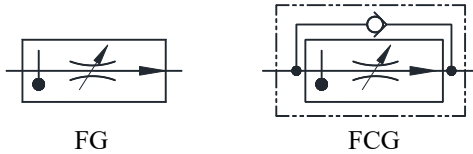


Flow Control Valves

Flow Control and Check Valves

These Valves are pressure and temperature compensating type valves and maintain a constant flow rate independent of change in system pressure (load) and temperature (Viscosity of the fluid). They Control flow rate of the hydraulic circuit and eventually control speed of the actuator precisely. Valves with an integral check valve allow a controlled flow and reverse free flow.

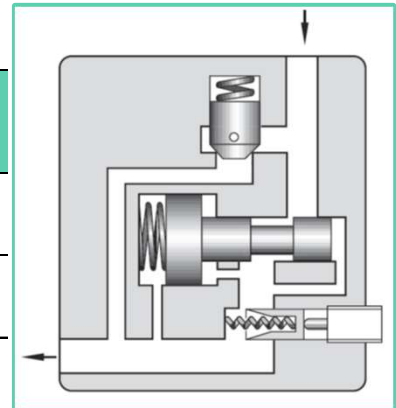
Graphic Symbol



Specifications

Model Numbers	Max. Metered Flow Capacity L/min.	Min. Metered Flow Capacity L/min.	Max. Oper. Pressure Kg/cm ²	Mass Kg.
FG FCG -01-1-1107※	1	0.02	140	1.3
FG FCG -01- $\frac{4}{8}$ -※-11※	4 8	0.02 (0.04)*	140	1.3
FG FCG -02-30-※-22801※	30	0.05	210	3.8
FG FCG -03-125-※-22801※	125	0.2		7.9

* The Figure in the bracket is for pressures above 70 Kg/cm²



Model Number Designation

F-	FC	G	-01	-8	-N	-11	H01
Special Seals **	Series Number	Type of Mounting	Valve Size	Max. Metered Flow Capacity L/min.	Pres. Compensator Stroke Adjustment	Design Number	Special Number
F: Special Seals for Phosphate Ester type Fluids (Omit if not required)	F: Flow Control Valves	G: Sub-Plate Mounting	01	1:1	N: Applicable only for pres. Compensator stroke adjustment (Option) (Omit if not required)	1107	-
				4:4 8:8		1207	H01
	FC: Flow Control and Check Valves		02	30:30		11	-
				03		125:125	12
			02	22801		-	
				22801		H01	
22801	-						
22801	H01						

** Before ordering the Special Seals, consult YUKEN INDIA LTD.

Attachment

Mounting Bolts

Valve Model Number	Socket Head Cap Screw	Qty	Bolt Kit Model Number
F※G-01	M5 x 55 Lg.	4	BKFG-01-10
F※G-02	M8 x 60 Lg.	4	BKFG-02-22
F※G-03	M10 x 80 Lg.	4	BKFG-03-22

Option

Pres. Compensator Stroke Adjustment

Can reduce jumping at the start of the actuator.

Sub-plates

Valve Model Number	Sub-plate Model No.	Thread Size	Mass Kg.
FG FCG -01	FGM-01X-1080	1/4 BSP.F	0.8
FG FCG -02	FGM-02-2080	1/4 BSP.F	2.3
	FGM-02X-2080	3/8 BSP.F	2.3
	FGM-02Y-2080	1/2 BSP.F	3.1
FG FCG -03	FGM-03-2080	3/8 BSP.F	3.9
	FGM-03X-2080	1/2 BSP.F	3.9
	FGM-03Y-2080	3/4 BSP.F	5.7

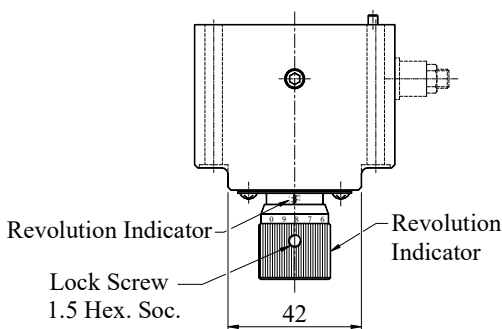
- Sub plates are available. Specify Sub-Plates model from the table above. When Sub-Plates are not used the mounting surface should have good machined finish.

Instructions

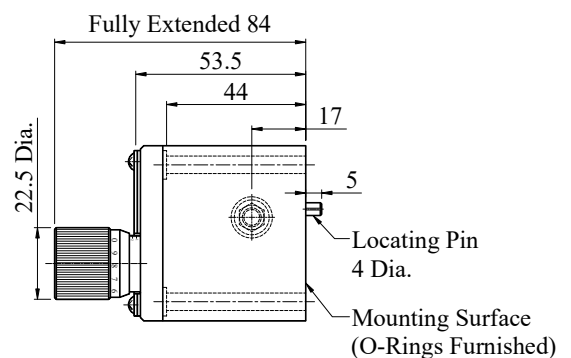
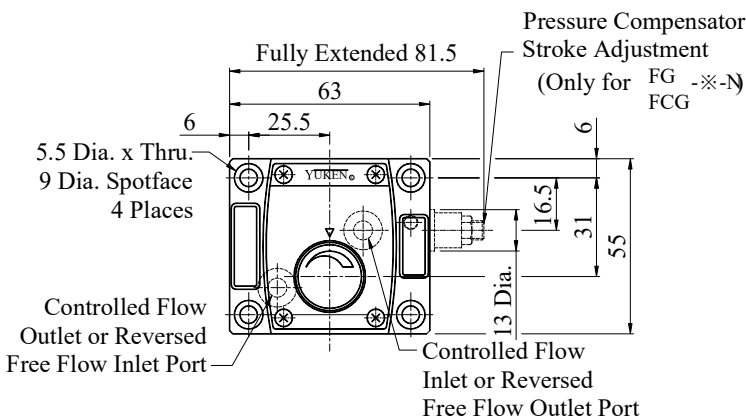
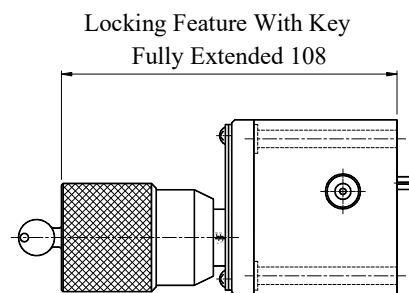
- Min. required pressure difference**
Min. differential pressure between inlet and outlet port is required to obtain the optimum pressure compensation. It varies according to the flow rate to be set. For details, please refer to the performance curve.
- Free flow**
Check Valve pressure drops vary with flow rates. If models with check valves are used, see free flow pressure drop characteristics.
- Flow Adjustment**
[F※G-01]
Loosen locking screw and turn flow adjustment dial clockwise for increase, and anti-clockwise for decrease. The dial makes about 4 revolutions from zero to full flow and the valve opening is indicated on the revolution indicator. (Refer to characteristic of “Metered Flow vs. Dial Position”)
After flow adjustment, tighten locking Screw.
[F※G-02/03] --- Anticlockwise for increase and clockwise for decrease.
- Line Filter**
To carry out flow adjustments by as small degree as 2 L/min. or less, be sure to use a line filter, 10μ or less, near the valve inlet.

DIMENSIONS IN MILLIMETRES

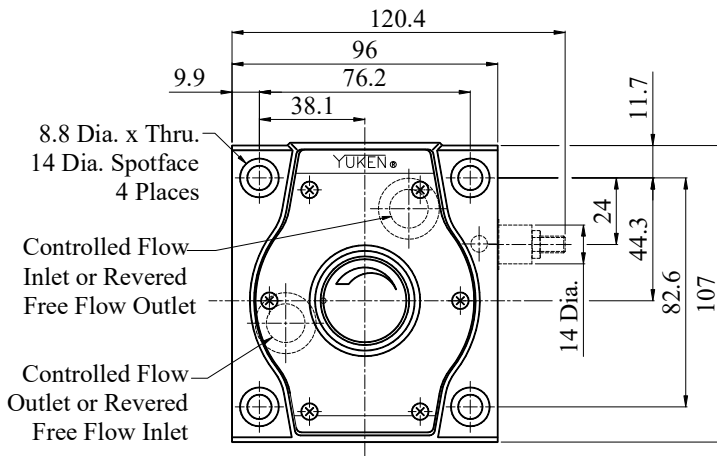
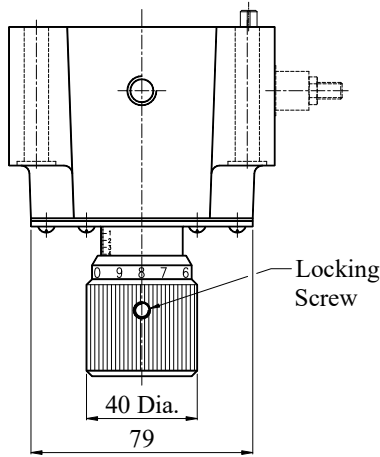
FG
FCG -01-※-※-11※※



