

ToughTek[®] MP-Series Mixing Pumps

3A4789E

EN

Electric mixing pump for use with Ardex brand self-leveling underlayment materials. For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

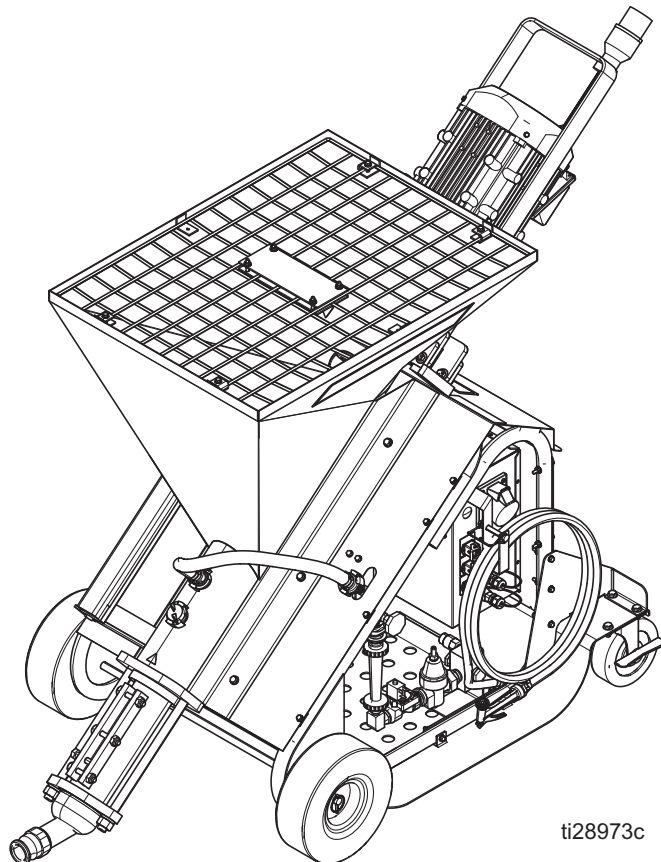
See page 2 for model information.

Maximum Working Pressure: 300 psi (2.07 MPa, 20.7 bar)



Important Safety Instructions

Read all warnings and instructions in this and all related manuals. Save these instructions.



ti28973c

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Related Manuals

Manual	Description
3A4554	ToughTek Mortar Coupling Hose
3A5637	ToughTek Camlock Mortar Hose

Manuals are available at www.graco.com

Models with Water Pump

Model	Part	Series	Description	Power
MP-20	25M070	D	ToughTek MP-20	200-240 VAC, 1 Phase, 60 Hz
	25M071	D	ToughTek MP-20 16A	200-240 VAC, 1 Phase, 50 Hz
MP-40	25M072	D	ToughTek MP-40	200-240 VAC, 3 Phase, 60 Hz
	25M073	D	ToughTek MP-40 380V	350-415 VAC, 3 Phase, 50 Hz

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
   	MOVING PARTS HAZARD Moving parts can pinch, cut or amputate fingers and other body parts. • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
 	ELECTRIC SHOCK HAZARD This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock. • Turn off and disconnect power before servicing equipment. • Connect only to grounded electrical outlets. • Ensure ground prongs are intact. • Do not expose to rain. Store indoors. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

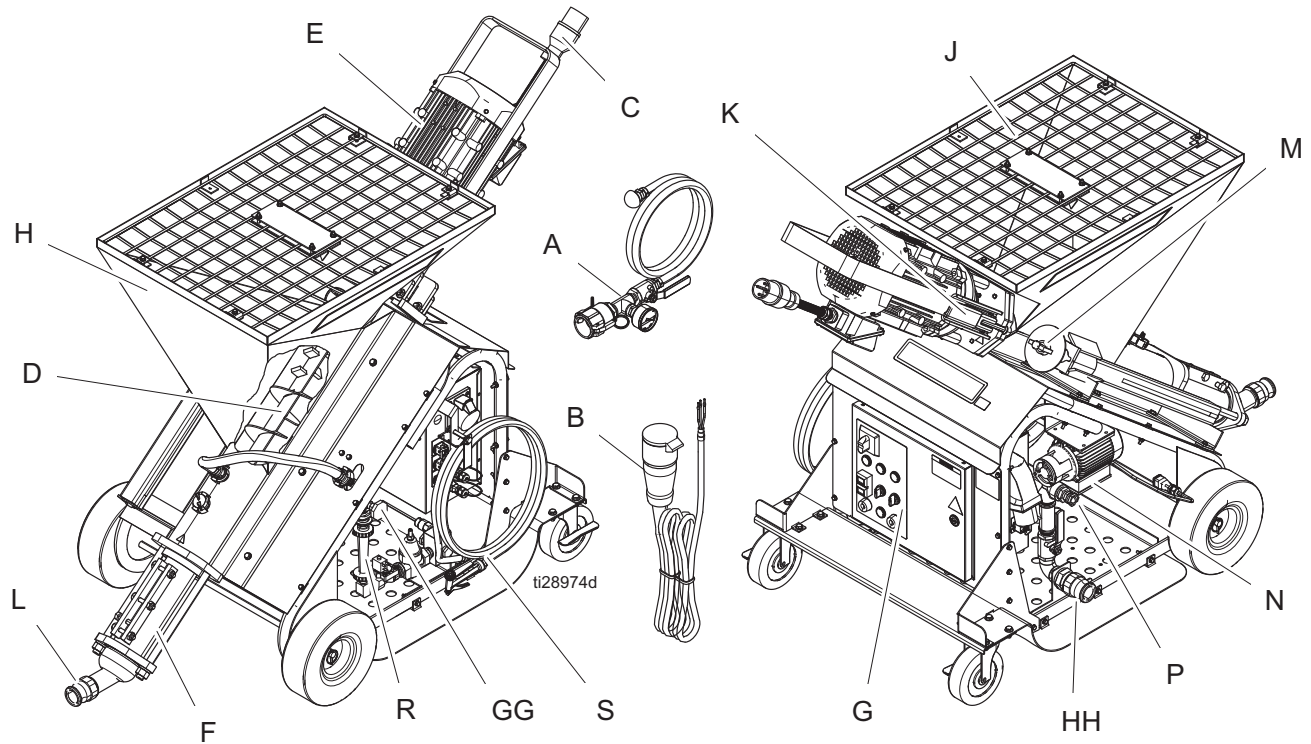


WARNING

 	EQUIPMENT MISUSE HAZARD Misuse can cause death or serious injury. • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer. • Do not leave the work area while equipment is energized or under pressure. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
  	PRESSURIZED EQUIPMENT HAZARD Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury. • Relieve Pressure when you stop spraying/dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.
	TOXIC FLUID OR FUMES HAZARD Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed. • Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	PERSONAL PROTECTIVE EQUIPMENT Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to: • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

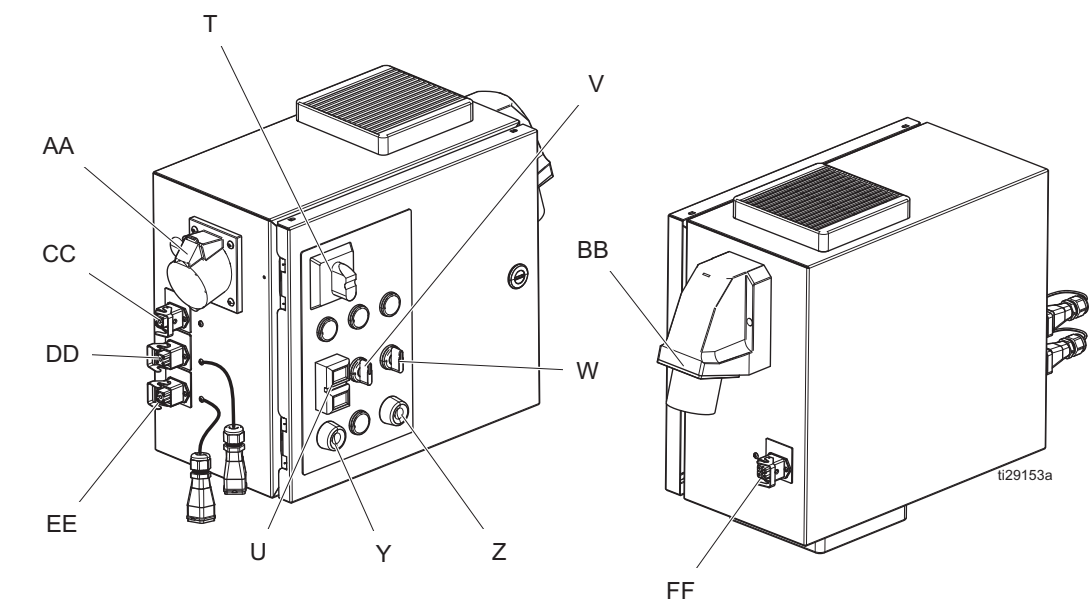
MP-20 and MP-40 Series



Ref.	Description
A	Pressure Test Hose
B	Power Cable
C	Motor Cable
D	Drive/Mix Shaft
E	Gear Box Motor
F	Rotor/Stator Pump
G	Control Box
H	Hopper
J	Hopper Grate

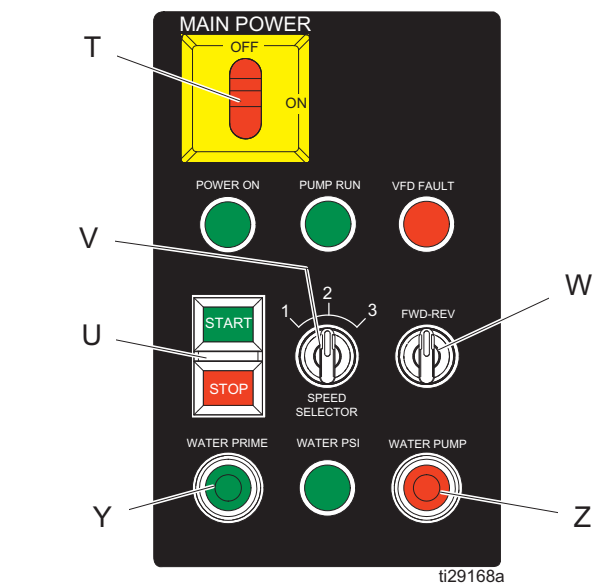
Ref.	Description
K	Motor Latch
L	Pump Assembly Outlet
M	Clean-Out Shaft
N	Water Pump
P	Water Pump Inlet
R	Water Flow Meter
S	Wash-Down Hose
GG	Water Flow Adjustment Valve
HH	Water Pump System Bypass Outlet

Control Box



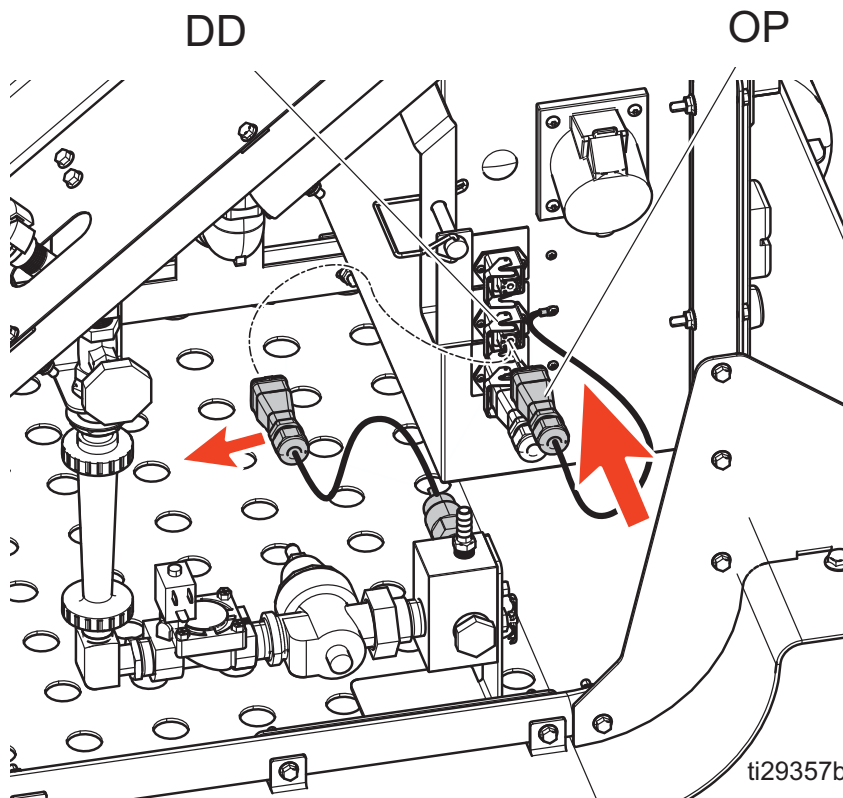
Ref.	Description
AA	Power Out Connector
BB	Main Power In Connector
CC	Water Valve Connector
DD	Water Pressure Connector
EE	Remote Switch Connector
FF	Water Pump Connector

Control Box Control Panel



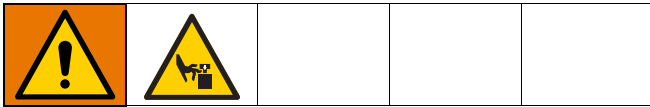
Ref.	Description
T	Main Power Disconnect Switch
U	Start/Stop Push Button
V	Speed Selector Knob
W	Forward/Reverse Pump Direction Switch
Y	Water Prime Button
Z	Water Pump Button

Water Pressure Over-ride Plug (OP)



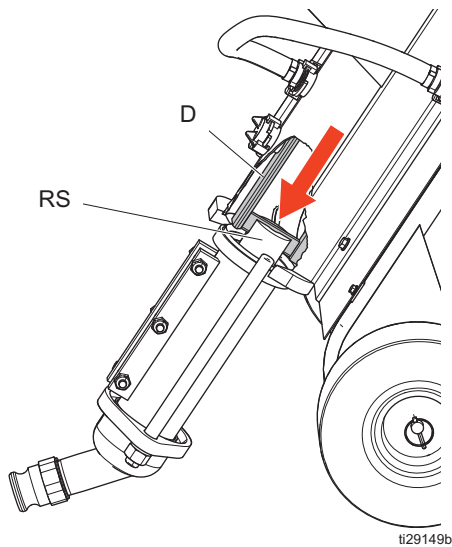
The water solenoid valve requires 40 psi of water pressure to be energized. If the water pressure is not 40 psi or greater, the solenoid valve will remain normally closed, blocking the flow of water. This operation can be overridden by unplugging the water pressure connector (DD) and connecting the water pressure override plug (OP). This mimics the signal that water pressure of 40 psi or greater is present, even when it is not.

Set Up

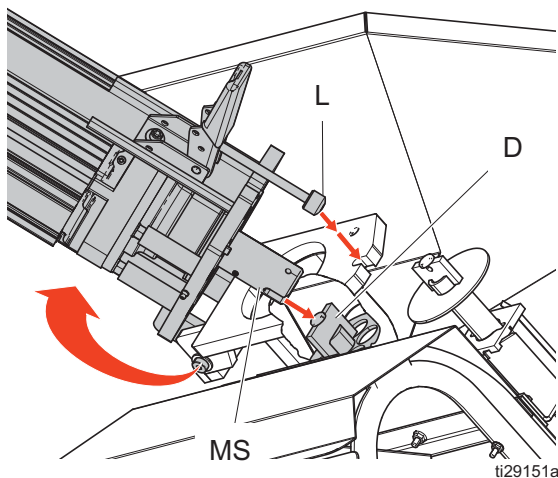


NOTE: For letter references, see the **Component Identification** section, starting on page 5.

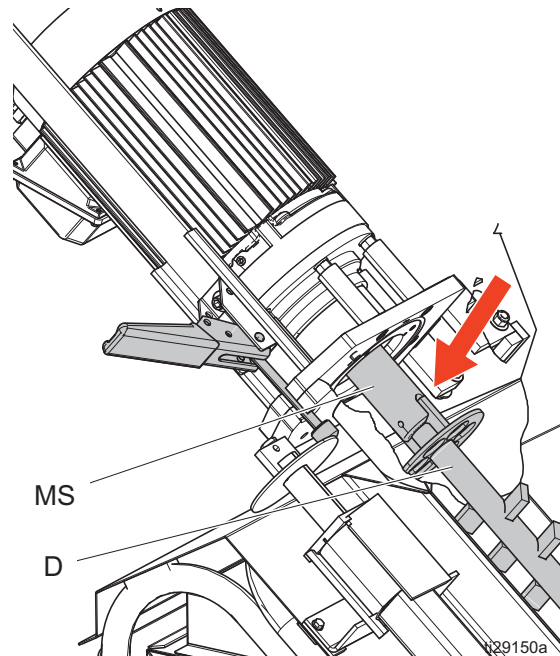
1. Assemble the drive/mix shaft (D) into the hopper and engage the flat end as shown below into the slot of the rotor (RS).



