

Modular Pneumatic Valve System Benefits Machine Builders



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Reduces Inventory
 Field Configurable

Flexible
 Increased Productivity

Overview:

The market for today's machine builders can be very competitive. One way for these companies to set themselves apart from their peers is the ability to efficiently tailor their standard designs to meet the very specific needs of each of their clients. By utilizing the flexibility and easy integration of Parker's Moduflex pneumatic valve system, one builder of custom mixing machines was able to meet their end-user's ever-changing specifications both economically and proficiently.

The Challenge:

The machine builder was experiencing recurring delays in delivery and reduced profitability due to cost overruns. A common cause of these problems was the lack of availability of pneumatic components needed to meet each client's individual requirements. Because many of these components were not common-use items, they fell outside of the scope of the negotiated price breaks and were resultantly priced at a premium.

The Solution:

The machine builder standardized on the Moduflex valve platform by Parker's Pneumatic Division. This system eliminated a number of recurring problems:

Preset Manifold Lengths – The Moduflex "V" series allows the user to configure valve islands to any reasonable length without having to conform to the set number of valves of an aluminum manifold. When a customer's valve requirements were increased during the production stage, the machine builder simply added valves to the stack. This allowed the builder to realize both the reduced cost of plumbing of a manifold assembly, and the flexibility of stand-alone valves.



Figure 1. Different sized valves on the same island.

Different Size Valves, Different Valve Islands – Both Size 1 (.32 Cv) and Size 2 (.80 Cv) of the Moduflex offering fit together on the same island. (Figure 1) This reduced the overall number of manifolds needed to complete the job, along with the additional labor and plumbing requirements. Since the entire pneumatic system was controlled using a DeviceNet field bus system, the need for additional communication components was also decreased.

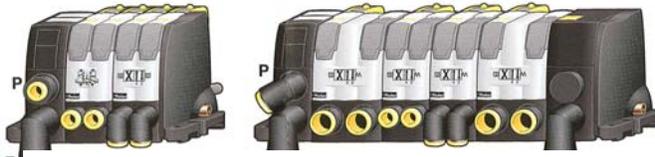


Figure 2. An Intermediate Supply Module can be added to an existing island to allow for multiple inlet pressures.

Different Pressures, Different Valve Islands – Late in the production stage, the end-user requested a special modification to the machine requiring vacuum. This modification was easily made by incorporating an intermediate supply module (Figure 2) and two additional valves into the existing stack, utilizing the existing DeviceNet networking components.

External/Internal Pilot – The request for vacuum late in the production phase would usually create a procurement issue – valves must be specified when ordering for either internal or external piloting. The Moduflex series allows for the valve island to be configured for either internal or external pilot on site with simple modifications, no extra components required. This allowed the manufacturer to use the valves already stocked on their shelves, without waiting for additional parts.

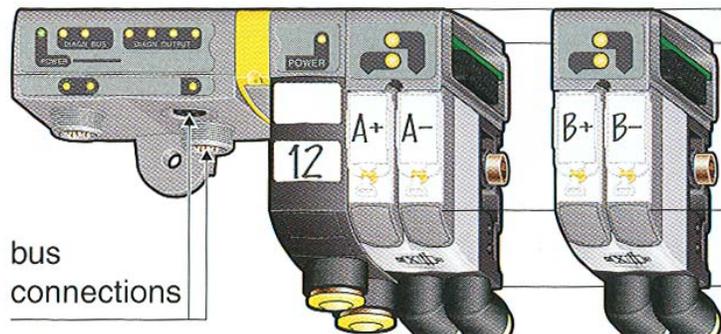


Figure 3. A variety of bus connections are available for the Moduflex series.

Networking Capability – The end-user of this mixing machine requested DeviceNet as the protocol. Since the machine design required a total of (9) individual manifolds, each controlled through the network, the machine builder opted for the DeviceNet electrical head module. (Figure 3)

The networking head modules offered by Parker are configured in a bus in/bus out style, so no additional components are required to add a manifold to a network. The head modules are available in CANopen, Profibus DP, and Interbus S, which allow them many options for their end customers.

The Results:

The machine builder was able to meet their delivery deadlines, despite the frequent design alterations. In addition, there was a significant savings in cost over the valve makes used in the past.

The most significant advantage of the Moduflex for this builder is the ability to mix various size valves with the same island. Because this design requires 9 individual pneumatic valve stations and various sized valves at each station, we were able to halve the total number of manifolds from 18 to 9.

Reducing the overall number of manifolds allows us to reduce the number of DeviceNet head modules and plumbing components, as well as the labor needed to assemble and mount the islands. All told, the machine builder realized a cost savings totaling \$3450 by using the Moduflex system over their standard components.

Cost Savings of (9) Moduflex Valves vs. (18) Standard Valves

Description	Additional Standard Units Needed vs. Moduflex	Cost each	Total
DeviceNet Head Modules	9	\$300	\$2,700
Plumbing (per manifold)	9	\$50	\$450
Labor (\$50 / hrs)	6	\$50	\$300
			\$3,450

Materials Used:

Qty.	Part Number	Description
(1)	P2M2HXT01F7MM	Head and Tail modules
(1)	P2M2HBVD11600	DeviceNet 16 Valve Bus Module
(2)	P2M1V4EE2CV00F7	Size 1 4/2 Bistable 0.32
(2)	P2M2V4ES2CV00C7	Size 2 4/2 Monostable 0.80 Cv
(1)	P2M2BXV01C9MM	Intermediate Module, (for vacuum)
(1)	P2M2V4EE2CV00F7	Size 2 4/2 Bistable 0.80 Cv (for vacuum)
(1)	P2M1V4EE2CV00F7	Size 1 4/2 Bistable 0.32 Cv (for vacuum)