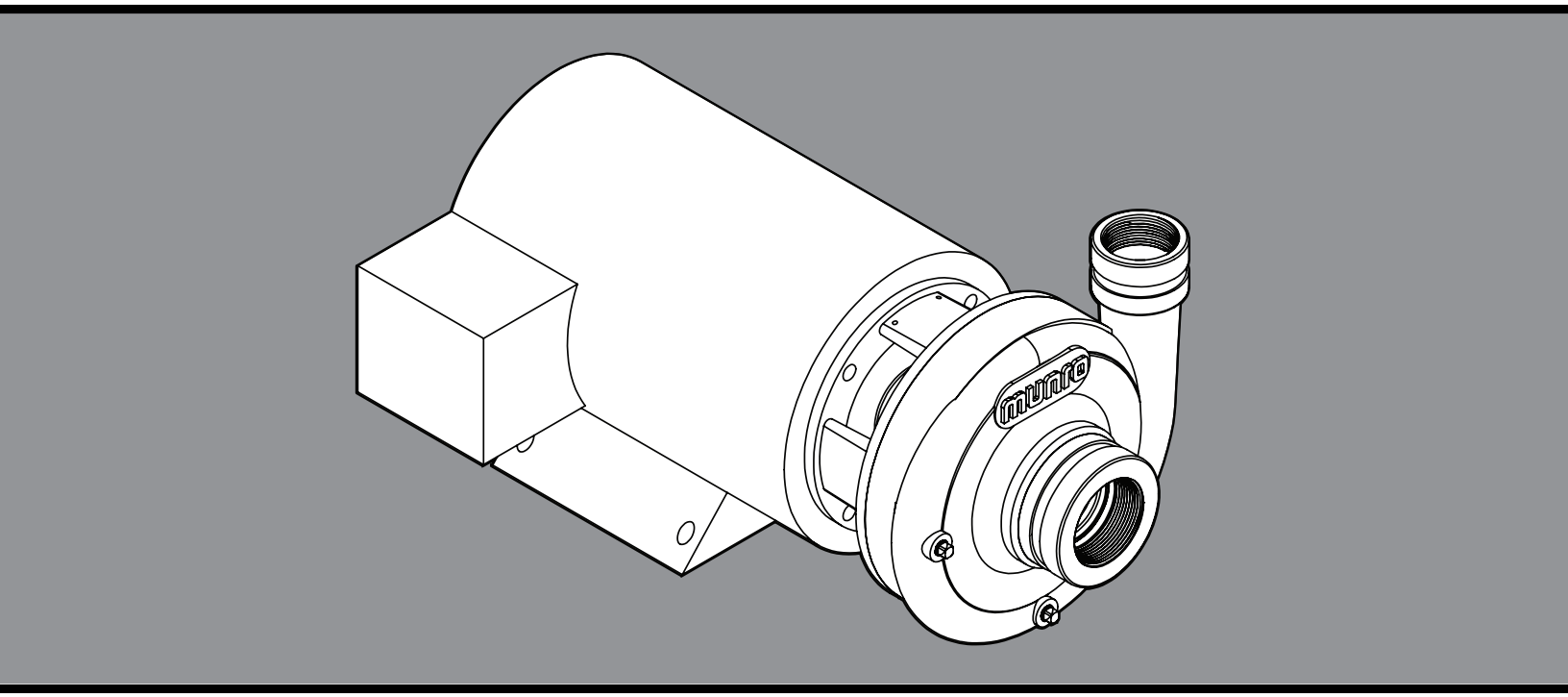
OWNER'S MANUAL

BP SERIES STRAIGHT CENTRIFUGAL PUMPS



Installation - Operation - Parts

1.800.942.4270
technicalsupport@munropump.com
www.munropump.com

munro®

READ AND FOLLOW SAFETY INSTRUCTIONS!

