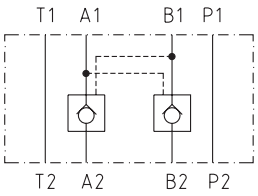
Pilot Operated Check Valves Sandwich Plates

2RJV1-06

Size 06 (D 03) • 320 bar (4600 PSI) • 60 L/min (15.9GPM)

HA 5021
7/2012

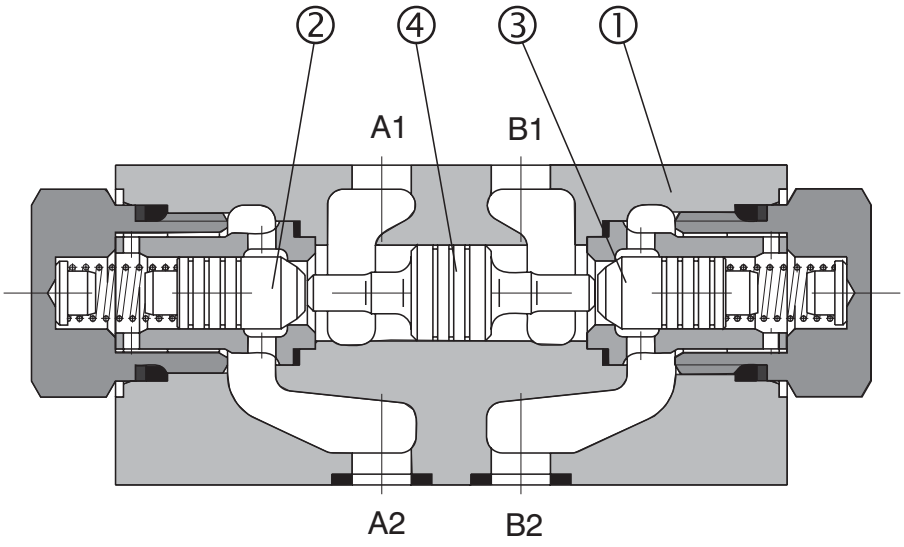
Replaces
HA 5021 5/2008



- **Sandwich plate design for use in vertical stacking assemblies**
- **Three models:**
  - **leakfree closure in lines A and B**
  - **leakfree closure in line A**
  - **leakfree closure in line B**
- **Installation dimensions to ISO 4401 / DIN 24 340**

Functional Description

Model 2RJV1-06 are pilot operated check valves in a sandwich plate design used to give leakfree closure of one or two actuator ports under pressure, even during long idle periods.
The valve consists of the cast iron housing (1), one or two check valves (2), (3) and the pilot piston (4).
When fluid flows from A1 (B1) to A2 (B2) it opens the check valve (2), (3) and at the same time shifts the pilot piston (4) to the right (left), thus opening the way B2 → B1 (A2 → A1). When the pressure drops (i. e. after shifting the directional valve into its middle position), the springs push the poppets onto the seats and the circuit between the check valve and the cylinder is closed.
To ensure that the poppet valves seat properly, the actuator ports A2 and B2 of the directional valve should be connected to tank T in neutral position (functional symbol Y).
The valve body is phosphate coated, the surfaces of the other parts are zinc coated.



Ordering Code

2RJV1-06-M □ □

Pilot Operated Check Valve
Sandwich Plate

Nominal size **06 (D 03)**

Modular design

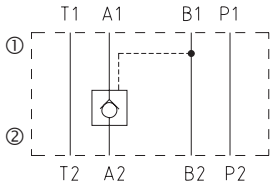
Seals
no designation NBR
V Viton

Functional Symbols
A Check valve in line A*
B Check valve in line B*
C Check valves in lines A and B*
* see the table Functional symbols

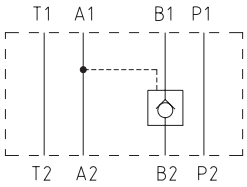
Functional Symbols

Arrangement of the check valves in the valve body

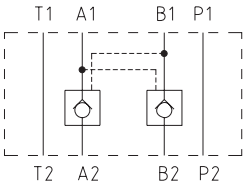
2RJV1-06-MA



2RJV1-06-MB

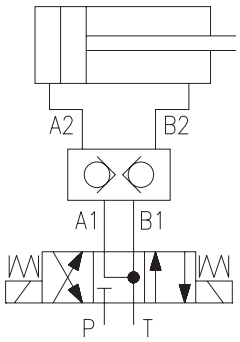


2RJV1-06-MC



① valve side
② subplate side

Typical circuit with pilot operated check valve



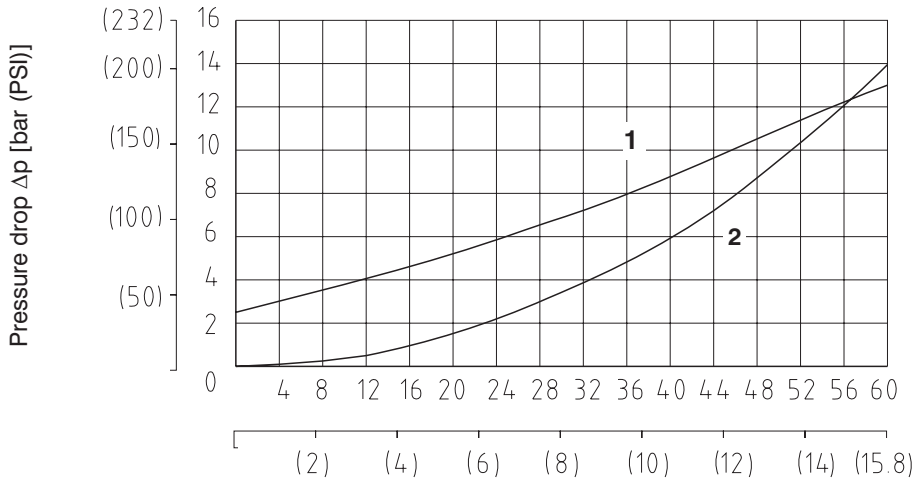
Technical Data

Valve size	mm (US)	06 (D 03)
Maximum flow	L/min (GPM)	60 (15.9)
Max. operating pressure	bar (PSI)	320 (4600)
Cracking pressure	bar (PSI)	see the Performance Curves
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22... +212)
Fluid temperature range (Viton)	°C (°F)	-20 ... +120 (-4... +248)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Area ratio (pilot piston/poppet)		3 : 1
Mounting position		unrestricted
Weight	kg (lbs)	0,8 (1.8)

Δp-Q Characteristics

Measured at ν = 32 mm^2/s (156 SUS)

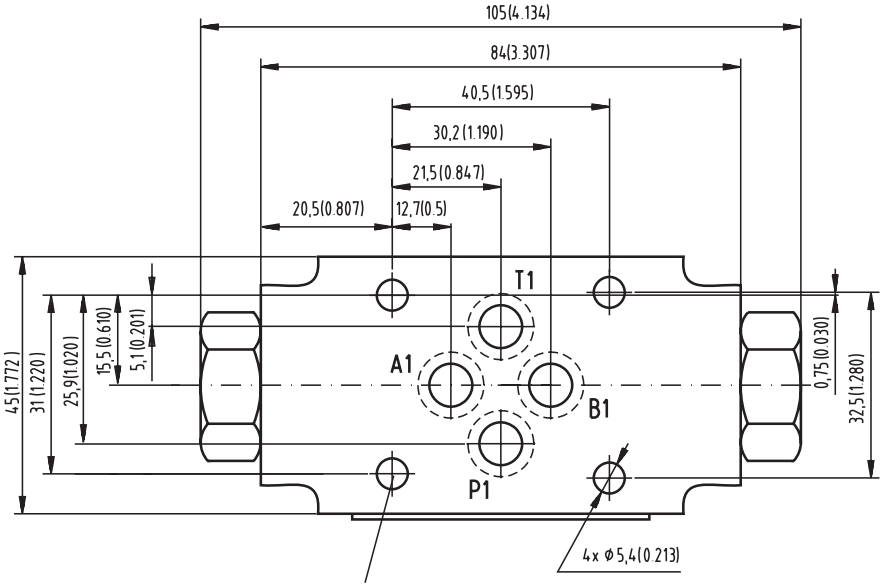
Pressure drop Δp related to flow rate.



	Flow in direction
1	A1 → A2 (B1 → B2)
2	A2 → A1 (B2 → B1)

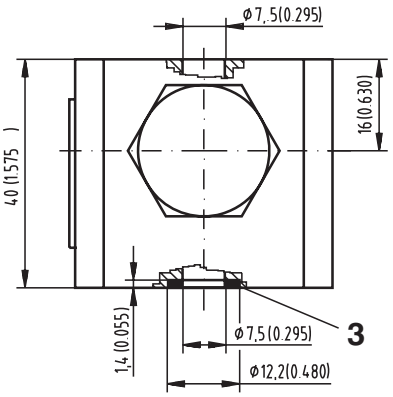
Valve Dimensions

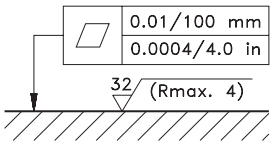
Dimensions in millimeters (inches)



Dimensions in millimeters:

1 Name plate
2 4 mounting holes
3 Square ring
9,25 x 1,68 NBR70 (4 pcs.)
supplied with valve





Required surface finish of interface

Spare Parts

Dimensions in millimeters

Seal kit

Type	Dimensions, quantity		Ordering number
	Square ring	O-ring	
Standard NBR 70	9,25 x 1,68 (4 pcs.)	-	28551800
Viton	-	9,25 x 1,78 (4 pcs.)	28551900

Caution!

- The plastic packaging is recyclable.
- Studs bolt must be ordered separately. For stud kits see data sheet HU 0030.
- Certified documentation is available per request.

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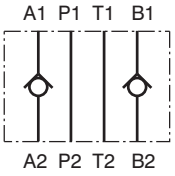
Check Valves Sandwich Plates MVJ3-06

Size 06 (D 03) • 350 bar (5076 PSI) • 50 L/min (13.2 GPM)

HA 5018
6/2012

Replaces
HA 5018 10/2010



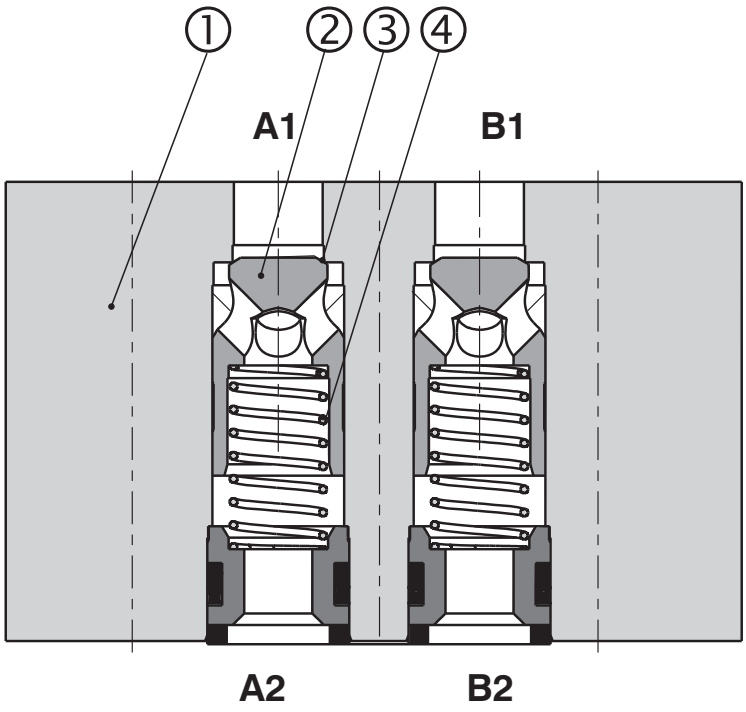
- ❑ **Sandwich plate design for use in vertical stacking assemblies**
- ❑ **Poppet design**
- ❑ **Leakfree closure in one or two service ports**
- ❑ **8 different models**
- ❑ **Installation dimensions to ISO 4401/ DN 24 340**

Functional Description

The check valve sandwich plates are used to allow flow in one direction and prevent flow in the other one. The sandwich design enables vertical stacking with other components of the same size. The check elements can be built into one or two ports, the other ports being through-holes.

The seat (3) is machined directly in the housing (1) and the poppet (2) is pushed onto the seat by compression spring (4). The cracking pressure depends on the spring used, on its preload and on the pressurized poppet surface area.
The valve housing surface is phosphate coated.

MODEL AB



Ordering Code

MVJ3-06 □ - □ - □ □

Sandwich Check Valve Plate for Stacking Assemblies

Nominal size

Functional symbols

Check valve in line P*	**P**
Check valve in line T*	**T**
Check valve in line A*	**A**
Check valve in line B*	**B**
Check valve in line A*	**C**
Check valve in line B*	**D**
Check valve in line A a B*	**AB**
Check valve in line P a T*	**PT**

* see the table Functional symbols

Cracking pressure

005	0,5 bar (7.25 PSI)
015	1,5 bar (21.75 PSI)
030	3,0 bar (43.51 PSI)
050	5,0 bar (72.51 PSI)

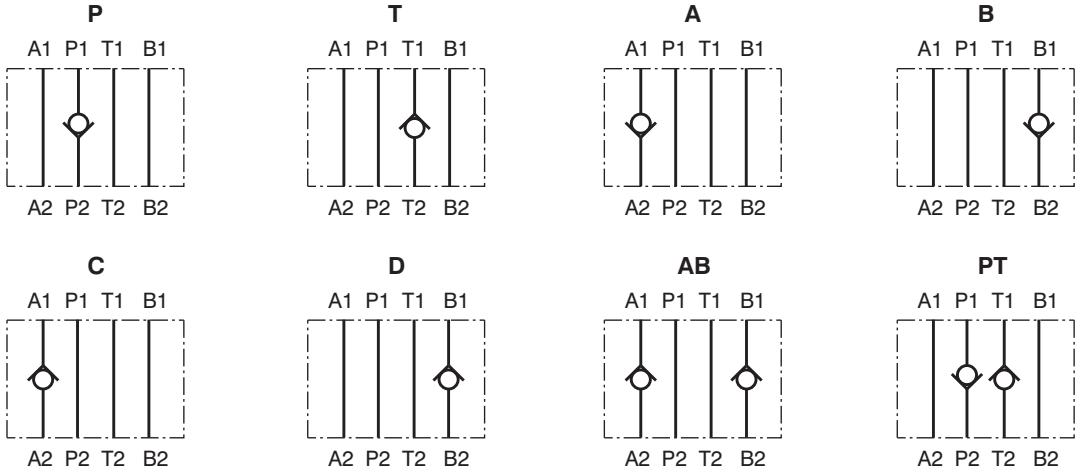
Surface finishing

no designation	Phosphate
A	PO-A

Seals

no designation	NBR
V	FPM (Viton)

Functional symbols



Notes: The orientation of the symbol on the name plate corresponds with the valve function.

① valve side
② subplate or manifold side

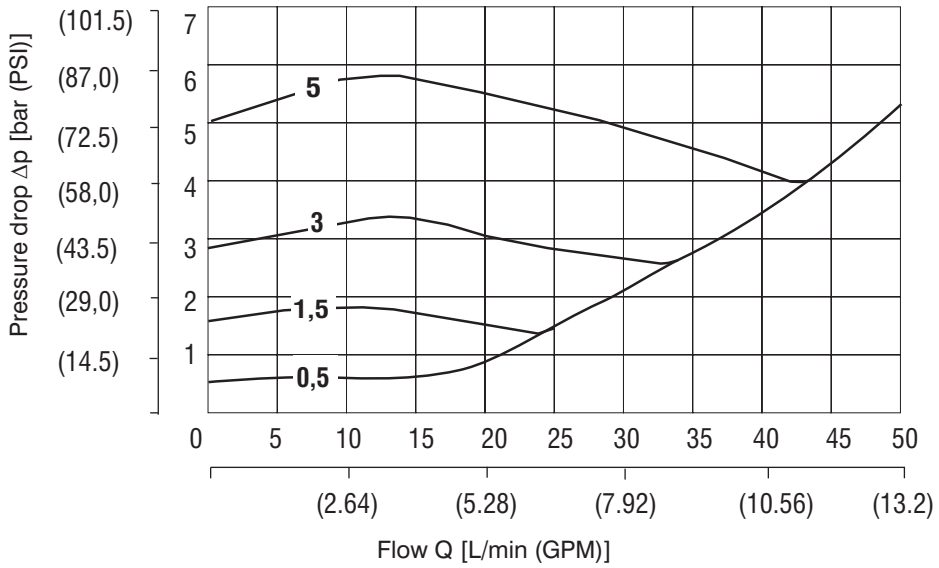
Technical Data

Valve size	mm (US)	06 (D 03)
Maximal flow	L/min (GPM)	50 (13.2)
Maximum operating pressure	bar (PSI)	350 (5076)
Cracking pressure	bar (PSI)	0,5 (7.25) 1,5 (21.75) 3 (43.51) 5 (72.51)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range for standard sealing (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)
Fluid temperature range for Viton seals (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Weight	kg (lbs)	0.8 (1.8)
Mounting position		unrestricted

Δp-Q Characteristics

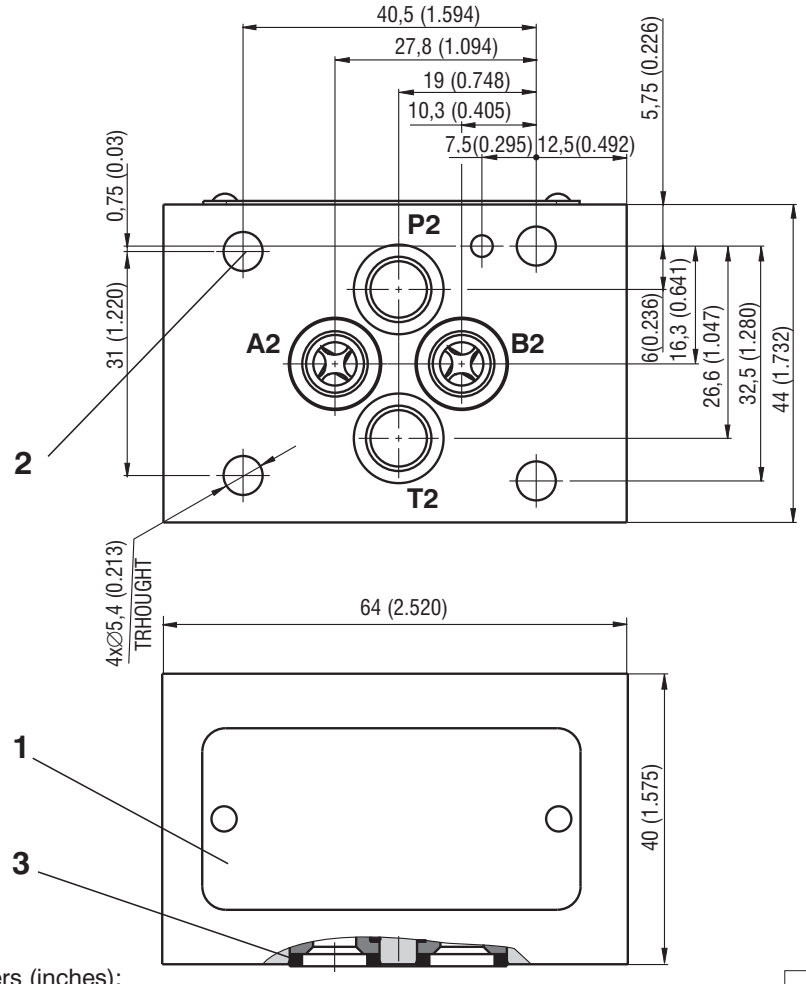
Measured at ν = 32 mm²/s (156 SUS)

Pressure drop Δp related to flow rate.



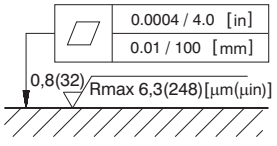
Valve Dimensions

Dimensions in milimeters (inches)



Dimensions in millimeters (inches):

1 Name plate
2 4 mounting through-holes
3 Seal kit, supplied with valve



Required surface finish of interface

Spare Parts

Dimensions in millimeters (inches)

Seal kit

Type	Dimensions, quantity		Order number
	O-Ring	Square Ring	
Standard NBR70	-	9,25 x 1,68 (4 pcs.)	28551800
Viton	9,25 x 1,78 (4 pcs.)	-	28551900

Caution!

- The packing foil is recyclable.
- The protective plate can be returned to manufacturer.
- Mounting bolts M5 must be ordered separately. Tightening torque of the bolts is 8.9 Nm.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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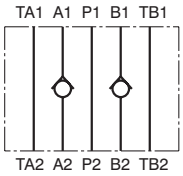
Check Valves Sandwich Plates MVJ3-10

HA 5020
10/2010

Size 10 (D 05) • 350 bar (5076 PSI) • 100 L/min (26.4 GPM)



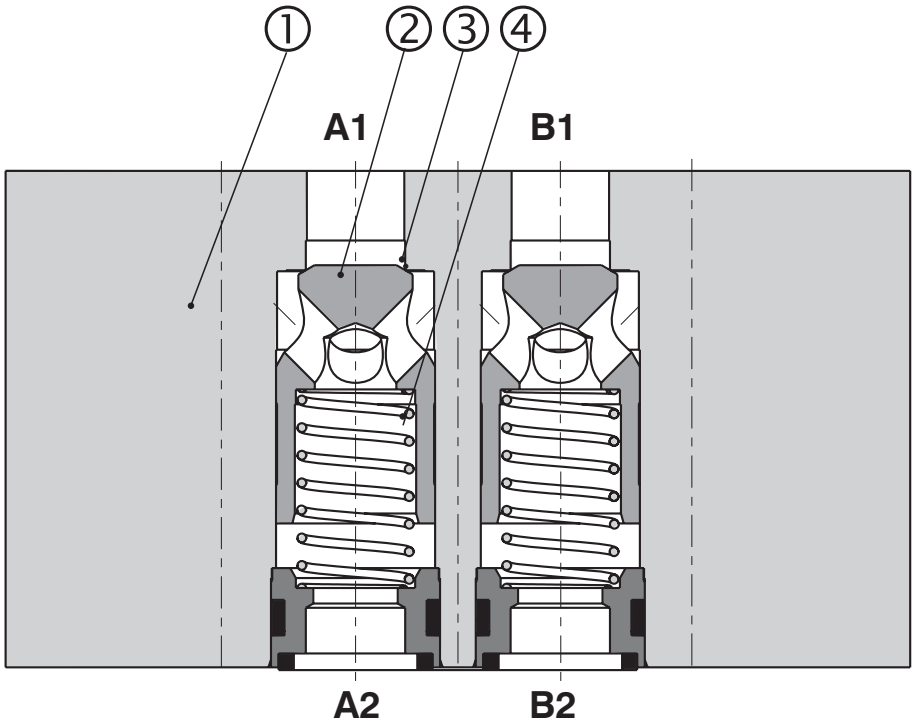
- ❑ **Sandwich plate design for use in vertical stacking assemblies**
- ❑ **Poppet design**
- ❑ **Leakfree closure in one or two service ports**
- ❑ **8 different models**
- ❑ **Installation dimensions to ISO 4401 / DN 24 340**

Functional Description

The check valve sandwich plates are used to allow flow in one direction and prevent flow in the other one. The sandwich design enables vertical stacking with other components of the same size. The check elements can be built into one or two ports, the other ports being through-holes.

The seat (3) is machined directly in the housing (1) and the poppet (2) is pushed onto the seat by compression spring (4). The cracking pressure depends on the spring used, on its preload and on the pressurized poppet surface area.
The valve housing surface is phosphate coated.

MODEL AB



Ordering Code

MVJ3-10 □ - □ - □ □

Sandwich Check Valve Plate for Stacking Assemblies

Nominal size

Functional symbols

Check valve in line P*	**P**
Check valve in line T*	**T**
Check valve in line A*	**A**
Check valve in line B*	**B**
Check valve in line A*	**C**
Check valve in line B*	**D**
Check valve in line A a B*	**AB**
Check valve in line P a T*	**PT**

* see the table Functional symbols

Cracking pressure

005	0,5 bar (7.25 PSI)
030	3,0 bar (43.51 PSI)
050	5,0 bar (72.51 PSI)

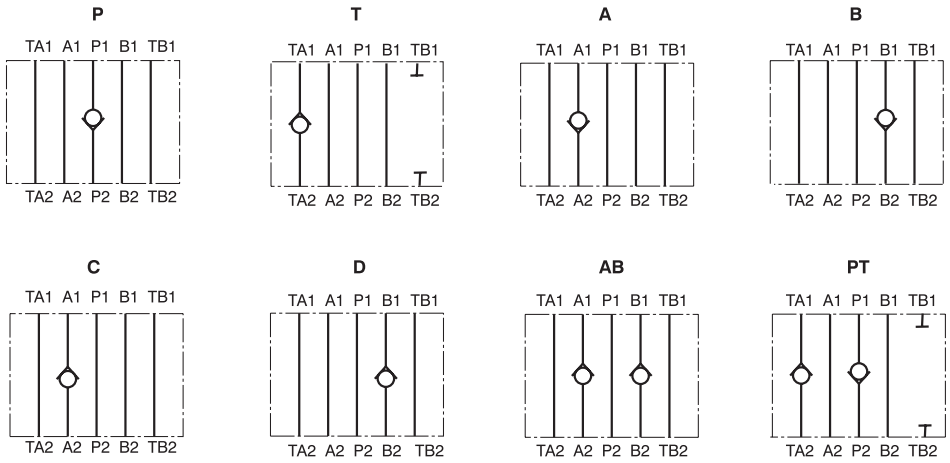
Surface finishing

no designation	Phosphate
A	PO-A

Seals

no designation	NBR
V	FPM (Viton)

Functional symbols



Notes: The orientation of the symbol on the name plate corresponds with the valve function.
Port TB is closed with models T and PT.

① valve side
② subplate or manifold side

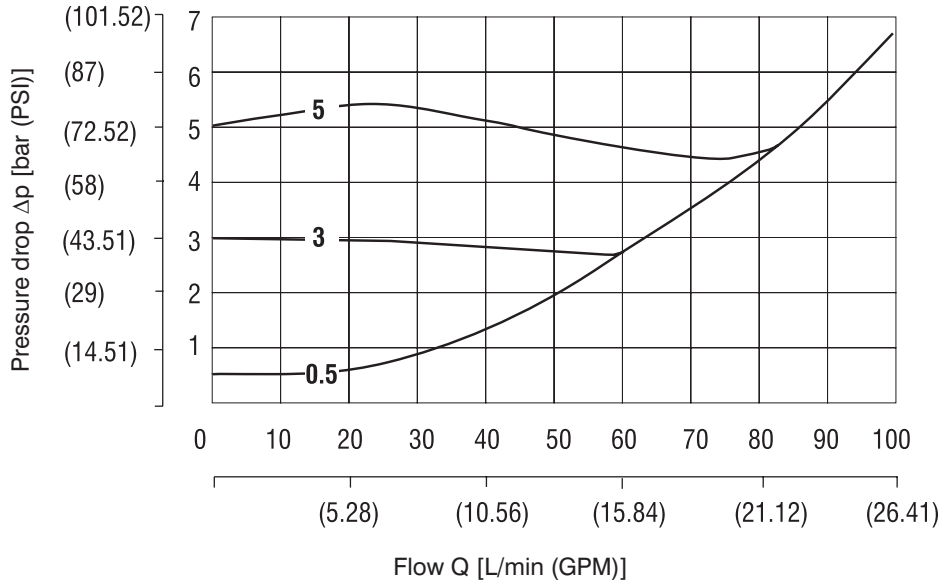
Technical Data

Valve size	mm (US)	10 (D 05)		
Maximal flow	L/min (GPM)	100 (26.4)		
Maximum operating pressure	bar (PSI)	350 (5076)		
Cracking pressure	bar (PSI)	0,5 (7.25)	3 (43.51)	5 (72.51)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524		
Fluid temperature range for standard sealing (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)		
Fluid temperature range for Viton seals (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)		
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)		
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406		
Weight	kg (lbs)	2.25 (4.96)		
Mounting position		unrestricted		

Δp-Q Characteristics

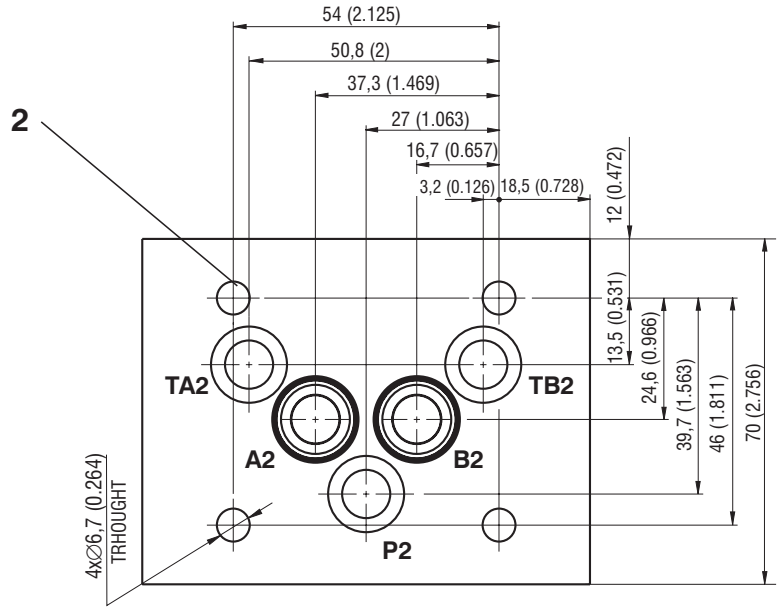
Measured at ν = 32 mm²/s (156 SUS)

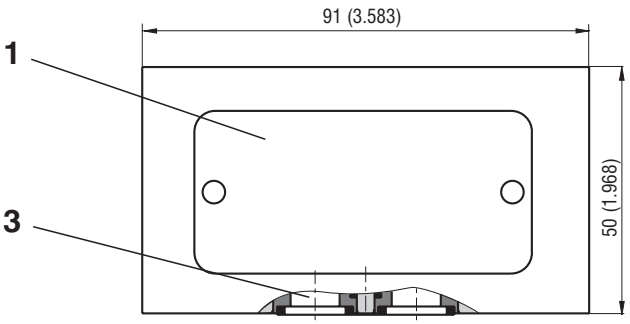
Pressure drop Δp related to flow rate.



Valve Dimensions

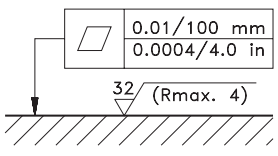
Dimensions in milimeters (inches)





Dimensions in millimeters:

1 Name plate
2 4 mounting through-holes
3 Square ring 12.42x1.68 (5 pcs.) supplied with valve



Required surface finish of interface

Spare Parts

Dimensions in millimeters

Seal kit

Type	Dimensions, quantity		Orderind number
	O-ring	Square ring	
Standard NBR70	-	12.42x1.68 (5 pcs.)	15991600
Viton	12.42x1.68 (5 pcs.)	-	22943800

Caution!

- The packing foil is recyclable.
- The protective plate can be returned to manufacturer.
- Mounting bolts M6 must be ordered separately. Tightening torque of the bolts is 15 Nm.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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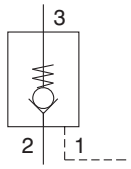
Pilot Operated Cartridge Check Valves

RJV1-05

Size 05 • 250 bar (3600 PSI) • 20 L/min (5.3 GPM)

HA 5111
8/2012

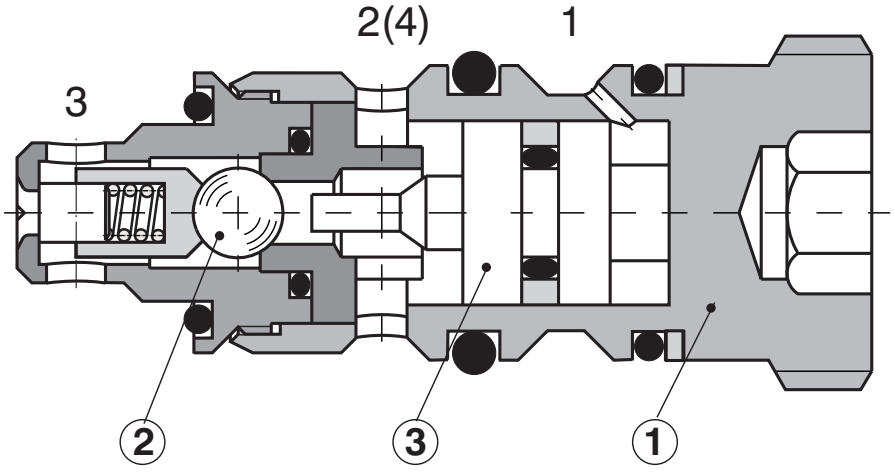
Replaces
HA 5111 10/2011



- **Cartridge valve for manifold mounting and with subplate**
- **Model with subplate - enables direct moutingon the hydraulic actuator by means of a hollow bolt**
- **The use of a hollow bolt with a build-in throttle VSV1 and check valve possible VSVJ1 and VSVJ2**

Functional Description

Model RJV1-05 are pilot operated check valves in cartridge design used to give leakfree closure of a hydraulic actuator port under pressure, even during long idle periods.
They basically consist of housing (1), check valve (2), and pilot piston (3). The cartridge is avaliable alredy assembled into a subplate for direct mounting onto the actuator (page 4 of this data sheet).
When fluid flows from port 2 → 3, it opens the check valve automatically. When the pressure in port 2 drops (e.g. after shifting the directional valve into its middle position), the spring pushes the ball (2) onto the seat and the circuit between the check valve and the actuator is closed. The control pressure (port 1) acting on the pilot piston (3) moves the ball (2) from the seat and makes the flow passage 3 → 2 free. An additional port 4 is available for use in double acting applications using two pilot operated check valves-see typical circuits (page 3) and drawings (page 5).
The valve body is blackened. The hollow bolt and the surface of the subplate are phosphate coated.



