

Standard Pump Turbine Meter Low Viscosity Batch Control System

Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF, BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF, BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF

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**Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF,
BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF,
BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

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Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF, BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF, BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF

1. Introduction

Unpacking

Please verify that the product is complete and without any damage. This package should contain the following parts:

1. Pump Motor
2. Pump Tube Assembly
3. Flow Chamber Assembly
4. Batch Controller
5. Operating Instructions

Assembly

1. Remove the pump and motor from packaging.
2. Inspect all contents for damage.
3. Couple the motor to the pump tube by using the Hand Wheel.
4. Attach flow chamber assembly to pump tube assembly by threading wing nut clockwise onto discharge of pump tube assembly.
5. Insert batch controller into flow chamber assembly and turn nut clockwise to tighten (see Figure 1).

- A. Electric Motor
- B. Air Motor
- C. Hand Wheel
- D. Pump Tube Assembly
- E. Flow Chamber Assembly
- F. Nut
- G. Batch Controller

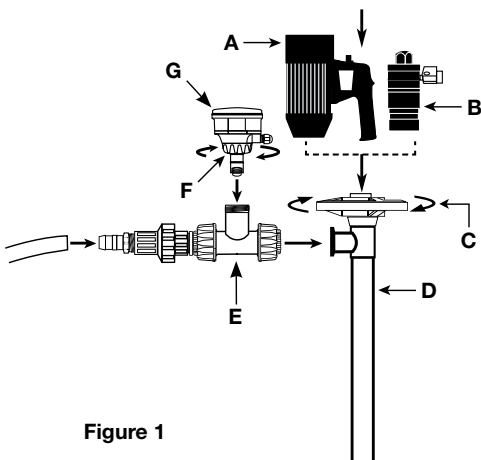


Figure 1

Start-Up & Safety Precautions

⚠ WARNING *Do not use this batch control system to transfer flammable or combustible liquids or in an environment where flammable or combustible fumes are present. The batch control module emits an output signal; therefore, the system is not intrinsically safe. Failure to comply may result in serious injury or death.*

⚠ WARNING *Before operating this equipment, the operator should thoroughly read and understand all instructions and safety warning labels including the manufacturer's instructions on the material being pumped.*

⚠ WARNING *When using an SP-A1 Series motor, Standard Pump recommends the use of a filter lubricator regulator (FLR) in order to ensure a moisture free supply of air to the motor.*

⚠ WARNING *SP-A1 Series motors must be lubricated daily to ensure proper functionality.*

General Safety Information

1. The operator should wear suitable protective clothing including: face mask, safety shield or goggles, gloves, apron, and safety shoes.
2. Check a chemical resistance chart to be sure the chemical being pumped is compatible with pump construction.
3. All federal, state and local safety codes should be followed.
4. Make sure nameplate information corresponds to voltage supplied.

Pre-Start-Up

1. All connections must be properly in place and securely tightened. Stainless steel hose clamps are required on hose and must be properly tightened. Pump hand wheel must be snug, otherwise pump coupling damage can occur.
2. Confirm yellow meter communication cable is securely fastened to connection port located on the side of motor handle

3. First use pump on water to become familiar with the assembly and check motor operation, flow rate, security of all hose connections, operation of speed control knob, liquid velocity and pump drainage.
4. Before starting motor, check to be sure hose is securely fastened in receiving vessel so hose cannot splash chemicals, causing injury.
5. Before connecting motor to power supply, be sure motor switch is OFF ("O" position) and speed control is turned down.
6. Never submerge pump below the discharge.
7. Never leave unit unattended during operation.
8. Do not use speed control knob as ON/OFF switch.*
9. If liquid appears below discharge assembly, check security of hose clamps and wing nut. If leakage fails to stop, cease operation. Neutralize pump and refer to specific parts list and operating instructions to repair. If unable to repair, contact factory.
10. When finished using pump, drain pump and hose thoroughly and operate on 1-2 gallons of clear water or neutral solution for 15-30 seconds to completely flush and rinse pump and hose assembly.
11. Never store the pump and hose assembly in the container. Always rinse thoroughly and hang on a wall bracket.

⚠ WARNING **The speed control switch should not be used as the main ON/OFF switch. Using the speed control switch in this manner causes excessive wear to the potentiometer and may result in premature failure. The use of the speed control switch does not cut power to the motor and inadvertent activation could result in injury.*

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BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF,
BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

Disassembly / Cleaning Procedures

1. In order to clean a majority of the residue from the pump tube, immerse the pump into a 55 Gallon Drum of water. Allow the pump to circulate the water for 3 minutes.
2. For a more thorough cleaning remove the motor from the pump tube by loosening the hand wheel (see Figure 2).

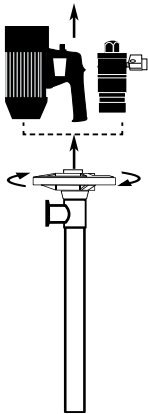


Figure 2

3. Remove the pump foot. (see Figure 3).

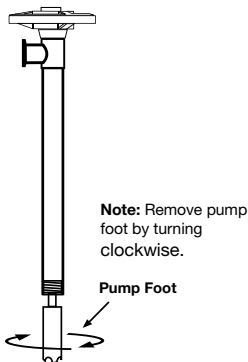


Figure 3

4. While holding the drive shaft with pliers (Factory suggests Grip-Locks to avoid scarring shaft) remove the impeller (see Figure 4).

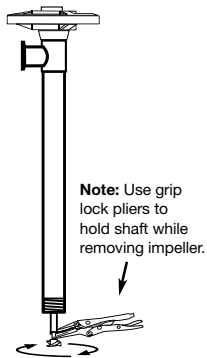


Figure 4

5. Remove the Pump Housing (see Figure 5).

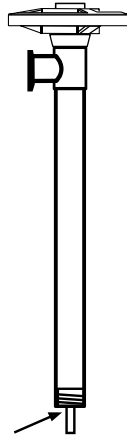


Figure 5

Note: Remove pump housing by turning clockwise.

