Instructions

ToughTek® CM-Series Continuous Mixers

3A4350L

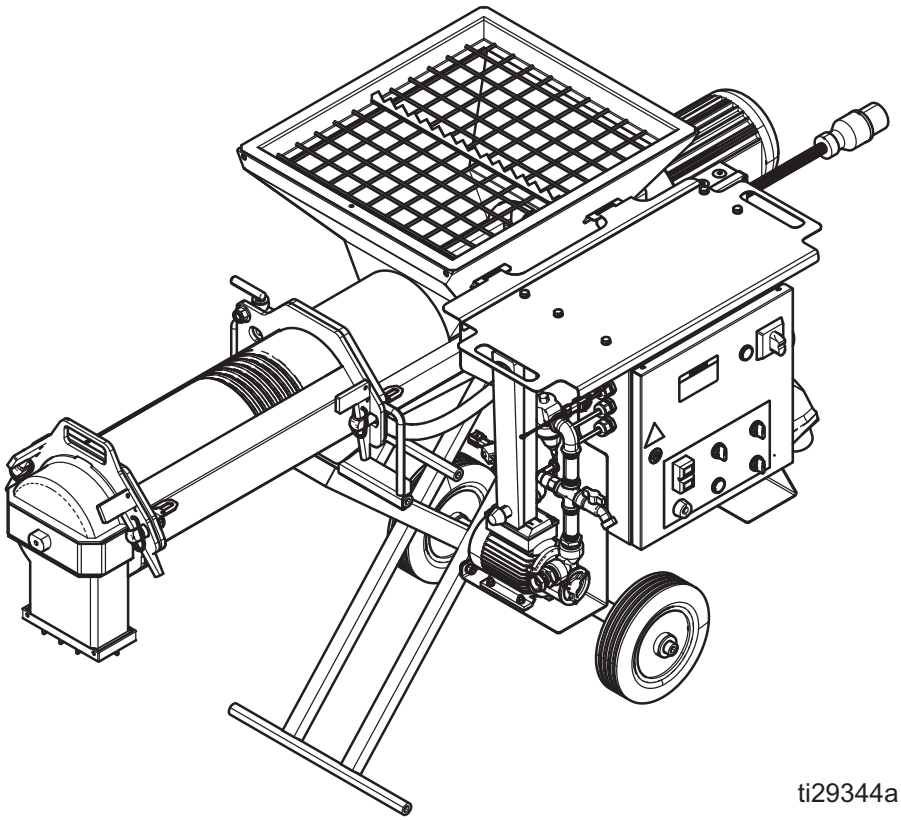
EN

Electric continuous mixer for water-based cementitious materials. For professional use only. Not approved for use in explosive atmospheres or hazardous locations.

See page 2 for model information.

Important Safety Instructions

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



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PROVEN QUALITY. LEADING TECHNOLOGY.

Contents

Models

Model	Part	Description	Power
CM-40	25M080	ToughTek CM-40	200-240 VAC, 1 Phase, 50 Hz
	25M081	ToughTek CM-40	200-240 VAC, 1 Phase, 60 Hz
	25M082	ToughTek CM-40	200-240 VAC, 3 Phase, 50 Hz
	25M083	ToughTek CM-40	200-240 VAC, 3 Phase, 60 Hz
CM-40 Silo	25M085	ToughTek CM-40 Silo	200-240 VAC, 1 Phase, 50 Hz
	25M086	ToughTek CM-40 Silo	200-240 VAC, 1 Phase, 60 Hz
	25M087	ToughTek CM-40 Silo	200-240 VAC, 3 Phase, 50 Hz

Related Manuals

Manual in English	Description
3A4361	ToughTek Rotor/Stator Pumps

Manuals are available at www.graco.com.

Warnings

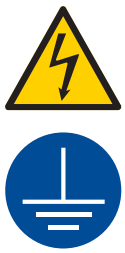
The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer 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 in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See 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.

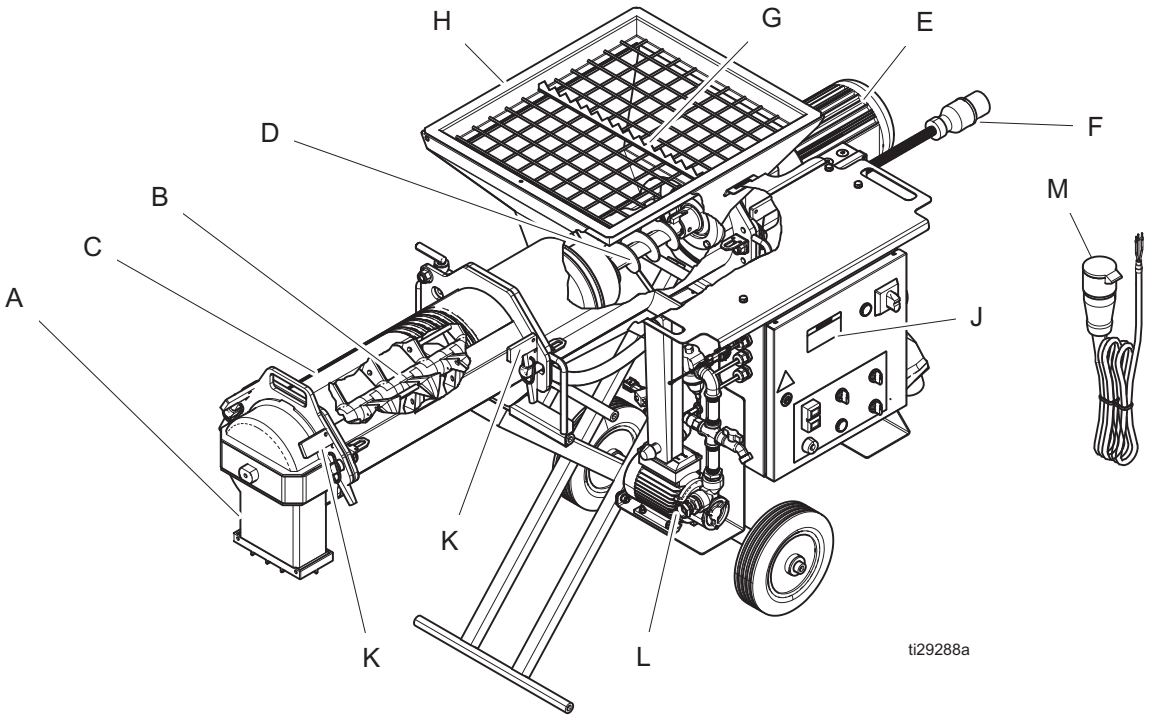
PERSONAL PROTECTIVE EQUIPMENT

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

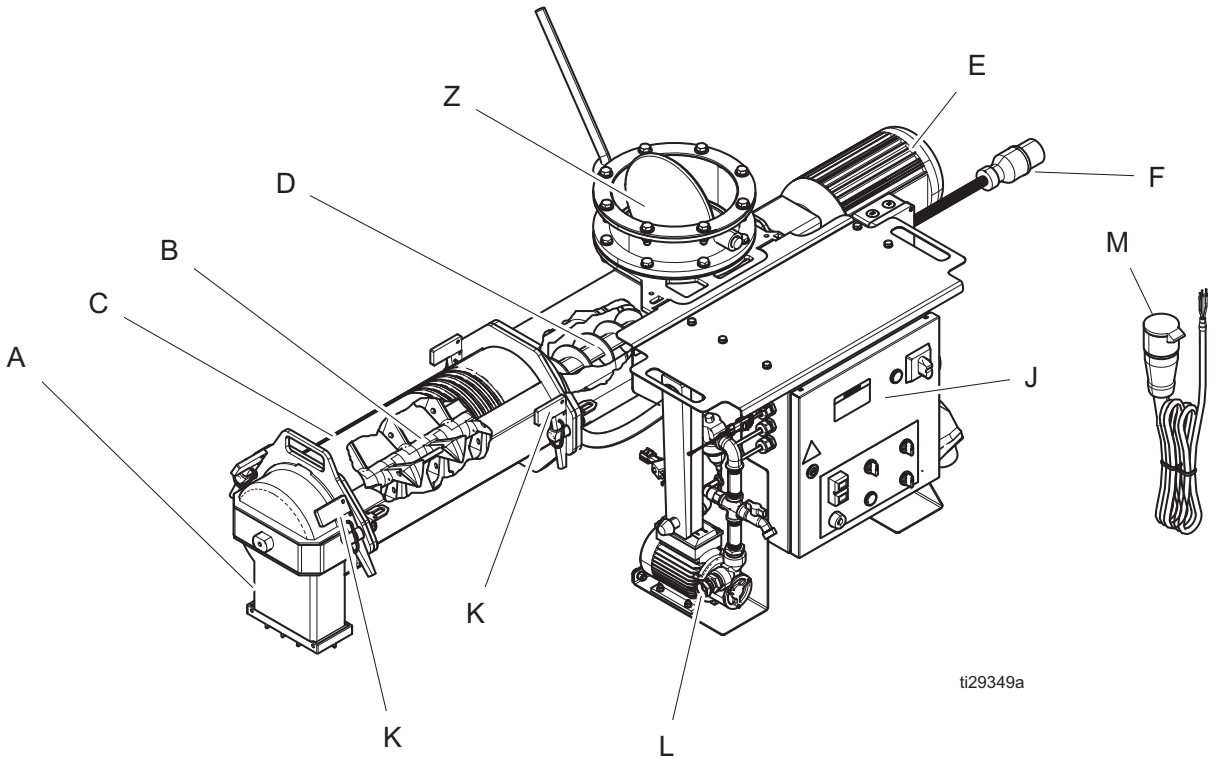
CM-40



Ref.	Description
A	Mixing Tube Discharge Nozzle
B	Mixing Shaft
C	Mixing Tube
D	Feed Screw
E	Gearbox Motor
F	Motor Cable

Ref.	Description
G	Hopper Grate
H	Hopper
J	Control Box
K	Wedge Retainer
L	Water Pump System
M	Power Cable

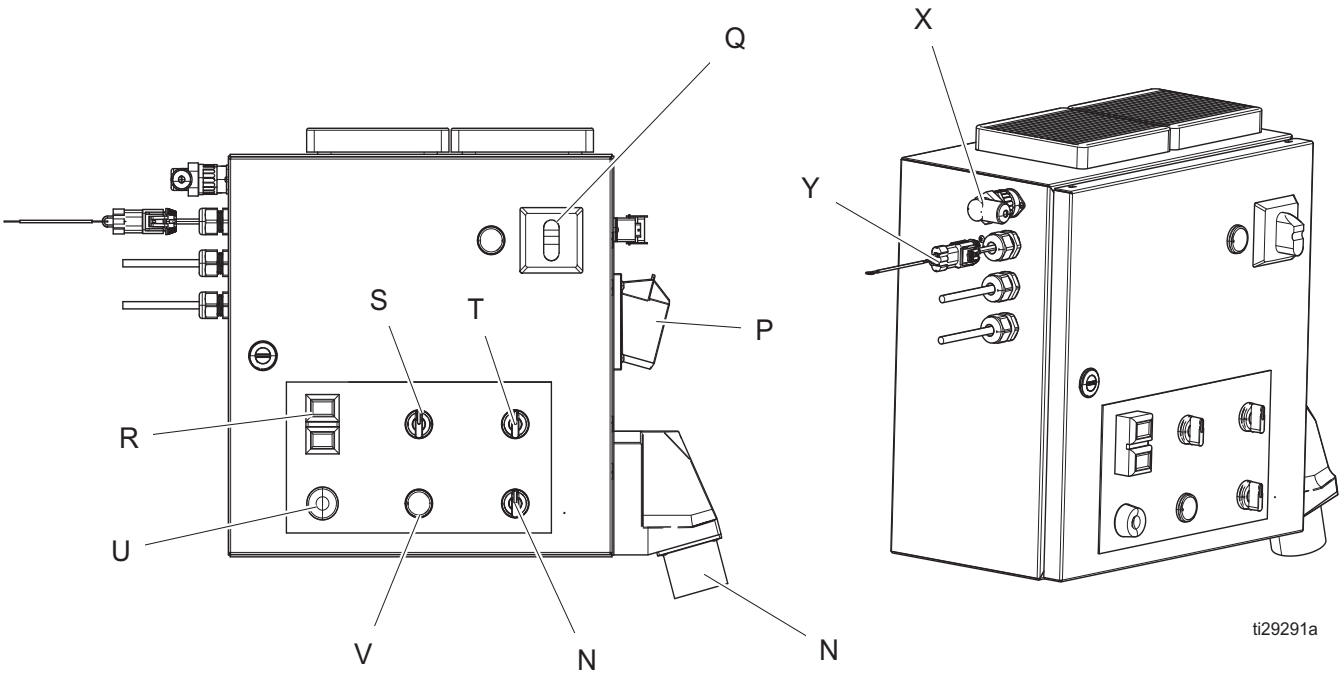
CM-40 Silo



Ref.	Description
A	Mixing Tube Discharge Nozzle
B	Mixing Shaft
C	Mixing Tube
D	Feed Screw
E	Gearbox Motor
F	Motor Cable

Ref.	Description
J	Control Box
K	Wedge Retainer
L	Water Pump System
M	Power Cable
Z	Butterfly Valve

Control Box (J)



