

DT Small Mixers Installation, Operation, Maintenance Manual

Equipment Reference:
20DTD Style Mixer
30DTD Style Mixer
40DTD Style Mixer

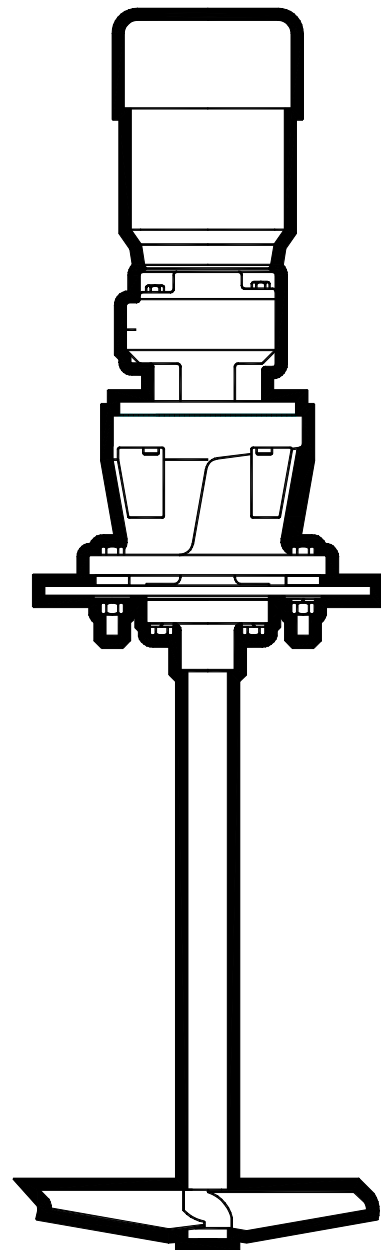


TABLE OF CONTENTS

Initial Inspection	1
Chemineer Assistance	1
Storage	2
Mounting & Installation	3
Open Tank Mixer Installation	3
Mixer Installation	12
Lubrication	17
Electric Motor – Model 30DT	17
Air Motor – Model 30DT	19
Gearmotor – Models 20DT, 40DT	19
Operation	20
Mixer	20
Electric Motors	21
Air Motors	21
Maintenance	22
Mixer Maintenance – Mixer Removal & Disassembly	22
Mixer Maintenance – Mixer Assembly	23
Parts	24

TABLE OF CONTENTS

Tables	Page
Table 1: Recommended Beam Sizes	3
Table 2: Off-Center Positioning	11
Table 3: Bolt Tightening Torque	16
Table 4: Motor Bearing Grease Addition	17
Table 5: Typical NLGI No. 2 Greases	18
Table 6: Lubrication Frequency	19

Figures

Figure 1: Model DTD, Installation	4
Figure 2: Models 20DTD, 40DTD	7
Figure 3: Model 30DTD	8
Figure 4: Angle Riser Mounting	9
Figure 5: Angle Mount Installation	10
Figure 6: Wiring Diagram, 1ph Gearmotor	13
Figure 7: Wiring Diagram, 3ph Gearmotor	14
Figure 8: Wiring Diagram, Motors	15

INITIAL INSPECTION

Step 1: Inspect crates. Upon receipt, inspect all crates and equipment for shipping damage. Report shipping damage to your local Chemineer office or to the factory in Dayton, Ohio. A claim should be filed immediately with the carrier involved.

Step 2: Uncrate. Check the contents. Do not uncrate the unit until you have read the *Mounting & Installation* section of this manual and looked at the assembly drawing shipped with the unit. Be careful in uncrating and handling. Do not discard the crating without making sure that all mixer parts have been removed. Correct assembly of this unit requires referring to both the unit assembly drawing and this manual.

Step 3: Questions? Call Chemineer. If the shipment is not complete or you do not understand what you have received, please contact *your local Chemineer office* immediately.

CHEMINEER ASSISTANCE

Chemineer maintains a fully staffed Parts and Field Service Department ready to help you with any service requirement. Simply contact your local Chemineer office, or contact Parts/Field Service at the Chemineer Factory in Dayton, Ohio:

Chemineer, Inc.
P.O. Box 1123
Dayton, Ohio 45401
Phone: (937) 454-3200
FAX: (937) 454-3375

Services available are as follows:

Installation and maintenance training seminars,
Installation and start-up supervision,
Preventative maintenance planning,
Parts order service,
Special instructions.

STORAGE

Do not remove any protective packaging, coatings (generally applied to the motor or gearmotor output shafts), or any protective coverings that may be applied to the wetted parts until the mixer is to be put into service. If the equipment is to be stored, *do not stack crates*. Store in a clean dry indoor location that is free from wide variations in temperature. The storage area should be free from vibration and excessive heat.

Inspect for external rust at six-month intervals. Apply rust preventative as required. If the unit has been in storage for more than six months or subjected to adverse moisture conditions, the motor windings may have to be dried prior to operation.

CAUTION! Coated/rubber covered agitator parts require special handling to avoid damage to coatings/rubber coverings. Do not use chains or hooks on coated/covered surfaces. Special care is required to prevent damage to edges and outside corners. Contact Chemineer Field Service for instructions.

Short-Term Indoor Storage

Mixers should be stored indoors in areas with no vibration and relatively constant temperatures and humidity. The factory storage preparations should be acceptable for up to six months storage.

Rotate the drive coupling 10 to 15 revolutions at least once per month to reduce the possibility of brinelling of the bearings and to redistribute bearing grease.

OPEN TANK MIXER INSTALLATION


Refer to the mixer assembly drawing for the required support structure design loads.

In designing the structure to accommodate bending moment, the structure should be sufficiently rigid so that the mixer extension shaft will not move more than 1/64 inch (.4mm) per foot of length due to deflection of the mounting system.

The agitator support in open tanks is typically constructed of two steel beams with lateral bracing. See *Table 1, below* for beam size.

TABLE 1: RECOMMENDED BEAM SIZES

MODEL	TANK DIAMETER, FT (M)									
	2 (.61)	2.5 (0.76)	3 (0.91)	4 (1.22)	5 (1.52)	6 (1.83)	7 (2.13)	8 (2.44)	9 (2.74)	10 (3.05)
20DTD	L2x2x3/16					L2.5x2.5x1/4				
30DTD	L2x2x3/16					L2.5x2.5x1/4				
40DTD	L2x2x3/16			L2.5x2.5x1/4						C3x4.1

 Cells shaded in gray are “not recommended”.

Diagonal bracing (45 degree) should be used between the span beams. The ends of the span beams should be boxed in. Both lateral bracing and diagonal bracing to be identical to span beams.

All model 20DTD, 30DTD, and 40DTD units are supplied with a flat plate assembly and rubber vibration isolators as standard. Refer to *Figure 1, page 4* for mounting dimensions.

