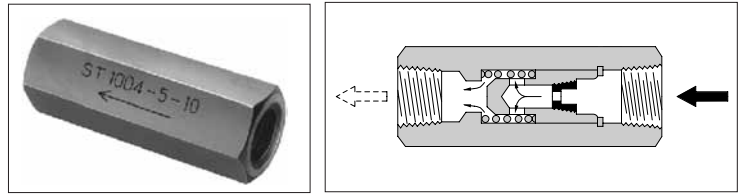


ACCESSORIES & OTHERS

■ Accessories	Page
● Air Bleed Valves	820
● “F3” Series Pipe Flange Kits	821
● “F5” Series Pipe Flange Kits	824
● “F6” Series Pipe Flange Kits	829
■ Data Sheet	
● Size of O-Ring	833
● SAE J1926-1 SAE Straight Thread O-Ring Port.....	835

Air Bleed Valves

These air bleed valves are designed to use, at the start-up of the pumps, to bleed off the air enclosed in the suction line or the other lines in the system.



Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Reseating Pressure MPa (PSI)	Cracking Pressure MPa (PSI)	Flow Rate to Reseating L/min (U.S.GPM)	Range of Usage to Pump Output Flow	Approx. Mass kg (lbs.)
ST1004-5-10*	25 (3630)	0.15 (22)	0.34 (49)	5 (1.32)	For 20 to 75 L/min (5.28 to 19.8 U.S.GPM)	0.2 (.44)
ST1004-10-10*				10 (2.64)	For Over 75 L/min (19.8 U.S.GPM)	

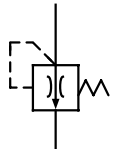
Model Number Designation

ST1004	-5	-10	*
Series Number	Flow Rate to Reseating	Design Number	Design Standards
ST1004: Air Bleed Valve	5: 5 L/min (1.32 U.S.GPM) 10: 10 L/min (2.64 U.S.GPM)	10	None: Japanese Standard "JIS" 80: European Design Standard 90: N. American Design Standard

Instructions

When the valve is used to bleed off the air from the pump, connect the inlet port of the valve to the discharge port of the pump as close as possible. When removing the air from the pipes, install the valve at the highest position of the system. In either case, the outlet port of the valve must be connected to the tank, the end of which is located below the oil level in the reservoir.

Graphic Symbol



Hydraulic Fluids

Type of Hydraulic Fluids

Petroleum Base OilsUse R & O (Rust and Oxidation inhibitor) type oils or anti-wear type oils (equivalent to ISO VG-32 or 46)

Synthetic FluidsUse phosphate ester type fluid or polyol ester type fluids.

Water Containing Fluids ..Use water glycol type fluids or water in oil emulsion type fluids.

Other Special FluidsConsult factory for information.

Recommended viscosity and Oil Temperatures

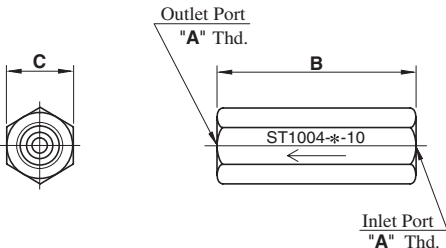
Viscosity ranging between 15 and 400 mm²/s (77 and 1800 SSU).

Oil temperatures between -15 and +70°C (5 and 160°F)

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

Filtration Recommended...25 microns or less.

ST1004-*-10/1080/1090



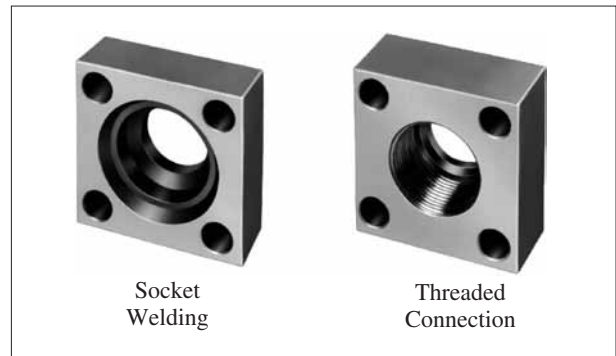
Model Numbers	"A" Thd.	mm (Inches)	
		B	C
ST1004-*-10	Rc 3/8	70 (2.76)	24 (.94)
ST1004-*-1080	3/8 BSPF	82 (3.23)	27 (1.06)
ST1004-*-1090	3/8 NPT	70 (2.76)	24 (.94)

**DIMENSIONS IN
MILLIMETRES (INCHES)**

“F3” Series Pipe Flange Kits

Specifications

- Max. Operating Pressure...25 MPa (3630 PSI)



Model Number Designation

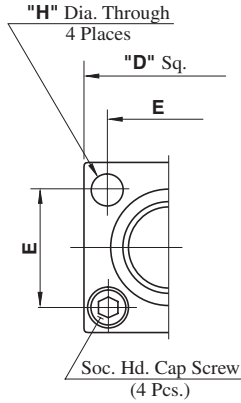
F-	F3	-03W	-A	-N	-11	*
Material of Seal	Series Number	Flange Size	Type of Pipe Connection	O-Ring & Bolts	Design Number	Design * Standards
None: Standard NBR (Buna N) Seal F: FPM (Viton) Seal (For Synthetic fluids)	F3	03W, 03, 06V 06W, 06, 10W 10, 16W, 16 24W, 24	A: Pipe Socket Welding	None: With O-Ring and Mounting Bolts N: No O-Ring and Mounting Bolts	11	None: Japanese Standard "JIS" & European Design Standard
		03W, 03, 06W 06, 10W, 10 16W, 16, 24W 24				C: Block Type
		03W, 03, 06V 06W, 06, 10W 10, 16W, 16 24W, 24	B: Threaded Connection	None: With O-Ring and Mounting Bolts N: No O-Ring and Mounting Bolts	11	None: Japanese Standard "JIS"
		03W, 03, 06W 06, 10W, 10 16W, 16, 24W 24				80: European Design Standard 90: N. American Design Standard

★ Three different design standards are available as shown blow. Select the suitable design standard to your requirement.

Type of Pipe Connection	Design Standard	Pipe Thread	Mounting Bolt (Socket Head Cap Screw)
Pipe Socket Welding Block Type	Japanese Standard "JIS" & European Design Standard	—	Metric Thd.
	N. American Design Standard	—	Unified Thd.
Threaded Connection	Japanese Standard "JIS"	Rc	Metric Thd.
	European Design Standard	BSP,F	Metric Thd.
	N. American Design Standard	NPT	Unified Thd.

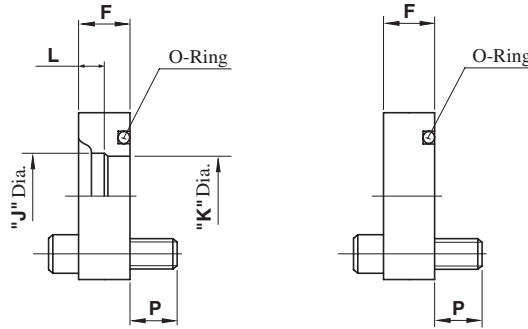
■ Pipe Socket Welding

F3-*-A*-11/1190



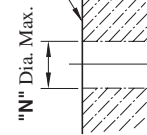
■ Block Type

F3-*-C*-11/1190



Customer's Mounting Surface

Surface should have a good machined finish.



