



**BRAWN
MIXER[®]**

AN **NBE** COMPANY

OPERATION

AND

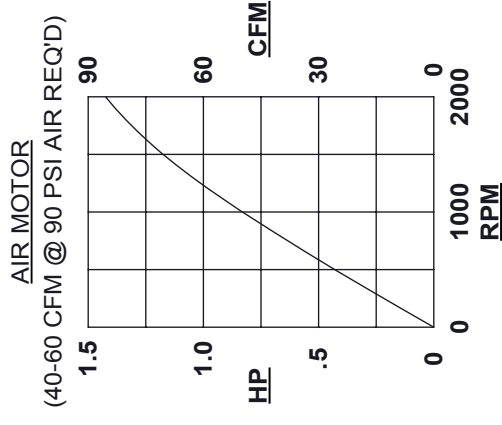
MAINTENANCE

MANUAL

SERIAL NUMBER

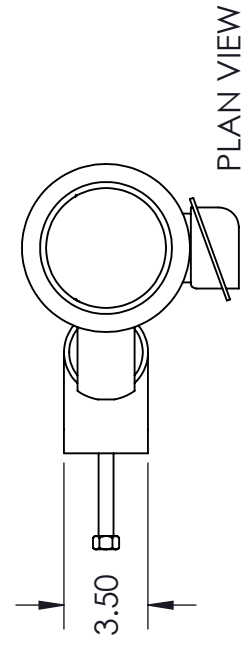
CUSTOMER: _____

SALES REP.: _____

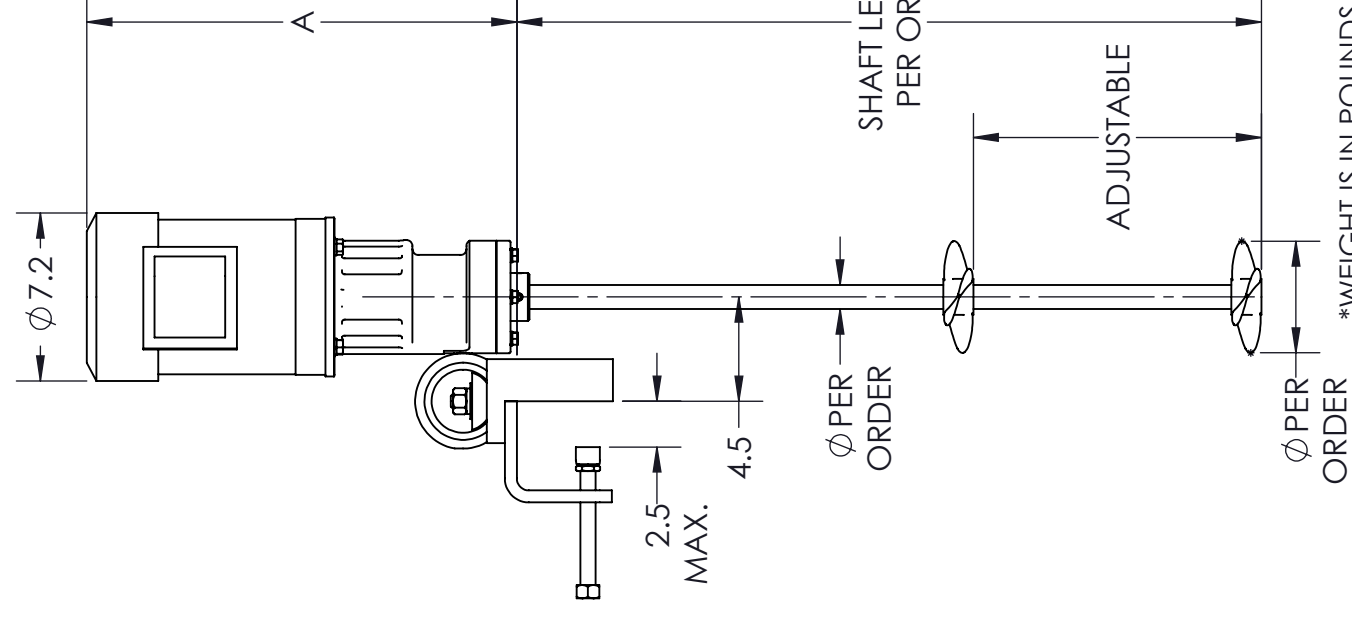


AIR MOTOR REQUIREMENTS AT 90 PSI

AIR MOTOR INCLUDES MUFFLER AND NEEDLE VALVE. REFER TO TABLE FOR AIR SUPPLY REQUIREMENTS.



PLAN VIEW



SHAFT LENGTH PER ORDER

ADJUSTABLE

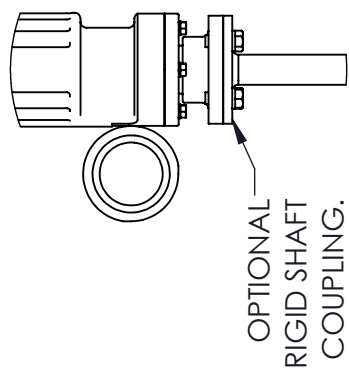
*WEIGHT IS IN POUNDS WITH ELECTRIC MOTOR.
WEIGHT OF AIR MOTOR SUPPLIED MIXER IS 37 LBS.
DOES NOT INCLUDE SHAFT OR IMPELLERS.

300 SERIES STAINLESS STEEL WASHDOWN DUTY TEFC 3 PHASE ELECTRIC MOTORS FROM 1/2 TO 2 HORSEPOWER. AIR MOTOR IS OPTIONALLY AVAILABLE.

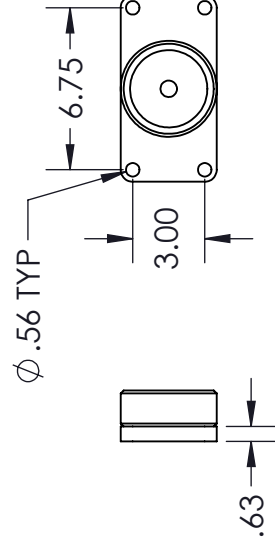
MOTOR AND DRIVESHAFT FLEXIBLY COUPLED FOR SHOCK LOADING PROTECTION.

DRIVESHAFT INDEPENDENTLY SUPPORTED WITH TWO SEALED, PERMANENTLY LUBRICATED BALL BEARINGS.

