

The **Smith Model SS1 Set Stop Valve Controller** is normally used in combination with a Smith Positive Displacement Meter, a preset counter, and a Smith Model 210 or 215 Digital Control Valve for loadrack applications.

Features

- Simple, Low Maintenance Valve Control Loop
- Low Valve Pressure Drop
- Precise, Fast, Shock-Free Valve Shutdown
- Dual Rate of Flow Control
- Low Flow Start
- Flow Limits Adjustable Without Flow

System Component Description

Model SS1 Set Stop Valve Controller

The Model SS1 Controller continuously compares actual flow rate (derived from the self-contained photoelectric transmitter) to a programmed flow rate set point. If the system flow rate deviates from the set point, the controller provides a signal to the solenoid operators on the Model 210 or 215 Digital Control Valve to maintain the set flow rate.

Calibrator

The calibrator, mounted in the housing just above the SS1 Controller, provides the means for externally adjusting meter factor.

Model 300 Series Preset Counter

The mechanical (down) counter with its electrical switch package provides first-stage and final-stage valve shutdown signals.

Digital Control Valve

The Smith Model 210 and 215 Digital Control Valves have two solenoid valve operators. With both solenoid valves closed, the main valve is locked in a fixed position. Energizing both solenoid valves causes the main valve to open further. De-energizing both solenoid valves causes the main valve to close further.

Operation

A typical loading operation is shown in Figure 1. At the start of the delivery, the digital valve is modulated to a low flow condition to prevent excessive foaming, splashing, and/or vapor generation. Both the flow rate and the volume duration of this low flow start are field-adjustable



(without flow). The flow rate is then allowed to increase up to the maximum flow setting programmed into the SS1 Controller. The controller continuously compares the actual flow rate to the set point and signals the digital valve to make corrections as required. The SS1 Controller can also be field-wired for dual rate of flow, with the lower of the two maximum flow rates being the same as the low flow start.

Upon receiving the first stage shutdown signal from the preset counter (e.g., with 30 gallons remaining to be delivered), the controller decreases the flow rate in three steps with the final stage shutdown signal from the preset counter terminating flow. The resultant valve shutdown cycle is fast, shock-free, and accurate.

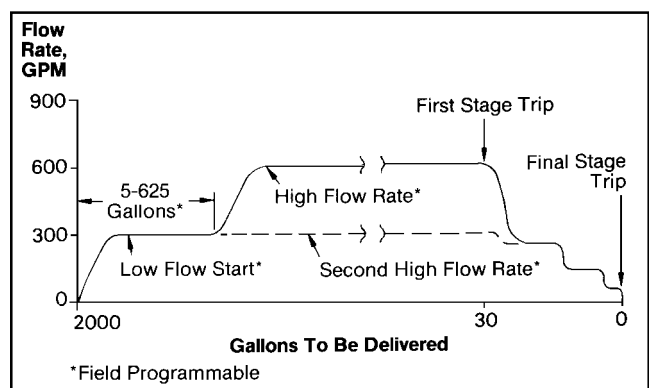


Figure 1 — Typical Loading Operation

Specifications

Input Power

Voltage/Current:
115 Vac $\pm 15\%$ @ 766 mA (with solenoids).
220 Vac $\pm 15\%$ @ 400 mA (with solenoids).
Frequency: 47-63 Hz.

Switch Inputs

First Trip and Low Flow:
Voltage: 115 Vac $\pm 15\%$ or 220 Vac $\pm 15\%$.
Current: 1.5 mA (maximum).
Second Trip:
Voltage: 90 to 280 Vac.
Current: 1.0A continuous, 5.0A inrush.

Output Relays

Voltage: 90 to 280 Vac.
Current: 0.5A continuous, 2.25A inrush.

Environmental

Design Operating Temperature: -40°F to 158°F (-40°C to 70°C).

Humidity: 5% to 95% with condensation.

Enclosures

NEMA 4 (weatherproof).
NEMA 7 (explosion-proof).

Approvals

UL Approved and CSA Certified for use in Class I, Groups C and D; Class I, Groups E, F, and G, Division 1 & 2 hazardous locations.

CENELEC Certified to EExd IIB T6.

SA Certified to Ex d IIB T6.

Field-Programmable Settings

High Flow: Four binary switches.

Low Flow Start: Flow Rate: Four binary switches. Quantity Delivered: Eight binary switches.

Valve Size	Maximum Low Flow Volume Setting			Low Flow Volume Setting Increments		
	Gallons	Dekaliters	Barrels	Gallons	Dekaliters	Barrels
2"	125	-	-	0.5	-	-
3", 4"	625	250+	-	2.5	1.0+	-
6"	1,250	625	-	5.0	2.5	-
8"	-	1,250	125	-	5.0	0.5
10"	-	1,250	-	-	5.0	-
12"	-	-	125	-	-	0.5

For other sizes and units of registration, consult factory.

+Based on 1:1 dek. gearing using 5:1 dek. gearing max. setting = 625, increment = 2.5.

Second High Flow*: Four binary switches.

When the Low Flow Start feature is used, the Second High Flow rate will be the same as the low flow rate.

