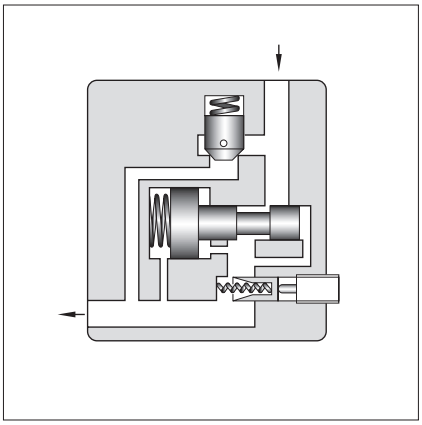
Flow Control Valves / Flow Control and Check Valves

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. Repeated resetting can be made easily with a digital readout.(Valve size "01" is excluded)



Specifications

Model Numbers	Max. Metered Flow Capacity L/min	Min. Metered Flow Capacity L/min	Max.Operating Pressure MPa	Approx. Mass kg
FG FCG -01- 4 8 -*-11	4 8	0.02 (0.04)★	14	1.3
FG FCG -02-30-*-30	30	0.05	21	3.8
FG FCG -03-125-*-30	125	0.2		7.9
FG FCG -06-250-*-30	250	2		23
FG FCG -10-500-*-30	500	4		52

★The figures in parentheses are for pressures above 7 MPa.

Model Number Designation

FC	G	−01	−8	−N	−11
Series Number	Type of Mounting	Valve Size	Max. Metered Flow L/min	Pres. Compensator★ Stroke Adjustment	Design Number
F : Flow Control Valves FC : Flow Control and Check Valves	G : Sub-Plate Mounting	01	4·8	N : Applicable only for Pres. Compensator Stroke Adjustment (Option)	11
		02	30		30
		03	125		30
		06	250		30
		10	500		30

★Pres. Compensator Stroke Adjustment : This is used to reduce the jumping phenomenon at actuator startup.

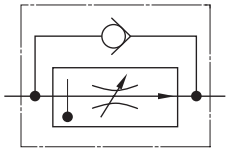
Accessories

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw
FG FCG -01	M 5 × 55L.....4pcs.
FG FCG -02	M 8 × 50L.....4pcs.
FG FCG -03	M10× 75L.....4pcs.
FG FCG -06	M16×130L.....4pcs.
FG FCG -10	M20×160L.....4pcs.

Graphic Symbols

FG



FCG

Sub-Plates

Valve Model Numbers	Sub-Plate Model No.	Thread Size Rc	Mass kg
FG FCG -01	FGM-01X-10	1/4	0.8
FG FCG -02	FGM-02-20	1/4	2.3
	FGM-02X-20	3/8	2.3
	FGM-02Y-20	1/2	3.1
FG FCG -03	FGM-03-20	3/8	3.9
	FGM-03X-20	1/2	3.9
	FGM-03Y-20	3/4	5.7
	FGM-03Z-20	1	5.7
FG FCG -06	FGM-06X-20	1	12.5
	FGM-06Y-20	1 1/4	16
	FGM-06Z-20	1 1/2	16
FG FCG -10	FGM-10Y-20	1 1/2, 2, (used with pipe flange)	37

- 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 ($\sqrt{}^{1.6}$).
- When ordering FGM-10Y, please order F3 pipe flange kit separately also. Please consult your Yuken representatives in advance separately for details on F3 pipe flange kit.

Instructions

Min. Required Pressure Difference

The minimum 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 curves.

Flow Adjustment

[F∗G-01]

Loosen the locking screw and turn the 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 characteristics of "Dial Position vs. Flow").

After flow adjustments, be sure to tighten the locking screw to the specified torque.

[F∗G-02, 03, 06, 10]

Loosen the locking screw and turn the flow adjustment handle clockwise for increase, and anti-clockwise for decrease.

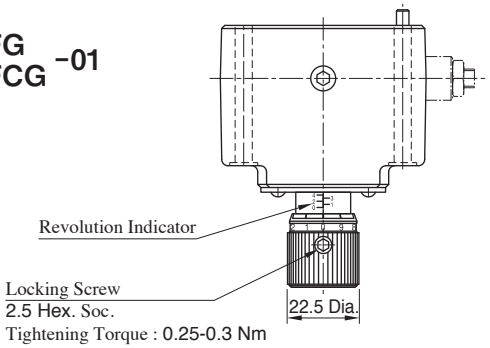
Open condition is indicated in digital-scale in built-in revolution indicator and each rotation of handle increase or decrease the number by 100 (Refer to the characteristics of "Dial Position vs. Flow").

After flow adjustments, be sure to tighten the locking screw.

