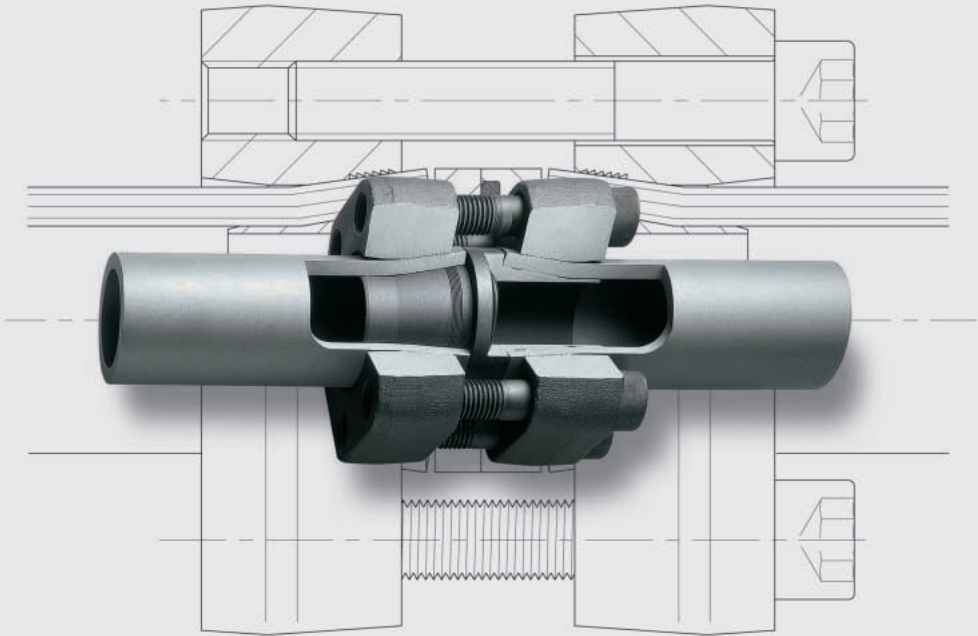


Flange couplings / ZAKO / ZAKO LP

- Flange couplings with cutting-ring connection
- ZAKO flared flanges
- ZAKO LP flared flanges



Experience plus ideas

Contents Type/Page

Product information

Pg. 215-217

Flange couplings
with cutting-ring connection
complete

Pg. 220-226

Flange couplings
with cutting-ring and square
flange connection

BFG

BFW



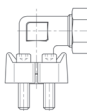
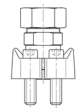
Pg. 220

Pg. 221+222

Flange couplings
with cutting-ring connection
and divided SAE flange

GFS

WFS



Pg. 223+225

Pg. 224+226

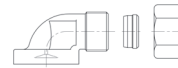
Flange couplings
with cutting-ring connection
Component parts

Pg. 228-231

Flange couplings
with cutting-ring and
square flange connection

BFG

BFW

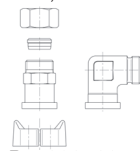


Pg. 228

Pg. 229

Flange couplings
with cutting-ring connection
and divided SAE flange

GFS, WFS



Pg. 230+231

Contents

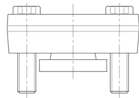
Type/Page

ZAKO flared flanges

Complete

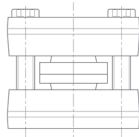
Pg. 234-243

Connection flange couplings,
3.000 psi
Standard series, 250 bar



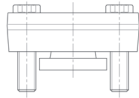
Pg. 234-235

Tube flange couplings,
3.000 psi
Standard series, 250 bar



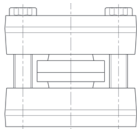
Pg. 236

Connection flange couplings,
6.000 psi
High-pressure series, 400 bar



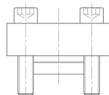
Pg. 237-238

Tube flange couplings,
6.000 psi
High-pressure series, 400 bar



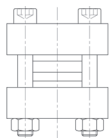
Pg. 239

Tube flange couplings
Square flanges, 400 bar



Pg. 240-241

Tube flange couplings
Square flanges, 400 bar



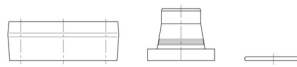
Pg. 242+243

Contents Type/Page

ZAKO flared flanges
Component parts

Pg. 246-256

Connection flange couplings, FE/3, K, OR
3.000 psi
Standard series, 250 bar



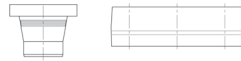
Pg. 246-247

Tube flange couplings, FE/3, K, OR, KO, FV/3
3.000 psi
Standard series, 250 bar



Pg. 248

Tube/hose flange couplings, KO, FV/3
3.000 psi
Standard series, 250 bar



Pg. 249

Connection flange couplings, FE/6, K, OR
6.000 psi
High-pressure series, 400 bar



Pg. 250

Tube flange couplings, FE/6, K, OR, KO, FV/6
6.000 psi
High-pressure series, 400 bar



