Check Valve, Ball Type, Pilot to Open

RJV1-05

M24 x 1.5 • Q_{max} 20 l/min (5 GPM) • p_{max} 250 bar (3600 PSI)



Hydraulic circuit with two pilot operated check valves. If pressured, the respective valve will pilot the other to open, thereby enabling cylinder motion in both directions. Without pressure at either valve, the cylinder is locked in place. (see application picture)

Technical Features

- > Hardened precision parts
- > Sharp-edged steel seats for dirt-tolerant performance
- > Leak-free closing, suitable for fast cycling with long life
- > High flow capacity
- > Optional sealed piston and flow restrictor integrated in hollow bolt
- > Design suitable for direct cylinder mounting through hollow bolt
- In the standard version the valve body is phosphated. The steel parts are zinc coated (240 h corrosion protection in NSS acc. to ISO 9227)

Functional Description

The valve allows flow to pass from port 2 to 1 while under load normally inhibiting flow from 1 to 2. When pressure is applied at port 3, flow passes from port 1 to 2.

The cartridge valve has a pilot ratio of 5.76:1, meaning that a minimum of 17 % of the load pressure must be applied at port 3 to open the valve. The check valve is spring closed to secure the holding position in static conditions and without load. The valve is optionally offered with a sealed piston and a flow restrictor valve. Port 4 is available for use in double acting applications using two pilot operated check valves.



Technical Data

Valve size / Cartridge cavity	M24 x 1.5 / QI3	
Max. flow	l/min (GPM)	20 (5.3)
Max. operating pressure	bar (PSI)	250 (3630)
Pilot ratio		5.76:1
Fluid temperature range (NBR)	°C (°F)	-30 +100 (-22 +212)
Fluid temperature range (FPM)	°C (°F)	-20 +120 (-4 +248)
Weight of the cartridge valve	kg (lbs)	0.08 (0.18)
Weight of the cartridge valve with body	kg (lbs)	1.6 (3.53)

	Datasheet	Туре
General information	GI_0060	Products and operating conditions
Cavity details	SMT_0019	SMT-QI3*
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate



1	free flow $(2 \rightarrow 1)$
2	pilot open (1→2)

RGO





Dimensions in millimeters (inches)

Cartridge valve RJV1-05

Model with body and hollow bolt RJV1-05*M(G)/* S, J1, J2







Туре	Port size	Ø D max mm (in)	Tightening torque Nm (ft-lbf)
D	M19 v 1 5	18 ^{+0,2}	30+3
Б	10110 X 1.5	(0.708 / 0.716)	(22.13+2.21)
C		22+0,2	70+5
	IVIZZ X I.S	(0.866 / 0.874)	(51.63+3.69)
	C 1/2	21+0,2	70+5
D	G 1/2	(0.826 / 0.834)	(51.63+3.69)
E	C 2/0	16,6+0,2	25+3
E	010	(0.653 / 0.661)	(18.43+2.21)

Model G



Ordering Code

	RJV1-05	/			
Check valve, pilot to open, ball type					Surface treatmentNo designationbody and flow restrictor phosphated, check valve black-coated and hollow bolt zinc-coated (ZnCr-3), ISO9227 (240 h)Aparts zinc-coated (ZnCr-3), ISO 9227 (240 h)Bparts zinc-coated (ZnNi), ISO 9227 (520 h)
Valve size					SealsNo designationNBRVFPM (Viton)
Pilot piston seal with seal without seal with seal	No designation 0			No o S J1 J2	Hollow bolt only for models with valve body designation without flow restrictor with flow restrictor VSV1 with flow restrictor VSVJ01 and check valve with flow restrictor VSVJ1 and check valve - reversed
Model Cartridge valve with body - metric threads with body - BSP threads	No designation M G		B C D E		Hollow bolt threads only for models with valve body M18 x 1.5 M22 x 1.5 G 1/2 G 3/8



