

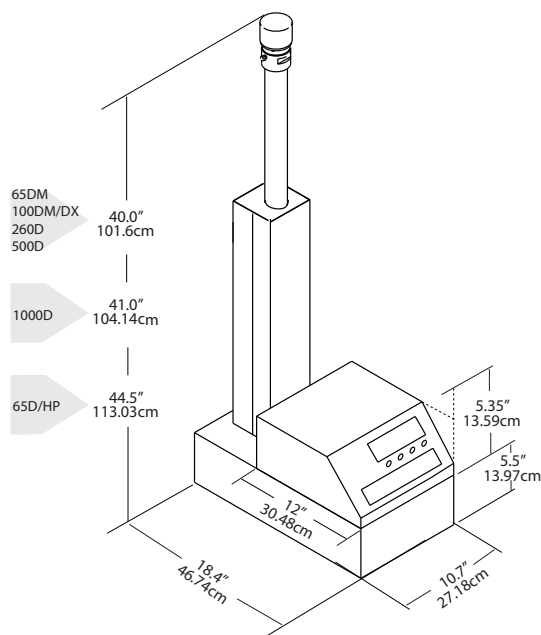
# Single Pump Valve Package Types and Installation

For Teledyne Isco Syringe Pumps

## Overview

For active valve operation with single syringe pumps, Teledyne Isco offers several valve package options.

The D Series pump system with valve operation consists of one or more syringe pumps with electric, air, or check valve package(s), independently controlled from a single D Series controller.



**Figure 1: Single pump system dimensions**

Single Pump	
Weight	Pump - 85lbs (38.5kg), Controller - 6.5lbs (2.96kg)
Power Requirements	100 ±10VAC, 1.5A maximum
	117 ± 12VAC, 1.5A maximum
	234 ± 23VAC, 0.75A maximum
Line Frequency	50 or 60 Hz

## Valve Packages

The valve packages may be passive (check valves) or active (air or electric). Electric valves are recommended for the following applications:

- Liquefied gases
- Heated viscous fluids delivered at low pressure from a pressure pot
- Viscous fluids requiring a forced valve closure

Valve Type	Wetted Materials	Tubing O.D.	Temperature Rating
Air	Hastelloy, SST, PEEK, Chemraz	500D, 260D, 100DM/ DX, 65DM: 1/8"	149°C / 300°F
		1000D: 1/4"	
Electric	Hastelloy, Inconel, Silicon Nitride	1000D, 500D, 260D, 100DM/DX, 65DM: 1/8" NOTE: 1000D uses adaptor 1/4" to 1/8"	

### Air Valves

The actively controlled pneumatic valve package requires a pressurized air source of 80 to 115psi (5.5 to 7.9 bar).

### Electric Valves

The actively controlled electric valve package provides added protection against back flow, and requires a special interface board mounted inside the controller.

## Valve Package Installation

For the steps that follow, refer to Figures 2 and 3 on the following page.

### ⚠ WARNING

**Risk of injury. The pressure produced could be up to 10,000psi (700 bar). Use only the appropriate tubing and connections.**

1. Use a plug to close the port that is unconnected.
2. Loosely attach the tubing from the valve assembly to the pump.
3. Place the strap around the pressure transducer cap. Tighten the wingnut.
4. Install the two panhead screws on the bottom of the bracket.

