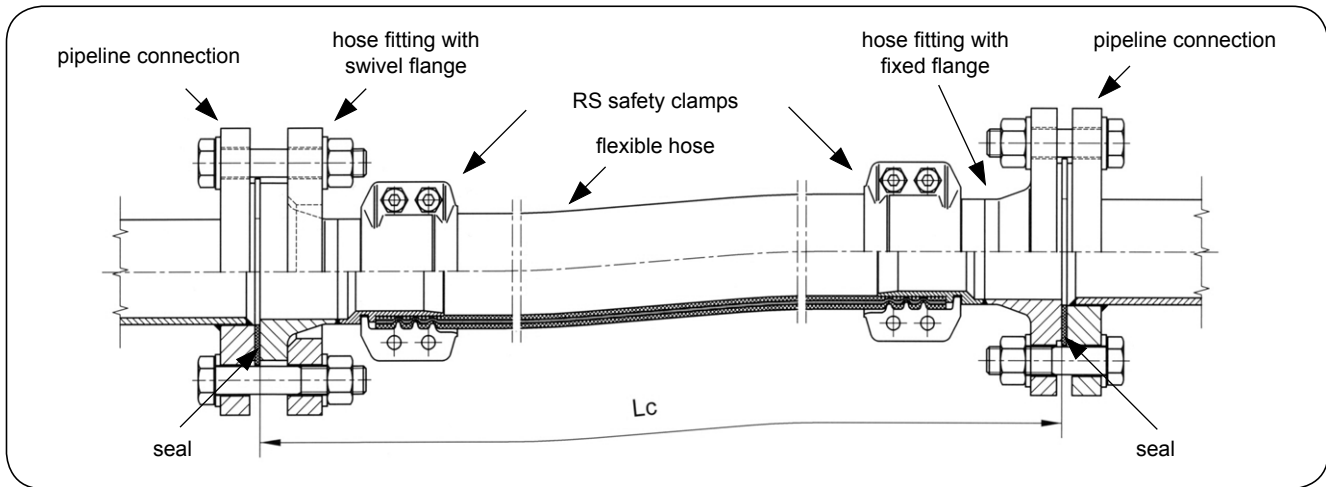


INDUSTRIAL FITTINGS - couplings

Flange couplings



The application of flange couplings in industry is one of the most extensive. First of all, the flange couplings are utilized to connect lengths of industrial pipelines, yet they are also used for flexible hose connection. The most frequently used steel flanges are manufactured according to the requirements of standards which precisely specify their types, dimensions, types of sealing surface, steel types, acceptable values of pressure at specific temperature.

PN flanges meet the requirements of:

- EN 1092-1:2007 - the recent European Standard,
- ISO 7005-1,
- set of old German DIN standards (e.g. DIN2633),
- old Polish standards e.g. PN-87/H-74731.

PN and the number that follows e.g. PN16, indicates mechanical properties and flange dimensions - „nominal pressure”. It is not a direct equivalent of permissible working pressure, because the last depends on the flange material and temperature of the medium. For medium temperature +20°C the permissible working pressure of PN16 flange amounts to 16 bar. The standards define working parameters for other temperatures. PN-marked flanges are manufactured for the following PN values:

PN2.5	PN6	PN10	PN16	PN25	PN40	PN63	PN100	PN160	PN250	PN320	PN400
-------	-----	------	------	------	------	------	-------	-------	-------	-------	-------

PN10, PN16 (most often), PN25 and PN40 flanges are most frequently used to connect with flexible hose assemblies. Flange dimensions according to different PN are sometimes the same, e.g.:

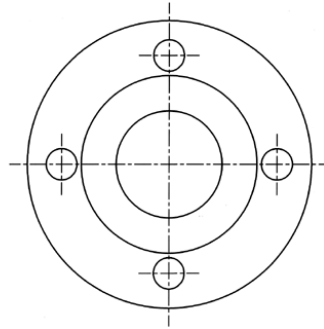
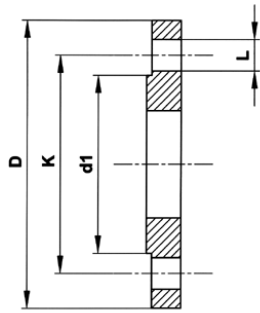
DN	PN6	PN10	PN16	PN25	PN40
from 10 to 40	PN6	use dimensions PN40	use dimensions PN40	use dimensions PN40	PN40
from 50 to 150	PN6	use dimensions PN16	PN16	use dimensions PN40	PN40
above 150	PN6	PN10	PN16	PN25	PN40

ASA 150 and ASA 300 flanges (according to American ANSI B16.5 standard). The numbers 150 and 300 indicate the class of mechanical properties and dimensions. The class 150 corresponds to PN20, and 300 corresponds to PN50.

The basic mating dimensions (flange diameters and hole parameters: number, diameters and position of bolt holes) for PN and ASA flanges are given in the table “Mating dimensions for PN and ASA flanges”. Other dimensions, e.g. thickness should be defined according to the standard.

INDUSTRIAL FITTINGS - couplings

Mating dimensions of PN and ASA flanges



D - outside flange diameter

K - diameter of bolt circle

d1 - face diameter

L - diameter of bolt hole

PN flange dimensions given by EN 1092-1. ASA flange dimensions given by ASME/ANSI B16.5:1996.

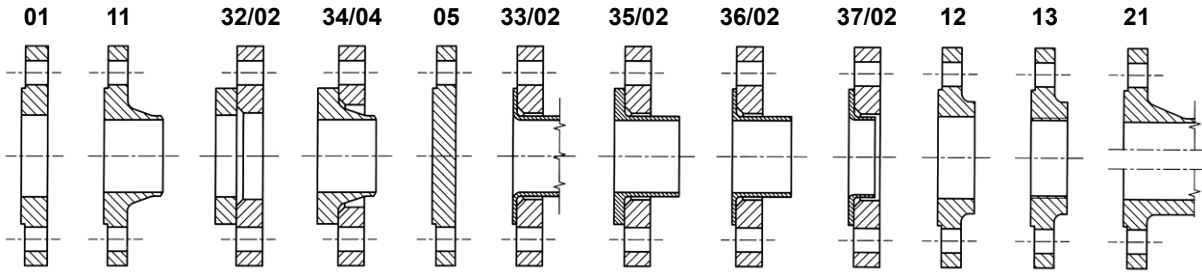
nominal diameters		PN6						PN10/16					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	80	55	40	11	4	M10	95	65	45	14	4	M12
20	3/4	90	65	50	11	4	M10	105	75	58	14	4	M12
25	1	100	75	60	11	4	M10	115	85	68	14	4	M12
32	1.1/4	120	90	70	14	4	M12	140	100	78	18	4	M16
40	1.1/2	130	100	80	14	4	M12	150	110	88	18	4	M16
50	2	140	110	90	14	4	M12	165	125	102	18	4	M16
65	2.1/2	160	130	110	14	4	M12	185	145	122	18	8	M16
80	3	190	150	128	18	4	M16	200	160	138	18	8	M16
100	4	210	170	148	18	4	M16	220	180	158	18	8	M16
125	5	240	200	178	18	8	M16	250	210	188	18	8	M16
150	6	265	225	202	18	8	M16	285	240	212	22	8	M20
200	8	320	280	258	18	8	M16	340	295	268	22	8/12	M20
250	10	375	335	312	18	12	M16	395/405	350/355	320	22/26	12	M20/M24

nominal diameters		PN25						PN40					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	95	65	45	14	4	M12	95	65	45	14	4	M12
20	3/4	105	75	58	14	4	M12	105	75	58	14	4	M12
25	1	115	85	68	14	4	M12	115	85	68	14	4	M12
32	1.1/4	140	100	78	18	4	M16	140	100	78	18	4	M16
40	1.1/2	150	110	88	18	4	M16	150	110	88	18	4	M16
50	2	165	125	102	18	4	M16	165	125	102	18	4	M16
65	2.1/2	185	145	122	18	8	M16	185	145	122	18	8	M16
80	3	200	160	138	18	8	M16	200	160	138	18	8	M16
100	4	235	190	162	22	8	M20	235	190	162	22	8	M20
125	5	270	220	188	26	8	M24	270	220	188	26	8	M24
150	6	300	250	218	26	8	M24	300	250	218	26	8	M24
200	8	360	310	278	26	12	M24	375	320	285	30	12	M27
250	10	425	370	335	30	12	M27	450	385	345	33	12	M30

