

Mechanical Valves Product Guide

$C_v = .06 - 1.32$

This type of valve is offered with ports from M5 to 1/4" in different versions including 3-way/2-position normally closed, 3-way/2-position normally open, and 5-way/2-position with a variety of operators to meet a wide range of uses. The valves are available in brass poppet style (Series 1 and 2), and spool style (Series 3 and 4).

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$C_v = 0.6$

Mechanically Operated Minivalves Series 2



3-way/2-position
Ports M5, cartridge $\varnothing 4$ mm (5/32" O.D.)

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$C_v = .52 - .73$

1/8" & 1/4" Mechanically Operated Valves Series 1 and 3



3-way/2-position and 5-way/2-position Ports 1/8", 1/4" NPTF

Page 40

$C_v = .73$

1/8" Ported Mechanically Operated Sensor Valves Series 3 Whisker Valve



3-way/2-position and 5-way/2-position Ports 1/8" NPTF

Page 42

$C_v = .68 - 1.32$

1/8" & 1/4" Ported Mechanically Operated Sensor Valves Series 4



3-way/2-position and 5-way/2-position Ports 1/8", 1/4" NPTF

Series 2 Mechanically Operated Minivalves

Cv = .06

3-way/2-position
Ports M5, cartridge \varnothing 4 mm
(10-32 UNF, 5/32" O.D.)

The mechanically operated Series 2 miniature valves with 3-way/2-position normally closed function are available with M5 threaded ports or with an integrated super-rapid fitting for diameter 4 mm tubes (5/32" OD). The devices are actuated by a plunger, roller/lever or a unidirectional lever.

These miniature valves have been designed to satisfy the application requirements of the controls industry, paying particular attention to the features which these components must have, i.e.:

- short operational stroke
- small dimensions
- fast and accurate signal

Operating phases (see individual dimension drawings):

A = total stroke

B = pre-stroke (closes exhaust)

C = effective stroke (opens outlet)



TECHNICAL SPECIFICATIONS

Valve group	3-way/2-position
Construction	Poppet type
Mounting	On consoles
Material	Anodized body, Brass poppet gate, Buna-N seals, nickel-plated brass plungers
Threaded port sizes	M5 (10-32 UNF) thread, or 4 mm O.D. cartridge (5/32" O.D. tube connect)
Installation	Bulkhead, or single panel mount
Operating temperature	32° F - 175° F, (dry air necessary down to -4° F)
Fluid	Filtered air (25 micron or less recommended)
Lubricant	Not required; otherwise, only oil compatible with Buna-N, (3° - 10° E), (ISOVG 32 grade; 32 centistrokes)

PNEUMATIC DATA

Operating pressure	2 - 10 bar, (30 - 145 psi)
Nominal pressure	6 bar, (87 psi)
Nominal flow	*Qn = 60 NL/min. (2.12 SCFM)
Nominal diameter	2.5 mm
Cv Rating	0.06

*Qn flowrate (SCFM) determined with a supply pressure of 6 bar, (87 psi), and with a pressure drop of 1 bar, (14.5 psi).

**Dimensions are in millimeters

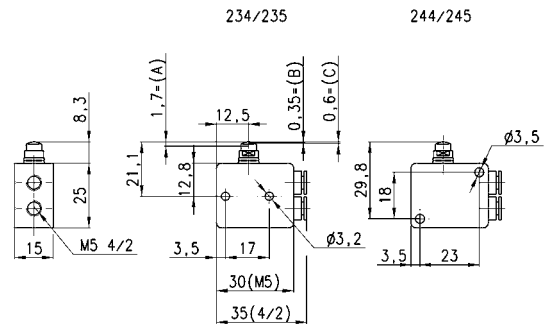
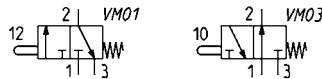
CODING OF MINIVALVES

2	3	4	-	94	5
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2	SERIES
3	FUNCTION 3 = 3/2-way NC 4 = 3/2-way NO
4	PORTS 4 = cartridge \varnothing 4 (5/32" OD) 5 = M5 (10-32 UNF)
94	ACTUATION 94 = plunger 95 = lever/roller 96 = unidirectional lever 98 = plunger, panel mounting
5	RESETTING 5 = spring return

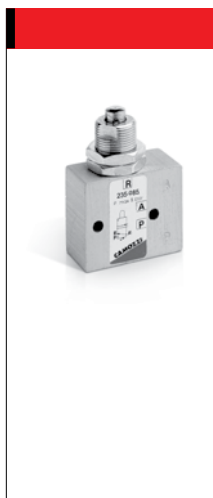
Minivalves

Operating pressure = 2 - 8 bar
Flow rate = 60 NI/min.
Actuating force at 6 bar = 6 N
A = Complete stroke
B = Centres closed position
C = Effective stroke