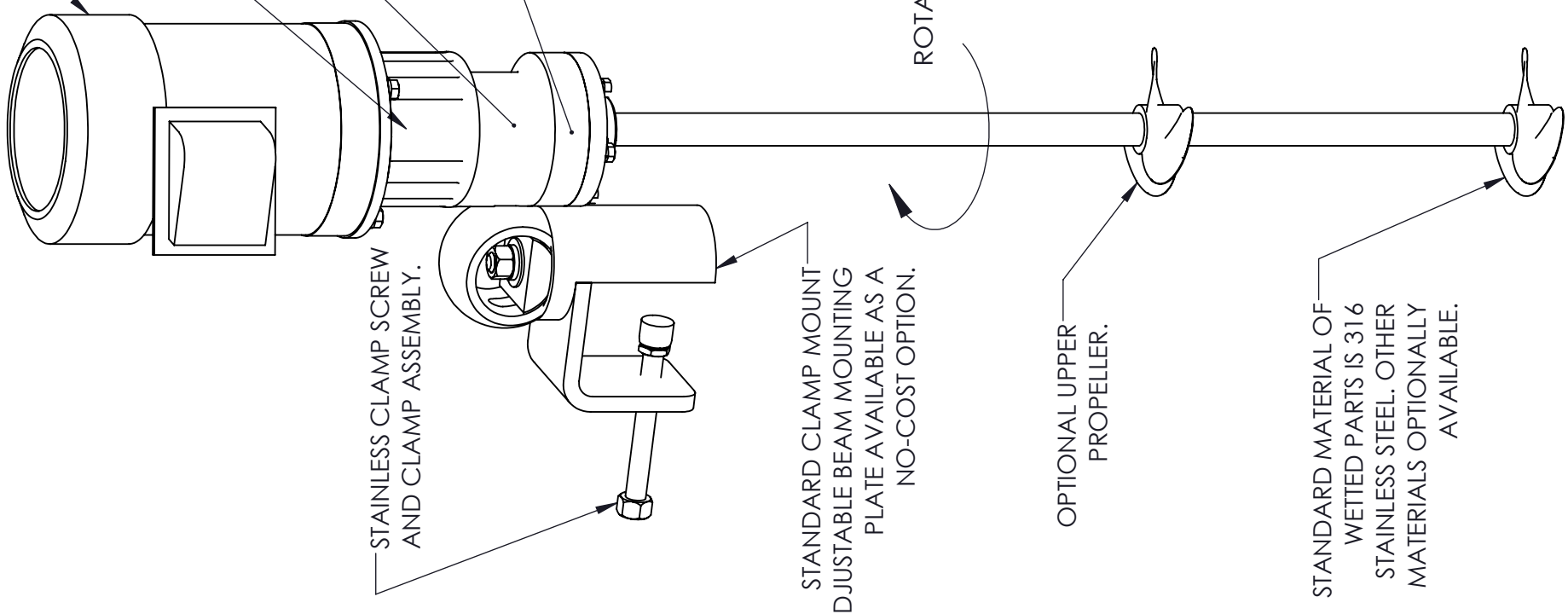
STAINLESS STEEL CONSTRUCTION HOUSING ASSEMBLY. 304SS STANDARD MATERIAL OF CONSTRUCTION. #4 POLISH AVAILABLE AS AN OPTION.



OPTIONAL RIGID SHAFT COUPLING.



OPTIONAL ADJUSTABLE BEAM MOUNTING PLATE



STAINLESS CLAMP SCREW AND CLAMP ASSEMBLY.

STANDARD CLAMP MOUNT ADJUSTABLE BEAM MOUNTING PLATE AVAILABLE AS A NO-COST OPTION.

OPTIONAL UPPER PROPELLER.

STANDARD MATERIAL OF WETTED PARTS IS 316 STAINLESS STEEL. OTHER MATERIALS OPTIONALLY AVAILABLE.

ALL DIMENSIONS ARE IN INCHES

MIXER MODEL	DIMENSION		*WGT
	A	B	
BDSS33	16.4	14.2	53
BDSS50	16.8	14.2	56
BDSS75	17.4	14.2	61
BDSS100	20.5	14.2	70
BDSS150	20.5	14.2	71
BDSS200	20.5	14.2	75

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DRAWN BY:BSB DATE:10/12/2018 © 2018 APPROVED BY: DATE:

MIXER MODEL
BDSS33 THRU 200
STAINLESS STEEL DIRECT DRIVE
DIMENSION AND ASSEMBLY DRAWING

DWG. NO. **B-TK0112M** REV.

FOR REFERENCE ONLY

BRAUN MIXER
A BROWN COMPANY
12838 STAINLESS DR
HOLLAND, MI 49424
PH: 616-399-5600
FAX: 616-399-3084

300 SERIES STAINLESS STEEL WASHDOWN DUTY TEFC 3 PHASE ELECTRIC MOTORS FROM 1/2 TO 2 HORSEPOWER. AIR MOTOR IS OPTIONALLY AVAILABLE.

MOTOR AND DRIVESHAFT FLEXIBLY COUPLED FOR SHOCK LOADING PROTECTION.

STAINLESS STEEL CONSTRUCTION HOUSING ASSEMBLY. 304SS STANDARD MATERIAL OF CONSTRUCTION. #4 POLISH AVAILABLE AS AN OPTION.

DRIVESHAFT INDEPENDENTLY SUPPORTED WITH TWO SEALED, PERMANENTLY LUBRICATED BALL BEARINGS.

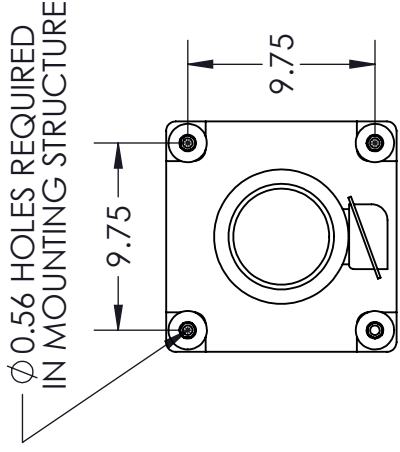
FLEXIBLE SHOCK MOUNTS.

OPTIONAL ANGLE RISER

OPTIONAL ANGLE RISER SHOWN

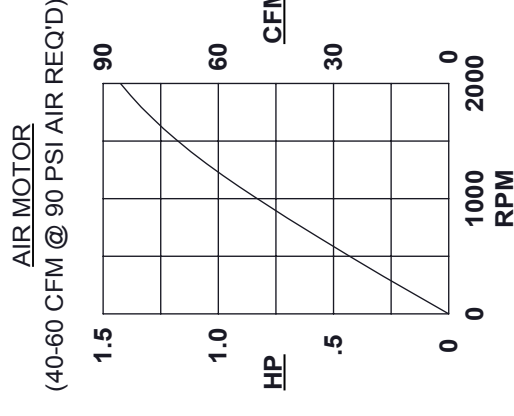
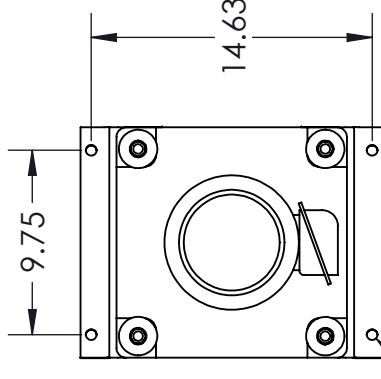
OPTIONAL UPPER PROPELLER.

STANDARD MATERIAL OF WETTED PARTS IS 316 STAINLESS STEEL. OTHER MATERIALS OPTIONALLY AVAILABLE.



