

PRESSURE CONTROL VALVES

Valve Type	Maximum Operating Pressure MPa (PSI)	Maximum Flow		Catalogue No.
		U.S.GPM	L/min	
Remote Control Relief Valves	25 (3630)	DT DG-01		Pub. EC-0201
Direct Type Relief Valves	21 (3050)	DT/DG-02		
Pilot Operated Relief Valves	25 (3630)	BT/BG	03 06 10 16 24	
Low Noise Type Relief Valves	25 (3630)	S-BG	03 06 10	
Solenoid Controlled Relief Valves	25 (3630)	BST/BSG	03 06 10 16	
Low Noise Type Sol. Cont. Relief Valves	25 (3630)	S-BSG	03 06 10	
Brake Valves	25 (3630)	UBGR	03 06 10	—
H/HC Type Pres. Control Valves	21 (3050)	HT · HG/HCT · HCG	03 06 10 16	Pub. EC-0202
Pres. Reducing (& Check) Valves	21 (3050)	RT · RG/RCT · RCG	03 06 10 16	Pub. EC-0203
Pres. Reducing & Relieving Valves	25 (3630)	RBG	03 06	Pub. EC-0204
Unloading Relief Valves	21 (3050)	BUCG	06 10	Pub. EC-0205
Pressure Switches	35 (5080)			Pub. EC-0206

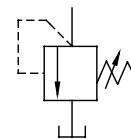
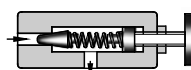
RELIEF VALVES

Remote Control / Direct Type Pilot Operated / Solenoid Controlled

Up to 25 MPa (3630 PSI), 400 L/min (106 U.S.GPM)

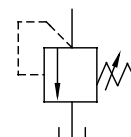
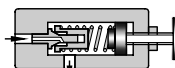
■ Remote Control Relief Valves Page 3

This valve is used as a remote control valve for pilot operated type pressure control valves.



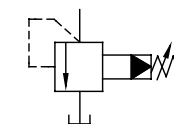
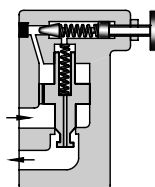
■ Direct Type Relief Valves Page 6

This valve is used in a hydraulic circuit to prevent damage due to over pressure and to adjust the maximum circuit pressure of small capacity.



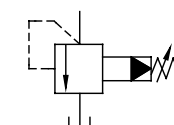
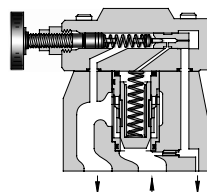
■ Pilot Operated Relief Valves Page 9

These valves protect the hydraulic system from excessive pressure, and can be used to maintain constant pressure in a hydraulic system. Remote control and unloading are permitted by using vent circuits.



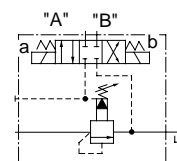
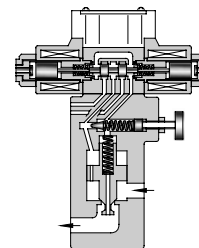
■ Low Noise Type Pilot Operated Relief Valves Page 16

Pilot operated relief valves here have been particularly developed as low-noise types. Able to protect pumps and control valves against excessive pressures, they are used to control the pressure in the hydraulic system to a constant level. Remote control and unloading are permitted by using vent circuits.



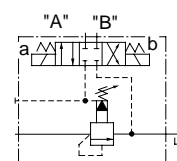
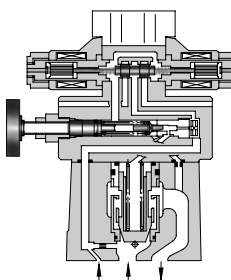
■ Solenoid Controlled Relief Valves Page 20

These valves are a combination of a pilot operated relief valve and a solenoid operated directional valve. Piping between the two is eliminated as the solenoid valve is directly mounted on the relief valve and connected with the relief valve vent. Pump pressure may be unloaded remotely by an electrical signal to the solenoid, or by connecting pilot relief valves to the solenoid valve ports.



■ Low Noise Type Solenoid Controlled Relief Valves Page 31

The low-noise solenoid controlled relief valve is a combination of a low-noise type pilot operated relief valve and a solenoid operated directional valve. It is used for no-load pump operation by using electric signals or, together with a remote control relief valve, for two or three pressure control of the hydraulic system.





CAUTION

When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.

■ Instructions

- To adjust the pressure, loosen the lock nut and turn the handle slowly clockwise for higher pressures or anti-clockwise for lower pressures. After adjustments, do not forget to tighten the lock nut.
- Piping of the tank line should not be connected to any tank line of the other valves, but connected directly to the tank.

■ Hydraulic Fluids

● Fluid Types

Any type of hydraulic fluids listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG 32 or VG 46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

● Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

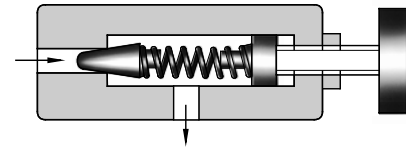
● Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 µm or finer line filter.



Specifications

Model Numbers		Max. Operating Pres. MPa (PSI)	Approx. Mass kg (lbs.)	
Threaded Connection	Sub-plate Mounting		DT type	DG type
DT-01-22*	DG-01-22*	25 (3630)	1.6 (3.5)	1.4 (3.1)



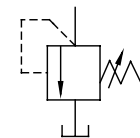
Model Number Designation

F-	D	T	-01	-22	*
Special Seals	Series Number	Type of Mounting	Valve Size	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	D: Remote Control Relief Valves	T: Threaded Connection	01	22	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		G: Sub-plate Mounting		22	None: Japanese Std. "JIS" and European Design Std. 90: N. American Design Std.

Instructions

- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- If the internal volume of the vent line is too large, chattering is likely to occur.

Graphic Symbol



Attachment

Mounting bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
DG-01	M5 × 45 Lg.	No.10-24UNC × 1-3/4 Lg.	4

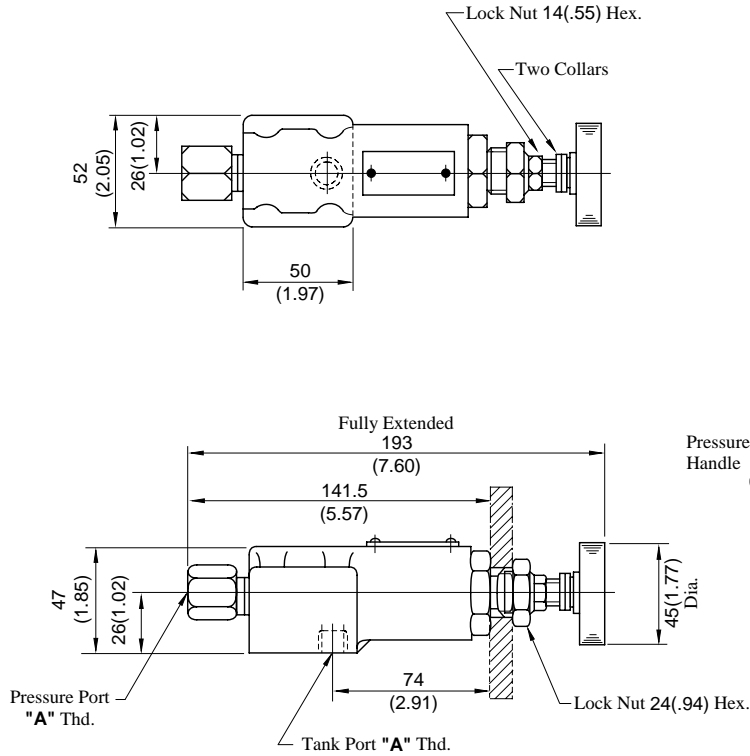
Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
DG-01	DGM-02-20	Rc 1/4	DGM-02-2080	1/4 BSP.F	DGM-02-2090	1/4 NPT	0.7 (1.5)

- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

DT-01-22/2280/2290

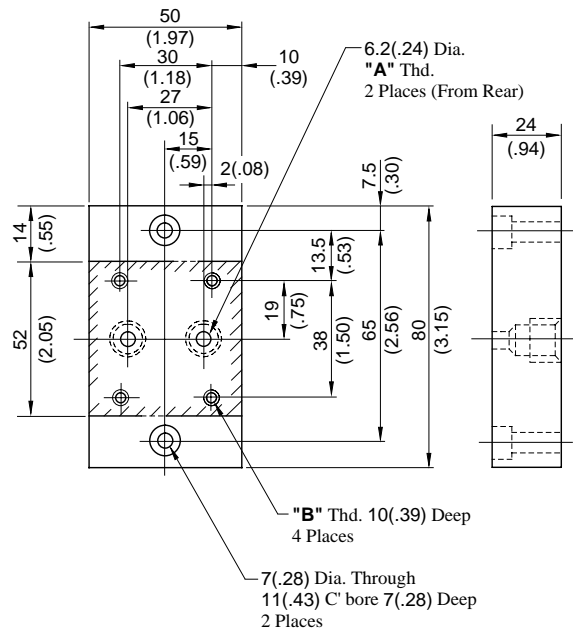
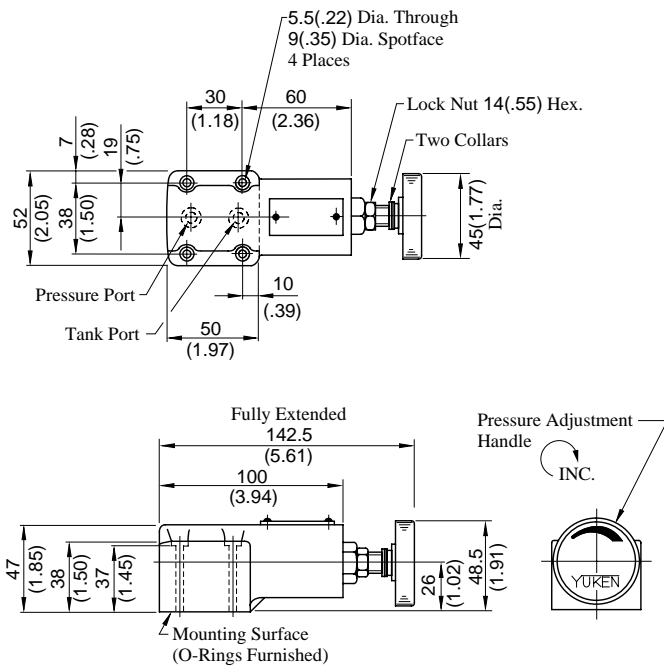
**DIMENSIONS IN
MILLIMETRES (INCHES)**



Model Numbers	"A" Thd.
DT-01-22	Rc 1/4
DT-01-2280	1/4 BSP.F
DT-01-2290	1/4 NPT

DG-01-22/2290

Sub-plate: DGM-02-20/2080/2090

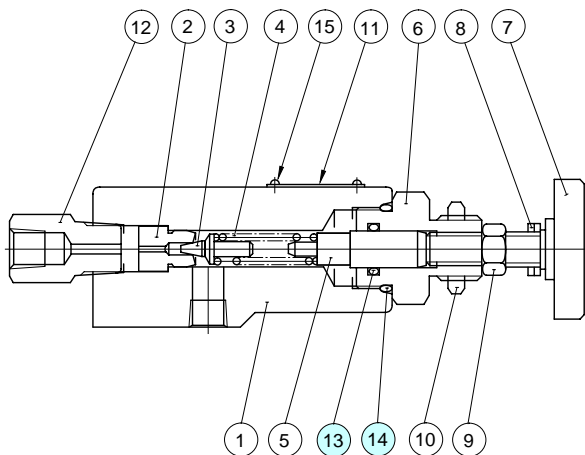


Model Numbers	"A" Thd.	"B" Thd.
DGM-02-20	Rc 1/4	M5
DGM-02-2080	1/4 BSP.F	
DGM-02-2090	1/4 NPT	No. 10-24 UNC

⚠ CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

DT-01-22/2280/2290



● List of Seals

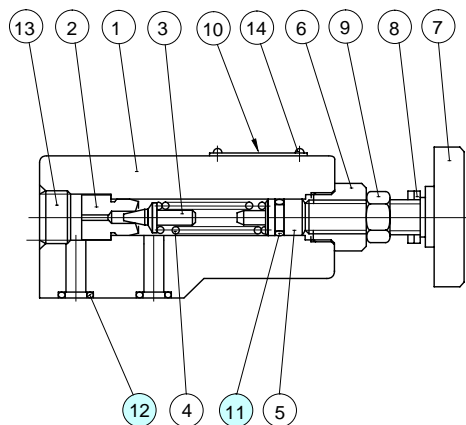
Item	Name of Parts	Parts Numbers	Qty.
13	O-Ring	SO-NA-P12	1
14	O-Ring	SO-NB-P22.4	1

Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
DT-01	KS-DT-01-22
DG-01	KS-DG-01-22

DG-01-22/2290



● List of Seals

Item	Name of Parts	Parts Numbers	Qty.
11	O-Ring	SO-NA-P9	1
12	O-Ring	SO-NB-P9	2

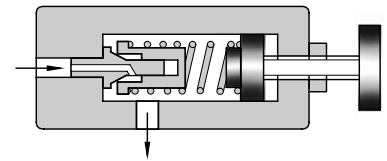
Note: When ordering the seals, please specify the seal kit number from the table below.



Specifications

Model Numbers		Max. Operating Pressure MPa (PSI)	Pres. Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)	
Threaded Connections	Sub-plate Mounting				DT type	DG type
DT-02-*-22*	DG-02-*-22*	21 (3050)	Note)	16 (4.22)	1.5 (3.3)	1.5 (3.3)

Note: Refer to the Model Number Designation.

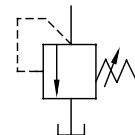


Model Number Designation

F-	D	T	-02	-B	-22	*
Special Seals	Series Number	Type of Mounting	Valve Size	Pres. Adj. Range MPa (PSI)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	D: Direct Type Relief Valves	T: Threaded Connection	02	B: ★-7 (★-1020) C: 3.5-14 (510-2030) H: 7-21 (1020-3050)	22	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		G: Sub-plate Mounting			22	None: Japanese Std. "JIS" and European Design Std. 90: N. American Design Std.

★ Refer to the Minimum Adjustment Pressure Characteristics.

Graphic Symbol



Attachment

Mounting bolts

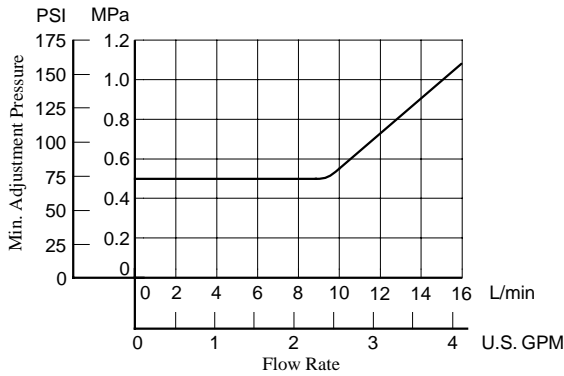
Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
DG-02	M5 × 45 Lg.	No.10-24UNC × 1-3/4 Lg.	4

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
DG-02	DGM-02-20	Rc 1/4	DGM-02-2080	1/4 BSP.F	DGM-02-2090	1/4 NPT	0.7 (1.5)

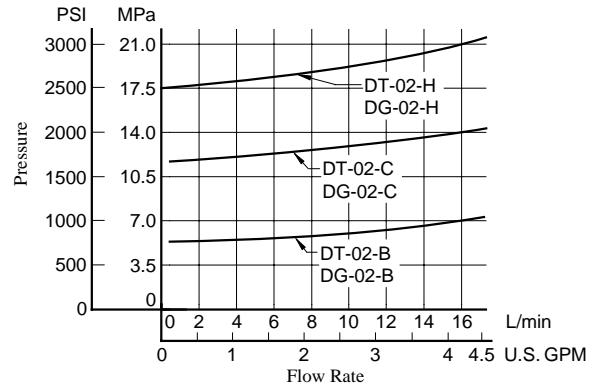
- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.
- The sub-plates are those for remote control relief valves. For dimensions, see page 4.

■ Min. Adjustment Pressure

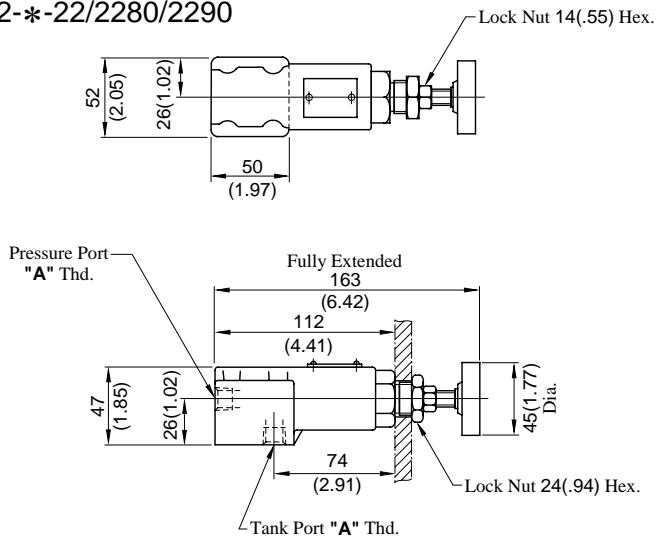


■ Nominal Override Characteristics

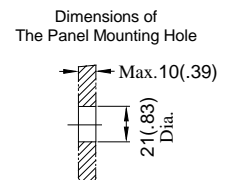
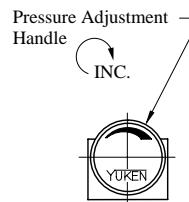
Hydraulic fluid: Viscosity : 35 mm²/s (164 SSU)
Specific Gravity : 0.850



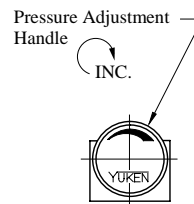
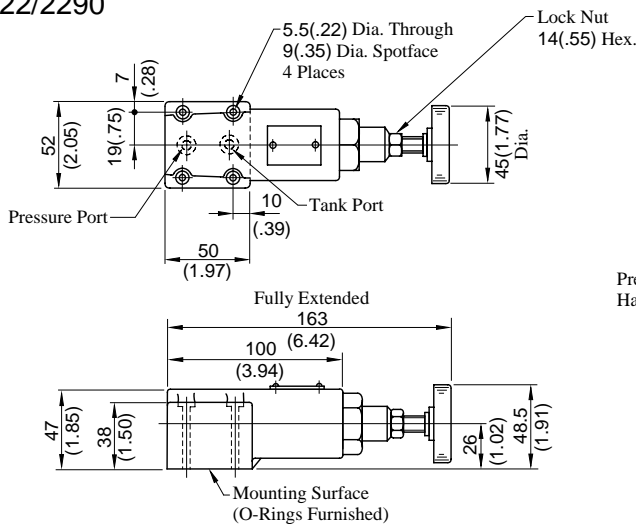
DT-02-*-22/2280/2290



Model Numbers	"A" Thd.
DT-02-*-22	Rc 1/4
DT-02-*-2280	1/4 BSP.F
DT-02-*-2290	1/4 NPT



DG-02-*-22/2290



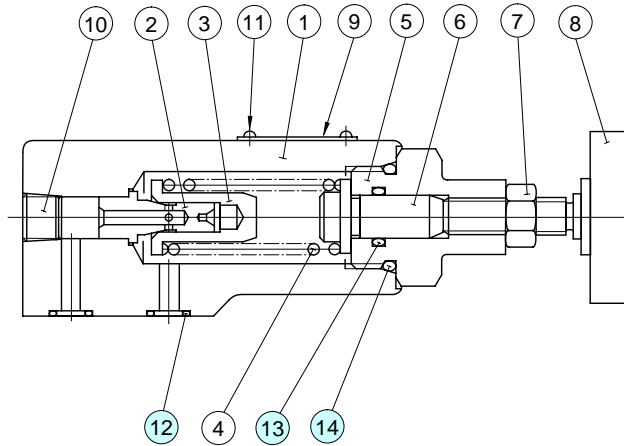
**DIMENSIONS IN
MILLIMETRES (INCHES)**

Note: For dimensions of the valve mounting surface, see the dimensional drawing (P.4) of the sub-plate used together.

DT-02-*-22/2280/2290
DG-02-*-22/2290

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



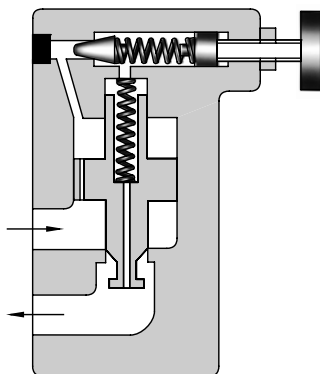
● List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
12	O-Ring	SO-NB-P9	2	Use only for DG-02
13	O-Ring	SO-NA-P12	1	———
14	O-Ring	SO-NB-P22.4	1	———

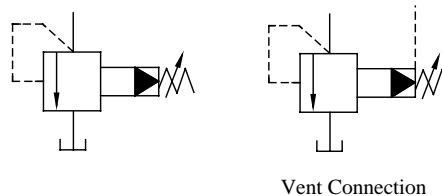
Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
DT-02	KS-DT-01-22
DG-02	KS-DG-02-22



Graphic Symbols



Specifications

Model Numbers		Max. Operating Pressure MPa (PSI)	Pres. Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)	
Threaded Connection	Sub-plate Mounting				BT type	BG type
BT-03-*-32*	BG-03-*-32*	25 (3630)	Note) ★-25 (★-3630)	100 (26.4)	5.0 (11.0)	4.7 (10.4)
BT-06-*-32*	BG-06-*-32*			200 (52.8)	5.0 (11.0)	5.6 (12.3)
BT-10-*-32*	BG-10-*-32*			400 (106)	8.5 (18.7)	8.7 (19.2)

Note: Refer to the Minimum adjustment Pressure characteristics on page 14.

Yuken can offer flanged connection valves described below.
For details, contact us.

Model Numbers	Max Operating Pres. MPa (PSI)	Max Flow L/min (U.S.GPM)
BF-10-*-32*	25 (3630)	400 (106)
BF-16-*-32*		800 (211)
BF-24-*-20*	21 (3050)	1200 (317)

Model Number Designation

F-	B	T	-03	-V	-32	*
Special Seals	Series Number	Type of Mounting	Valve Size	High Venting* Pres. Feature	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	B: Pilot Operated Relief Valves	T: Threaded Connection	03	V: For High Venting Pressure Feature (Omit if not required)	32	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
			06		32	
			10		32	
		G: Sub-plate Mounting	03		32	None: Japanese Std. "JIS" and European Design Std. 90: N. American Design Std.
			06		32	
			10		32	

★ Use high venting pressure type to reduce the response time from unload to onload.



■ Attachment

● Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw	
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.
BG-03	M12 × 70 Lg. (2 pcs.), M12 × 95 Lg. (2 pcs.)	1/2-13UNC × 2-3/4 Lg. (2 pcs.), 1/2-13UNC × 3-3/4 Lg. (2 pcs.)
BG-06	M16 × 60 Lg. (2 pcs.), M16 × 80 Lg. (2 pcs.)	5/8-11UNC × 2-1/4 Lg. (2 pcs.), 5/8-11UNC × 3-1/4 Lg. (2 pcs.)
BG-10	M20 × 70 Lg. (2 pcs.), M20 × 90 Lg. (2 pcs.)	3/4-10UNC × 2-3/4 Lg. (2 pcs.), 3/4-10UNC × 3-1/2 Lg. (2 pcs.)

■ Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
BG-03	BGM-03-20	Rc 3/8	BGM-03-3080	3/8 BSP.F	BGM-03-2090	3/8 NPT	2.4(5.3)
	BGM-03X-20	Rc 1/2	BGM-03X-3080	1/2 BSP.F	BGM-03X-2090	1/2 NPT	3.1(6.8)
BG-06	BGM-06-20	Rc 3/4	BGM-06-3080	3/4 BSP.F	BGM-06-2090	3/4 NPT	4.7(10.4)
	BGM-06X-20	Rc 1	BGM-06X-3080	1 BSP.F	BGM-06X-2090	1 NPT	5.7(12.6)
BG-10	BGM-10-20	Rc 1-1/4	BGM-10-3080	1-1/4 BSP.F	BGM-10-2090	1-1/4 NPT	8.4(18.5)
	BGM-10X-20	Rc 1-1/2	BGM-10X-3080	1-1/2 BSP.F	BGM-10X-2090	1-1/2 NPT	10.3(22.7)

● Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good ma-chined finish.

■ Instructions

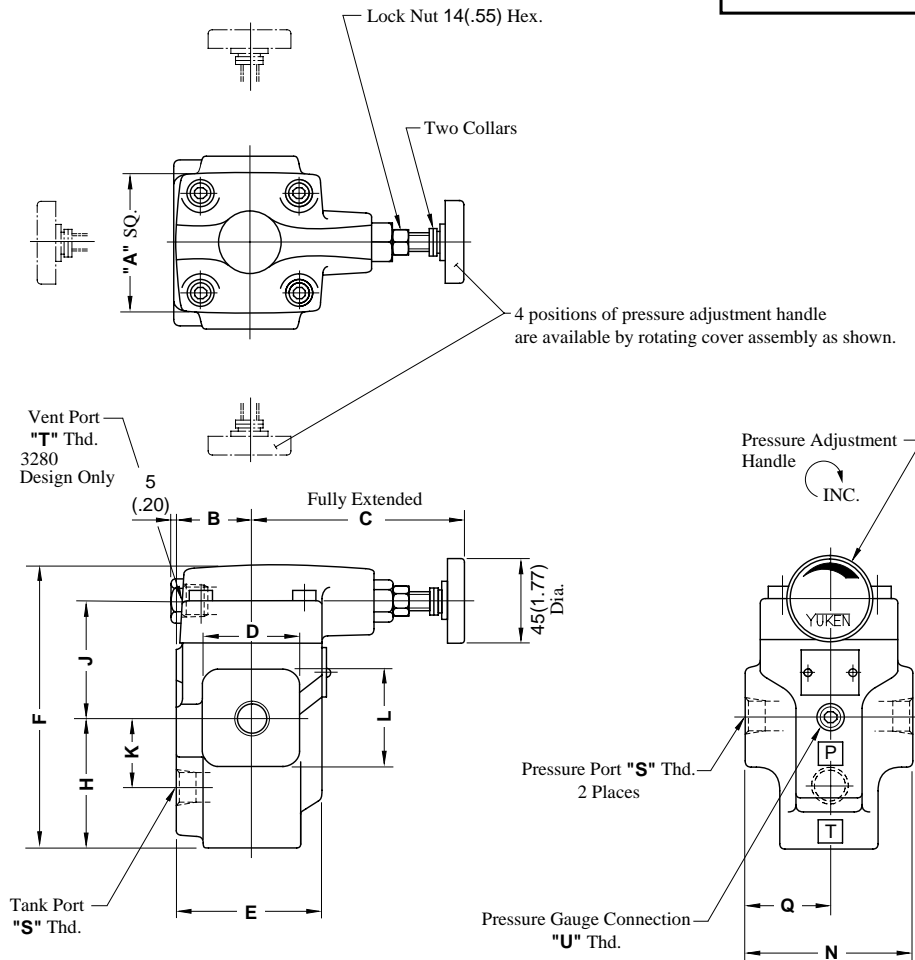
- If a remote control relief valve is used in the vent circuit, see page 3. In addition, if the internal volume of the vent line is too large, chattering is likely to occur. Thus, as far as possible reduce the inside Dia. and the length of the pipe.
- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- With a small flow, the setting pressure may be unstable. Use models numbered 03 and 06 with a flow rate above 8 L/min (2.1 U.S. GPM) and model 10 with 15 L/min (4.0 U.S. GPM).
- There are two threaded connection pressure ports. They can be connected each other in-line; one as inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.

BT-03-*-32/3280/3290

BT-06-*-32/3280/3290

BT-10-*-32/3280/3290

DIMENSIONS IN
MILLIMETRES (INCHES)

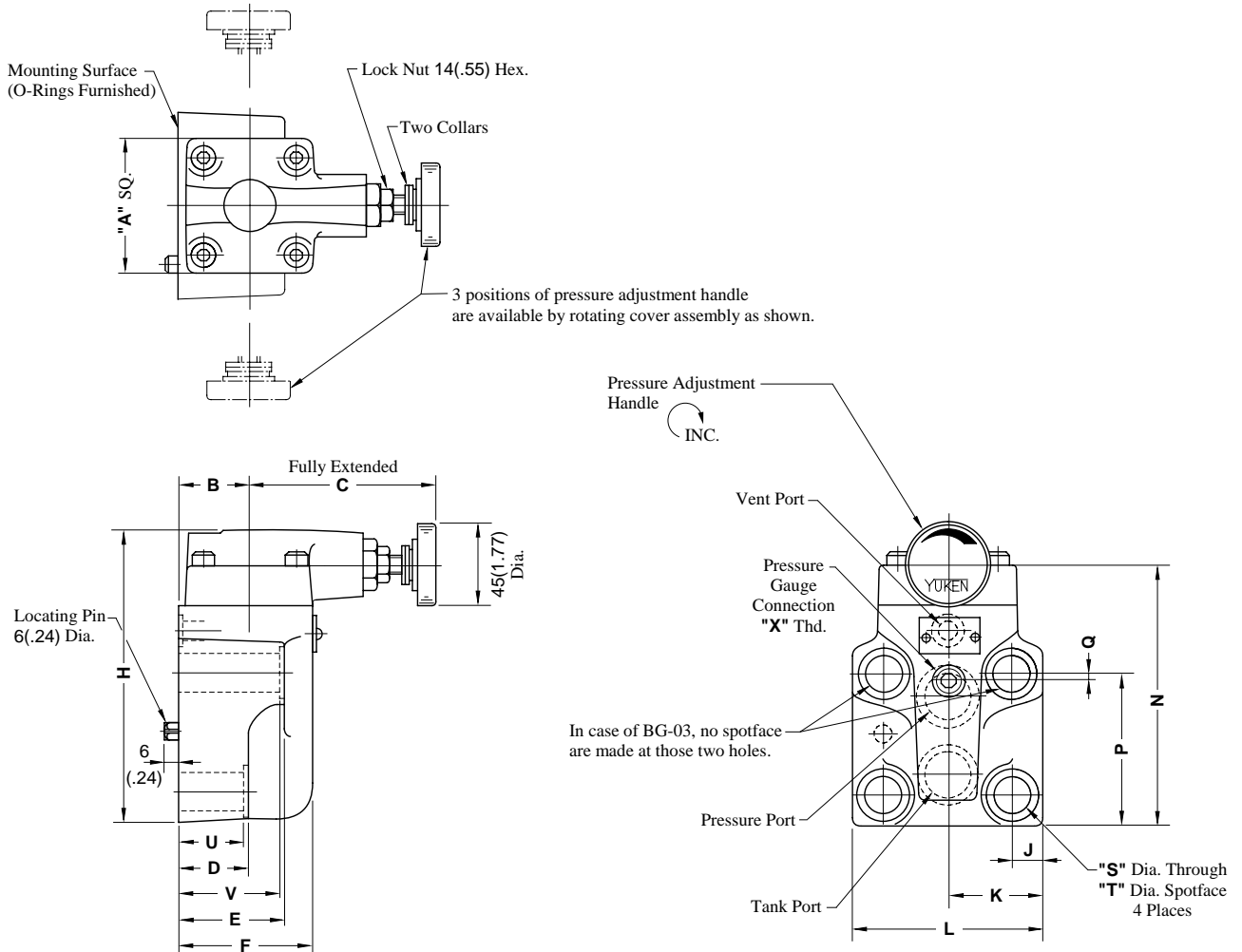


Model Numbers	Dimensions mm (Inches)											
	A	B	C	D	E	F	H	J	K	L	N	Q
BT-03-*-32/3280/3290	75 (2.95)	40 (1.57)	105 (4.13)	52 (2.05)	78 (3.07)	150.5 (5.93)	68.5 (2.70)	62 (2.44)	36 (1.42)	52 (2.05)	90 (3.54)	45 (1.77)
BT-06-*-32/3280/3290												
BT-10-*-32/3280/3290	85 (3.35)	50 (1.97)	101 (3.98)	80 (3.15)	96 (3.78)	183 (7.20)	89 (3.50)	74 (2.91)	49 (1.93)	80 (3.15)	120 (4.72)	60 (2.36)

Model Numbers	Thread Size		
	"S" Thd.	"T" Thd.	"U" Thd.
BT-03-*-32	Rc 3/8	Rc 3/8	Rc 1/4
BT-03-*-3280	3/8 BSP.F	3/8 BSP.F	1/4 BSP.Tr
BT-03-*-3290	3/8 NPT	3/8 NPT	1/4 NPT
BT-06-*-32	Rc 3/4	Rc 3/8	Rc 1/4
BT-06-*-3280	3/4 BSP.F	3/8 BSP.F	1/4 BSP.Tr
BT-06-*-3290	3/4 NPT	3/8 NPT	1/4 NPT
BT-10-*-32	Rc 1-1/4	Rc 3/8	Rc 1/4
BT-10-*-3280	1-1/4 BSP.F	3/8 BSP.F	1/4 BSP.Tr
BT-10-*-3290	1-1/4 NPT	3/8 NPT	1/4 NPT

BG-03-*-32/3290
BG-06-*-32/3290
BG-10-*-32/3290

MENSIONS IN
MILLIMETRES (INCHES)

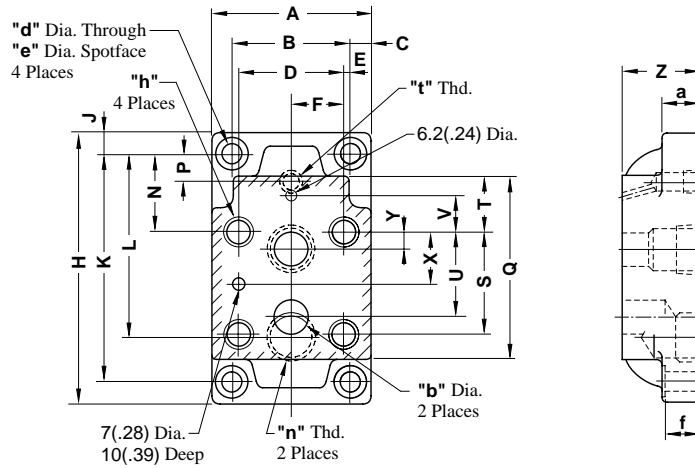


Model Numbers	Dimensions mm (Inches)																
	A	B	C	D	E	F	H	J	K	L	N	P	Q	S	T	U	V
BG-03-*-32/3290	75 (2.95)	40 (1.57)	105 (4.13)	57 (2.24)	78 (3.07)	78 (3.07)	137 (5.39)	14.1 (.56)	41 (1.61)	82 (3.23)	117 (4.61)	77 (3.03)	22 (.87)	13.5 (.53)	21 (.83)	55 (2.17)	—
BG-06-*-32/3290	75 (2.95)	40 (1.57)	105 (4.13)	40 (1.57)	60 (2.36)	78 (3.07)	161 (6.34)	17 (.67)	52 (2.05)	104 (4.09)	141 (5.55)	83.5 (3.29)	4.5 (.18)	17.5 (.69)	26 (1.02)	38 (1.50)	58 (2.28)
BG-10-*-32/3290	85 (3.35)	45 (1.77)	101 (3.98)	47 (1.85)	67 (2.64)	84 (3.31)	195 (7.68)	20.7 (.81)	62 (2.44)	124 (4.88)	175 (6.89)	110 (4.33)	6 (.24)	21.5 (.85)	32 (1.26)	45 (1.77)	65 (2.56)

Model Numbers	Thread Size	Mounting Surface
	"X" Thd	
BG-03-*-32	Rc 1/4 = 1/4 BSP.Tr	ISO 6264-AR-06-2-A
BG-03-*-3290	1/4 NPT	
BG-06-*-32	Rc 1/4 = 1/4 BSP.Tr	ISO 6264-AS-08-2-A
BG-06-*-3290	1/4 NPT	
BG-10-*-32	Rc 1/4 = 1/4 BSP.Tr	ISO 6264-AT-10-2-A
BG-10-*-3290	1/4 NPT	

BGM-03,03X-20 / 3080 / 2090
 BGM-06,06X-20 / 3080 / 2090
 BGM-10,10X-20 / 3080 / 2090

DIMENSIONS IN MILLIMETRES (INCHES)



Model Numbers	Dimensions mm (Inches)													
	A	B	C	D	E	F	H	J	K	L	N	P	Q	S
BGM-03	86 (3.39)	60 (2.36)	13 (.51)	53.8 (2.12)	3.1 (.12)	26.9 (1.06)	149 (5.87)	13 (.51)	123 (4.84)	86 (3.39)	32 (1.26)	26 (1.02)	97 (3.82)	53.8 (2.12)
BGM-03X										95 (3.74)	21 (.83)			
BGM-06	108 (4.25)	78 (3.07)	15 (.59)	70 (2.76)	4 (.16)	35 (1.38)	180 (7.09)	15 (.59)	150 (5.91)	106.5 (4.19)	51 (2.01)	27.2 (1.07)	121 (4.76)	66.7 (2.63)
BGM-06X										119 (4.69)	18 (.71)			
BGM-10	126 (4.96)	94 (3.70)	16 (.63)	82.6 (3.25)	5.7 (.22)	41.3 (1.63)	227 (8.94)	16 (.63)	195 (7.68)	138.2 (5.44)	62 (2.44)	30.2 (1.19)	154 (6.06)	88.9 (3.50)
BGM-10X										158 (6.22)	17 (.67)			

