



Moduflex Valve System

***Modular Valve Islands or
Stand-Alone Valves***

Catalogue : PDE2536TCUK-ev





WARNING

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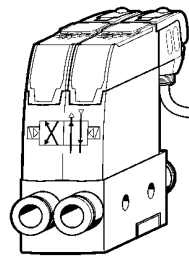
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Bold text part numbers are standard.

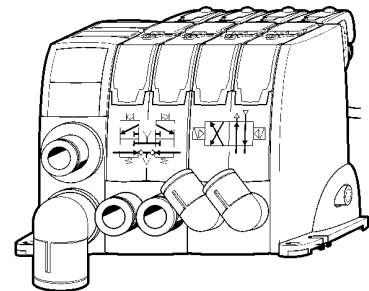
Standard text part numbers may have longer lead times.

Adaptive Pneumatic

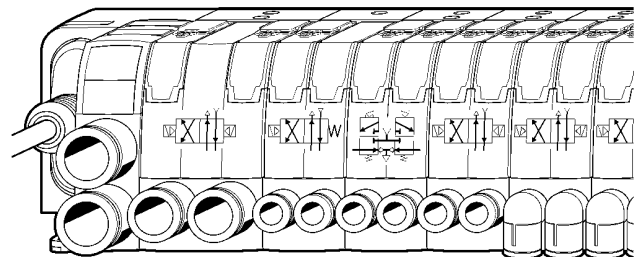
- With the Moduflex valve design, pneumatic automation is now totally flexible.
- Valves may be stand-alone or assembled into short or long islands, depending on application.
- IP 65-67 water and dust protection allows the valve to be installed near the cylinders for shorter response time and lower air consumption.
- Valve island electrical connections may be integrated.
- Push-in pneumatic connectors may be straight or elbow, for 5/32", 1/4", 3/8" or 1/2" OD tubes. Metric sizes are also available.
- A given island may incorporate different valve sizes in order to fulfill each cylinder flow requirement. A single island will accommodate all cylinders, up to 4" bore size.
- Island modifications are easy – add or remove a valve, change a valve function, change tubing size, change piloting in minutes.
- Manual overrides (MAN) are also adaptive – locking for setup, non-locking for production.



Stand-Alone Valve



Short Valve Island



or Long Valve Island

Straight or Elbow
Pneumatic Connectors

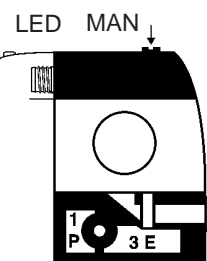
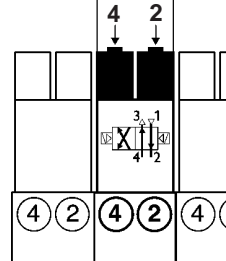
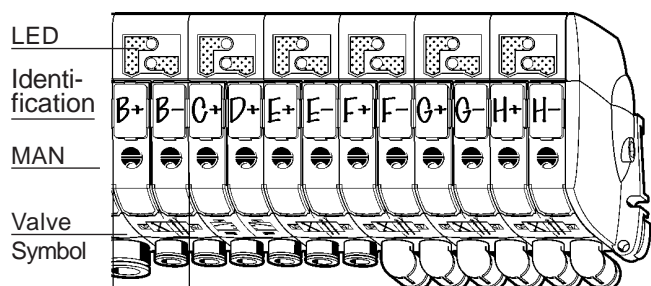
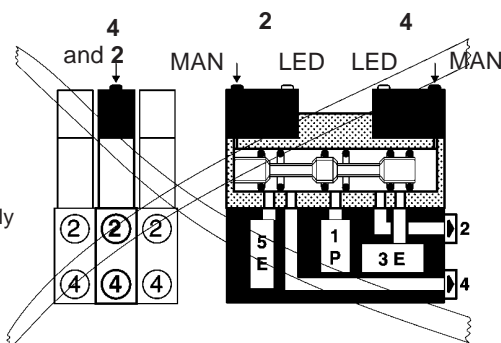
Easy Man-Machine Dialog

- Moduflex incorporates LED indicators, MAN, in conjunction with valve symbols and identification.
- As compared to traditional 5/2 valve islands, Moduflex offers a more user friendly dialog; each marking, LED and MAN are all lined up with the corresponding cylinder output.

Island with traditional 5/2 spool valves:

Before any action, LED and MAN have to be carefully related to the corresponding output.

Man-machine dialog is difficult.

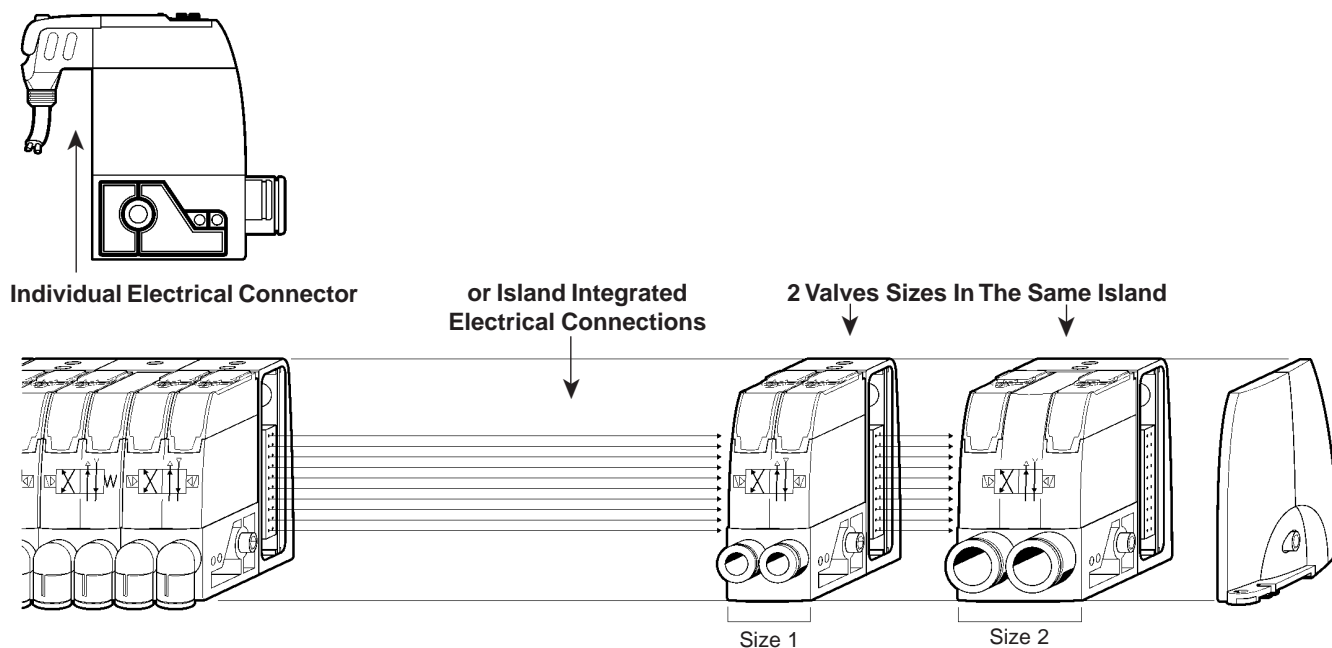


Island with Moduflex 4/2 slides valves:

Each marking, LED and MAN line up with the corresponding output.

Man-machine dialog is easy.

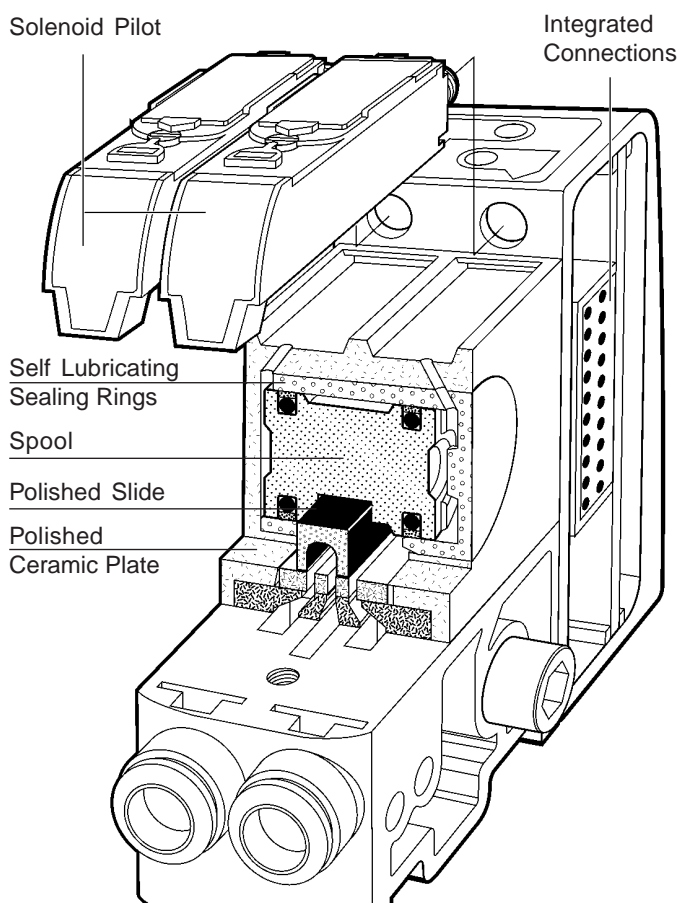
With high performance technology, Moduflex opens a new era in the field of electro-pneumatic automation. Valves are easily assembled into compact islands that conform to any application requirement.



High Performance Technology

The unique Moduflex super-compact 4/2 slide valve concept features:

- A very short stroke (2.5 mm) slide and spool arrangement for short response times.
- A large spool diameter (14 mm) provides higher actuation force for totally reliable piloting with dry or lubricated air, 40µ filtration.
- A polished ceramic plate and slide arrangement for total sealing and long life (100 M operations).
- The best flow / size ratio.
- For robotic applications, valve impact resistance, and valve weight permit mounting on fast-moving machine components.

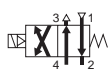


Valve Functions, Flows and Tube Connections

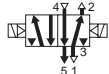
Moduflex valves offer all functions required for standard electro-pneumatic automation applications:

4 or 3-way valves, 2-position single solenoid or double solenoid valves, 3-position valves, different flows and tube connections to control all pneumatic cylinders and actuators.

4/2 and 5/2 Valves are Functionally Equivalent



4/2 valve
4 ports
2 position



5/2 valve
5 ports
2 position

Both of the above are 4-way valves and may control any double-acting cylinder.

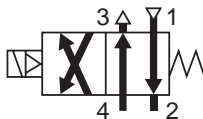
- 4/2 valves have one (1) exhaust port.
- 5/2 valves have two (2) exhaust ports.

Moduflex has chosen to offer 4/2 valves rather than 5/2 valves.

For the same function and flow, 4/2 valves are more compact and easier to use. For example, collecting exhaust is simpler.

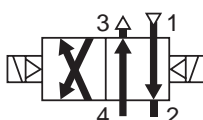
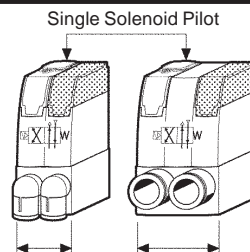
4/2

4 Port
2-Position
Valves



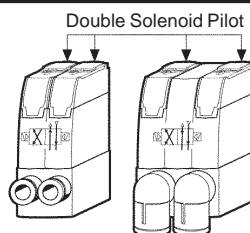
Single Solenoid (Monostable)

Control Signal has to be Maintained.



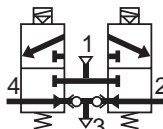
Double Solenoid (Bistable)

Control Signals may be Momentary.



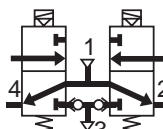
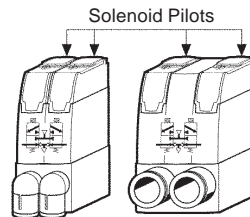
3/2

3 Port
2-Position
Valves



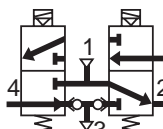
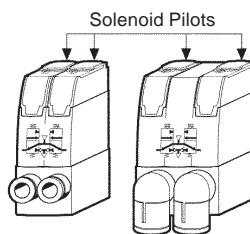
Double Solenoid NC + NC (Normally Closed + Normally Closed)

Single Solenoid, Outputs when Energized



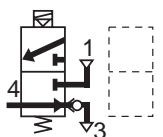
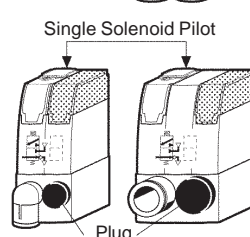
Double Solenoid NO + NO (Normally Open + Normally Open)

Single Solenoid, Outputs when De-energized

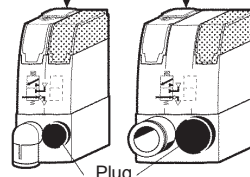


Double Solenoid NC + NO

NC: Output when Energized
NO: Output when De-energized

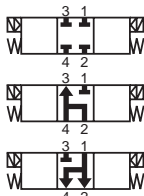


Single Solenoid NC



4/3

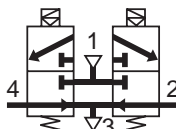
4 Port
3-Position
Valves



All Ports Blocked

Center Exhaust

Pressure Center



Center Exhaust Dual 3/2 NC + NC

Without Exhaust Check Valve

Dual 3/2 valve modules achieve these 3-position valve functions (5/3 or 4/3) as explained by opposite box.

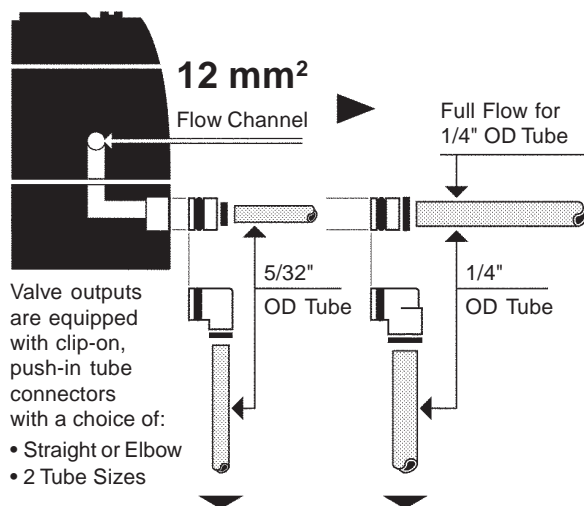
Flows and Tube Connections

Two valve sizes lead to a global choice of four tube sizes, therefore covering all typical applications.

Size 1

Nominal Flow: .32 Cv*

12 mm² flow channel, for 5/32" and 1/4" OD tubes



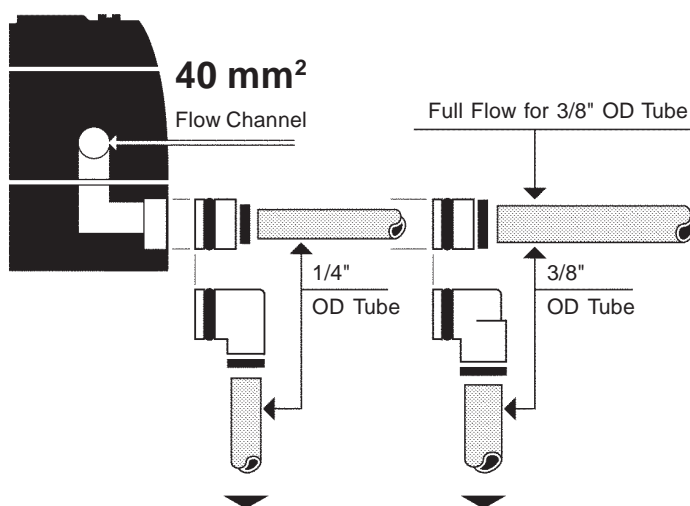
To Cylinders 6 to 25 mm Bore Size 25 to 40 mm Bore Size

Size 2

Nominal Flow: .80 Cv*

40 mm² flow channel, for 1/4" and 3/8" OD tubes

*Except 3/2 functions, See Specifications.

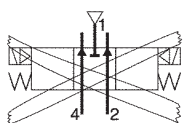


To Cylinders 40 to 63 mm Bore Size 63 to 100 mm Bore Size

Typical cylinder speeds are shown in the Technical Section. Module size, tube diameter and length, cylinder size and load and exhaust collection are taken into account.

Dual 3/2 Valves Replace All 3-Position Valves for a Better Performance

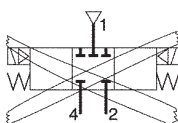
3-Position Center Exhaust



A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module (version with no exhaust check valves). Both cylinder chambers are exhausted and rod and piston are free to move.



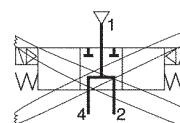
3-Position All Ports Blocked



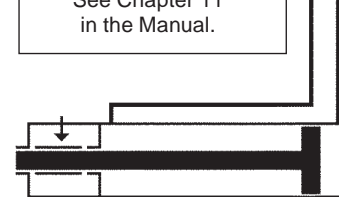
A traditional 5/3 all ports blocked valve is now replaced by a double 3/2 NC+NC valve module and a dual P.O. check module that will block the flow to and from the cylinder. Cylinder positioning is more precise.



3-Position Pressure Center



A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



See Chapter 11 in the Manual.

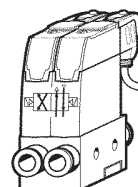
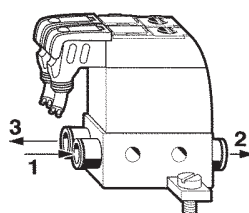
Module Series Selection

Moduflex system provides a complete choice of either stand-alone valves, short-build valve islands, or large valve island configurations. Electrical control connections may be individual or island integrated. Peripheral modules add complementary functions — flow control, pressure regulation or cylinder positioning.

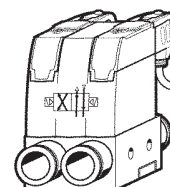


S Series Stand-Alone Valve Modules

For isolated cylinders on a machine, it is preferable to locate the valve close by. Therefore a stand-alone module is ideal. Response time and air consumption are then reduced to a minimum.



Size 1

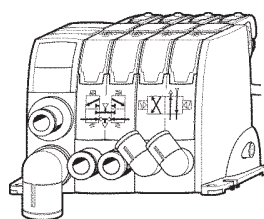


Size 2



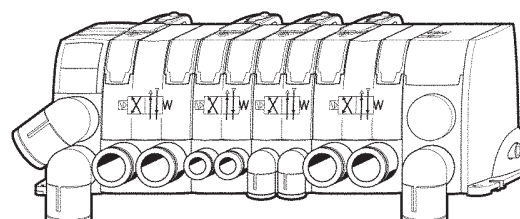
T Series Valve Island Modules with Individual Connectors

For small groups of cylinders requiring short localized valve islands, it is convenient to use individual electrical connector islands.



Size 1

Remote Short-Build Island



Size 2

Size 1

Size 2

High-Flow Island



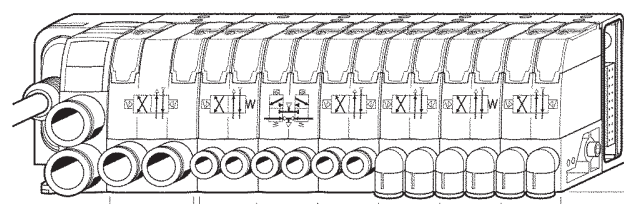
Valvetronic™

V Series Valve Island Modules with Integrated Connections

When the number of valves is larger, modular islands are easily assembled using the integrated electrical connection series. These islands are then connected to

the control PLC, with a multi-connector cable or with a field bus connection.

Multi-Section Long Island

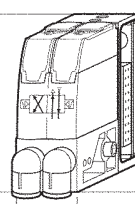


Size 2

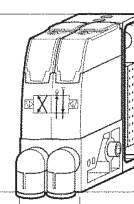
Size 1



Intermediate Supply Module

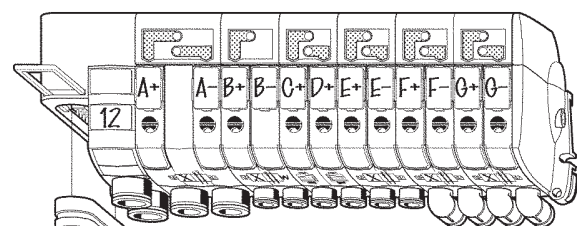


Size 1



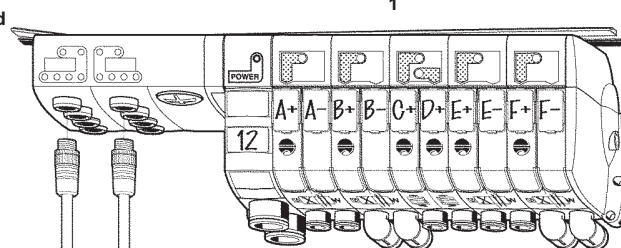
Size 1

1



Compact 20-Pin IP65 Multi-Connector

Field Bus



Sensor Feedback Signals

P P Series Peripheral Modules

Individual Connectors

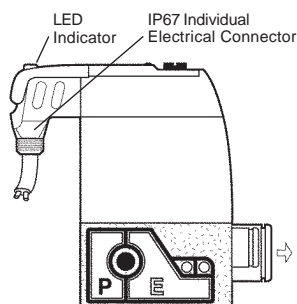
This M8 standard IP67 plug-in connector is used with:

- **S Series** stand-alone modules
- **T Series** modules for individual connector islands

Each connector is equipped with:

- LED indicator
- Voltage surge suppressor.

The 24VDC connection is polarity insensitive and therefore compatible with both PNP and NPN logic.

