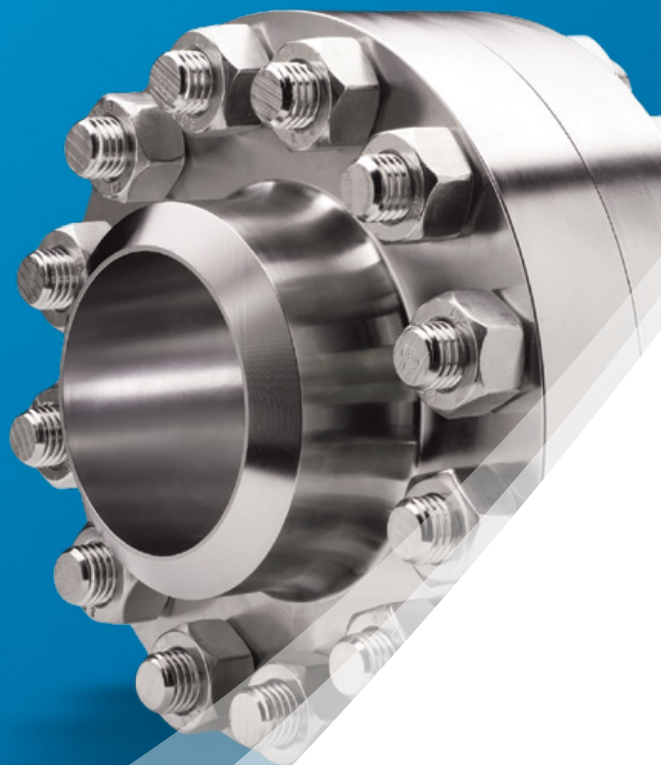


VECTOR SPO® COMPACT FLANGE

TECHNICAL BROCHURE





CLASS CL150	2
FIGURE FLANGE TYPES	2
DIMENSIONAL DATA	3
WEIGHT DATA	5
STUD BOLT LENGTH	7
STUD BOLT WEIGHT	9

CLASS CL300	11
FIGURE FLANGE TYPES	11
DIMENSIONAL DATA	12
WEIGHT DATA	14
STUD BOLT LENGTH	17
STUD BOLT WEIGHT	19

CLASS CL600	21
FIGURE FLANGE TYPES	21
DIMENSIONAL DATA	22
WEIGHT DATA	23
STUD BOLT LENGTH	27
STUD BOLT WEIGHT	28

CLASS CL900	29
FIGURE FLANGE TYPES	29
DIMENSIONAL DATA	30
WEIGHT DATA	31
STUD BOLT LENGTH	35
STUD BOLT WEIGHT	36

CLASS CL1500	37
FIGURE FLANGE TYPES	37
DIMENSIONAL DATA	38
WEIGHT DATA	39
STUD BOLT LENGTH	43
STUD BOLT WEIGHT	44

CLASS CL2500	45
FIGURE FLANGE TYPES	45
DIMENSIONAL DATA	46
WEIGHT DATA	47
STUD BOLT LENGTH	50
STUD BOLT WEIGHT	51

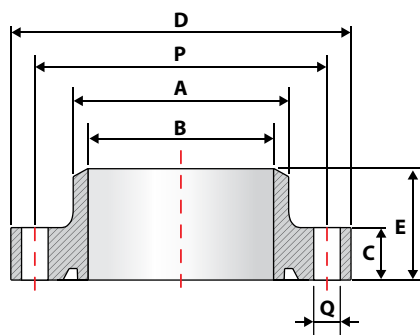
CLASS 5K	52
FIGURE FLANGE TYPES	52
DIMENSIONAL DATA	53
WEIGHT DATA	54
STUD BOLT LENGTH	57
STUD BOLT WEIGHT	58

CLASS 7.5K	59
FIGURE FLANGE TYPES	59
DIMENSIONAL DATA	60
WEIGHT DATA	61
STUD BOLT LENGTH	64
STUD BOLT WEIGHT	65

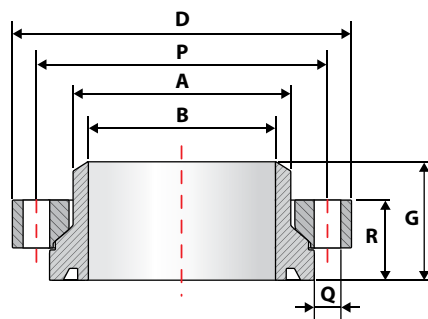
CLASS 10K	66
FIGURE FLANGE TYPES	66
DIMENSIONAL DATA	67
WEIGHT DATA	68
STUD BOLT LENGTH	71
STUD BOLT WEIGHT	72

CLASS 15K	73
FIGURE FLANGE TYPES	73
DIMENSIONAL DATA	74
WEIGHT DATA	75
STUD BOLT LENGTH	78
STUD BOLT WEIGHT	79

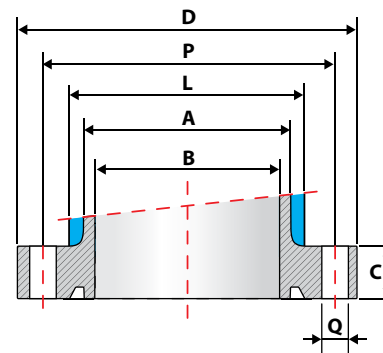
Weld Neck



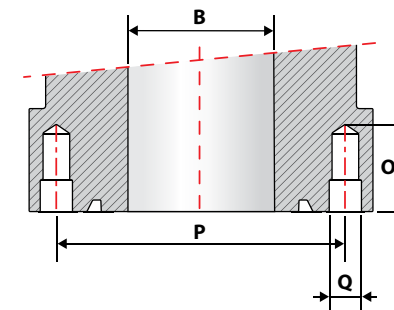
Swivel



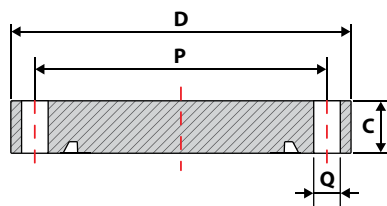
Integral



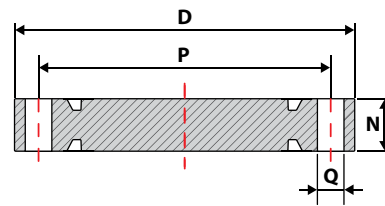
Rigid Interface



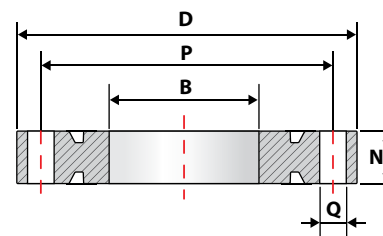
Blind



Paddle Blank



Paddle Spacer



Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	15	0.59	93	3.66	40	1.57	49	1.93	22	0.87	17	0.67	28	1.10	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	15	0.59	98	3.86	40	1.57	49	1.93	31	1.22	18	0.71	28	1.10	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	15	0.59	105	4.13	40	1.57	50	1.97	39	1.54	19	0.75	28	1.10	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.68	15	0.59	120	4.72	41	1.61	51	2.01	52	2.05	22	0.87	29	1.14	42	1.65	94.3	3.71	15	0.59	4	1/2
2	50	60.3	2.37	54.8	2.16	15	0.59	132	5.20	42	1.65	53	2.09	67	2.64	23	0.91	30	1.18	42	1.65	106.3	4.19	15	0.59	4	1/2
2 1/2	65	73.0	2.87	66.9	2.63	16	0.63	145	5.71	43	1.69	54	2.13	80	3.15	23	0.91	32	1.26	42	1.65	119.0	4.69	15	0.59	8	1/2
3	80	88.9	3.50	82.8	3.26	18	0.71	161	6.34	46	1.81	62	2.44	94	3.70	24	0.94	39	1.54	42	1.65	134.9	5.31	15	0.59	8	1/2
4	100	114.3	4.50	108.2	4.26	22	0.87	186	7.32	51	2.01	70	2.76	122	4.80	25	0.98	42	1.65	42	1.65	160.3	6.31	15	0.59	8	1/2
5	125	141.3	5.56	134.5	5.30	25	0.98	213	8.39	55	2.17	77	3.03	149	5.87	29	1.14	48	1.89	42	1.65	187.3	7.37	15	0.59	12	1/2
6	150	168.3	6.63	161.5	6.36	28	1.10	240	9.45	60	2.36	80	3.15	178	7.01	32	1.26	50	1.97	42	1.65	214.3	8.44	15	0.59	12	1/2
8	200	219.1	8.63	211.6	8.33	30	1.18	294	11.57	65	2.56	81	3.19	232	9.13	33	1.30	49	1.93	42	1.65	268.1	10.55	15	0.59	12	1/2
10	250	273.1	10.75	264.7	10.42	32	1.26	355	13.98	70	2.76	87	3.43	293	11.54	38	1.50	54	2.13	42	1.65	329.3	12.96	15	0.59	16	1/2
12	300	323.9	12.75	314.8	12.39	35	1.38	403	15.87	76	2.99	92	3.62	340	13.39	42	1.65	58	2.28	42	1.65	376.7	14.83	15	0.59	20	1/2
14	350	355.6	14.00	346.0	13.62	38	1.50	437	17.20	82	3.23	96	3.78	375	14.76	44	1.73	62	2.44	42	1.65	411.5	16.20	15	0.59	20	1/2
16	400	406.4	16.00	396.8	15.62	42	1.65	505	19.88	88	3.46	103	4.06	430	16.93	48	1.89	69	2.72	52	2.05	473.4	18.64	18	0.71	20	5/8
18	450	457.2	18.00	447.6	17.62	46	1.81	552	21.73	94	3.70	110	4.33	478	18.82	52	2.05	75	2.95	52	2.05	520.9	20.51	18	0.71	20	5/8
20	500	508.0	20.00	496.9	19.56	50	1.97	606	23.86	100	3.94	118	4.65	532	20.94	56	2.20	82	3.23	52	2.05	574.7	22.63	18	0.71	24	5/8
22	550	558.8	22.00	547.7	21.56	54	2.13	661	26.02	106	4.17	125	4.92	586	23.07	59	2.32	89	3.50	52	2.05	629.1	24.77	18	0.71	28	5/8
24	600	609.6	24.00	596.9	23.50	59	2.32	730	28.74	112	4.41	133	5.24	641	25.24	63	2.48	97	3.82	62	2.44	693.0	27.28	22	0.87	24	3/4
26	650	660.4	26.00	644.6	25.38	64	2.52	784	30.87	118	4.65	141	5.55	695	27.36	66	2.60	105	4.13	62	2.44	746.8	29.40	22	0.87	24	3/4
28	700	711.2	28.00	695.4	27.38	68	2.68	839	33.03	124	4.88	149	5.87	749	29.49	70	2.76	112	4.41	62	2.44	801.2	31.54	22	0.87	28	3/4
30	750	762.0	30.00	746.2	29.38	72	2.83	893	35.16	130	5.12	156	6.14	804	31.65	73	2.87	119	4.69	62	2.44	855.5	33.68	22	0.87	32	3/4
32	800	812.8	32.00	797.0	31.38	76	2.99	945	37.20	136	5.35	164	6.46	856	33.70	76	2.99	125	4.92	62	2.44	908.0	35.75	22	0.87	36	3/4
34	850	863.6	34.00	847.8	33.38	79	3.11	998	39.29	142	5.59	170	6.69	909	35.79	79	3.11	131	5.16	62	2.44	960.5	37.82	22	0.87	40	3/4
36	900	914.4	36.00	898.6	35.38	84	3.31	1059	41.69	148	5.83	176	6.93	955	37.60	82	3.23	138	5.43	72	2.83	1016.6	40.02	25	0.98	32	7/8
38	950	965.2	38.00	946.1	37.25	88	3.46	1114	43.86	154	6.06	184	7.24	1010	39.76	85	3.35	145	5.71	72	2.83	1071.6	42.19	25	0.98	36	7/8
40	1000	1016.0	40.00	996.9	39.25	92	3.62	1172	46.14	160	6.30	192	7.56	1067	42.01	88	3.46	152	5.98	72	2.83	1129.2	44.46	25	0.98	40	7/8
42	1050	1066.8	42.00	1047.7	41.25	95	3.74	1219	47.99	166	6.54	197	7.76	1114	43.86	91	3.58	157	6.18	72	2.83	1176.2	46.31	25	0.98	44	7/8
44	1100	1117.6	44.00	1098.5	43.25	99	3.90	1271	50.04	172	6.77	204	8.03	1166	45.91	95	3.74	163	6.42	72	2.83	1228.3	48.36	25	0.98	44	7/8
46	1150	1168.4	46.00	1149.3	45.25	102	4.02	1323	52.09	178	7.01	210	8.27	1218	47.95	98	3.86	168	6.61	72	2.83	1280.3	50.41	25	0.98	48	7/8
48	1200	1219.2	48.00	1200.1	47.25	106	4.17	1376	54.17	184	7.24	217	8.54	1271	50.04	100	3.94	175	6.89	72	2.83	1332.9	52.48	25	0.98	52	7/8

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.
- 4) Since August 2015 we follow for CL150 and CL300 our new improved standard, the SPO-C CF. This range is also suitable for cryogenic applications.
Previous standard dimensions for CL150 and CL300 available on request.



Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
50	1250	1270.0	50.00	1250.9	49.25	112	4.41	1415	55.71	190	7.48			1297	51.06	102	4.02			81	3.19	1365.0	53.74	29	1.14	36	1
52	1300	1320.8	52.00	1295.4	51.00	116	4.57	1465	57.68	196	7.72			1347	53.03	106	4.17			81	3.19	1415.0	55.71	29	1.14	40	1
54	1350	1371.6	54.00	1346.2	53.00	120	4.72	1520	59.84	202	7.95			1402	55.20	109	4.29			81	3.19	1470.0	57.87	29	1.14	44	1
56	1400	1422.4	56.00	1397.0	55.00	125	4.92	1570	61.81	210	8.27			1452	57.17	112	4.41			81	3.19	1520.0	59.84	29	1.14	48	1
58	1450	1473.2	58.00	1447.8	57.00	135	5.31	1620	63.78	218	8.58			1502	59.13	115	4.53			81	3.19	1570.0	61.81	29	1.14	48	1
60	1500	1524.0	60.00	1498.6	59.00	140	5.51	1675	65.94	225	8.86			1557	61.30	119	4.69			81	3.19	1625.0	63.98	29	1.14	52	1
62	1550	1574.8	62.00	1549.4	61.00	140	5.51	1735	68.31	232	9.13			1607	63.27	122	4.80			90	3.54	1680.0	66.14	32	1.26	48	1 1/8
64	1600	1625.6	64.00	1600.2	63.00	150	5.91	1787	70.35	240	9.45			1657	65.24	125	4.92			90	3.54	1730.0	68.11	32	1.26	48	1 1/8

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.
- 4) Values for G and R, for nominal size from 50" to 64" available on request.
- 5) Since August 2015 we follow for CL150 and CL300 our new improved standard, the SPO-C CF. This range is also suitable for cryogenic applications.
Previous standard dimensions for CL150 and CL300 available on request.



Vector SPO® Compact Flange

CL150

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	10S	2.11	0.68	0.68	0.15	0.95	1.1	0.74	0.71
1/2	15	40	2.77	0.69		0.16		1.1		0.72
1/2	15	80	3.73	0.70		0.18		1.1		0.72
3/4	20	10S	2.11	0.75	0.76	0.17	1.0	1.2	0.89	0.83
3/4	20	40	2.87	0.77		0.19		1.2		0.84
3/4	20	80	3.91	0.79		0.22		1.3		0.85
1	25	10S	2.77	0.87	0.88	0.24	1.2	1.4	1.1	1.0
1	25	40	3.38	0.89		0.26		1.4		1.0
1	25	80	4.55	0.92		0.30		1.5		1.0
1 1/2	40	10S	2.77	1.1	1.2	0.35	1.4	1.8	1.7	1.5
1 1/2	40	40	3.68	1.1		0.40		1.8		1.5
1 1/2	40	80	5.08	1.2		0.47		1.9		1.5
2	50	10S	2.77	1.3	1.4	0.47	1.6	2.1	2.2	1.8
2	50	40	3.91	1.3		0.55		2.2		1.8
2	50	80	5.54	1.4		0.66		2.3		1.8
2 1/2	65	10S	3.05	1.6	1.9	0.64	1.9	2.5	2.7	2.0
2 1/2	65	40	5.16	1.7		0.82		2.7		2.1
2 1/2	65	80	7.01	1.9		0.97		2.8		2.2
3	80	10S	3.05	2.0	2.5	0.87	2.6	3.4	3.3	2.3
3	80	40	5.49	2.2		1.2		3.7		2.4
3	80	80	7.62	2.4		1.4		4.0		2.5
4	100	10S	3.05	2.9	4.2	1.3	3.1	4.4	4.7	2.9
4	100	40	6.02	3.3		1.8		4.9		3.1
4	100	80	8.56	3.6		2.2		5.3		3.3
5	125	10S	3.40	3.9	6.3	1.8	4.0	5.8	7.2	4.0
5	125	40	6.55	4.4		2.6		6.6		4.3
5	125	80	9.53	5.0		3.3		7.3		4.5
6	150	10S	3.40	5.1	9.1	2.3	4.6	7.0	10.2	5.1
6	150	40	7.11	6.0		3.5		8.1		5.5
6	150	80	10.97	6.8		4.6		9.3		6.0
8	200	10S	3.76	7.4	15.0	3.2	6.1	9.3	16.1	7.0
8	200	20	6.35	8.3		4.3		10.4		7.4
8	200	30	7.04	8.5		4.6		10.6		7.5
10	250	10S	4.19	10.6	23.3	5.5	8.3	13.8	27.3	10.9
10	250	20	6.35	11.6		6.7		15.0		11.4

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
10	250	30	7.80	12.3		7.5		15.9		11.8
12	300	10S	4.57	13.2	33.0	6.7	9.8	16.5	39.0	13.4
12	300	20	6.35	14.3		7.9		17.7		14.0
12	300	30	8.38	15.4		9.4		19.2		14.6
14	350	10S	4.78	16.4	42.4	8.4	11.4	19.8	48.4	15.9
14	350	10	6.35	17.5		9.7		21.1		16.5
14	350	20	7.92	18.5		10.9		22.4		17.1
16	400	10S	4.78	24.2	62.6	12.2	17.9	30.1	70.8	24.2
16	400	10	6.35	25.5		13.7		31.7		24.9
16	400	20	7.92	26.9		15.3		33.2		25.6
18	450	10S	4.78	28.5	82.5	13.6	21.1	34.7	92.1	27.9
18	450	10	6.35	30.2		15.5		36.6		28.8
18	450	20	7.92	31.8		17.4		38.5		29.6
20	500	10S	5.54	36.0	108	18.2	25.6	43.7	120	34.6
20	500	10	6.35	37.0		19.4		44.9		35.2
20	500	20	9.53	40.9		23.9		49.5		37.3
22	550	10S	5.54	43.9	139	22.5	31.6	54.0	151	41.4
22	550	10	6.35	45.1		23.8		55.4		42.0
22	550	20	9.53	49.7		29.2		60.7		44.5
24	600	10S	6.35	61.8	186	31.6	45.4	77.0	196	58.0
24	600	20	9.53	67.0		37.8		83.2		60.9
24	600	XS	12.70	72.2		44.0		89.3		63.8
26	650	10	7.92	77.4	234	41.3	53.9	95.2	238	69.3
26	650	STD	9.53	80.4		44.9		98.8		71.0
26	650	20	12.70	86.4		51.9		106		74.3
28	700	10	7.92	90.4	284	48.9	63.5	112	290	81.2
28	700	STD	9.53	93.8		53.0		117		83.1
28	700	20	12.70	101		61.0		125		86.9
30	750	10	7.92	104	341	57.3	73.5	131	343	92.2
30	750	STD	9.53	108		61.9		135		94.4
30	750	20	12.70	115		70.9		144		98.6
32	800	10	7.92	117	404	64.9	82.9	148	400	102
32	800	STD	9.53	121		70.0		153		105
32	800	20	12.70	130		80.2		163		109
34	850	10	7.92	130	468	72.9	92.7	166	464	114



Vector SPO® Compact Flange

CL150

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
34	850	STD	9.53	135		78.6		171		117
34	850	20	12.70	145		89.8		183		122
36	900	10	7.92	157	562	81.8	115	197	543	135
36	900	STD	9.53	162		88.0		203		138
36	900	20	12.70	173		100		215		144
38	950	STD	9.53	183	651	101	128	229	624	155
38	950	XS	12.70	195		115		243		161
38	950	ISO	14.20	200		121		249		164
40	1000	STD	9.53	209	754	119	148	267	715	176
40	1000	XS	12.70	222		134		282		183
40	1000	ISO	14.20	228		141		289		186
42	1050	STD	9.53	221	842	123	155	278	801	185
42	1050	XS	12.70	234		139		294		192
42	1050	ISO	14.20	241		146		302		196
42	1050	ISO	16.00	248		156		311		200
44	1100	STD	9.53	243	956	134	172	306	911	204
44	1100	XS	12.70	258		152		323		212
44	1100	ISO	14.20	265		160		331		216
44	1100	ISO	16.00	273		170		341		220
46	1150	STD	9.53	262	1068	146	185	331	1018	220
46	1150	XS	12.70	278		165		350		229
46	1150	ISO	14.20	286		174		359		233
46	1150	ISO	16.00	295		184		370		238
46	1150	ISO	17.50	303		193		378		242
48	1200	STD	9.53	287	1201	160	203	363	1125	237
48	1200	XS	12.70	305		180		383		246
48	1200	ISO	14.20	313		190		393		251
48	1200	ISO	16.00	322		201		404		256
48	1200	ISO	17.50	331		211		414		260
50	1250	ISO	9.53	295	1346				1215	231
50	1250	ISO	12.70	313						240
50	1250	ISO	14.20	322						245
50	1250	ISO	16.00	333						251
50	1250	ISO	17.50	341						255
52	1300	ISO	12.70	333	1494				1353	256

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
52	1300	ISO	14.20	343						261
52	1300	ISO	16.00	354						268
52	1300	ISO	17.50	363						273
52	1300	ISO	20.00	379						281
54	1350	ISO	12.70	365	1664				1498	280
54	1350	ISO	14.20	375						286
54	1350	ISO	16.00	387						292
54	1350	ISO	17.50	397						298
54	1350	ISO	20.00	414						307
56	1400	ISO	12.70	391	1849				1642	295
56	1400	ISO	14.20	402						301
56	1400	ISO	16.00	415						308
56	1400	ISO	17.50	426						313
56	1400	ISO	20.00	444						323
58	1450	ISO	12.70	433	2131				1798	312
58	1450	ISO	14.20	445						318
58	1450	ISO	16.00	459						325
58	1450	ISO	17.50	470						332
58	1450	ISO	20.00	490						342
60	1500	ISO	12.70	474	2362				1990	342
60	1500	ISO	14.20	486						349
60	1500	ISO	16.00	501						357
60	1500	ISO	17.50	514						363
60	1500	ISO	20.00	534						374
62	1550	ISO	12.70	516	2532				2189	383
62	1550	ISO	14.20	529						390
62	1550	ISO	16.00	545						398
62	1550	ISO	17.50	558						405
62	1550	ISO	20.00	580						417
64	1600	ISO	12.70	572	2883				2382	409
64	1600	ISO	14.20	586						416
64	1600	ISO	16.00	603						425
64	1600	ISO	17.50	618						432
64	1600	ISO	20.00	641						445

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	70	85	90	70									26 / 14
3/4	20	4	1/2	70	85	90	70									26 / 14
1	25	4	1/2	70	85	90	70									26 / 14
1 1/2	40	4	1/2	70	85	95	70									26 / 14
2	50	4	1/2	70	90	95	70									26 / 14
2 1/2	65	8	1/2	75	90	100	75									26 / 14
3	80	8	1/2	80	100	105	75									26 / 14
4	100	8	1/2	85	105	110	80									26 / 14
5	125	12	1/2	90	115	120	80									26 / 14
6	150	12	1/2	100	120	130	85									26 / 14
8	200	12	1/2	100	120	135	85									26 / 14
10	250	16	1/2	105	130	145	90									26 / 14
12	300	20	1/2	110	135	155	90									26 / 14
14	350	20	1/2	120	140	165	95									26 / 14
16	400	20	5/8	135	160	185	110									31 / 17
18	450	20	5/8	140	170	195	115									31 / 17
20	500	24	5/8	150	185	205	120									31 / 17
22	550	28	5/8	160	195	220	125									31 / 17
24	600	24	3/4	175	215	240	140	185	225	250	160				8	37 / 21
26	650	24	3/4	185	230	255	145	200	240	265	160				3	37 / 21
28	700	28	3/4	195	240	265	150	205	250	275	160					37 / 21
30	750	32	3/4	200	250	275	155	215	260	290	165					37 / 21
32	800	36	3/4	210	260	285	160	220	270	300	170					37 / 21
34	850	40	3/4	215	270	295	160	230	280	310	175					37 / 21
36	900	32	7/8	235	290	315	180	250	305	330	190					42 / 24
38	950	36	7/8	240	300	330	180	255	315	340	195					42 / 24
40	1000	40	7/8	250	310	340	185	265	325	355	200					42 / 24
42	1050	44	7/8	255	320	350	190	270	335	360	205					42 / 24
44	1100	44	7/8	265	330	360	195	280	345	375	205					42 / 24
46	1150	48	7/8	270	340	370	195	285	350	385	210					42 / 24
48	1200	52	7/8	280	350	380	200	290	360	395	215					42 / 24

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.



Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	1250	36	1	300		400	220	315		420	235					48 / 28
52	1300	40	1	305		415	225	325		430	240					48 / 28
54	1350	44	1	315		425	225	330		440	240					48 / 28
56	1400	48	1	325		440	230	340		455	250					48 / 28
58	1450	48	1	345		465	240	360		480	260					48 / 28
60	1500	52	1	355		475	245	370		495	265					48 / 28
62	1550	48	1 1/8	365		485	260	380		505	280					53 / 30
64	1600	48	1 1/8	385		510	270	400		530	290					53 / 30

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Length of studbolts and washer thickness for flange sizes from 50" to 64" are available on request.

Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
3/4	20	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
1	25	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
1 1/2	40	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
2	50	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
2 1/2	65	8	1/2	0.5	0.5	0.6	0.6	0.5	1.0	1.1	1.1	0.7								
3	80	8	1/2	0.5	0.5	0.6	0.7	0.5	1.0	1.1	1.2	0.7								
4	100	8	1/2	0.5	0.5	0.7	0.7	0.5	1.0	1.2	1.2	0.8								
5	125	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.1								
6	150	12	1/2	0.7	1.0	1.2	1.3	0.8	1.7	1.9	2.0	1.2								
8	200	12	1/2	0.7	1.0	1.2	1.3	0.8	1.7	1.9	2.0	1.2								
10	250	16	1/2	1.0	1.4	1.7	1.9	1.2	2.3	2.6	2.8	1.6								
12	300	20	1/2	1.2	1.8	2.2	2.5	1.4	3.0	3.4	3.7	2.0								
14	350	20	1/2	1.2	1.9	2.3	2.7	1.5	3.1	3.5	3.9	2.1								
16	400	20	5/8	2.2	3.4	4.1	4.7	2.8	5.6	6.2	6.9	3.9								
18	450	20	5/8	2.2	3.6	4.3	5.0	2.9	5.7	6.5	7.1	4.0								
20	500	24	5/8	2.6	4.6	5.7	6.3	3.7	7.2	8.2	8.9	5.0								
22	550	28	5/8	3.0	5.7	7.0	7.8	4.5	8.7	10.0	10.9	6.0								
24	600	24	3/4	4.2	7.8	9.6	10.8	6.3	12.1	13.9	15.0	8.4	8.3	10.1	11.2	7.2	12.5	14.3	15.4	10.4
26	650	24	3/4	4.2	8.3	10.3	11.4	6.5	12.5	14.5	15.6	8.6	9.0	10.8	11.9	7.2	13.2	15.0	16.1	9.7
28	700	28	3/4	4.9	10.2	12.5	13.9	7.8	15.1	17.5	18.8	10.3	10.7	13.1	14.4	8.4	15.6	18.0	19.3	10.8
30	750	32	3/4	5.6	11.9	14.9	16.4	9.3	17.6	20.6	22.1	12.1	12.8	15.5	17.3	9.9	18.5	21.2	23.0	12.7
32	800	36	3/4	6.3	14.1	17.5	19.2	10.8	20.4	23.8	25.5	13.9	14.8	18.1	20.2	11.4	21.1	24.5	26.5	14.6
34	850	40	3/4	7.0	16.1	20.2	22.0	11.9	23.1	27.2	29.1	15.5	17.2	20.9	23.1	13.1	24.2	27.9	30.2	16.6
36	900	32	7/8	8.6	19.3	23.8	25.8	14.8	27.9	32.4	34.5	19.1	20.5	25.0	27.1	15.6	29.2	33.7	35.7	19.9
38	950	36	7/8	9.7	22.2	27.7	30.5	16.6	31.9	37.4	40.2	21.5	23.5	29.1	31.4	18.0	33.3	38.8	41.1	22.9
40	1000	40	7/8	10.8	25.6	31.8	34.9	19.0	36.4	42.6	45.7	24.4	27.2	33.3	36.4	20.5	38.0	44.1	47.2	25.9
42	1050	44	7/8	11.9	28.8	36.1	39.5	21.4	40.6	48.0	51.4	27.4	30.5	37.8	40.6	23.1	42.3	49.7	52.5	29.1
44	1100	44	7/8	11.9	29.9	37.2	40.6	22.0	41.8	49.1	52.5	27.9	31.6	38.9	42.3	23.1	43.5	50.8	54.2	29.1
46	1150	48	7/8	13.0	33.2	41.8	45.5	24.0	46.2	54.8	58.5	30.5	35.1	43.1	47.4	25.8	48.0	56.0	60.3	32.3
48	1200	52	7/8	14.0	37.3	46.7	50.7	26.7	51.4	60.7	64.7	33.7	38.7	48.0	52.7	28.7	52.7	62.0	66.7	35.7

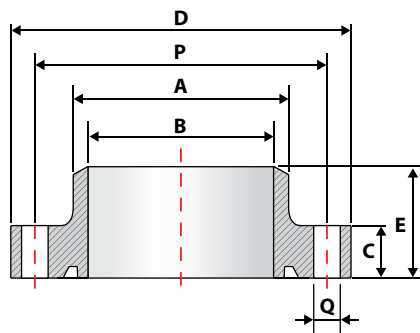
1) Bolt set weight includes washers weight, if applicable.

2) Weight of studbolts and bolt set for flange sizes from 50" to 64" are available on request.

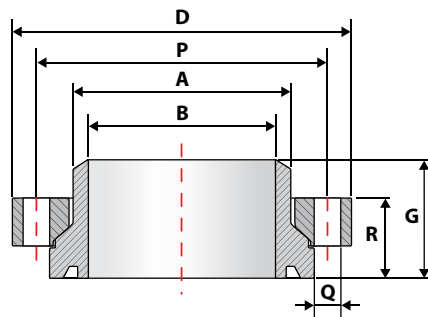
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	
50	1250	36	1	13.9	36.3		48.3	26.6	50.2		62.2	33.5	38.1		50.8	28.4	52.0		64.7	35.3
52	1300	40	1	15.4	41.0		55.7	30.2	56.4		71.2	37.9	43.6		57.7	32.2	59.1		73.2	39.9
54	1350	44	1	17.0	46.5		62.8	33.2	63.5		79.8	41.7	48.7		65.0	35.5	65.7		82.0	43.9
56	1400	48	1	18.5	52.4		70.9	37.1	70.9		89.4	46.3	54.8		73.3	40.3	73.3		91.8	49.6
58	1450	48	1	18.5	55.6		74.9	38.7	74.1		93.5	47.9	58.0		77.3	41.9	76.5		95.9	51.2
60	1500	52	1	20.1	62.0		82.9	42.8	82.0		103	52.8	64.6		86.4	46.3	84.7		106	56.3
62	1550	48	1 1/8	25.8	75.9		101	54.1	102		127	67.0	79.0		105	58.2	104.9		131	71.2
64	1600	48	1 1/8	25.8	80.1		106	56.2	106		132	69.1	83.2		110	60.3	109.0		136	73.2

1) Bolt set weight includes washers weight, if applicable.
2) Weight of studbolts and bolt set for flange sizes from 50" to 64" are available on request.

