

Check Valves

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06

Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Казахстан (772)734-952-31

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Таджикистан (992)427-82-92-69

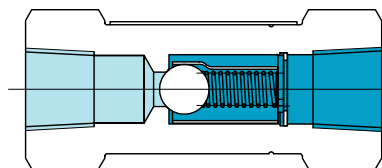
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

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Check Valves

Function	Model	Maximum Working Pressure MPa	Rated Flow L/min												Page
			1	2	5	10	20	50	100	200	500	1000	2000		
Inline Check (Threaded Connection)	DT8P1	21	02 03 06 10												F3
Angle Check (Threaded Connection)	C2	21	800 805 815 820 825 830												F5
Angle Check (Gasket Mounting)	C2G C5G	21	805 815 825												F8
Angle Check (Flange Mounting)	DF10P1	21	16 24												F12
Pilot-Operated Check	4CG	21	03 06 10												F15
Pilot-Operated Check	THPCG	35	03 06												F21
Pilot-Operated Check	C2PG C5PG	21	805 815 825												F24
Shuttle	CVSH-3	21													F28
Shuttle	CVSH-01	21													F28
Modular Shuttle	CVSH-MD	21													F28
For Relief Valve	URMC	21	03 06 10												F31

In-line type check valves DT8P1



- Simple installation, can be used as a pipe coupling.
- Low pressure line (10/11 design), high pressure (20 design) types.

Functional Symbol



Model Code

DT8P1 - 06 - 5 - 11 - JA - (S22) - J

2 3 4 5 6

(F3) - DT8P1 - 06 - 5 - JA - 20 - (S22) - J

1 2 3 4 5 6

1 Fluid

Omit for mineral oil, water glycol
(water glycol fluids, 20 design only)
F3: phosphate ester (20 design only)

2 Inline check valve(threaded connection)

3 Size

See 'Specifications'

4 Cracking pressure

See 'Specifications'

5 Design no. (See Notes on Use)

10: DT8P1-02,03

11: DT8P1-06,10,12

20: DT8P1-03,04,06,08,10

6 Special feature

S22: no spring type

Specifications

Model	Size	Max. Working Pressure MPa	Rated Flow L/min	Weight kg
DT8P1-02	02	21	20	0.2
DT8P1-03	03		40	0.2 (0.5)
DT8P1-04/06	04/06		80	0.7 (1.6)
DT8P1-08/10/12	08/10/12		200	2.3 (4.0)

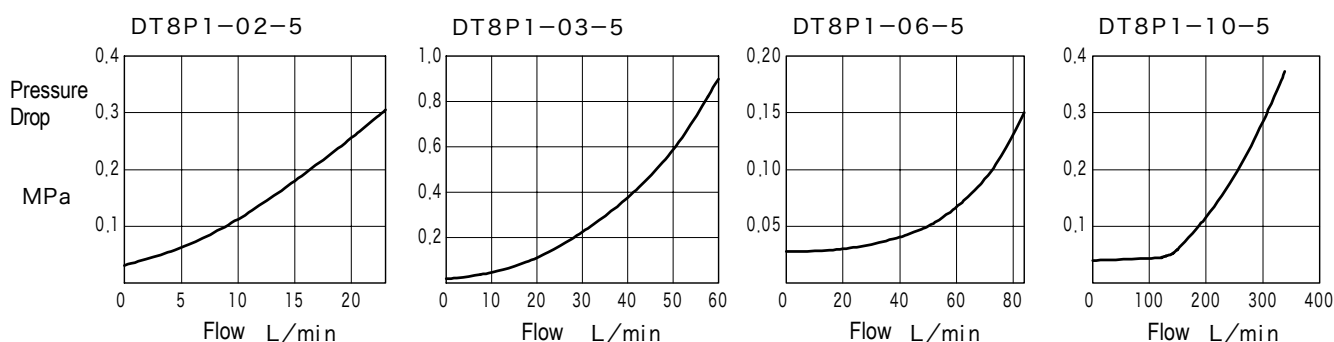
() refers to 20 design

Code	5	15	20	25	30	50	65	125
Cracking Pressure MPa	0.035	0.11	0.14	0.18	0.21	0.35	0.46	0.88

Note: some cracking pressures may not be applicable for certain sizes. See page F-4 Spring Table.

Performance Curves (at 20 mm²/s)

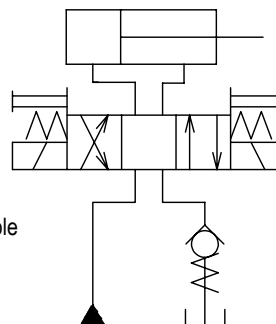
Press. Drop Characteristics (cracking pressure 0.035 Mpa)



Notes on Use

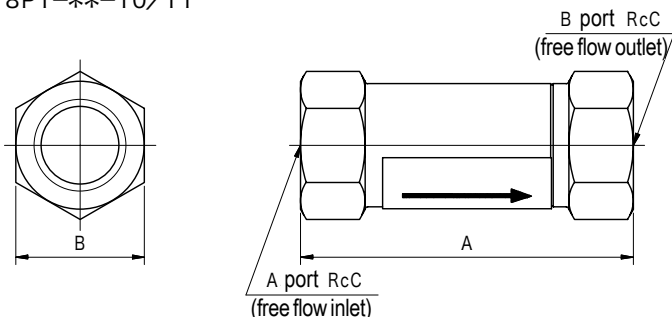
- 10, 11 design, as shown in the circuit, should be used only for low pressure line or to stop static pressure under high pressure.
- Use 20 design for high pressure line
- 10, 11 design cannot be used with water-glycol fluids
- Mount S22 (no spring) type so A port is at bottom (free flow inlet).

DT8P1 Design No. 10, 11 Application Example



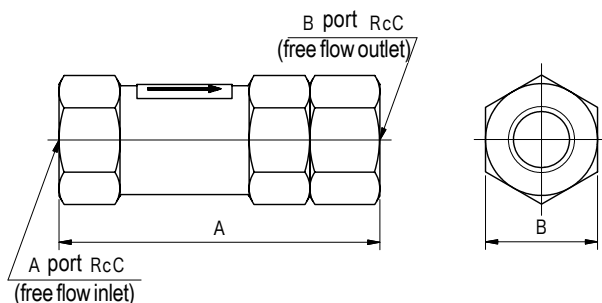
Dimensions

DT8P1-**-10/11



Model	C	A	B
DT8P1-02-**-10-JA-J	1/4	57.1	22
DT8P1-03-**-10-JA-J	3/8	76.2	25.4
DT8P1-06-**-11-JA-J	3/4	98.4	38
DT8P1-10-**-11-JA-J	1-1/4	133.4	63
DT8P1-12-**-11-JA-J	1-1/2	133.4	63

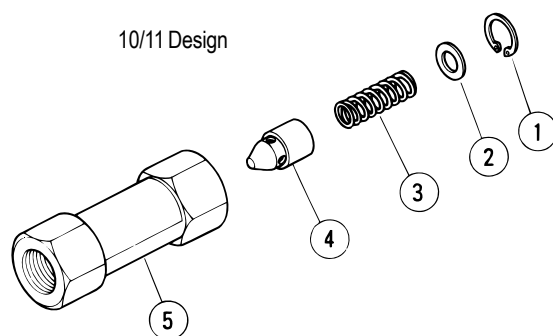
DT8P1-**-20



Model	C	A	B
DT8P1-03-**-JA-20-J	3/8	93	32
DT8P1-04-**-JA-20-J	1/2	131.7	46
DT8P1-06-**-JA-20-J	3/4		
DT8P1-08-**-JA-20-J	1	178	67
DT8P1-10-**-JA-20-J	1-1/4		

Construction

10/11 Design



Springs

No.	Part No.
5	VP113559
15	40016779
50	40022160
65	40031356

DT8P1-03-20

No.	Part No.
5	VP123761
20	40015761
30	VA12224
65	VP123760

DT8P1-04/06-20

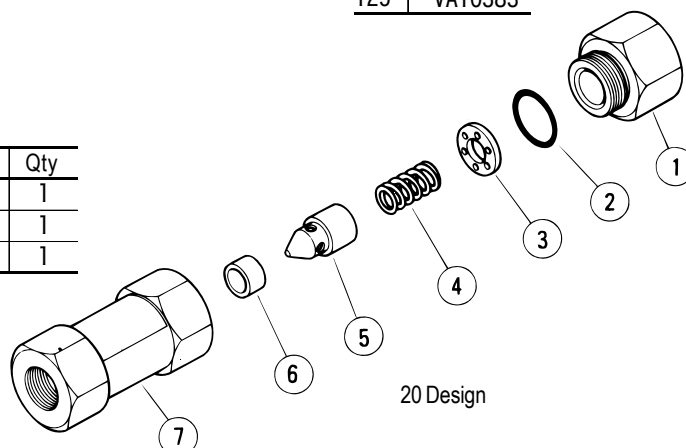
No.	Part No.
5	VP125779
15	VA15935
20	VA11721
30	VA14342
50	VA28508
65	VP125780
125	VA10383

DT8P1-08/10-20

No.	Part No.
5	VP125631
15	VA16021
20	VA11722
25	VA11490
30	VA11571
65	VP125632

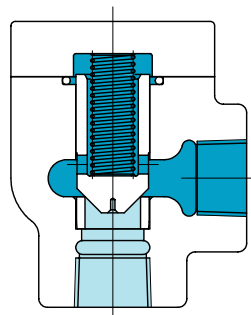
② O-Rings (20 Design)

Model	Part No.	Standard	Qty
DT8P1-03-20	007990819	AS568-908 (NBR, Hs90)	1
DT8P1-04/06-20	007991619	AS568-916 (NBR, Hs90)	1
DT8P1-08/10-20	007992419	AS568-924 (NBR, Hs90)	1



20 Design

Angle type check valves (taper thread port type) C2



- Angle check valve allows maintenance without removing piping.

Functional Symbols



Model Code

(F3) - C2 - 805 - (S3) - JA - (S26) - J

1 2 3 4 5

- | | |
|---|---|
| <p>1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester</p> <p>2 Angle check (th'd connection)</p> <p>3 Size
See 'Specifications'</p> | <p>4 Cracking pressure
See 'Specifications'</p> <p>5 Special feature
S26: pilot operated type
S12: bypass orifice</p> |
|---|---|

Specifications

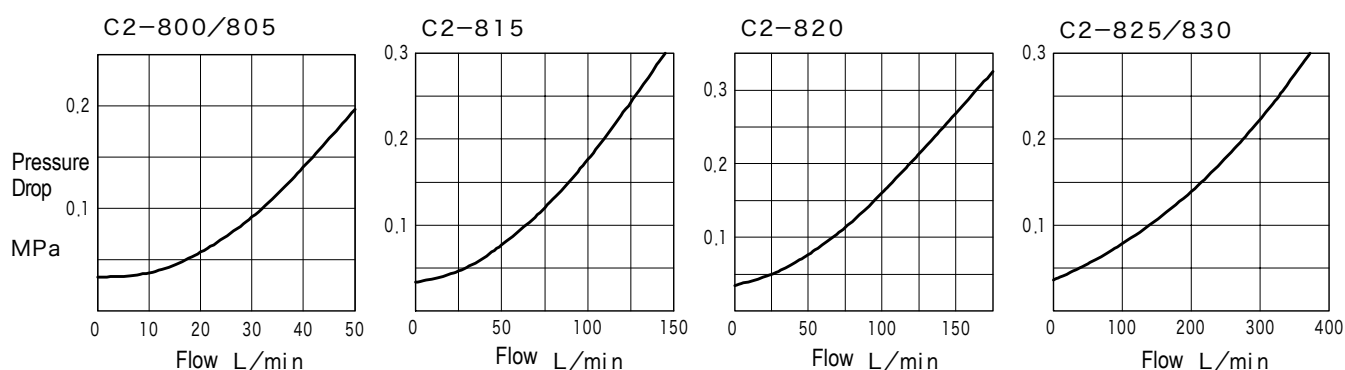
Model	Size	Maximum Working Pressure MPa	Rated Flow L/min	Weight kg
C2-800	02	21	20	1.5
C2-805	03		40	1.5
C2-815	06		80	2.5
C2-820	08		125	3.5
C2-825	10		250	4.5
C2-830	12		315	4.5

Code	Omitted, S12	S20	S19	S2	S3	S8	S17	S34	S22
Cracking Pressure MPa	0.035	0.004	0.14	0.25	0.35	0.53	0.88	1.05	No spring

Note: some cracking pressures may not be applicable for certain sizes. See Spring Table on page F7.

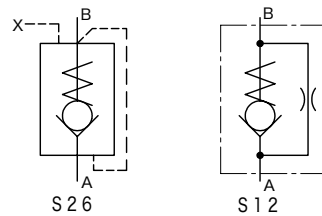
Performance Curves (at 20 mm²/s)

Pressure drop characteristics (cracking pressure 0.035 MPa)



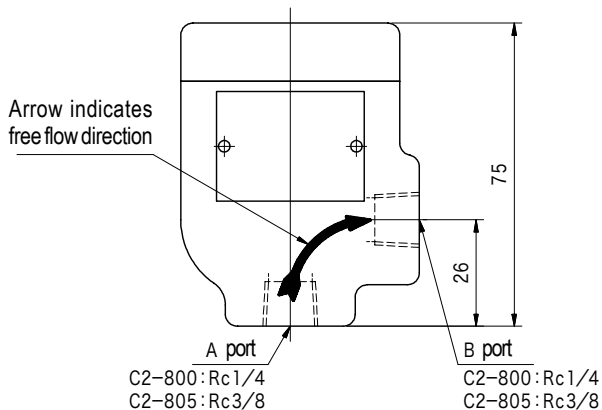
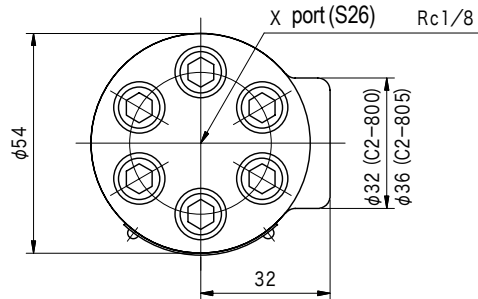
Notes on Use

- Mount S22 (no spring) type so A port is at bottom (free flow inlet).
- With S26 (pilot operated) type, pilot pressure is applied to close valve.
Be careful as pilot pressure will leak to B port.
- With S12 (with bypass orifice) type, orifice is incorporated in the poppet.
Orifice size for C2-800 and C2-805 is $\phi 1.0$ and for others, $\phi 1.2$.

