



08/13/2014  
 Patriot Biofuels  
 101 Patriot Way  
 ANNAWAN, IL 61234  
 USA

Purchase Order #: 008731  
 Sales Order #: 0001876901  
 Line Item: 000010

Please note this documentation is being submitted for your review and approval. Procurement & Fabrication can not proceed until approval of these drawings are received by LIGHTNIN. Please return one copy of each drawing marked "APPROVED", "APPROVED AS NOTED" or "NOT APPROVED - RESUBMIT". Drawings marked "APPROVED" or "APPROVED AS NOTED" will be released for material procurement and fabrication.

Please also note that price and delivery are contingent upon return and approved with 30 days of the date noted above. Drawings not received by this date may result in delayed delivery based on manufacturing capacity.

Submitted Date: 08/13/2014  
 Print Quantity: 01

Document Name	Document Number	Document Revision
General Arrangement Drawing	1876901000010-A	
Assembly Drawing X5S & X6S	L-17997	
Seal Assembly Drawing	1748252010-B	
A310 (1 piece) Impeller Assembly	L-16701	
Sales Offices	IT-3839	P

Thank You.

For Questions please call: John Hogan  
 Surkamp & Rowe, Inc.  
 Phone #: 513-489-2850  
 Email: sally.elkins@surkamp-rowe.com

Please return drawings via e-mail, fax or hard copy to:  
 CATHY STOWE  
 135 MT READ BLVD  
 ROCHESTER, NY 14611  
 USA  
 Fax: 585-527-1744  
 E-Mail: cathy.stowe@spx.com



# Lightnin Mixer Model X5S150

Ship To: Patriot Fuels Biodiesel LLC  
Customer: Patriot Fuels Biodiesel LLC  
PO Number: 008731

Order: 0001876901 Line: 000010

READ AND UNDERSTAND THIS DOCUMENT PRIOR TO OPERATING OR SERVICING THIS PRODUCT.