This is the safety alert symbol. When you see this symbol on your pump or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER warns about hazards that **WILL** cause serious personal injury, death or major property damage if ignored.

⚠WARNING warns about hazards that **CAN** cause serious personal injury, death or major property damage if ignored.

⚠ CAUTION warns about hazards that **WILL** or **CAN** cause minor personal injury or property damage if ignored.

The label **NOTICE** indicates special instructions which are important but not related to hazards.

MOTOR AND ELECTRICAL:

Carefully read and follow all safety instructions in this manual and on pump.

⚠ WARNING

Hazardous voltage.
Can shock, burn, or cause death.

Electric pump motors can be hazardous if not properly installed. Call a licensed electrician if unsure of any electrical connection.

GENERAL SAFETY – ELECTRICAL

1. **⚠WARNING** Every time work is to be performed on a pump, the power supply should be terminated at the breaker box.
2. **⚠WARNING** Follow all local electrical and safety codes, including the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
3. **⚠WARNING** Replace damaged or worn cords immediately.
4. Ground motor before connecting to power supply.
5. **⚠WARNING** Use extreme caution around an operating pump and motor – it may be hot enough to cause serious burns.

GENERAL OPERATION – ELECTRICAL

1. Refer to motor nameplate to verify that supply voltage and motor wiring is the same.
2. Verify motor phase against supply power phase.

GENERAL SAFETY – MOTOR

1. **⚠WARNING** Disconnect the main power before handling the unit for ANY REASON.
2. **⚠WARNING** An operating motor can run between 250°F and 311°F depending on insulation rating. Never touch a motor without first determining the housing temperature.
3. Keep pump motor ventilated to reduce damage due to heat.
4. **⚠ DANGER** Motor is not waterproof and should never be submersed into any liquid.
5. Motor is designed to work with up to a 15 degree angle of water impact. Do not allow water to spray directly onto motor. External motor protection should be used to eliminate environmental concerns.
6. To reduce the risk of electric shock, the motor must be securely and adequately grounded. Refer to National Electric Code (NEC Article 250 – Grounding) for additional information.
7. When in doubt, call a licensed electrician. High voltage can shock, burn or cause death.

WIRING CONNECTION:

ROTATION

1. When facing the suction tapping, all Munro pumps run in a Counter-Clockwise (CCW) rotation only. Rotation from the motor end perspective is Clockwise (CW) and is marked as such on the motor nameplate. Tampering with, or reversing, the rotation will damage your pump and void the warranty.

CHECK MOTOR ROTATION – 3 PHASE

1. A fractional second application of power, known as "bumping the motor", should be applied to all 3-phase motors to verify rotation of shaft as described above.
2. Improper rotation can cause catastrophic pump failure and voids the warranty.
3. Reversing two of the three power wires makes the motor run in the opposite direction.

GENERAL WIRING INFORMATION

1. Refer to the connection instruction on the motor nameplate.

GROUNDING

1. Grounding the motor can be achieved by securing the motor to a metal raceway system. Alternately a separate grounding wire connected to bare metal on the motor frame, or to the green grounding screw located inside the motor terminal box, or other suitable means is acceptable. (Refer to NEC Article 250 – Grounding for specifics.)
2. Verify motor grounding provision on the nameplate before connecting any wires to the motor.

MOTOR PROTECTION

1. Fuses and circuit breakers are used as a safety device for the wire circuit. They do NOT offer motor protection.
2. Consult local or national electric codes for proper fuse protection based on the motor nameplate data.

THERMAL OVERLOAD

1. All motors must be thermally protected – either within the motor or externally.
2. The internal overload is usually automatic and resets itself once the temperature has dropped to a safe point.
3. Overload helps protect the motor from burnout from overload of low voltage, high voltage and other causes.
4. Frequent tripping of the overload indicates motor or power problems. Immediate professional attention is recommended.
5. **⚠WARNING** NEVER examine, make wiring changes or touch the motor before disconnecting the electrical supply. Thermal overload protectors automatically reset and can close the electrical circuit without warning.
6. **⚠WARNING** The overload should never be tampered with or removed.