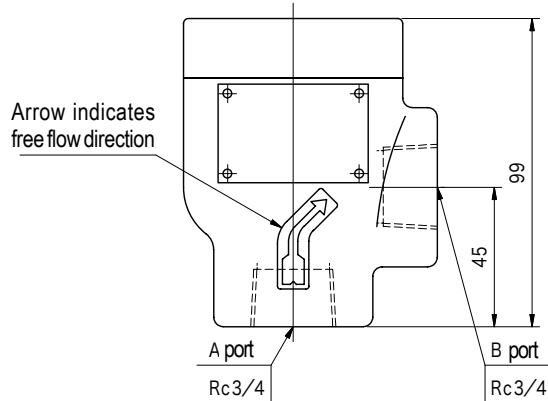
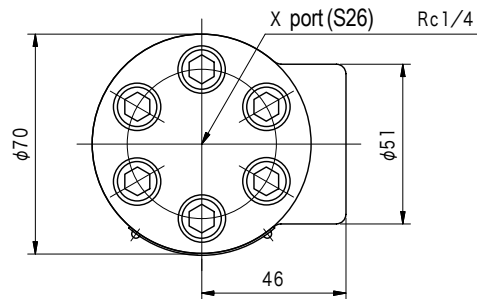


Dimensions

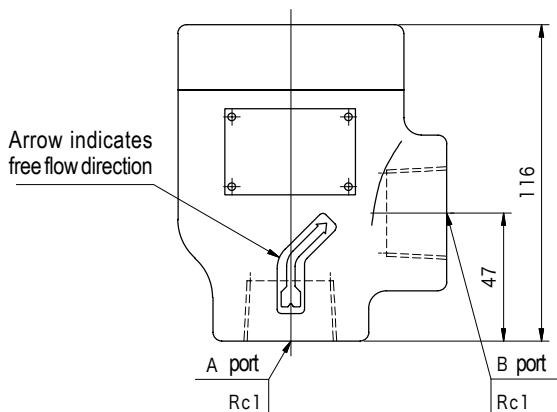
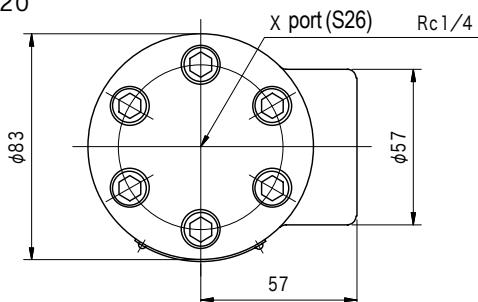
C2-800, C2-805



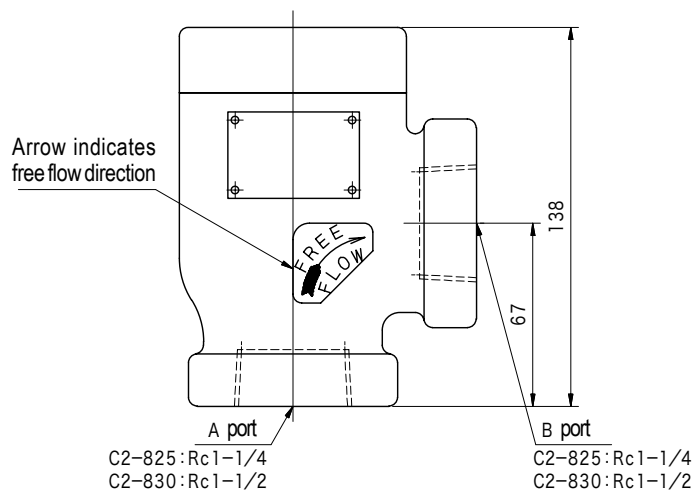
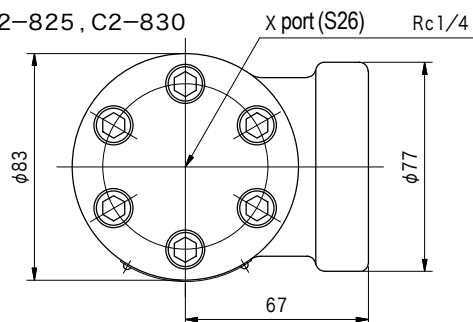
C2-815

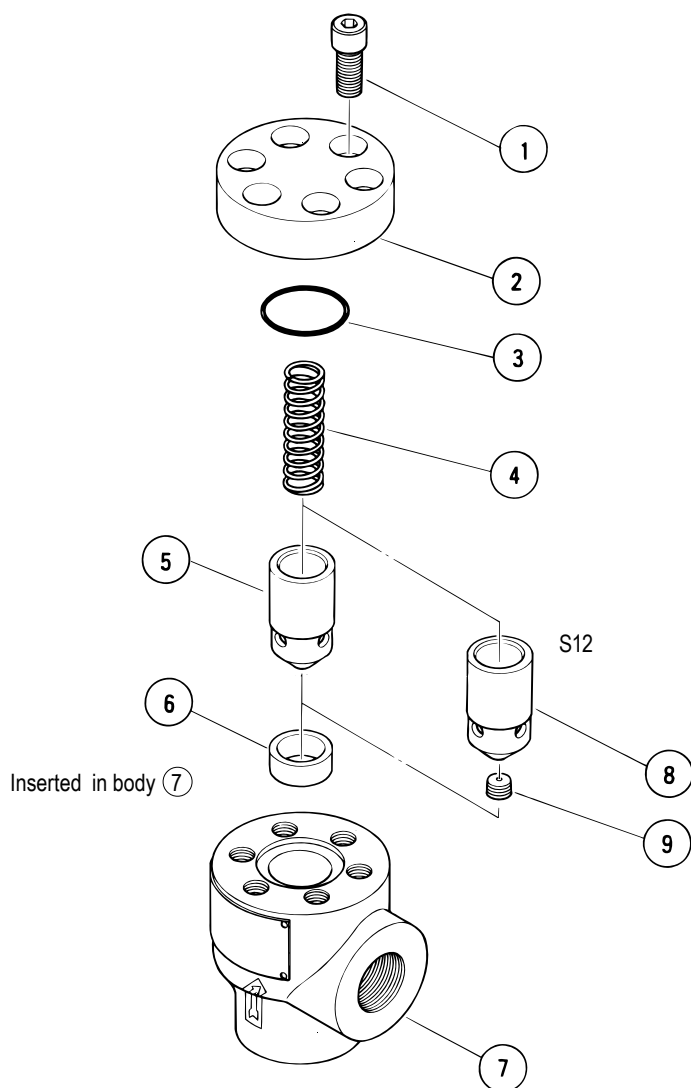


C2-820



C2-825, C2-830





④ Springs

C2-800/805

Code	Part No.
Omitted	VP2978
S3	VP35298
S8	VP55233
S12	VP2978
S17	VP112407
S19	VA4906
S20	VP140804

C2-820

Code	Part No.
Omitted	VP2990
S3	VP19767
S8	VA3284
S12	VP2990
S17	VA27400
S19	VA20100
S20	VA25993

C2-815

Code	Part No.
Omitted	VP2943
S2	VA10075
S3	VP25896
S8	VP32999
S12	VP2943
S17	VP84235
S19	VP2287
S20	VA10102
S34	VA10716

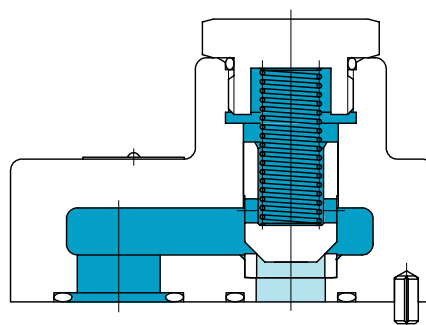
C2-825/830

Code	Part No.
Omitted	VP2284
S2	VP2953
S3	VP29059
S8	VP39778
S12	VP2284
S17	VA13278
S19	VP106669
S20	VP2950
S34	VA10008

③ O-Rings

Model	Part No.	Standard	Qty
C2-800/805	007901919	AS568-019 (NBR, Hs90)	1
C2-815	007921619	AS568-216 (NBR, Hs90)	1
C2-820	007922219	AS568-222 (NBR, Hs90)	1
C2-825/830	007922319	AS568-223 (NBR, Hs90)	1

Angle type check valves (subplate mounting type) C2G/C5G



Functional Symbol



Model Code

(F3) - C5G - 825 - (S3) - JA - (11) - (S160) - (M)

1 2 3 4 5 6 7

- | | |
|---|---|
| <p>1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester</p> <p>2 Angle check (gasket mount)</p> <p>3 Size
See 'Specifications'</p> <p>4 Cracking pressure
See 'Specifications'</p> <p>5 Design no.
Used only for C2G-805</p> | <p>6 Special feature
S51: adj. opening (for C2G-805)
S160: adj. opening (for C2G-815, C5G-825)</p> <p>7 Mounting bolts
Omitted: unified thread (3/4-10UNC)
M: metric bolts (M20)
Only for C5G-825, 'Omitted' code applicable for all others</p> |
|---|---|

Specifications

Model	Size	Maximum Working Pressure MPa	Rated Flow L/min	Weight kg
C2G-805	03	21	40	1.5
C5G-815	06		80	3.0
C5G-825	10		380	6.0

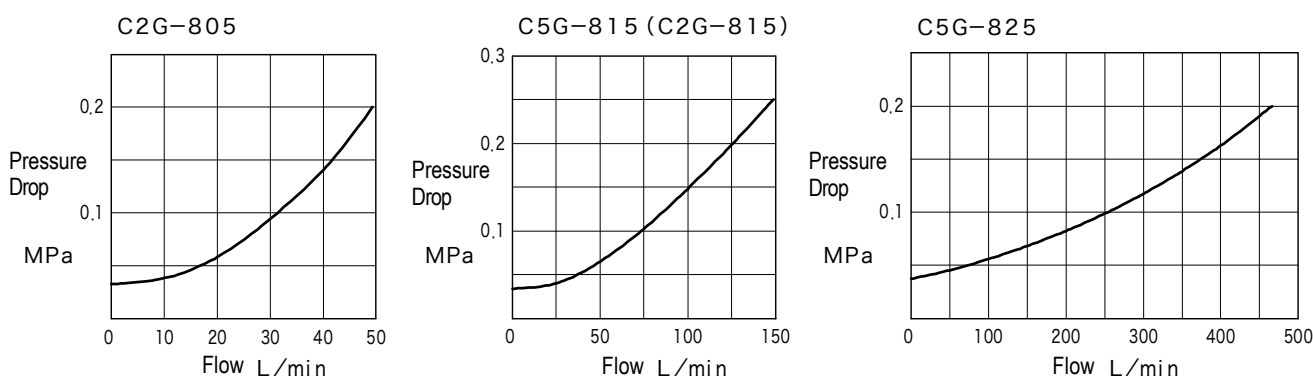
Note: max. working pressure of S51, S160 special suffix valves is 14 MPa.

Model	Omitted, S12	S20	S19	S2	S3	S8	S17	S34	S22
Cracking Pressure MPa	0.035	0.004	0.14	0.25	0.35	0.53	0.88	1.05	No spring

Note: cracking pressures may not be applicable depending on valve size. See Spring Table on page F11.

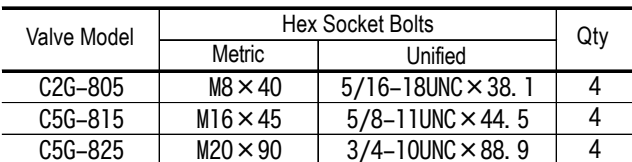
Performance Curves (at 20 mm²/s)

Pressure Drop Characteristics (cracking pressure 0.035 MPa)



Notes on Use

- ## Mounting Bolts (JIS B1176,Strength Class 12.9)

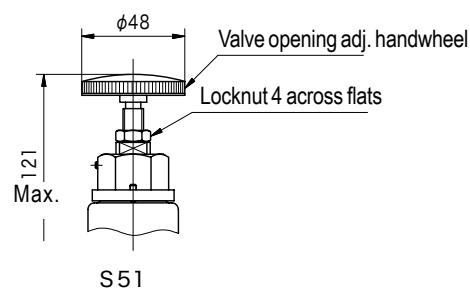
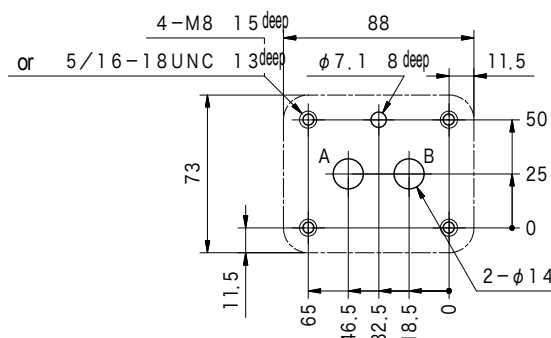
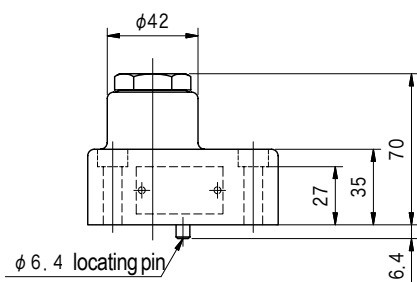


- ## Dimensions

Subplate

- Subplate must be ordered separately.
- Hex socket bolts are included (unified thread).
- See page Q5 for dimensions.

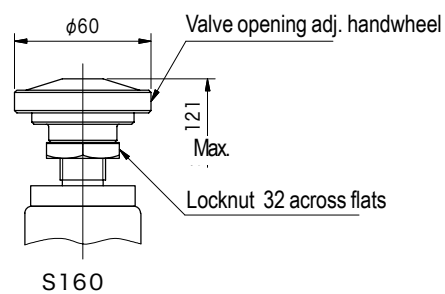
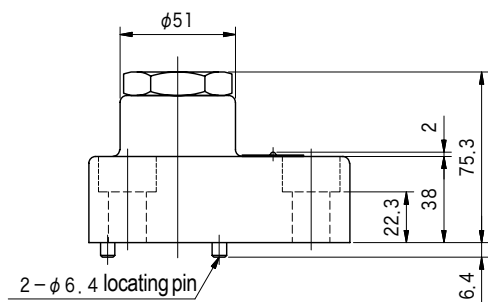
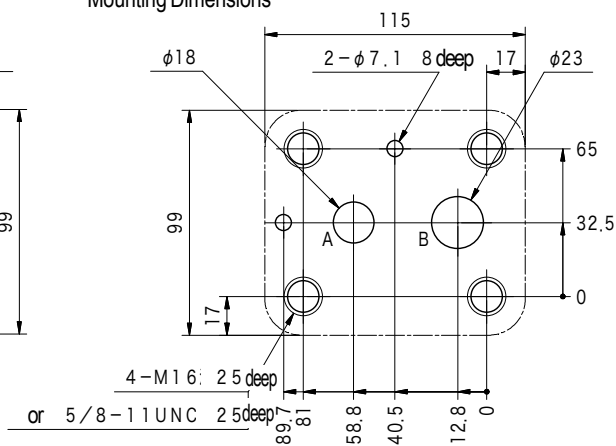
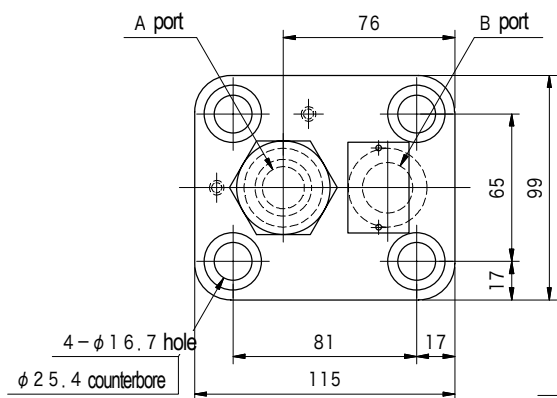
C2G-805