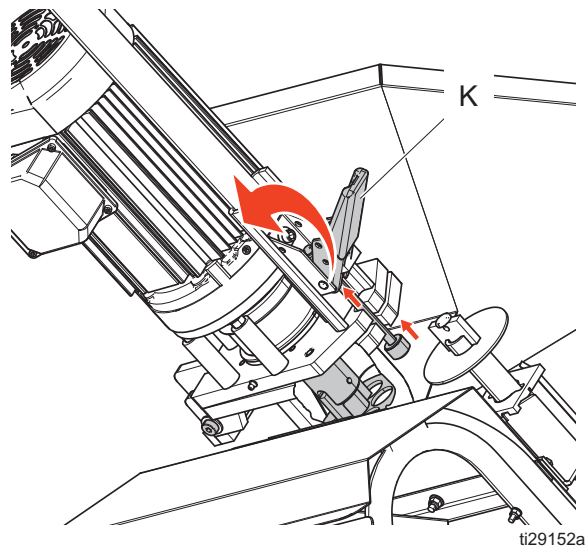
2. Slowly swing the motor assembly toward its closed position, stopping shortly before the motor shaft adapter (MS) and drive/mix shaft (D) touch.



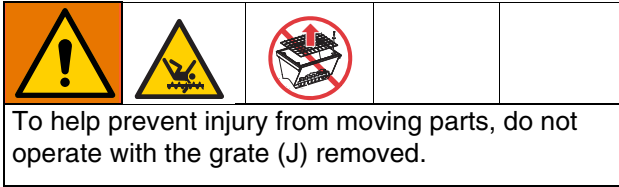
3. Make sure the motor shaft adapter (MS) and drive/mix shaft (D) are aligned so the drive shaft flat slides into the motor shaft adapter slot. If they do not align, rotate them into position.



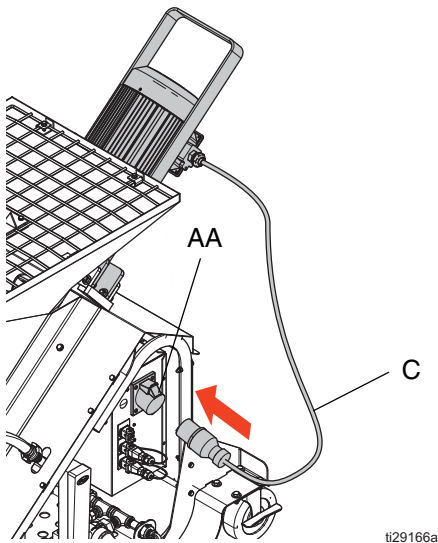
4. Swing the motor completely shut and lock it in place with the motor latch (K).



- Secure the hopper grate (J) onto the top of the hopper (H).



- Connect the motor cable (C) to the power out connector (AA).



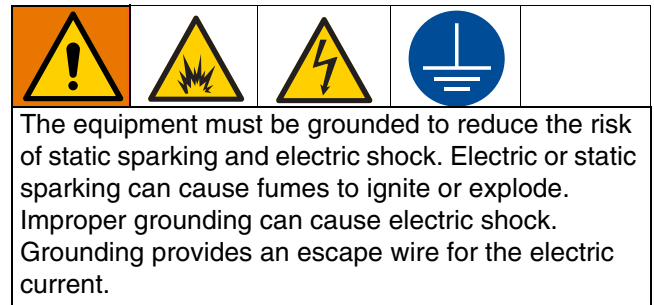
- Verify that the main power disconnect switch (T) is OFF.
- Connect the power cable (B) to an appropriate power source.
- Connect power cable (B) to the main power in connector (BB).

Electrical Connections

Power Cable Color Code

Power Cable MTA727 (for systems 25M070, 25M071):	
Line 1	Black
Line 2	White
Ground	Green
Power Cable MTA728 (for systems 25M072):	
Line 1	Black
Line 2	White
Line 3	Red
Ground	Green
Power Cable MTA851 (for systems 25M073):	
Line 1	Black
Line 2	White
Line 3	Red
Neutral	Orange
Ground	Green

Grounding



The system is grounded through the power cord.

Operation

NOTE: For letter references, see the **Component Identification** section, starting on page 5.

Priming Hoses with Water

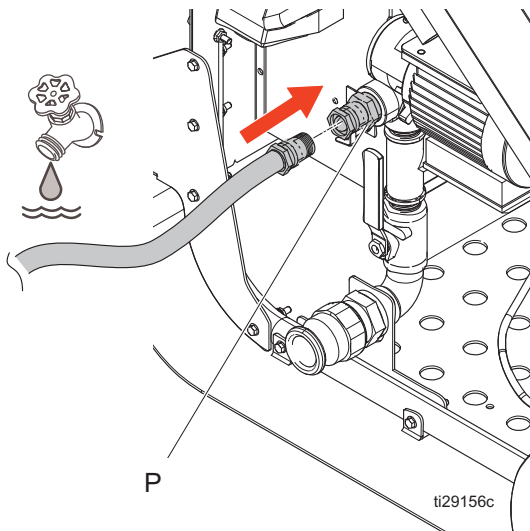


NOTICE

To prevent material curing in the hose, never load material into a dry hose. Loading material into a dry hose will cause the material to stick to components and cure, causing damage and requiring replacement of those parts.

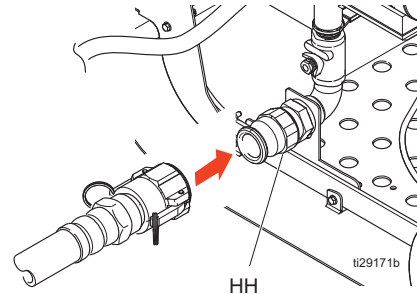
1. Attach a water feed hose to the water pump inlet (P).

NOTE: The water pump inlet is 3/4 in. female garden hose fitting.

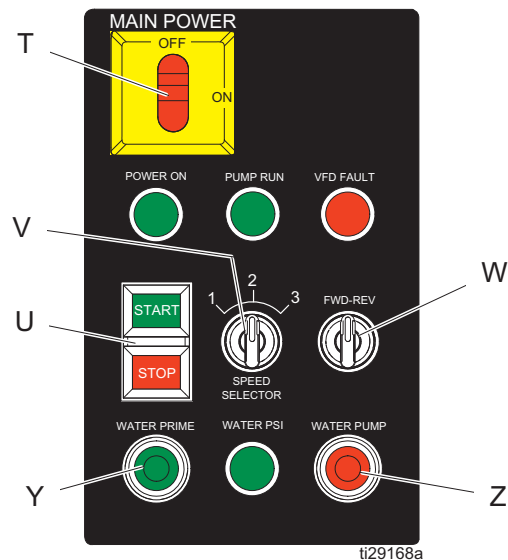


NOTE: The water feed must be able to supply water pressure of 30 psi or greater, or else the pump will not operate in the forward direction. A pressure switch that controls the pump forward direction operation activates at 30 psi to allow forward operation. If water pressure is below 30 psi and the pump must be operated in the forward direction, the pressure switch can be bypassed by connecting the water pressure bypass plug.

2. Attach the hose to the water pump system bypass outlet (HH).



3. Place the end of the hose into a waste container.
4. Turn the main power disconnect switch (T) to ON.
5. Open the ball valve directly before the water pump system bypass outlet (HH).
6. Press the water pump button (Z) to turn on the water pump.



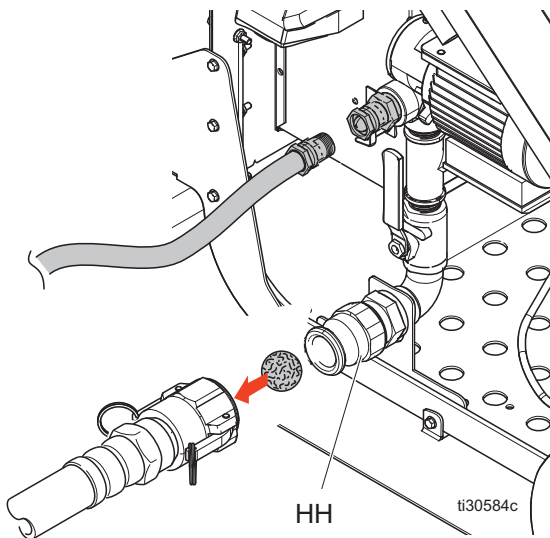
NOTICE

Do not allow the water pump to operate with no flow for more than five minutes. The water pump can become overheated and become damaged.

7. Run water until water flows from the end of the hose.
8. Press the water pump button (Z) to stop the water pump and close the ball valve directly before the water pump system bypass outlet (HH).

9. Run clean-out ball(s) to coat the inside of the hoses:

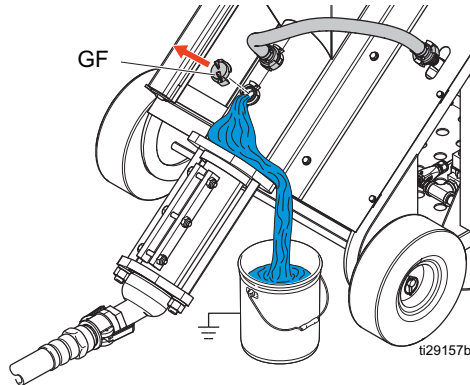
- a. Remove the hose inlet from the water pump system bypass outlet (HH) and place a hose clean-out ball within the hose inlet. The ball must be wetted down before inserting. If using a 1 in. whip hose, begin with the smallest clean-out ball.



- b. Reattach the hose to the water pump system bypass outlet (HH), open the ball valve, and press the water pump button (Z) to resume flushing the hose.
 - c. The clean-out ball will be pushed out of the hose after several minutes. Once the ball is pushed through the hose, press the water pump button (Z).
 - d. If using a 1 in. whip hose, remove the hose and transition fitting and repeat the process using the large clean-out ball on the remaining hoses. Once the ball is pushed out, stop the water pump and reattach the transition fitting and whip hose.
10. After using the clean-out ball(s), close the ball valve, remove the hose inlet from the water pump system bypass outlet (HH), and attach the hose inlet to the pump outlet (L).

Priming System with Water

1. Remove the Geka fitting cap (GF) from the lower port.
2. Press the water pump button (Z), then hold the water prime button (Y) for several seconds. The water flow adjustment valve (GG) must be open. Once water flows from the lower port, release the water prime button (Y).



NOTE: If water does not fill the mixing chamber, see **Startup After Extended Storage**, page 19, or contact Graco Technical Support.

3. Add dish soap or a slicking agent to the water through the lower port and replace the Geka fitting cap (GF).

NOTE: When priming with water, add dish soap or a slicking agent to help lubricate the pump. Priming with water only may cause excessive pump friction, producing a high pitch noise and premature pump wear.

4. Turn the speed selector knob (V) to speed 1 and press the START button (U). Press the STOP button (U) once the pump starts rotating freely.

NOTE: Do not run the rotor/stator pump with water for more than five minutes at a time or premature pump wear may occur.

5. If the pump does not rotate within five seconds of pressing the START button (U), with the pump on, quickly turn the pump direction switch (W) between forward and reverse.

NOTE: The pump direction switch (W) is normally in the FWD position. The switch must be held in the REV position to reverse the pump direction. The switch will return to the FWD position when it is released.

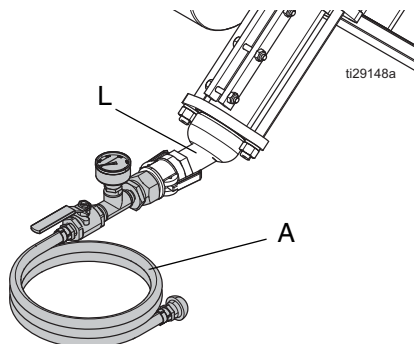
NOTE: If the pump has not broken free after five seconds, press the STOP button (U) or the motor control could encounter an overload error. After multiple attempts to free the pump, allow the motor to cool for one minute and see **Troubleshooting**, page 21.

6. Remove the hose inlet from the pump outlet (L) and walk the water out of the hose.
 - a. Starting at the pump, elevate the hose and slowly move towards the hose outlet. As you move towards the hose outlet, the remaining water will drain from the hoses.
7. Perform **Pump Pressure Setting** procedure, page 13.
8. Reattach the hose to the pump outlet (L). The system is ready to prime with material.

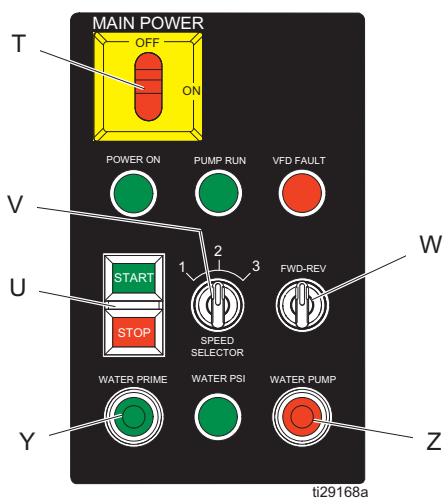
Pump Pressure Setting



1. Attach the pressure test hose (A) to the pump outlet (L) with the pressure test hose ball valve turned to OPEN.

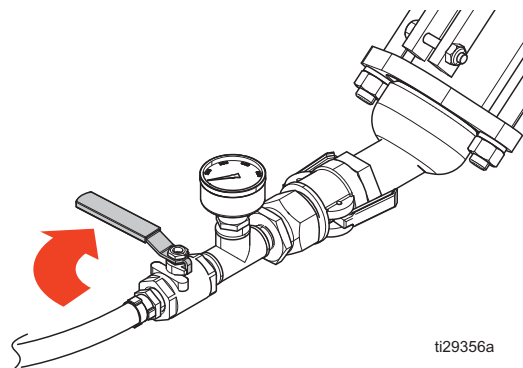


2. Place the end of the hose in a waste container.
3. Press the START button (U). Water should flow from the outlet of the pressure test hose.



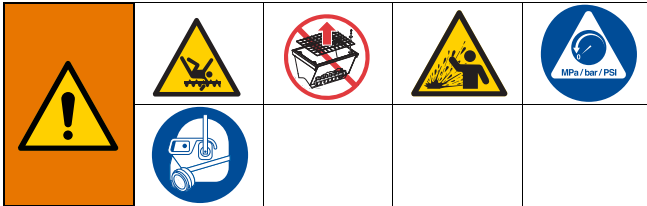
4. Set the water flow meter (R) to the approximate level needed for pumping material by adjusting the water flow adjustment valve (GG).
 - 2.5 gpm for MP-20
 - 5 gpm for MP-40

5. Use the speed selector knob (V) to change the pump speed to level 2.
6. Slowly close the pressure test hose ball valve.



7. Observe the pressure setting on the pressure gauge.
 8. Slowly open the pressure test hose ball valve to relieve any remaining pressure.
 9. Press the STOP button (U).
 10. To increase pressure, evenly tighten the stator bolts. Evenly loosen the stator bolts to decrease pressure.
 11. Repeat steps 3-10 until desired pressure is achieved.
- NOTE:** Over-tightening the stator can wear out the stator prematurely. Under-tightening the stator will cause the pump to under perform and have reduced output. System is factory-set to a pressure of approximately 300 psi.
12. Remove the pressure test hose (A) from the pump outlet (L).

Prime and Pump Material



To help prevent injury from moving parts, do not operate with the grate (J) removed.

To prevent injury from splashing fluid, always follow the **Pressure Relief Procedure**, page 15, before disconnecting any hoses or hose fittings.

Hose pack-out can occur while using this equipment. During a pack-out, equipment and fluid will stay pressurized. If a pack-out occurs, follow the **Pressure Relief Procedure**, page 15, before disconnecting any hoses or hose fittings.

NOTE: To reduce risk of a hose pack-out, pump material using the shortest required length of hose.

Prime and Pump

1. Prime the hoses and system with water. See **Priming Hoses with Water** (page 10) and **Priming System with Water** (page 12).
2. Verify that material hose is attached to the pump outlet.

NOTE: To reduce waste, use a short length of hose while adjusting the material consistency. Additional hose lengths can be added once desired material consistency is achieved.

3. Add dry material:

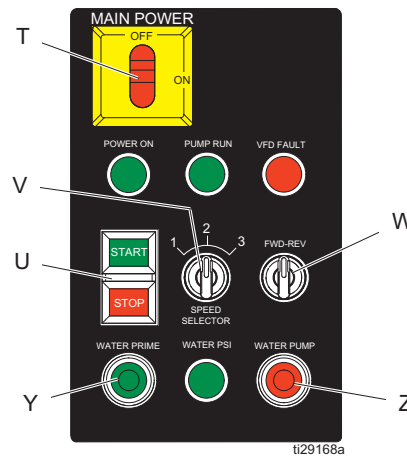


Adding material to the hopper generates clouds of dust, and exposes the user to the sharp teeth on the hopper grate. Always wear protective equipment when adding material to the hopper.

