



Manual Number: MCWCEA01
Edition (ECN): 2024236

Installation, Parts, and Service

MWR36J4, MCR36E4



2.2 Vital Information About the Forces Imparted to Supporting Structures by Laundering Machines	34
2.2.1 Disclaimer of Responsibility	35
2.2.2 Major Design Considerations	35
2.2.3 Primary Information Sources	36
2.3 Prevent Damage from Chemical Supplies and Chemical Systems	36
2.3.1 How Chemical Supplies Can Cause Damage.....	37
• Dangerous Chemical Supplies and Wash Formulas.....	37
• Incorrect Configuration or Connection of Equipment	37
2.3.2 Equipment and Procedures That Can Prevent Damage.....	39
• Use the chemical manifold supplied.	39
• Close the line.....	40
• Do not let a vacuum occur.....	40
• Flush the chemical tube with water.....	40
• Put the chemical tube fully below the inlet.....	40
• Prevent leaks.	40
3 Installation Procedures	41
3.1 Handling a Washer-extractor from Delivery to Final Location	41
3.1.1 Notices.....	41
• Qualified Personnel Only.....	41
• Disclaimer	41
• Other Tasks	41
3.1.2 Facility Prerequisites	42
3.1.3 Rigger Precautions.....	42
3.1.4 Technician Precautions.....	44
• Can the Door(s) Be Opened Before Utilities are Connected?	46
3.2 Connection Precautions for Washer-extractors	46
3.2.1 Notices.....	47
• Machine Must Be Anchored	47
3.2.2 Utility Requirements and Related Information	47
3.2.3 Plumber Precautions.....	48
3.2.4 Electrician Precautions	49
3.2.5 Chemical Supplier Precautions.....	50
3.3 Servicing the Door to Open it with Power Off or with a Malfunctioning Door Lock	51
3.3.1 Disassembly	51
3.3.1.1 Removing the Handle and Opening the Door	51
3.3.1.2 Removing the Door Latch Shaft from the Door Lock Mechanism	54
3.3.2 Reinstalling the Shaft and Door Handle.....	54
4 Drive Assemblies.....	57
Drive Chart MCR36E4, MWR36J4	58
Motor Mount MCR36E4, MWR36J4.....	59
Bearing Installation MCR36E4, MWR36J4.....	60
5 Shell and Door Assemblies	62
Door Assembly and Installation MCR36E4, MWR36J4	64
Door Lock Mechanisms MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6Z	68

Door Handle and Lock Actuator	71
6 Chemical Supply	74
Soap Chute MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4	75
7 Water and Drain.....	78
Water Inlets MCR27E5, MWR27E/X/J5, MCR36E4, MWR36J4, MCT27E5, MWT27E/X/J5	80
Drain Valve Installation MCR36E4, MWR36J4	82
8 Control and Sensing	83
8.1 Vibration Safety Switch Adjustments	83
8.1.1 What the Vibration Safety Switch Does	83
8.1.2 Adjustments.....	83
Vibration Safety Switch MCR27E5, MWR27E/X/J5, MCT27E5, MWT27E/X/J5, MCR36E4, MWR36E4.....	85
Level Switch MCR27E5	86
Coin Acceptor and Vault MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4	88
9 Dimensional Drawing.....	90
BDMWR36JAE/2023246D — MCR36E4, MWR36J4	91
BDMWR36JAB/2023262D — MCR36E4, MWR37J4 Options	92

Figures

Figure 1	The Bolts in Milnor® Equipment.....	25
Figure 2	Apply Threadlocker in a Blind Hole.....	31
Figure 3	Apply Threadlocker in a Through Hole.....	32
Figure 4	Use heat for disassembly of fasteners with threadlocker.....	32
Figure 5	How Rotating Forces Act On the Foundation	36
Figure 6	Incorrect Configurations That Let the Chemical Supply Go In the Ma- chine by a Siphon.....	38
Figure 7	Incorrect Configurations That Let the Chemical Supply Go In the Ma- chine by Gravity.....	39
Figure 8	Examples of Manifolds for Chemical Tubes. Your equipment can look different.....	39
Figure 9	A Configuration that Prevents Flow in the Machine When the Pump is Off (if the chemical tube and tank have no pressure)	40
Figure 10	Door Handle Spoke Set Screw.....	52
Figure 11	Handle Spoke Spring and Ball.....	52
Figure 12	Front Retaining Clip and Thrust Washer	53
Figure 13	Rear Flange Bearing (being removed) and Retaining Clip (arrow).....	53
Figure 14	Return Spring After Separation from Shaft Cam.....	53
Figure 15	Door Lock Slider Pin in the Door Lock Mechanism.....	54
Figure 16	Removing the Shaft from the Lock Mechanism.....	54
Figure 17	Shaft in the 9 o'clock Position Showing Spring Retaining Hole	55
Figure 18	Shaft with Return Spring Installed.....	55
Figure 19	Inserting Ball and Spring in Handle Spoke	56
Figure 20	Adjusting Set Screw.....	56
Figure 21	Door Handle and Lock Actuator.....	71
Figure 22	Shim Adjustment Steps.....	72
Figure 23	Vibration Switch	84

Tables

Table 1	Trademarks	8
Table 2	Parts List—Safety Placard Use and Placement MCR12E5, MCR16E5, MCR18E4, MCR27E5, MCT12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4	21
Table 3	Parts List—Safety Placard Use and Placement MWR12E5, MWR16E5, MWR18E4, MWR18X4, MWR18J4, MWR27E5, MWR36J4, MWT12E5, MWT16E5, MWT18E4, MWT18X4, MWT18J4, MWT27E5	23
Table 4	Parts List—Guards and Covers MCR36E4, MWR36J4.....	24
Table 5	Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant	25
Table 6	Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant	26
Table 7	Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant	26
Table 8	Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant	27
Table 9	Threadlocker by the Diameter of the Bolt (see below Note)	27
Table 10	Torque Values if You Apply LocTite 222	28
Table 11	Torque Values if You Apply LocTite 242	28
Table 12	Torque Values if You Apply LocTite 262	28
Table 13	Torque Values if You Apply LocTite 272 (High-Temperature)	28
Table 14	Torque Values if You Apply LocTite 277	29
Table 15	Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller	29
Table 16	Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch	30
Table 17	Parts List—Drive Chart MCR36E4, MWR36J4	58
Table 18	Parts List—Motor Mount MCR36E4, MWR36J4.....	59
Table 19	Parts List—Bearing Installation MCR36E4, MWR36J4.....	61
Table 20	Parts List—Door Assembly and Installation MCR36E4, MWR36J4	66
Table 21	Parts List—Door Lock Mechanisms MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ; 3022X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6Z	70
Table 22	Parts List—Door Handle and Lock Actuator	73
Table 23	Parts List—Soap Chute MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4	77
Table 24	Parts List—Water Inlets MCR27E5, MWR27E/X/J5, MCR36E4, MWR36J4, MCT27E5, MWT27E/X/J5.....	81
Table 25	Parts List—Drain Valve Installation MCR36E4, MWR36J4	82
Table 26	Effect of Tripping Vibration Safety Switch	83
Table 27	Parts List—Vibration Safety Switch MCR27E5, MWR27E/X/J5, MCT27E5, MWT27E/X/J5, MCR36E4, MWR36E4.....	85
Table 28	Parts List—Level Switch MCR27E5.....	86
Table 29	Parts List—Coin Acceptor and Vault MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4.....	89

1 General Service and Safety Related Components



Important Safety Instructions

INSTALLERS / OWNER

GROUNDING INSTRUCTIONS: This appliance must be connected to a grounded metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

GENERAL INSTRUCTIONS:

- 1) Before the appliance is removed from service or discarded, remove the door.
- 2) Do not install or store this appliance where it will be exposed to the weather.
- 3) Do not repair or replace any part of the appliance or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published User-repair instructions that you understand and have the skills to carry out.

OWNER / OPERATOR

WARNING: To reduce the risk of fire, electric shock, or injury to persons when using your appliance, all users must follow basic precautions, including the following:

- 1) Read all instructions before using the appliance.
- 2) Do not allow children to play on or in the appliance. Close supervision of children is Necessary when the appliance is used near children.
- 3) Do not reach into the appliance if the tub or agitator is moving.
- 4) Do not tamper with controls.

**This envelope contains the user guides.
SAVE THESE INSTRUCTIONS**

BMP720097 / 19036

BRUUUM01.1 0000229985 A.3 D.6 12/5/19, 11:43 AM Released

PELLERIN MILNOR CORPORATION LIMITED STANDARD WARRANTY

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

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

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

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

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

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

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

BMP720097/19036

1.1 How to Get the Necessary Repair Components

BNUUUM01.C01 0000250120 A.3 B.3 1/2/20, 2:14 PM Released

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

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

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

To write to the Milnor® factory:

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

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

1.2 Trademarks

BNUUUU02.R01 0000158093 A.3 G.2 F.2 7/20/23, 10:57 AM Released

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

Table 1. Trademarks

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

Table 1 Trademarks (cont'd.)

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

BNWRUS08 / 2019335

BNWRUS08 0000249979 B.3 1/2/20, 2:19 PM Released

1.3 Safety — Rigid Washer Extractors

BNWRUS08.C01 0000249978 A.3 B.3 1/2/20, 2:19 PM Released

1.3.1 Safety Alert Messages—Internal Electrical and Mechanical Hazards

BNWRUS01.C03 0000234538 A.3 B.3 A.6 1/2/20, 2:19 PM Released

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



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

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



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

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

1.3.2 Safety Alert Messages—Cylinder and Processing Hazards

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

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



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

- ▶ Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- ▶ Do not touch goods inside or hanging partially outside the turning cylinder.
- ▶ Do not operate the machine with a malfunctioning door interlock.
- ▶ Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.
- ▶ Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.



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

- ▶ Do not attempt to open the door or reach into the cylinder until the cylinder is stopped.
- ▶ Do not place any object in the turning cylinder.
- ▶ Do not operate the machine with a malfunctioning door interlock.



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

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



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

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

1.3.3 Safety Alert Messages—Unsafe Conditions

BNWRUS04.C01 0000234585 A.3 B.3 1/2/20, 2:19 PM Released

1.3.3.1 Damage and Malfunction Hazards

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

1.3.3.1.1 Hazards Resulting from Inoperative Safety Devices

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



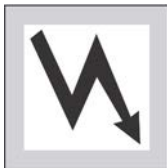
DANGER: Entangle and Sever Hazards — Cylinder door interlock— Operating the machine with a malfunctioning door interlock can permit opening the door when the cylinder is turning and/or starting the cycle with the door open, exposing the turning cylinder.

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



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

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



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

- ▶ Do not unlock or open electric box doors.



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

- ▶ Do not remove guards, covers, or panels.

1.3.3.1.2 Hazards Resulting from Damaged Mechanical Devices

BNWRUS04.C04 0000234652 A.3 B.3 B.2 1/2/20, 2:19 PM Released



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

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



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

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



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

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

1.3.3.2 Careless Use Hazards

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

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

BNWRUS04.C06 0000234650 A.3 B.3 1/2/20, 2:19 PM Released

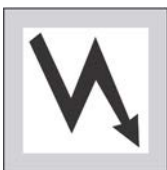


WARNING: Multiple Hazards — Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

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

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

BNWRUS04.C07 0000234649 A.3 B.3 1/2/20, 2:19 PM Released



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

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

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



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

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



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

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

BNWCAI01 / 2022376

BNWCAI01 0000204676 C.2 9/9/22, 3:16 PM Released

1.4 Installation Tag Guidelines

BNWCAI01.R01 0000204675 A.3 C.2 9/9/22, 3:16 PM Released

MCR12E5
MCT18E4

MCR36E4
MCT27E5

MCT16E5



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

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

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

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, commissioning, and servicing the machine are also available from the Milnor Parts department.



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



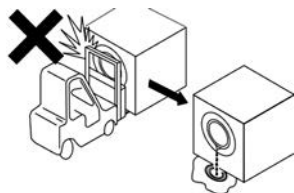
B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies. (Not used on MCT models.)



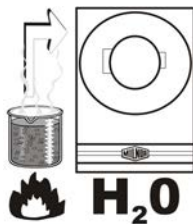
B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine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



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



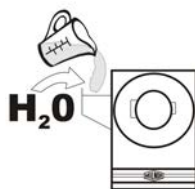
B2TAG94099: Do not strike the shell door when fork-lifting. This can cause the door to leak.



B2T2001013: Hot water connection.



B2T2001014: Cold water connection.



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



B2T2006001: Remove restraints inside. Your machine requires either one or two anchor bolts on each corner of the base, as shown. (Not used on MCR36E4.)



B2T2006002: Remove this restraint from the vibration switch.



B2T2008007: Do not exceed 160° Fahrenheit (71° Celsius) water temperature. Excessive temperature can damage the water valves in this machine. Eliminate water hammer on the water lines to this machine. Water hammer can rupture the water inlet valves on this machine. Follow applicable codes when installing water hammer arresters. Maintain incoming water pressure between 10 and 75 psi (between 0.7 and 5.1 bar). Pressures outside this range can damage the water valves in this machine.



B2T2018004: Install 8 anchor bolts. Remove vibration switch restraint. (Only used on MCR36E4.)

BNWCAI02 / 2022376

BNWCAI02 0000204672 C.3 9/9/22, 3:30 PM Released

1.5 Installation Tag Guidelines

BNWCAI02.R01 0000204671 A.3 C.3 9/9/22, 3:30 PM Released

MWF18J8	MWR12J5	MWR12X5	MWR36J4
MWT12E5	MWT12J5	MWT12X5	MWT16E5
MWT16J5	MWT16X5	MWT18E4	MWT18J6
MWT18X4	MWT27E5	MWT27J5	MWT27X5



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

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

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

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, commissioning, and servicing the machine are also available from the Milnor Parts department.



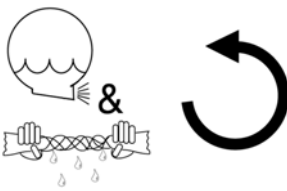
B2TAG88005: This carefully built product was tested and inspected to meet Milnor performance and quality standards by (identification mark of tester).



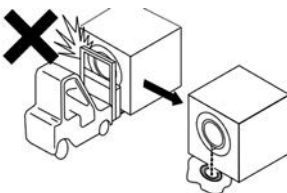
B2TAG94078: Do not forklift here; do not jack here; do not step here—whichever applies. (Not used on MWT models.)



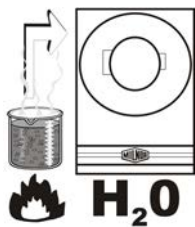
B2TAG94081: Motor must rotate in this direction. On single motor washer-extractors and centrifugal extractors, the drive motor must turn in this direction during draining and extraction. This tag is usually wrapped around a motor housing. If the motor turns in the opposite direction when the machine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



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



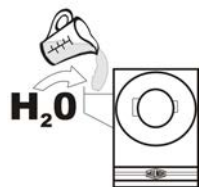
B2TAG94099: Do not strike the shell door when fork-lifting. This can cause the door to leak.



B2T2001013: Hot water connection.



B2T2001014: Cold water connection.



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



B2T2004027: Steam connection. (Optional) (Not used on MWT18_ models.)



B2T2006001: Remove restraints inside. Your machine requires either one or two anchor bolts on each corner of the base, as shown. (Not used on MWR36J4.)



B2T2006002: Remove this restraint from the vibration switch.



B2T2008007: Do not exceed 160° Fahrenheit (71° Celsius) water temperature. Excessive temperature can damage the water valves in this machine. Eliminate water hammer on the water lines to this machine. Water hammer can rupture the water inlet valves on this machine. Follow applicable codes when installing water hammer arresters. Maintain incoming water pressure between 10 and 75 psi (between 0.7 and 5.1 bar). Pressures outside this range can damage the water valves in this machine.



B2T2018004: Install 8 anchor bolts. Remove vibration switch restraint. (Used only on MWR36J4.)

This page intentionally blank

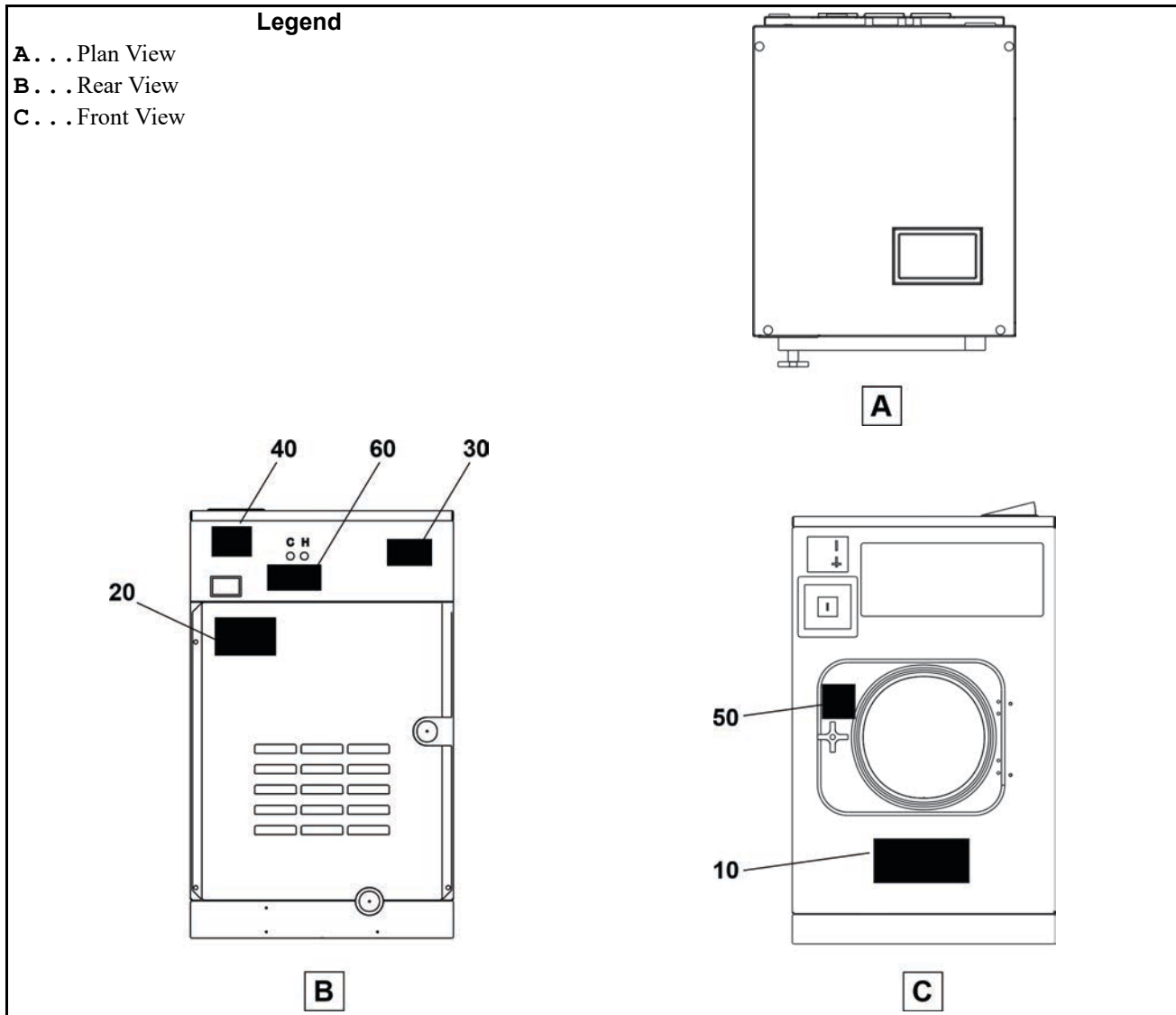
Safety Placard Use and Placement

2 Sheets

MCR12E5, MCR16E5, MCR18E4, MCR27E5, MCT12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4



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



Safety Placard Use and Placement

2 Sheets

MCR12E5, MCR16E5, MCR18E4, MCR27E5, MCT12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4

Table 2. Parts List—Safety Placard Use and Placement

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	10	01 10707B	NPLT:WARNING FRT SHELL MW COIN	
all	20	01 10708B	NPLT:REAR WARNINGS MW COIN	
all	30	01 10375D	NPLT:ELEC HAZARD MW-TCATA	
all	40	01 10092E	NPLT:SPEC PLT-MD IN CHINA-ENG	MCR12, 16, 18 MCT12, 16, 18
all	40	01 10093E	NPLT:SPEC PLT+CODE-ENGLISH	MCR27, MCT27
all	50	01 10709B	NPLT:DOOR ILOC INST MW COIN	MCR36E4
all	60	01 10710A	NPLT:CAUTION CHEMICAL SYSTEM	