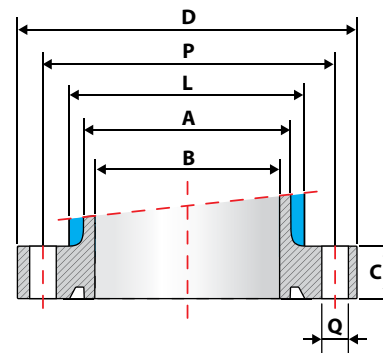
Weld Neck



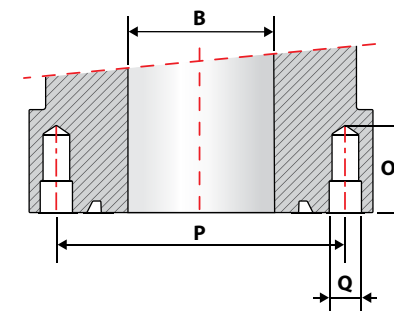
Swivel



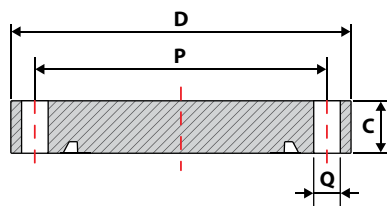
Integral



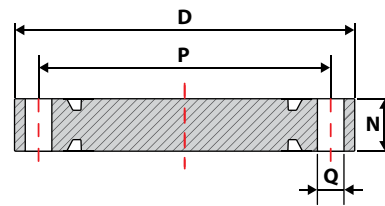
Rigid Interface



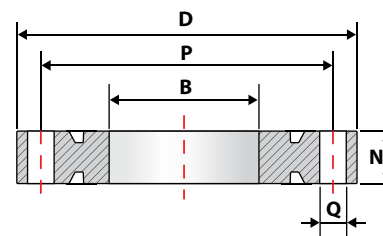
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	15	0.59	93	3.66	40	1.57	49	1.93	22	0.87	17	0.67	28	1.10	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	15	0.59	98	3.86	40	1.57	49	1.93	31	1.22	18	0.71	28	1.10	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	15	0.59	105	4.13	40	1.57	50	1.97	39	1.54	19	0.75	28	1.10	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.68	15	0.59	120	4.72	41	1.61	51	2.01	52	2.05	22	0.87	29	1.14	42	1.65	94.3	3.71	15	0.59	4	1/2
2	50	60.3	2.37	54.8	2.16	15	0.59	132	5.20	42	1.65	53	2.09	67	2.64	23	0.91	30	1.18	42	1.65	106.3	4.19	15	0.59	4	1/2
2 1/2	65	73.0	2.87	66.9	2.63	16	0.63	145	5.71	43	1.69	54	2.13	80	3.15	23	0.91	32	1.26	42	1.65	119.0	4.69	15	0.59	8	1/2
3	80	88.9	3.50	82.8	3.26	18	0.71	161	6.34	46	1.81	62	2.44	94	3.70	24	0.94	39	1.54	42	1.65	134.9	5.31	15	0.59	8	1/2
4	100	114.3	4.50	108.2	4.26	22	0.87	186	7.32	51	2.01	70	2.76	122	4.80	25	0.98	42	1.65	42	1.65	160.3	6.31	15	0.59	8	1/2
5	125	141.3	5.56	134.5	5.30	25	0.98	213	8.39	55	2.17	77	3.03	149	5.87	29	1.14	48	1.89	42	1.65	187.3	7.37	15	0.59	12	1/2
6	150	168.3	6.63	161.5	6.36	28	1.10	240	9.45	60	2.36	80	3.15	178	7.01	32	1.26	50	1.97	42	1.65	214.3	8.44	15	0.59	12	1/2
8	200	219.1	8.63	206.4	8.13	35	1.38	306	12.05	69	2.72	96	3.78	232	9.13	38	1.50	59	2.32	52	2.05	274.6	10.81	18	0.71	12	5/8
10	250	273.1	10.75	260.4	10.25	42	1.65	361	14.21	78	3.07	106	4.17	286	11.26	44	1.73	69	2.72	52	2.05	329.4	12.97	18	0.71	20	5/8
12	300	323.9	12.75	311.2	12.25	47	1.85	415	16.34	87	3.43	115	4.53	340	13.39	49	1.93	76	2.99	52	2.05	383.2	15.09	18	0.71	20	5/8
14	350	355.6	14.00	339.8	13.38	50	1.97	450	17.72	96	3.78	121	4.76	375	14.76	52	2.05	82	3.23	52	2.05	418.0	16.46	18	0.71	24	5/8
16	400	406.4	16.00	390.6	15.38	58	2.28	519	20.43	106	4.17	135	5.31	430	16.93	57	2.24	94	3.70	62	2.44	482.4	18.99	22	0.87	24	3/4
18	450	457.2	18.00	438.1	17.25	63	2.48	567	22.32	117	4.61	143	5.63	478	18.82	62	2.44	102	4.02	62	2.44	529.9	20.86	22	0.87	28	3/4
20	500	508.0	20.00	488.9	19.25	69	2.72	631	24.84	128	5.04	153	6.02	526	20.71	67	2.64	111	4.37	72	2.83	587.7	23.14	25	0.98	24	7/8
22	550	558.8	22.00	533.4	21.00	74	2.91	685	26.97	139	5.47	163	6.42	580	22.83	72	2.83	120	4.72	72	2.83	642.1	25.28	25	0.98	28	7/8
24	600	609.6	24.00	584.2	23.00	81	3.19	750	29.53	150	5.91	172	6.77	634	24.96	76	2.99	130	5.12	81	3.19	702.0	27.64	29	1.14	28	1
26	650	660.4	26.00	635.0	25.00	86	3.39	804	31.65	161	6.34	181	7.13	688	27.09	81	3.19	139	5.47	81	3.19	755.8	29.76	29	1.14	32	1
28	700	711.2	28.00	679.4	26.75	91	3.58	859	33.82	172	6.77	191	7.52	743	29.25	85	3.35	147	5.79	81	3.19	810.2	31.90	29	1.14	32	1
30	750	762.0	30.00	730.2	28.75	98	3.86	928	36.54	183	7.20	203	7.99	801	31.54	90	3.54	159	6.26	90	3.54	874.5	34.43	32	1.26	32	1 1/8
32	800	812.8	32.00	781.0	30.75	103	4.06	981	38.62	194	7.64	212	8.35	854	33.62	94	3.70	167	6.57	90	3.54	927.0	36.49	32	1.26	32	1 1/8
34	850	863.6	34.00	828.6	32.62	109	4.29	1045	41.14	205	8.07	221	8.70	907	35.71	98	3.86	177	6.97	98	3.86	985.5	38.80	35	1.38	32	1 1/4
36	900	914.4	36.00	876.3	34.50	114	4.49	1097	43.19	216	8.50	229	9.02	959	37.76	102	4.02	185	7.28	98	3.86	1037.6	40.85	35	1.38	32	1 1/4
38	950	965.2	38.00	925.2	36.43	119	4.69	1152	45.35	227	8.94	238	9.37	1014	39.92	107	4.21	194	7.64	98	3.86	1092.6	43.02	35	1.38	36	1 1/4
40	1000	1016.0	40.00	976.0	38.43	126	4.96	1210	47.64	238	9.37	251	9.88	1071	42.17	111	4.37	206	8.11	98	3.86	1150.2	45.28	35	1.38	40	1 1/4
42	1050	1066.8	42.00	1026.8	40.43	131	5.16	1271	50.04	249	9.80	258	10.16	1116	43.94	115	4.53	213	8.39	107	4.21	1206.2	47.49	38	1.50	36	1 3/8
44	1100	1117.6	44.00	1073.2	42.25	135	5.31	1323	52.09	260	10.24	266	10.47	1168	45.98	119	4.69	220	8.66	107	4.21	1258.3	49.54	38	1.50	40	1 3/8
46	1150	1168.4	46.00	1124.0	44.25	142	5.59	1385	54.53	271	10.67	276	10.87	1218	47.95	124	4.88	230	9.06	117	4.61	1314.3	51.74	42	1.65	36	1 1/2
48	1200	1219.2	48.00	1169.2	46.03	152	5.98	1437	56.57	282	11.10	283	11.14	1271	50.04	128	5.04	237	9.33	117	4.61	1366.9	53.81	42	1.65	36	1 1/2

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.
- 4) Since August 2015 we follow for CL150 and CL300 our new improved standard, the SPO-C CF. This range is also suitable for cryogenic applications.
Previous standard dimensions for CL150 and CL300 available on request.

Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
50	1250	1270.0	50.00	1220.0	48.03	165	6.50	1462	57.56	293	11.54			1301	51.22	132	5.20			107	4.21	1392.0	54.80	38	1.50	44	1 3/8
52	1300	1320.8	52.00	1270.8	50.03	175	6.89	1513	59.57	304	11.97			1352	53.23	137	5.39			107	4.21	1443.0	56.81	38	1.50	48	1 3/8
54	1350	1371.6	54.00	1315.6	51.80	180	7.09	1564	61.57	315	12.40			1403	55.24	141	5.55			107	4.21	1494.0	58.82	38	1.50	52	1 3/8
56	1400	1422.4	56.00	1366.4	53.80	185	7.28	1626	64.02	326	12.83			1454	57.24	146	5.75			117	4.61	1550.0	61.02	42	1.65	48	1 1/2
58	1450	1473.2	58.00	1417.2	55.80	190	7.48	1684	66.30	337	13.27			1512	59.53	150	5.91			117	4.61	1608.0	63.31	42	1.65	48	1 1/2
60	1500	1524.0	60.00	1464.0	57.64	193	7.60	1736	68.35	348	13.70			1564	61.57	155	6.10			117	4.61	1660.0	65.35	42	1.65	52	1 1/2
62	1550	1574.8	62.00	1514.8	59.64	200	7.87	1788	70.39	360	14.17			1616	63.62	159	6.26			117	4.61	1712.0	67.40	42	1.65	56	1 1/2
64	1600	1625.6	64.00	1555.6	61.24	210	8.27	1840	72.44	372	14.65			1668	65.67	163	6.42			117	4.61	1764.0	69.45	42	1.65	60	1 1/2

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.
- 4) Values for G and R, for nominal size from 50" to 64" available on request.
- 5) Since August 2015 we follow for CL150 and CL300 our new improved standard, the SPO-C CF. This range is also suitable for cryogenic applications.
Previous standard dimensions for CL150 and CL300 available on request.



Vector SPO® Compact Flange

CL300

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	105	2.11	0.68	0.68	0.15	0.95	1.1	0.74	0.71
1/2	15	40	2.77	0.69		0.16		1.1		0.72
1/2	15	80	3.73	0.70		0.18		1.1		0.72
1/2	15	160	4.78	0.72		0.19		1.1		0.73
3/4	20	105	2.11	0.75	0.76	0.17	1.0	1.2	0.89	0.83
3/4	20	40	2.87	0.77		0.19		1.2		0.84
3/4	20	80	3.91	0.79		0.22		1.3		0.85
3/4	20	160	5.56	0.81		0.25		1.3		0.86
1	25	105	2.77	0.87	0.88	0.24	1.2	1.4	1.1	1.0
1	25	40	3.38	0.89		0.26		1.4		1.0
1	25	80	4.55	0.92		0.30		1.5		1.0
1	25	160	6.35	0.96		0.35		1.5		1.0
1 1/2	40	105	2.77	1.1	1.2	0.35	1.4	1.8	1.7	1.5
1 1/2	40	40	3.68	1.1		0.40		1.8		1.5
1 1/2	40	80	5.08	1.2		0.47		1.9		1.5
1 1/2	40	160	7.14	1.3		0.56		2.0		1.6
2	50	105	2.77	1.3	1.4	0.47	1.6	2.1	2.2	1.8
2	50	40	3.91	1.3		0.55		2.2		1.8
2	50	80	5.54	1.4		0.66		2.3		1.8
2	50	160	8.74	1.6		0.86		2.5		1.9
2 1/2	65	105	3.05	1.5	1.8	0.64	1.7	2.4	2.6	1.9
2 1/2	65	40	5.16	1.6		0.82		2.6		2.0
2 1/2	65	80	7.01	1.7		0.97		2.7		2.1
2 1/2	65	160	9.53	1.9		1.2		2.9		2.1
3	80	105	3.05	2.0	2.5	0.87	2.6	3.4	3.3	2.3
3	80	40	5.49	2.2		1.2		3.7		2.4
3	80	80	7.62	2.4		1.4		4.0		2.5
4	100	105	3.05	2.9	4.2	1.3	3.1	4.4	4.7	2.9
4	100	40	6.02	3.3		1.8		4.9		3.1
4	100	80	8.56	3.6		2.2		5.3		3.3
5	125	105	3.40	3.9	6.3	1.8	4.0	5.8	7.2	4.0
5	125	40	6.55	4.4		2.6		6.6		4.3
5	125	80	9.53	5.0		3.3		7.3		4.5
6	150	105	3.40	5.1	9.1	2.3	4.6	7.0	10.2	5.1
6	150	40	7.11	6.0		3.5		8.1		5.5

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
6	150	80	10.97	6.8		4.6		9.3		6.0
8	200	20	6.35	10.8	18.8	5.6	8.4	14.0	20.0	10.1
8	200	30	7.04	11.0		6.0		14.3		10.2
8	200	40	8.18	11.4		6.5		14.9		10.4
8	200	60	10.31	12.1		7.5		15.9		10.8
8	200	80	12.70	13.0		8.6		17.0		11.3
10	250	20	6.35	15.3	31.2	8.0	11.1	19.1	32.2	13.8
10	250	30	7.80	16.0		9.0		20.1		14.2
10	250	40	9.27	16.7		10.0		21.1		14.6
10	250	60	12.70	18.4		12.2		23.3		15.6
10	250	80	15.09	19.6		13.8		24.9		16.2
12	300	20	6.35	21.0	46.9	10.9	15.1	25.9	48.2	18.9
12	300	30	8.38	22.4		12.6		27.7		19.7
12	300	STD	9.53	23.2		13.6		28.7		20.1
12	300	40	10.31	23.7		14.3		29.4		20.4
12	300	XS	12.70	25.2		16.3		31.4		21.3
12	300	60	14.27	26.2		17.7		32.7		21.8
12	300	80	17.48	28.2		20.3		35.4		23.0
14	350	20	7.92	26.5	58.7	14.9	17.6	32.5	60.2	23.2
14	350	30	9.53	27.8		16.5		34.1		23.9
14	350	40	11.13	29.1		18.1		35.7		24.6
14	350	XS	12.70	30.3		19.7		37.2		25.2
14	350	60	15.09	32.2		22.0		39.6		26.3
14	350	80	19.05	35.2		25.8		43.4		27.9
16	400	20	7.92	40.0	90.3	21.6	28.0	49.7	87.7	34.1
16	400	30	9.53	41.6		23.7		51.8		35.0
16	400	40	12.70	44.8		27.8		55.8		36.7
16	400	60	16.66	48.8		32.7		60.8		38.8
16	400	80	21.44	53.4		38.6		66.7		41.3
18	450	STD	9.53	49.2	117	27.0	32.6	59.6	114	40.8
18	450	30	11.13	51.2		29.5		62.1		41.8
18	450	XS	12.70	53.1		31.9		64.5		42.9
18	450	40	14.27	55.1		34.2		66.9		43.9
18	450	60	19.05	61.0		41.4		74.0		47.0
18	450	80	23.83	66.7		48.4		81.0		50.0



Vector SPO® Compact Flange

CL300

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
20	500	20	9.53	66.3	160	33.6	45.2	78.8	154	55.1
20	500	30	12.70	71.2		39.5		84.6		57.7
20	500	40	15.09	74.8		43.8		89.0		59.6
20	500	60	20.62	83.1		53.6		98.8		63.9
20	500	80	26.19	91.3		63.3		109		68.1
22	550	30	12.70	85.2	203	47.9	54.0	102	195	68.9
22	550	ISO	16.00	91.2		55.0		109		72.0
22	550	60	22.23	102		68.0		122		77.8
22	550	80	28.58	114		81.0		135		83.5
24	600	XS	12.70	109	265	58.0	71.7	130	246	85.9
24	600	30	14.27	112		61.8		134		87.6
24	600	40	17.48	119		69.7		141		91.1
24	600	60	24.61	134		86.9		159		98.7
24	600	80	30.96	147		102		173		105
26	650	20	12.70	127	323	68.2	81.9	150	302	100
26	650	ISO	14.20	130		72.4		154		102
26	650	ISO	16.00	135		77.5		159		104
26	650	ISO	17.50	139		81.7		164		106
28	700	30	15.88	159	393	90.3	97.4	188	364	122
28	700	ISO	16.00	159		90.7		188		122
28	700	ISO	17.50	163		95.5		193		124
30	750	30	15.88	199	493	112	128	240	450	154
30	750	ISO	16.00	199		112		240		154
30	750	ISO	17.50	204		118		246		156
32	800	30	15.88	227	582	126	146	272	527	174
32	800	ISO	16.00	227		127		273		174
32	800	ISO	17.50	233		133		279		177
34	850	40	17.48	276	698	152	178	330	623	208
34	850	ISO	20.00	287		163		341		213
34	850	ISO	22.20	296		173		351		218
36	900	40	19.05	316	808	176	199	375	717	235
36	900	ISO	20.00	321		181		380		237
36	900	ISO	22.20	331		191		391		242
38	950	ISO	20.00	358	930	204	220	424	830	266
38	950	ISO	22.20	370		216		436		271

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
38	950	ISO	25.00	384		231		451		278
40	1000	ISO	20.00	409	1086	236	254	490	951	299
40	1000	ISO	22.20	421		249		503		305
40	1000	ISO	25.00	437		266		520		312
40	1000	ISO	28.00	454		284		538		320
42	1050	ISO	20.00	466	1248	258	296	554	1089	342
42	1050	ISO	22.20	480		272		568		348
42	1050	ISO	25.00	498		290		587		356
42	1050	ISO	28.00	516		310		606		365
42	1050	ISO	30.00	529		323		619		370
42	1050	ISO	32.00	541		335		632		376
44	1100	ISO	22.20	519	1393	296	318	614	1221	376
44	1100	ISO	25.00	538		316		634		384
44	1100	ISO	28.00	559		337		655		394
44	1100	ISO	30.00	572		350		668		400
44	1100	ISO	32.00	586		364		682		406
46	1150	ISO	22.20	592	1606	321	372	694	1395	429
46	1150	ISO	25.00	613		343		715		438
46	1150	ISO	28.00	636		365		738		449
46	1150	ISO	30.00	651		381		753		455
46	1150	ISO	32.00	665		396		768		462
46	1150	ISO	36.00	695		426		798		476
48	1200	ISO	25.00	685	1858	371	403	774	1555	476
48	1200	ISO	28.00	709		396		799		487
48	1200	ISO	30.00	725		412		815		494
48	1200	ISO	32.00	742		428		831		502
48	1200	ISO	36.00	774		460		863		516
50	1250	ISO	25.00	691	2093				1662	450
50	1250	ISO	28.00	717						462
50	1250	ISO	30.00	735						470
50	1250	ISO	32.00	752						478
50	1250	ISO	36.00	787						494
52	1300	ISO	25.00	753	2377				1847	483
52	1300	ISO	28.00	782						496
52	1300	ISO	30.00	801						504

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
52	1300	ISO	32.00	820						513
52	1300	ISO	36.00	857						530
54	1350	ISO	28.00	834	2612				2031	526
54	1350	ISO	30.00	854						535
54	1350	ISO	32.00	875						545
54	1350	ISO	36.00	915						563
54	1350	ISO	40.00	955						581
56	1400	ISO	28.00	923	2897				2271	590
56	1400	ISO	30.00	945						600
56	1400	ISO	32.00	967						610
56	1400	ISO	36.00	1011						629
56	1400	ISO	40.00	1054						649
58	1450	ISO	28.00	1015	3200				2509	652
58	1450	ISO	30.00	1039						662
58	1450	ISO	32.00	1062						673
58	1450	ISO	36.00	1109						693
58	1450	ISO	40.00	1156						714
60	1500	ISO	30.00	1097	3451				2755	706
60	1500	ISO	32.00	1122						718
60	1500	ISO	36.00	1172						740
60	1500	ISO	40.00	1222						762
60	1500	ISO	45.00	1284						790
62	1550	ISO	30.00	1174	3794				2998	748
62	1550	ISO	32.00	1201						760
62	1550	ISO	36.00	1254						784
62	1550	ISO	40.00	1308						807
62	1550	ISO	45.00	1374						837
64	1600	ISO	35.00	1337	4218				3254	822
64	1600	ISO	36.00	1351						829
64	1600	ISO	40.00	1408						854
64	1600	ISO	45.00	1479						885
64	1600	ISO	50.00	1549						915

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	70	85	90	70									26 / 14
3/4	20	4	1/2	70	85	90	70									26 / 14
1	25	4	1/2	70	85	90	70									26 / 14
1 1/2	40	4	1/2	70	85	95	70									26 / 14
2	50	4	1/2	70	90	95	70									26 / 14
2 1/2	65	8	1/2	75	90	100	75									26 / 14
3	80	8	1/2	80	100	105	75									26 / 14
4	100	8	1/2	85	105	110	80									26 / 14
5	125	12	1/2	90	115	120	80									26 / 14
6	150	12	1/2	100	120	130	85									26 / 14
8	200	12	5/8	120	145	160	105									31 / 17
10	250	20	5/8	135	160	180	110									31 / 17
12	300	20	5/8	145	175	195	115									31 / 17
14	350	24	5/8	150	185	205	120									31 / 17
16	400	24	3/4	175	210	230	140	185	220	245	160				9	37 / 21
18	450	28	3/4	185	225	245	145	195	235	260	160				4	37 / 21
20	500	24	7/8	205	245	270	165	220	260	285	185				10	42 / 24
22	550	28	7/8	215	260	285	170	230	275	300	185				5	42 / 24
24	600	28	1	235	285	315	190	255	305	330	210				9	48 / 28
26	650	32	1	245	300	330	195	265	315	345	210				4	48 / 28
28	700	32	1	255	315	345	200	275	330	360	215					48 / 28
30	750	32	1 1/8	275	340	370	215	295	360	385	240				3	53 / 30
32	800	32	1 1/8	285	355	380	220	305	370	400	240					53 / 30
34	850	32	1 1/4	305	375	405	235	330	395	425	260				3	59 / 33
36	900	32	1 1/4	315	390	420	240	340	410	440	265					59 / 33
38	950	36	1 1/4	325	400	435	245	350	425	455	270					59 / 33
40	1000	40	1 1/4	340	425	455	255	365	445	475	275					59 / 33
42	1050	36	1 3/8	355	440	475	270	385	465	500	295					64 / 36
44	1100	40	1 3/8	365	455	485	275	390	480	510	300					64 / 36
46	1150	36	1 1/2	385	475	510	295	415	505	540	325					70 / 40
48	1200	36	1 1/2	405	495	535	305	435	520	565	335					70 / 40

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	1250	44	1 3/8	425		560	305	450		585	330					64 / 36
52	1300	48	1 3/8	445		585	315	470		610	340					64 / 36
54	1350	52	1 3/8	455		600	320	480		625	345					64 / 36
56	1400	48	1 1/2	470		620	335	500		650	365					70 / 40
58	1450	48	1 1/2	480		635	340	510		660	370					70 / 40
60	1500	52	1 1/2	490		645	345	515		675	375					70 / 40
62	1550	56	1 1/2	500		665	350	530		690	380					70 / 40
64	1600	60	1 1/2	520		685	360	550		715	390					70 / 40

1) On low strength flange material standard washers are required, thicknes of washers has to be added to bolt length.
2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.
3) Length of studbolts and washer thickness for flange sizes from 50" to 64" are available on request.

Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
3/4	20	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
1	25	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
1 1/2	40	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
2	50	4	1/2	0.2	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.3								
2 1/2	65	8	1/2	0.5	0.5	0.6	0.6	0.5	1.0	1.1	1.1	0.7								
3	80	8	1/2	0.5	0.5	0.6	0.7	0.5	1.0	1.1	1.2	0.7								
4	100	8	1/2	0.5	0.5	0.7	0.7	0.5	1.0	1.2	1.2	0.8								
5	125	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.1								
6	150	12	1/2	0.7	1.0	1.2	1.3	0.8	1.7	1.9	2.0	1.2								
8	200	12	5/8	1.3	1.8	2.2	2.4	1.6	3.1	3.5	3.7	2.3								
10	250	20	5/8	2.2	3.4	4.1	4.6	2.8	5.6	6.2	6.7	3.9								
12	300	20	5/8	2.2	3.7	4.5	5.0	2.9	5.9	6.6	7.1	4.0								
14	350	24	5/8	2.6	4.6	5.7	6.3	3.7	7.2	8.2	8.9	5.0								
16	400	24	3/4	4.2	7.8	9.4	10.3	6.3	12.1	13.6	14.5	8.4	8.3	9.9	11.0	7.2	12.5	14.1	15.2	10.5
18	450	28	3/4	4.9	9.7	11.8	12.8	7.6	14.6	16.7	17.7	10.0	10.2	12.3	13.6	8.4	15.1	17.2	18.5	11.5
20	500	24	7/8	6.5	12.6	15.1	16.6	10.2	19.1	21.6	23.1	13.4	13.5	16.0	17.5	11.4	20.0	22.5	24.0	16.4
22	550	28	7/8	7.6	15.4	18.7	20.5	12.2	23.0	26.2	28.0	16.0	16.5	19.7	21.5	13.3	24.1	27.3	29.1	18.1
24	600	28	1	10.8	22.1	26.8	29.6	17.9	32.9	37.6	40.4	23.3	24.0	28.7	31.0	19.7	34.8	39.5	41.8	27.5
26	650	32	1	12.4	26.3	32.2	35.5	20.9	38.7	44.6	47.8	27.1	28.5	33.8	37.1	22.6	40.8	46.2	49.4	29.9
28	700	32	1	12.4	27.4	33.8	37.1	21.5	39.7	46.2	49.4	27.7	29.5	35.5	38.7	23.1	41.9	47.8	51.0	29.3
30	750	32	1 1/8	17.2	38.1	47.2	51.3	29.8	55.4	64.4	68.5	38.4	40.9	49.9	53.4	33.3	58.1	67.1	70.6	43.0
32	800	32	1 1/8	17.2	39.5	49.2	52.7	30.5	56.7	66.4	69.9	39.1	42.3	51.3	55.5	33.3	59.5	68.5	72.7	41.9
34	850	32	1 1/4	22.8	53.0	65.2	70.4	40.9	75.9	88.0	93.3	52.3	57.4	68.7	73.9	45.2	80.2	91.5	96.7	58.0
36	900	32	1 1/4	22.8	54.8	67.8	73.0	41.7	77.6	90.7	95.9	53.1	59.1	71.3	76.5	46.1	82.0	94.1	99.3	57.5
38	950	36	1 1/4	25.7	63.6	78.2	85.1	47.9	89.3	104	111	60.8	68.5	83.1	89.0	52.8	94.2	109	115	65.7
40	1000	40	1 1/4	28.6	73.9	92.4	98.9	55.4	102	121	127	69.7	79.3	96.7	103	59.8	108	125	132	74.0
42	1050	36	1 3/8	33.3	85.1	105	114	64.7	118	139	147	81.4	92.3	111	120	70.7	126	145	153	87.4
44	1100	40	1 3/8	37.0	97.2	121	129	73.2	134	158	166	91.8	104	128	136	79.9	141	165	173	98.4
46	1150	36	1 1/2	42.8	111	137	147	85.0	154	180	190	106	120	146	156	93.7	162	188	198	115
48	1200	36	1 1/2	42.8	117	143	154	87.9	160	186	197	109	125	150	163	96.6	168	193	206	118

1) Bolt set weight includes washers weight, if applicable.

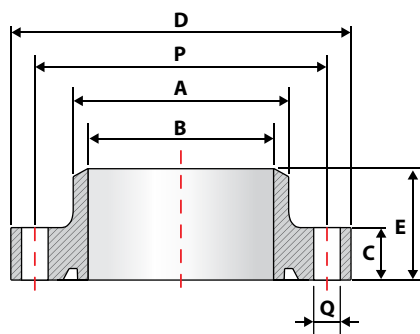
2) Weight of studbolts and bolt set for flange sizes from 50" to 64" are available on request.



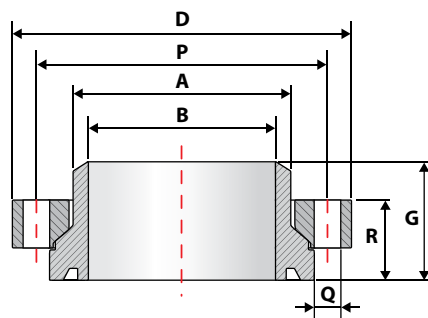
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	
50	1250	44	1 3/8	40.7	125		164	89.4	165		205	110	132		171	96.7	173		212	117
52	1300	48	1 3/8	44.4	142		187	101	187		231	123	150		195	109	195		239	131
54	1350	52	1 3/8	48.2	158		208	111	206		256	135	166		216	119	214		265	144
56	1400	48	1 1/2	57.1	181		238	129	238		295	157	192		250	140	249		307	169
58	1450	48	1 1/2	57.1	184		244	131	242		301	159	196		254	142	253		311	171
60	1500	52	1 1/2	61.9	204		269	144	266		330	175	214		281	156	276		343	187
62	1550	56	1 1/2	66.6	224		298	157	291		365	190	238		309	170	304		376	204
64	1600	60	1 1/2	71.4	250		329	173	321		400	209	264		343	187	336		415	223

1) Bolt set weight includes washers weight, if applicable.
2) Weight of studbolts and bolt set for flange sizes from 50" to 64" are available on request.