6. Remove outer tube and inner tube from discharge housing by turning clockwise (see Figure 6).

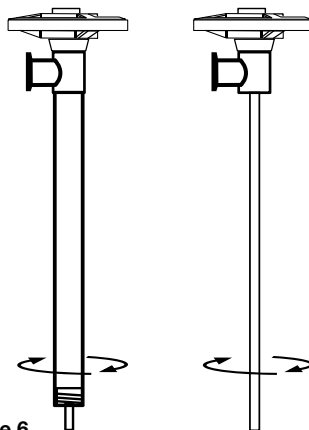


Figure 6

7. Remove pump coupling (P/N: 1004) from drive shaft by turning counterclockwise. Pull drive shaft straight down removing it from the discharge housing.

⚠ WARNING *When replacing the bearing unit (P/N1038) during reassembly, make sure the drive shaft is inserted through the spacer in between the bearings inside the bearing unit. Failure to do so could cause the bearing unit to prematurely fail.*

2. Description Design

The F104 Batch Controller is designed for accurate and reliable batching or blending of a variety of liquids. The instrument combines complex control capability with easy calibration and operation. Self explaining calibration menus and 5-button keypad allow a user friendly setup of all the batch parameters while the high visible LCD display can show batch in progress, instant and totalized flow.

Technical Data

General

- Materials:
 - Case: ABS
 - Display window: PC
 - Panel & Wall gasket: silicone rubber
 - Keypad: 5-button silicone rubber
- Display:
 - LC full graphic display
 - Backlight version: 3-colors
 - Backlight activation: User adjustable with 5 levels of timing
 - Update rate: 1 second
 - Enclosure: IP65 front
- Flow input range (frequency): 0÷1500Hz
- Flow input accuracy (frequency): 0.5%

Electrical

- Supply Voltage: 110-230VAC ± 10% regulated
- FLS hall effect flow Sensor power:
 - 5 VDC @ < 20 mA
 - Optically isolated from current loop
 - Short circuit protected
- 1 x Solid State Relay output:
 - Optically isolated, 50 mA MAX sink, 24 VDC MAX pull-up voltage
 - Max pulse/min: 300
 - Hysteresis: user selectable
 - User selectable as: pulse output
- 1 x Relay output:
 - Mechanical SPDT contact
 - Expected mechanical life
 - Expected electrical life operations): 105 N.O./N.C.switching capacity 5A/240VAC
 - Max pulse/min: 60
 - Hysteresis: User selectable
 - User selectable as: OUT – Batch: Batch in progress indication

Environmental

- Operating temperature: -20 to +70°C (-4 to 158°F)
- Storage temperature: -30 to +80°C (-22 to 176°F)
- Relative humidity: 0 to 95% not condensing

Standards & Approvals

- Manufactured under ISO 9001
- Manufactured under ISO 14001
- CE
- RoHS Compliant
- GOST R

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BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

3. Specification

Turbine Meter Pump System Specifications

Model	Immersion Length	Pump Tube Material	Voltage	Motor Drives	Discharge Fitting	Pumping Principle	Max Viscosity cps (mPAS)*	Max Flow Range	Metering Principle	Accuracy	Max Temp
Electric Turbine Batch Control Systems 110–120V/1/50-60											
BC-280-PP	27" (700 mm) 39" (1000 mm) 47" (1200 mm) 60" (1500 mm) 72" (1800 mm)	Polypropylene	110-120V	Open Drip Proof (IP44)	1" (25 mm) Hose Barb	Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)	Turbine (Paddle Wheel)	+/- 0.61% of Full Scale +/- 1% of Reading	130° F (55° C)
BC-ENC-PP		Polypropylene	110-120V	TEFC (IP54)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			130° F (55° C)
BC-280-PVDF		PVDF (Kynar®)	110-120V	Open Drip Proof (IP44)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			175° F (80° C)
BC-ENC-PVDF		PVDF (Kynar®)	110-120V	TEFC (IP54)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			175° F (80° C)
Electric Turbine Batch Control Systems 220–240V/1/50-60											
BC2-280-PP	27" (700 mm) 39" (1000 mm) 47" (1200 mm) 60" (1500 mm) 72" (1800 mm)	Polypropylene	220-240V	Open Drip Proof (IP44)	1" (25 mm) Hose Barb	Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)	Turbine (Paddle Wheel)	+/- 0.61% of Full Scale +/- 1% of Reading	130° F (55° C)
BC2-ENC-PP		Polypropylene	220-240V	TEFC (IP54)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			130° F (55° C)
BC2-280-PVDF		PVDF (Kynar®)	220-240V	Open Drip Proof (IP44)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			175° F (80° C)
BC2-ENC-PVDF		PVDF (Kynar®)	220-240V	TEFC (IP54)		Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 27 GPM (102,2 LPM)			175° F (80° C)
Air Turbine Batch Control Systems											
BC-A1-PP	27" (700 mm) 39" (1000 mm) 47" (1200 mm) 60" (1500 mm) 72" (1800 mm)	Polypropylene	110-120V	Air, 1/2 hp (370 W)	1" (25 mm) Hose Barb	Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 20 GPM (75,7 LPM)	Turbine (Paddle Wheel)	+/- 0.61% of Full Scale +/- 1% of Reading	130° F (55° C)
BC-A1-PVDF		PVDF (Kynar®)	110-120V			Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 20 GPM (75,7 LPM)			175° F (80° C)
BC2-A1-PP		Polypropylene	220-240V			Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 20 GPM (75,7 LPM)			130° F (55° C)
BC2-A1-PVDF		PVDF (Kynar®)	220-240V			Sealless / Centrifugal	300	4 GPM (15,2 LPM) - 20 GPM (75,7 LPM)			175° F (80° C)

*Pump is intended for intermittent use when operating at maximum viscosity.