F※G-01-※-※-12※※H01

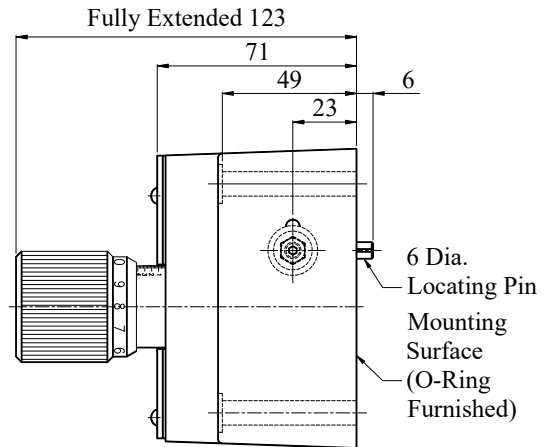
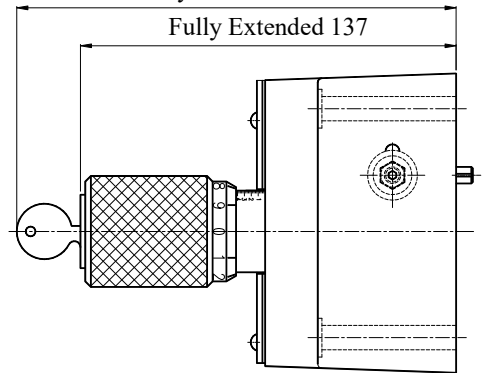


● **F※G-02-30-※-22801**



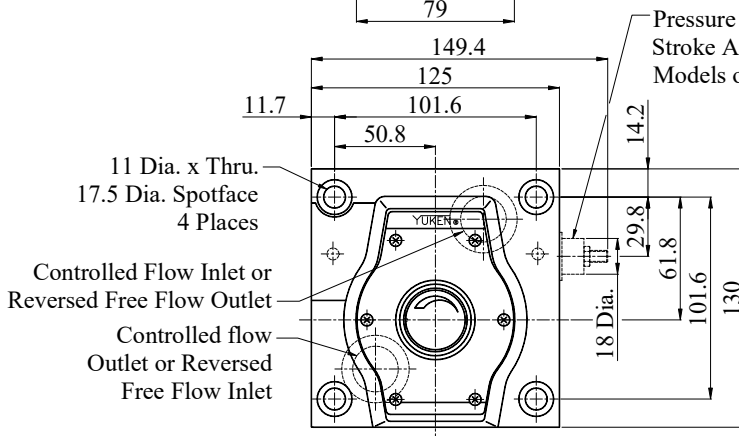
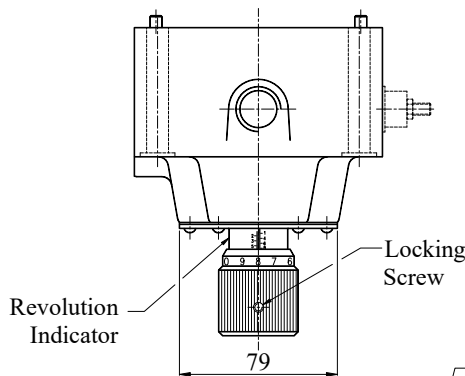
● **F※G-02-30-※-22801H01**

Locking Feature With Key
Fully Extended 160



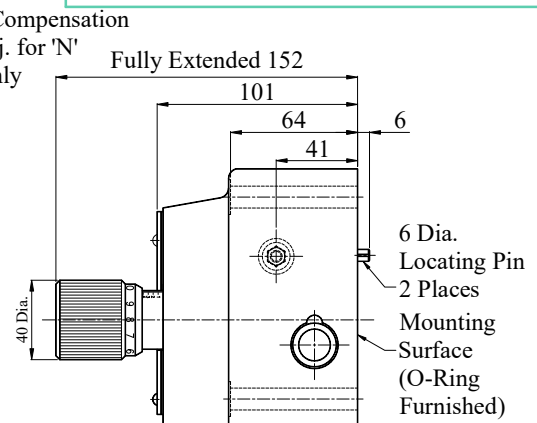
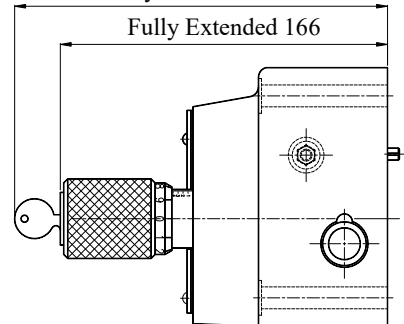
DIMENSIONS IN MILLIMETRES

● **F※G-03-125-※-22801**

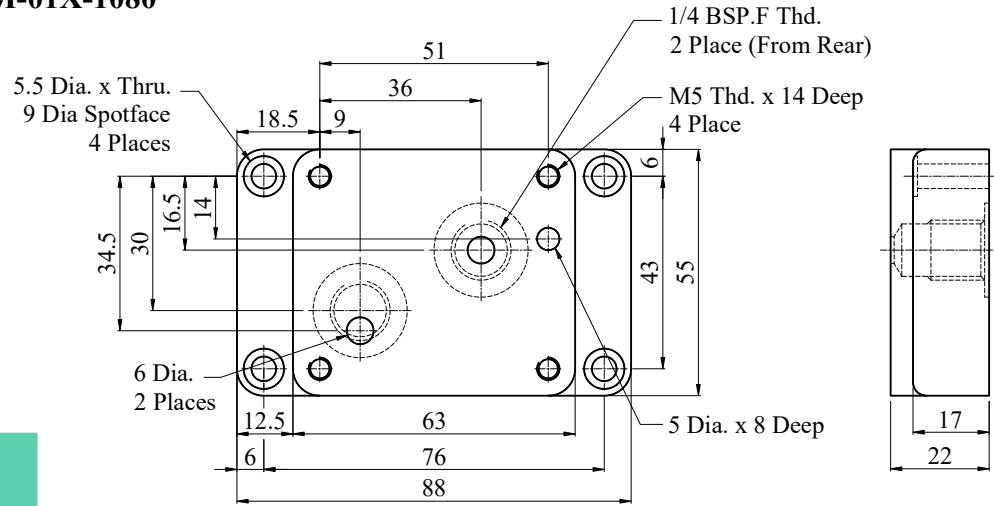


● **F※G-03-125-※-22801H01**

Locking Feature With Key
Fully Extended 189



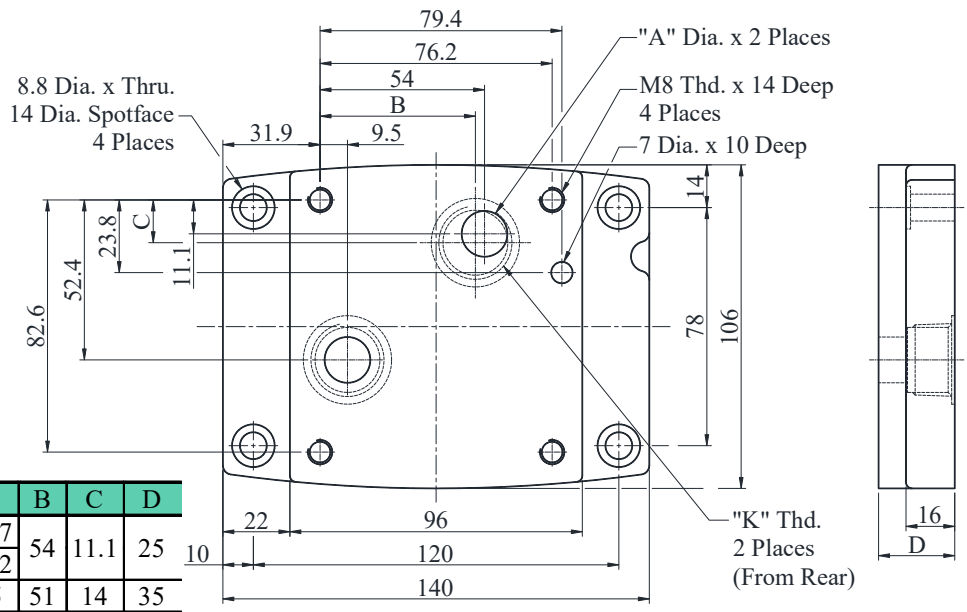
● Sub-Plates FGM-01X-1080



DIMENSIONS IN MILLIMETRES

02

● FGM-02X-2080
02Y

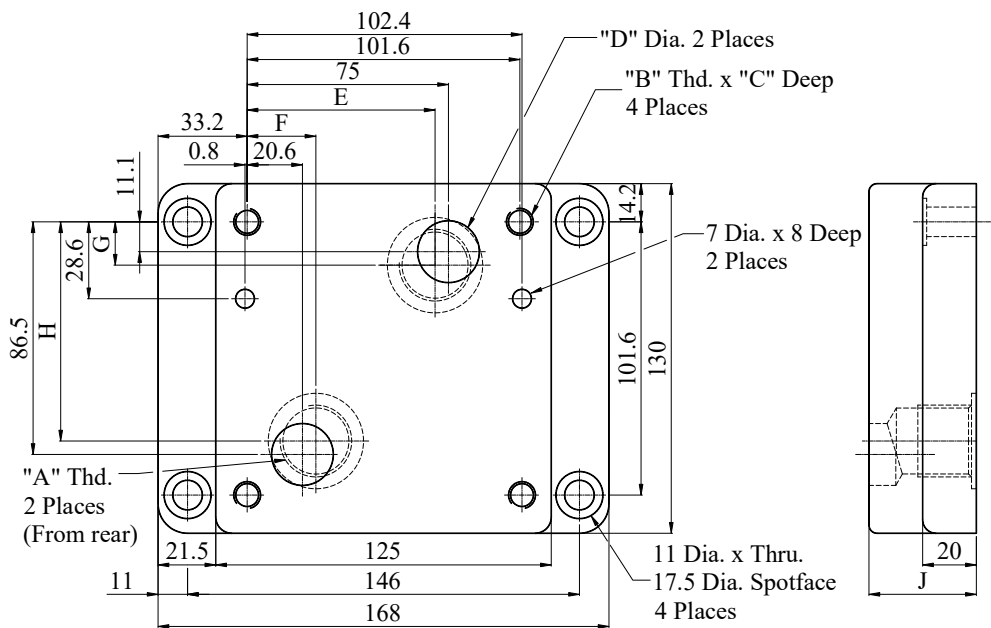


Sub-plate Model Number	"K" Thd.	Weight Approx. Kg.
FGM-02-2080	1/4	2.3
FGM-02X-2080	3/8	2.3
FGM-02Y-2080	1/2	3.1

