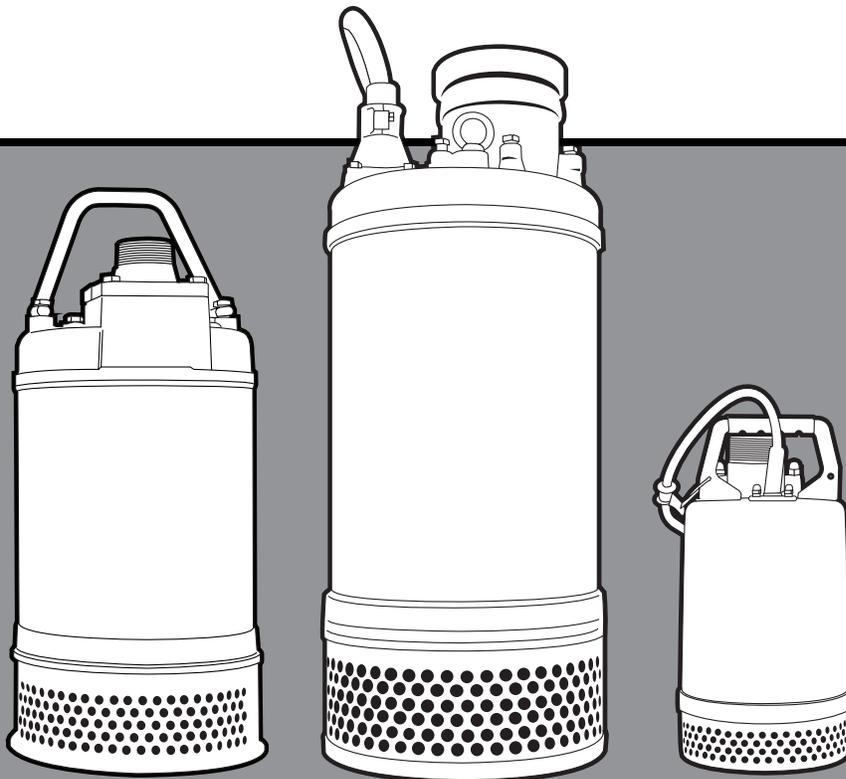


# **OWNER'S MANUAL**

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## **FS SERIES FOUNTAIN AND DEWATERING PUMPS**



Installation - Operation - Parts

1.800.942.4270  
mpi@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.

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

### **WARNING**



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

Ground pump before connecting to power supply.

 **Wire motor for correct voltage. See “Motor & Electrical” section of this manual and motor nameplate.**

 **Ground motor before connecting to power supply.**

 **Meet National Electrical Code, Canadian Electrical Code, and local codes for all wiring.**

 **Follow wiring instructions in this manual when connecting motor to power lines.**

## MOTOR AND ELECTRICAL:

### GENERAL SAFETY – ELECTRICAL

1. Follow all local electrical and safety codes, including the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
2.  Disconnect the main power before handling the unit for ANY REASON.
3.  Replace damaged or worn cords immediately.
4.  Use extreme caution around an operating pump and motor – it may be hot enough to cause serious burns.
5.  Ground motor before connecting to power supply.
6.  If unsure of electrical connection, call a licensed electrician. High voltage can shock, burn, or cause death.

### GENERAL OPERATION – ELECTRICAL

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

### GENERAL SAFETY – MOTOR

1.  Disconnect the main power before handling the unit for ANY REASON.
2.  An operating motor will run at a high temperature and will be too hot to touch.
3. 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.
4.  When in doubt, call a licensed electrician. High voltage can shock, burn, or cause death.

## WIRING CONNECTION:

### ROTATION

1. All Munro pump motors run in a Counter-Clockwise (CCW) rotation when looking at the motor shaft. Single phase motors are pre-wired for CCW and should never be reversed.

### CHECK MOTOR ROTATION

1. A fractional second application of power should be applied to all 3-phase motors to verify CCW rotation of shaft (sometimes referred to as “bumping” the motor”).
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. Verify voltage and phase of power source with motor nameplate before connecting to motor.

### MOTOR PROTECTION

Fuses and circuit breakers are used as a safety device for the wire circuit only. They do NOT offer motor protection.

1. Consult local or national electric codes for proper fuse protection based on the motor data located on the pump nameplate.

### GROUNDING:

Grounding the motor can be achieved by securing the motor to a metal raceway system. Power service grounding is always preferred.

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)

### IDENTIFYING GROUND WIRE

Typically a pump’s ground wire is indicated by a color other than black or white, most often green. If there is any question, use an OHM meter to identify the correct wire to use for grounding purposes.

1. Set OHM meter to read Rx1
2. Attach one of the meter’s wire leads to any metal piece on the pump case – for example, a metal handle.
3. Attach the other meter wire to the exposed wire end of one of the pump’s (motor) wire leads.
4. When the OHM meter shows full, positive movement, this is the ground wire.
5. Testing the other motor wire leads should result in zero meter movement.