Set a bag of material on the center of the hopper grate (G) so the teeth are in the middle of the bag. Twist the bag 15 degrees in both directions to rip open, and lift both ends of the bag so the dry material falls into the hopper. Dispose of the bag.

NOTE: Keep the hopper filled with dry material when priming with material and pumping.

4. Press the water pump button (Z) (on water pump models) and START button (U). Material should start to flow from the hose outlet (L).



5. Adjust the water flow rate using the water flow adjustment valve (GG) until the desired material consistency is achieved.
6. Pump and apply material according to material manufacturer's specifications.

NOTE: To stop dispensing momentarily, press the water pump button (Z) (on water pump models) and STOP button (U). To resume dispensing, press the water pump button (Z) and START button (U).

If the material is approaching its cure time, or if the system will be idle for enough time for material to begin curing in the system, **Flush** the system (see page 16).

NOTICE

Failure to flush prior to material curing in the system will result in damage to the system and may require replacement of all system parts in contact with material.

7. When pumping is completed, press the water pump button (Z) and the STOP button (U).
8. Follow **Shutdown**, page 18.

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Push the STOP button (U).
2. Hold the hose outlet firmly against a designated waste container.
3. Turn the speed control knob (V) to speed 1.
4. Hold the pump direction switch (W) in the REV position and push the START button (U).
5. Allow the pump to run in reverse for several seconds while holding the pump direction switch (W) in the REV position.

NOTE: If the pump is stalled, do not run the pump for more than five seconds at a time or the motor control could encounter an overload error. After multiple attempts to free the pump, allow the motor to cool for one minute.

6. Push the STOP button (U) after five seconds and release the pump direction switch (W). The switch will return to its normal FWD position.
7. Turn the main power disconnect switch (T) to OFF.
8. If you suspect the hose is still clogged or that pressure has not been fully relieved after following the previous step:
 - a. Starting at the open hose outlet, VERY SLOWLY open the coupling while maintaining control of the hose.
 - b. Clear the hose. If there is still pressure trapped down the line, work your way back to the pump by individually opening each coupling between each hose connection. Maintain control of each hose and VERY SLOWLY open each coupling until pressure has been fully relieved.

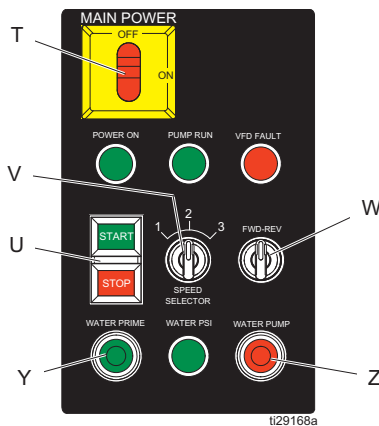
System Flush



NOTICE

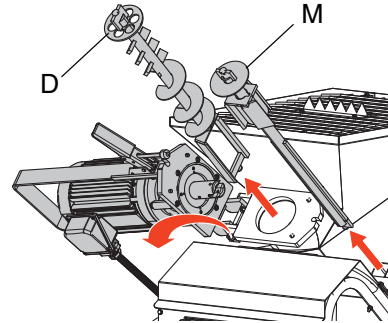
Failure to flush prior to material curing in the system will result in damage to the system and may require replacement of all system parts in contact with material.

1. With the pump stopped, turn the speed control knob (V) to speed level one.



2. Place the hose outlet in a waste container.
3. Flush material from the hopper and the mixing chamber.
 - a. Press the water pump button (Z) (on water pump models) and START button (U) to begin flushing out any remaining material until the hopper is empty.
 - b. Once the hopper is empty of all material, press the STOP button (U) to stop the pump.
 - c. Rinse the hopper (H) with the attached water wash-down hose (S).
 - d. Press the START button (U) and run the pump until no water is left inside the hopper.
4. If there is still material left in the mixing chamber after flushing with water, use the clean-out shaft (M).
 - a. Turn the main power disconnect switch (T) to OFF.
 - b. Undo the motor latch (K) and swing the motor assembly (E) open.

- c. Remove the drive/mix shaft (D) and replace with the clean-out shaft (M).



NOTE: Only use the clean-out shaft (M) if material cannot be cleaned using normal flushing means. Excessive use of the clean-out shaft can cause premature wear to the system.

- d. Slowly swing the motor assembly toward its closed position, stopping shortly before the motor shaft adapter (MS) and clean-out shaft (M) touch.
- e. Make sure the motor shaft adapter (MS) and clean-out shaft (M) are aligned so the clean-out shaft flat slides into the motor shaft adapter slot. If they do not align, rotate them into position.
- f. Swing the motor completely shut and lock it in place with motor latch (K).
- g. Turn the main power disconnect switch (T) to ON and press the water pump button (Z) (on water pump models).
- h. Spray the hopper (H) with water.

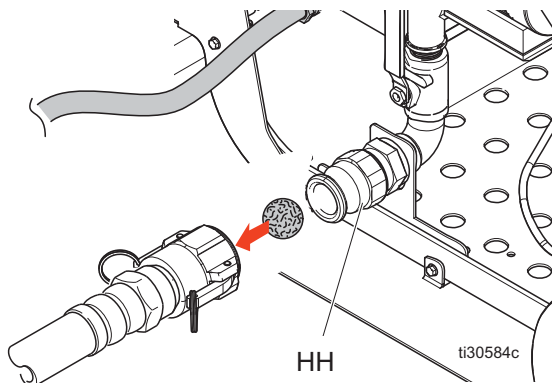
NOTICE

Only run the pump with the clean-out shaft (M) while the speed control knob (V) is set to level one. Using the clean-out shaft at higher speed levels may cause damage to shaft and hopper.

- i. Press the START button (U) and run the pump until no water is left in the hopper. Press the STOP button (U) and water pump button (Z) (on water pump models) to stop the pump.
 - j. Make sure the mixing chamber is clean. If not, repeat step 5h and 5i until clean.
 - k. Repeat steps 5a through 5f, but replace the clean-out shaft (M) with the drive/mix shaft (D).
5. Remove the hose inlet from the pump outlet (L) and attach the hose to the water pump system bypass outlet (HH).

Hose Flush

1. Attach hose to the water pump system bypass outlet (HH).
2. Open the water pump outlet ball valve and press the water pump button (Z). Run until heavy sediment has been flushed and clean water begins to exit the hose outlet.
3. Press the water pump button (Z) to stop dispensing and close the ball valve.
4. Remove the remaining material in the hoses with a hose clean-out ball:
 - a. Place the hose outlet into a waste container.
 - b. Remove the hose inlet from the water pump outlet and place a hose clean-out ball within the hose inlet. The ball must be wetted down before inserting. If using a 1 in. (25 mm) whip hose, begin with the smallest clean-out ball.
 - c. Reattach the hose to the water pump system bypass outlet (HH), open the ball valve, and press the water pump button (Z) to resume flushing the hose.
 - d. The hose clean-out ball will be pushed out of the hose after several minutes. Once the ball is pushed through the hose, press the water pump button (Z). Repeat until all sediment is removed from the hose.
 - e. If using a 1 in. (25 mm) whip hose, remove the hose and transition fitting and repeat the process using the large clean-out ball on the remaining hoses. Once the ball is pushed out, stop the water pump. Insert the large clean-out ball and flush the hose repeatedly until sediment is removed from the hose. Then reattach the transition fitting and whip hose.
5. Turn the main power disconnect switch (T) to OFF.
6. Dispose of all waste material in accordance with local rules and regulations. See manufacturer SDSs for additional information.



Shutdown

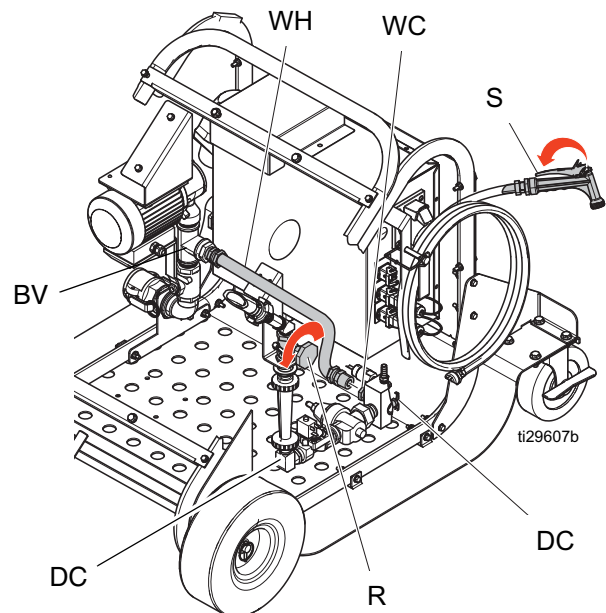
1. Follow **System Flush** (page 16) and **Hose Flush** (page 17).
2. Disconnect the power supply.
3. Drain water from the water pump system.

NOTICE

In cold environments, water left in the pump system could freeze and damage the equipment. When working in cold environments, drain all water from the pump system to avoid damage.

Winterizing and Extended Storage

1. Connect the power cable to the appropriate power source and turn the main power disconnect switch (T) to ON.
2. If connected to the water pump inlet, disconnect the water feed hose.
3. Disconnect the water assembly hose (WH) from the water assembly control inlet (WC). Loosen the drain cock (DC) behind the water flow meter, fully open the water flow adjustment valve (GG), fully open the water pump ball valve (BV), and then open the spray gun latch on the water wash-down hose (S).



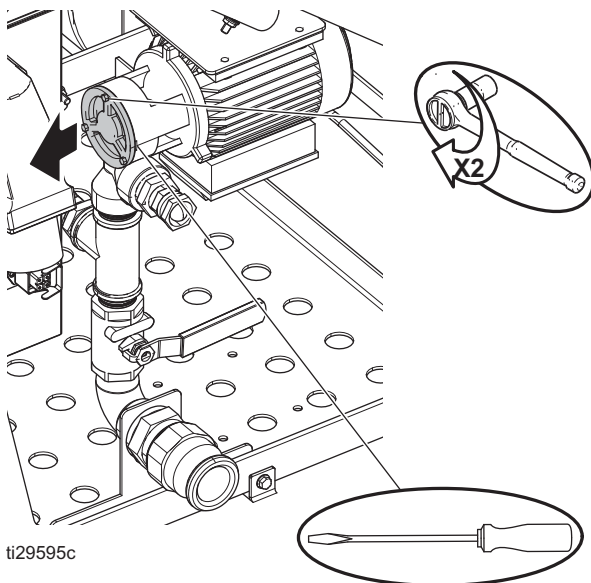
4. Press and hold the water prime button (Y) until water has stopped draining from all openings, then release the button.
5. Press the water pump button (Z) (on water pump models) to turn the water pump on and let it run for 15 seconds to expel any excess water. Press the button again to stop the water pump.
6. Turn the main power disconnect switch (T) to OFF and disconnect from the power supply.
7. Leave all components open and detached until the next use.
8. Make sure the motor has been fully greased and the mixing pump has been thoroughly cleaned and no material remains.

Startup After Extended Storage

Reassemble all disconnected hoses and close all water drain openings before startup.

If the pump will not startup after an extended period of storage, perform the following steps:

1. Loosen the three bolts on the end cap by approximately two turns.
2. Insert a flat screwdriver blade into the provided slots between the end cap and the pump head.
3. Gently pry on both sides until the cover lifts off the pump head.
4. Restart the water pump and observe that it starts up and operates correctly. While the pump is running, tighten the three bolts.
5. Press the water pump button (Z) (on water pump models) to turn off the water pump and press and hold the water prime button (Y).
6. Slowly open the flow meter valve until water can be seen passing through the flow meter.
7. Release the water prime button (Y) and make sure the water has stopped. The mixing pump is now ready for use.



Routine Maintenance

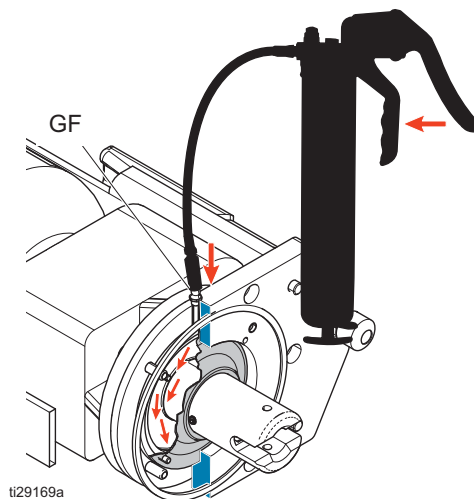
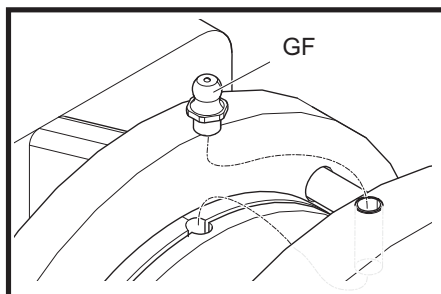
The following maintenance should be performed daily:

1. Flush the system (see **Flush**, page 13).
2. Perform the **Pressure Relief Procedure**, page 8.
3. Clean the hopper with a scrub pad. It is recommended that you clean the outside of the sprayer with a cloth and water.

NOTICE

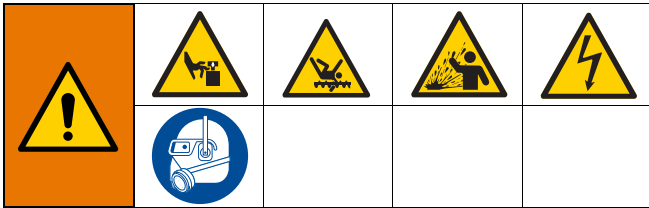
Failure to clean properly after use will damage seals and moving parts due to wear from material build-up. To avoid damage, properly clean the unit after each use.

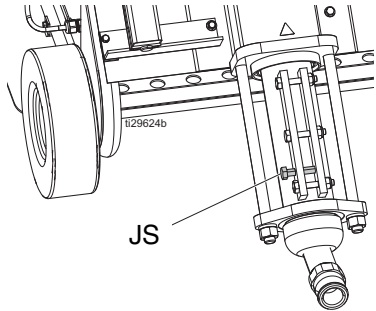
4. Check the pump, seals, hoses, couplings, and cables for wear and damage. Replace if necessary.
5. Grease seals daily via the grease fitting (GF) located on the motor flange. Use water resistant, corrosion inhibited grease.



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Troubleshooting



Problem	Cause	Solution
The rotor/stator pump operates, but output is low	Pump pressure is too low, stator is too loose.	Tighten stator to achieve suitable pumping pressure.
	Pump pressure is too high, stator is too tight.	Loosen stator to achieve suitable pumping pressure.
	Stator is worn or damaged.	Tighten stator. If low output continues, replace stator.
	Rotor is worn or damaged.	Tighten stator. If low output continues, replace stator.
	Material hose is clogged.	Clean or replace the material hose.
	Large pressure drop in material hose.	Reduce hose length and/or increase diameter.
Pump does not operate	Stator sleeve is too tight.	Evenly loosen the stator bolts to reduce pressure. If the pump still does not operate when bolts are loose, engage the jacking screw (JS) to further open the stator sleeve. This should reduce pressure enough to allow the pump to run. Once running, re-tighten the stator bolts to achieve appropriate pump pressure. 
	VFD overload fault.	Turn power disconnect switch to OFF and wait one minute for VFD to reset. See “VFD overload fault,” below, for possible causes.
	Material hose is obstructed.	Clean or replace the hose.
	Dried material in pump assembly.	Clean or replace the pump assembly.
Pump is noisy when pumping	Pumping water without dish soap or a slick agent.	Add dish soap or a slicking agent to the water
	Pump is running with no material or fluid in the hopper.	Add material to hopper or shut off pump.

Problem	Cause	Solution
Erratic accelerated speed	Material supply exhausted.	Refill the hopper and prime pump with material.
Motor is powered but nothing comes out of the hose	Pump pressure is too high, stator is too tight.	Loosen stator to achieve suitable pumping pressure.
	Pump is packed out with dry or cured material.	Disassemble and clean the pump.
	Hose is packed out with dry or cured material.	Clean or replace the material hose.
Material is too thick to push through the hose without packing out	Hose is too restrictive.	Thin and mix material thoroughly to a lower viscosity if material supplier allows.
		Use a pump system priming fluid (dish soap or slicking agent) to wet out the system.
		Reduce length and/or increase diameter of hose.
Electric motor will not start or stops during operation	Loose connections.	Check connections in electrical enclosure. Check for correct voltage supply at the disconnect and VFD terminals L1, L2, L3.
	Motor overload relay trips.	Turn power disconnect switch to OFF and wait one minute for VFD to reset. Allow the motor to cool if conditions occur frequently. See "VFD overload fault," below, for possible causes.
VFD overload fault	The VFD detects a motor overload due to motor slowing down under a high current condition.	Reduce motor load.
		Lower pressure.
		Reduce length and/or increase diameter of hose.
Water Pump will not run	Extended period of time without use.	See Startup After Extended Storage , page 19.
	Not properly winterized.	If any water pump system components are damaged, replace as necessary or see Startup After Extended Storage , page 19.

