

Unloading Relief Valves

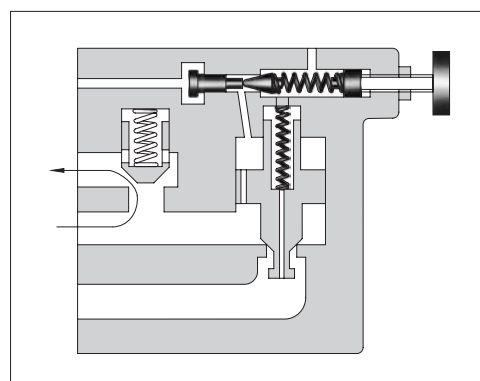
These valves are used to operate the pumps with minimum load in accumulator circuits or in high-low pump circuits.

In accumulator circuits, when the system pressure reaches 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 269), 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)

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.

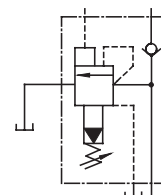
★ Use the high-venting-pressure type to reduce the shift time from unloading to onloading.

Pilot-drain system

A pilot-drain system is typically configured with an external pilot and an external drain, as indicated by the right graphic symbol. However, customized pilot-drain systems with an internal pilot are also available.

For the internal pilot type, the design standard number at the end of the model number is uniquely assigned. Refer to the table below for the internal pilot type. Please contact us for details.

Graphic Symbol



Pilot & Drain Conn.	Graphic Symbols	European Design Standard	N. American Design Standard	Japanese Std. "JIS"
Int. Pilot- Int. Drain		BUCG-06-**-30801 BUCG-10-**-25801	BUCG-06-**-30901 BUCG-10-**-25901	BUCG-06-**-3001 BUCG-10-**-2501
Int. Pilot- Ext. Drain		BUCG-06-**-30802	BUCG-06-**-30902	BUCG-06-**-2502

■ 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 reservoir; 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.)