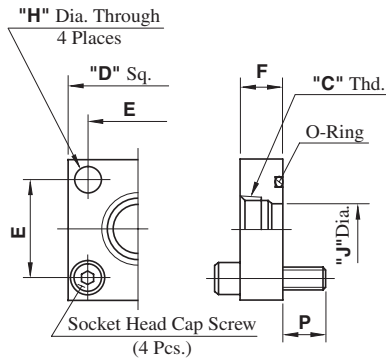
Kit Numbers	Piping Size	Dimensions mm (Inches)									O-Ring	Socket Head Cap Screw	Approx.* Mass kg (lbs.)		
		D	E	F	H	J	K	L	N	P					
F3-03W-*-11	1/4	54 (2.13)	36 (1.42)	21 (.83)	11 (.43)	14.3 (.56)	11 (.43)	8 (.31)	15 (.59)	14 (.55)	SO-NB-G25	M10 × 35 Lg.	0.5 (1.1)		
F3-03W-*-1190						17.1 (.67)	17.8 (.70)	12.5 (.49)		9 (.35)		17.1 (.67)		3/8-16UNC × 1-1/2 Lg.	
F3-03-*-11	3/8	14 (.55)	17.1 (.67)	17.8 (.70)	12.5 (.49)	9 (.35)			15 (.59)			14 (.55)		M10 × 35 Lg.	
F3-03-*-1190							3/8-16UNC × 1-1/2 Lg.								
F3-06V-*-11	3/8	58 (2.28)	40 (1.57)	21 (.83)	11 (.43)	17.8 (.70)	12.5 (.49)	9 (.35)	20 (.79)	14 (.55)	SO-NB-G30	M10 × 35 Lg.	0.8 (1.8)		
F3-06W-*-11	1/2					22.2 (.87)	16 (.63)	11 (.43)		14 (.55)		3/8-16UNC × 1-1/2 Lg.			
F3-06W-*-1190						3/4	27.7 (1.09)	20 (.79)		12 (.47)		14 (.55)		17.1 (.67)	M10 × 35 Lg.
F3-06-*-11	3/8-16UNC × 1-1/2 Lg.														
F3-10W-*-11	1	76 (2.99)	56 (2.20)	27 (1.06)	13.5 (.53)	34.5 (1.36)	25 (.98)	14 (.55)	31.5 (1.24)	18 (.71)	SO-NB-G40	M12 × 45 Lg.	1.4 (3.1)		
F3-10W-*-1190	1-1/4					17.5 (.69)	43.2 (1.70)	31.5 (1.24)		16 (.63)		18 (.71)		17.5 (.69)	1/2-13UNC × 1-3/4 Lg.
F3-10-*-11						1-1/4									17.5 (.69)
F3-10-*-1190	1/2-13UNC × 1-3/4 Lg.														
F3-16W-*-11	1-1/2	100 (3.94)	73 (2.87)	35 (1.38)	17.5 (.69)	49.1 (1.93)	37.5 (1.48)	18 (.71)	50 (1.97)	25 (.98)	SO-NB-G60	M16 × 60 Lg.	2.7 (6.0)		
F3-16W-*-1190						2	22.1 (.87)	61.1 (2.41)		47.5 (1.87)		20 (.79)		25 (.98)	22.1 (.87)
F3-16-*-11	2						25 (.98)								
F3-16-*-1190						8/5-11UNC × 2-1/4 Lg.									
F3-24W-*-11	2-1/2	140 (5.51)	103 (4.06)	44 (1.73)	24 (.94)	77.1 (3.04)	60 (2.36)	22 (.87)	75 (2.95)	36 (1.42)	SO-NB-G85	M22 × 80 Lg.	5.8 (12.8)		
F3-24W-*-1190						3	38.6 (1.52)	90.0 (3.54)		71 (2.80)		25 (.98)		36 (1.42)	38.6 (1.52)
F3-24-*-11	3						36 (1.42)								
F3-24-*-1190						7/8-9UNC × 3-1/4 Lg.									

★ Approx. mass is the value including socket head cap screws (4 Pcs.).

Threaded Connection

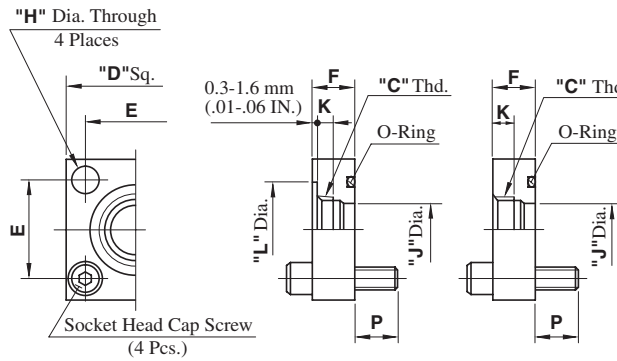
Japanese Standard "JIS" & N. American Design Standard

F3-*-B*-11/1190

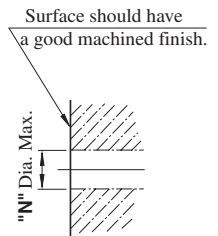


European Design Standard

F3-*-B*-1180



Customer's Mounting Surface



Piping Size: 03W to 10

Piping Size: 16W to 24

Kit Numbers	Piping Size "C" Thd.	Dimensions mm (Inches)									O-Ring	Socket Head Cap Screw	Approx.* Mass kg (lbs.)			
		D	E	F	H	J	K	L	N	P						
F3-03W-B*-11	Rc 1/4					11 (.43)	—	—								
F3-03W-B*-1180	1/4 BSPF					11.5 (.45)	12 (.47)	21 (.83)								
F3-03W-B*-1190	1/4 NPT	54 (2.13)	36 (1.42)	21 (.83)	11 (.43)	11 (.43)	—	—			15 (.59)	14 (.55)	SO-NB-G25	3/8-16UNC x 1-1/2 Lg.	0.5 (1.1)	
F3-03-B*-11	Rc 3/8					14 (.55)	—	—				14 (.55)		M10 x 35 Lg.		
F3-03-B*-1180	3/8 BSPF					15 (.59)	14 (.55)	24.3 (.96)								
F3-03-B*-1190	3/8 NPT					14 (.55)	—	—				17.1 (.67)		3/8-16UNC x 1-1/2 Lg.		
F3-06V-B*-11	Rc3/8					14 (.55)	—	—				14 (.55)		M10 x 35 Lg.		
F3-06W-B*-11	Rc 1/2					17.5 (.69)	—	—				14 (.55)		M10 x 35 Lg.		
F3-06W-B*-1180	1/2 BSPF			21 (.83)		19 (.75)	17 (.67)	29 (1.14)								
F3-06W-B*-1190	1/2 NPT	58 (2.28)	40 (1.57)		11 (.43)	17.5 (.69)	—	—			20 (.79)	17.1 (.67)	SO-NB-G30	3/8-16UNC x 1-1/2 Lg.	0.8 (1.8)	
F3-06-B*-11	Rc 3/4					23 (.91)	—	—				13 (.51)		M10 x 40 Lg.		
F3-06-B*-1180	3/4 BSPF					24.5 (.96)	20 (.79)	35.5 (1.40)								
F3-06-B*-1190	3/4 NPT					23 (.91)	—	—				17.5 (.69)		3/8-16UNC x 1-3/4 Lg.		
F3-10W-B*-11	Rc 1					29 (1.14)	—	—				18 (.71)		M12 x 45 Lg.		
F3-10W-B*-1180	1 BSPF					30.5 (1.20)	21 (.83)	43.5 (1.71)								
F3-10W-B*-1190	1 NPT	76 (2.99)	56 (2.20)		13.5 (.53)	29 (1.14)	—	—			31.5 (1.24)	17.5 (.69)	SO-NB-G40	1/2-13UNC x 1-3/4 Lg.	1.4 (3.1)	
F3-10-B*-11	Rc 1-1/4					—	—	—				15 (.59)		M12 x 50 Lg.		
F3-10-B*-1180	1-1/4 BSPF					31.5 (1.24)	22 (.87)	53 (2.09)								
F3-10-B*-1190	1-1/4 NPT					—	—	—				15.8 (.62)		1/2-13UNC x 2 Lg.		
F3-16W-B*-11	Rc 1-1/2					43.5 (1.71)	—	—				25 (.98)		M16 x 60 Lg.		
F3-16W-B*-1180	1-1/2 BSPF					45 (1.77)	22 (.87)	—								
F3-16W-B*-1190	1-1/2 NPT	100 (3.94)	73 (2.87)		17.5 (.69)	43.5 (1.71)	—	—			50 (1.97)	28.5 (1.12)	SO-NB-G60	5/8-11UNC x 2-1/2 Lg.	2.7 (6.0)	
F3-16-B*-11	Rc 2					—	—	—				21 (.83)		M16 x 60 Lg.		
F3-16-B*-1180	2 BSPF					47.5 (1.87)	22 (.87)	—								
F3-16-B*-1190	2 NPT					—	—	—				24.5 (.96)		5/8-11UNC x 2-1/2 Lg.		
F3-24W-B*-11	Rc 2-1/2					70 (2.76)	—	—				36 (1.42)		M22 x 80 Lg.		
F3-24W-B*-1180	2-1/2 BSPF					72.5 (2.85)	20 (.79)	—								
F3-24W-B*-1190	2-1/2 NPT	140 (5.51)	103 (4.06)		24 (.94)	70 (2.76)	—	—			75 (2.95)	38.6 (1.52)	SO-NB-G85	7/8-9UNC x 3-1/4 Lg.	5.8 (12.8)	
F3-24-B*-11	Rc 3					—	—	—				31 (1.22)		M22 x 80 Lg.		
F3-24-B*-1180	3 BSPF					71 (2.80)	20 (.79)	—								
F3-24-B*-1190	3 NPT					—	—	—				33.6 (1.32)		7/8-9UNC x 3-1/4 Lg.		

