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# **USER MANUAL**

**MODEL NUMBER:  
FST  
FSTV  
FSTK  
FSTK-SIL  
AND RELATED UNITS**

**Flooded Suction Tank**

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**English**

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## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT



# WARNING



**Read this manual completely and understand the machine before operating or servicing it.**

- Read all instructions before installing or operating unit.
- Always wear appropriate personal protective equipment (PPE) when operating or servicing unit.
- Always follow all chemical safety precautions and handling instructions provided by the chemical manufacturer and Safety Data Sheet (SDS).
- If the unit is modified or serviced with parts not listed in this manual, the unit may not operate correctly.
- Do not exceed an incoming air pressure of 80 psi (5.5 bar).
- Do not exceed a fluid temperature of 100°F (37°C).
- Only use clean and dry air. Air must be filtered and free of moisture or pump life will be diminished. If needed, install an air dryer before unit.
- Do not use an air lubricator before the unit.
- Always flush the unit with fresh water for at least 5 minutes when switching from an alkaline to an acid or an acid to an alkaine.
- Never operate unit without the lid (FST-LID) on.
- Never open ball valves (PBV12M12F) when there is chemical in the tank, unless the ball valves are connected to an appropriate location for chemical discharge. Chemical will flow out of the tank through the open ball valve(s).
- Do not use the unit if an overflow hose is not installed.
- If chemical flows from the overflow port, shut down the unit immediately and correct the problem before proceeding.
- Do not use the unit if it is damaged or leaking.

### PROTECT THE ENVIRONMENT

Please dispose of packaging materials, old machine components, and hazardous fluids in an environmentally safe way according to local waste disposal regulations.



Always remember to recycle.

\*Specifications and parts are subject to change without notice.

Options		
	Pump Seal Material	Air-Operated Valve Seal Material
FST	Santoprene (standard)	Viton ( <b>V</b> )
	Viton ( <b>V</b> )	- Silicone ( <b>SIL</b> )
	Kalrez ( <b>K</b> )	
Add bold option codes to item number as shown. For standard options, no option code is needed.		
<b>Examples:</b>		
<ul style="list-style-type: none"> <li>• FST-V (standard unit with Santoprene pump seals and Viton air-operated valve seal material)</li> <li>• FSTV-V (unit with Viton pump seals and Viton air-operated valve seal material)</li> <li>• FSTK-SIL (unit with Kalrez pump seals and Silicone air-operated valve seal material)</li> </ul>		

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REQUIREMENTS	
Compressed air requirements	70 psi (4.8 bar) with 2-3 cfm (56.6-85 l/min)
Liquid temperature range	40-100°F (4.4-37°C)
Electrical requirements	100-240 VAC at 60 Hz, 2 amps (GFCI protected outlet)
Operating voltage	24 VDC; unit includes transformer
Chemical compatibility	Chemical products used with this equipment must be formulated for this type of application and compatible with unit materials and pump seals. For more information on chemical compatibility, consult the manufacturer or SDS for your product or contact our customer service department.

SPECIFICATIONS	
Power type	Compressed air and electricity
Chemical pickup type	Draws from concentrated, pre-mixed, or ready-to-use product
Number of products unit can draw from	One product
Suction line length/diameter	20 ft (6.1 m) clear, braided PVC hose with 1/2 in. (12.7 mm) inside diameter
Capacity	2.6 gallons (10 liters)
Discharge hose diameter/length	Discharge hose(s) not included
Flow rate*	2 gal/min (7.6 l/min)
Pump seals	Santoprene, Viton, or Kalrez
Air-operated valve seals	Viton or Silicone o-rings and Sarlink seal
*Dilution rates and flow rates given are based on chemical with viscosity of water and factory air pressure settings.	