OPEN TANK MIXER INSTALLATION

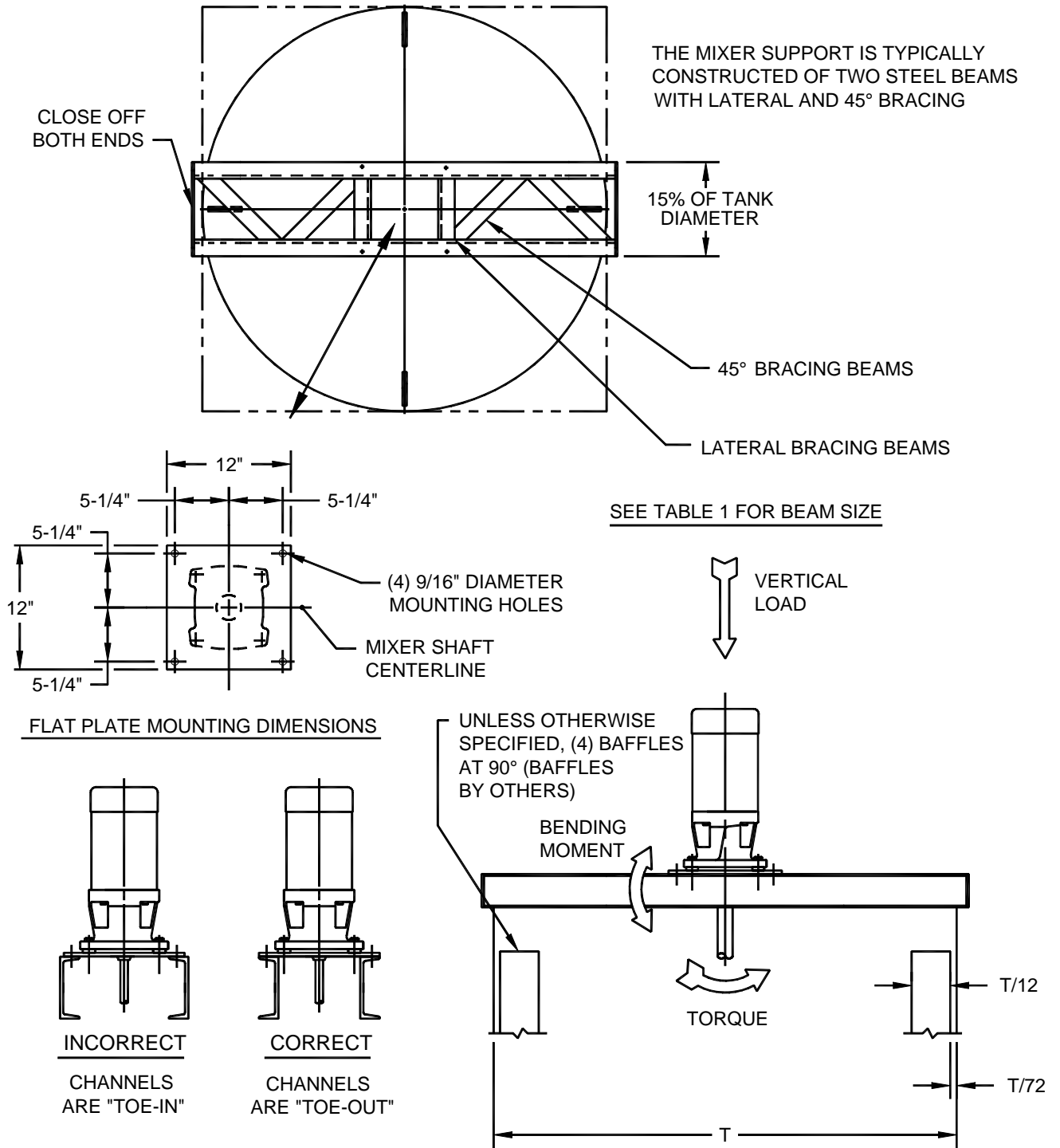


Figure 1: Model DTD, Installation

OPEN TANK MIXER INSTALLATION

Correct unit installation requires both the unit assembly drawing and this manual.

The model 20DTD is a gear reduced, beam mount mixer. The drive unit is typically shipped with the gearmotor (integral motor/gear reducer) [105] mounted to the cast aluminum housing [201-03]. A plated chuck drive shaft [214] coupling with bearing support extends from the housing for extension shaft attachment. Also in the main unit box may be separate cartons for the flat plate [160] mounting assembly, angle riser [800] assembly (if applicable), impellers or propellers [500] and all other required accessories. Shafting [400] is shipped separately.

The model 30DTD is a direct drive, beam mount mixer. The drive unit is typically shipped with the motor [100] mounted to the cast aluminum housing [201-03]. A plated chuck drive shaft [214] coupling with bearing support extends from the housing for extension shaft attachment. Also in the main unit box may be separate cartons for the flat plate [160] mounting assembly, angle riser [800] assembly (if applicable), impellers or propellers [500] and all other required accessories. Shafting [400] is shipped separately.

The model 40DTD is a gear reduced, beam mount mixer. The drive unit is typically shipped with the gearmotor (integral motor/gear reducer) [105] mounted to the cast aluminum housing [201-03]. A plated flanged drive shaft [216] coupling with bearing support extends from the housing for flanged removable shaft coupling [300] attachment. Also in the main unit box may be separate cartons for the flat plate [160] mounting assembly, angle riser [800] assembly (if applicable), removable coupling [300] assembly, impellers or propellers [500] and all other required accessories. Shafting [400] is shipped separately.

Be certain to locate all contents before discarding packaging materials.

1. Remove all shipping constraints. A nylon strap, or similar, should be secured around the mixer housing [201-03] to lift and move the mixer. Please note the approximate net weight of the unit as shown on the assembly drawing and use caution when moving or lifting these items. *At no point during installation or maintenance of the mixer, should the extension shaft ever be used as a lifting point!*

WARNING: DO NOT connect the mixer to the power source until the unit is fully assembled and properly positioned in the vessel.

2. Remove the flat plate [160] assembly from the shipping carton and assemble to drive housing [201-03] as shown in *Figure 2, page 7 and Figure 3, page 8*. Mount drive to support structure using customer supplied fastener set (1/2" bolts).

The mixer should never be mounted with the shaft and propeller(s) installed.

OPEN TANK MIXER INSTALLATION

3. For 20DTD and 30DTD units, assemble the extension shaft **[400]** to the drive housing assembly **[200]** by inserting the shaft end with the machined recess and “flats” into the chuck coupling **[214]** until the shaft bottoms out, approximately 5” (127mm). Orient the shaft to allow the chuck coupling setscrews **[213]** (two at 90°) to engage the “flats”. Tighten chuck setscrews **[213]** with a 3/16” hex key wrench.
4. For 40DTD units, clean the extension shaft **[400]** turndown diameter and the removable shaft coupling **[301-02]** bore. Make sure both surfaces are completely dry and free from any burrs or nicks. Install the shaft key **[307-02]** into the extension shaft keyway, making sure it is fully bottomed into the keyway. Install the coupling over the shaft end. Install shaft bolt, lockwasher and flatwasher **[304, 305, 306]** and torque to the value shown in *Table 3, page 16*. Engage the two coupling setscrews **[308]** onto the shaft key **[307-02]**. Install two coupling bolts and lockwashers **[302, 303]** at 180°. Tighten the bolts to engage the tenon and pull the removable coupling **[301-02]** and flanged drive shaft **[216]** coupling faces together. Install and tighten the remaining coupling bolts and lockwashers. Torque bolts to the value shown in *Table 3*.
5. For single impeller assemblies, install the impeller with the lower hub face even with the shaft end. Impeller orientation should allow the driving edge of the impeller to pump toward the bottom of the mixing vessel. Tighten the impeller setscrews (typically quantity two).

