Optimize design and performance of pneumatic systems.

AVENTICS™ Series 651, 652, 653

High flow rates and broad range of Air Preparation systems enable easier selection, design and system optimization.

VALVES DIRECT

EMERSON™

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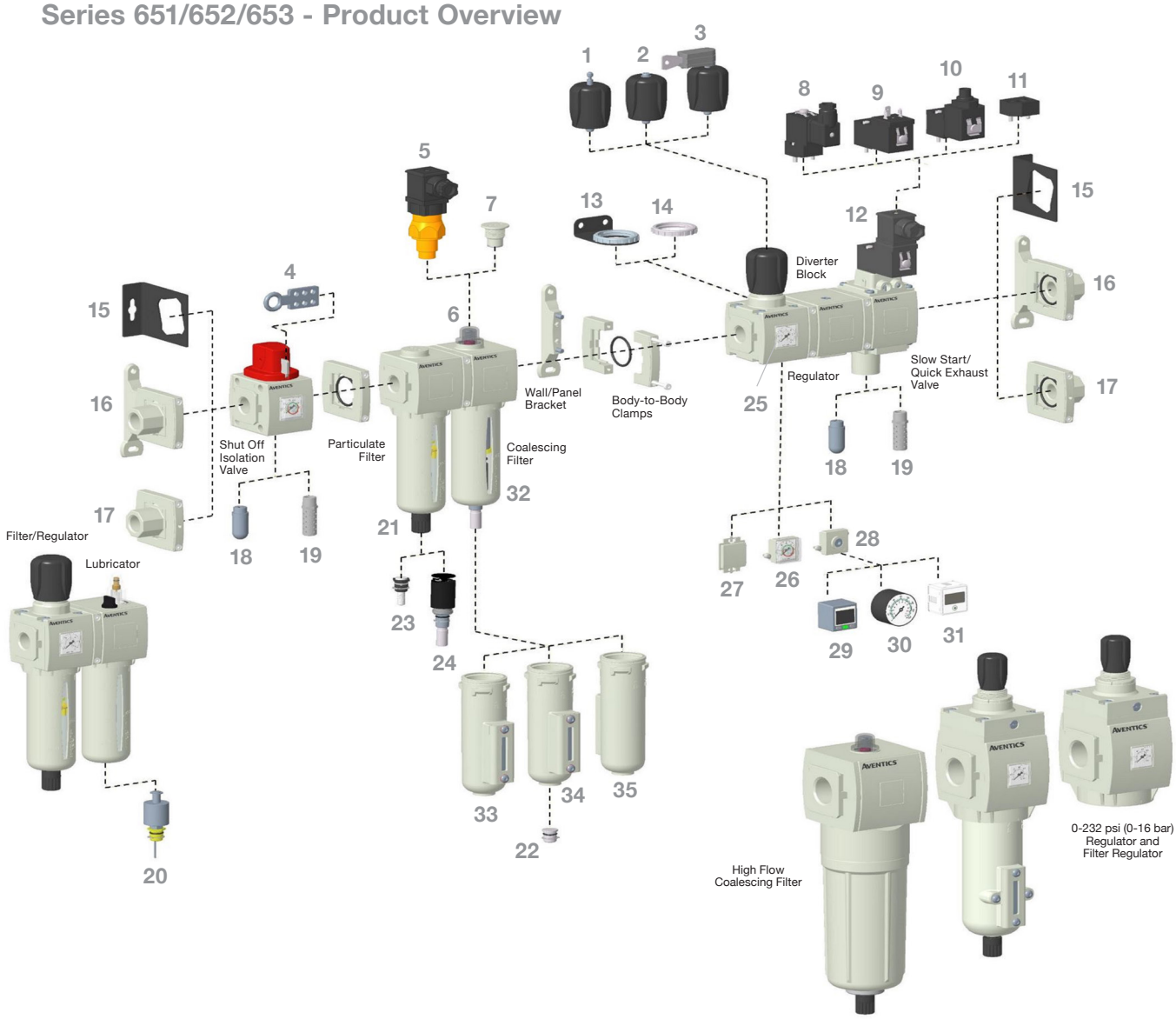
Series 651/652/653 - Product Overview