Low Viscosity Batch Control System Electric Motors

Model	Voltage	Amps	Watts	HP	Phase	Hz	Enclosure	Variable Speed	Hazardous Duty	Shipping Wt lbs (kg)
SP-280P-BC	110V	8.5	825	1	1	50-60	ODP (IP44)	Y	N	9.0 (4,0)
SP-280P-2-BC	220V	5	825	1	1	50-60	ODP (IP44)	Y	N	9.0 (4,0)
SP-ENC-BC	110V	8.5	825	1	1	50-60	TEFC (IP54)	Y	N	12.7 (5,7)
SP-ENC-2-BC	220V	5	825	1	1	50-60	TEFC (IP54)	Y	N	12.7 (5,7)

Low Viscosity Batch Control System Air Motors

Model	HP	Watts	Max Inlet Pressure	Min Hose	Max dBA	Airline Size Inches	Hazardous Duty	Air Consumption	Shipping Wt lbs (kg)
SP-A1	1/2	370	100 psi(6,8 bar)	3/8"(10 mm)	109.50	1/8" NPT	AtEx	22 CFM (10,4 L/sec)@ 90 PSI (6,2 Bar)	2.7 (1,2)

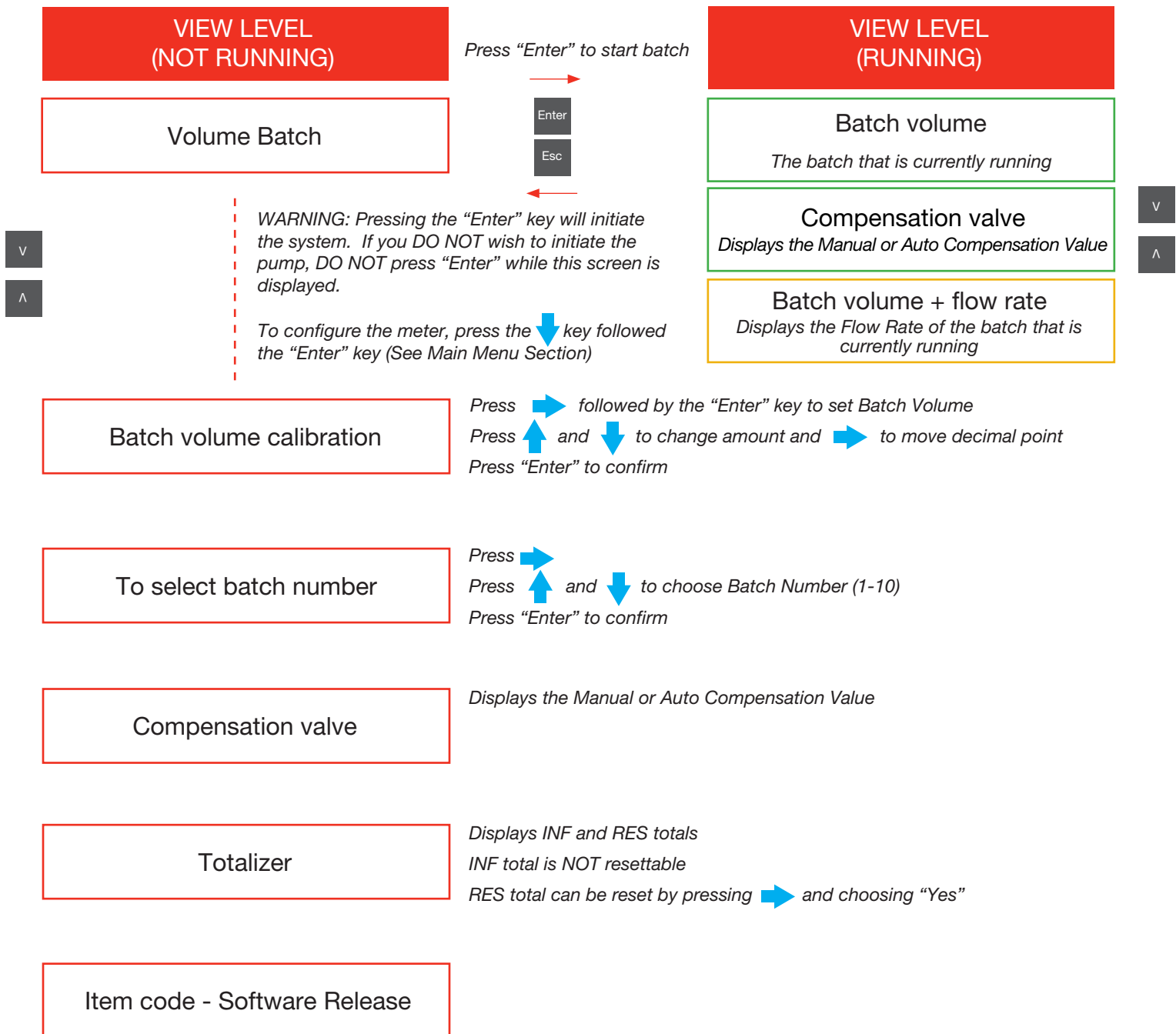
Note: For optimum performance make sure proper size air lines are installed.

Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF, BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF, BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF

4. Operational Overview

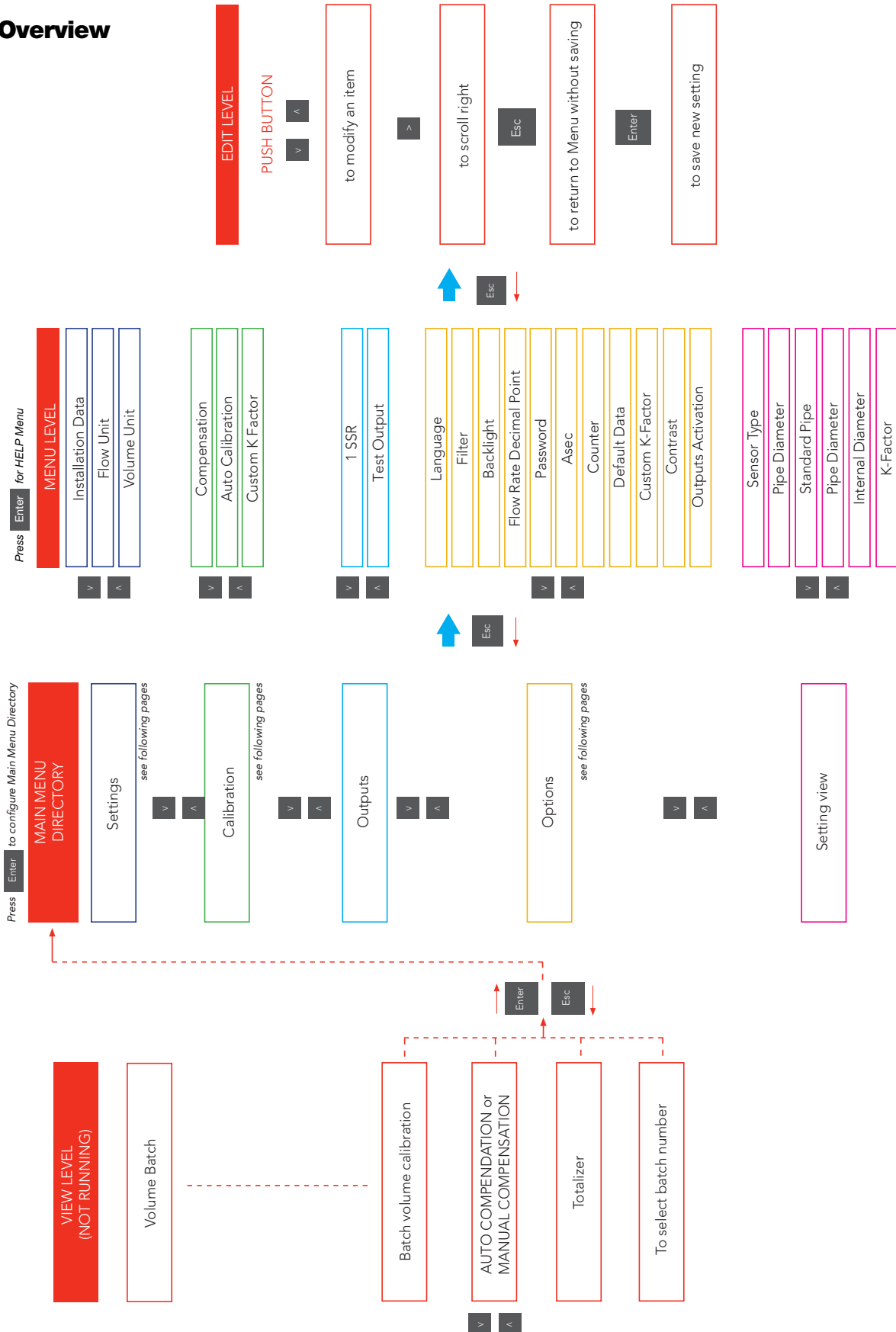
The M9.50.SP batch controller features a full graphic display and a five-button keypad for system set-up, calibration and operation. Full graphic display has a white backlight during standard conditions, a red backlight correlated to MISSING SIGNAL ALARM (fixed after 30sec) always with priority, a green backlight during the batch performing. The M9.50.SP is able to store 10 different batches with 10 different correlated k-factors.

Batch Performing

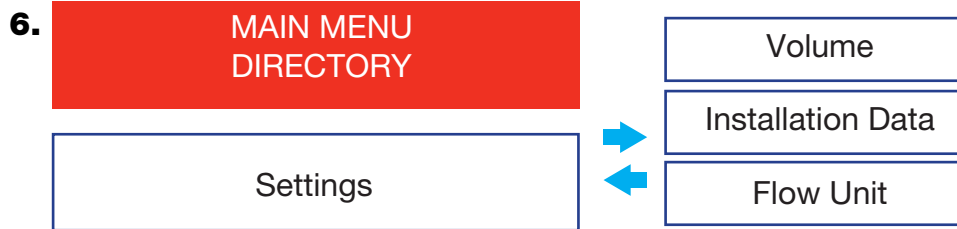


**Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF,
BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF,
BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

5. Menu Overview



Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF, BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF, BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF



Main Menu:

- Settings:** Press → to configure settings
- Installation Data: Press → Choose "Other" and press "Enter" to confirm
- Flow Unit: Press → Choose Flow unit of measure and press "Enter" to confirm
- Volume Unit: Press → Choose Volume unit of measure and press "Enter" to confirm



Calibration: Press → to configure settings

Compensation

- Press →
- Choose Automatic or Manual Compensation setting
- Manual Compensation will allow the operator to manually enter the overrun compensation value
- In Automatic Compensation mode, the meter will automatically calculate the overrun compensation.

Note: In Automatic Compensation mode, the first batch is used to determine the overrun compensation amount; therefore this batch will overrun by approximately 0.25-0.35 gallons (1-1.3 liters). At this point the meter has calculated the overrun amount. All subsequent batches will be accurately dispensed. This step must be performed every time the meter is powered off.

Auto Calibration – To ensure accurate batching, the meter must be calibrated to the specific liquid being batch using this feature

Note: For most accurate results, use a graduated container as the receiving vessel.

Note: The operator must predetermine the amount that will be pumped into the receiving vessel prior to starting the Auto-Calibration process. This is the amount that will be entered into the meter during Step 6 of the process.

1. Press →
2. Press ↑ or ↓ to choose the Batch No. you wish to calibrate
3. Press "Enter"
4. Press "ENTER" to start trial batch and automatic calculation. F104 starts counting pulses from the sensor.

WARNING: Pressing "Enter" will activate pump. Ensure that all hose fittings are secure and the discharge hose secured in the receiving vessel.

5. When the fluid level in the receiving vessel reaches the predetermined amount, press "ENTER" to stop calculation. At this point, the F104 stops counting pulses from the sensor. (Any fluid that comes out of pump discharge during the motor throttle down period has not been counted by the meter and should not be added to the final volume.)
6. When display reads "Set the Volume Fluid Fill into the tank", input the predetermined amount.
7. F104 is calculating the new K-Factor.
8. Successful K-Factor calculation. Press "ENTER" to accept new K-Factor or ESC to return without saving.

Note: The K-Factor is based on a constant flow. During a specific batch, the motor must remain on the same speed as when the K-Factor was calculated. Changing the speed of the motor in the middle of a batch will cause an inaccurate reading in the batch control module.

**Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF,
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BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**




Calibration

continued

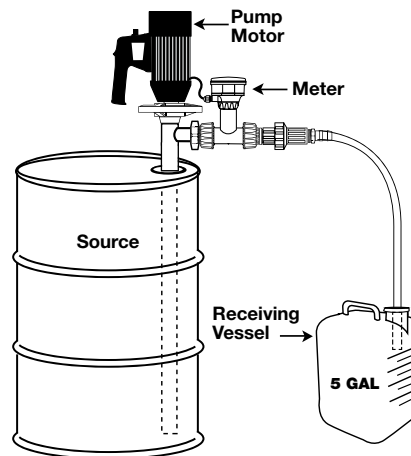
Helpful Hints:

- Speed potentiometer on motor should be turned to "Max" to ensure flow chamber is full during calibration process.
- The predetermined amount of fluid that will be pumped during the K-Factor Calculate process should be no less than 3 gallons or 12 liters.
- Using a larger receiving vessel than the amount you plan to pump for this process will decrease the turbulence of the liquid in the container, thereby making it easier to stop the meter at the predetermined volume.
- For increased accuracy, repeat the Auto-Calibration process three times, notating the calculated K-Factor after each process. Then take the average of these K-Factors and manually enter this value to any of the ten available presets

• **Custom K-Factor** – This function allows the operator to manually enter the K-Factor

- Press 
- Press  or  to choose the Batch No. you wish to calibrate
- Press "Enter"
- Enter K-Factor
- Press "Enter" to save

Recommended Auto-Calibration set up

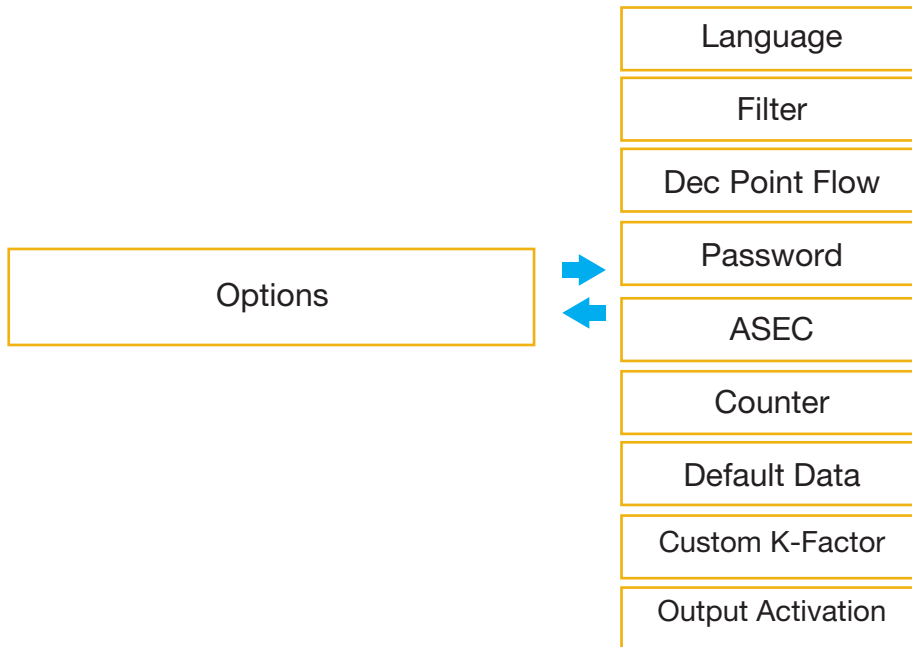


Outputs

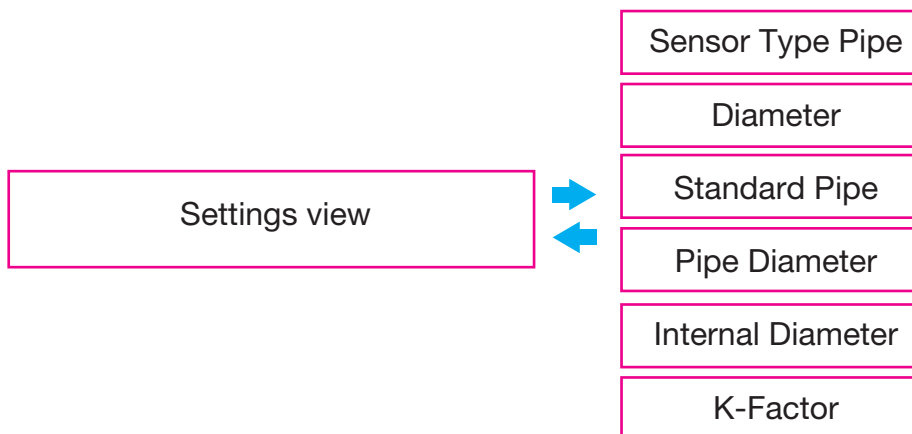
1 SSR

Test Output

Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF, BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF, BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF



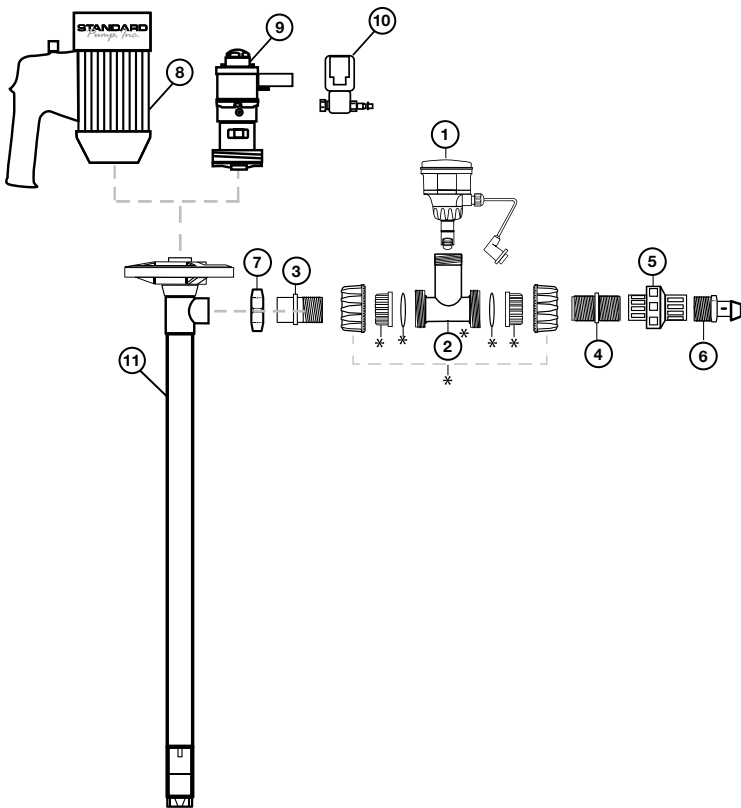
- **Language** – Choose preferred language
- **Filter**
- **Backlight**
- **Dec Point Flow** – Choose preferred decimal point placement
- **Password** – When the Password is enabled, the password is then the following sequence of buttons
 ➡, ⬆, ➡, "Enter"
- **ASEC** – This function does not apply to this meter. Set to "OFF"
- **Counter** – Batches can be set to count Up or Down
- **Default Data** – Return meter to Factory settings
- **Custom K-Factor** – Manually enter K-Factors
- **Contrast**
- **Output Activation** – Allows operator to activate or deactivate outputs