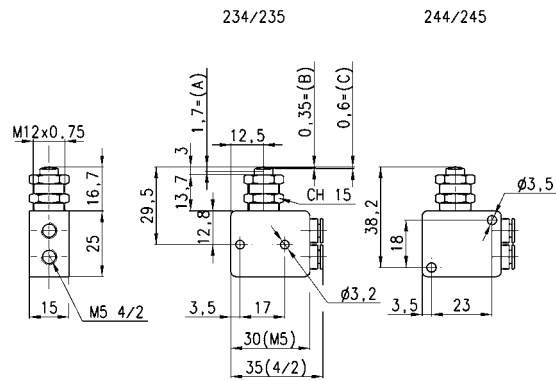
Mod.	SYMBOL
234-945	VM01
235-945	VM01
244-945	VM03
245-945	VM03

The company reserves the right to vary models and dimensions without notice.
These products are designed for industrial applications and are not suitable for sale to the general public.



Minivalves

Operating pressure = 2 - 8 bar
 Flow rate = 60 NI/min.
 Actuating force at 6 bar = 6 N
 A = Complete stroke
 B = Centres closed position
 C = Effective stroke

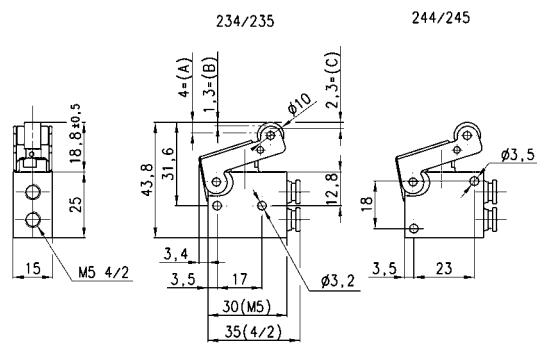


Mod.	SYMBOL
234-985	VM01
235-985	VM01
244-985	VM03
245-985	VM03



Minivalves

Operating pressure = 2 - 8 bar
 Flow rate = 60 NI/min.
 Actuating force at 6 bar = 4 N
 A = Complete stroke
 B = Centres closed position
 C = Effective stroke



Mod.	SYMBOL
234-955	VM04
235-955	VM04
244-955	VM06
245-955	VM06



Minivalves

Operating pressure = 2 - 8 bar

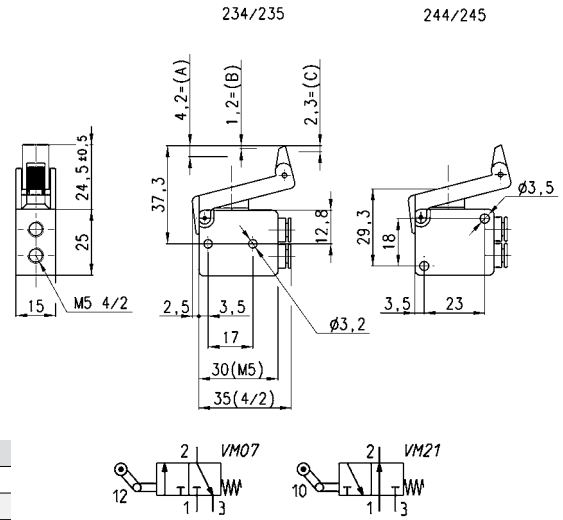
Flow rate = 60 NI/min.

Actuating force at 6 bar = 6 N

A = Complete stroke

B = Centres closed position

C = Effective stroke



Mod.	SYMBOL
234-965	VM07
235-965	VM07
244-965	VM21
245-965	VM21

Series 1 and 3 Mechanically Operated Valves

Cv = .52 - 1.31

3-way/2-position and 5-way/2-position
Ports 1/8" and 1/4" NPTF
Series 1: 1/8" and 1/4" NPTF
Series 3: 1/8" NPTF

The mechanically operated valves in the Series 3 (1/8") have been designed with three different types of actuation:

- plunger
- lever/roller
- unidirectional lever/roller

In each case, return is effected by a mechanical spring.

The Series 3, 3-way/2-position valves are normally closed in the rest position when the pressure is supplied at P and are normally open when the pressure is supplied at the connection R, the user port A remaining unchanged.

Moreover, the 5-way/2-position valves may be supplied via the ports R and S with two different pressures if a cylinder has to be operated using a delivery pressure which is different from the return pressure. They can be operated with vacuum down to -.9 bar (28" Hg). Additionally, the series 3 valves can be supplied with 2 different pressures into ports 3 and 5 if a cylinder requires different extend and retract forces. The series 1 valves offer a more rugged, compact design with steel operator interfaces.