nominal diameters		ASA 150						ASA 300					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	88.9	60.3	34.9	15.9	4	1/2	95.3	66.7	34.9	15.9	4	1/2
20	3/4	98.4	69.9	42.9	15.9	4	1/2	117.5	82.5	42.9	19	4	5/8
25	1	108.0	79.4	50.8	15.9	4	1/2	123.8	88.9	50.8	19	4	5/8
32	1.1/4	117.5	88.9	63.5	15.9	4	1/2	133.4	98.4	63.5	19	4	5/8
40	1.1/2	127.0	98.4	73.0	15.9	4	1/2	155.6	114.3	73.0	22.2	4	3/4
50	2	152.4	120.7	92.1	19	4	5/8	165.1	127.0	92.1	19	8	5/8
65	2.1/2	177.8	139.7	104.8	19	4	5/8	190.5	149.2	104.8	22.2	8	3/4
80	3	190.5	152.4	127.0	19	4	5/8	209.6	168.3	127.0	22.2	8	3/4
100	4	228.6	190.5	157.2	19	8	5/8	254.0	200.0	157.2	22.2	8	3/4
125	5	254.0	215.9	185.7	22.2	8	3/4	279.4	235.0	185.7	22.2	8	3/4
150	6	279.4	241.3	215.9	22.2	8	3/4	317.5	269.9	215.9	22.2	12	3/4
200	8	342.9	298.5	269.9	22.2	8	3/4	381.0	330.2	269.9	25.4	12	7/8
250	10	406.4	362.0	323.9	25.4	12	7/8	444.5	387.3	323.9	28.6	16	1

INDUSTRIAL FITTINGS - couplings

PN flange types (according to EN 1092-1)

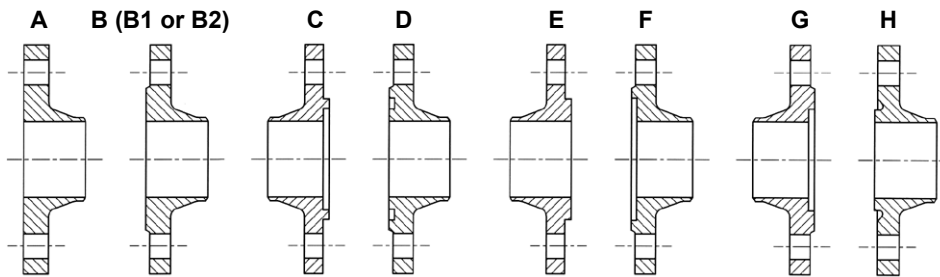


01	plate flange for welding	33	lapped end pipe
11	weld-neck flange	35	weld collar with long neck
02	loose plate flange (swivel)	36	pressed collar with long neck
04	loose plate flange (swivel)	37	pressed collar
05	blank flange	12	hubbed slip-on flange for welding
32	weld-on plate collar	13	hubbed threaded flange
34	weld-neck collar	21	integral flange

Sealing surface:

Flanges can have different sealing surface of their faces depending on the sealing applied.

Sealing surface of PN flanges (according to EN 1092-1):



A	flat	E	spigot
B	raised face	F	recess
C	tongue	G	O-ring spigot
D	groove	H	O-ring groove

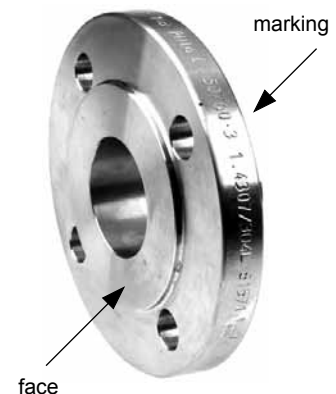
Type B1 with raised face is the most frequently used. The seal face should be grooved - a result of turning - to ensure surface roughness compliant with the standard.

Flange marking:

All flanges should be clearly and permanently marked. Marking should include: flange manufacturer's name or trade mark, number of the standard, flange type number, DN, PN number, material, heat number. The marking should be stamped on the flange outer rim.




Marking example:

XXX/EN1092-1/11/DN150/PN40/S235JR/12345



INDUSTRIAL FITTINGS - couplings

Flange hose fittings - assembly

	<p>Assemble with RS-636... and RS-637... safety clamps described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter. TK-RKSS and TK - RKOPS flange fittings are sold without clamps, which should be separately selected. FSL flange couplings are supplied with safety clamps as a set.</p>
	<p>TK-RKSS and TK-RKOPS flange fittings can be crimped with TI-LR... and TI-LDR... ferrules described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter.</p>
	<p>TK-CKSS and TK-CKOPS flange fittings and FRS flange couplings should be assembled with adequate worm-drive clamps or band-it system described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules".</p>

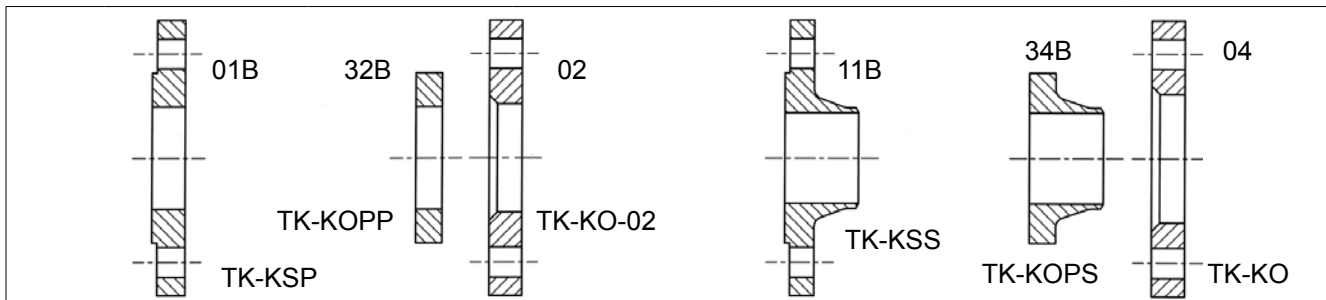
Rubber steam hoses should only be used with special flanges and clamps, described in „Steam hoses” section.

Flange fittings for steel, composite and PTFE hoses are described in respective sections.

INDUSTRIAL FITTINGS - couplings

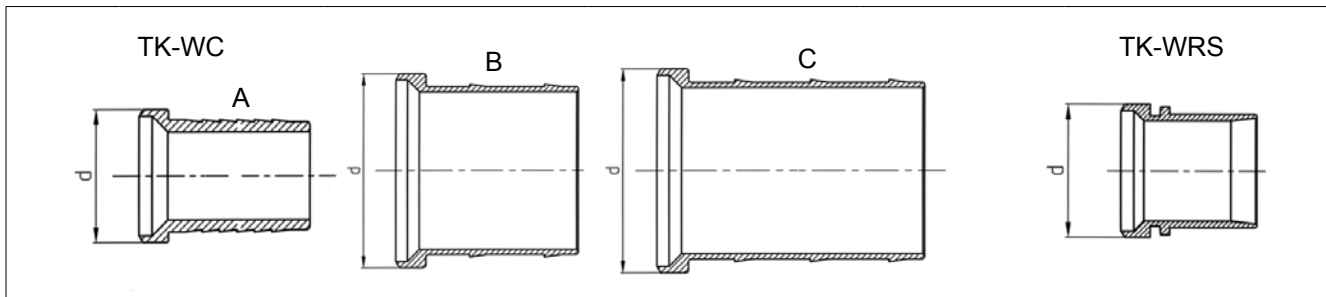
EN1092-1 PN16 flanges

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code).