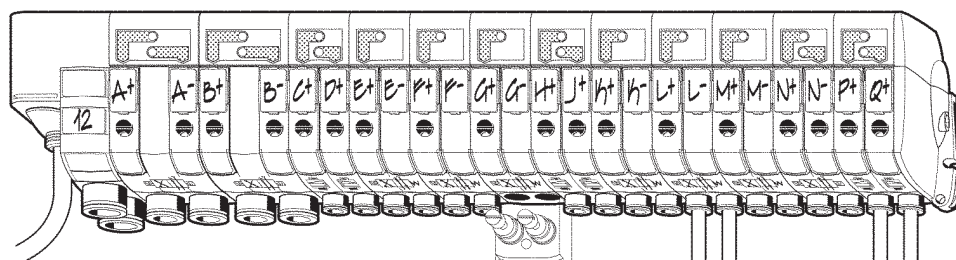
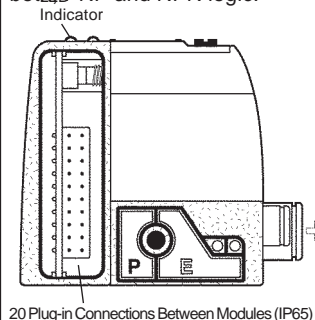


Integrated Connections

Each integrated connection valve island module is equipped with a 20 plug-in modular circuit that includes:

- Multiple connections between island modules
- Connections to solenoid pilots
- LED indicators
- Voltage surge suppressor

The resulting island is IP65 protected and compatible with both PNP and NPN logic.



Dual Flow Control Modules

By controlling the exhaust flows of a double-acting cylinder, this module can adjust both speeds, forward and backward. It may be plugged into the valve module outlet ports or mounted close to the cylinder in its in-line version.

See Chapter 10 in the Manual.

Pressure Regulation Modules

The thrust developed by a cylinder often requires adjustment by controlling pressure to the front or back of the piston. The pressure regulation module enables manual adjustment of pressure with visual indication provided by the pressure gauge.

See Chapter 10 in the Manual.

Dual P.O. Check Valve Modules

Combined with a double 3/2 NC + NC valve, this module will block both flows and stop cylinder movement as soon as the valve's outputs are both exhausted.

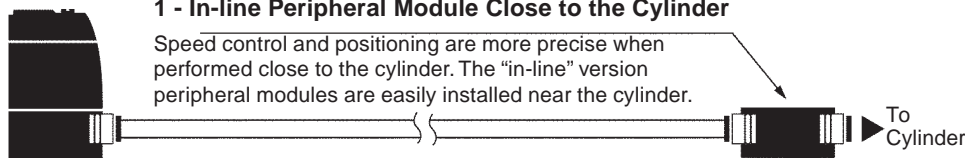
Better than a 3-position valve, it provides more precise positioning when close to the cylinder.

See Chapter 11 in the Manual.

Peripheral modules installation selection

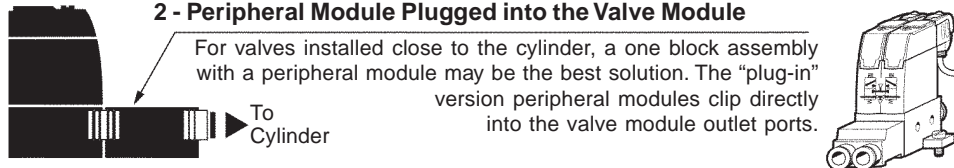
1 - In-line Peripheral Module Close to the Cylinder

Speed control and positioning are more precise when performed close to the cylinder. The "in-line" version peripheral modules are easily installed near the cylinder.



2 - Peripheral Module Plugged into the Valve Module

For valves installed close to the cylinder, a one block assembly with a peripheral module may be the best solution. The "plug-in" version peripheral modules clip directly into the valve module outlet ports.



New Opportunities in Machine Design

Moduflex is totally flexible. As a system, it combines valve functions with modularity to obtain the best solution for a wide range of applications. The following are typical arrangements found in standard automation applications.

Different Installations



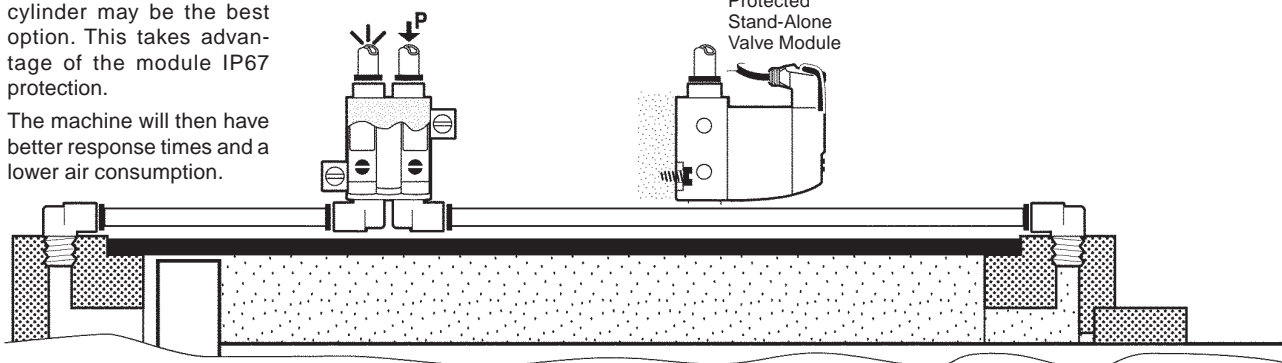
S Series Stand-Alone Valve Module Close to a Cylinder

For isolated cylinders, a stand-alone valve module positioned close to the cylinder may be the best option. This takes advantage of the module IP67 protection.

The machine will then have better response times and a lower air consumption.



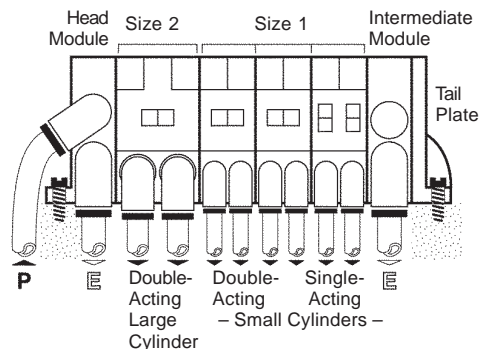
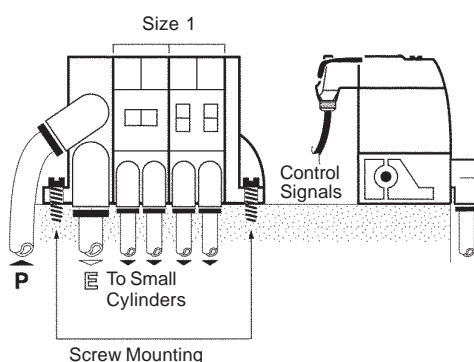
IP67
Protected
Stand-Alone
Valve Module



T Series Small Valve Island Close to a Cylinder Group

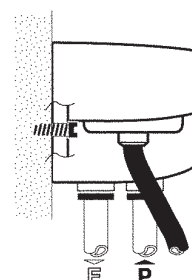
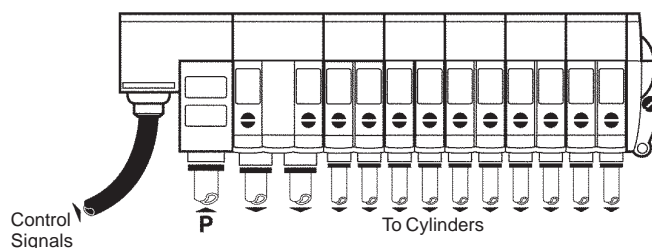
In order to reduce response time and air consumption, remote short valve islands located close to a cylinder group are ideal.

Individual connector **T Series** islands can be configured according to the flow requirements—size 1 only or size 1 and size 2 both mixed in the same island, single or double P and E connections, etc.



V Series Valve Island Close to Actuators and Cylinders

Most cylinders on a machine may be close enough to be controlled by a larger island. The **V Series** (integrated electrical connections) is then preferred in order to reduce electrical wiring to a minimum.

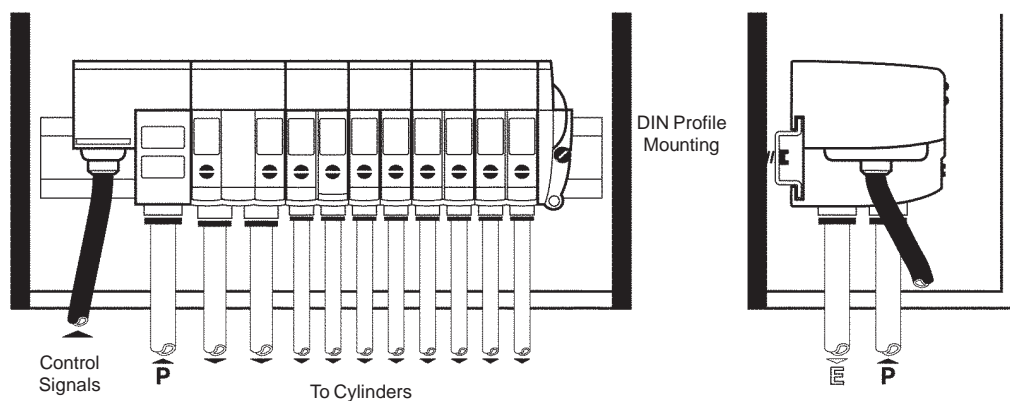


V Series Centralized Valve Island Enclosed in Control Cabinet

The applications on the previous page show the valves installed outside enclosures taking advantage of the Moduflex IP65-67 rating.

However, for some applications, particularly food process and medical industries with specific hygiene requirements or aggressive environments, an enclosure is usually preferred.


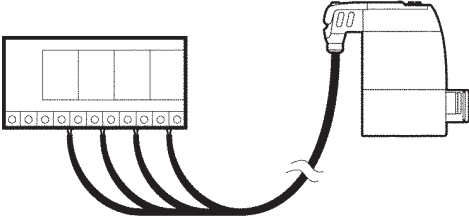
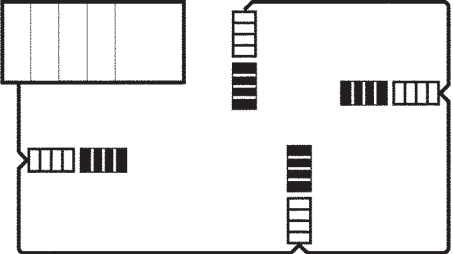


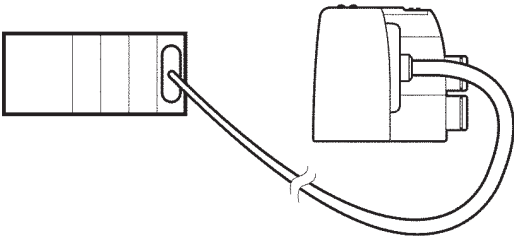
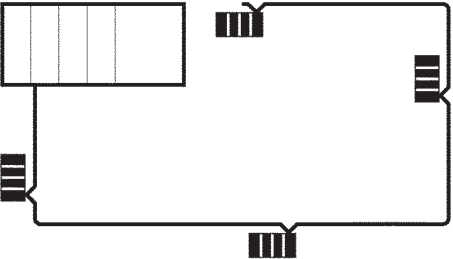
Therefore, as Moduflex collects all exhausts, including pilot exhausts, the electro-pneumatic valve island can be safely installed inside the electrical or control cabinet.



Different Control Connections

In addition to the numerous possibilities in valve installation, Moduflex also provides a complete choice of electrical connections and controls. The overview below gives a

summary of the options available for both wired and serial bus connections. Additional information can be found on the following pages.

	Wired Connections	Serial Bus Connections
 S Series	 <p>See Chapter 7 in the Manual.</p>	 <p>See Chapter 16 in the Manual.</p>
 T Series		
 V Series Valvetronic™	 <p>See Chapter 8 in the Manual.</p>	 <p>See Chapters 17 and 18 in the Manual.</p>

Specifications

Modulflex specifications answer most industry's automation requirements. Applications run from clean room electronic manufacturing to process industries in aggressive environments.

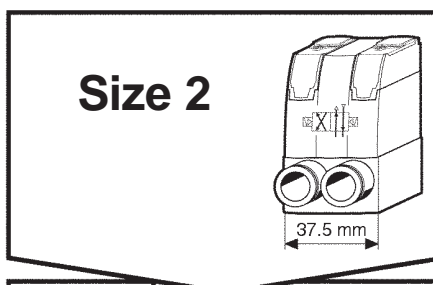
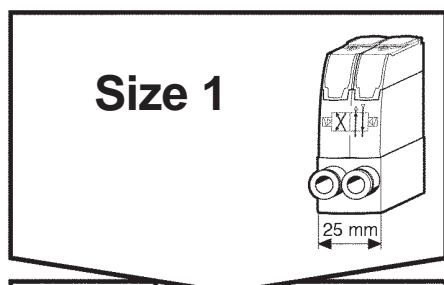
Pneumatic Specification

General Specification

Fluid	Air, inert gas, filtered 40μ ^① , dry ^② or lubricated ^③		
Operating Pressures	Vacuum to 120 PSI		
Piloting Pressure	43 to 120 PSI for operating pressures below, use external pilot supply available on all head modules ^⑤		
Pilot Supply	Internal with S Series , mixed internal / external with T and V Series		
Exhaust Collection	All exhausts are collectable, including solenoid pilot exhaust		
Life Cycle	100 million operations ^④ (with dry air, 3 Hz, 20°C, 6 bar)		
Operating Temperatures	5°F to 140°F (32°F to 130°F for field bus systems)		
Stocking Temperatures	-40°F to 155°F		
Vibration Resistance	According to IEC 68 - 2 - 6	2G	2 to 150 Hz
Impact Resistance	According to IEC 68 - 2 - 27	15G	11 ms

- ① Class 5 according to ISO 8573-1
- ② Class 4 according to ISO 8573-1
- ③ With main air supply lubricated, must use external pilot supply with non-lubricated air
- ④ 4/2 valve
- ⑤ Double 3/2 minimum 50 PSI

Flow Specification



	Valve Construction	Flow Channel	Flow Rating (Cv)		Valve Construction	Flow Channel	Flow Rating (Cv)	
4/2 	Lapped Slide on Lapped Ceramic Plate	12 mm ²	.32*		Lapped Slide on Lapped Ceramic Plate	40 mm ²	.80*	4/2
Dual 3/2 (≡ 4/3) 	Piloted Spool with the Addition of an Exhaust Check Valve	12 mm ²	.22*		Piloted Spool with the Addition of an Exhaust Check Valve	28 mm ²	.44*	Dual 3/2 (≡ 4/3)

* Cv measured with check valve removed

■ *Electrical specification*

■ Solenoid pilot specification

In order to simplify selection, mounting and maintenance, only one solenoid pilot is required for all Moduflex.



24 V DC solenoid pilot
common to all the
Moduflex system

Rated coil voltage	24 V DC		
Allowable voltage fluctuation	- 15 % to + 10 % of nominal voltage		
Electrical connection	Polarity insensitive : PNP and NPN compatible		
Coil insulation type	Class B		
Power consumption	1 W (42 mA)		
Manual override	Locking or non-locking, isolated if required		
Response time of the complete valve	9.6 ms ± 1.2 on 4/2 bistable valve size 1 14.8 ms ± 2 on 4/2 bistable valve size 2	According to ISO 12238	
Duty factor	100 %		
Dust and water protection	According to EN 60 529	S and T series : IP 67 V series : IP 65	

■ *Serial bus specification*

■ All buses

EMC / CE mark.	According to EN 61 000-6-2 EN 50081-2
----------------	--

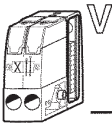
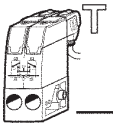

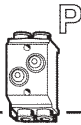
■ AS-i bus

AS-i line	According to EN 50295
Solenoid pilot voltage	24 V DC
Module consumption	max. 70 mA (2 slaves)
Max. supply for all inputs	240 mA (including internal input consumption)
Internal input consum.	9 mA for each active input
Inputs	According to IEC 1131-2 class 2

■ Device bus

Bus line	According to each bus specification		
Module voltage	20 to 30 V DC		
Solenoid pilot voltage	24 V DC		
Module consumption	Profibus DP max. 1,5 W	DeviceNet max. 1,5 W	Interbus S max.2 W
Outputs	Overload protection		

Order Code
and
Information

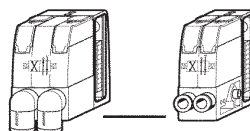
0 Basic Modules     → p. 14 - 16

0 Electrical and Pneumatic Clip-on Connectors → p. 17 - 18

V Series



1 Complete Modules for Valve Islands with Integrated Connections

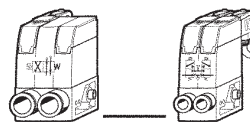


→ p. 19 - 22

T Series



1 Complete Modules for Valve Islands with Individual Connectors

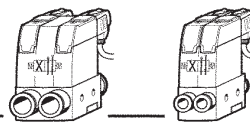


→ p. 23 - 24

S Series



1 Complete Stand-Alone Valves

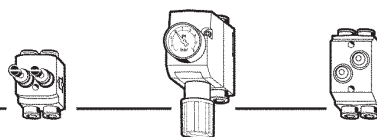


→ p. 25 - 26

P Series



1 Complete Peripheral Modules



→ p. 27 - 28

V, T, S and P Series Assembly Procedure Using Basic Modules

Moduflex gives machine builders maximum flexibility to assemble each automation system step by step using basic modules as shown on the opposite page.

Valve islands can be easily assembled using the following procedure.

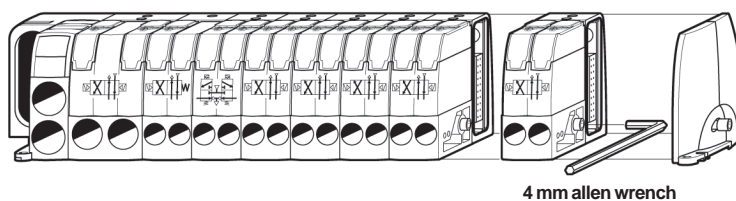
1 - Assemble the required valve island with the basic modules shown opposite.

2 - Mount the valve island on the machine together with any stand alone valves and peripheral modules.

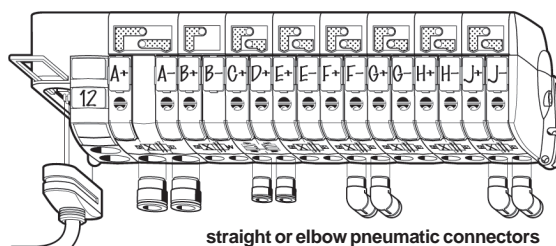
3 - Select and install the required clip-on pneumatic and electrical connectors, see page 19 for order codes.

The advantage of this approach is that each specialist can have input to benefit the automation system :

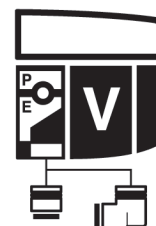
- The machine designer can specify the basic modules and where they are installed on the machine.
- The pneumatic specialist can select the optimum connections and tube sizes.
- The electrician can select the optimum electrical connections.



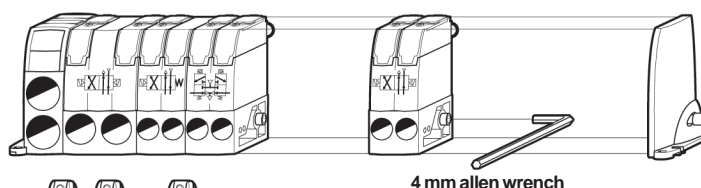
V series
basic island assembly
(no connector)



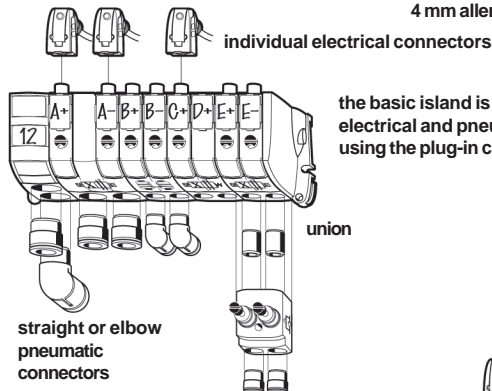
the basic island is mounted on the machine and then, pneumatic connections are made, using the plug-in connectors.



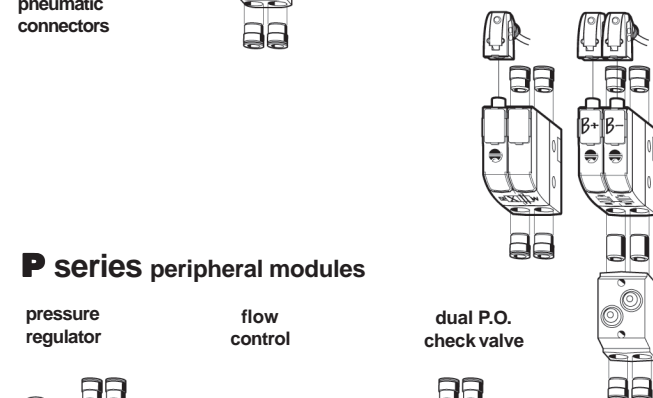
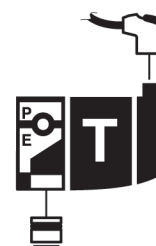
20 pin
electrical connector



T series
basic island assembly
(no connector)



the basic island is mounted on the machine, and then, electrical and pneumatic connections are made, using the plug-in connectors.