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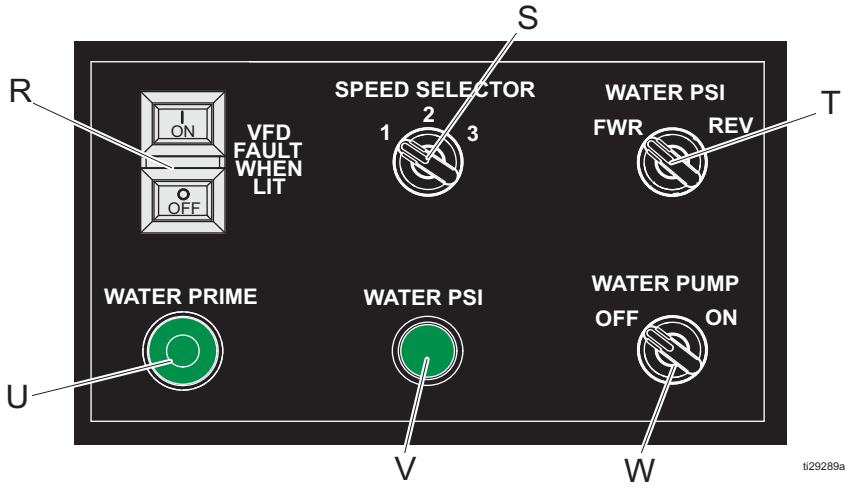

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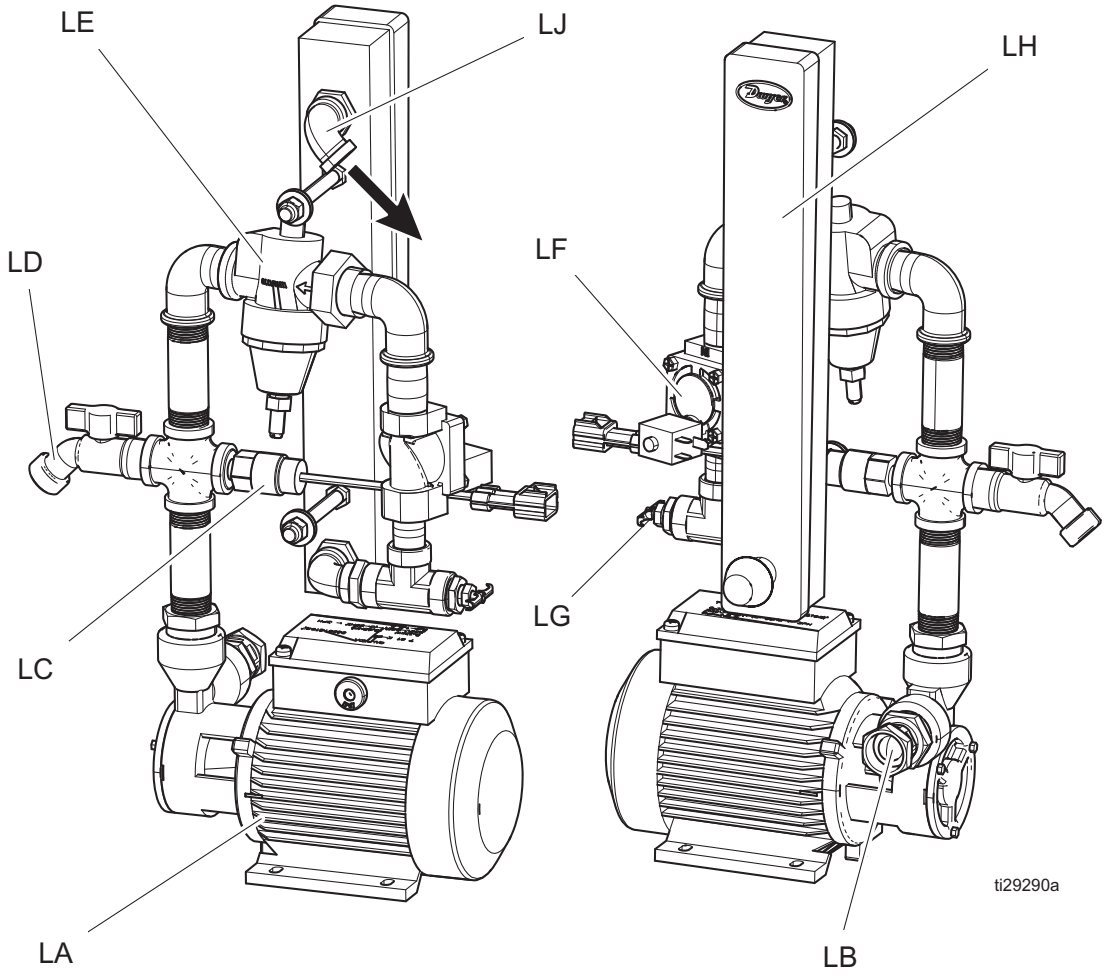
Ref.	Description
N	Main Power In Connector
P	Power Out Connector
Q	Main Power Disconnect Switch
R	START/STOP Push Button
S	Speed Selector Knob
T	Forward/Reverse Mixer Direction Switch

Ref.	Description
U	Water Prime Button
V	Water Pressure Indicator
W	Water Pump ON/OFF Switch
X	Remote Switch Connector
Y	Water Pressure Switch Plug

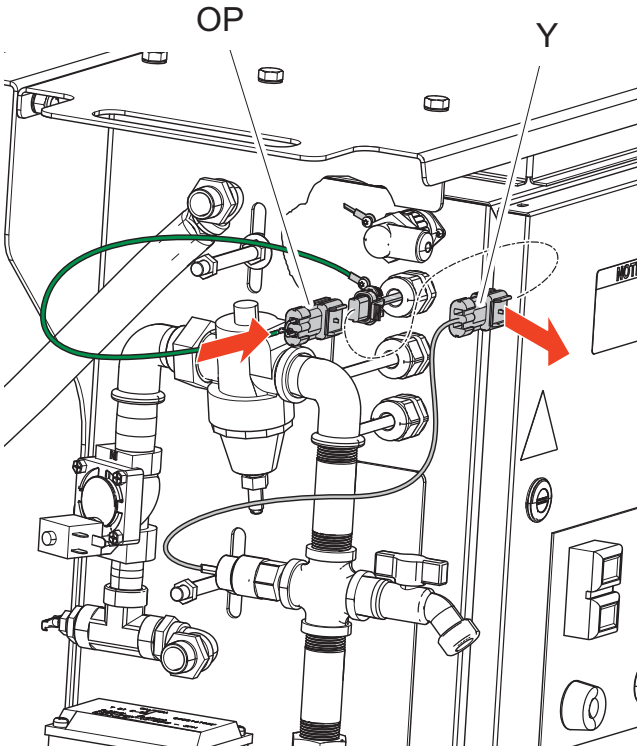
Water Pump System (L)



Ref.	Description
LA	Water Pump
LB	Water Pump System Inlet
LC	Water Pressure Switch
LD	Water Faucet Valve

Ref.	Description
LE	Water Pressure Regulator
LF	Water Solenoid Valve
LG	Water Drain Valve
LH	Water Flow Meter
LJ	Water Pump System Outlet

Water Pressure Over-ride Plug (OP)



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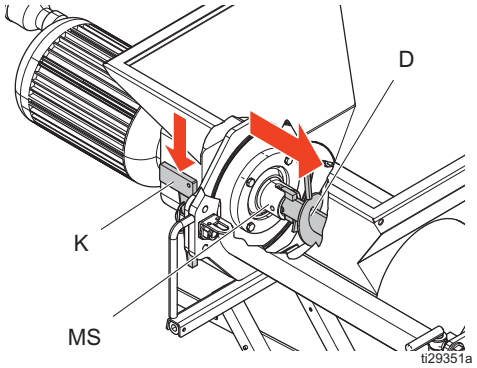
The water solenoid valve requires 40 psi of water pressure to be energized. If the water pressure is not 40 psi or greater, the solenoid valve will remain normally closed, blocking the flow of water. This operation can be overridden by unplugging the water pressure switch plug (Y) and connecting the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

Setup

1. Make sure the wedge retainers (K) are secure on the motor side. Make sure both flange faces are paired with their matching counterpart.
2. Verify the flat end of the feed screw (D) is engaged with the motor shaft adapter (MS).



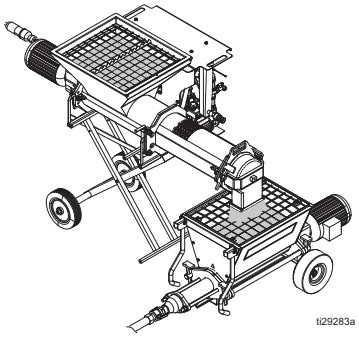
3. Make sure the wedge retainers (K) are secure on the mixing tube (C) side. Make sure both flange faces are paired with their matching counterpart. The mixing shaft (B) should be engaged with the feed screw (D).
4. Make sure the wedge retainers (K) are secure on the mixing tube discharge nozzle (A) side. Make sure both flange faces are paired with their matching counterpart.
5. **CM-40:** Secure the hopper grate (G) onto the top of the hopper (H).

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

CM-40 Silo: Mount the mixer to the appropriate sized silo using the provided butterfly seal and fasteners. The butterfly seal should be assembled between the butterfly valve (Z) and silo.

NOTE: See **Butterfly Valve Mounting Pattern**, page 15, for the butterfly valve diameter and mounting pattern.

6. Position the mixer over the pump hopper. The mixer should be on a horizontal surface so it is secure and stable.



7. Connect the motor cable (F) to the power out connector (P).
8. Connect the power cable (M) to the main power in connector (N).
9. Connect to the appropriate power source.

Electrical Components

Power Cable Color Code

Power Cable MTA727 (for systems 25M080, 25M081, 25M085, 25M086)	
Line 1	Black
Line 2	White
Ground	Green
Power Cable MTA728 (for systems 25M082, 25M083, 25M087)	
Line 1	Black
Line 2	White
Line 3	Red
Ground	Green

Grounding

The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.

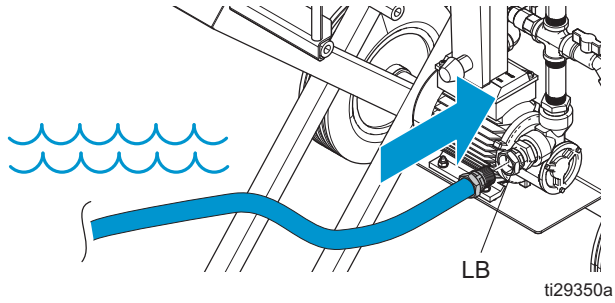
The system is grounded through the power cord.

Operation

Start Up

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

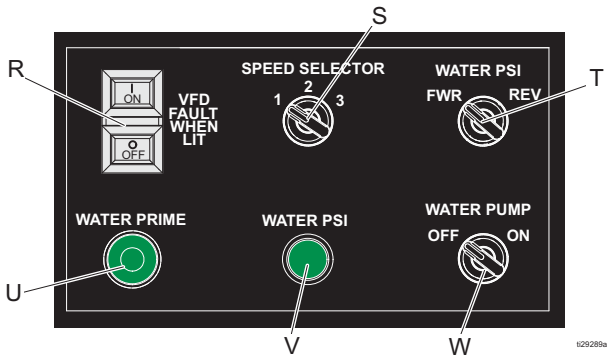
NOTE: The connection is a 3/4 in. female garden hose type fitting.



NOTE: The water feed must be able to supply water pressure of 40 psi or greater or else the mixer will not operate in the forward direction. A pressure switch that controls the forward direction operation of the mixer activates at 40 psi, allowing for forward operation. If water pressure is below 40 psi and the mixer must be operated in the forward direction, the pressure switch can be bypassed by connecting the water pressure bypass plug.

2. Turn the power disconnect switch (Q) to ON.

3. Turn the water pump switch (W) to ON.



4. Press and hold the water prime button (U).

5. Set the water flow meter (LH) to 3 gpm, then release the water prime button (U).

6. Press the START button (R) to run the mixing shaft.

NOTE: A scraping noise is normal as the mixing tines run close to the inside of the hopper.

7. Verify water is flowing through the mixing tube (C) and out the mixing tube discharge nozzle (A).

8. Hold the mixer direction switch (T) in the REV position for several seconds. Verify the mixing shaft is turning in the opposite direction and water has stopped flowing out of the mixing tube discharge nozzle (A).

NOTE: When running in reverse, the water solenoid valve (LF) is not energized and is closed. This stops water from being fed into the mixer.

NOTE: The mixer direction switch (T) 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.

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

9. Press the STOP button (R) to stop the motor.

10. Turn the water pump switch (W) to OFF.

Mixing and Dispensing Material

Avoid contact with the discharge nozzle (A) and feed liner (FL) while mixing and dispensing material. These parts can pull in, crush, cut or amputate fingers and other body parts.

1. Add dry material:

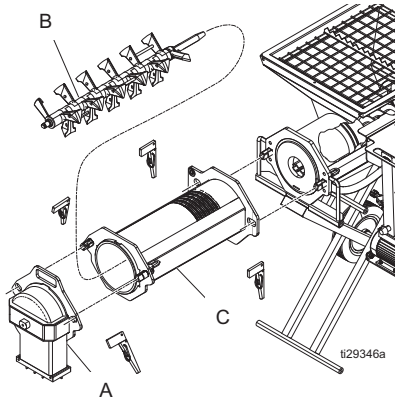
   Adding material to the hopper generates clouds of dust, and exposes the user to the sharp teeth on the hopper grate. Always wear protective equipment when adding material to the hopper.

   CM-40: 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 bag.

   CM-40 Silo: Fill the silo with material. Open the silo butterfly valve (Z) slowly to allow material to drop into the feed section of the mixer.

   NOTE: During operation, keep the hopper filled with dry material. Do not allow the level to drop below the top of the feed screw (D) or the output material consistency will change.

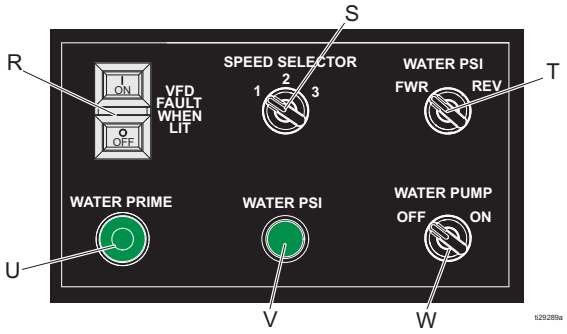
2. With the main power disconnect switch (Q) set to OFF, remove the mixing tube discharge nozzle (A), mixing shaft (B), and mixing tube (C).