### Plumbing Connections

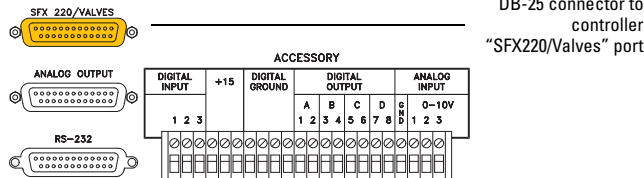
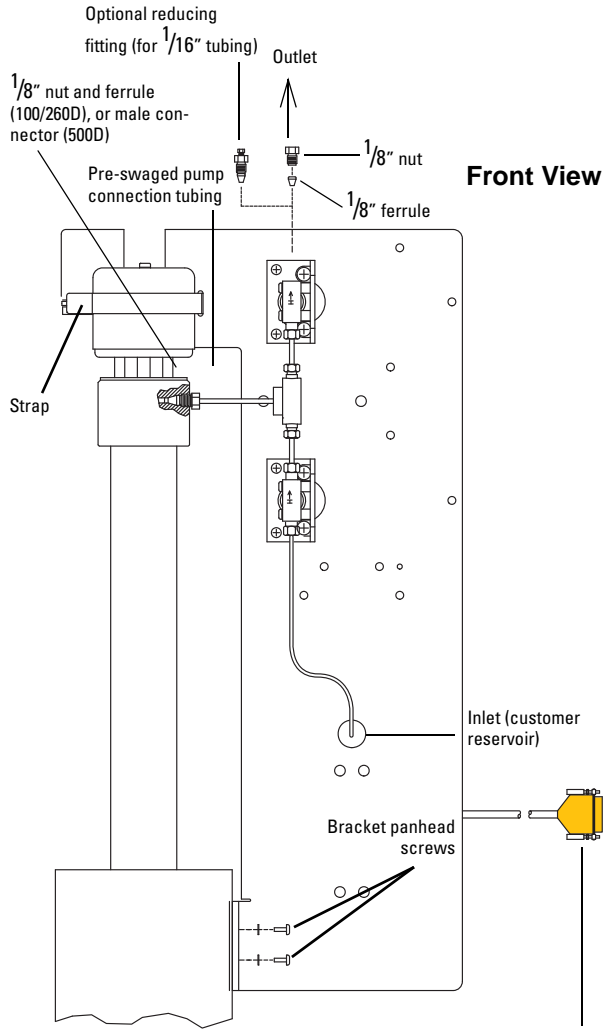
1. Tighten the tubing nuts.
2. Connect the inlet tube to the supply reservoir.
3. Connect the outlet to your apparatus.

### Electrical Connections

**Electric Valve Package** – Connect the DB-25 cable to the controller rear panel “SFX 220/VALVES” connector, as shown shaded in Figure 2 on the following page.

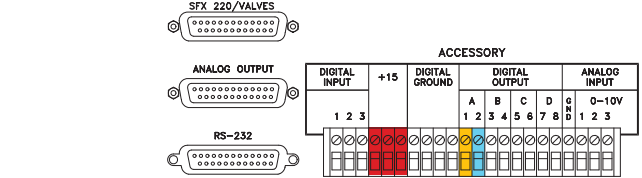
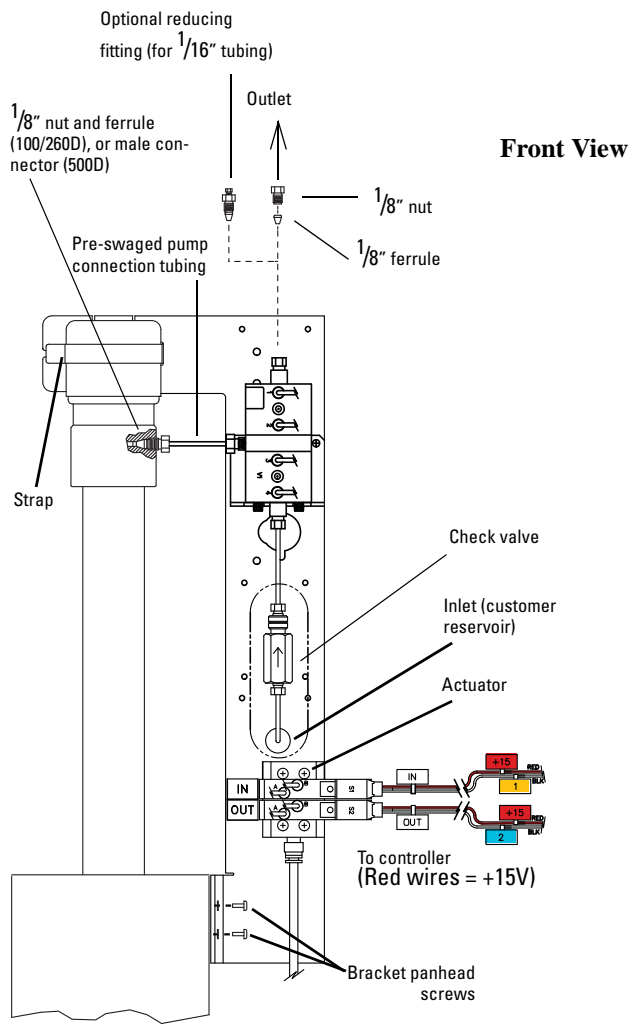
**Air Valve Package** – As shown in Figure 3, connect the two positive (red) wires to any two of the 15VDC terminals on the rear of the controller. Connect the black wire from solenoid #1 (IN) to DIGITAL OUTPUT 1. Connect the black wire from solenoid #2 (OUT) to DIGITAL OUTPUT 2.