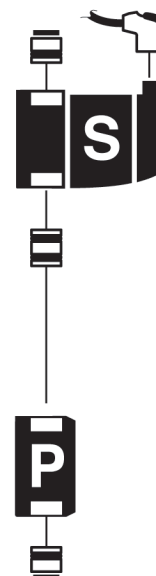
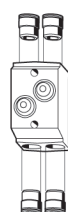
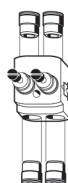
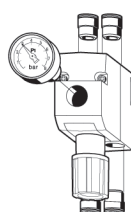
S series
stand-alone valve
modules

P series peripheral modules

pressure
regulator

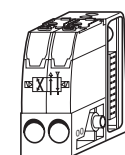
flow
control

dual P.O.
check valve

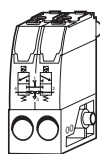


V, T, S and P Series

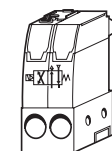
0 Basic Modules (Without Connectors)



P2M1V4EE2CV

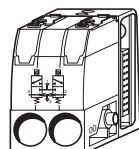


P2M1TDEE2C

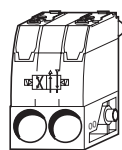


P2M1S4ES2C

SIZE 1 Electro-Pneumatic Valve Modules, 24VDC			V Series Island Modules	T Series Island Modules	S Series Stand Alone Modules
4/2		Single Solenoid (Monostable)	P2M1V4ES2CV Weight 3.32 oz	P2M1T4ES2C Weight 2.40 oz	P2M1S4ES2C Weight 2.54 oz
		Double Solenoid (Bistable)	P2M1V4EE2CV Weight 3.63 oz	P2M1T4EE2C Weight 2.72 oz	P2M1S4EE2C Weight 3.07 oz
3/2		Double Solenoid NC + NC	P2M1VDEE2CV Weight 3.74 oz	P2M1TDEE2C Weight 2.82 oz	P2M1SDEE2C Weight 3.00 oz
		Double Solenoid NO + NO	P2M1VCEE2CV Weight 3.74 oz	P2M1TCEE2C Weight 2.82 oz	P2M1SCEE2C Weight 3.00 oz
		Double Solenoid NC + NO	P2M1VEEE2CV Weight 3.74 oz	P2M1TEEE2C Weight 2.82 oz	P2M1SEEE2C Weight 3.00 oz
		Single Solenoid NC	P2M1V3ES2CV Weight 3.60 oz	P2M1T3ES2C Weight 2.68 oz	P2M1S3ES2C Weight 2.82 oz
		Center Exhaust = dual 3/2 NC + NC without exhaust check valve	P2M1VGEE2CV Weight 3.74 oz	P2M1TGEE2C Weight 2.84 oz	P2M1SGEE2C Weight 3.00 oz
			Dual 3/2 valve modules achieve these functions as explained on page 5.		

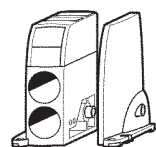


P2M2VDEE2CV

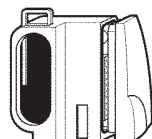


P2M2T4EE2C

SIZE 2 Electro-Pneumatic Valve Modules, 24VDC					
4/2		Single Solenoid (Monostable)	P2M2V4ES2CV Weight 3.53 oz	P2M2T4ES2C Weight 2.61 oz	P2M2S4ES2C Weight 2.75 oz
		Double Solenoid (Bistable)	P2M2V4EE2CV Weight 3.88 oz	P2M2T4EE2C Weight 2.93 oz	P2M2S4EE2C Weight 3.28 oz
3/2		Double Solenoid NC + NC	P2M2VDEE2CV Weight 4.06 oz	P2M2TDEE2C Weight 3.32 oz	P2M2SDEE2C Weight 3.53 oz
		Double Solenoid NO + NO	P2M2VCEE2CV Weight 4.06 oz	P2M2TCEE2C Weight 3.32 oz	P2M2SCEE2C Weight 3.53 oz
		Double Solenoid NC + NO	P2M2VEEE2CV Weight 4.06 oz	P2M2TEEE2C Weight 3.32 oz	P2M2SEEE2C Weight 3.53 oz
		Single Solenoid NC	P2M2V3ES2CV Weight 3.88 oz	P2M2T3ES2C Weight 3.17 oz	P2M2S3ES2C Weight 3.35 oz
		Center Exhaust = dual 3/2 NC + NC without exhaust check valve	P2M2VGEE2CV Weight 4.06 oz	P2M2TGEE2C Weight 3.32 oz	P2M2SGEE2C Weight 3.53 oz
			Dual 3/2 valve modules achieve these functions as explained on page 5.		

V, T, S and P Series**0 Basic Modules** *(Without Connectors)*

P2M2HXT01



P2M2HEV0A

**Island Head, Tail
and Intermediate Modules****V Series**Island
Modules**T Series**Island
Modules**S Series**Stand Alone
ModulesPneumatic Head and Tail Module Set,
(Common to both **T** and **V Series**)**P2M2HXT01**

Weight 2.26 oz

P2M2HXT01

Weight 2.26 oz

Island Intermediate Supply Module
(With a Set of 4 Configurations Plates)**P2M2BXV0A**

Weight 2.40 oz

P2M2BXT0A

Weight 1.48 oz

Multi-Connector Electrical Head Module
(For **V Series** Only)**P2M2HEV0A**

Weight 1.34 oz

25-Pin, D-Sub Electrical Head Module
(For **V Series** Only)**P2M2HEV0D**

Weight 1.72 oz

Field Bus Electrical Head Module
(For **V Series** Only)Select from Options
on page 21**P Series Peripheral Modules****SIZE 1****SIZE 2**

Dual Flow Control Module

P2M1PXFA

Weight 1.06 oz

P2M2PXFA

Weight 1.59 oz

Dual Pilot-operated
Check Valve Module**P2M1PXCA**

Weight 0.88 oz

P2M2PXCA

Weight 1.41 oz

Plug-in
GaugePressure Regulation Module
Without Gauge**P2M1PXST**

Weight 4.06 oz

0 to 30 PSI

P2M2PXST

Weight 4.94 oz

0 to 30 PSI

P2M1K0GT

Weight 1.06 oz

P2M1PXSL

Weight 4.06 oz

0 to 60 PSI

P2M2PXSL

Weight 4.94 oz

0 to 60 PSI

P2M1K0GL

Weight 1.06 oz

P2M1PXSN

Weight 4.06 oz

0 to 120 PSI

P2M2PXSN

Weight 4.94 oz

0 to 120 PSI

P2M1K0GN

Weight 1.06 oz

Pressure Regulation Module
With Gauge**P2M1PXSR**

Weight 5.12 oz

0 to 30 PSI

P2M2PXSR

Weight 6.00 oz

0 to 30 PSI

P2M1PXSM

Weight 5.12 oz

0 to 60 PSI

P2M2PXSM

Weight 6.00 oz

0 to 60 PSI

P2M1PXSG

Weight 5.12 oz

0 to 120 PSI

P2M2PXSG

Weight 6.00 oz

0 to 120 PSI

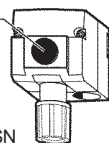


P2M1PXFA

P2M1PXCA



P2M1K0GN



P2M2PXSN

V, T, S and P Series Basic Modules System Organisation

The advantage of using the Moduflex basic module approach was explained on page 16.

Initially, the basic valve islands and modules without connectors are mounted on the machine.

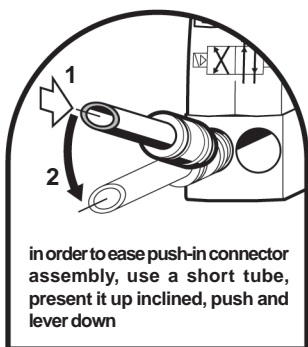
At this stage, the pneumatic connectors are chosen from an available selected inventory in order to obtain step by step the best result for each valve to cylinder connection : tube size and connector type (straight or elbow)

At a further stage, the same process is applied to the electrical connections with the choice of the optimum cable.

For such operations, a convenient connectors inventory must be available to the pneumatic specialist and to the electrician. To assist this inventory selection, this page shows basic modules and connector options, the opposite page lists all Moduflex plug-in connectors and their order codes.

This information is a guide to selection, taking into account :

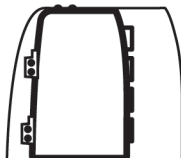
- module size, 1 or 2.
- series used, V, T, S or P.
- the application criteria, connection distances, type of installation ...



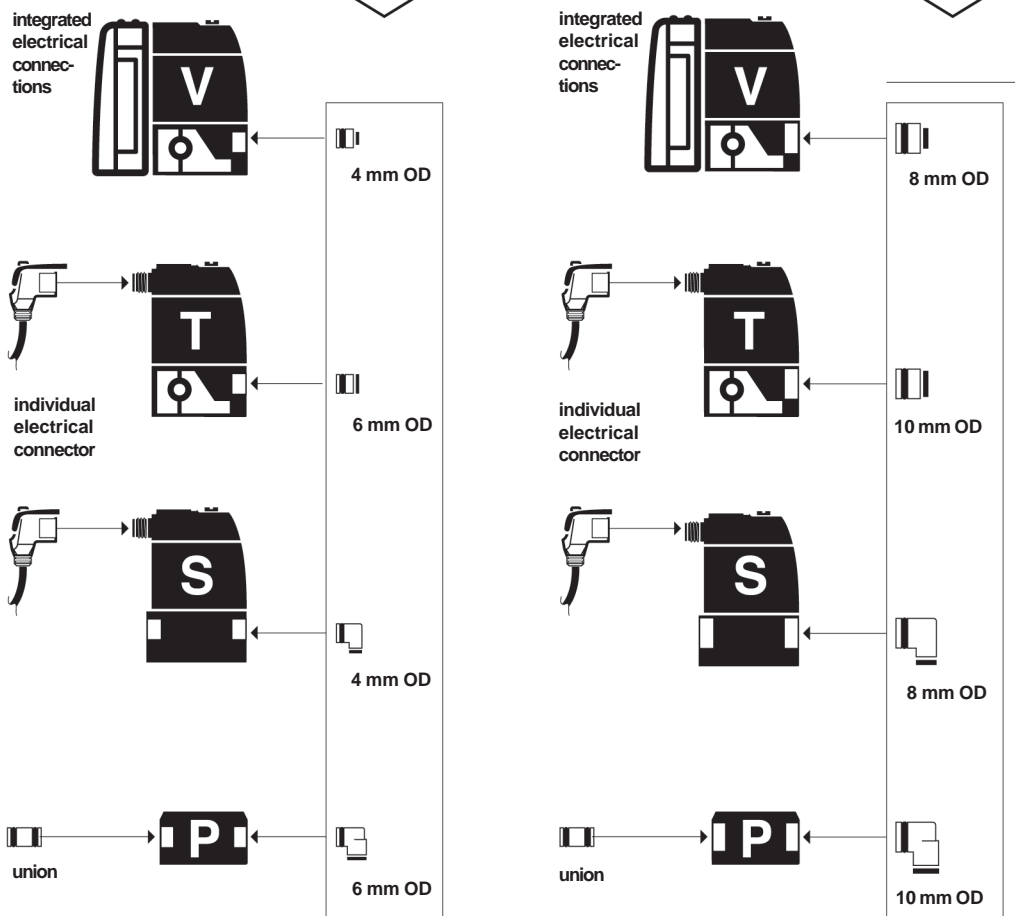
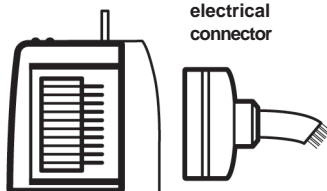
threaded connection for Device bus



vampire connection for ASI bus

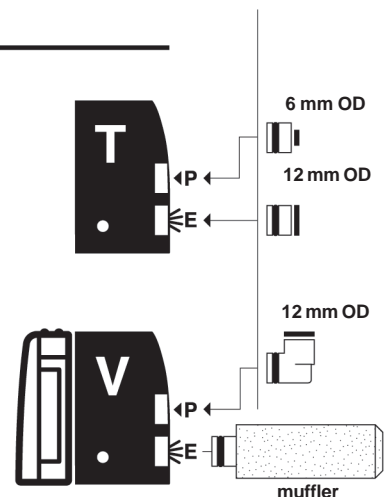


multi-pin electrical connector



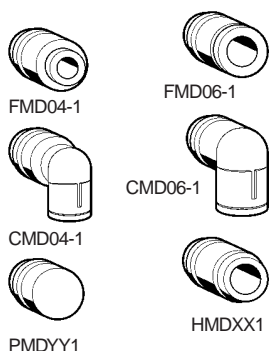
Island head supply and intermediate modules

- pneumatic connectors for 6, 8, 10 or 12 mm OD tube.
- V series island head : electrical multi-connector or field bus connections.



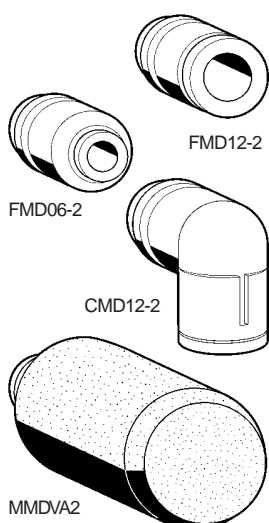
V, T, S and P Series

0 Separate Clip-on Connectors



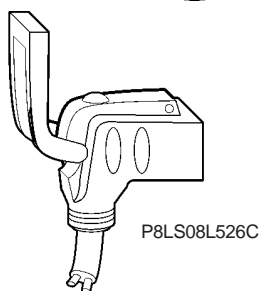
		<u>Elbow Version</u>		<u>Straight Version</u>	
		Pack Qty.	Weight (oz) Per Unit	Order Code	Weight (oz) Order Code
Pneumatic Connectors for SIZE 1 Modules					
Clip-on Tube Push-in Connector	5/32" = 4 mm OD	10	0.18	CMD04-1	0.07 FMD04-1
	6 mm OD	10	0.18	CMD06-1	0.11 FMD06-1
	1/4" OD	10	0.18	CMD07-1	0.11 FMD07-1
Clip-on Muffler for Exhaust Port		10			0.18 MMDVA1
Clip-on Plug		10			0.11 PMDYY1
Clip-on Double Male Union (For Peripheral Valve Modules)		10			0.21 HMDXX1

Note: 85 Durometer minimum for pneumatic connectors.



		<u>Elbow Version</u>		<u>Straight Version</u>	
		Pack Qty.	Weight (oz) Per Unit	Order Code	Weight (oz) Order Code
Pneumatic Connectors for SIZE 2 Modules Head and Intermediate Island Modules					
Clip-on Tube Push-in Connector	6 mm OD	10	0.18	CMD06-2	0.11 FMD06-2
	1/4" OD	10	0.18	CMD07-2	0.11 FMD07-2
	8 mm OD	10	0.21	CMD08-2	0.14 FMD08-2
	3/8" OD	10	0.21	CMD09-2	0.14 FMD09-2
	10 mm OD	10	0.25	CMD10-2	0.18 FMD10-2
	12 mm OD	10	0.28	CMD12-2	0.21 FMD12-2
	1/2" OD	10	0.28	CMD13-2	0.21 FMD13-2
Clip-on Muffler for Exhaust Port (For Stand-alone Valve Modules and for Island Head or Intermediate Module Exhaust Ports)		10			0.11 MMDVA2
Clip-on Plug		10			0.18 PMDYY2
Clip-on Double Male Union (For Peripheral Valve Modules)		10			0.28 HMDXX2

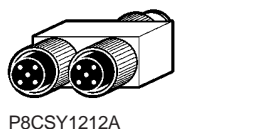
Note: 85 Durometer minimum for pneumatic connectors.



M8 Female Individual Connectors with Flying Lead Cable (For Solenoid Pilots)		Weight (oz)	Order Code
With LED Voltage Surge Protection and Flying Lead Cable IP67 Protected	2 m Cable	2.19	P8LS08L226C
	5 m Cable	5.47	P8LS08L526C
	9 m Cable	9.88	P8LS08L926C



Standard Threaded IP67 Electrical Connectors			Pack Qty.	Weight (oz)	Order Code
	Male	Female			
IP67 Protected	M8	Cable Quick Connect	10	0.42	P8CS0803J
	M12	Cable Quick Connect	10	5.47	P8CS1204J
	M12	Two M12	10	1.06	P8CSY1212A



Electrical 20-Pin Multi-Connector with Flying Lead Cable		Weight (oz)	Order Code
		2 m Cable	10.97 P8LMH20M2A
		5 m Cable	27.41 P8LMH20M5A
		9 m Cable	49.38 P8LMH20M9A

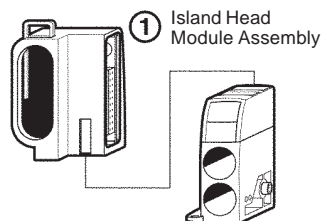
Electrical 25-Pin, D-Sub Cable (IP40)		Weight (oz)	Order Code
		3 m Cable	14.3 P8LMH253A



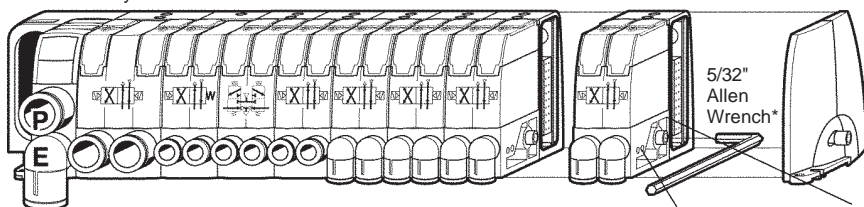
V Series Valvetronic™

Valve Island Modules with Integrated Connections

1 Complete Modules (Complete with Pneumatic Connectors)



② Valve Island Assembly



Island Assembly with a Single Screw per Module

V Series modules are easily assembled to form a complete island that includes:

- Common pressure channel P,
- Common exhaust channel E,
- An integrated electrical circuit connecting each solenoid pilot to the island head module.

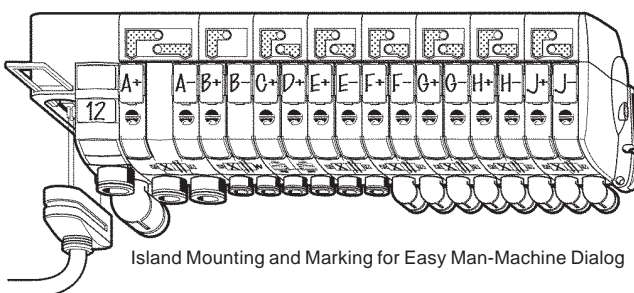
Modules with different functions and flow passages may be combined in the same island, giving total flexibility to adapt to all machine requirements.

The table opposite may be used to select:

- Electro-pneumatic valve modules, size 1 or 2 with 4/2, 3/2 or 4/3 functions;
- Island head and tail pneumatic module set;
- Multi-connector or field bus electrical head module;
- If required, an intermediate module to double air supply to the island or to divide it in separate sections.

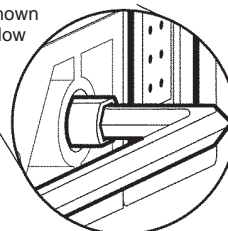
With 20 integrated connections, an island will have 19 solenoid pilots maximum. For Pinout details refer to page 40 & 41. With field bus head modules, other limitations occur (see page 21).

The overall width of the island is obtained by adding each module width as shown below.



Island Mounting and Marking for Easy Man-Machine Dialog

Screw Head Must be Orientated as Shown Below



* Maximum torque rating 13 in. lbs.

Special Case: 4/3 All Ports Blocked



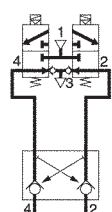
Page 5 shows that a 3-position all ports blocked valve is efficiently replaced by a double 3/2 NC + NC valve and a dual P.O. check module.

Depending upon the application, the following options can be selected:

A Complete Module within Island

The complete module order code for such configuration is:

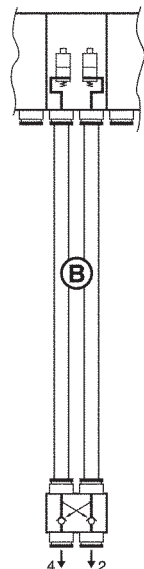
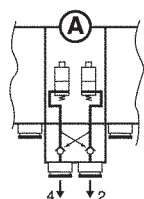
- Size 1: **P2M1VBEE2CV00**
- Size 2: **P2M2VBEE2CV00**



B Separate Module

The double 3/2 NC + NC remains in the island while the in-line dual P.O. check valve module is mounted close to the cylinder for more precise positioning.

Page 27 gives the order code for this in-line module.



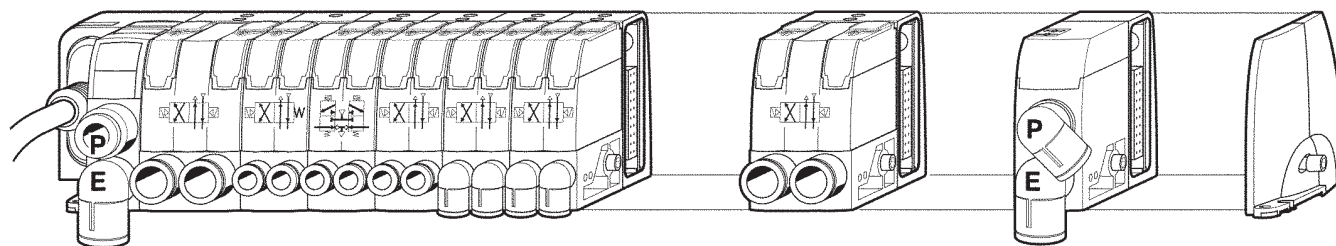
Multi-Connector
Electrical Head Module
Width: 27 mm

Head and Tail Pneumatic
Module Set
Width: 20 mm

Modules
Size 1
Width: 25 mm

Module
Size 2
Width: 37.5 mm

Intermediate
Module
Width: 25 mm



Typical Multi-Connector V Series Island Combining Different Valve Flows and Functions.