Sub-plate Model Number	A	B	C	D
FGM-02-2080	11.7	54	11.1	25
FGM-02X-2080	15.2			
FGM-02Y-2080	15	51	14	35

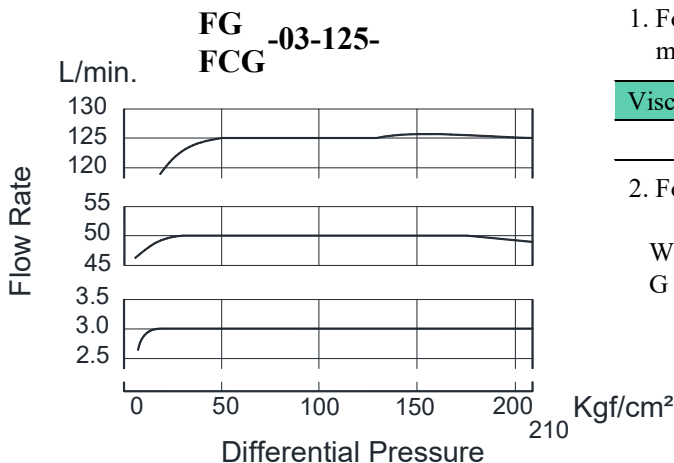
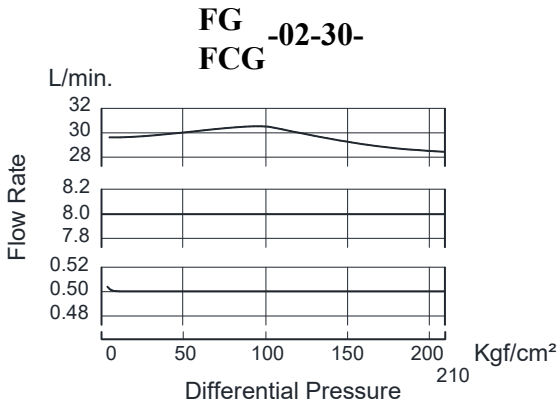
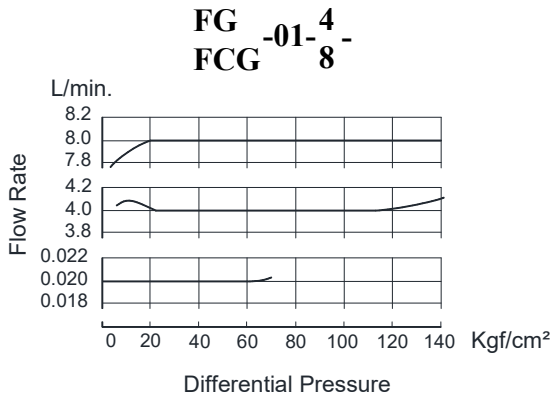
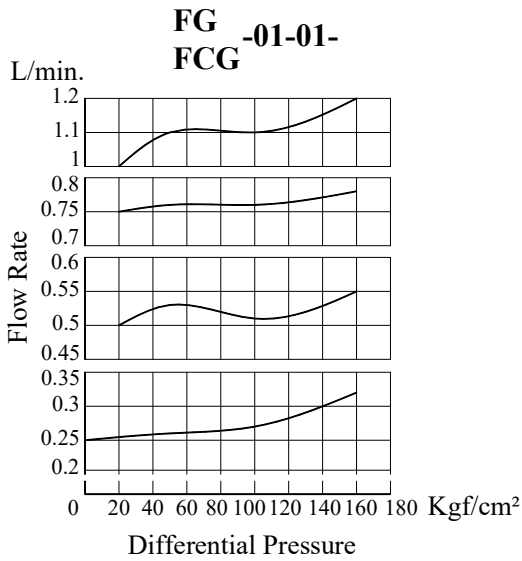
03

● FGM-03X-2080
03Y

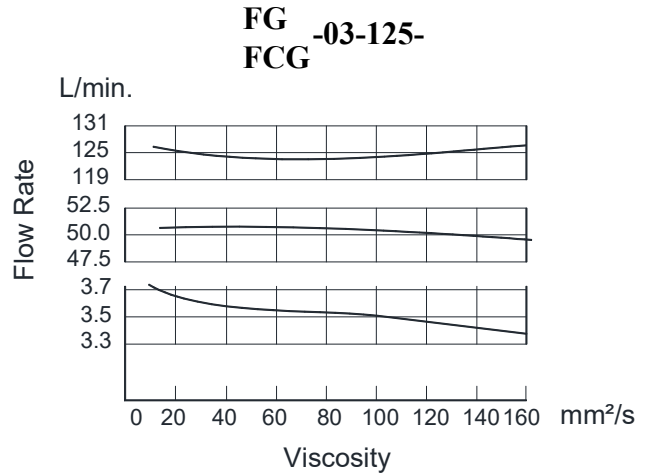
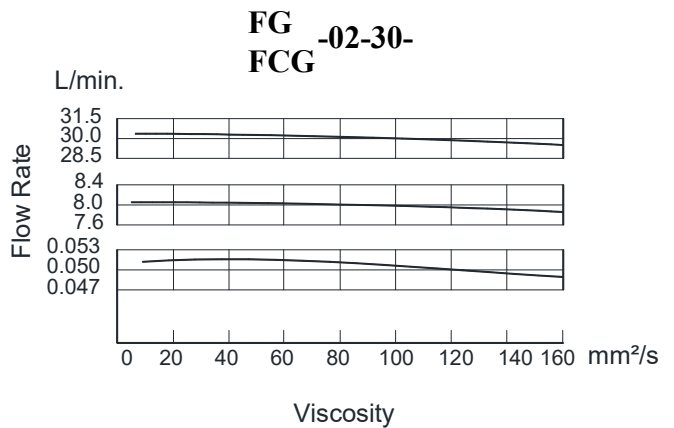
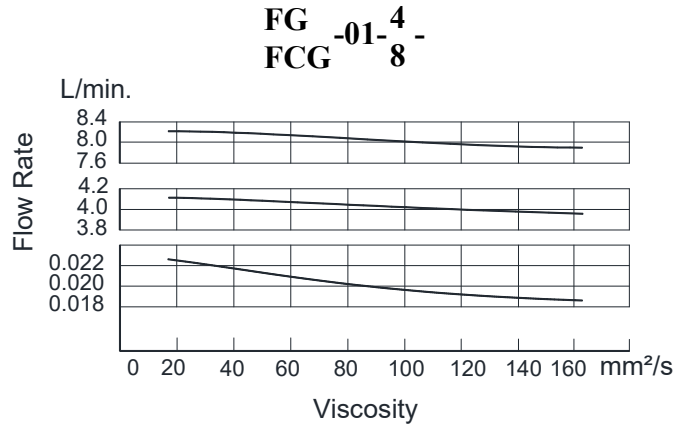


Sub-Plate Model Number	"A" Thd.	"B" Thd.	C	D	E	F	G	H	J
FGM-03-2080	3/8 BSP.F	M10	18	15.0	75	20.6	11.1	86.5	25
FGM-03X-2080	1/2 BSP.F	M10	18	19.0					
FGM-03Y-2080	3/4 BSP.F	M10	18	23.0	70	25.6	16.1	81.5	40