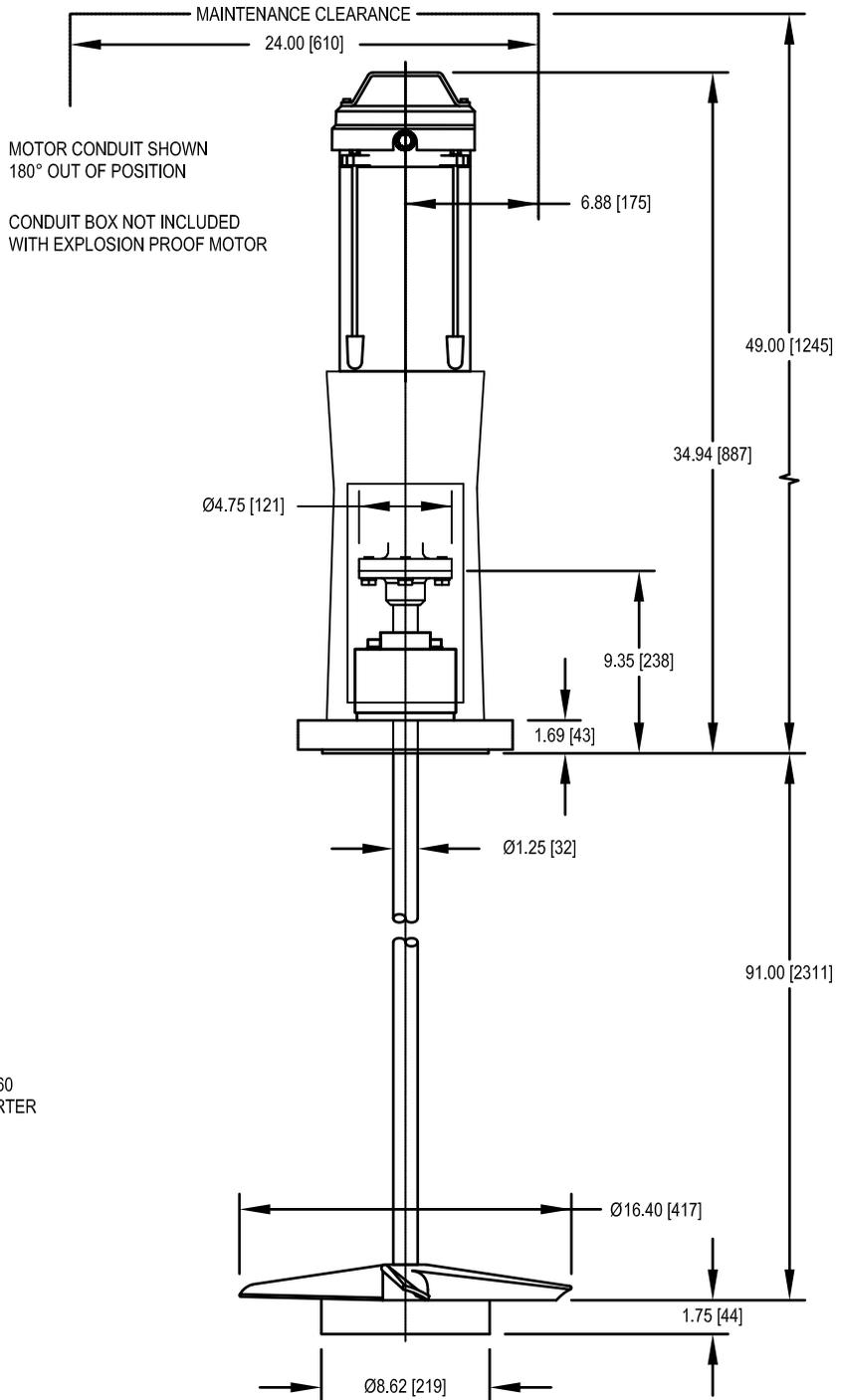
## Table of Contents

### TITLE

General Arrangement Drawing  
Assembly Drawing X5S & X6S  
Seal Assembly Drawing  
A310 (1 piece) Impeller Assembly  
Sales Offices

### DOCUMENT NO.

1876901000010-A  
L-17997  
1748252010-B  
L-16701  
IT-3839



NOTES:

- ① MOTOR DATA:  
 H.P.: 1.50 R.P.M.: 1725  
 VOLTS: 230/460 PHASE: 3 Hz: 60  
 ENCLOSURE: XPFC DUTY: STANDARD-INVERTER  
 IMPELLER SPEED - 350 IMPELLER TYPE - A310
- ② APPROXIMATE TOTAL MIXER WEIGHT IS 280.75 lbs [127 kg]  
 WEIGHT WILL VARY WITH MOTOR CHARACTERISTICS.
- ③ ALL DIMENSIONS ARE IN INCHES [mm] AND ARE MAXIMUM.
- ④ MIXER MOUNTING DESIGN DATA:  
 VERTICAL DOWNWARD LOAD: 510 LBS. [2269 N]  
 TORQUE: 650 IN.-LBS. [73 N•m]  
 BENDING MOMENT: 8700 IN.-LBS. [983 N•m]  
 DESIGN LOADS ARE GREATER THAN ACTUAL LOADS  
 BY A SUITABLE FACTOR, CONSISTENT WITH  
 CONSTRUCTION CODES AND **LIGHTNIN** EXPERIENCE.  
**LIGHTNIN** WARRANTIES AND GUARANTEES EXTEND  
 FOR THOSE ITEMS FURNISHED BY IT. ALL OTHER EQUIPMENT  
 AND DESIGNS ARE THE RESPONSIBILITY OF OTHERS.
- ⑤ UNIT IS FURNISHED WITH A STYLE D11  
 MECHANICAL SEAL.
- ⑥ MIXER MOUNTING FLANGE DATA:  
 150 LB. ANSI SERIES DRILLING  
 SIZE: 6" O.D.: 11.00 BOLT CIRCLE: 9.50  
 NO. OF HOLES: 8 BOLT DIA.: 0.75  
 AS COMMON PRACTICE, FLANGE BOLT HOLES STRADDLE  
 MIXER CENTERLINE.
- ⑦ MATERIAL OF IN-TANK MIXER PARTS IS 316LSS

ALL EQUIPMENT DESIGN AND APPLICATION DATA SHOWN HEREIN AND RELATED KNOW-HOW IS CONFIDENTIAL AND THE PROPERTY OF THE LIGHTNIN GROUP OF COMPANIES. NO USE OR DISCLOSURE THEREOF MAY BE MADE WITHOUT OUR WRITTEN PERMISSION.