TECHNICAL SPECIFICATIONS

Valve group	3/2, 5/2, (way/positions)
Construction	Spool type Series 3; Poppet type series 1
Mounting	Mounting holes in valve body
Materials	Anodized body, Stainless steel spool, Buna-N seals
Threaded port size	1/8" and 1/4" NPTF
Installation	Single panel mount
Operating temperature	32° F - 175° F, (dry air necessary down to -4° F)
Fluid	Filtered air (25 micron or less recommended)
Lubricant	Not required; otherwise, oil compatible with Buna-N, (3° - 10° E) (ISOVG32 grade; 32 centistokes)

PNEUMATIC DATA

Operating pressure	0 - 10 bar, (0 - 145 psi) (down to -.9 bar vacuum; 28" Hg with Series 3)
Nominal pressure	6 bar (87 psi)
Nominal flow	*Qn Series 1: 1/8" = 500 NL/min. (17.65 SCFM); 1/4" = 1250 NL/min. (44.14 SCFM) Series 3: 1/8" = 700 NL/min. (24.7 SCFM)
Nominal Diameter	1/8" = 5 mm
Cv Rating	Series 1: 1/8" = 0.52; 1/4" = 1.31 Series 3: 1/8" = 0.73

*Qn flowrate (SCFM) determined with a supply pressure of 6 bar, (87 psi), and with a pressure drop of 1 bar, (14.5 psi)

**Dimensions are in millimeters

CODING OF MINIVALVES

3	3	8	-	94	5	TF
3	SERIES: 1 3					
3	FUNCTION: 3 = 3/2 ways NC 4 = 3/2 ways NO (only Series 1) 5 = 5/2 ways					
8	PORTS: 8 = 1/8 NPTF 4 = 1/4 NPTF (only Series 1)					
94	ACTUATION: 94 = plunger 95 = lever/roller 96 = unidirectional roller					
5	RESETTING: 5 = spring return					
TF	TF = NPTF ports blank = BSP ports					

Valves Mod. 338-945TF Cv = .73

Actuating force at 6 bar (87 psi) = 32N (7.19 lbs.)

Valves Mod. 358-945TF Cv = .73

Actuating force at 6 bar (87 psi) = 35N (7.87 lbs.)

Valves Mod. 338-955TF Cv = .73

Actuating force at 6 bar (87 psi) = 15N (3.37 lbs.)
Note: roller and plunger are made of stainless steel. (AISI 303)

Valves Mod. 358-955TF Cv = .73

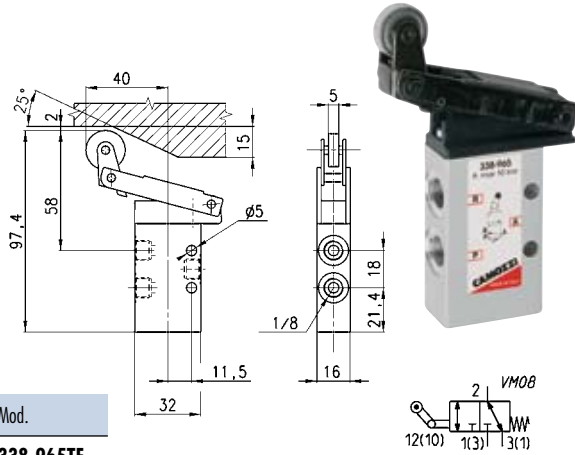
Actuating force at 6 bar (87 psi) = 17N (3.82 lbs.)
Note: roller and plunger are made of stainless steel. (AISI 303)

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Valves Mod. 338-965TF

Cv = .73

Actuating force at 6 bar (87 psi) = 15N (3.37 lbs.)
 Note: roller and plunger are made of stainless steel. (AISI 303)



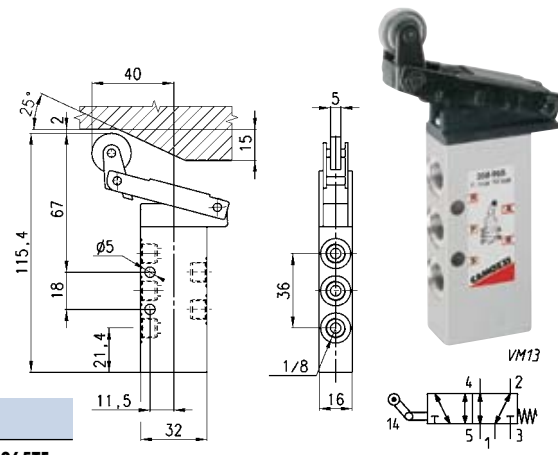
Mod.

338-965TF

Valves Mod. 358-965TF

Cv = .73

Actuating force at 6 bar (87 psi) = 16N (3.60 lbs.)
 Note: roller and plunger are made of stainless steel. (AISI 303)



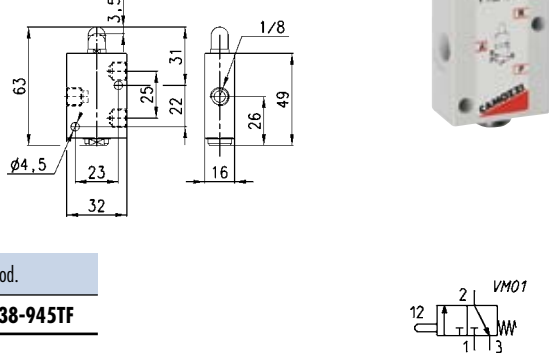
Mod.