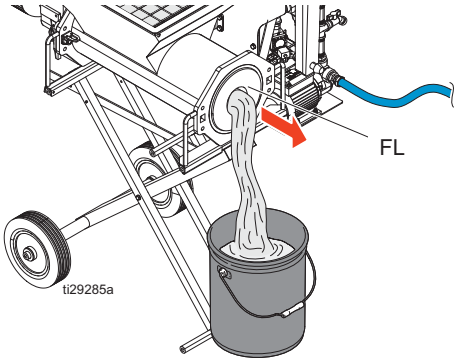
NOTICE

When removing a wedge retainer (K), hit the underside with a rubber mallet. Do not hit the pointed end of the wedge retainer. The end of the wedge can become damaged or bent, and no longer fit through the retaining slot.

3. Turn the power disconnect switch (Q) to ON.



4. Press the START button (R) and verify there is material output from the feed liner (FL). Place a bucket under the feed liner (FL) to catch any dry material output.



5. Adjust the speed selector knob (S) to your desired output level and press the STOP button (R).
6. Turn the power disconnect switch (Q) to OFF.
7. Reattach the mixing tube discharge nozzle (A), mixing shaft (B), and mixing tube (C).
8. Turn the power disconnect switch (Q) to ON.
9. Turn the water pump switch (W) to ON and press the START button (R).
10. Observe the material output and adjust the water flow meter (LH) until your desired material consistency is achieved.

Clean Out

Avoid contact with the discharge nozzle (A) and feed liner (FL) during clean out. These parts can pull in, crush, cut or amputate fingers and other body parts.

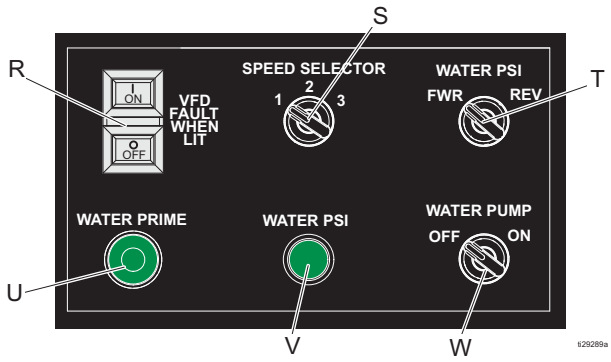
When finished mixing and dispensing material or taking an extended break, the mixer should be emptied and cleaned thoroughly so material does not cure and harden in the system.

1. Continue to mix and dispense material until no dry material remains.

   CM-40: Do not add any more bags of dry material to the hopper. Run the mixer until the hopper (H) is empty and only clear water exits the mixing tube discharge nozzle (A).

   CM-40 Silo: Close the silo butterfly valve (SV) and run the mixer until only clear water exits the mixing tube discharge nozzle (A).

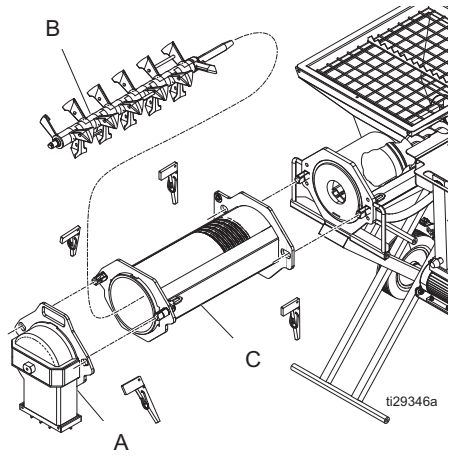
2. Press the STOP button (R) and turn the water pump switch (W) to OFF.



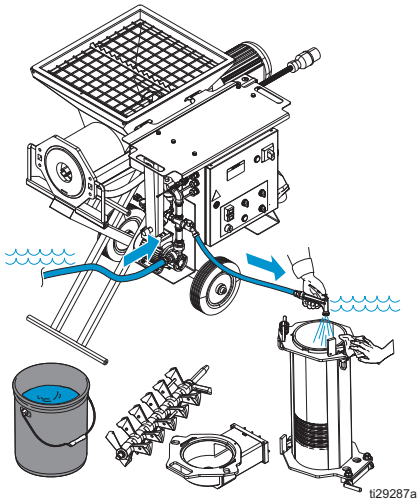
3. Turn the power disconnect switch (Q) to OFF.

4. Clean mixing tube assembly:

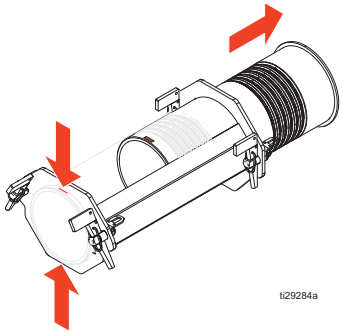
   a. Remove the mixing tube discharge nozzle (A), mixing shaft (B), and mixing tube (C).



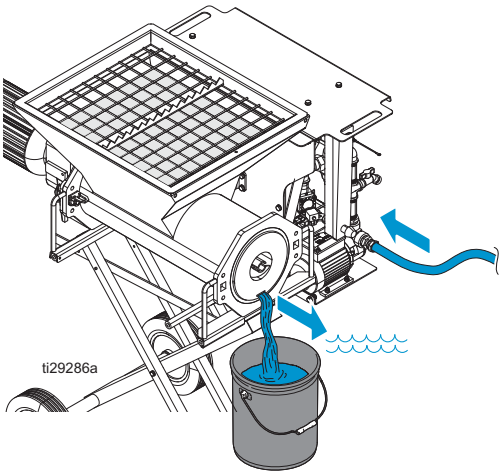
   b. Thoroughly clean the removed parts with water. A water hose can be attached to the water faucet valve (LD) to spray down the mixing parts.



NOTE: The mixing tube can be removed from its steel support sleeve for easier and more thorough cleaning.



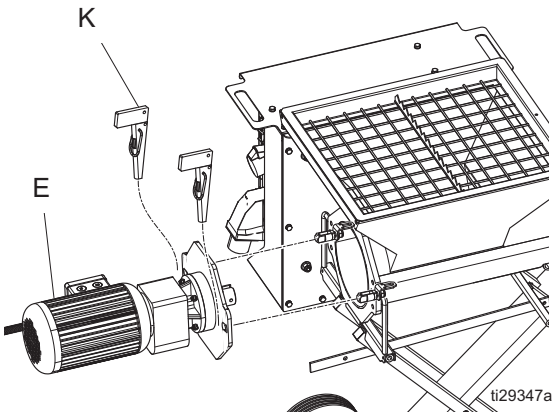
c. Wipe down the feed liner (FL). If any material or residue has built up on the water feed slot, thoroughly clean it out. Run water through feed slot if necessary.



5. Clean hopper (H) and feed screw (D):

   a. Disconnect the power cable (M) from the main power in connector (N).

   b. Remove the wedge retainers (K) and remove the motor assembly (E) from the system.



NOTICE

When removing a wedge retainer (K), hit the underside with a rubber mallet. Do not hit the pointed end of the wedge retainer. The end of the wedge can become damaged or bent, and no longer fit through the retaining slot.

   c. Remove the hopper grate (G).

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

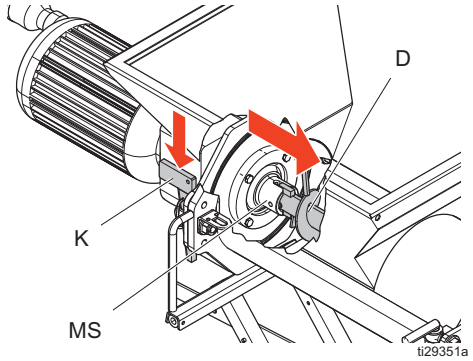
   d. Pull out the feed screw (D).

   e. With a rag, clean out the hopper (H), feed screw (D), and any other components that are still covered with material.

   f. Dry all components thoroughly.

   g. Assemble the feed screw (D) back into the hopper and attach the hopper grate (G).

   h. Attach the motor assembly (E) to the base unit. Align and engage the motor shaft adapter (MS) and flat end of the feed screw (D) before securing the motor assembly with the wedge retainers (K).



6. Reattach the mixing tube discharge nozzle (A), mixing shaft (B), and mixing tube (C).

7. Dispose of all waste material in accordance with local rules and regulations. See manufacturer SDSs for more information

Shutdown

1. To shutdown, perform the **Clean Out** procedure, page 13.
2. Disconnect from the power supply.
3. Drain water from the water pump system.

NOTICE

If working in a cold environment, failure to drain water from the water pump system could cause damage to the system due to freezing water.

Routine Maintenance

The following maintenance should be performed daily:

1. Perform the **Clean Out** procedure, page 13.
2. Clean the hopper with a scrub pad and thoroughly dry the hopper (H) and feed screw (D). It is recommended that you clean the outside of the mixer 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.

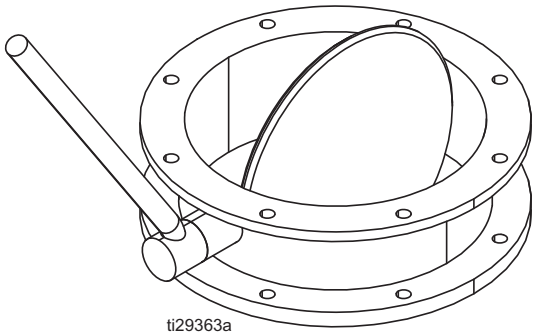
NOTE: Failure to thoroughly dry the hopper and feed screw can cause material buildup and material to be fed and mixed inconsistently.

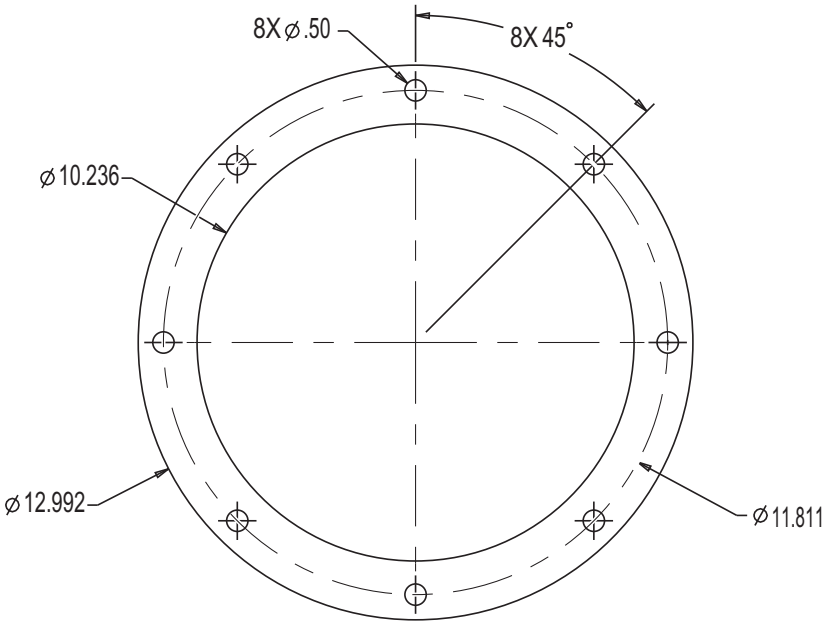
3. Check the mixing shaft (B), bearing on the mixing tube discharge nozzle (A), mixing tube (C), feed screw (D), and motor seal for wear and damage. Replace if necessary.

The following maintenance should be performed at or before each specified time interval:

Every 3 years or fewer: Replace the grease in the motor gearbox. Use grease made for gear applications.

Butterfly Valve Mounting Pattern





Troubleshooting

Problem	Cause	Solution
Mixed material is too dry	Water flow meter setting is too low.	Increase the water flow meter control setting to increase the water added to the material.
	Water insert slot is plugged.	Clean out the obstruction.
	Water feed pressure is too low.	Find a suitable water source that provides adequate pressure.
Mixed material is too wet	Water flow meter setting is too high.	Decrease the water flow meter control setting to decrease the water added to the material.
	Dry material in the hopper/silo is running low.	Add more material to the hopper or silo.

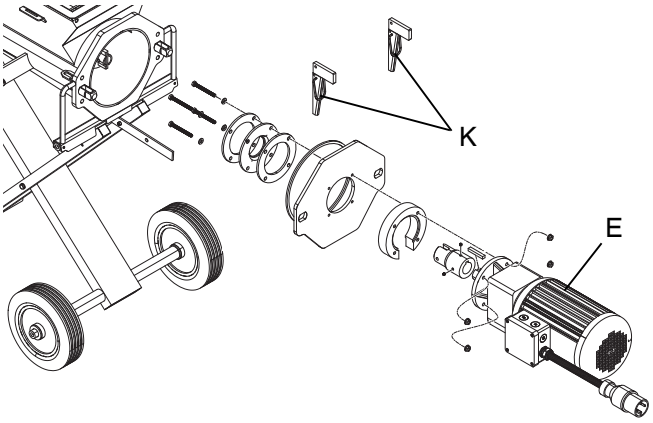
Error Codes on the Display

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.

