

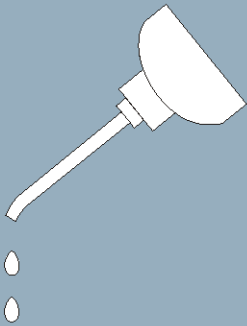
Published Manual Number/ECN: MPI48H7KAE/2016416A

- Publishing System: TPAS2
- Access date: 10/20/2016
- Document ECNs: Latest



# Installation and Service

## 48040H7R, H7K



**Read the  
separate  
safety  
manual  
before  
installing,  
operating,  
or servicing**



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## About This Manual



This document uses Simplified Technical English.  
Learn more at <http://www.asd-ste100.org>.

### 1. How to Identify this Manual and its Included Documents [Document BIUUUD20]

Use the specifications on the front cover of this manual to identify this manual or the included documents. This section gives these specifications.

**Published manual number**—The primary identification number for the manual.

**Document System**—The document system used to make the manual.

**Access date**—The date Milnor prepared the manual for its publication.

**Document ECNs**—A document ECN tells when the document was made. If this section contains “Latest Available,” then Pellerin Milnor® Corporation used the newest version of each document in the manual.

### 2. Best Available Data [Document BIUUUD17]

This manual has the most accurate data that was available when Milnor® sent your machine to the distributor. When the given instructions do not identify the device, we supply the best available instructions. Use the given instructions.

If you received incorrect instructions or if the instructions do not include some necessary data, speak with the Milnor® Customer Support group.

### 3. Trademarks [Document BIUUUD14]

#### 3.1. Trademarks of Pellerin Milnor Corporation—These words are trademarks of Pellerin Milnor Corporation:

**Table 1: Trademarks**

CBW®	E-P OneTouch®	Gear Guardian®	Milnet®	RinSave™
E-P Express®	E-P Plus®	Mentor®	Milnor®	Staph-Guard®
	ExactXtract™	Mildata®	MultiTrac™	Visionex™

#### 3.2. Trademarks of Other Companies—These words are trademarks of other companies:

**Table 2: Trademarks**

Acronis®	IBM®	Microsoft Office XP®	Microsoft Access®	Siemens®
Atlas 2000®	Microsoft Windows 2000®	Microsoft Windows NT®	Microsoft Windows XP®	Seagate Crystal Reports®
		Yaskawa®		

— End of BIUUUD21 —



## **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, FOB our factory. 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.

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## How to Get the Necessary Repair Components



This document uses Simplified Technical English.  
Learn more at <http://www.asd-ste100.org>.

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<sup>®</sup> 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: 504-467-2787  
Fax: 504-469-9777  
Email: [parts@milnor.com](mailto:parts@milnor.com)

— End of BIUUUD19 —



BIUUUM04 (Published) Book specs- Dates: 20080506 / 20080506 / 20080506 Lang: ENG01 Applic: UUU

## Fastener Torque Requirements

Torque requirements for other fasteners are specified in the specific document which describes the assembly. **If fastener torque specifications or threadlocking compound requirements in an assembly document vary from the specifications in this document, use the assembly document.**

**Figure 1: Common Bolts Used in Milnor Equipment**

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

### 1. Torque Values

The tables below list the standard size, grade, threadlocking compound, and torque requirements for fasteners commonly used on Milnor® equipment.

**Note 1:** Data derived from Pellerin Milnor® Corporation “Bolt Torque Specification” (bolt\_torque\_milnor.xls/2002096).

#### 1.1. Carbon Steel Fasteners

##### 1.1.1. Without Threadlocking Compound

**Table 1: Torque Values for Dry Fasteners 5/16-inch and Smaller**

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

Fastener Torque Requirements

**Table 2: Torque Values for Dry Fasteners Larger Than 5/16-inch**

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

**Table 3: Torque Values for Plated Fasteners 5/16-inch and Smaller**

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

**Table 4: Torque Values for Plated Fasteners Larger Than 5/16-inch**

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

## 1.1.2. With Threadlocking Compound

**Table 5: Threadlocking Compound Selection by Bolt Size**

LocTite Product	Bolt Size			
	1/4"	1/4" – 5/8"	5/8" – 7/8"	1" +
LocTite 222	OK			
LocTite 242		OK		
LocTite 262			OK	
LocTite 272			High temperature	
LocTite 277				OK

Fastener Torque Requirements

**Table 6: Torque Values for Applications of LocTite 222**

Bolt Size	Bolt Grade							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-inches	N-m	Pound-inches	N-m	Pound-inches	N-m	Pound-inches	N-m
1/4 x 20	60	7	96	11	132	15	108	12
1/4 x 28	72	8	108	12	144	16	--	--

**Table 7: Torque Values for Applications of LocTite 242**

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

**Table 8: Torque Values for Applications of LocTite 262**

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

**Table 9: Torque Values for Applications of Loctite 272 (High Temperature)**

Bolt Size	Bolt Grade							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
1 x 8	350	475	901	1222	1272	1725	1114	1510
1 x 12	383	519	986	1337	1392	1887	--	--
1 x 14	393	533	1012	1372	1428	1936	--	--
1-1/8 x 7	496	672	1111	1506	1802	2443	1577	2138
1-1/8 x 12	556	754	1247	1691	2022	2741	--	--
1-1/4 x 7	700	949	1568	2126	2544	3449	2226	3018
1-1/4 x 12	774	1049	1737	2355	2816	3818	--	--
1-3/8 x 6	917	1243	2056	2788	3335	4522	2919	3958
1-3/8 x 12	1044	1415	2341	3174	3797	5148	--	--
1-1/2 x 6	1217	1650	2729	3700	4426	6001	3873	5251
1-1/2 x 12	1369	1856	3071	4164	4980	6752	--	--

**Table 10: Torque Values for Applications of Loctite 277**

Bolt Size	Bolt Grade							
	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	--	--

## 1.2. Stainless Steel Fasteners

**Table 11: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller**

Nominal Bolt Size	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 12: Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch**

Bolt Size	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

## 2. Preparation



**WARNING [1]: Fire Hazard**—Some solvents and primer products are flammable.

- Use in a well ventilated area.
  - Do not use flammable products near ignition sources.
1. Clean all threads with a wire brush, a tap, or a die.
  2. Degrease the fasteners and the mating threads with a cleaning solvent. Wipe the parts dry.

**Note 2:** LocTite 7649 Primer N™ will remove grease from parts, but it costs more than a standard organic or petroleum solvent.

3. Prime the fasteners and the mating threads with LocTite 7649 Primer N™ or equal. Allow the primer to dry for at least one minute.

## 3. Application of Threadlocking Compound

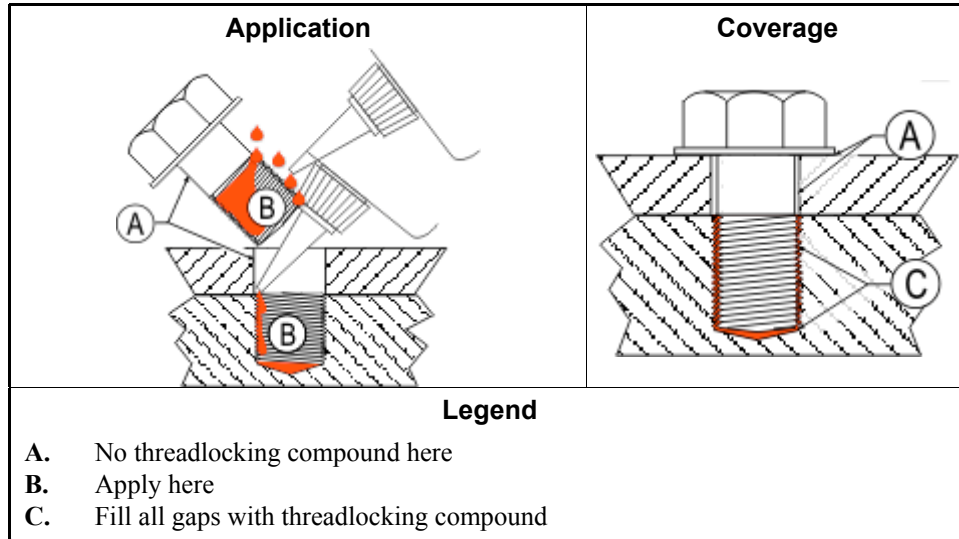


**CAUTION [2]: Malfunction Hazard**—Improper application of threadlocking compounds may result in fasteners becoming loose from impact, heat, or vibration. Loose fasteners can cause the equipment to malfunction.

- Read and follow the threadlocking compound manufacturer's instructions and warnings.

Apply threadlocking compound to the thread engagement areas of fasteners and mating threads only.

**Figure 2: Blind Hole**



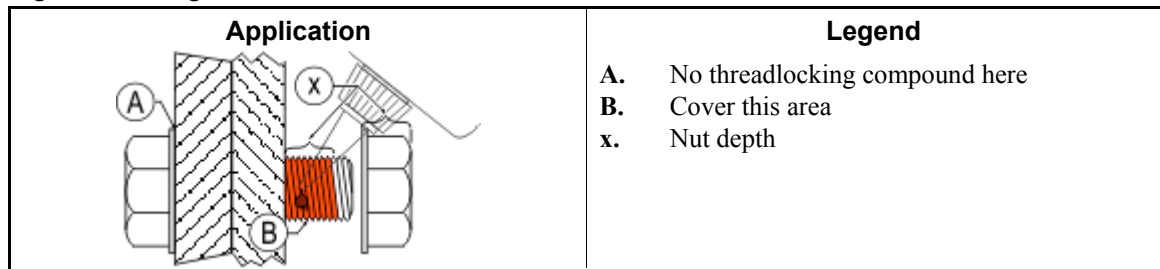
### 3.1. Blind Holes

1. Apply several drops of threadlocking compound down the female threads to the bottom of the hole.
2. Apply several drops of threadlocking compound to the bolt.
3. Tighten bolt to value shown in the appropriate table ([Table 5](#) through [Table 11](#)).

### 3.2. Through Holes

1. Insert bolt through assembly.
2. Apply several drops of threadlocking compound to the bolt thread area that will engage the nut.
3. Tighten bolt to value shown in the appropriate table ([Table 5](#) through [Table 11](#)).

**Figure 3: Through Hole**

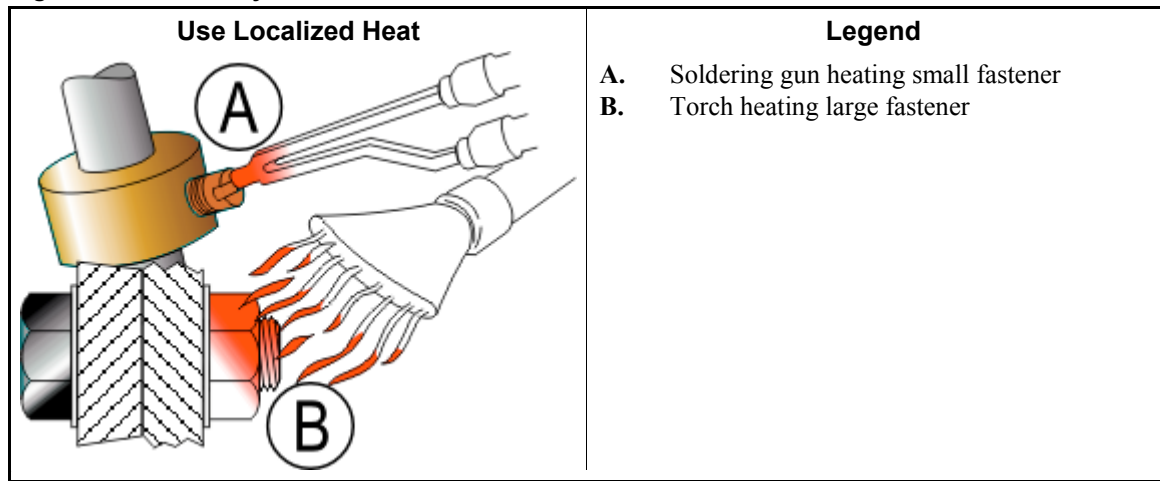


### 3.3. Disassembly

—For low-strength and medium-strength products, disassemble with hand tools.

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

Figure 4: Disassembly



— End of BIUUM04 —



Safety

1

## Safety—Tilting Washer-Extractors

### 1. General Safety Requirements—Vital Information for Management Personnel [Document BIUUUS04]

Incorrect installation, neglected preventive maintenance, abuse, and/or improper repairs, or changes to the machine can cause unsafe operation and personal injuries, such as multiple fractures, amputations, or death. The owner or his selected representative (owner/user) is responsible for understanding and ensuring the proper operation and maintenance of the machine. The owner/user must familiarize himself with the contents of all machine instruction manuals. The owner/user should direct any questions about these instructions to a Milnor® dealer or the Milnor® Service department.

Most regulatory authorities (including OSHA in the USA and CE in Europe) hold the owner/user ultimately responsible for maintaining a safe working environment. Therefore, the owner/user must do or ensure the following:

- recognize all foreseeable safety hazards within his facility and take actions to protect his personnel, equipment, and facility;
- work equipment is suitable, properly adapted, can be used without risks to health or safety, and is adequately maintained;
- where specific hazards are likely to be involved, access to the equipment is restricted to those employees given the task of using it;
- only specifically designated workers carry out repairs, modifications, maintenance, or servicing;
- information, instruction, and training is provided;
- workers and/or their representatives are consulted.

Work equipment must comply with the requirements listed below. The owner/user must verify that installation and maintenance of equipment is performed in such a way as to support these requirements:

- control devices must be visible, identifiable, and marked; be located outside dangerous zones; and not give rise to a hazard due to unintentional operation;
- control systems must be safe and breakdown/damage must not result in danger;
- work equipment is to be stabilized;
- protection against rupture or disintegration of work equipment;
- guarding, to prevent access to danger zones or to stop movements of dangerous parts before the danger zones are reached. Guards to be robust; not give rise to any additional hazards; not be easily removed or rendered inoperative; situated at a sufficient distance from the danger zone; not restrict view of operating cycle; allow fitting, replacing, or maintenance by restricting access to relevant area and without removal of guard/protection device;
- suitable lighting for working and maintenance areas;
- maintenance to be possible when work equipment is shut down. If not possible, then protection measures to be carried out outside danger zones;
- work equipment must be appropriate for preventing the risk of fire or overheating; discharges of gas, dust, liquid, vapor, other substances; explosion of the equipment or substances in it.

- 1.1. **Laundry Facility**—Provide a supporting floor that is strong and rigid enough to support—with a reasonable safety factor and without undue or objectionable deflection—the weight of the fully loaded machine and the forces transmitted by it during operation. Provide sufficient clearance for machine movement. Provide any safety guards, fences, restraints, devices, and verbal and/or posted restrictions necessary to prevent personnel, machines, or other moving machinery from accessing the machine or its path. Provide adequate ventilation to carry away heat and vapors. Ensure service connections to installed machines meet local and national safety standards, especially regarding the electrical disconnect (see the National Electric Code). Prominently post safety information, including signs showing the source of electrical disconnect.
- 1.2. **Personnel**—Inform personnel about hazard avoidance and the importance of care and common sense. Provide personnel with the safety and operating instructions that apply to them. Verify that personnel use proper safety and operating procedures. Verify that personnel understand and abide by the warnings on the machine and precautions in the instruction manuals.
- 1.3. **Safety Devices**—Ensure that no one eliminates or disables any safety device on the machine or in the facility. Do not allow machine to be used with any missing guard, cover, panel or door. Service any failing or malfunctioning device before operating the machine.
- 1.4. **Hazard Information**—Important information on hazards is provided on the machine safety placards, in the Safety Guide, and throughout the other machine manuals. **Placards must be kept clean so that the information is not obscured. They must be replaced immediately if lost or damaged. The Safety Guide and other machine manuals must be available at all times to the appropriate personnel.** See the machine service manual for safety placard part numbers. Contact the Milnor Parts department for replacement placards or manuals.
- 1.5. **Maintenance**—Ensure the machine is inspected and serviced in accordance with the norms of good practice and with the preventive maintenance schedule. Replace belts, pulleys, brake shoes/disks, clutch plates/tires, rollers, seals, alignment guides, etc. before they are severely worn. Immediately investigate any evidence of impending failure and make needed repairs (e.g., cylinder, shell, or frame cracks; drive components such as motors, gear boxes, bearings, etc., whining, grinding, smoking, or becoming abnormally hot; bending or cracking of cylinder, shell, frame, etc.; leaking seals, hoses, valves, etc.) Do not permit service or maintenance by unqualified personnel.

## 2. **Safety Alert Messages—Internal Electrical and Mechanical Hazards** [Document BIUUUS11]

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



**WARNING 1: 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 2: 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.



**WARNING 3: Crush Hazards**—Tilting machines only—The machine housing will crush your body or limbs if it descends or falls while you are under it. Housing can descend with power off or on. Manual operation of tilting valves overrides safety interlocks. Improper operation of manual tilting valves may cause the housing to descend.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.

### 3. Safety Alert Messages—External Mechanical Hazards [Document BIUUUS12]

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



**WARNING 4: Strike and Crush Hazards**—Machines with power operated door—The moving door can strike you or crush or pinch your limbs if caught between the door and machine. Some doors move automatically.

- Keep yourself and others clear of movement areas and paths.
- Keep both hands on the controls while operating.
- Do not operate the machine with malfunctioning two-hand manual controls.



**WARNING 5: Crush Hazards**—Tilting machines only—The machine can crush your body or limbs if you are caught between the tilting housing and a stationary object. Some machines tilt automatically.

- Keep yourself and others clear of movement areas and paths.
- Keep both hands on the controls while operating.
- Do not operate the machine with malfunctioning two-hand manual controls.



**WARNING 6: 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.

### 4. Safety Alert Messages—Cylinder and Processing Hazards

[Document BIUUUS13]

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



**DANGER 7: Entangle and Sever Hazards**—Contact with goods being processed can cause the goods to wrap around your body or limbs and dismember you. The goods are normally isolated by the locked cylinder door.

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



**WARNING 8: Crush Hazards**—Contact with the turning cylinder can crush your limbs. The cylinder will repel any object you try to stop it with, possibly causing the object to strike or stab you. The turning cylinder is normally isolated by the locked cylinder door.

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



**WARNING 9: 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 10: 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.

## 5. Safety Alert Messages—Unsafe Conditions [Document BIUUUS14]

### 5.1. Damage and Malfunction Hazards

#### 5.1.1. Hazards Resulting from Inoperative Safety Devices



**DANGER 11: 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 12: 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 13: 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 14: 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.



**WARNING 15: Crush Hazards**—Down limit switches (machines with front and rear tilt cylinders)—Failure of both front or both rear limit switches allows the seated tilt wheels on a tilted machine to lift from their cradles. The housing will fall and lunge forward or rearward.

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

#### 5.1.2. Hazards Resulting from Damaged Mechanical Devices



**WARNING 16: 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 17: 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 18: 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

## 5.2. Careless Use Hazards

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



**WARNING 19: 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.

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



**WARNING 20: Electrocutation and Electrical Burn Hazards**—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

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



**WARNING 21: 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 22: Crush Hazards**—Tilting machines only—The machine housing will crush your body or limbs if it descends or falls while you are under it. Housing can descend with power off or on. Manual operation of tilting valves overrides safety interlocks. Improper operation of manual tilting valves may cause the housing to descend.

- Secure both red safety supports in accordance with the instructions furnished, then lock out and tag out power at the main machine disconnect before working under the tilted machine.
- Do not operate the manual tilt valves with anyone under the machine.
- Do not operate the tilt controls with anyone under the machine.



**WARNING 23: Crush Hazards**—Tilting machines with front and rear tilt cylinders—The housing will fall and lunge forward or rearward if the tilt wheels on the non-tilted end lift out of their cradles, even with safety supports in place.

- Understand the consequences of operating manually.



**WARNING 24: 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.

— End of BIUUUS27 —

## How To Use the Red Safety Support(s) for Maintenance

### 1. What Safety Supports are Provided and Why

These machines are provided with two safety stands that can be folded down from within a channel that is part of the shell weldment when the machine is in the wash position. If the machine has an automatic loading elbow (dryel), it is provided with a safety bar that can be inserted when the dryel is up.

Use the safety support(s) whenever the maintenance to be performed requires you to place any part of your body in or near the path of the vertically moving portion of the machine. When not in use, stow the safety supports as explained herein.

**Figure 1: Safety Stands for Rubber Spring-resting, Hydraulic-tilt Washer-extractor Models (stowed shown at top, deployed shown at bottom)**

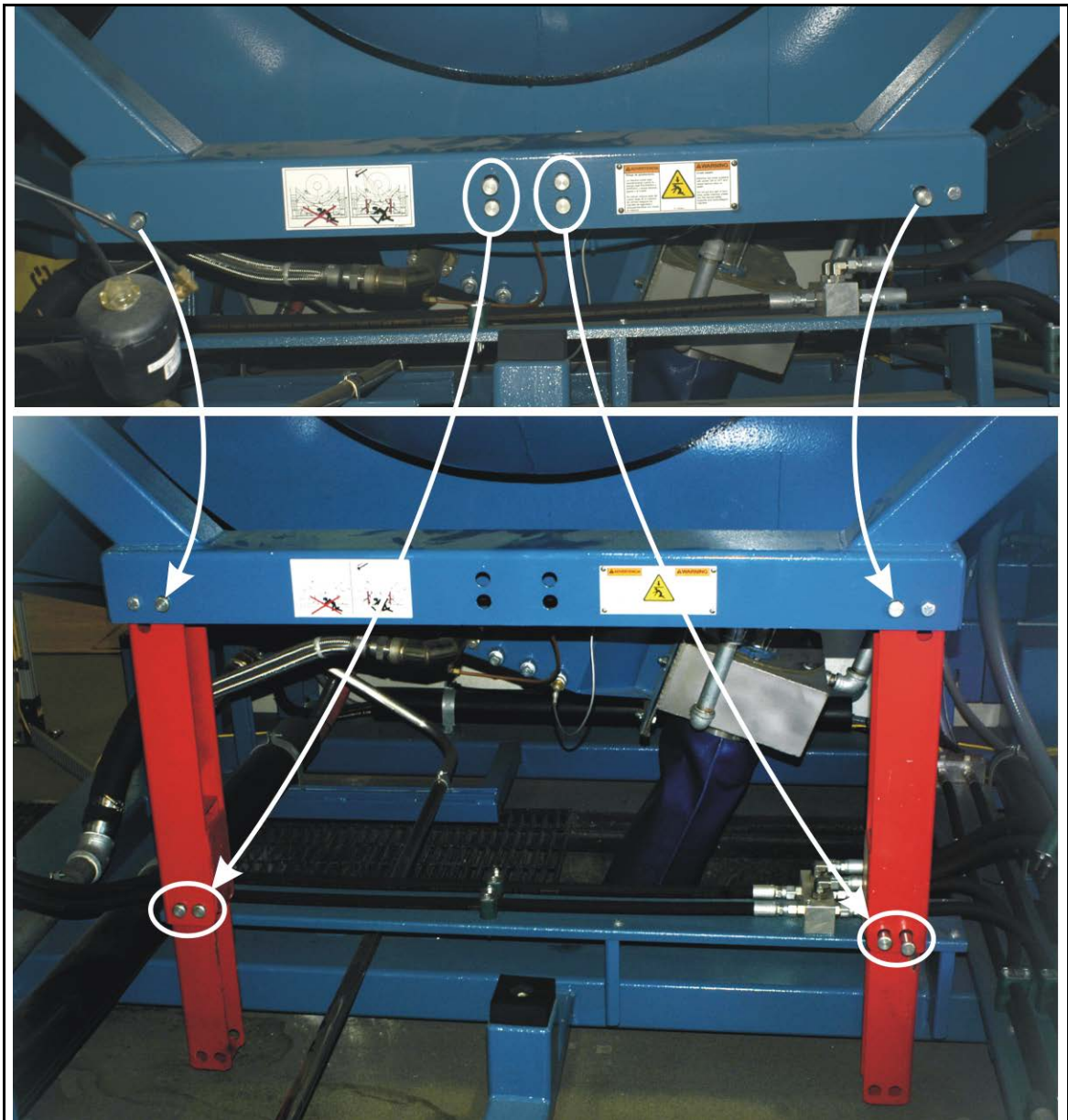
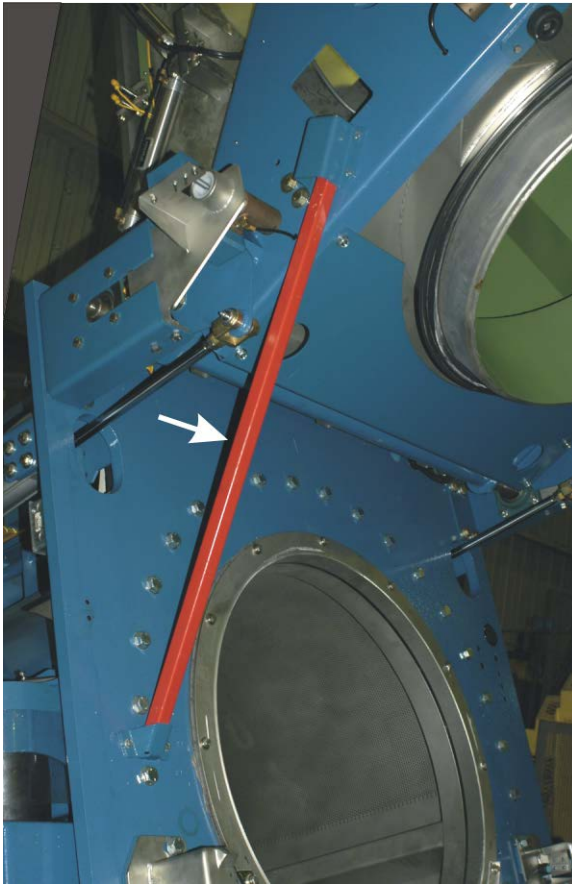




Figure 2: Safety Bar for Rubber Spring-resting, Hydraulic-tilt Washer-extractor Models with a Dryel



**WARNING 1: Crush Hazard**—The safety supports provide protection against the drifting down of the vertically moving portion of the machine during maintenance in the event of a leak in the hydraulic system. They are not intended to restrain the machine from coming down under power.

- Never work in or near the path of the vertically moving portion of the machine unless the safety supports are deployed and power is locked out/tagged out.
- Do not attempt to rest the safety stands on the floor by tilting the machine back under power.
- Maintain the safety support(s) in good condition.
- Where a pair of safety supports is provided, always use both safety supports.
- When not in use, stow these safety components in the location provided on the machine.

## 2. How to Deploy the Safety Support(s)

- 2.1. **Put the Machine In Position to Accept the Safety Support(s)**—At the controls, put the machine in the wash position (the shell is horizontal).
- 2.2. **Put the Safety Support(s) in Position**—Lower the safety stands from within the channel as follows:
  1. Remove the cotter pins from all six retaining pins.

2. While holding either safety stand to take the weight off of the retaining pins, remove the three pins and allow the safety stand to rotate down to the vertical position. The lower section of the safety stand will fall to the floor.
3. Lift the lower portion of the stand just enough to insert two retaining pins so the lower and upper portions of the safety stand lock together.
4. Insert the third retaining pin into the hole that prevents the stand from rotating.
5. Repeat these steps for the other safety stand. **Do not attempt to rest the safety stands on the floor by tilting the machine.**

**2.3. Deploy the Dryel Safety Bar if Appropriate**—If the machine uses a dryel for automated loading, use the safety bar for any maintenance that requires the dryel to be up. After you put the dryel in the up position, insert the safety bar first into the holding bracket on the dryel, then in the bracket on the shell front. A location is provided on the machine for stowing the safety bar when not in use.

— End of BIUUUS06 —

BIIFLM30 (Published) Book specs- Dates: 20140319 / 20140319 / 20140319 Lang: ENG01 Applic: IFL

### Safety Supports: 4840H7K, 6836H5K Hydraulic tilt

Figure 1: Safety Supports Installed

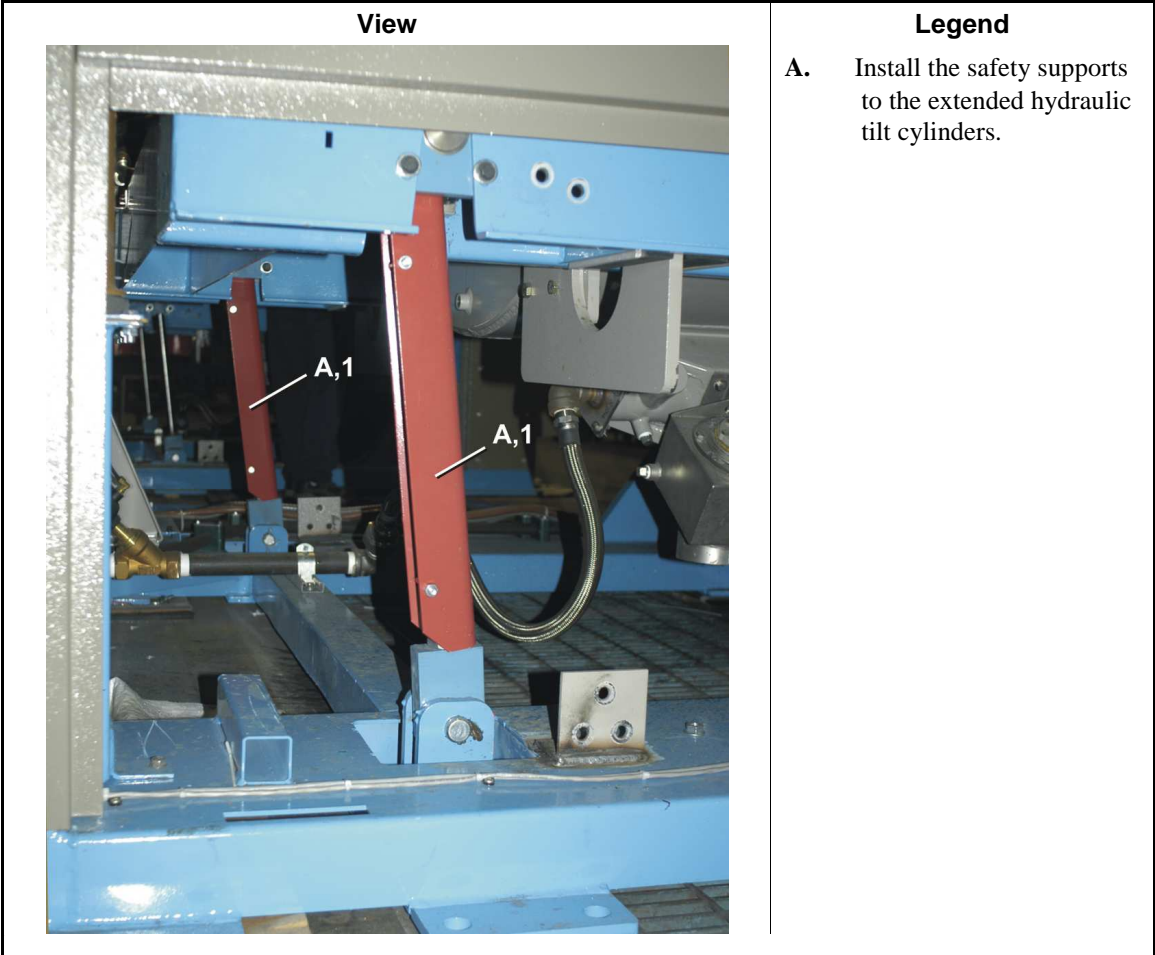


Figure 2: Detailed views



**Table 1: Parts List—Safety Supports 4840H7N**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
none				
Components				
	1	02 22420	HYDRAULIC SUPT SAFETY STAND 4840F7A	4840H7N, 4840H7K
		02 22424A	HYDRAULIC CYLINDER SAFETY BRACKET	6836H5N, 6836H5K
all	2	15K133	HXCAPSCREW 3/8-16UNC2AX3 GR5 Z	
all	3	15G205	HXNUT 3/8-16UNC2B ZINC GR2	

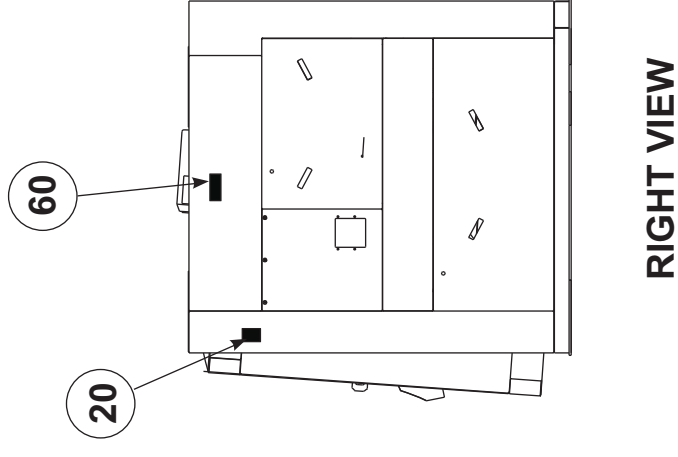
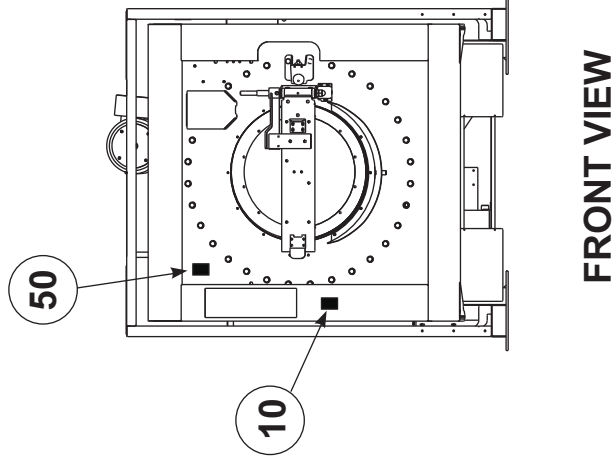
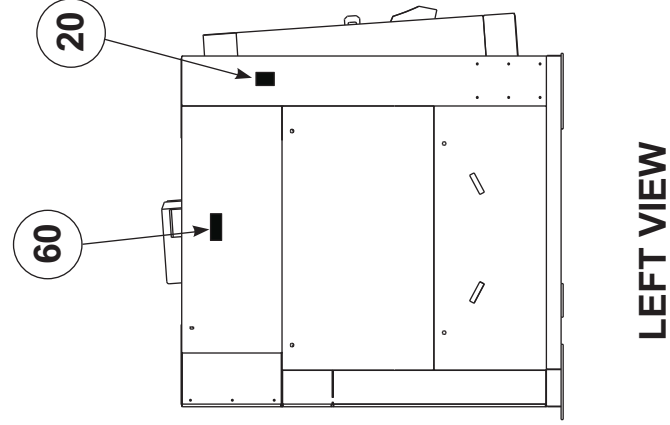
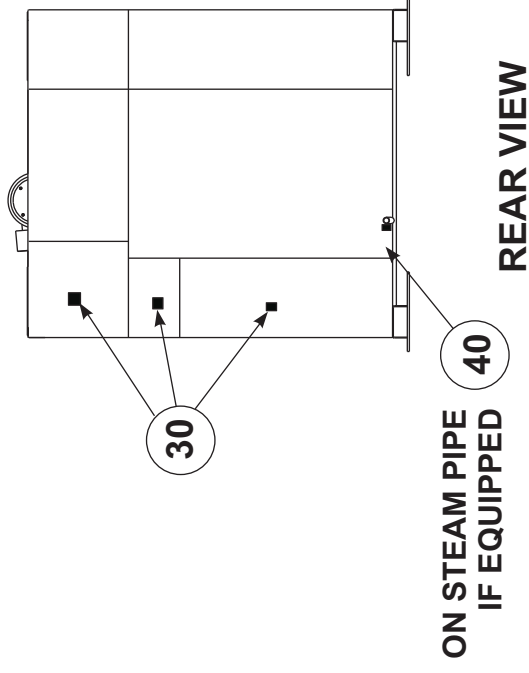
— End of BIIFLM30 —



**Pellerin Milnor Corporation**  
 P. O. Box 400, Kenner, LA 70063-0400

**Notes:**

1. Replace placard immediately, if removed or unreadable.
2. Approximate locations of placards are shown. Mounting holes are provided on machine. Use #8 self-tapping screws.





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Litho in U.S.A.

**Parts List—Safety Placard Placement**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
-----COMPONENTS-----				
all	10	01 10583A	NPLT:64/72 W/E WARN FRT-TCATA	
all	20	01 10630A	NPLT:TILT CRUSH HAZARD-TCATA	
all	30	01 10377A	NPLT:ELEC HAZARD LG-TCATA	
all	40	01 10685A	NPLT:BURN HAZARD WARN-TCATA	STEAM INLET ONLY
all	50	01 10699A	NPLT:SERV HZRD-PLYEST-TCATA	
all	60	01 10375B	NPLT:ELEC HAZARD SMALL-TCATA	

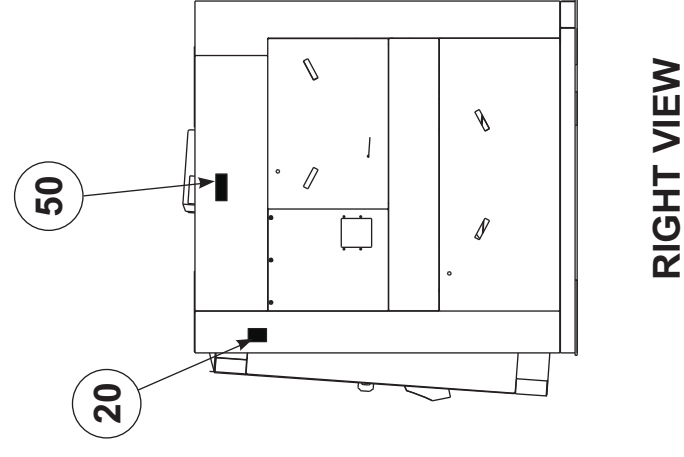
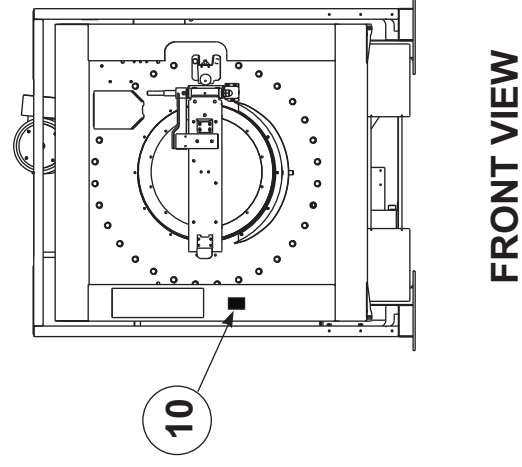
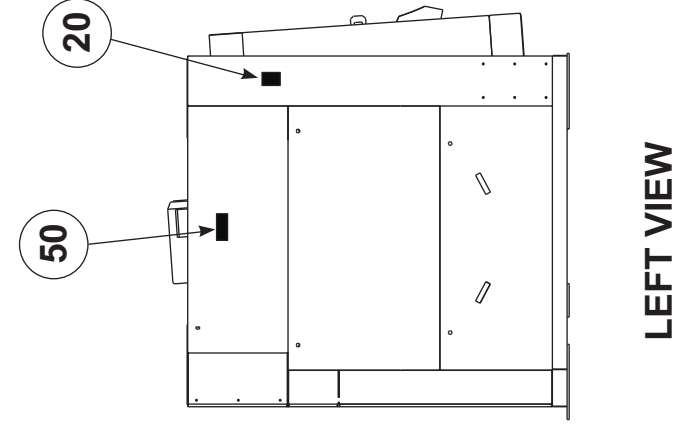
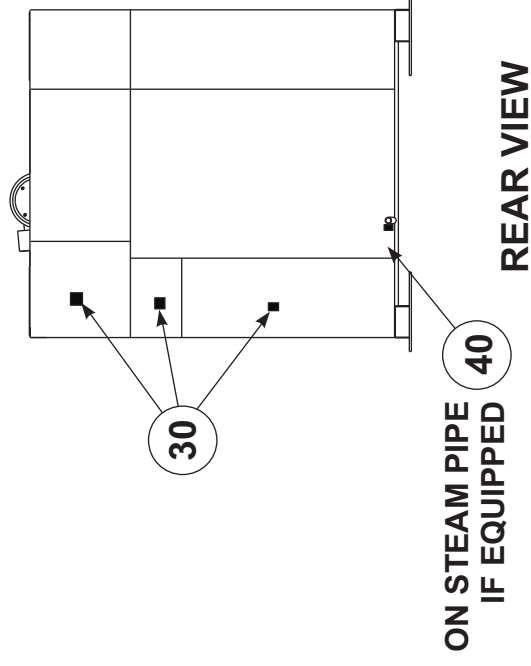


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**ISO PLACARDS**  
 Shown on this page.

**Notes:**

1. Replace placard immediately, if removed or unreadable.
2. Approximate locations of placards are shown. Mounting holes are provided on machine. Use #8 self-tapping screws.





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**Parts List—Safety Placard Placement**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
all	10	01 10629X	NPLT:WE1-TILT WARNINGS FRT	
all	20	01 10630X	NPLT:WE1-TILT WARNING SIDE ISO	
all	30	01 10377	NPLTE:"WARNING" 4X4	
all	40	01 10649X	NPLT:HOT BEHIND CVR WARN-ISO	STEAM INLET ONLY
all	50	01 10375	NPLTE:"WARNING" 2X2	



BIUUUI02KR (Published) Book specs- Dates: 20160713 / 20160713 / 20160713 Lang: ENG01 Applic: 48040H7K 48040H7R

## Tag Guidelines for the Models Listed Below

48040H7K 48040H7R

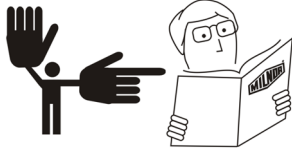
**Notice 1:** This information may apply to models in addition to those listed above. It applies to paper tags. It does not apply to the vinyl or metal safety placards, which must remain permanently affixed to the machine and replaced if no longer readable.

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

Tag Guidelines for the Models Listed Below

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

**Display or Action**



**Explanation**

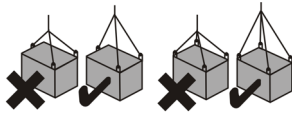
Read the manuals before proceeding. This symbol appears on most tags. The machine ships with safety, operator, and routine maintenance guides for customer use. Milnor dealer manuals for installing, servicing, and commissioning this machine are also available from the Milnor Parts department.



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



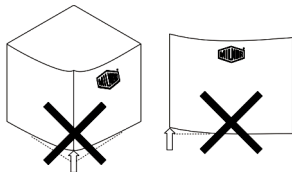
B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies.



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



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



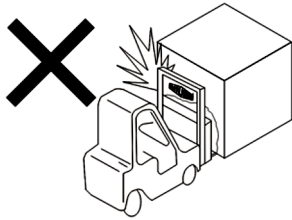
B2TAG94084: Do not lift from one corner of the machine, as this can cause the frame to rack, damaging it.



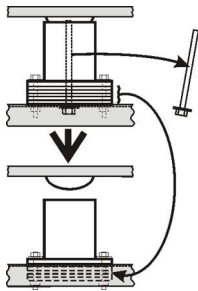
B2TAG94097: The cylinder must rotate **counterclockwise** during draining and extraction (spin) when viewed from here (rear of machine). Otherwise, reverse the electric power connections, as explained in the schematic manual.

**Display or Action**

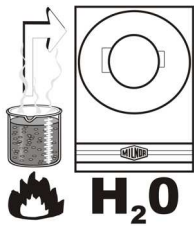
**Explanation**



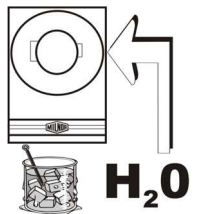
B2TAG94118: Do not strike shipping container during fork-lifting. Fragile components inside.



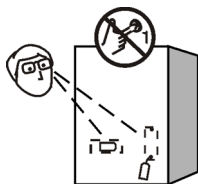
B2T2000028: Relocate shims as shown. Do not start machine until this is done.



B2T2001013: Hot water connection.



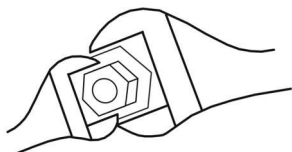
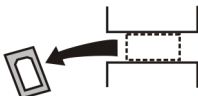
B2T2001014: Cold water connection.



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



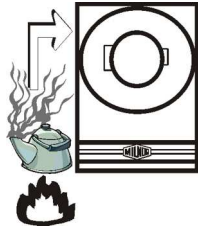
B2T2002013: Do not start the machine until shipping restraints are removed. This tag will appear on the outside of the machine to alert you to the presence of internal shipping restraints. A tag will also appear on the restraint to help identify it. Most, but not all shipping restraints display the color red. Some shipping restraints are also safety stands. Do not discard these.



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

Tag Guidelines for the Models Listed Below

**Display or Action**



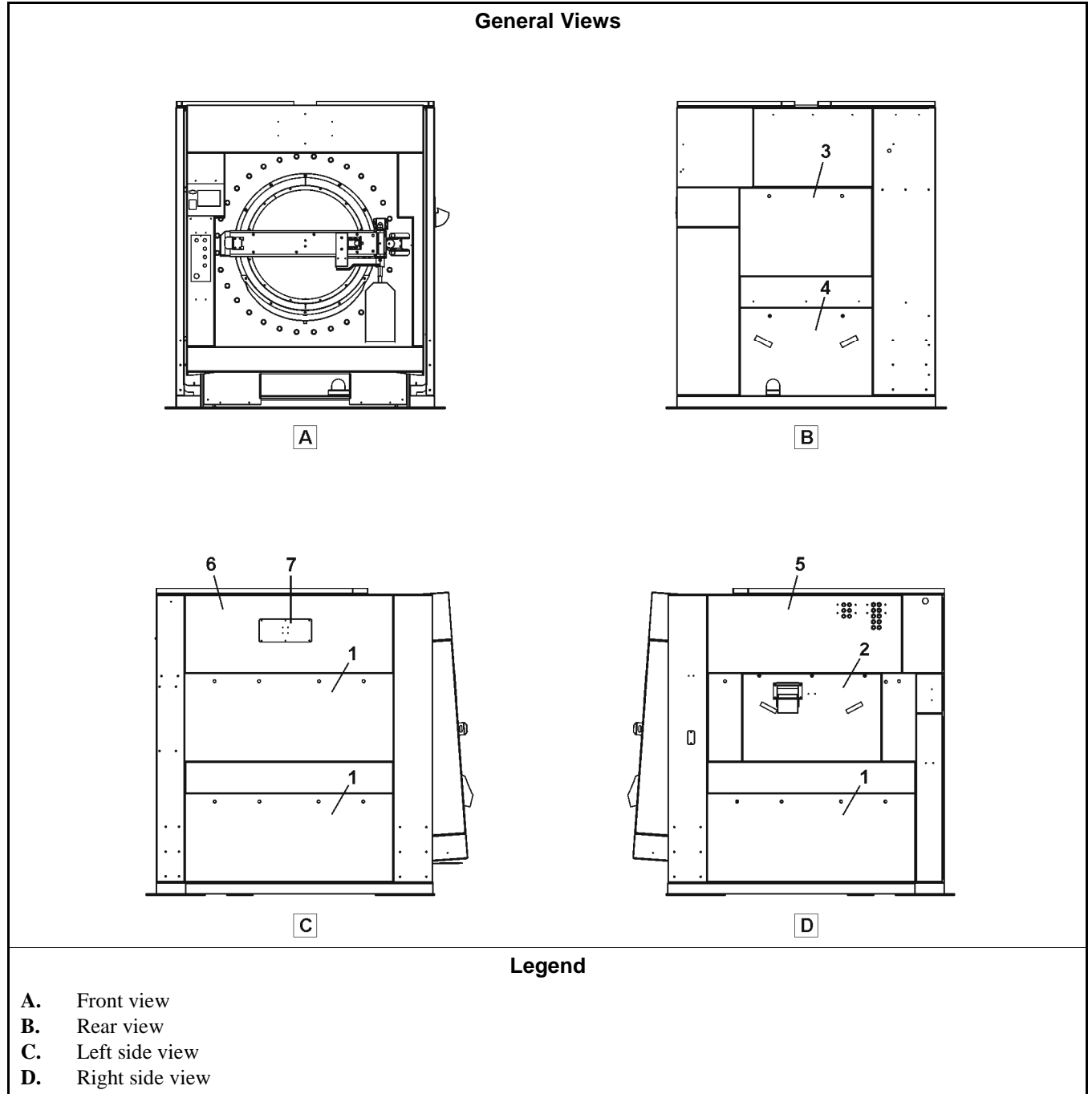
**Explanation**

B2T2004027: Steam connection (optional)

— End of BIUUUI02 —

## Panels and Covers

Figure 1: 48040H7N, 48040H7W, 4840H7R, 4840H7K



Panels and Covers

**Table 1: 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
Assemblies				
	A	GHG48004	Installation Group	
Components				
all	1	A48 22110E	Cover	
all	2	A48 22110G	Cover	
all	3	A48 22110F	Cover	
all	4	A48 22207	Cover	
all	5	W2 22269	Cover	
all	6	W2 22269A	Cover	
all	7	02 22115D	Cover	

— End of BIH4M01 —

# Installation

2

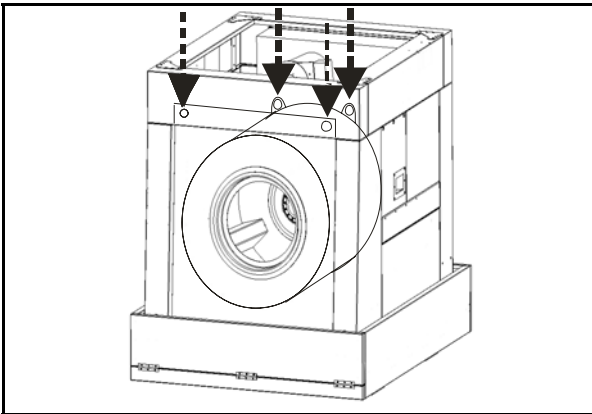
## 48040F\_, 48040H\_ & 68036H\_ Washer Extractor Installation

### 1. Handling

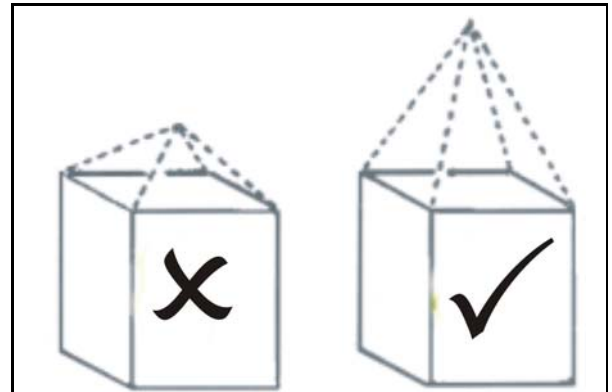
**Note 1:** Once the machine is given to the carrier for delivery, it is solely the responsibility of the carrier to ensure that no damage occurs during transit. In addition to readily apparent damage, carriers are liable for concealed damage. Do not hesitate to file a claim with the carrier if the machine is damaged in any way during shipment. Milnor will be glad to assist you in filing your claim, but is not responsible for any shipping damage to the machine once it has been delivered to the carrier in good condition.

1. Remove the protective coverings (leaving the machine on shipping skids) and examine carefully for possible shipping damage. If the machine is damaged, notify the transportation company immediately.
2. Locate the lift points as shown in [Figure 1](#).
3. Attach chains as shown in [Figure 2](#).

**Figure 1: Where To Lift**



**Figure 2: Rigger liable for damages**



**CAUTION 1:** **Machine damage hazard**—Improper placement of pickup chains can cause direct or indirect damage to machine.

- Use a 4 point pickup (as shown in [Figure 2](#))
- Use long pickup chains to prevent racking and/or twisting machine frame

### 2. Moving the Machine into Place

1. Use skids for fork lifting. If possible, leave the machine on shipping skids until it is near its final position. Once skids are removed, carefully place forks under base. Do not allow the forks to come in contact with valves, piping, motors, etc., located under the machine. Do not push or hit the shell front when uncrating or installing the machine as it may cause the door to leak.
2. Never push, pull, lift, jack, or exert pressure on any components that protrude from the machine frame (shell front, door, electric boxes, controls, guards, conduits, conveyors, piping, valves, drains, vents, tilt frames, etc.).
3. Do not pull on door conduit to help move the machine as the door switch may require readjustment.



### 3. Site Requirements

#### 3.1. Space Requirement

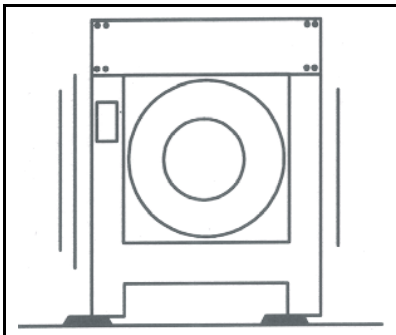
1. All openings and corridors through which equipment must pass during installation must be large enough to accommodate the width and the height of the machine as shown on the dimensional drawings. It is occasionally possible to reduce the overall dimensions by removing piping or other special modifications. Consult Milnor for additional information.
2. Sufficient clearance must be provided for normal operation and maintenance procedures.

#### 3.2. Operational Requirements

1. Allow sufficient ventilation for the heat and vapors of normal operation to dissipate.
2. Provide easy access to controls. Operators must be able to view all status lights and reach all controls associated with the machine (e.g., electrical power connections, water and steam shutoffs, etc.)

- 3.3. Foundation Requirement**—The floor and/or all other support components must have sufficient strength and rigidity with due consideration for the natural or resonant frequency thereof to withstand the fully loaded weight of the machine, including the wet goods and any repeated sinusoidal (rotating) forces generated during its operation. Determining the suitability of floors, foundations, and other supporting structures normally requires analysis by a qualified structural engineer.

**Figure 3: Vibration warning**



**CAUTION [2]: Machine damage hazard**—Improperly installed suspension type machines can “walk” out of position during extract (Figure 3), endangering personnel and damaging equipment.

- Roughen floor. Install anchor bolts and grout under all base pads to prevent “teeter-totter” and sideways movement.
- Remove shipping restraints after machine is in place. Failure to remove all restraints (usually painted red) will cause malfunctions and damage. Restraints may be located behind access covers. These include, but are not limited to:
  - Cylinder hold-down bolts, brackets, straps and/or blocking. Replace all fasteners which are part of the machine structure.
  - Vibration safety switch restraint.

## 4. Setting Procedures

To protect against lateral creeping of the machine during operation (due to vibration), roughen the area of the floor where the grout will be applied. Anchor bolts are required.

1. With the machine near the final location, unbolt the shipping skids. Observing all precautions, lift the machine off its skids and lower the machine onto blocking. Shim the blocking until the machine is level and approximately 1" (25) clearance exists under each base pad. Install anchor bolts as shown on the dimensional drawing, but do not tighten bolts until grout is completely dry.
2. Apply grout between the existing foundation floor and the base pads, observing the following considerations:
  - Use only industrial strength non-shrinking grout. Pack or trowel by hand.
  - If the grout after mixing is too thin (causing it to flow from under the base pads) install temporary cardboard framing around pads to retain the grout until it cures.



**CAUTION [3]: Vibration and Malfunction Hazard**—Voids under the base pads can magnify vibration and cause unsatisfactory operation.

- Grout must displace total clearance between base pads and existing foundation floor.
  - Voids must not exist.
3. Tighten anchor bolts evenly using only one-quarter turn on each bolt before moving to the next one. While tightening, frequently skip from front to back and right to left to insure uniform tension. After tightening all bolts, check each bolt at least twice during the first week of operation.

## 5. Before Running Machine



**CAUTION [4]: Machine Damage Hazard**—Machine can be damaged if shipping restraints are improperly utilized. These include various bolts, brackets, weldments and safety stands (painted red), and the vibration safety switch (tie wrapped).

- DO NOT remove shipping restraints until installation is complete.
- DO remove all shipping restraints before operating machine.

All machines are shipped with the shell locked to the mid frame by four hold down ring weldments (two per side). Each weldment consists of a cone and cup arrangement. When shipped, the shell mounted cone and the mid-frame mounted cup are locked together using a center bolt and shims inserted under the weldment cup (Figure 4). Remove the center bolt and shims before placing machine in service. Re-install the weldment as shown in Figure 4 and store the shims underneath the mid frame as shown in Figure 5. Retain center bolts in the event that the machine is moved.

Figure 4: The hold down weldment

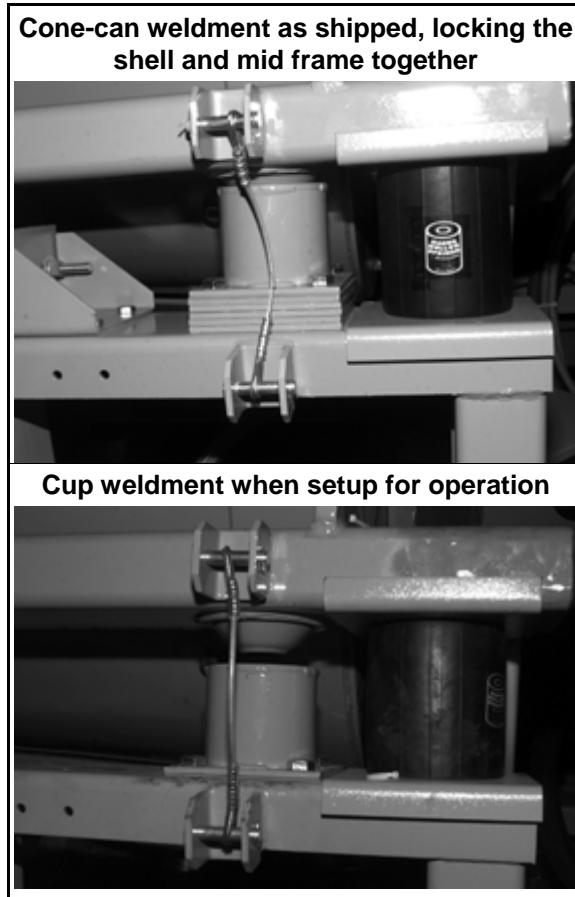
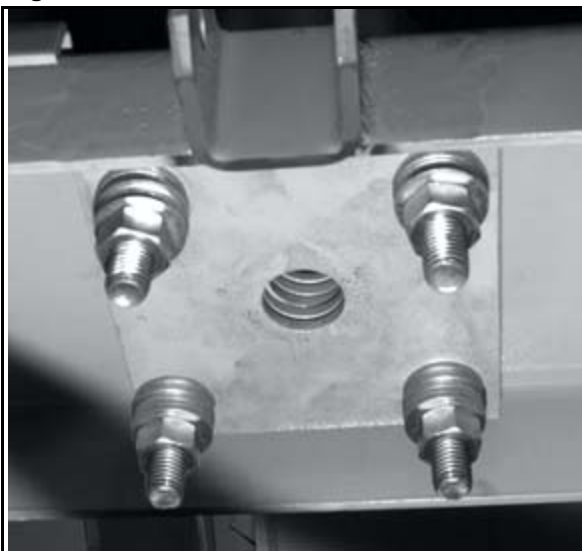


Figure 5: Shims stored under the mid frame



## 6. Before Tilting Machine



**WARNING 5: Crush/Sever hazard**—Tilting mechanisms can crush or sever parts of your body caught in them.

- Install safety stands before performing maintenance under a tilted machine.
- NEVER test or operate (manually or automatically) any machine function with any portion of a person's body under the tilted machine - even if the safety stands are installed.

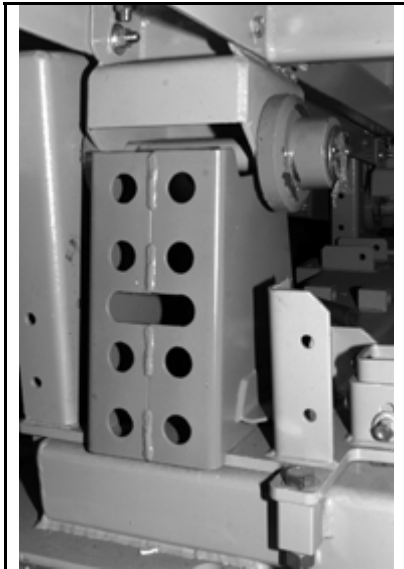


**WARNING 6: Crush/Sever hazard**—Tilt machines with tilt wheels/cradles may lunge forward or rearward and even fall over if the non-tilted ends are raised out of their cradles - killing/injuring personnel and/or damaging property.

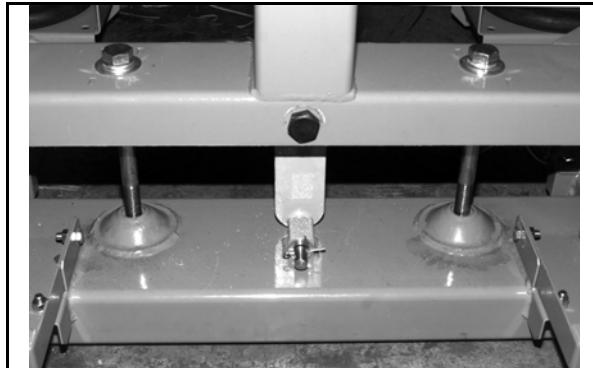
- NEVER manually tilt (lift) both ends of the machine at the same time. One end must always be seated in its cradle.
- ALWAYS visually inspect the tilt wheels to be sure they are all fully seated in their cradles before each manual tilt up.
- Pneumatic valve manual operation must be done by trained competent maintenance personnel who thoroughly understand the system and all the consequences of manual operations.
- ALWAYS understand beforehand all the consequences of manually operating pneumatic valves.
- NEVER permit operation with malfunctioning tilt limit switches

Tilting machines leave the factory with 4 hold-down bolts (two per side) locking the tilting mid-frame to the floor frame (Figure 7). Remove these bolts after machine is anchored and grouted, service connections are complete and all other installation steps are complete.

**Figure 6: Safety stand in place**



**Figure 7: Tilting Mid Frame to Floor Locking Bolts**



— End of BIIFLI01 —

## Avoiding Damage From Allied Remote Chemical Delivery Systems

Milnor® does not manufacture or supply remote chemical delivery systems and this document is meant only to illustrate some of the possible problems that can be minimized during installation of such systems by the chemical supply company. Milnor washer-extractors and CBW® batch washers (tunnels) are available with convenient inlets for such systems (see Figure 1). Most common of the types of systems currently used in commercial laundering operations are pumped chemical systems. Other types, such as constant pressure, re-circulating ring main systems have also been, and may continue to be used with Milnor equipment.

This document warns about some of the possible hazards posed by chemical systems and lists certain requirements needed to minimize those hazards. The procedures for interfacing with allied chemical systems and information pertinent to chemical use in general are provided elsewhere in the product manuals (see Note 1).

**Figure 1: Pumped Chemical Inlets on CBW Batch Washer**



**Note 1:** Misuse of laundering chemicals (such as injecting excessive concentrations of chlorine bleach or permitting acid sours to react with hypo chlorite) due to incorrect formulation can also be hazardous. Information pertinent to chemical use is provided elsewhere in the product manuals.