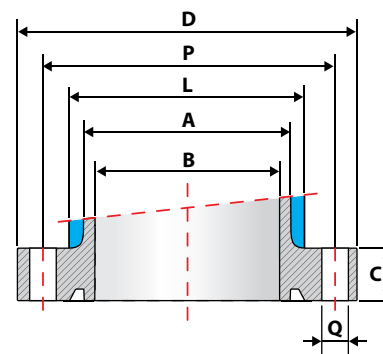
Weld Neck



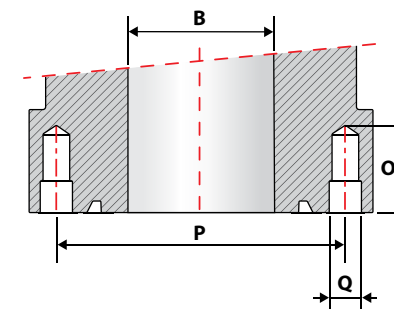
Swivel



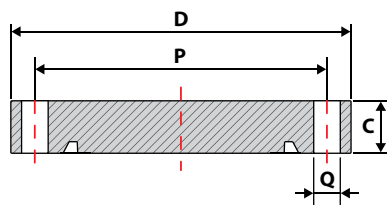
Integral



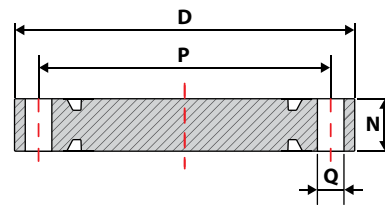
Rigid Interface



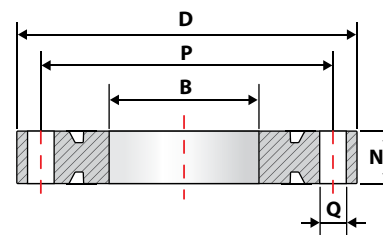
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	20	0.79	93	3.66	51	2.01	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	20	0.79	98	3.86	53	2.09	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	20	0.79	105	4.13	56	2.20	61	2.40	41	1.61	19	0.75	34	1.34	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.69	23	0.91	121	4.76	64	2.52	72	2.83	58	2.28	22	0.87	42	1.65	42	1.65	95.3	3.75	15	0.59	8	1/2
2	50	60.3	2.37	54.8	2.16	23	0.91	136	5.35	60	2.36	69	2.72	73	2.87	23	0.91	41	1.61	42	1.65	110.0	4.33	15	0.59	8	1/2
2 1/2	65	73.0	2.87	66.9	2.63	26	1.02	149	5.87	66	2.60	75	2.95	87	3.43	26	1.02	46	1.81	42	1.65	123.1	4.84	15	0.59	12	1/2
3	80	88.9	3.50	82.8	3.26	25	0.98	161	6.34	61	2.40	74	2.91	98	3.86	26	1.02	47	1.85	42	1.65	134.9	5.31	15	0.59	12	1/2
4	100	114.3	4.50	108.2	4.26	31	1.22	203	7.99	70	2.76	89	3.50	129	5.08	31	1.22	55	2.17	52	2.05	171.7	6.76	18	0.71	12	5/8
5	125	141.3	5.56	134.5	5.30	35	1.38	230	9.06	78	3.07	94	3.70	156	6.14	35	1.38	58	2.28	52	2.05	198.6	7.82	18	0.71	12	5/8
6	150	168.3	6.63	161.5	6.36	36	1.42	258	10.16	75	2.95	93	3.66	184	7.24	37	1.46	59	2.32	52	2.05	226.8	8.93	18	0.71	12	5/8
8	200	219.1	8.63	211.6	8.33	43	1.69	312	12.28	87	3.43	111	4.37	237	9.33	44	1.73	70	2.76	52	2.05	280.4	11.04	18	0.71	20	5/8
10	250	273.1	10.75	264.7	10.42	53	2.09	382	15.04	102	4.02	130	5.12	293	11.54	51	2.01	86	3.39	62	2.44	344.8	13.57	22	0.87	20	3/4
12	300	323.9	12.75	314.8	12.39	60	2.36	450	17.72	108	4.25	140	5.51	346	13.62	57	2.24	97	3.82	72	2.83	407.7	16.05	25	0.98	20	7/8
14	350	355.6	14.00	346.0	13.62	64	2.52	482	18.98	113	4.45	148	5.83	377	14.84	61	2.40	104	4.09	72	2.83	439.2	17.29	25	0.98	24	7/8
16	400	406.4	16.00	396.8	15.62	73	2.87	547	21.54	122	4.80	161	6.34	431	16.97	68	2.68	117	4.61	81	3.19	499.0	19.65	29	1.14	24	1
18	450	457.2	18.00	444.5	17.50	80	3.15	614	24.17	131	5.16	173	6.81	487	19.17	74	2.91	129	5.08	90	3.54	560.1	22.05	32	1.26	24	1 1/8
20	500	508.0	20.00	496.9	19.56	86	3.39	664	26.14	139	5.47	184	7.24	538	21.18	80	3.15	139	5.47	90	3.54	610.6	24.04	32	1.26	28	1 1/8
22	550	558.8	22.00	547.7	21.56	94	3.70	730	28.74	149	5.87	197	7.76	592	23.31	85	3.35	152	5.98	98	3.86	670.7	26.41	35	1.38	24	1 1/4
24	600	609.6	24.00	596.9	23.50	100	3.94	785	30.91	158	6.22	208	8.19	647	25.47	91	3.58	162	6.38	98	3.86	725.6	28.57	35	1.38	28	1 1/4
26	650	660.4	26.00	644.6	25.38	105	4.13	835	32.87	166	6.54	217	8.54	697	27.44	97	3.82	171	6.73	98	3.86	775.6	30.54	35	1.38	32	1 1/4
28	700	711.2	28.00	695.4	27.38	112	4.41	900	35.43	176	6.93	229	9.02	745	29.33	102	4.02	182	7.17	107	4.21	835.2	32.88	38	1.50	32	1 3/8
30	750	762.0	30.00	746.2	29.38	118	4.65	955	37.60	185	7.28	241	9.49	799	31.46	108	4.25	193	7.60	107	4.21	889.8	35.03	38	1.50	36	1 3/8
32	800	812.8	32.00	797.0	31.38	126	4.96	1016	40.00	195	7.68	252	9.92	850	33.46	113	4.45	204	8.03	117	4.61	945.7	37.23	42	1.65	32	1 1/2
34	850	863.6	34.00	847.8	33.38	133	5.24	1081	42.56	205	8.07	264	10.39	903	35.55	119	4.69	216	8.50	126	4.96	1004.8	39.56	45	1.77	32	1 5/8
36	900	914.4	36.00	898.6	35.38	145	5.71	1134	44.65	214	8.43	282	11.10	957	37.68	125	4.92	232	9.13	126	4.96	1058.4	41.67	45	1.77	32	1 5/8
38	950	965.2	38.00	946.1	37.25	147	5.79	1196	47.09	223	8.78	286	11.26	1008	39.69	131	5.16	238	9.37	136	5.35	1115.0	43.90	49	1.93	32	1 3/4
40	1000	1016.0	40.00	996.9	39.25	153	6.02	1251	49.25	232	9.13	298	11.73	1062	41.81	136	5.35	249	9.80	136	5.35	1169.6	46.05	49	1.93	36	1 3/4
42	1050	1066.8	42.00	1047.7	41.25	165	6.50	1312	51.65	241	9.49	313	12.32	1106	43.54	141	5.55	264	10.39	144	5.67	1225.2	48.23	52	2.05	32	1 7/8
44	1100	1117.6	44.00	1073.2	42.25	170	6.69	1365	53.74	249	9.80	323	12.72	1160	45.67	147	5.79	273	10.75	144	5.67	1278.5	50.33	52	2.05	36	1 7/8
46	1150	1168.4	46.00	1124.0	44.25	174	6.85	1438	56.61	262	10.31	335	13.19	1221	48.07	152	5.98	284	11.18	153	6.02	1345.9	52.99	55	2.17	36	2
48	1200	1219.2	48.00	1169.2	46.03	189	7.44	1490	58.66	270	10.63	354	13.94	1273	50.12	157	6.18	303	11.93	153	6.02	1397.4	55.02	55	2.17	36	2

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	10S	2.11	0.91	0.91	0.20	0.95	1.2	0.73	0.70
1/2	15	40	2.77	0.92		0.21		1.2		0.71
1/2	15	80	3.73	0.94		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
3/4	20	10S	2.11	1.0	1.0	0.25	1.0	1.3	0.88	0.82
3/4	20	40	2.87	1.0		0.28		1.3		0.83
3/4	20	80	3.91	1.1		0.31		1.3		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
1	25	10S	2.77	1.2	1.2	0.36	1.2	1.5	1.1	0.99
1	25	40	3.38	1.2		0.39		1.6		1.0
1	25	80	4.55	1.2		0.43		1.6		1.0
1	25	160	6.35	1.3		0.49		1.7		1.0
1	25	XXS	9.09	1.4		0.57		1.7		1.1
1 1/2	40	10S	2.77	1.6	1.7	0.63	1.6	2.3	1.6	1.4
1 1/2	40	40	3.68	1.7		0.70		2.3		1.4
1 1/2	40	80	5.08	1.8		0.79		2.4		1.4
1 1/2	40	160	7.14	1.9		0.93		2.6		1.4
1 1/2	40	XXS	10.15	2.0		1.1		2.7		1.5
2	50	10S	2.77	2.0	2.3	0.76	2.0	2.8	2.2	1.8
2	50	40	3.91	2.1		0.86		2.9		1.8
2	50	80	5.54	2.2		1.0		3.0		1.8
2	50	160	8.74	2.4		1.3		3.3		1.9
2	50	XXS	11.07	2.6		1.4		3.4		2.0
2 1/2	65	10S	3.05	2.5	3.0	1.0	2.4	3.4	2.9	2.2
2 1/2	65	40	5.16	2.7		1.3		3.7		2.3
2 1/2	65	80	7.01	2.9		1.5		3.9		2.3
2 1/2	65	160	9.53	3.1		1.8		4.2		2.4
2 1/2	65	XXS	14.02	3.5		2.2		4.6		2.6
3	80	10S	3.05	2.6	3.4	1.1	2.7	3.8	3.4	2.3
3	80	40	5.49	2.9		1.4		4.2		2.4
3	80	80	7.62	3.1		1.7		4.5		2.6
3	80	160	11.13	3.5		2.2		4.9		2.7
4	100	10S	3.05	4.9	6.8	2.0	4.9	6.9	6.6	4.4
4	100	40	6.02	5.5		2.7		7.6		4.6
4	100	80	8.56	5.9		3.3		8.2		4.8

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
4	100	120	11.13	6.3		3.8		8.7		5.0
4	100	160	13.49	6.7		4.3		9.2		5.2
5	125	10S	3.40	6.8	10.2	2.8	5.8	8.6	9.9	6.0
5	125	40	6.55	7.6		3.8		9.6		6.3
5	125	80	9.53	8.3		4.7		10.5		6.7
5	125	120	12.70	9.0		5.5		11.3		7.0
5	125	160	15.88	9.7		6.4		12.2		7.3
6	150	10S	3.40	8.1	13.3	3.4	6.8	10.2	13.3	7.4
6	150	40	7.11	9.2		4.7		11.6		7.9
6	150	80	10.97	10.3		6.1		12.9		8.4
6	150	120	14.27	11.2		7.2		14.0		8.9
8	200	10S	3.76	12.3	23.2	5.7	9.7	15.4	23.2	11.1
8	200	20	6.35	13.5		7.2		16.8		11.6
8	200	30	7.04	13.8		7.6		17.2		11.8
8	200	40	8.18	14.3		8.2		17.9		12.1
8	200	60	10.31	15.2		9.4		19.0		12.5
8	200	80	12.70	16.2		10.7		20.3		13.0
8	200	100	15.09	17.2		11.9		21.6		13.5
8	200	120	18.26	18.5		13.5		23.2		14.2
10	250	10S	4.19	21.6	43.0	9.6	17.4	27.0	40.3	18.2
10	250	20	6.35	23.0		11.4		28.8		19.0
10	250	30	7.80	24.0		12.6		30.0		19.4
10	250	40	9.27	24.9		13.8		31.2		19.9
10	250	60	12.70	27.1		16.6		34.0		21.0
10	250	80	15.09	28.6		18.4		35.8		21.7
10	250	100	18.26	30.5		20.9		38.3		22.7
10	250	120	21.44	32.4		23.3		40.7		23.6
12	300	10S	4.57	33.6	68.3	15.2	27.4	42.5	63.6	28.8
12	300	20	6.35	35.1		17.1		44.5		29.6
12	300	30	8.38	36.7		19.3		46.6		30.5
12	300	STD	9.53	37.7		20.5		47.8		31.0
12	300	40	10.31	38.3		21.3		48.7		31.3
12	300	XS	12.70	40.2		23.8		51.1		32.3
12	300	60	14.27	41.5		25.4		52.8		33.0
12	300	80	17.48	44.0		28.6		56.0		34.3



Vector SPO® Compact Flange

CL600

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
12	300	100	21.44	47.0		32.5		59.9		35.9
12	300	120	25.40	50.0		36.3		63.7		37.4
14	350	105	4.78	38.5	83.4	17.7	30.7	48.5	78.1	33.1
14	350	10	6.35	40.0		19.7		50.4		33.9
14	350	20	7.92	41.5		21.7		52.4		34.7
14	350	30	9.53	43.0		23.6		54.4		35.5
14	350	40	11.13	44.5		25.6		56.3		36.3
14	350	XS	12.70	45.9		27.5		58.2		37.1
14	350	60	15.09	48.1		30.4		61.1		38.3
14	350	80	19.05	51.7		35.0		65.7		40.2
14	350	100	23.83	55.9		40.5		71.2		42.4
14	350	120	27.79	59.3		44.9		75.6		44.2
16	400	105	4.78	54.2	122	23.7	44.4	68.1	112	45.9
16	400	10	6.35	56.0		26.2		70.6		46.9
16	400	20	7.92	57.9		28.6		73.0		47.9
16	400	30	9.53	59.7		31.1		75.5		49.0
16	400	40	12.70	63.4		36.0		80.4		51.0
16	400	60	16.66	67.9		41.9		86.3		53.5
16	400	80	21.44	73.2		48.9		93.3		56.5
16	400	100	26.19	78.4		55.6		100		59.4
16	400	120	30.96	83.5		62.2		107		62.1
18	450	105	4.78	74.0	169	31.8	61.8	93.6	154	63.0
18	450	10	6.35	76.2		34.8		96.6		64.2
18	450	20	7.92	78.4		37.8		99.6		65.5
18	450	STD	9.53	80.7		40.8		103		66.8
18	450	30	11.13	83.0		43.8		106		68.1
18	450	XS	12.70	85.2		46.7		108		69.3
18	450	40	14.27	87.4		49.6		111		70.5
18	450	60	19.05	93.9		58.2		120		74.2
18	450	80	23.83	100		66.7		128		77.9
18	450	100	29.36	108		76.2		138		81.9
20	500	105	5.54	86.9	213	39.1	70.5	110	196	73.9
20	500	10	6.35	88.3		41.0		111		74.7
20	500	20	9.53	93.7		48.0		119		77.8
20	500	30	12.70	98.9		55.0		126		80.8

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
20	500	40	15.09	103		60.2		131		83.1
20	500	60	20.62	112		72.1		143		88.3
20	500	80	26.19	121		83.7		154		93.3
20	500	100	32.54	131		96.7		167		99.0
22	550	105	5.54	117	285	49.7	96.7	146	255	97.3
22	550	10	6.35	118		51.8		149		98.2
22	550	20	9.53	125		60.2		157		102
22	550	30	12.70	131		68.5		165		105
22	550	ISO	16.00	137		77.0		174		109
22	550	60	22.23	149		92.7		189		116
22	550	80	28.58	161		108		205		123
22	550	100	34.93	173		124		220		129
24	600	105	6.35	139	351	62.8	113	176	316	116
24	600	20	9.53	146		72.5		186		120
24	600	XS	12.70	153		82.1		195		124
24	600	30	14.27	157		86.7		200		126
24	600	40	17.48	164		96.2		209		131
24	600	60	24.61	180		117		230		140
24	600	80	30.96	194		135		248		148
24	600	100	38.89	210		157		270		157
26	650	10	7.92	158	418	75.9	123	199	381	133
26	650	STD	9.53	162		81.5		205		135
26	650	20	12.70	170		92.3		216		140
26	650	ISO	14.20	174		97.4		221		142
26	650	ISO	16.00	179		103		227		145
26	650	ISO	17.50	183		108		232		147
26	650	ISO	20.00	189		117		240		151
26	650	ISO	22.20	195		124		247		154
26	650	ISO	25.00	202		133		257		158
26	650	ISO	28.00	209		143		266		163
28	700	10	7.92	194	517	91.2	154	245	466	162
28	700	STD	9.53	199		97.5		252		165
28	700	20	12.70	208		110		264		170
28	700	30	15.88	218		122		276		176
28	700	ISO	16.00	218		123		277		176



Vector SPO® Compact Flange

CL600

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
28	700	ISO	17.50	222		128		282		178
28	700	ISO	20.00	230		138		292		183
28	700	ISO	22.20	236		146		300		186
28	700	ISO	25.00	244		157		311		191
28	700	ISO	28.00	253		168		322		196
28	700	ISO	30.00	259		175		329		199
30	750	10	7.92	221	614	107	176	283	556	186
30	750	STD	9.53	227		114		290		189
30	750	20	12.70	237		128		304		195
30	750	30	15.88	248		142		318		201
30	750	ISO	17.50	253		149		325		205
30	750	ISO	20.00	262		160		335		209
30	750	ISO	22.20	269		169		345		214
30	750	ISO	25.00	278		181		357		219
30	750	ISO	28.00	288		194		369		225
30	750	ISO	30.00	294		202		378		228
32	800	10	7.92	265	745	120	214	333	661	219
32	800	STD	9.53	271		128		341		223
32	800	20	12.70	283		143		357		230
32	800	30	15.88	295		159		372		236
32	800	40	17.48	301		166		380		240
32	800	ISO	20.00	311		178		392		245
32	800	ISO	22.20	319		189		403		250
32	800	ISO	25.00	329		202		416		256
32	800	ISO	28.00	340		216		430		262
32	800	ISO	30.00	347		226		440		267
32	800	ISO	32.00	355		235		449		271
34	850	10	7.92	316	889	140	258	397	789	262
34	850	STD	9.53	323		149		406		266
34	850	20	12.70	336		166		423		274
34	850	30	15.88	349		183		441		282
34	850	40	17.48	356		192		449		285
34	850	ISO	20.00	367		205		463		292
34	850	ISO	22.20	376		217		475		297
34	850	ISO	25.00	387		232		490		304

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
34	850	ISO	28.00	400		248		505		311
34	850	ISO	30.00	408		258		516		315
34	850	ISO	32.00	416		269		526		320
34	850	ISO	36.00	432		290		547		330
36	900	10	7.92	369	1075	160	303	462	918	295
36	900	STD	9.53	377		170		473		300
36	900	20	12.70	392		189		492		309
36	900	30	15.88	407		209		512		317
36	900	40	19.05	421		228		531		326
36	900	ISO	20.00	426		234		537		328
36	900	ISO	22.20	436		247		550		334
36	900	ISO	25.00	449		264		567		342
36	900	ISO	28.00	462		282		585		350
36	900	ISO	30.00	472		294		597		355
36	900	ISO	32.00	481		306		609		360
36	900	ISO	36.00	498		329		632		371
38	950	STD	9.53	418	1207	187	335	521	1067	344
38	950	XS	12.70	434		208		542		354
38	950	ISO	14.20	442		218		552		358
38	950	ISO	16.00	451		230		564		364
38	950	ISO	17.50	459		239		574		368
38	950	ISO	20.00	471		256		590		376
38	950	ISO	22.20	483		270		605		382
38	950	ISO	25.00	497		288		623		391
38	950	ISO	28.00	512		308		642		400
38	950	ISO	30.00	522		320		655		405
38	950	ISO	32.00	532		333		668		411
38	950	ISO	36.00	552		358		693		423
38	950	ISO	40.00	571		383		718		434
40	1000	STD	9.53	459	1373	212	368	579	1211	378
40	1000	XS	12.70	477		235		602		389
40	1000	ISO	14.20	486		246		613		394
40	1000	ISO	16.00	496		259		626		400
40	1000	ISO	17.50	504		269		637		404
40	1000	ISO	20.00	518		287		655		413

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
40	1000	ISO	22.20	531		303		671		420
40	1000	ISO	25.00	546		323		691		429
40	1000	ISO	28.00	563		344		712		439
40	1000	ISO	30.00	574		358		726		445
40	1000	ISO	32.00	585		372		740		451
40	1000	ISO	36.00	607		400		768		464
40	1000	ISO	40.00	628		428		796		477
42	1050	STD	9.53	548	1640	234	445	679	1390	436
42	1050	XS	12.70	567		260		705		447
42	1050	ISO	14.20	577		272		717		453
42	1050	ISO	16.00	588		286		731		459
42	1050	ISO	17.50	597		298		743		464
42	1050	ISO	20.00	612		318		763		473
42	1050	ISO	22.20	626		335		780		481
42	1050	ISO	25.00	643		357		802		491
42	1050	ISO	28.00	661		381		826		502
42	1050	ISO	30.00	673		396		841		509
42	1050	ISO	32.00	685		412		857		516
42	1050	ISO	36.00	708		443		888		530
42	1050	ISO	40.00	732		473		918		543
44	1100	ISO	22.20	672	1824	368	476	844	1566	523
44	1100	ISO	25.00	690		392		868		533
44	1100	ISO	28.00	710		417		894		545
44	1100	ISO	30.00	723		434		911		553
44	1100	ISO	32.00	736		451		927		560
44	1100	ISO	36.00	762		485		961		576
44	1100	ISO	40.00	787		518		994		591
44	1100	ISO	45.00	819		559		1035		609
46	1150	ISO	22.20	777	2069	434	560	994	1797	613
46	1150	ISO	25.00	798		460		1020		625
46	1150	ISO	28.00	819		487		1048		637
46	1150	ISO	30.00	834		506		1066		646
46	1150	ISO	32.00	848		524		1084		654
46	1150	ISO	36.00	877		560		1121		671
46	1150	ISO	40.00	905		596		1157		687

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
46	1150	ISO	45.00	940	2428	641	643	1201	2002	707
48	1200	ISO	25.00	903		502		1146		679
48	1200	ISO	28.00	926		533		1176		692
48	1200	ISO	30.00	942		553		1196		701
48	1200	ISO	32.00	957		573		1217		710
48	1200	ISO	36.00	988		614		1257		728
48	1200	ISO	40.00	1019		653		1297		746
48	1200	ISO	45.00	1057		703		1346		768

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	4	1/2	80	95	100	75									26 / 14
1 1/2	40	8	1/2	90	110	110	80									26 / 14
2	50	8	1/2	90	105	110	80									26 / 14
2 1/2	65	12	1/2	95	115	120	85									26 / 14
3	80	12	1/2	90	115	120	80									26 / 14
4	100	12	5/8	110	135	145	100									31 / 17
5	125	12	5/8	120	145	155	105									31 / 17
6	150	12	5/8	120	145	160	105									31 / 17
8	200	20	5/8	135	165	180	110									31 / 17
10	250	20	3/4	165	195	215	135	175	210	225	160				14	37 / 21
12	300	20	7/8	185	225	245	155	200	240	260	185				19	42 / 24
14	350	24	7/8	195	235	255	160	210	250	270	185				15	42 / 24
16	400	24	1	220	265	290	180	235	280	305	210				17	48 / 28
18	450	24	1 1/8	240	290	315	200	260	310	335	240				21	53 / 30
20	500	28	1 1/8	255	305	335	205	270	325	355	240				15	53 / 30
22	550	24	1 1/4	275	335	360	220	300	355	385	260				18	59 / 33
24	600	28	1 1/4	285	350	380	230	310	375	400	260				12	59 / 33
26	650	32	1 1/4	295	365	395	235	320	385	420	260				7	59 / 33
28	700	32	1 3/8	320	390	420	250	345	415	445	290				12	64 / 36
30	750	36	1 3/8	330	405	440	255	355	430	465	290				6	64 / 36
32	800	32	1 1/2	355	435	470	280	380	465	495	315				8	70 / 40
34	850	32	1 5/8	375	460	495	295	405	490	525	340				12	75 / 43
36	900	32	1 5/8	400	485	525	310	430	520	555	340				0	75 / 43
38	950	32	1 3/4	410	500	540	320	445	535	575	365				10	81 / 47
40	1000	36	1 3/4	420	520	560	330	455	555	595	365				4	81 / 47
42	1050	32	1 7/8	450	550	595	350	490	590	630	390				3	86 / 50
44	1100	36	1 7/8	460	565	610	355	500	605	650	395					86 / 50
46	1150	36	2	475	585	630	370	515	630	670	415				5	92 / 53
48	1200	36	2	505	620	665	385	545	660	705	425					92 / 53

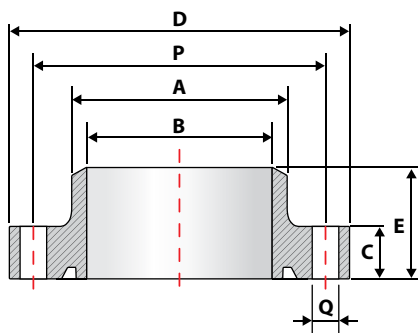
1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

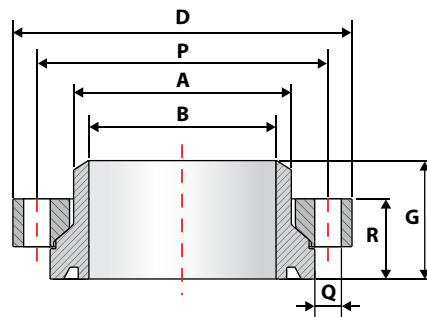
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1 1/2	40	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2	50	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2 1/2	65	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.2								
3	80	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.1								
4	100	12	5/8	1.3	1.7	2.1	2.2	1.5	3.0	3.4	3.5	2.2								
5	125	12	5/8	1.3	1.8	2.2	2.4	1.6	3.1	3.5	3.7	2.3								
6	150	12	5/8	1.3	1.8	2.2	2.4	1.6	3.1	3.5	3.7	2.3								
8	200	20	5/8	2.2	3.4	4.2	4.6	2.8	5.6	6.4	6.7	3.9								
10	250	20	3/4	3.5	6.2	7.3	8.0	5.0	9.7	10.8	11.5	6.8	6.5	7.8	8.4	6.0	10.1	11.4	11.9	9.3
12	300	20	7/8	5.4	9.5	11.5	12.6	7.9	14.9	16.9	18.0	10.6	10.3	12.3	13.3	9.5	15.7	17.7	18.7	15.0
14	350	24	7/8	6.5	12.0	14.5	15.7	9.8	18.5	20.9	22.2	13.1	12.9	15.4	16.6	11.4	19.4	21.9	23.1	17.3
16	400	24	1	9.3	17.7	21.4	23.4	14.5	27.0	30.6	32.6	19.1	18.9	22.6	24.6	16.9	28.2	31.8	33.8	25.4
18	450	24	1 1/8	12.9	25.0	30.2	32.8	20.8	37.9	43.1	45.7	27.3	27.0	32.2	34.8	25.0	40.0	45.2	47.8	37.4
20	500	28	1 1/8	15.1	30.9	37.0	40.7	24.9	46.0	52.1	55.7	32.4	32.8	39.4	43.1	29.1	47.8	54.5	58.1	41.6
22	550	24	1 1/4	17.1	35.9	43.7	46.9	28.7	53.0	60.8	64.1	37.3	39.1	46.3	50.2	33.9	56.3	63.4	67.3	48.8
24	600	28	1 1/4	20.0	43.4	53.2	57.8	35.0	63.3	73.2	77.8	45.0	47.2	57.0	60.8	39.6	67.1	77.0	80.8	54.5
26	650	32	1 1/4	22.8	51.3	63.5	68.7	40.9	74.1	86.3	91.5	52.3	55.6	66.9	73.0	45.2	78.5	89.8	95.9	59.9
28	700	32	1 3/8	29.6	68.2	83.1	89.5	53.3	97.8	113	119	68.1	73.5	88.4	94.8	61.8	103	118	124	83.2
30	750	36	1 3/8	33.3	79.1	97.1	105	61.1	112	130	139	77.8	85.1	103	111	69.5	118	136	145	89.9
32	800	32	1 1/2	38.1	90.9	111	120	71.7	129	150	158	90.8	97.4	119	127	80.7	135	157	165	105
34	850	32	1 5/8	47.1	114	140	150	89.5	161	187	197	113	123	149	159	103	170	196	206	136
36	900	32	1 5/8	47.1	121	147	159	94.0	168	194	206	118	130	158	168	103	178	205	215	127
38	950	32	1 3/4	59.3	145	177	191	113	205	237	251	143	158	190	204	129	217	249	263	168
40	1000	36	1 3/4	66.7	167	207	223	132	234	274	290	165	181	221	237	146	248	288	304	183
42	1050	32	1 7/8	70.1	184	225	244	143	254	295	314	178	201	242	258	160	271	312	328	198
44	1100	36	1 7/8	78.8	212	260	281	164	291	339	360	203	230	279	299	182	309	358	378	221
46	1150	36	2	97.8	250	308	332	195	348	406	430	244	271	332	353	219	369	430	451	274
48	1200	36	2	97.8	266	327	351	203	364	425	448	252	287	348	372	224	385	446	469	273

1) Bolt set weight includes washers weight, if applicable.

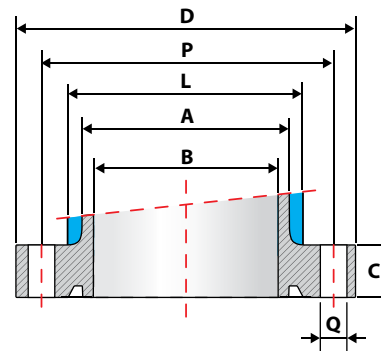
Weld Neck



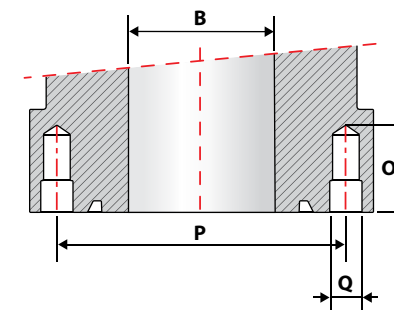
Swivel



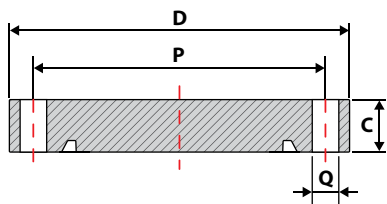
Integral



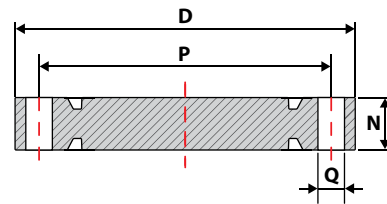
Rigid Interface



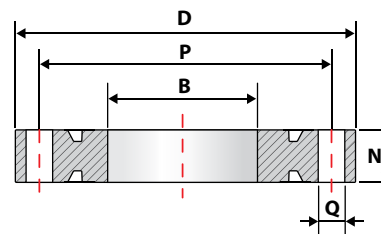
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	20	0.79	93	3.66	51	2.01	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	20	0.79	98	3.86	53	2.09	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	20	0.79	105	4.13	56	2.20	61	2.40	41	1.61	19	0.75	34	1.34	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.69	23	0.91	121	4.76	64	2.52	72	2.83	58	2.28	22	0.87	42	1.65	42	1.65	95.3	3.75	15	0.59	8	1/2
2	50	60.3	2.37	54.8	2.16	23	0.91	136	5.35	60	2.36	69	2.72	73	2.87	23	0.91	41	1.61	42	1.65	110.0	4.33	15	0.59	8	1/2
2 1/2	65	73.0	2.87	66.9	2.63	26	1.02	149	5.87	66	2.60	75	2.95	87	3.43	26	1.02	46	1.81	42	1.65	123.1	4.84	15	0.59	12	1/2
3	80	88.9	3.50	82.8	3.26	25	0.98	161	6.34	61	2.40	74	2.91	98	3.86	26	1.02	47	1.85	42	1.65	134.9	5.31	15	0.59	12	1/2
4	100	114.3	4.50	108.2	4.26	31	1.22	203	7.99	70	2.76	89	3.50	129	5.08	31	1.22	55	2.17	52	2.05	171.7	6.76	18	0.71	12	5/8
5	125	141.3	5.56	134.5	5.30	35	1.38	230	9.06	78	3.07	94	3.70	156	6.14	35	1.38	58	2.28	52	2.05	198.6	7.82	18	0.71	12	5/8
6	150	168.3	6.63	161.5	6.36	40	1.57	263	10.35	87	3.43	103	4.06	189	7.44	40	1.57	65	2.56	52	2.05	231.6	9.12	18	0.71	16	5/8
8	200	219.1	8.63	211.6	8.33	50	1.97	330	12.99	98	3.86	124	4.88	241	9.49	48	1.89	81	3.19	62	2.44	293.2	11.54	22	0.87	20	3/4
10	250	273.1	10.75	264.7	10.42	60	2.36	397	15.63	110	4.33	141	5.55	293	11.54	56	2.20	97	3.82	72	2.83	354.8	13.97	25	0.98	20	7/8
12	300	323.9	12.75	311.2	12.25	68	2.68	462	18.19	119	4.69	154	6.06	346	13.62	64	2.52	109	4.29	81	3.19	413.9	16.30	29	1.14	20	1
14	350	355.6	14.00	342.9	13.50	73	2.87	497	19.57	127	5.00	164	6.46	382	15.04	68	2.68	118	4.65	81	3.19	449.3	17.69	29	1.14	24	1
16	400	406.4	16.00	393.7	15.50	82	3.23	567	22.32	140	5.51	179	7.05	441	17.36	75	2.95	133	5.24	90	3.54	513.8	20.23	32	1.26	24	1 1/8
18	450	457.2	18.00	444.5	17.50	90	3.54	633	24.92	153	6.02	193	7.60	495	19.49	82	3.23	147	5.79	98	3.86	574.0	22.60	35	1.38	24	1 1/4
20	500	508.0	20.00	495.3	19.50	99	3.90	700	27.56	166	6.54	208	8.19	545	21.46	89	3.50	161	6.34	107	4.21	635.5	25.02	38	1.50	24	1 3/8
22	550	558.8	22.00	539.7	21.25	107	4.21	764	30.08	179	7.05	222	8.74	598	23.54	96	3.78	174	6.85	117	4.61	693.6	27.31	42	1.65	24	1 1/2
24	600	609.6	24.00	590.5	23.25	115	4.53	830	32.68	191	7.52	236	9.29	653	25.71	102	4.02	187	7.36	126	4.96	754.2	29.69	45	1.77	24	1 5/8
26	650	660.4	26.00	632.0	24.88	124	4.88	894	35.20	204	8.03	251	9.88	706	27.80	109	4.29	201	7.91	136	5.35	812.8	32.00	49	1.93	24	1 3/4
28	700	711.2	28.00	679.4	26.75	141	5.55	948	37.32	214	8.43	274	10.79	759	29.88	116	4.57	223	8.78	136	5.35	866.4	34.11	49	1.93	24	1 3/4
30	750	762.0	30.00	730.2	28.75	149	5.87	1014	39.92	227	8.94	287	11.30	808	31.81	123	4.84	237	9.33	144	5.67	926.9	36.49	52	2.05	24	1 7/8
32	800	812.8	32.00	772.8	30.43	157	6.18	1081	42.56	239	9.41	301	11.85	864	34.02	129	5.08	250	9.84	153	6.02	988.4	38.91	55	2.17	24	2
34	850	863.6	34.00	819.2	32.25	158	6.22	1160	45.67	254	10.00	309	12.17	915	36.02	135	5.31	257	10.12	171	6.73	1057.1	41.62	62	2.44	24	2 1/4
36	900	914.4	36.00	870.0	34.25	176	6.93	1214	47.80	265	10.43	333	13.11	969	38.15	142	5.59	280	11.02	171	6.73	1110.7	43.73	62	2.44	24	2 1/4
38	950	965.2	38.00	909.2	35.80	174	6.85	1291	50.83	279	10.98	337	13.27	1023	40.28	148	5.83	283	11.14	188	7.40	1176.8	46.33	68	2.68	24	2 1/2
40	1000	1016.0	40.00	956.0	37.64	190	7.48	1344	52.91	290	11.42	359	14.13	1077	42.40	155	6.10	305	12.01	188	7.40	1230.0	48.42	68	2.68	24	2 1/2
42	1050	1066.8	42.00	1016.8	40.03	192	7.56	1396	54.96	300	11.81	366	14.41	1129	44.45	161	6.34	311	12.24	188	7.40	1282.1	50.48	68	2.68	28	2 1/2
44	1100	1117.6	44.00	1053.6	41.48	211	8.31	1451	57.13	310	12.20	392	15.43	1183	46.57	167	6.57	336	13.23	188	7.40	1336.8	52.63	68	2.68	28	2 1/2
46	1150	1168.4	46.00	1096.4	43.17	219	8.62	1527	60.12	324	12.76	406	15.98	1225	48.23	173	6.81	349	13.74	206	8.11	1401.9	55.19	74	2.91	28	2 3/4
48	1200	1219.2	48.00	1147.2	45.17	218	8.58	1618	63.70	342	13.46	413	16.26	1294	50.94	179	7.05	356	14.02	224	8.82	1482.0	58.35	81	3.19	28	3