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### Installation Instructions:

1. Remove all components from packaging.
2. Select desired area to mount the unit.
3. Make sure the mounting bracket (TBRKT) is oriented correctly, and secure it to the wall using two of the screws and plastic anchors provided.  
 Note: To drill holes for the plastic anchors, use a 5/16 inch drill bit. The two holes should be 8 inches (20.32 cm) apart horizontally.
4. Mount the unit by connecting the bracket (TBRKT) located on the back of the tank to the bracket (TBRKT) on the wall.
5. Open the lid (FST-LID) by removing all 4 screws (AS1-VS) and set aside.
6. Connect one or more of the ball valves (PBV12M12F) on the underside of the unit to your existing metering pump(s).  
 Note: The ball valves (PBV12M12F) have 1/2 inch NPT female threads.
7. Connect the suction hose (H12CB) to your chemical source. Maximum draw length is 30 ft (0.3 m).  
 Note: Strainer (not included) must be used on suction line. Select strainer based on chemical compatibility.
8. Connect a hose to the overflow port, located on the upper left side of the unit, and run the hose back to your chemical source or to another location that is suitable for chemical discharge.  
 Note: The overflow port has 1/4 inch NPT female threads.
9. Close the four ball valves (PBV12M12F) located on the underside of the unit.
10. Connect a compressed air supply line to the air inlet fitting (AP25).
11. Check to ensure ball valve (PVCV14FM) is in the open position.
12. Solenoid box (PB633) is preset to only allow the pump to cycle for up to 2 minute without stopping. If it reaches 2 minute and is still cycling the unit will automatically shut off and the green and amber LED lights will indicate a failure. Reset by unplugging the unit and reconnecting to power source.  
 Note: This can be adjusted on the circuit board (CNTLBSN) up to 10 minutes. Adjust for your application.
13. Close and secure the lid (FST-LID) of the tank unit with all 4 screws (AS1-VS).

### Operation Instructions:

1. Follow all instructions from the chemical manufacturer.
2. Verify that all of the ball valves (PBV12M12F) that will not be used are closed and/or plugged.
3. Verify the cap (JC35B-T) is secured on the top of the tank.
4. Verify that the pump (P56/P56K/P56V) is connected to the chemical source.
5. Plug in the 24 VDC power adapter (PS120-24V) to a 100-240 VAC power source to active the unit. When the unit is active, the pump (P56/P56K/P56V) will start to cycle. The pump (P56/P56K/P56V) will stop cycling when product reaches the appropriate fill level, and it will remain inactive until fluid level decreases.
6. Operation cycle of unit will be signaled by LED lights:

Solenoid Box LED Color Signals	
Green	Unit is active and solution is filled to appropriate fill level.
Green and Red	Unit is actively filling tank (pump cycling).
Green and Amber	Error or failure has occurred. Unplug unit, inspect components, and plug back into power source.

7. Open the ball valve(s) (PBV12M12F) that are connected to your metering pump(s). Any ball valves that are not connected to a metering pump should remain closed.

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### After Use Instructions:

We recommend flushing the unit with fresh water for 5 minutes or until all chemical has been discharge from system before shutting down unit.

To shut down unit, unplug the 24 VDC power adapter (PS120-2V).

### Maintenance Instructions:

To keep your unit operating properly, periodically perform the following maintenance procedures:

Note: Before performing any maintenance, drain the tank and ensure that the unit has been disconnected from compressed air and electrical power.