### 1. How a Chemical System Can Damage the Machine It Serves

Milnor has manufactured washer-extractors and tunnel washers with the same stainless steel specification since its founding. Every batch of steel used is certified and documented by the steel mill. Testing of samples damaged by corrosion have, in every case, proven the steel to be well within the AISI 304 specification.

Chemical products commonly found in the laundry industry, when used in **established** dosages and proper operating parameters, under the auspices of an experienced chemical specialist, should produce satisfactory results, with no consequential detrimental effects. The industry has published standards in Riggs and Sherrill, “Textile Laundering Technology”. However, the stainless steel can be damaged and even destroyed by **abnormal** contact with chlorine bleach, hydrofluosilicic acid and other commonly used chemicals, as will occur if chemicals are unintentionally leaked into the machine, particularly when it is no longer in use and especially when machine surfaces are dry.

Some chemical systems have been found to permit chemicals to dribble from the supply lines, or worse, to siphon from the supply tank into the machine, during operation and long after the system is shut down—as after working hours and during weekends. If this occurs, **deterioration (rusting) of the stainless steel and damage to any textiles therein will inevitably result. If this condition goes undetected, machine damage is likely to be catastrophic.** No machine is immune to such damage.



**CAUTION [1]: Equipment and Textile Damage Hazards**—Chemicals leaked into the machine, particularly when it is idle can destroy machine components and textiles left in the machine. **Pellerin Milnor Corporation accepts absolutely no responsibility for damage to its equipment or to textiles therein from abnormal contact with chemicals.**

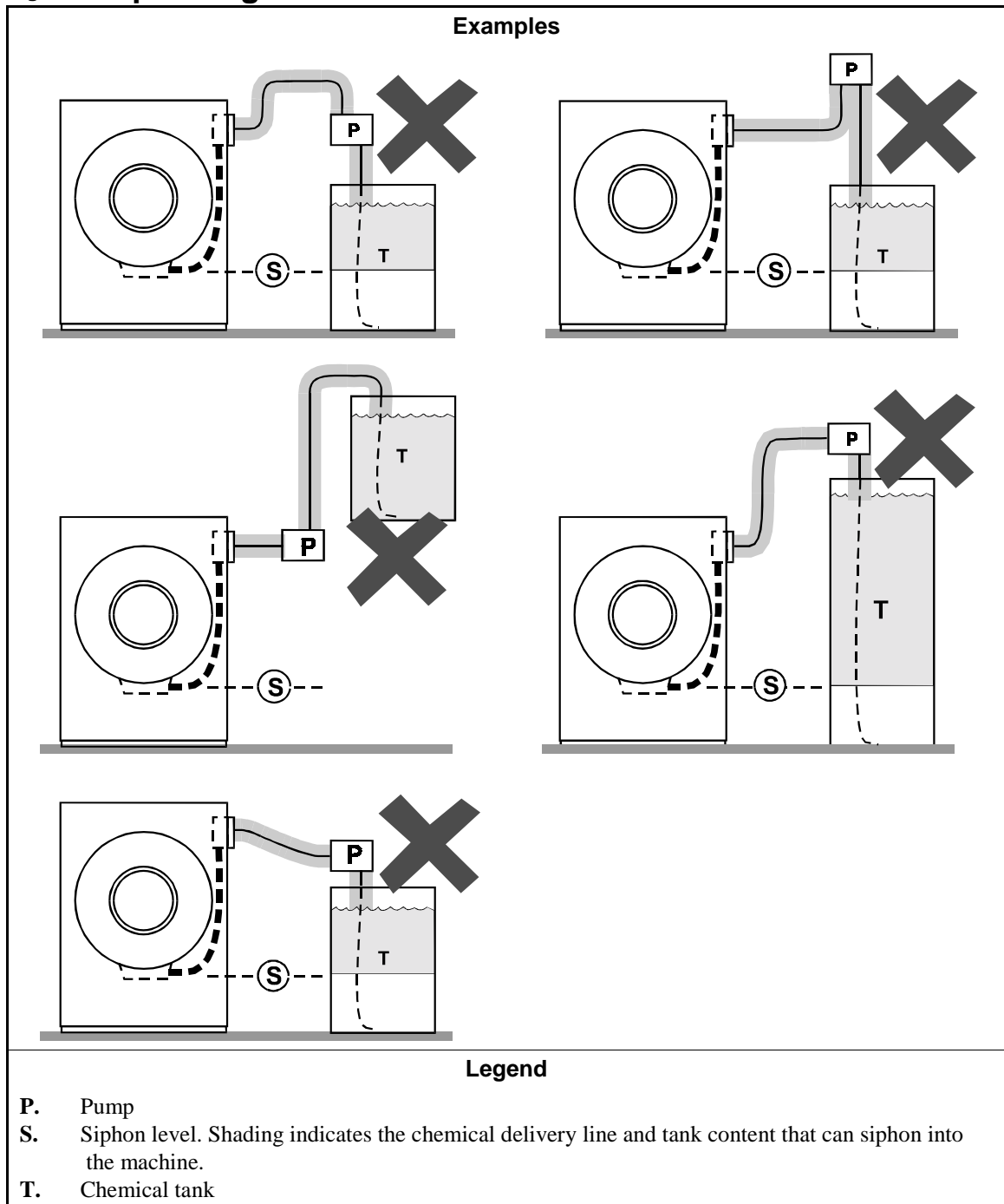
- Ensure that the chemical system prevents unintentional release of chemicals.
- Inspect regularly for proper operation and evidence of damage.

## 2. Requirements for Chemical Systems Used With Milnor Machines

It is the responsibility of the chemical system manufacturer and supplier to ensure that their system is safe for personnel and equipment. Some important points are described below.

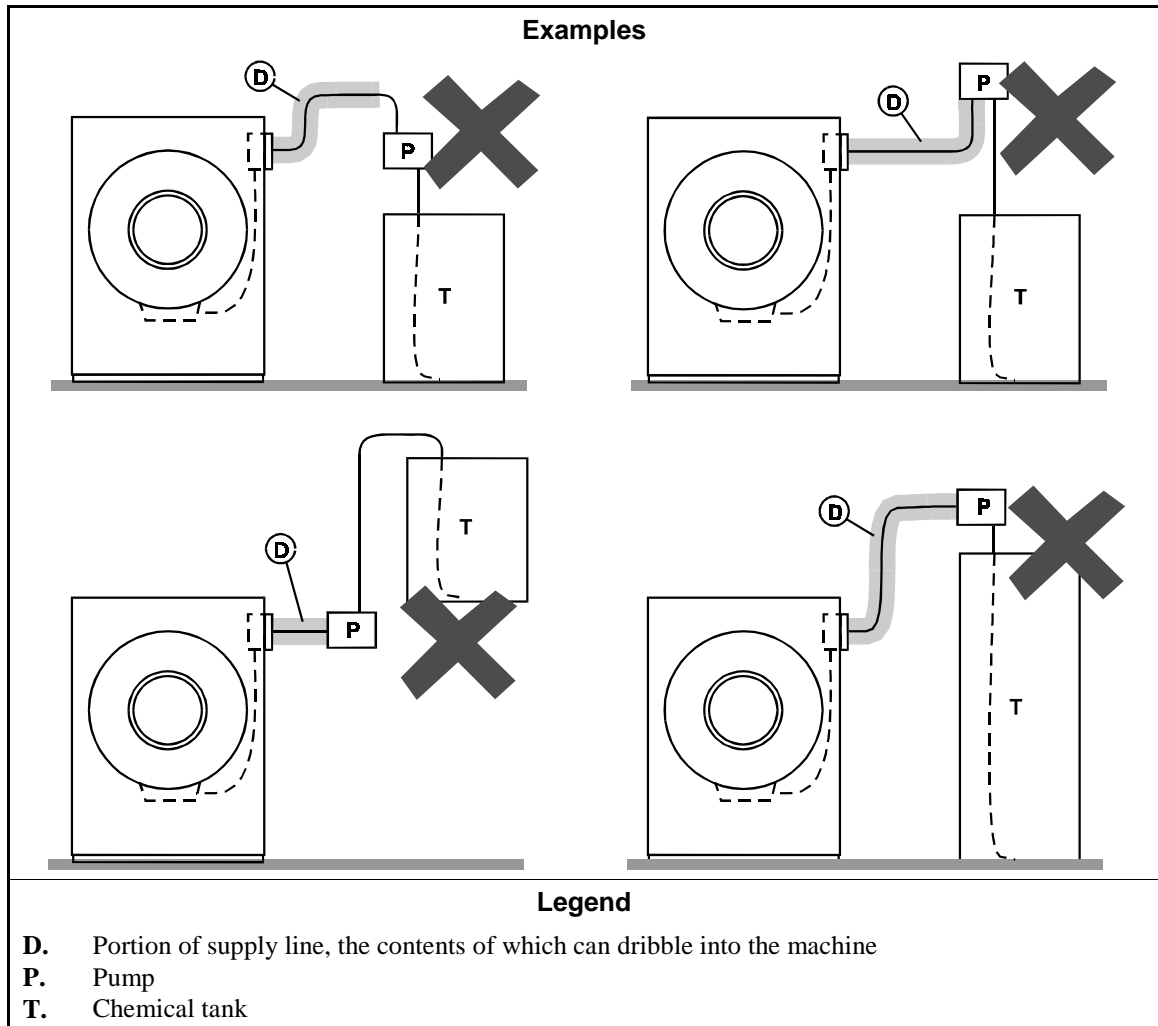
- 2.1. **Ensure the System Cannot Siphon.**—The supply system must be designed to counteract any siphoning that could occur as a result of having a sealed supply line between the bottom of the chemical tank and the internal machine connection at the drain trough. As shown in the Figure 2 examples, if the pump (P) and/or the valving does not provide positive closure and there is no vacuum breaker protection, siphoning is likely to occur. In each of the Figure 2 illustrations, the volume of chemical in the tank above the siphon level (S), and indicated by shading, will flow into the machine.

**Figure 2: Siphoning From the Chemical Tank into the Machine**



2.2. **Ensure the Chemical Lines Cannot Dribble**—The pumped chemical system may provide a means of positively closing the chemical line at the pump location, but not at the injection site. Hence, any concentrated chemical that remains in the injection line between the pump and the machine is free to flow into the machine. Some examples of this are shown in Figure 3.

**Figure 3: Dribbling From Chemical Supply Line Into Machine (assumes positive closure at the pump)**



### 3. Design and Installation Recommendations

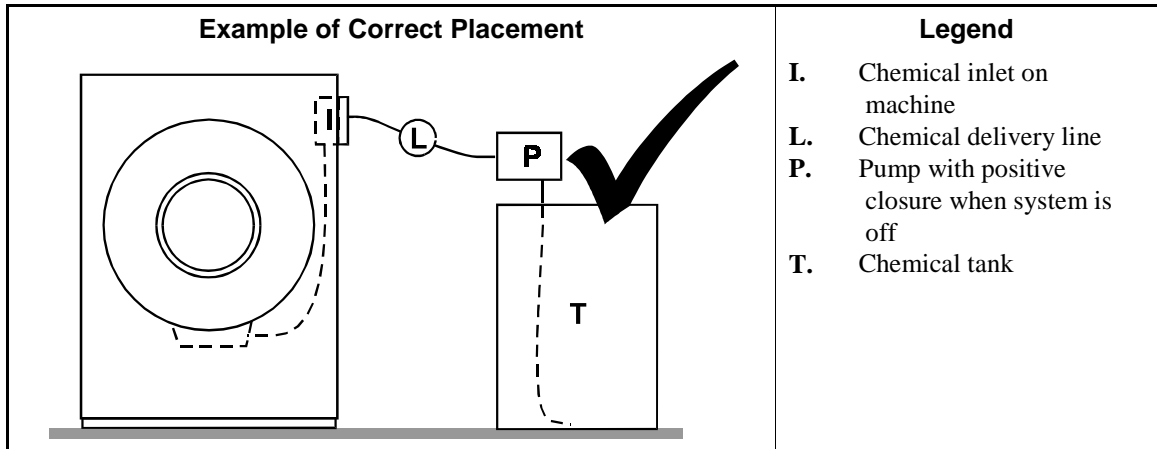
**It is the responsibility of the chemical system manufacturer and supplier to use whatever measures are necessary to ensure that their system is safe for personnel and equipment.** The following are some of the possible methods the manufacturer or supplier may wish to use, as appropriate.

- 3.1. **Siphoning: Positively close the line.**—If the pump does not provide positive closure when the system is off, employ a shutoff valve in the line to serve this purpose.
- 3.2. **Siphoning: Break the siphon.**—Provide an air gap or vacuum breaker in the chemical delivery line. This must be located above the “full” line of the tank.
- 3.3. **Dribbling: Flush the entire chemical delivery line.**—If any concentrated chemical that remains in the injection line between the pump and the machine is free to flow into the machine, employ a system that flushes the entire line between the pump and the injection point with fresh water after each injection.



- 3.4. **Dribbling: Locate the entire chemical line below the machine inlet.**— Assuming the chemical system does not retain any line pressure and that the pump provides positive closure when the system is off, locate the entire chemical delivery line below the level of the chemical inlet. An example of this is shown in Figure 4.

**Figure 4: Locating a Pumped Chemical System With Positive Closure To Protect Against Machine Damage**



#### 4. Guarding Against Leaks

All personnel who may work with the chemical system (e.g., chemical system manufacturer, chemical system supplier, chemical supplier, operator, maintenance personnel) should be vigilant in observing for leaks in the system. When connecting, or reconnecting chemical lines, whether at installation, after taking samples, or when replacing components, at a minimum ensure that:

1. the proper components are used,
2. all connections are the proper fit, and
3. all components are securely connected.



**CAUTION [2]: Injury and Damage Hazards**—Chemicals leaking from a chemical system may be corrosive or toxic. Such chemicals can injure personnel and damage equipment.

- Use care when connecting chemical lines.
- Inspect regularly for leaks.

— End of BIWUUI03 —

## About the Forces Transmitted by Milnor® Washer-extractors

During washing and extracting, all washer-extractors transmit both static and dynamic (cyclic) forces to the floor, foundation, or any other supporting structure. During washing, the impact of the goods as they drop imparts forces which are quite difficult to quantify. Size for size, both rigid and flexibly-mounted machines transmit approximately the same forces during washing. During extracting, rigid machines transmit forces up to 30 times greater than equivalent flexibly-mounted models. The actual magnitude of these forces vary according to several factors:

- machine size,
- final extraction speed,
- amount, condition, and type of goods being processed,
- the liquor level and chemical conditions in the bath preceding extraction, and
- other miscellaneous factors.

Estimates of the maximum force normally encountered are available for each Milnor® model and size upon request. Floor or foundation sizes shown on any Milnor® document are only for on-grade situations based only on previous experience without implying any warranty, obligation, or responsibility on our part.

### 1. Rigid Machines

Size for size, rigid washer-extractors naturally require a stronger, more rigid floor, foundation, or other supporting structure than flexibly-mounted models. If the supporting soil under the slab is itself strong and rigid enough and has not subsided to leave the floor slab suspended without support, on grade installations can often be made directly to an existing floor slab if it has enough strength and rigidity to safely withstand our published forces without transmitting undue vibration. If the subsoil has subsided, or if the floor slab itself has insufficient strength and rigidity, a deeper foundation, poured as to become monolithic with the floor slab, may be required. Support pilings may even be required if the subsoil itself is “springy” (i.e., if its resonant frequency is near the operating speed of the machine). Above-grade installations of rigid machines also require a sufficiently strong and rigid floor or other supporting structure as described below.

### 2. Flexibly-mounted Machines

Size for size, flexibly-mounted machines generally do not require as strong a floor, foundation, or other supporting structure as do rigid machines. However, a floor or other supporting structure having sufficient strength and rigidity, as described in [Section 3](#), is nonetheless vitally important for these models as well.

### 3. How Strong and Rigid?

Many building codes in the U.S.A. specify that laundry floors must have a minimum live load capacity of 150 pounds per square foot (732 kilograms per square meter). However, even compliance with this or any other standard does not necessarily guarantee sufficient rigidity. In any event, it is the sole responsibility of the owner/user to assure that the floor and/or any other supporting structure exceeds not only all applicable building codes, but also that the floor and/or any other supporting structure for each washer-extractor or group of washer-extractors actually has sufficient strength and rigidity, plus a reasonable factor of safety for both, to support the weight of all the fully loaded machine(s) including the weight of the water and goods, and including the published 360° rotating sinusoidal RMS forces that are transmitted by the machine(s). Moreover, the floor, foundation, or other supporting structure must have sufficient

rigidity (i.e., a natural or resonant frequency many times greater than the machine speed with a reasonable factor of safety); otherwise, the mentioned 360° rotating sinusoidal RMS forces can be multiplied and magnified many times. It is especially important to consider all potential vibration problems that might occur due to all possible combinations of forcing frequencies (rotating speeds) of the machine(s) compared to the natural frequencies of the floor and/or any other supporting structure(s). A qualified soil and/or structural engineer must be engaged for this purpose.

**Figure 1: How Rotating Forces Act on the Foundation**

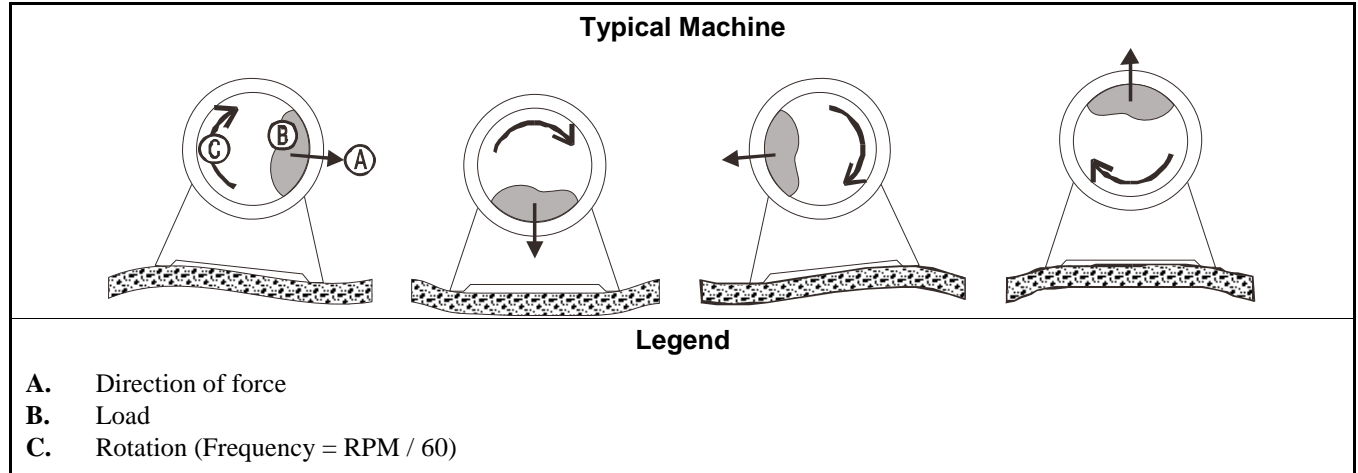


Figure 1 above is intended to depict both on-grade and above-grade installations and is equally applicable to flexibly-mounted washer-extractors, as well as to rigid models installed either directly on a floor slab or on a foundation poured integrally with the slab. Current machine data is available from Milnor® upon request. All data is subject to change without notice and may have changed since last printed. It is the sole responsibility of every potential owner to obtain written confirmation that any data furnished by Milnor® applies for the model(s) and serial number(s) of the specific machines.

— End of BIWUI02 —

## Service Connections

Required service connections (depending on the machine model and optional equipment) are as follows:

1. Piped inlets and outlets are as listed in the “Table of Piped Inlets” and “Table of Piped Outlets.” The sizes and locations of piped inlets and outlets are shown on the dimensional drawings for the machine.
2. Electric power connections.

### 1. Requirements for Piped Connections

1. Inlet pressures must be within the minimum/maximum range specified. Pressures outside of the specified range may cause the machine to operate inefficiently or malfunction, and may damage machine components.



**CAUTION [1]: Machine Damage**—Valve bodies will be ruined if twisted and distorted.

- Hold the connection side of the valve with a wrench when connecting plumbing.
2. When connecting water and steam inlets, always install unions and shut-off valves at the point of connection to permit removal of the machine components for servicing, if necessary.
  3. If available, use hot water for the supply injector connection. Hot water supply must be 10 PSI minimum (0.70 kilogram/centimeter) and must not contain steam. After making the connection, set the pressure regulator for a maximum of 28 PSI (1.96 kilograms/centimeter), when there is no water flow.
  4. If valve is accidentally piped to the wrong water line, merely interchange the air tube (if valve is air operated). Never interchange any electrical connections.
  5. Some of the water inlet and/or steam valves on machines may be of the “ball valve” construction. The flow rate of a ball valve is far greater than that of an equal size globe valve. Do not use globe type shut-off valves in front of ball valves unless the globe valve is selected in accordance with the following table.



**CAUTION [2]: Machine Damage Hazards**—Pumped chemical systems, if not properly installed, can cause corrosion damage.

- See the reference manual for precautions and additional information before making any chemical connections.

**Table 1: Valve sizes and their equivalents**

Ball valve size	Equivalent globe valve size
1-1/4" normal flow	2-1/2"
1-1/2" normal flow	2-1/2"
2" normal flow	3"

### 2. Piped Inlet Specification

Piped inlet requirements are as follows (see dimension drawings for sizes and locations of connection points):

**Table 2: Table of Piped Inlets**

Description of Connections	Source Requirements	Piping Specifications, Comments
Cold water inlet	1-1/2" NPT 10 - 75 PSI (0.7 -5.27 kgs.sq. cm.)	Pipe material per plumbing code
Hot water inlet		
Steam inlet	1 - 1/4" NPT 30 - 115 PSI (2.10 - 8.08 kgs. sq. cm.)	Pipe material per plumbing code
Compressed air--air tilting models	1" NPT 85 - 110 PSI (5.97 - 7.73 kg.sq. cm.)	
Compressed air--hydraulic tilting, and non-tilt models	1/4" NPT, 85 - 110 PSI (5.97 - 7.73 kg.sq. cm.)	

2.1. **Piped Outlet Specification**—Piped outlet requirements are as follows (see dimensional drawings for sizes and locations of connection points):

**Table 3: Table of Piped Outlets**

Description of Connections	Destination Requirements or Description	Piping Specifications
Drain	4 1/2" OD (not tilted)	Rubber hose, PVC, or other approved material per plumbing code
Vent	4" Diameter	

2.2. **Precautions for Electrical Connections**



**WARNING 3: Electrocution Hazard**—Contact with high voltage can kill or seriously injure you.

- All electrical connections must be made by a competent electrician.
1. Connections must be made by a competent electrician.
  2. See the fuse and wire sizing information in the schematic manual and on the machine nameplate.
  3. “Stinger leg” if any, must be connected to terminal L3, never to terminals L1 or L2.
  4. Only use BUSSMAN FUSETRON FRN (up to 250V), FRS (up to 600V), or similar lag fuses. The nameplate fuse sizes must not be applied to standard fuses.
  5. See nameplate for fuse and wire size. For wire runs more than 50 feet (15.24 meters), increase by one wire size per each additional 50 feet.
  6. Make the power and liquid supply electrical connections within junction box on the rear of the machine.
  7. Verify all motor rotation as shown in FIGURE 1 (See the operating and troubleshooting manual for more information). If the cylinder turns in the wrong direction, see note below.

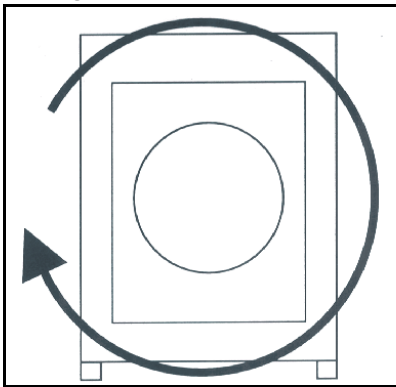
**Note 1:** Before shipping, all motors are properly phased for correct rotation. It is possible to reverse the direction of rotation in a three-phase machine by interchanging the incoming power leads. Therefore, the rotation of a three-phase machine must be observed and corrected when the machine is first installed. If it is necessary to reverse the rotation, simply swap the incoming power lines to the machine (never move L3 if L3 is a stinger leg). Never attempt to reconnect motors or the motor control devices.



**CAUTION [4]: Component Damage**—Voltage fluctuations of more than 10% above or below the specified voltage for your machine can damage electrical components, especially motors.

- Any such conditions should be corrected prior to commissioning your machines.

**Figure 1: Rotation Direction during Drain and Extract**



**2.3. Electric Power Connections**—The customer must furnish a remotely mounted switch with lag type fuses, circuit breakers and wiring between the electrical service box and the junction box on the machine. The sizes of these fuses and wires, along with the motor fuses supplied with the machine, depend on the machine voltage. See the fuse and wire sizing information in the schematic manual and on the machine nameplate.

— End of BIIFUI01 —

Drive

3

BIIFLM05 (Published) Book specs- Dates: 20151104 / 20160205 / 20160205 Lang: ENG01 Applic: IFL IH4

# Drive Components and Belt Installation



This document uses Simplified Technical English.  
Learn more at <http://www.asd-ste100.org>.

## 1. Drive Components Identification

Figure 1: General View: 4840H7N, 4840H7W, 4840H7R, 4840H7K , 4840M7K

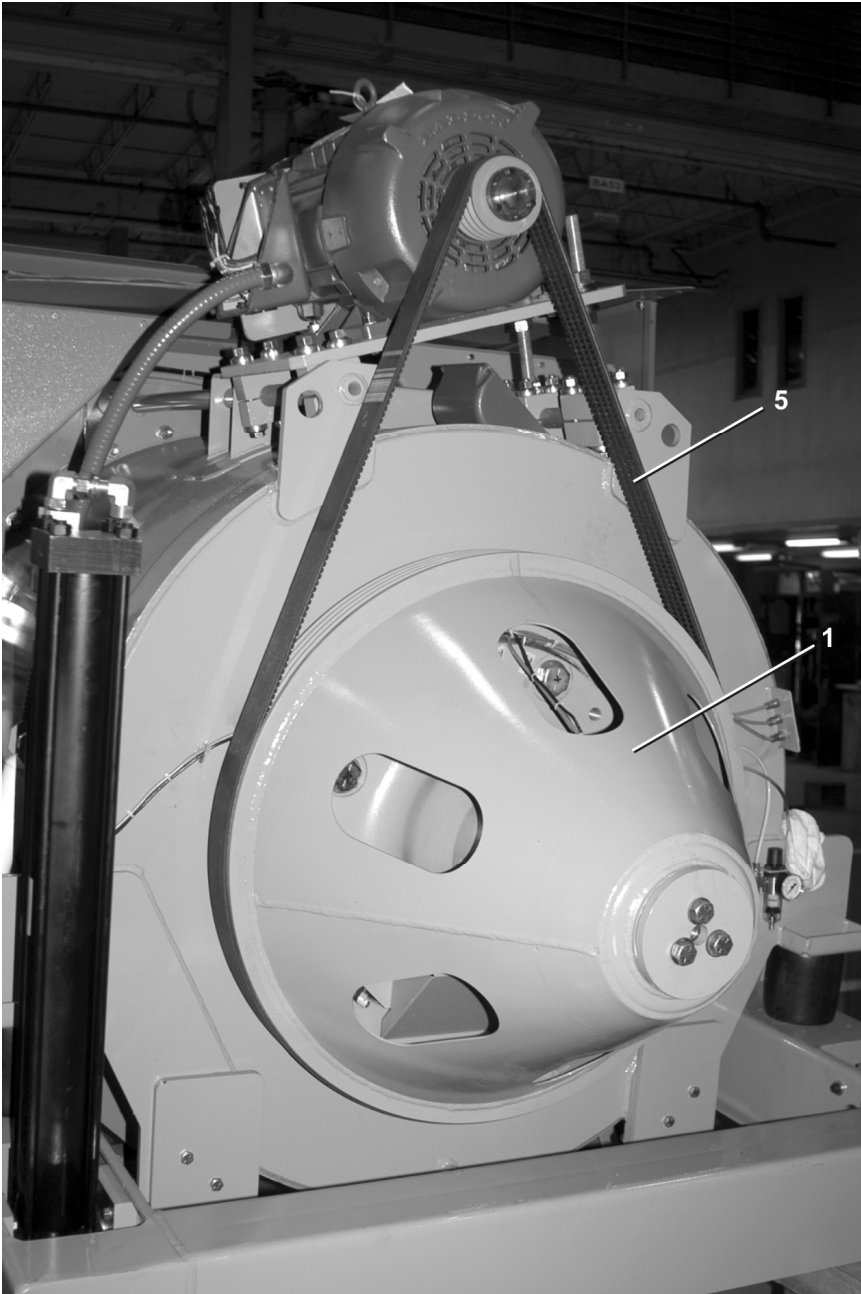
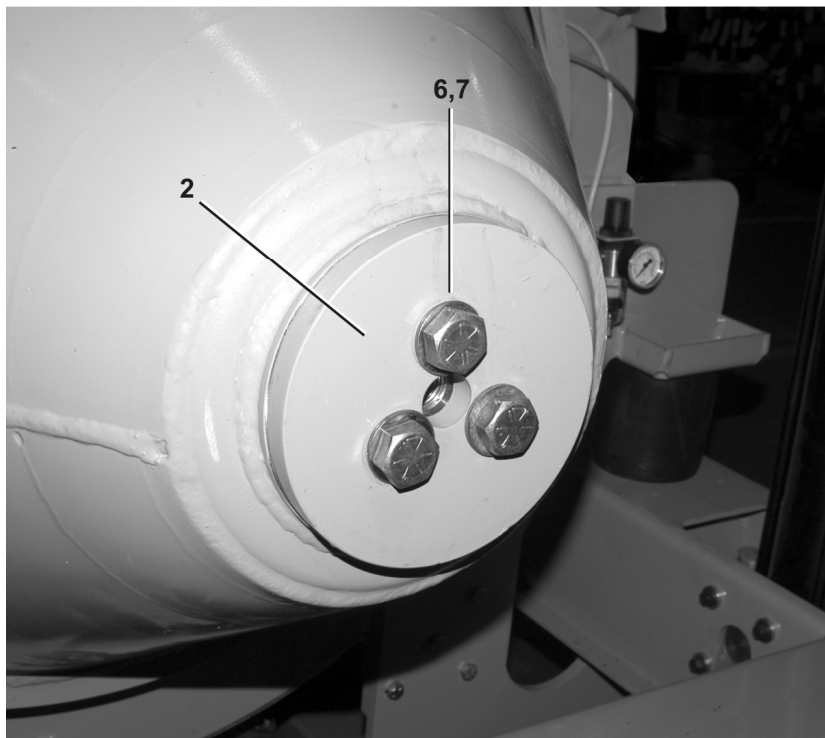
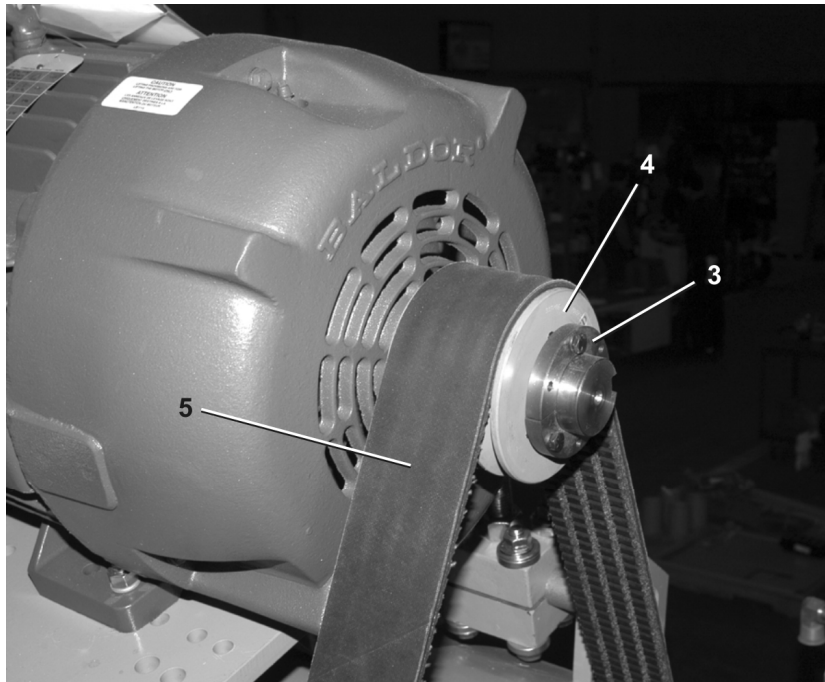




Figure 2: Detailed views



**Table 1: Parts List—Drive Components and Belt 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
Assemblies				
	A	GDB48002	Installation Group; Drive chart; 4840H7N, 4840H7W	4840H7W, 4840H7N, 4840H7R, 4840H7K, 4840M7K
Components				
all	1	X2 21925	Pulley; Cylinder	
all	2	X2 21923	Pull-up plate	
all	3	56Q1RSD	Bushing; 1+7/8"	
all	4	56044B4SD	V-pulley	
all	5	56VB147XB4	V-belt	
all	6	15K232A	Bolt; Hex head; 3/4-10X2	
all	7	15U321H	Washer; Flat; 3/4	

## 2. Belt Installation and Tension Procedure

When you install a new drive belt, the belt will increase in length when it first operates. Do this procedure again after 24, 80, and 160 hours of operation to get the correct tension.

1. Remove electrical power from the machine. Refer to applicable safety codes.
2. Install the belt loose on the pulleys, or make the belt loose, if it is tight.
3. Measure the outer diameter of the belt accurately. If this is not the first time that you did this procedure, the belt will be longer this time.
4. Calculate the correct length of the belt when it is tight, as follows:
  - If you installed a new belt this day, multiply the length by 1.003. This gives the necessary length when you make a new belt tight.

*Example: 152 inches (3861 millimeters) X 1.003 = 152.46 inches (3872 millimeters)*

- If the belt is not new (operated), multiply the length by 1.005. This gives the necessary length when you make an operated belt tight.

*Example: 152.2 inches (3866 millimeters) X 1.005 = 152.96 inches (3885 millimeters)*

5. Make a loop of the correct length with flexible wire. Attach the ends together tightly.
6. Put the wire loop around the belt.
7. Make the belt tight until there is no play in the wire loop.

— End of BIIFLM05 —

## Drive Motor Installation

Figure 1: Drive Motor Installation: 48040F7\_, 48040H7\_, M7V48036\_, M7V48040\_, M9V4840\_, 6836F5\_, 6836H5\_

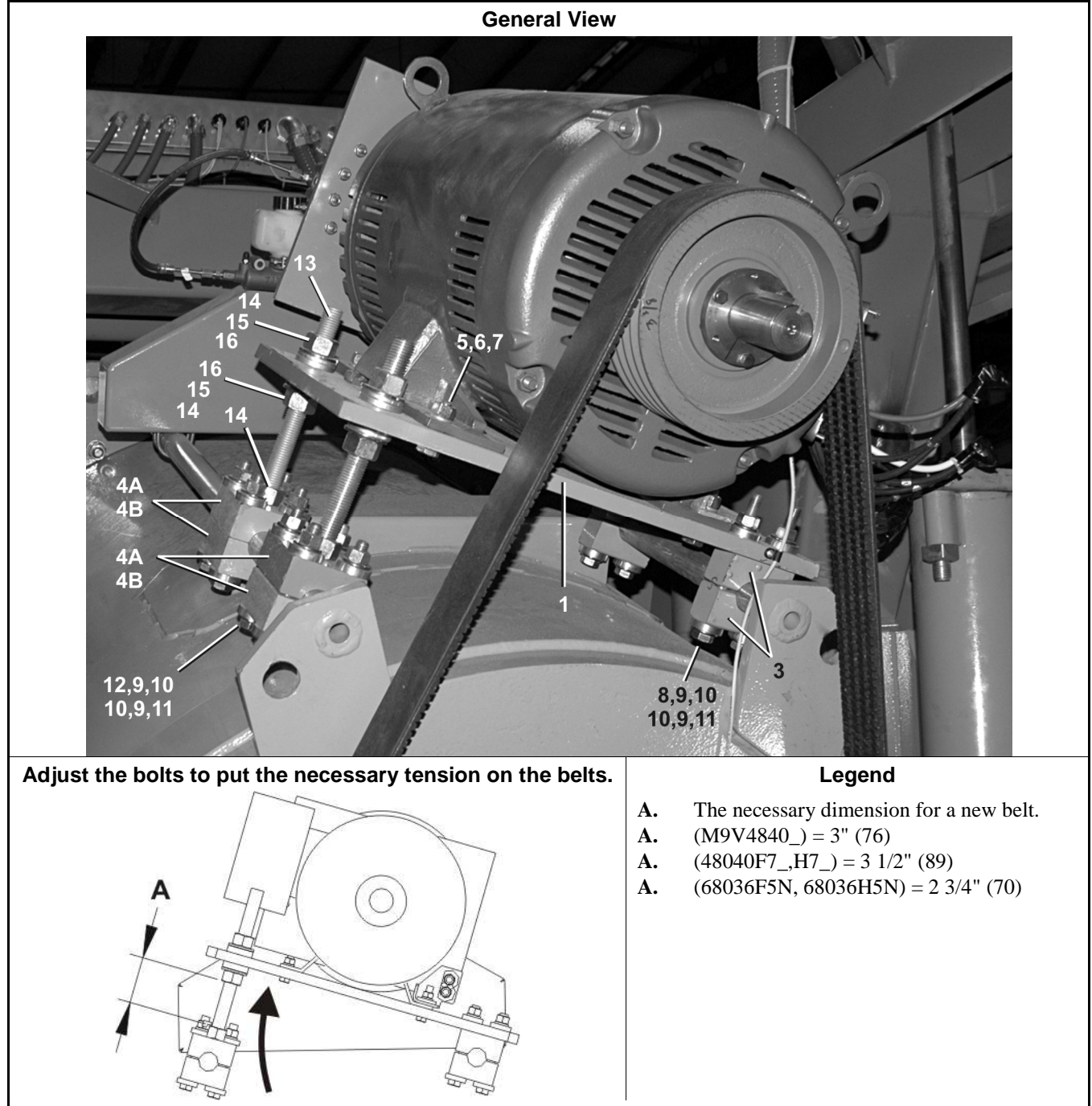


Figure 2: Drive Motor Installation: 48040H7N (shown)

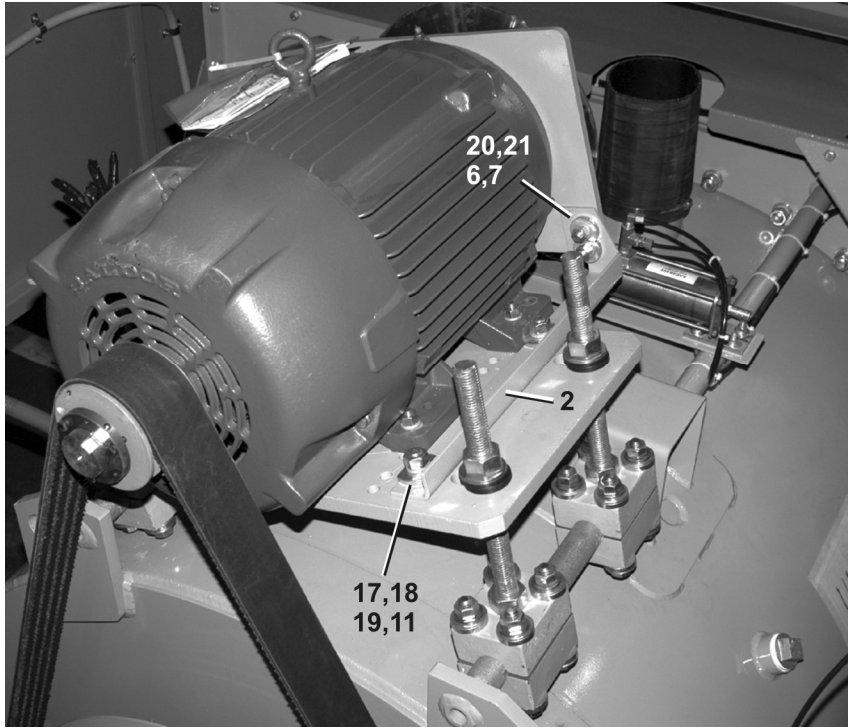
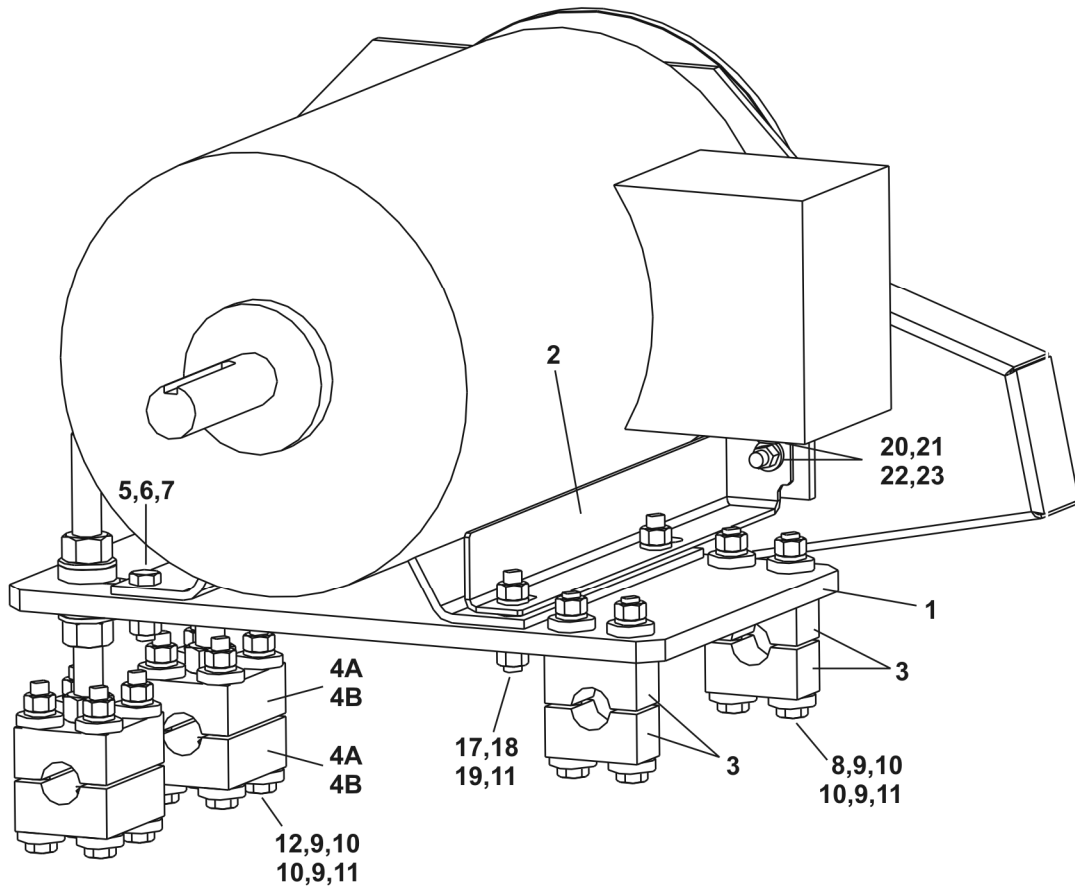


Figure 3: Drive Motor Installation: 68036F5N



**Table 1: Parts List—Drive Motor Installation**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GBD4840M	Installation Group; Drive motor support	M7V4836_, M7V4840_, M9V4840_
	B	ADB4840F2	Installation Group; Drive motor support	4840H7_
	C	GDB6836E	Installation Group; Drive motor support,	6836F_, 6836H5_
Components				
all	1	03 17130	Motor plate	
B	2	02 21859C	Torque arm	
A	2	W3 17131	Torque arm	
C	2	W3 17131B	Torque arm	
all	3	02 11311B	Pivot clamp	
all	4A	X2 11311P	Jack bolt clamp	
all	4B	C2 11311C	Jack bolt clamp	
all	5	15K191A	Bolt; Hex head; 1/2-13X2.5	
all	6	15U300	Washer; Lock; 1/2	
all	7	15G230	Nut; Hex; 1/2-13	
all	8	15K227D	Bolt; Hex head; 5/8-11X6	
all	9	15U316	Washer; Flat; 5/8	
all	10	17W030	Washer; Spherical; 5/8	
all	11	15G238	Nut; Hex; 5/8-11	
all	12	15K227B	Bolt; Hex head; 5/8-11X5.5	
all	13	17R031A13A	Threaded rod; 1-8 X 13"	
all	14	15G250	Nut; Hex; 1-8	
all	15	15U393	Washer; Flat; 1"	
all	16	17W060	Washer; Spherical; 1"	
all	17	15K226L	Bolt; Hex head; 5/8-11X3.5	
all	18	02 11603A	Washer; Clipped; 5/8	
all	19	15U315	Washer; Lock; 5/8	
all	20	15K171B	Bolt; Hex head; 1/2-13X1+3/4	
all	21	02 11603C	Washer; Clipped; 1/2	

— End of BIIFLM06 —

## Cylinder Installation

Figure 1: Shell and Cylinder

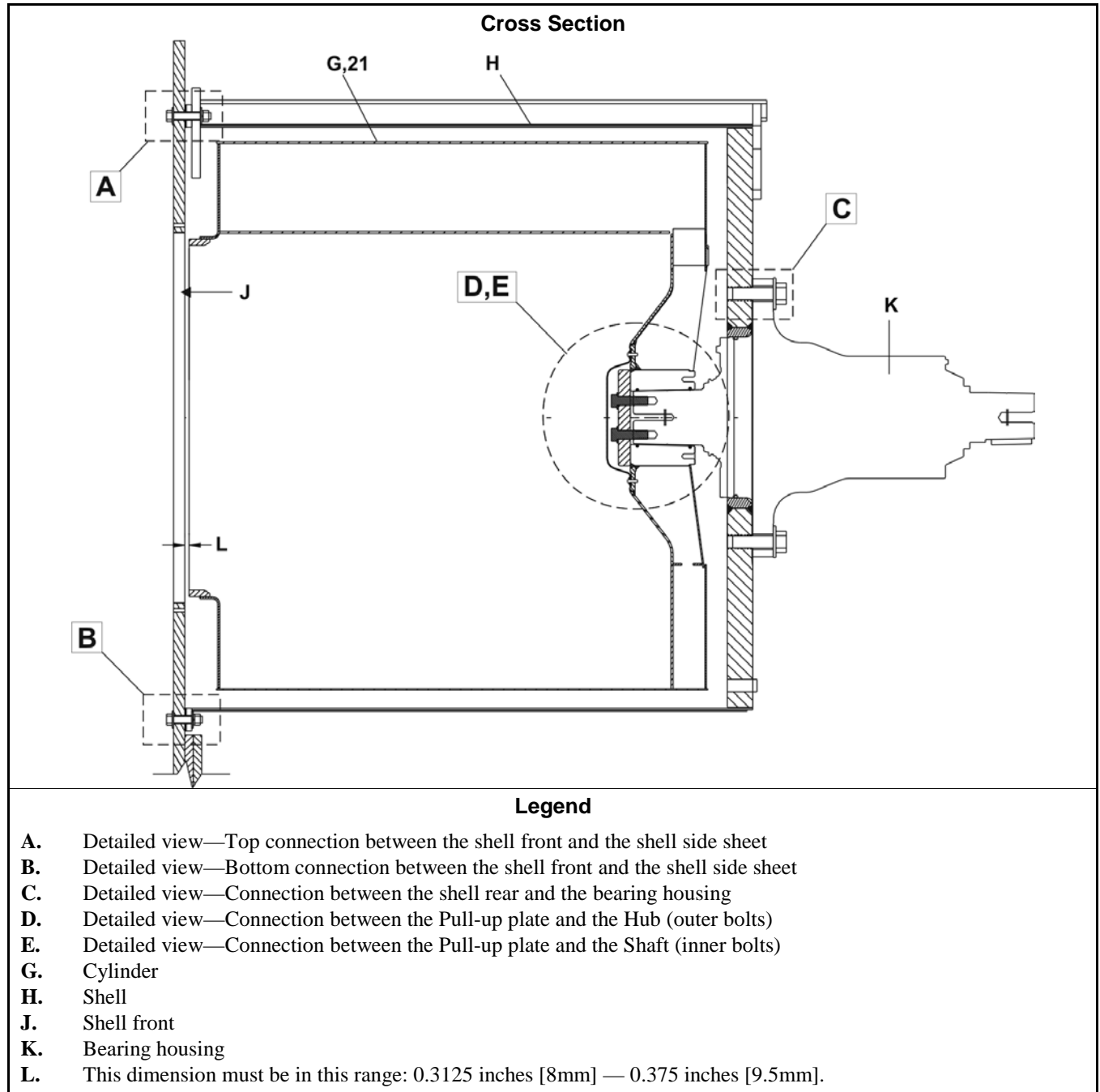


Figure 2: Detailed views

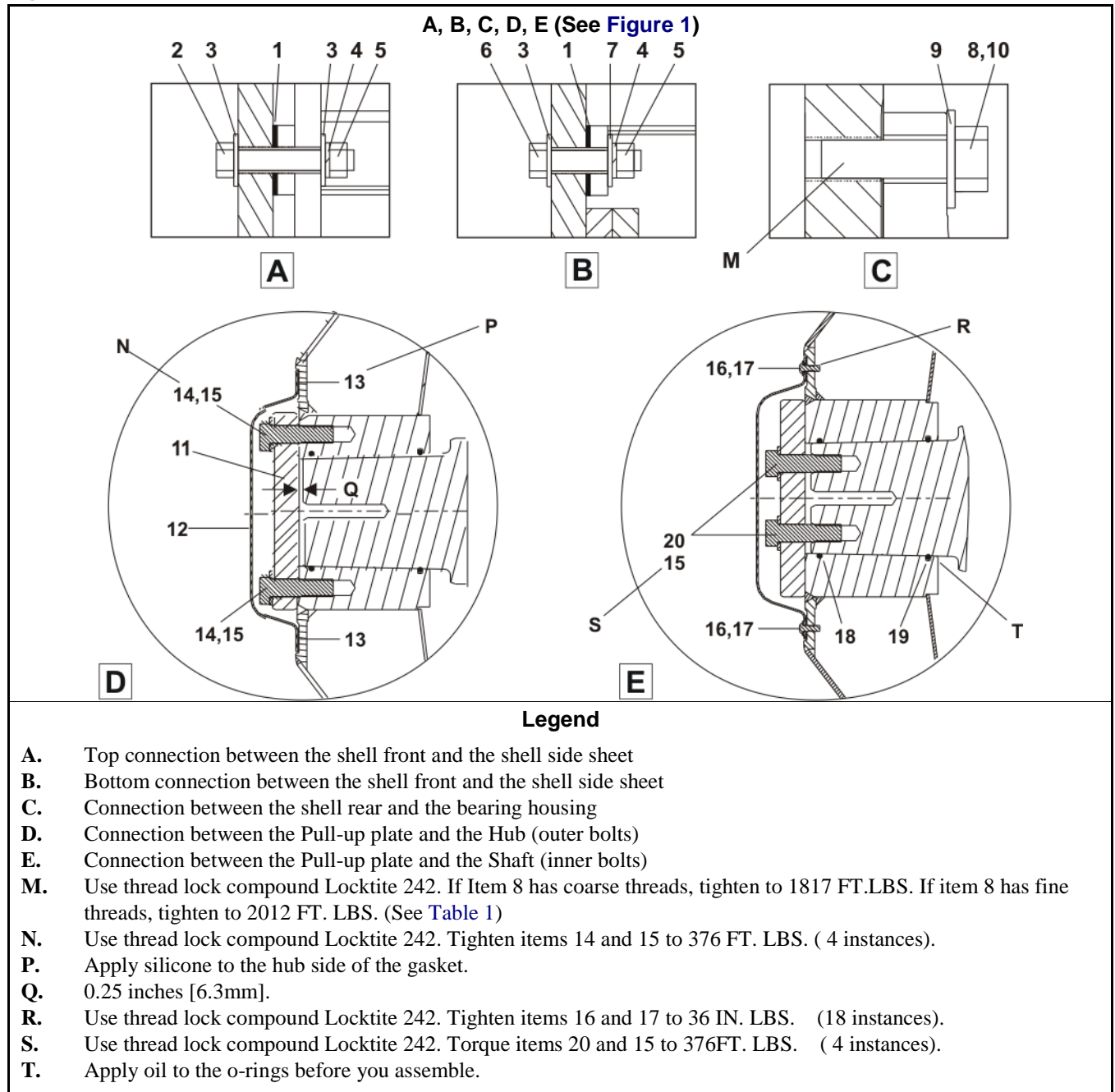
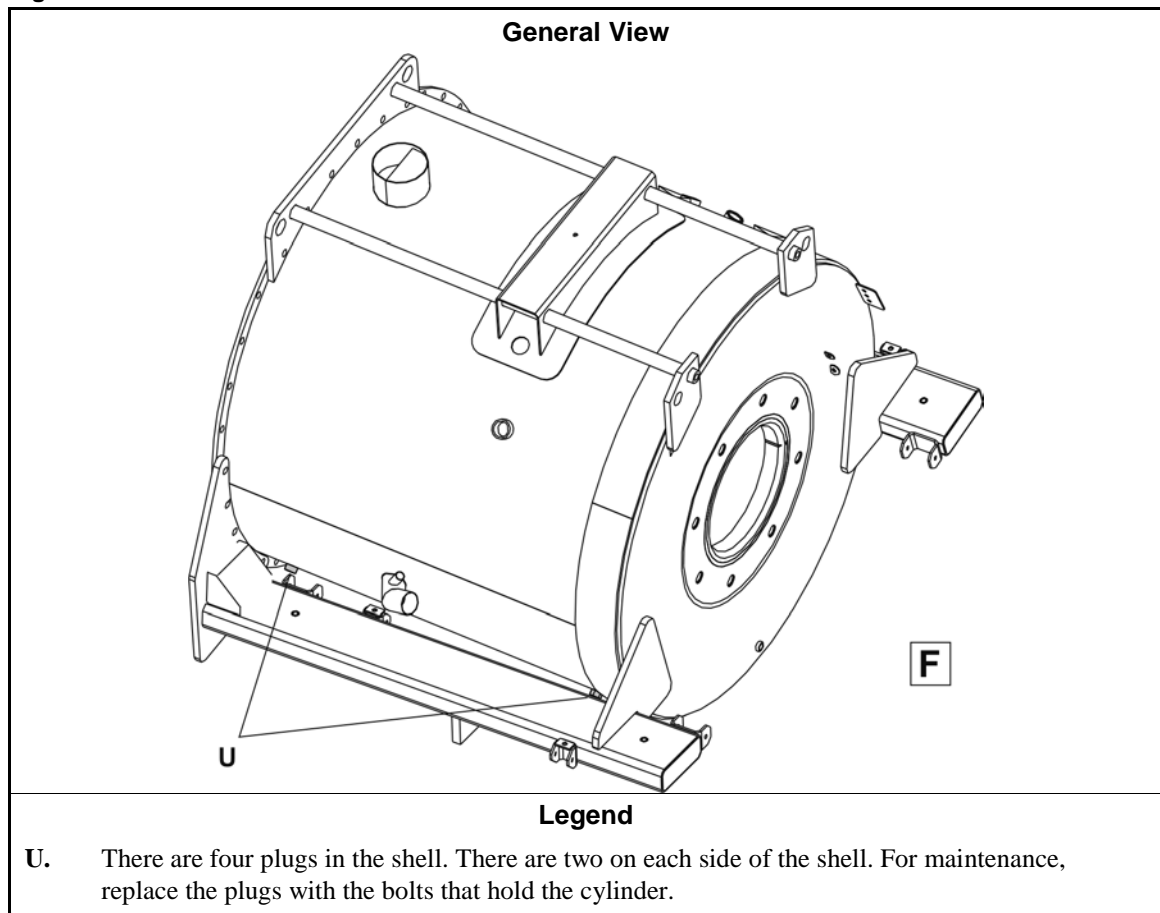


Figure 3: Shell





Cylinder Installation

**Table 1: Parts List—Cylinder Installation**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GSF4840F	Installation Group; Shell front; 48040F_, 48040H_	4840F_, 4840H_, 4840M7K
	B	GCA4840F	Installation Group; Cylinder; 48040F_, 48040H_	4840F_, 4840H_, 4840M7K
Components				
all	1	03 48053B	Gasket; 48040F_; 1/8	
all	2	15K240	Bolt; Hex head; 3/4-10UNC	
all	3	15U492	Washer; Flat	
all	4	15U340	Washer; Lock	
all	5	15G240	NutHex; 3/4-10UNC	
all	6	15K250	Bolt; Hex head; 3/4-10UNC	
all	7	15U494	Washer; Flat	
all	8	15K310	Bolt; Hex head; 1+1/4-12X4	Coarse thread. This part applies to machines made after 05, 2008.
all	8	15K309	Bolt; Hex head; 1.25-7UNC X 4.0	Fine thread. This part applies to machines made through 05, 2008.
all	9	15U600	Washer; Flat	
all	10	20C007G	Thread lock compound; Loctite 242	
all	11	X2 21916	Pull-up plate; Cylinder	
all	12	X2 21917	Cover; Cylinder hub	
all	13	02 21918	Gasket; Cover; Cylinder hub	
all	14	15K235AA	Bolt; Hex head; 3/4-10X2.75	
all	14	15K234CA	Bolt; Hex head; 3/4-10X2.25	
all	15	15U321H	Washer; Flat	
all	16	15U188	Washer; Flat	
all	17	15K040T	Bolt; Torx button head; 1/4-20X3/4	
all	18	60C155V	O-Ring; Viton; 4.75ID; 3/16CS	
all	19	60C157V	O-Ring; Viton; 4+7/8ID; 3/16CS	
all	20	15K235AA	Bolt; Hex head; 3/4-10X2.75	
all	21	ACA4840F7B	Cylinder	Standard Cylinder - 38" door
all	21	ACA4840F7P	Cylinder	Pickfree Cylinder