Check Valve, Poppet-type, Pilot to Open

SC5H-BP3

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 420 bar (6100 PSI)

Technical Features

- Hardened and precision working parts
 - Sharp-edged ground steel seats for dirt-tolerant performance
- $\,\,$ $\,$ Leak-free closing and suitable for fast cycling with long life
- > High flow capacity

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- > Optional sealed piston and bias spring ranges for back-pressure control
- > In the standard version, the valve is zinc-coated for 520 h protection acc. to ISO 9227

Functional Description

The valve allows flow to pass from port 2 to 1 while normally closing flow from 1 to 2 with load. When pressure is applied at port 3. The flow passes from port 1 to 2.

The cartridge valve has a 3:1 pilot ratio. This require minimum one-third of the load pressure applied at port 3 to open the valve. The check valve is also spring closed to secure holding position in static conditions without the load.





Technical Data

Valve size / Carti	ridge cavity		7/8-14 UNF-2A - LONG / BP3 (C-10-3S)	
Max. flow		l/min (GPM)	60 (15.8)	
Max. operating	pressure	bar (PSI)	420 (6090)	
Pilot ratio			3:1	
Fluid temperatur	re range (NBR)	°C (°F)	-30 +100 (-22 +212)	
Fluid temperatur	re range (FPM)	°C (°F)	-20 +120 (-4 +248)	
Weight		kg (lbs)	0.13 (0.29)	
		Datasheet	Туре	
General informa	tion	GI_0060	Products and operating conditions	
Valve bodies	In-line mounted	SB_0018	SB-BP3*	
Sandwich mounted		SB-04(06)_0028	SB-BP3*	
Cavity details		SMT_0019	SMT-BP3*	
Spare parts		SP_8010		

Characteristics measured at $v = 40 \text{ mm}^2/\text{s}$ (195 SUS)

Pressure drop related to flow rate



50

(13.2) (15.8)

60







Check Valve, Poppet-type, Pilot to Open

SC5H-CP3

1-1/16-12 UN • Q_{max} 120 l/min (32 GPM) • p_{max} 350 bar (5100 PSI)

Technical Features

- > Hardened and precision working parts
- > Sharp-edged ground steel seats for dirt-tolerant performance
- > Leak-free closing and suitable for fast cycling with long life
- > High flow capacity
- > Optional sealed piston and bias spring ranges for back-pressure control
- > In the standard version, the valve is zinc-coated for 520 h protection acc. to ISO 9227

Functional Description

The valve allows flow to pass from port 2 to 1 while normally closing flow from 1 to 2 with load. When pressure is applied at port 3. The flow passes from port 1 to 2.

The cartridge valve has a 3:1 pilot ratio. This require minimum one-third of the load pressure applied at port 3 to open the valve. The check valve is also spring closed to secure holding position in static conditions without the load.



Technical Data

Symbol

Valve size / Cartridge cavity			1-1/16-12 UN-2A / CP3		
Max. flow		l/min (GPM)	120 (31.7)		
Max. operating	pressure	bar (PSI)	350 (5080)		
Pilot ratio			3:1		
Fluid temperatu	re range (NBR)	°C (°F)	-30 +100 (-22 +212)		
Fluid temperatu	re range (FPM)	°C (°F)	-20 +120 (-4 +248)		
Weight		kg (Ibs)	0.22 (0.49)		
		Datasheet	Туре		
General information		GI_0060	Products and operating conditions		
In-line mounted		SB_0018	SB-CP3*		
Sandwich mounted		SB-04(06)_0028	SB-CP3*		
Cavity details		SMT_0019	SMT-CP3*		
Spare parts		SP_8010			

Characteristics measured at $v = 40 \text{ mm}^2/\text{s}$ (195 SUS)

Pressure drop related to flow rate









Ordering Code



Check Valve, Poppet Type, Pilot to Open, Modular

2RJV1-06/M



ISO 4401-03-02-0-05



Ports P, A, B, T max. Ø7.5 mm (0.29 in)