PUMP:

GENERAL SAFETY – PUMP

⚠WARNING

1. An operating pump, with a blocked discharge, will heat the

water and pump housing. Allow pumps to cool before handling.
2. High temperature sensors can help protect plastic plumbing from disfiguring and/or expanding.
3. Running a pump without water may cause damage to the seal.

OPERATION

1. Locate the pump as close to the water source as is practical.
2. Fill the pump case and suction pipe with water to expel as much air as possible prior to start-up.
3. TIP: A plug on the pump case, or as part of an installation of a priming port can be temporarily loosened to allow for air to evacuate at start-up.
4. Use of an inlet side check valve or foot valve is required in suction lift applications.
5. Booster applications, where water is constantly coming into the pump under pressure, do not require the use of a check or foot valve on the inlet side.
6. Use of a ball valve on the discharge line can be used to increase back pressure, keeping the motor running within Service Factor (SF) amps.
7. Never completely restrict flow through the pump while it is operating.
8. If the pump has not picked up prime within 2 minutes, re-fill the pump case and suction lines.
9. Verify all suction connections are airtight.
10. It is not uncommon for priming to take 2 or 3 tries.

ROTATION

1. Single phase motors are pre-wired for CCW, as viewed from suction tapping, and should never be reversed.
2. Three phase motors must be verified at the job site.

MAINTENANCE – LUBRICATION

1. No lubrication is required. The ball bearings are permanently lubricated and sealed at the factory.

MAINTENANCE – FREEZING

1. Drain the entire system if there is a danger of freezing.
2. Drain plugs are provided on the pump case.
3. TIP: Filling the pump with non-toxic Munro Freeze Defeat and replacing the plugs, will reduce the oxidation in the case over the winter. Before spring start-up, drain the Munro Freeze Defeat from the case.

RECOMMENDED EQUIPMENT:

1. Strainer – Use of strainers prevent large debris from entering pump systems. (Suction Application)
2. Pressure Gauge – Use of a pressure gauge helps to troubleshoot and identify a pump or system issue.
3. Discharge Valve – Use of a gate or ball valve on the discharge side of the pump allows back pressure and amperage adjustment.
4. Foot Valve – Use of a foot valve (or check valve) can aid the priming of a pump. If the lines are kept full, the pump does not have to evacuate the air before pumping water.
5. Isolation Fittings – Use of cam fittings or unions, on both the suction and discharge piping, allows easy access for pump maintenance, repair and removal.

INSTALLATION:

This pump is not designed for use in a flammable or explosive environment.

1. LOCATION: Place the pump as close to water source as possible.
   Keep suction line as short and direct to the pump as possible.
   b. Avoid high or looped sections of hose as that may hold air, preventing priming.
2. PIPEWORK: Assemble and install inlet and discharge lines, keeping in mind needed isolation, priming, and pressure adjustment accommodations.
   a. Support pipework as needed to reduce stress on the pump case.
3. WIRING: Refer to the motor nameplate for electrical connections.
   a. Verify electric motor requirements and availability.
   b. Make sure motor is grounded.
   c. If unsure about the electrical requirements or information on the motor nameplate, consult an electrician.
4. PRIMING: Fill pump case and suction pipe with water. Do NOT operate the pump without water in the case to avoid mechanical seal damage.
   a. TIP: A plug on the pump case, or as part of an installation of a priming port can be temporarily loosened to allow for air to evacuate at start-up.
5. BUMP TEST: A fractional second application of power should be applied to all motors to verify rotation of the shaft as described above.
   a. Improper rotation can cause catastrophic pump failure and voids the warranty.
   b. For three phase motors, interchange two of the three power wires to reverse direction.
   c. For single phase, consult the motor nameplate for wiring.