* Approx. Mass is the value including socket head cap screws (4 Pcs.).

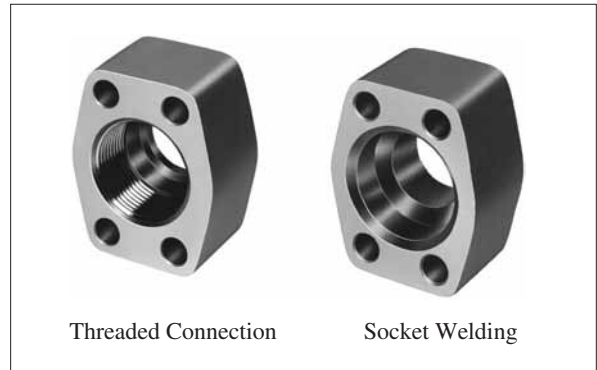
■ “F5” Series Pipe Flange Kits

The dimensions of the flange mounting surface are based upon SAE 4 Bolt Split Flange (Standard Pressure Series).

■ Specifications

● Max. Operating Pressure

Maximum operation pressure varies with the type of pipe connection or flange size. Refer to the applicable installation drawings.



■ Model Number Designation

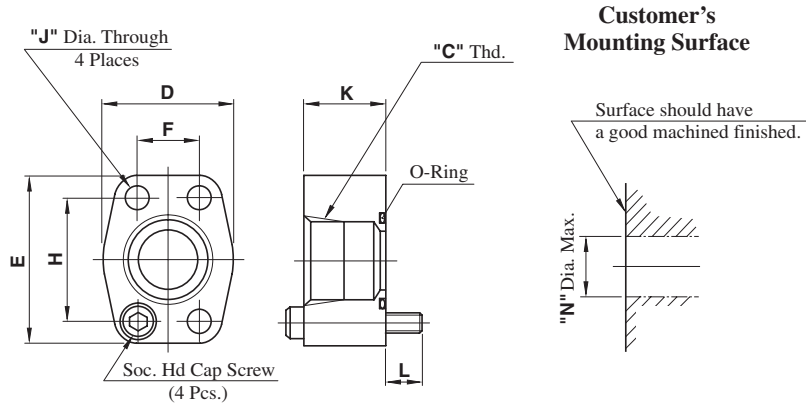
F-	F5	-06	-A	-10	*
Material of Seal	Series Number	Flange Size	Type of Pipe Connection	Design Number	Design Standards*
None: Standard NBR (Buna N) Seal	F5	04W, 04, 06X 06, 08, 08W,10 12, 16, 16W, 20 24, 28, 32	A: Threaded Connection	10	None: Japanese Standard "JIS"
		04, 06, 08 10, 12, 16 20			80: European Design Standard
		04W, 04, 06 08, 10, 12 16, 16W, 20 24, 28, 32			90: N. American Design Standard
F: FPM (Viton) Seal (For Synthetic Fluids)		04W, 04, 06X 06, 08, 08W,10 12, 16, 16W, 20 24, 28, 32	B: Socket Welding	10	None: Japanese Standard "JIS" & European Design Standard
		04W, 04, 06 08, 10, 12 16, 16W, 20,24 28, 32			90: N. American Design Standard
		04, 06, 08 10, 12, 16 20	C: Butt Welding	10	None: Japanese Standard "JIS" & European Design Standard 90: N. American Design Standard

★ Three different design standards are available as shown below. Select the suitable design standard to your requirement.

Type of Pipe Connection	Design Standard	Pipe Thread	Mounting Bolt (Socket Head Cap Screw)
Threaded Connection	Japanese Standard "JIS"	Rc	Metric Thd.
	European Design Standard	BSP.F	Metric Thd.
	N. American Design Standard	NPT	Unified Thd.
Pipe Socket Welding Butt Welding	Japanese Standard "JIS" & European Design Standard	—	Metric Thd.
	N. American Design Standard	—	Unified Thd.