Pg. 251

Tube/hose flange couplings, KO, FV/6
6.000 psi
High-pressure series, 400 bar

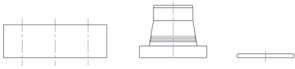


Pg. 252

Contents

Type/Page

Connecting flange couplings
Square flanges, 400 bar



Pg. 253-254

Tube flange couplings
Square flanges, 400 bar

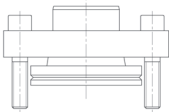


Pg. 255-256

ZAKO LP flared flanges
Complete

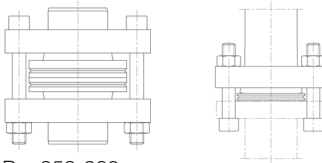
Pg. 258-265

Connection flange couplings, 60 bar



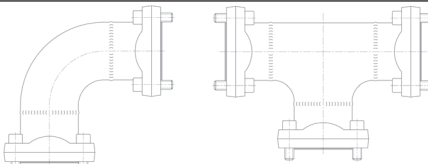
Pg. 258

Tube flange couplings, 60 bar



Pg. 259-260

Tube connecting pieces, 60 bar



Pg. 261-262

ZAKO LP flared flanges
Component parts

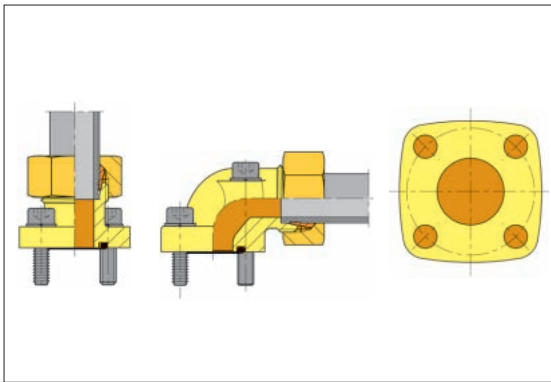


Pg. 263-265

Product Information Flange Couplings

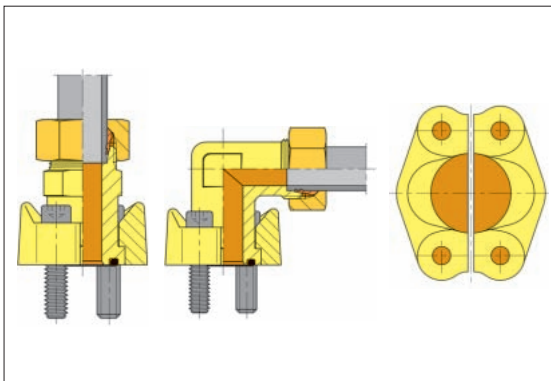
In addition to the tube couplings for the various installation criteria, flanges are frequently used in hydraulic systems, preferably with medium-range and larger dimensions. Different flange versions are available to enable compliance with the different requirements.

Flange couplings with square flange and cutting-ring connection



The flange couplings with a square flange connection are characterized by particularly compact outside dimensions. They are supplied in straight and elbow designs. The product range consists of the outside tube diameters from 10 mm to 35 mm. Flange sealing is carried out with an elastic round sealing ring (O-ring), and the mounting connection with cheese head screws. The flange connections are designed for the connection hole patterns of leading pump manufacturers.

SAE flange couplings with cutting-ring connection



The SAE flange couplings are supplied in standard and high-pressure designs with hole patterns in accordance with SAE J 518 or ISO 6162.

The device-side connection is carried out with 2 flange halves secured with 4 cheese head screws. In contrast to the male threads, the screws can be mounted on the couplings with smaller tools and reduced force. The tube-side connection can be produced with cutting rings or BV-10 flared couplings.

SAE flange couplings with cutting-ring connection – elbow design

A particular advantage of the SAE flange couplings with an elbow design is their directional adjustability. However, the accessibility of the mounting screws must be ensured when installing the tube.

SAE flange couplings with welded connection on request

The VOSS ZAKO system with the 10° flare principle is available for especially high loads, such as vibrations and pressure jolts or high pressures with larger tube dimensions.

General Note

In order for the flange couplings listed in this catalogue to fulfill their function, it is extremely important that the respective installation instructions and the note in the technical remarks are followed exactly.

ZAKO flange couplings

The ZAKO programme of flange couplings caters to tubing systems with outside diameters of between 16 and 120 mm. Both the connecting and the tube-to-port flange couplings are available for standard (250 bar) or high pressure (400 bar) and are classified accordingly in the standard and high-pressure series. VOSS offers the SAE and square flanges listed in this catalogue (Fig. 1 and 2).

To pre-assemble the ZAKO flange couplings, press the ZAKO ring into the tube end (similar to the flared cone of BV-10 tube couplings in conjunction with 10° flared cones). The tube fixture for both systems is therefore identical (see Fig. 3). The difference lies in the fact that the flared cone is sealed by means of a DKO head. On the tube side, sealing is achieved with high surface pressure at the flared section and the labyrinth seal effect of the small teeth on the cone surface. The flange presses a large area of the tube end against the ZAKO ring, ensuring especially high holding forces. As a result, the system remains leak-tight even when exposed to vibrations or reverse bending stress.

Hydraulic engineers appreciate the following characteristics of ZAKO flanges:

- Particularly suitable for extreme loading.
- Notching and incision-free tube holding with the 10° flared cone principle.
- Use of standard coupling bores.
- Easy assembly, even with thick-walled tubes.
- Minimisation of assembly errors, as the ZAKO ring must be pre-assembled in an assembly aid.