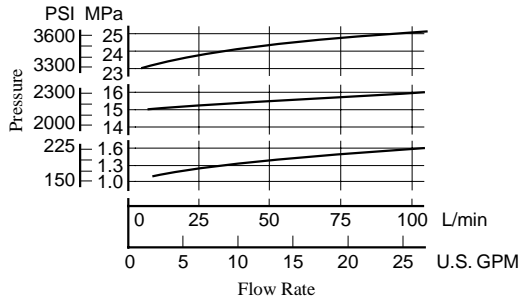
Model Numbers	Dimensions mm (Inches)										
	T	U	V	X	Y	Z	a	b	d	e	f
BGM-03	19 (.75)	47.4 (1.87)	0 (0)	22 (.87)	22 (.87)	32 (1.26)	20 (.79)	14.5 (.57)	11 (.43)	17.5 (.69)	19 (.75)
BGM-03X						40 (1.57)					
BGM-06	37 (1.46)	55.5 (2.19)	23.8 (.94)	33.4 (1.31)	11 (.43)	40 (1.57)	25 (.98)	23 (.91)	13.5 (.53)	21 (.83)	24 (.94)
BGM-06X						50 (1.97)					
BGM-10	42 (1.65)	76.2 (3.00)	31.8 (1.25)	44.5 (1.75)	12.7 (.50)	50 (1.97)	32 (1.26)	28 (1.10)	17.5 (.69)	26 (1.02)	31 (1.22)
BGM-10X						63 (2.48)					

Model Numbers	Japanese Standard "JIS" Design "20"			European Design Standard Design "3080"			N. American Design Standard Design "2090"		
	"h"	"n" Thd.	"t" Thd.	"h"	"n" Thd.	"t" Thd.	"h"	"n" Thd.	"t" Thd.
BGM-03	M12 Thd. 20(.79) Deep	Rc 3/8	Rc 1/4	M12 Thd. 20(.79) Deep	3/8 BSP.F	1/4 BSP.F	1/2-13UNC Thd. 22(.87) Deep	3/8 NPT	1/4 NPT
BGM-03X		Rc 1/2			1/2 BSP.F			1/2 NPT	
BGM-06	M16 Thd. 25(.98) Deep	Rc 3/4		M16 Thd. 25(.98) Deep	3/4 BSP.F		5/8-11UNC Thd. 27(1.06) Deep	3/4 NPT	
BGM-06X		Rc 1			1 BSP.F			1 NPT	
BGM-10	M20 Thd. 28(1.10) Deep	Rc1-1/4	M20 Thd. 28(1.10) Deep	1-1/4 BSP.F	3/4-10UNC Thd. 28(1.10) Deep	1-1/4 NPT			
BGM-10X		Rc 1-1/2		1-1/2 BSP.F		1-1/2 NPT			

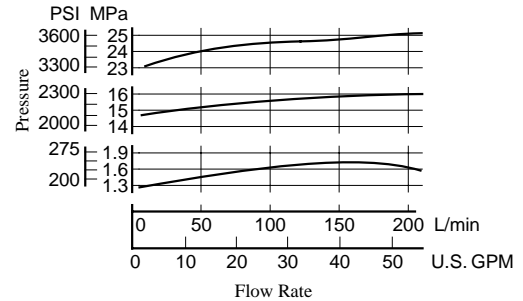
Nominal Override Characteristics

Hydraulic fluid: Viscosity : 35 mm²/s (164 SSU)
Specific Gravity : 0.850

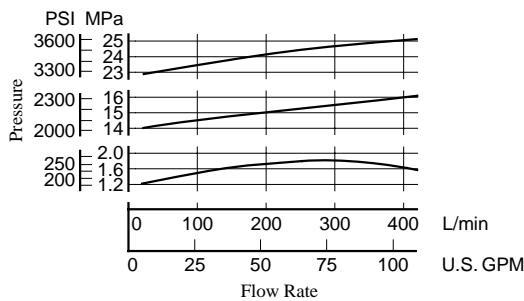
BT-03, BG-03



BT-06, BG-06



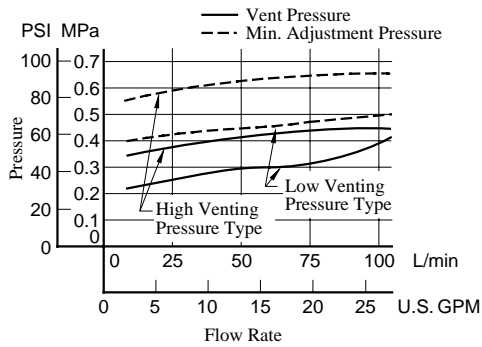
BT-10, BG-10



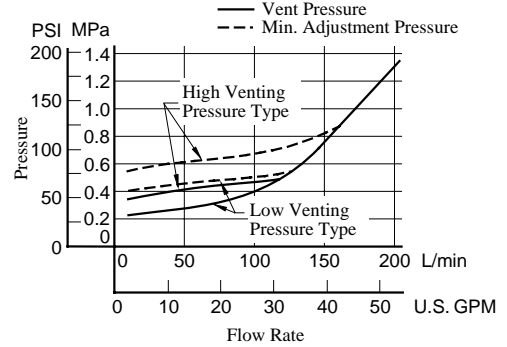
Min. Adj. Pressure & Vent Pressure vs. Flow

Hydraulic fluid: Viscosity : 35 mm²/s (164 SSU)
Specific Gravity : 0.850

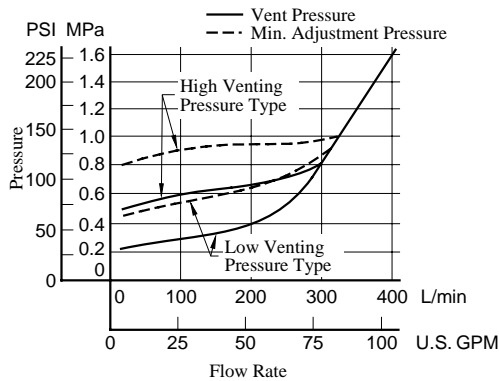
BT-03, BG-03



BT-06, BG-06



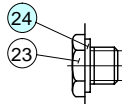
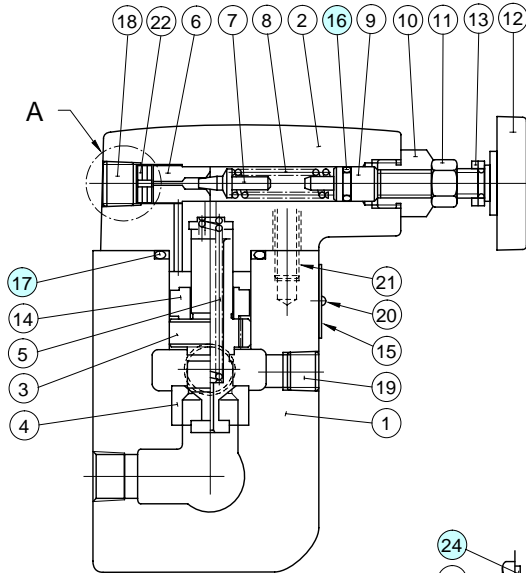
BT-10, BG-10



BT-03-* -32/3280/3290

BT-06-* -32/3280/3290

BT-10-* -32/3280/3290



Section "A"
for Design 3280

⚠ CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

● List of Seals

Item	Name of Parts	Part Numbers			Qty.
		BT-03	BT-06	BT-10	
16	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
17	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1
24	Bonded Seal	SG-FB-3/8	SG-FB-3/8	SG-FB-3/8	1

Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

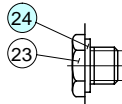
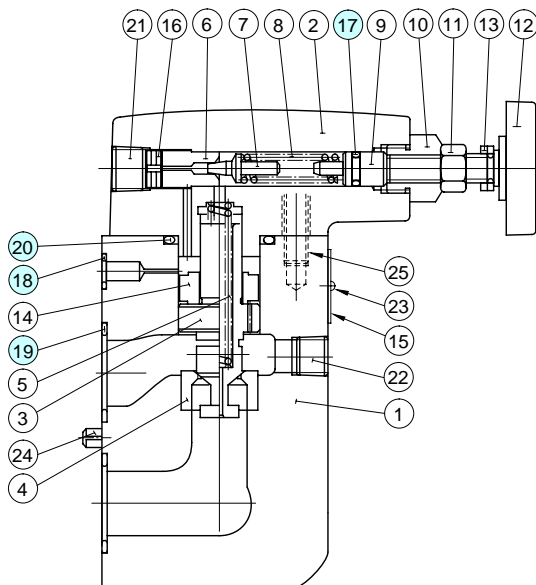
Model Numbers	Seal Kit Numbers
BT-03	KS-BT-03-32
BT-06	
BT-10	KS-BT-10-32

Note: No bonded seals are included in the seal kits.

BG-03-* -32/3290

BG-06-* -32/3290

BG-10-* -32/3290



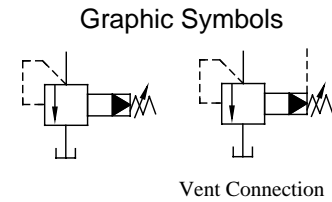
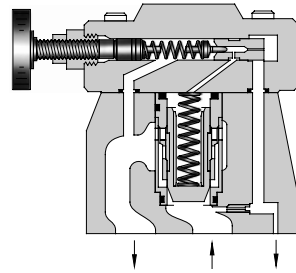
● List of Seals

Item	Name of Parts	Part Numbers			Qty.
		BG-03	BG-06	BG-10	
17	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
18	O-Ring	SO-NB-P9	SO-NB-P11	SO-NB-P9	1
19	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
20	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1

Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
BG-03	KS-BG-03-32
BG-06	KS-BG-06-32
BG-10	KS-BG-10-32



Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Pres. Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)
S-BG-03-*-*-40*	25 (3630)	Note)	100 (26.4)	4.1 (9.0)
S-BG-06-*-*-40*		★-25	200 (52.8)	5.0 (11.0)
S-BG-10-*-*-40*		(★-3630)	400 (106)	10.5 (23.1)

Note: See minimum adjustment pressure characteristics on page 18.

Model Number Designation

F-	S-	B	G	-03	-V	-L	-40	*
Special Seals	Low Noise Type	Series Number	Type of Mounting	Valve Size	High Venting* ¹ Pres. Feature	Direction of Handle	Design Number	Design Std.
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	S: Low Noise Type	B: Pilot Operated Relief Valves	G: Sub-plate Mounting	03	V: For High Venting Pressure Feature (Omit if not required)	(Viewed from pressure gauge connection) L: Left (Normal) R: Right	40	Refer to ★ ²
				06			40	
				10			40	

★¹. Use the high venting pressure type where it is necessary to reduce the response time from unloading to onloading.

★². Design Standards: None Japanese Standard "JIS" and European Design Standard 90 N. American Design Standard

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
S-BG-03	BGM-03-20	Rc 3/8	BGM-03-3080	3/8 BSP.F	BGM-03-2090	3/8 NPT	2.4 (5.3)
	BGM-03X-20	Rc 1/2	BGM-03X-3080	1/2 BSP.F	BGM-03X-2090	1/2 NPT	3.1 (6.8)
S-BG-06	BGM-06-20	Rc 3/4	BGM-06-3080	3/4 BSP.F	BGM-06-2090	3/4 NPT	4.7 (10.4)
	BGM-06X-20	Rc 1	BGM-06X-3080	1 BSP.F	BGM-06X-2090	1 NPT	5.7 (12.6)
S-BG-10	BGM-10-20	Rc 1-1/4	BGM-10-3080	1-1/4 BSP.F	BGM-10-2090	1-1/4 NPT	8.4 (18.5)
	BGM-10X-20	Rc 1-1/2	BGM-10X-3080	1-1/2 BSP.F	BGM-10X-2090	1-1/2 NPT	10.3 (22.7)

• Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

• The sub-plates are those for pilot operated relief valves. For dimensions, see page 13.

Attachment

Mounting Bolts

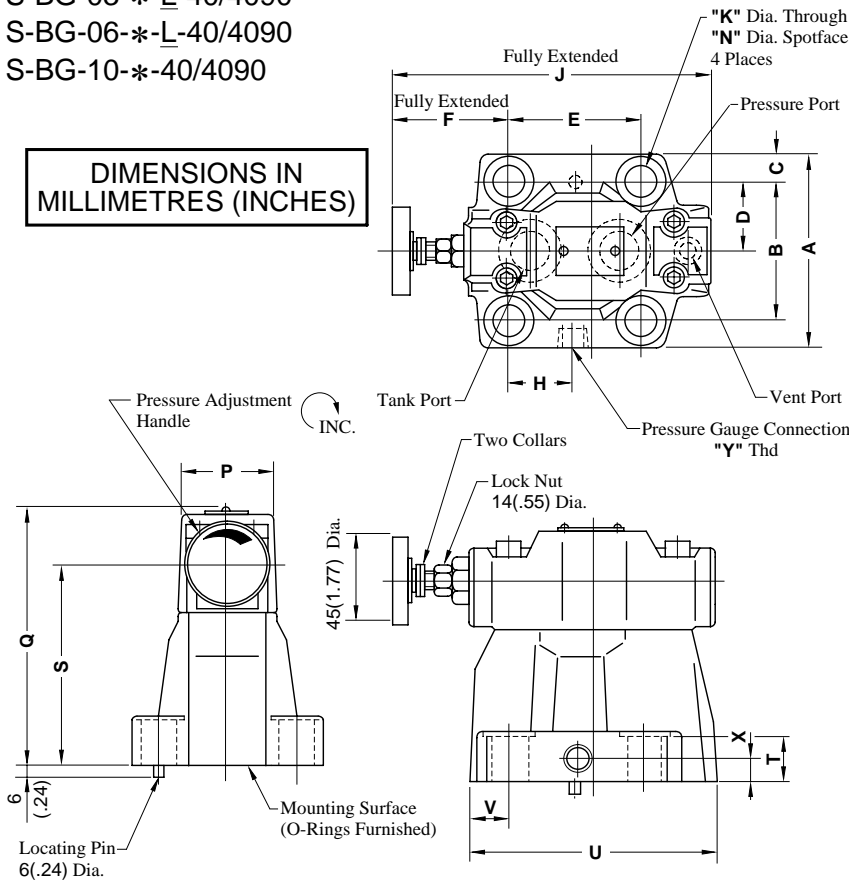
Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
S-BG-03	M12 × 40 Lg.	1/2-13 UNC × 1-1/2 Lg.	4
S-BG-06	M16 × 50 Lg.	5/8-11 UNC × 2 Lg.	4
S-BG-10	M20 × 60 Lg.	3/4-10 UNC × 2-1/4 Lg.	4

Instructions

- If a remote control relief valve is used in the vent circuit, see page 3. In addition, if the internal volume of the vent line is too large, chattering is likely to occur. Thus, as far as possible reduce the inside Dia. and the length of the pipe.
- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- With a small flow, the setting pressure may be unstable. Use models numbered 03 and 06 with a flow rate above 5 L/min (1.3 U.S. GPM) and model 10 with 8 L/min (2.1 U.S. GPM).

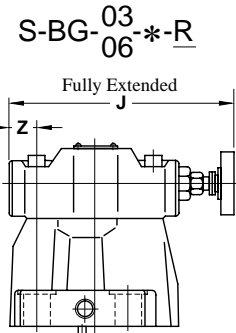
S-BG-03-**-L-40/4090
S-BG-06-**-L-40/4090
S-BG-10-**-40/4090

DIMENSIONS IN
MILLIMETRES (INCHES)



Mounting surface
S-BG-03: ISO 6264-AR-06-2-A
S-BG-06: ISO 6264-AS-08-2-A
S-BG-10: ISO 6264-AT-10-2-A

Opposite Handle Position



Note: For other dimensions, see the figures shown left.

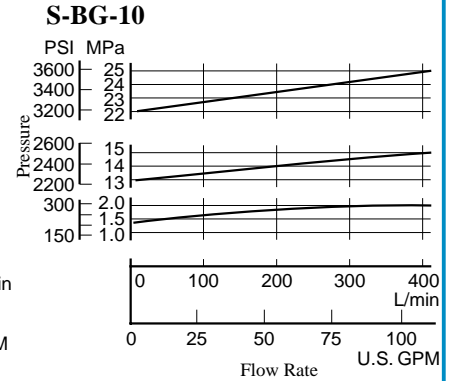
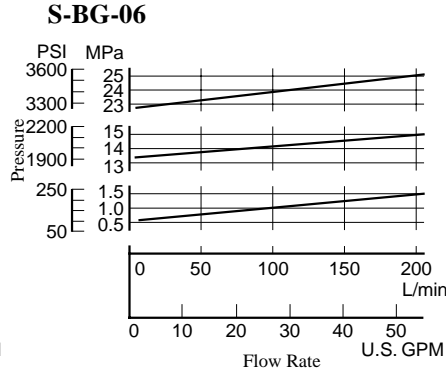
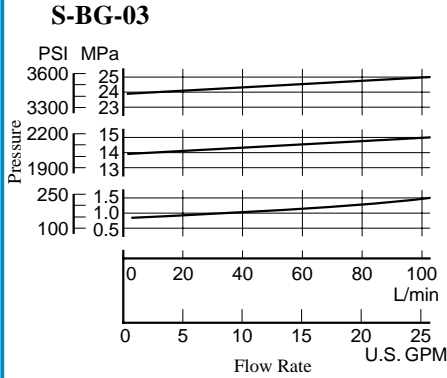
Note: For dimensions of the valve mounting surface, see the dimensional drawing (P. 13) of the sub-plate used together.

Model Numbers	"Y" Thd.
S-BG-03-**-40	Rc 1/4 = 1/4 BSP.Tr
S-BG-03-**-4090	1/4 NPT
S-BG-06-**-40	Rc 1/4 = 1/4 BSP.Tr
S-BG-06-**-4090	1/4 NPT
S-BG-10-**-40	Rc 1/4 = 1/4 BSP.Tr
S-BG-10-**-4090	1/4 NPT

Model Numbers	Dimensions mm (Inches)																	
	A	B	C	D	E	F	H	J	K	N	P	Q	S	T	U	V	X	Z
S-BG-03	76 (2.99)	53.8 (2.12)	11.1 (.44)	26.9 (1.06)	53.8 (2.12)	73.6 (2.90)	26.9 (1.06)	163.5 (6.44)	13.5 (.53)	21 (.83)	50 (1.97)	130 (5.12)	103 (4.06)	21.5 (.85)	106 (4.17)	26.1 (1.03)	13 (.51)	36.1 (1.42)
S-BG-06	98 (3.86)	70 (2.76)	14 (.55)	35 (1.38)	66.7 (2.63)	58.8 (2.31)	33.7 (1.33)	163.5 (6.44)	17.5 (.69)	26 (1.02)	50 (1.97)	130 (5.12)	103 (4.06)	26 (1.02)	122 (4.80)	19.3 (.76)	13 (.51)	21.3 (.84)
S-BG-10	120 (4.72)	82.6 (3.25)	18.7 (.74)	41.3 (1.63)	88.9 (3.50)	50.6 (1.99)	44.9 (1.77)	180 (7.09)	21.5 (.85)	32 (1.26)	65 (2.56)	167 (6.57)	135 (5.31)	33.5 (1.32)	155 (6.10)	21.2 (.83)	18 (.71)	—

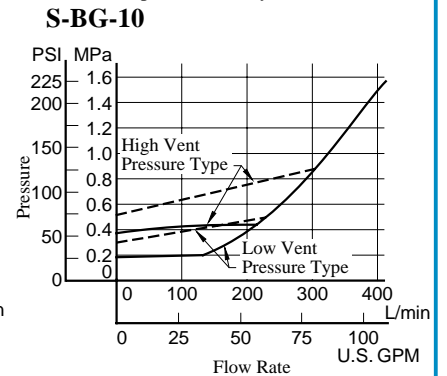
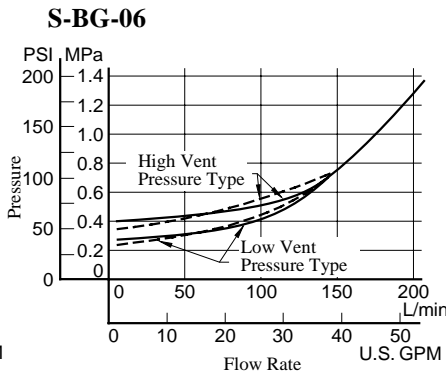
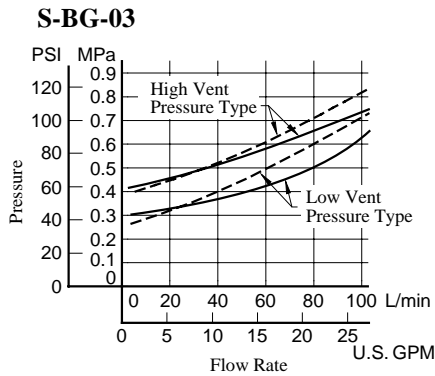
Nominal Override Characteristics

Hydraulic fluid:
Viscosity : 35 mm²/s (164 SSU)
Specific Gravity : 0.850



Min. Adj. Pressure and Vent Pressure vs. Flow

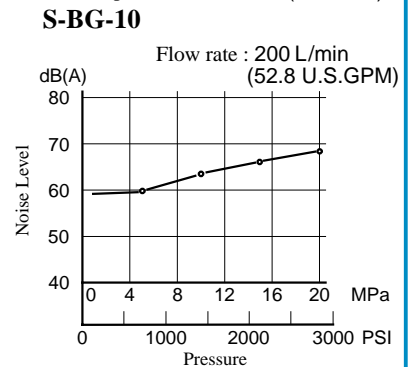
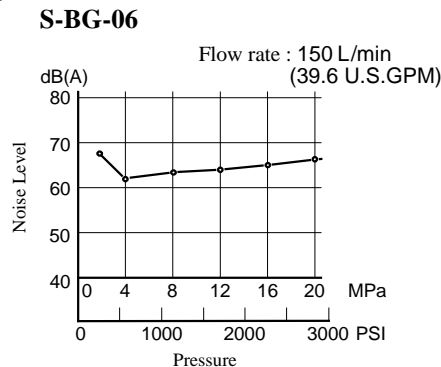
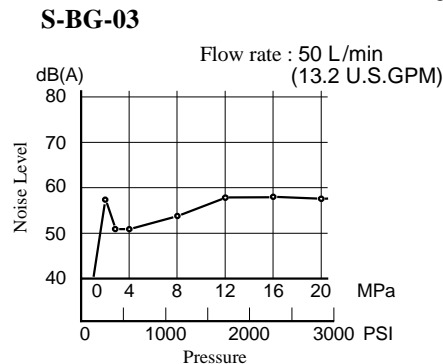
Hydraulic fluid:
Viscosity : 35 mm²/s (164 SSU)
Specific Gravity : 0.850



Noise Level

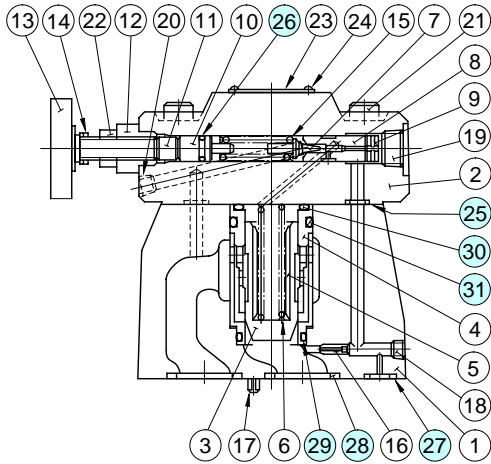
Measuring condition
Measuring position: At 1m (3.3 ft.) back from the valve front.

Viscosity : 35 mm²/s (164 SSU)
Back pressure : 0.1 MPa (14.5 PSI)

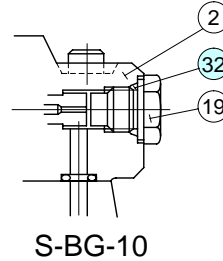


Spare Parts List

S-BG-03,06,10-*40/4090



CAUTION
When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



● List of Seals

Item	Name of Parts	Part Numbers			Qty.
		S-BG-03	S-BG-06	S-BG-10	
25	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	2
26	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
27	O-Ring	SO-NB-P9	SO-NB-P11	SO-NB-P9	1
28	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
29	O-Ring	SO-NB-A024	SO-NB-A024	SO-NB-A128	1
30	O-Ring	SO-NB-P28	SO-NB-P28	SO-NB-P36	1
31	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1
32	O-Ring	—	—	SO-NB-P14	1

● List of Seal Kits

Model Numbers	Seal Kit Numbers
S-BG-03	KS-S-BG-03-40
S-BG-06	KS-S-BG-06-40
S-BG-10	KS-S-BG-10-40

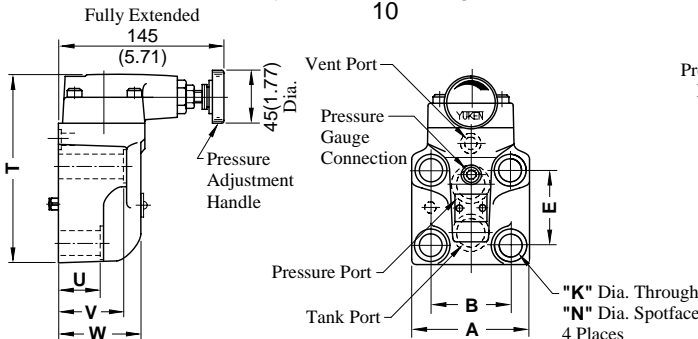
Note: When ordering the seals, please specify the seal kit number from the table below.

■ Interchangeability in Installation between Conventional Type and Low-noise Type

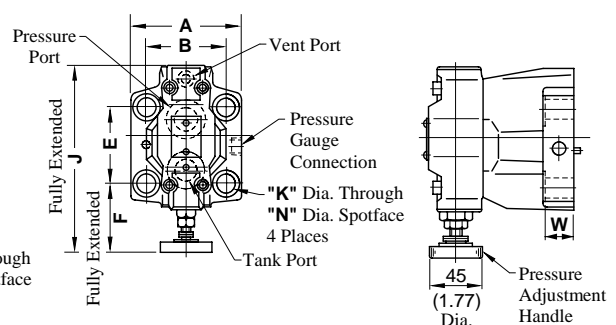
The design 40 of low-noise S-BG-03, -06, and -10 is interchangeable for installation with design 32 of conventional BG-03, -06 and -10. Their exterior shapes such as the position of the pressure adjustment handles are different.

DIMENSIONS IN
MILLIMETRES (INCHES)

Conventional Type: BG-06, Design 32
03
10



Low-noise type: S-BG-06, Design 40
03
10



Model Numbers	A	B	E	K	N	T	U	V
BG-03	82 (3.23)	53.8 (2.12)	53.8 (2.12)	13.5 (.53)	21 (.83)	117 (4.61)	55 (2.16)	78 (3.07)
BG-06	104 (4.09)	70 (2.76)	66.7 (2.63)	17.5 (.69)	26 (1.02)	141 (5.55)	38 (1.50)	58 (2.28)
BG-10	124 (4.88)	82.6 (3.25)	88.9 (3.50)	21.5 (.85)	32 (1.26)	175 (6.89)	45 (1.77)	65 (2.56)

Model Numbers	A	B	E	F	K	N	J	W
S-BG-03	76 (2.99)	53.8 (2.12)	53.8 (2.12)	73.6 (2.90)	13.5 (.53)	21 (.83)	163.5 (6.44)	20.5 (.81)
S-BG-06	98 (3.86)	70 (2.76)	66.7 (2.63)	58.8 (2.31)	17.5 (.69)	26 (1.02)	163.5 (6.44)	25 (.98)
S-BG-10	120 (4.72)	82.6 (3.25)	88.9 (3.50)	50.6 (1.99)	21.5 (.85)	32 (1.26)	180 (7.09)	32.5 (1.28)

Specifications / Model Number Designation

■ Specifications

Model Numbers		Max. Operating Pressure MPa (PSI)	Pressure Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)		
					Double Sol.	Single Sol.	With Vent Restrictor
Threaded Connection	BST-03-*-**-47*	25 (3630)	Note ★-25 (★-3630)	100 (26.4)	7.4 (16.3)	6.8 (15.0)	7.8 (17.2)
	BST-06-*-**-47*			200 (52.8)	7.4 (16.3)	6.8 (15.0)	7.8 (17.2)
	BST-10-*-**-47*			400 (106)	11.1 (24.5)	10.5 (23.2)	11.5 (25.4)
Sub-plate Mounting	BSG-03-*-**-47*	25 (3630)	Note ★-25 (★-3630)	100 (26.4)	7.1 (15.7)	6.5 (14.3)	7.5 (16.5)
	BSG-06-*-**-47*			200 (52.8)	8.0 (17.6)	7.4 (16.3)	8.4 (18.5)
	BSG-10-*-**-47*			400 (106)	11.3 (24.9)	10.7 (23.6)	11.7 (25.8)



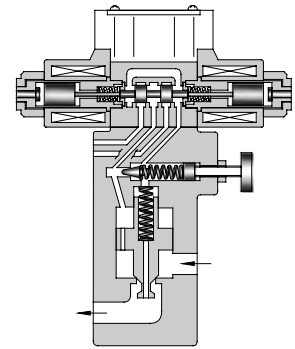
Note: For relief valves, standard pilot operated relief valves are used.
For minimum adjustment pressures and other characteristics, see page 14.

● Solenoid Ratings

Electric Source	Coil Type	Frequency (Hz)	Voltage (V)		Current & Power at Rated Voltage		
			Source Rating	Serviceable Range	Inrush* (A)	Holding (A)	Power (W)
AC	A100	50	100	80~110	2.42	0.51	—
			100	90~120	2.14	0.37	
			110		2.35	0.44	
	A120	50	120	96~132	2.02	0.42	
			108~144	1.78	0.31		
	A200	50	200	160~220	1.21	0.25	
			180~240	1.07	0.19		
	A240	50	220		1.18	0.22	
			240	192~264	1.01	0.21	
			216~288	0.89	0.15		
DC (K Series)	D12	—	12	10.8~13.2	—	2.45	29
			24	21.6~26.4	—	1.23	
			48	43.2~52.8	—	0.61	
AC→DC Rectified	R100	50/60	100	90~110	—	0.33	29
			R200	200	180~220	—	

★ Inrush current in the above table shows rms values at maximum stroke.

The coil type numbers in the shaded column are handled as optional extras. In case these coils are required to be chosen, please confirm the time of delivery with us before ordering.



Yuken can offer flanged connection valves described below.

Consult Yuken for the details.

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
BSF-10-*-**-47*	25 (3630)	400 (106)
BSF-16-*-**-47*		800 (211)

■ Model Number Designation

F-	A-	BS	T	-03	-V	-2B3A	-A100	-N	-47	*
Special Seals	With Vent Restrictor	Series Number	Type of Mounting	Valve Size	High Venting Pres. Feature	Vent Type	Coil Type	Type of Electrical Con.	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	A: With Vent Restrictor (Option)	BS: Solenoid Controlled Relief Valves	T: Threaded Connection G: Sub-plate Mounting	03 06 10	V: For High Venting Pressure Feature (Omit if not required)	2B3A ^{*3} 2B3B 2B2B 2B2 3C2 3C3	AC: A100, A120 A200, A240 DC: D12, D24 D48 AC→DC: R100, R200	None: Terminal Box Type N: With Plug-in Connector (DIN) N: With Plug-in Connector (DIN)	47	None: Japanese Std. "JIS" 90: N. American Design Std. 80: European Design Std.

- ★1. Models with vent restrictor are applicable only for the vent type 2B3A and 2B3B. For details, see page 22.
- ★2. Use high-venting-pressure types to reduce response time from unloading to onloading.
- ★3. For the details of the vent types, see the following page.

Vent Types

Vent Type	Graphic Symbols	Solenoid Operated Directional Valve Model Number	Operation		
			SOL "a"	SOL "b"	Vent Connecting
2B3A		DSG-01-2B3A	—	OFF	Connected to port "A".
			—	ON	Connected to tank (no-load)
2B3B		DSG-01-2B3B	—	OFF	Connected to tank (no-load)
			—	ON	Connected to port "B".
2B2B		DSG-01-2B2B	—	OFF	Closed state (relief valve setting pressure)
			—	ON	Connected to port "B".
2B2		DSG-01-2B2	—	OFF	Connected to port "A".
			—	ON	Connected to port "B".
3C2		DSG-01-3C2	OFF	OFF	Closed state (relief valve setting pressure)
			ON	OFF	Connected to port "A".
			OFF	ON	Connected to port "B".
3C3		DSG-01-3C3	OFF	OFF	Connected to tank (no-load)
			ON	OFF	Connected to port "A".
			OFF	ON	Connected to port "B".

Attachment

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw	
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.
BSG-03	M12 × 70 Lg. (2 pcs.), M12 × 95 Lg. (2 pcs.)	1/2-13UNC × 2-3/4 Lg. (2 pcs.), 1/2-13UNC × 3-3/4 Lg. (2 pcs.)
BSG-06	M16 × 60 Lg. (2 pcs.), M16 × 80 Lg. (2 pcs.)	5/8-11UNC × 2-1/4 Lg. (2 pcs.), 5/8-11UNC × 3-1/4 Lg. (2 pcs.)
BSG-10	M20 × 70 Lg. (2 pcs.), M20 × 90 Lg. (2 pcs.)	3/4-10UNC × 2-3/4 Lg. (2 pcs.), 3/4-10UNC × 3-1/2 Lg. (2 pcs.)

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
BSG-03	BGM-03-20	Rc 3/8	BGM-03-3080	3/8 BSP.F	BGM-03-2090	3/8 NPT	2.4(5.3)
	BGM-03X-20	Rc 1/2	BGM-03X-3080	1/2 BSP.F	BGM-03X-2090	1/2 NPT	3.1(6.8)
BSG-06	BGM-06-20	Rc 3/4	BGM-06-3080	3/4 BSP.F	BGM-06-2090	3/4 NPT	4.7(10.4)
	BGM-06X-20	Rc 1	BGM-06X-3080	1 BSP.F	BGM-06X-2090	1 NPT	5.7(12.6)
BSG-10	BGM-10-20	Rc 1-1/4	BGM-10-3080	1-1/4 BSP.F	BGM-10-2090	1-1/4 NPT	8.4(18.5)
	BGM-10X-20	Rc 1-1/2	BGM-10X-3080	1-1/2 BSP.F	BGM-10X-2090	1-1/2 NPT	10.3(22.7)

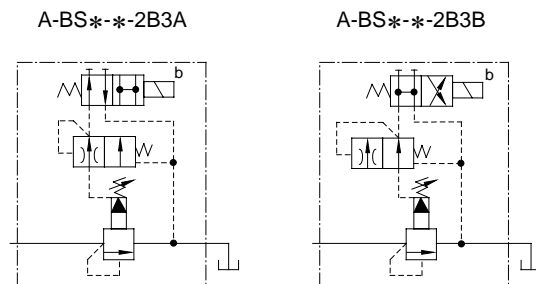
- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.
- The sub-plates are those for pilot operated relief valves. For dimensions, see page 13.

Option

Models with vent restrictor

The type with a vent restrictor has a vent restrictor in vent types 2B3A and 2B3B added between a relief valve and a solenoid operated directional valve. It prevents shock to the main circuit by gradually lowering the venting pressure in the shift from the set pressure to unloading.

Unloading pressure are the same as without a vent restrictor.



Instructions

- If a remote control relief valve is used in the vent circuit, see page 3. In addition, if the internal volume of the vent line is too large, chattering is likely to occur. Thus, as far as possible reduce the inside Dia. and the length of the pipe.
- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- With a small flow, the setting pressure may be unstable. Use models numbered 03 and 06 with a flow rate above 8 L/min (2.1 U.S. GPM) and model 10 with 15 L/min (4.0 U.S. GPM).
- There are two threaded connection pressure ports. They can be connected each other in-line; one as inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.

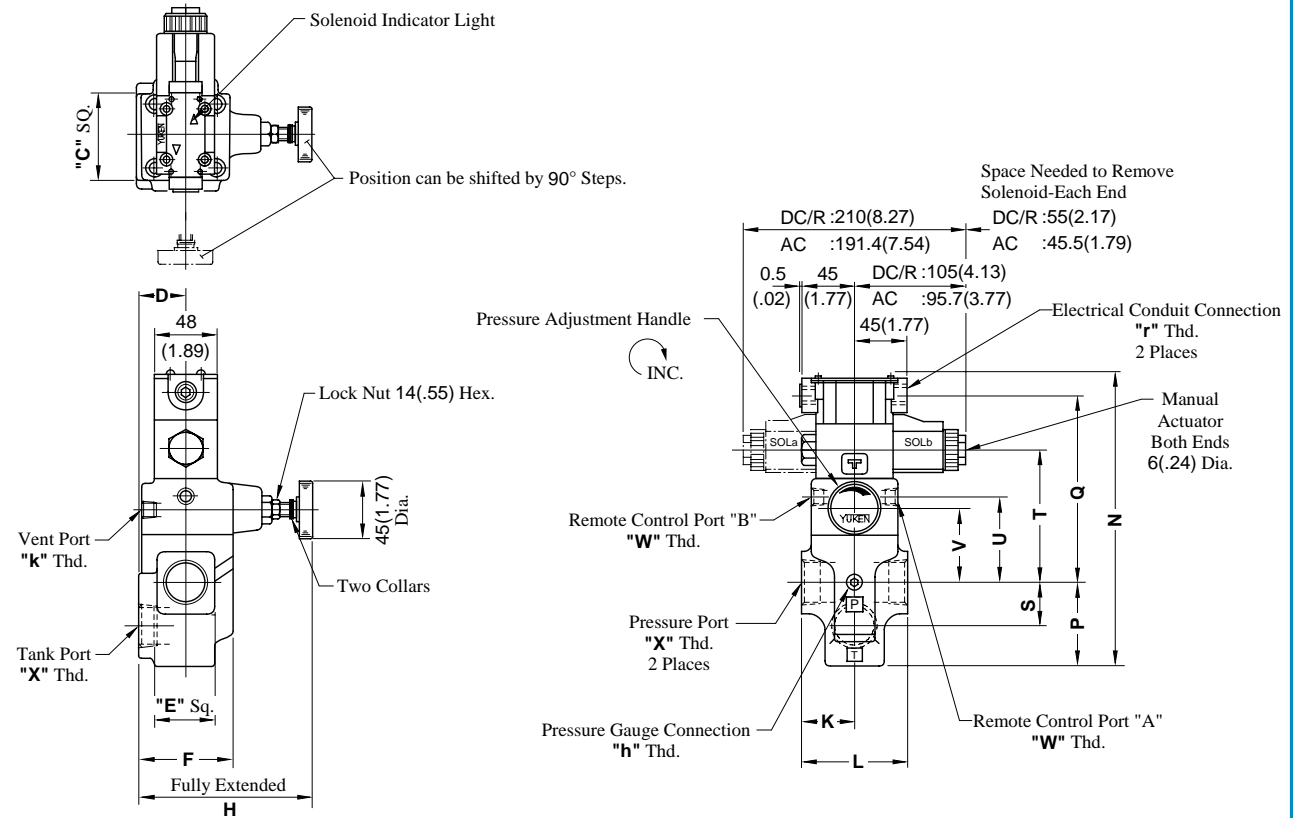
Interchangeability in Installation between Old and New Design.

