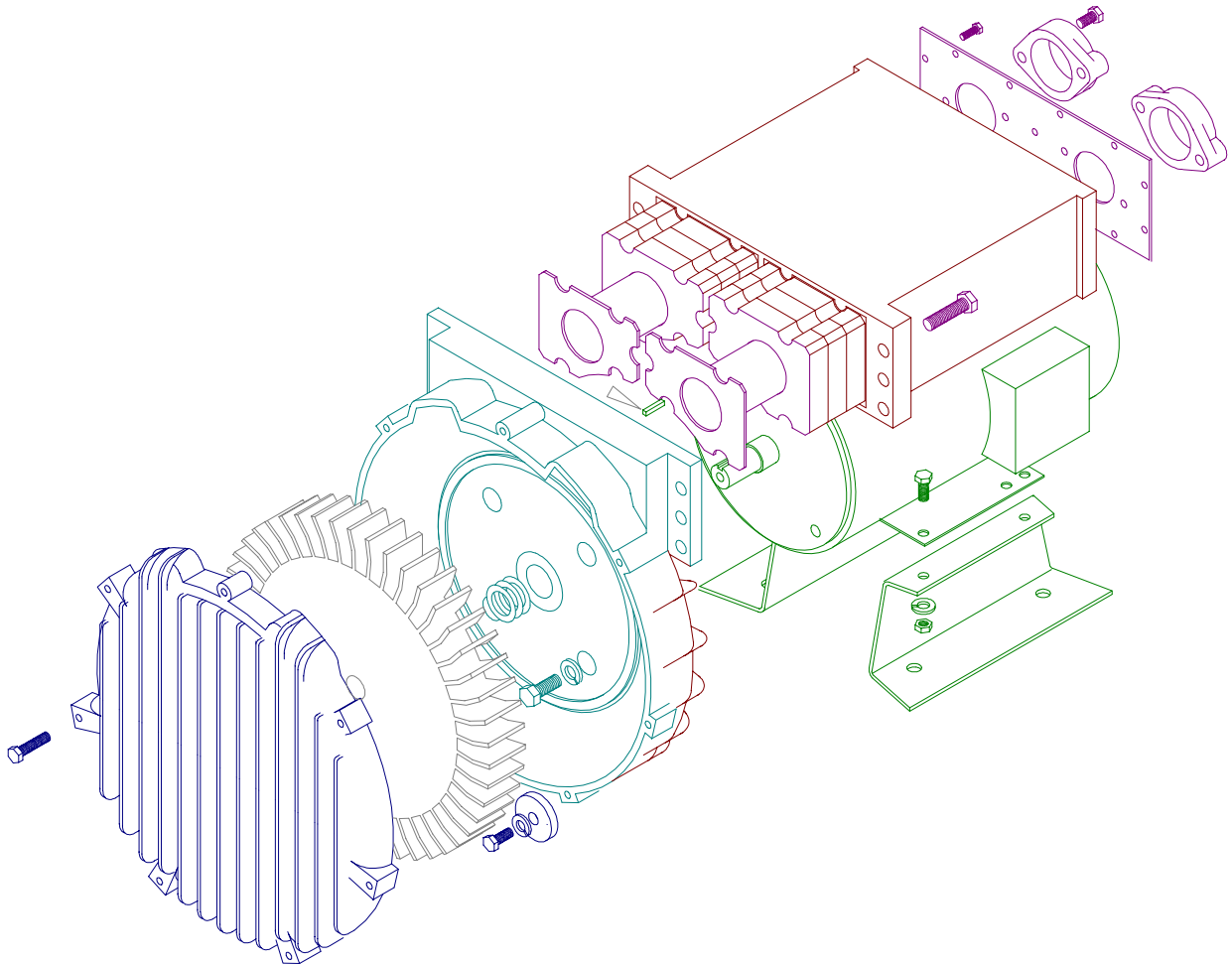


# SERVICE AND PARTS MANUAL FOR BLOWER MODEL

EN6, EN858, EN909, EN14

## DIRECT DRIVE REGENERATIVE BLOWER



**AMETEK**

**Technical & Industrial Products**

627 Lake Street, Kent, OH 44240 U.S.A.  
Telephone: 330-673-3452 Fax: 330-677-3306  
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**Your Choice. Our Commitment.™**