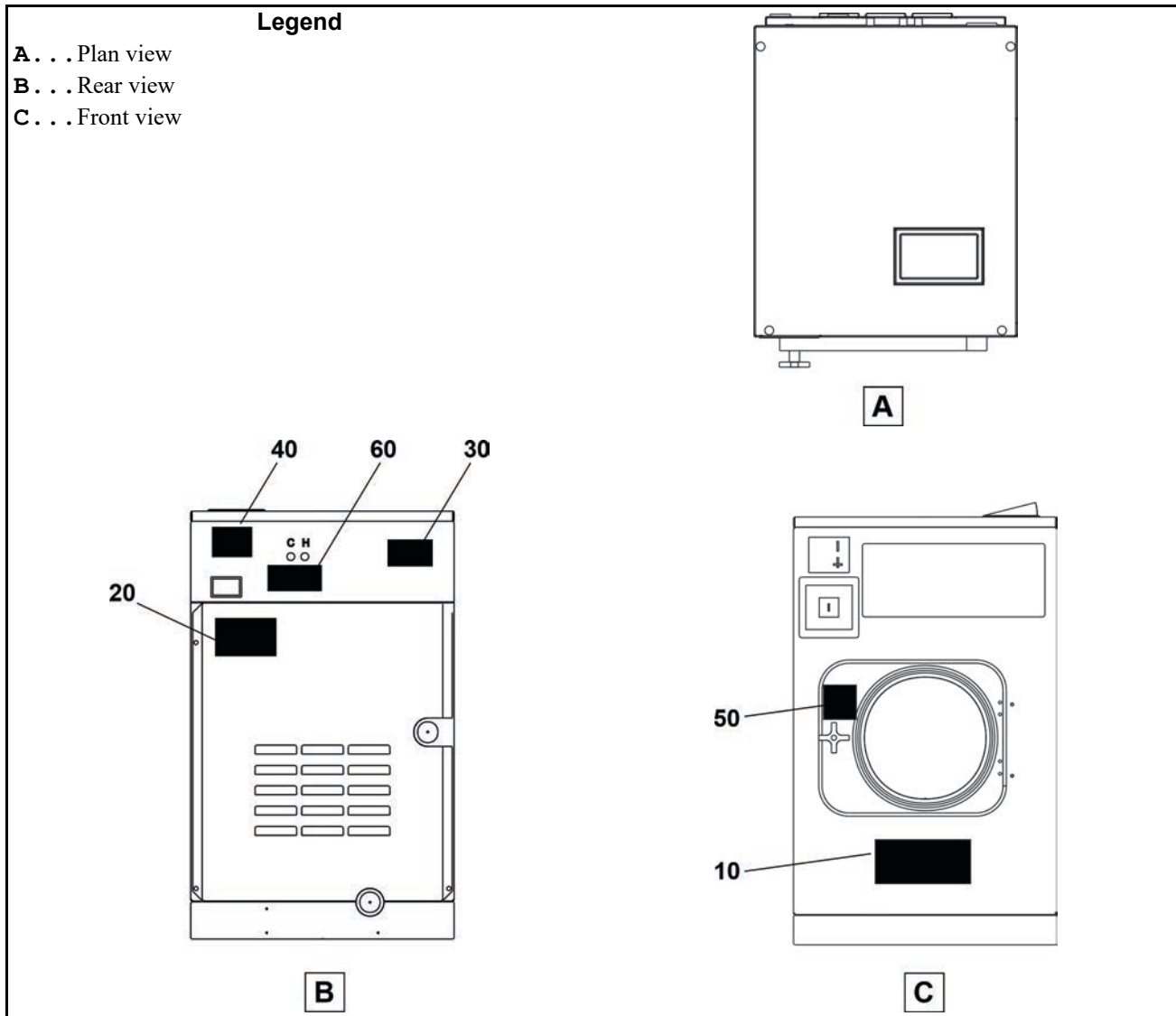
Safety Placard Use and Placement

2 Sheets

MWR12E5, MWR16E5, MWR18E4, MWR18X4, MWR18J4, MWR27E5, MWR36J4, MWT12E5, MWT16E5, MWT18E4, MWT18X4, MWT18J4, MWT27E5



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



Safety Placard Use and Placement

2 Sheets

MWR12E5, MWR16E5, MWR18E4, MWR18X4, MWR18J4, MWR27E5, MWR36J4, MWT12E5, MWT16E5, MWT18E4, MWT18X4, MWT18J4, MWT27E5

Table 3. Parts List—Safety Placard Use and Placement

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	10	01 10707B	NPLT:WARNING FRT SHELL MW COIN	
all	20	01 10708B	NPLT:REAR WARNINGS MW COIN	
all	30	01 10375D	NPLT:ELEC HAZARD MW-TCATA	
all	40	01 10092E	NPLT:SPEC PLT-MD IN CHINA-ENG	MWR12, 16, 18 MWT12, 16, 18
all	40	01 10093E	NPLT:SPEC PLT+CODE-ENGLISH	MWR27, MWT27 MWR36J4
all	50	01 10709B	NPLT:DOOR ILOC INST MW COIN	
all	60	01 10710A	NPLT:CAUTION CHEMICAL SYSTEM	

Guards and Covers

MCR36E4, MWR36J4



Table 4. Parts List—Guards and Covers

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

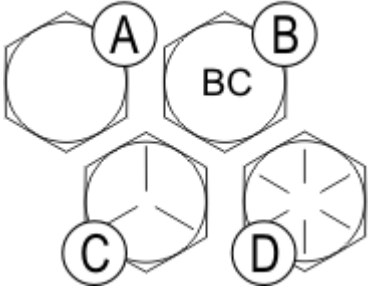
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	03 41301E	CABINET FRONT MCR36	
all	1	03 41301D	CABINET FRONT MWR36E6	
all	1	03 41301C	CABINET FRONT MWR36J/X6	
all	2	03 41303B	PANEL SIDE PAINTED MCR36	
all	3	03 41304C	CABINET TOP MCR36	
all	4	03 41305	CABINET REAR VAL MT MCR36	
all	5	03 CF5X5A	COVER:MCR POWER/CHEM TERMINAL	
all	6	03 41306B	CABINET BACK MCR36	
all	7	15N110H	RDWASHHD TORXBOLT M6-1X25MM ZN	
all	8	15G004HB	EXTRUNUT M6-1 GRIP 0.8-4MM	
all	9	03 41302B	LOWER FRONT COVER MCR36	
all	10	15K120M	HXCAPSCREW M8X40 8.8 FULTH	
all	11	17N070M	CAGE NUT M8 1.8-3.2MM THK	

1.6 Torque Requirements for Fasteners

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

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

Figure 1. The Bolts in Milnor® Equipment

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

1.6.1 Torque Values

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

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



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

1.6.1.1 Fasteners Made of Carbon Steel

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

1.6.1.1.1 Without a Threadlocker

BNUUUN02.C04 0000222447 A.3 B.3 1/2/20, 2:14 PM Released

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

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

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

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

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

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

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

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

1.6.1.1.2 With a Threadlocker

BNUUUN02.C05 0000222446 A.3 B.3 1/2/20, 2:14 PM Released

Table 9. Threadlocker by the Diameter of the Bolt (see below Note)

LocTite Product	Dimension			
	1/4-inch	1/4- to 5/8-inch	5/8- to 7/8-inch	1-inch +
LocTite 222	OK			
LocTite 242		OK		
LocTite 262			OK	
LocTite 272			High temperature	
LocTite 277				OK



NOTE: The acceptable bolt size ranges for various LocTite® threadlocking products is the LocTite manufacturer’s **general** recommendation. Specific applications sometime require that a LocTite product is applied to a bolt size outside the ranges shown here. For example, Milnor® specifies LocTite 242 for use on certain 1" bolt applications and has confirmed this usage with the LocTite manufacturer. You may see variances such as this in the documentation for specific machine assemblies.

Table 10. Torque Values if You Apply LocTite 222

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

Table 11. Torque Values if You Apply LocTite 242

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

Table 12. Torque Values if You Apply LocTite 262

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

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

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

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

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

Table 14. Torque Values if You Apply LocTite 277

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
1 x 8	325	441	837	1135	1181	1601	1034	1402
1 x 12	356	483	916	1242	1293	1753	–	–
1 x 14	365	495	939	1273	1326	1798	–	–
1-1/8 x 7	461	625	1032	1399	1674	2270	1464	1985
1-1/8 x 12	516	700	1158	1570	1877	2545	–	–
1-1/4 x 7	650	881	1456	1974	2362	3202	2067	2802
1-1/4 x 12	719	975	1613	2187	2615	3545	–	–
1-3/8 x 6	851	1154	1909	2588	3097	4199	2710	3674
1-3/8 x 12	970	1315	2174	2948	3526	4781	–	–
1-1/2 x 6	1130	1532	2534	3436	4110	5572	3597	4877
1-1/2 x 12	1271	1723	2852	3867	4624	6269	–	–

1.6.1.2 Stainless Steel Fasteners

BNUUUN02.C06 0000222445 A.3 B.3 1/2/20, 2:14 PM Released

Table 15. Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller

Dimension	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	79	9	76	9	45	5
1/4 x 28	100	11	94	11	56	6
5/16 x 18	138	16	132	15	79	9
5/16 x 24	148	17	142	16	85	10

Table 16. Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch

Dimension	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
	Pound-Feet	N-m	Pound-Feet	N-m	Pound-Feet	N-m
3/8 x 16	21	28	20	27	12	16
3/8 x 24	23	31	22	29	13	18
7/16 x 14	33	44	31	42	19	25
7/16 x 20	35	47	33	45	20	27
1/2 x 13	45	61	43	58	26	35
1/2 x 20	47	64	45	61	27	37
9/16 x 12	59	81	57	77	34	46
9/16 x 18	66	89	63	85	38	51
5/8 x 11	97	131	93	125	56	75
5/8 x 18	108	150	104	141	62	84
3/4 x 10	132	179	128	173	77	104
3/4 x 16	130	176	124	168	75	101
7/8 x 9	203	275	194	263	116	158
7/8 x 14	202	273	193	262	116	157
1 x 8	300	406	287	389	172	233
1 x 14	271	367	259	351	156	211
1-1/8 x 7	432	586	413	560	248	336
1-1/8 x 12	408	553	390	529	234	317
1-1/4 x 7	546	740	523	709	314	425
1-1/4 x 12	504	683	480	651	288	390
1-1/2 x 6	930	1261	888	1204	533	722
1-1/2 x 12	732	992	703	953	422	572

1.6.2 Preparation

BNUUUN02.T01 0000222511 A.3 B.3 B.2 4/20/23, 9:05 AM Released



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

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

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



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

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

1.6.3 How to Apply a Threadlocker

BNUUUN02.T02 0000222508 A.3 B.3 B.2 4/20/23, 9:09 AM Released

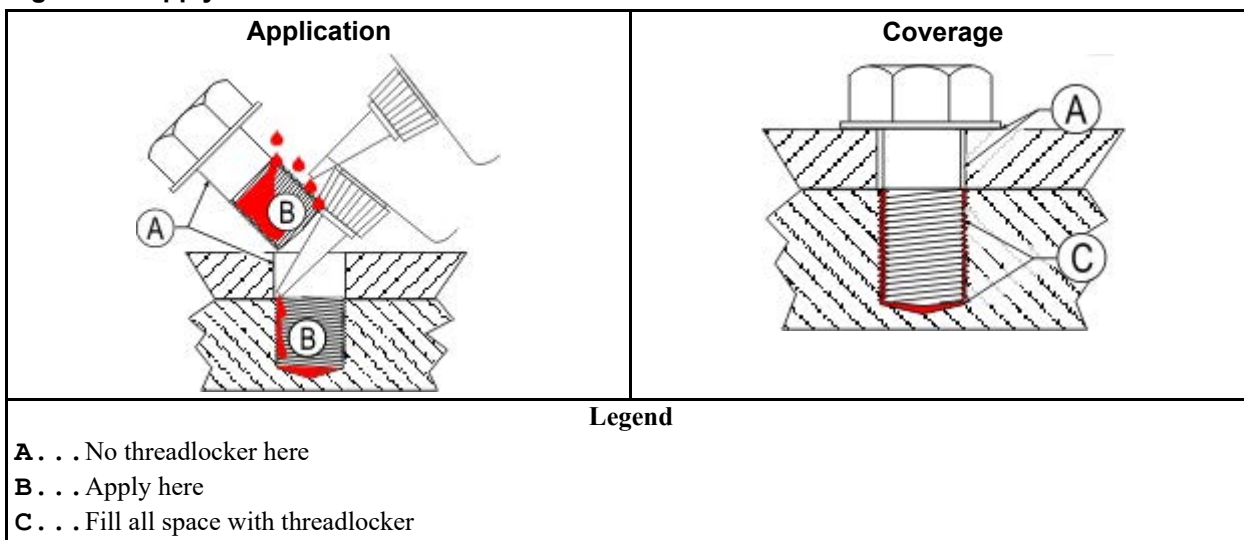


CAUTION: Malfunction Hazard — Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

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

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

Figure 2. Apply Threadlocker in a Blind Hole



1.6.3.1 Blind Holes

BNUUUN02.T03 0000222507 A.3 B.3 1/2/20, 2:14 PM Released

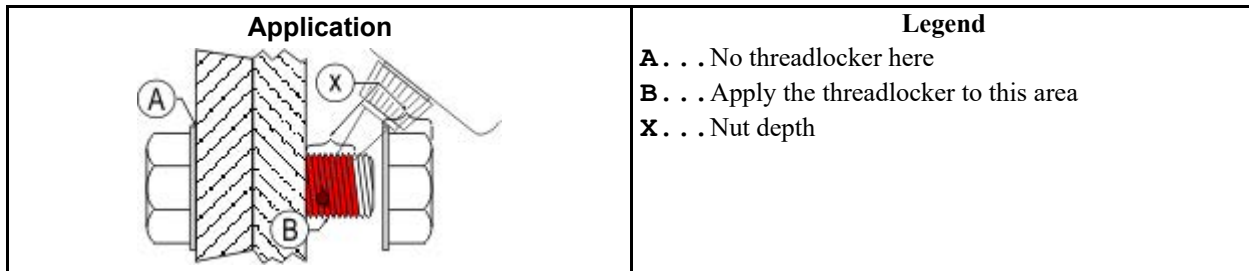
1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table ([Table 9: Threadlocker by the Diameter of the Bolt \(see below Note \), page 27](#) to [Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 29](#)).

1.6.3.2 Through Holes

BNUUUN02.T04 0000222506 A.3 B.3 11/26/19, 2:51 PM Released

1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.
3. Tighten the bolt to the value shown in the correct table ([Table 9: Threadlocker by the Diameter of the Bolt \(see below Note \), page 27](#) to [Table 15: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller, page 29](#)).

Figure 3. Apply Threadlocker in a Through Hole



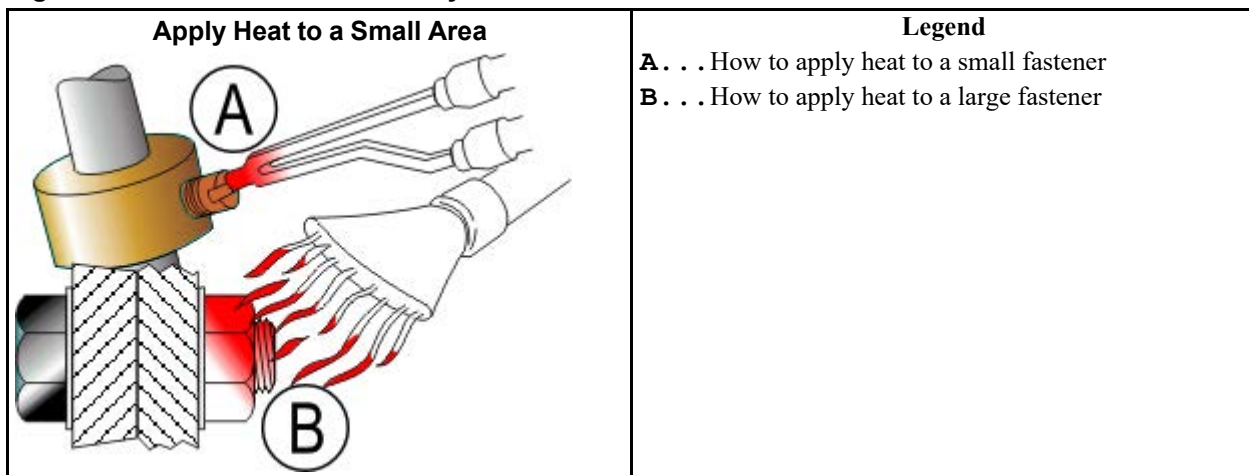
1.6.3.3 Disassembly

BNUUUN02.C07 0000222444 A.3 B.3 11/26/19, 2:59 PM Released

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

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

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



2 Important Installation Precautions

BFUUUF01 / 2023174

BNUUUF01 0000109243 D.2 4/26/23, 10:44 AM Released

2.1 External Fuse/Breaker, Wiring, and Disconnect Requirements

BNUUUF01.C01 0000109242 A.3 D.2 A.4 1/2/20, 2:14 PM Released

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

2.1.1 Fuse or Circuit Breaker Size

BNUUUF01.R01 0000109241 A.3 D.2 A.4 1/2/20, 2:14 PM Released

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

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

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

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

2.1.2 Wire Size

BNUUUF01.R02 0000109240 A.3 D.2 A.4 1/2/20, 2:14 PM Released

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



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

2.1.3 Ground

BNUUUF01.R03 0000109239 A.3 D.2 A.4 1/2/20, 2:14 PM Released

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

2.1.4 Disconnect Switch for Lockout/Tagout

BNUUUF01.R04 0000109238 A.3 D.2 A.5 1/2/20, 2:14 PM Released

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

2.1.5 Using GFCI (Ground Fault Circuit Interrupter) Device

BNUUUF01.R05 0000571262 A.3 D.2 A.2 4/26/23, 10:44 AM Released

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

Use a GFCI with a higher trip level.



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

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

BNUUUI01 / 2019392

BNUUUI01 0000189337 C.3 1/2/20, 2:14 PM Released

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

BNUUUI01.C01 0000189336 A.3 C.3 A.5 1/2/20, 2:14 PM Released

This document replaces Milnor® document BIWUUI02.

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

2.2.1 Disclaimer of Responsibility

BNUUUI01.C02 0000189359 A.3 C.3 B.3 1/2/20, 2:14 PM Released

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

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

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

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

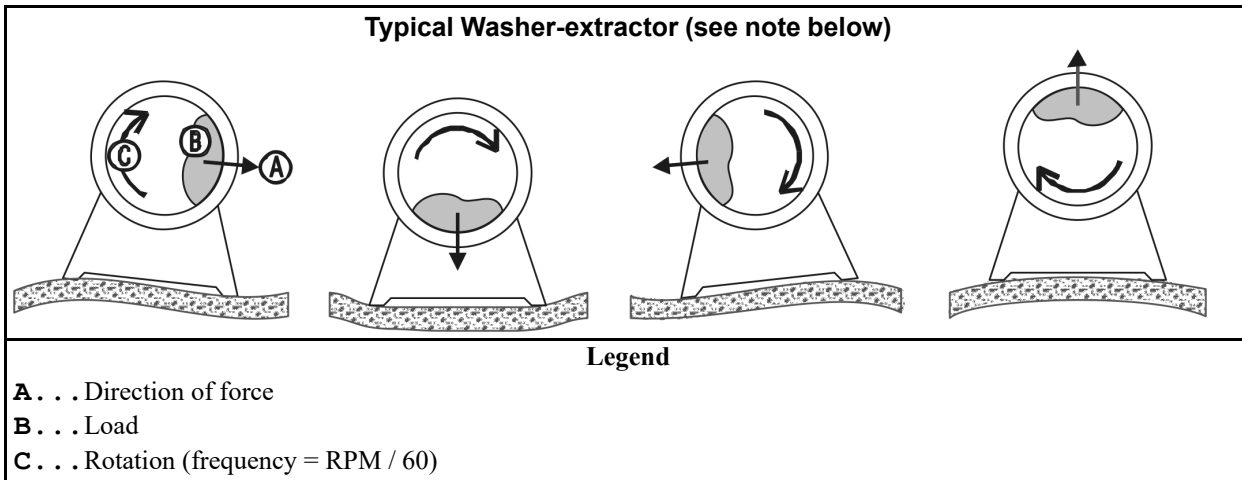
If the owner/operator does not possess the necessary expertise to ensure that the facility can safely and functionally accommodate the equipment, it will be necessary to consult the appropriate expert(s), such as a structural engineer, soils engineer, and/or architect.