Design 47 valve is one on which DSG-01, design 60 is mounted as a pilot valve. It is interchangeable with old design (design 46) with respect to specifications, exterior shape and mounting dimensions.

BST-03-* -47/4790
 BST-06-* -47/4790
 BST-10-* -47/4790

● Terminal Box Type

DIMENSIONS IN
MILLIMETRES (INCHES)

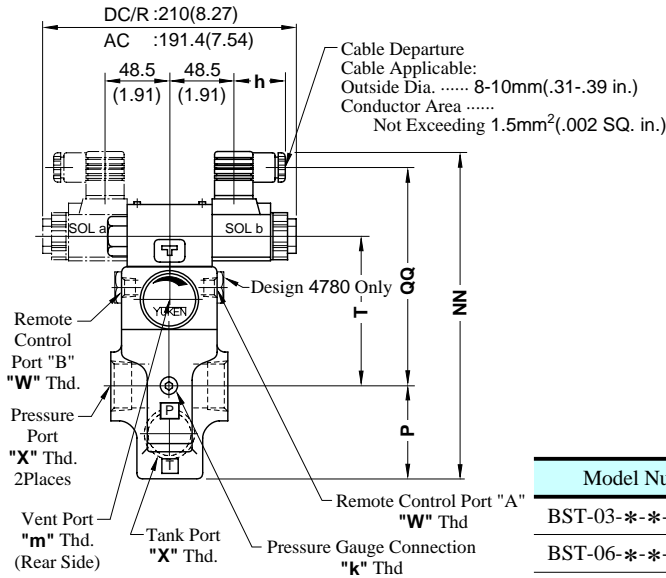


Model Numbers	Dimensions mm (Inches)													
	C	D	E	F	H	K	L	N	P	Q	S	T	U	V
BST-03-* -47/4790	75 (2.95)	40 (1.57)	52 (2.05)	78 (3.07)	145 (5.71)	45 (1.77)	90 (3.54)	240.8 (9.48)	68.5 (2.70)	154 (6.06)	36 (1.42)	107 (4.21)	69 (2.72)	62 (2.44)
BST-06-* -47/4790														
BST-10-* -47/4790	85 (3.35)	50 (1.97)	80 (3.15)	96 (3.78)	151 (5.94)	60 (2.36)	120 (4.72)	273.3 (10.76)	89 (3.50)	166 (6.54)	49 (1.93)	119 (4.69)	81 (3.19)	74 (2.91)

Model Numbers	Japanese Standard "JIS" Design 47					N. American Design Standard Design 4790				
	"W" Thd.	"X" Thd.	"h" Thd.	"k" Thd.	"r" Thd.	"W" Thd.	"X" Thd.	"h" Thd.	"k" Thd.	"r" Thd.
BST-03	Rc 1/8	Rc 3/8	Rc 1/4	Rc 3/8	G 1/2	1/8 NPT	3/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT
BST-06		Rc 3/4					3/4 NPT			
BST-10		Rc 1-1/4					1-1/4 NPT			

● Models with Plug-in Connector

03
BST-06-**-**-N-47/4780/4790
10



**DIMENSIONS IN
MILLIMETRES (INCHES)**

Model Numbers	Dimensions mm(Inches)				
	P	T	NN	QQ	h
BST-03-*-A*-N	68.5	107	240.5	160	39 (1.54)
BST-06-*-A*-N	(2.70)	(4.21)	(9.47)	(6.30)	
BST-10-*-A*-N	89	119	273	172	39 (1.54)
	(3.50)	(4.69)	(10.75)	(6.77)	
BST-03-*-D*-N	68.5	107	251.5	171	39 (1.54)
BST-06-*-D*-N	(2.70)	(4.21)	(9.90)	(6.73)	
BST-10-*-D*-N	89	119	284	183	53 (2.09)
	(3.50)	(4.69)	(11.18)	(7.20)	
BST-03-*-R*-N	68.5	107	254.5	164.2	53 (2.09)
BST-06-*-R*-N	(2.70)	(4.21)	(10.02)	(6.46)	
BST-10-*-R*-N	89	119	287	176.2	
	(3.50)	(4.69)	(11.30)	(6.94)	

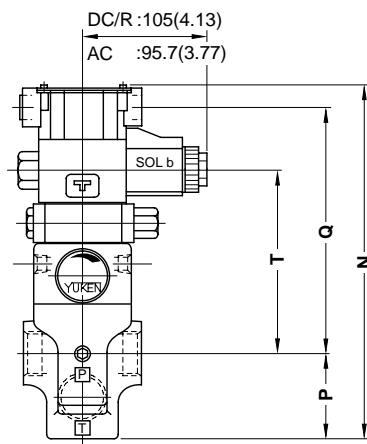
Model Numbers	"W" Thd.	"X" Thd.	"k" Thd.	"m" Thd.
BST-03-*-**-N-4780		3/8 BSP.F		
BST-06-*-**-N-4780	1/8 BSP.F	3/4 BSP.F	1/4 BSP.Tr	3/8 BSP.Tr
BST-10-*-**-N-4780		1-1/4 BSP.F		

See the installation drawing of terminal box type on page 23 for design 47 and 4790 port screws and other dimensions.

■ Options - Models with Vent Restrictor

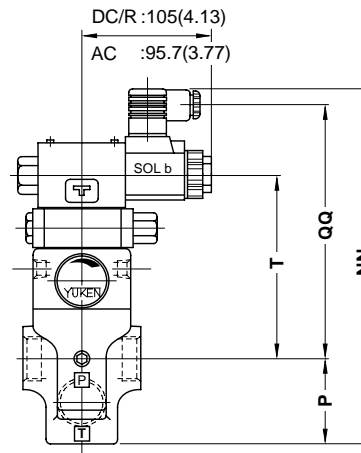
● Terminal Box Type

03
A-BST-06-**-2B3A-**-47/4790
10
2B3B



● Plug-in Connector Type

03
A-BST-06-**-2B3A-**-N-47/4780/4790
10
2B3B



Item	P	T	Terminal Box Type		Plug-in Connector Type					
					AC Solenoid		DC Solenoid		R (AC→DC) Solenoid	
			N	Q	NN	QQ	NN	QQ	NN	QQ
A-BST-03	68.5	137	270.8	184	270.5	190	281.5	201	284.5	194.2
A-BST-06	(2.70)	(5.39)	(10.66)	(7.24)	(10.65)	(7.48)	(11.08)	(7.91)	(11.20)	(7.65)
A-BST-10	89	149	303.3	196	303	202	314	213	317	206.2
	(3.50)	(5.87)	(11.94)	(7.72)	(11.93)	(7.95)	(12.36)	(8.39)	(12.48)	(8.12)

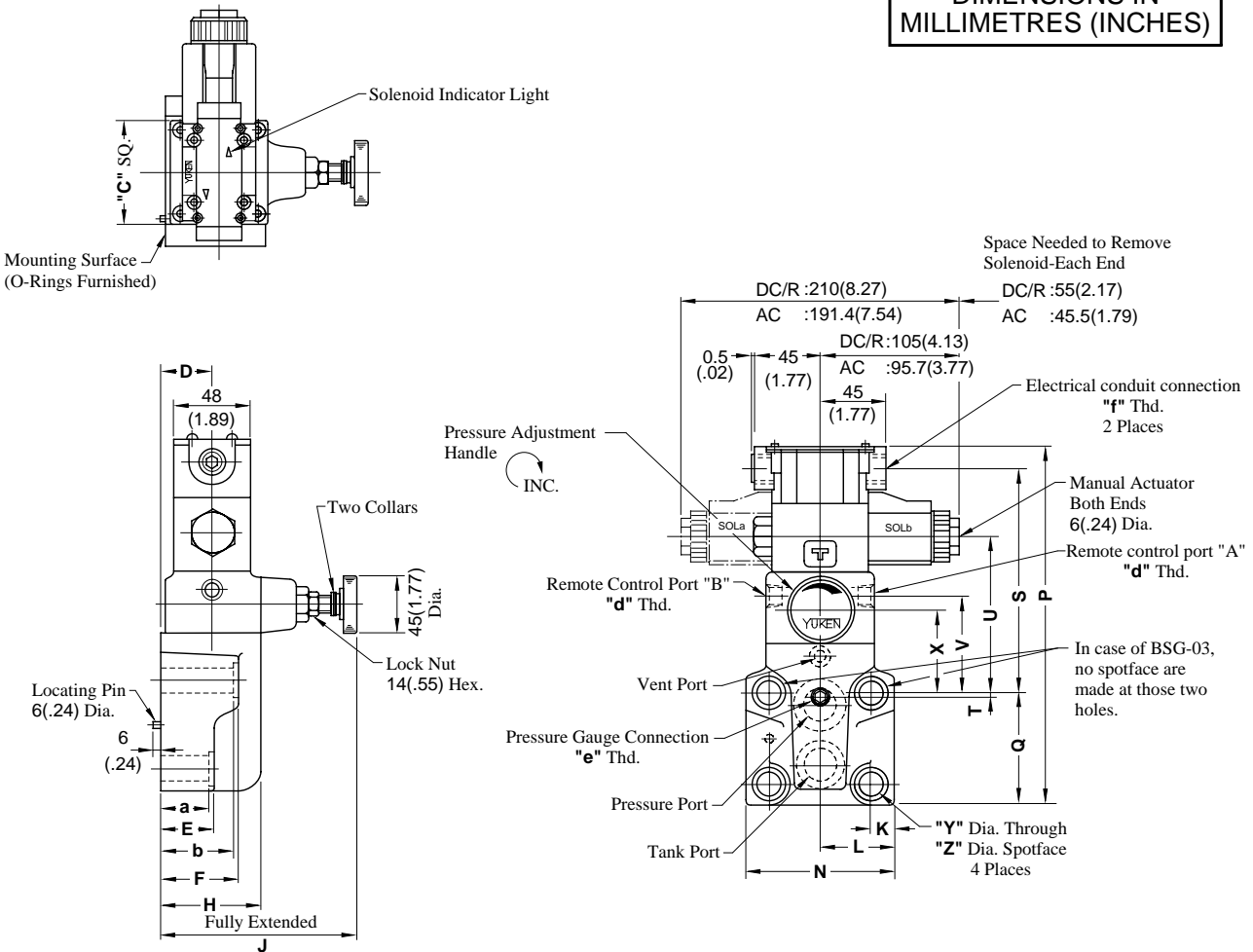
For other dimensions, see the models without vent restrictor type on page 23 and 24.

BSG-03-* -47/4790
BSG-06-* -47/4790
BSG-10-* -47/4790

Mounting surface
BSG-03: ISO 6264-AR-06-2-A
BSG-06: ISO 6264-AS-08-2-A
BSG-10: ISO 6264-AT-10-2-A

Terminal Box Type

DIMENSIONS IN
MILLIMETRES (INCHES)



Model Numbers	Dimensions mm (Inches)																			
	C	D	E	F	H	J	K	L	N	P	Q	S	T	U	V	X	Y	Z	a	b
BSG-03	75 (2.95)	40 (1.57)	57 (2.24)	78 (3.07)	78 (3.07)	145 (5.71)	14.1 (.56)	41 (1.61)	82 (3.23)	227.3 (8.95)	77 (3.03)	132 (5.20)	22 (.87)	85 (3.35)	47 (1.85)	40 (1.57)	13.5 (.53)	21 (.83)	55 (2.17)	—
BSG-06	75 (2.95)	40 (1.57)	40 (1.57)	60 (2.36)	78 (3.07)	145 (5.71)	17 (.67)	52 (2.05)	104 (4.09)	251.3 (9.89)	83.5 (3.29)	149.5 (5.89)	4.5 (.18)	102.5 (4.04)	64.5 (2.54)	57.5 (2.26)	17.5 (.69)	26 (1.02)	38 (1.50)	58 (2.28)
BSG-10	85 (3.35)	45 (1.77)	47 (1.85)	67 (2.64)	84 (3.31)	146 (5.75)	20.7 (.81)	62 (2.44)	124 (4.88)	285.3 (11.23)	110 (4.33)	157 (6.18)	6 (.24)	110 (4.33)	72 (2.83)	65 (2.56)	21.5 (.85)	32 (1.26)	45 (1.77)	65 (2.56)

Model Numbers	Japanese Standard "JIS" Design 47			N. American Design Standard Design 4790		
	"d" Thd.	"e" Thd.	"f" Thd.	"d" Thd.	"e" Thd.	"f" Thd.
BSG-03						
BSG-06	Rc 1/8	Rc 1/4	G 1/2	1/8 NPT	1/4 NPT	1/2 NPT
BSG-10						

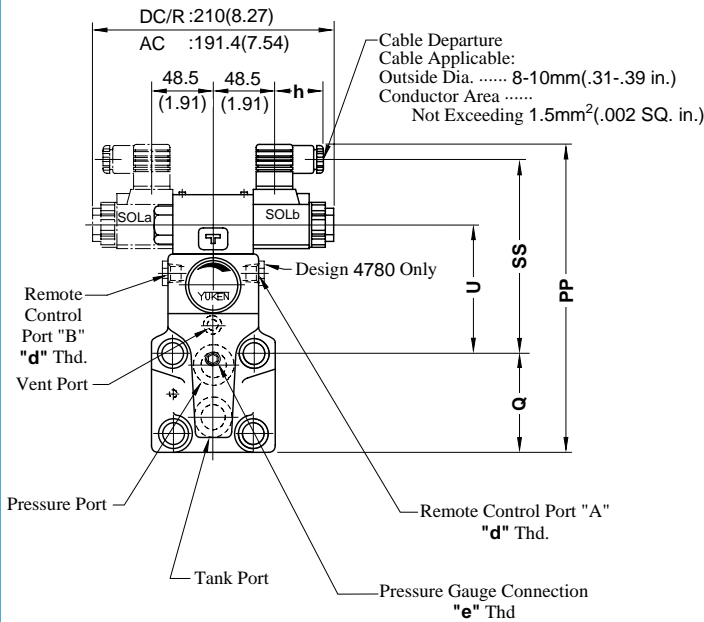
Note: For dimensions of the valve mounting surface, see the installation drawing (P.13) of the sub-plate used together.



Installation Drawings

● Models with Plug-in Connector

03
BSG-06-*-**-N-47/4780/4790
10



**DIMENSIONS IN
MILLIMETRES (INCHES)**

Model Numbers	Dimensions mm(Inches)				
	Q	U	PP	SS	h
BSG-03-*-**-N	77 (3.03)	85 (3.35)	227 (8.94)	138 (5.43)	
BSG-06-*-**-N	83.5 (3.29)	102.5 (4.04)	251 (9.88)	155.5 (6.12)	39 (1.54)
BSG-10-*-**-N	110 (4.33)	110 (4.33)	285 (11.22)	163 (6.42)	
BSG-03-*-**-D*-N	77 (3.03)	85 (3.35)	238 (9.37)	149 (5.87)	
BSG-06-*-**-D*-N	83.5 (3.29)	102.5 (4.04)	262 (10.31)	166.5 (6.56)	39 (1.54)
BSG-10-*-**-D*-N	110 (4.33)	110 (4.33)	296 (11.65)	174 (6.85)	
BSG-03-*-**-R*-N	77 (3.03)	85 (3.35)	241 (9.49)	142.2 (5.60)	
BSG-06-*-**-R*-N	83.5 (3.29)	102.5 (4.04)	265 (10.43)	159.7 (6.29)	53 (2.09)
BSG-10-*-**-R*-N	110 (4.33)	110 (4.33)	299 (11.77)	167.2 (6.58)	

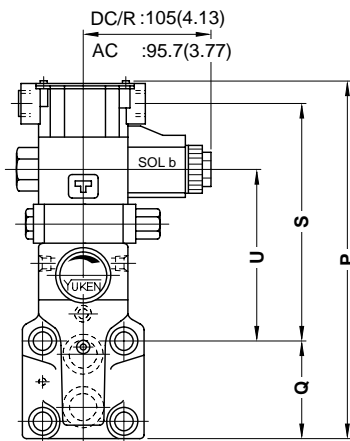
Model Numbers	"d" Thd.	"e" Thd.
BSG-03-*-**-N-4780	1/8 BSP.F	1/4 BSP.Tr
BSG-06-*-**-N-4780		
BSG-10-*-**-N-4780		

See the installation drawing of terminal box type on page 25 for design 47 and 4790 port screws and other dimensions.

■ Options - Models with Vent Restrictor

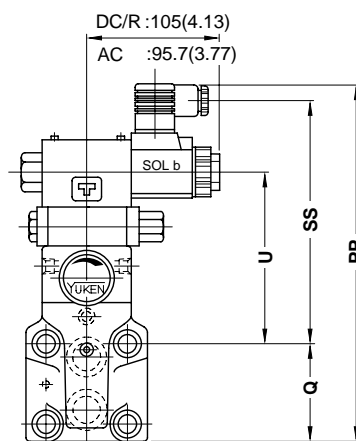
● Terminal Box Type

03
A-BSG-06-*-2B3A
10
2B3B *-N-47/4790



● Plug-in Connector Type

03
A-BSG-06-*-2B3A
10
2B3B *-N-47/4780/4790



Item Model Numbers	Q	U	Terminal Box Type		Plug-in Connector Type					
			P	S	AC Solenoid		DC Solenoid		R (AC→DC) Solenoid	
					PP	SS	PP	SS	PP	SS
A-BSG-03	77 (3.03)	115 (4.53)	257.3 (10.13)	162 (6.38)	257 (10.12)	168 (6.61)	268 (10.55)	179 (7.05)	271 (10.67)	172.2 (6.78)
A-BSG-06	83.5 (3.29)	132.5 (5.22)	281.3 (11.07)	179.5 (7.07)	281 (11.06)	185.5 (7.30)	292 (11.50)	196.5 (7.74)	295 (11.61)	189.7 (7.47)
A-BSG-10	110 (4.33)	140 (5.51)	315.3 (12.41)	187 (7.36)	315 (12.40)	193 (7.60)	326 (12.83)	204 (8.03)	329 (12.95)	197.2 (7.76)

For other dimensions, see the models without vent restrictor type on page 25 and 26.

Details of Receptacle

Type of Electrical Conduit Connection	Double Solenoid Type	Single Solenoid Type
Terminal Box Type		
Plug-in Connector Type		

- ★1. There are two grounding terminals. You can use either one.
- ★2. If you do not need the common plate, remove it.
- ★3. With DC solenoids, polarity is no question.

! DANGER

- Do not perform wiring while the power is on. Doing so may result in electric shock, burns or death.
- Make the wiring properly. Improper wiring will cause an irregular movement of the machine, resulting in a grave accident.

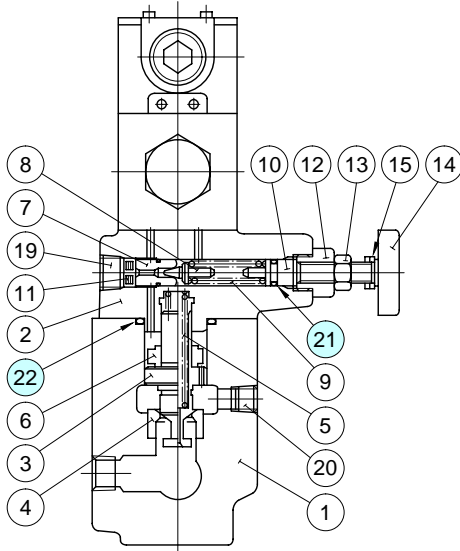
Electrical Circuit

Type of Electrical Conduit Connection	Electric Source		
	AC	DC	AC→DC Rectified
Terminal Box Type			
Plug-in Connector Type			

Threaded Connections

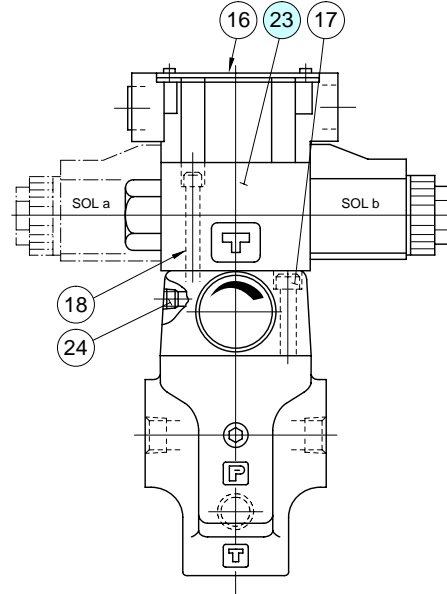
Terminal Box Type

03
BST-06-***-47/4790
10



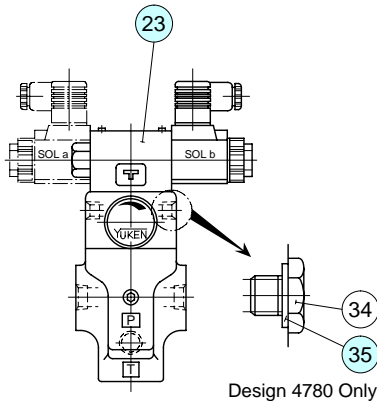
CAUTION

When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.



Models with Plug-in Connector

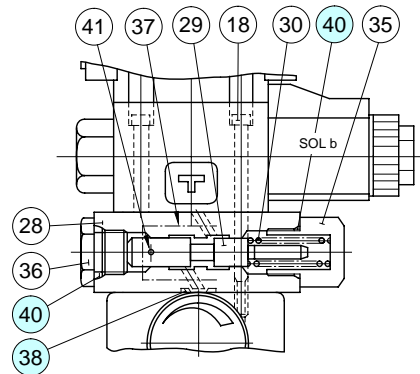
03
BST-06-***-N-47/4780/4790
10



Option

Models with Vent Restrictor

03
A-BST-06-***-47/4790
10
N-47/4780/4790



List of Seals

Item	Name of Parts	Part Numbers			Qty.
		BST-03	BST-06	BST-10	
21	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
22	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1
35	Bonded Seal	SG-FB-1/8	SG-FB-1/8	SG-FB-1/8	2
38*	O-Ring	SO-NB-P8			2
40*	O-Ring	SO-NB-P14			2

★ The O-Rings for Item 38,40 are used only for the models with the vent restrictor.

Note: When ordering the seals, please specify the seal kit number from the table right. In addition to the above seals, seals for the pilot valves are included in the seal kit.

For the detail of the pilot valve seals, see the catalogue No. Pub.EC-0402.

List of Seal Kits

Model Numbers	Seal Kit Numbers
BST-03	KS-BST-03-46
BST-06	
BST-10	KS-BST-10-46
A-BST-03	KS-A-BST-03-46
A-BST-06	
A-BST-10	KS-A-BST-10-46

Note: No bonded seals are included in the seal kits.

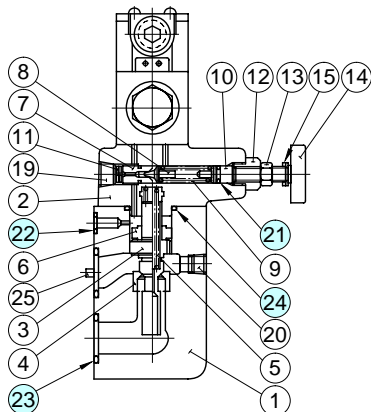
Pilot Valves

See page 30 for the pilot valve model numbers to be used.

■ Sub-plate Mounting

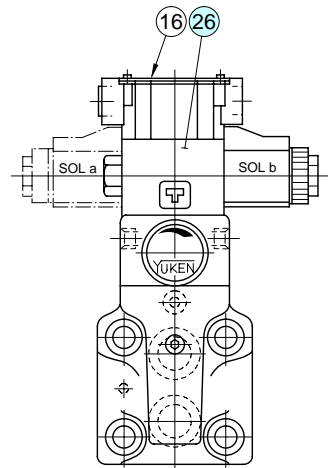
● Terminal Box Type

03
BSG-06-***-47/4790
10



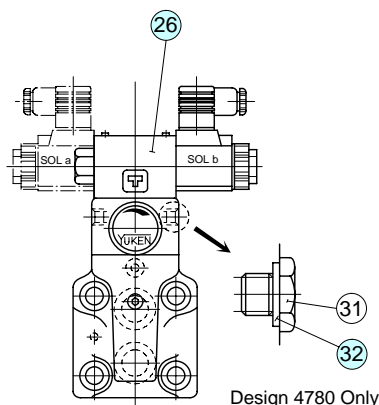
⚠ CAUTION

When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.



● Models with Plug-in Connector

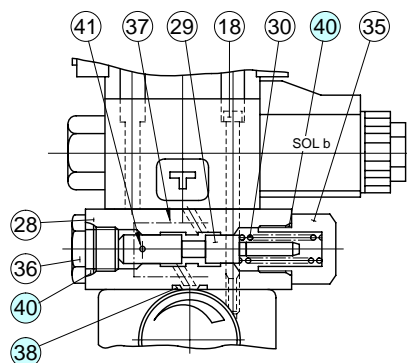
03
BSG-06-***-N-47/4780/4790
10



■ Option

● Models with Vent Restrictor

03
A-BSG-06-***-47/4790
10
N-47/4780/4790



● List of Seals

Item	Name of Parts	Part Numbers			Qty.
		BSG-03	BSG-06	BSG-10	
21	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
22	O-Ring	SO-NB-P9	SO-NB-P11	SO-NB-P9	1
23	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
24	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1
32	Bonded Seal	SG-FB-1/8	SG-FB-1/8	SG-FB-1/8	2
38*	O-Ring	SO-NB-P8			2
40*	O-Ring	SO-NB-P14			2

★ The O-Rings for item 38, 40 are used only for the models with the vent restrictor.

Note: When ordering the seals, please specify the seal kit number from the table right. In addition to the above seals, seals for the pilot valves are included in the seal kit.

For the detail of the pilot valve seals, see the catalogue No. Pub. EC-0402.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
BSG-03	KS-BSG-03-46
BSG-06	KS-BSG-06-46
BSG-10	KS-BSG-10-46
A-BSG-03	KS-A-BSG-03-46
A-BSG-06	KS-A-BSG-06-46
A-BSG-10	KS-A-BSG-10-46

Note: No bonded seals are included in the seal kits.

● Pilot Valves

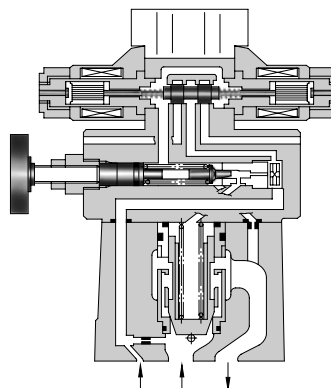
See page 30 for the pilot valve model numbers to be used.

● List of Pilot Valves

Type of Electrical Conduit Connection	Valve Model Numbers	Pilot Valve Model Numbers	Remarks
Terminal Box Type	*-BST/BSG-03/06/10-*2B3A-★-47	DSG-01-2B3A-★-60	Japanese Standard "JIS"
	*-BST/BSG-03/06/10-*2B3B-★-47	DSG-01-2B3B-★-60	
	*-BST/BSG-03/06/10-*2B2B-★-47	DSG-01-2B2B-★-60	
	*-BST/BSG-03/06/10-*2B2-★-47	DSG-01-2B2-★-60	
	*-BST/BSG-03/06/10-*3C2-★-47	DSG-01-3C2-★-60	
	*-BST/BSG-03/06/10-*3C3-★-47	DSG-01-3C3-★-60	
	*-BST/BSG-03/06/10-*2B3A-★-4790	DSG-01-2B3A-★-6090	N. American Design Std.
	*-BST/BSG-03/06/10-*2B3B-★-4790	DSG-01-2B3B-★-6090	
	*-BST/BSG-03/06/10-*2B2B-★-4790	DSG-01-2B2B-★-6090	
	*-BST/BSG-03/06/10-*2B2-★-4790	DSG-01-2B2-★-6090	
*-BST/BSG-03/06/10-*3C2-★-4790	DSG-01-3C2-★-6090		
*-BST/BSG-03/06/10-*3C3-★-4790	DSG-01-3C3-★-6090		
Plug-in Connector Type	*-BST/BSG-03/06/10-*2B3A-★-N-47	DSG-01-2B3A-★-N-60	Japanese Standard "JIS"
	*-BST/BSG-03/06/10-*2B3B-★-N-47	DSG-01-2B3B-★-N-60	
	*-BST/BSG-03/06/10-*2B2B-★-N-47	DSG-01-2B2B-★-N-60	
	*-BST/BSG-03/06/10-*2B2-★-N-47	DSG-01-2B2-★-N-60	
	*-BST/BSG-03/06/10-*3C2-★-N-47	DSG-01-3C2-★-N-60	
	*-BST/BSG-03/06/10-*3C3-★-N-47	DSG-01-3C3-★-N-60	
	*-BST/BSG-03/06/10-*2B3A-★-N-4780	DSG-01-2B3A-★-N-60	European Design Std.
	*-BST/BSG-03/06/10-*2B3B-★-N-4780	DSG-01-2B3B-★-N-60	
	*-BST/BSG-03/06/10-*2B2B-★-N-4780	DSG-01-2B2B-★-N-60	
	*-BST/BSG-03/06/10-*2B2-★-N-4780	DSG-01-2B2-★-N-60	
	*-BST/BSG-03/06/10-*3C2-★-N-4780	DSG-01-3C2-★-N-60	
	*-BST/BSG-03/06/10-*3C3-★-N-4780	DSG-01-3C3-★-N-60	
	*-BST/BSG-03/06/10-*2B3A-★-N-4790	DSG-01-2B3A-★-N-6090	N. American Design Std.
	*-BST/BSG-03/06/10-*2B3B-★-N-4790	DSG-01-2B3B-★-N-6090	
	*-BST/BSG-03/06/10-*2B2B-★-N-4790	DSG-01-2B2B-★-N-6090	
*-BST/BSG-03/06/10-*2B2-★-N-4790	DSG-01-2B2-★-N-6090		
*-BST/BSG-03/06/10-*3C2-★-N-4790	DSG-01-3C2-★-N-6090		
*-BST/BSG-03/06/10-*3C3-★-N-4790	DSG-01-3C3-★-N-6090		

Note: 1. Fill a coil type (a symbol representing current/voltage) in section marked ★.

2. For the details of the pilot valves, see the Catalogue No. Pub. EC-0402.



Specifications

Model Numbers		Max. Operating Pressure MPa (PSI)	Pressure Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)		
					Double Sol.	Single Sol.	With Vent Restrictor
Sub-plate Mounting	S-BSG-03-*-**-52*	25 (3630)	★ - 25 (★ - 3630)	100 (26.4)	6.3 (13.9)	5.7 (12.6)	6.7 (14.8)
	S-BSG-06-*-**-52*			200 (52.8)	7.2 (15.9)	6.6 (14.6)	7.6 (16.8)
	S-BSG-10-*-**-52*			400 (106)	12.7 (28.0)	12.1 (26.7)	13.1 (28.9)

★ For relief valves, low-noise type pilot operated relief valves are used. For minimum adjustment pressures and other characteristics, see page 18.

Solenoid Ratings

Solenoid ratings are the same as for the conventional type. See Solenoid Ratings on page 20.

Model Number Designation

F-	A-	S-	BS	G	-03	-V	-2B3A	-A100	-N	-L	52	*
Special Seals	With Vent Restrictor	Low Noise Type	Series Number	Type of Mtg.	Valve size	High Venting Pres. Feature	Vent Type	Coil Type	Type of Electrical Connections	Direction of Handle	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	A: ★ With Vent Restrictor (option)	S: Low Noise Type	BS: Solenoid Controlled Relief Valves	G: Sub-plate Mtg.	03	V: ★ For High Venting Pressure Feature (Omit if not required)	2B3A 2B3B 2B2B 2B2 3C2 3C3	AC: ★ A100 A120 A200 A240	None: Terminal Box Type N: With Plug-in Connector (DIN) N: With Plug-in Connector (DIN)	Viewed from pressure gauge Connection L: Left (Normal) R: Right	52	None: Japanese Std. "JIS" 90: N. American Design Std. 80: European Design Std.
					06			DC: D12 D24 D48				
					10			AC →DC: R100 R200				

★ 1. Models with vent restrictor are applicable only for the vent type 2B3A and 2B3B. For details, see page 32.

★ 2. Use high-venting-pressure types to reduce response time from unloading to onloading.

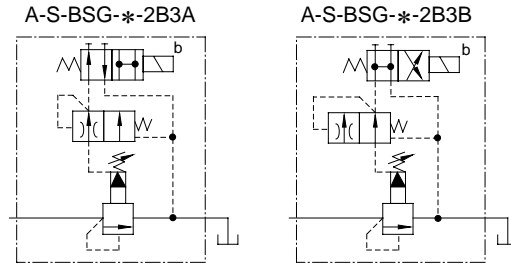
★ 3. The vent types are the same as for the conventional type solenoid controlled relief valves. For the details of the vent types, see page 21.

★ 4. The coil codes are the same as for the conventional type solenoid controlled valves. See the solenoid ratings on page 20.

Option

Models with vent restrictor

The type with a vent restrictor has a vent restrictor in vent types 2B3A and 2B3B added between a relief valve and a solenoid operated directional valve. It prevents shock to the main circuit by gradually lowering the venting pressure in the shift from the setting pressure to unloading. Unloading pressures are the same as without a vent restrictor.



Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
S-BSG-03	BGM-03-20	Rc 3/8	BGM-03-3080	3/8 BSP.F	BGM-03-2090	3/8 NPT	2.4(5.3)
	BGM-03X-20	Rc 1/2	BGM-03X-3080	1/2 BSP.F	BGM-03X-2090	1/2 NPT	3.1(6.8)
S-BSG-06	BGM-06-20	Rc 3/4	BGM-06-3080	3/4 BSP.F	BGM-06-2090	3/4 NPT	4.7(10.4)
	BGM-06X-20	Rc 1	BGM-06X-3080	1 BSP.F	BGM-06X-2090	1 NPT	5.7(12.6)
S-BSG-10	BGM-10-20	Rc 1-1/4	BGM-10-3080	1-1/4 BSP.F	BGM-10-2090	1-1/4 NPT	8.4(18.5)
	BGM-10X-20	Rc 1-1/2	BGM-10X-3080	1-1/2 BSP.F	BGM-10X-2090	1-1/2 NPT	10.3(22.7)

- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.
- The sub-plates are those for pilot operated relief valves. For dimensions, see page 13.

Attachment

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
S-BSG-03	M12 × 40 Lg.	1/2-13 UNC × 1-1/2 Lg.	4
S-BSG-06	M16 × 50 Lg.	5/8-11 UNC × 2 Lg.	4
S-BSG-10	M20 × 60 Lg.	3/4-10 UNC × 2-1/4 Lg.	4

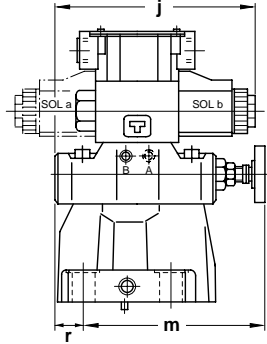
Instructions

- If a remote control relief valve is used in the vent circuit, see page 3. In addition, if the internal volume of the vent line is too large, chattering is likely to occur. Thus, as far as possible reduce the inside Dia. and the length of the pipe.
- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- With a small flow, the setting pressure may be unstable. Use models numbered 03 and 06 with a flow rate above 5 L/min (1.3 U.S. GPM) and model 10 with 8 L/min (2.1 U.S. GPM).