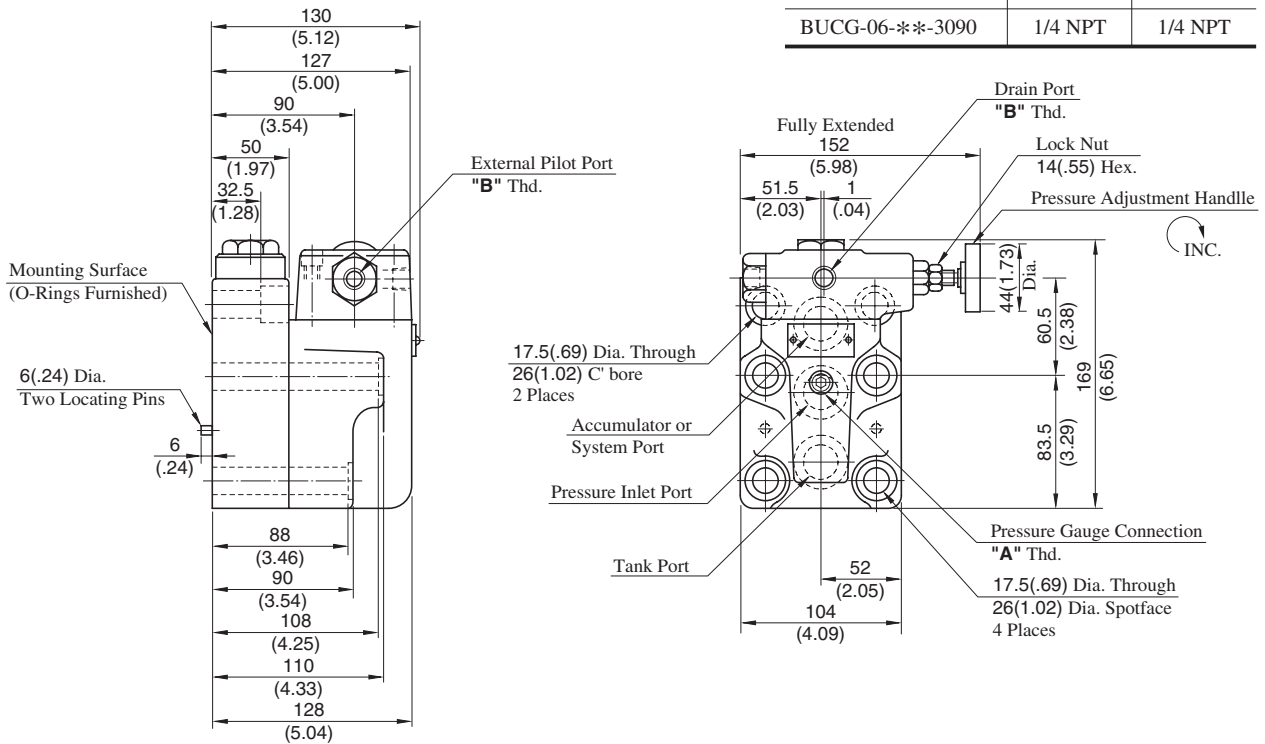
■ Sub-plate

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

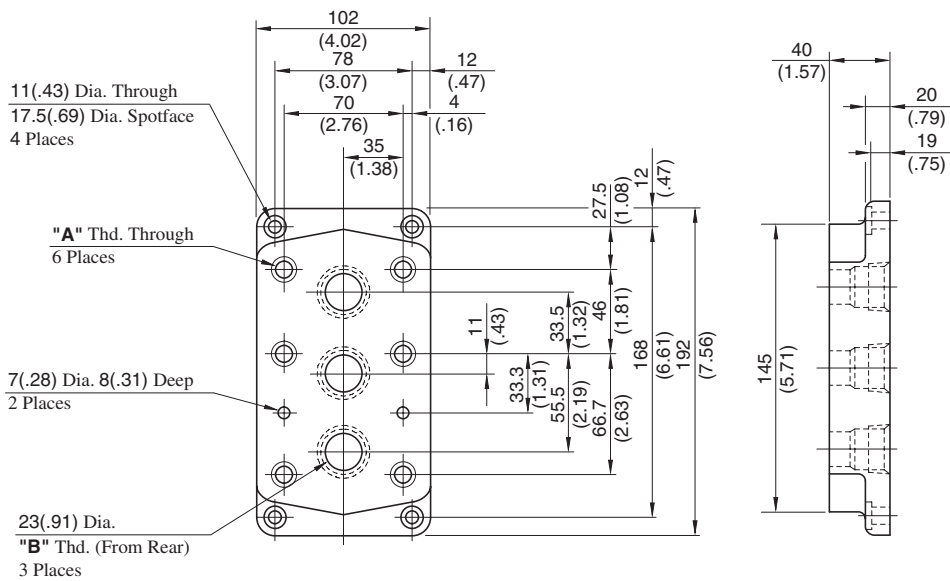
Model Numbers	"A" Thd.	"B" Thd.
BUCG-06-**-30	Rc 1/4	Rc 1/4
BUCG-06-**-3080	1/4 BSP.Tr	1/4 BSP.F
BUCG-06-**-3090	1/4 NPT	1/4 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