V Series Valvetronic™

Valve Island Modules with Integrated Connections

1 Complete Modules *(Complete with Pneumatic Connectors)*

Basic Series	Size	Valve Type	Function	Actuator / Pilot (Main 14)	Actuator / Pilot (Return 12)	Frequency	Voltage	Cable / Light	Lead Length	Ports 1 & 3	Ports 2 & 4
P2M	1	V	4	E	S	2	C	V	0	0	F7
Basic Series P2M Valvetronic Modules	Size 1 Size 1 2 Size 2	Valve Type V Valvetronic	Function 3 3/2 Normally Closed 4 4/2 B APB = Dual 3/2 NC + PO Check C Dual 3/2 NO/NO (4/3 Pressure Ctr) D Dual 3/2 NC/NC E Dual 3/2 NC/NO G CE = Dual 3/2 NC without Check	Actuator / Pilot (Main 14) E Solenoid	Actuator / Pilot (Return 12) E Solenoid S Spring Return	Frequency 2 DC	Voltage C 24V	Cable / Light V LED & Surge Suppression	Lead Length 0 No Cable	Ports 1 & 3 0 None	Ports 2 & 4 C0 10mm Elbow Fitting ¹ C2 12mm Elbow Fitting ¹ C3 1/2" Elbow Fitting¹ C4 5/32" (4mm) Elbow Fitting C6 6mm Elbow Fitting C7 1/4" Elbow Fitting C8 8mm Elbow Fitting ¹ C9 3/8" Elbow Fitting¹ F0 10mm Straight Fitting ¹ F2 12mm Straight Fitting ¹ F3 1/2" Straight Fitting¹ F4 5/32" (4mm) Straight Fitting F6 6mm Straight Fitting F7 1/4" Straight Fitting F8 8mm Straight Fitting ¹ F9 3/8" Straight Fitting¹ JJ Double Male Union MM Clip-In Muffler PP Clip-In Plug

Notes:

1. Only available with Size 2 Valves
2. **Bold Options Standard**

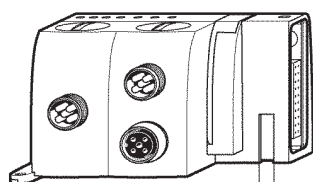


V Series Bus Connections

Valve Island Electrical Head Modules for Bus Connections and Control

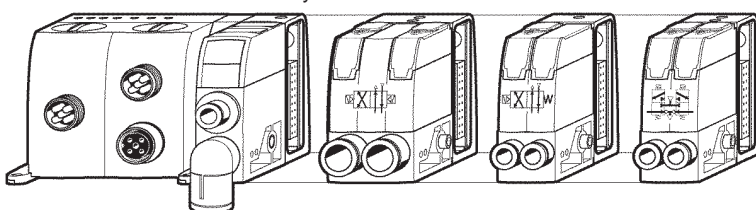
Assembly

V Series islands with direct field bus connections assemble in the same way as other **V Series** (p. 18).



① Electrical and Pneumatic Head Modules Assembly

② Valve Island Assembly

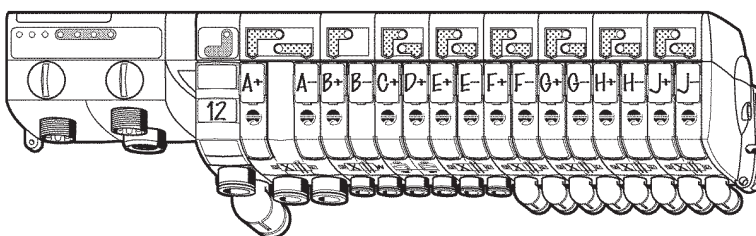
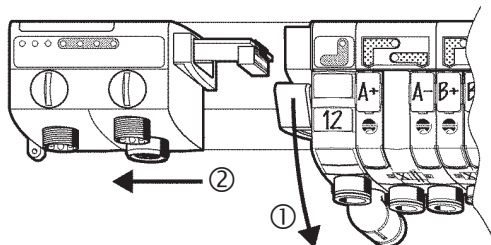


Maximum Output Number:

- 8 or 6 Solenoid Pilots for ASi Field Bus
- 16 Solenoid Pilots for Device Bus

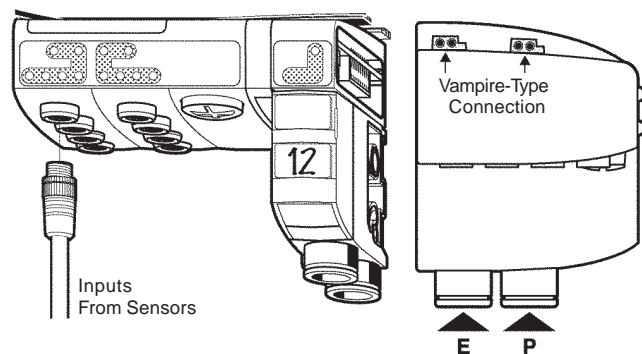
Maintenance

Once mounted and connected, the island provides separate access to pneumatic and to electronic sections in order to facilitate maintenance (see below).



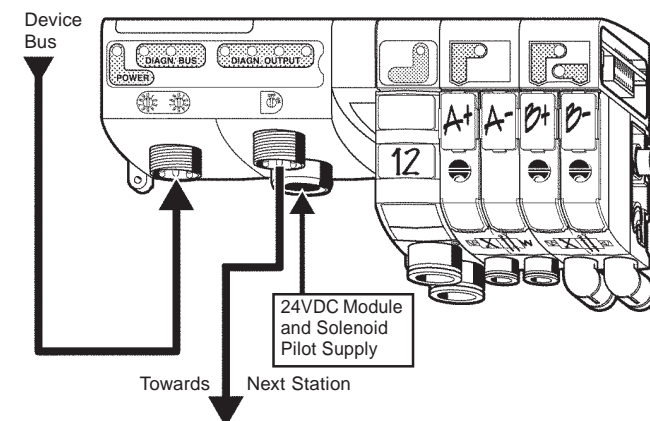
ASi Bus Connection

ASi cables are to be connected to the island with vampire-type connections. Input signals may be collected with M8 or M12 connections.



Device Bus Connection

Device bus cables are to be connected to the island through threaded standard connections.



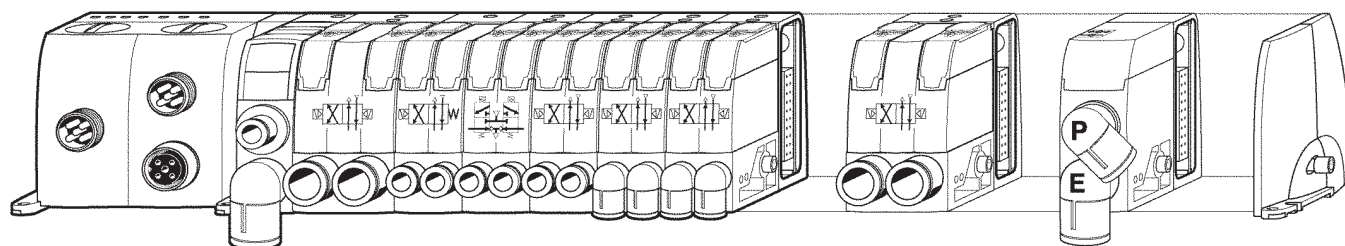
Field Bus Electrical Head Module
Width: 62 mm

Head and Tail Pneumatic Module Set
Width: 20 mm

Modules Size 1
Width: 25 mm

Module Size 2
Width: 37.5 mm

Intermediate Module
Width: 25 mm

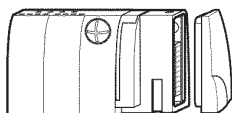


Typical Multi-Connector **V Series** Island Combining Different Valve Flows and Functions.

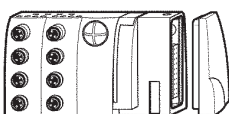


V Series Bus Connections

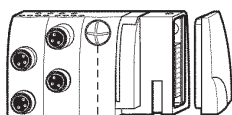
Valve Island Electrical Head Modules for Bus Connections and Control



P2M2HBVA10800



P2M2HBVA10808A



P2M2HBVA20608B



P8LS12JACK

Standard ASi Protocol (up to 31 nodes)

Electrical Head Modules

Electrical Module for **8 Solenoids Max.**
(V Series islands may have up to 8 solenoids)
(2 nodes per module, 4 input, 4 solenoids per node)*

I/O

Capability

Weight (oz)

Order Code

0 inputs and
8 solenoid outputs

5.29

P2M2HBVA10800

8 (PNP) inputs on
eight (M8) connectors
and 8 solenoid outputs

7.05

P2M2HBVA10808A

8 (PNP) inputs on
four (M12) connectors
and 8 solenoid outputs

7.05

P2M2HBVA10808B

ASi Version 2.1 Protocol (up to 62 nodes)

Electrical Head Modules

Electrical Module for **6 Solenoids Max.**
(V Series islands may have up to 6 solenoids)
(2 nodes per module, 4 input, 4 solenoids per node)*

I/O

Capability

Weight (oz)

Order Code

0 inputs and
6 solenoid outputs

5.29

P2M2HBVA20600

8 (PNP) inputs on
eight (M8) connectors
and 6 solenoid outputs

7.05

P2M2HBVA20608A

8 inputs on
four (M12) connectors
and 6 solenoid outputs

7.05

P2M2HBVA20608B

ASi Bus Accessories

Length

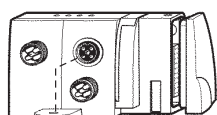
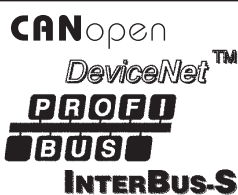
Weight (oz)

Order Code

M12 Cable with Jack for Addressing

1 m

3.53

P8LS12JACK

P2M2HBVP11600



P8CS1205AA

Device Bus Electrical Head Modules

Electrical Module for **16 Outputs Max.**
(V Series islands may have up to 16 solenoids)

Bus

Protocol

Weight (oz)

Order Code

Profibus DP

8.82

P2M2HBVP11600

DeviceNet

8.82

P2M2HBVD11600

Interbus S

10.58

P2M2HBVS11600

CANopen

8.82

P2M2HBVC11600

Device Bus Accessories

Power Supply Female Straight Connector

Bus

Protocol

Connector
Type

Weight (oz)

Order Code

Profibus DP
or Interbus S

M12 type A

0.88

P8CS1205AA

DeviceNet

M12 type B

0.88

P8CS1205AB

Line Termination Resistor

Profibus DP

M12 type B

0.88

P8BPA00MBDeviceNet /
CANopen

M12 type A

0.88

P8BPA00MA

Note: For bus connections, use the standard cables and connectors available from your electrical supplier.



T Series

Valve Island Modules with Individual Connectors

1 Complete Modules (Complete with Pneumatic and Electrical Connectors)

T Series modules are easily assembled to form a complete island that includes:

- Common pressure channel P;
- Common exhaust channel E;

All electrical connectors remain individual. All pneumatic connectors are of the push-in tube type.

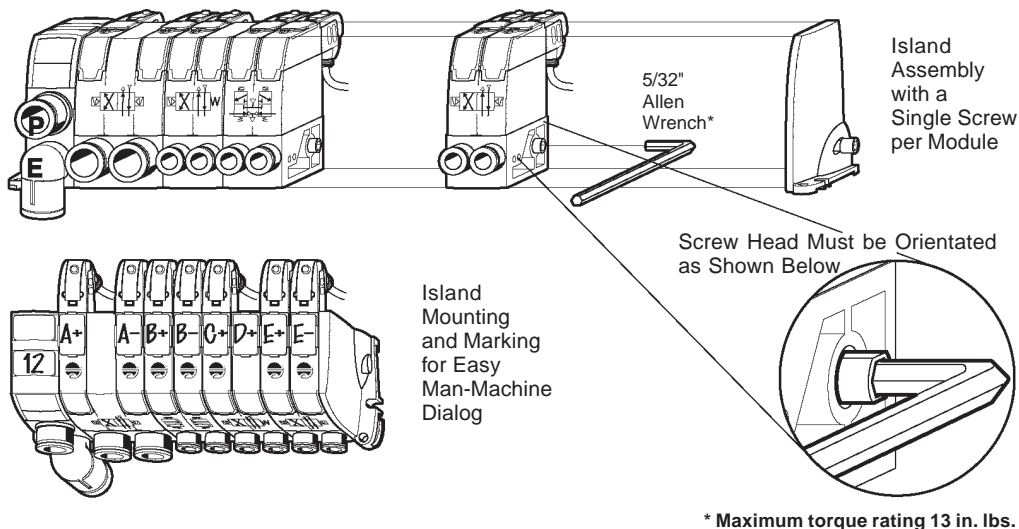
Modules with different functions and flow passages may be combined in the same island, giving total flexibility to adapt to all machine requirements.

The table opposite may be used to select:

- Electro-pneumatic valve modules, size 1 or 2 with 4/2, 3/2 or 4/3 functions;
- Pneumatic island head and tail module set;
- If required, an intermediate module to double air supply to the island or to divide it in separate sections.

Each module is complete with electric and pneumatic connectors specified at the end of the order code.

The overall width of the island is obtained by adding each module width as shown below.



Special Case: 4/3 All Ports Blocked



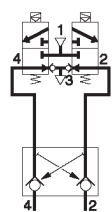
Page 5 shows that a 3-position all ports blocked valve is efficiently replaced by a double 3/2 NC + NC valve and a dual P.O. check module.

Depending upon the application, the following options can be selected.

(A) Complete Module Within Island

The complete module order code for such configuration is:

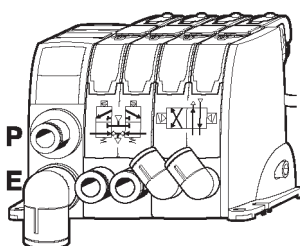
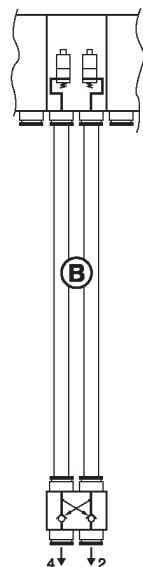
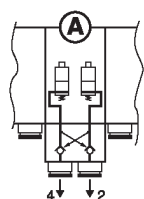
- Size 1... **P2M1TBEE2C●●0■**
- Size 2... **P2M2TBEE2C●●0■**



(B) Separate Module

The double 3/2 NC + NC remains in the island while the in-line dual P.O. check valve module is mounted close to the cylinder for more precise positioning.

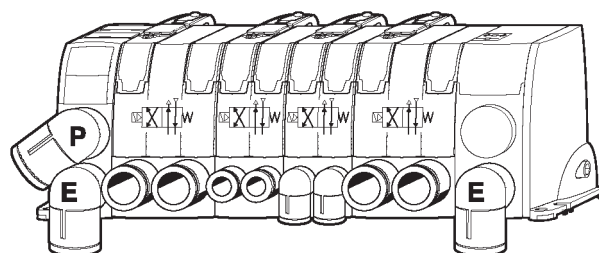
Page 27 gives the order code for this in-line module.



Typical **T Series** short island for single and double acting small cylinders

Typical **T Series** height flow island for both small and large cylinders

	Pneumatic Head and Tail Module	Modules Size 1	Modules Size 2	Intermediate Module
Width ⇒	20 mm	25 mm	37.5 mm	25 mm





T Series

Valve Island Modules with Individual Connectors

1 Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

Basic Series	Size	Valve Type	Function	Actuator / Pilot (Main 14)	Actuator / Pilot (Return 12)	Frequency	Voltage	Cable / Light	Lead Length	Ports 1 & 3	Ports 2 & 4
P2M	1	T	4	E	S	2	C	0	0	0	F4
Basic Series P2M Valvetronic Modules	Size 1 Size 1 2 Size 2	Valve Type T Individual Wire	Function 3 3/2 Normally Closed 4 4/2 B APB = Dual 3/2 NC + PO Check C Dual 3/2 NO/NO (4/3 Pressure Ctr) D Dual 3/2 NC/NC E Dual 3/2 NC/NO G CE = Dual 3/2 NC without Check	Actuator / Pilot (Main 14) E Solenoid	Actuator / Pilot (Return 12) E Solenoid S Spring Return	Frequency 2 DC	Voltage C 24V	Cable / Light 0 No Cable / Light V LED & Surge Suppression	Lead Length 0 No Cable 2 2 Meter 5 5 Meter 9 9 Meter	Ports 1 & 3 0 None	Ports 2 & 4 C0 10mm Elbow Fitting ¹ C2 12mm Elbow Fitting ¹ C3 1/2" Elbow Fitting¹ C4 5/32" (4mm) Elbow Fitting C6 6mm Elbow Fitting C7 1/4" Elbow Fitting C8 8mm Elbow Fitting ¹ C9 3/8" Elbow Fitting¹ F0 10mm Straight Fitting ¹ F2 12mm Straight Fitting ¹ F3 1/2" Straight Fitting¹ F4 5/32" (4mm) Straight Fitting F6 6mm Straight Fitting F7 1/4" Straight Fitting F8 8mm Straight Fitting ¹ F9 3/8" Straight Fitting¹ JJ Double Male Union MM Clip-In Muffler PP Clip-In Plug

Notes:

1. Only available with Size 2 Valves
2. **Bold Options Standard**



S Series Stand-alone Valve Modules

1 Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

P and E Connectors Selection

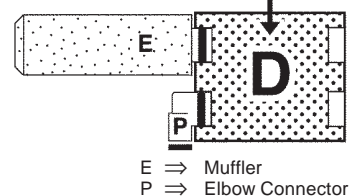
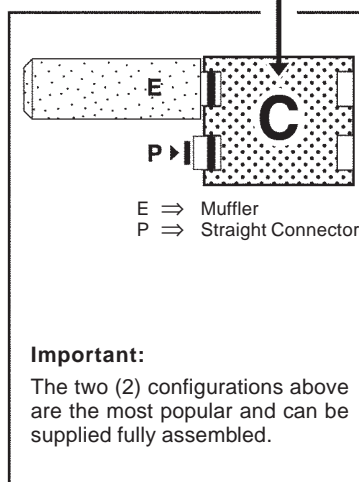
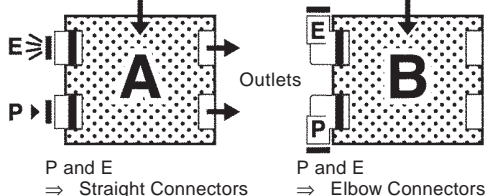
To provide the optimum flow and simplify installation, stand-alone valve modules may require different P and E connectors to the outlet connectors.

The module order codes shown opposite include a *, which can be replaced with a letter to give the option shown below.

P2M1S4ES2C●●*■

Electrical
Connectors

Outlet
Pneumatic
Connectors



With the configurations shown above, all pneumatic connectors use the same tube size.

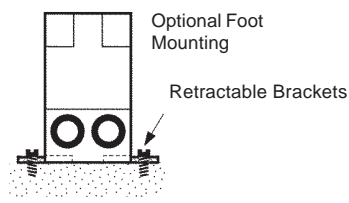
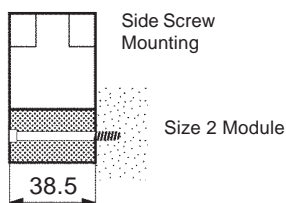
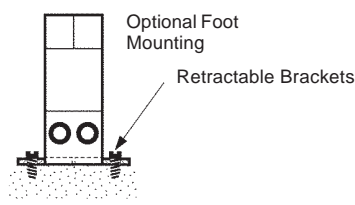
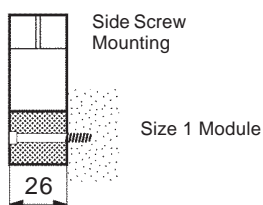
Starting with basic modules (p. 15), it is also possible to use upstream connectors bigger than the output connectors.

To obtain all other configurations, please use basic modules (p. 15) and plug-in connectors and mufflers (p. 17). Assembly is easy.