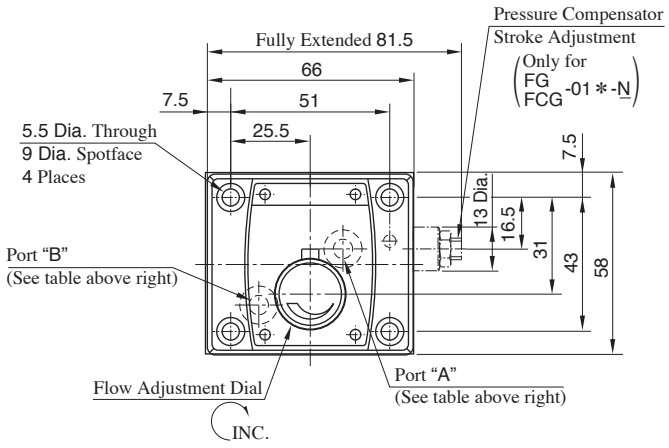
Line Filter

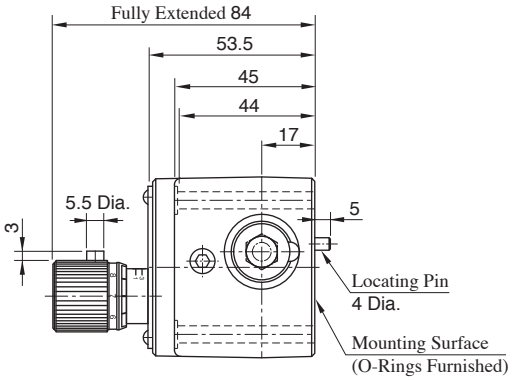
To carry out flow adjustments by as small degree as 2 L/min or less, be sure to use a line filter of 10 μm or finer and install it near the valve inlet.

FG FCG -01



Model No.	Port "A"	Port "B"
FG-01	Controlled Flow Inlet	Controlled Flow Outlet
FCG-01	Controlled Flow Inlet or Free Flow Outlet	Controlled Flow Outlet or Free Flow Inlet

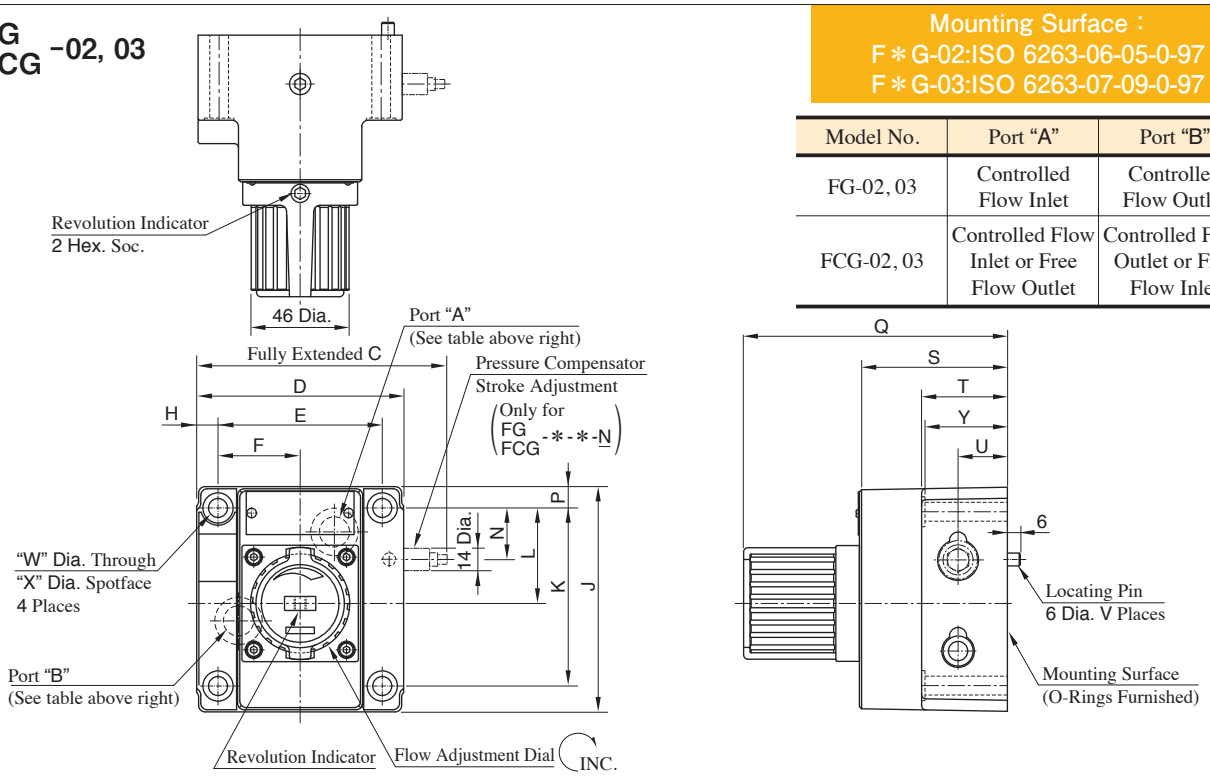




FG FCG -02, 03

Mounting Surface :
F＊G-02:ISO 6263-06-05-0-97
F＊G-03:ISO 6263-07-09-0-97

Model No.	Port "A"	Port "B"
FG-02, 03	Controlled Flow Inlet	Controlled Flow Outlet
FCG-02, 03	Controlled Flow Inlet or Free Flow Outlet	Controlled Flow Outlet or Free Flow Inlet