358-965TF

Valves Mod 138-945 TF

Cv = .52

Operating pressure = 0 - 10 bar (0-145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 70N (15.7 lbs)



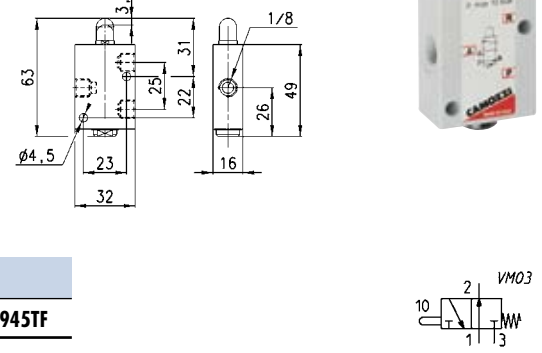
Mod.

138-945TF

Valves Mod 148-945 TF

Cv = .52

Operating pressure = 0 - 10 bar (0-145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 70N (15.7 lbs)



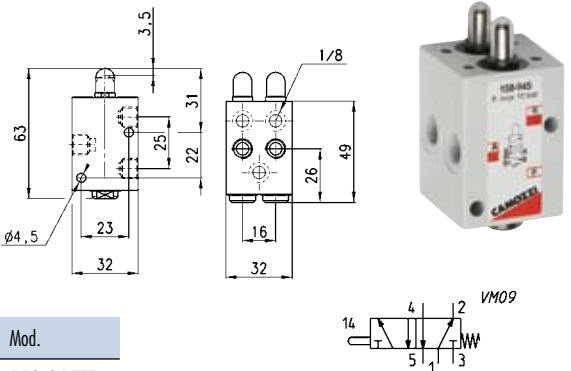
Mod.

148-945TF

Valves Mod 158-945 TF

Cv = .52

Operating pressure = 0 - 10 bar (0-145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 120N (26.9 lbs) total combined



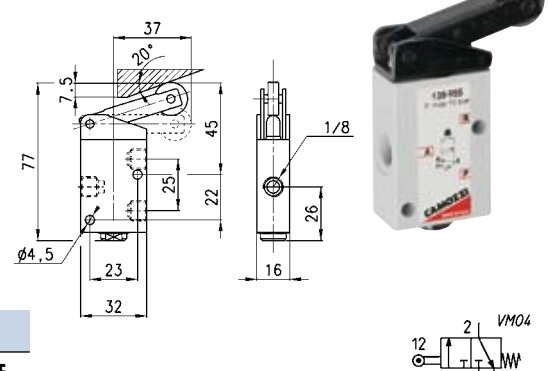
Mod.

158-945TF

Valves Mod 138-955 TF

Cv = .52

Operating pressure = 0 - 10 bar (0-145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 36N (8.08 lbs)



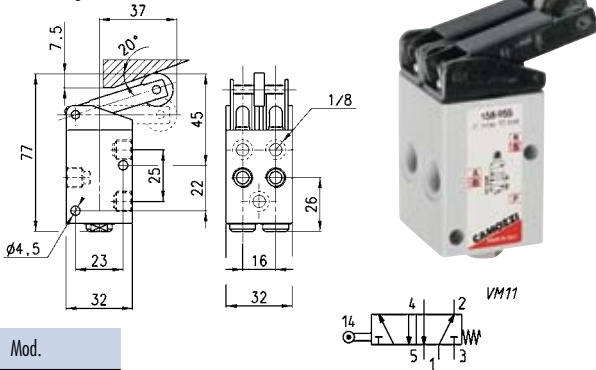
Mod.

138-955TF

Valves Mod 158-955 TF

Cv = .52

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 92N (20.65 lbs) total combined



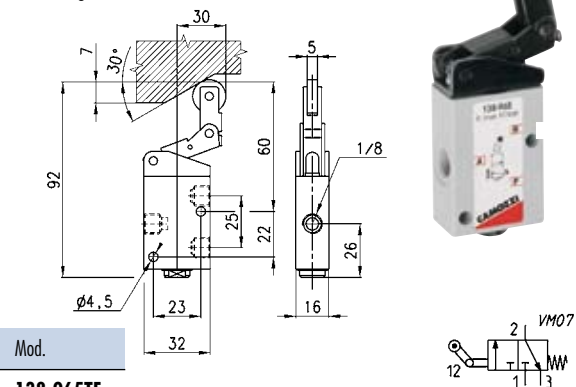
Mod.

158-955TF

Valves Mod 138-965 TF

Cv = .52

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 500 NI/min. (17.65 SCFM)
 Actuating force at 6 bar = 41N (9.2 lbs)



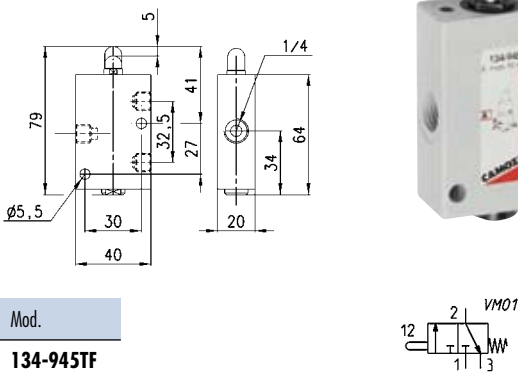
Mod.

