

#60-1267-014 Dual Air Valve Package for SyriXus® 260x / 500x Installation Instructions

NOTE: The air actuator tubing is shown partly cut away for clarity of features.

Overview

The SyriXus 260x / 500x dual air valve option is designed to automatically allow the SyriXus 260x and SyriXus 500x pumps to operate continuously under software control. As one pump is delivering working fluid, the other refills and balances pressure, then waits its turn to take over delivery. As the delivering pump reaches near empty, the software switches delivery to the other (full) pump. Once the switch is completed, the first pump then refills and balances pressure, then waits its turn to take over delivery again.

This operation allows the pumps to deliver working fluid continuously with nearly no deviation in the delivered pressure (or flow) while the pumps refill. This action will continue while working fluid is available to the refill the pumps or the until the user stops or changes the flow.

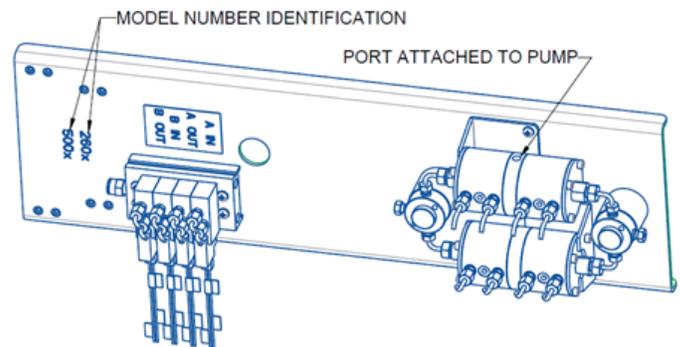
The dual air valve option mounts between two SyriXus pumps and fastens the two pumps together. The two pumps must be the same model type to allow proper operation.

Tubing to connect to the pumps are included for both the SyriXus 500x and SyriXus 260x pumps. Only the tubing for the pumps being attached to will be used; the other pump tubing should be retained to allow the valve to be mounted on a different size pair of pumps if this becomes desired in the future.

Parts of the Valve Assembly

Most of the valve assembly will be assembled at the factory, but the 'U' shaped mounting bracket and the pump tubing will be separate. Additionally, the reagent supply tubing and air supply tubing are shipped unattached to prevent damage to the plastic tubing during shipping. Screws and washers are supplied with the assembly in a separate package.

Prepare the Valve Assembly for Installation

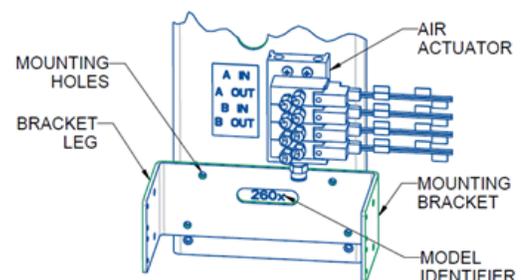


Remove the valve assembly from the packaging and identify the ports on the valves that will be attached to the tubing to the pump. There will be one port on each valve, and the ports will be oriented toward the outside of the valve assembly. Notice there is lettering on the opposite end of the assembly relative to the valve identifying the model numbers.

Orient the valve assembly with the valves facing up, and the model identifier lettering closer to you. The end of the valve assembly with the Model Identifier Lettering represents the "bottom" of the valve assembly.

Orient the Mounting Bracket with the Mounting Holes closer together at the top and the Bracket Legs directed toward you as shown in the figure. Place the mounting bracket over the Model Identifier Lettering so that the model number that this valve assembly will be used with is visible through the opening in the bracket. Observe that all four mounting holes in the bracket align with corresponding threaded holes in the valve assembly.