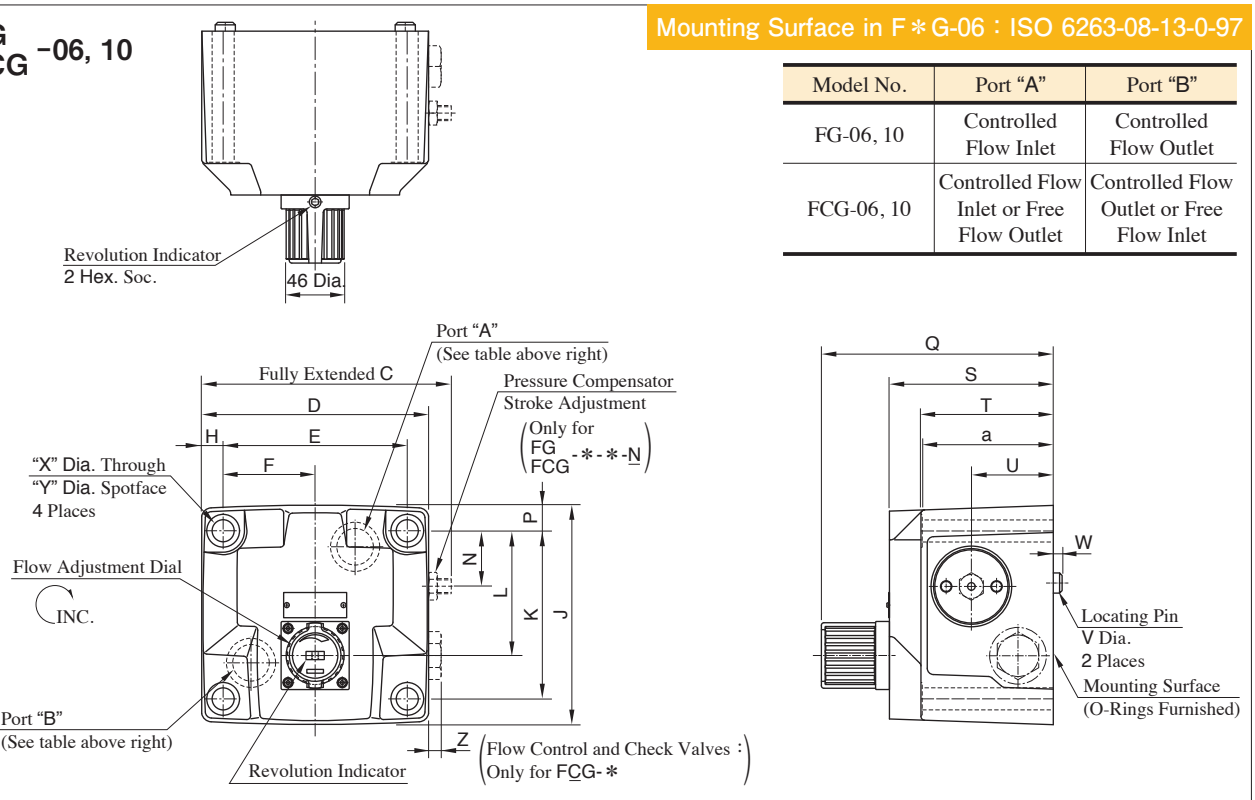


Model No.	C	D	E	F	H	J	K	L	N	P	Q	S	T	U	V	W	X	Y
FG FCG -02	116	96	76.2	38.1	9.9	104.5	82.6	44.3	24	9.9	123	69	40	23	1	8.8	14	39
FG FCG -03	145	125	101.6	50.8	11.7	125	101.6	61.8	29.8	11.7	152	98	64	41	2	11	17.5	63

FG FCG -06, 10

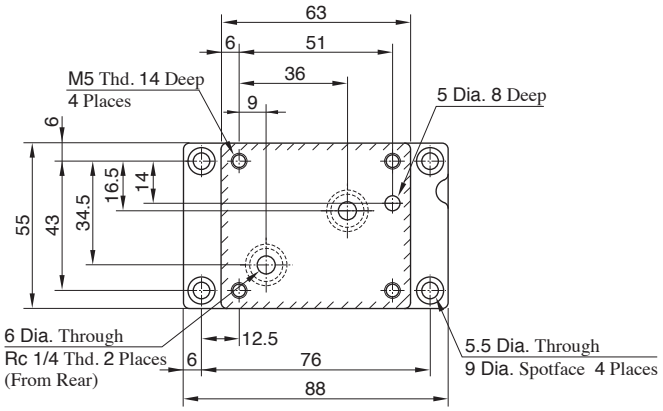
Mounting Surface in F＊G-06 : ISO 6263-08-13-0-97

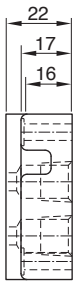
Model No.	Port "A"	Port "B"
FG-06, 10	Controlled Flow Inlet	Controlled Flow Outlet
FCG-06, 10	Controlled Flow Inlet or Free Flow Outlet	Controlled Flow Outlet or Free Flow Inlet



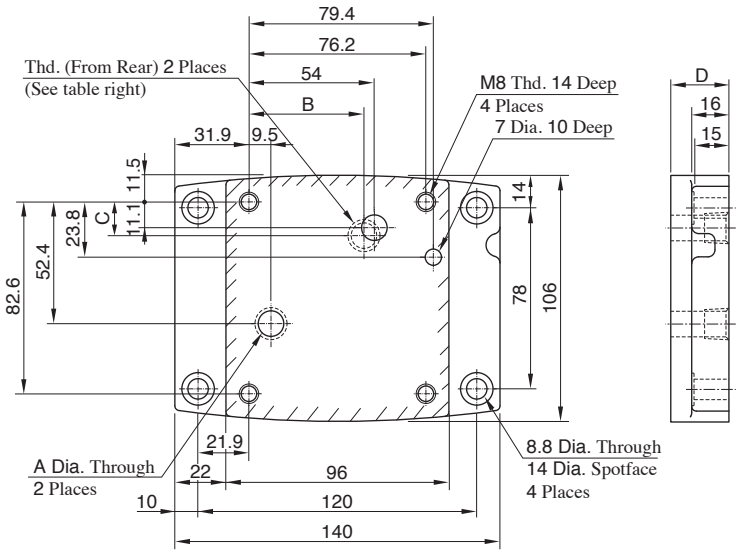
Model No.	C	D	E	F	H	J	K	L	N	P	Q	S	T	U	V	W	X	Y	Z	a
FG FCG -06	198	180	146.1	73	17	174	133.4	99	44	20.3	184	130	105	65	16	7	17.5	26	10	103
FG FCG -10	267	244	196.9	98.5	23.5	228	177.8	144.5	61	25	214	160	137	85	18	10	21.5	32	7.5	135

