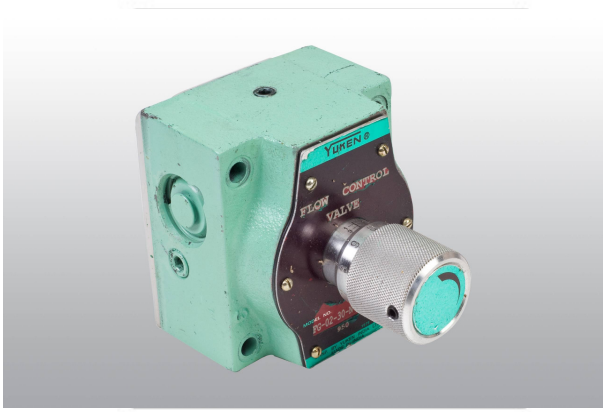
❖ Flow Control Valves
❖ Flow Control and Check Valves

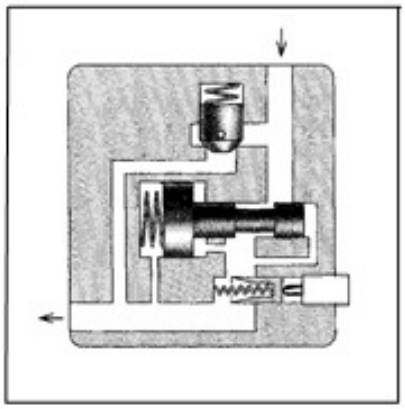


These valves are pressure and temperature compensating type valves and maintain a constant flow rate independent of change in system pressure (load) and temperature (viscosity of the fluid). They control flow rate of the hydraulic circuit and eventually control speed of the actuator precisely. Valves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

❖ Ratings

Model Numbers	Max. Metered Flow Capacity l/min	Min. Metered Flow Capacity l/min	Max. Operating Pressure kgf/cm2	Mass kg
FG / FCG - 01 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 figures in the bracket are for pressures above 70 kgf/cm2



❖ Model Number Designation

F	FC	G	-01	-8	-N	-11
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metered Flow Capacity l/min	Pres. Compensator Stroke Adjustment	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**F:** Flow Control Valves **FC:** Flow Control and Check Valves	**G:** Sub-Plating Mounting	**01**	**4**:4 **8**:8	**N:** Applicable only for Pres. Conpensator Stroke Adjustment (option) (Omit if not required)	**11**
			02	**30**:30		**22801**
			03	**125**:125		**22801**

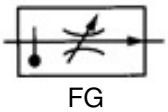
Also available with locking feature with key & model no. Please refer drawing FG 02/03 - * - * - 22801HO1

❖ Attachment

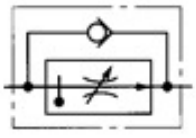
⌘ Mounting Bolts

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

Graphic Symbols



FG



FCG

❖ Option

⌘ Pres. compensator stroke adjustment

Can reduce jumping at the start of the actuator

❖ Sub-Plates

Valve Model Number	Sub-Plate Model No.	Piping Size	Mass kg.
FG FCG -01	FGM-01 X-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

⌘ Subplates 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.

❖ Instructions

⌘ Min. required pressure difference

Min required pressure differential between inlet and outlet port is required to obtain the optimum pressure compensation. It varies accordingly 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.

