

ToughTek[®] CM-Series Continuous Mixers

3A4350J

EN

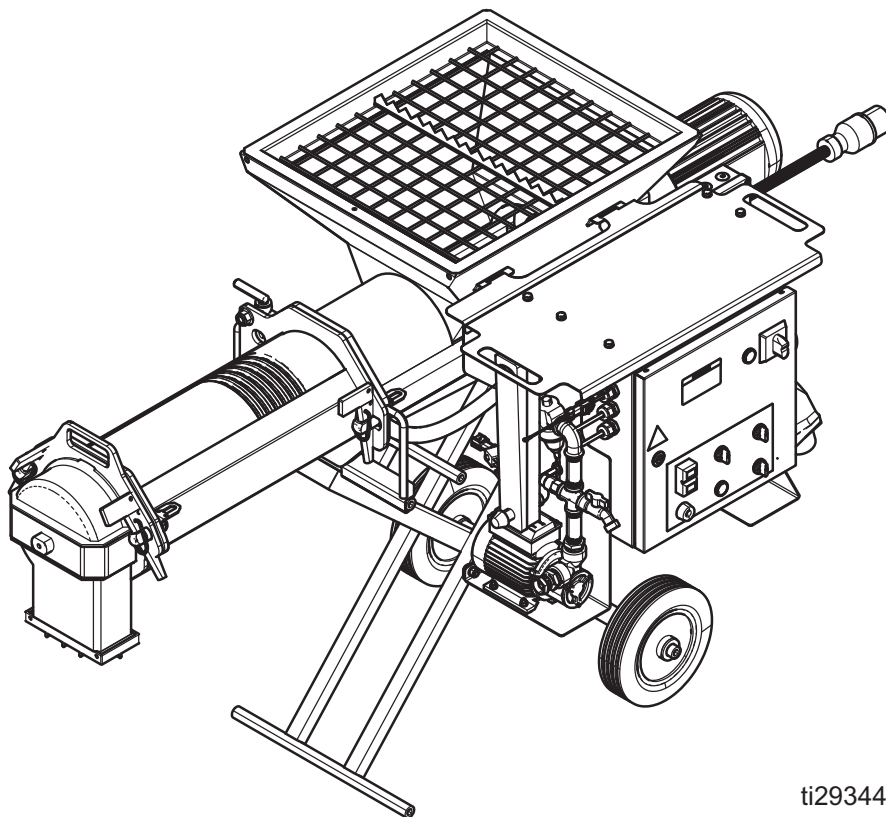
**Electric continuous mixer for water-based cementitious materials. For professional use only.
Not approved for use in explosive atmospheres or hazardous locations.**

See page 2 for model information.



Important Safety Instructions

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



ti29344a

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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
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.

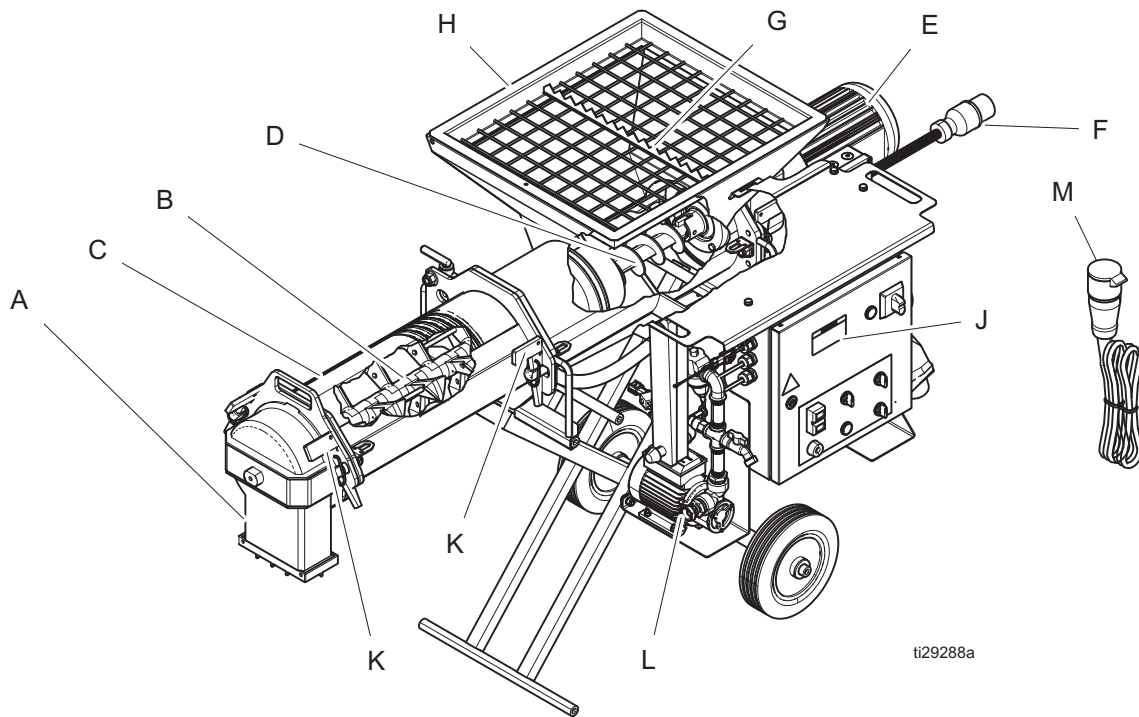
 <h2 style="margin: 0;">WARNING</h2>	
    	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
 	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • 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

 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • 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.
  	<p>PRESSURIZED EQUIPMENT HAZARD</p> <p>Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • 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.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • 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.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>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:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