Ordering Code

RJV1-05- □□/ □□□

Pilot Operated Cartridge Check Valve

Nominal size

Seals

no designation	NBR
V	Viton

Model

With pilot piston seal	**no designation**
Without pilot piston seal	**0**

Hollow bolt

no designation	without throttle valve
S	with flow throttle valve VSV1
J1	with flow throttle VSVJ1
J2	with flow throttle VSVJ2

(fill in just with the model with subplate)

Model

Cartridge valve	**no designation**
With subplate - connecting threads 3x M12x1,5 und 1x M18x1,5	**M**
With subplate - connecting threads 3x G1/4 und 1x G3/8	**G**

Threads of hollow bolt

B	M18x1,5
C	M22x1,5
D	G1/2
E	G3/8

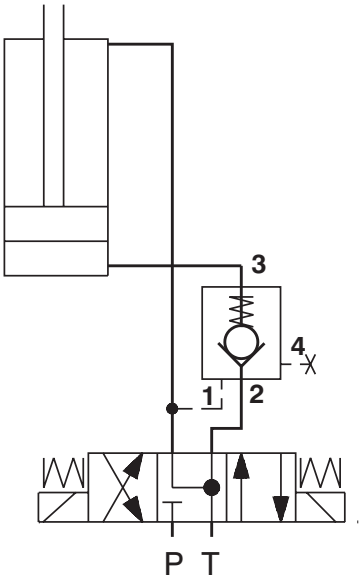
(fill in just with the model with subplate)

Technical Data

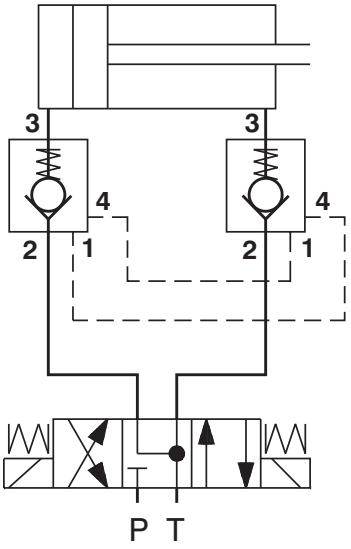
Nominal size		05
Maximum flow	L/min (GPM)	20 (5.3)
Maximum operating pressure	bar (PSI)	250 (3600)
Cracking pressure	bar (PSI)	see Δp-Q characteristics
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +212)
Fluid temperature range (Viton)	°C (°F)	-20 ... +120 (-4 ... +248)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Area ration (pilot piston / seat)		5.76
Weight of the cartridge valve	kg (lbs)	0,08 (0.18)
Mounting position		unrestricted

Hydraulic Circuits

Use of the pilot operated check valve for one direction only (lowering). Port **4** is pluged



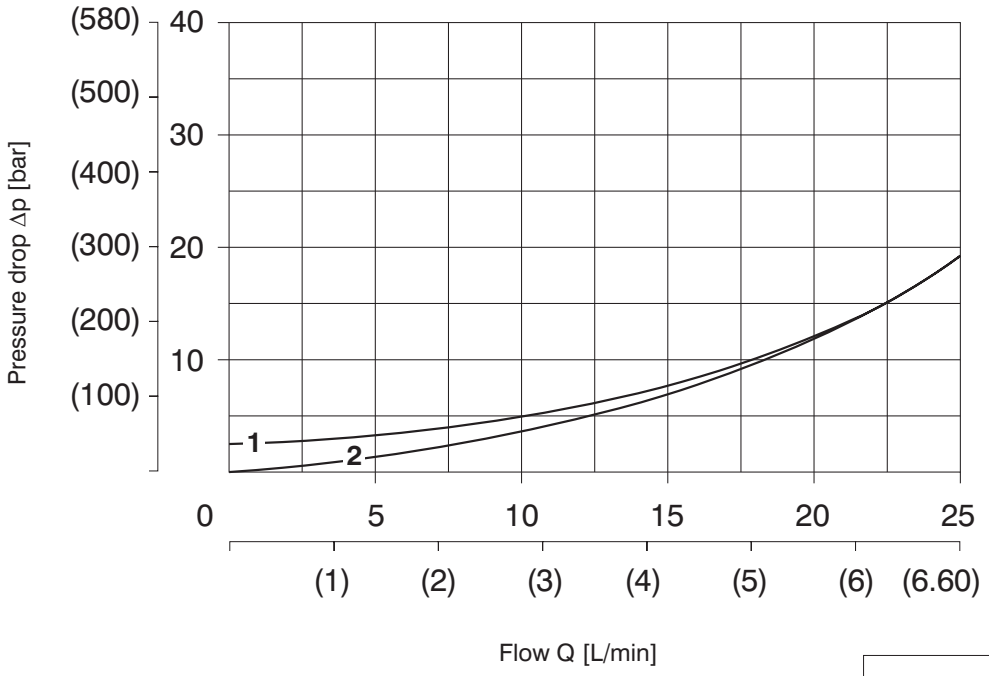
Hydraulic circuit with two pilot operated check valves enabling movement in both directions. The use of a directional valve with **Y**-functional symbol ensures perfect seating of the ball, thus ensuring tight closure of the actuator.



Δp-Q Characteristics

Measured at $\nu = 32\ mm^2/s$ (156 SUS)

Pressure drop Δp related to flow rate.

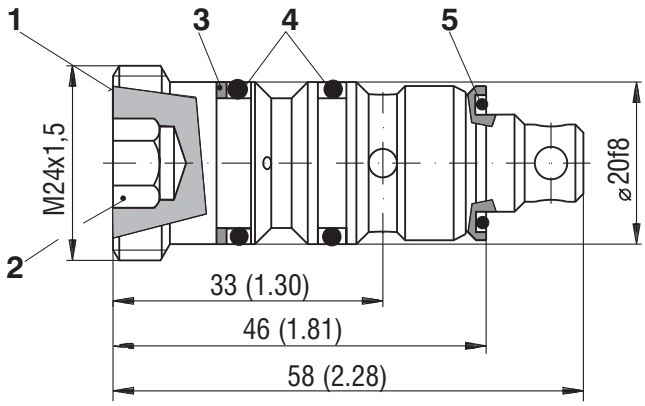


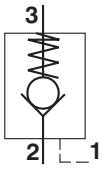
	Flow in direction
1	2 → 3
2	3 → 2

Valve Dimensions

Dimensions in millimeters (inches)

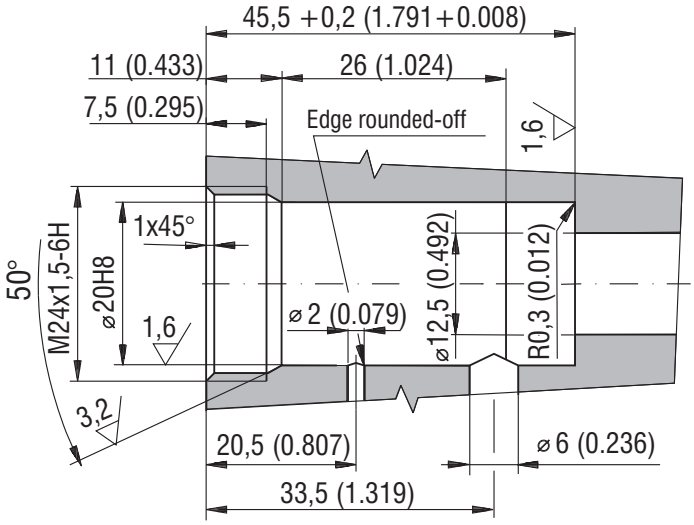
Cartridge valve RJV1-05





1 Type code stamped on the face (RJV1-05)
2 Inside HEX 10 (Tightening torque is 10+2 Nm)
3 OPKR - BBP80B 113-N9 (14.66 x 19.02 x 1.14)
4 O-ring 15.08 x 2.62 (15.54 x 2.62)
5 O-ring 12.42 x 1.78

Cavity



Spare Parts

Dimensions in millimeters

Seal kit

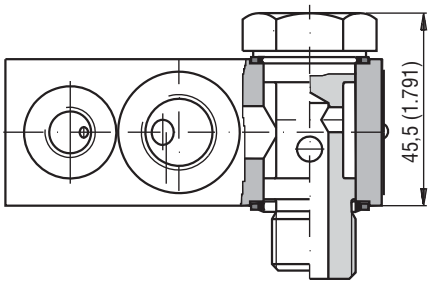
Type	Dimensions, quantity		Ordering number
	O-ring	Back-up ring	
Standard NBR70	12.42 x 1.78 (1 pc.)	14.66 x 19.02 x 1.14 (1 pc.)	15969700
	15.08 x 2.62 (2 pcs.)	-	
Viton	12.42 x 1.78 (1 pc.)	14.66 x 19.02 x 1.14 (1 pc.)	22806000
	15.08 x 2.62 (2 pcs.)	-	

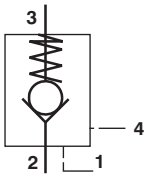
Valve Dimensions

Dimensions in millimeters (inches)

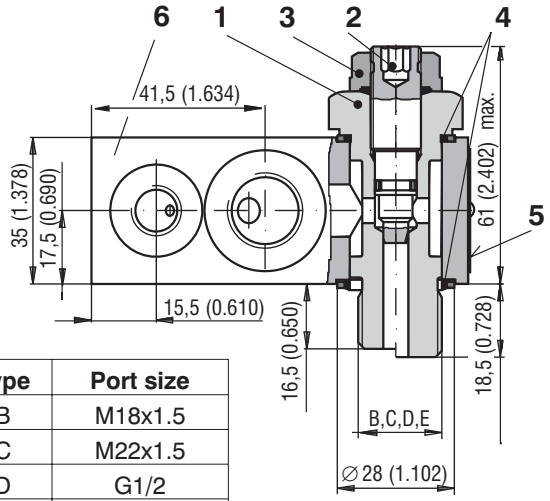
Model with subplate

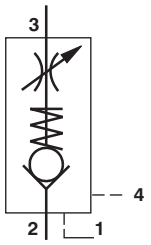
- Hollow bolt without throttle valve





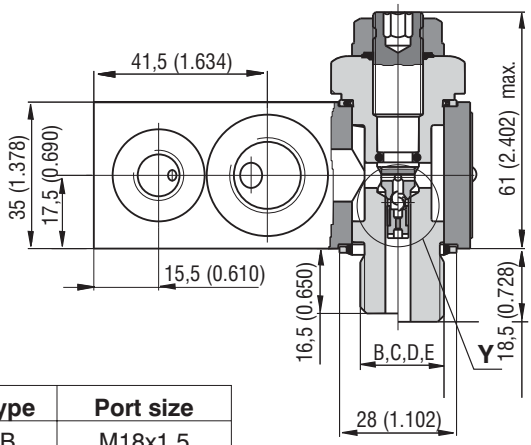
- Hollow bolt with throttle valve VSV1



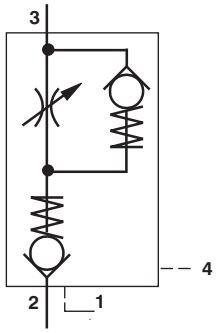


Type	Port size
B	M18x1.5
C	M22x1.5
D	G1/2
E	G3/8

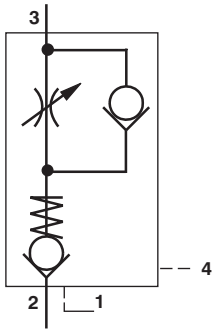
- Hollow bolt with flow throttle and check valve VSVJ1 and VSVJ2

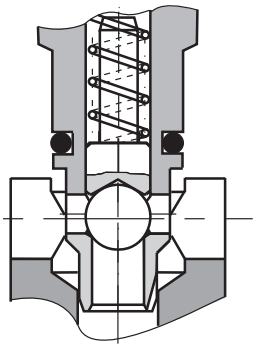


VSVJ1

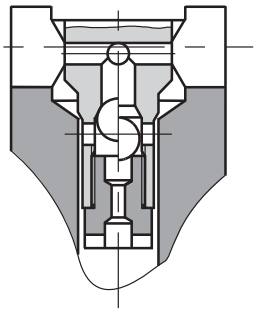


VSVJ2





Y

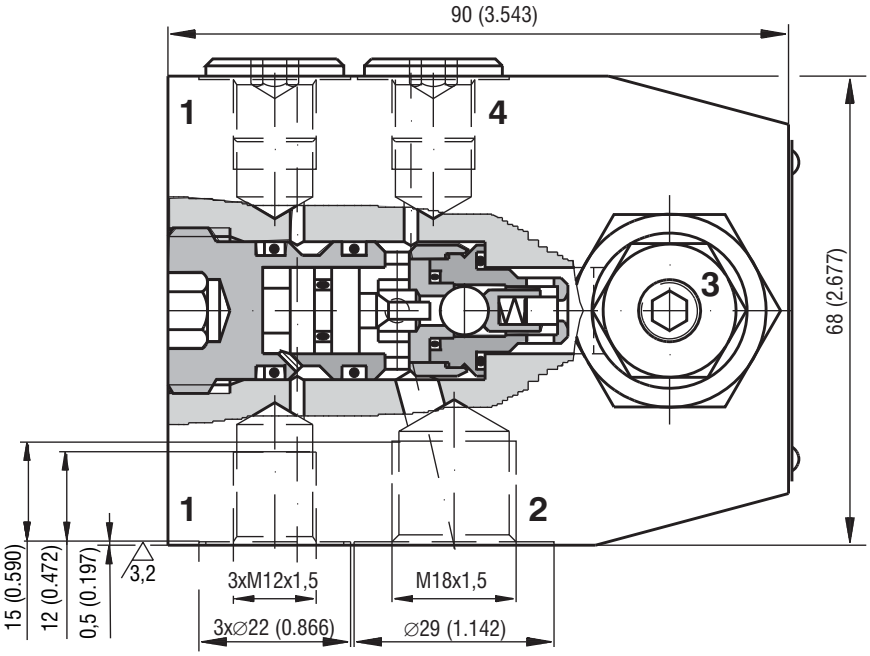


Type	Port size
B	M18x1.5
C	M22x1.5
D	G1/2
E	G3/8

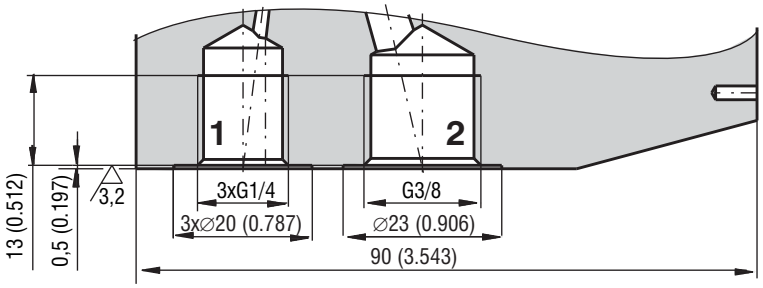
1 Hollow bolt (HEX 27)
2 Throttle valve VSV1, VSVJ1, VSVJ2 (Inside HEX 6)
3 Sealing nut SEAL-LOCK 12 x 1,5 (HEX 19)
4 Seal D 22.5 x 28 x 1.5 - NSA
5 Type plate
6 For optimum positioning the subplate can be turned be 180° (around the check valve axis)

- Dimension scheme of subplate with outlet 1 - 4

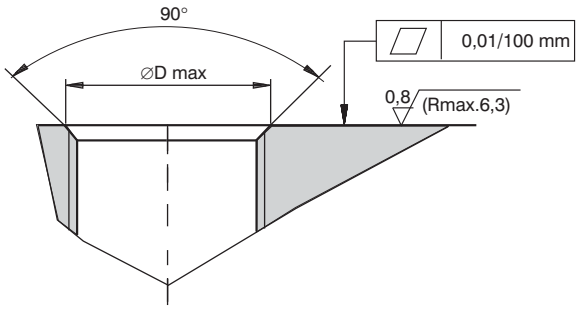
Model
M



Model
G



Connecting threads of hollow bolt



Port size	⌀ D max	Tightening torque (Nm)
M18 x 1.5	$18^{+0.2}$	30+3
M22 x 1.5	$22^{+0.2}$	70+5
G 1/2	$21^{+0.2}$	70+5
G 3/8	$16.6^{+0.2}$	25+3

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www.argo-hytos.com

ARGO HYTOS

Check Valves

SC1F-A2

3/4-16 UNF • 420 bar (6091 PSI) • 40 L/min (10.6 GPM)

HA 5010
7/2012

Replaces
HA 5010 1/2008

- ❑ **Standard and High performance variant**
- ❑ **Poppet design**
- ❑ **Leakfree closure in one direction**
- ❑ **Four cracking pressures**

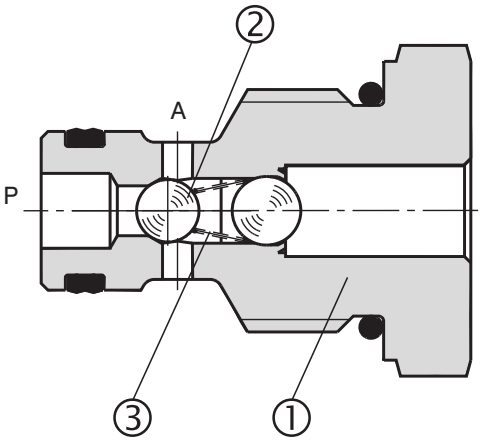
Functional Description

The check valve serves the leak free closure in one direction and allows flow in the opposite direction. The poppet design provides leak free closure.
The seat is created directly in the valve housing (1) and the small ball (2) is pushed by spring (3) through the thumb ring (4)* onto the seat. The cracking pressure depends on the spring selected, its preloading and the pressurized poppet surface area. The cracking pressure with a standard valve is 0.5 bar (7.25 PSI). Four* cracking pressures are available.
The surface of the valve housing is zinc coated.

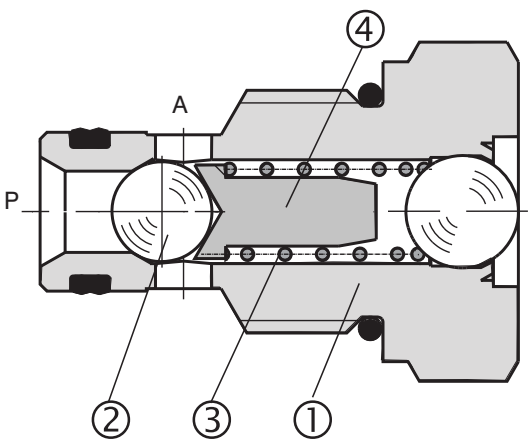
* With the High performance valve

Cartridge Valve

Standard performance



High performance



Ordering Code

SC1F-A2 / □ □ □

Check Valves - 3/4 16 UNF

Standard	**S**
High performance	**H**

no designation	**Seals** NBR
V	FPM (Viton)

	Cracking pressure
***005**	0.5 bar (7.2 PSI)
015	1.5 bar (21.7 PSI)
035	3.5 bar (50.7 PSI)
070	7.0 bar (101.5 PSI)

* The cracking pressure with a standard valve is 0.5 bar (7.25 PSI)

Technical Data

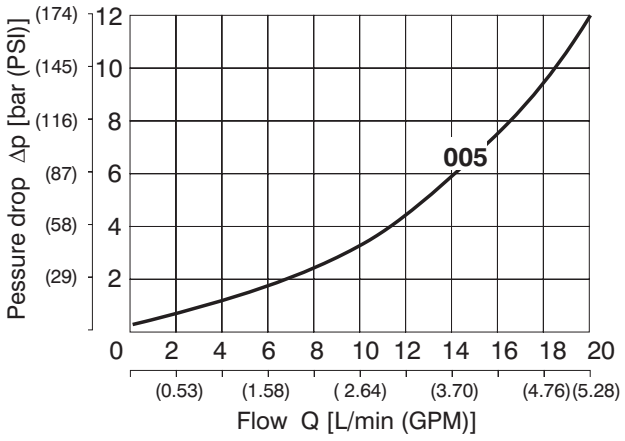
		Standard		High performance	
Cartridge thread		3/4 16 UNF-2A			
Maximum flow rate	L/min (GPM)	20 (5.3)		40 (10.6)	
Max. operating pressure	bar (PSI)	350 (5076)		420 (6091)	
Cracking pressure	bar (PSI)	0,5*	1,5	3,5	7,0
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524			
Fluid temperature range (NBR)	°C (°F)	-30 .... +100 (-22 ... +212)			
Fluid temperature range (Viton)	°C (°F)	-20 .... +120 (-4 ... +248)			
Viscosity range	mm^2/s (SUS)	10 ... 500 (49 ... 2450)			
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406			
Valve tightening torque	Nm (lbf.ft)	60+2 (44.25+1.47)			
Weight	kg(lbs)	0,05		0,06	
Mounting position		unrestricted			
Valve body (data sheed HA 0018)		SB-A2			

* The cracking pressure with a standard valve is 0.5 bar (7.25 PSI)

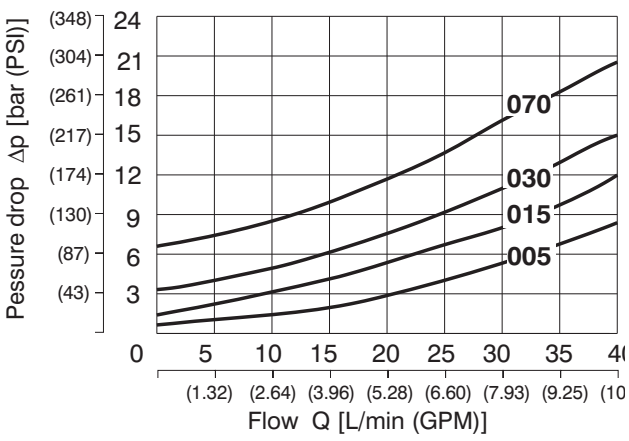
Δp-Q Characteristics

Measured at ν = 32 mm^2/s (156 SUS)

Standard valve



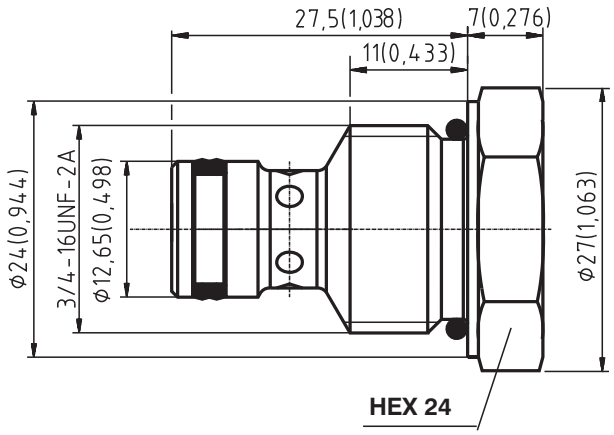
High performance valve



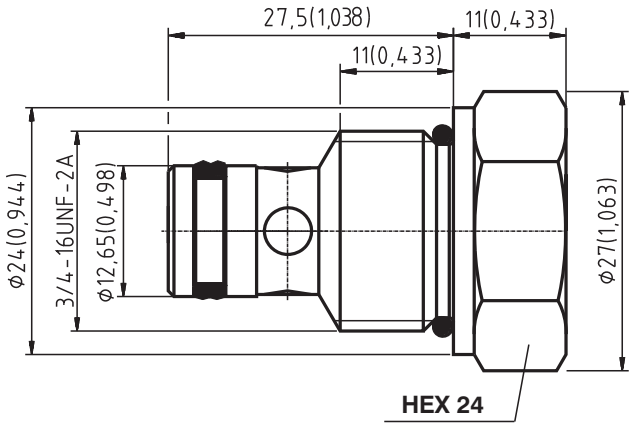
Valve Dimensions

Dimensions in millimeters (inches)

Standard valve

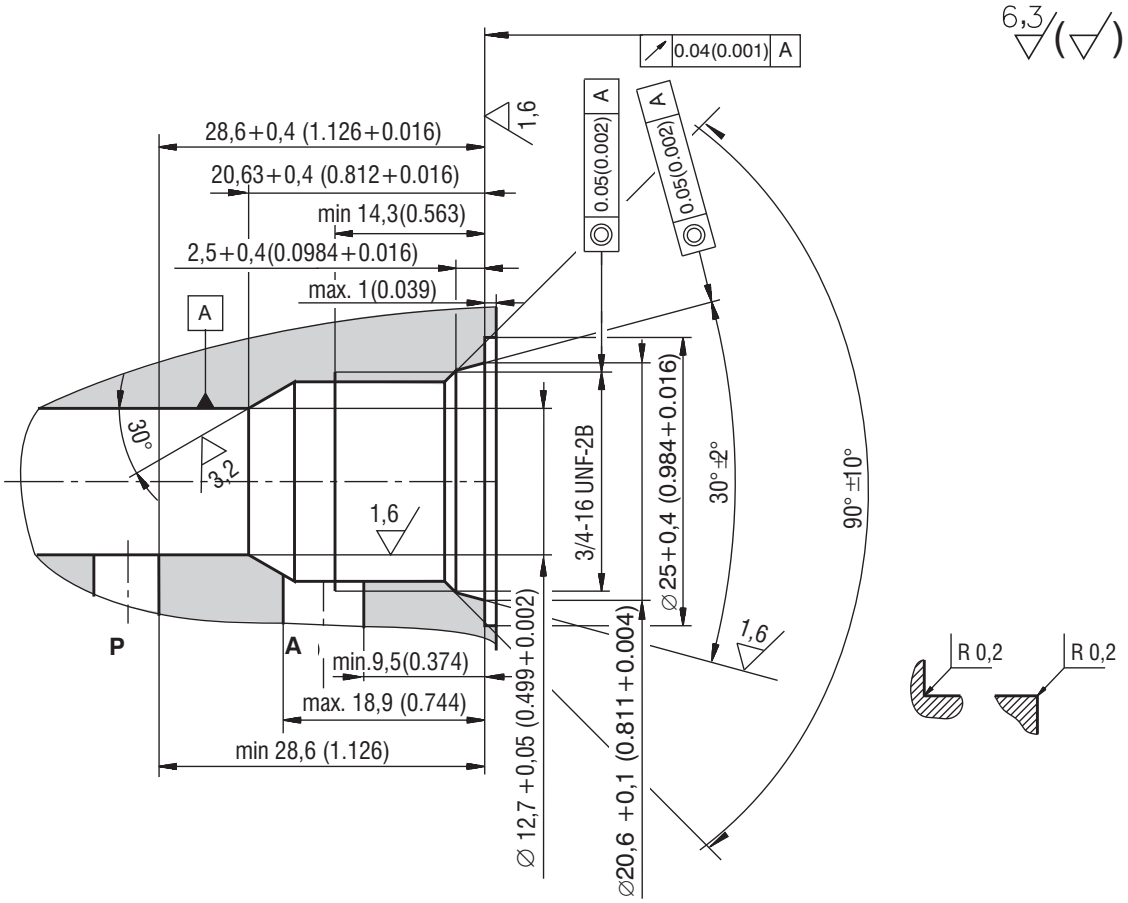


High performance valve



Cavity

Dimensions in millimeters (inches)



Spare Parts

Standard and high performance valve

Dualseal - PU	O-ring - NBR	O-ring - Viton	Ordering number
10.3 x 12.7 x 3.1 (1pc.)	17 x 1.8 (1pc.)	-	22752500
10.3 x 12.7 x 3.1 (1pc.)	-	17.17 x 1.78 (1pc.)	22752600

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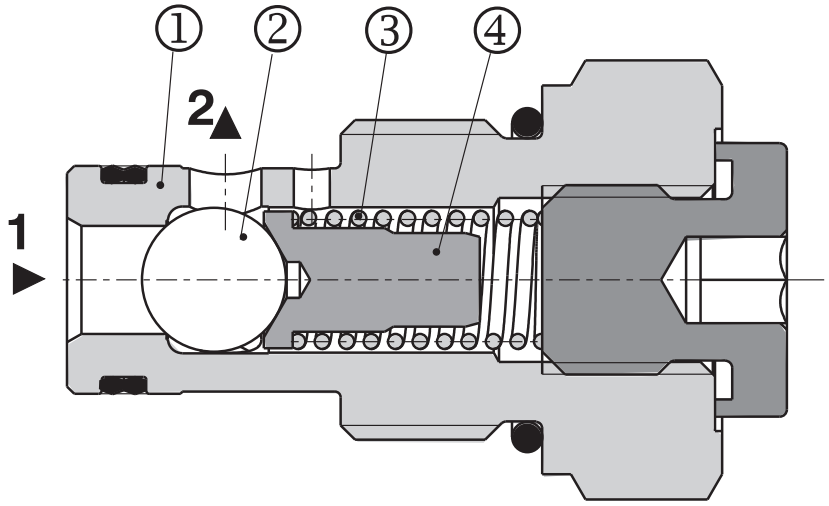
- ❑ **Poppet design**
- ❑ **Leakfree closure in one direction**
- ❑ **Four cracking pressures**

Functional Description

The check valve serves the leak free closure in one direction and allows flow in the opposite direction. The poppet design provides leak free closure.
The seat is created directly in the valve housing (1) and the small ball (2) is pushed by spring (3) through the thumb ring (4)* onto the seat. The cracking pressure depends on the spring selected, its preloading and the pressurized poppet surface area. Four* cracking pressures are available.
The surface of the valve housing is zinc coated.