138-965TF

Valves Mod 134-945 TF

Cv = 1.31

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 1250 NI/min. (44.14 SCFM)
 Actuating force at 6 bar = 64N (14.37 lbs)



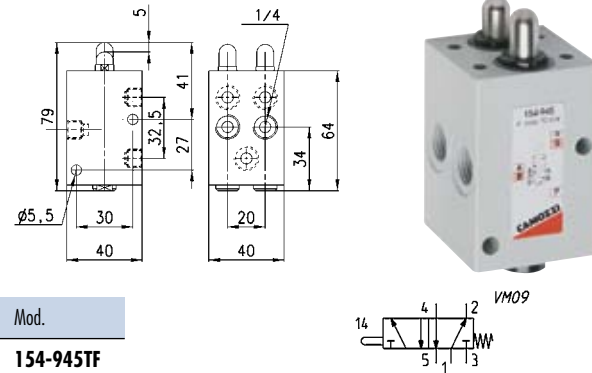
Mod.

134-945TF

Valves Mod 154-945 TF

Cv = 1.31

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 1250 NI/min. (44.14 SCFM)
 Actuating force at 6 bar = 147N (33.0 lbs) total combined



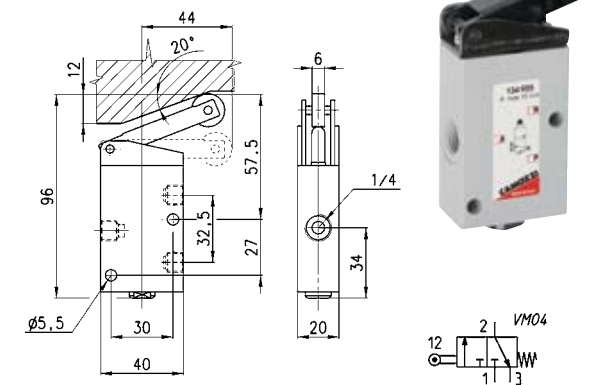
Mod.

154-945TF

Valves Mod 134-955 TF

Cv = 1.31

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 1250 NI/min. (44.14 SCFM)
 Actuating force at 6 bar = 41N (9.2 lbs)



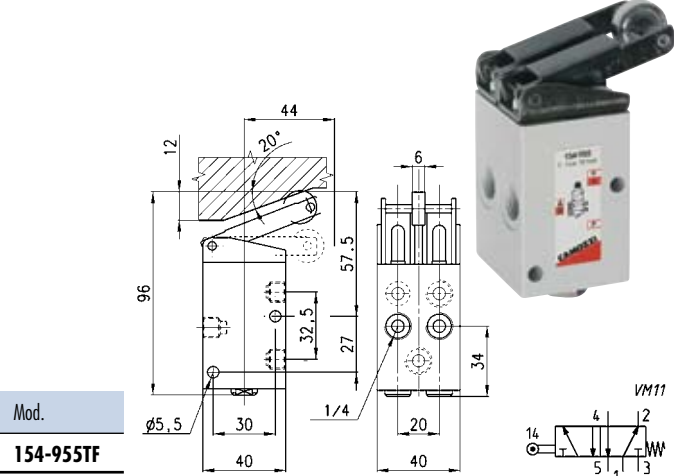
Mod.

134-955TF

Valves Mod 154-955 TF

Cv = 1.31

Operating pressure = 0 - 10 bar (0 - 145 psi)
 Flow rate = 1250 NI/min. (44.14 SCFM)
 Actuating force at 6 bar = 110N (24.7 lbs) total combined



Mod.

154-955TF

Series 3 1/8" Ported Mechanically Operated Sensor Valves (Whisker Valve)

Cv = .73

3-way/2-position and 5-way/2-position Ports 1/8" NPTF

In order to facilitate the use of limit switch valves in applications where very low actuating forces and high flow rates are required, the Series 3 valves are equipped with new mechanical devices designed for this purpose. The Series 3 valve is designed with a mechanical lever which when operated releases an internal pilot signal to atmosphere. Actuation forces are less than 50g (2N); (.5 lbf) and the sensitivity can be increased by adding a "whisker" or rod of dia. 3mm to the lever (cross-thread of M5 x .8 can be used to hold "whisker-rod" in place)

The functions available are as follows:

for the 3 Series:

- 3-way/2-position normally closed or normally open (spring return)
- 5-way/2-position (spring return)

* These valves have an internal mechanical spring return and a pilot-pressure spool plunger that shifts upon actuation of the lever by depressurizing the spool plunger. Valve symbols shown are "at rest" next to the actuator symbol.