# WARRANTY, INSTALLATION, MAINTENANCE AND TROUBLESHOOTING INSTRUCTIONS



## Technical & Industrial Products

627 Lake Street, Kent, OH 44240 U.S.A

Telephone: 330-673-3452 Fax: 330-677-3306

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1. **No Fault Policy** - AMETEK Rotron DR, EN and HiE regenerative direct drive blowers are guaranteed for one full year from the date of installation (limited to 18 months from the date of shipment.) to the original purchaser only. Should the blower fail, **regardless of the cause of failure**, we will at our option repair or replace the blower.
2. **Standard Policy** - AMETEK Rotron Minispiral, Revaflow, Multiflow, Nautilair, remote drive blowers, moisture separators, packaged units, CP blowers, Nasty Gas™ models and special built (EO) products are guaranteed for one full year from date of shipment for workmanship and material defect to the original purchaser only. Should the blower fail, we will evaluate the failure. If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.
3. **Parts Policy** - AMETEK Rotron spare parts and accessories are guaranteed for three months from date of shipment for workmanship and material defect to the original purchaser only. If failure is determined to be workmanship or material defect related we will at our option repair or replace the part.

**Corrective Action** - A written report will be provided indicating reason(s) for failure, with suggestions for corrective action. Subsequent customer failures due to abuse, misuse, misapplication or repeat offense will not be covered. AMETEK Rotron will then notify you of your options. Any failed unit that is tampered with by attempting repair or diagnosis will void the warranty, unless authorized by the factory.

**Terms and Conditions** - Our warranty covers repairs or replacement of regenerative blowers only, and will not cover labor for installation, outbound and inbound shipping costs, accessories or other items not considered integral blower parts. Charges may be incurred on products returned for reasons other than failures covered by their appropriate warranty. Out-of-warranty product and in warranty product returned for failures determined to be caused by abuse, misuse, or repeat offense will be subject to an evaluation charge. Maximum liability will in no case exceed the value of the product purchased. Damage resulting from mishandling during shipment is not covered by this warranty. It is the responsibility of the purchaser to file claims with the carrier. Other terms and conditions of sale are stated on the back of the order acknowledgement.

### Installation Instructions for SL, DR, EN, CP, and HiE Series Blowers

1. **Bolt It Down** - Any blower must be secured against movement prior to starting or testing to prevent injury or damage. The blower does not vibrate much more than a standard electric motor.
2. **Filtration** - All blowers should be filtered prior to starting. Care must be taken so that no foreign material enters the blower. If foreign material does enter the blower, it could cause internal damage or may exit at extremely high velocity.

Should excessive amounts of material pass through the blower, it is suggested that the cover(s) and impeller(s) be removed periodically and cleaned to avoid impeller imbalance. Impeller

imbalance greatly speeds bearing wear, thus reducing blower life. Disassembling the blower will void warranty, so contact the factory for cleaning authorization.

- Support the Piping** - The blower flanges and nozzles are designed as connection points only and are not designed to be support members.

Caution: Plastic piping should not be used on blowers larger than 1 HP that are operating near their maximum pressure or suction point. Blower housing and nearby piping temperatures can exceed 200°F. Access by personnel to the blower or nearby piping should be limited, guarded, or marked, to prevent danger of burns.

- Wiring** - Blowers must be wired and protected/fused in accordance with local and national electrical codes. All blowers must be grounded to prevent electrical shock. Slo-Blo or time delay fuses should be used to bypass the first second of start-up amperage.
- Pressure/Suction Maximums** - The maximum pressure and/or suction listed on the model label should not be exceeded. This can be monitored by means of a pressure or suction gage (available from Rotron), installed in the piping at the blower outlet or inlet. Also, if problems do arise, the Rotron Field representative will need to know the operating pressure/suction to properly diagnose the problem.
- Excess Air** - Bleed excess air off. DO NOT throttle to reduce flow. When bleeding off excess air, the blower draws less power and runs cooler.

**Note:** Remote Drive (Motorless) Blowers - Properly designed and installed guards should be used on all belts, pulleys, couplings, etc. Observe maximum remote drive speed allowable. Due to the range of uses, drive guards are the responsibility of the customer or user. Belts should be tensioned using belt gauge.