- Suitable for stainless-steel tubes with tolerances according to DIN 2391-C.
- Complete range of flanges in the standard and high-pressure lines with hole patterns according to SAE and square flange.

Note on safety:

A wide range of different operating conditions often cause loads on tube connections with unforeseeable parameters. To ensure safe operation, please observe the following:

- In addition to the outer diameter of the tube, also take the wall thickness into account.
- VOSS 10° flared couplings may only be pre-assembled with the specially designed VOSS pre-assembly devices.
- Always observe the assembly instructions of the device used!

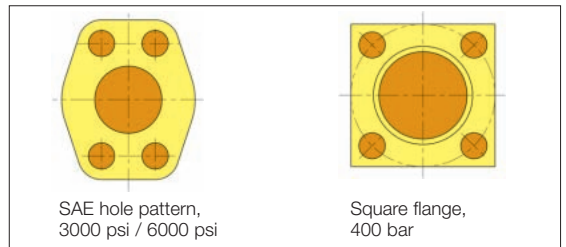


Fig. 1

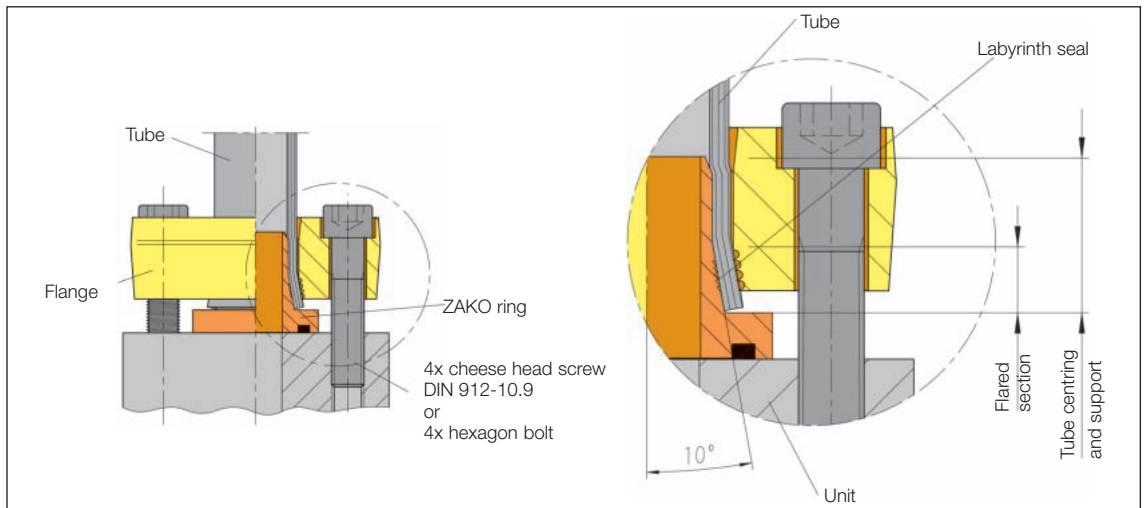


Fig. 2

Product information about ZAKO Low Pressure Flange Couplings

The ZAKO Low Pressure flange program has been specially designed for applications in the low pressure area, for example return lines or lubrication lines. The quick and easy pre-assembly and final assembly make this tube coupling system an economical alternative to welding.

Due to the many years of experience with our 10° flared system, we guarantee a quadruple safety factor at an operating pressure of 60 bar, also with ZAKO Low pressure flange coupling.

The quick and clean pre-assembly of thin-walled tubing, having a tube outside diameter of 48.3 to 114.3 mm, is normally carried out on our 10° flared machine. Only a tool change is required.

With the pre-assembly the ZAKO Low Pressure ring is pressed with hydraulic force into the tube. The tube which is now pre-assembled has such a high pressing force on the front side of the coupling due to the 10° flare that alternating bending stresses, oscillations, pressure impulses and deviations in temperature are tolerated.

In addition to the technical advantages, which this coupling offers as opposed to welding, the economical benefit should be mentioned. The normal working stages for welding, such as crimping, adjustment, seal welding and cleaning and the transportation connected with it as well as the maintenance work and expenditure incurred for training of staff are completely dispensed with when using the ZAKO Low Pressure.

90° tube bends and T-pieces are obtainable in addition to the ZAKO Low Pressure flange program with coupling flanges and flange connections.