1) Provision for Key Lockable (Regulator & F/R*)
2) Tamper Resistant (Regulator & F/R*)
3) Key Lockable (Regulator & F/R*)
4) Scissor Lock
5) Electric Differential Pressure Indicator (Coalescing Filter)
6) Differential Pressure Visual Pop-up Indicator (Coalescing Filter)
7) No Differential Pressure Indicator
8) Vertical Solenoid (DIN Connector with & w/o LED)
9) Horizontal Solenoid without DIN Spade Coil without Connector
10) Horizontal Solenoid with 3 Pin M12 Connection
11) Pilot Air Operated
12) Horizontal Solenoid (DIN Connector with & w/o LED)

* F/R = Filter/Regulator

13) Panel Nut/Panel Bracket (Regulator & F/R*)
14) Panel Nut (Regulator & F/R)
15) Side Mounting Brackets
16) End Plates, Body-to-Body Clamps & Wall/Panel Brackets
17) End Plates & Body-to-Body Clamps
18) Polyethylene Muffler
19) Metal Muffler
20) Electronic Liquid Level Indicator
21) Semi-automatic/Manual Drain
22) Plug for No Drain
23) Manual Drain - Stainless Steel
24) Automatic Drain - Normally Open - Brass

25) Low Profile Gauge
26) Low Profile Gauge with Pressure Range Indicators
27) No Gauge Port
28) Port Plate
29) Digital Pressure Switch - DPS Series 280
30) Round Gauge
31) Digital Gauge
32) Polycarbonate Bowl & Guard (No Bowl Guard Option - Series 651 Only)
33) Metal Bowl with Polyamide Sight Gauge
34) Metal Bowl with Borosilicate (Glass) Sight Gauge
35) Metal Bowl without Sight Gauge

Series 651/652/653 Modular Assembly Mounting Features

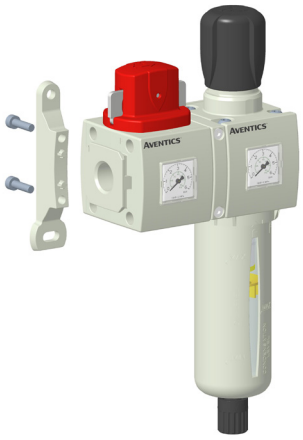
(see Accessories pages 52 & 53 for part numbers)

Body-to-Body Assembly Clamp

Easy to assemble Body-to-Body clamp, with captive screws. Available with NBR or FKM Seal. Products are easily assembled in seconds.

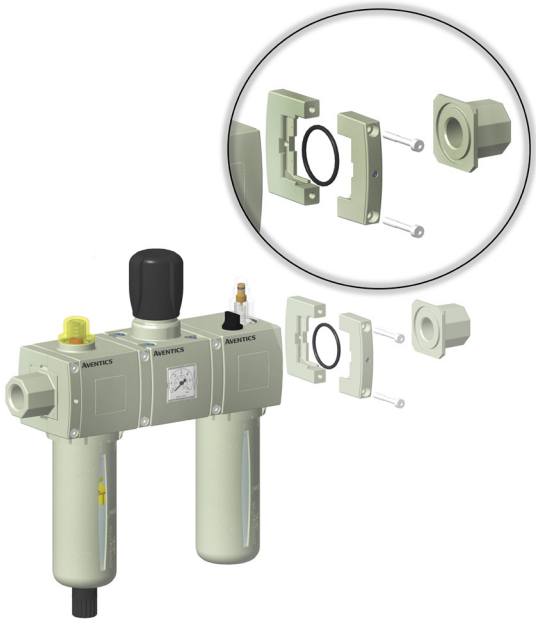
Wall/Panel Bracket

The Wall/Panel Bracket feature is the primary mounting feature for the air prep assemblies. These brackets easily attach to the back of the Body-to-Body assembly clamps using two screws. In addition, this bracket can be used as a support bracket in between any station on the manifold.



End Plates with Body-to-Body Assembly Clamp

The "End Plate" feature allows the user to easily remove the air prep assembly without having to remove the piping. Simply loosen the screws on the Body-to-Body assembly clamps, and the manifold is easily removed in seconds. The kit includes Inlet/Outlet plates, Body-to-Body clamps and O-Rings.

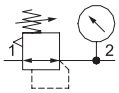


Side Mounting Brackets

The "Side Mounting Brackets" are typically used to mount single units, but could also be used to mount multiple units. Recommended only for static applications (without vibration).