**SPX. >Lightnin**

GENERAL ARRANGEMENT

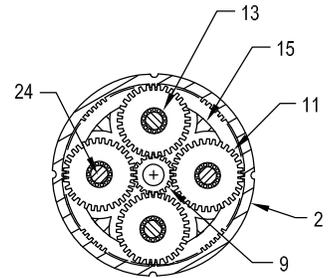
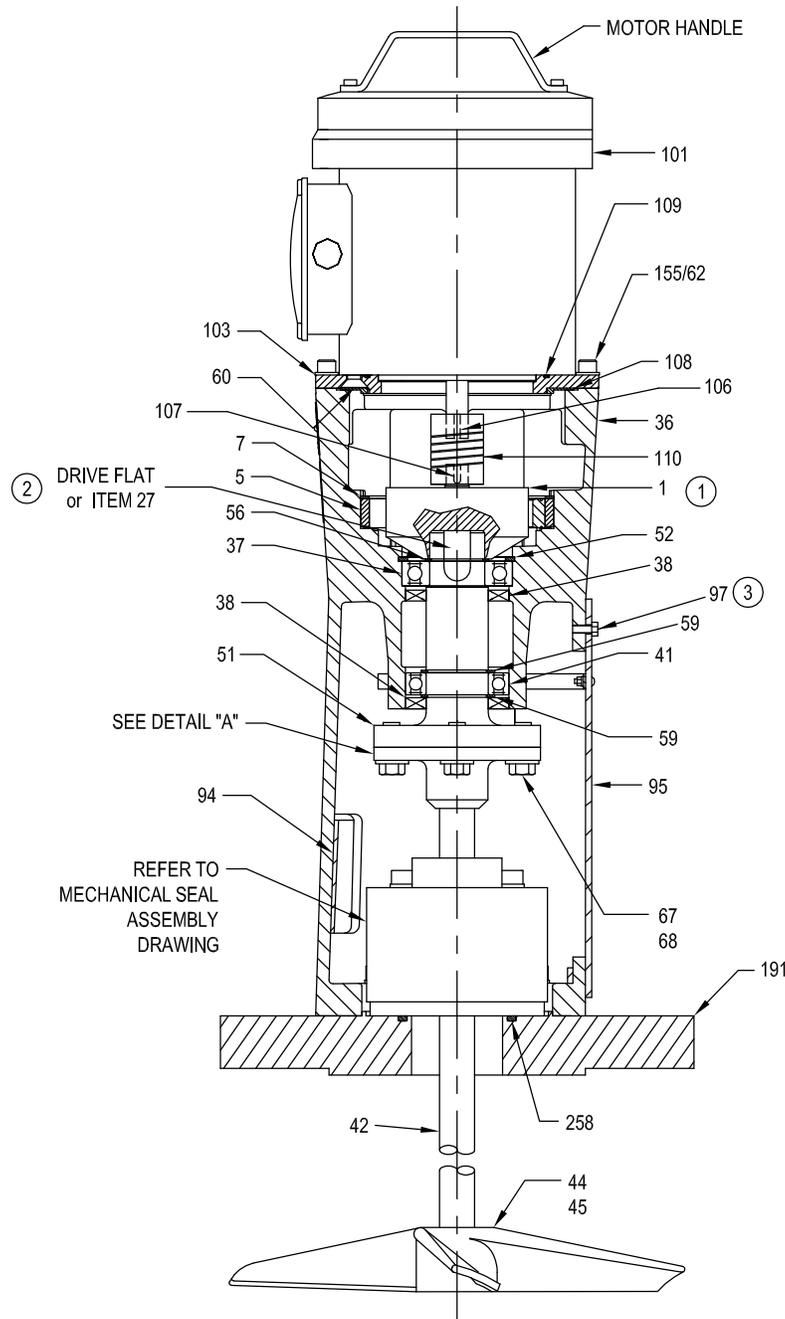
FOR: **Patriot Fuels Biodiesel LLC**  
 S.O. NO.: 1876901 ITEM NO.: 10  
 CUST. P.O. NO.: 008731 QUANTITY: 1  
 TAG NO.: NA  
 MIXER MODEL: X5S150 RATIO: 5:1  
 SERIAL NO.: 1000002948657



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2014

CERTIFIED BY:

DATE:



GEAR CARRIER ASSEMBLY AND RING GEAR (1)

WHEN ORDERING PARTS, SPECIFY:  
DRAWING NO., PART NAME, ITEM NO.,  
AND MIXER SERIAL NUMBER.

