



INSTALLATION, OPERATION and MAINTENANCE MANUAL

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# Submersible Pumps

Series LBV 40/75/215/315

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With the  
**FLO**



Manufacturer of Pumps, Tanks, Heat Exchangers & Accessories  
for HVAC Market After-Sales Parts and Services

Submersible Pumps

Series LBV 40/75/215/315

FLO FAB INC  
LAKE WORTH,  
FLORIDA, USA



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## 1. PRIOR TO OPERATION

- 1.1. Be sure to provide an adequate grounding and install with leakage breaker to prevent the users from serious electric shock injury.
- 1.2. Make sure the voltage of the power supply are identical to the indications of the nameplate (label) on the pump. Do not plug into other voltage and phase than indicated on the nameplate.
- 1.3. Do not have a dry-run in the air, it will damage the pump.
- 1.4. Do not use the electrical cable to carry, lift or lower the pump. Please carry by the pump handle.
- 1.5. **Extension of power cable:**  
When the power cable has to be extended, select the proper cable size within the allowable extension. If cable is extended too far, a drop in voltage may occur, which will stop the running of the motor and damage the pump.

**DO NOT USE THE PUMP IN PONDS, SWIMMING POOLS, BATH TUBS, OR ANY OTHER AREA WHERE THERE ARE PEOPLE; SERIOUS ACCIDENTS CAN OCCUR.**

## 2. CARE UNDER OPERATION

### 2.1. **When the pump stops suddenly (by the motor protection device) :**

The motor protection device is built-in and shuts off the circuit automatically to prevent the motor from burning-out when the motor is overloaded due to clogging by foreign particles or when plugged-in to wrong power source (Voltage, Frequency, etc.). Should the pump stop suddenly, please check piping, pump itself, connection of electrical cable to power source, etc. The motor protector always automatically trips-off in a few seconds if there is any abnormality. Please resume the operation after clearing the trouble and leave the pump as it is.

- 2.2. Please consult your local dealer or company from which the pump was purchased if you are unable to solve the problem. Unauthorized personel is prohibited from disassembling or assembling the pump as it will probably result in inferiority in performance or damage to motor.

## 3. CARE AFTER OPERATION

*YOU DO NOT NEED TO TAKE ANY SPECIAL CARE ON THE PUMP AFTER OPERATION, HOWEVER, YOU MUST BE WARN OF THE FOLLOWINGS:*

- 3.1. If a freezing temperature is predicted, lift up the pump from water and re-install it in dry condition.
- 3.2. If pump is left in the water for a long period of time without running, rust and other possible floating particals will accumulate in the pump, which will inevitably shorten the life of the pump. In this case, let the pump run in clean water and remove floating particals from inside the pump. Re-install it once dried.

## 4. APPLICATIONS

*THE MOST EFFICIENT, VERSATILE AND COST-EFFECTIVE PRODUCTS YOU'LL EVER USE!*

- Draining from buildings and sanitary facilities.
- Water treatment process in sewage treatment yards.
- Sewage waste containing slender material and all wastewater removal.
- Draining other sewage water.

## 5. TROUBLE SHOOTING

*TO PREVENT SERIOUS ACCIDENTS, DISCONNECT THE POWER SUPPLY BEFORE INSPECTING THE PUMP:*

<b>Malfunction</b>	<b>Reason(s)</b>	<b>Countermeasure(s)</b>
Pump fails to start	No power is supplied (power outage)	Contact the electric power company or an electrical repair shop
	Open circuit or poor connection of the cabtyre cable	Check if there is an open circuit in the cabtyre cable or wiring
	Impeller is obstructed	Inspect the pump and remove the obstruction
Pump starts but stops immediately, causing the motor protector to actuate	Impeller is obstructed	Inspect the pump and remove the obstruction
	Voltage drop	Correct the voltage to the rated voltage, or use an extension cable that meets the standard
	A 50Hz model is operated at 60Hz	Check the nameplate and replace the pump or impeller
	The strainer is obstructed, and the pump was operated dry for long hours	Remove the obstruction
	Motor abnormal	Repair the motor or replace with a new motor
	The pump is picking up too much sediment	Place a concrete block under the pump to prevent the pump from picking-up sediment
The pump's head and pumping volume is lower	The impeller is worn	Replace
	The hose may be clogged	Minimize the number of bends in the hose, (in an area with a large amount of debris, use the pump in a meshed basket)
	The strainer is obstructed or buried	Remove the obstruction. Place a concrete block under the pump to prevent the pump from picking-up sediment
	The motor rotates in reverse	Interchange the power supply terminal connection
The pump generates noise or vibration	The bearing of the motor may be damaged	To replace the bearing, contact the dealer from whom you purchased the equipment