For dual impeller assemblies, space the upper impeller at a recommended minimum of two impeller diameters and maximum of three impeller diameters above the lower impeller. The lower impeller should be a minimum of one impeller diameter below the liquid surface at all times during mixer operation.

OPEN TANK MIXER INSTALLATION

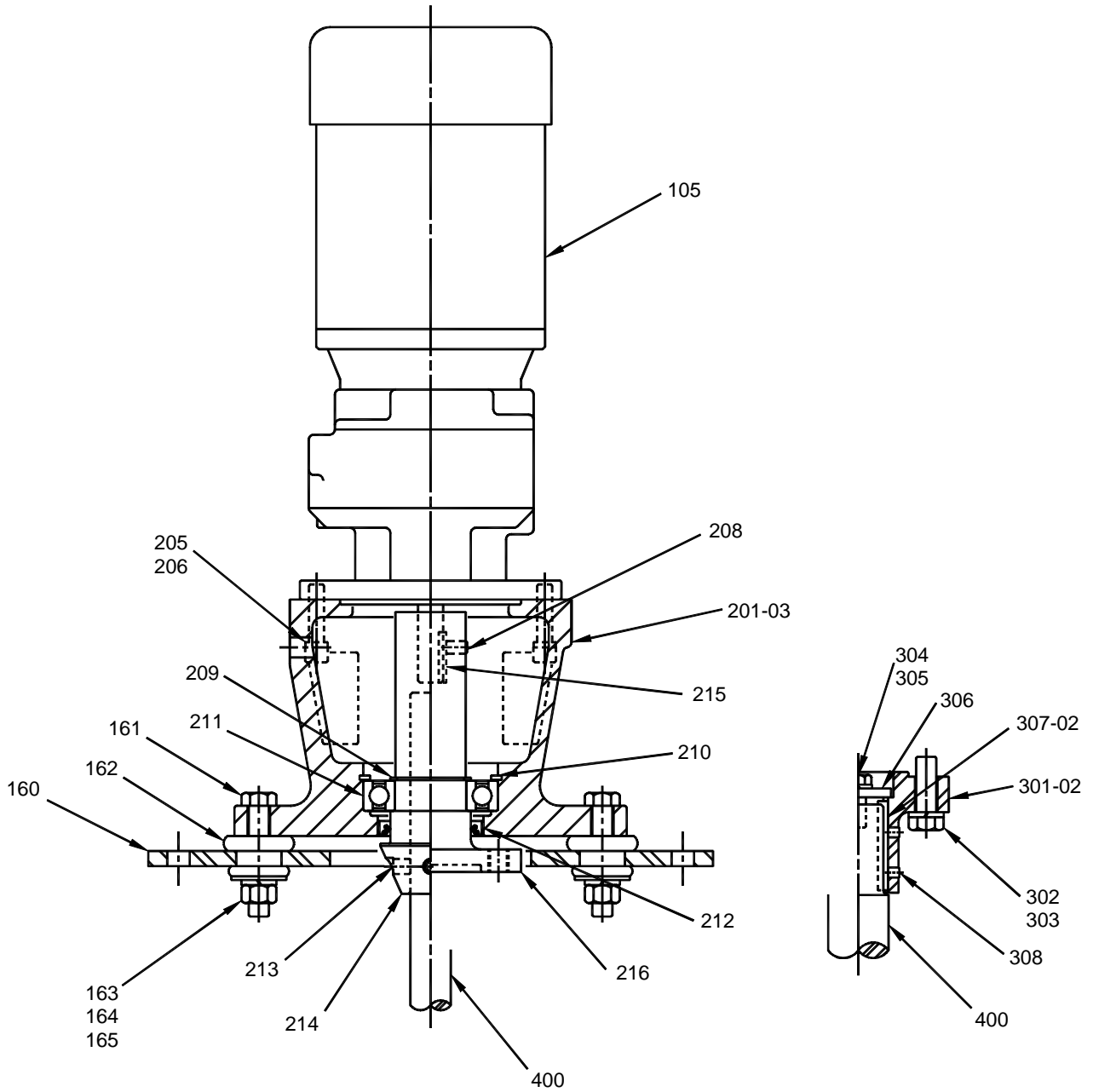


Figure 2: Models 20DTD, 40DTD

OPEN TANK MIXER INSTALLATION

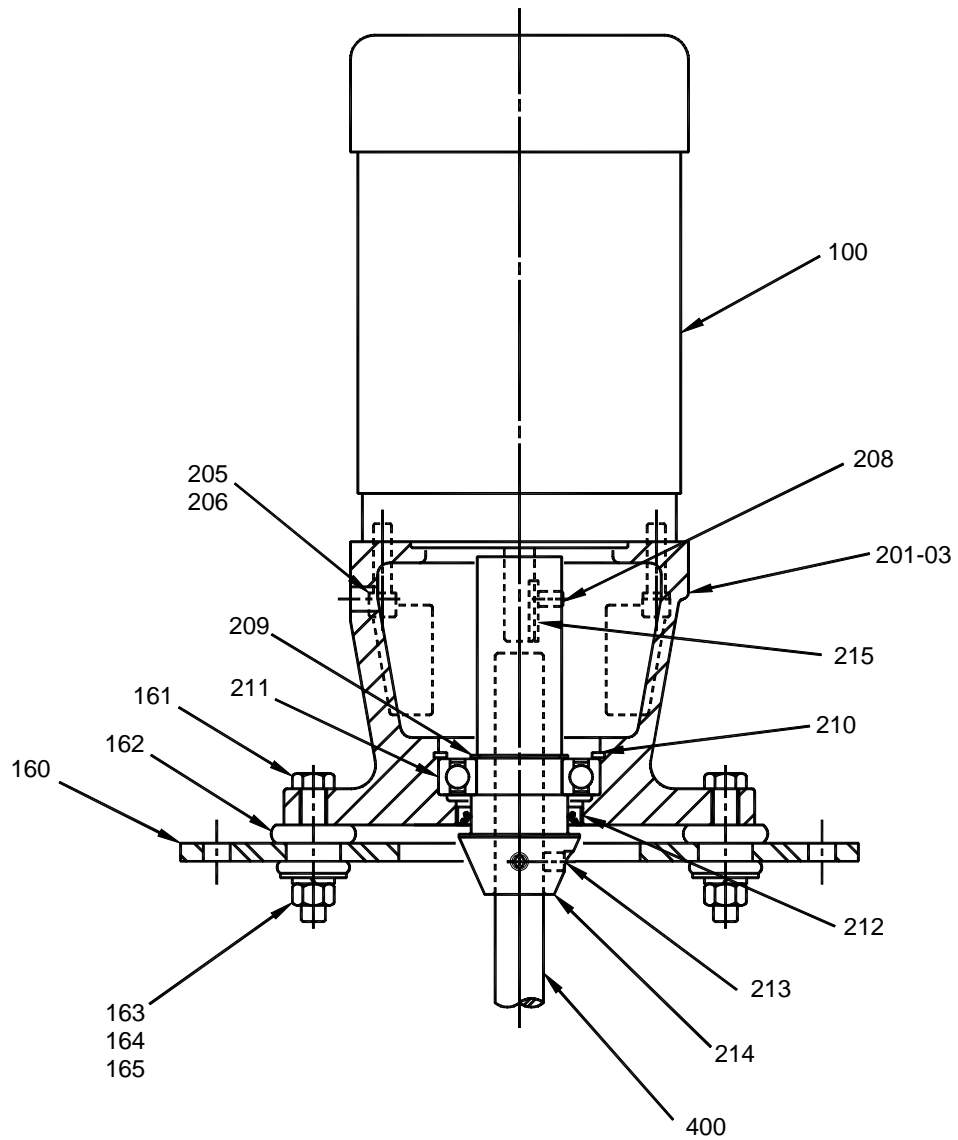


Figure 3: Model 30DTD

OPEN TANK MIXER INSTALLATION OPTIONAL ANGLE RISERS

Optional 10° angle risers are available for these units.

If angle risers are supplied, refer to *Figure 4, below*. The drive unit may be angle mounted in any orientation. Unit will attach to support structure using customer supplied fastener set (1/2" bolts).