## **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. Overloads help protect the motor from burnout from overload of low voltage, high voltage and other causes.
4. Frequent tripping of the overload indicates motor or source power problems. Immediate professional attention is recommended.
5. ⚠️ 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. ⚠️ The overload should never be tampered with or removed.

## **PUMP:**

### **GENERAL SAFETY – PUMP**

1. ⚠️ An operating pump, with a blocked discharge, will heat the water and pump housing. Allow pumps to cool before handling.

### **GENERAL OPERATION – PUMP**

1. To run properly, pump should be submersed more than 50% of its height.
2. Pump and pipe must be drained when not in use or if there is any danger of freezing.
3. Running a pump dry may cause damage to the seal and void warranty.

### **AVOIDING AIRLOCK**

1. Fill the pump case and suction pipe with water to expel as much air as possible prior to start-up to avoid an airlock.

### **PIPE CONNECTION**

Note: Grooved-end connection fittings allow pumps to be detached from pipe work without the inconvenience of unthreading the pipe.

1. Plastic or galvanized steel pipe and hose are most commonly used. Support all pipe as needed.
2. Keep discharge lines equal, or to within one size larger, to the pump outlet. Avoid excess fittings when possible. Use straight runs when possible.
3. Pipe should not be smaller than the corresponding discharge holes.
4. All threaded joints and connections should have pipe-specific sealing compound applied and completely tightened.
5. Isolation valves or unions on discharge and ground connections throughout system allow for easier pump removal and reduce leak risks.

## **OPERATION:**

1. Normal system start-up may take a few minutes for air to expel from system and water to begin to cycle. If no water is flowing after a few minutes, turn the pump off and refer to troubleshooting guide. Do NOT run pump dry for any period of time.
2. Never run dry or against a closed discharge for an extended period of time. Running a pump dry may cause damage to the seal and void the warranty.
3. Make sure the pump is submersed more than 50% of its height to run properly.

### **Rotation**

1. Motors are pre-wired for CCW and should never be reversed.

### **Maintenance – Lubrication**

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

### **Maintenance – Freezing**

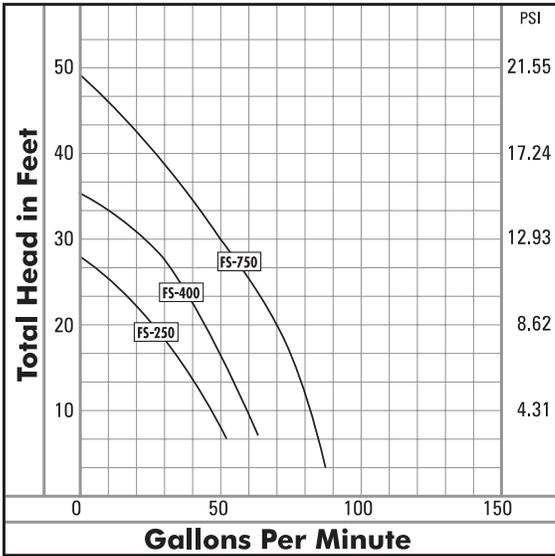
1. Drain the entire system if there is a danger of freezing.
2. FS Pumps can run in cold water as long as the water is freely moving.