Installation Selection

All stand-alone valve modules are supplied complete with mounting options:

- Side Screw Mountings
- Foot Mounting (Retractable Brackets)





S Series Stand-alone Valve Modules

1 Complete Modules *(Complete with Pneumatic and Electrical Connectors)*

Basic Series	Size	Valve Type	Function	Actuator / Pilot (Main 14)	Actuator / Pilot (Return 12)	Frequency	Voltage	Cable / Light	Lead Length	Fitting Conf.	Ports (All Ports)
P2M	1	S	4	E	S	2	C	0	0	A	F4
Basic Series P2M Electro-Pneumatic Valve Modules	Size 1 Size 1 2 Size 2	Valve Type S Stand Alone	Function 3 3/2 Normally Closed 4 4/2 B APB = Dual 3/2 NC + PO Check C Dual 3/2 NO/NO (4/3 Pressure Ctr) D Dual 3/2 NC/NC E Dual 3/2 NC/NO G CE = Dual 3/2 NC without Check	Actuator / Pilot (Main 14) E Solenoid	Actuator / Pilot (Return 12) E Solenoid S Spring Return	Frequency 2 DC	Voltage C 24V	Cable / Light 0 Nom Cable / Light V LED & Surge Suppression	Lead Length 0 No Cable 2 2 Meter 5 5 Meter 9 9 Meter	Fitting Configuration A* Straight Fittings (5/32") 4mm Straight Fitting 6mm Straight Fitting 8mm Straight Fitting [†] 10mm Straight Fitting [†] 12mm Straight Fitting [†] 1/4" Straight Fitting 3/8" Straight Fitting [†] 1/2" Straight Fitting [†] B* Elbow Fittings (5/32") 4mm Elbow Fitting 6mm Elbow Fitting 8mm Elbow Fitting 10mm Elbow Fitting [†] 12mm Elbow Fitting [†] 1/4" Elbow Fitting 3/8" Elbow Fitting [†] 1/2" Elbow Fitting [†] C*† Straight Fitting & Muffler (5/32") 4mm Straight Fitting & Muffler 6mm Straight Fitting & Muffler 8mm Straight Fitting & Muffler [†] 10mm Straight Fitting & Muffler [†] 12mm Straight Fitting & Muffler [†] 1/4" Straight Fitting & Muffler 3/8" Straight Fitting & Muffler [†] 1/2" Straight Fitting & Muffler [†] D*† Elbow Fitting & Muffler (5/32") 4mm Elbow Fitting & Muffler 6mm Elbow Fitting & Muffler 8mm Elbow Fitting & Muffler 10mm Elbow Fitting & Muffler [†] 12mm Elbow Fitting & Muffler [†] 1/4" Elbow Fitting & Muffler 3/8" Elbow Fitting & Muffler [†] 1/2" Elbow Fitting & Muffler [†]	Ports (All Ports) C0 10mm Elbow Fitting [†] C2 12mm Elbow Fitting [†] C3 1/2" Elbow Fitting [†] C4 5/32" (4mm) Elbow Fitting C6 6mm Elbow Fitting C7 1/4" Elbow Fitting C8 8mm Elbow Fitting [†] C9 3/8" Elbow Fitting [†] F0 10mm Straight Fitting [†] F2 12mm Straight Fitting [†] F3 1/2" Straight Fitting [†] F4 5/32" (4mm) Straight Fitting F6 6mm Straight Fitting F7 1/4" Straight Fitting F8 8mm Straight Fitting [†] F9 3/8" Straight Fitting [†]

Notes:

1. Only available with Size 2 Valves
2. **Bold Options Standard**

* Ports 1 & 3 fittings sizes are same as Ports 2 & 4 (See example below)

† Fitting in Port 1, Muffler in Port 3

EXAMPLE for Fitting Configuration:

SIZE 1

CF7 Ports 1 & 3 1/4" Straight Fitting & Muffler
Ports 2 & 4 1/4" Straight Fittings

SIZE 2

AC0 Ports 1 & 3 10mm Straight Fittings
Ports 2 & 4 10mm Elbow Fittings

P P Series Peripheral Modules

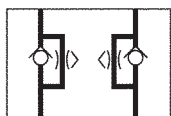
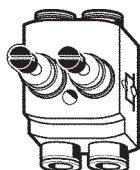
1 Complete Modules *(Complete with Pneumatic Connectors)*

Module Function Selection

Dual Flow Control

By controlling the exhaust flows of a double-acting cylinder, this module can adjust both speeds — extend and retract. It may be plugged into the valve module output ports or mounted close to the cylinder in its in-line version.

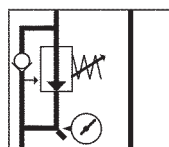
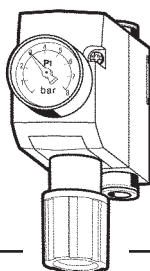
See Section III-Manual Chapter 10 for full details.



Pressure Regulation

The thrust developed by a cylinder often requires adjustment by controlling pressure to the front or back of the piston. The pressure regulation module enables manual adjustment of pressure with visual indication provided by the pressure gauge.

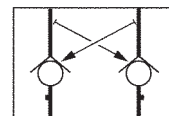
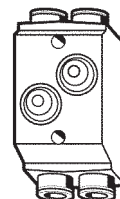
See Section III-Manual Chapter 10 for full details.



Dual P.O. Check Valve

Combined with a double 3/2 NC + NC valve, this module will block both flows and stop cylinder movement as soon as the valve's outputs are both exhausted. Better than a 3-position valve, it provides more precise positioning when fitted close to the cylinder.

See Section III-Manual Chapter 11 for full details.



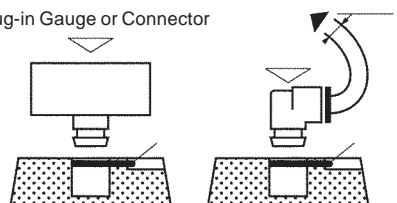
Pressure Gauge:

A pressure regulation module may be supplied:

- With a gauge equipped with a damper to protect it from pressure oscillations, or
- With a 5/32" OD tube connector to reach a remote gauge that should be protected.

Starting from basic modules (page 15) other size 1 gauge connectors are available (page 17).

Plug-in Gauge or Connector

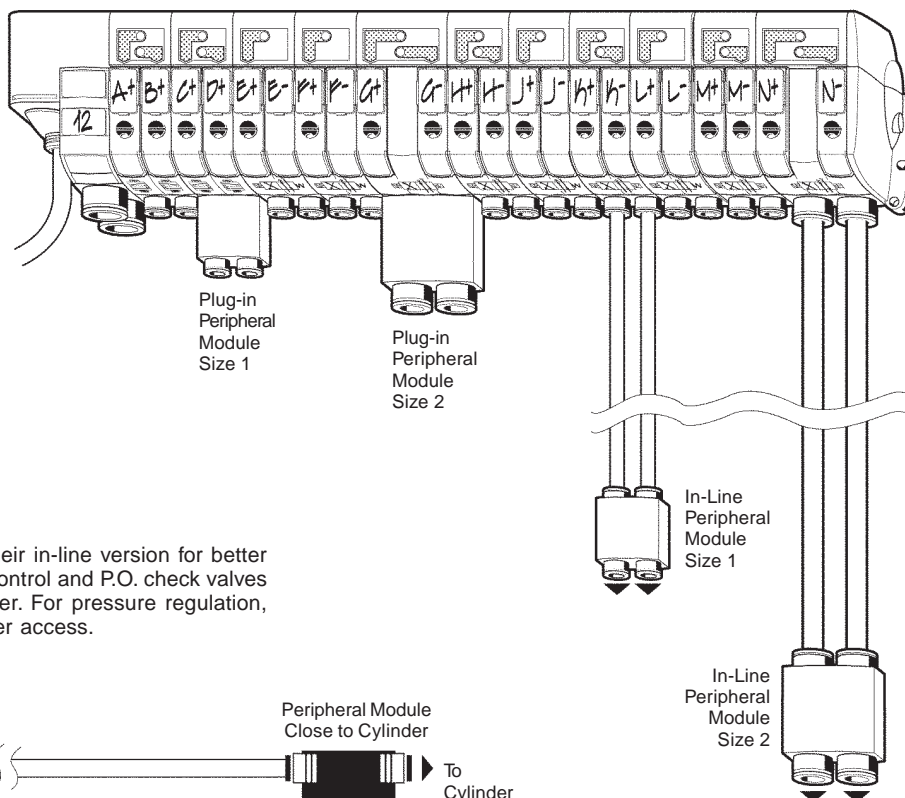
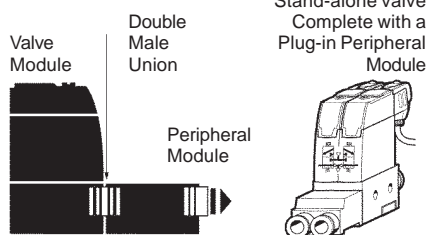


Module Installation Selection

As shown on opposite page, peripheral modules are available in two versions:

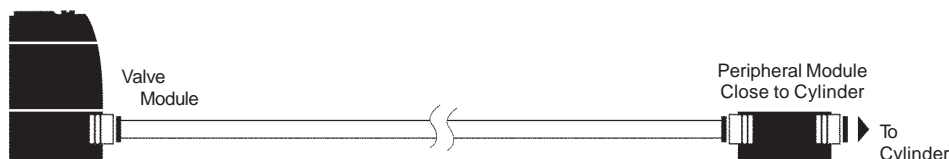
1. Plug-in Modules

Complete with clip-on double-male unions enabling connection directly into the valve module outlet ports.



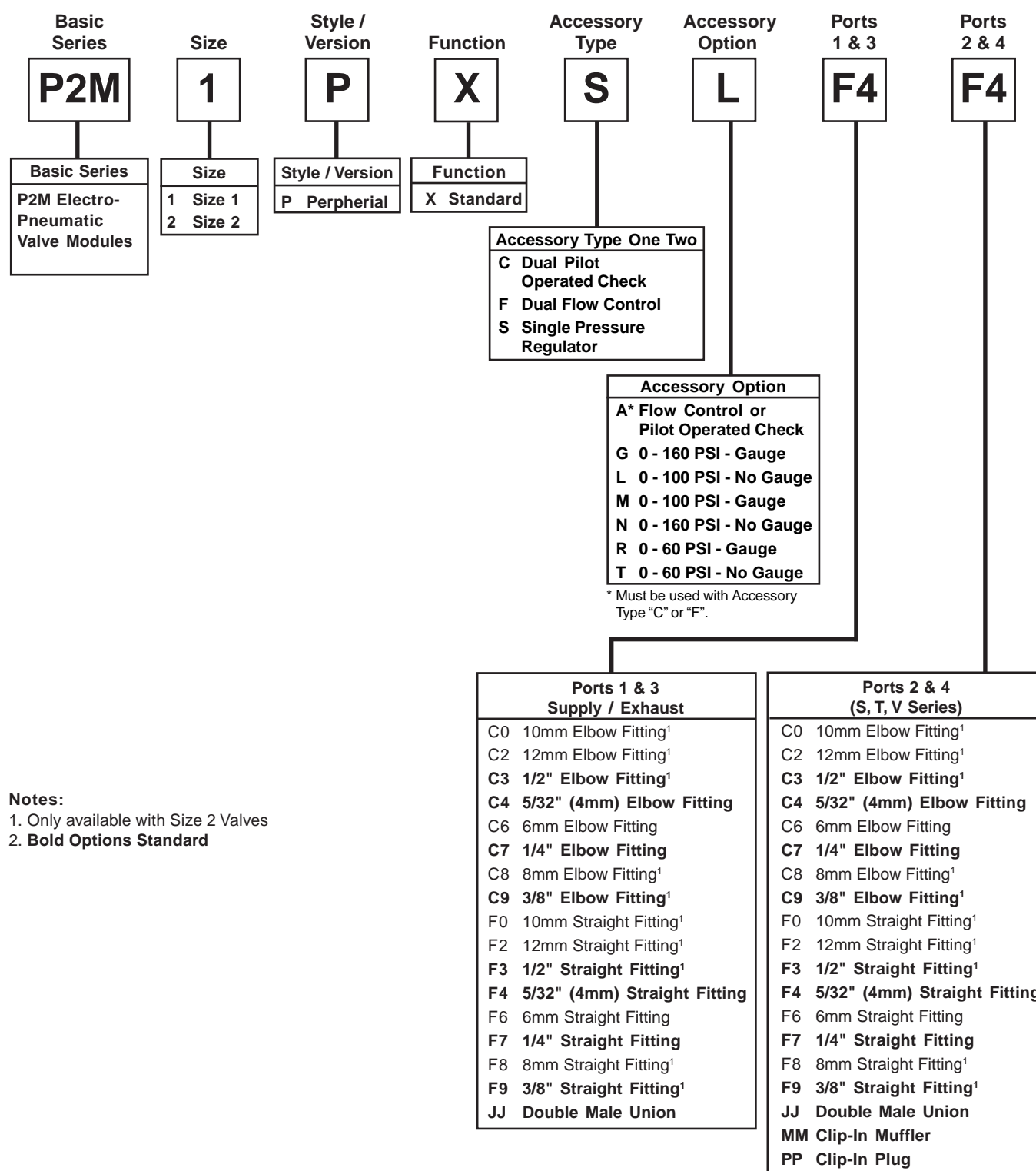
2. In-line Modules

Peripheral modules are also proposed in their in-line version for better cylinder speed control or positioning. Flow control and P.O. check valves are more efficient when close to the cylinder. For pressure regulation, the in-line version is often installed for better access.



P P Series Peripheral Modules

1 Complete Modules *(Complete with Pneumatic Connectors)*

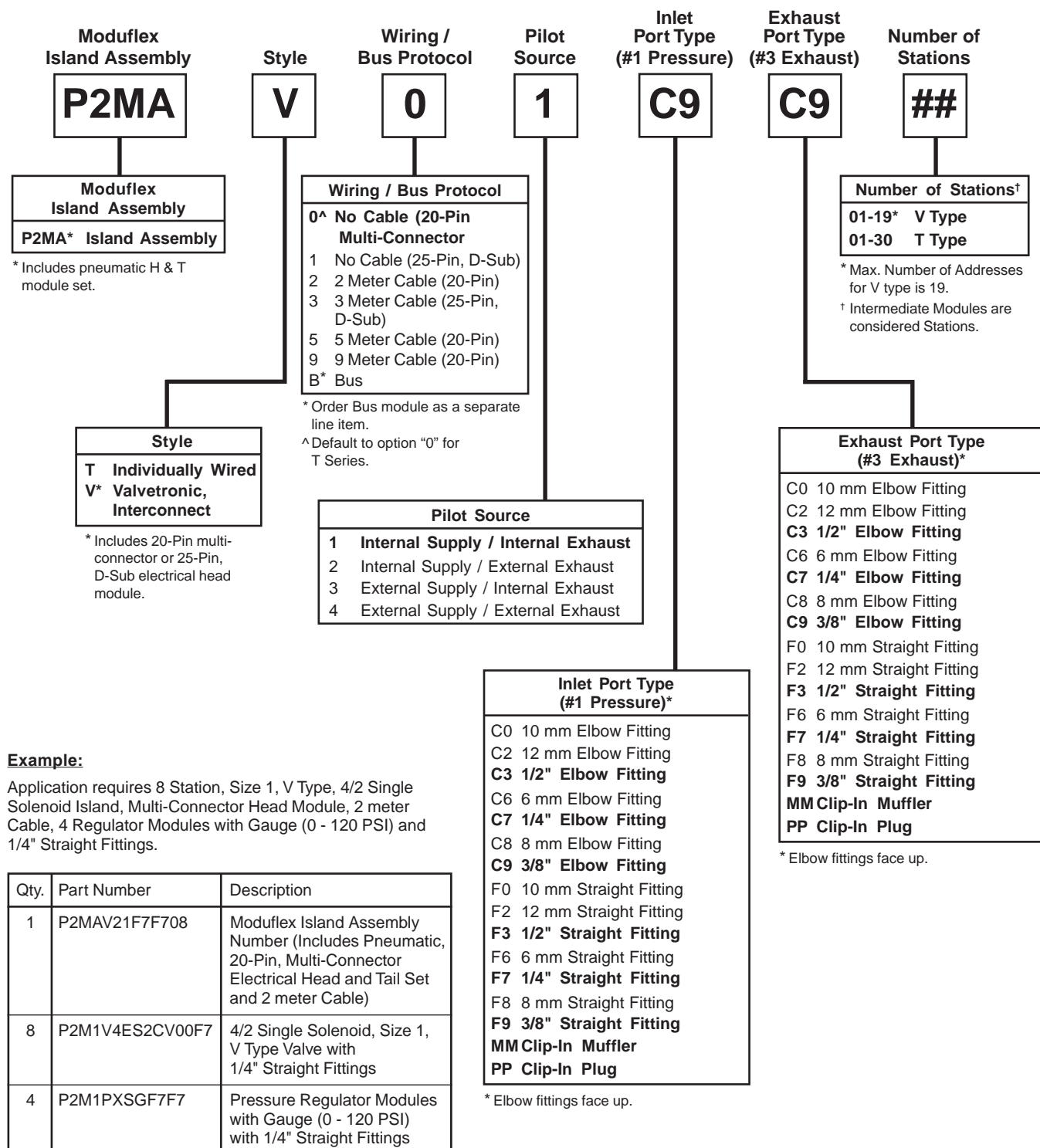


Notes:

1. Only available with Size 2 Valves
2. **Bold Options Standard**

Moduflex Island Assembly

Complete Modules *(Complete with Pneumatic and Electrical Connectors)*



BOLD OPTIONS ARE STANDARD

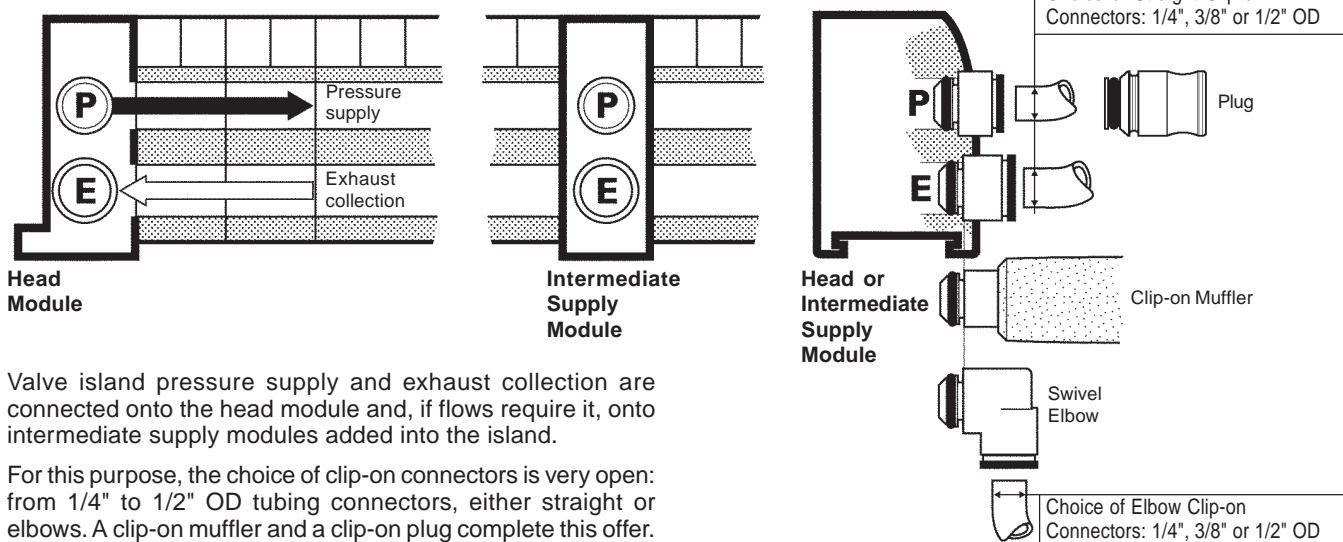
II Technical

This section contains all information, data and recommendations to assist with the choice and the use of Moduflex components.

Island Head Module Port Sizing

Moduflex is totally flexible – islands may have from two (2) to 19 valves, with a choice of two valve sizes, depending on the required flow. Therefore, each island has specific needs for the size of its pressure supply and its exhaust collection.

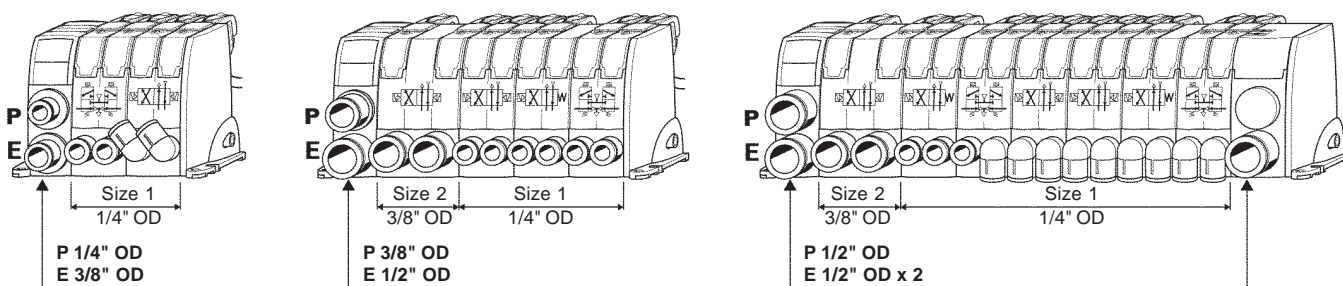
Choice of Connections to Island P and E Ports



Valve island pressure supply and exhaust collection are connected onto the head module and, if flows require it, onto intermediate supply modules added into the island.

For this purpose, the choice of clip-on connectors is very open: from 1/4" to 1/2" OD tubing connectors, either straight or elbows. A clip-on muffler and a clip-on plug complete this offer.

Sizing Recommendations



The three (3) valve islands above present typical situations for sizing islands pressure supply and exhaust collection.

In a given island, valves do not deliver their flow at the same moment; therefore, the number of valves in an island is not the major factor to consider. More important is the size of the largest valve and the largest output tubes to the cylinders.

We would recommend the following:

- Air supply connection at least equivalent to largest output tube to cylinders.
- Exhaust collection at least twice the section area of the largest output tube to cylinders.

For islands with high flows, the following options are possible:

- Use tubes up to 1/2" OD or mufflers providing exhaust collection is not necessary.
- Provide additional P and/or E connection ports by inclusion of intermediate supply modules, keeping the tube size small.

At the machine commissioning stage, the supply and exhaust connections can be easily modified until the required performance is achieved.