1	GEAR CARRIER ASSEMBLY
2	RING GEAR
5	RING GEAR RETAINING PIN
7	RETAINING RING
9	SUN GEAR
11	PLANET GEAR
12	THRUST WASHER (NOT SHOWN)
13	NEEDLE BEARING
15	CARRIER BODY
24	PLANET DOWEL PIN
27	KEY (2)
36	HOUSING
37	BALL BEARING
38	OIL SEAL (2)
41	BALL BEARING
42	IMPELLER SHAFT
44	IMPELLER
45	SET SCREW
51	DRIVE SHAFT
52	RETAINING RING
56	RETAINING RING
59	RETAINING RING (2)
60	FLAT HEAD SCREW
62	WASHER
67	HEX HEAD CAP SCREW
68	LOCKWASHER
94	PEDESTAL BACK GUARD
95	PEDESTAL SAFETY COVER
97	SELF TAPPING SCREW
101	MOTOR
103	ADAPTER
106	MOTOR KEY
107	SUN GEAR KEY
108	GASKET
109	O-RING
110	DRIVE COUPLING ASSEMBLY
155	ADAPTER HARDWARE
191	FLANGE
236	REMOVABLE COUPLING
237	KEY
238	THRUST PLATE
239	HEX HEAD CAP SCREW (NYLOK)
258	O-RING

ITEM	PART NAME
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ASSEMBLY DRAWING

**X5S75 THRU X5S500  
X6S75 THRU X6S500  
GEAR DRIVE ECL  
WITH ELECTRIC MOTOR**

(2) DRIVE FLAT or ITEM 27

(1)

(3)

(2)

SEE DETAIL "A"

REFER TO MECHANICAL SEAL ASSEMBLY DRAWING

DETAIL "A"

NOTES:

- (1) GEAR KIT CONSISTS OF ITEMS 2, 5, 7, 108, 110 AND GEAR CARRIER ASSEMBLY ITEMS 9, 11, 12, 13, 15, 24, 27 & 107. KIT IS SOLD AS A SET. INDIVIDUAL ITEMS ARE NOT AVAILABLE.
- (2) DRIVE FLAT FURNISHED ON X5S & X6S 75 THRU 150 ONLY. KEY (ITEM 27) FURNISHED ON X5S & X6S 200 THRU 500.
- (3) FURNISHED ON LUBRICATED MECHANICAL SEAL UNITS ONLY WHERE PEDESTAL SAFETY COVER HAS BEEN MODIFIED FOR LUBE LINE ACCESS AT BOTTOM OF SAFETY COVER.