# PUMP SPECIFICATIONS

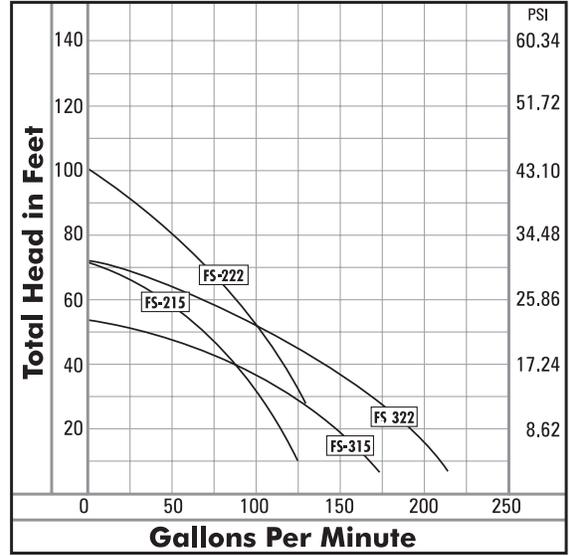
Weight In Lbs.	Solids Handling In Inches	Discharge Size In Inches	Cord Length In Feet	Voltage	Phase	Amps	HP	Part Number
32	.24	1.5	18	110	1	4	1/3	FS250S11
32	.24	1.5	18	220	1	2.5	1/3	FS250S22
33	.24	2	18	110	1	5.3	1/2	FS400S11
33	.24	2	18	220	1	3	1/2	FS400S22
40	.32	2	18	110	1	10	1	FS750S11
37	.32	2	18	220	1	5	1	FS750S22
35	.32	2	18	220	3	4	1	FS750T22
35	.32	2	18	440	3	2	1	FS750T44
83	.36	2	33	110	1	20	2	FS215S11
81	.36	2	33	220	1	10	2	FS215S22
70	.36	2	33	220	3	6	2	FS215T22
60	.36	2	33	440	3	3	2	FS215T44
83	.36	3	33	110	1	20	2	FS315S11
81	.36	3	33	220	1	10	2	FS315S22
59	.36	3	33	220	3	6	2	FS315T22
78	.36	3	33	440	3	3	2	FS315T44
88	.36	2	33	220	3	8	3	FS222T22
68	.36	2	33	440	3	4.5	3	FS222T44
68	.36	3	33	220	3	9	3	FS322T22
69	.36	3	33	440	3	4.5	3	FS322T44
142	.4	2	33	220	3	15	5	FS237T22
122	.4	2	33	440	3	7.5	5	FS237T44
143	.4	3	33	220	3	15	5	FS337T22
135	.4	3	33	440	3	7.5	5	FS337T44
145	.4	4	33	220	3	15	5	FS437T22
144	.4	4	33	440	3	7.5	5	FS437T44
158	.4	3	33	220	3	25	7.5	FS355T22
148	.4	3	33	440	3	11.3	7.5	FS355T44
133	.4	4	33	220	3	22.5	7.5	FS455T22
148	.4	4	33	440	3	11.3	7.5	FS455T44
300	.6	4	33	220	3	30	10	FS475T22
300	.6	4	33	440	3	16	10	FS475T44
300	.6	6	33	220	3	30	10	FS675T22
300	.6	6	33	440	3	15	10	FS675T44
305	.6	4	33	220	3	45	15	FS411T22
307	.6	4	33	440	3	22.5	15	FS411T44
310	.6	6	33	220	3	45	15	FS611T22
311	.6	6	33	440	3	22.5	15	FS611T44
313	.6	6	33	220	3	60	20	FS6150T22
313	.6	6	33	440	3	30	20	FS6150T44
570	.8	6	33	220	3	90	30	FS6220T22
570	.8	6	33	440	3	45	30	FS6220T44
581	.8	8	33	220	3	90	30	FS8220T22
581	.8	8	33	440	3	45	30	FS8220T44