These settings are selected during the FIRST CALIBRATION PROCEDURE

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BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

7. Turbine Low Viscosity Batch Control System Spare Parts Lists



10.1 Batch Control System See Figure 28

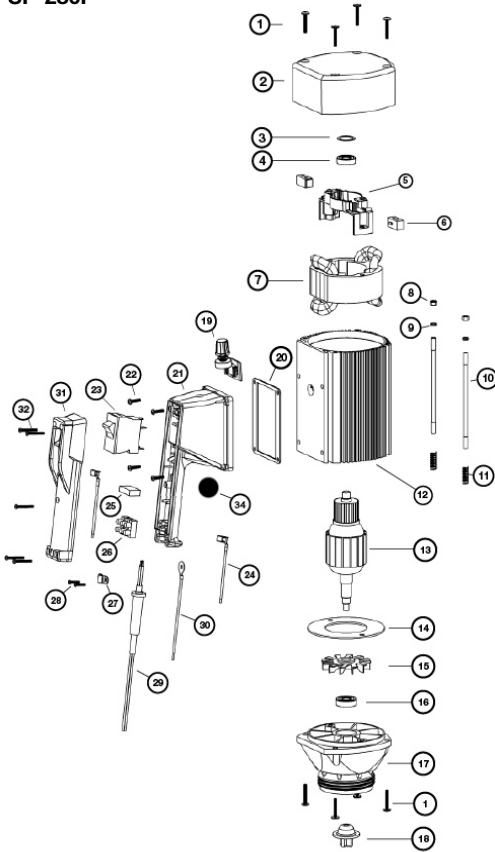
Ref. #	Description	P/N for Electric BCS	P/N for Air BCS	Qty
1	Batch Control Module, 110-120V / 220-240V (Cable Connection Included)	F104	-	1
	Batch Control Module, 110-120V (Power Cord Included)		F102	1
	Batch Control Module, 220-240V (Power Cord Included)		F102	1
Polypropylene				
-	1" PP T Assembly (Includes Items 2-7)	TEBPPFC	TEBPPFC	1
2	1" PP T with FNPT Ends*	TEB010VT	TEB010VT	1
3	1" PP MNPT Pump Outlet Fitting	US61652	US61652	1
4	1" PP MNPT Nipple	NIP100-SH	NIP100-SH	1
5	1" PP Check Valve	US61655	US61655	1
6	1" PP MNPT Hose Barb Fitting	US61659	US61659	1
7	PP Wing Nut	1106	1106	1
PVDF				
-	1" PVDF T Assembly (Includes Items 2-7)	TEKPVDFFC	TEKPVDFFC	1
2	1" PVDF T with FNPT Ends*	TEK010VT	TEK010VT	1
3	1" PVDF MNPT Pump Outlet Fitting	US61661	US61661	1
4	1" PVDF MNPT Nipple	4884-020	4884-020	1
5	1" PVDF Check Valve	US61664	US61664	1
6	1" PVDF MNPT Hose Barb Fitting	US61665	US61665	1
7	PVDF Wing Nut	4106	4106	1
Electric Motors				
8	Open Drip Proof (IP44) 110-120V/1/50-60Hz with BCS Port	SP-280P-BC	-	1
	Open Drip Proof (IP44) 220-240V/1/50-60Hz with BCS Port	SP-280P-2-BC	-	1
	Refer to Page 14 for Spare Parts			
	TEFC (IP54) 110-120V/1/50-60Hz with BCS Port	SP-ENC-BC	-	1
	TEFC (IP54) 220-240V/1/50-60Hz with BCS Port	SP-ENC-2-BC	-	1
	Refer to Page 14 for Spare Parts			
Air Motor & Solenoid				
9	Air Motor, 1/2 HP (370 W)	-	SP-A1	1
	Refer to Page 15 For Spare Parts			
10	Solenoid Valve Kit, SS316			1
	110-120V	-	0021SS	1
	220-240V	-	0021SS-2	1
Pump Tubes				
11	Polypropylene Drum Pump Tube	See Page 16	See Page 16	1
	PVDF Drum Pump Tube			

* Items marked with an asterisk belong to the same assembly.