Dimensions

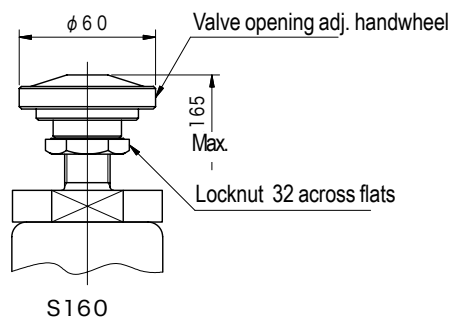
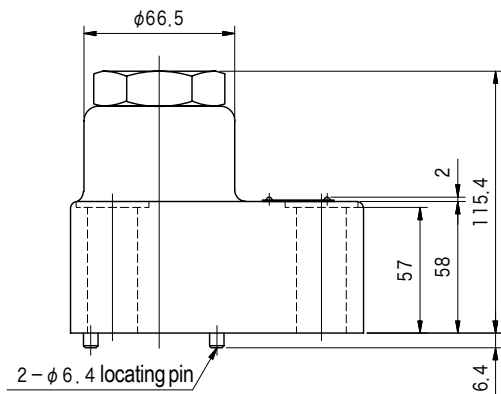
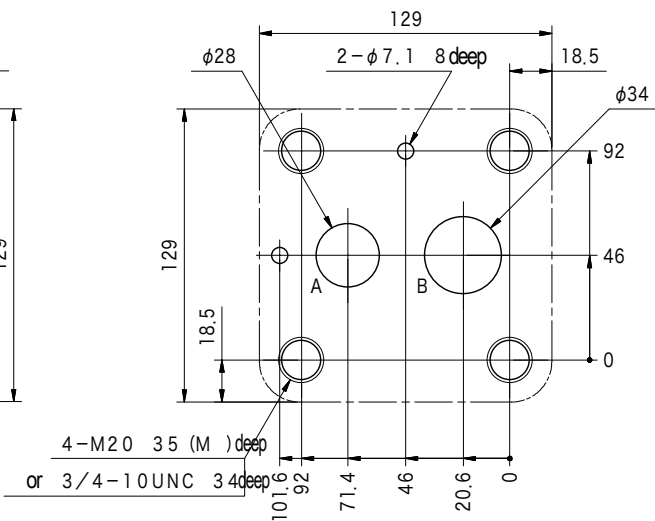
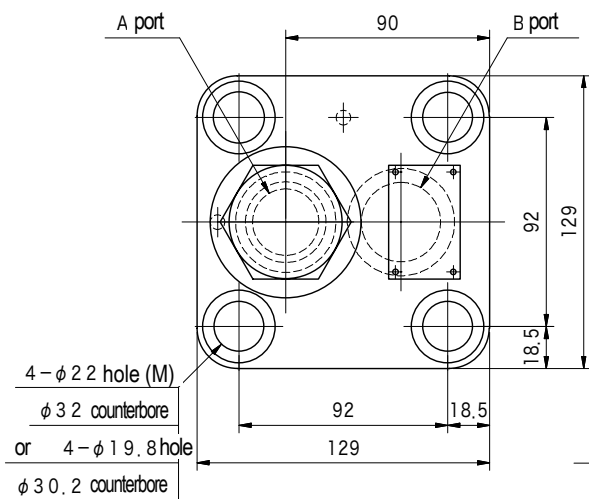
C5G-815

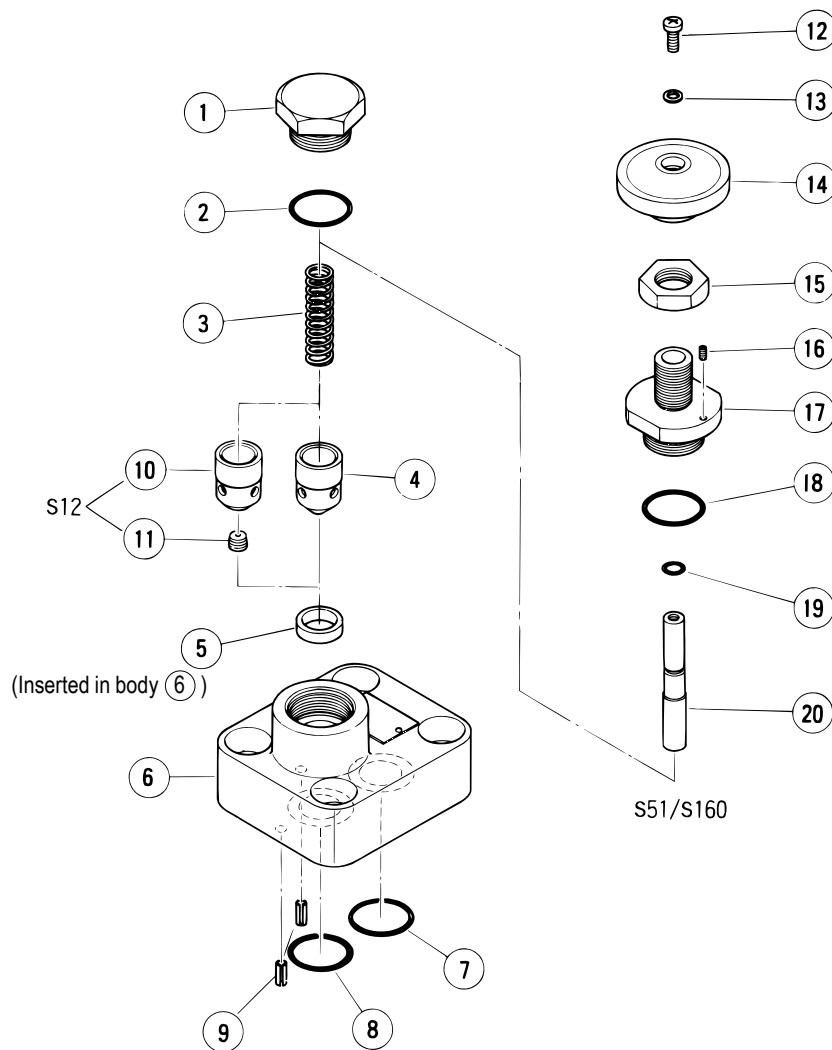
Mounting Dimensions



C5G-825

Mounting Dimensions





③ Springs
C2G-805

No.	Part No.
Omitted	VP2978
S3	VP35298
S8	VP55233
S12	VP2978
S17	VP112407
S19	VA4906
S20	VP140804

C5G-815

No.	Part No.
Omitted	VP2943
S2	VA10075
S3	VP25896
S8	VP32999
S12	VP2943
S17	VP84235
S19	VP2287
S20	VA10102
S34	VA10716

C5G-825

No.	Part No.
Omitted	VP2284
S2	VP2953
S3	VP29059
S8	VP39778
S12	VP2284
S17	VA13278
S19	VP106669
S20	VP2950
S34	VA10008

O-Rings

C2G-805

No.	Part No.	Standard	Qty
2	007991019	AS568-910 (NBR, Hs90)	1
7	007911519	AS568-115 (NBR, Hs90)	1
8	007911719	AS568-117 (NBR, Hs90)	1
18	007991019	AS568-910 (NBR, Hs90)	1
19	007900919	AS568-009 (NBR, Hs90)	1

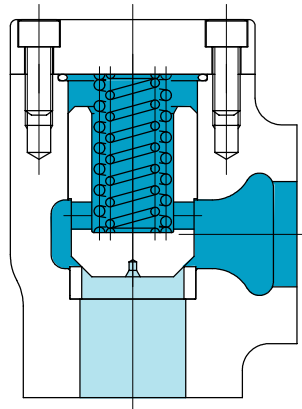
C5G-825

No.	Part No.	Standard	Qty
2	007992019	AS568-920 (NBR, Hs90)	1
7	007922319	AS568-223 (NBR, Hs90)	1
8	007922219	AS568-222 (NBR, Hs90)	1
18	007992019	AS568-920 (NBR, Hs90)	1
19	007901119	AS568-011 (NBR, Hs90)	1

C5G-815

No.	Part No.	Standard	Qty
2	007991619	AS568-916 (NBR, Hs90)	1
7	007921619	AS568-216 (NBR, Hs90)	2
18	007991619	AS568-916 (NBR, Hs90)	1
19	007901119	AS568-011 (NBR, Hs90)	1

Angle type check valves (flange port type) DF10P1



- Flange mounted type check valve for large flows.

Functional Symbol



Model Code

(F3) - DF10P - 16 - 5 - 20 - JA - (S22)

1 2 3 4 5 6

- | | |
|---|--|
| <p>1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester</p> <p>2 Angle check valve (flange connection)</p> <p>3 Size
See 'Specifications'</p> | <p>4 Cracking pressure
See 'Specifications'</p> <p>5 Design no.</p> <p>6 Special feature
S12: orifice (ø1.2)
S22: no spring type</p> |
|---|--|

Specifications

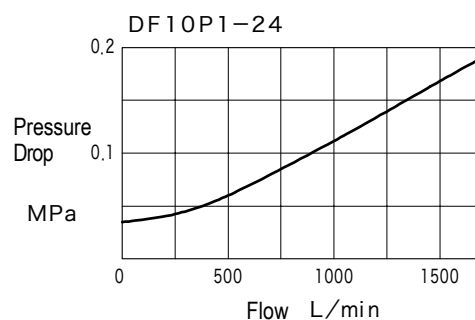
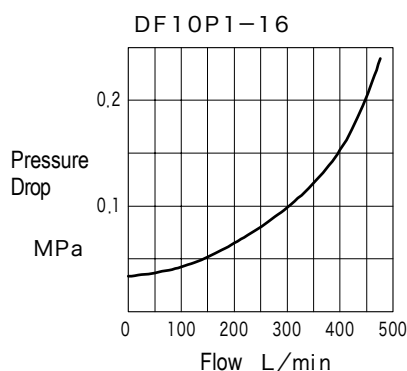
Model	Size	Maximum Working Pressure MPa	Rated Flow L/min	Weight kg
DF10P1-16	16	21	500	13
DF10P1-24	24		1200	65.5

Code	5 (s'd)	7	10	20	25	30	50	65	80	100
Cracking Pressure MPa	0.035	0.05	0.07	0.14	0.18	0.21	0.35	0.46	0.56	0.7

Note: some cracking pressures may not be applicable for certain sizes. See Spring Table on page F14.

Performance Curves (at 20 mm²/s)

Pressure Drop Characteristics (cracking pressure 0.035 MPa)



Notes on Use

- S22 (no spring) type should be mounted horizontally with gasket surface down.

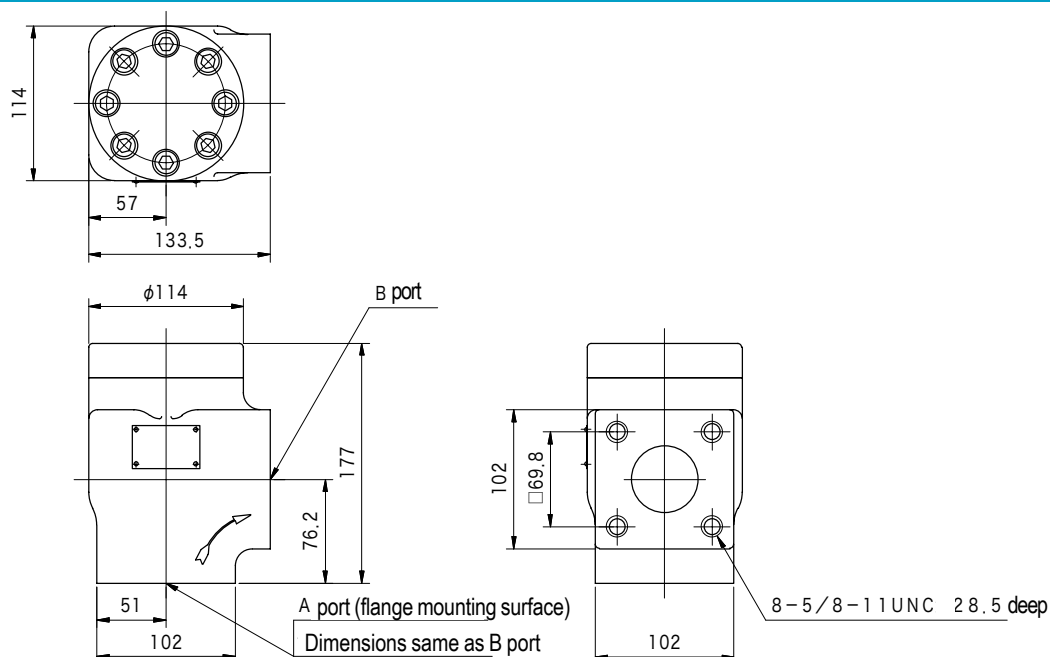
Flange

Valve Model	Connection Port Dia. Rc	Flange		
		Threaded	Size	Welded
		Straight Flange		Straight Flange
DF10P1-16	1-1/2	FL-12-PS-20-JA-J	1-1/2	FL-12-TS-20-JA-S18
	2	FL-16-PS-20-JA-J	2	FL-16-TS-20-JA-S18
DF10P1-24	2-1/2	FL-20-PS-20-JA-J	2-1/2	FL-20-TS-20-JA-S18
	3	FL-24-PS-20-JA-J	3	FL-24-TS-20-JA-S18

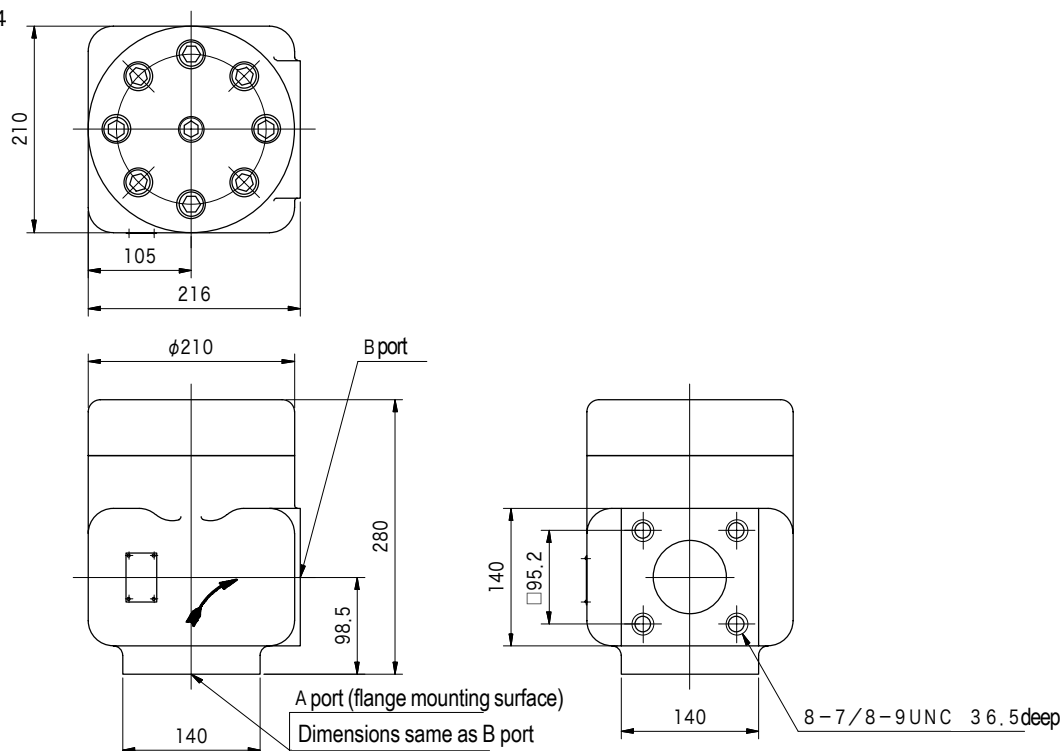
- Flange must be ordered separately.
- Mounting bolts, spring washer, O rings are included with flanges.
- See page Q14 for dimensions.
- Mounting bolt tightening torque
DF10P1-16: 108~132 Nm
DF10P1-24: 200~300 Nm