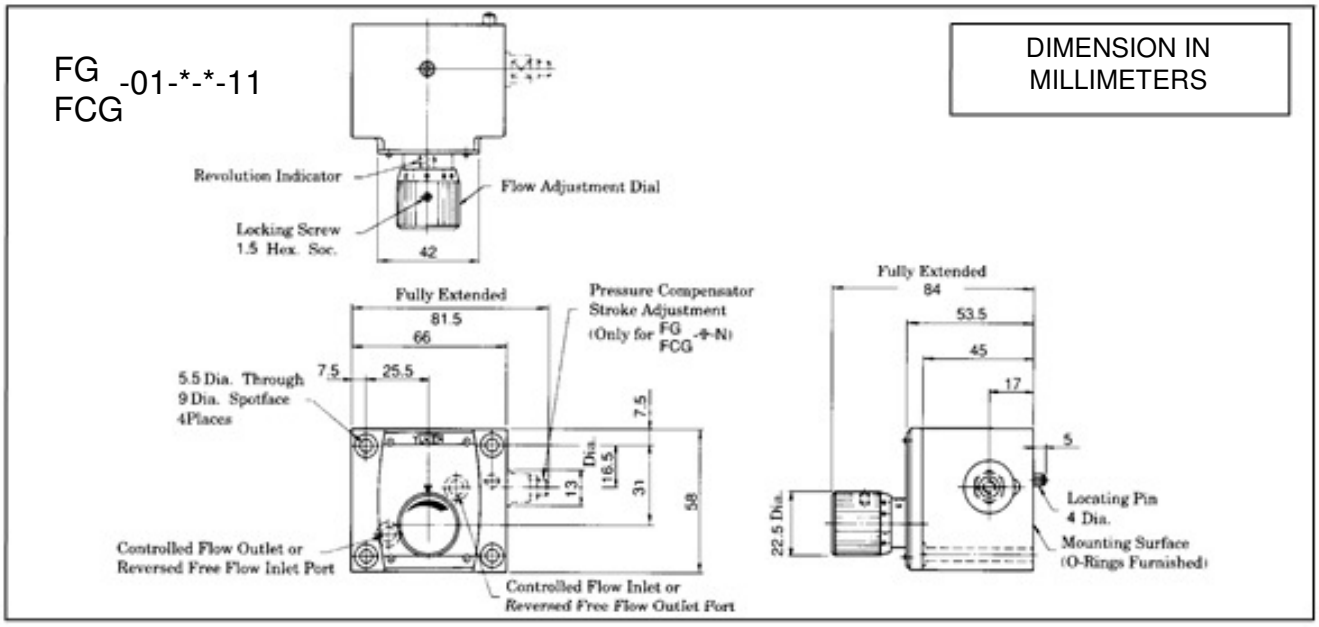
⌘ Flow adjustment

[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")
Also Flow adjustment, tighten locking screw.
[F*G - 02/03] ---- Anticlockwise for increase and clockwise for decrease.

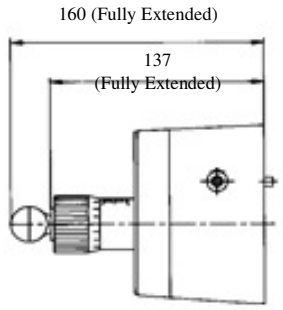
⌘ Line filter

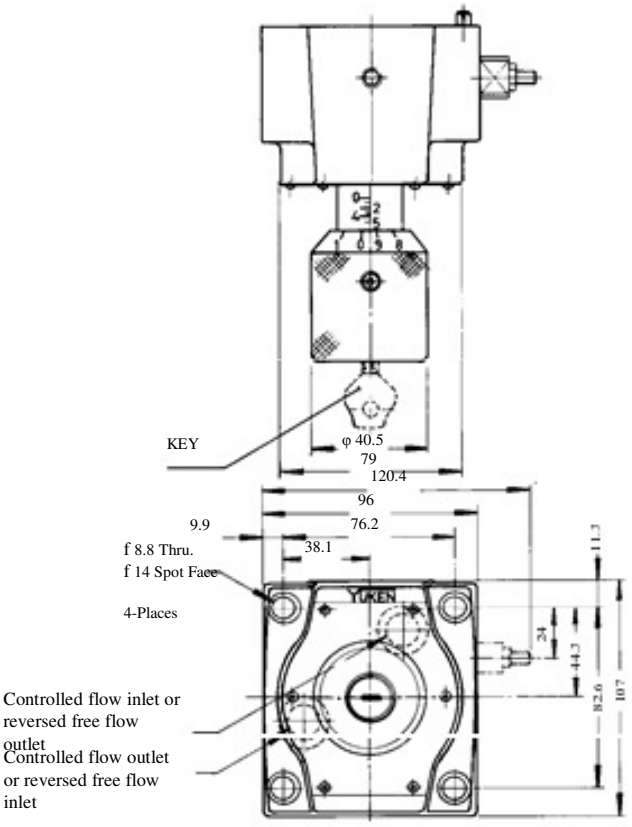
To carry out flow adjustments by as small degree as 2 l/min of less, be sure to use a line filter, 10 m or less, near the valve inlet.