— End of BIIFLM07 —

## Bearing Housing Components and Installation

Figure 1: Bearing housing

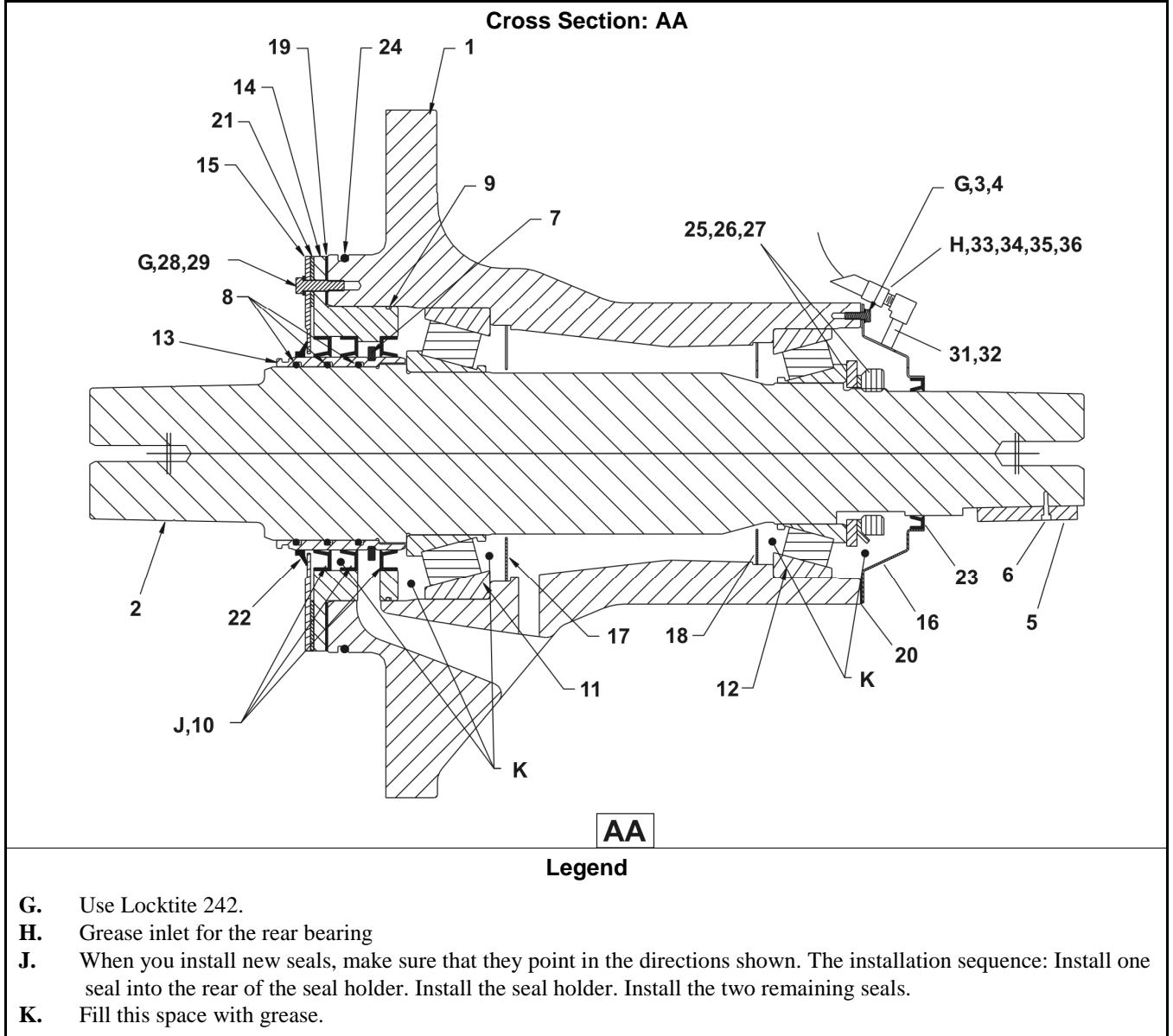


Figure 2: Bearing housing

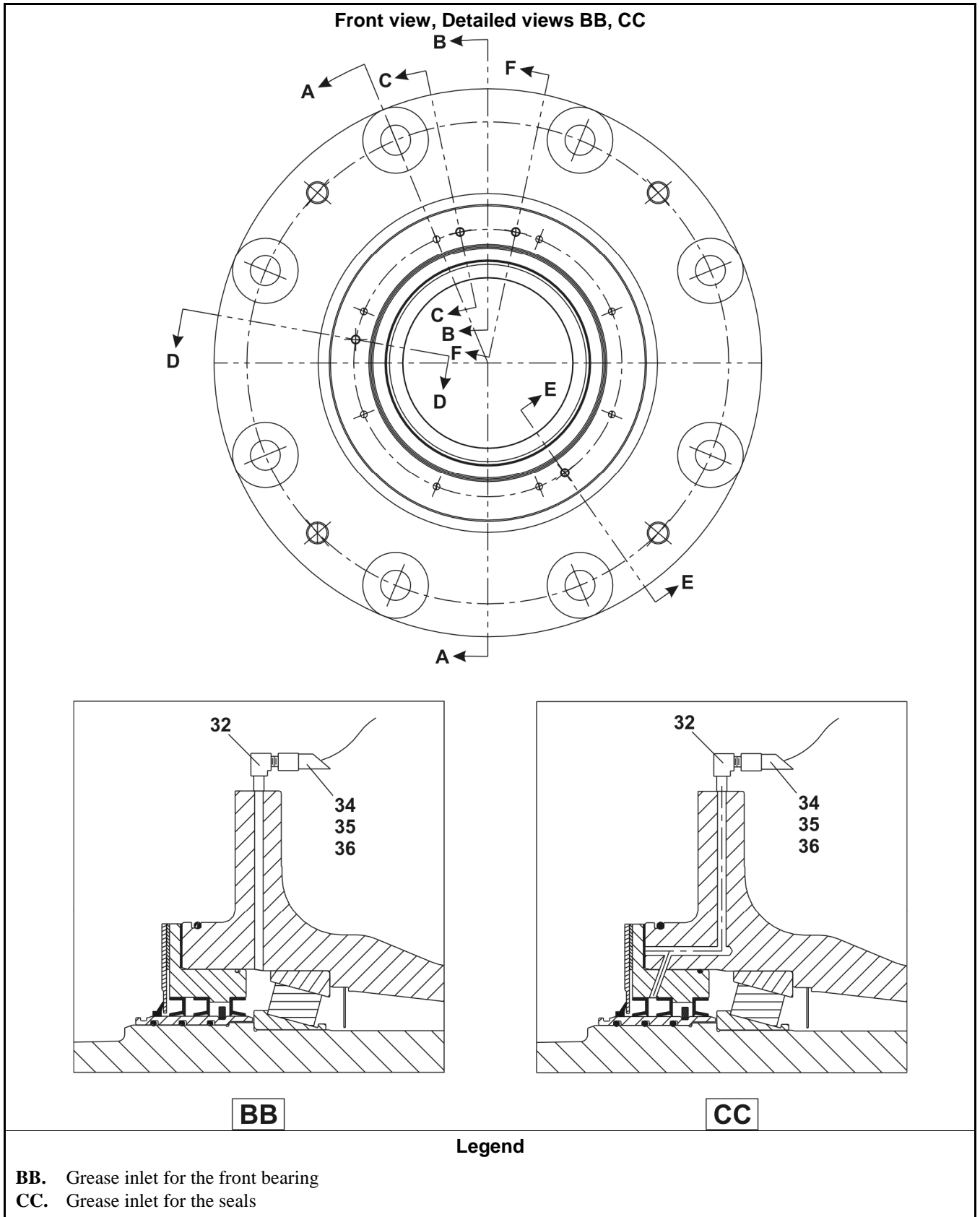


Figure 3: Bearing housing

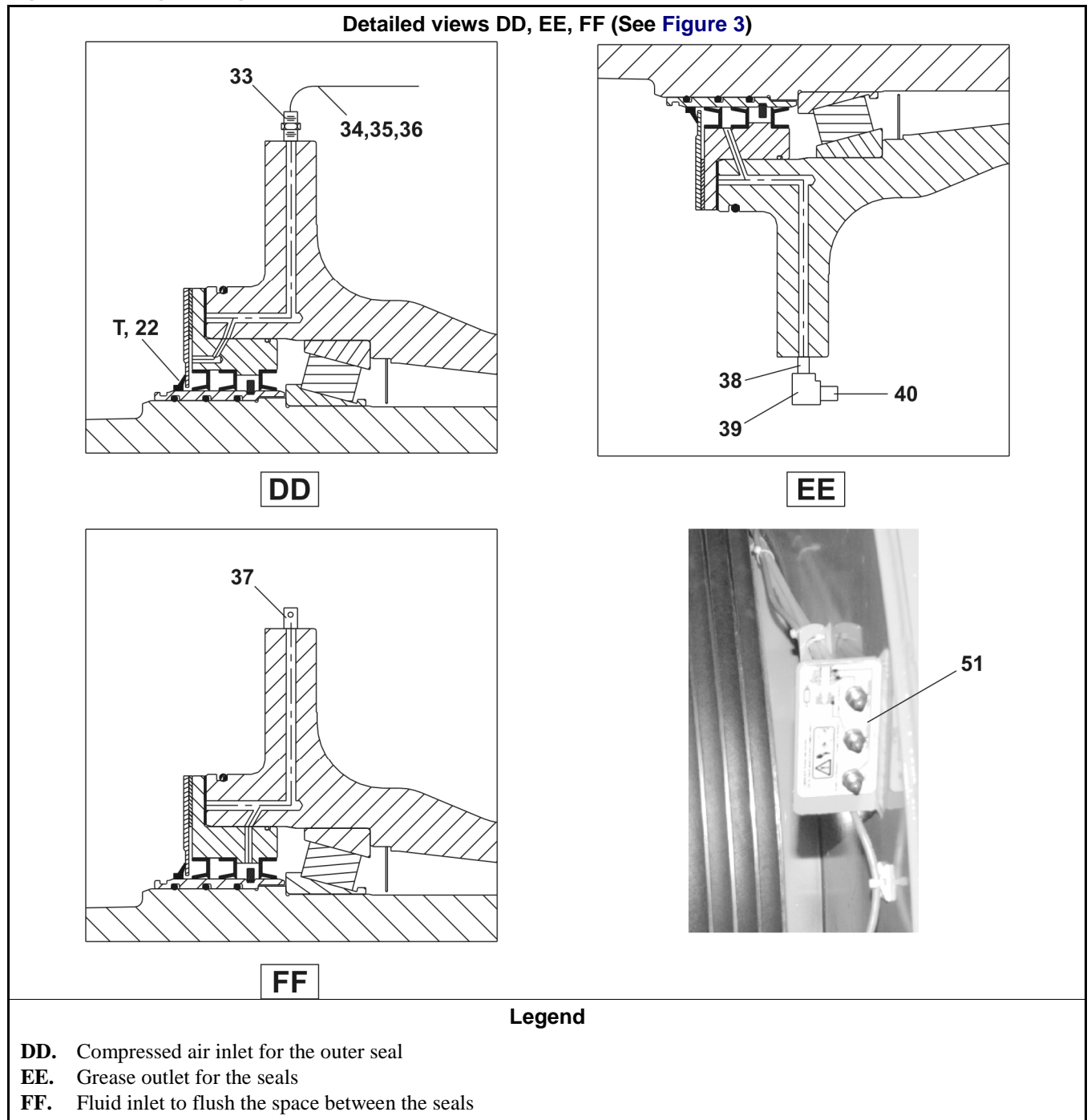
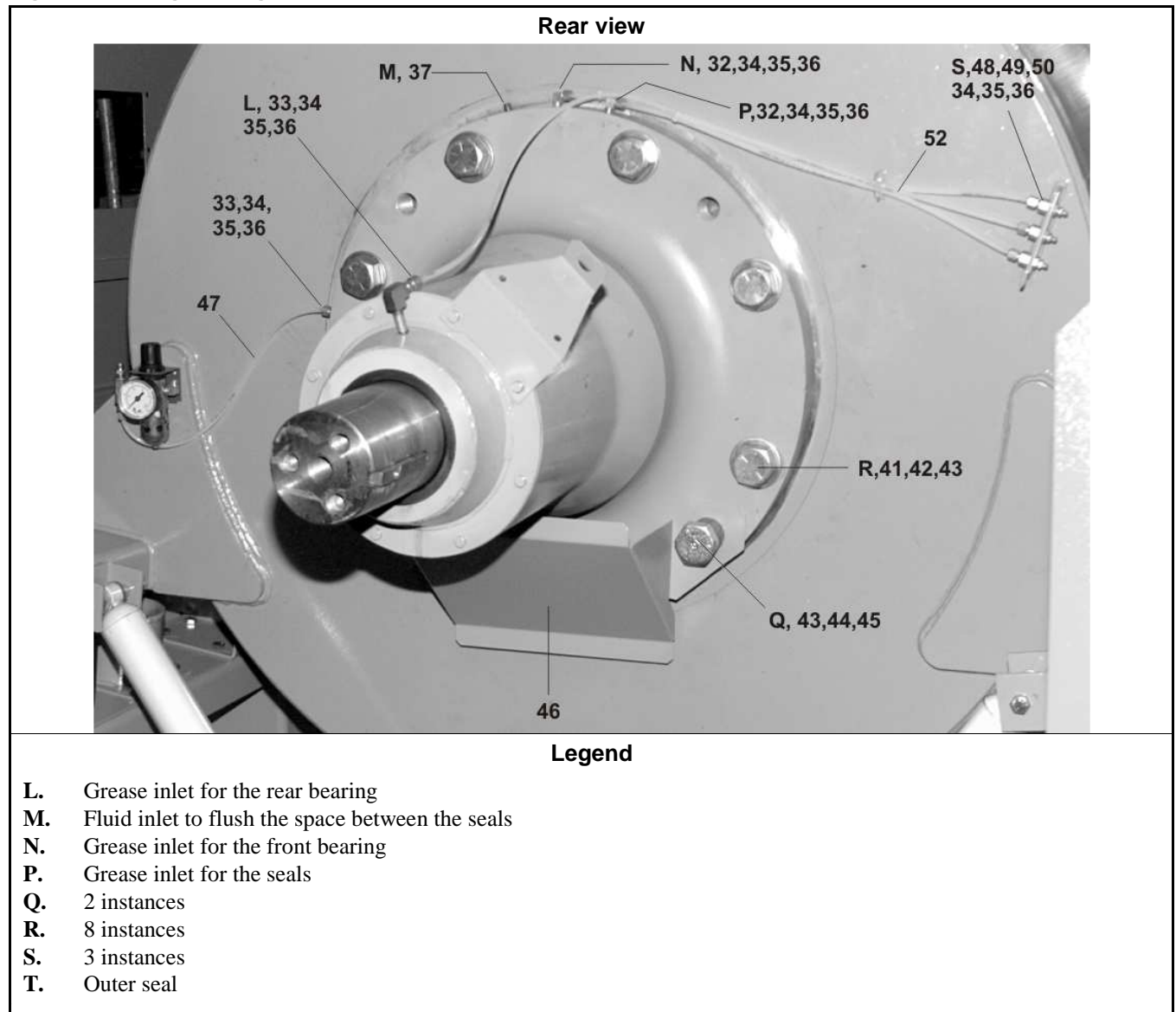


Figure 4: Bearing housing



**Table 1: Parts List— Bearing Housing 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
Assemblies				
	A	ABM4840F	Assembly; Bearing housing; 48040F_, 48040H7_	4840F_, 4840H_, 4840M7K
	B	ABM4840FV	Assembly; Bearing housing; Fluoroelastic polymer (Viton) ; 48040F_, 48040H_	4840F_, 4840H_, 4840M7K
	C	ABN4840F	Tested part; Bearing housing; 48040F_, 48040H_	4840F_, 4840H_, 4840M7K
	D	ABN4840FV	Tested part; Bearing housing; Fluoroelastic polymer (Viton); 48040F_, 48048H_	4840F_, 4840H_, 4840M7K
	E	GBM4840F	Installation Group; Bearing housing; 48040F_, 48040H_	4840F_, 4840H_, 4840M7K
Components				
none	1	X2 21800	Machined part; Bearing housing	
all	2	X2 21801	Machined part; Shaft	
all	3	15K039	Bolt; Hex head; 1/4-20 UNC	
all	4	15U180	WasherLock	
all	5	X2 21816	Machined part; Pulley key	
all	6	15N091	Bolt; Phillip pan head; 8/32UNC	
all	7	02 21817	Water ring	
AC	8	60C160DB	O-Ring; Buna-N	
BD	8	60C160DV	O-Ring; Viton	
AC	9	60C275	O-Ring; Buna-N	
BD	9	60C275V	O-Ring; Viton	
AC	10	24S148	Seal; Shaft; Nitrile	
BD	10	24S148V	Seal; Shaft; Viton	
all	11	54A986	Bearing; Taper roller; SKF	
all	12	54A987	Bearing; Taper roller; SKF	
all	13	X2 21802	Seal sleeve	
all	14	X2 21803	Machined part; Seal holder; Front	
all	15	X2 21804	Plate; Seal; Front	
all	16	02 21805	Seal holder; Rear	
all	17	02 21806	Grease shield; Front	
all	18	02 21807	Grease shield;Front	
all	19	02 21810	Gasket; Seal holder;Front	
all	20	02 21811	Gasket; Seal holder; Rear	
all	21	02 21812	Gasket; Seal	
AC	22	24S146	Seal; Shaft; Nitrile	
BD	22	24S146V	Seal; Shaft; Viton	
AC	23	24S114	Seal; Shaft; Nitrile	
BD	23	24S114V	Seal; Shaft; Viton	
AC	24	60C190	O-Ring; Buna-N	
BD	24	60C190D	O-Ring; Viton	
all	25	56AHN24	Bearing locknut	

Bearing Housing Components and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	26	56AHW124	Bearing lockwasher	
all	27	56ATW24	Bearing tongue washer	
all	28	15K112	Bolt; Hex head; 3/8-16X1+1/2	
all	29	15U260	Washer; Lock	
all	30	20C003A	Adhesive; L# 380; Black; Bonding; High strength	
all	31	53A031B	Hydraulic fitting; Compression fitting; 90 elbow; 1/4	
all	32	5N0C01KG42	Pipe; 1/8; 1.5; Galvanized steel; Threads, two ends	
all	33	53A005B	Hydraulic fitting; Connector; 1/4; male; 1/8; Compression fitting	
all	34	53A500	Hydraulic fitting; Sleeve; Delrin; 1/4	
all	35	53A501	Hydraulic fitting; Insert; Brass; 1/4	
all	36	53A059A	Hydraulic fitting; Tube-fitting nut; Brass; 1/4	
all	37	5SP0CFESSV	Pipe Fitting; Plug; Square head with vent; 1/8	
all	38	5SLOCBEA	Pipe Fitting; Elbow; 90 degree; Brass; 1/8	
all	39	5N0CCLSB42	Pipe; Close (threads only); Brass; 1/8	
all	40	54M029	Relief fitting; Alemite	
all	41	15K310	Bolt; Hex head; 1+1/4-12X4	Coarse thread. This part applies to machines made after 05/30/2008.
all	41	15K309	Bolt; Hex head; 1.25-7UNC X 4.0	Fine thread. This part applies to machines made through 05/30/2008.
all	42	15U600	Washer; Flat	
all	43	20C007G	Thread lock compound; Loctite 242	
all	44	15K255ZN	Bolt; Hex head; 8UNCX1.5	
all	45	15U393	Washer; Flat	
all	46	02 21818	Drip shield	
all	47	AIR58003	Air injection; Bearing housing	
all	48	53A007B	Hydraulic fitting; Connector; 1/4; female; 1/4; Compression fitting	
all	49	5SB0E0CBEO	Pipe Fitting; Hex Bushing Reducer; Brass; 1/4X1/8	
all	50	54M015	Grease fitting	
all	51	01 10025Y	Dataplate; Grease	
all	52	60E004TC	Tubing; Nylon; 1/4"	

— End of BIIFLM08 —

## Air Injection Components

Figure 1: Air Injection Components

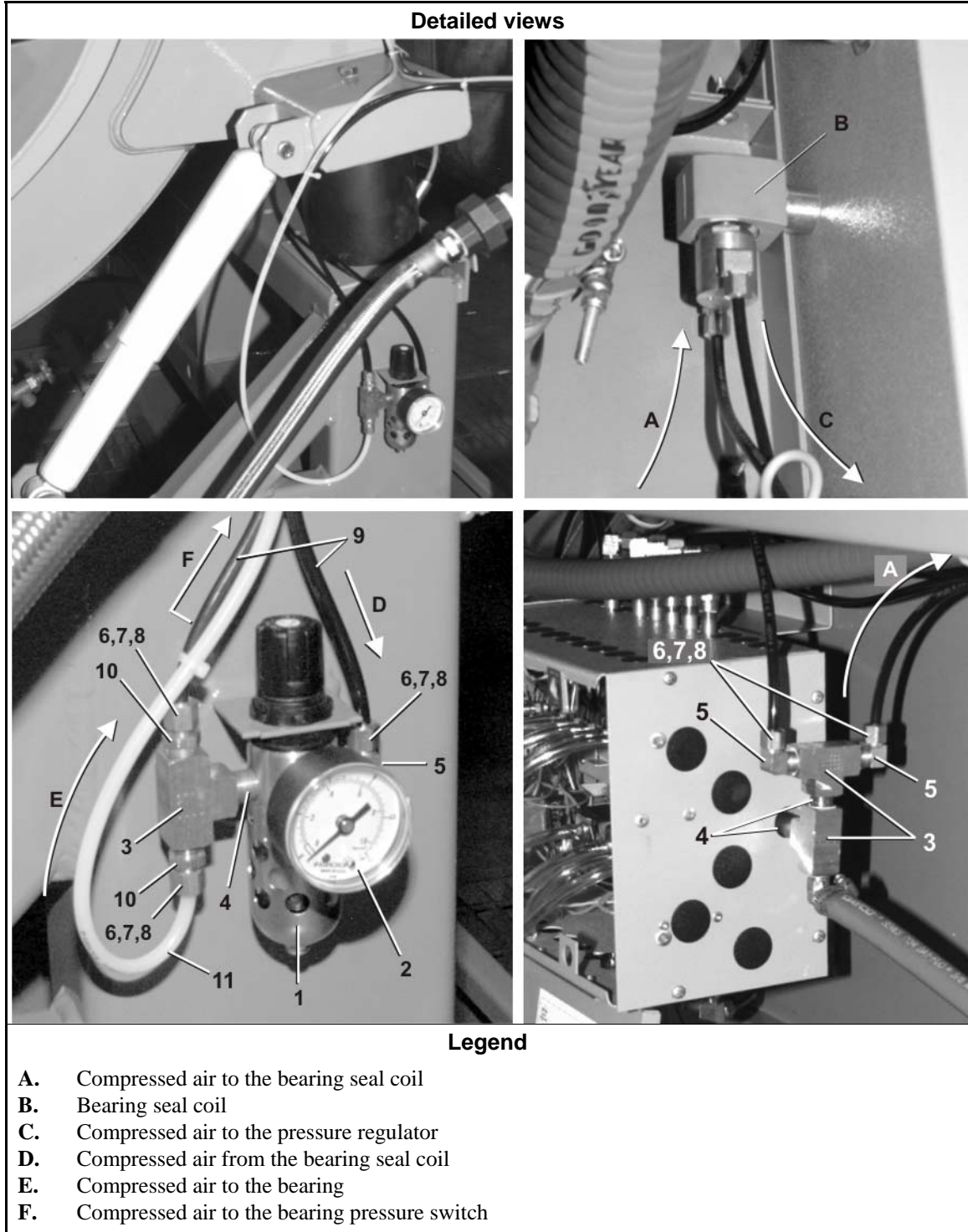




Figure 2: Air Flow in the Bearing Housing

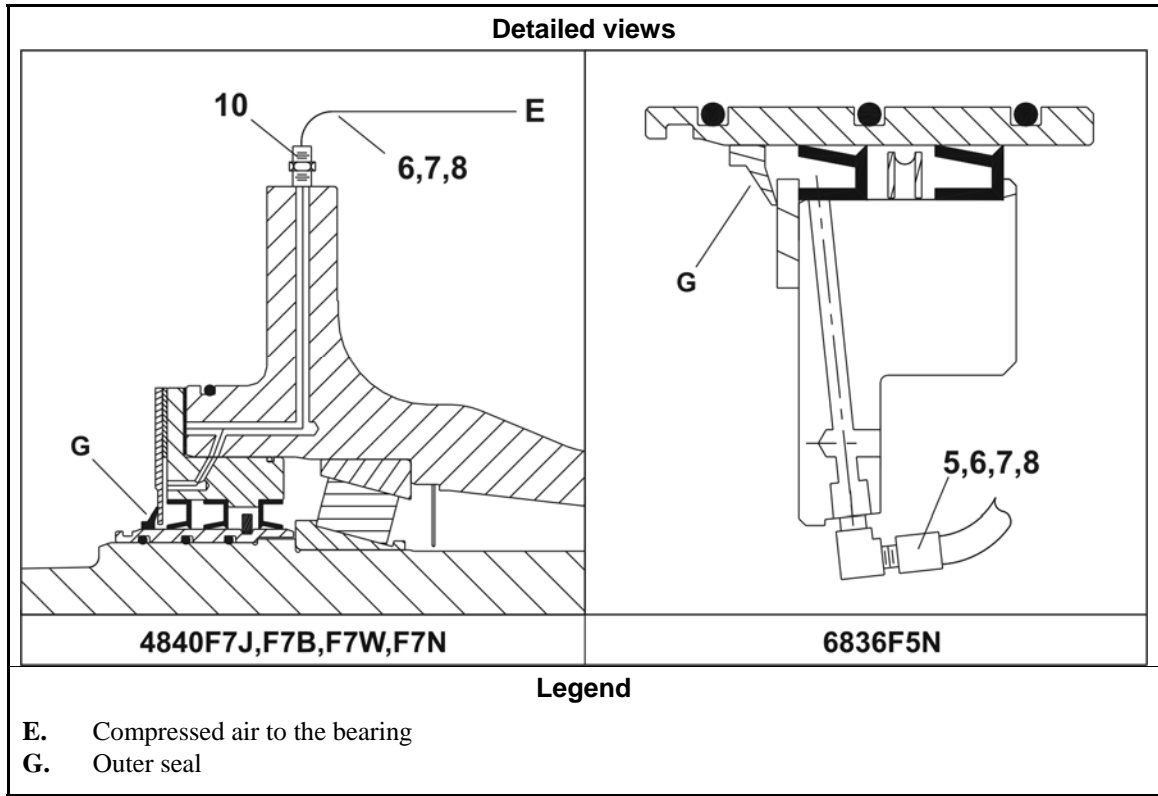


Table 1: Parts List—Air Injection Components

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
Assemblies				
	A	AIR58003	Assembly; Air injection	
Components				
all	1	96J019G	Filter Regulator; 1/4"; 0-60PSI	
all	2	30N095	Pressure Gauge; 1/8"; 0-15PSI	
all	3	51V015	Pipe Fitting; Tee; 1/4 ; Brass	
all	4	5N0ECLSBE2	Pipe; 1/4; Close (threads only); Brass	
all	5	53A031B	Hydraulic fitting; Elbow 90 degrees; 1/4; 1/8	
all	6	53A059A	Hydraulic fitting; Tube fitting nut; 1/4	
all	7	53A500	Hydraulic fitting; Sleeve; 1/4; Brass	
all	8	53A501	Hydraulic fitting; Insert; 1/4; Brass	
all	9	60E004TE	Tubing; Round; 0.25; NYLON	
all	10	53A005B	Hydraulic fitting; Hose end straight connector; 1/4	
all	11	60E004TC	Tubing; Round; 0.25; NYLON	

— End of BIIFLM09 —

BIIFLM10 (Published) Book specs- Dates: 20130815 / 20130815 / 20130815 Lang: ENG01 Applic: IFL IH4

## Brake Components and Installation

Figure 1: Brake Components

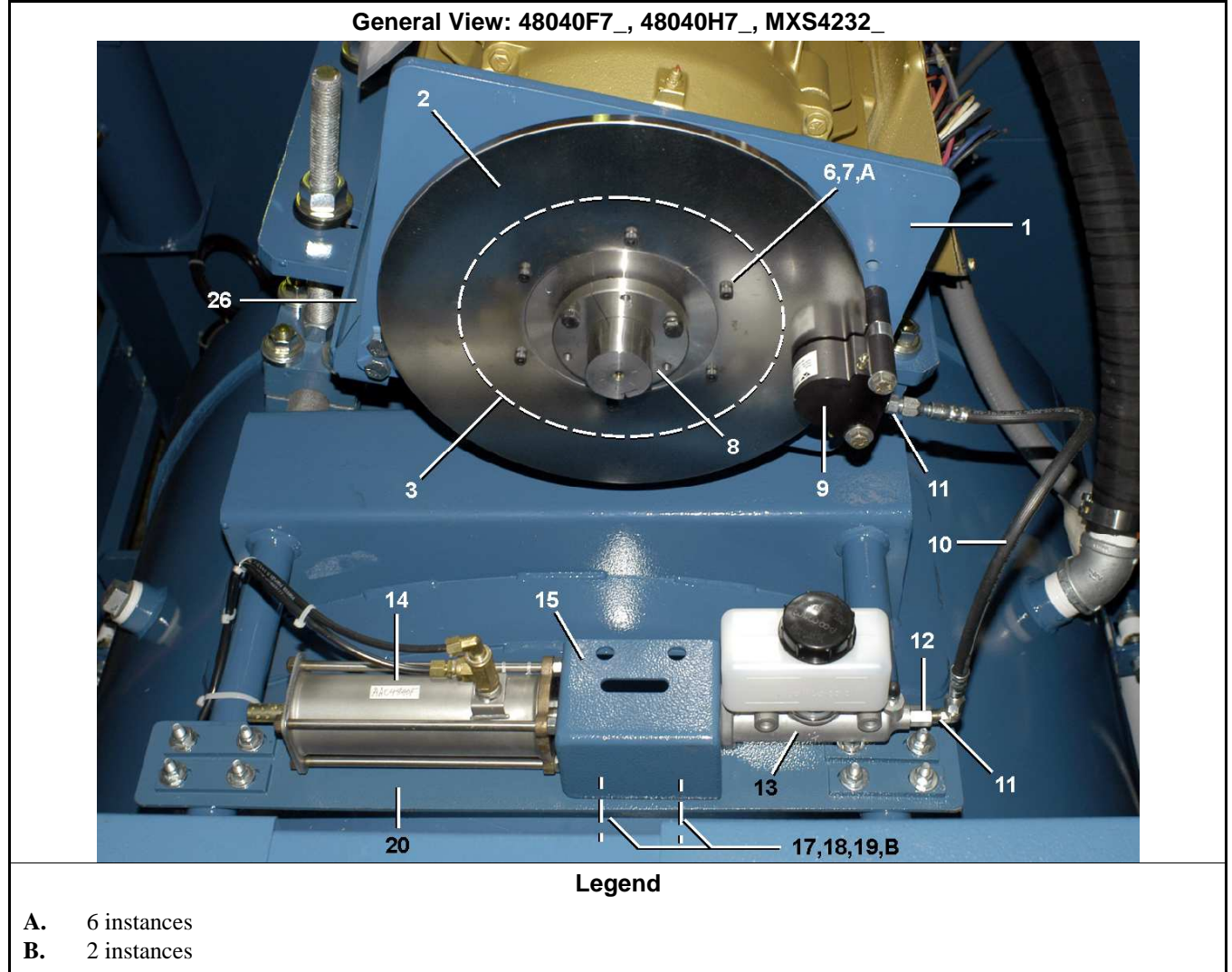
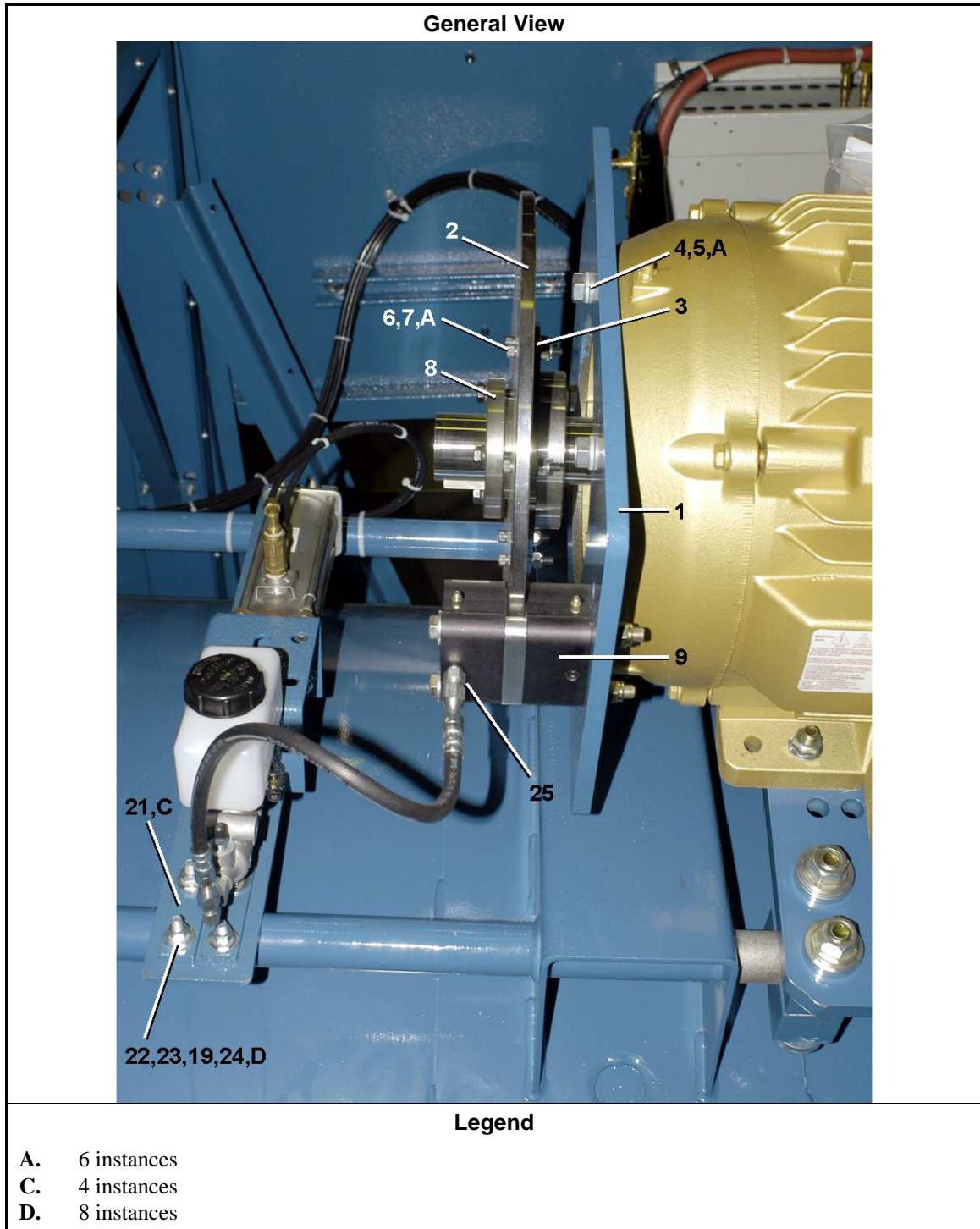


Figure 2: Brake Components



**Table 1: Parts List—Brake 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
Assemblies				
	A	ABR4840F	Installation Group; Disk brake	
Components				
all	1	X2 21858	Mounting plate	
all	2	X2 21866	Disk	
all	3	X2 21867	Hub	
all	4	15K151	Bolt; Hex head; 1/2-13UNC24X1.25	
all	5	15U300	Washer; Lock; 1/2	
all	6	15K041B	Bolt; Socket; 1/4-20X1"	
all	7	15G166A	Nut; Nylon lock; 1/4	
all	8	56Q1RSK	Bushing	
all	9	54KC7974	Caliper	
all	10	54KC7961BG	Brake hose; 1/8" x 18"	
all	11	52AY0ER003	Hydraulic fitting; Adapters; 1/4"MJICX1/8"	
all	12	52XY0ER004	Hydraulic fitting; Adapters; 3/16MJX1/8FP	
all	13	54KMC1125U	Master cylinder	
all	14	AAC4840F	Air cylinder	
all	15	W3 65238	Mounting bracket	
all	16	02 21943	Spacer	
all	17	15K095	Bolt; Hex head; 3/8-16UNC2AX1	
all	18	15U255	Washer; Lock; 3/8	
all	19	15G205	Nut; Hex; 3/8	
all	20	02 22417	Mounting plate	
all	21	02 10539	Spacer	
all	22	27A031C	U-bolt; 5/16-18X1.25	
all	23	15U240	Washer; Flat; 3/8"	
all	24	15U260	Washer; Lock; 3/8	
all	25	54KC7961BSEAL	Seal	
all	26	02 21859C	Torque arm	

— End of BIIFLM10 —

BIEUUM01 (Published) Book specs- Dates: 20120629 / 20120629 / 20120629 Lang: ENG01 Applic: HDU IFL IFG IFS IHU IEU PVU MXC MXD

## Disk Brake Maintenance



This document uses Simplified Technical English.

Learn more at <http://www.asd-ste100.org>.

**NOTICE P1:** "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.

You can do these types of maintenance on the disk brake:

- do an inspection of the brake as specified in the maintenance schedule,
- replace the friction pads,
- do an overhaul on the calipers,
- replace the hydraulic fluid,
- adjust the connection between the brake cylinder and the air cylinder.

For the first four types of maintenance, you must remove air from (bleed) the hydraulic circuit.

Section 6 tells how to operate the disk brakes. You can use it in some of the types of maintenance in this procedure.

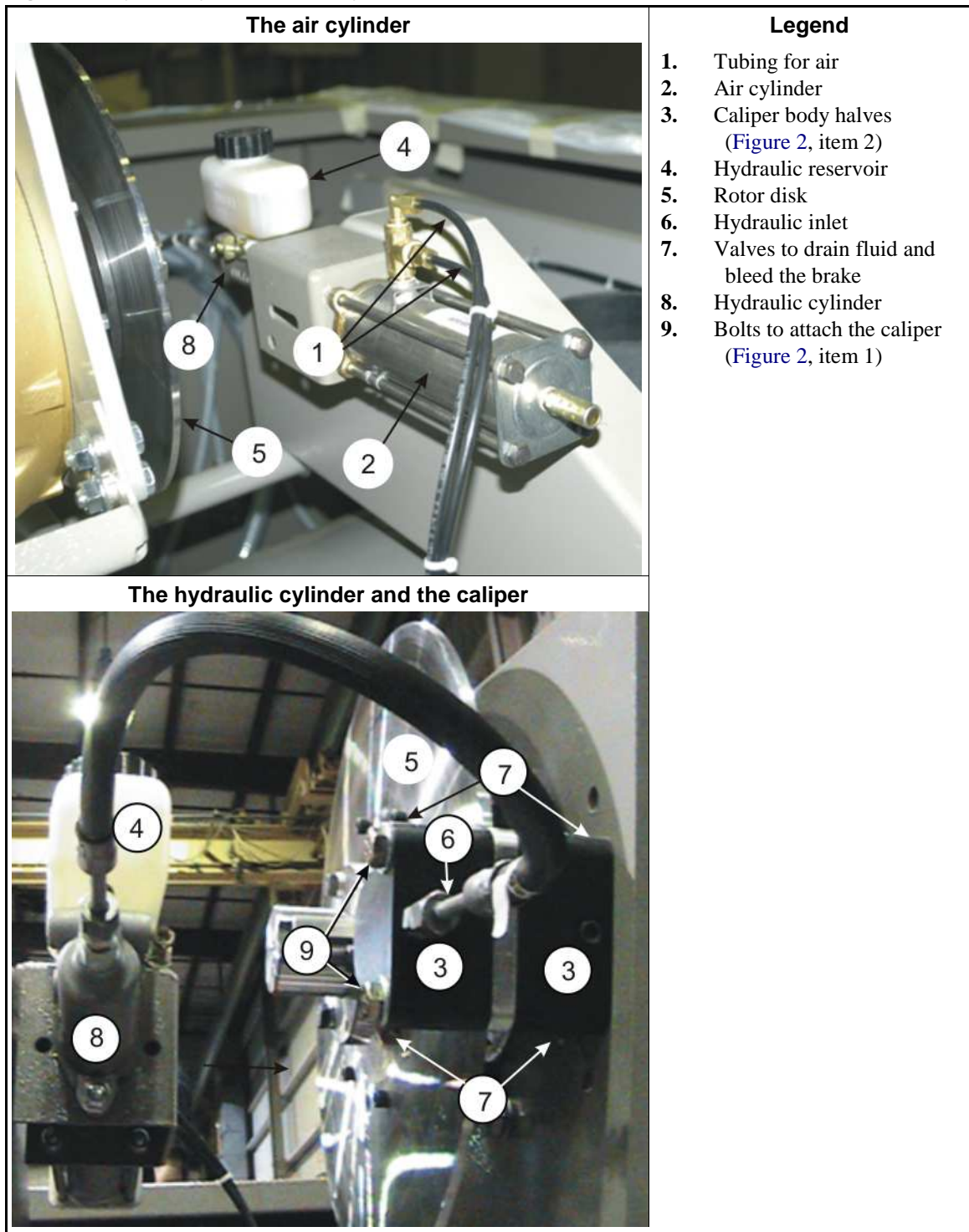


**WARNING 2: Risk of injury or death** —A machine in operation without safety guards is dangerous.

- You must be an approved maintenance technician.
- Use special caution when this instruction tells you to do work with electrical power on. Remove power from the machine for all other maintenance. Obey safety codes.
- Replace all guards and covers.

**Tip:** During parts of this procedure when you open up the calipers or hydraulic lines, put a cloth under the calipers to catch hydraulic fluid and parts that will fall. For safety, fully remove spilled hydraulic fluid after brake maintenance. This will help you easily identify leaks.

Figure 1: A typical hydraulic brake system



## 1. The Inspection of the Brake

**Note 1:** The brakes shown in this document can look different from your equipment.

**Note 2:** Do this inspection when the maintenance schedule tells it is necessary. Do this inspection after you replace friction pads or do a caliper overhaul.

- 1.1. Examine the fluid in the reservoir.** —Change the hydraulic fluid if it smells, has contamination, or has an unusual color. See [Section 4](#).

**Note 3:** Brake fluid can become defective from heat in the brake system. Brake fluid absorbs water from air. Water in the brake system causes corrosion.

If necessary, add new DOT 3 fluid to 0.25 inch (6.35 millimeters) from the top of the reservoir. Follow the precautions on the container.

- 1.2. Examine the rotor disk surface (Figure 1, item 5).** —Replace the disk if it is worn or if it is not flat.
- 1.3. Examine the brake pads (Figure 2, item 4).** —To do this, you will remove/replace the calipers and bleed the hydraulic system. See [Section 3](#) and [Section 4](#).
1. **Remove power from the machine (see Notice P1).**
  2. Remove the bolts ([Figure 1](#), item 9) that attach the caliper halves ([Figure 1](#), item 7).
  3. Remove the caliper halves.
  4. Replace the pads as told in [Section 2](#) if
    - the pads make an unusual noise when you apply the brake
    - if the rotor is worn or damaged
    - if the pad thickness is less than 1/16 inches (2 mm) ([Figure 2](#), item 14) above the mounting screw ([Figure 2](#), item 3). Always replace the two brake pads at the same time.
  5. Put the caliper halves in their positions on the brake assembly. Tighten the mounting bolts to 30 foot-pounds (41 Newton-meters).
  6. Bleed the hydraulic systems as told in [Section 4.4](#).
  7. Supply electrical power to the machine.
- 1.4. Examine the condition of all of the brake system.**
1. Make sure that brake mounting components are tightly installed.
  2. Make sure that fittings are tight. Make sure that there are no leaks.

## 2. How to Do a Friction Pad Replacement

You must have the necessary replacement friction pads for your machine. Refer to the brake parts document in your machine manual. You will find part numbers for components or overhaul/repair kits. The overhaul/repair kit contains O-rings, pads, and other components.

1. **Remove power from the machine (see Notice P1).**
2. Remove the used fluid. See [Section 4.3](#).
3. Remove the two bolts that attach the caliper ([Figure 1](#), item 9) and the two caliper halves ([Figure 1](#), item 3) to get access to the friction pads. Do not disconnect the hydraulic line ([Figure 1](#), item 6).
4. If there are leaks, see [Section 3](#) “How to Do a Caliper Overhaul ” before you continue.
5. Replace each friction pad:
  - a. Remove the brass screw ([Figure 2](#), item 3) that attaches the pad to the piston.
  - b. Attach the new pad to the piston. Tighten the screw.
  - c. Make sure that the screw head is fully in the recess in the pad.
6. Make sure that the connection o-rings are clean and in their positions ([Figure 2](#), item 7).

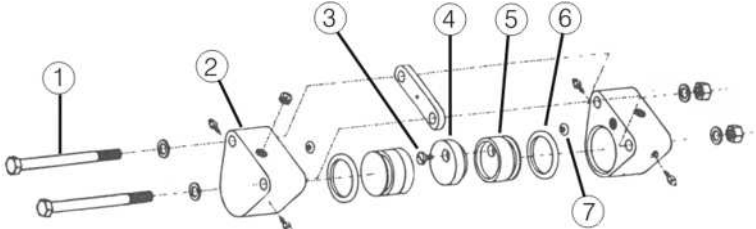
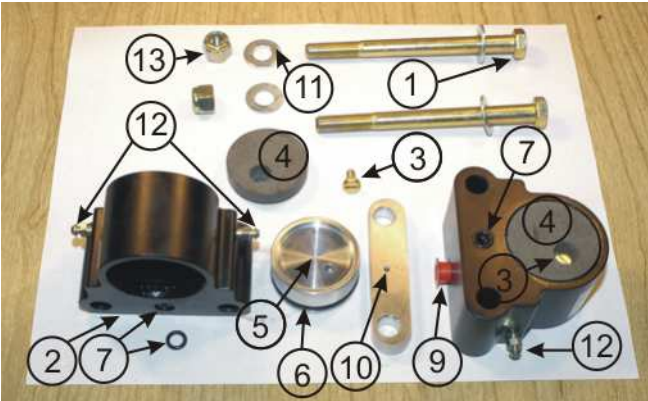


## Disk Brake Maintenance

7. Put the caliper halves in their positions on the brake assembly. Tighten the mounting bolts to 30 foot-pounds (41 Newton-meters).
8. Bleed the brake. See [Section 4 “How to Change Hydraulic Fluid and Remove \(Bleed\) Air from the Brake Circuit”](#).
9. Supply electrical power to the machine.



### 3. How to Do a Caliper Overhaul

Figure 2: The Caliper Components

<p><b>The Expanded View (Shows the Piston and the O-rings)</b></p> 	<p><b>Legend</b></p> <ol style="list-style-type: none"> <li>1. The bolts to attach the caliper (Figure 1, item 9)</li> <li>2. Caliper body halves (Figure 1, item 3)</li> <li>3. Brass screw</li> <li>4. Friction pad</li> <li>5. Piston</li> <li>6. The Piston O-ring</li> <li>7. The connection O-ring and its position</li> <li>8. Plug for the hydraulic inlet</li> <li>9. A hydraulic inlet (connected on one caliper, a plug (item 8) on the other)</li> <li>10. The hole in the spacer</li> <li>11. Washer</li> <li>12. One of the four valves to bleed the fluid</li> <li>13. Nut</li> <li>14. The pad thickness must be more than than 1/16 inches (2 mm) above item 3</li> </ol>
<p><b>The Caliper and the Pad</b></p> 	<p><b>Look at the pad thickness above the top of the screw</b></p> 
<p><b>Fittings for the Hydraulic Inlet</b></p> 	

**Tip:** Hydraulic fluid flows from one caliper to the other caliper. Fluid flows through the connection O-rings (Figure 2, item 7) and the hole in the spacer (Figure 2, item 10). When you disconnect the calipers, hydraulic fluid can flow from the hole at the connection O-rings. Air can get in the line. After you connect the calipers, you must bleed the system.

You must have the necessary kit for the overhaul of your machine. Refer to the brake parts document in your machine's manual.

1. **Remove power from the machine (see Notice P1).**
2. Get access to the caliper halves (see [Section 2](#)).
3. Do an overhaul on each caliper:
  - a. Remove and discard the connection O-rings ([Figure 2](#), item 7) on the caliper bodies.
  - b. Apply compressed air to the fitting for the hydraulic inlets (see [Figure 2](#), item 8) to push the pistons out.
  - c. Replace the piston O-rings ([Figure 2](#), item 6).
  - d. Put the pistons in the caliper body. Carefully tap the pistons with a wood or rubber hammer to install it.
  - e. Replace the connection O-rings. ([Figure 2](#), item 7)
  - f. Replace the friction pads (see [Section 2](#)).
4. Replace the caliper halves as specified in [Section 2](#).
5. Bleed the brake circuit (see [Section 4](#)).
6. Supply electrical power to the machine.

## 4. How to Change Hydraulic Fluid and Remove (Bleed) Air from the Brake Circuit

### 4.1. Risks and Precautions



**WARNING [3]: Risk of injury** —Machine power must be on for these procedures.

- Stay away from operating mechanisms.



**CAUTION [4]: Risk of injury and damage** —This procedure releases pressurized brake fluid.

- Keep brake fluid out of your eyes and mouth. Wear eye protection.
- Follow procedures carefully to prevent damage to the face of the disk or the pistons.



**CAUTION [5]: Risk of malfunction** . —Air in hydraulic fluid will compress. Compressed air in the brake line will cause brake malfunctions.

- Remove (bleed) air from the brake circuit before you operate the machine.

### 4.2. Requirements —These personnel and items are necessary for this procedure:

- two technicians
- an 8-ounce container of new brake fluid
- Alternative procedures to remove air and used brake fluid:
  - » a suction pump (faster procedure) (see [Figure 3](#))
  - » with pressure in the hydraulic cylinder and gravity (see [Figure 4](#))

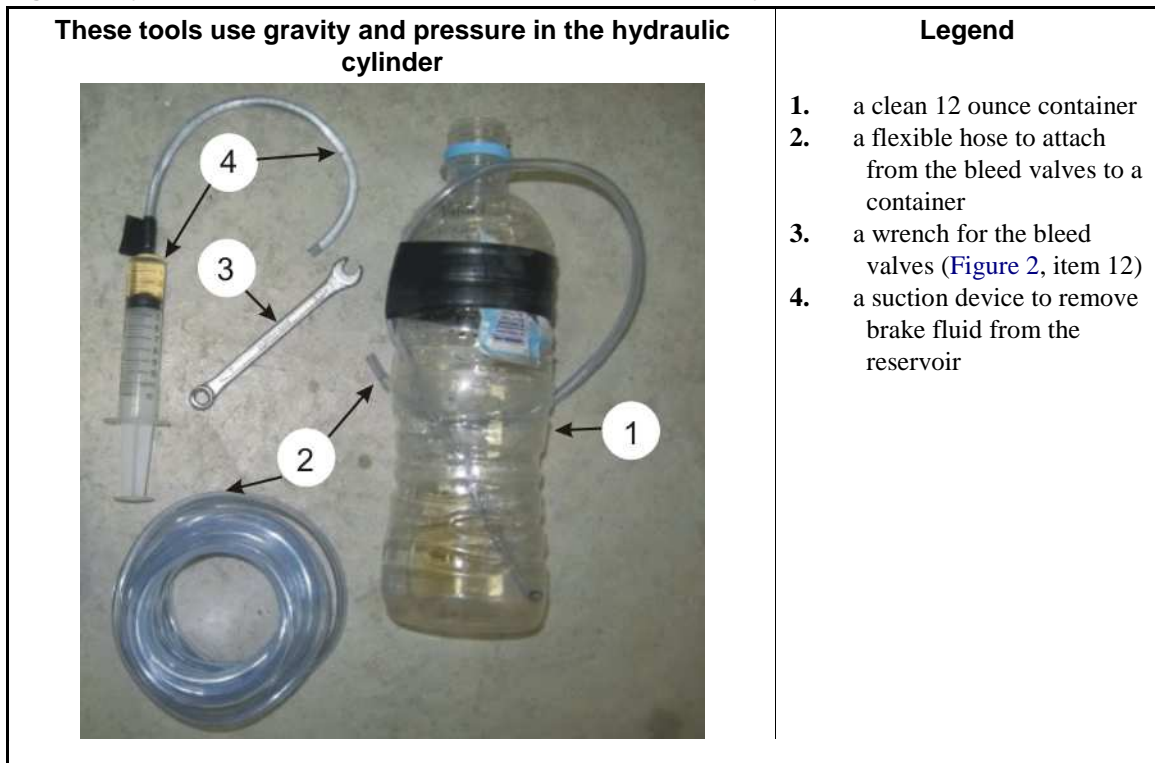
**Tip:** The Vacula suction pump can do the work more quickly than by gravity and pressure in the hydraulic cylinder. It is also cleaner because all of the hydraulic fluid goes into the container supplied. It helps you not spill the hydraulic fluid.

- If you use a suction pump as shown in [Figure 3](#), follow the manufacturer's instructions.
- If you use the tools as shown in [Figure 4](#), follow the instructions in [Section 4.3](#) and [Section 4.4](#).

**Figure 3: Pumps Used to Remove Hydraulic Fluid Quickly**



**Figure 4: Typical Tools to Remove Air (Bleed) Brakes and Used Hydraulic Fluid**



**4.3. Use the tools in Figure 4 to remove the used hydraulic fluid and clean the line.** —Do these steps:

1. Use a suction tool (Figure 4, item 4) to remove the used fluid from the reservoir. Clean the contamination.
2. Connect the tubing (Figure 4, item 2) and container (Figure 4, item 1) to the valve on the caliper (Figure 1, item 7).
3. Open the valve.
4. Add new fluid to flush out the lines.
5. Apply/release the brake (See Section 6) approximately 5 to 15 times. This will flush the used fluid out of the lines.
6. Close the valve.

**Note 4:** These steps will cause air to go into the line.

**4.4. Add new hydraulic fluid and remove (bleed) air from the brake circuit.**

**Note 5:** This procedure uses pressure in the hydraulic cylinder and the tools in Figure 4.

1. Fill the reservoir with new DOT 3 brake fluid. When you do the remaining steps, continue to add new fluid to the reservoir. Do not let the reservoir become more than half empty. You must make sure that the reservoir has fluid to prevent air flow into the system from the reservoir.
2. Apply electrical power to the machine. Release the brake.
3. See the part of the machine reference manual that tells how to operate the outputs manually.

4. Put a small quantity of new brake fluid (approximately inches (50 mm)) in the 12 ounce container (Figure 4, item 1).
5. Do these steps for each bleed valve (Figure 1, item 1) . Two technicians are necessary. This will move the fluid in one direction and push air out of the line:
  - a. Attach a clean tube to the valve. Put the other end in the container (Figure 4, item 1) below the fluid.
  - b. Make sure that the reservoir is full of fluid.
  - c. Apply the brake (See section 6).
  - d. Open the bleed valve. (Figure 2, item 12)
  - e. Look for air bubbles in the container when you push the air and fluid out through the tube.
  - f. Close the valve.
  - g. Release the brake.
  - h. Continue the steps b through g until no more air comes out of the line.
6. Add fluid to the top of the reservoir. Replace the cap.
7. Operate the brake many times. Make sure that it operates correctly.

## 5. How to Adjust the Connection between the Brake Cylinder and the Air Cylinder

If you removed the brake cylinder or the air cylinder, you must adjust this connection.

Figure 5: The Connection between the Brake Cylinder and the Air Cylinder

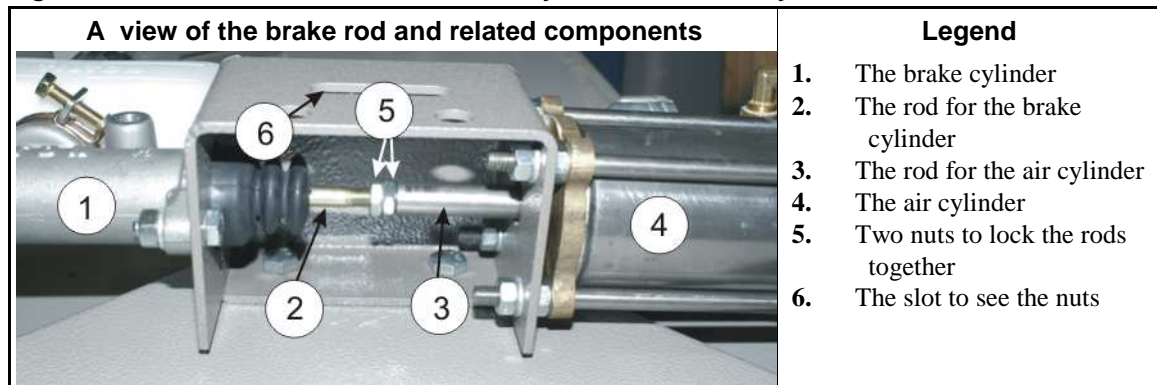
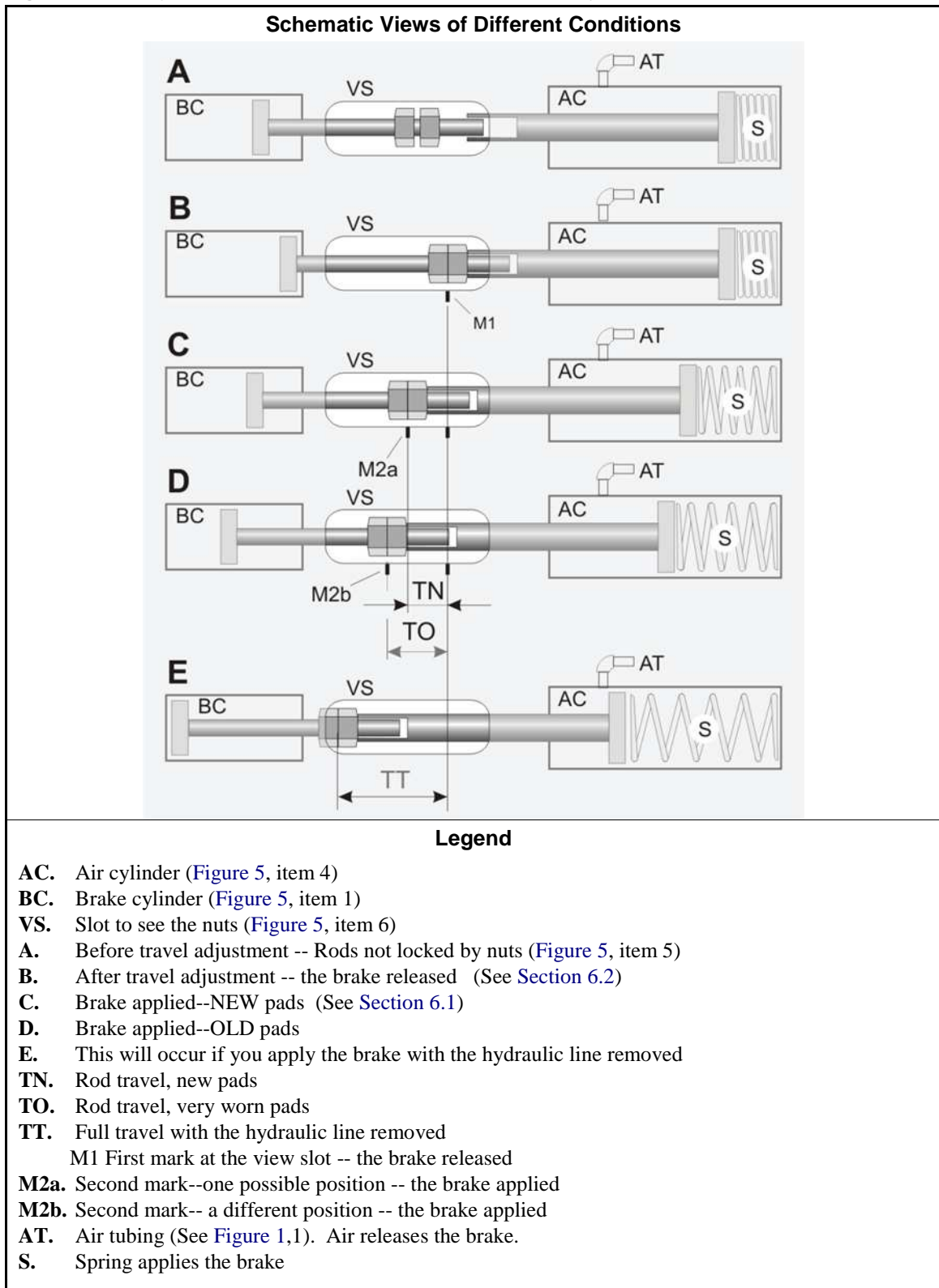


Figure 6: The Adjustment between the Brake Rod and the Air Cylinder



### 5.1. Adjust for maximum rod travel.

1. Operate the master switch to energize control power.
2. Make sure that the air pressure that releases the brake (Figure 7, item 1) is 85 -100 PSI ( 5.95 - 07.0 kg/cm-cm).
3. Make sure that the nuts that lock the rods together (Figure 5, item 5) are loose.
4. Release the brake (see Section 6). Let the air cylinder rod fully retract into the air cylinder as shown in Figure 6, A.
5. Turn the brake rod into the air cylinder rod until the brake rod comes out of the brake cylinder fully. See Figure 6, B.
6. Lock the brake rod (Figure 5, item 2) to the air cylinder rod (Figure 5, item 3) with two nuts (Figure 5, item 5).

### 5.2. Make sure that the brake will continue to operate while the pads wear.

1. Release the brake. On the view slot, put a mark at the position of the lock nuts. (Figure 6, item M1).
2. Apply the brake. See Section 6.
3. Put a mark at the position of the lock nuts when the brake is applied. This can be at position M2a, M2b, or between M2a and M2b. When the pads wear this position will move.
4. Make sure that the distance the rod moves when you apply the brake is 0.75 to 1.0 inches (19-25 mm). If the travel is more than this, the brake piston can hit the mechanical stop before the brake engages fully. This condition is shown in Figure 6 , E (dimension TT).

## 6. Operation of Brake Systems

Look at the electrical schematics of your machine to find how your brake is controlled. Some machines release the brake when you close the door. Some machines have a control relay to release or apply the brake.

### 6.1. How to Apply the Brake for Machines with a "Break Release" Output

1. Turn the "brake release" control output off to de-energize the air valve to remove air pressure to the air cylinder (Figure 1, item 1).
2. With no air pressure, a spring in the air cylinder will apply force to the hydraulic cylinder (Figure 1, item 8). This will apply pressure to the brake pads (Figure 2, item 4) against the rotor disk (Figure 1, item 5). (Figure 6, item C,D)

**Note 6:** If electrical power or compressed air is missing, hydraulic pressure will apply the brake.

### 6.2. How to Release the Brake for Machines with a "Brake Release" Output

1. Turn the control output called "brake release" on to energize the air cylinder valve.
2. Air pressure compresses the spring and releases the brake. (Figure 6, item B)

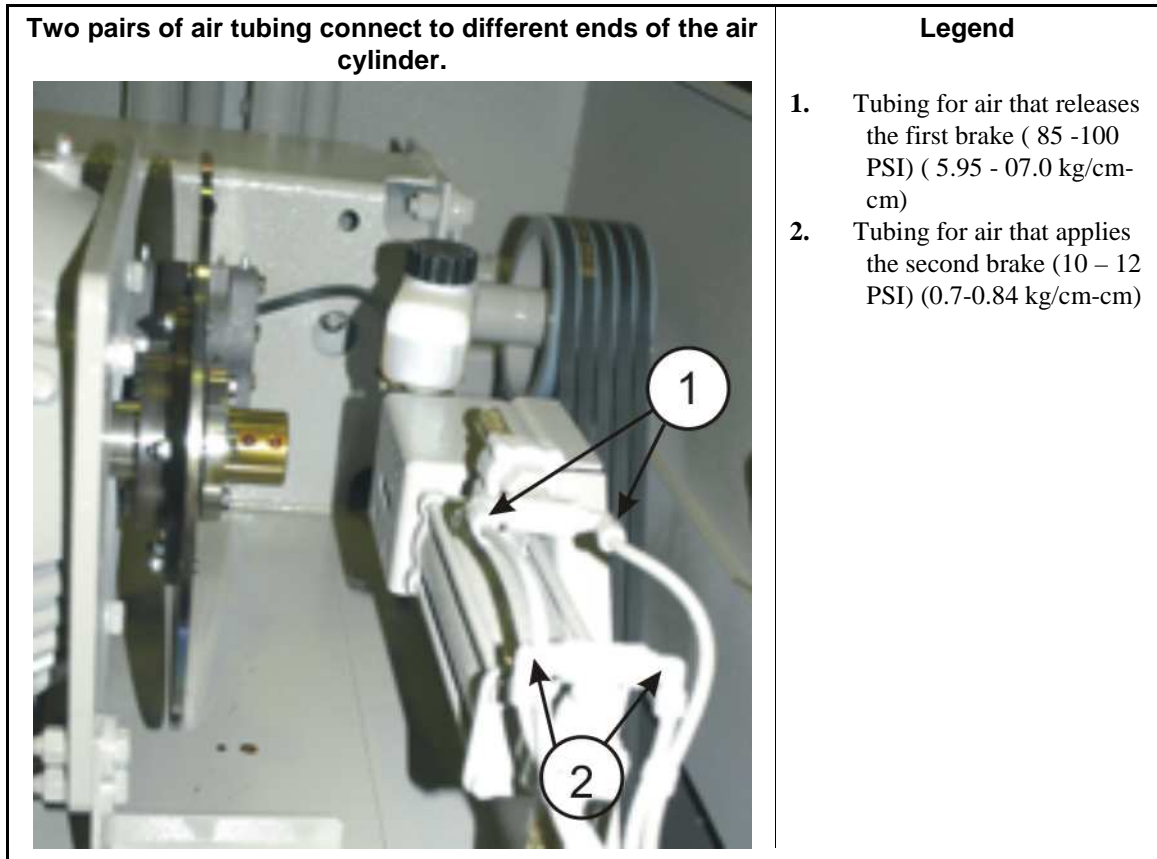
**6.3. How to Apply and then Release the Brake Quickly** —There are two air tubes at (Figure 1, item 1). One supplies compressed air from an air valve. The other sends this compressed air to a pressure switch. If you remove one of the two tubes when compressed air is there, you will apply the brake.

1. Disconnect the air tubing (Figure 1, item 1).

2. Turn the "brake release" output on. The air valve will supply compressed air to one of the tubes. (Figure 1, item 1).
3. Quickly move one of the compressed air tubes (Figure 1, item 1) on and off the air cylinder.
4. After you complete this procedure, connect the air tubing.

#### 6.4. How the Brake Operates on Divided Cylinder Machines

Figure 7: A Typical First and Second Brake on a Divided Cylinder Machine



- On divided cylinder machines, two pair of air tubes connect to different ends of the air cylinder.
- When the cylinder turns, air pressure at Figure 7, item 1 compresses the spring and releases the brake.
- When you operate the stop control, air pressure at 1 is removed. Then the spring in the air cylinder applies the brake.
- If you open the door, the 2nd brake is applied. Then the air pressure at Figure 7, item 2 and the spring apply the brake.

**6.5. The Second Brake** —If your machine has a second brake which uses air pressure and spring pressure, it will have a pressure regulator. Make sure that you adjust the air pressure of the second brake (Figure 7, item 2) to 10 – 12 PSI (0.7-0.84 kg/cm-cm).