■ Sub-plate

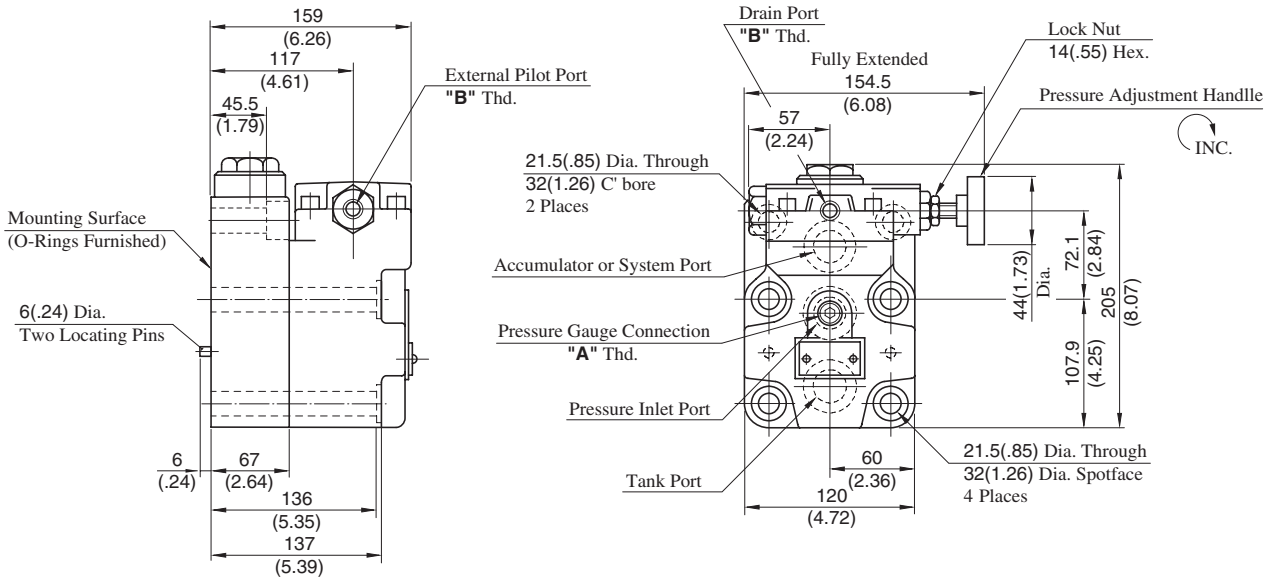
BUCGM-06-20/2080/2090



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**

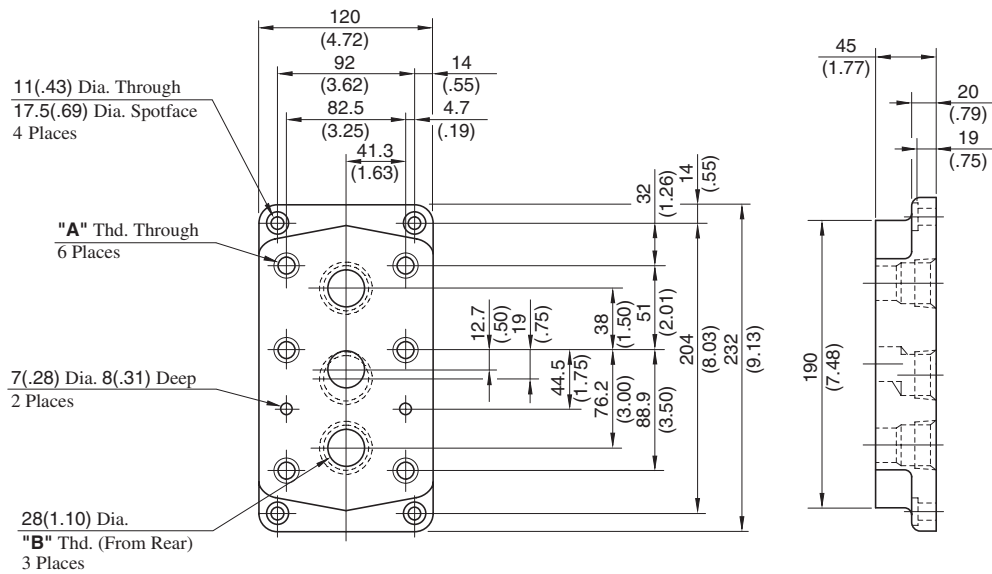
Model Numbers	"A" Thd.	"B" Thd.
BUCG-10-**-25	Rc 1/4	Rc 1/4
BUCG-10-**-2580	1/4 BSP.Tr	1/4 BSP.F
BUCG-10-**-2590	1/4 NPT	1/4 NPT



DIMENSIONS IN MILLIMETRES (INCHES)