Threaded Connection

Japanese Standard "JIS" : F5-*-A-10
 N. American Design Standard : F5-*-A-1090



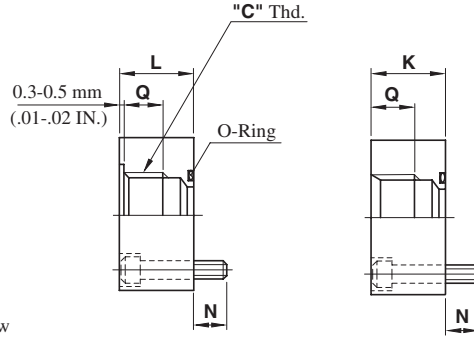
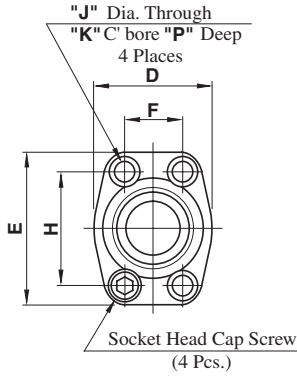
Kit Numbers	Piping Size "C" Thd.	Dimensions mm (Inches)								Socket Head Cap Screw (4 Pcs.)	O-Ring	Max. Operating Pressure MPa (PSI)	Approx. Mass kg (lbs.) ^{*1}	Recommended Tightening Torque (Tolerance ±10%) Nm (IN.lbs.) ^{*2}			
		D	E	F	H	J	K	L	N								
F5-04W-A-10	Rc 3/8	40 (1.57)	54 (2.13)	17.5 (.689)	38.1 (1.500)	8.8 (.346)	30 (1.18)	10 (.39)	13 (.51)	M8 × 40 Lg.	SO-NB-P22	28 (4060)	0.5 (1.1)	35 (310)			
F5-04-A-10	Rc 1/2							14.5 (.57)		5/16-18UNC × 1-3/4 Lg.							
F5-04W-A-1090	3/8 NPT																
F5-04-A-1090	1/2 NPT																
F5-06X-A-10	Rc 3/4	48 (1.89)	65 (2.56)	22.2 (.874)	47.6 (1.874)	11 (.433)	8.8 (.346)	15 (.59)	19 (.75)	M8 × 45 Lg.	SO-NB-G30	28 (4060)	0.7 (1.5)	35 (310)			
F5-06-A-10							11 (.433)	30 (1.18)		M10 × 45 Lg.				68.5 (606)			
F5-06-A-1090							3/4 NPT	14.5 (.57)		3/8-16UNC × 1-3/4 Lg.							
F5-08W-A-10	Rc 3/4	55 (2.17)	70 (2.76)	26.2 (1.031)	52.4 (2.063)	11 (.433)	30 (1.18)	15 (.59)	26 (1.02)	M10 × 45 Lg.	SO-NB-G35	28 (4060)	0.9 (2.0)	68.5 (606)			
F5-08-A-10	Rc 1							14.5 (.57)		3/8-16UNC × 1-3/4 Lg.							
F5-08-A-1090	1 NPT																
F5-10-A-10	Rc 1-1/4	64 (2.52)	80 (3.15)	30.2 (1.189)	58.7 (2.311)	11 (.433)	38 (1.50)	17 (.67)	32 (1.26)	M10 × 55 Lg.	SO-NB-G40	28 (4060)	1.2 (2.6)	68.5 (606)			
F5-10-A-1090	1-1/4 NPT							12 (.472)		19.2 (.76)					7/16-14UNC × 2-1/4 Lg.		
F5-12-A-10	Rc 1-1/2	72 (2.83)	94 (3.70)	35.7 (1.406)	69.9 (2.752)	13.5 (.531)	38 (1.50)	17 (.67)	38 (1.50)	M12 × 55 Lg.	SO-NB-G50	21 (3050)	1.5 (3.3)	118 (1044)			
F5-12-A-1090	1-1/2 NPT							19.2 (.76)		1/2-13UNC × 2-1/4 Lg.							
F5-16W-A-10	Rc 1-1/2	85 (3.35)	102 (4.02)	42.9 (1.689)	77.8 (3.063)	13.5 (.531)	38 (1.50)	48 (1.89)	63 (2.48)	M12 × 55 Lg.	SO-NB-G60	21 (3050)	1.8 (4.0)	118 (1044)			
F5-16-A-10	Rc 2							51 (2.01)							SO-NB-G65	17.5 (2540)	1.7 (3.8)
F5-16W-A-1090	1-1/2 NPT							48 (1.89)							SO-NB-G60	21 (3050)	1.8 (4.0)
F5-16-A-1090	2 NPT							51 (2.01)							SO-NB-G65	17.5 (2540)	1.7 (3.8)
F5-20-A-10	Rc 2-1/2	102 (4.02)	114 (4.49)	50.8 (2.000)	88.9 (3.500)	13.5 (.531)	48 (1.89)	17 (.67)	63 (2.48)	M12 × 65 Lg.	SO-NB-G75	17.5 (2540)	2.0 (4.4)	118 (1044)			
F5-20-A-1090	2-1/2 NPT							21.8 (.86)		1/2-13UNC × 2-3/4 Lg.							
F5-24-A-10	Rc 3	116 (4.57)	135 (5.31)	61.9 (2.437)	106.4 (4.189)	17 (.67)	53 (2.09)	76 (2.99)	88 (3.46)	M16 × 70 Lg.	SO-NB-G85	3.5 (510)	2.7 (6.0)	287 (2540)			
F5-24-A-1090	3 NPT							19.2 (.76)		5/8-11UNC x 2-3/4 Lg.							
F5-28-A-10	Rc 3-1/2	134 (5.28)	153 (6.02)	69.9 (2.752)	120.7 (4.752)	17 (.67)	53 (2.09)	76 (2.99)	88 (3.46)	M16 × 70 Lg.	SO-NB-G100	3.5 (510)	3.4 (7.5)	287 (2540)			
F5-28-A-1090	3-1/2 NPT							19.2 (.76)		5/8-11UNC x 2-3/4 Lg.							
F5-32-A-10	Rc 4	150 (5.91)	162 (6.38)	77.8 (3.068)	130.2 (5.126)	17 (.67)	53 (2.09)	76 (2.99)	101 (3.98)	M16 × 70 Lg.	SO-NB-G115	3.5 (510)	3.7 (8.2)	287 (2540)			
F5-32-A-1090	4 NPT							19.2 (.76)		5/8-11UNC x 2-3/4 Lg.							

*1. Approx. mass is the value including socket head cap screws (4 Pcs.).

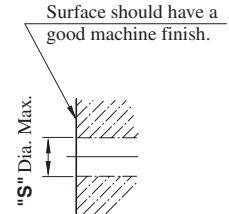
*2. The values of recommended tightening torque are for socket head cap screws and apply to when these flanges are used for pressure line.

■ Threaded Connection

European Design Standard
F5-*-A-1180



Customer's
Mounting Surface



Piping Size:
1/2 to 1-1/2

Piping Size:
2 & 2-1/2

Kit Numbers	Piping Size "C" Thd.	Dimensions mm (Inches)										Socket Head Cap Screw (4 Pcs.)	O-Ring	Max. Operating Pressure MPa (PSI)	Approx. Mass kg (lbs.)	
		D	E	F	H	J	K	L	N	P	Q					S
F5-04-A-1080	1/2 BSP.F	40 (1.57)	59 (2.32)	17.5 (.689)	38.1 (1.500)	8.8 (.346)	14 (.55)	31 (1.22)	12.6 (.50)	8.6 (.34)	17 (.67)	15 (.59)	M8 × 35 Lg.	SO-NB-P22	28 (4060)	0.5 (1.1)
F5-06-A-1080	3/4 BSP.F	48 (1.89)	72 (2.83)	22.2 (.874)	47.6 (1.874)	11 (.433)	17.5 (.69)	31 (1.22)	14.8 (.58)	10.8 (.43)	20 (.79)	19 (.75)	M10 × 35 Lg.	SO-NB-G30	28 (4060)	0.7 (1.5)
F5-08-A-1080	1 BSP.F	55 (2.17)	77 (3.03)	26.2 (1.031)	52.4 (2.063)	11 (.433)	17.5 (.69)	31 (1.22)	14.8 (.58)	10.8 (.43)	21 (.83)	25 (.98)	M10 × 35 Lg.	SO-NB-G35	28 (4060)	0.9 (2.0)
F5-10-A-1080	1-1/4 BSP.F	64 (2.52)	83 (3.27)	30.2 (1.189)	58.7 (2.311)	11 (.433)	17.5 (.69)	39 (1.54)	16.8 (.66)	10.8 (.43)	22 (.87)	32 (1.26)	M10 × 45 Lg.	SO-NB-G40	28 (4060)	1.2 (2.6)
F5-12-A-1080	1-1/2 BSP.F	72 (2.83)	99 (3.90)	35.7 (1.406)	69.9 (2.752)	13.5 (.531)	21 (.83)	41 (1.61)	17.5 (.69)	13.5 (.53)	22 (.87)	38 (1.50)	M12 × 45 Lg.	SO-NB-G50	21 (3050)	1.6 (3.5)
F5-16-A-1080	2 BSP.F	85 (3.35)	107 (4.21)	42.9 (1.689)	77.8 (3.063)	13.5 (.531)	21 (.83)	41 (1.61)	17.5 (.69)	13.5 (.53)	31 (1.22)	50 (1.97)	M12 × 45 Lg.	SO-NB-G65	17.5 (2540)	1.8 (4.0)
F5-20-A-1080	2-1/2 BSP.F	102 (4.02)	118 (4.65)	50.8 (2.000)	88.9 (3.500)	13.5 (.531)	21 (.83)	46 (1.81)	17.5 (.69)	13.5 (.53)	31 (1.22)	63 (2.48)	M12 × 50 Lg.	SO-NB-G75	17.5 (2540)	1.9 (4.2)