* With the High performance valve



Ordering Code

SC1F-B2 / □ □ □

Check valves - 7/8 14UNF

High performance **H**

Seals

no designation NBR

V FPM (Viton)

Cracking pressure

005 0,5 bar (7.2 PSI)

015 1,5 bar (21.7 PSI)

035 3,5 bar (50.7 PSI)

050 5,0 bar (71,5 PSI)

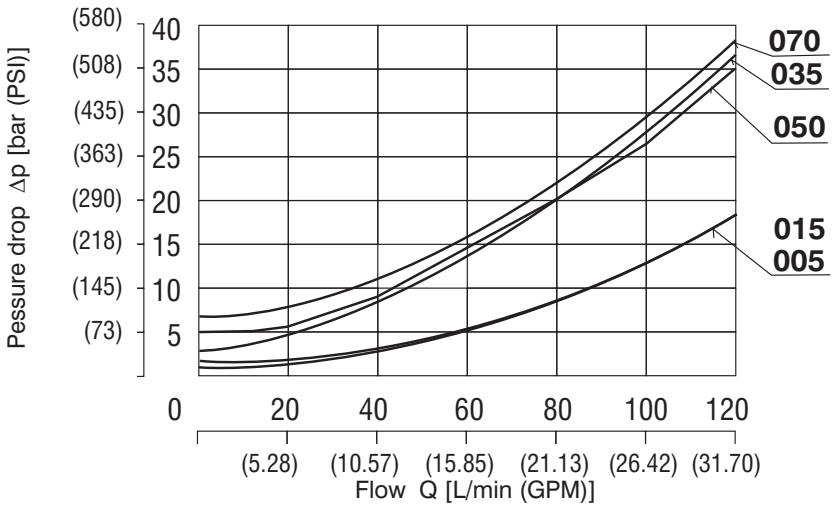
070 7,0 bar (101.5 PSI)

Technical Data

		High performance
Cartridge thread		7/8 14UNF-2A
Maximum flow rate	L/min (GPM)	120 (31.7)
Max. operating pressure	bar (PSI)	420 (6091)
Cracking pressure	bar (PSI)	0,5 (7.2) 1,5 (21.7) 3,5 (50.7) 5,0 (71.5) 7,0 (101.5)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 .... +100 (-22 ... +212)
Fluid temperature range (Viton)	°C (°F)	-20 .... +120 (-4 ... +248)
Viscosity range	mm^2/s (SUS)	10 ... 500 (49 ... 2450)
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406
Valve tightening torque	Nm (lbf.ft)	60 +2 (44.25 +1.47)
Weight	kg(lbs)	0,12
Mounting position		unrestricted
Valve body (data sheet HA 0018)		SB-B2

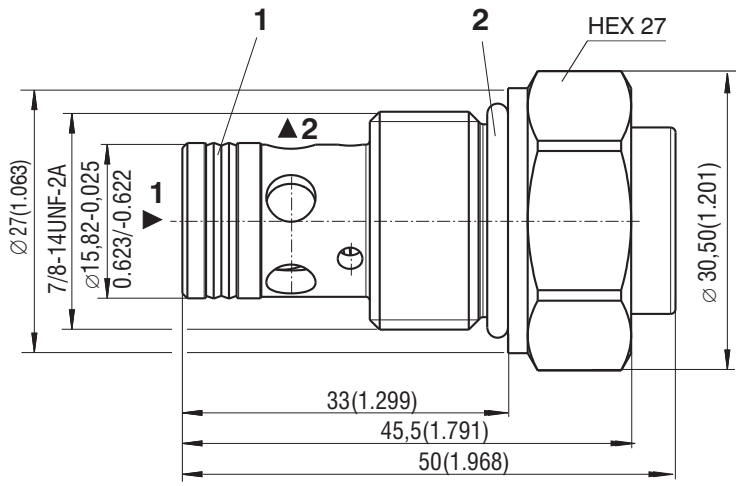
Δp-Q Characteristics

Measured at ν = 32 mm^2/s (156 SUS)



Valve Dimensions

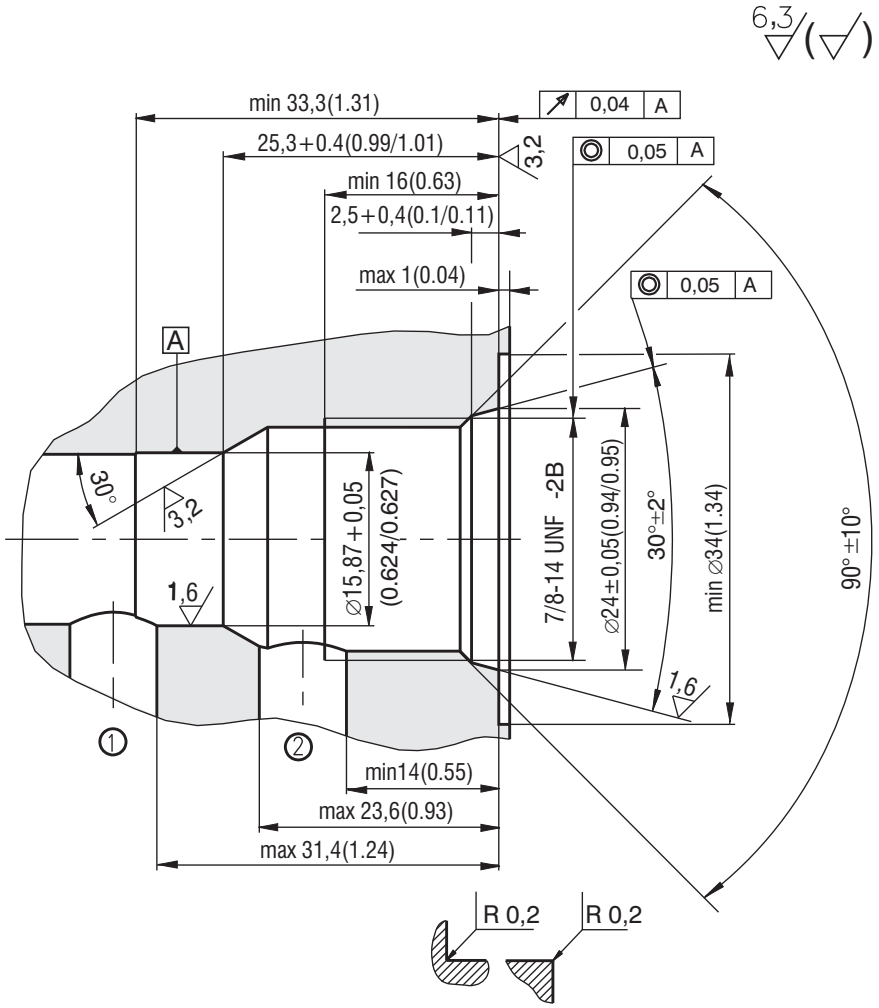
Dimensions in millimeters (inches)



1 Combined sealing:
DRYZ000002Z20 13,47 x 15,87 x 3,1 (supplied with valve)
2 O-ring 19,4 x 2,1 (supplied with valve)

Cavity

Dimensions in millimeters (inches)



Spare Parts

Seal kit		Ordering number
Dualseal - PU	**O-ring - NBR**	18775600
DRYZ000002Z20 13,47 x 15,87 x 3,1 (1pc.)	19,4 x 2,1 (1pc.)	

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ARGO HYTOS

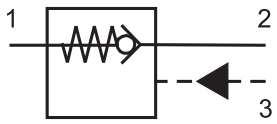
Pilot Operated Check Valves

SC5H-Q3/I

M20 x 1.5 • p_{max} 350 bar • Q_{max} 30 L/min

HA 5217
12/2014

Replaces
HA 5217 7/20086

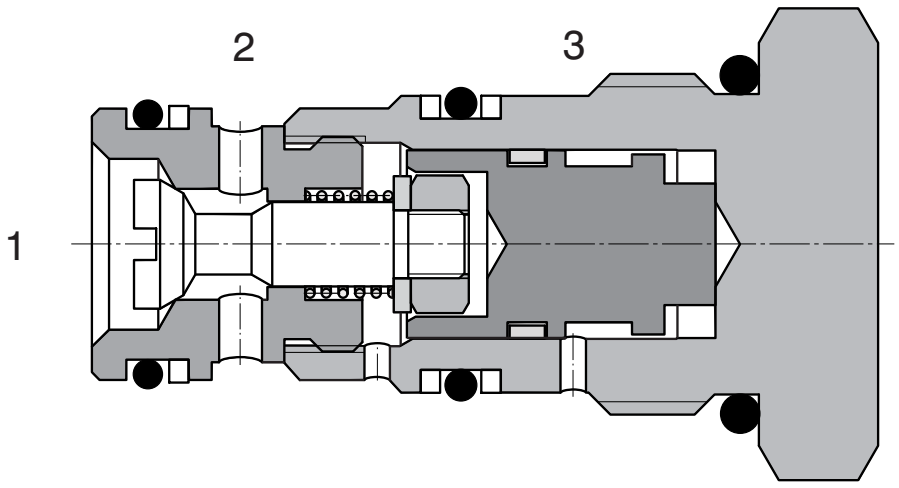


- ❑ **Load-holding without leakage**
- ❑ **Low pressure drop**
- ❑ **Optional pilot seal**
- ❑ **The valve should be mounted as close as possible to the actuator**
- ❑ **Fits the same cavity as the Q3 overcentre valve**

Functional Description

The design of the valve fitted with conical seat ensures hermetical closing in one direction and in the other direction of flow with a small pressure drop. The valve remains shut off closely if the pressure in channel (1) is equal to or higher than the pressure in channel (2) and no pressure and / or insufficient pressure only is exerted in the channel (3). As soon as the pressure in the channel (2) exceeds the pressure in the channel (1) including pressure caused by the spring the valve opens the flow from (2) to (1). If the liquid has to flow through the valve from (1) to (2) the control pressure should be introduced in the channel (3). As soon as this pressure attains a necessary value the control gate valve is shifted against the spring and moves the valve cone out of the seat. At calculating the control pressure it is necessary to take into consideration that pressure in the channel (2) will increase the control pressure by the same value multiplied by an effective differential area. This effective differential area has a value of 1 – 1/3 at a rate of control areas of 3:1.

As for appropriate basic surface finish the external parts are zinc coated.



Ordering Code

SC5H-Q3/I □ □ □

Pilot Operated Check Valve

Pilot ratio

Standard	3:1	**3**

Seals

No designation	NBR

Optional pilot seal

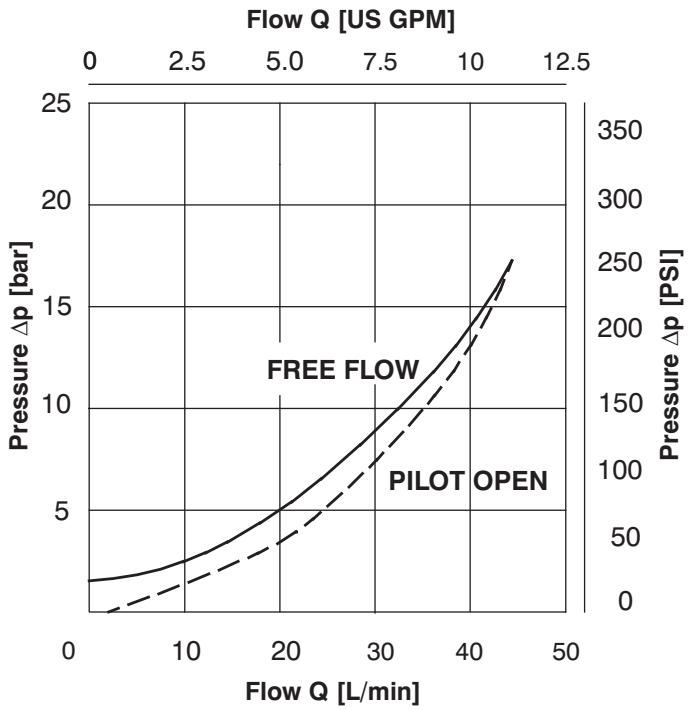
No designation	without seal
S	wit seal

Technical Data

Cavity		M20 x 1.5
Maximum flow	L/min	30
Pilot ratio		3:1
Max. pressure	bar	350
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 ... 400
Maximum degree of fluid contamination		according to ISO 4406, Class 21/18/15
Weight	kg	0.08
Maximum valve tightening torque in valve body or in control block	Nm	45^{+2}
Mounting position		Unrestricted

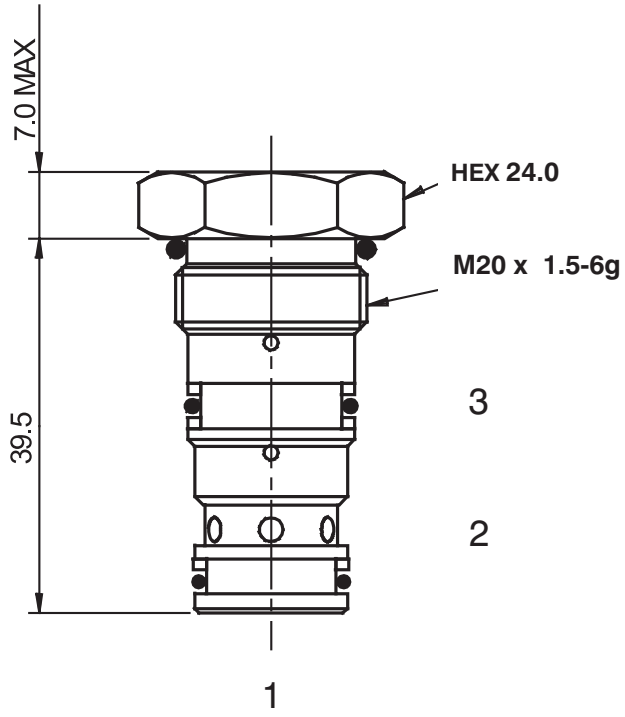
Δp-Q Characteristics

Measured at $\nu = 40\ mm^2/s$



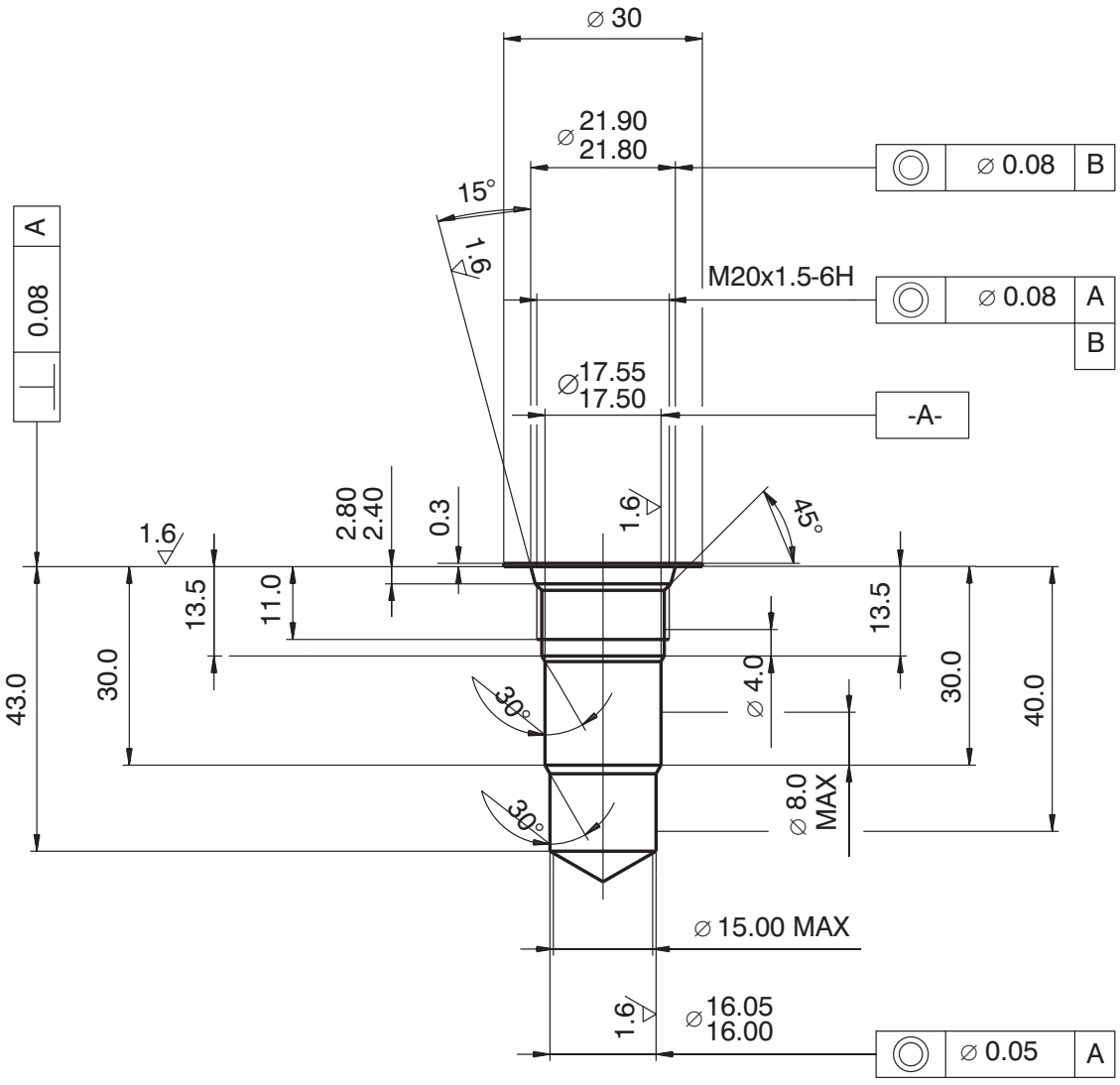
Dimensions

Measurements in millimeters



Cavity

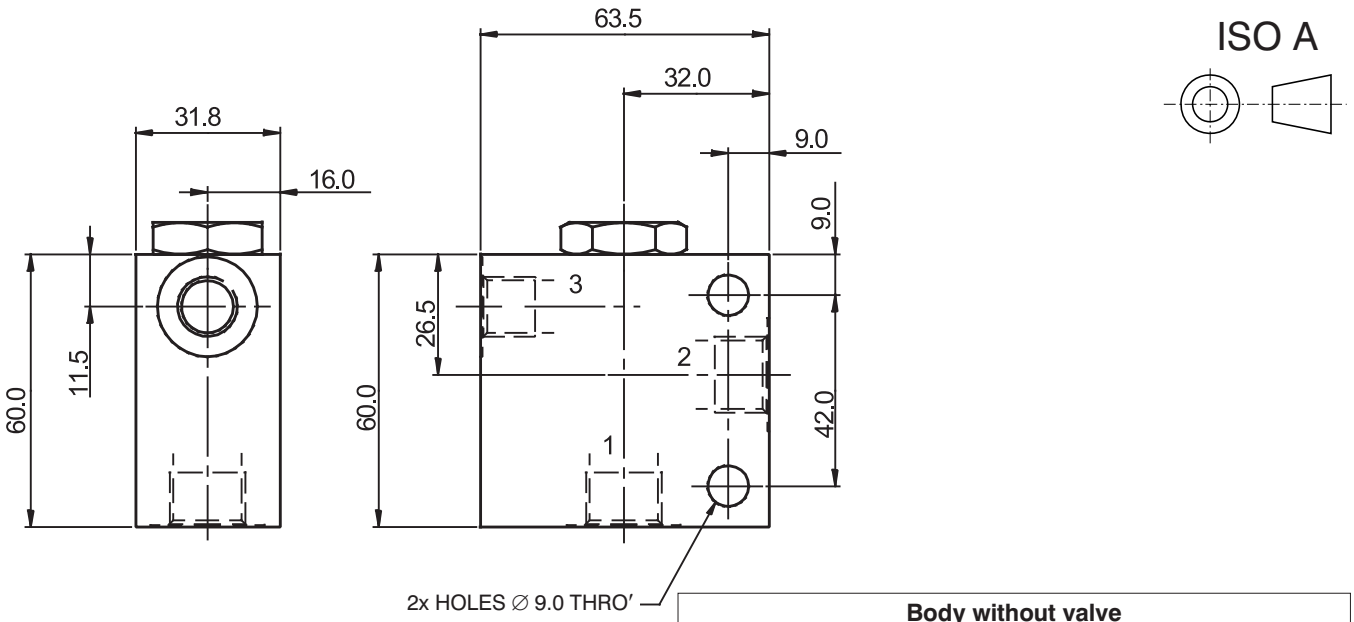
Measurements in millimeters



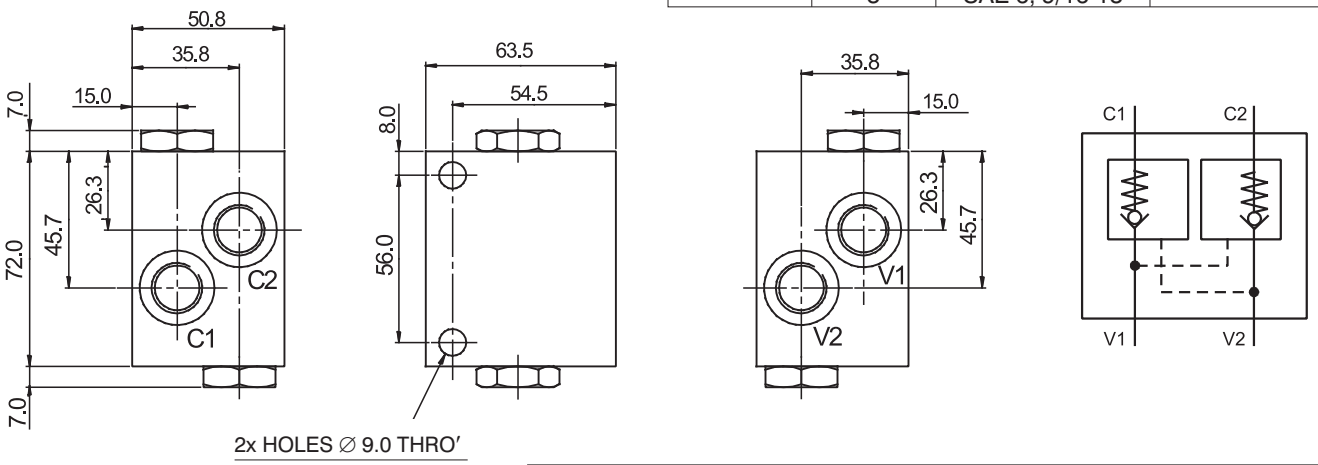
Valve Bodies

Measurements in millimeters

ISO A



Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G3/8	SB-Q3-0103AL
	3	G1/4	
	1, 2	SAE 8, 3/4-16	SB-Q3-0104AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G3/8	SB-Q3-0103ST
	3	G1/4	
	1, 2	SAE 8, 3/4-16	SB-Q3-0104ST
	3	SAE 6, 9/16-18	



Dual body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	C1, C2, V1, V2	G3/8	SB-Q3-0303AL
	C1, C2, V1, V2	SAE 8, 3/4-16	SB-Q3-0304AL
Steel	C1, C2, V1, V2	G3/8	SB-Q3-0303ST
	C1, C2, V1, V2	SAE 8, 3/4-16	SB-Q3-0304ST

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

Seal kits on request.

Caution!

- The packing foil is recyclable.
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ARGO HYTOS

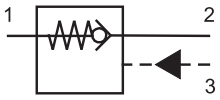
Pilot Operated Check Valves

SC5H-R3/I

M27 x 1.5 • p_{max} 350 bar • Q 90 L/min

HA 5218
12/2014

Replaces
HA 5218 7/2008

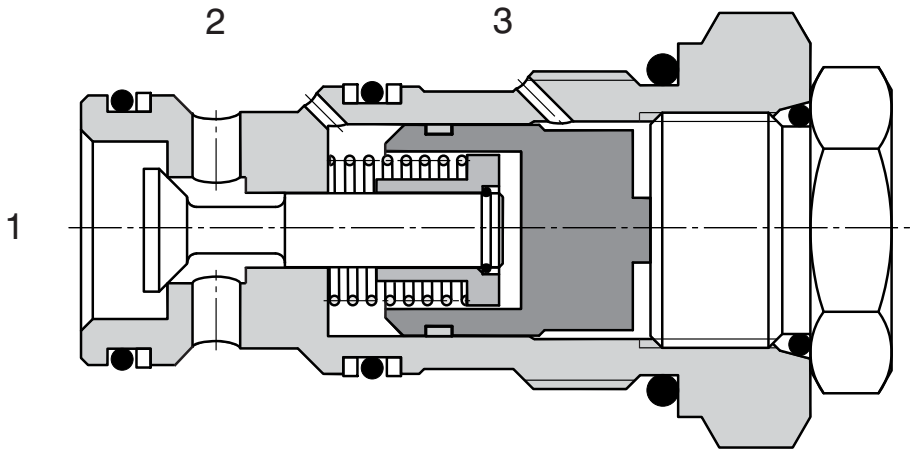


- ❑ **Load-holding without leakage**
- ❑ **Low pressure drop**
- ❑ **Optional pilot seal**
- ❑ **The valve should be mounted as close as possible to the actuator**
- ❑ **Fits the same cavity as the R3 overcentre valve**

Functional Description

The design of the valve fitted with conical seat ensures hermetical closing in one direction and in the other direction of flow with a small pressure drop. The valve remains shut off closely if the pressure in channel (1) is equal to or higher than the pressure in channel (2) and no pressure and / or insufficient pressure only is exerted in the channel (3). As soon as the pressure in the channel (2) exceeds the pressure in the channel (1) including pressure caused by the spring the valve opens the flow from (2) to (1). If the liquid has to flow through the valve from (1) to (2) the control pressure should be introduced in the channel (3). As soon as this pressure attains a necessary value the control gate valve is shifted against the spring and moves the valve cone out of the seat. At calculating the control pressure it is necessary to take into consideration that pressure in the channel (2) will increase the control pressure by the same value multiplied by an effective differential area. This effective differential area has a value of 1 – 1/4 at a rate of control areas of 4:1.

As for appropriate basic surface finish the external parts are zinc coated.



Ordering Code

SC5H-R3/I □ □ □

Pilot Operated Check Valve

Pilot ratio

Standard	4:1	**4**

Seals

No designation	NBR

Optional pilot seal

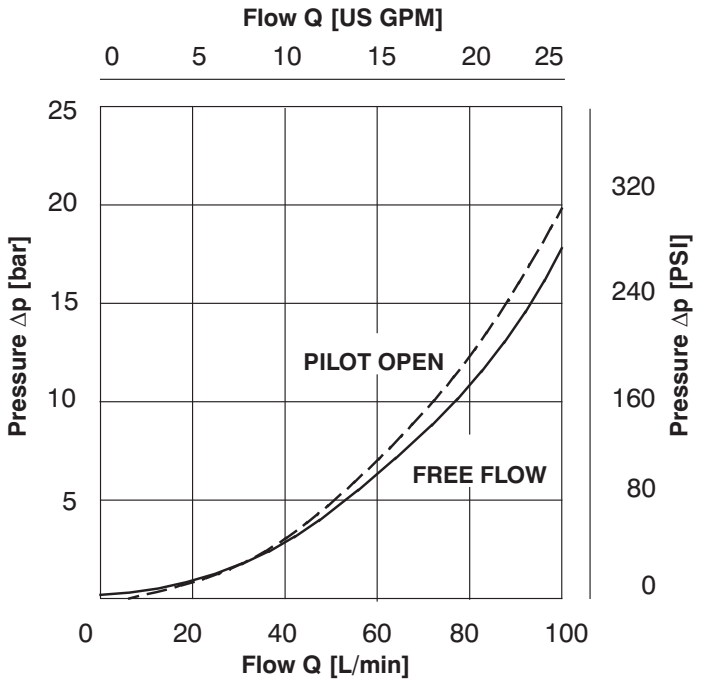
No designation	without seal
S	wit seal

Technical Data

Cavity		M27 x 1.5
Maximum flow	L/min	90
Pilot ratio		4:1
Max. pressure	bar	350
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 400
Maximum degree of fluid contamination		according to ISO 4406, Class 21/18/15
Weight	kg	0.27
Maximum valve tightening torque in valve body or in control block	Nm	60^{+2}
Mounting position		Unrestricted

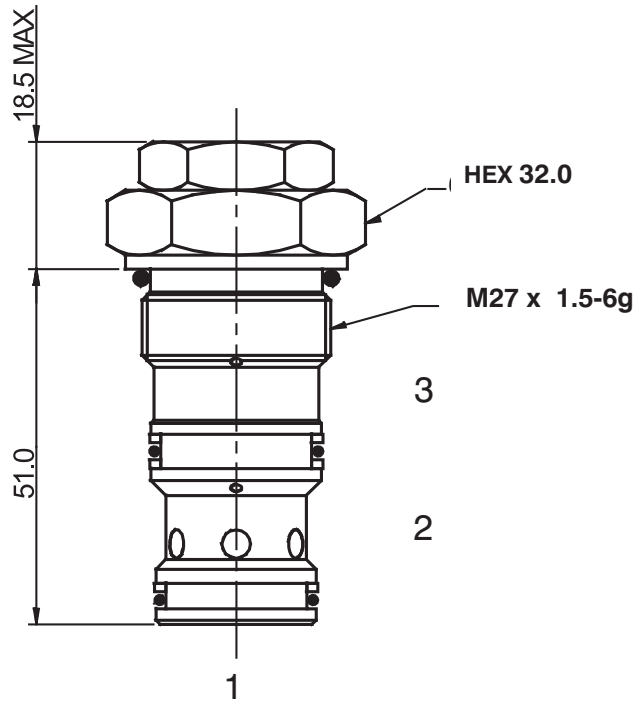
Δp-Q Characteristics

Measured at $\nu = 40\ mm^2/s$



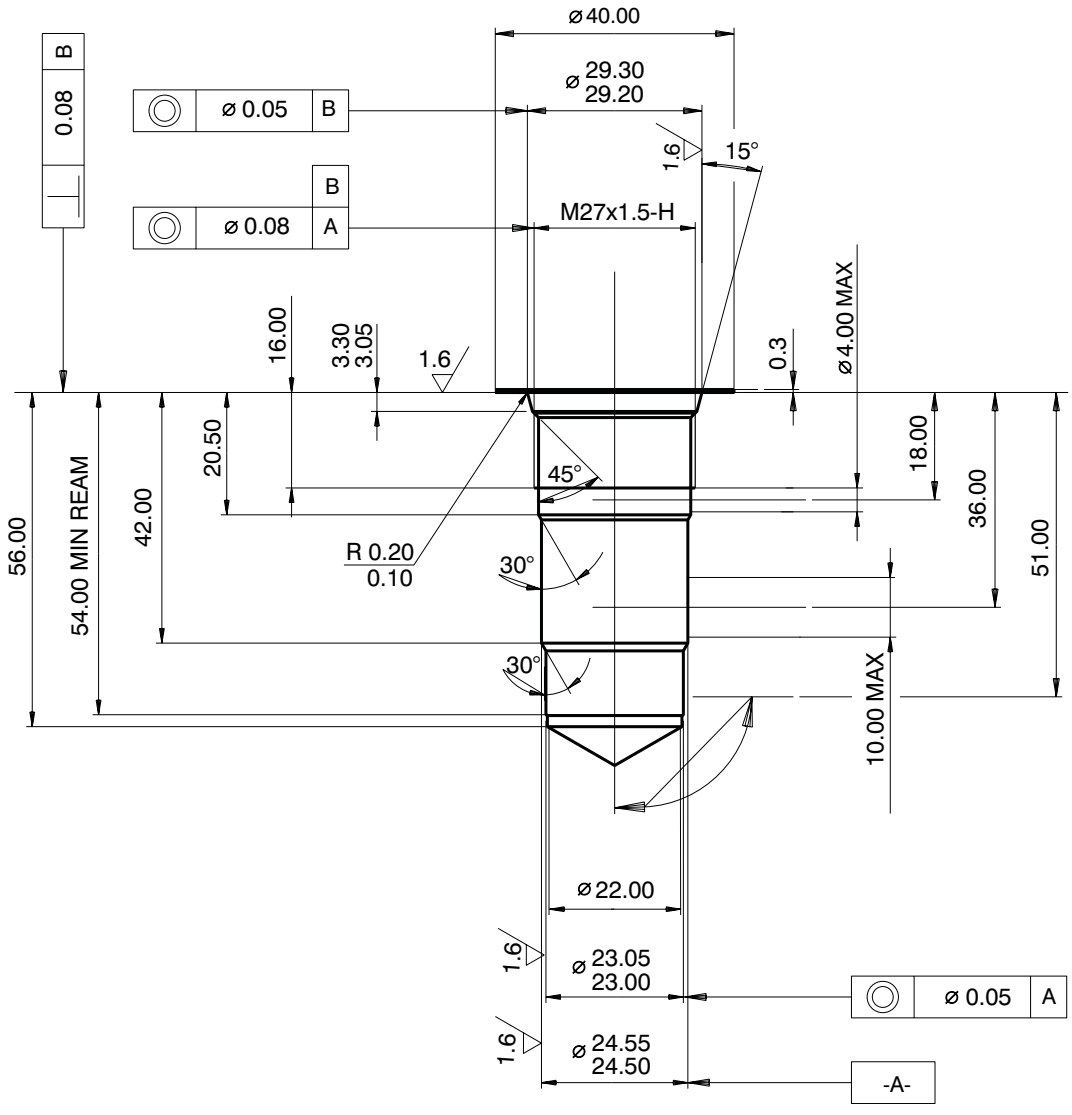
Dimensions

Measurements in millimeters



Cavity

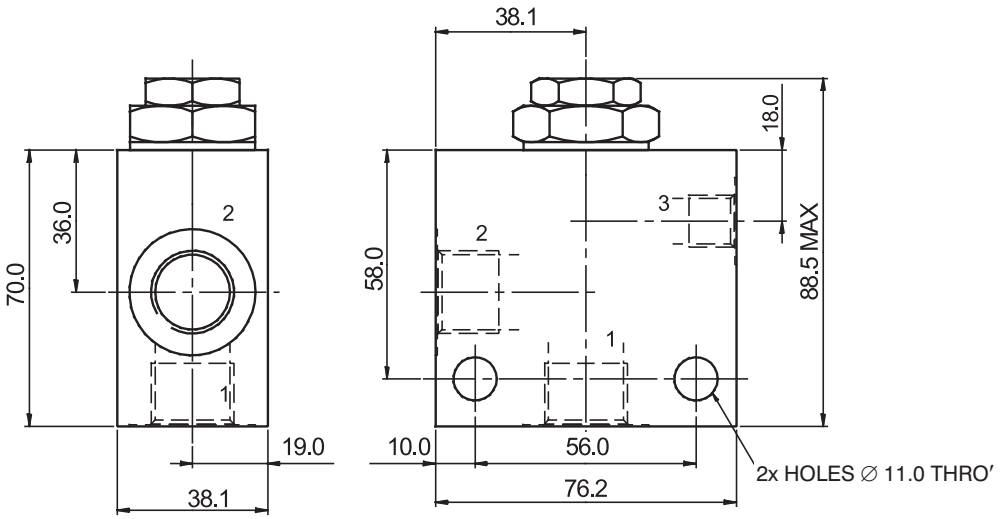
Measurements in millimeters



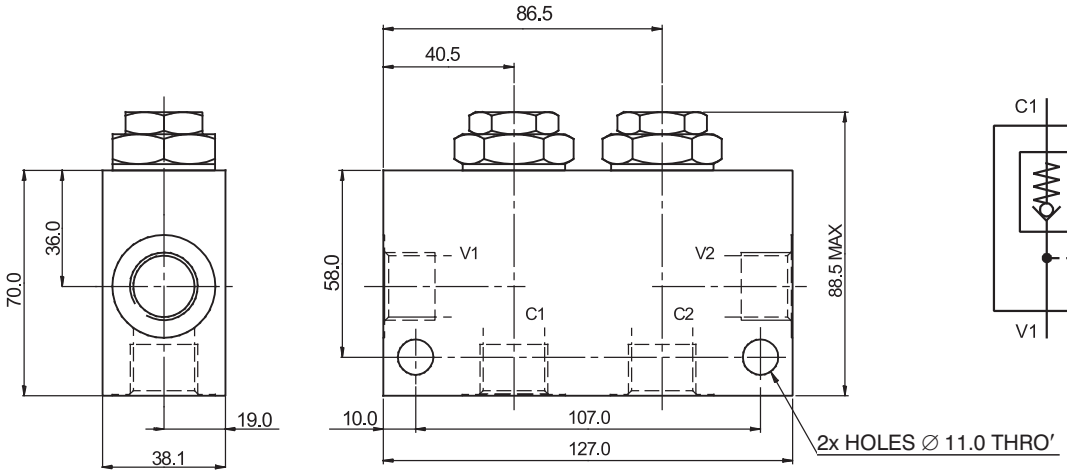
Valve Bodies

Measurements in millimeters

ISO A



Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G1/2	SB-R3-0105AL
	3	G1/4	
	1, 2	SAE 10, 7/8-14	SB-R3-0106AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G1/2	SB-R3-0105ST
	3	G1/4	
	1, 2	SAE 10, 7/8-14	SB-R3-0106ST
	3	SAE 6, 9/16-18	



Dual body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	C1, C2, V1, V2	G1/2	SB-R3-0205AL
	C1, C2, V1, V2	SAE 10, 7/8-14	SB-R3-0206AL
Steel	C1, C2, V1, V2	G1/2	SB-R3-0205ST
	C1, C2, V1, V2	SAE 10, 7/8-14	SB-R3-0206ST

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

Seal kits on request.