■ Sub-plate

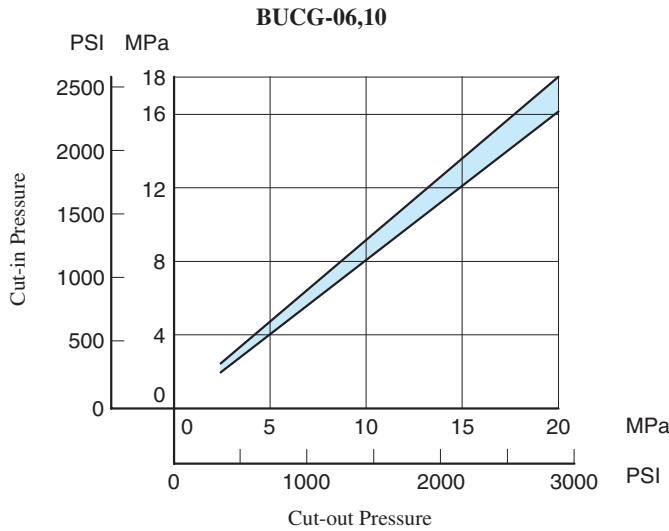
BUCGM-10-20/2080/2090



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

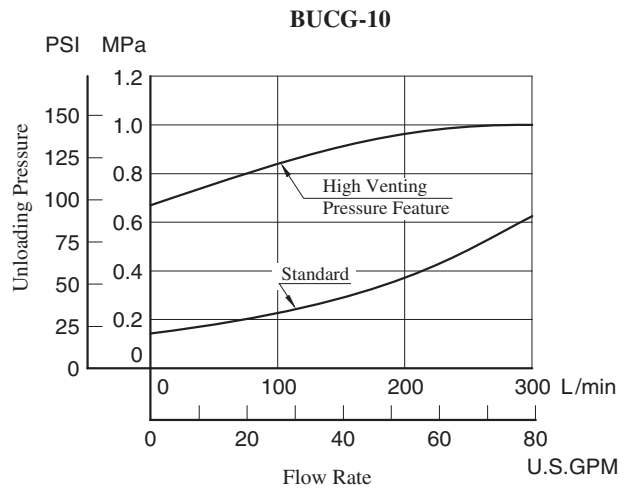
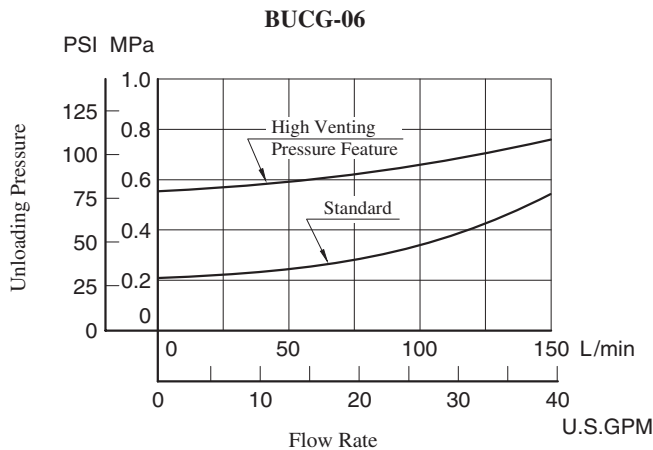
Cut-in Pressure vs. Cut-out Pressure

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



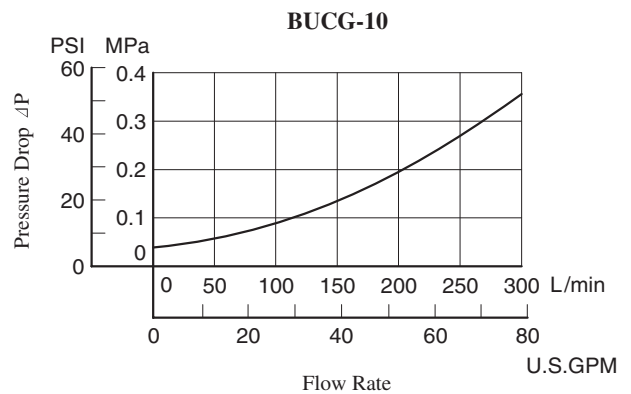
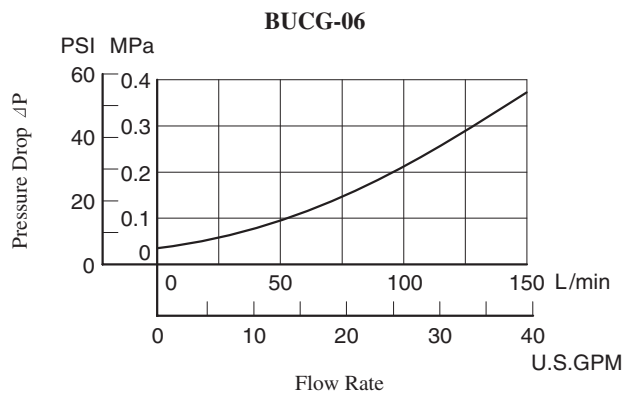
Unloading Pressure vs. Flow