*This feature is activated by a field-mounted external SPST maintained 115 (or 220) Vac 1.5 mA capacity switch (not supplied).

Special Adaptation Kit

With old-style PD meters that have Model AM-1 Calibrators (Models AB, AS, B or S-12, 13, 24, 28, 30, 35, 42, 45, 50, 60, 75, 100), a special adaptation kit is provided with SS1 Controller. The kit contains spacer ring and AM-5 Calibrator.

Associated Equipment

Meters: Refer to appropriate specification bulletin for particular meter size.

Valves: Up to 200 SSU, refer to Bulletin SS03009, Model 210 Valve.

Above 200 SSU, refer to Bulletin SS03010, Model 215 Valve.

Wiring: Refer to Bulletin MN03008, Model SS1 Installation/Operation Manual.

Ordering Information Required

1. Controller Model Number or Meter Model, Units of Registration, Voltage, and Meter Serial Number if available.
2. Mounting:
 - a. Factory-mounted on new meter.
 - b. Field adaptation to new-style meter.
 - c. Field adaptation to old-style meter (adaption kit required).

Modeling

Example: SS1 — 100 — 110 — .10 — 02 — 00 — 1

Model Designation

SS1

Disk Slots

100 - 100 Slots (E3, E4, and F4 Meter, 1:1 Dek
G6 Meter, 5:1 Gallon)
200 - 200 Slots (All Other Meters and Gearings)

Voltage

110 - 110 Vac
220 - 220 Vac

Housing

1 -UL/CSA
2 - BASEEFA

Coupling

00 - S1 (E3 through H8)
01 - S3 & S5 (C2 through H8)
02 - S6 & S7 (C2 through M16)
03 - S1, S3, & S5 (JA/JB10, K12,
& M16)
04 - C2-S1 & SC-13 Gallons
05 - C2-S1 & SC-13 Dekalitre
06 - SD Meters & T-40 Gallons
07 - SD Meters & T-40 Dekalitre

Meter Size

Timing

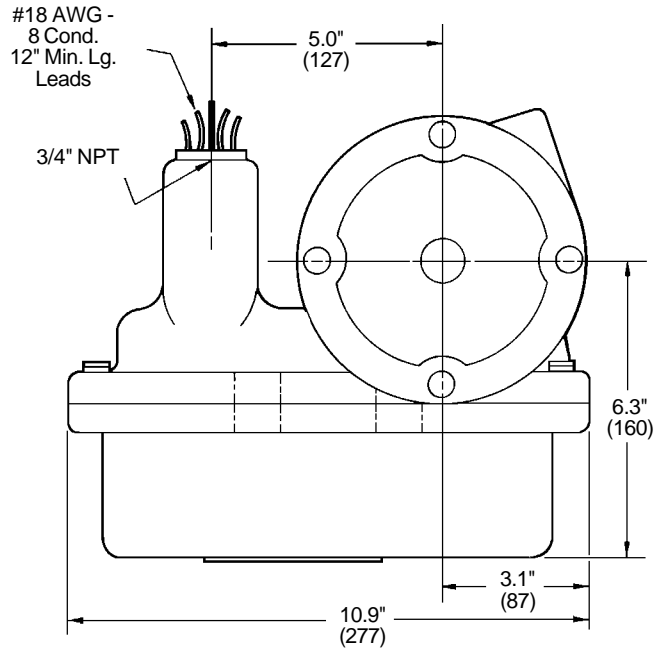
C2 & SC-13, 1:1 Gallon .10
SD-3, SD30, & E3 through G6, 5:1 Gallon .10
E3, E4, & F4, 1:1 Dekalitre .10
E3, E4, & F4, 5:1 Dekalitre .175
G6, 5:1 Dekalitre .13
H8, 10:1 Dekalitre .20
H8, 1:1 Barrel .20
JA10 & JB10, 10:1 Dekalitre .10
K12, 1:1 Barrel .15
M16, 1:1 Barrel .10

Decal

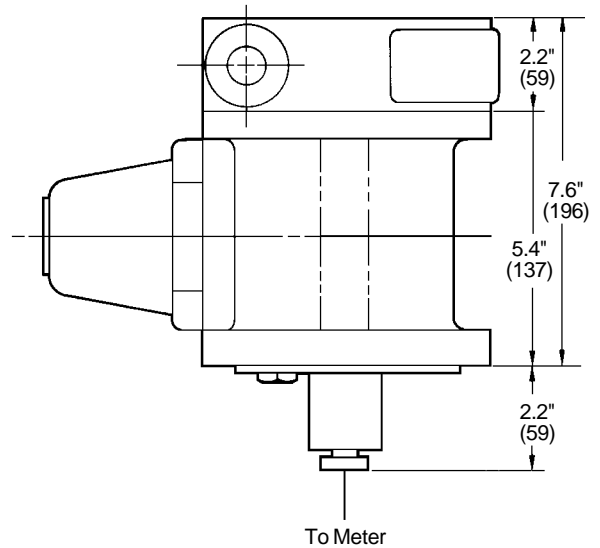
01
02
03
04
05
06
07
08
09
10

Dimensions

Inches (mm)



Top View



Side View

Note: Dimensions — Inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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