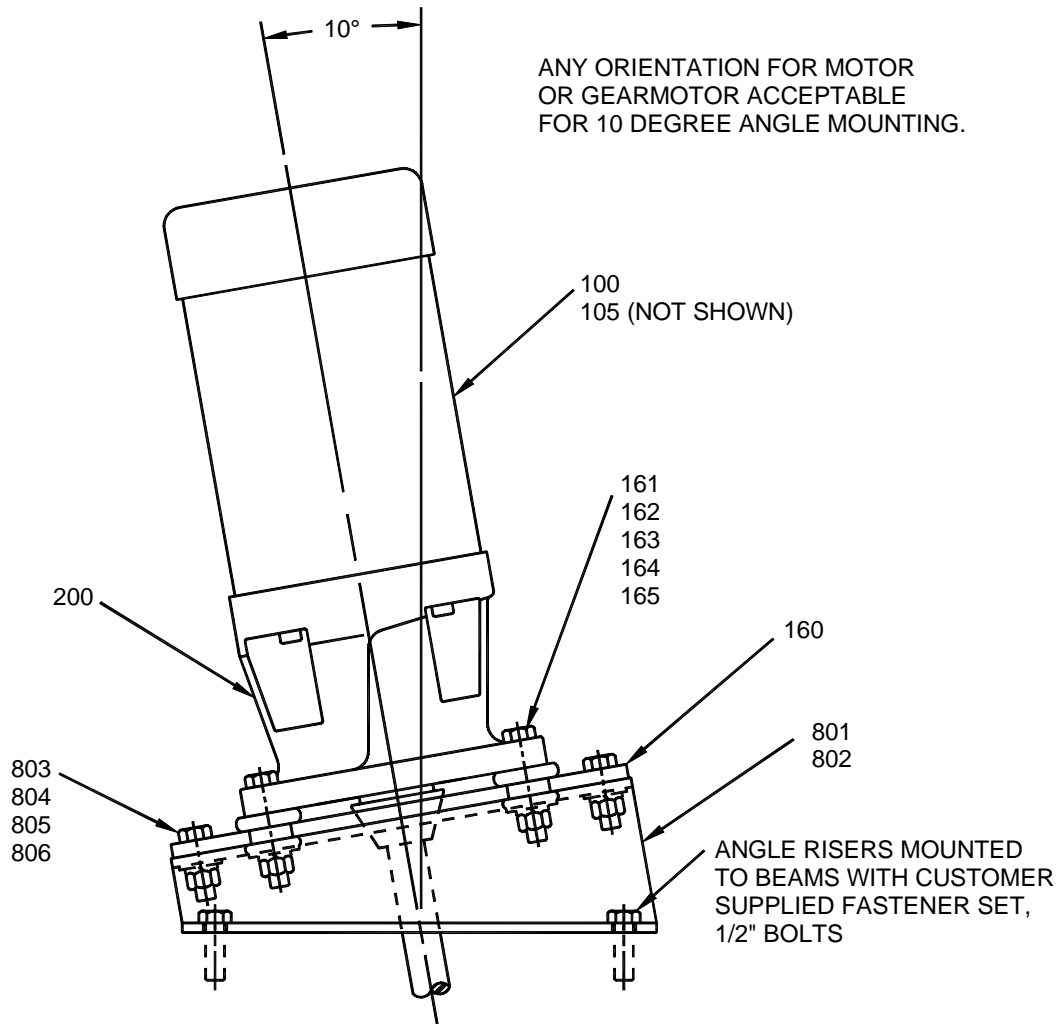


Figure 4: Angle Riser Mounting

**OPEN TANK MIXER INSTALLATION
OPTIONAL ANGLE RISERS**

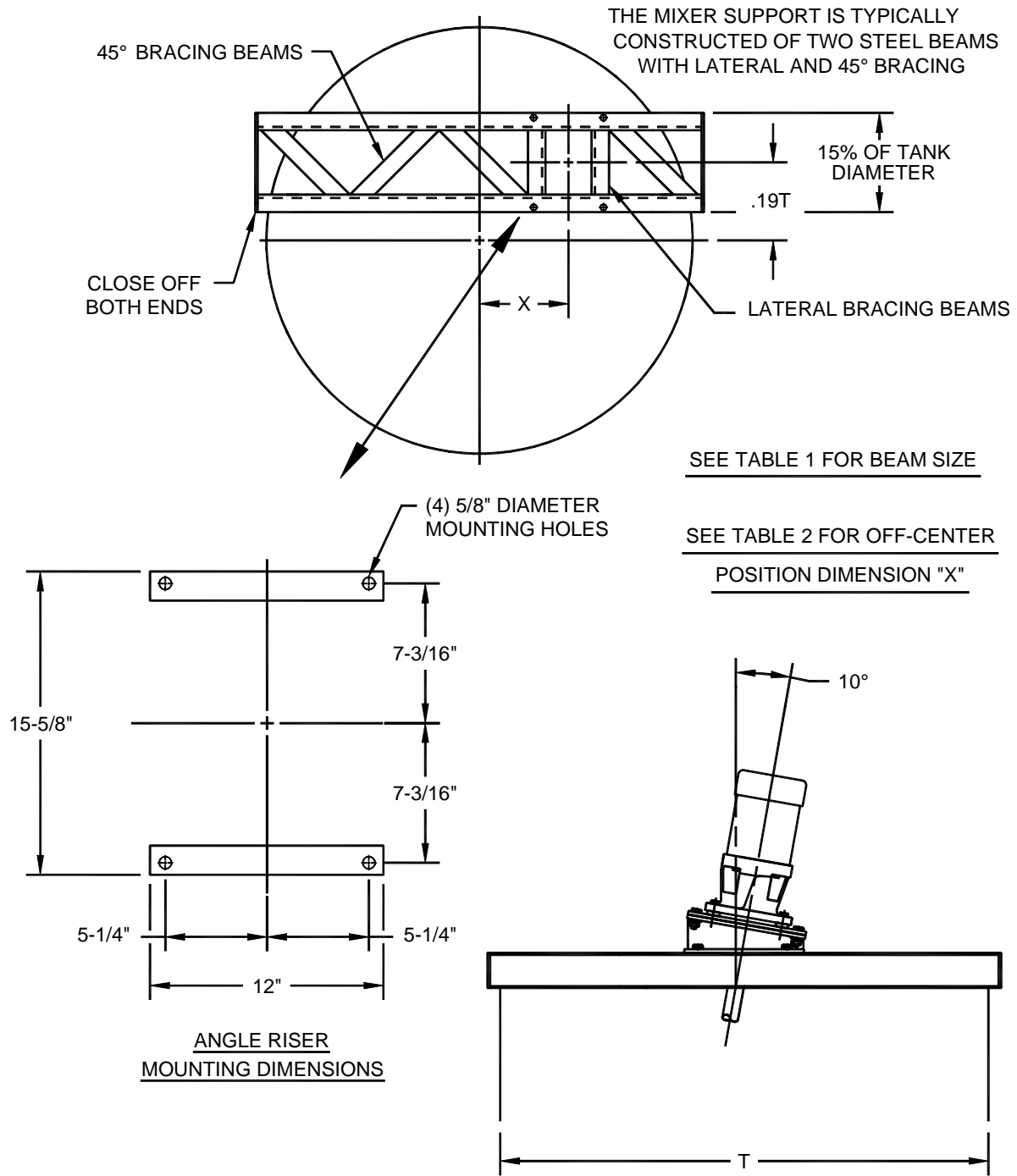


Figure 5: Angle Mount Installation

**OPEN TANK MIXER INSTALLATION
OPTIONAL ANGLE RISERS****TABLE 2: OFF-CENTER POSITIONING**

SHAFT EXTENSION RANGE IN (MM)	“X” DIMENSION, IN (MM)	MINIMUM TANK DIAMETER “T”, IN (MM)
20” – 37” (508 – 940)	5” (127)	18” (457)
38” – 53” (965 – 1346)	7.5” (191)	22” (559)
54” – 76” (1372 – 1930)	10.75” (273)	32” (813)
77” – 110” (1956 – 2794)	15.5” (394)	46” (1168)
111” – 135” (2819 – 3429)	21.25” (540)	64” (1626)

MIXER INSTALLATION ELECTRIC MOTORS, GEARMOTORS

1. Check the nameplate data on the motor/gearmotor to assure that the available power supply agrees with the motor requirements. Protective devices should be of the proper size and rating to safely carry the load and interrupt the circuit on overloads.
2. If the motor/gearmotor has been stored in a damp location, the windings may require drying.

NOTE: Do not obstruct the normal flow of ventilating air through or over the motor/gearmotor.

3. Many of the motors supplied with this product are dual voltage. The motor cord supplied with a single phase motor is applicable for use on 125V systems only. Customer is responsible for supplying all necessary motor connections and for properly wiring the motors. Refer to wiring diagrams *Figures 6 and 7, pages 13 and 14*, for gearmotor connections and *Figure 8, page 15* for normal motor connections. Consult *Chemineer Field Service* if there are any questions pertaining to the installation or operation of the motor or mixer unit.
4. Connect the motor/gearmotor in accordance with the National Electric Code and local requirements, but do not make the connections permanent until the motor/gearmotor rotation has been checked. Jog the motor/gearmotor to check for correct rotation prior to securing wiring. Refer to unit assembly drawing for unit rotation direction. If any additional motor/gearmotor auxiliary devices such as space heaters or temperature sensors are used, connect them in proper circuits and insulate them from motor/gearmotor power cables.

AIR MOTORS

1. Air motors are designed to be driven by compressed air. Under no circumstances should they be driven with any other type of gas, fluids, particles, solids, or any substance mixed with air.
2. The muffler is shipped uninstalled on the air motor. Always install a moisture trap and filter in the air line ahead of the motor.
3. "Reversible" type air motors will work equally in both directions. A 4-way valve may be connected to both air ports to allow reversible operation. For efficiency of output and control of speed, use air lines of the same size or the next larger pipe size than the intake port of the motor.
4. *Lubrication of the air motor is required.* Refer to **Lubrication** section of this manual for more information.

MIXER INSTALLATION

TYPE EAR (CAPACITOR START & RUN)