Caution!

- The packing foil is recyclable.
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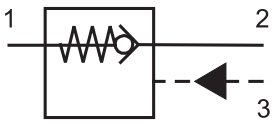
Pilot Operated Check Valves

SC5H-S3/I

1-5/16-12 UN-2A • p_{max} 350 bar • Q 120 L/min

HA 5220
12/2014

Replaces
HA 5220 7/2008

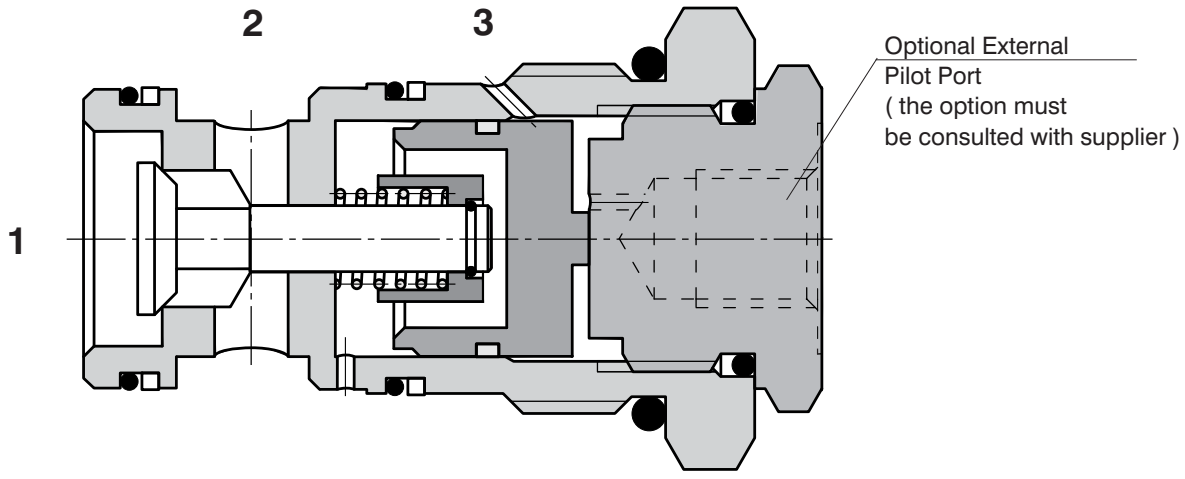


- ❑ **Load-holding without leakage**
- ❑ **Low pressure drop**
- ❑ **Optional pilot seal**
- ❑ **The valve should be mounted as close as possible to the actuator**
- ❑ **Fits the same cavity as the S3 overcentre valve**

Functional Description

The design of the valve fitted with conical seat ensures hermetical closing in one direction and in the other direction of flow with a small pressure drop. The valve remains shut off closely if the pressure in channel (1) is equal to or higher than the pressure in channel (2) and no pressure and / or insufficient pressure only is exerted in the channel (3). As soon as the pressure in the channel (2) exceeds the pressure in the channel (1) including pressure caused by the spring the valve opens the flow from (2) to (1). If the liquid has to flow through the valve from (1) to (2) the control pressure should be introduced in the channel (3). As soon as this pressure attains a necessary value the control gate valve is shifted against the spring and moves the valve cone out of the seat. At calculating the control pressure it is necessary to take into consideration that pressure in the channel (2) will increase the control pressure by the same value multiplied by an effective differential area. This effective differential area has a value of 1 – 1/3 at a rate of control areas of 3:1.

As for appropriate basic surface finish the external parts are zinc coated.



Ordering Code

SC5H-S3/I □ □ □

Pilot Operated Check Valve

Seals

No designation NBR

Pilot ratio

Standard 3:1 **3**

Optional pilot seal

No designation without seal

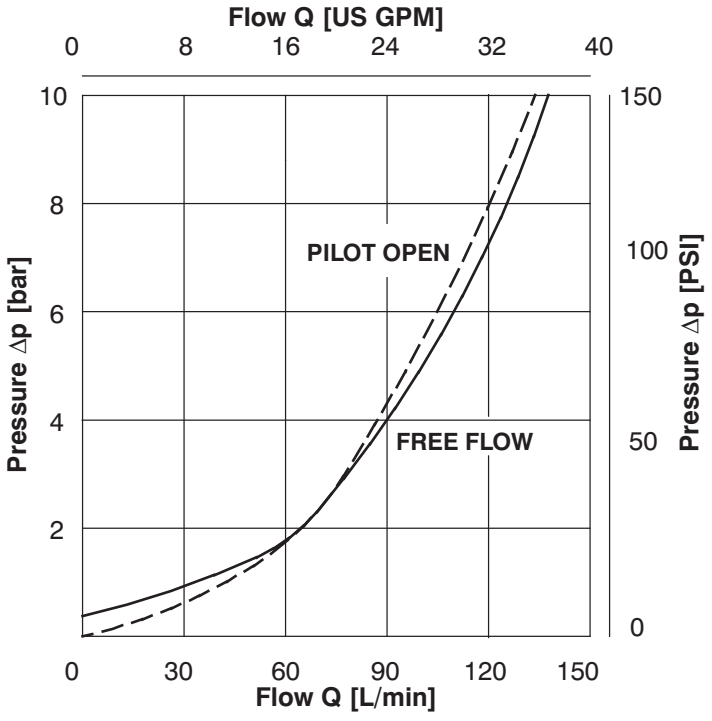
S wit seal

Technical Data

Cavity		1-5/16-12 UN-2A
Maximum flow	L/min	120
Pilot ratio		3:1
Max. pressure	bar	350
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 ... 400
Maximum degree of fluid contamination		According to ISO 4406, Class 21/18/15
Weight	kg	0.28
Maximum valve tightening torque in valve body or in control block	Nm	100^{+2}
Mounting position		Unrestricted

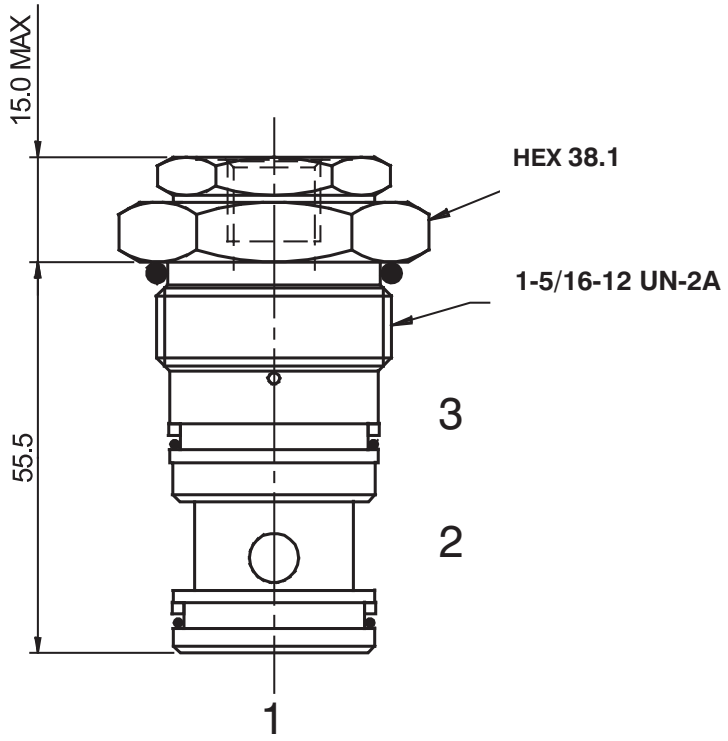
Δp-Q Characteristics

Measured at $\nu = 40\ mm^2/s$



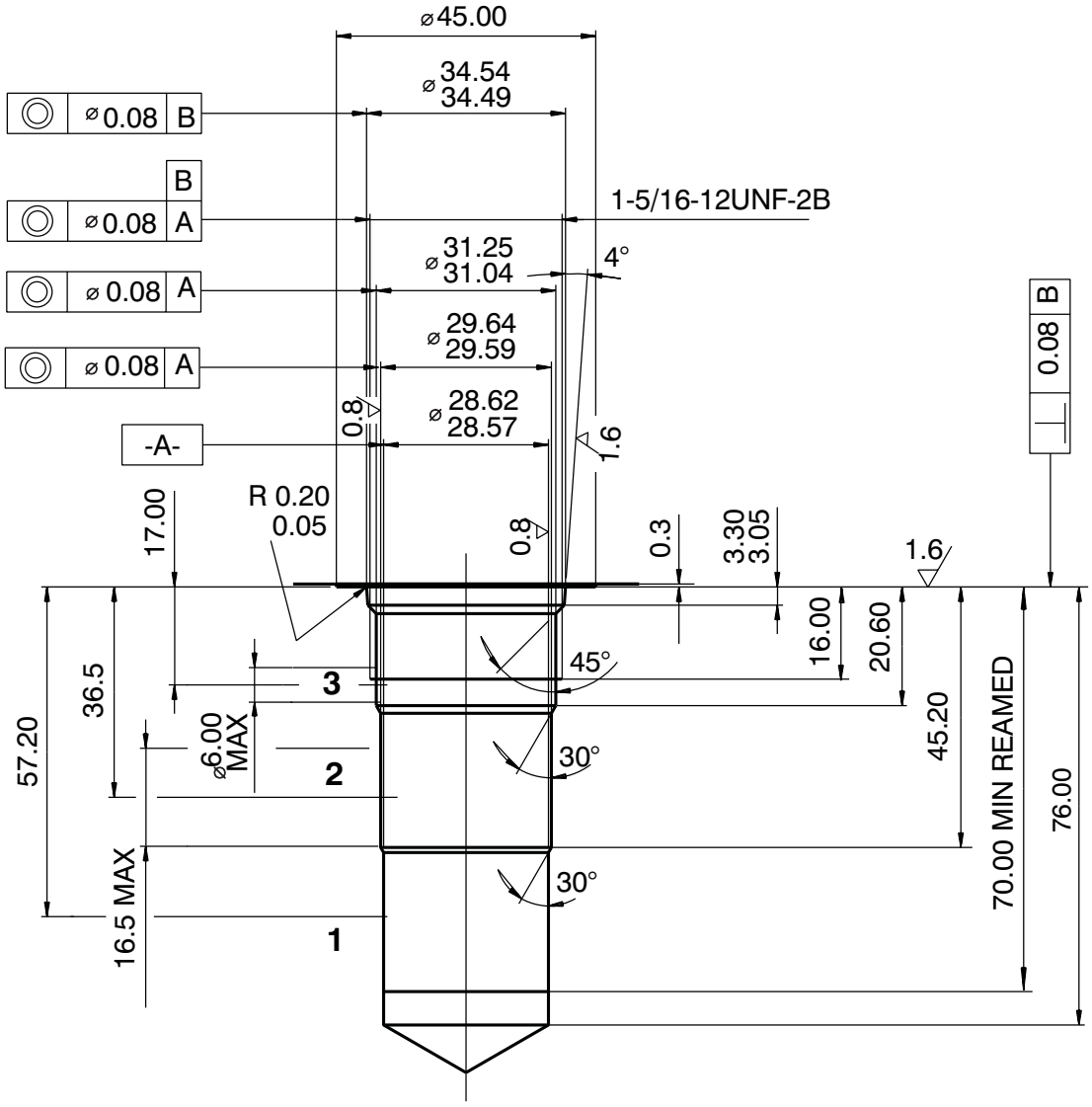
Dimensions

Measurements in millimeters



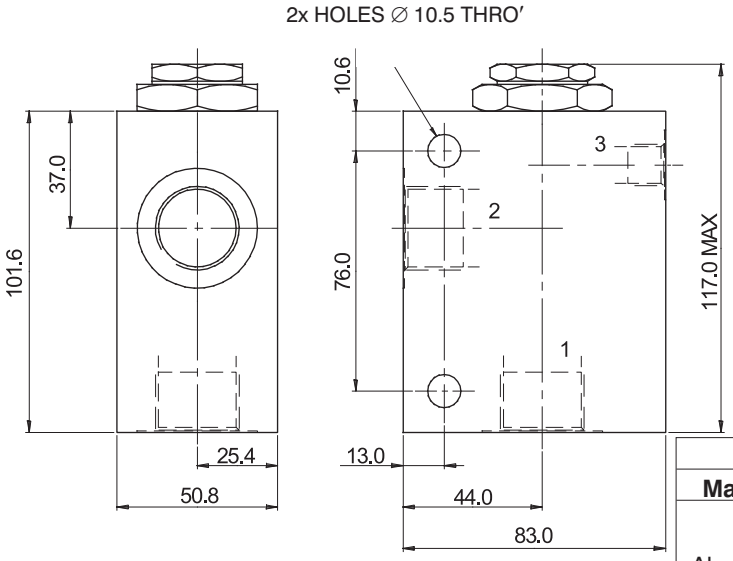
Cavity

Measurements in millimeters

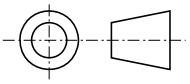


Valve Bodies

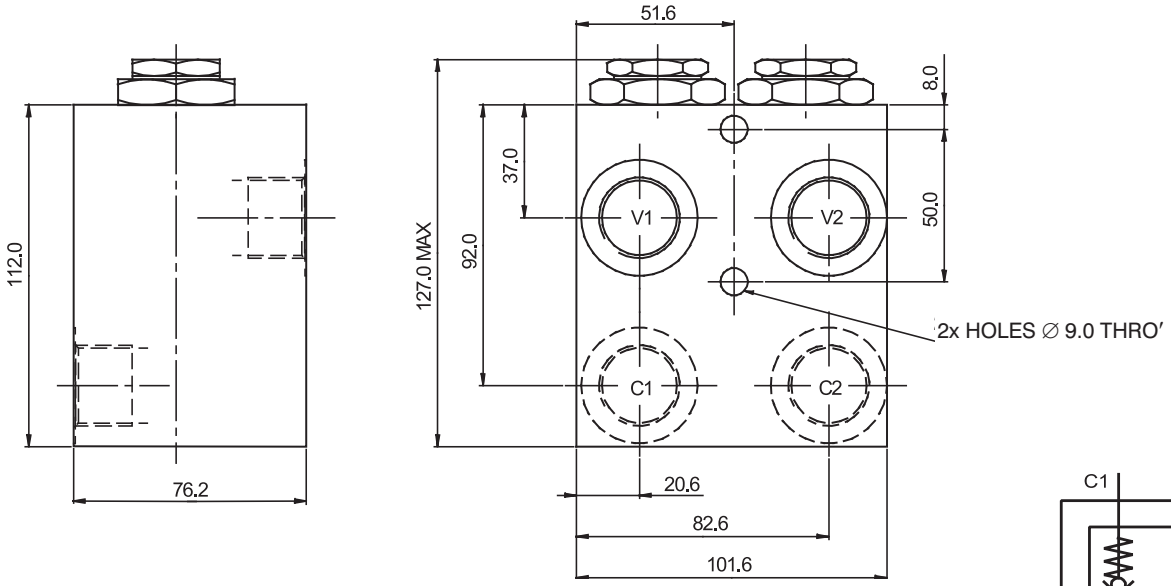
Measurements in millimeters

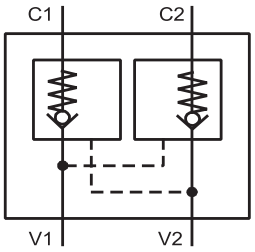


ISO A



Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G3/4	SB-S3-0107AL
	3	G1/4	
	1, 2	SAE 12, 1-1/16-12	SB-S3-0108AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G3/4	SB-S3-0107ST
	3	G1/4	
	1, 2	SAE 12, 1-1/16-12	SB-S3-0108ST
	3	SAE 6, 9/16-18	





Dual body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	C1, C2, V1, V2	G3/4	SB-S3-0207AL
	C1, C2, V1, V2	SAE 12, 1-1/16-12	SB-S3-0208AL
Steel	C1, C2, V1, V2	G3/4	SB-S3-0207ST
	C1, C2, V1, V2	SAE 12, 1-1/16-12	SB-S3-0208ST

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

Seal kits on request.

Caution!

- The packing foil is recyclable.
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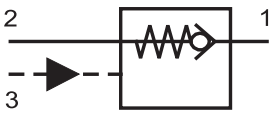
Pilot Operated Check Valves
Pilot to Close

M20 x 1,5 • p_{max} 350 bar • Q 30 L/min

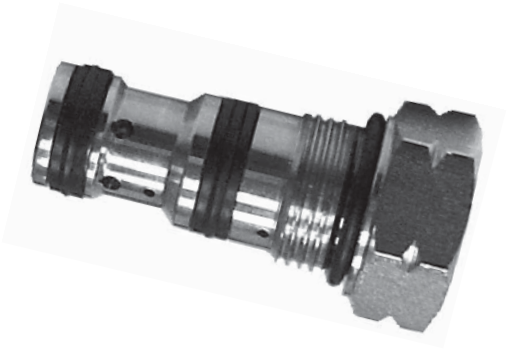
SCC5H-Q3/I

HA 5221
7/2008

Replaces
HA 5221 9/2006



- **Load-holding without leakage**
- **Low pressure drop**
- **Pilot seal**
- **Fits the same cavity as the Q3 overcentre valve**



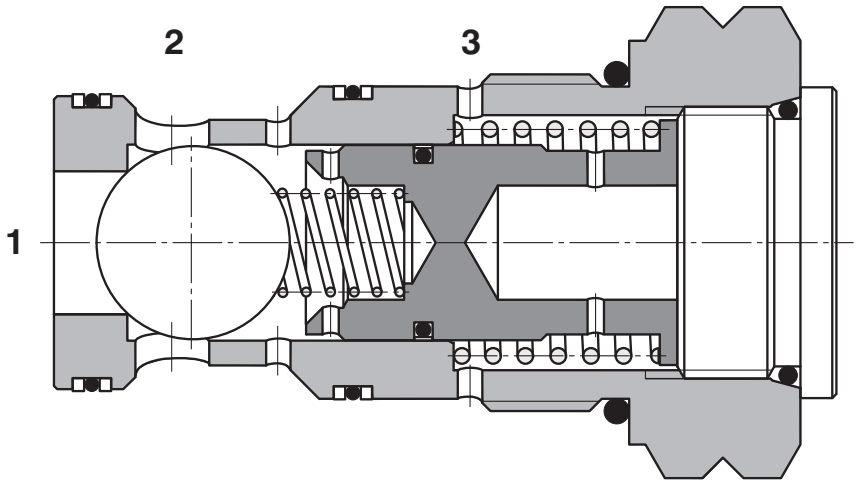
Functional Description

The one-way control valves make the flow possible in one direction with a low pressure drop and prevent from the flow in opposite direction.
The pressure in channel (1) causes a lifting of the valve ball from the seat against the spring. In this way it is released the flow from (1) into (2). The flow in the direction from (2) to (1) is not possible because the spring action and pressure in channel (2) result in pressure exerted to the valve ball in the seat.
The control pressure in channel (3) acts to the control gate valve pressing the valve ball in the appropriate valve seat. In this way the flow is shut off closely in both the directions.

$$\text{Control pressure for shutting off the valve} = \frac{\text{Pressure of channel (1)}}{2}$$

At computing the control pressure it is necessary to take into consideration that the pressure in channel (2) increases the necessary control pressure by the same value multiplied by an efficient differential area having a value of 1-1/2 at a ratio of control areas of 2:1.

As for basic surface treatment the external part of the valve are zinc coated.



Ordering Code

SC5H-R3/I □ □

Pilot Operated Check Valve
Pilot to close

Pilot ratio

Standard	2:1	**2**

Seals

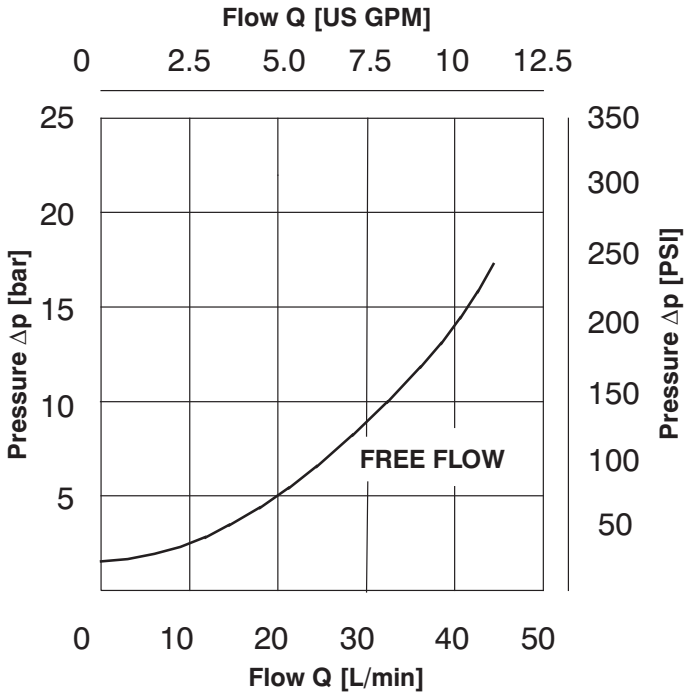
no designation	NBR

Technical Data

Cavity		M20 x 1.5
Maximum flow	L/min	30
Max. pressure	bar	350
Pilot ratio		2:1
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 ... 400
Maximum degree of fluid contamination		According to ISO 4406, Class 21/18/15
Weight	kg	0.08
Maximum valve tightening torque in valve body or in control block	Nm	45^{+2}
Mounting position		Unrestricted

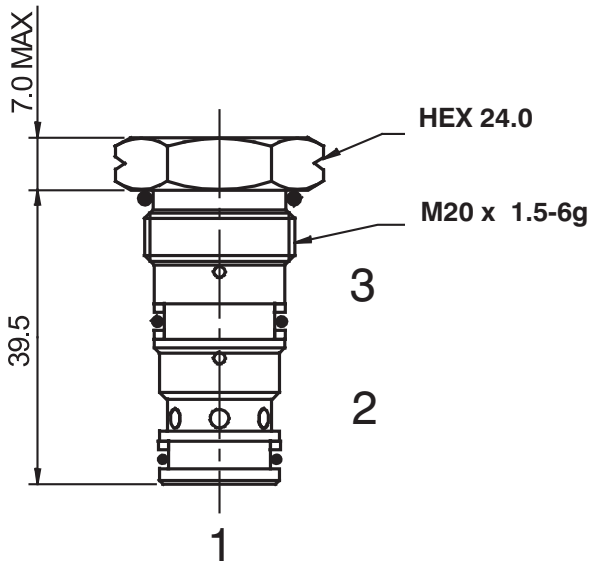
Δp-Q Characteristics

Measured at $\nu = 40\ mm^2/s$



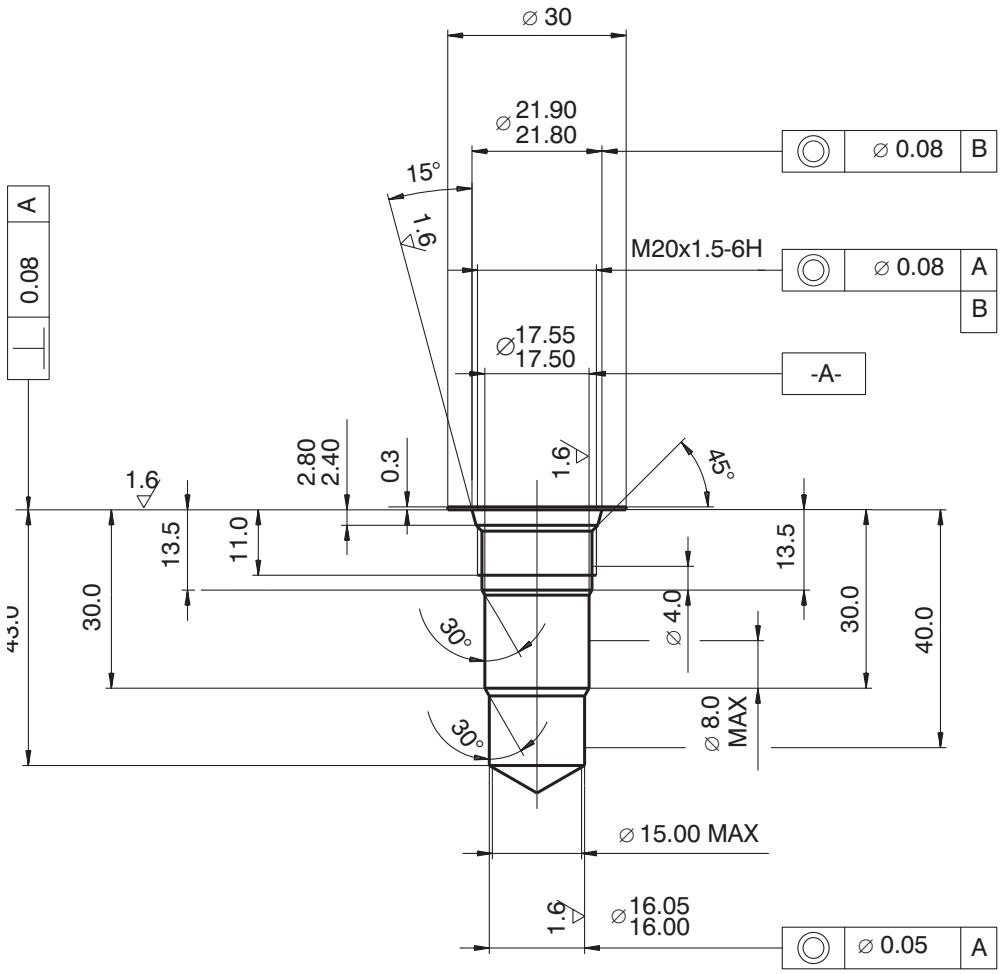
Dimensions

Measurements in millimeters



Cavity

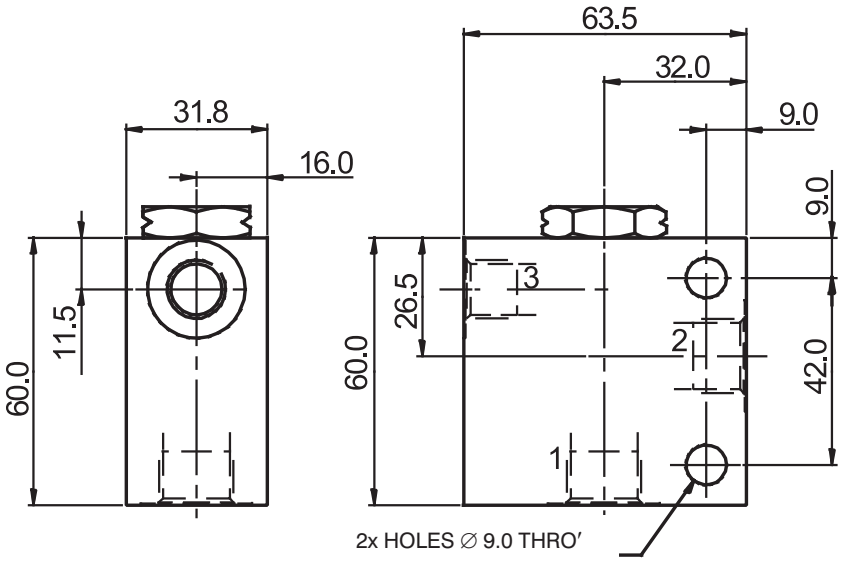
Measurements in millimeters



Valve Bodies

Measurements in millimeters

ISO A



Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G3/8	SB-R3-0105AL
	3	G1/4	
	1, 2	SAE 8, 3/4-16	SB-R3-0106AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G3/8	SB-R3-0105ST
	3	G1/4	
	1, 2	SAE 8, 3/4-16	SB-R3-0106ST
	3	SAE 6, 9/16-18	

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

Seal kits on request.

Caution!

- The packing foil is recyclable.
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ARGO HYTOS

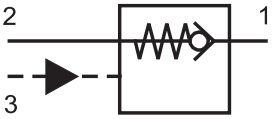
Pilot Operated Check Valves
Pilot to Close

SCC5H-S3/I

1-5/16-12 UN-2A • p_{max} 350 bar • Q 120 L/min

HA 5222
7/2008

Replaces
HA 5222 9/2006



- ❑ **Load-holding without leakage**
- ❑ **Low pressure drop**
- ❑ **Pilot seal**
- ❑ **Fits the same cavity as the S3 overcentre valve**

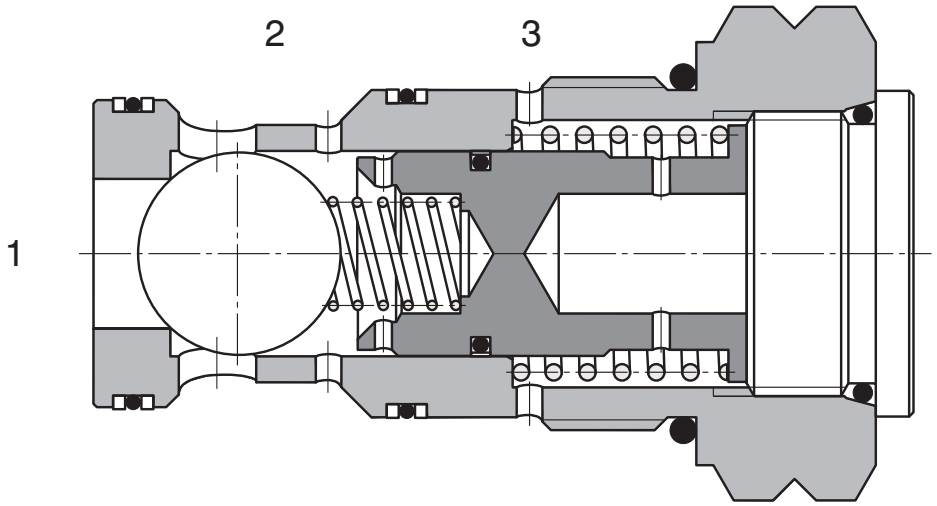
Functional Description

The one-way control valves make the flow possible in one direction with a low pressure drop and prevent from the flow in opposite direction.
The pressure in channel (1) causes a lifting of the valve ball from the seat against the spring. In this way it is released the flow from (1) into (2). The flow in the direction from (2) to (1) is not possible because the spring action and pressure in channel (2) result in pressure exerted to the valve ball in the seat.
The control pressure in channel (3) acts to the control gate valve pressing the valve ball in the appropriate valve seat. In this way the flow is shut off closely in both the directions.

$$\text{Control pressure for shutting off the valve} = \frac{\text{Pressure of channel (1)}}{2}$$

At computing the control pressure it is necessary to take into consideration that the pressure in channel (2) increases the necessary control pressure by the same value multiplied by an efficient differential area having a value of 1-1/2 at a ratio of control areas of 2:1.

As for basic surface treatment the external part of the valve are zinc coated.