# PUMP CURVES

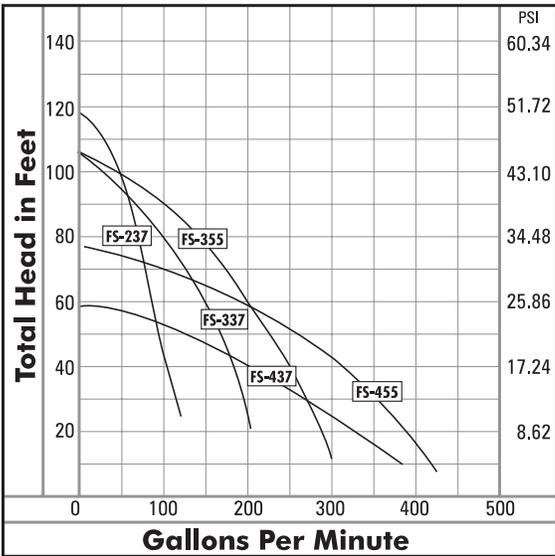
**HORSEPOWER RANGE: 1/3 - 1**



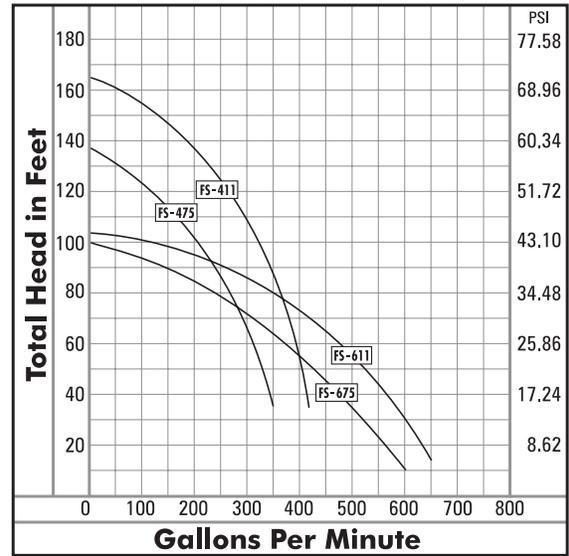
**HORSEPOWER RANGE: 2 - 3**



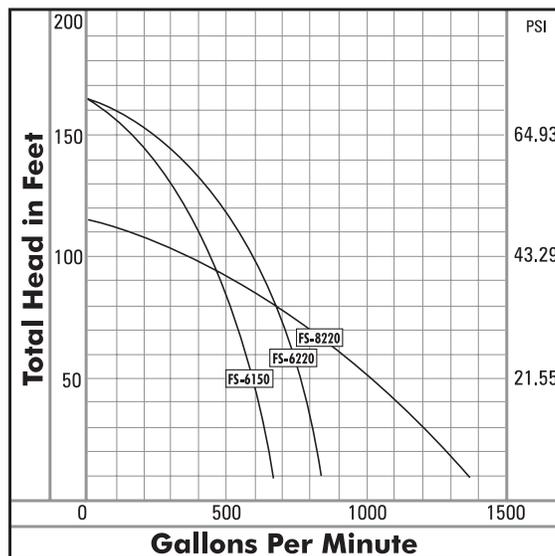
**HORSEPOWER RANGE: 5 - 7.5**



**HORSEPOWER RANGE: 10 - 15**



**HORSEPOWER RANGE: 20 - 30**

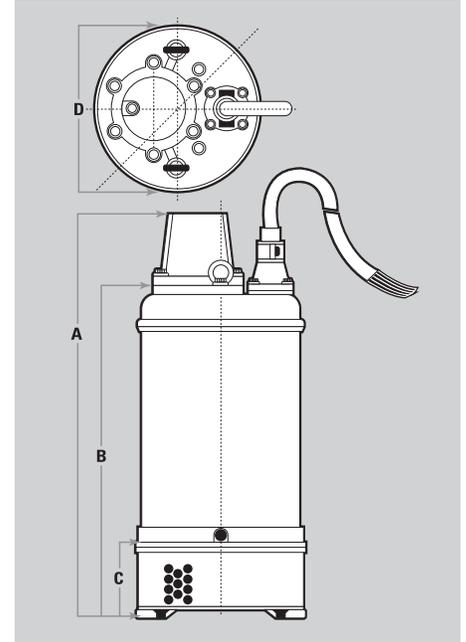
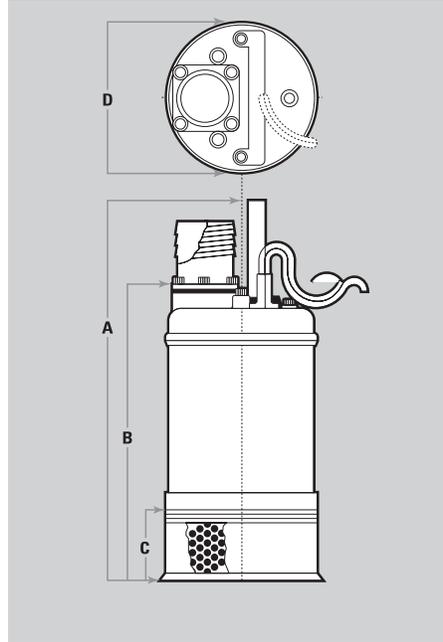
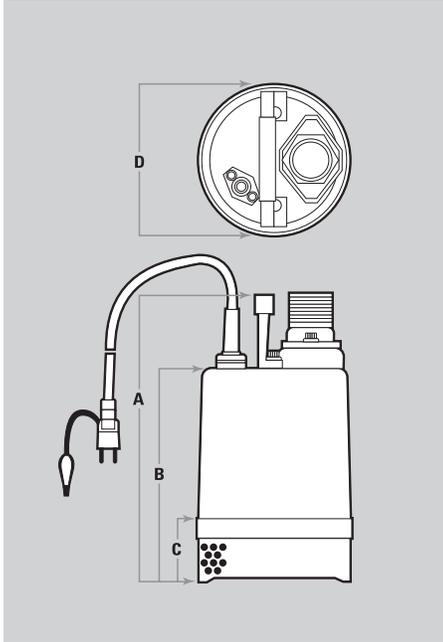