2.2.2 Major Design Considerations

BNUUUI01.C03 0000189358 A.3 C.3 A.5 1/2/20, 2:14 PM Released

- Vibration and/or noise can be felt or heard outside of the laundry room as a result of the following, if supporting structures are not sufficiently rigid:
 - Extraction (the spinning cylinder) in washer-extractors and centrifugal extractors, imparts sinusoidal forces to supporting structures as shown in [Figure 5: How Rotating Forces Act On the Foundation, page 36](#) . In rigid washer-extractors, these forces are up to 30 times that of suspended washer-extractors of the same capacity.
 - Extraction forces can be magnified many times if the rotation frequency matches the resonant frequency of supporting structures. To avoid this, supporting structures must have a natural resonant frequency many times greater than any possible rotation speed of the machine or combination of rotation speeds of all machines.
 - Each time goods fall in the rotating cylinder of a washer, washer-extractor, centrifugal extractor, or dryer, this can impart a force to the supporting structures.
 - The intermittent start and stop actions of large components inside the machine, particularly in a tilting washer-extractor, press-extractor, or centrifugal extractor, can impart intermittent forces to the supporting structures.
- The possibility of adverse consequences is significantly greater for upper floor installations than for installations at grade. Always consult a structural engineer for such an installation.
- The possibility of adverse consequences is significantly greater for installations at grade if subsidence causes a void between the foundation and the soil or if the soil itself does not provide adequate strength and rigidity. Some possible remedies are the addition of pilings or a deeper foundation, installed as to be monolithic with the existing foundation.
- Machine forces can cause damage to the machine or the floor without the correct anchorage.
- Applicable building codes, even when met, do not guarantee sufficient structural support and isolation of machine forces to the laundry room.

Figure 5. How Rotating Forces Act On the Foundation



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

2.2.3 Primary Information Sources

BNUUUI01.C04 0000189357 A.3 C.3 A.5 1/2/20, 2:14 PM Released

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

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



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

BIWUUI03 / 2019296

BNUUUR02 0000160550 E.3 1/2/20, 2:14 PM Released

2.3 Prevent Damage from Chemical Supplies and Chemical Systems

BNUUUR02.C01 0000160549 A.3 E.3 B.3 1/2/20, 2:14 PM Released

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

Chemical supply companies usually:

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

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

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

2.3.1 How Chemical Supplies Can Cause Damage

BNUUUR02.R01 0000160548 A.3 E.3 B.5 10/1/21, 11:24 AM Released

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

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

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

Incorrect Configuration or Connection of Equipment — Many chemical systems:

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

Damage will occur if a chemical supply can go in the machine when the chemical system is off. Some configurations of components can let the chemical supplies go in the machine by a siphon ([Figure 6, page 38](#)). Some can let chemical supplies go in the machine by gravity ([Figure 7, page 39](#)).

Figure 6. Incorrect Configurations That Let the Chemical Supply Go In the Machine by a Siphon

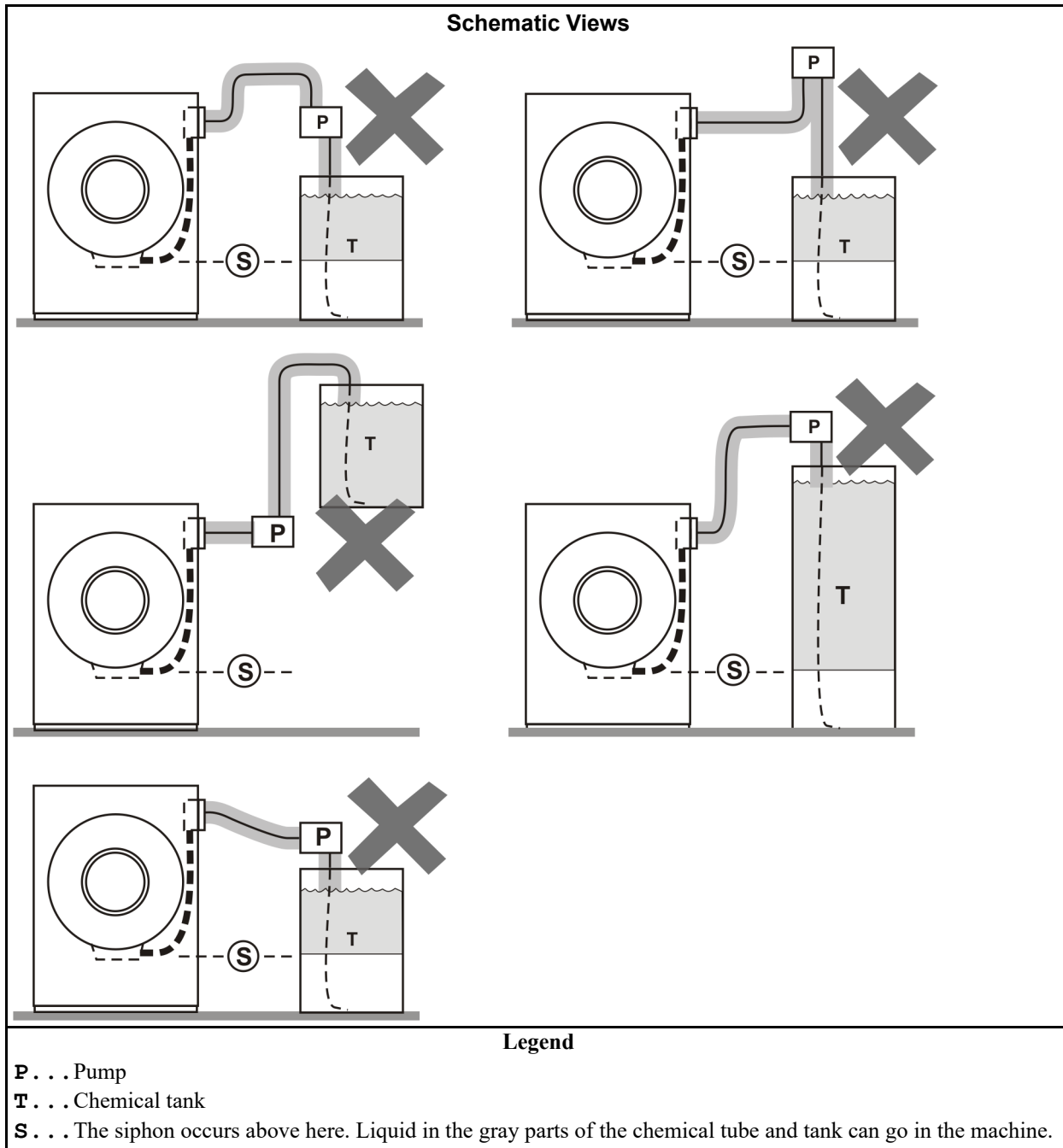
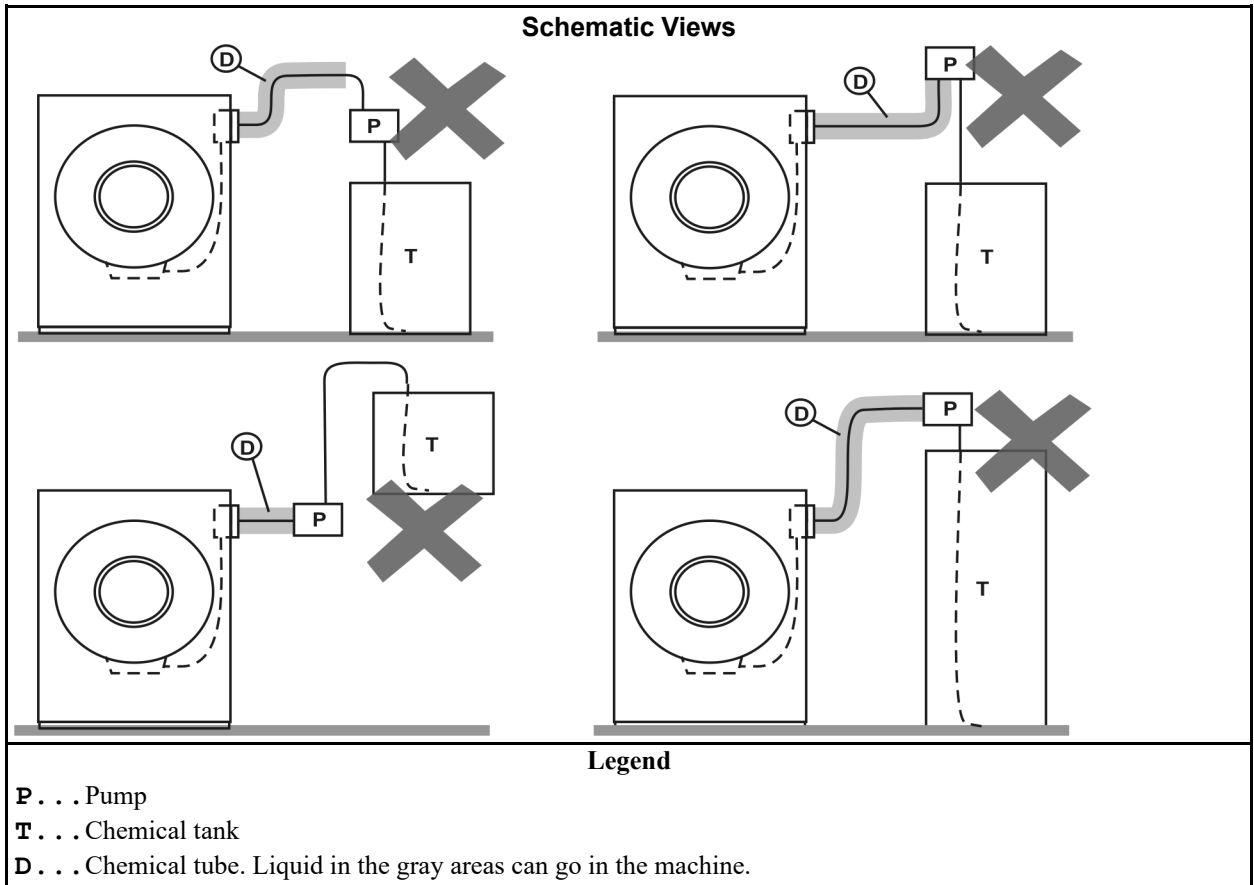


Figure 7. Incorrect Configurations That Let the Chemical Supply Go In the Machine by Gravity

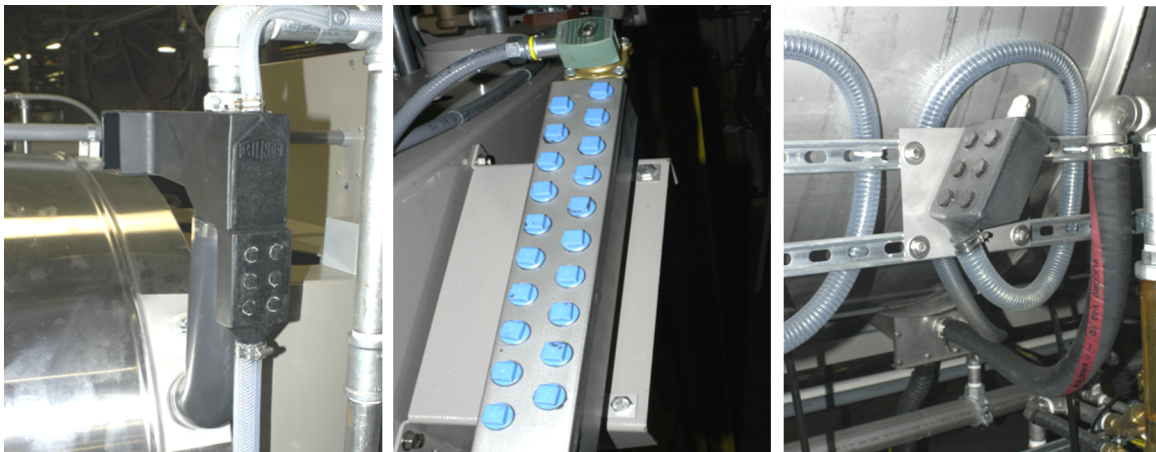


2.3.2 Equipment and Procedures That Can Prevent Damage

BNUUUR02.R02 0000160545 A.3 E.3 B.3 1/2/20, 2:14 PM Released

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

Figure 8. Examples of Manifolds for Chemical Tubes. Your equipment can look different.



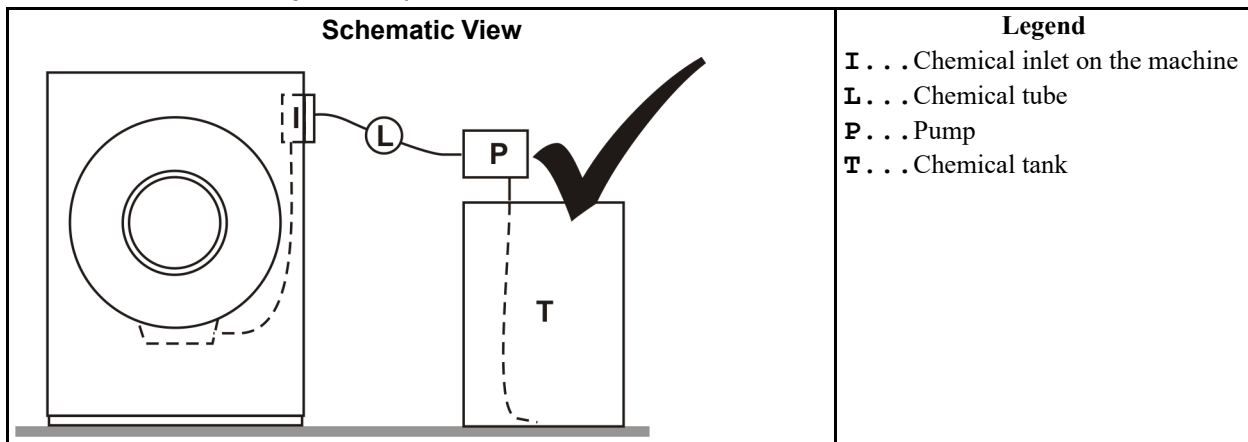
Close the line. — If the pump does not always close the line when it is off, use a shutoff valve to do this.

Do not let a vacuum occur. — Supply a vacuum breaker in the chemical line that is higher than the full level of the tank.

Flush the chemical tube with water. — If the liquid that stays in the tube between the pump and the machine can flow in the machine, flush the tube with water after the pump stops.

Put the chemical tube fully below the inlet. — It is also necessary that there is no pressure in the chemical tube or tank when the system is off.

Figure 9. A Configuration that Prevents Flow in the Machine When the Pump is Off (if the chemical tube and tank have no pressure)



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

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

3 Installation Procedures

BNWUUI03 / 2019426

BNWUUI03 0000254788 B.7 1/2/20, 2:19 PM Released

3.1 Handling a Washer-extractor from Delivery to Final Location

BNWUUI03.C01 0000254787 A.3 B.7 C.5 1/2/20, 2:19 PM Released

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

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

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

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

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

3.1.1 Notices

BNWUUI03.R04 0000257899 A.3 B.7 A.4 1/2/20, 2:19 PM Released

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

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

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

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

3.1.2 Facility Prerequisites

BNWUUI03.R01 0000254786 A.3 B.7 B.4 1/2/20, 2:19 PM Released

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

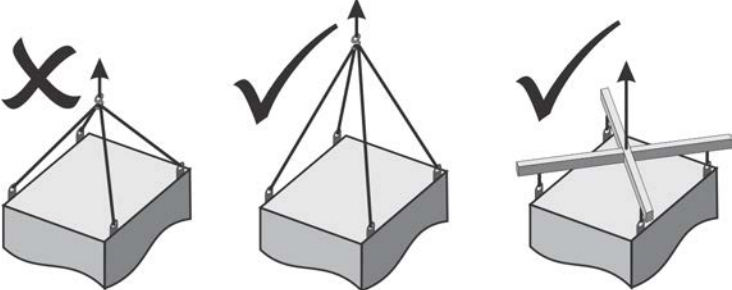
3.1.3 Rigger Precautions

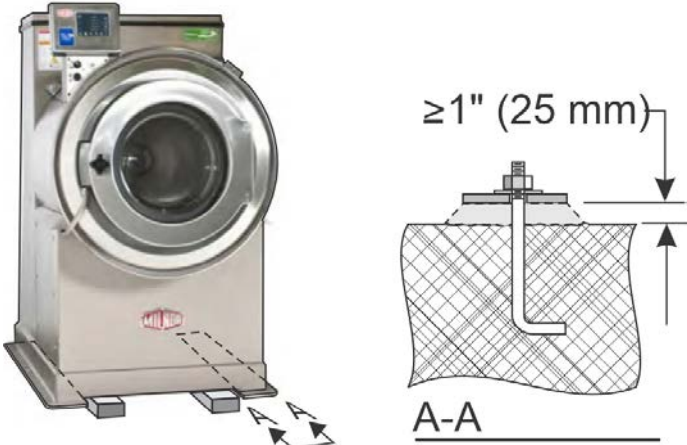
BNWUUI03.R02 0000254785 A.3 B.7 B.6 1/2/20, 2:19 PM Released



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

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

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

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

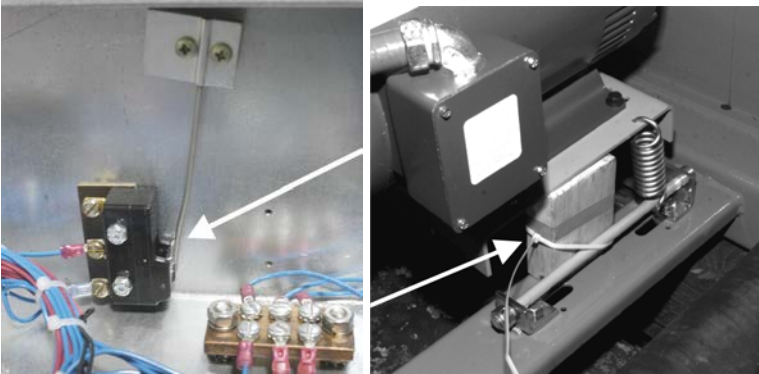
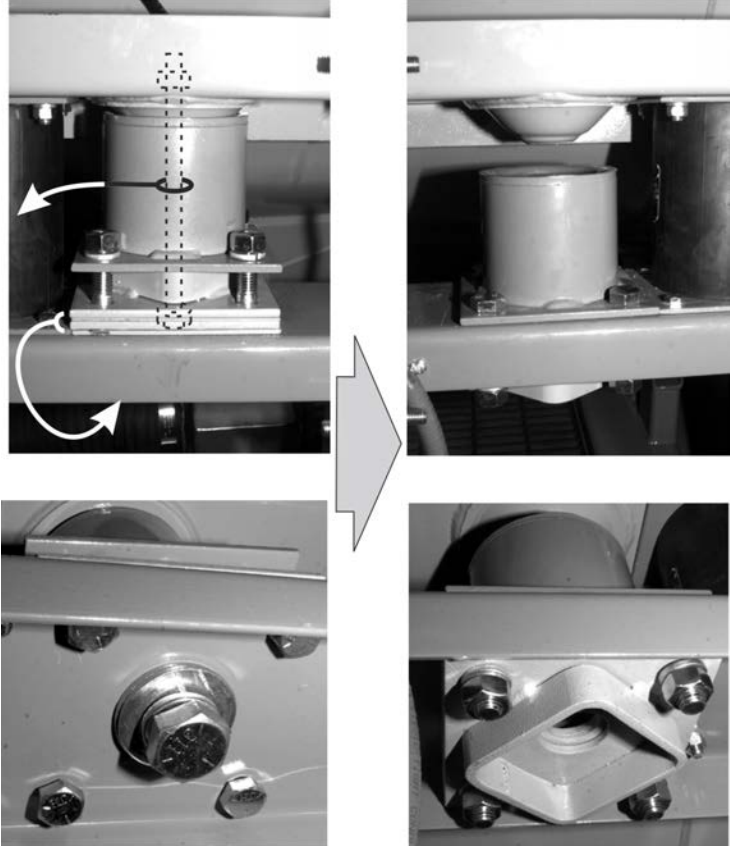
3.1.4 Technician Precautions

BNWUUI03.R03 0000257735 A.3 B.7 A.5 1/2/20, 2:19 PM Released



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

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

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

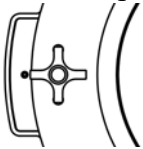

Precaution	Explanation
See the “Cylinder inspection” warning and inspect the cylinder for smoothness.	Inspect the cylinder and perforations for smoothness. Pellerin Milnor Corporation cannot accept cylinder finish damage claims after the machine has been placed in service. Machines are shipped with the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



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

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

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

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

BNWUUI04 / 2021322 BNUUUF01 0000255072 C.2 8/2/21, 10:05 AM Released

3.2 Connection Precautions for Washer-extractors

BNWUUI04.C01 0000255071 A.3 C.2 B.2 8/2/21, 10:05 AM Released

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

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

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

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

3.2.1 Notices

BNWUUI04.R03 0000255231 A.3 C.2 A.7 1/2/20, 2:19 PM Released

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

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

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

3.2.2 Utility Requirements and Related Information

BNWUUI04.R05 0000255583 A.3 C.2 A.12 1/2/20, 2:19 PM Released

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

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

3.2.3 Plumber Precautions

BNWUUI04.R01 0000255070 A.3 C.2 A.9 1/2/20, 2:19 PM Released



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

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

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

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

3.2.4 Electrician Precautions

BNWUUI04.R02 0000255232 A.3 C.2 A.7 1/2/20, 2:19 PM Released



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

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

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

3.2.5 Chemical Supplier Precautions

BNWUUI04.R04 0000255482 A.3 C.2 A.5 1/2/20, 2:19 PM Released

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

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

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

BNWUUI05 / 2021465

BNWUUI05 0000327776 B.2 11/11/21, 11:34 AM Released

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

BNWUUI05.C01 0000327775 A.3 B.2 A.2 12/8/20, 10:09 AM Released



NOTE: This document supersedes document MSSM0288AE and applies to all washer-extractors with four-spoke door handles, including 30022Hxx, MCRxxxxx models. The photographs in this document show the older style bare metal door handles but the instructions apply, as well, to newer machines with black, coated handles.

