

# Orifice Flange Assemblies

## Model NOF

Model NOF Orifice Flange Assemblies are used in conjunction with Orifice Plates (Model NOP) for flow measurement of smaller or medium size pipes at lower or medium pressure ranges. The flange connection is of an RF type and the differential pressure tapping system is with flange taps.

### Standard Specifications

#### Nominal diameters:

40 mm (1½") to 350 mm (14")

#### Flange ratings:

JIS 10, 20, 30 kgf/cm<sup>2</sup> RF

ANSI (or JPI) 150, 300, 600 1b RF

(Note: ANSI and JPI flanges are identical except that bevel angles are different.)

#### Piping connection method:

JIS 10 kgf/cm<sup>2</sup>: Insertion welding type (slip-on type)

JIS 20, 30 kgf/cm<sup>2</sup>, ANSI and JPI:  
Butt welding type (welded neck)

#### Flange material:

SF45A<sup>(\*2)</sup>, SUSF304, SUSF316

#### Differential pressure piping connection:

Select referring to the model number construction table.

#### Materials of bolts and nuts<sup>(\*3)</sup>:

Through-bolts: SNB7

Nuts: S45C

Jack bolts and nuts: S25C

#### Gaskets:

JIS 10, 20 kg/cm<sup>2</sup>, and ANSI (or JPI) 150, 300 lb

Material: Asbestos sheet gasket

Thickness: 1.5mm

Manufacturer's Type No.: V-1501AC or T-1100S

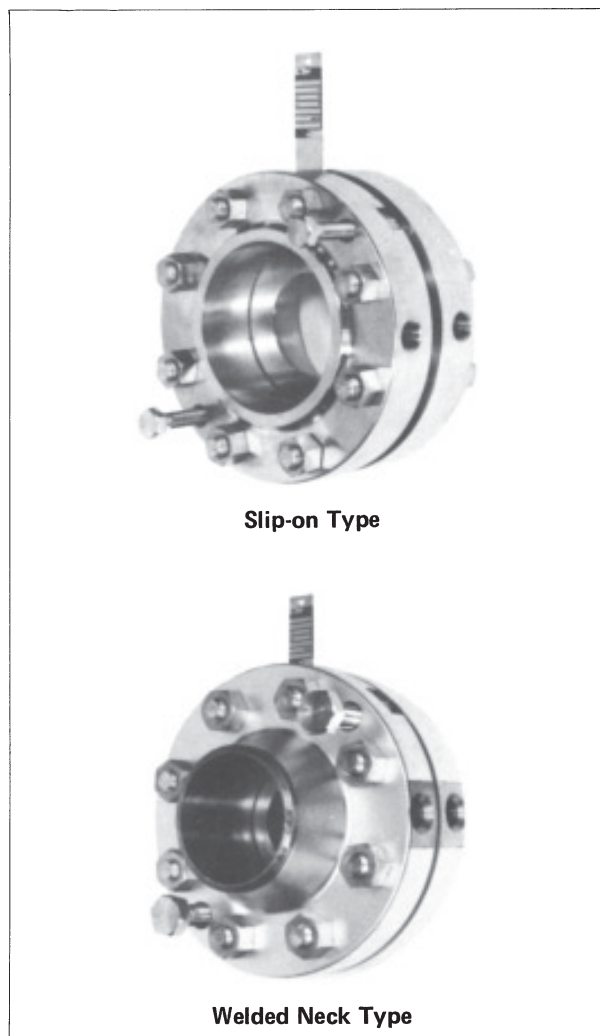
(Note: Vortex gaskets and other special types of gaskets also are available.)

JIS 30 kg/cm<sup>2</sup>, and ANSI (or JPI) 600 lb

Material: Vortex gaskets with inside and outside rings

Thickness: 4.5mm

Manufacturer's Type No.: V-596 or T-1834R (Inside/outside rings and hoops are made of SUS304.)



Slip-on Type

Welded Neck Type

#### Notes:

(\*1): Other materials also are available.





Examples: SFHV12B (ASTM F1 equivalent),  
SFHV23B (ASTM F11 equivalent)

(\*2): Azbil Corporation standard SF45A steel is produced by forging JIS structural carbon steel S25C to provide an identical mechanical strength with that of JIS SF45A steel.

(\*3): Select bolts and nuts depending on the fluid temperature and referring to the following table.