Error Code	Fault Description	Corrective Action
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

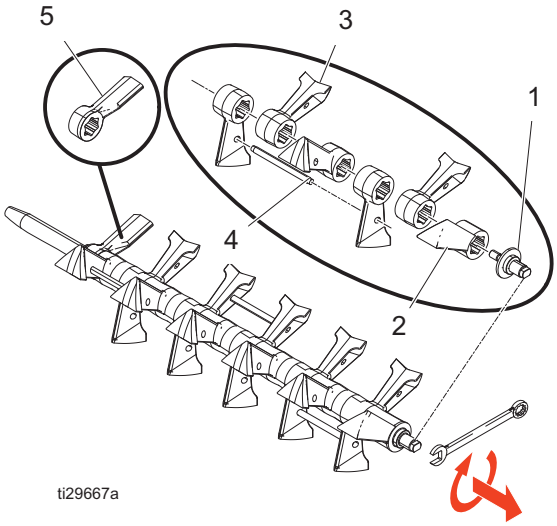
Motor Assembly



1. Disconnect the unit from the power source.
2. Remove two wedge retainers (K) and slide out the motor assembly (E).
3. Disassemble the motor assembly (E) and examine the parts. Replace any worn or damaged parts as necessary. See page 23 for saleable part numbers.
4. Reassemble the motor assembly (E) and reinstall the motor assembly back into the unit.
5. Replace two wedge retainers (K).

Mixing Shaft

To remove the mixing shaft and replace the blades, perform the steps below.



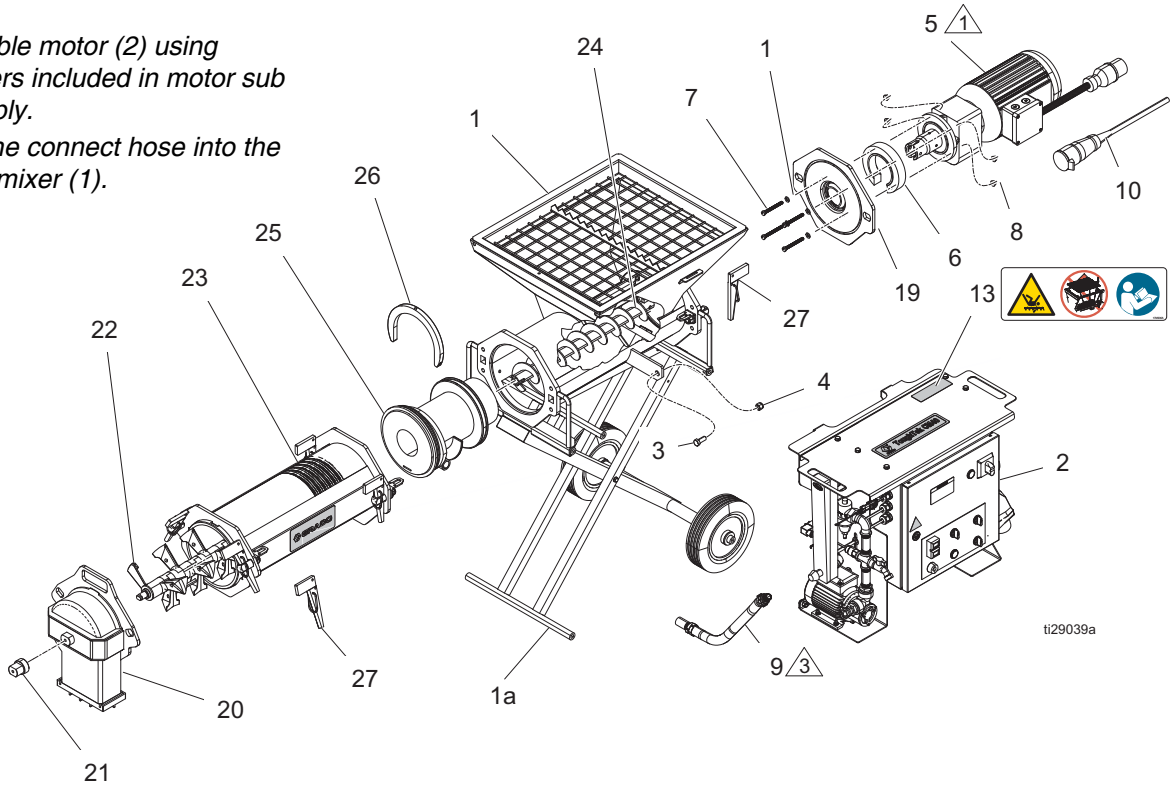
1. Use a wrench to turn the bearing pin (1) **right** to loosen.
2. Remove the mixing shaft.
3. Remove the mixing blades (2, 3, 5) and rods (4). Replace parts if necessary.
4. Reinstall the mixing shaft and use a wrench to turn the bearing pin (1) left to tighten.

Parts

CM-40 Series

Notes:

1. *Assemble motor (2) using fasteners included in motor sub assembly.*
3. *Push the connect hose into the port in mixer (1).*



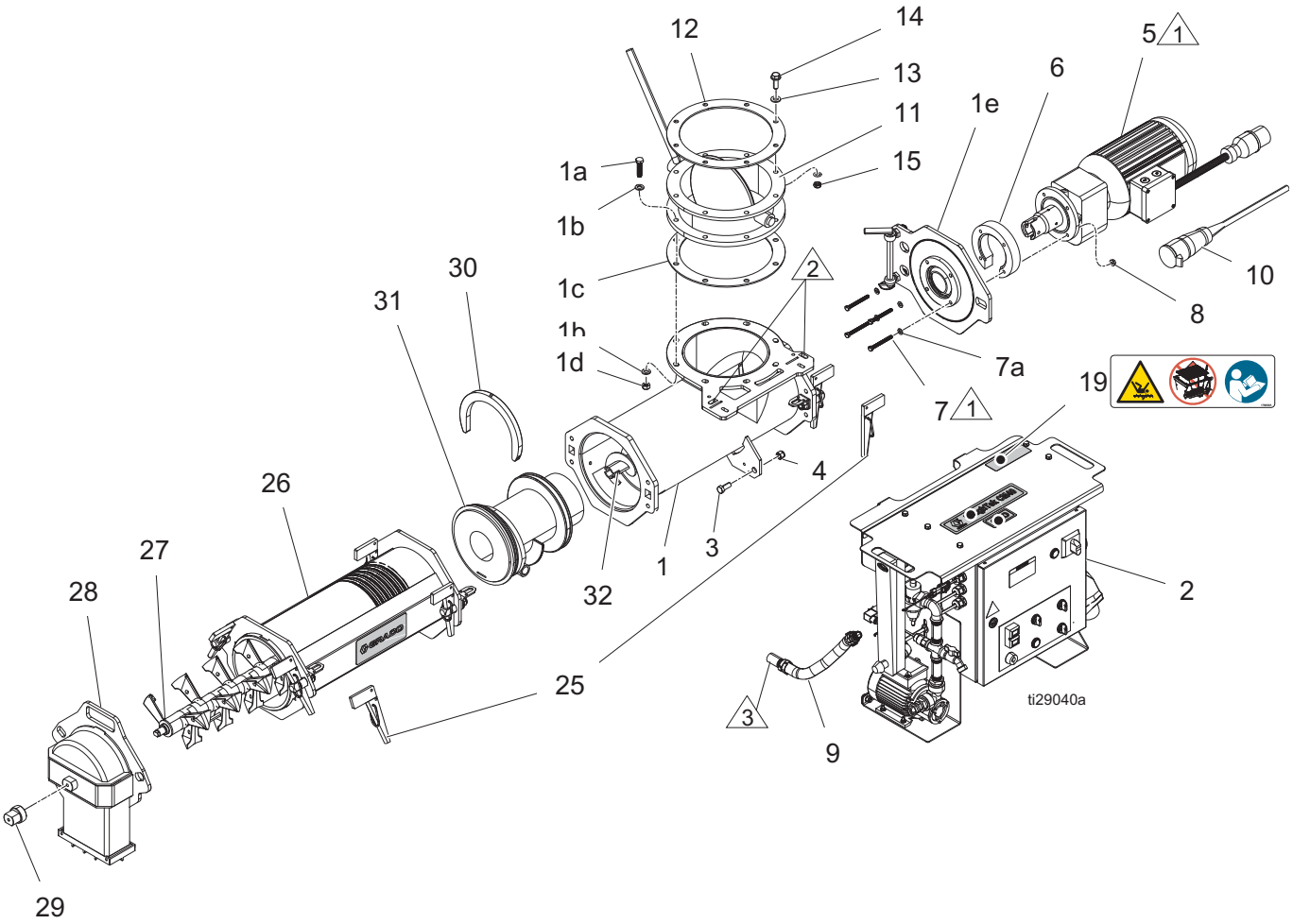
Ref.	Part	Description	Qty.
1	- - - - -	MIXER, 2 mix, mobile	1
1a	25E590	CART, CM-40 (includes wheels and fasteners)	1
2	- - - - -	MODULE, control, CM-40, 220V, 1ph, 50 Hz (see page 26)	1
	- - - - -	MODULE, control, CM-40, 220V, 1ph, 60 Hz (see page 26)	1
	- - - - -	MODULE, control, CM-40, 220V, 3ph, 50 Hz (see page 26)	1
	- - - - -	MODULE, control, CM-40, 220V, 3ph, 60 Hz (see page 26)	1
3	100424	SCREW, cap, hex hd	1
4	801020	NUT, lock, hex	1
5	MTA672	KIT, motor, assembly, 3ph	1
6	MTA442	SPACER, 4 kW motor	1
7	- - - - -	BOLT, hex hd, M8 x 1.25 x 80	4
8	16A390	NUT, hex, flanged	4
9	MTA691	KIT, hose, output, 3/4 in. x 14 in.	1
10	MTA727	HARNESS, power, 1ph (models 25M080, 25M081)	1

Ref.	Part	Description	Qty.
10a	MTA007	PLUG ONLY, power, 1 ph	1
10	MTA728	HARNESS, power, 3ph (model 25M082, 25M083)	1
10a	MTA935	PLUG ONLY, power, 3ph (model 25M082, 25M083)	1
13▲	17M606	LABEL, safety	1
20*	18B309	ASSEMBLY, mixing tube, discharge	1
21*	MTA650	BEARING, mixing tube, discharge nozzle, plastic bushing	1
22	MTA795	SHAFT, mixing, assembly	1
23	MTA794	ASSEMBLY, mixing tube	1
24	MTA802	SCREW, delivery shaft, high pitch	1
25	MTA800	TUBE, dosing zone	1
26	MTA801	BRACKET, dosing zone	1
27	MTA924	WEDGE, retainer	6

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

** Included in Discharge Nozzle Assembly Kit 18B309*

CM-40 Silo Series



***NOTES**:*

1. Assemble motor (2) using fasteners included in motor sub assembly.
2. Attach control module frame “hooks” through slots on mixer (1). Then assemble bolt (3) and nut (4).
3. Push the connect hose into the port in mixer (1).

CM-40 Silo Series Parts List

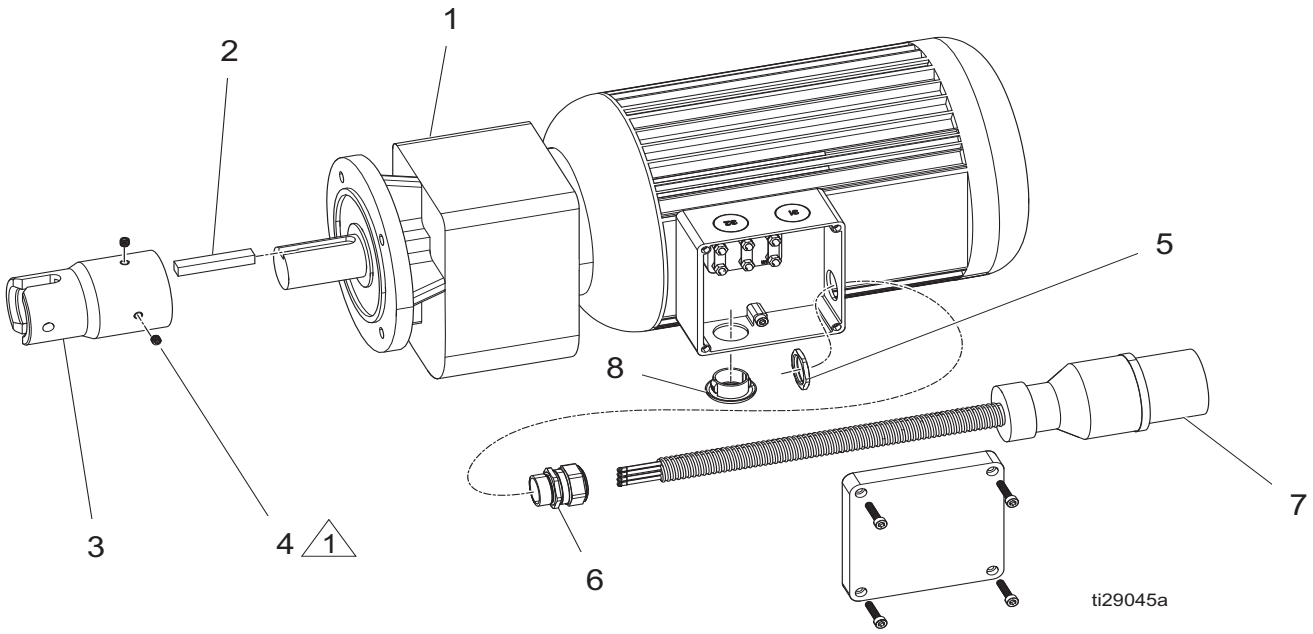
Ref.	Part	Description	Qty.
1	- - - - -	MIXER, b-mix, MAI	1
1e	25R841	FLANGE, mounting, silo motor. Includes gasket, hinge, and pin (shaft and plates not included)	1
2	- - - - -	MODULE, control, CM-40, 220V, 1ph, 50 Hz (see page 26)	1
	- - - - -	MODULE, control, CM-40, 220V, 1ph, 60 Hz (see page 26)	1
	- - - - -	MODULE, control, CM-40, 220V, 3ph, 50 Hz (see page 26)	1
3	100424	SCREW, cap, hex hd	1
4	801020	NUT, lock, hex	1
5	MTA672	KIT, motor, assembly	1
6	MTA442	SPACER, 4 kW motor	1
7	- - - - -	BOLT, hex hd, M8 x 1.25 x 80	4
8	16A390	NUT, hex, flanged	4
9	MTA811	KIT, hose, output, CM-40, 11.13 in.	1
10	MTA727	HARNESS, power, 1ph (models 25M085, 25M086)	1
10a	MTA007	PLUG ONLY, power, 1ph (models 25M085, 25M086)	1
10	MTA728	HARNESS, power, 3ph (model 25M087)	1
10a	MTA935	PLUG ONLY, power, 3ph (model 25M087)	1
11†	- - - - -	VALVE, butterfly, 300mm	1
12	†MTA443	SEAL, butterfly, 300mm	1
13†	- - - - -	WASHER, plain	16
14	†100017	SCREW, cap, hex hd	8
15	†119547	NUT, hex, lock, nylon, thin	8
19▲	17M606	LABEL, safety	1
25	MTA924	WEDGE, retainer	6
26	MTA794	ASSEMBLY, mixing tube	1
27	MTA795	SHAFT, mixing, assembly	1
28*	18B309	ASSEMBLY, mixing tube, discharge	1
29*	MTA650	BEARING, mixing tube, discharge nozzle, plastic bushing	1
30	MTA801	BRACKET, dosing zone	1
31	MTA800	TUBE, dosing zone	1
32	MTA802	SCREW, delivery shaft, high pitch	1