TECHNICAL SPECIFICATIONS

Valve group	3-way/2-position, 5-way/2-position
Construction	Spool-type (servocontrolled)
Mounting	Mounting holes in valve body
Materials	Anodized body, stainless steel spool, Buna-N seals
Threaded port sizes	1/8" NPTF
Installation	In any position
Operating temperature	32° F - 175° F, (dry air necessary down to -4° F)
Fluid	Filtered air (25 micron or less recommended)
Lubricant	Not required; otherwise, oil compatible with Buna-N, (3° - 10° E) (ISOVG 32 grade; 32 centistrokes)

PNEUMATIC DATA

Operating pressure	4-10 bar (58-145 psi)
Nominal pressure	6 bar, (87 psi)
Nominal flow	*Qn Series 3: 1/8" = 700 NI/min. (24.7 SCFM) Cv ratin 1/8 NPTF" = .73
Nominal diameter	1/8" = 5 mm
Fluid	Filtered air

* Qn = determined with supply pressure of 6 bar and with Dp = 1 bar
Dimensions are in millimeters

CODING OF MINIVALVES

3	3	8	-	D15	-	9A5	TF
3	SERIES: 3 4						
3	FUNCTION: 3 = 3/2-way NC 4 = 3/2-way NO 5 = 5/2-way						
8	PORTS: 8 = 1/8 NPTF 4 = 1/4 NPTF						
D15	D15 = pressure drop/spring 015 = pressure/spring 011 = pressure/pressure						
9A5	ACTUATION 9A5 = lever sensor, spring return 194 = plunger sensor, spring return 294 = plunger sensor, bistable 195 = lever/roller, spring return 295 = lever/roller, bistable		* These valves have an internal mechanical spring return and a pilot-pressure spool plunger that shifts upon actuation of the lever by depressurizing the spool plunger. Valve symbols shown are "at rest" next to the actuator symbol.				
TF	TF = NPTF ports blank = BSP ports						

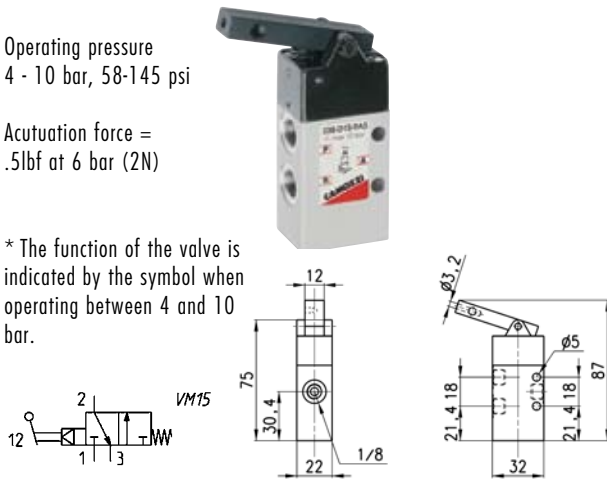
Valves Mod. **338-D15-9A5TF**

Cv = .73

Operating pressure
4 - 10 bar, 58-145 psi

Actuation force =
.5lbf at 6 bar (2N)

* The function of the valve is indicated by the symbol when operating between 4 and 10 bar.

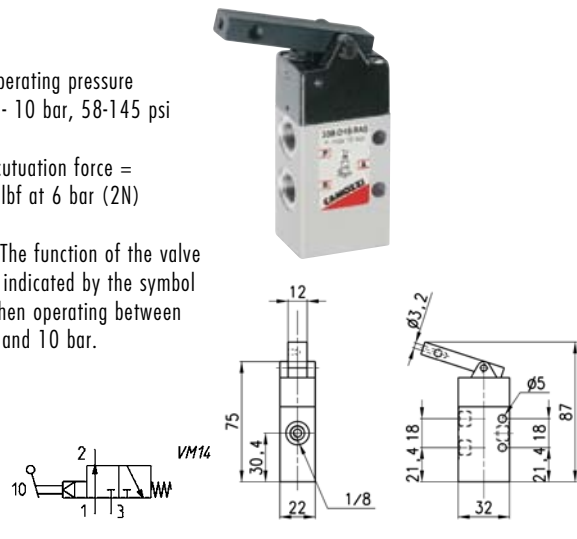
Valves Mod. **348-D15-9A5TF**

Cv = .73

Operating pressure
4 - 10 bar, 58-145 psi

Actuation force =
.5lbf at 6 bar (2N)

* The function of the valve is indicated by the symbol when operating between 4 and 10 bar.

Valves Mod. **358-D15-9A5TF**

Cv = .73

Operating pressure
4 - 10 bar, 58-145 psi

Actuation force =
.5lbf at 6 bar (2N)

* The function of the valve is indicated by the symbol when operating between 4 and 10 bar.



* All "whisker-rod" holes in lever have M5 x 0.8 cross-drilled tap hole for securing rod.