Ordering Code

SCC5H-S3/I □ □

Pilot Operated Check Valve
Pilot to close

Pilot ratio

Standard	2:1	**2**

Seals

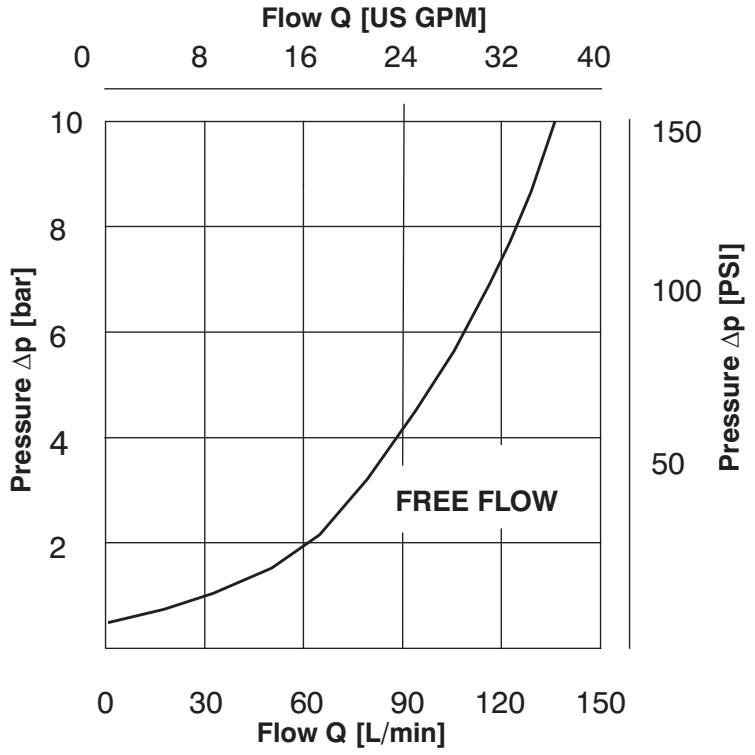
no designation	NBR

Technical Data

Cavity		1-5/16-12 UN-2A
Maximum flow	L/min	120
Max. pressure	bar	350
Pilot ratio		2:1
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 ... 400
Maximum degree of fluid contamination		According to ISO 4406, Class 21/18/15
Weight	kg	0.28
Maximum valve tightening torque in valve body or in control block	Nm	100^{+2}
Mounting position		unrestricted

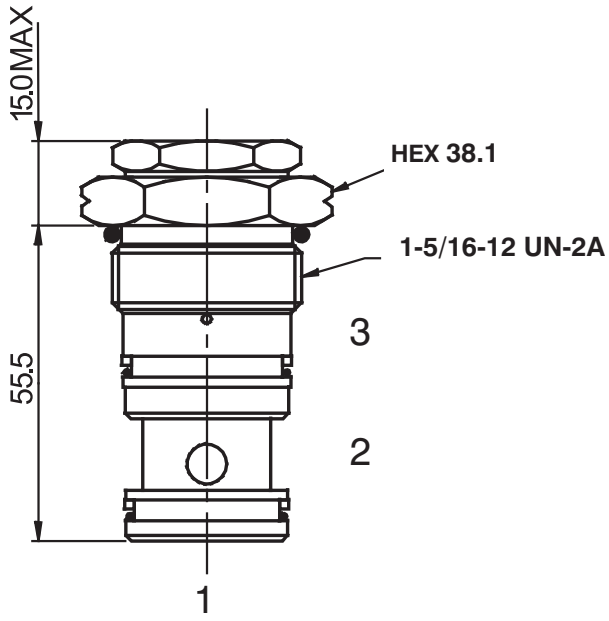
Δp-Q Characteristics

Measured at $\nu = 40\ mm^2/s$



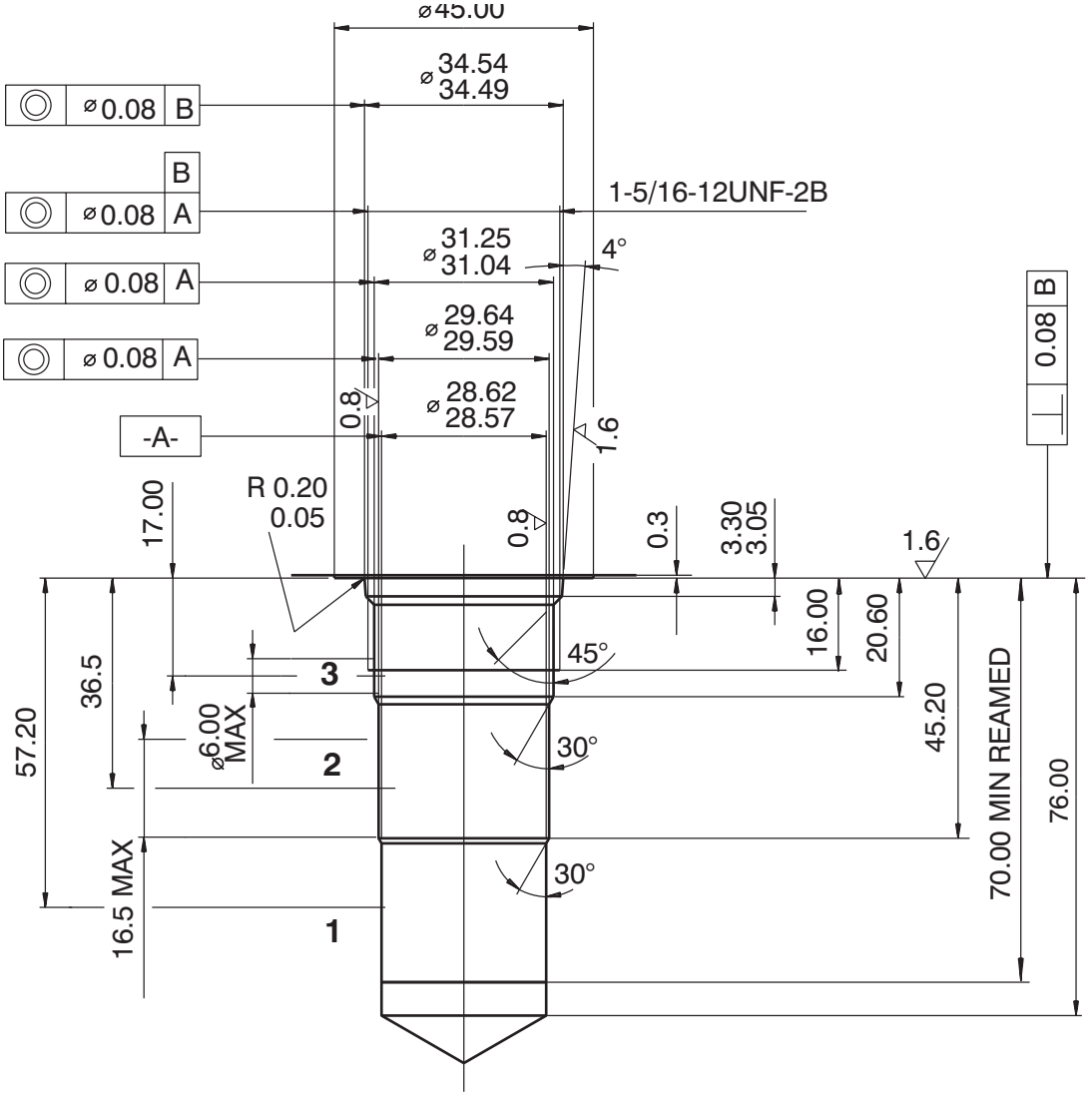
Dimensions

Measurements in millimeters



Cavity

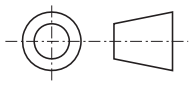
Measurements in millimeters

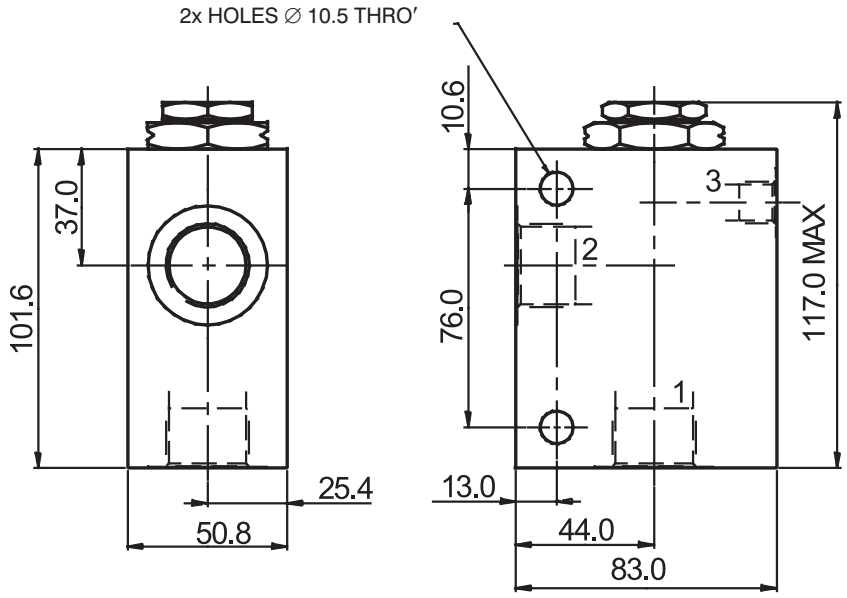


Valve Bodies

Measurements in millimeters

ISO A





Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G3/4	SB-S3-0107AL
	3	G1/4	
	1, 2	SAE 12, 1-1/16-12	SB-S3-0108AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G3/4	SB-S3-0107ST
	3	G1/4	
	1, 2	SAE 12, 1-1/16-12	SB-S3-0108ST
	3	SAE 6, 9/16-18	

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

Seal kits on request.

Caution!

- The packing foil is recyclable.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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www.argo-hytos.com

Pilot Operated Check Valves with Decompression

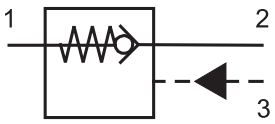
SCD5H-R3/I

M27 x 1.5 • p_{max} 350 bar • Q_{max} 90 L/min

HA 5219
12/2014

Replaces
HA 5219 7/2008

- ❑ **Load-holding without leakage**
- ❑ **Low pressure drop**
- ❑ **Decompression stage**
- ❑ **Optional pilot seal**
- ❑ **The valve should be mounted as close as possible to the actuator**
- ❑ **Fits the same cavity as the R3 overcentre valve**



Functional Description

The design of the valve fitted with conical seat ensures hermetical closing in one direction and in the other direction of flow with a small pressure drop. In this case the question is an indirectly controlled one-way valve opened hydraulically. The closing element (valve cone of the main stage of the valve) and a ball (of the control stage) are pressed to the seat of the valve by the spring force. If the channel (2) pressure exceeds the spring pressure and pressure in the channel (1) the liquid flows through the valve opened. The appropriate pressure drops are identified on the characteristics as a free rate of flow. In the case of this direction of flow the valve operates as a simple one-way valve.
In the opposite direction the liquid can flow from the -channel (1) to the channel (2) in the case a sufficient control pressure acts in the channel (3) only.

$$\text{Opening pressure of the control stage (decompression)} = \frac{\text{Pressure of channel (1)}}{25}$$

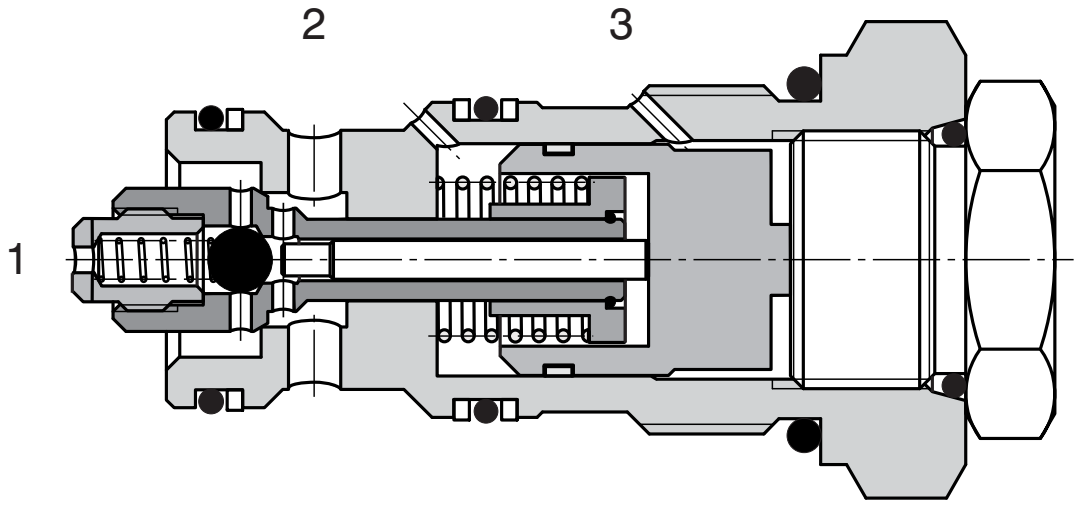
By opening a small amount the control valve the pressure in the channel (2) is dropped in such extent that he control pressure in the channel (3) is sufficient for opening the main stage.

$$\text{Opening pressure of the main stage} = \frac{\text{Pressure of channel (1)}}{3}$$

Pressure drop values at the main stage opened are identified in the flow characteristics as open by the control.

During computing the control pressure it is necessary to take into consideration that pressure acting in the channel (2) increases the control pressure by the same value multiplied by the effective differential area having a value of 1 – 1/25 in case of a value of the ratio of control surfaces of 25:1.

As for appropriate basic surface finish the external parts are zinc coated.



Ordering Code

SCD5H-R3/I □ □ □

Pilot Operated Check Valve
with decompression

Pilot ratio

Decompression	25:1	
Full flow	3:1	**3**

Seals

No designation	NBR

Optional pilot seal

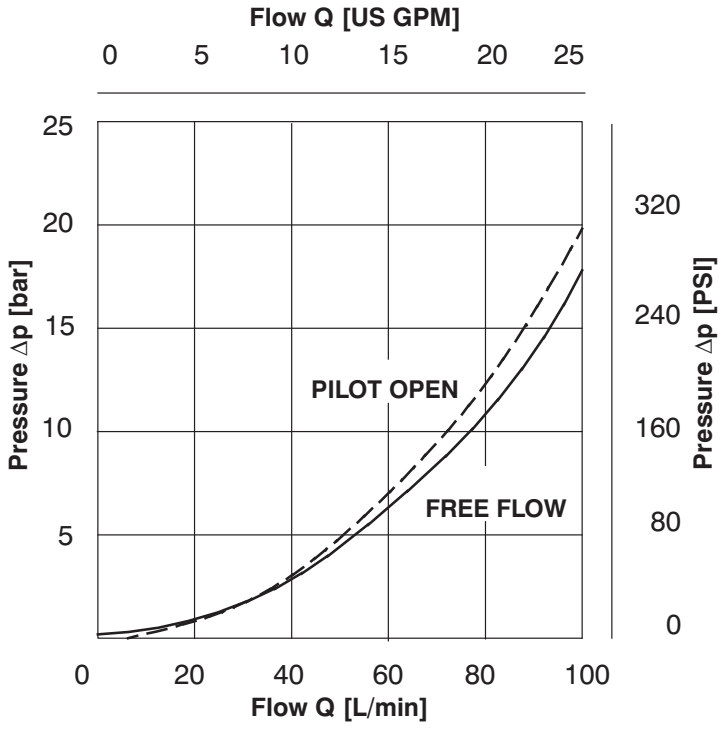
No designation	without seal
S	wit seal

Technical Data

Cavity		M27 x 1.5
Maximum flow	L/min	90
Pilot ratio decomperssion		25:1
Pilot ratio full flow		3:1
Max. pressure	bar	350
Pressure drops	bar	see Δp - Q characteristics
Hydraulic fluid		Hydraulic oil (HM, HV) according to DIN 51524
Fluid temperature range	°C	-20 ... +90
Viscosity	mm^2/s	20 ...400
Maximum degree of fluid contamination		According to ISO 4406, Class 21/18/15
Weight	kg	0.24
Maximum valve tightening torque in valve body or in control block	Nm	60^{+2}
Mounting position		Unrestricted

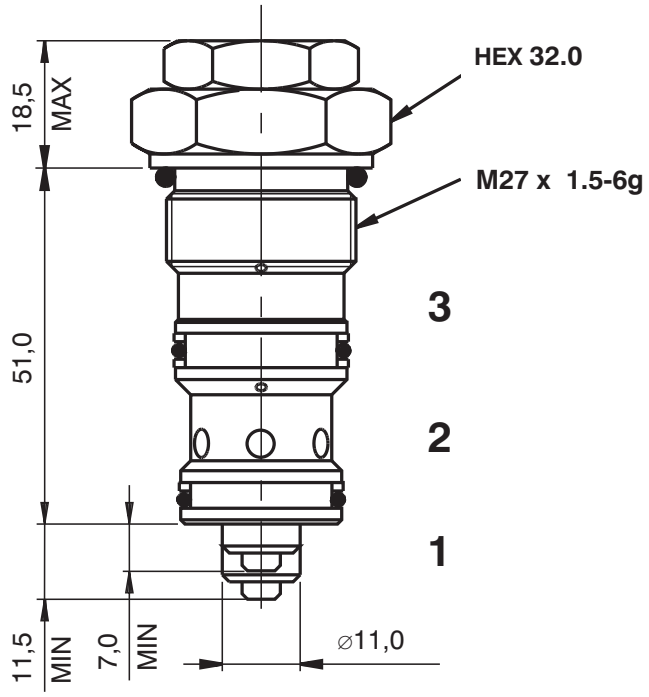
Δp-Q Characteristics

Measured at ν = 40 mm^2/s



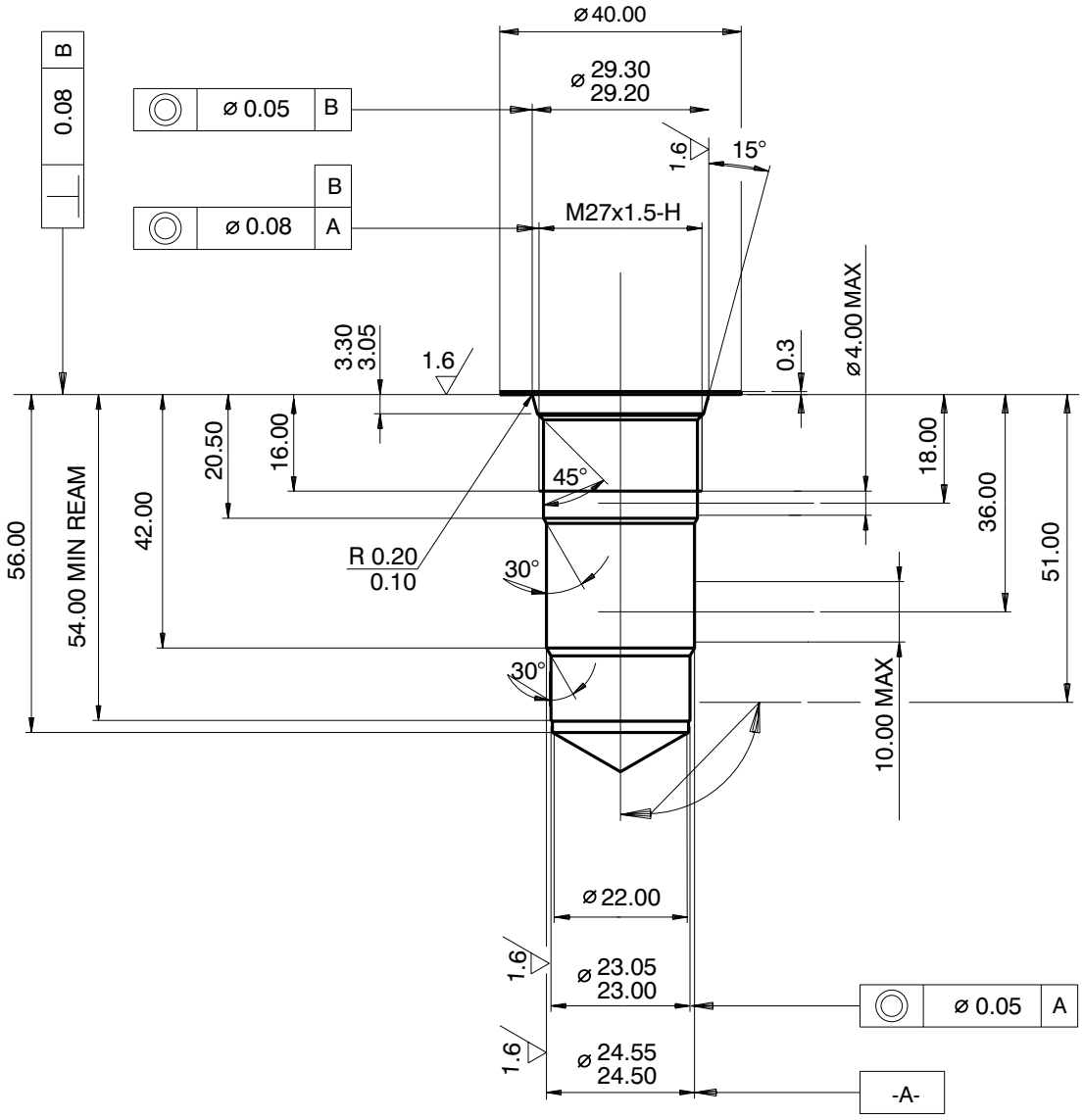
Dimensions

Measurements in millimeters



Cavity

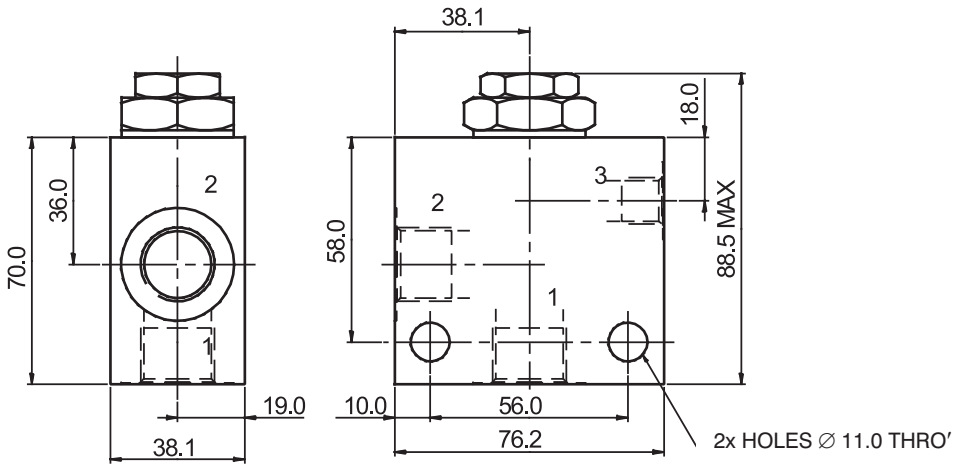
Measurements in millimeters



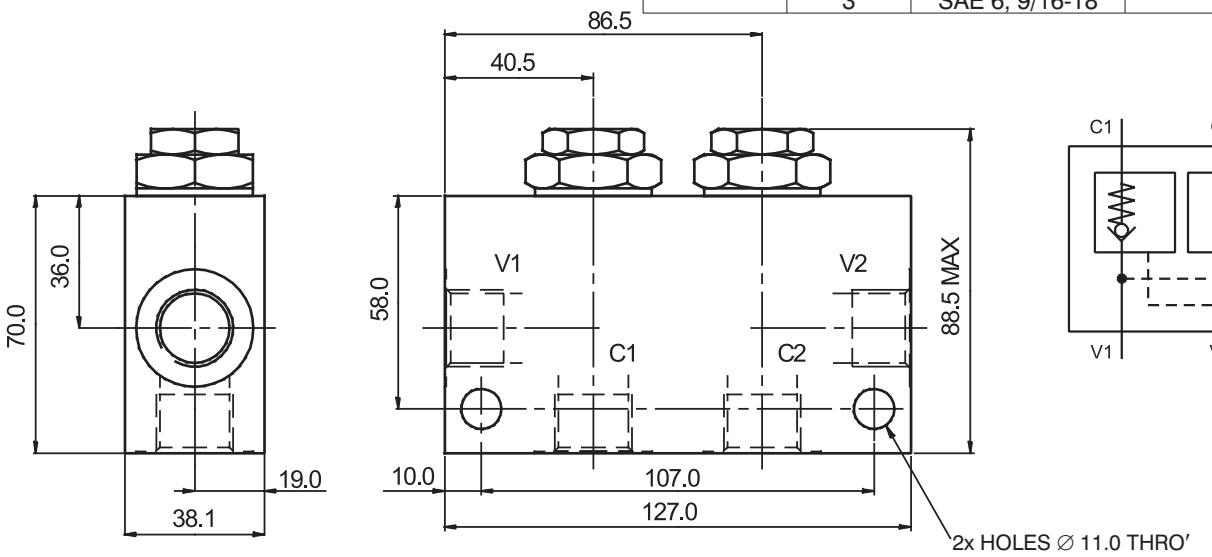
Valve Bodies

Measurements in millimeters

ISO A



Body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	1, 2	G1/2	SB-R3-0105AL
	3	G1/4	
	1, 2	SAE 10, 7/8-14	SB-R3-0106AL
	3	SAE 6, 9/16-18	
Steel	1, 2	G1/2	SB-R3-0105ST
	3	G1/4	
	1, 2	SAE 10, 7/8-14	SB-R3-0106ST
	3	SAE 6, 9/16-18	



Dual body without valve			
Material	**Ports**	**Port size**	**Type code**
Aluminium	C1, C2, V1, V2	G1/2	SB-R3-0205AL
	C1, C2, V1, V2	SAE 10, 7/8-14	SB-R3-0206AL
Steel	C1, C2, V1, V2	G1/2	SB-R3-0205ST
	C1, C2, V1, V2	SAE 10, 7/8-14	SB-R3-0206ST

The use of aluminium bodies is limited to a maximum operating pressure of 210 bar.

Spare Parts

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ARGO HYTOS

Check Valves

VJ3

Size 06, 08,10,16,20,25,30 • 320 bar (4600 PSI) • 400 L/min (105 GPM)

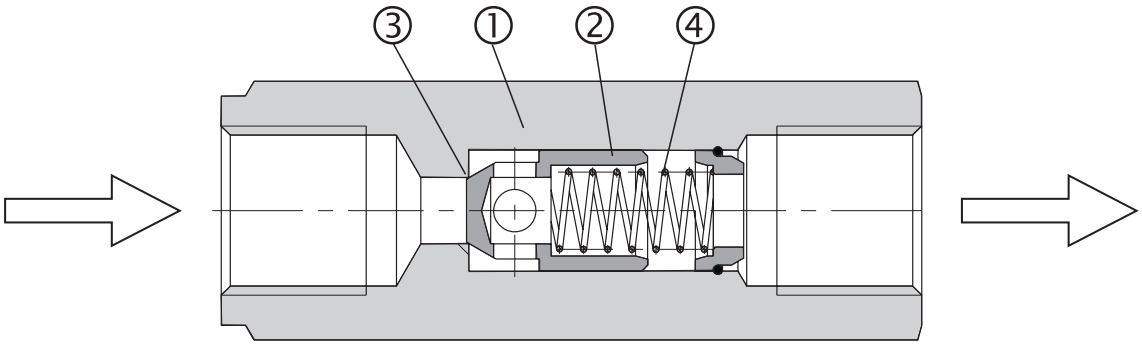
HA 5009
11/2010

Replaces
HA 5009 5/2008

- ❑ **Mounting styles:**
  - **for in-line mounting**
  - **straight valve cartridge**
  - **right angled valve cartridge**
- ❑ **Seven sizes**
- ❑ **Poppet design**
- ❑ **Leakfree closure in one direction**
- ❑ **Three cracking pressures**

Functional Description

The check valve is used to allow flow in one direction and prevent flow in the other. The poppet design guarantees leakfree closure.
The seat (3) is created directly in the housing (1) and the poppet (2) is pushed onto the seat by the compression spring (4). Design without spring pushes the poppet (2) on to the seat by presssure of the fluid. The cracking pressure depends on the spring selected and the pressurised poppet surface area. Three cracking pressures are available. The valve without cracking pressure is also available (without spring).
The basic surface treatment of the valve housing is zinc coated.



Ordering Code

VJ3 - □ - □ - □

Check Valve

Nominal size

06	**06**
08	**08**
10	**10**
16	**16**
20	**20**
25	**25**
30	**30**

Model

G1	For in-line mounting - with G threads
M1*	- with M threads
S*	- with SAE threads
02*	Straight valve cartridge
03*	Straight valve cartridge

*For sizes 06, 10, 16, 20 only

Cracking pressure in bar

000	Without spring
005	0,5 bar 7.25 PSI)
015	1,5 bar (21.75 PSI)
030	3,0 bar (43.51 PSI)

FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE AND TABLE OF PREFERRED TYPES ON PAGE 4

Technical Data

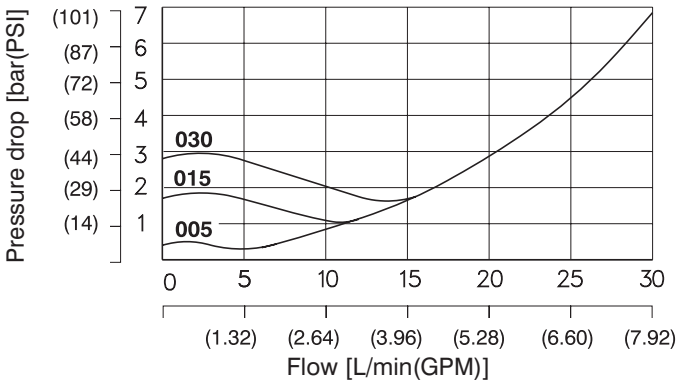
Nominal size		06	08	10	16	20	25	30
Maximum flow rate	L/min (GPM)	30 (7.9)	40 (10.6)	60 (15.9)	160 (42.3)	250 (66)	300 (79.2)	400 (105.6)
Maximum pressure	bar(PSI)	320 (105.6)						
Cracking pressure	bar(PSI)	0,5 (7.25)		1,5 (21.75)			3,0 (43.51)	
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524						
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +100)						
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)						
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406 (1999)						
Weight - model G1	kg (lbs)	0,11 (0.25)	0,2 (0.44)	0,34 (0.8)	0,52 (1.2)	0,95 (2.1)	1,95 (4.29)	2,35 (5.18)
- models M1, S	kg (lbs)	0,11 (0.25)	-	0,34 (0.8)	0,52 (1.2)	0,95 (2.1)	-	-
- models 02, 03	kg (lbs)	0,05 (0.002)	-	0,09 (0.004)	0,22 (0.009)	0,26 (0.010)	-	-
Mounting position		optional, in case of construction without spring						

Δp-Q Characteristics

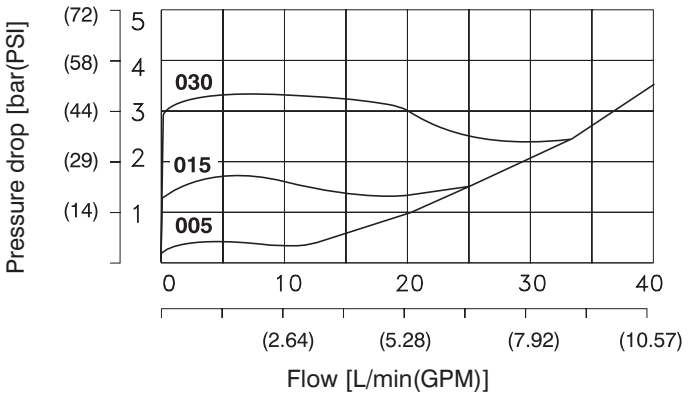
Measured at $\nu = 32\ mm^2/s$ (156 SUS)

Pressure drop Δp related to flow rate.