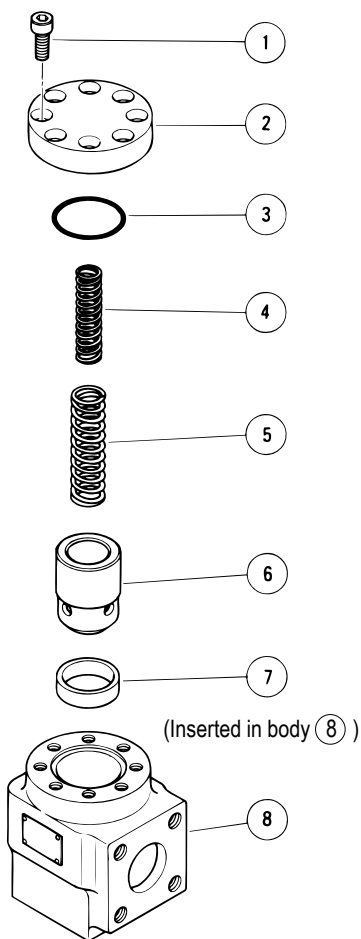
Dimensions

DF10P1-16



DF10P1-24





Springs
DF10P1-16

Code	Part No.	
	④	⑤
5	_____	VP20898
10	_____	VA18774
20	_____	VP271580
30	_____	VP230660
50	_____	VA18796
65	_____	VP117683
80	VA17001	
100	VP285636	

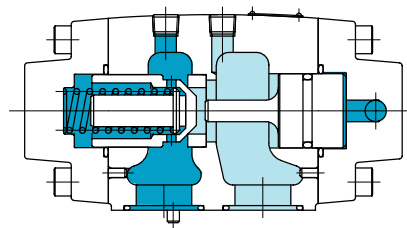
DF10P1-24

Code	Part No.	
	⑤	
5	VP46563	
7	VA12693	
10	VP212147	
20	VP236242	
25	VA14148	
30	VA14099	
65	VP117684	

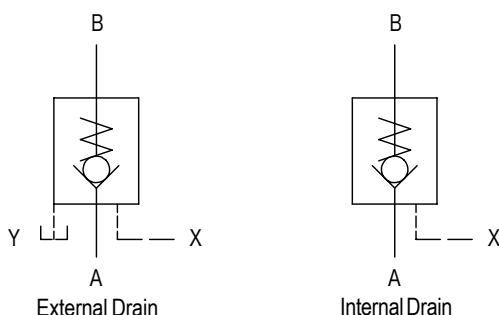
O-Rings

No.	DF10P1-16			DF10P1-24		
	Part No.	Standard	Qty	Part No.	Standard	Qty
3	007923019	AS568-230 (NBR, Hs90)	1	007924219	AS568-242 (NBR, Hs90)	1

Pilot operated check valves 4CG



Functional Symbols



- Valve can function to provide free flow in one direction and also flow in reverse direction with external pilot pressure.
- Decompression type with poppet opening before main valve available.

F
15

CHECK VALVES

Model Code

(F3) - 4CG - 03 -(D) A- 20 - (GE5) - JA - (S100) - J

1 2 3 4 5 6 7 8

- 1 Fluid
Omitted for mineral oil, water glycol
F3:phosphate ester
- 2 Pilot operated check valve
4CG:Gasket mounting
- 3 Size
See 'Specifications'
- 4 Decompression function
Omitted, standard
D:Decompression type
- 5 Cracking pressure
A:0.21Mpa
C:0.53Mpa
F:1.05Mpa
- 6 Design no.
See right Table
- 7 Drain
Omitted for internal drain
GE5:External drain
- 8 Code
See right Table

Model	Design No.	Control Code
4CG-03	20	S100
4CG-03-D	20	S100
4CG-03-GE5	21	(omitted)
4CG-03-D-GE5	21	(omitted)

4CG-06	20	S100
4CG-06-D	20	S100
4CG-06-GE5	21	(omitted)
4CG-06-D-GE5	21	(omitted)

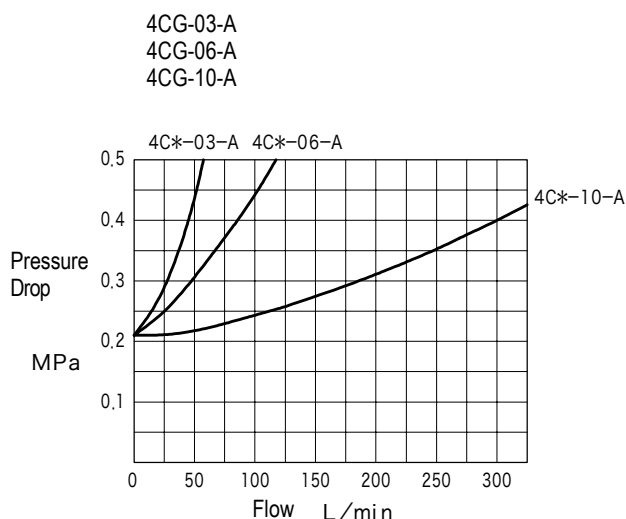
4CG-10	20	(omitted)
4CG-10-D	20	(omitted)
4CG-10-GE5	20	(omitted)
4CG-10-D-GE5	20	S2

Specifications

Model	Size	Max. Wkg. Pressure MPa	Rated Flow L/min	Cracking Pressure MPa	Weight kg
4CG-03	03	21	50		3.5
4CG-06	06		125		7.0
4CG-10	10		315		12

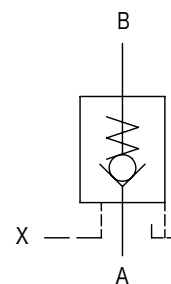
Performance Curves (at 20 mm²/s)

Pressure Drop Characteristics (free flow direction, cracking pressure 0.21 MPa)



Pilot Pressure

Pilot pressure (for decompression type, pressure to actuate the small poppet) necessary to open valve and allow flow from B to A can be calculated from the following:

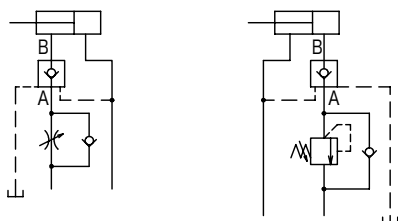


P_X : pilot pressure
 P_A : A side pressure
 P_B : B side pressure
 P_C : cracking pressure

Model	Formula
4CG-03	$P_X > 0.28 (P_B + P_C) + 0.72 P_A$
4CG-03-D	$P_X > 0.03 P_B + 0.97 P_A + 0.28 P_C$
4CG-03-GE5	$P_X > 0.28 (P_B + P_C) - 0.03 P_A$
4CG-03-D-GE5	$P_X > 0.03 P_B + 0.22 P_A + 0.28 P_C$
4CG-06	$P_X > 0.29 (P_B + P_C) + 0.71 P_A$
4CG-06-D	$P_X > 0.02 P_B + 0.98 P_A + 0.29 P_C$
4CG-06-GE5	$P_X > 0.29 (P_B + P_C) - 0.04 P_A$
4CG-06-D-GE5	$P_X > 0.02 P_B + 0.23 P_A + 0.29 P_C$
4CG-10	$P_X > 0.39 (P_B + P_C) + 0.61 P_A$
4CG-10-D	$P_X > 0.01 P_B + 0.99 P_A + 0.39 P_C$
4CG-10-GE5	$P_X > 0.39 (P_B + P_C) - 0.14 P_A$
4CG-10-D-GE5	$P_X > 0.01 P_B + 0.24 P_A + 0.39 P_C$

Notes on Use

- In case of back pressure in A port caused by counterbalance valve or flow control valve, high pilot pressure will be necessary to open the valve. If the



high pilot pressure P_X as calculated from the equation cannot be achieved, use external drain type.

- Sudden opening of actuator line pressure may result in shock. In this case use decompression type valve where the small poppet opens before the main valve to bleed B port pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

Valve Model	Hex Socket Bolts		Qty
	Unified	Metric	
4CG-03	M10 × 70	3/8-16UNC × 69.8	4
4CG-06	M10 × 85	3/8-16UNC × 82.5	4
4CG-10	M10 × 110	3/8-16UNC × 107.9	6

- Order mounting bolts separately.
- Mounting bolt tightening torque:
4CG-03/06/10: 54~66Nm

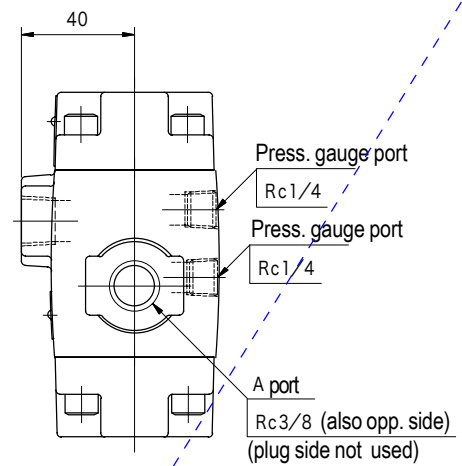
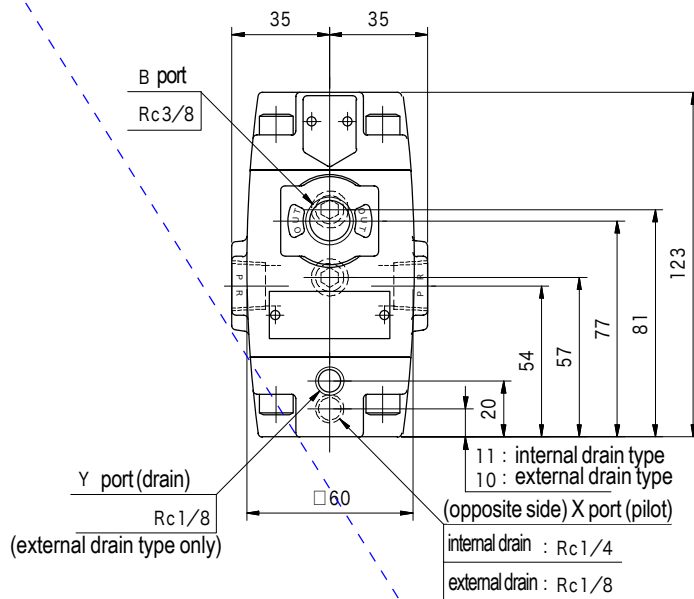
Subplate

Valve Model	Subplate	Connection Port Dia. Rc
4CG-03	RXGM-03-20-JA-J	3/8
	RXGM-03X-20-JA-J	1/2
4CG-06	RXGM-06-20-JA-J	3/4
	RXGM-06X-20-JA-J	1
4CG-10	RXGM-10-20-JA-J	1-1/4
	RXGM-10X-20-JA-J	1-1/2

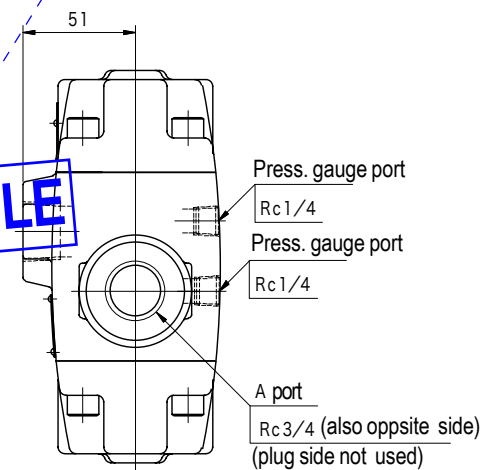
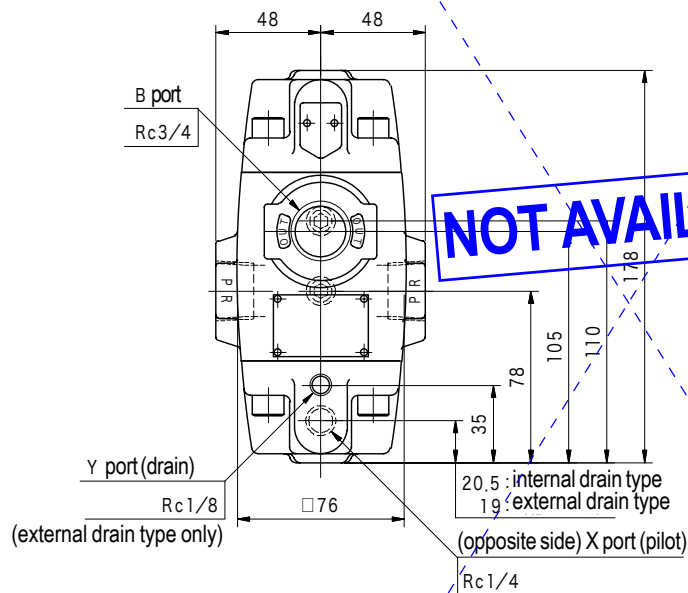
- Subplate must be ordered separately.
- Hex socket bolts are included (unified thread).
- See page Q4 for dimensions.