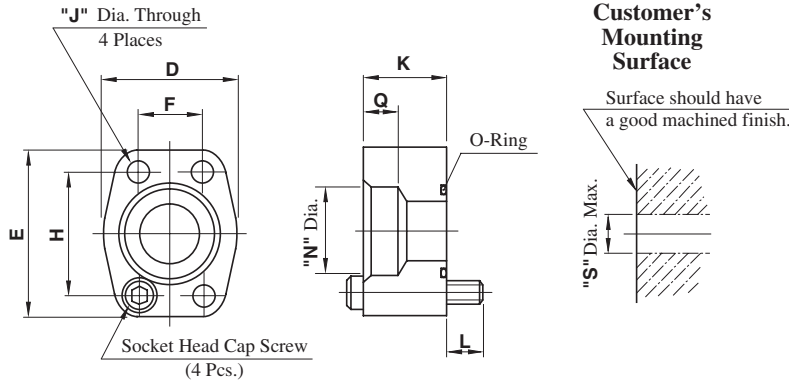
★ Approx. mass is the value including socket head cap screws (4 Pcs.).

● Recommended Tightening Torque
For Socket Head Cap Screw

Kit Numbers	Tightening Torque	
	Recommendation Nm (IN.lbs.)	Tolerance
F5-04-A-1080	35 (310)	±10%
F5-06-A-1080	68.5 (606)	
F5-08-A-1080		
F5-10-A-1080		
F5-12-A-1080	118 (1044)	
F5-16-A-1080		
F5-20-A-1080		

Note: The values of tightening torque above apply to when these flanges are used for pressure line.

■ Socket Welding
 Japanese Standard "JIS" &
 European Design Standard : F5- *-B-10
 N. American Design Standard : F5- *-B-1090



● Recommended Tightening Torque
 For Socket Head Cap Screw

Kit Numbers	Tightening Torque	
	Recommendation Nm (IN.lbs.)	Tolerance
F5-04W-B F5-04-B F5-06X-B	35 (310)	±10%
F5-06-B F5-08W-B F5-08-B F5-10-B	68.5 (660)	
F5-12-B F5-16W-B F5-16-B F5-20-B	118 (1044)	
F5-24-B F5-28-B F5-32-B	287 (2540)	

Note: The values of tightening torque above apply to when these flanges are used for pressure line.

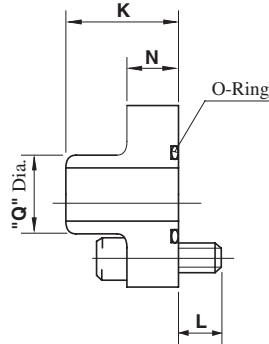
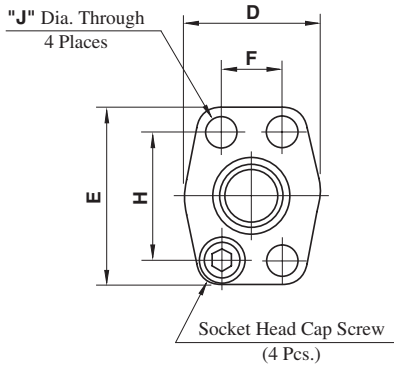
Kit Numbers	Piping Size	Dimensions mm (Inches)										Socket Head Cap Screw (4 Pcs.)	O-Ring	Max. Operating Pressure MPa(Psi)	Approx. Mass kg (lbs.)		
		D	E	F	H	J	K	L	N	Q	S						
F5-04W-B-10 ----- F5-04W-B-1090	3/8							10 (.39)	17.8 (.701)	9 (.35)				M8 × 40 Lg. ----- 5/16-18UNC × 1-3/4 Lg.	SO-NB-P22	28 (4060)	0.5 (1.1)
F5-04-B-10 ----- F5-04-B-1090	1/2	40 (1.57)	54 (2.13)	17.5 (.689)	38.1 (1.500)	8.8 (.346)	30 (1.18)	10 (.39)	22.2 (.874)	11 (.43)		13 (.51)	M8 × 40 Lg. ----- 5/16-18UNC × 1-3/4 Lg.				
F5-06X-B-10 ----- F5-06-B-10 ----- F5-06-B-1090	3/4	48 (1.89)	65 (2.56)	22.2 (.874)	47.6 (1.874)	8.8 (.346) 11 (.433)	30 (1.18)	15 (.59)	27.7 (1.091)	12 (.47)		19 (.75)	M8 × 45 Lg. ----- M10 × 45 Lg. ----- 3/8-16UNC × 1-3/4 Lg.	SO-NB-G30	28 (4060) 14 (2030)	0.7 (1.5)	
F5-08W-B-10 ----- F5-08-B-10 ----- F5-08-B-1090	3/4 1							15 (.59)	27.7 (1.091)	12 (.47)		26 (1.02)	M10 × 45 Lg. ----- 3/8-16UNC × 1-3/4 Lg.	SO-NB-G35	28 (4060) 14 (2030)	0.9 (2.0)	
F5-10-B-10 ----- F5-10-B-1090	1-1/4	64 (2.52)	80 (3.15)	30.2 (1.189)	58.7 (2.311)	11 (.433) 12 (.472)	38 (1.50)	17 (.67)	43.2 (1.701)	16 (.63)		32 (1.26)	M10 × 55 Lg. ----- 7/16-14UNC × 2-1/4 Lg.	SO-NB-G40	14 (2030)	1.2 (2.7)	
F5-12-B-10 ----- F5-12-B-1090	1-1/2	72 (2.83)	94 (3.70)	35.7 (1.406)	69.9 (2.752)	13.5 (.531)	38 (1.50)	17 (.67)	49.1 (1.933)	18 (.71)		38 (1.50)	M12 × 55 Lg. ----- 1/2-13UNC × 2-1/4 Lg.	SO-NB-G50	14 (2030)	1.5 (3.3)	
F5-16W-B-10 ----- F5-16W-B-1090	1-1/2							17 (.67)	49.1 (1.933)	18 (.71)		48 (1.89)	M12 × 55 Lg. ----- 1/2-13UNC × 2-1/4 Lg.	SO-NB-G60	21 (3050)	1.8 (3.7)	
F5-16-B-10 ----- F5-16-B-1090	2	85 (3.35)	102 (4.02)	42.9 (1.689)	77.8 (3.063)	13.5 (.531)	38 (1.50)	17 (.67)	61.1 (2.406)	20 (.79)		51 (2.01)	M12 × 55 Lg. ----- 1/2-13UNC × 2-1/4 Lg.	SO-NB-G65	10.5 (1520)	1.7 (3.8)	
F5-20-B-10 ----- F5-20-B-1090	2-1/2	102 (4.02)	114 (4.49)	50.8 (2.000)	88.9 (3.500)	13.5 (.531)	48 (1.89)	17 (.67)	77.1 (3.035)	22 (.87)		63 (2.48)	M12 × 65 Lg. ----- 1/2-13UNC × 2-3/4 Lg.	SO-NB-G75	7 (1020)	2.0 (4.4)	
F5-24-B-10 ----- F5-24-B-1090	3	116 (4.57)	135 (5.31)	61.9 (2.437)	106.4 (4.189)	17.5 (.689)	38 (1.50)	17 (.67)	90.0 (3.543)	25 (.98)		76 (2.99)	M16 × 55 Lg. ----- 5/8-11UNC × 2-1/4 Lg.	SO-NB-G85	3.5 (510)	2.7 (6.0)	
F5-28-B-10 ----- F5-28-B-1090	3-1/2	134 (5.28)	153 (6.02)	69.9 (2.752)	120.7 (4.752)	17.5 (.689)	38 (1.50)	17 (.67)	102.8 (4.047)	28 (1.10)		88 (3.46)	M16 × 55 Lg. ----- 5/8-11UNC × 2-1/4 Lg.	SO-NB-G100	3.5 (510)	3.4 (7.5)	
F5-32-B-10 ----- F5-32-B-1090	4	150 (5.91)	162 (6.38)	77.8 (2.063)	130.2 (5.126)	17.5 (.689)	38 (1.50)	17 (.67)	115.5 (4.547)	31.5 (1.24)		101 (3.98)	M16 × 55 Lg. ----- 5/8-11UNC × 2-1/4 Lg.	SO-NB-G115	3.5 (510)	3.7 (8.2)	

★ Approx. mass is the value including socket head cap screws (4 Pcs.).