## 6. SERVICE AND WARRANTY

If you can not find the reasons of the problem, please consult the authorized local dealer or company from which the pump was purchased. The pump has a 1 year warranty from the invoice date. Invoice is required for any warranty work.

## 7. TECHNICAL SPECIFICATIONS

MODELS	DISCHARGE	SOLID
LBV-40	2"	3/4"
LBV-75	2"	2"
LBV-215	2"	2"
LBV-315	3"	2"

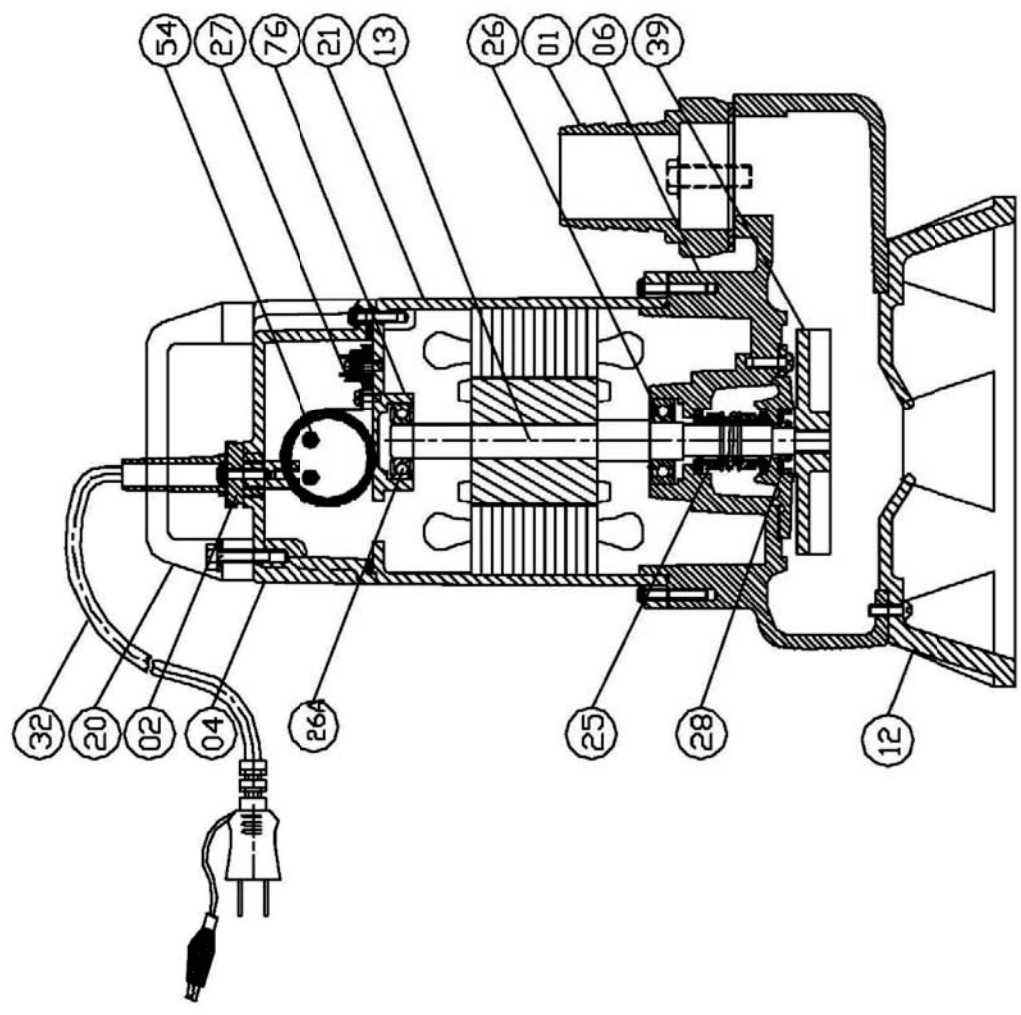
### SPECIFICATIONS

MODELS	OUTLET		Elec. MOTOR			Voltage / Phase / HZ	Solid Pass		Weight	
	mm	in	Hp	Amp.			mm	in.	kg.	lbs
				Start	Run					
LBV-40-50-0.6	50	2	1/2	13	5	115/1/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	5	2.64	220/1/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	7.6	1.59	208/3/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	7.5	1.8	230/3/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	3.5	0.7	460/3/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	3.9	0.90	480/3/60	19	3/4	16	34
LBV-40-50-0.6	50	2	1/2	2	0.57	575/3/60	19	3/4	16	34