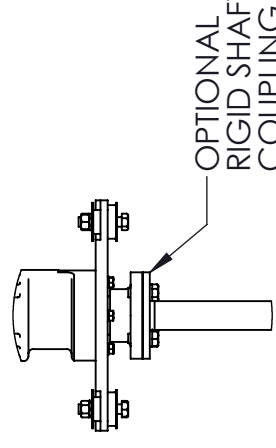
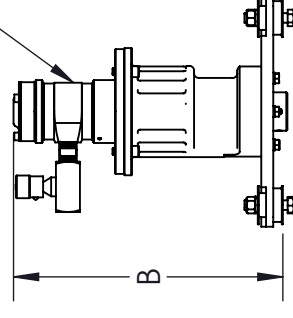
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OPTIONAL ANGLE RISER MOUNTING

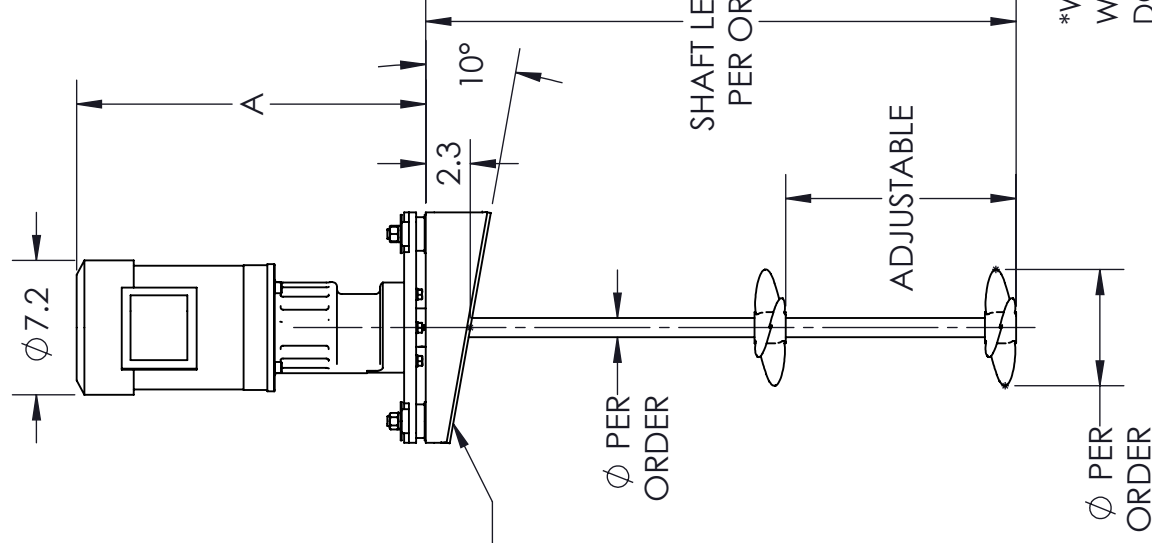


AIR MOTOR REQUIREMENTS AT 90 PSI

OPTIONAL AIR MOTOR INCLUDES MUFFLERS AND NEEDLE VALVE. REFER TO TABLE FOR AIR SUPPLY REQUIREMENTS.



OPTIONAL RIGID SHAFT COUPLING



*WEIGHT IS IN POUNDS WITH ELECTRIC MOTOR. WEIGHT OF AIR MOTOR SUPPLIED MIXER IS 60 LBS. DOES NOT INCLUDE SHAFT OR IMPELLERS.

ALL DIMENSIONS ARE IN INCHES.

MIXER MODEL	DIMENSION		*WGT
	A	B	
BDSSF33	16.3	14.5	80
BDSSF50	16.5	14.5	83
BDSSF75	17.1	14.5	88
BDSSF100	20.2	14.5	97
BDSSF150	20.2	14.5	98
BDSSF200	20.2	14.5	102

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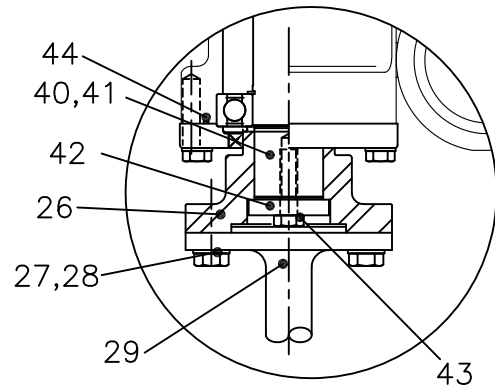
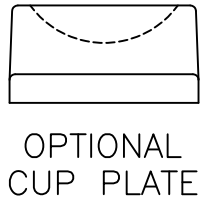
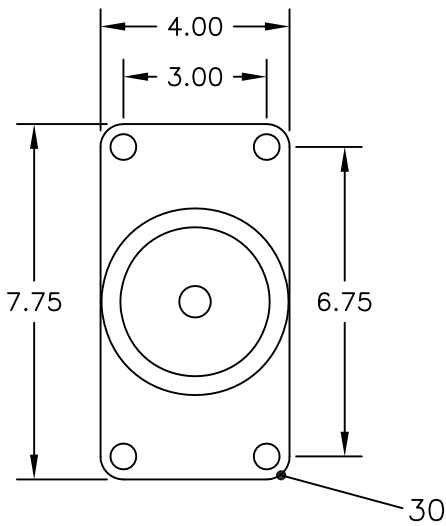
DRAWN BY: BSB DATE: 10/22/2018 © 2018

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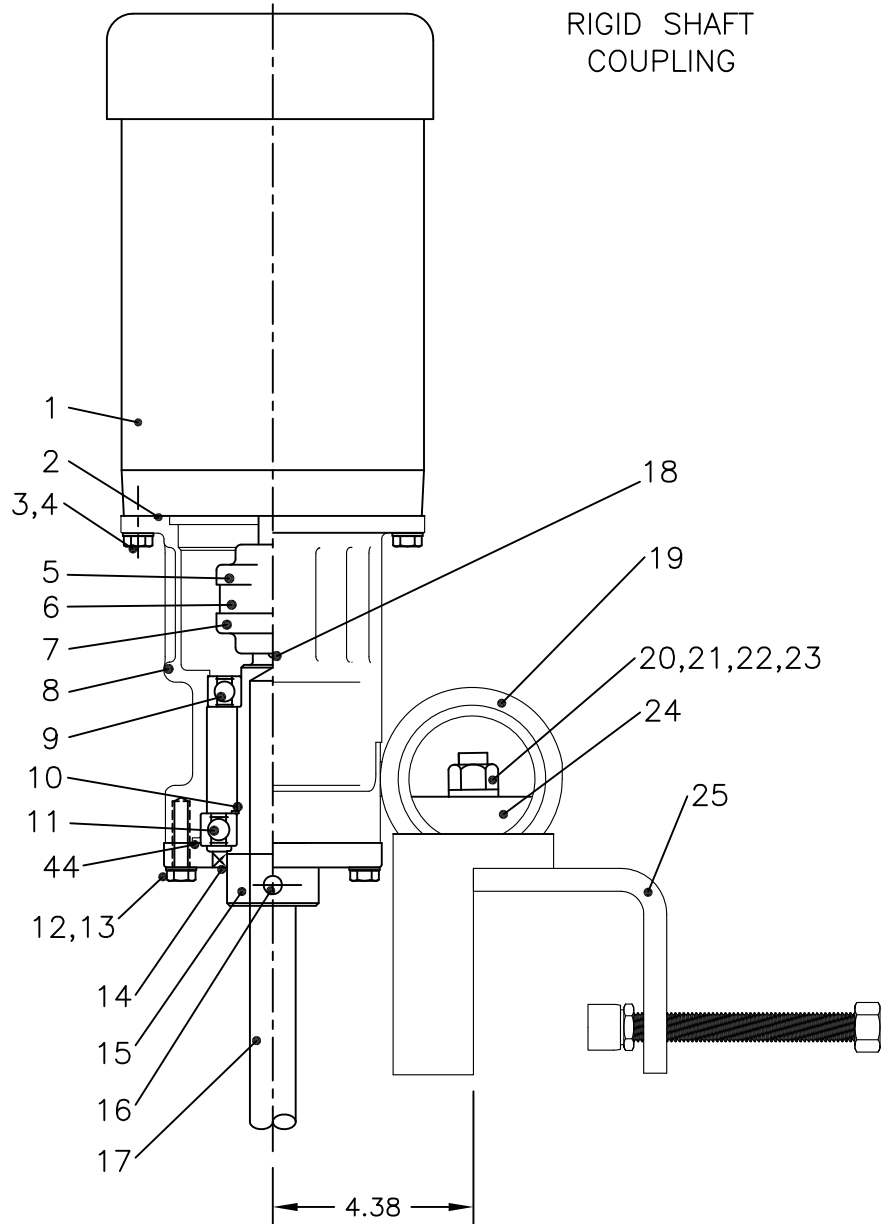
MIXER MODEL
BDSSF33 THRU 200
STAINLESS STEEL - DIRECT DRIVE
DIMENSION AND ASSEMBLY DRAWING

DWG. NO. **B-TK0184M** REV.