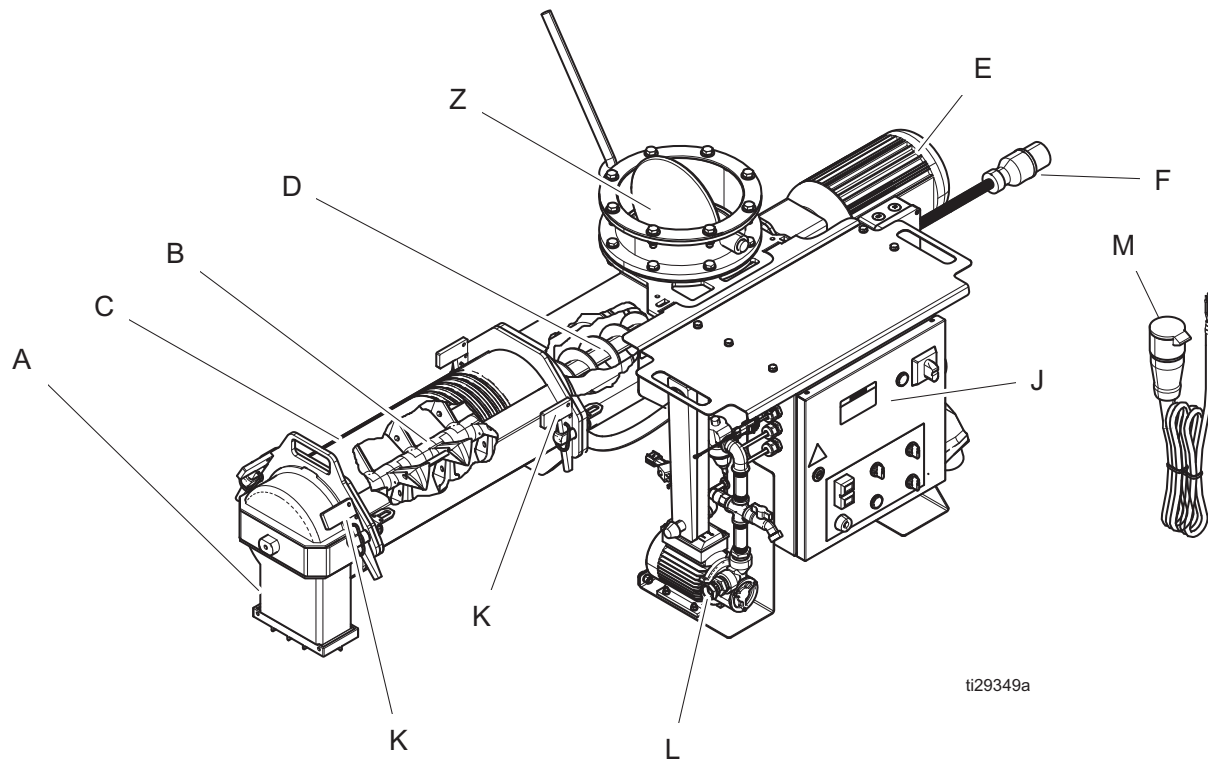
CM-40



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

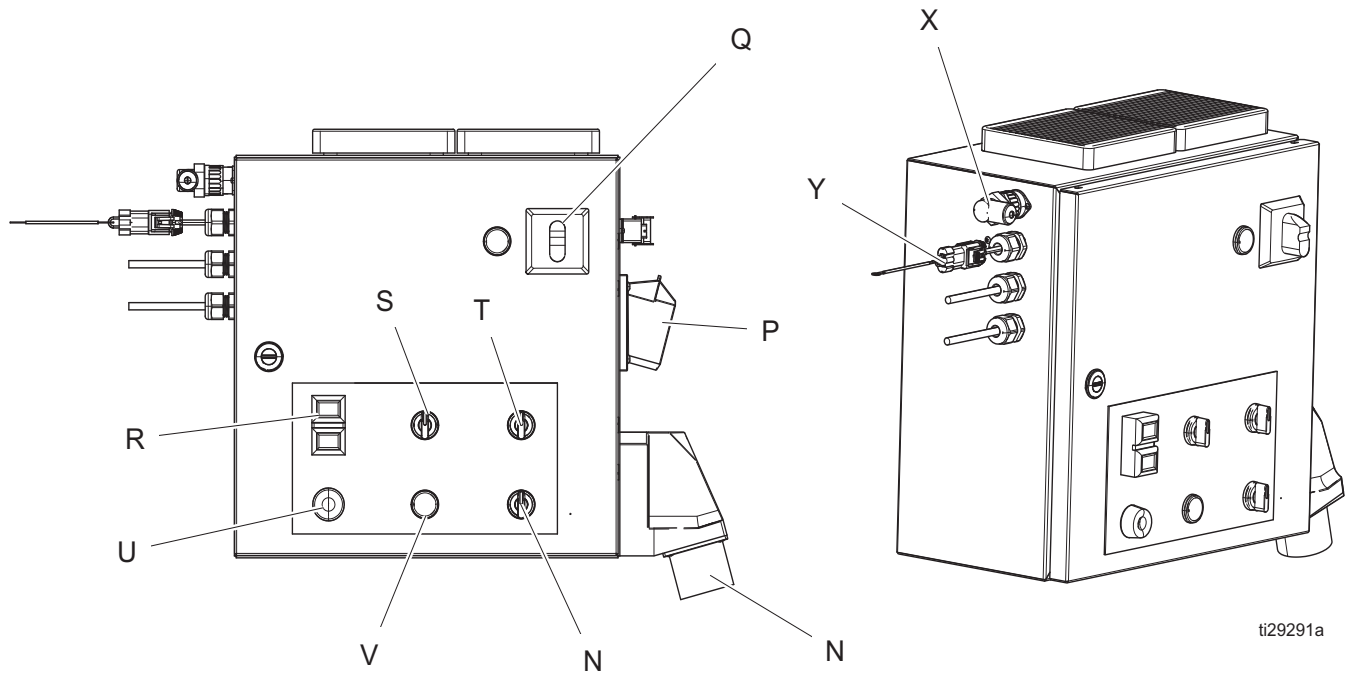


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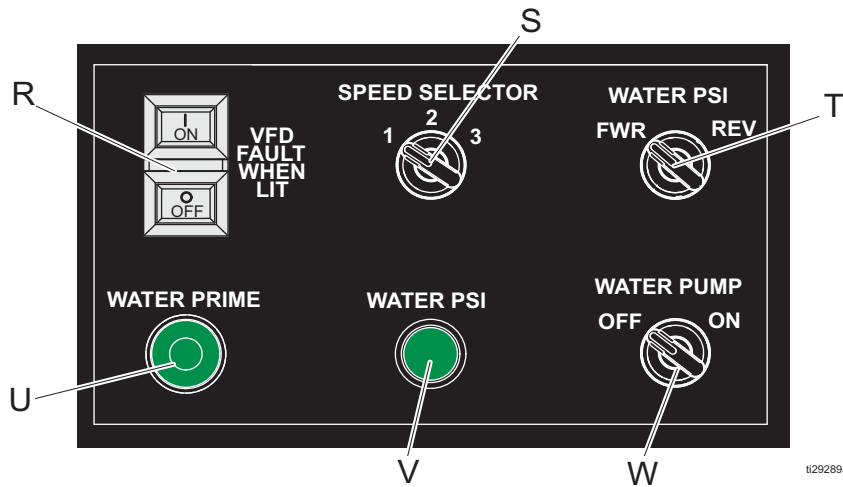
Ref.	Description
A	Mixing Tube Discharge Nozzle
B	Mixing Shaft
C	Mixing Tube
D	Feed Screw
E	Gearbox Motor
F	Motor Cable

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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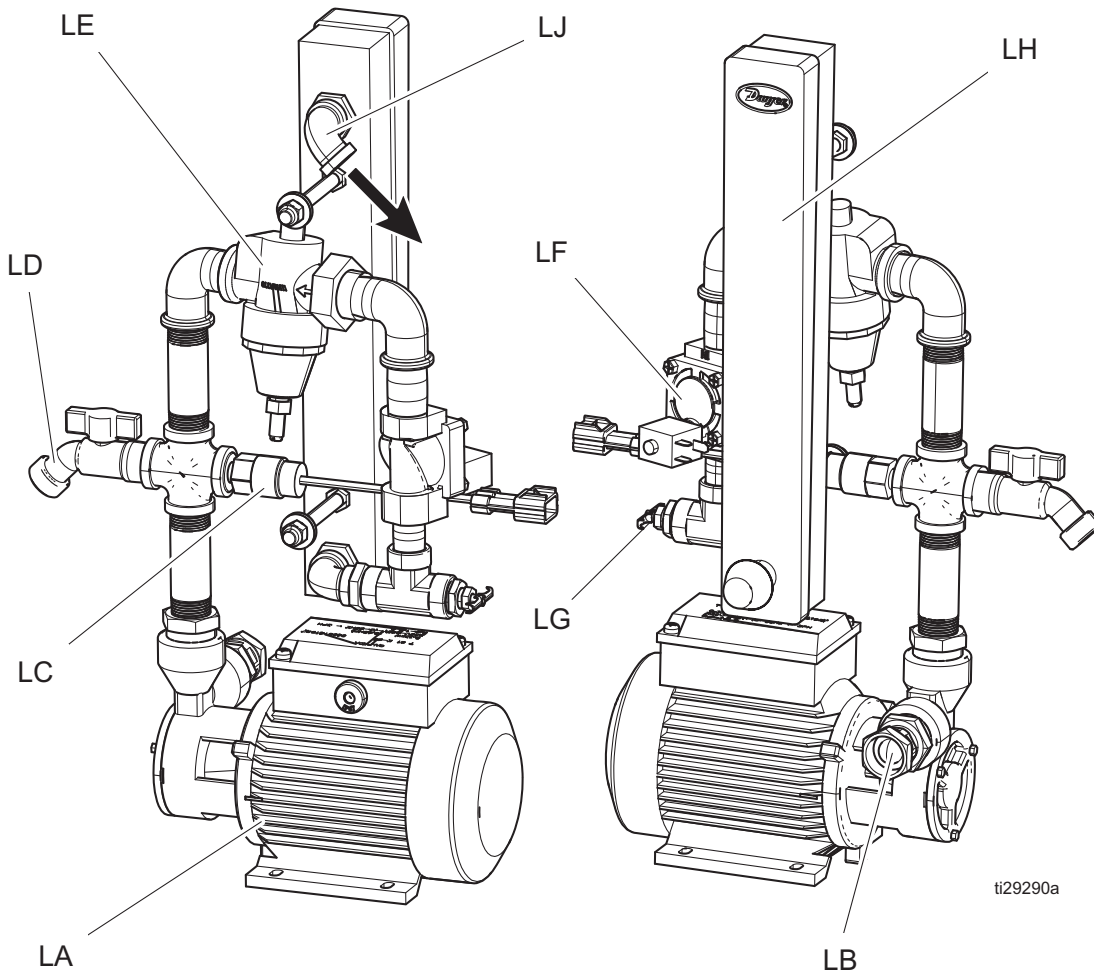


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Ref.	Description
N	Main Power In Connector
P	Power Out Connector
Q	Main Power Disconnect Switch
R	START/STOP Push Button
S	Speed Selector Knob
T	Forward/Reverse Mixer Direction Switch

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)

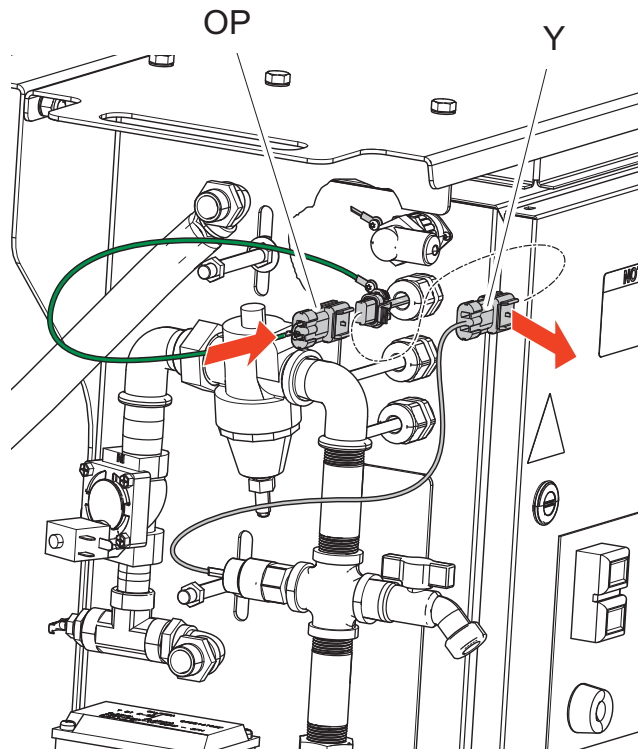


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Ref.	Description
LA	Water Pump
LB	Water Pump System Inlet
LC	Water Pressure Switch
LD	Water Faucet Valve

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

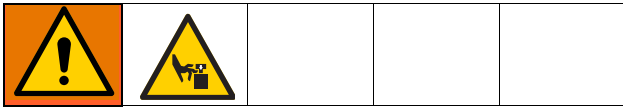
Water Pressure Over-ride Plug (OP)



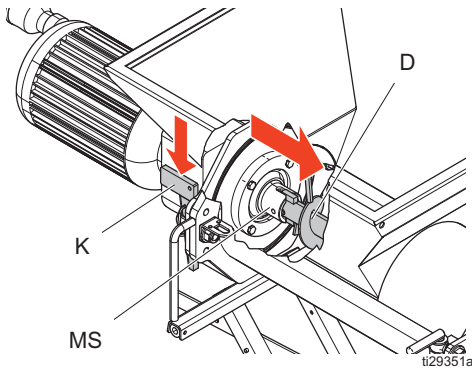
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The water solenoid valve requires 40 psi of water pressure to be energized. If the water pressure is not 40 psi or greater, the solenoid valve will remain normally closed, blocking the flow of water. This operation can be overridden by unplugging the 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).

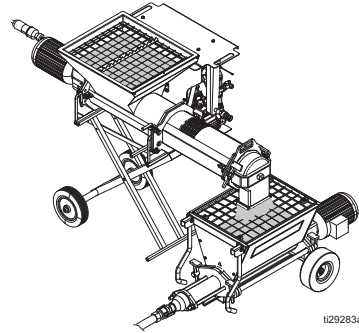


To help prevent injury from moving parts, do not operate with the grate (J) removed.

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, 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.

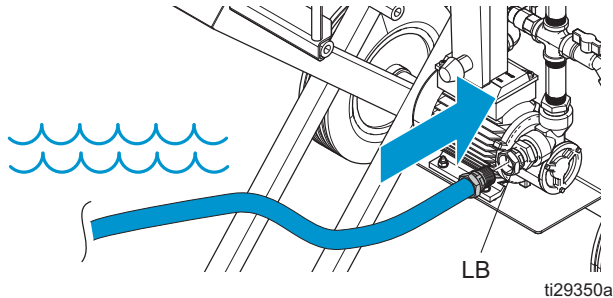
The system is grounded through the power cord.

Operation

Start Up

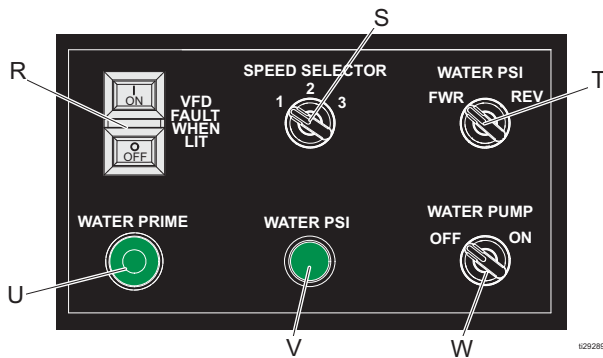
1. Attach a water feed hose to the water pump system inlet (LB).