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



Pressure Drop for Check Valve

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



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

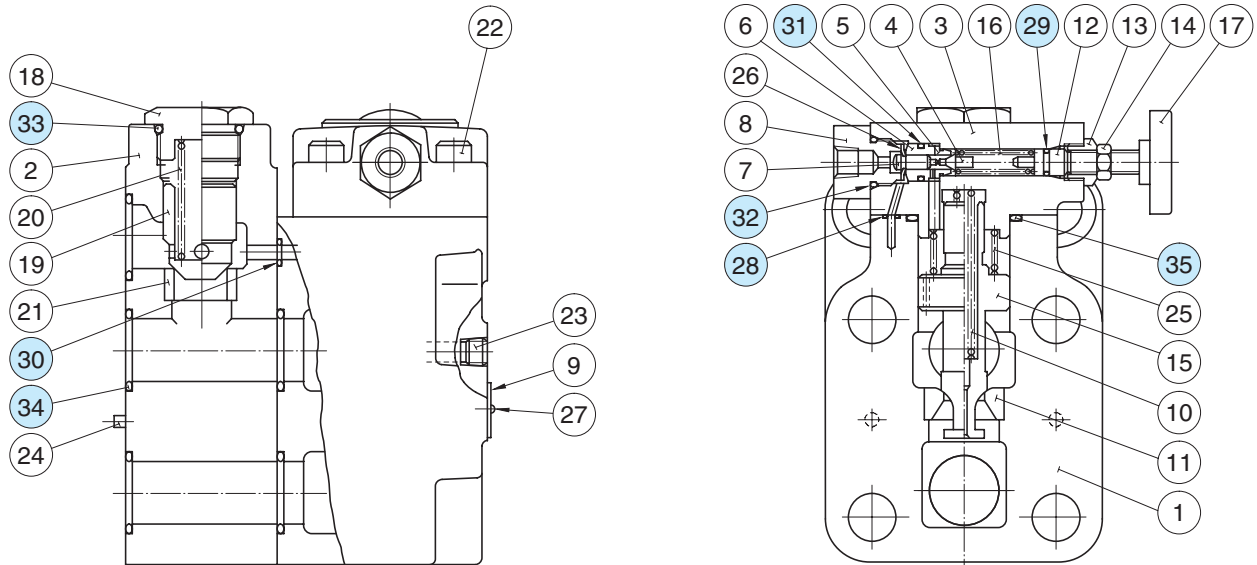
Viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

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

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

Spare Parts List

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



● 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-P32	SO-NB-P45	1

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

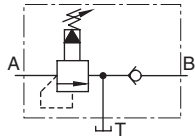
● List of Seal Kits

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

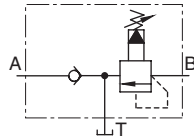
Brake Valves

Brake valves are used on hydraulic cylinders and in brake circuits of hydraulic motors. They can brake with any pressure, permitting smooth stopping.