Cylinder Working Speed Charts

The charts below provide the cylinder working speeds at 90 PSI, under different conditions

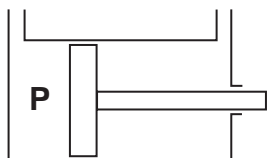
- Non-loaded or 50% loaded double-acting cylinder
- Exhaust-piped through 6.5 ft. long tubing, or exhaust muffled

Standard Conditions

- Double-Acting Cylinder
- Working Pressure:
P = 90 PSI

Specific Conditions

- Exhaust piped through tube 6.5 ft. long, with next ID above ID tube from valve to cylinder.
- Non-Loaded Cylinder

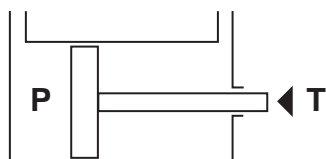


Cylinder Working Speeds, in in/sec

Valve Module	Tube ID	Tube OD	Tube Length	Cylinder Bore Size						
				1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Size 1	0.079	5/32"	3 ft	16.9	11.0	—	—	—	—	—
			9 ft	10.6	6.7	—	—	—	—	—
	0.106	5/32"	3 ft	33.5	20.5	13.0	—	—	—	—
			9 ft	21.7	13.4	8.3	—	—	—	—
	5/32"	1/4"	3 ft	65.7	39.4	24.4	16.1	10.6	—	—
			9 ft	61.8	33.9	21.3	14.6	9.1	—	—
			12 ft	49.2	28.7	18.1	12.2	7.5	—	—
			24 ft	37.0	22.4	14.2	9.4	5.5	—	—
Size 2	5/32"	1/4"	3 ft	—	51.2	31.7	21.0	13.8	—	—
			9 ft	—	40.6	25.6	17.5	10.9	—	—
			12 ft	—	31.5	20.0	13.4	8.25	—	—
			24 ft	—	23.5	14.9	9.9	5.7	—	—
	0.300	3/8"	3 ft	—	—	—	42.0	36.4	22.0	14.4
			9 ft	—	—	—	39.2	32.4	20.0	13.6

Cylinder Working Speeds, in in/sec

Valve Module	Tube ID	Tube OD	Tube Length	Cylinder Bore Size						
				1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Size 1	0.079	5/32"	3 ft	12.6	7.9	—	—	—	—	—
			9 ft	8.3	5.1	—	—	—	—	—
	0.106	5/32"	3 ft	25.6	16.1	9.8	—	—	—	—
			9 ft	16.9	10.6	6.3	—	—	—	—
	5/32"	1/4"	3 ft	39.4	33.5	20.9	14.2	8.7	—	—
			9 ft	36.6	29.5	17.3	11.8	7.5	—	—
			12 ft	32.7	24.8	14.2	9.4	5.9	—	—
			24 ft	26.8	18.1	10.6	7.1	4.3	—	—
Size 2	5/32"	1/4"	3 ft	51.2	43.5	27.1	18.5	3.5	—	—
			9 ft	49.9	35.4	25.1	17.0	9.0	—	—
			12 ft	35.9	27.2	15.6	10.3	6.5	—	—
			24 ft	28.1	19.0	11.1	7.6	4.5	—	—
	0.300	3/8"	3 ft	—	—	—	36.8	24.4	15.2	10.0
			9 ft	—	—	—	34.8	22.0	13.2	9.2



Field of Application

S Series Stand-Alone Valve Modules

T Series and **V** Series Valve Island Modules

Note: A complete machine cycle includes:

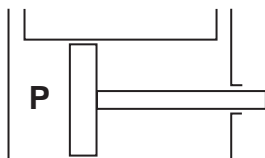
- Cylinder displacement times that can be deducted from the cylinder speeds given below.
- Cylinder starting times depend on the cylinder strokes; henceforth they could not be included in the charts below.

Standard Conditions

- Double-Acting Cylinder
- Working Pressure:
P = 90 PSI

Specific Conditions

- Muffled Exhaust
(Non-Collected)
- Non-Loaded Cylinder

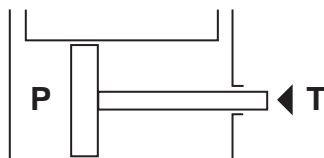


Cylinder Working Speeds, in in/sec

Valve Module	Tube ID	Tube OD	Tube Length	Cylinder Bore Size						
				1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Size 1	0.079	5/32"	3 ft	16.9	10.6	—	—	—	—	—
			9 ft	10.6	6.7	—	—	—	—	—
	0.106	5/32"	3 ft	34.6	21.3	13.4	—	—	—	—
			9 ft	21.7	13.4	8.7	—	—	—	—
	5/32"	1/4"	3 ft	66.9	38.6	24.4	16.5	10.2	—	—
			9 ft	59.1	33.5	21.7	14.6	9.1	—	—
			12 ft	49.2	27.6	17.7	12.2	7.5	—	—
			24 ft	37.4	22.0	13.8	9.4	5.9	—	—
Size 2	5/32"	1/4"	3 ft	87.0	50.1	31.7	21.4	13.2	—	—
			9 ft	70.9	40.2	26.0	17.5	10.9	—	—
			12 ft	54.1	30.3	19.4	13.4	8.2	—	—
			24 ft	39.3	23.1	14.4	9.9	6.2	—	—
	0.300	3/8"	3 ft	—	—	—	48.0	39.2	23.6	15.6
			9 ft	—	—	—	44.0	34.4	20.8	14.0

Cylinder Working Speeds, in in/sec

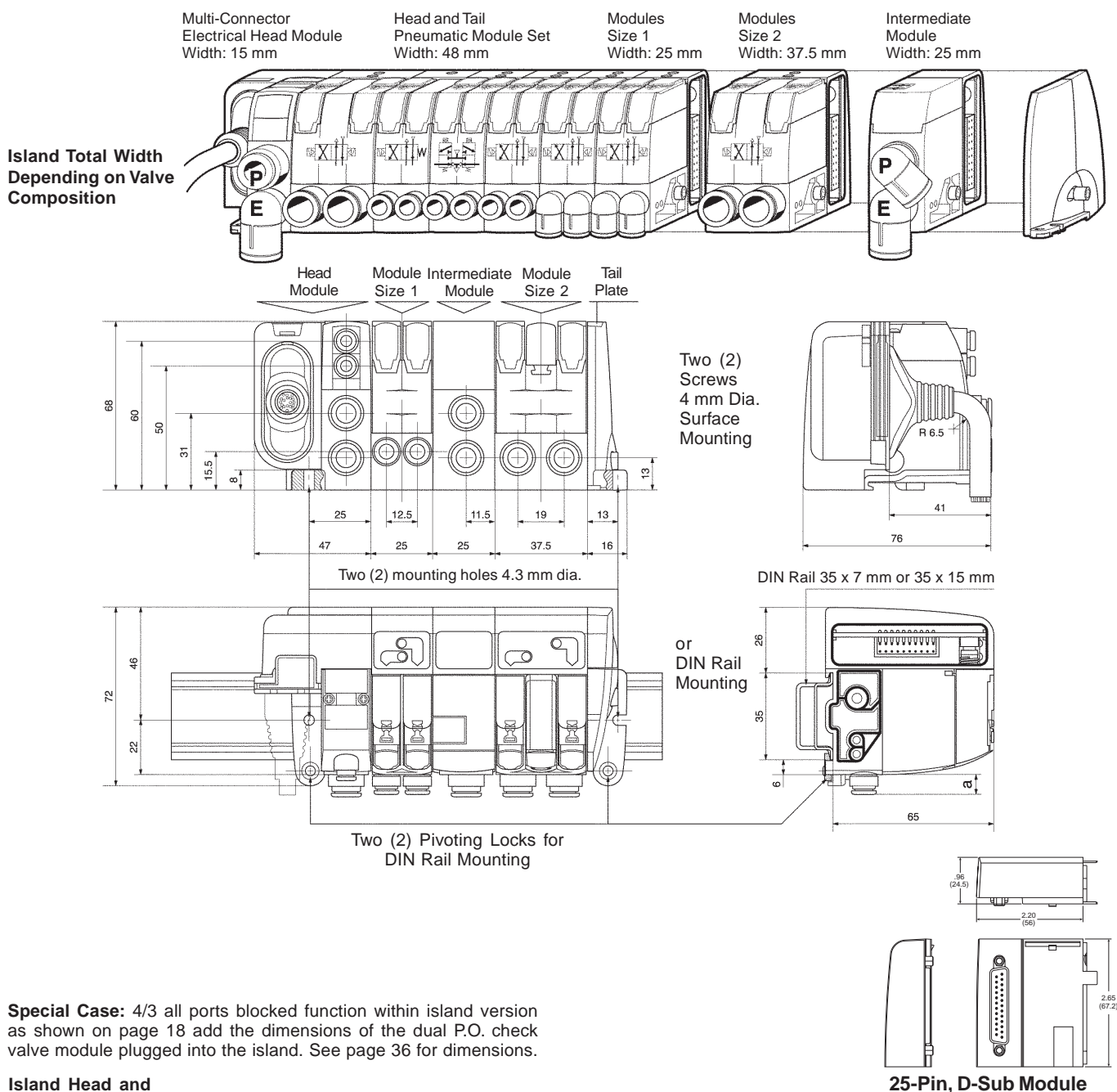
Valve Module	Tube ID	Tube OD	Tube Length	Cylinder Bore Size						
				1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Size 1	0.079	5/32"	3 ft	13.8	8.7	—	—	—	—	—
			9 ft	9.1	5.5	—	—	—	—	—
	0.106	5/32"	3 ft	26.4	17.3	10.6	—	—	—	—
			9 ft	17.3	11.0	6.7	—	—	—	—
	5/32"	1/4"	3 ft	39.4	34.3	22.0	15.0	9.1	—	—
			9 ft	36.6	30.3	18.1	12.2	7.5	—	—
			12 ft	32.7	24.8	14.6	9.8	6.3	—	—
			24 ft	27.2	18.1	11.0	7.1	4.7	—	—
Size 2	5/32"	1/4"	3 ft	51.2	44.6	28.6	19.5	11.8	—	—
			9 ft	49.9	36.3	21.7	14.6	10.9	—	—
			12 ft	36.0	27.3	16.0	10.8	6.9	—	—
			24 ft	28.6	19.5	12.1	7.8	4.9	—	—
	0.300	3/8"	3 ft	—	—	—	42.0	26.0	16.4	11.2
			9 ft	—	—	—	38.8	22.8	14.4	9.6





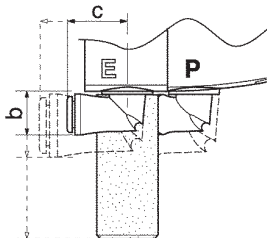
V Series Valve Island Dimensions and Mounting

20-Pin, Multi-Connector Valve Island



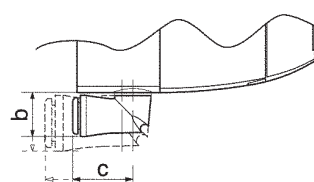
Island Head and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	8	13	16
8 mm Tube OD	9	16	19
3/8" Tube OD	9	16	19
10 mm Tube OD	13	18	22
12 mm Tube OD	13	19	25
1/2" Tube OD	13	19	25
Muffler		40	



Island Valve Modules

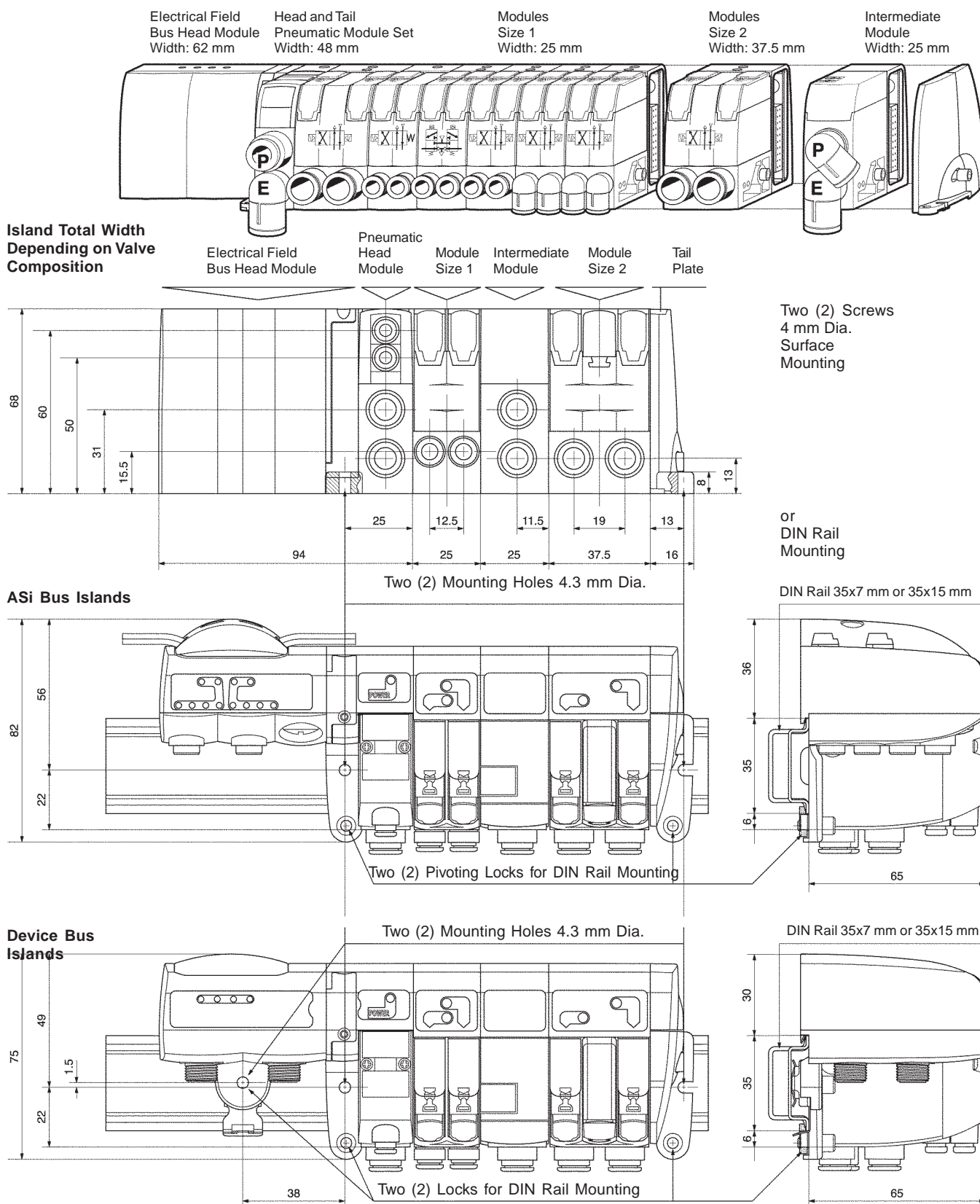
OD Tube Ext.	a	b	c
5/32" (4 mm)	8	10	12
Size 1 Modules			
6 mm	8	13	16
1/4"	8	13	16
1/4"	8	13	16
Size 2 Modules			
8 mm	9	16	19
3/8"	9	16	19
10 mm	13	18	22





V Series Valve Island Dimensions and Mounting

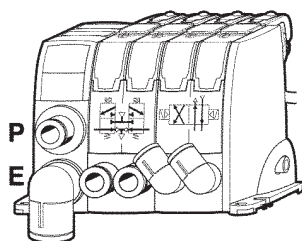
Field Bus Connected Islands



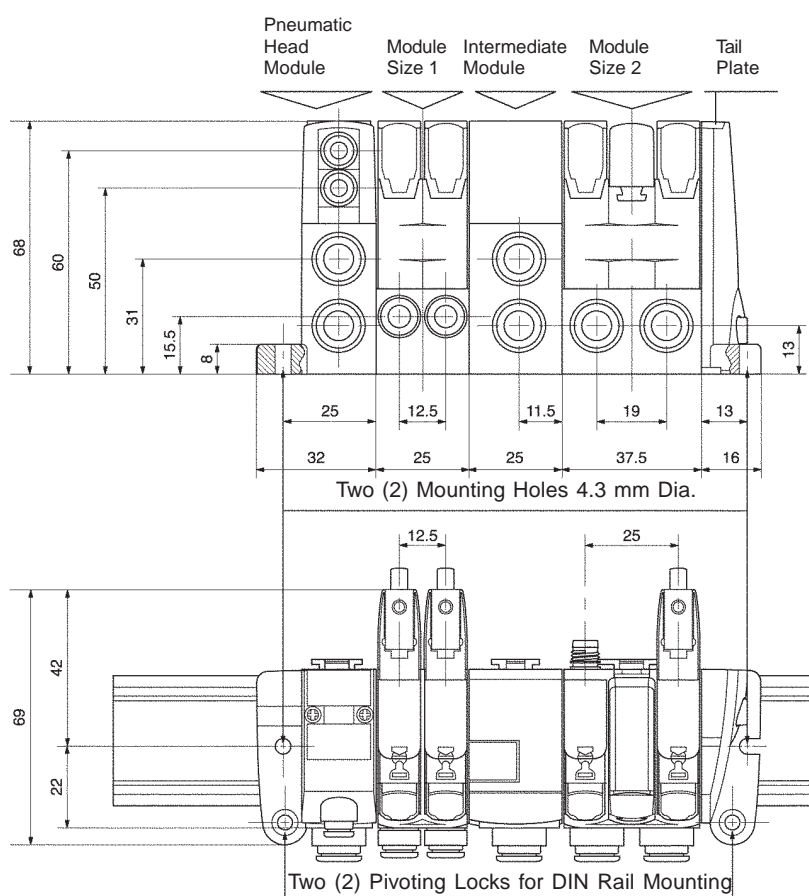
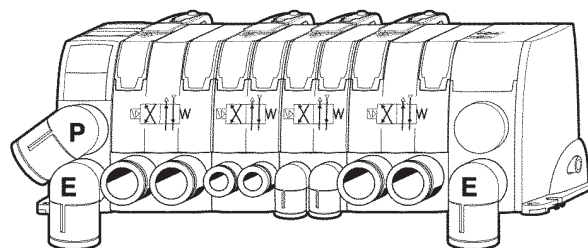


T Series Valve Island Dimensions and Mounting

Island Total Width
Depending on Valve
Composition

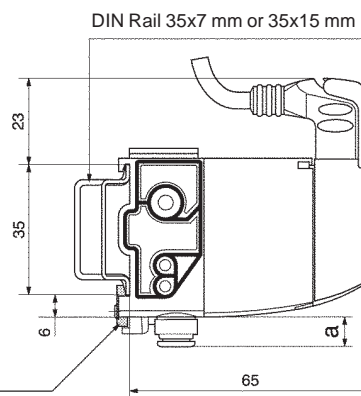


Width → Pneumatic Head and Tail Module 48 mm Modules Size 1 25 mm Modules Size 2 37.5 mm Intermediate Module 25 mm



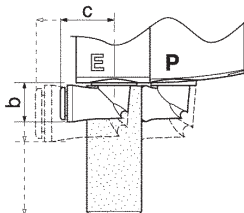
Two (2)
Screws
4 mm Dia.
Surface
Mounting

or
DIN Rail
Mounting



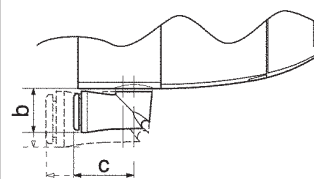
Island Head and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	8	13	16
8 mm Tube OD	9	16	19
3/8" Tube OD	9	16	19
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
1/2" Tube OD	13	19	25
Muffler		40	



Island Valve Modules

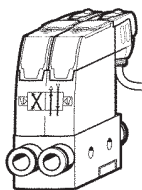
OD Tube Ext.	a	b	c
Size 1 Modules			
5/32" (4 mm)	8	10	12
6 mm	8	13	16
1/4"	8	13	16
Size 2 Modules			
1/4"	8	13	16
8 mm	9	16	19
3/8"	9	16	19
10 mm	13	18	22



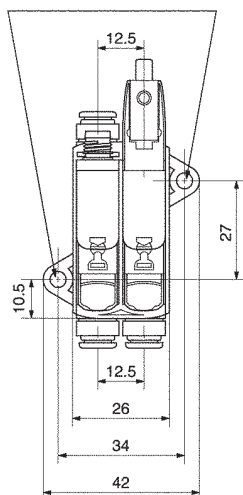


S Series Valve Island Dimensions and Mounting

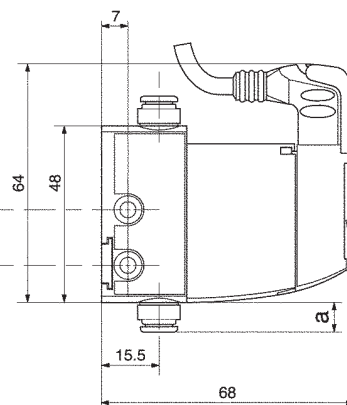
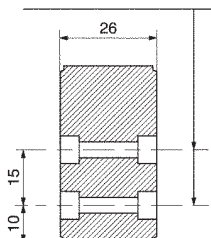
Stand-Alone Valve Size 1



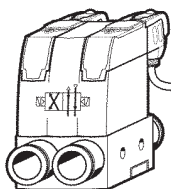
Surface Mounting with Screws
4 mm Dia. into Retractable
Brackets 3 mm Thick



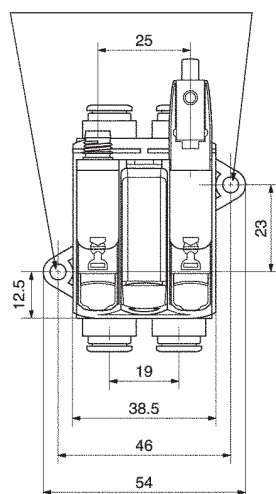
or Side Mounting with
2 Screws 4 mm Dia.



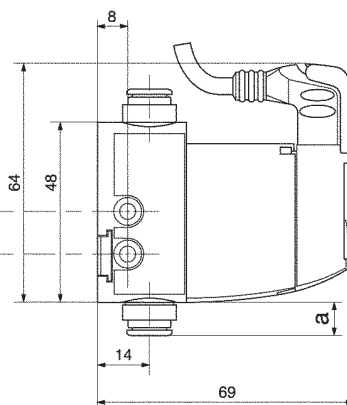
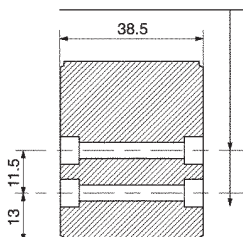
Stand-Alone Valve Size 2



Surface Mounting with Screws
4 mm Dia. into Retractable
Brackets 3 mm Thick



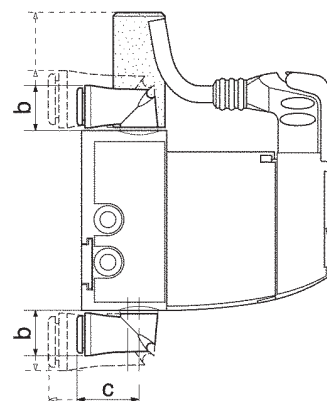
or Side Mounting with
2 Screws 4 mm Dia.