Error Codes on the Display

Error Code	Fault Description	Corrective Action
oc	Over current	Check the wiring connections to U/T1, V/T2, W/T3 for possible short circuits or shorts to ground.
		Check for loose contacts between AC motor drive and motor.
		Check for possible excessive loading conditions at the motor.
ov	Over voltage	Check if the input voltage falls within the rated AC motor drive input voltage range.
		Check for possible voltage transients.
oH1 oH2	Overheating	Make sure that the ambient temperature falls within the specified temperature range.
		Make sure that ht ventilation holes are not obstructed.
		Remove any foreign objects from the heat sinks and check for possible dirty heat sink fins.
		Check the fan and clean it.
Lv	Low voltage	Check whether the input voltage falls within the AC motor drive rated input voltage range.
		Check for abnormal load in motor.
		Check for correct wiring of input power to R-S-T (for 3-phase models) without phase loss.
oL	Overload - The VDF detects excessive drive current	Check whether the motor is overloaded.
oL1	Overload 1 - Internal electronic overload trip	Check for possible motor overload.
oL2	Overload 2 - Motor overload	Reduce the motor load.
GFF	Ground fault	Check for possible poor insulation at the output line.
cFA	Auto acceleration or deceleration failure	Load may have changed suddenly.
AErr	Analog signal error	Check the wiring of the ACI.
PHL	Phase loss	Check the input phase wiring for loose contacts.
ocA	Over current during acceleration	Short-circuit at motor output: Check for possible poor insulation at the output line.
ocd	Over current during deceleration	Short-circuit at motor output: Check for possible poor insulation at the output line.
ocn	Over current during constant speed	Short-circuit at motor output: Check for possible poor insulation at the output line.
		Sudden increase in motor loading: Check for possible motor stall.
NOTE: If the display shows any error codes not listed in this table, call Graco Technical Assistance.		

Repair

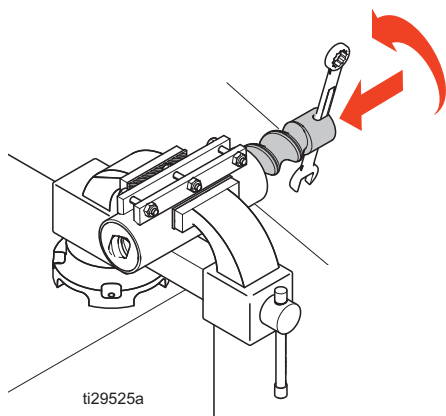
Rotor/Stator Pump Repair



1. Before performing repair, flush the system (see **Flush**, page 16).
2. Disconnect the mixing pump from the power source.
3. Remove the retaining nuts (31) and washers (32) to disconnect the nozzle (29) and rotor/stator pump (RS) from the hopper. Replace any parts if necessary.

If Replacing Both the Rotor and the Stator

1. If not assembled together, join the new rotor (27) with the new stator (28) by placing the stator (28) in a vise and screwing in the rotor (27) using a flat bar or wrench.



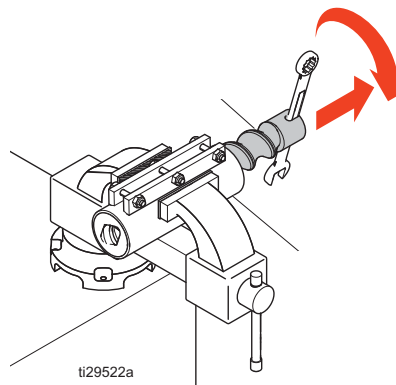
NOTE: Apply a lubricant to the rotor and stator beforehand to improve ease of assembly.

NOTE: Do not screw the non-slotted end of the rotor past the end of the stator. It should be flush or positioned slightly within the stator. If the rotor sticks out past the stator end, the nozzle will not fit onto the end of the ties rods correctly.

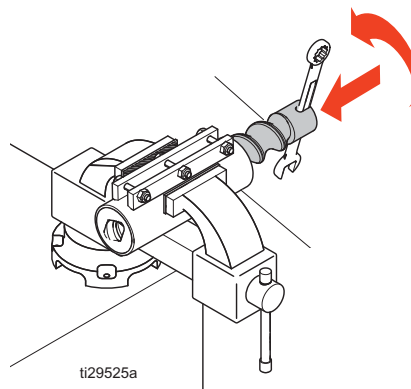
2. With the new rotor/stator assembly, join the stator (28), o-ring (25), pump adapter (26), and flange plate (FP) together.
3. Assemble the nozzle (29), nuts (31), and washers (32). Torque the nuts to 60 ft-lb (81 N•m).

If Replacing Only the Rotor or the Stator

1. Place the rotor/stator pump (RS) assembly in a vise.
2. Turn the rotor (27) counterclockwise with a flat bar or wrench to remove the rotor (27) from the stator (28).



3. Replace the worn rotor (27) or stator (28) with a new part, then screw the rotor (27) clockwise back into the stator (28).



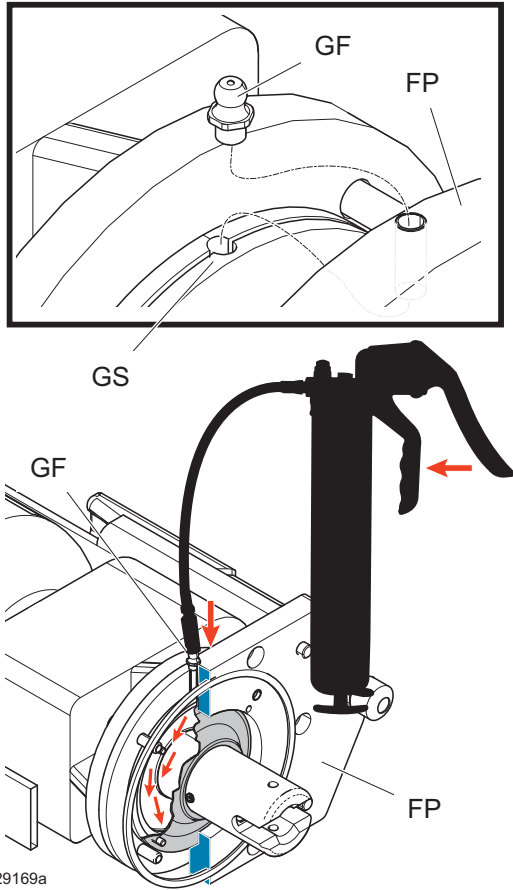
NOTE: Apply a lubricant to the rotor and stator beforehand to improve ease of assembly.

NOTE: Do not screw the non-slotted end of the rotor past the end of the stator. It should be flush or positioned slightly within the stator. If the rotor sticks out past the stator end, the nozzle will not fit onto the end of the ties rods correctly.

4. With the new rotor/stator assembly, join the stator (28), o-ring (25), pump adapter (26), and flange plate (FP) together.
5. Assemble the nozzle (29), nuts (31), and washers (32). Torque the nuts to 60 ft-lb (81 N•m).

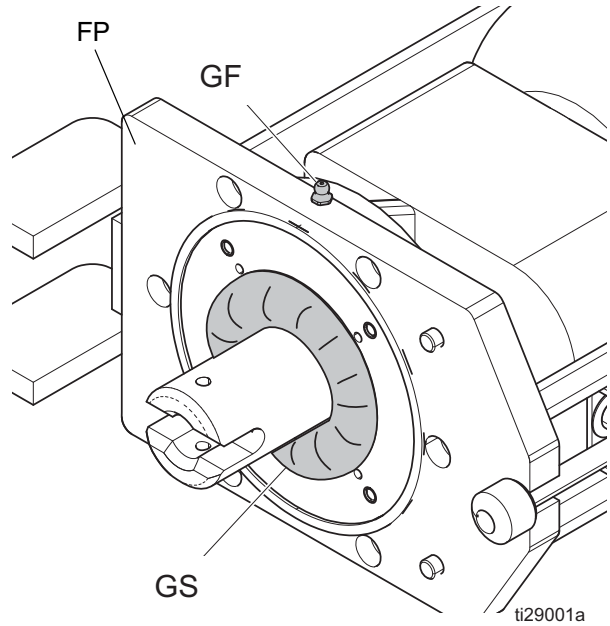
Motor Seal Replacement

Take special note of the groove positions of the grease seal (GS), in relation to the grease hole in the flange plate (FP) and the grease fitting (GF). The groove gives a path for the grease to get into the cavity behind the grease seal.



Use a grease that has high water resistance and high compression protections. If necessary, add grease on a daily basis, or after each time the unit is cleaned down.

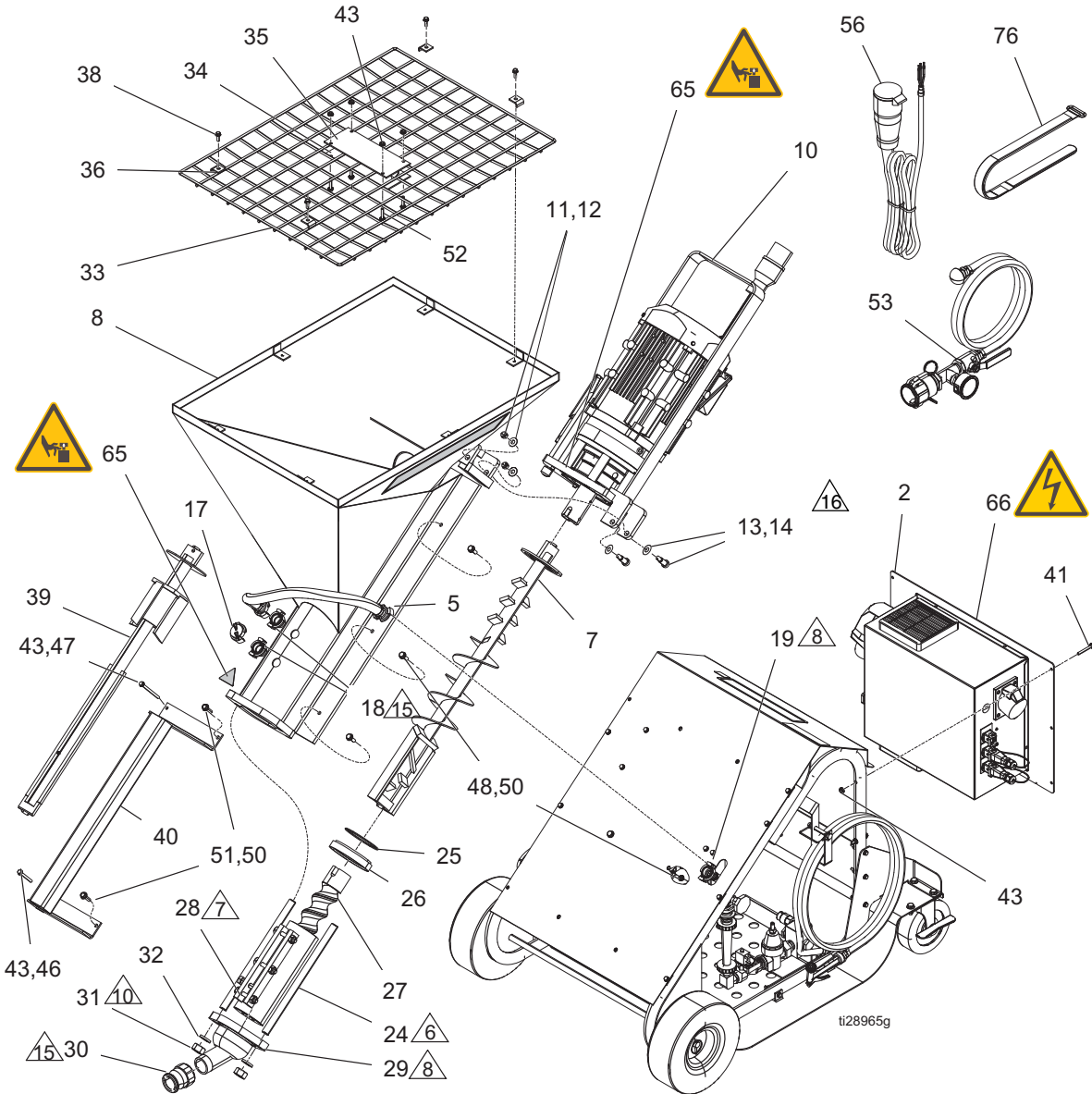
The illustration below shows the grease seal (GS) in a deformed state, as it should be when the motor assembly is complete and the seal is full of grease.



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Parts

MP-20 and MP-40 Series Parts



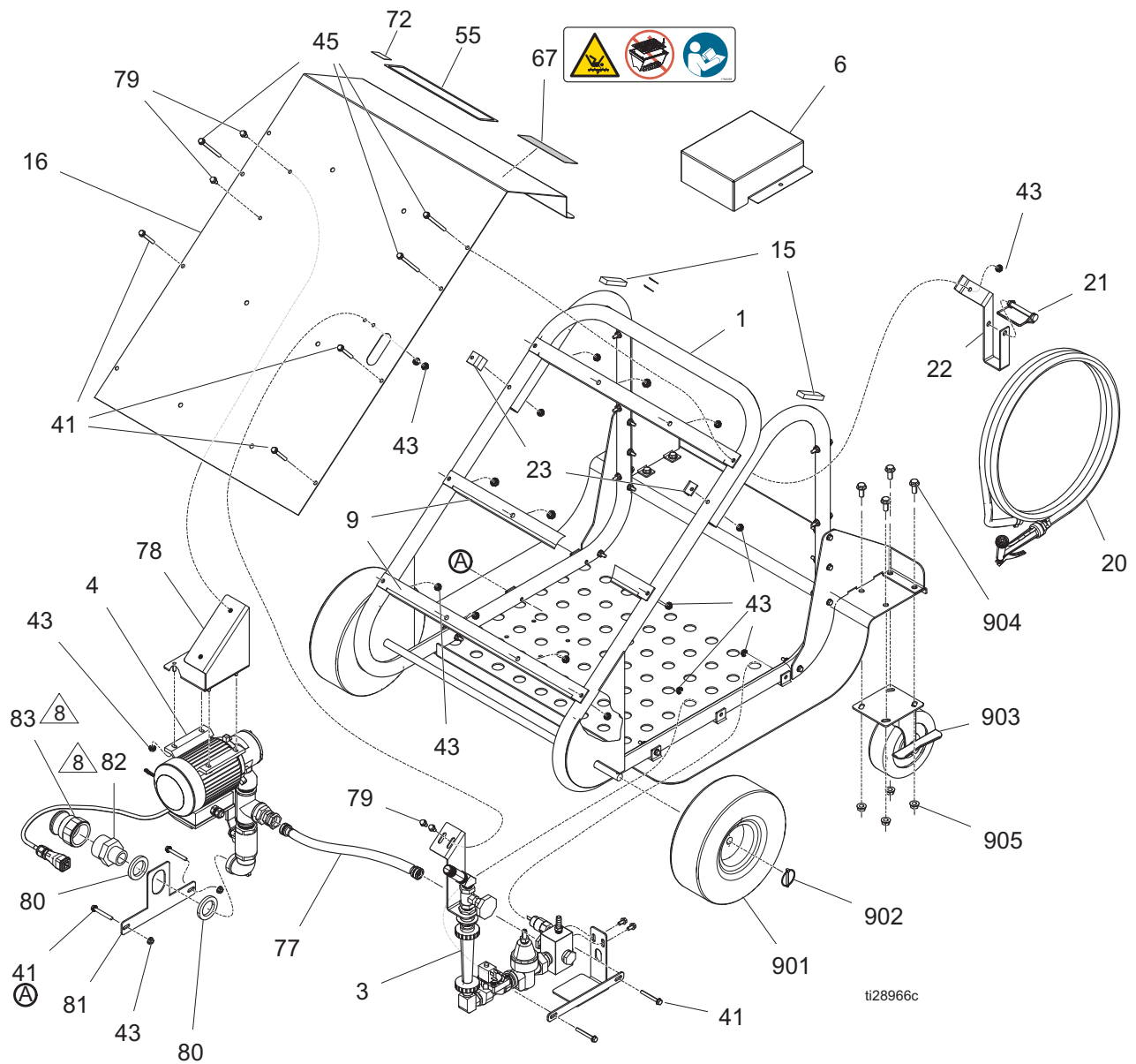
-  Apply pipe sealant to threads only on the flange side of the hopper (8).
-  Apply grease lubricant to both ends of the inside of the stator (28).
-  Apply pipe sealant to pipe threads.
-  Torque to 60 +/- 5 ft-lb (81 +/- 6.7 N•m).
-  Apply pipe sealant to threads.
-  Dust cap (85) included on non-water pump systems.