Sub-Plate:FGM-01X





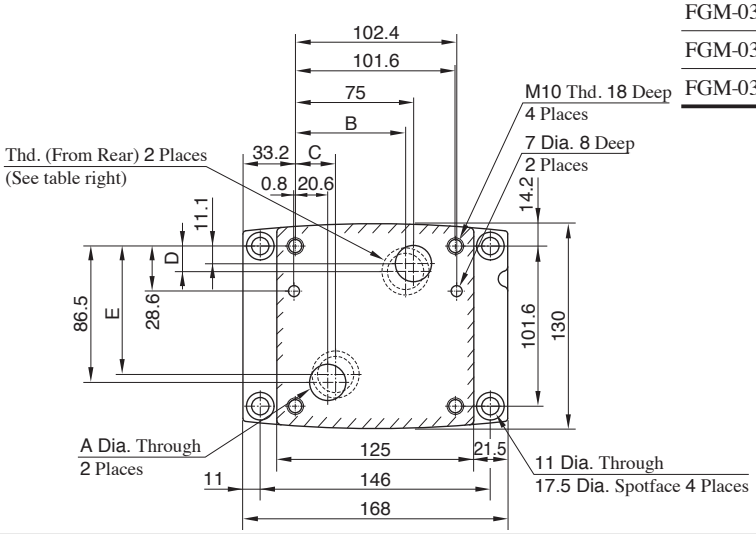
Sub-Plate:FGM-02, 02X, 02Y

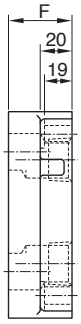


Sub-Plate Model Numbers	Thread Size Rc	A	B	C	D
FGM-02-20	1/4	11	54	11.1	25
FGM-02X-20	3/8	14	54	11.1	25
FGM-02Y-20	1/2	14	51	14	35

Sub-Plate:FGM-03, 03X, 03Y, 03Z

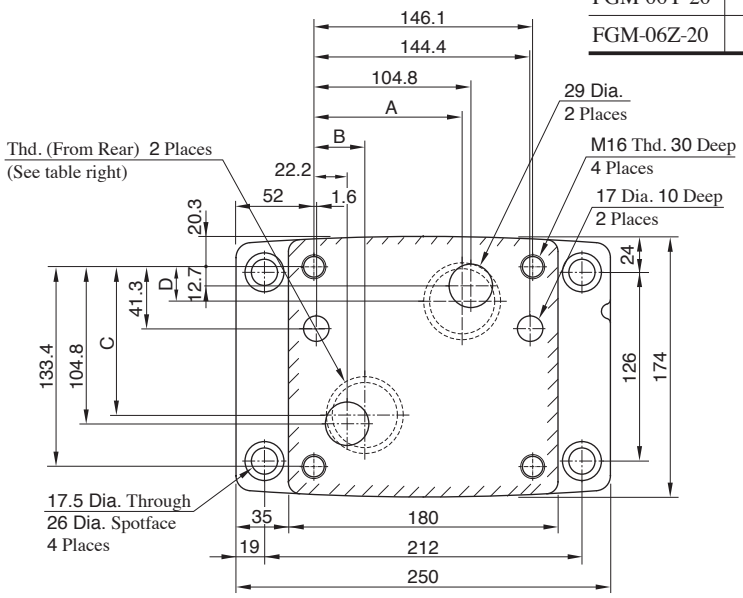
Sub-Plate Model Numbers	Thread Size Rc	A	B	C	D	D	F
FGM-03-20	3/8	14	75	20.6	11.1	86.5	25
FGM-03X-20	1/2	17.5	75	20.6	11.1	86.5	25
FGM-03Y-20	3/4	23	70	25.6	16.1	81.5	40
FGM-03Z-20	1	23	70	25.6	16.1	81.5	40