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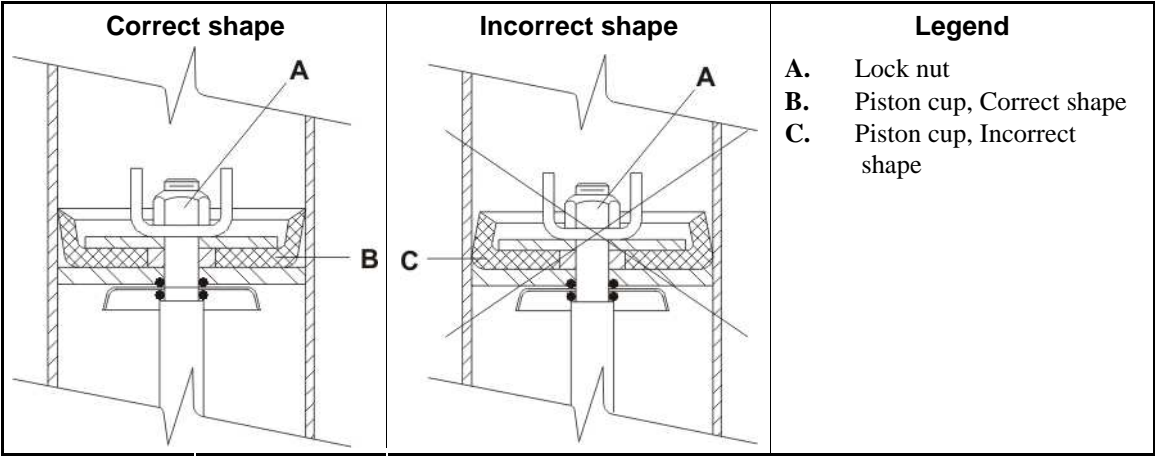


# Air Cylinder Components and Installation

## 1. How To Get the Correct Piston Cup Shape

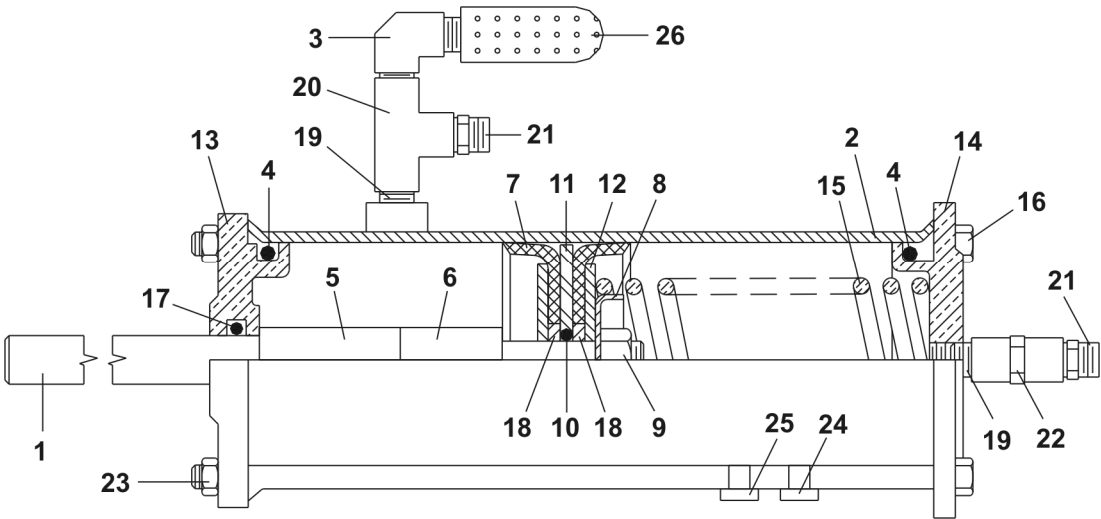
The figure that follows shows the correct shape and the incorrect shape of the piston cup. Tighten the locknut only until you can turn the piston cup and the washer on the stem with some resistance. If you tighten the locknut too much, this will cause the incorrect shape. This can stop air cylinder movement.

Figure 1: Compare Piston Cup Shapes



## 2. Air Cylinder Components

Figure 2: Air cylinder



**Table 1: Parts List—Air Cylinder 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
Assemblies				
	A	AAC4840F	Assembly; Air cylinder; Two direction operation; Brake;	4840F_, 4840H_ 68036H_
	B	AAC68002	Spring; Air cylinder; Two direction operation; Brake	6836M5K, 7246M5K
Components				
all	1	02 18650B	Stem; Air cylinder; Two direction operation; Brake; 7.88L	
all	2	W2 18646	Air cylinder; Two direction operation; Brake	
all	3	53A031XB	Hydraulic fitting; Elbow 90 degrees; 1/4	
all	4	60C132	O-Ring; #329; 2"; 3/16"; Buna-N; 70	
all	5	27B250	Spacer; Rolled; 0.5; .521; 0.636 X 1.5	
all	6	27B34010SS	Spacer; Rolled; 0.5; 0.51; 0.625; 0.062	
all	7	02 02194	Piston cup; Air cylinder; 2+3/8"	
all	8	02 18651	Washer; Flat; 3/8; 1.63 X 0.14	
all	9	15G220	Nut; Nylon insert lock; 8; 24	
all	10	60C106	O-Ring; #011; 5/16"; 1/16"; Buna-N; 70	
all	11	02 02105B	Washer; Piston cup; Brass; 2.38"	
all	12	02 02085	Washer; Back-up; Piston cup; 2"OD	
all	13	06 20702E	Cylinder head; Stem side	
all	14	02 02101	Cylinder head; Spring side	
A	15	02 21865	Spring; Air cylinder; Two direction operation; Brake	
B	15	02 17024	Spring; Air cylinder; Two direction operation; Brake	
all	16	W6 20702F	Rod; Air cylinder; Two direction operation; Brake	
all	17	60C110	O-Ring; #011; 1/2"; 3/32"; Buna-N; 70	
all	18	02 02185	Washer; Flat; 3/8; 0.75 X 0.12	
all	19	5N0ECLSBE2	Pipe; 1/4; Close (threads only); Brass	
all	20	51V015	Pipe Fitting; Tee; 1/4	
all	21	53A008B	Hydraulic fitting; Hose end straight connector; 1/4	
all	22	5SCC0EBE	Pipe FittingCoupling; 1/4;	
all	23	15G185	Nut; Hex; 5/16; 18	
all	24	20L601F	Identification tag; "F"	
all	25	20L601X	Identification tag; "X"	
all	26	27A005A	Muffler; 1/4"	

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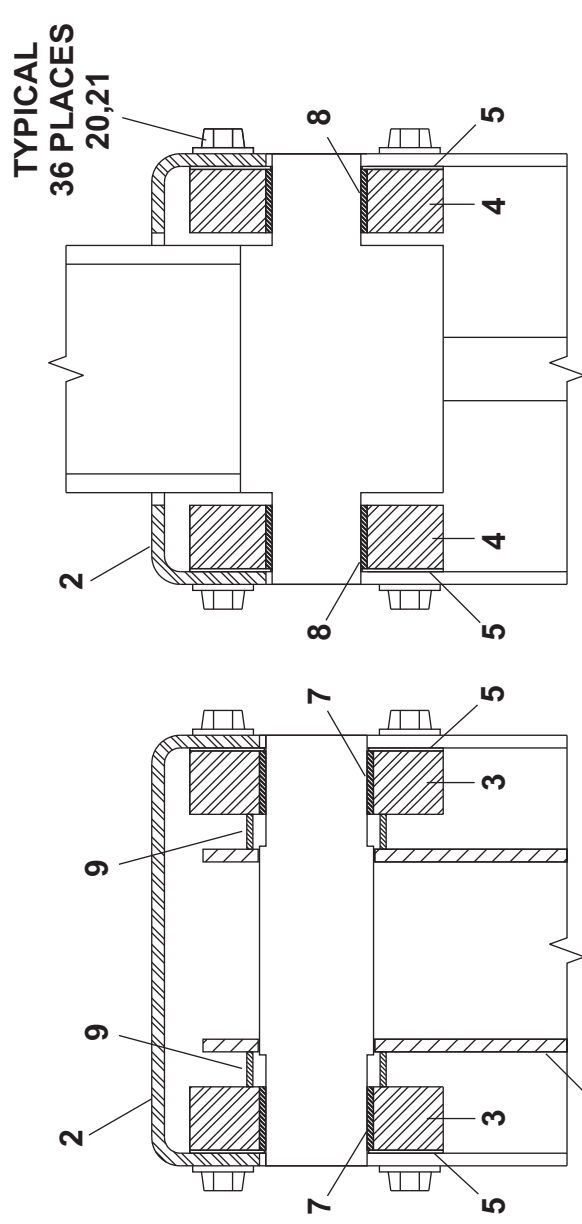
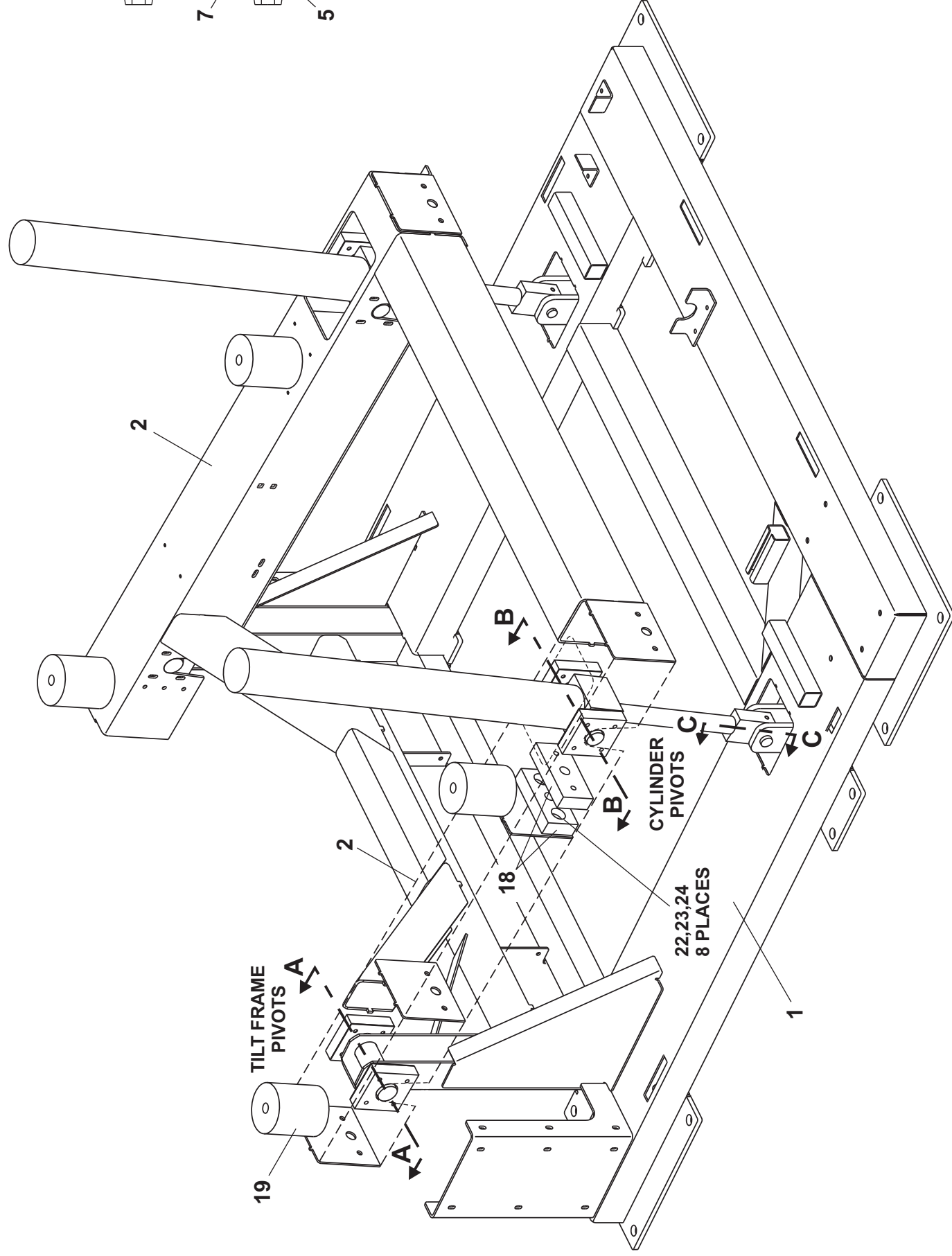
# Frame and Tilt

4

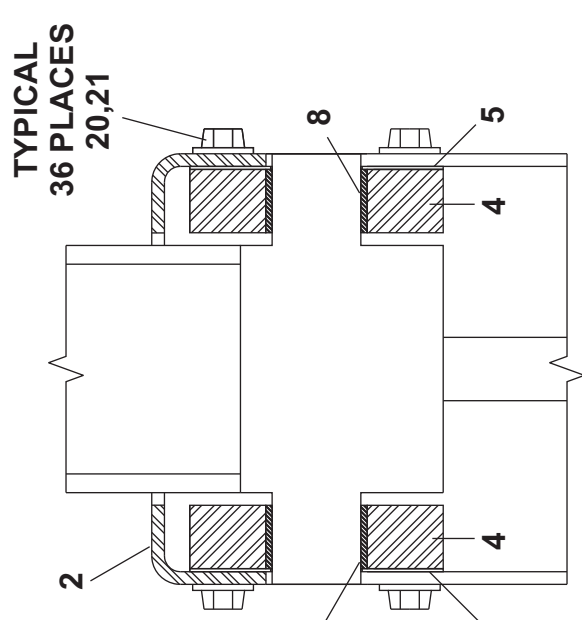


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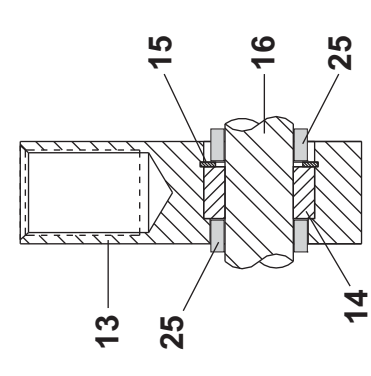
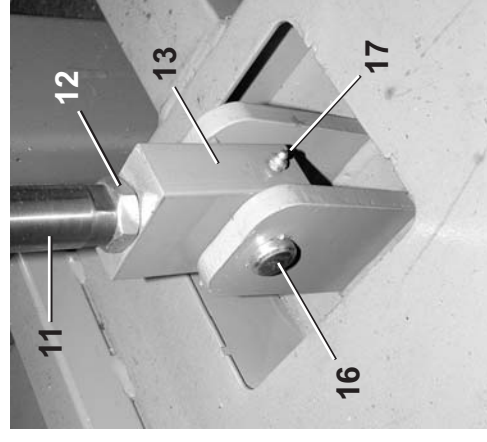


Section A-A  
Tilt Frame Pivots



Section B-B  
Cylinder Pivots

TYPICAL  
36 PLACES  
20,21



Section C-C  
Cylinder Clevis



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Used In	Item	Part Number	Description	Comments
	A	GHF48003	INSTALL=FRAME+PIVOTS 4840F 2WAY HYDRAULIC TILT	
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
All	1	W2 22232	WLMT=BASE FRAME HYD, 4840F	
all	2	W2 22245	WLMT=TILT FRAME, 4840F HYD	
all	3	02 22293	4840 TILT FRAME BUSHING MOUNT	
all	4	02 22293A	4840 HYD CYL BUSHING MOUNT	
all	5	02 22393	4840F TILT FRAME BUSHING SPACER	
all	7	54E228	2"IDX1.25"LG NON-FRICT BUSHING	
all	8	54E227	1.75"IDX1.25"LG NON-FRICT BUSHING	
all	9	54JH22000C	SHFTCOLL 2"ID DBLSPLT CARSTL	
all	11	27E163C33A	HYDRAULIC CYL 3.25" BORE X 33" STROKE	
all	12	15G248	HXJAMNUT 1-14UNF2B ZINC GR2	
all	13	X2 23402	4840F HYDRAULIC CYLINDER CLEVIS END	
all	14	54A702	BALLBUSH 1" RBC#B16-L=NO SEALS	
all	15	17B181	RETRING;INT;1.725;ENDRIES HO162	
all	16	17A101	CLEVIS PIN 1"X3+1/2"DRILLED ZI	
all	17	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	
all	18	02 22257	RESTPAD= TILT STOP 4840F HYD	
all	19	60B133	MM SPRG 5X1X7 F#W223580064	
all	20	15K118	HEX FLANGE BOLT 3/8-16X1+7/8 GR8 ZINC	
all	21	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
all	22	15K191	HXCAPSCR 1/2-13UNC2AX2.5 GR5 Z	
all	23	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	24	15G234N	HXLOCKNUT NYL 1/2-13UNC2 STLZ	
all	25	02 22509	SPACER=CLEVIS END-4840FA	

Used In	Item	Part Number	Description	Comments

Used In	Item	Part Number	Description	Comments

Used In	Item	Part Number	Description	Comments

# Frame and Non-tilt Supports

Figure 1: Frame and Non-tilt Supports: 48040H7W, 48040H7R

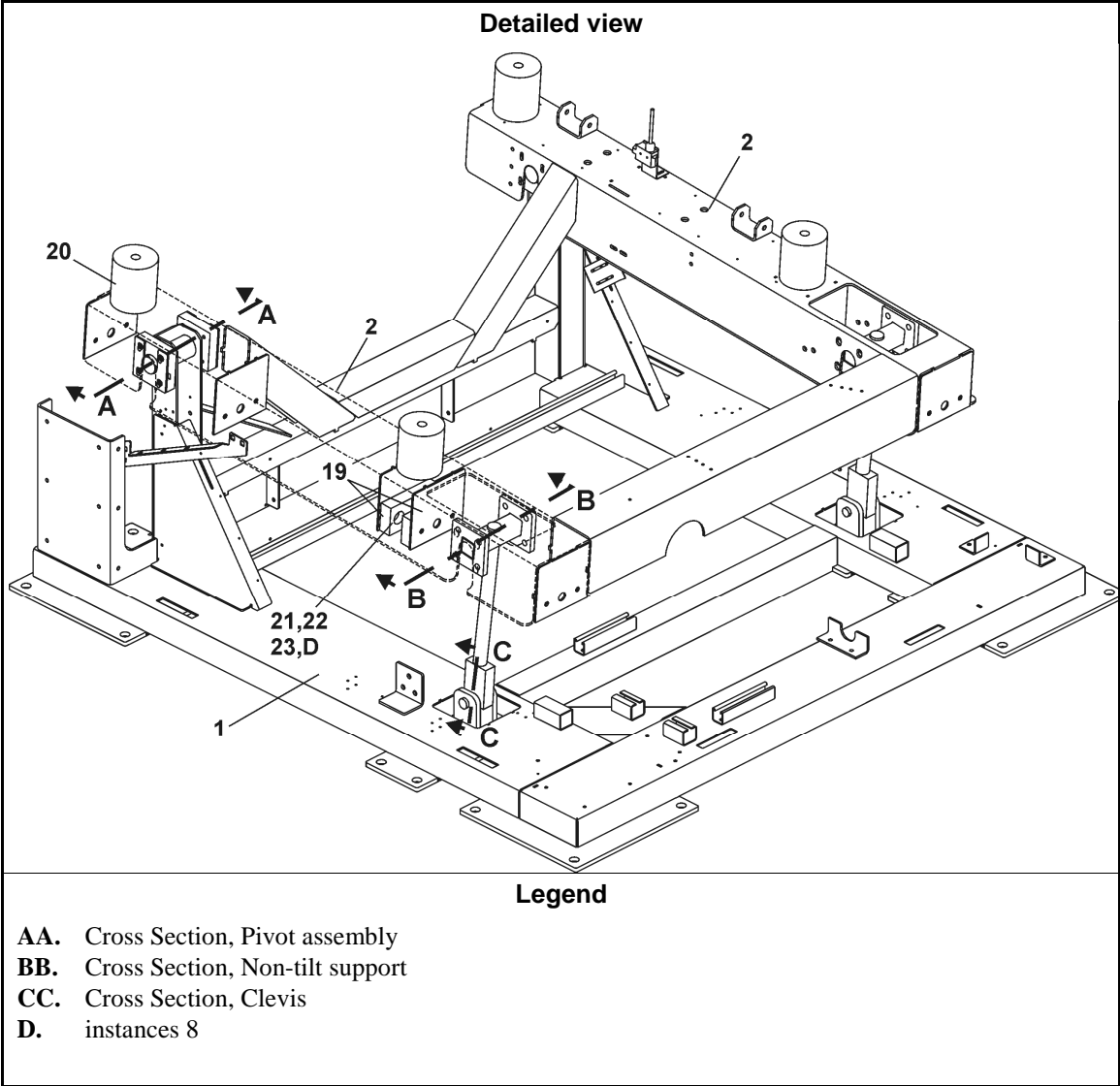


Figure 2: Frame and pivot assemblies

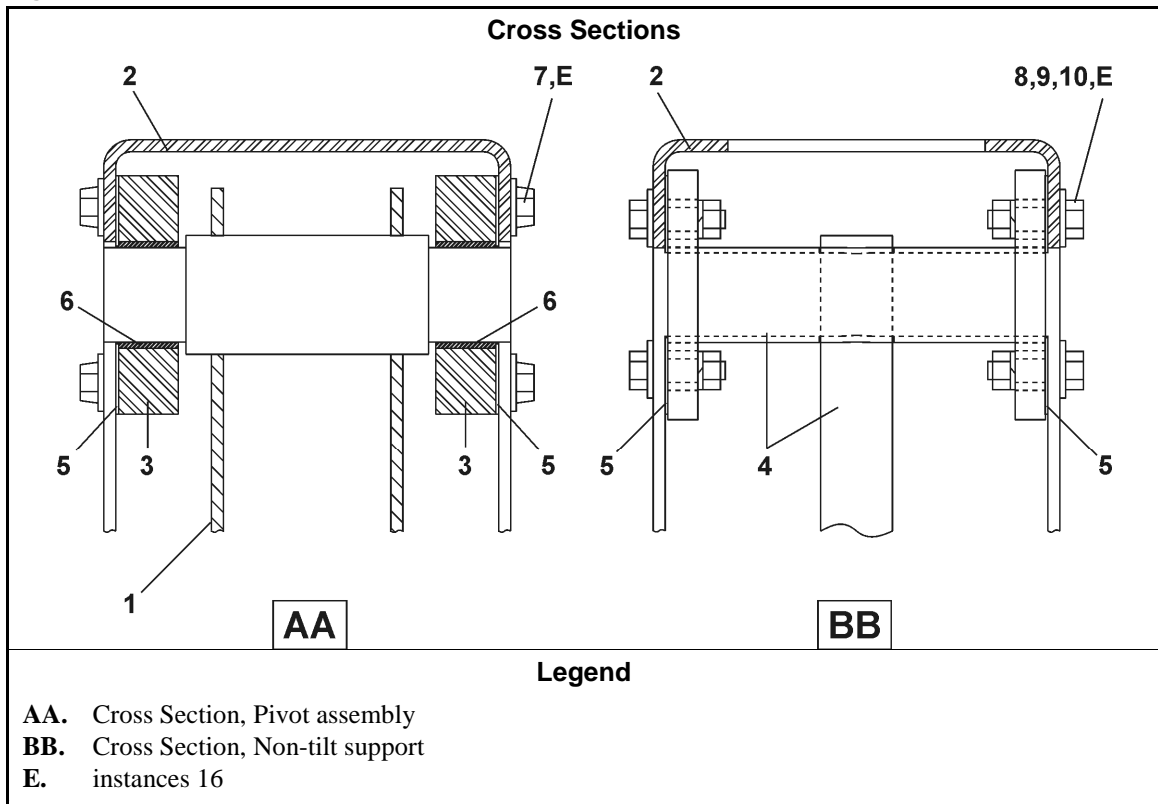
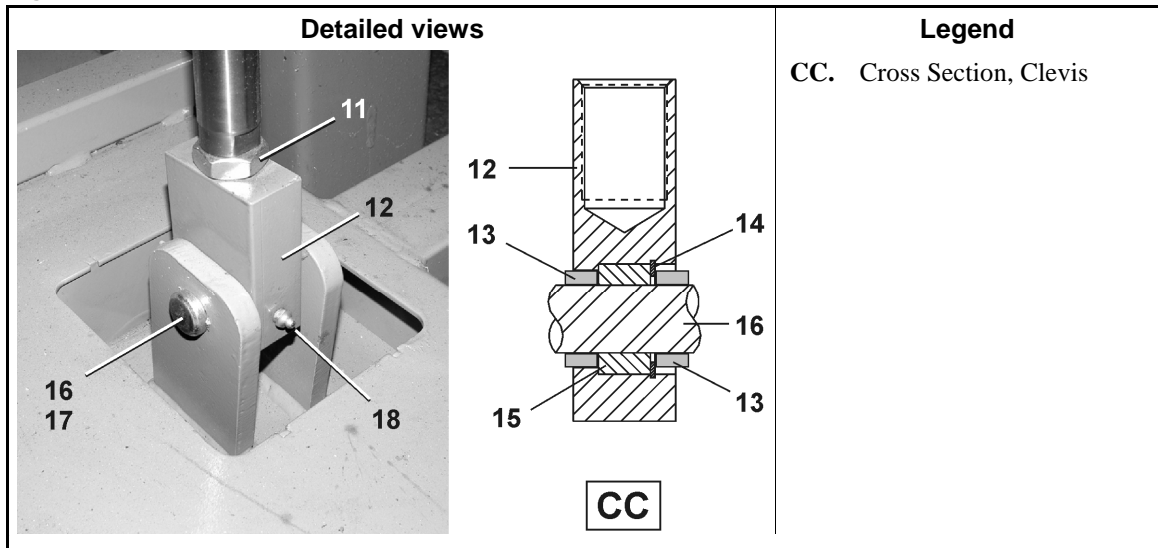


Figure 3: Clevis



**Table 1: Parts List— Frame and Non-tilt Supports**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GHF48004	Installation Group	
	B	AHF48001	Assembly, Non-tilt support	
Components				
all	1	W2 22232	Base frame	
all	2	W2 22245	Tilt frame	
all	3	02 22293	Bushing	
all	4	W2 22432	Non-tilt support	
all	5	02 22393	Spacer	
all	6	54E228	Bushing, 2"X1.25"	
all	7	15K118	Bolt, 3/8-16X1+3/4	
all	8	15K223A	Bolt, 5/8-11X2	
all	9	15U315	Washer, Lock, 5/8	
all	10	15G238	Nut, 5/8-11	
all	11	15G248	Nut, 1-14	
all	12	X2 23402	Clevis	
all	13	02 22509	Spacer	
all	14	17B181	Retainer	
all	15	54A702	Ball bushing, 1"	
all	16	17A101	Clevis pin, 1"X3+1/2"	
all	17	15H060	Cotter pin, 3/16X2	
all	18	54M021	Grease fitting, 1/8X1/4	
all	19	02 22257	Rubber stop pad	
all	20	60B133	Rubber spring, 5X1X7	
all	21	15K191	Bolt, 1/2-13X2.5	
all	22	15U280	Washer, Flat, 1/2"	
all	23	15G234N	Nut, Nylon lock, 1/2-13	

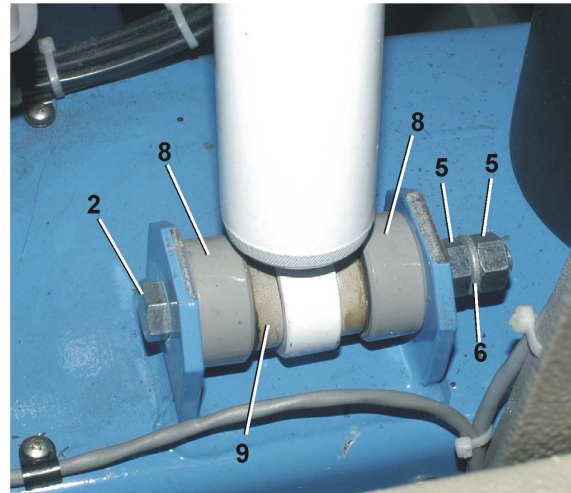
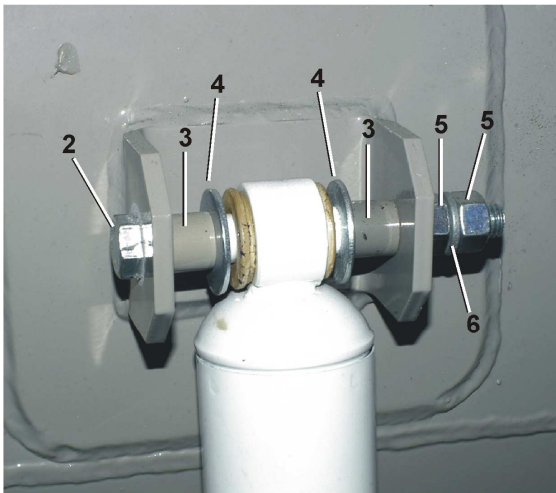
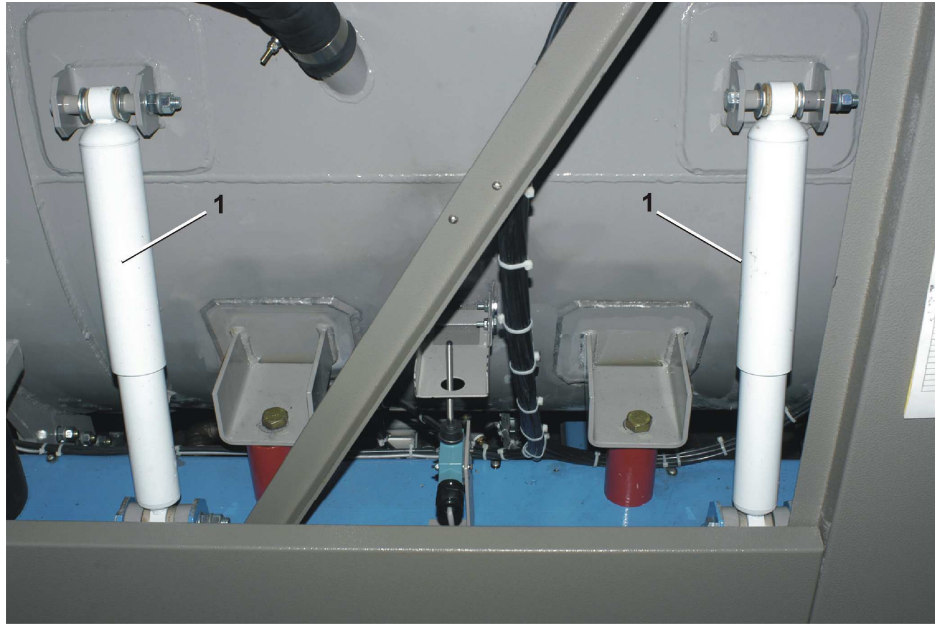
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BIH4M02 (Published) Book specs- Dates: 20140320 / 20140320 / 20140320 Lang: ENG01 Applic: IH4

## Shock Absorbers

Figure 1: Installed views: 48040H7N, 48040H7W, 48040H7R, 48040H7K



Shock Absorbers

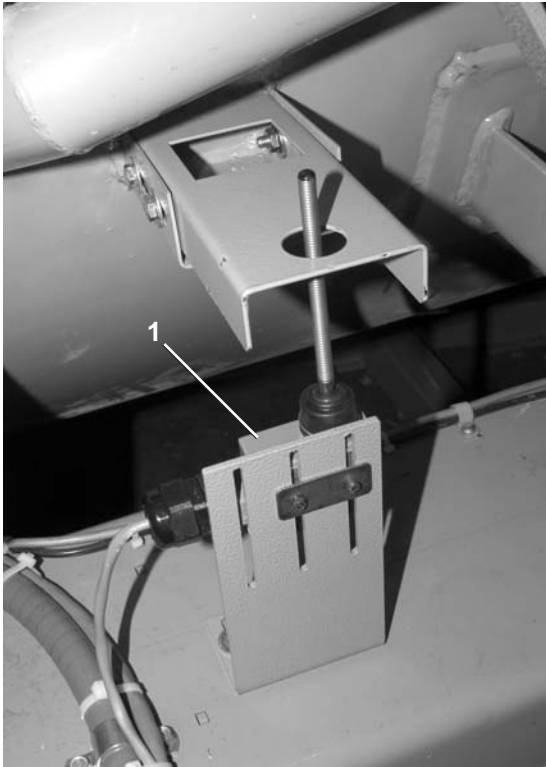
**Table 1: Parts List— Shock Absorbers**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GSS48001	Installation Group	
Components				
all	1	60BS6832	Shock absorber	
all	2	15K203	Bolt, 1/2-13X5	
all	3	05 20190	Spacer	
all	4	15U280	Washer, Flat, 1/2"	
all	5	15G230	Nut, 1/2-13	
all	6	15U300	Washer, Lock, 1/2"	
all	8	05 20187B	Rod	
all	9	05 20187C	Spacer	

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# Excursion Switch

48040H7N, 48040H7W, 48040H7R, 48040H7K



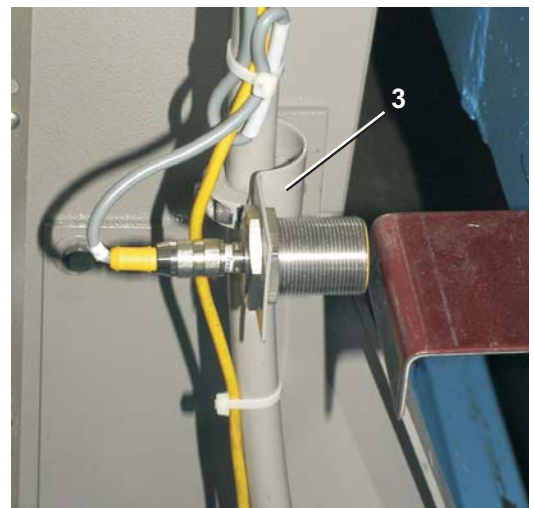
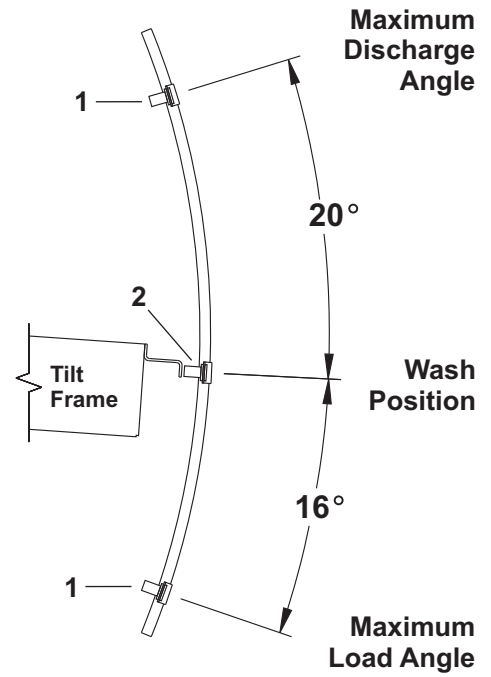
### Parts List—Excursion Switch

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			-----COMPONENTS-----	
all	1	09R008ASTD	* 09R008A+MOUNTING HDWRE+INST	

# Tilt Limit Switches

48040H7N, 48040H7K



# Tilt Limit Switches

48040H7N, 48040H7K

<b>Parts List—Tilt Limit Switches</b> Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.				
Used In	Item	Part Number	Description	Comments
-----ASSEMBLIES-----				
	A	GMI48005	INSTL HYD TILT MISC ITEMS 4840F	
-----COMPONENTS-----				
All	1	09RPS30DAS	PRXSW QK CONN 30M NC-AC SHLD	
all	2	09RPS30ADS	PROX SW QK CONN 30M NO-DC SHLD	
all	3	W3 60220B	PROX SW MTG WLMT 30MM, 6440	

# Hydraulic Schematic

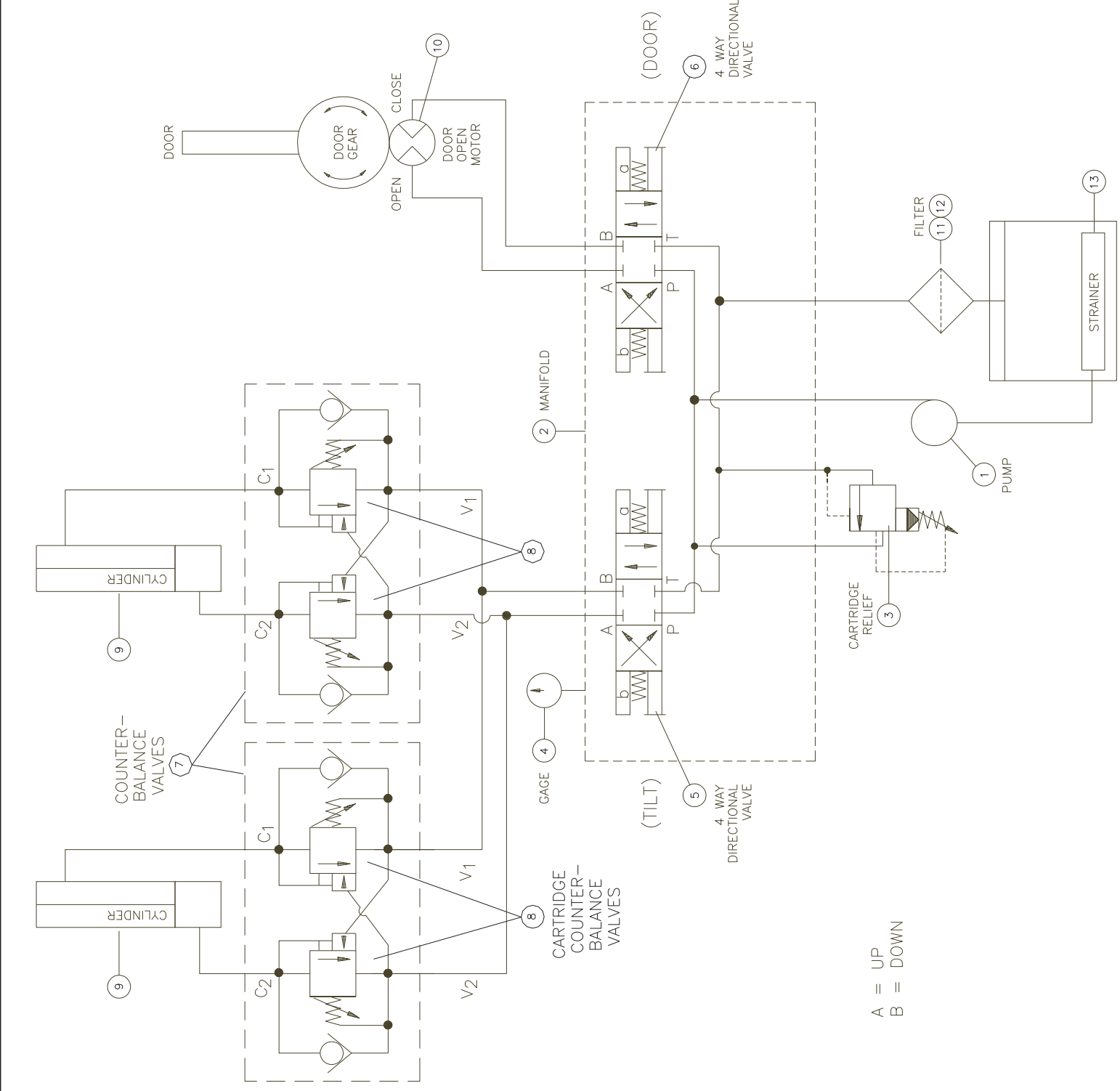
## 48040H7N, 48040H7K



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BMP090034/2014124B  
(Sheet 1 of 1)

Litho in U.S.A.



**Parts List—Hydraulic Schematic**  
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
	A	GHC48002	ASSEMBLIES INSTALL=HYDRAULIC TILT, 2-WAY, 4840F	
			COMPONENTS GEAR PUMP-RECIRC.PUMP-EATON	
all	1	27E5506	GEAR PUMP-RECIRC.PUMP-EATON	
all	2	96DH455	MANIFOLD, 2-VALVE D05 PARALLEL	
all	3	96DH455A	CART,RELIEF VICK#RV5-10-S-020	
all	4	27E731500	LIQFILL GAGE 0-1500PSI/BAR BRZ	
all	5	96RH711E71	DIRECTIONAL CNT VLV D05NG10 230V	TILT
all	6	96RH705E71	VALVE-HYD.4-WAY DIRECTIONAL 240V	OPTIONAL AUTODOOR
all	7	96DH472	COUNTERBALANCE VALVE-SUN BODY	
all	8	96DH472A	CARTRIDGE, COUNTERBALANCE VLV.	
all	9	27E163C33A	HYDRAULIC CYL 3.25" BORE X 33" STROKE	
all	10	27E320025	TDRQMOTOR- HYDRAULIC	
all	11	27E7112	INTANK RETURN FILTER 1+1/4"	
all	12	27E7201	FILLER-BREATH-FILT.LHA#ABB-40N	
all	13	27E7105	SUCT.STRAIN=FLO EZY#S-10-100	

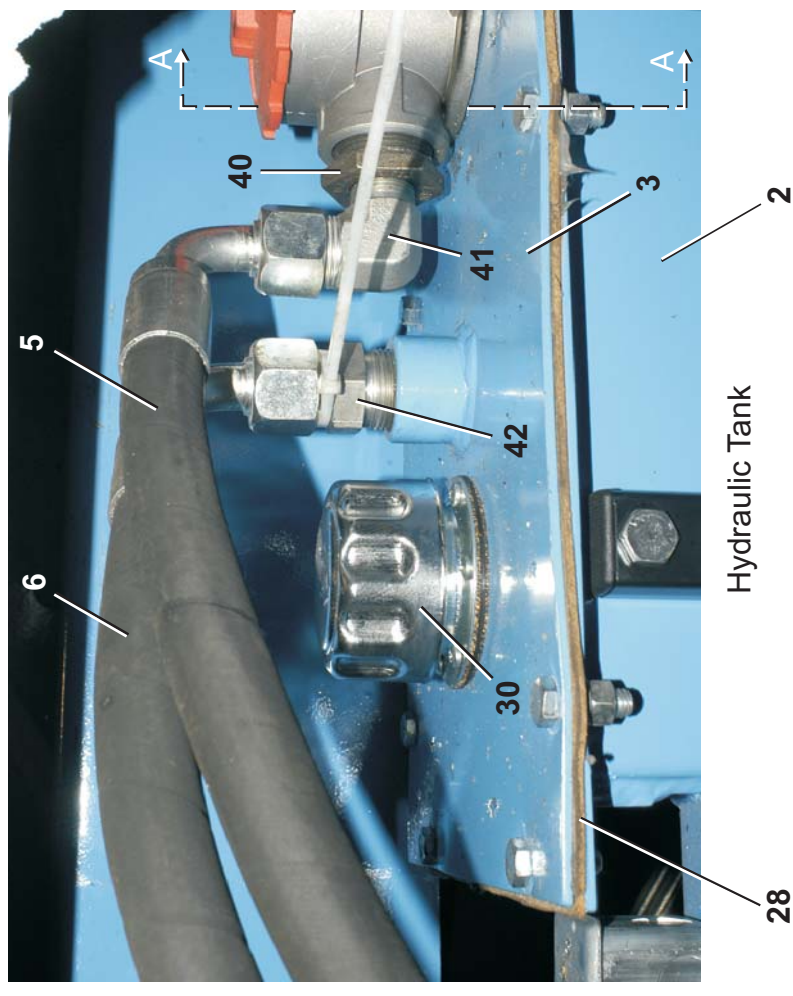
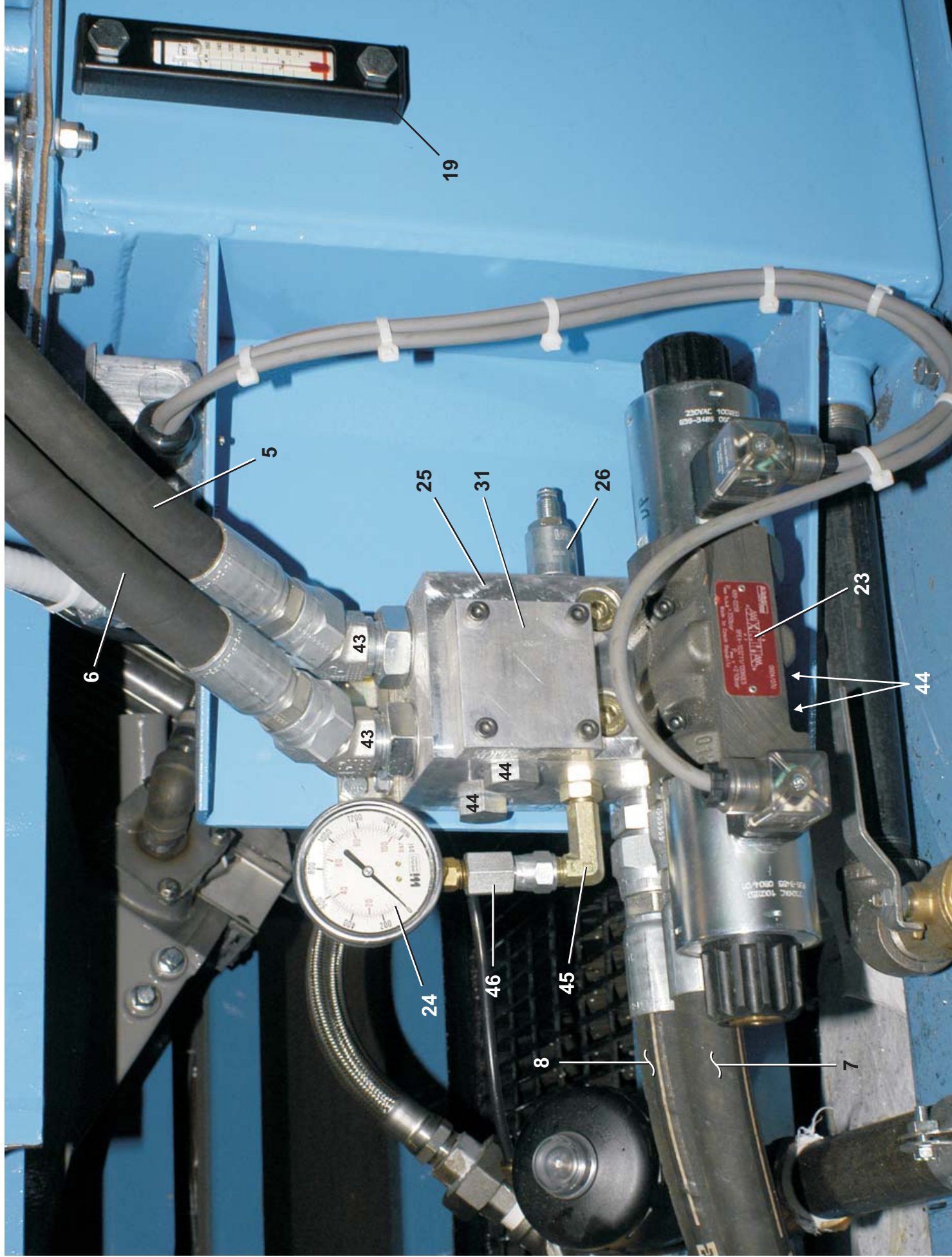
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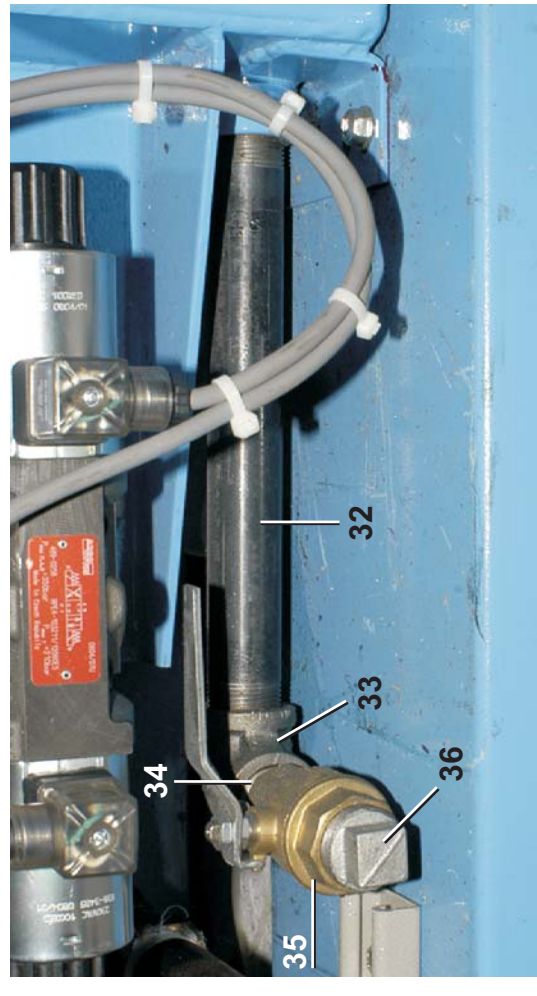
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BMP090033/2014124B  
(Sheet 1 of 4)

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Hydraulic Tank



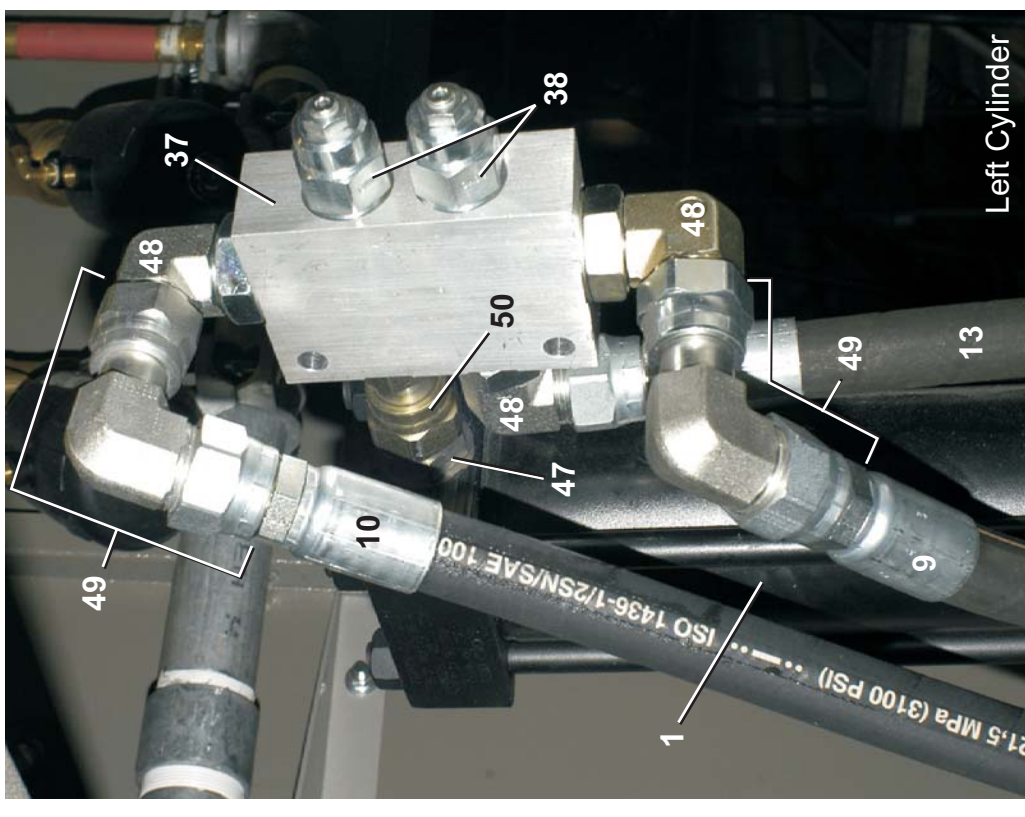
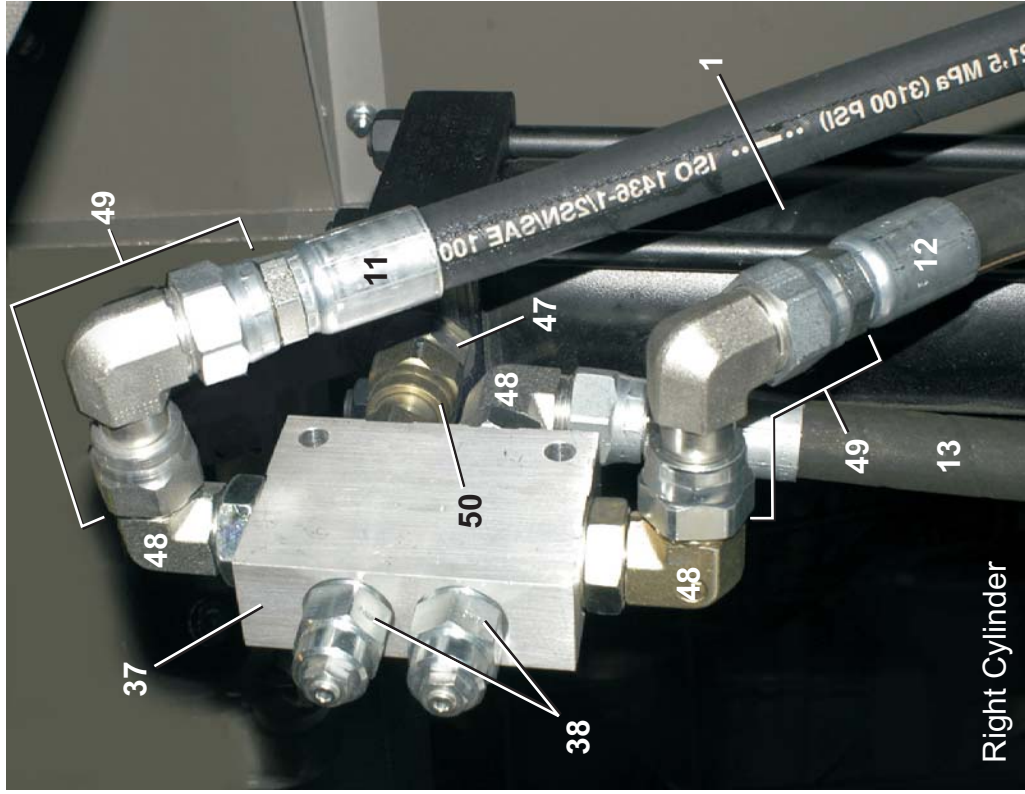
**Hydraulic Tilt Components**  
**48040H7N, 48040H7K**

BMP090033/2014124B  
 (Sheet 2 of 4)

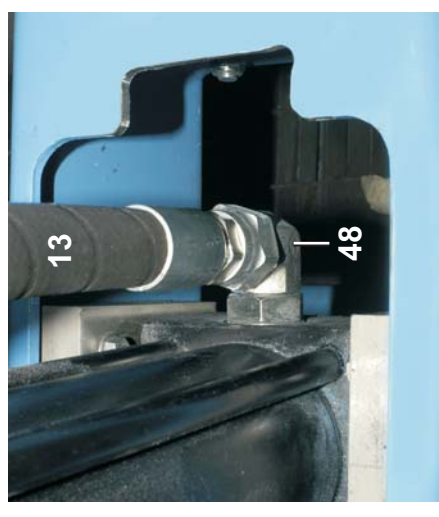
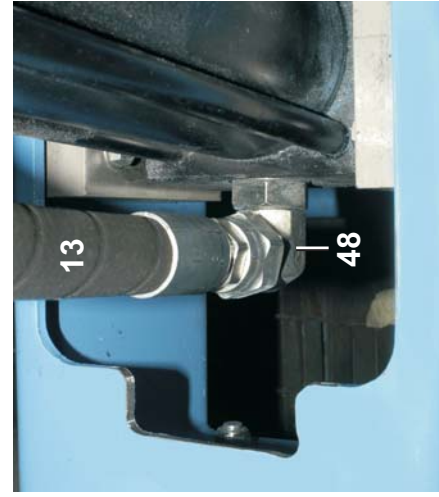
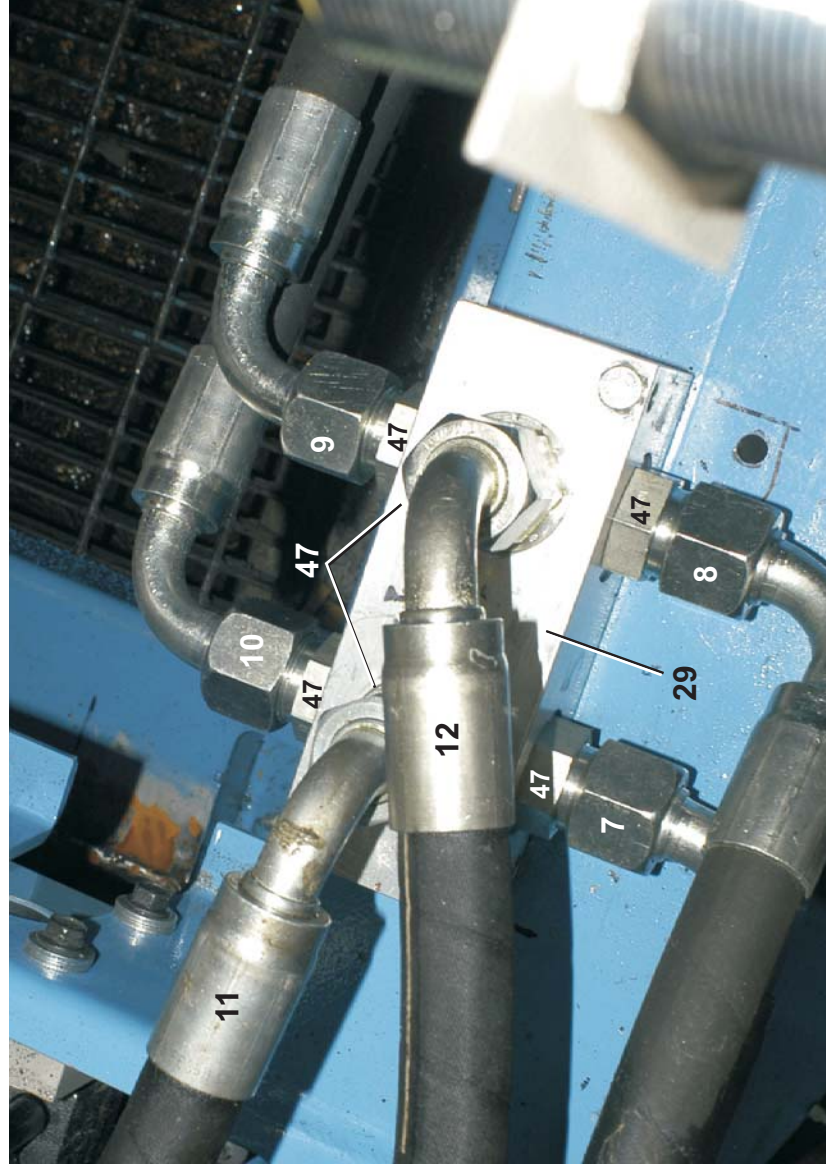


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Junction Block





# Hydraulic Tilt Components 48040H7N, 48040H7K



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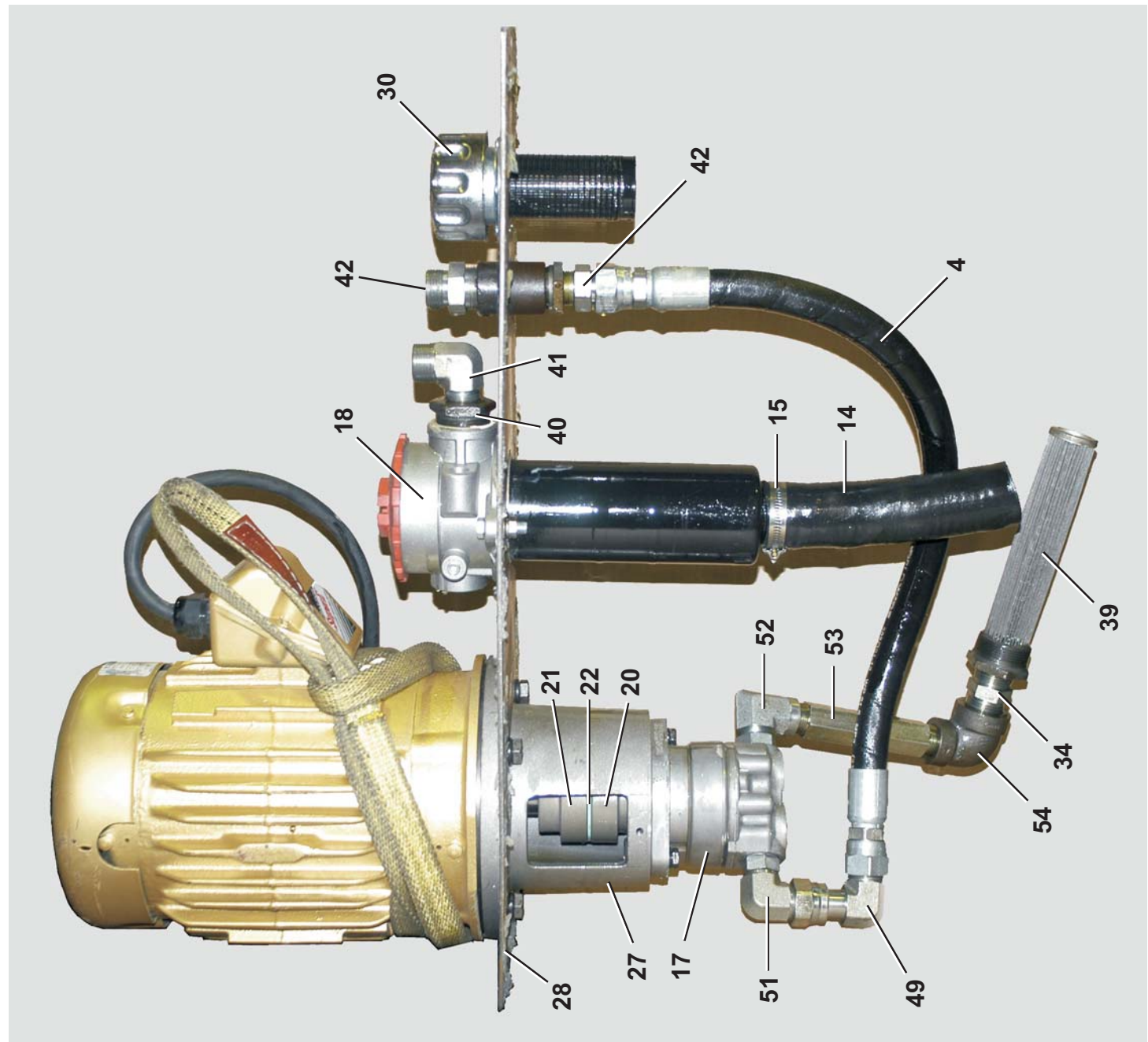
BMP090033/2014124B  
(Sheet 3 of 4)

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## Parts List—Hydraulic Tilt Components