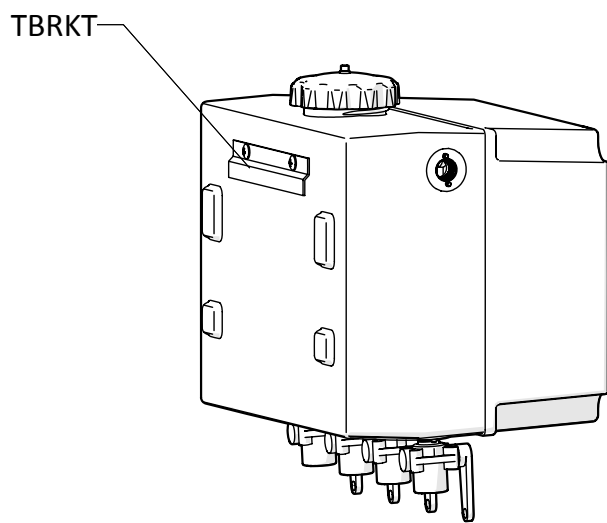
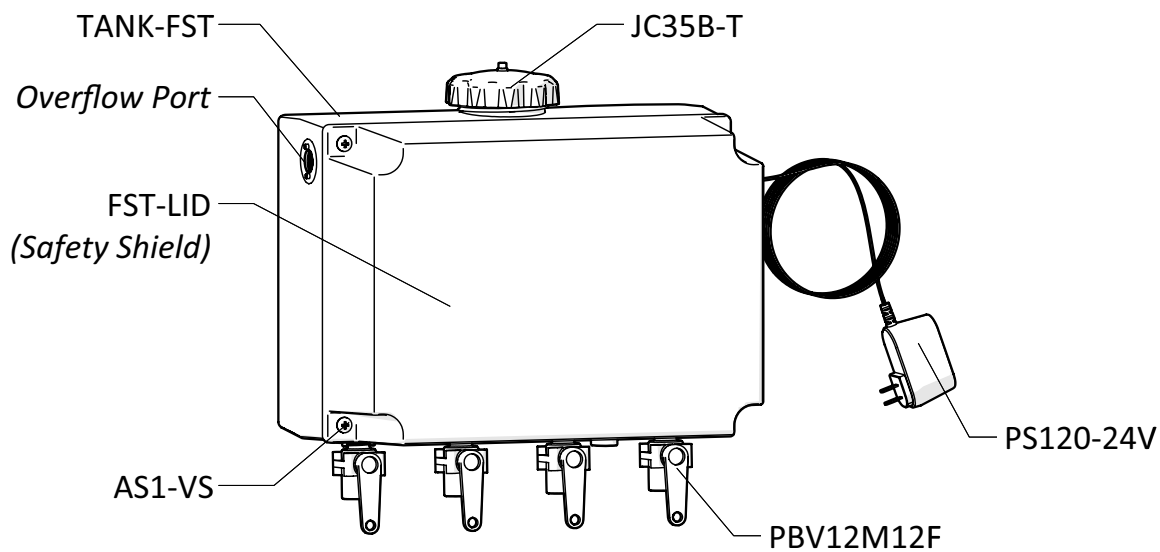
- Inspect the pump (P56/P56K/P56V) for wear and leaks.
- Inspect all hoses for leaks or excessive wear. Make sure all hose clamps are in good condition and properly secured.
- Replace the filter located within the air regulator (R25) as needed. Clean by unthreading the air regulator bowl (ABR25) from the air regulator (R25).
- Check the suction line and strainer for debris and clean as needed.
- Drain your air compressor tank on a regular basis to help extend pump life. An air source with a high moisture content will accelerate pump wear. Note: If your air source has a high moisture content, you may wish to install a water separator (WS-20CFM) before the unit.

### Troubleshooting Instructions:

- Check the air regulator bowl and air filter for debris such as water, oil, or rust particles. Clean by unthreading the air regulator bowl from the air regulator (R25).
- If air passes through the pump (P56/P56K/P56V) without cycling, the pump needs to be replaced.
- If chemical flows from the overflow port, the solenoid valve (SCV110) or air operated valve (AOV38) may need to be replaced.
- If valve (AOV38) does not open, check for proper air pressure on air gauge (AG100). Air regulator (R25) factory set at 70 psi (4.8 bar).
- Check to ensure ball valve (PVCV14FM) is in the open position.
- If green and amber color lights appear in solenoid box unplug the unit to reset. Inspect components and plug back in to power source once lights have faded.
- If the unit operates at a reduced pressure:
  - o If the air supply is 50 psi (3.4 bar) or above, check the air gauge (AG100), which should read near 50 psi (3.4 bar). If the air gauge reads more or less than 50 psi (3.4 bar), adjust the pressure by turning the knob on the top of the air regulator (R25).