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	10S	2.11	0.91	0.91	0.20	0.95	1.2	0.73	0.70
1/2	15	40	2.77	0.92		0.21		1.2		0.71
1/2	15	80	3.73	0.94		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
3/4	20	10S	2.11	1.0	1.0	0.25	1.0	1.3	0.88	0.82
3/4	20	40	2.87	1.0		0.28		1.3		0.83
3/4	20	80	3.91	1.1		0.31		1.3		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
1	25	10S	2.77	1.2	1.2	0.36	1.2	1.5	1.1	0.99
1	25	40	3.38	1.2		0.39		1.6		1.0
1	25	80	4.55	1.2		0.43		1.6		1.0
1	25	160	6.35	1.3		0.49		1.7		1.0
1	25	XXS	9.09	1.4		0.57		1.7		1.1
1 1/2	40	10S	2.77	1.6	1.7	0.63	1.6	2.3	1.6	1.4
1 1/2	40	40	3.68	1.7		0.70		2.3		1.4
1 1/2	40	80	5.08	1.8		0.79		2.4		1.4
1 1/2	40	160	7.14	1.9		0.93		2.6		1.4
1 1/2	40	XXS	10.15	2.0		1.1		2.7		1.5
2	50	10S	2.77	2.0	2.3	0.76	2.0	2.8	2.2	1.8
2	50	40	3.91	2.1		0.86		2.9		1.8
2	50	80	5.54	2.2		1.0		3.0		1.8
2	50	160	8.74	2.4		1.3		3.3		1.9
2	50	XXS	11.07	2.6		1.4		3.4		2.0
2 1/2	65	10S	3.05	2.5	3.0	1.0	2.4	3.4	2.9	2.2
2 1/2	65	40	5.16	2.7		1.3		3.7		2.3
2 1/2	65	80	7.01	2.9		1.5		3.9		2.3
2 1/2	65	160	9.53	3.1		1.8		4.2		2.4
2 1/2	65	XXS	14.02	3.5		2.2		4.6		2.6
3	80	10S	3.05	2.6	3.4	1.1	2.7	3.8	3.4	2.3
3	80	40	5.49	2.9		1.4		4.2		2.4
3	80	80	7.62	3.1		1.7		4.5		2.6
3	80	160	11.13	3.5		2.2		4.9		2.7
3	80	XXS	15.24	3.9		2.6		5.4		2.9
4	100	10S	3.05	4.9	6.8	2.0	4.9	6.9	6.6	4.4
4	100	40	6.02	5.5		2.7		7.6		4.6

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
4	100	80	8.56	5.9		3.3		8.2		4.8
4	100	120	11.13	6.3		3.8		8.7		5.0
4	100	160	13.49	6.7		4.3		9.2		5.2
4	100	XXS	17.12	7.2		4.9		9.9		5.4
5	125	10S	3.40	6.8	10.2	2.8	5.8	8.6	9.9	6.0
5	125	40	6.55	7.6		3.8		9.6		6.3
5	125	80	9.53	8.3		4.7		10.5		6.7
5	125	120	12.70	9.0		5.5		11.3		7.0
5	125	160	15.88	9.7		6.4		12.2		7.3
5	125	XXS	19.05	10.4		7.1		12.9		7.6
6	150	10S	3.40	9.5	15.2	4.3	7.6	11.9	14.8	8.4
6	150	40	7.11	10.7		5.8		13.4		9.0
6	150	80	10.97	12.0		7.3		14.9		9.5
6	150	120	14.27	13.0		8.5		16.1		10.0
6	150	160	18.26	14.2		9.8		17.5		10.5
6	150	XXS	21.95	15.2		11.0		18.7		11.0
8	200	10S	3.76	16.9	29.6	7.7	13.6	21.3	27.9	14.6
8	200	20	6.35	18.2		9.4		23.0		15.3
8	200	30	7.04	18.6		9.8		23.4		15.4
8	200	40	8.18	19.1		10.5		24.1		15.7
8	200	60	10.31	20.2		11.9		25.4		16.2
8	200	80	12.70	21.3		13.3		26.8		16.8
8	200	100	15.09	22.4		14.7		28.2		17.3
8	200	120	18.26	23.9		16.5		30.0		18.0
8	200	140	20.62	24.9		17.8		31.3		18.5
8	200	XXS	22.23	25.6		18.7		32.2		18.8
8	200	160	23.01	25.9		19.1		32.6		19.0
8	200	ISO	25.00	26.7		20.1		33.7		19.4
10	250	10S	4.19	27.8	52.0	12.2	22.7	34.9	47.5	23.3
10	250	20	6.35	29.3		14.2		36.9		24.1
10	250	30	7.80	30.3		15.5		38.2		24.6
10	250	40	9.27	31.4		16.8		39.5		25.1
10	250	60	12.70	33.7		19.8		42.5		26.3
10	250	80	15.09	35.3		21.9		44.6		27.1
10	250	100	18.26	37.4		24.5		47.2		28.2



Vector SPO® Compact Flange

CL900

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
10	250	120	21.44	39.4		27.1		49.8		29.2
10	250	140	25.40	41.8		30.2		52.9		30.4
10	250	160	28.58	43.7		32.6		55.3		31.4
12	300	105	4.57	40.9	80.2	17.5	33.8	51.3	74.1	35.0
12	300	20	6.35	42.6		19.6		53.4		35.9
12	300	30	8.38	44.4		22.0		55.8		36.9
12	300	STD	9.53	45.4		23.3		57.1		37.5
12	300	40	10.31	46.1		24.2		58.0		37.8
12	300	XS	12.70	48.2		27.0		60.8		39.0
12	300	60	14.27	49.6		28.7		62.5		39.7
12	300	80	17.48	52.4		32.3		66.1		41.2
12	300	100	21.44	55.7		36.6		70.4		43.0
12	300	120	25.40	58.9		40.8		74.6		44.7
12	300	140	28.58	61.5		44.0		77.8		46.1
12	300	160	33.32	65.1		48.7		82.5		48.0
14	350	105	4.78	48.4	99.4	21.9	39.1	61.0	91.1	40.9
14	350	10	6.35	50.1		24.1		63.2		41.8
14	350	20	7.92	51.7		26.3		65.3		42.7
14	350	30	9.53	53.4		28.5		67.5		43.6
14	350	40	11.13	55.1		30.6		69.7		44.5
14	350	XS	12.70	56.7		32.8		71.8		45.4
14	350	60	15.09	59.2		35.9		75.0		46.7
14	350	80	19.05	63.2		41.1		80.1		48.9
14	350	100	23.83	67.9		47.1		86.2		51.4
14	350	120	27.79	71.7		52.0		91.0		53.4
14	350	140	31.75	75.4		56.7		95.8		55.4
14	350	160	35.71	79.0		61.3		100		57.3
16	400	105	4.78	70.5	146	32.0	58.0	90.0	132	59.3
16	400	10	6.35	72.6		34.8		92.8		60.4
16	400	20	7.92	74.7		37.5		95.5		61.6
16	400	30	9.53	76.9		40.2		98.2		62.7
16	400	40	12.70	81.1		45.6		104		65.0
16	400	60	16.66	86.3		52.2		110		67.8
16	400	80	21.44	92.4		60.0		118		71.0
16	400	100	26.19	98.3		67.5		125		74.2

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
16	400	120	30.96	104		74.8		133		77.2
16	400	140	36.53	111		83.2		141		80.7
16	400	160	40.49	115		88.9		147		83.1
18	450	105	4.78	94.7	201	41.9	78.9	121	181	79.9
18	450	10	6.35	97.3		45.3		124		81.3
18	450	20	7.92	99.9		48.6		127		82.7
18	450	STD	9.53	103		51.9		131		84.1
18	450	30	11.13	105		55.2		134		85.6
18	450	XS	12.70	108		58.5		137		86.9
18	450	40	14.27	110		61.7		141		88.3
18	450	60	19.05	118		71.3		150		92.4
18	450	80	23.83	125		80.8		160		96.4
18	450	100	29.36	134		91.4		170		101
18	450	120	34.93	142		102		181		105
18	450	140	39.67	149		110		189		109
18	450	160	45.24	157		120		199		113
20	500	105	5.54	127	272	56.9	105	162	242	106
20	500	10	6.35	129		59.0		164		107
20	500	20	9.53	135		67.0		172		111
20	500	30	12.70	142		74.9		180		114
20	500	40	15.09	146		80.8		186		117
20	500	60	20.62	157		94.1		199		122
20	500	80	26.19	168		107		212		128
20	500	100	32.54	179		122		227		134
20	500	120	38.10	190		134		240		140
20	500	140	44.45	201		148		253		146
20	500	160	50.01	210		160		265		151
22	550	105	5.54	159	349	68.6	133	201	311	133
22	550	10	6.35	161		71.0		204		134
22	550	20	9.53	169		80.5		213		138
22	550	30	12.70	176		89.8		223		142
22	550	ISO	16.00	184		99.4		232		147
22	550	60	22.23	198		117		250		154
22	550	80	28.58	213		135		268		162
22	550	100	34.93	227		152		285		169

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
22	550	120	41.28	240		169		302		177
22	550	140	47.63	254		185		318		184
22	550	160	53.98	267		201		334		191
24	600	105	6.35	202	445	88.1	168	256	391	167
24	600	20	9.53	211		99.1		267		172
24	600	XS	12.70	220		110		278		177
24	600	30	14.27	224		115		283		179
24	600	40	17.48	233		126		294		184
24	600	60	24.61	252		150		318		194
24	600	80	30.96	269		170		338		203
24	600	100	38.89	289		195		363		214
24	600	120	46.02	307		217		385		223
24	600	140	52.37	322		236		404		231
24	600	160	59.54	339		256		424		240
26	650	ISO	14.20	272	556	136	205	341	485	217
26	650	ISO	16.00	278		143		348		220
26	650	ISO	17.50	283		149		354		223
26	650	ISO	20.00	291		158		363		227
26	650	ISO	22.20	297		167		372		230
26	650	ISO	25.00	306		177		382		235
26	650	ISO	28.00	315		189		394		240
26	650	ISO	30.00	321		196		401		243
26	650	ISO	32.00	327		204		408		246
26	650	ISO	36.00	339		218		423		253
26	650	ISO	40.00	351		233		438		259
28	700	30	15.88	342	720	167	257	425	586	256
28	700	ISO	16.00	343		168		425		256
28	700	ISO	17.50	348		175		432		259
28	700	ISO	20.00	357		186		443		264
28	700	ISO	22.20	365		196		453		268
28	700	ISO	25.00	374		209		466		274
28	700	ISO	28.00	385		222		479		279
28	700	ISO	30.00	392		231		488		283
28	700	ISO	32.00	399		239		497		287
28	700	ISO	36.00	412		257		514		294

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
28	700	ISO	40.00	426		274		531		301
30	750	30	15.88	409	872	197	311	508	713	309
30	750	ISO	17.50	416		206		517		313
30	750	ISO	20.00	426		218		530		318
30	750	ISO	22.20	435		230		541		323
30	750	ISO	25.00	446		244		555		329
30	750	ISO	28.00	458		259		570		335
30	750	ISO	30.00	466		269		580		340
30	750	ISO	32.00	474		279		590		344
30	750	ISO	36.00	489		298		609		352
30	750	ISO	40.00	505		318		629		361
30	750	ISO	45.00	524		342		653		371
32	800	ISO	20.00	504	1045	256	374	630	851	376
32	800	ISO	22.20	514		269		642		382
32	800	ISO	25.00	527		285		658		388
32	800	ISO	28.00	540		302		675		396
32	800	ISO	30.00	549		313		686		400
32	800	ISO	32.00	558		324		698		405
32	800	ISO	36.00	576		346		720		415
32	800	ISO	40.00	593		368		742		424
32	800	ISO	45.00	615		395		769		436
34	850	ISO	22.20	597	1199	314	438	752	1020	461
34	850	ISO	25.00	611		332		770		469
34	850	ISO	28.00	627		350		788		477
34	850	ISO	30.00	637		363		801		482
34	850	ISO	32.00	647		375		813		488
34	850	ISO	36.00	667		399		837		498
34	850	ISO	40.00	687		423		861		509
34	850	ISO	45.00	711		453		891		522
34	850	ISO	50.00	735		482		920		535
36	900	ISO	25.00	723	1477	378	527	905	1183	529
36	900	ISO	28.00	740		399		926		538
36	900	ISO	30.00	751		413		940		544
36	900	ISO	32.00	762		427		954		550
36	900	ISO	36.00	784		455		982		562

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
36	900	ISO	40.00	806		482		1009		574
36	900	ISO	45.00	834		516		1043		588
36	900	ISO	50.00	860		550		1077		602
38	950	ISO	28.00	831	1640	452	592	1044	1390	636
38	950	ISO	30.00	843		467		1059		643
38	950	ISO	32.00	856		482		1074		649
38	950	ISO	36.00	880		512		1104		662
38	950	ISO	40.00	905		542		1134		675
38	950	ISO	45.00	935		578		1170		691
38	950	ISO	50.00	966		614		1207		707
38	950	ISO	55.00	995		650		1242		723
40	1000	ISO	30.00	970	1958	523	690	1213	1588	715
40	1000	ISO	32.00	983		540		1230		722
40	1000	ISO	36.00	1010		573		1263		736
40	1000	ISO	40.00	1037		607		1297		751
40	1000	ISO	45.00	1071		648		1338		769
40	1000	ISO	50.00	1104		689		1379		786
40	1000	ISO	55.00	1137		729		1419		804
42	1050	ISO	32.00	1030	2121	585	714	1299	1772	773
42	1050	ISO	36.00	1060		621		1335		789
42	1050	ISO	40.00	1089		656		1370		805
42	1050	ISO	45.00	1125		701		1415		824
42	1050	ISO	50.00	1162		744		1458		844
42	1050	ISO	55.00	1197		788		1502		863
42	1050	ISO	60.00	1233		831		1545		882
44	1100	ISO	32.00	1191	2537	656	841	1496	1997	854
44	1100	ISO	36.00	1223		696		1537		871
44	1100	ISO	40.00	1254		737		1577		888
44	1100	ISO	45.00	1294		786		1627		910
44	1100	ISO	50.00	1333		836		1676		931
44	1100	ISO	55.00	1372		885		1725		952
44	1100	ISO	60.00	1411		933		1774		972
46	1150	ISO	36.00	1400	2903	781	978	1759	2282	1000
46	1150	ISO	40.00	1435		825		1803		1019
46	1150	ISO	45.00	1478		879		1857		1042

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
46	1150	ISO	50.00	1521		933		1911		1065
46	1150	ISO	55.00	1564		986		1964		1087
46	1150	ISO	60.00	1606		1039		2017		1110
46	1150	ISO	65.00	1648		1091		2069		1132
48	1200	ISO	36.00	1598	3221	913	1128	2041	2639	1186
48	1200	ISO	40.00	1637		959		2088		1207
48	1200	ISO	45.00	1685		1017		2145		1232
48	1200	ISO	50.00	1733		1074		2203		1256
48	1200	ISO	55.00	1780		1131		2259		1281
48	1200	ISO	60.00	1827		1187		2315		1305
48	1200	ISO	65.00	1873		1243		2371		1330

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	4	1/2	80	95	100	75									26 / 14
1 1/2	40	8	1/2	90	110	110	80									26 / 14
2	50	8	1/2	90	105	110	80									26 / 14
2 1/2	65	12	1/2	95	115	120	85									26 / 14
3	80	12	1/2	90	115	120	80									26 / 14
4	100	12	5/8	110	135	145	100									31 / 17
5	125	12	5/8	120	145	155	105									31 / 17
6	150	16	5/8	130	155	170	110									31 / 17
8	200	20	3/4	160	190	205	130	170	200	220	160				17	37 / 21
10	250	20	7/8	185	225	245	155	200	240	255	185				19	42 / 24
12	300	20	1	210	255	275	175	225	270	290	210				22	48 / 28
14	350	24	1	220	265	290	180	235	285	305	210				17	48 / 28
16	400	24	1 1/8	245	300	320	200	265	315	340	240				19	53 / 30
18	450	24	1 1/4	265	325	350	220	290	345	375	260				22	59 / 33
20	500	24	1 3/8	290	355	380	240	315	380	405	290				25	64 / 36
22	550	24	1 1/2	315	380	410	260	345	410	440	315				27	70 / 40
24	600	24	1 5/8	335	410	440	275	370	440	470	340				30	75 / 43
26	650	24	1 3/4	360	440	475	300	395	475	510	365				33	81 / 47
28	700	24	1 3/4	395	480	515	315	430	515	550	365				16	81 / 47
30	750	24	1 7/8	420	510	545	335	455	545	580	390				19	86 / 50
32	800	24	2	440	535	570	355	480	580	615	415				22	92 / 53
34	850	24	2 1/4	455	555	595	380	505	605	640	470				43	103 / 60
36	900	24	2 1/4	490	600	635	395	540	645	685	470				25	103 / 60
38	950	24	2 1/2	500	610	650	415	555	665	705	520				49	114 / 66
40	1000	24	2 1/2	535	650	690	430	585	705	745	520				33	114 / 66
42	1050	28	2 1/2	535	660	700	435	590	710	755	520				31	114 / 66
44	1100	28	2 1/2	575	700	745	455	630	755	800	520				12	114 / 66
46	1150	28	2 3/4	605	735	780	485	665	795	840	570				27	125 / 72
48	1200	28	3	615	755	795	505	680	820	860	620				49	136 / 78

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

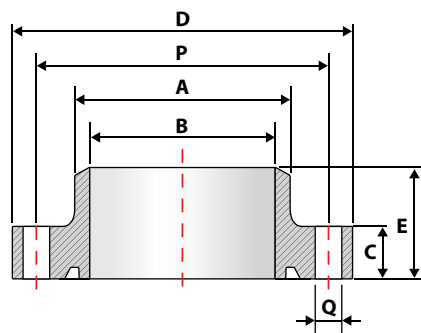
2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.



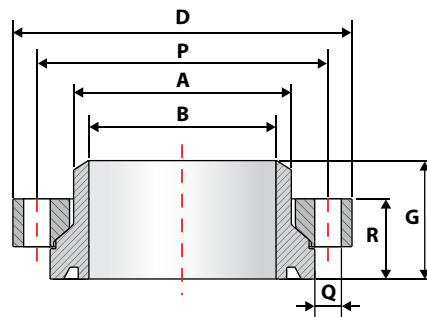
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1 1/2	40	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2	50	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2 1/2	65	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.2								
3	80	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.1								
4	100	12	5/8	1.3	1.7	2.1	2.2	1.5	3.0	3.4	3.5	2.2								
5	125	12	5/8	1.3	1.8	2.2	2.4	1.6	3.1	3.5	3.7	2.3								
6	150	16	5/8	1.7	2.6	3.2	3.5	2.2	4.4	4.9	5.2	3.1								
8	200	20	3/4	3.5	6.0	7.1	7.7	4.9	9.5	10.6	11.2	6.6	6.3	7.5	8.2	6.0	9.9	11.0	11.7	9.7
10	250	20	7/8	5.4	9.5	11.5	12.6	7.9	14.9	16.9	18.0	10.6	10.3	12.3	13.1	9.5	15.7	17.7	18.5	15.0
12	300	20	1	7.7	14.1	17.1	18.5	11.8	21.8	24.8	26.2	15.6	15.1	18.1	19.5	14.1	22.8	25.8	27.2	22.1
14	350	24	1	9.3	17.7	21.4	23.4	14.5	27.0	30.6	32.6	19.1	18.9	23.0	24.6	16.9	28.2	32.2	33.8	25.4
16	400	24	1 1/8	12.9	25.5	31.2	33.3	20.8	38.4	44.1	46.2	27.3	27.6	32.8	35.4	25.0	40.5	45.7	48.3	36.8
18	450	24	1 1/4	17.1	34.6	42.4	45.6	28.7	51.7	59.5	62.8	37.3	37.8	45.0	48.9	33.9	54.9	62.1	66.0	50.3
20	500	24	1 3/8	22.2	46.3	56.7	60.7	38.4	68.6	79.0	82.9	49.5	50.3	60.7	64.7	46.3	72.6	82.9	86.9	67.8
22	550	24	1 1/2	28.6	60.5	73.0	78.8	50.0	89.1	102	107	64.2	66.3	78.8	84.5	60.5	94.8	107	113	88.0
24	600	24	1 5/8	35.3	76.2	93.3	100	62.6	112	129	135	80.2	84.2	100	107	77.4	120	135	142	112
26	650	24	1 3/4	44.5	95.7	117	126	79.7	140	161	171	102	105	126	136	97.0	149	171	180	141
28	700	24	1 3/4	44.5	105	128	137	83.7	149	172	181	106	114	137	146	97.0	159	181	191	130
30	750	24	1 7/8	52.6	129	157	167	103	182	209	220	129	140	167	178	120	192	220	231	160
32	800	24	2	65.2	155	188	200	125	220	253	266	157	169	204	216	146	234	269	281	197
34	850	24	2 1/4	91.3	204	249	267	171	296	341	358	216	227	272	287	211	318	363	379	301
36	900	24	2 1/4	91.3	220	269	285	177	311	361	376	223	242	290	308	211	334	381	399	283
38	950	24	2 1/2	123	279	341	363	232	402	464	486	293	310	371	394	290	433	494	517	414
40	1000	24	2 1/2	123	299	363	385	240	422	486	508	302	327	394	416	290	450	517	539	394
42	1050	28	2 1/2	143	349	430	456	283	492	573	599	355	384	463	492	339	528	606	635	457
44	1100	28	2 1/2	143	375	456	485	296	518	599	629	368	410	492	521	339	554	635	665	428
46	1150	28	2 3/4	188	480	583	619	385	667	771	806	479	527	631	666	452	715	818	854	595
48	1200	28	3	242	583	716	754	479	825	958	996	600	645	778	816	588	887	1020	1058	814

1) Bolt set weight includes washers weight, if applicable.

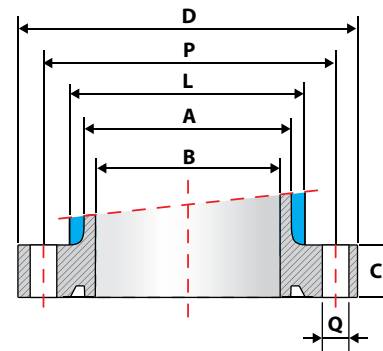
Weld Neck



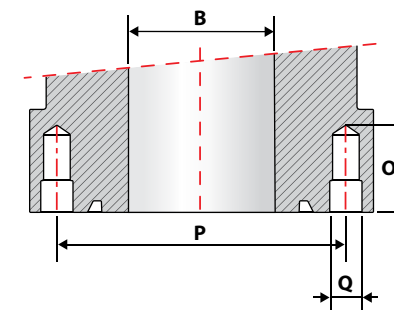
Swivel



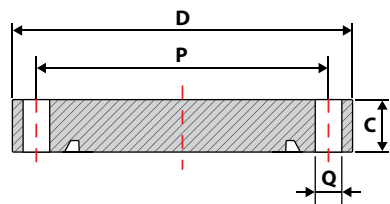
Integral



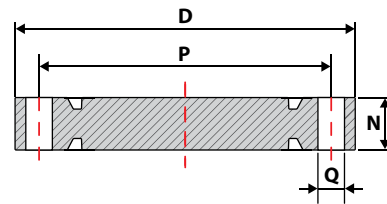
Rigid Interface



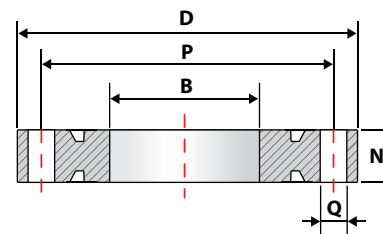
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	20	0.79	93	3.66	51	2.01	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	20	0.79	98	3.86	53	2.09	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	20	0.79	105	4.13	56	2.20	61	2.40	41	1.61	19	0.75	34	1.34	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.69	23	0.91	121	4.76	64	2.52	72	2.83	58	2.28	22	0.87	42	1.65	42	1.65	95.3	3.75	15	0.59	8	1/2
2	50	60.3	2.37	54.8	2.16	23	0.91	136	5.35	60	2.36	69	2.72	73	2.87	23	0.91	41	1.61	42	1.65	110.0	4.33	15	0.59	8	1/2
2 1/2	65	73.0	2.87	66.9	2.63	26	1.02	149	5.87	66	2.60	75	2.95	87	3.43	26	1.02	46	1.81	42	1.65	123.1	4.84	15	0.59	12	1/2
3	80	88.9	3.50	77.9	3.07	30	1.18	180	7.09	73	2.87	85	3.35	105	4.13	29	1.14	54	2.13	52	2.05	148.3	5.84	18	0.71	12	5/8
4	100	114.3	4.50	102.3	4.03	37	1.46	224	8.82	86	3.39	103	4.06	135	5.31	35	1.38	64	2.52	62	2.44	187.0	7.36	22	0.87	12	3/4
5	125	141.3	5.56	128.2	5.05	43	1.69	261	10.28	92	3.62	113	4.45	157	6.18	40	1.57	75	2.95	72	2.83	218.6	8.61	25	0.98	12	7/8
6	150	168.3	6.63	154.1	6.07	50	1.97	307	12.09	101	3.98	125	4.92	191	7.52	45	1.77	86	3.39	81	3.19	258.8	10.19	29	1.14	12	1
8	200	219.1	8.63	206.4	8.13	60	2.36	365	14.37	115	4.53	142	5.59	250	9.84	54	2.13	96	3.78	81	3.19	317.4	12.50	29	1.14	16	1
10	250	273.1	10.75	257.5	10.14	75	2.95	453	17.83	136	5.35	167	6.57	315	12.40	65	2.56	120	4.72	98	3.86	393.6	15.50	35	1.38	16	1 1/4
12	300	323.9	12.75	304.8	12.00	83	3.27	508	20.00	151	5.94	182	7.17	370	14.57	73	2.87	134	5.28	98	3.86	449.0	17.68	35	1.38	20	1 1/4
14	350	355.6	14.00	333.3	13.12	89	3.50	558	21.97	162	6.38	194	7.64	403	15.87	79	3.11	145	5.71	107	4.21	493.1	19.41	38	1.50	20	1 3/8
16	400	406.4	16.00	381.0	15.00	105	4.13	626	24.65	180	7.09	217	8.54	459	18.07	87	3.43	168	6.61	117	4.61	555.2	21.86	42	1.65	20	1 1/2
18	450	457.2	18.00	431.8	17.00	111	4.37	704	27.72	198	7.80	231	9.09	515	20.28	96	3.78	180	7.09	136	5.35	622.3	24.50	49	1.93	20	1 3/4
20	500	508.0	20.00	477.8	18.81	126	4.96	778	30.63	217	8.54	255	10.04	572	22.52	104	4.09	203	7.99	144	5.67	690.7	27.19	52	2.05	20	1 7/8
22	550	558.8	22.00	527.0	20.75	142	5.59	850	33.46	234	9.21	279	10.98	634	24.96	112	4.41	226	8.90	153	6.02	757.9	29.84	55	2.17	20	2
24	600	609.6	24.00	574.6	22.62	146	5.75	933	36.73	253	9.96	291	11.46	688	27.09	120	4.72	236	9.29	171	6.73	829.3	32.65	62	2.44	20	2 1/4
26	650	660.4	26.00	616.0	24.25	172	6.77	990	38.98	269	10.59	325	12.80	745	29.33	129	5.08	270	10.63	171	6.73	887.0	34.92	62	2.44	20	2 1/4
28	700	711.2	28.00	651.2	25.64	182	7.17	1051	41.38	285	11.22	344	13.54	805	31.69	137	5.39	287	11.30	171	6.73	947.2	37.29	62	2.44	24	2 1/4
30	750	762.0	30.00	702.0	27.64	186	7.32	1132	44.57	304	11.97	357	14.06	864	34.02	145	5.71	299	11.77	188	7.40	1017.5	40.06	68	2.68	24	2 1/2
32	800	812.8	32.00	740.8	29.17	202	7.95	1155	45.47	311	12.24	376	14.80	887	34.92	153	6.02	316	12.44	188	7.40	1040.8	40.98	68	2.68	24	2 1/2
34	850	863.6	34.00	791.6	31.17	214	8.43	1232	48.50	328	12.91	395	15.55	930	36.61	162	6.38	334	13.15	206	8.11	1107.1	43.59	74	2.91	24	2 3/4
36	900	914.4	36.00	834.4	32.85	222	8.74	1339	52.72	352	13.86	411	16.18	992	39.06	172	6.77	350	13.78	242	9.53	1191.3	46.90	88	3.46	20	3 1/4
38	950	965.2	38.00	875.2	34.46	226	8.90	1416	55.75	369	14.53	422	16.61	1050	41.34	181	7.13	360	14.17	260	10.24	1257.5	49.51	94	3.70	20	3 1/2
40	1000	1016.0	40.00	916.0	36.06	250	9.84	1452	57.17	382	15.04	456	17.95	1105	43.50	190	7.48	392	15.43	242	9.53	1305.0	51.38	88	3.46	24	3 1/4
42	1050	1066.8	42.00	966.8	38.06	257	10.12	1549	60.98	402	15.83	469	18.46	1144	45.04	199	7.83	403	15.87	277	10.91	1379.5	54.31	101	3.98	20	3 3/4
44	1100	1117.6	44.00	1007.6	39.67	275	10.83	1583	62.32	413	16.26	495	19.49	1216	47.87	208	8.19	429	16.89	260	10.24	1424.2	56.07	94	3.70	24	3 1/2
46	1150	1168.4	46.00	1048.4	41.28	281	11.06	1666	65.59	433	17.05	510	20.08	1261	49.65	217	8.54	442	17.40	277	10.91	1496.5	58.92	101	3.98	24	3 3/4
48	1200	1219.2	48.00	1099.2	43.28	303	11.93	1714	67.48	445	17.52	538	21.18	1309	51.54	226	8.90	469	18.46	277	10.91	1544.7	60.81	101	3.98	24	3 3/4

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	10S	2.11	0.91	0.91	0.20	0.95	1.2	0.73	0.70
1/2	15	40	2.77	0.92		0.21		1.2		0.71
1/2	15	80	3.73	0.94		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
1/2	15	XXS	7.47	0.99		0.28		1.2		0.73
3/4	20	10S	2.11	1.0	1.0	0.25	1.0	1.3	0.88	0.82
3/4	20	40	2.87	1.0		0.28		1.3		0.83
3/4	20	80	3.91	1.1		0.31		1.3		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
3/4	20	XXS	7.82	1.1		0.39		1.4		0.86
1	25	10S	2.77	1.2	1.2	0.36	1.2	1.5	1.1	0.99
1	25	40	3.38	1.2		0.39		1.6		1.0
1	25	80	4.55	1.2		0.43		1.6		1.0
1	25	160	6.35	1.3		0.49		1.7		1.0
1	25	XXS	9.09	1.4		0.57		1.7		1.1
1 1/2	40	10S	2.77	1.6	1.7	0.63	1.6	2.3	1.6	1.4
1 1/2	40	40	3.68	1.7		0.70		2.3		1.4
1 1/2	40	80	5.08	1.8		0.79		2.4		1.4
1 1/2	40	160	7.14	1.9		0.93		2.6		1.4
1 1/2	40	XXS	10.15	2.0		1.1		2.7		1.5
2	50	10S	2.77	2.0	2.3	0.76	2.0	2.8	2.2	1.8
2	50	40	3.91	2.1		0.86		2.9		1.8
2	50	80	5.54	2.2		1.0		3.0		1.8
2	50	160	8.74	2.4		1.3		3.3		1.9
2	50	XXS	11.07	2.6		1.4		3.4		2.0
2	50	ISO	12.50	2.6		1.5		3.5		2.0
2	50	ISO	14.20	2.7		1.6		3.6		2.0
2 1/2	65	10S	3.05	2.5	3.0	1.0	2.4	3.4	2.9	2.2
2 1/2	65	40	5.16	2.7		1.3		3.7		2.3
2 1/2	65	80	7.01	2.9		1.5		3.9		2.3
2 1/2	65	160	9.53	3.1		1.8		4.2		2.4
2 1/2	65	XXS	14.02	3.5		2.2		4.6		2.6
2 1/2	65	ISO	16.00	3.6		2.3		4.7		2.6
3	80	10S	3.05	4.1	5.0	1.7	4.2	5.9	4.8	3.5
3	80	40	5.49	4.4		2.1		6.3		3.7
3	80	80	7.62	4.7		2.4		6.6		3.8