F*G-02-30-*-22801/22801H01

Locking Feature with key





(Fully Extended) 140

71

50 6

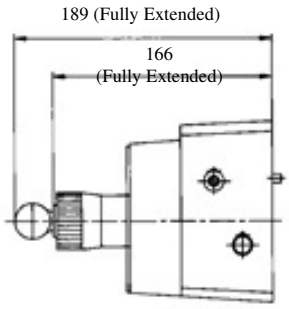
23

Mounting Surface (O-Rings furnished)

DIMENSION IN MILLIMETERS

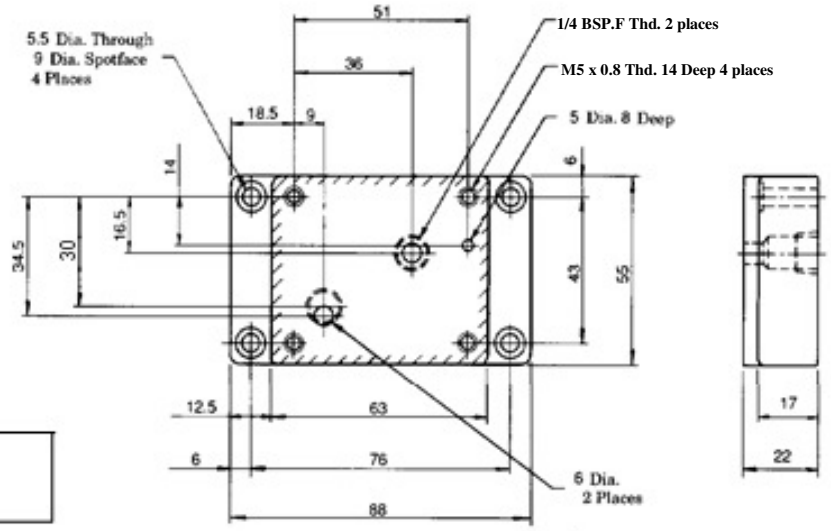
F*G-03-125-*-22801/22801H01

Locking Feature with key



Sub-plates

FGM-01X-1080

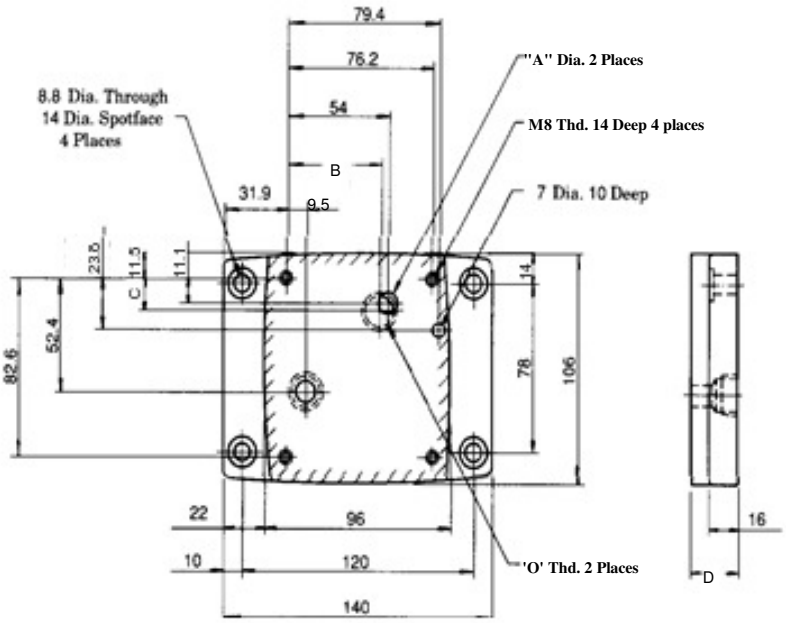


DIMENSION IN MILLIMETERS

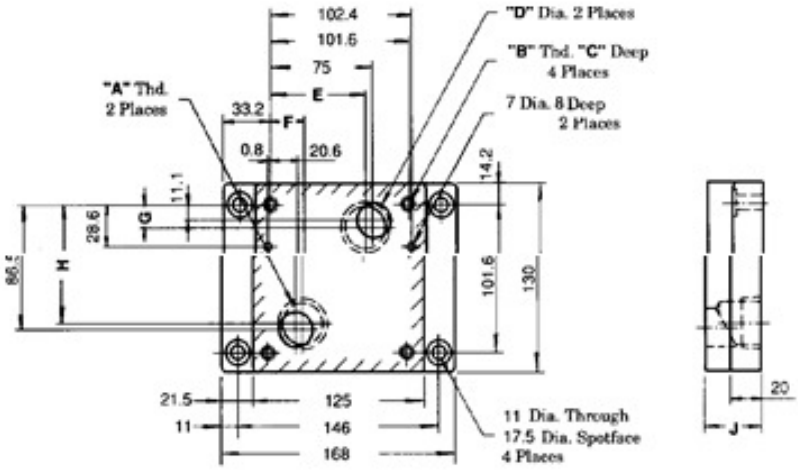
02
FGM-02X-2080
02Y

Sub-Plate Model Number	'O' Thd. BSP.F	A	B	C
FGM-02-2080	1/4	11.7	54	11.1
FGM-02X-2080	3/8	15.2	54	11.1
FGM-02Y-2080	1/2	15	51	14