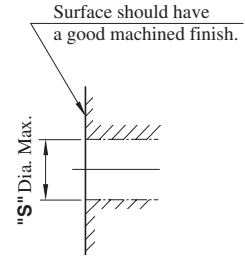
■ Butt Welding

Japanese Standard "JIS" & European Design Standard : F5- *-C-10

N. American Design Standard : F5- *-C-1090



**Customer's
Mounting Surface**



Kit Numbers	Piping Size	Dimensions mm (Inches)										Socket Head Cap Screw (4 Pcs.)	O-Ring	Max. Operating Pressure MPa (PSI)	Approx.* Mass kg (lbs.)
		D	E	F	H	J	K	L	N	Q	S				
F5-04-C-10 ----- F5-04-C-1090	1/2	40 (1.57)	54 (2.13)	17.5 (.689)	38.1 (1.500)	8.8 (.346)	39 (1.54)	13 (.51) 14.8 (.58)	17 (.67)	21.7 (.85)	13 (.51)	M8 × 30 Lg. ----- 5/16-18UNC × 1-1/4Lg.	SO-NB-P22	28 (4060)	0.25 (.6)
F5-06-C-10 ----- F5-06-C-1090	3/4	48 (1.89)	65 (2.56)	22.2 (.874)	47.6 (1.874)	11 (.433)	41 (1.61)	16 (.63) 19.1 (.75)	19 (.75)	27.2 (1.07)	19 (.75)	M10 × 35 Lg. ----- 3/8-16UNC × 1-1/2Lg.	SO-NB-G30	28 (4060)	0.35 (.8)
F5-08-C-10 ----- F5-08-C-1090	1	55 (2.17)	70 (2.76)	26.2 (1.031)	52.4 (2.063)	11 (.433)	42 (1.65)	16 (.63) 19.1 (.75)	19 (.75)	34 (1.34)	26 (1.02)	M10 × 35 Lg. ----- 3/8-16UNC × 1-1/2Lg.	SO-NB-G35	28 (4060)	0.45 (1.0)
F5-10-C-10 ----- F5-10-C-1090	1-1/4	64 (2.52)	80 (3.15)	30.2 (1.189)	58.7 (2.311)	11 (.433) 12 (.472)	44 (1.73)	16 (.63) 19.1 (.75)	19 (.75)	42.7 (1.68)	32 (1.26)	M10 × 35 Lg. ----- 7/16-14UNC × 1-1/2Lg.	SO-NB-G40	28 (4060)	0.63 (1.4)
F5-12-C-10 ----- F5-12-C-1090	1-1/2	72 (2.83)	94 (3.70)	35.7 (1.406)	69.9 (2.752)	13.5 (.531)	50 (1.97)	18 (.71) 16.1 (.63)	22 (.87)	48.6 (1.91)	38 (1.50)	M12 × 40 Lg. ----- 1/2-13UNC × 1-1/2Lg.	SO-NB-G50	21 (3050)	1.3 (2.9)
F5-16-C-10 ----- F5-16-C-1090	2	85 (3.35)	102 (4.02)	42.9 (1.689)	77.8 (3.063)	13.5 (.531)	50 (1.97)	18 (.71) 16.1 (.63)	22 (.87)	60.5 (2.38)	51 (2.01)	M12 × 40 Lg. ----- 1/2-13UNC × 1-1/2Lg.	SO-NB-G65	17.5 (2540)	1.3 (2.9)
F5-20-C-10 ----- F5-20-C-1090	2-1/2	102 (4.02)	114 (4.49)	50.8 (2.000)	88.9 (3.500)	13.5 (.531)	50 (1.97)	20 (.79) 19.5 (.77)	25 (.98)	76.3 (3.00)	63 (2.48)	M12 × 45 Lg. ----- 1/2-13UNC × 1-3/4Lg.	SO-NB-G75	14 (2030)	1.4 (3.1)

★ Approx. mass is the value including socket head cap screws (4 Pcs.).

**● Recommended Tightening Torque
For Socket Head Cap Screw**

Kit Numbers	Tightening Torque	
	Recommendation Nm (IN.lbs.)	Tolerance
F5-04-C	35 (310)	±10%
F5-06-C	68.5 (660)	
F5-08-C		
F5-10-C		
F5-12-C	118 (1044)	
F5-16-C		
F5-20-C		

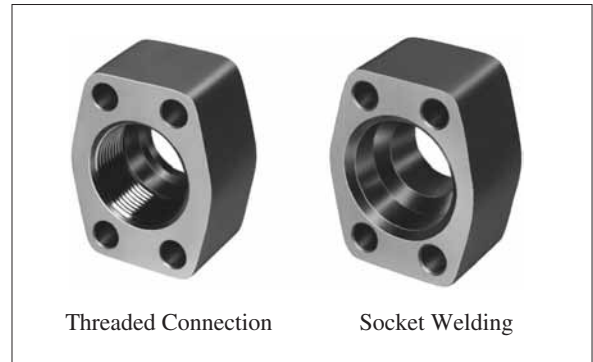
Note: The values of tightening torque above apply to when these flanges are used for pressure line.

“F6” Series Pipe Flange Kits

The dimensions of the flange mounting surface are based upon SAE 4 Bolt Split Flange (High Pressure Series).

Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Remarks
F6-*A-*-10/1080/1090	31 (4500)	Threaded Connection
F6-*-B-*-10/1090	42 (6090)	Pipe Socket Welding



Model Number Designation

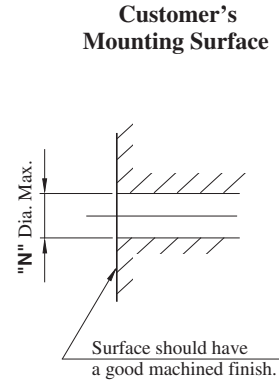
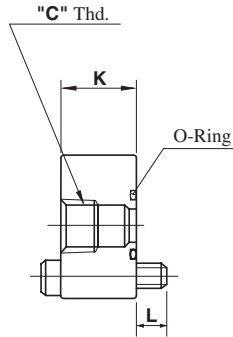
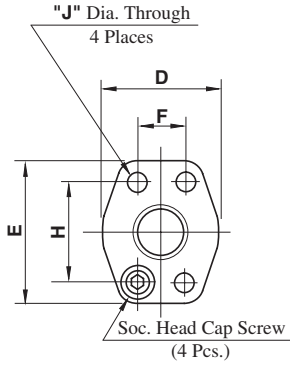
F-	F6	-06	-A	-M	-10	*	
Material of Seal	Series Number	Flange Size	Type of Pipe Connection	Type of Mounting Bolt	Design Number	Design Standards	
None: Standard NBR (Buna N) Seal	F6	04W, 04 06W, 06 08W, 08 10W, 10 12W, 12	A: Threaded Connection	M: Metric Thd.	10	None: Japanese Standard "JIS"	
		04W, 04 06W, 06 08W, 08 10W, 10 12W, 12		M: Metric Thd.		80: European Design Standard	
		04W, 04 06W, 06 08W, 08 10W, 10 12W, 12		U: Unified Thd.		90: N. American Design Standard	
F: FPM (Viton) Seal (For Synthetic Fluids)		04W, 04 06W, 06 08W, 08 10W, 10 12W, 12	B: Pipe Socket Welding	M: Metric Thd.		10	None: Japanese Standard "JIS" & European Design Standard
		04W, 04 06W, 06 08W, 08 10W, 10 12W, 12		U: Unified Thd.			90: N. American Design Standard
		04W, 04 06W, 06 08W, 08 10W, 10 12W, 12					

★ Three different design standards are available as shown below. Select the suitable design standard to your requirement.