DN	code					
	01B type	32B type	02 type	11B type	34B type	04 type
15	TK-KSP-015	TK-KOPP-015	TK-KO-02-015	TK-KSS-015	TK-KOPS-015	TK-KO-015
20	TK-KSP-020	TK-KOPP-020	TK-KO-02-020	TK-KSS-020	TK-KOPS-020	TK-KO-020
25	TK-KSP-025	TK-KOPP-025	TK-KO-02-025	TK-KSS-025	TK-KOPS-025	TK-KO-025
32	TK-KSP-032	TK-KOPP-032	TK-KO-02-032	TK-KSS-032	TK-KOPS-032	TK-KO-032
40	TK-KSP-040	TK-KOPP-040	TK-KO-02-040	TK-KSS-040	TK-KOPS-040	TK-KO-040
50	TK-KSP-050	TK-KOPP-050	TK-KO-02-050	TK-KSS-050	TK-KOPS-050	TK-KO-050
65	TK-KSP-065	TK-KOPP-065	TK-KO-02-065	TK-KSS-065	TK-KOPS-065	TK-KO-065
80	TK-KSP-080	TK-KOPP-080	TK-KO-02-080	TK-KSS-080	TK-KOPS-080	TK-KO-080
100	TK-KSP-100	TK-KOPP-100	TK-KO-02-100	TK-KSS-100	TK-KOPS-100	TK-KO-100
125	TK-KSP-125	TK-KOPP-125	TK-KO-02-125	TK-KSS-125	TK-KOPS-125	TK-KO-125
150	TK-KSP-150	TK-KOPP-150	TK-KO-02-150	TK-KSS-150	TK-KOPS-150	TK-KO-150

Weld-in pipe stubs for flanges



DN	code	hose I.D. [mm]	d [mm]	type	DN	code	hose I.D. [mm]	d [mm]
25	TK-WC-025	25	33.7	A	15	TK-WRS-015-013	13	21.3
32	TK-WC-032	32	42.4	A	20	TK-WRS-020-019	19	26.9
40	TK-WC-040	38-40	48.3	A	25	TK-WRS-025-025	25	33.7
50	TK-WC-050	50-51	60.3	A	32	TK-WRS-032-032	32	42.4
65	TK-WC-065	63-65	76.1	A	40	TK-WRS-040-038	38	48.3
80	TK-WC-080-076	75-76	88.9	A	40	TK-WRS-040-040	40	48.3
80	TK-WC-080-080	80	88.9	A	50	TK-WRS-050-050	50	60.3
100	TK-WC-100	100-102	114.3	B	50	TK-WRS-050-051	51	60.3
125	TK-WC-125	125-127	139.7	B	65	TK-WRS-065-063	63	76.1
150	TK-WC-150	150-152	168.3	B	65	TK-WRS-065-065	65	76.1
200	TK-WC-200	200-203	219.1	C	80	TK-WRS-080-076	76	88.9
250	TK-WC-250	250-254	273.0	C	80	TK-WRS-080-080	80	88.9
					100	TK-WRS-100-100	100	114.3
					100	TK-WRS-100-102	102	114.3
					125	TK-WRS-125-125	125	139.7
					125	TK-WRS-125-127	127	139.7
					150	TK-WRS-150-150	150	168.3
					150	TK-WRS-150-152	152	168.3
					200	TK-WRS-200-200	200	219.1
					200	TK-WRS-200-203	203	219.1

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code).

Working pressure 10 bar (type TK-WC), 25 bar (type TK-WRS).
 - assemble with clamps (type TK-WC),
 - assemble with RS safety clamps or crimp with TI-LR, TI-LDR ferrules (type TK-WRS).

INDUSTRIAL FITTINGS - couplings

Flange fittings for rubber and plastic hoses

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code). Flanges according to EN1092-1 PN16 - assemble with clamps. Working pressure 10 bar.

DN	fitting with fixed neck flange	fitting with swivel flange, neck face		hose I.D. [mm]	type
		stub	flange		
25	TK-CKSS-025	TK-CKOPS-025	TK-KO-025	25	A
32	TK-CKSS-032	TK-CKOPS-032	TK-KO-032	32	A
40	TK-CKSS-040	TK-CKOPS-040	TK-KO-040	38-40	A
50	TK-CKSS-050	TK-CKOPS-050	TK-KO-050	50-51	A
65	TK-CKSS-065	TK-CKOPS-065	TK-KO-065	63-65	A
80	TK-CKSS-080-076	TK-CKOPS-080-076	TK-KO-080	75-76	A
80	TK-CKSS-080-080	TK-CKOPS-080-080	TK-KO-080	80	A
100	TK-CKSS-100	TK-CKOPS-100	TK-KO-100	100-102	B
125	TK-CKSS-125	TK-CKOPS-125	TK-KO-125	125-127	B
150	TK-CKSS-150	TK-CKOPS-150	TK-KO-150	150-152	B
200	TK-CKSS-200	TK-CKOPS-200	TK-KO-200	200-203	C
250	TK-CKSS-250	TK-CKOPS-250	TK-KO-250	250-254	C

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code). Flanges according to EN1092-1 PN16, fittings according to EN14420-4. - assemble with RS safety clamps or crimp with TI-LR, TI-LDR ferrules. Working pressure up to 25 bar.

DN	fitting with fixed neck flange	fitting with swivel flange, neck face		hose I.D. [mm]
		stub	flange	
15	TK-RKSS-015-013	TK-RKOPS-015-013	TK-KO-015	13
20	TK-RKSS-020-019	TK-RKOPS-020-019	TK-KO-020	19
25	TK-RKSS-025-025	TK-RKOPS-025-025	TK-KO-025	25
32	TK-RKSS-032-032	TK-RKOPS-032-032	TK-KO-032	32
40	TK-RKSS-040-038	TK-RKOPS-040-038	TK-KO-040	38
40	TK-RKSS-040-040	TK-RKOPS-040-040	TK-KO-040	40
50	TK-RKSS-050-050	TK-RKOPS-050-050	TK-KO-050	50
50	TK-RKSS-050-051	TK-RKOPS-050-051	TK-KO-050	51
65	TK-RKSS-065-063	TK-RKOPS-065-063	TK-KO-065	63
65	TK-RKSS-065-065	TK-RKOPS-065-065	TK-KO-065	65
80	TK-RKSS-080-076	TK-RKOPS-080-076	TK-KO-080	76
80	TK-RKSS-080-080	TK-RKOPS-080-080	TK-KO-080	80
100	TK-RKSS-100-100	TK-RKOPS-100-100	TK-KO-100	100
100	TK-RKSS-100-102	TK-RKOPS-100-102	TK-KO-100	102
125	TK-RKSS-125-125	TK-RKOPS-125-125	TK-KO-125	125
125	TK-RKSS-125-127	TK-RKOPS-125-127	TK-KO-125	127
150	TK-RKSS-150-150	TK-RKOPS-150-150	TK-KO-150	150
150	TK-RKSS-150-152	TK-RKOPS-150-152	TK-KO-150	152
200	TK-RKSS-200-200	TK-RKOPS-200-200	TK-KO-200	200
200	TK-RKSS-200-203	TK-RKOPS-200-203	TK-KO-200	203

INDUSTRIAL FITTINGS - couplings

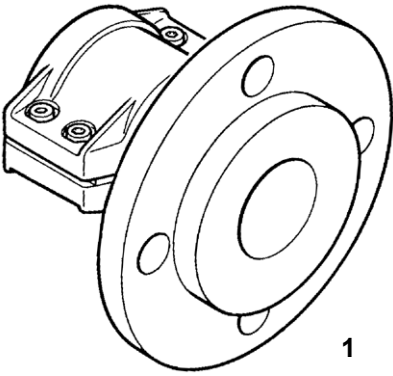
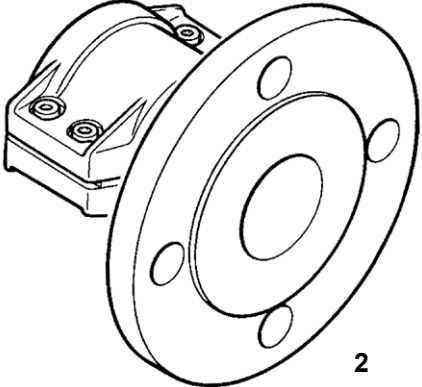
FSL flange couplings with EN 14420-3 (DIN 2817) safety clamps