MP-20 and MP-40 Parts List

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	MTA708	ENCLOSURE, control assy (for MP-20) see page 41	1	30	128474	FITTING, 1.5 in. camlock m x 1.5 in. npt f	1
	MTA709	ENCLOSURE, control assy (for MP-20 16A) see page 41	1	31	C19187	NUT, nex	2
	MTA710	ENCLOSURE, control assy (for MP-40) see page 41	1	32	101015	WASHER, lock	2
	MTA711	ENCLOSURE, control assy (for MP-40 380V) see page 41	1	33	☼	GRATE, hopper	1
5	MTA804	HOSE, assy, water	1	34	✱	PLATE, blade, weldment	1
7	MTA771	SHAFT, drive, cross-tine (for MP-20, MP-20 16A)	1	35	✱	PLATE, breaker, bag, cont mixer	1
	MTA814	SHAFT, drive, cross-tine (for MP-40, MP-40 380V)	1	36	☼*	BRACKET, plate, hopper	4
8	-----	HOPPER, assy	1	38	☼*	SCREW, flanged, hex hd	4
10	MTA738	MOTOR, assembly, w/ frame (for MP-20, MP-20 16A) see page 37	1	39	MTA706	SHAFT, clean out, assembly	1
	MTA729	MOTOR, assembly, w/frame (for MP-40) see page 38	1	40	-----	FRAME, assy, rack clean-out	1
	MTA736	MOTOR, assembly, w/frame (for MP-40 380V) see page 39	1	41	-----	SCREW, hex, serrated, 1/4-20 x 2.00	15
11	-----	NUT, lock	2	42	-----	WASHER, flat, fender, 1/4	4
12	-----	WASHER, 3/8 plain flat	2	43	115942✱	NUT, hex, flange head	32
13	126833	SCREW, shoulder, socket head	2	46	-----	SCREW, hex, serrated, 1/4-20 x 2.50	1
14	109570	WASHER, plain	2	47	-----	BOLT, hex, 1/4-20 x 3 3/4	1
17	MTA012	FITTING, Geka, cap, end	1	48	112586	SCREW, cap, hex hd	4
18	MTA236	FITTING, Geka, 3/4 in. male pipe	2	50	110996	NUT, hex, flange head	2
24	-----	STUD, 3/4-10 x 13.25	2	51	-----	SCREW, flange, hex, 5/16-18 x 1.25	2
25	117337	O-RING	1	52	120444✱	SCREW, hex hd, flanged	4
26	MTA374	ADAPTER, pump, 90mm (for MP-20, MP-20 16A)	1	53	17N886	HOSE, water, tester, 1.5 in. female camlock	1
	MTA062	ADAPTER, pump, 113.5mm (for MP-40, MP-40 380V)	1	56	MTA727	HARNESS, power, single phase (for MP-20, MP-20 16A)	1
27	MTA719†	ROTOR, D8-1.5, green (for MP-20, MP-20 16A)	1	56a	MTA007	PLUG ONLY, power, single phase (MP-20, MP-20 16A)	1
	MTA722❖	ROTOR, R7-1.5, yellow (for MP-40 380V)	1	56	MTA728	HARNESS, power, three phase (for MP-40)	1
28	MTA720†	STATOR, D8-1.5, green (for MP-20, MP-20 16A)	1	56a	MTA935	PLUG ONLY, power, three phase (MP-40)	1
	MTA723❖	STATOR, R7-1.5, yellow (for MP-40, 380V)	1	56	MTA851	HARNESS, power, three phase (for MP-40 380V)	1
29	MTA725	NOZZLE, output, assembly (for MP-20, MP-20 16A)	1	65▲	15H108	LABEL, safety, warning, pinch	2
	MTA726	NOZZLE, output, assembly (for MP-40, MP-40 380V)	1	66▲	196548	LABEL, warning, shock	1
				76	114271	STRAP, retaining	1
				85	MTA985	COVER, dust, lapp	1

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA721	D8-1.5 rotor/stator kit, green (for MP-20, MP-20 16A)	27 (1), 28 (1)
❖	MTA724	R7-1.5 rotor/stator kit, yellow (for MP-40, MP-40 380V)	27 (1), 28 (1)
☼	MTA715	Hopper Grate Assembly Kit	33 (1), 36 (4), 38 (4)
☼*	MTA756	Bracket Replacement Kit	36 (1), 38 (1)
✱	MTA718	Hopper Bag Breaker Kit	34 (1), 35 (1), 43 (4), 52 (4)

MP-20 and MP-40 Series Parts (continued)



ti28966c

 Apply pipe sealant to pipe threads.

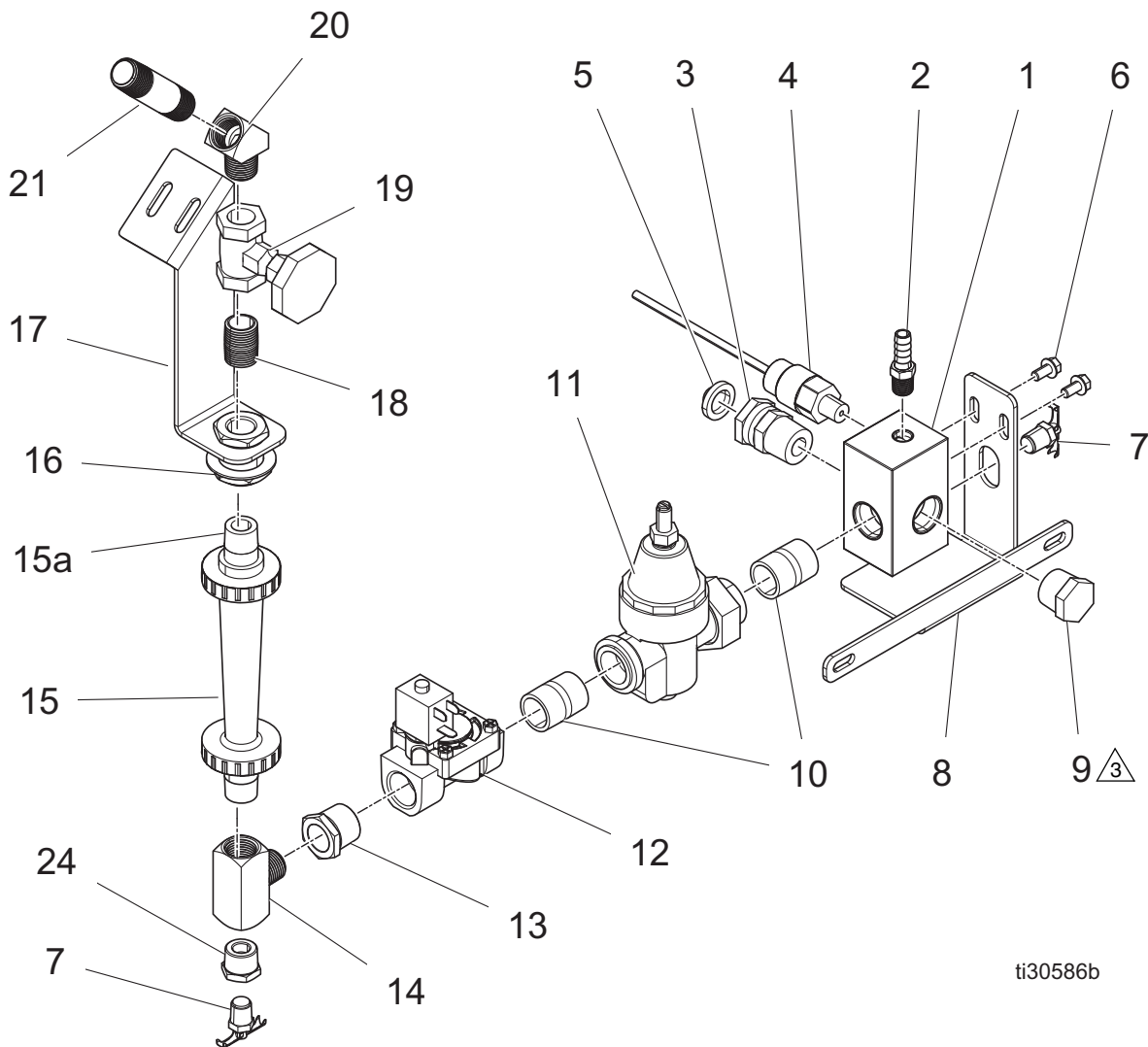
MP-20 and MP-40 Parts List (continued)

Ref.	Part	Description	Qty.
1	-----	FRAME, assy, wheels, MP	1
3	-----	CONTROL, water, assy	1
4	-----	PUMP, assy, water, 60 hZ (for MP-20 16a, MP-40 380V) see page 34	1
	-----	PUMP, assy, water, 50 Hz (for MP-20 16A, MP-40 380V) see page 34	1
5	MTA804	HOSE, assy, water	2
6	MTA707	DUCT, fan, cooling, assy	1
16	-----	COVER, top	1
19	MTA083	FITTING, Geka, 1/2 in., npt, female	1
20	MTA714	HOSE, assy, washdown	1
21	125981	PIN, retaining, with tab	1
22	-----	BRACKET, hose	1
41	-----	SCREW, hex, serrated, 1/4-20 x 2.00	15
42	-----	WASHER, flat, fender, 1/4	4
43	115942	NUT, hex, flange head	32
44	15R472	FASTENER, hex hd, flanged, 1/4 x 1	4
45	-----	BOLT, hex, 1/4-20 x 3 1/4 in.	3
67▲	17M606	LABEL, safety	1
77	MTA999	HOSE, water, MP	1
78	-----	BRACKET, water pump, top painted	1
79	-----	SCREW, flanged, hex hd	4
80	MTA330	CHOCK, wedge, rubber	2
81	-----	BRACKET, water pump, bot painted	1
82	17G711	FITTING, straight, 1 1/2 x 1 npt	1
83	128474	FITTING, 1.5 in. camlock m x 1.5 in. npt f	1
901	†	WHEEL, tire, 10 in., runflat	1
902	MTA010†	PIN, linch, 3/16 dia shaft	1
903	❖	CASTER, swivel, 6 in., with brake	1
904	111192❖	SCREW, cap flange hd	1
905	112958❖	NUT, hex, flanged	1

▲ Replacement Danger and Warning labels are available at no cost.

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA678	Wheel Kit	72 (1), 73 (1)
❖	MTA733	Caster Kit	74 (4), 75 (1), 76 (4)

Water Control Assembly (Ref. 3)



ti30586b

△₂ Add pipe sealant to all pipe fittings.

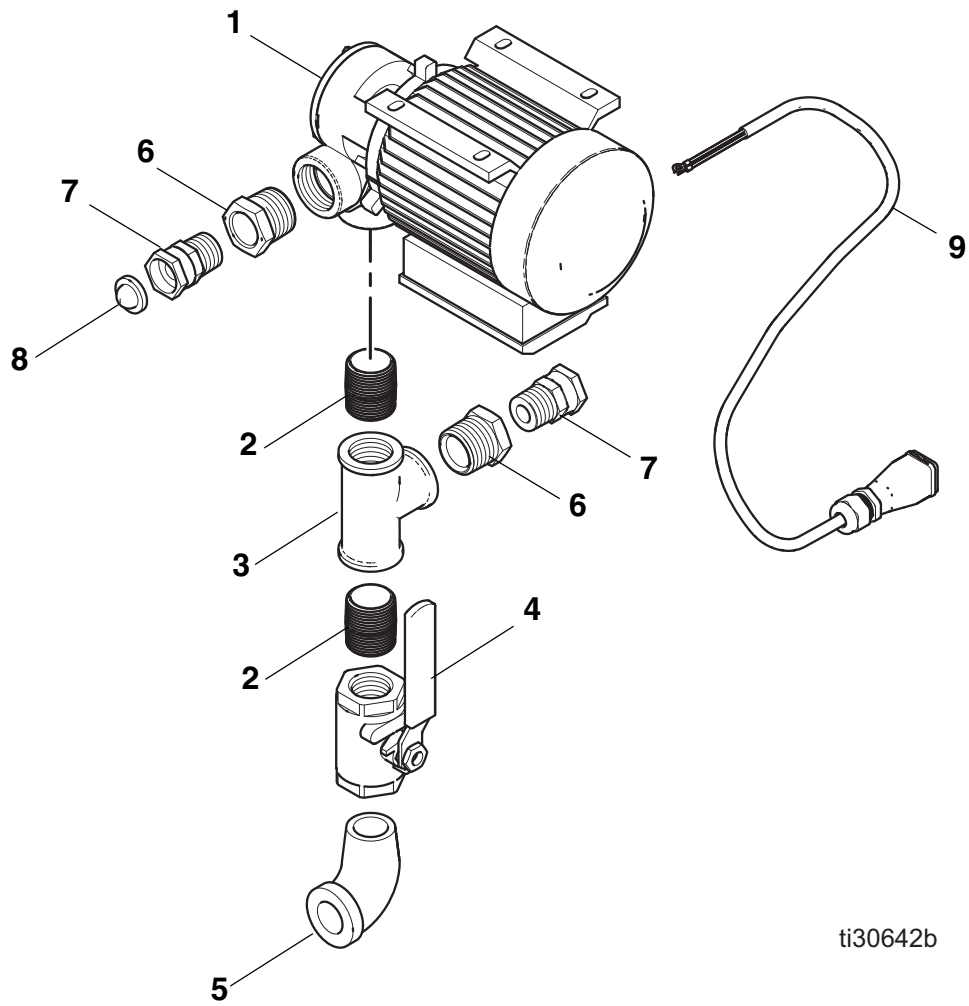
△₃ For non-water pump models, positions of plug (9) and GHT fitting (3) are switched.

Water Control Assembly Parts List

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	MTA992	MANIFOLD, water	1	12	†	VALVE, water, 3/4 in. 24 VDC, 6W	1
2	-----	FITTING, barb, hose, 1/4 npt, 3/8 in. hose	1	13	117326	FITTING, bushing	1
3	MTA334	ADAPTER, swivel hose to pipe	1	14	-----	FITTING, tee, 1/2 in. npt	1
4	MTA994	SWITCH, 30 psi, water	1	15	MTA993	METER, flow (with brass flanges)	1
5	MTA266	STRAINER, washer, 3/4 npt, 60/50 mesh	1	15a	17V996	FLANGE, brass, 1/2 npt	2
6	-----	SCREW, flange, hex hd	2	16	512905	FITTING, bulkhead	1
7	-----	FITTING, drain, cock 1/4, npt	2	17	-----	BRACKET, water circuit, top, painted	1
8	-----	BRACKET, water circuit, bot, painted	1	18	-----	FITTING, nipple, 1/2 npt	1
9	121621	PLUG, 3/4 in. npt	1	19	MTA991	VALVE, globe	1
10	-----	FITTING, nipple, 3/4 npt	2	20	-----	FITTING, 45 degree, 1/2 npt	1
11	MTA082	REGULATOR, 3/4 lf, N45BU, M1	1	21	-----	FITTING, nipple, 1/2 npt x 3 in. lg	1
				24	-----	FITTING, bushing, 1/2 x 1/4 npt	1

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA696	Water Valve and Harness Kit	20 (1), Water Valve Solenoid Harness (1)

Water Pump Assembly (Ref. 4)



ti30642b

 Add pipe sealant to all pipe fittings.