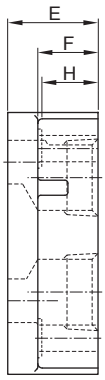




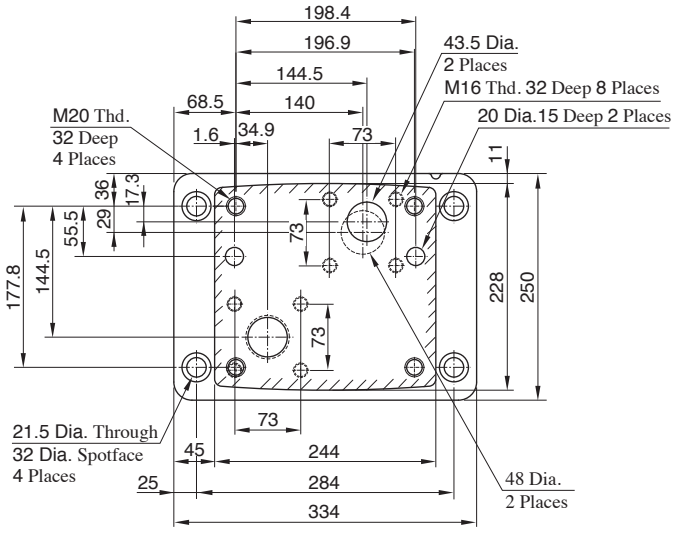
Sub-Plate:FGM-06X, 06Y, 06Z

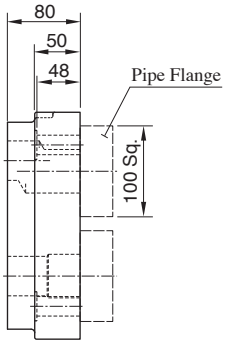
Sub-Plate Model Numbers	Thread Size Rc	A	B	C	D	E	F	H
FGM-06X-20	1	104.8	22.2	104.8	18	45	35	34
FGM-06Y-20	1 1/4	99	34	99	23	60	40	39
FGM-06Z-20	1 1/2	99	34	99	23	60	40	39