Coupling material: St (carbon steel), SS (AISI 316Ti), Ms (brass), Al (aluminium), PP (polypropylene)

Working pressure: 25 bar (for Al version - 16 bar, for PP version - 10 bar)

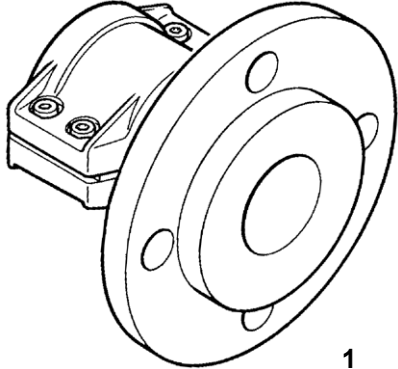
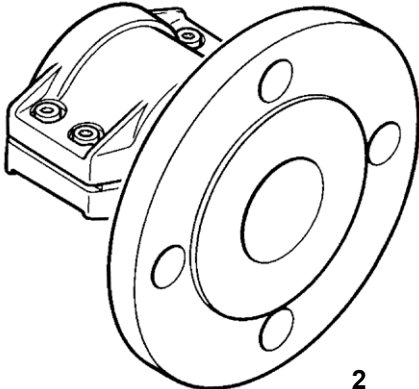
A complete hose coupling with a fixed/swivel flange at the end, supplied as a set with an aluminium safety clamp. The safety clamps made of other materials and for different hose wall thickness are described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" (only RS-636... and RS-637... clamps).

DN - hose inside diameter x hose wall thickness.

picture	code	DN [mm]	flange	material	weight [kg]	pic.		
 <p>swivel flange</p>	RS-950013005211	13 x 5 (1/2")	DN 15 PN 10/16	St	1.10	1		
	RS-960013005210			St	1.00	2		
	RS-950013005221			SS/St	1.10	1		
	RS-950013005222			SS	1.10	1		
	RS-960013005220			SS	1.00	2		
	RS-950013005411		DN 15 PN 25/40	St	1.20	1		
	RS-960013005410			St	1.10	2		
	RS-950013005421			SS/St	1.20	1		
	RS-950013005422			SS	1.20	1		
	RS-960013005420			SS	1.10	2		
	RS-950013005711		ASA 150 1/2"	St	0.80	1		
	RS-960013005710			St	1.20	2		
	RS-950013005721			SS/St	0.80	1		
	RS-950013005722			SS	0.80	1		
	RS-960013005720			SS	1.20	2		
 <p>fixed flange</p>	RS-950019006211	19 x 6 (3/4")	DN 20 PN 10/16	St	1.30	1		
	RS-960019006210			St	1.20	2		
	RS-950019006221			SS/St	1.30	1		
	RS-950019006222			SS	1.30	1		
	RS-960019006220			SS	1.20	2		
	RS-950019006411		DN 20 PN 25/40	St	1.40	1		
	RS-960019006410			St	1.30	2		
	RS-950019006421			SS/St	1.40	1		
	RS-950019006422			SS	1.40	1		
	RS-960019006420			SS	1.30	2		
	RS-950019006711		ASA 150 3/4"	St	1.00	1		
	RS-960019006710			St	1.20	2		
	RS-950019006721			SS/St	1.00	1		
	RS-950019006722			SS	1.00	1		
	RS-960019006720			SS	1.20	2		
	RS-950019006811		ASA 300 3/4"	St	1.50	1		
	RS-960019006810			St	1.70	2		
	RS-950025006211		DN 25 PN 10/16	25 x 6 (1")	St	1.70	1	
	RS-960025006210					1.50	2	
	RS-950025006221					SS/St	1.70	1
	RS-950025006222					SS	1.70	1
	RS-960025006220					SS	1.50	2
	RS-950025006251				DN 25 PN 25/40	PP/St	1.20	1
	RS-950025006255					PP	0.60	1
	RS-950025006411					St	1.90	1
RS-960025006410	St	1.60				2		
RS-950025006421	SS/St	1.90				1		
RS-950025006422	ASA 150 1"	SS	1.90	1				
RS-960025006420		SS	1.60	2				
RS-950025006711		St	1.40	1				
RS-960025006710		St	1.70	2				
RS-950025006721		SS/St	1.40	1				
RS-950025006722	SS	1.40	1					
RS-960025006720		1.70	2					

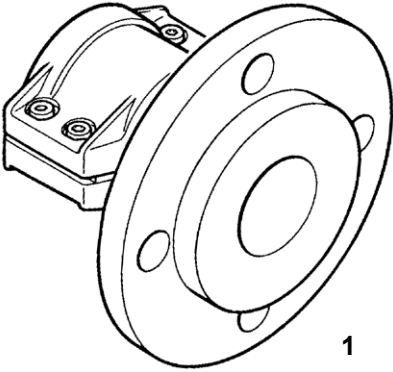
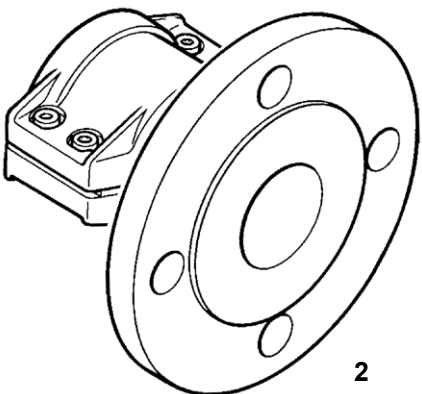
INDUSTRIAL FITTINGS - couplings

FSL flange couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	flange	material	weight [kg]	pic.	
 <p>swivel flange</p>	RS-950025006811	25 x 6 (1")	ASA 300 1"	St	1.90	1	
	RS-960025006810			St	2.10	2	
	 <p>fixed flange</p>	RS-950032006211	32 x 6 (1.1/4")	DN 32 PN 10/16	St	2.30	1
		RS-960032006210			St	2.00	2
		RS-950032006221			SS/St	2.30	1
		RS-950032006222			SS	2.30	1
		RS-960032006220			SS	2.00	2
		RS-950032006251			PP/St	1.70	1
		RS-950032006255			PP	0.90	1
		RS-950032006411			St	2.60	1
		RS-960032006410			St	2.20	2
		RS-950032006421			SS/St	2.60	1
		RS-950032006422	SS	2.60	1		
		RS-960032006420	SS	2.20	2		
		RS-950032006711	St	1.80	1		
		RS-960032006710	St	1.70	2		
		RS-950032006721	SS/St	1.80	1		
		RS-950032006722	SS	1.80	1		
		RS-960032006720	SS	1.70	2		
		RS-950032006811	ASA 300 1.1/4"	St	2.40	1	
RS-960032006810		ASA 300 1.1/4"	St	2.70	2		
RS-950038007211		38 x 6.5 (1.1/2")	DN 40 P 10/16	St	2.80	1	
RS-960038007210	St			2.30	2		
RS-950038007221	SS/St			2.80	1		
RS-950038007222	SS			2.80	1		
RS-960038007220	SS			2.30	2		
RS-950038007251	PP/St			2.00	1		
RS-950038007255	PP			0.90	1		
RS-950038007411	St			3.00	1		
RS-960038007410	St			2.80	2		
RS-950038007421	SS/St			3.00	1		
RS-950038007422	SS	3.00	1				
RS-960038007420	SS	2.80	2				
RS-950038007711	St	2.30	1				
RS-960038007710	St	2.20	2				
RS-950038007721	SS/St	2.30	1				
RS-950038007722	SS	2.30	1				
RS-960038007720	SS	2.20	2				
RS-950038007811	ASA 300 1.1/2"	St	3.40	1			
RS-960038007810	ASA 300 1.1/2"	St	3.70	2			
RS-950040007211	40 x 7	DN 40 PN 10/16	St	2.90	1		
RS-960040007210			St	2.40	2		
RS-950040007221			SS/St	2.90	1		
RS-950040007222			SS	2.90	1		
RS-960040007220			SS	2.40	2		
RS-950040007251			PP/St	2.10	1		
RS-950040007255			PP	1.00	1		
RS-950040007411			St	3.10	1		
RS-960040007410			St	2.90	2		
RS-950040007711			St	2.50	1		
RS-960040007710	St	2.40	2				
RS-950040007721	SS/St	2.50	1				
RS-950040007722	SS	2.50	1				
RS-960040007720	SS	2.40	2				
			ASA 150 1.1/2"	St	2.50	1	
			ASA 150 1.1/2"	St	2.40	2	
			ASA 150 1.1/2"	SS/St	2.50	1	
			ASA 150 1.1/2"	SS	2.50	1	
			ASA 150 1.1/2"	SS	2.40	2	