Terminal Box Type

Opposite Handle Position

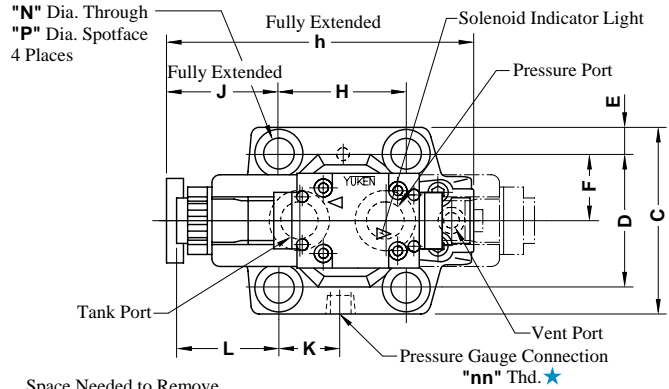
S-BSG-03
06 -*-*-*-R



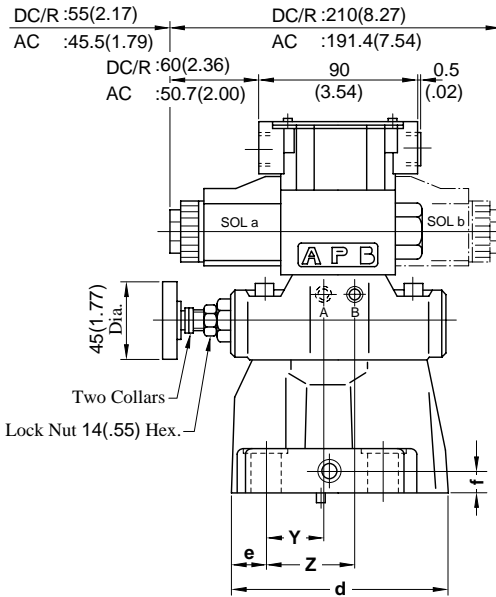
Note: For other dimensions, see the figures shown right

Mounting surface
S-BSG-03: ISO 6264-AR-06-2-A
S-BSG-06: ISO 6264-AS-08-2-A
S-BSG-10: ISO 6264-AT-10-2-A

S-BSG-03
06 -*-*-*-L-52/5290
S-BSG-10 -*-*-*-L-52/5290

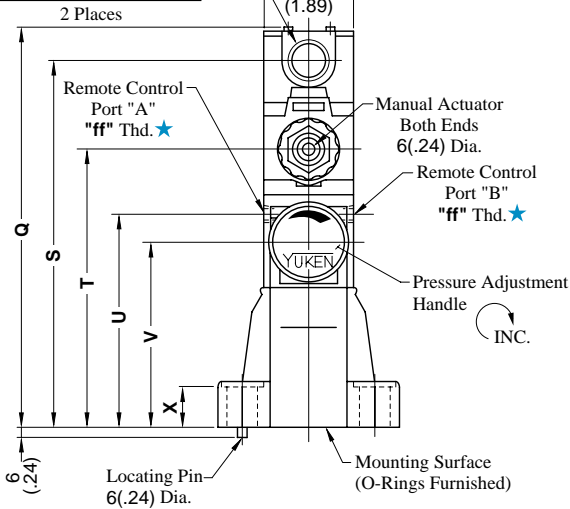


Space Needed to Remove Solenoid-Each End



Electrical Conduit Connection

Design Std.	Thd. Size
52	G 1/2
5290	1/2 NPT



Model Numbers	Dimensions mm (Inches)																						
	C	D	E	F	H	J	K	N	P	Q	S	T	U	V	X	Y	Z	d	e	f	h	m	r
S-BSG-03	76 (2.99)	53.8 (2.12)	11.1 (.44)	26.9 (1.06)	53.8 (2.12)	73.6 (2.90)	26.9 (1.06)	13.5 (.53)	21 (.83)	218.3 (8.59)	200 (7.87)	153 (6.02)	117 (4.61)	103 (4.06)	21.5 (.85)	17.1 (.67)	36.6 (1.44)	106 (4.17)	26.1 (1.03)	13 (.51)	163.5 (6.44)	127.4 (5.02)	36.1 (1.42)
S-BSG-06	98 (3.86)	70 (2.76)	14 (.55)	35 (1.38)	66.7 (2.63)	58.8 (2.31)	33.7 (1.33)	17.5 (.69)	26 (1.02)	218.3 (8.59)	200 (7.87)	153 (6.02)	117 (4.61)	103 (4.06)	26 (1.02)	31.9 (1.26)	51.4 (2.02)	122 (4.80)	19.3 (.76)	13 (.51)	163.5 (6.44)	142.2 (5.60)	21.3 (.84)
S-BSG-10	120 (4.72)	82.6 (3.25)	18.7 (.74)	41.3 (1.63)	88.9 (3.50)	46.1 (1.81)	44.9 (1.77)	21.5 (.85)	32 (1.26)	253.3 (9.97)	235 (9.25)	188 (7.40)	149 (5.87)	135 (5.31)	34 (1.34)	43.2 (1.70)	62.7 (2.47)	155 (6.10)	21.1 (.83)	18 (.71)	180 (7.09)	—	—

Model Numbers	AC Solenoid		DC/R Solenoid	
	L	j	L	j
S-BSG-03	68.8 (2.71)	158.7 (6.25)	78.1 (3.07)	168 (6.61)
S-BSG-06	54 (2.13)	158.7 (6.25)	63.3 (2.49)	168 (6.61)
S-BSG-10	41.8 (1.65)	—	51.1 (2.01)	—

**DIMENSIONS IN
MILLIMETRES (INCHES)**

★ For the port screws, see the Plug-in Connector type on page 34.

Note: For dimensions of the valve mounting surface, see the installation drawing (P.13) of the sub-plate used together.

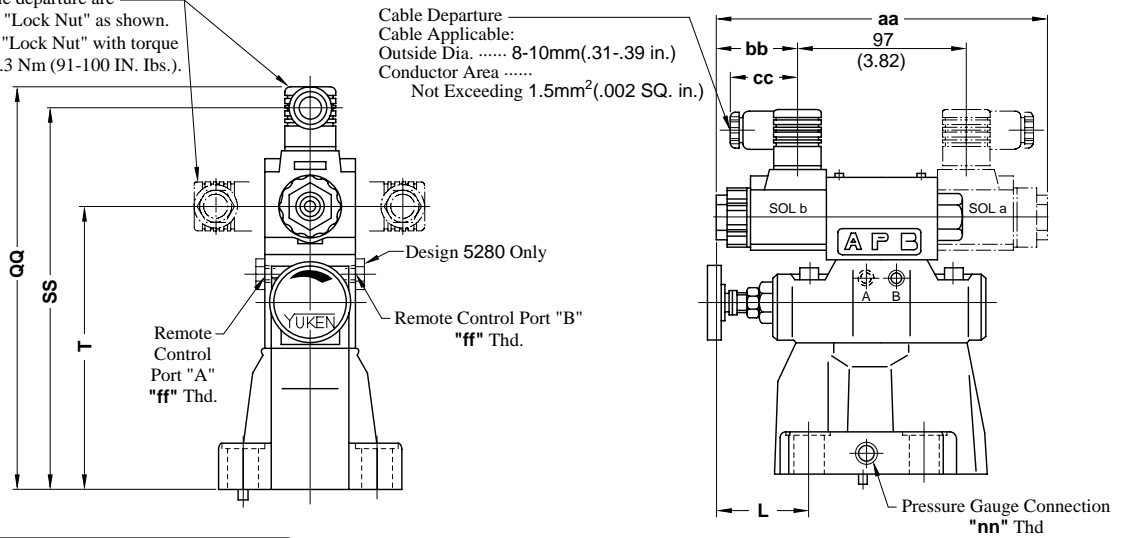


■ Plug-in Connector Type

S-BSG-03-**-**-N-L-52/5280/5290

S-BSG-10-**-**-N-52/5280/5290

Three positions of cable departure are available by loosening "Lock Nut" as shown. After location, tighten "Lock Nut" with torque in the range 10.3 to 11.3 Nm (91-100 IN. lbs.).



DIMENSIONS IN
MILLIMETRES (INCHES)

Model Numbers	Dimensions mm (Inches)							Remarks
	L	T	SS	QQ	aa	bb	cc	
S-BSG-03-**-**-A*-N	68.8 (2.71)	153 (6.02)	206 (8.11)	218 (8.58)	191.4 (7.54)	47.2 (1.86)	39 (1.54)	With AC Solenoid
S-BSG-06-**-**-A*-N	54 (2.13)	153 (6.02)	206 (8.11)	218 (8.58)				
S-BSG-10-**-**-A*-N	41.8 (1.65)	188 (7.40)	241 (9.49)	253 (9.96)				
S-BSG-03-**-**-D*-N	78.1 (3.07)	153 (6.02)	217 (8.54)	229 (9.02)	210 (8.27)	56.5 (2.22)	39 (1.54)	With DC Solenoid
S-BSG-06-**-**-D*-N	63.3 (2.49)	153 (6.02)	217 (8.54)	229 (9.02)				
S-BSG-10-**-**-D*-N	51.1 (2.01)	188 (7.40)	252 (9.92)	264 (10.39)				
S-BSG-03-**-**-R*-N	78.1 (3.07)	153 (6.02)	210.2 (8.28)	232 (9.13)	210 (8.27)	56.5 (2.22)	53 (2.09)	With AC → DC Solenoid
S-BSG-06-**-**-R*-N	63.3 (2.49)	153 (6.02)	210.2 (8.28)	232 (9.13)				
S-BSG-10-**-**-R*-N	51.1 (2.01)	188 (7.40)	245.2 (9.65)	267 (10.51)				

Model Numbers	Thread Size					
	Japanese Standard "JIS" Design 52		European Design Standard Design 5280		N. American Design Standard Design 5290	
	"ff" Thd.	"nn" Thd.	"ff" Thd.	"nn" Thd.	"ff" Thd.	"nn" Thd.
S-BSG-03-**-**-N	Rc 1/8	Rc 1/4	1/8 BSP.F	1/4 BSP.F	1/8 NPT	1/4 NPT
S-BSG-06-**-**-N						
S-BSG-10-**-**-N						

Options-Models with Vent Restrictor

Terminal Box Type

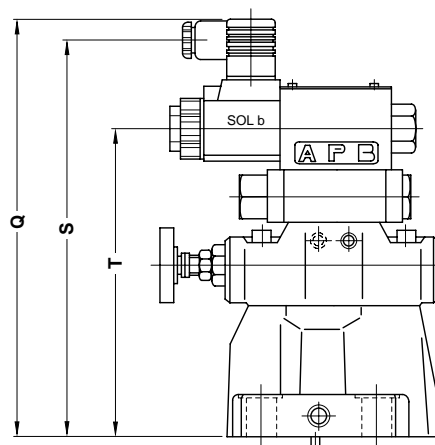
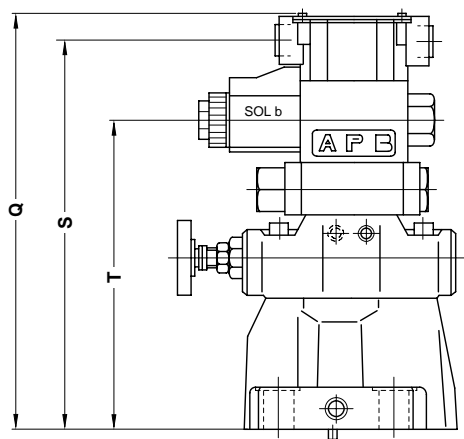
A-S-BSG-⁰³/₀₆ -*-**-L-52/5290

A-S-BSG-10-**-*-52/5290

Plug-in Connector Type

A-S-BSG-⁰³/₀₆ -*-**-N-L-52/5280/5290

A-S-BSG-10-**-*-N-52/5280/5290



Model Numbers	Dimensions mm (Inches)			Remarks
	Q	S	T	
A-S-BSG-03-**-*-A*/D*/R*-	248.3 (9.78)	230(9.06)	183(7.20)	Terminal Box Type
A-S-BSG-06-**-*-A*/D*/R*-	248.3(9.78)	230(9.06)	183(7.20)	
A-S-BSG-10-**-*-A*/D*/R*-	283.3(11.15)	235(9.25)	188(7.40)	
A-S-BSG-03-**-*-A*-N-L	248(9.76)	236(9.29)	183(7.20)	Plug-in Connector Type
A-S-BSG-03-**-*-D*-N-L	259(10.20)	247(9.72)		
A-S-BSG-03-**-*-R*-N-L	262(10.31)	240.2(9.46)		
A-S-BSG-06-**-*-A*-N-L	248(9.76)	236(9.29)	183(7.20)	
A-S-BSG-06-**-*-D*-N-L	259(10.20)	247(9.72)		
A-S-BSG-06-**-*-R*-N-L	262(10.31)	240.2(9.46)		
A-S-BSG-10-**-*-A*-N	283(11.14)	271(10.67)	188(7.40)	
A-S-BSG-10-**-*-D*-N	294(11.57)	282(11.10)		
A-S-BSG-10-**-*-R*-N	297(11.69)	275.2(10.83)		

Lead Wire Connection

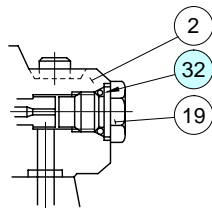
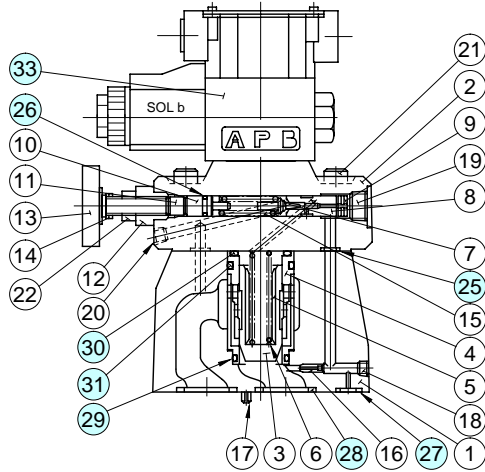
Lead Wire Connection is the same way as the conventional type solenoid controlled relief valves. See page 27.



Spare Parts List

● Terminal Box Type

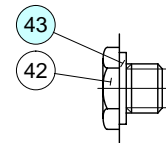
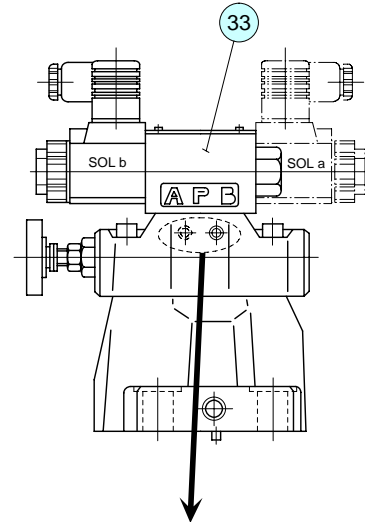
S-BSG-03,06,10-***-52/5290



*-S-BSG-10

● Plug-in Connector Type

S-BSG-03,06,10-***-N-52/5280/5290



Design 5280 Only

● List of Seals

Item	Name of Parts	Part Numbers			Qty.
		S-BSG-03	S-BSG-06	S-BSG-10	
25	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	2
26	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1
27	O-Ring	SO-NB-P9	SO-NB-P11	SO-NB-P9	1
28	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	2
29	O-Ring	SO-NB-A024	SO-NB-A024	SO-NB-A128	1
30	O-Ring	SO-NB-P28	SO-NB-P28	SO-NB-P36	1
31	O-Ring	SO-NB-P32	SO-NB-P32	SO-NB-P42	1
32	O-Ring	—	—	SO-NB-P14	1
38*	O-Ring	SO-NB-P8			2
40*	O-Ring	SO-NB-P14			2
43	Bonded Seal	SG-FB-1/8	SG-FB-1/8	SG-FB-1/8	2

★ The O-Rings for item 38, 40 are used only for the models with the vent restrictor.

Note: When ordering the seals, please specify the seal kit number from the table right. In addition to the above seals, seals for the pilot valves are included in the seal kit.

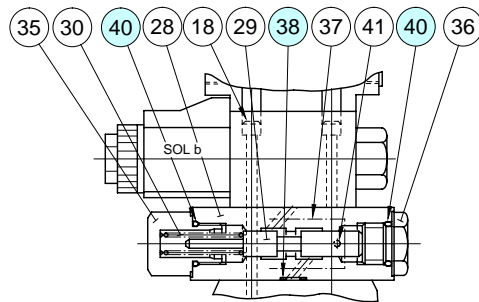
For the detail of the pilot valve seals, see the catalogue No. Pub. EC-0402.

⚠ CAUTION

When making replacement of seals or solenoid assemblies, please do it carefully after reading through the relevant instructions in the Operator's Manual.

■ Option-Models with Vent Restrictor

A-S-BSG-03,06,10-***-52/5290
N-52/5280/5290



● List of Seal Kits

Model Numbers	Seal Kit Numbers
S-BSG-03	KS-S-BSG-03-51
S-BSG-06	KS-S-BSG-06-51
S-BSG-10	KS-S-BSG-10-51
A-S-BSG-03	KS-A-S-BSG-03-51
A-S-BSG-06	KS-A-S-BSG-06-51
A-S-BSG-10	KS-A-S-BSG-10-51

Note: No bonded seals are included in the seal kits.

● Pilot Valves

See page 37 for the pilot valve model numbers to be used.

● List of Pilot Valves

Type of Electrical Conduit Connection	Valve Model Numbers	Pilot Valve Model Numbers	Remarks	
Terminal Box Type	*-S-BSG-03/06/10-*-2B3A-★-52	DSG-01-2B3A-★-60	Japanese Standard "JIS"	
	-S-BSG-03/06/10--2B3B-★-52	DSG-01-2B3B-★-60		
	-S-BSG-03/06/10--2B2B-★-52	DSG-01-2B2B-★-60		
	-S-BSG-03/06/10--2B2-★-52	DSG-01-2B2-★-60		
	-S-BSG-03/06/10--3C2-★-52	DSG-01-3C2-★-60		
	-S-BSG-03/06/10--3C3-★-52	DSG-01-3C3-★-60		
	Terminal Box Type	*-S-BSG-03/06/10-*-2B3A-★-5290	DSG-01-2B3A-★-6090	N. American Design Std.
		-S-BSG-03/06/10--2B3B-★-5290	DSG-01-2B3B-★-6090	
		-S-BSG-03/06/10--2B2B-★-5290	DSG-01-2B2B-★-6090	
		-S-BSG-03/06/10--2B2-★-5290	DSG-01-2B2-★-6090	
		-S-BSG-03/06/10--3C2-★-5290	DSG-01-3C2-★-6090	
		-S-BSG-03/06/10--3C3-★-5290	DSG-01-3C3-★-6090	
Plug-in Connector Type	*-S-BSG-03/06/10-*-2B3A-★-N-52	DSG-01-2B3A-★-N-60	Japanese Standard "JIS"	
	-S-BSG-03/06/10--2B3B-★-N-52	DSG-01-2B3B-★-N-60		
	-S-BSG-03/06/10--2B2B-★-N-52	DSG-01-2B2B-★-N-60		
	-S-BSG-03/06/10--2B2-★-N-52	DSG-01-2B2-★-N-60		
	-S-BSG-03/06/10--3C2-★-N-52	DSG-01-3C2-★-N-60		
	-S-BSG-03/06/10--3C3-★-N-52	DSG-01-3C3-★-N-60		
	Plug-in Connector Type	*-S-BSG-03/06/10-*-2B3A-★-N-5280	DSG-01-2B3A-★-N-60	European Design Std.
		-S-BSG-03/06/10--2B3B-★-N-5280	DSG-01-2B3B-★-N-60	
		-S-BSG-03/06/10--2B2B-★-N-5280	DSG-01-2B2B-★-N-60	
		-S-BSG-03/06/10--2B2-★-N-5280	DSG-01-2B2-★-N-60	
		-S-BSG-03/06/10--3C2-★-N-5280	DSG-01-3C2-★-N-60	
		-S-BSG-03/06/10--3C3-★-N-5280	DSG-01-3C3-★-N-60	
	Plug-in Connector Type	*-S-BSG-03/06/10-*-2B3A-★-N-5290	DSG-01-2B3A-★-N-6090	N. American Design Std.
		-S-BSG-03/06/10--2B3B-★-N-5290	DSG-01-2B3B-★-N-6090	
		-S-BSG-03/06/10--2B2B-★-N-5290	DSG-01-2B2B-★-N-6090	
		-S-BSG-03/06/10--2B2-★-N-5290	DSG-01-2B2-★-N-6090	
		-S-BSG-03/06/10--3C2-★-N-5290	DSG-01-3C2-★-N-6090	
		-S-BSG-03/06/10--3C3-★-N-5290	DSG-01-3C3-★-N-6090	

Note: 1. Fill a coil type (a symbol representing current/voltage) in section marked ★.
2. For the details of the pilot valves, see the Catalogue No. Pub. EC-0402.



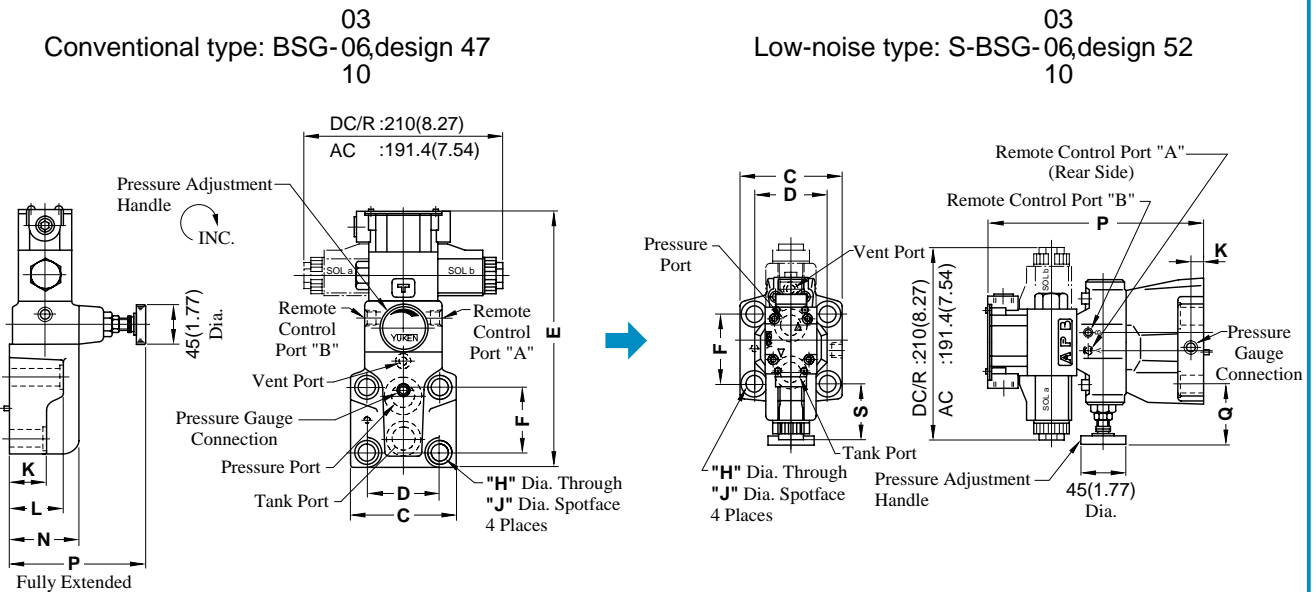
Interchangeability in Installation between Old and New Design

Interchangeability with old products

Design 52 valve is one on which DSG-01, design 60 is mounted as a pilot valve. It is interchangeable with old design (S-BSG-*, design 51) in terms of specifications and mounting dimensions.

Interchangeability between conventional and low-noise type

Design 52 of the low-noise type is interchangeable for installation with design 47 of conventional types BSG-03/-06/-10. However, exterior shapes such as the position of the pressure adjustment handle are different.

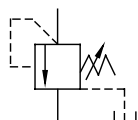
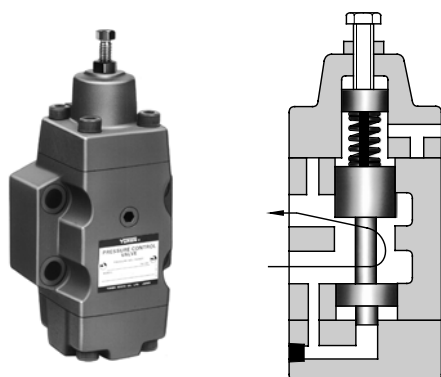


Model Numbers	Dimensions mm (Inches)									
	C	D	E	F	H	J	K	L	N	P
BSG-03	82 (3.23)	53.8 (2.12)	227.3 (8.95)	53.8 (2.12)	13.5 (.53)	21 (.83)	57 (2.24)	78 (3.07)	78 (3.07)	145 (5.71)
BSG-06	104 (4.09)	70 (2.76)	251.3 (9.89)	66.7 (2.63)	17.5 (.69)	26 (1.02)	40 (1.57)	60 (2.36)	78 (3.07)	145 (5.71)
BSG-10	124 (4.88)	82.6 (3.25)	285.3 (11.23)	88.9 (3.50)	21.5 (.85)	32 (1.26)	47 (1.85)	67 (2.64)	84 (2.31)	146 (5.75)

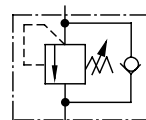
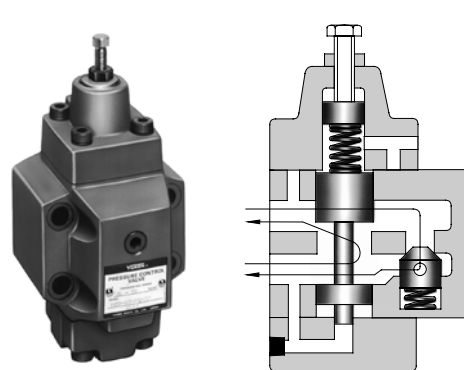
Model Numbers	Dimensions mm (Inches)									
	C	D	F	H	J	K	P	Q	S	
									AC	DC/R
S-BSG-03	76 (2.99)	53.8 (2.12)	53.8 (2.12)	13.5 (.53)	21 (.83)	13 (.51)	218.3 (8.59)	73.6 (2.90)	68.8 (2.71)	78.1 (3.07)
S-BSG-06	98 (3.86)	70 (2.76)	66.7 (2.63)	17.5 (.69)	26 (1.02)	13 (.51)	218.3 (8.59)	58.8 (2.31)	54 (2.13)	63.3 (2.49)
S-BSG-10	120 (4.72)	82.6 (3.25)	88.9 (3.50)	21.5 (.85)	32 (1.26)	18 (.71)	253.3 (9.97)	46.1 (1.81)	41.8 (1.65)	51.1 (2.01)

YUKEN**H/HC TYPE PRESSURE CONTROL VALVES****HT/HG -03/06/10(3/8,3/4,1-1/4)
HCT/HCG****Threaded Connections/Sub-plate Mounting****PRESSURE
CONTROLS****Up to 21 MPa (3050 PSI), 500 L/min (132 U.S. GPM)****H Type Pressure Control Valves**

These valves are hydraulically damped, direct operated, pressure control valves which can be actuated by internal or external pilot pressure. There are various types of valve including sequence, unloading and low pressure relief valves, all of which are operated by a pressure rise in the circuit, sensed either internally or remotely.

**HC Type Pressure Control Valves**

These valves are hydraulically damped, direct operated pressure control valves which can be actuated by internal or external pilot pressure. They are available with integral check valves for use when free reverse flow from secondary port to the primary port is desired. There are various types of valve including sequence and counterbalance valves, all of which are operated by a pressure rise in the circuit, sensed either internally or remotely.

**Hydraulic Fluids****Fluid Types**

Any type of hydraulic fluids listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG32 or VG46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 μm or finer line filter.

Specifications

Series	Model Numbers		Max. Operating Pres. MPa (PSI)	Max. Flow L/min (U.S. GPM)	Approx. Mass kg (lbs.)	
	Threaded Connection	Sub-plate Mounting			Threaded Connection	Sub-plate Mounting
H Type Pressure Control Valves	HT-03-***-22/2280/2290	HG-03-***-22/2290	21(3050)	50 (13.2)	3.7 (8.2)	4.0 (8.8)
	HT-06-***-22/2280/2290	HG-06-***-22/2290		125 (33)	6.2 (13.7)	6.1 (13.4)
	HT-10-***-22/2280/2290	HG-10-***-22/2290		250 (66)	12.0 (26.4)	11.0 (24.2)
HC Type Pressure Control Valves	HCT-03-***-22/2280/2290	HCG-03-***-22/2290	21(3050)	50 (13.2)	4.1 (9.0)	4.8 (10.6)
	HCT-06-***-22/2280/2290	HCG-06-***-22/2290		125 (33)	7.1 (15.6)	7.4 (16.3)
	HCT-10-***-22/2280/2290	HCG-10-***-22/2290		250 (66)	13.8 (30.4)	13.8 (30.4)

- For check valve pressure drops of HC type, see free flow pressure drop characteristics described on page 12.

Yuken can offer flanged connection valves described below.
For details, contact us.

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. flow L/min (U.S.GPM)
HF/HCF-10-***-22/2290	21 (3050)	250(66)
HF/HCF-16-***-20/2090		500(132)

Model Number Designation

F-	H	T	-03	-C	3	-P	-22	*		
Special Seals	Series Number	Type of Mounting	Valve Size	Pres. Adj. Range MPa (PSI)	Valve Type ^{★1}	With Auxiliary Pilot Pressure	Design Number	Design Standards		
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	H: H Type Pressure Control Valves	T: Threaded Connection	03	L: 0.25 - 0.45 (36 - 65) M: 0.45 - 0.9 (65 - 130) N: 0.9 - 1.8 (130 - 260) A: 1.8 - 3.5 (260 - 510) B: 3.5 - 7.0 (510 - 1020) C: 7.0 - 14 (1020 - 2030)	★1 ★2 2 3 4	P: With Auxiliary Pilot Pressure ^{★3}	22	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.		
			06				22			
			10				22			
		G: Sub-plate Mounting	03				22		None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.	
			06				22			
			10				22			
	HC: HC Type Pressure Control Valves	T: Threaded Connection	03		★1 ★2 3 4		P: With Auxiliary Pilot Pressure ^{★3}	22		None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
			06					22		
			10					22		
		G: Sub-plate Mounting	03					22	None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std.	
			06					22		
			10					22		

- ★1. For the details of valve types, see the following page.
- ★2. Type 1 is only possible for pressure adjustment ranges L and M.
- ★3. Models with auxiliary pilots are used where valves must be operated under a lower external pilot pressure than the adjusted pressure (types N, A, and B: about 1/8 of adjusted pressure; type C: about 1/16). This does not apply to pressure adjustment ranges L and M and valve type 1.

Valve Types

H Type

Valve Type	Type 1: Low Pres. Relief Valve	Type 2: Sequence Valve	Type 3: Sequence Valve	Type 4: Unloading Valve
Pilot-Drain Type	Internal Pilot-Internal Drain	Internal Pilot-External Drain	External Pilot-External Drain	External Pilot-Internal Drain
Operations				
Graphic Symbols				
Description	Can be used as low-pressure relief valve, but be careful to occurrence of surge pressure.	Used to control the operational sequence of 2 or more actuators. If primary pressure exceeds the pressure setting, effective fluid is delivered to the secondary side.	Used for the same purpose as for the type 2. Operated by external pilot pressure irrespective of primary pressure.	Used as unloading valve. If external pilot pressure exceeds the pressure setting, the pump is turned no-load by releasing all fluid to the tank.

HC Type

Valve Type	Type 1: Counterbalance Valve	Type 2: Sequence and Check Valve	Type 3: Sequence and Check Valve	Type 4: Counterbalance Valve
Pilot-Drain Type	Internal Pilot-Internal Drain	Internal Pilot-External Drain	External Pilot-External Drain	External Pilot-Internal Drain
Operations				
Graphic Symbols				
Descriptions	Used to prevent gravitational falls by generating a pressure on the actuator return side. If primary pressure exceeds the pressure setting, fluid is released to keep the pressure constant.	Used to control the operating sequence of two or more actuators. If primary pressure exceeds the pressure setting, effective fluid is delivered to the secondary side. Reversed flow is free by a check valve.	Used for the same purpose as for type 2. Operated by external pilot pressure irrespective of primary pressure. Reversed flow is free by a check valve.	Used for the same purpose as for type 1. Operated by external pilot pressure irrespective of primary pressure. Reversed flow is free by a check valve.

■ Instructions

- To adjust the pressure, loosen the lock nut and turn the pressure adjustment screw slowly clockwise to increase pressures or anti-clockwise to decrease pressures. After adjustments, do not forget to tighten the lock nut.
- Connect the secondary side pressure ports of types 1 and 4 (internal drain) and the drain ports of types 2 and 3 (external drain) directly to the tanks with a back pressure close to the atmospheric pressure.
- There are two threaded connection primary pressure ports. They can be connected each other in-line; one as inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.

■ Attachment

● Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
HG-03	M10 × 50 Lg.	3/8 -16 UNC × 2 Lg.	4
HG-06	M10 × 50 Lg.	3/8 -16 UNC × 2 Lg.	4
HG-10	M10 × 50 Lg.	3/8 -16 UNC × 2 Lg.	6
HCG-03	M10 × 70 Lg.	3/8 -16 UNC × 2-3/4 Lg.	4
HCG-06	M10 × 80 Lg.	3/8 -16 UNC × 3-1/4 Lg.	4
HCG-10	M10 × 90 Lg.	3/8 -16 UNC × 3-1/2 Lg.	6

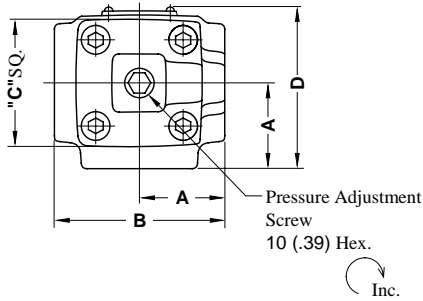
■ Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N.American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
HG HCG -03-***	HGM-03-20	Rc 3/8	HGM-03-2080	3/8 BSP.F	HGM-03-2090	3/8 NPT	1.6 (3.5)
	HGM-03X-20	Rc 1/2	HGM-03X-2080	1/2 BSP.F	HGM-03X-2090	1/2 NPT	1.6 (3.5)
HG HCG -03-***-P	HGM-03-P-20	Rc 3/8	HGM-03-P-2080	3/8 BSP.F	HGM-03-P-2090	3/8 NPT	2.0 (4.4)
	HGM-03X-P-20	Rc 1/2	HGM-03X-P-2080	1/2 BSP.F	HGM-03X-P-2090	1/2 NPT	2.0 (4.4)
HG HCG -06-***	HGM-06-20	Rc 3/4	HGM-06-2080	3/4 BSP.F	HGM-06-2090	3/4 NPT	2.4 (5.3)
	HGM-06X-20	Rc 1	HGM-06X-2080	1 BSP.F	HGM-06X-2090	1 NPT	3.0 (6.6)
HG HCG -06-***-P	HGM-06-P-20	Rc 3/4	HGM-06-P-2080	3/4 BSP.F	HGM-06-P-2090	3/4 NPT	2.4 (5.3)
	HGM-06X-P-20	Rc 1	HGM-06X-P-2080	1 BSP.F	HGM-06X-P-2090	1 NPT	3.0 (6.6)
HG HCG -10-***	HGM-10-20	Rc 1-1/4	HGM-10-2080	1-1/4 BSP.F	HGM-10-2090	1-1/4 NPT	4.8 (10.6)
	HGM-10X-20	Rc 1-1/2	HGM-10X-2080	1-1/2 BSP.F	HGM-10X-2090	1-1/2 NPT	5.7 (12.6)
HG HCG -10-***-P	HGM-10-P-20	Rc 1-1/4	HGM-10-P-2080	1-1/4 BSP.F	HGM-10-P-2090	1-1/4 NPT	4.8 (10.6)
	HGM-10X-P-20	Rc 1-1/2	HGM-10X-P-2080	1-1/2 BSP.F	HGM-10X-P-2090	1-1/2 NPT	5.7 (12.6)

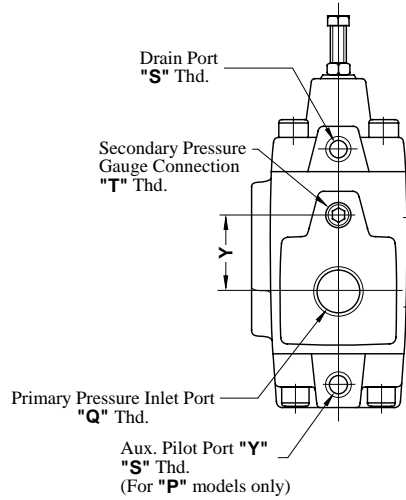
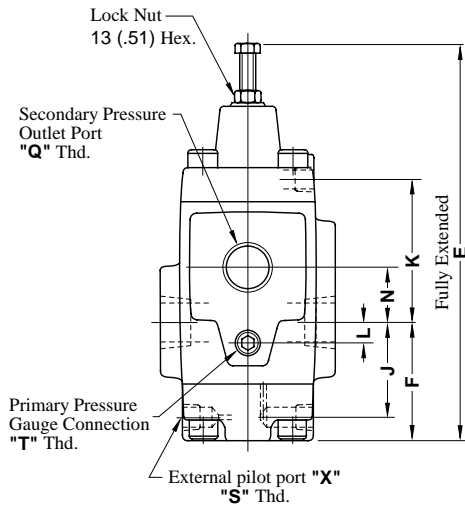
- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

HT-03, 06, 10-**-**-22/2280/2290

Type 3: Sequence Valve (External Pilot, External Drain)

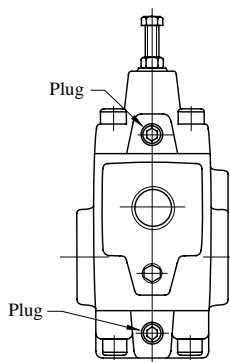


Model Numbers	"Q" Thd.	"S" Thd.	"T" Thd.
HT-03, 22	Rc 3/8	Rc 1/4	Rc 1/4
HT-06, 22	Rc 3/4		
HT-10, 22	Rc 1-1/4		
HT-03, 2280	3/8 BSP.F	1/4 BSP.F	1/4 BSP.Tr
HT-06, 2280	3/4 BSP.F		
HT-10, 2280	1-1/4 BSP.F		
HT-03, 2290	3/8 NPT	1/4 NPT	1/4 NPT
HT-06, 2290	3/4 NPT		
HT-10, 2290	1-1/4 NPT		

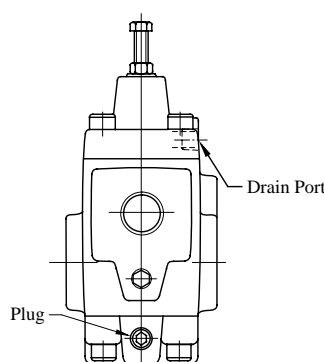


Model Numbers	Dimensions mm (Inches)										
	A	B	C	D	E	F	J	K	L	N	Y
HT-03	41 (1.61)	82 (3.23)	60 (2.36)	74 (2.91)	191 (7.52)	57 (2.24)	43 (1.69)	70 (2.76)	0 (0)	28 (1.10)	28 (1.10)
HT-06	48 (1.89)	96 (3.78)	73 (2.87)	87 (3.43)	221 (8.70)	64.5 (2.54)	50.5 (1.99)	80.5 (3.17)	9 (.35)	33 (1.30)	42 (1.65)
HT-10	66 (2.60)	132 (5.20)	86 (3.39)	112 (4.41)	272 (10.71)	84 (3.31)	66 (2.60)	98 (3.86)	12 (.47)	40 (1.57)	52 (2.05)

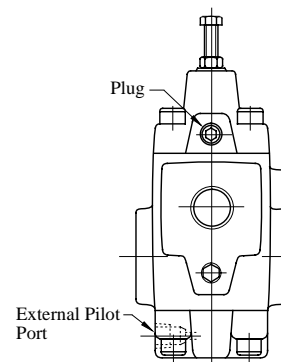
Type 1: Low Pressure Relief Valve (Internal Pilot, Internal Drain)



Type 2: Sequence Valve (Internal Pilot, External Drain)



