LIGHTNIN

MIXER MANUAL

INSTRUCTIONS

INSTALLATION

OPERATION

MAINTENANCE

Book No. BK1978

INSTRUCTION MANUAL

LIGHTNIN SALES ORDER L880659

LIGHTNIN LINE ITEM 000010

TABLE OF CONTENTS

SAFETY CHECK LIST

IMPORTANT WARNINGS

All *LIGHTNIN* Mixers and Aerators are provided with properly designed lifting devices and safety covers to avoid potential injury and/or equipment damage. The following SAFETY CHECK LIST should be THOROUGHLY REVIEWED AND ADHERED TO before installing, operating or performing maintenance on the mixer. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY. Ensure the use of qualified, quality trained and safety conscious personnel.

1. Use only the lifting device, if provided, on your unit to install the mixer. Use shouldered eyebolts and tighten securely to handle component parts. We strongly recommend that the hoist rings be of safety swivel type with 360° rotational capability. Lift per instructions in the instruction manual.

2. DO NOT connect the motor to the power source until all components are assembled, the mixer is installed, and all hardware is tightened to the proper torque which is specified in the operation and maintenance manuals supplied by *LIGHTNIN*.

3. DO NOT operate shaft sealing devices at temperatures or pressures higher than those specified in the manual or on the nameplates.

4. DO NOT service the mixer until you have followed your ”Control of Hazardous Energy Sources” (lockout, tagout procedure) as required by OSHA 29 CFR Part 1910.

5. DO NOT touch rotating mixer parts or any part of mixer that has the potential of having a hot surface including motor, gear drive housing, seal, shafting and flange.

6. DO NOT operate mixer for service other than its intended use, that being fluid mixing with the mixer attached to a rigid structure and connected to a power source appropriate to operate the drive motor.

7. DO NOT make any field changes or modifications (horsepower, seal material components, output speed, shaft lengths, impellers, etc.) without reviewing the changes with your *LIGHTNIN* Sales Representative or the *LIGHTNIN* Customer Service Department.

8. DO NOT install an aftermarket Variable Frequency Drive without first consulting your *LIGHTNIN* Sales Representative or the *LIGHTNIN* Customer Service Department to determine the compatibility of the existing motor with the Variable Frequency Drive.

9. DO NOT operate mixer until you have checked the following items:
   - A. Make sure the mixer is properly grounded.
   - B. Ensure all protective guards and covers are installed. Guarding of the mixer shaft below mixer mounting surface is the responsibility of the customer.
   - C. Ensure all detachable components are securely coupled to the mixer.
   - D. Thoroughly REVIEW and ADHERE TO the mixer operating instructions supplied by *LIGHTNIN*.
   - E. Ensure the mixer output shaft rotates freely by hand.
   - F. Ensure all personnel and equipment are clear of rotating parts.
   - G. Ensure all external connections (electrical, hydraulic, pneumatic, etc.) have been completed in accordance with all applicable codes and regulations.

10. DO NOT enter the mixing vessel UNLESS:
    - A. The mixer power supply is locked out (follow Item number 4).
    - B. The mixer shaft is firmly attached to the mixer drive or the shaft is supported securely from below.
    - C. You have followed applicable confined space regulations.

CE COMPLIANCE

If mixer nameplate has a CE marking on it, then the equipment furnished conforms to the following directives:

98/37/EC Machinery Directive
89/336/EEC Electro–Magnetic Compatibility
73/23/EEC Low Voltage

Any CE marking and/or associated documentation applies to the mixer only. This has been supplied on the basis that the mixer is a unique system. When the mixer is installed, it becomes an integral part of a larger system which is not within the scope of supply and CE marking is the responsibility of others.

CAUTION: CE Compliance does not imply that the mixer satisfies PED (Pressure Equipment 97/23/EC) or ATEX (Potential
Explosive Atmospheres 94/9/EC) unless marking is clearly shown on mixer.

‘

NOISE LEVELS

SOUND PRESSURE LEVELS
Portable Series: ECL, EV – maximum 80 Dba @ 1 meter
Heavy Series: S10, 70/80, 500/600 – maximum 85 Dba @ 1 meter

THIS PRODUCT MAY BE COVERED BY ONE OR MORE OF THE FOLLOWING U. S. PATENTS:

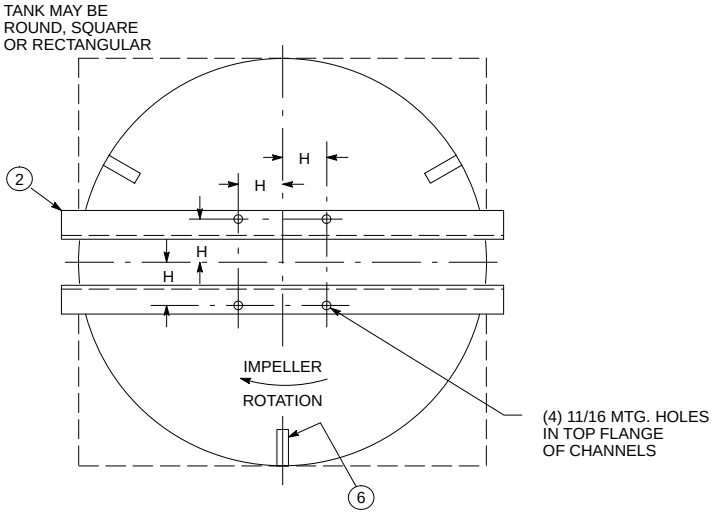
5006283	5046245	5118199	5152934	5152606	5203630
5344235	5364184	5368390	5378062	5427450	5454986
5470152	5478149	5480228	5501523	5511881	5560709
5568975	5568985	5655780	5720286	5746536	5758965
5779359	5842377	5925293	5951162	5972661	5988604
6089748	6109449	6142458	6158722	6250797	6299776
6334705	6386753	6457853	6634784	6715913	6742923
6746147	6789314	6796707	6796770	6808306	6843612
6860474	6877750	6935771	6986507	6997444	7001063
	7056095	7168641	7168848	7168849	

CERTIFIED DIMENSION DRAWING FOR *LIGHTNIN* XDQ AND XJQ SERIES MIXERS

Vertical On–Center Mounting

ALL DIMENSIONS IN INCHES

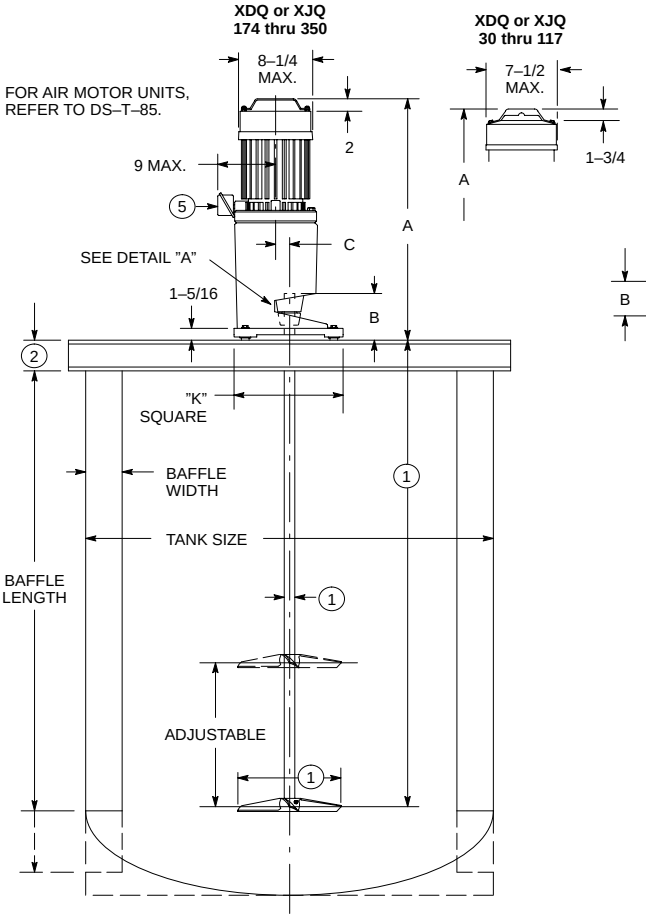
DRAWING IT–1985
ISSUED – 3/15/83
REVISED – 2/26/01

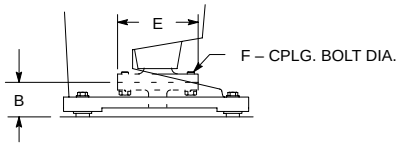


NOTES:

1. REFER TO ORDER SPECIFICATION SHEET FOR:
   A. MODEL NUMBER AND MOTOR HORSEPOWER.
   B. SHAFT DIAMETER AND FULL LENGTH.
   C. SHAFT CONNECTION – STANDARD CHUCK OR ALTERNATE COUPLING CONSTRUCTION.
   D. QUANTITY AND SIZE OF IMPELLERS.
   E. IF LOWER IMPELLER IS EQUIPPED WITH STABILIZER.
2. MIXER SUPPORT CHANNEL SIZE (NOT FURNISHED BY "LIGHTNIN"):
   TANKS UP TO AND INCLUDING 8 FEET – 4" X 7.25#
   TANKS OVER 8 FEET – 6" X 8.2#
3. MIXER WEIGHT CAN VARY WITH MOTOR CHARACTERISTICS, SHAFT AND IMPELLER SELECTION.
4. DIMENSION "A" IS MAXIMUM. CAN VARY SLIGHTLY DEPENDING ON MOTOR ENCLOSURE.
5. CONDUIT BOX NOT INCLUDED WITH EXPLOSION PROOF MOTOR.
6. EQUISPACED TANK BAFFLES NOT FURNISHED BY "LIGHTNIN". SEE SPECIFICATION SHEET FOR BAFFLE DIMENSIONAL DATA.

MINIMUM DIAMETER OPENING REQUIRED TO PASS IMPELLER WHEN DETACHED FROM SHAFT			
IMPELLER DIA.	MINIMUM OPENING (IN.)	IMPELLER DIA.	MINIMUM OPENING (IN.)
2.5	2	10.0	7–3/4
3.4	2–5/8	11.2	8–3/4
3.8	3	11.8	9–1/4
4.5	3–1/2	12.8	10
5.2	4	13.6	10–5/8
5.9	4–5/8	15.1	11–3/4
6.3	4–7/8	15.6	12–1/4
6.8	5–1/4	17.0	13–1/4
7.6	6	19.0	15





DETAIL "A"
ALTERNATE COUPLING
CONSTRUCTION
(SEE NOTE 1c)

MODEL	APPR. WGT. LBS.	A (4)	B		C	E	F	H	K
			WITH CHUCK	WITH CPLG.					
XDQ–30	51	21–1/2	6–1/2	3–1/8	0	3–7/8	3/8	4	10
XDQ–43	56								
XDQ–87	60	21–3/4							
XDQ–117	70	22–1/2							
XDQ–174	135	24–1/4	6–3/4	3–1/8	0	4–3/4	1/2	5–1/2	13
XDQ–230	140	26							
XDQ–350	155								
XJQ–30	63	23–1/4	6–3/8	2–3/4	1–3/8	3–7/8	3/8	4	10
XJQ–43	66								
XJQ–65	70	24–5/8	7	2–3/8	1–5/8	4–3/4	1/2	4–1/2	11
XJQ–87	83								
XJQ–117	89	25–3/8							
XJQ–174	155	28–3/4	6–3/4	3	1–7/8	4–3/4	1/2	5–1/2	13
XJQ–230	200	30–1/2							
XJQ–350	225								

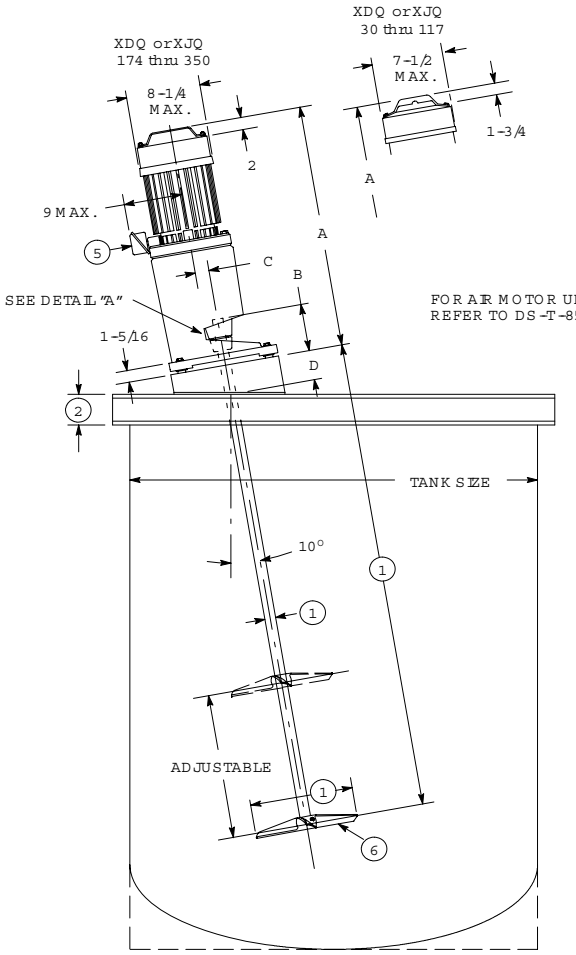
CERTIFICATION: This drawing, when used in conjunction with the attached specification sheet for ***LIGHTNIN*** Order _____ represents certified dimensions.

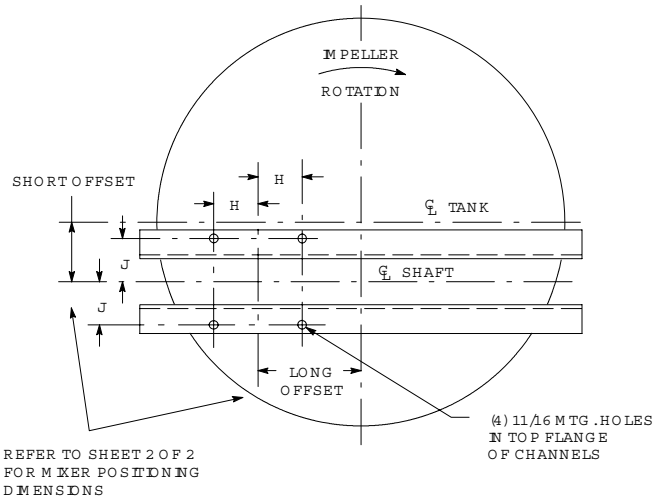
DRAWING IT-1986
SHEET 1 of 2
ISSUED - 3/15/83
REVISED - 2/26/01

CERTIFIED DIMENSION DRAWING FOR LIGHTNIN XDQ AND XJQ SERIES MIXERS

Angular Off-Center Mounting

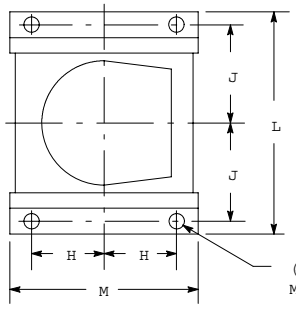
ALL DIMENSIONS IN INCHES



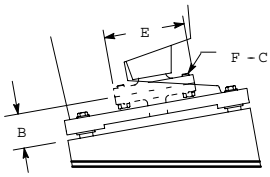


NOTES:

1. REFER TO ORDER SPECIFICATION SHEET FOR:
   A. MODEL NUMBER AND MOTOR HORSEPOWER.
   B. SHAFT DIAMETER AND FULL LENGTH.
   C. SHAFT CONNECTION - STANDARD CHUCK OR ALTERNATE COUPLING CONSTRUCTION.
   D. QUANTITY AND SIZE OF IMPELLERS.
   E. IF LOWER IMPELLER IS EQUIPPED WITH STABILIZER.
2. MIXER SUPPORT CHANNEL SIZE (NOT FURNISHED BY "LIGHTNIN"):
   TANKS UP TO AND INCLUDING 8 FEET - 4" X 7.25#
   TANKS OVER 8 FEET - 6" X 8.2#
3. MIXER WEIGHT CAN VARY WITH MOTOR CHARACTERISTICS, SHAFT AND IMPELLER SELECTION.
4. DIMENSION "A" IS MAXIMUM. CAN VARY SLIGHTLY DEPENDING ON MOTOR ENCLOSURE.
5. CONDUIT BOX NOT INCLUDED WITH EXPLOSION PROOF MOTOR.
6. REFER TO SHEET 2 OF 2 FOR MINIMUM DIAMETER OPENING REQUIRED TO PASS IMPELLER/S WHEN DETACHED FROM SHAFT.



ANGLE RISER
BASE DETAIL



DETAIL "A"
ALTERNATE COUPLING
CONSTRUCTION
(SEE NOTE 1c)

MODEL	APPR. WGT. LBS.	A (4)	B WITH CHUCK	B WITH CPLG.	C	D	E	F	H	J	L	M
XDQ-30	51	21-1/2	6-1/2	3-1/8	0	2-1/4	3-7/8	3/8	4	5-3/8	12-1/4	10
XDQ-43	56											
XDQ-87	60	21-3/4										
XDQ-117	70	22-1/2										
XDQ-174	135	24-1/4	6-3/4	3-1/8	0	3	4-3/4	1/2	5-1/2	7-5/8	16-3/4	13-1/2
XDQ-230	140	26										
XDQ-350	155											
XJQ-30	63	23-1/4	6-3/8	2-3/4	1-3/8	2-1/4	3-7/8	3/8	4	5-3/8	12-1/4	10
XJQ-43	66											
XJQ-65	70	24-5/8	7	2-3/8	1-5/8	2-1/4	4-3/4	1/2	4-1/2	5-7/8	13-1/4	11
XJQ-87	83											
XJQ-117	89	25-3/8										
XJQ-174	155	28-3/4	6-3/4	3	1-7/8	3	4-3/4	1/2	5-1/2	7-5/8	16-3/4	13-1/2
XJQ-230	200	30-1/2										
XJQ-350	225											

CERTIFICATION: This drawing, when used in conjunction with the attached specification sheet for LIGHTNIN Order _____ represents certified dimensions.