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 over-heat 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

				
<p>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.</p>				

1. Add dry material:

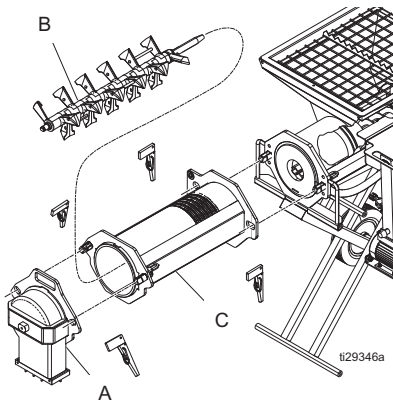
				
<p>Adding material to the hopper generates clouds of dust, and exposes the user to the sharp teeth on the hopper grate. Always wear protective equipment when adding material to the hopper.</p>				

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.

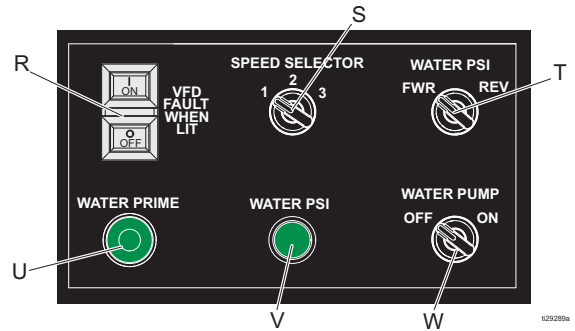
NOTE: During operation, keep the hopper filled with dry material. Do not allow the level to drop below the top of the feed screw (D) or the output material consistency will change.

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).

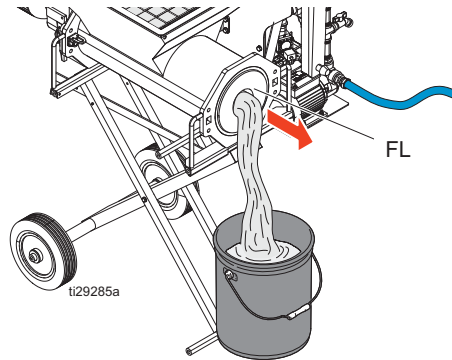


NOTICE
<p>When removing a wedge retainer (K), hit the underside with a rubber mallet. Do not hit the pointed end of the wedge retainer. The end of the wedge can become damaged or bent, and no longer fit through the retaining slot.</p>

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

				
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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.

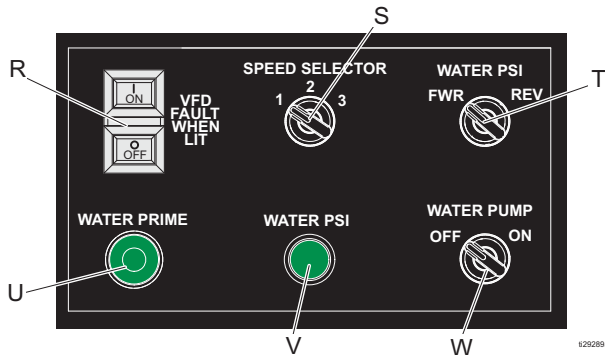
When finished mixing and dispensing material or taking an extended break, the mixer should be emptied and cleaned thoroughly so material does not cure and harden in the system.

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).

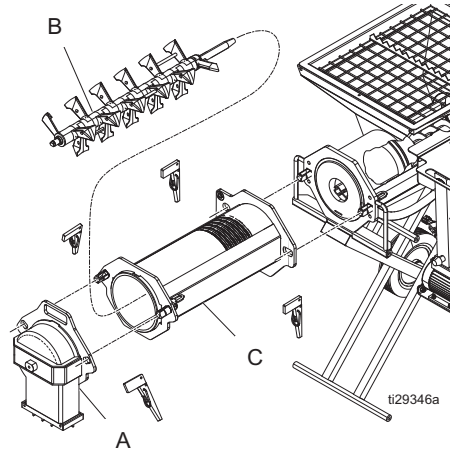
CM-40 Silo: Close the silo butterfly valve (SV) and run the mixer until only clear water exits the mixing tube discharge nozzle (A).

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

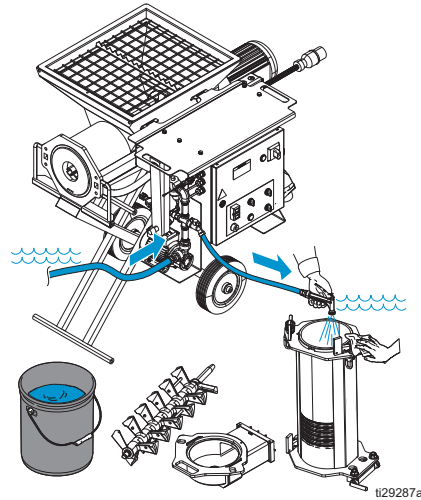


3. Turn the power disconnect switch (Q) to OFF.

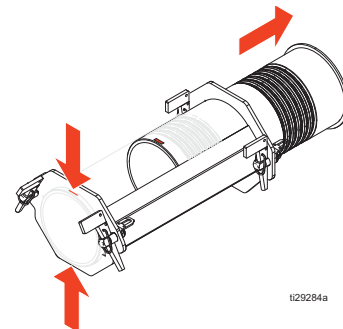
4. Clean mixing tube assembly:
 - a. Remove the mixing tube discharge nozzle (A), mixing shaft (B), and mixing tube (C).



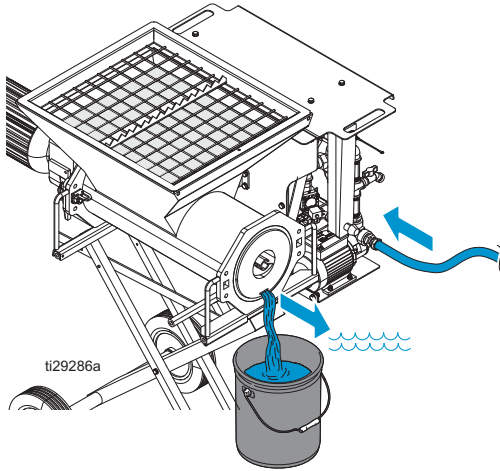
- b. Thoroughly clean the removed parts with water. A water hose can be attached to the water faucet valve (LD) to spray down the mixing parts.



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

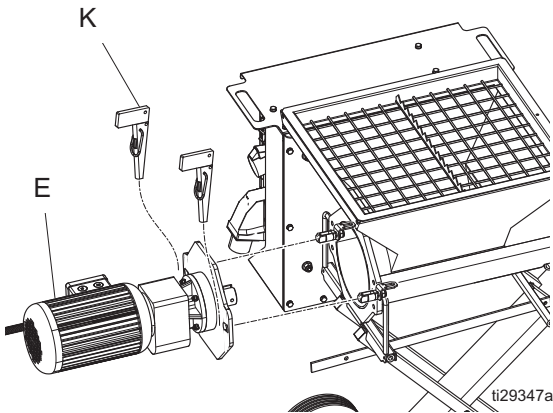


- c. Wipe down the feed liner (FL). If any material or residue has built up on the water feed slot, thoroughly clean it out. Run water through feed slot if necessary.



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

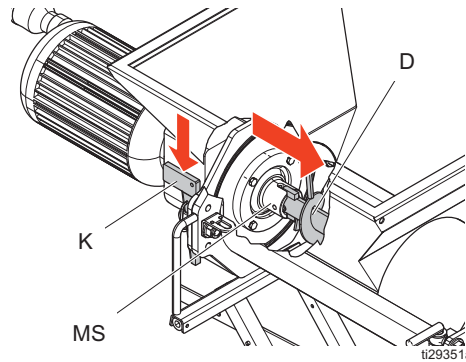
- a. Disconnect the power cable (M) from the main power in connector (N).
- b. Remove the wedge retainers (K) and remove the motor assembly (E) from the system.



- 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

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.

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.

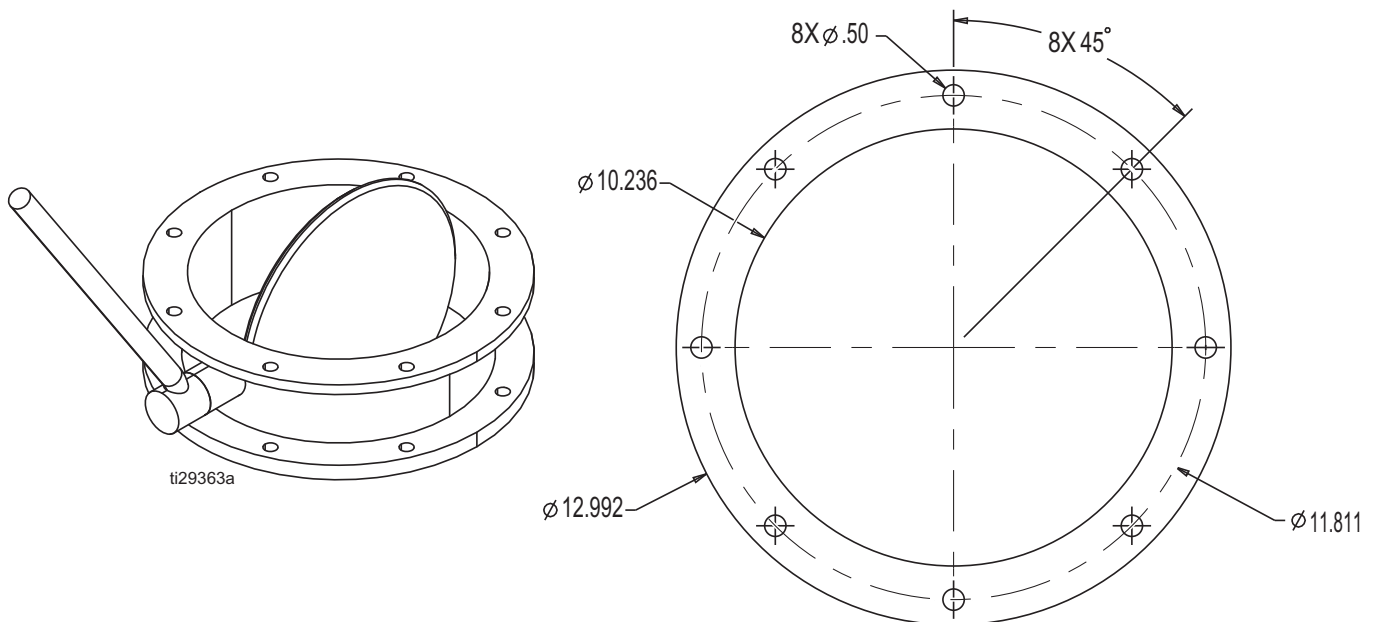
NOTE: Failure to thoroughly dry the hopper and feed screw can cause material buildup and material to be fed and mixed inconsistently.