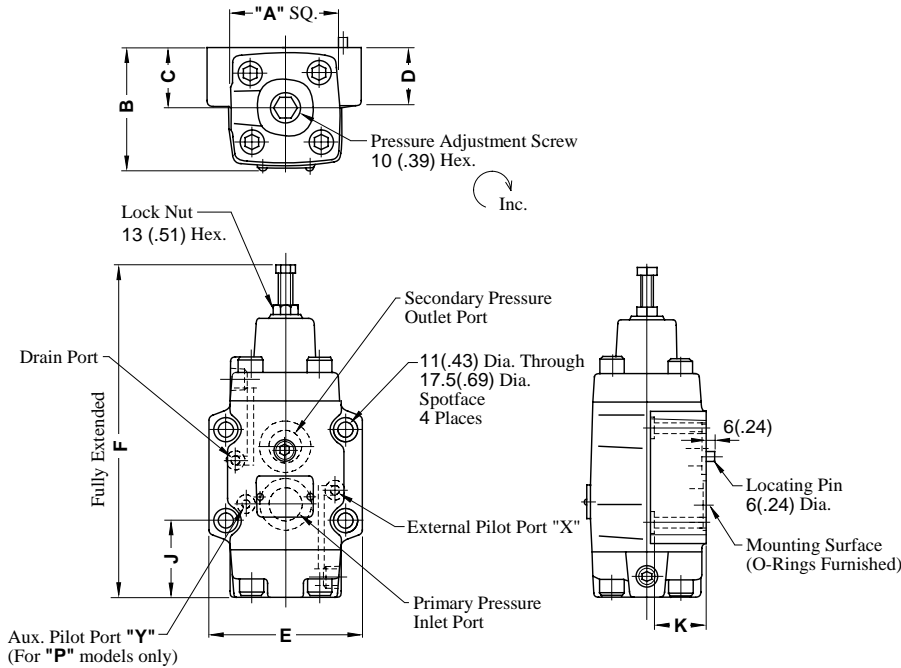
Type 4: Unloading Valve (External Pilot, Internal Drain)



HG-03, 06-**-**-22/2290

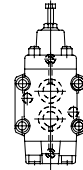
Type 3: Sequence Valve
(External Pilot, External Drain)

Mounting Surface
HG-03: ISO 5781-AG-06-2-A
HG-06: ISO 5781-AG-08-2-A

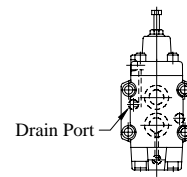


Model Numbers	Dimensions mm (Inches)							
	A	B	C	D	E	F	J	K
HG-03	60 (2.36)	67 (2.64)	35 (1.38)	39 (1.54)	89 (3.50)	191 (7.52)	49.6 (1.95)	38 (1.50)
HG-06	73 (2.87)	79 (3.11)	40 (1.57)	39 (1.54)	102 (4.02)	221 (8.70)	51 (2.01)	38 (1.50)

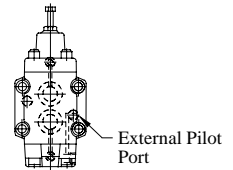
Type 1: Low Pressure Relief Valve
(Internal Pilot, Internal Drain)



Type 2: Sequence Valve
(Internal Pilot, External Drain)



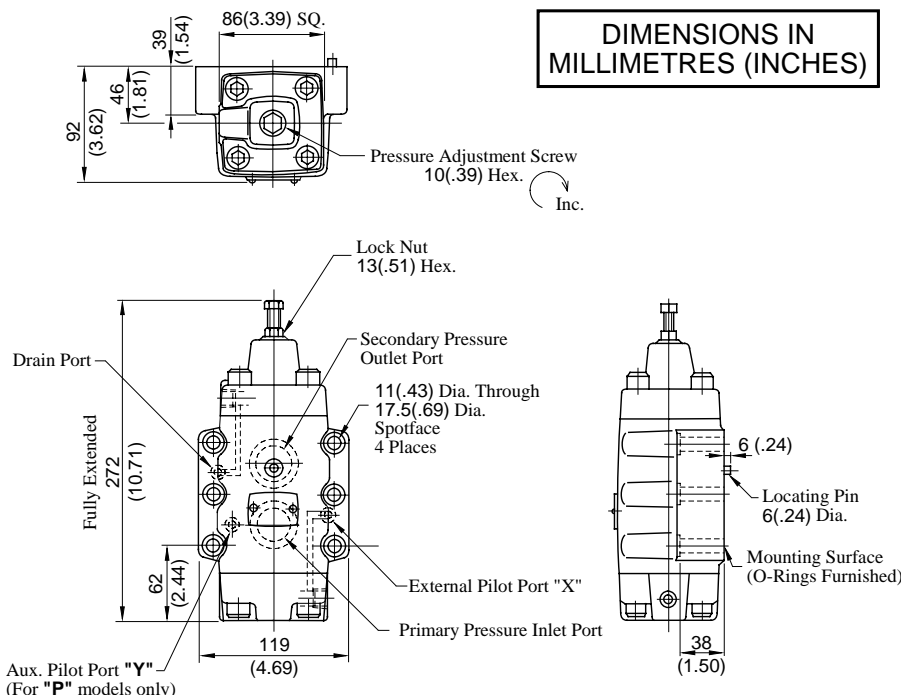
Type 4: Unloading Valve
(External Pilot, Internal Drain)



HG-10-**-**-22/2290

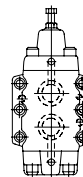
Type 3: Sequence Valve
(External Pilot, External Drain)

Mounting Surface
ISO 5781-AJ-10-2-A

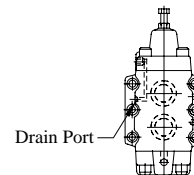


**DIMENSIONS IN
MILLIMETRES (INCHES)**

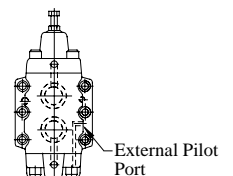
Type 1: Low Pressure Relief Valve
(Internal Pilot, Internal Drain)



Type 2: Sequence Valve
(Internal Pilot, External Drain)



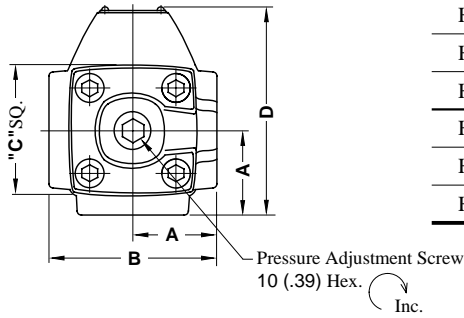
Type 4: Unloading Valve
(External Pilot, Internal Drain)



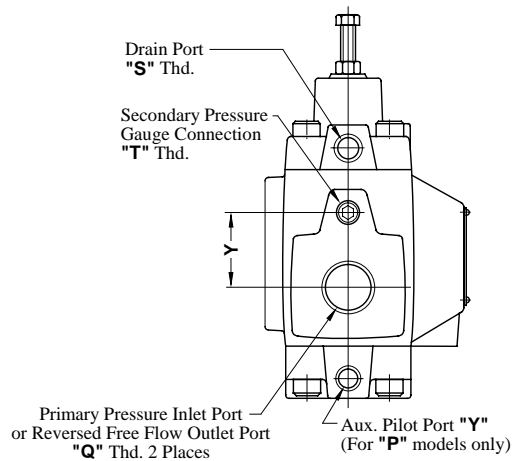
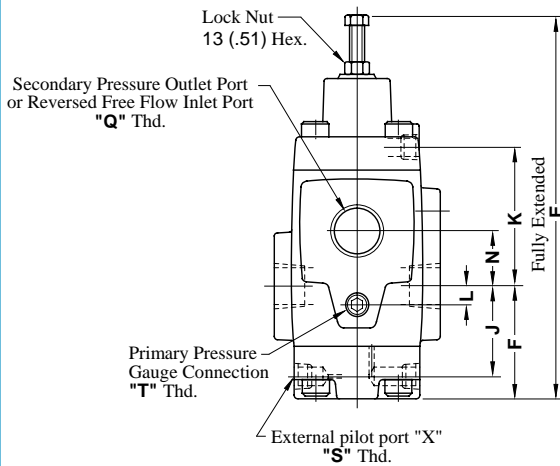
HCT-03, 06, 10-**-**-22/2280/2209

Type 3: Sequence and Check Valve (External Pilot, External Drain)

Model Numbers	"Q" Thd.	"S" Thd.	"T" Thd.
HCT-03, 22	Rc 3/8	Rc 1/4	Rc 1/4
HCT-06, 22	Rc 3/4		
HCT-10, 22	Rc 1-1/4		
HCT-03, 2280	3/8 BSP.F	1/4 BSP.F	1/4 BSP.Tr
HCT-06, 2280	3/4 BSP.F		
HCT-10, 2280	1-1/4 BSP.F		
HCT-03, 2290	3/8 NPT	1/4 NPT	1/4 NPT
HCT-06, 2290	3/4 NPT		
HCT-10, 2290	1-1/4 NPT		

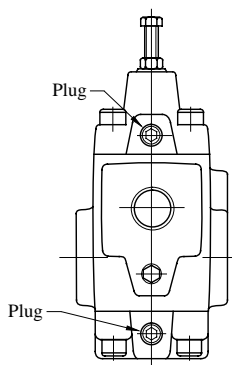


**DIMENSIONS IN
MILLIMETRES (INCHES)**

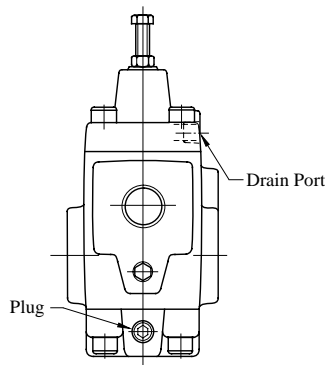


Model Numbers	Dimensions mm (Inches)										
	A	B	C	D	E	F	J	K	L	N	Y
HCT-03	41 (1.61)	82 (3.23)	60 (2.36)	96 (3.78)	191 (7.52)	57 (2.24)	43 (1.69)	70 (2.76)	0 (0)	28 (1.10)	28 (1.10)
HCT-06	48 (1.89)	96 (3.78)	73 (2.87)	116 (4.57)	221 (8.70)	64.5 (2.54)	50.5 (1.99)	80.5 (3.17)	9 (.35)	33 (1.30)	42 (1.65)
HCT-10	66 (2.60)	132 (5.20)	86 (3.39)	152 (5.98)	272 (10.71)	84 (3.31)	66 (2.60)	98 (3.86)	12 (.47)	40 (1.57)	52 (2.05)

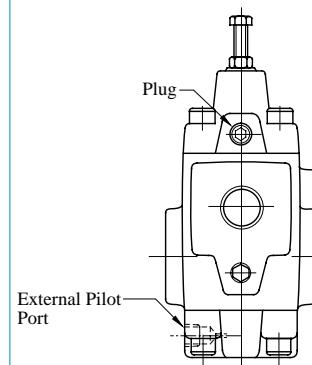
Type 1: Counterbalance Valve (Internal Pilot, Internal Drain)



Type 2: Sequence and Check Valve (Internal Pilot, External Drain)



Type 4: Counterbalance Valve (External Pilot, Internal Drain)

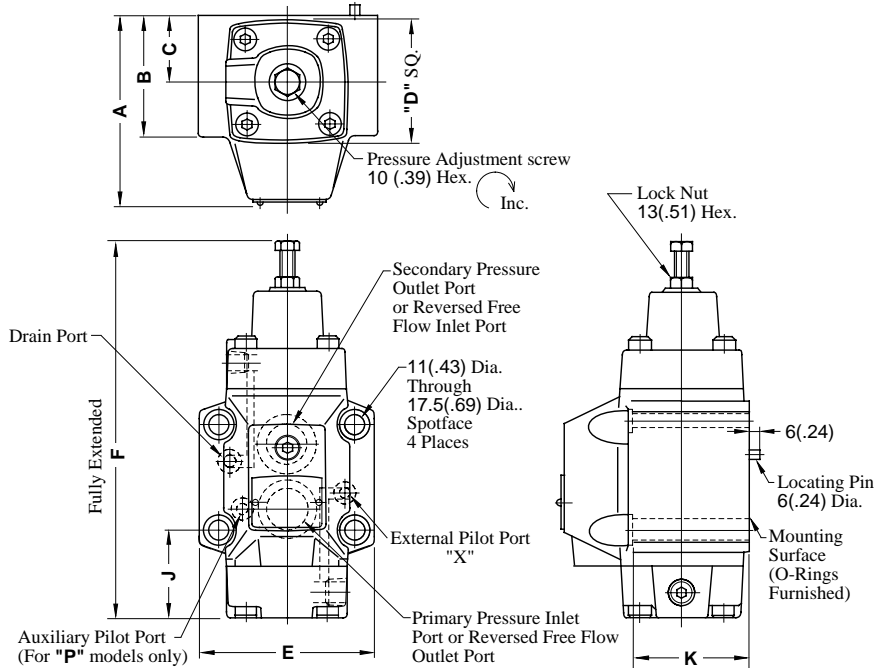


Installation Drawings

HCG-03, 06-**-**-22/2290

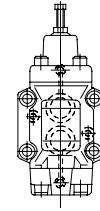
Type 3: Sequence and Check Valve (External Pilot, External Drain)

Mounting Surface
HCG-03: ISO 5781-AG-06-2-A
HCG-06: ISO 5781-AH-08-2-A

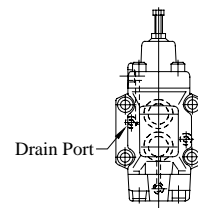


Model Numbers	Dimensions mm (Inches)							
	A	B	C	D	E	F	J	K
HCG-03	90 (3.54)	59 (2.32)	35 (1.38)	60 (2.36)	89 (3.50)	191 (7.52)	49.6 (1.95)	58 (2.28)
HCG-06	108 (4.25)	69 (2.72)	40 (1.57)	73 (2.87)	102 (4.02)	221 (8.70)	51 (2.01)	68 (2.68)

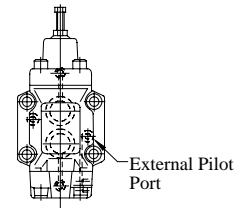
Type 1: Counterbalance Valve (Internal Pilot, Internal Drain)



Type 2: Sequence and Check Valve (Internal Pilot, External Drain)



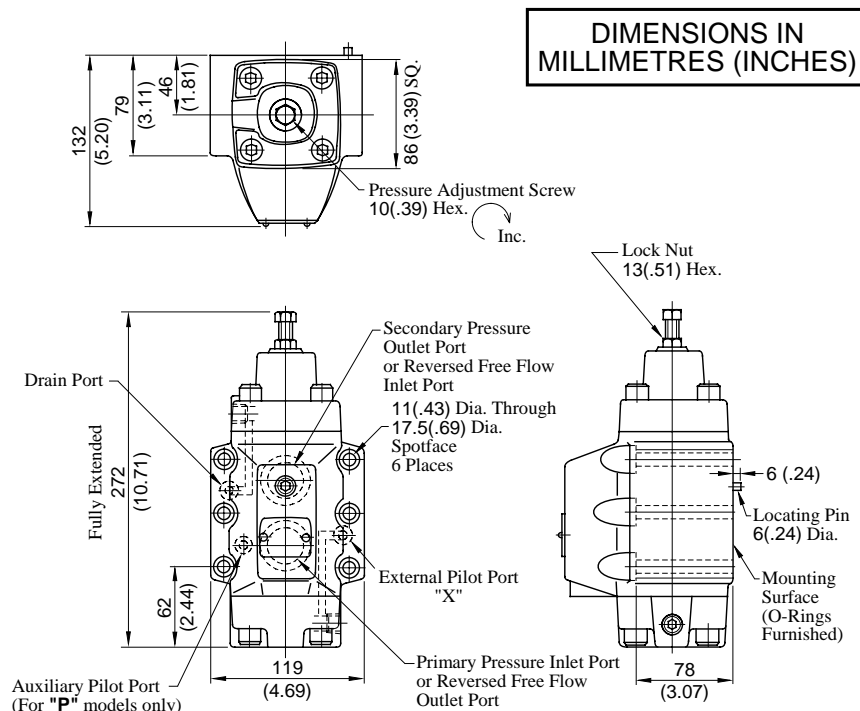
Type 4: Counterbalance Valve (External Pilot, Internal Drain)



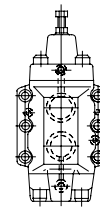
HCG-10-**-**-22/2290

Type 3: Sequence and Check Valve (External Pilot, External Drain)

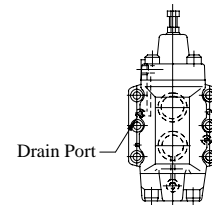
Mounting Surface
ISO 5781-AJ-10-2-A



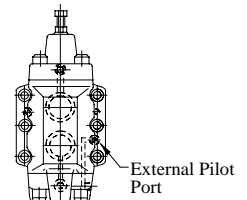
Type 1: Counterbalance Valve (Internal Pilot, Internal Drain)



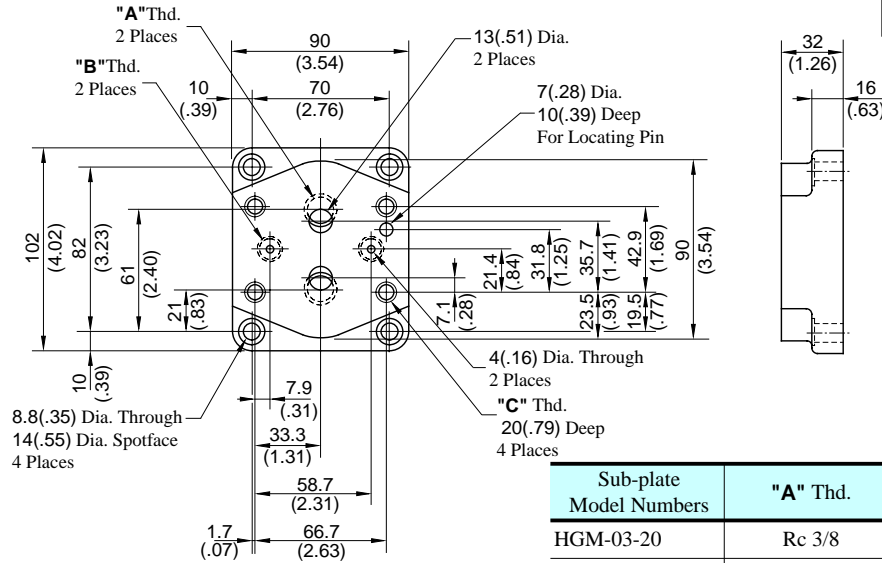
Type 2: Sequence and Check Valve (Internal Pilot, External Drain)



Type 4: Counterbalance Valve (External Pilot, Internal Drain)



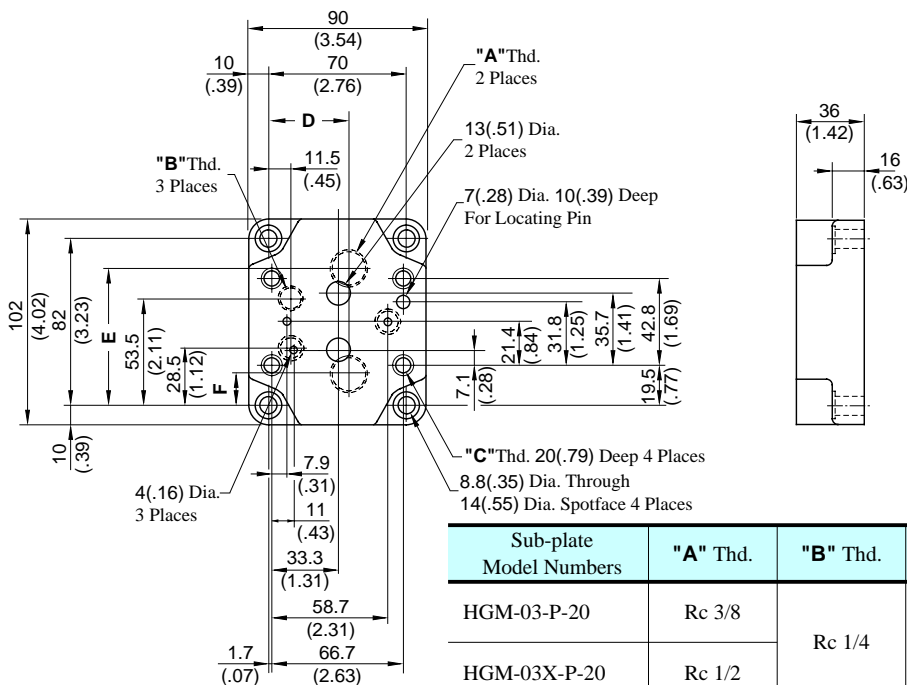
● HGM-03-20/2080/2090
HGM-03X-20/2080/2090



DIMENSIONS IN MILLIMETRES (INCHES)

Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.
HGM-03-20	Rc 3/8	Rc 1/4	M10
HGM-03X-20	Rc 1/2		
HGM-03-2080	3/8 BSP.F	1/4 BSP.F	
HGM-03X-2080	1/2 BSP.F		
HGM-03-2090	3/8 NPT	1/4 NPT	3/8-16 UNC
HGM-03X-2090	1/2 NPT		

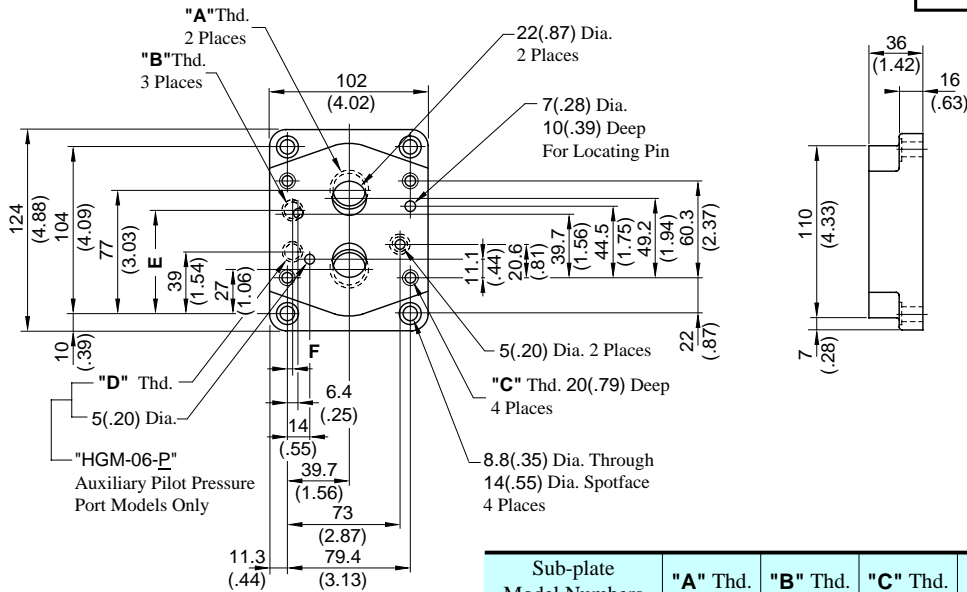
● With Auxiliary Pilot Pressure Port
HGM-03-P-20/2080/2090
HGM-03X-P-20/2080/2090



Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.	D	E	F
HGM-03-P-20	Rc 3/8	Rc 1/4	M 10	35 (1.38)	69.5 (2.74)	12.5 (.49)
HGM-03X-P-20	Rc 1/2			41 (1.61)	67.5 (2.66)	14.5 (.57)
HGM-03-P-2080	3/8 BSP.F	1/4 BSP.F		35 (1.38)	69.5 (2.74)	12.5 (.49)
HGM-03X-P-2080	1/2 BSP.F			41 (1.61)	67.5 (2.66)	14.5 (.57)
HGM-03-P-2090	3/8 NPT	1/4 NPT	3/8-16 UNC	35 (1.38)	69.5 (2.74)	12.5 (.49)
HGM-03X-P-2090	1/2 NPT			41 (1.61)	67.5 (2.66)	14.5 (.57)

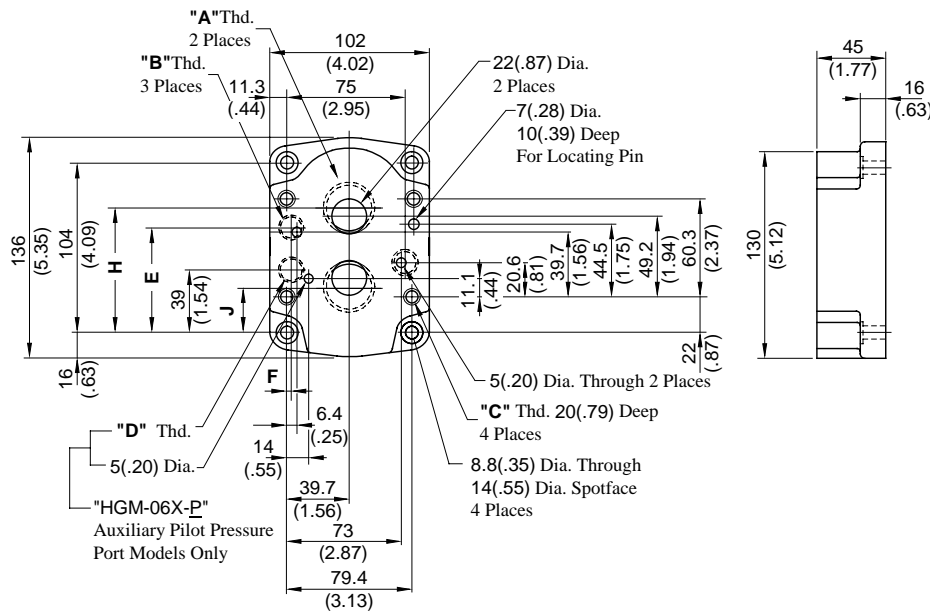
● HGM-06-20/2080/2090
HGM-06-P-20/2080/2090

**DIMENSIONS IN
MILLIMETRES (INCHES)**



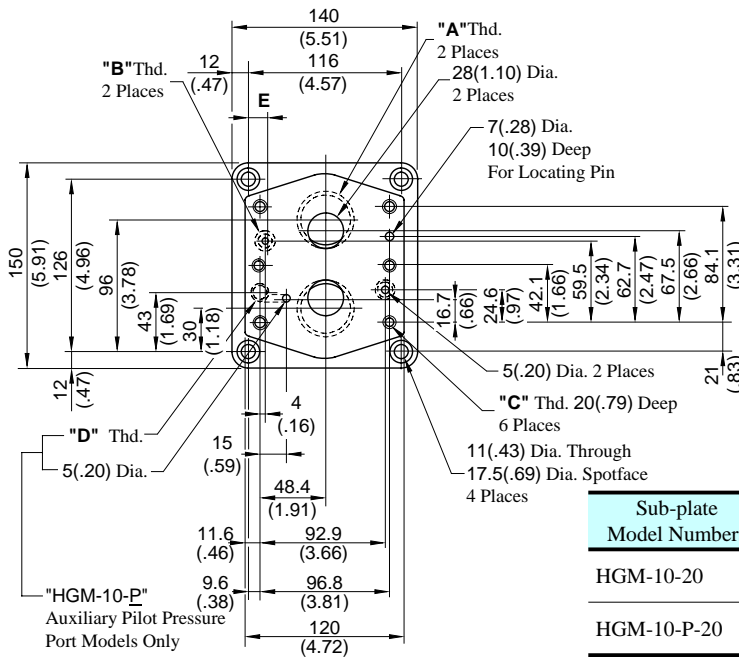
Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.	"D" Thd.	E	F
HGM-06-20	Rc 3/4	Rc 1/4	M10	Rc 1/4	61.7 (2.43)	6.4 (.25)
HGM-06-P-20					64 (2.52)	3 (.12)
HGM-06-2080	3/4 BSP.F	1/4 BSP.F	M10	1/4 BSP.F	61.7 (2.43)	6.4 (.25)
HGM-06-P-2080					64 (2.52)	3 (.12)
HGM-06-2090	3/4 NPT	1/4 NPT	3/8-16 UNC	1/4 NPT	61.7 (2.43)	6.4 (.25)
HGM-06-P-2090					64 (2.52)	3 (.12)

● HGM-06X-20/2080/2090
HGM-06X-P-20/2080/2090

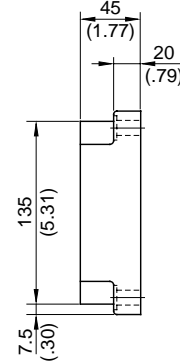


Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.	"D" Thd.	E	F	H	J
HGM-06X-20	Rc 1	Rc 1/4	M10	Rc 1/4	61.7 (2.43)	6.4 (.25)	82.3 (3.24)	22 (.87)
HGM-06X-P-20					64 (2.52)	3 (.12)		
HGM-06X-2080	1 BSP.F	1/4 BSP.F	M10	1/4 BSP.F	61.7 (2.43)	6.4 (.25)	80 (3.15)	24 (.94)
HGM-06X-P-2080					64 (2.52)	3 (.12)	82.3 (3.24)	22 (.87)
HGM-06X-2090	1 NPT	1/4 NPT	3/8-16 UNC	1/4 NPT	61.7 (2.43)	6.4 (.25)	80 (3.15)	24 (.94)
HGM-06X-P-2090					64 (2.52)	3 (.12)	82.3 (3.24)	22 (.87)

● HGM-10-20/2080/2090
HGM-10-P-20/2080/2090

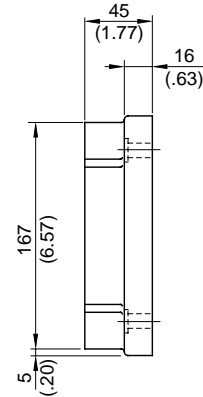
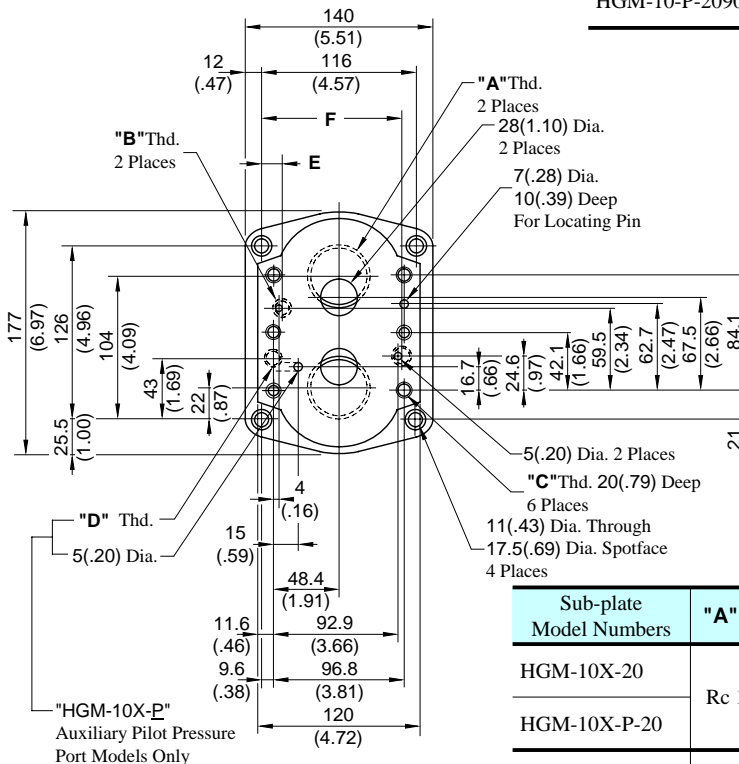


DIMENSIONS IN
MILLIMETRES (INCHES)



Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.	"D" Thd.	E
HGM-10-20	Rc 1-1/4	Rc 1/4	M10	Rc 1/4	13.6 (.54)
HGM-10-P-20					9.6 (.38)
HGM-10-2080	1-1/4 BSP.F	1/4 BSP.F		1/4 BSP.F	13.6 (.54)
HGM-10-P-2080					9.6 (.38)
HGM-10-2090	1-1/4 NPT	1/4 NPT	3/8-16 UNC	1/4 NPT	13.6 (.54)
HGM-10-P-2090					9.6 (.38)

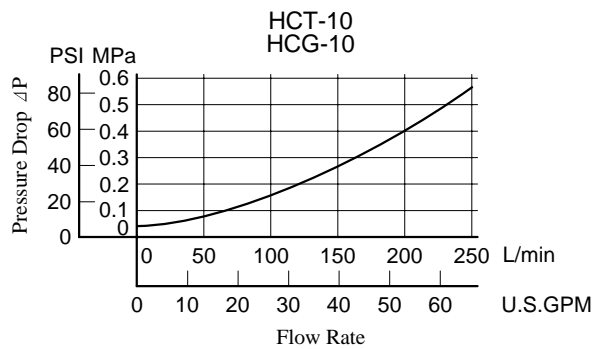
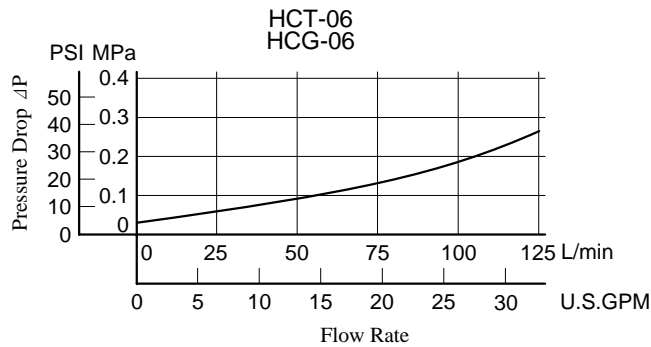
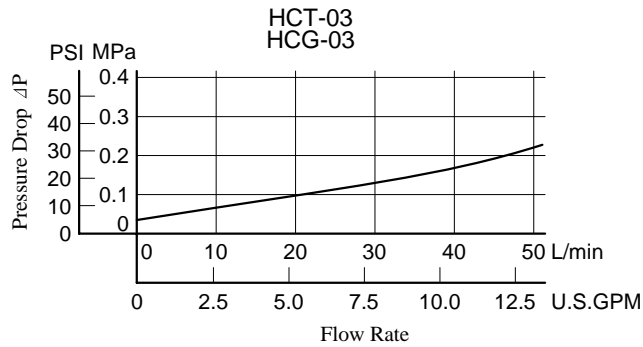
● HGM-10X-20/2080/2090
HGM-10X-P-20/2080/2090



Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.	"D" Thd.	E	F
HGM-10X-20	Rc 1-1/2	Rc 1/4	M10	Rc 1/4	13.6 (.54)	102.5 (4.04)
HGM-10X-P-20					9.6 (.38)	116 (4.57)
HGM-10X-2080	1-1/2 BSP.F	1/4 BSP.F		1/4 BSP.F	13.6 (.54)	102.5 (4.04)
HGM-10X-P-2080					9.6 (.38)	116 (4.57)
HGM-10X-2090	1-1/2 NPT	1/4 NPT	3/8-16 UNC	1/4 NPT	13.6 (.54)	102.5 (4.04)
HGM-10X-P-2090					9.6 (.38)	116 (4.57)

■ Pressure Drop for Reversed Free Flow

Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU), Specific Gravity 0.850



- For any other viscosity, multiply the factors in the table below.

Viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

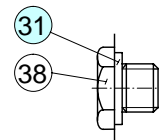
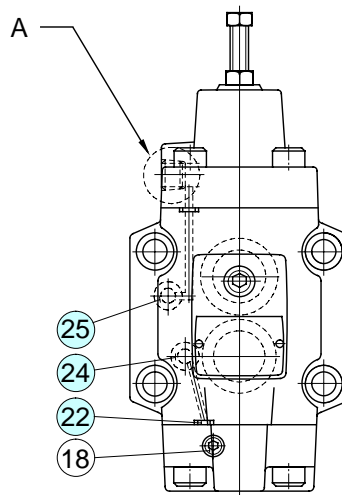
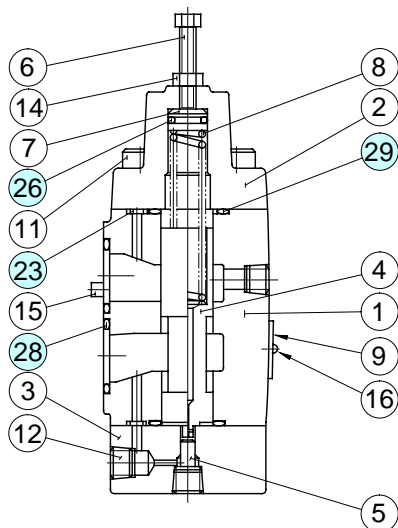
- For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

$$\Delta P' = \Delta P (G'/0.850)$$

HT-03, 06, 10-**-*-22/2280/2290
HG-03, 06, 10-**-*-22/2290

⚠ CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



Section "A" for
HT-**-**-*-2280 Models

● List of Seals

Item	Name of Parts	Part Numbers			Quantity	
		HT HG-03	HT HG-06	HT HG-10	HT-*	HG-*
22	O-Ring	SO-NB-P4	SO-NB-P4	SO-NB-P4	—	3*
23	O-Ring	SO-NB-P6	SO-NB-P6	SO-NB-P6	4	4
24	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	1*
25	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	2
26	O-Ring	SO-NA-P11	SO-NA-P15	SO-NA-P20	1	1
28	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	—	2
29	O-Ring	SO-NB-P22	SO-NB-P28	SO-NB-P36	2	2
31	Bonded Seal	SG-FB-1/4	SG-FB-1/4	SG-FB-1/4	2	—

★ Used only for HG type with auxiliary pilot pressure port (P).

Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
HT-03-**-22/2280/2290	KS-HT-03-22
HT-06-**-22/2280/2290	KS-HT-06-22
HT-10-**-22/2280/2290	KS-HT-10-22
HG-03-**-22/2290	KS-HG-03-22
HG-03-**-P-22/2290	KS-HG-03-P-22
HG-06-**-22/2290	KS-HG-06-22
HG-06-**-P-22/2290	KS-HG-06-P-22
HG-10-**-22/2290	KS-HG-10-22
HG-10-**-P-22/2290	KS-HG-10-P-22

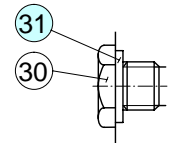
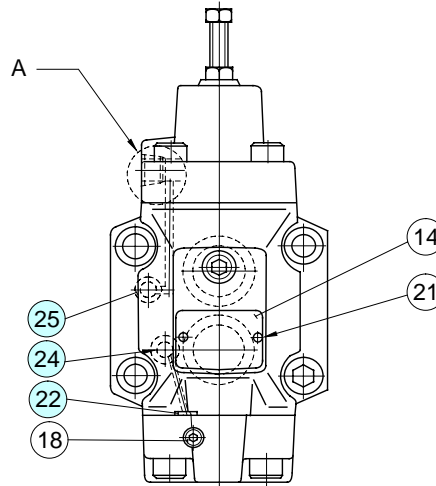
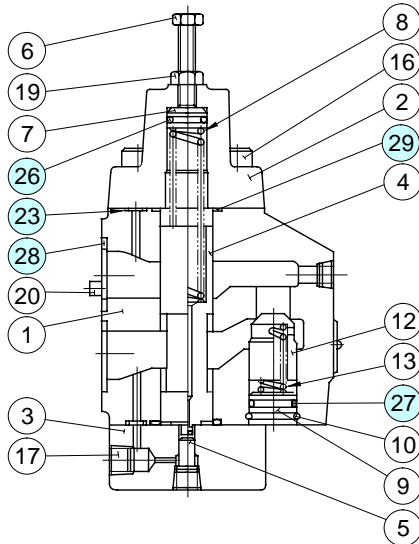
Note: No bonded seals are included in the seal kits.

HCT-03, 06, 10-**-**-22/2280/2290

HCG-03, 06, 10-**-**-22/2290

CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



Section "A" for
HCT-**-**-2280 Models

List of Seals

Item	Name of Parts	Part Numbers			Quantity	
		HCT HCG -03	HCT HCG -06	HCT HCG -10	HCT-*	HCG-*
22	O-Ring	SO-NB-P4	SO-NB-P4	SO-NB-P4	—	3*
23	O-Ring	SO-NB-P6	SO-NB-P6	SO-NB-P6	4	4
24	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	1*
25	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	2
26	O-Ring	SO-NA-P11	SO-NA-P15	SO-NA-P20	1	1
27	O-Ring	SO-NB-P12	SO-NB-P18	SO-NB-P22A	1	1
28	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	—	2
29	O-Ring	SO-NB-P22	SO-NB-P28	SO-NB-P36	2	2
31	Bonded Seal	SG-FB-1/4	SG-FB-1/4	SG-FB-1/4	2	—

* Used only for HCG type with auxiliary pilot pressure port (P).

Note: When ordering the seals, please specify the seal kit number from the table below.

List of Seal Kits

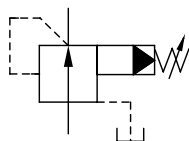
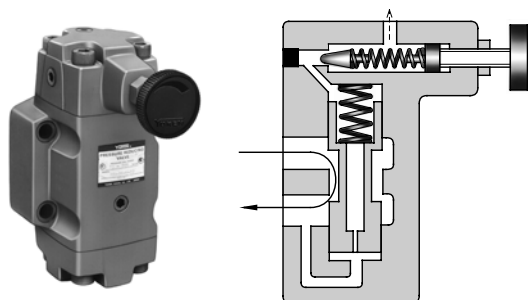
Model Numbers	Seal Kit Numbers
HCT-03-**-22/2280/2290	KS-HCT-03-22
HCT-06-**-22/2280/2290	KS-HCT-06-22
HCT-10-**-22/2280/2290	KS-HCT-10-22
HCG-03-**-22/2290	KS-HCG-03-22
HCG-03-**-P-22/2290	KS-HCG-03-P-22
HCG-06-**-22/2290	KS-HCG-06-22
HCG-06-**-P-22/2290	KS-HCG-06-P-22
HCG-10-**-22/2290	KS-HCG-10-22
HCG-10-**-P-22/2290	KS-HCG-10-P-22

Note: No bonded seals are included in the seal kits.

Up to 21 MPa (3050 PSI), 500 L/min (132 U.S.GPM)

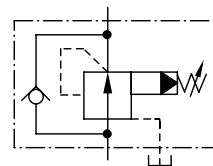
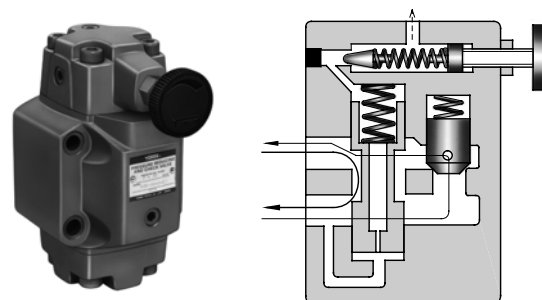
■ Pressure Reducing Valves

Pressure reducing valves are used to set the pressure of a hydraulic circuit below that of the main circuit. In addition, operation under remote control is possible by using the remote control port.



■ Pressure Reducing and Check Valves

Pressure reducing and check valves are used to set the pressure of a hydraulic circuit below that of the main circuit. They have check valves, which allow a free flow from the secondary side to the primary. Operation under remote control is also possible by using the remote control port.



■ Hydraulic Fluids

● Fluid Types

Any type of hydraulic fluid listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG 32 or VG 46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

● Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

● Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 μm or finer line filter.

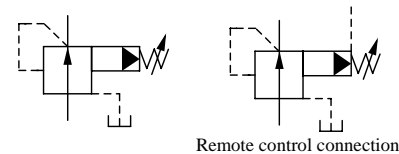
Specifications

Valve Name	Model Numbers		Max. Operating Pressure MPa (PSI)	Max. Flow ^{★1}		Drain Flow ^{★2} L/min (U.S.GPM)	Approx. Mass kg (lbs.)	
	Threaded Connection	Sub-plate Mounting		Setting Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)		Threaded Connection	Sub-plate Mounting
Pressure Reducing Valve	RT-03-* -22*	RG-03-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	40 (10.6)	0.8 - 1.0 (.21 - .26)	4.3 (9.5)	4.5 (9.9)
				1.0 - 20.5 (145 - 2970)	50 (13.2)			
	RT-06-* -22*	RG-06-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	50 (13.2)	0.8 - 1.1 (.21 - .29)	6.9 (15.2)	6.8 (15.0)
				1.0 - 1.5 (145 - 220)	100 (26.4)			
				1.5 - 20.5 (220 - 2970)	125 (33.0)			
	RT-10-* -22*	RG-10-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	130 (34.3)	1.2 - 1.5 (.31 - .40)	12.0 (26.5)	11.0 (24.3)
				1.0 - 1.5 (145 - 220)	180 (47.5)			
				1.5 - 10.5 (220 - 1520)	220 (58.1)			
				10.5 - 20.5 (1520 - 2970)	250 (66.0)			
Pressure Reducing and Check Valve	RCT-03-* -22*	RCG-03-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	40 (10.6)	0.8 - 1.0 (.21 - .26)	4.8 (10.6)	5.4 (11.9)
				1.0 - 20.5 (145 - 2970)	50 (13.2)			
	RCT-06-* -22*	RCG-06-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	50 (13.2)	0.8 - 1.1 (.21 - .29)	7.8 (17.2)	8.1 (17.9)
				1.0 - 1.5 (145 - 220)	100 (26.4)			
				1.5 - 20.5 (220 - 2970)	125 (33.0)			
	RCT-10-* -22*	RCG-10-* -22*	21 (3050)	0.7 - 1.0 (102 - 145)	130 (34.3)	1.2 - 1.5 (.31 - .40)	13.8 (30.4)	13.8 (30.4)
				1.0 - 1.5 (145 - 220)	180 (47.5)			
				1.5 - 10.5 (220 - 1520)	220 (58.1)			
				10.5 - 20.5 (1520 - 2970)	250 (66.0)			

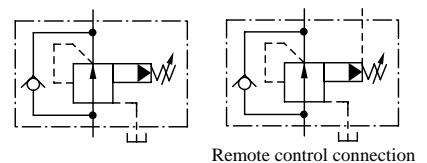
- ★1. The max. flow rates are those shown at the primary pressure at 21 MPa (3050 PSI).
- ★2. The drain flow rates are equal to pilot flow rates when differential pressure between primary and secondary pressure is at 20.5 MPa (2970 PSI).

Graphic Symbols

● RT / RG



● RCT / RCG



Yuken can offer flanged connection valves described below.

For details, contact us.

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
RF/RCF-10-* -22*	21 (3050)	250 (66)
RF/RCF-16-* -20*		500 (132)

Model Number Designation

F-	R	T	-03	-B	-22	*
Special Seals	Series Number	Type of Mounting	Valve Size	Pres. Adj. Range MPa (PSI)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	R: Pressure Reducing Valves	T: Threaded Connection	03	B: 0.7-7 (102-1020) C: 3.5-14 (510-2030) H: 7-20.5 (1020-2970)	22	None: Japanese Std. "JIS" 80: European Design Std. 90: N.American Design Std.
			06		22	
			10		22	
		G: Sub-plate Mounting	03		22	
			06		22	
			10		22	
	RC: Pressure Reducing and Check Valves	T: Threaded Connection	03	22		
			06	22		
			10	22		
		G: Sub-plate Mounting	03	22		
			06	22		
			10	22		

■ Attachment

● Mounting bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
RG-03	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4
RG-06	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4
RG-10	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	6
RCG-03	M10 × 70 Lg.	3/8-16 UNC × 2-3/4 Lg.	4
RCG-06	M10 × 80 Lg.	3/8-16 UNC × 3-1/4 Lg.	4
RCG-10	M10 × 90 Lg.	3/8-16 UNC × 3-1/2 Lg.	6

■ Sub-plate

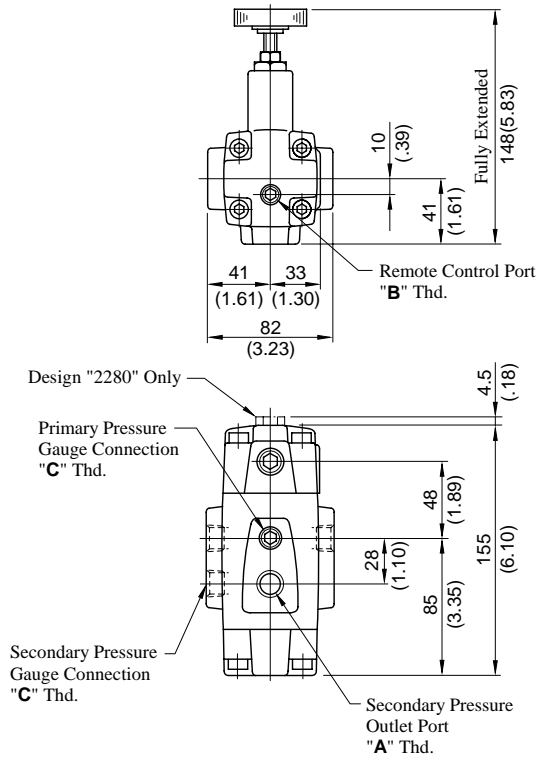
Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
RG RCG ⁻⁰³	HGM-03-20	Rc 3/8	HGM-03-2080	3/8 BSP.F	HGM-03-2090	3/8 NPT	1.6 (3.5)
	HGM-03X-20	Rc 1/2	HGM-03X-2080	1/2 BSP.F	HGM-03X-2090	1/2 NPT	
RG RCG ⁻⁰⁶	HGM-06-20	Rc 3/4	HGM-06-2080	3/4 BSP.F	HGM-06-2090	3/4 NPT	2.4 (5.3)
	HGM-06X-20	Rc 1	HGM-06X-2080	1 BSP.F	HGM-06X-2090	1 NPT	3.0 (6.6)
RG RCG ⁻¹⁰	HGM-10-20	Rc 1-1/4	HGM-10-2080	1-1/4 BSP.F	HGM-10-2090	1-1/4 NPT	4.8 (10.6)
	HGM-10X-20	Rc 1-1/2	HGM-10X-2080	1-1/2 BSP.F	HGM-10X-2090	1-1/2 NPT	5.7 (12.6)

- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

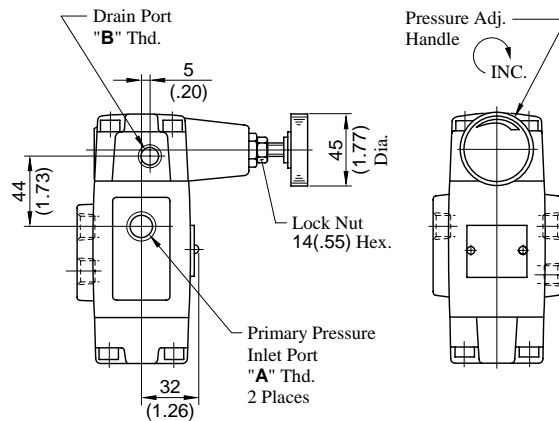
■ Instructions

- To adjust the pressure, loosen the lock nut and turn the pressure adjustment handle slowly clockwise for higher pressures and anti-clockwise for lower pressures. After adjustments, do not forget to tighten the lock nut.
- Connect the drain port directly to the tank in which case the pressure at the drain port should be kept at a low back pressure close to the atmospheric pressure.
- There are two threaded connection type primary pressure ports. They can be connected each other in-line; one as an inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.

RT-03-* -22/2280/2290

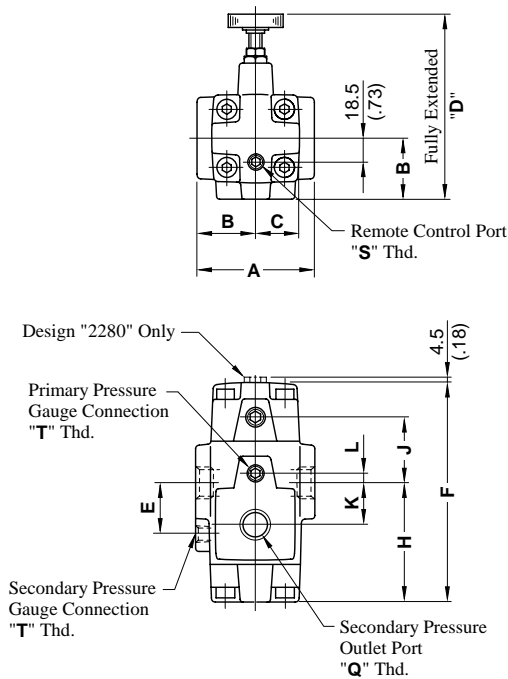


Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
RT-03-* -22	Rc 3/8	Rc 1/4	Rc 1/4
RT-03-* -2280	3/8 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RT-03-* -2290	3/8 NPT	1/4 NPT	1/4 NPT

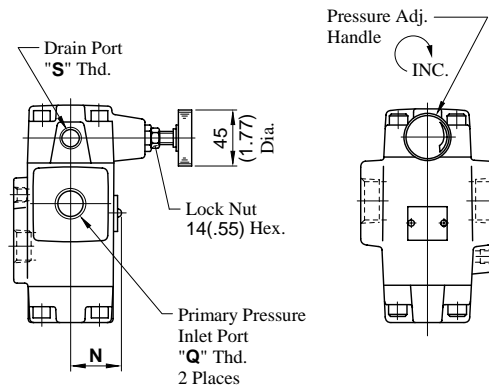


**DIMENSIONS IN
MILLIMETRES (INCHES)**

RT-06-10-* -22/2280/2290

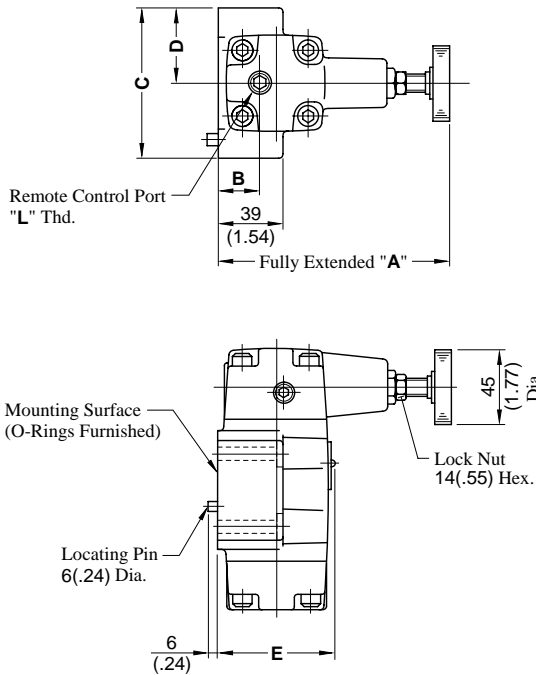


Model Numbers	Thread Size		
	"Q" Thd.	"S" Thd.	"T" Thd.
RT-06-* -22	Rc 3/4	Rc 1/4	Rc 1/4
RT-06-* -2280	3/4 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RT-06-* -2290	3/4 NPT	1/4 NPT	1/4 NPT
RT-10-* -22	Rc 1-1/4	Rc 1/4	Rc 1/4
RT-10-* -2280	1-1/4 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RT-10-* -2290	1-1/4 NPT	1/4 NPT	1/4 NPT



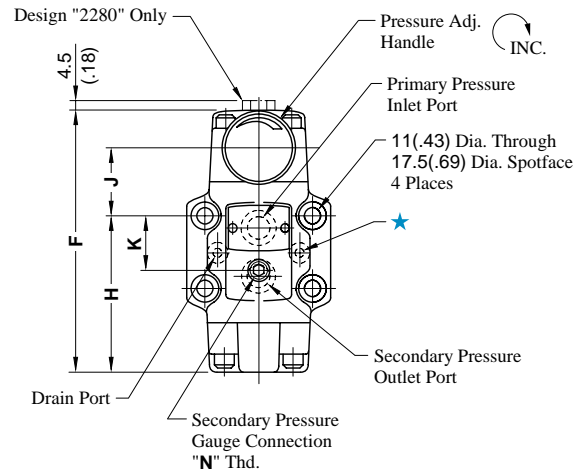
Model Numbers	Dimensions mm (Inches)										
	A	B	C	D	E	F	H	J	K	L	N
RT-06	96 (3.78)	48 (1.89)	36.5 (1.44)	149 (5.87)	42 (1.65)	179 (7.05)	97.5 (3.84)	53.5 (2.11)	33 (1.30)	9 (.35)	39 (1.54)
RT-10	132 (5.20)	66 (2.60)	43 (1.69)	167 (6.57)	52 (2.05)	216 (8.50)	124 (4.88)	64 (2.52)	40 (1.57)	12 (.47)	46 (1.81)

RG-03/06-⁰³/₀₆*-22/2280/2290



Model Numbers	Thread Size	
	"L" Thd.	"N" Thd.
RG-03/06-*22	Rc 1/4	Rc 1/4
RG-03/06-*2280	1/4 BSP.F	1/4 BSP.Tr
RG-03/06-*2290	1/4 NPT	1/4 NPT

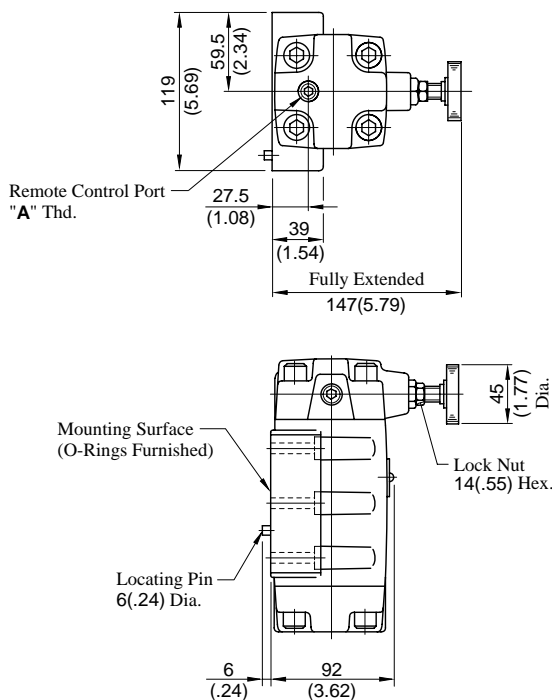
★ Port connection is not required for RG models but an O-ring should be furnished.



Model Numbers	Dimensions mm (Inches)								
	A	B	C	D	E	F	G	H	J
RG-03	142 (5.59)	25 (.98)	89 (3.50)	44.5 (1.75)	67 (2.64)	155.5 (6.12)	92.4 (3.64)	40.6 (1.60)	34.9 (1.37)
RG-06	141 (5.55)	21.5 (.85)	102 (4.02)	51 (2.01)	79 (3.11)	179 (7.05)	111 (4.37)	40 (1.57)	48 (1.89)

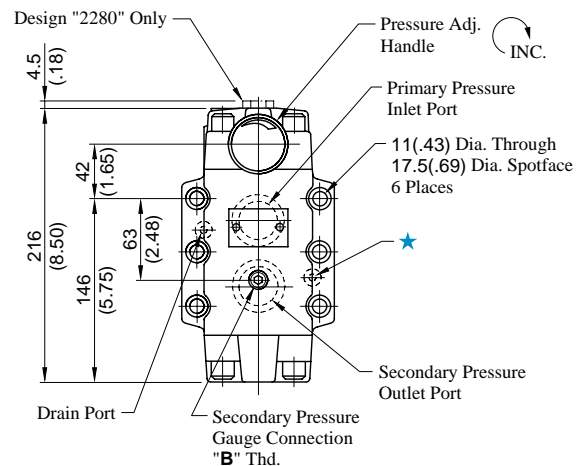
DIMENSIONS IN
MILLIMETRES (INCHES)

RG-10-*22/2280/2290

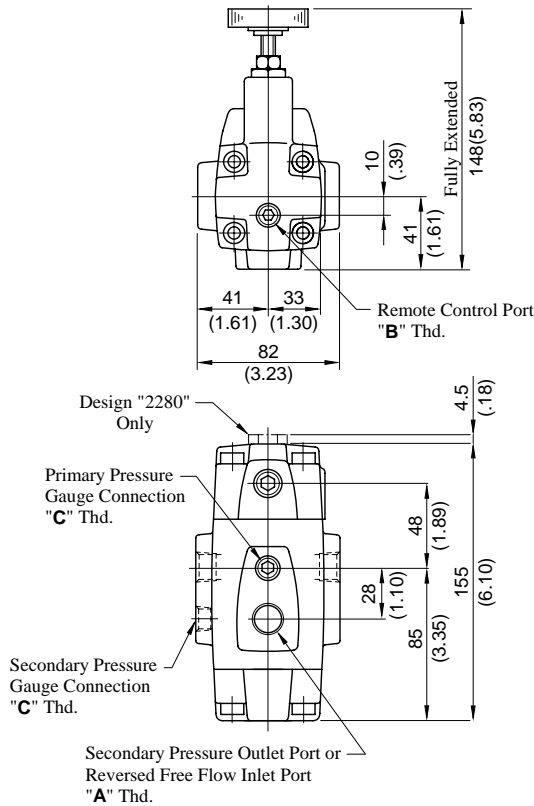


Model Numbers	Thread Size	
	"A" Thd.	"B" Thd.
RG-10-*22	Rc 1/4	Rc 1/4
RG-10-*2280	1/4 BSP.F	1/4 BSP.Tr
RG-10-*2290	1/4 NPT	1/4 NPT

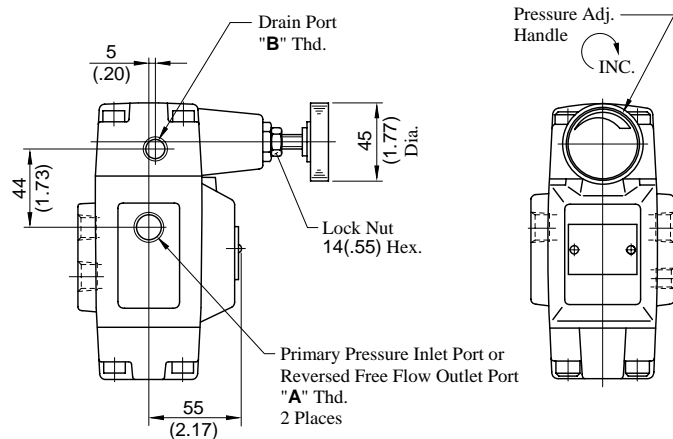
★ Port connection is not required for RG models but an O-ring should be furnished.



RCT-03-* -22/2280/2290

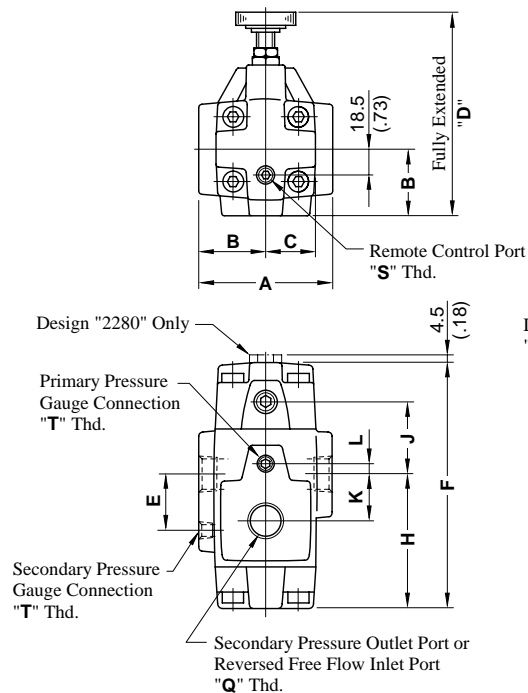


Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
RCT-03-* -22	Rc 3/8	Rc 1/4	Rc 1/4
RCT-03-* -2280	3/8 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RCT-03-* -2290	3/8 NPT	1/4 NPT	1/4 NPT

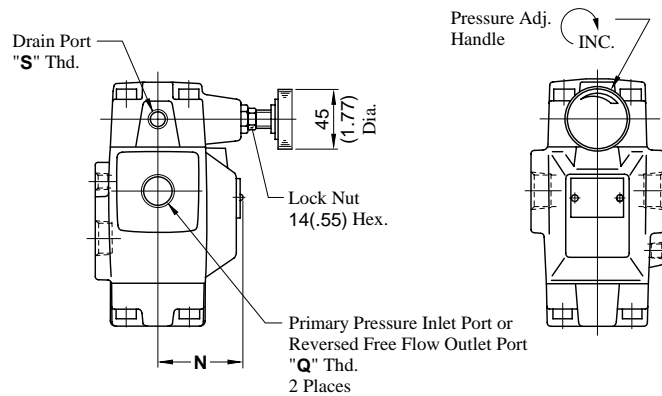


**DIMENSIONS IN
MILLIMETRES (INCHES)**

RCT-06 10-* -22/2280/2290

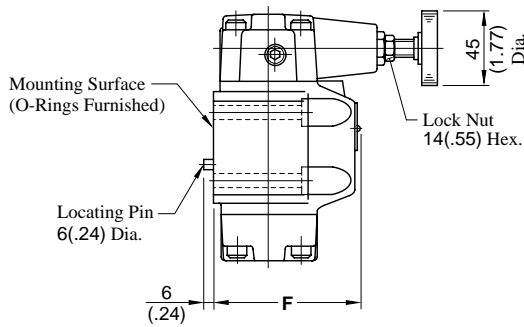
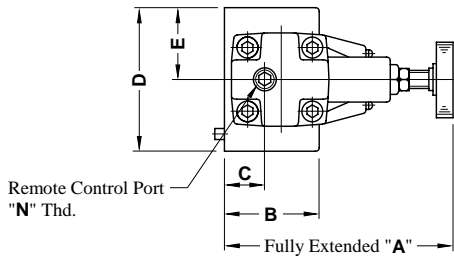


Model Numbers	Thread Size		
	"Q" Thd.	"S" Thd.	"T" Thd.
RCT-06-* -22	Rc 3/4	Rc 1/4	Rc 1/4
RCT-06-* -2280	3/4 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RCT-06-* -2290	3/4 NPT	1/4 NPT	1/4 NPT
RCT-10-* -22	Rc 1-1/4	Rc 1/4	Rc 1/4
RCT-10-* -2280	1-1/4 BSP.F	1/4 BSP.F	1/4 BSP.Tr
RCT-10-* -2290	1-1/4 NPT	1/4 NPT	1/4 NPT



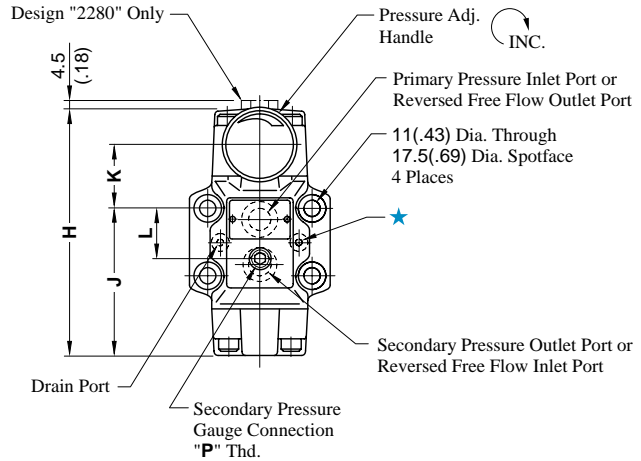
Model Numbers	Dimensions mm (Inches)										
	A	B	C	D	E	F	H	J	K	L	N
RCT-06	96 (3.78)	48 (1.89)	36.5 (1.44)	149 (5.87)	42 (1.65)	179 (7.05)	97.5 (3.84)	53.5 (2.11)	33 (1.30)	9 (.35)	68 (2.68)
RCT-10	132 (5.20)	66 (2.60)	43 (1.69)	167 (6.57)	52 (2.05)	216 (8.50)	124 (4.88)	64 (2.52)	40 (1.57)	12 (.47)	86 (3.39)

RCG-03/06-* -22/2280/2290



Model Numbers	Thread Size	
	"N" Thd.	"P" Thd.
RCG-03/06-* -22	Rc 1/4	Rc 1/4
RCG-03/06-* -2280	1/4 BSP.F	1/4 BSP.Tr
RCG-03/06-* -2290	1/4 NPT	1/4 NPT

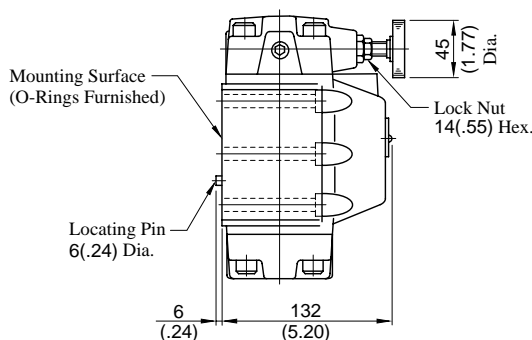
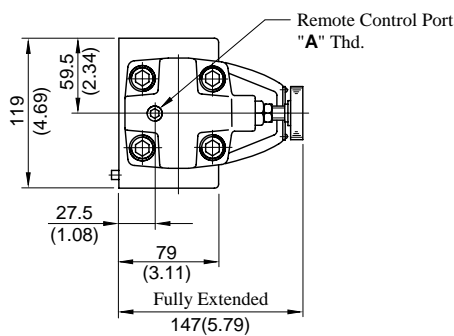
★ Port connection is not required for RCG models but an O-ring should be furnished.



Model Numbers	Dimensions mm (Inches)									
	A	B	C	D	E	F	H	J	K	L
RCG-03	142 (5.59)	59 (2.32)	25 (.98)	89 (3.50)	44.5 (1.75)	90 (3.54)	155 (6.10)	92.4 (3.64)	40.6 (1.60)	34.9 (1.37)
RCG-06	141 (5.55)	69 (2.72)	21.5 (.85)	102 (4.02)	51 (2.01)	108 (4.25)	179 (7.05)	111 (4.37)	40 (1.57)	48 (1.89)

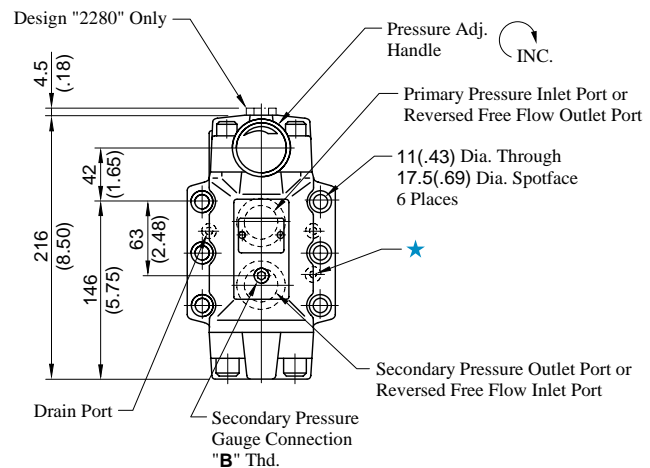
DIMENSIONS IN MILLIMETRES (INCHES)

RCG-10-* -22/2280/2290



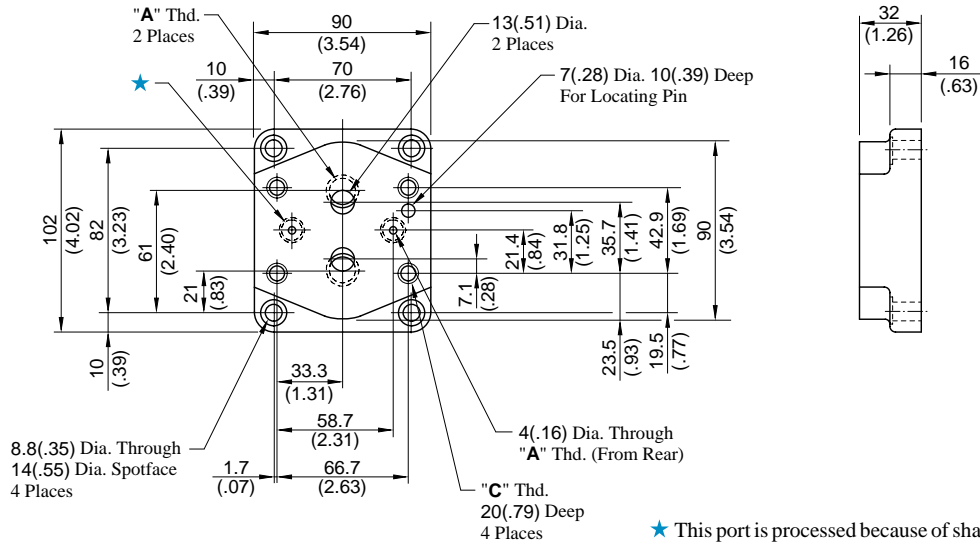
Model Numbers	Thread Size	
	"A" Thd.	"B" Thd.
RCG-10-* -22	Rc 1/4	Rc 1/4
RCG-10-* -2280	1/4 BSP.F	1/4 BSP.Tr
RCG-10-* -2290	1/4 NPT	1/4 NPT

★ Port connection is not required for RCG models but an O-ring should be furnished.



- HGM-03-20/2080/2090
HGM-03X-20/2080/2090

DIMENSIONS IN
MILLIMETRES (INCHES)

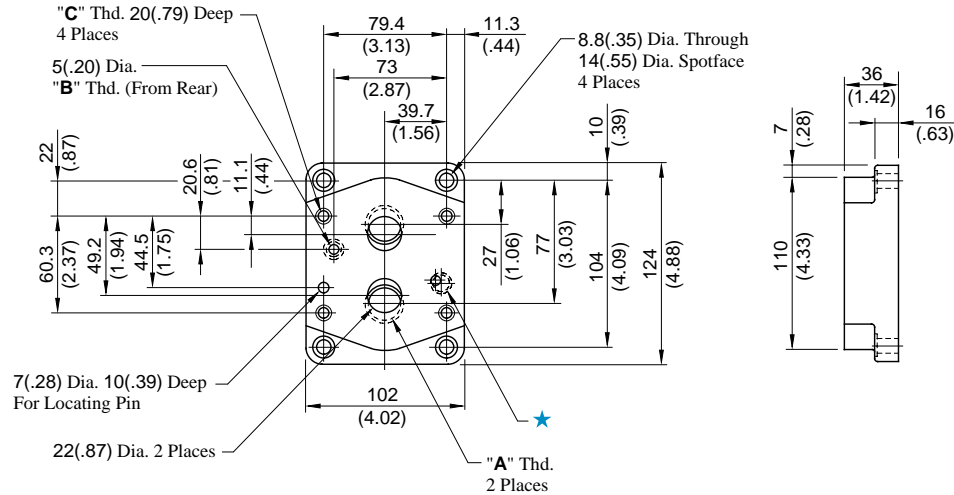


★ This port is processed because of sharing this sub-plate with the H/HC Type Pressure Control Valve and not used for the Pressure Reducing (and Check) Valve.

Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
HGM-03-20	Rc 3/8	Rc 1/4	M10
HGM-03X-20	Rc 1/2		
HGM-03-2080	3/8 BSP.F	1/4 BSP.F	
HGM-03X-2080	1/2 BSP.F		
HGM-03-2090	3/8 NPT	1/4 NPT	3/8-16 UNC
HGM-03X-2090	1/2 NPT		

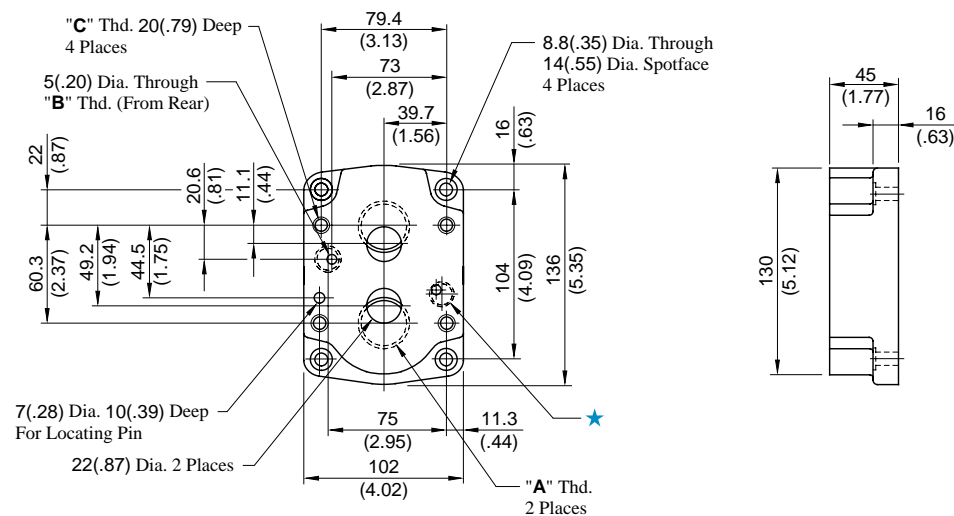
● HGM-06-20/2080/2090

DIMENSIONS IN MILLIMETRES (INCHES)



● HGM-06X-20/2080/2090

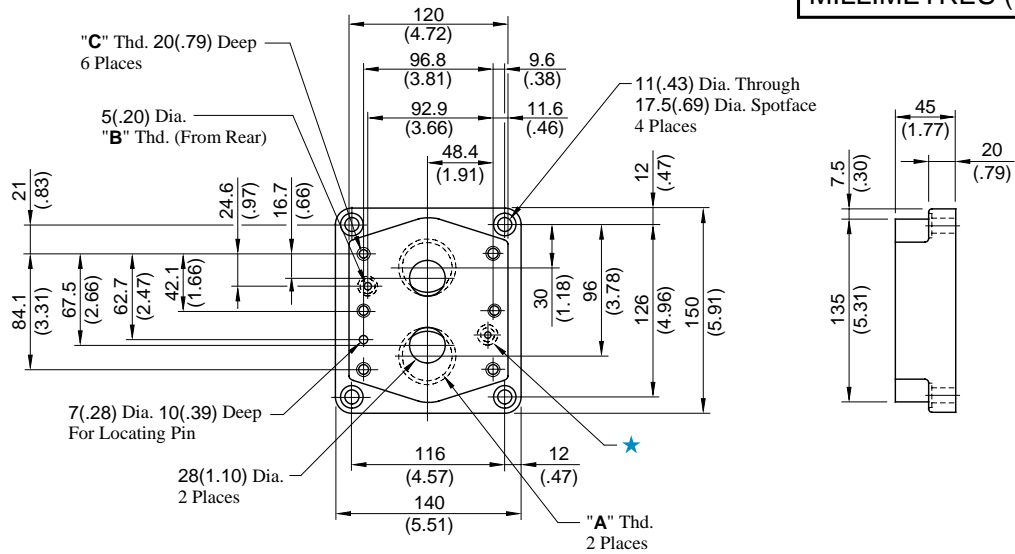
★ This port is processed because of sharing this sub-plate with the H/HC Type Pressure Control Valve and not used for the Pressure Reducing (and Check) Valve.



Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
HGM-06-20	Rc 3/4	Rc 1/4	M10
HGM-06X-20	Rc 1		
HGM-06-2080	3/4 BSP.F	1/4 BSP.F	
HGM-06X-2080	1 BSP.F		
HGM-06-2090	3/4 NPT	1/4 NPT	3/8-16 UNC
HGM-06X-2090	1 NPT		

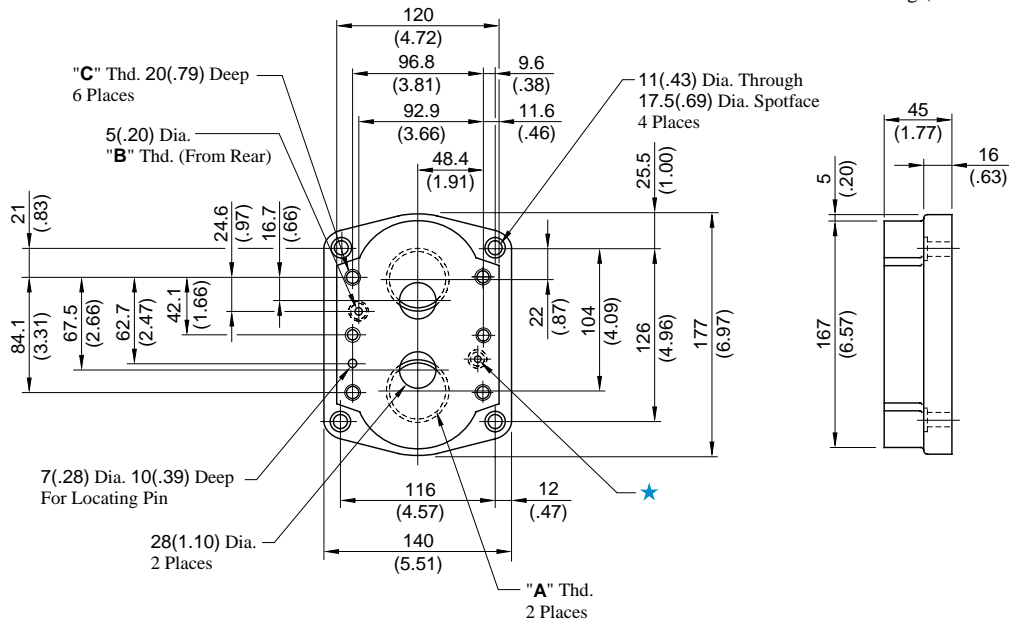
● HGM-10-20/2080/2090

DIMENSIONS IN MILLIMETRES (INCHES)



● HGM-10X-20/2080/2090

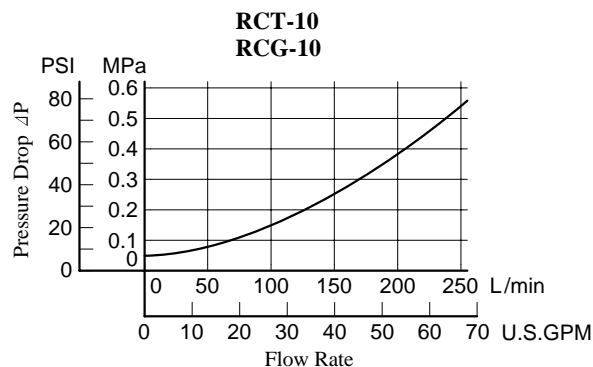
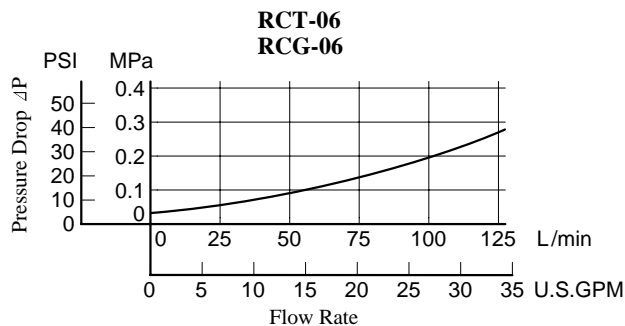
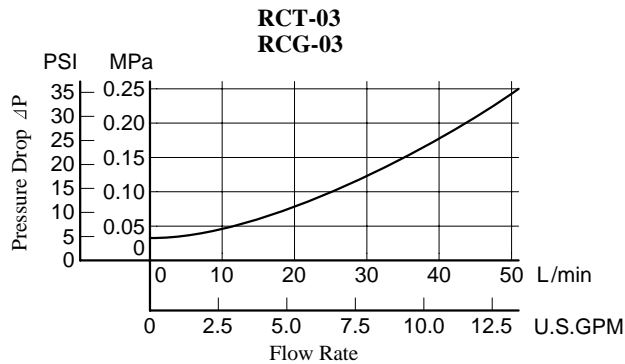
★ This port is processed because of sharing this sub-plate with the H/HC Type Pressure Control Valve and not used for the Pressure Reducing (and Check) Valve.



Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
HGM-10-20	Rc 1-1/4	Rc 1/4	M10
HGM-10X-20	Rc 1-1/2		
HGM-10-2080	1-1/4 BSP.F	1/4 BSP.F	
HGM-10X-2080	1-1/2 BSP.F		
HGM-10-2090	1-1/4 NPT	1/4 NPT	3/8-16 UNC
HGM-10X-2090	1-1/2 NPT		

■ Pressure Drop for Reversed Free Flow

Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU), Specific Gravity 0.850



- For any other viscosity, multiply the factors in the table below.

Viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

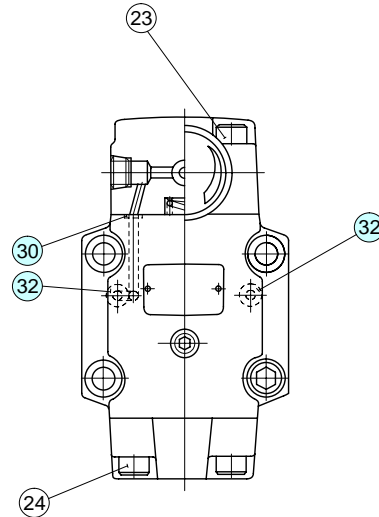
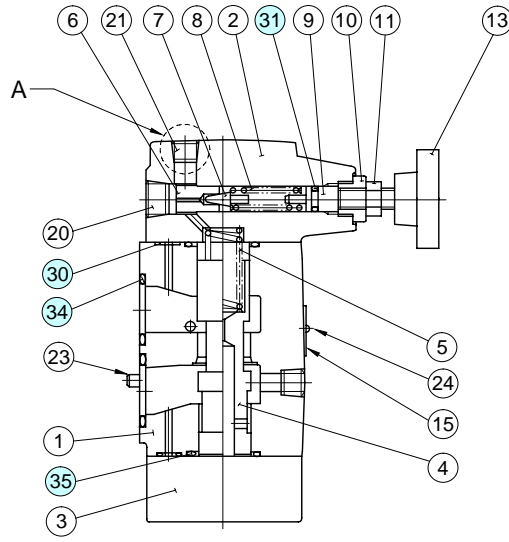
- For any other specific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

$$\Delta P' = \Delta P (G'/0.850)$$

RT/RG-03-*-22/2280/2290
 RT/RG-06-*-22/2280/2290
 RT/RG-10-*-22/2280/2290

CAUTION

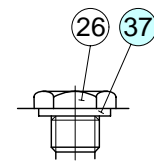
When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



List of Seals

Item	Name of Parts	Part Numbers			Quantity	
		RT RG -03	RT RG -06	RT RG -10	RT-*	RG-*
30	O-Ring	SO-NB-P6	SO-NB-P6	SO-NB-P6	4	4
31	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1	1
32	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	2
34	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	—	2
35	O-Ring	SO-NB-P22	SO-NB-P28	SO-NB-P36	2	2
37	Bonded Seal	SG-FB-1/4	SG-FB-1/4	SG-FB-1/4	1	1

Note: When ordering the seals, please specify the seal kit number from the table below.



Section "A" for
Design 2280

List of Seal Kits

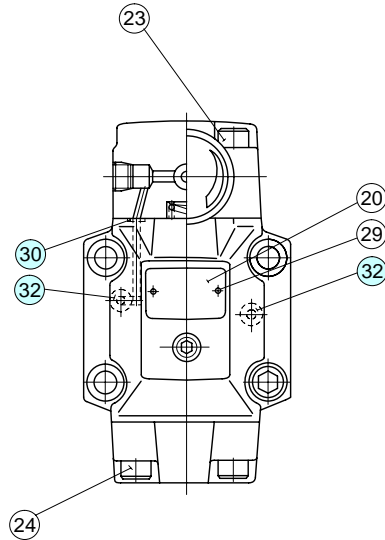
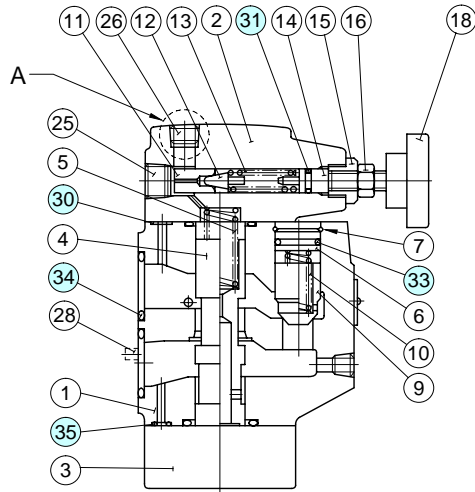
Model Numbers	Seal Kit Numbers
RT-03-*-22/2280/2290	KS-RT-03-22
RT-06-*-22/2280/2290	KS-RT-06-22
RT-10-*-22/2280/2290	KS-RT-10-22
RG-03-*-22/2280/2290	KS-RG-03-22
RG-06-*-22/2280/2290	KS-RG-06-22
RG-10-*-22/2280/2290	KS-RG-10-22

Note: No bonded seals are included in the seal kits.

RCT/RCG-03-* -22/2280/2290
 RCT/RCG-06-* -22/2280/2290
 RCT/RCG-10-* -22/2280/2290

⚠ CAUTION

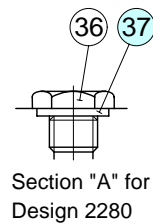
When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



● List of Seals

Item	Name of Parts	Part Numbers			Quantity	
		RCT RCG-03	RCT-06 RCG	RCT-10 RCG	RCT-* RCG-*	RCG-*
30	O-Ring	SO-NB-P6	SO-NB-P6	SO-NB-P6	4	4
31	O-Ring	SO-NA-P9	SO-NA-P9	SO-NA-P9	1	1
32	O-Ring	SO-NB-P9	SO-NB-P9	SO-NB-P9	—	2
33	O-Ring	SO-NB-P12	SO-NB-P18	SO-NB-P22A	1	1
34	O-Ring	SO-NB-P18	SO-NB-P28	SO-NB-P32	—	2
35	O-Ring	SO-NB-P22	SO-NB-P28	SO-NB-P36	2	2
37	Bonded Seal	SG-FB-1/4	SG-FB-1/4	SG-FB-1/4	1	1

Note: When ordering the seals, please specify the seal kit number from the table below.



● List of Seal Kits

Model Numbers	Seal Kit Numbers
RCT-03-* -22/2280/2290	KS-RCT-03-22
RCT-06-* -22/2280/2290	KS-RCT-06-22
RCT-10-* -22/2280/2290	KS-RCT-10-22
RCG-03-* -22/2280/2290	KS-RCG-03-22
RCG-06-* -22/2280/2290	KS-RCG-06-22
RCG-10-* -22/2280/2290	KS-RCG-10-22

Note: No bonded seals are included in the seal kits.





PRESSURE REDUCING AND RELIEVING VALVES

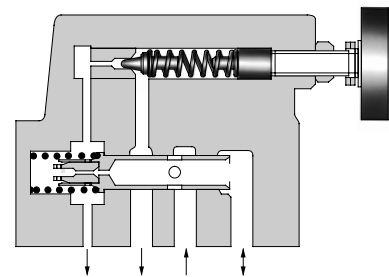
**RBG-03 / 06 (3/8 , 3/4)
Sub-plate Mounting**

**PRESSURE
CONTROLS**

Specifications / Model Number Designation / Others

Up to 25 MPa (3630 PSI), 125 L/min (33 U.S.GPM)

Pressure reducing and relieving valves are composite pressure control valves having pressure reducing and counterbalancing functions developed for hydraulic balancing circuits.



Specifications

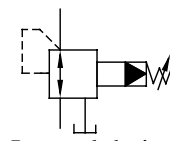
Model Numbers	Max. Operating Pressure MPa (PSI)	Pres. Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)	Relieving Flow L/min (U.S.GPM)	Drain Flow L/min (U.S.GPM)	Approx. Mass kg (lbs.)
RBG-03-*-10*	14 (2030)	0.6-13.5 (90-1960)	50 (13.2)	50 (13.2)	0.6-1 (.16-.26)	4.2 (9.3)
RBG-06-*-10*	25 (3630)	0.8-24.5 (120-3550)	125 (33)	125 (33)	1.5-2 (.40-.53)	11 (24.3)

Model Number Designation

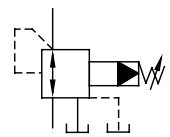
F-	RB	G	-03	-R	-10	*
Special Seals	Series Number	Type of Mounting	Valve Size	Drain Type	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	RB: Pressure Reducing and Relieving Valves	G: Sub-plate Mounting	03 06	None: Internal Drain R: External Drain	10 10	Refer to ★

★ Design Standards: None Japanese Standard "JIS"
 80 European Design Standard
 90 N. American Design Standard

Graphic Symbols



Internal drain



External drain

Attachment

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw (4 pcs.)	
	Japanese Standard "JIS" European Design Standard	N. American Design Standard
RBG-03	M10 × 65 Lg.	3/8-16 UNC × 2-1/2 Lg.
RBG-06	M10 × 70 Lg.	3/8-16 UNC × 2-3/4 Lg.

Sub-plate

Valve Model Numbers	Piping Size	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
		Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
RBG-03	3/8	RBGM-03-10	Rc 3/8	RBGM-03-1080	3/8 BSP.F	RBGM-03-1090	3/8 NPT	1.6 (3.5)
	1/2	RBGM-03X-10	Rc 1/2	RBGM-03X-1080	1/2 BSP.F	RBGM-03X-1090	1/2 NPT	
RBG-06	3/4	RBGM-06-10	Rc 3/4	RBGM-06-1080	3/4 BSP.F	RBGM-06-1090	3/4 NPT	4.8 (10.6)
	1	RBGM-06X-10	Rc 1	RBGM-06X-1080	1 BSP.F	RBGM-06X-1090	1 NPT	

• Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

Hydraulic Fluids

Fluid Types

Any type of hydraulic fluids listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG32 or VG46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

Control of Contamination

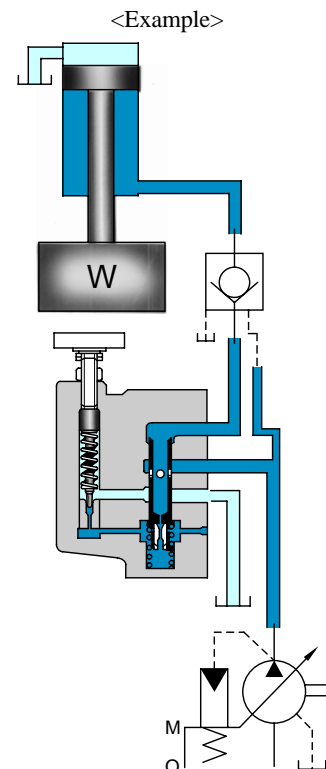
Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination with-in NAS 1638-Grade 12. Use 25 μm or finer line filter.

Instructions

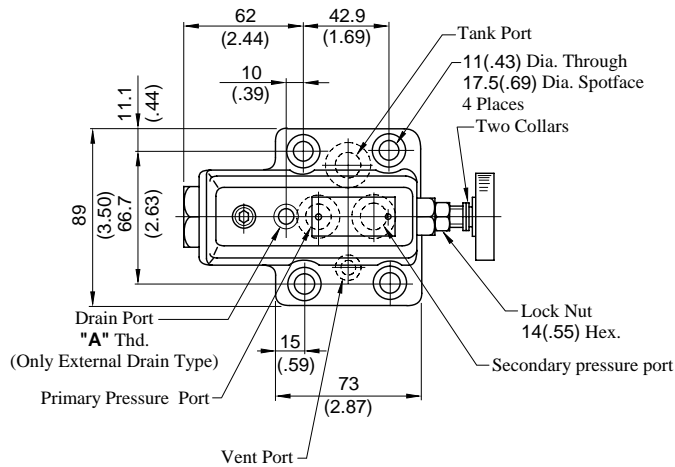
- To use remote control relief valve in the venting circuit, see the Catalogue No. Pub. EC-0201. If the internal volume of the vent line is too large, chattering is likely to occur. Thus, as far as possible reduce the inside Dia and the length of the pipe.
- To adjust the pressure, loosen the lock nut and turn the pressure adjustment handle slowly clockwise for higher pressures and anti-clockwise for lower pressures. After adjustments, do not forget to tighten the lock nut.
- Pressure is limited by collars fitted. If a working pressure cannot be attained, remove some collars. One collar is equivalent to 10 MPa (1450 PSI).
- Connect the tank pipe not to any other line but directly to the tank.

Features and applications of pressure reducing and relieving valves

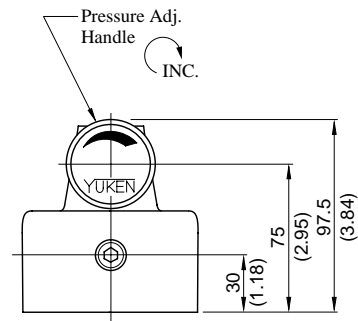
A conventional circuit composed of a pressure reducing valve, a relief valve (for counterbalance) and a check valve can be replaced with one pressure reducing and relieving valve. This enables balancing pressures to be adjusted easily and permits the circuit to be greatly simplified, resulting in a lower cost. If the load is changed, the balancing pressure can be reset easily only by operating the pressure adjustment handle. Pressure reducing and relieving valves can be applied to hydraulic balance circuits such as balance mechanisms of machining centers.



RBG-03-*-10/1080/1090

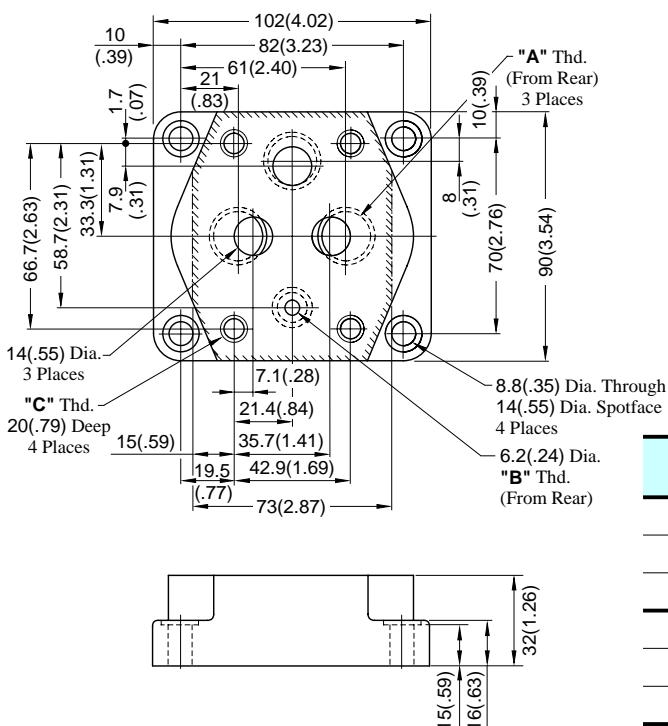


Model Numbers	"A" Thd.
RBG-03-10	Rc 1/4
RBG-03-1080	1/4 BSP.F
RBG-03-1090	1/4 NPT



**DIMENSIONS IN
MILLIMETRES (INCHES)**

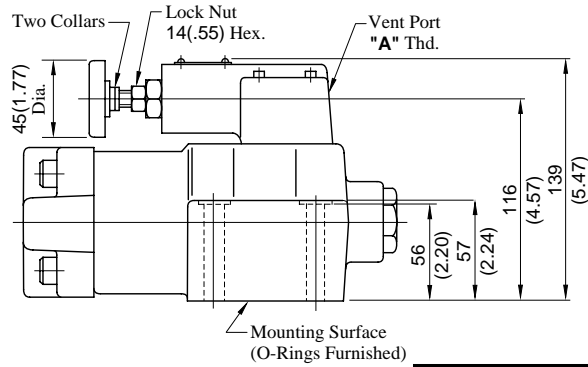
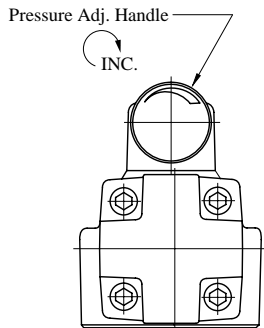
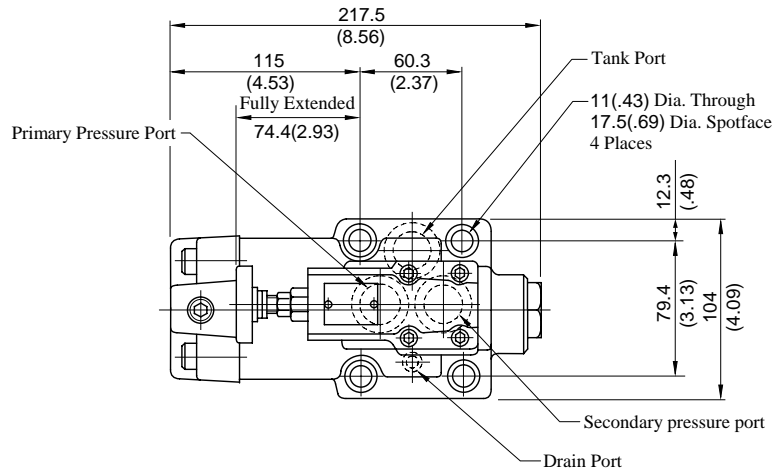
Sub-plate : RBGM-03 03X-10/1080/1090



Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" Thd.
RBGM-03-10	Rc 3/8	Rc 1/4	M10
RBGM-03-1080	3/8 BSP.F	1/4 BSP.F	
RBGM-03-1090	3/8 NPT	1/4 NPT	3/8-16 UNC
RBGM-03X-10	Rc 1/2	Rc 1/4	M10
RBGM-03X-1080	1/2 BSP.F	1/4 BSP.F	
RBGM-03X-1090	1/2 NPT	1/4 NPT	3/8-16 UNC

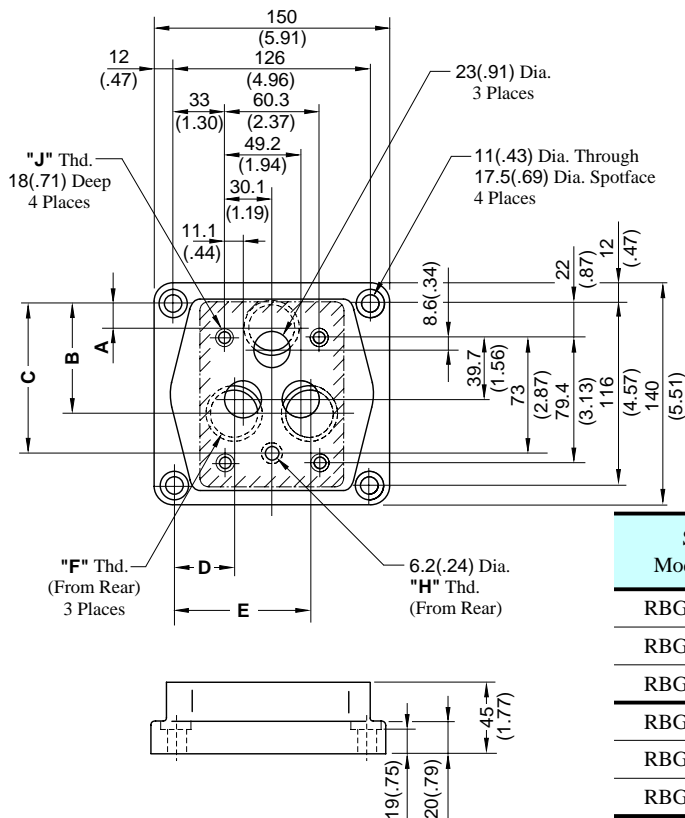
RBG-06-*-10/1080/1090

Model Numbers	"A" Thd.
RBG-06-10	Rc 3/8
RBG-06-1080	3/8 BSP.F
RBG-06-1090	3/8 NPT



**DIMENSIONS IN
MILLIMETRES (INCHES)**

Sub-plate : RBGM-06
06X-10/1080/1090

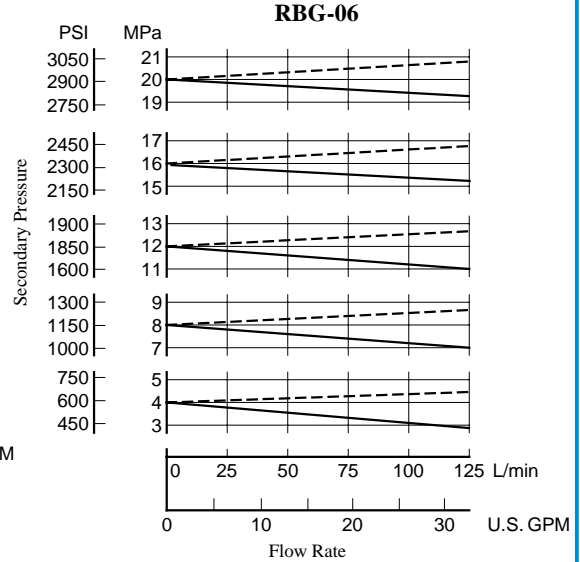
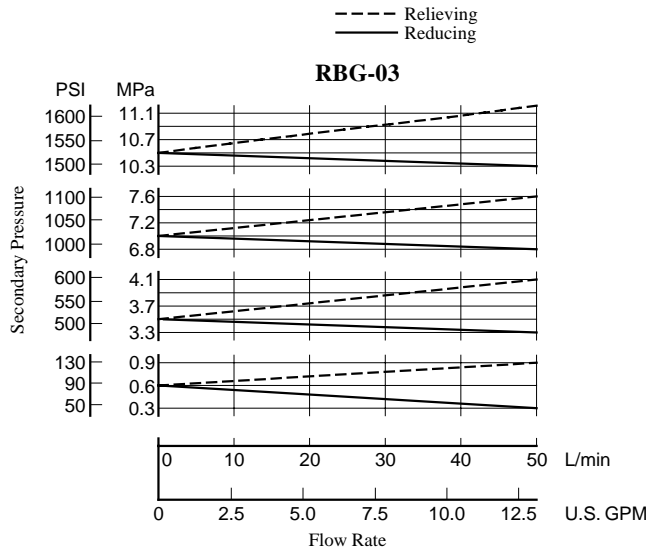


Model Numbers	Dimensions mm (Inches)				
	A	B	C	D	E
RBGM-06	20.7 (.81)	65.7 (2.59)	95 (3.74)	37.1 (1.46)	89.1 (3.51)
RBGM-06X	20.4 (0.80)	69.7 (2.74)	98.4 (3.87)	32.5 (1.28)	93.8 (3.69)

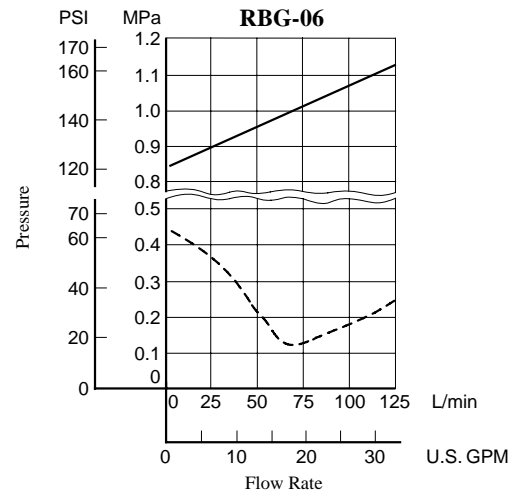
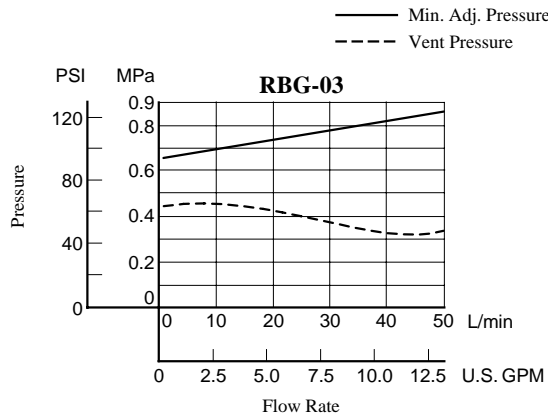
Sub-plate Model Numbers	Thread Size		
	"F" Thd.	"H" Thd.	"J" Thd.
RBGM-06-10	Rc 3/4	Rc 1/4	M10
RBGM-06-1080	3/4 BSP.F	1/4 BSP.F	
RBGM-06-1090	3/4 NPT	1/4 NPT	3/8-16 UNC
RBGM-06X-10	Rc 1	Rc 1/4	M10
RBGM-06X-1080	1 BSP.F	1/4 BSP.F	
RBGM-06X-1090	1 NPT	1/4 NPT	3/8-16 UNC

Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU) , Specific Gravity 0.850

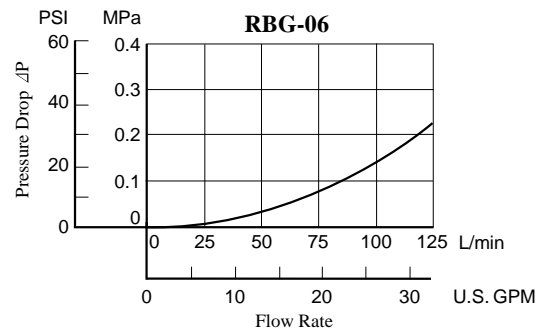
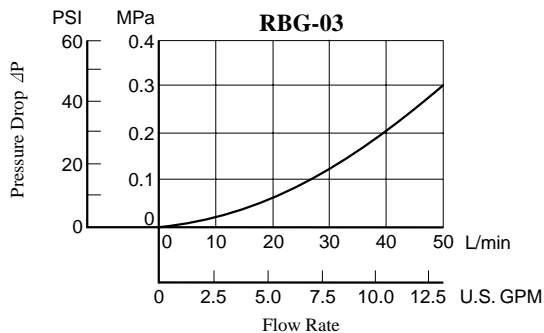
Nominal Override Characteristics



Min. Adj. Pressure & Vent Pressure



Pressure Drop



● For any other viscosity, multiply the factors in the table below.

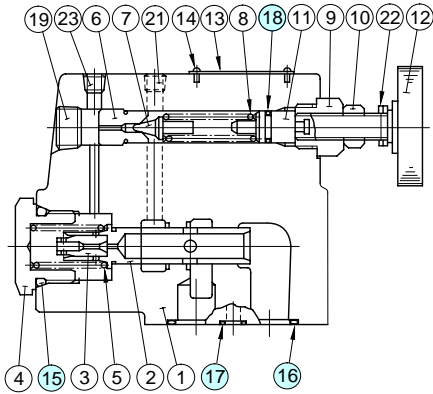
Viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU		77	98	141	186	232	278	324	371	417
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

● For any others pecific gravity (G'), the pressure drop (ΔP') may be obtained from the formula below.

$$\Delta P' = \Delta P (G'/0.850)$$

Spare Parts List

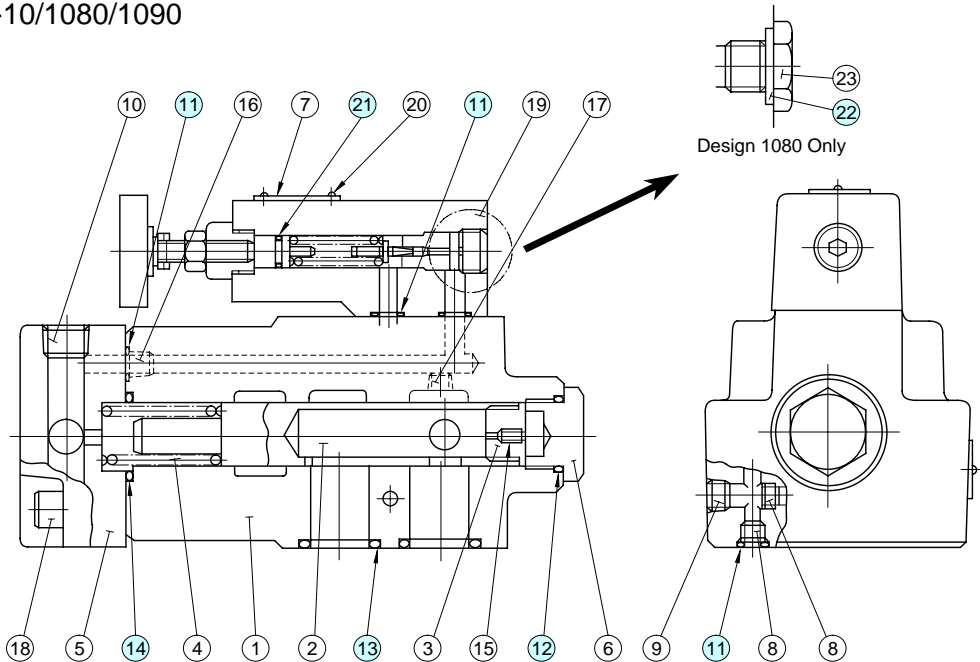
RBG-03-*-10/1080/1090



● List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
15	O-Ring	SO-NB-P24	1	Included in Seal Kit Kit No. : KS-RBG-03-10
16	O-Ring	SO-NB-P18	3	
17	O-Ring	SO-NB-P9	1	
18	O-Ring	SO-NA-P9	1	

RBG-06-*-10/1080/1090



● List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
11	O-Ring	SO-NB-P9	4	Included in Seal Kit Kit No. : KS-RBG-06-10
12	O-Ring	SO-NB-P24	1	
13	O-Ring	SO-NB-P28	3	
14	O-Ring	SO-NB-P30	1	
21	O-Ring	SO-NA-P9	1	
22	Bonded Seal	SG-FB-3/8	1	

Note: No bonded seals are included in the seal kits.



UNLOADING RELIEF VALVES

**BU CG-06/10 (3/4, 1-1/4)
Sub-plate Mounting**

**PRESSURE
CONTROLS**

Specifications / Model Number Designation

Up to 21 MPa (3050 PSI), 250 L/min (66 U.S.GPM)

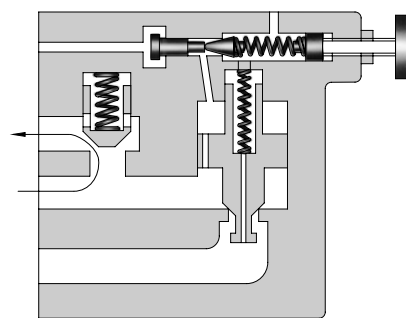
These valves are used to operate the pumps with minimum load in accumulator circuits or in high-low pump circuits.

In accumulator circuits, when the system pressure reaches to a cut out pressure (adjusted maximum), the valve acts to divert the pump delivery to the reservoir at low pressure, thus the pump is unloaded automatically.