The door is designed to lock as soon as the machine starts a wash cycle. If electrical power to the machine is interrupted during the washing cycle, or if the door interlock mechanism fails to unlock, the door can be opened by **qualified, service personnel** by removing the door handle and a few related components. These components must be properly reinstalled for safe operation.



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

- ▶ Service the machine only if qualified and authorized.
- ▶ Lock out and tag out power at the main machine disconnect before reaching into the cylinder.



DANGER: Amputation hazard — If the door interlock mechanism does not function properly, an operator may be able to open the door and reach into the machine during operation. Goods in the rotating cylinder can wrap around a person's arm and twist it off.

- ▶ Verify proper door lock function during machine operation, before returning the machine to normal service.

3.3.1 Disassembly

BNWUUI05.C02 0000327774 A.3 B.2 A.1 12/7/20, 10:45 AM Released

3.3.1.1 Removing the Handle and Opening the Door

BNWUUI05.T01 0000327773 A.3 B.2 A.2 12/8/20, 10:09 AM Released

The handle is held in place on the shaft with a thrust washer and retaining clip in front of the handle and a flange bearing and retaining clip behind the handle. The amount of turning force the handle can exert on the shaft is adjustable with the four set screws, springs and steel balls—one within each spoke of the handle. The steel balls seat into depressions in the shaft. When properly adjusted, the set screws will apply sufficient spring tension so that the handle will reliably operate the latch, but the handle will ratchet if turned counterclockwise or if too much turning force is applied.

Remove the handle from the shaft as follows:

1. Gently pry the black plastic cap from the center of the handle with a small screwdriver.

2. Attempt to ratchet the handle by turning it counterclockwise by hand. If this is not possible, the springs have too much tension applied. Back off on the four set screws just enough for the handle to ratchet. Typically this happens when the set screws are flush with the surface of the handle spoke as is the case in [Figure 10: Door Handle Spoke Set Screw, page 52](#) .
3. Repeat the following sub-steps four times to remove all set screws, springs, and steel balls:
 - a. Remove the set screw from the topmost handle spoke.
 - b. Hold a finger over the hole, then, while keeping your finger on the hole, ratchet the handle counterclockwise until the hole is pointing down.
 - c. Hold one hand or a cup under the handle to catch the contents, then remove your finger, allowing the spring and ball to fall out, as in [Figure 11: Handle Spoke Spring and Ball, page 52](#) . Shake the handle if necessary, to work the components free.

Figure 10. Door Handle Spoke Set Screw



Figure 11. Handle Spoke Spring and Ball



4. Remove the front retaining clip and thrust washer ([Figure 12: Front Retaining Clip and Thrust Washer, page 53](#)), then pull the handle off of the shaft.
5. Normally, the flange bearing will come off with the handle, but if not, remove it as shown in [Figure 13: Rear Flange Bearing \(being removed\) and Retaining Clip \(arrow\), page 53](#) . Remove the rear retaining clip. Push against the door to release the retaining clip.

Figure 12. Front Retaining Clip and Thrust Washer



Figure 13. Rear Flange Bearing (being removed) and Retaining Clip (arrow)



NOTICE: Risk of component damage—The *return* spring is located around the shaft, between the door and the shaft cam. The end of the spring is inserted into a small hole in the shaft cam. The spring can stretch and be damaged if it does not separate from the shaft cam.

- Be prepared to work the end of the spring out of the hole in the shaft cam as the door is opened.
6. Slowly open the door. Allow the door latch shaft, which is still captive within the door lock mechanism, to slide out of the door. Watch to be sure the return spring separates from the shaft cam and remains with the door, as shown in [Figure 14: Return Spring After Separation from Shaft Cam, page 53](#) .

Figure 14. Return Spring After Separation from Shaft Cam



3.3.1.2 Removing the Door Latch Shaft from the Door Lock Mechanism

BNWUUI05.T02 0000327788 A.3 B.2 A.2 12/8/20, 10:09 AM Released



TIP: It is easier and more reliable to remove the shaft from the door lock mechanism then to attempt to reinsert the shaft into the door and replace the handle while the shaft is still captive in the door lock.

1. Remove the cover (not shown) from the door lock mechanism (Figure 15: Door Lock Slider Pin in the Door Lock Mechanism, page 54).
2. Using a screwdriver, push down the door lock slider pin (Figure 15, page 54) and rotate the shaft (Figure 16: Removing the Shaft from the Lock Mechanism, page 54) counterclockwise to remove it from the lock mechanism.

Figure 15. Door Lock Slider Pin in the Door Lock Mechanism

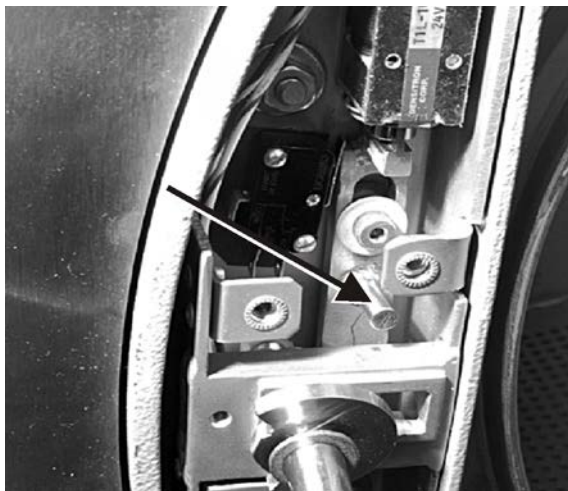
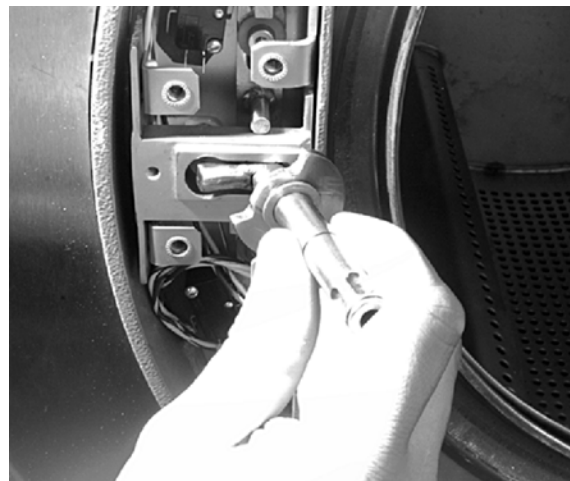


Figure 16. Removing the Shaft from the Lock Mechanism



3.3.2 Reinstalling the Shaft and Door Handle

BNWUUI05.T03 0000327831 A.3 B.2 A.2 12/8/20, 10:09 AM Released

Once the goods have been removed from the machine and any malfunction of the door lock mechanism, such as a burned out coil or mechanical interference, has been identified and repaired, reinstall the components as follows:

1. Install the cover on the door lock mechanism.
2. Insert the shaft into the open door and seat the end of the return spring into retaining hole in door shaft cam (Figure 17: Shaft in the 9 o'clock Position Showing Spring Retaining Hole, page 55 and Figure 18: Shaft with Return Spring Installed, page 55).

Figure 17. Shaft in the 9 o'clock Position Showing Spring Retaining Hole

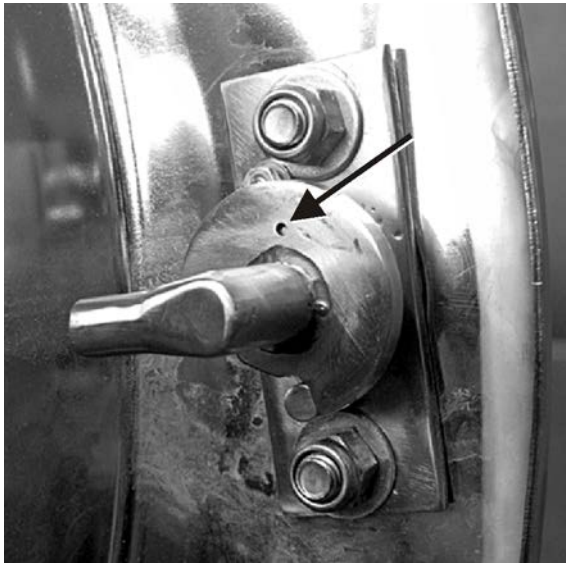
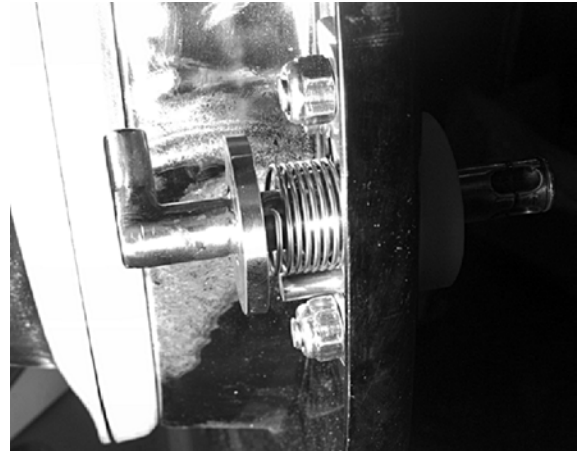


Figure 18. Shaft with Return Spring Installed

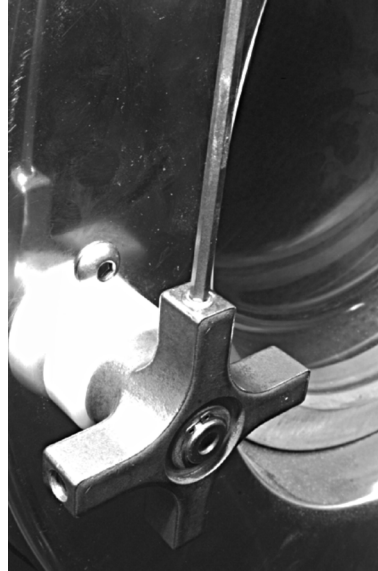


3. Looking at the rear of the door, rotate the shaft counterclockwise about 90 degrees, until the shaft fully seats into the door. When properly seated, the shaft finger (the latch) will align with the key way on the door lock mechanism.
4. Install the rear retaining clip on the shaft.
5. Slide the door handle and flange bearing onto the shaft.
6. Install the front thrust bearing and retaining clip on the shaft.
7. Repeat the following sub-steps four times—once for each ball, spring, and set screw: ([Figure 19: Inserting Ball and Spring in Handle Spoke, page 56](#) and [Figure 20: Adjusting Set Screw, page 56](#)):
 - a. Drop the ball into the hole of door handle top spoke, followed by the spring, as shown in [Figure 19, page 56](#).
 - b. Install the set screw. As previously stated, the handle should ratchet if more turning force than necessary is applied or if turned counterclockwise. Tighten the set screw until the set screw is flush with the handle. This will provide roughly the correct spring tension.
 - c. Rotate door handle counterclockwise 90 degrees to ratchet it to the next position (with the next spoke on top).

Figure 19. Inserting Ball and Spring in Handle Spoke



Figure 20. Adjusting Set Screw



8. When all four set screws are in place, check to be sure the handle will ratchet if turned counterclockwise, or if latched with more force than necessary. Make 1/4 turn adjustments to all four set screws if necessary to achieve the proper tension.
9. Install the black plastic cap over the center of the handle.

4 Drive Assemblies

Drive Chart

MCR36E4, MWR36J4



Table 17. Parts List—Drive Chart

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	98CMCR3516	VPUL,SPA630-03-3020, MCR36	
all	2	98CMCR3517	VBELT, SPA-2332 3PCS, MCR36	
all	3	98CMCR3518	BUSH VPUL TB TYPE,3020-45	
all	4	98CMCR2713	CSM/STRMACHKEY 3/8SQX2+1/2 TOL.+0	
all	5	98CMCR3515	VPUL=MTR,SPA85-03-1210,MCR36	
all	6	98CMCR3519	BUSH TB TYP 1210X28, BSW3/8"	
all	7	98CMCR3508	MOTOR,4KW 220V/440V/50HZ MC/WR36	

BPWCEI02 / 2022225

BPWCEI02.1 0000477661 A.3 5/26/22, 11:50 AM Released

Motor Mount

1 Sheet

MCR36E4, MWR36J4

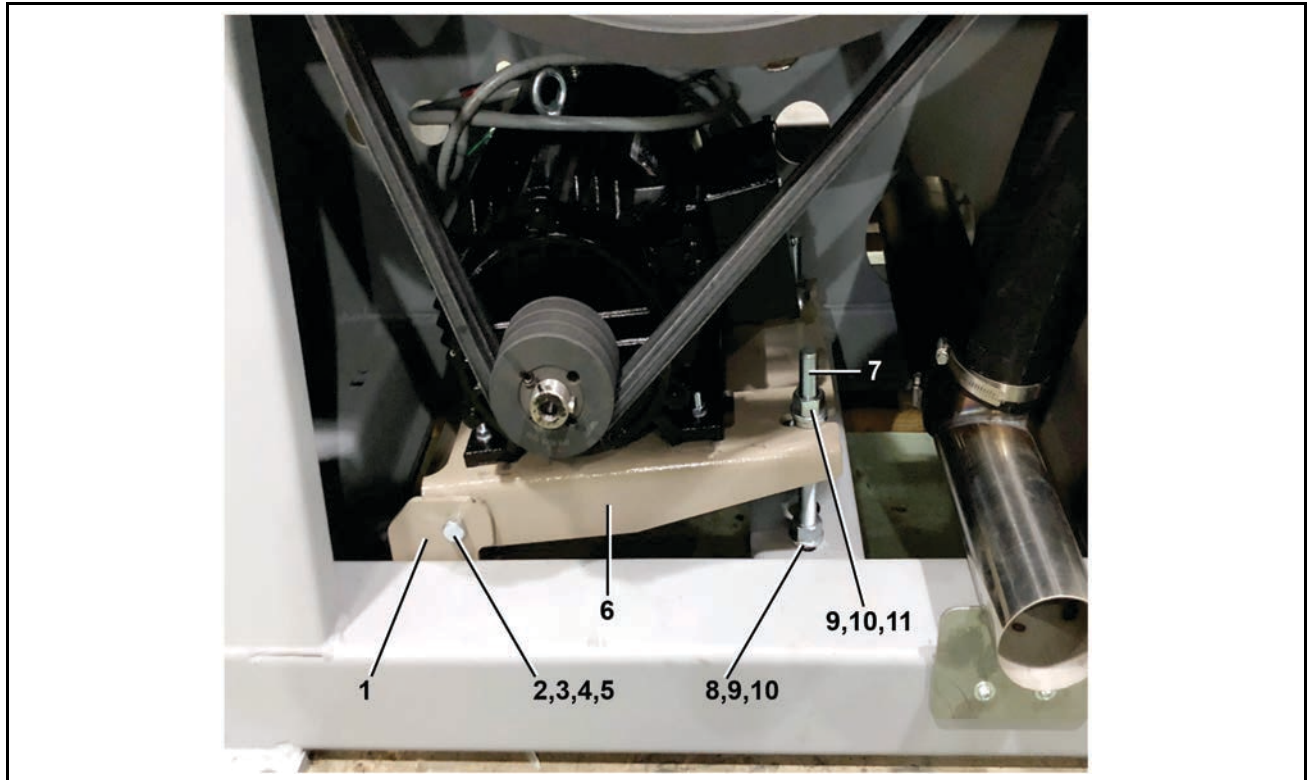


Table 18. Parts List—Motor Mount

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	98CMCR3520	MOTOR MOUNT RAIL, MCR36	
all	2	15K154M	HEXCAPSCR M12-1.75X40 ZINC 8.8 FULTH	
all	3	98CX773513	FLATWASHER, D12 ZINC	
all	4	15U283M	LOCKWSHR D12 ZINC	
all	5	98CX773113	HEXNUTM12, ZINC	
all	6	98CMCR3521	PLATE=MOTOR MOUNT, MCR36	
all	7	15K227IM	HEXCAPSCR M16-2X180,ZINC 8.8	
all	8	98CX773515	FLATWASHER, D16 ZINC	
all	9	98CX773115	HEXNUT M16, ZINC	
all	10	15U315M	LOCKWSHR D16 METRIC ZINC	
all	11	17W030	SPHERICAL WASHER SET 5/8 M/F	