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.

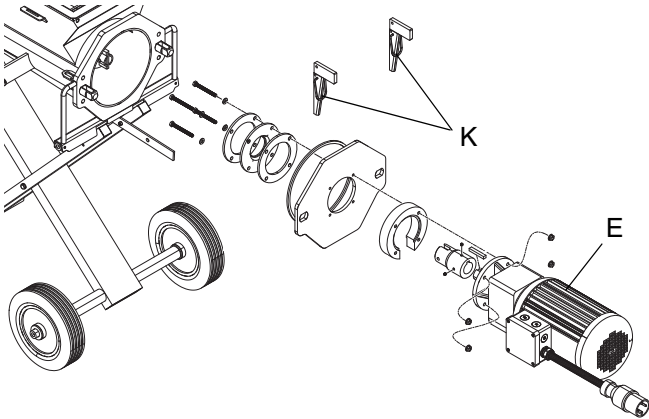
Error Codes on the Display

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

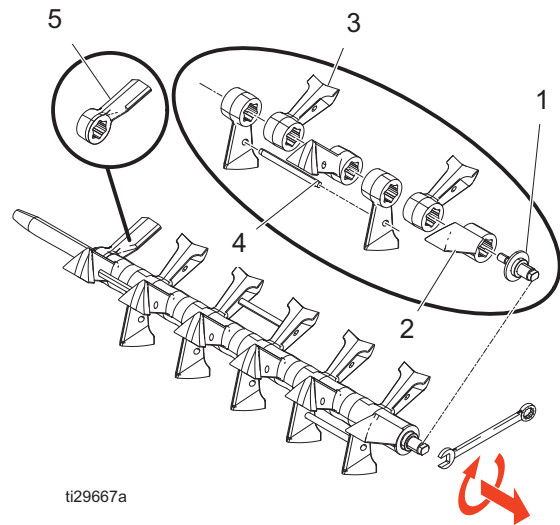


1. Disconnect the unit from the power source.
2. Remove two wedge retainers (K) and slide out the motor assembly (E).
3. Disassemble the motor assembly (E) and examine the parts. Replace any worn or damaged parts as necessary. See page 24 for saleable part numbers.
4. Reassemble the motor assembly (E) and reinstall the motor assembly back into the unit.
5. Replace two wedge retainers (K).

Mixing Shaft



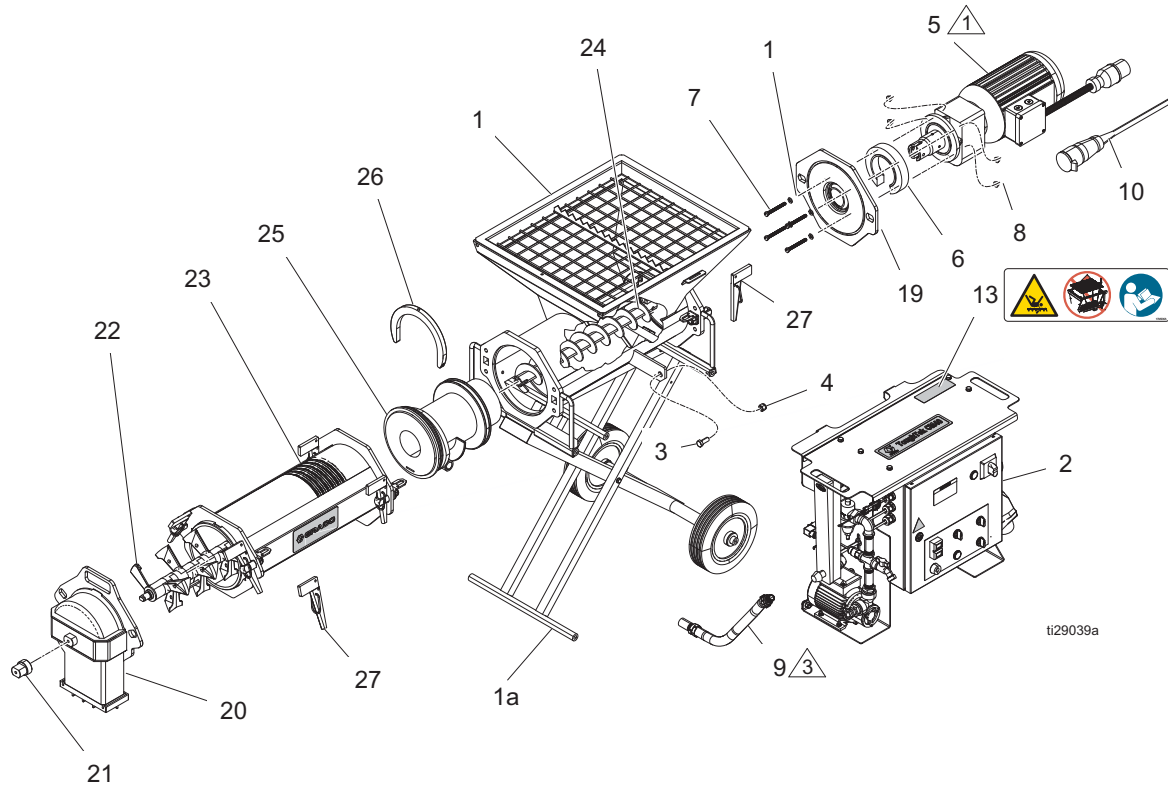
To remove the mixing shaft and replace the blades, perform the steps below.



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.

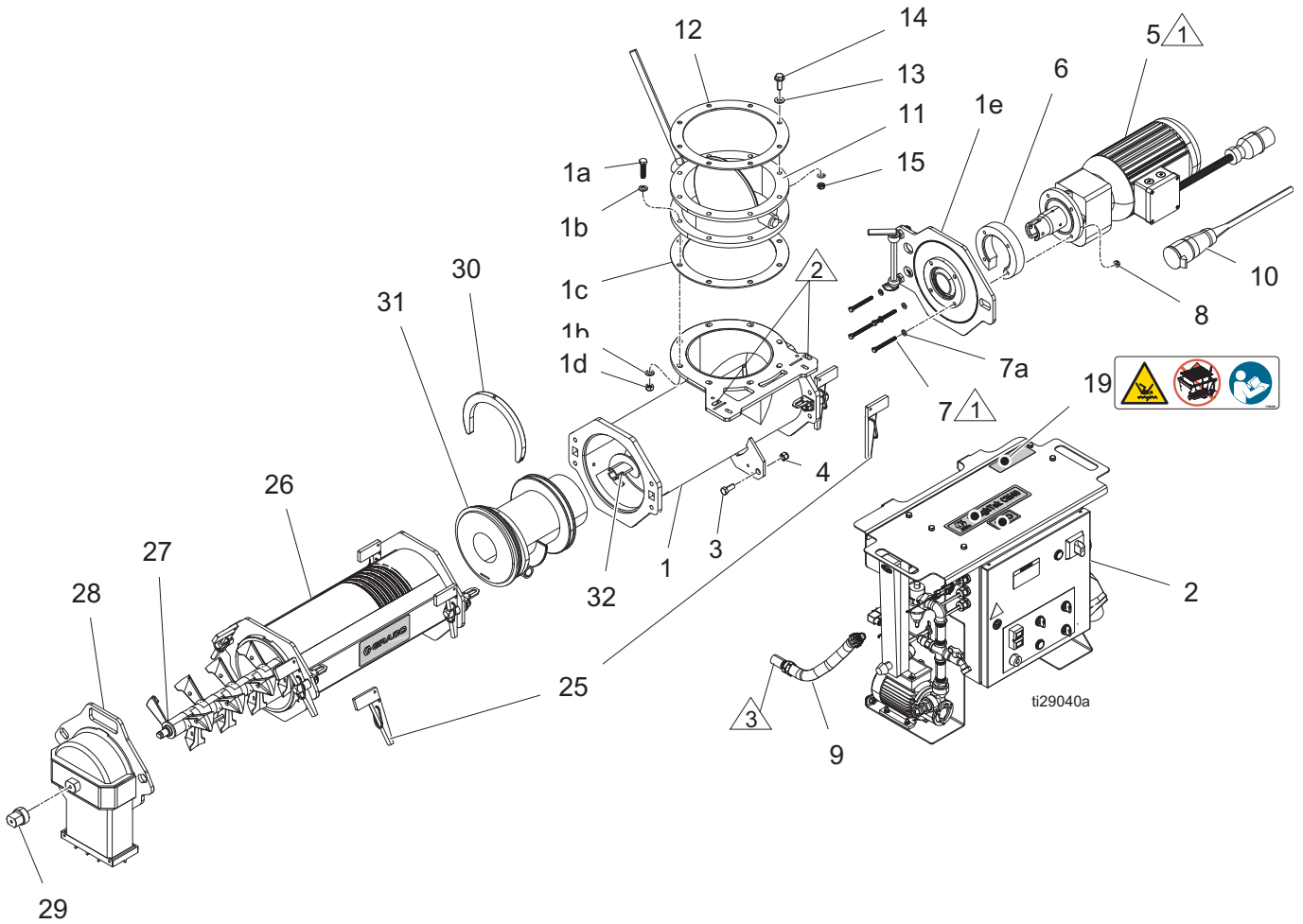
Parts

CM-40 Series



Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	MIXER, 2 mix, mobile	1	10a	MTA935	PLUG ONLY, power, 3ph (model 25M082)	1
1a	25E590	CART, CM-40 (includes wheels and fasteners)	1	13▲	17M606	LABEL, safety	1
2	-----	MODULE, control, CM-40, 220V, 1ph, 50 Hz (see page 27)	1	20	-----	NOZZLE, mixing tube, discharge	1
	-----	MODULE, control, CM-40, 220V, 1ph, 60 Hz (see page 27)	1	21	MTA650	BEARING, mixing tube, discharge nozzle, plastic bushing	1
	-----	MODULE, control, CM-40, 220V, 3ph, 50 Hz (see page 27)	1	22	MTA795	SHAFT, mixing, assembly	1
3	100424	SCREW, cap, hex hd	1	23	MTA794	ASSEMBLY, mixing tube	1
4	801020	NUT, lock, hex	1	24	MTA802	SCREW, delivery shaft, high pitch	1
5	MTA672	KIT, motor, assembly, 3ph	1	25	MTA800	TUBE, dosing zone	1
6	-----	SPACER, 4 kW motor	1	26	MTA801	BRACKET, dosing zone	1
7	-----	BOLT, hex hd, M8 x 1.25 x 80	4	27	MTA924	WEDGE, retainer	6
8	16A390	NUT, hex, flanged	4				
9	MTA691	KIT, hose, output, 3/4 in. x 14 in.	1	▲		<i>Replacement Danger and Warning labels are available at no cost.</i>	
10	MTA727	HARNESS, power, 1ph (models 25M080, 25M081)	1	Notes:			
10a	MTA007	PLUG ONLY, power, 1 ph	1	△1		Assemble motor (2) using fasteners included in motor sub assembly.	
10	MTA728	HARNESS, power, 3ph (model 25M082)	1	△3		Push the connect hose into the port in mixer (1).	