Type of Pipe Connection	Design Standard	Pipe Thread	Mounting Bolt (Socket Head Cap Screw)
Threaded Connection	Japanese Standard "JIS"	Rc	Metric Thd.
	European Design Standard	BSP.F	Metric Thd.
	N. American Design Standard	NPT	Unified Thd.
Pipe Socket Welding	Japanese Standard "JIS" & European Design Standard	—	Metric Thd.
	N. American Design Standard	—	Unified Thd.

■ Threaded Connection

Japanese Standard "JIS" : F6-***-A-M-10
 N. American Design Standard : F6-***-A-U-1090



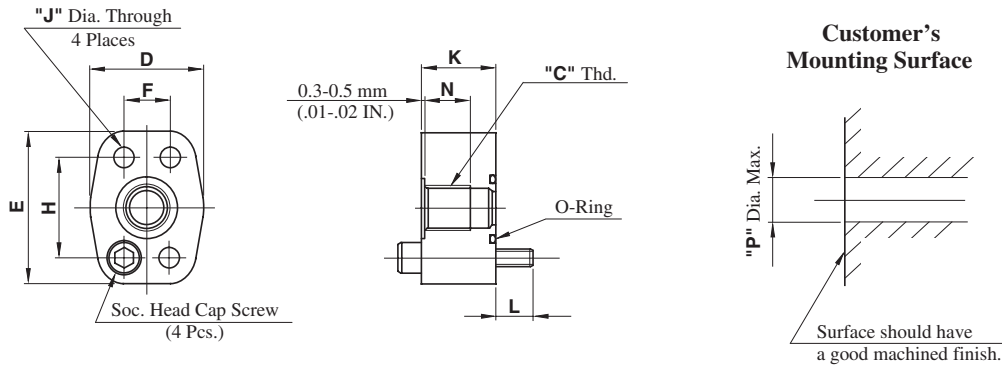
Kit Numbers	Piping Size "C" Thd.	Dimensions mm (Inches)								Socket Head Cap Screw (4 Pcs.)	O-Ring	Approx. ^{*1} Mass kg (lbs.)	Recommended ^{*2} Tightening Torque (Tolerance ±10%) Nm (IN.lbs.)
		D	E	F	H	J	K	L	N				
F6-04W-A-M-10	Rc 3/8	48 (1.89)	56.5 (2.22)	18.2 (.717)	40.5 (1.594)	8.8 (.346)	28 (1.10)	12 (.47)	15 (.59)	M8 × 40 Lg	SO-NB-P22	0.4 (.9)	35 (310)
F6-04-A-M-10	Rc 1/2												
F6-04W-A-U-1090	3/8 NPT						26 (1.02)	12.1 (.48)		5/16-18UNC × 1-1/2 Lg			
F6-04-A-U-1090	1/2 NPT												
F6-06W-A-M-10	Rc 1/2	57.5 (2.26)	77.5 (3.05)	23.8 (.937)	50.8 (2.000)	11 (.433)	30	15 (.59)	21 (.83)	M10 × 45 Lg	SO-NB-G30	0.9 (2.0)	68.5 (606)
F6-06-A-M-10	Rc 3/4												
F6-06W-A-U-1090	1/2 NPT						14.5 (.57)	3/8-16UNC × 1-3/4 Lg					
F6-06-A-U-1090	3/4 NPT												
F6-08W-A-M-10	Rc 3/4	65 (2.56)	81 (3.19)	27.8 (1.094)	57.2 (2.252)	13.5 (.531)	30 (1.18)	15 (.59)	26 (1.02)	M12 × 45 Lg.	SO-NB-G35	1.1 (2.4)	118 (1044)
F6-08-A-M-10	Rc 1												
F6-08W-A-U-1090	3/4 NPT						26.5 (1.04)	18 (.71)		7/16-14UNC × 1-3/4 Lg.			
F6-08-A-U-1090	1 NPT						34 (1.34)	16.8 (.66)		7/16-14UNC × 2 Lg.			
F6-10W-A-M-10	Rc 1	72 (2.83)	95 (3.74)	31.8 (1.252)	66.7 (2.626)	13.5 (.531)	34 (1.34)	16 (.63)	34 (1.34)	M12 × 50 Lg.	SO-NB-G40	1.3 (2.9)	118 (1044)
F6-10-A-M-10	Rc 1-1/4												
F6-10W-A-U-1090	1 NPT						34 (1.34)	16.8 (.66)		1/2-13UNC × 2 Lg.			
F6-10-A-U-1090	1-1/4 NPT						39 (1.54)	18.2 (.72)		1/2-13UNC × 2-1/4 Lg.			
F6-12W-A-M-10	Rc 1-1/4	90 (3.54)	113 (4.45)	36.5 (1.437)	79.4 (3.126)	17.5 (.689)	34 (1.34)	21 (.83)	44 (1.73)	M16 × 55 Lg.	SO-NB-G50	1.5 (3.3)	287 (2540)
F6-12-A-M-10	Rc 1-1/2												
F6-12W-A-U-1090	1-1/4 NPT						34 (1.34)	23.2 (.91)		5/8-11UNC × 2-1/4 Lg.			
F6-12-A-U-1090	1-1/2 NPT						39 (1.54)	24.5 (.96)		5/8-11UNC × 2-1/2 Lg.			

★1. Approx. mass is the value including socket head cap screws (4 Pcs.).

★2. The values of recommended tightening torque are for socket head cap screws.