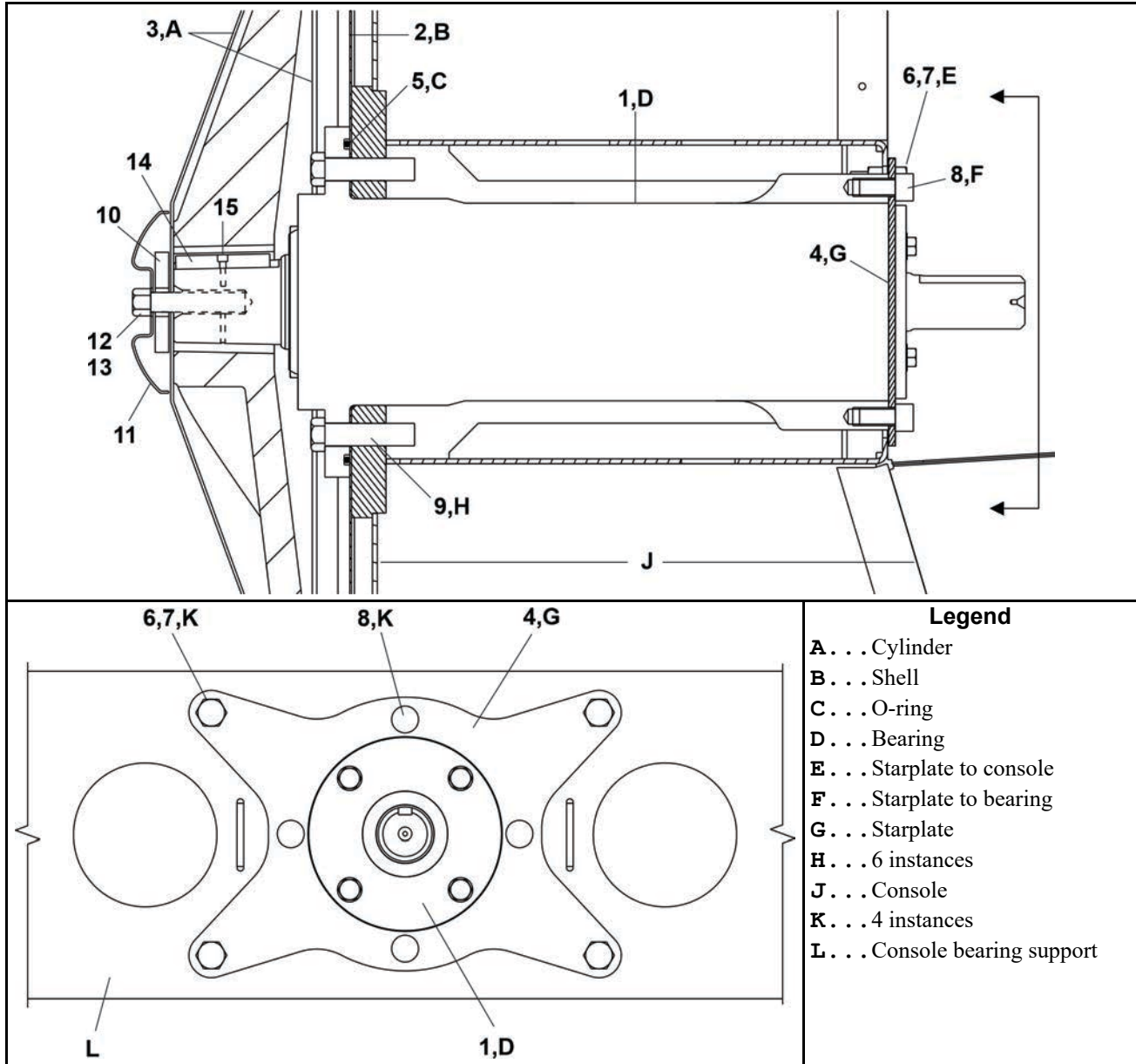
BPWCEB01 / 2022232

BPWCEB01.1 0000478216 A.3.A.4 5/31/22, 7:57 AM Released

Bearing Installation

2 Sheets

MCR36E4, MWR36J4



Bearing Installation

2 Sheets

MCR36E4, MWR36J4

Table 19. Parts List—Bearing Installation

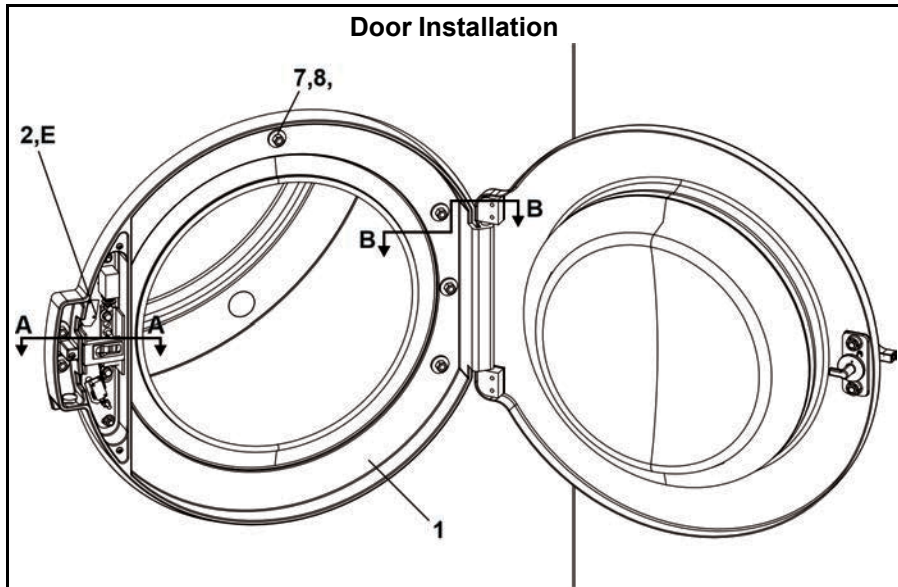
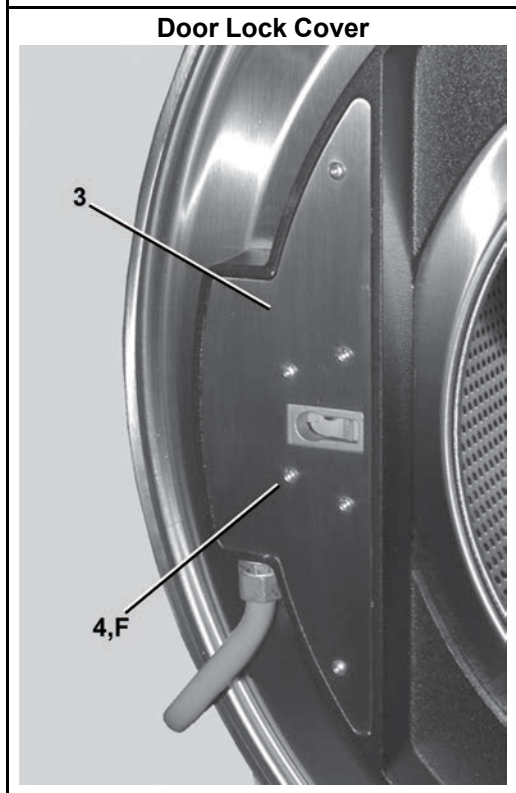

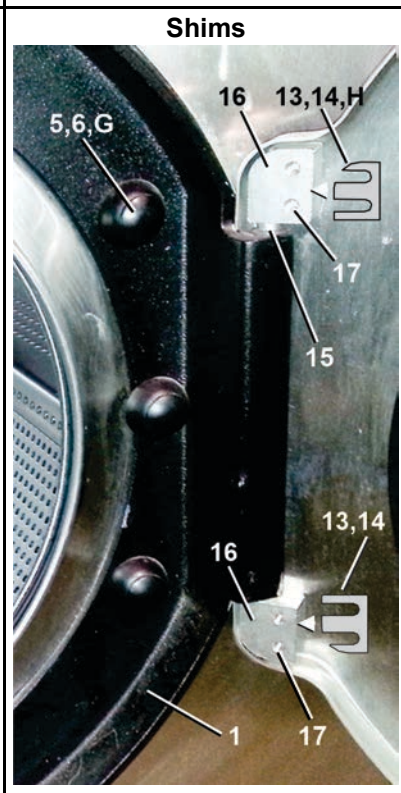
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	98CMCR3501	INSTL=BEARING HOUSE,MCR36	
Components				
all	1	98CMCR3502	BEARING HOUSING ASSY MCR36	
all	2	W3 40301A	WLDMNT=SHELL,MCR36	
all	3	ACA3621M5	ASSY=CYLINDER,MCR36	
all	4	98CMCR3505	STARPLATE,MCR36	
all	5	60C171	ORING 8.5"IDX 3/16CS BUNA70 #371	
all	6	98CX773113	HEXNUTM12, ZINC	
all	7	15U283M	LOCKWSHR D12 ZINC	
all	8	15K154M	HEXCAPSCR M12-1.75X40 ZINC 8.8 FULTH	
all	9	15K216MS	HEXCAPSCR M16-2X50 SS FULTH	
all	10	98CMCR0950	SHAFT RETNR SPACER METRIC	
all	11	98CMCR0949	COVER SHAFT RETAINER METRIC	
all	12	15B201	HEXCAPSCR M20-2.5 X 50M 18-8	
all	13	20C007G	THDLOCKSEAL LCT24231 RMUBL50CC	
all	14	98CMCR0947	MCR SHAFT KEY	
all	15	98CMCR0948	SPRING PIN	

5 Shell and Door Assemblies

This page intentionally blank

Door Assembly and Installation

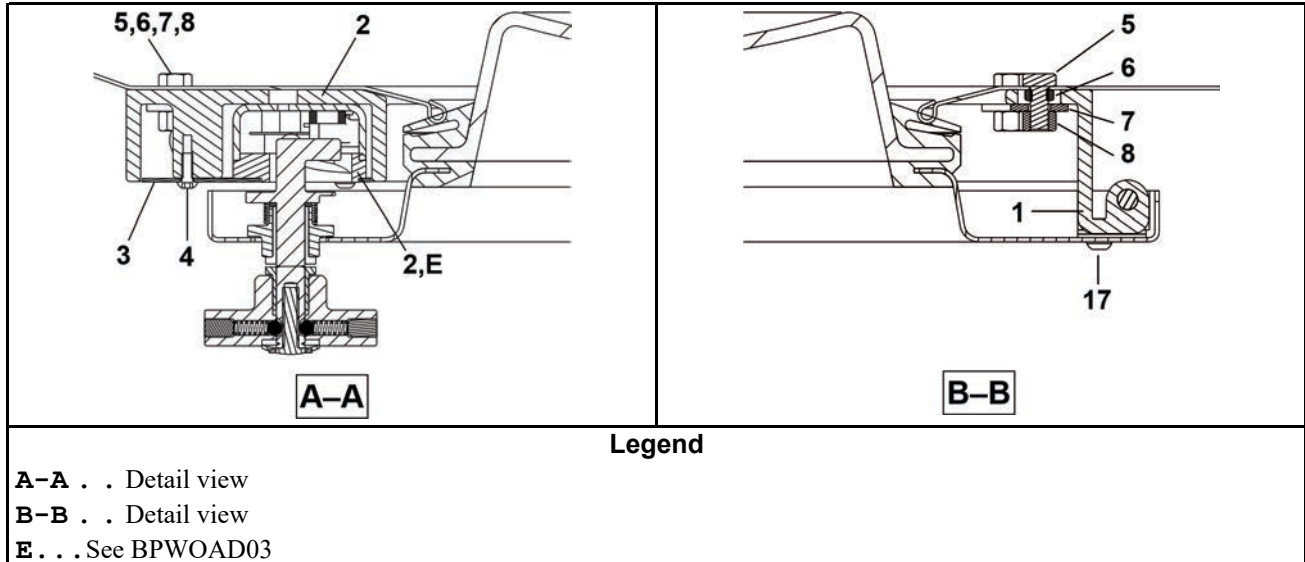
MCR36E4, MWR36J4

<p style="text-align: center;">Door Installation</p> 		<p style="text-align: center;">Legend</p> <p>A-A . . See detail B-B . . See detail E . . . See BPWOAD03 F . . . 6 instances G . . . 7 instances H . . . Add or remove shims till the door locks properly and seals.</p>
<p style="text-align: center;">Door Lock Cover</p> 	<p style="text-align: center;">Hinge</p> 	<p style="text-align: center;">Shims</p> 

Door Assembly and Installation

4 Sheets

MCR36E4, MWR36J4



Door Assembly and Installation

4 Sheets

MCR36E4, MWR36J4

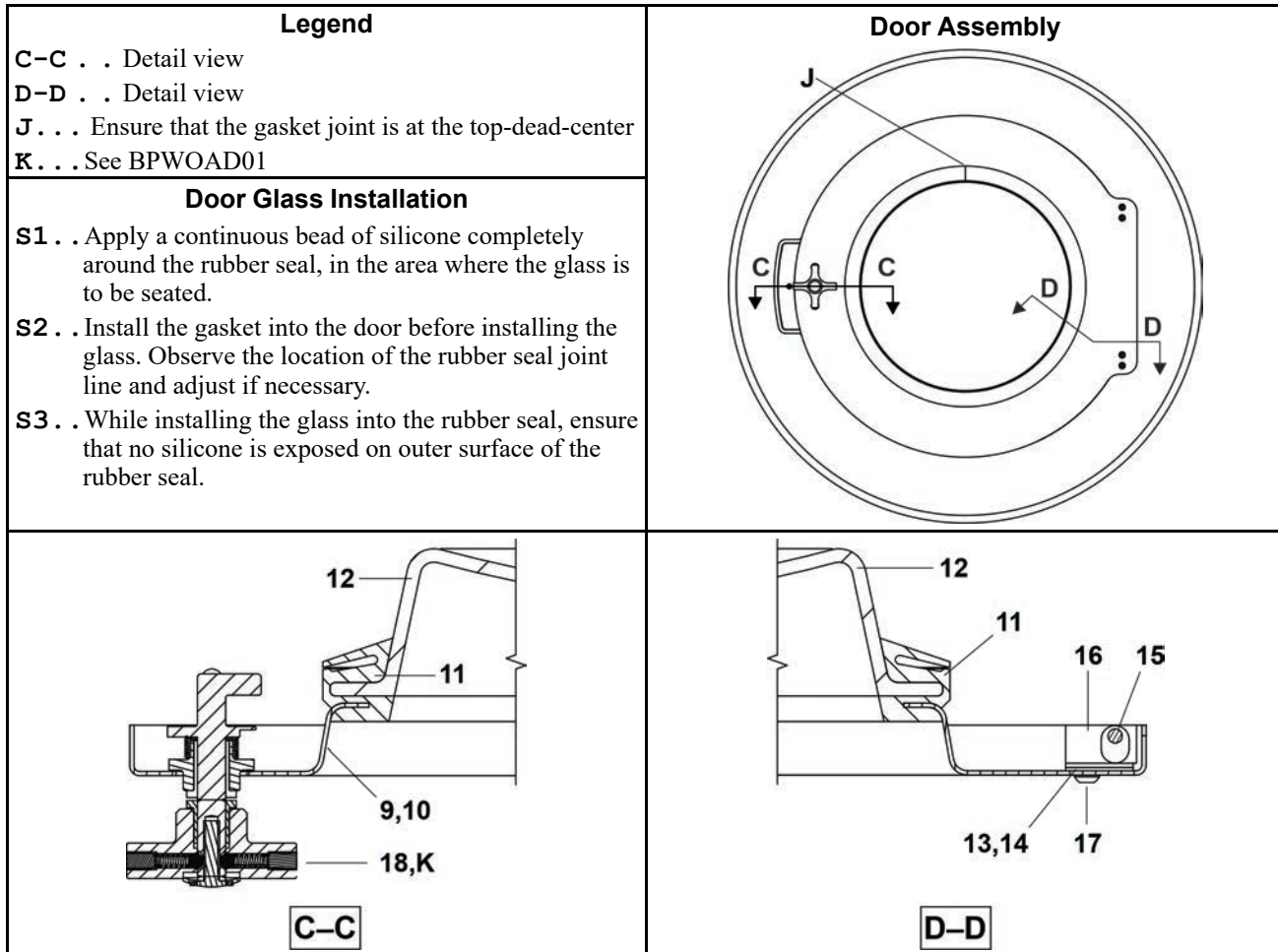


Table 20. Parts List—Door Assembly and Installation

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	02 11992	36/42V DOOR FRAME FLATFRONT MACHINED	
all	2	98CMCR0978	DOOR INTERLOCK ASSY MCT18	
all	2	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	
all	3	98CMCR3511	DOOR LOCK BOX COVER, MCR36	
all	4	15K017	BUTSOKCAPSCR 10-24X1/2 SS	
all	5	27A270	.843"ID X 1.496" BASE NCS35	
all	6	27A271	.843"ID X 1.496" BASE CAP NCS36	
all	7	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	

Door Assembly and Installation

4 Sheets

MCR36E4, MWR36J4

Table 20 Parts List—Door Assembly and Installation (cont'd.)

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
all	8	15G004B	HEXFLGNUT M8X1.25 SS18-8	
all	9	02 11991	20" SHELL DOOR FLAT FRONT	
all	10	02 11991G	20" DOOR STIFFENER	
all	11	02 11993	20" DOOR GASKET FLAT FRONT	
all	12	02 11994	20" DOOR GLASS FLAT FRONT	
all	13	02 03297	30" DOOR HINGE SPACER 14GA	
all	14	02 03297A	30" DOOR HINGE SPACER 16GA	
all	15	X2 03296B	HING PIN 3022V8	
all	16	02 03260B	SHELL DOOR HINGE, WMT12	
all	17	98CX770514	BUTSOKCAPSCR M6*25 SS, ENDRIES P#1RWN	
all	18	98CMCR0925	ASSY=DR HNDL MECH	