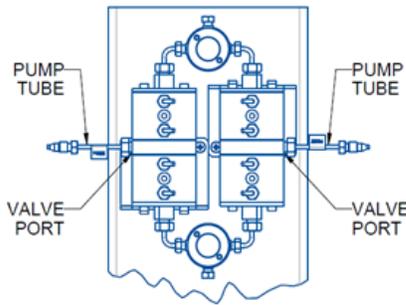
The image below shows the bracket placed for use with a 260x pump; placement on a 500x pump will be very similar.



Locate four #8-32 x 3/8" long screws in the hardware package; and install a single #8 internal thread lock washer on each screw, followed by a single #8 flat washer on each screw. Thread these screws with washers into each of the four holes in the mounting bracket. Finger tighten these screws but do not completely tighten them down yet. When properly installed, all four screws will be in place and the correct model identification number will be visible, but the bracket can be moved slightly to assist on installation later.

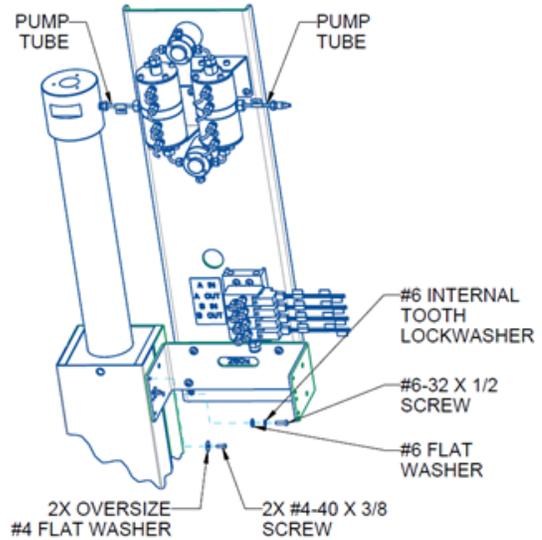
Locate the tubing that will be attached between the valve assembly and the pumps. These tubing assemblies have labels identifying the appropriate SyriXus pump model: one pair of tubing assemblies are labeled as '260x' and the other pair as '500x'. Select the tubing corresponding to the pump model that this valve will be used with. Use PTFE tape on the NPT fitting for the 500x only. Do not use PTFE tape on the other threaded nuts.

The pump tubing assemblies have different fittings pre-attached to each end. One of the fittings will fit into the valve body. Attach the tubing to the valve port. The figure below shows the SyriXus 260x pump tube; the SyriXus 500x would be similar.



Insert two #6-32 x 1/2 screws into #6 internal tooth lock washers, then insert the #6-32 x 1/2 screws with lock washer into a #6 flat washer. Next, insert four #4-40 x 3/8 screws each into an oversized #4 flat washer. Place these screws and washers within convenient reach near the pump.

Position the valve assembly on the side of one of the pumps with the pump tube aligned with the port in the cap. While holding the valve in place, thread the port fitting into the pump cylinder cap. Tighten the gland nut on the tubing finger tight.



Continuing to hold the valve assembly in place, insert the #6 screw with washers into the valve mounting bracket in the bottom hole closest to the valve as shown in the figure. Tighten this screw only finger tight. Install the two #4-40 screws in the top two holes in the mounting bracket near the front of the pump as shown.

Move the second pump into position so that the free pump tubing aligns with the port in the second pump's cap. Thread the port fitting into the pump cylinder cap. Tighten the gland nut on the tubing finger tight.

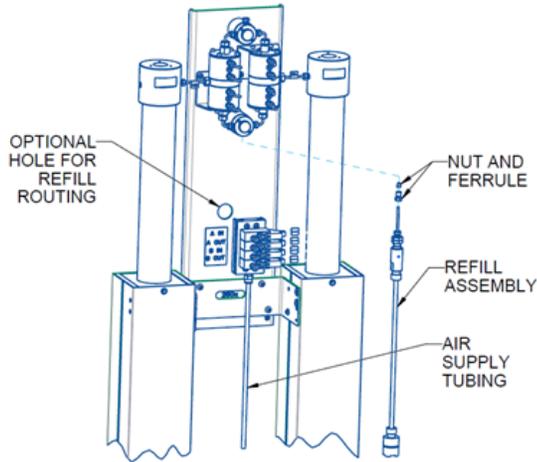
Install the remaining #6-32 screw with washers and #4-40 screws with washers into the mounting bracket and into the second pump.