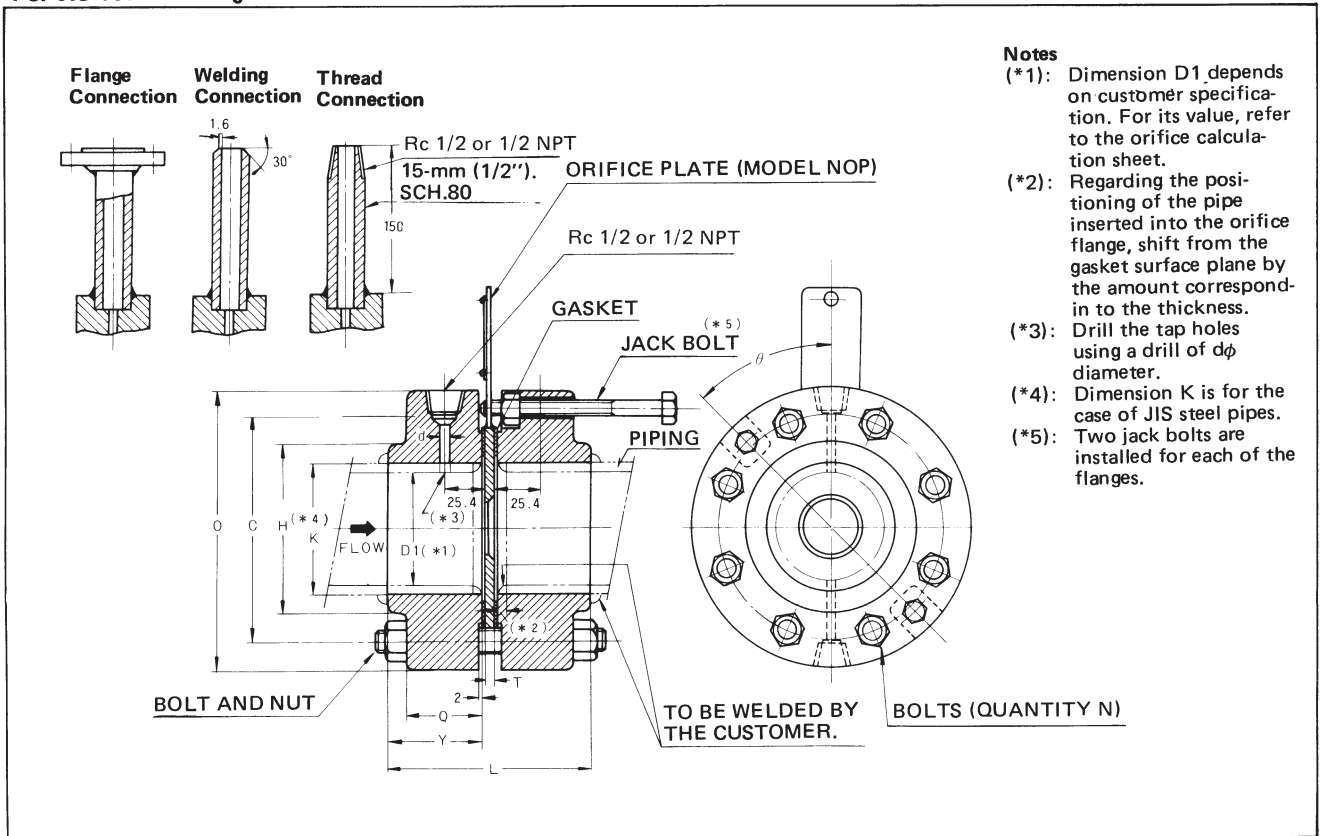
Parts	Fluid temperature	
	-45° C or below	-45° C ~ 400° C
Bolts	SUS 304	SCM3
Nuts	SUS 304	S45C
Jack bolts and nuts	SUS 304	S25C