FOR REFERENCE ONLY



OPTIONAL
RIGID SHAFT
COUPLING



44	1	O-RING
43	1	HEX HEAD CAP SCREW (OPT.)
42	1	THRUST WASHER (OPT.)
41	1	KEY (OPT.)
40	1	DRIVE SHAFT (OPT.)
30	1	CUP PLATE (OPT.)
29	1	RIGID FLANGE SHAFT (OPT.)
28	4	LOCK WASHER
27	4	HEX HEAD CAP SCREW
26	1	RIGID FLANGE COUPLING (OPT.)
25	1	CLAMP ASSEMBLY
24	1	SHOE
23	1	FLAT WASHER
22	1	LOCK WASHER
21	1	NUT
20	1	BOLT
19	1	BALL MOUNT
18	1	KEY
17	1	MIXER SHAFT
16	2	SET SCREW
15	1	CHUCK SHAFT
14	1	OIL SEAL
13	6	LOCK WASHER
12	6	HEX HEAD CAP SCREW
11	1	BALL BEARING
10	1	SNAP RING
9	1	BALL BEARING
8	1	304SS HOUSING
7	1	COUPLING HUB
6	1	SLEEVE
5	1	COUPLING HUB
4	4	LOCKWASHER
3	4	HEX HEAD CAP SCREW
2	1	O-RING
1	1	MOTOR

ITEM NO.	QTY.	PART NAME
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12838 STAINLESS DRIVE
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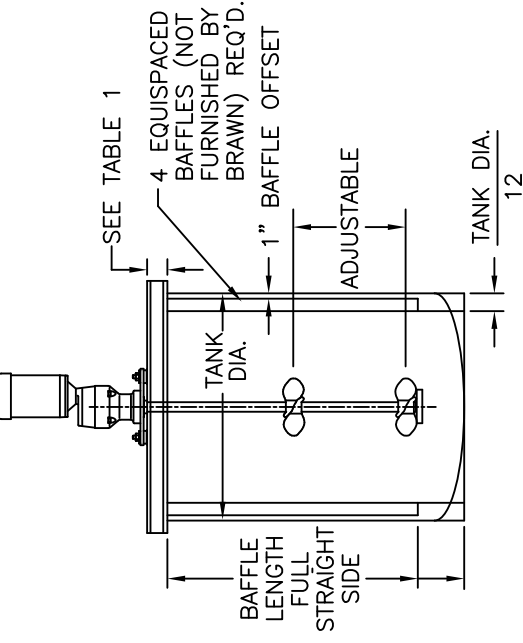
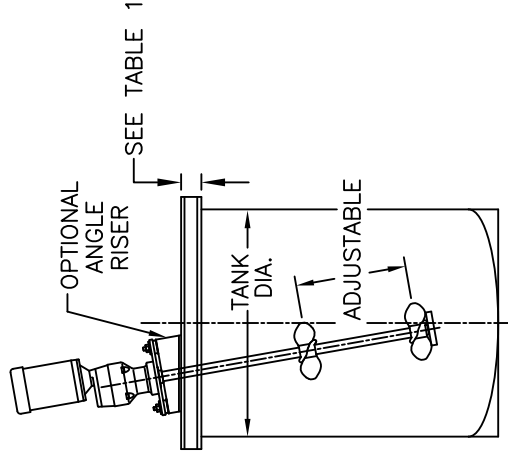
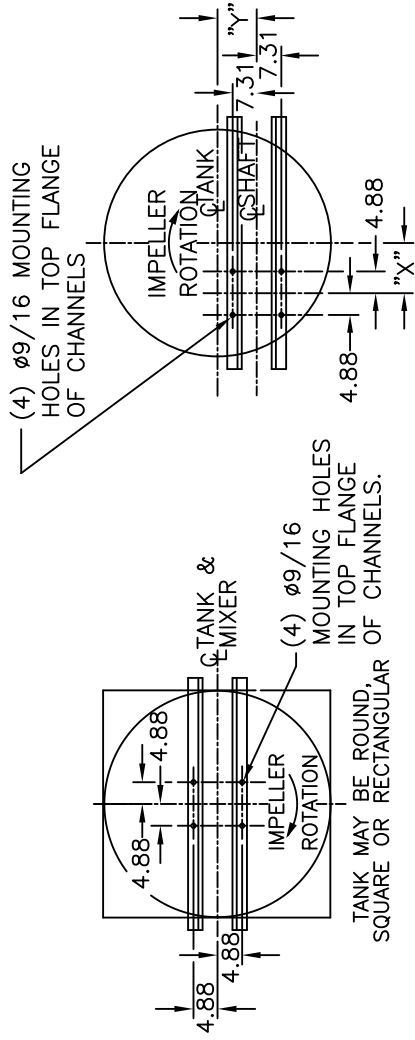
MIXER MODEL
 BDSS33 THRU 500
 STAINLESS STEEL DIRECT DRIVE
 DIMENSION AND ASSEMBLY DRAWING

DRAWN BY: BSB DATE: 4-30-15 © 2018
 APPROVED BY: DATE:

DWG. NO. A- TK0031A REV. A

MIXER MODEL BDF/BGMF	DESIGN LOADS			RECOMMENDED CHANNEL SIZE	
	DOWNWARD LOAD (LBS.)	BENDING (IN. LBS.)	TORSIONAL (IN. LBS.)	BEAM SPAN UP TO AND INCL.	
33	230	4,300	150	96"	144"
50	245	4,300	200		
75	260	4,300	300	C4 x 7.25#	C6 x 8.2#
100	275	4,300	400		
150	360	7,500	600		
200	380	7,500	800		
300	400	8,700	1,200		
500	420	8,700	2,000		

TABLE 1



VERTICAL ON CENTER MOUNTING

ANGULAR OFF-SET MOUNTING (SEE TABLE 2 FOR DIMENSIONS)

TANK DIA.	"X"	"Y"	TANK DIA.	"X"	"Y"
30"	9"	5"	81"	28.5"	16.5"
33"	10"	5.5"	84"	29.5"	17"
36"	11"	6"	90"	31.5"	18"
39"	11.5"	6.5"	93"	32.5"	18.5"
42"	13.5"	7"	96"	34"	19.5"
45"	14.5"	7.5"	99"	35"	20"
48"	15.5"	8.75"	102"	36"	20.5"
51"	17"	9.5"	105"	37"	21"
54"	18"	10"	108"	38.5"	22"
57"	19"	10.5"	111"	39.5"	22.5"
60"	20"	11"	114"	40.5"	23"
63"	21.5"	12"	117"	42"	24"
66"	22.5"	12.5"	120"	43"	24.5"
69"	23.5"	13"	126"	45.5"	26"
72"	25"	14"	132"	47.5"	27"
75"	26"	14.75"	138"	50"	28.5"
78"	27"	15.5"	144"	52"	30"

TABLE 2

NOTES:

1. WARRANTY APPLIES ONLY TO ITEMS FURNISHED BY BRAWN MIXER, INC. ALL OTHER EQUIPMENT AND DESIGNS ARE THE RESPONSIBILITY OF OTHERS. BRAWN MIXER, INC. DOES NOT WARRANT, GUARANTEE, OR ASSUME ANY RESPONSIBILITY FOR THE DESIGN OR CONSTRUCTION OF THE MOUNTING THE MIXER.
2. DESIGN LOADS ARE GREATER THAN ACTUAL LOADS BY A SUITABLE FACTOR TO PROVIDE FOR ADEQUATE DESIGN OF MIXER MOUNTING STRUCTURE.
3. ROUND TANKS REQUIRE BAFFLES AS SHOWN UNLESS OTHERWISE INSTRUCTED BY BRAWN MIXER, INC.