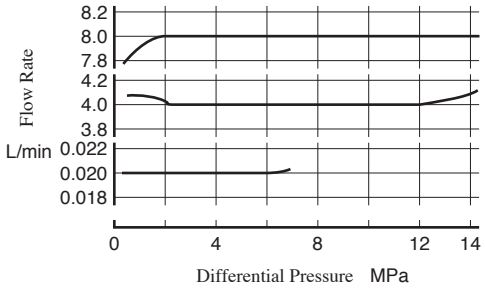
Sub-Plate:FGM-10Y



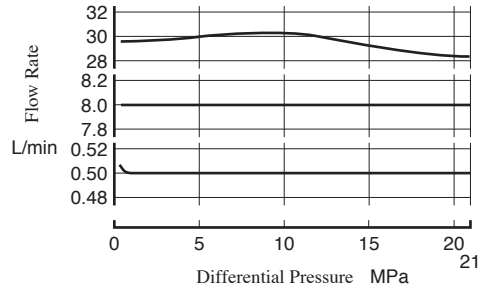


Differential Pressure vs. Flow

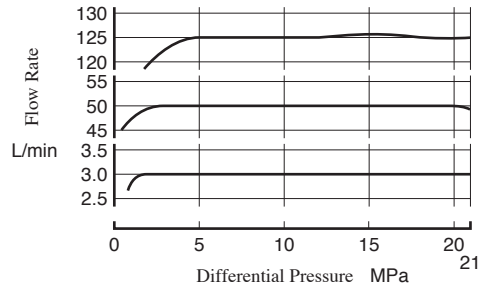
FG/FCG-01



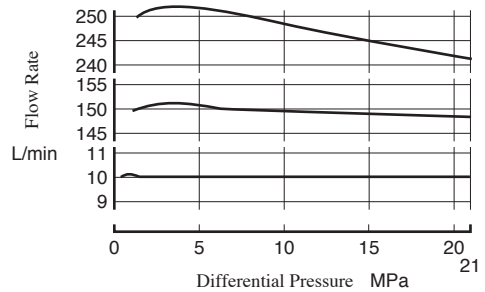
FG/FCG-02



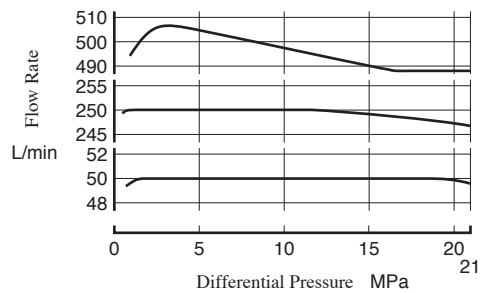
FG/FCG-03



FG/FCG-06

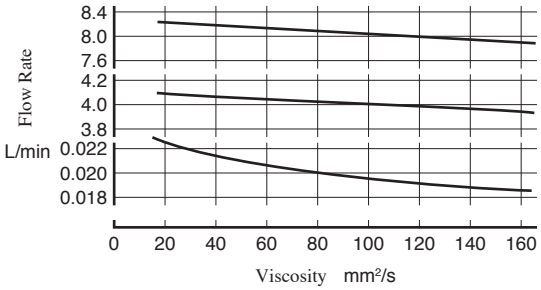


FG/FCG-10

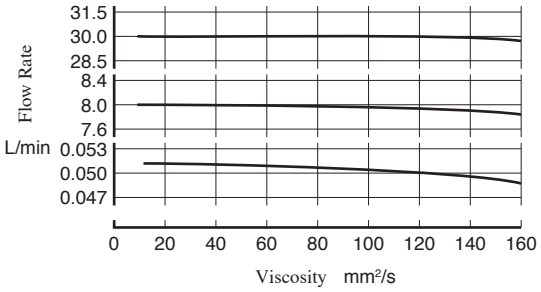


Viscosity vs.Flow

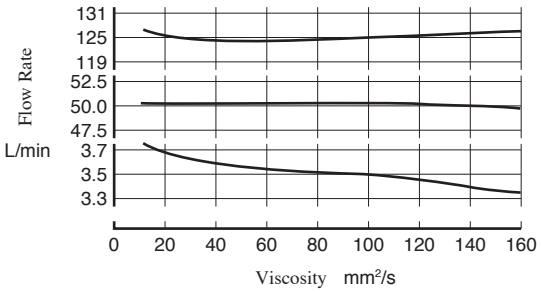
FG/FCG-01



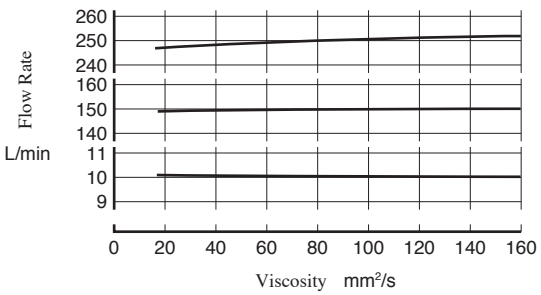
FG/FCG-02



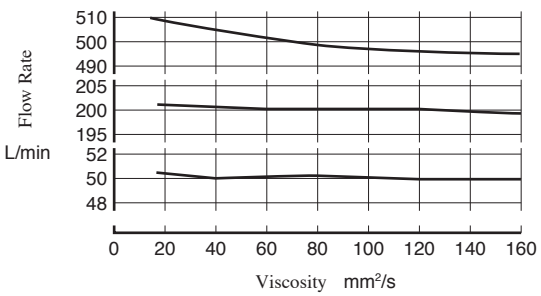
FG/FCG-03



FG/FCG-06

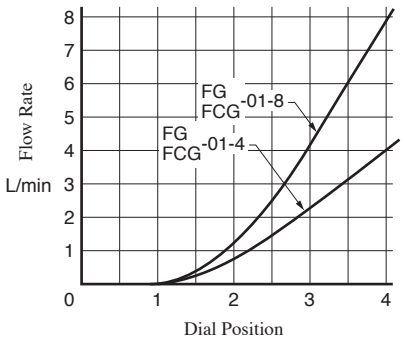


FG/FCG-10

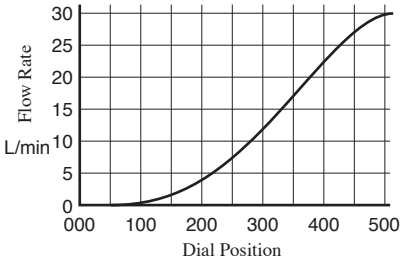


Dial Position vs. Flow

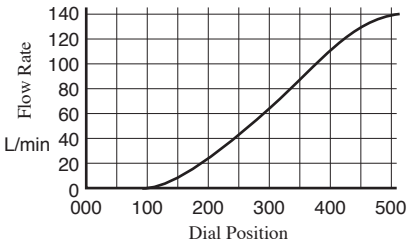
FG FCG-01



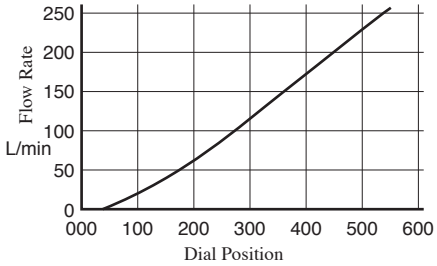
FG FCG-02



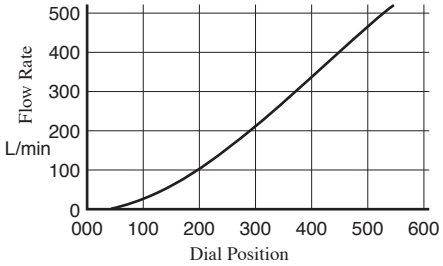
FG FCG-03



FG FCG-06

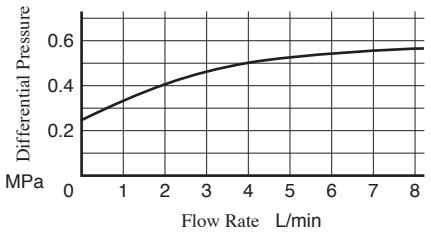


FG FCG-10

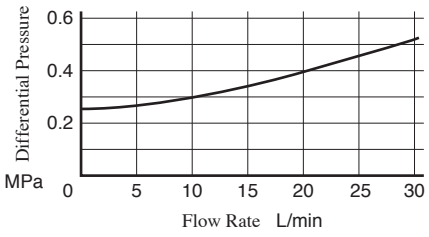


Min. Required Pressure Difference

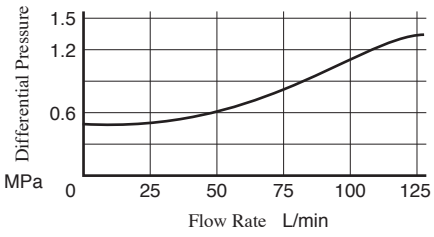
FG FCG-01



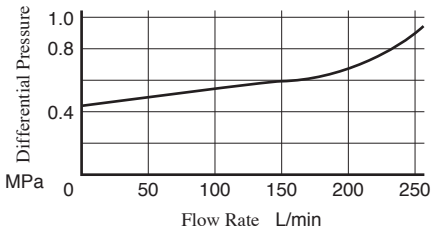
FG FCG-02



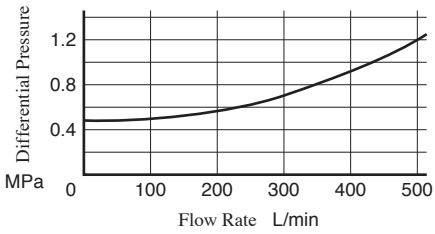
FG FCG-03



FG FCG-06



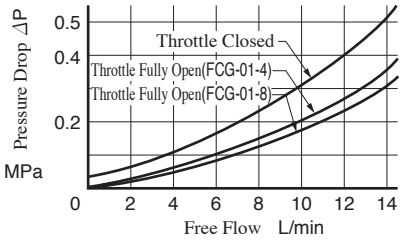
FG FCG-10



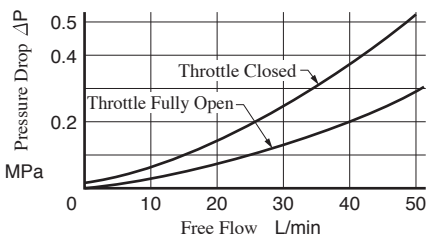
Pressure Drop for Free Flow (Only for with check valve)