Metered Flow Vs. Differential Pressure



Metered Flow Vs. Viscosity



1. For any other Viscosity, multiply by the factors in the table below.

Viscosity	cSt	20	40	60	80	100
Factor		0.87	1.03	1.14	1.23	1.30

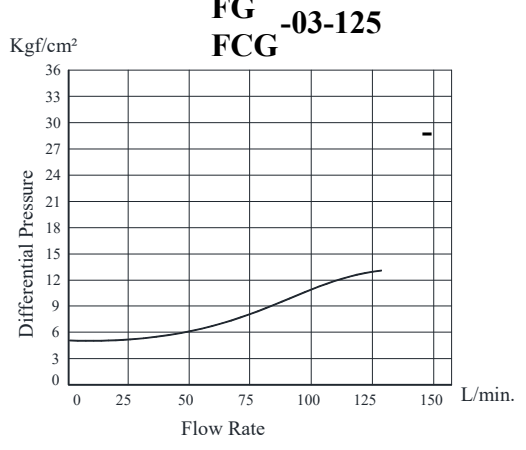
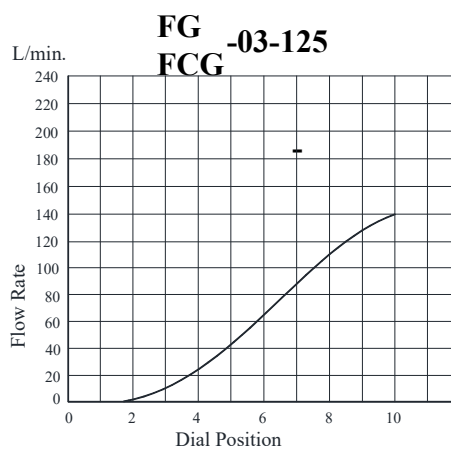
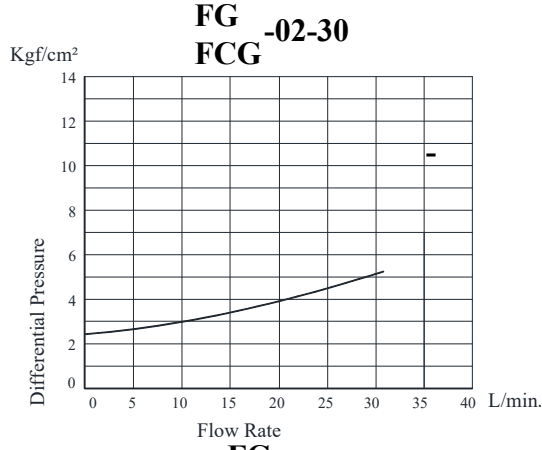
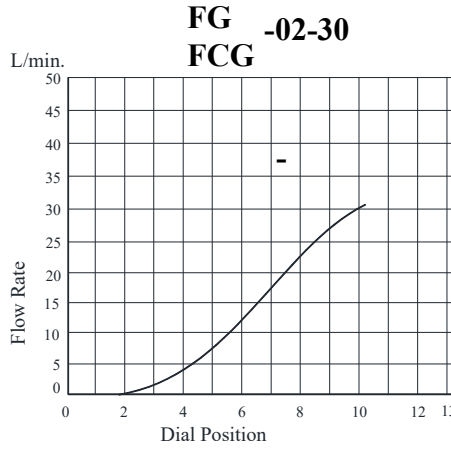
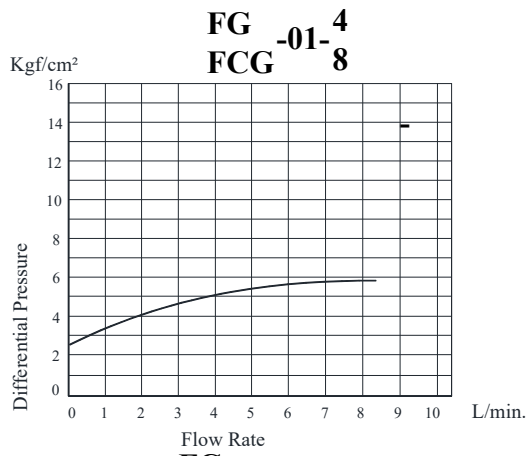
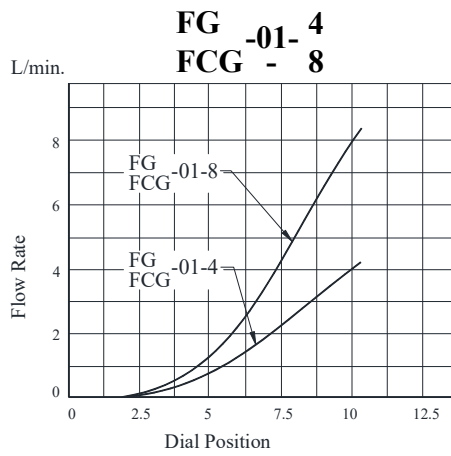
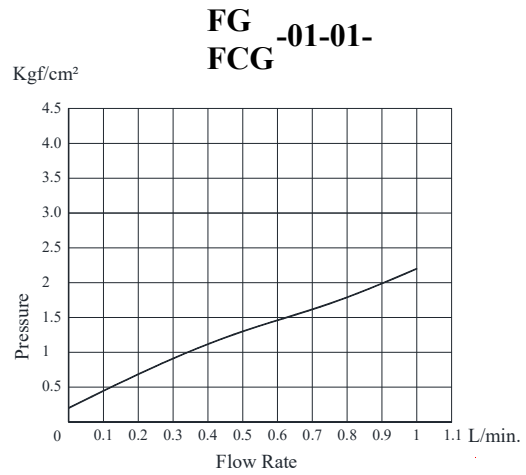
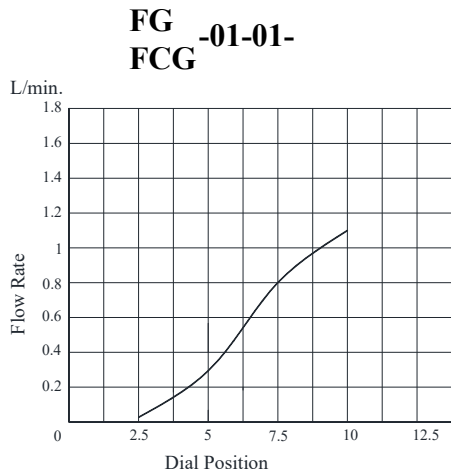
2. For any other specific gravity, use the formula :

$$\Delta P' = \Delta P$$

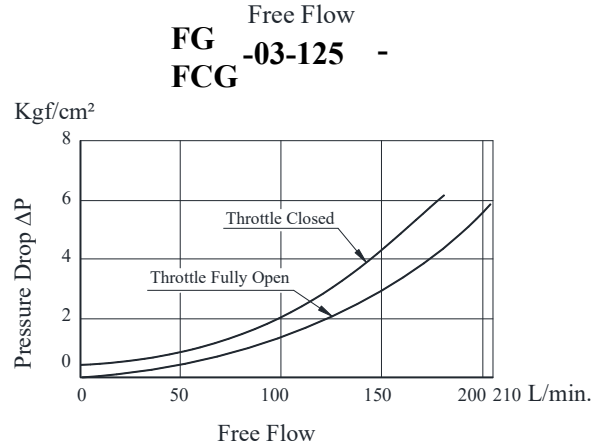
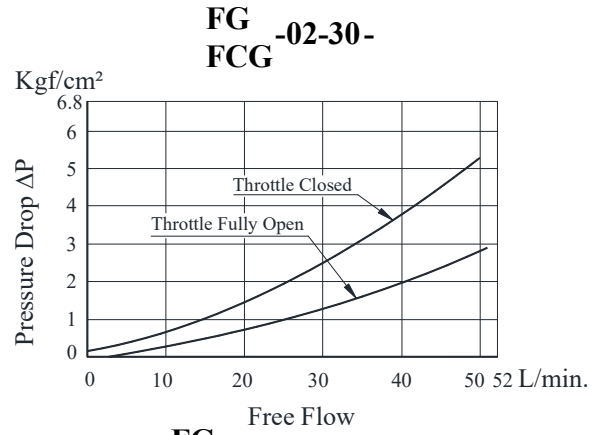
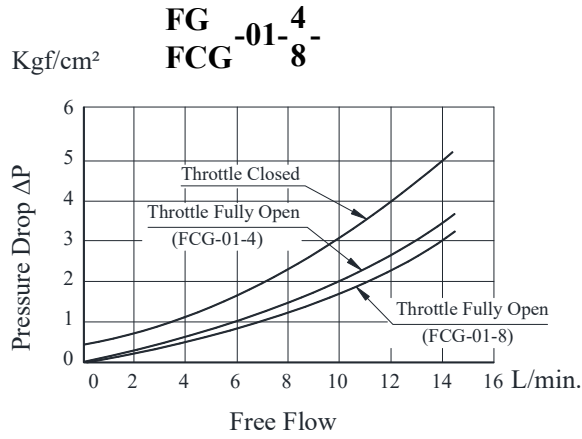
Where P is each value in the chart above, and G is 0.850 specific gravity.

Metered Flow Vs. Dial Position

Minimum required Pressure Difference



Pressure Drop for Reversed Free Flow



Spare Parts List

List of Seals

Sl. No.	Name of parts	Part No.	Qty.			
			FG-01	FCG-01	FG-01-N	FCG-01-N
1	O - Ring	SO-NA-P4	1	1	2	2
2	O - Ring	SO-NB-P9	2	2	2	2
3	O - Ring	SO-NB-P10	1	1	1	1
4	O - Ring	SO-NB-P16	1	1	1	1
5	O - Ring	SO-NB-P14	1	1	1	1
6	O-Ring	SO-NB-P7	-	1	-	1

Sl. No.	Name of parts	Part No.	Qty.			
			FG-02	FCG-02	FG-02-N	FCG-02-N
1	O - Ring	SO-NA-P4	1	1	1	1
2	O - Ring	SO-NB-P5	-	-	1	1
3	O - Ring	SO-NB-P10A	-	1	-	1
4	O - Ring	SO-NB-P12	1	1	1	1
5	O - Ring	SO-NB-P18	3	3	4	4
6	O - Ring	SO-NB-G25	1	1	1	1
8	Back-Up Ring	SO-BB-P4	1	1	1	1

Sl. No.	Name of parts	Part No.	Qty.			
			FG-03	FCG-03	FG-03-N	FCG-03-N
1	O - Ring	SO-NA-P4	1	1	1	1
2	O - Ring	SO-NB-P5	-	-	1	1
3	O - Ring	SO-NB-P21	-	1	-	1
4	O - Ring	SO-NB-P18	2	2	2	2
5	O - Ring	SO-NB-P28	2	2	2	2
6	O - Ring	SO-NB-G35	1	1	1	1
7	Back-Up Ring	SO-BB-P4	1	1	1	1

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

List of Seals Kits

Valve Model Numbers	Seal Kit Numbers
FG-01	KS-FG-01-11
FCG-01	KS-FCG-01-11
FG-01-N	KS-FG-01-N-11
FCG-01-N	KS-FCG-01-N-11

Valve Model Numbers	Seal Kit Numbers
FG-02	KS-FG-02-11
FCG-02	KS-FCG-02-11
FG-02-N	KS-FG-02-N-11
FCG-02-N	KS-FCG-02-N-11

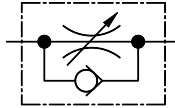
Valve Model Numbers	Seal Kit Numbers
FG-03	KS-FG-03-11
FCG-03	KS-FCG-03-11
FG-03-N	KS-FG-03-N-11
FCG-03-N	KS-FCG-03-N-11

Throttle and Check Valve

This valve is used to regulate an actuator speed in a circuit where line pressure is almost steady and small fluctuation of oil flow due to pressure changes is permitted. Integrated check valve allows reversed free flow from outlet to inlet port.