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FILE NO. SDB103C DATE 6-3-98 ©2018

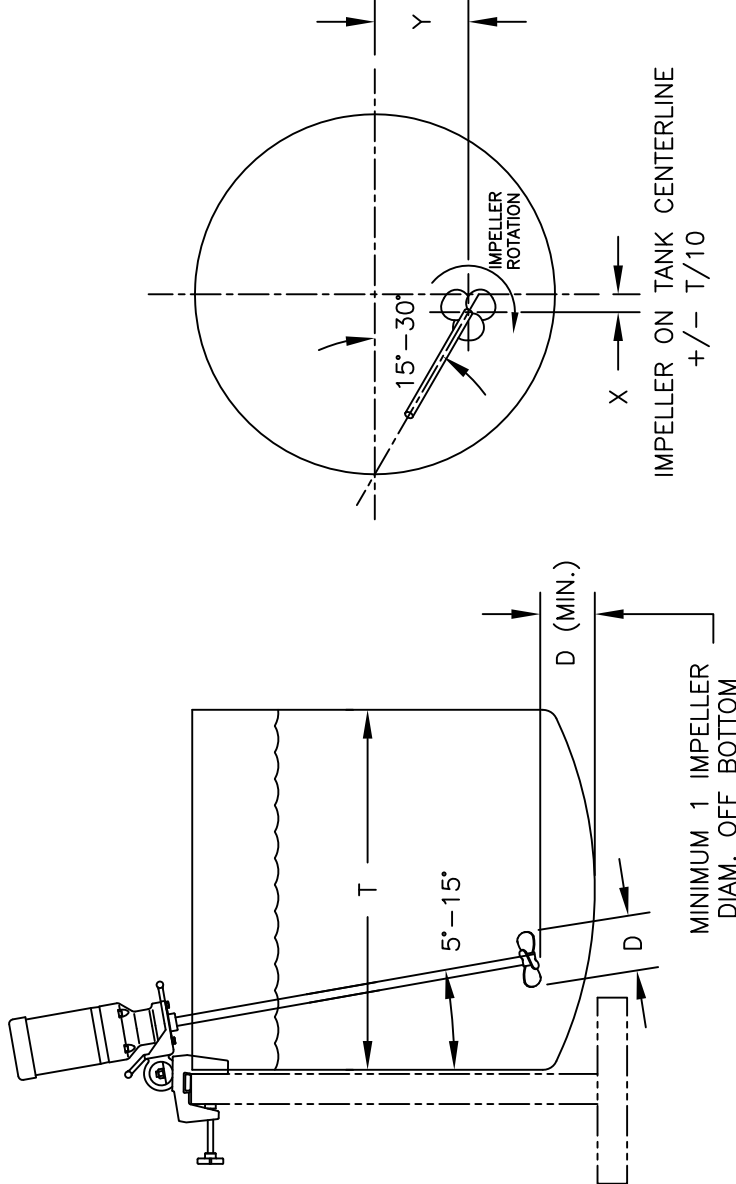
BRAWN MIXER
MIXER MODEL
BDF & BGMF MOUNTING
DIMENSION AND ASSEMBLY DRAWING

TABLE 1: DESIGN LOADS

MIXER MODEL	MAXIMUM DESIGN LOADS		
	DOWNWARD LOAD (LBS.)	BENDING (IN. LBS.)	TORSIONAL (IN. LBS.)
LD*	50	400	40
LG*	80	450	180
SD*	50	400	40
SG*	80	450	180
MD**	170	1,250	75
MG**	190	1,600	750

*UP TO 1/2 HP **UP TO 2 HP

MIXER MODEL BD/BG	DOWNWARD LOAD (LBS.)	BENDING (IN. LBS.)	TORSIONAL (IN. LBS.)
33	230	4,300	150
50	245	4,300	200
75	260	4,300	300
100	275	4,300	400
150	360	7,500	600
200	380	7,500	800
300	400	8,700	1,200
500	420	8,700	2,000



IMPELLER ON TANK CENTERLINE
+/- T/10

TABLE 2: Y OFFSET

TANK DIA.	Y	TANK DIA.	Y
30"	5.5"	81"	14.5"
33"	6"	84"	15"
36"	6.5"	90"	16.5"
39"	7"	93"	17"
42"	7.5"	96"	17.5"
45"	8"	99"	18"
48"	8.5"	102"	18.5"
51"	9"	105"	19"
54"	10"	108"	19.5"
57"	10.5"	111"	20"
60"	11"	114"	20.5"
63"	11.5"	117"	21"
66"	12"	120"	22"
69"	12.5"	126"	23"
72"	13"	132"	24"
75"	13.5"	138"	25"
78"	14"	144"	26"

NOTES:

1. THE BRAWN MANUFACTURER'S WARRANTY APPLIES ONLY TO ITEMS FURNISHED BY BRAWN MIXER, INC. ALL OTHER EQUIPMENT AND DESIGNS ARE THE RESPONSIBILITY OF OTHERS. BRAWN MIXER, INC. DOES NOT WARRANT, GUARANTEE, OR ASSUME ANY RESPONSIBILITY FOR THE DESIGN OR CONSTRUCTION OF THE MOUNTING OF THE MIXER.
2. DESIGN LOADS ARE GREATER THAN ACTUAL LOADS BY A SUITABLE FACTOR TO PROVIDE FOR ADEQUATE DESIGN OF MIXER MOUNTING STRUCTURE.
3. OPERATION OF MIXER IN A SWIRLING TANK OR VORTEX CAN CAUSE UNDUJUE STRESSES ON MIXER SHAFT AND POSSIBLE DAMAGE. ORIENT AS SHOWN FOR OPTIMUM MIXING.
4. DO NOT CLAMP DIRECTLY ON PLASTIC/FIBERGLASS TANKS. USE RIGID MOUNTING STRUCTURES PREVENT DAMAGE TO TANK/MIXER.

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FILE NO. SDB105A DATE 6/7/18 ©2018

BRAWN MIXER
MIXER MODEL
CLAMP MOUNT MIXER MOUNTING
DIMENSION AND ASSEMBLY DRAWING

CONTENTS

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Exploded View Drawings / Spare Parts Pricing

SAFETY

The precautions mentioned in this manual are not intended to cover all hazards that may exist in a plant or on this equipment. Using safety mechanisms require the constant attention of everyone in the vicinity of this (or any) equipment.

A plant and the related equipment are only as safe as the personnel are safety-minded. Proper equipment maintenance and the use of personal safety devices will contribute as much toward safety as will any number of mechanical safety devices.