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

** Included in Mixing Tube Discharge Nozzle Assembly Kit 18B309*

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA674	Butterfly Valve Kit	11 (1), 12 (1), 13 (11), 14 (8), 15 (8)

Motor Assembly (MTA672)



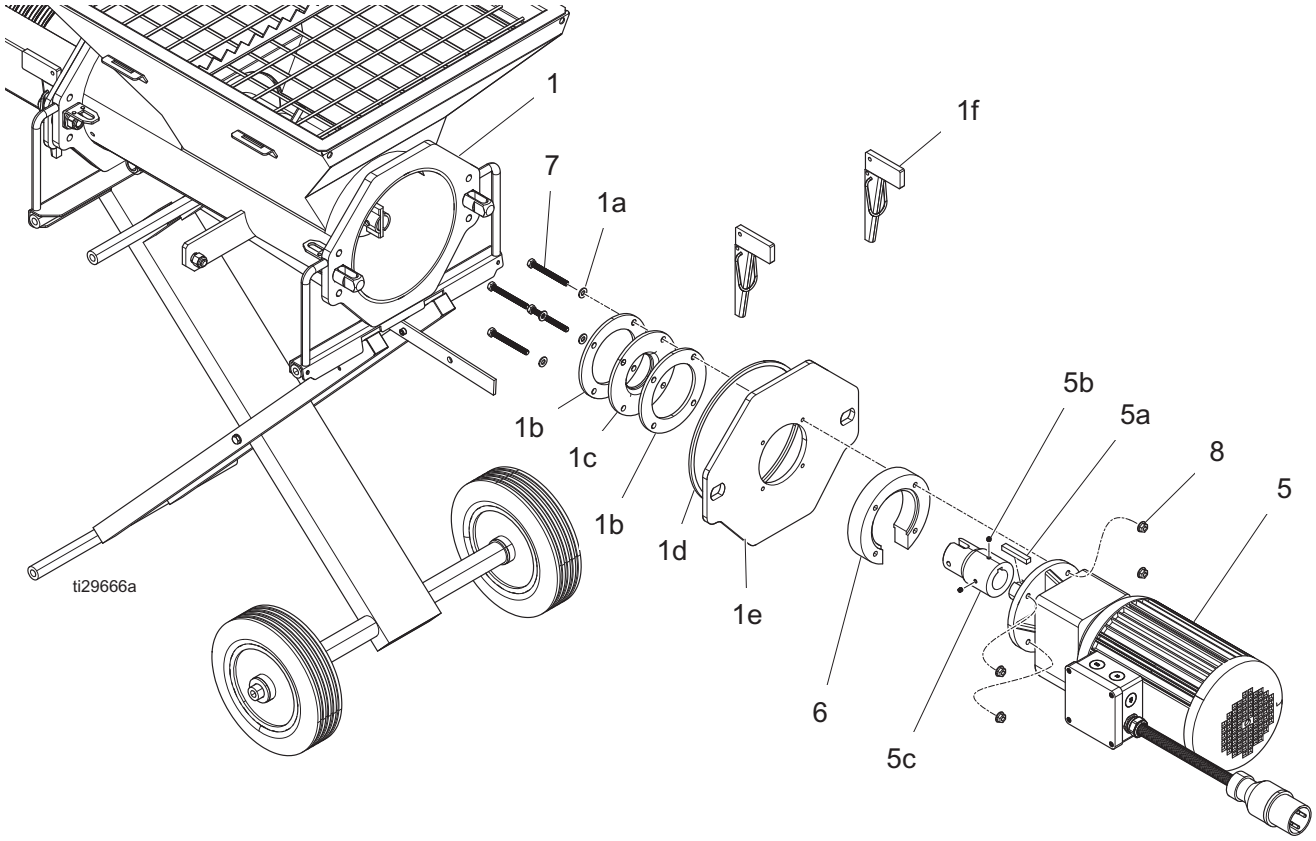
1 Apply thread locker adhesive to set screws (4).

Ref.	Part	Description	Qty.
1◆	- - - - -	MOTOR, gearbox, ABM-4kW	1
2†◆	MTA020	KEY, special, drive	1
3†	- - - - -	AUGER, drive, 35mm	1
4†	- - - - -	SCREW, set 1/4-20 x .25 soc cup	2
5◆	- - - - -	BUSHING, strain relief, nut	1
6◆	- - - - -	BUSHING, strain relief	1
7◆	MTA784	CABLE, motor, 4 kW, 6 ft	1
8◆	- - - - -	PLUG, liquid tight, 1.0 in.	1

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA697	Drive Auger Kit	2 (1), 3 (1), 4 (2)
◆	MTA699	4 kW Motor Kit	1 (1), 2 (1), 5 (1), 6 (1), 7 (1), 8 (1)

NOTE: For legacy CM-40 motor assemblies, order the legacy drive auger MTA927 and key MTA445 to replace drive auger (Ref. 3) and key MTA020.

Motor Assembly Replacement Parts

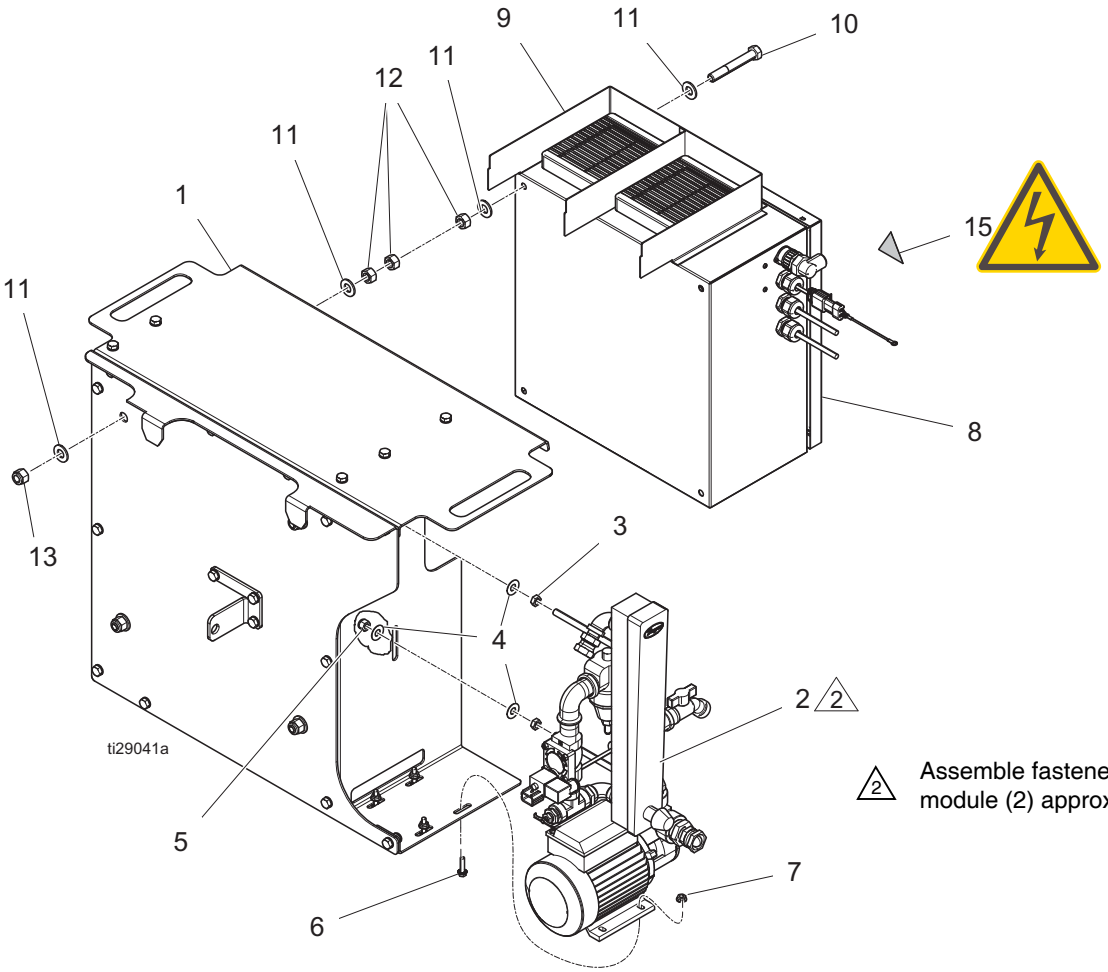


Ref.	Part	Description
1a	- - - - -	WASHER, plain
1b	MTA655	SEAL, connection plate engine
1c	MTA656	SEAL, motor coupling gasket
1d	MTA654	GASKET, motor flange
1e	- - - - -	PLATE, motor flange
1f	MTA924	WEDGE, retainer
5	MTA672	KIT, motor, assembly
5a*	MTA020	KEY, special, drive

Ref.	Part	Description
5b*	- - - - -	SCREW, set 1/4-20 x 0.25 soc cup
5c*	- - - - -	AUGER, drive, 35mm
6	MTA442	SPACER, 4 kW motor
7	- - - - -	BOLT, hex hd, M x 1.25 x 80
8	16A390	NUT, hex, flanged

* *Included in Auger Drive Kit MTA697.*

Control Box Assembly



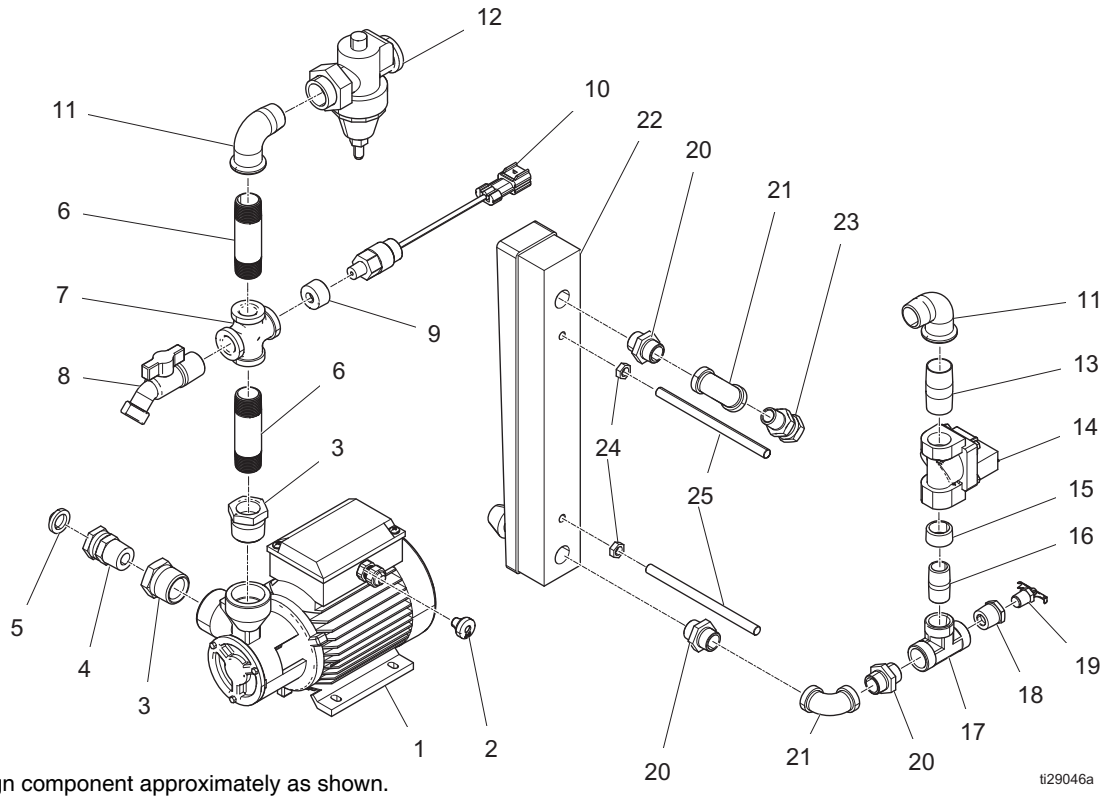
2 Assemble fasteners from water pump module (2) approximately as shown.