Typical circuit with pilot operated check valve



Size 06 (D03) • Q_{max} 60 l/min (16 GPM) • p_{max} 320 bar (4600 PSI)

Technical Features

- Pilot to open check valve, poppet type with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 03)
- Sandwich plate design for use in vertical stacking assemblies
- > Sharp-edged steel seats for dirt-tolerant performance
- > Leak-free closing, suitable for fast cycling with long life
- > High flow capacity
- > Optional bias spring ranges for back-pressure control
- > Three pilot ratios available
- > In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

RGO

Functional Description

The valve allows flow to pass from port A(B)1 to A(B)2 while normally closing flow from A(B)2 to A(B)1 with load. When pressure is applied at pilot port. The flow passes from port 2 to 1. The valve has three pilot ratios option. This requires at least one-third (ratio 3:1), one-sixth (ratio 6:1) or one-ninth (ratio 9:1) of the load pressure to be applied at the opposite port to open the valve. The check valve is spring closed to secure the holding position in static conditions and without load. The valve is offered with optional bias spring ranges for back-pressure control.



Technical Data

Spare parts

Valve size		06 (D03)		
Max. flow	l/min (GPM)	60 (15.9)		
Max. operating pressure	bar (PSI)	320 (4640)		
Cracking pressure	bar (PSI)	3 (43.5) 4 (58) 5 (72.5) 8 (116) 12 (174)		
Fluid temperature range (NBR)	°C (°F)	-30 +100 (-22 +212)		
Fluid temperature range (FPM)	°C (°F)	-20 +120 (-4 +248)		
Pilot ratio		3:1 / 6:1 / 9:1		
Weight	kg (lbs)	0.8 (1.76)		
	Datasheet	Туре		
General information	GI_0060	Products and operating conditions		
Mounting interface	SMT_0019	Size 06		

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate





Pilot ratio 6 : 1

SP_8010





Model MC



No designation

030* (for pilot ratio 3 : 1 and 9 : 1)

V

000 (for all pilot ratios)

020 (for pilot ratio 6 : 1)

040 (for pilot ratio 3 : 1)

050 (for pilot ratio 3 : 1)

080 (for pilot ratio 3 : 1)

120 (for pilot ratio 3 : 1)

Α

В

С

3

6

9

Modular sandwich plate design

3: 1 (for all cracking pressures except 2 bar)

9: 1 (only for cracking pressure 0 bar and 3 bar)

6 : 1 (only for cracking pressure 2 bar)

Functional symbols

check valve in line A

check valve in line B

Pilot ratio

check valve in line A and B

Seals

FPM (Viton)

no spring

Cracking pressure

2 bar (29.0 PSI)

3 bar (43.5 PSI)

4 bar (58.0 PSI)

5 bar (72.5 PSI)

8 bar (116 PSI)

12 bar (174 PSI)

*Preferred type for pilot ratio 3 :1 respective 9 :1

NBR



Check Valve, Poppet-type, Pilot to Open, Modular

VJR1-04/M

Size 04 (D02) • Q_{max} 20 l/min (5 GPM) • p_{max} 320 bar (4600 PSI)



ISO 4401-02-01-0-05



max Ø4.5 mm (0.18 in)

Typical circuit with pilot operated check valve



Technical Features

- Pilot to open check valve, poppet-type with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 02)
 - Sandwich plate design for use in vertical stacking assemblies
- > Sharp-edged steel seats for dirt-tolerant performance
- > Leak-free closing, suitable for fast cycling with long life
- High flow capacity

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In the standard version, the valve housing is phosphated and steel parts are zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

The valve allows flow to pass from port A(B)1 to A(B)2 while normally under load inhibiting flow from A(B)2 to A(B)1. When pressure is applied at the pilot port, the valve is opened and flow passes from port 2 to 1. The valve has a 3:1 pilot ratio, meaning that at least one third of the load pressure must be applied to open the valve. The check valve is spring closed to secure the holding position in static conditions and without load.