DRAWING IT-1986
SHEET 2 of 2
ISSUED - 3/15/83
REVISED - 4/2/03

XDQ & XJQ SERIES MIXER POSITIONING DATA BASED ON 10° ANGULAR OFF-SET MOUNTING

ALL DIMENSIONS IN INCHES (mm)

TANK DIA.		MAXIMUM TANK DEPTH		LONG OFF-SET		SHORT OFF-SET	
inches	mm	inches	mm	inches	mm	inches	mm
24	610	36	915	6-3/4	170	3-7/8	100
27	685	41	1040	7-5/8	195	4-3/8	110
30	760	45	1145	8-5/16	210	4-3/4	120
36	915	54	1370	9-7/8	250	5-3/4	145
42	1065	63	1600	11-1/2	290	6-5/8	170
48	1220	72	1830	13	330	7-1/2	190
54	1370	81	2055	14-1/2	370	8-1/2	215
60	1525	90	2285	16-1/8	410	9-5/16	235
66	1675	100	2540	17-7/8	455	10-5/16	260
72	1830	108	2745	19-1/4	490	11-1/8	280
78	1980	117	2970	20-3/4	525	12	305
84	2135	126	3200	22-3/8	570	13	330
90	2285	135	3430	24	610	13-3/4	350
96	2440	144	3660	25-1/2	650	14-3/4	375
102	2590	154	3910	27-1/4	690	15-3/4	400
108	2745	162	4115	28-5/8	730	16-9/16	420
114	2895	171	4345	30-3/16	765	17-7/16	445
120	3050	180	4575	31-3/4	810	18-5/16	465

XDQ & XJQ SERIES MIXER POSITIONING DATA BASED ON 7° ANGULAR OFF-SET MOUNTING

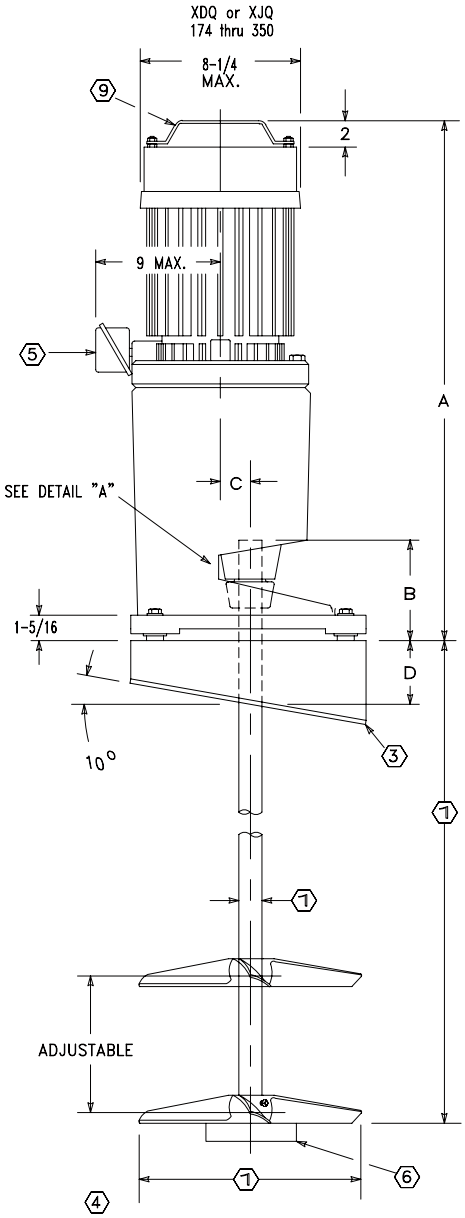
TANK DIA.		MAXIMUM TANK DEPTH		LONG OFF-SET		SHORT OFF-SET	
inches	mm	inches	mm	inches	mm	inches	mm
24	610	48	1220	6-3/8	165	5-1/8	130
27	685	54	1370	7-1/8	180	5-3/4	145
30	760	60	1525	7-13/16	200	6-5/16	160
36	915	72	1830	9-1/4	235	7-1/2	190
42	1065	84	2135	10-3/4	275	8-3/4	225
48	1220	96	2440	12-1/4	315	9-15/16	255
54	1370	108	2745	13-11/16	350	11-1/8	285
60	1525	120	3050	15-1/8	385	12-5/16	315
66	1675	132	3355	16-5/8	425	13-1/2	345
72	1830	144	3660	18-1/16	460	14-3/4	375
78	1980	156	3965	19-1/2	495	15-15/16	405
84	2135	168	4270	21	535	17-1/8	435
90	2285	180	4575	22-7/16	570	18-3/8	470
96	2440	192	4880	23-7/8	610	19-9/16	500
102	2590	204	5185	25-3/8	645	20-3/4	530
108	2745	216	5490	26-13/16	680	21-15/16	560
114	2895	228	5795	28-5/16	720	23-3/16	590
120	3050	240	6100	29-3/4	755	24-3/8	620

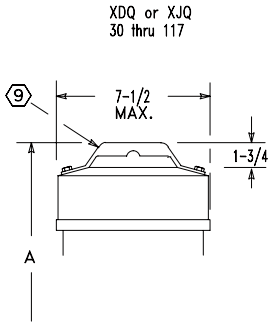
NOTE:

(1) CONSULT FACTORY FOR TANK DIAMETERS OR DEPTHS NOT LISTED.

MINIMUM DIAMETER OPENING REQUIRED TO PASS IMPELLER WHEN DETACHED FROM SHAFT			
IMPELLER DIA.	MINIMUM OPENING (IN.)	IMPELLER DIA.	MINIMUM OPENING (IN.)
2.5	2	10.0	7-3/4
3.4	2-5/8	11.2	8-3/4
3.8	3	11.8	9-1/4
4.5	3-1/2	12.8	10
5.2	4	13.6	10-5/8
5.9	4-5/8	15.1	11-3/4
6.3	4-7/8	15.6	12-1/4
6.8	5-1/4	17.0	13-1/4
7.6	6	19.0	15

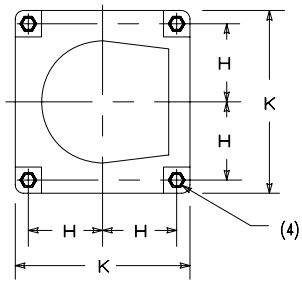
CERTIFICATION: This mounting data, when used in conjunction with the dimension drawing and order specification sheet for the LIGHTNIN Order Number listed on Sheet 1 of 2 represents certified dimensions.



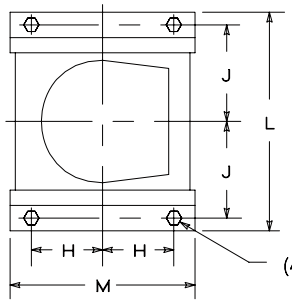


NOTES:

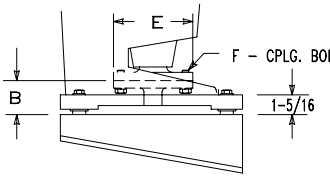
1. DEPENDENT ON APPLICATION.
2. ALSO AVAILABLE WITH ELECTRONIC VARIABLE SPEED DRIVE.
3. ANGLE RISERS ARE FURNISHED ONLY WHEN SPECIFIED.
4. WEIGHT WILL VARY WITH MOTOR ENCLOSURE AND SHAFT AND IMPELLER SELECTION.
5. DIMENSIONS ARE MAXIMUM – WILL VARY WITH MOTOR ENCLOSURE.
   CONDUIT BOX NOT INCLUDED WITH EXPLOSION PROOF MOTOR.
6. LOWER IMPELLER EQUIPPED WITH STABILIZING RING ONLY WHEN REQUIRED.
7. ALL DIMENSIONS ARE IN INCHES.
8. DIMENSIONS ARE FOR REFERENCE ONLY UNLESS CERTIFIED.
9. MOTOR HANDLE SHOWN 90° OUT OF POSITION.



MIXER BASE



ANGLE RISER BASE



DETAIL "A"
ALTERNATE COUPLING CONSTRUCTION

MODEL	APPR. WGT. LBS.	A	B WITH CHUCK	B WITH CPLG.	C	D	E	F	H	J	K	L	M
XDQ-30	51	21-1/2	6-1/4	2-7/8	0	2-1/4	3-7/8	3/8	4	5-3/8	10	12-1/4	10
XDQ-43	56												
XDQ-87	60	21-3/4											
XDQ-117	70	22-1/2											
XDQ-174	135	24-1/4	6-1/2	2-7/8	0	3	4-3/4	1/2	5-1/2	7-5/8	13	16-3/4	13-1/2
XDQ-230	140	26											
XDQ-350	155												
XJQ-30	63	23-1/4	6	2-1/2	1-3/8	2-1/4	3-7/8	3/8	4	5-3/8	10	12-1/4	10
XJQ-43	66												
XJQ-65	70	24-5/8	6-3/4	2-1/8	1-5/8	2-1/4	4-3/4	1/2	4-1/2	5-7/8	11	13-1/4	11
XJQ-87	83												
XJQ-117	89	25-3/8											
XJQ-174	155	28-3/4	6-1/2	2-3/4	1-7/8	3	4-3/4	1/2	5-1/2	7-5/8	13	16-3/4	13-1/2
XJQ-230	200	30-1/2											
XJQ-350	225												

CERTIFIED BY: DATE:

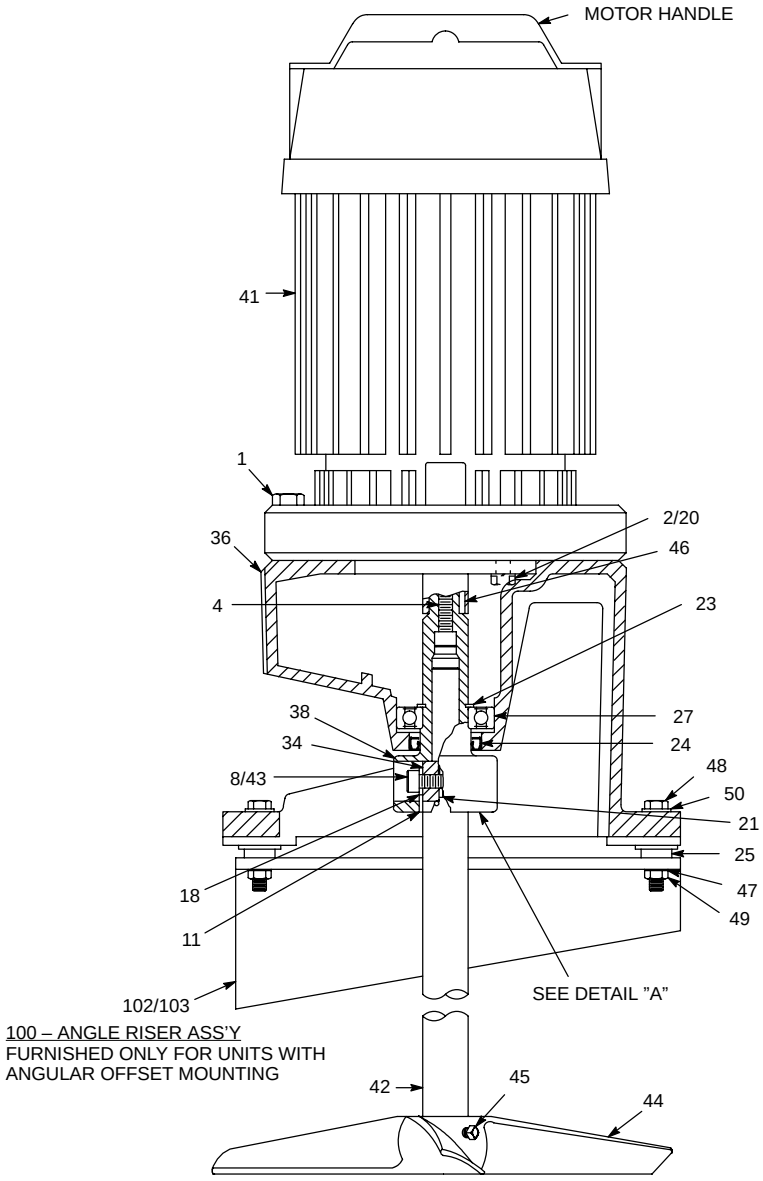
ISO 9001 CERTIFIED

LIGHTNIN®
MIXERS AND AERATORS

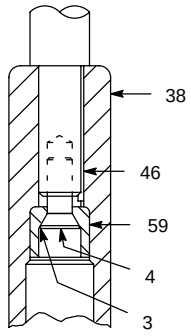
OUTLINE DIMENSIONS ARE IN INCHES

MODEL XDQ & XJQ OPEN TANK FIXED MOUNT MIXERS

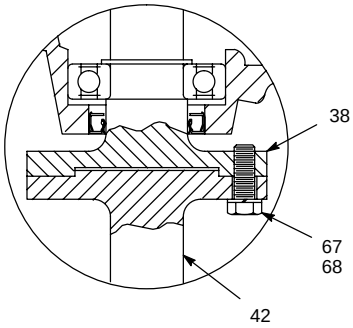
DRAWING NO. DS-T-82A



100 – ANGLE RISER ASS'Y
FURNISHED ONLY FOR UNITS WITH
ANGULAR OFFSET MOUNTING



MOTOR AND DRIVE SHAFT ASSEMBLY
MODELS XDQ 30 THRU 117 ONLY



DETAIL "A"
ALTERNATE COUPLING CONSTRUCTION
(ITEMS 8, 11, 18, 21 & 34 NOT FURNISHED)

① HARDWARE ITEMS 47, 48, 49 & 50 FURNISHED ONLY FOR UNITS WITH ANGLE RISERS.

② SAFETY COVER FURNISHED (NOT SHOWN). SEE IT–1989 FOR DETAILS.

WHEN ORDERING PARTS, SPECIFY;
MACHINE SERIAL NO., ITEM NO. AND
DRAWING NO.

ITEM	PART NAME	ITEM	PART NAME
41	MOTOR		
38	DRIVE SHAFT	105	SAFETY COVER ②
36	HOUSING	103	ANGLE RISER (R.H.)
34	CHUCK GRIP	102	ANGLE RISER (L.H.)
27	BALL BEARING	100	ANGLE RISER ASSEMBLY
25	FLEXIBLE MOUNTING	68	LOCKWASHER
24	OIL SEAL	67	HEX HEAD CAP SCREW
23	RETAINING RING	59	WASHER (XDQ30 THRU 117 ONLY)
21	SNAP RING	50	PLAINWASHER
20	BRASS WASHER	49	HEX NUT
18	CHUCK WASHER	48	HEX HEAD CAP SCREW ①
11	LIMIT PIN	47	LOCKWASHER
8	CHUCK SCREW	46	MOTOR SHAFT KEY
4	SHAFT SCREW	45	SET SCREW
3	LOCKWASHER	44	IMPELLER
2	HEX HEAD CAP SCREW	43	HEX KEY WRENCH (NOT SHOWN)
1	HEX HEAD CAP SCREW	42	MIXER SHAFT