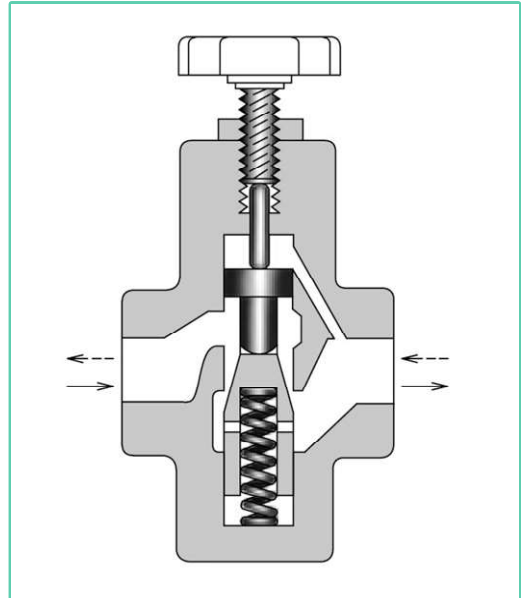
Graphic Symbol



Specifications

Model Numbers		Rated Flow L/min.	Max. Operating Pressure Kg/cm ²	Mass Kg.
Threaded Connection	SRCT-03-※-4180	30	210	1.2
	SRCT-06-※-4180	85	210	3.2
Sub-Plate Mounting	SRCG-06-※-41	85	210	4.0

Rated flow stands for approximate flow rate when the pressure drop between inlet and outlet ports of the valve is fully opened condition becomes 3Kg/cm² maximum at fluid's specific gravity of 0.85 and kinematic viscosity of 20 cSt (100SSU)



Model Number Designation

F	SRC	T	-03	-H	-41	※
Special Seals **	Serial Number	Type of Mounting	Valve Size	Pr. Differential Kg/cm ²	Design Number	Design Standard
F: For Phosphate Ester Type Fluids. (Omit if not required)	SRC: Throttle And Check Valve	T: Threaded Connection	03	H: High Pr. Differential 50 ~ 210 L: Low Pr. Differential 5 ~ 50	41	80
			06			---
		G: Sub-Plate Mounting	06			---

* Also available with Hand knob type on request.
** Before ordering the Special seals, consult YUKEN INDIA LTD.

Sub-plate

Valve Model Number	Sub-Plate Model Number	Thread Size	Mass Kg.
SRCG-06	SRGM-06-4080	3/4 BSP.F	2.4
	SRGM-06X-4080	1 BSP.F	3.0

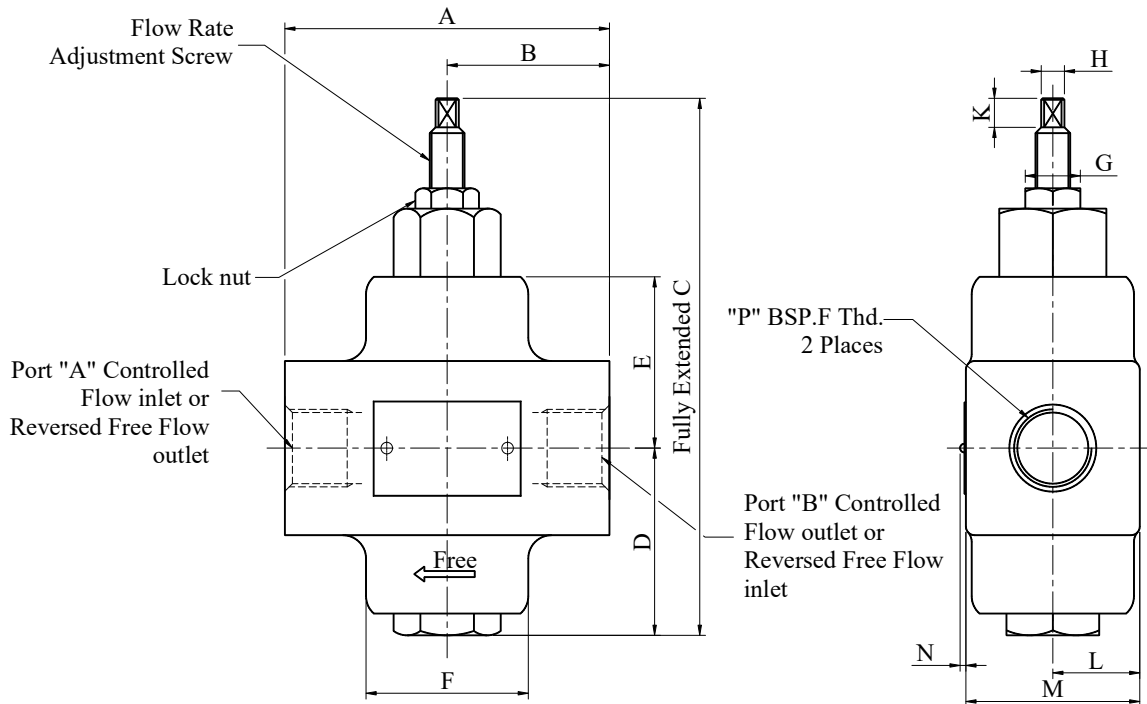
- Sub-plate are available, Specify sub-plate model from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

Attachment

Mounting Bolts

Valve Model Number	Socket Head Cap Screw	Qty	Bolt Kit Model Number
SRCG-06	M10 x 70 Lg.	4	BKSRG-06-40

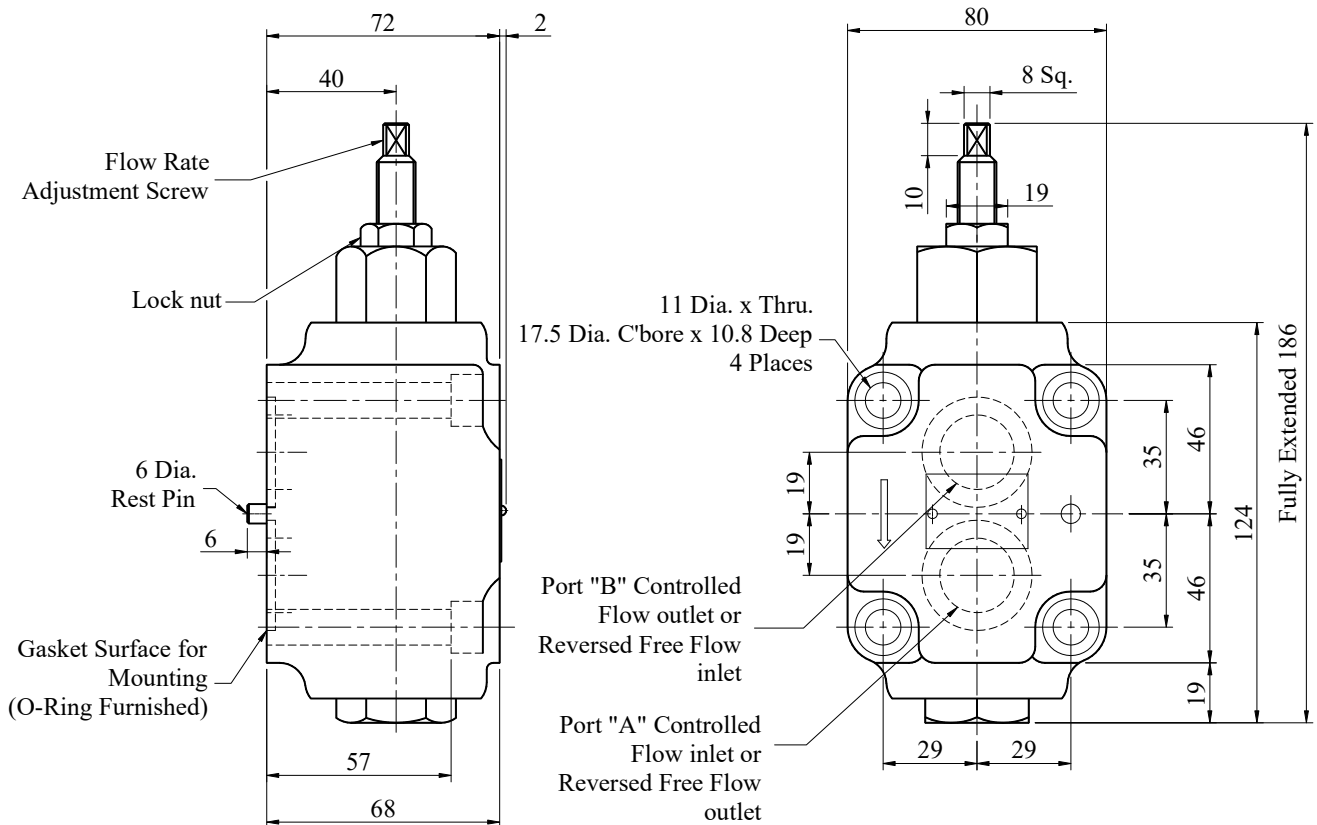
• SRCT-03-※-4180
06



Model No.	A	B	C	D	E	F	G	H	K	L	M	N	P
SRCT-03-※-4180	82	41	151	58	54	40 Dia.	19	Sq. 8	10	20	40	2	3/8 BSP.F
SRCT-06-※-4180	112	56	186	66	59	56 Dia.	19	Sq. 8	10	30	60	2	3/4 BSP.F