Series 4 1/8" & 1/4" Mechanically Operated Sensor Valves

3-way/2-position and 5-way/2-position
Ports 1/8", 1/4" NPTF

In order to facilitate the use of limit switch valves in applications where very low actuating forces and high flowrates are required, Series 4 valves are equipped with new mechanical devices designed for this purpose. The 4 Series includes one or two minivalves depending on the function which the valve must perform.*

The mini valves reduce the actuation force required to operate the main valve.

The functions available are as follows:

- 5-way/2-position (monostable) - spring-return
- 5-way/2-position (bistable) - double-pilot detented

*The mini-valves utilize a poppet valve to pilot-pressure the main spool plunger.



GENERAL DATA

Construction	spool-type (servocontrolled); internal pilot-pressure spool plunger
Valve Function	3-way/2-position, 5-way/2-position
Materials	Anodized body, stainless steel spool, NBR seals
Ports	1/8", 1/4" NPTF
Operating Temperature	32° - 175°F (dry air necessary down to -4°F)

PNEUMATIC DATA

Operating pressure	2.5 - 8 bar (36 - 116 psi) for single-pilot models
	2 - 8 bar (29 - 116 psi) for double-pilot models
Nominal Flow	Qn: 1/4" = 1250 NL/min. (44.1 SCFM) Cv = 1.31
	1/8" = 650 NL/min. (22.95 SCFM) Cv = 0.68

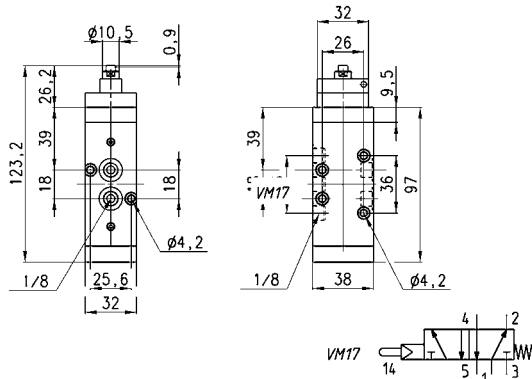
CODING							
3	3	8	-	D15	-	9A5	TF
3	SERIES: 3 4						
3	FUNCTION: 3 = 3/2-way NC 4 = 3/2-way NO 5 = 5/2-way						
8	PORTS: 8 = 1/8 NPTF 4 = 1/4 NPTF						
D15	D15 = pressure drop/spring 015 = pressure/spring 011 = pressure/pressure						
9A5	ACTUATION 9A5 = lever sensor, spring return 194 = plunger sensor, spring return 294 = plunger sensor, bistable 195 = lever/roller, spring return 295 = lever/roller, bistable						
TF	TF = NPTF ports blank = BSP ports						

* Valves operate by internal pilot pressure against plunger when manual/mechanical poppet valves are actuated.

Valves Mod. 458-015-194TF

Cv = 0.68

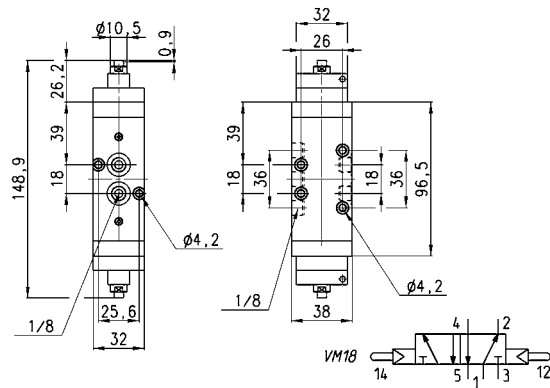
Operating pressure = 2.5 - 8 bar (36 - 116 psi)
Flow rate = 650 Nl/min. (22.95 SCFM)
Actuating force at 6 bar = 6 N (1.35 lbf)



Valves Mod. 458-011-294TF

Cv = 0.68

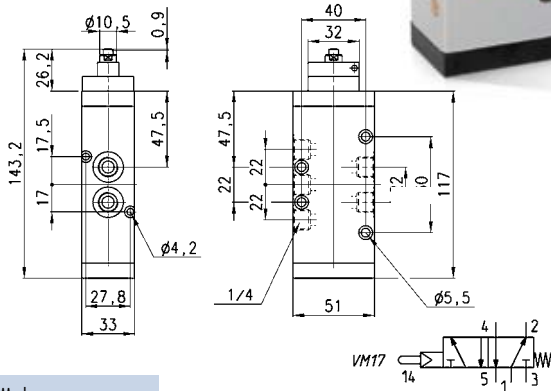
Operating pressure = 2 - 8 bar (29 - 116 psi)
Flow rate = 650 Nl/min. (22.95 SCFM)
Actuating force at 6 bar = 6 N (1.35 lbf)



Valves Mod. 454-015-194TF

Cv = 1.31

Operating pressure = 2.5 - 8 bar (36 - 116 psi)
 Flow rate = 1250 NI/min. (44.1 SCFM)
 Actuating force at 6 bar = 6 N (1.35 lbf)