NOTE: All ports are threaded as standard (except Lockout Valve).

REGULATOR



- High flow with a wide range of adjustable output pressure ranges
- Available with relieving, non-relieving and internal flow check options
- Optional low profile gauge, round gauge, digital gauge or digital pressure switch
- Optional extended temperature range of -40 °F to 176 °F (-40 °C to 80 °C)
- Threaded ports allow for individual or modular mounting
- Key lockable and tamper resistant options

Performance Data				
Series		**651**	**652**	**653**
Port Size		1/8, 1/4	1/4, 3/8, 1/2	1/2, 3/4, 1
Thread Type		NPTF, G & Rc		
Nominal Flow - Per ISO 6358 P1 = 145 PSI (10 bar) Setpoint P2 = 91.4 PSI (6.3 bar) ΔP = 14.5 PSI (1 bar)		SCFM (L/min ANR)		
	1/8	28.1 (800)	-	-
	1/4	72.6 (2060)	144.2 (4120)	-
	3/8	-	228.6 (6530)	-
	1/2	-	245.0 (7000)	245.0 (7000)
	3/4	-	-	353.1 (10000)
	1	-	-	406.1 (11500)
Maximum Inlet Pressure PSIG (bar) P1		232 (16)		290 (20)
Adjustable Pressure Ranges PSIG (bar) P2		3 to 45 (0.2 to 3)		
		3 to 60 (0.2 to 4)		
		7 to 125 (0.5 to 8)		
		7 to 145 (0.5 to 10)		
		-	-	7 to 232 (0.5 to 16)*
Pilot Operated Regulator Input-to-Output Pressure Ratio		-	1:1	-
Ambient Temperature Range °F (°C)		-4 to 122 (-20 to 50)		
Fluid Temperature Range °F (°C)		-4 to 122 (-20 to 50)		
Fluid		Air or Inert Gas		
Weight lbs. (kg)		0.47 (0.215)	0.95 (0.431)	2.43 (1.102)/2.85 (1.293)*

* High pressure assisted version

Materials in Contact with Fluid	
Body	Aluminum
Seals	NBR/FKM
Springs	Stainless Steel
Poppet	Brass
Stem	PA

How to Order - Regulator

8 651 A R 0 0 2 F A00 G 0

Port Type
8 = NPTF
[1] G = ISO 228/1-G
J = ISO 7/1 Rc

Product Series
651
652
653

Revision
A

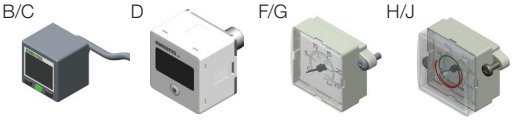
Product Type
K = Regulator with Internal Flow Check (652 only)
[2] R = Regulator
W = Pilot Operated Regulator (652 only)

K/R W

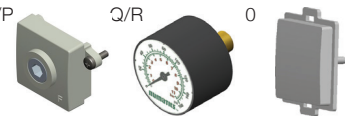
Port Size
1 = 1/8 (Series 651)
2 = 1/4 (Series 651 or 652)
3 = 3/8 (Series 652)
4 = 1/2 (Series 652 or 653)
5 = 3/4 (Series 653)
6 = 1 (Series 653)

Gauge Type
B = Digital Pressure Switch - PNP (Rated Pressure - 0-145 PSIG/0-10 bar)
C = Digital Pressure Switch - NPN (Rated Pressure - 0-145 PSIG/0-10 bar)
D = Digital Gauge (Rated Pressure - 0-145 PSIG/0-10 bar)
F = Low Profile Gauge PSI/bar
G = Low Profile Gauge bar/PSI
H = Low Profile Gauge PSI/bar with Pressure Range Indicator
J = Low Profile Gauge bar/PSI with Pressure Range Indicator
N = No Gauge with Port Plate (1/8 NPTF)
P = No Gauge with Port Plate (1/8 ISO 7/1 Rc)
Q = Round Gauge bar/PSI
R = Round Gauge PSI/bar
0 = No Gauge Port