DIMENSIONS IN MILLIMETRES

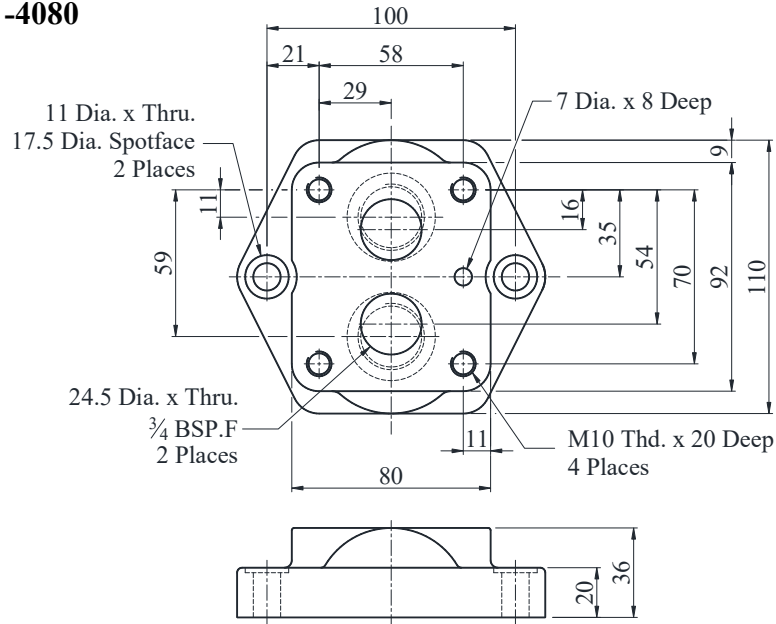
• SRCG-06-※-41



Mounting Sub-Plate

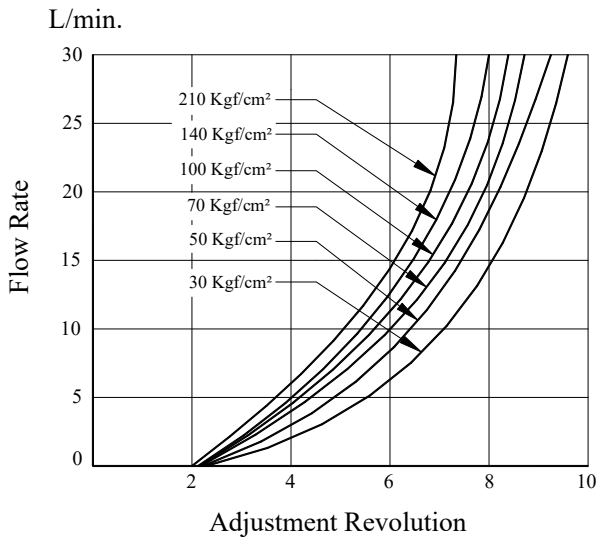
DIMENSIONS IN MILLIMETRES

SRGM-06-※-4080

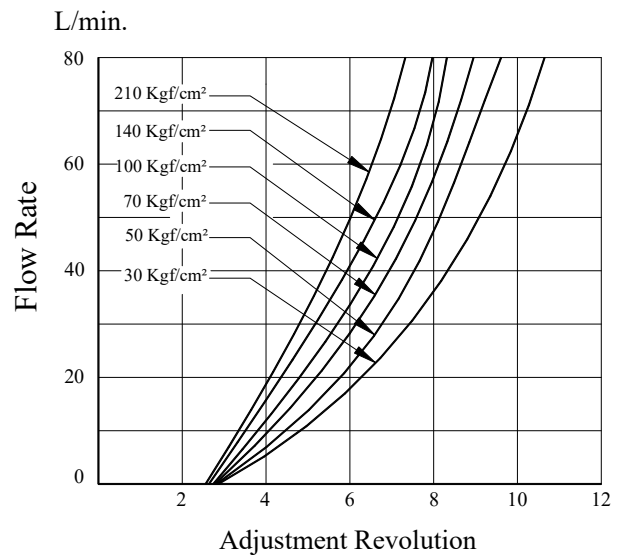


Metered Flow Vs. Adjustment Revolutions

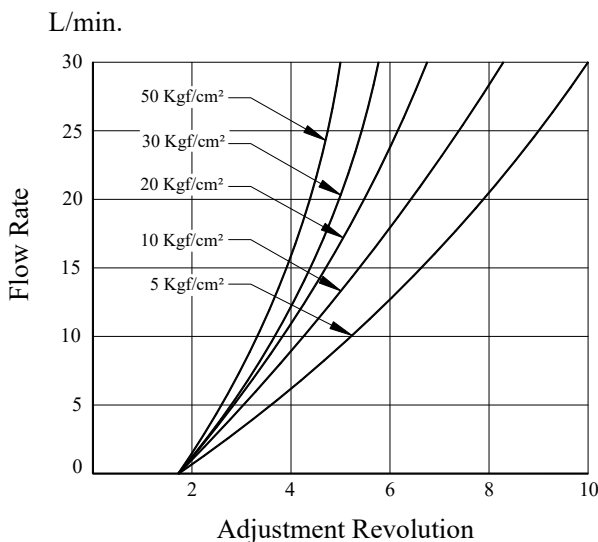
SRCT-03-H-4180



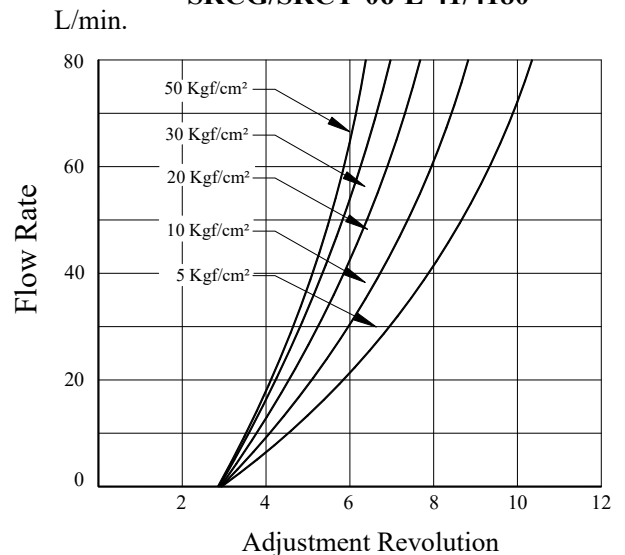
SRCG/SRCT-06-H-41/4180



SRCT-03-L-4180

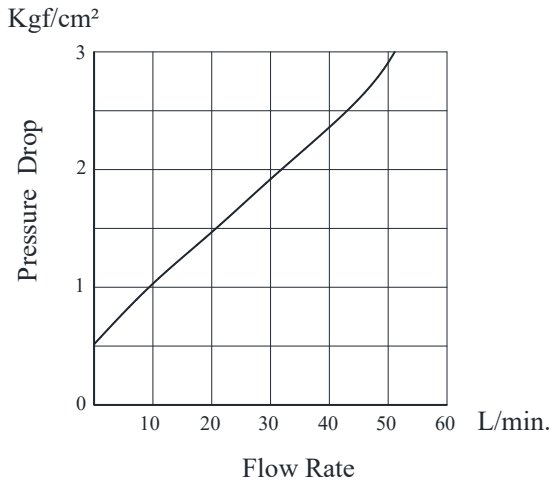


SRCG/SRCT-06-L-41/4180

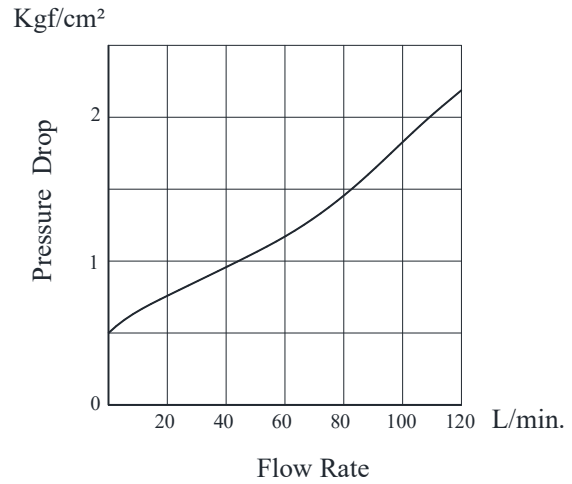


● **Pressure Drop for Reverse Free Flow**

SRCT-03-※ -41/4180



SRCG/SRCT-06-※ -41/4180



■ **Spare Parts List**

● **List of Seals**

Sl. No.	Name of Parts	Part Numbers					
		SRCT-03	Qty	SRCT-06	Qty	SRCG-06	Qty
1	O-Ring	SO-NA-P12	1	SO-NA-P14	1	SO-NA-P14	1
2	O-Ring	SO-NB-P18	1	SO-NB-P24	2	SO-NB-P24	2
3	O-Ring	-	-	-	-	SO-NB-P28	2
4	Back up Ring	SO-BB-P12	1	SO-BB-P14	1	SO-BB-P14	1

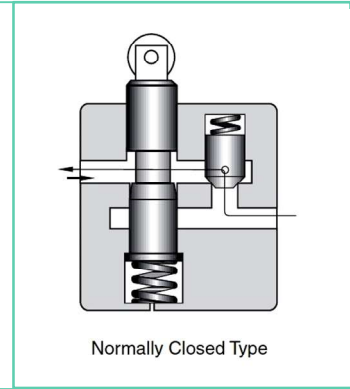
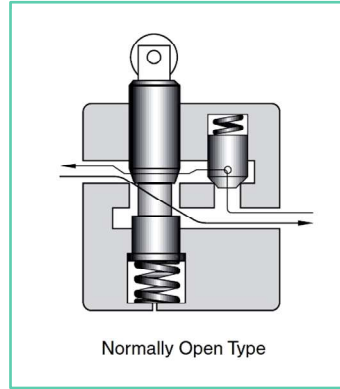
Note : When ordering the seals, please specify the seal kit number from the table below.