Sub-Plate Model Number	D	Weight Approx. kgf.
FGM-02-2080	25	2.3
FGM-02X-2080	25	2.3
FGM-02Y-2080	35	3.1

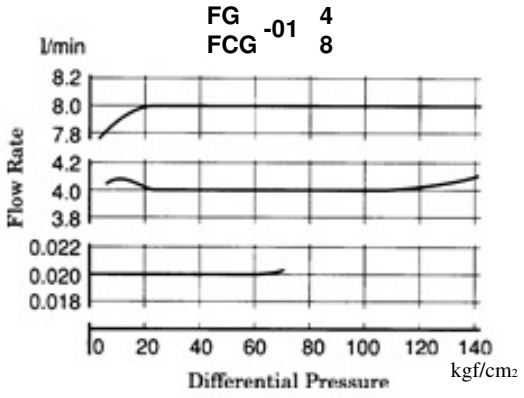


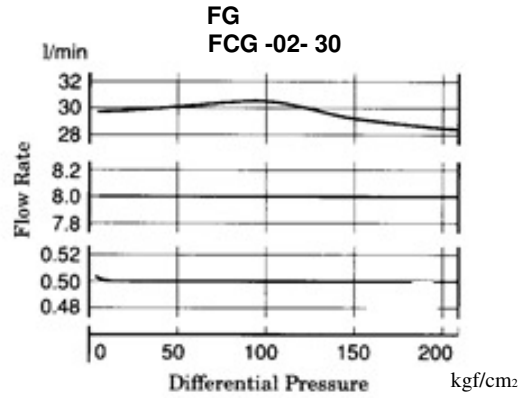
03
FGM-03X-2080
03Y

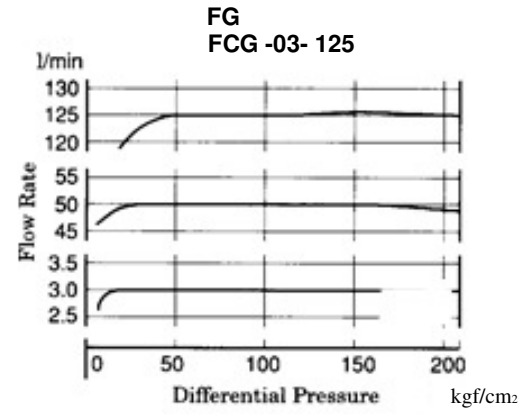


Sub-plate Model Numbers	"A" thd	"B" thd	C	D	E	F	G	H	J
FGM-03-2080	3/8 BSP.F	M10	18	15.0	75	20.6	11.1	86.5	25
FGM-03X-2080	1/2 BSP.F	M10	18	19.0					
FGM-03Y-2080	3/4 BSP.F	M10	18	23.0	70	25.6	16.1	81.5	40

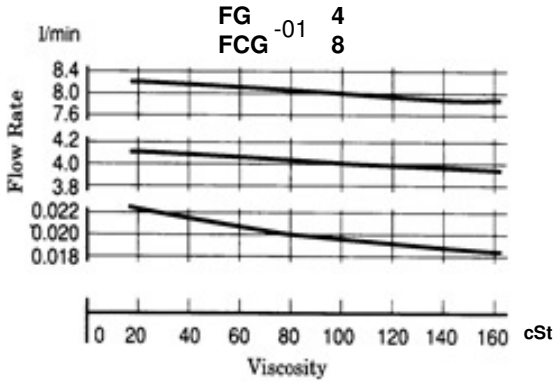
❖ Metered Flow Vs. Differential Pressure