Technical Data

Valve size		04 (D02)
Max. flow	l/min (GPM)	20 (5.3)
Max. operating pressure	bar (PSI)	320 (4640)
Cracking pressure	bar (PSI)	1 (14.5)
Fluid temperature range (NBR)	°C (°F)	-30 +100 (-22 +212)
Fluid temperature range (FPM)	°C (°F)	-20 +120 (-4 +248)
Pilot ratio		3 : 1
Mass	kg (Ibs)	0.7 (1.54)

	Datasheet	Туре
General information	GI_0060	Products and operating conditions
Mounting interface / tolerances	SMT_0019	Size 04
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate



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





Functional symbols



VJR1-04/MB

VJR1-04/MC



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

Ordering Code VJR1-04 / M Check valve, pilot to open, Surface treatment poppet-type, modular No designation body phosphated, steel parts zinc-coated (ZnCr-3), ISO9227 (240 h) Α zinc-coated (ZnCr-3), ISO 9227 (240 h) Valve size В zinc-coated (ZnNi), ISO 9227 (520 h) Modular sandwich plate design Seals **Functional symbols** No designation NBR check valve in line A FPM (Viton) Α v check valve in line B В С check valve in line A and B **Pilot ratio Cracking pressure** 010 3:1 3 1 bar (14.5 PSI)



Pilot to Open Operated Check Valve, Poppet Type, Modular

VJR3-10/M



ISO 4401-05-04-0-05



Ports P, A, B, T - max. Ø11,2 mm (0.44 in)

Typical circuit with pilot operated check valve



Size 10 (D05) • Q_{max} 140 l/min (37 GPM) • p_{max} 350 bar (5100 PSI)

Technical Features

- Pilot to open operated check valve, poppet type with subplate mounting surface acc. to ISO 4401, DIN 24340 (CETOP 05) standards > >
 - Sandwich plate design for use in vertical stacking assemblies
- Sharp-edged ground steel seats for for dirt-tolerant performance
- Leak-free closing and suitable for fast cycling with long life >
- > High flow capacity
- Valve is fitted with decompression stage facilitating steady opening without pressure > peaks
- In the standard version, the valve housing is phosphated and steel parts zinc coated > for 240 h protection acc. to ISO 9227

Functional Description

The valve allows flow to pass from port A(B)1 to A(B)2 while normally closing flow from A(B)2 to A(B)1 with load. When pressure is applied at pilot port. The flow passes from port 2 to 1. The valve has a 6:1 pilot ratio. The check valve is also spring closed to secure holding position in static conditions without the load. The valve is offered with optional bias spring ranges for back-pressure control.



Technical Data

Valve size		10 (D05)
Max. flow	l/min (GPM)	140 (37)
Max. operating pressure	bar (PSI)	350 (5080)
Cracking pressure	bar (PSI)	2 (29)
Fluid temperature range (NBR)	°C (°F)	-30 +100 (-22 +212)
Fluid temperature range (FPM)	°C (°F)	-20 +120 (-4 +248)
Pilot ratio		6:1
Weight	kg (lbs)	2.2 (4.85)
	Datasheet	Туре
General information	GI_0060	products and operating conditions
Mounting interface / tolerances	SMT_0019	Size 10
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate



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

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Model "C"



VJR3-10/MA



TA1 A1 P1 B1 TB1

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VJR3-10/MC

P1 B1 TB1 TA1 A1 Ô Ô TA2 A2 P2 B2 TB2

valve side

2 subplate or manifold side



TA2 A2 P2 B2 TB2





Pilot Operated Check Valve in In-Line Body

IC5H

Q_{max} 80 l/min (21 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

- > Hydraulic pilot operated check valve, poppet design, for simple in-line connection
- Leak-free closing and long service life of built-in check valves thanks to used quality materials and hardened key components
- > High flow capacity at a low pressure drop
- In the standard version the surface of body and valves is zinc coated for corrosion protection 240 h in NSS acc. to ISO 9227