# PUMP DIMENSIONS

FS250/400/750

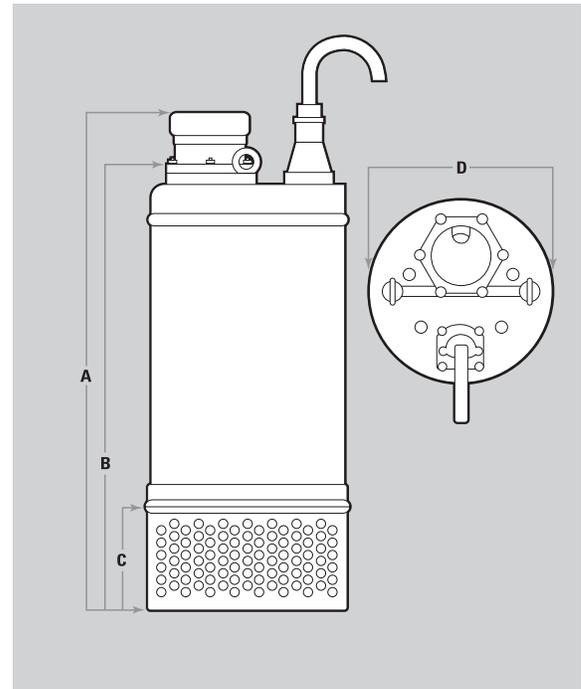
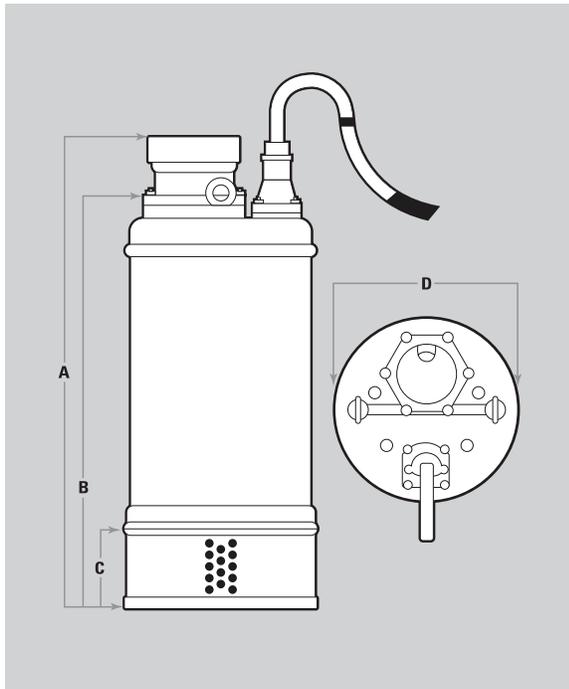
FS215/315/222/322/237/  
337/437/355/455

FS475/675/411/611



FS6150

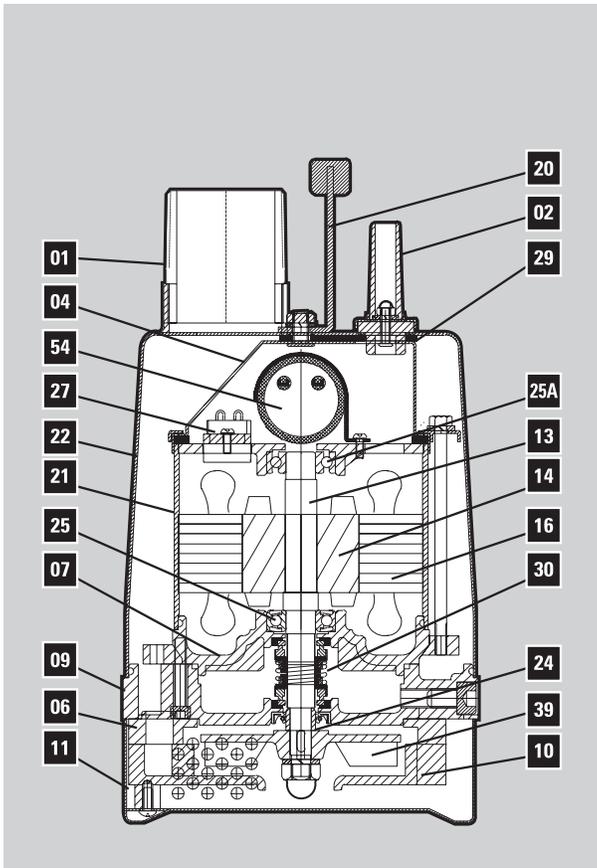
FS6220/8220



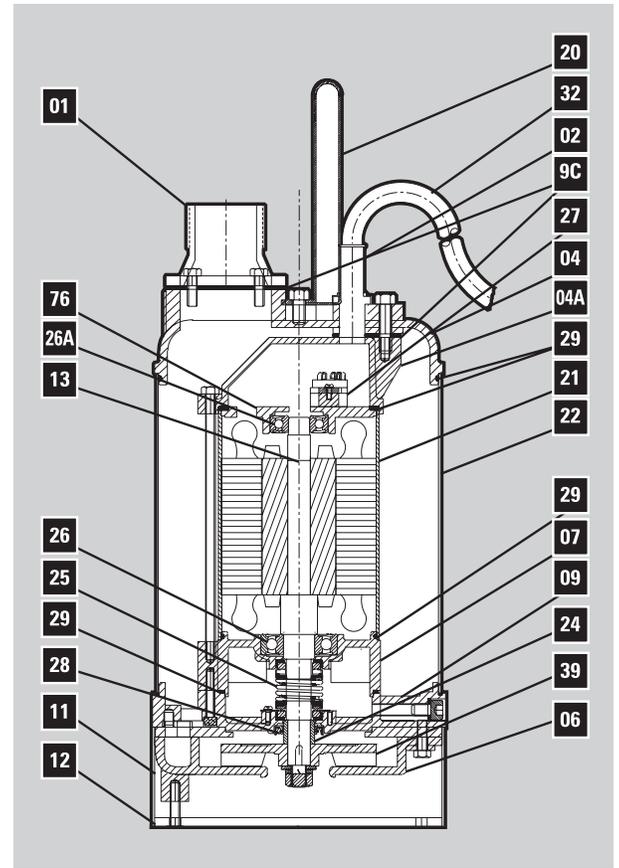
Model Number	A in Inches	B in Inches	C in Inches	D in Inches
FS250/400	13.375	10	3	7.125
FS750	14.625	11.25	3	7.125
FS215/315	22	16	2.875	8.5
FS222/322	22	16	2.875	8.5
FS237/337/437	25.25	19.625	4.75	11.25
FS355/455	26.375	20.625	4.75	11.25
FS475/675	33.25	27.375	7	13.875
FS411/611	33.25	27.375	7	13.875
FS6150	26.25	30	5.75	13.75
FS6220/8220	41	37	8	16.5