B/C D F/G H/J



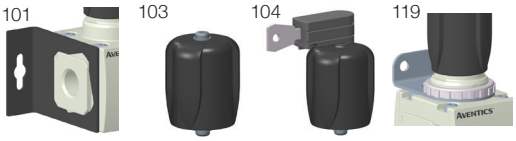
N/P Q/R 0



Pressure Range
D = 3–45 PSIG/0.2–3 bar
E = 3–60 PSIG/0.2–4 bar
G = 7–125 PSIG/0.5–8 bar
H = 7–145 PSIG/0.5–10 bar
N = 7–232 PSIG/0.5–16 bar (653 only)

[3] Options
A00 = No Options
101 = Side Mounting Brackets
102 = Panel Nut (651 and 652 only)
103 = Tamper Resistant
104 = Key Lockable
105 = High Temperature (80 °C/176 °F)
[4] 106 = Low Temperature (-40 °C/-40 °F)
109 = FKM Seals
113 = Stainless Steel Fasteners
114 = Provision for Key Lockable Option
117 = ATEX Zones 1–21
119 = Panel Bracket with Panel Nut (651 and 652 only)
121 = Non-relieving
122 = Bottom Oriented Pressure Adjustment
123 = Gauge Type Mounted for Right-to-Left Flow
202 = 105 + 109
2A9 = 105 + 106

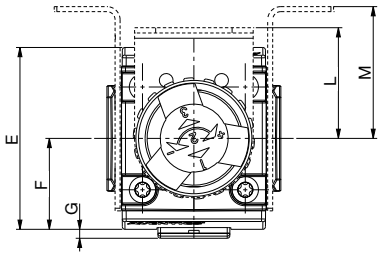
101 103 104 119



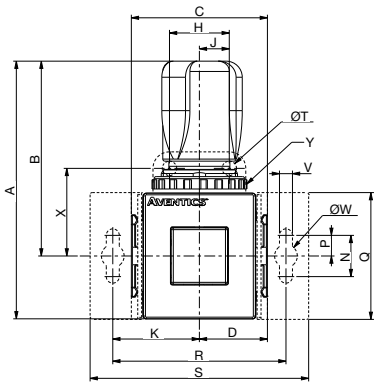
122 123

1 Conforms to ISO standards 1179-1
2 Relieving Standard; use option 121 for Non-relieving
3 If multiple options are required, please use the online CAD configurator on the website to generate the part number (www.emerson.com), or consult factory
4 Compressed air must be dry enough so no ice formation is present on the product

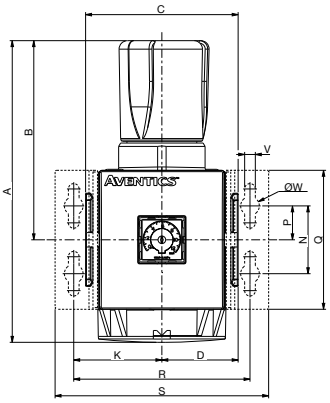
Dimensions: mm (inches) Series 651/652/653 Regulator



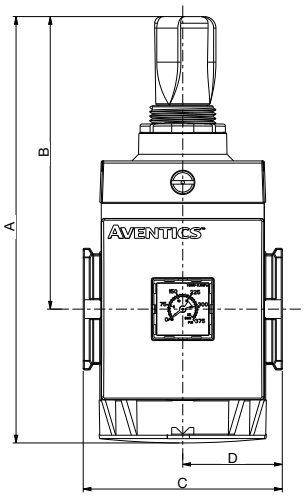
Series 651/652



Series 653



Series 653 High Pressure Regulator - 232 PSIG (16 bar)

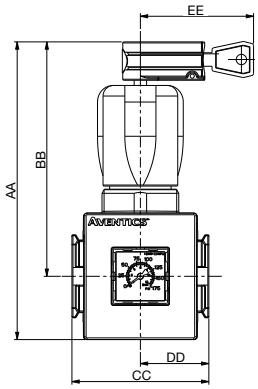


	A	B	C	D	E	F	G	H	J	K	L	M
651	103	77.5	50	25	58	29	3.4	29	14.5	35	42	44.5
	(4.06)	(3.05)	(1.97)	(0.98)	(2.28)	(1.14)	(0.13)	(1.14)	(0.57)	(1.38)	(1.65)	(1.75)
652	125	94.5	66	33	69	34.5	2.5	29	14.5	41.75	42	50
	(4.92)	(3.72)	(2.60)	(1.30)	(2.72)	(1.36)	(0.10)	(1.14)	(0.57)	(1.64)	(1.65)	(1.97)
653	178.4	117.5	90	45	93	46.5	3	-	-	52	-	62
	(7.02)	(4.63)	(3.54)	(1.77)	(3.66)	(1.83)	(0.12)	-	-	(2.05)	-	(2.44)