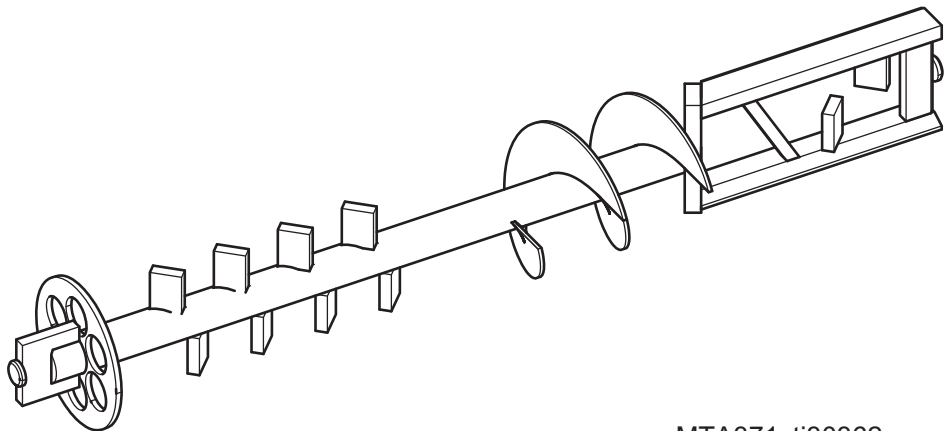
Water Pump Assembly Parts List

Ref.	Part	Description	Qty.
1	†	PUMP, water, 220V, 1ph, .33kW, 60Hz	1
	†	PUMP, water, 220V, 1ph, .33kW, 50Hz	1
2	-----	FITTING, nipple, 1 in. npt x 1 1/2 in.	2
3	106464	FITTING, tee, pipe, 1 in. npt	4
4	MTA335	VALVE, ball, brass, 1 in. fnpt	1
5	-----	ELBOW, street, pipe	1
6	158586	FITTING, bushing	2
7	MTA334	ADAPTER, swivel hose to pipe	2
8	MTA266	STRAINER, washer, 3/4 npt, 60/50 mesh	1
9	†	CORD, assembly, water pump, 1ph, mp	1

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA694	60Hz Water Pump Kit (for MP-20, MP-40)	1 (1), 9 (1)
†	MTA695	50Hz Water Pump Kit (for MP-20 16A, MP-40 380V)	1 (1), 9 (1)

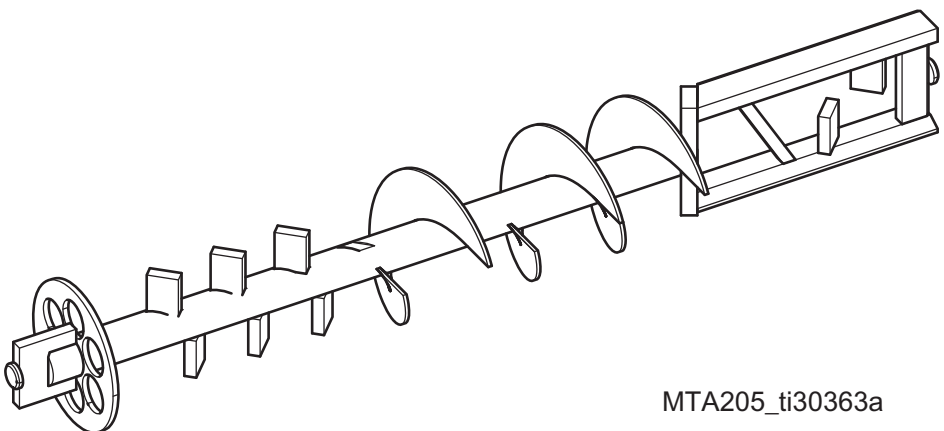
Drive Shaft (Ref. 7)

MTA771 (for MP-20, MP-20 16A)



MTA371_ti30362a

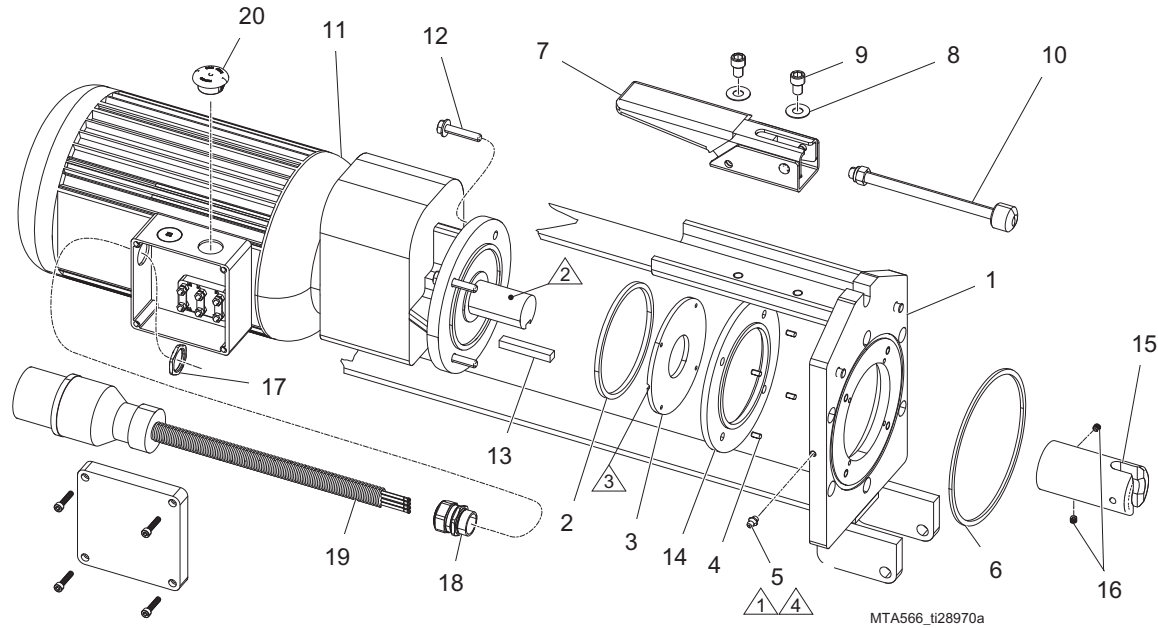
MTA814 (for MP-40, MP-40 380V)



MTA205_ti30363a

Motor Assemblies (Ref. 10)

MTA738 (for MP-20, MP-20 16A)

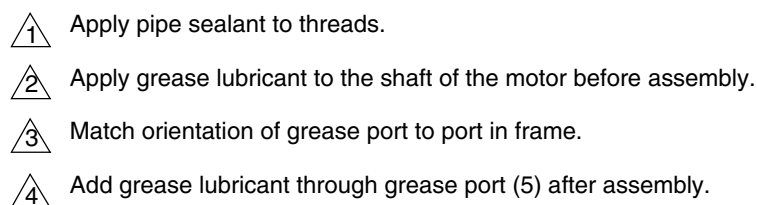


- △1 Apply pipe sealant to threads.
- △2 Apply grease lubricant to the shaft of the motor before assembly.
- △3 Match orientation of grease port to port in frame.
- △4 Add grease lubricant through grease port (5) after assembly.

Parts List

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	FRAME, mount, motor, short	1	11	†	MOTOR, gearbox, 4kW	1
2	MTA019	ADAPTER, motor flange	1	12	110837	SCREW, flange, hex	4
3	❖	SEAL, grease, shaft, motor	1	13	MTA020†*	KEY, special, drive	1
4	❖	PIN, 3/16 dia x 3/8 dowel	4	14	-----	SPACER, 4kw, motor	1
5	115278	FITTING, zerk, grease, 1/4-28 unf	1	15	MTA014*	ADAPTER, auger/pump	1
6	MTA073	SEAL, flange, motor	1	16	*	SCREW, set 1/4-20 x .25 soc cup	2
7	✿	LATCH, catch, draw, batch, mixer	1	17	†	BUSHING, strain relief, nut	1
8	✿	WASHER, 3/8 plain flat	2	18	†	BUSHING, strain relief	1
9	✿	SCREW, shcs, 3/8-16 x 1/2	2	19	MTA784†	CABLE, motor, 6 ft	1
10	✿	PIN, draw, assy	1	20	†	PLUG, liquid tight, 1.0 in.	1

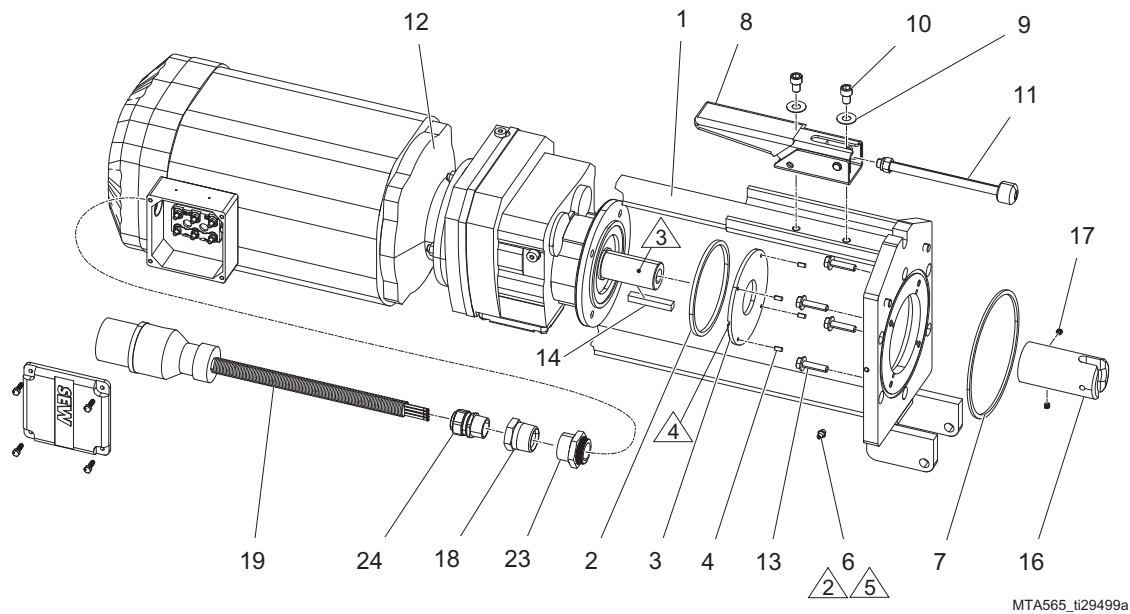
Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA699	4kW Motor Kit	11 (1), 13 (1), 17 (1), 18 (1), 19 (1), 20 (1)
❖	MTA731	Motor Shaft Grease Seal Replacement Kit	3 (1), 4 (4)
✿	MTA730	Draw Catch Latch Kit	7 (1), 8 (2), 9 (2), 10 (1)
*	MTA790	Driver Auger/Pump Adapter Kit	13 (1), 15 (1), 16 (2)



Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	FRAME, mount, motor	1	15	†*	KEY, custom, sew	1
2	MTA274	SEAL, pusher, sumi	1	16	MTA273	SPACER, sumi, 1 1/2 in.	1
3	MTA247	SEAL, sumi	1	17	MTA064*	ADAPTER, driver, auger/pump	1
4	❖	SEAL, grease, shaft, motor	1	18	*	SCREW, set 1/4-20 x .25 soc cup	2
5	❖	PIN, 3/16 dia x 3/8 dowel	4	19	MTA248	SPACER, sumi	6
6	MTA079	TUBE, lubricant, sumi	1	20	564147	SCREW, 3/8-16 x 1.75 soc hd cap	6
7	115278	FITTING, zerk, grease, 1/4-28 unf	1	21	†	FITTING, bushing	1
8	MTA073	SEAL, flange, motor	1	22	†	FITTING, cbl, strain relief, 3/4 npt	1
9	-----	SCREW, scr 5/16-18 x.31 soc cup	4	23	MTA784†	CABLE, motor, 6 ft	1
10	✿	LATCH, catch, draw, batch, mixer	1	24	†	SCREW, mach, pnh	3
11	✿	WASHER, 3/8 plain flat	2	25	†	WASHER	3
12	✿	SCREW, shcs, 3/8-16 x 1/2	2	26	†	NUT, hex	3
13	✿	PIN, draw, assy	1	27	†	INSULATOR, cap, hd, heat shrink	3
14	†	MOTOR, gearbox, 5.5 kW	1				

* *Parts Details*

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA732	5.5 kW Motor Kit	14 (1), 15 (1), 21 (1), 22 (1), 23 (1), 24 (3), 25 (3), 26 (3), 27 (3)
❖	MTA731	Motor Shaft Grease Seal Replacement Kit	4 (1), 5 (4)
✿	MTA730	Draw Catch Latch Kit	10 (1), 11 (2), 12 (2), 13 (1)
✳	MTA792	Driver Auger/Pump Adapter Kit	15 (1), 17 (1), 18 (2)

MTA736 (for MP-40 380V)

MTA565_ti29499a

- △₂ Apply pipe sealant to threads.
- △₃ Apply grease lubricant to the shaft of the motor before assembly.
- △₄ Match the orientation of the grease port to the port in the flange.
- △₅ Add grease lubricant through the grease port after assembly.

Parts List

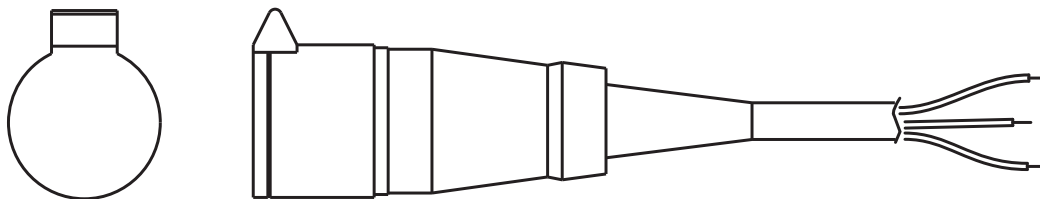
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	FRAME, mount, motor	1	12	†	MOTOR, gearbox, 5.5 kw, sew-Euro188	1
2	MTA019	ADAPTER, motor flange	1	13	-----	SCREW, flange, hex, 5/16-18 x 1.25	4
3	❖	SEAL, grease, shaft, motor	1	14	†*	KEY, special, drive	1
4	-----	PIN, 3/16 dia x 3/8 dowel	4	16	MTA014*	ADAPTER, auger/pump	1
6	115278	FITTING, zerk, grease, 1/4-28 unf	1	17	*	SCREW, set 1/4-20 x .25 soc cup	2
7	MTA073	SEAL, flange, motor	1	18	†	FITTING, bushing	1
8	✿	LATCH, catch, draw, batch, mixer	1	19	MTA784†	CABLE, motor, 6 ft	1
9	✿	WASHER, 3/8 plain flat	2	23	†	FITTING, cbl, strain, relief, 1 npt	1
10	✿	SCREW, shcs, 3/8-16 x 1/2	2	24	†	FITTING, cbl, strain relief, 3/4 npt	1
11	✿	PIN, draw, assy	1				

*** Parts Details**

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA737	5.5 kW Motor Kit	12 (1), 14 (1), 18 (1), 19 (1), 23 (1), 24 (1)
❖	MTA731	Motor Shaft Grease Seal Replacement Kit	3 (1), 4 (4)
✿	MTA730	Draw Catch Latch Kit	8 (1), 9 (2), 10 (2), 11 (1)
*	MTA791	Driver Auger/Pump Adapter Kit	14 (1), 16 (1), 17 (2)

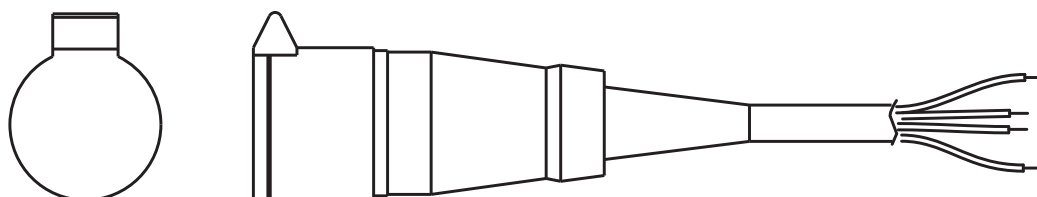
Power Cable (Ref. 56)

MTA727 (for MP-20, MP-20 16A). MTA007 (Plug Only).



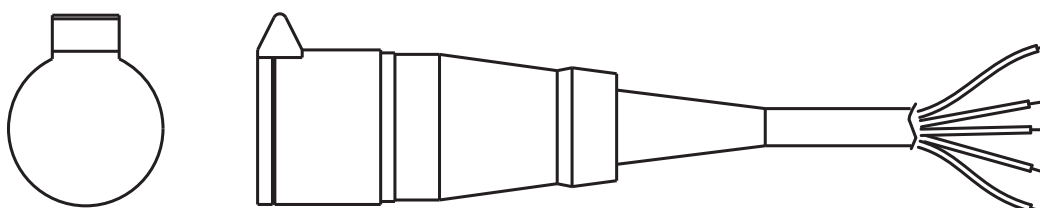
MTA158_ti29501a

MTA728 (for MP-40). MTA935 (Plug Only).