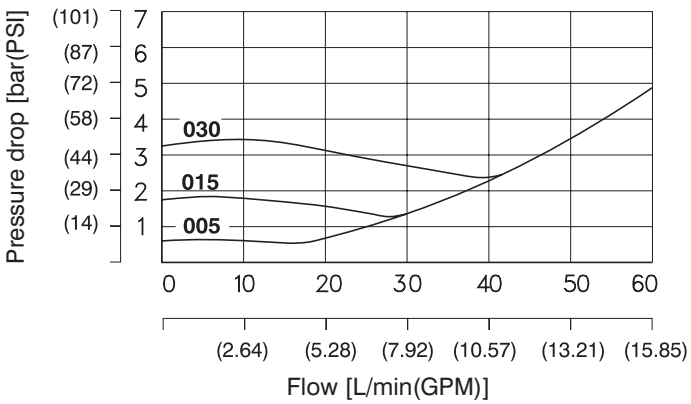
Nominal size 06



Nominal size 08



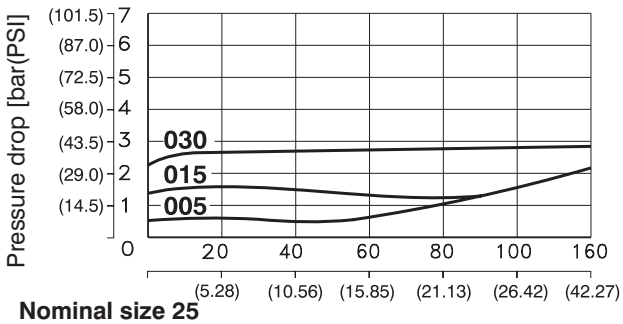
Nominal size 10



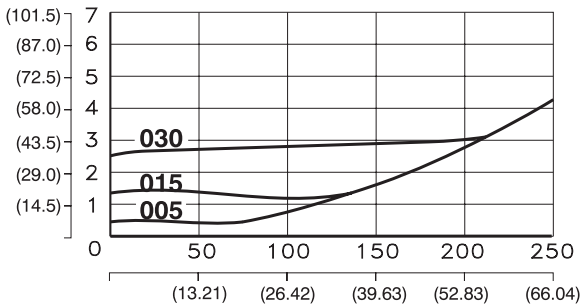
Δp-Q Characteristics

Measured at ν = 32 mm²/s (156 SUS)

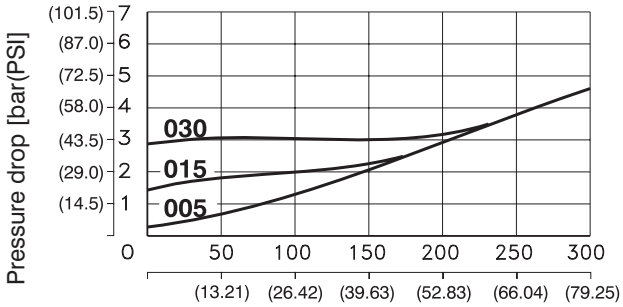
Nominal size 16



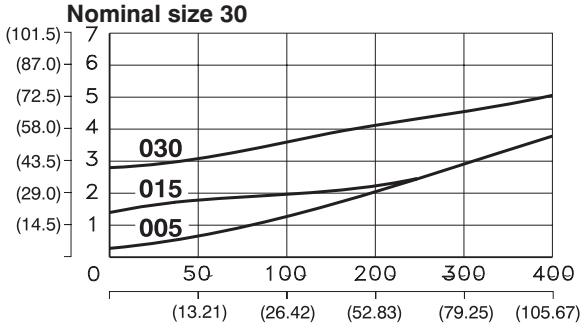
Nominal size 20



Nominal size 25



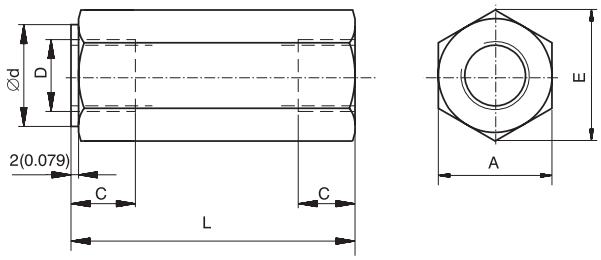
Nominal size 30



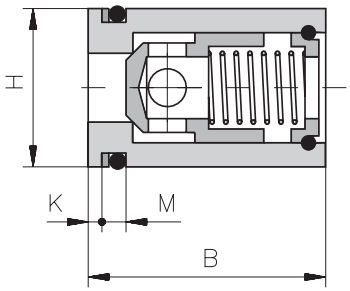
Valve Dimensions

Dimensions in millimeters (inches)

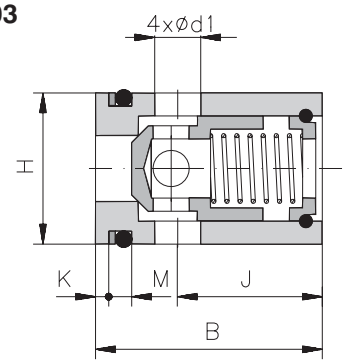
Model G1,M1, S



Model 02



Model 03



Size	A	*B*	C	D			Ød
				G1	M1	S	
06	19 (0.748)	27 - 0,2 (1.063-0.008)	12 (0.47)	G 1/4	M14x1,5	SAE-6, 9/16-18	19 (0.75)
08	24 (0.945)	-	12 (0.47)	G 3/8	-	-	24 (0.94)
10	30 (1.181)	32 - 0,2 (1.260-0.008)	14 (0.55)	G 1/2	M18x1,5	SAE-8, 3/4-16	30 (1.18)
16	36 (1.417)	45 - 0,2 (1.772-0.008)	16 (0.63)	G 3/4	M27x2	SAE-12, 1 1/16-12	36 (1.42)
20	46 (1.811)	45 - 0,2 (1.772-0.008)	18 (0.71)	G 1	M33x2	SAE-16, 1 5/16-12	46 (1.81)
25	60 (2.362)	-	20 (0.79)	G1 1/4	-	-	60 (2.36)
30	65 (2.559)	-	22 (0.87)	G1 1/2	-	-	65 (2.56)

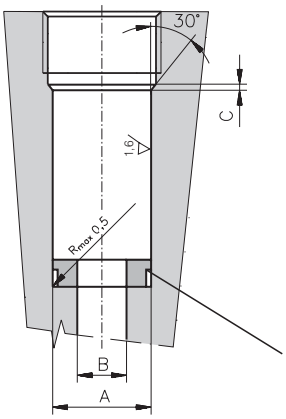
Size	Ød1	E	H	J	K	L	M
06	3,5 (0.138)	22 (0.866)	∅ 20 (0.787 f8)	18 (0.709)	1,6 (0.063)	58 (2.28)	4,4 +0,2 (0.173+0.0079)
08	-	27,7 (1.09)	-	-	-	58 (2.28)	-
10	5,5 (0.217)	34,5 (1.358)	∅ 25 (0.984 f8)	20 (0.787)	1,6 (0.063)	72 (2.83)	4,4 +0,2 (0.173+0.0079)
16	8,5 (0.335)	41,5 (1.634)	∅ 35 (1.378 f8)	27 (1.063)	2,2 (0.087)	85 (3.35)	5,3 +0,2 (0.209+0.0079)
20	10,5 (0.413	53,6 (2.087)	∅ 40 (1.575 f8)	25 (0.984)	2,2 (0.087)	98 (3.86)	5,3 +0,2 (0.209+0.0079)
25	-	69 (2.717)	-	-	-	120 (4.72)	-
30	-	75 (2.953)	-	-	-	132 (5.20)	-

Cavity

Dimensions in millimeters (inches)

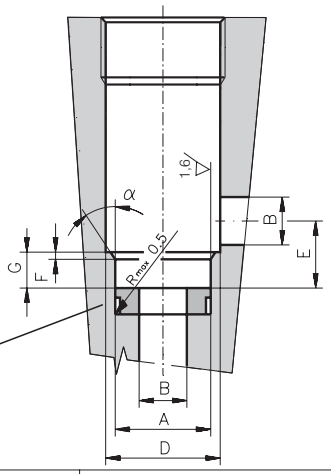
(length according to distance ring)

Model 02



If the hole cannot be reamed to the bottom, the use of a distance ring is recommended

Model 03



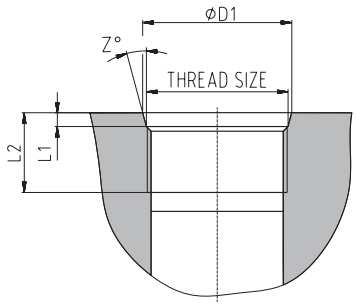
Size	A	B	C	D*	E	F	G	α
06	∅20 (0.787+0.0013 H8)	∅06 (0.236)	2 (0.079)	∅26 (1.024)	10.5 (0.413)	1 (0.039)	7-0.3 (0.276-0.0118)	20 °
10	∅25 (0.984+0.0013 H8)	∅10 (0.394)	2 (0.079)	∅32 (1.260)	14 (0.551)	1.5 (0.059)	8+0.2 (0.315+0.0079)	30 °
16	∅35 (1.378+0.0015 H8)	∅16 (0.630)	2 (0.079)	∅44 (1.732)	22 (0.866)	2 (0.079)	13+0.2 (0.512+0.0079)	30 °
20	∅40 (1.575+0.0015 H8)	∅20 (0.787)	2 (0.079)	∅48 (1.890)	25 (0.984)	2 (0.079)	14+0.2 (0.551+0.0079)	30 °

* minimum diameter recommended

SAE-Port Cavities

Dimensions in millimeters (inches)

Type	Thread size	∅D1	L1	L2	Z°
SAE-6	9/16-18 UNF-2B	15.6 (0.614)	2.5 (0.098)	13 (0.512)	12
SAE-8	3/4-16 UNF-2B	20.6 (0.811)	2.5 (0.098)	15 (0.591)	15
SAE-12	1 1/16-12 UN-2B	29.2 (1.150)	2.5 (0.098)	19 (0.748)	15
SAE-16	1 5/16-12 UN-2B	35.5 (1.398)	3.3 (0.130)	19 (0.748)	15



Spare Parts

Seal kit for Model 02 and Model 03

Size	O-Ring - NBR	Back-up ring	Order number
06	15,08 x 2,62	BBP 80B113-N9 14,66 x 19,02 x 1,14	22701100
10	20 x 2,65	BBP 80B116-N962N 19,43 x 23,79 x 1,14	15954600
16	28 x 3,55	BBP 80B216-N9 8,98 x 34,98 x 1,02	15954700
20	32,92x3,53	BBP 80B219-N90 33,88 x 39,88 x 1,02	22701400

Preferred Types of Valves

Typ	Order number	Typ	Order number
VJ3-06-005-M1	28433500	VJ3-06-005-G1	15946400
-	-	VJ3-08-005-G1	22666100
VJ3-10-005-M1	28433800	VJ3-10-005-G1	17333500
VJ3-16-005-M1	28434100	VJ3-16-005-G1	22663600
VJ3-20-005-M1	28434400	VJ3-20-005-G1	17333700
-	-	VJ3-25-005-G1	22664200
-	-	VJ3-30-005-G1	22665000

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www.argo-hytos.com

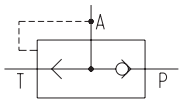
Logical 3 Way Check Valves — VJL2-304

Size 04 • 210 bar (3000 PSI) • 15 L/min(4 GPM)

HA 5007
7/2012

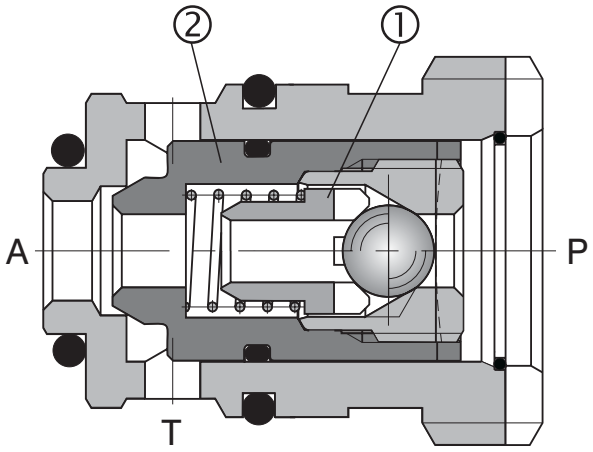
Replaces
HA 5007 4/2007

- ❑ **Screw-in cartridge valve**
- ❑ **For leak-free applications**
- ❑ **Simple design**
- ❑ **High reliability**



Functional Description

The fluid pressure in port P opens the ball check valve (1), thus allowing the fluid to pass to port A. Due to the area and pressure differential between ports P and A, the poppet (2) closes tightly the connection between ports A and T.
If there is no pressure in port P, then any pressure in port A causes the fluid to pass in the direction A → T. At the same time, the ball check valve provides a leak free closure between ports A and P.
The valve housing and the poppet are made of steel and hardened steel respectively.
The valve is delivered without any surface treatment.



Ordering Code

VJL2 - 304 - ☐ ☐

Shuttle Valve

3 way design

Valve size

Seals
no designation Standard (NBR)
V Viton (FPM)

Type of the connecting thread
M Metric thread (M22x1.5)
G Pipe thread (G1/2)

Spare Parts

Dimensions in millimeters

Seal kit			
Type	Dimensions, quantity		Ordering number
Standard NBR	O-ring	14 x 1.78 (1 pc.)	22737500
		9 x 1.8 (1 pc.)	
		10 x 1 (1 pc.)	
Viton		14 x 1.78 (1 pc.)	22737600
		9.25 x 1.78 (1 pc.)	
		10 x 1 (1 pc.)	

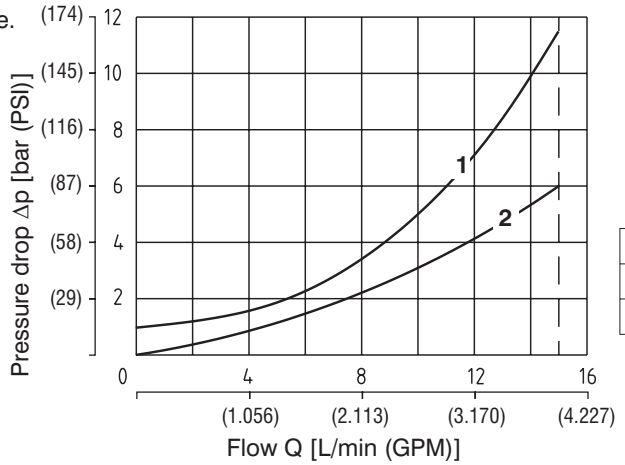
Technical Data

Valve size		04
Nominal flow rate P → A	L/min (GPM)	15 (4)
Nominal flow rate A → T	L/min (GPM)	15 (4)
Maximum working pressure	bar (PSI)	210 (3000)
Pressure drop	bar (PSI)	see the characteristic
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +212)
Fluid temperature range (Viton)	°C (°F)	-20 ... +120 (-4 ... +248)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Weight	kg (lbs)	0.04 (0.088)
Mounting position		unrestricted

Δp-Q Characteristic

Measured at ν = 32 mm^2/s (156 SUS)

Pressure drop Δp related to flow rate.

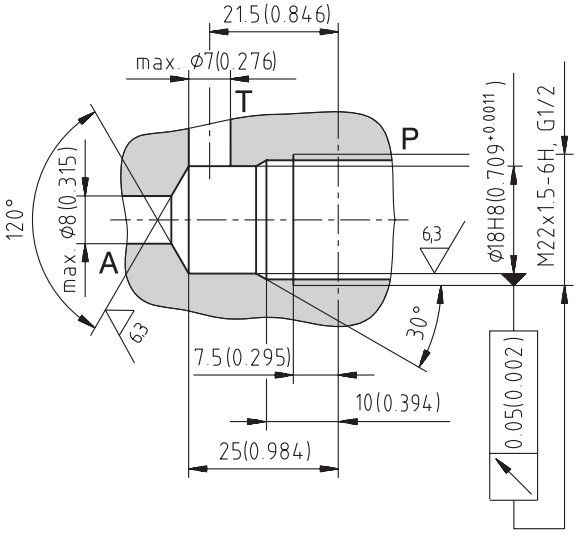


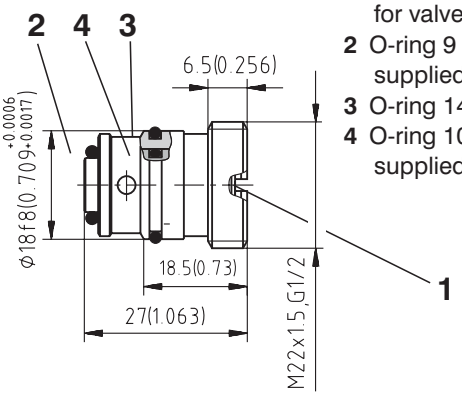
	Flow in direction
1	P → A
2	A → T

Valve Dimensions

Dimensions in millimeters (inches)

Valve Cavity





Dimensions in millimeters:

1 Screw driver slot for valve in cavity
2 O-ring 9 x 1.8 NBR70 (1 pc.), supplied with valve
3 O-ring 14 x 1.78
4 O-ring 10 x 1 (1 pc.), supplied with valve

Caution!

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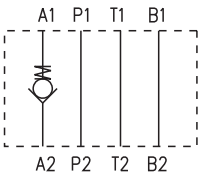
Check Valves Sandwich Plates VJO1-04/M

Size 04 (D 02) • 320 bar (4600 PSI) • 30 L/min (7.9 GPM)

HA 5012
8/2012

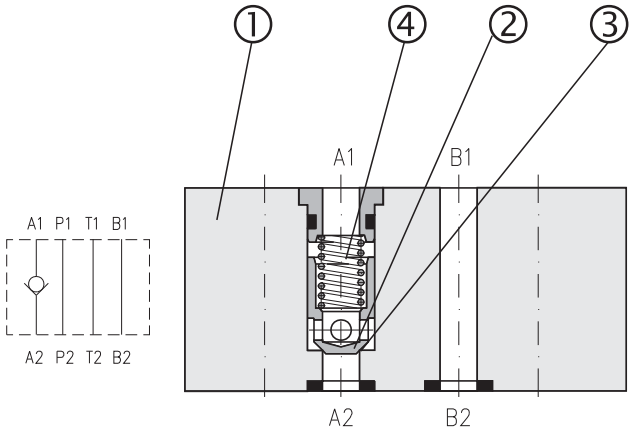
Replaces
HA 5012 4/2008



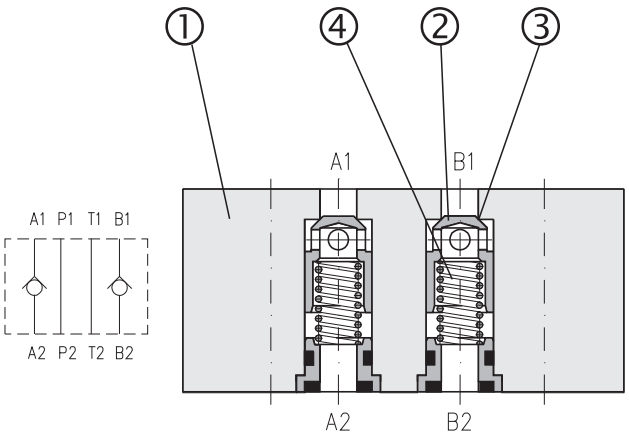
- **Sandwich plate design for use in vertical stacking assemblies**
- **Poppet design**
- **Leakfree closure in one or two service ports**
- **8 different models**
- **Installation dimensions to ISO 4401 CETOP - RP 121H**

Functional Description

The check valves sandwich plate are used to allow flow in one direction and prevent flow in the other in the port in which the check element is installed. The sandwich design enables stacking with other components of the same size. The check elements are build into one or two ports, the other ports being through-holes. The seat (3) is machined directly in the housing (1) and the poppet (2) is pushed onto the seat by the compression spring (4). The cracking pressure depends on the spring selected and the pressurised poppet surface area. The valve housing surface is phosphate coated.



Model A



Model D

Ordering Code

VJO1-04/M □ - □ □

Sandwich Check Valve Plate for Stacking Assemblies

Valve size
04 (D 02)

Sandwich plate design

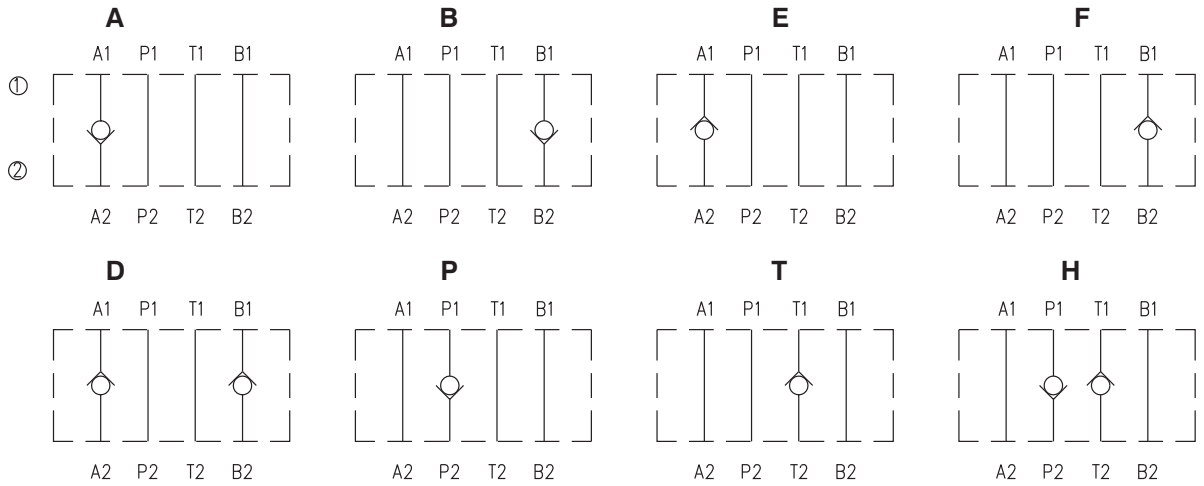
Seal
no designation NBR
V FPM (Viton)

Cracking pressure
05 0.5 bar (7 PSI)
15 1.5 bar (22 PSI)
30 3.0 bar (43 PSI)

Functional Symbols
A Check valve in line * A
B Check valve in line * B
E Check valve in line * A
F Check valve in line * B
D Check valves in lines * A and B
P Check valve in line * P
T Check valve in line * T
H Check valves in lines * P and T

* see the table Functional symbols

Functional symbols



Notes: Symbol orientation on the label corresponds with the valve function.
① valve side
② subplate or manifold side

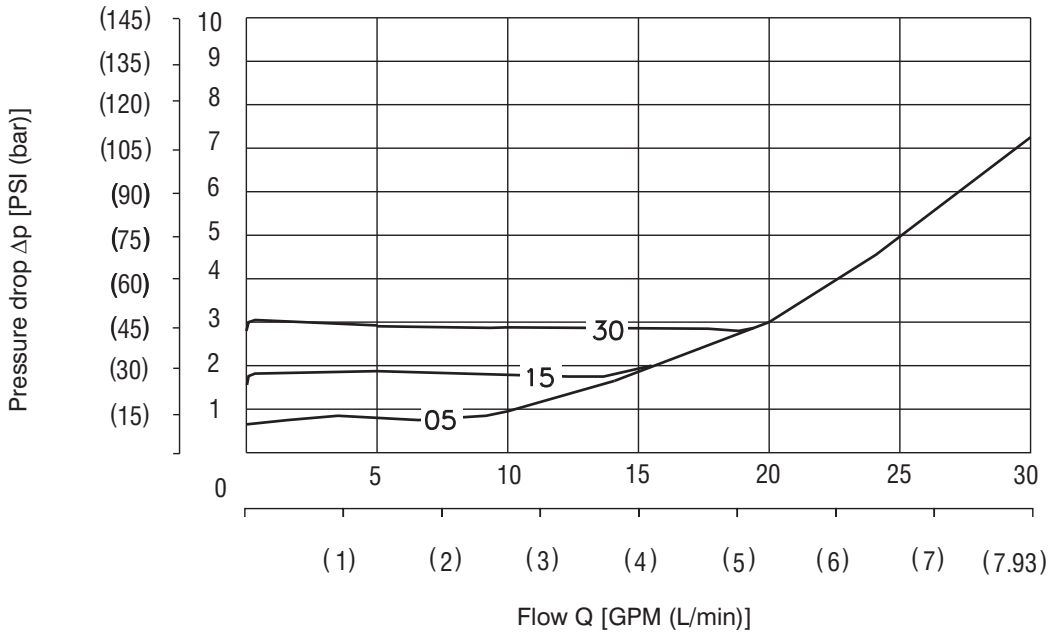
Technical Data

Valve size	mm (US)	04 (D 02)		
Maximum flow	L/min (GPM)	30 (7.94)		
Maximum operating pressure	bar (PSI)	320 (4600)		
Cracking pressure	bar (PSI)	0,5 (7)	1,5 (0.4)	3 (0.8)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524		
Fluid temperature range for standard sealing (NBR)	°C (°F)	-30 ... +100 (-22... +212)		
Fluid temperature range for Viton seals (FPM)	°C (°F)	-20 ... +120 (-4... +248)		
Viscosity range	mm^2/s (SUS)	20 ... 400 (98... 1840)		
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406		
Weight	kg (lbs)	0,40 (0.879)		
Mounting position		unrestricted		

Δp-Q Characteristics

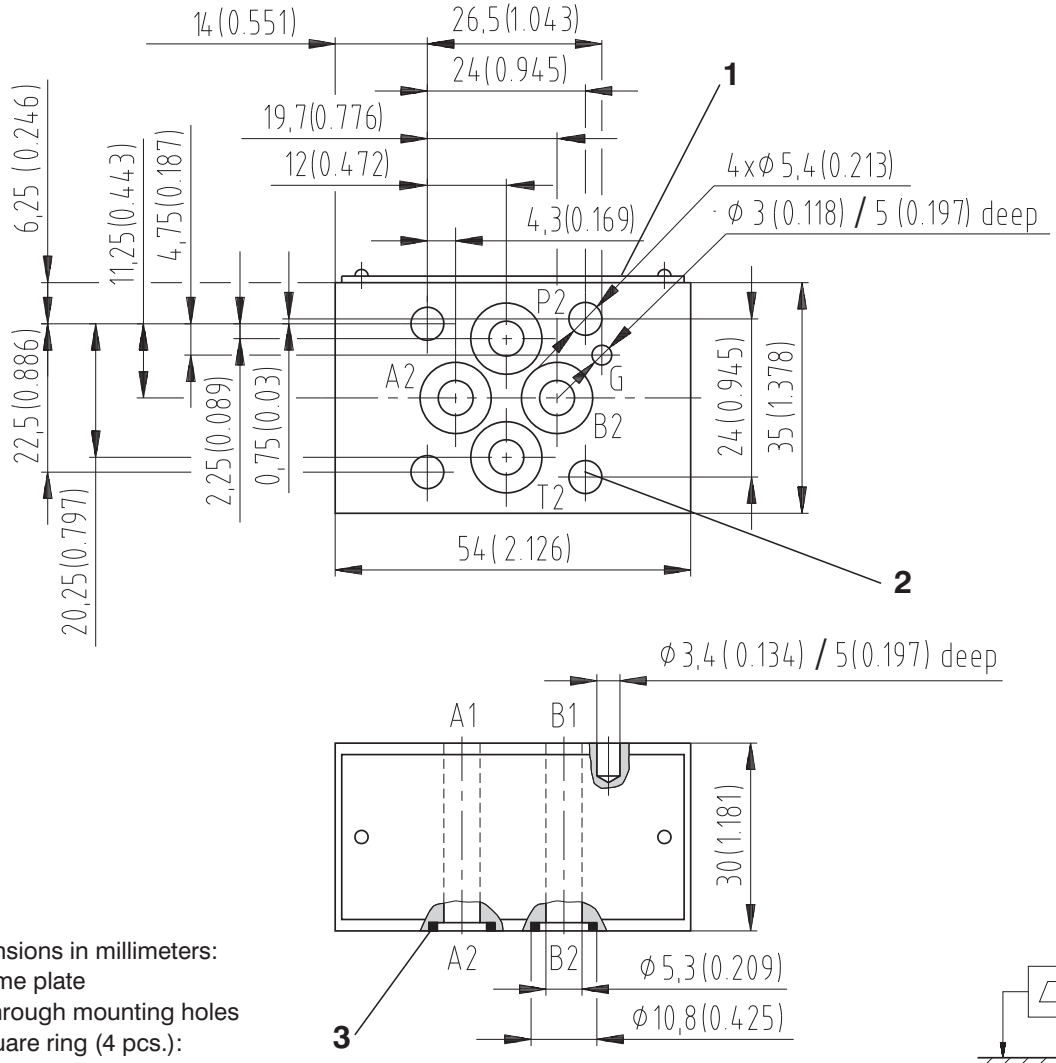
Measured at ν = 32 mm²/s (156 SUS)

Pressure drop Δp related to flow rate.



Valve Dimensions

Dimensions in imillimeters (inches)

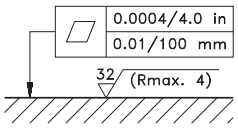


Dimensions in millimeters:

1 Name plate

2 4 through mounting holes

3 Square ring (4 pcs.):
standard (NBR) - SR 010 6.07 x 1.68
Viton (FPM) - 6.07 x 1.78
supplied with valve



Required surface finish of interface

Spare Parts

Dimensions in millimeters

Seal kit

Type	Dimensions, quantity		Ordering number
	Square ring	O-ring	
Standard NBR	6.07 x 1.68 (4 pcs.)	-	15946100
Viton	-	6.07 x 1.78 (4 pcs.)	22662600

Caution!

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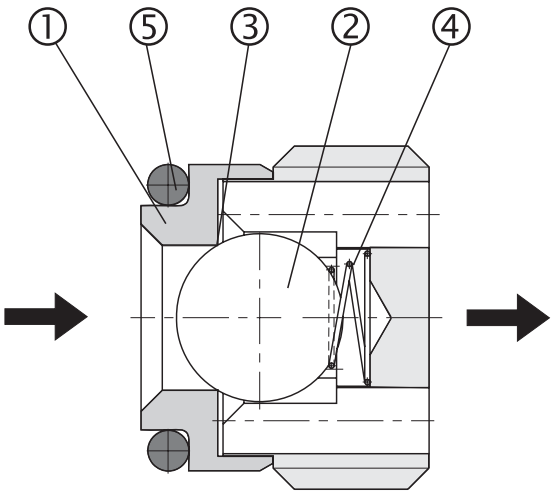
- ❑ **Small dimensions**
- ❑ **Two models**
- ❑ **Poppet design**
- ❑ **Leak-free closure in one direction**

VJO1-06/Sx-1

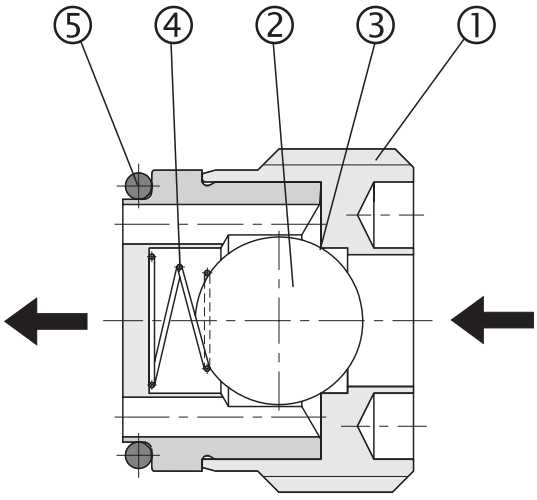
VJO1-06/Sx-2

Functional Description

The check valves VJO1 are developed to be built directly into the lines of the hydraulic circuits. Their features designate them for all applications, where tight closure in one direction and small dimensions are required. The valve is provided with holes for a mounting mandrel. The shut-off edge (3) of the valve is engineered in the housing (1) and the shut-off function is accomplished by the ball (2) which is pushed onto the seat by spring (4). Sealing of the valve body (1) in the mounting cavity is provided by the sealing ring (5). During the assembly, the valve has to be secured against loosening by means of a suitable glue or cement (Loctite, etc.).



Model 01



Model 02

Ordering Code

VJO1-06/S□-□□

Check Valve

Valve size

Cartridge **S**

Model
G pipe thread G1/4
S thread SAE

Flow direction
1 model 01
2 model 02

Seals
no designation NBR
V FPM (Viton)

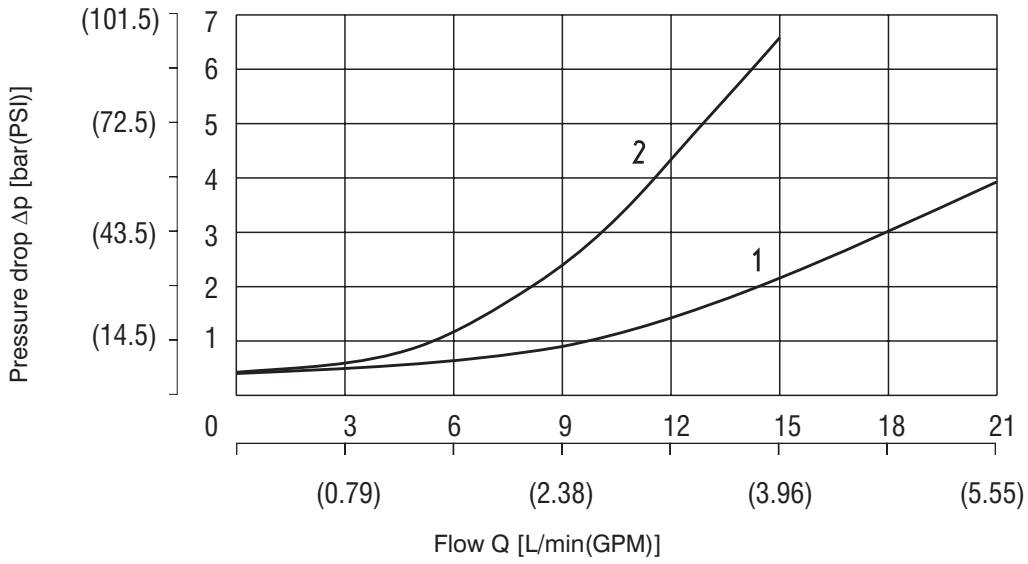
Technical Data

Valve size		06
Maximum flow rate	L/min (GPM)	20 (5.28)
Maximum operating pressure	bar (PSI)	320 (4600)
Cracking pressure	bar (PSI)	0,25 (3.62)
Hydraulic fluid		Petroleum oils (HM, HL, HLP)
Fluid temperature range for (NBR)	°C (°F)	-30 ... +100 (-22 ... +212)
Fluid temperature range for (Viton)	°C (°F)	-20 ... +120 (-4 ... +248)
Viscosity range	SUS (mm^2/s)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Weight	lbs (kg)	0.007 (0.015)
Mounting position		unrestricted

Δp-Q Characteristics

Measured at ν = 156 SUS (32 mm^2/s)

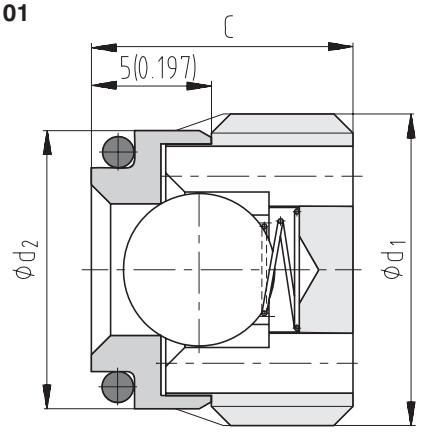
Pressure drop Δp related to flow rate.