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
3	80	160	11.13	5.2		2.9		7.1		4.0
3	80	XXS	15.24	5.7		3.5		7.7		4.2
3	80	ISO	16.00	5.7		3.6		7.7		4.2
3	80	ISO	17.50	5.9		3.7		7.9		4.3
4	100	10S	3.05	7.6	9.7	3.1	7.4	10.5	9.0	6.5
4	100	40	6.02	8.2		3.9		11.3		6.8
4	100	80	8.56	8.8		4.5		11.9		7.0
4	100	120	11.13	9.3		5.2		12.5		7.2
4	100	160	13.49	9.7		5.7		13.1		7.4
4	100	XXS	17.12	10.4		6.5		13.8		7.7
4	100	ISO	17.50	10.4		6.5		13.9		7.7
4	100	ISO	20.00	10.9		7.0		14.4		7.9
4	100	ISO	22.20	11.2		7.4		14.8		8.0
5	125	10S	3.40	11.4	15.5	4.5	11.2	15.6	14.2	9.7
5	125	40	6.55	12.3		5.6		16.8		10.1
5	125	80	9.53	13.2		6.7		17.8		10.5
5	125	120	12.70	14.1		7.7		18.9		10.9
5	125	160	15.88	14.9		8.7		19.9		11.2
5	125	XXS	19.05	15.6		9.6		20.8		11.6
5	125	ISO	20.00	15.9		9.9		21.1		11.7
5	125	ISO	22.20	16.4		10.5		21.7		11.9
5	125	ISO	25.00	17.0		11.3		22.4		12.1
6	150	40	7.11	19.4	25.0	8.8	17.5	26.3	22.1	15.5
6	150	80	10.97	20.8		10.6		28.1		16.1
6	150	120	14.27	22.0		12.0		29.5		16.7
6	150	160	18.26	23.3		13.7		31.2		17.3
6	150	XXS	21.95	24.5		15.2		32.7		17.8
6	150	ISO	25.00	25.5		16.3		33.8		18.2
6	150	ISO	28.00	26.3		17.4		34.9		18.6
6	150	ISO	30.00	26.9		18.0		35.6		18.8
8	200	20	6.35	29.5	43.0	14.1	23.1	37.3	38.1	23.9
8	200	30	7.04	29.9		14.6		37.8		24.1
8	200	40	8.18	30.5		15.4		38.6		24.4
8	200	60	10.31	31.7		16.9		40.1		25.0
8	200	80	12.70	33.1		18.6		41.7		25.6
8	200	100	15.09	34.4		20.2		43.3		26.2



Vector SPO® Compact Flange

CL1500

| WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
8	200	120	18.26	36.0		22.2		45.4		27.0
8	200	140	20.62	37.3		23.7		46.9		27.5
8	200	XXS	22.23	38.1		24.7		47.9		27.9
8	200	160	23.01	38.5		25.2		48.3		28.1
8	200	ISO	25.00	39.4		26.4		49.5		28.6
8	200	ISO	28.00	40.9		28.1		51.3		29.2
8	200	ISO	30.00	41.8		29.3		52.4		29.6
8	200	ISO	32.00	42.7		30.4		53.5		30.1
8	200	ISO	36.00	44.4		32.5		55.6		30.9
10	250	30	7.80	56.6	83.5	26.5	45.2	71.7	71.3	44.7
10	250	40	9.27	57.9		28.0		73.2		45.3
10	250	60	12.70	60.8		31.5		76.8		46.7
10	250	80	15.09	62.7		34.0		79.2		47.6
10	250	100	18.26	65.3		37.1		82.3		48.9
10	250	120	21.44	67.8		40.1		85.4		50.0
10	250	140	25.40	70.8		43.8		89.0		51.5
10	250	160	28.58	73.2		46.7		91.9		52.6
10	250	ISO	30.00	74.2		48.0		93.2		53.1
10	250	ISO	32.00	75.6		49.7		94.9		53.8
10	250	ISO	36.00	78.4		53.1		98.3		55.1
10	250	ISO	40.00	81.1		56.3		102		56.3
10	250	ISO	45.00	84.3		60.2		105		57.8
12	250	STD	9.53	75.2	117	38.4	57.7	96.1	101	59.7
12	300	40	10.31	76.1		39.5		97.2		60.1
12	300	XS	12.70	78.8		42.7		100		61.4
12	300	60	14.27	80.5		44.8		103		62.2
12	300	80	17.48	84.0		49.0		107		63.9
12	300	100	21.44	88.2		54.1		112		65.9
12	300	120	25.40	92.3		59.0		117		67.9
12	300	140	28.58	95.5		62.8		121		69.5
12	300	160	33.32	100		68.4		126		71.7
12	300	ISO	36.00	103		71.5		129		72.9
12	300	ISO	40.00	106		75.9		134		74.7
12	300	ISO	45.00	111		81.3		139		76.9
12	300	ISO	50.00	115		86.4		144		78.9
14	350	40	11.13	98.7	151	51.6	74.8	126	133	79.1

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
14	350	XS	12.70	101		54.1		129		80.1
14	350	60	15.09	104		57.8		133		81.7
14	350	80	19.05	109		63.9		139		84.1
14	350	100	23.83	115		71.1		146		87.1
14	350	120	27.79	120		76.8		152		89.4
14	350	140	31.75	125		82.4		157		91.7
14	350	160	35.71	129		87.9		163		93.9
14	350	ISO	36.00	129		88.3		163		94.1
14	350	ISO	40.00	134		93.6		168		96.3
16	400	40	12.70	144	226	72.2	109	181	186	108
16	400	60	16.66	150		80.2		189		111
16	400	80	21.44	158		89.6		199		115
16	400	100	26.19	166		98.7		208		118
16	400	120	30.96	173		108		217		122
16	400	140	36.53	181		118		227		126
16	400	160	40.49	187		125		234		129
16	400	ISO	45.00	194		132		242		132
18	450	XS	12.70	187	300	93.5	144	237	258	147
18	450	40	14.27	190		97.4		241		149
18	450	60	19.05	200		109		253		154
18	450	80	23.83	210		120		264		159
18	450	100	29.36	221		133		277		164
18	450	120	34.93	232		145		289		169
18	450	140	39.67	241		156		299		173
18	450	160	45.24	251		167		311		178
18	450	ISO	50.00	259		177		321		182
20	500	40	15.09	263	420	133	200	333	345	198
20	500	60	20.62	277		150		350		205
20	500	80	26.19	291		166		366		212
20	500	100	32.54	306		184		384		219
20	500	120	38.10	319		199		399		225
20	500	140	44.45	334		216		416		232
20	500	160	50.01	346		230		430		238
20	500	ISO	55.00	357		243		443		243
22	550	ISO	15.88	351	569	175	270	445	446	254
22	550	60	22.23	370		198		467		263



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
22	550	80	28.58	389		220		490		272
22	550	100	34.93	407		242		511		281
22	550	120	41.28	425		263		532		289
22	550	140	47.63	442		283		553		297
22	550	160	53.98	459		303		573		306
22	550	ISO	55.00	461		306		576		307
22	550	ISO	60.00	474		322		591		313
24	600	40	17.48	437	700	225	333	558	574	330
24	600	60	24.61	462		254		587		342
24	600	80	30.96	484		279		612		352
24	600	100	38.89	511		310		643		365
24	600	120	46.02	535		336		670		376
24	600	140	52.37	555		360		693		385
24	600	160	59.54	578		385		719		396
24	600	ISO	60.00	579		387		720		397
24	600	ISO	65.00	594		404		738		404
26	650	ISO	22.20	583	944	296	437	732	703	401
26	650	ISO	25.00	594		309		746		407
26	650	ISO	28.00	607		324		761		413
26	650	ISO	30.00	615		334		770		417
26	650	ISO	32.00	622		343		780		420
26	650	ISO	36.00	638		362		799		428
26	650	ISO	40.00	654		381		818		435
26	650	ISO	45.00	673		404		841		444
26	650	ISO	50.00	692		427		863		453
26	650	ISO	55.00	710		449		885		462
26	650	ISO	60.00	728		471		907		471
28	700	ISO	30.00	705	1120	395	499	894	838	480
28	700	ISO	32.00	714		406		905		484
28	700	ISO	36.00	732		428		927		493
28	700	ISO	40.00	750		449		948		501
28	700	ISO	45.00	772		476		975		512
28	700	ISO	50.00	794		502		1001		522
28	700	ISO	55.00	815		528		1026		533
28	700	ISO	60.00	836		553		1052		543
28	700	ISO	65.00	857		578		1077		553

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
30	750	ISO	30.00	830	1321	469	592	1060	1027	586
30	750	ISO	32.00	841		481		1073		591
30	750	ISO	36.00	862		506		1097		601
30	750	ISO	40.00	882		530		1121		611
30	750	ISO	45.00	908		560		1151		623
30	750	ISO	50.00	933		589		1180		635
30	750	ISO	55.00	958		618		1209		647
30	750	ISO	60.00	982		646		1238		658
30	750	ISO	65.00	1006		674		1266		670
30	750	ISO	70.00	1030		702		1293		681
32	800	ISO	36.00	907	1503	503	621	1124	1132	614
32	800	ISO	40.00	930		530		1151		626
32	800	ISO	45.00	958		564		1185		639
32	800	ISO	50.00	985		597		1218		653
32	800	ISO	55.00	1012		630		1251		666
32	800	ISO	60.00	1039		662		1283		679
32	800	ISO	65.00	1066		694		1315		692
32	800	ISO	70.00	1092		726		1346		705
32	800	ISO	75.00	1117		757		1377		718
34	850	ISO	36.00	1077	1806	581	750	1332	1360	735
34	850	ISO	40.00	1102		612		1362		747
34	850	ISO	45.00	1134		650		1400		763
34	850	ISO	50.00	1165		687		1438		778
34	850	ISO	55.00	1196		724		1474		793
34	850	ISO	60.00	1226		761		1511		808
34	850	ISO	65.00	1256		797		1547		823
34	850	ISO	70.00	1286		832		1582		837
34	850	ISO	75.00	1315		867		1617		852
34	850	ISO	80.00	1344		902		1652		866
36	900	ISO	40.00	1386	2210	727	977	1704	1706	968
36	900	ISO	45.00	1422		769		1746		985
36	900	ISO	50.00	1457		810		1787		1002
36	900	ISO	55.00	1493		851		1828		1020
36	900	ISO	60.00	1527		892		1869		1037
36	900	ISO	65.00	1562		932		1909		1053
36	900	ISO	70.00	1596		971		1948		1070



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
36	900	ISO	75.00	1629		1010		1987		1086
36	900	ISO	80.00	1662		1049		2025		1102
36	900	ISO	85.00	1695		1087		2063		1118
38	950	ISO	45.00	1606	2507	865	1108	1974	2006	1151
38	950	ISO	50.00	1646		911		2019		1170
38	950	ISO	55.00	1685		955		2064		1189
38	950	ISO	60.00	1724		1000		2108		1208
38	950	ISO	65.00	1763		1043		2152		1227
38	950	ISO	70.00	1801		1086		2195		1246
38	950	ISO	75.00	1838		1129		2237		1264
38	950	ISO	80.00	1875		1171		2280		1282
38	950	ISO	85.00	1912		1213		2321		1300
38	950	ISO	90.00	1948		1254		2362		1318
40	1000	ISO	50.00	1811	2925	1026	1217	2243	2216	1233
40	1000	ISO	55.00	1854		1077		2294		1254
40	1000	ISO	60.00	1897		1128		2345		1275
40	1000	ISO	65.00	1939		1178		2395		1296
40	1000	ISO	70.00	1980		1227		2444		1317
40	1000	ISO	75.00	2022		1276		2493		1337
40	1000	ISO	80.00	2062		1325		2542		1357
40	1000	ISO	85.00	2103		1372		2590		1377
40	1000	ISO	90.00	2142		1420		2637		1397
40	1000	ISO	95.00	2182		1466		2684		1417
42	1050	ISO	50.00	2158	3432	1149	1493	2641	2652	1505
42	1050	ISO	55.00	2206		1204		2697		1529
42	1050	ISO	60.00	2253		1259		2752		1552
42	1050	ISO	65.00	2300		1314		2806		1575
42	1050	ISO	70.00	2346		1367		2860		1598
42	1050	ISO	75.00	2392		1421		2913		1621
42	1050	ISO	80.00	2437		1473		2966		1643
42	1050	ISO	85.00	2482		1526		3018		1665
42	1050	ISO	90.00	2527		1577		3070		1687
42	1050	ISO	95.00	2571		1628		3121		1709
42	1050	ISO	100.00	2614		1678		3171		1730
44	1100	ISO	55.00	2349	3843	1322	1576	2898	2898	1596
44	1100	ISO	60.00	2400		1383		2959		1622

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
44	1100	ISO	65.00	2450		1444		3020		1647
44	1100	ISO	70.00	2501		1504		3080		1673
44	1100	ISO	75.00	2550		1563		3139		1698
44	1100	ISO	80.00	2599		1622		3198		1722
44	1100	ISO	85.00	2648		1680		3256		1747
44	1100	ISO	90.00	2696		1737		3313		1771
44	1100	ISO	95.00	2744		1794		3370		1795
44	1100	ISO	100.00	2791		1850		3426		1818
44	1100	ISO	105.00	2838		1906		3482		1842
46	1150	ISO	60.00	2706	4329	1554	1793	3347	3338	1868
46	1150	ISO	65.00	2762		1619		3412		1896
46	1150	ISO	70.00	2817		1684		3477		1923
46	1150	ISO	75.00	2872		1749		3542		1951
46	1150	ISO	80.00	2927		1812		3605		1978
46	1150	ISO	85.00	2980		1875		3668		2005
46	1150	ISO	90.00	3034		1938		3731		2031
46	1150	ISO	95.00	3086		2000		3793		2058
46	1150	ISO	100.00	3138		2061		3854		2084
46	1150	ISO	105.00	3190		2121		3914		2109
46	1150	ISO	110.00	3241		2181		3974		2135
48	1200	ISO	60.00	2996	4978	1679	2010	3690	3701	2018
48	1200	ISO	65.00	3056		1752		3762		2048
48	1200	ISO	70.00	3116		1824		3834		2079
48	1200	ISO	75.00	3175		1895		3905		2108
48	1200	ISO	80.00	3233		1966		3976		2138
48	1200	ISO	85.00	3291		2035		4046		2168
48	1200	ISO	90.00	3348		2105		4115		2197
48	1200	ISO	95.00	3405		2173		4184		2225
48	1200	ISO	100.00	3462		2241		4252		2254
48	1200	ISO	105.00	3518		2308		4319		2282
48	1200	ISO	110.00	3573		2375		4385		2310
48	1200	ISO	115.00	3628		2441		4451		2338

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	4	1/2	80	95	100	75									26 / 14
1 1/2	40	8	1/2	90	110	110	80									26 / 14
2	50	8	1/2	90	105	110	80									26 / 14
2 1/2	65	12	1/2	95	115	120	85									26 / 14
3	80	12	5/8	110	135	140	100									31 / 17
4	100	12	3/4	130	160	170	120	155	170	180	160	12			30	37 / 21
5	125	12	7/8	150	185	195	135	180	200	205	185	15			36	42 / 24
6	150	12	1	175	210	220	155	205	225	235	210	15			40	48 / 28
8	200	16	1	195	230	250	165	210	250	265	210				30	48 / 28
10	250	16	1 1/4	235	285	305	205	260	305	325	260				37	59 / 33
12	300	20	1 1/4	255	305	330	210	275	330	350	260				29	59 / 33
14	350	20	1 3/8	270	330	350	230	295	355	375	290				35	64 / 36
16	400	20	1 1/2	310	375	400	255	340	405	425	315				29	70 / 40
18	450	20	1 3/4	335	405	430	285	370	440	465	365				46	81 / 47
20	500	20	1 7/8	375	450	480	310	410	490	515	390				42	86 / 50
22	550	20	2	410	495	525	340	450	540	565	415				37	92 / 53
24	600	20	2 1/4	430	525	555	365	480	570	600	470				55	103 / 60
26	650	20	2 1/4	485	585	615	390	530	630	660	470				29	103 / 60
28	700	24	2 1/4	505	610	645	400	550	660	690	470				19	103 / 60
30	750	24	2 1/2	525	640	670	430	580	695	725	520				37	114 / 66
32	800	24	2 1/2	555	675	710	445	610	725	765	520				21	114 / 66
34	850	24	2 3/4	595	715	755	480	655	775	820	570				32	125 / 72
36	900	20	3 1/4	635	765	810	530	710	835	880	670				68	147 / 85
38	950	20	3 1/2	655	790	840	555	735	870	920	725				87	158 / 91
40	1000	24	3 1/4	690	835	885	560	765	905	955	670				40	147 / 85
42	1050	20	3 3/4	730	880	930	610	815	965	1015	775				77	169 / 98
44	1100	24	3 1/2	755	910	965	605	835	990	1045	725				38	158 / 91
46	1150	24	3 3/4	780	940	995	635	865	1025	1085	775				53	169 / 98
48	1200	24	3 3/4	820	990	1050	655	910	1075	1135	775				31	169 / 98

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

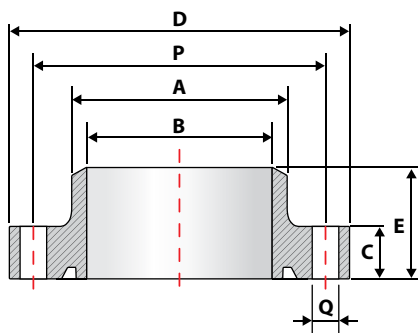
2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.



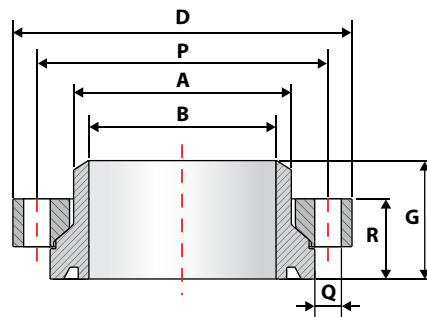
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1 1/2	40	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2	50	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2 1/2	65	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.2								
3	80	12	5/8	1.3	1.7	2.1	2.1	1.5	3.0	3.4	3.4	2.2								
4	100	12	3/4	2.1	2.9	3.6	3.8	2.7	5.0	5.7	5.9	3.7	3.5	3.8	4.0	3.6	6.4	5.9	6.1	6.7
5	125	12	7/8	3.2	4.6	5.7	6.0	4.2	7.9	8.9	9.2	5.8	5.5	6.2	6.3	5.7	10.1	9.4	9.5	10.5
6	150	12	1	4.6	7.1	8.5	8.9	6.2	11.7	13.1	13.5	8.6	8.3	9.1	9.5	8.5	14.6	13.7	14.1	15.3
8	200	16	1	6.2	10.5	12.4	13.4	8.9	16.7	18.5	19.6	12.0	11.3	13.4	14.2	11.3	17.5	19.6	20.4	18.9
10	250	16	1 1/4	11.4	20.4	24.8	26.5	17.8	31.9	36.2	37.9	23.5	22.6	26.5	28.3	22.6	34.0	37.9	39.7	37.0
12	300	20	1 1/4	14.3	27.7	33.1	35.9	22.8	42.0	47.4	50.1	30.0	29.9	35.9	38.0	28.3	44.2	50.1	52.3	43.9
14	350	20	1 3/8	18.5	36.0	43.9	46.6	30.6	54.5	62.5	65.1	39.9	39.3	47.3	49.9	38.6	57.8	65.8	68.5	60.0
16	400	20	1 1/2	23.8	49.6	60.0	64.0	40.8	73.4	83.8	87.8	52.7	54.4	64.8	68.0	50.4	78.2	88.6	91.8	74.1
18	450	20	1 3/4	37.1	74.2	89.7	95.3	63.1	111	127	132	81.7	82.0	97.5	103	80.9	119	135	140	124
20	500	20	1 7/8	43.8	96.0	115	123	79.4	140	159	167	101	105	125	132	99.8	149	169	176	147
22	550	20	2	54.3	120	145	154	99.6	174	199	208	127	132	158	165	122	186	212	220	175
24	600	20	2 1/4	76.1	161	196	208	137	237	273	284	175	180	213	224	176	256	289	301	261
26	650	20	2 1/4	76.1	181	219	230	146	258	295	306	184	198	236	247	176	274	312	323	239
28	700	24	2 1/4	91.3	227	274	290	180	318	365	381	225	247	296	310	211	338	388	401	276
30	750	24	2 1/2	122.9	293	357	374	240	416	480	497	302	324	388	405	290	447	511	528	399
32	800	24	2 1/2	122.9	310	377	397	249	433	500	519	310	341	405	427	290	464	528	550	379
34	850	24	2 3/4	160.8	405	486	513	326	565	647	674	407	445	527	558	388	606	688	718	517
36	900	20	3 1/4	217.2	507	611	647	423	724	828	864	532	567	667	703	535	784	884	920	764
38	950	20	3 1/2	277.6	609	735	781	516	887	1012	1059	655	683	809	855	674	961	1087	1133	992
40	1000	24	3 1/4	260.6	661	800	848	537	922	1061	1109	667	733	867	915	642	994	1128	1176	858
42	1050	20	3 3/4	329.6	782	942	996	653	1111	1272	1325	818	873	1033	1087	830	1202	1363	1416	1175
44	1100	24	3 1/2	333.1	842	1015	1077	675	1175	1348	1410	842	932	1105	1166	809	1265	1438	1499	1069
46	1150	24	3 3/4	395.5	1002	1208	1278	816	1398	1603	1674	1014	1111	1317	1394	996	1507	1713	1790	1342
48	1200	24	3 3/4	395.5	1054	1272	1349	842	1449	1668	1745	1039	1169	1381	1458	996	1565	1777	1854	1280

1) Bolt set weight includes washers weight, if applicable.

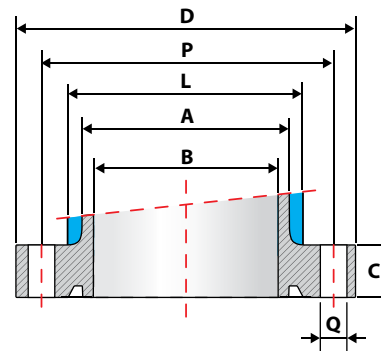
Weld Neck



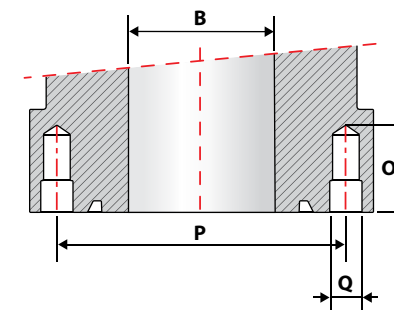
Swivel



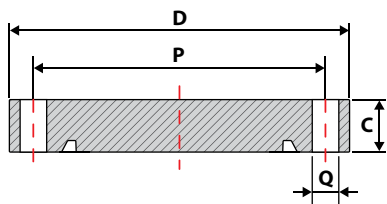
Integral



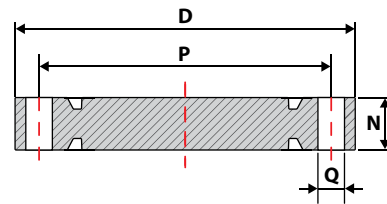
Rigid Interface



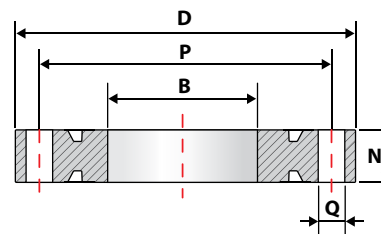
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	15.8	0.62	20	0.79	93	3.66	51	2.01	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	21.0	0.83	20	0.79	98	3.86	53	2.09	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	26.6	1.05	20	0.79	105	4.13	56	2.20	61	2.40	41	1.61	19	0.75	34	1.34	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	40.9	1.61	23	0.91	121	4.76	64	2.52	72	2.83	58	2.28	22	0.87	42	1.65	42	1.65	95.3	3.75	15	0.59	8	1/2
2	50	60.3	2.37	52.5	2.07	27	1.06	147	5.79	72	2.83	81	3.19	73	2.87	25	0.98	49	1.93	52	2.05	116.2	4.57	18	0.71	8	5/8
2 1/2	65	73.0	2.87	62.7	2.47	32	1.26	179	7.05	81	3.19	90	3.54	90	3.54	29	1.14	56	2.20	62	2.44	141.6	5.57	22	0.87	8	3/4
3	80	88.9	3.50	77.9	3.07	36	1.42	209	8.23	85	3.35	98	3.86	104	4.09	33	1.30	65	2.56	72	2.83	166.3	6.55	25	0.98	8	7/8
4	100	114.3	4.50	102.3	4.03	44	1.73	248	9.76	95	3.74	116	4.57	133	5.24	39	1.54	76	2.99	81	3.19	200.4	7.89	29	1.14	8	1
5	125	141.3	5.56	122.2	4.81	50	1.97	278	10.94	106	4.17	127	5.00	163	6.42	45	1.77	86	3.39	81	3.19	230.2	9.06	29	1.14	12	1
6	150	168.3	6.63	146.4	5.76	58	2.28	322	12.68	120	4.72	139	5.47	196	7.72	52	2.05	97	3.82	90	3.54	268.8	10.58	32	1.26	12	1 1/8
8	200	219.1	8.63	198.5	7.81	72	2.83	408	16.06	145	5.71	167	6.57	253	9.96	63	2.48	119	4.69	107	4.21	343.7	13.53	38	1.50	12	1 3/8
10	250	273.1	10.75	242.9	9.56	88	3.46	485	19.09	172	6.77	192	7.56	319	12.56	76	2.99	141	5.55	117	4.61	415.0	16.34	42	1.65	16	1 1/2
12	300	323.9	12.75	288.9	11.37	99	3.90	564	22.20	195	7.68	214	8.43	376	14.80	86	3.39	161	6.34	136	5.35	483.2	19.02	49	1.93	16	1 3/4
14	350	355.6	14.00	317.5	12.50	108	4.25	618	24.33	211	8.31	228	8.98	412	16.22	92	3.62	174	6.85	144	5.67	531.2	20.91	52	2.05	16	1 7/8
16	400	406.4	16.00	363.5	14.31	125	4.92	718	28.27	238	9.37	255	10.04	473	18.62	103	4.06	200	7.87	171	6.73	615.1	24.22	62	2.44	16	2 1/4
18	450	457.2	18.00	409.5	16.12	136	5.35	780	30.71	260	10.24	278	10.94	535	21.06	113	4.45	220	8.66	171	6.73	676.3	26.63	62	2.44	16	2 1/4
20	500	508.0	20.00	455.6	17.94	147	5.79	849	33.43	282	11.10	298	11.73	582	22.91	126	4.96	238	9.37	188	7.40	735.0	28.94	68	2.68	16	2 1/2
22	550	558.8	22.00	501.6	19.75	163	6.42	958	37.72	310	12.20	323	12.72	633	24.92	137	5.39	262	10.31	224	8.82	821.8	32.36	81	3.19	16	3
24	600	609.6	24.00	547.7	21.56	176	6.93	1039	40.91	334	13.15	346	13.62	692	27.24	149	5.87	283	11.14	242	9.53	891.3	35.09	88	3.46	16	3 1/4

- NOTES:**
- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
 - 2) Metric dimensions are governing. Imperial dimensions for info.
 - 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	40	2.77	0.92	0.91	0.21	0.95	1.2	0.73	0.71
1/2	15	80	3.73	0.94		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
1/2	15	XXS	7.47	0.99		0.28		1.2		0.73
3/4	20	40	2.87	1.0	1.0	0.28	1.0	1.3	0.88	0.83
3/4	20	80	3.91	1.1		0.31		1.3		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
3/4	20	XXS	7.82	1.1		0.39		1.4		0.86
1	25	40	3.38	1.2	1.2	0.39	1.2	1.6	1.1	1.0
1	25	80	4.55	1.2		0.43		1.6		1.0
1	25	160	6.35	1.3		0.49		1.7		1.0
1	25	XXS	9.09	1.4		0.57		1.7		1.1
1	25	ISO	10.00	1.4		0.59		1.7		1.1
1 1/2	40	40	3.68	1.7	1.7	0.70	1.6	2.3	1.6	1.4
1 1/2	40	80	5.08	1.8		0.79		2.4		1.4
1 1/2	40	160	7.14	1.9		0.93		2.6		1.4
1 1/2	40	XXS	10.15	2.0		1.1		2.7		1.5
1 1/2	40	ISO	11.00	2.1		1.1		2.8		1.5
1 1/2	40	ISO	12.50	2.1		1.2		2.8		1.5
2	50	40	3.91	2.8	3.0	1.1	2.8	4.0	2.7	2.3
2	50	80	5.54	3.0		1.3		4.1		2.4
2	50	160	8.74	3.3		1.6		4.4		2.4
2	50	XXS	11.07	3.4		1.8		4.6		2.5
2	50	ISO	12.50	3.5		1.9		4.7		2.5
2	50	ISO	14.20	3.6		2.0		4.8		2.6
2 1/2	65	40	5.16	5.0	5.4	2.0	5.0	7.0	4.7	4.0
2 1/2	65	80	7.01	5.3		2.2		7.2		4.1
2 1/2	65	160	9.53	5.6		2.5		7.5		4.2
2 1/2	65	XXS	14.02	6.0		3.0		8.0		4.4
2 1/2	65	ISO	16.00	6.2		3.2		8.2		4.4
3	80	40	5.49	7.6	8.3	3.0	7.7	10.7	7.5	6.2
3	80	80	7.62	7.9		3.4		11.1		6.4
3	80	160	11.13	8.4		4.0		11.7		6.6
3	80	XXS	15.24	9.0		4.6		12.3		6.8
3	80	ISO	16.00	9.1		4.7		12.4		6.8
3	80	ISO	17.50	9.2		4.9		12.6		6.9

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
3	80	ISO	20.00	9.5		5.2		12.9		7.0
4	100	40	6.02	12.5	14.3	4.9	12.1	17.1	12.4	9.9
4	100	80	8.56	13.1		5.7		17.8		10.2
4	100	120	11.13	13.6		6.4		18.5		10.4
4	100	160	13.49	14.1		7.0		19.1		10.6
4	100	XXS	17.12	14.8		7.8		20.0		10.9
4	100	ISO	17.50	14.9		7.9		20.0		10.9
4	100	ISO	20.00	15.4		8.5		20.6		11.1
4	100	ISO	22.20	15.8		8.9		21.0		11.2
4	100	ISO	25.00	16.2		9.5		21.6		11.4
5	125	80	9.53	17.4	20.0	8.5	14.8	23.3	17.7	13.6
5	125	120	12.70	18.4		9.7		24.5		14.0
5	125	160	15.88	19.3		10.8		25.6		14.4
5	125	XXS	19.05	20.2		11.8		26.7		14.7
5	125	ISO	20.00	20.5		12.1		27.0		14.9
5	125	ISO	22.20	21.1		12.8		27.6		15.1
5	125	ISO	25.00	21.7		13.6		28.5		15.4
5	125	ISO	28.00	22.4		14.5		29.3		15.7
5	125	ISO	30.00	22.9		15.0		29.8		15.9
6	150	80	10.97	27.1	31.7	13.1	21.8	35.0	28.0	21.1
6	150	120	14.27	28.5		14.7		36.6		21.7
6	150	160	18.26	30.1		16.6		38.4		22.4
6	150	XXS	21.95	31.5		18.2		40.1		23.0
6	150	ISO	25.00	32.6		19.5		41.3		23.5
6	150	ISO	28.00	33.6		20.7		42.5		23.9
6	150	ISO	30.00	34.3		21.4		43.3		24.2
6	150	ISO	32.00	34.9		22.2		44.0		24.5
6	150	ISO	36.00	36.1		23.5		45.4		25.0
8	200	60	10.31	51.7	64.4	23.9	42.1	66.0	55.8	40.5
8	200	80	12.70	53.4		25.8		67.9		41.3
8	200	100	15.09	55.0		27.7		69.8		42.0
8	200	120	18.26	57.1		30.1		72.2		42.9
8	200	140	20.62	58.7		31.9		73.9		43.6
8	200	XXS	22.23	59.7		33.0		75.1		44.0
8	200	160	23.01	60.2		33.6		75.7		44.2
8	200	ISO	25.00	61.4		35.0		77.1		44.7