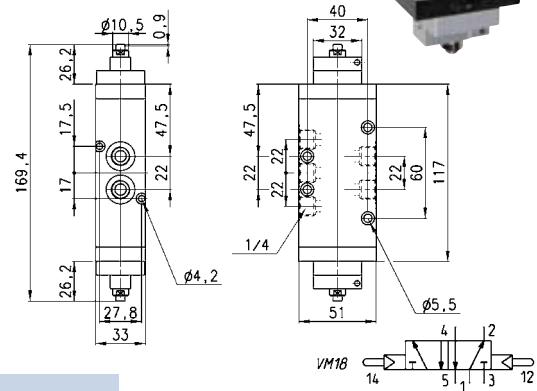


Mod.
454-015-194TF

Valves Mod. 454-011-294TF

Cv = 1.31

Operating pressure = 2 - 8 bar (29 - 116 psi)
 Flow rate = 1250 NI/min. (44.1 SCFM)
 Actuating force at 6 bar = 6 N (1.35 lbf)

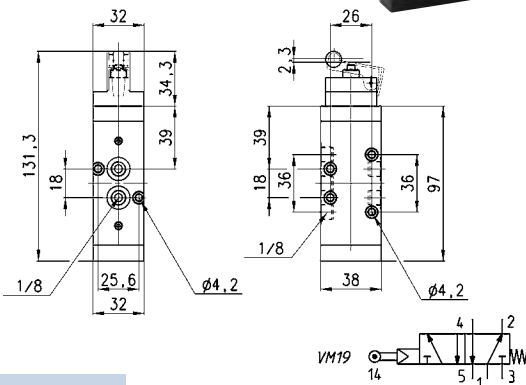


Mod.
454-011-294TF

Valves Mod. 458-015-195TF

Cv = 0.68

Operating pressure = 2.5 - 8 bar (36 - 116 psi)
 Flow rate = 650 NI/min. (22.95 SCFM)
 Actuating force at 6 bar = 4 N (.9 lbf)

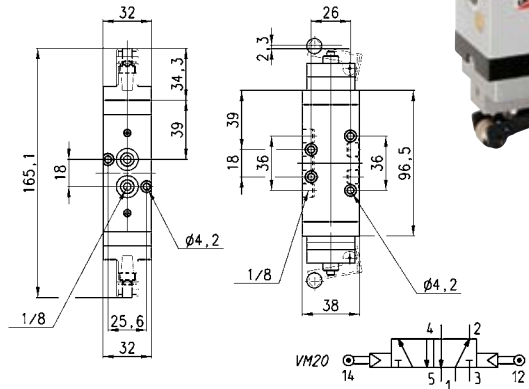


Mod.
458-015-195TF

Valves Mod. 458-011-295TF

Cv = 0.68

Operating pressure = 2 - 8 bar (29 - 116 psi)
 Flow rate = 650 NI/min. (22.95 SCFM)
 Actuating force at 6 bar = 4 N (.9 lbf)

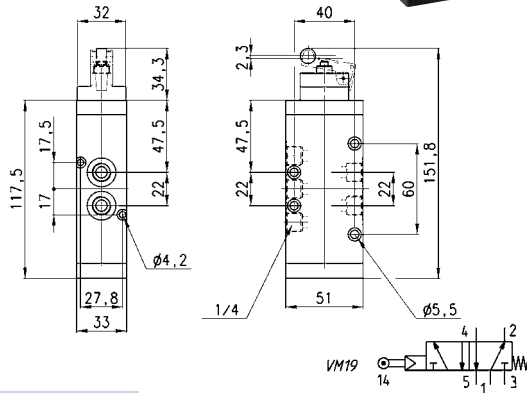


Mod.
458-011-295TF

Valves Mod. 454-015-195TF

Cv = 1.31

Operating pressure = 2.5 - 8 bar (36 - 116 psi)
 Flow rate = 1250 NI/min. (44.1 SCFM)
 Actuating force at 6 bar = 4 N (.9 lbf)



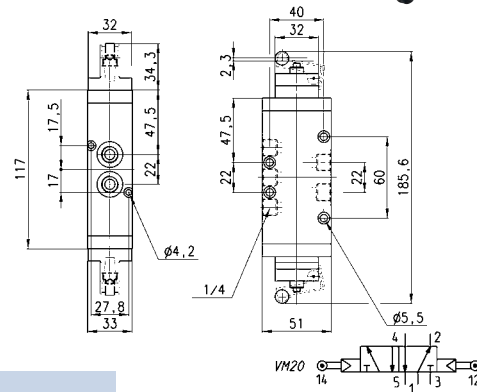
Mod.

454-015-195TF

Valves Mod. 454-011-295TF

Cv = 1.31

Operating pressure = 2 - 8 bar (29 - 116 psi)
 Flow rate = 1250 NI/min. (44.1 SCFM)
 Actuating force at 6 bar = 4 N (.9 lbf)



Mod.

454-011-295TF