Maintenance Procedure

**When properly piped, filtered, and applied, little or no routine maintenance is required. Keep the filter clean. Also, all standard models in the DR, EN, CP, and HiE series have sealed bearings that require no maintenance. Bearing should be changed after 15,000 to 20,000 hours, on average. Replacement bearing information is specified on the chart below.**

Bearing Part Number	Size	Seal Material	Grease	Heat Stabilized
510217 510218 510219	205 206 207	Polyacrylic	Nye Rheotemp 500 30% +/- 5% Fill	Yes – 325 F
510449 516440 516648	203 202 307	Buna N	Exxon Polyrex Grease	NO
516840 516841 516842 516843 516844 516845 516846 516847	206 207 208 210 309 310 311 313	Buna N	Exxon Polyrex Grease	NO

## Troubleshooting

		POSSIBLE CAUSE	OUT OF WARRANTY REMEDY ***
IMPELLER DOES NOT TURN	Humming Sound	<ol style="list-style-type: none"> <li>* One phase of power line not connected</li> <li>* One phase of stator winding open</li> <li>Bearings defective</li> <li>Impeller jammed by foreign material</li> <li>Impeller jammed against housing or cover</li> <li>** Capacitor open</li> </ol>	<ol style="list-style-type: none"> <li>Connect</li> <li>Rewind or buy new motor</li> <li>Change bearings</li> <li>Clean and add filter</li> <li>Adjust</li> <li>Change capacitor</li> </ol>
	No Sound	<ol style="list-style-type: none"> <li>* Two phases of power line not connected</li> <li>* Two phases of stator winding open</li> </ol>	<ol style="list-style-type: none"> <li>Connect</li> <li>Rewind or buy new motor</li> </ol>
IMPELLER TURNS	Blown Fuse	<ol style="list-style-type: none"> <li>Insufficient fuse capacity</li> <li>Short circuit</li> </ol>	<ol style="list-style-type: none"> <li>Use time delay fuse of proper rating</li> <li>Repair</li> </ol>
	Motor Overheated Or Protector Trips	<ol style="list-style-type: none"> <li>High or low voltage</li> <li>* Operating in single phase condition</li> <li>Bearings defective</li> <li>Impeller rubbing against housing or cover</li> <li>Impeller or air passage clogged by foreign material</li> <li>Unit operating beyond performance range</li> <li>Capacitor shorted</li> <li>* One phase of stator winding short circuited</li> </ol>	<ol style="list-style-type: none"> <li>Check input voltage</li> <li>Check connections</li> <li>Check bearings</li> <li>Adjust</li> <li>Clean and add filter</li> <li>Reduce system pressure/vacuum</li> <li>Change capacitor</li> <li>Rewind or buy new motor</li> </ol>
	Abnormal Sound	<ol style="list-style-type: none"> <li>Impeller rubbing against housing or cover</li> <li>Impeller or air passages clogged by foreign material</li> <li>Bearings defective</li> </ol>	<ol style="list-style-type: none"> <li>Adjust</li> <li>Clean and add filter</li> <li>Change bearings</li> </ol>
	Performance Below Standard	<ol style="list-style-type: none"> <li>Leak in piping</li> <li>Piping and air passages clogged</li> <li>Impeller rotation reversed</li> <li>Leak in blower</li> <li>Low voltage</li> </ol>	<ol style="list-style-type: none"> <li>Tighten</li> <li>Clean</li> <li>Check wiring</li> <li>Tighten cover, flange</li> <li>Check input voltage</li> </ol>
<p>* 3 phase units  ** 1 phase units  *** Disassembly and repair of new blowers or motors will void the Rotron warranty. Factory should be contacted prior to any attempt to field repair an in-warranty unit.</p>			

### **Blower Disassembly:**

**WARNING:** Attempting to repair or diagnose a blower may void Rotron's warranty. It may also be difficult to successfully disassemble and reassemble the unit.

- 1) Disconnect the power leads. **CAUTION:** Be sure the power is disconnected before doing any work whatsoever on the unit.
- 2) Remove or separate piping and/or mufflers and filters from the unit.
- 3) Remove the cover bolts and then the cover. **NOTE:** Some units are equipped with seals. It is mandatory that these seals be replaced once the unit has been opened.
- 4) Remove the impeller bolt and washers and then remove the impeller. **NOTE:** Never pry on the edges of the impeller. Use a puller as necessary.
- 5) Carefully note the number and location of the shims. Remove and set them aside. **NOTE:** If the disassembly was for inspection and cleaning the unit may now be reassembled by reversing the above steps. If motor servicing or replacement and/or impeller replacement is required the same shims may not be used. It will be necessary to re-shim the impeller according to the procedure explained under assembly.