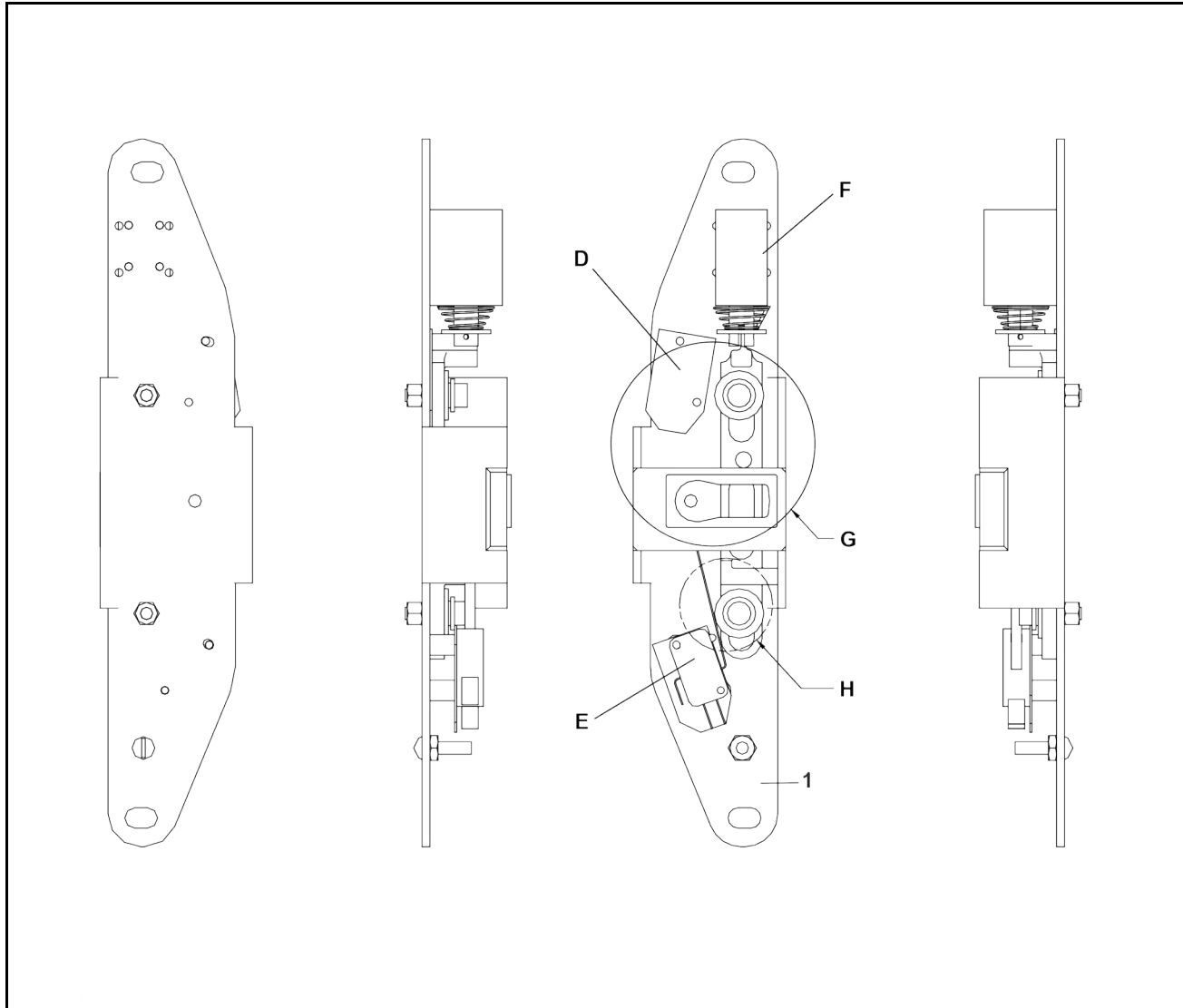
BPW0AD03 / 2023316

BPW0AD03.1 0000255709 A.3 L.2 8/7/23, 8:45 AM Released

Door Lock Mechanism

3Sheets

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



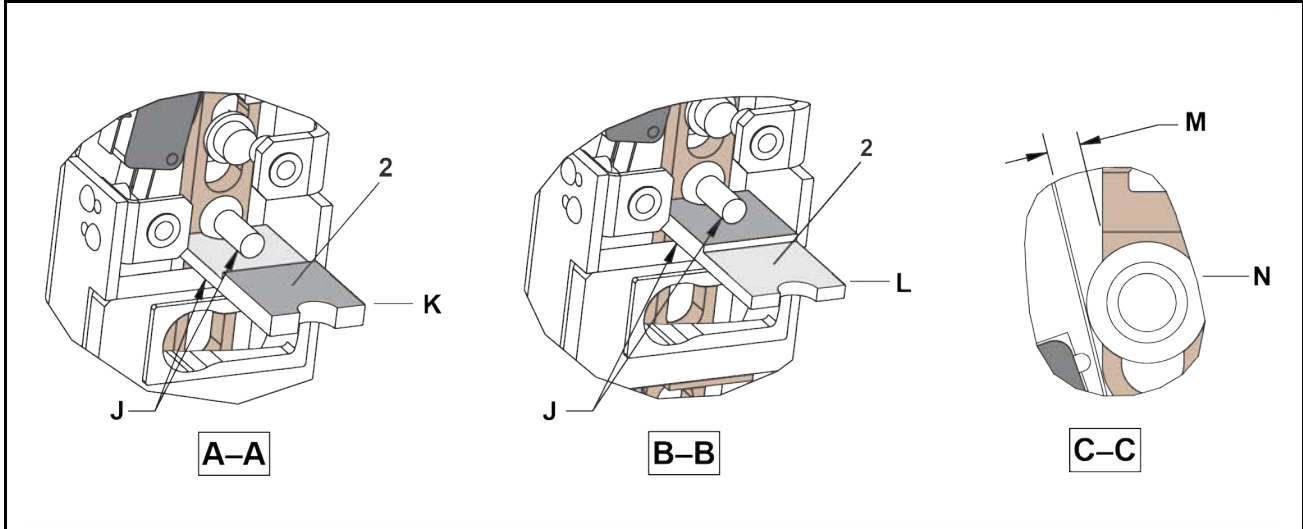
Legend

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

Door Lock Mechanisms

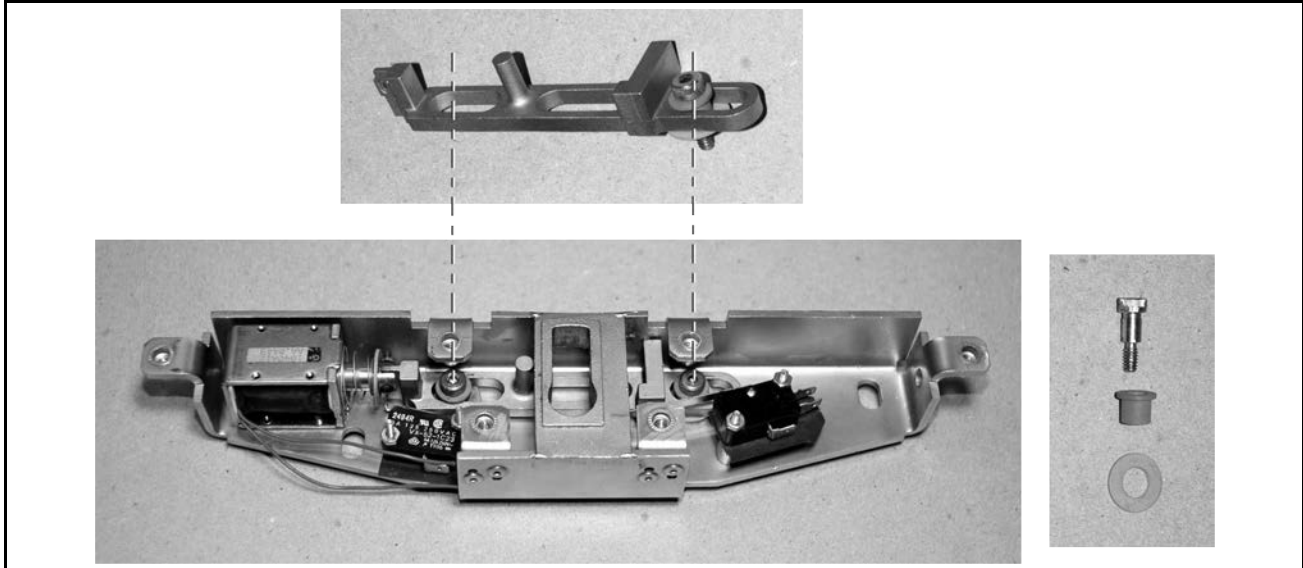
3Sheets

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



Legend

- A-A** . . . Door lock switch “OFF”
- B-B** . . . Door lock switch “ON”
- C-C** . . . Door closed switch
- J** . . . No air gap
- K** . . . Insert item 2, thin side. Adjust the switch to “OFF.”
- L** . . . Insert item 2, thick side. Adjust the switch to be “ON.”
- M** . . . $\frac{3}{16}$ ” minimum clearance
- N** . . . Measure this while the slider is down.



Door Lock Mechanisms

3Sheets

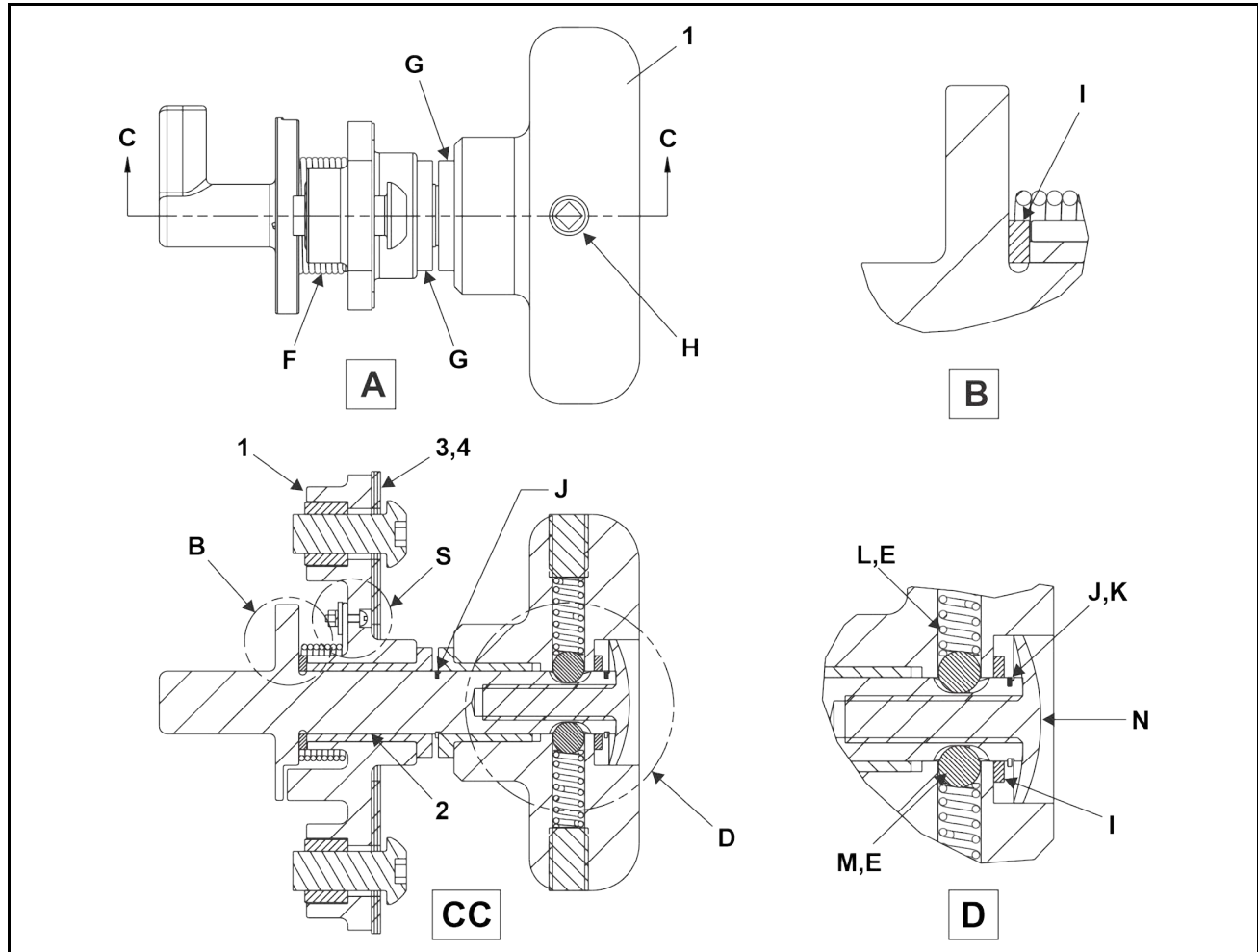
MCR12; MCT16/18/27; MWF18/27; MWR27/36; MWT12/16/18/27; 3015/3022T6X, VRJ, V8Z, VZZ;
3022X8R; 36021V5J, V5Z, V7Z; 36026V5J, V5Z, V7Z; 42026V5J, V6Z. 42030V6Z

Table 21. Parts List—Door Lock Mechanisms

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Assemblies				
	1	98CMCR1206	DOOR INTERLOCK ASSY MCT12	MCR12, MCT16,
	1	98CMCR1205	DOOR INTERLOCK ASSY MWT12	MWT12, MWT16
	1	98CMCR0978	DOOR INTERLOCK ASSY MCT18	MCT18, MCT27
	1	98CMCR0971	DOOR INTERLOCK ASSY V8Z VRJ MILNOR ASSY A33 03226B	MWF18, MWF27, MWT18, MWT27, MCR36E4, MWR36J4, 30015/22T6X, VRJ, V8Z, VZZ, 36021V_, 36026V_, 42026V_, 42030V_
all	2	X2 03306A	MACH=GAGE DR LOCK SWITH, MCR	

Door Handle and Lock Actuator

Figure 21. Door Handle and Lock Actuator



Legend

- A . . . Top
- B . . . Detailed view
- CC . . Cross Section
- D . . . Detailed view
- E . . . 4 instances
- F . . . Torsion spring
- G . . . Flange bearing
- H . . . Bolt
- I . . . Thrust washer
- J . . . Retainer ring
- K . . . Do not open the ring more than necessary to get it on the shaft.
- L . . . Spring
- M . . . Roller ball
- N . . . Retainer

Door Handle and Lock Actuator

3 Sheets

Figure 22. Shim Adjustment Steps

Steps

S1 . . Add shims to make the latch looser. Remove shims to make latch tighter. To add shims, add a notch to the shims as shown. Then you will not have to remove the handle assembly. When you remove or add shims, always start with the thinnest shim.

S2 . . Make a notch as shown.

S3 . . Put in the machine screw. Put the eye of the torsion spring on the screw then put the flat washer, lock washer, and nut on the screw to hold the eye. Tighten the nut.

S4 . . Put the free end of the spring into this hole.

Legend

P . . . The shim with the added notch

Q . . . Rear view

R . . . Inside view

S . . . Detailed view

T . . . Torsion spring

U . . . The shim thickness is (.230 inches)

V . . . The shim thickness is (.015)

Door Handle and Lock Actuator

3 Sheets

Table 22. Parts List—Door Handle and Lock Actuator

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

6 Chemical Supply

BPWCAC01 / 2022036

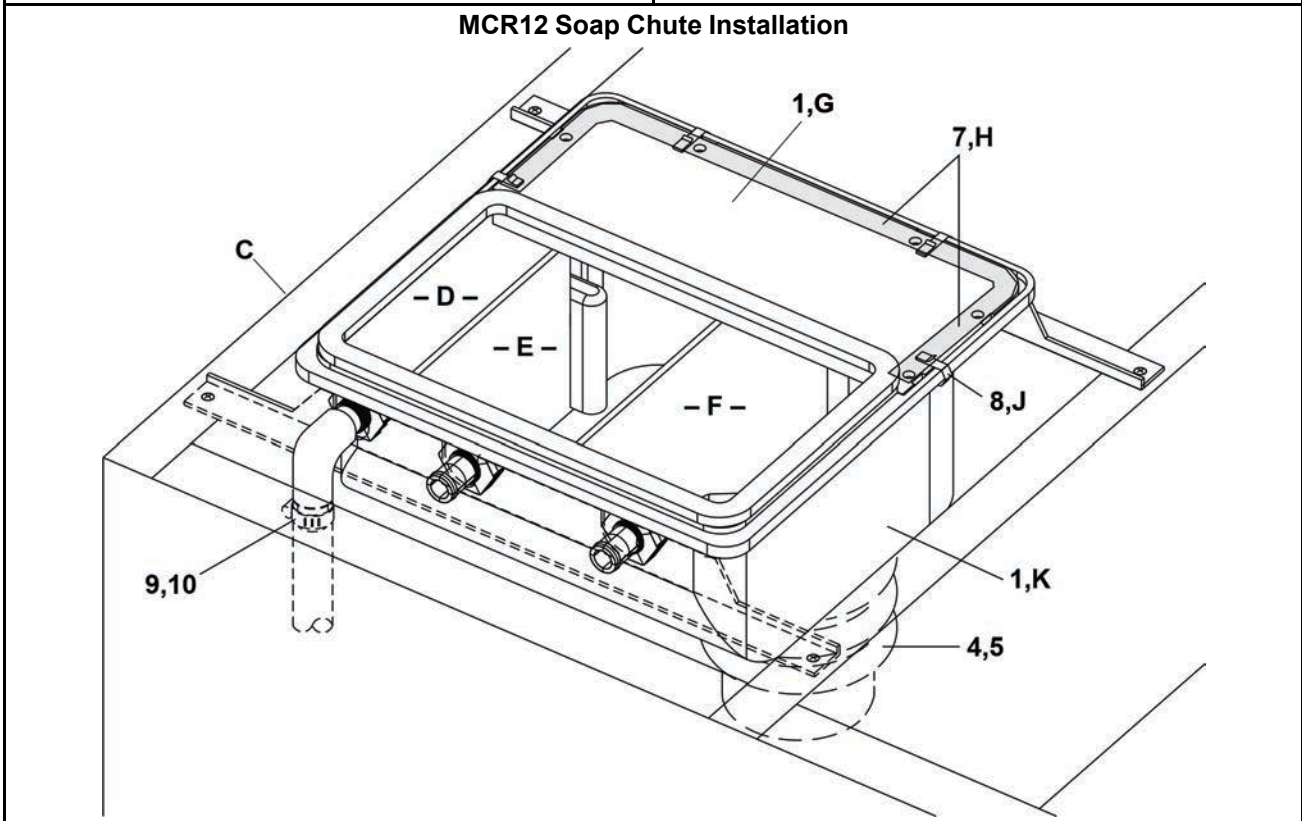
BPWCAC01.1 0000403354 A.3 A.5 1/14/22, 12:14 PM Released

Soap Chute

3 Sheets

MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4

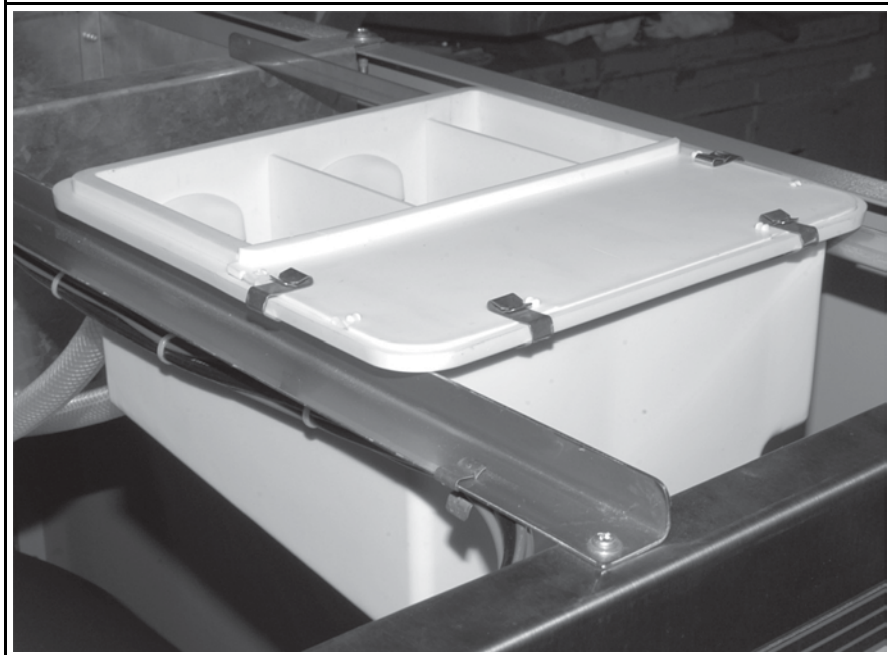
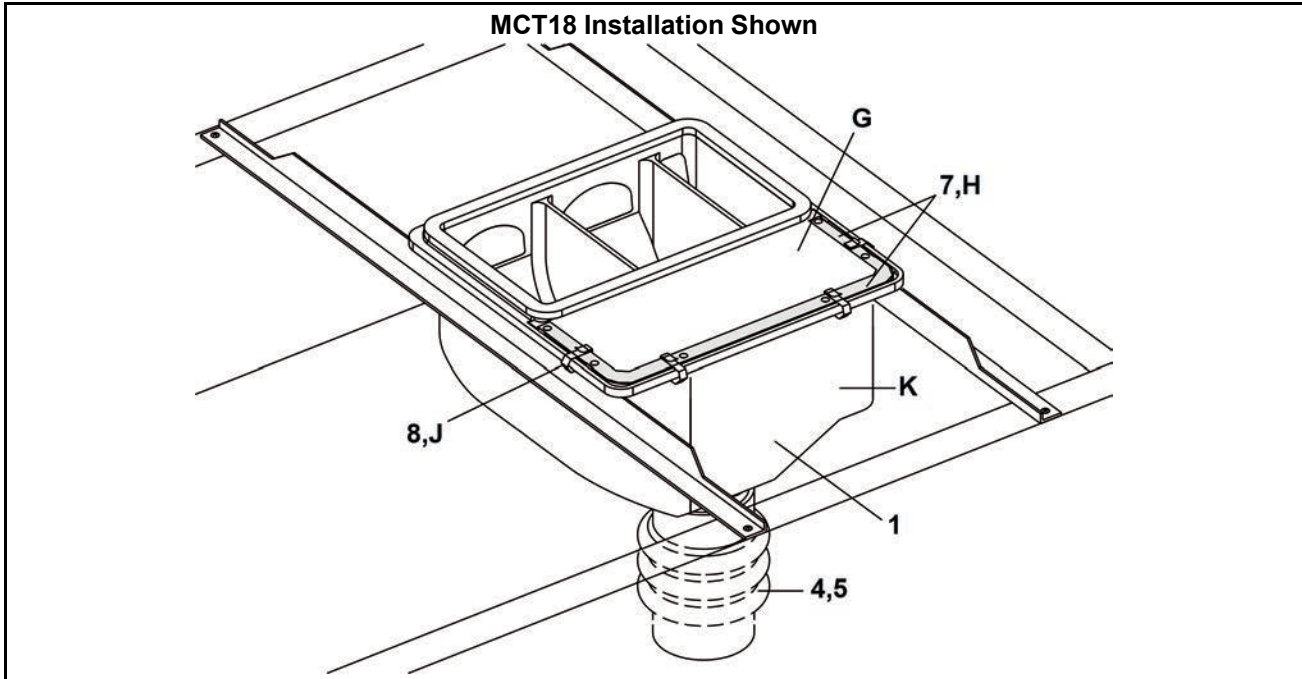
	<p>Legend</p> <ul style="list-style-type: none"> A . . . Top cosmetic cover B . . . Gasket C . . . Front cosmetic D . . . Liquid softener E . . . Powdered detergent or powdered bleach F . . . Powdered detergent G . . . Cover H . . . Apply silicone between soap chute body and cover. J . . . Clip 4 instances K . . . Body



Soap Chute

3 Sheets

MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4



Legend

G . . . Cover
H . . . Apply silicone between soap chute body and cover.
J . . . Clip 4 instances
K . . . Body

Soap Chute

3 Sheets

MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4

Table 23. Parts List—Soap Chute

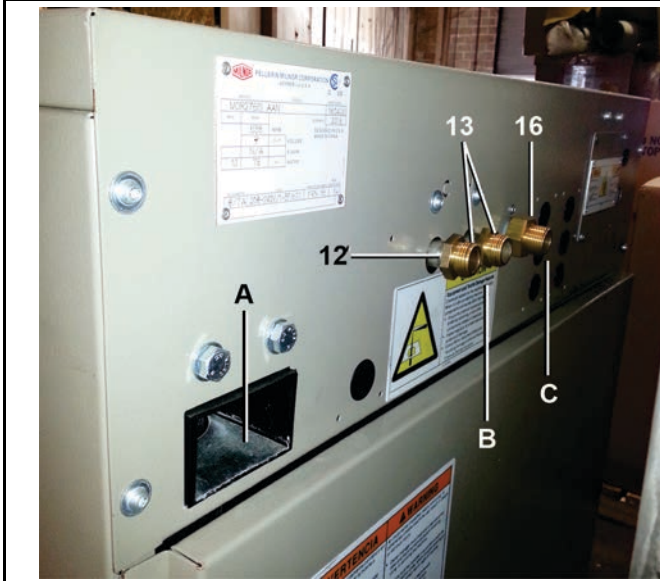
Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	AWS33005	SOAP CHUTE ASSY 3 COMP	
all	2	03 40039B	GASKET SOAP CHUTE	
all	3	03 40039C	COVER SOAP CHUTE	
all	4	03 40039H	FLEXIBLE TUBE=SOAP CHUTE 4.25"	
all	5	27A065S	HOSECLAMP 1.56"-2.5"SSSCR#32	
all	6	W3 40039D	WELD HINGE COVER SOAP CHUTE	
all	7	20C040B	SUPERFLEX CLR RTV SIL 10.2OZ	
all	8	12P015D	CABLE CLIP TINN#C23214-017	
all	9	60E006C	PVC TUBING NYL.REINF.5IDX.75OD	
all	10	27A044S	HOSECLAMP 11/16-1.25SSSCR#64012	