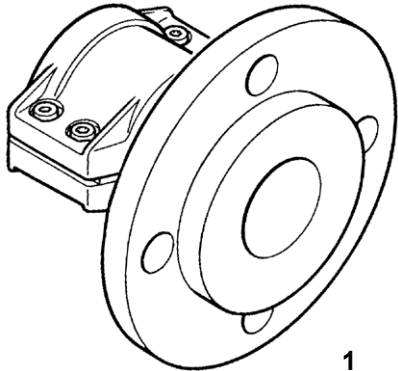
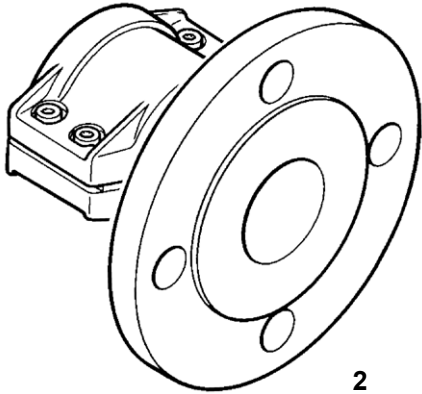
INDUSTRIAL FITTINGS - couplings

FSL flange couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	flange	material	weight [kg]	pic.		
 <p>swivel flange</p>	RS-950050008211	50 x 8 (2")	DN 50 PN 10/16	St	3.60	1		
	RS-960050008210			St	3.20	2		
	RS-950050008221			SS/St	3.60	1		
	RS-950050008222			SS	3.60	1		
	RS-960050008220			SS	3.20	2		
	RS-950050008231			Ms/St	3.40	1		
	RS-950050008233			Ms	3.60	1		
	RS-950050008241			Al/St	2.70	1		
	RS-950050008244			Al	1.30	1		
	RS-950050008251			PP/St	2.40	1		
	RS-950050008255			PP	1.10	1		
	RS-950050008411			St	4.20	1		
	RS-960050008410		St	3.50	2			
	RS-950050008421		SS/St	4.20	1			
	RS-950050008422		SS	4.20	1			
	RS-960050008420		SS	3.50	2			
	RS-950050008711		St	3.50	1			
	RS-960050008710		St	3.40	2			
	RS-950050008721		SS/St	3.50	1			
	RS-950050008722		SS	3.50	1			
	RS-960050008720		SS	3.40	2			
	RS-950050008811		St	4.20	1			
	RS-960050008810		St	4.70	2			
	 <p>fixed flange</p>		RS-950065007211	63 x 8 65 x 7 (2.1/2")	DN 65 PN 10/16	St	4.60	1
			RS-960065007210			St	4.10	2
			RS-950065007221			SS/St	4.60	1
RS-950065007222		SS	4.60			1		
RS-960065007220		SS	4.10			2		
RS-950065007231		Ms/St	4.50			1		
RS-950065007233		Ms	4.70			1		
RS-950065007241		Al/St	3.40			1		
RS-950065007244		Al	1.80			1		
RS-950065007251		PP/St	3.10			1		
RS-950065007255		PP	1.70			1		
RS-950065007411		St	5.30			1		
RS-960065007410		St	4.80		2			
RS-950065007421		SS/St	5.30		1			
RS-950065007422		SS	5.30		1			
RS-960065007420		SS	4.80		2			
RS-950065007711		St	5.40		1			
RS-960065007710		St	4.60		2			
RS-950065007721		SS/St	5.40		1			
RS-950065007722		SS	5.40		1			
RS-960065007720		SS	4.60		2			
RS-950065007811		St	6.20		1			
RS-960065007810		St	6.40		2			
RS-950075008211		St	75 x 8 (3")		DN 80 PN 10/16	St	6.10	1
RS-960075008210		St				4.90	2	
RS-950075008221		SS/St				6.10	1	
RS-950075008222		SS				6.10	1	
RS-960075008220		SS				4.90	2	
RS-950075008231		Ms/St				5.70	1	
RS-950075008233		Ms				5.90	1	

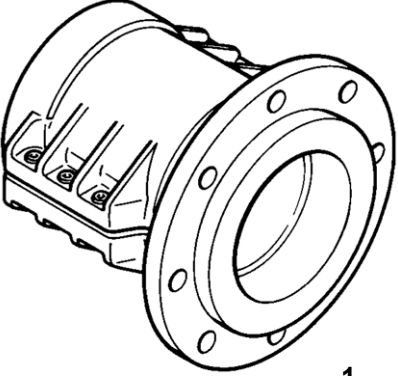
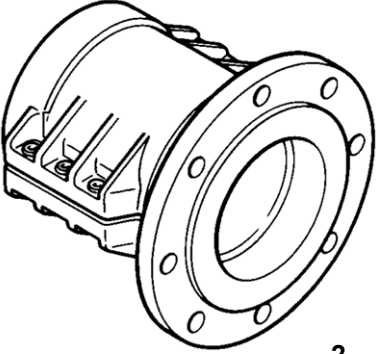
INDUSTRIAL FITTINGS - couplings

FSL flange couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	flange	material	weight [kg]	pic.		
 <p>swivel flange</p>	RS-950075008241	75 x 8 (3")	DN 80 PN 10/16	Al/St	4.30	1		
	RS-950075008244			Al	2.30	1		
	RS-950075008251			PP/St	3.80	1		
	RS-950075008255			PP	2.00	1		
	RS-950075008411		St	6.60	1			
	RS-960075008410		St	5.90	2			
	RS-950075008421		SS/St	6.60	1			
	RS-950075008422		SS	6.60	1			
	RS-960075008420		SS	5.90	2			
	RS-950075008711		St	5.50	1			
	RS-960075008710		St	5.70	2			
	RS-950075008721		SS/St	5.50	1			
	RS-950075008722		SS	5.50	1			
	RS-960075008720		SS	5.70	2			
	RS-950075008811		St	7.50	1			
	RS-960075008810		St	8.10	2			
	 <p>fixed flange</p>		RS-950080008211	80 x 8	DN 80 PN 10/16	St	6.20	1
			RS-960080008210			St	5.00	2
RS-950080008221		SS/St	6.20			1		
RS-950080008222		SS	6.20			1		
RS-960080008220		SS	5.00			2		
RS-950080008241		Al/St	4.30			1		
RS-950080008244		Al	2.30			1		
RS-950080008251		PP/St	3.80			1		
RS-950080008255		PP	2.00			1		
RS-950080008411		St	6.70			1		
RS-960080008410		St	6.00			2		
RS-950080008711		St	5.60			1		
RS-960080008710		St	5.80		2			
RS-950080008721		SS/St	5.60		1			
RS-950080008722		SS	5.60		1			
RS-960080008720		SS	5.80		2			
RS-950100008211		St	8.40		1			
RS-960100008210		St	7.00		2			
RS-950100008221		SS/St	8.40		1			
RS-950100008222		SS	8.40		1			
RS-960100008220		SS	7.00		2			
RS-950100008231		Ms/St	8.00		1			
RS-950100008233		Ms	8.30		1			
RS-950100008241		Al/St	5.60		1			
RS-950100008244	Al	3.40	1					
RS-950100008251	PP/St	4.90	1					
RS-950100008255	PP	3.00	1					
RS-950100008411	St	9.80	1					
RS-960100008410	St	8.90	2					
RS-950100008421	SS/St	9.80	1					
RS-950100008422	SS	9.80	1					
RS-960100008420	SS	8.90	2					
RS-950100008711	St	9.30	1					
RS-960100008710	St	9.20	2					
RS-950100008721	SS/St	9.30	1					
RS-950100008722	SS	9.30	1					
RS-960100008720	SS	9.20	2					
RS-950100008811	St	13.60	1					
RS-960100008810	St	13.70	2					