- To assure maximum safety, optimum performance, and to gain knowledge of the product, it is essential that you or any other operator of this equipment read and understand the contents of this manual before the mixer is operated.
- Installation, operation and maintenance must be performed only by qualified personnel.
- Do not operate this equipment unless all safety devices are installed and working properly. Check all devices prior to starting the equipment.
- Disconnect and lock out electrical power before installing or servicing the mixer.
- Do not touch rotating parts (keep all guards and safety devices installed while operating).

- Develop a safety checklist for this equipment and perform regular maintenance to ensure continued and proper operation.
- Do not make any field changes or modifications without reviewing the change with your BRAWN Sales Representative or the BRAWN Customer Service Department.

CUSTOMER SERVICE

Mixer Model #..... **BD-SERIES**
 Mixer Serial # _____
 Contact:
 ➤ Customer Service..... 616/399-5600
 ➤ E-Mail sales@brawnmixer.com

You have received a quality engineered and manufactured BRAWN mixer. We value your business, and we will strive to provide you with the proper service and equipment to meet your needs.

The information contained in this BRAWN Mixer Operator's Manual is designed to assist you in putting your BRAWN mixer into operation without further delay. **Please read the entire manual before attempting to start your mixer.** If you have any further questions or if, by some chance, there are some missing components, contact your BRAWN Mixer Representative or the factory immediately.

We welcome your comments and suggestions concerning any BRAWN Mixer product. Please direct these comments in writing to the National Sales Manager at BRAWN Mixer, located in Holland, Michigan. To expedite troubleshooting service, please make your initial contact through your BRAWN Mixer Representative. If, for whatever reason, your representative cannot be reached and you have an emergency condition, please call us directly at 616/399-5600 and ask for the Customer Service Department.

Remember, you are backed by your BRAWN Mixer Technical Representative and the factory support team. We are here to assist you; let us know how we can be of help.

INITIAL INSPECTION

1. Upon receipt of your Brawn mixer, check for possible shipping damage. Report any damage immediately to the carrier and to Brawn Mixer.
2. All Brawn mixers are shipped with the shaft and impeller(s) disassembled from the drive assembly. In addition, the clamp or cup mount and any mounting hardware for portable mixers are shipped loose.
3. Storage: Mixers should not be stored near vibrating machinery to avoid damage to the bearings. Store mixers as packaged by the factory. For longer storage periods, consult factory. If electric motors have been subjected to humid conditions, check the insulation resistance between phase and mass and between the different phases. The resistance should not be less than 100 megohms. If the resistance is less, please consult the factory. If mixer is stored for more than a year, the condition of the gear lubricant should be checked before the mixer is put in operation (see lubrication instructions).

INSTALLATION

[REFER TO ASSEMBLY / DIMENSION DRAWING]

Refer to the mixer installation / assembly drawing for important mounting structure design, assembly, mounting, and dimensional data.

1. Model BD portable mixers are designed with handles incorporated in the mounting base. These are intended for lifting of the mixer assembly.
2. For clamp-mount units, install the mixer drive on the mounting structure and secure by tightening the clamp screw.

For fixed-mount and cup-plate mount mixers, install the mixer drive on the mounting structure and secure with properly-sized, Grade 5 or better hardware. Torque the hardware as recommended in **TABLE 1**.

3. Inspect the impeller bore and shaft surface for evidence of damage and repair, if required, before installing the impeller(s) on the shaft or the shaft into

the coupling. Install the impeller(s) on the mixer shaft by carefully sliding the impeller hub over the shaft to its proper location and tighten the set screws. It is recommended that the shaft be spotted with a drill point at the setscrew locations to prevent loosening of the impeller(s).

4. Install mixer shaft **[16]** by inserting the end with the machined groove into the chuck driveshaft **[14]**. (It is recommended that the mixer shaft portion engaged in the chuck driveshaft be coated with an anti-seize compound.) Tighten setscrews **[15]** to secure shaft.
 - If optional rigid shaft coupling **[25]** is furnished, connect the mixer shaft **[28]** and rigid driveshaft couplings by carefully engaging the shaft rabbeted faces and installing the mounting hardware **[26 & 27]**. Be careful not to damage the coupling faces or rabbets, as this can cause excessive shaft run-out that will affect the life of the mixer.

TABLE 1: RECOMMENDED TORQUE VALUES

HARDWARE SIZE	TORQUE VALUES (FOOT POUNDS)	
	STANDARD GRADE 2 & 300 SERIES STAINLESS	HIGH STRENGTH GRADES 5 & 8
5/16	9	13
3/8-16	17	27
1/2-13	40	65
5/8-11	85	125

BOLT-TIGHTENING RECOMMENDATIONS:

Inadequately or improperly tightened hardware can loosen due to vibration during mixer operation. This can result in reduced mixer life or damage to equipment. Recommended torque values for tightening all in-tank and mounting hardware are listed in **TABLE 1**. These average torque values should be considered only as a guide and not as absolute values.

INSTALLATION, Cont.

The following guidelines are based on mixing in vertical cylindrical tanks with flat, dished, or shallow cone bottoms. Mixer installations may vary with tank shape, retention times, starting conditions, and other requirements.

1. For liquid levels 0.5 to 1.1 times the tank diameter, a single impeller is suitable.
2. For liquid levels 1.1 to 1.6 times the tank diameter, use dual impellers.
3. Impellers may be located from 0.5 to 2.0 impeller diameters off the tank bottom, with one diameter off bottom being optimum.
4. When dual impellers are necessary, spacing between impellers should be approximately two impeller diameters with gear drives, and four to five impeller diameters with direct drive mixers.
5. Mixer position in tank should be as shown in **FIGURES A or B** [below] for maximum turnover of liquid.

START UP

1. Connect the motor in accordance with the motor nameplate. The motor starter should incorporate overload protection. Before operating the mixer, jog the motor and observe mixer shaft rotation. Proper rotation is clockwise, as viewed from the top, unless otherwise noted.
2. Check all bolts and fasteners for tightness. It is good maintenance practice to recheck all bolts after two weeks of operation and periodically thereafter. Refer to **TABLE 1** for recommended torque values.
3. Do not attempt to start mixer with impellers buried in solids or solidified liquids.



CAUTION

Do not operate mixer with the tank empty or the lowest impeller submerged with less than $\frac{1}{2}$ of the impeller diameter of liquid above it. Damage to the mixer and/or mounting structure may result.

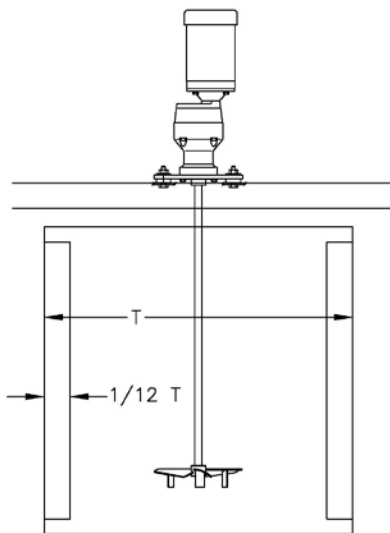


FIGURE A

RECOMMENDED BAFFLE ARRANGEMENTS
THREE OR FOUR BAFFLES, EVENLY SPACED
BAFFLE WIDTH $\frac{1}{12}$ THE TANK DIAMETER
LENGTH IS FROM THE LIQUID LEVEL
DOWN TO 6 INCHES OFF BOTTOM