Dimensions and mountings
of the stand-alone valves
presented on page 25 —
4/2 double and single 3/2,
4/3 center exhaust and
4/3 pressure center.

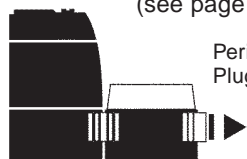
Special Case: 4/3 all ports blocked.
Add the dual P.O. check
valve module that has been
plugged in the basic valve.
Dimensions are given on page 36.

OD Tube Ext.		a	b	c
Size 1 Modules	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	8	13	16
	Muffler		31	
Size 2 Modules	1/4"	8	13	16
	8 mm	9	16	19
	3/8"	9	16	19
	10 mm	13	18	22
	Muffler		40	



P P Series Peripheral Modules Dimensions and Mounting

Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve (see page 26).

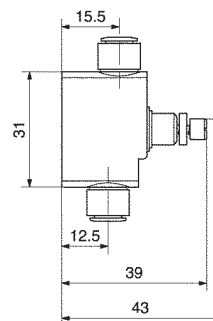
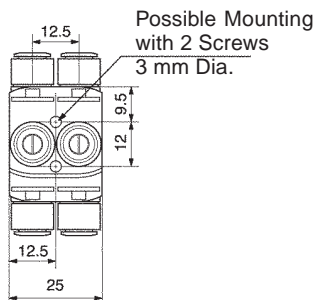
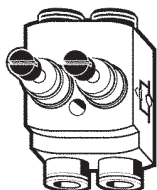
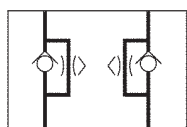


Peripheral Module
Plugged in a Valve
or an Island



In-Line Peripheral Modules:
Mounting is Required

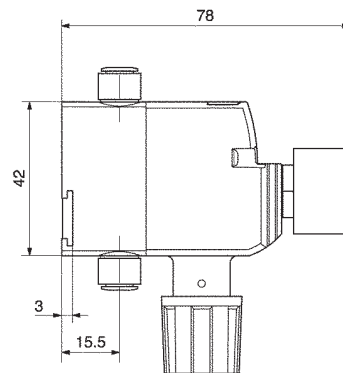
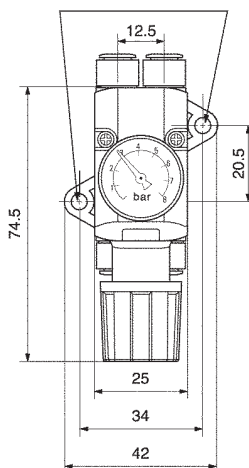
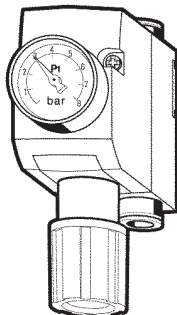
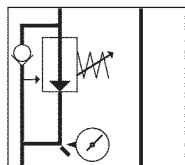
Dual Flow Control Module Size 1



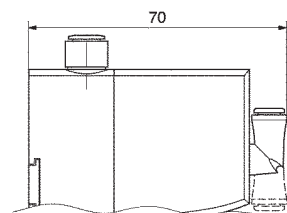
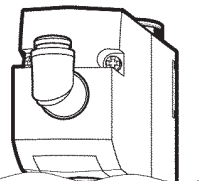
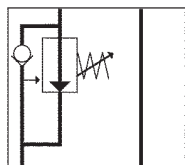
Pressure Regulation Module Size 1

Mounting with 2 Screws 4 mm Dia.
on Retractable Brackets

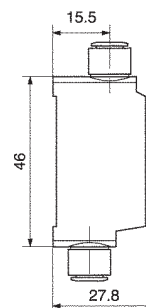
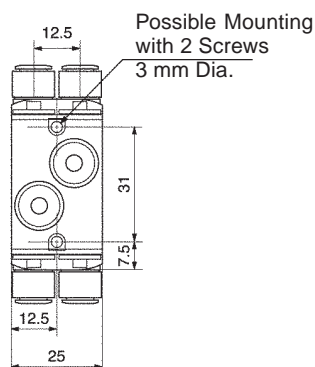
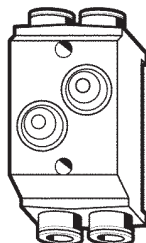
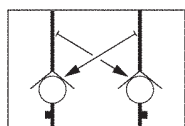
With Gauge



Without Gauge



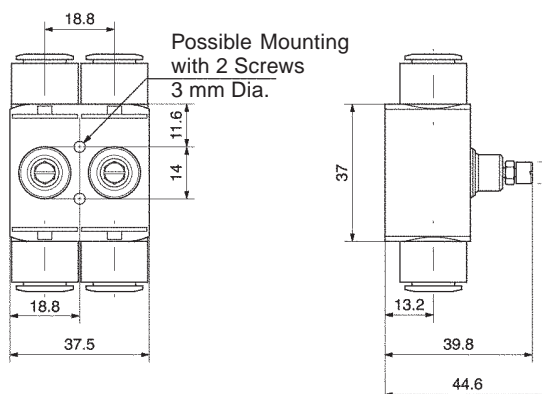
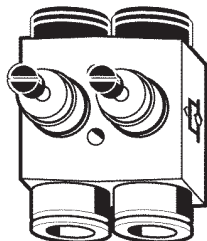
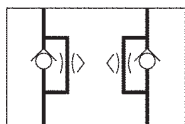
Dual P.O. Check Valve Module Size 1



Swivel Elbow
Push-in
Connector
5/32" (4 mm)
OD Tube

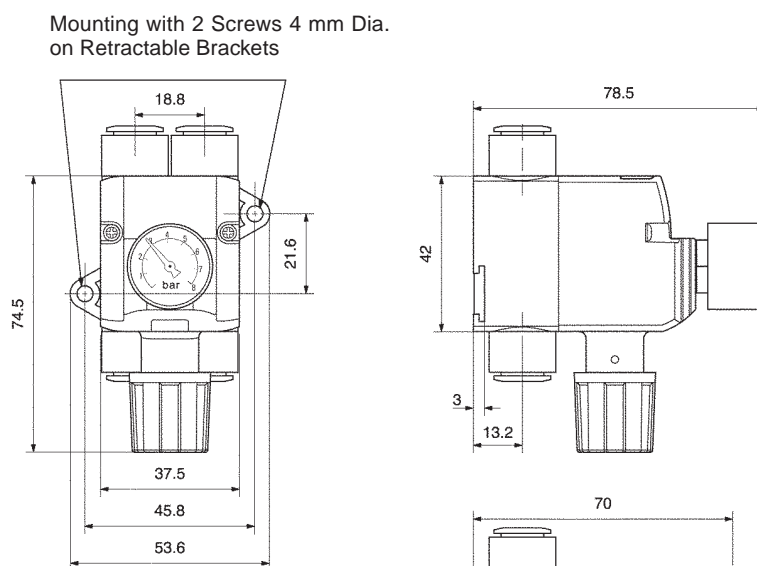
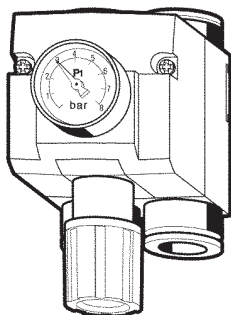
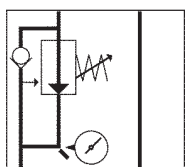
P P Series Peripheral Modules Dimensions and Mounting

Dual Flow Control Module Size 2

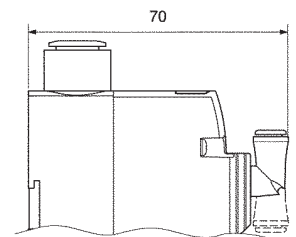
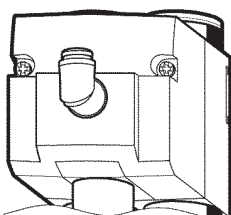
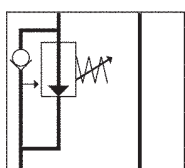


Pressure Regulation Module Size 2

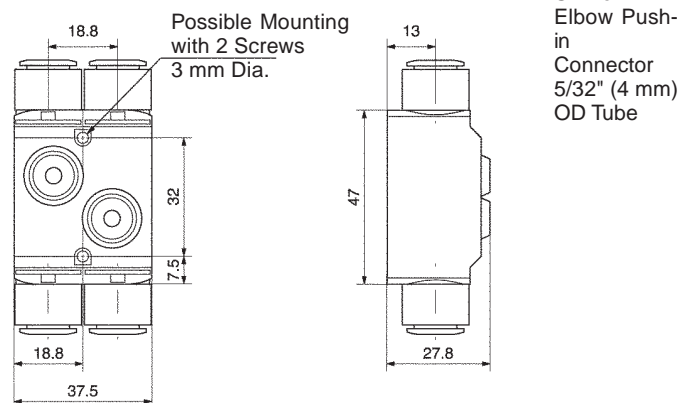
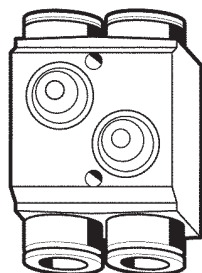
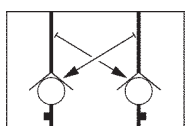
With Gauge



Without Gauge



Dual P.O. Check Valve Module Size 2



Swivel Elbow Push-in Connector 5/32" (4 mm) OD Tube

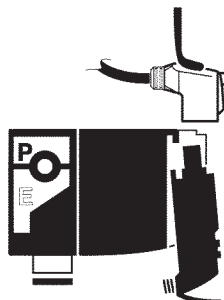
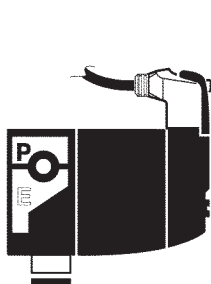
V, T, S, and P Series Maintenance Recommendations

Maintenance Procedure

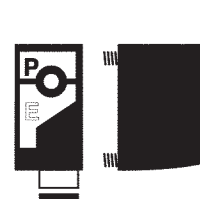
The latest generations of compact pneumatic valves have a life expectancy which generally exceeds the equipment they control. Therefore, maintenance is seldom required. When it

is necessary to change the solenoid pilot, valve or connector, they can be easily replaced without removing the island base, as shown below.

S and T Series

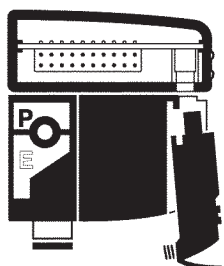
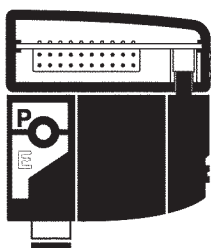


Use a Torx
Screw Driver

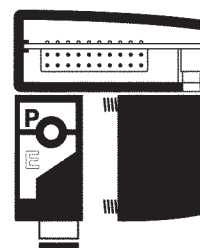


Torque
Rating
Valve to
Base:
4.5 in. lbs.

V Series



Torque
Rating
Solenoid
to Valve:
3.0 in. lbs.



Torque
Rating
Valve to
Base:
4.5 in. lbs.

With Only One Universal Solenoid Pilot for all Configurations, Maintenance is Simple

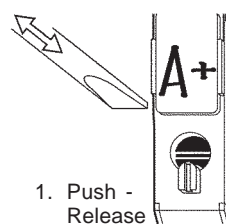
24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

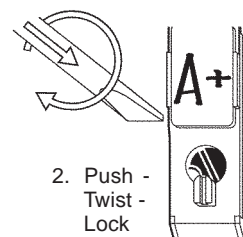
Because all Moduflex valve and island configurations are supplied with this unique solenoid pilot, maintenance operations remain very simple.

See Section III-Manual (VAL-SIF-135) Chapter 9 for more information.

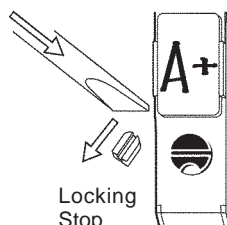
Multi-Function Adaptable Manual Override



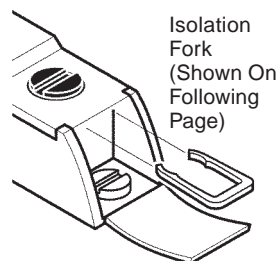
1. Push -
Release



2. Push -
Twist -
Lock



3. Remove Lock
Capability



Isolation
Fork
(Shown On
Following
Page)

4. Manual
Override is
Totally Isolated

Maintenance Components









P2D8V32C5

Valve Module Solenoid Pilot 24VDC		Weight (oz)	Order Code
Solenoid Pilot (Without Plug-in Electrical Connector)		0.53	P2D8V32C5

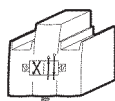


P2M1X4EE







Size 1 Valve Modules Without Solenoid Pilot and Without Subbase		Weight (oz)	Order code	
4/2		Single Solenoid (Monostable)	0.92	P2M1X4ES
		Double Solenoid (Bistable)	0.88	P2M1X4EE
3/2		Double Solenoid NC + NC	0.99	P2M1XDEE
		Double Solenoid NO + NO	0.99	P2M1XCEE
		Double Solenoid NC + NO	0.99	P2M1XEEE
		Single Solenoid NC	0.88	P2M1X3ES

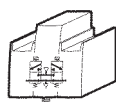


P2M1XDEE

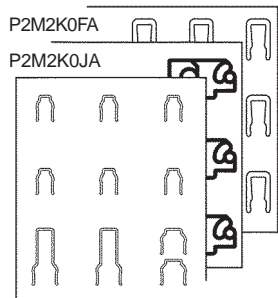


P2M2X4EE

Size 2 Valve Modules Without Solenoid Pilot and Without Subbase		Weight (oz)	Order code	
4/2		Single Solenoid (Monostable)	0.99	P2M2X4ES
		Double Solenoid (Bistable)	1.06	P2M2X4EE
3/2		Double Solenoid NC + NC	1.13	P2M2XDEE
		Double Solenoid NO + NO	1.13	P2M2XCEE
		Double Solenoid NC + NO	1.13	P2M2XEEE
		Single Solenoid NC	0.99	P2M2X3ES



P2M2XDEE



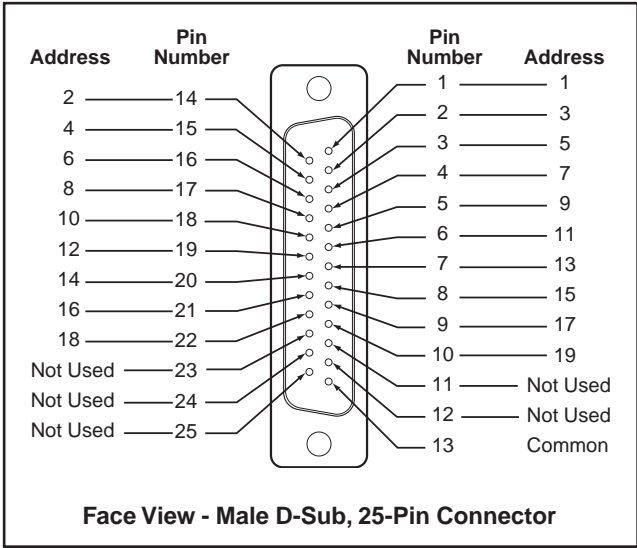
P2M2K0CA

Set of Maintenance Parts		Weight (oz)	Order Code
Clips	Set of 10 Clips: 6 for Size 1 Modules, 2 for Size 2 Modules, 2 for Island Head and Intermediate Modules	0.21	P2M2K0CA
Seals	Set of 10 Seals: 3 for Inter Island Base Seals, 3 Under Solenoid Pilot Seals, 4 Under Valve Seals (Two Size 1 Seals, Two Size 2 Seals)	0.21	P2M2K0JA
Forks	Set of 10 Isolation Forks for Solenoid Pilot Manual Override	0.28	P2M2K0FA



Valvetronic™

V Series 25-Pin, D-Sub Addressing



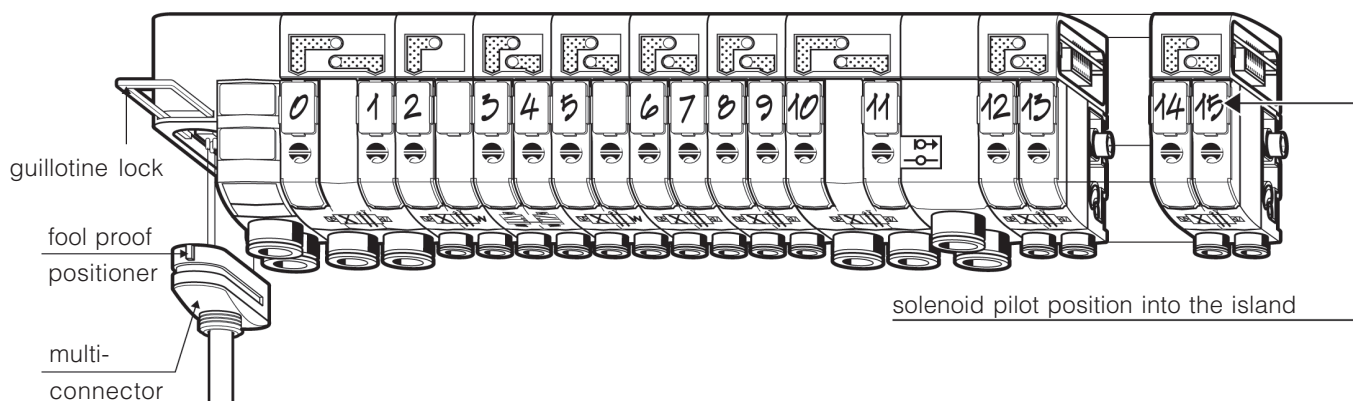
Electrical Specifications

Rated Voltage	24 VDC
Maximum Addresses	19
Maximum Energized Simultaneously	19
Electrical Connection	25-Pin, D-Sub DIN41652, MIL-C-24308, NFC93425 Type HE5
Polarity	Insensitive: PNP and NPN compatible
Dust and Water Protection	IP40



Valvetronic™

V Series 20-Pin, Multi-Connector and Addressing



cable
2 m
5 m
or 9 m

Ø 8.6 mm

On the island head module, the multi-connector integrates the HE10 connector standard in its 20 pin version.

Its plug-in function is secured in position with a guillotine lock with easy access from the front of the island.

Just like the whole island, the multi-connector follows the IP 65 protection standard.

Cable specification :

8,6 mm dia., UL, 20 wires, 0.22 mm², AWG 24.

Minimum static radius : 6.5 mm.

Available with 2 m, 5 m and 9 m lengths.

When assembling a V series island, modules are automatically connected to the head module through the modular principle of the integrated electrical connections, as explained on chap. 8 of the manual.

The color code addressing given below conforms to the DIN 47100 standard.

To each wire color code corresponds a solenoid pilot position in the island.