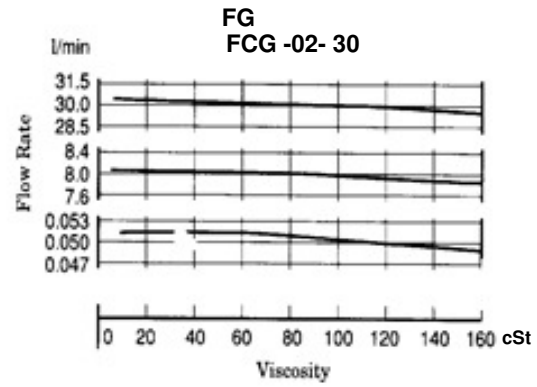


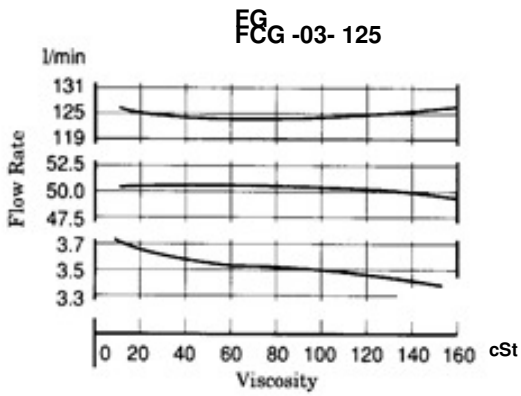




❖ Metered Flow Vs. Viscosity







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

Viscosity	cSt	20	40	60	80	100
	SSU	98	186	278	371	464
Factor		0.87	1.03	1.14	1.23	1.30

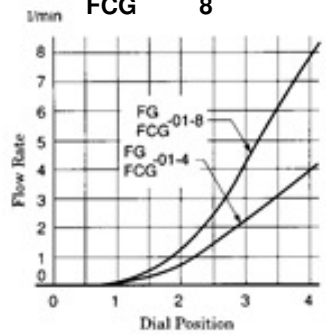
2. For any other specific gravity, use the formula :

$$\Delta P' = \Delta P \frac{G'}{G}$$

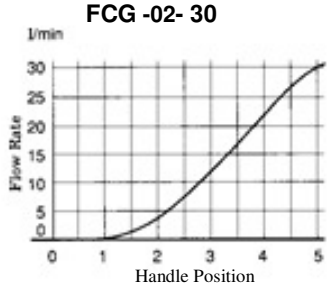
Where P is each value in the chart above, and G is 0.850 specific gravity.

❖ Metered Flow Vs. Dial Position

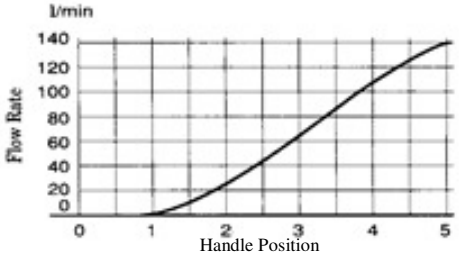
FG FCG -01 4 8



FG FCG -02- 30

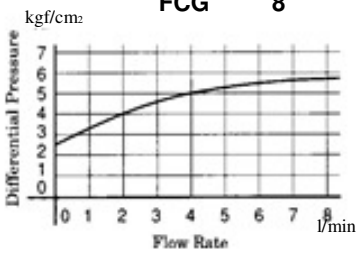


FG FCG -03- 125

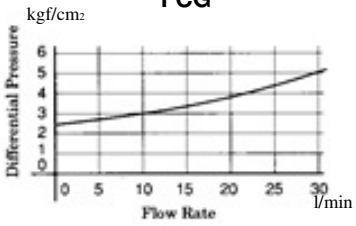


❖ Minimum Pressure Difference Required Between Inlet And Outlet Port

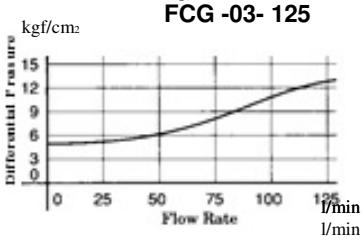
FG FCG -01 4 8



FG FCG -02- 30

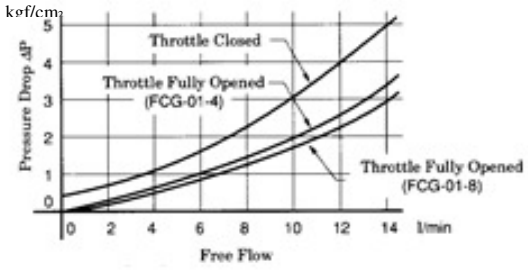


FG FCG -03- 125

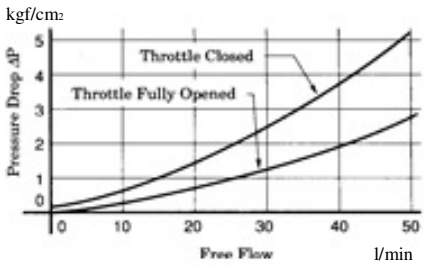


❖ Pressure Drop for Reversed Free Flow

FG FCG -01- 4 8



FCG -02- 30



kgf/cm2 **FCG -03- 125**