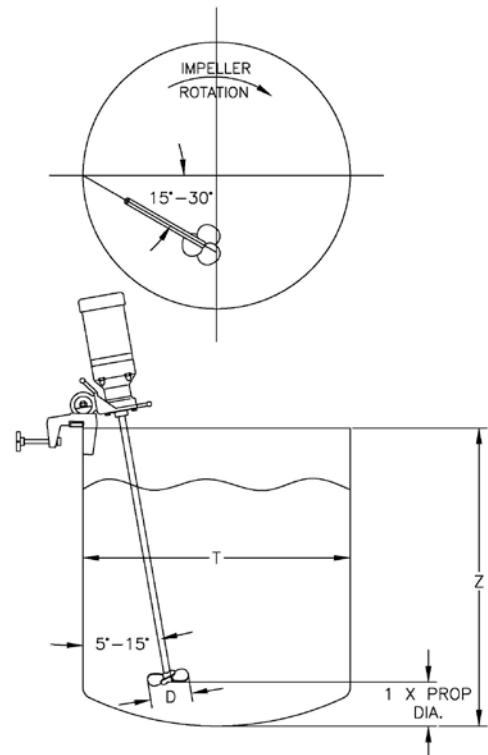
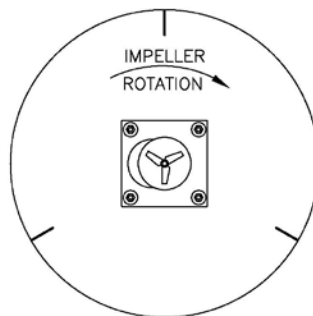


FIGURE B

ELECTRIC MOTORS

This equipment contains HAZARDOUS VOLTAGES, ROTATING PARTS AND HOT SURFACES. SEVERE PERSONAL INJURY OR PROPERTY DAMAGE CAN RESULT IF SAFETY INSTRUCTIONS ARE NOT FOLLOWED. Only qualified personnel should work on or around this equipment after becoming thoroughly familiar with all warnings, safety notices, and maintenance procedures contained herein. The successful and safe operation of this equipment is dependant upon proper handling, installation, operation and maintenance.



WARNING

Explosion-proof motors—these motors are constructed to comply with the U.L. Label Service Procedure Manual. When repairing and reassembling a motor that has an underwriter's label, it is imperative that the unit be reinspected and:

1. All original fits and tolerances be maintained.
2. All plugs and hardware be securely fastened.
3. Any parts replacements, including hardware, be accurate duplicates of the originals.

Repair work on explosion-proof motors can only be done by the original manufacturing or U.L. certified shops. Violations of any of the above items will invalidate the significance of the U.L. Label.

STORAGE

Motors must be stored in a clean, dry, well-ventilated location free from vibration and rapid or wide temperature variations. If the unit is to be stored longer than three months, consult factory. Ball bearing motors are shipped from the factory properly lubricated and ready to operate. When in storage, the motor shaft must be turned several rotations every month and bearings relubricated every year. On non-explosion-proof TEFC motors, a removable plug in the bottom of the frame or housing permits removal of accumulated moisture. Drain regularly if storage atmosphere results in formation of condensation.

INSTALLATION

Installation must be handled by qualified service or maintenance personnel.

OPERATION



CAUTION

Repeated trial starts can overheat the motor and may result in motor burnout. If repeated trial starts are made, allow sufficient time between trials to permit heat to dissipate from windings and rotor to prevent overheating. Starting currents are several times running currents, and heating varies as the square of the current.

After installation is completed, but before motor is put in regular service, make an initial start as follows:

1. Check motor starting and control device connections against wiring diagrams.
2. Check voltage, phase, and frequency of line circuit (power supply) against motor nameplate.
3. If possible, remove external load (disconnect drive) and turn shaft by hand to ensure free rotation. This may have been done during the installation procedure; if so, and conditions have not changed, this check may not be necessary.
 - a. If drive is disconnected, run motor at no load long enough to be certain that no unusual conditions develop. Listen and feel for excessive noise, vibration, clicking, or pounding. If present, stop motor immediately. Investigate the cause and correct before putting motor in service.
 - b. If drive is not disconnected, interrupt the starting cycle after motor has accelerated to low speed. Carefully observe for unusual conditions as motor coasts to a stop.
4. When checks are satisfactory, operate at minimum load and look for unusual conditions. Increase load slowly to maximum. Check unit for satisfactory operation.



CAUTION

Guard against overloading. Overloading causes overheating and overheating means shortened insulation life. A motor subjected to a 10°C temperature rise above the maximum limit for the insulation may cause the insulation life to be reduced by 50%. To avoid overloading, be sure motor current does not exceed nameplate current when nameplate voltage is applied.

ELECTRIC MOTORS, Cont.

Electric motors operating under normal conditions become quite warm. Although some places may feel hot to the touch, the unit may be operational within limits. Use a thermocouple to measure winding temperature.

The total temperature, not the temperature rise, is the measure of safe operation. Investigate the operating conditions if the total temperature measured by a thermocouple placed on the windings exceeds:

- 230°F (110°C) for class "B" insulation
- 275°F (135°C) for class "F" insulation
- 302°F (150°C) for class "H" insulation

VOLTAGE REGULATION

Motors will operate successfully under the following conditions of voltage and frequency variation, but not necessarily in accordance with the standard established for operation under rated conditions:

1. When the variation in voltage does not exceed 10% above or below normal, with all phases balanced.
2. When the variation in frequency does not exceed 5% above or below normal.
3. When the sum of the voltage and frequency of the voltage does not exceed 10% above or below normal (provided the frequency variation does not exceed 5%).

MAINTENANCE

Failure to properly maintain the equipment can result in severe personal injury and product failure. The instructions contained herein should be carefully reviewed, understood and followed. The following maintenance procedures should be performed regularly:

1. Bearing lubrication (when regreaseable bearings are supplied)
2. Insulation resistance check
3. Cleaning

This checklist does not represent an exhaustive survey of maintenance steps necessary to ensure safe operation of the equipment. Particular applications may require further procedures

Dangerous voltages are present in the equipment which can cause severe personal injury and product failure. Always de-energize and ground the equipment before

maintenance. Maintenance should be performed only by qualified personnel.

The use of unauthorized parts in the repair of the equipment, tampering by unqualified personnel, or removal or alteration of guards or conduit covers will result in dangerous conditions which can cause severe personal injury or equipment damage. Follow all safety instructions contained herein.

BEARING LUBRICATION

(When regreaseable bearings are supplied)



CAUTION

Do not lubricate motor while in operation, since excess grease will be forced through the bearings and into the motor before it will force its way out of the drain plug. Excess grease accumulation on windings reduces insulation life.

Prior to shipment, motor bearings are lubricated with the proper amount and grade to provide six months of satisfactory service under normal operation and conditions.

For best results, grease should be compounded from a polyurea base and a good grade of petroleum oil. It should be of No. 2 consistency and stabilized against oxidation. Operating temperature ranges should be from -15°F to +250°F for class B insulation, and to +300°F for classes F and H. Most leading oil companies have special bearing greases that are satisfactory.

Relubricate bearings every six months (more often if conditions require), as follows:

1. Stop the motor. Lock out the switch.
2. Thoroughly clean off pipe plugs and remove from housings.
3. Remove hardened grease from drains with a stiff wire or rod.
4. Add grease to inlet with hand gun until small amount of new grease is forced out drain.
5. Remove excess grease from ports, replace inlet plugs, and run motor ½ hour before replacing drain plug.
6. Put motor back in operation.

ELECTRIC MOTORS, Cont.