MTA380_ti29500a

MTA851 (for MP-40 380V)



MTA475_ti29591a

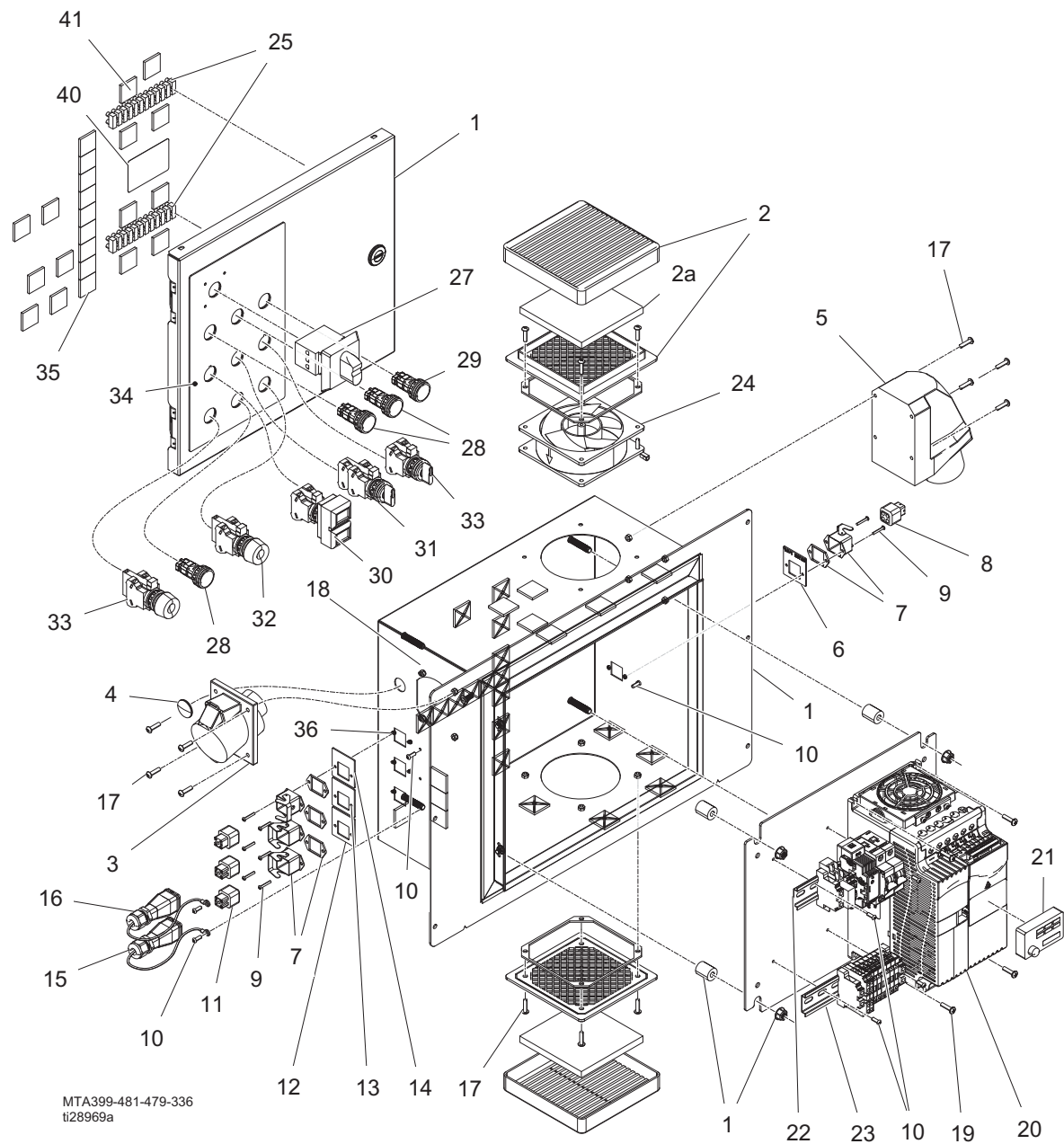
Electrical Enclosure (Ref. 2) Parts

MTA708 (for MP-20)

MTA709 (for MP-20 16A)

MTA710 (for MP-40)

MTA711 (for MP-40 380V)

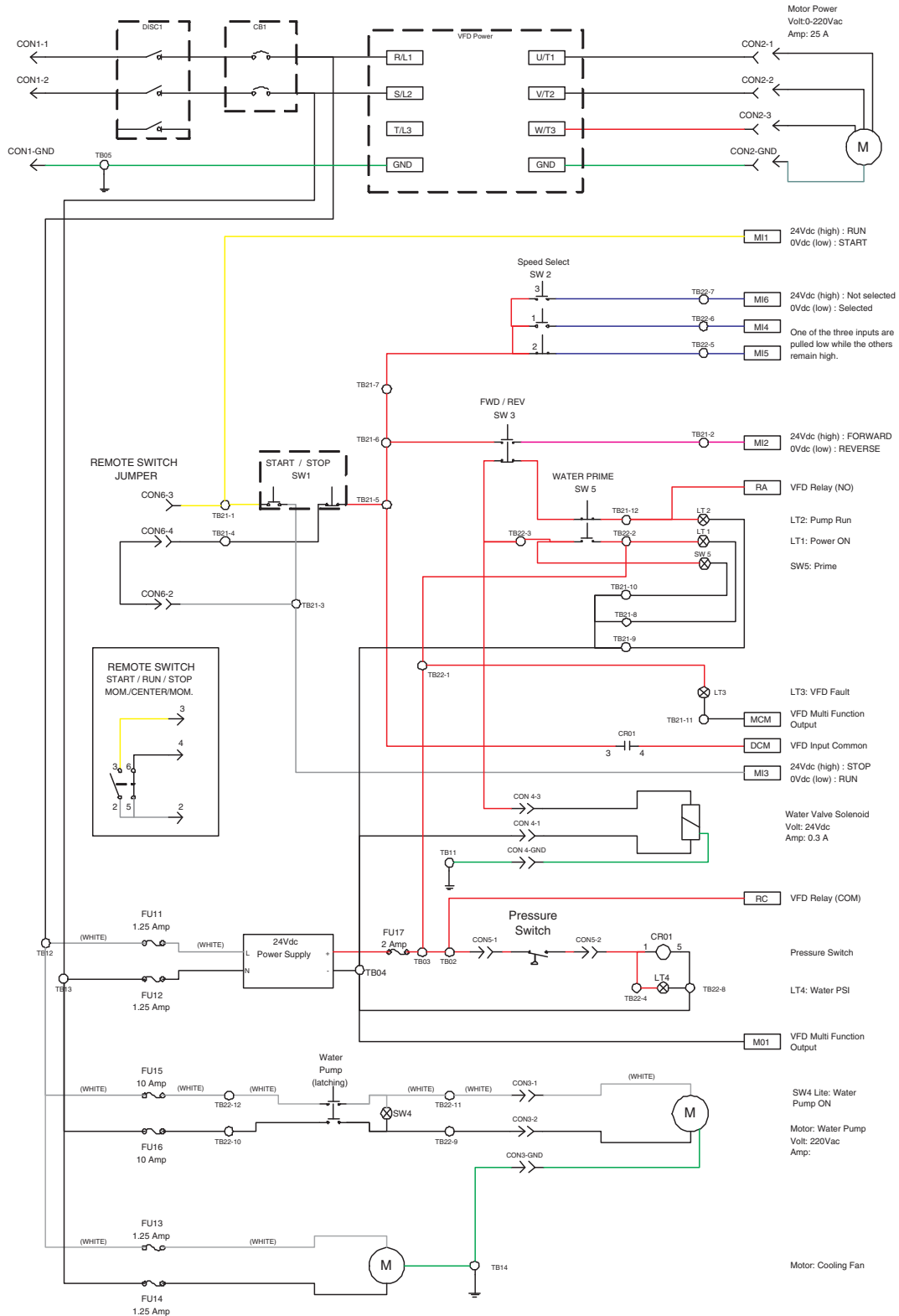


Electrical Enclosure Parts List

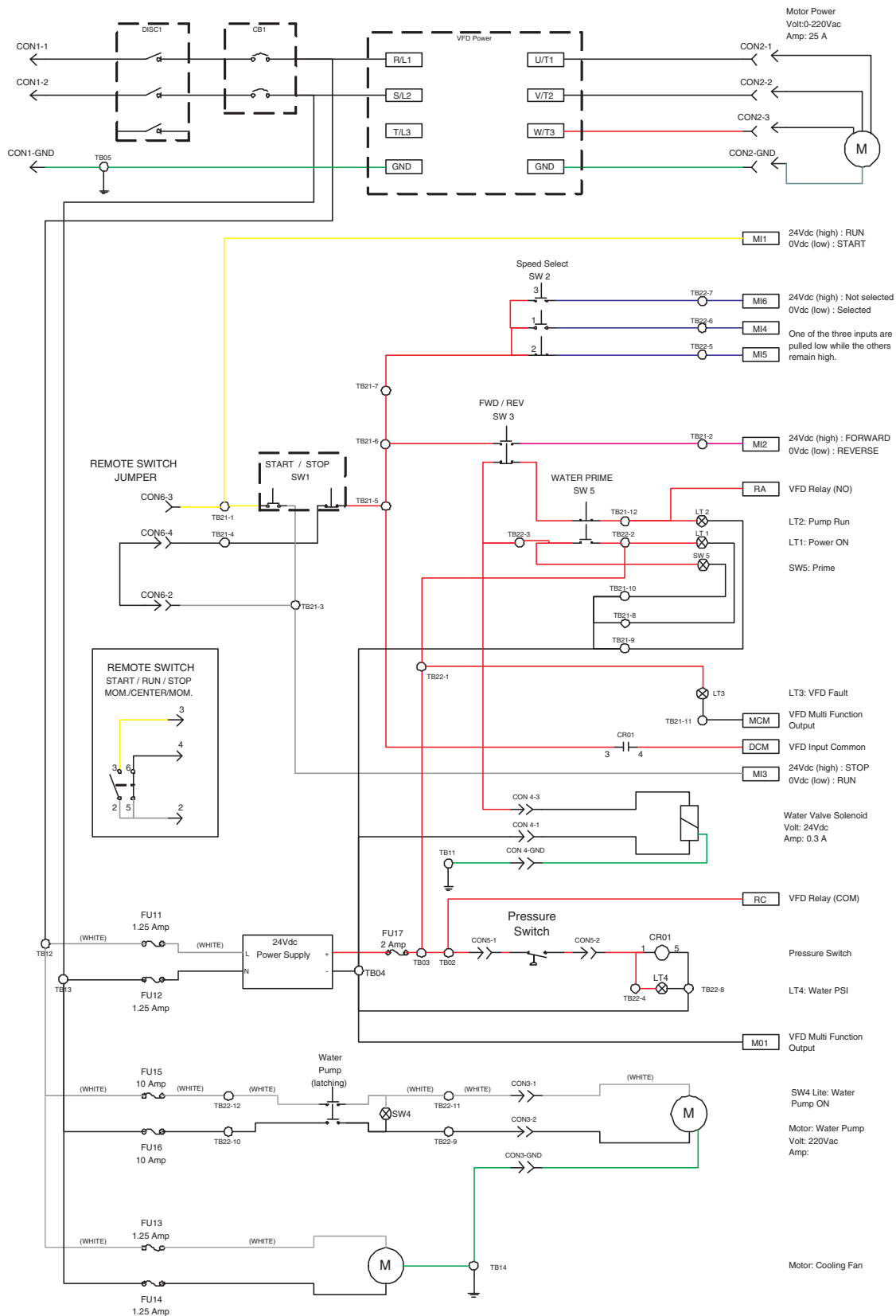
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	ENCLOSURE, control	1	21	MTA831	CONTROL, vfd keypad	1
2	MTA926	FILTER, fan, assembly	2	22	-----	MODULE, din rail assembly, MP-20 (see page 47)	1
2a	MTA881	KIT, filter, cooling fan (pack of 5)	2	-----	MODULE, din rail assembly, MP-20 16A (see page 47)	1	
3	MTA839	CONNECTOR, outlet, 230VAC, 4 wire	1	-----	MODULE, din rail assembly, MP-40 (see page 47)	1	
4	-----	PLUG, hole, rubber	1	-----	MODULE, din rail assembly, MP-40 380V (see page 47)	1	
5	MTA838	KIT, connector, 230VAC, 3 wire, inlet (for MP-20, MP-20 16A)	1	23	-----	MODULE, din rail 2	1
	MTA849	KIT, connector, 230VAC, 4 wire, inlet (for MP-40)	1	24	MTA833	FAN, cooling	1
	MTA852	KIT, connector, 400VAC, 5 wire, inlet (for MP-40 380V)	1	25	-----	TERMINAL, strip, 12 pos	2
6	-----	LABEL, water pump	1	27	MTA850	KIT, disconnect, switch (for MP-20, MP-20 16A)	1
7	-----	HOUSING, panel mount, locking lever	4		MTA840	KIT, disconnect, switch (for MP-40)	1
8	-----	INSERT, contact, female, 4 pin	1		MTA853	KIT, disconnect, switch (for MP-40 380V)	1
9	-----	FASTENER, #4-40 x 3/4, bh, cs	8	28	MTA848	KIT, indicator, green	3
10	-----	FASTENER, #8-32 x 1/2, ph, threading	8	29	MTA847	KIT, indicator, red	1
11	-----	INSERT, contact, female, 5 pin	3	30	MTA842	KIT, switch, on/off	1
12	-----	LABEL, remote	1	31	MTA844	KIT, switch, speed selector	1
13	-----	LABEL, water psi	1	32	MTA843	KIT, switch, water pump	1
15	MTA845	KIT, harness, remote jumper	1	33	MTA841	KIT, switch, fwd/rev, prime	1
16	MTA846	KIT, harness, press switch jumper	1	34	-----	LABEL, legend	1
17	-----	FASTENER, #10-32 x 3/4, bh, cs	16	35	-----	HOLDER, zip tie mount, adhesive	51
18	115483	NUT, lock	12	36	C27076	NUT	8
19	-----	FASTENER, #10-24 x 3/4, ph, Phillips	4	40	-----	LABEL, fuse, location	1
20	MTA778	KIT, VDF, MP-20	1	41	-----	TIE, cable, 4 in.	31
	MTA779	KIT, VDF, MP-20 16A	1				
	MTA780	KIT, VDF, MP-40	1				
	MTA781	KIT, VDF, MP-40 380V	1				

Wiring Schematics

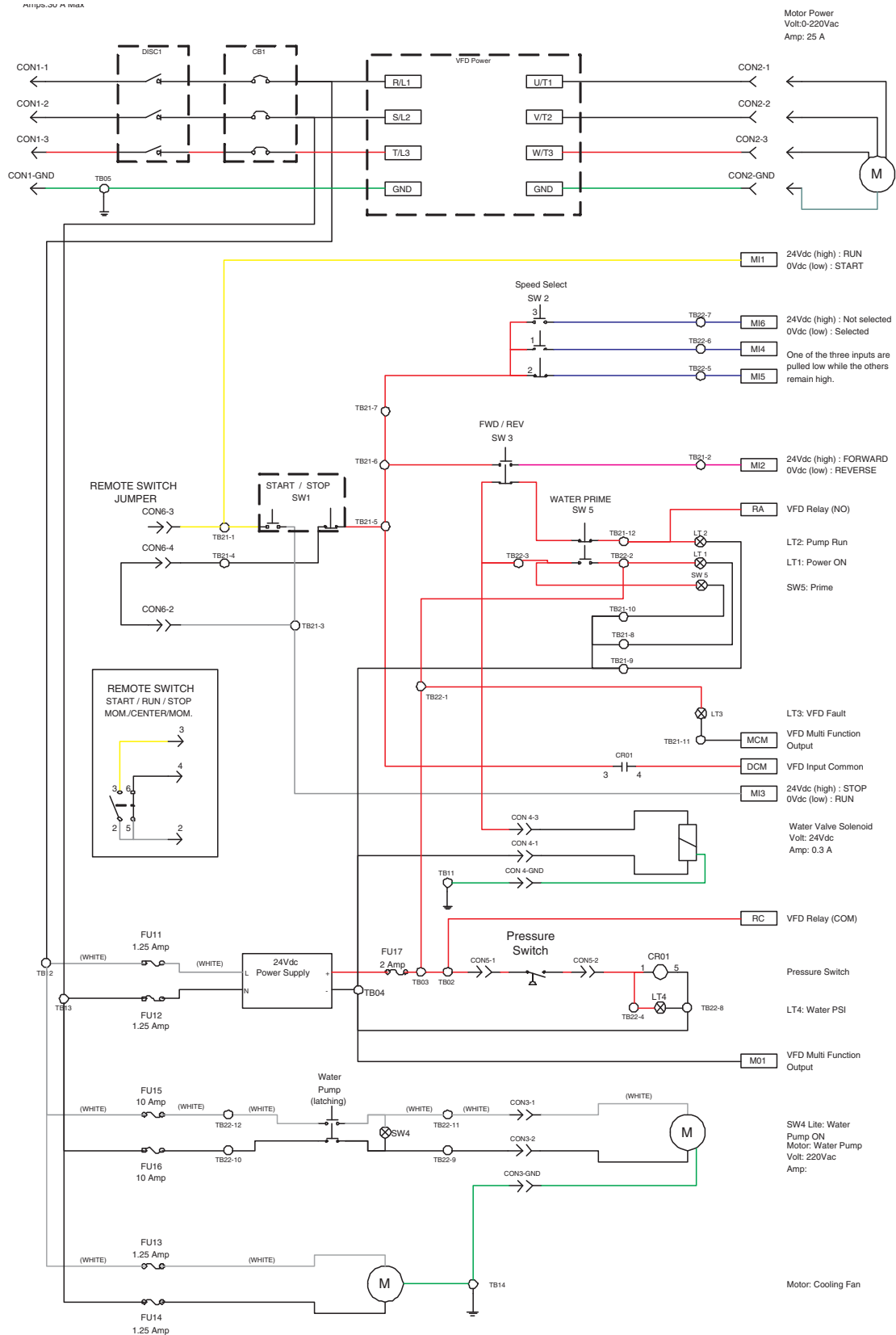
MP-20 (MTA708)