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
8	200	ISO	28.00	63.2		37.1		79.1		45.5
8	200	ISO	30.00	64.4		38.4		80.4		46.0
8	200	ISO	32.00	65.5		39.7		81.7		46.5
8	200	ISO	36.00	67.7		42.2		84.2		47.4
8	200	ISO	40.00	69.7		44.5		86.6		48.3
8	200	ISO	45.00	72.2		47.3		89.3		49.4
10	250	80	15.09	87.1	109	44.7	63.3	108	93.7	66.1
10	250	100	18.26	90.4		48.3		112		67.5
10	250	120	21.44	93.5		51.8		115		68.9
10	250	140	25.40	97.3		56.0		119		70.6
10	250	160	28.58	100		59.3		123		71.9
10	250	ISO	30.00	102		60.8		124		72.5
10	250	ISO	32.00	103		62.8		126		73.2
10	250	ISO	36.00	107		66.7		130		74.8
10	250	ISO	40.00	110		70.4		134		76.3
10	250	ISO	45.00	114		74.9		138		78.0
10	250	ISO	50.00	118		79.1		142		79.7
10	250	ISO	55.00	122		83.1		146		81.3
12	250	80	17.48	131	166	67.2	96.0	163	144	99.9
12	250	100	21.44	136		73.2		169		102
12	250	120	25.40	142		79.0		175		105
12	250	140	28.58	146		83.5		179		106
12	250	160	33.32	152		90.0		186		109
12	300	ISO	36.00	155		93.6		190		111
12	300	ISO	40.00	160		98.9		195		113
12	300	ISO	45.00	166		105		201		115
12	300	ISO	50.00	171		111		207		118
12	300	ISO	55.00	177		117		213		120
12	300	ISO	60.00	182		122		218		122
12	300	ISO	65.00	187		128		224		124
14	350	80	19.05	173	220	89.3	124	213	187	130
14	350	100	23.83	181		97.7		222		133
14	350	120	27.79	187		104		228		136
14	350	140	31.75	193		111		235		139
14	350	160	35.71	199		117		241		141
14	350	ISO	36.00	200		118		242		142

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
14	350	ISO	40.00	205		124		248		144
14	350	ISO	45.00	213		132		256		147
14	350	ISO	50.00	219		139		263		150
14	350	ISO	55.00	226		146		270		153
14	350	ISO	60.00	232		153		277		156
14	350	ISO	65.00	238		159		283		158
16	400	80	21.44	268	341	136	195	331	281	197
16	400	100	26.19	278		147		342		202
16	400	120	30.96	288		157		352		206
16	400	140	36.53	299		169		364		211
16	400	160	40.49	307		177		372		214
16	400	ISO	45.00	315		186		381		218
16	400	ISO	50.00	324		196		391		222
16	400	ISO	55.00	333		206		400		225
16	400	ISO	60.00	342		215		410		229
16	400	ISO	65.00	350		224		418		233
16	400	ISO	70.00	358		232		427		236
18	450	80	23.83	347	449	183	247	430	372	255
18	450	100	29.36	361		198		445		262
18	450	120	34.93	375		213		460		268
18	450	140	39.67	387		225		473		273
18	450	160	45.24	401		239		487		279
18	450	ISO	50.00	412		251		499		283
18	450	ISO	55.00	423		263		511		288
18	450	ISO	60.00	434		275		522		293
18	450	ISO	65.00	445		286		534		298
18	450	ISO	70.00	455		298		545		302
18	450	ISO	75.00	465		308		556		307
20	500	80	26.19	438	574	227	309	536	492	331
20	500	100	32.54	458		248		557		340
20	500	120	38.10	474		266		575		347
20	500	140	44.45	493		286		595		356
20	500	160	50.01	509		303		611		363
20	500	ISO	55.00	524		318		626		369
20	500	ISO	60.00	537		332		641		375
20	500	ISO	65.00	551		346		655		381

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
20	500	ISO	70.00	564		360		668		387
20	500	ISO	75.00	577		373		682		392
20	500	ISO	80.00	589		386		695		398
20	500	ISO	85.00	601		399		707		403
22	550	80	28.58	614	798	310	440	750	672	459
22	550	100	34.93	638		335		775		470
22	550	120	41.28	662		359		800		480
22	550	140	47.63	685		383		823		491
22	550	160	53.98	707		406		846		500
22	550	ISO	55.00	710		410		850		502
22	550	ISO	60.00	728		428		868		509
22	550	ISO	65.00	744		445		885		517
22	550	ISO	70.00	761		462		902		524
22	550	ISO	75.00	777		478		918		531
22	550	ISO	80.00	792		494		934		538
22	550	ISO	85.00	807		510		950		544
22	550	ISO	90.00	822		525		965		551
24	600	80	30.96	776	1014	390	555	944	861	585
24	600	100	38.89	811		426		981		601
24	600	120	46.02	842		458		1012		615
24	600	140	52.37	869		486		1040		627
24	600	160	59.54	899		516		1071		640
24	600	ISO	60.00	901		518		1072		641
24	600	ISO	65.00	921		539		1093		650
24	600	ISO	70.00	940		559		1113		658
24	600	ISO	75.00	960		579		1133		667
24	600	ISO	80.00	979		598		1153		675
24	600	ISO	85.00	997		617		1172		683
24	600	ISO	90.00	1015		635		1190		691
24	600	ISO	95.00	1033		654		1208		699
24	600	ISO	100.00	1050		671		1226		707

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	4	1/2	80	95	100	75									26 / 14
1 1/2	40	8	1/2	90	110	110	80									26 / 14
2	50	8	5/8	105	125	130	95									31 / 17
2 1/2	65	8	3/4	120	145	150	115	155	160	165	160	22			35	37 / 21
3	80	8	7/8	140	170	170	130	180	180	185	185	29			43	42 / 24
4	100	8	1	160	195	200	150	205	210	220	210	27			46	48 / 28
5	125	12	1	175	210	220	155	205	230	235	210	15			40	48 / 28
6	150	12	1 1/8	195	235	250	175	230	255	270	240	13			43	53 / 30
8	200	12	1 3/8	240	285	300	210	275	310	325	290	14			52	64 / 36
10	250	16	1 1/2	275	330	355	240	305	360	380	315				46	70 / 40
12	300	16	1 3/4	310	375	400	275	350	410	435	365	3			58	81 / 47
14	350	16	1 7/8	335	400	430	295	375	440	465	390				60	86 / 50
16	400	16	2 1/4	390	465	495	345	445	515	540	470	8			76	103 / 60
18	450	16	2 1/4	410	500	525	355	460	545	575	470				65	103 / 60
20	500	16	2 1/2	445	540	575	390	500	595	630	520				76	114 / 66
22	550	16	3	505	605	645	450	590	670	710	620	17			104	136 / 78
24	600	16	3 1/4	545	650	695	485	635	725	765	670	20			114	147 / 85

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Washer thickness is the total extra bolt length required to achieve a clamp length to nominal diameter ratio of 4.5, to be achieved by 1 or 2 washers.

Standard = All combinations of Weld Neck (WN), Blind (BL) and Integral (IF)

Swivel = All combinations of Swivel (SW) against Weld Neck (WN), Blind (BL) or Integral (IF)

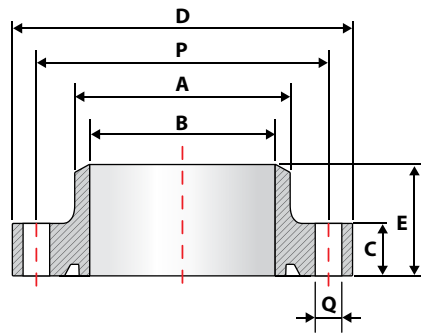
Line blanks = Paddle Blank (PB) or Paddle Spacer (PS) between a standard connection



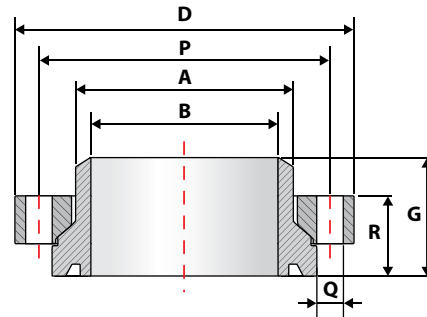
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1 1/2	40	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2	50	8	5/8	0.9	1.1	1.3	1.3	1.0	1.9	2.1	2.2	1.4								
2 1/2	65	8	3/4	1.4	1.8	2.2	2.2	1.7	3.2	3.6	3.6	2.4	2.3	2.4	2.5	2.4	4.7	3.8	3.9	4.7
3	80	8	7/8	2.2	2.9	3.5	3.5	2.7	5.0	5.6	5.6	3.7	3.7	3.7	3.8	3.8	7.6	5.9	6.0	7.4
4	100	8	1	3.1	4.3	5.2	5.4	4.0	7.4	8.3	8.5	5.6	5.5	5.6	5.9	5.6	10.6	8.7	9.0	10.6
5	125	12	1	4.6	7.1	8.5	8.9	6.2	11.7	13.1	13.5	8.6	8.3	9.3	9.5	8.5	14.6	13.9	14.1	15.3
6	150	12	1 1/8	6.5	10.1	12.2	13.0	9.1	16.6	18.7	19.5	12.3	12.0	13.3	14.0	12.5	20.3	19.7	20.5	21.8
8	200	12	1 3/8	11.1	19.2	22.8	24.0	16.8	30.3	33.9	35.1	22.3	22.0	24.8	26.0	23.2	36.0	35.9	37.1	39.5
10	250	16	1 1/2	19.0	35.2	42.3	45.5	30.7	54.3	61.3	64.5	40.3	39.1	46.1	48.7	40.3	58.1	65.2	67.7	64.8
12	300	16	1 3/4	29.7	54.9	66.5	70.9	48.7	84.6	96.1	101	63.6	62.0	72.7	77.1	64.7	93.0	102	107	104
14	350	16	1 7/8	35.0	68.6	81.9	88.1	60.4	104	117	123	77.9	76.8	90.1	95.2	79.9	112	125	130	126
16	400	16	2 1/4	60.9	117	139	148	103	178	200	209	134	133	154	162	141	200	215	223	224
18	450	16	2 1/4	60.9	123	150	157	106	184	211	218	137	138	163	172	141	199	224	233	216
20	500	16	2 1/2	81.9	166	201	214	145	248	283	296	186	186	222	235	194	268	303	316	299
22	550	16	3	138	274	328	350	244	412	466	488	313	320	363	385	336	479	501	523	533
24	600	16	3 1/4	174	348	415	444	310	522	589	618	397	406	463	489	428	608	637	663	677

1) Bolt set weight includes washers weight, if applicable.

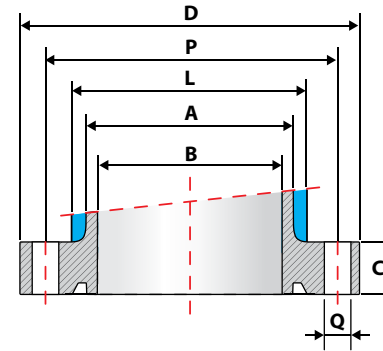
Weld Neck



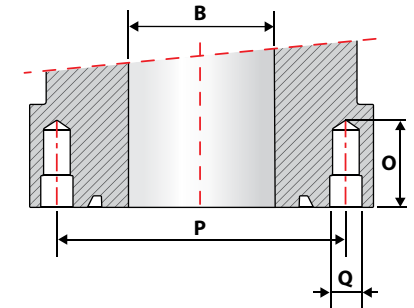
Swivel



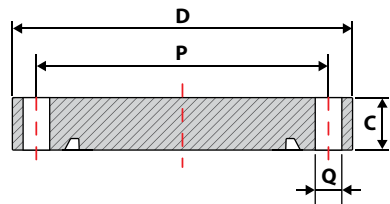
Integral



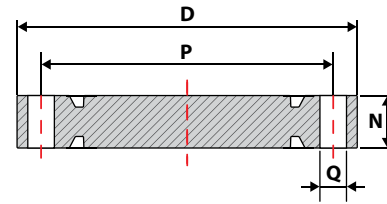
Rigid Interface



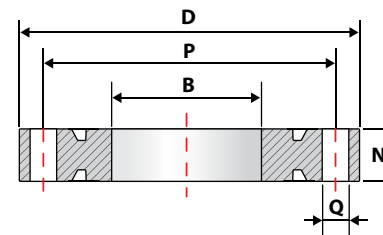
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	17.1	0.67	20	0.79	93	3.66	51	2.01	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	22.5	0.89	20	0.79	98	3.86	53	2.09	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	27.9	1.10	20	0.79	105	4.13	56	2.20	61	2.40	41	1.61	19	0.75	34	1.34	42	1.65	79.4	3.13	15	0.59	4	1/2
1 1/2	40	48.3	1.90	42.8	1.69	23	0.91	121	4.76	59	2.32	65	2.56	58	2.28	22	0.87	42	1.65	42	1.65	95.3	3.75	15	0.59	8	1/2
2	50	60.3	2.37	54.8	2.16	23	0.91	136	5.35	62	2.44	70	2.76	73	2.87	24	0.94	42	1.65	42	1.65	110.0	4.33	15	0.59	8	1/2
2 1/2	65	73.0	2.87	66.9	2.63	26	1.02	149	5.87	66	2.60	75	2.95	87	3.43	27	1.06	47	1.85	42	1.65	123.1	4.85	15	0.59	12	1/2
3	80	88.9	3.50	77.9	3.07	30	1.18	180	7.09	73	2.87	85	3.35	105	4.13	30	1.18	55	2.17	52	2.05	148.3	5.84	18	0.71	12	5/8
4	100	114.3	4.50	102.3	4.03	37	1.46	224	8.82	86	3.39	103	4.06	135	5.31	36	1.42	65	2.56	62	2.44	187.0	7.36	22	0.87	12	3/4
5	125	141.3	5.56	128.2	5.05	43	1.69	261	10.28	92	3.62	113	4.45	157	6.18	42	1.65	76	2.99	72	2.83	218.6	8.61	25	0.98	12	7/8
6	150	168.3	6.63	146.4	5.76	57	2.24	307	12.09	108	4.25	125	4.92	191	7.52	48	1.89	87	3.43	81	3.19	258.8	10.19	29	1.14	12	1
8	200	219.1	8.63	193.7	7.63	65	2.56	375	14.76	130	5.12	152	5.98	245	9.65	58	2.28	102	4.02	90	3.54	317.4	12.50	32	1.26	16	1 1/8
10	250	273.1	10.75	247.7	9.75	77	3.03	453	17.83	158	6.22	167	6.57	315	12.40	70	2.76	124	4.88	98	3.86	393.6	15.50	35	1.38	16	1 1/4
12	300	323.9	12.75	288.9	11.37	90	3.54	508	20.00	186	7.32	182	7.17	370	14.57	79	3.11	145	5.71	98	3.86	449.0	17.68	35	1.38	20	1 1/4
14	350	355.6	14.00	317.5	12.50	98	3.86	558	21.97	204	8.03	194	7.64	403	15.87	85	3.35	157	6.18	107	4.21	493.1	19.41	38	1.50	20	1 3/8
16	400	406.4	16.00	363.5	14.31	113	4.45	638	25.12	234	9.21	220	8.66	454	17.87	95	3.74	179	7.05	126	4.96	555.2	21.86	45	1.77	20	1 5/8
18	450	457.2	18.00	409.5	16.12	122	4.80	704	27.72	258	10.16	240	9.45	515	20.28	105	4.13	195	7.68	136	5.35	622.3	24.50	49	1.93	20	1 3/4
20	500	508.0	20.00	455.6	17.94	137	5.39	778	30.63	288	11.34	271	10.67	572	22.52	115	4.53	222	8.74	144	5.67	690.7	27.19	52	2.05	20	1 7/8
22	550	558.8	22.00	501.6	19.75	152	5.98	872	34.33	318	12.52	289	11.38	624	24.57	124	4.88	235	9.25	171	6.73	765.0	30.12	62	2.44	20	2 1/4
24	600	609.6	24.00	547.7	21.56	162	6.38	933	36.73	343	13.50	317	12.48	688	27.09	133	5.24	260	10.24	171	6.73	829.3	32.65	62	2.44	20	2 1/4

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.



Vector SPO® Compact Flange

5K

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	10S	2.11	0.91	0.91	0.20	0.95	1.1	0.73	0.70
1/2	15	40	2.77	0.92		0.21		1.2		0.71
1/2	15	80	3.73	0.94		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
1/2	15	XXS	7.47	0.99		0.28		1.2		0.73
3/4	20	10S	2.11	1.0	1.0	0.25	1.0	1.3	0.88	0.82
3/4	20	40	2.87	1.0		0.27		1.3		0.83
3/4	20	80	3.91	1.1		0.30		1.3		0.84
3/4	20	160	5.56	1.1		0.34		1.4		0.85
3/4	20	XXS	7.82	1.1		0.39		1.4		0.86
1	25	10S	2.77	1.2	1.2	0.36	1.2	1.5	1.1	0.99
1	25	40	3.38	1.2		0.38		1.5		1.0
1	25	80	4.55	1.2		0.43		1.6		1.0
1	25	160	6.35	1.3		0.49		1.7		1.0
1	25	XXS	9.09	1.4		0.56		1.7		1.1
1 1/2	40	10S	2.77	1.6	1.7	0.60	1.6	2.2	1.6	1.4
1 1/2	40	40	3.68	1.7		0.66		2.3		1.4
1 1/2	40	80	5.08	1.7		0.75		2.4		1.4
1 1/2	40	160	7.14	1.8		0.87		2.5		1.4
1 1/2	40	XXS	10.15	2.0		1.0		2.6		1.5
2	50	10S	2.77	2.0	2.3	0.80	2.0	2.8	2.3	1.8
2	50	40	3.91	2.1		0.90		2.9		1.9
2	50	80	5.54	2.2		1.0		3.1		1.9
2	50	160	8.74	2.4		1.3		3.3		2.0
2	50	XXS	11.07	2.6		1.5		3.5		2.1
2	50	ISO	12.50	2.7		1.6		3.6		2.1
2	50	ISO	14.20	2.8		1.7		3.7		2.1
2 1/2	65	10S	3.05	2.5	3.0	1.1	2.4	3.5	3.0	2.3
2 1/2	65	40	5.16	2.7		1.3		3.7		2.4
2 1/2	65	80	7.01	2.9		1.6		4.0		2.4
2 1/2	65	160	9.53	3.1		1.8		4.2		2.5
2 1/2	65	XXS	14.02	3.5		2.2		4.6		2.7
2 1/2	65	ISO	16.00	3.6		2.4		4.8		2.7
3	80	10S	3.05	4.1	5.0	1.7	4.2	5.9	4.9	3.7
3	80	40	5.49	4.5		2.1		6.3		3.8

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
3	80	80	7.62	4.8		2.5		6.6		3.9
3	80	160	11.13	5.2		3.0		7.2		4.1
3	80	XXS	15.24	5.7		3.5		7.7		4.3
3	80	ISO	16.00	5.7		3.6		7.8		4.4
3	80	ISO	17.50	5.9		3.8		8.0		4.4
4	100	40	6.02	8.3	9.7	3.9	7.4	11.3	9.3	7.0
4	100	80	8.56	8.8		4.5		11.9		7.2
4	100	120	11.13	9.3		5.2		12.5		7.4
4	100	160	13.49	9.8		5.7		13.1		7.6
4	100	XXS	17.12	10.4		6.5		13.8		7.9
4	100	ISO	17.50	10.5		6.6		13.9		7.9
4	100	ISO	20.00	10.9		7.0		14.4		8.1
4	100	ISO	22.20	11.2		7.4		14.8		8.2
4	100	ISO	25.00	11.6		7.9		15.3		8.4
5	125	40	6.55	12.4	15.5	5.7	11.2	16.8	14.9	10.7
5	125	80	9.53	13.3		6.7		17.9		11.1
5	125	120	12.70	14.1		7.8		18.9		11.5
5	125	160	15.88	14.9		8.8		19.9		11.8
5	125	XXS	19.05	15.7		9.7		20.9		12.2
5	125	ISO	20.00	15.9		10.0		21.1		12.3
5	125	ISO	22.20	16.4		10.6		21.8		12.5
5	125	ISO	25.00	17.0		11.3		22.5		12.8
5	125	ISO	28.00	17.7		12.1		23.2		13.0
5	125	ISO	30.00	18.0		12.5		23.7		13.2
6	150	40	7.11	22.2	28.7	8.9	17.5	26.4	23.6	16.6
6	150	80	10.97	23.7		10.6		28.2		17.3
6	150	120	14.27	25.0		12.1		29.6		17.9
6	150	160	18.26	26.4		13.8		31.3		18.5
6	150	XXS	21.95	27.7		15.2		32.7		19.1
6	150	ISO	25.00	28.7		16.4		33.9		19.5
6	150	ISO	28.00	29.6		17.4		34.9		19.9
6	150	ISO	30.00	30.2		18.1		35.6		20.2
6	150	ISO	32.00	30.7		18.8		36.3		20.4
6	150	ISO	36.00	31.8		20.0		37.5		20.9
8	200	60	10.31	36.8	48.4	16.9	27.1	44.0	42.6	28.5



Vector SPO® Compact Flange

5K

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
8	200	80	12.70	38.3		18.7		45.8		29.2
8	200	100	15.09	39.8		20.4		47.5		29.8
8	200	120	18.26	41.6		22.6		49.7		30.7
8	200	140	20.62	43.0		24.2		51.3		31.3
8	200	XXS	22.23	43.9		25.3		52.4		31.7
8	200	160	23.01	44.4		25.8		52.9		31.9
8	200	ISO	25.00	45.5		27.0		54.1		32.4
8	200	ISO	28.00	47.1		28.9		56.0		33.1
8	200	ISO	30.00	48.1		30.1		57.2		33.5
8	200	ISO	32.00	49.1		31.3		58.4		34.0
8	200	ISO	36.00	51.1		33.6		60.7		34.9
8	200	ISO	40.00	52.9		35.7		62.8		35.7
8	200	ISO	45.00	55.1		38.2		65.3		36.6
10	250	60	12.70	64.6	85.8	32.1	46.5	78.6	77.0	50.5
10	250	80	15.09	66.9		34.5		81.0		51.5
10	250	100	18.26	69.9		37.6		84.1		52.9
10	250	120	21.44	72.8		40.7		87.2		54.1
10	250	140	25.40	76.3		44.4		90.9		55.7
10	250	160	28.58	79.0		47.3		93.7		56.9
10	250	ISO	30.00	80.2		48.5		95.0		57.4
10	250	ISO	32.00	81.8		50.3		96.7		58.1
10	250	ISO	36.00	85.1		53.6		100		59.6
10	250	ISO	40.00	88.2		56.9		103		60.9
10	250	ISO	45.00	91.8		60.8		107		62.5
10	250	ISO	50.00	95.3		64.4		111		64.1
10	250	ISO	55.00	98.7		67.9		114		65.5
12	250	80	17.48	95.4	127	50.2	62.9	113	110	69.5
12	300	100	21.44	101		55.3		118		71.7
12	300	120	25.40	106		60.2		123		73.8
12	300	140	28.58	110		64.1		127		75.5
12	300	160	33.32	115		69.6		133		77.9
12	300	ISO	36.00	118		72.7		136		79.2
12	300	ISO	40.00	123		77.2		140		81.2
12	300	ISO	45.00	128		82.5		145		83.5
12	300	ISO	50.00	134		87.7		151		85.7

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
12	300	ISO	55.00	139		92.6		155		87.8
12	300	ISO	60.00	144		97.3		160		89.9
12	300	ISO	65.00	148		102		165		91.8
14	300	80	19.05	126	167	65.6	82.8	148	144	90.9
14	350	100	23.83	134		72.7		155		94.0
14	350	120	27.79	140		78.5		161		96.5
14	350	140	31.75	146		84.1		167		99.0
14	350	160	35.71	151		89.5		172		101
14	350	ISO	36.00	152		89.9		173		102
14	350	ISO	40.00	157		95.3		178		104
14	350	ISO	45.00	164		102		185		107
14	350	ISO	50.00	171		108		191		109
14	350	ISO	55.00	177		114		197		112
14	350	ISO	60.00	183		120		203		115
14	350	ISO	65.00	189		125		208		117
16	400	80	21.44	188	250	90.3	125	215	209	132
16	400	100	26.19	197		99.5		224		136
16	400	120	30.96	207		109		233		140
16	400	140	36.53	218		119		244		144
16	400	160	40.49	225		126		251		147
16	400	ISO	45.00	234		134		259		150
16	400	ISO	50.00	243		142		267		154
16	400	ISO	55.00	252		150		275		158
16	400	ISO	60.00	260		158		283		161
16	400	ISO	65.00	268		166		291		164
16	400	ISO	70.00	276		173		298		167
18	450	80	23.83	245	330	125	159	284	283	174
18	450	100	29.36	259		139		297		180
18	450	120	34.93	273		152		310		186
18	450	140	39.67	285		162		321		190
18	450	160	45.24	298		175		333		196
18	450	ISO	50.00	309		185		344		200
18	450	ISO	55.00	320		195		354		205
18	450	ISO	60.00	331		205		364		209
18	450	ISO	65.00	342		215		374		213

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
18	450	ISO	70.00	352		225		383		218
18	450	ISO	75.00	362		234		393		222
20	500	80	26.19	338	458	178	218	396	382	235
20	500	100	32.54	358		197		415		243
20	500	120	38.10	376		213		431		250
20	500	140	44.45	395		231		449		258
20	500	160	50.01	411		246		465		264
20	500	ISO	55.00	426		260		478		270
20	500	ISO	60.00	440		273		491		276
20	500	ISO	65.00	453		286		504		281
20	500	ISO	70.00	466		298		517		286
20	500	ISO	75.00	479		310		529		291
20	500	ISO	80.00	492		322		540		296
20	500	ISO	85.00	504		334		552		301
22	550	80	28.58	467	629	230	295	525	511	319
22	550	100	34.93	492		252		547		328
22	550	120	41.28	516		274		569		338
22	550	140	47.63	540		295		591		347
22	550	160	53.98	563		316		611		356
22	550	ISO	55.00	566		319		614		357
22	550	ISO	60.00	584		335		630		364
22	550	ISO	65.00	601		351		646		370
22	550	ISO	70.00	618		366		661		377
22	550	ISO	75.00	634		380		676		383
22	550	ISO	80.00	650		395		690		389
22	550	ISO	85.00	666		409		704		395
22	550	ISO	90.00	681		423		718		401
24	600	80	30.96	576	780	299	372	671	638	392
24	600	100	38.89	612		333		705		406
24	600	120	46.02	644		362		734		418
24	600	140	52.37	671		387		759		429
24	600	160	59.54	702		415		787		440
24	600	ISO	60.00	704		417		789		441
24	600	ISO	65.00	724		436		808		449
24	600	ISO	70.00	744		454		826		457

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
24	600	ISO	75.00	764		473		844		464
24	600	ISO	80.00	783		490		862		472
24	600	ISO	85.00	802		508		880		479
24	600	ISO	90.00	821		525		897		486
24	600	ISO	95.00	839		541		913		493
24	600	ISO	100.00	857		557		929		500

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	4	1/2	80	95	100	75									26 / 14
1 1/2	40	8	1/2	90	110	110	80									26 / 14
2	50	8	1/2	90	110	115	80									26 / 14
2 1/2	65	12	1/2	95	115	120	85									26 / 14
3	80	12	5/8	110	135	140	100									31 / 17
4	100	12	3/4	130	160	170	120	155	170	180	160	12			30	37 / 21
5	125	12	7/8	150	185	195	135	180	200	210	185	15			36	42 / 24
6	150	12	1	190	220	235	165	205	235	255	210				33	48 / 28
8	200	16	1 1/8	210	250	270	185	230	270	290	240				36	53 / 30
10	250	16	1 1/4	240	290	315	205	265	310	335	260				35	59 / 33
12	300	20	1 1/4	265	325	350	220	290	345	370	260				22	59 / 33
14	350	20	1 3/8	290	350	375	235	315	375	400	290				26	64 / 36
16	400	20	1 5/8	330	400	430	275	365	430	460	340				32	75 / 43
18	450	20	1 3/4	360	435	465	295	395	470	500	365				35	81 / 47
20	500	20	1 7/8	395	480	510	325	435	520	550	390				31	86 / 50
22	550	20	2 1/4	445	530	570	370	490	575	615	470				49	103 / 60
24	600	20	2 1/4	465	565	600	380	510	610	645	470				39	103 / 60

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Washer thickness is the total extra bolt length required to achieve a clamp length to nominal diameter ratio of 4.5, to be achieved by 1 or 2 washers.

Standard = All combinations of Weld Neck (WN), Blind (BL) and Integral (IF)

Swivel = All combinations of Swivel (SW) against Weld Neck (WN), Blind (BL) or Integral (IF)

Line blanks = Paddle Blank (PB) or Paddle Spacer (PS) between a standard connection

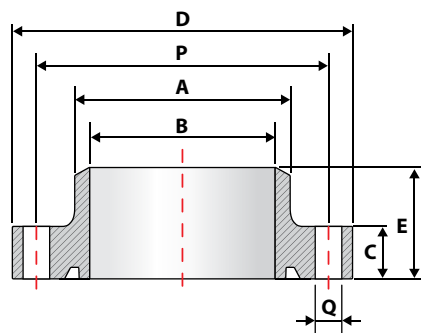
WN / RI = Weld Neck (WN), Blind (BL) or Integral (IF) against Rigid Interface (RI)



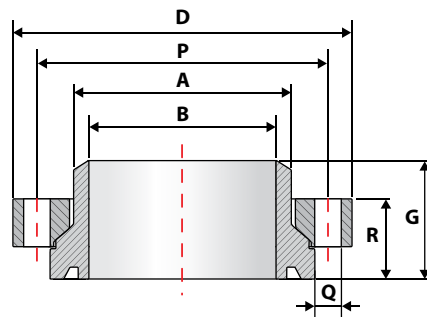
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1 1/2	40	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2	50	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
2 1/2	65	12	1/2	0.7	0.9	1.1	1.2	0.8	1.6	1.8	1.9	1.2								
3	80	12	5/8	1.3	1.7	2.1	2.1	1.5	3.0	3.4	3.4	2.2								
4	100	12	3/4	2.1	2.9	3.6	3.8	2.7	5.0	5.7	5.9	3.7	3.5	3.8	4.0	3.6	6.4	5.9	6.1	6.7
5	125	12	7/8	3.2	4.6	5.7	6.0	4.2	7.9	8.9	9.2	5.8	5.5	6.2	6.5	5.7	10.1	9.4	9.7	10.5
6	150	12	1	4.6	7.7	8.9	9.5	6.6	12.3	13.5	14.1	9.0	8.3	9.5	10.3	8.5	13.0	14.1	14.9	14.5
8	200	16	1 1/8	8.6	14.6	17.3	18.7	12.8	23.2	25.9	27.3	17.1	15.9	18.7	20.1	16.6	24.6	27.3	28.7	27.7
10	250	16	1 1/4	11.4	20.9	25.2	27.4	17.8	32.3	36.6	38.8	23.5	23.0	26.9	29.1	22.6	34.5	38.4	40.5	36.6
12	300	20	1 1/4	14.3	28.8	35.3	38.0	23.9	43.1	49.6	52.3	31.0	31.5	37.5	40.2	28.3	45.8	51.8	54.5	41.9
14	350	20	1 3/8	18.5	38.6	46.6	49.9	31.3	57.1	65.1	68.5	40.6	41.9	49.9	53.3	38.6	60.5	68.5	71.8	56.9
16	400	20	1 5/8	29.4	62.6	75.8	81.5	52.1	92.0	105	111	66.9	69.2	81.5	87.2	64.5	98.6	111	117	94.1
18	450	20	1 3/4	37.1	79.7	96.4	103	65.3	117	133	140	83.9	87.5	104	111	80.9	125	141	148	118
20	500	20	1 7/8	43.8	101	123	131	83.2	145	167	174	105	111	133	141	99.8	155	177	185	140
22	550	20	2 1/4	76.1	167	198	213	138	243	274	289	176	183	215	230	176	259	291	306	256
24	600	20	2 1/4	76.1	174	211	224	142	250	288	301	180	191	228	241	176	267	304	317	248

1) Bolt set weight includes washers weight, if applicable.