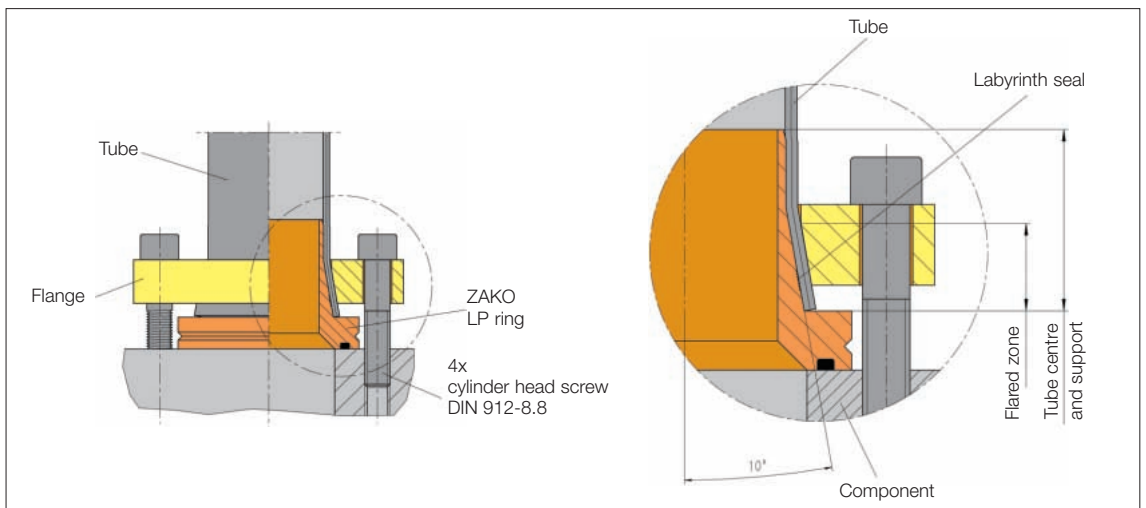
Due to this, further cost saving can be achieved because the tube bending processes and the resulting assembly times do not apply.

As a standard, all components of the ZAKO Low Pressure series have the chrome VI-free surface protection of VOSS Zink-Nickel.

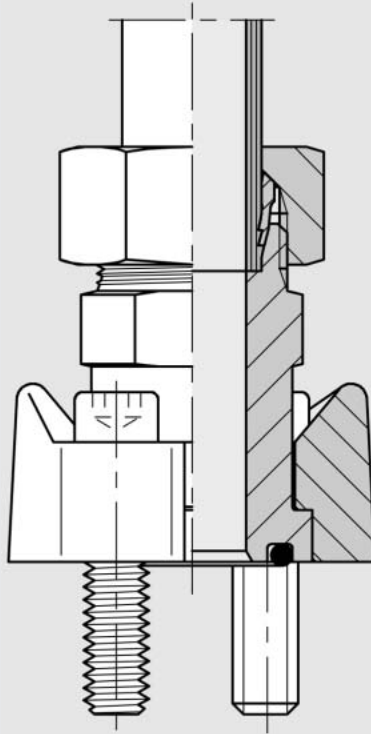
Owing to the fact that the ZAKO Low Pressure series was designed for low pressure, the dimensions of the individual components are reduced in addition to the tightening torque. This additionally simplifies assembly, especially with regard to positions difficult to access.

An overview of the features of the ZAKO Low Pressure tube coupling system are:

- Notch-free and cut-free tube clamping using the successful 10° flared principle.
- Quick, clean and easy pre-assembly.
- Use of the existing ZAKO pre-assembly equipment.
- The same pre-assembly and assembly processes as with the standard ZAKO high pressure series, however with reduced tightening torque.
- Reduction of the assembly times due to the saving of welding and cleaning processes.
- Quadruple reliability of the system against bursting.
- Flange program available with hole patterns according to SAE including 90° tube bend and T-piece.
- Chrome VI-free corrosion protection as a standard VOSS Zink-Nickel.



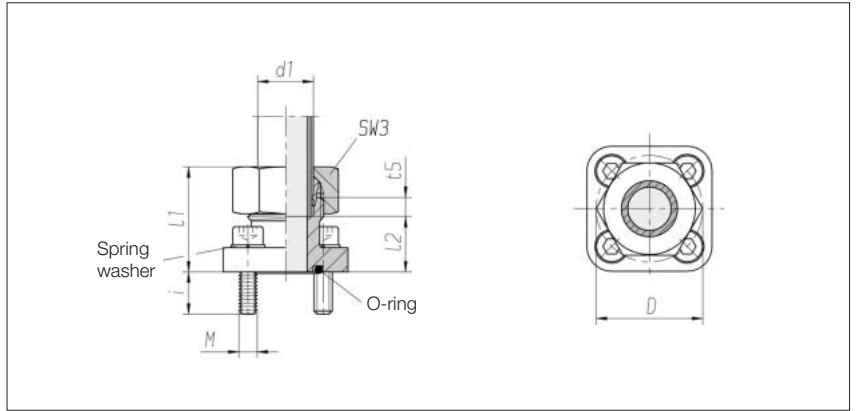
Flange couplings
with cutting-ring connection
complete