Ref.	Part	Description	Qty.
1	- - - - -	FRAME, panel mount, control box	1
2	- - - - -	MODULE, water control, 60 Hz (models 25M081, 25M083, 25M086) See page 29	1
	- - - - -	MODULE, water control, 50 Hz (models 25M080, 25M082, 25M085, 25M087) See page 29	1
3	- - - - -	NUT, jam	2
4	- - - - -	WASHER, 3/8 plain flat	4
5	101714	NUT, lock	2
6	15R472	FASTENER, hex hd, flanged, 1/4 x 1	4
7	115942	NUT, hex, flange head	4
8	MTA688	KIT, enclosure, control, 1ph (models 25M080, 25M081, 25M085, 25M086) See page 26	1
	MTA689	KIT, enclosure, control, 3ph (models 25M082, 25M083, 25M087) See page 26	1
9	- - - - -	COVER, assembled, control box	1
10	†124869	SCREW, cap, hex hd	4
11	†	WASHER, plain	16
12	†100321	NUT	12
13	†801020	NUT, lock, hex	4
15▲	196548	LABEL, warning, shock	1

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

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA690	Control Fasteners Kit	10 (4), 11 (16), 12 (12), 13 (4)

Water Pump Assembly



△2 Align component approximately as shown.

△3 Use jam nut (24) to lock stud (25) into flow meter (22).

△4 Align arrow on regulator (12) and valve (14) with the direction of the flow.

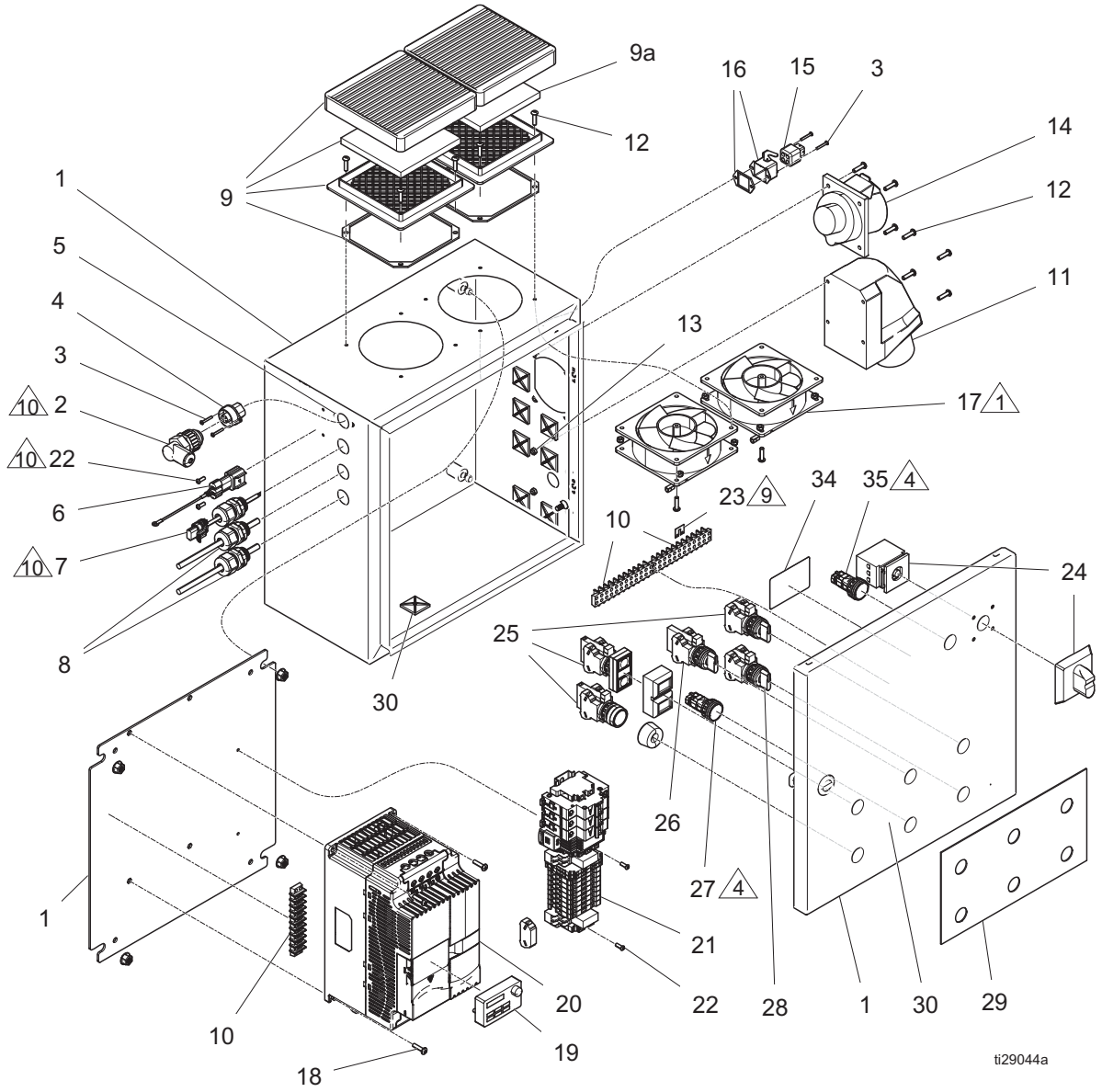
5. Apply pipe sealant to all non-swivel pipe threads.

Ref.	Part	Description	Qty.
1†	- - - - -	PUMP, water, 60 Hz (models 25M081, 25M083, 25M086)	1
◆	- - - - -	PUMP, water, 50 Hz (models 25M080, 25M082, 25M085, 25M087)	1
2†◆	- - - - -	GROMMET, water tight	1
3	158586	FITTING, bushing	2
4	MTA334	ADAPTER, swivel, hose to pipe	1
5	MTA266	STRAINER, washer, 3/4 npt, 50/50 mesh	1
6	- - - - -	FITTING, nipple, pipe	2
7	C20434	FITTING, cross, pipe	1
8	MTA423	VALVE, faucet, 3/4 npt x 3/4 npt	1
9	- - - - -	BUSHING, face, 3/4 npt x 1/4 npt, cs	1
10	MTA499	KIT, switch, low psi, water	1
11	100549	ELBOW, street, pipe, 90 degree	2
12	25E891	REGULATOR, 3/4 lf, n45bu, M1	1
13	100627	NIPPLE, short	1
14	MTA093	VALVE, water, 3/4 in., 24VDC, 6W	1
15	107219	BUSHING	1
16	- - - - -	FITTING, nipple, 1/2 npt x 1.5 lng, cs	1
17	103475	FITTING, tee, pipe	1
18	- - - - -	FITTING, reducer, 1/2 in. x 1/4 in. pipe	1
19	- - - - -	FITTING, drain, cock, 1/4 npt	1
20	100122	NIPPLE, close	3
21	118573	FITTING, elbow, 1/2 pipe	2
22	MTA693	KIT, meter, 0-10 gpm, 0-38 lmp	1
23	190451	UNION, adapter	1
24	- - - - -	TERMINAL, insulated, female	2
25	- - - - -	STUD, 3/8-24 x 4 in. long, sst	2

Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA812	60Hz Water Pump Kit (models 25M081, 25M083, 25M086)	1 (1), 2 (1)
◆	MTA813	50Hz Water Pump Kit (models 25M080, 25M082, 25M085, 25M087)	1 (1), 2 (1)

Electrical Enclosure Assembly

MTA688 (for CM-40 1 phase, CM-40 Silo 1 phase)
MTA689 (for CM-40 3 phase, CM-40 Silo 3 phase)



1 Note the viewable for fan (9) installation. the fan must intake fresh air with the terminal at the position shown.

4 Install indicators (27) with the “top” indicator positioned upwards.

9 Install jumper (23) on terminal block TB22 between position 5 and 6.

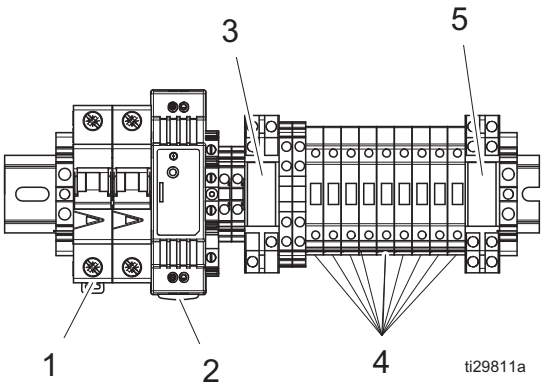
10 Install the lanyard end of items (2) and (6) with corresponding screw (22).

Electrical Enclosure Assembly Parts List

Ref.	Part	Description	Qty.
1	- - - - -	ENCLOSURE, control	1
2	MTA832	HARNESS, connector, jumper and GND	1
3	- - - - -	FASTENER, #4-40 x 3/4, bh, cs	4
4	MTA859	HARNESS, remote connection	1
5	C27076	NUT	4
6	MTA862	HARNESS, water psi, cap	1
7	MTA860	HARNESS, water psi, conn	1
8	MTA861	HARNESS, water press-pump conn	1
9	MTA926	FILTER, fan, assembly	2
9a	MTA851	KIT, filter, cooling fan (pack of 5)	2
10	- - - - -	TERMINAL, strip, 10 pos	3
11	MTA838	CONNECTOR, inlet, 230 VAC, 3 wire (for 25M080, 25M081, 25M085, 25M086)	1
	MTA849	CONNECTOR, inlet, 230 VAC, 4 wire (for 25M082, 25M083, 25M087)	1
12	- - - - -	FASTENER, #10-32 x 3/4, bh, cs	16
13	- - - - -	NUT, lock	12
14	MTA839	CONNECTOR, outlet, 230 VAC, 4 wire	1
15	- - - - -	HARNESS, plug, vibrator	1
16	- - - - -	HOUSING, panel mount, locking lever	1
17	MTA858	FAN, cooling, 120 x 38, 230 VAC	1
18	- - - - -	FASTENER, #10-24 x 3/4, ph, phillips	4
19	MTA831	CONTROL, vfd keypad	1
20	MTA782	DRIVER, inverter, 5.5 kW, 240 V	1
21	- - - - -	MODULE, din rail assembly, 1 ph (for 25M080, 25M081, 25M085, 25M086) see page 28	1
	- - - - -	MODULE, din rail assembly, 3 ph (for 25M082, 25M083, 25M087) see page 28	1
22	- - - - -	FASTENER, #8-32 x 1/2, ph, threading	4
23	- - - - -	TERMINAL, jumper	1
24	MTA863	KIT, disconnect, CM40, 1 phase (for 25M080, 25M081, 25M085, 25M086)	1
	MTA854	KIT, disconnect, CM40, 3 phase (for 25M082, 25M083, 25M087)	
25	MTA855	KIT, switch, on/off, prime	1
26	MTA856	KIT, switch, speed selector	1
27	MTA848	INDICATOR, pilot light, green, 24 VDC	2
28	MTA857	KIT, switch, water pump	1
29	- - - - -	LAVEL, legend	1
30	- - - - -	HOLDER, zip tie mount, adhesive	39
31	- - - - -	HARNESS, control, C	1
33	- - - - -	TIE, cable, 7.50 in.	39
34	- - - - -	LABEL, fuse, location	1
35	MTA928	KIT, indicator, green, 240 VAC	1

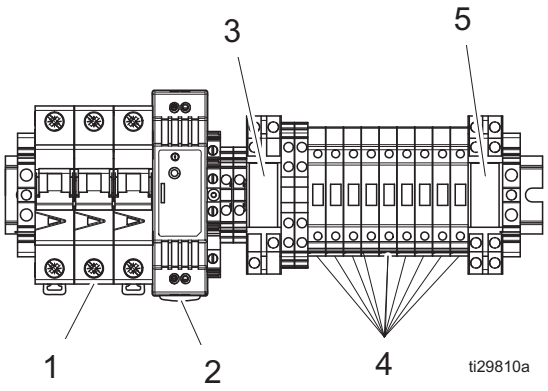
Din Rail Assembly Modules

Module, din rail assembly (for CM-40 1 phase, CM-40 Silo 1 phase)



Ref.	Part	Description	Qty.
1	MTA890	KIT, circuit breaker, 63A, 2 pole	1
2	MTA889	KIT, power supply, 24 VDC, 15 watt	1
3	MTA886	KIT, relay, 5 pin, 24 VDC	1
4	MTA885	KIT, fuse, CM-40	1
5	MTA887	KIT, relay, 8 pin, 24 VDC	1

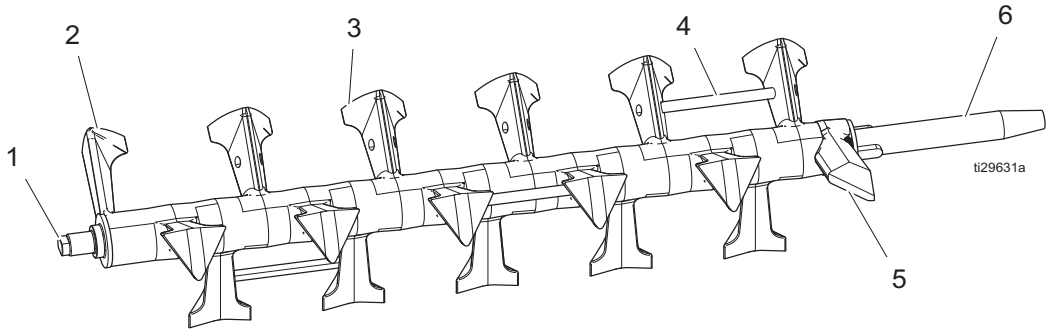
Module, din rail assembly (for CM-40 3 phase, CM-40 silo 3 phase)



Ref.	Part	Description	Qty.
1	MTA891	KIT, circuit breaker, 40 A, 3 pole	1
2	MTA889	KIT, power supply, 24 VDC, 15 watt	1
3	MTA886	KIT, relay, 5 pin, 24 VDC	1
4	MTA885	KIT, fuse, CM-40	1
5	MTA887	KIT, relay, 8 pin, 24 VDC	1