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).

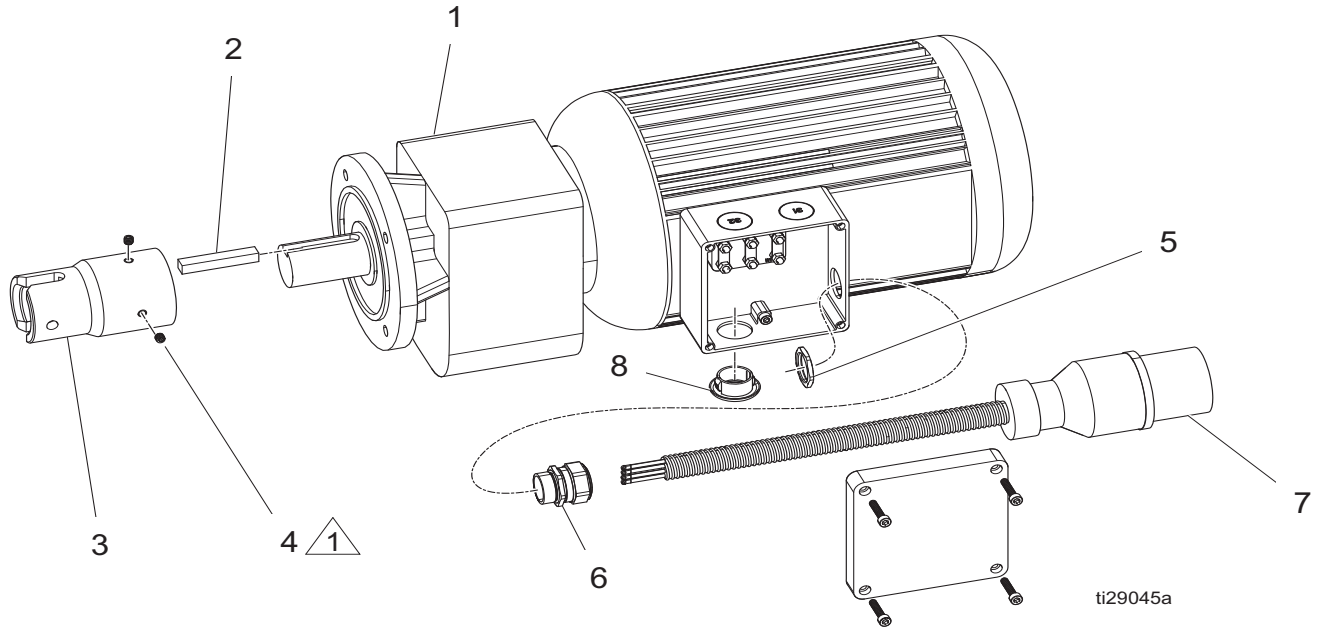
CM-40 Silo Series Parts List


Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	MIXER, b-mix, MAI	1	10a	MTA935	PLUG ONLY, power, 3ph (model 25M087)	1
2	-----	MODULE, control, CM-40, 220V, 1ph, 50 Hz (see page 27)	1	11	†	VALVE, butterfly, 300mm	1
	-----	MODULE, control, CM-40, 220V, 1ph, 60 Hz (see page 27)	1	12	†MTA443	SEAL, butterfly, 300mm	1
	-----	MODULE, control, CM-40, 220V, 3ph, 50 Hz (see page 27)	1	13	†	WASHER, plain	16
3	100424	SCREW, cap, hex hd	1	14	†100017	SCREW, cap, hex hd	8
4	801020	NUT, lock, hex	1	15	†119547	NUT, hex, lock, nylon, thin	8
5	MTA672	KIT, motor, assembly	1	19▲	17M606	LABEL, safety	1
6	-----	SPACER, 4 kW motor	1	25	MTA924	WEDGE, retainer	6
7	-----	BOLT, hex hd, M8 x 1.25 x 80	4	26	MTA794	ASSEMBLY, mixing tube	1
8	16A390	NUT, hex, flanged	4	27	MTA795	SHAFT, mixing, assembly	1
9	MTA811	KIT, hose, output, CM-40, 11.13 in.	1	28	-----	NOZZLE, mixing tube, discharge	1
10	MTA727	HARNESS, power, 1ph (models 25M085, 25M086)	1	29	MTA650	BEARING, mixing tube, discharge nozzle, plastic bushing	1
10a	MTA007	PLUG ONLY, power, 1ph (models 25M085, 25M086)	1	30	MTA801	BRACKET, dosing zone	1
10	MTA728	HARNESS, power, 3ph (model 25M087)	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.*

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)



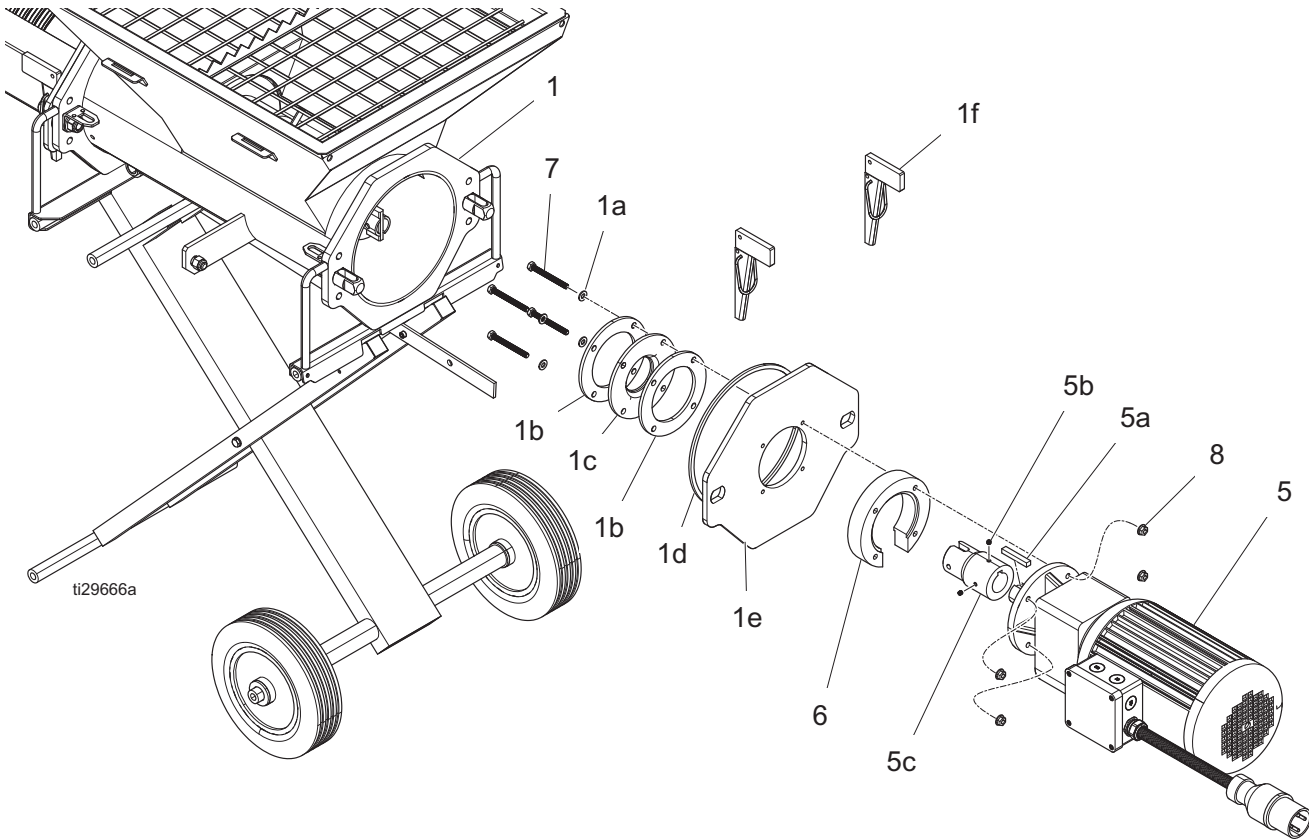
 Apply thread locker adhesive to set screws (4).