● **List of Seals Kits**

Model Numbers	Seal Kit Numbers
SRCT-03	KS-SRCT-03-4180
SRCT-06	KS-SRCT-06-4180
SRCG-06	KS-SRCG-06-41

Deceleration Valves
Deceleration and Check Valves

These valves are available either with or without an integral check valve which allows free reverse flow. Flow rate through the valve is regulated by the movement of the spool, which is operated by a cam. When the spool is depressed, the flow is decreased in Normally Open type valves and increased in normally Closed type valves. Their principal use is to control the speed of actuators in machine tools and similar application.



Specifications

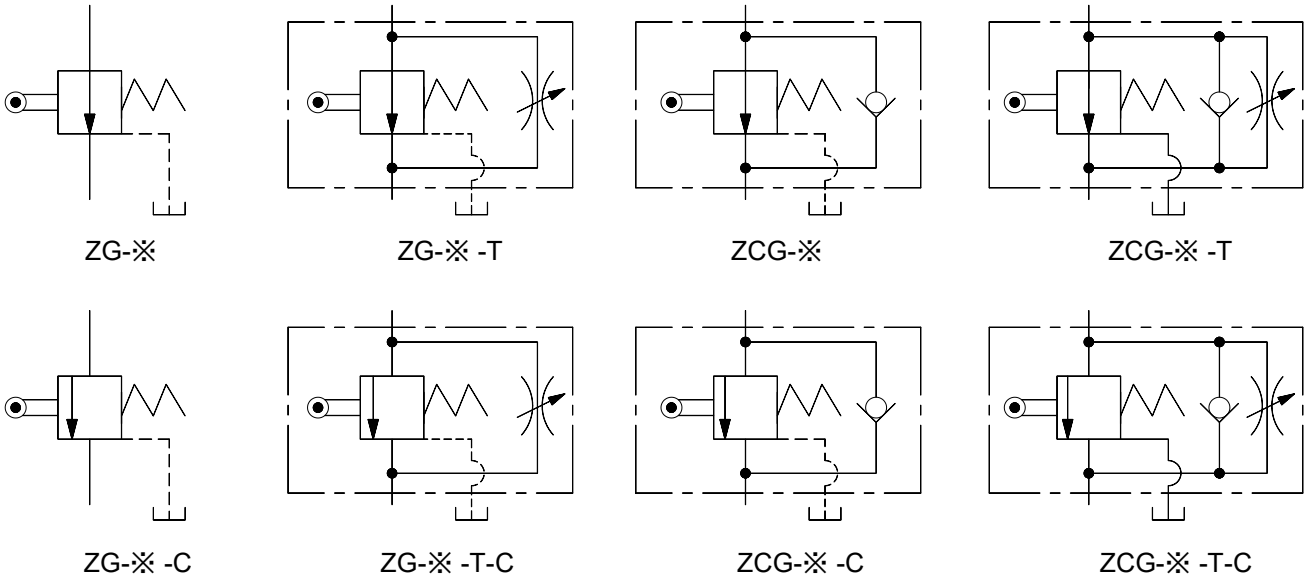
Model Numbers	Max. Flow L/min.	Max. Operating Pressure Kgf/cm ²	Mass Kg.
Z※G-03-※※-22	30	210	4.3
Z※G-06-※※-22	60		8.7

Model Number Designation

F-	ZC	G	-03	-T	-C	-22
Special Seals **	Series Number	Type of Mounting	Valves Size	With Adjustable Needle Valve for By-Pass Line	Spool Type	Design Number
F: Special Seals for Phosphate Ester Type Fluids. (Omit if not required)	Z: Deceleration Valve ZC: Deceleration and Check Valve	G: Sub-Plate Mounting	03 06	T: With Adjustable Needle Valve (Omit if not Required)	None: Normally Open Type C: Normally Closed Type	22

** Before ordering the Special Seals, consult YUKEN INDIA LTD.

Graphic Symbol



Instruction

Force to Depress Spool

Model No.	Force Kgf.
Z※G-03	15
Z※G-06	27

Drain Port Back Pressure

Limit the drain port back pressure to 1 Kgf/cm² in addition, connect the drain pipe independently and directly to the tank.

Total Leakage

cm³/min [Viscosity : 20cSt]

Model No.	Pressure Kgf/cm ²				
	10	20	50	100	210
Z※G-03	9	18	44	88	185
Z※G-06	9	17	43	86	180

Attachment

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw	Qty	Bolt Kit Model No.
Z※G-03	M8 x 75 Lg.	4	BKZG-03-20
Z※G-06	M10 x 100 Lg.	4	BKZG-06-20

Options

Bypass throttle valves

To allow a metered flow between ports even when the flow is stopped by the spool.

Sub-Plate

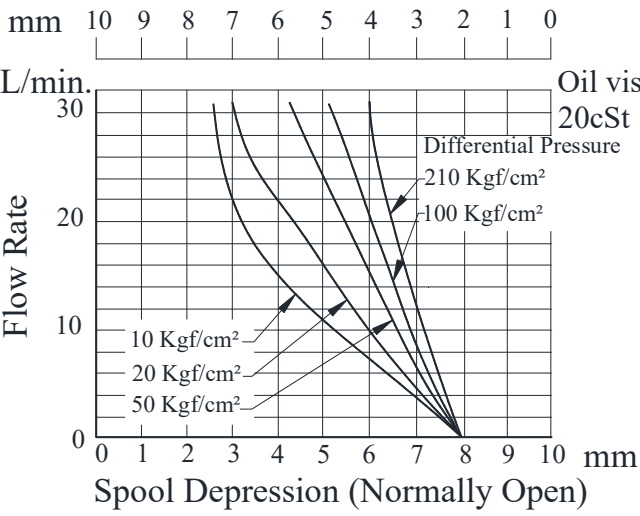
Valve Model Numbers	Sub-Plate Model No.	Thread Size	Mass Kg.
Z※G-03	ZGM-03-2180	3/8 BSP.F	2
Z※G-06	ZGM-06-2180	3/4 BSP.F	3.8

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

Metered Flow Vs. Spool Depression

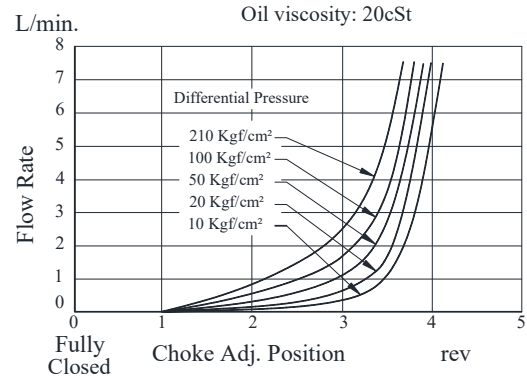
Z※G-03

Spool Depression (Normally Closed)



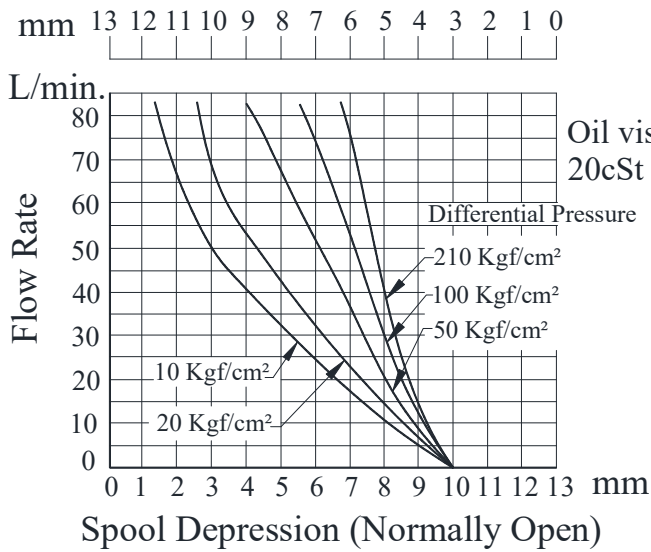
Metered Flow for Needle Valve

Z※G-03-T

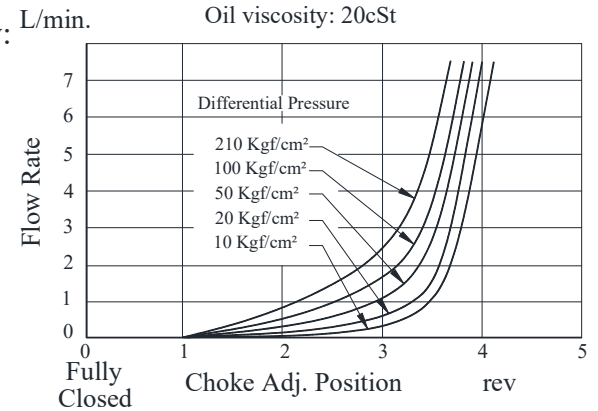


Z※G-06

Spool Depression (Normally Closed)