LBV-75-1-1.1	50	2	1/2	30	10	115/1/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	15.4	5.29	220/1/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	15.8	3.17	208/3/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	15	3.7	230/3/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	7	1.4	460/3/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	7.8	1.70	480/3/60	50	2	21	46
LBV-75-1-1.1	50	2	1/2	4	1.14	575/3/60	50	2	21	46
LBV-215-2-1.3	50	2	1	36	10.58	220/1/60	50	2	25	55
LBV-215-2-1.3	50	2	1	24	6.35	208/3/60	50	2	25	55
LBV-215-2-1.3	50	2	1	22.5	5.9	230/3/60	50	2	25	55
LBV-215-2-1.3	50	2	1	12.1	2.87	460/3/60	50	2	25	55
LBV-215-2-1.3	50	2	1	13	2.68	480/3/60	50	2	25	55
LBV-215-2-1.3	50	2	1	9	2.30	575/3/60	50	2	25	55
LBV-315-2-1.3	80	3	1	36	10.58	220/1/60	50	2	25	55
LBV-315-2-1.3	80	3	1	24	6.35	208/3/60	50	2	25	55
LBV-315-2-1.3	80	3	1	22.5	5.9	230/3/60	50	2	25	55
LBV-315-2-1.3	80	3	1	12.1	2.87	460/3/60	50	2	25	55
LBV-315-2-1.3	80	3	1	13	2.68	480/3/60	50	2	25	55
LBV-315-2-1.3	80	3	1	9	2.30	575/3/60	50	2	25	55