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

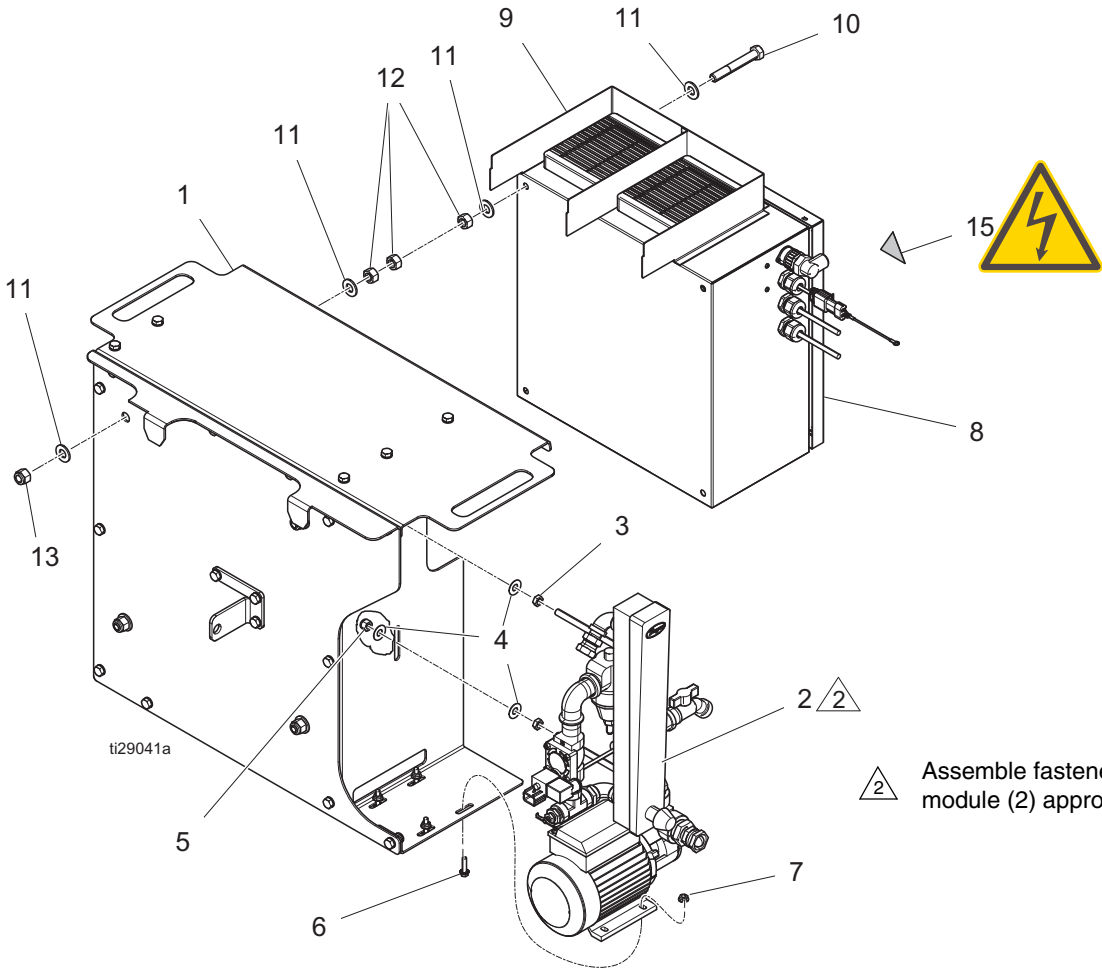


Ref.	Part	Description
1a	-----	WASHER, plain
1b	MTA655	SEAL, connection plate engine
1c	MTA656	SEAL, motor coupling gasket
1d	MTA654	GASKET, motor flange
1e	-----	PLATE, motor flange
1f	MTA924	WEDGE, retainer
5	MTA672	KIT, motor, assembly
5a*	MTA020	KEY, special, drive

Ref.	Part	Description
5b*	-----	SCREW, set 1/4-20 x .25 soc cup
5c*	-----	AUGER, drive, 35mm
6	-----	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



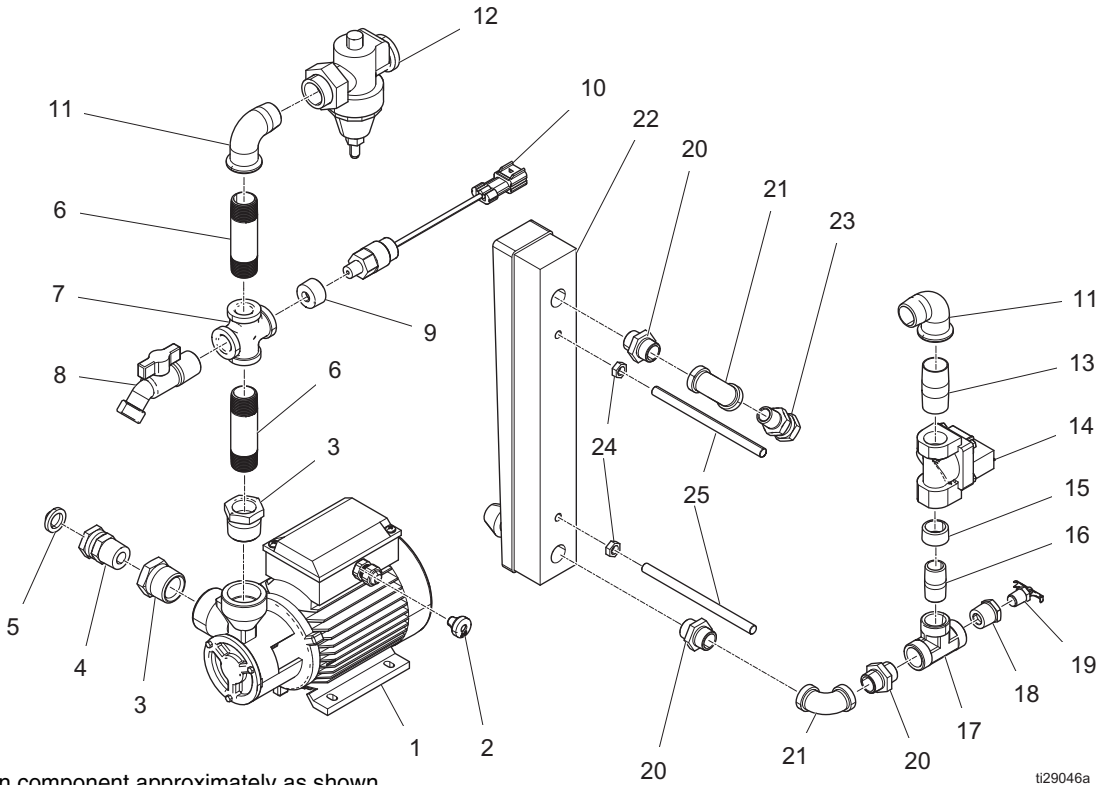
▲ Assemble fasteners from water pump module (2) approximately as shown.

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	-----	FRAME, panel mount, control box	1	8	MTA688	KIT, enclosure, control, 1ph (models 25M080, 25M081, 25M085, 25M086) See page 27	1
2	-----	MODULE, water control, 60 Hz (models 25M081, 25M086) See page 30	1		MTA689	KIT, enclosure, control, 3ph (models 25M082, 25M087) See page 27	1
	-----	MODULE, water control, 50 Hz (models 25M080, 25M082, 25M085, 25M087) See page 30	1	9	-----	COVER, assembled, control box	1
3	-----	NUT, jam	2	10	†124869	SCREW, cap, hex hd	4
4	-----	WASHER, 3/8 plain flat	4	11	†	WASHER, plain	16
5	101714	NUT, lock	2	12	†100321	NUT	12
6	15R472	FASTENER, hex hd, flanged, 1/4 x 1	4	13	†801020	NUT, lock, hex	4
7	115942	NUT, hex, flange head	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



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

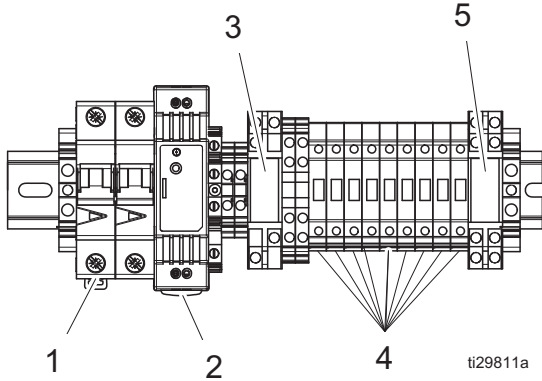
Symbol	Kit	Description	Included in Kit: Ref. (Qty.)
†	MTA812	60Hz Water Pump Kit (models 25M081, 25M086)	1 (1), 2 (1)
◆	MTA813	50Hz Water Pump Kit (models 25M080, 25M082, 25M085, 25M087)	1 (1), 2 (1)

Electrical Enclosure Assembly Parts List

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

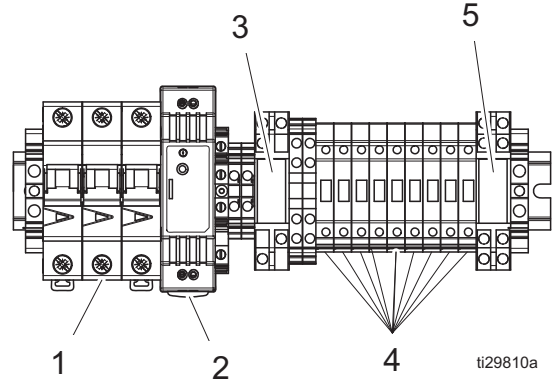
Din Rail Assembly Modules

**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

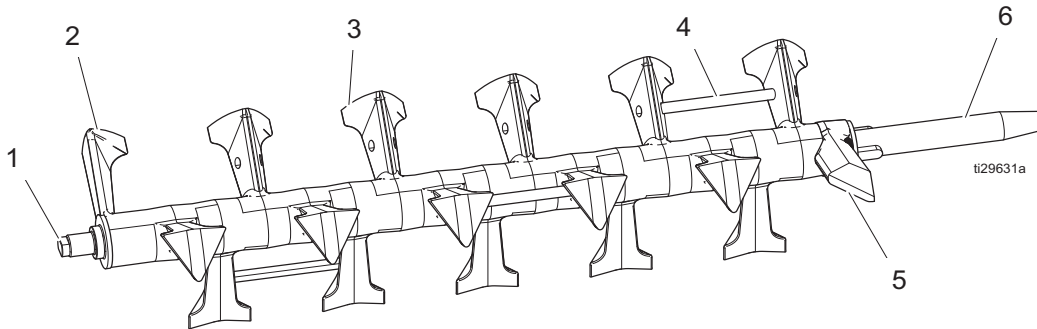
**Module, din rail assembly
(for CM-40 3 phase, CM-40 silo 3 phase)**



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

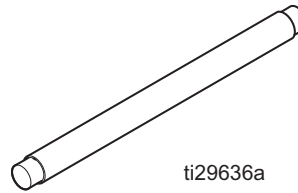
Mixing Shaft Parts

Mixing Shaft, Complete Assembly (MTA795)

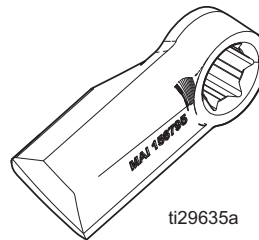


Ref.	Part	Description
1	17T462	PIN, bearing, M12, lh thread
2	MTA799	KIT, blade, wing, mixing, g
3	MTA796	KIT, blade, wing, mixing, sym
4	MTA658	ROD, connecting, mixer
5	MTA798	KIT, blade, wing, mixing, b, 26 mm
6	MTA922	KIT, shaft, mixing