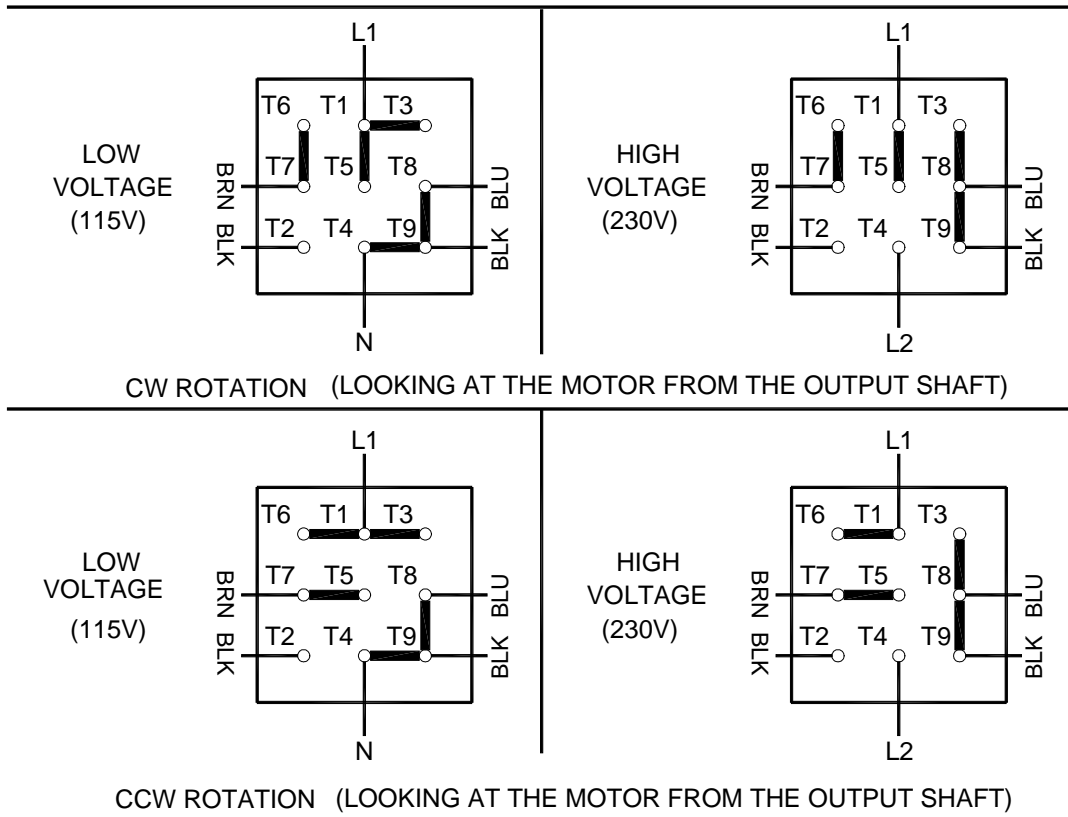
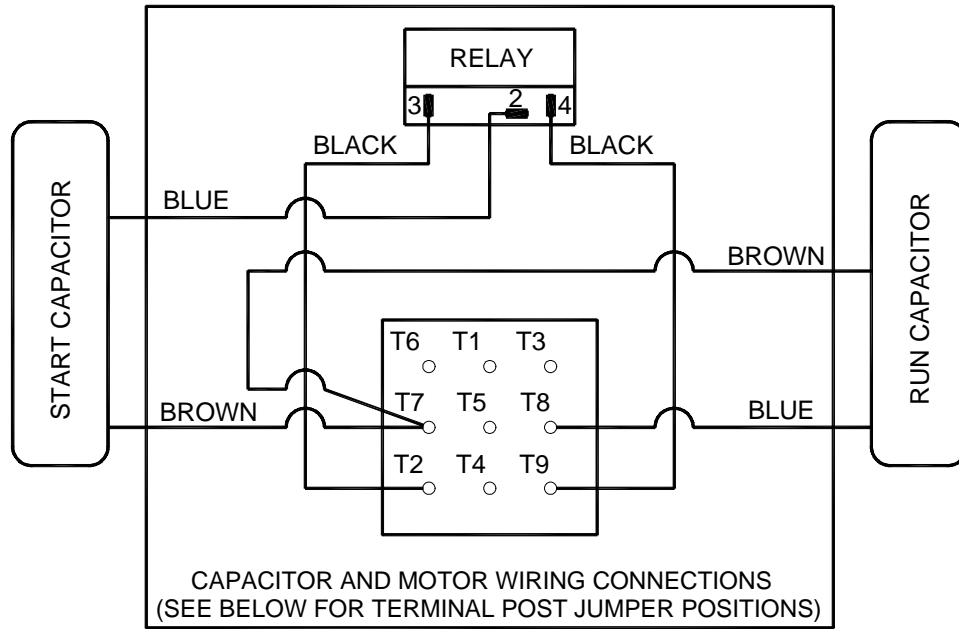
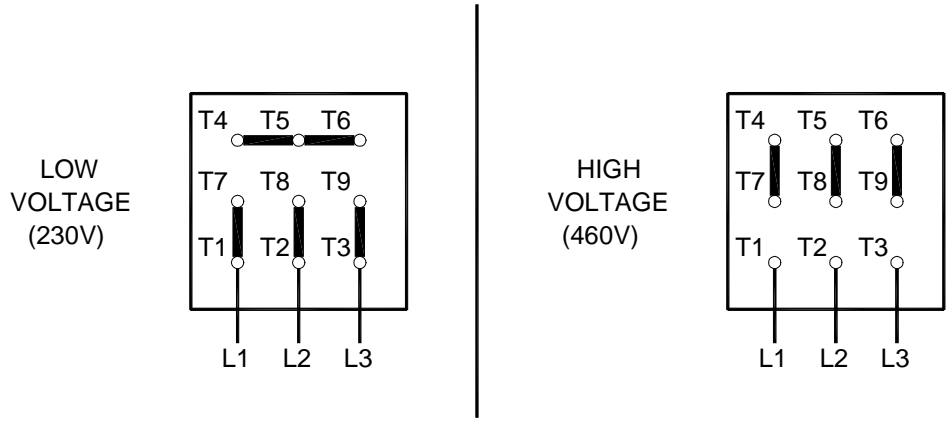


Figure 6: Wiring Diagram, 1ph Gearmotor

MIXER INSTALLATION

MOTOR WIRING CONNECTIONS AND
TERMINAL POST JUMPER POSITIONS



NOTE: TO REVERSE GEARMOTOR SHAFT ROTATION,
INTERCHANGE ANY TWO LINE LEADS

CHECK MOTOR LEADS WITH CONNECTION DIAGRAMS ON MOTOR
NAMEPLATE OR CONDUIT BOX FOR PROPER WIRING

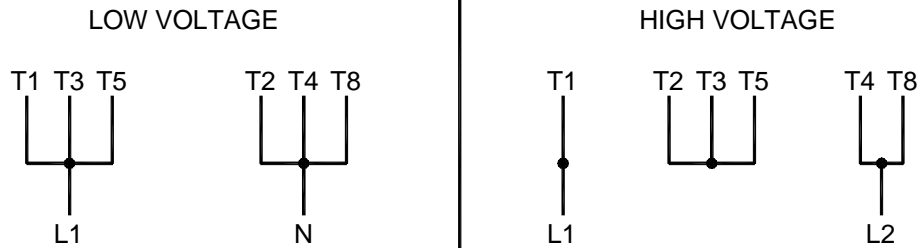
CHECK THE MIXER SHAFT ROTATION AGAINST THE PROPER
ROTATION INDICATED ON THE ASSEMBLY DRAWING

NOTE:
THE NORMAL GEARMOTOR OUTPUT SHAFT ROTATION SHOULD BE CCW
WHEN LOOKING AT THE GEARMOTOR FROM THE OUTPUT SHAFT END.
THE NORMAL MIXER SHAFT ROTATION IS CW WHEN LOOKING INTO THE
TANK FOR STANDARD ROTATION IMPELLERS.