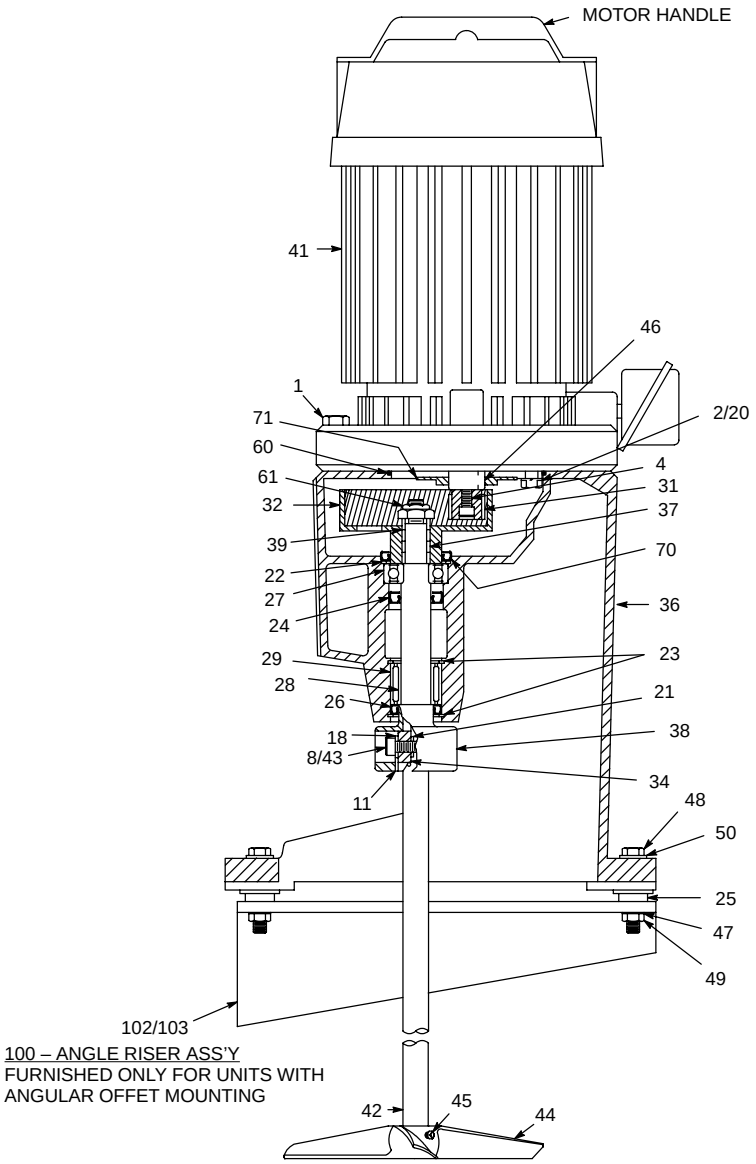
ISO 9001 CERTIFIED

LIGHTNIN ®
MIXERS AND AERATORS

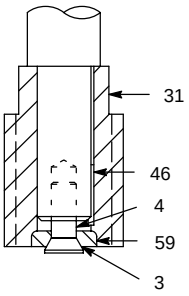
ASSEMBLY DRAWING

XDQ DIRECT DRIVE OPEN TANK MIXERS

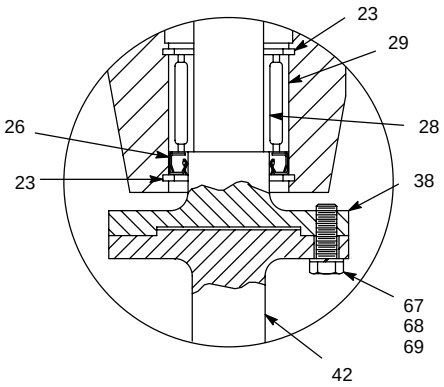
DRAWING NO. L–16716B



100 – ANGLE RISER ASS'Y
FURNISHED ONLY FOR UNITS WITH
ANGULAR OFFET MOUNTING



MOTOR SHAFT AND PINION ASSEMBLY
MODELS XJQ 30 THRU 117 ONLY



DETAIL "A"
ALTERNATE COUPLING CONSTRUCTION
(ITEMS 8, 11, 18, 21 & 34 NOT FURNISHED)

NOTES:

1. HARDWARE ITEMS 47, 48, 49 & 50 FURNISHED ONLY FOR UNITS WITH ANGLE RISERS.
2. SOLD IN SETS ONLY.
3. SAFETY COVER FURNISHED (NOT SHOWN). SEE IT–1989 FOR DETAILS.

ITEM	PART NAME
38	DRIVE SHAFT
37	SPACER
36	HOUSING
34	CHUCK GRIP
32	INTERNAL GEAR ②
31	PINION ②
30	GEAR/PINION SET ②
29	OUTER RING AND ROLLER ASSY
28	INNER RING
27	BALL BEARING
26	OIL SEAL
25	FLEXIBLE MOUNT
24	OIL SEAL
23	RETAINING RING (2)
22	RETAINING RING
21	SNAP RING
20	BRASS WASHER
18	CHUCK WASHER
11	LIMIT PIN
8	CHUCK SCREW
4	PINION SCREW
3	LOCKWASHER – PINION SCREW
2	HEX HEAD CAP SCREW
1	HEX HEAD CAP SCREW

ITEM	PART NAME
105	SAFETY COVER ③
103	ANGLE RISER (R.H.)
102	ANGLE RISER (L.H.)
100	ANGLE RISER ASSEMBLY
71	SLINGER (XJQ 174 THRU 350 ONLY)
70	OIL SEAL (XJQ 174 THRU 350 ONLY)
69	HEX NUT (XJQ 30 THRU 117 ONLY)
68	LOCKWASHER
67	HEX HEAD CAP SCREW
61	GRIP SPRING LOCKNUT
60	O–RING
59	WASHER (XJQ 30 THRU 117 ONLY)
50	PLAIN WASHER ①
49	HEX NUT ①
48	HEX HEAD CAP SCREW ①
47	LOCKWASHER ①
46	MOTOR SHAFT KEY
45	SET SCREW
44	IMPELLER
43	HEX KEY WRENCH (NOT SHOWN)
42	MIXER SHAFT
41	MOTOR
39	GRIP SPRING SET ②

WHEN ORDERING PARTS, SPECIFY MACHINE SERIAL NO., ITEM NO. & DRAWING NO.

ISO 9001 CERTIFIED

LIGHTNIN ®
MIXERS AND AERATORS

ASSEMBLY DRAWING

XJQ GEAR DRIVE OPEN TANK MIXER

DRAWING NO. L–16717D

GENERAL INSTRUCTIONS
LIGHTNIN® XJQ 30 THRU 350 SERIES
OPEN TANK FIXED MOUNT MIXERS

SECTION 1 – INITIAL INSPECTION, SHIPPING ARRANGEMENTS AND STORAGE

1.1 As soon as you have uncrated your mixer, check it for shipping damage and report any damage immediately to the carrier and to our factory.

1.2 Mixer and impellers are packed together. The mixer shaft is packed in a separate container.

1.3 Do not remove wrappings or protective coatings if the mixer is to be stored before it is placed in operation. Store the mixer in a clean, dry location, with circulating air, free from wide or rapid variations in temperature. When gear drive models have been stored for more than a year, the condition of the gear lubricant should be checked before the mixer is installed (see lubrication instructions).

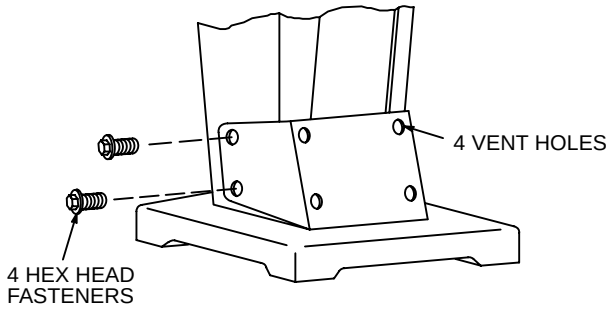
SECTION 2 – MIXER AND SHAFT INSTALLATION

2.1 Refer to the installation drawing for proper mixer mounting and location.

2.2 All mixers are furnished with safety covers. Do not remove during operation.

a . Stop unit and disconnect power supply before removing safety cover.

b . Re–install safety cover after servicing the unit.



SAFETY COVER

2.3 Impeller rotation must be according to the arrow on the mixer nameplate.

a . Single phase totally enclosed motors are wired at our factory for correct rotation.

b . All three phase and explosion proof motors must be field wired for proper rotation. If rotation does not agree with nameplate, reverse any two line leads.

c . Dual voltage motors must be wired for the desired voltage. Refer to the connection diagrams provided on the motor nameplate or inside the conduit box cover.

2.4 ***LIGHTNIN*** Mixers are equipped with ball bearing chemical plant motors specifically designed for mixer service in totally enclosed or explosion proof construction.

a . Constant speed mixers are furnished with ***LIGHTNIN*** DURA–MIX™ energy efficient motors unless otherwise specified.

b . For variable speed mixers with electronic or air driven motors, refer to supplementary instructions for motor control data and connection requirements.

2.5 Single Phase Motors for XDC30 thru 87 (or motors nameplated 1/4 thru 1 horsepower):

a . Totally enclosed motors are furnished with eight foot cords fitted with UL approved three prong grounded plugs suitable for the correct voltage.

b . Explosion proof motors are furnished with a pipe tap connection and suitable leads. A conduit box with internal switch is available for explosion proof service.

c . All DURA–MIX™ single phase motors are equipped with an internal over–temperature device with manual reset. If the thermal trips, wait fifteen (15) minutes and depress the reset button on the motor body. A click indicates reset.

2.6 Three Phase Motors:

a . All totally enclosed motors are equipped with a conduit box and suitable leads.

b . All explosion proof motors are furnished with a pipe tap connection and suitable leads.

IMPORTANT: ALL THREE PHASE MOTORS (except explosion proof on XDC 30 thru 65 or other XP motors nameplated 3/4 horsepower and below) are equipped with over–temperature thermostats which are designed to interrupt current in the holding coil of magnetic starters only. The motor thermostats will reset themselves, but the control panel ”start” button must be depressed to start the motor.

EXPLOSION PROOF MOTORS on XDC 30 thru 65 or XP motors nameplated 3/4 horsepower and below are equipped with automatic over–temperature circuits which can trip and reset themselves after the motor cools. TO AVOID INJURY DUE TO UNEXPECTED START UP, DISCONNECT FROM POWER UNTIL THE MOTOR COOLS.

2.7 Procedure for units equipped with chuck:

a . To install the mixer shaft, back off the chuck screw (refer to Figure 1) as far as the limit pin will allow. DO NOT FORCE.

b . Insert the mixer shaft into the chuck bore as far as it will go, and draw up the chuck screw with the wrench provided, rotating the shaft slightly back and forth to make sure the chuck grip seats against the flat of the shaft.

c . Tighten the chuck screw with the wrench provided. The wrench has been properly sized to tighten the screw. DO NOT IMPACT THE WRENCH OR USE AN EXTENSION.

NOTE: A safety feature is provided by a slight taper in the flat on the mixer shaft. The shaft cannot drop out unless the grip is intentionally released.

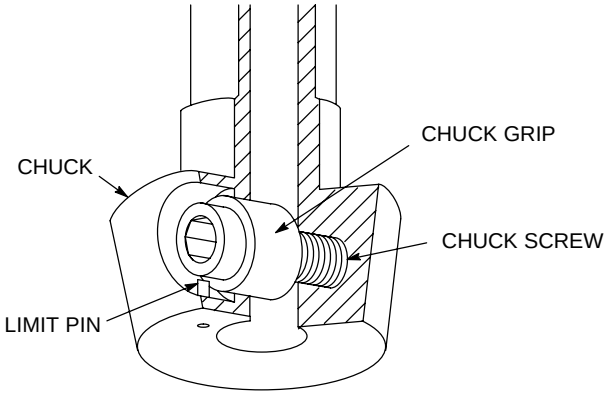


FIGURE 1 – CHUCK DETAILS

2.8 Procedure for units equipped with couplings:

a . Connect the mixer shaft (42) to the drive shaft (38) by bolting the coupling halves together.

CAUTION: Care should be exercised in order to prevent damage to the coupling rabbets, and to insure proper seating of the coupling halves.

2.9 Position the impeller(s) on the mixer shaft. Refer to the specification sheet for recommended dual impeller spacing. The larger wedge shaped portion of the hub body must face up towards the mixer. The bottom of the hub is stamped ”DOWN”. Refer to Figure 2 for general orientation reference. Tighten impeller set screws securely. For unusually severe conditions, the shaft should be spotted for the set screws.

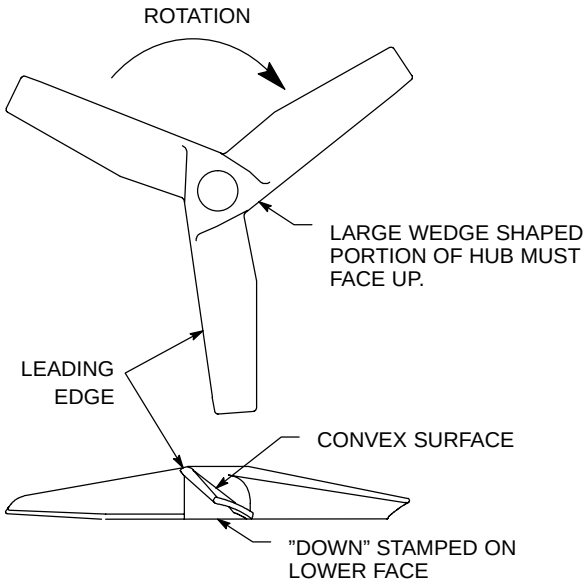


FIGURE 2 – IMPELLER ORIENTATION

SECTION 3 – MIXER OPERATION

3.1 ***LIGHTNIN*** mixers are designed to operate continuously at normal or low liquid levels, and in air.

IMPORTANT: Variable speed drives sometimes have critical ranges where the unit should not be operated during drawoff or in air. These ranges will be indicated on a warning decal at the speed control. It is not good practice to operate any mixer continuously when extreme vortexing or surging occurs.

3.2 At the end of two weeks service, check the housing cap screws, chuck screw and mounting bolts for tightness.

3.3 Dirt on the motor case acts as an insulator to prevent proper cooling. Always keep the motor clean.

3.4 At the end of the mixing cycle, it is good practice to turn off the mixer before the tank has been drained to a level which will result in excessive splashing.

3.5 A built–in shock load feature is included in the gear drive. The grip springs (39) provide a keyless friction drive between the gear and the drive shaft, and the springs will slip before the mixer is damaged. Therefore, if the mixer shaft does not rotate when the motor is turned on, remove the motor (41) from the housing (36) and tighten the grip spring locknut (61) securely. The table below lists the recommended tightening torque for this locknut. If a torque wrench is not available, be sure the locknut is tightened sufficiently to prevent grip spring slippage.

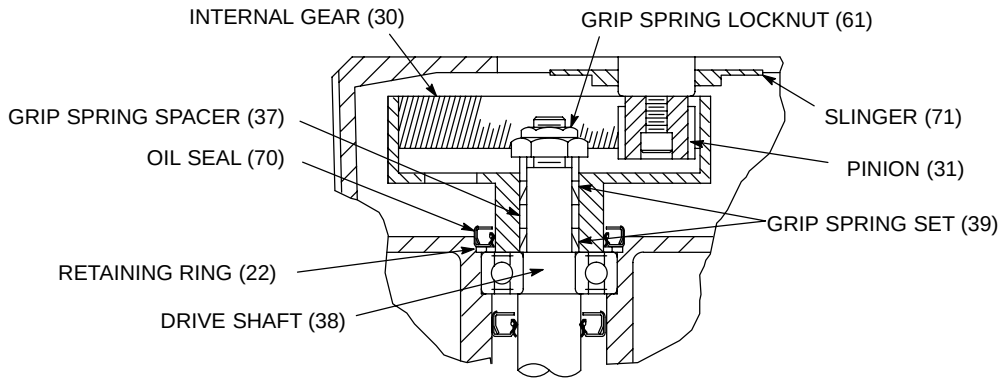


FIGURE 3 – GRIP SPRING ASSEMBLY

MODEL	XJQ 30	XJQ 43	XJQ 65	XJQ 87 & 117	XJQ 174	XJQ 230 & 350
TIGHTENING TORQUE IN FOOT–POUNDS	20	20	50	50	125	125

RECOMMENDED TIGHTENING TORQUE FOR GRIP SPRING LOCKNUT

SECTION 4 – FLEX MOUNT REPLACEMENT

4.1 The flex mounts can be removed with a long bolt and two pieces of tubing as shown in Figure 4.

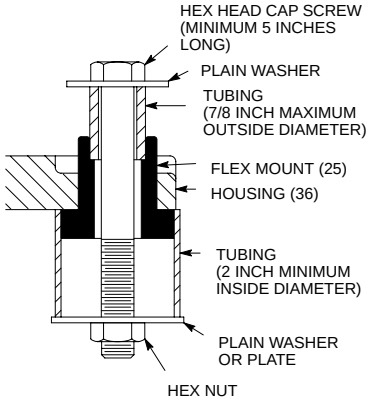


FIGURE 4 – FLEX MOUNT REMOVAL

4.2 Tighten the nut until the mount is free of the housing.

4.3 To install new mounts, use a long bolt and a piece of tubing as shown in Figure 5.

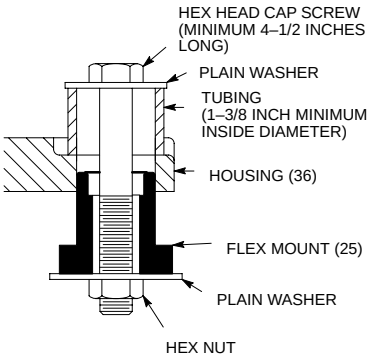


FIGURE 5 – FLEX MOUNT INSTALLATION

4.4 Lubricate the mount with a natural rubber lubricant or liquid hand soap.

4.5 Tighten the nut until the mount is tight with the housing base.

4.6 Replace ALL mounts if one is replaced.

4.7 Tighten mounting hardware to 85 ft–lbs. Use double nuts to lock in position.

SECTION 5 – MIXER LUBRICATION

5.1 STANDARD GEAR LUBRICANT – The factory supplied NLGI EP0 grease is a high quality lubricant with a lithium base, suitable for operation in ambient temperatures ranging between +50° F and +200° F. **Under normal operating conditions, this lubricant need not be changed until the unit has been dismantled for some reason.**

5.2 Under adverse operating conditions, periodic changes of lubricant may be necessary. Adverse conditions are defined as operating in very humid, dust laden or chemical atmospheres, or where wide variations in ambient temperature occurs. Such adverse conditions can lead to deterioration of lubricant compounds and additives, and it is recommended that the condition of the grease be checked within six months after start up. Reputable lubricant suppliers can analyze the grease and recommend economical, safe change schedules.

5.3 Gear Lubricant Recommendations:

Use only a lubricant suitable for the temperature and operating conditions.