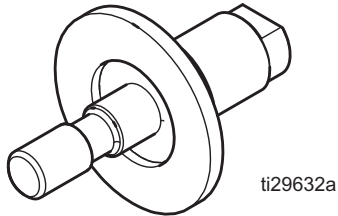
Ref. 4 - MTA658, Connecting Mixer Rod



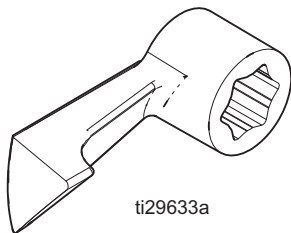
Ref. 5 - MTA798, Rear Mixing Wing Blade



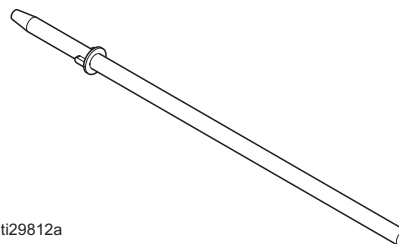
Ref. 1 - 17T462, M12 Left-Hand Thread Bearing Pin



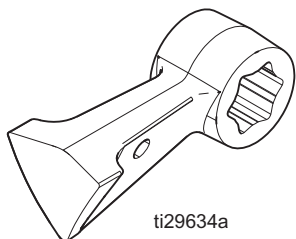
Ref. 2 - MTA799, Front Mixing Wing Blade



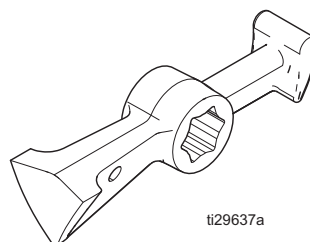
Ref. 6 - MTA922, Mixing Shaft



Ref. 3 - MTA796, Symmetric Mixing Wing Blade

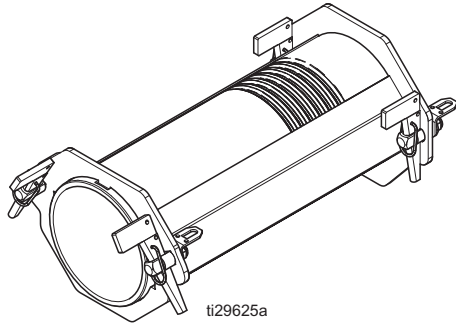


**MTA797, Duo Mixing Wing Blade
(Can be used to replace Ref. 3)**



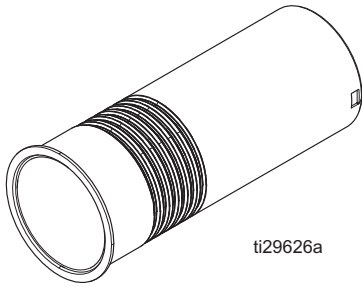
Mixing Tube and Discharge Nozzle Parts

Mixing Tube Assembly with Wedges (MTA794)



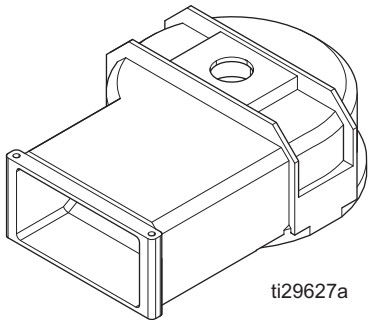
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Mixing Tube (MTA897)



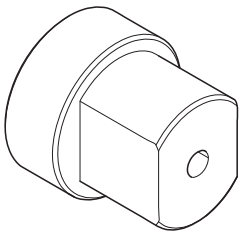
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Mixing Tube Discharge Nozzle (MTA793)



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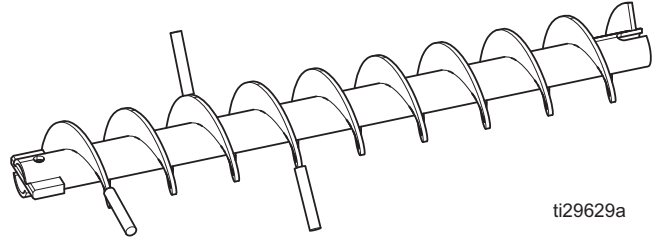
Discharge Nozzle Plastic Bushing/Bearing (MTA650)



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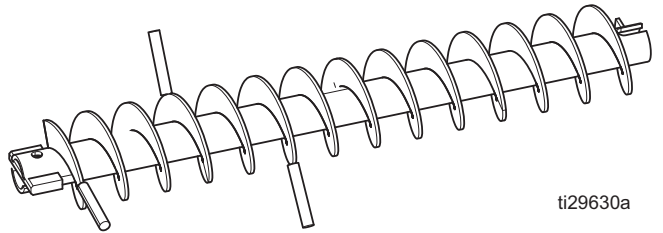
Delivery Shaft Screws

P60 High Pitch Delivery Shaft Screw (MTA802)



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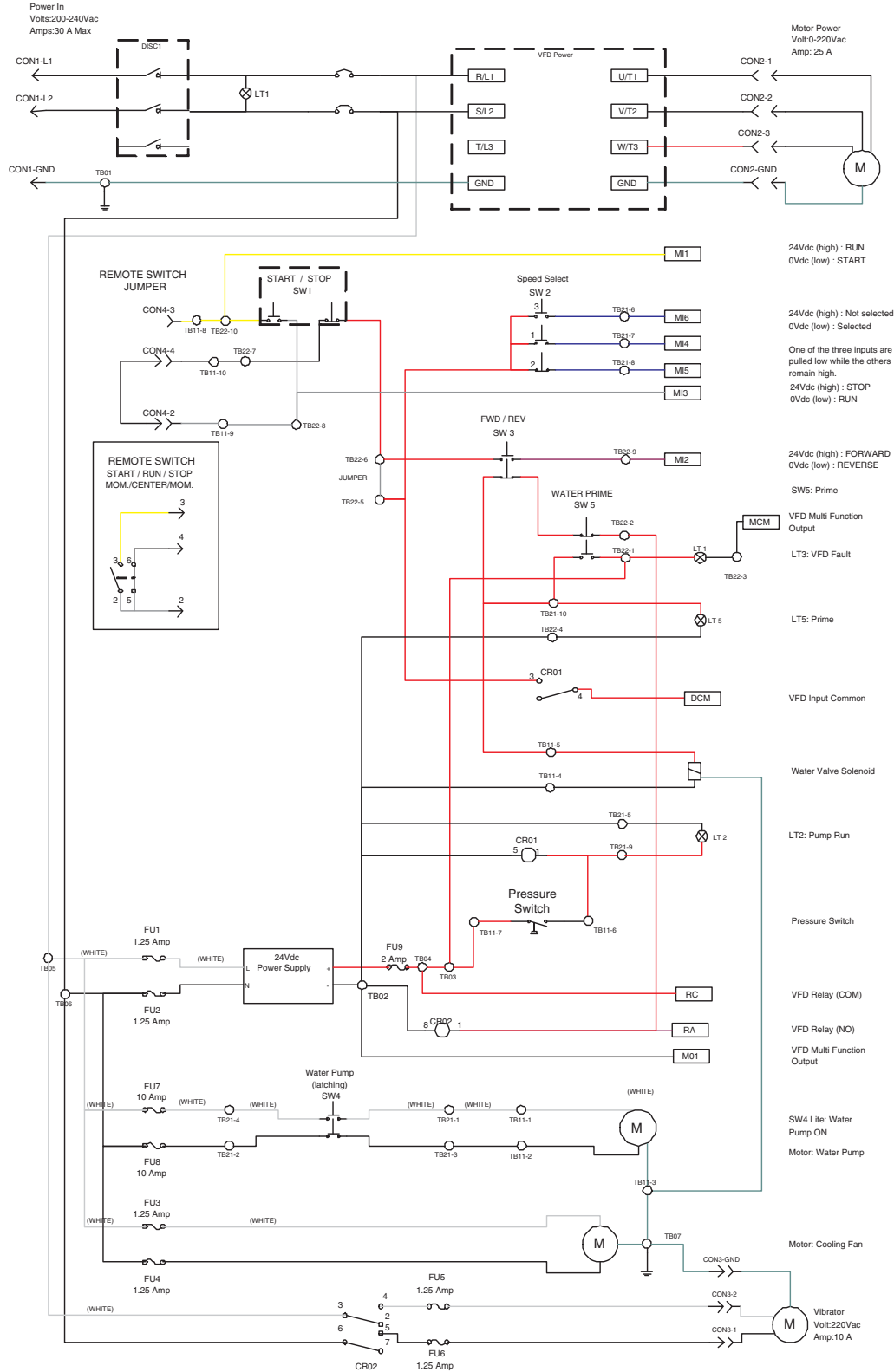
P40 Low Pitch Delivery Shaft Screw (MTA803)



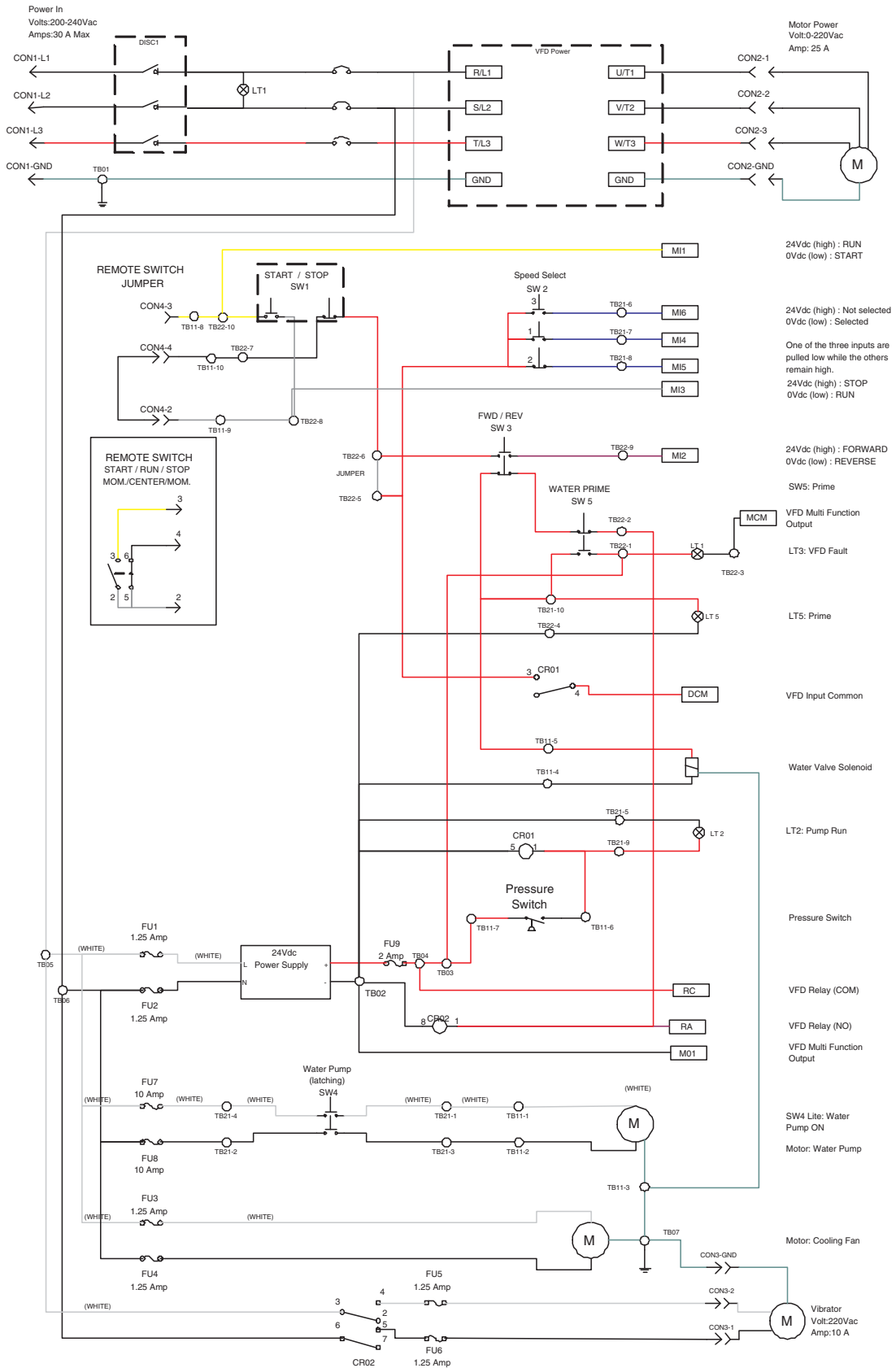
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Wiring Schematic