7 Water and Drain

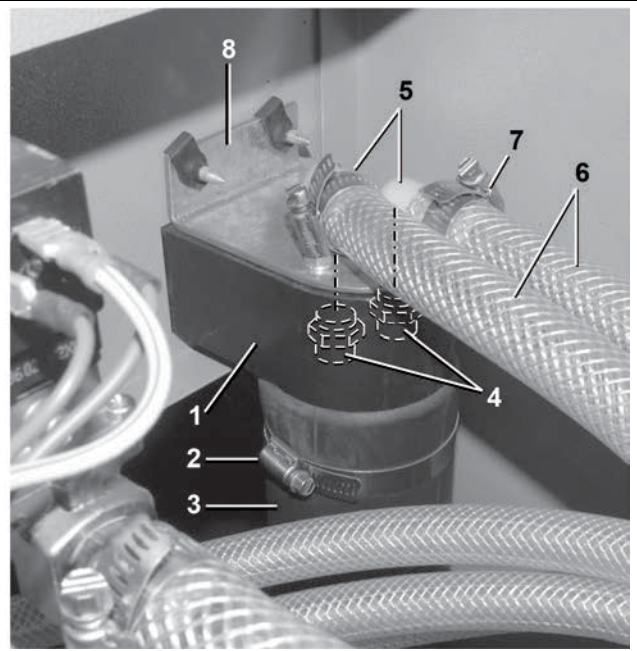
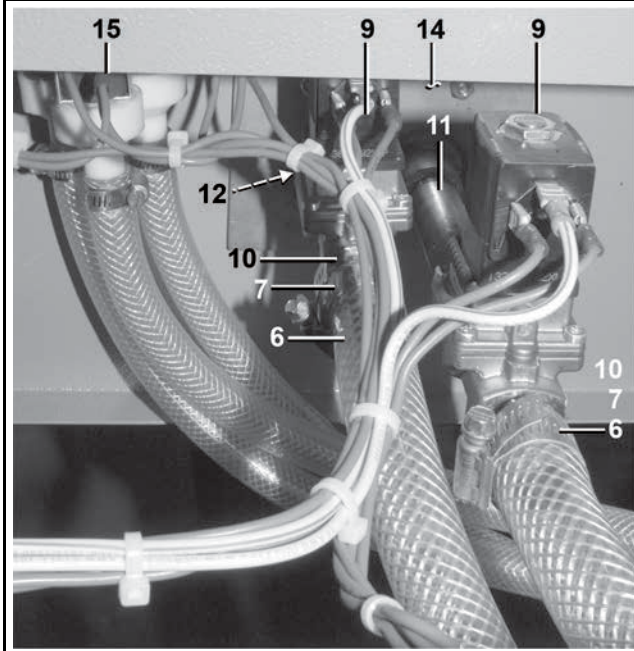
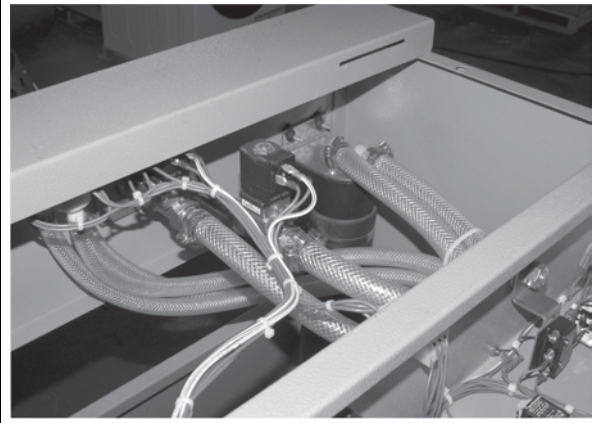
This page intentionally blank

Water Inlets

MCR27E5, MWR27E/X/J5, MCR36E4, MWR36J4, MCT27E5, MWT27E/X/J5



Legend
A . . . Vacuum breaker
B . . . Hot and cold fill water
C . . . Hot water to flush soap chute



Water Inlets

2 Sheets

MCR27E5, MWR27E/X/J5, MCR36E4, MWR36J4, MCT27E5, MWT27E/X/J5

Table 24. Parts List—Water Inlets

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GVW3022001	WATER INLET ASSY MCR/MWR27	
Components				
all	1	02 03588P	PERISTALTIC/WATER INLET COIN	
all	2	27A082S	HOSECLAMP 2+9/16-3.5SS305SCR	
all	3	03 40225A	FILL HOSE 18KG	
all	4	51E513NU	NUT 11/16 THRD.#64138 US PLAST	
all	5	51E513EBN	3/4" 90DEG. ELBOW W/NUT	
all	6	60E008A	TUBINGNYLREINF.75"IDX1.025"OD	
all	7	27A049	HOSECLAMP 1.25"DIA SPRINGTYPE	
all	8	02 03588W	VAC BKR BOX BKT	
all	9	96P057B71	1/2"NPT X 1/2"ORIFICE 240V 5/6 PARKER	
all	10	51E510	HOSESTEM BRASS 1/2MPX3/4HOSEID	
all	11	5N0K05ABE2	NPT NIP 1/2X5 TBE BRASS STD	
all	12	5N0K01KBE2	NPT NIP 1/2X1.5TBE BRASS STD	
all	13	51E513B	3/4"MHX1/2"FP PARKER#80GH-12-8	
all	14	W3 40544A	PLT H2O INLET MCR/MWR27	
all	15	98CMR0938	3/4 INLET 13M 3 OUT 220/240V	
all	16	51E513BP	3/4"BSP/FPXMALE GARDEN HOSE	

Drain Valve Installation

MCR36E4, MWR36J4

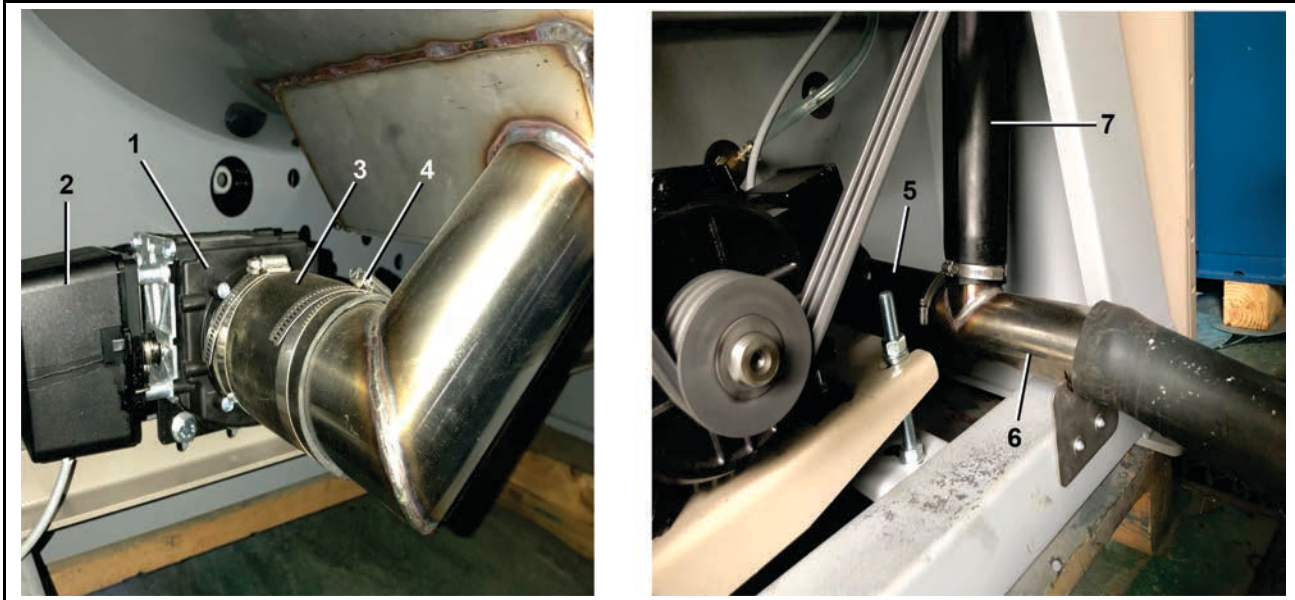


Table 25. Parts List—Drain Valve Installation

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	96D350A71	DRINVAL 3"N/O MTRDR240V 50/60C W/COVER	
all	2	96D35C0V	MTRCOVER 2-PCFOR 3"DRAINVAL	
all	3	98CMCR3510	HOSE ADAPTER 3",MCR36	
all	4	27A088S	HOSECLAMP 3+1/16-4"SSSCR#HSS56	
all	5	98CMCR3509	DRAIN HOSE 3", MCR36	
all	6	W3 40541B	WLDMNT=DRAIN PIPE, MCR36	
all	7	98CX03588C	DRAIN HOSE 3.06IDX.13WALL, 42X	

8 Control and Sensing

BNWUUM01 / 2019345

BNWUUM01 0000250244 C.2 11/7/19, 10:43 AM Released

8.1 Vibration Safety Switch Adjustments

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

8.1.1 What the Vibration Safety Switch Does

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

The **vibration safety switch** in [Figure 23: Vibration Switch, page 84](#) is an important safety feature. If properly adjusted, the switch will momentarily actuate as a result of repeated machine movement caused by an out-of-balance condition. [Table 26, page 83](#) below illustrates the effect of the **vibration safety switch** actuation.

Table 26. Effect of Tripping Vibration Safety Switch

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

8.1.2 Adjustments

BNWUUM01.C03 0000250240 A.3 C.2 B.2 11/7/19, 10:43 AM Released

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

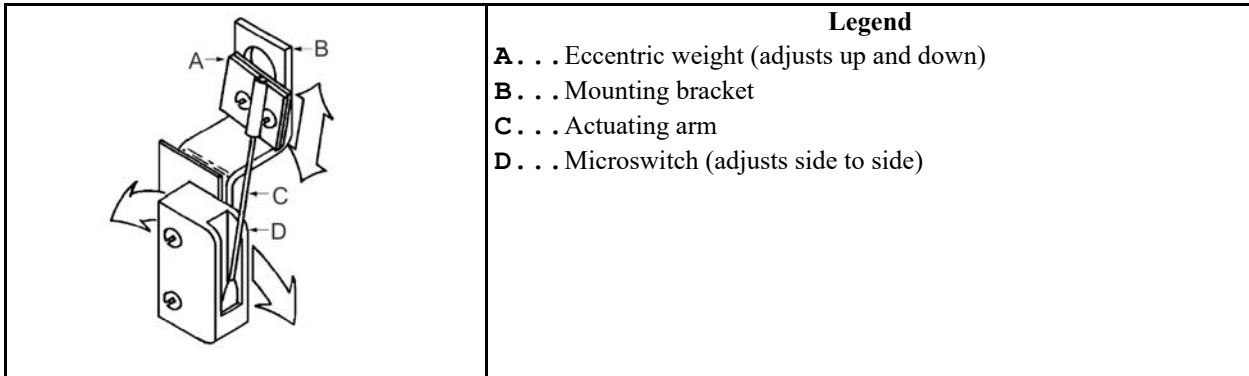
Adjustment of this switch from the factory setting is not recommended; however, it should be checked for proper functioning and adjusted if its proper setting is lost.

As shown in [Figure 23: Vibration Switch, page 84](#), the unit consists of a **sensitive micro-switch** with an extended actuating arm supporting an eccentric weight. The weight may be adjusted by moving it up and down on the arm and by rotating it on the arm. In addition, the **micro-switch** itself may be tilted from side to side.

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

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

Figure 23. Vibration Switch



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

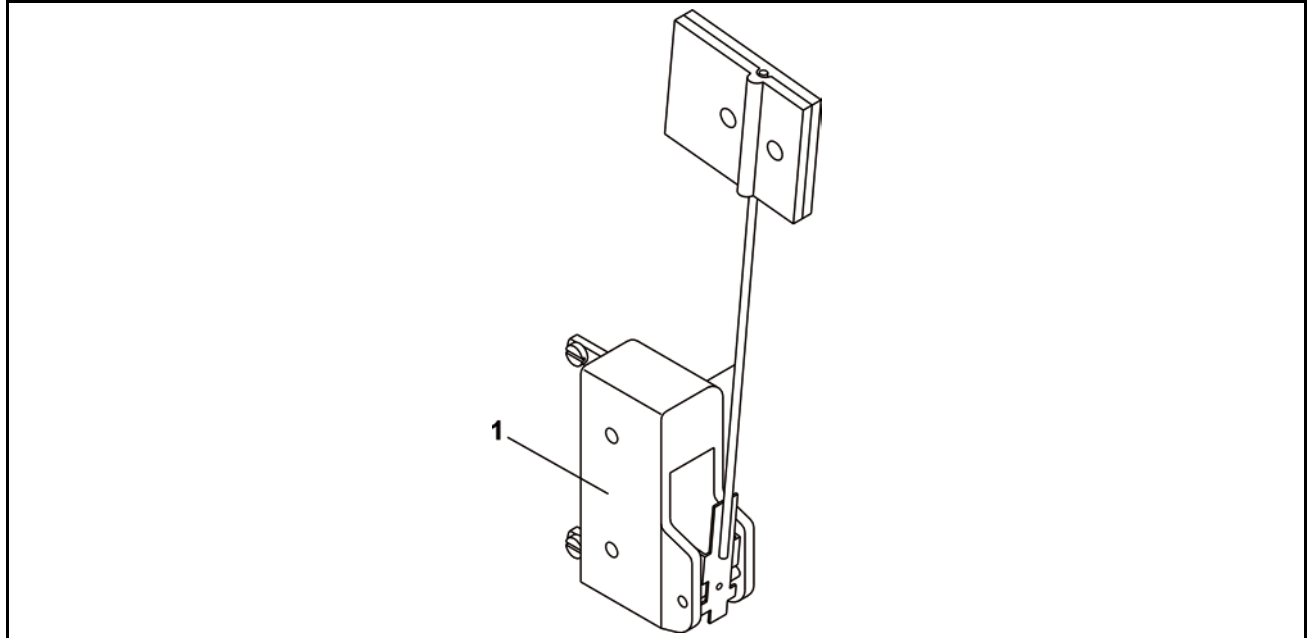
BPWCDZ02 / 2022216

BPWCDZ02.1 0000425857 A.3 A.4 5/20/22, 3:34 PM Released

Vibration Safety Switch

1 Sheet

MCR27E5, MWR27E/X/J5, MCT27E5, MWT27E/X/J5, MCR36E4, MWR36E4

**Table 27. Parts List—Vibration Safety Switch**

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	SAE03 151C	* ASY-VIBRAT SWT=LG CNTR NC/NO	

BPWCEZ01 / 2022233

BPWCEZ01.1 0000480034 A.3 A.4 5/31/22, 2:55 PM Released

Level Switch

1 Sheet

MCR27E5

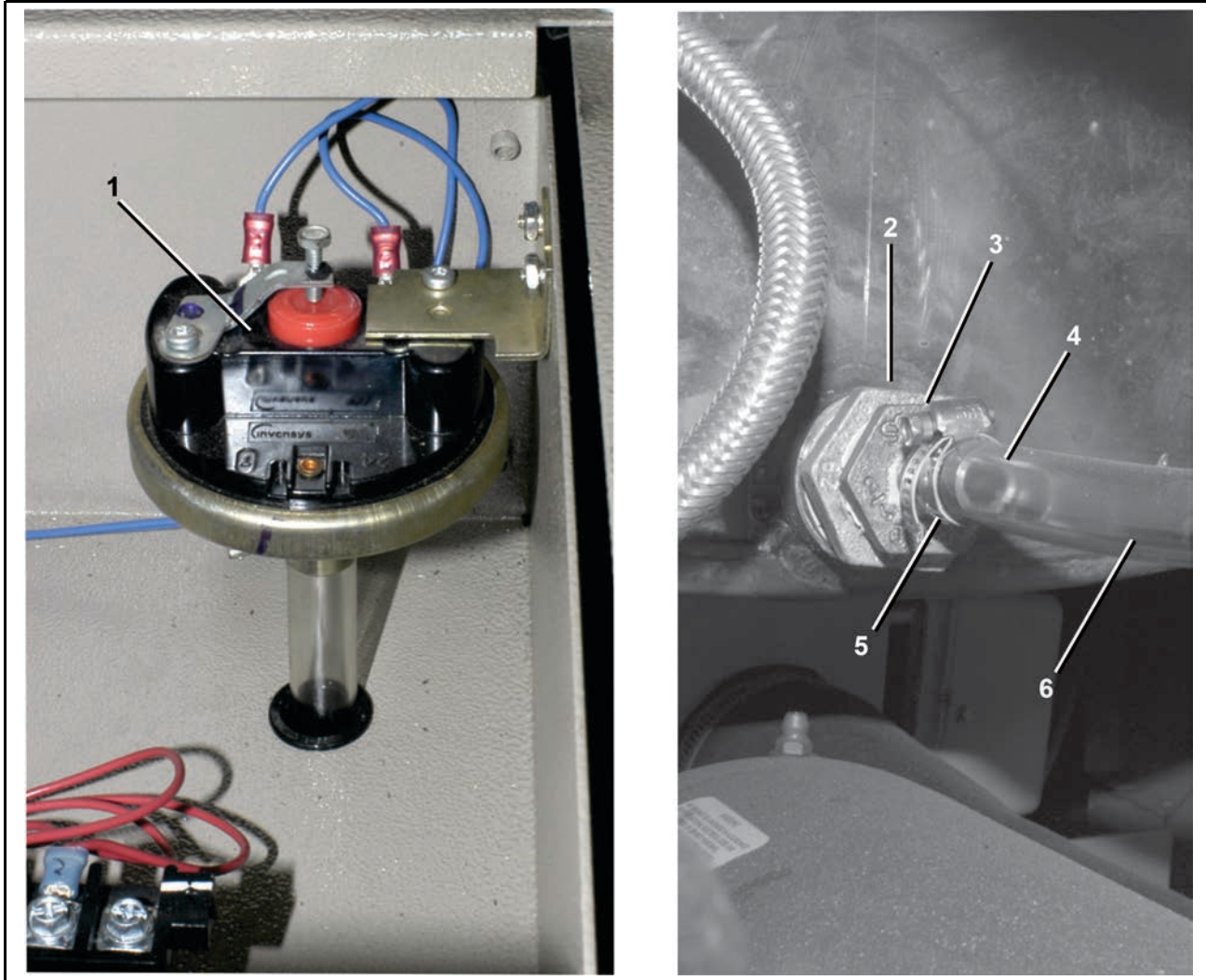


Table 28. Parts List—Level Switch

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

Used In	Item	Part Number	Description/Nomenclature	Comments
Components				
all	1	09N086A	PRESS SW INVENSYS #738-761	
all	2	5SB1A0PNFO	NPTHEXBUSH 1X3/4 GALMAL 150#	
all	3	5SB0P0GNFO	NPTHEXBUSH 3/4X3/8 GALMAL 150#	
all	4	51E507A	HOSESTEM BRASS 3/8MPX1/2HOSEID	
all	5	27A040	HOSECLAMP 7/16-25/32SS W/SCREW	
all	6	60E005P	PVC TUBING 1/2"ID X 5/8"OD	