- 6) Remove the housing bolts and remove the motor assembly (arbor/.housing on remote drive models).
- 7) Arbor disassembly (Applicable on remote drive models only):
  - a) Slide the bearing retraining sleeve off the shaft at the blower end.
  - b) Remove the four (4) screws and the bearing retaining plate from the blower end.
  - c) Lift the shaft assembly far enough out of the arbor to allow removal of the blower end snap ring.
  - d) Remove the shaft assembly from the arbor.
  - e) If necessary, remove the shaft dust seal from the pulley end of the arbor.

*Muffler Material Replacement:*

- 1) Remove the manifold cover bolts and them manifold cover.
- 2) The muffler material can now be removed and replaced if necessary. On blowers with fiberglass acoustical wrap the tubular retaining screens with the fiberglass matting before sliding the muffler pads over the screens.
- 3) Reassemble by reversing the procedure.

**NOTE: On DR068 models with tubular mufflers it is necessary to remove the cover and impeller accessing the muffler material from the housing cavity.**

*Blower Reassembly:*

- 1) Place the assembled motor (assembled arbor assembly for remote drive models) against the rear of the housing and fasten with the bolts and washer.
- 2) To ensure the impeller is centered within the housing cavity re-shim the impeller according to the procedure outlined below.
- 3) If blower had a seal replace the seal with a new one.
- 4) Place the impeller onto the shaft making sure the shaft key is in place and fasten with the bolt, washer and spacer as applicable. Torque the impeller bolt per the table below. Once fastened carefully rotate the impeller to be sure it turns freely.
- 5) Replace the cover and fasten with bolts.
- 6) Reconnect the power leads to the motor per the motor nameplate.

<b>Bolt Size</b>	<b>Torque</b>
<b>1/4-20</b>	<b>6.25 +/- 0.25</b>
<b>5/16-18</b>	<b>11.5 +/- 0.25</b>
<b>3/8-16</b>	<b>20.0 +/- 0.5</b>
<b>1/2-13</b>	<b>49.0 +/- 1</b>
<b>5/8 -11</b>	<b>90.0 +/- 2</b>

*Impeller Shimming Procedure:*

WARNING: This unit may be difficult to shim. Extreme care may be exercised.

Tools Needed: Machinist's Parallel Bar  
Vernier Caliper with depth measuring capability  
Feeler gauges or depth gauge

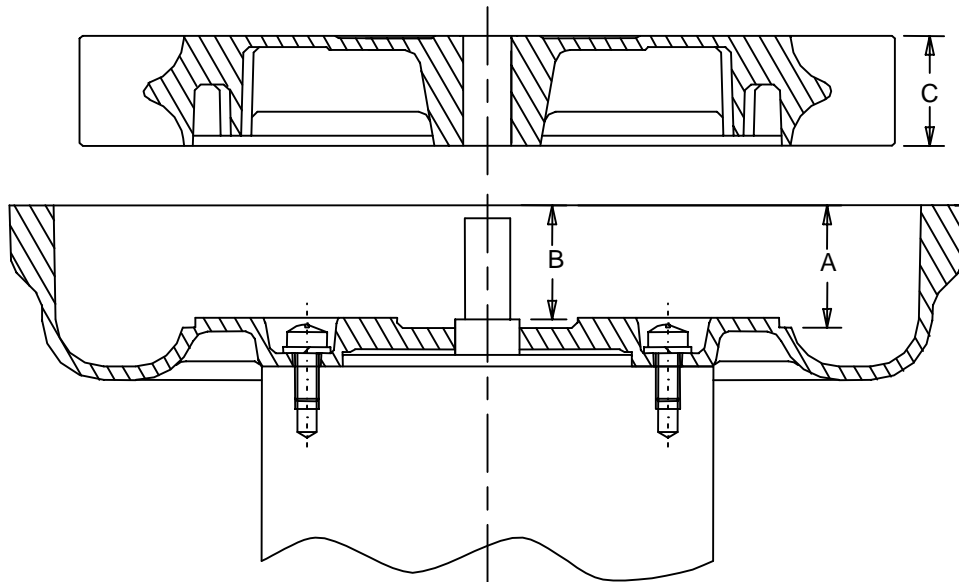
Measure the Following:

- Distance from the flange face to the housing (A)
- Distance from the flange face to the motor shaft shoulder (B)
- Impeller Thickness (C)

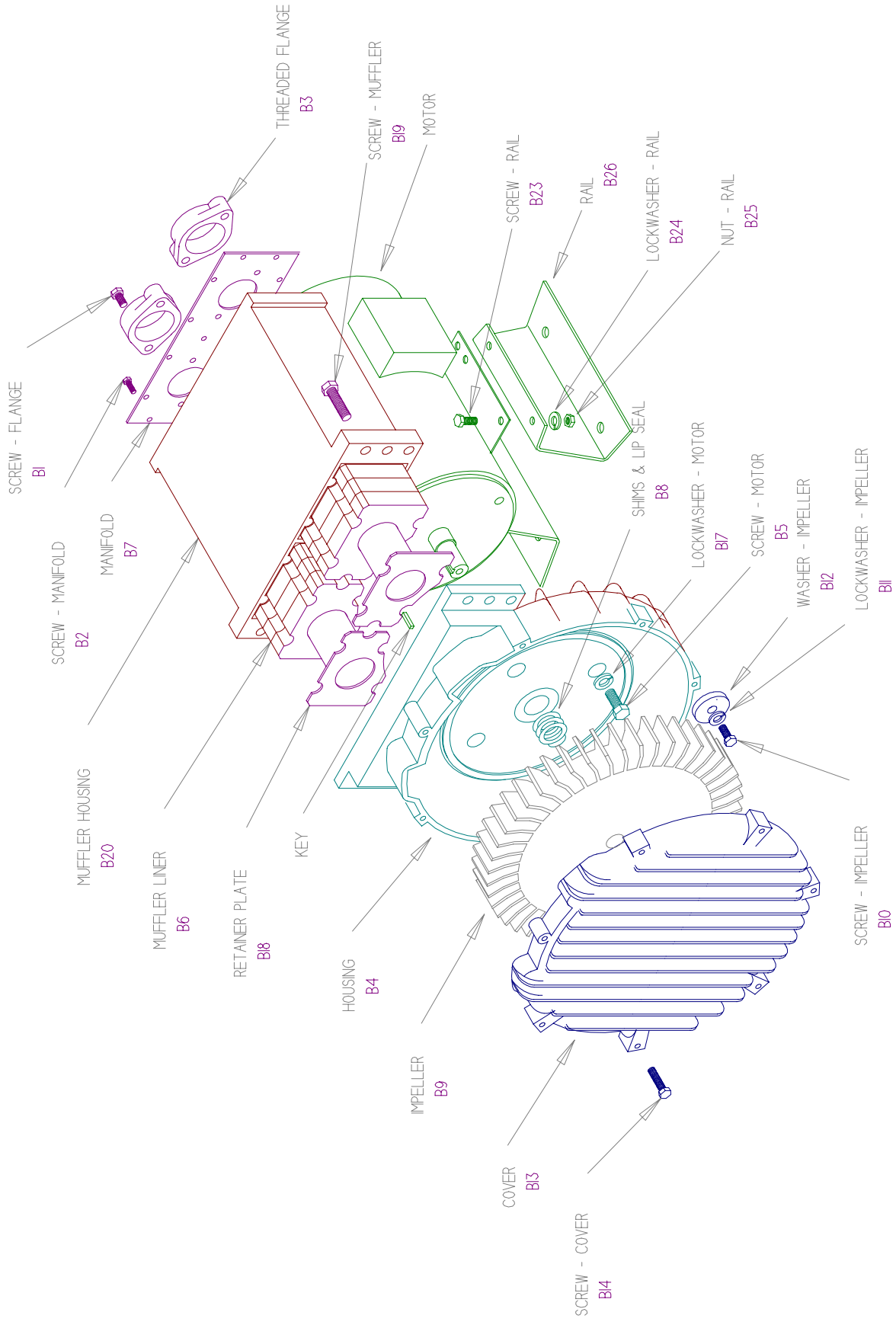
Measurements (A) and (B) are made by laying the parallel bar across the housing flange face and measuring to the proper points. Each measurement should be made at three points, and the average of the readings should be used.

$$\text{Shim Thickness} = B - (A+C)/2$$

After the impeller installation (step #4 above) the impeller/cover clearance can be checked with feeler gauges, laying the parallel bar across the housing flange face. This clearance should nominally be  $(A+C)/2$ .