INDUSTRIAL FITTINGS - couplings

FSL flange couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	flange	material	weight [kg]	pic.	
 <p>swivel flange</p> <p>1</p>	RS-950125010211	125 x 10 (5")	DN 125 PN 10/16	St	11.00	1	
	RS-960125010210			St	10.40	2	
	RS-950125010221			SS/St	11.00	1	
	RS-950125010222			SS	11.00	1	
	RS-960125010220			SS	10.40	2	
	RS-950125010411		DN 125 PN 25/40	St	13.30	1	
	RS-960125010410			St	13.10	2	
	RS-950125010711		ASA 150 5"	St	11.60	1	
	RS-960125010710			St	12.70	2	
	RS-950125010721			SS/St	11.60	1	
	RS-950125010722			SS	11.60	1	
	RS-960125010720			SS	12.70	2	
	RS-950125010811		ASA 300 5"	St	17.60	1	
	RS-960125010810			St	18.60	2	
 <p>fixed flange</p> <p>2</p>	RS-950150010211	150 x 10 (6")	DN 150 PN 10/116	St	16.50	1	
	RS-960150010210			St	16.00	2	
	RS-950150010221			SS/St	16.50	1	
	RS-950150010222			SS	16.50	1	
	RS-960150010220			SS	16.00	2	
	RS-950150010231			Ms/St	19.20	1	
	RS-950150010233			Ms	19.60	1	
	RS-950150010241			Al/St	12.00	1	
	RS-950150010244			Al	8.70	1	
	RS-950150010411			DN 150 PN 25/40	St	19.00	1
	RS-960150010410				St	19.70	2
	RS-950150010711			ASA 150 6"	St	19.30	1
	RS-960150010710				St	19.10	2
	RS-950150010721				SS/St	19.30	1
	RS-950150010722		SS		19.30	1	
	RS-960150010720		SS		19.10	2	
	RS-950150010811		ASA 300 6"	St	25.50	1	
	RS-960150010810			St	27.20	2	
	RS-950200012111		DN 200 PN 10	St	26.90	1	
	RS-960200012110			St	25.70	2	
	RS-950200012121			SS/St	26.90	1	
	RS-950200012122			SS	26.90	1	
	RS-960200012120			SS	25.70	2	
	RS-950200012211		DN 200 PN 16	St	25.70	1	
	RS-960200012210			St	25.40	2	
	RS-950200012311		DN 200 PN 25	St	29.40	1	
	RS-960200012310			St	31.40	2	
	RS-950200012711		ASA 150 8"	St	29.20	1	
RS-960200012710	St	32.10		2			
RS-950200012721	SS/St	29.20		1			
RS-950200012722	SS	29.20		1			
RS-960200012720	SS	32.10		2			
RS-950200012811	ASA 300 8"	St	40.40	1			
RS-960200012810		St	44.80	2			

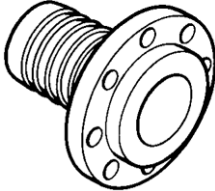
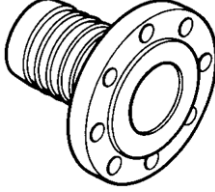
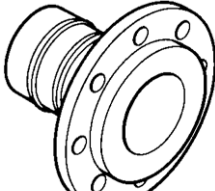
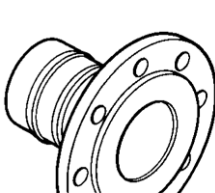


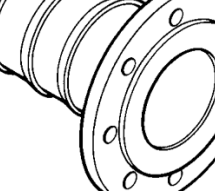
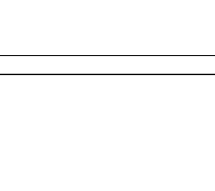
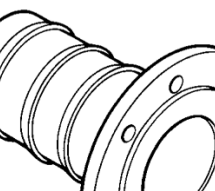
INDUSTRIAL FITTINGS - couplings

FRS flanges

Material: St (carbon steel), SS (AISI 316Ti)

Working pressure: 10 bar (from DN 125 to DN 250 - 6 bar)

Flanges designed to be mounted on hoses with band clamps (see chapter "INDUSTRIAL FITTINGS - clip, clamps, ferrules"). L* - hose tail length.

picture	code	DN [mm]	flange	L* [mm]	material	weight [kg]	pic.
 swivel flange	RS-910025000211	25 (1")	DN 25 PN 10/16	65	St	1.60	1
	RS-920025000210				St	1.30	2
	RS-910025000221				SS/St	1.60	1
	RS-910025000222				SS	1.60	1
	RS-920025000220				SS	1.30	2
 fixed flange	RS-910032000211	32 (1.1/4")	DN 32 PN 10/16	65	St	2.30	1
	RS-920032000210				St	1.90	2
	RS-910032000221				SS/St	2.20	1
	RS-910032000222				SS	2.20	1
	RS-920032000220				SS	1.90	2
 fixed flange	RS-910040000211	38/40 (1.1/2")	DN 40 PN 10/16	65	St	2.70	1
	RS-920040000210				St	2.10	2
	RS-910040000221				SS/St	2.60	1
	RS-910040000222				SS	2.60	1
	RS-920040000220				SS	2.10	2
 swivel flange	RS-910050000211	50 (2")	DN 50 PN 10/16	65	St	3.40	1
	RS-920050000210				St	2.80	2
	RS-910050000221				SS/St	3.20	1
	RS-910050000222				SS	3.20	1
	RS-920050000220				SS	2.80	2
 fixed flange	RS-910065000211	63/65 (2.1/2")	DN 65 PN 10/16	90	St	4.40	1
	RS-920065000210				St	3.60	2
	RS-910065000221				SS/St	4.10	1
	RS-910065000222				SS	4.10	1
	RS-920065000220				SS	3.60	2
 fixed flange	RS-910075000211	75 (3")	DN 80 PN 10/16	90	St	5.60	1
	RS-920075000210				St	4.40	2
	RS-910075000221				SS/St	5.30	1
	RS-910075000222				SS	5.30	1
	RS-920075000220				SS	4.40	2
 swivel flange	RS-910080000211	80	DN 80 PN 10/16	90	St	5.70	1
	RS-920080000210				St	4.50	2
	RS-910080000221				SS/St	5.40	1
	RS-910080000222				SS	5.40	1
	RS-920080000220				SS	4.50	2
 swivel flange	RS-910100000211	100 (4")	DN 100 PN 10/16	100	St	7.00	3
	RS-920100000210				St	5.70	4
	RS-910100000221				SS/St	6.30	3
	RS-910100000222				SS	6.30	3
	RS-920100000220				SS	5.60	4
 fixed flange	RS-910125000211	125 (5")	DN 125 PN 10/16	125	St	8.00	3
	RS-920125000210				St	7.40	4
	RS-910150000211	150 (6")	DN 150 PN 10/16	150	St	10.30	3
	RS-920150000210				St	9.70	4
	RS-910150000221				SS/St	10.30	3
	RS-910150000222				SS	10.30	3
	RS-920150000220	SS	9.80	4			
	RS-910200000111	200 (8")	DN 200 PN 10	150	St	15.80	3
	RS-920200000110				St	15.30	4
	RS-910250000111	250 (10")	DN 250 PN 10	200	St	21.00	5
RS-920250000110	St				19.50	6	

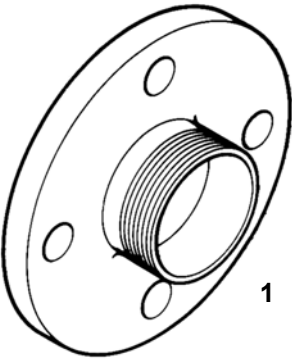
INDUSTRIAL FITTINGS - couplings

FGN flanges

Material: St (carbon steel), SS (AISI 316Ti), Ms (brass), Al (aluminium), PP (polypropylene)

Working pressure: 10 bar

Fixed flange with male thread.