This page intentionally blank

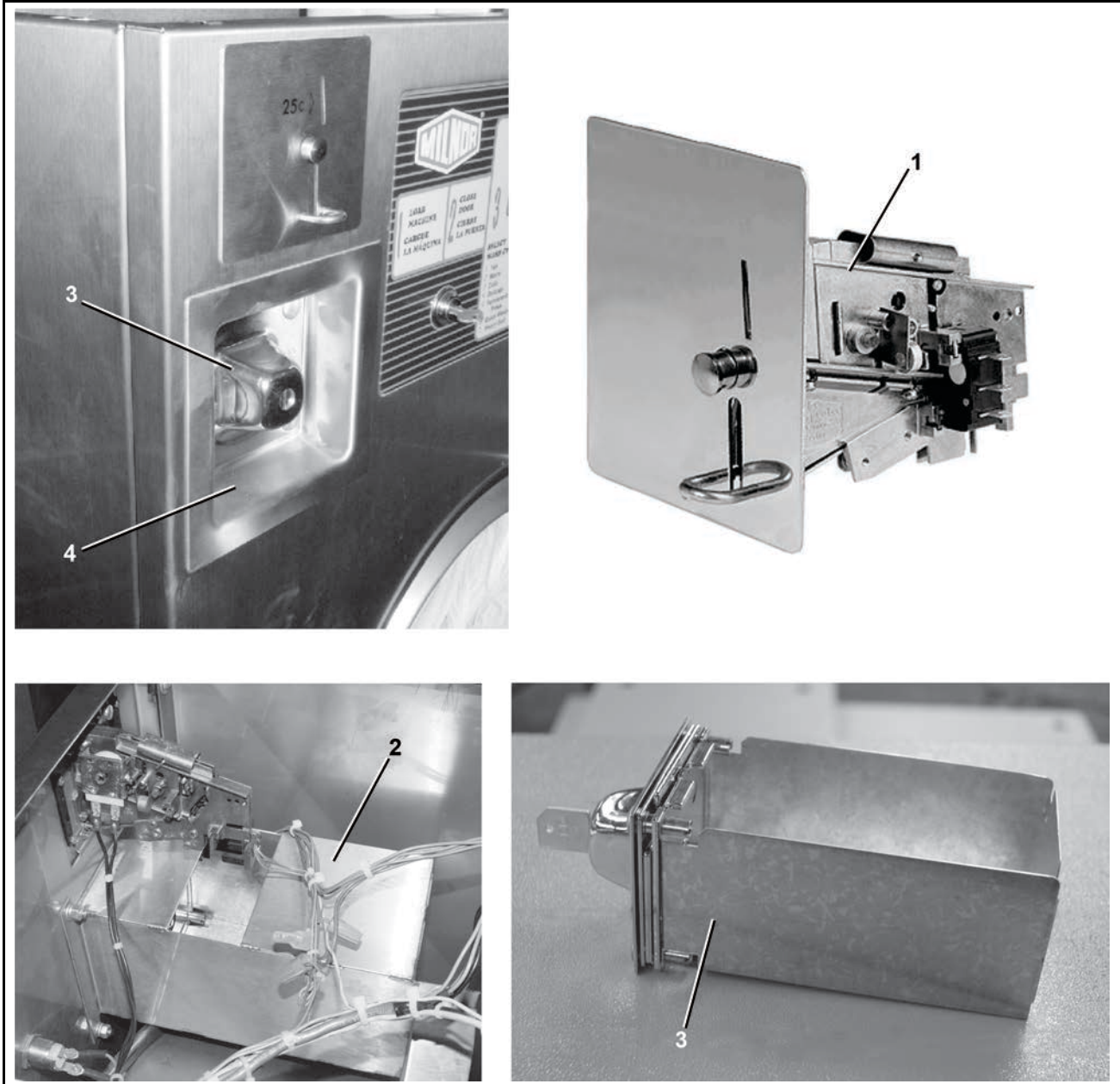
BPWCAZ01 / 2022036

BPWCAZ01.1 0000403001 A.3 A.5 1/14/22, 12:47 PM Released

Coin Acceptor and Vault

2 Sheets

MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4



Coin Acceptor and Vault

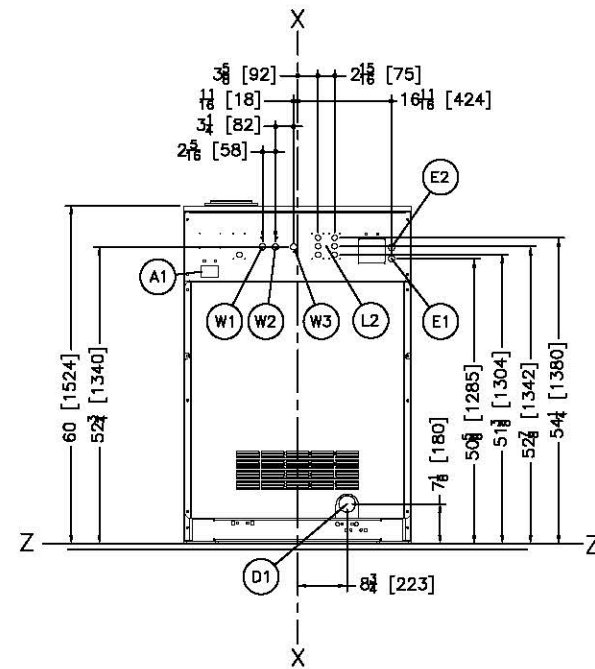
2 Sheets

MCR12E5, MCT16E5, MCT18E4, MCT27E5, MCR36E4

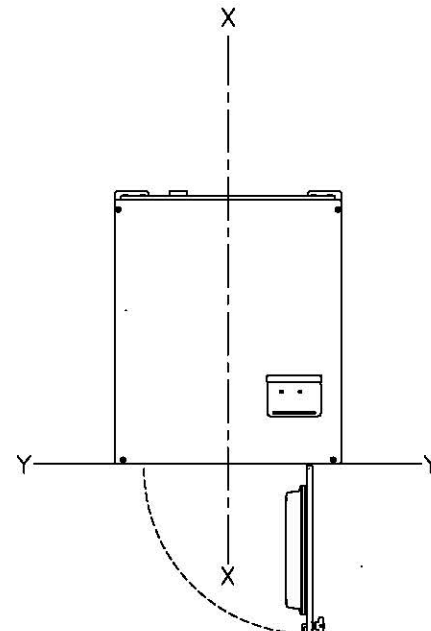
Table 29. Parts List—Coin Acceptor and Vault

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	Item	Part Number	Description/Nomenclature	Comments
Reference Assemblies				
	A	GCM33002	COIN ASSY INSTALL 2314MCR09	
Components				
all	1	38C085	REJ.W/LOCK-MECH 230V CASTIC	
all	2	W3 40029	2314MCR09 COIN VAULT WELD	
all	3	38C152KI	COIN LOC BX KEY-INDV.#71942-XD	KEYED INDIVIDUALLY
all	3	38C152KA	COIN LOC BX#71942-XD KEY-ALIKE	KEYED ALIKE
all	4	03 40029B	BEZZLE COIN VAULT	

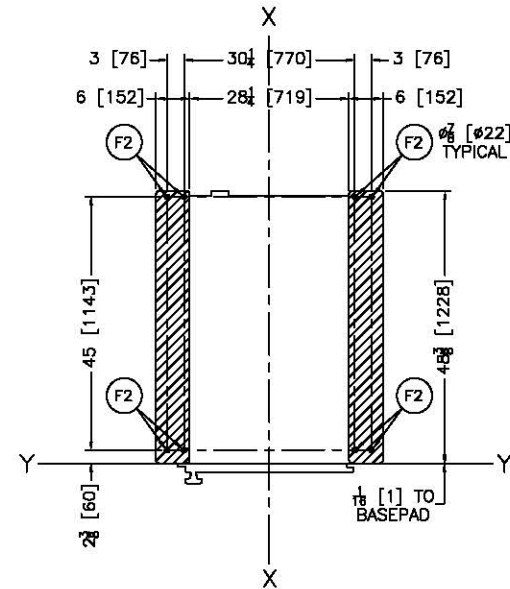
9 Dimensional Drawing



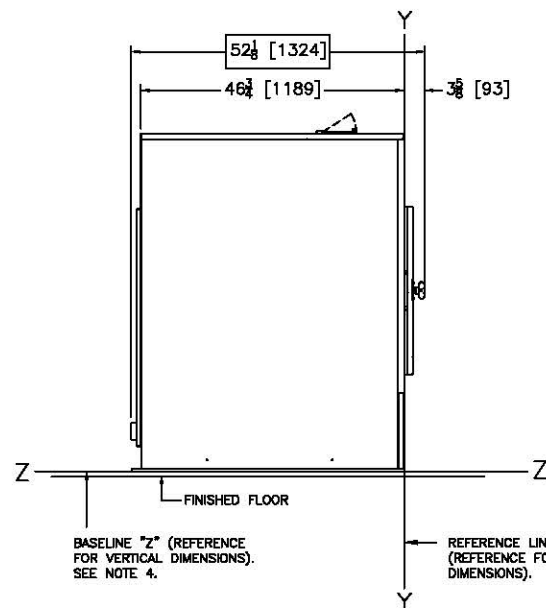
REAR VIEW



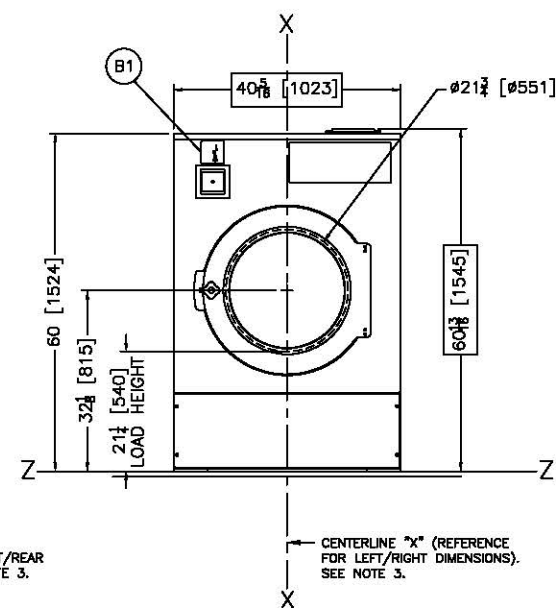
PLAN VIEW



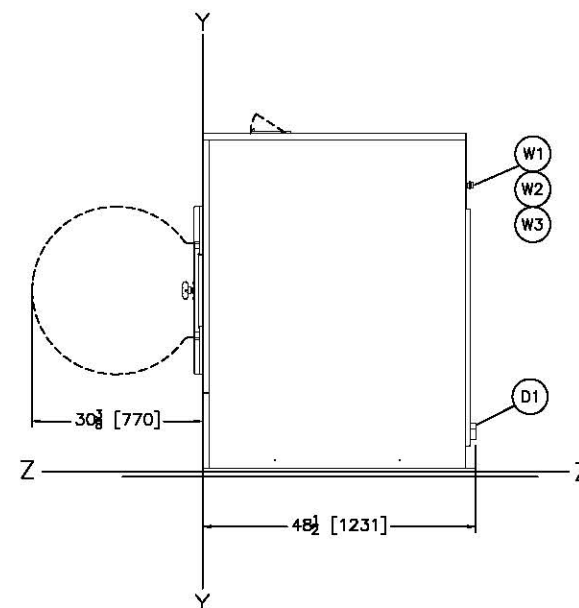
FOUNDATION PLAN



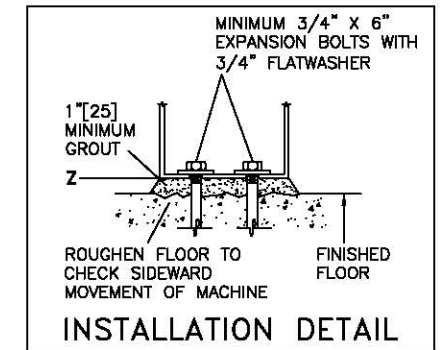
LEFT VIEW



FRONT VIEW



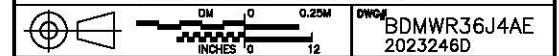
RIGHT VIEW



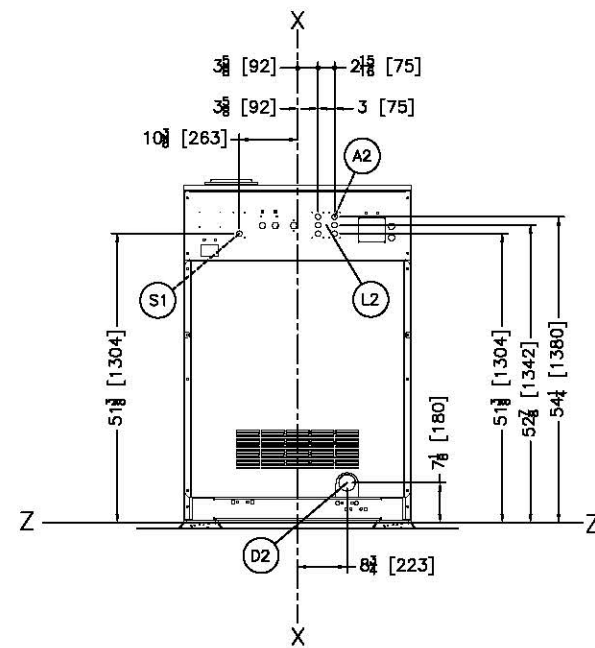
ITEM	LEGEND
W3	HOT WATER FOR SOAP CHUTE INLET, 3/4" GARDEN HOSE CONNECTION WITH 1/2" HOSE
W2	HOT WATER INLET, 3/4" GARDEN HOSE
W1	COLD WATER INLET, 3/4" GARDEN HOSE
L2	PERISTALTIC CHEMICAL INLETS: MCR36E4 (0 PORTS), MWR36E4 (3 PORTS), MWR36J4 (5 PORTS)
L1	SOAP CHUTE
F2	(8) 7/8" ANCHOR BOLT HOLES, USE 3/4" X 6" BOLTS MINIMUM
F1	FOUNDATION BASE PADS
E1	MAIN ELECTRICAL CONNECTION
D1	DRAIN, ELECTRIC OPERATED, 3" [76] OD HOSE CONNECTION
B1	COIN ACCEPTOR, MCR36E4 ONLY
A1	VACUUM BREAKER, NO CONNECTION

- NOTES**
- SHIM TO LEVEL THE MACHINE AND ALLOW FOR 1" [25] MINIMUM GROUT. ANCHOR ALL (8) ANCHOR BOLT HOLES, OR THE WARRANTY WILL BE DECLARED INVALID. USE 3/4" X 6" BOLTS. MINIMUM. SEE INSTALLATION MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS.
 - AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
 38 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL
 42 [1067] IF OBJECT IS A GROUNDED WALL (e.g. 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.

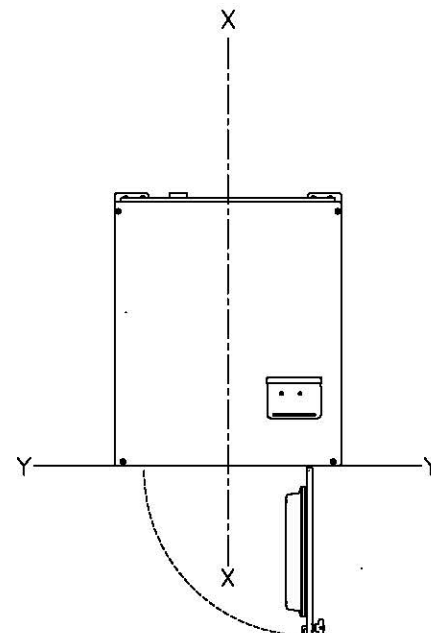
MCR36E4, MWR36J4



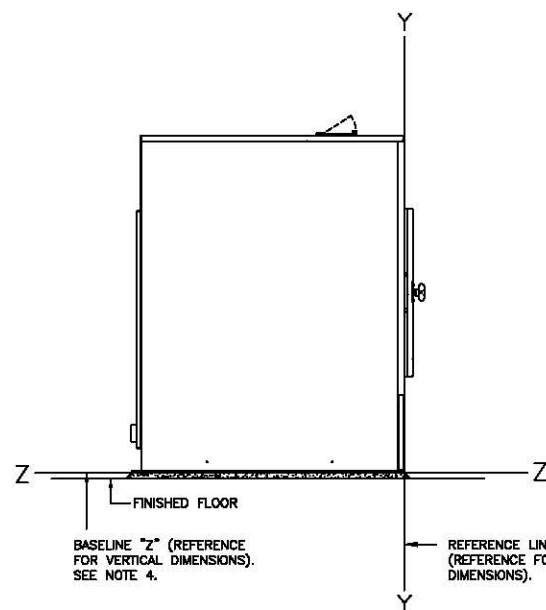
PPELLERIN MILNOR CORPORATION
 P.O. Box 400 Kenner, LA 70063, USA, Phone 504/487-8581, FAX 504/488-3094, Email: milnorinfo@milnor.com



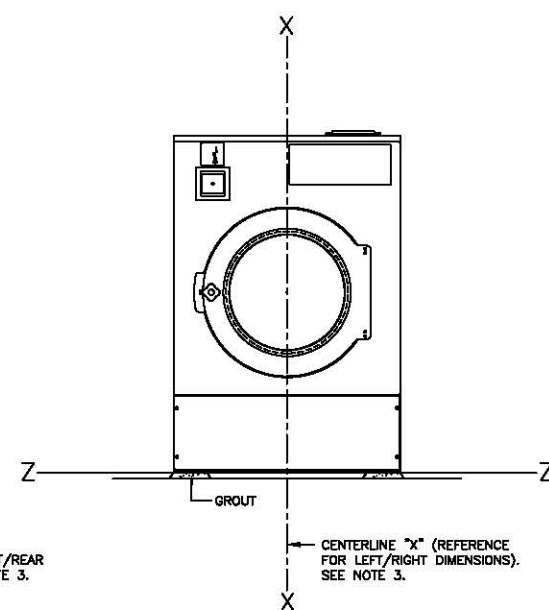
REAR VIEW



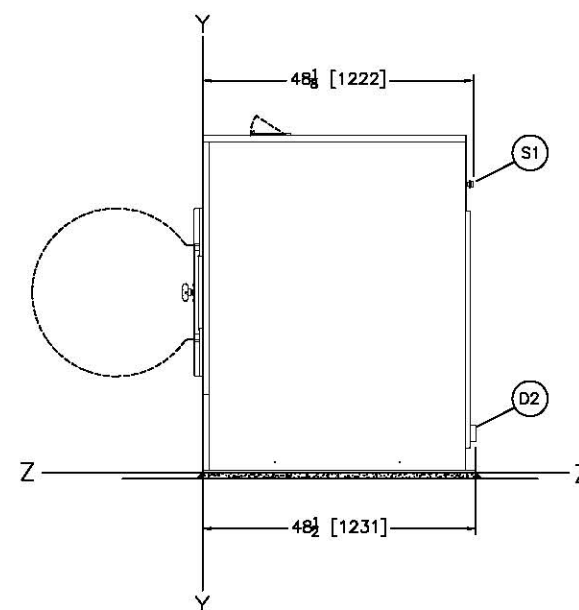
PLAN VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

ITEM	LEGEND
S1	OPTIONAL AIR-OPERATED STEAM VALVE INLET 1/2"BSPT, Y-STRAINER REMOVED FOR SHIPPING MUST BE ADDED AT INSTALLATION, REQUIRES AIR (A2) OFFERED ON MWR36J4 ONLY
L2	PERISTALTIC CHEMICAL INLETS: (5 PORTS) WITH OPTIONAL AIR-OPERATED STEAM, MWR36J4
D2	OPTIONAL ELECTRIC HEAT- DRAIN, ELECTRIC OPERATED, 3" [76] OD, MWR36J4 ONLY.
A2	1/4"BSPT AIR INLET, ONLY WITH OPTIONAL AIR-OPERATED STEAM, CUSTOMER MUST SUPPLY AIR STRAINER.

- NOTES**
- AS OF THIS WRITING, THE MINIMUM CLEARANCE REQUIRED BY U.S. NATIONAL ELECTRIC CODES, FROM ELECTRIC BOX TO ANY OBJECT IS:
 38 [914] IF OBJECT IS AN UNGROUNDED (INSULATED) WALL
 42 [1067] IF OBJECT IS A GROUNDED WALL (e.g. 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.

OPTIONS MCR36E4, MWR36J4

DM 0 0.25M DWG# BDMWR36J4AB
 INCHES 0 12 2023262D

MILNOR PELLERIN MILNOR CORPORATION
 P.O. Box 400 Kenner, LA 70063, USA, Phone 504/487-9581,
 FAX 504/488-3084, Email: milnorinfo@milnor.com