Figure 7: Wiring Diagram, 3ph Gearmotor

MIXER INSTALLATION

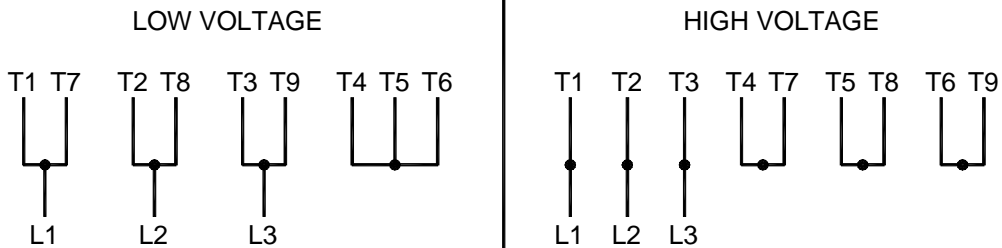
**SINGLE-PHASE MOTOR
(WITHOUT THERMAL PROTECTOR)**



CCW ROTATION (LOOKING AT THE MOTOR FROM THE SHAFT END)

NOTE: TO REVERSE MOTOR SHAFT ROTATION,
INTERCHANGE MOTOR LEADS T5 AND T8

**THREE-PHASE MOTOR
(WITHOUT THERMAL PROTECTOR)**



NOTE: TO REVERSE MOTOR SHAFT ROTATION,
INTERCHANGE ANY TWO LINE LEADS

CHECK MOTOR LEADS WITH CONNECTION DIAGRAMS ON MOTOR
NAMEPLATE OR CONDUIT BOX FOR PROPER WIRING

CHECK THE MIXER SHAFT ROTATION AGAINST THE PROPER
ROTATION INDICATED ON THE ASSEMBLY DRAWING

NOTE:
THE NORMAL MOTOR SHAFT ROTATION SHOULD BE CCW WHEN
LOOKING AT THE MOTOR FROM THE SHAFT END.
THE NORMAL MIXER SHAFT ROTATION IS CW WHEN LOOKING INTO THE
TANK FOR STANDARD ROTATION IMPELLERS.

Figure 8: Wiring Diagram, Motors

MIXER INSTALLATION**TABLE 3: BOLT TIGHTENING TORQUE**

BOLT SIZE	CARBON STEEL ⁽¹⁾				300 SERIES STAINLESS ⁽²⁾	
	GRADE 2		GRADE 5		Ft-lb	Nm
	Ft-lb	Nm	Ft-lb	Nm		
1/4-20	4.1	5.6	6	8.1	4.1	5.6
5/16-18	8.3	11	13	17	8.3	11
3/8-16	15	20	23	31	15	20
1/2-13	38	51	56	76	38	51
5/8-11	68	92	113	153	68	92
3/4-10	120	163	200	271	120	163

Tighten all fasteners to values shown unless specifically instructed to do otherwise. Lubricate all fasteners at assembly with grease, oil or an anti-seize material. Bolt threads and contact surfaces of bolt heads and nuts should be lubricated.

⁽¹⁾If fasteners cannot be lubricated, multiply table values by 1.33.

⁽²⁾If fasteners cannot be lubricated, multiply table values by 1.25.

LUBRICATION

This section defines the proper oils and greases that must be used with this equipment.

ELECTRIC MOTOR – MODEL 30DT

The motor bearings have been properly greased by the manufacturer. Motor bearings should be regreased at 12-month intervals when installed in clean, dry environments, or every six months for heavy duty and dusty locations. Any good quality general purpose grease consisting of a refined base oil stock and a lithium or calcium-complex based soap, with an NLGI No. 2 classification, will work satisfactorily. Most major oil companies offer such products, usually with extreme pressure (EP) additives for additional protection. *Table 5, page 18* lists some commonly available greases.

When regreasing, stop the motor, remove the outlet plug and add grease according to *Table 4* with a hand lever gun only. Run the motor for about ten minutes before replacing the outlet plug. Certain TEFC motors have a spring relief outlet fitting on the fan end. If the outlet plug is not accessible at the surface of the hood, it is the spring relief type and need not be removed when regreasing.

CAUTION! Overgreasing is a major cause of bearing and motor failure.

TABLE 4: MOTOR BEARING GREASE ADDITION

MOTOR FRAME SIZE	RELIANCE		LEESON		BALDOR	
	in ³	cm ³	in ³	cm ³	in ³	cm ³
56C	sealed for life		sealed for life		sealed for life	
140TC	sealed for life		sealed for life		0.6	9.8

ELECTRIC MOTOR – MODEL 30DT**TABLE 5: TYPICAL NLGI NO. 2 GREASES**

<i>For Ambient Temperature Range of 0° to 104° F (-18° to 40° C)</i>		
MANUFACTURER	GENERAL PURPOSE	EP
Amoco Oil Co.	Amolith grease: Grade 2	Amolith grease: Grade 2EP
Ashland Oil Co.		Multi-lube Lithium EP grease: Grade 2
		EP Lithium #2
Chevron U.S.A.Inc.	Industrial grease: Grade medium	Dura-Lith greases EP: Grade 2
CITGO Petroleum Corp.		Premium Lithium EP grease: Grade 2
Conoco Inc.		EP Conolith grease: Grade 2
Exxon Co. U.S.A.	Unirex N: Grade 2	Nebula EP: Grade 2
		Ronex MP: Grade 2
Mobil Oil Corp.		Mobilux EP 2
Pennzoil Products Co.		Pennlith EP grease 712
Phillips 66 Co.	Philube L Multi-purpose grease L-2	Philube EP grease: EP-2
Shell Oil Co.	Alvania grease 2	Alvania grease EP 2
		Alvania grease EP LF 2
Texaco Lubricants Co.	Premium RB grease	Multifak EP 2
Unocal 76		Unoba EP grease: Grade 2
		Multiplex EP: Grade 2

ELECTRIC MOTOR – MODEL 30DT

The following table may be used as a guide in determining frequency of lubrication. The periods listed assume a clean, dry environment with an ambient temperature not exceeding 104°F (40°C). If conditions are less desirable than this, adjust the frequency accordingly. (*Table 6* is for motor speeds 1800 RPM or slower).

TABLE 6: LUBRICATION FREQUENCY

DUTY	LUBRICATION INTERVAL (Months)
Intermittent	36
8-16 Hours/Day	30
Continuous	24

AIR MOTOR – MODEL 30DT

Lubrication of the air motor is required. An automatic air line lubricator must be installed in the air line just ahead of the air motor. The lubricator should be adjusted to feed one drop of oil for every 50-75 CFM of air going through the motor. Detergent SAE #10 automotive engine oil or equivalent is the recommended air motor lubricant.

GEARMOTOR – MODELS 20DT, 40DT

The gearmotor (gear reducer) has been permanently lubricated with mineral oil, ISO 220 grade, acceptable for operation in ambient temperatures not exceeding 104°F (40°C). The gearmotor can be operated at up to a 10 degree off vertical mounting angle, any orientation.

MIXER

Proper operating procedures will allow maximum performance of your Chemineer DT Mixer. The following list will aid in the safe operation of your unit.