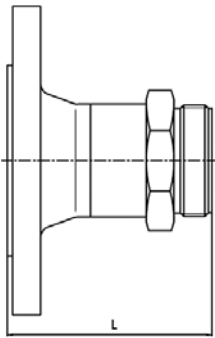
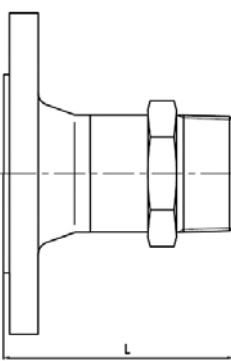
picture	code	flange	thread	length [mm]	material	weight [kg]	pic.
	RS-900025100211	DN 25 PN 10/16	1" BSP	73	St	1.30	2
	RS-900025100212			73	SS	1.30	2
	RS-900025100215	DN 32 PN 10/16	1.1/4" BSP	41	PP	0.15	1
	RS-900032125211			75	St	1.90	2
	RS-900032125212	75	SS	1.90	2		
	RS-900040150211	DN 40 PN 10/16	1.1/2" BSP	77	St	2.15	2
	RS-900040150212			77	SS	2.15	2
	RS-900040150215		1.1/2" BSPT	60	PP	0.27	1
	RS-900040200211			2" BSP	87	St	2.30
	RS-900040200212	87	SS		2.30	2	
RS-900001300111	TW 1	3" BSP	58	St	1.85	1	
RS-900001300112			58	SS	1.90	1	
RS-900001300113			37	Ms	1.40	1	
RS-900001300114			40	Al	0.54	1	
RS-900050200211	DN 50 PN 10/16	2" BSP	90	St	2.95	2	
RS-900050200212			90	SS	2.95	2	
RS-900050200213			37	Ms	2.55	1	
RS-900050200214		37	Al	0.81	1		
RS-900050200215		2" BSPT	60	PP	0.36	1	
RS-900065250211	DN 65 PN 10/16	2.1/2" BSP	90	St	3.60	2	
RS-900065250212			90	SS	3.60	2	
RS-900065300211		3" BSP	90	St	3.70	2	
RS-900065300212			90	SS	3.75	2	
RS-900080300211	DN 80 PN 10/16	3" BSP	95	St	4.35	2	
RS-900080300212			95	SS	4.40	2	
RS-900080300213			46	Ms	3.80	1	
RS-900080300214		46	Al	1.20	1		
RS-900080300215		3" BSPT	68	PP	0.54	1	
RS-900003400111	TW 3	4" BSP	58	St	2.30	1	
RS-900003400112			58	SS	2.10	1	
RS-900003400114			50	Al	0.81	1	
RS-900100400211	DN 100 PN 10/16	4" BSP	97	St	5.55	2	
RS-900100400212			97	SS	5.35	2	
RS-900100400213			55	Ms	5.05	1	
RS-900100400214			55	Al	1.70	1	
RS-900100550251		5.1/2" DIN 11	5.1/2" DIN 11	97	St	6.45	2
RS-900100550252				97	SS	6.90	2
RS-900100550254				83	Al	2.05	1

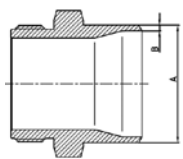
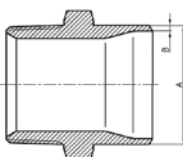
INDUSTRIAL FITTINGS - couplings

FGN flanges

Material: Carbon steel, AISI 316 steel (add SS-316 to a code)

Coupling with flanges according to EN1092-1 PN16. Optionally available with swivel flanges and flanges according to ANSI B16.5. Joined by a butt weld with a joint quality level „B” according to EN ISO 5817.

picture	size [inch]	FGN flange code	codes of elements		thread size [inch]	length L [mm]
			fitting	PN16 flange		
Flange with BSP thread 	1	TK-KGZ-025-100	TK-WGZ-025-100	TK-KSS-025	1	94
	1.1/4	TK-KGZ-032-125	TK-WGZ-032-125	TK-KSS-032	1.1/4	96
	1.1/2	TK-KGZ-040-150	TK-WGZ-040-150	TK-KSS-040	1.1/2	102
	2	TK-KGZ-050-200	TK-WGZ-050-200	TK-KSS-050	2	114
	2.1/2	TK-KGZ-065-250	TK-WGZ-065-250	TK-KSS-065	2.1/2	116
	3	TK-KGZ-080-300	TK-WGZ-080-300	TK-KSS-080	3	121
	4	TK-KGZ-100-400	TK-WGZ-100-400	TK-KSS-100	4	113
Flange with BSPT thread 	1	TK-KGZT-025-100	TK-WGZT-025-100	TK-KSS-025	1	98
	1.1/4	TK-KGZT-032-125	TK-WGZT-032-125	TK-KSS-032	1.1/4	107
	1.1/2	TK-KGZT-040-150	TK-WGZT-040-150	TK-KSS-040	1.1/2	110
	2	TK-KGZT-050-200	TK-WGZT-050-200	TK-KSS-050	2	119
	2.1/2	TK-KGZT-065-250	TK-WGZT-065-250	TK-KSS-065	2.1/2	125
	3	TK-KGZT-080-300	TK-WGZT-080-300	TK-KSS-080	3	133
	4	TK-KGZT-100-400	TK-WGZT-100-400	TK-KSS-100	4	141

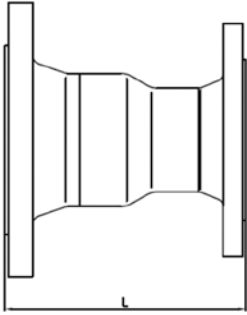
picture	size [inch]	code	thread size [inch]	A diameter [mm]	wall thickness B [mm]
Fitting with BSP thread 	1	TK-WGZ-025-100	1	33.7	2.6
	1.1/4	TK-WGZ-032-125	1.1/4	42.4	2.6
	1.1/2	TK-WGZ-040-150	1.1/2	48.3	2.6
	2	TK-WGZ-050-200	2	60.3	2.9
	2.1/2	TK-WGZ-065-250	2.1/2	76.1	2.9
	3	TK-WGZ-080-300	3	88.9	3.2
	4	TK-WGZ-100-400	4	114.3	3.6
Fitting with BSPT thread 	1	TK-WGZT-025-100	1	33.7	2.6
	1.1/4	TK-WGZT-032-125	1.1/4	42.4	2.6
	1.1/2	TK-WGZT-040-150	1.1/2	48.3	2.6
	2	TK-WGZT-050-200	2	60.3	2.9
	2.1/2	TK-WGZT-065-250	2.1/2	76.1	2.9
	3	TK-WGZT-080-300	3	88.9	3.2
	4	TK-WGZT-100-400	4	114.3	3.6

INDUSTRIAL FITTINGS - couplings

Flange adapter

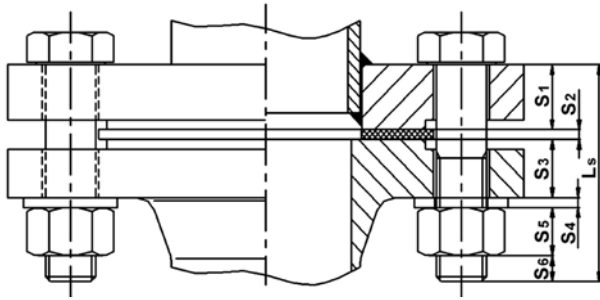
Material: Carbon steel, AISI 316 steel (add SS-316 to a code)

Flange adapter according to EN1092-1 PN16. Optionally available with swivel flanges and flanges according to ANSI B16.5. Joined by a butt weld with a joint quality level „B” according to EN ISO 5817.