Model No. Table

Basic model no.	Selectable specifications						Optional specifications (orifice plate)					Description
	I	II	III	IV	V	VI	VII	VIII		IX	X	
	Specifi- cation	Pressure rating	Nominal pipe diameter	Flange material	Diff. press. connection method	Bolt/nut material	Orifice bore	Tapping system	Available range		Material	
NOF												Orifice Flange Assembly
-J	010											JIS 10KRF
	020											" 20KRF
	030											" 30KRF
-P	150											JPI 150RF
	300											" 300RF
	600											" 600RF
-A	150											ANSI 150RF
	300											" 300RF
	600											" 600RF
			040						○ ○			Pipe size 40 mm (1½")
			050						○ ○			" 50 mm (2")
			065						○ ○			" 65 mm (2½")
			080						○ ○			" 80 mm (3")
			090						○ ○			" 90 mm (3½")
			100						○ ○ ○ ○			" 100 mm (4")
			125						○ ○ ○ ○			" 125 mm (5")
			150						○ ○ ○ ○			" 150 mm (6")
			200						○ ○ ○ ○			" 200 mm (8")
			250						○ ○ ○ ○			" 250 mm (10")
			300						○ ○ ○ ○			" 300 mm (12")
			350						○ ○ ○ ○			" 350 mm (14")
				1								SF45A
				2								SUSF316
				7								SUSF304
				A								Rc 1/2 internal thread
				B								1/2 NPT internal thread
				C								Nipple with Rc 1/2 external thread
				D								Nipple with 1/2 NPT external thread
				E								Nipple with bevel
				F								With nipple flange
					1							SNB7/S45C
					2							SUS304/SUS304
												-C 2 
												-Q 2 
												-E 2 
												-S 2 
												-X
										2		SUS316
										7		SUS304
											02	2mm
											03	3mm
											05	5mm
											08	8mm
											10	10mm

# Dimension Drawings

## For JIS 10K RF flanges



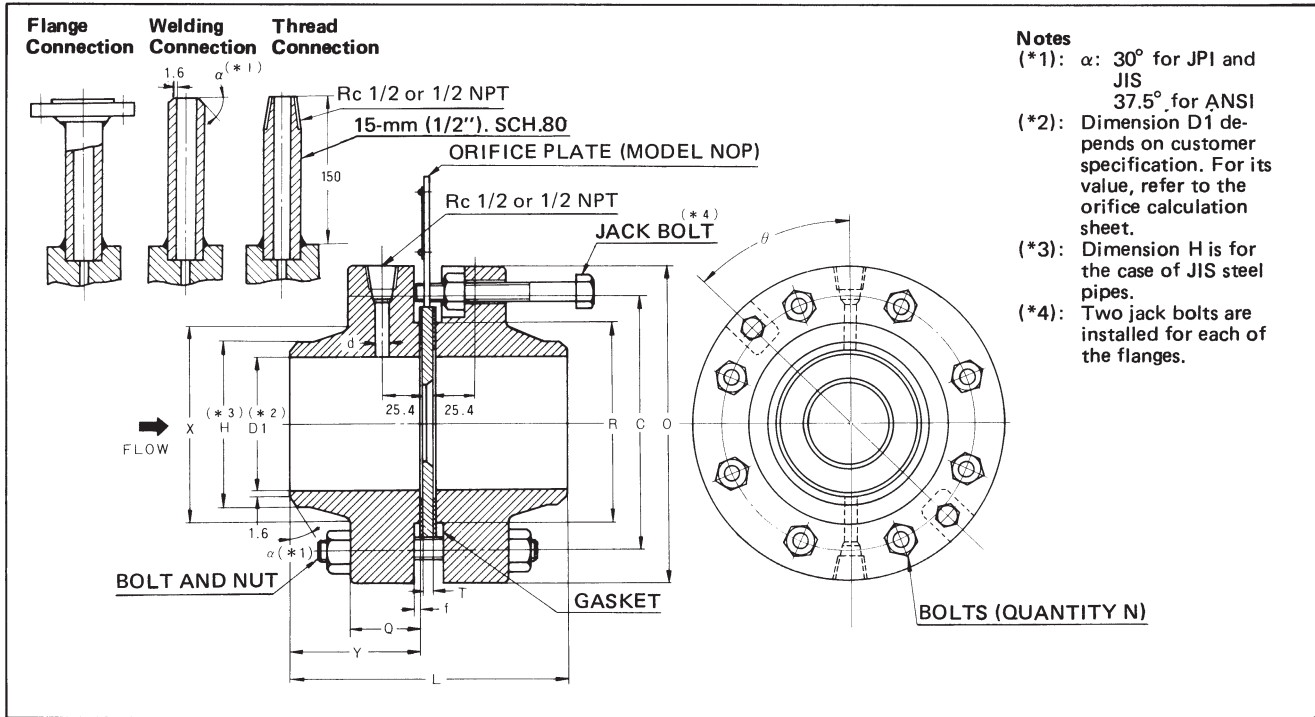
## For JIS 10K RF flanges

(Unit: mm)