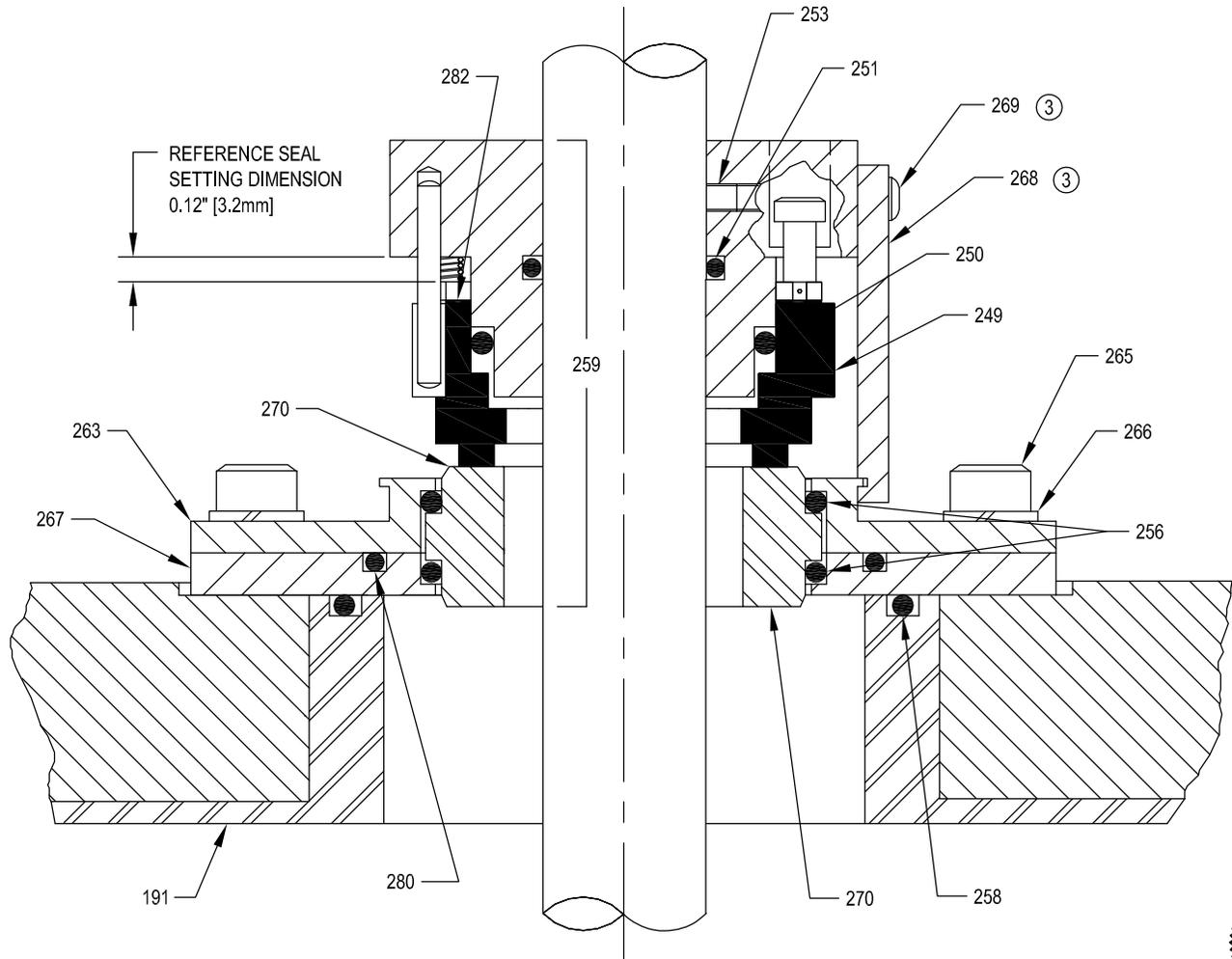


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NOTES:

- ① THE "LIGHTNIN" SEAL ASSEMBLY (259) IS AVAILABLE AS AN ASSEMBLY ONLY. INTERNAL COMPONENTS ARE NOT AVAILABLE AS INDIVIDUAL ITEMS.
- ② STANDARD SEAL ASSEMBLY MATERIALS:  
METAL COMPONENTS - STAINLESS STEEL  
STATIONARY SEAL FACE - 316SS / DURCHROME  
ROTARY SEAL FACE - CARBON  
SEAL RINGS - KALREZ
- ③ REMOVE ITEMS 268 & 269 BEFORE OPERATING THE MIXER AND RETAIN FOR FUTURE USE. REFER TO SEAL MAINTENANCE INSTRUCTIONS.

SEAL SHAFT DIA.	MAX. TANK PRESSURE	MAX. TEMPERATURE	MAX. SHAFT SPEED (RPM)
1-1/4	125 PSIG	600° F	350



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

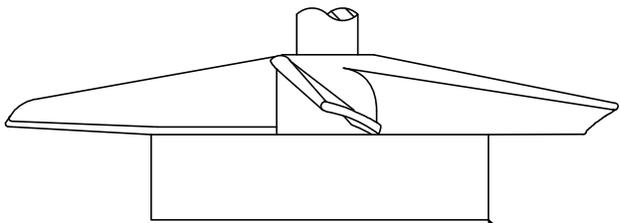
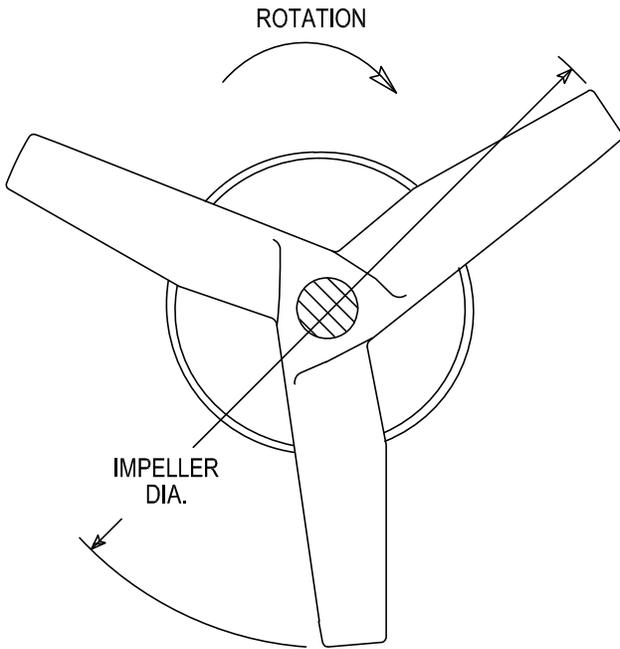
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263	GLAND	282	GASKET
259	"LIGHTNIN" MECHANICAL SEAL ASSEMBLY	280	GLAND SEAL RING
258	SEALING RING	270	INSERT
256	STATIONARY SEAL RING	269	SEAL SETTING RETAINING SCREW
253	SET SCREW	268	SEAL SETTING TAB (SEE NOTE 3)
251	SHAFT SEAL RING	267	GLAND PLATE
250	ROTARY SEAL RING	266	LOCKWASHER
249	ROTARY SEALING FACE	265	SOCKET HEAD CAP SCREW
191	FLANGE		
ITEM	PART NAME	ITEM	PART NAME