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			ASSEMBLIES	
A		GHC48002	INSTALL=HYDRAULIC TILT, 2-WAY, 4840F	
B		AHT48001	HYDRAULIC OIL RESERVOIR ASSY-4840F	
C		AHT48003	48F7A HYDRAULIC HOSE & FITTING ASSY	
			COMPONENTS	
All	1	27E163C33A	HYDRAULIC CYL 3.25" BORE X 33" STROKE	
all	2	W2 22403	HYD OIL TANK WLMT- 4840F	
all	3	W2 22408	HYD TANK TOP WLMT-4840F	
all	4	60EH50C24B	HYD.HOSE 3/4"+2 X FORSW=24"	
all	5	60EH50C22A	HYD.HOSE 3/4"+ 90FSW + FORSW=22.5"	
all	6	60EH50C23A	HYD.HOSE 3/4"+ 90FSW + FORSW=23"	
all	7	60EH50C01A	HYD.HOSE 3/4"+ 90FSW + FORSW=165"	
all	8	60EH50C01B	HYD.HOSE 3/4"+ 90FSW + FORSW=167"	
all	9	60EH50C76A	HYD.HOSE 3/4"+ 90FSW + FORSW=76"	
all	10	60EH50C84A	HYD.HOSE 3/4"+ 90FSW + FORSW=84"	
all	11	60EH50C36A	HYD.HOSE 3/4"+90FSWXFORSW=36"	
all	12	60EH50C32A	ASSY=HYDRAULIC HOSE 3/4X32LG	
all	13	60EH50C30B	HYD.HOSE 3/4"+2 X FORSW=30"	
all	14	60E110	HOSE 1.625"ID WIRE INSERT	
all	15	27A082	HOSECLAMP 2.5625-3.5CADSC#HS48	
all	17	27E5506	GEAR PUMP-RECIRC.PUMP-EATON	
all	18	27E7112	INTANK RETURN FILTER 1+1/4"	
all	19	27E7303	LEVEL INDICATOR W/THERM-STAUFF	
all	20	27E792	COUPLING HUB MAGNALOY #M200-02005	
all	21	27E793	COUPLING HUB MAGNALOY #M200-10408	
all	22	27E794	COUPLING INSERT-HYTREL MAGNALOY#M270-H5	
all	23	96RH711E71	DIRECTIONAL CNT VLV D05NG10 230V	
all	24	27E731500	LIQFILL GAGE 0-1500PSI/BAR BRZ	
all	25	96DH455	MANIFOLD, 2-VALVE D05 PARALLEL	
all	26	96DH455A	CART,RELIEF VICK#RV5-10-S-020	





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**Parts List—Hydraulic Tilt Components**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
all	27	27E795	PUMP MOUNT MAGNALOY #M182472A	
all	28	27E796	GASKET MAGNALOY #M182AVG	
all	29	27E797	JUNCTION BLOCK DAMAN #AJ2700212S	
all	30	27E7201	FILLER-BREATH-FILT.LHA#ABB-40N	
all	31	96DH455B	BLANK COVERPLATE-DAMEN#AD05CPP	
all	32	5N0P10AF42	NPT NIPPLE 3/4X10 TBE BLKSTL	
all	33	5SLOPMIA	NPT ELB 90DEG 3/4 BLKMAL 300#	
all	34	5N0P01KF42	NPT NIP 3/4X1.5 TBE BLKSTL S40	
all	35	96D050A	3/4"BALLVALVE BRZ BONOMI 171N	
all	36	5SP0PCESS	NPT PLUG 3/4 SQ SOLID BLK CI	
all	37	96DH472	COUNTERBALANCE VALVE-SUN BODY	
all	38	96DH472A	CARTRIDGE, COUNTERBALANCE VLV.	
all	39	27E7105	SUCT.STRAIN=FLO EZY#S-10-100	
all	40	5SB1E0PMFO	NPTHEXBUSH 1.25X3/4 BLKML 150#	
all	41	52ZJ00S007	TUBEFIT90ELFCSL3/4"#12CLO-S	
all	42	52ZC0PS001	TUBEFITSTR3/4"#12-FLO-S	
all	43	52ZJ00S005	TUBFITSTRTHD45ELFC#12V50L0-S	
all	44	52PY0KR001	HEXPLUG 1/2"OR #6408-08-0	
all	45	52JY0GR004	ELB90 3/80RXMJIC#6801LL-6-6NWO	
all	46	52AY0ER005	STR.1/4"FPX3/8"FJIC#6506-4-6	
all	47	52ZC00S003	TUBEFIT STRTHDCN3/4"#12F50L0-S	
all	48	52ZJ00S011	TUBEFIT90EL3/4"FACESEAL ORING	
all	49	52ZJ00S006	TUBEFIT90EL3/4"#12-C6LO-S	
all	50	52ZC0PS002	TUBEFITSTRSW 3/4"#12F650L-S	
all	51	52ZJ00S009	TUBEFIT90EL3/4X5/8"FACESEAL OR	
all	52	52JY0PR008	ELB.3/4MORXF #6805-12-12NWO	
all	53	5N0P06AF42	NPT NIP 3/4X6 TBE BLKSTL SK40	
all	54	5SLOPMFA	NPT ELB 90DEG 3/4 BLKMAL 150#	

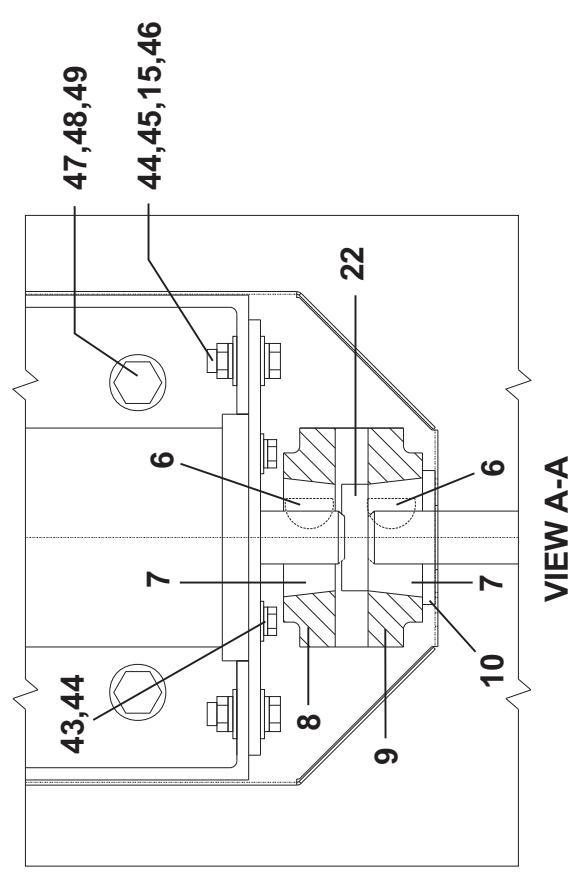
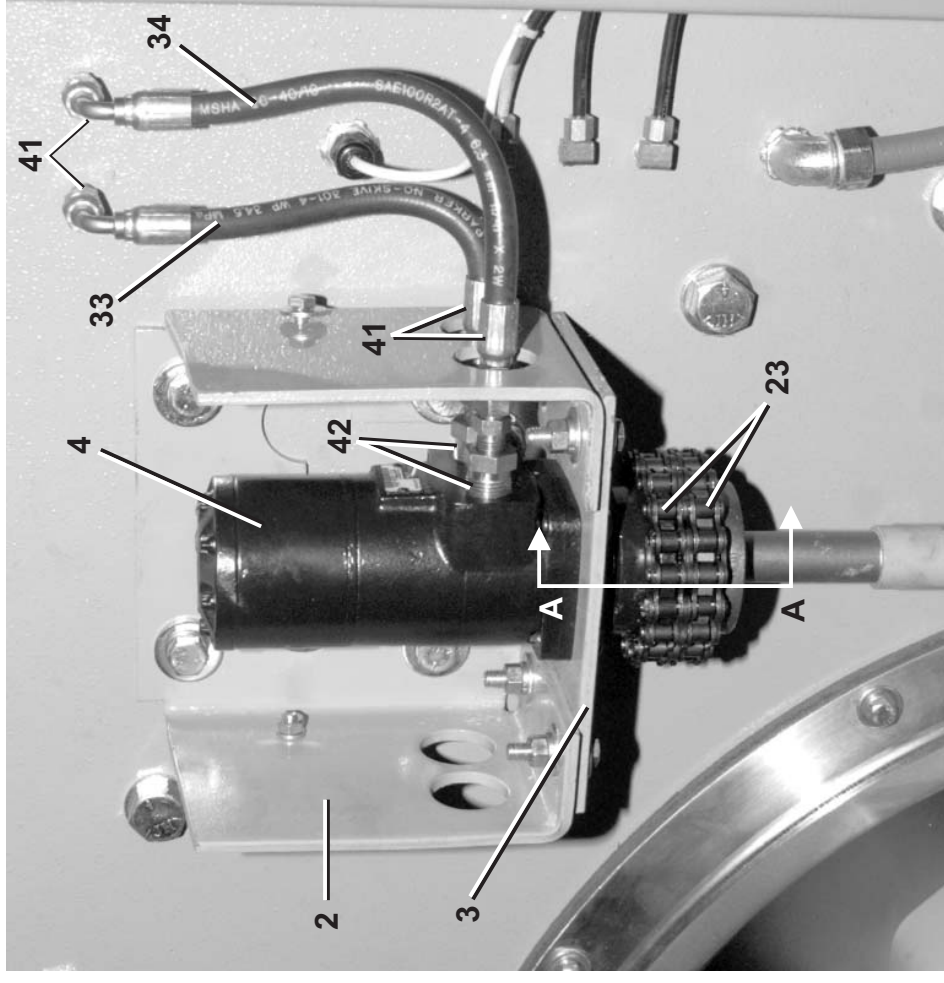
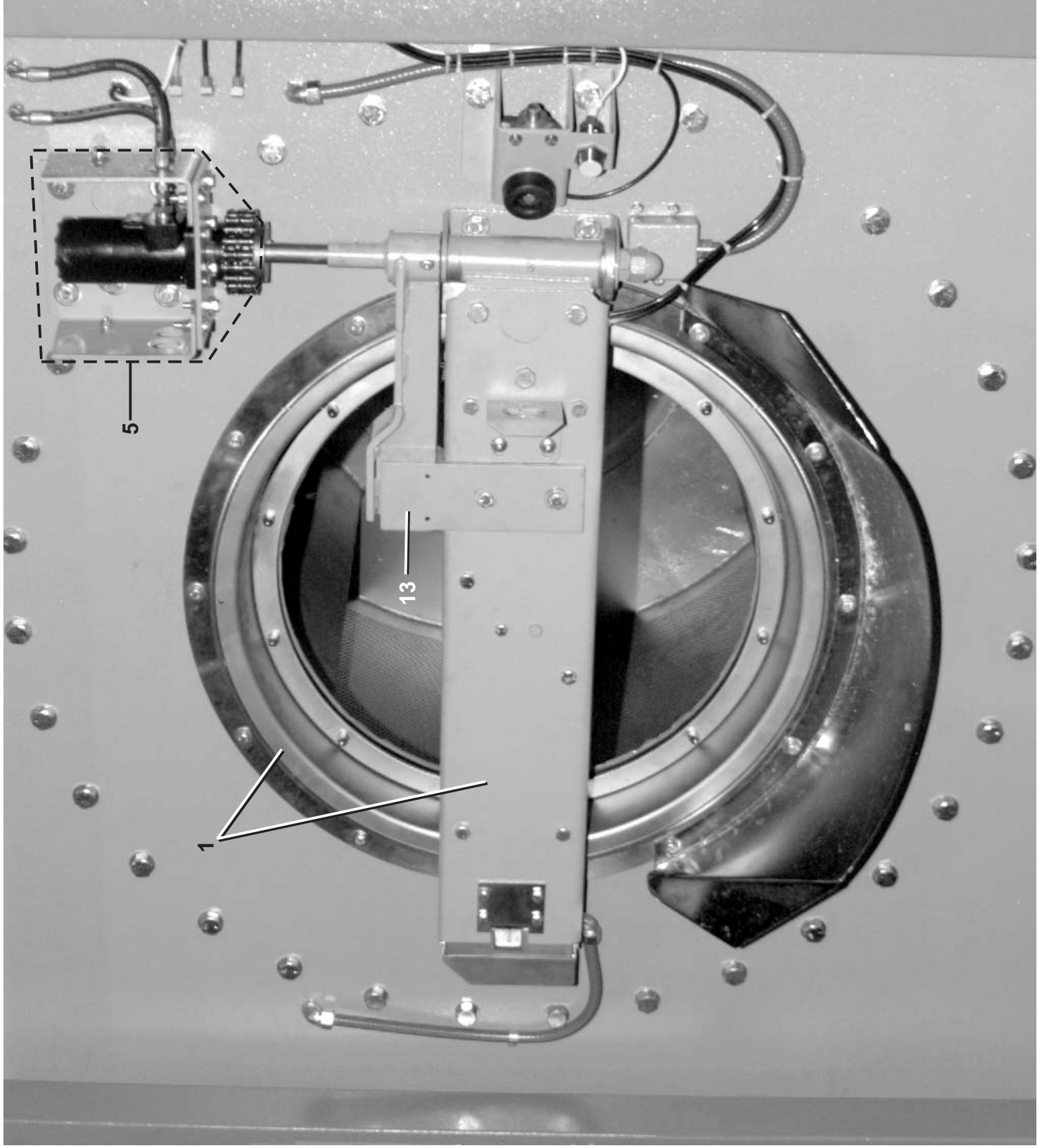
**Hydraulic Door Installation**  
**48040F7J,F7B,F7W,F7N 4840H7N,H7W**



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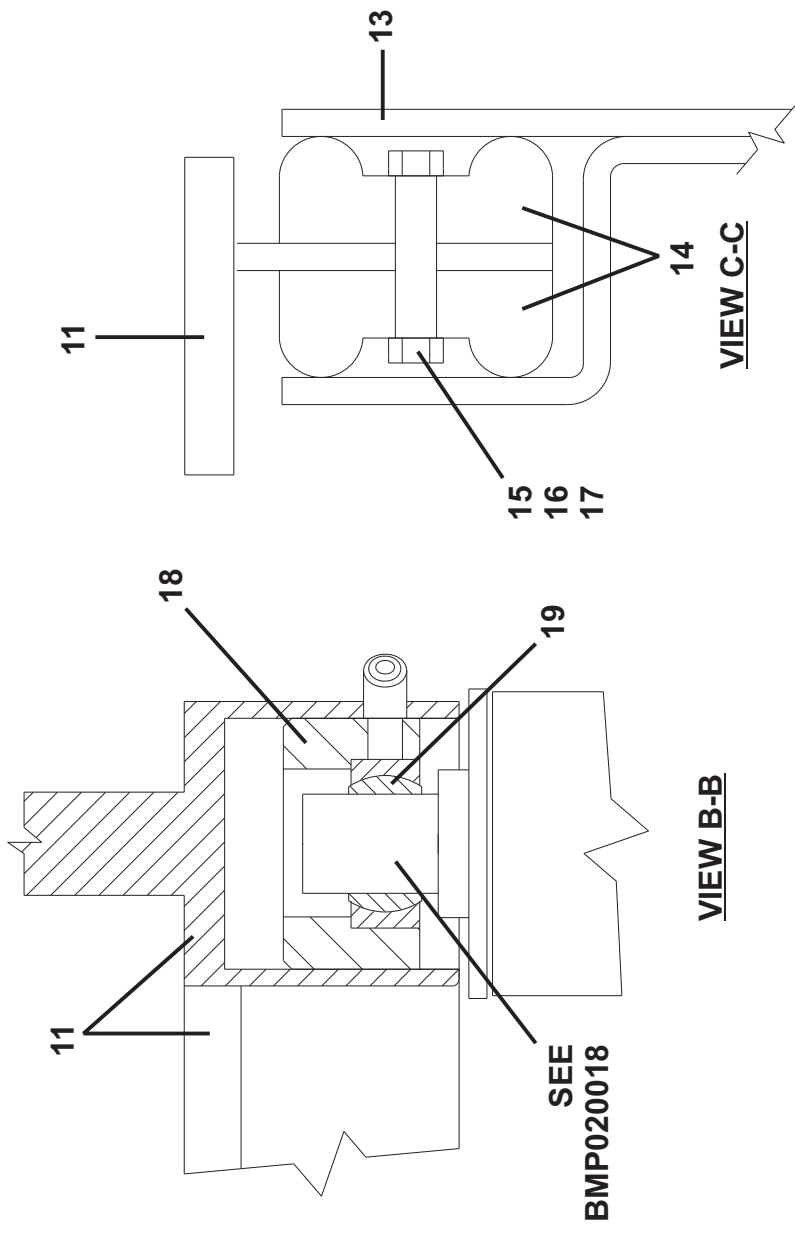
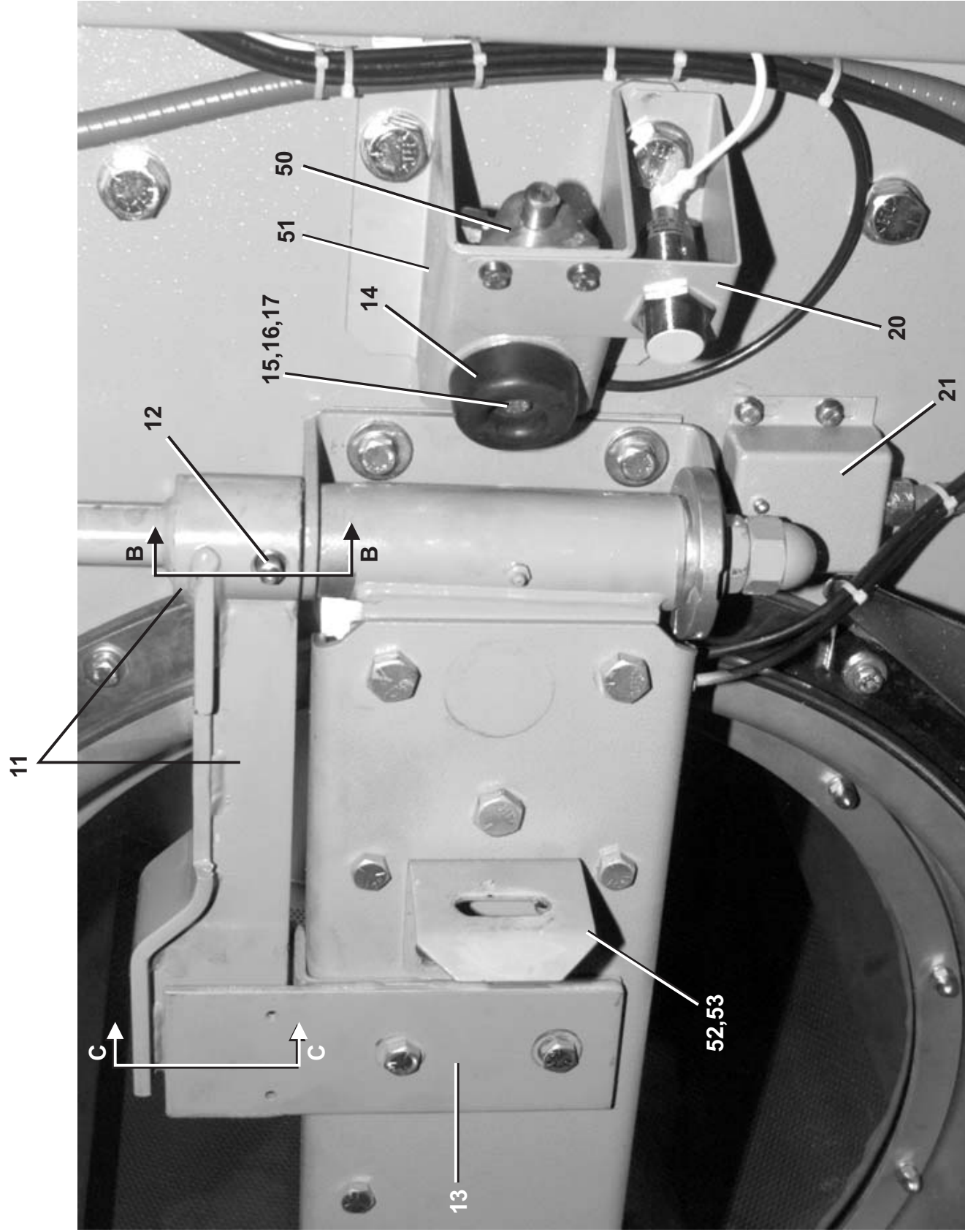
**Hydraulic Door Installation**  
**48040F7J,F7B,F7W,F7N 4840H7N,H7W**

BMP020014/2012194B  
 (Sheet 2 of 5)



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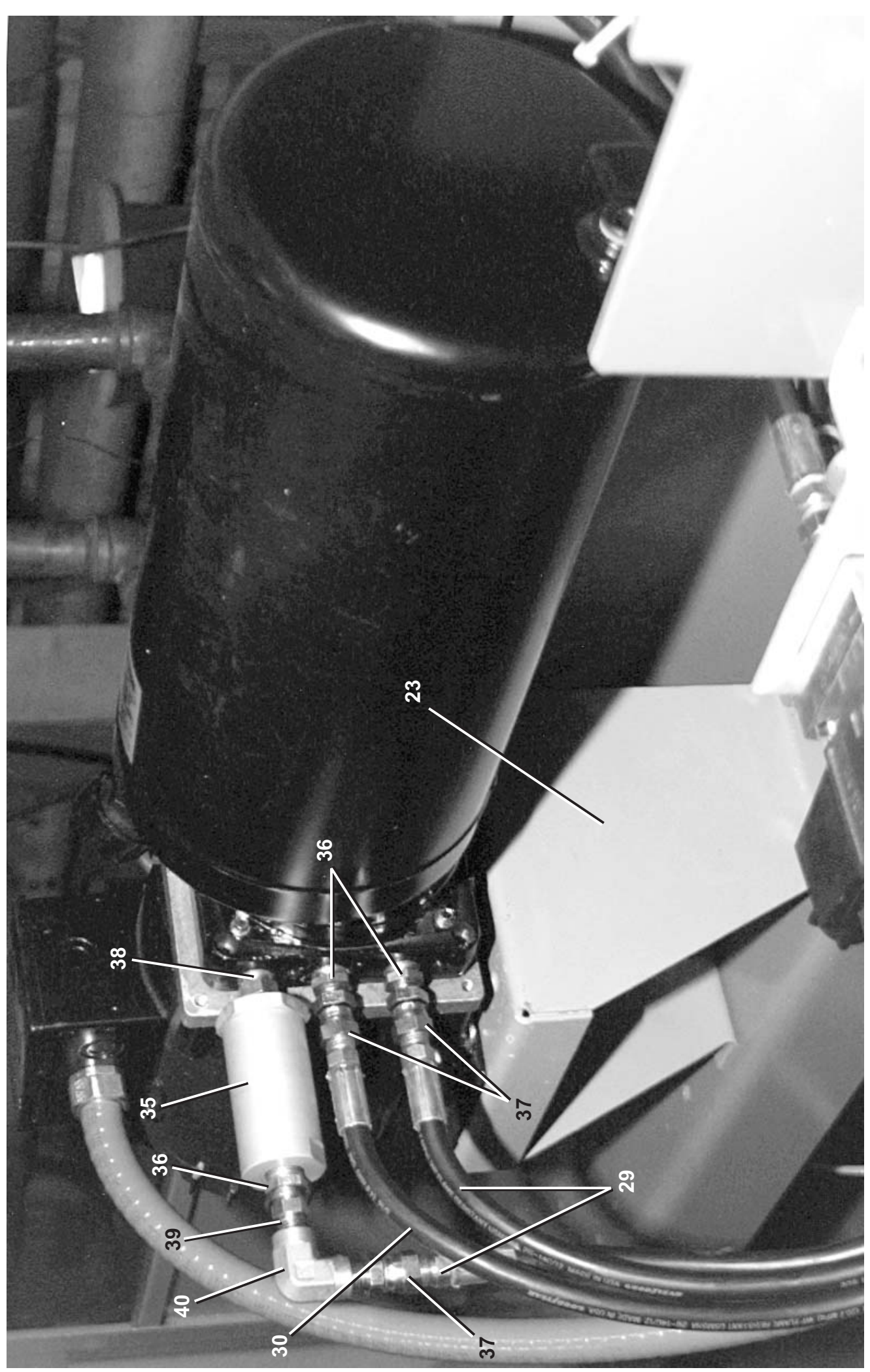
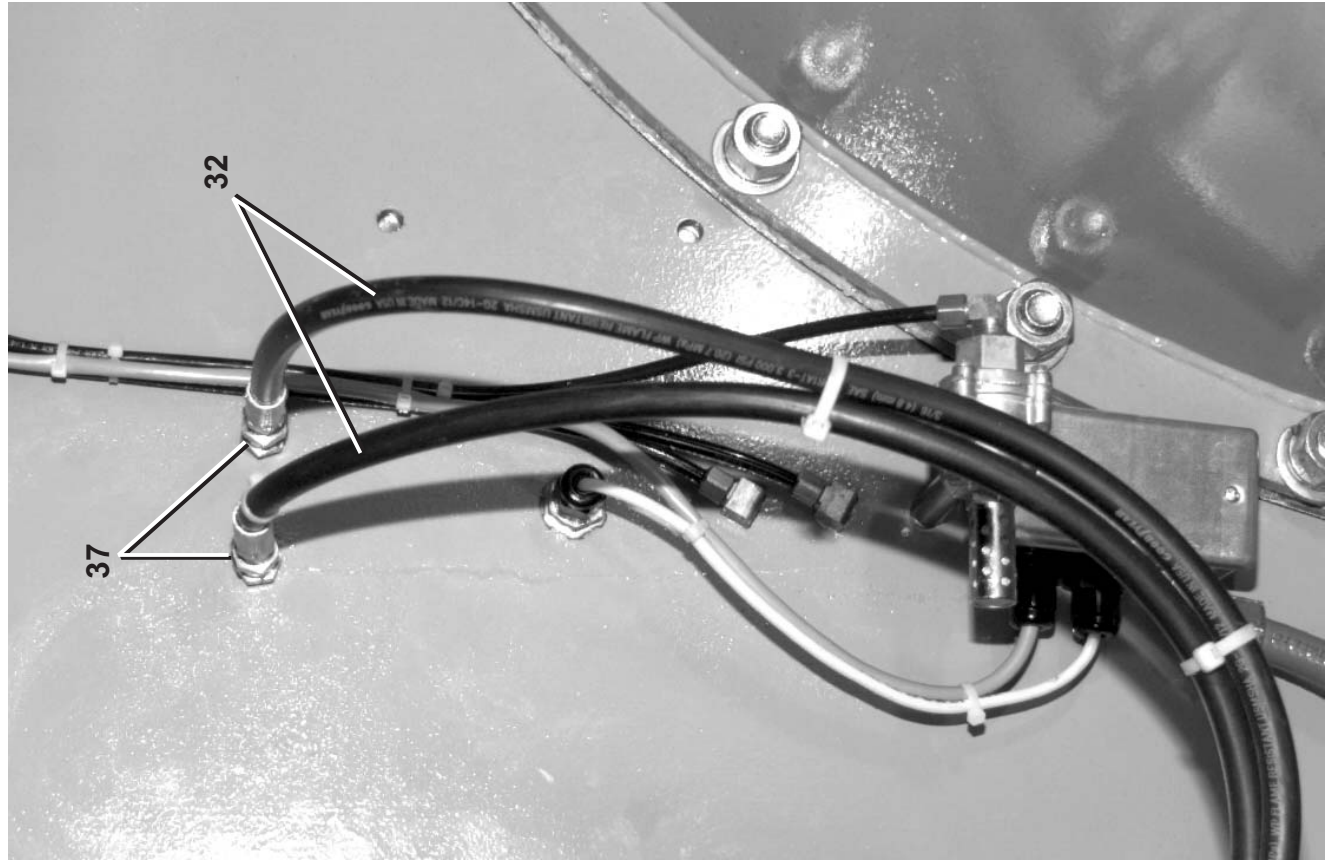
**Hydraulic Door Installation**  
**48040F7J,F7B,F7W,F7N 4840H7N,H7W**



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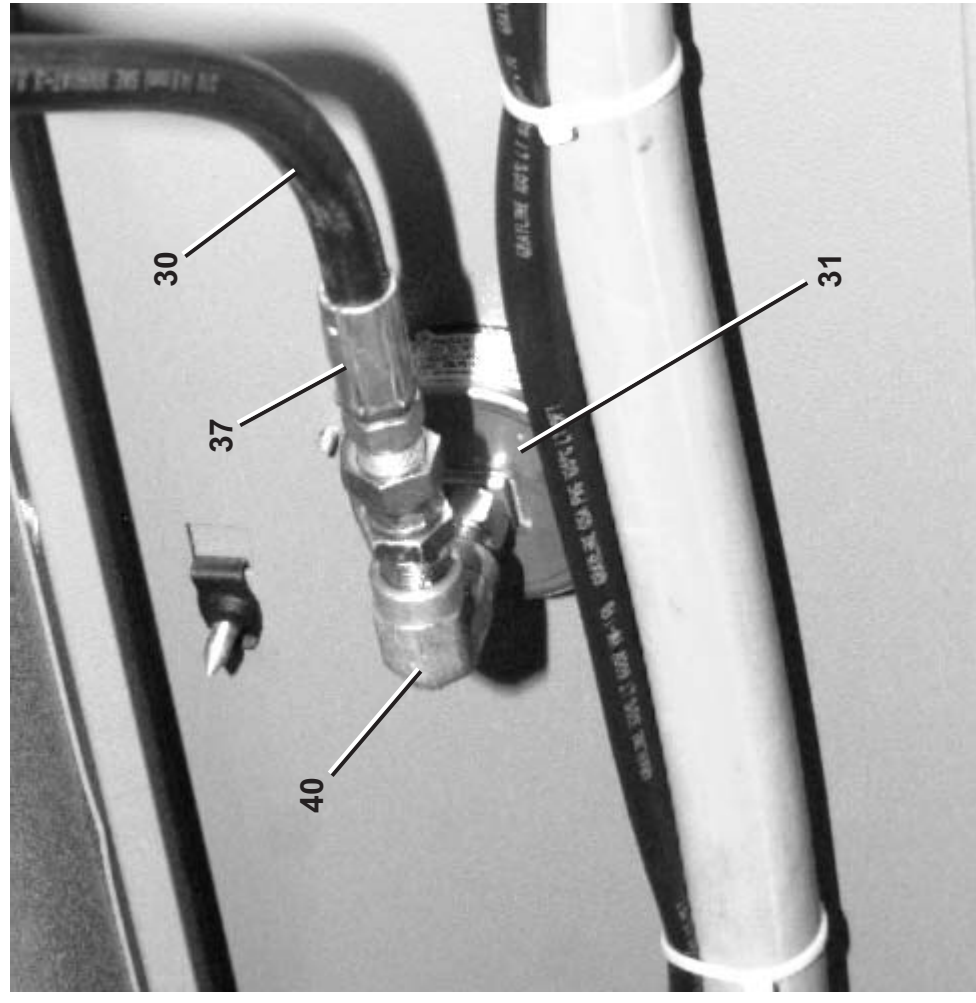
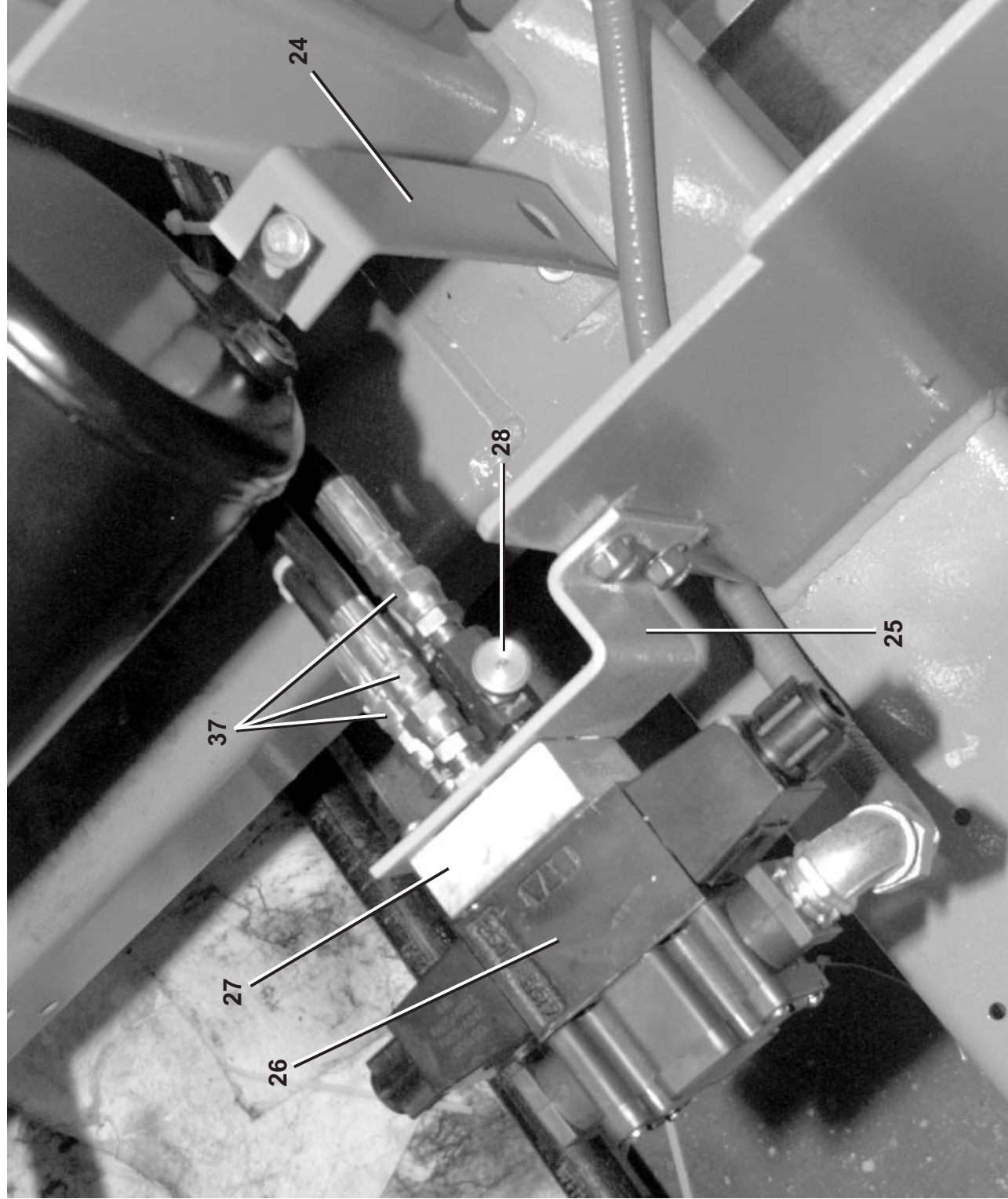
**Hydraulic Door Installation**  
**48040F7J,F7B,F7W,F7N 4840H7N,H7W**

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**Parts List—Hydraulic Door Installation**  
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			ASSEMBLIES	
A		GMI48002	INSTL=TILT MISC ITEMS, 4840F	
B		GHT48401	INST=HYDRAUL AUTODOOR, 4840F	
			COMPONENTS	
all	1	A25 00100B	* SHELLDOR+30"X4" 52WE1+TILTS	
all	2	03 25278	BRKT=MOTOR MOUNT AUTO DOOR	
all	3	03 25285	PLATE=MOTOR MOUNT AUTO DOOR	
all	4	27E320025	TDRQMOTOR- HYRAULIC	
all	5	02 21968	COVER=CHAIN COUPLING, 4840F	
all	6	15E008	KEY#15 WOODRUF 1/4X1 NIC ALLOY	
all	7	56Q1A1610	1.0" BUSH VPUL TPRLOCK1610TLXN	
all	8	54J220	DRCCOUPHALF TY-H5018TLB SPRKET	
all	9	54J221	DRCCOUPHALF C-5018 X 1610 TBF	
all	10	02 09109	DISC=3"DUMP VALVE RIGID SEAT	
all	11	W3 25300F	WLMT=TORQUE ARM AUTODR,4840F	
all	12	54M021	GRSFIT 1/8PIPE X 1/4STR 1607-B	
all	13	W3 25301A	*BKT WELD=DR ACTUATOR LH OPT.	
all	14	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	15	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	16	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-	
all	17	15U238	LOKWAS INTOOTH 3/8" (US STD) 4	
all	18	03 25604	ADAPTER FOR B12-L BUSHING	
all	19	54AA00PBB	BUSH BALL 3/4 RBC-B12L	
all	20	02 21967	BRKT=AUTODOOR PROX, 4840F	
all	21	W3 25078A	WELD=BRKT 2ND DRSWTCH, 4840F	
all	22	02 175048	DRIPSHIELD=3"INLET VALVE	
all	23	02 21966	BRKT=HYDRAUL POWR UNIT, 4840F	
all	24	03 48186	MT=ISOLATOR RESERVOIR 42T	
all	25	07 10279	SUBPLATE MTG BRKT	
all	26	96RH706E71	VLPARKER 220V50/240V60 7GPM	

Used In	Item	Part Number	Description	Comments
all	27	96RH706A01	PARKER SUBPLATE#SPD23N35	
all	28	96JH200	NEEDLE VLV.1/4"DELTROL#NMF20SK	
all	29	60EH15C30A	HYD HOSE 3/16"+ENDS=30" LG	
all	30	60EH15C91A	*HYD HOSE 3/16"+ENDS=91"	
all	31	30N125G	GAUGE 0-2000PSI BAR 14 BACK	
all	32	60EH15C187	*HYD HOSE 3/16"+ENDS=187"	
all	33	60EH21C08S	ASSY=HYD HOSE 1/4"X8" SHORT	
all	34	60EH21C10L	ASSY=HYD HOSE 1/4"X10" LONG	
all	35	27E7110	HYD IN-LINE FILTER ARROW #9053	
all	36	52AY0GR004	HEXPTPEBUSH 3/8MX1/4F#5406-6-4	
all	37	52XY0ER008	STRADAPT 1/4" #1404-4-4	
all	38	52LY0GR002	HEXPIPNIPI 3/8X3/8 #5404-6-6	
all	39	52LY0ER001	HEXPIPNIPI 1/4X1/4 #5404-4-4	
all	40	52JY0ER003	ELB90 1/4"FEM.#5504-4-4	
all	41	52ZC0ES001	TUBEFIT 1/4"STR.#4-FLO-S	
all	42	52AY0KR004	HEXPTPEBUSH 1/2MX1/4F#0102-8-4	
all	43	15K088	HEXCAPSCR 3/8-16NCX7/8 GR 5 ZI	
all	44	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	45	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	46	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	47	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	48	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	49	15K151	HXCAPSCR 1/2-13UNC24X1.25 GR5	
all	50	SA 10 020	DOORLATCH ASSY-SMALL	
all	51	02 21874	DOOR OPEN STOP, 4840F	
all	52	02 21873	DOOR OPEN STRIKER, 4840F	
all	53	15K084	TRUSS HXSOK 3/8-16 X 23/32SS	

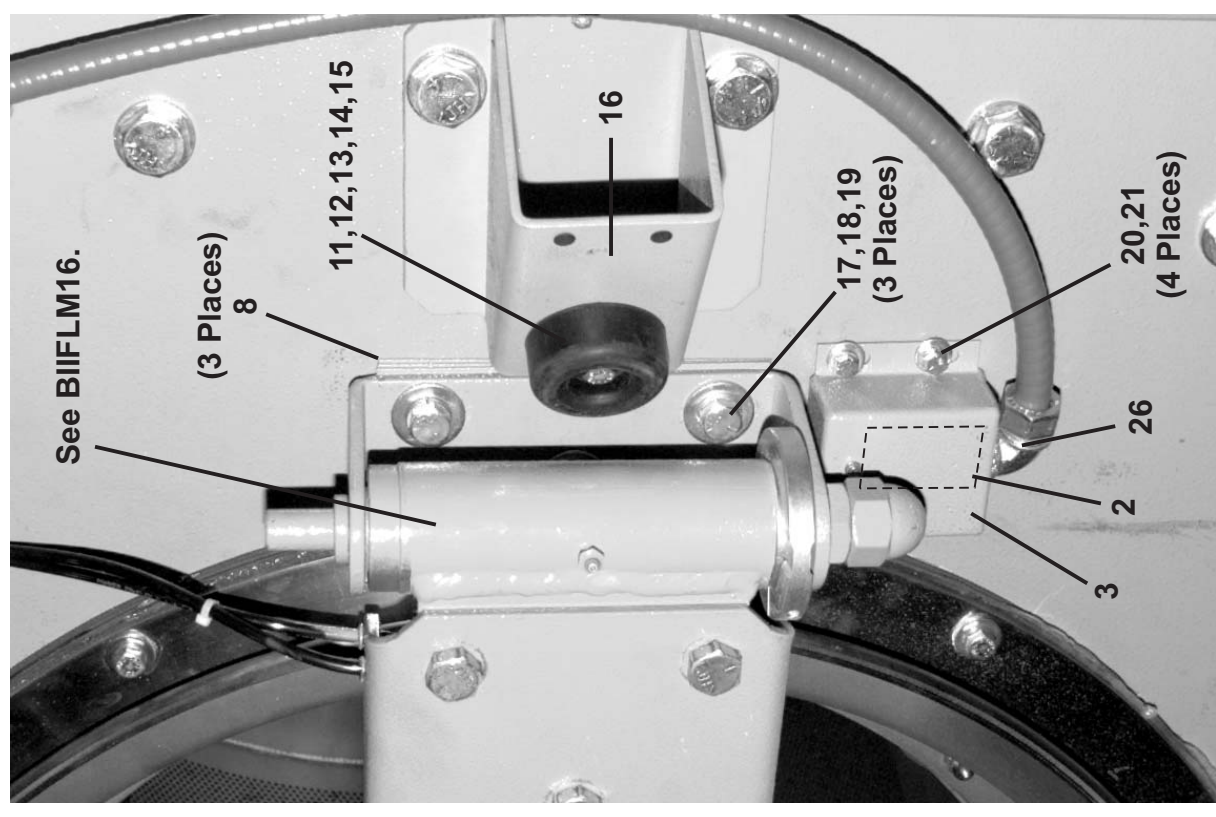
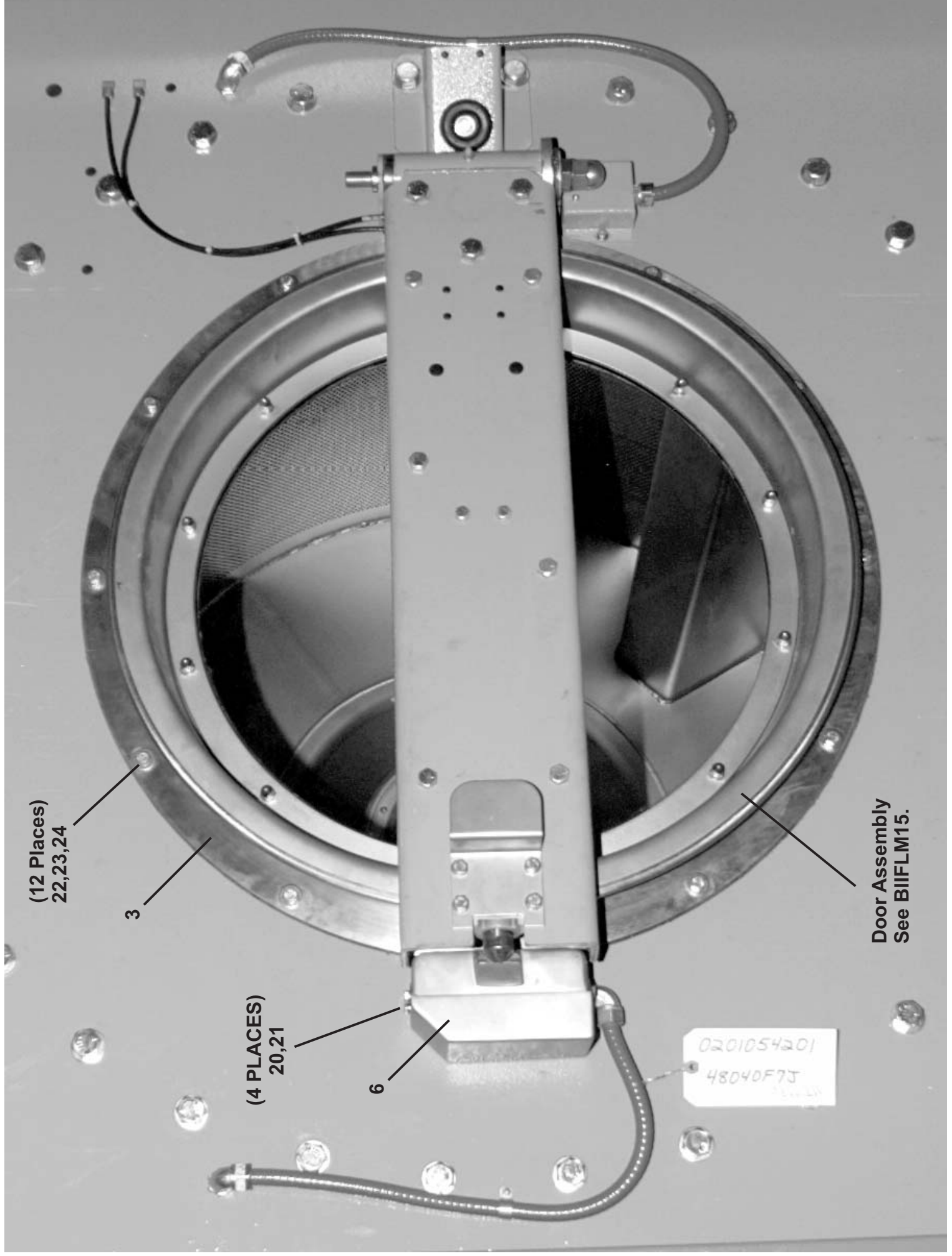
**Installation Standard Door**  
**48040F7J,F7N,F7B,F7W 48040H7N,H7W**



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 (Sheet 1 of 3)

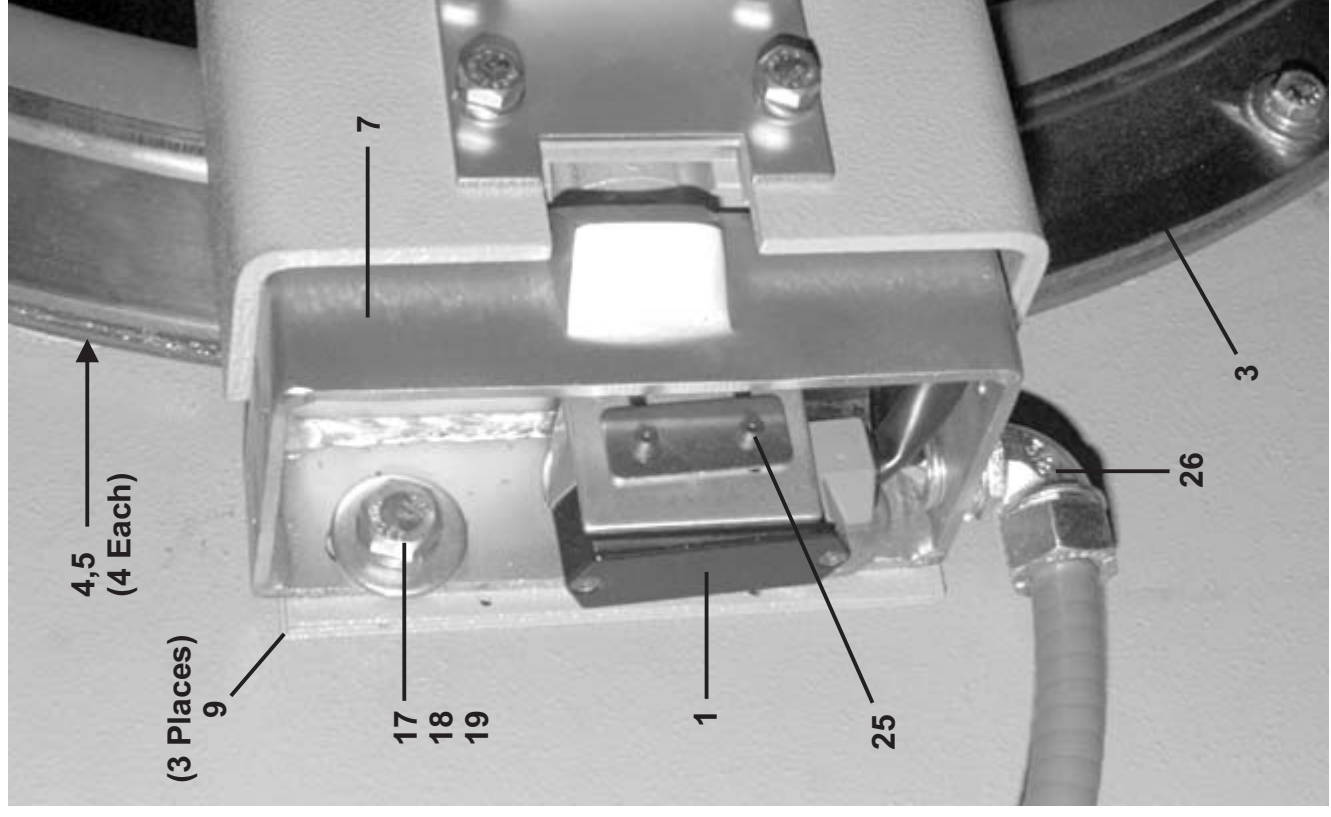




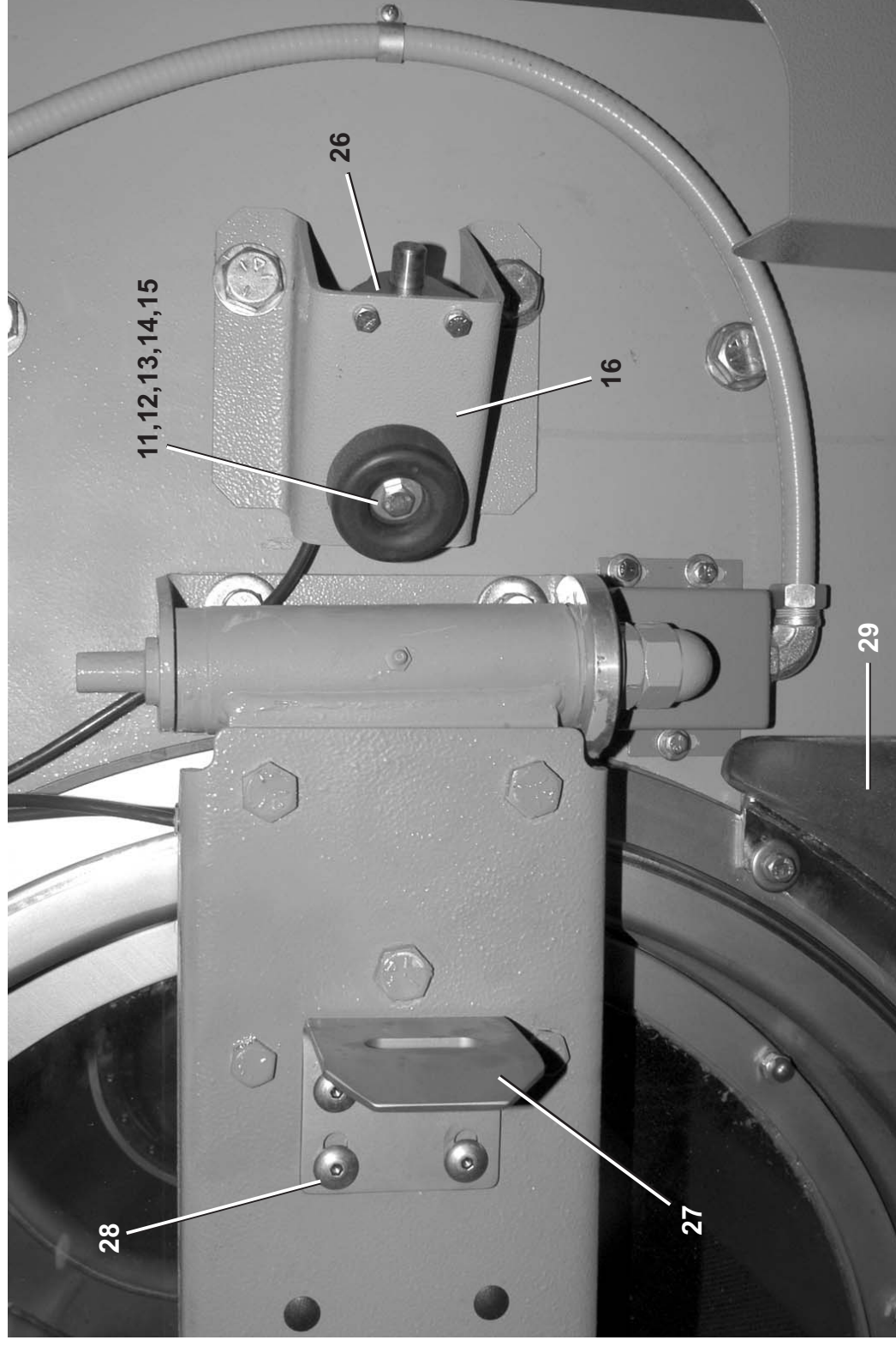


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**Optional Door Open Latch**





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**Parts List—Installation Standard Door**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			-----ASSEMBLIES-----	
	A	GSD4840F	INSTL=SHELL DOOR, 4840F	
			-----COMPONENTS-----	
all	1	E25 00100	* DOOR INTLK SWITCH ASSY	
all	2	09RM01212S	CAPSW 12' 180DEG ROLLER SILVER	
all	3	Y3 25084C	RING DOOR MACHINED=34.125BC	
all	4	03 25026D	GASKET=DOOR MTG RING=1/16"	
all	5	03 25026E	GASKET=DOOR MTG RING=1/8"	
all	6	W3 25180	*COVER=SWITCH & DOOR STRIKER	
all	7	W3 25159S	* WLMT,DOORSSTRIKER,SS =ALL52	
all	8	03 25170A	SHIM=HINGE BKT BOLT-ON=52WTB	
all	9	03 25159W	SHIM=DOOR LATCH STRIKER=52WTB	
all	10	W3 25078A	WELD=BRKT 2ND DRSWTCH, 4840F	
all	11	60C075	TRUCK BUMPER 2+1/2ODW3/8HO.613	
all	12	15K105	HXCAPSCR 3/8-16UNC2A1.25 GR5 P	
all	13	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	14	15U238	LOKWAS INTOOTH 3/8" (US STD) 4	
all	15	15U240	FLATWASHER(USS STD) 3/8" ZNC P	
all	16	02 21874	DOOR OPEN STOP, 4840F	
all	17	15K151	HXCAPSCR 1/2-13UNC24X1.25 GR5	
all	18	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
all	19	15U490	FLAWASH 1+1/2X17/32X1/4ZINC	
all	20	15K031	BUTSOKCAPSCR 1/4-20X1/2 SS18-8	
all	21	15U181	LOCKWASHER MEDIUM 1/4 SS18-8	
all	22	15K100	HEXCAPSCR 3/8-16X1+1/4 SS18-8	
all	23	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	24	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
all	25	15K022	SOKCPCSCR 10-24UNC2 X1+1/4 SS18	
all	26	SA 10 020	DOORLATCH ASSY-SMALL	
all	27	02 21873	DOOR OPEN STRIKER, 4840F	
All	28	15K084	TRUSS HXSOK 3/8-16 X 23/32SS	
All	29	W3 25282	DOOR TRAY WELDMENT 5238TILT	

# Components, Manual Door

Figure 1: Components, Manual Door

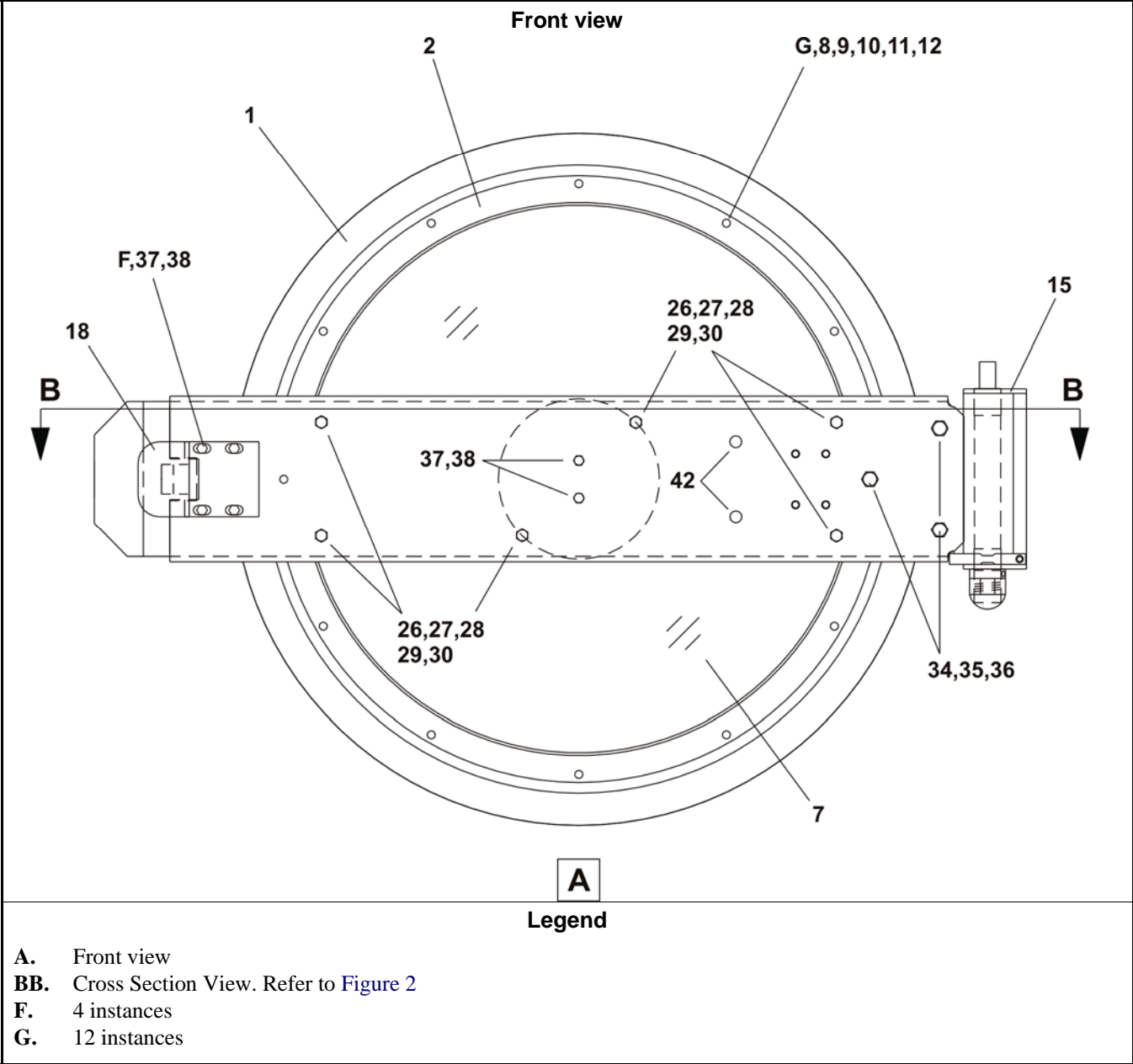
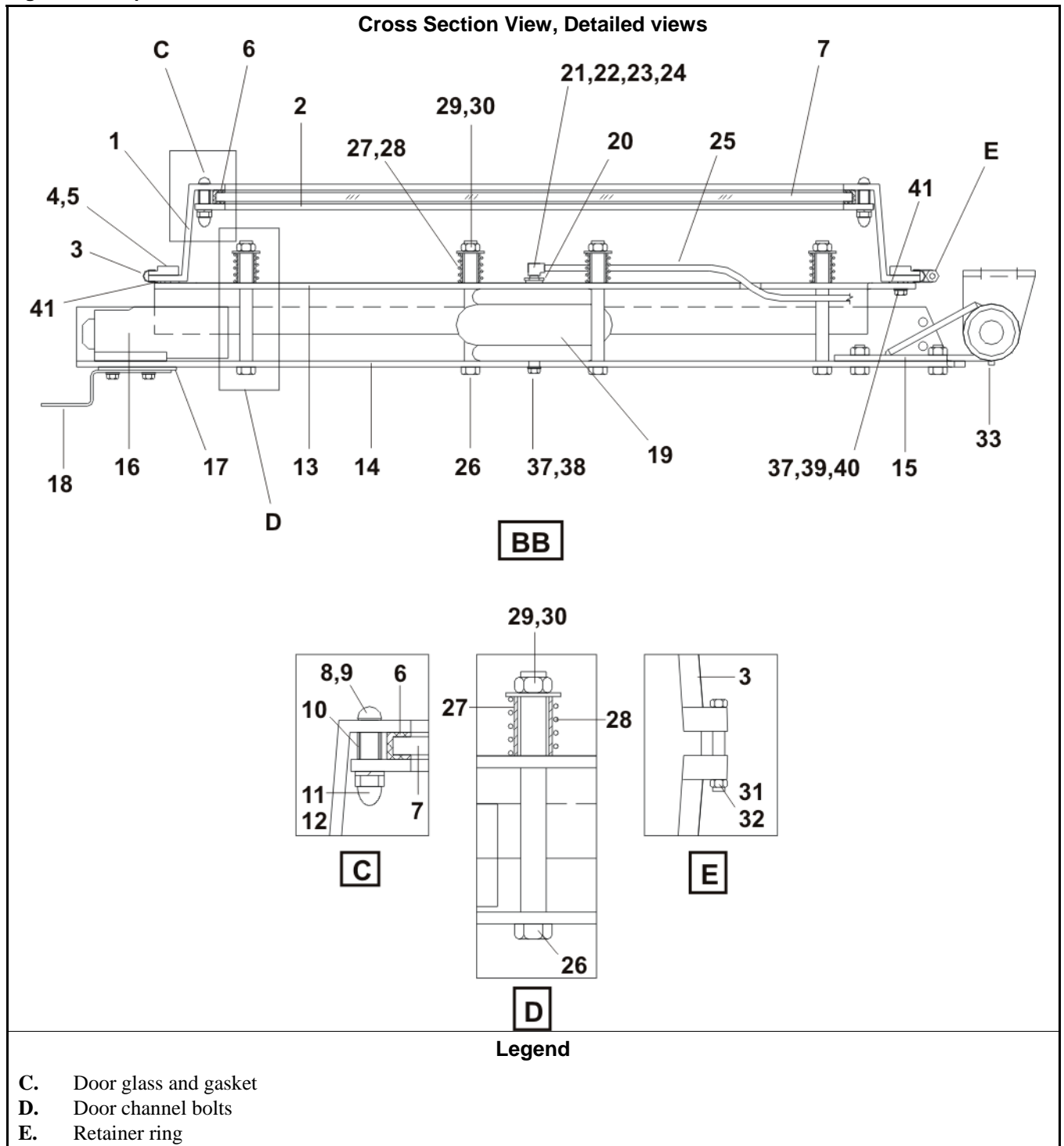


Figure 2: Components, Manual Door



**Table 1: Parts List—Components, Manual Door**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	A25 00100B	Assembly; Shell door; 30"X4"	
Components				
all	1	Y3 25060A	Tapered side; 30"	
all	2	X3 25058A	Machined part; Retainer ring; Door glass and gasket	
all	3	W3 25085C	Weldment; Retainer ring; Gasket; Door	
all	4	03 25085A	Gasket; 3/8	
all	5	20C047	Adhesive; 3M #1099	
all	6	03 25083	Gasket; Door glass; 26.5/26.4	
all	7	03 25013A	Door glass; 26.5/26.4	
all	8	15K106B	Bolt; Socket head button; 3/8-16	
all	9	24G030N	Washer; Nylon; .379ID	
all	10	27B2400K0L	Spacer; Rolled; 0.375	
all	11	15G200	Nut; Hex; 3/8-16	
all	12	15U260	Washer; Lock; 3/8	
all	13	03 25061	Door inner channel	
all	14	03 25089	Door outer channel	
all	15	A25 04500	Assembly; Bearing and Hinge pin	
all	16	SA 15 028	Assembly; Door latch	
all	17	02 15633	Adjustment plate; Door latch	
all	18	02 15633A	Door handle	
all	19	60B090	Pneumatic bellows actuator	
all	20	5SB0E0CBEO	Hex Bushing Reducer; Brass; 1/4X1/8	
all	21	53A031B	Hydraulic fitting; Elbow 90 degrees; 1/4; 1/8	
all	22	53A059A	Hydraulic fitting; Elbow 90 degrees; 5/16; 1/8	
all	23	53A500	Hydraulic fitting Sleeve; 1/4	
all	24	53A501	Hydraulic fitting; Tube; 1/4Brass	
all	25	60E004TE	Tubing; Round; 0.25; Nylon	
all	26	15K203	Bolt; Hex head; 1/2;13	
all	27	27B2750L0T	Spacer; Rolled.562ID.937L.048T	
all	28	02 18187S	Spring; Door; Stainless steel	
all	29	15U280	Washer; Flat; 1/2	
all	30	15G234	Nut; Nylon lock; 1/2-13	
all	31	15N200	BoltPhillip button head; 1/4;20	
all	32	15G170	Nut; Hex; 1/4-20	
all	33	54M015	Grease fitting	
all	34	15K214E	Bolt Hex head; 5/8-11	
all	35	15G238	Nut; Hex; 5/8-11	
all	36	15U315	Washer; Lock; 5/8	
all	37	15U255	Washer; Lock; 3/8	
all	38	15K085	Bolt Hex head; 3/8-16	

Components, Manual Door

**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.**

<b>Used In</b>	<b>Item</b>	<b>Part Number</b>	<b>Description/Nomenclature</b>	<b>Comments</b>
all	39	15G205	Nut; Hex3/8-16	
all	40	15N223	Bolt; Counter sink; 3/8;16	
all	41	15U245B	Washer; Flat;	
all	42	12P1ALHP	Hole plug; Nylon; 9/16"	

— End of BIIFLM15 —

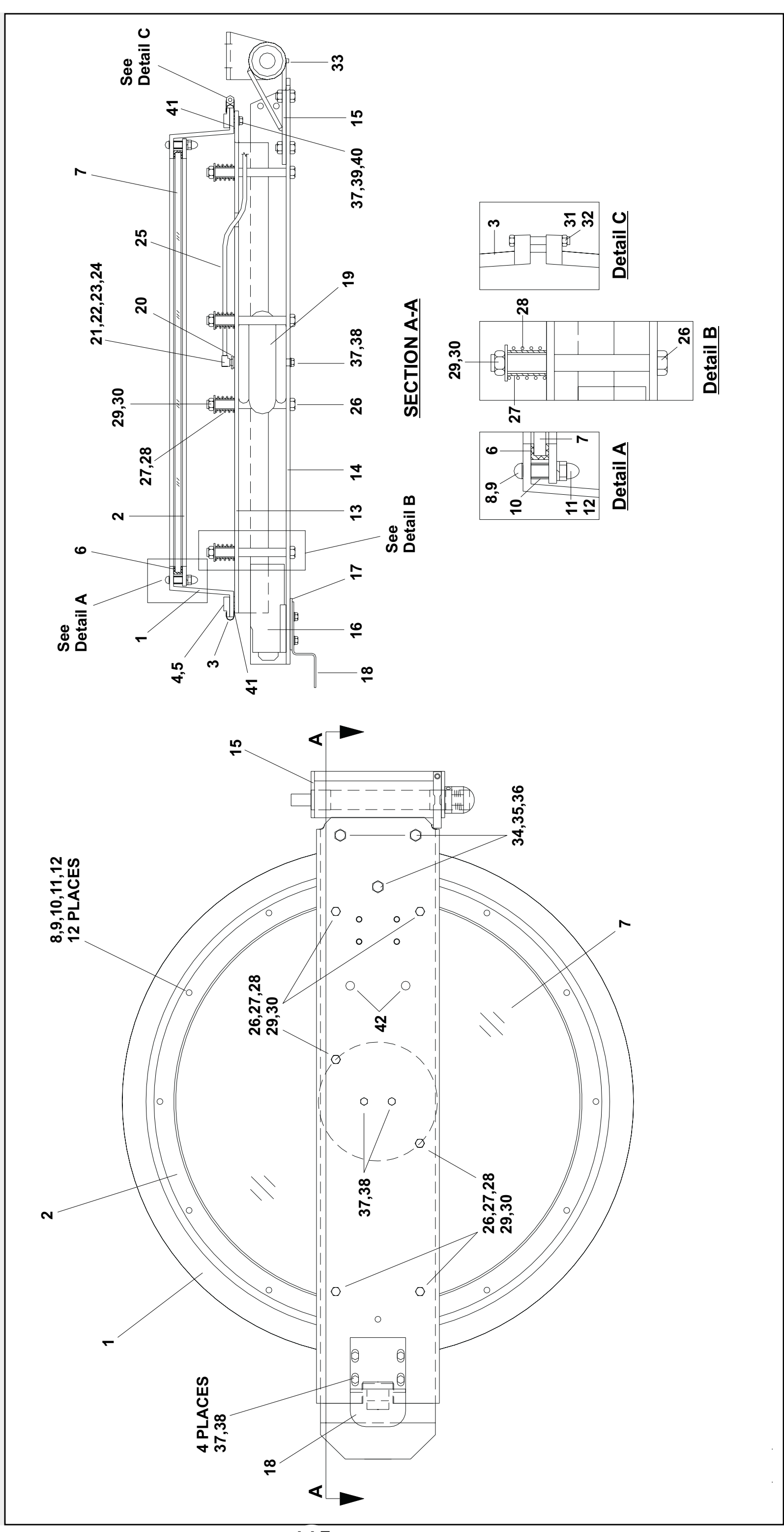
**Standard Door**  
**48040F7J,F7N,F7B,F7W**

BMP020017/2002226V  
 (Sheet 1 of 2)



Pellerin Milnor Corporation  
 P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.