SEAL ASSEMBLY REPLACEMENT:

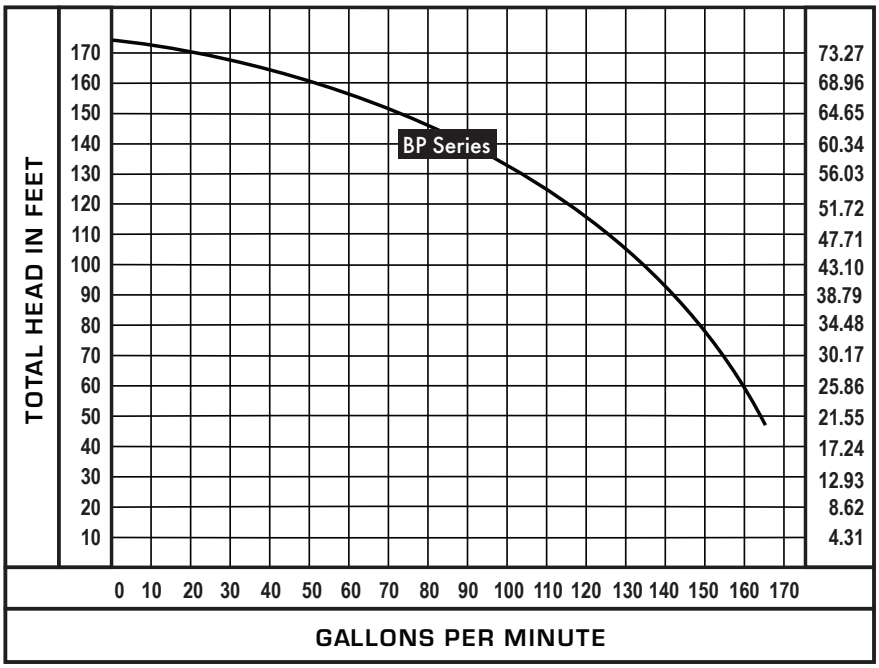
⚠ CAUTION Make certain the power supply is disconnected before attempting to service the unit.

1. SEAL REMOVAL:
   a. Use a Retaining Ring Pliers to spread and remove the retaining ring from around the shaft.
      i. NOTE: Seal is compressed by this ring, control the release of the ring and seal spring.
   b. Remove spring ring and spring from motor shaft.
   c. Remove the mount ring bolts to separate the mount ring from the motor.
   d. Use a screwdriver or similar tool from the motor side of the mount ring to remove the seal from the pocket.
   e. Once removed, clean all debris from seal pocket.
2. SEAL INSTALLATION:
   a. Apply a thin layer of multi-purpose lubricant to the outside edge of the rubber seat – spread around entire seal.
   b. Do NOT touch or get lubricant on the face of the seal. Position the seat over the seal pocket of the mount ring.
   c. While protecting the seal face, gently push to seat the seal.
   d. Being careful not to damage the seal seat, slide the mount ring over the shaft and bolt to motor face.
   e. Apply a thin layer of lubricant to the interior portion of the seal and around the motor shaft.
   f. Keeping it level, position the seal head over the motor shaft and lower into place.
   g. Use equal pressure to settle the top of the seal to the bottom.
   h. Place spring and spring ring around the motor shaft and sleeve.
   i. Use a Retaining Ring Pliers to spread a retaining ring to fit around the motor shaft.
   j. Compress the seal spring until the groove on the shaft sleeve is visible.
   k. Release the Retaining Ring to hold seal into place.