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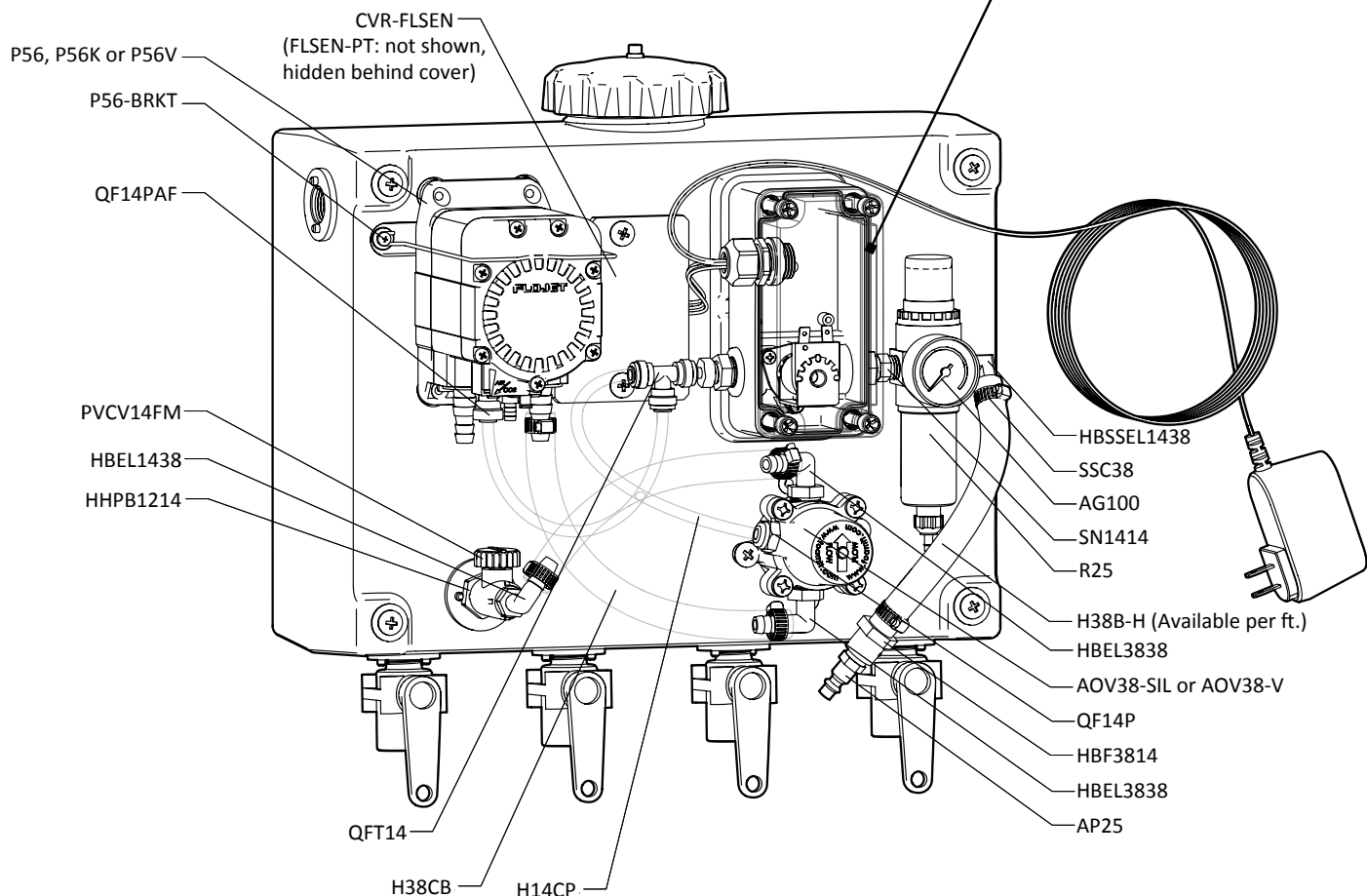
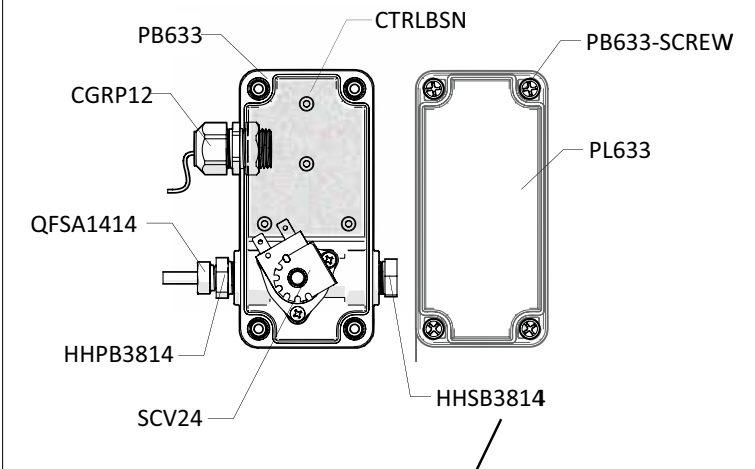
### TANK ASSEMBLY