- **Do not** operate the unit before reading and following the instructions on all tags and nameplates attached to the unit.
- **Do not** operate the unit with less than one impeller's diameter liquid coverage above the lowest impeller. Increased side loading caused by operations at liquid level will decrease unit life.
- **Do not** operate the unit in a fluid with a specific gravity or viscosity higher than that for which the unit was designed.
- **Do not** attempt to start the unit with the mixing impeller buried in solids or a "set up" fluid.
- **Do not** locate tank internals or other rotating equipment close to the mixer impellers or extension shaft.
- **Do not** make any modifications to the mixer unit in the field (i.e. motor horsepower, mixer speed, shaft length, impeller diameter, etc.) without reviewing the change with *your local Chemineer office or Chemineer Field Service.*

CAUTION: There may be a speed range where the unit cannot be operated because of shaft resonant frequency. This range must be avoided or passed through quickly or destructive forces can be generated. Refer to the main unit assembly drawing for speed range information or consult *your local Chemineer office.*

Should there be problems operating the unit, confirm that the installation is correct. If you are unable to resolve the problem, contact *your local Chemineer office.*

ELECTRIC MOTORS

Air circulation is very important to get full performance and long life from an electric motor. Do not block the suction inlets on fan-cooled motors. Motor life will be decreased if its temperature exceeds its thermal rating. The allowable temperature is stamped on the motor nameplate.

Prior to permanently wiring the electric motor:

- Check nameplate data on motor to assure that the available power supply agrees with the motor requirements. Protective devices should be the proper size and rating to safely carry the load and to interrupt the circuit on overloads.
- Check motor leads with connection diagrams on motor nameplate and/or conduit box so that the proper connections are made. All motors should be installed in accordance with the National Electric Code and local requirements.
- Check the output shaft rotation against the proper rotation indicated on the assembly drawing. For standard three-phase electric motors, the rotation is reversed by switching any two power leads.
- Check operating motor amperage against nameplate amperage.

The motor should start quickly and run smoothly. If the motor should fail to start or make abnormal noise, immediately shut motor off, disconnect it from the power supply, and investigate the cause. If the problem cannot be corrected, contact *your local Chemineer office* for assistance.

AIR MOTORS

Air motors are designed to be driven by compressed air. Under no circumstances should they be driven with any other type of gas, fluids, particles, solids, or any substance mixed with air.

Operating pressures should not exceed 100psi (689 kPa). The speed and torque can be regulated by using a pressure regulator or shut-off valve to obtain the desired power and to conserve air.

MIXER MAINTENANCE

Refer to *Figures 2 and 3, pages 7 and 8.*

Mixer Removal & Disassembly

CAUTION: *Prior to removing mixer, review the installation to assure that all safety issues are resolved.*

1. Lock out and disconnect all power to the mixer motor and any optional devices.
2. Remove the extension shaft **[400]**.
3. Remove the mixer drive unit from the tank and move to a suitable service area.
4. Rotate the chuck drive shaft **[214]** or flanged drive shaft **[216]** until the motor shaft setscrew **[208]** is aligned with the setscrew access hole located in the housing **[201-03]**. Insert a 3/16" hex key wrench into the access hole and engage the setscrew. Loosen the setscrew.
5. Remove the motor mounting bolts **[205]**. Remove the motor **[100]** or gearmotor **[105]** from the housing.
6. Remove the motor shaft setscrew **[208]**. Remove the snap ring **[209]** from the drive shaft.
7. Mount the housing, motor mounting end up, in an arbor press. Press the drive shaft out of the housing.
8. Remove the snap ring **[210]** from the housing.
9. Turn the housing over, motor mounting end down, and remove the lip seal **[212]**.
10. Press the bearing **[211]** out of the housing.

The mixer drive is now fully disassembled. Clean parts and inspect for wear. Replace worn parts as required.

MIXER MAINTENANCE

Refer to *Figures 2 and 3, pages 7 and 8.*

Mixer Assembly

1. Mount the housing **[201-03]**, motor mounting end up, in an arbor press. Press the bearing **[211]** into the housing, to the shoulder of the housing bearing bore. *NOTE: Apply press to the outer bearing race only, to avoid damaging the bearing.*
2. Install the snap ring **[210]** into the housing bearing bore.
3. Turn the housing over, motor mounting end down. Install the lip seal **[212]** into the housing (seal lip facing the bearing, flush with the bottom of the housing).
4. Support the housing, motor mounting end down, by resting the inner race of the bearing **[211]** on a suitable pipe or tube fixture. *NOTE: The bearing inner race must be supported while installing the drive shaft to avoid damaging the bearing.*
5. Apply grease to the lip of the lip seal **[212]**.
6. Press the chuck drive shaft **[214]** or flanged drive shaft **[216]** into the bearing **[211]** to the shoulder of the shaft.
7. Install snap ring **[209]** onto the drive shaft.
8. Install the motor shaft setscrew **[208]**.
9. Install the motor or gearmotor key **[215]** onto the motor shaft using Loctite Adhesive.
10. Align the motor shaft key and the drive shaft keyway, and install the motor or gearmotor onto the housing.
11. Install the motor mounting bolts **[205]** and hi-collar lockwashers **[206]**. Tighten bolts securely.
12. Rotate the chuck drive shaft **[214]** or flanged drive shaft **[216]** until the motor shaft setscrew **[208]** is aligned with the setscrew access hole located in the housing **[201-03]**. Insert a 3/16" hex key wrench into the access hole and engage the setscrew. Tighten setscrew securely.

Do not install the extension shaft at this time. Refer to the *Mounting & Installation* section of the manual for mixer drive installation instructions.

20DTD, 30DTD, 40DTD MIXER PART NUMBERS

Part #	Description	Qty.
100	Motor	1
105	Gearmotor	1
160	Flat Plate	1
161	Hex Bolt	4
162	Rubber Vibration Isolator	4
163	Flatwasher	4
164	Spring Lockwasher	4
165	Hex Nut	4
200	Housing Assembly	
201-03	Housing, Models 20DTD, 30DTD, 40DTD	1
205	Socket Head Bolt	4
206	Hi-Collar Lockwasher	4
208	Setscrew, Motor Output Shaft	1
209	Snap Ring	1
210	Snap Ring	1
211	Bearing	1
212	Lip Seal	1
213	Setscrew, Extension Shaft/Chuck	2
214-01	Chuck Drive Shaft, Mate 56C to 1" Shaft	1
214-02	Chuck Drive Shaft, Mate 140TC to 1" Shaft	1
215-01	Motor Key, 56C Motor	1
215-02	Motor Key, 140TC Motor/Gearmotor	1
216	Flanged Drive Shaft, Mate 140TC	1
300	Removable Coupling Assembly	
301-02	Removable Flanged Shaft Coupling	1
302	Hex Bolt	4
303	Spring Lockwasher	4
304	Hex Bolt	1
305	Spring Lockwasher	1
306	Flatwasher	1
307-02	Key	1
308	Setscrew	2

20DTD, 30DTD, 40DTD MIXER PART NUMBERS

Part #	Description	Qty.
400	Extension Shaft	1
500	Propellers/Impellers Dispersion Blade Impeller Marine Propeller, Type JP-3 High Efficiency Impeller, Type SC-3	
800	Angle Riser Assembly	
801	Left Hand Angle Riser	1
802	Right Hand Angle Riser	1
803	Hex Bolt	4
804	Flatwasher	4
805	Spring Lockwasher	4
806	Hex Nut	4