PUMP PERFORMANCE

Capacity – GPM Discharge Pressure (PSI) at 5' Suction Lift						Max Case Pressure	Shut Off Pressure	Model Number
HP	25	35	45	55	65			
5	163	152	130	108	65	75	175	BP0500B
5	163	152	130	108	65			BP0500B3
5	163	152	130	108	65			BP0500B3TEFC

PUMP CURVE



PUMP SPECIFICATIONS

Specifications - Pump

HP	Phase	Discharge		Inlet		Approx Ship Weight/Lbs	Max Liquid Temp	Model Number
		Threaded	Grooved	Threaded	Grooved			
5	1	1 1/2″	2″	2″	3″	90	104°	BP0500B
5	3					100		BP0500B3
5	3					105		BP0500B3TEFC

Specifications - Motor

HP	Phase	Standard Voltage	FLA	SFA	MOTOR TYPE	HZ	Model Number
5	1	208-230	24.0-23.7	1.15	ODP	60	BP0500B
5	3	208-230/460	13.8-12.6/6.2	1.15	ODP	60	BP0500B3
5	3	230/460	12.2/16.10	1.25	TEFC	60	BP0500B3TEFC

WIRING SIZE CHART

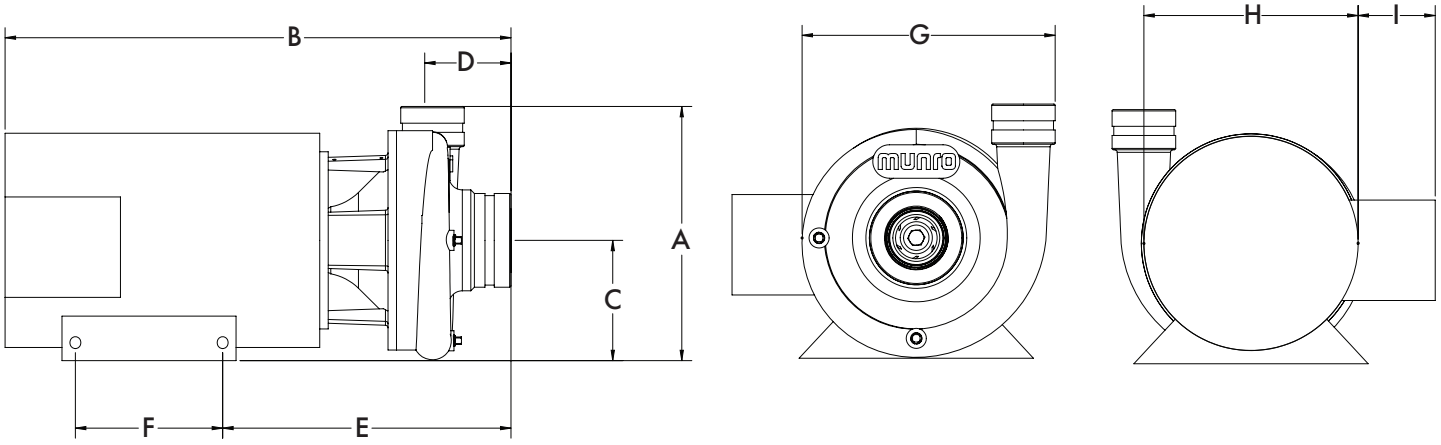
Motor Rating			Circuit Size	Fuse Size	Full Load Amps	Copper Wire Size						
Volts	HP	Phase				KW	12	10	8	6	4	2
120 (1ø)	1/4	1	20	10	5.8	0.186	291	464	692	1171	1863	2350
	1/3	1	20	10	7.2	0.246	230	365	546	924	1471	2338
	1/2	1	20	15	9.8	0.373	171	272	407	689	1096	1742
	3/4	1	20	15	13.8	0.559	130	207	310	524	834	1326
	1	1	20	20	16	0.746	99	157	236	399	635	1009
	1-1/2	1	30	25	20	1.12		128	192	325	515	822
240 (1ø)	1/4	1	20	5	2.9	0.186	1166	1853	2769	4685	7453	11850
	1/3	1	20	5	3.6	0.246	920	1462	2186	3699	5884	9355
	1/2	1	20	8	4.9	0.373	685	1090	1629	2756	4384	6970
	3/4	1	20	8	6.9	0.559	522	829	1240	2098	3337	5305
	1	1	20	10	8	0.746	397	631	944	1597	2540	4039
	1-1/2	1	20	15	10	1.12	269	427	639	1081	1720	2734
	2	1	20	20	12	1.49	259	411	615	1041	1656	2633
	2-1/2	1	30	20	11.6	1.9	220	344	522	885	1407	2238
	3	1	30	25	17	2.24	184	292	437	739	1176	1871
	5	1	40	30	28	3.73		198	296	502	798	1269