## 8. Parts List - LBV 40 - 75

Parts List

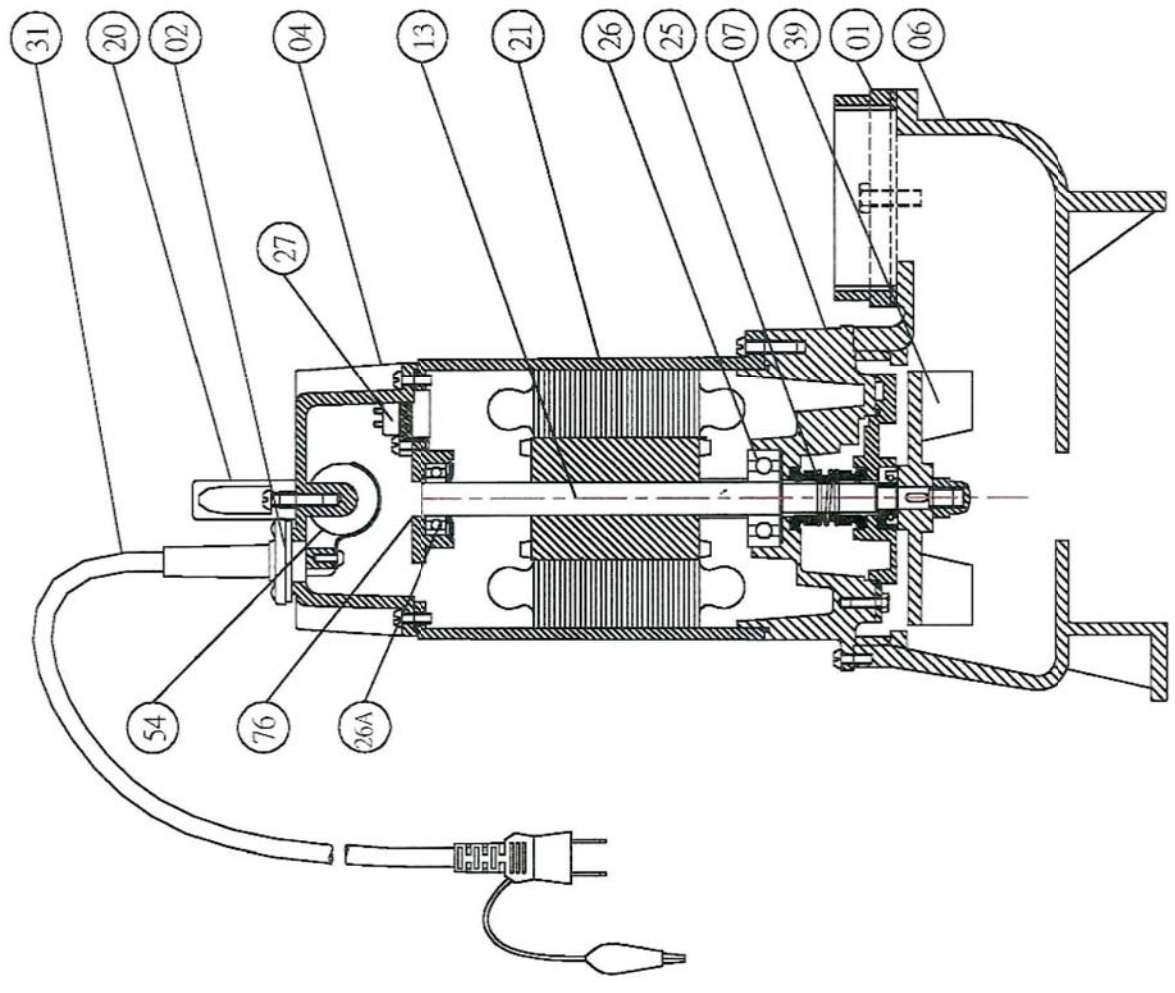
P/Nd	Description	Material	Q'ty
01	Dirtlet	PC	1
02	Cable gland	NBR	1
04	Upper cover	A C	1
06	Pump casing	FC-50	1
12	Base	FC-50	1
13	Shaft	SUS-410	1
20	Handle	PC	1
21	Motor frame	SUS-304	1
25	Mech seal	CE/CA	1
26	Bearing	6202ZZ#C3	1
26A	Bearing	6203ZZ#C3	1
27	Protector		1
28	Seal	NBR	1
32	Cable	VCT	1
39	Impeller	FC-20	1
54	Capacitor	FC-20	1
76	Bearing bracket	FC-20	1



## 8. Parts List - LBV 215 - 315

LBV-215-315 Part list

P/No.	Description	Matl	Q'ty	Remarks
01	Outlet	FC-20	1	
02	Cable gland	FC-20	1	
04	Top cover	FC-20	1	
06	Volute	FC-20	1	
07	Bracket	FC-20	1	
13	Shaft	SUS-410	1	
20	Handle	PC	1	
21	Motor frame	FC-20	1	
25	Mech. seal	SIC/SIC	1	
26	Bearing		1	6303ZZ*C3
26A	Bearing		1	6202ZZ*C3
27	Protector		1	
31	Cable	PV	1	
39	Impeller	FCD-50	1	
54	Capacitor		1	
76	Bracket	FC-20	1	



## 9. Slide Rail Coupling

Notice to installing contractor: Instructions must remain with installation.

### GENERAL INFORMATION

These models are complete systems used in sewage or dewatering installations with side outlet flanged pumps. They can be used in basins of 10ft depth (for deeper depths, consult factory). The guide rail systems are particularly useful when the liquid level is above the pump discharge pump. The systems feature easy automatic engagement and disengagement for removing the pump for service or repair without draining the basin.