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## CONTROL BOX ASSEMBLY

### SOLENOID BOX ASSEMBLY



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ITEM NUMBER	ITEM DESCRIPTION
2TH	2 POSITION TERMINAL HOUSING CONN RCPT HSNQ 2POS CST-100 II
AG100	1.5 INCH DRY MODEL 20 DUAL SCALE GAUGE
AOV38-SIL	AIR OPERATED VALVE WITH 3/8 IN FPT-SILICONE O RINGS
<i>AOV38-ORK-SIL</i>	O RING KIT FOR AOV38-SIL
AOV38-V	AIR OPERATED VALVE WITH 3/8 IN FP-VITON O RINGS
<i>AOV38-ORK-V</i>	O RING KIT FOR AOV38-V
AP25	PLUG 1/4 NPTM AIR FITTING - BRASS
AS1-VS	1/4-20 X 1/2 PHIL TRUSS MACH SCREW 19-8 W/516 ORANGE VIBRASEAL PATCH
B63212	Screw, 6-32 Thread, 1/2" Length
B63234	6-32 3/4 IN FLAT HEAD STAINLESS SCREW
B63234	6-32 3/4 IN FLAT HEAD STAINLESS SCREW
CGRP12	CORD GRIP 1/2 INCH
CTRLBSN	CONTROL BOARD FOR SENSOR ON FST UNITS
FLSEN-PT	FLUID LEVEL DETECTION SENSOR FOR PLASTIC TANK-3 WIRE MODEL
FST-LID	LID FOR TANK-FST
FW38X78	FLAT WASHER 3/8X7/8 X.050
GS1-SIL	GROMMET SEAL FOR AOV38-SILICONE
H12CB	1/2 IN (ID) CLEARBRAID RF SERIES
H14CP	1/4IN OD POLYETHYLENE TUBING-NATURAL COLOR - Available per ft.
H38B-H	3/8 INCH BLUE HOSE - Available per ft.
H38CB	3/8in CLEARBRAID RF SERIES - Available per ft.
H38CP	3/8 IN OD POLYETHYLENE TUBING - NATURAL - Available per ft.
HB1238	1/2in MPT X 3/8in HOSE BARB
HBEL1438	HOSE BARB ELBOW 1/4 X 3/8
HBEL3838	HOSE BARB ELBOW 3/8 X 3/8
HBF1438	1/4in FPT X 3/8in HOSE BARB - POLYPRO
HBSEL1438	STAINLESS HOSE BARB 1/4 MPT X 3/8 BARB ELBOW
HHPB1214	HEX HEAD POLY BUSHING 1/2 MPT X 1/4 FPT
HHPB3814	HEX HEAD POLY BUSHING 3/8 MPT X 1/4 FPT
JC35B-T	BLACK 3.5 INCH CAP - POLYPROPYLENE - TEFLON GASKET-NO CHECK VALVE
<i>JC35B-P</i>	BLACK 3.5 INCH CAP - POLYPROPYLENE
<i>JC35SSCS</i>	VENTED 18-8 SS SOCKET HEAD CAP SCREW, 10-32 THREAD, 3/4 INCH LENGTH .046 VENT DIAMETER
<i>JC-G35-T</i>	JUG CAP GASKET 3.5 INCH CAP TEFLON
P12	HEX HEAD PLUG WITH 1/2 M.PT.
P18	PLUG 1/8 MPT HEX HEAD 304 SS
P56	PUMP WITH SANTOPRENE SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB

P56K	PUMP WITH KALREZ SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
P56V	PUMP WITH VITON SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
<i>20756103B</i>	Polypro G57 Air Port x HB Straight, w/ Viton o-ring
<i>HB14P</i>	1/4in BRASS HB AIR FITTING /G57/P56
<i>HB5638</i>	HOSE BARB FOR P56 PUMP
<i>HB5638K</i>	HOSE BARB FOR P56K PUMP
<i>HB5638V</i>	HOSE BARB FOR P56V PUMP
P56-BRKT	PUMP BRACKET- STAINLESS STEEL
PB633	CONTROL BOX BODY - POLYPROPYLENE - 6x3x3
<i>PB633-GSKT</i>	GASKET FOR POLY CONTROL BOX 6x3x3
<i>PB633-SCREW</i>	SCREW FOR PB633 CONTROL BOX - POLYPROPYLENE
PBV12M12F	POLYPROPLENE BALL VALVE-1/2 MPT TO 1/2 FPT
PL633	CONTROL BOX LID - POLYPROPYLENE - 6x3x3
PS120-24V	PLUG-IN VOLTAGE TRANSFORMER, 120 VAC INPUT, 24VDC OUPUT
PVCV14FM	PVC BALL VALVE-1/4FPT X 1/4MPT-VITON SEALS
QF14P	MALE CON. 1/4in TUBE X 1/4in MPT POLYPROPYLENE
QF14PAF	1/4in QF PUMP AIR FITTING
QFSA1414	STEM ADAPTER 1/4in STEM X 1/4in NPT - POLYPROPYLENE
QFT14	UNION TEE 1/4in TUBE - POLYPROPYLENE
R25	AIR REGULATOR - 1/4fpt TWO PORT 1/8fpt TWO PORT - INCLUDES FILTER AND BOWL
<i>AFR25</i>	AIR FILTER for R25
<i>ABR25</i>	METAL AIR BOWL for R25
S142034ST	1/4-20 X 3/4 INCH SELF TAPPING SCREW 410 STAINLESS STEEL
S61358	410 Stainless Steel, Pan Head Phillips, 6-13 Thread, 5/8" Length
S81838	HI LO 8/18 SCREW 3/8 LONG
SCV24	SOLENOID COIL VALVE-24VDC (NO VALVE BODY)
SN1414	STAINLESS 1/4MPT X 1/4MPT NIPPLE
SSC12	WORM GEAR CLAMP, S/S (.31-.91)
SSC38	WORM GEAR CLAMP, S/S (.25-.63)
TANK-FST	TANK FOR FST
TPL-SS	PLATE FOR MOUNTING TANK TO BRACKET, DUAL PURPOSE FST
WC22	CONN SOCKET 22-26AWG TIN CRIMP
WC22-26	CONN SOCKET 22-26AWG TIN CRIMP
WCH3P	CONN HOUSING 3POS .156 W/RAMP
WMS14	14 X 1 1/4 HEX W/H SMS SLOTT, S/S
WMS14A	5/16 X 1 1/2 STRAIGHT PLASTIC ANCHOR