Dimensions

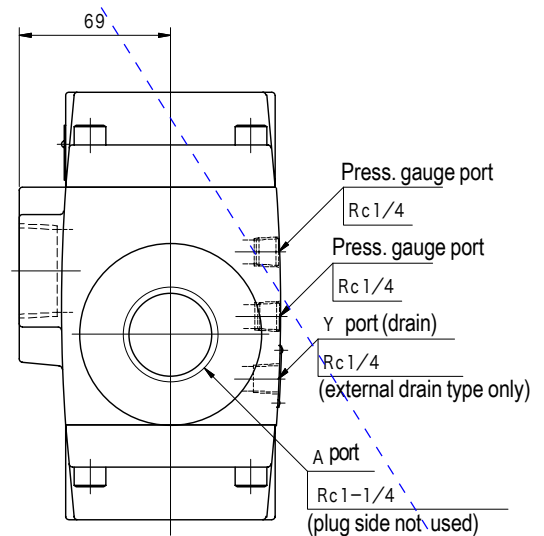
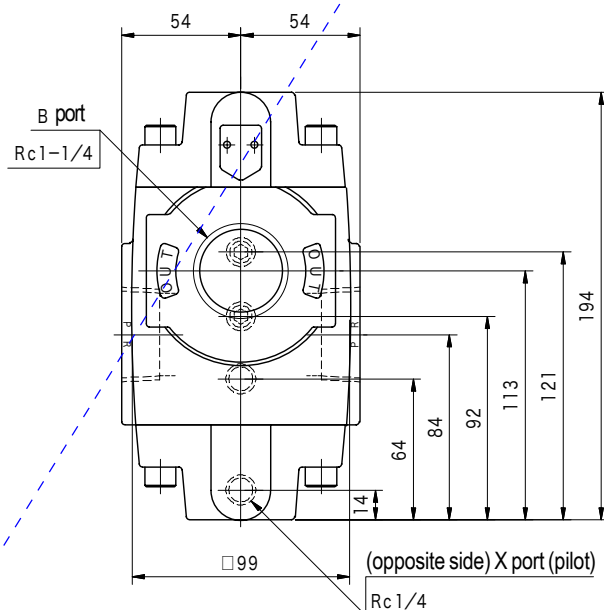
4CT-03



4CT-06

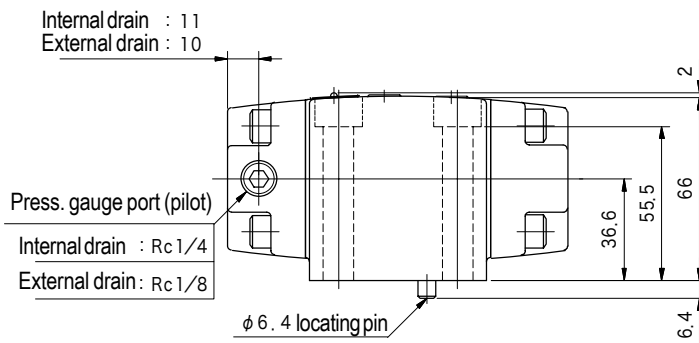
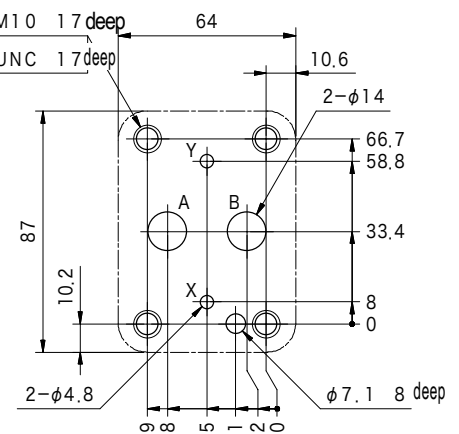


4CT-10

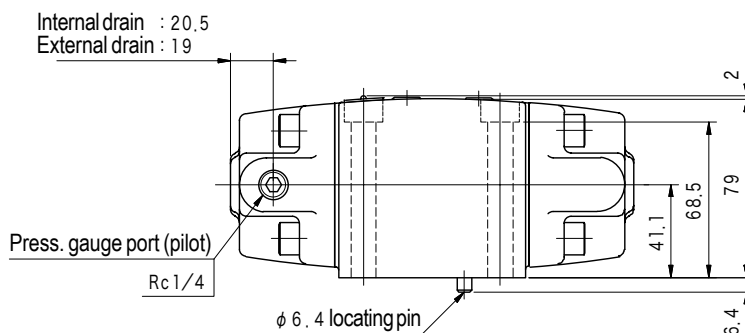
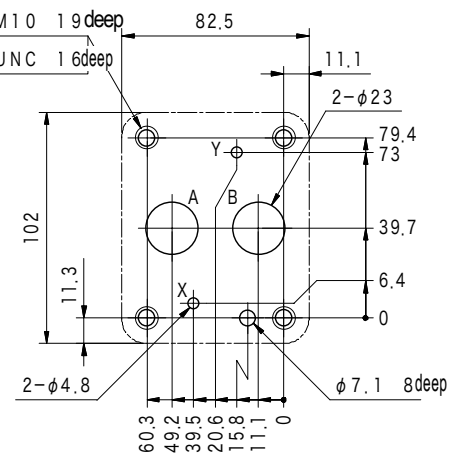


CHECK VALVES

Mounting Dimensions (ISO 5781-06-A)

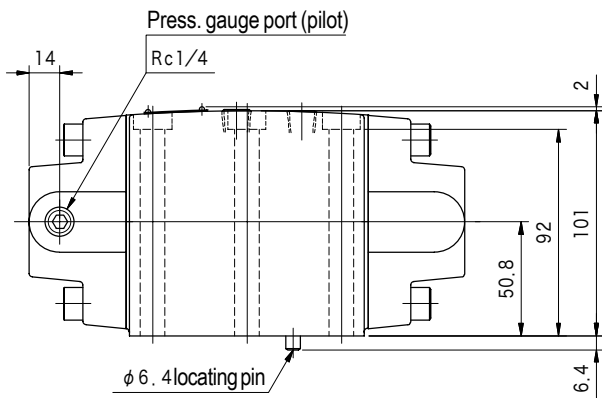
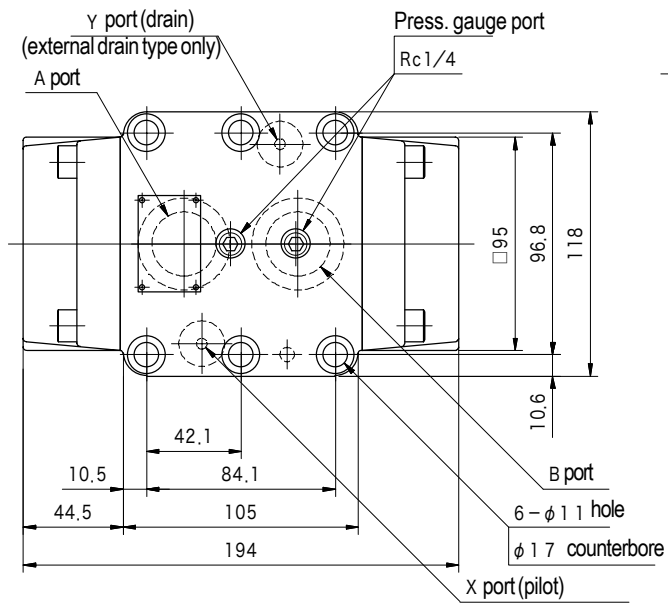


Mounting Dimensions (ISO 5781-08-A)

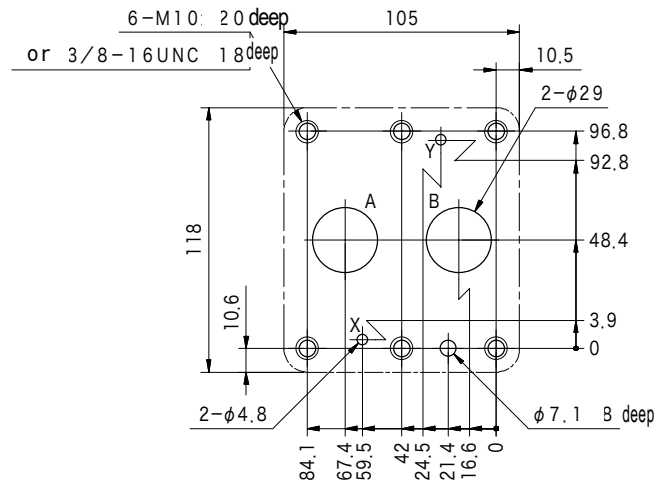


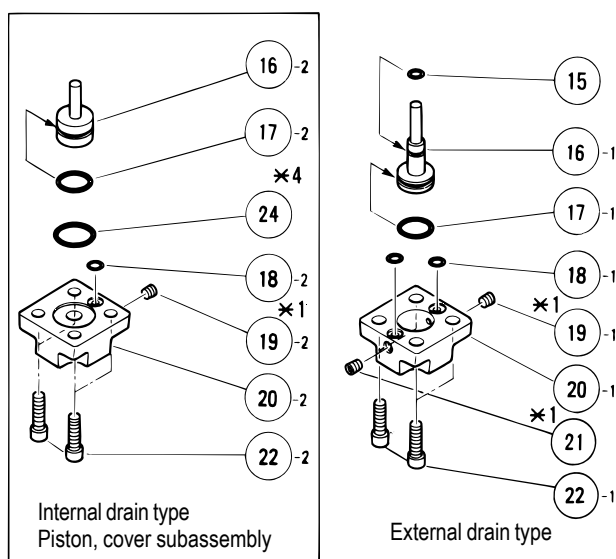
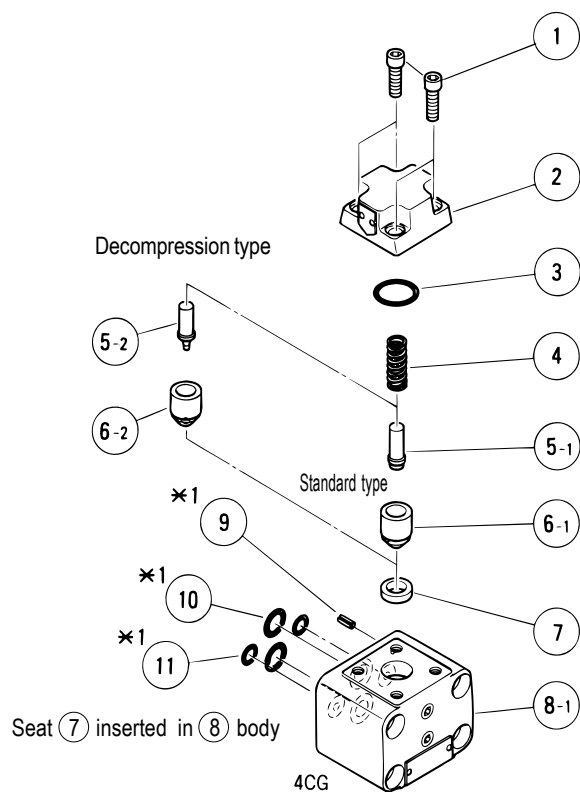
Dimensions

4CG-10



Mounting Dimensions (ISO 5781-10-A)





- * 1 ⑨~⑪⑲⑳ not used in 4CT.
- * 3 ㉓ also used with 4CG-10.
- * 4 ㉔ also used in 4CG/T-03/06/10 external drain type.

O-Rings 4CG/T-03

No.	Part No.	Standard	Quantity	
			Int. Dr.	Ext. Dr.
3	007912117	AS568-121 (NBR, Hs70)	1	1
10	007911517	AS568-115 (NBR, Hs70)	2	2
11	007911117	AS568-111 (NBR, Hs70)	1	2
17	007902017	AS568-020 (NBR, Hs70)	1	—
18	007901017	AS568-010 (NBR, Hs70)	1	2
24	007902417	AS568-024 (NBR, Hs70)	1	1

Note: last digit of O-ring part nos. for external drain type is "9" (Hs90).
For external drain 4CT, O-ring (18) is 1pc.

4CG/T-06

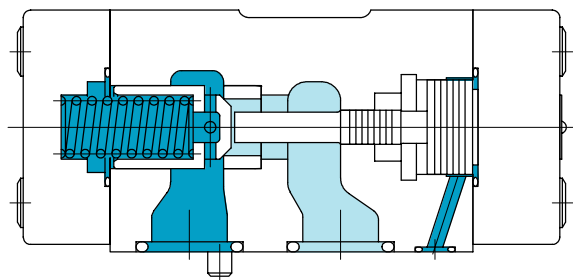
No.	Part No.	Standard	Quantity	
			Int. Dr.	Ext. Dr.
3	007912517	AS568-125 (NBR, Hs70)	1	1
10	007921617	AS568-216 (NBR, Hs70)	2	2
11	007911417	AS568-114 (NBR, Hs70)	1	2
17	007902417	AS568-024 (NBR, Hs70)	1	—
18	007901117	AS568-011 (NBR, Hs70)	1	2
24	007902817	AS568-028 (NBR, Hs70)	1	1

Note: last digit of O-ring part nos. for external drain type is "9" (Hs90).
For external drain 4CT, O-ring (18) is 1pc.

4CG/T-10

No.	Part No.	Standard	Quantity	
			Int. Dr.	Ext. Dr.
3	007922317	AS568-223 (NBR, Hs70)	1	1
10	007922017	AS568-220 (NBR, Hs70)	2	2
11	007911417	AS568-114 (NBR, Hs70)	1	2
15	007911317	AS568-113 (NBR, Hs70)	—	1
17	007921817	AS568-218 (NBR, Hs70)	1	1
18	007901517	AS568-015 (NBR, Hs70)	1	1
24	007922317	AS568-223 (NBR, Hs70)	1	1

Pilot operated check valves THPCG

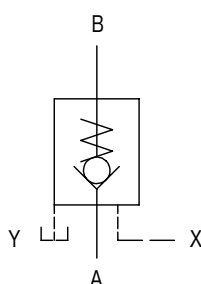


- Valve can function to provide free flow in one direction and also flow in reverse direction with external pilot pressure.

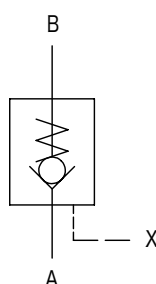
F
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CHECK VALVES

Functional Symbols



External Drain Type



Internal Drain Type

Model Code

(F3) - THPCG - 06 - C -(E) - 10

1 2 3 4 5 6

- 1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester
- 2 Pilot operated check
- 3 Size
See 'Specifications'

- 4 Cracking pressure
See 'Specifications'
- 5 Drain
Omitted: internal drain
E: external drain
- 6 Design no.

Specifications

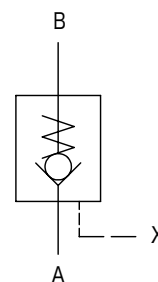
Model	Size	Max. Wkg. Pressure MPa	Rated Flow L/min	Weight kg
THPCG-03	03	35	50	1.6
THPCG-06	06		140	3.6

Code	A	C	F
Cracking Pressure MPa	0.21	0.52	1.02

Pilot pressure

Pilot pressure necessary to open valve and allow flow from B to A can be calculated from the following:

P_x : pilot pressure
 P_A : A side pressure
 P_B : B side pressure
 P_C : cracking pressure

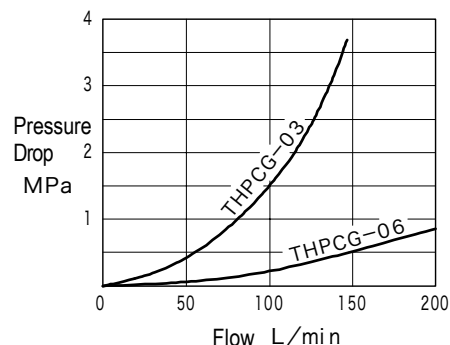
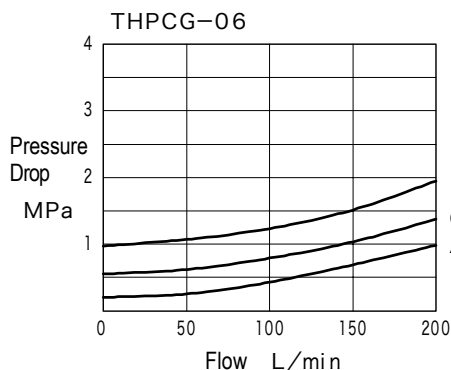
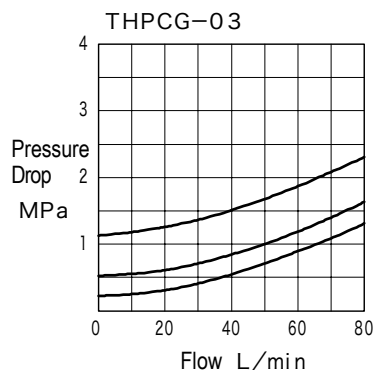


Model	Formula
THPCG-03	$P_x > 0.36 (P_B + P_C) + 0.64 P_A$
THPCG-03-E	$P_x > 0.36 (P_B + P_C) - 0.18 P_A$
THPCG-06	$P_x > 0.36 (P_B + P_C) + 0.64 P_A$
THPCG-06-E	$P_x > 0.36 (P_B + P_C) - 0.23 P_A$

Performance Curves (at 20 mm²/s)

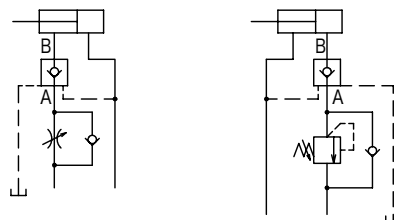
Pressure Drop Characteristics (free flow)

Pressure Drop Characteristics (pilot operation)



Notes on Use

- In case of back pressure in A port caused by counterbalance valve or flow control valve, high pilot pressure will be necessary to open the valve. If the high pilot pressure P_x as calculated from the equation cannot be achieved, use external drain type.