Nominal pipe diameter (mm)	Flange OD O	Flange thickness Q	OD of hub welded section H	Pipe OD	Flange ID K	Flange length Y	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
40	140	40	64	48.6	49.1	46	6.5	105	4	M16	72°	95 + T
50	155	40	76	60.5	61.1	46	6.5	120	4	M16	72°	95 + T
65	175	40	92	76.3	77.1	46	6.5	140	4	M16	72°	95 + T
80	185	40	108	89.1	90.0	46	10	150	8	M16	45°	95 + T
90	195	40	120	101.6	102.6	46	10	160	8	M16	45°	95 + T
100	210	40	134	114.3	115.4	46	13	175	8	M16	45°	95 + T
125	250	40	160	139.8	141.2	46	13	210	8	M20	45°	95 + T
150	280	40	188	165.2	166.6	46	13	240	8	M20	45°	95 + T
200	330	40	236	216.3	218.0	46		290	12	M20	30°	95 + T
250	400	40	292	267.4	269.5	50	13	355	12	M22	30°	103 + T
300	445	40	346	318.5	321.0	52	13	400	16	M22	22.5°	107 + T
350	490	40	386	355.6	358.1	54	13	445	16	M22	22.5°	111 + T

## Dimension Drawings

For JIS 20K, 30K, and ANSI (or JPI) 150, 300, 600 lb RF flanges



## Table of Dimensions

### For JIS 20K RF Flange

(Unit: mm)

Nominal pipe diameter (mm)	Flange OD O	Flange thickness Q	OD of hub welded section H	Hub root diameter X	Flange length Y	Gasket plane diameter R	Gasket plane height f	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
40	140	40	48.6	66	68	85	2	6.5	105	4	M16	72°	139 + T
50	155	40	60.5	80	70	100	2	6.5	120	8	M16	45°	143 + T
65	175	40	76.3	104	75	120	2	6.5	140	8	M16	45°	153 + T
80	200	40	89.1	117	77	135	2	10	160	8	M20	45°	157 + T
90	210	40	101.6	130	76	145	2	10	170	8	M20	45°	155 + T
100	225	40	114.3	142	78	160	2	13	185	8	M20	45°	159 + T
125	270	40	139.8	172	86	195	2	13	225	8	M22	45°	175 + T
150	305	40	165.2	202	99	230	2	13	260	12	M22	30°	201 + T
200	350	40	216.3	252	98	275	2	13	305	12	M22	30°	199 + T
250	430	40	267.4	312	109	345	2	13	380	12	M24	30°	221 + T
300	480	40	318.5	364	115	395	3	13	430	16	M24	22.5°	233 + T
350	540	45	355.6	408	126	440	3	13	480	16	M30	22.5°	255 + T

### For JIS 30K RF Flange

(Unit: mm)

Nominal pipe diameter (mm)	Flange OD O	Flange thickness Q	OD of hub welded section H	Hub root diameter X	Flange length Y	Gasket plane diameter R	Gasket plane height f	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
40	160	40	48.6	70	75	90	2	6.5	120	4	M20	72°	159 + T
50	165	40	60.5	84	77	105	2	6.5	130	8	M16	45°	163 + T
65	200	40	76.3	104	88	130	2	6.5	160	8	M20	45°	185 + T
80	210	40	89.1	118	89	140	2	10	170	8	M20	45°	187 + T
90	230	40	101.6	130	89	150	2	10	185	8	M22	45°	187 + T
100	240	40	114.3	142	88	160	2	13	195	8	M22	45°	185 + T
125	275	40	139.8	172	93	195	2	13	230	8	M22	45°	195 + T
150	325	40	165.2	202	104	235	2	13	275	12	M24	30°	217 + T
200	370	42	216.3	254	109	280	2	13	320	12	M24	30°	227 + T
250	450	48	267.4	312	129	345	2	13	390	12	M30	30°	267 + T
300	515	52	318.5	366	141	405	3	13	450	16	M30	22.5°	291 + T
350	560	54	355.6	406	147	450	3	13	495	16	M30	22.5°	303 + T

**For ANSI (or JPI) 150 lb RF flanges**

(Unit: mm)