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
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), 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

Water Pump System Kits

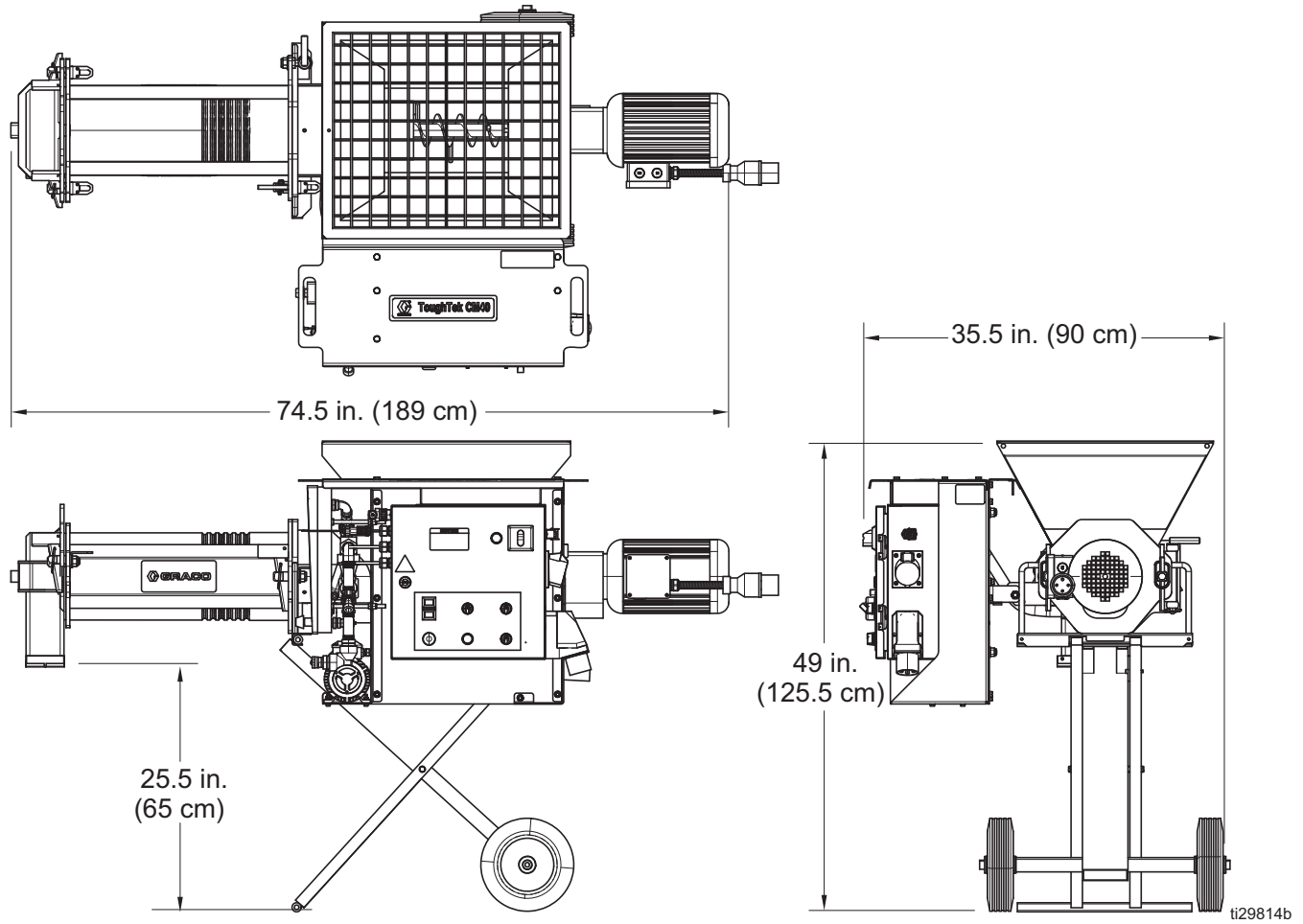
Kit	Description	Associated System	Kit Type
MTA691	KIT, hose, output, 3/4 in. x 14 in.	CM-40 Series (25M080, 25M081, 25M082)	Hose only
MTA811	KIT, hose, output, CM-40, 11.13 in.	CM-40 Silo Series (25M085, 25M086, 25M087)	Hose only
MTA693	KIT, meter, 0-10 gpm, 1-38 lpm	CM-40 Series (25M080, 25M081, 25M082),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

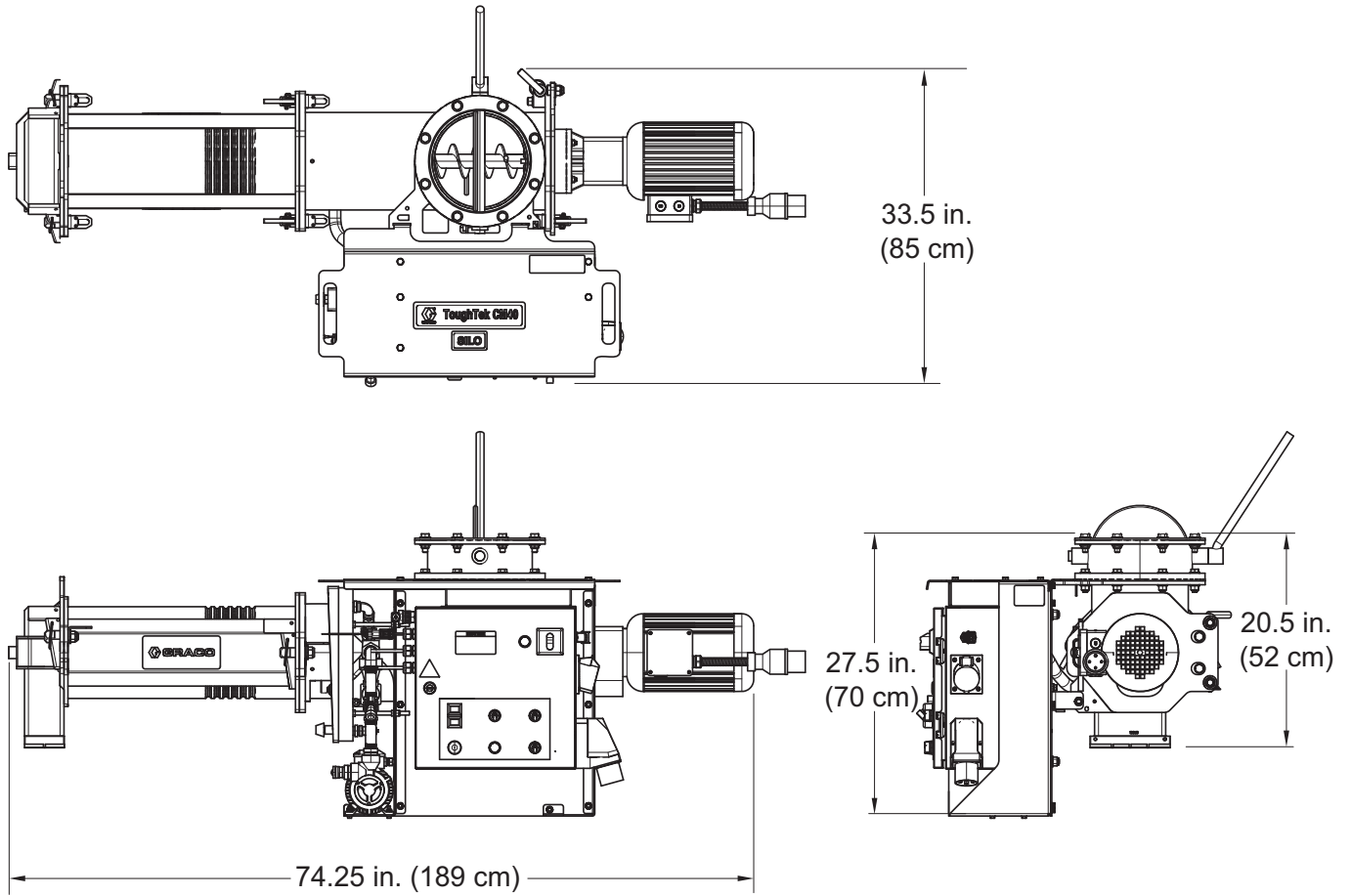
Kit Number	Description	Associated System	Kit Type
MTA688	KIT, enclosure, control, CM-40, 1 ph	CM-40 1 ph (25M080, 25M081), CM-40 Silo 1 ph (25M085, 25M086)	Enclosure assembly
MTA689	KIT, enclosure, control, CM-40, 3 ph	CM-40 1 ph (25M082), CM-40 Silo 1 ph (25M087)	Enclosure assembly
MTA727	KIT, harness,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

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.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6921 or Toll Free: 1-800-328-0211 Fax: 612-378-3505

All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A4350

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