Functional Description

Check valves, built in in-line body, allow free flow from the pump to the actuator (direction V1 \rightarrow C1, V2 \rightarrow C2). In opposite direction from the consumer to the tank (direction C1 \rightarrow V1, C2 \rightarrow V2) the valves are mechanically opened by pilot pressure sensed in the second pipeline of actuator and acting on the face surface of special piston. The pilot operated check valves secure the position of loaded actuator when the pump is off, and the check valves are closed by pressure induced by load. The pilot ratio is a min. ratio of system and pilot pressure needed for opening the check valves. The basic position of valve cone is assured by weak spring.

Typical hydraulic circuit with a pilot operated check valve





Technical Data

Maximal flow	l/min (GPM)	20 (5.3)	40 (11)	60 (16)	80 (21)
Connecting threads for fittings		G 1/4"	G 3/8″	G 1/2″	G 3/4″
Pilot ratio		6:1	6:1	4:1	3,5:1
Max. operating pressure	bar (PSI)		350 (5080)	
Cracking pressure of check valve	bar (PSI)	1 (14.5)			
Fluid temperature range	°C (°F)		-30 +80 (-22 +212)
Weight (one-side valve "A")	kg (lbs)	0.67 (1.48)	0.63 (1.39)	1.09 (2.40)	1.97 (4.34)
Weight (both-side valve "C")	kg (lbs)	0.68 (1.50)	0.64 (1.41)	1.12 (2.47)	2.01 (4.43)

	Datasheet	Туре
General information	GI_0060	Products and operating conditions

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate







IC5H-40P/HA6-010-A







Dimensions in millimeters (in)



Dimension	IC5H-20P/H	IC5H-40P/H	IC5H-60P/H	IC5H-80P/H
А	64	64	80	100
В	15	15	17.5	20
С	40	40	50	60
ØD*	M8 x 1.25 – 15	M8 x 1.25 - 15	6.5	8.5
E	8	8	15	15
F	14	14	21	25
G	36	36	38	50
Н	G 1/4"	G 3/8"	G 1/2"	G 3/4"
1	13	13	16	21
HEX J	22 (tightening torque 50 Nm)	22 (tightening torque 50 Nm)	27 (tightening torque 70 Nm)	38 (tightening torque 120 Nm)
К	G 1/4"	G 3/8"	G 1/2"	G 3/4"
L	27	27	32 / 26	41

*Connecting thread M8 x 1.25 – 15 is machined only at the type IC5H-20P/H and IC5H-40P/H. Other types are only provided with a through-going hole for fixing screw (ØD 6.5 / ØD 8.5 mm [0.26 / 0.34 in]).

Functional Symbols

IC5H-xxP/HA





Note: Thanks to symmetrical design the in-line body with a pilot operated check valve in 1-channel (IC5H-xxP/HA) can be used by exchanging 1 / 2 ports as the in-line body with pilot operated check valve in 2-channel (IC5H-xx/HB)

Ordering Code

	IC5H - P/	H	- 0	10 - A
Pilot operated check valve in in-line body				Surface treatment zinc-coated (ZnCr-3), ISO 9227 (240 h)
Maximal flow range 20 l/min (5 GPM) 40 l/min (11 GPM)	20 40			Seals No designation NBR
60 l/min (16 GPM) 80 l/min (21 GPM)	60 80			Cracking pressure of check valve 1 bar (14.5 PSI)
Body connection rectangular			3	Pilot ratio
Model High performance			4 6	4:1 6:1
List of manufactured types: IC5H-20P/HA6-010-A				Valve design
IC5H-20P/HC6-010-A		C		check valve built in 1-channel check valve built in 1 and 2-channel
IC5H-40P/HC6-010-A IC5H-60P/HA4-010-A				
IC5H-60P/HC4-010-A IC5H-80P/HA3-010-A				
IC5H-80P/HC3-010-A				