### Electric Valve Package



Controller Rear Panel

### Air Valve Package



Controller Rear Panel

### Top View

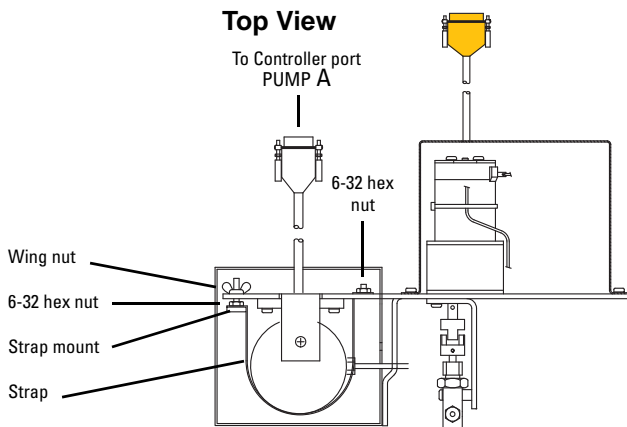


Figure 2: Electric valve installation

### To Controller port PUMP A Top View

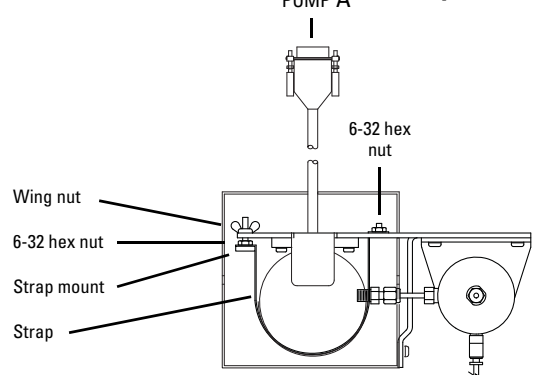
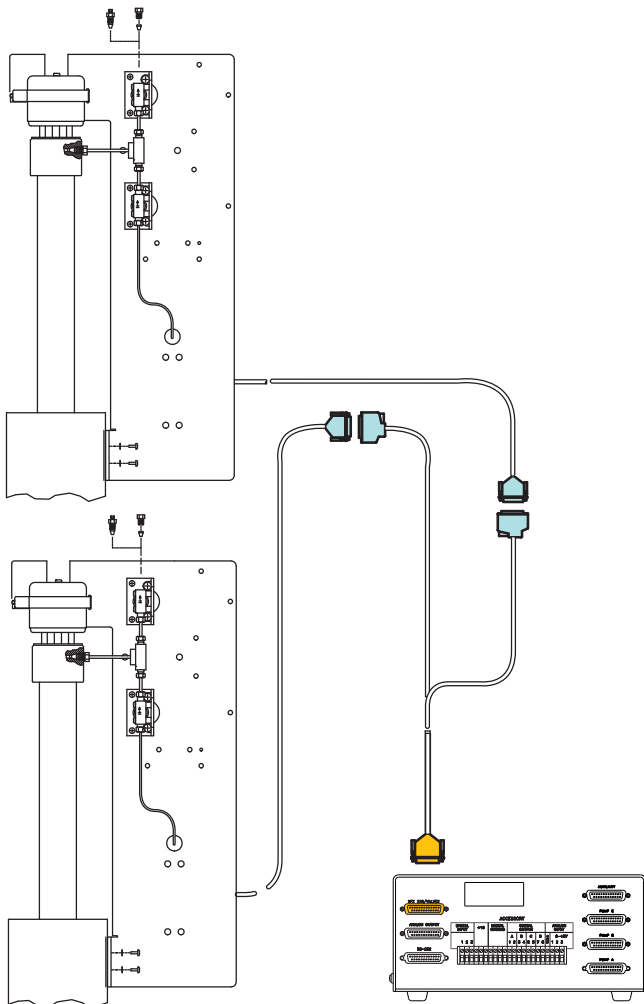