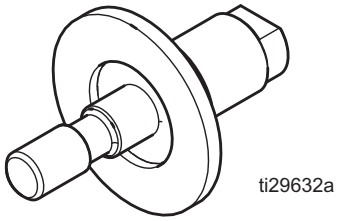
Mixing Shaft Parts

Mixing Shaft, Complete Assembly (MTA795)

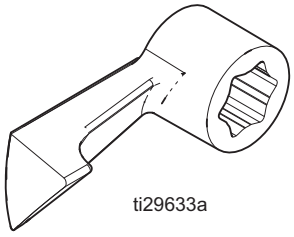


Ref.	Part	Description
1	17T462	PIN, bearing, M12, lh thread
2	MTA799	KIT, blade, wing, mixing, g
3	MTA796	KIT, blade, wing, mixing, sym
4	MTA658	ROD, connecting, mixer
5	MTA798	KIT, blade, wing, mixing, b, 26 mm
6	MTA922	KIT, shaft, mixing

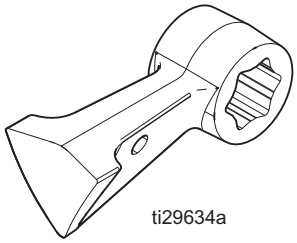
Ref. 1 - 17T462, M12 Left-Hand Thread Bearing Pin



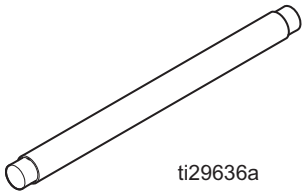
Ref. 2 - MTA799, Front Mixing Wing Blade



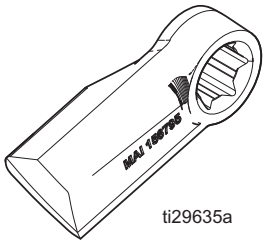
Ref. 3 - MTA796, Symmetric Mixing Wing Blade



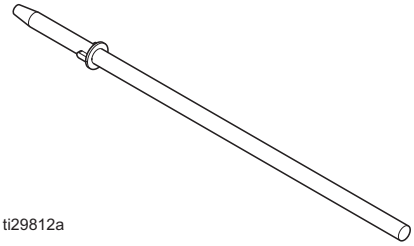
Ref. 4 - MTA658, Connecting Mixer Rod



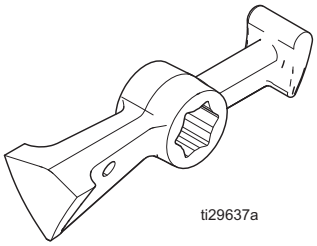
Ref. 5 - MTA798, Rear Mixing Wing Blade



Ref. 6 - MTA922, Mixing Shaft

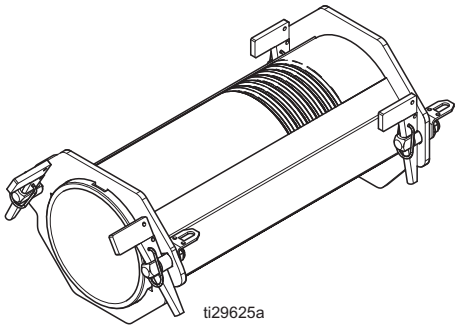


MTA797, Duo Mixing Wing Blade (Can be used to replace Ref. 3)

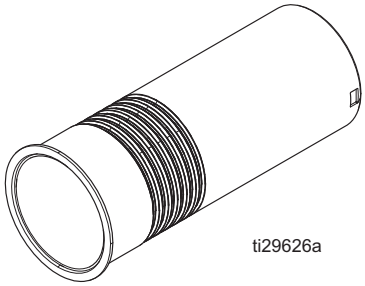


Mixing Tube and Discharge Nozzle Parts

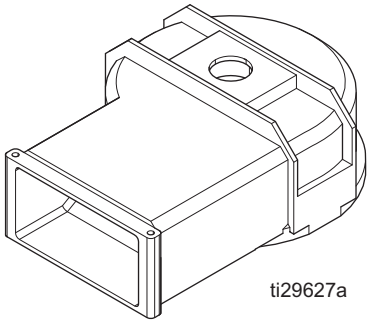
Mixing Tube Assembly with Wedges (MTA794)



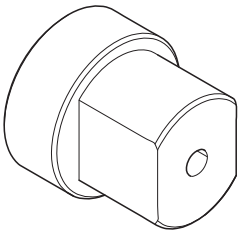
Mixing Tube (MTA897)



Mixing Tube Discharge Nozzle (MTA793)

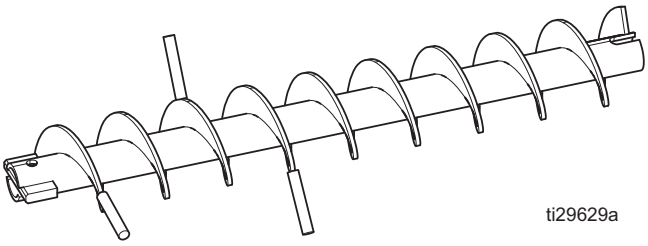


Discharge Nozzle Plastic Bushing/Bearing (MTA650)

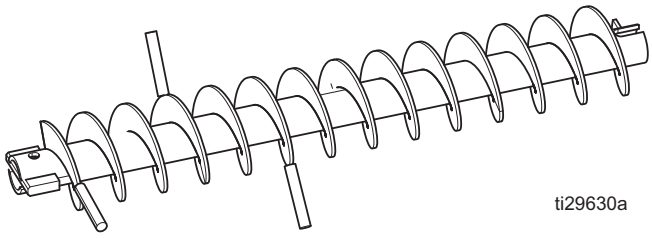


Delivery Shaft Screws

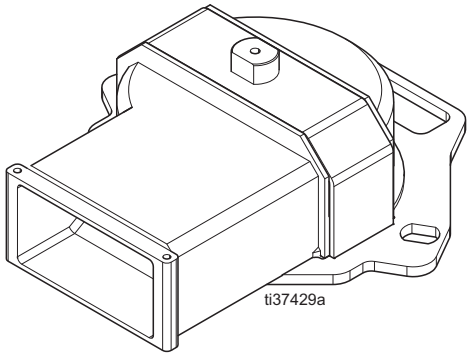
P60 High Pitch Delivery Shaft Screw (MTA802)



P40 Low Pitch Delivery Shaft Screw (MTA803)

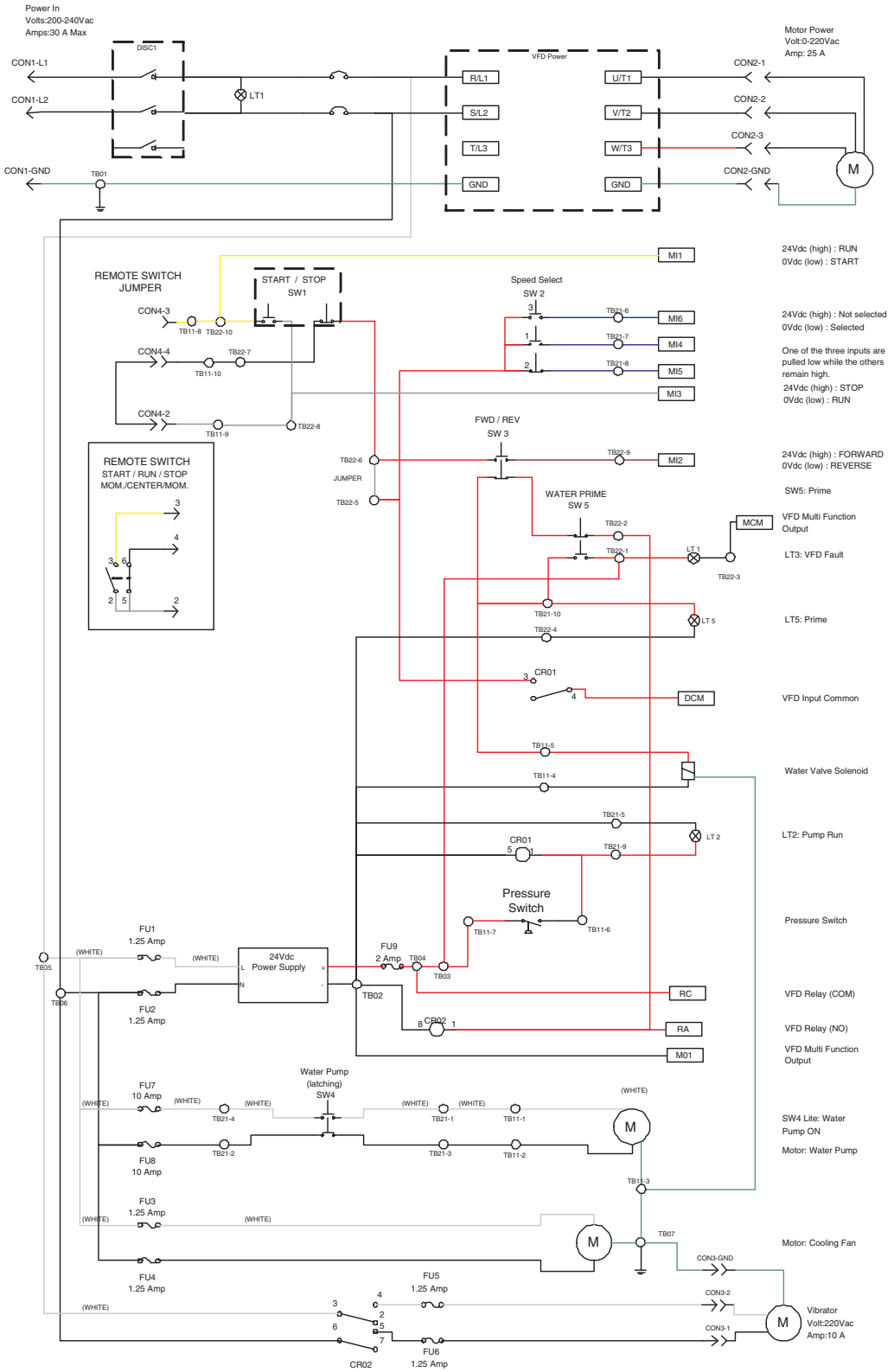


Mixing Tube Discharge Nozzle Assembly (18B309)

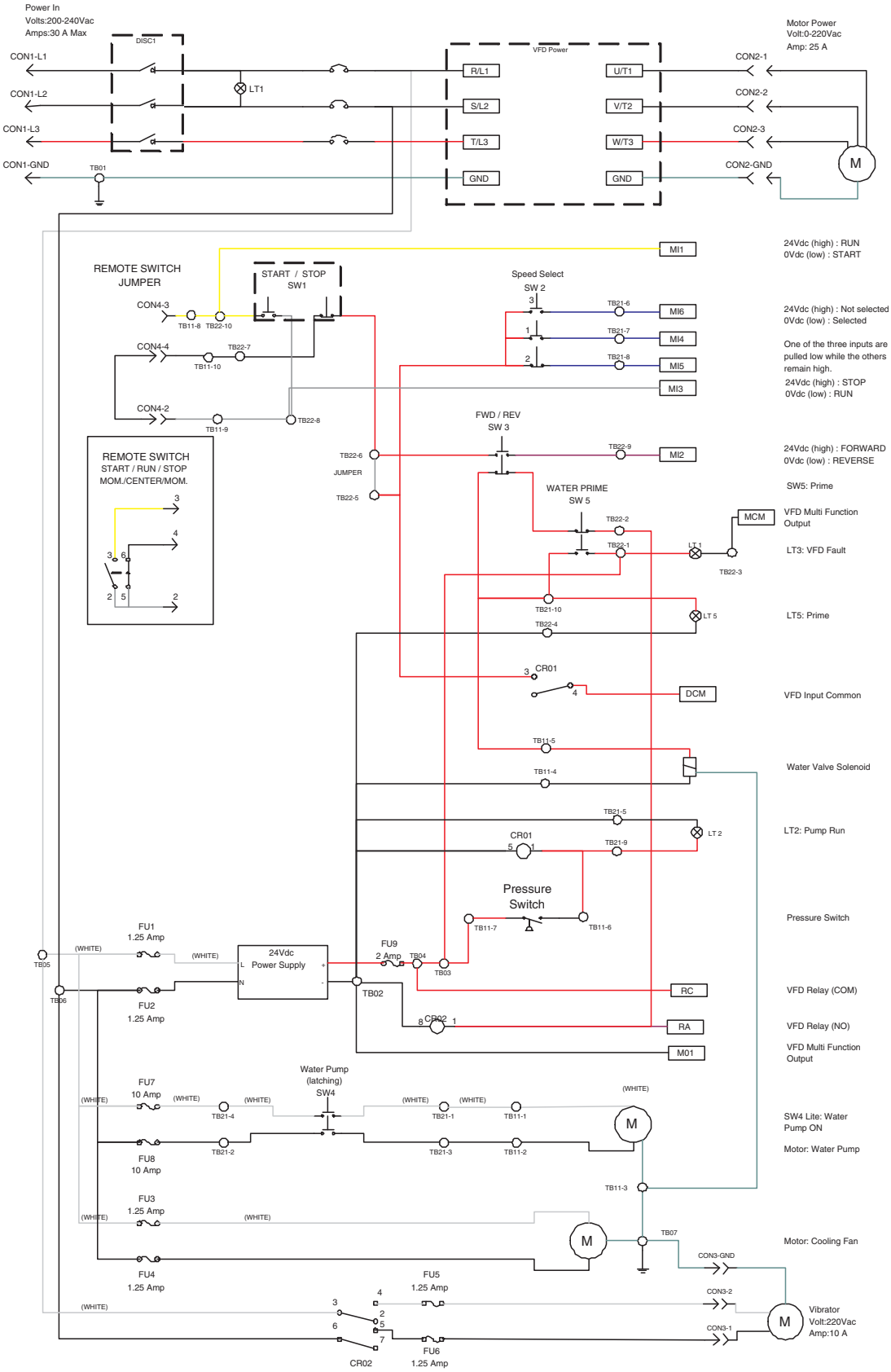


Wiring Schematic

CM-40 1 phase, CM-40 Silo 1 phase (MTA688)