Hydraulic Fluid : Viscosity 35 mm²/s, Specific Gravity 0.850

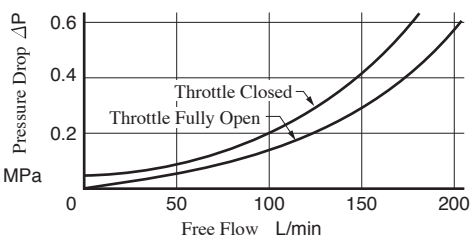
FCG-01



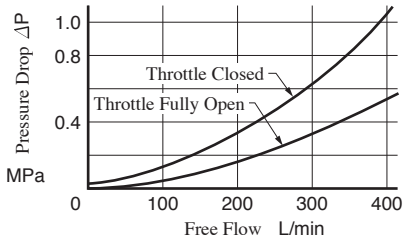
FCG-02



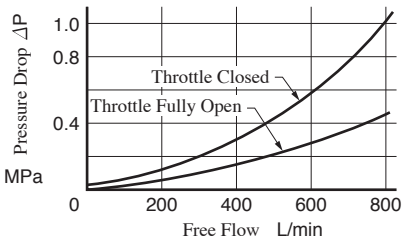
FCG-03



FCG-06



FCG-10



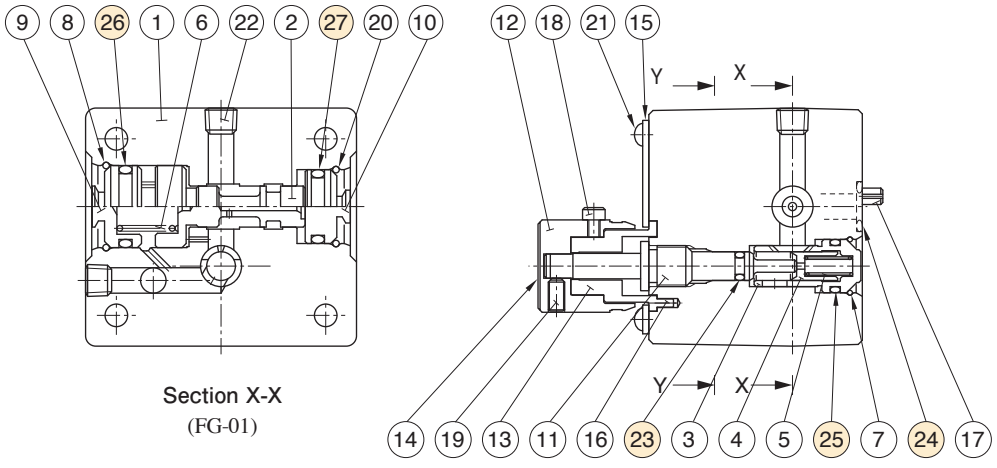
●For any other viscosity, multiply the factors in the table below.

Viscosity mm²/s	20	40	60	80	100
Factor	0.87	1.03	1.14	1.23	1.30

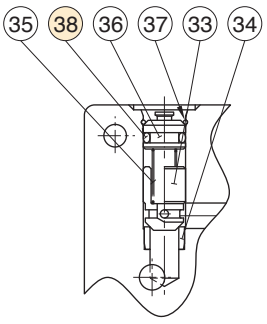
●Please use $\Delta P' = \Delta P \frac{G'}{G}$ for specific gravity change. However, ΔP is the value in the diagram and G is 0.850.

List of Seals

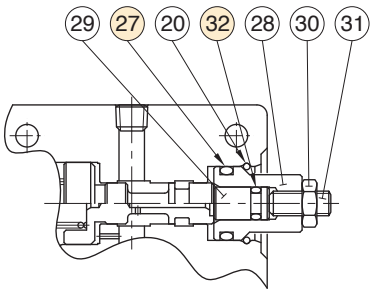
FG FCG -01



Section X-X
(FG-01)



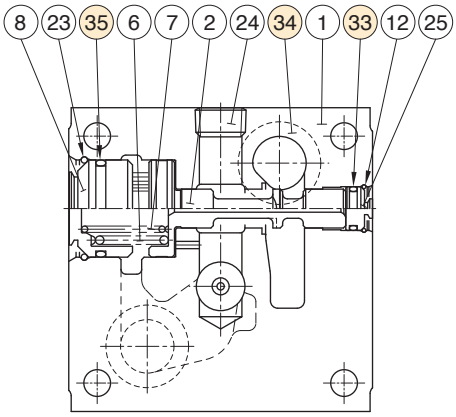
Section Y-Y
(FCG-01)