AMBIENT TEMP. RANGE	NLGI #	BASE	MIN. OIL VISCOSITY SUS	MAX. OPERATING TEMP.
50° F to 200° F	EP 0	LITHIUM	750 @ 100° F 76 @ 210° F	200° F

LIGHTNIN EP0 grease (part number 123620PSP) is available in 2 pound containers.

Approved Alternate Lithium EP 0 Greases

MANUFACTURER	PRODUCT
Agip	GR MU/EP 0
Amoco	Amolith EP 0
BP	A0, CA or CS0
Castrol	Helveum 0, Impervia CL
Chevron	Duralith EP 0
Citgo	Premium Lithium EP0
Elf	EPEXA0
Exxon	Lidok EP0
Lubriplate	630 AAA
Mobil	Mobilux EP 0
Pennzoil	Pennlith EP710
Shell	Alvania EP 0
Sunoco	Prestige 740 EP
Texaco	Multifak EP 0

NOTE:
This cross reference list should be used as a guide only. Before using these products, discuss with a local supplier.

For operation in ambient temperatures below +50° F, we recommend use of a synthetic grease (Mobil SHC 007 or equal) compounded only with synthesized hydrocarbon fluids. This grease is suitable for a wide range of ambient temperatures between –30° F and +200° F, and should be considered where seasonal lubricant changes are necessary

5.4 Changing Gear Lubricant:

a . Make sure the mixer housing is vertical to prevent spillage.

b . Remove the motor to housing cap screws and lift off the motor by its handle.

c . Remove all old grease from the gear chamber and wipe clean.

d . Pack the chamber with fresh grease (see table below). Paddle the grease to fill voids and remove air pockets, rotating the shaft and shaking the housing while paddling.

GEAR CHAMBER CAPACITY	
MODEL	GREASE – LBS.
XJQ 30 & 43	1.25 ①
XJQ 65 thru 117	2.25 ①
XJQ 174 thru 350	3.0 ②

① PACK CHAMBER FLUSH WITH TOP OF THE INTERNAL GEAR.

② PACK CHAMBER TO WITHIN 3/4” BELOW TOP OF INTERNAL GEAR.

e . Check the O–ring in the flange of the motor and replace if it is deformed, cut or deteriorated.

f . Carefully align the motor rabbet and guide into the housing bore. Guide the pinion into mesh with the gear, and make sure the O–ring is properly seated in the groove.

g . Check for free movement of all components by rotating the drive shaft.

h . If satisfactory, replace the motor to housing hardware and tighten securely.

SECTION 6 – DISASSEMBLY

6.1 Removing the Mixer Shaft:

a . Remove the limit pin (11) by driving it into the counterbored hole.

b . Remove the chuck screw (8).

c . Remove snap ring (21), chuck grip (34) and chuck washer (18) from the chuck screw.

6.2 Removing the Motor from the Housing:

a . Set the mixer in a vertical position to prevent spilling the gear lubricant.

b . Remove the four housing cap screws and washers (1, 2 & 20).

c . Raise the motor (41) by its handle (35) or eyebolts to separate the motor from the housing (36).

d . Remove the O–ring (60).

6.3 Removing the Pinion from the Motor:

a . Hold the pinion (31) from turning and remove the pinion cap screw (4) in one of the following ways:

1 .XJQ 30 thru 117 – Use a Phillips screwdriver.

2 .XJQ 174 thru 350 – Use a 5/16 inch hex key wrench.

3 .XJQ 174 thru 350 (with a nylon slinger) – The slinger (71) must be removed by breaking it. Place a wooden block under the slinger and strike the opposite side with a chisel.

b . Remove the pinion with a bearing puller.

6.4 Removing Drive Shaft, Bearings and Oil Seals from the Housing:

a . Remove the lubricant from the gear chamber.

b . Remove the grip spring locknut (61) from the upper end of the drive shaft (38). Use one of the following methods to hold the drive shaft from turning:

1 . Procedure for units equipped with chuck:

a .XJQ 30 thru 117 – Insert a hex key wrench (43) in the chuck screw.

b .XJQ 174 thru 350 – Remove the chuck assembly per paragraph 6.5. Insert a 1 foot length of 1 inch diameter bar into the chuck grip bore.

2 . For models with rigid couplings:

a .Bolts can be inserted into the coupling half and a bar interlocked between the bolts to keep the drive shaft from rotating.

c . Thread a nut on the end of the drive shaft (38) to protect the threads when pressing out the shaft.

d . Mount the housing in an arbor press, motor end upward, and press the drive shaft clear of the internal gear bore.

e . Remove the internal gear (30), the two grip spring sets (39) and the grip spring spacer (37).

f . Remove the drive shaft, with the bearing inner ring (29) in place, through the lower opening in the housing.

g . If it is necessary to remove the bearing inner ring, start it from its seat with a thin screwdriver or wedge, then remove it from the drive shaft with a bearing puller.

h . XJQ 174 thru 350 ONLY – Pry the oil seal (70) from the housing bore as shown in Figure 6.

1 .Insert a 7/8 bolt into the ball bearing (27) bore.

2 .Use the bolt head as a fulcrum and pry out the oil seal (70) with pliers.

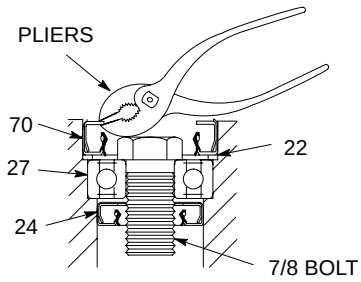


FIGURE 6 – OIL SEAL REMOVAL

i . Use Wades Truarc No. 4 pliers to remove the internal retaining ring (22).

j . Remove the ball bearing (27) and upper oil seal (24) through the upper opening of the housing.

k . Remove the internal retaining rings (23).

l . Mount the housing, motor end upward, in an arbor press and press out the oil seal (26) and the outer ring and roller assembly (29).

6.5 Disassembling the Chuck:

a . Remove the limit pin (11) by driving it into the counterbored hole.

b . Remove the chuck screw (8).

c . Remove snap ring (21), chuck grip (34) and chuck washer (18) from the chuck screw.

SECTION 7 – ASSEMBLY

7.1 Preparing for Assembly:

a . Clean all parts thoroughly.

b . Inspect for the following defects:

1 .Cracks or damage of the housing.

2 .Dents, gouges or scoring of the drive shaft, housing bore, and particularly the mating faces of the motor and the housing.

c . Repair or replace defective parts. It is good practice to replace an oil seal which has been removed from the housing. Apply a small quantity of bearing grease to the housing bore and around the oil seal lip to provide lubrication and to make the seal more effective.

d . Replace the O–ring if it is cut, deformed or deteriorated.

e . Replace the ball bearing and roller bearing (including the bearing inner ring) if they show indications of wear.

7.2 Assembling the Drive Shaft in the Housing:

a . Mount the housing (36) in an arbor press, motor end up.

b . Press the upper oil seal (24), sealing lip upward, approximately 1/8 inch below the shoulder of the bore.

c . Press the ball bearing (27) on its outer race against the shoulder of the housing bore.

d . Install retaining ring (22).

e . XJQ 174 thru 350 ONLY:

1 .Apply a heavy coating of ball bearing grease to the top of the ball bearing (27).

2 .Apply a coating of Loctite ”Bearing Mount” grade to the outside of the new oil seal (70).

3 .Press the oil seal (70), sealing lip up, into the housing until it seats against the retaining ring (22).

f . Turn the housing motor end down in the press, and install the inner of the two lower retaining rings (23).

g . Pack the outer ring and roller assembly (29) with a suitable bearing grease and press it into the housing bore until it registers against the retaining ring.

h . Press the oil seal (26), with its sealing lip towards the motor end of the housing, against the outer ring and roller assembly.

i . Install outer retaining ring (23).

j . If the bearing inner ring (28) has been removed from the drive shaft (38), press it in place.

k . Apply a thin film of light oil on the tapered surfaces *only* of each grip spring set.

CAUTION: For proper operation of the grip springs, oil *must not* get between the grip spring driving surfaces and the drive shaft or gear bore.

l . Install the inner ring of the lower grip spring set (39) so that the thicker edge seats against the shaft shoulder.

m . Place the housing on its side and grease the lips of the oil seals.

n . Hold the internal gear (30) in place in the gear chamber and pass the drive shaft through its bearings as far as it will go into the hub of the gear.

o . With the gear on the end of the shaft, turn the housing motor end down and press the shoulder of the drive shaft against the inner race of the ball bearing (27).

p . Turn the housing motor end up. Center the internal gear in the drive shaft and install the external ring of the lower grip spring set (39), grip spring spacer (37) and upper grip spring set (39). Both grip spring sets should be installed with the thicker edge of the external ring upward (see Figure 7).

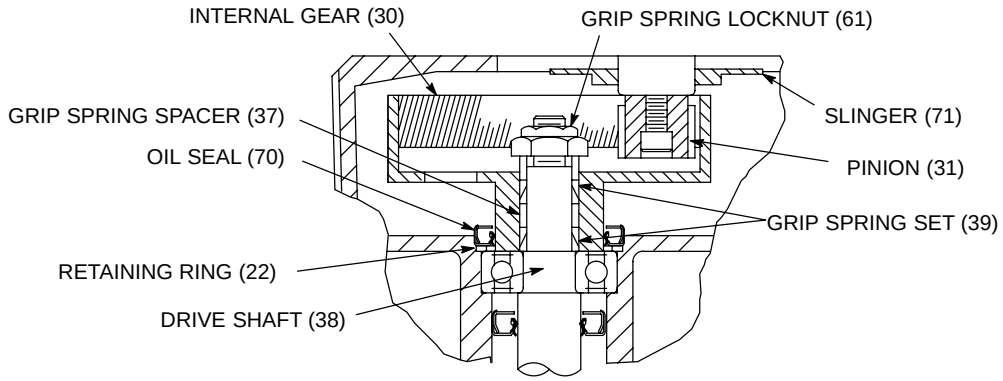


FIGURE 7 – GRIP SPRING ASSEMBLY

q . Apply a thin coat of light oil on the threads of the drive shaft and the bottom surface of the grip spring locknut.

r . Thread the grip spring locknut (61) onto the end of the drive shaft (finger tight). Rotate the internal gear (30) by hand, and at the same time tighten down on the locknut until the internal gear can no longer be rotated. Tighten the locknut securely. (The table below lists the recommended tightening torque for this locknut. If a torque wrench is not available, be sure locknut is tightened sufficiently to prevent grip spring slippage.) Use one of the following methods to prevent the drive shaft from turning while performing this operation.

XJQ SERIES MODEL	30 & 43	65 thru 117	174 thru 350
TIGHTENING TORQUE (FT.–LBS)	20	50	125

RECOMMENDED TIGHTENING TORQUE FOR GRIP SPRING LOCKNUT

1 .Procedure for units equipped with chuck:

a .XJQ 30 thru 117 – Reassemble the chuck assembly. Insert a hex key wrench into the chuck screw.

b .XJQ 174 thru 350 – With the chuck assembly removed from the drive shaft, insert a 1 foot length of 1 inch diameter bar in the chuck grip bore.

2 .For models with coupling:

a .Bolts can be inserted into the coupling half and a bar interlocked between the bolts to keep the drive shaft from rotating.

7.3 Assembling the Pinion on the Motor Shaft:

a . XJQ 174 thru 350 ONLY:

1 .Install the slinger on the motor shaft, allowing a gap of 1/32 inch gap between the motor oil seal and the top of the slinger.

2 .Check shaft end play and rotate to make sure slinger rotates freely.

3 .Coat the set screw threads with Loctite and tighten the set screw securely.

b . Apply a thin film of grease to the motor shaft or pinion shaft.

c . Make sure that the motor shaft key (46) is in place in the motor shaft keyway.

d . Assemble the pinion on the motor shaft by driving it into place with light strokes of a mallet.

e . Make sure that the pinion and motor shafts butt securely, then install and tighten the pinion screw (4).

7.4 Assembling the Chuck:

a . Assemble chuck washer (18), chuck grip (34) and snap ring (21) on the chuck screw (8).

b . Thread the chuck screw into the chuck end of the drive shaft, far enough to insert the limit pin (11), so that the end of the pin is 3/16 of an inch underflush.

7.5 Assembling the Motor to the Housing:

a . Fill the gear chamber of the housing (36) level with a suitable lubricant (see Section 5). Make sure that the grease is solidly packed without air pockets by paddling the grease, rotating the drive shaft by hand, tapping or shaking the housing.

b . Clean the mating surfaces of the motor (41) and the housing (36).

c . Place the O–ring (60) on the motor (41).

d . Align the motor rabbet with the opening of the housing, and lower the motor into place using care so as not to damage the O–ring.

e . Align the motor and housing so that the switch, conduit box or junction box of the motor are opposite the large opening on the front of the housing.

f . Align the screw holes and install the housing cap screws and washers (1, 2 & 20).

g . Rotate the drive shaft several revolutions by hand to make sure that all parts are running freely.

h . Reassemble the mixer shaft to the unit as described in the installation instructions.

GENERAL INSTRUCTIONS FOR *LIGHTNIN*® XDQ 30 THRU 350 SERIES OPEN TANK FIXED MOUNT MIXERS

SECTION 1 – INITIAL INSPECTION, SHIPPING ARRANGEMENTS AND STORAGE

1.1 As soon as you have uncrated your mixer, check it for shipping damage and report any damage immediately to the carrier and to our factory.

1.2 Mixer and impellers are packed together. The mixer shaft is packed in a separate container.

1.3 Do not remove wrappings or protective coatings if the mixer is to be stored before it is placed in operation. Store the mixer in a clean, dry location, with circulating air, free from wide or rapid variations in temperature.

SECTION 2 – MOUNTING

2.1 Support the mixer by the motor handle or eye bolts and mount it on the support base. Refer to the installation or dimension drawing.

2.2 All mixers are furnished with safety covers. Do not remove during operation. Stop unit and disconnect power supply before removing safety cover. Reinstall safety cover after servicing the unit.

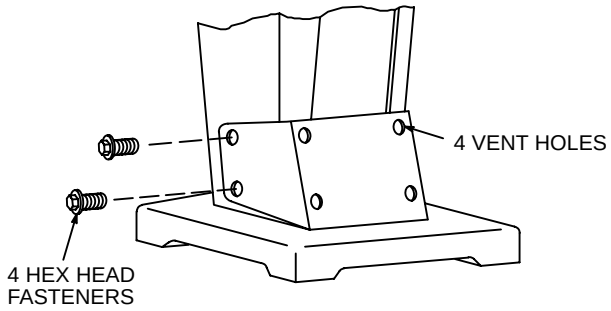


FIGURE 1 – SAFETY COVER

2.3 Impeller rotation must be according to the arrow on the mixer nameplate.

a . Single phase totally enclosed motors are wired at our factory for correct rotation.

b . All three phase and explosion proof motors must be field wired for proper rotation. If rotation does not agree with nameplate, reverse any two line leads.

c . Dual voltage motors must be wired for the desired voltage. Refer to the connection diagrams provided on the motor nameplate or inside the conduit box cover.

SECTION 3 – MOTOR CONNECTIONS

3.1 ***LIGHTNIN***® Mixers are equipped with ball bearing chemical plant motors specifically designed for mixer service in totally enclosed or explosion proof construction.

a . Constant speed mixers are furnished with ***LIGHTNIN*** DURA–MIX™ energy efficient motors unless otherwise specified.

b . For variable speed mixers with electronic or air driven motors, refer to supplementary instructions for motor control data and connection requirements.

3.2 Single Phase Motors for XDQ/XJQ 30 thru 87 (or motors nameplated 1/4 thru 1 horsepower):

a . Totally enclosed motors are furnished with eight foot cords fitted with UL approved three prong grounded plugs suitable for the correct voltage.

b . Explosion proof motors are furnished with a pipe tap connection and suitable leads. A conduit box with internal switch is available for explosion proof service.

c . All DURA–MIX™ single phase motors are equipped with an internal over–temperature device with manual reset. If the thermal trips, wait fifteen (15) minutes and depress the reset button on the motor body. A click indicates reset.

3.3 Three Phase Motors:

a . All totally enclosed motors are equipped with a conduit box and suitable leads.

b . All explosion proof motors are furnished with a pipe tap connection and suitable leads.

IMPORTANT: ALL THREE PHASE MOTORS (except explosion proof on XDQ 30 thru 65 or other XP motors nameplated 3/4 horsepower and below) are equipped with over–temperature thermostats which are designed to interrupt current in the holding coil of magnetic starters only. The motor thermostats will reset themselves, but the control panel ”start” button must be depressed to start the motor.

EXPLOSION PROOF MOTORS on XDQ 30 thru 65 or XP motors nameplated 3/4 horsepower and below are equipped with automatic over–temperature circuits which can trip and reset themselves after the motor cools. TO AVOID INJURY DUE TO UNEXPECTED START UP, DISCONNECT FROM POWER UNTIL THE MOTOR COOLS.

SECTION 4 – INSTALLING THE MIXER SHAFT

4.1 Position the impeller(s) on the mixer shaft. Refer to the specification sheet for recommended dual impeller spacing. The larger wedge shaped portion of the hub body must face up towards the mixer. The bottom of the hub is stamped ”DOWN”. Refer to Figure 2 for general orientation reference. Tighten impeller set screws securely. For unusually severe conditions, the shaft should be spotted for the set screws.