20 wires
0.22 mm²
AWG 24

solenoid pilot position into the island

color code		color code		color code	
0	pink - brown	7	white - green	14	grey
1	white - pink	8	red - blue	15	yellow
2	grey - brown	9	grey - pink	16	green
3	white - grey	10	violet	17	brown
4	yellow - brown	11	red	18	white
5	white - yellow	12	blue		
6	brown - green	13	pink		
				common :	black

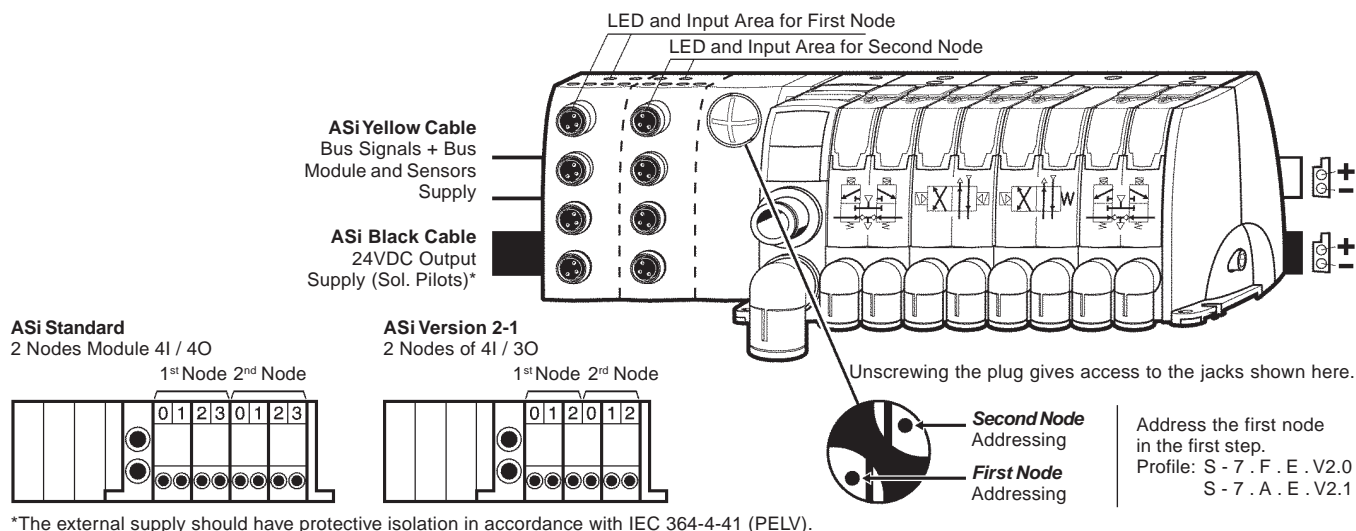


Valvetronic™

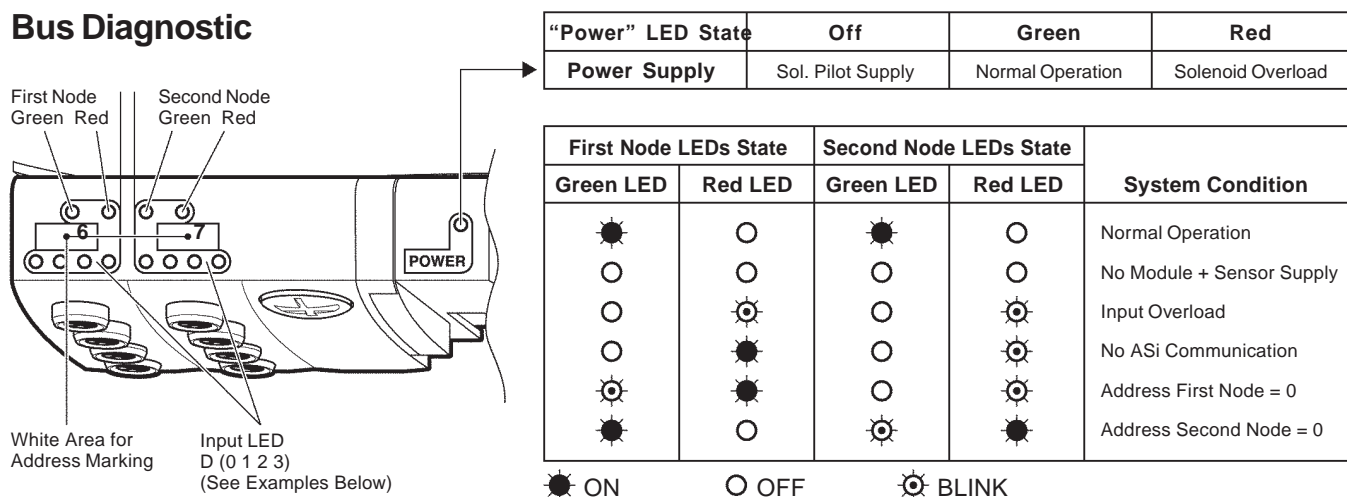
V Series

ASi Bus Module: Addressing, Diagnostic, Input Wiring

Bus Addressing, First and Second Node



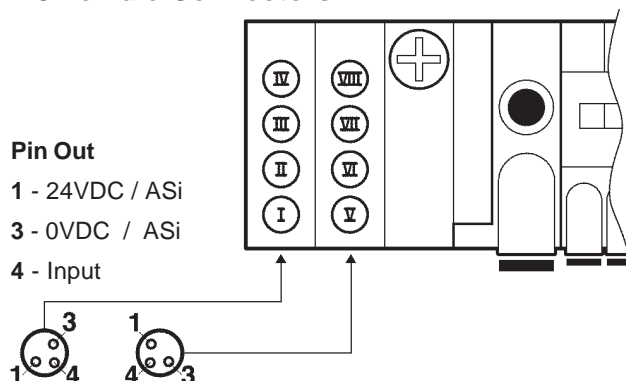
Bus Diagnostic



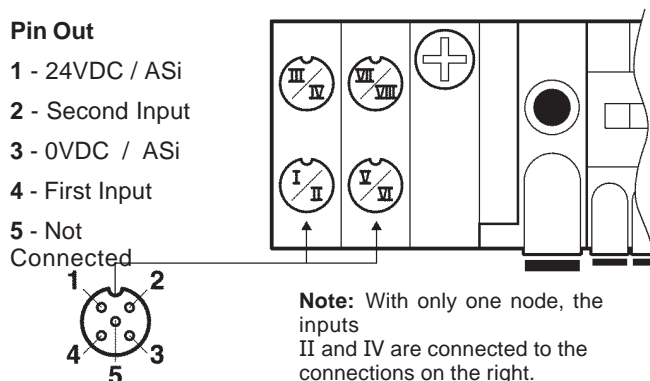
Input Wiring

Physical Input (I, II, III, IV) = D (0 1 2 3) First Node,
Physical Input (V, VI, VII, VIII) = D (0 1 2 3) Second Node.

M8 Female Connectors



M12 Female Connectors





Device Bus Modules: Common Connections

Power Supply Common to All Types of Device Bus Modules

Connection

All bus modules have an M12 male connector for power supply.

Type A or B have been chosen to make them non compatible with M12 bus connectors, thereby avoiding any connection mistake.

Diagnostic

The two "power" indicators shown on the illustrations provide visual indication of the module and solenoid supply status.

Note: Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing communications to remain on. This can be done by placing the user's Emergency Stop switch or other hard-wired control contact between Pin 1 and Pin 4. If this feature is not required, Pin 1 and Pin 4 should be wired together.

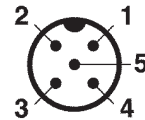
M12 Power Supply Connector

(As Seen On Module)

- 1 - 24VDC Module (Not Connected for DeviceNet)
- 2 - Not Connected
- 3 - 0VDC Module and Solenoid
- 4 - 24VDC Solenoid
- 5 - Protected Earth (PE)

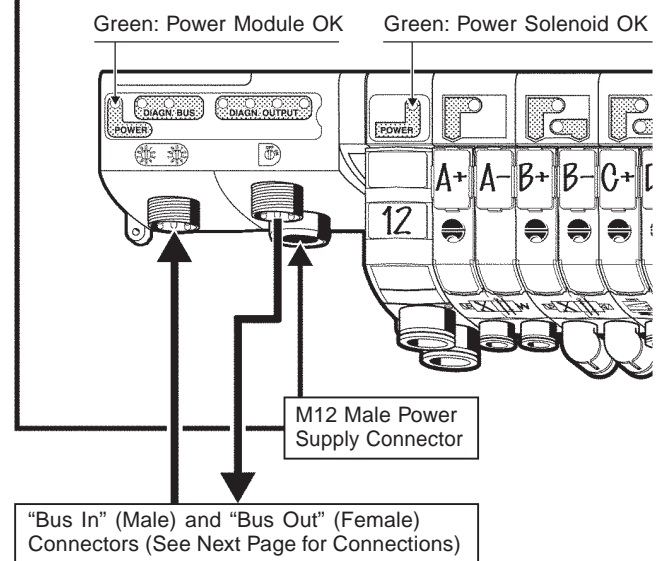
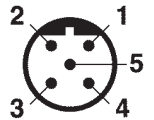
Profibus DP/
Interbus S

Type A



DeviceNet/
CANopen

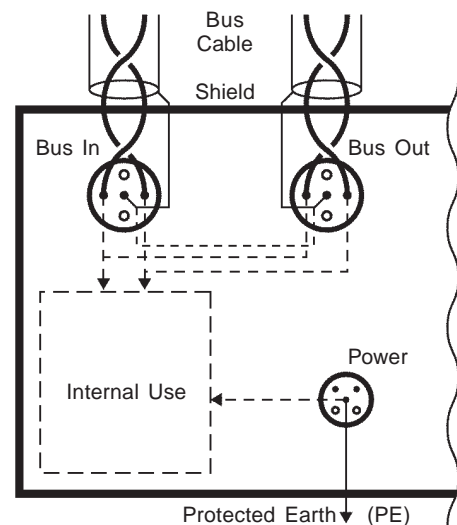
Type B



Bus Cable Protection Shield Connections for Profibus DP, DeviceNet and CANopen

To provide protection against electro-magnetic interferences, the bus cables are shielded. The module "bus in" and "bus out" connectors each includes a pin for connecting the cable shield (see next pages). It is safer to connect the shield to the protected earth (PE) at both ends of the bus. Within the bus module, provision is made to enable shield continuity by connection between the two shield pins.

The protected earth have to be connected locally on each module for CE accordance.





Device Bus Module: Connections, Addressing, Diagnostic



Bus Cable Connections

Profibus DP standard male and female type B M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MB, is necessary on the "bus out" connector of the last station.

This module incorporates an Autobaud detect feature, eliminating the need to set switches.

Addressing

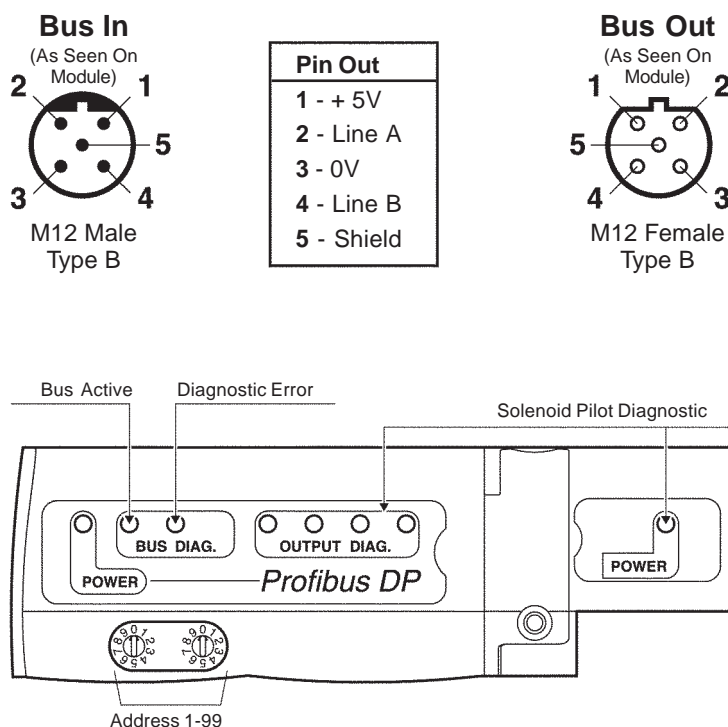
Use the GSD file on website ①.

The rotary switches enable configuration of the decimal address.

① www.parker.com/modulflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MA, is necessary on the "bus out" connector of the last station.

Addressing

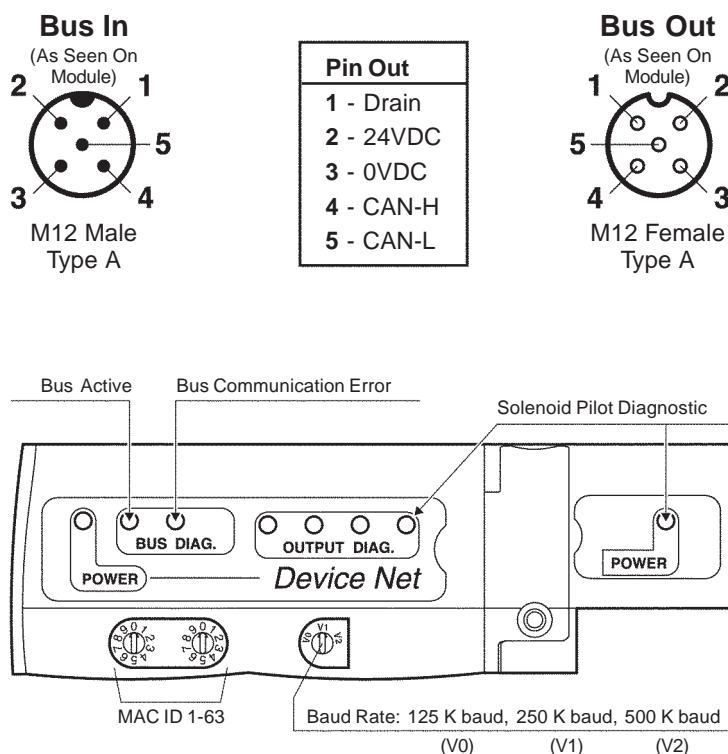
Use the EDS file on website ①.

The rotary switches enable configuration of the node address (MAC ID) and the baud rate.

① www.parker.com/modulflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



CANopen

Bus Cable Connections

CANopen standard male and female type A M12 connectors.

Use of prefabricated cables available from your local electrical supplier is recommended.

Line termination P8BPA00MB, is necessary on the “bus out” connector of the last station.

Addressing

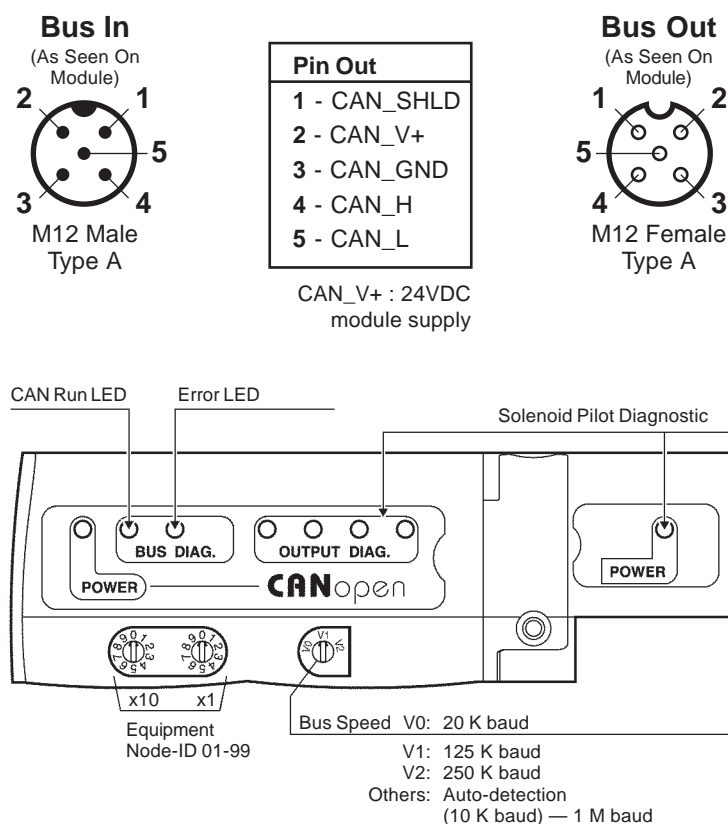
Use the GSD file on website①.

The rotary switches enable configuration of the decimal address.

① www.parker.com/moduflex

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



INTERBUS-S

Bus Cable Connections

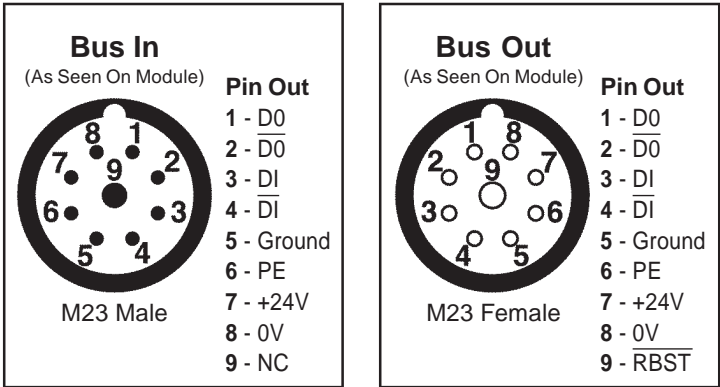
The M23 connectors conform to “Interbus remote bus”.
Use of prefabricated cables available from your usual electrical supplier is recommended.
This module operates at 500 kbps.

Addressing

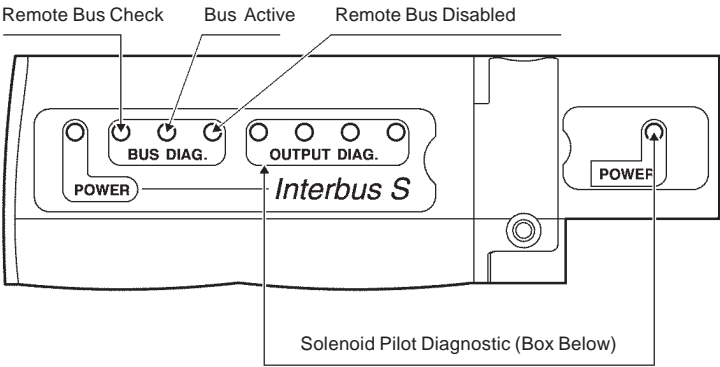
Interbus S is self addressing; therefore, it does not need any software or hardware configuration.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.
This diagnostic conforms to the Interbus S standard.

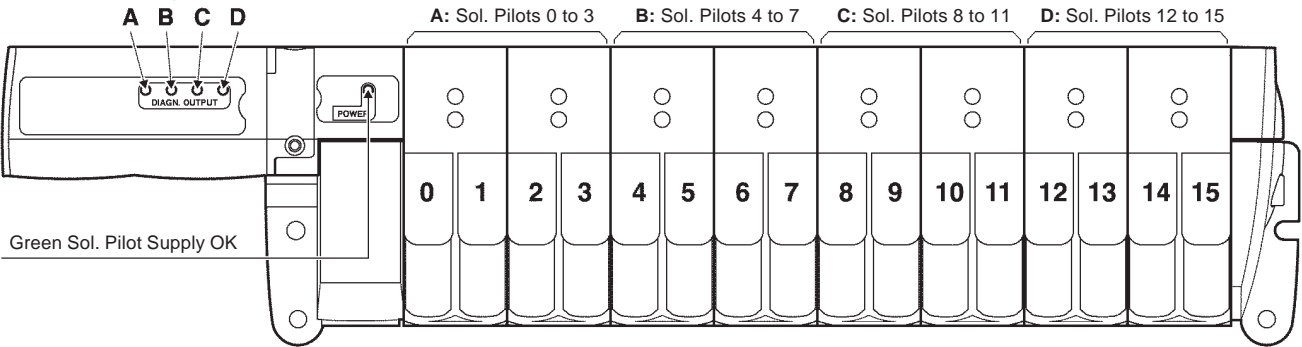


Note: For more details, please consult “Interbus remote bus” documentation.



Solenoid Pilot Diagnostic Common to All Device Bus Modules

Red LEDs Detecting Solenoid Valve Short-Circuits



Inside the bus module, solenoid valve control is protected against short-circuits with the following visual indication provided:

- The red LEDs with code, shown above, detect solenoid valve short-circuits.
- Supply is OK when the solenoid pilot power supply indicator is green.

V or T Series**Valve Island Configurator CD-ROM Use**
CD-ROM “Standard Valve Island” Configuration

Valve Island Module Identification

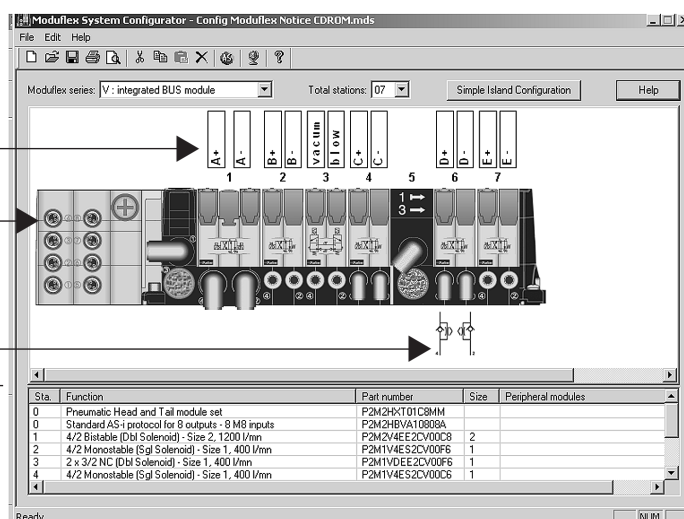
Valve Island Graphic Description with

Valve Module Symbols, Output Connectors, Pneumatic, and Electrical Head Module, etc....

Peripheral Module Additions

Valve Island Composition with Each

Module Description and Order Code



From pages 18 to 23, this catalog shows how to configure the Moduflex V or T series valve island that a given application requires, and how to order it. As shown in the example above, you may also do this with the Moduflex Valve Island Configurator CD-ROM.

With the CD-ROM, once the valve island is configured, the following items may be edited for the application:

1. Valve Island Print with Symbols and Marking

This graphic gathers all information required:

- For assembling, marking and connecting the valve island;
- For commissioning and maintaining the machine.

No additional valve circuit is necessary.

2. Report (4 pages) (1)

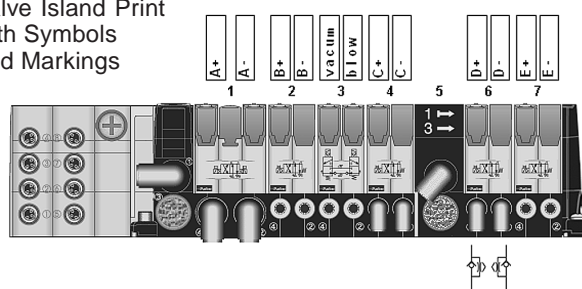
- Page 1 - Valve island complete modules part numbers
- Page 2 - Valve island basic modules and connectors listing
- Page 3 - Bill of material
- Page 4 - Warnings

3. 2D Drawings Exported DX File

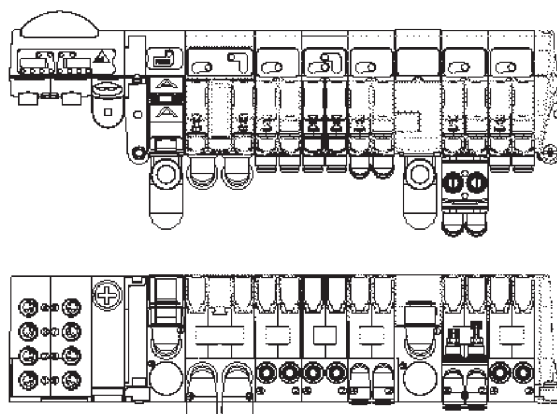
This transfer on the machine drawings enables defining the valve island mounting onto the machine.

Note: 3D files (IGES, STEP and PRO-ENG) are available in the CD-ROM, for import in your CAD software of separate basic modules and connectors.

(1) If an assembled valve island is ordered, please combine this 4-page report in order.

Valve Island Print
with Symbols
and Markings

Valve Island 2D Drawing Exported DX File

**Ask for Your Moduflex Valve Island Configurator CD-ROM**

Order Code: **MFCD1**

This multi-language CD-ROM allows installation in English, French, German, Swedish, Italian and Spanish.