Mounting Bolts (JIS B1176, Strength Class 12.9)

Model	Mounting Bolts	Quantity
THPCG-03	M8 × 40	4
THPCG-06	M10 × 45	4

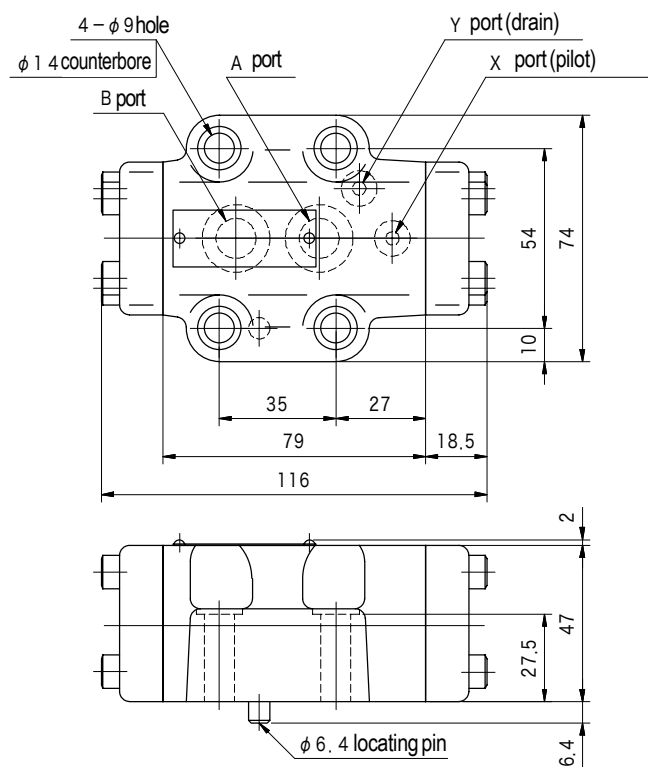
- Order mounting bolts separately.
- Mounting bolt tightening torque:
THPCG-03: 27~33Nm
THPCG-06: 54~66Nm

Subplate

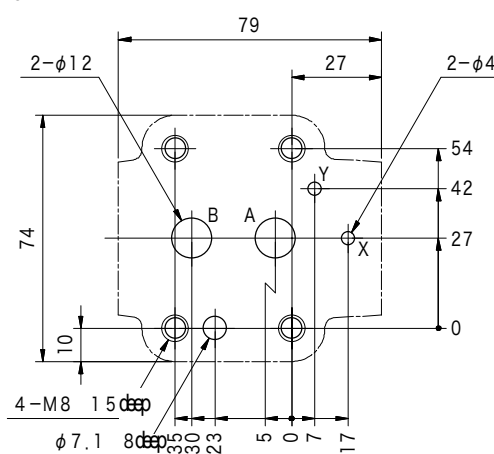
- Manifold block mounting (subplate not available).

Dimensions

THPCG-03

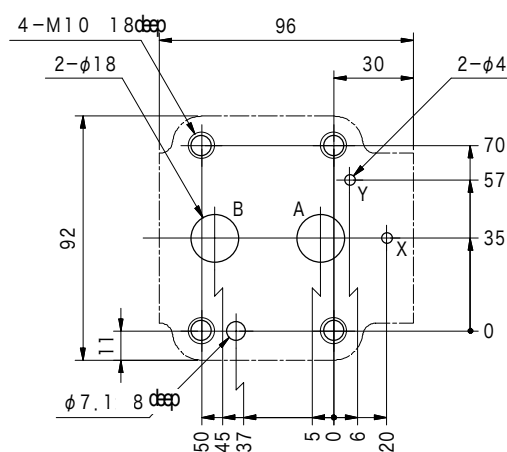
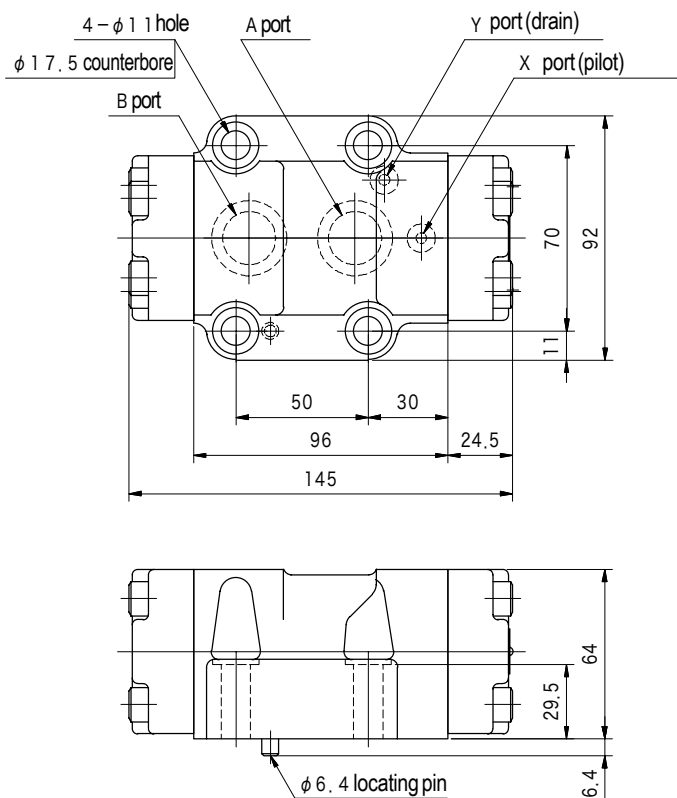


Mounting Dimensions



Dimensions

THPCG-06



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CHECK VALVES

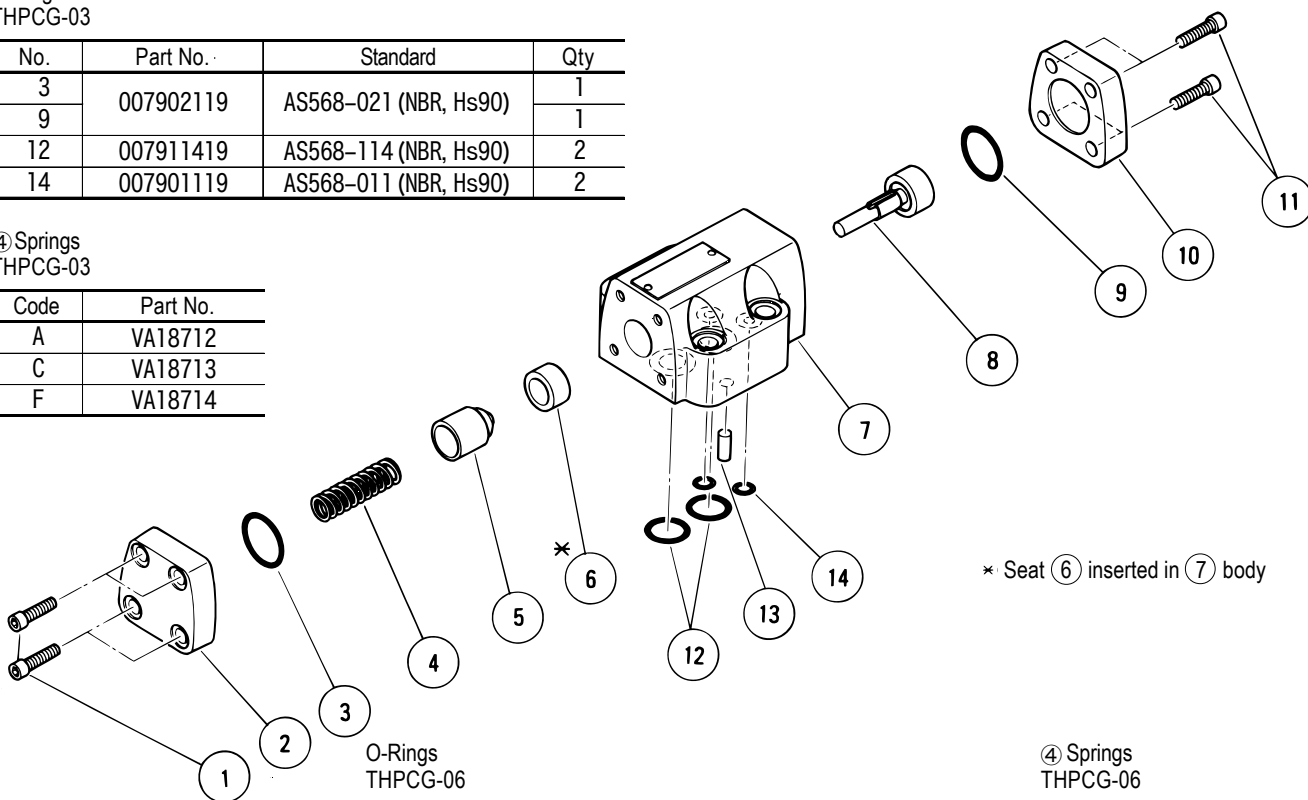
Construction

O-Rings
THPCG-03

No.	Part No.	Standard	Qty
3	007902119	AS568-021 (NBR, Hs90)	1
9			1
12	007911419	AS568-114 (NBR, Hs90)	2
14	007901119	AS568-011 (NBR, Hs90)	2

④ Springs
THPCG-03

Code	Part No.
A	VA18712
C	VA18713
F	VA18714



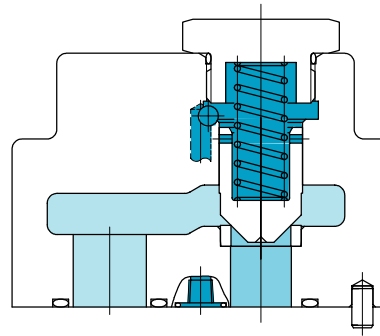
O-Rings
THPCG-06

No.	Part No.	Standard	Qty
3	007902419	AS568-024 (NBR, Hs90)	1
9			1
12	007921219	AS568-212 (NBR, Hs90)	2
14	007901119	AS568-011 (NBR, Hs90)	2

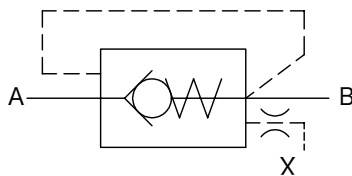
④ Springs
THPCG-06

Code	Part No.
A	VA18723
C	VA18724
F	VA18725

Pilot operated check valves C2PG/C5PG



Functional Symbols



- Normal free flow in both directions. External pilot pressure to close flow in both directions.

Model Code

(F3) - C5PG - 815 - (S3) - 10 - (S1)

1 2 3 4 5 6

- | | |
|--|---|
| <p>1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester</p> <p>2 Pilot operated check</p> <p>3 Size
See 'Specifications'</p> <p>4 Cracking pressure
See 'Specifications'</p> | <p>5 Design no.
10: C5PG-815, C5PG-825
11: C2PG-805</p> <p>6 Special feature
S1: O-ring seal against pilot pressure internal leakage
S5: notched poppet to reduce shock
(cracking pressure 0.035 MPa, 0.35 MPa)
(excluding C2PG-805)</p> |
|--|---|

Specifications

Model	Size	Max. Wkg. Pressure MPa	Rated Flow L/min	Weight kg
C2PG-805	03	21	40	1.5
C5PG-815	06		80	4.5
C5PG-825	10		380	8.6

Code	Omitted (Std)	S19	S2	S3	S8	S17	S34	S22
Cracking Pressure MPa	0.035	0.14	0.25	0.35	0.53	0.88	1.05	No spring

- Cracking pressure value indicated is from A to B, free flow. For cracking pressure from B to A, multiply values in the table by the coefficient in the table at right.

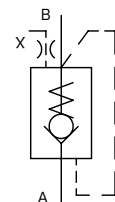
Model	Coefficient
C2PG-805	1.1
C5PG-815	1.1
C5PG-825	1.3

- Cracking pressure for C2PG-805 per Omitted code and S3 only.

Pressure Required to Open and Close Valve

- Pilot pressure necessary to open valve and allow flow from B to A can be calculated from the following:

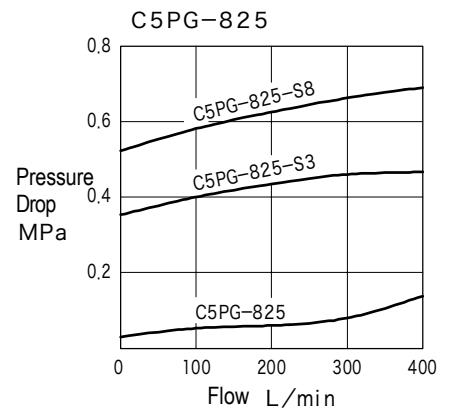
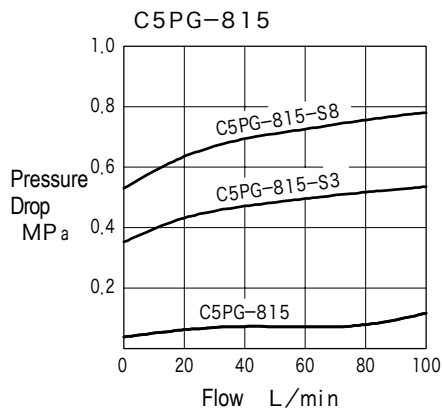
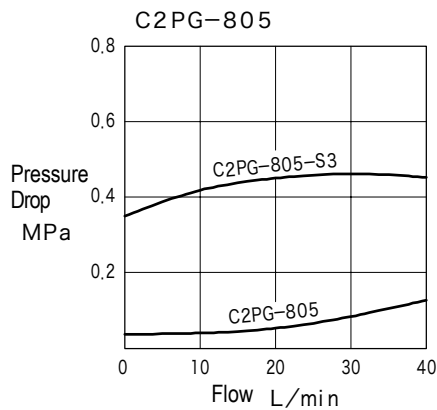
P_X : pilot pressure
 P_A : A side pressure
 P_B : B side pressure
 P_C : cracking pressure



C2PG-805	Req'd pressure to open (A→B)	$P_A > 1.89 P_X - 0.89 P_B + P_C$
	Req'd pressure to open (B→A)	$P_B > 2.13 P_X + 1.13 (P_C - P_A)$
	Req'd pressure to close	$P_X > 0.53 (P_A - P_C) + 0.47 P_B$
C5PG-815	Req'd pressure to open (A→B)	$P_A > 1.93 P_X - 0.93 P_B + P_C$
	Req'd pressure to open (B→A)	$P_B > 2.07 P_X + 1.07 (P_C - P_A)$
	Req'd pressure to close	$P_X > 0.52 (P_A - P_C) + 0.48 P_B$
C5PG-825	Req'd pressure to open (A→B)	$P_A > 1.77 P_X - 0.77 P_B + P_C$
	Req'd pressure to open (B→A)	$P_B > 2.29 P_X + 1.29 (P_C - P_A)$
	Req'd pressure to close	$P_X > 0.56 (P_A - P_C) + 0.44 P_B$

Performance Curves (at 20 mm²/s)

Pressure Drop Characteristics



Notes on Use

- S22 (no spring) type should be mounted horizontally with gasket surface down.
- When pilot pressure closes the valve, be careful as pilot pressure will leak to B port. If B port pressure is low because of such leakage, pilot pressure will fall and the closed A to B position may be unstable. If no leakage is necessary, use special suffix "S1" type.