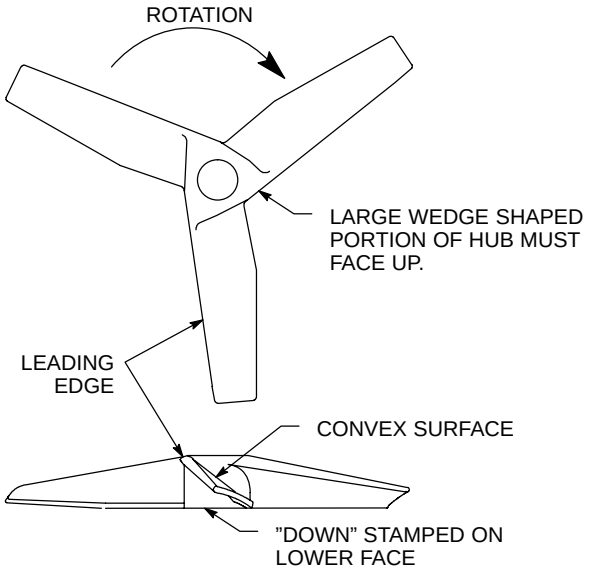


FIGURE 2 – IMPELLER ORIENTATION

4.2 To install the mixer shaft, back off the chuck screw (refer to Figure 3) as far as the limit pin will allow. DO NOT FORCE. Insert the mixer shaft into the chuck bore as far as it will go, and draw up the chuck screw with the wrench provided, rotating the shaft slightly back and forth to make sure the chuck grip seats against the flat of the shaft. Tighten the chuck screw with the wrench provided. The wrench has been properly sized to tighten the screw. DO NOT IMPACT THE WRENCH OR USE AN EXTENSION.

NOTE: A safety feature is provided by a slight taper in the flat on the mixer shaft. The shaft cannot drop out unless the grip is intentionally released.

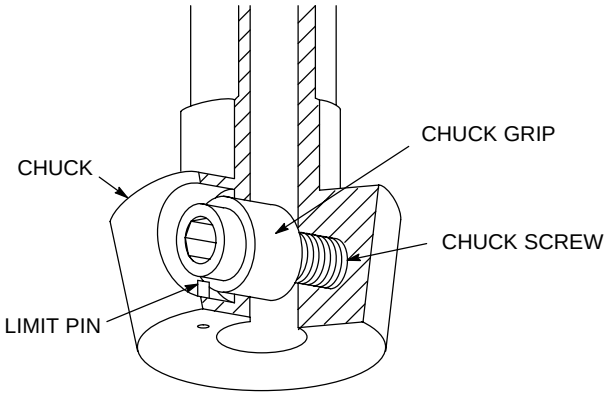


FIGURE 3 – CHUCK DETAILS

4.3 Alternate procedure for units equipped with couplings:

a . Connect the mixer shaft to the drive shaft by bolting the coupling halves together. Use care to prevent damage to the rabbets. Make sure the mating faces are flush before torqueing the hardware.

SECTION 5 – MIXER OPERATION

5.1 ***LIGHTNIN*** mixers are designed to operate continuously at normal or low liquid levels, and in air.

IMPORTANT: Variable speed drives sometimes have critical ranges where the unit should not be operated during drawoff or in air. These ranges will be indicated on a warning decal at the speed control. It is not good practice to operate any mixer continuously when extreme vortexing or surging occurs.

5.2 At the end of two weeks service, check the housing cap screws, chuck screw and mounting bolts for tightness.

5.3 Dirt on the motor case acts as an insulator to prevent proper cooling. Always keep the motor clean.

5.4 At the end of the mixing cycle, it is good practice to turn off the mixer before the tank has been drained to a level which will result in excessive splashing.

SECTION 6 – FLEX MOUNT REPLACEMENT

6.1 The flex mounts can be removed with a long bolt and two pieces of tubing as shown in Figure 4.

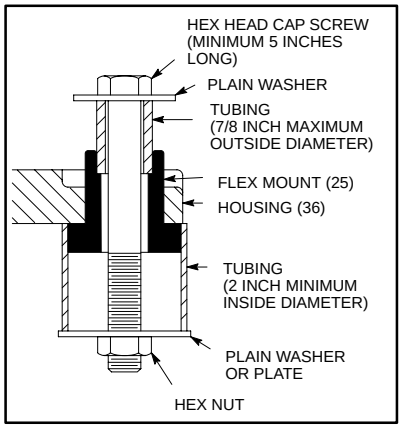


FIGURE 4
FLEX MOUNT REMOVAL

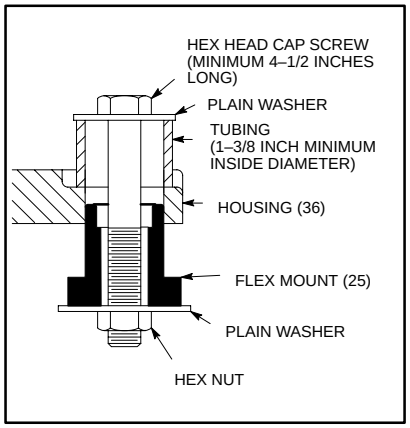


FIGURE 5
FLEX MOUNT INSTALLATION

6.2 Tighten the nut until the mount is free of the housing.

6.3 To install new mounts, use a long bolt and a piece of tubing as shown in Figure 5.

6.4 Lubricate the mount with a natural rubber lubricant or liquid hand soap.

6.5 Tighten the nut until the mount is tight with the housing base.

6.6 Replace ALL mounts if one is replaced.

6.7 Tighten mounting hardware to 85 ft–lbs. Use double nuts to lock in position.

SECTION 7 – DISASSEMBLY

7.1 Removing the Motor from the Housing:

a . To remove the mixer shaft from the drive shaft (38), back off the chuck screw (8) as far as the limit pin (11) will allow. The mixer shaft is now free from the chuck and can be withdrawn.

For models equipped with coupling: Remove the coupling bolts and lower the mixer shaft through the opening in the housing.

b . Remove housing cap screws and washers (1, 2 & 20).

c . Insert a hex wrench in the chuck screw (8) to prevent the drive shaft from turning. For models with couplings, bolts can be inserted into the coupling half and a bar interlocked between the bolts to keep the shaft from rotating.

d . Remove the shaft screw (4) through the drive shaft bore in one of the following ways:

1 . XDQ 30 through 117 – use a Phillips screwdriver.

2 . XDQ 174 through 350 – use a 3/8 inch long shank hex wrench.

e . The upper end of the drive shaft is closely fitted to the motor shaft. Therefore, to separate the motor (41) and housing (36), tap evenly around the upper edge of the housing with a mallet.

f . On XDQ 30 thru 117 models, the motor shaft key (46) is lightly cemented in the motor shaft keyway.

7.2 Removing Drive Shaft, Bearing and Oil Seal from the Housing:

a . Follow the procedure outlined above.

b . Use Waldes Truarc No. 4 pliers to remove retaining ring (22).

c . Mount housing, motor end upward, in an arbor press and press drive shaft (38) through the lower opening of the housing.

d . Turn the housing motor end down, and press ball bearing (27) and oil seal (24) downward out of the housing.

7.3 Disassembling the Chuck:

a . Remove the limit pin (11) by driving it into the counterbored hole.

b . Remove the chuck screw (8).

c . Remove snap ring (21), chuck grip (34) and chuck washer (18) from the chuck screw.

SECTION 8 – ASSEMBLY

8.1 Preparing for Assembly:

a . Clean all parts thoroughly.

b . Inspect for the following defects:

1 . Cracks or damage of the housing.

2 . Dents, gouges or scoring of the drive shaft, housing bore, and particularly the mating faces of the motor and the housing.

c . Repair or replace defective parts. It is good practice to replace an oil seal which has been removed from the housing. Apply a small quantity of bearing grease to the housing bore and around the oil seal lip to provide lubrication and to make the seal more effective.

d . Replace the ball bearing if it shows indications of wear.

8.2 Assembling the Drive Shaft in the Housing:

a . Mount the housing (36) in an arbor press, motor end up.

b . Press the ball bearing (27) on its outer race to the shoulder of the housing bore.

c . Turn the housing motor end down and press the oil seal (24), sealing lip inward, flush with the lower end of the housing.

d . Support the housing, motor end down, by resting the inner race of the ball bearing on a suitable sleeve.

e . Grease the lip of the oil seal and press the drive shaft (38) into the ball bearing until the shoulder of the shaft registers against the inner race of the bearing.

f . Use Waldes Truarc No. 4 pliers to install the retaining ring (22) in the shaft groove.

g . Turn the housing motor end down, and press the drive shaft until the chuck head contacts the small end of the housing. For models equipped with coupling, press the shaft to move coupling 1/4 of an inch closer to the end of the housing.

8.3 Assembling the Chuck:

a . Assemble chuck washer (18), chuck grip (34) and snap ring (21) on the chuck screw (8).

b . Thread the chuck screw into the chuck end of the drive shaft, far enough to insert the limit pin (11), so that the end of the pin is 3/16 of an inch underflush.

8.4 Assembling the Motor to the Housing:

a . If the drive shaft has not been removed from the housing, turn the housing motor end down, and press the drive shaft until the chuck head contacts the small end of the housing. For models equipped with couplings, press the shaft to move coupling 1/4 of an inch closer to the end of the housing.

b . Install the motor key (46).

1 . Models XDQ 174 thru 350 – Install the key in the drive shaft keyway.

2 . Models XDQ 30 thru 117 – If the key has been removed, clean the key and the motor shaft keyway. Apply Loctite Sealant, Grade E (American Sealants Co.) to both items before reassembling.

c . Apply a light film of lubricant to both shafts. Align the mating keyways and insert one shaft into the other, without forcing, until the shafts are securely butted. There will be a small gap between the motor face and the housing face.

d . Align the motor (41) and the housing (36) so that the switch, conduit box or junction box of the motor is opposite the large opening in the front of the housing.

e . Align the screw holes and install the housing cap screws and washers (1, 2 & 20).

f . Draw up the screws evenly until the housing face is just snug with the motor face, but do not completely tighten the screws.

g . Insert the hex key wrench in the chuck screw (8) to keep the drive shaft (38) from turning, then thread in and tighten the shaft screw (4).

h . For models equipped with couplings, bolts can be inserted in the coupling half, and a bar interlocked between the bolts to prevent the drive shaft from rotating.

i . Tighten the four housing cap screws evenly.

j . Reassemble the mixer shaft to the unit as described in Section 4.

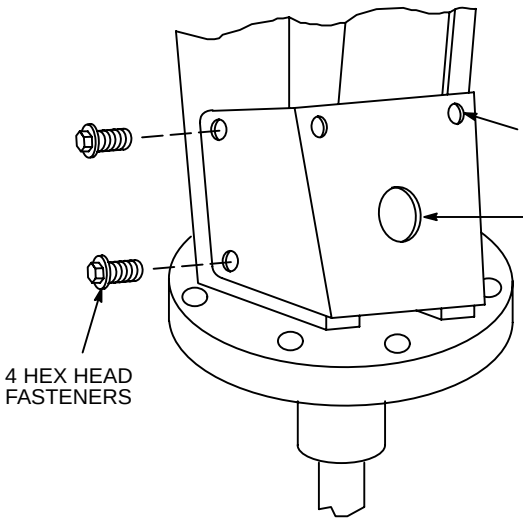
SECTION 9 – LUBRICATION

9.1 Your ***LIGHTNIN*** mixer has been lubricated at the factory with the correct type and amount of high quality lubricants. Lubricant cleanliness is protected by properly designed enclosures.

9.2 All mixer bearings are sealed type with contact rubbing seals and are pre–packed with lubricant. Relubrication of these bearings is not necessary.

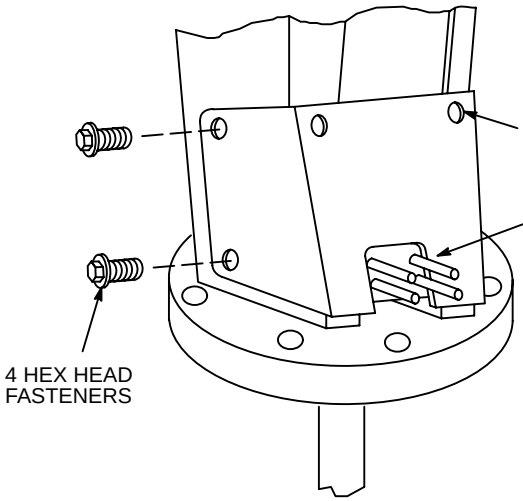
REMOVABLE SAFETY COVERS FOR *LIGHTNIN*® FIXED MOUNT TYPE MIXERS

- ALL MIXERS ARE FURNISHED WITH SAFETY COVERS. DO NOT REMOVE DURING OPERATION.
- STOP UNIT AND DISCONNECT POWER SUPPLY BEFORE REMOVING SAFETY COVER.
- RE–INSTALL SAFETY COVERS AFTER SERVICING THE UNIT.
- REFER TO THE INSTRUCTION MANUAL FURNISHED WITH YOUR UNIT FOR COMPLETE MIXER PARTS LISTS AND SERVICING INSTRUCTIONS.



CLOSED TANK MODELS
XDC–XJC SERIES, XJCK
AND SXJ SERIES
WITH STUFFING BOX

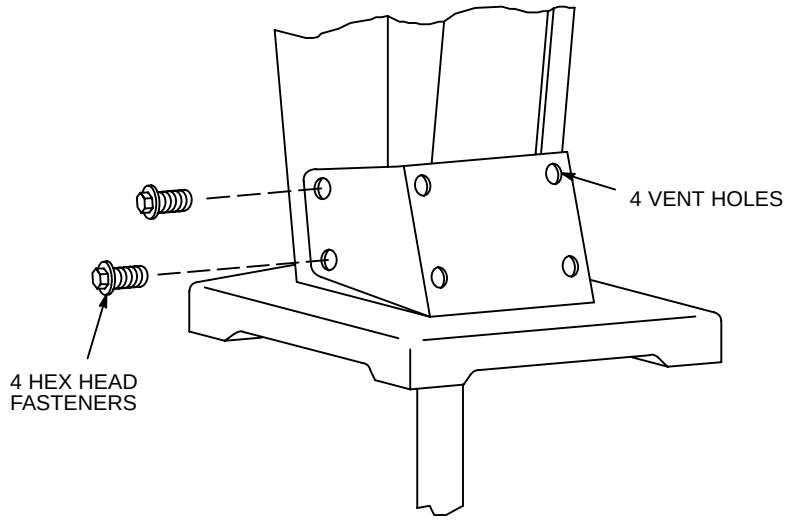
NOTE:
THE STUFFING BOX REQUIRES LUBRICATION AT REGULAR INTERVALS. REFER TO INSTRUCTION MANUAL FOR COMPLETE DETAILS.



CLOSED TANK MODELS
XDDS–XJDS SERIES
XJSS AND SXJS SERIES
WITH ROTARY MECHANICAL SEAL

NOTE:
REFER TO INSTRUCTIONS FOR MECHANICAL SEAL LUBRICATION, FLUSHING AND/OR COOLING REQUIREMENTS.

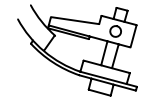
OPEN TANK MODELS
XDQ–XJQ SERIES

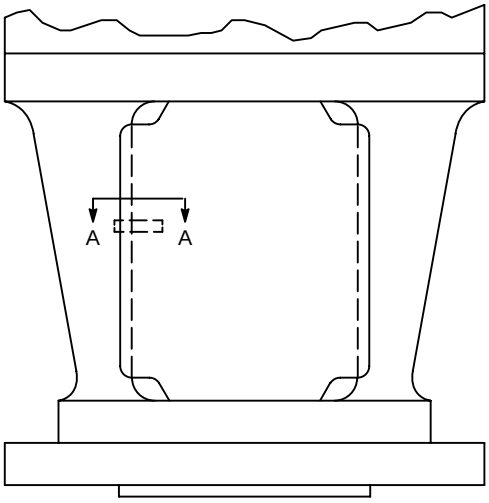


CLOSED TANK MODELS

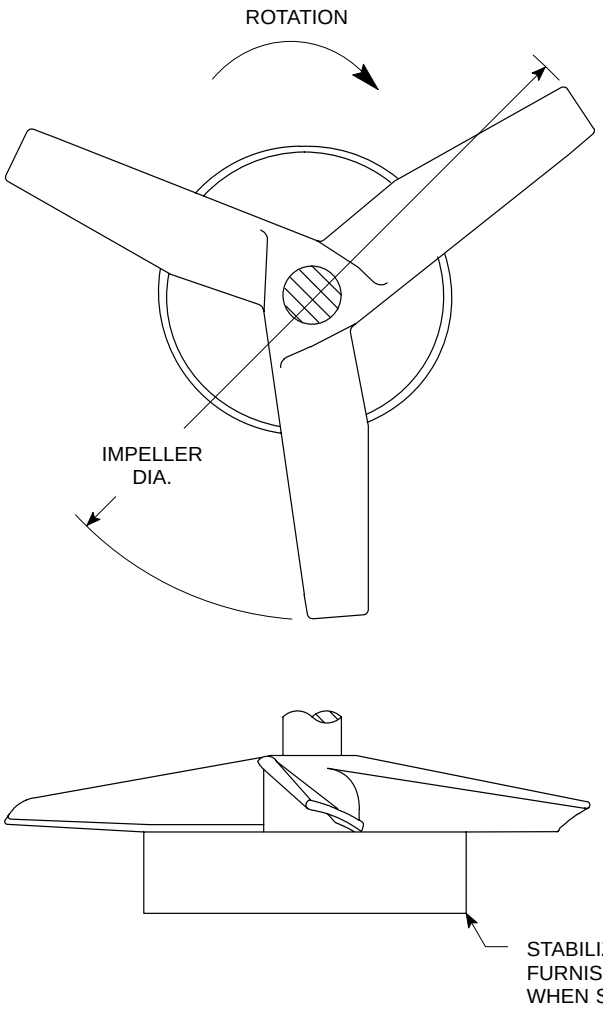
XLC SERIES
WITH STUFFING BOX

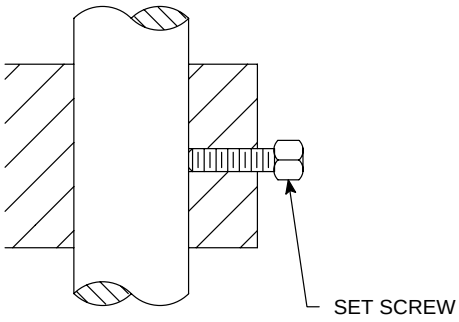
XLDS–XLSS SERIES
WITH ROTARY MECHANICAL SEAL





NOTE:
REFER TO INSTRUCTIONS FOR MECHANICAL SEAL LUBRICATION, FLUSHING AND/OR COOLING REQUIREMENTS.