picture	size [inch]	code	codes of elements			length L [mm]
			PN16 flange	adaptor	PN16 flange	
	DN32/DN25	TK-ZKR-032-025	TK-KSS-032	TK-RS-042-033	TK-KSS-025	136
	DN40/DN32	TK-ZKR-040-032	TK-KSS-040	TK-RS-048-042	TK-KSS-032	155
	DN50/DN40	TK-ZKR-050-040	TK-KSS-050	TK-RS-060-048	TK-KSS-040	170
	DN65/DN50	TK-ZKR-065-050	TK-KSS-065	TK-RS-076-060	TK-KSS-050	184
	DN80/DN65	TK-ZKR-080-065	TK-KSS-080	TK-RS-088-076	TK-KSS-065	189
	DN100/DN80	TK-ZKR-114-080	TK-KSS-100	TK-RS-114-088	TK-KSS-080	206
	DN125/DN100	TK-ZKR-125-100	TK-KSS-125	TK-RS-139-114	TK-KSS-100	238

INDUSTRIAL FITTINGS - couplings

Bolts and nuts for flange connections



Required bolt length Ls:

$$L_s = S_1 + S_2 + S_3 + S_4 + S_5 + S_6 \text{ [mm]}$$

- L_s - required bolt length [mm]
- S₁, S₃ - connected flange thickness [mm]
- S₂ - seal thickness [mm]
- S₄ - washer thickness [mm]
- S₅ - nut thickness [mm]
- S₆ - thread length behind a nut [mm]
(S₆ > 2 x thread pitch)

The selection procedure of bolts and nuts for flanges made according to EN 1092 and EN 1759 standard should comply with EN 1515-1.

Length of bolts for flange connections (EN 1092)

DN	neck fixed flange type 11,12,13 with neck fixed flange type 11,12,13				neck fixed flange type 11,12,13 with swivel flange type 4/34, 2.32				swivel flange type 4/34, 2.32 with swivel flange type 4/34, 2.32				flat fixed flange type 01B, 01A with flat fixed flange type 01B, 01A			
	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40
10	55	55	55	55	60	60	60	60	70	70	70	70	50	50	50	50
15	55	55	55	55	60	60	60	60	70	70	70	70	50	50	50	50
20	55	55	55	55	70	70	70	70	80	80	80	80	50	50	50	50
25	55	55	55	55	70	70	70	70	80	80	80	80	50	50	50	50
32	60	60	60	60	75	75	75	75	90	90	90	90	60	60	60	60
40	60	60	60	60	75	75	75	75	90	90	90	90	60	60	60	60
50	60	60	65	65	80	80	80	80	95	95	95	95	65	65	65	65
65	60	60	70	70	80	80	85	85	95	95	100	100	65	65	70	70
80	65	65	70	70	80	80	90	90	95	95	110	110	65	65	70	70
100	65	65	75	75	85	85	100	100	110	110	120	120	70	70	80	80
125	70	70	90	90	85	85	110	110	110	110	140	140	70	70	90	90
150	70	70	90	90	100	100	120	120	120	120	140	140	75	75	100	100

Number and size of bolts for flange connection (EN 1092)

flange type		neck fixed flange 11,12,13, swivel flange type 4/34, 2.32, flat fixed flange type 01B, 01A												
DN		10	15	20	25	32	40	50	65	80	100	125	150	
screw size	PN10/16	M12	M12	M12	M12	M16	M16	M16	M16	M16	M16	M16	M20	
	PN25/40	M12	M12	M12	M12	M16	M16	M16	M16	M16	M20	M24	M24	
screw number		4	4	4	4	4	4	4	8	8	8	8	8	

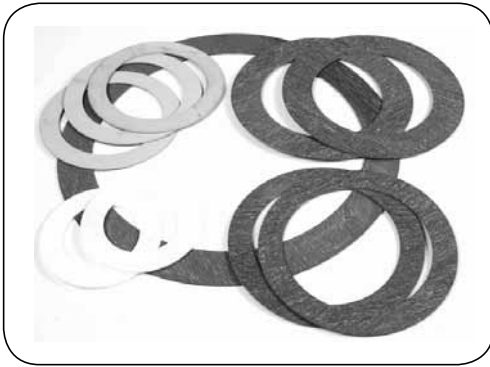
The structure of an assembly set code

TK	-	SZ1	-	M12	-	050	-	A	-	PG
set type	thread size	length [mm]	mechanical properties grade or steel grade		material					
SZ1 set bolts DIN931- 4 pcs nuts DIN934 - 4 pcs washers DIN125A- 4 pcs	M12	50, 55, 60, 70, 80	A - 5.6 B - A2-70		PG carbon steel (galvanized) SS AISI 304 steel					
	M16	60, 65, 70, 75, 80, 85, 90, 95, 100, 110								
	M20	70, 75, 80, 100, 120								
	M24	90, 110, 120, 140								

Other materials, grades of mechanical properties are available on request. The selection of materials and grades of bolts should be based on EN 1515-1 standard, and primarily a flange PN as well as temperature range.

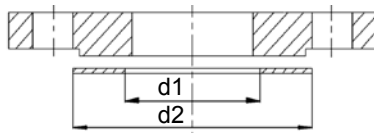
INDUSTRIAL FITTINGS - couplings

Flat seals for flange connection



Material: KLINGER SIL 4430, PTFE, EPDM
Working press.: Up to 100 bar - KLINGER SIL 4430
 Up to 300 bar - PTFE
 Up to 60 bar - EPDM
Working temp.: From -200°C up to +400°C - KLINGER SIL 4430
 From -200°C up to +220°C - PTFE
 From -30°C up to +120°C - EPDM

- PN flange flat seals made according to PN-EN 1514-1.
- ASA flange flat seals made according to ASME B16.21ANSI.
- Permissible working pressure of a particular seal depends on a type and temperature of the medium. For proper seal selection contact Sales or Technical Department of TUBES INTERNATIONAL®.
- When selecting the seal, check that d2 dimension is suitable for your flange class. Example: DN10 PN40 seal is suitable for PN10, PN16 and PN25 classes. The code applies to the highest class.



IBC seal dimensions for PN flanges

DN	d1 [mm]	d2 [mm]				
		PN6	PN10	PN16	PN25	PN40
10	18	39		46		
15	22	44		51		
20	27	54		61		
25	34	64		71		
32	43	76		82		
40	49	86		92		
50	61	96		107		
60	72	106		117		
65	77	116		127		
80	89	132		142		
100	115	152	162		168	
125	141	182	192		194	
150	169	207	218		224	
200	220	262	273	284	290	
250	273	317	328	329	340	352
300	324	373	378	384	400	417

IBC (Flat Ring) seal dimensions for ASA flanges

NPS	DN	d1 [mm]	d2 [mm]			
			ASA 150	ASA 300	ASA 400	ASA 600
1/2"	15	21	48		54	
3/4"	20	27	57		67	
1"	25	33	67		73	
1.1/4"	32	42	76		83	
1.1/2"	40	48	86		95	
2"	50	60	105		111	
2.1/2"	65	73	124		130	
3"	80	89	137		149	
3.1/2"	90	102	162	165	162	
4"	100	114	175	181	178	194
5"	125	141	197	216	213	241
6"	150	168	222	251	248	267
8"	200	219	279	308	305	321
10"	250	273	340	362	359	400
12"	300	324	410	422	419	457

The structure of a flange seal code

TK	UK	IBC	PN06	010	T	3
application	seal type	flange class	size	material	thickness [mm]	
flange seal	IBC - inside bolt circle FF - flat face TG - tongue and groove SR - spigot and recess	PN6, PN10, PN16, PN25, PN40	DN 10 ÷ DN 300	T - PTFE E - EPDM 4430 - KLINGER SIL 4430	standard: 2; 3 options: 0.25; 0.4; 0.5; 0.8; 1; 1.5; 4; 5; 6.4	
		ASA 150, ASA 300, ASA 400, ASA 600	DN 15 ÷ DN 300			