Mounting Bolts (JIS B1176, Strength Class 12.9)

Model	Hex Socket Bolts		Qty
	Metric	Unified	
C2PG-805	M8 × 40	5/16-18UNC × 38.1	4
C5PG-815	M16 × 60	5/8-11UNC × 57.1	4
C5PG-825	M20 × 100	3/4-10UNC × 101.6	4

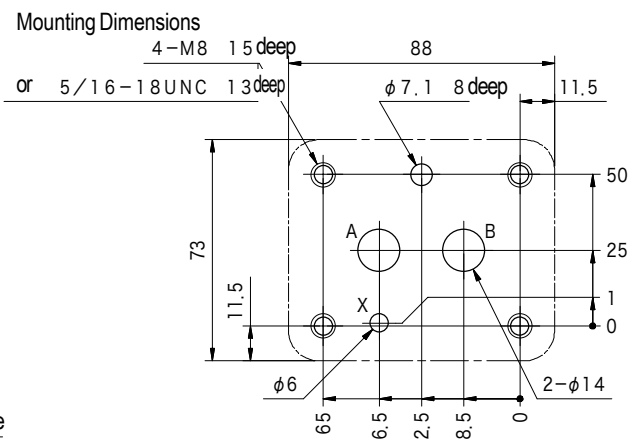
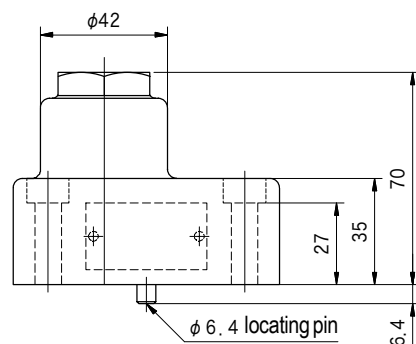
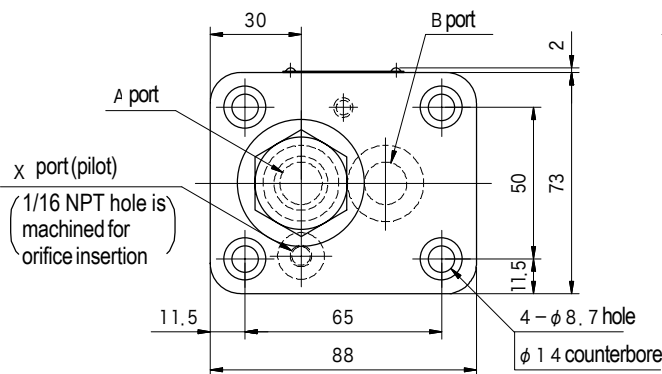
- Order mounting bolts separately.
- Mounting bolt tightening torque:
C2PG-805: 27~33 Nm
C2PG-815: 90~110 Nm
C5PG-825: 180~220 Nm

Subplate

- Manifold block mounting (subplate not available).

Dimensions

C2PG-805

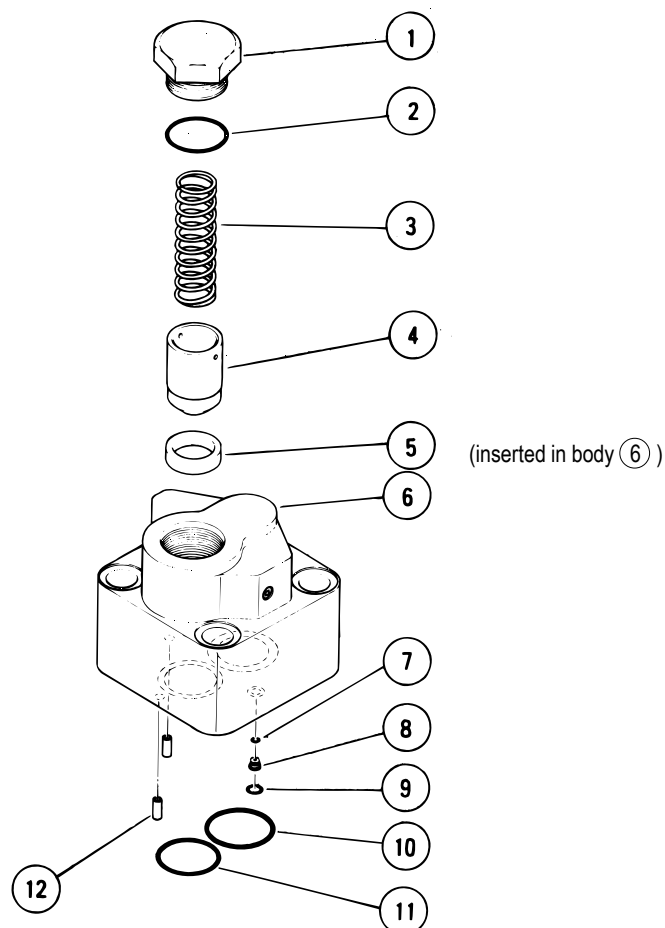


F
25

CHECK VALVES

**F
26**

or



③ Springs
C2PG-805

Code	Part No.
Omitted	VA23287
S3	VA28602

C5PG-815

Code	Part No.
Omitted	VP2943
S2	VA10075
S3	VP25896
S8	VP32999
S17	VP84235
S19	VP2287
S34	VA10716

C5PG-825

Code	Part No.
Omitted	VP2284
S2	VP2953
S3	VP29059
S8	VP39778
S17	VA13278
S19	VP106669
S34	VA10008

O-Rings
C2PG-805

No.	Part No.	Standard	Qty
2	007991019	AS568-910 (NBR, Hs90)	1
9	007901419	AS568-014 (NBR, Hs90)	1
10	007911519	AS568-115 (NBR, Hs90)	1
11	007911719	AS568-117 (NBR, Hs90)	1

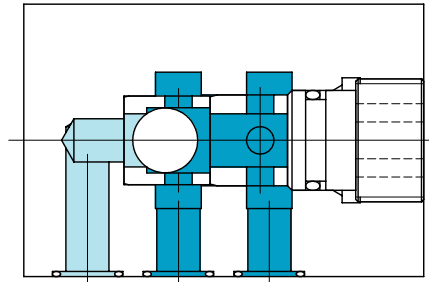
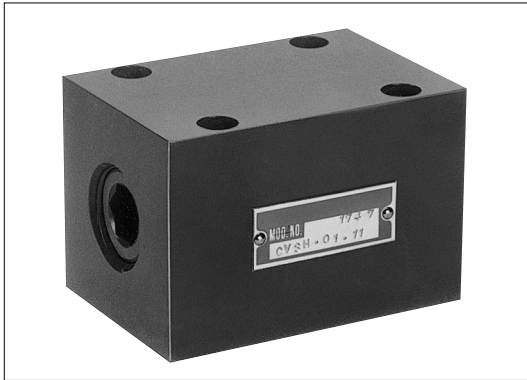
C5PG-825

No.	Part No.	Standard	Qty
2	007992019	AS568-920 (NBR, Hs90)	1
7	40031170	— (NBR, Hs70)	1
9	007901219	AS568-012 (NBR, Hs90)	1
10	007922319	AS568-223 (NBR, Hs90)	1
11	007922219	AS568-222 (NBR, Hs90)	1

C5PG-815

No.	Part No.	Standard	Qty
2	007991619	AS568-916 (NBR, Hs90)	1
9	007901219	AS568-012 (NBR, Hs90)	1
10	007921619	AS568-216 (NBR, Hs90)	1
11	007921619	AS568-216 (NBR, Hs90)	1

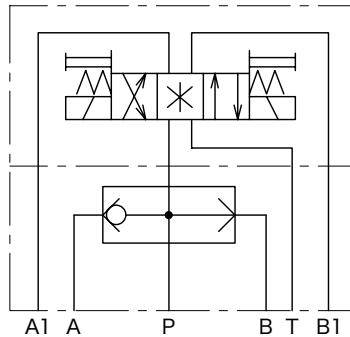
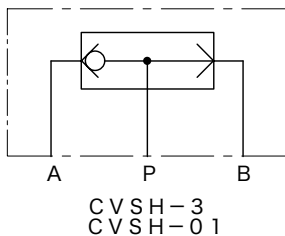
Shuttle valves CVSH



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CHECK VALVES

Functional Symbols



Solenoid directional valve
DG4V-3

CVSH-MD

- Pressure from the higher of A port or B port will be directed to P port.
- Used if constant pilot pressure must be maintained.

Model Code

CVSH-3-10

1 2 3

- 1 Shuttle valve
- 2 Size
3: 1/4
01: 3/8
MD: 1/4 (solenoid valve stack module)
- 3 Design no.

Mounting Bolts (JIS B1176, Strength Class 12.9)

Valve Model	Hex Socket Bolts	Qty
CVSH-3	M5 × 50	4
CVSH-01	M6 × 60	4

- Order mounting bolts separately.
- Mounting bolt tightening torque:
CVSH-3: 7~8 Nm
CVSH-01: 12~15Nm

Specifications

Model	Max. Wkg. Pressure MPa	Rated Flow L/min	Weight kg
CVSH-3-10	21	10	0.8
CVSH-01-11	21	50	2.1
CVSH-MD-11	21	10	1.5

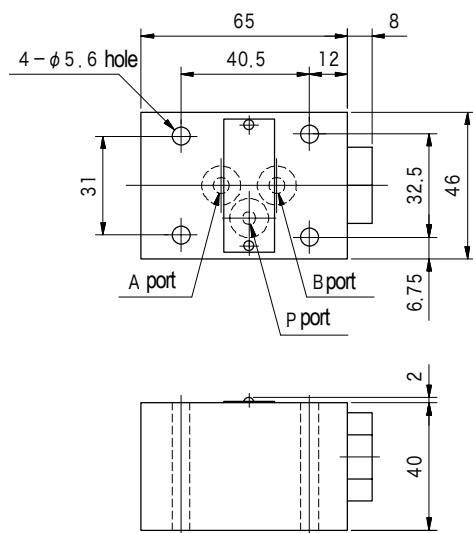
Subplate

Valve Model	Subplate		Connection Port Dia. Rc
CVSH-3	Side Piping	DGMS-3-1E-10-T-JA-J	3/8
	Bottom Piping	DGVM-3-10-T-JA-J	

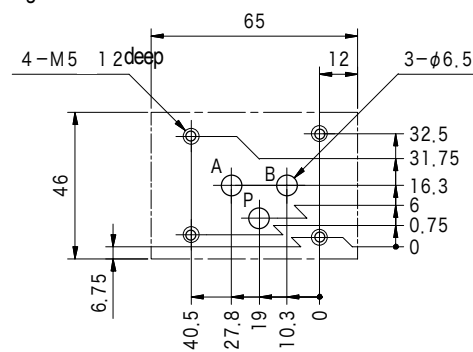
- Subplate must be ordered separately.
- See page Q8 for dimensions.

Dimensions

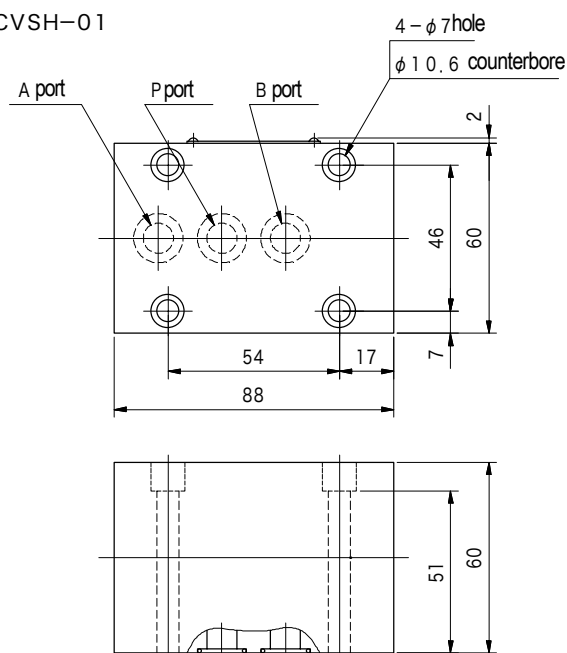
CVSH-3



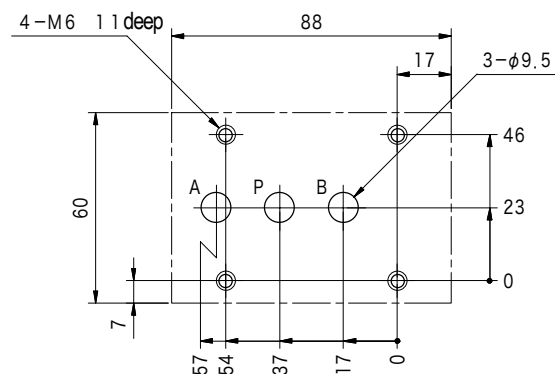
Mounting Dimensions (ISO 4401-03)