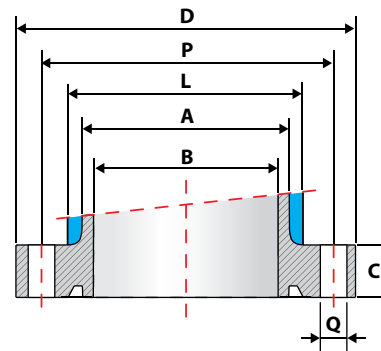
Weld Neck



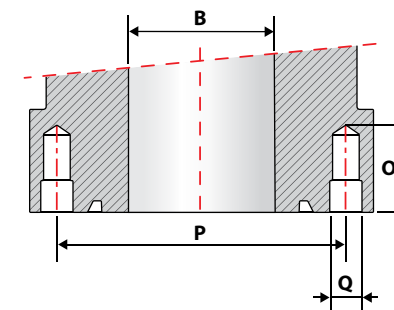
Swivel



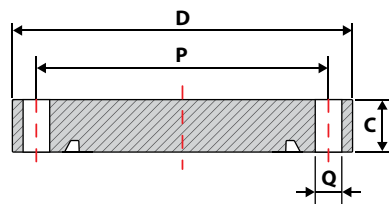
Integral



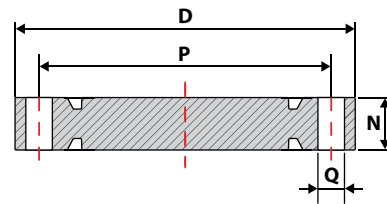
Rigid Interface



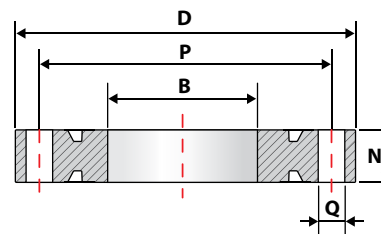
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	15.8	0.62	20	0.79	93	3.66	53	2.09	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	21.0	0.83	20	0.79	98	3.86	55	2.17	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	26.6	1.05	20	0.79	107	4.21	58	2.28	68	2.68	46	1.81	19	0.75	40	1.57	42	1.65	81.5	3.21	15	0.59	8	1/2
1 1/2	40	48.3	1.90	40.9	1.61	25	0.98	133	5.24	68	2.68	79	3.11	58	2.28	23	0.91	49	1.93	52	2.05	102.3	4.03	18	0.71	8	5/8
2	50	60.3	2.37	49.2	1.94	28	1.10	147	5.79	77	3.03	85	3.35	73	2.87	26	1.02	51	2.01	52	2.05	116.2	4.57	18	0.71	8	5/8
2 1/2	65	73.0	2.87	59.0	2.32	34	1.34	179	7.05	82	3.23	92	3.62	90	3.54	30	1.18	58	2.28	62	2.44	142.1	5.59	22	0.87	8	3/4
3	80	88.9	3.50	73.7	2.90	38	1.50	210	8.27	89	3.50	100	3.94	106	4.17	34	1.34	66	2.60	72	2.83	168.0	6.61	25	0.98	8	7/8
4	100	114.3	4.50	97.2	3.83	46	1.81	244	9.61	100	3.94	116	4.57	140	5.51	41	1.61	75	2.95	72	2.83	201.5	7.93	25	0.98	12	7/8
5	125	141.3	5.56	115.9	4.56	55	2.17	296	11.65	116	4.57	136	5.35	170	6.69	48	1.89	95	3.74	90	3.54	243.0	9.57	32	1.26	12	1 1/8
6	150	168.3	6.63	139.8	5.50	63	2.48	336	13.23	131	5.16	151	5.94	199	7.83	55	2.17	108	4.25	98	3.86	277.2	10.91	35	1.38	12	1 1/4
8	200	219.1	8.63	182.6	7.19	77	3.03	418	16.46	158	6.22	183	7.20	252	9.92	67	2.64	132	5.20	117	4.61	347.7	13.69	42	1.65	12	1 1/2
10	250	273.1	10.75	230.2	9.06	95	3.74	518	20.39	190	7.48	212	8.35	312	12.28	80	3.15	159	6.26	144	5.67	431.1	16.97	52	2.05	12	1 7/8
12	300	323.9	12.75	273.1	10.75	109	4.29	600	23.62	217	8.54	230	9.06	395	15.55	91	3.58	175	6.89	144	5.67	514.0	20.24	52	2.05	16	1 7/8
14	350	355.6	14.00	300.0	11.81	117	4.61	647	25.47	234	9.21	246	9.69	431	16.97	98	3.86	189	7.44	153	6.02	555.0	21.85	55	2.17	16	2
16	400	406.4	16.00	344.5	13.56	130	5.12	718	28.27	260	10.24	269	10.59	473	18.62	111	4.37	211	8.31	171	6.73	615.1	24.22	62	2.44	16	2 1/4
18	450	457.2	18.00	387.3	15.25	143	5.63	796	31.34	285	11.22	294	11.57	529	20.83	124	4.88	234	9.21	188	7.40	682.0	26.85	68	2.68	16	2 1/2
20	500	508.0	20.00	431.8	17.00	163	6.42	927	36.50	319	12.56	322	12.68	580	22.83	138	5.43	259	10.20	242	9.53	779.3	30.68	88	3.46	12	3 1/4
22	550	558.8	22.00	476.2	18.75	176	6.93	1007	39.65	345	13.58	347	13.66	641	25.24	151	5.94	281	11.06	260	10.24	848.3	33.40	94	3.70	12	3 1/2
24	600	609.6	24.00	517.6	20.38	191	7.52	1112	43.78	374	14.72	376	14.80	696	27.40	163	6.42	308	12.13	295	11.61	931.5	36.67	107	4.21	12	4

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	40	2.77	0.93	0.91	0.21	0.95	1.2	0.73	0.71
1/2	15	80	3.73	0.95		0.23		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
1/2	15	XXS	7.47	0.99		0.28		1.2		0.73
3/4	20	40	2.87	1.0	1.0	0.28	1.0	1.3	0.88	0.83
3/4	20	80	3.91	1.1		0.31		1.3		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
3/4	20	XXS	7.82	1.1		0.39		1.4		0.86
1	25	40	3.38	1.1	1.1	0.45	1.3	1.8	1.0	0.95
1	25	80	4.55	1.2		0.50		1.8		0.97
1	25	160	6.35	1.2		0.57		1.9		0.98
1	25	XXS	9.09	1.3		0.65		2.0		1.0
1	25	ISO	10.00	1.3		0.67		2.0		1.0
1 1/2	40	40	3.68	2.2	2.2	0.83	2.4	3.3	2.0	1.8
1 1/2	40	80	5.08	2.3		0.94		3.4		1.8
1 1/2	40	160	7.14	2.4		1.1		3.5		1.8
1 1/2	40	XXS	10.15	2.5		1.3		3.7		1.9
1 1/2	40	ISO	11.00	2.6		1.3		3.8		1.9
1 1/2	40	ISO	12.50	2.6		1.4		3.8		1.9
2	50	80	5.54	3.1	3.2	1.4	2.8	4.2	2.8	2.5
2	50	160	8.74	3.4		1.7		4.5		2.6
2	50	XXS	11.07	3.6		1.9		4.7		2.6
2	50	ISO	12.50	3.7		2.0		4.9		2.6
2	50	ISO	14.20	3.8		2.1		5.0		2.7
2 1/2	65	80	7.01	5.6	5.7	2.4	5.0	7.3	4.9	4.3
2 1/2	65	160	9.53	5.9		2.7		7.7		4.4
2 1/2	65	XXS	14.02	6.3		3.2		8.2		4.5
2 1/2	65	ISO	16.00	6.5		3.4		8.4		4.6
3	80	80	7.62	8.5	8.9	3.6	7.8	11.4	7.8	6.7
3	80	160	11.13	9.0		4.2		12.0		6.9
3	80	XXS	15.24	9.6		4.9		12.7		7.1
3	80	ISO	16.00	9.7		5.0		12.8		7.1
3	80	ISO	17.50	9.9		5.2		13.0		7.2
3	80	ISO	20.00	10.1		5.5		13.3		7.3
4	100	80	8.56	13.0	14.3	6.4	10.2	16.6	12.6	10.2

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
4	100	120	11.13	13.6		7.1		17.3		10.4
4	100	160	13.49	14.2		7.7		17.9		10.7
4	100	XXS	17.12	14.9		8.5		18.7		11.0
4	100	ISO	17.50	15.0		8.6		18.8		11.0
4	100	ISO	20.00	15.5		9.2		19.4		11.2
4	100	ISO	22.20	15.9		9.6		19.8		11.4
4	100	ISO	25.00	16.3		10.2		20.4		11.5
5	125	120	12.70	23.0	24.7	11.6	19.2	30.8	21.3	17.3
5	125	160	15.88	24.0		12.8		32.0		17.7
5	125	XXS	19.05	25.0		13.9		33.1		18.1
5	125	ISO	20.00	25.3		14.2		33.4		18.3
5	125	ISO	22.20	25.9		14.9		34.2		18.5
5	125	ISO	25.00	26.7		15.8		35.0		18.8
5	125	ISO	28.00	27.4		16.7		35.9		19.1
5	125	ISO	30.00	27.9		17.3		36.5		19.3
6	150	120	14.27	33.7	37.0	17.1	27.0	44.1	31.9	25.3
6	150	160	18.26	35.4		19.1		46.1		26.0
6	150	XXS	21.95	37.0		20.8		47.8		26.7
6	150	ISO	25.00	38.2		22.2		49.2		27.2
6	150	ISO	28.00	39.3		23.5		50.5		27.6
6	150	ISO	30.00	40.0		24.3		51.3		27.9
6	150	ISO	32.00	40.7		25.1		52.1		28.2
6	150	ISO	36.00	42.0		26.6		53.6		28.8
8	200	120	18.26	63.7	71.0	33.3	48.9	82.2	61.3	47.5
8	200	140	20.62	65.3		35.2		84.1		48.2
8	200	XXS	22.23	66.4		36.5		85.4		48.7
8	200	160	23.01	67.0		37.1		86.0		48.9
8	200	ISO	25.00	68.3		38.6		87.6		49.5
8	200	ISO	28.00	70.3		40.9		89.8		50.3
8	200	ISO	30.00	71.5		42.3		91.3		50.8
8	200	ISO	32.00	72.8		43.8		92.7		51.4
8	200	ISO	36.00	75.1		46.5		95.4		52.4
8	200	ISO	40.00	77.4		49.1		98.0		53.3
8	200	ISO	45.00	80.0		52.1		101		54.4
10	250	120	21.44	119	135	59.3	90.7	150	113	86.6



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
10	250	140	25.40	123		64.0		155		88.3
10	250	160	28.58	126		67.6		158		89.7
10	250	ISO	30.00	127		69.2		160		90.3
10	250	ISO	32.00	129		71.4		162		91.1
10	250	ISO	36.00	133		75.7		166		92.8
10	250	ISO	40.00	137		79.8		170		94.3
10	250	ISO	45.00	141		84.7		175		96.2
10	250	ISO	50.00	146		89.4		180		97.9
10	250	ISO	55.00	150		93.8		184		99.6
12	250	120	25.40	182	208	101	124	224	173	132
12	250	140	28.58	186		106		229		134
12	250	160	33.32	193		113		236		136
12	300	ISO	36.00	197		116		240		138
12	300	ISO	40.00	202		122		246		140
12	300	ISO	45.00	208		129		253		143
12	300	ISO	50.00	215		135		259		145
12	300	ISO	55.00	221		142		265		148
12	300	ISO	60.00	226		147		271		150
12	300	ISO	65.00	232		153		277		152
14	350	120	27.79	227	261	126	153	279	218	164
14	350	140	31.75	234		134		286		166
14	350	160	35.71	240		140		293		169
14	350	ISO	36.00	241		141		294		169
14	350	ISO	40.00	247		148		300		172
14	350	ISO	45.00	255		156		309		175
14	350	ISO	50.00	263		164		317		179
14	350	ISO	55.00	270		171		324		182
14	350	ISO	60.00	277		179		331		185
14	350	ISO	65.00	284		186		338		187
14	350	ISO	70.00	290		192		345		190
14	350	ISO	75.00	296		199		352		193
16	400	120	30.96	305	355	168	202	370	304	222
16	400	140	36.53	317		180		382		227
16	400	160	40.49	325		189		391		231
16	400	ISO	45.00	335		198		400		235

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
16	400	ISO	50.00	345		209		411		239
16	400	ISO	55.00	355		219		421		243
16	400	ISO	60.00	364		228		430		247
16	400	ISO	65.00	373		238		440		251
16	400	ISO	70.00	382		247		449		255
16	400	ISO	75.00	390		255		457		259
16	400	ISO	80.00	398		264		466		262
16	400	ISO	85.00	406		272		474		265
18	450	120	34.93	412	482	228	269	497	419	304
18	450	140	39.67	425		241		510		310
18	450	160	45.24	439		256		525		316
18	450	ISO	50.00	451		269		538		321
18	450	ISO	55.00	464		281		551		327
18	450	ISO	60.00	476		294		563		332
18	450	ISO	65.00	488		306		575		337
18	450	ISO	70.00	499		317		587		342
18	450	ISO	75.00	510		329		598		347
18	450	ISO	80.00	521		340		609		351
18	450	ISO	85.00	531		350		620		356
18	450	ISO	90.00	541		361		630		360
18	450	ISO	95.00	551		370		640		364
20	500	120	38.10	649	753	318	450	767	638	480
20	500	140	44.45	670		339		789		489
20	500	160	50.01	688		357		807		497
20	500	ISO	55.00	704		373		823		504
20	500	ISO	60.00	720		389		839		510
20	500	ISO	65.00	735		404		854		517
20	500	ISO	70.00	750		419		869		523
20	500	ISO	75.00	764		433		883		529
20	500	ISO	80.00	778		447		897		535
20	500	ISO	85.00	792		461		911		541
20	500	ISO	90.00	805		474		924		547
20	500	ISO	95.00	818		487		937		552
20	500	ISO	100.00	830		499		949		558
20	500	ISO	105.00	843		511		961		563

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
22	550	120	41.28	826	964	406	568	974	829	618
22	550	140	47.63	851		432		1000		629
22	550	160	53.98	876		456		1025		640
22	550	ISO	55.00	880		460		1029		641
22	550	ISO	60.00	899		479		1048		650
22	550	ISO	65.00	917		498		1066		658
22	550	ISO	70.00	936		516		1084		666
22	550	ISO	75.00	953		534		1102		673
22	550	160	80.00	971		551		1119		681
22	550	ISO	85.00	988		568		1136		688
22	550	ISO	90.00	1004		584		1153		695
22	550	ISO	95.00	1020		600		1169		702
22	550	ISO	100.00	1036		616		1184		709
22	550	ISO	105.00	1051		631		1199		716
22	550	ISO	110.00	1066		646		1214		722
22	550	ISO	115.00	1080		660		1228		728
24	600	120	46.02	1091	1265	532	770	1303	1085	816
24	600	140	52.37	1122		562		1333		829
24	600	160	59.54	1155		596		1366		843
24	600	ISO	60.00	1157		598		1368		844
24	600	ISO	65.00	1179		620		1390		854
24	600	ISO	70.00	1201		642		1412		863
24	600	ISO	75.00	1223		664		1434		873
24	600	ISO	80.00	1244		685		1455		882
24	600	ISO	85.00	1265		705		1476		891
24	600	ISO	90.00	1285		725		1496		899
24	600	ISO	95.00	1305		745		1516		908
24	600	ISO	100.00	1324		764		1535		916
24	600	ISO	105.00	1343		783		1553		924
24	600	ISO	110.00	1362		801		1572		932
24	600	ISO	115.00	1380		819		1590		940
24	600	ISO	120.00	1397		837		1607		948
24	600	ISO	125.00	1414		853		1624		955

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	8	1/2	80	100	100	75									26 / 14
1 1/2	40	8	5/8	100	125	125	95									31 / 17
2	50	8	5/8	105	130	135	95									31 / 17
2 1/2	65	8	3/4	125	150	155	115	155	160	170	160	18			33	37 / 21
3	80	8	7/8	140	170	175	130	180	185	190	185	25			41	42 / 24
4	100	12	7/8	160	190	200	140	180	200	215	185	9			33	42 / 24
5	125	12	1 1/8	190	230	240	175	230	250	260	240	19			46	53 / 30
6	150	12	1 1/4	215	260	270	190	255	280	290	260	17			49	59 / 33
8	200	12	1 1/2	255	310	320	230	300	340	350	315	18			57	70 / 40
10	250	12	1 7/8	310	375	390	280	370	415	430	390	25			73	86 / 50
12	300	16	1 7/8	335	405	430	295	375	445	465	390				59	86 / 50
14	350	16	2	360	435	460	315	400	475	500	415				62	92 / 53
16	400	16	2 1/4	400	485	515	350	445	530	560	470				71	103 / 60
18	450	16	2 1/2	440	530	565	385	495	585	620	520				80	114 / 66
20	500	12	3 1/4	515	615	655	470	635	690	730	670	46			127	147 / 85
22	550	12	3 1/2	555	660	710	505	685	740	790	725	49			137	158 / 91
24	600	12	4	610	730	775	565	780	820	870	825	76			166	180 / 105

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Washer thickness is the total extra bolt length required to achieve a clamp length to nominal diameter ratio of 4.5, to be achieved by 1 or 2 washers.

Standard = All combinations of Weld Neck (WN), Blind (BL) and Integral (IF)

Swivel = All combinations of Swivel (SW) against Weld Neck (WN), Blind (BL) or Integral (IF)

Line blanks = Paddle Blank (PB) or Paddle Spacer (PS) between a standard connection

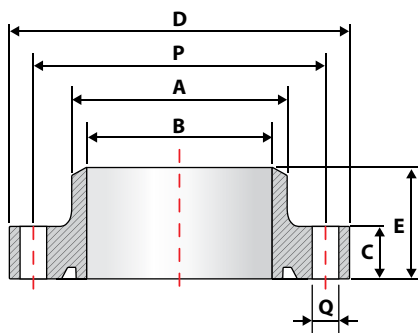
WN / RI = Weld Neck (WN), Blind (BL) or Integral (IF) against Rigid Interface (RI)



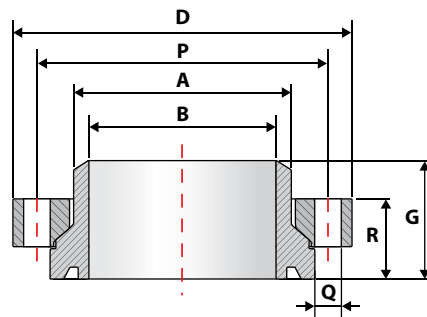
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	8	1/2	0.5	0.5	0.6	0.6	0.5	1.0	1.1	1.1	0.7								
1 1/2	40	8	5/8	0.9	1.0	1.3	1.3	1.0	1.9	2.1	2.1	1.4								
2	50	8	5/8	0.9	1.1	1.3	1.4	1.0	1.9	2.2	2.2	1.4								
2 1/2	65	8	3/4	1.4	1.9	2.2	2.3	1.7	3.3	3.6	3.7	2.4	2.3	2.4	2.5	2.4	4.5	3.8	3.9	4.6
3	80	8	7/8	2.2	2.9	3.5	3.6	2.7	5.0	5.6	5.7	3.7	3.7	3.8	3.9	3.8	7.3	6.0	6.1	7.3
4	100	12	7/8	3.2	4.9	5.8	6.2	4.3	8.2	9.1	9.4	5.9	5.5	6.2	6.6	5.7	9.6	9.4	9.9	10.2
5	125	12	1 1/8	6.5	9.9	12.0	12.5	9.1	16.3	18.4	18.9	12.3	12.0	13.0	13.5	12.5	21.1	19.5	20.0	22.2
6	150	12	1 1/4	8.6	14.0	17.0	17.6	12.4	22.6	25.5	26.2	16.7	16.6	18.3	18.9	17.0	28.2	26.8	27.5	29.9
8	200	12	1 1/2	14.3	24.5	29.8	30.7	22.1	38.8	44.1	45.0	29.2	28.8	32.7	33.6	30.3	47.5	46.9	47.9	51.3
10	250	12	1 7/8	26.3	47.6	57.6	59.9	43.0	73.9	83.9	86.2	56.1	56.8	63.7	66.0	59.9	92.2	90.0	92.3	99.5
12	300	16	1 7/8	35.0	68.6	82.9	88.1	60.4	104	118	123	77.9	76.8	91.1	95.2	79.9	112	126	130	126
14	350	16	2	43.5	84.3	102	108	73.8	128	145	151	95.5	93.7	111	117	97.2	137	155	161	154
16	400	16	2 1/4	60.9	120	145	154	105	181	206	215	135	133	159	168	141	194	220	229	220
18	450	16	2 1/2	81.9	164	197	210	143	246	279	292	184	184	218	231	194	266	300	313	303
20	500	12	3 1/4	130.3	247	295	314	225	377	425	444	290	304	331	350	321	484	461	480	521
22	550	12	3 1/2	166.6	310	368	396	282	476	535	563	365	382	413	441	404	609	579	607	657
24	600	12	4	237.8	447	535	568	414	685	773	806	533	572	601	638	605	930	839	876	986

1) Bolt set weight includes washers weight, if applicable.

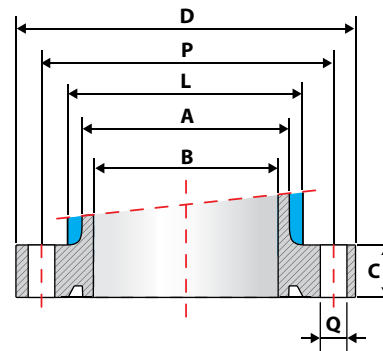
Weld Neck



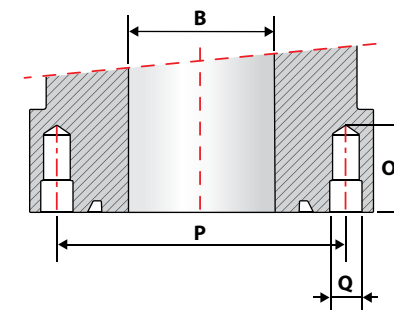
Swivel



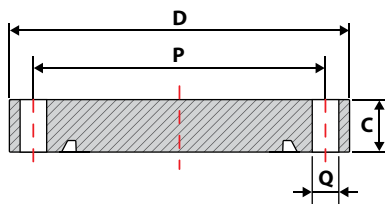
Integral



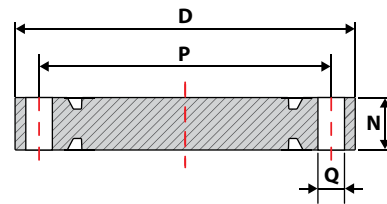
Rigid Interface



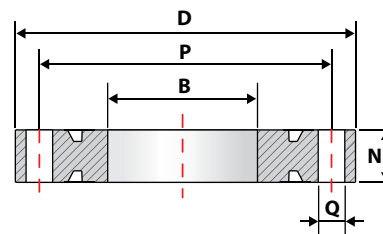
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	15.8	0.62	20	0.79	93	3.66	53	2.09	56	2.20	27	1.06	17	0.67	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	21.0	0.83	20	0.79	98	3.86	55	2.17	58	2.28	33	1.30	18	0.71	32	1.26	42	1.65	72.7	2.86	15	0.59	4	1/2
1	25	33.4	1.31	26.6	1.05	25	0.98	107	4.21	58	2.28	68	2.68	46	1.81	20	0.79	40	1.57	42	1.65	81.5	3.21	15	0.59	8	1/2
1 1/2	40	48.3	1.90	40.9	1.61	29	1.14	135	5.31	68	2.68	79	3.11	58	2.28	23	0.91	46	1.81	52	2.05	102.3	4.03	18	0.71	8	5/8
2	50	60.3	2.37	49.2	1.94	32	1.26	147	5.79	80	3.15	85	3.35	73	2.87	27	1.06	51	2.01	52	2.05	116.2	4.57	18	0.71	8	5/8
2 1/2	65	73.0	2.87	59.0	2.32	38	1.50	181	7.13	90	3.54	92	3.62	90	3.54	31	1.22	58	2.28	62	2.44	142.1	5.59	22	0.87	8	3/4
3	80	88.9	3.50	73.7	2.90	43	1.69	210	8.27	100	3.94	100	3.94	106	4.17	36	1.42	67	2.64	62	2.44	168.0	6.61	22	0.87	12	3/4
4	100	114.3	4.50	97.2	3.83	50	1.97	246	9.69	115	4.53	116	4.57	140	5.51	44	1.73	79	3.11	72	2.83	201.5	7.93	25	0.98	12	7/8
5	125	141.3	5.56	115.9	4.56	65	2.56	300	11.81	128	5.04	134	5.28	171	6.73	51	2.01	105	4.13	90	3.54	243.0	9.57	32	1.26	12	1 1/8
6	150	168.3	6.63	139.8	5.50	79	3.11	333	13.11	160	6.30	151	5.94	197	7.76	59	2.32	118	4.65	98	3.86	275.0	10.83	35	1.38	12	1 1/4
8	200	219.1	8.63	182.6	7.19	86	3.39	426	16.77	177	6.97	178	7.01	254	10.00	73	2.87	137	5.39	117	4.61	349.0	13.74	42	1.65	12	1 1/2
10	250	273.1	10.75	230.2	9.06	95	3.74	516	20.31	205	8.07	211	8.31	330	12.99	88	3.46	162	6.38	126	4.96	431.0	16.97	45	1.77	16	1 5/8
12	300	323.9	12.75	273.1	10.75	109	4.29	614	24.17	237	9.33	240	9.45	400	15.75	100	3.94	182	7.17	144	5.67	518.0	20.39	52	2.05	16	1 7/8
14	350	355.6	14.00	300.0	11.81	125	4.92	663	26.10	265	10.43	264	10.39	437	17.20	108	4.25	203	7.99	153	6.02	561.0	22.09	55	2.17	16	2
16	400	406.4	16.00	344.5	13.56	135	5.31	729	28.70	294	11.57	300	11.81	474	18.66	121	4.76	230	9.06	171	6.73	615.1	24.22	62	2.44	16	2 1/4
18	450	457.2	18.00	387.3	15.25	155	6.10	843	33.19	331	13.03	335	13.19	563	22.17	134	5.28	257	10.12	188	7.40	716.0	28.19	68	2.68	16	2 1/2
20	500	508.0	20.00	431.8	17.00	170	6.69	890	35.04	364	14.33	361	14.21	579	22.80	147	5.79	277	10.91	206	8.11	750.0	29.53	74	2.91	16	2 3/4
22	550	558.8	22.00	476.2	18.75	185	7.28	967	38.07	398	15.67	395	15.55	633	24.92	159	6.26	300	11.81	224	8.82	815.0	32.09	81	3.19	16	3
24	600	609.6	24.00	517.6	20.38	200	7.87	1131	44.53	431	16.97	440	17.32	751	29.57	171	6.73	337	13.27	260	10.24	953.0	37.52	94	3.70	16	3 1/2

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	40	2.77	0.93	0.91	0.22	0.96	1.2	0.73	0.71
1/2	15	80	3.73	0.95		0.24		1.2		0.71
1/2	15	160	4.78	0.96		0.25		1.2		0.72
1/2	15	XXS	7.47	0.99		0.29		1.2		0.73
3/4	20	40	2.87	1.0	1.0	0.28	1.0	1.3	0.88	0.83
3/4	20	80	3.91	1.1		0.31		1.4		0.84
3/4	20	160	5.56	1.1		0.35		1.4		0.85
3/4	20	XXS	7.82	1.1		0.39		1.4		0.86
1	25	40	3.38	1.4	1.4	0.45	1.3	1.8	1.1	1.0
1	25	80	4.55	1.5		0.50		1.8		1.0
1	25	160	6.35	1.5		0.57		1.9		1.0
1	25	XXS	9.09	1.6		0.65		2.0		1.1
1	25	ISO	10.00	1.6		0.67		2.0		1.1
1 1/2	40	40	3.68	2.6	2.7	0.83	2.3	3.2	2.1	1.8
1 1/2	40	80	5.08	2.7		0.94		3.3		1.9
1 1/2	40	160	7.14	2.8		1.1		3.4		1.9
1 1/2	40	XXS	10.15	3.0		1.3		3.6		2.0
1 1/2	40	ISO	11.00	3.0		1.3		3.6		2.0
1 1/2	40	ISO	12.50	3.1		1.4		3.7		2.0
2	50	80	5.54	3.5	3.6	1.4	2.8	4.2	3.0	2.6
2	50	160	8.74	3.8		1.7		4.5		2.7
2	50	XXS	11.07	4.0		1.9		4.7		2.7
2	50	ISO	12.50	4.1		2.0		4.9		2.8
2	50	ISO	14.20	4.2		2.1		5.0		2.8
2 1/2	65	80	7.01	6.4	6.6	2.4	5.1	7.5	5.2	4.6
2 1/2	65	160	9.53	6.7		2.7		7.8		4.7
2 1/2	65	XXS	14.02	7.2		3.2		8.3		4.8
2 1/2	65	ISO	16.00	7.4		3.4		8.5		4.9
3	80	160	11.13	10.0	9.9	4.6	7.2	11.7	8.1	7.1
3	80	XXS	15.24	10.6		5.2		12.4		7.4
3	80	ISO	16.00	10.8		5.3		12.5		7.4
3	80	ISO	17.50	11.0		5.5		12.7		7.5
3	80	ISO	20.00	11.3		5.8		13.0		7.6
4	100	120	11.13	15.3	15.9	7.3	11.0	18.2	13.8	11.5
4	100	160	13.49	15.9		7.9		18.8		11.7

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
4	100	XXS	17.12	16.8		8.7		19.7		12.1
4	100	ISO	17.50	16.9		8.8		19.8		12.1
4	100	ISO	20.00	17.4		9.4		20.3		12.3
4	100	ISO	22.20	17.9		9.8		20.8		12.5
4	100	ISO	25.00	18.4		10.4		21.3		12.7
5	125	160	15.88	29.0	30.4	13.8	20.8	34.6	23.4	19.7
5	125	XXS	19.05	30.1		14.9		35.8		20.1
5	125	ISO	20.00	30.4		15.3		36.1		20.2
5	125	ISO	22.20	31.1		16.0		36.8		20.5
5	125	ISO	25.00	31.9		16.8		37.7		20.8
5	125	ISO	28.00	32.8		17.7		38.5		21.1
5	125	ISO	30.00	33.3		18.3		39.1		21.4
6	150	160	18.26	43.5	45.9	18.8	29.9	48.7	33.6	27.3
6	150	XXS	21.95	45.3		20.6		50.4		28.0
6	150	ISO	25.00	46.8		22.0		51.8		28.5
6	150	ISO	28.00	48.1		23.2		53.1		29.0
6	150	ISO	30.00	49.0		24.1		53.9		29.4
6	150	ISO	32.00	49.9		24.9		54.7		29.7
6	150	ISO	36.00	51.4		26.4		56.2		30.2
8	200	120	18.26	75.0	83.2	33.9	53.6	87.4	70.0	55.0
8	200	140	20.62	76.8		35.7		89.3		55.8
8	200	XXS	22.23	78.1		37.0		90.6		56.3
8	200	160	23.01	78.7		37.6		91.2		56.5
8	200	ISO	25.00	80.2		39.1		92.6		57.1
8	200	ISO	28.00	82.3		41.3		94.8		58.0
8	200	ISO	30.00	83.7		42.7		96.2		58.6
8	200	ISO	32.00	85.1		44.1		97.6		59.2
8	200	ISO	36.00	87.8		46.7		100		60.3
8	200	ISO	40.00	90.3		49.2		103		61.3
8	200	ISO	45.00	93.2		52.2		106		62.5
10	250	140	25.40	124	134	68.0	87.1	155	124	96.7
10	250	160	28.58	128		71.7		159		98.2
10	250	ISO	30.00	129		73.3		160		98.9
10	250	ISO	32.00	131		75.4		163		99.8
10	250	ISO	36.00	135		79.7		167		102



Vector SPO® Compact Flange

10K

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
10	250	ISO	40.00	140		83.8		171		103
10	250	ISO	45.00	144		88.7		176		105
10	250	ISO	50.00	149		93.3		180		107
10	250	ISO	55.00	153		97.7		185		109
12	250	140	28.58	202	219	114	134	248	201	158
12	250	160	33.32	209		122		256		161
12	300	ISO	36.00	213		126		260		162
12	300	ISO	40.00	219		131		266		165
12	300	ISO	45.00	226		139		273		168
12	300	ISO	50.00	233		145		279		171
12	300	ISO	55.00	239		152		286		173
12	300	ISO	60.00	245		158		292		176
12	300	ISO	65.00	251		164		298		178
14	350	120	27.79	263	295	139	179	318	255	195
14	350	140	31.75	270		147		326		198
14	350	160	35.71	278		154		333		201
14	350	ISO	36.00	278		155		334		201
14	350	ISO	40.00	286		162		341		204
14	350	ISO	45.00	294		171		350		208
14	350	ISO	50.00	303		179		358		211
14	350	ISO	55.00	311		187		366		215
14	350	ISO	60.00	319		195		374		218
14	350	ISO	65.00	327		203		382		221
14	350	ISO	70.00	334		210		389		224
14	350	ISO	75.00	341		217		396		227
16	400	120	30.96	337	383	182	237	419	343	255
16	400	140	36.53	351		196		433		260
16	400	160	40.49	361		205		442		264
16	400	ISO	45.00	371		216		453		269
16	400	ISO	50.00	382		227		465		273
16	400	ISO	55.00	393		239		476		278
16	400	ISO	60.00	404		249		486		282
16	400	ISO	65.00	414		260		497		286
16	400	ISO	70.00	424		270		507		290
16	400	ISO	75.00	434		280		517		294

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
16	400	ISO	80.00	443		289		526		298
16	400	ISO	85.00	452		298		535		302
18	450	120	34.93	528	597	292	356	648	517	393
18	450	140	39.67	543		307		663		399
18	450	160	45.24	560		324		680		406
18	450	ISO	50.00	574		338		694		411
18	450	ISO	55.00	588		353		709		417
18	450	ISO	60.00	602		367		723		423
18	450	ISO	65.00	616		381		737		428
18	450	ISO	70.00	629		394		750		434
18	450	ISO	75.00	642		407		763		439
18	450	ISO	80.00	655		420		775		444
18	450	ISO	85.00	667		432		787		449
18	450	ISO	90.00	678		443		799		453
18	450	ISO	95.00	689		454		810		458
20	500	120	38.10	630	726	326	413	738	628	459
20	500	140	44.45	654		350		762		468
20	500	160	50.01	675		370		783		477
20	500	ISO	55.00	693		388		801		484
20	500	ISO	60.00	711		406		818		491
20	500	ISO	65.00	728		423		835		498
20	500	ISO	70.00	745		439		852		505
20	500	ISO	75.00	761		455		868		511
20	500	ISO	80.00	777		471		884		518
20	500	ISO	85.00	793		486		899		524
20	500	ISO	90.00	808		501		914		530
20	500	ISO	95.00	822		516		928		536
20	500	ISO	100.00	836		529		942		542
20	500	ISO	105.00	850		543		956		547
22	550	120	41.28	803	931	414	521	935	799	577
22	550	140	47.63	832		443		964		589
22	550	160	53.98	860		471		992		600
22	550	ISO	55.00	865		475		996		602
22	550	ISO	60.00	887		497		1018		611
22	550	ISO	65.00	908		518		1039		619

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
22	550	ISO	70.00	929		539		1060		627
22	550	ISO	75.00	949		559		1080		635
22	550	ISO	80.00	969		578		1100		643
22	550	ISO	85.00	989		598		1119		651
22	550	ISO	90.00	1008		616		1137		659
22	550	ISO	95.00	1026		634		1156		666
22	550	ISO	100.00	1044		652		1173		673
22	550	ISO	105.00	1061		669		1191		680
22	550	ISO	110.00	1078		686		1207		687
22	550	ISO	115.00	1095		702		1224		693
24	600	140	52.37	1253	1375	712	838	1549	1181	913
24	600	160	59.54	1291		751		1588		928
24	600	ISO	60.00	1293		753		1591		929
24	600	ISO	65.00	1319		779		1617		939
24	600	ISO	70.00	1345		805		1643		949
24	600	ISO	75.00	1369		830		1668		959
24	600	ISO	80.00	1394		855		1692		968
24	600	ISO	85.00	1418		879		1717		978
24	600	ISO	90.00	1441		903		1740		987
24	600	ISO	95.00	1464		926		1763		996
24	600	ISO	100.00	1486		948		1786		1005
24	600	ISO	105.00	1508		970		1808		1013
24	600	ISO	110.00	1529		991		1829		1021
24	600	ISO	115.00	1550		1012		1850		1030
24	600	ISO	120.00	1570		1033		1870		1037
24	600	ISO	125.00	1590		1052		1890		1045

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	80	95	100	75									26 / 14
3/4	20	4	1/2	80	95	100	75									26 / 14
1	25	8	1/2	90	105	115	80									26 / 14
1 1/2	40	8	5/8	110	125	130	100									31 / 17
2	50	8	5/8	115	135	140	100									31 / 17
2 1/2	65	8	3/4	135	155	165	120	155	165	175	160	10			29	37 / 21
3	80	12	3/4	145	170	180	125	155	180	190	160				24	37 / 21
4	100	12	7/8	165	195	210	145	180	210	225	185				29	42 / 24
5	125	12	1 1/8	210	250	265	185	230	270	280	240				36	53 / 30
6	150	12	1 1/4	245	285	305	205	270	310	330	260				33	59 / 33
8	200	12	1 1/2	270	325	345	235	300	355	375	315				48	70 / 40
10	250	16	1 5/8	295	365	385	255	330	395	415	340				50	75 / 43
12	300	16	1 7/8	335	410	440	295	375	450	475	390				59	86 / 50
14	350	16	2	375	455	485	320	420	500	530	415				54	92 / 53
16	400	16	2 1/4	410	505	535	355	455	555	580	470				66	103 / 60
18	450	16	2 1/2	465	565	600	395	515	620	655	520				68	114 / 66
20	500	16	2 3/4	505	615	655	435	565	675	715	570				76	125 / 72
22	550	16	3	550	665	710	470	615	730	775	620				82	136 / 78
24	600	16	3 1/2	605	745	775	530	685	820	855	725				113	158 / 91

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Washer thickness is the total extra bolt length required to achieve a clamp length to nominal diameter ratio of 4.5, to be achieved by 1 or 2 washers.