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BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

8 . Electric Motors Spare Parts Lists

SP-280P



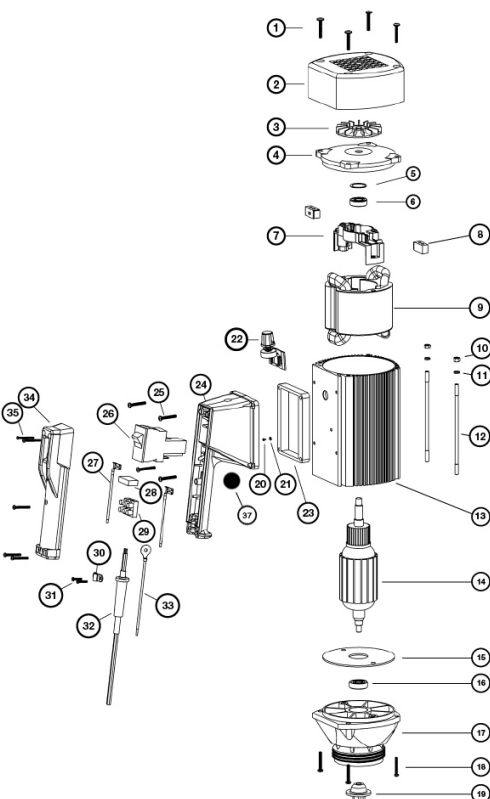
Ref. #	Description	P/N for SP-280P	Qty
1	Screw, Motor Cover / Lower Housing	8130	8
2	Motor Cover	8000	1
3	Wave Washer	8125	1
4	Bearing, Upper	8331	1
5	Brush Holder	8508	1
6	Carbon Brushes (2 Required)		
	110v	8509	2
	220v	8703	2
7	Stator		
	110v	8503	1
	220v	8702	1
8	Hexagon Nut	8448	2
9	Lock Washer	8071	2
10	Rod Connector	8506	2
11	Pressure Spring	8507	2
12	Motor Housing	8510P	1
13	Armature		
	110v	8502	1
	220v	8701	1
14	Guide Disc	8504	1
15	Fan	8511	1
16	Bearing, Lower	8126	1
17	Lower Housing	8100	1
	110v	8360	1
	220v	8705	1
18	Motor Coupling	8333	1
19	Speed Potentiometer		
	110v	9802	1
	220v	9801H	1
20	Gasket		
	110v	8167	1
	220v	8167LVR	1
21	Switch Housing		
	Fixed Speed	8001	1
	Variable Speed	8010	1
22	Screw, Switch Housing		
	110v	8131	4
	220v	8131LVR	4
23	Overload Switch		
	110v	8611	1
	220v w/ LVR	8704LVR	1
	220v w/o LVR	8704	1
24	Switch Lead (2 Required)	8185	1
25	EMI Filter	8003	1
26	Terminal Block	8001-3	1
27	Cable Clamp	8001-1	1
28	Screw, Cable Clamp	8001-2	2
29	Power Cord		
	110v	8360	1
	220v	8705	1
30	Earthing Lead	8183	1
31	Switch Cover	8002	1
32	Screw, Switch Cover	8220	5
33	Repair Kit (Includes Items 6 & 8)		
	110v	9055	1
	220v	9056	1
34	Communication Plug	RKF 40-693 /0.3m	1

SP-280 Series

SP-ENC Series

Ref. #	Description	P/N for SP-ENC	Qty
1	Screw, Motor Cover	3130	4
2	Motor Cover	3000	1
3	Fan	3512	1
4	Bearing Cover	3511	1
5	Wave Washer	8125	1
6	Bearing, Upper	8331	1
7	Brush Holder	8508	1
8	Carbon Brushes		
	110v	8509	2
	220v	8703	2
9	Stator		
	110v	3503	1
	220v	3702	1
10	Hexagon Nut	8448	2
11	Lock Washer	8071	2
12	Rod Connector	3703	2
13	Motor Housing	3510	1
14	Armature		
	110v	3502	1
	220v	3701	1
15	Guide Disc	3504	1
16	Bearing, Lower	8126	1
17	Lower Housing	8100	1
18	Screw, Lower Housing	8130	4
19	Motor Coupling	8333	1
20	Ground Screw	8162	1
21	Star Washer	8511	1
22	Speed Potentiometer		
	110v	9802	1
	220v	9801H	1
23	Gasket		
	110v	8167	1
	220v	8167LVR	1
24	Switch Housing		
	Fixed Speed	8001	1
	Variable Speed	8010	1
25	Screw, Switch Housing		
	110v	8131	4
	220v	8131LVR	4
26	Overload Switch		
	110v	8611	1
	220v (w/ LVR)	8704LVR	1
	220v (w/o LVR)	8704	1
27	Switch Lead	8185	1
28	EMI Filter	8003	1
29	Terminal Block	8001-3	1
30	Cable Clamp	8001-1	1
31	Screw, Cable Clamp	8001-2	1
32	Power Cord		
	110v	8360	1
	220v	8705	1
33	Earthing Lead	8183	1
34	Switch Cover	8002	1
35	Screw, Switch Cover	8220	5
36	Repair Kit (Includes Items 8 & 19)		
	110v	9055	1
	220v	9056	1
37	Communication Plug	RKF 40-693 /0.3m	1

SP-ENC

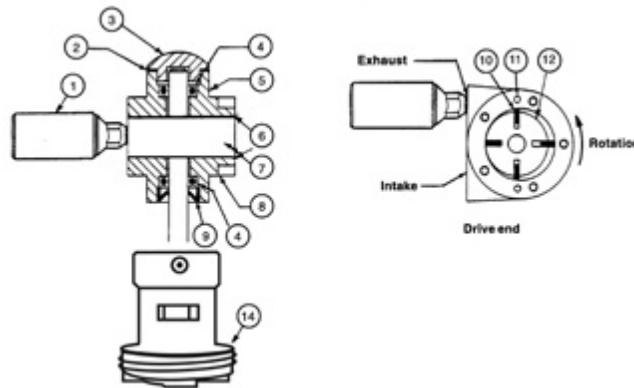


**Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF,
BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF,
BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