### GENERAL CONSTRUCTION

A flanged discharge elbow base is supplied with the rail system. The elbow base has casted mounting pins which supports the lower rail guides. The elbow base, mounting plate, as well as the upper guide rail bracket are made of durable class 30 cast iron that is epoxy coated. All models require the use of 1" schedule 40 (galvanized steel or stainless steel) pipe for guide rails. Pipe is furnished by the installer.

### LIFTING CABLE

The pump is equipped with lifting lugs that are an integral part of the motor housing or cover for lifting. A permanently attached chain or cable (purchased separately), should be used to aid in pump installation and removal. It is not necessary to use a separate pull chain on the mounting plate which is bolted to the pump discharge flange.

### UPPER GUIDE RAIL SUPPORT BRACKET

As mentioned above, all the rail systems utilize 1" standard pipe for the guide rails. The upper guide support rail bracket is to be mounted to the basin cover frame, as per the discretion of the installer.

### INSTALLING RAIL SYSTEM PARTS (Concrete Basin)

#### Discharge Elbow Base and Guide Rails:

1. Lower the elbow base into the basin.
2. Position the elbow base by dropping a plumb line from the center of the guide rail pins located on the upper guide rail bracket to the center of guide rail pins protruding from the elbow base. Level the elbow base flange in two directions 90° to each other. Mark the outline of the base and bolt holes/slots on the concrete basin floor.
3. Move the base aside to allow for installation of 1" mounting bolts (not included & method of installation to be determined by installer). Secure base with mounting bolts.
4. Cut the 1" pipe guide rails (supplied by others) to the proper length and install them between the pins of the upper guide rail bracket and the pins on the elbow base. It is recommended that the guide rails are to be 1" schedule 40, galvanized or stainless steel pipe.



## 9. Slide Rail Coupling

### **INSTALLING RAIL SYSTEM PARTS (Fiberglass Basin)**

#### **Discharge Elbow Base, Discharge Piping and Guide Rails:**

1. Determine proper length required for discharge piping.
2. Connect discharge piping to elbow base
3. Lower the discharge piping/elbow base assembly into the basin.
4. Position the elbow base by dropping a plumb line from the center of the guide rail pins located on the upper guide rail bracket to the center of guide rail pins protruding from the elbow base. Level the elbow base flange in two directions 90° to each other.
5. Cut the 1" pipe guide rails (supplied by others) to the proper length and install them between the pins of the upper guide rail bracket and the pins on the elbow base. It is recommended that the guide rails are to be 1" schedule 40, galvanized or stainless steel pipe.

### **ATTACHING MOUNTING PLATE TO PUMP**

1. Determine if mounting adapter flange (included) is required for proper assembly.
2. Position mounting plate against pump discharge flange or (if required) sandwich mounting adapter flange between mounting plate and pump discharge flange.
3. Secure mounting plate to pump with screws and washers. Tighten securely.

