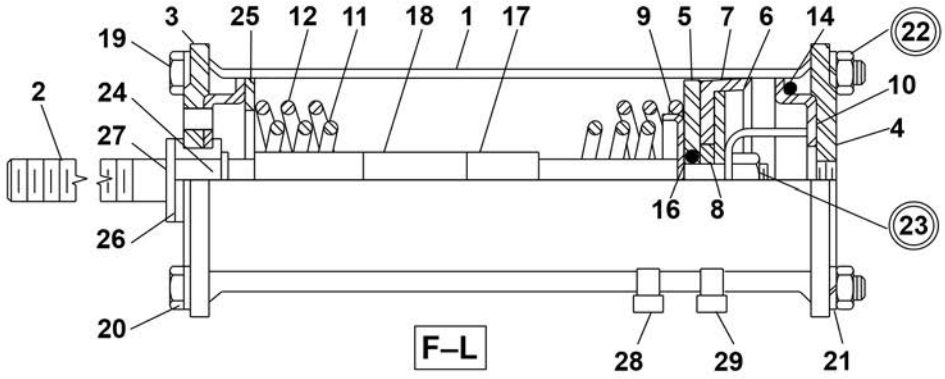
Legend

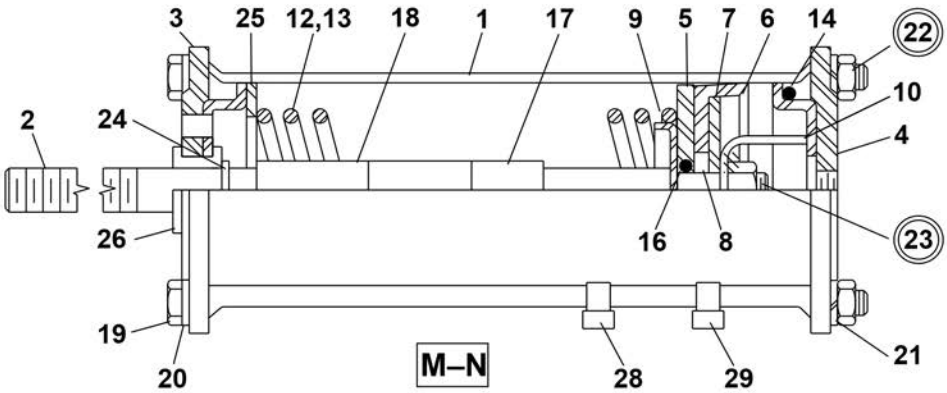
A–C . . See parts list
D . . . See parts list