# PARTS BREAKDOWN

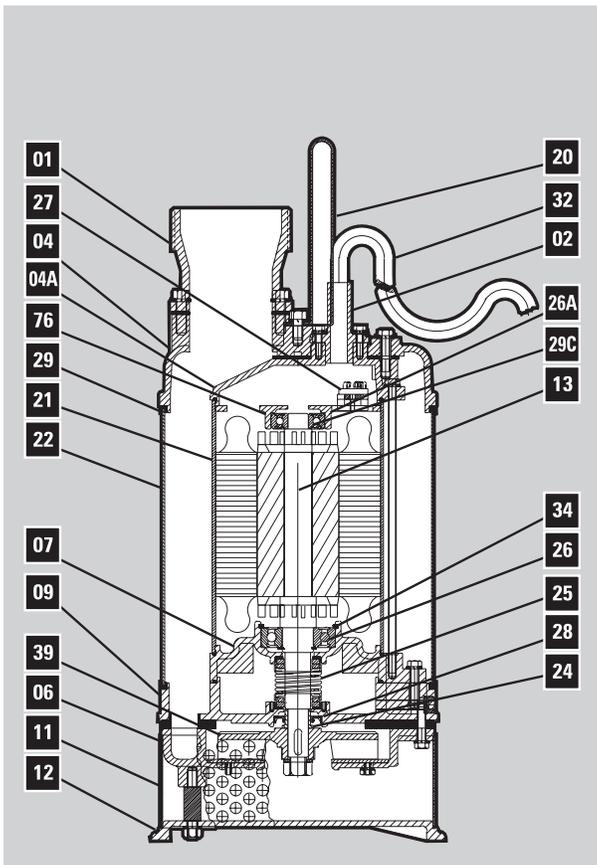
FS250/400/750



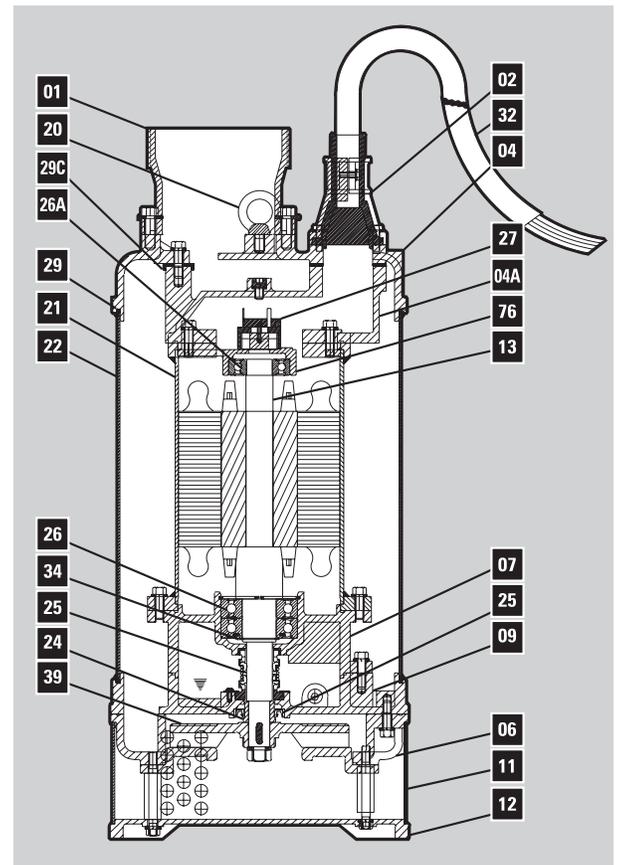
FS215/315/222/322



FS237/337/437/355/455



FS475/675/411/611

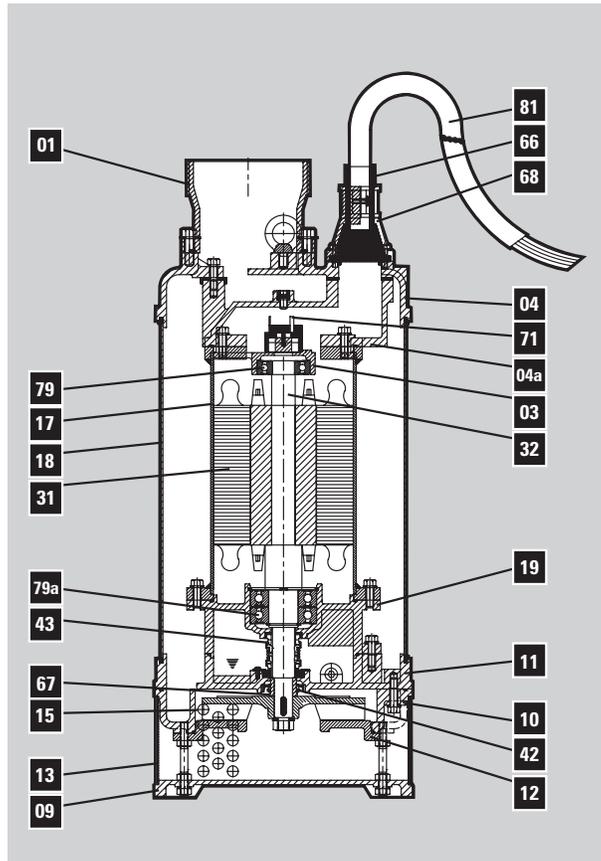


# PARTS BREAKDOWN

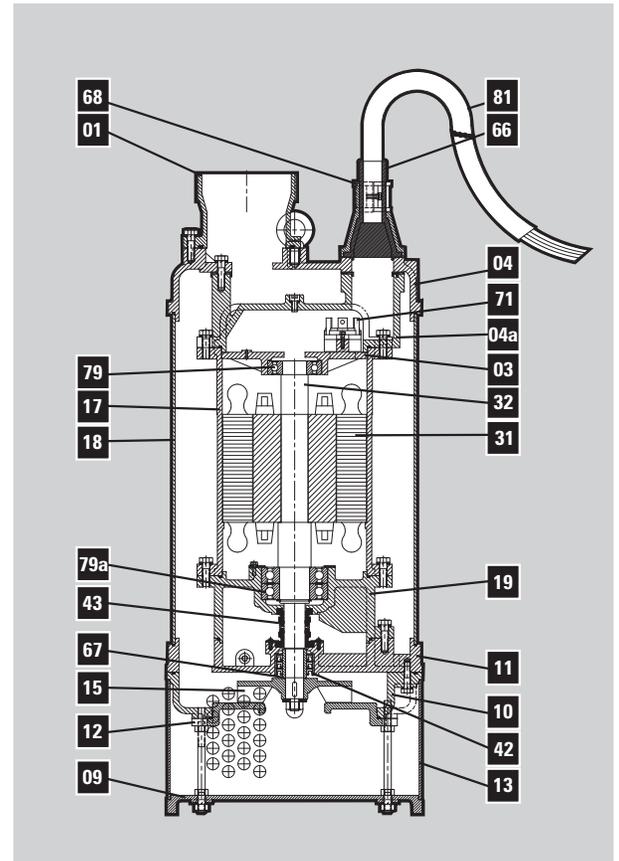
Reference Number	Parts Description	Model Numbers		
		FS250/400/750	FS215/315/222/322 FS237/337/437/355/455	FS475/675/411/611
01	Discharge Flange	Cast Iron 200	Cast Iron 200	Cast Iron 200
02	Cable Gland	Fiber Plastic	NBR	NBR
04	Upper Cover	SUS304	SUS304	SUS304
04A	Motor Cover	Cast Iron 200	Cast Iron 200	Cast Iron 200
06	Pump Casing	Cast Iron 200	Ductile Iron 50	Ductile Iron 50
07	Bearing Block	Cast Iron 200	Cast Iron 200	Cast Iron 200
09	Seal Block	Cast Iron 200	Cast Iron 200	Cast Iron 200
10	Inlet Plate	Cast Iron 200	Cast Iron 200	Cast Iron 200
11	Strainer	SUS304	SUS304	SUS304
12	Bottom Plate	Ductile Iron 50	Ductile Iron 50	Ductile Iron 50
13	Shaft	SUS410	SUS410	SUS410
14	Rotor	Silicon Steel	Silicon Steel	Silicon Steel
16	Stator	Silicon Steel	Silicon Steel	Silicon Steel
20	Handle/Hanger	Steel	Steel	Steel
21	Motor Frame	SUS304	Cast Iron 250	Cast Iron 250
22	Outer Case	SUS304	SUS304	SUS304
24	Shaft Sleeve	SUS304	SUS410	SUS410
25-25A	Bearing			
27	Protector			
28	O-Ring	NBR	NBR	NBR
29	Gasket	NBR	NBR	NBR
30	Mechanical Seal	CE/CA+SIC/SIC	CE/CA+SIC/SIC	CE/CA+SIC/SIC
32	Cable			
34	C-Ring		SC40	SC40
39	Impeller	Ductile Iron 45	High Chrome Steel	High Chrome Steel
54	Capacitor			
76	Bearing Block	Cast Iron 200	Cast Iron 200	Cast Iron 200