■ Threaded Connection

European Design Standard : F6- *-A-M-1080



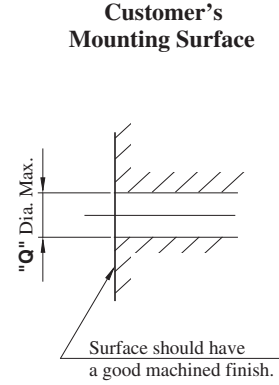
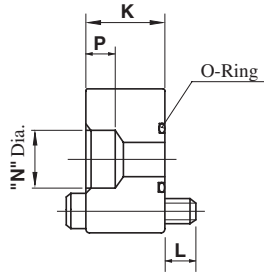
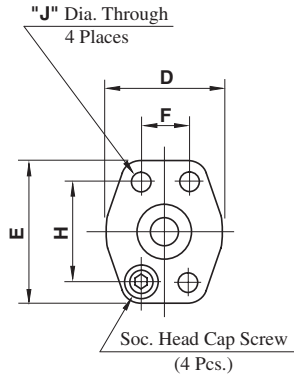
Kit Numbers	Piping Size "C" Thd.	Dimensions mm (Inches)										Socket Head Cap Screw (4 Pcs.)	O-Ring	Approx. Mass kg (lbs.) ^{*1}	Recommended Tightening Torque (Tolerance ±10%) Nm (IN.lbs.) ^{*2}
		D	E	F	H	J	K	L	N	P					
F6-04W-A-M-1080	3/8 BSP.F	48 (1.89)	56.5 (2.22)	18.2 (.717)	40.5 (1.594)	8.8 (.346)	28 (1.10)	12 (.47)	14 (.55)	15 (.59)		M8 × 40 Lg.	SO-NB-P22	0.4 (.9)	35 (310)
F6-04-A-M-1080	1/2 BSP.F								17 (.67)						
F6-06W-A-M-1080	1/2 BSP.F	57.5 (2.26)	77.5 (3.05)	23.8 (.937)	50.8 (2.000)	11 (.433)	30 (1.18)	15 (.59)	17 (.67)	21 (.83)		M10 × 45 Lg.	SO-NB-G30	0.9 (2.0)	68.5 (606)
F6-06-A-M-1080	3/4 BSP.F								20 (.79)						
F6-08W-A-M-1080	3/4 BSP.F	65 (2.56)	81 (3.19)	27.8 (1.094)	57.2 (2.252)	13.5 (.531)	30 (1.18)	15 (.59)	20 (.79)	26 (1.02)		M12 × 45 Lg.	SO-NB-G35	1.1 (2.4)	118 (1044)
F6-08-A-M-1080	1 BSP.F						34 (1.34)	16 (.63)	21 (.83)		M12 × 50 Lg.				
F6-10W-A-M-1080	1 BSP.F	72 (2.83)	95 (3.74)	31.8 (1.252)	66.7 (2.626)	13.5 (.531)	34 (1.34)	16 (.63)	21 (.83)	34 (1.34)		M12 × 50 Lg.	SO-NB-G40	1.3 (2.9)	118 (1044)
F6-10-A-M-1080	1-1/4 BSP.F						39 (1.54)		22 (.87)		M12 × 55 Lg.				
F6-12W-A-M-1080	1-1/4 BSP.F	90 (3.54)	113 (4.45)	36.5 (1.437)	79.4 (3.126)	17.5 (.689)	34 (1.34)	21 (.83)	22 (.87)	44 (1.73)		M16 × 55 Lg.	SO-NB-G50	1.5 (3.3)	287 (2540)
F6-12-A-M-1080	1-1/2 BSP.F						39 (1.54)				M16 × 60 Lg.				

★1. Approx. mass is the value including socket head cap screws (4 Pcs.).

★2. The values of recommended tightening torque are for socket head cap screw.

■ Socket Welding

Japanese Standard "JIS" & European Design Standard : F6- *-B-M-10
 N. American Design Standard : F6- *-B-U-1090



Kit Numbers	Piping Size	Dimensions mm (Inches)										Socket Head Cap Screw (4 Pcs.)	O-Ring	Approx. Mass kg (lbs.) ^{*1}	Recommended Tightening Torque (Tolerance ±10%) Nm (IN.lbs.) ^{*2}			
		D	E	F	H	J	K	L	N	P	Q							
F6-04W-B-M-10 ----- F6-04W-B-U-1090	3/8	48 (1.89)	56.5 (2.22)	18.2 (.717)	40.5 (1.594)	8.8 (.346)	28 (1.10)	12 (.47)	17.8 (.701)	9 (.35)	15 (.59)	M8 × 40 Lg.	SO-NB-P22	0.4 (.9)	35 (310)			
26 (1.02)							12.1 (.48)	5/16-18UNC × 1-1/2 Lg.										
F6-04-B-M-10 ----- F6-04-B-U-1090	1/2	48 (1.89)	56.5 (2.22)	18.2 (.717)	40.5 (1.594)	8.8 (.346)	28 (1.10)	12 (.47)	22.2 (.874)	11 (.43)	15 (.59)	M8 × 40 Lg.				SO-NB-P22	0.4 (.9)	35 (310)
26 (1.02)							12.1 (.48)	5/16-18UNC × 1-1/2 Lg.										
F6-06W-B-M-10 ----- F6-06W-B-U-1090	1/2	57.5 (2.26)	77.5 (3.05)	23.8 (.937)	50.8 (2.000)	11 (.433)	30 (1.18)	15 (.59)	22.2 (.874)	11 (.43)	21 (.83)	M10 × 45 Lg.	SO-NB-G30	0.9 (2.0)	68.5 (606)			
14.5 (.57)							15 (.59)	3/8-16UNC × 1-3/4 Lg.										
F6-06-B-M-10 ----- F6-06-B-U-1090	3/4	57.5 (2.26)	77.5 (3.05)	23.8 (.937)	50.8 (2.000)	11 (.433)	30 (1.18)	15 (.59)	27.7 (1.091)	12 (.47)	21 (.83)	M10 × 45 Lg.				SO-NB-G30	0.9 (2.0)	68.5 (606)
14.5 (.57)							15 (.59)	3/8-16UNC × 1-3/4 Lg.										
F6-08W-B-M-10 ----- F6-08W-B-U-1090	3/4	65 (2.56)	81 (3.19)	27.8 (1.094)	57.2 (2.252)	13.5 (.531)	30 (1.18)	15 (.59)	27.7 (1.091)	12 (.47)	26 (1.02)	M12 × 45 Lg.	SO-NB-G35	1.1 (2.4)	118 (1044)			
26.5 (1.04)							18 (.71)	7/16-14UNC × 1-3/4 Lg.										
F6-08-B-M-10 ----- F6-08-B-U-1090	1	65 (2.56)	81 (3.19)	27.8 (1.094)	57.2 (2.252)	13.5 (.531)	30 (1.18)	15 (.59)	34.5 (1.358)	14 (.55)	26 (1.02)	M12 × 45 Lg.				SO-NB-G35	1.1 (2.4)	118 (1044)
26.5 (1.04)							18 (.71)	7/16-14UNC × 1-3/4 Lg.										
F6-10W-B-M-10 ----- F6-10W-B-U-1090	1	72 (2.83)	95 (3.74)	31.8 (1.252)	66.7 (2.626)	13.5 (.531)	34 (1.34)	16 (.63)	34.5 (1.358)	14 (.55)	34 (1.34)	M12 × 50 Lg.	SO-NB-G40	1.3 (2.9)	118 (1044)			
16.8 (.66)							16 (.63)	1/2-13UNC × 2 Lg.										
F6-10-B-M-10 ----- F6-10-B-U-1090	1-1/4	72 (2.83)	95 (3.74)	31.8 (1.252)	66.7 (2.626)	13.5 (.531)	34 (1.34)	16 (.63)	43.2 (1.701)	16 (.63)	34 (1.34)	M12 × 50 Lg.				SO-NB-G40	1.3 (2.9)	118 (1044)
16.8 (.66)							16 (.63)	1/2-13UNC × 2 Lg.										
F6-12W-B-M-10 ----- F6-12W-B-U-1090	1-1/4	90 (3.54)	113 (4.45)	36.5 (1.437)	79.4 (3.126)	17.5 (.689)	34 (1.34)	21 (.83)	43.2 (1.701)	16 (.63)	44 (1.73)	M16 × 55 Lg.	SO-NB-G50	1.5 (3.3)	287 (2540)			
23.2 (.91)							23.2 (.91)	5/8-11UNC × 2-1/4 Lg.										
F6-12-B-M-10 ----- F6-12-B-U-1090	1-1/2	90 (3.54)	113 (4.45)	36.5 (1.437)	79.4 (3.126)	17.5 (.689)	34 (1.34)	21 (.83)	49.1 (1.933)	18 (.71)	44 (1.73)	M16 × 55 Lg.				SO-NB-G50	1.5 (3.3)	287 (2540)
23.2 (.91)							23.2 (.91)	5/8-11UNC × 2-1/4 Lg.										

★1. Approx. mass is the value including socket head cap screws (4 Pcs.).
 ★2. The values of recommended tightening torque are for socket head cap screws.