**Pellerin Milnor Corporation**  
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

**Parts List—Standard Door**  
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
	A	A25 00100B	* SHELLDOR+30"X4" 52WE1+TILTS	
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
all	1	Y3 25060A	DOOR DRILLED=30" TAPERED	
all	2	X3 25058A	MACH=DOOR GLASS RETAINER RING	
all	3	W3 25085C	* WLDMT=DOOR GSKT RETAIN RING	
all	4	03 25085A	GASKET-40 DURO 3/8T=4"DEEPR	
all	5	20C047	ADHES.3M #1099 INDUUST QUARTS	
all	6	03 25083	GASKET=DOOR GLASS 26.5/26.4	
all	7	03 25013A	DOORGLASS-SIZE 26.5/26.4	
all	8	15K106B	BUTSOKCAPSCR 3/8-16NCX1+3/8 SS	
all	9	24G030N	ROLLED WASH.379ID NYLTITE 37W	
all	10	27B2400K0L	SPACER ROLL.43ID.562L.03T SS	
all	11	15G200	HXCNPNT 3/8-16 UNC2A 5/8X1/2	
all	12	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	13	03 25061	CHANNEL=DOOR INNER=52"	
all	14	03 25089	CHANNEL=DOOR OUTER=52"	
all	15	A25 04500	BEARING&HINGE PIN ASSY,52T	
all	16	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
all	17	02 15633	ADJPLATE=DOORLATCH CAD	
all	18	02 15633A	DOOR LATCH HANDLE 42Q	
all	19	60B090	AIRMT S-131 1CONV.F#W013587731	
all	20	5SB0E0CBEO	NPTHEXBUSH 1/4X1/8 BRASS 125#	
all	21	53A031B	BODY-EL90MALE.25X1/8 #269C-42B	
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	60E004TE	1/4"OD X.170"ID NYL(BLK)TUBING	
all	26	15K203	HXTAPSCR TFL 1/2-13X5 GR5 ZINC	
all	27	27B2750L0T	SPC RROLL.562ID.937L.048T ZNK	

Used In	Item	Part Number	Description	Comments
all	28	02 18187S	SPRING=DOOR STAINLESS STEEL	
all	29	15U280	FL+WASHER(USS STD)1/2 ZNC PL+D	
all	30	15G234	LOKNUT 1/2-13NC CAD FLXLOC#21F	
all	31	15N200	FILMACSCR 1/4-20UNCX2 SS18-8 S	
all	32	15G170	HEXNUT 1/4-20UNC2 SS18-8	
all	33	54M015	GREASEFIT 60X36/60X44 1610BL	
all	34	15K214E	HXCAPSCR 5/8-11UNC2AX1.5 GR5 Z	
all	35	15G238	HXNUT 5/8-11UNC2B SAE ZINC GR2	
all	36	15U315	LOKWASHER MEDIUM 5/8 ZINCPL	
all	37	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
all	38	15K085	HEXCAPSCR 3/8-16UNC2AX3/4 GR5	
all	39	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
all	40	15N223	FLATMACSCR 3/8-16NC2 X 1+1/4 S	
all	41	15U245B	FLATWASH SPECIAL DOOR 52+72	
all	42	12P1ALHP	HOLEPLUG 9/16"NYLON HEYCO#2653	



## Recirculation Door Components and Installation (Left hand configuration)

Figure 1: Recirculation Door Installation

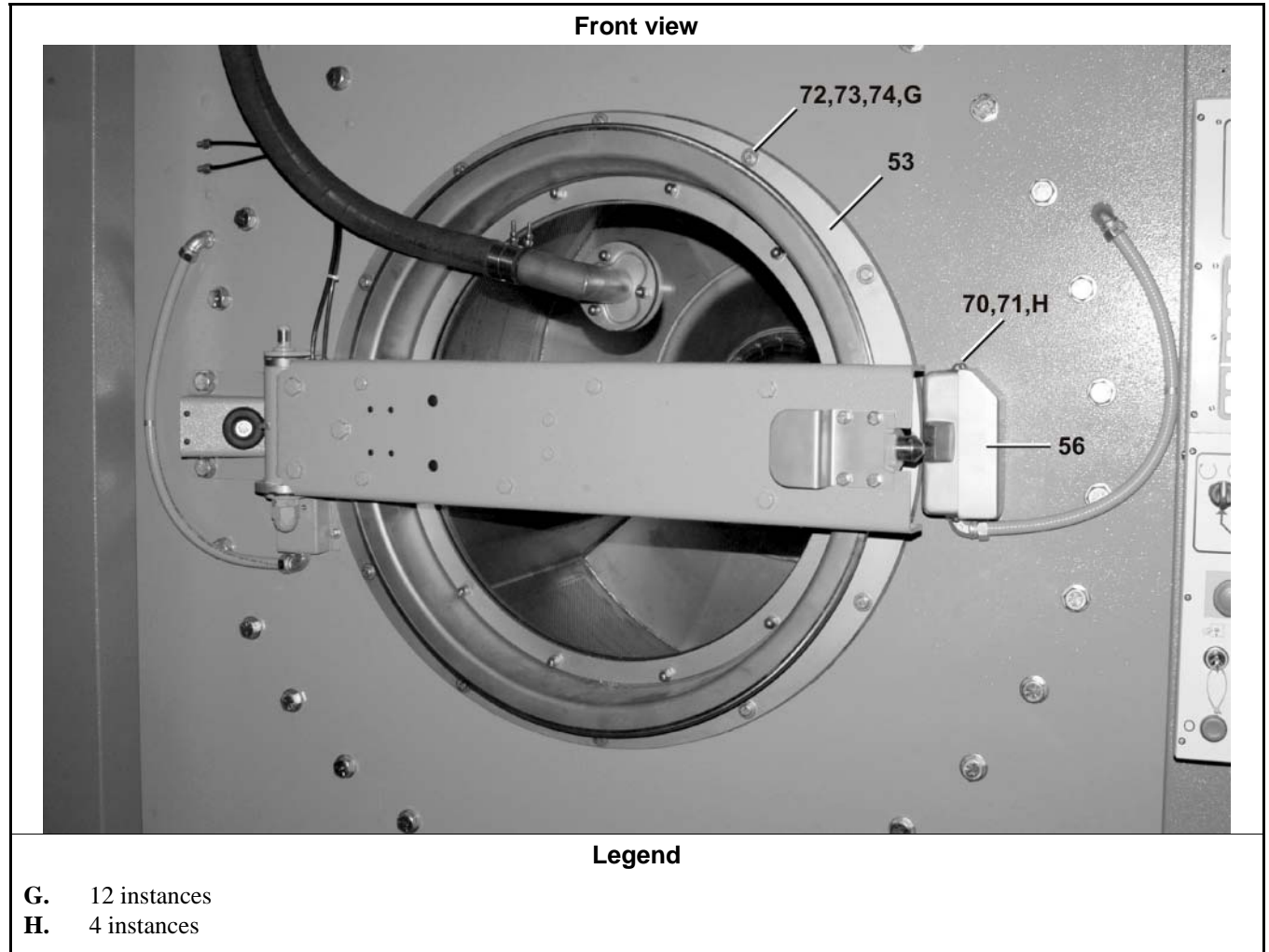


Figure 2: Recirculation Door Installation

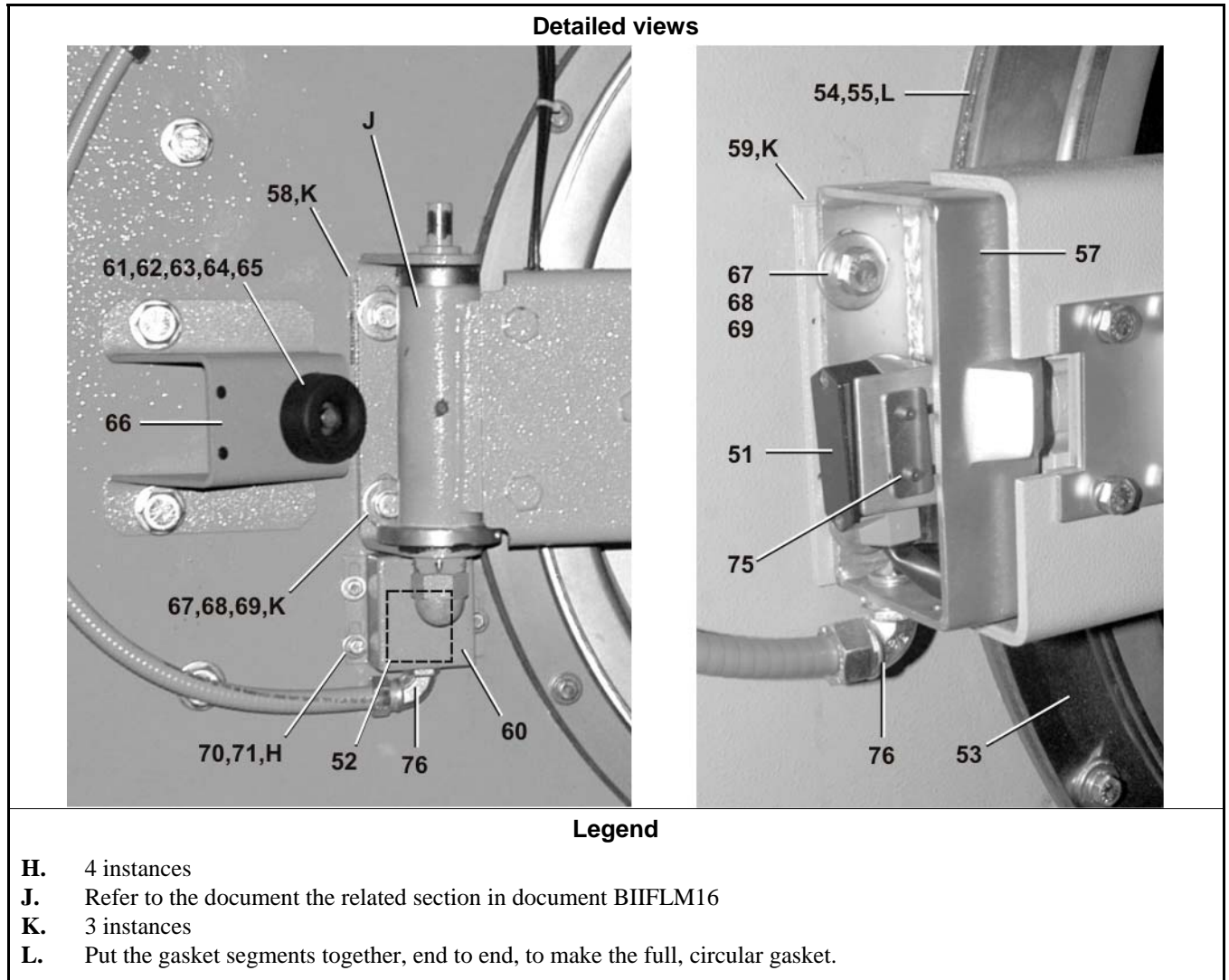


Figure 3: Recirculation Door Components

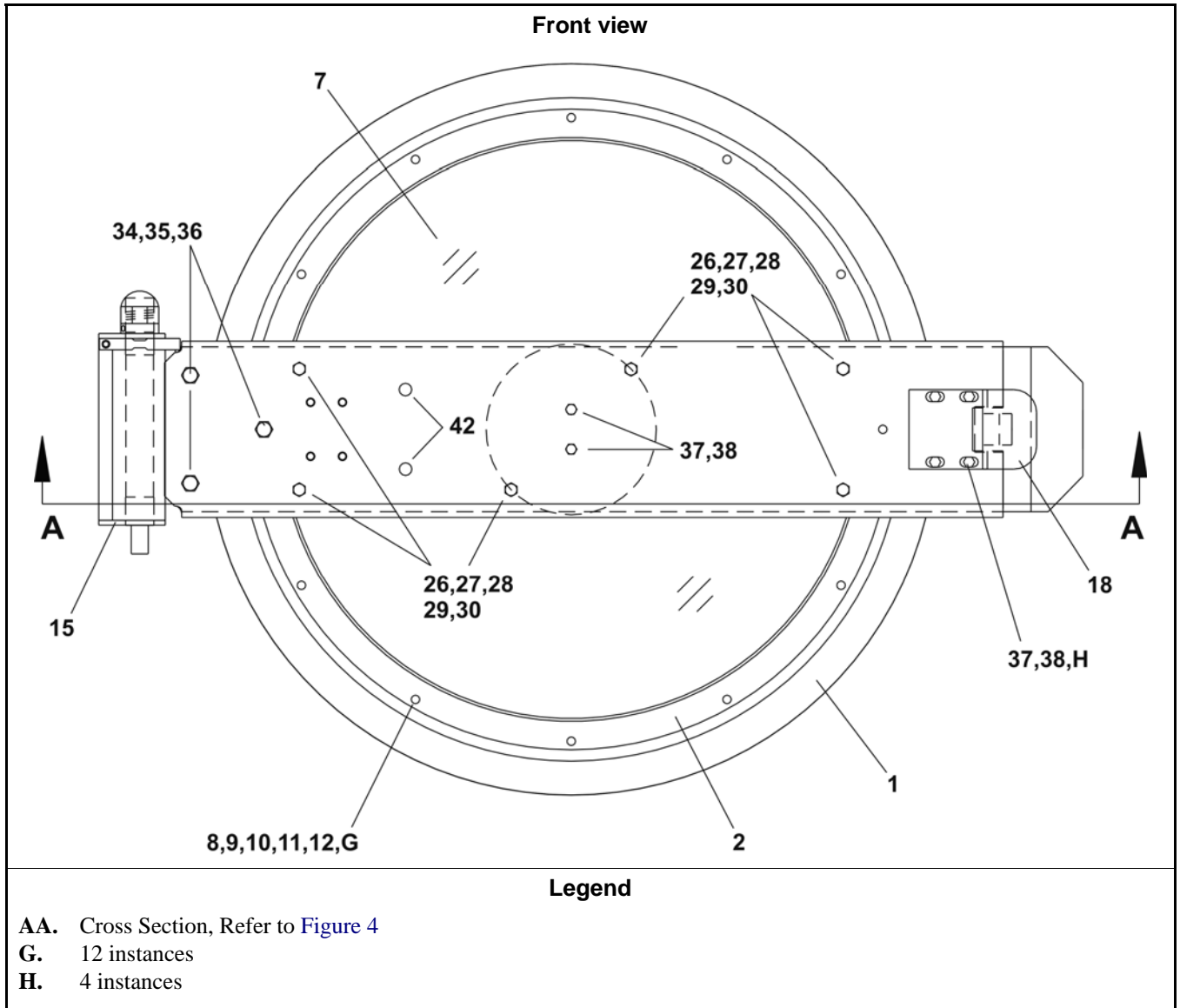


Figure 4: Recirculation Door Components

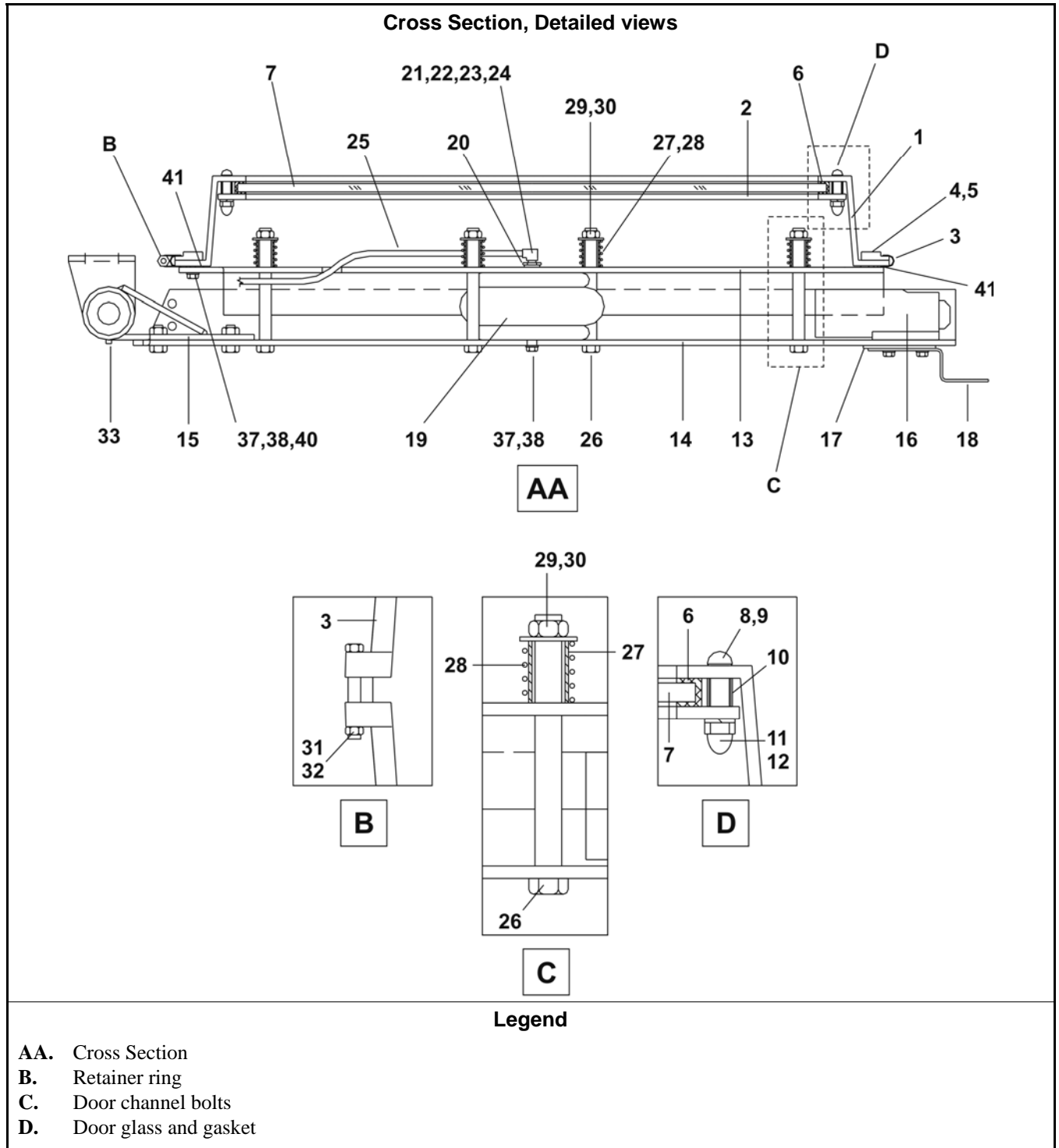
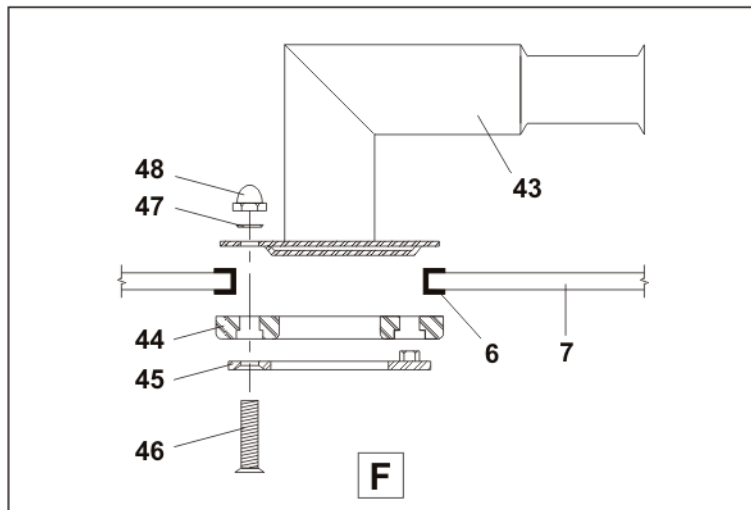
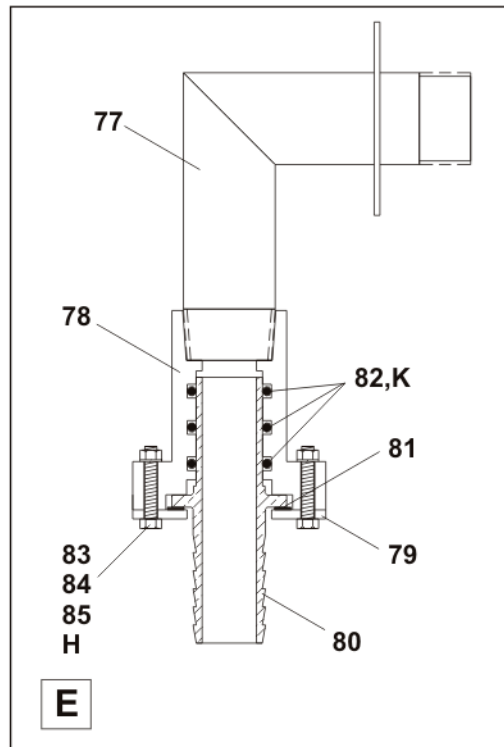
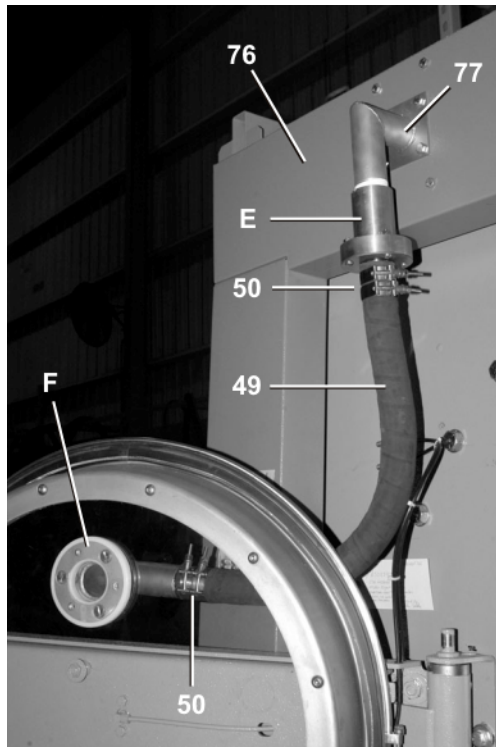


Figure 5: Components, Recirculation door

Detailed views of Rotary coupling and Recirculation nozzle



Legend

- E.** Rotary coupling
- F.** Recirculation nozzle
- H.** 4 instances
- K.** 3 instances

Recirculation Door Components and Installation (Left hand configuration)

**Table 1: Parts List—Recirculation Door 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
Assemblies				
	A	A25 00100H	Assembly: Recirculation door, 30"	
	B	GSD4840F	Installation Group; Recirculation door, 30"	
Components				
all	1	Y3 25060A	Tapered side; 30"	
all	2	X3 25058A	Retainer ring; Door glass	
all	3	W3 25085C	Retainer ring; Gasket	
all	4	03 25085A	Gasket,; 3/8	
all	5	20C047	Adhesive; 1 Quart	
all	6	03 25083	Gasket; Door glass	
all	7	03 25013B	Door glass	
all	8	15K106B	Bolt;Socket head button; Stainless steel; 3/8	
all	9	24G030N	Washer; Nylon; .379	
all	10	27B2400K0L	Spacer; Rolled; Stainless steel; 0.375 X 0.562	
all	11	15G200	Nut;Cap; 3/8; 16	
all	12	15U260	Washer; Lock; Stainless Steel; 3/8	
all	13	03 25061	Door inner channel	
all	14	03 25089	Door outer channel	
all	15	A25 04500	Assembly; Bearing and Hinge pin	
all	16	SA 15 028	Assembly; Door latch	
all	17	02 15633S	Adjustment plate; Door latch	
all	18	02 15633A	Door handle	
all	19	60B090	Pneumatic bellows actuator	
all	20	5SB0E0CBEO	Hex adapter bushings; Brass; 1/4X1/8	
all	21	53A031B	Hydraulic fitting; Elbow 90 degrees; 1/4; 1/8	
all	22	53A059A	Hydraulic fitting;Tube fitting nutBrass; 1/4	
all	23	53A500	Hydraulic fitting;Sleeve; 1/4	
all	24	53A501	Hydraulic fitting; Tube; Brass; 1/4	
all	25	60E004TE	Tubing; Round; Nylon; 0.25	
all	26	15K203	Bolt; Hex head; Zinc plated; 1/2	
all	27	27B2750L0T	Spacer; Rolled; Zinc plated; 0.5625	
all	28	02 18187S	Spring; Stainless steel; 0.985	
all	29	15U280	Washer; Flat; Zinc plated; 1/2	
all	30	15G234	Nut;Lock; Cadmium plated; 1/2	
all	31	15N200	Bolt; Phillip button head; Stainless steel; 1/4	
all	32	15G170	Nut;Hex; Stainless steel; 1/4	
all	33	54M015	Grease fitting	
all	34	15K214E	Bolt;Hex head; Zinc plated; 5/8	
all	35	15G238	Nut; Hex; Zinc Plated; 5/8	
all	36	15U315	Washer; Lock; Zinc plated; 5/8	
all	37	15U255	Washer; Lock; Zinc plated; 3/8	
all	38	15K085	Bolt;Hex head; Unplated; 3/8	

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	39	15G205	Nut;Hex; Zinc Plated; 3/8	
all	40	15N223	Bolt;Counter sink; Unplated; 3/8	
all	41	15U245B	Washer;Flat; Clipped ; .39	
all	42	12P1ALHP	Hole plug; 9/16	
all	43	W2 10583M	Recirculation nozzle	
all	44	02 03127	Mounting ring; Recirculation nozzle; UHMW	
all	45	W2 03128	Mounting plate; Recirculation nozzle	
all	46	15N223A	Bolt;Counter sink; Stainless steel; 3/8	
all	47	24G030N	Washer; Rolled; Nylon; .379	
all	48	15G200	Nut; Cap; Unplated; 3/8	
all	49	60E098	Hose; Water; 1 1/2	
all	50	27A066A	Hoseclamp; T-bolt; 1-3/4	
all	51	E25 00100	Switch; Door interlock	
all	52	09RM01212S	Switch; Door open	
all	53	Y3 25084C	Machined part; Door ring	
all	54	03 25026D	Gasket; Door ring; 1/32	
all	55	03 25026E	Gasket; Door ring; 1/8	
all	56	W3 25180	Cover; Interlock switch and Striker	
all	57	W3 25159S	Door; Striker	
all	58	03 25170A	Shim; Hinge	
all	59	03 25159W	Shim; Striker	
all	60	W3 25078A	Bracket; Switch; Door open	
all	61	60C075	Rubber bumper; 2+1/2	
all	62	15K105	Bolt; Hex head; 3/8	
all	63	15G205	Nut; Hex; Zinc Plated; 3/8	
all	64	15U238	Washer; Lock; Stainless Steel; 3/8	
all	65	15U240	Washer; Flat; Zinc plated; 3/8	
all	66	02 21874	Stop; Door open	
all	67	15K151	Bolt; Hex head; 1/2	
all	68	15U300	Washer; Lock; Zinc plated; 1/2	
all	69	15U490	Washer; Flat; Zinc plated; 1/2	
all	70	15K031	Bolt;Socket head button; Stainless steel; 1/4	
all	71	15U181	Washer; Lock; Stainless Steel; 1/4	
all	72	15K100	Bolt;Hex head; Stainless steel; 3/8	
all	73	15U260	Washer; Lock; Stainless Steel; 3/8	
all	74	15U246	Washer; Flat; Stainless Steel; 3/8	
all	75	15K022	Bolt; Socket head button; Stainless steel; 10	
all	76	W2 22040	Elbow pipe and flange	
all	77	02 22101E	Upper front panel; Recirculation door	
all	78	X5 20203	Outer sleeve; Rotary coupling	
all	79	05 20202	End cap; Rotary coupling	
all	80	X5 20201	Inner sleeve; Rotary coupling	
all	81	05 20206	Thrust washer; Rotary coupling	

Recirculation Door Components and Installation (Left hand configuration)

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	82	60C127T	O-Ring; 1-3/8	
all	83	15K043	Bolt; Hex head; Zinc plated; 1/4	
all	84	15U180	Washer; Lock; Zinc plated; 1/4	
all	85	15G165	Nut;Hex; Zinc Plated; 1/4	

— End of BIIFLM25 —



## Door Hinge Components and Installation

Figure 1: Door Hinge Components and Installation

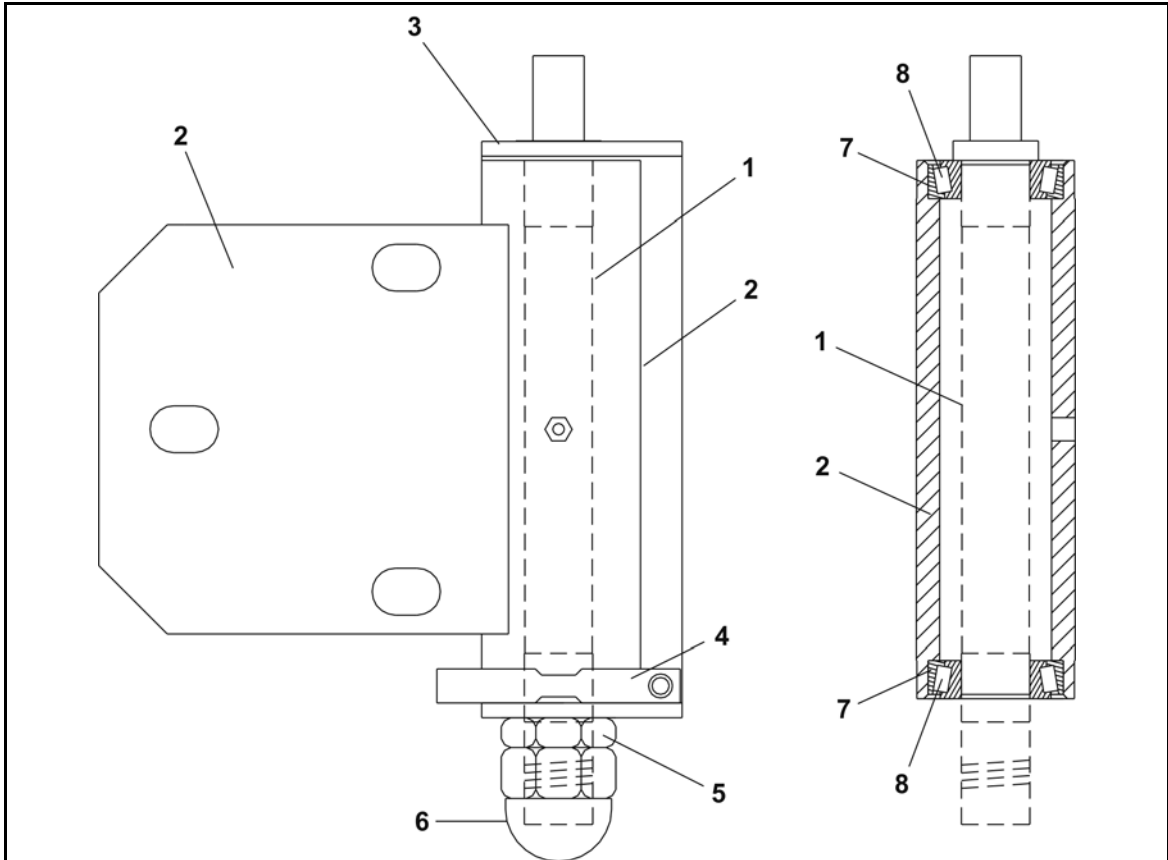


Table 1: Parts List—Door Hinge Components and Installation

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
Assemblies				
	A	A25 04500	Assembly; Bearing and Pin	
Components				
all	1	03 25302	Hinge pin	
all	2	W3 25071	Weldment; Door hinge; 30"	
all	3	03 25170	Bracket; Door hinge	
all	4	54JH13562B	Shaft collar; Split; 3+9/16	
all	5	15G248	Nut; Jam; 14	
all	6	15G249	NutCap (acorn); 1-14	
all	7	54A976	Bearing; Cup; The Timken Company; L44610	
all	8	54A977	Bearing; Cone; The Timken Company; L44643	

— End of BIIFLM16 —

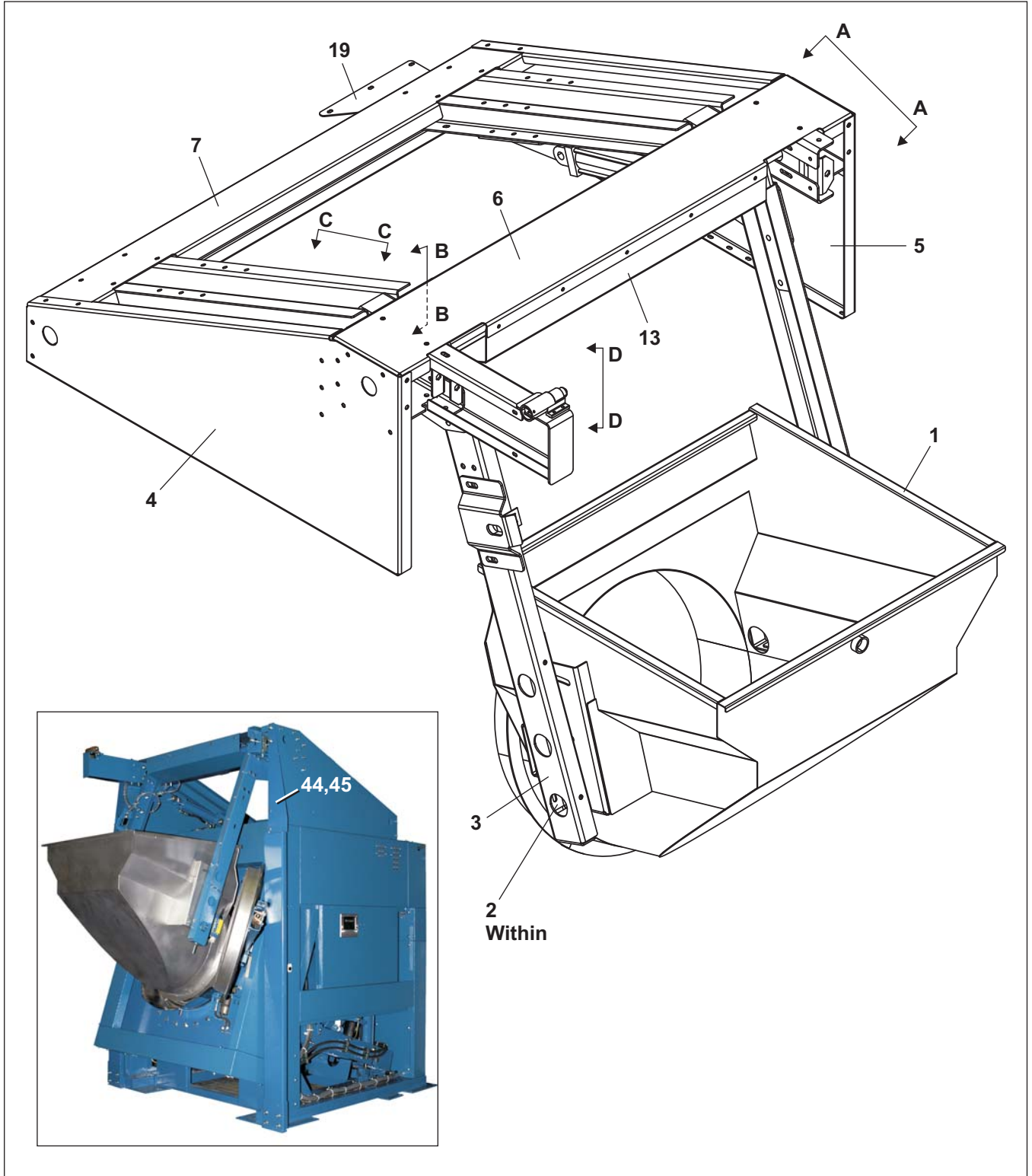


# DRYELL Loading

5

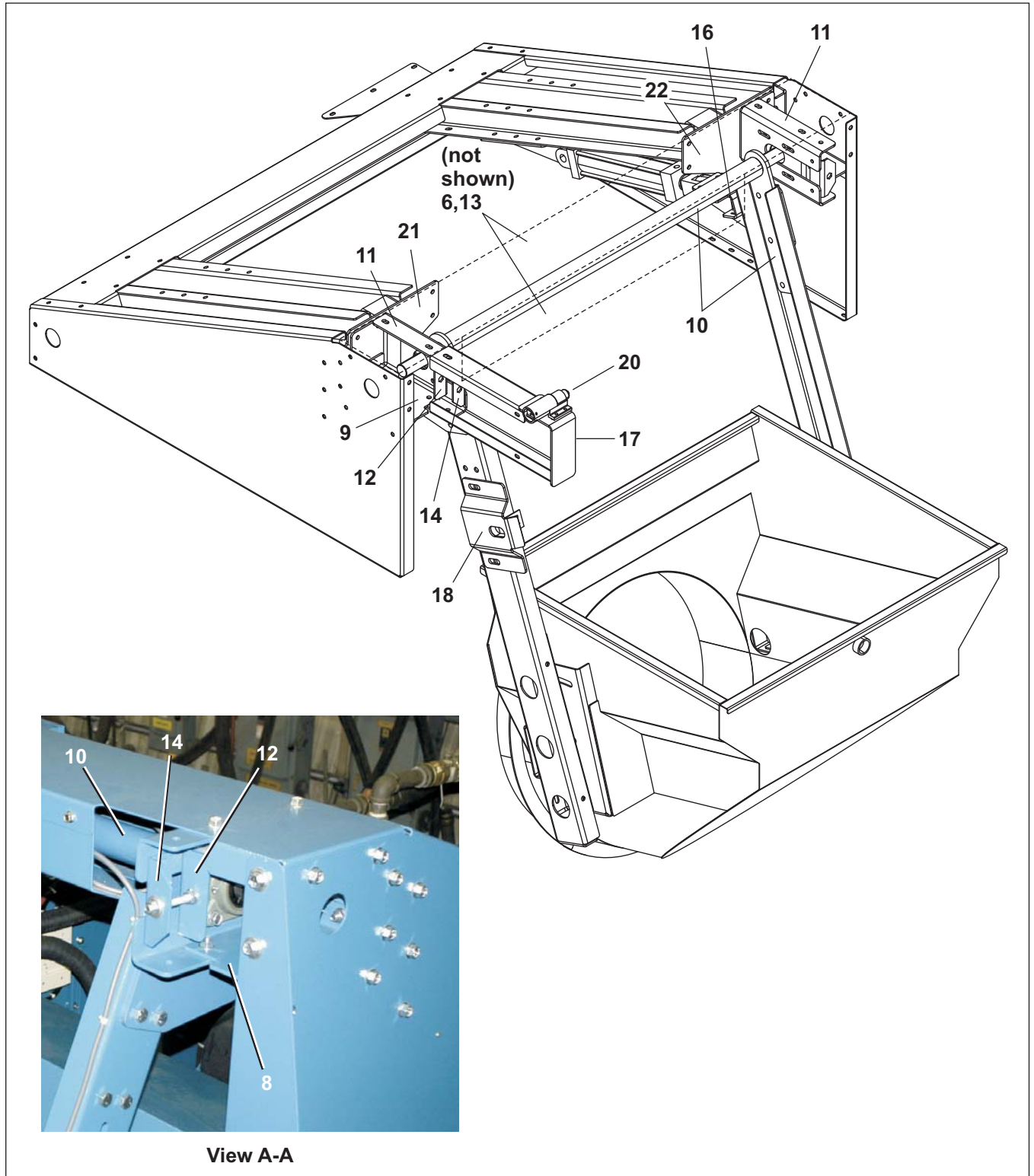
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48040H7N, 48040H7K, 68036H5N, 68036H5K



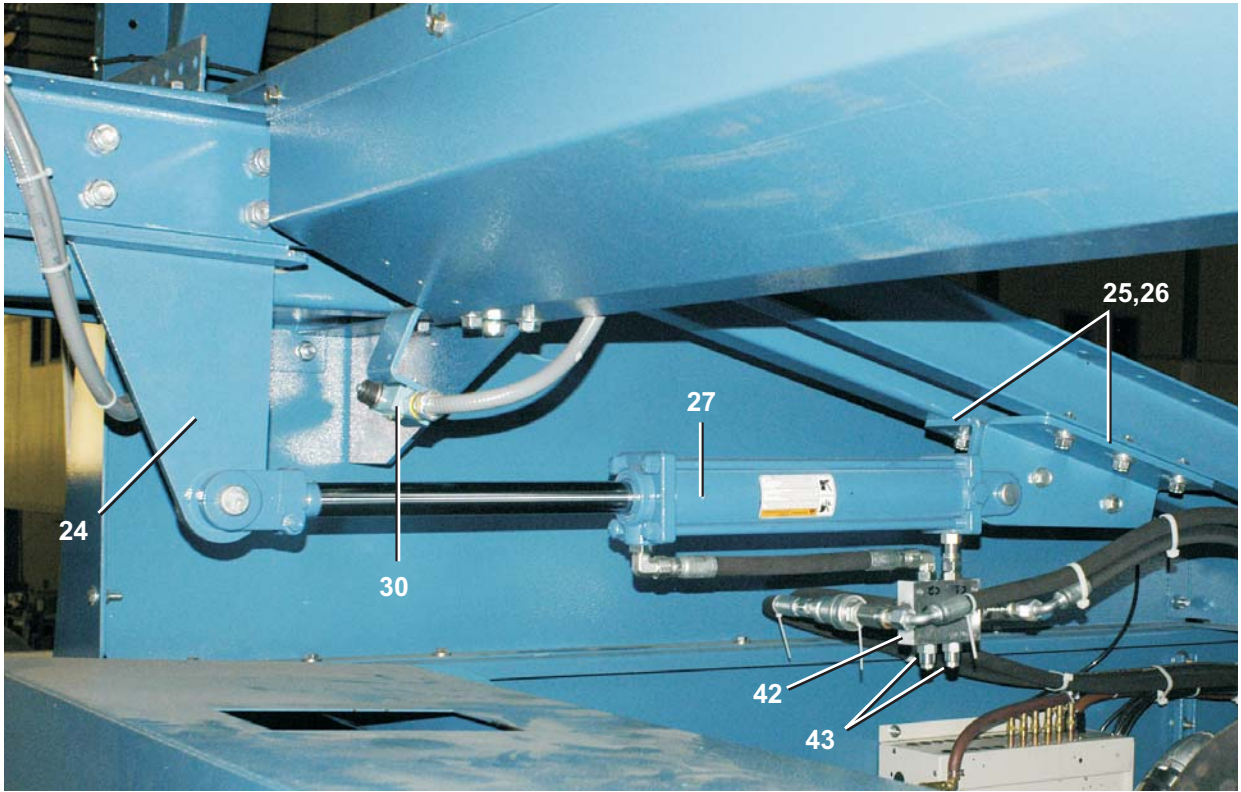
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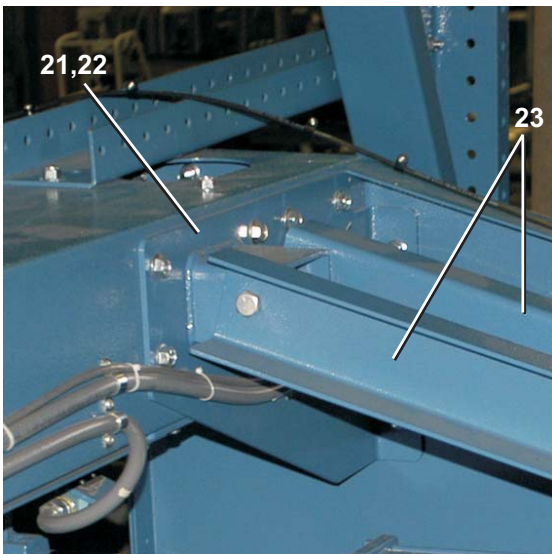


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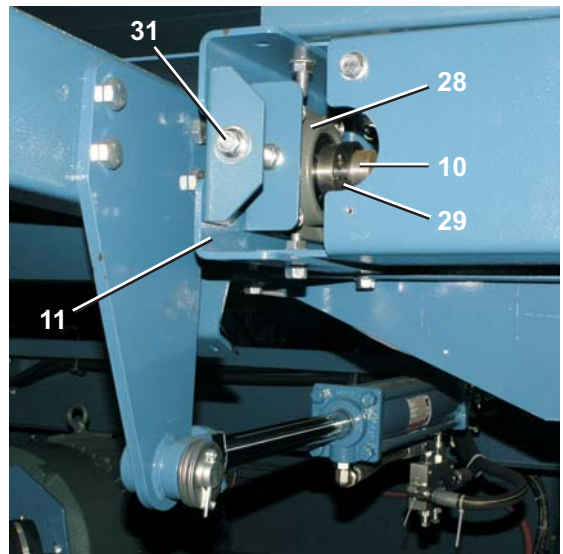
48040H7N, 48040H7K, 68036H5N, 68036H5K



**View B-B: Cylinder Mounting**



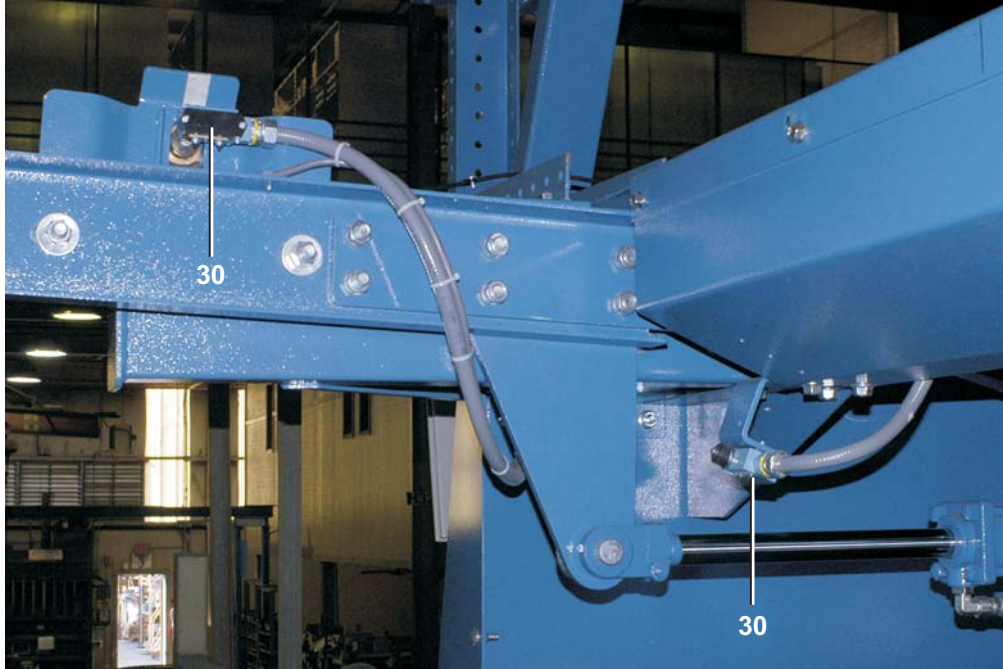
**View C-C: Cylinder Support Channels**



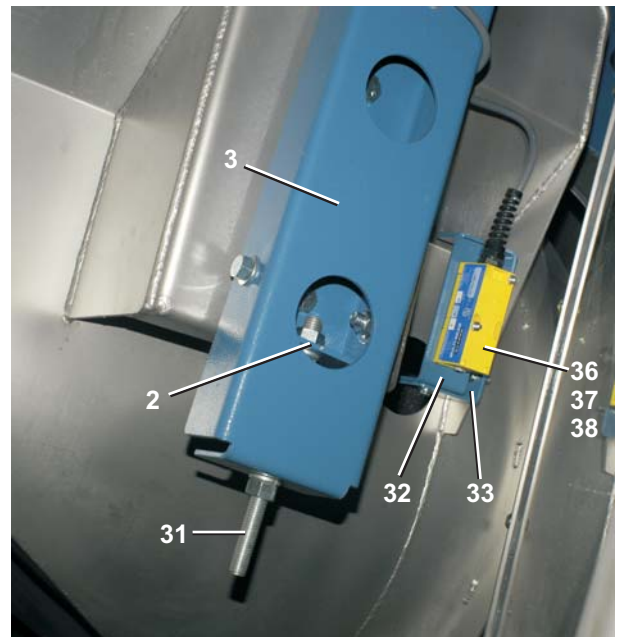
**View D-D(1): Pivot Shaft and Bearings**

# DRYELL Loading

48040H7N, 48040H7K, 68036H5N, 68036H5K



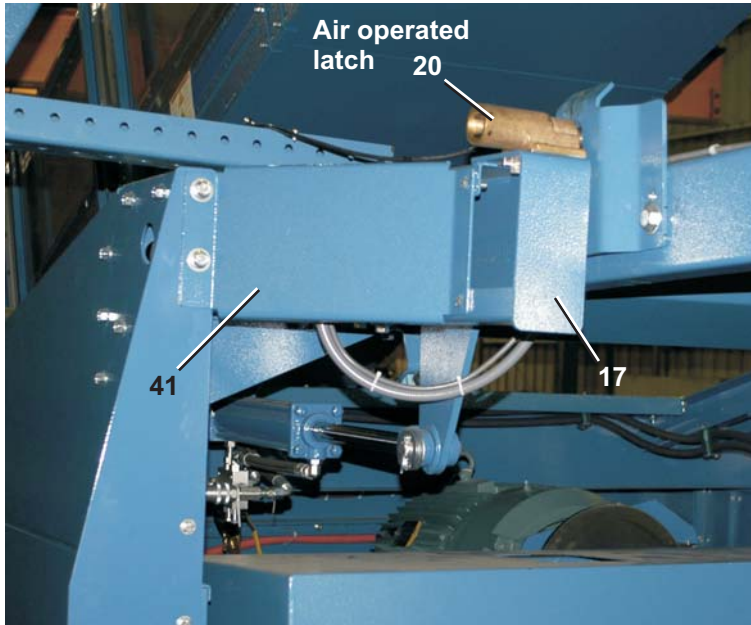
View D-D(2): Tilt Switches



Load Chute Photo Eyes

## DRYELL Loading

48040H7N, 48040H7K 68036H5N, 68036H5K





# DRYELL Loading

48040H7N, 48040H7K, 68036H5N, 68036H5K

<b>Parts List— Dryell Loading</b>				
Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.				
Used In	Item	Part Number	Description	Comments
-----ASSEMBLIES-----				
	A	GHT48003	INST=HYDRAULIC DRYEL-4840H7N	4840H7N, 4840H7K 6836H5N, 6836H5K
	B	GHT68003	INST=HYDRAULIC DRYEL-6836F5A	
-----COMPONENTS-----				
A	1	W2 22582	LOAD CHUTE WLMT 4840F DRYEL	
B	1	W2 22173A	LOAD CHUTE WLMT-6836F DRYEL	
all	2	02 22330	CHUTE LIFTARM ADAPTER-DRYEL	
A	3	02 22583	CHUTE LIFTING ARM 4840F DRYEL	
B	3	02 22333	CHUTE LIFTING ARM-6836F DRYEL	
A	4	02 22584	SIDE FRAME LF-4840F DRYEL	
B	4	02 22334	SIDE FRAME LF-6836F DRYEL	
A	5	02 22584A	SIDE FRAME RT-4840F DRYEL	
B	5	02 22334A	SIDE FRAME RT-6836F DRYEL	
A	6	02 22585	TOP FRAME-4840F DRYEL	
B	6	02 22335	TOP FRAME-6836F DRYEL	
A	7	02 22586	REAR FRAME-4840F DRYEL	
B	7	02 22336	REAR FRAME-6836F DRYEL	
A	8	02 22587	TOP FRAME BRACKET RT-4840F DRYEL	
B	8	02 22548	TOP FRAME BRKT RT-6836F DRYEL	
A	9	02 22587A	TOP FRAME BRACKET LF-4840F DRYEL	
B	9	02 22548A	TOP FRAME BRKT LF-6836F DRYEL	
A	10	W2 22513	DRYELL DRIVE SHAFT-4840F	
B	10	W2 22512	WLMT=LOADCHUTE PIVOT SHAFT	
all	11	02 22510	CHUTE BEARING MTG BRKT-DRYEL	
all	12	02 22549	BRNG CARRIER ADJ BRKT-DRYEL	
A	13	02 22588	SHAFT COVER 4840F DRYEL	
B	13	02 22570	SHAFT COVER-6836F DRYEL	
all	14	04 22714A	BRG CARRIER ADJUSTING BKT	
A	15	02 22593	CHUTE DOWN STOP BRKT-LF	
B	15	02 22571	CHUTE DOWN STOP BRKT-LF	
A	16	02 22593A	CHUTE DOWN STOP BRKT-RT	
B	16	02 22571A	CHUTE DOWN STOP BRKT-RT	
all	17	W2 22511	CHUTE UP STOP CHAN WLMT-DRYEL	
all	18	W2 22573	PLUNGER RECEIVER WLMT-DRYEL	
all	19	02 22594	RT CRNR STIFF,4840F DRYEL	
all	20	SA 15 028	* DOOR LATCH ASSY-DIVCYLS	
A	21	W2 22589	HYDCYL CHAN SUPP WLMT LF-4840F DRYEL	
B	21	W2 22337	HYDCYL CHAN SUPPORT WLMT-LF	
A	22	W2 22589A	HYDCYL CHAN SUPP WLMT RT-4840F DRYEL	
B	22	W2 22337A	HYDCYL CHAN SUPPORT WLMT RT-6836F	

**DRYELL Loading**

48040H7N, 48040H7K, 68036H5N, 68036H5K

**Parts List—Dryell Loading**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

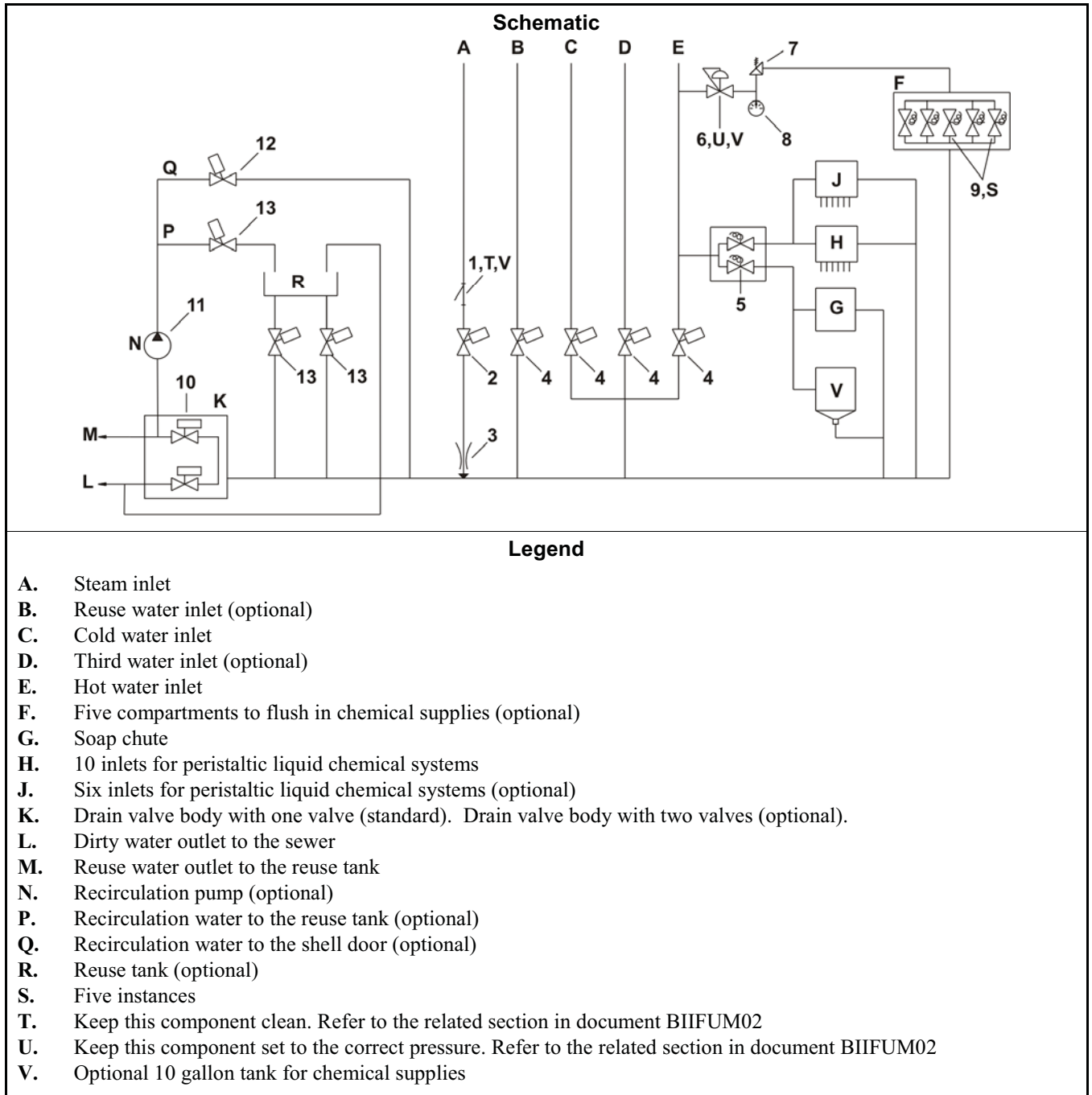
Used In	Item	Part Number	Description	Comments
A	23	02 22590	HYDCYL SUPPORT CHAN-4840F DRYEL	
B	23	02 22590	HYDCYL SUPPORT CHAN-4840F DRYEL	
all	23	02 22541	HYDCYL SUPPORT CHANNEL-DRYEL	
all	24	W2 22339	DRYEL LIFT PLATE WLMT	
all	25	02 22547	HYDCYL REAR MTG-RT	
all	26	02 22547A	HYDCYL REAR MTG-LF	
A	27	AHT48003A	LOADCHUTE HYD CYL ASSY-4840F DRYELL	
B	27	AHT68003	LOADCHUTE HYD CYL ASSY-6836F DRYELL	
all	28	54AF1687	FLBRG 1.6875 NTN#UCF209-111T	
all	29	54JH11690C	1 PC SPLIT SHAFTCOLLAR-SPECIAL	
all	30	09R012	MICSW SPDT PAINTED BZE6-RN 01	
all	31	17R024A08A	THREADED ROD 5/8-11X8" ZNCPL G	
all	32	02 22596	PHOTO EYE MOUNTING BASE	
all	33	02 22597	PHOTO EYE MOUNTING BRKT	
all	34	09RPE006A	PHOTOEYE EMITTER 24/120V AC	
all	35	09RPE007A	P.E. PWR.BLK. NO-OUT 120V-IN	
all	36	09RPE006B	PHOTOEYE RECEIVER 24/120V AC	
all	37	09RPE007C1	P.E. PWR.BLK. 240V-OUT 240V-IN	
all	38	09RPE006B2	PHOTOEYE ON/OFF LOGICMOD #LM3	
all	39	06 20739	EXTRUSION GLASS PROXSW	
all	40	06 20739A	GLASS=3.06 DIA PROXSW	
all	41	02 22550	CHUTE UP STOP BRACE-DRYEL	
all	42	60EH40C206	HYD HOSE 1/2" + 2 X FORSW=206"	
all	43	96DH471	COUNTERBALANCE VALVE-SUN BODY	
all	44	96DH471A	CARTRIDGE-COUNTERBAL.SUN	
all	45	02 22612	TOP FRAME RT GUSSET-4840H DRYEL	
all	46	02 22612A	TOP FRAME LF GUSSET-4840H DRYEL	

# Water and Steam

6

## Water and Steam Schematic and Primary Components: 48040F\_, 48040H\_

Figure 1: Water and Steam Schematic and Primary Components



**Table 1: Parts List—The Water and Steam Schematic**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
none				
Components				
all	1	51T060	Steam strainer; 1+1/4"	
all	2	96D0011E	Steam valve; usually closed; air operated; 1.25"NPT	
all	3	X6 20247A	Machined part; Steam nozzle; 3/4" NPT	
all	4	96D087WE	Water valve; usually closed; air operated; 1.5"	
all	5	96P053D71	Water valve; electric operated 3/4"	
all	6	96J030D	Pressure regulator; 1/2"	
all	7	96M001	Pressure relief valve; 1/2X3/8"	
all	8	30N100	Pressure gauge; 1/8"	
all	9	96TCC2AA71	Water valve; usually closed; two way;electric operated; 3/8"	
A	10	GVD48400	Installation Group; Drain valve body with one valve	
B	10	GVD48402	Installation Group; Drain valve body with two valves	
all	11	27E956K82	Water pump, standard flow; 2.0HP50C	
all	12	96D087WEST	Water valve; usually open; air operated; 1.5"	
all	13	96D087WESS	Water valve; usually closed; air operated; 1.5"	

— End of BIIFLM17 —

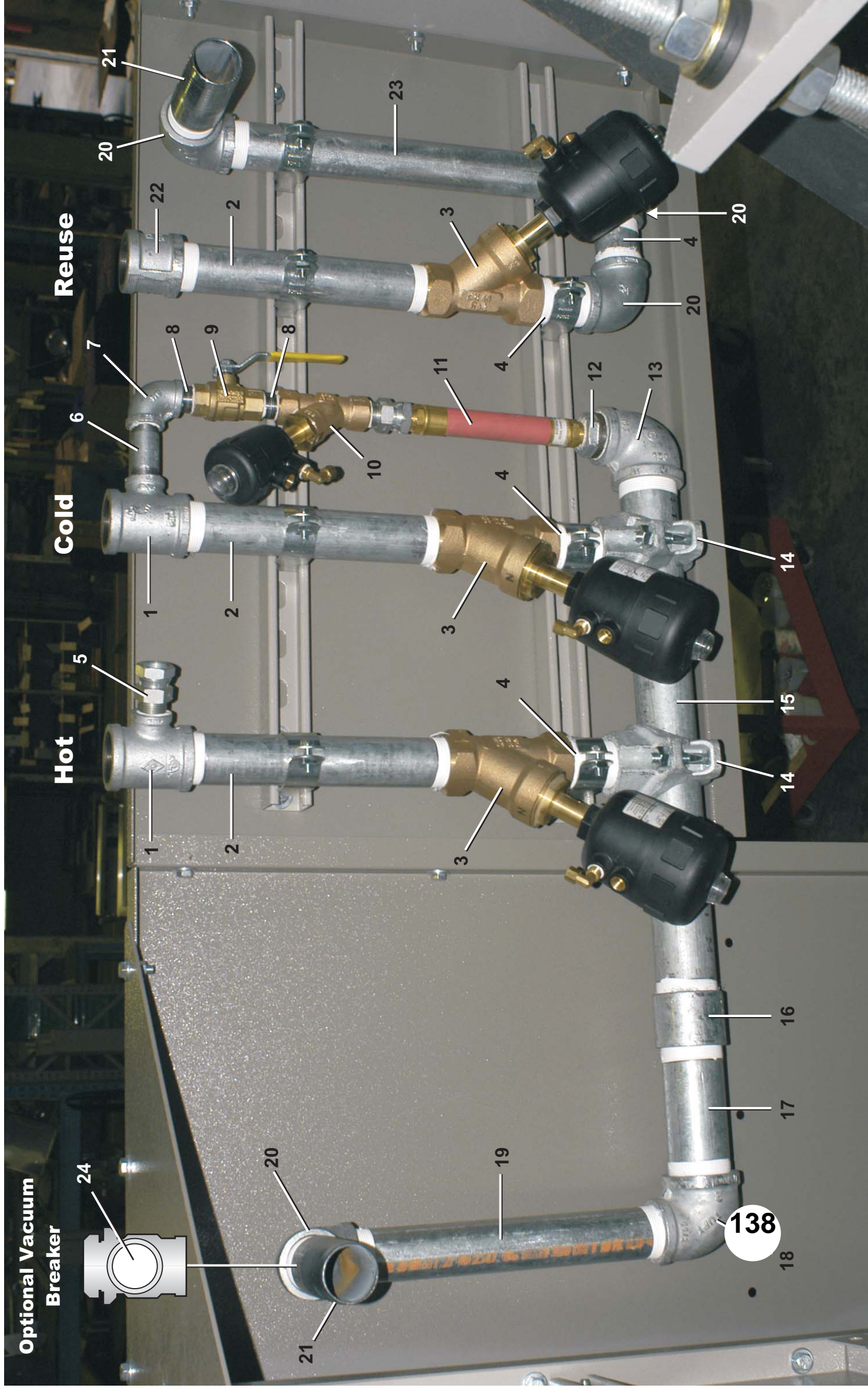
**Water Inlets**  
**4840H7N, 4840H7W**

BMP090035/2012195B  
 (Sheet 1 of 3)



Pellerin Milnor Corporation  
 P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.