Nominal pipe diameter (inch)	Flange OD O	Flange thickness Q	OD of hub welded section H	Hub root diameter X	Flange length Y	Gasket plane diameter R	Gasket plane height f	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
1-1/2	127	40	48.6	65	83	73	1.6	6.5	98.5	4	1/2	72°	169 + T
2	152	40	60.5	78	83	92	1.6	6.5	120.5	4	5/8	72°	169 + T
2-1/2	178	40	76.3	90	86	105	1.6	6.5	139.5	4	5/8	72°	175 + T
3	190	40	89.1	108	86	127	1.6	10	152.5	4	5/8	72°	175 + T
3-1/2	216	40	101.6	122	86	140	1.6	10	178	8	5/8	45°	175 + T
4	229	40	114.3	135	90	157	1.6	13	190.5	8	5/8	45°	183 + T
5	254	40	139.8	164	90	186	1.6	13	216	8	3/4	45°	183 + T
6	279	40	165.2	192	102	216	1.6	13	241.5	8	3/4	45°	207 + T
8	343	40	216.3	246	111	270	1.6	13	298.5	8	3/4	45°	225 + T
10	406	40	267.4	305	111	324	1.6	13	362	12	7/8	30°	225 + T
12	483	40	318.5	365	121	381	1.6	13	432	12	7/8	30°	245 + T
14	533	40	355.6	400	130	413	1.6	13	476	12	1	30°	263 + T

**For ANSI (or JPI) 300 lb RF flanges**

(Unit:mm)

Nominal pipe diameter (inch)	Flange OD O	Flange thickness Q	OD of hub welded section H	Hub root diameter X	Flange length Y	Gasket plane diameter R	Gasket plane height f	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
1-1/2	156	40	48.6	70	86	73	1.6	6.5	114.5	4	3/4	72°	175 + T
2	165	40	60.5	84	86	92	1.6	6.5	127	8	5/8	45°	175 + T
2-1/2	190	40	76.3	100	89	105	1.6	6.5	149	8	3/4	45°	181 + T
3	210	40	89.1	117	89	127	1.6	10	168	8	3/4	45°	181 + T
3-1/2	229	40	101.6	133	89	140	1.6	10	184	8	3/4	45°	181 + T
4	254	40	114.3	146	92	157	1.6	13	200	8	3/4	45°	187 + T
5	279	40	139.8	178	100	186	1.6	13	235	8	3/4	45°	203 + T
6	318	40	165.2	206	100	216	1.6	13	270	12	3/4	30°	203 + T
8	381	42	216.3	260	112	270	1.6	13	330	12	7/8	30°	227 + T
10	444	48	267.4	321	118	324	1.6	13	387.5	16	1	22.5°	239 + T
12	521	51	318.5	375	131	381	1.6	13	451	16	1-1/8	22.5°	265 + T
14	584	54	355.6	425	143	413	1.6	13	514.5	20	1-1/8	18°	289 + T

**For ANSI (or JPI) 600 lb RF flanges**

(Unit: mm)

Nominal pipe diameter (inch)	Flange OD O	Flange thickness Q	OD of hub welded section H	Hub root diameter X	Flange length Y	Gasket plane diameter R	Gasket plane height f	Tap hole diameter d	Bolt hole diameter C	No. of bolts N	Bolt size	Position of jack bolt $\theta$	Face-to-face distance L
1-1/2	156	40	48.6	70	92	73	1.6	6.5	114.5	4	3/4	72°	193 + T
2	165	40	60.5	84	92	92	1.6	6.5	127	8	5/8	45°	193 + T
2-1/2	190	40	76.3	100	95	105	1.6	6.5	149	8	3/4	45°	199 + T
3	210	40	89.1	117	95	127	1.6	10	168	8	3/4	45°	199 + T
3-1/2	229	42	101.6	133	95	140	1.6	10	184	8	7/8	45°	199 + T
4	273	45	114.3	152	108	157	1.6	13	216	8	7/8	45°	225 + T
5	330	51	139.8	189	121	186	1.6	13	266.5	8	1	45°	251 + T
6	356	55	165.2	222	124	216	1.6	13	292	12	1	30°	257 + T
8	419	62	216.3	273	140	270	1.6	13	349	12	1-1/8	30°	289 + T
10	508	70	267.4	343	159	324	1.6	13	432	16	1-1/4	22.5°	327 + T
12	559	74	318.5	400	162	381	1.6	13	489	20	1-1/4	18°	333 + T
14	603	77	355.6	432	171	413	1.6	13	527	20	1-3/8	18°	351 + T





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6th Edition: Issued in Mar. 2015

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