When the accumulator pressure drops to the cut in pressure (refer to characteristic chart on page 5), the valve directs the pump delivery to the accumulator and hydraulic system.

An integral check valve prevents reverse flow through the valve from the accumulator.

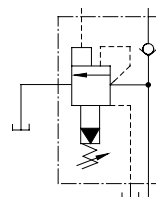
In high-low pump circuits, the valve acts to unload the large volume pump with the same manner as described above during load operation of the small volume pump.



Specifications

Model Numbers	Max. Operating Pres. MPa (PSI)	Max. Flow L/min (U.S.GPM)	Approx. Mass kg(lbs.)
BUCG-06-**-30/3080/3090	21 (3050)	125 (33)	12 (26.5)
BUCG-10-**-25/2580/2590		250 (66)	21.5 (47.4)

Graphic Symbol



Model Number Designation

F-	BUC	G	-06	-B	V	-30	*
Special Seals	Series Number	Type of Mounting	Valve Size	Cut-out Pres. Adj. Range MPa (PSI)	High Venting* Pres. Feature	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	BUC: Unloading Relief Valve	G: Sub-plate Mounting	06 10	B: 2.5-7.0 (360-1020) C: 3.5-14 (510-2030) H: 7.0-21 (1020-3050)	V: For High Venting Pressure Feature (Omit if not required)	30 25	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.

★ Use the high-venting-pressure type to reduce the shift time from unloading to onloading.

■ Hydraulic Fluids

● Fluid Types

Any type of hydraulic fluids listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG32 or VG46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

● Recommended Viscosity and Oil Temperatures

Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

● Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 μm or finer line filter.

■ Instructions

- To adjust the pressure, loosen the lock nut and turn the pressure adjustment handle slowly clockwise for higher pressures or anti-clockwise for lower pressures. After adjustments, do not forget to tighten the lock nut.
- Take care not to neglect connecting the drain pipe to the tank; otherwise not only will the valve fail to operate properly but also the line pressure will rise infinitely. Extend the end of the drain pipe into fluid.
- Limit the pressure drop between the valve and the accumulator in an accumulator circuit below 10% of the cut-out pressure.
- Limit the drain port back pressure below 2% of the cut-out pressure.

■ Attachment

● Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw	
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.
BUCG-06	M16 × 55Lg. (2 pcs.)	5/8-11 UNC × 2-1/4 Lg. (2 pcs.)
	M16 × 110Lg. (2 pcs.)	5/8-11 UNC × 4-1/2 Lg. (2 pcs.)
	M16 × 130Lg. (2 pcs.)	5/8-11 UNC × 5 Lg. (2 pcs.)
BUCG-10	M20 × 70Lg. (2 pcs.)	3/4-10 UNC × 2-3/4 Lg. (2 pcs.)
	M20 × 160Lg. (4 pcs.)	3/4-10 UNC × 6-1/2 Lg. (4 pcs.)

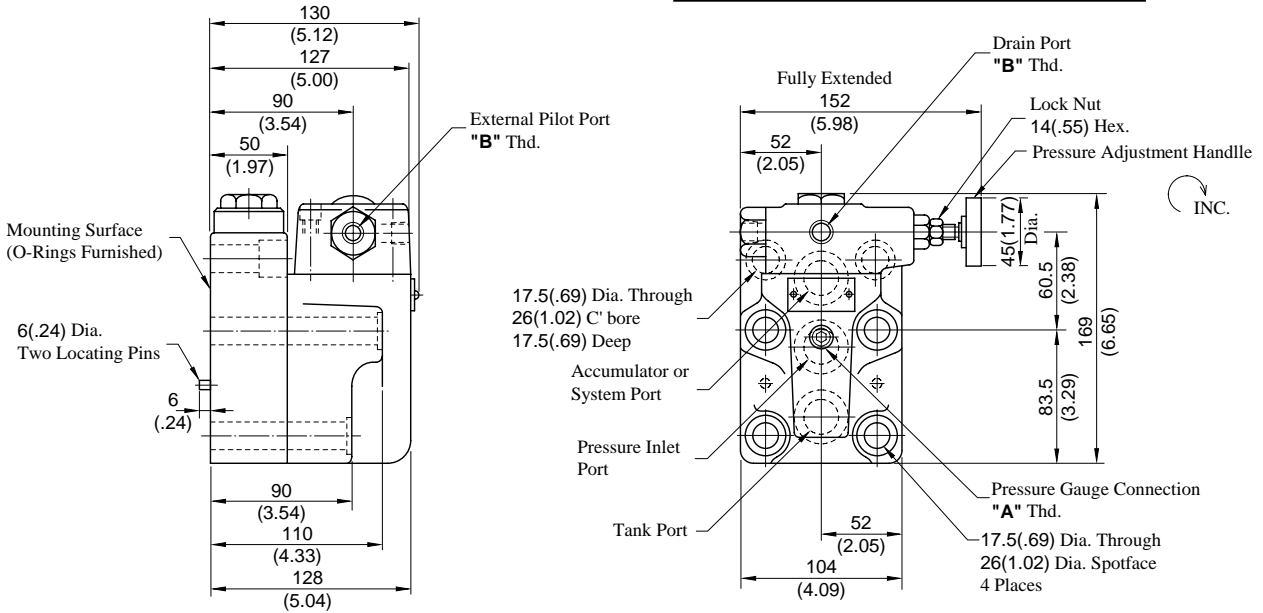
■ Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
BUCG-06	BUCGM-06-20	Rc 3/4	BUCGM-06-2080	3/4 BSP.F	BUCGM-06-2090	3/4 NPT	4.4 (9.7)
BUCG-10	BUCGM-10-20	Rc 1-1/4	BUCGM-10-2080	1-1/4 BSP.F	BUCGM-10-2090	1-1/4 NPT	7.2 (15.9)

- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

BUCG-06-**-30/3080/3090

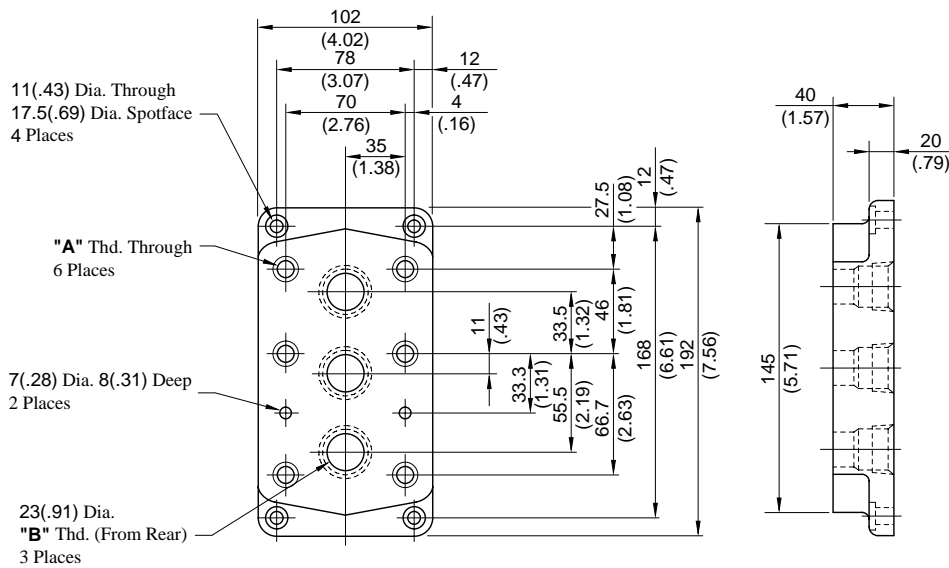
Model Numbers	"A" Thd.	"B" Thd.
BUCG-06-**-30	Rc 1/4	Rc 1/4
BUCG-06-**-3080	1/4 BSP.Tr	1/4 BSP.F
BUCG-06-**-3090	1/4 NPT	1/4 NPT



**DIMENSIONS IN
MILLIMETRES (INCHES)**

Sub-plate

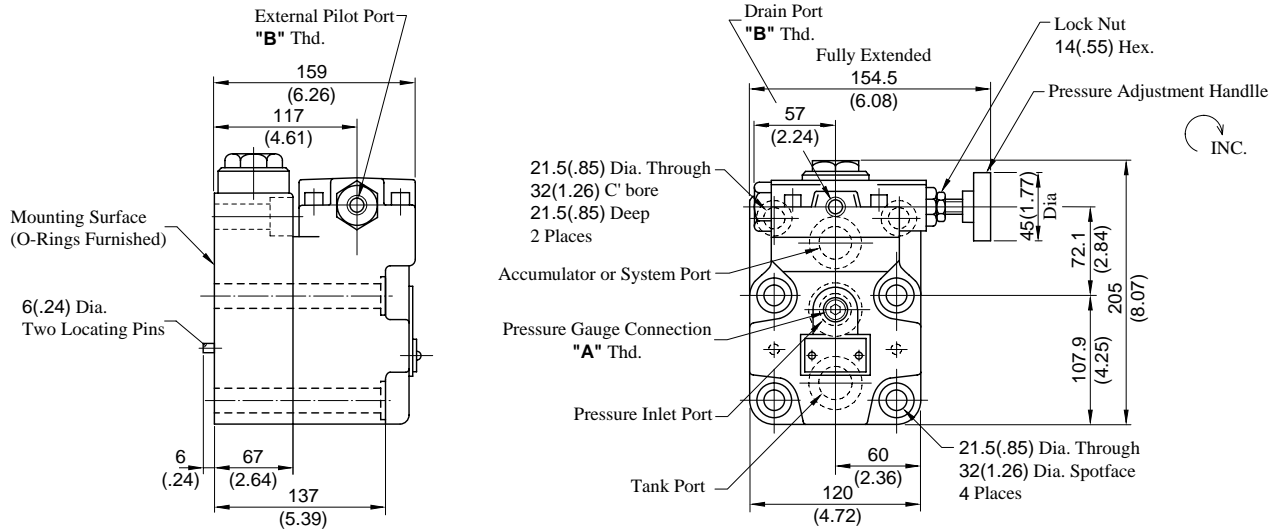
BUCGM-06-20/2080/2090



Sub-plate Model No.	"A" Thd.	"B" Thd.
BUCGM-06-20	M16	Rc 3/4
BUCGM-06-2080	M16	3/4 BSP.F
BUCGM-06-2090	5/8-11 UNC	3/4 NPT

BUCG-10-**-25/2580/2590

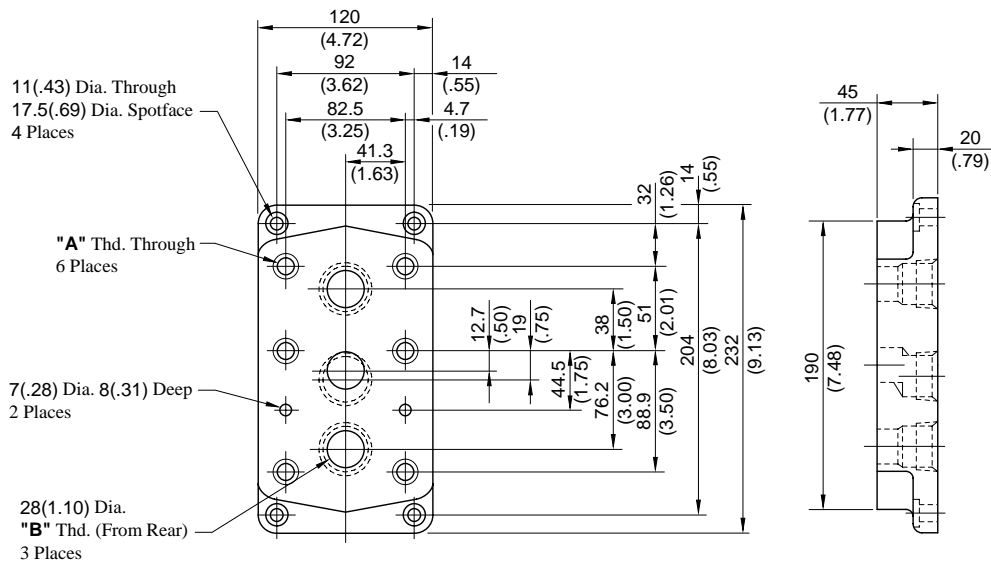
Model Numbers	"A" Thd.	"B" Thd.
BUCG-10-**-25	Rc 1/4	Rc 1/4
BUCG-10-**-2580	1/4 BSP.Tr	1/4 BSP.F
BUCG-10-**-2590	1/4 NPT	1/4 NPT



DIMENSIONS IN
MILLIMETRES (INCHES)

Sub-plate

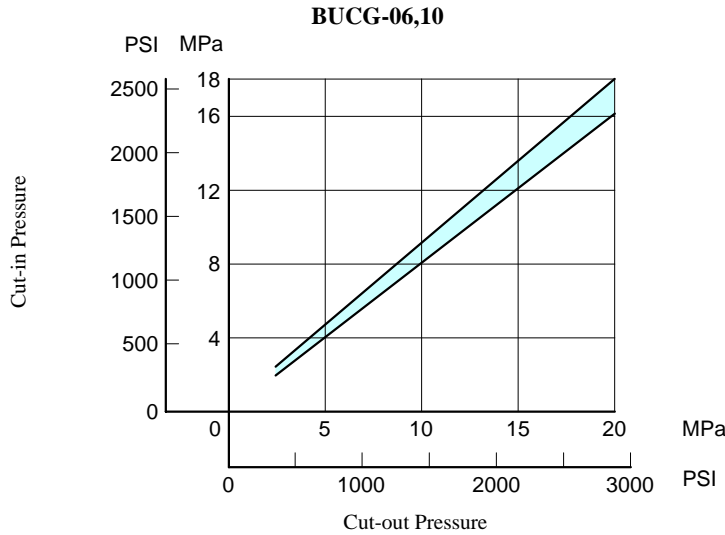
BUCGM-10-20/2080/2090



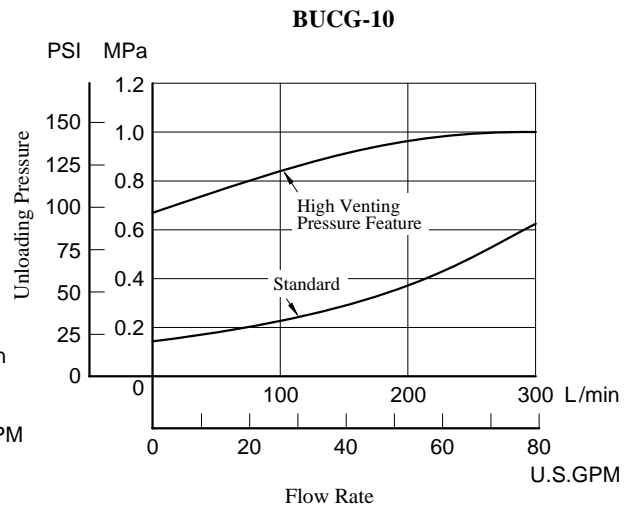
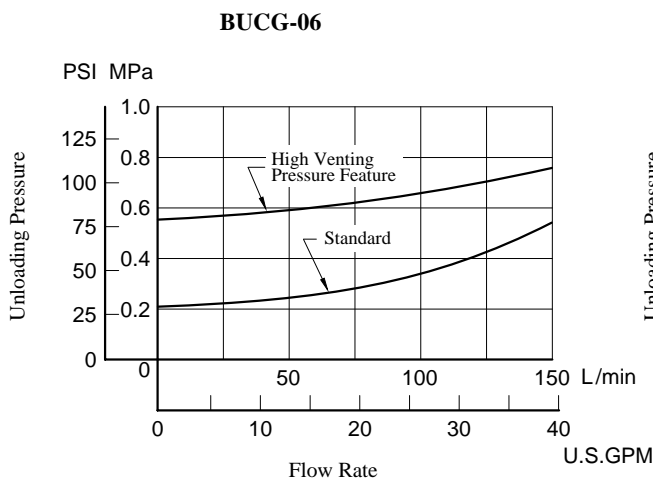
Sub-plate Model No.	"A" Thd.	"B" Thd.
BUCGM-10-20	M20	Rc 1-1/4
BUCGM-10-2080	M20	1-1/4 BSP.F
BUCGM-10-2090	3/4-10 UNC	1-1/4 NPT

Hydraulic Fluid: Viscosity 35 mm²/s (164 SSU), Specific Gravity 0.850

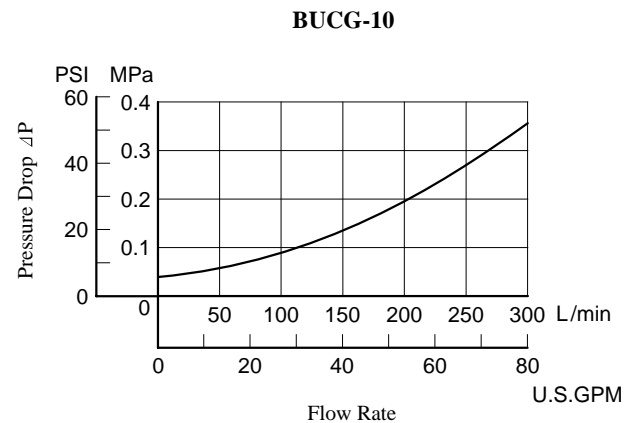
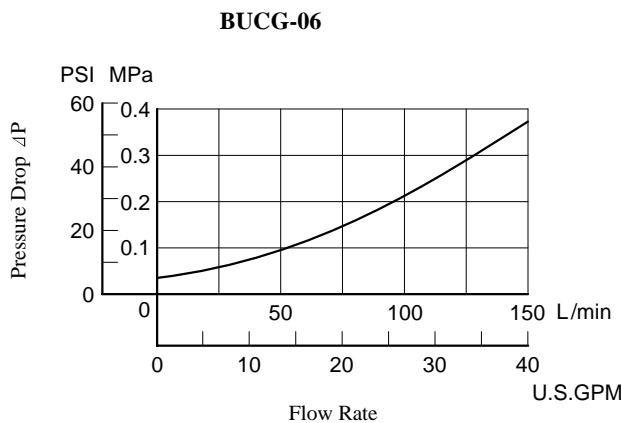
■ **Cut-in Pressure vs. Cut-out Pressure**



■ **Unloading Pressure vs. Flow**



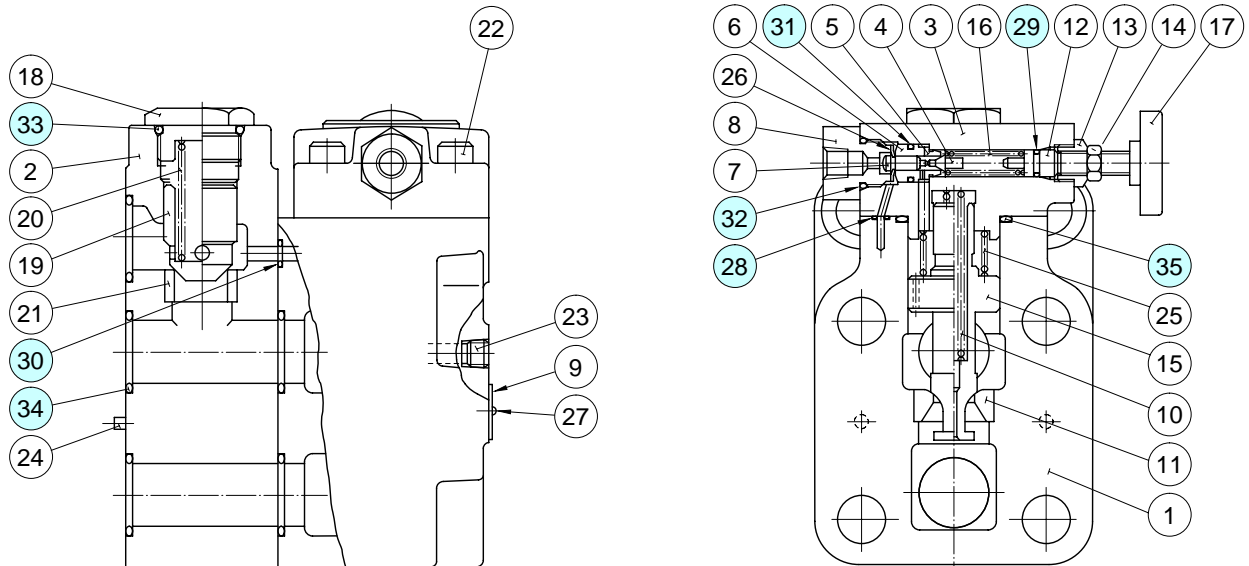
■ **Pressure Drop for Check Valve**



BUCG-06-**-30/3080/3090
BUCG-10-**-25/2580/2590

⚠ CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.



● List of Seals

Item	Name of Parts	Part Numbers		Quantity
		BUCG-06	BUCG-10	
28	O-Ring	SO-NB-P6	SO-NB-P6	3
29	O-Ring	SO-NA-P9	SO-NA-P9	1
30	O-Ring	SO-NB-P11	SO-NB-P9	1
31	O-Ring	SO-NB-P12	SO-NB-P12	1
32	O-Ring	SO-NB-P18	SO-NB-P18	1
33	O-Ring	SO-NB-P24	SO-NB-P32	1
34	O-Ring	SO-NB-P28	SO-NB-P32	5
35	O-Ring	SO-NB-G32	SO-NB-P45	1

Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
BUCG-06	KS-BUCG-06-30
BUCG-10	KS-BUCG-10-25



PRESSURE SWITCHES

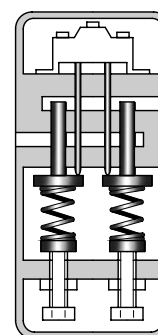
ST/SG-02

Threaded Connections/Sub-plate Mounting

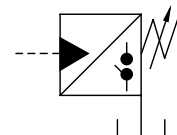
**PRESSURE
CONTROLS**

Up to 35 MPa (5100 PSI)

These pressure switches are used in hydraulic systems to make or break an electrical circuit at a preset hydraulic pressure. The pressure switch has two microswitches, each of which is capable of detecting electrically the high pressure or low pressure setting. The microswitch has a dust and drip-proof structure.



Graphic Symbol



Specifications

Model Numbers		Max. Operating Pressure MPa (PSI)	Approx. Mass kg (lbs.)	
Threaded Connection	Sub-plate Mounting		ST type	SG type
ST-02-* -20	SG-02-* -20	35 (5100)	4.5 (9.9)	4.5 (9.9)
ST-02-* -2080	SG-02-* -2080			
ST-02-* -2090	SG-02-* -2090			

Micro Switch Ratings

Loads	AC		DC
	Normally Closed Contact	Normally Open Contact	
Inductive Load	4.5 A - 125V 3.0 A - 250V	2.5 A - 125V 1.5 A - 250V	0.05 A - 125V 0.03 A - 250V
Electric Motor, Incandescent Lamp, Electromagnetic Coil Load			—

Model Number Designation

F-	S	T	-02	-B	-20	*
Special Seals	Series Number	Type of Mounting	Valve Size	Pres. Adj. Range MPa (PSI)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	S: Pressure Switches	T: Threaded Connection	02	B: 0.7 - 7.0 (100 - 1020) C: 3.5 - 14 (510 - 2030) H: 7.0 - 21 (1020 - 3050) K: 10.5 - 35 (1520 - 5100)	20	None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std.
		G: Sub-plate Mounting			20	

Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
SG-02	SGM-02-20	Rc 1/4	SGM-02-2080	1/4 BSP.F	SGM-02-2090	1/4 NPT	1.1 (2.4)

● Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

■ Attachment

● Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
ST-02	M6 × 60 Lg.	1/4 - 20 UNC × 2-1/2 Lg.	2
SG-02			

■ Hydraulic Fluids

● Fluid Types

Any type of hydraulic fluids listed in the table below can be used.

Petroleum base oils	Use fluids equivalent to ISO VG32 or VG46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water containing fluids	Use water-glycol fluid.

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

● Recommended Viscosity and Oil Temperatures

Recommended Viscosity and Oil Temperatures

Viscosity ranging between 15 - 400 mm²/s (77 - 1800 SSU).

Oil temperatures between -15/+70°C (5 - 158°F).

Use hydraulic fluids which satisfy the recommended viscosity and oil temperatures given above.

● Control of Contamination

Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valves. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 µm or finer line filter.

■ Instructions

● Pressure adjustments

Remove the front cover and loosen the lock nut. Turn the pressure adjustment screw slowly clockwise to increase pressure or anti-clockwise to decrease pressure. After adjustment, be sure to tighten the lock nut and replace the front cover in the original position.

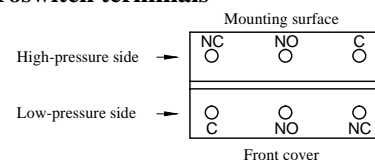
● Drain piping

Connect the drain pipe not to any other line but directly to the tank.

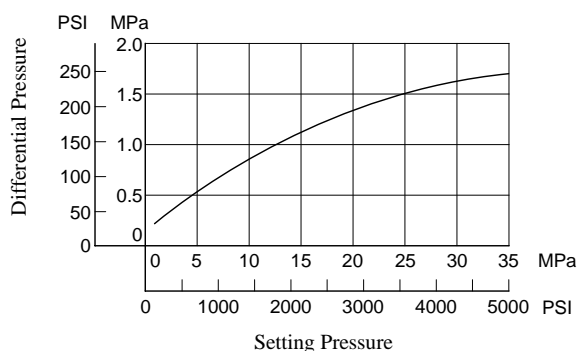
● Pressures and Microswitch contacts

Pressure	Contact Point	
	High Pressure Microswitch	Low Pressure Microswitch
Under the setting pressure	 ○ NC ○ NO	 ○ NC ○ NO
Above the setting pressure	 ○ NC ○ NO	 ○ NC ○ NO

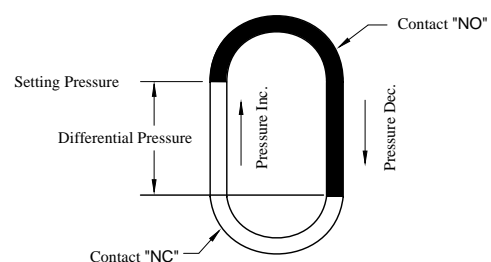
● Microswitch terminals



■ Differential Pressure Characteristic

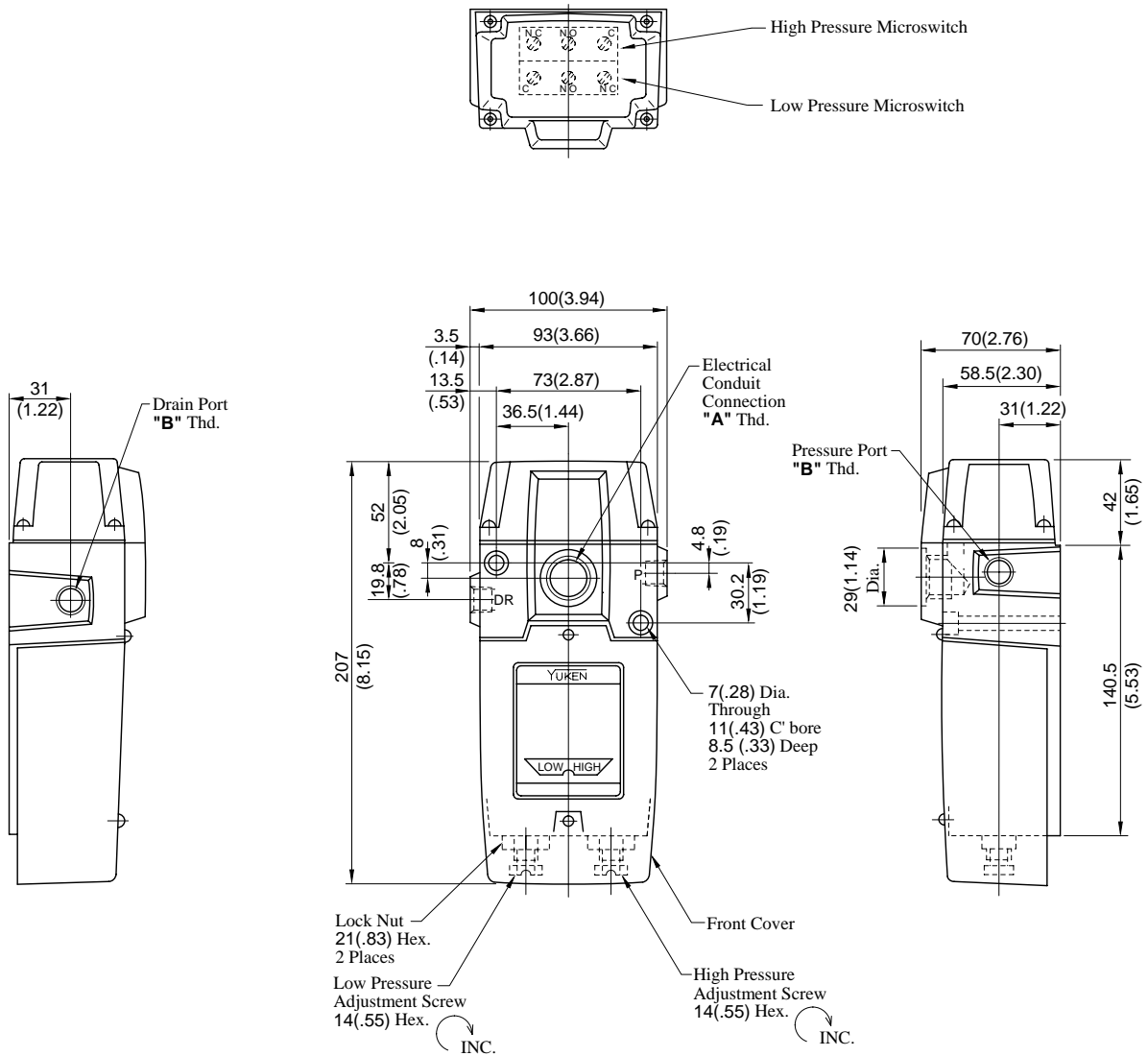


★ The differential pressure means the pressure difference caused between at NC and at NO when one of the pressures on the high and low pressure side is increased and then decreased.



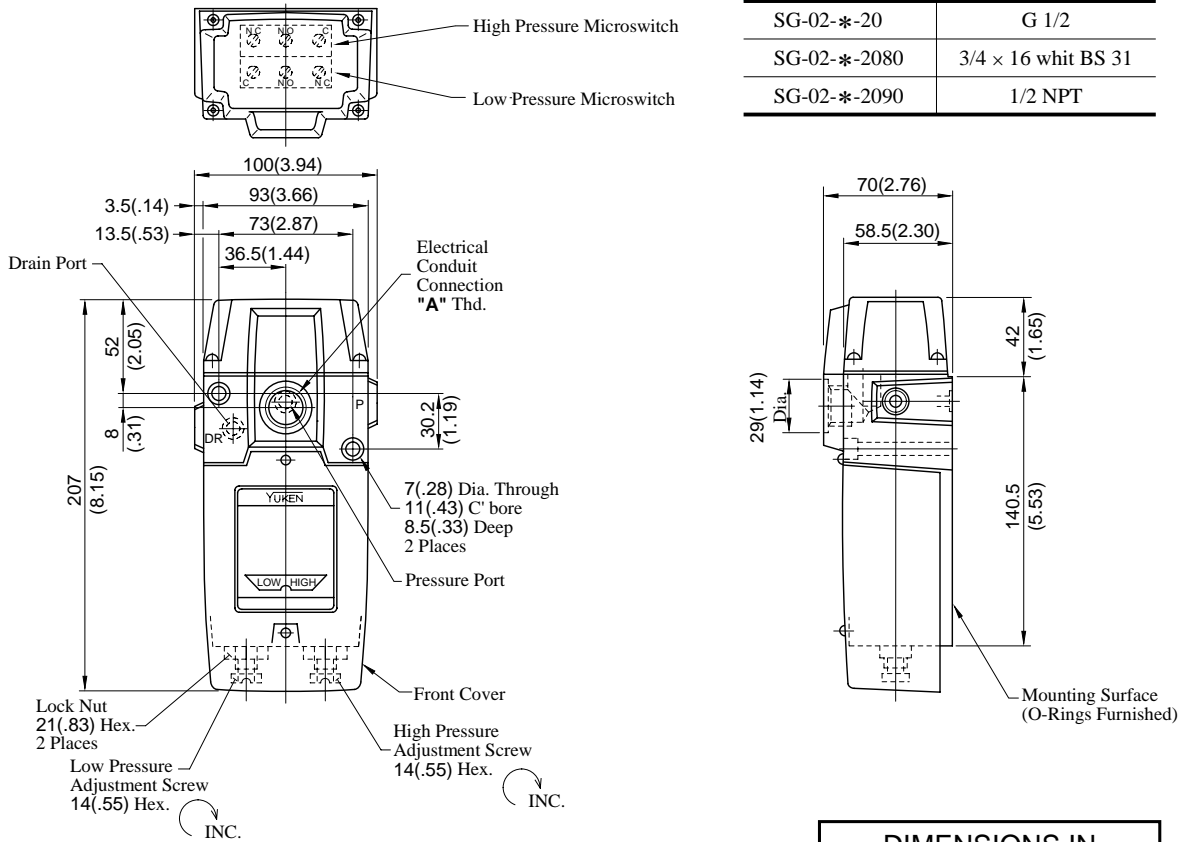
ST-02-*-20/2080/2090

DIMENSIONS IN
MILLIMETRES (INCHES)



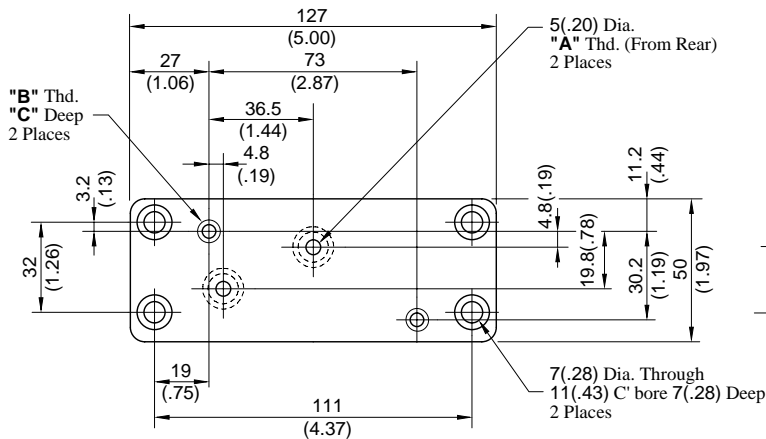
Model Numbers	"A" Thd.	"B" Thd.
ST-02-*-20	G 1/2	Rc 1/4
ST-02-*-2080	3/4 × 16 whit BS 31	1/4 BSP.F
ST-02-*-2090	1/2 NPT	1/4 NPT

SG-02-* -20/2080/2090



**DIMENSIONS IN
MILLIMETRES (INCHES)**

Sub-plate : SGM-02-20/2080/2090

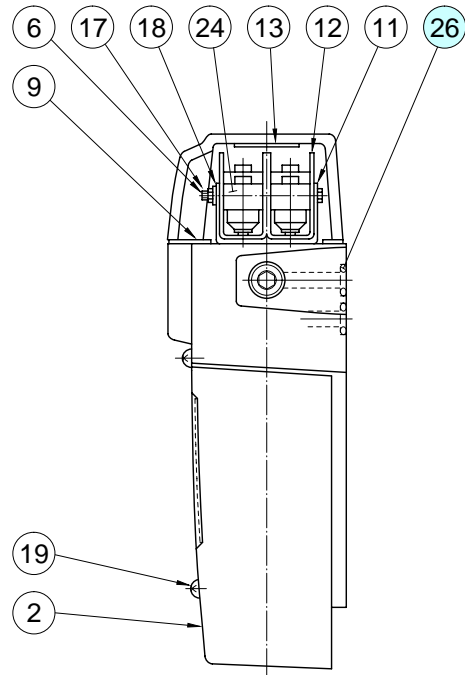
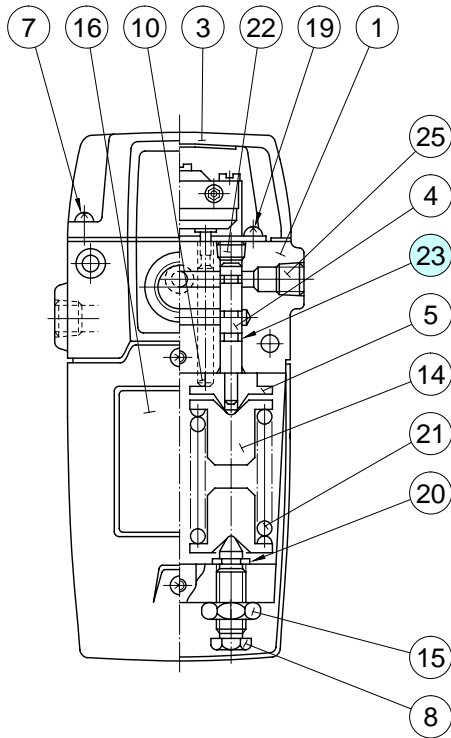


Sub-plate Model Numbers	"A" Thd.	"B" Thd.	"C" mm (Inches)
SGM-02-20	Rc 1/4	M6	12 (.47)
SGM-02-2080	1/4 BSP.F		
SGM-02-2090	1/4 NPT	1/4-20 UNC	16 (.63)



Examples	Schematic Diagram	Wiring Diagram
<p>Example 1 Solenoid is required to be energised at low pressure setting and de-energised at high pressure setting.</p>		
<p>Example 2 Solenoid is required to be de-energised at low pressure setting and energised at high pressure setting.</p>		
<p>Example 3 Electric motor is required to be started at low pressure setting and stopped at high pressure setting.</p>		

ST-02-*-20/2080/2090
SG-02-*-20/2080/2090



● List of Seals

Item	Name of Parts	Part Numbers		Qty.
		ST-02	SG-02	
23	O-Ring	SO-NA-P5	SO-NA-P5	2
26	O-Ring	—	SO-NB-P8	2

Note: When ordering the seals, please specify the seal kit number from the table right.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
ST-02-*-20/2080/2090	KS-ST-02-20
SG-02-*-20/2080/2090	KS-SG-02-20