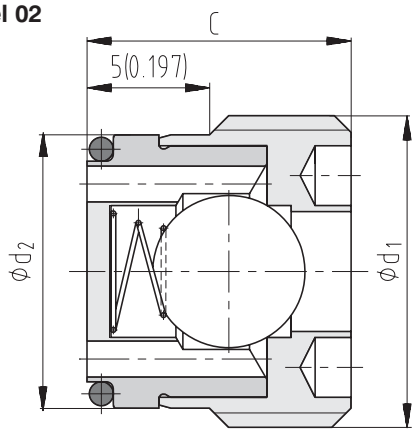
Valve Dimensions

Dimensions in millimeters (inches)

Model 01



Model 02

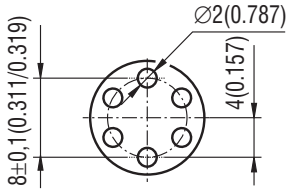


Type	∅d1	∅d2	C	O-Ring
VJO1-06/SG-1	G1/4	$11.4^{+0.05}$ (0.449/0.451)	11 (0.433)	8 x 1.5
VJO1-06/SS-1	SAE 5 1/2-20			
VJO1-06/SG-2	G1/4	$11.4^{+0.05}$ (0.449/0.451)	11 (0.433)	9 x 1
VJO1-06/SS-2	SAE 5 1/2-20			

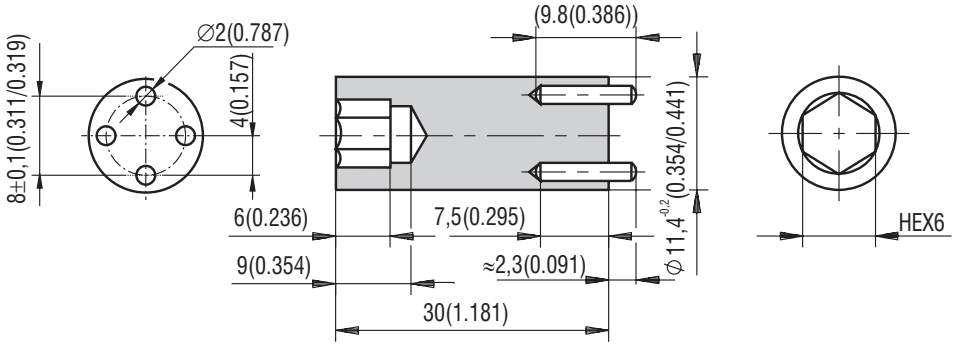
Mounting Mandrel

Dimensions in millimeters (inches)

Model 01



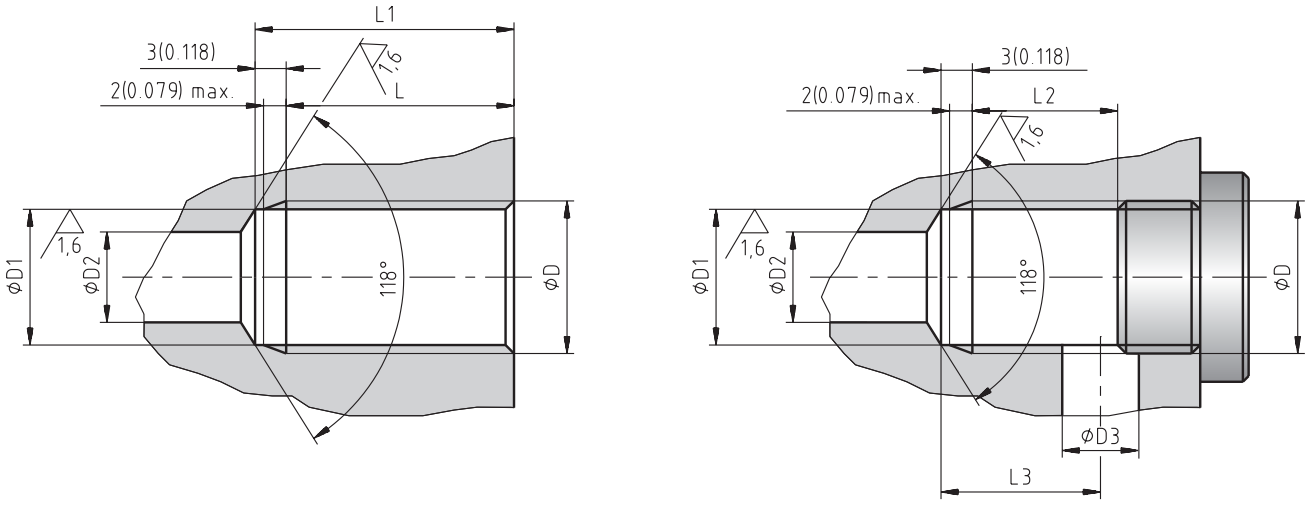
Model 02



Type	Tightening torque	Ordering number
VJO1-06/Sx-1	15 Nm (11.13 ft-lbs)	15949500
VJO1-06/Sx-2	15 Nm (11.13 ft-lbs)	28395600

Cavity

Dimensions in millimeters (inches)



Type	∅D	∅D1	∅D2	∅D3	L	L1	L2	L3
VJO1-06	G1/4; SAE 5 1/2-20	$11.5^{+0.1}$ (0.453/0.457)	7 (max. 0.276)	6 (0.236)	20 (0.787)	23 (0.906)	14 (0.551)	14 (0.551)

Spare Parts

Dimensions in millimeters

Seal kit

Type		Dimension, quantity	Ordering number
Standard NBR90	VJO1-06/SG-1	O-Ring 8 x 1.5 (1 pc.)	16755400
	VJO1-06/SG-2	O-Ring 9 x 1 (1 pc.)	15949700
Viton	VJO1-06/SG-1	O-Ring 8 x 1.5 (1 pc.)	16969800
	VJO1-06/SG-2	O-Ring 9 x 1 (1 pc.)	15949800

Spare Parts kit

Type		Dimensions, quantity	Ordering number
Standard NBR	VJO1-06/SS-1	Seat (1 pc.) Bullet D 6.35 (1 pc.) Spring (1 pc.) O-Ring 8 x 1.5 (1 pc.) Body (1 pc.)	22688000
	VJO1-06/SS-2	Stay (1 pc.) Bullet D 6.35 (1 pc.) Spring (1 pc.) O-Ring 9 x 1 (1 pc.) Body (1 pc.)	22688100
Viton	VJO1-06/SS-1	Seat (1 pc.) Bullet D 6.35 (1 pc.) Spring (1 pc.) O-Ring 8 x 1.5 (1 pc.) Body (1 pc.)	22688200
	VJO1-06/SS-2	Stay (1 pc.) Bullet D 6.35 (1 pc.) Spring (1 pc.) O-Ring 9 x 1 (1 pc.) Body (1 pc.)	22688300

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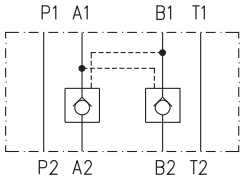
Pilot Operated Check Valves
Sandwich Plates

VJR1-04/M

Size 04 • p_{max} up to 320 bar • Q_{max} up to 20 L/min

HA 5023
5/2008

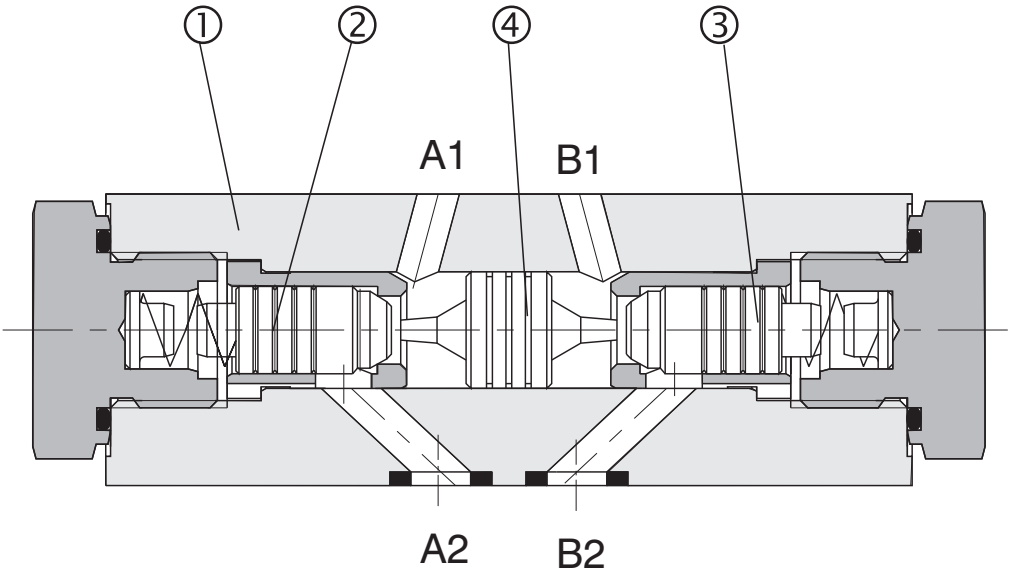
Replaces
HA 5023 1/2003



- **Sandwich plate design for use in vertical stacking assemblies**
- **3 models:**
  - **leakfree closure of both sides with check valves in lines A and B**
  - **leakfree closure with check valve in line A**
  - **leakfree closure in line B**
- **Installation dimensions acording to ISO 4401 / DIN 24 340**

Functional Description

A pilot operated check valve is used to provide leakfree closure of a hydraulic circuit under pressure. It protects the load against dropping should a line break occur and ensures a stable position of a hydraulic actuator under pressure, even during long idle periods.
The valve basically consists of housing (1), one or two check valves (2), (3) and pilot piston (4).
When fluid flows from A1 (B1) to A2 (B2) it opens the check valve (2), (3) and at the same time shifts the pilot piston (4) to the right (left), thus opening the way B2→B1 (A2→A1). When the pressure drops (e.g. after shifting the directional valve into its middle position), the springs push the balls onto the seats and the circuit between the check valve and the actuator is closed under pressure. To ensure that the ball valves seat properly and that they perfectly close ports A2 and B2, a directional valve with functional symbol Y is to be used, which connects in its neutral position both sides of the pilot piston (4) with tank.
The valve housing surface is phophate coated, the surfaces of the other parts are zinc coated.



Ordering Code

VJR1-04/M □ □

Pilot Operated Check Valve
Sandwich Plate

Nominal size

Modular design

Seals
no designation (NBR)
V FPM (Viton)

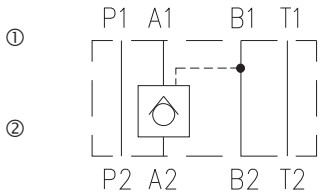
Functional Symbols
A check valve in line A*
B check valve in line B*
C check valves in lines A and B*
* see the table Functional symbols

FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE AND TABLE OF PREFERRED TYPES ON PAGE 4

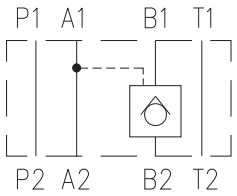
Functional Symbols

Arrangement of the check valves in the valve body

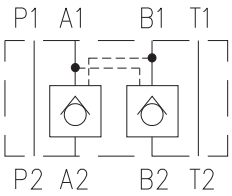
VJR1-04/MA



VJR1-04/MB

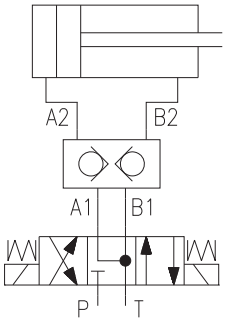


VJR1-04/MC



① valve side
② subplate side

Typical circuit with pilot operated check valve



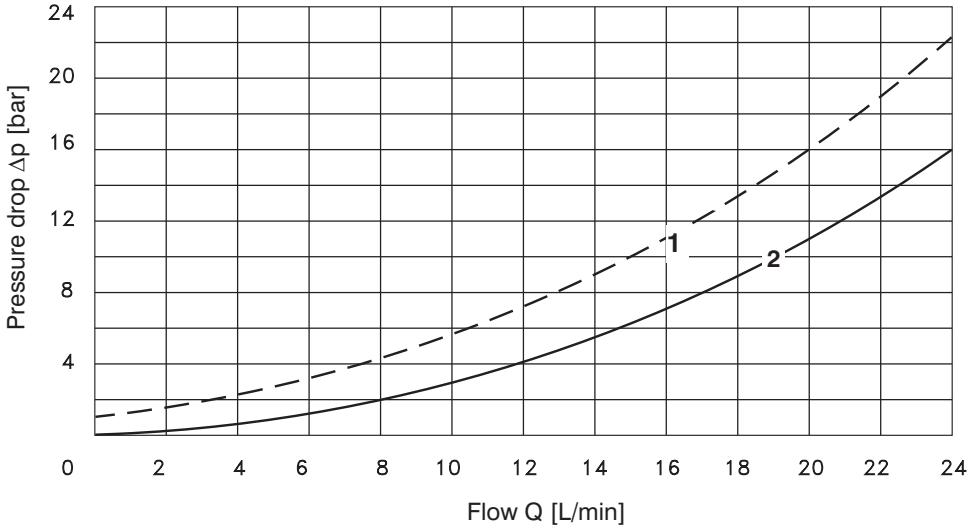
Technical Data

Nominal size	mm	04
Maximum flow	L/min	20
Maximum operating pressure	bar	320
Cracking pressure	bar	1
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C	-30 ... +100
Fluid temperature range (Viton)	°C	-20 ... +120
Viscosity range	mm^2/s	20 ... 400
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406 (1999)
Area ratio (pilot piston / poppet)		3 : 1
Mounting position		optional
Weight	kg	0.7

Δp-Q Characteristics

Measured at $\nu = 32\ mm^2/s$

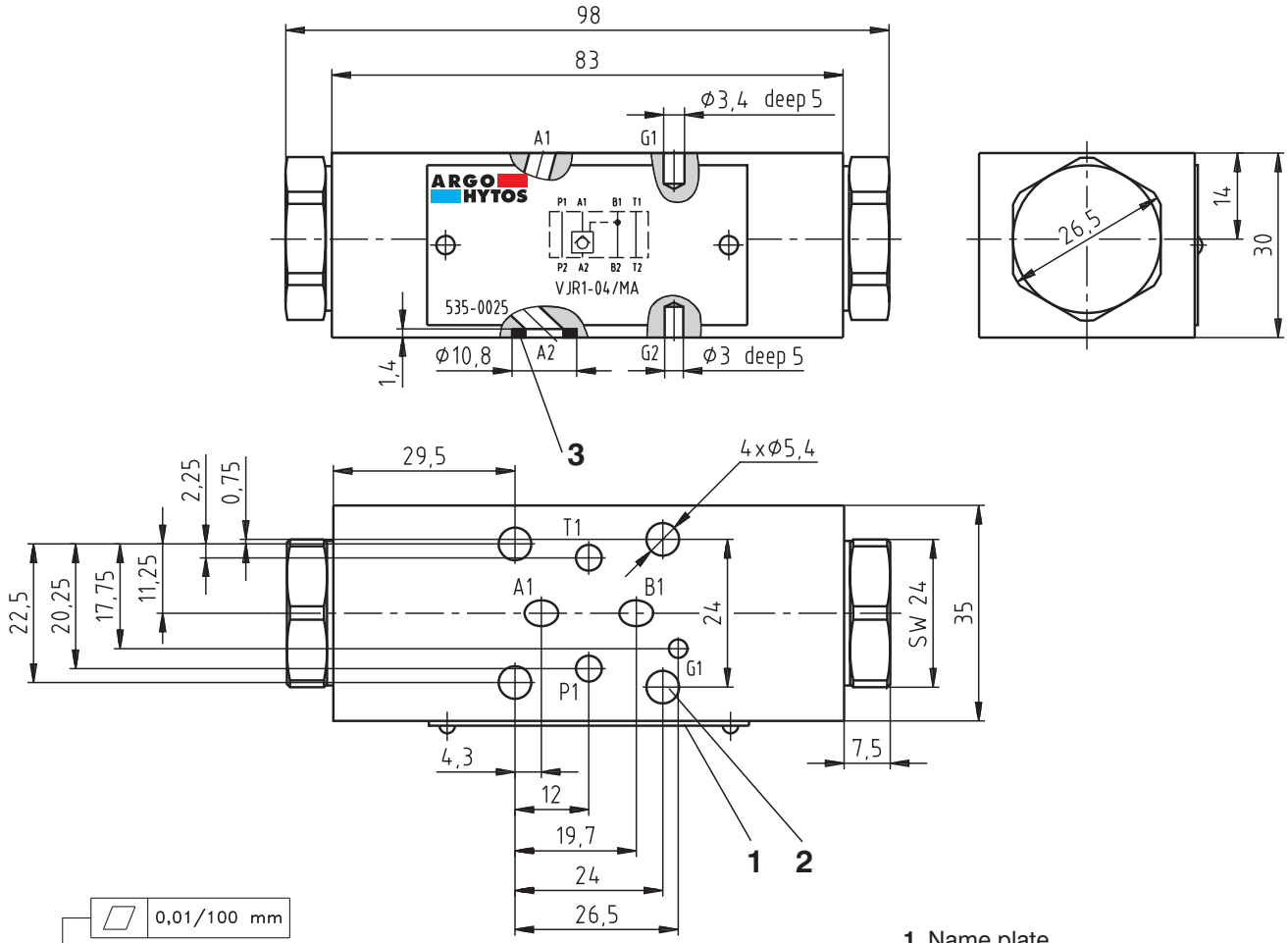
Pressure drop Δp related to flow rate.

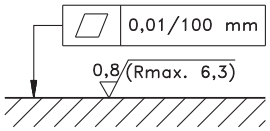


	Flow in direction
1	A1 → A2 (B1 → B2)
2	A2 → A1 (B2 → B1)

Valve Dimensions

Dimensions in millimeters





Required surface finish of interface

1 Name plate
2 4 mounting holes
3 Square ring 7.65 x 1.68 (4 pcs.) supplied with valve

Spare Parts

Seal kit

Type	Dimensions, quantity		Ordering number
	Square ring	O-ring	
Standard NBR70	7.65 x 1.68 (4 pcs.)	17 x 1.8 (2 pcs.)	535-0098
Viton	-	7.65 x 1.78 (4 pcs.)	535-0123
		17.17 x 1.78 (2 pcs.)	

Preferred Types of Valves

Type	Ordering Number
VJR1-04/MC	535-0024

Caution!

- The packing foil is recyclable.
- The transport plate is to be returned to the supplier.
- Mounting bolts M5 x 55 DIN 912-10.9 or studs must be ordered separately.
  Tightening torque is 5 Nm.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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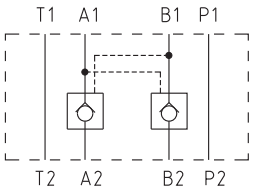
Pilot Operated Check Valves Sandwich Plates

VJR2-06/M

Size 06 (D 03) • 320 bar (4600 PSI) • 45 L/min(11.8 GPM)

HA 5024
7/2012

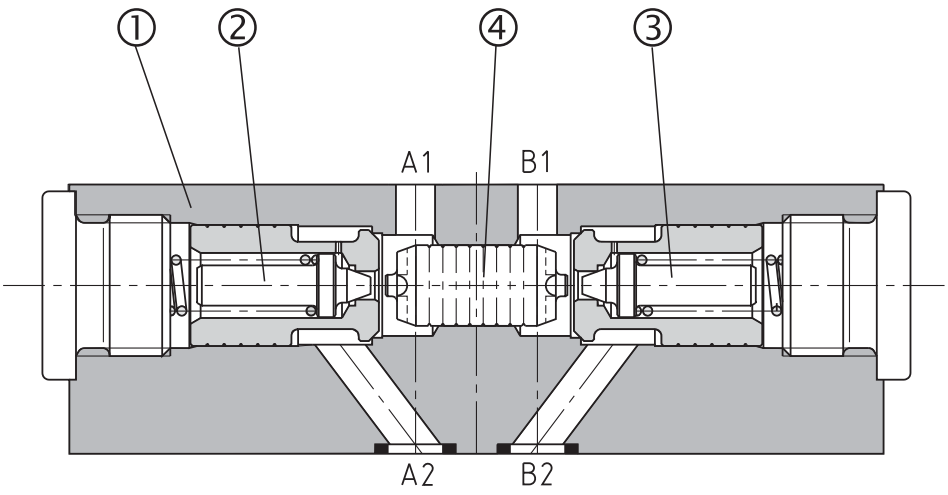
Replaces
HA 5024 5/2008



- **Pilot operated check valve sandwich plate for use in stacking assemblies**
- **3 models**
  - **double valve with check valves in lines A and B**
  - **single valve with check valve in line A**
  - **single valve with check valve in line B**
- **Installation dimensions to ISO 4401, CETOP - RP 121H and NFPA T3.5.1 - D 02**

Functional Description

A pilot operated check valve closes tightly the hydraulic circuit between the valve and the actuator. The valve consists of the steel housing (1), one or two check valves (2), (3) and the pilot piston (4). The main poppets of the check valves are provided with pilot poppets (5) which enable opening the check valve under pressure.
When fluid flows from A1 to A2 it opens the check valve (2) and at the same time shifts the pilot piston (4) which opens by means of the pilot poppet (5) the check valve (3). When the pressure in channels A1 and B1 drops, the springs push the poppets onto the seats and the circuit between the check valve and the actuator is closed under pressure.
To ensure that the check valves close tightly, a directional valve with functional symbol Y is to be used, which connects in its middle position the ports A1 and B1 with tank T (see the typical circuit diagram).
The valve housing (1) is phosphate coated, the surfaces of the other parts are zinc coated.



Ordering Code

VJR2-06/M □ □

Pilot Operated Check Valve
Sandwich Plate

Valve size **06 (D 03)**

Modular design

A
B
C

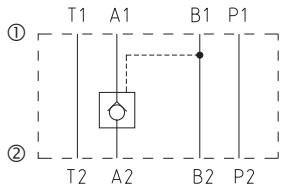
Functional Symbols
check valve in line A*
check valve in line B*
check valves in lines A and B*
* see the table Functional symbols

Seals
no designation NBR
V Viton

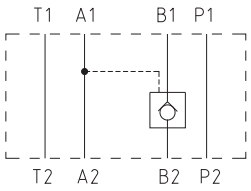
Functional Symbols

Arrangement of the check valves in the valve body

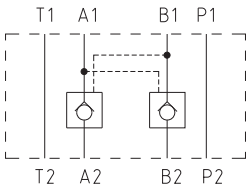
VJR2-06/MA



VJR2-06/MB

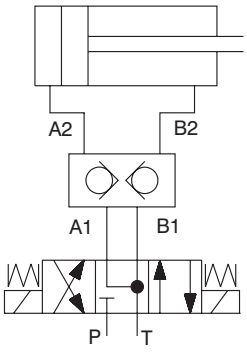


VJR2-06/MC



① valve side
② subplate side

Typical circuit with pilot operated check valve



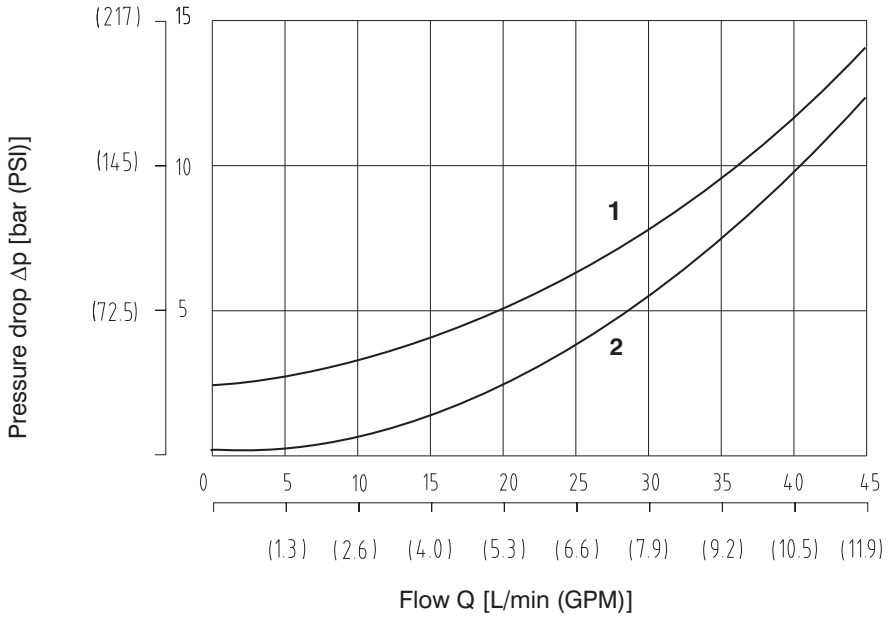
Technical Data

Valve size	mm (US)	06 (D 03)
Maximum flow	L/min (GPM)	45 (11.8)
Maximum operating pressure	bar (PSI)	320 (4600)
Cracking pressure	bar (PSI)	2(29)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22...+212)
Fluid temperature range (Viton)	°C (°F)	-20 ... +120(-4...+248)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98...1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Area ration (pilot piston / seat)		8,16 : 1
Mounting position		unrestricted
Weight	kg (lbs)	1,6

Δp-Q Characteristics

Measured at ν = 32 mm²/s (156 SUS)

Pressure drop Δp related to flow rate.

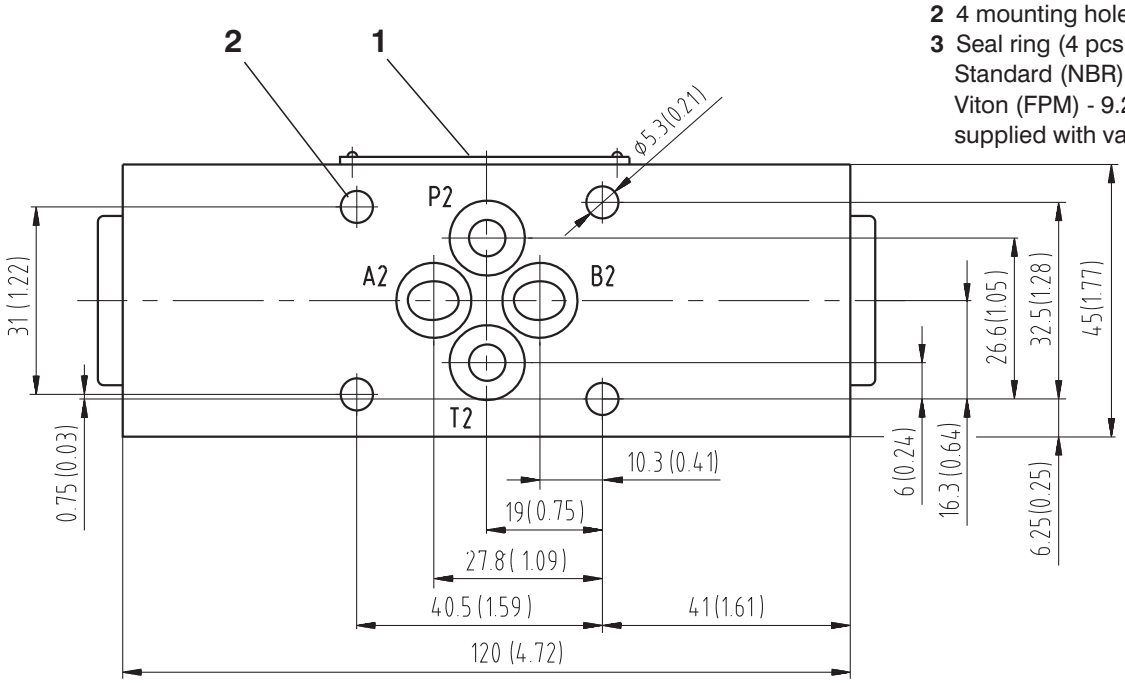


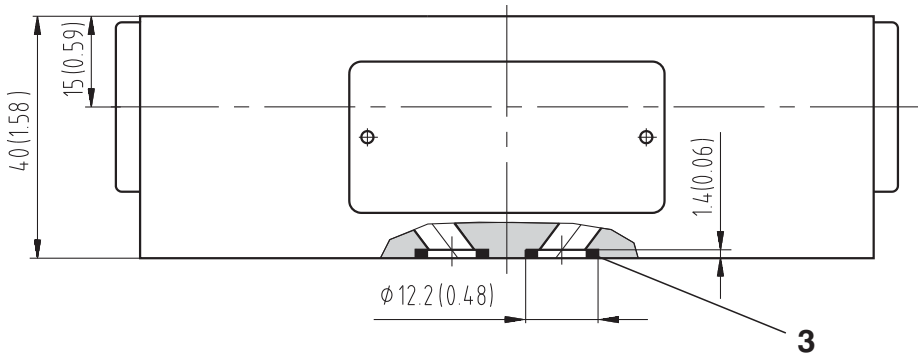
	Flow in direction
1	A1 → A2 (B1 → B2)
2	A2 → A1 (B2 → B1)

Valve Dimensions

Dimensions in millimeters and inches

Dimensions in millimeters:
1 Name plate
2 4 mounting holes
3 Seal ring (4 pcs.):
Standard (NBR) - 9.25 x 1.68
Viton (FPM) - 9.25 x 1.78
supplied with valve





Required surface finish of interface

Spare Parts

Dimensions in millimeters

Seal kit

Type	Dimensions, quantity		Order number
	Square ring	O-ring	
Standard NBR 70	9.25 x 1.68 (4 pcs.)	-	22795100
Viton	-	9.25 x 1.78 (4 pcs.)	22795200

Caution!

- The packing foil is recyclable.
- Tightening torque of the screws is 6.6 ft-lbs (8.9 Nm).
- Certified documentation is available per request.

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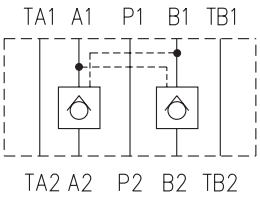
Pilot Operated Check Valves Sandwich Plates

VJR2-10/M

Size 10 (D 05) • 350 bar (5076 PSI) • 100L/min (26.4 GPM)

HA 5025
6/2012

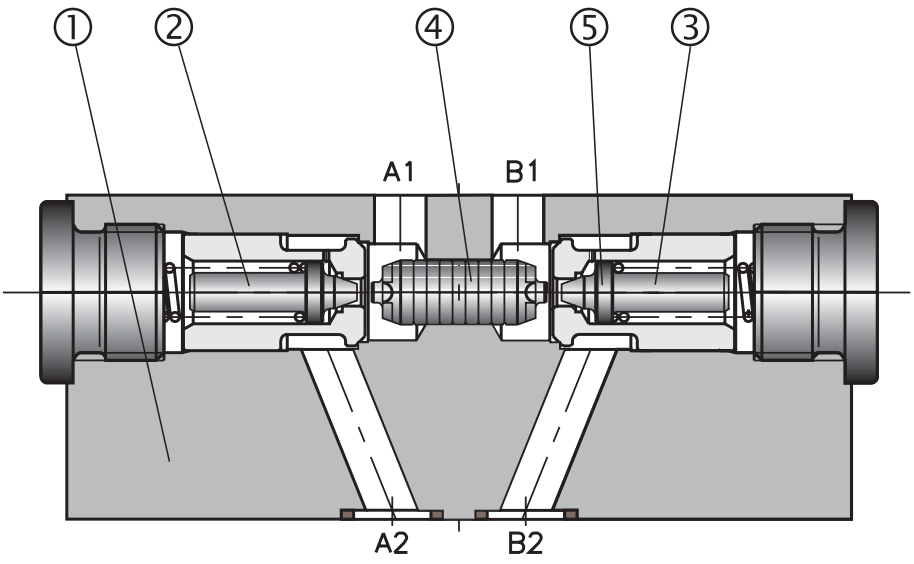
Replaces
HA 5025 2/2008



- **Pilot operated check valve sandwich plate for use in stacking assemblies**
- **3 models**
  - **double valve with check valves in lines A and B**
  - **single valve with check valve in line A**
  - **single valve with check valve in line B**
- **Installation dimensions to SO 4401 CETOP - RP 121H and NFPA T3.5.1 - D 02**

Functional Description

A pilot operated check valve closes tightly the hydraulic circuit between the valve and the actuator. The valve consists of the housing (1), one or two check valves (2), (3) and the pilot piston (4). The main poppets of the check valves are provided with pilot poppets (5) which enable opening the check valve under pressure.
When fluid flows from A1 to A2 it opens the check valve (2) and at the same time shifts the pilot piston (4) which opens by means of the pilot poppet (5) the check valve (3). When the pressure in channels A1 and B1 drops, the springs push the poppets onto the seats and the circuit between the check valve and the actuator is closed under pressure.
To ensure that the check valves close tightly, a directional valve with functional symbol Y is to be used, which connects in its middle position the ports A1 and B1 with tank T (see the typical circuit diagram).
The valve housing (1) is phosphate coated, the surfaces of the other parts are zinc coated.