Experience plus ideas

Straight flange couplings

With cutting-ring and square flange connection



Series	PB	Hole circle dia. D	SW3	l1 approx.	l2	t5	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm* kg/100 approx.	Order No. complete	Order No. **
L 10	315	35	19	38	23	7	12.5	M 6 x 22	20 x 2.5	10	13.4	0 1 95 36 20 81*** 0 1 95 36 20 07
L 12	315	35	22	38	23	7	12.5	M 6 x 22	20 x 2.5	10	12.7	0 1 95 37 20 81 0 1 95 37 20 07
L 15	250	35	27	38	23	7	12.5	M 6 x 22	20 x 2.5	10	13.1	0 1 95 38 20 81 0 1 95 38 20 07
L 15	100	40	27	43	28	7	12.5	M 6 x 22	26 x 2.5	10	15.8	0 1 95 39 20 81 0 1 95 39 20 07
L 18	100	40	32	44	27.5	7.5	12.5	M 6 x 22	26 x 2.5	10	16.3	0 1 95 40 20 81 0 1 95 40 20 07
L 22	100	40	36	44	27.5	7.5	12.5	M 6 x 22	26 x 2.5	10	15.6	0 1 95 41 20 81 0 1 95 41 20 07
L 28	100	40	41	51	34.5	7.5	12.5	M 6 x 22	26 x 2.5	10	19.4	0 1 95 14 20 81 0 1 95 14 20 07
L 28	100	55	41	49	32.5	7.5	11.5	M 8 x 25	32 x 2.5	25	38.4	0 1 95 90 20 81 0 1 95 90 20 07
S 16	315	35	30	40	21.5	8.5	12.5	M 6 x 22	20 x 2.5	10	12.8	0 1 95 10 20 81 0 1 95 10 20 07

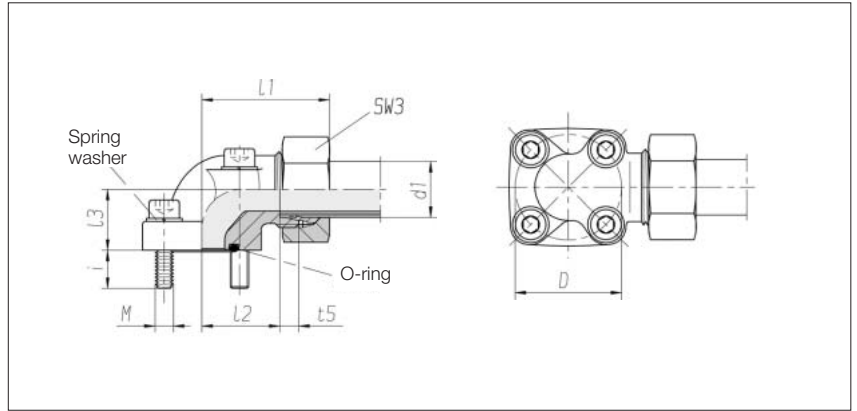
* Nm = Recommended tightening torques for cheese head screws M 6 with friction value μ total 0,14

** With union nut and 2S cutting ring

*** Sample product code, see: BFG10L/LK35

Elbow flange couplings

With cutting-ring and square flange connection



Series	PB	Hole circle dia. D	SW3	l1 approx.	l2	l3	t5	i approx.	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	kg/100 approx.	Order No. complete	Order No. **
L 10	315	35	19	46	31	16.5	7	12.5	2 x M 6 x 22 2 x M 6 x 35	20 x 2.5	10	18.6	0 1 95 42 20 81***	0 1 95 42 20 07
L 12	315	35	22	46	31	16.5	7	12.5	2 x M 6 x 22 2 x M 6 x 35	20 x 2.5	10	16.8	0 1 95 62 20 81	0 1 95 62 20 07
L 15	250	35	27	46	31	16.5	7	12.5	2 x M 6 x 22 2 x M 6 x 35	20 x 2.5	10	17.8	0 1 95 63 20 81	0 1 95 63 20 07
L 15	100	40	27	46	31	22.5	7	12.5	4 x M 6 x 22	26 x 2.5	10	20.4	0 1 95 64 20 81	0 1 95 64 20 07
L 18	100	35	32	47	30.5	20	7.5	12.5	2 x M 6 x 22 2 x M 6 x 40	20 x 2.5	10	22.8	0 1 95 45 20 81	0 1 95 45 20 07
L 18	100	40	32	47	30.5	22.5	7.5	12.5	4 x M 6 x 22	26 x 2.5	10	20.6	0 1 95 43 20 81	0 1 95 43 20 07
L 22	100	40	36	47	30.5	22.5	7.5	12.5	4 x M 6 x 22	26 x 2.5	10	20.9	0 1 95 44 20 81	0 1 95 44 20 07
L 28	100	40	41	49	32.5	28	7.5	12.5	2 x M 6 x 22 2 x M 6 x 50	26 x 2.5	10	29.9	0 1 95 15 20 81	0 1 95 15 20 07
L 35	100	40	50	52	30.5	34	10.5	12.5	2 x M 6 x 22 2 x M 6 x 60	26 x 2.5	10	39.5	0 1 95 27 20 81	0 1 95 27 20 07
L 35	100	55	50	60	38.5	32	10.5	11.5	2 x M 8 x 25 2 x M 8 x 60	32 x 2.5	25	57.9	0 1 95 17 20 81	0 1 95 17 20 07