	N	P	Q	R	S	ØT	V	ØW	X	Y
651	20	10	50	70	92	7	6.3	11	39.1	M30 x 2
	(0.79)	(0.39)	(1.97)	(2.76)	(3.62)	(0.28)	(0.25)	(0.43)	(1.54)	
652	20	10	61.5	84	106	7	6.3	11	43.5	M37 x 2
	(0.79)	(0.39)	(2.42)	(3.31)	(4.17)	(0.28)	(0.25)	(0.43)	(1.71)	
653	40	20	82	104	126	-	6.3	11	-	-
	(1.57)	(0.79)	(3.23)	(4.09)	(4.96)	-	(0.25)	(0.43)	-	

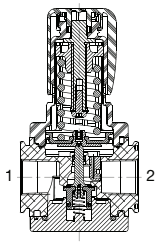
	A	B	C	D	E	F	G
653 High Pressure	193	132	90	45	93	46.5	3
	(7.60)	(6.20)	(3.54)	(1.77)	(3.66)	(1.83)	(0.12)

Series 651/652/653



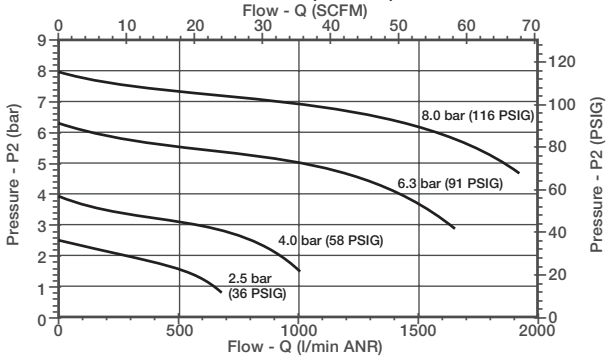
	AA	BB	CC	DD	EE
651	121.5	96	50	25	55
	(4.78)	(3.78)	(1.97)	(0.98)	(2.17)
652	151	120	66	33	55
	(5.94)	(4.72)	(2.60)	(1.30)	(2.17)
653	192	137	90	45	55
	(7.56)	(5.39)	(3.54)	(1.77)	(2.17)

Cross Section - Series 651/652/653 Regulator

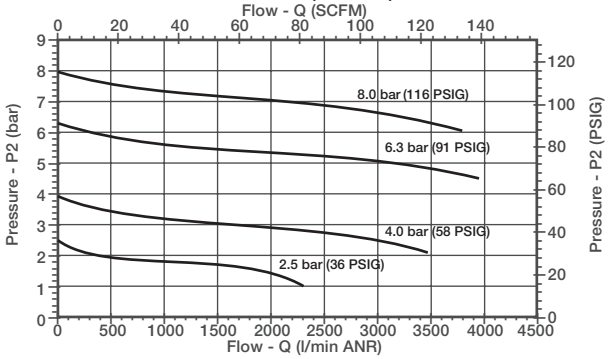


Regulator Flow Charts

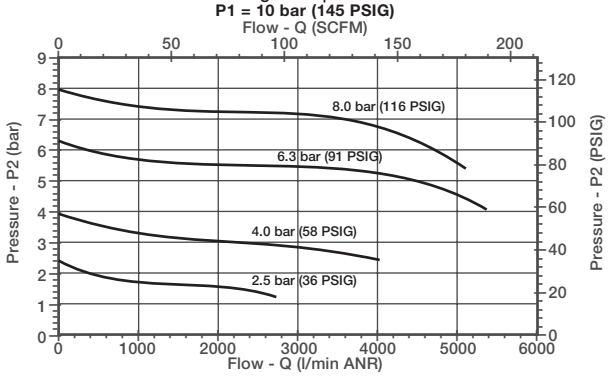
651 Regulator | 1/8 Ports
P1 = 10 bar (145 PSIG)