Ordering Code

VJR2-10/M □ □

Pilot Operated Check Valve
Sandwich Plate

Valve size **10 (D 05)**

Modular design

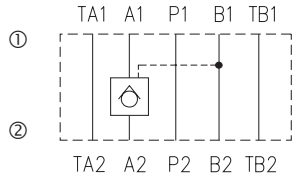
Seals
no designation NBR
V Viton

Functional Symbols
A Check valve in line A*
B Check valve in line B*
C Check valves in lines A and B*
* see the table Functional symbols

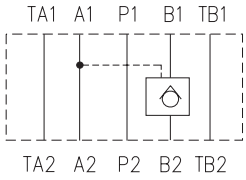
Functional Symbols

Arrangement of the check valves in the valve body

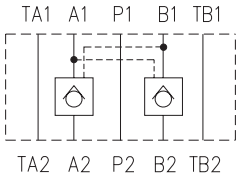
VJR2-10/MA



VJR2-10/MB

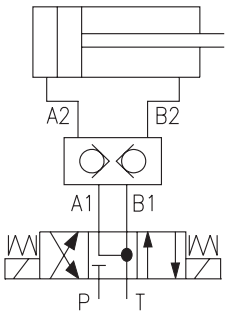


VJR2-10/M**C**



① valve side
② subplate side

Typical circuit with pilot operated check valve



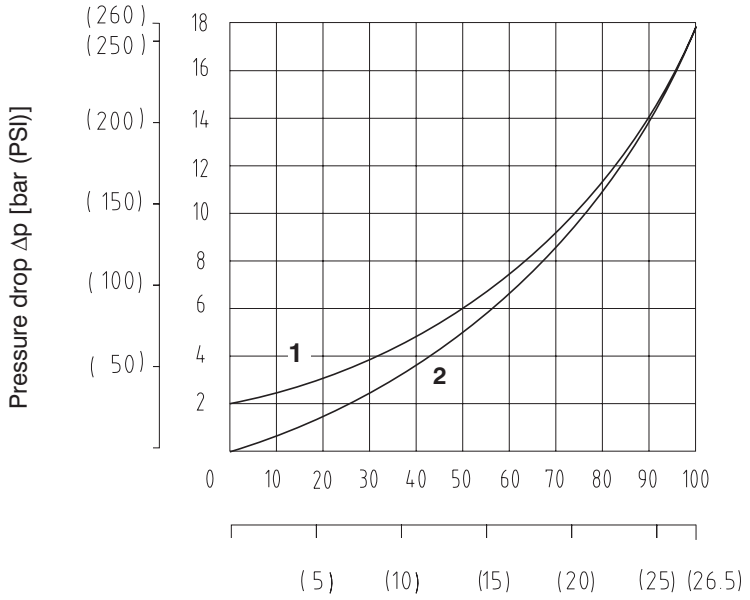
Technical Data

Valve size	mm (US)	10 (D 05)
Maximum flow	L/min (GPM)	100(26.42)
Maximum operating pressure	bar (PSI)	350 (5076)
Cracking pressure	bar (PSI)	2 (29)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30...+100 (-22 ... +212)
Fluid temperature range (Viton)	°C (°F)	-20...+120 (-4 ... +248)
Viscosity range	mm^2/s (SUS)	20...400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Area ration (pilot piston / seat)		5,6 : 1
Mounting position		unrestricted
Weight	kg (lbs)	3 (6.61)

Δp-Q Characteristics

Measured at ν = 32 mm^2/s (156 SUS)

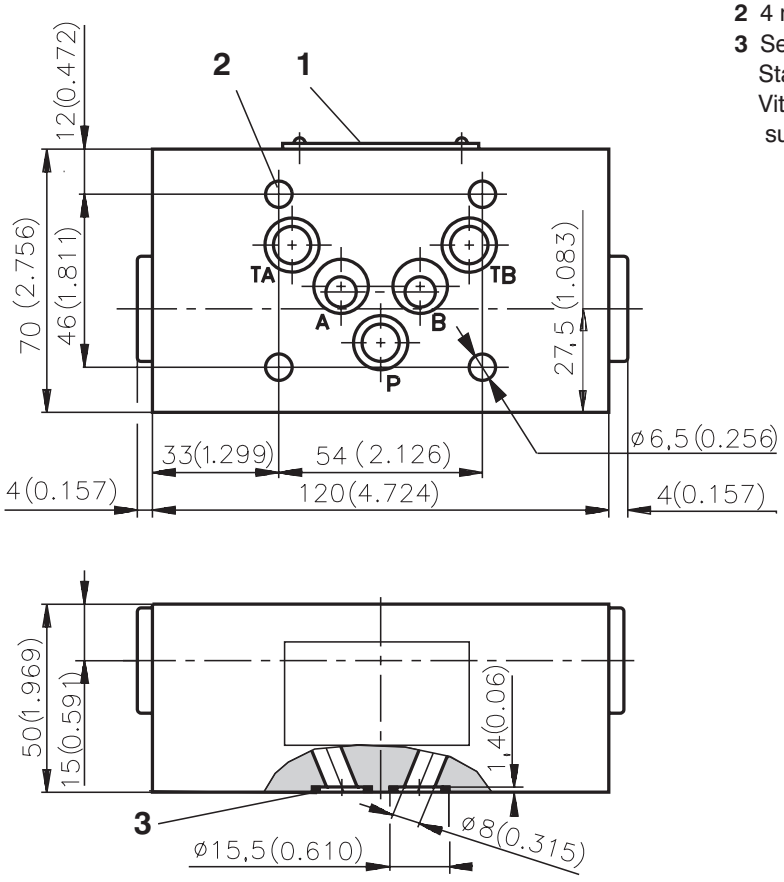
Pressure drop Δp related to flow rate.



	Flow in direction
1	A1 → A2 (B1 → B2)
2	A2 → A1 (B2 → B1)

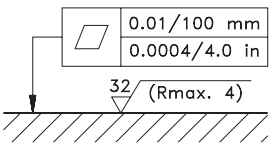
Valve Dimensions

Dimensions in millimeters and inches



Dimensions in millimeters:

1 Name plate
2 4 mounting holes
3 Seal ring (5 pcs.):
Standard (NBR) - ring NBR 70 12.42 x 1.68
Viton (FPM) - ring 12.42 x 1.78
supplied with valve



Required surface finish of interface

Spare Parts

Dimensions in millimeters

Seal kit

Type	Dimensions, quantity		Ordering number
	O-ring	Square ring	
Standard NBR70	-	12.42x1.68 (5 pcs.)	15991600
Viton	12.42x1.68 (5 pcs.)	-	22943800

Caution!

- The plastic packaging is recyclable.
- Mounting studs must be ordered separately. For stud kits see HU 0040.
- Certified documentsation is available per request.

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Check Valves, One-Way Throttling VJS3

Size 06,10,16,20 • 320 bar (4600 PSI) • Q_{max} 250 L/min (66 GPM)

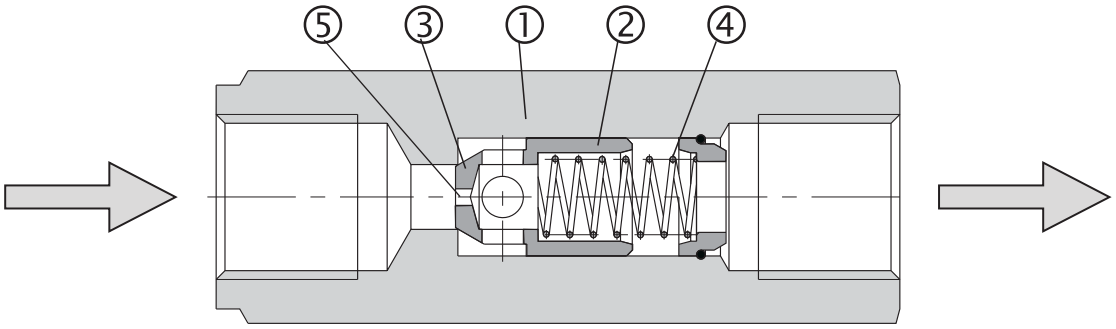
HA 5019
11/2010

Replaces
HA 5019 5/2010

- **Mounting styles:**
  - **for in-line mounting**
  - **straight valve cartridge**
  - **right angled valve cartridge**
- **Four sizes**
- **Poppet design**
- **One-way throttling check valve**
- **Three cracking pressures**

Functional Description

Check valves are used to allow flow in one direction and prevent flow in the other. The poppet design guarantees leak free closure and so it is allowed throttling only through orifice plate (5). The seat (3) is created directly in the housing (1) and the poppet (2) is pushed onto the seat by the compression spring (4). Design without spring pushes the poppet (2) on to the seat by presssure of the fluid. The cracking pressure depends on the spring selected and the pressurised poppet surface area. Three cracking pressures are available. The valve without cracking pressure is also available (without spring).
The basic surface treatment of the valve housing is zinc coated.



Ordering Code

VJS3 - ☐ - ☐ - ☐ - ☐

Check Valve

Nominal size

06	**06**
10	**10**
16	**16**
20	**20**

Cracking pressure

Without spring	000
0,5 bar (7.25 PSI)	**005**
1,5 bar (21.75 PSI)	015
3,0 bar (43.51 PSI)	030

Orifice average

020	0,20 mm (0,008 inch)
050	0,50 mm (0,019 inch)
080	0,80 mm (0,031 inch)
100	1,00 mm (0,039 inch)
150	1,50 mm (0,059 inch)
200	2,00 mm (0,079 inch)
300	3,00 mm (0,118 inch)

Other orifices on demand

Model

G1	For in-line mounting - with G threads
M1	- with M threads
S	- with SAE threads
02	Straight valve cartridge
03	Straight valve cartridge

Technical Data

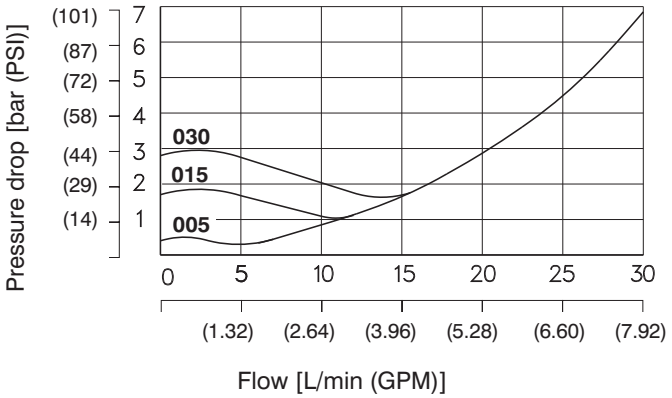
Nominal size		06	10	16	20
Maximum flow rate	L/min (GPM)	30 (7.9)	60 (15.9)	160 (42.3)	250 (66)
Maximum pressure	bar (PSI)	320 (4600)			
Cracking pressure	bar (PSI)	0,5 (7.25)	1,5 (21.75)		3,0 (43.51)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524			
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +100)			
Viscosity range	mm^2/s (SUS)	20 ... 400 (98 ... 1840)			
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406			
Weight - model G1,M1,S - models 02, 03	kg (lbs)	0.11 (0.25) 0.05 (0.002)	0.34 (0.8) 0.09 (0.004)	0.52 (1.2) 0.22 (0.009)	0.95 (2.1) 0,26 (0.010)
Mounting position		unrestricted, in case of construction without spring			

Δp-Q Characteristics

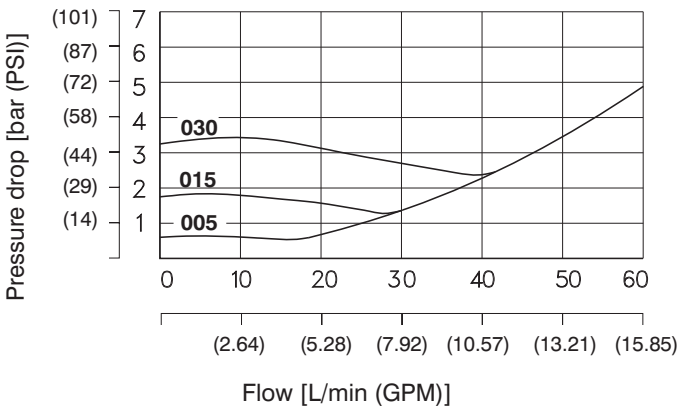
Measured at $\nu = 32\ mm^2/s$ (156 SUS)

Pressure drop Δp related to flow rate.

Nominal size 06



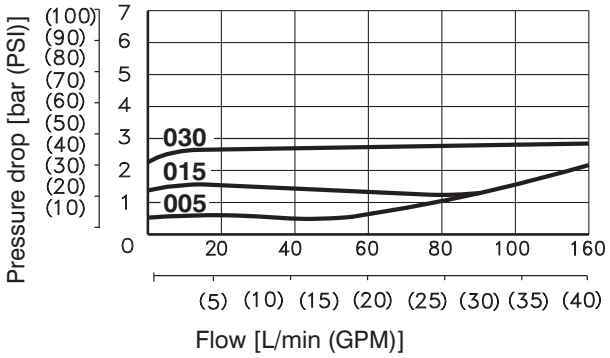
Nominal size 10



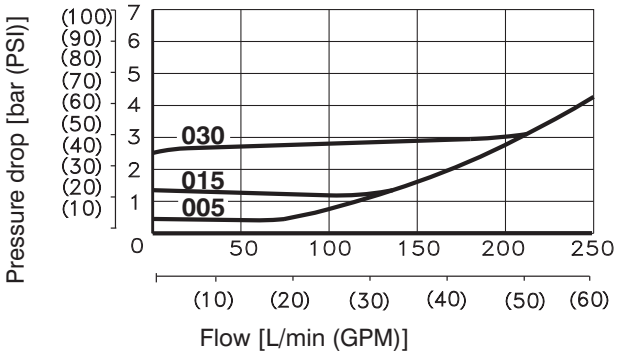
Δp-Q Characteristics

Measured at ν = 32 mm²/s (156 SUS)

Nominal size 16



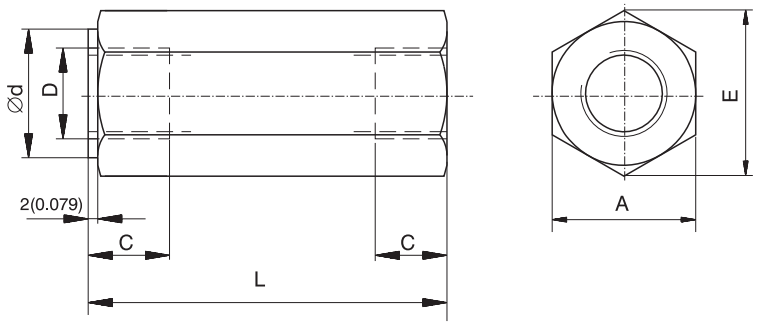
Nominal size 20



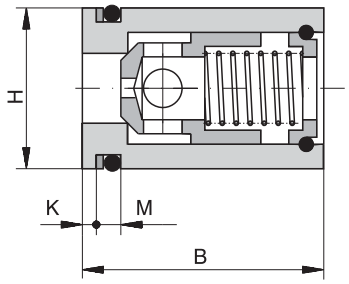
Valve Dimensions

Dimensions in millimeters (inches)

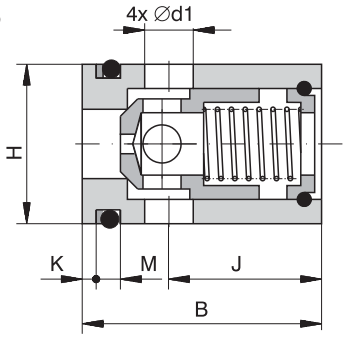
Model G1



Model 02



Model 03



Size	A	*B*	C	D			∅d
				G1	M1	S	
06	19 (0.748)	27 - 0,2 (1.063-0.008)	12 (0.47)	G 1/4	M14x1,5	SAE-6, 9/16-18	19 (0.75)
10	30 (1.181)	32 - 0,2 (1.260-0.008)	14 (0.55)	G 1/2	M18x1,5	SAE-8, 3/4-16	30 (1.18)
16	36 (1.417)	45 - 0,2 (1.772-0.008)	16 (0.63)	G 3/4	M27x2	SAE-12, 1 1/16-12	36 (1.42)
20	46 (1.811)	45 - 0,2 (1.772-0.008)	18 (0.71)	G 1	M33x2	SAE-16, 1 5/16-12	46 (181)

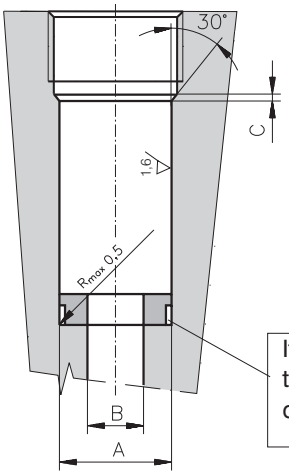
Size	E	H	J	K	L	M
06	22 (0.866)	∅20 (0.787) f8	18 (0.709)	1.6 (0.063)	58 (2.28)	4.4+0.2 (0.173+0.0079)
10	34.5 (1.358)	∅25 (0.984) f8	20 (0.787)	1.6 (0.063)	72 (2.83)	4.4+0.2 (0.173+0.0079)
16	41.5 (1.634)	∅35 (1.378) f8	27 (1.063)	2.2 (0.087)	85 (3.35)	5.3+0.2 (0.209+0.0079)
20	53 (2.087)	∅40 (1.575) f8	25 (0.984)	2.2 (0.087)	98 (3.86)	5.3+0.2 (0.209+0.0079)

Cavity

Dimensions in millimeters (inches)

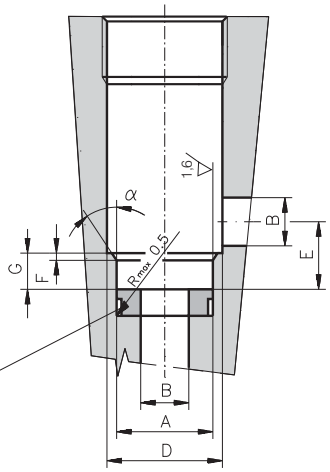
(length according to distance ring)

Model 02



If the hole cannot be reamed to the bottom, the use of a distance ring is recommended.

Model 03

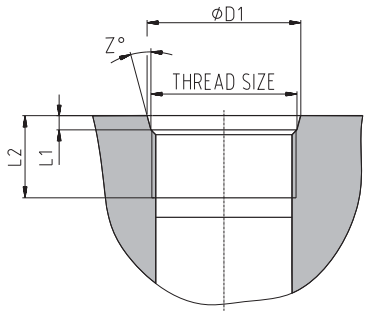


Size	A	B	C	D*	E	F	G	α
06	∅20 (0.787+0.0013) H8	∅06 (0.236)	2 (0.079)	∅26 (1.024)	10.5 (0.413)	1 (0.039)	7-0.3 (0.276-0.0118)	20 °
10	∅25 (0.984+0.0013) H8	∅10 (0.394)	2 (0.079)	∅32 (1.260)	14 (0.551)	1.5 (0.059)	8+0.2 (0.315+0.0079)	30 °
16	∅35 (1.378+0.0015) H8	∅16 (0.630)	2 (0.079)	∅44 (1.732)	22 (0.866)	2 (0.079)	13+0.2 (0.512+0.0079)	30 °
20	∅40 (1.575+0.0015) H8	∅20 (0.787)	2 (0.079)	∅48 (1.890)	25 (0.984)	2 (0.079)	14+0.2 (0.551+0.0079)	30 °

SAE-Port Cavities

Dimensions in millimeters (inches)

ISO 11926, SAE J1926, MS 16142



Type	Thread size	∅D1	L1	L2	Z°
SAE-6	9/16-18 UNF-2B	15.6 (0.614)	2.5 (0.098)	13 (0.512)	12
SAE-8	3/4-16 UNF-2B	20.6 (0.811)	2.5 (0.098)	15 (0.591)	15
SAE-12	1 1/16-12 UN-2B	29.2 (1.150)	2.5 (0.098)	19 (0.748)	15
SAE-16	1 5/16-12 UN-2B	35.5 (1.398)	3.3 (0.130)	19 (0.748)	15

Spare Parts

Seal kit for Model 02 and Model 03

Size	O-Ring - NBR	Back-up ring		Ordering number
06	15,08 x 2,62	BBP 80B113-N9	14,66 x 19,02 x 1,14	22701100
10	20 x 2,65	BBP 80B116-N962N	19,43 x 23,79 x 1,14	15954600
16	28 x 3,55	BBP 80B216-N9	8,98 x 34,98 x 1,02	15954700
20	32,92x3,53	BBP 80B219-N90	33,88 x 39,88 x 1,02	22701400

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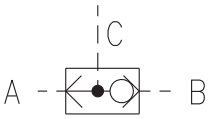
Size 04 • p_{max} up to 500 bar (7252 PSI) • Q_{max} up to 8 l/min (2.1 GPM)

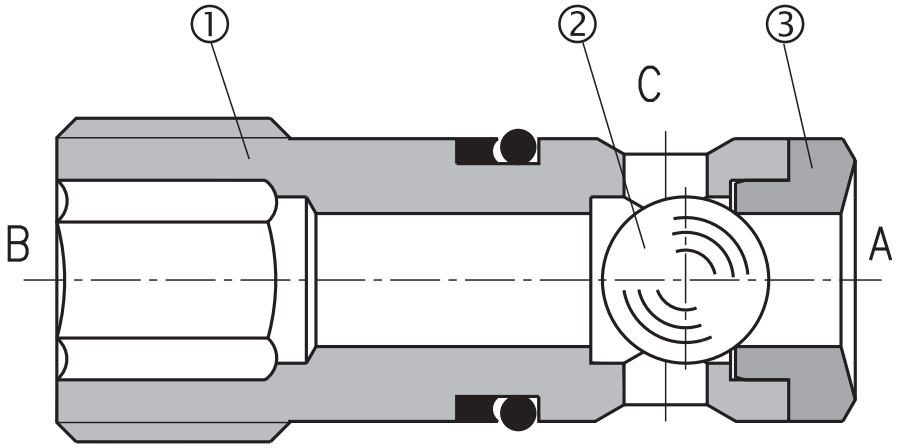
- ❑ **Compact design**
- ❑ **Poppet design**
- ❑ **Comparing and transmitting a pressure signal**



Functional Description

LV1-043 is 3 way poppet valve consists of the valve housing (1), the seat (3) and the ball (2).

It connects the users A or B with C according to the size of the control pressure in these ports.



Ordering Code

LV1-043

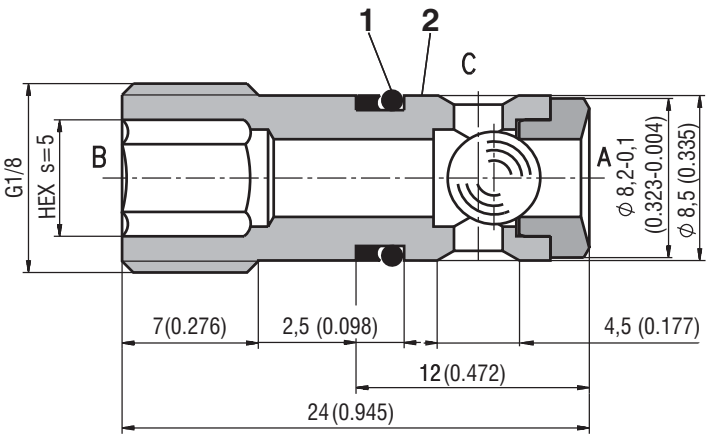
Logical Valve		
Nominal size	**04**	**3 way design**

Technical Data

Nominal size		04
Maximum flow rate	L/min (GPM)	8 (2.113)
Maximum working pressure	bar (PSI)	500 (7252)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22... +212)
Viscosity range	mm^2/s (SUS)	20 ... 400 (98... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Mounting position		unrestricted
Weight	kg (lbs)	0,01 (0.022)

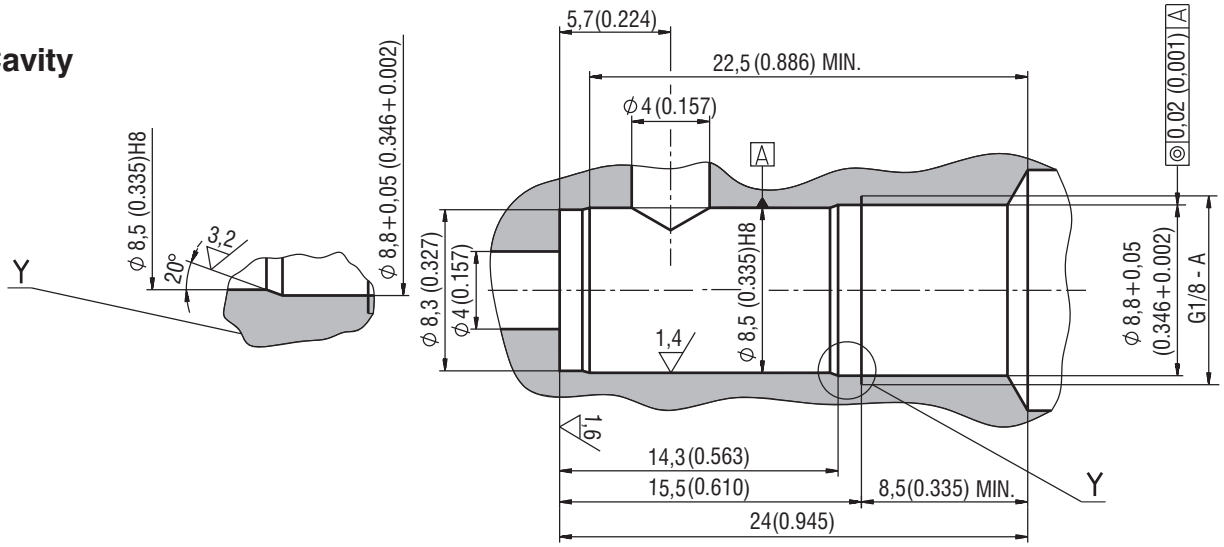
Valve Dimensions

Dimensions in millimetres and inches



1 Thrust ring 8,5 x 6,8 x 1 (1 pc.)
2 O-ring 6 x 1 (1 pc.)
(supplied with valve)

Cavity



Spare Parts

Seal kit

Type	Dimensions, quantity	Ordering number
O-ring	6 x 1 (1 pc.)	16755700
Thrust ring	8,5 x 6,8 x 1 (1 pc.)	

Caution!

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- Tightening torque 12 Nm.
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Logical Valves

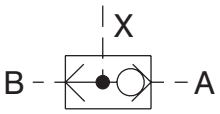
LV1-063

Size 06 • p_{max} 320 bar (4641PSI) • Q_{max} 40L/min (10.57GPM)

HA 5015
7/2012

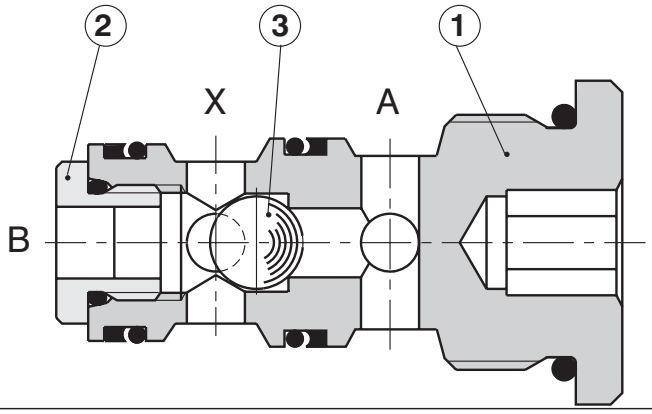
Replaces
HA 5015 11/2007

- ❑ **Ball-valve**
- ❑ **Poppet design**
- ❑ **Comparing and transmitting a pressure signal**



Functional Description

LV1-063 is 3 way poppet valve consists of the valve housing (1), the seat (3) and the ball (2).
It connects the users B or A with X according to the size of the control signal in these ports.



Ordering Code

LV1-063 ☐

Logical Valve

Nominal size

Seals
no designation NBR

3 way design

Technical Data

Nominal size		06
Maximum flow rate	L/min (GPM)	40 (10.57)
Maximum working pressure	bar(PSI)	320 (4641)
Fluid temperature range (NBR)	°F (°C)	-30 ... +100 (-22 ... +212)
Viscosity range	SUS (mm^2/s)	20 ... 400 (98 ... 1840)
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Mounting position		unrestricted
Weight	kg(lb)	0,078 (0.41)

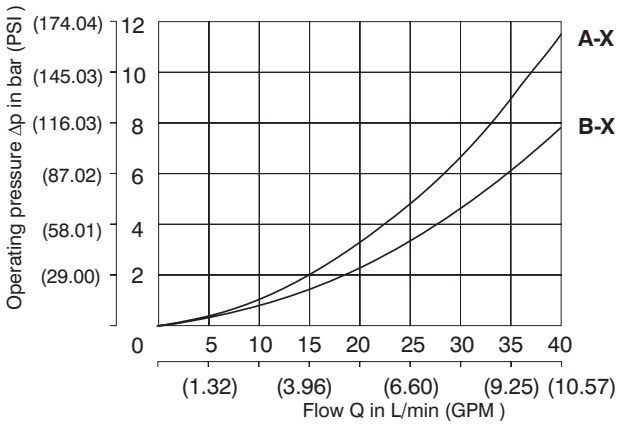
Spare Parts

Seal kit

Type	Dimensions, quantity		Ordering number
	O-ring	Back-up ring	
Standard - NBR	14 x 1.78 NBR 90 (2 pc.)	BBP80B015-N9 14.73 x 17.43 x 1.14 (2 pc.)	22752700
	19.4 x 2.1 NBR 80 (1 pc.)	-	

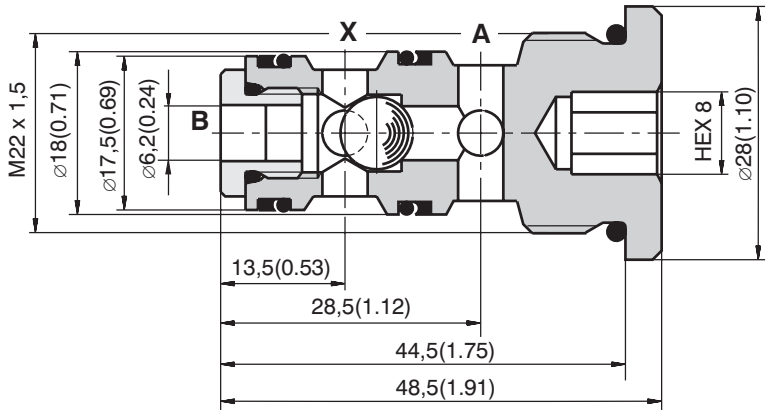
Δp-Q Characteristics

Measured at ν = 32 mm²/s (156 SUS)

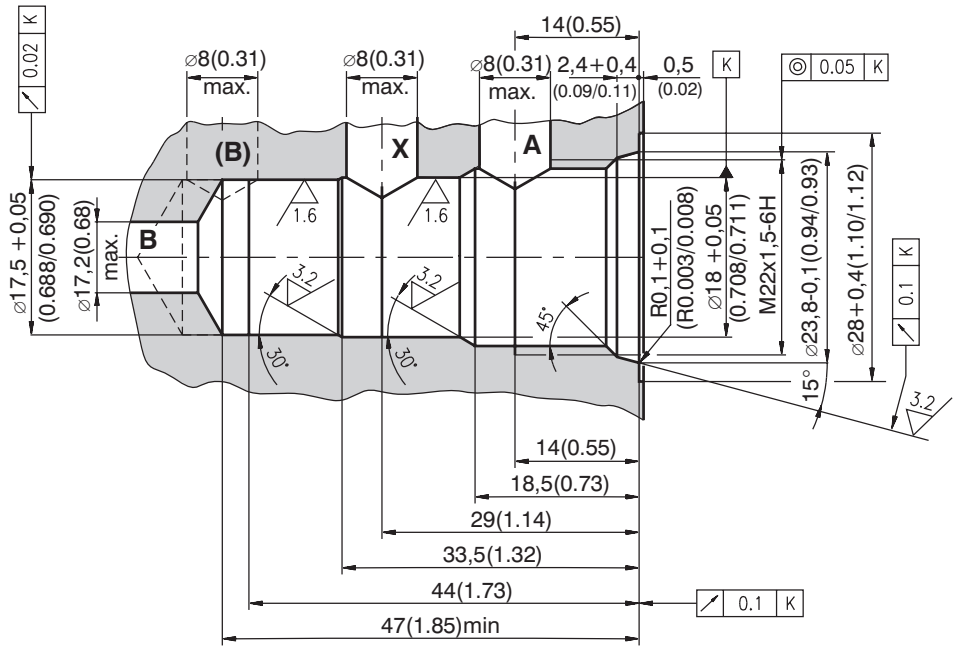


Valve Dimensions

Dimensions in inches and millimeters (in brackets)



Cavity



Caution!

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- Tightening torque 30 Nm.
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