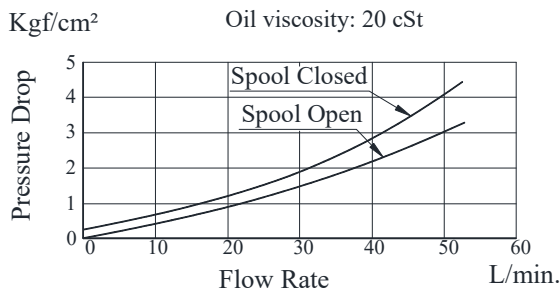


Z※G-06-T

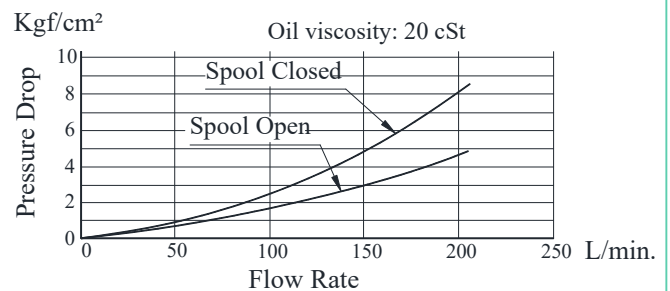


Pressure Drop for Reversed Free Flow

Z※G-03

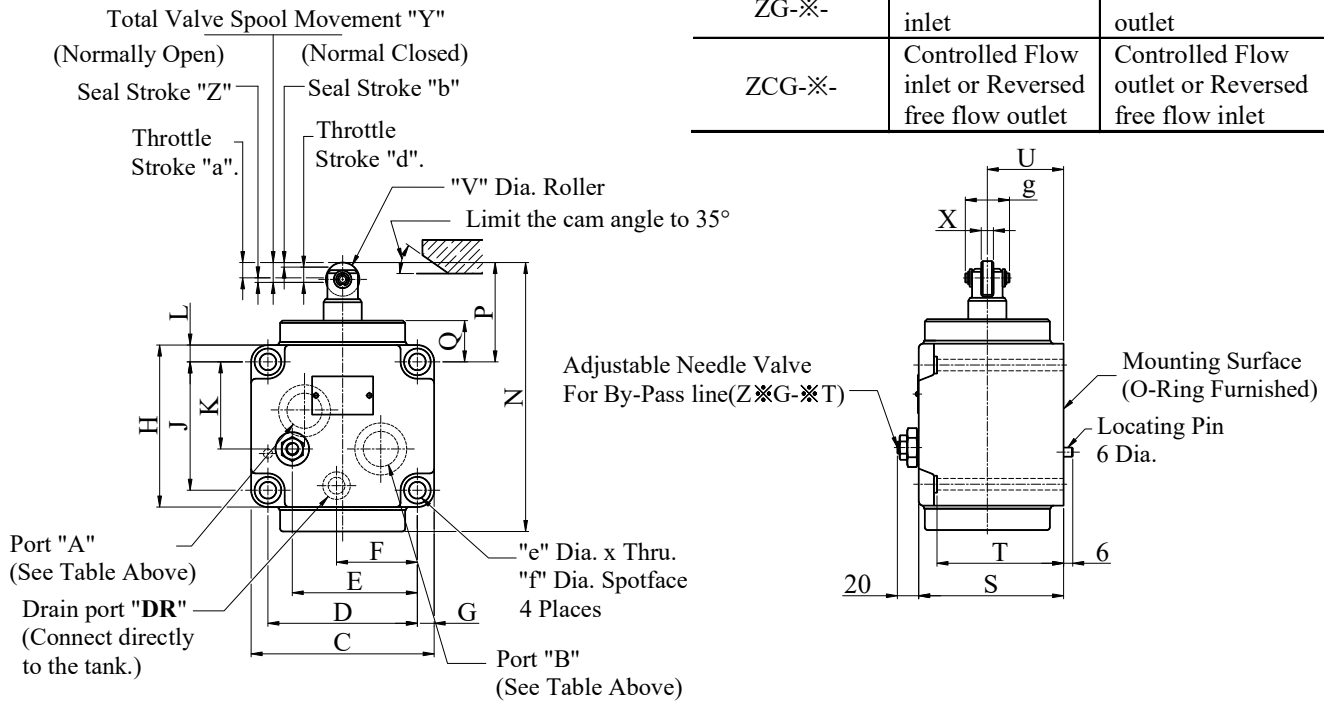


Z※G-06



● **ZG - 03** -※ -※ -22
ZCG 06

Model numbers	Port "A"	Port "B"
ZG-※-	Controlled Flow inlet	Controlled Flow outlet
ZCG-※-	Controlled Flow inlet or Reversed free flow outlet	Controlled Flow outlet or Reversed free flow inlet

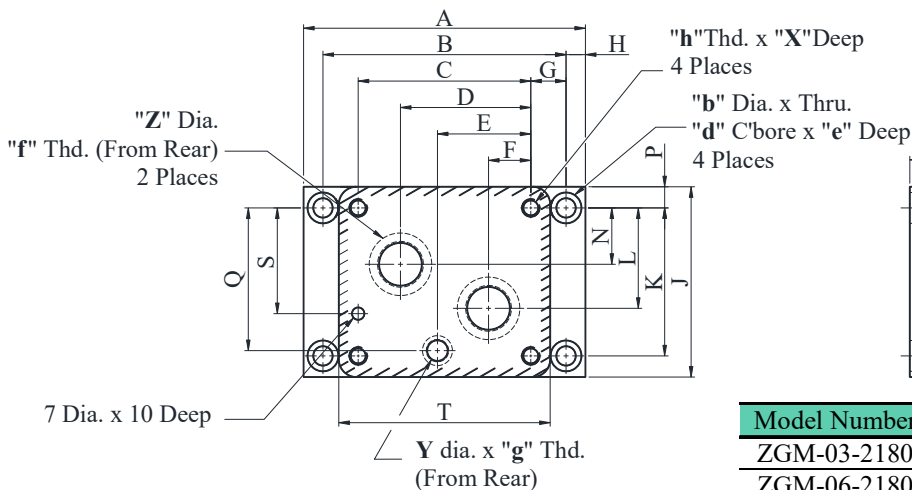


Model Number	C	D	E	F	G	H	J	K	L	N	P	Q	S
Z※G-03	102	80	66	40	11	82	60	41	11	141	56	25	70
Z※G-06	120	98	82	49	11	106	84	57	11	176	65	27	95

Model Number	T	U	V	X	Y	Z	a	b	d	e	f	g
Z※G-03	60	35	18	6	10	2	8	2	8	8.8	14	24.5
Z※G-06	85	50	22	8	13	3	10	3	10	11	17.5	29

● **Sub-Plate: ZGM-03,06**

DIMENSIONS IN MILLIMETRES



Model Number	"f" Thd.	"g" Thd.	"h" Thd.
ZGM-03-2180	3/8 BSP.F	1/4 BSP.F	M8
ZGM-06-2180	3/4 BSP.F	1/4 BSP.F	M10

Model Number	A	B	C	D	E	F	G	H	J	K
Z※G-03	146	124	80	60	42	20	22	11	85	60
Z※G-06	160	138	98	74	53	24	20	11	108	84

Model Number	L	N	P	Q	S	T	U	X	Y	Z	b	d	e
Z※G-03	40	20	12.5	58	44	102	26	18	6.2	15	11	17.5	10.8
Z※G-06	57	32	12	81	60	120	35	18	11	24.5	11	17.5	10.8

■ Spare Parts List

● List of Seals

Sl. No.	Name of Parts	Part Numbers			
		Z✕G-03	Qty	Z✕G-06	Qty
1	O-Ring	SO-NB-P18	2	SO-NB-P36	2
2	O-Ring	SO-NB-P9	1	SO-NA-P25	1
3	O-Ring	SO-NB-P32	2	*SO-NB-P18	1
4	O-Ring	SO-NA-P20	1	^T SO-NA-P5	1
5	O-Ring	*SO-NB-P12	1	SO-NB-P28	2
6	O-Ring	^T SO-NA-P5	1	SO-NB-P14	1
7	Back up Ring	^T SO-BB-P5	1	^T SO-BB-P5	1

Note:

* - only applicable for ZCG-03/ZCG-06

T – Only applicable for valves with needle valve option.

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

● List of Seals Kits

Model Numbers	Seal Kit Numbers	
	With Std. model	Model with “T” Option
ZG-03	KS-ZG-03-22	KS-ZG-03-T-22
ZCG-03	KS-ZCG-03-22	KS-ZCG-03-T-22
ZG-06	KS-ZG-06-22	KS-ZG-06-T-22
ZCG-06	KS-ZCG-06-22	KS-ZCG-06-T-22