Air Cylinder Assemblies

6 Sheets





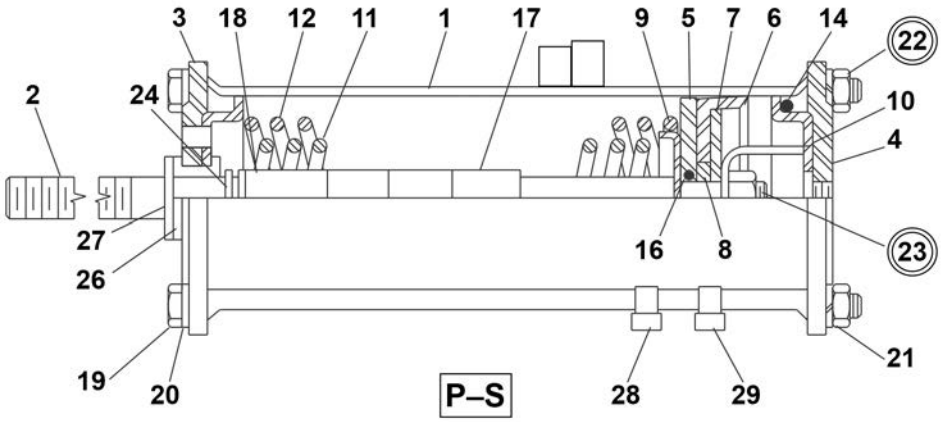


Legend

E . . . See parts list
F-L . . See parts list
M-N . . See parts list

Air Cylinder Assemblies

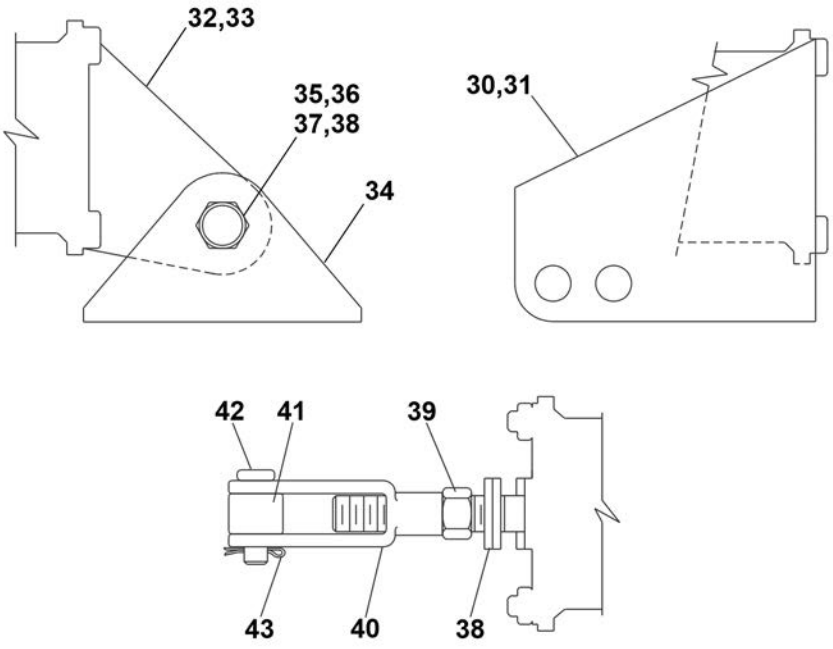
6 Sheets



Legend

P-S . . See parts list

Figure 90. Air Cylinder Mounting Hardware



Air Cylinder Assemblies

6 Sheets

Table 47. Parts List—Air Cylinder Assmeblies

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 36 035	89483V* AIRCYL=BRAKE ASSY	72WP2,WP3,WE3
	B	SA 28 128	89483T* BRAKE AIRCYL 2-WAY 60+72SGU	60+72SP2,SP3
	C	SA 28 152	89483V* BRAKE AIRCYL 2-WAY 60WE2+3	60WP2,WP3,D3A,DA3
	D	SA 10 019A	89483U* BRAKE AIRCYL,2-WAY=42WE+DAU	4231/4244 WP2/WP3 CP2/CP3 NP2/NP3 SP2/SP3
	F	A52 00200	89463U* BRAKE AIRCYL=7244 TILT ONLY	72DA1/L/N,DBN, WTL/N,WP1
	G	SA 10 019Q	89483T*BRAKE CYL ASSY=4226QWE+DYA	4226DP1,DA1,DYP,D5P
	H	AAC14001A	90000Z AIRCYL-LONG= 42S6PSG	3621+26Q6X 4226Q4X,Q6X
	I	A76AC001A	89463T AIR CYL.2-3/8 BORE 2"STROKE	5840TG2,TS1,TT1
	J	A76AC001B	89463@ AIR CYL.2-3/8 BORE 3"STROKE	5840TG2,TS1,TT1
	K	A75 01200	89463T*AIR CYL. DAMPER = 3"STROKE	5858+80TG1/2,TS1,TT1
	L	A75 01300	89463U*AIR CYL. DAMPER = 2"STROKE	5858+80TG1/2,TS1,TT1
	M	SA 10 019	89497U* BRAKE AIRCYL=BALCOM+DIVCYL	
	N	AAC14001	90041U*AIRCYL=RATE 50-91 STRK 2.09	3621F8P
	P	A25 00600	89457V* BRAKE AIRCYL=52WE1 +52TILT	52LWN/H,WTL/N,WP/E1,DYA
	Q	AAC64001	894613*AIRCYL=BRAKE ASSY 6442	64BTL,BTN,BHP, DA1,DAL,DAN
	R	AAC65001	93481B AIRCYL=BRAKE ASSY 6446E6N	6446,7246,7258,M7E 4244SP2 SM
	S	AAC58001	95000Z AIRCYL=BRAKE ASSY 7258J2N	7258J2N
			Components	
A-D	1	W2 18646	93344L*CYLINDER-AIR=DOUBLEACT BRAKE	
F-S	1	02 02068	94266A AIRCYL-STAINLESS=DUMPVALVE	
A-D, F-G, S,I-K,M-Q	2	02 18650	96431B STEM=2 WAY AIRCYLINDER BRAKE	
H	2	03 06313A	96431# STEM=AIR CYL 304SS	
L	2	02 18650A	96417B STEM-AIRCYL.UPLOCK PRESS	
R	2	02 18650B	97362B STEM=2WAY AIRCYL BRAKE 7.88L	
A-D	3	02 18660	CYLHEAD-BRASS=2WAY AIRCYL	
F-Q	3	02 02546	CYLHEAD=SLIDESTEM	
R	3	06 20702E	91227B FLOW NOT ACTUATOR CYL HEAD	
S	4	02 02101	71334A CYLHEAD W/TAPPED HOLE	
ALL	5	02 02105	91522A PISTON CUP WASHER STNLS STL	
S	5	02 02105B	92253B 2.38"ACYL BRASS PISCUP WASHR	
ALL	6	02 02194	93217B PISTONCUP=DUMPVALVE 2+3/8"	
ALL	7	02 02085	75161A UP WASHER=2"OD=PISTONCUP	

Air Cylinder Assemblies

6 Sheets

Table 47 Parts List—Air Cylinder Assmeblies (cont'd.)