**Water Inlets**  
**4840H7N, 4840H7W**

BMP090035/2012195B  
 (Sheet 2 of 3)



Pellerin Milnor Corporation  
 P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.





**Pellerin Milnor Corporation**  
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

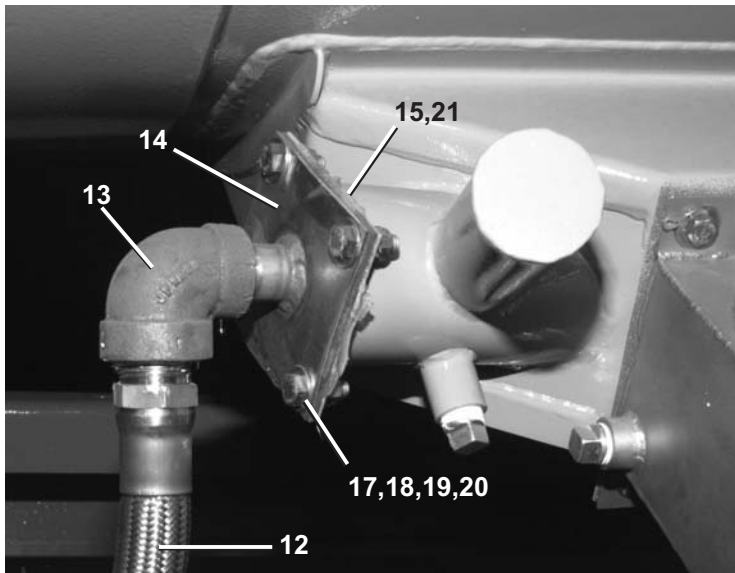
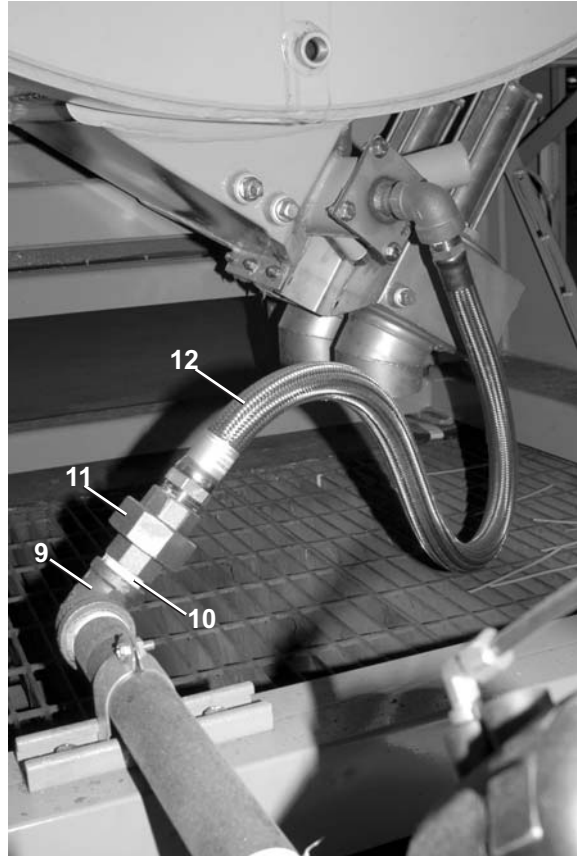
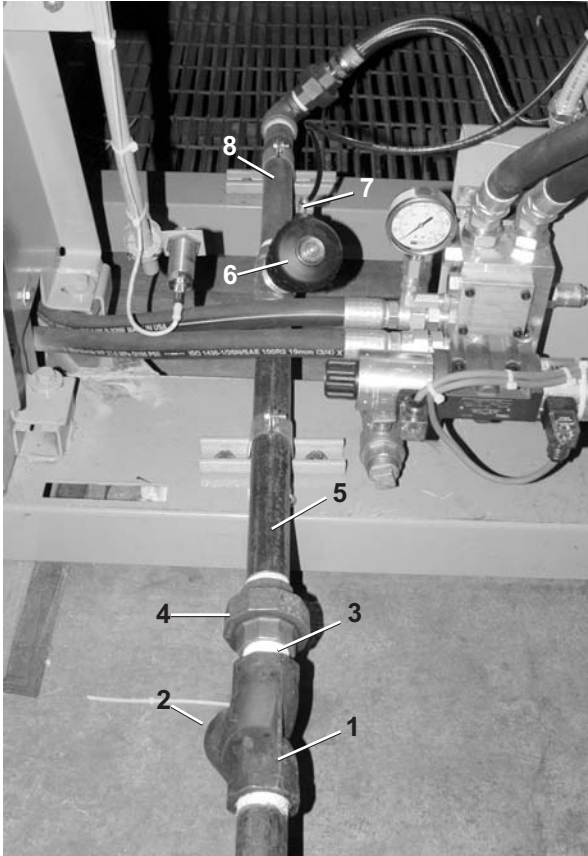
Used In	Item	Part Number	Description	Comments
	A	AVW48019	ASSY=HOT H2O VALVES, 4840F7A	
	B	AVW48020	ASSY=COLD H2O VALVE, 4840F7A	
	C	AVW48022	ADD VACUUM BREAKER 4840F7A	
	D	AVW48023	ADD REUSE INLET 4840F7A	
	E	AVW48402	ASSY=H2O W/3RD-NOTILT, 4840F	
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
all	1	5S1KMG40P	TEE 1.5X1.5X3/4 150# GALV	
all	2	5N1K11AG42	NPT NIP 1.5X11 TBE GALSTL SK40	
all	3	96D087WE	ANGBODVLV 1.5"N/C H2O BURK BRZ	
all	4	5N1K03AG42	NPT NIP 1.5X3 TBE GALSTL SK40	
all	5	51X019	UNIONSTRADT 3/4"#0107-12-12	
all	6	5N0P03AG42	NPT NIP 3/4X3 TBE GALSTL SK40	
all	7	5SLOPNFA	NPTTEL B 90DEG 3/4 GALMAL 150#	
all	8	5N0PCLSG42	NPT NIP 3/4XCLS TBE GALSTL S40	
all	9	96D050A	3/4"BALLVALVE BRZ BONOMI 171N	
all	10	96D0009E	3/4"NPTBRZ N/C STEAMVAL ANGBOD	
all	11	60E086C08A	*WATERHOSE 3/4X8"LG+ENDS	
all	12	5SB1A0PNFO	NPTHEXBUSH 1X3/4 GALMAL 150#	
all	13	5SL2ANFA1A	NPT ELBOW 90DEG 2X1" GALMAL 15	
all	14	51V302	MECH-T 2X1.5 FEM #920N GALV.	
all	15	02 21219	MACH=NIPPLE+2HOLES FOR TEE	
all	16	5SCC2ANF	NPT COUP 2" GALMAL 150#	
all	17	5N2A06AG42	NPT NIP 2X6 TBE GALSTL SK40	
all	18	5SL2ANFA1K	NPTTEL B 90DEG 2X1.5 GALMAL 150#	
all	19	5N1K13AG42	NPT NIP 1.5X13 TBE GALSTL SK40	
all	20	5SL1KNFA	NPT ELBOW 90DEG 1.5" GALMAL 15	
all	21	51E098A	KINGCOMBNIP 2"IDXNPT #RST25S	
all	22	5SCC1KNF	NPT COUP 1.5 GALMAL 150#	
all	23	5N1K16AG42	NPT NIP 1.5X16 TBE GALSTL SK40	
all	24	SA 03 009	1.5"SIPHONBRKR+SCUPPER ASSY	
all	25	5SCA2ANF	NPT CAP 2" GALMAL 150#	

Parts List, cont.—Water Inlets				
Used In	Item	Part Number	Description	Comments
all	26	5N2A12AG42	NPT NIP 2X12 TBE GALSTL SK40	
all	27	5SZANFA	NPT TEE 2" GALMAL 150#	
all	28	5N2A36AG42	NPT NIP 2X36 TBE GALSTL SK40	
all	29	5N2A24AG42	NPT NIP 2X24 TBE GALSTL SK40	
all	31	5SL2ANFA	NPT ELBOW 90DEG 2" GALMAL 150#	
all	32	60E255	HOSE 2" WATER CORRUGATED(V50)	
all	33	5N2ACLSG42	NPT NIP 2XCLS TBE GALSTL SK40	
all	34	5SL2ANFK	NPTTEL B 45DEG 2"GALMAL 150#	
all	35	5SCA1KNF	NPT CAP 1.5 GALMAL 150#	
all	36	5N1K12AG42	NPT NIP 1.5X12 TBE GALSTL SK40	
all	37	5S1KNFA	NPT TEE 1.5" GALMAL 150#	
all	38	5N1K36AG42	NPT NIP 1.5X36 TBE GALSTL SK40	
all	39	5N1K24AG42	NPT NIP 1.5X24 TBE GALSTL SK40	
all	40	5N1KCLSG42	NPT NIP 1.5XCLS TBE GALSTL SK40	
all	41	51E098AP	KINGREDNIP2"DX1.5MPT #STC2520	



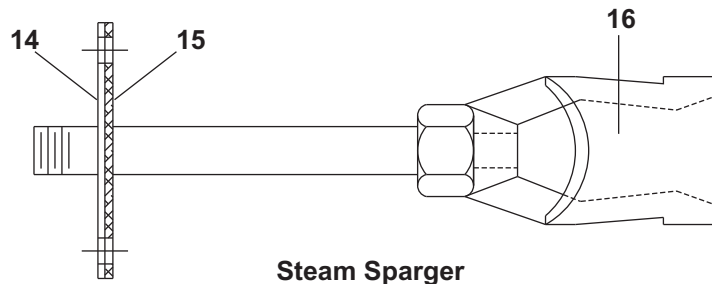
# Steam Inlet

4840H7N, 4840H7W, 4840H7R, 4840H7K



# Steam Inlet

4840H7N, 4840H7W, 4840H7R, 4840H7K



**Steam Sparger**

### Parts List— Steam Inlet

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
-----ASSEMBLIES-----				
-----COMPONENTS-----				
	1	51T060	Y-STRAINER 1+1/4" CAST IRON	
all	2	5SP0PHFSS	NPT PLUG 3/4 SQ SOLID STL/ZINC	
all	3	5N1ECLSF42	NPT NIP 1.25XCLS TBE BLKSTLS40	
all	4	5SU1EMI	NPT UNION 1.25" BLKMAL 300#	
all	5	5N1E14AF82	NPT NIPPLE 1.25X14 TBE BLKSTL SCH 80	
all	6	96D0011E	1.25"NPTBRZ N/C STEAMVALANGBD	
all	7	96H018	ANGLE NEEDLE VLV 1/4"T X 1/8MP	
all	8	5N1E18AF82	NPT NIPPLE 1.25X18 TBE BLKSTL SCH 80	
all	9	5SL1EMFA1A	NPT ELBOW 90DEG 1.25X1" BLKMAL	
all	10	5N1ACLSF42	NPT NIP 1X CLS TBE BLKSTL SK40	
all	11	5SU1AMI	NPT UNION 1" BLKMAL 300#	
all	12	60E518C35A	STMHOSE SSFLEX 1"=35+2SSEND	

**Steam Inlet**

4840H7N, 4840H7W, 4840H7R, 4840H7K

**Parts List—Steam Inlet**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
all	13	5SL1AMIA0P	NPTELB 90DEG 1X3/4 BLKMAL 300#	
all	14	W2 11365	*STEAM PIPE+FLANGE WLMT	
all	15	02 11369D	GASKET STEAM FLANGE MTG DYE	
all	16	X6 20247A	3/4" NPT .5" SPARGER MACH.	
all	17	15K096	HEXCAPSCR 3/8-16UNC2X1SS18-8	
all	18	15U245	FLTWASH 3/8 STD COMM 18-8 SS	
all	19	15U260	LOCKWASHER MEDIUM 3/8 SS18-8	
all	20	15G206	HEXNUT 3/8-16 UNC2 SS 18-8	
all	21	20C040B	SUPERFLEX CLR RTV SIL 10.2OZ	

## Installation, Drain Valve Body With One Valve

Figure 1: Installation, Drain Valve Body With One Valve



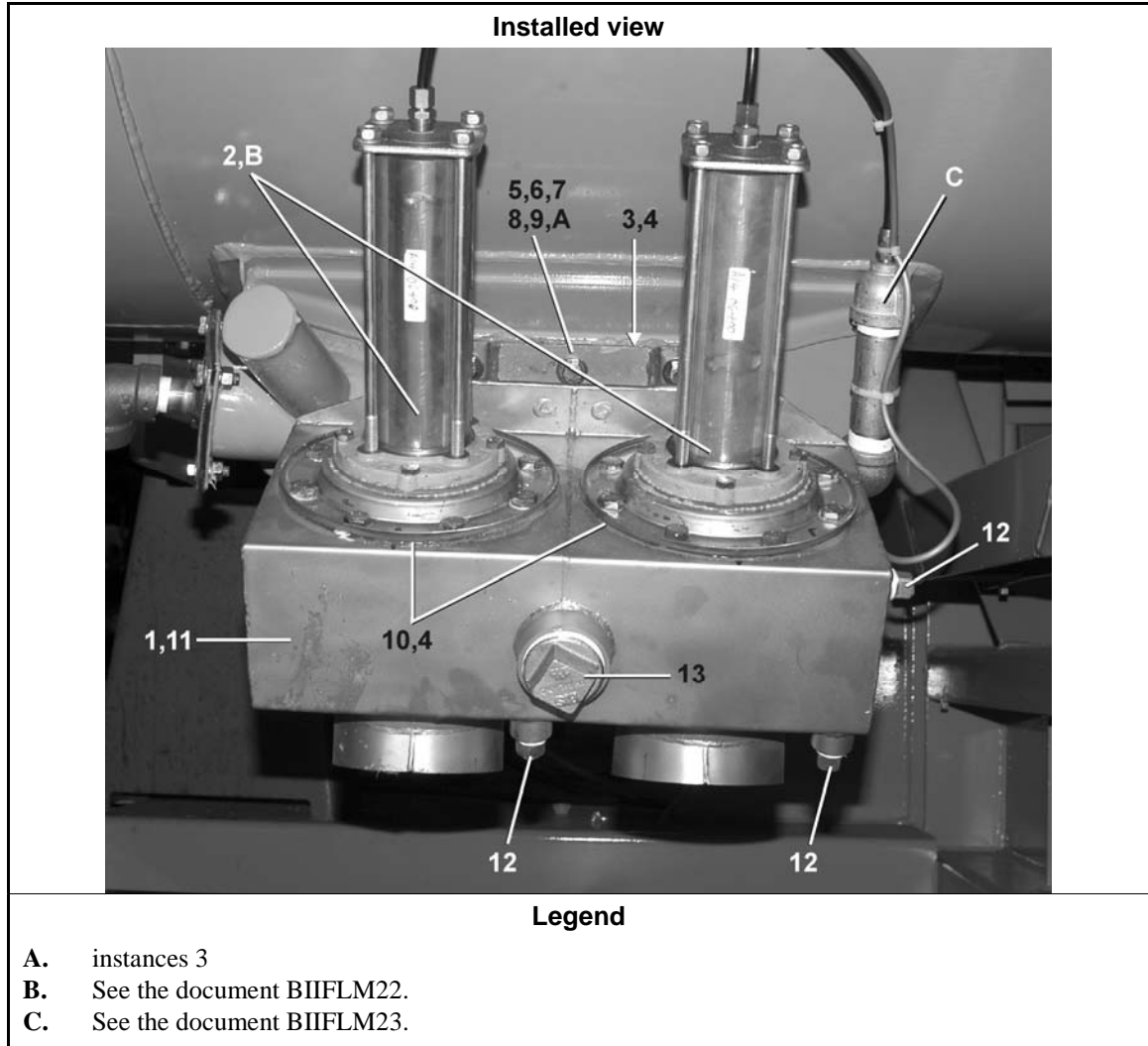
**Table 1: Parts List—Installation Drain Valve Body with One Valve**

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
Assemblies				
	A	GVD48400	Installation Group, Drain valve body with one valve, 4840F_, 4840H_	
Components				
all	1	A14 06400	Assembly*, Bonnet and air cylinder, 4"	
all	2	A14 06500B	Assembly, Drain valve 4"	
all	3	02 15026	Gasket, Drain valve	
all	4	20C040B	Silicone	
all	5	15K096	Bolt 3/8-16UNC2X1SS18-8	
all	6	15U201	Washer, Flat, 3/8"	
all	7	24G030N	Washer, Rolled, Nylon, 3/8"	
all	8	15U260	Washer,Lock, 3/8"	
all	9	15G206	Nut, Hex, 3/8"	

— End of BIIFLM21 —

## Drain Valve Body with Two Valves

Figure 1: Drain Valve Body with Two Valves



Drain Valve Body with Two Valves

Figure 2: Pressure gage

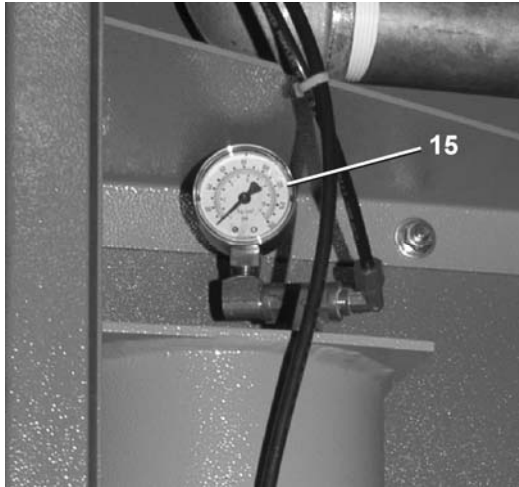


Figure 3: Compressed air tank

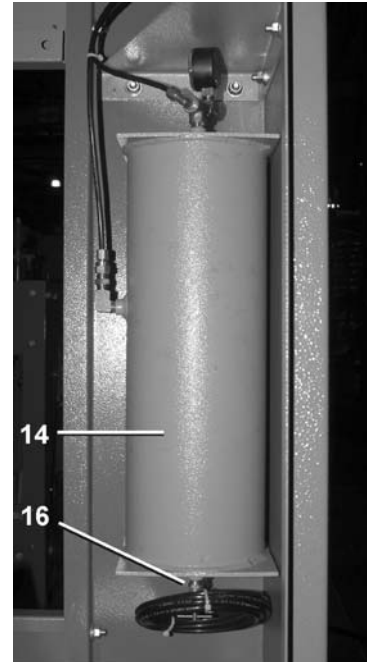


Table 1: Parts List—Drain Valve Body with Two Valves

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GVD48402	Installation Group	
Components				
all	1	AVD48402	Assembly, Drain Valve Body with Two Valves	
all	2	A14 06400	Bonnet Assembly	
all	3	02 15026	Gasket	
all	4	20C040B	Silicone	
all	5	15K096	Bolt, 3/8-16X1	
all	6	15U201	Washer, Flat, 7/8X3/8X.062	
all	7	24G030N	Washer, Nylon, 3/8	
all	8	15U260	Washer, Lock, 3/8	
all	9	15G206	Nut, 3/8-16	
all	10	02 14443	Gasket, 4"	
all	11	W2 11304C	Valve body	
all	12	5SP0KGFSS	Plug, 1/2"	
all	13	51P055	Plug, 1.5"	
all	14	W3 25307D	Compressed air tank	
all	15	30N102	Pressure gage, 1/4", .0-150 PSI	
all	16	96H018	Needle valve, 1/4"X 1/8"	

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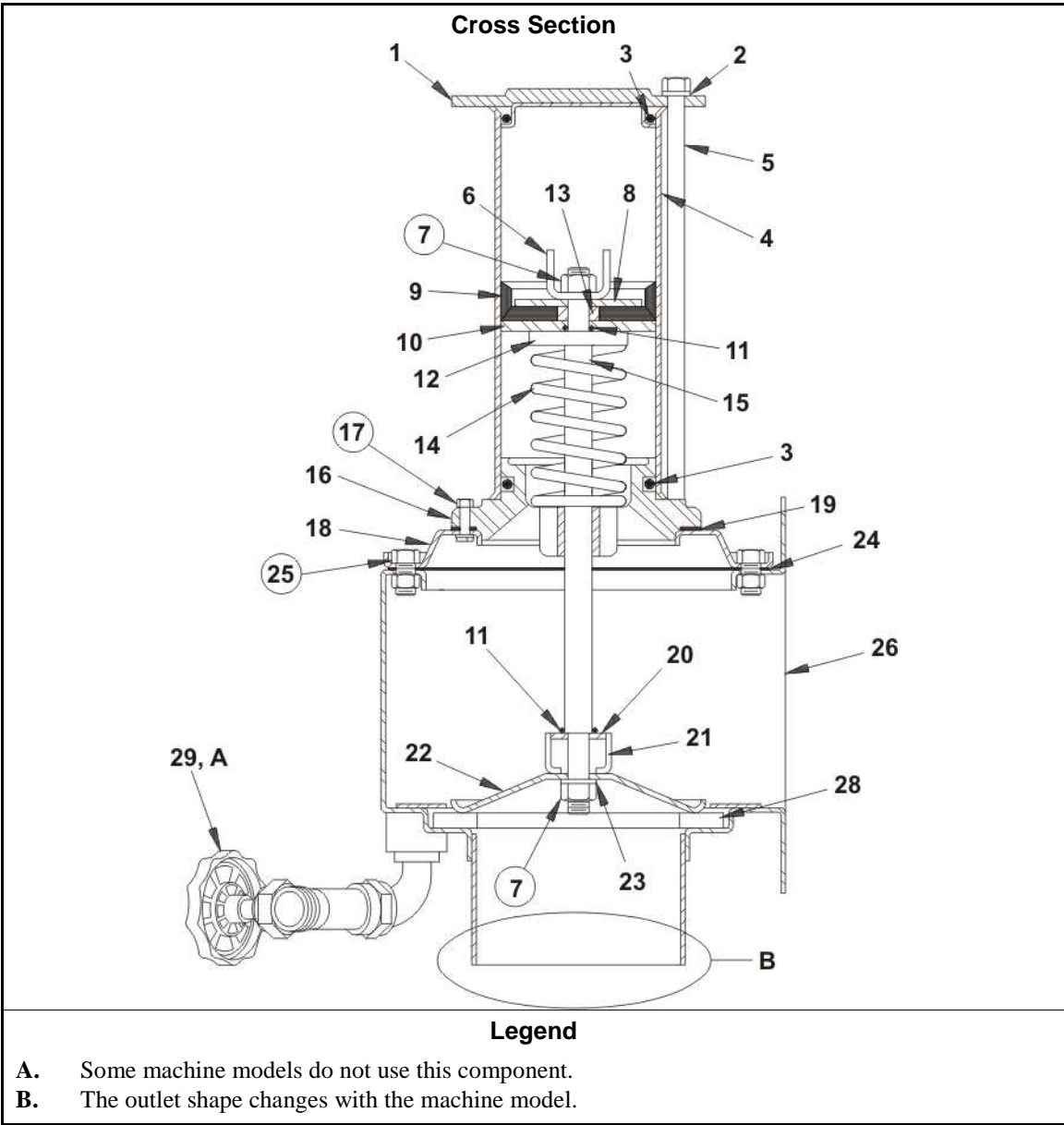
### Components, Drain Valve



**WARNING 1:** Risk of severe injury—The air cylinder can come apart with strong force when you remove components.

- Look at the illustration carefully to know which components are in spring tension.

Figure 1: Components, Drain Valve





Components, Drain Valve

**Table 1: Parts List—Components, Drain Valve**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	N	W2 15997	Weldment; Drain valve body; 4"	CBW Reuse tank
	P	AVD14003	Assembly; Drain valve; 4"	36021Q_, 36026Q_
	Q	AVD14001A	Assembly; Drain valve; 4"	42026Q_
	R	AVD14001	Assembly; Drain valve; 4"	36021F8P
	S	A14 06500B	Assembly; Drain valve; 4"	48040F7_, 4840H7_, 48036QHP, QTL/N, 42026QHP, 48036BHP, BTL/N
	T	A15 15100	Assembly; Drain valve; 4"	42031WP2, WP3, 42032F7J, P, W, 36030F8J, P, W
	U	A14 06500	Assembly; Drain valve; 4"	36021NSP
	V	A14 06500A	Assembly; Drain valve; 4"	42026DA1
	W	A14 06500F	Assembly; Drain valve; 4"	42026DP1, DYP
	X	SA 09 013A	Assembly; Drain valve; 4"	30016NSP
	Y	A14 06400	Assembly; Bonnet and air cylinder; 4"	Used in N through T and includes 1 through 23
	Z	A14 06400A	Assembly; Bonnet and air cylinder; 4"	Used in U through X and includes 1 through 23
Components				
all	1	02 02101	Cylinder head	
Y	2	15U210	WasherLock; Zinc plated; 5/16	
Z	2	15U205	WasherLock; Stainless Steel; 5/16	
Y	3	60C132	O-Ring; Buna-N; 2"; 3/16"	
Z	3	60C132V	O-Ring; Viton; 2"; 3/16"	
all	4	02 02068	Air cylinder; Drain valve	
Y	5	02 10585D	Bolt; 5/16-18 X 7.875	
Z	5	02 10585	Bolt; Stainless steel; 5/16-18 X 7.875	
all	6	03 01313	Stop; Air cylinder	
all	7	15G220	Nut; Nylon lock; 3/8; 24	
all	8	02 02085	Washer; Back-up; Piston cup; 2" OD	
all	9	02 02194	Piston cup; Drain valve; 2+3/8"	
all	10	02 02105B	Washer; Piston cup; Brass; 2.38"	
Y	11	60C106	O-Ring; Buna-N; 5/16"; 1/16"	
Z	11	60C106V	O-Ring; Viton; 5/16"; 1/16"	
all	12	02 18651	Washer; Two direction operation; Air cylinder; Brake	
all	13	02 02185	Washer; Compression limit; Piston cup	
all	14	02 17023	Spring; Drain valve; Stainless steel; 1.5 OD	
all	15	02 16021I	Stem; Drain valve; Stainless steel; 4" and 8"	
Y	16	X2 02743	Bonnet; Drain valve; 2"	
Z	16	X2 02743S	Bonnet; Drain valve; Stainless steel; 2"	
all	17A	15G168	Nut; Square; Stainless steel; 1/4; 20	
all	17B	24G020N	Washer; Rolled; 0.252 ID	

**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.**

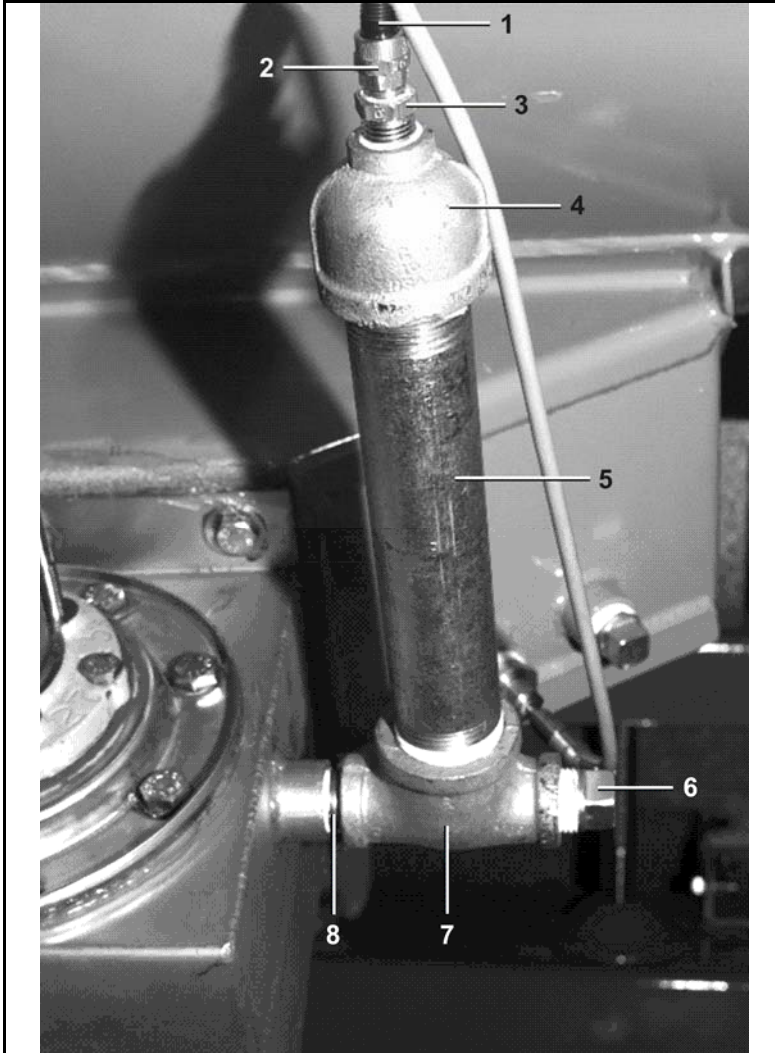
Used In	Item	Part Number	Description/Nomenclature	Comments
all	17C	15K041S	Bolt; Hex headStainless steel; 1/4"	
all	17D	15U181	Washer; Lock; Stainless steel; 1/4"	
all	18	02 14447	Bonnet; Drain valve; Stainless steel; 4"	
Y	19	02 18931F	Gasket; Drain valve	
Z	19	02 18932B	Gasket; Drain valve 1/8"	
Y	20	02 16021E	Washer; Drain valve; 3/8ID X 1.25 OD	
Z	20	02 18651A	Washer; Drain valve; Disk	
Y	21	02 16021C	Bumper and retainer; Bonnet; Drain valve	
Y	21	02 16021D	Bumper and retainer; Bonnet; Drain valve	
Z	21	02 16021S	Bumper and retainer; Bonnet; Drain valve	
all	22	02 14446	Disk; Drain valve; Stainless steel; 4"	
all	23	15U245	Washer; FlatStainless Steel; 3/8"	
P-V,X	24	02 14443	Gasket; Bonnet; Drain valve; Stainless steel; 4"	
W	24	02 14443	Gasket; Bonnet; Drain valve; Stainless steel; 4"	
all	25A	15K086	Bolt; Hex head; Stainless steel; 3/8-16	
all	25B	24G030N	Washer; Rolled; 0.379ID	
P-T	25C	15U200	Washer; FlatStainless Steel; Zinc plated; 5/16"	
R	26	W2 14740	Weldment; Drain valve body; 36021F8P	
S	26	W2 11304	Weldment; Drain valve body; 42026_	
N,T	26	W2 15997	Weldment; Drain valve body; 4"; 4231WE+SG	
U	26	W2 14445S	Weldment; Drain valve body; 4" NPT	
V	26	W2 14445	Weldment; Drain valve body; 4"; 36_BWE, QTS	
W	26	W2 14445F	Weldment; Drain valve body; 42026DYP	
X	26	W2 14445J	Weldment; Drain valve body; 3" NPT	
Q	26	W2 14740A	Weldment; Drain valve body; 42_S6P	
P	26	W2 11943	Weldment; Drain valve body; Drain to rear; 36_Q_	
Q-T	27	5SP0KGFSS	Pipe Fitting; Plug; Square head; 1/2"	
U-X	27	5SP0KSFHC	Pipe Fitting; Plug; Hex head; 1/2"	
all	28	02 14166	Seat; 4" Drain valve; [deprecated]	
all	29	96DB0PNA	Hose bibb; 3/4"	

— End of BIIFLM22 —

BIIFLM23 (Published) Book specs- Dates: 20090428 / 20090428 / 20091217 Lang: ENG01 Applic: IFL

## Air Chamber Components and Installation

Figure 1: Air Chamber Components and Installation



**Table 1: Parts List—Air Chamber 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
Assemblies				
	A	AD 15 090K	Installation Group; Air chamber for the pressure switch	
Components				
all	1	60E004AT	Tubing; 5/16	
all	2	53A047H	Hydraulic fittingAdapters; 5/16	
all	3	5SB0E0CBEO	Pipe Fitting; HexbushBrass; 1/4X1/8	
all	4	5SR1A0ENF	Pipe Fitting; Reducer BushingGalvanized steel; 1X1/4	
all	5	5N1A07AG42	Pipe; Galvanized steel; 1; 7	
all	6	5SP0KGFSS	Pipe Fitting; Plug; 1/2	
all	7	5S0KNFA1A	Pipe Fitting; Tee;Galvanized steel; 1/2X1/2X1	
all	8	5N0KCLSG42	Pipe; Close (threads only); Galvanized steel; 1/2	

— End of BIIFLM23 —

Chemical

7

## Inlet for Peristaltic Chemical Supplies and Water

Figure 1: Water Lines for the Liquid Chemical Inlets

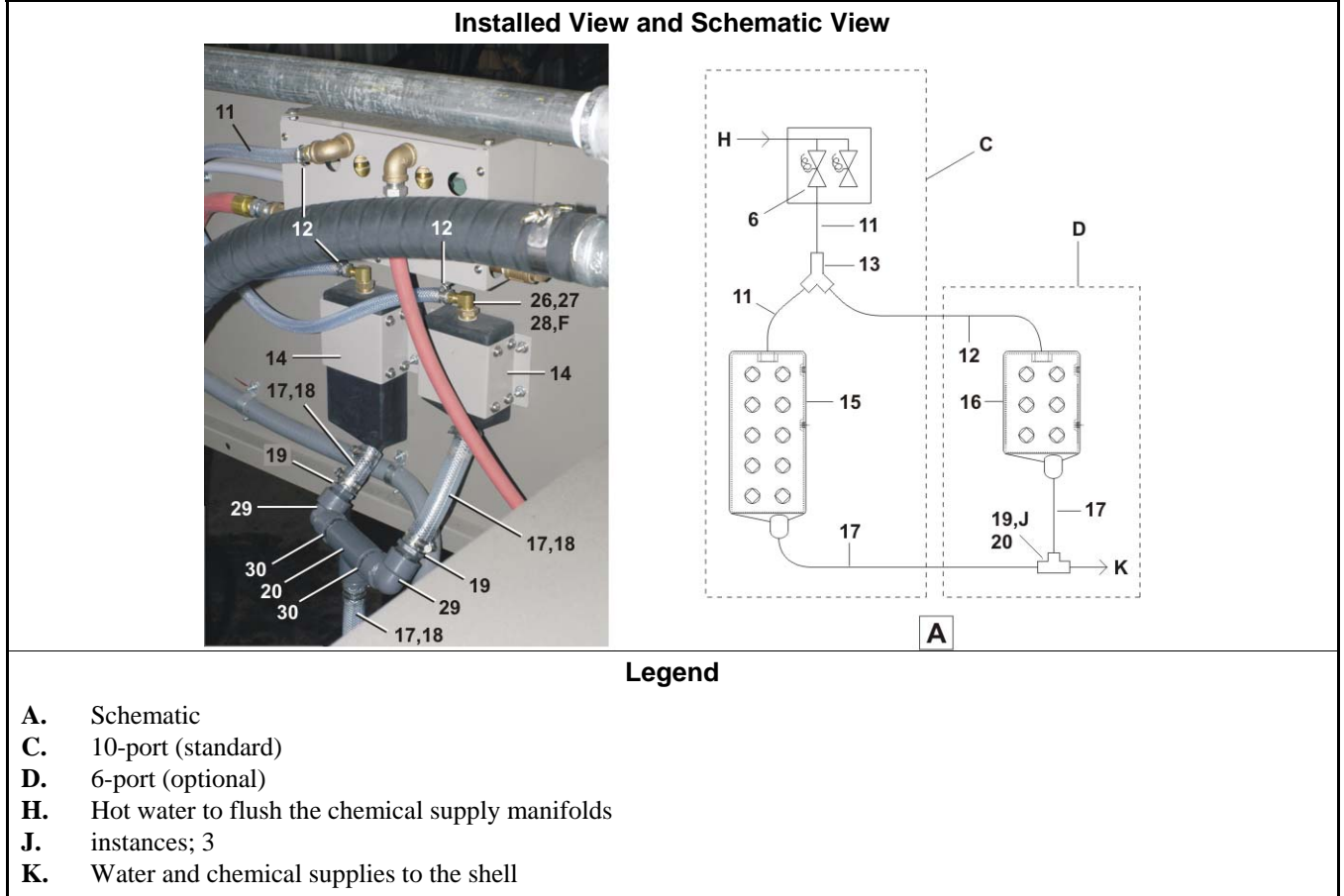


Figure 2: Water Valves for the Liquid Chemical Inlets and the Soap Chute

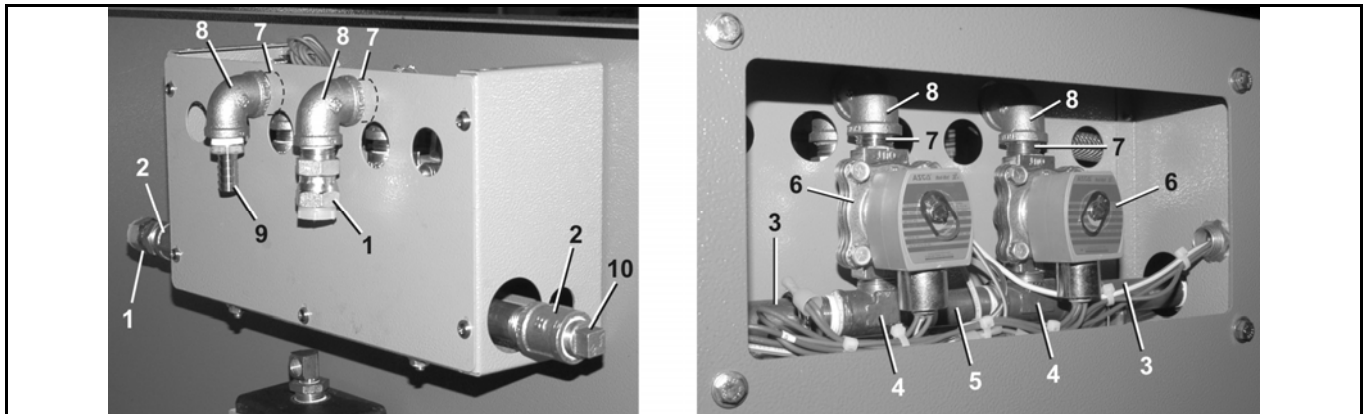
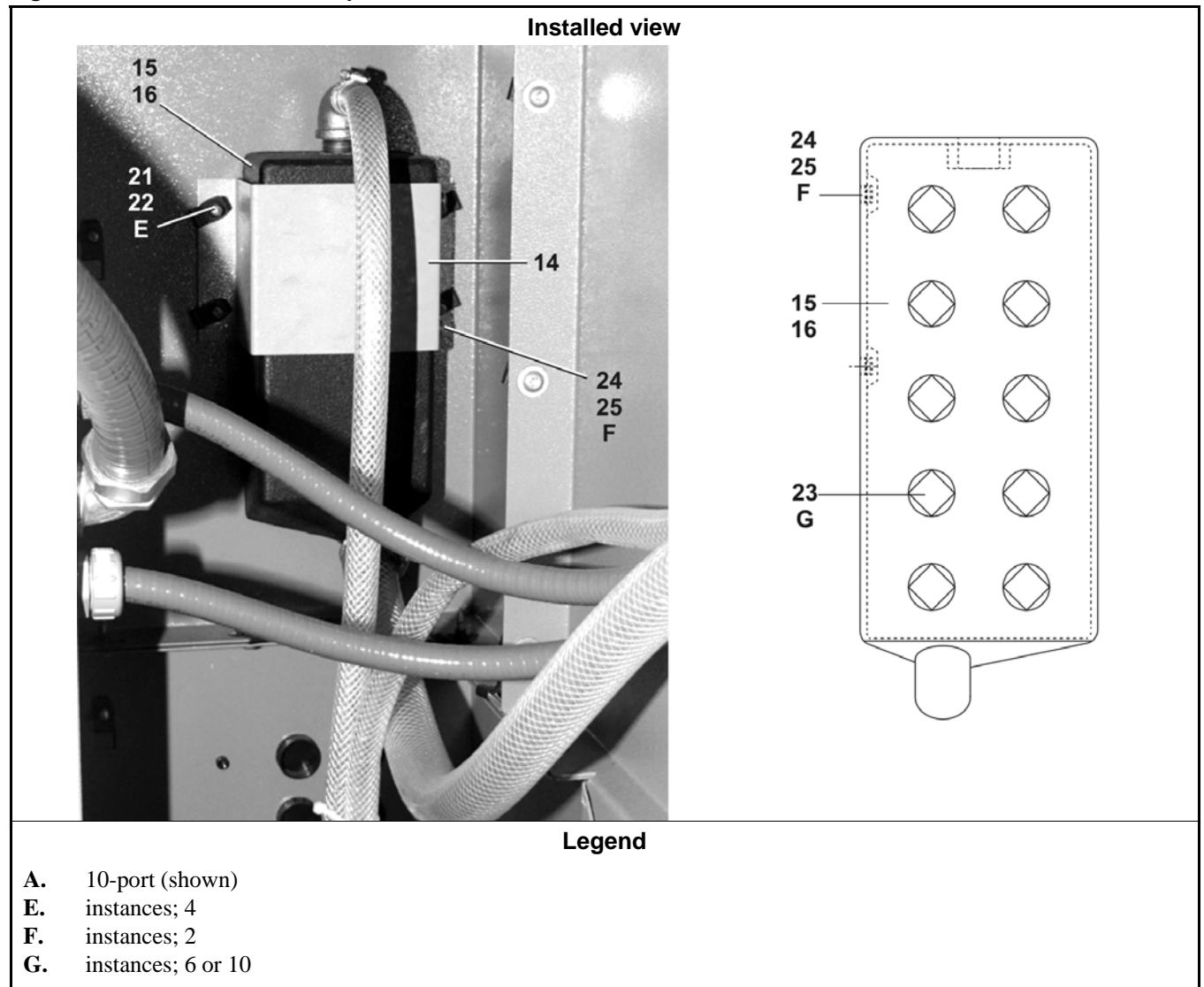


Figure 3: Manifold, 10-Port and 6-port



**Table 1: Parts List—Inlet for Peristaltic Chemical Supplies and Water**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	AWS68001	Assembly; Valve manifold	
	B	GWL4840F	Installation Group; Inlet for 10 Peristaltic Chemical Supplies	
	C	GWL4840W	Installation Group; Inlet for Six Peristaltic Chemical Supplies and Water	
Components				
all	1	51X017	Union; 1/2"	
all	2	5SCC0KBE	Coupling; 1/2"	
all	3	5N0K05ABE2	Pipe nipple; 1/2X5	
all	4	51V027	Tee; 1/2FX1/2FX1/2M	
all	5	5N0K03ABE2	Pipe nipple; 1/2X3	
all	6	96TDC2AA71	Water valve; 1/2"N/C2WAY240V50/60C	
all	7	5N0KCLSBE2	Pipe nipple; 1/2XCLS	
all	8	5SL0KBEA	Elbow; 90DEG 1/2"	
all	9	51E509	Hose stem; 1/2MPX1/2HOSEID	
all	10	5SP0KBESS	Hole plug; 1/2"	
all	11	60E006C	Tubing; 1/2"	
all	12	27A040	Hose clamp; 1/2"	
all	13	51E509Y	Y-Branch; 1/2"	
all	14	02 03276	Mounting bracket	
all	15	02 03589O	Manifold; 10-port	
all	16	02 03589L	Manifold; 6-port	
all	17	60E010	Tubing; 1"	
all	18	27A090	Hose clamp; 1"	
all	19	51ET1AE01	Adapter	
all	20	5S1AP8A	Tee; 1"	
all	21	15G004HB	Nut; Clip; M6-1 GRIP 0.8-4MM	
all	22	15N110H	Bolt; Torx button headM6-1X25MM ZN	
all	23	5SP0KXFHS	Plug; 1/2"	
all	24	15K032	Bolt; Socket head button; 1/4-20X3/8	
all	25	15U181	Washer; Lock; 1/4"	
all	26	5SB0K0EBEO	Hexbush; 1/2X1/4	
all	27	5SL0EBEC	Street elbow; 1/4"	
all	28	51E507	Hose stem; 1/4MPX1/2HOSEID	
all	29	5SL1AP8A	Pipe fitting; Elbow; 1" ; 90; PVC	
all	30	5N1ACLSP82	Pipe fitting; Pipe nipple; 1"; CLS; PVC	

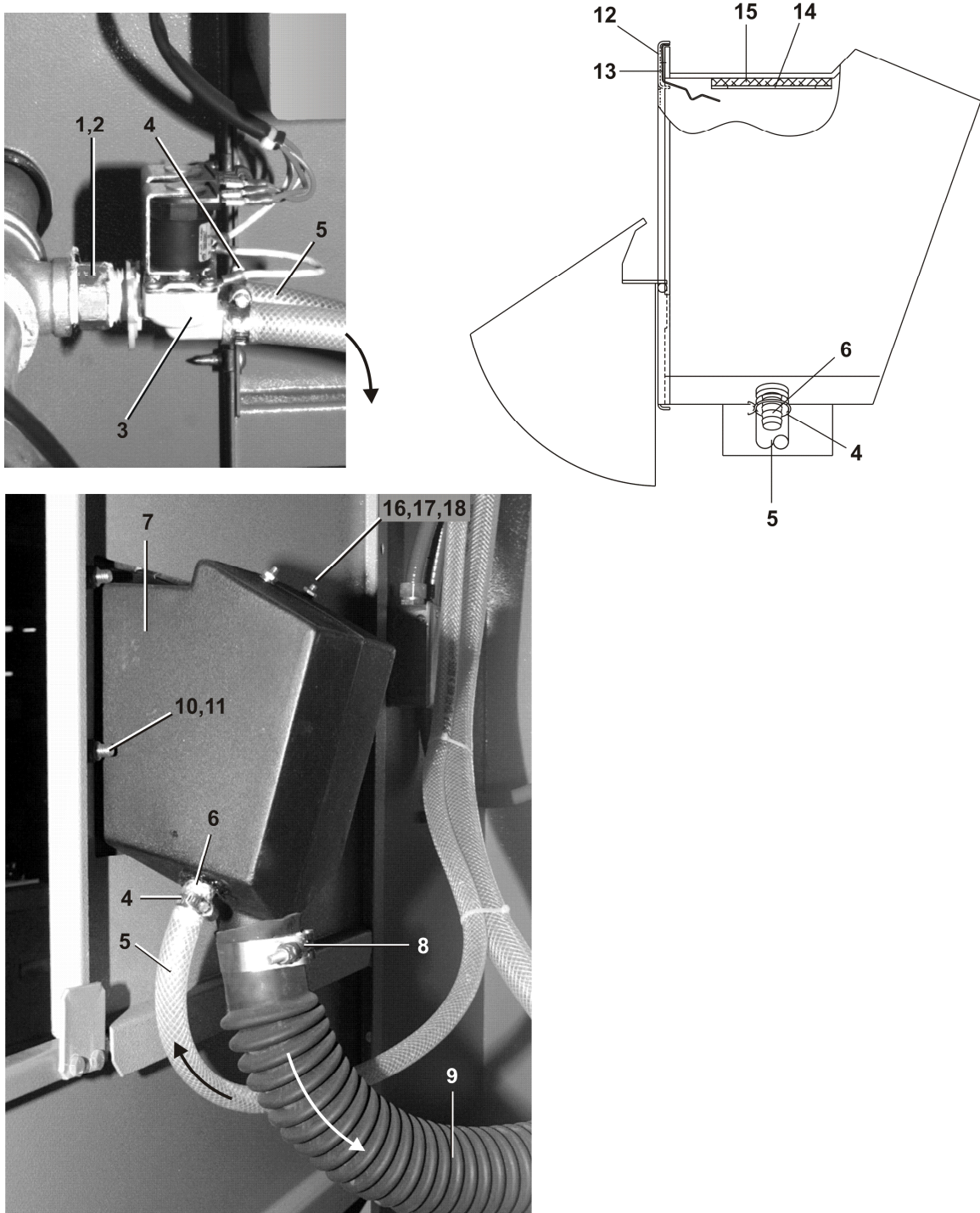
— End of BIIFLM29 —



BIIFLM27 (Published) Book specs- Dates: 20140321 / 20140321 / 20140321 Lang: ENG01 Applic: IFL IH4

## Soap Chute Components and Installation

Figure 1: Soap Chute Components and Installation



Soap Chute Components and Installation

**Table 1: Parts List—Soap Chute Components and Installation**

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	A	GWS48010A	Installation Group; Soap chute; 48040F_	48040F_
	B	GWS48020A	Installation Group; Soap chute; 48040H_	48040H_
Components				
all	1	51E513FG	Pipe Fitting; Hose adapter; 3/4"	
all	2	53A060HA	Washer; Hose adapter; 3/4"	
all	3	96P053D71	Valve; Solenoid, duo; 1/2"; Water; Electric	
all	4	27A040	Hoseclamp; Worm; 5/8	
all	5	60E006C	Tubing; Round; PVC; 0.75	
all	6	51BB0KN00B	Pipe Fitting; Barbed; Polypropylene; 1/2"	
all	7	AWS30211A	Assembly; Soap chute	
all	8	27A070	Hoseclamp; T-bolt	
all	9	02 03870A	Tubing; Flexible; Rubber 2.5" X 18"	
all	10	15K053	Bolt; Socket head button 5/16	
all	11	15G188	Nut; Hex; 5/16	
all	12	02 04215	Bezel; Soap chute	
all	13	02 04217	Latch; Soap chute	
all	14	02 04216	Chemical guard; Soap chute	
all	15	98A002AT	Abrasive pad; 6" X 9"	
all	16	15G105	Nut; Hex; 8; 32	
all	17	15N095	Bolt; Slot head button; 8; 32	
all	18	15U120B	Washer; Lock; 8	

— End of BIIFLM27 —

**10 Gallon Chemical Supply Tank  
4840H7N, H7W**

BMP090036/2012195B  
(Sheet 1 of 2)

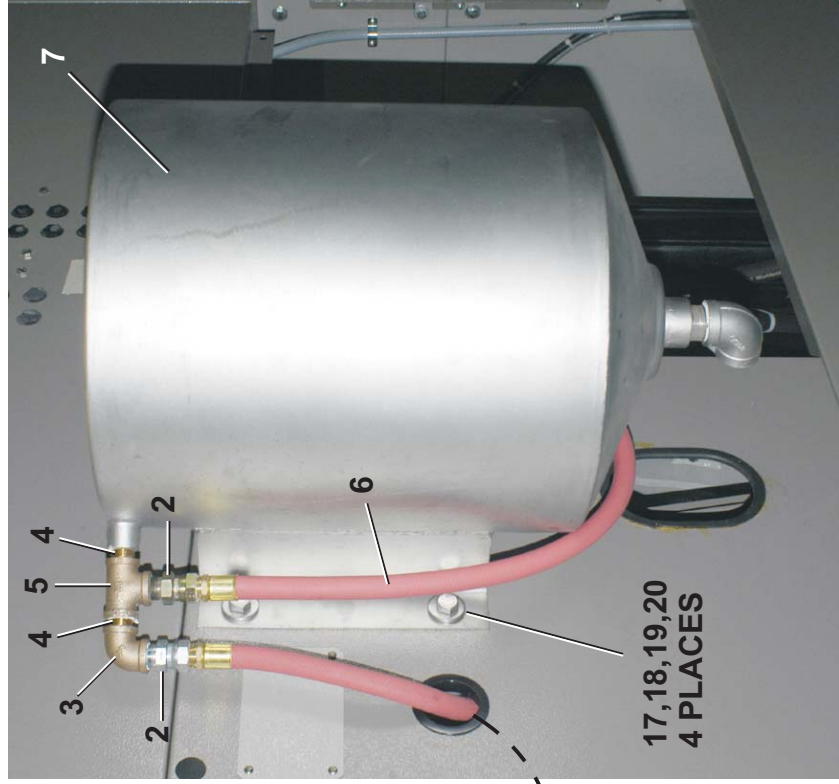


Pellerin Milnor Corporation  
P. O. Box 400, Kenner, LA 70063-0400

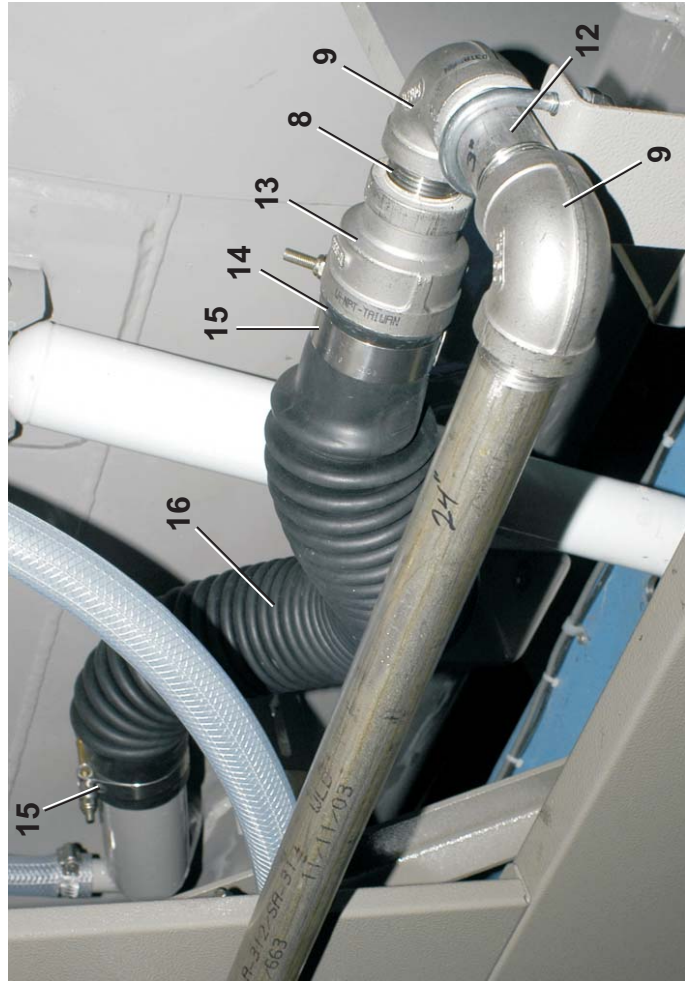
Litho in U.S.A.