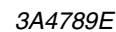


MP-20 16A (MTA709)



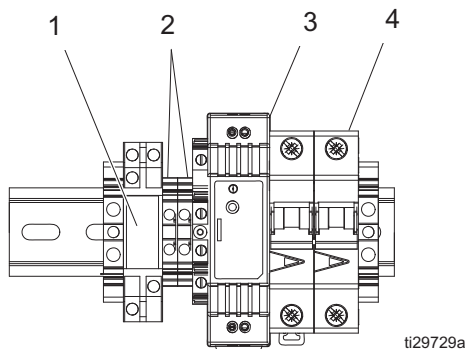
MP-40 (MTA710)





Din Rail Assembly Modules

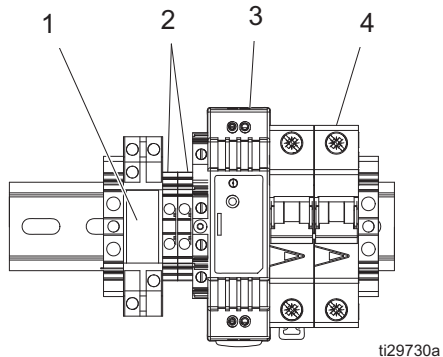
Module, din rail assembly (for MP-20)



ti29729a

Ref.	Part	Description	Qty.
1	MTA886	KIT, relay, 5 pin, 24 VDC	1
2	MTA884	KIT, fuse	1
3	MTA889	KIT, power supply, 24 VDC, 15 watt	1
4	MTA890	KIT, circuit breaker, 63A, 2 pole	1

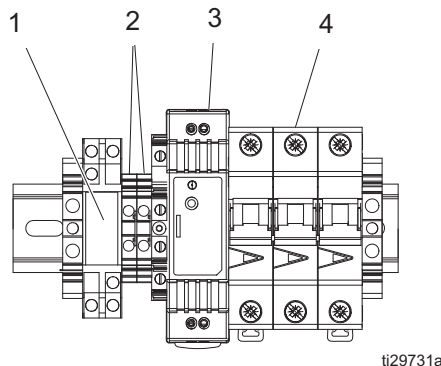
Module, din rail assembly (for MP-20 16A)



ti29730a

Ref.	Part	Description	Qty.
1	MTA886	KIT, relay, 5 pin, 24 VDC	1
2	MTA884	KIT, fuse	1
3	MTA889	KIT, power supply, 24 VDC, 15 watt	1
4	MTA893	KIT, circuit breaker, 16A, 2 pole	1

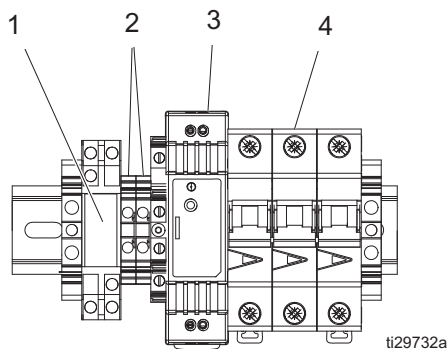
Module, din rail assembly (for MP-40)



ti29731a

Ref.	Part	Description	Qty.
1	MTA886	KIT, relay, 5 pin, 24 VDC	1
2	MTA884	KIT, fuse	1
3	MTA889	KIT, power supply, 24 VDC, 15 watt	1
4	MTA891	KIT, circuit breaker, 40A, 3 pole	1

Module, din rail assembly (for MP-40 380V)



ti29732a

Ref.	Part	Description	Qty.
1	MTA886	KIT, relay, 5 pin, 24 VDC	1
2	MTA884	KIT, fuse	1
3	MTA889	KIT, power supply, 24 VDC, 15 watt	1
4	MTA892	KIT, circuit breaker, 32A, 3 pole	1

Systems and Accessories

Systems

With Water Pump			
Description	Power	Motor	Part
MP-20	220V, 1-ph, 60 Hz, 30A	5.4 hp (4 kW)	25M070
MP-20 16A	220V, 1-ph, 50 Hz, 16A	5.4 hp (4 kW)	25M071
MP-40	220V, 3-ph, 60 Hz, 25A	7.5 hp (5.5 kW)	25M072
MP-40 380V	380V, 3-ph, 50 Hz, 25A	7.5 hp (5.5 kW)	25M073

Accessories

Kit	Description
17N886	KIT, rotor/stator pump water pressure tester, 1.5 in. female camlock

Rotor/Stator Pump Kits

Kit	Description	System Used On	Kit Type
MTA719	KIT, rotor, D8-1.5, green	MP-20 (25M070), MP-20 16A (25M071)	Rotor only
MTA720	KIT, stator, D8-1.5, green	MP-20 (25M070), MP-20 16A (25M071)	Stator Only
MTA721	KIT, rotor/stator, D8-1.5, green	MP-20 (25M070), MP-20 16A (25M071)	Rotor and stator
MTA722	KIT, rotor, R7-1.5, yellow	MP-20 (25M072), MP-40 380V (25M073)	Rotor only
MTA723	KIT, stator, R7-1.5, yellow	MP-20 (25M072), MP-40 380V (25M073)	Stator only
MTA724	KIT, rotor/stator, R7-1.5, yellow	MP-20 (25M072), MP-40 380V (25M073)	Rotor and stator

Nozzle Kits

Kit	Description	System Used On
MTA725	KIT, nozzle, output, MP-20	MP-20 (25M070), MP-20 16A (25M071)
MTA726	KIT, nozzle, output, MP-40	MP-40 (25M072), MP-40 380V (25M073)

Motor Kits

Kit	Description	Associated System	Kit Type
MTA699	KIT, motor, ABM-4 kW, 3p	MP-20 (25M070), MP-20 16A (25M071)	Motor only
MTA738	KIT, motor, MP-20	MP-20 (25M070), MP-20 16A (25M071)	Motor assembly
MTA732	KIT, motor, 5.5 kW, sumi-200	MP-40 (25M072)	Motor only
MTA729	KIT, motor, MP-40, 3 phase, 60 Hz	MP-40 (25M072)	Motor assembly
MTA737	KIT, motor, 5.5 kW, SEW-EURO188	MP-40 380V (25M073)	Motor only
MTA736	KIT, motor, MP-40, 3 phase, 50 Hz	MP-40 380V (25M073)	Motor Assembly

Drive Shaft Kits

Kit	Description	System Used On	Kit Type
MTA706	KIT, shaft, clean out, MP-20/40	MP-20 (25M070), MP-20 16A (25M071), MP-40 (25M072), MP-40 380V (25M073)	Clean out shaft
MTA712	KIT, shaft, drive, assembly, MP-20	MP-20 (25M070), MP-20 16A (25M071)	Drive shaft
MTA713	KIT, shaft, drive assembly, MP-40	MP-40 (25M072), MP-40 380V (25M073)	Drive shaft
MTA772	KIT, shaft, drive, high shear, assembly, MP-20	MP-20 (25M070), MP-20 16A (25M071)	High shear drive shaft
MTA773	KIT, shaft, drive, high shear, assembly, MP-40	MP-40 (25M072), MP-40 380V (25M073)	High shear drive shaft

Water Pump System Kits

Kit	Description	System Used On	Kit Type
MTA694	KIT, pump, water, 220V, 60 Hz	MP-20 (25M070), MP-40 (25M072)	Water pump and harness
MTA695	KIT, pump, water, 220V, 50 Hz	MP-20 16A (25M071), MP-40 380V (25M073)	Water pump and harness

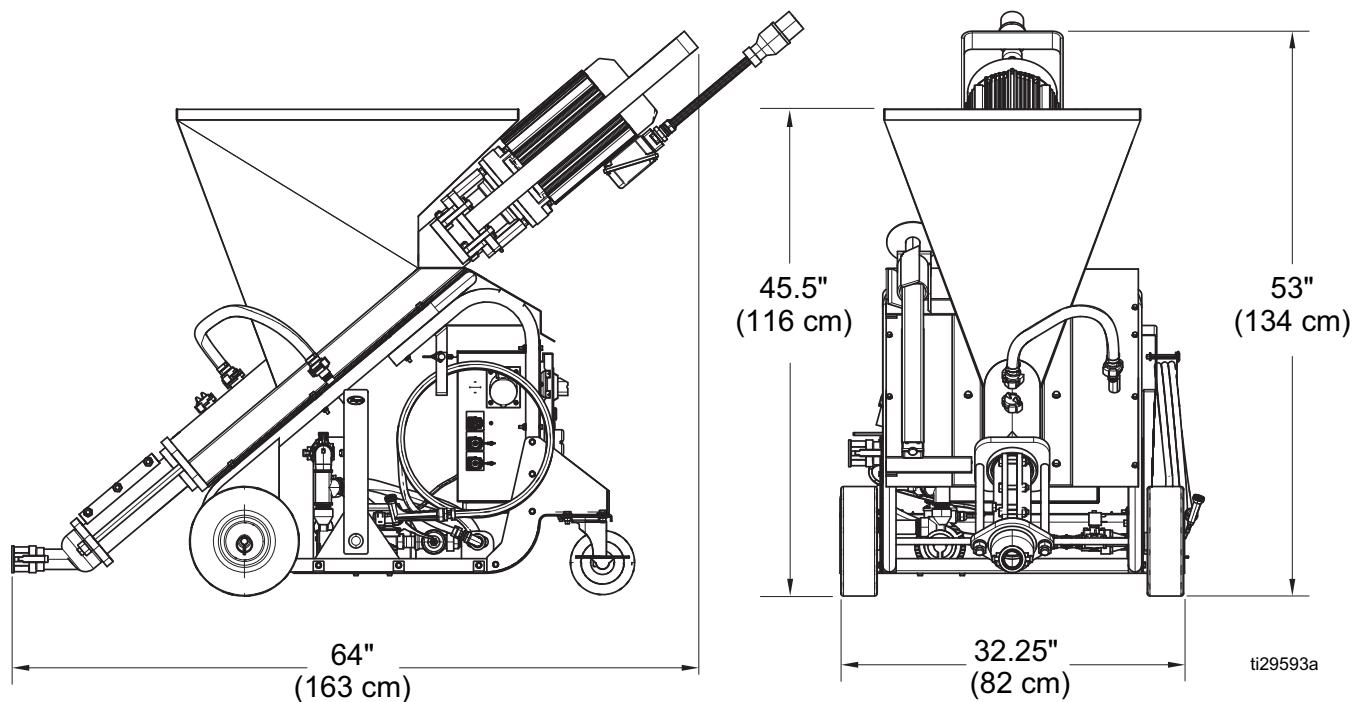
Enclosure Kits

Kit	Description	Associated System
MTA708	KIT, enclosure, MP-20, 1 phase	MP-20 (25M070)
MTA709	KIT, enclosure, MP-20, 1 phase, 16A	MP-20 16A (25M071)
MTA710	KIT, enclosure, MP-40, 3 phase	MP-40 (25M072)
MTA711	KIT, enclosure, MP-40, 3 phase+NEU	MP-40 380V (25M073)

Wheels and Casters Kits

Kit	Description	System Used On
MTA733	KIT, caster, swivel, 6 in., with brake	MP-20 (25M070), MP-20 16A (25M071), MP-40 (25M072), MP-40 380V (25M073)
MTA678	KIT, wheel, tire, 10 in., runflat	MP-20 (25M070), MP-20 16A (25M071), MP-40 (25M072), MP-40 380V (25M073)

Dimensions (for all models)



[illegible]

Technical Specifications

ToughTek MP-20 Mixing Pump 25M070		
	US	Metric
Maximum Fluid Working Pressure	300 psi	2.07 MPa, 20.7 bar
Maximum Motor Speed	314 rpm	
Weight (empty)	430 lb	195 kg
Hopper Capacity	37.4 gallons	141.6 liters
Wetted Parts	Tool steel, painted steel, plated steel, PORON®	
Fluid Inlet Size	3.0 in.	7.6 cm
Fluid Outlet Size	1.5 in. npt male with 1.5 in. male camlock	
Rotor/Stator Pump	D8-1.5	
Power Requirements		
Voltage	200-240 VAC	
Minimum Circuit Breaker Size	30 Amps	
Phase	1 Phase	
Frequency	60 Hz	
Water Pump Inlet Feed Pressure Requirements		
Minimum Pressure	40 psi	0.28 MPa, 2.8 bar
Maximum Pressure	70 psi	0.48 MPa, 4.8 bar
Hose Requirements		
Minimum Pressure	300 psi	2.07 MPa, 20.7 bar
Minimum Hose Diameter	1.0 in.	25 mm
Minimum Hose Length	25 ft	7.5 m
Noise Level (measured at 3.1 ft)		
Sound Pressure	85 dBa	
Operating Ambient Temperature		
Temperature	32° F to 120° F	0° C to 49° C

ToughTek MP-20 16A Mixing Pump 25M071		
	US	Metric
Maximum Fluid Working Pressure	300 psi	2.07 MPa, 20.7 bar
Maximum Motor Speed	244 rpm	
Weight (empty)	430 lb	195 kg
Hopper Capacity	37.4 gallons	141.6 liters
Wetted Parts	Tool steel, painted steel, plated steel, PORON®	
Fluid Inlet Size	3.0 in.	7.6 cm
Fluid Outlet Size	1.5 in. npt male with 1.5 in. male camlock	
Rotor/Stator Pump	D8-1.5	
Power Requirements		
Voltage	200-240 VAC	
Minimum Circuit Breaker Size	16 Amps	
Phase	1 Phase	
Frequency	50 Hz	
Water Pump Inlet Feed Pressure Requirements		
Minimum Pressure	40 psi	0.28 MPa, 2.8 bar
Maximum Pressure	70 psi	0.48 MPa, 4.8 bar
Hose Requirements		
Minimum Pressure	300 psi	2.07 MPa, 20.7 bar
Minimum Hose Diameter	1.0 in.	25 mm
Minimum Hose Length	25 ft	7.5 m
Noise Level (measured at 3.1 ft)		
Sound Pressure	85 dBa	
Operating Ambient Temperature		
Temperature	32° F to 120° F	0° C to 49° C

ToughTek MP-40 Pump 25M072		
	US	Metric
Maximum Fluid Working Pressure	300 psi	2.07 MPa, 20.7 bar
Maximum Motor Speed	327 rpm	
Weight (empty)	480 lb	218 kg
Hopper Capacity	37.4 gallons	141.6 liters
Wetted Parts	Tool steel, painted steel, plated steel, PORON®	
Fluid Inlet Size	3.8 in.	9.7 cm
Fluid Outlet Size	1.5 in. npt male with 1.5 in. male camlock	
Rotor/Stator Pump	R7-1.5	
Power Requirements		
Voltage	200-240 VAC	
Minimum Circuit Breaker Size	25 Amps	
Phase	3 Phase	
Frequency	60 Hz	
Water Pump Inlet Feed Pressure Requirements		
Minimum Pressure	40 psi	0.28 MPa, 2.8 bar
Maximum Pressure	70 psi	0.48 MPa, 4.8 bar
Hose Requirements		
Minimum Pressure	300 psi	2.07 MPa, 20.7 bar
Minimum Hose Diameter	1.0 in.	25 mm
Minimum Hose Length	25 ft	7.5 m
Noise Level (measured at 3.1 ft)		
Sound Pressure	84 dBa	
Operating Ambient Temperature		
Temperature	32° F to 120° F	0° C to 49° C

ToughTek MP-40 380V Mixing Pump 25M073		
	US	Metric
Maximum Fluid Working Pressure	300 psi	2.07 MPa, 20.7 bar
Maximum Motor Speed	349 rpm	
Weight (empty)	450 lb	204 kg
Hopper Capacity	37.4 gallons	141.6 liters
Wetted Parts	Tool steel, painted steel, plated steel, PORON®	
Fluid Inlet Size	3.8 in.	9.7 cm
Fluid Outlet Size	1.5 in. npt male with 1.5 in. male camlock	
Rotor/Stator Pump	R7-1.5	
Power Requirements		
Voltage	350-415 VAC	
Minimum Circuit Breaker Size	25 Amps	
Phase	3 Phase	
Frequency	50 Hz	
Water Pump Inlet Feed Pressure Requirements		
Minimum Pressure	40 psi	0.28 MPa, 2.8 bar
Maximum Pressure	70 psi	0.48 MPa, 4.8 bar
Hose Requirements		
Minimum Pressure	300 psi	2.07 MPa, 20.7 bar
Minimum Hose Diameter	1.0 in.	25 mm
Minimum Hose Length	25 ft	7.5 m
Noise Level (measured at 3.1 ft)		
Sound Pressure	86 dBa	
Operating Ambient Temperature		
Temperature	32° F to 120° F	0° C to 49° C

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

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FOR GRACO CANADA CUSTOMERS

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Revision E, May 2018