### **INSTALLING PUMP AND DISCONNECT**

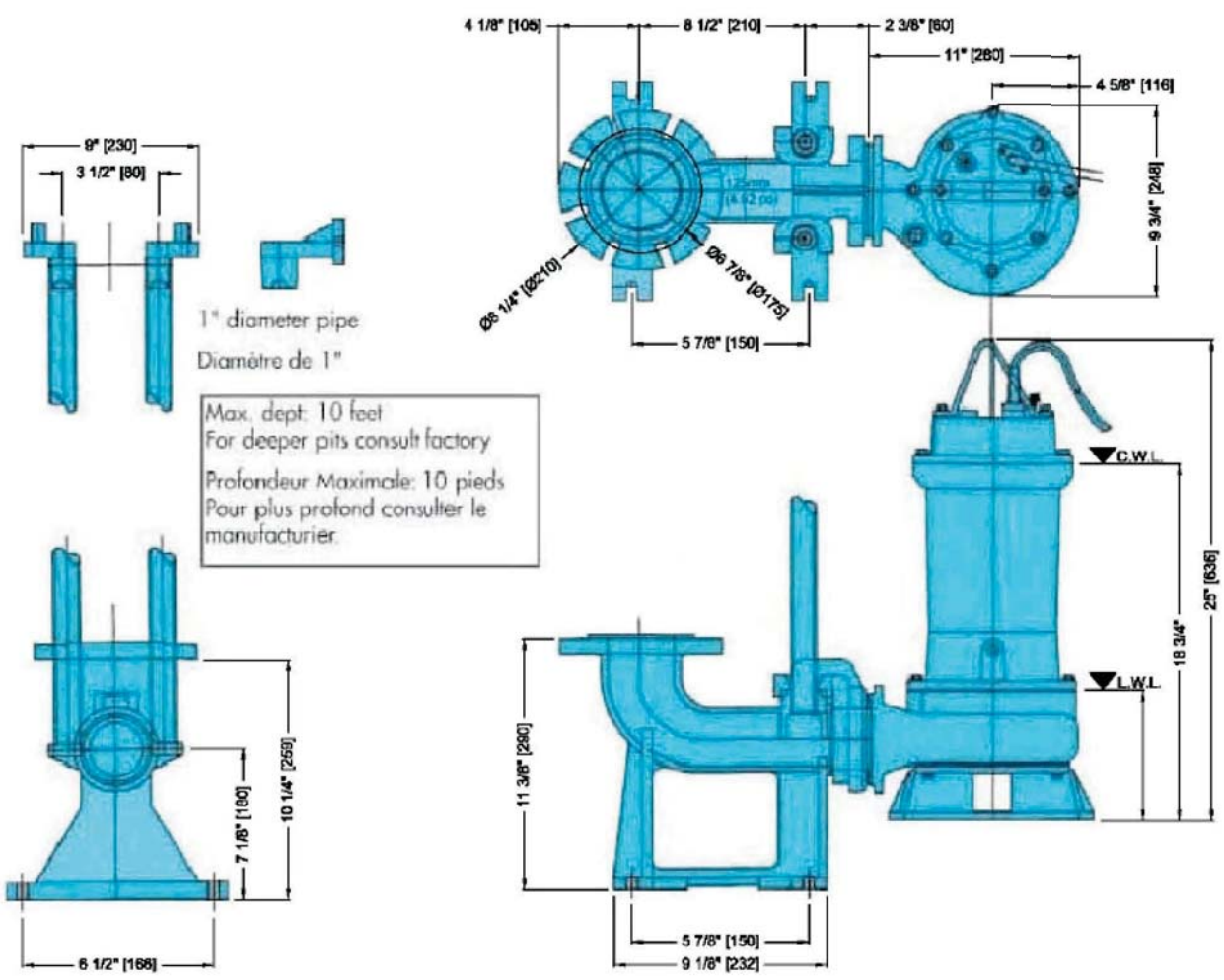
Position pump so the guide rails are captured by the mounting plate. Slowly lower the pump down the guide rails to the base.

If the pump is supported from beneath with concrete blocks or extended legs on the pump base, make certain the mounting plate is sufficiently compressed for sealing. The cantilevered weight of the pump is required for compressing and sealing the machined faces between the mounting plate the elbow base.

After lowering the pump down the guide rail, secure the upper end of the lifting cable where convenient, to prevent the cable from falling into the basin.