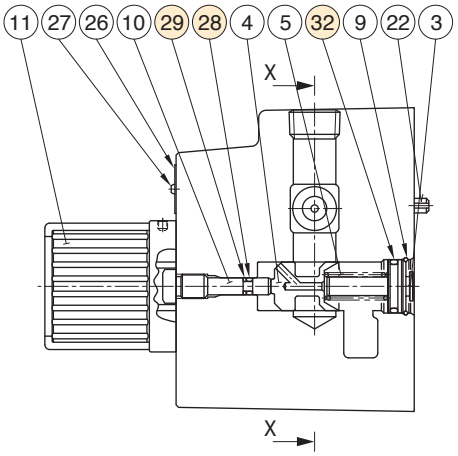
Section X-X
(FG FCG-01-∗-N)

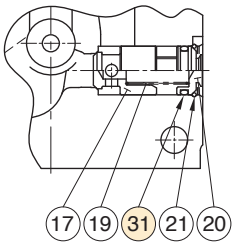
Item	Name of Parts	Part Numbers	Qty.
23	O-Ring	OR NBR-70-1 P4-N	1
24	O-Ring	OR NBR-90 P9-N	2
25	O-Ring	OR NBR-90 P10-N	1
26	O-Ring	OR NBR-90 P16-N	1
27	O-Ring	OR NBR-90 P14-N	1
32	O-Ring	OR NBR-70-1 P5-N	1
38	O-Ring	OR NBR-90 P7-N	1

FG FCG -02, 03

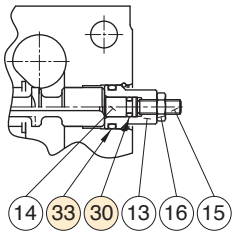


Section X-X
(FG-＊)





(FCG-＊)

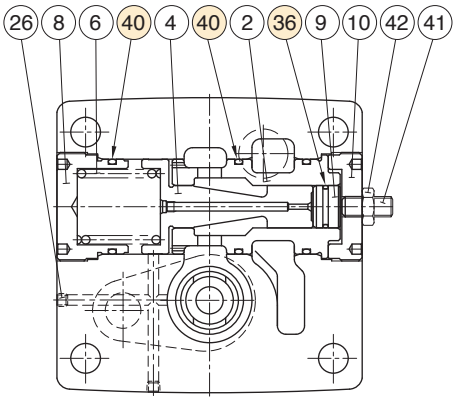


(FG FCG -＊-＊-N)

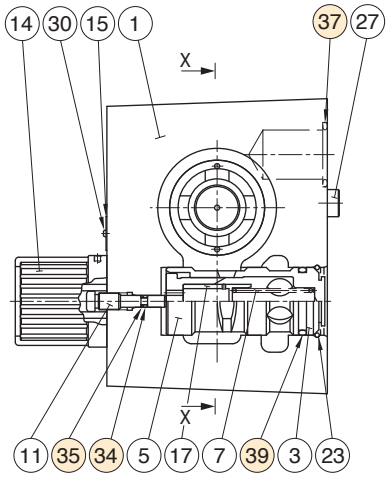
Section X-X

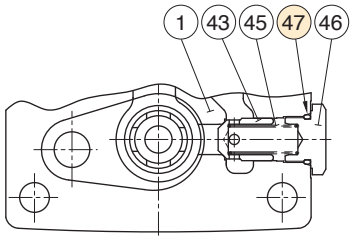
Item	Name of Parts	Part Numbers		Qty.
		FG FCG -02	FG FCG -03	
28	O-Ring	OR NBR-70-1 P4-N	OR NBR-70-1 P4-N	1
29	Back Up Ring	BR JIS B 2401-4-T2-P4	BR JIS B 2401-4-T2-P4	1
30	O-Ring	OR NBR-90 P5-N	OR NBR-90 P5-N	1
31	O-Ring	OR NBR-90 P10A-N	OR NBR-90 P16-N	1
32	O-Ring	OR NBR-90 P12-N	OR NBR-90 P18-N	1
33	O-Ring	OR NBR-90 P14-N	OR NBR-90 P14-N	1
34	O-Ring	OR NBR-90 P18-N	OR NBR-90 P28-N	2
35	O-Ring	OR NBR-90 G25-N	OR NBR-90 G35-N	1

FG FCG -06, 10

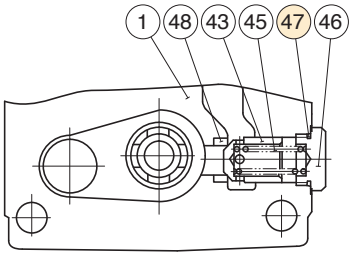


Section X-X
(FG-＊)





Section X-X
(FCG-06)



Section X-X
(FCG-10)

Item	Name of Parts	Part Numbers		Qty.
		FG FCG -06	FG FCG -10	
34	O-Ring	OR NBR-70-1 P4-N	OR NBR-70-1 P4-N	1
35	Back Up Ring	BR JIS B 2401-4-T2-P4	BR JIS B 2401-4-T2-P4	1
36	O-Ring	OR NBR-90 P21-N	OR NBR-90 P34-N	1
37	O-Ring	OR NBR-90 P32-N	OR NBR-90 P48-N	2
39	O-Ring	OR NBR-90 P34-N	OR NBR-90 P50-N	1
40	O-Ring	OR NBR-90 P50-N	OR NBR-90 P75-N	3
47	O-Ring	AS568-020 (NBR-90)	OR NBR-90 P32-N	1