Motor Rating			Circuit Size	Fuse Size	Full Load Amps	Copper Wire Size						
Volts	HP	Phase				KW	12	10	8	6	4	2
208 (3ø)	1-1/2	3	20	10	6.6	1.12	530	843	1340	2131	3389	5385
	2	3	20	15	7.5	1.49	407	648	1031	1639	2607	4145
	2-1/2	3	20	15	9.0	1.9	346	551	876	1393	2216	3523
	3	3	20	15	10.6	2.24	289	459	731	1162	1849	2939
	5	3	30	25	16.7	3.73	181	289	459	730	1162	1847
240 (3ø)	1-1/2	3	20	10	6	1.12	641	1019	1522	2576	4098	6516
	2	3	20	10	6.8	1.49	492	783	1170	1979	3148	5006
	2-1/2	3	20	15	8.2	1.9	418	666	995	1682	2676	4255
	3	3	20	15	9.6	2.24	354	563	841	1423	2264	3600
	5	3	30	20	15.2	3.73	243	386	577	977	1555	2472
480 (3ø)	1-1/2	3	20	5	3	1.12	2693	4280	6396			
	2	3	20	5	3.4	1.49	2019	3210	4797	8116		
	2-1/2	3	20	10	4.0	1.9	1716	2729	4077	6899		
	3	3	20	10	4.8	2.24	1615	2568	3837	6492	10328	
	5	3	20	10	7.6	3.73	973	1547	2311	3911	6221	9891

Values are for estimating purposes only and may not meet NEC code. Design should be verified.

PUMP DIMENSIONS

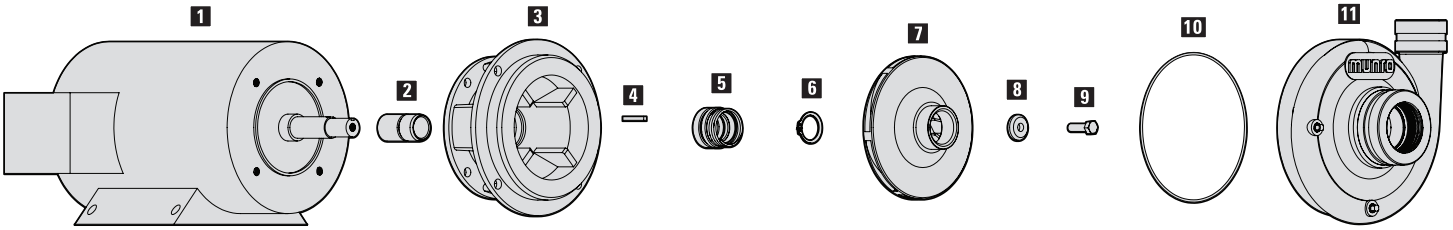
BP Series - 5 HP



HP	Phase	Motor Type	A	B	C	D	E	F	G	H*	I*
5	1	ODP	9.5	19.141	4.5	2.93	10.75	5.5	9.5	6.5	0
				18.89						8	3
	3	TEFC		20.64						9.5	2.25

*NOTE: Sizes are subject to change without notice.