# 9. Slide Rail Coupling

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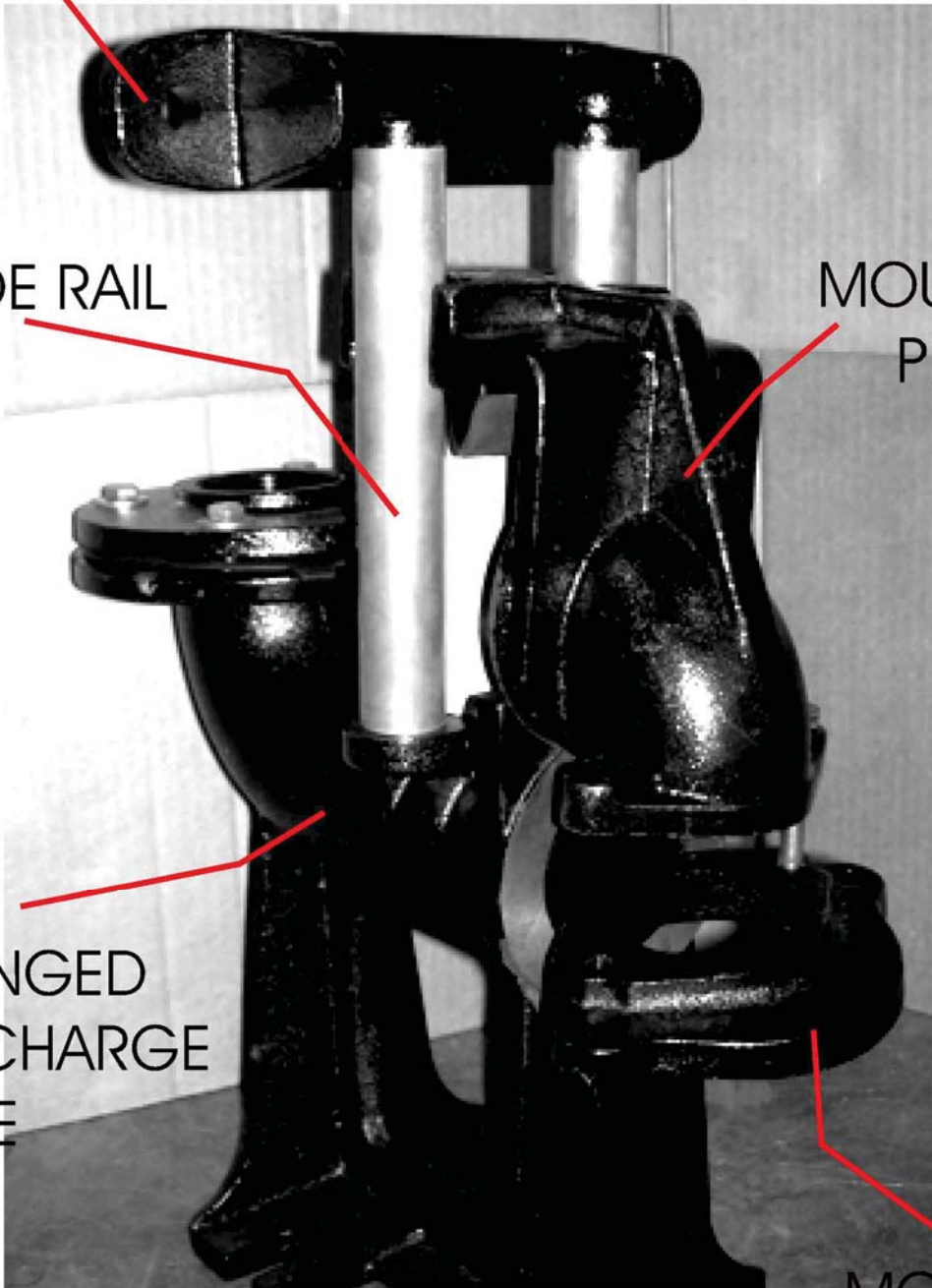
UPPER GUIDE RAIL BRACKET

GUIDE RAIL

MOUNTING  
PLATE

FLANGED  
DISCHARGE  
BASE

MOUNTING  
ADAPTER  
FLANGE  
(if required)



# 1A1 MODEL Cartridge Filter Housing



The 1A1 MODEL Cartridge Filter Housing is an all-metal, two-piece housing, featuring centerpost-type construction. The 1 A1 Model has a maximum operating temperature and pressure of 125 psig at 200°F. The 1A1 Model Cartridge Filter Housing has flow rates to up to 6 Gallons Per Minute (GPM).

## APPLICABLE FILTER CARTRIDGES

Micro-Klean— III (Series U30)

Betapure—

## DESIGN FEATURES

- All-metal, two-piece construction.
- Head and Sump Durable die-cast aluminum
- Mounting pads drilled to accept self-tapping screws provided with the optional mounting bracket.
- Centerpost-type design for easy cartridge changeout.

## Options

- Mounting bracket; order separately.