# PARTS BREAKDOWN

## FS6150



## FS6220/8220



Reference Number	Parts Description	Model Numbers		
		FS6150	FS6220	FS8220
01	Discharge Head	FC20	FC20	FC20
03	Switch Plate	FC20	FC20	FC20
04	Upper Cover	FC20	FC20	FC20
04A	Motor Cover	FC20	FC20	FC20
09	Base Plate	FC20	FC20	FC20
10	Pump Casing	FC20	FC20	FC20
11	Seal Bracket	FC20	FC20	FC20
12	Inlet Plate	FC20	FC20	FC20
13	Strainer	SUS304	SUS304	SUS304
15	Impeller	HCR	HCR	HCR
17	Motor Frame	FC20	FC20	FC20
18	Outer Case	SC40	SUS304	SUS304
19	Bearing Bracket	FC20	FC20	FC20
31	Stator			
32	Shaft/Rotor without Bearing			
42	Oil Seal	NBR	NBR	NBR
43	Mechanical Seal			
66	Cable Gland	NBR	NBR	NBR
67	Shaft Sleeve	SUS410	SUS410	SUS410
68	Gland Holder	FC20	FC20	FC20
71	Thermal Protector			
79	Bearing		6308	6308
79A	Bearing		6310	6310
81	Cable			

## TERMS & CONDITIONS

**GOVERNING LAW:** It is understood and agreed that these Terms and Conditions of Sale 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 Pump Inc. 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. 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, Munro will repair the breakdown or failure and replace any defective part or the whole unit at the Company's discretion. Freight charges will be the User's responsibility.

Further, we warrant to our immediate customer and to the ultimate consumer that products of our manufacture will be free of defects in material and workmanship under normal use and service for the following time periods, when installed and maintained in accordance with our instructions. Pump Products: One (1) year from date of installation or (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 the purchaser's or any sub-vender's obligation to make known to the ultimate consumer the terms and conditions of this warranty. This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (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, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply. **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 STATION, 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, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, 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 by the terms and conditions of the original manufacturer's warranty.

**RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSIS 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) sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content (f) 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 reasonable wear and tear, abraded or corroded by fluid pumped, run in a dry condition, operated at high temperatures or outside the technical specifications of the unit. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept 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 application and use of the product.

**UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH 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 shall 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.**

## TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
<b>Pump fails to start.</b>	<ol style="list-style-type: none"> <li>1. No power is supplied. (Power outage)</li> <li>2. Open circuit or poor connection of the cable.</li> <li>3. Impeller is obstructed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact power company or an electrical repair shop.</li> <li>2. Check if there is an open circuit in the cable or wiring.</li> <li>3. Use OHM meter to check the status of circuit.</li> <li>4. Inspect the pump and remove the obstruction.</li> </ol>
<b>Pump starts but stops immediately, causing the motor protector to actuate.</b>	<ol style="list-style-type: none"> <li>1. Impeller is obstructed.</li> <li>2. Voltage drop.</li> <li>3. A 50 Hz model is operated at 60 Hz.</li> <li>4. The strainer is obstructed, and the pump was operated dry for a long period.</li> <li>5. Motor sounds abnormal or will not run.</li> <li>6. The pump is picking up too much sediment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect the pump and remove the obstruction.</li> <li>2. Correct the voltage to the rated voltage, or use an extension cable that meets the standard.</li> <li>3. Check the nameplate and replace the pump or impeller.</li> <li>4. Remove the obstruction.</li> <li>5. Repair the motor or replace with a new motor.</li> <li>6. Place a concrete block under the pump to prevent pump from picking up sediment.</li> </ol>
<b>The pump's head and pumping volume is lower than expected.</b>	<ol style="list-style-type: none"> <li>1. The impeller is worn.</li> <li>2. The hose appears to be clogged.</li> <li>3. The strainer is obstructed or buried.</li> <li>4. The motor rotates in reverse.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace impeller.</li> <li>2. Minimize the number of bends in the hose. (in an area with a large amount of debris, use the pump in a meshed basket.)</li> <li>3. Remove the obstruction. Place a concrete block under the pump to prevent pump from picking up sediment.</li> <li>4. Interchange the power supply terminal connection.</li> </ol>
<b>High amp draw.</b>	<ol style="list-style-type: none"> <li>1. No system back pressure.</li> <li>2. Incorrect wiring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install a valve to regulate discharge flow.</li> <li>2. Verify ground and power wires.</li> </ol>
<b>Pump's running but not moving water.</b>	<ol style="list-style-type: none"> <li>1. Pump running backwards.</li> </ol>	<ol style="list-style-type: none"> <li>1. Exchange any two of the power wires.</li> </ol>
<b>The pump generates noise or vibration</b>	<ol style="list-style-type: none"> <li>1. The bearing of the motor may be damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the bearing. Contact an authorized service center or the dealer where you purchased the equipment.</li> </ol>

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