WHEN ORDERING PARTS, SPECIFY:
DRAWING NUMBER, PART NAME, ITEM
NUMBER AND SERIAL NUMBER

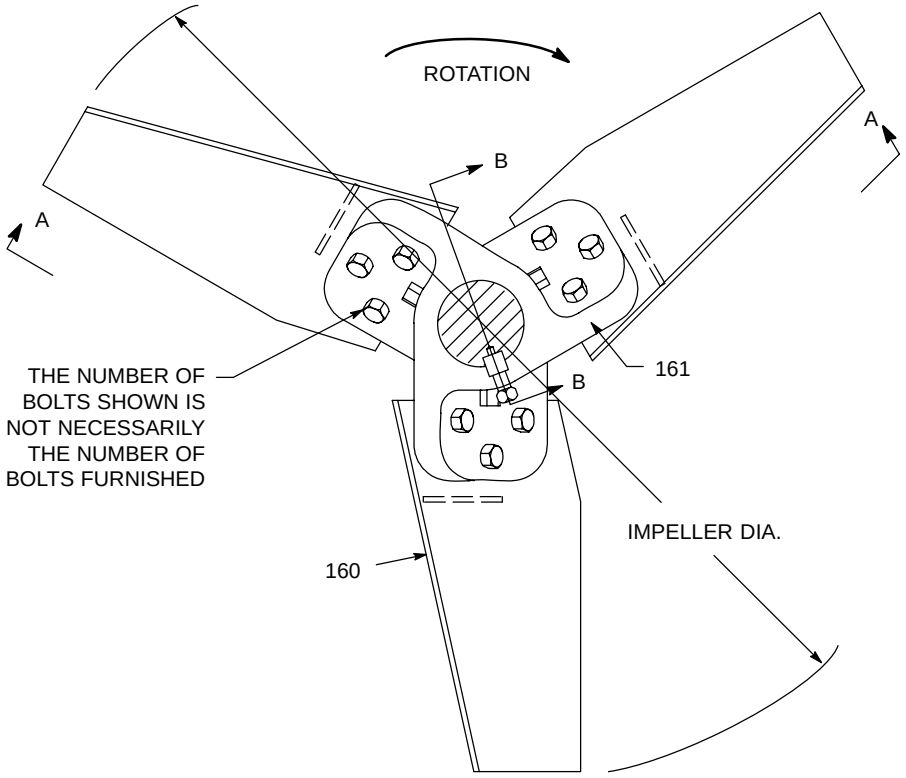
LIGHTNIN ®
MIXERS AND AERATORS

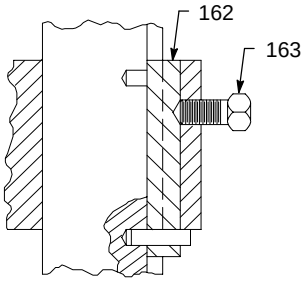
ISO 9001
CERTIFIED

ASSEMBLY DRAWING

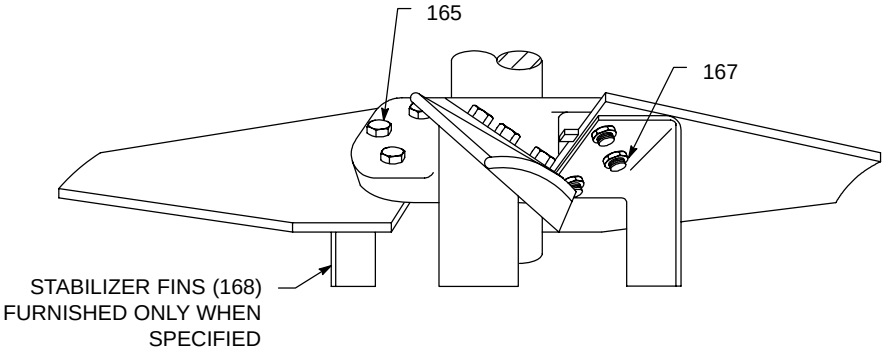
A310
AXIAL FLOW IMPELLER

DRAWING NO. L–16701B





SECTION B–B



VIEW A–A

WHEN ORDERING PARTS, SPECIFY: DRAWING NUMBER, PART NAME, ITEM NUMBER AND SERIAL NUMBER

ITEM	PART NAME
168	STABILIZER FIN
167	HEX NUT
165	HEX HEAD CAP SCREW
163	SET SCREW
162	HOOK KEY
161	HUB
160	BLADE

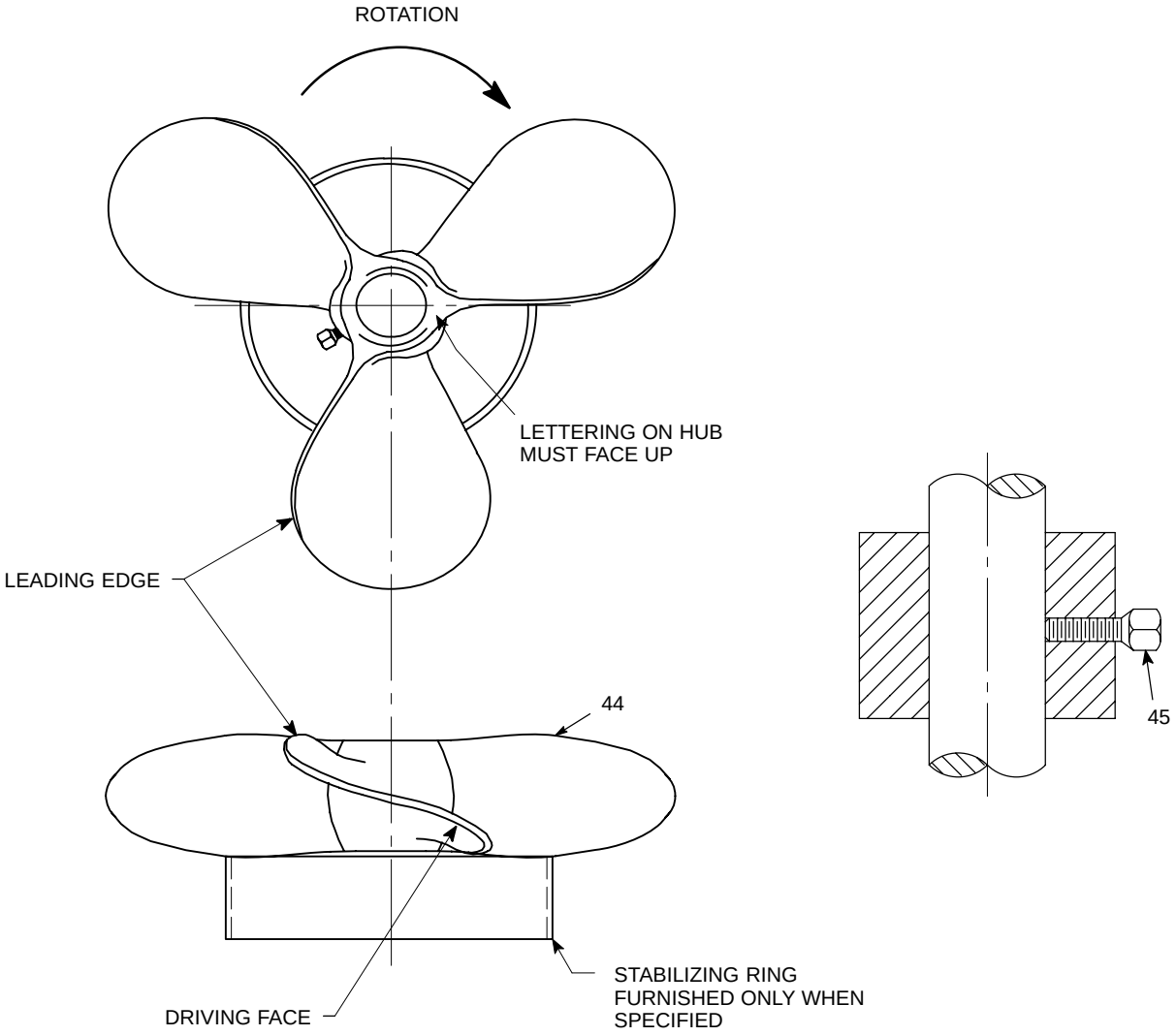
LIGHTNIN ®
MIXERS AND AERATORS

ASSEMBLY DRAWING

A310
AXIAL FLOW IMPELLER ONE PIECE HUB W/ BOLTED BLADES

ISO 9001 CERTIFIED

DRAWING NO. L–16673A



WHEN ORDERING PARTS, SPECIFY: DRAWING NUMBER, PART NAME, ITEM NUMBER AND SERIAL NUMBER

ITEM	PART NAME
45	SQUARE HEAD SET SCREW
44	A–100 IMPELLER

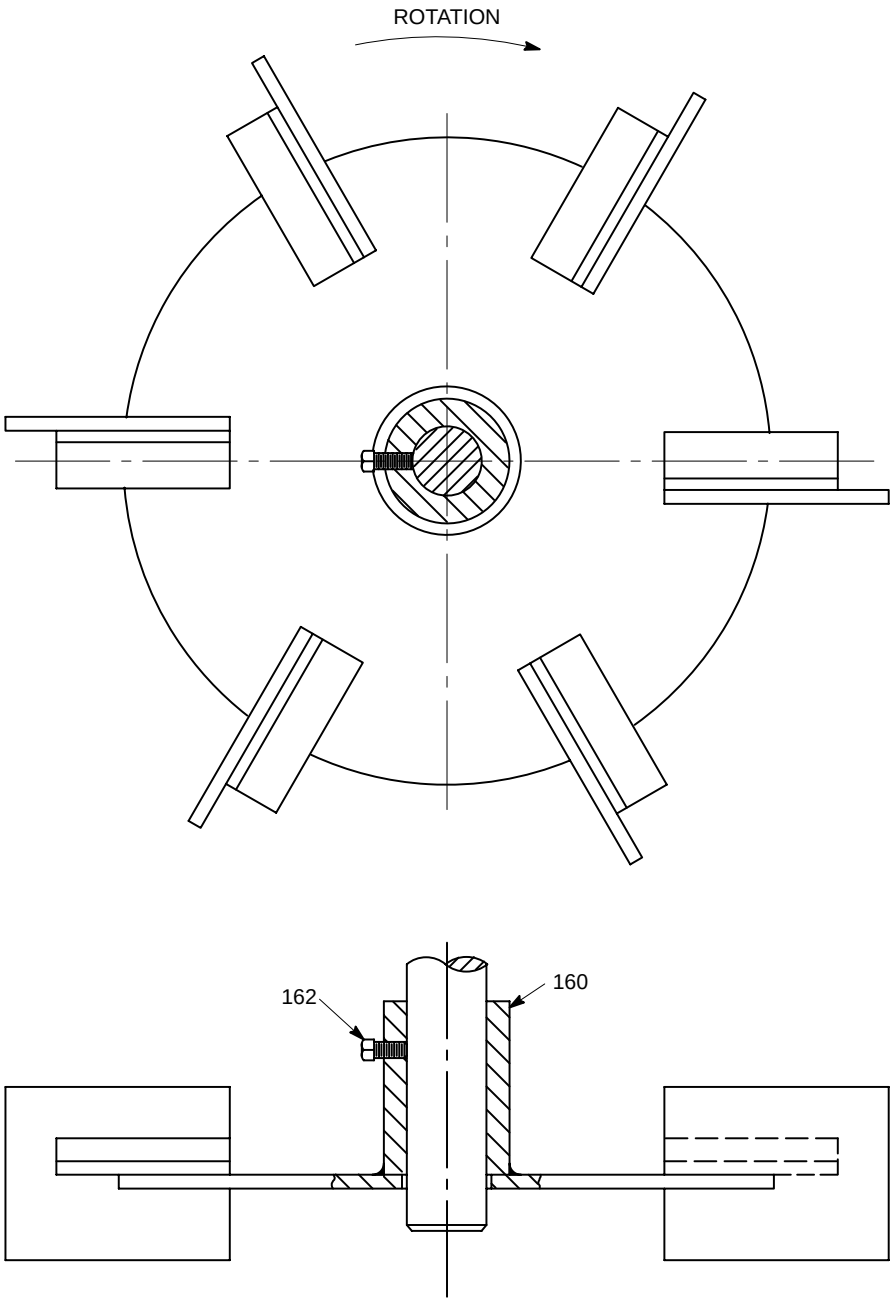
ISO 9001
CERTIFIED

LIGHTNIN

MIXERS AND AERATORS

ASSEMBLY DRAWING

A–100 IMPELLER



WHEN ORDERING PARTS SPECIFY:
DRAWING NUMBER, PART NAME, ITEM NUMBER AND SERIAL NUMBER.

ITEM	PART NAME
162	SET SCREW
160	TURBINE

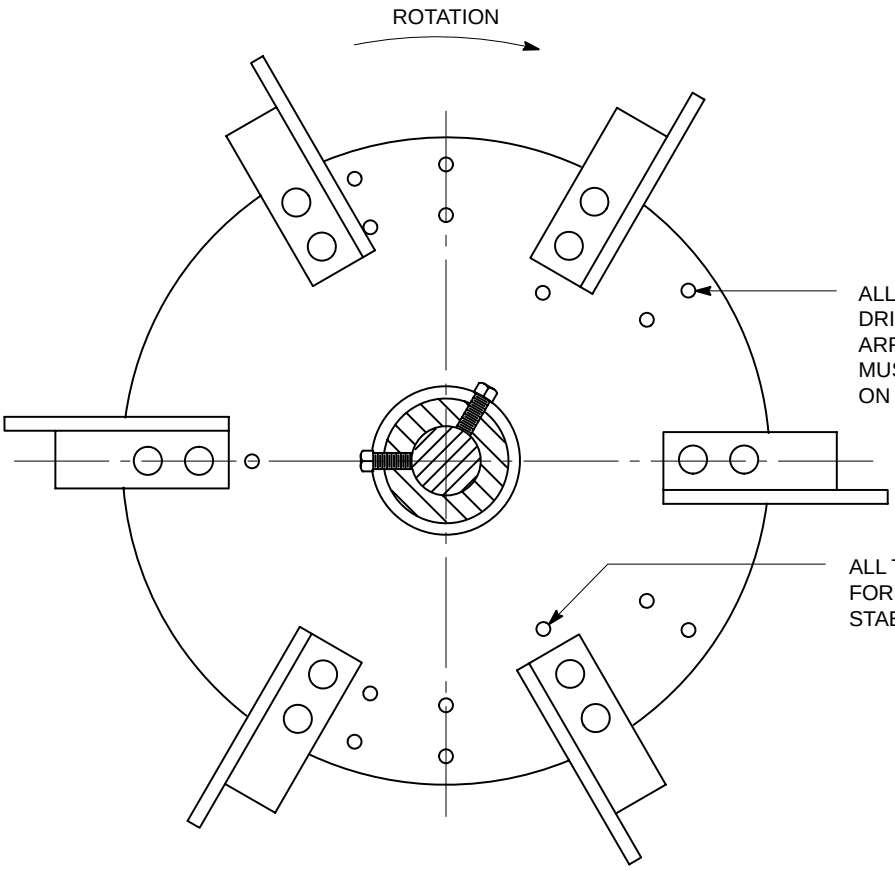
ISO 9001
CERTIFIED

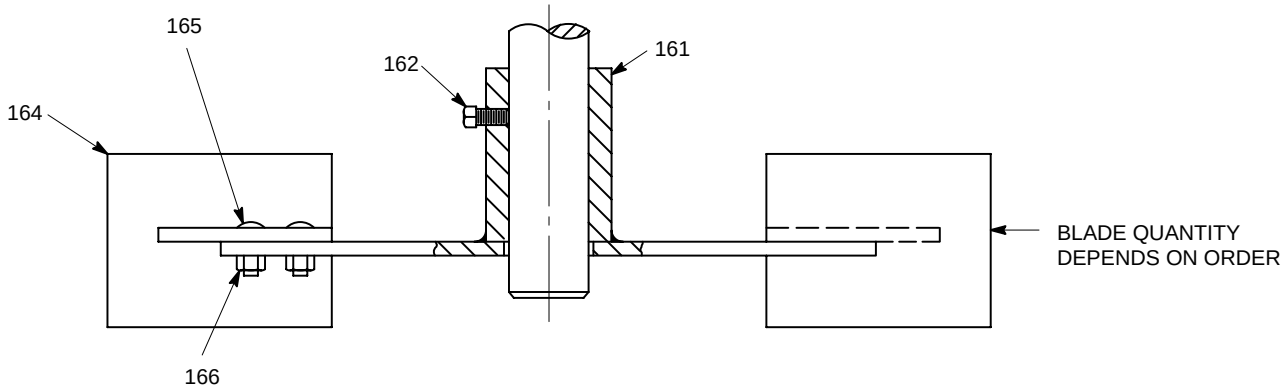
LIGHTNIN

MIXERS AND AERATORS
ASSEMBLY DRAWING

R100 ALL WELDED PILOT PLANT TURBINE

DRAWING NO. L–16844





WHEN ORDERING PARTS SPECIFY: DRAWING NUMBER, PART NAME, ITEM NUMBER AND SERIAL NUMBER.