INSULATION RESISTANCE

Check insulation resistance periodically. Any approved method of measuring insulation resistance may be used, provided the voltage across the insulation is at a safe value for the type and condition of the insulation. A hand crank megger of not over 500 volts is the most convenient and safe method. Standards of the Institute of Electrical and Electronics Engineers, Inc., recommend that the insulation resistance of the stator windings at 75° C, measured at 500 volts dc, after one minute should not be less than:

$$\frac{\text{Rated Voltage of Machine} + 1000}{1000} = \text{Insulation Resistance in Megohms}$$

This formula is satisfactory for most checks. For more information, see IEEE Standard No. 43 "Recommended Practice for Insulation Resistance Testing of AC Rotating Machinery."

CLEANING



WARNING

Do not attempt to clean the motor while it is operating. Contact with rotating parts can cause severe personal injury or property damage. Stop the motor and lock out switch before cleaning.

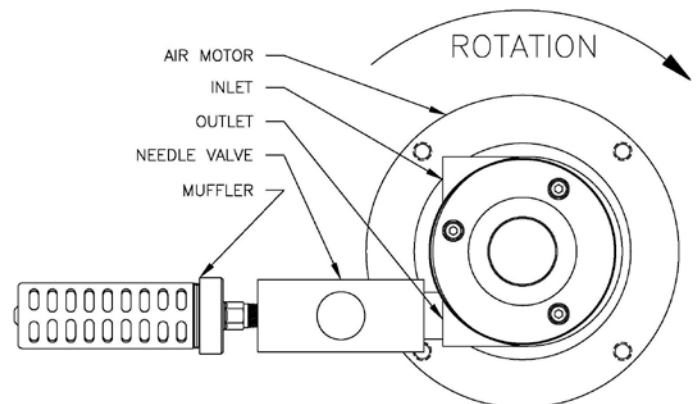
The motor exterior must be kept free of oil, dust, water, and chemicals. For fan-cooled motors, it is particularly important to keep the air intake openings free of foreign material. Do not block air outlet or inlet.

On non-explosion-proof TEFC motors, a removable plug in the bottom center of the motor frame or housing permits removal of accumulated moisture. Drain regularly.

AIR MOTORS

If your mixer was supplied with an air motor, certain precautions must be taken as follows:

1. The mixer was shipped with a needle valve installed on the motor inlet port. A muffler is provided for installation at the exhaust port. The function of the needle valve is to control the motor speed.
2. The air supply must be adequately sized to provide the proper pressure and volume of clean, filtered, dry air. A pressure regulator followed by an air line lubricator is required prior to connection to the needle valve. A combination filter/regulator/lubricator is commonly used for this purpose. The air line filter should be capable of 25 microns or better.
3. Blow out the air supply line before connecting to the motor to remove any dirt or debris in the air line.
4. The exhaust port must not be obstructed such as to cause a back pressure on the motor. An obstructed exhaust has an adverse effect on the air motor. This may also cause the motor shaft seal to fail thus pressurizing the gearbox and/or mixer drive housing and causing seal failure.

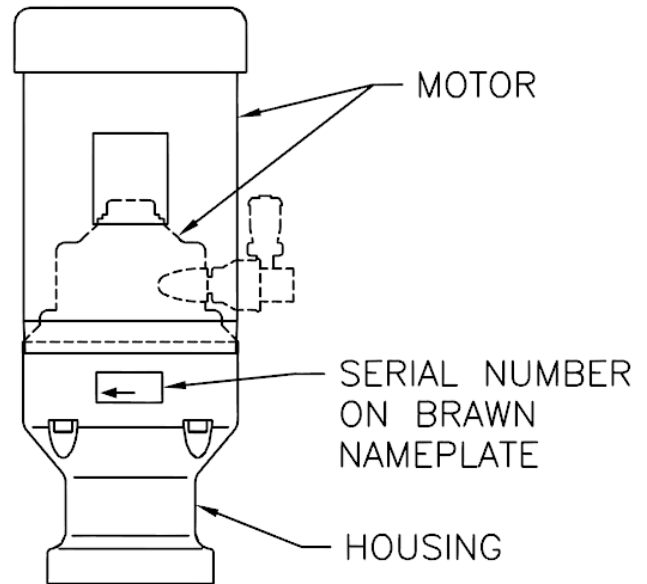


**AIR MOTOR ROTATIONAL
DIRECTION DIAGRAM**

STORAGE

Units shipped from Brawn Mixer are intended to be used within 30 days after receipt and presumed to be stored indoors in a heated building. Store mixers as packaged by the factory. If you intend on storing units under adverse conditions or for a long period of time, special storage precautions will be necessary.

1. Store in a sheltered area away from chemical vapors or steam.
2. Cover.
3. Do not store in sunlight or near high heat.
4. Spray oil on exposed shafts and seals. Remove oil on start-up.
5. Rotate output shaft 360° every 3-4 weeks.
6. Mixers should not be stored near vibrating machinery to avoid damage to the bearings.
7. If electric motors have been subjected to humid conditions, check the insulation resistance between phase and mass and between the different phases. The resistance should not be less than 100 megohms. If the resistance is less, please consult the factory.



BD SERIES MIXERS



MIXER NAMEPLATE

WARRANTY

WARRANTY: All equipment or parts covered by this manual are guaranteed free from defective material and workmanship for a period of twelve (12) months from date of shipment, under normal use and service. This warranty does not cover failure of normal wear parts unless the failure of such part has resulted from defective material and workmanship. BRAWN Mixer will repair or replace, at its option, any equipment which has been found to be defective and is within the warranty period, provided that the equipment is shipped, with previous factory authorization, freight prepaid, to BRAWN's plant in Holland, Michigan, USA. All return shipments are made FOB BRAWN's factory. BRAWN is not responsible for removal, installation, or any other incidental expenses incurred in shipping the equipment to or from BRAWN. In the case of components purchased by BRAWN Mixer and incorporated in the equipment, the component manufacturer's guarantee shall apply. NOTE: Any modifications or corrective work done to the equipment which were not specifically authorized in writing by BRAWN Mixer shall void this limited warranty, and BRAWN Mixer shall accept no liability for any of the corrective work or expenditures which were conducted without their prior, written authorization. BRAWN Mixer shall not be held liable for any further cost, expense, or labor to replace equipment or replaceable parts, or indirect or consequential damages.

With the exceptions of the limited warranty set out above, there are no other understandings, agreements, representations, or warranties implied (including any regarding the merchantability or fitness for a particular purpose), not specified herein, respecting this agreement or equipment, hereunder. This contract states the entire obligation of BRAWN Mixer in connection with this transaction.

SHOULD WE MAKE A MISTAKE...

BRAWN Mixer's Direct Returns Policy

To ensure proper handling of your return, please take a moment to read the following:

- **ALL** returns require a **RETURN GOODS AUTHORIZATION (RGA) NUMBER**. We are unable to process your return or issue proper credit without an approved **RGA** number.
- **ALL** returns must be **COMPLETE**, including all original warranties, manuals, documentation, and packaging.
- **ALL** product must be received within 14 days of issuing an **RGA** number.

How to Return Product

You must have a **RGA** number before you return any product to BRAWN Mixer. To obtain this number, call **616/399-5600** and ask for Customer Service. Be sure to have available the following information:

- ✓ your order number
- ✓ the BRAWN product serial number
- ✓ the part number and description of the product
- ✓ the reason for the return

◆ IMPORTANT ◆

The RGA number must be written clearly on all boxes being returned. C.O.D. shipments will not be accepted.

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