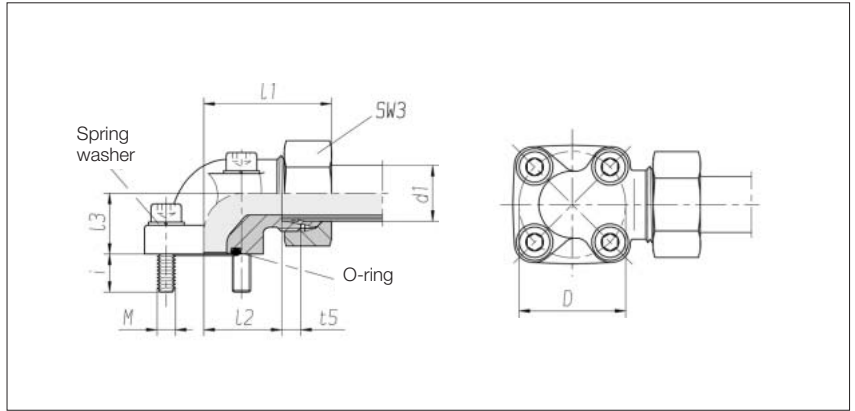
* Nm = Recommended tightening torques for cheese head screws M 6/8 with friction value μ total 0.14

** With union nut and 2S cutting ring

*** Sample product code, see: BFW10L/LK35

Elbow flange couplings

With cutting-ring and square flange connection



Series	PB	Hole circle dia. D	SW3	l1 approx.	l2	l3	t5	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	kg/100 approx.	Order No. complete	Order No. **
S 16	315	35	30	48	29.5	20	8.5	12.5	2 x M 6 x 22 2 x M 6 x 40	20 x 2.5 10	10	22.1	0 1 95 25 20 81***	0 1 95 25 20 07
S 20	315	35	36	56	34.5	25	10.5	11	2 x M 6 x 22 2 x M 6 x 45	20 x 2.5 10	10	29.1	0 1 95 11 20 81	0 1 95 11 20 07
S 20	250	55	36	56	34.5	24	10.5	11	2 x M 8 x 25 2 x M 8 x 50	32 x 1.5 25	25	52.9	0 1 95 18 20 81	0 1 95 18 20 07
S 20	250	40	36	51	29.5	22	10.5	12.5	2 x M 6 x 22 2 x M 6 x 45	26 x 2.5 10	10	25.5	0 1 95 13 20 81	0 1 95 13 20 07
S 25	250	55	46	61	37	30	12	11.5	2 x M 8 x 25 2 x M 8 x 55	32 x 1.5 25	25	61.3	0 1 95 89 20 81	0 1 95 89 20 07
S 30	250	55	50	62	35.5	32	13.5	11	2 x M 8 x 25 2 x M 8 x 50	32 x 1.5 25	25	58.4	0 1 95 24 20 81	0 1 95 24 20 07

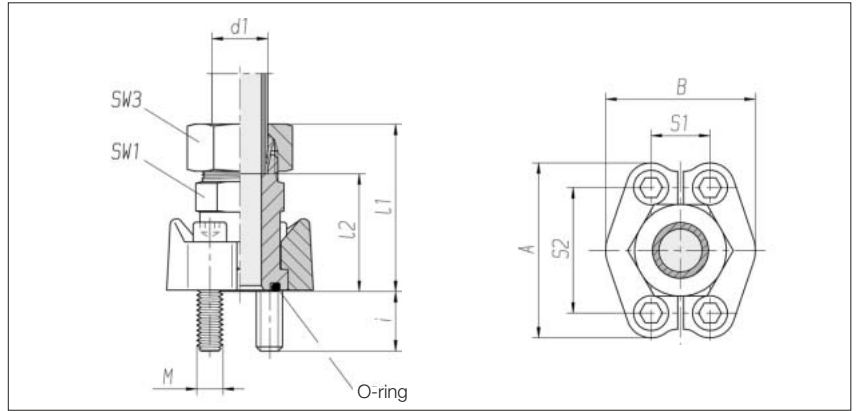
* Nm = Recommended tightening torques for cheese head screws M 6/8 with friction value μ total 0,14

** With union nut and 2S cutting ring

*** Sample product code, see: BFW16S/LK35

Straight flange couplings

With cutting-ring connection and divided SAE flange
Hole pattern according to SAE J 518 C / ISO 6162
Standard series (3000 psi)



Flange size	Series	PB	SW1	SW3	I1	I2 approx.	S1	S2	A	B	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	Order No. complete	Order No. **
3/4"	L 18	315	30	32	62	45.5	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 00 20 81***	0 3 05 00 20 07
3/4"	L 22	160	30	36	62	45.5	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 01 20 81	0 3 05 01 20 07
1"	L 28	160	36	41	63	46.5	26.2	52.4	70	59	14	M 10 x 30	32.92 x 3.53	50	0 3 05 02 20 81	0 3 05 02 20 07
1 1/4"	L 35	160	41	50	69	47.5	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 03 20 81	0 3 05 03 20 07
1 1/4"	L 35	160	41	50	69	47.5	30.2	58.7	79	73	19	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/2"	L 42	160	46	60	76	53	35.7	69.9	94	83	14	M 12 x 35	47.22 x 3.53	85	0 3 05 04 20 81	0 3 05 04 20 07
3/4"	S 20	350	30	36	69	46.5	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 05 20 81	0 3 05 05 20 07
3/4"	S 25	350	30	46	69	45	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 06 20 81	0 3 05 06 20 07
1"	S 30	350	36	50	76	49.5	26.2	52.4	70	59	14	M 10 x 30	32.92 x 3.53	50	0 3 05 08 20 81	0 3 05 08 20 07
1 1/4"	S 25	280	41	46	72	48	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 07 20 81	0 3 05 07 20 07
1 1/4"	S 25	280	41	46	72	48	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/4"	S 30	280	41	50	75	48.5	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 09 20 81	0 3 05 09 20 07
1 1/4"	S 30	280	41	50	75	48.5	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/4"	S 38	280	46	60	81	50.5	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 10 20 81	0 3 05 10 20 07
1 1/4"	S 38	280	46	60	81	50.5	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/2"	S 38	210	46	60	85	54	35.7	69.9	94	83	19	M 12 x 35	47.22 x 3.53	85	0 3 05 11 20 81	0 3 05 11 20 07