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

Used In	Item	Part Number	Description/Nomenclature	Comments
ALL	8	02 02185	79237A WASHER=PISTON CUP COMP LIMIT	
A-D,F-Q,S	9	02 18651	73171A WASHER=2WAY BRAKECYL	
A-D,F-Q,S	10	03 01313	70219A STOP=AIR CYL W/2+11/16STROKE	
A-C,F-L, P-Q,S	11	02 15880	96471B SPRING=BRAKE1.5OD10.3FL17#/"	
A,D,F-M, Q,S	12	02 15881	96471# SPRING=BRAKE2.1OD11FL15.5#/"	
N	13	02 17023	83392B SPRING-SS=DUMP 1.5OD8FL21#/"	
ALL	14	60C132	ORING 2"IDX3/16CS BUNA70 #329	
A-D	15	60C110	ORING 1/2IDX3/32CS BUNA70 #112	
ALL	16	60C106	ORING 5/16ID 1/16CS BUNA70#011	
D,G-J,L-N,Q,S	17	27B240	SPCRROLL.5ID.813L.062T STLZNC	
A,C-D,F-Q,L,S	18	27B250	SPCRROLL.5ID1.5L.062T STLZNC	
S	19	02 10585E	91142# TIE BOLT=5/16-18X8.25LG PLTD	
ALL	19	02 10585E	91142# TIE BOLT=5/16-18X8.25LG PLTD	
R ONLY	19	W6 20702F	90293B*FLOW NOT VLV=AIR-CYL ROD WLD	
ALL	20	15U200	FLATWASHER(USS STD) 5/16"ZNC PLT	
ALL	21	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
F-Q	22	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR2	
ALL	23	15G220	02Z LTHX THIN LOKNUT 3/8-24 SSNTE	
A,C,F-G,I-J,L,Q,S	24	15U243	FLAWASHER 7/8ODX33/64IDX16GA ZINCPL	
F-N	25	15U520	FLAT WASHER 2+3/8X1+41/64X12GA ZINC	
F-Q,S	26	54E220	NYLNR 8L2FF BUSH 1/2X9/16X.140	
F,K,I-J,Q,S	27	17B012	EXTRETRING IND#1000-50-ST-ZD ZINC	
A	28	20L601R	ID TAG NAT'L #1614 ALUM EMB LET "R"	
B	28	20L601U	ID TAG NAT'L #1614 ALUM EMB LET "U"	
C	28	20L601P	ID TAG NAT'L #1614 ALUM EMB LET "P"	
D	28	20L601X	ID TAG NAT'L #1614 ALUM EMB LET "X"	
S	28	20L601J	ID TAG NAT'L #1614 ALUM EMB LET "J"	
F,H,Q,S	28	20L601A	ID TAG NAT'L #1614 ALUM EMB LET "A"	
G	28	20L601Q	ID TAG NAT'L #1614 ALUM EMB LET "Q"	
M	28	20L601F	ID TAG NAT'L #1614 ALUM EMB LET "F"	
N	28	20L601D	ID TAG NAT'L #1614 ALUM EMB LET "D"	

General Service & Safety-Related Components

6 Sheets

Table 47 Parts List—Air Cylinder Assmeblies (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
P	28	20L601V	ID TAG NAT'L #1614 ALUM EMB LET "V"	
K	28	20L601V	ID TAG NAT'L #1614 ALUM EMB LET "V"	
I-J,L	28	20L601E	ID TAG NAT'L #1614 ALUM EMB LET "E"	
F,I-L	29	20L601A	ID TAG NAT'L #1614 ALUM EMB LET "A"	
G-H	29	20L601F	ID TAG NAT'L #1614 ALUM EMB LET "F"	
N	29	20L601C	ID TAG NAT'L #1614 ALUM EMB LET "C"	
Q	29	20L601D	ID TAG NAT'L #1614 ALUM EMB LET "D"	
ALL	30	03 06309	70310C RIGHTMOUNT=BRAKE CYL ZNC	RIGHT
ALL	31	03 06308	70310C LEFTMOUNT=BRAKE CYL ZINC	LEFT
ALL	32	02 02550	97437ABRKT=AIRCYL-RIGHT ZINC/CAD	RIGHT
ALL	33	02 02547	LT BRACKET=AIRCYL CAD	LEFT
ALL	34	02 02556	SUPPORT=AIRCYL CADSTL	
ALL	35	27B2750L0T	01Z SPC RROLL.562ID.937L.048T ZNK	
ALL	36	15K206	HEXCAPSCR M5-.8X40MM 18-8SS	
ALL	37	15G235F	HXFNJAMNUT 9/16-12UNC2B ZINC GR2	
ALL	38	15U280	01Z FL+WASHER(USS STD)1/2 ZNC PL+D	
ALL	39	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
ALL	40	17A020	ADJ CLEVIS MACHINED 1/2-13 ZINC PLT	
ALL	41	17A065	01Z EYEEND 1/2-13 X2.25 ZINC	
ALL	42	17A040	CLEVISPIN 1/2"X1+3/8" DRILLED	
ALL	43	15H030	STDCOTTERPIN 3/32X3/4 ZINCPL	
ALL	44	27B34010SZ	SPCRROLL.512ID.625L.062T STLZC	
ALL	45	02 17024	94302B SPRING-SS=DUMP 1.5OD4FL40#/"	