PARTS BREAKDOWN



Items	SINGLE PHASE	HORSEPOWER	5
		MODEL NO.	BP SERIES
	DESCRIPTION	PART NO.	
1	5hp, 1ph, ODP Motor	M3005B	1
2	Shaft Sleeve	MLP60010	1
3	BP4000 Series Mount Ring	MBP4300	1
4	Motor Shaft Key	MLP3005KEY	1
5	Mechanical Shaft Seal	PACSC185	1
6	SS 32MM Retaining Ring	MLP30001	1
7	3000 Series Brass Impeller	MLP3405	1
8	5hp Beveled Cone Washer	MLP3CONE	1
9	Impeller Bolt 3/8-16 x 1 1/4" HX HD, SS	MLPB906	1
10	500 Series Case Gasket	MBPG001	1
11	4000 Series BP Pump Case	MBP4100A	1
▲	Mount Ring Bolt 3/8-16 x 3/4" HX HD, SS	MLPB906	4
▲	Case Bolt 7/16-14 x 3/4" HX HD, SS	MBPB930	4
▲	Slinger Washer	MLPG005	1
(▲) Not Shown			

TERMS & CONDITIONS

GOVERNING LAW: It is understood and agreed that these Terms and Conditions of Sale (this "Agreement") shall be interpreted under and pursuant to the laws of the State of Colorado; you agree that any action at law or suit which is related to any contact of sale brought against us shall be filed in a federal or state court located in the State of Colorado.

LIMITED WARRANTY: Munro, Inc. (the "Company") hereby warrants, in accordance with and subject to the provisions herein contained, your unit against defects in materials and workmanship under normal use and service when properly connected for a period of 12 months or 1000 hours of operation (which ever occurs first), from the date of purchase (Continuous-duty rated products are exempt from the 1000 hours of operation stipulation). In the event of a breakdown or failure of your unit or part thereof, within the period of 12 months or 1000 hours of operation, which prevents normal function, and is found to be the result of a defect in materials or workmanship, the Company will repair the breakdown or failure and/or replace any defective part or the whole unit at the Company's discretion. Freight charges will be the customer or ultimate consumer's responsibility.

Further, we warrant to our immediate customer and to the ultimate consumer (the "Customer") that products of our manufacture will be free of defects in material and workmanship under normal use and service, when installed and maintained in accordance with our instructions, for a period of twelve (12) months from date of installation or eighteen (18) eighteen months from date of shipment, whichever occurs first. As used herein, the "Ultimate Consumer" is defined as the purchaser who first uses the product after its initial installation or, in the case of product designed for non-permanent installation, the first owner who used the product. It is our immediate customer's obligation to make known to the Ultimate Consumer the terms and conditions of this warranty. This warranty provides limited specific legal rights, and there may also be other rights, which vary from state to state. As, and to the extent, covered by the federal consumer product warranties Law (the Magnuson-Moss Act, 15 U.S. Code §2301, et seq., (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, to the fullest extent allowed, (2) this warranty is for all purposes a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against the Company, unless and until the Ultimate Consumer notifies the Company in writing of the defect, and delivers the product and/or defective part(s) Customer paid freight (see Return Policy section, below) to our factory or nearest authorized service facility. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may be limited by such law, to the extent applicable. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURER OR AUTHORIZED REPAIR FACILITY, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, statements as to the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on product manufactured by the Company, if any, are subject to laboratory tests corrected for field performance. Any additional statements in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing, if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. Components or accessories supplied by us but manufactured by others are warranted only to the extent of, and are subject to, the terms and conditions of the original manufacturer's warranty.

RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYZES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.

This warranty shall not apply when damage is caused by (a) improper installation, mechanical or electrical, (b) improper power (i.e., voltage, etc.) (c) lightning (d) freezing (e) sand or other abrasive material (f) scale or corrosion build-up due to excessive chemical content. This warranty does not extend to or cover the unit or any part of it which, in the opinion of the Company, has worn by wear and tear, abraded or corroded by fluid pumped or environmental conditions, run in a dry condition, operated at high temperatures or outside the technical specifications of the unit. Mechanical seal failure is not warranted outside of initial start up. Any modification of the original equipment will also void this warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts, nor charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the intended application and use of the product.

UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, REGARDLESS OF WHETHER SUCH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

No rights extended under this warranty may be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.
If any litigation is commenced between the parties hereto for the enforcement of any rights hereunder, the successful party in subject litigation shall be entitled to receive from the unsuccessful party all costs incurred in connection therewith, including a reasonable amount for attorney's fees.

YOUR ACCEPTANCE OF ANY GOODS SUPPLIED BY US, OR ON OUR BEHALF, SHALL, WITHOUT LIMITATION CONSTITUTE ACCEPTANCE OF ALL TERMS, AND CONDITIONS STATED ABOVE. VISIT WWW.MUNROPUMP.COM/COMPANY-INFORMATION/WARRANTY-STATEMENTS FOR COMPLETE WARRANTY AND TERMS OF SALE.

TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Little or no discharge	1. Casing not initially filled with water to prime pump 2. Total head too high 3. Suction lift too high, or too long 4. Impeller plugged 5. Hole or air leak in suction line 6. Foot valve too small 7. Impeller damaged 8. Foot valve or suction line not submerged deep enough in water 9. Insufficient inlet pressure or suction head 10. Suction piping too small 11. Motor wired incorrectly 12. Casing gasket leaking 13. Suction or discharge line valves closed	1. Fill pump casing 2. Shorten suction lift and/or change head 3. Lower suction lift, install foot valve and prime or shorten length of suction line 4. Clean impeller 5. Repair or replace suction line, use pipe sealing compound. 6. Match foot valve to piping or install one size larger foot valve 7. Replace impeller 8. Submerge lower in water 9. Increase inlet pressure by adding more water to tank or increasing back pressure 10. Increase to pump inlet size or one size larger 11. Check wiring diagram for correct wiring 12. Replace Gasket 13. Open suction and/or discharge lines
Pump will not deliver water or develop pressure	1. No priming water in casing 2. Mechanical seal is leaking 3. Leak in suction line 4. Discharge line is closed and priming air has no where to go 5. Suction line (or valve) is closed 6. Poor pump performance 7. Foot valve is leaking 8. Suction screen is clogged	1. Fill pump casing 2. Replace seal (See Rotary Seal Replacement on p.2) 3. Repair or replace 4. Open discharge line 5. Open suction line or valve 6. Replace worn parts 7. Replace foot valve 8. Clean or replace screen
Loss of suction	1. Air leak in suction line 2. Suction lift is too high 3. Insufficient inlet pressure or suction head in booster system 4. Clogged foot valve or strainer	1. Repair or replace suction line 2. Lower suction lift, install foot valve and prime 3. Increase inlet pressure by adding more water to tank or increasing back pressure 4. Unclog
Pump vibrates and/or makes excessive noise	1. Mounting plate or foundation not rigid enough 2. Foreign material in pump 3. Impeller damaged 4. Worn motor bearings 5. Suction lift too high	1. Reinforce 2. Disassemble pump and clean 3. Replace impeller 4. Replace bearings 5. Lower suction lift, install foot valve and prime
Pump will not start or run	1. Improper wiring 2. Blown fuse or open circuit breaker 3. Loose or broken wiring 4. Stone or foreign object lodged in impeller 5. Motor shorted out 6. Thermal overload has opened circuit	1. Check wiring diagram on motor 2. Replace fuse or close circuit breaker 3. Tighten connections, replace broken wiring 4. Disassemble pump and remove foreign object 5. Replace motor 6. Allow unit to cool, restart after reason for over load has been determined
Pump leaks at shaft	1. Worn mechanical shaft seal	1. Replace rotary seal (See Rotary Seal Replacement on p.2)

Download troubleshooting guide at www.munropump.com/resources

Call Munro technical support for any questions relating to start-up or operation of this pump. **Toll Free: 1.800.942.4270**