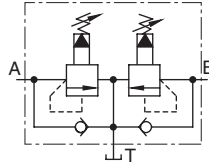
Graphic Symbols



03
UBGR-06-A
10



03
UBGR-06-B
10



03
UBGR-06-W
10



C
Brake Valves

Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Pres. Adj. Range MPa (PSI)	Max. Flow L/min (U.S.GPM)
UBGR -03 - * - B - 20 *	25 (3630)	0.7 - 7.0 (100 - 1020)	50 (13.2)
UBGR -03 - * - H - 20 *		3.5 - 25 (510 - 3630)	
UBGR -06 - * - 20 *		0.7 - 25 (100 - 3630)	125 (33.0)
UBGR -10 - * - 20 *		0.7 - 25 (100 - 3630)	200 (52.8)

Model Number Designation

F-	UBGR	-03	-A	-B	-20	*
Special Seals	Series Number	Valve Size	Type	Pres. Adj. Range MPa (PSI)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	UBGR: Brake Valves, Sub-plate Mounting	03	A: For A-Line B: For B-Line W: For A•B-Lines	B: 0.7-7.0 (100-1020)	20	Refer to ★
		06		H: 3.5-25 (510-3630)		
		10		None: 0.7-25 (100-3630)	20	

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

• Consult Yuken when detailed material such as dimensions figures is required.

Semiconductor Type Pressure Switches

These pressure switches have built-in electronic circuit on a semiconductor pressure sensor and an open collector insulated by a photocoupler has been used as output. As the use of semiconductor has put movable parts away from the sensor section, high reliability and durability can be obtained.

These pressure switches are suitable for the applications not only compact, light weight and vibration-proof are required but also better substitute to conventional pressure switches.

Model Number Designation

J	T	-02	-100	-11
Series Number	Type of Mounting	Valve Size	Max. Setting Pressure MPa (PSI)	Design Number
J : Semiconductor Type Pressure Switch	T : Threaded Connection	02	35 : 3.5 (510) 100 : 10 (1450) 200 : 20 (2900) 350 : 35 (5080)	11

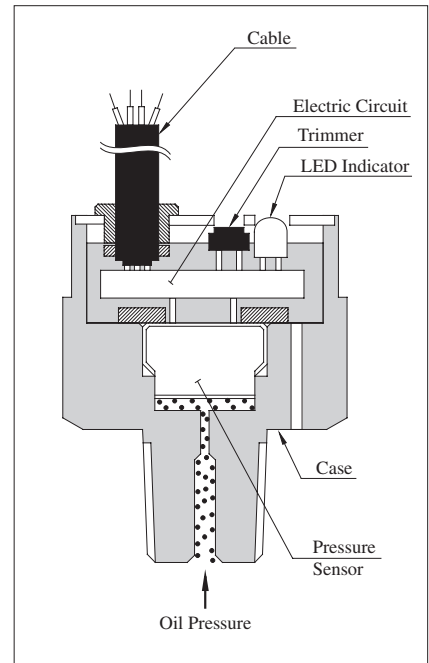
Specifications

Model Numbers		JT-02 -35-11	JT-02 -100-11	JT-02 -200-11	JT-02 -350-11
Description					
Max. Operating Pressure	MPa (PSI)	10 (1450)	10 (1450)	20 (2900)	35 (5080)
Proof Pressure	MPa (PSI)	20 (2900)	20 (2900)	40 (5800)	50 (7250)
Pressure Setting Range	MPa (PSI)	0.1 - 3.5 (15 - 510)	1 - 10 (145 - 1450)	2 - 20 (290 - 2900)	3.5 - 35 (510 - 5080)
Pressure Setting (ON pressure Setting)		Single adjustment: ON trimmer setting (variable resistor)*			
Differential Pressure Setting (OFF Pressure Setting)		Single adjustment: DIFF trimmer setting (-1 to -10% of the ON pressure setting)			
Sign on act		When the ON pressure, the LED indicator lights.			
Output System		Open collector (photocoupler insulated) Maximum operating voltage : 35 VDC; maximum current: 100 mA			
Power Source		10 to 28 VDC (ripple included). A constant-voltage power supply must be used. Current consumption: 10 mA.			
Insulation Resistance		100 MΩ or more			
Response Time		1.5 ms	20 ms (damper contained)		
Repeatability		Approx. 0.5 %			
Operating Temperature Range		-20 to +70 °C (-4 to 158 °F)			
Setting Fluctuation with Temperature Drift		1% or less of the maximum operating pressure relative to 10 °C change.			
Storage Temperature Range		-40 to +105 °C (-40 to 221 °F)			
Dust-proofness /Water-Proofness		IEC Pub. 529 IP54			
Vibration-resistance		98 m/s ² (322 ft./s ²) (10 - 55 Hz)			
Shock-resistance		98 m/s ² (322 ft./s ²)			
Mass		17g (.39 lbs.)			