For Soap Manifold  
See BIIFLM29



17,18,19,20  
4 PLACES





Pellerin Milnor Corporation  
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

**Parts List—10 Gallon Chemical Supply Tank**

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

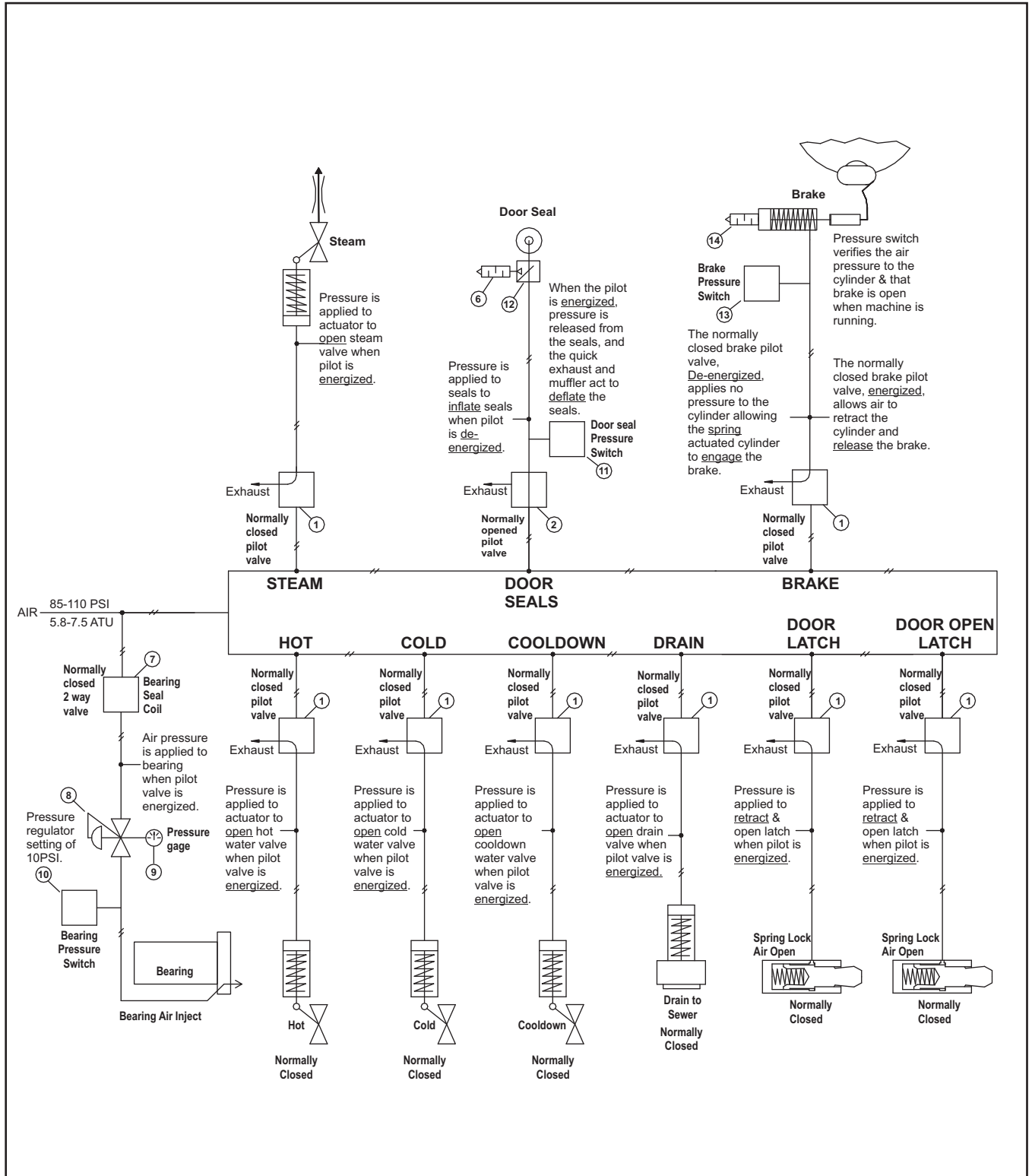
Used In	Item	Part Number	Description	Comments
-----ASSEMBLIES-----				
	A	GWD48001	INST=10GAL S/S TANK	
	B	AWS68001	ASSY=STD SOAP MANIFOLD 6836E	
-----COMPONENTS-----				
all	1	60E085C54A	HOSE ASSY=1/2" X 54"LG	
all	2	51X017	UNIONSTRADT 1/2"#1404-8-8	
all	3	5SL0KBEA	NPT ELB 90DEG 1/2 BRASS 125#	
all	4	5N0KCLSBE2	NPT NIP 1/2XCLS TBE BRASS STD	
all	5	5S0KBEA	NPT TEE 1/2" BRASS 125#	
all	6	60E085C36A	HOSE ASSY=1/2"X36"LG+ENDS	
all	7	W2 16190B	*GRAVITY DYE TK-15"OD+1"COULP	
all	8	5N1ACLSS42	NPT NIP 1XCLS TBE 304SS SK 40	
all	9	5SL1ASFA	NPT ELBOW 90DEG 1" 304SS 150#	
all	10	5N1A05AS42	NPT NIPPLE 1X5 TBE 304SS SK40	
all	11	5N1A24AS42	NPT NIPPLE 1X24 TBE 304SS SK40	
all	12	5N1A03AS42	NPT NIPPLE 1X3 TBE 304SS SK40	
all	13	5SR1K1ASF	NPT RED 1.5 X 1 S/S 304 150#	
all	14	5N1K03AS41	NPT NIP 1.5X3 TOE 304SS SK40	
all	15	27A070	T-BOLT HOSECLAMP 1.94"-2.25"	
all	16	02 03870E	FLEXTUBE=5COMP 2.5"ID X 2"ID X21"LG	
all	17	15K153	HXCAPSCR 1/2 -13 X 1 +1/4 SS	
all	18	15U285	FLATWASHER 1/2 STD COMM SS18-8	
all	19	15U310	LOKWASHER REGULAR 1/2 SS18-8	
all	20	15G225	HEXNUT 1/2-13UNC2 SS18-8	
all	21	02 22413	COSM=10 GAL TANK PANEL 4840F	

Pneumatic

8

# Pneumatic Schematic

4840H7N, 4840H7K



# Pneumatic Schematic

4840H7N, 4840H7K

## Parts List—Pneumatic Schematic

Find the correct assembly first, then find the needed components. The item letters (A, B, C, etc.) assigned to assemblies are referred to in the "Used In" column to identify which components belong to an assembly. The item numbers (1, 2, 3, etc.) assigned to components relate the parts list to the illustration.

Used In	Item	Part Number	Description	Comments
			-----ASSEMBLIES-----	
			-----COMPONENTS-----	
all	1	96R301B71	1/8" AIRPILOT 3W NC 240V50/60	
all	2	96R302B71	1/8" AIRPILOT 3W NO 240V50/60	
all	3	96J019E	1/4"PRESSREG3-60#AR20N02HZX406	
all	4	30N101	PRESSGAUGE 1/8"BACKCN.0-60PSI	
all	5	96N0012P	DBL.REM.VLV.3/8"4-WAY=CTR.OFF	
all	6	27A005	MUFFLER 3/8" BANTAM B38	
all	7	96TBC2BA37	1/4" N/C 2WAY 120V50/60C VALVE-ASCO#8262H022	
all	8	96J019G	1/4"FILTERREG 0-60PSI	
all	9	30N095	PRESSGAUGE 1/8"BACKCN.0-15PSI	
all	10	09N082B05	PRESSW NASON CLOSE @ 5 LB	
all	11	09N082B10	PRESSW NASON CLOSE FALLING AT 9PSI	
all	12	96M055	DELTROL QUICK EXHAUST VLV.1/4"	
all	13	09N082A	PRESSW NASON CLOSE @ 62 LB.	
all	14	27A005A	MUFFLER 1/4"ALLIED B-28 BANTAM	
all	15	96JH100	NEEDLE VLV.ELB.1/8"#NAS2200N01	
all	16	96TBC2AA00	1/4" N/C 2WAY AIR-OP VALVE (NO COIL)	
all	17	96DG030	CHECKVLV, 1/4"WATTS-SERIES 600	
all	18	53A016A	AIR RESTRICTER=STEAM CBW	

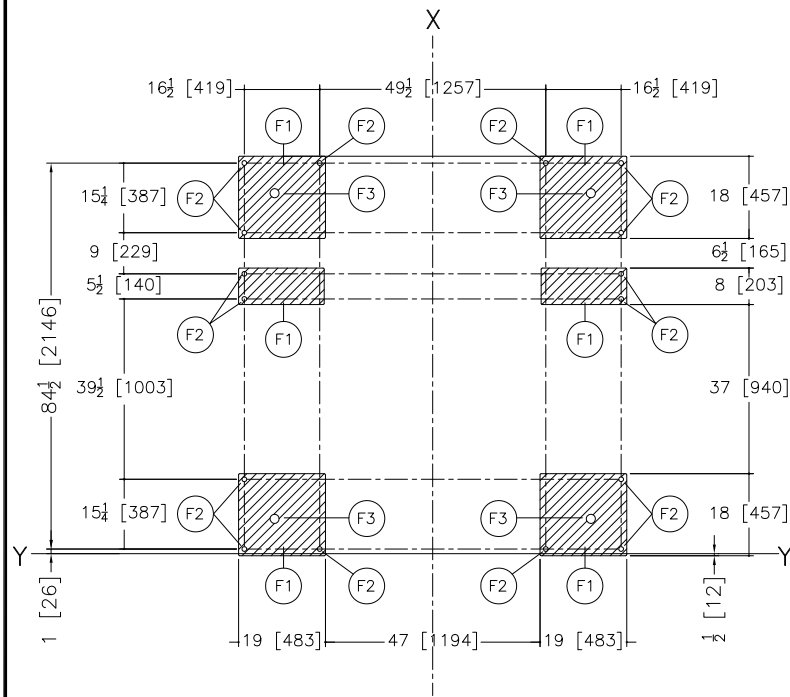




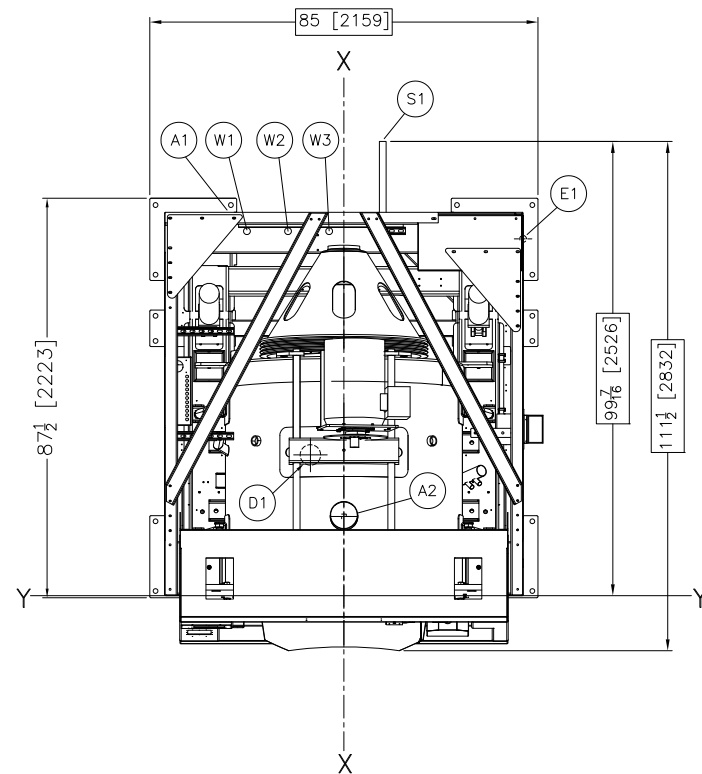
Dimensional

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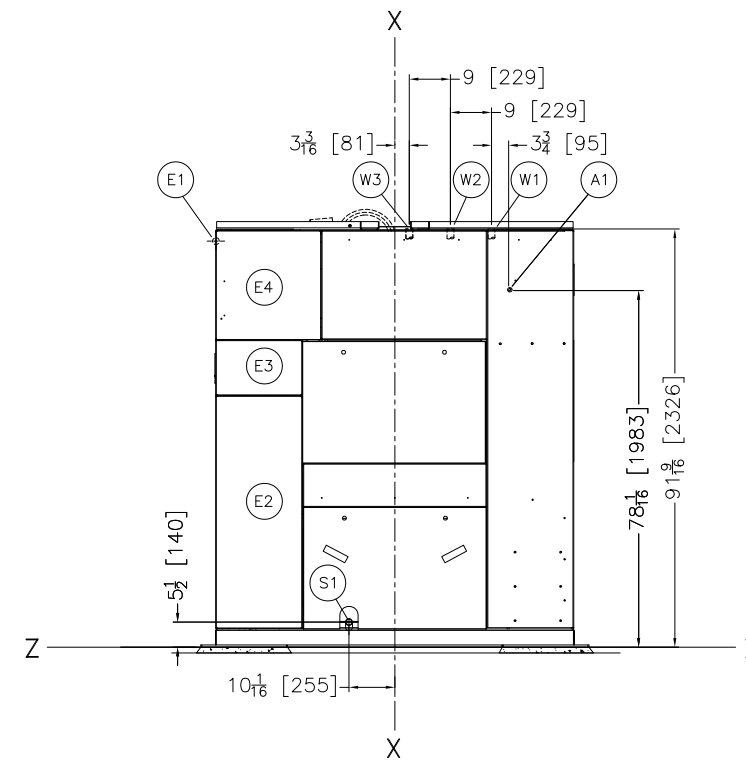




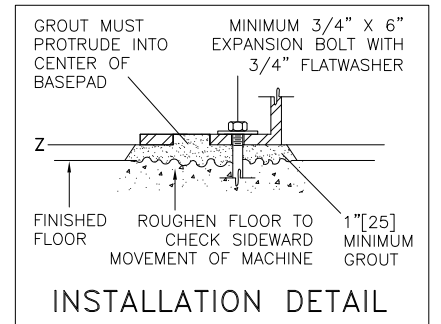
FOUNDATION VIEW



PLAN VIEW

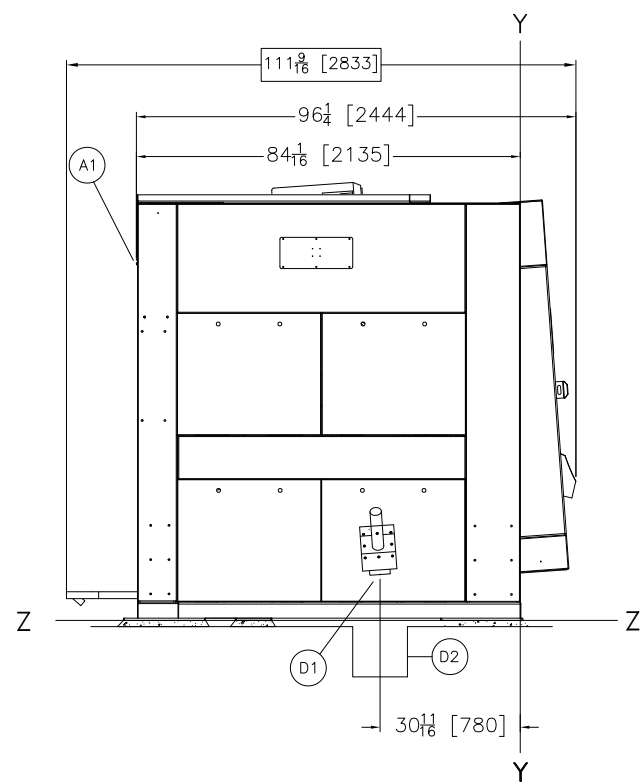


REAR VIEW

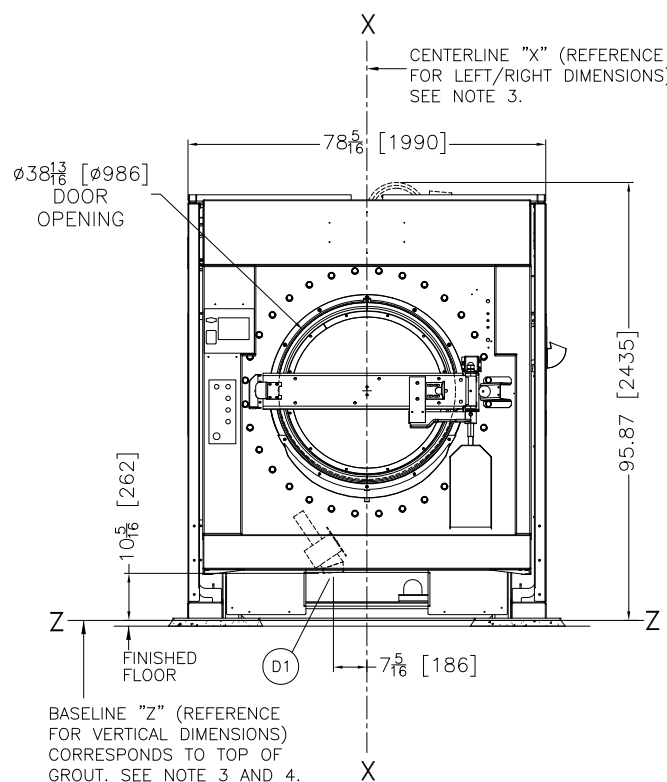


INSTALLATION DETAIL

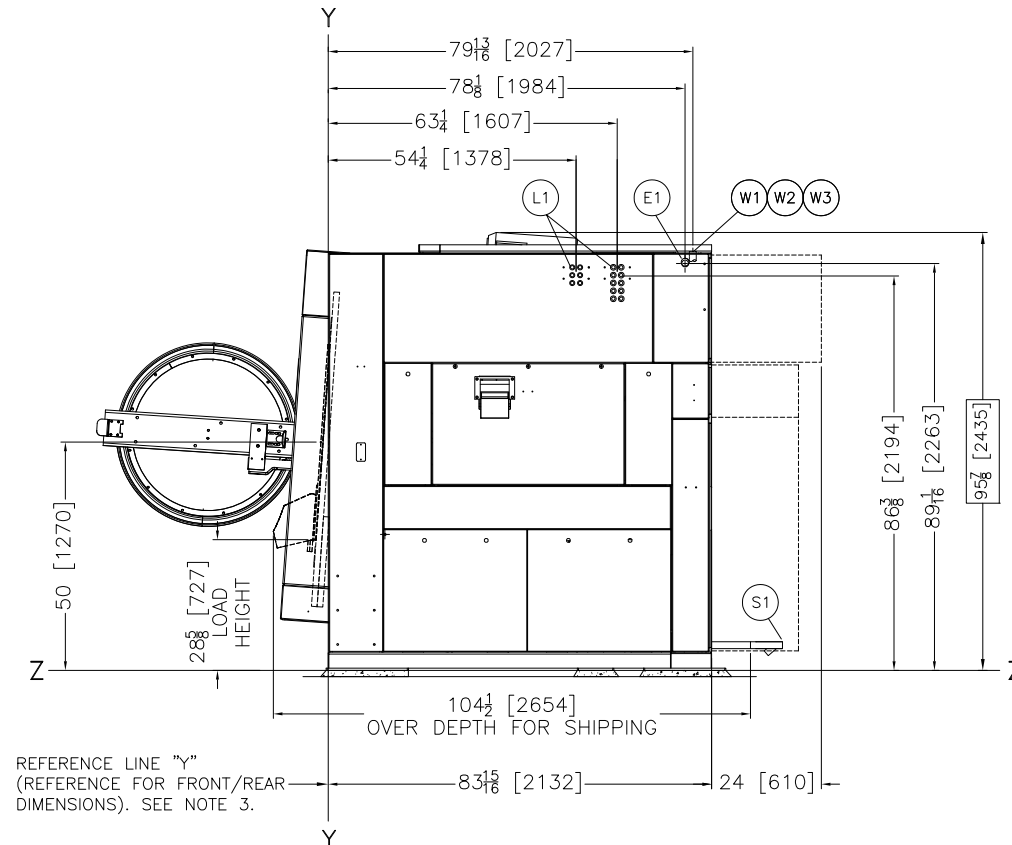
W3	OPTIONAL REUSE WATER CONNECTION, 1-1/2" NPT
W2	COLD WATER CONNECTION, 1-1/2" NPT
W1	HOT WATER CONNECTION, 1-1/2" NPT
S1	STEAM INLET, 1-1/4" NPT
L1	16 PORT LIQUID SUPPLY INLETS
F3	GROUT HOLES
F2	(16) 1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6" BOLTS MINIMUM. (1) BOLT PER PAD MINIMUM.
F1	BASEPADS, SEE NOTE 8.
E4	INVERTER BOX
E3	MICROPROCESSOR CONTROL BOX
E2	MAIN ELECTRICAL CONTROL BOX
E1	MAIN ELECTRICAL CONNECTION
D2	DRAIN TROUGH
D1	DRAIN TO SUMP 4-1/2"[114] DIA. OUTLET
A2	VENT, 4" DIAMETER
A1	MAIN AIR CONNECTION, 1/4" NPT
ITEM	LEGEND



LEFT VIEW



FRONT VIEW



RIGHT VIEW

**NOTES**

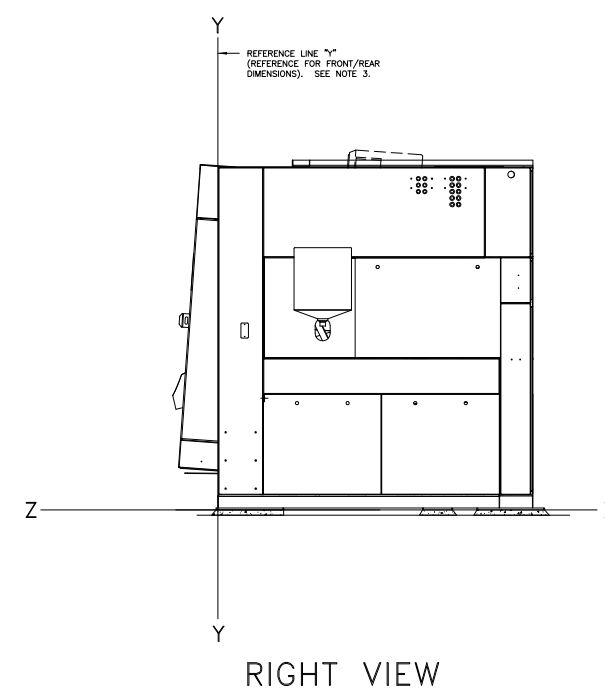
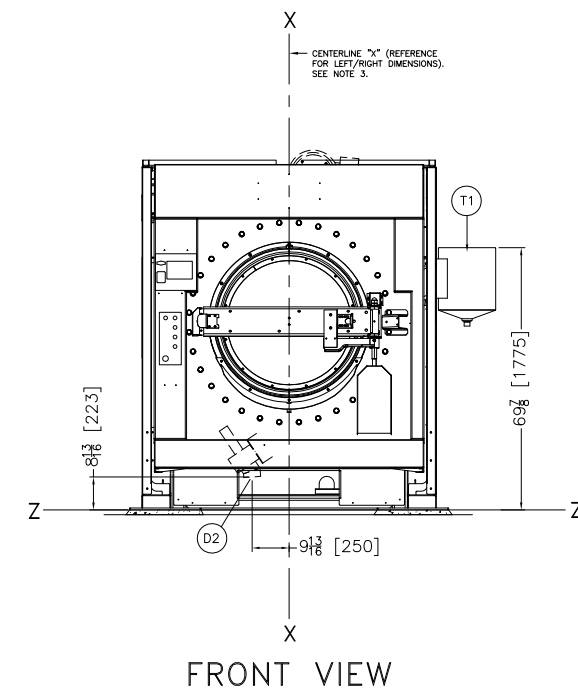
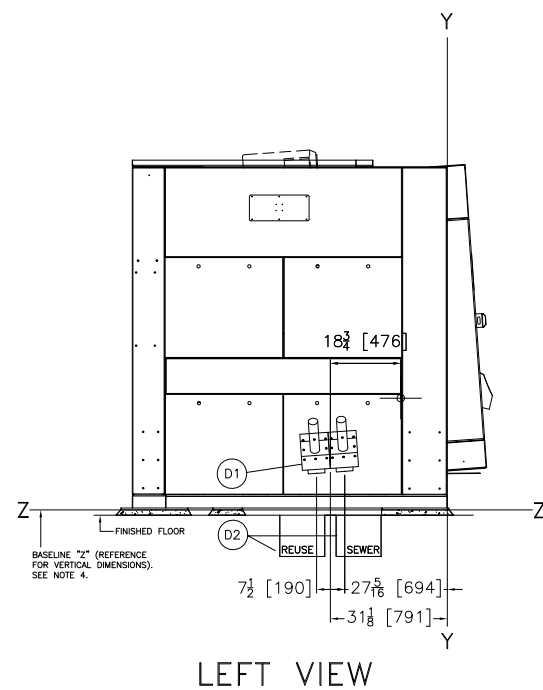
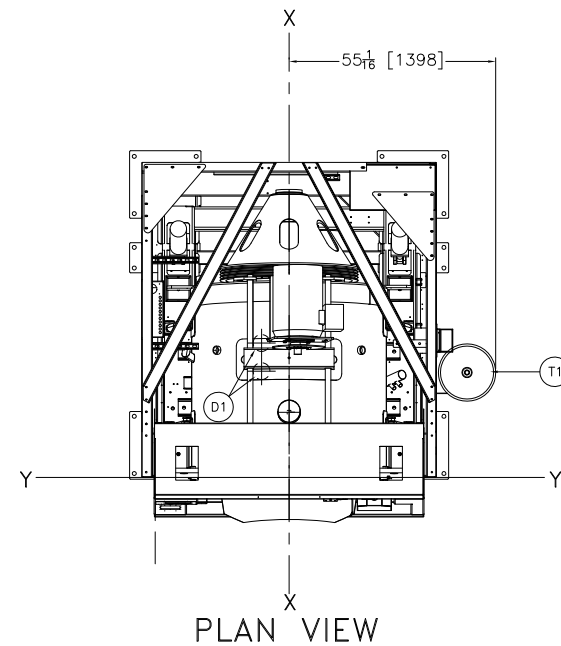
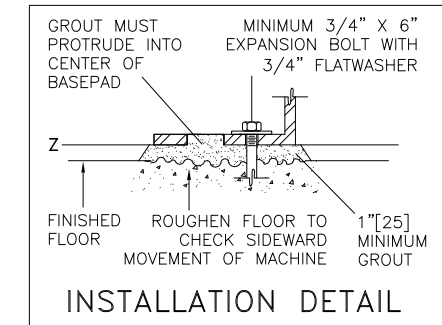
- SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR WITH ONE ANCHOR BOLT PER PAD, MINIMUM. USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.
- DRAIN VALVE MAY MOVE ± 1" [25] IN ANY DIRECTION DURING OPERATION AND MUST NOT BE RIGIDLY CONNECTED TO DRAIN.
- DUE TO VARYING WEIGHT OF MACHINE ON SPRINGS TOLERANCE IS ± 1/2 [13]. SEE DIMENSIONS WITH ASTERISK [\*] ATTACHED.
- SHADED AREA DENOTES BASE PADS WHICH MUST BE CONTINUOUSLY SUPPORTED.
- DO NOT PRE-PIPE ANY CLOSER THAN 60 [1524].
- AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
  - 36 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL.
  - 42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
  - 48 [1219] IF OBJECT IS ANY LIVE PART.
 CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.
- CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.
- BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS, ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVELING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1" [25] THICK GROUT BED.
- USE REFERENCE LINES "X", "Y", AND "Z" TO LOCATE ALL SERVICE CONNECTIONS.
- NUMBERS IN BRACKETS [ ] DENOTE DIMENSIONS IN MILLIMETERS.
- ALL DIMENSIONS SHOWN ARE APPROXIMATE, SUBJECT TO NORMAL MANUFACTURING TOLERANCES, AND TO OCCASIONAL CHANGES WITHOUT NOTICE THROUGH REDESIGN AND/OR RELOCATION OF COMPONENTS, ETC. DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED, AND IN NO EVENT PRE-PIPE CLOSER THAN FIVE FEET FROM MACHINE. FACTORY MUST BE CONSULTED FOR DIMENSIONS IF MACHINE IS TO BE MOVED THROUGH NARROW OR LOW CORRIDORS OR OPENINGS.

**ATTENTION**  
MOST REGULATORY AUTHORITIES (INCLUDING OSHA IN THE USA) HOLD THE OWNER/USER ULTIMATELY RESPONSIBLE TO MAINTAIN A SAFE WORKING ENVIRONMENT. ACCORDINGLY, THE OWNER/USER MUST RECOGNIZE ALL FORESEEABLE SAFETY HAZARDS, FURNISH SAFETY INSTRUCTIONS AND GUIDANCE TO ALL PERSONNEL WHO MAY COME IN CONTACT WITH THE INSTALLATION, AND PROVIDE ALL NECESSARY ADDITIONAL SAFETY GUARDS, FENCES, RESTRAINTS, DEVICES, ETC., NOT FURNISHED BY THE EQUIPMENT MANUFACTURER OR VENDOR.

**ATTENTION**  
THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS OPERATION. WRITE THE FACTORY FOR ADDITIONAL MACHINE DATA FOR USE BY A COMPETENT SOIL AND/OR STRUCTURAL ENGINEER.

4840H7R

DWG# BD4840H7RBE 2015055D  
**MILNOR** PELLERIN MILNOR CORPORATION  
 P.O. Box 400 Kenner, LA 70063, USA, Phone 504/467-9591, FAX 504/469-1849, Email: milnorinfo@milnor.com



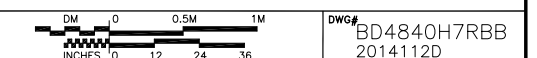
T1	OPTIONAL 10 GALLON CHEMICAL SUPPLY TANK
D2	DUAL DRAIN TROUGH
D1	OPTIONAL DUAL DRAINS (2) 4-1/2"[114] DIA. OUTLETS
ITEM	LEGEND

- NOTES**
- SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR WITH ONE ANCHOR BOLT PER PAD, MINIMUM. USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.
  - DRAIN VALVE MAY MOVE ± 1" [25] IN ANY DIRECTION DURING OPERATION AND MUST NOT BE RIGIDLY CONNECTED TO DRAIN.
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  - CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.
  - BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS. ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVERING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BOTTOM RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1"[25] THICK GROUT BED.
  - USE REFERENCE LINES "X", "Y", AND "Z" TO LOCATE ALL SERVICE CONNECTIONS.
  - NUMBERS IN BRACKETS [ ] DENOTE DIMENSIONS IN MILLIMETERS.
  - ALL DIMENSIONS SHOWN ARE APPROXIMATE, SUBJECT TO NORMAL MANUFACTURING TOLERANCES, AND TO OCCASIONAL CHANGES WITHOUT NOTICE THROUGH REDESIGN AND/OR RELOCATION OF COMPONENTS, ETC. DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED, AND IN NO EVENT PRE-PIPE CLOSER THAN FIVE FEET FROM MACHINE. FACTORY MUST BE CONSULTED FOR DIMENSIONS IF MACHINE IS TO BE MOVED THROUGH NARROW OR LOW CORRIDORS OR OPENINGS.

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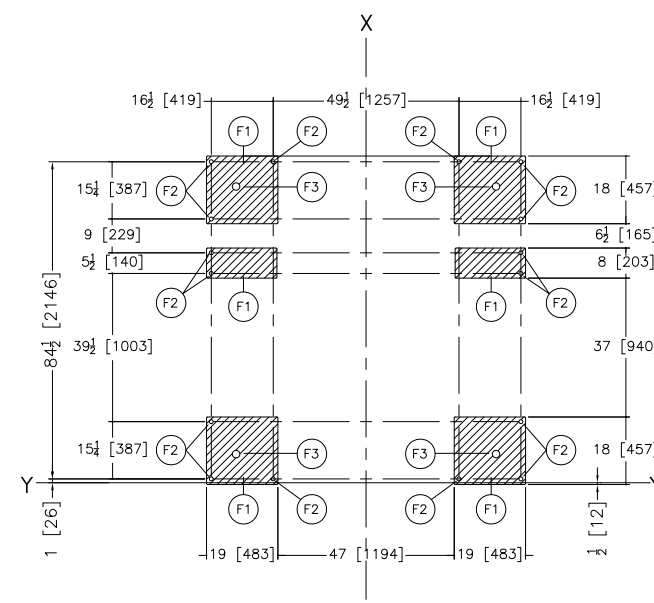
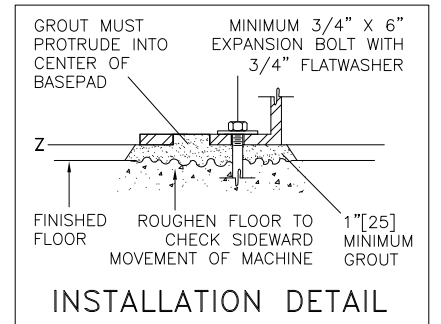
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**4840H7R OPTIONS**

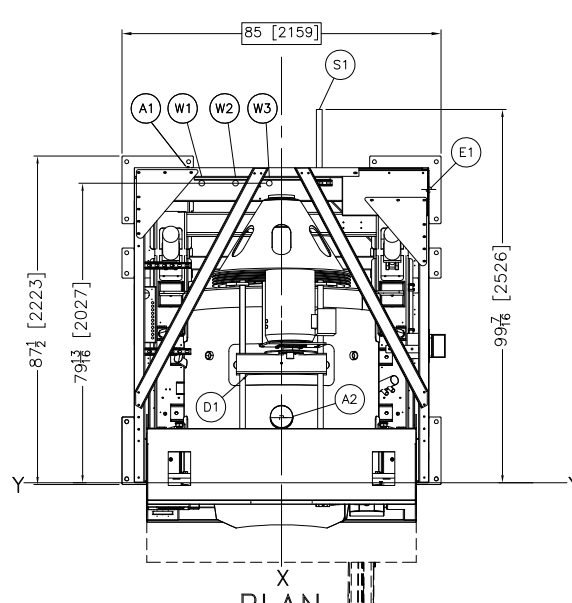


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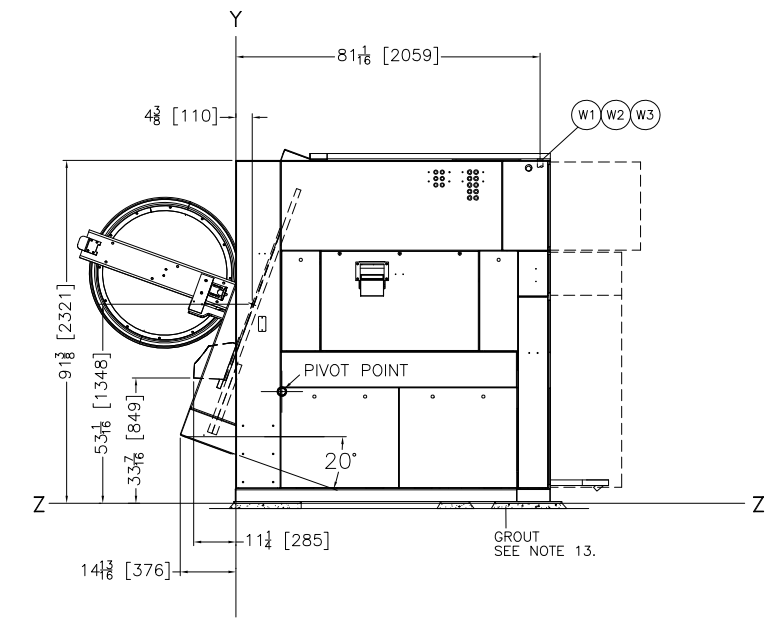




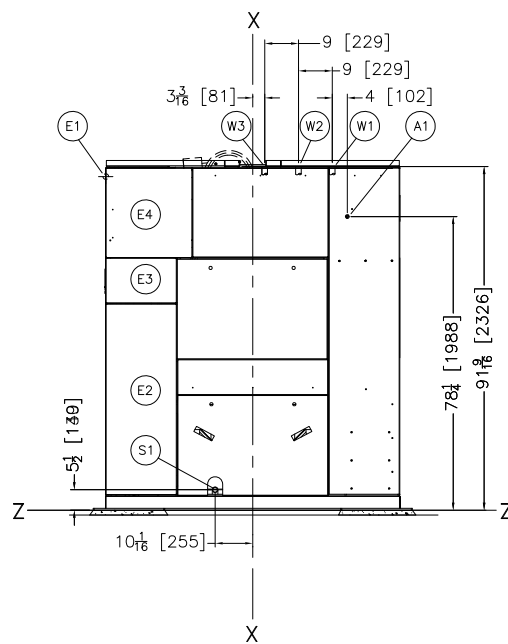
FOUNDATION VIEW



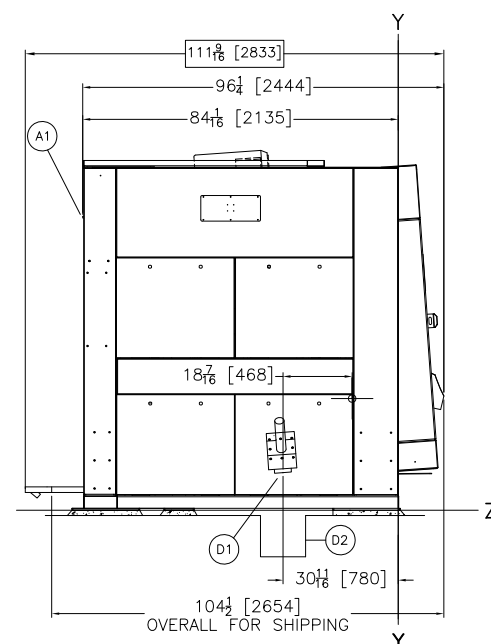
PLAN VIEW



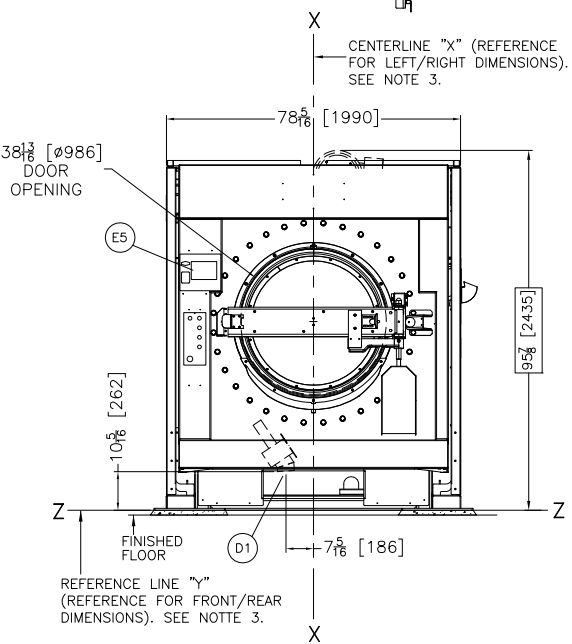
RIGHT VIEW (LOAD)



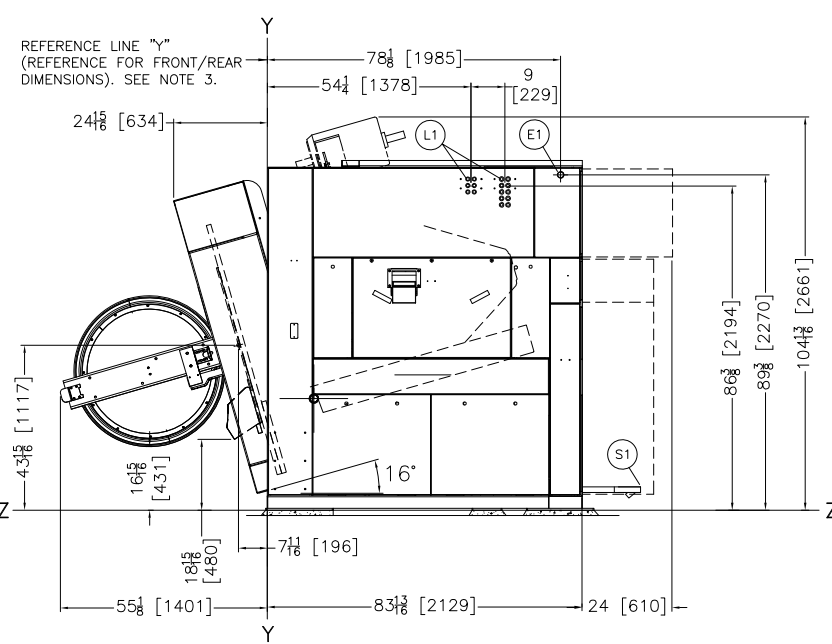
REAR VIEW



LEFT VIEW (WASH)



FRONT VIEW



RIGHT VIEW (UNLOAD)

ITEM	LEGEND
W3	OPTIONAL REUSE WATER CONNECTION, 1-1/2" NPT
W2	COLD WATER CONNECTION, 1-1/2" NPT
W1	HOT WATER CONNECTION, 1-1/2" NPT
S1	STEAM INLET, 1-1/4" NPT
L1	16 PORT LIQUID SUPPLY INLETS
F3	GROUT HOLES
F2	(16) 1-1/16" DIAMETER ANCHOR BOLT HOLES, USE 3/4" X 6" BOLTS MINIMUM. (1) BOLT PER PAD MINIMUM.
F1	BASEPADS, SEE NOTE 8.
E5	MitTouch-EX™ TOUCH SCREEN CONTROLLER
E4	INVERTER BOX
E3	MICROPROCESSOR CONTROL BOX
E2	MAIN ELECTRICAL CONTROL BOX
E1	MAIN ELECTRICAL CONNECTION
D2	DRAIN TROUGH
D1	DRAIN TO SUMP 4-1/2"[114] DIA. OUTLET
A2	VENT, 4" DIAMETER
A1	MAIN AIR CONNECTION, 1/4" NPT

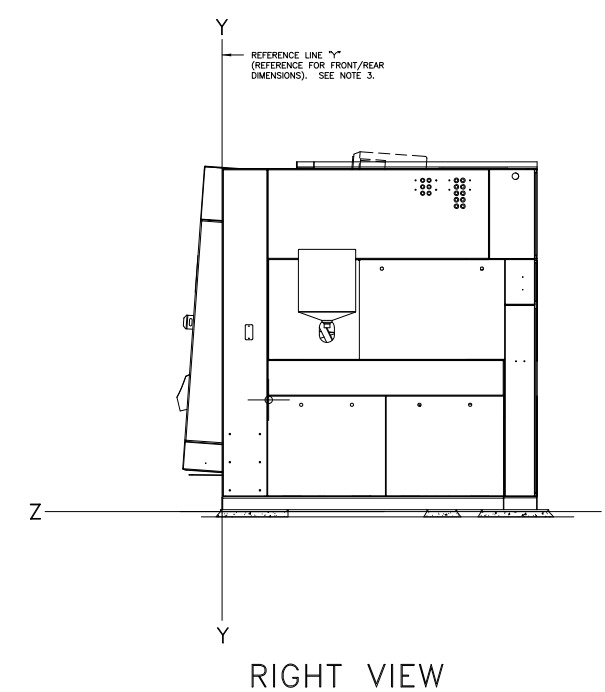
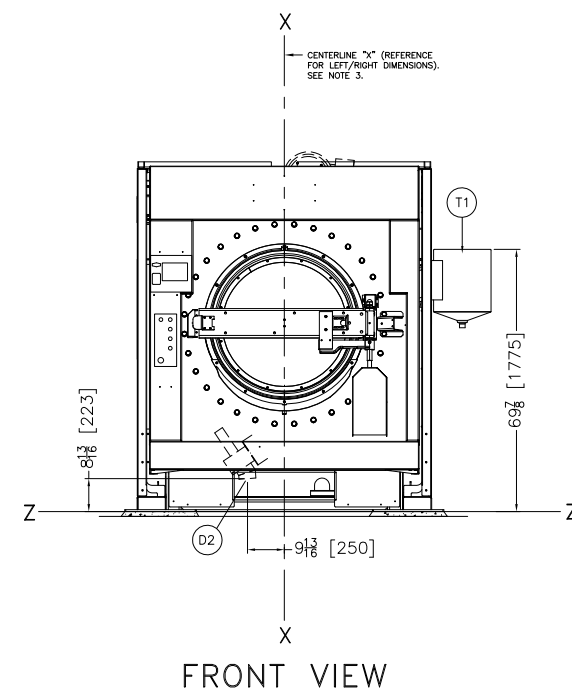
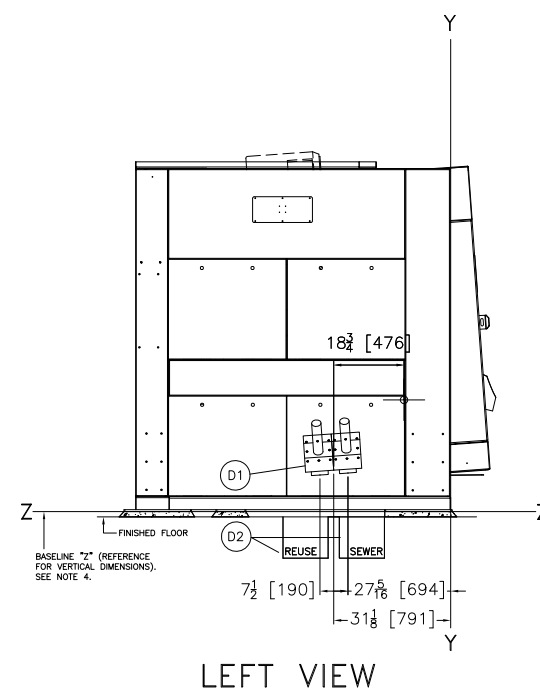
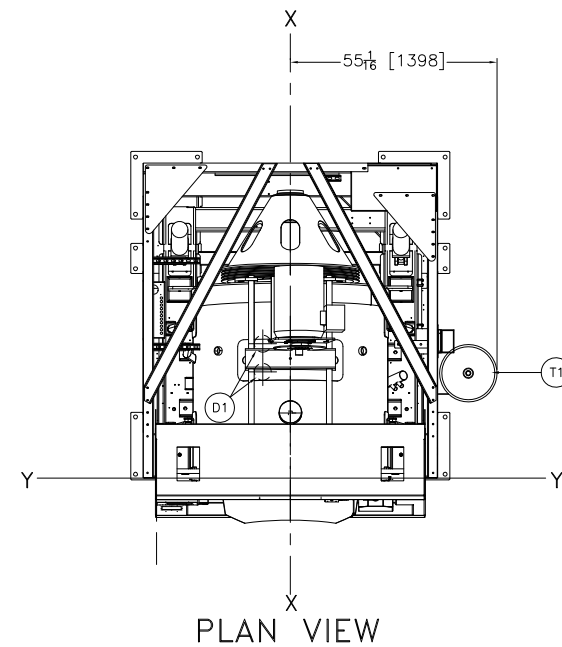
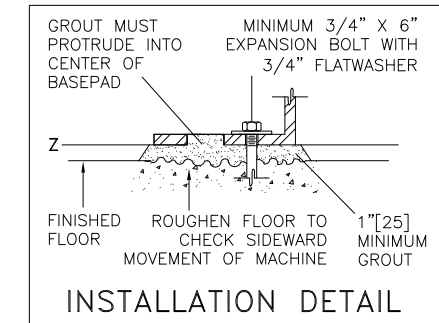
- NOTES**
- SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT ANCHOR WITH ONE ANCHOR BOLT PER PAD, MINIMUM. USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.
  - DRAIN VALVE MAY MOVE ± 1" [25] IN ANY DIRECTION DURING OPERATION AND MUST NOT BE RIGIDLY CONNECTED TO DRAIN.
  - DUE TO VARYING WEIGHT OF MACHINE ON SPRINGS TOLERANCE IS ± 1/2 [13]. SEE DIMENSIONS WITH ASTERISK [\*] ATTACHED.
  - SHADED AREA DENOTES BASE PADS WHICH MUST BE CONTINUOUSLY SUPPORTED.
  - DO NOT PRE-PIPE ANY CLOSER THAN 60 [1524].
  - AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
    - 36 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL
    - 42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
    - 48 [1219] IF OBJECT IS ANY LIVE PART.
 CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.
  - CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.
  - BASELINE "Z" IS THE REFERENCE FOR ALL VERTICAL DIMENSIONS, ON MACHINES WITH FIXED BASE PADS, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE BASE PAD. ON MACHINES WITH ADJUSTABLE FEET, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE FEET WHEN ADJUSTED SO THAT THE MACHINE IS AT ITS MINIMUM ACCEPTABLE HEIGHT. ON TRAVELING SHUTTLES, BASELINE "Z" CORRESPONDS TO THE BOTTOM OF THE RAIL. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR WILL VARY AS REQUIRED TO ENSURE BASELINE "Z" IS HORIZONTAL AND ANY INTERFACING MACHINES REQUIRING GROUT ARE SET ON A MINIMUM 1[25] THICK GROUT BED.
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4840H7K HYDRAULIC TILT



DWG# BD4840H7KBE 2015055D

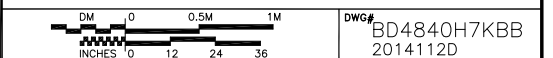




T1	OPTIONAL 10 GALLON CHEMICAL SUPPLY TANK
D2	DUAL DRAIN TROUGH
D1	OPTIONAL DUAL DRAINS (2) 4-1/2" [114] DIA. OUTLETS
ITEM	LEGEND

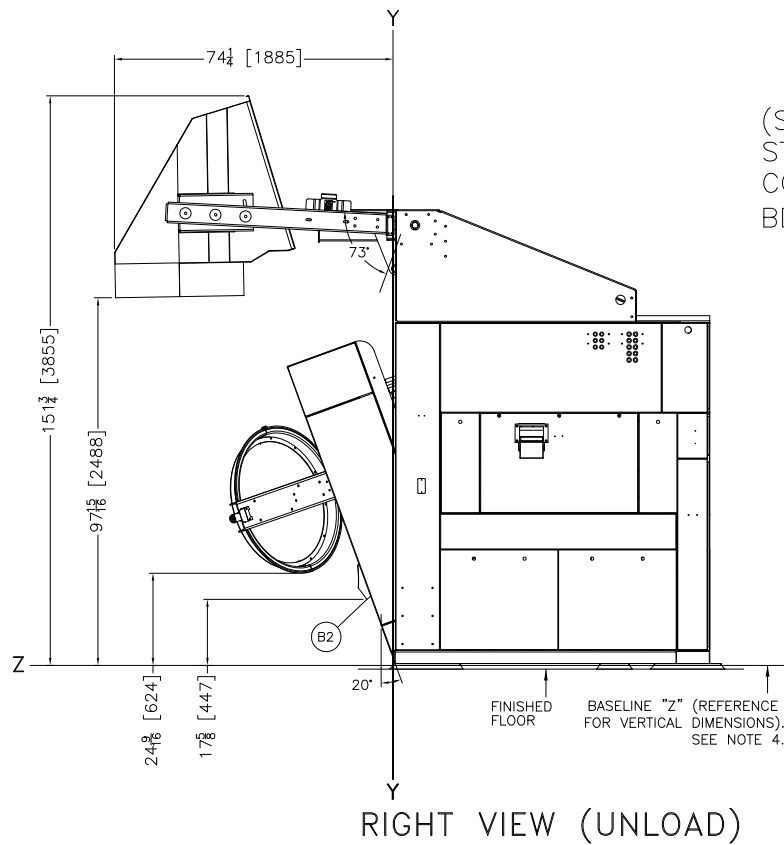
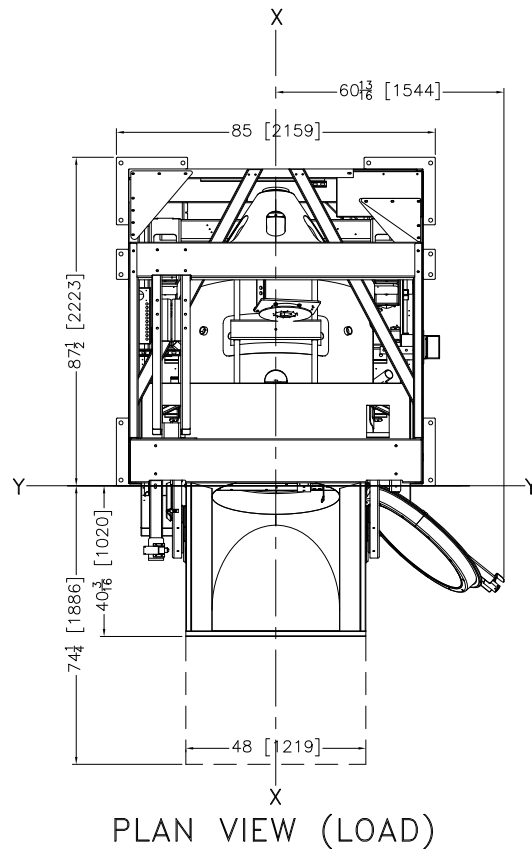
- NOTES**
- SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR WITH ONE ANCHOR BOLT PER PAD, MINIMUM USE 3/4" X 6" BOLTS, MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.
  - DRAIN VALVE MAY MOVE ± 1" [25] IN ANY DIRECTION DURING OPERATION AND MUST NOT BE RIGIDLY CONNECTED TO DRAIN.
  - DUE TO VARYING WEIGHT OF MACHINE ON SPRINGS TOLERANCE IS ± 1/2 [13]. SEE DIMENSIONS WITH ASTERISK [\*] ATTACHED.
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OPTIONS 4840H7K

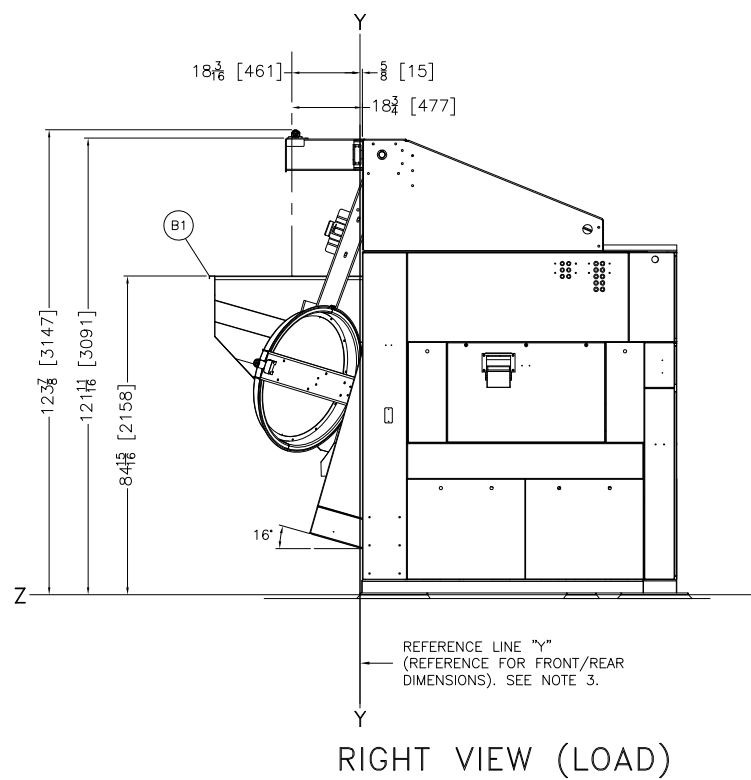
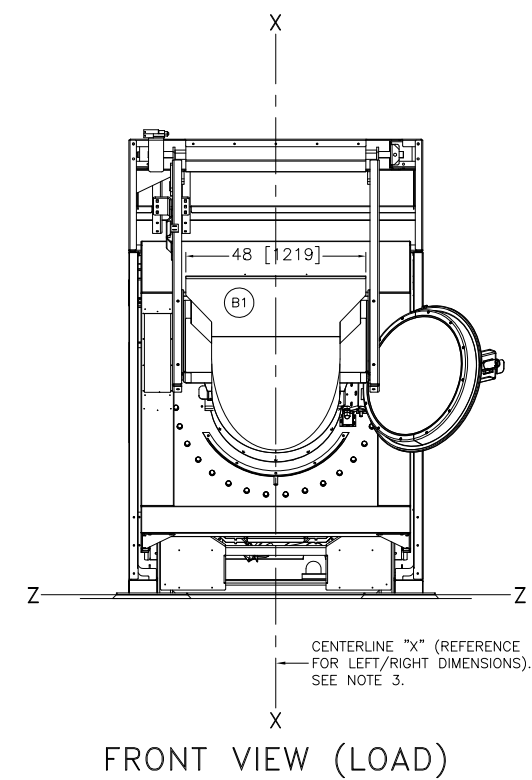


DWG# BD4840H7KBB  
2014112D

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 FAX 504/469-1849, Email: milnorinfo@milnor.com



(SEE BD4840H7KBE FOR STANDARD DIMENSIONS AND CONNECTIONS. SEE BD4840H7KBB FOR OPTIONS.)



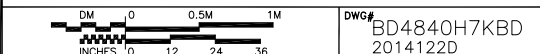
B2	UNLOAD CHUTE
B1	DRYELL LOADING CHUTE
ITEM	LEGEND

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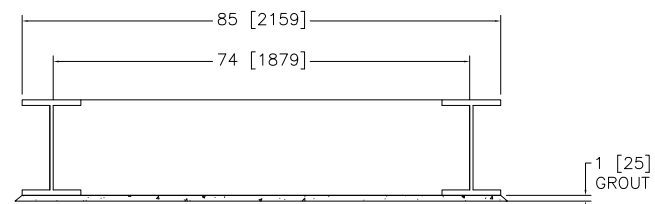
4840H7K WITH DRYELL



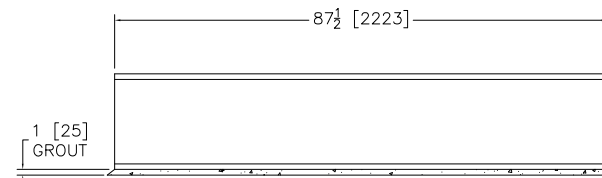
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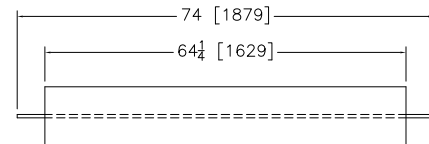




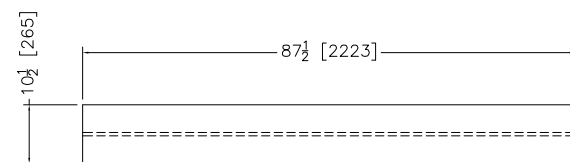
A-A



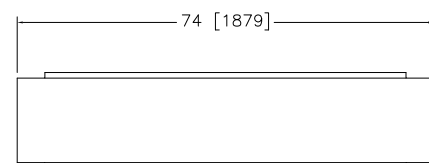
B-B



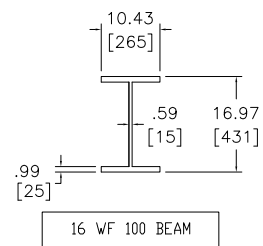
P1: PLAN



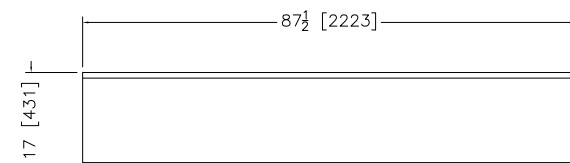
P2: PLAN



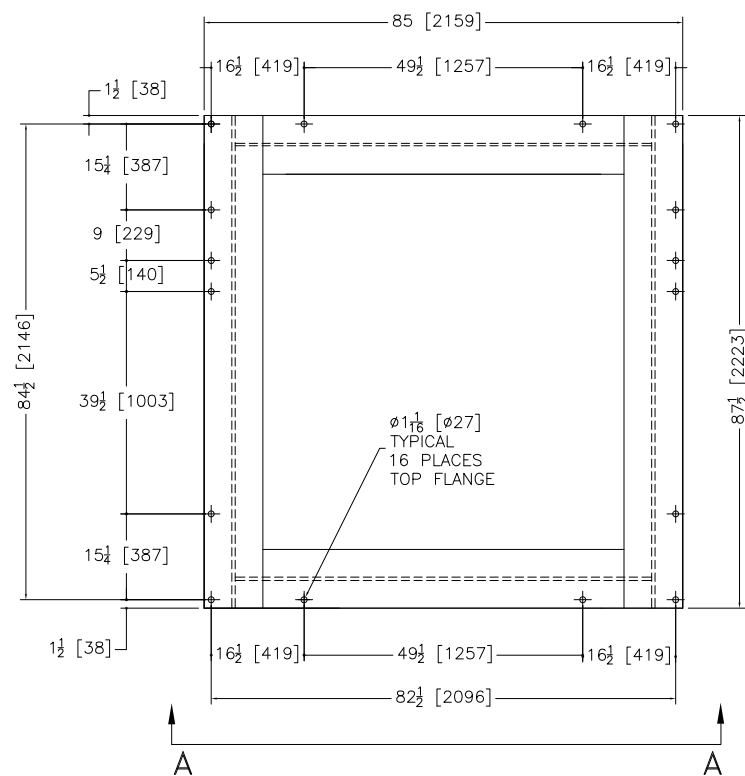
P1: ELEVATION



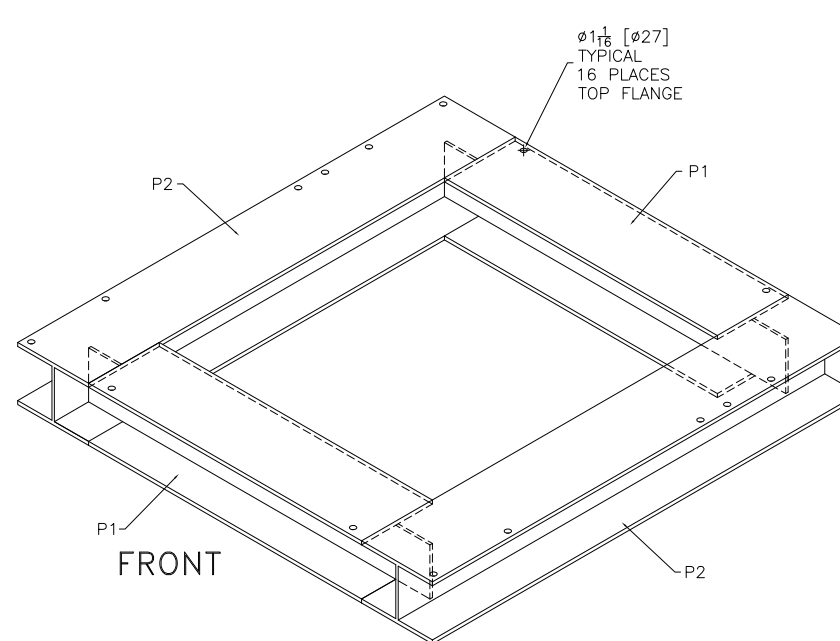
16 WF 100 BEAM



P2: ELEVATION



PLAN: TOP FLANGE TO MACHINE



THIS PEDESTAL DESIGN IS RECOMMENDED FOR THE 4840H7N WITH DRYELL INTERFACING WITH A CF4014MS SHUTTLE, NEEDING 17" IN ADDITIONAL HEIGHT. SEE NOTE 2.

- NOTES**
- THIS DRAWING SHOWS THE PEDESTAL DESIGN FOR MILNOR 4840H7N NON-TILT & 4840H7N HYDRAULIC TILTING MACHINES. THIS BASE MAY BE USED WHENEVER LOCAL CONDITIONS ARE SUCH THAT MACHINE OPERATION WOULD BE ENHANCED BY RAISING THE MACHINE SETTING 17 [431] INCHES.
  - IF MACHINE IS TO BE BOLTED TO PEDESTAL BASE, BOLT HOLES IN PEDESTAL TOP FLANGE SHOULD BE LOCATED AND DRILLED ONLY AFTER MACHINE IS ON SITE AND CAN BE USED AS A TEMPLATE FOR BOLT HOLE LOCATIONS. IF BASE IS TO BE BOLTED TO FOUNDATION, CUSTOMER MUST DETERMINE LOCATION OF BOLT HOLES IN BOTTOM FLANGE.
  - WHEN INSTALLING MACHINE AND PEDESTAL BASE, IT IS RECOMMENDED TO LAY THE PEDESTAL ON A MINIMUM 1 [25] THICK GROUT BED AND BOLT THE MACHINE TO IT. ALTERNATELY, THE MACHINE MAY BE WELDED TO THE BASE, PROVIDED IT IS SHIMMED AS REQUIRED TO INSURE THERE IS NO DISTORTION OF THE MACHINE BASE PLATES OR FRAME.
  - THIS BASE MUST BE FABRICATED LOCALLY AND SHOULD BE MADE SQUARE AND LEVEL. IT IS NOT SUPPLIED BY PELLERIN MILNOR CORP. THIS DRAWING CONVEYS NO EXPRESS OR IMPLIED WARRANTY WITH REGARD TO THE CONSTRUCTION AND/OR SUITABILITY OF THIS ASSEMBLY.
  - NUMBERS IN BRACKETS [ ] DENOTE DIMENSIONS IN MILLIMETERS.
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PEDESTAL BASE 4840H7N,H7K -17"

DM 0 0.5M 1M DWG# BD4840H7DBSA 2014122D

INCHES 0 12 24 36

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