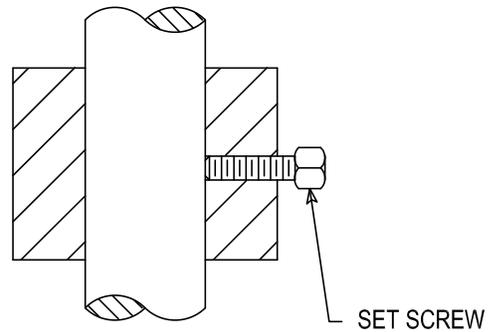
**LIGHTNIN**<sup>®</sup>  
MIXERS AND AERATORS

ASSEMBLY DRAWING

**D11 SINGLE MECHANICAL SEAL**



STABILIZER RING  
FURNISHED ONLY  
WHEN SPECIFIED



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

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**LIGHTNIN**®  
MIXERS AND AERATORS

ASSEMBLY DRAWING

**A310**  
**AXIAL FLOW IMPELLER**



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PLEASE GO TO: [www.lightnin-mixers.com](http://www.lightnin-mixers.com)**

**-OR-**

**CALL: 1-888-649-2378  
1-888-MIX-BEST**



# Notes

## LIMITED WARRANTY

Unless otherwise noted on the face hereof, SPX goods, auxiliaries and parts thereof are warranted to the original purchaser against defective workmanship and material for a period of twelve (12) months from date of installation or (18) months from date of shipment from factory, whichever expires first. If the goods or services do not conform to the warranty stated above, then as Buyer's sole remedy, SPX shall, at SPX's option, either repair or replace the defective goods or re-perform defective services. Third party goods furnished by SPX will be repaired or replaced as Buyer's sole remedy, but only to the extent provided in and honored by the original manufacturer's warranty. Unless otherwise agreed to in writing, SPX shall not be liable for breach of warranty or otherwise in any manner whatsoever for: (i) normal wear and tear; (ii) corrosion, abrasion or erosion; (iii) any good or services which, following delivery or performance by SPX, has been subjected to accident, abuse, misapplication, improper repair, alteration, improper installation or maintenance, neglect, or excessive operating conditions; (iv) defects resulting from Buyer's specifications or designs or those of Buyer's contractors or subcontractors other than SPX; or (v) defects resulting from the manufacture, distribution, promotion or sale of Buyer's products.

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## TECHNICAL SERVICES

The Lightnin brand dedicated after sales support teams are on hand to offer advice and support. With more than 85 years' experience in the manufacture and supply of agitation equipment, we know what parts need to be on hand to support our customer base so that your downtime is minimized. Our team of highly experienced field service technicians is on call to support the on-site servicing of equipment, or supervise and train your maintenance staff in best practice care of equipment.

## INSTALLATION AND COMMISSIONING

Proper installation of your Lightnin mixer is critical to its long term performance and reliability. To ensure that installation

procedures are followed, a certified technician will:

- Audit the equipment
- Supervise job-site contractors
- Perform a final inspection

## SERVICE SUPPORT & REFURBISHMENT

The equipment audit is specifically designed to identify potential mechanical problems before they occur. Using many forms of modern technology and drawing on our mixer manufacturing experience, our technicians can identify the onset of bearing and gear failures, misalignment and system problems without the need to interrupt production. Factory gearbox exchange and refurbishment programs offer a fast and cost-effective route to extending equipment life.

## SPX FLOW TECHNOLOGY

135 Mt. Read Blvd.

Rochester, NY 14611

P: (888) 649-2378 (MIX-BEST) or +1 (585) 436-5550

F: (585) 436-5589

E: [lightnin@spx.com](mailto:lightnin@spx.com) ▪ [www.lightninmixers.com](http://www.lightninmixers.com)

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