Standard = All combinations of Weld Neck (WN), Blind (BL) and Integral (IF)

Swivel = All combinations of Swivel (SW) against Weld Neck (WN), Blind (BL) or Integral (IF)

Line blanks = Paddle Blank (PB) or Paddle Spacer (PS) between a standard connection

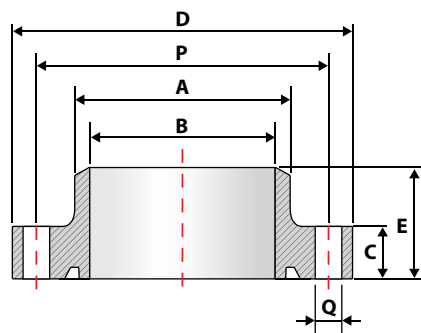
WN / RI = Weld Neck (WN), Blind (BL) or Integral (IF) against Rigid Interface (RI)



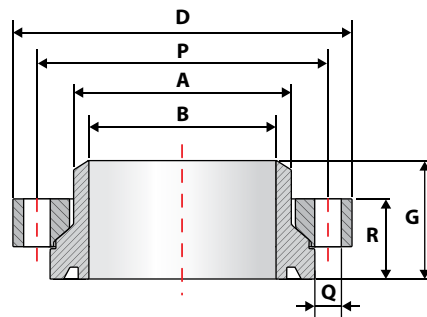
Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
3/4	20	4	1/2	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.6	0.4								
1	25	8	1/2	0.5	0.6	0.7	0.7	0.5	1.1	1.2	1.2	0.8								
1 1/2	40	8	5/8	0.9	1.1	1.3	1.3	1.0	2.0	2.1	2.2	1.5								
2	50	8	5/8	0.9	1.2	1.4	1.4	1.0	2.0	2.2	2.3	1.5								
2 1/2	65	8	3/4	1.4	2.0	2.3	2.5	1.8	3.4	3.7	3.9	2.5	2.3	2.5	2.6	2.4	4.2	3.9	4.0	4.4
3	80	12	3/4	2.1	3.2	3.8	4.0	2.8	5.4	5.9	6.1	3.9	3.5	4.0	4.3	3.6	5.6	6.1	6.4	6.3
4	100	12	7/8	3.2	5.1	6.0	6.5	4.5	8.3	9.2	9.7	6.1	5.5	6.5	6.9	5.7	8.9	9.7	10.2	9.9
5	125	12	1 1/8	6.5	10.9	13.0	13.8	9.6	17.4	19.5	20.2	12.8	12.0	14.0	14.6	12.5	18.4	20.5	21.0	20.8
6	150	12	1 1/4	8.6	16.0	18.6	19.9	13.4	24.5	27.1	28.5	17.6	17.6	20.2	21.5	17.0	26.2	28.8	30.1	27.1
8	200	12	1 1/2	14.3	25.9	31.2	33.1	22.6	40.2	45.5	47.4	29.7	28.8	34.1	36.0	30.3	43.1	48.4	50.3	49.1
10	250	16	1 5/8	23.6	44.7	55.4	58.4	38.7	68.3	78.9	81.9	50.5	50.1	59.9	62.9	51.6	73.6	83.5	86.5	82.0
12	300	16	1 7/8	35.0	68.6	84.0	90.1	60.4	104	119	125	77.9	76.8	92.2	97.3	79.9	112	127	132	126
14	350	16	2	43.5	87.9	107	114	75.0	131	150	157	96.7	98.4	117	124	97.2	142	161	168	149
16	400	16	2 1/4	60.9	123	151	160	106	184	212	221	137	136	166	174	141	197	227	235	217
18	450	16	2 1/2	81.9	173	210	223	147	255	292	305	188	192	231	244	194	274	313	326	293
20	500	16	2 3/4	107	229	279	297	197	336	386	404	251	256	306	324	258	363	413	431	390
22	550	16	3	138	298	361	385	255	436	499	523	324	333	396	420	336	472	534	558	506
24	600	16	3 1/2	222	450	554	576	394	672	776	799	505	510	610	636	539	733	832	858	836

1) Bolt set weight includes washers weight, if applicable.

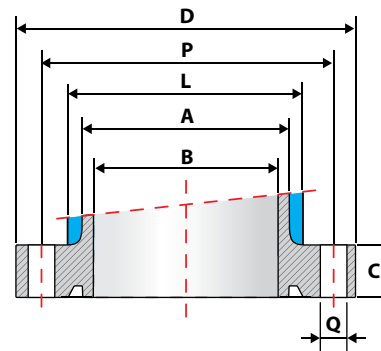
Weld Neck



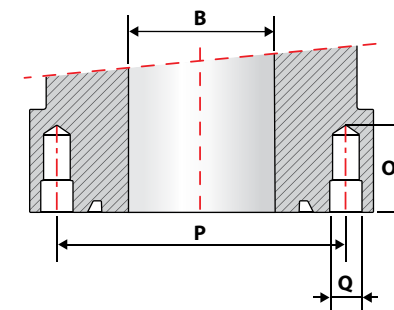
Swivel



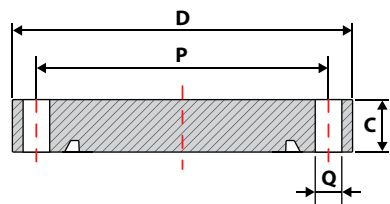
Integral



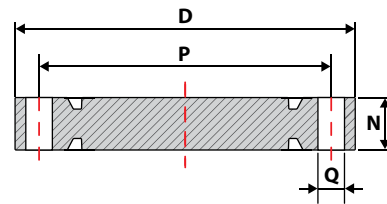
Rigid Interface



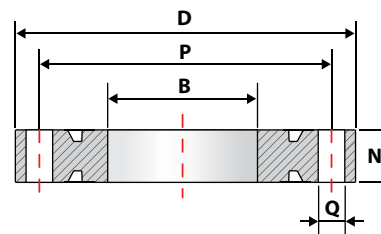
Blind



Paddle Blank



Paddle Spacer





Nominal Size		Flange Dimensions																		Bolting data							
		A		B		C		D		E		G		L		N		R		O		P		Q		No	Size
NPS	DN	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		in
1/2	15	21.3	0.84	15.8	0.62	25	0.98	93	3.66	53	2.09	56	2.20	27	1.06	18	0.71	31	1.22	42	1.65	67.3	2.65	15	0.59	4	1/2
3/4	20	26.7	1.05	21.0	0.83	25	0.98	98	3.86	55	2.17	58	2.28	33	1.30	20	0.79	32	1.26	42	1.65	72.7	2.86	15	0.59	8	1/2
1	25	33.4	1.31	26.6	1.05	27	1.06	107	4.21	58	2.28	68	2.68	46	1.81	21	0.83	40	1.57	42	1.65	81.5	3.21	15	0.59	8	1/2
1 1/2	40	48.3	1.90	40.9	1.61	31	1.22	135	5.31	68	2.68	74	2.91	58	2.28	26	1.02	46	1.81	52	2.05	102.3	4.03	18	0.71	8	5/8
2	50	60.3	2.37	42.8	1.69	43	1.69	163	6.42	83	3.27	92	3.62	76	2.99	31	1.22	64	2.52	62	2.44	124.0	4.88	22	0.87	8	3/4
2 1/2	65	73.0	2.87	53.9	2.12	48	1.89	189	7.44	95	3.74	100	3.94	88	3.46	35	1.38	69	2.72	72	2.83	144.0	5.67	25	0.98	8	7/8
3	80	88.9	3.50	66.6	2.62	50	1.97	225	8.86	105	4.13	107	4.21	99	3.90	41	1.61	74	2.91	72	2.83	180.0	7.09	25	0.98	12	7/8
4	100	114.3	4.50	87.3	3.44	64	2.52	276	10.87	126	4.96	130	5.12	147	5.79	50	1.97	96	3.78	90	3.54	219.0	8.62	32	1.26	12	1 1/8
5	125	141.3	5.56	109.5	4.31	72	2.83	319	12.56	150	5.91	152	5.98	177	6.97	58	2.28	113	4.45	98	3.86	255.0	10.04	35	1.38	12	1 1/4
6	150	168.3	6.63	131.8	5.19	79	3.11	393	15.47	175	6.89	175	6.89	252	9.92	68	2.68	133	5.24	98	3.86	330.0	12.99	35	1.38	16	1 1/4
8	200	219.1	8.63	174.6	6.87	100	3.94	486	19.13	205	8.07	215	8.46	315	12.40	83	3.27	163	6.42	117	4.61	410.0	16.14	42	1.65	16	1 1/2
10	250	273.1	10.75	215.9	8.50	117	4.61	583	22.95	247	9.72	250	9.84	370	14.57	101	3.98	188	7.40	144	5.67	488.0	19.21	52	2.05	16	1 7/8
12	300	323.9	12.75	266.7	10.50	130	5.12	626	24.65	283	11.14	280	11.02	401	15.79	116	4.57	208	8.19	153	6.02	525.0	20.67	55	2.17	16	2
14	350	355.6	14.00	271.0	10.67	144	5.67	775	30.51	310	12.20	310	12.20	495	19.49	125	4.92	232	9.13	188	7.40	648.0	25.51	68	2.68	16	2 1/2
16	400	406.4	16.00	333.3	13.12	170	6.69	802	31.57	357	14.06	355	13.98	522	20.55	141	5.55	268	10.55	188	7.40	675.0	26.57	68	2.68	16	2 1/2
18	450	457.2	18.00	366.7	14.44	185	7.28	968	38.11	395	15.55	395	15.55	633	24.92	156	6.14	295	11.61	224	8.82	815.0	32.09	81	3.19	16	3
20	500	508.0	20.00	419.1	16.50	210	8.27	1055	41.54	440	17.32	440	17.32	696	27.40	171	6.73	334	13.15	242	9.53	890.0	35.04	88	3.46	16	3 1/4
22	550	558.8	22.00	463.5	18.25	227	8.94	1136	44.72	480	18.90	475	18.70	756	29.76	186	7.32	360	14.17	260	10.24	958.0	37.72	94	3.70	16	3 1/2
24	600	609.6	24.00	490.5	19.31	242	9.53	1290	50.79	515	20.28	510	20.08	840	33.07	201	7.91	382	15.04	295	11.61	1087.0	42.80	107	4.21	16	4

NOTES:

- 1) Values for B give max bore for SPO Compact Flange standard dimensions, for other seal ring types and low strength flange materials contact FOGT.
- 2) Metric dimensions are governing. Imperial dimensions for info.
- 3) Values for L (Integral Flange only) given for standard torque tool, other max neck OD will apply for other tools.

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
1/2	15	40	2.77	1.2	1.2	0.22	0.96	1.2	0.78	0.75
1/2	15	80	3.73	1.2		0.24		1.2		0.76
1/2	15	160	4.78	1.2		0.25		1.2		0.76
1/2	15	XXS	7.47	1.2		0.29		1.2		0.78
3/4	20	40	2.87	1.1	1.2	0.28	0.91	1.2	0.88	0.83
3/4	20	80	3.91	1.2		0.31		1.2		0.84
3/4	20	160	5.56	1.2		0.35		1.3		0.85
3/4	20	XXS	7.82	1.3		0.39		1.3		0.87
1	25	40	3.38	1.5	1.6	0.45	1.3	1.8	1.2	1.1
1	25	80	4.55	1.6		0.50		1.8		1.1
1	25	160	6.35	1.6		0.57		1.9		1.1
1	25	XXS	9.09	1.7		0.65		2.0		1.1
1	25	ISO	10.00	1.7		0.67		2.0		1.1
1 1/2	40	40	3.68	2.7	2.9	0.81	2.3	3.1	2.4	2.1
1 1/2	40	80	5.08	2.8		0.92		3.2		2.1
1 1/2	40	160	7.14	3.0		1.1		3.4		2.2
1 1/2	40	XXS	10.15	3.1		1.2		3.5		2.2
1 1/2	40	ISO	11.00	3.2		1.3		3.6		2.2
1 1/2	40	ISO	12.50	3.2		1.3		3.7		2.3
2	50	160	8.74	5.9	5.9	2.0	4.7	6.7	4.1	3.8
2	50	XXS	11.07	6.1		2.3		6.9		3.8
2	50	ISO	12.50	6.2		2.4		7.0		3.9
2	50	ISO	14.20	6.3		2.5		7.2		3.9
2 1/2	65	160	9.53	8.8	8.9	2.9	6.9	9.8	6.3	5.7
2 1/2	65	XXS	14.02	9.3		3.4		10.4		5.9
2 1/2	65	ISO	16.00	9.5		3.7		10.6		6.0
3	80	160	11.13	12.9	13.0	5.4	9.7	15.1	10.5	9.4
3	80	XXS	15.24	13.6		6.1		15.8		9.6
3	80	ISO	16.00	13.7		6.2		15.9		9.7
3	80	ISO	17.50	13.9		6.4		16.1		9.8
3	80	ISO	20.00	14.3		6.8		16.4		9.9
4	100	XXS	17.12	24.9	24.7	10.8	18.1	28.9	18.9	17.0
4	100	ISO	17.50	25.0		10.9		29.0		17.0
4	100	ISO	20.00	25.6		11.5		29.6		17.2
4	100	ISO	22.20	26.1		12.0		30.1		17.4

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
4	100	ISO	25.00	26.7		12.6		30.7		17.7
5	125	XXS	19.05	38.0	37.8	17.6	26.9	44.5	30.1	26.3
5	125	ISO	20.00	38.4		18.0		44.9		26.4
5	125	ISO	22.20	39.2		18.8		45.7		26.7
5	125	ISO	25.00	40.2		19.8		46.7		27.1
5	125	ISO	28.00	41.1		20.8		47.7		27.5
5	125	ISO	30.00	41.8		21.4		48.3		27.7
6	150	160	18.26	63.0	64.3	36.8	44.8	81.7	55.1	47.8
6	150	XXS	21.95	65.1		38.9		83.7		48.6
6	150	ISO	25.00	66.7		40.5		85.3		49.2
6	150	ISO	28.00	68.2		42.0		86.8		49.8
6	150	ISO	30.00	69.1		42.9		87.7		50.2
6	150	ISO	32.00	70.1		43.8		88.7		50.5
6	150	ISO	36.00	71.8		45.6		90.4		51.2
8	200	XXS	22.23	120	126	67.0	85.6	153	104	88.6
8	200	160	23.01	121		67.7		153		88.9
8	200	ISO	25.00	122		69.5		155		89.5
8	200	ISO	28.00	125		72.2		158		90.6
8	200	ISO	30.00	127		73.9		160		91.2
8	200	ISO	32.00	128		75.5		161		91.9
8	200	ISO	36.00	131		78.8		164		93.1
8	200	ISO	40.00	134		81.8		167		94.3
8	200	ISO	45.00	138		85.3		171		95.7
10	250	160	28.58	202	210	109	140	249	181	152
10	250	ISO	30.00	203		111		251		153
10	250	ISO	32.00	206		114		253		154
10	250	ISO	36.00	211		119		258		156
10	250	ISO	40.00	216		123		263		158
10	250	ISO	45.00	222		129		269		160
10	250	ISO	50.00	227		135		274		162
10	250	ISO	55.00	232		140		280		164
12	250	140	28.58	250	270	129	169	298	241	190
12	250	160	33.32	259		138		307		193
12	300	ISO	36.00	263		143		311		195
12	300	ISO	40.00	270		150		318		198



Vector SPO® Compact Flange

15K

WEIGHT DATA

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
12	300	ISO	45.00	279		158		326		202
12	300	ISO	50.00	287		166		334		205
12	300	ISO	55.00	294		173		342		208
12	300	ISO	60.00	302		181		349		211
12	300	ISO	65.00	309		187		356		214
14	350	ISO	40.00	449	457	251	305	556	399	341
14	350	ISO	45.00	459		262		566		345
14	350	ISO	50.00	469		272		576		349
14	350	ISO	55.00	479		281		586		353
14	350	ISO	60.00	488		290		595		356
14	350	ISO	65.00	497		299		604		360
14	350	ISO	70.00	506		308		612		363
14	350	ISO	75.00	514		316		620		367
16	400	140	36.53	543	588	279	372	650	487	390
16	400	160	40.49	554		290		662		395
16	400	ISO	45.00	567		303		674		400
16	400	ISO	50.00	581		316		688		405
16	400	ISO	55.00	594		329		701		411
16	400	ISO	60.00	607		342		714		416
16	400	ISO	65.00	619		354		726		421
16	400	ISO	70.00	631		366		738		425
16	400	ISO	75.00	643		378		749		430
16	400	ISO	80.00	654		389		760		434
16	400	ISO	85.00	665		399		771		438
18	450	160	45.24	889	933	488	609	1097	788	659
18	450	ISO	50.00	906		505		1114		666
18	450	ISO	55.00	923		522		1131		672
18	450	ISO	60.00	940		539		1148		679
18	450	ISO	65.00	956		555		1164		685
18	450	ISO	70.00	972		571		1180		692
18	450	ISO	75.00	987		586		1195		698
18	450	ISO	80.00	1002		600		1210		703
18	450	ISO	85.00	1017		615		1224		709
18	450	ISO	90.00	1030		628		1238		714
18	450	ISO	95.00	1044		642		1251		720

Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
20	500	140	44.45	1169	1262	623	816	1439	1029	843
20	500	160	50.01	1194		648		1464		853
20	500	ISO	55.00	1216		670		1486		862
20	500	ISO	60.00	1237		691		1507		870
20	500	ISO	65.00	1258		712		1528		878
20	500	ISO	70.00	1278		732		1548		886
20	500	ISO	75.00	1298		752		1568		893
20	500	ISO	80.00	1317		771		1587		901
20	500	ISO	85.00	1336		789		1606		908
20	500	ISO	90.00	1354		808		1624		915
20	500	ISO	95.00	1372		825		1641		922
20	500	ISO	100.00	1389		842		1658		929
20	500	ISO	105.00	1406		858		1675		935
22	550	140	47.63	1459	1585	767	1013	1780	1301	1054
22	550	160	53.98	1494		801		1814		1068
22	550	ISO	55.00	1499		806		1819		1070
22	550	ISO	60.00	1525		832		1845		1080
22	550	ISO	65.00	1551		858		1870		1090
22	550	ISO	70.00	1576		882		1895		1100
22	550	ISO	75.00	1601		907		1919		1109
22	550	ISO	80.00	1625		930		1943		1118
22	550	ISO	85.00	1649		953		1966		1127
22	550	ISO	90.00	1671		976		1989		1136
22	550	ISO	95.00	1694		998		2011		1145
22	550	ISO	100.00	1715		1019		2032		1153
22	550	ISO	105.00	1736		1040		2053		1161
22	550	ISO	110.00	1757		1060		2073		1169
22	550	ISO	115.00	1777		1079		2092		1177
24	600	160	59.54	2066	2172	1125	1410	2535	1814	1516
24	600	ISO	60.00	2069		1128		2537		1517
24	600	ISO	65.00	2100		1158		2568		1529
24	600	ISO	70.00	2130		1188		2598		1541
24	600	ISO	75.00	2160		1217		2627		1553
24	600	ISO	80.00	2189		1246		2655		1564
24	600	ISO	85.00	2217		1274		2683		1575



Nominal Size		Neck wall thickness		Approximate weights (ea)						
				Weld neck	Blind	Swivel Collar	Swivel Ring	Swivel (Collar & Ring)	Paddle Blank	Paddle Spacer
NPS	DN	SCH	mm	kg	kg	kg	kg	kg	kg	kg
24	600	ISO	90.00	2245		1301		2711		1586
24	600	ISO	95.00	2272		1328		2737		1596
24	600	ISO	100.00	2299		1354		2763		1607
24	600	ISO	105.00	2325		1379		2789		1617
24	600	ISO	110.00	2350		1404		2814		1626
24	600	ISO	115.00	2375		1428		2838		1636
24	600	ISO	120.00	2399		1452		2861		1645
24	600	ISO	125.00	2423		1475		2884		1654

Nominal size		Bolting		Torque tool				Tension tool								
				Length of stud bolts ¹⁾				Length of stud bolts ^{1) 2)}				"Washer" (thickness)				"Washer"
		Number	Nominal diameter	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	Standard	Swivel	Line blanks	WN / RI	OD / ID
NPS	DN		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2	15	4	1/2	90	100	110	80									26 / 14
3/4	20	8	1/2	90	100	115	80									26 / 14
1	25	8	1/2	95	110	120	85									26 / 14
1 1/2	40	8	5/8	110	130	140	100									31 / 17
2	50	8	3/4	145	165	175	125	155	175	185	160				24	37 / 21
2 1/2	65	8	7/8	160	185	200	140	180	200	210	185	5			31	42 / 24
3	80	12	7/8	165	190	210	145	180	205	220	185				29	42 / 24
4	100	12	1 1/8	210	240	260	180	230	260	280	240				37	53 / 30
5	125	12	1 1/4	230	275	290	200	255	295	315	260				40	59 / 33
6	150	16	1 1/4	245	300	315	205	270	325	335	260				33	59 / 33
8	200	16	1 1/2	300	365	385	250	330	395	415	315				34	70 / 40
10	250	16	1 7/8	355	425	455	300	390	465	495	390				51	86 / 50
12	300	16	2	385	465	505	325	430	510	545	415				49	92 / 53
14	350	16	2 1/2	440	530	570	385	495	585	620	520				79	114 / 66
16	400	16	2 1/2	495	590	635	410	545	645	690	520				53	114 / 66
18	450	16	3	550	660	705	470	615	725	775	620				82	136 / 78
20	500	16	3 1/4	610	735	785	520	685	810	855	670				80	147 / 85
22	550	16	3 1/2	655	790	845	560	735	870	925	725				86	158 / 91
24	600	16	4	715	855	915	620	805	945	1010	825				115	180 / 105

1) On low strength flange material standard washers are required, thickness of washers has to be added to bolt length.

2) Extra free bolt length for tension tool is based on 1 times bolt diameter, for some tension tools more free stud length may be required.

3) Washer thickness is the total extra bolt length required to achieve a clamp length to nominal diameter ratio of 4.5, to be achieved by 1 or 2 washers.

Standard = All combinations of Weld Neck (WN), Blind (BL) and Integral (IF)

Swivel = All combinations of Swivel (SW) against Weld Neck (WN), Blind (BL) or Integral (IF)

Line blanks = Paddle Blank (PB) or Paddle Spacer (PS) between a standard connection

WN / RI = Weld Neck (WN), Blind (BL) or Integral (IF) against Rigid Interface (RI)



Nominal size		Bolting		Weight of stud bolts and nuts																
				Nuts	Torque tool								Tension tool							
		Number	Nominal diameter		Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set	Swivel Bolt Set	Line Blank Bolt Set	WN / RI Bolt Set	Standard Studs	Swivel Studs	Line Blank Studs	WN / RI Studs	Standard Bolt Set (1)	Swivel Bolt Set (1)	Line Blank Bolt Set (1)	WN / RI Bolt Set (1)
NPS	DN		in	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
1/2	15	4	1/2	0.2	0.3	0.3	0.4	0.3	0.5	0.6	0.6	0.4								
3/4	20	8	1/2	0.5	0.6	0.6	0.7	0.5	1.1	1.1	1.2	0.8								
1	25	8	1/2	0.5	0.6	0.7	0.8	0.5	1.1	1.2	1.3	0.8								
1 1/2	40	8	5/8	0.9	1.1	1.3	1.4	1.0	2.0	2.2	2.3	1.5								
2	50	8	3/4	1.4	2.2	2.5	2.6	1.9	3.6	3.9	4.0	2.6	2.3	2.6	2.8	2.4	3.7	4.0	4.2	4.2
2 1/2	65	8	7/8	2.2	3.3	3.8	4.1	2.9	5.4	6.0	6.3	4.0	3.7	4.1	4.3	3.8	6.1	6.3	6.5	6.7
3	80	12	7/8	3.2	5.1	5.8	6.5	4.5	8.3	9.1	9.7	6.1	5.5	6.3	6.8	5.7	8.9	9.5	10.0	9.9
4	100	12	1 1/8	6.5	10.9	12.5	13.5	9.4	17.4	18.9	20.0	12.6	12.0	13.5	14.6	12.5	18.6	20.0	21.0	20.9
5	125	12	1 1/4	8.6	15.0	17.9	18.9	13.0	23.6	26.5	27.5	17.3	16.6	19.2	20.5	17.0	25.2	27.8	29.1	28.3
6	150	16	1 1/4	11.4	21.3	26.1	27.4	17.8	32.7	37.5	38.8	23.5	23.5	28.3	29.1	22.6	34.9	39.7	40.5	36.1
8	200	16	1 1/2	19.0	38.4	46.8	49.3	32.0	57.5	65.8	68.4	41.5	42.3	50.6	53.2	40.3	61.3	69.6	72.2	60.9
10	250	16	1 7/8	35.0	72.7	87.0	93.2	61.4	108	122	128	79.0	79.9	95.2	101	79.9	115	130	136	122
12	300	16	2	43.5	90.2	109	118	76.1	134	152	162	97.9	101	119	128	97.2	144	163	171	146
14	350	16	2 1/2	81.9	164	197	212	143	246	279	294	184	184	218	231	194	266	300	313	302
16	400	16	2 1/2	81.9	184	220	236	153	266	302	318	194	203	240	257	194	285	322	339	280
18	450	16	3	138	298	358	382	255	436	496	520	324	333	393	420	336	472	531	558	506
20	500	16	3 1/4	174	390	470	502	332	564	643	675	419	438	518	546	428	611	691	720	629
22	550	16	3 1/2	222	487	588	629	417	709	810	851	528	547	647	688	539	769	869	910	792
24	600	16	4	317	699	836	894	606	1016	1153	1211	764	787	924	987	806	1104	1241	1304	1207

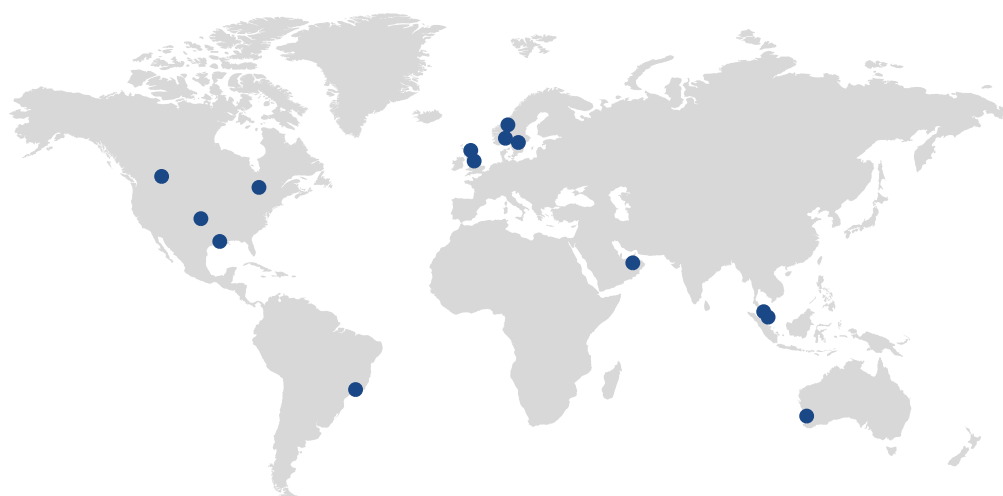
1) Bolt set weight includes washers weight, if applicable.

 This brochure is intended for information only and we would advise that for the latest and more detailed information, please visit our website at www.fogt.com.

We wish to advise you that whilst details and measurements are correct at time of print and despite all efforts being made to ensure the information contained within the brochure is correct, the contents of this brochure may not be totally accurate, up to date, or applicable to the circumstances of a particular enquiry.

We cannot accept liability for any changes, omissions or inaccuracies that may occur to the product technical specification due to third parties and will not accept liability for any direct, indirect, special, consequential or any other losses or damages of any kind arising as a result of access to, or the use of this brochure, or any information contained therein.

Global Presence



AUSTRALIA • BRAZIL • CANADA • MALAYSIA • NORWAY • SINGAPORE
UNITED ARAB EMIRATES • UNITED KINGDOM • UNITED STATES

CONTACT US BY PHONE: +1 281 233 1400
OR FIND MORE INFO ON WWW.FOGT.COM