Figure 3: Air valve installation Requires pressurized air source @ 80-115 psi (5.5 - 7.93 bar)

## Continuous Flow Options

A single pump cannot provide continuous flow modes. However, a single pump with single valve package can be combined with another pump and valve package to create a multiple pump system.

Two single valve packages may be plumbed together with the proper fittings. Single electric valves used for this purpose will also require the custom 'Y' cable (part #60-5364-211) in order to connect to the controller. The cable's single male DB-25 plug connects to the SFX220/VALVES port on the rear panel of the controller. The cable's two female DB-25 plugs each connect to the valve cables. Refer to Figure 4, below.



**Figure 4: Custom 'Y' cable for dual use of single electric valve packages**

For detailed information on multiple pump systems, refer to the technical bulletin [Multiple Pump Systems for Continuous Flow or Independent Modes](#).

## Concentration Gradients

A single pump can provide time programmed, linear pressure and flow gradients.

**Time** – When programming gradients, time can be entered with a resolution of 0.1 minute, with a maximum time of 9,999 minutes per step.

**Steps** – Up to 200 user-programmed steps can be entered, e.g., 1 gradient with 200 steps or 200 gradients with 1 step each.

## Single Valve Packages Available from Isco

Single valve packages are available both separately and as part of a complete system. Call the factory for additional information.

**Table 1: Valve Packages and Systems**

Single check valve package for Model 1000D. 1/4-inch tubing.	68-1247-123
Single check valve package for Model 500D, 260D, and 100DM/DX. 1/8-inch tubing.	68-1247-062
Single air valve auto-refill/outlet package for Model 500D. 1/8-inch valve. Requires pressurized air source.	68-1247-089
Single electric valve auto-refill/outlet package for Model 500D. 1/8-inch valve. Controller electric valve driver board required.	68-1247-112
Single air valve auto-refill/outlet package for Model 260D and 100DM/DX 1/8-inch valve. Requires pressurized air source.	68-1247-088
Single air valve auto-refill/outlet package for Model 65D. Requires pressurized air source.	68-1247-131
Single electric valve auto-refill/outlet package for Model 260D and 100DM/DX. 1/8-inch valve. Controller electric valve driver board required.	68-1247-110
System SE500 Single electric valve system. Includes one 500D pump, electric valve package, and system controller.	67-9000-210
System SE260 Single electric valve system. Includes one 260D pump, electric valve package, and system controller.	67-9000-209
System SE100DM Single electric valve system. Includes one 100DM pump, electric valve package, and system controller.	67-9000-223
System SE100DX Single electric valve system. Includes one 100DX pump, electric valve package, and system controller.	67-9000-222
<b>Custom Valve Packages</b>	
Single electric valve auto-refill/outlet package for Model 1000D.	60-5364-255
Single air valve auto-refill/outlet package for Model 1000D.	60-5364-107
Single air valve auto-refill/outlet package for Model 500D. 1/4-inch valve.	60-5364-195

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