Adjust the position of the valve assembly and then tighten the six screws just installed.

Tighten the gland nut on the tubing into both cylinder caps.

Tighten the fittings into the valves to no more than 120 inch-pounds [14 N·m].

With the valve assembly positioned satisfactorily, tighten the four screws near the model identifier lettering at the bottom of the valve assembly.



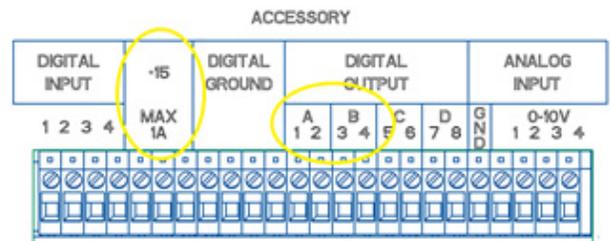
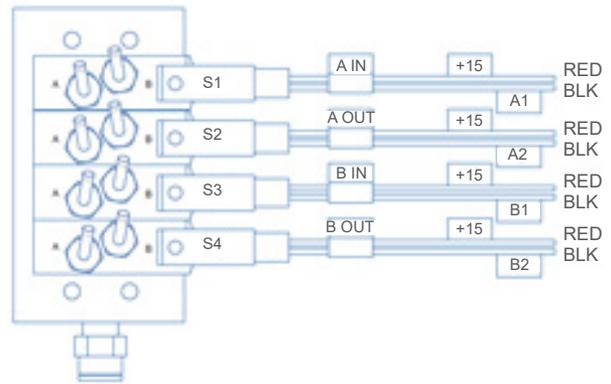
Locate the refill tubing assembly. The gland nut and ferrule to attach the refill assembly to the valve should already be swaged onto the refill assembly. Thread the nut and ferrule into the bottom of the tee between the valves and tighten. While tightening, use a wrench on the flats of the tee to prevent damaging the assembly while tightening the gland nut.

Optional: Depending on the location where the pumps are to be installed, the refill fluid source may be located either in front of the valve assembly (as shown in the figure) or behind the pumps. A hole in the valve plate allows for the refill tubing to be routed behind the pumps if desired.

Air supply tubing is provided with the valve assembly. Connect the air supply tubing to the actuator by pushing the retaining ring on the actuator port inward and then pushing the tubing into the actuator. Release the retaining ring. When properly installed, the tubing should not be able to be easily pulled out. Reversing this procedure allows the air supply tubing to be detached should the pumps need to be moved. The air supply tubing can be cut to a suitable length if desired.

NOTE: The refill tubing can be shortened by removing the fitting and ferrule at the filter end and cutting the tubing shorter.

The valve can then be electrically connected to the controller using the procedure described as follows:



The actuator has eight wires, four red and four black. The red wires have labels showing '+15', and the black wires have labels 'A1', 'A2', 'B1' and 'B2'.

On the back of the pump controller is a terminal strip connector labeled 'ACCESSORY'. Locate the connections identified as circled in the figure above.

Connect the red wires to the connectors labeled '+15'. More than one red wire can be connected to a single +15 terminal connector.

The black wires are connected to the DIGITAL OUTPUT connectors, matching the label on the wire with the connector having the same name. Only the 'A' and 'B' connectors are used with a single pair of pumps and a dual air valve.

ATTENTION: Although the '+15' connectors will have more than one red wire in some ports, 'DIGITAL OUTPUT' connectors must have only one black wire per port.

Before connecting the controller to the pump, inspect that the connections are inserted correctly and secured.

Refer to the User Manual for information about connecting two pairs of pumps with air valves to a single controller.

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