CM-40 3 phase, CM-40 Silo 3 phase (MTA689)



Systems and Accessories

Systems

Model	Part	Description	Power
CM-40	25M080	ToughTek CM-40	200-240 VAC, 1 Phase, 50 Hz
	25M081	ToughTek CM-40	200-240 VAC, 1 Phase, 60 Hz
	25M082	ToughTek CM-40	200-240 VAC, 3 Phase, 50 Hz
	25M083	ToughTek CM-40	200-240 VAC, 3 Phase, 60 Hz
CM-40 Silo	25M085	ToughTek CM-40 Silo	200-240 VAC, 1 Phase, 50 Hz
	25M086	ToughTek CM-40 Silo	200-240 VAC, 1 Phase, 60 Hz
	25M087	ToughTek CM-40 Silo	200-240 VAC, 3 Phase, 50 Hz

Motor Kits

Kit	Description	Associated System	Kit Type
MTA672	KIT, motor, assembly, CM-40, 3 phase	CM-40 Series (25M080, 25M081, 25M082, 25M083), CM-40 Silo Series (25M085, 25M086, 25M087)	Motor only
MTA724	KIT, motor, 4 kW		Motor only
MTA784	KIT, cable, motor, CM		Motor cable
MTA697	KIT, auger, drive		Driver auger

Delivery Shaft Screws

Kit	Description
MTA802	KIT, P60, high pitch, delivery shaft screw
MTA803	KIT, P40, low pitch, delivery shaft screw

Mixing Shaft Kits

Kit	Description
MTA795	KIT, mixing shaft, complete assembly
17T462	KIT, M12, left-hand thread, bearing pin
MTA658	KIT, connecting mixer rod
MTA799	KIT, front, mixing wing, blade
MTA798	KIT, rear, mixing wing, blade
MTA796	KIT, symmetric, mixing wing, blade
MTA797	KIT, duo, mixing wing, blade

Mixing Tube Kits

Kit	Description
MTA794	KIT, mixing shaft, complete assembly, with wedges
MTA897	KIT, mixing tube only
MTA793	KIT, mixing tube, discharge nozzle only
MTA650	KIT, discharge nozzle, plastic bushing/bearing
18B309	KIT, mixing tube discharge nozzle assembly

Water Pump System Kits

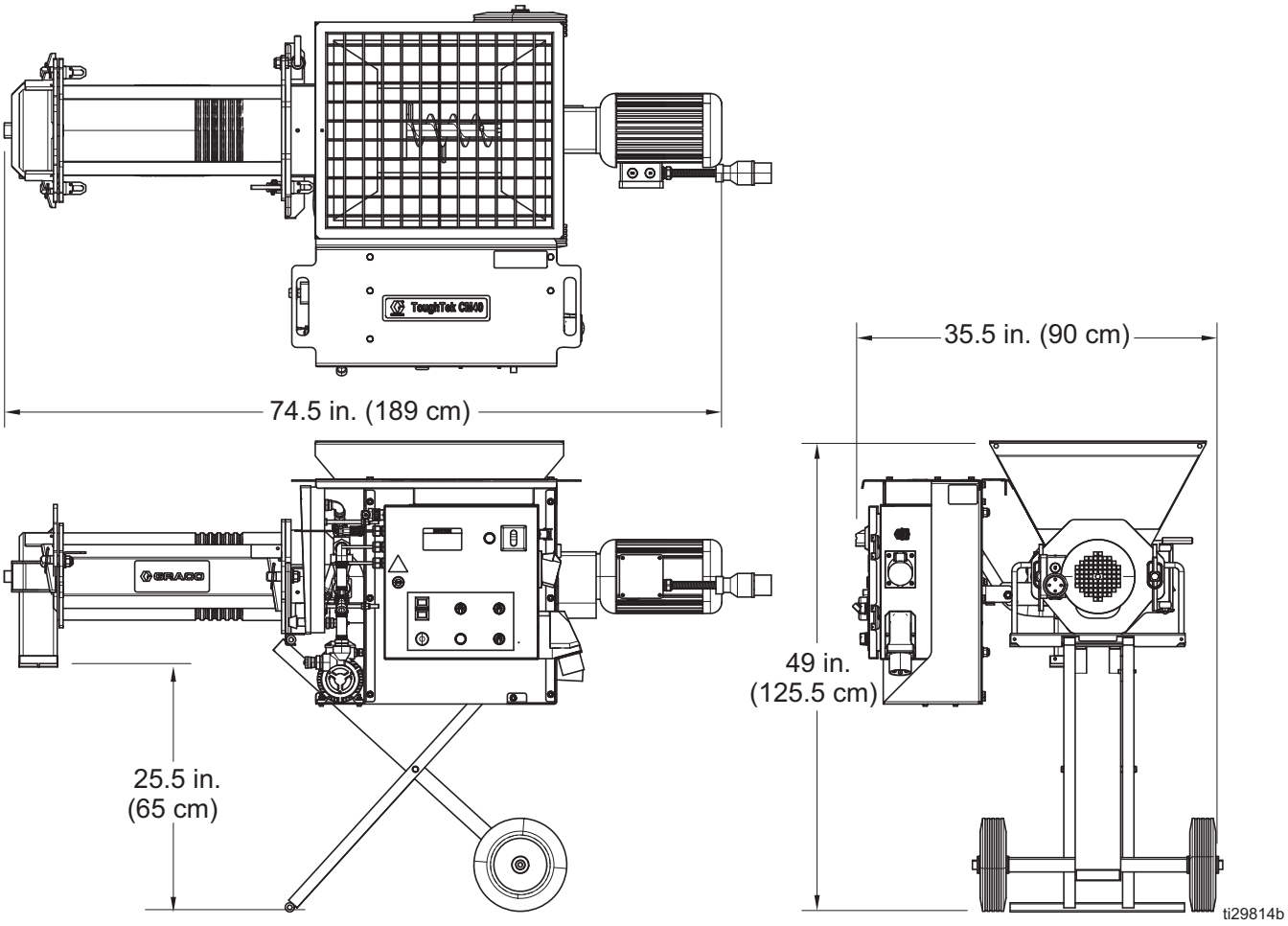
Kit	Description	Associated System	Kit Type
MTA691	KIT, hose, output, 3/4 in. x 14 in.	CM-40 Series (25M080, 25M081, 25M082, 25M083)	Hose only
MTA811	KIT, hose, output, CM-40, 11.13 in.	CM-40 Silo Series (25M085, 25M086, 25M087)	Hose only
MTA693	KIT, meter, 0-10 gpm, 1-38 lpm	CM-40 Series (25M080, 25M081, 25M082, 25M083), CM-40 Silo Series (25M085, 25M086, 25M087)	Flow meter only
MTA806	KIT, switch, low psi, water, CM-40	CM-40 Series (25M080, 25M081, 25M082, 25M083), CM-40 Silo Series (25M085, 25M086, 25M087)	Pressure switch only
MTA812	KIT, pump, water 60 Hz, CM-40	CM-40 60 Hz (25M081, 25M083), CM-40 Silo 60 HZ (25M086)	Water pump only
MTA813	KIT, pump, water, 50 Hz, CM-40	CM-40 50 Hz (25M080, 25M082), CM-40 Silo 50 Hz (25M085, 25M087)	Water pump only

Enclosure Kits

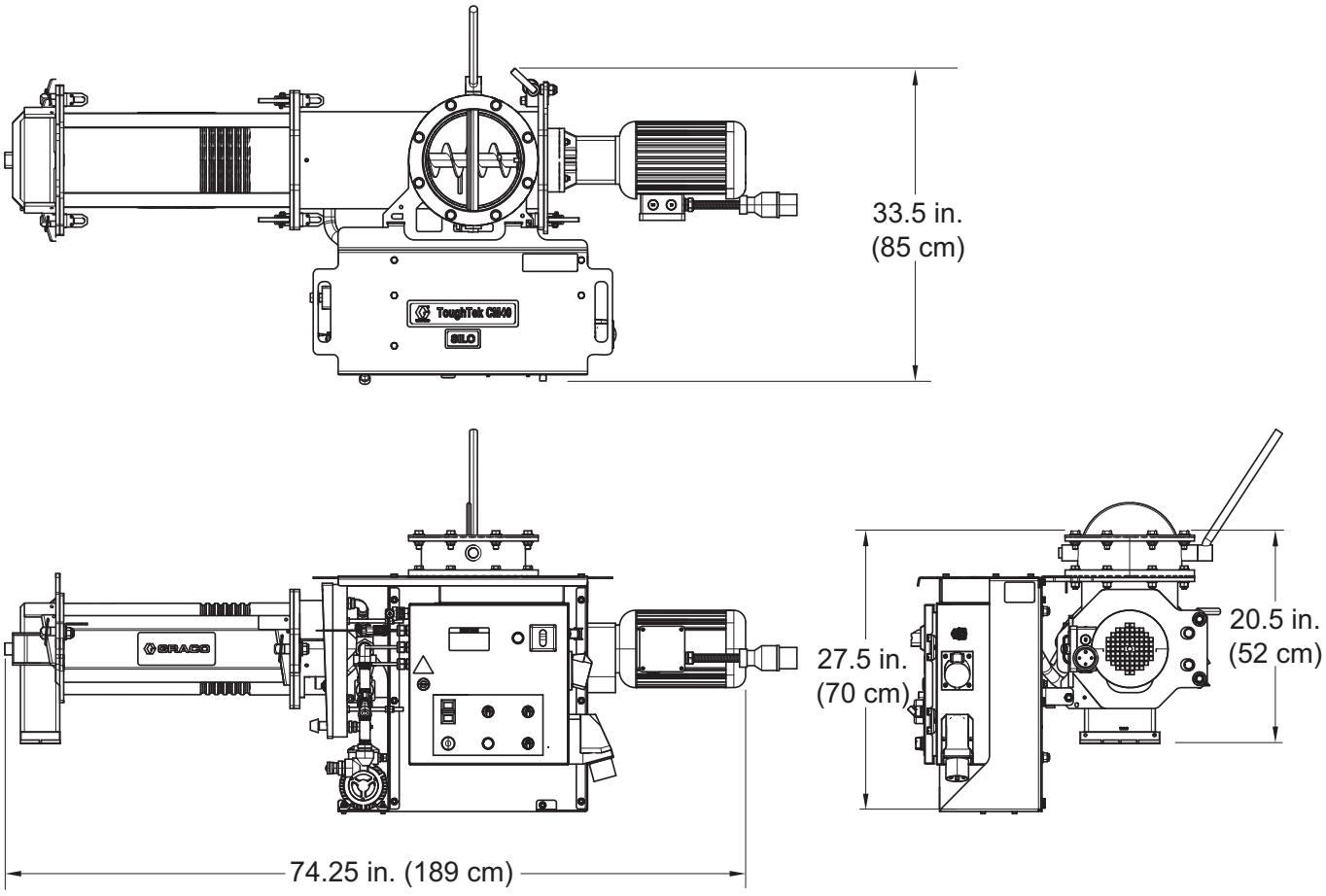
Kit Number	Description	Associated System	Kit Type
MTA688	KIT, enclosure, control, CM-40, 1 ph	CM-40 1 ph (25M080, 25M081), CM-40 Silo 1 ph (25M085, 25M086)	Enclosure assembly
MTA689	KIT, enclosure, control, CM-40, 3 ph	CM-40 3ph (25M082, 25M083), CM-40 Silo 3ph (25M087)	Enclosure assembly
MTA727	KIT, harness, power, 1 phase	CM-40 1 ph (25M080, 25M081), CM-40 Silo 1 ph (25M085, 25M086)	Power cable
MTA728	KIT, harness, power, 3 phase	CM-40 3ph (25M082), 25M083, CM-40 Silo 3 ph (25M087)	Power cable
MTA690	KIT, fasteners, control, CM-40	CM-40 Series (25M080, 25M081, 25M082, 25M083), CM-40 Silo Series (25M085, 25M086, 25M087)	Fasteners only

Dimensions

CM-40



CM-40 Silo



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Technical Specifications

ToughTek CM-40 Continuous Mixers		
	US	**Metric**
Maximum Motor Speed	314 rpm	
Wetted Parts	Tool steel, painted steel, plated steel, PORON®	
Water Pump Inlet Feed Pressure Requirements		
Minimum Pressure	40 psi	0.28, 2.8 bar
Maximum Pressure	70 psi	0.48 MPa, 4.8 bar
Hopper Capacity		
CM-40	16 gallon	60.6 liters
Weight (empty)		
CM-40	460 lb	209 kg
CM-40 Silo	440 lb	200 kg
Noise Level (measured at 3.1 ft)		
Sound Pressure	91 dBa	
Operating Ambient Temperature		
Temperature	32° F to 120° F	0° C to 49° C

Power Requirements				
Part Number	**Voltage**	**Minimum Circuit Breaker Size**	**Phase**	**Frequency**
25M080	200-240 VAC	30 A	1 Phase	50 Hz
25M081	200-240 VAC	30 A	1 Phase	60 Hz
25M082	200-240 VAC	25 A	3 Phase	50 Hz
25M083	200-240 VAC	25 A	3 Phase	60 Hz
25M085	200-240 VAC	30 A	1 Phase	50 Hz
25M086	200-240 VAC	30 A	1 Phase	60 Hz
25M087	200-240 VAC	25 A	3 Phase	50 Hz

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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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.

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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.

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