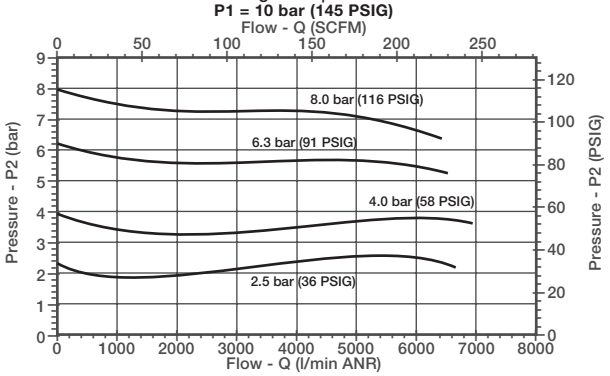
651 Regulator | 1/4 Ports
P1 = 10 bar (145 PSIG)



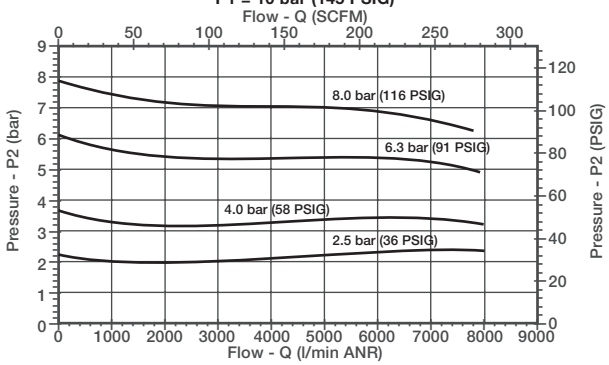
652 Regulator | 1/4 Ports
P1 = 10 bar (145 PSIG)



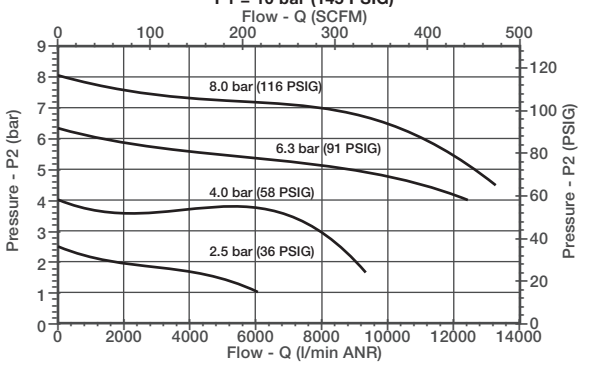
652 Regulator | 3/8 Ports
P1 = 10 bar (145 PSIG)



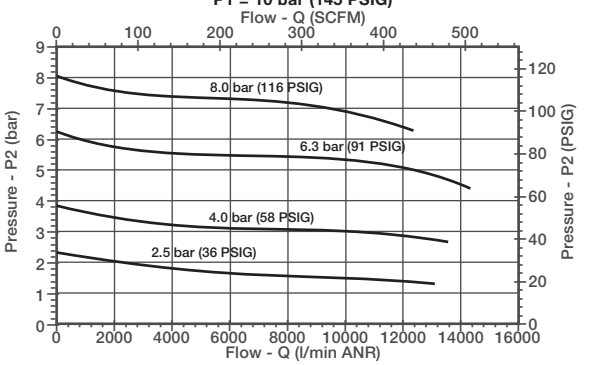
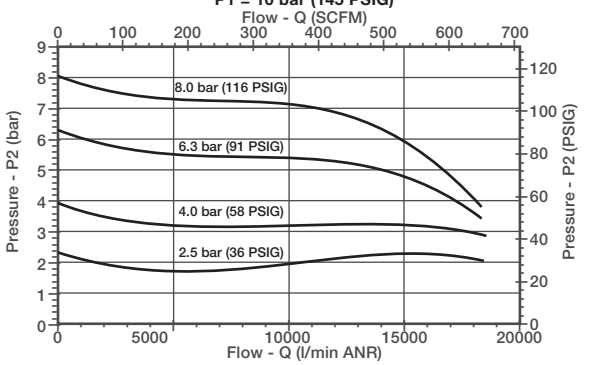
652 Regulator | 1/2 Ports
P1 = 10 bar (145 PSIG)



653 Regulator | 1/2 Ports
P1 = 10 bar (145 PSIG)



653 Regulator | 3/4 Ports
P1 = 10 bar (145 PSIG)



653 Regulator | 1 Ports
P1 = 10 bar (145 PSIG)