★ Trimmer Rotation Angle: 0 to 260°

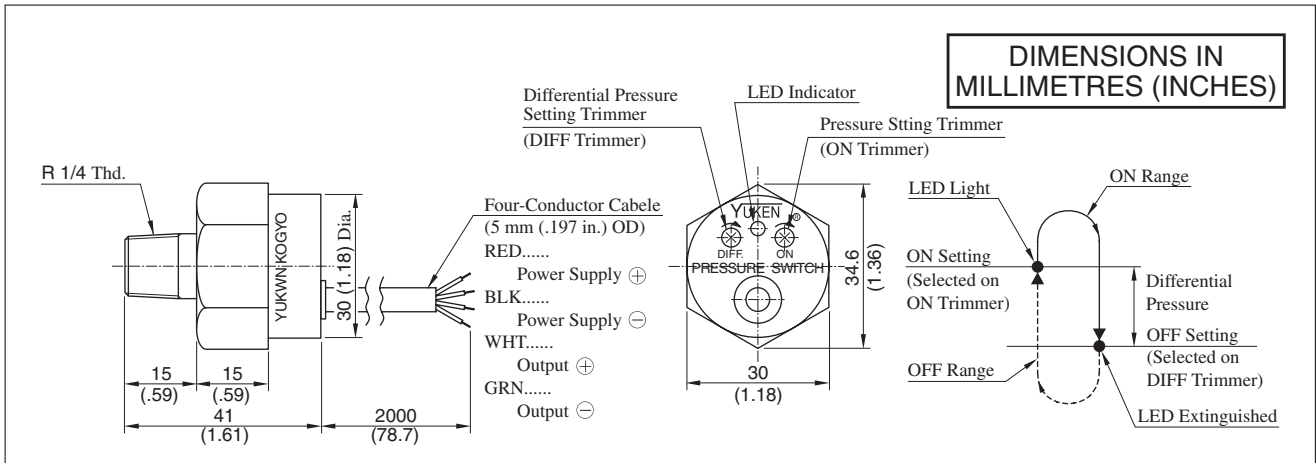
Instructions

Voltage-proof test should not be carried out as semiconductor has been used.



Graphic Symbol





Adjustment

- Before starting, turn the ON and DIFF trimmers fully clockwise. (Trimmer Rotation Angle: 0 – 260°)
- Turn on the power.
- < ON pressure setting >
Apply required pressure to the switch. Turn ON trimmer slowly anti-clockwise and stop it when LED indicator lights, ON setting obtained.
- < Differential pressure setting >
Gradually reduce pressure to obtain the required OFF pressure. Then, turn DIFF trimmer anti-clockwise slowly and stop it when LED indicator goes off. The OFF setting is now obtained.
- Make sure if "ON" or "OFF" setting is correct by working of LED indicator when applying or reducing pressure repeatedly several times.

Application Examples of Electrical Circuit

<p>Output Circuit of Semiconductor Type Pressure Switch (Internal Circuit)</p>	<p>Direct Relay Drive</p> <ul style="list-style-type: none"> Use relay operable at 100 mA or lower. Connect surge voltage absorption diode (D) in parallel with the relay coil. Connect protective diode (D) between the white and green wires.
<p>Connection to Sequential Controller</p> <p>1. Sink System</p> <p>2. Source System</p>	<p>The usage below is possible because output circuit is insulated by a photocoupler.</p> <p>1. When AND circuit Two Pressures The sequential controller is signaled only when pressure switches No. 1 and 2 are both ON.</p> <p>2. When OR circuit two pressures The sequential controller is signaled when either of pressure switches No. 1 and 2 is ON.</p>