ITEM	PART NAME
166	MACH. SCREW NUT
165	ROUND HD. MACH. SCREW
164	FLAT BLADE
162	SET SCREW (2 REQ'D)
161	HUB & DISC ASSEMBLY

LIGHTNIN ®
MIXERS AND AERATORS

ISO 9001
CERTIFIED

ASSEMBLY DRAWING

R100
PILOT PLANT TURBINE

BOLT TIGHTENING TORQUE RECOMMENDATIONS

Inadequately or improperly tightened hardware can loosen due to vibration or the load reactions imposed by fluid forces. This can result in reduced equipment service life or damage and failure.

Recommended torques for tightening ANSI bolts and screws on ***LIGHTNIN*** Mixers and Aerators and their mounting structures are listed below for your general reference. These average torque values should be considered only as guides and not as absolute values.

The amount of torque required to maintain a tight connection can vary considerably for bolts of the same size under different operating conditions. Variations such as basic joint design, compression factors, type and strength of base and hardware material, surface finish of mating parts and lubrication are only some of the factors that influence the tightness of bolted connections for given bolt torques.

UNLESS SPECIFICALLY LISTED ELSEWHERE IN THE DETAILED INSTRUCTIONS, TIGHTEN THE MIXER AND MOUNTING HARDWARE TO THE RECOMMENDED VALUES SHOWN IN. A torque wrench must be used to ensure compliance with these torque requirements.

Certain assembly connections may require special torques that are not listed in the table. These torques can be found in the detailed assembly and disassembly sections of your manual. REVIEW YOUR MANUAL CAREFULLY TO DETERMINE WHERE SPECIAL TORQUES ARE REQUIRED.

For severe duty service, torques higher than listed, to tighten a bolt to maximum capacity, can often be used. However, due to the many variables previously mentioned, the only absolute method to determine optimum torque is to deliberately yield a bolt under actual conditions. If a bolt does yield or shear, 75% of the torque applied in yielding the bolt can be used to obtain a tight connection that is satisfactory.

ALL BOLTS SHOULD BE RETIGHTENED 12 HOURS AFTER ASSEMBLY, AND AT EACH SCHEDULED SHUT DOWN THEREAFTER.

RECOMMENDED TIGHTENING TORQUES FOR COMMERCIAL GRADE STEEL, GR5, 304 AND 316 STAINLESS STEEL (1) (2)

BOLT THREAD SIZE	TIGHTENING TORQUES (IN FT-LBS) **(4)** GRADE 2, 3 OR 304/316 SS BOLTS LUBRICATED	TIGHTENING TORQUES (IN FT-LBS) **(4)** GRADE 5 BOLTS LUBRICATED	MARKING GRADE	STEEL SAE GRADE MARKING REFERENCE GUIDE **(2)**
1/4 - 20	4.6	7.2	 NO MARK	SAE GRADES 0, 1 AND 2
5/16 - 18	9.6	15		
3/8 - 16	17	26		
7/16 - 14	27	42		SAE GRADE 3
1/2 - 20	41	64		
9/16 - 12	60	92		
5/8 - 11	83	128		SAE GRADE 5
3/4 - 10	146	226		
7/8 - 9 **(3)**	142	365		
1 - 8	212	547		ALL SOCKET HEAD CAP SCREWS SAE GRADE 5
1 1/8 - 7	301	675		
1 1/4 - 7	425	952		
1 3/8 - 6	557	1249		
1 1/2 - 6	739	1657		
1 3/4 - 5 **(3)**	754	1600		
2 - 4 1/2	1134	2406		
2 1/4 - 4 1/2	1659	3519		
2 1/2 - 4	2269	4813		

(1) ALL BOLTS SHOULD BE COATED WITH OIL, GREASE OR AN ANTI-SEIZE COMPOUND WHENEVER POSSIBLE. THE THREADS AND BEARING FACE OF BOLT HEADS AND/OR NUTS SHOULD BE LUBRICATED.

(2) TORQUE VALUES SHOWN SUPERSEDE PREVIOUS TABLES THAT MAY HAVE ALLOWED LOWER VALUES. IT IS RECOMMENDED THAT ONLY FASTENERS BE USED THAT ARE PROPERLY MARKED, INCLUDING MANUFACTURER'S TRADE MARKING. ONLY FASTENERS MARKED AS SHOWN ARE GUARANTEED TO MEET SPECIFICATION AND PERFORMANCE REQUIREMENTS.

(3) ALLOWABLE BOLT STRESS VALUES CHANGE AT THESE LOCATIONS AND IS REFLECTED IN THE SUGGESTED TORQUE VALUES.

(4) **CONVERSION FACTORS:**

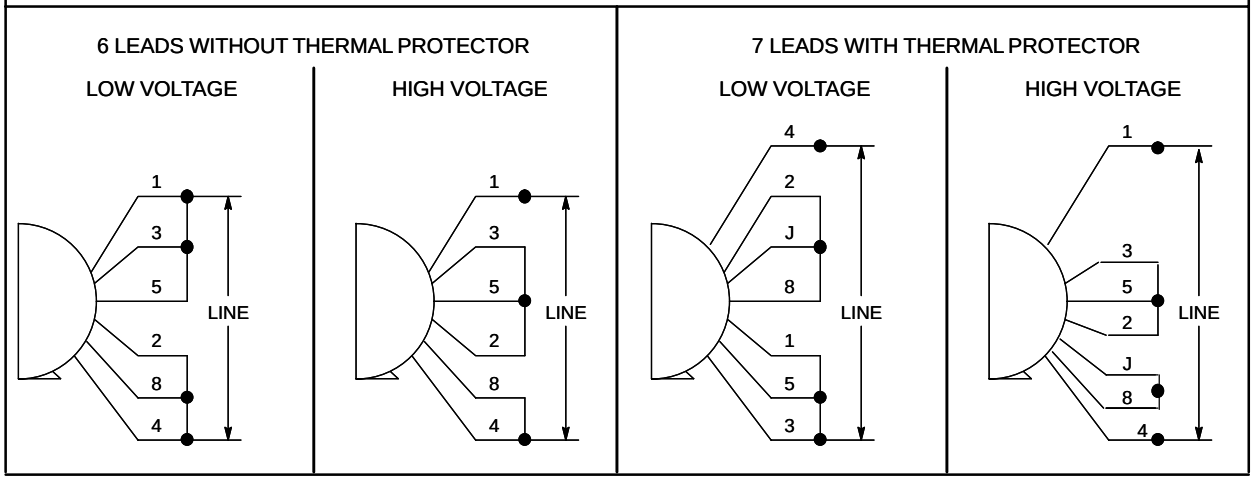
FRICTION LOCKING DEVICES MULTIPLY LUBRICATED VALUE BY 1.15. THESE TORQUES PERTAIN TO BOLTS OR NUTS WITH FRICTION LOCKING DEVICES SUCH AS NYLON PELLETS OR PATCHES, FIBER INSERTS OR UPSET THREADS.

DRY VALUES MULTIPLY LUBRICATED VALUE BY 1.33.

METRIC VALUES IN N-m 1FT-LB = 1.3558 N-m

CONNECTION DIAGRAM SINGLE PHASE MOTORS

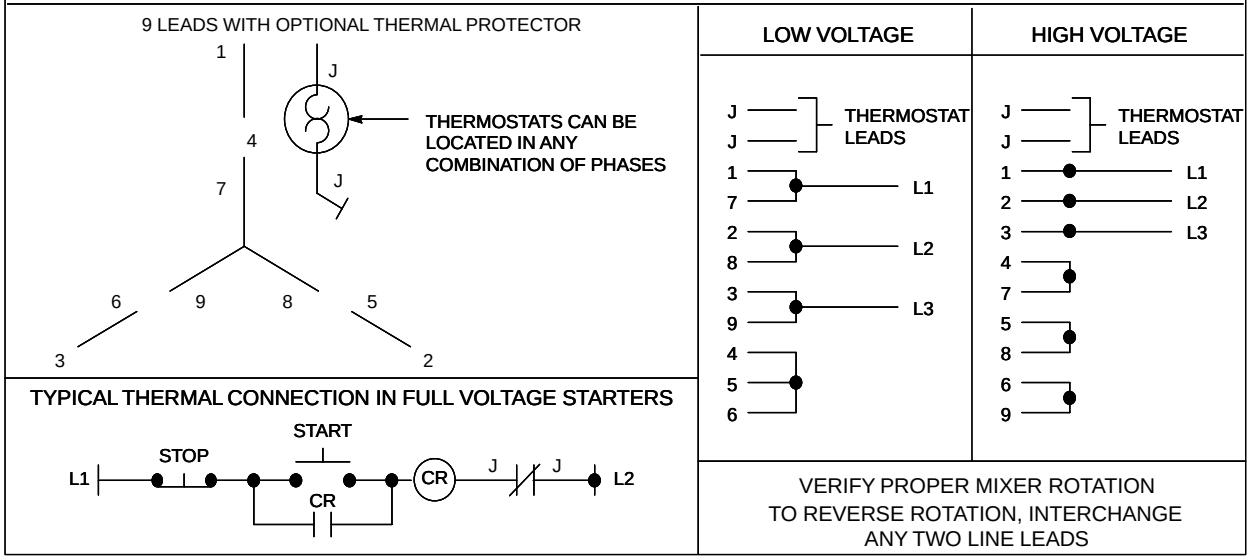
FIGURE 1 – CONNECTION DIAGRAM



VERIFY PROPER MIXER ROTATION
TO REVERSE ROTATION, INTERCHANGE LEADS 5 AND 8

CONNECTION DIAGRAM THREE PHASE MOTORS

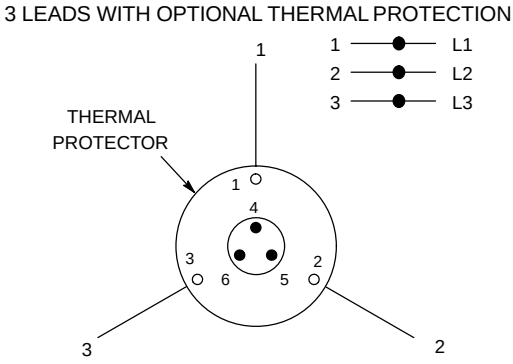
FIGURE 2 – CONNECTION DIAGRAM



ALL XP MOTORS HAVE THERMAL PROTECTION (J)

CONNECTION DIAGRAM 3 PHASE SINGLE VOLTAGE

FIGURE 3 – CONNECTION DIAGRAM



VERIFY PROPER MIXER ROTATION
TO REVERSE ROTATION, INTERCHANGE ANY TWO LINE LEADS

WARNING: MOTORS THAT HAVE AUTOMATIC THERMAL RESETS CAN START AUTOMATICALLY ONCE THE MOTOR HAS COOLED. TO AVOID POSSIBLE INJURY, DISCONNECT THE POWER, ALLOW THE MOTOR TO COOL, THEN RECONNECT THE POWER.

MIXER PARTS **UNIT SIZE: XDQ–30, XDQ–43, XDAQ–33**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
NOTE: See mixer nameplate or spec. sheet for unit size & ratio. See Assembly Drawing for item no. identifier							
			DRAWING: L–16716				
1			HEX HEAD CAP SCREW	2	100324CPS		
2			HEX HEAD CAP SCREW	2	100325CPS		
3			LOCKWASHER – MOTOR SHAFT SCREW	1	115012PSP		
4			MOTOR SHAFT SCREW	1	102007CPS		
7		A	HANDLE PIN (XDAQ–33)	2	108500PSP		
8		C	CHUCK SCREW	1	105861CPG		
11		C	LIMIT PIN	1	272668420		
18		C	CHUCK WASHER	1	112756S16		
20			BRASS WASHER	4	112762BRH		
21		C	SNAP RING	1	114276302		
23*			RETAINING RING	1	114280PSP		
24*			OIL SEAL	1	115382PSP		
25			FLEXIBLE MOUNTS	4	138317PSP		
			FLEXIBLE MOUNT KIT – PRE 1978 HOUSING (INCLUDES ITEMS 25, 47, 48, 49 & 50)	1	1500A06PSP		
27*			BALL BEARING	1	116223PSP		
34		C	CHUCK GRIP	1	130012316		
35		A	MOTOR HANDLE (XDAQ–33)	1	135225ALM		
36			HOUSING KIT (INCLUDES ITEMS 25 & 105)	1	136531KIT		
38			DRIVE SHAFT WITH CHUCK	1	143799PD4		
			DRIVE SHAFT WITH COUPLING	1	14381241L		
43			HEX KEY WRENCH (FOR CHUCK)	1	127210BPF		
46			MOTOR SHAFT KEY	1	114196STL		
47			LOCKWASHER (ANGLE RISER ONLY)	4	112207CPS		
48			HEX HEAD CAP SCREW (ANGLE RISER ONLY)	4	100159CPS		
49			HEX NUT (ANGLE RISER ONLY)	4	107010CPS		
50			PLAINWASHER (ANGLE RISER ONLY)	4	112012CPS		
59			SHAFT SCREW WASHER	1	112788STL		
67		R	HEX HEAD CAP SCREW	4	100122CPS		
68		R	LOCKWASHER	4	112205STL		
81		A	PIPE NIPPLE	1	122103BRS		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Coupling Construction

Blank code denotes common parts

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XDQ–30, XDQ–43, XDAQ–33**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
82		A	NEEDLE VALVE	1	122910BRS		
83		A	AIR HOSE COUPLING	1	122704BRS		
84		A	MUFFLER	1	150000PSP		
100			ANGLE RISER ASSEMBLY	1	802062PSP		
102			ANGLE RISER (LEFT HAND)	1	130015STL		
103			ANGLE RISER (RIGHT HAND)	1	130016STL		
105			COVER PLATE KIT (INCLUDES HARDWARE)	1	801844PSP		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Coupling Construction

Blank code denotes common parts

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XDQ–174, XDQ–230, XDQ–350, XDAQ–300**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
NOTE: See mixer nameplate or spec. sheet for unit size & ratio. See Assembly Drawing for item no. identifier							
			DRAWING: L–16716				
1			HEX HEAD CAP SCREW	2	100147CPS		
		A		2	100143STL		
2			HEX HEAD CAP SCREW	2	100138CPS		
4			SHAFT SCREW	1	102561GR5		
8		C	CHUCK SCREW	1	105860316		
					105860CPG		
11		C	LIMIT PIN	1	272668420		
18		C	CHUCK WASHER	1	112750316		
					112750S16		
20			WASHER	2	112761BRS		
21		C	SNAP RING	1	114273302		
23*			RETAINING RING	1	114275PSP		
24*			OIL SEAL	1	115381PSP		
25			FLEXIBLE MOUNTS	4	138317PSP		
		(1)	FLEXIBLE MOUNT KIT (PRE 1978 HOUSING)	1	1500A06PSP		
27*			BALL BEARING	1	116225PSP		
34		C	CHUCK GRIP	1	130010316		
35		A	EYEBOLT	2	105619CPS		
36			HOUSING KIT (INCLUDES ITEMS 25 & 105)	1	136532KIT		
					136532NKIT		
38		C	DRIVE SHAFT WITH CHUCK	1	143778PD4		
		R	DRIVE SHAFT WITH COUPLING	1	14380941L		
					143809PD4		
41		A	EYEBOLT (XDAQ–300)	2	105619CPS		
43		C	HEX KEY WRENCH (FOR CHUCK)	1	127209BPF		
46			MOTOR SHAFT KEY	1	190750STL		
47		(2)	LOCKWASHER	4	112207CPS		
48		(2)	HEX HEAD CAP SCREW	4	100159CPS		
49		(2)	HEX NUT	4	107010CPS		
50		(2)	PLAIN WASHER	4	112012CPS		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction

(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser Units Only

Blank code denotes common parts

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XDQ–174, XDQ–230, XDQ–350, XDAQ–300**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
67		R	HEX HEAD CAP SCREW	4	100139STL		
					100139316		
68		R	LOCKWASHER	4	112206STL		
					112206316		
72		A	COUPLING	1	131070BRS		
74		A	GASKET	1	125687VEL		
76		A	HEX HEAD CAP SCREW	4	100122CPS		
77		A	LOCKWASHER	4	112205STL		
81		A	PIPE NIPPLE	1	122105BRS		
82		A	BALL VALVE	1	122912BRZ		
83		A	AIR HOSE COUPLING	1	122706BRS		
84		A	MUFFLER	1	123631PSP		
100			ANGLE RISER ASSEMBLY	1	802063PSP		
102			ANGLE RISER (LEFT HAND)	1	130017STL		
103			ANGLE RISER (RIGHT HAND)	1	130018STL		
105			COVER PLATE KIT (INCLUDES HARDWARE)	1	801845PSP		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction

(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser Units Only

Blank code denotes common parts

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XJQ–30, XJQ–43, XJAQ–33**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
NOTE: See mixer nameplate or spec. sheet for unit size & ratio. See Assembly Drawing for item no. identifier							
			DRAWING: L–16717, L–16730				
2			HEX HEAD CAP SCREW	4	100128CPS		
3			LOCKWASHER – PINION SCREW	1	115012PSP		
4			PINION SCREW	1	102007CPS		
7		A	HANDLE PIN (XJAQ–33)	2	108500PSP		
8		C	CHUCK SCREW	1	105861316		
					105861CPG		
11		C	LIMIT PIN	1	272668420		
18		C	CHUCK WASHER	1	112756316		
					112756S16		
20			WASHER	4	112762BRH		
21		C	SNAP RING	1	114276302		
22*			RETAINING RING	1	114278PSP		
23*			RETAINING RING	2	114282PSP		
24			OIL SEAL	1	115355PSP		
25			FLEXIBLE MOUNTS	4	138317PSP		
			FLEXIBLE MOUNT KIT – PRE 1978 HOUSING (INCLUDES ITEMS 25, 47, 48, 49 & 50)	1	1500A06PSP		
26*			OIL SEAL	1	115358PSP		
27*			BALL BEARING	1	116243PSP		
28*			INNER RING	1	117028PSP		
29*			OUTER RING & ROLLER ASSEMBLY	1	117027PSP		
30			GEAR & PINION SET	1	119869PSP		
31			PINION	1	119806STL		
34		C	CHUCK GRIP	1	130012316		
35		A	HANDLE (XJAQ–33)	1	135225ALM		
36			HOUSING KIT (INCLUDES ITEMS 25 & 105)	1	136528KIT		
37			GRIP SPRING SPACER	1	138808STL		
38			DRIVE SHAFT WITH CHUCK	1	143794PD4		
			DRIVE SHAFT WITH COUPLING	1	14385141L		
				1	143851PD4		
39*			GRIP SPRING (SET OF 2)	2	147031PSP		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Coupling Construction

Blank code denotes common parts

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XJQ–30, XJQ–43, XJAQ–33**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
43		C	HEX KEY WRENCH FOR CHUCK	1	127210BPF		
46			MOTOR SHAFT KEY	1	114196STL		
			UNITS WITH ANGLE RISER & FLEX MOUNTS:				
47			LOCKWASHER	4	112207CPS		
48			HEX HEAD CAP SCREW	4	100159CPS		
49			HEX NUT	4	107010CPS		
50			PLAINWASHER	4	112012CPS		
			UNITS WITH ANGLE RISER, NO FLEX MOUNTS:				
47			LOCKWASHER	4	112206CPS		
48			HEX HEAD CAP SCREW	4	100147CPS		
49			HEX NUT	4	107008CPS		
50			PLAINWASHER	4	112008CPS		
59			WASHER – SHAFT SCREW	1	112777STL		
60*			O–RING	1	115766BUN		
61*			GRIP SPRING LOCKNUT	1	107717STL		
67		R	HEX HEAD CAP SCREW	4	100127STL		
					100127316		
68		R	LOCKWASHER	4	112205STL		
					112205316		
69		R	HEX NUT	4	107004STL		
					107004316		
81		A	PIPE NIPPLE	1	122103BRS		
82		A	NEEDLE VALVE	1	122910BRS		
83		A	AIR HOSE COUPLING	1	122704BRS		
84		A	MUFFLER	1	150000PSP		
100			ANGLE RISER ASSEMBLY (WITH FLEX MOUNTS)	1	802062PSP		
102			ANGLE RISER (LEFT HAND)	1	130015STL		
103			ANGLE RISER (RIGHT HAND)	1	130016STL		
105			COVER PLATE KIT (INCLUDES HARDWARE)	1	801846PSP		
			LUBRICANT – STANDARD – 2 LB CAN (1)	1	123620PSP		
			LUBRICANT – FOOR GRADE – 14 OZ TUBE	2	275255PSP		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Coupling Construction

Blank code denotes common parts

1.) Ambient temperatuer 50 – 200 Deg. F

* Recommended spare parts

MIXER PARTS **UNIT SIZE: XJQ–65, XJQ–87, XJQ–117, XJAQ–100**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
NOTE: See mixer nameplate or spec. sheet for unit size & ratio. See Assembly Drawing for item no. identifier							
			DRAWING: L–16717, L–16730				
2			HEX HEAD CAP SCREW	4	100325CPS		
3			LOCKWASHER (PINION SCREW)	1	115013PSP		
4			PINION SCREW	1	102009CPS		
7		A	HANDLE PIN (XJAQ–100)	2	108500PSP		
8		C	CHUCK SCREW	1	105861316		
					105861CPG		
11		C	LIMIT PIN	1	272668420		
18		C	CHUCK WASHER	1	112756316		
					112756S16		
20			WASHER	4	112762BRH		
21		C	SNAP RING	1	114276302		
22*			RETAINING RING	1	114279PSP		
23*			RETAINING RING	2	114283PSP		
24*			OIL SEAL	1	115356PSP		
25*			FLEXIBLE MOUNTS	4	138317PSP		
		(1)	FLEXIBLE MOUNTING KIT (PRE 1978)	1	1500A06PSP		
26*			OIL SEAL	1	115357PSP		
27*			BALL BEARING	1	116222PSP		
28*			INNER RING	1	117026PSP		
29*			OUTER RING & ROLLER ASSEMBLY	1	117025PSP		
30			GEAR & PINION SET	1	119866PSP		
31			PINION	1	119804STL		
34		C	CHUCK GRIP	1	130011316		
35			HANDLE (XJAQ–100)	1	135225ALM		
36			HOUSING KIT (INCLUDES ITEMS 25 & 105)	1	136529KIT		
37			GRIP SPRING SPACER	1	138810STL		
38		C	DRIVE SHAFT WITH CHUCK	1	143782PD4		
		R	DRIVE SHAFT WITH COUPLING	1	14385041L		
					143850PD4		
39			GRIP SPRING (2 PER SET)	2	147030PSP		
43		C	HEX KEY WRENCH	1	127210BPF		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction

(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser Units Only

Blank code denotes common parts

* Recommended spare parts

NOTE: Flexible Mounting Kit (1978 and newer) is PN 803557PSP.

MIXER PARTS **UNIT SIZE: XJQ–65, XJQ–87, XJQ–117, XJAQ–100**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
46			MOTOR SHAFT KEY	1	114196STL		
47		(2)	LOCKWASHER (WITH FLEX MOUNTS)	4	112207CPS		
		(2)	LOCKWASHER (NO FLEX MOUNTS)	4	112206CPS		
48		(2)	HEX HEAD CAP SCREW (WITH FLEX MOUNTS)	4	100159CPS		
		(2)	HEX HEAD CAP SCREW (NO FLEX MOUNTS)	4	100147CPS		
49		(2)	HEX NUT (WITH FLEX MOUNTS)	4	107010CPS		
		(2)	HEX NUT (NO FLEX MOUNTS)	4	107008CPS		
50		(2)	PLAIN WASHER (WITH FLEX MOUNTS)	4	112012CPS		
		(2)	PLAIN WASHER (NO FLEX MOUNTS)	4	112008CPS		
59			WASHER (PINION SCREW)	1	112778STL		
60*			O–RING	1	115766BUN		
61*			GRIP SPRING LOCKNUT	1	107716STL		
67		R	HEX HEAD CAP SCREW	4	100143STL		
					100143316		
68		R	LOCKWASHER	4	112206STL		
					112206316		
69		R	HEX NUT	4	107008CPS		
					107008316		
81		A	PIPE NIPPLE	1	122103BRS		
82		A	BALL VALVE	1	122910BRS		
83		A	AIR HOSE COUPLING	1	122704BRS		
84		A	MUFFLER	1	150000PSP		
100			ANGLE RISER ASSEMBLY (W/FLEX MOUNTS)	1	802064PSP		
102			ANGLE RISER (LEFT HAND)	1	130019STL		
103			ANGLE RISER (RIGHT HAND)	1	130020STL		
105			COVER PLATE KIT (INCLUDES HARDWARE)	1	801847PSP		
			LUBRICANT – STANDARD – 2 LB CAN (3)	2	123620PSP		
			LUBRICANT – FOOD GRADE – 14 OZ TUBE	3	275255psp		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction

Blank code denotes common parts

(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser Units Only
= Flexible Mounts (Item 25) required with replacement housing
(3) = Ambient temperature 50 – 200 deg. F

* Recommended spare parts

NOTE: Flexible Mounting Kit (1978 and newer) is PN 803557PSP.

MIXER PARTS **UNIT SIZE: XJQ–174, XJQ–230, XJQ–350, XJAQ–300**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
NOTE: See mixer nameplate or spec. sheet for unit size & ratio. See Assembly Drawing for item no. identifier							
			DRAWING: L–16717, L–16730				
1			HEX HEAD CAP SCREW	2	100147CPS		
		A			100143STL		
2			HEX HEAD CAP SCREW	2	100138CPS		
4			PINION CAP SCREW	1	102560GR5		
8		C	CHUCK SCREW	1	105860316		
					105860CPG		
11		C	LIMIT PIN	1	272668420		
18		C	CHUCK WASHER	1	112750S16		
					112750316		
20			WASHER	2	112761BRS		
21		C	SNAP RING	1	114273302		
22*			RETAINING RING	1	114274PSP		
23*			RETAINING RING	2	114284PSP		
24*			OIL SEAL	1	115349PSP		
25*			FLEXIBLE MOUNT	4	138317PSP		
		(1)	FLEXIBLE MOUNTING KIT (PRE 1978)	1	1500A06PSP		
26*			OIL SEAL	1	115350PSP		
27*			BALL BEARING	1	116677PSP		
28*			INNER RING	1	117024PSP		
29*			OUTER RING & ROLLER ASSEMBLY	1	117023PSP		
30		#	GEAR & PINION SET	1	119863PSP		
31		#	PINION	1	119802STL		
34		C	CHUCK GRIP	1	130010316		
35		A	EYEBOLT (XJAQ–300)	2	105619CPS		
36			HOUSING KIT (INCLUDES ITEMS 25 & 105)	1	136530KIT		
37			GRIP SPRING SPACER	1	138812STL		
38		C	DRIVE SHAFT WITH CHUCK	1	143777PD4		
		R	DRIVE SHAFT WITH COUPLING	1	14385241L		
					143852PD4		
39			GRIP SPRING (2 PER SET)	2	147029PSP		
43		C	HEX KEY WRENCH (FOR CHUCK)	1	127209BPF		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction
(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser units only
** = Non–stock

= Slinger, Item 71 (139054PSP) should be ordered when changing pinion or motor.

* Recommended spare parts Blank code denotes common parts

NOTE: Flexible Mounting Kit (1978 and newer) is PN 803557PSP

MIXER PARTS **UNIT SIZE: XJQ–174, XJQ–230, XJQ–350, XJAQ–300**

For service and repair, call 1–888–MIX BEST (1–888–649–2378)

ITEM NO.	IDENT. CODE ♦		DESCRIPTION	QTY.	PART NO.	PRICE (EACH)	SHIPMENT (WEEKS)
46			MOTOR SHAFT KEY	1	190750STL		
47		(2)	LOCKWASHER (WITH FLEX MOUNTS)	4	112207CPS		
			LOCKWASHER (NO FLEX MOUNTS)	4	112206CPS		
48		(2)	HEX HEAD CAP SCREW (WITH FLEX MOUNTS)	4	100159CPS		
			HEX HEAD CAP SCREW (NO FLEX MOUNTS)	4	100147CPS		
49		(2)	HEX NUT (WITH FLEX MOUNTS)	4	107010CPS		
			HEX NUT (NO FLEX MOUNTS)	4	107008CPS		
50		(2)	PLAIN WASHER (WITH FLEX MOUNTS)	4	112012CPS		
			PLAIN WASHER (NO FLEX MOUNTS)	4	112008CPS		
60*			O–RING	1	115763BUN		
61			GRIP SPRING LOCKNUT	1	107715STL		
67		R	HEX HEAD CAP SCREW	4	100139STL		
					100139316		
68		R	LOCKWASHER	4	112206STL		
					112206316		
70			OIL SEAL	1	115402PSP		
71			SLINGER	1	139054PSP		
72		A	COUPLING	1	131070BRS		
73		A	HOUSING ADAPTER	1	132662ALF		
74		A	GASKET	1	125687VEL		
76		A	HEX HEAD CAP SCREW	4	100122CPS		
77		A	LOCKWASHER	4	112205STL		
81		A	PIPE NIPPLE	1	122105BRS		
82		A	BALL VALVE	1	122912BRZ		
83		A	AIR HOSE COUPLING	1	122706BRS		
84			MUFFLER	1	123631PSP		
100			ANGLE RISER ASSEMBLY (WITH FLEX MOUNTS)	1	802063PSP		
101			ANGLE RISER ASSEMBLY (NO FLEX MOUNTS)	1	800441PSP		
102			ANGLE RISER (LEFT HAND)	1	130017STL		
103			ANGLE RISER (RIGHT HAND)	1	130018STL		
105			COVER PLATE KIT (INCLUDES HARDWARE)	1	801848PSP		
			LUBRICANT – STANDARD – 2 LB CAN (3)	3	123620PSP		
			LUBRICANT – FOOD GRADE – 14 OZ TUBE	7	275255PSP		

♦ **IDENTITY CODE:**

A = Air Motor
C = Chuck Construction
R = Rigid Coupling Construction

(1) = Kit contains Items 25, 47, 48, 49 & 50
(2) = Angle Riser units only
(3) = Ambient temperature 50–200 Deg. F

= Slinger, Item 71 (139054PSP) should be ordered when changing pinion or motor.
** = Non–stock

* Recommended spare parts Blank code denotes common parts

NOTE: Flexible Mounting Kit (1978 and newer) is PN 803557PSP

FOR AN UP TO DATE REPRESENTATIVE LIST

PLEASE GO TO: www.lightnin-mixers.com

-OR-

CALL: 1-888-649-2378

1-888-MIX-BEST

Notes

LIGHTNIN

REPAIR & SERVICE GUIDE

LIGHTNIN Process Equipment Services (LPES): The fastest route to uptime.

Expertise: LPES technicians are the backbone of our dedicated service organization. They're uniquely qualified to keep your LIGHTNIN mixers running right.

Lightnin Certified Technicians: All LPES technicians are certified via training courses to ensure that the work they do meets the highest standards for consistency and reliability.

Genuine LIGHTNIN Parts: All LPES repairs follow original design specs and use only factory-authorized replacement parts.

Full LIGHTNIN Factory Warranty: We're so confident we'll do the job right that all LPES repair and service work is covered by a full factory warranty. What we repair, we guarantee – 100%.

Repair Services: *LIGHTNIN provides quick, reliable repair services – using only certified technicians and factory-authorized replacement parts – on gearboxes, mechanical seals (seal cartridge and seal assembly), steady bearings, machine assemblies, impellers, shafts and all portable units. This service can be provided either at your site or at a LIGHTNIN Service Center location. All work is backed by LIGHTNIN's full warranty on all parts and service.*

Exchange Services: *By eliminating repair time, LIGHTNIN Exchange Services offer the fastest way to get up and running when a breakdown occurs. LPES keeps selected speed reducers, portable units and mixer subassemblies in stock – and available for immediate exchange – at regional service centers. Simply call and we will configure the appropriate assembly and ship it to you within 24 hours. Then send the damaged assembly back to us within 30 days – to ensure you receive a discounted price.*

Equipment Upgrade Services: *Preventive maintenance is your best defense against costly unplanned downtime and repairs associated with old or obsolete equipment. The full range of LPES upgrade services give you a convenient and cost-efficient way to address problems before they happen by converting older equipment to the latest, most reliable LIGHTNIN designs.*

Additional LPES Services: *In addition to minimizing downtime and repair costs when equipment failure occurs, LPES offers a comprehensive range of services for maximizing productivity through every stage of the equipment life cycle.*

- **Installation and Start-up**
- **Maintenance and Repair**
- **Asset Management**

LIGHTNIN Process Equipment Services Warranty

When repairs to your LIGHTNIN mixer are needed, we guarantee the results for one full year. This exclusive warranty covers all parts and labor. Talk to your LIGHTNIN sales representative for more information.

Call:

The LIGHTNIN Experts

When your need is urgent and after normal business hours call our 24-hour response team hotline at 1-888-MIX-BEST (U.S. and Canada). Your request will be promptly processed and directed to your nearest LPES team member. For more information visit our website at: www.lightninmixers.com.

Factory Service Center Locations

Chicago, Illinois
Houston, Texas
Mulberry, Florida
Reading, Pennsylvania
Rochester, New York
San Francisco, California
Wytheville, Virginia

Authorized Service Center Locations

Baton Rouge, Louisiana
Concord, Ontario, Canada
East Hanover, New Jersey
Macon, Pooler, Roswell, Georgia