## STANDARD MODEL SPECIFICATIONS

Table 1 gives specifications for the 1A1 Model. Note that Maximum Operating Pressure is the rating for the housing only. Actual filter operating temperature depends on temperature capability of the filter cartridge used in the housing.

Operating Data	1A1 Model
Maximum Operating Pressure and Temperature	125 psi @ 200°F
Flow Rate (GPM)	See Table 2.
Materials of Construction	
Head and Sump	Die-Cast Aluminum
Centerpost	Stainless Steel
Head Gasket	Buna N & Cork
Cap-Nut Gasket	Fiber
Connection Sizes	3/8" NPTF
Cartridge Requirements	The model uses one filter cartridge. See "Cartridge Requirements" for more information.

TABLE 1 - SPECIFICATIONS

## CARTRIDGE REQUIREMENTS

The 1A1 Model Cartridge Filter Housing uses one Micro-Klean III Cartridge or one Betapure Cartridge Filter.

## FLOW RATES

Table 2 gives maximum flow rates in Gallons Per Minute (GPM) for the 1A1 Model Cartridge Filter Housings. Do not use Table 2 for filter sizing. Use the table as a guide only in establishing the housing flow rates. When you know the flow rate for a selected cartridge, then use the table to determine whether or not the housing is within the recommended flow rate. Remember to consider the amount of contaminant to be removed when selecting a filter.

Housing Model	Inlet / Outlet	FLOW (GPM)					
		Water	80 SSU	150 SSU	300 SSU	600 SSU	1000 SSU
1A1	3/8" NPTF	6	5	4.5	4	3.5	3

TABLE 2 - RECOMMENDED FLOW RATES

## BENEFITS

- Long Service Life
- Quick and Easy Cartridge Change-out
- Reduced Down Time for Filter Change-out
- Reduced Labor Cost
- Uses Standard Filters
- Economical
- Easily Mounted to Wall or Support Structure



## STANDARD MODEL DIMENSIONS

Table 3 gives dimensions in inches and shipping weight in pounds for the 1A1 Model Cartridge Filter Housing. These should be used for rough plumbing and approximate size definition. Note that figure 1 defines a length or width by a letter symbol in the top row. The square where the row and column meet is the selected dimension.

Model	A	B	C	D	Shipping Weight
1A1	6 3/16"	4 15/16"	3 1/2"	2 3/4"	3 lbs

TABLE 3. - 1A1 HOUSING DIMENSIONS

## 1A1 MODEL ORDERING GUIDE

Plant Code 01      Product Code 020

Model	Catalog Number	Mounting Bracket Kit*
1A1	44109-01	35581-05

\* Order Separately

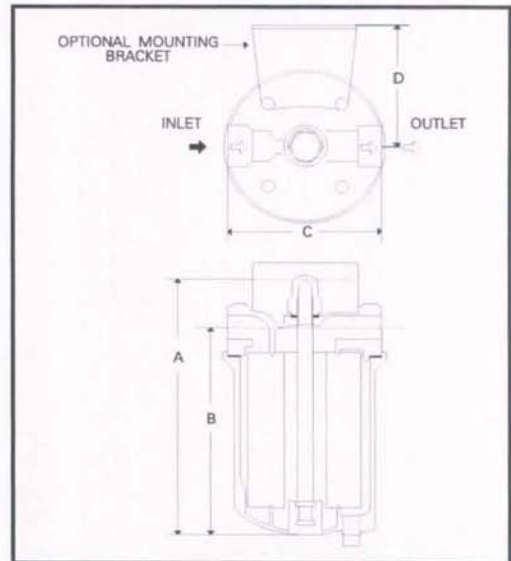
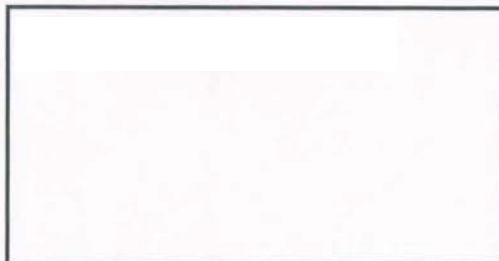


FIGURE 1. - 1A1 MODEL FILTER HOUSING

## WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of

manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or





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