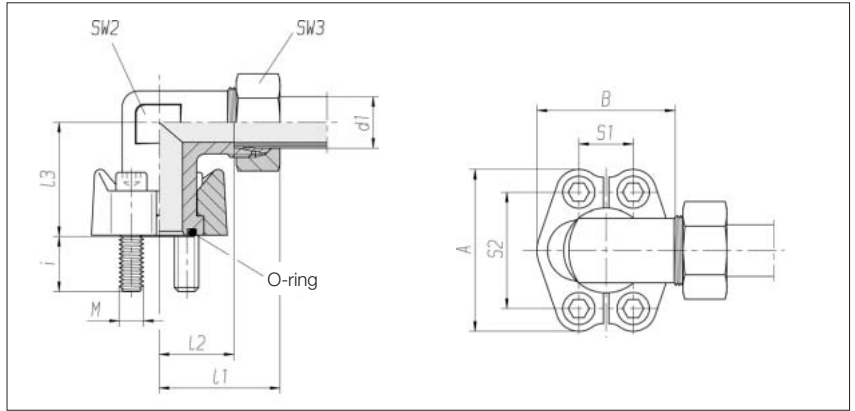
* Nm = Recommended tightening torques for cheese head screws M10/12 with friction value μ total 0.14

** With union nut and 2S cutting ring

*** Sample product code, see: GFS33/18L

Elbow flange couplings

With cutting-ring connection and divided SAE flange
 Hole pattern according to SAEJ 518 C / ISO 6162
 Standard series (3000 psi)



Flange size	Series Tube OD d1	PB	SW2	SW3	I1	I2 approx.	I3	S1	S2	A	B	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	Order No. complete	Order No. **
3/4"	L 18	315	30	32	48	31.5	42	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 12 20 81***	0 3 05 12 20 07
3/4"	L 22	160	30	36	50	33.5	42	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 13 20 81	0 3 05 13 20 07
1"	L 28	160	36	41	53	36.5	45	26.2	52.4	70	59	14	M 10 x 30	32.92 x 3.53	50	0 3 05 14 20 81	0 3 05 14 20 07
1 1/4"	L 35	160	41	50	68	46.5	50	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 15 20 81	0 3 05 15 20 07
1 1/4"	L 35	160	41	50	68	46.5	50	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/2"	L 42	160	50	60	77	56	76	35.7	69.9	94	83	19	M 12 x 35	47.22 x 3.53	85	0 3 05 16 20 81	0 3 05 16 20 07
3/4"	S 20	350	30	36	54	32.5	42	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 17 20 81	0 3 05 17 20 07
3/4"	S 25	350	30	46	57	33	42	22.2	47.6	65	52	16	M 10 x 30	25 x 3.53	50	0 3 05 18 20 81	0 3 05 18 20 07
1"	S 30	350	36	50	63	36.5	45	26.2	52.4	70	59	14	M 10 x 30	32.92 x 3.53	50	0 3 05 20 20 81	0 3 05 20 20 07
1 1/4"	S 25	280	41	46	67	43	50	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 19 20 81	0 3 05 19 20 07
1 1/4"	S 25	280	41	46	67	43	50	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/4"	S 30	280	41	50	70	43.5	50	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 21 20 81	0 3 05 21 20 07
1 1/4"	S 30	280	41	50	70	43.5	50	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/4"	S 38	280	41	60	74	43	50	30.2	58.7	79	73	24	M 12 x 40	37.7 x 3.53	85	0 3 05 22 20 81	0 3 05 22 20 07
1 1/4"	S 38	280	41	60	74	43	50	30.2	58.7	79	73	14	M 10 x 30	37.7 x 3.53	50	On request	On request
1 1/2"	S 38	210	50	60	87	56	76	35.7	69.9	94	83	19	M 12 x 35	47.22 x 3.53	85	0 3 05 23 20 81	0 3 05 23 20 07

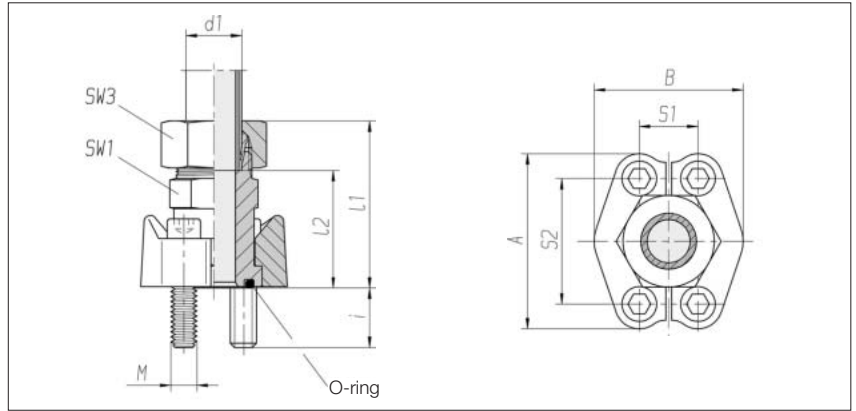
* Nm = Recommended tightening torques for cheese head screws M10/12 with friction value μ total 0,14