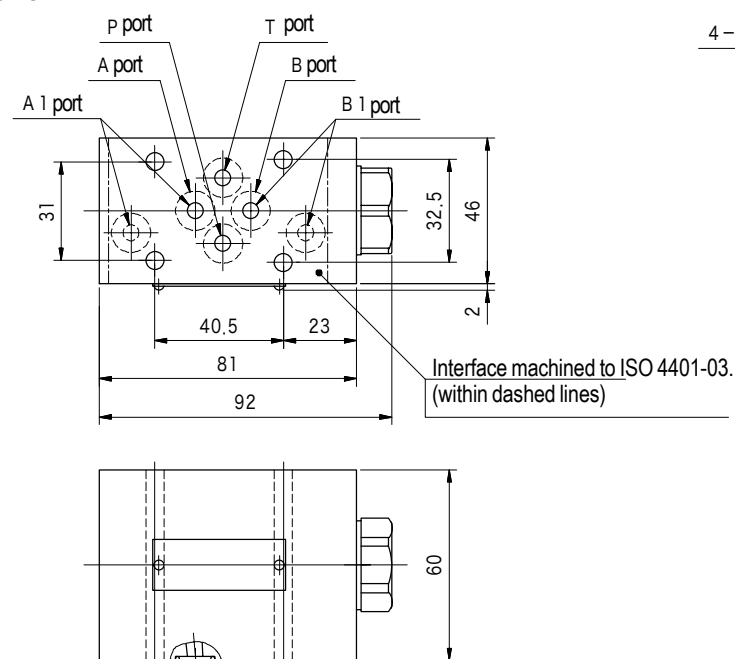
CVSH-01



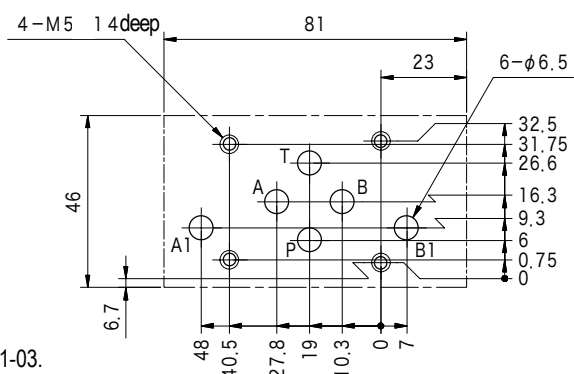
Mounting Dimensions



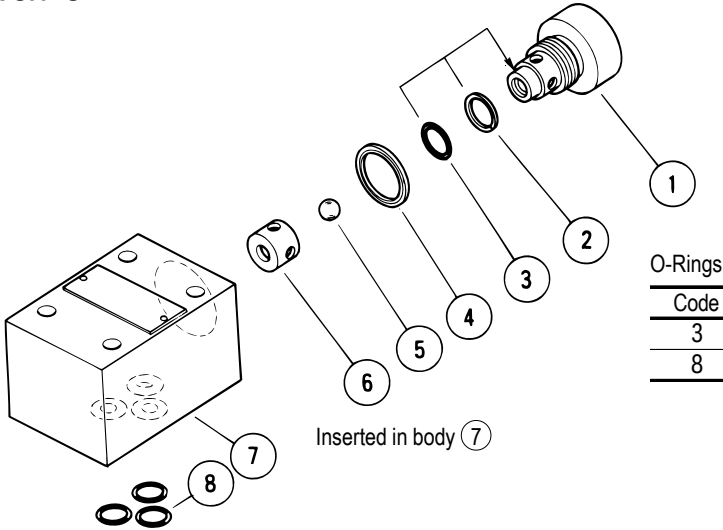
CVSH-MD



Mounting Dimensions



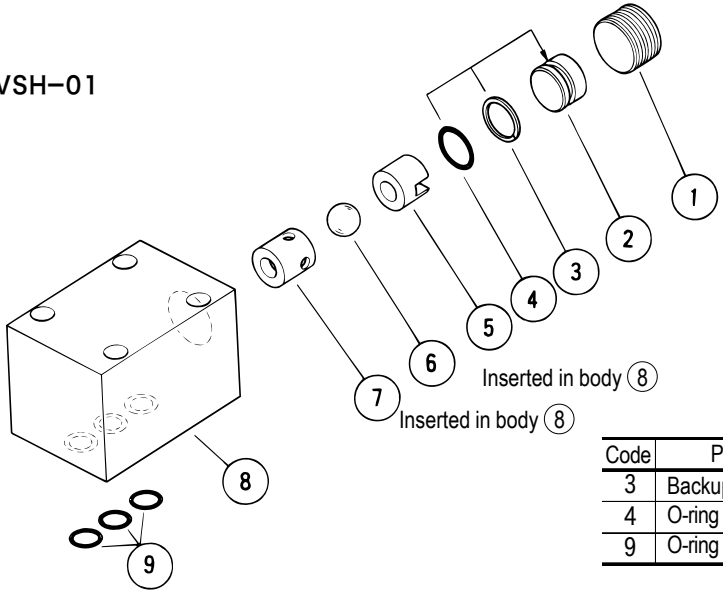
CVSH-3



O-Rings

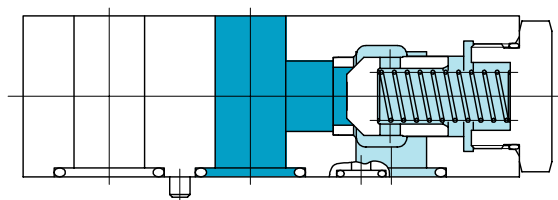
Code	Part No.	Standard	Qty
3	007901319	AS568-013 (NBR, Hs90)	1
8	007901219	AS568-012 (NBR, Hs90)	3

CVSH-01



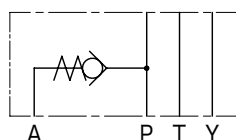
Code	Part Name	Part No.	Standard	Qty
3	Backup ring	008101702	JIS B 2407 T2-P18	1
4	O-ring	008001717	JIS B 2401 1A-P18	1
9	O-ring	007901417	AS568-014 (NBR, Hs70)	3

Check valve modules (for relief valves)URMC



- Used with relief valve to prevent reverse flow at pump start up.

Functional Symbol



Model Code

(F3) - URMC - 03 - 10 - S1

1 2 3 4 5

- 1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester
- 2 Modular check valve(for relief valve)
- 3 Size
See 'Specifications'
- 4 Design no.
10: URMC-03,10
11: URMC-06
- 5 Cracking pressure
See 'Specifications'

Specifications

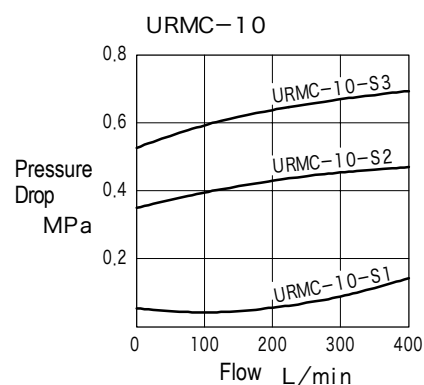
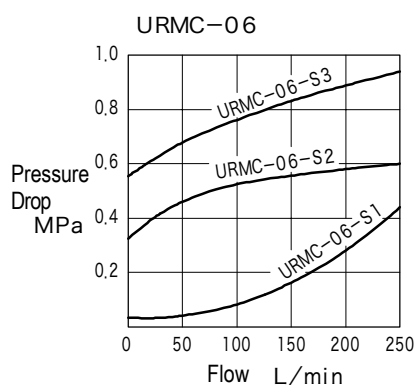
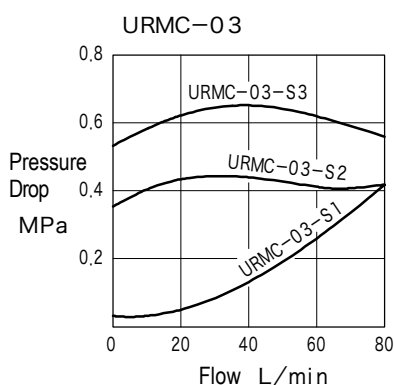
Model	Size	Max. Wkg. Pressure MPa	Rated Flow L/min	Weight kg
URMC-03	03	21	40	4.0
URMC-06	06		100	5.9
URMC-10	10		250	11

Code	S1 (Note)	S2	S3	S4
Cracking Pressure MPa	0.035	0.35	0.53	0.88

Note: URMC-10-10-S cracking pressure is 0.05 MPa.

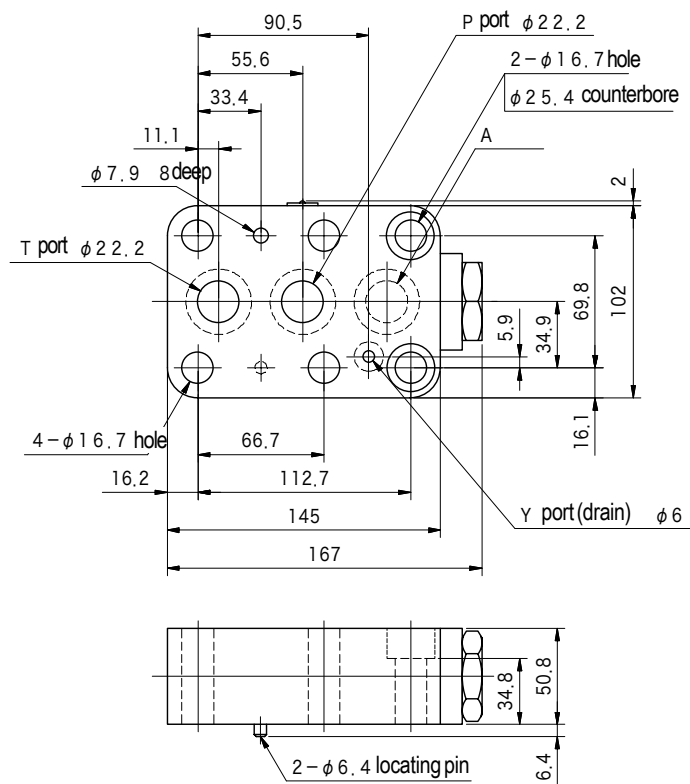
Performance Curves (at 20 mm²/s)

Pressure Drop Characteristics

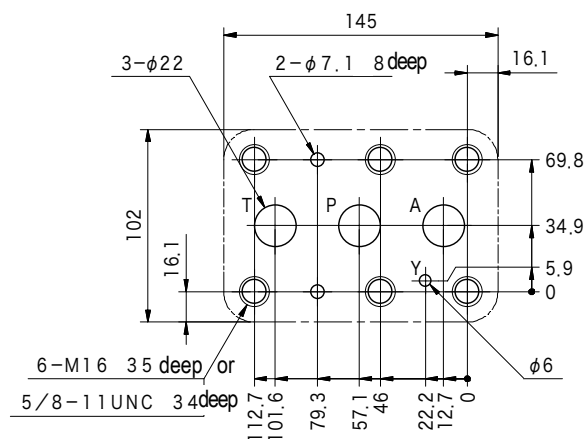


Dimensions

URMC-06



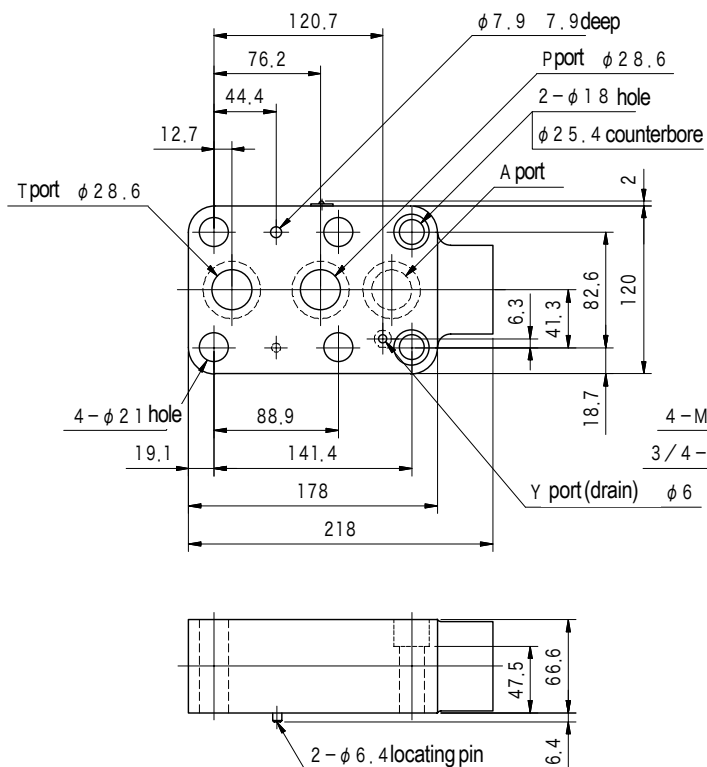
Mounting Dimensions



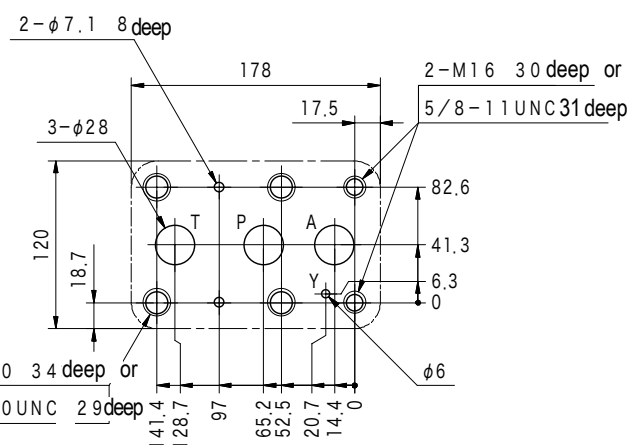
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33

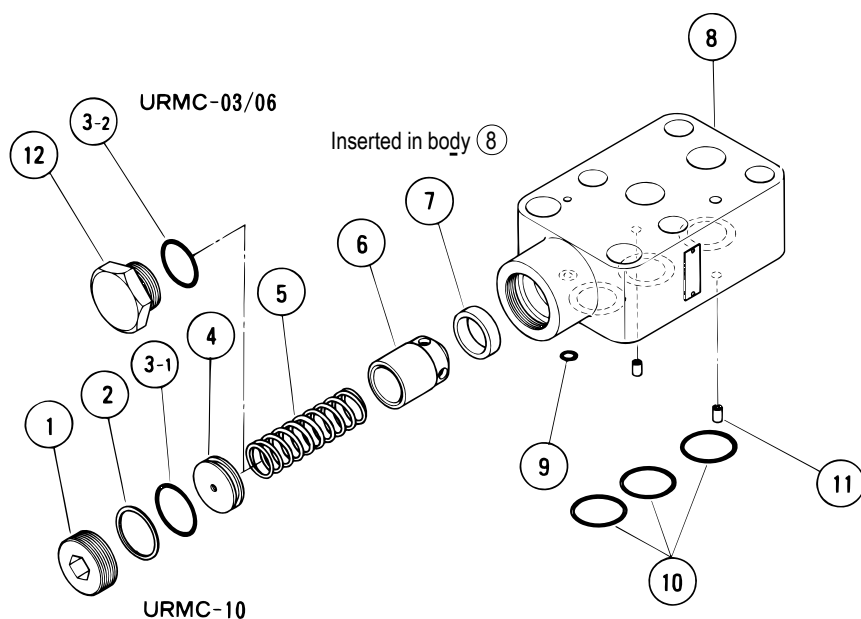
CHECK VALVES

URMC-10



Mounting Dimensions





⑤ Springs
URMC-03

Code	Part No.
S1	VP2978
S2	VP35298
S3	VP55233
S4	VP112407

URMC-06

Code	Part No.
S1	VP2943
S2	VP25896
S3	VP32999
S4	VP84235

URMC-10

Code	Part No.
S1	VP2284
S3	40022109
S4	40014039

O-Rings
URMC-03

No.	Part No.	Standard	Qty
3	007991019	AS568-910 (NBR, Hs90)	1
9	007901119	AS568-011 (NBR, Hs90)	1
10	007911519	AS568-115 (NBR, Hs90)	3

Backup Ring
URMC-10

No.	Part No.	Standard	Qty
2	48197637	MS28774-220	1

URMC-06

No.	Part No.	Standard	Qty
3	007991619	AS568-916 (NBR, Hs90)	1
9	007911119	AS568-111 (NBR, Hs90)	1
10	007921619	AS568-216 (NBR, Hs90)	3

URMC-10

No.	Part No.	Standard	Qty
3	007922017	AS568-220 (NBR, Hs70)	1
9	007901219	AS568-012 (NBR, Hs90)	1
10	007922019	AS568-220 (NBR, Hs90)	3

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06

Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
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Красноярск (391)204-63-61
Курск (4712)77-13-04
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Магнитогорск (3519)55-03-13
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Набережные Челны (8552)20-53-41
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Орел (4862)44-53-42
Оренбург (3532)37-68-04
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Казахстан (772)734-952-31

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
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Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
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Смоленск (4812)29-41-54
Сочи (862)225-72-31
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Тюмень (3452)66-21-18
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Уфа (347)229-48-12
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