# ASSEMBLY DIAGRAM EN6 EN808 EN909 EN14



Model:

Part No.:

Parts Breakdown

EN6

EN858

EN909

EN14

EN14

038361

038744

038629

038762

038760

038180

038745

038634

038761

038438

080070

080071

Item No.	Qty.	Req'd	Description	EN858	EN909	EN14	EN14
M3	1		Key Motor Shaft	510212	511532	155066	511532
B1	6		Screw, Flange (4 pcs)	120255	155067	140016	140016
B2			Screw, Manifold	Not Used	Not Used	Not Used	Not Used
B3	2		Flange	See Next Page	511614	529912	529912
	2		O-ring	Not Used	Not Used	155377	155377
			Elbow 90°	See Next Page	Not Used	Not Used	Not Used
B4	1		Housing	516747	516764	515356	516799
B5	4		Screw, Hsg./Motor	251792	155034	140014	120205
B6	54		Muffler Material	Not Used	(32) 550020 (40 pcs)	529943	550073
	2		Matting, Fiberglass	Not Used	550075	550077	550116
B7			Manifold Plate	Not Used	Not Used	Not Used	Not Used
B8	*		Shim .002"	272703	511547	511547	515991
	*		Shim .005"	272704	511548	511548	515992
	*		Shim .010"	272705	511549	511549	515993
	*		Shim .020"	272706	511550	511550	515994
	*		Shim .030"	Not Used	Not Used	Not Used	Not Used
B9	1		Impeller	515484	515249	515270	515509
B10	1		Bolt, Impeller	251791	120210	140015	155068
B11	1		Lockwasher, Impeller	251787	251788	251788	251788
B12	1		Washer, Impeller	Not Used	Not Used	Not Used	Not Used
B13	1		Cover	515488	515247	515359	515910
B14	8		Screw, Cover	251790	140016	140016	155069
B15	1		Eye Bolt	Not Used	140019	140019	140019
B16	1		Spacer, Impeller Bolt	478336	515555	511529	515990
			Shaft Sleeve	Not Used	Not Used	Not Used	Not Used
B17			Lockwasher, Housing	Not Used	Not Used	Not Used	Not Used
B18	1		Screen, Muffler Retaining, Right (**)	Not Used	515407	529939	550040
	1		Screen, Muffler Retaining, Left (**)	Not Used	515408	529940	550042
B19	6		Bolt, Muffler Hsg/Hsg	Not Used	155025	155025	155067
B19A	4		Bolt, Muffler/Housing	Not Used	120214	120214	120214
B20	1		Muffler Housing	Not Used	550019	529932	550039
	1		Muffler Discrete	522948	Not Used	Not Used	Not Used
			Bolt, Motor/Muffler	Not Used	Not Used	Not Used	Not Used
			Lockwasher, Motor/Muffler	Not Used	Not Used	Not Used	Not Used
			Washer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used
			Spacer, Motor/Muffler	Not Used	Not Used	Not Used	Not Used
B21			Heat Slinger	Not Used	Not Used	Not Used	Not Used
B22			Guard Heat slinger	Not Used	Not Used	Not Used	Not Used

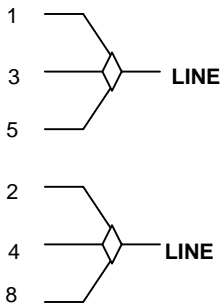
B23	4	Bolt, Rail	251791	12007	155095	120256	155025
B24	4	Lockwasher Rail	251787	251787	251787	251788	251788
B24A	8	Washer, Rail/Motor	Not Used	Not Used	155091	Not Used	Not Used
B25	6	Nut, Rail	251789	251789	251789	155070	155070
B26	2	Rail Mounting	478338	595301	595301	516242	516242
	1	Lip Seal	516691	516693	516693	516694	516693