9. Air Motor Spare Parts Lists

SP-A1

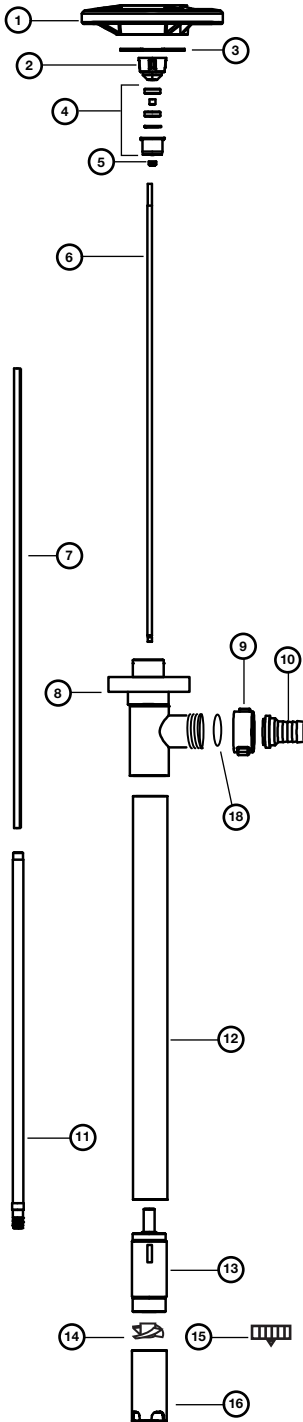
Ref. #	Description	P/N for SP-A1	Qty
1	Muffle	SAF350	1
2*	Gasket	SAC229	1
3	Dead end cap	SAC228A	1
4*	Bearing	SAG549	2
5	Dead end plate	SAC617	1
6*	Gasket	SAC527	2
7	Body	SAE899	1
8	Drive end plate	SAC616	1
9*	Shaft seal	SAC190A	1
10*	Vane	SAE893	4
11	Dowel pin	SD324A	4
12	Impeller	SAE896	1
13	Repair kit*	SK285	1
	Includes item numbers		1
	2, 4, 6, 9 and 10		1
14	A1 adapter	9007	1



**Models: BC-280-PP, BC-ENC-PP, BC-280-PVDF, BC-ENC-PVDF,
BC2-280-PP, BC2-ENC-PP, BC2-280-PVDF, BC2-ENC-PVDF,
BC-A1-PP, BC-A1-PVDF, BC2-A1-PP & BC2-A1-PVDF**

10. SP-PP & SP-PVDF Spare Parts Lists

Pump Tube Spare Parts List



Ref. Number	Description	P/N for SP-PP	P/N for SP-PVDF	Qty
1	Hand Wheel, Polypropylene	1842	1842	1
2	Pump Coupling, Nylon	1004*	1004*	1
3	Snap Ring, Steel	1508	1508	1
4	Bearing Unit Assembled – 2 each Viton shielded bearings, spacer, snap ring, bearing can	1038*	1038*	1
5	V-Seal, Viton®	1000	-	1
	V-Seal, PTFE	-	4000	
6	Drive Shaft, Hastelloy			
	27" (700 mm)	1543	1543	1
	39" (1000 mm)	1544	1544	1
	47" (1200 mm)	1545	1545	1
	50" (1270 mm)	1549	1549	1
	60" (1500 mm)	1546	1546	1
	72" (1800 mm)	1547	1547	1
7	Guide Sleeve, PTFE			
	27"(700 mm)	1516	1516	1
	39" (1000 mm), 47" (1200 mm), 50" (1270 mm)	1514	1514	
	60" (1500 mm), 72" (1800 mm)	1661	1661	1
8	Discharge Housing	1028	4028	1
9	Wing Nut	1106	4106	1
10	Hose Barb			
	.75" (19 mm)	1051	4051	1
	1" (25 mm)	1082	4082	1
11	Inner Tube,			
	27" (700 mm)	1600	4600	1
	39" (1000 mm)	1601	4601	1
	47" (1200 mm)	1602	4602	1
	50" (1270 mm)	1623	4623	1
	60" (1500 mm)	1615	4615	1
	72" (1800 mm)	1616	4618	1
12	Outer Tube,			
	27" (700 mm)	1604	4604	1
	39" (1000 mm)	1603	4603	1
	47" (1200 mm)	1605	4605	1
	50" (1270 mm)	1624	4622	1
	60" (1500 mm)	1617	4617	1
	72" (1800 mm)	1618	4619	1
13	Pump Housing (Includes Carbon Bushing)	1524*	4607*	1
14	High Volume Impeller, Polypropylene	1608*	4608*	1
15	High Pressure Impeller, PTFE	4608 HH	4608 HH	1
16	High Volume Pump Foot, Polypropylene	1609*	-	1
	High Volume Pump Foot, PVDF	-	4609*	1
	High Pressure Pump Foot, Polypropylene & PTFE	1609 HH	-	1
	High Pressure Pump Foot, PVDF & PTFE	-	4609 HH	1
17	Repair Kit (*Includes Items 2, 5, 10, 13, & 14)	9050	9051	1
18	O-Ring, Viton®	-	-	1

SP-PP & SP-PVDF pumps should not be used to pump flammables.

Warranty

Three year limited warranty

Standard Pump, Inc. warrants, subject to the conditions below, through either Standard Pump, Inc., its subsidiaries, or its authorized distributors, to repair or replace free of charge, including labor, any part of this equipment which fails within **three years** of delivery of the product to the end user. Such failure must have occurred because of defect in material or workmanship and not as a result of operation of the equipment other than in accordance with the instructions given in this material. Specific exceptions include:

- Consumable items such as motor brushes, bearings, couplings and impellers. (Motor brushes typically have a life span of approximately 700 hours. This will vary with the manner in which the motor is used)

Conditions of exceptions include:

- Equipment must be returned by prepaid carriage to Standard Pump, Inc., its subsidiary or authorized distributor.
- All repairs, modifications must have been made by or with express written permission by Standard Pump, Inc., its subsidiary or authorized distributor.
- Equipment which have been abused, misused, or subject to malicious or accidental damage or electrical surge are excluded.

Warranties purporting to be on behalf of Standard Pump, Inc. made by any person, including representatives of Standard Pump, Inc, its subsidiaries, or its distributors, which do not fall within the terms of this warranty shall not be binding upon Standard Pump, Inc. unless expressly approved in writing by a Director or Manager of Standard Pump, Inc. Information for returning pumps Equipment which has been contaminated with, or exposed to, bodily fluids, toxic chemicals or any other substance hazardous to health must be decontaminated before it is returned to Standard Pump, Inc, or its distributor. A returned goods authorization number (RGA #) issued by Standard Pump, Inc., its subsidiary or authorized distributor, must be included with the returned equipment. The RGA # is required if the equipment has been used. If the equipment has been used, the fluids that have been in contact with the pump and the cleaning procedure must be specified along with a statement that the equipment has been decontaminated.

STANDARD PUMP

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