Model	Part No.	Motor	Wiring Diagram	Specific Parts	Rear (M1)	Impeller End (M2)
EN6F5L	038361	529475	M + L	B3 Flange 511480 (2 pcs)		
EN6F72L	038180	500297	K + L	B3 Flange 478341 (2 pcs) Elbow Not Used Screen Guard, Flange 511479 (2)	510217	510218
EN6F86L	038438	529634	N + L	B3 Flange 478341 (2 pcs) Elbow Not Used Screen Guard, Flange 511479 (2)		
EN858BD72WL	038744	515556	K + L			
EN858BD86WL	038745	529627	N + L		516840	516844
EN858BA72W	080070	515558	K + L			
EN909BG72WL	038629	511512	K + L			
EN909BG86WL	038634	529631	N + L		516842	516844
EN909BD72WL	080071	550675	K + L			
EN14DX86MWL	038762	529632	N + L			
EN14DX72MWL	038761	516095	K + L		516844	516846
EN14BK72MWL	038760	511513	K + L		516842	516844

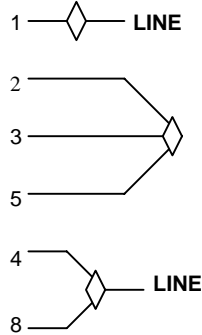
# WIRING DIAGRAMS, XP MOTORS

## H. 1Ø, 6 WIRE

**115 VAC**



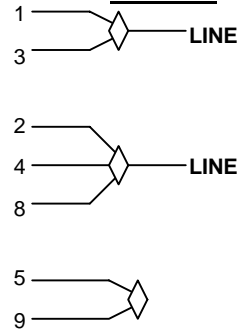
**230 VAC**



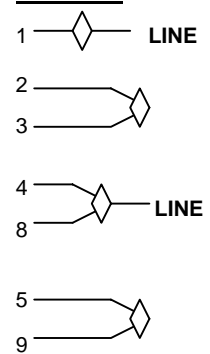
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

## I. 1Ø, 7 WIRE

**115 VAC**



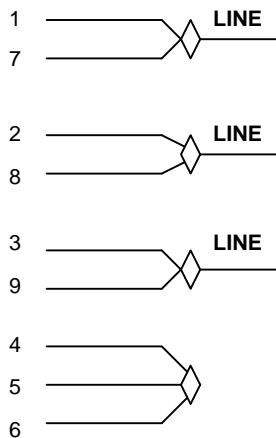
**230 VAC**



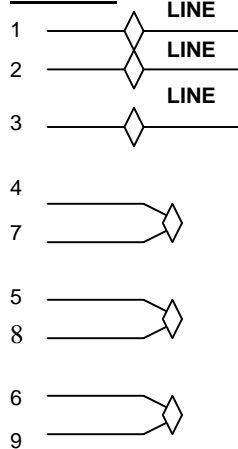
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

## K. 3Ø, 9 WIRE

**230 VAC**

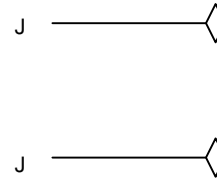


**460 VAC**



INTERCHANGE ANY TWO LEAD LINES TO REVERSE ROTATION

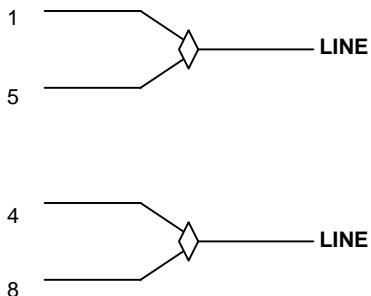
## L. PILOT DUTY THERMAL OVERLOADS



HOOK J LEADS TO CONTROL CIRCUITRY

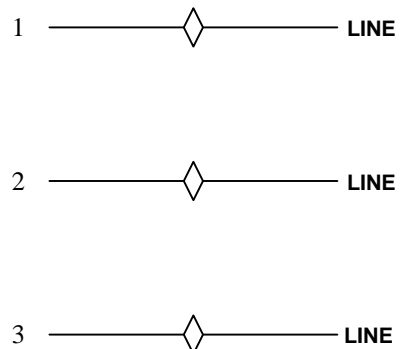
## M. 1Ø 230 VAC

SINGLE VOLTAGE



INTERCHANGE LEADWIRES 5 & 8 TO REVERSE ROTATION

## N. 3Ø 575 VAC



INTERCHANGE ANY TWO LEAD LINES TO REVERSE ROTATION