** With union nut and 2S cutting ring

*** Sample product code, see: WFS33/18L

Straight flange couplings

With cutting-ring connection and divided SAE flange
Hole pattern according to SAE J 518 C / ISO 6162
High-pressure series (6000 psi)



Flange size	Series Tube OD d1	PB	SW1	SW3	I1	I2 approx.	S1	S2	A	B	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	Order No. complete	Order No. **
3/4"	S 16	400	30	30	69	50.5	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 24 20 81***	0 3 05 24 20 07
3/4"	S 20	400	30	36	72	50.5	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 25 20 81	0 3 05 25 20 07
3/4"	S 25	400	30	46	75	51	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 26 20 81	0 3 05 26 20 07
1"	S 25	400	41	46	84	60	27.8	57.2	81	70	21	M 12 x 45	32.92 x 3.53	85	0 3 05 27 20 81	0 3 05 27 20 07
1"	S 30	400	41	50	87	60.5	27.8	57.2	81	70	21	M 12 x 45	32.92 x 3.53	85	0 3 05 28 20 81	0 3 05 28 20 07
1 1/4"	S 30	400	41	50	92	65.5	31.8	66.7	95	78	23	M 14 x 50	37.7 x 3.53	135	0 3 05 30 20 81	0 3 05 30 20 07
1 1/4"	S 38	315	46	60	98	67	31.8	66.7	95	78	23	M 14 x 50	37.7 x 3.53	135	0 3 05 32 20 81	0 3 05 32 20 07
1 1/2"	S 38	315	46	60	104	73	36.5	79.4	113	95	25	M 16 x 55	47.22 x 3.53	210	0 3 05 34 20 81	0 3 05 34 20 07

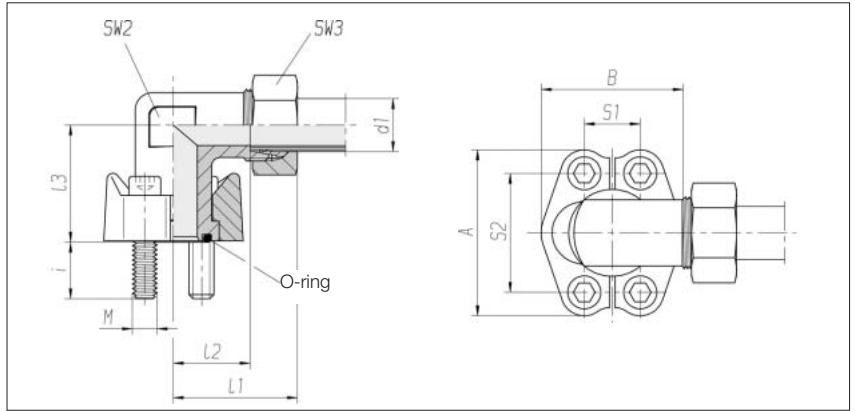
* Nm = Recommended tightening torques for cheese head screws M10 - 16 with friction value μ total 0.14

** With union nut and 2S cutting ring

*** Sample product code, see: GFS63/16S

Elbow flange couplings

With cutting-ring connection and divided SAE flange
 Hole pattern according to SAE J 518 C / ISO 6162
 High-pressure series (6000 psi)



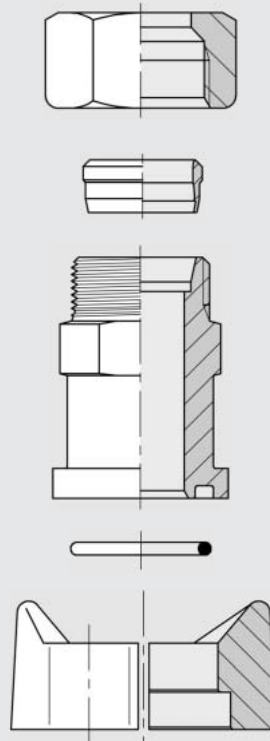
Flange size	Series Tube OD d1	PB	SW2	SW3	l1	l2	l3	S1	S2	A	B	i	4 x cheese head screw DIN 912-8.8	O-ring	Nm*	Order No. complete	Order No. **
1/2"	S 16	400	24	30	48	29.5	39	18.3	40.5	56	47	14	M 8 x 30	18.66 x 3.53	25	0 3 05 35 20 81***	0 3 05 35 20 07
3/4"	S 16	400	32	30	55	36.5	48	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 36 20 81	0 3 05 36 20 07
3/4"	S 20	400	32	36	57	35.5	48	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 37 20 81	0 3 05 37 20 07
3/4"	S 25	400	32	46	60	36	48	23.8	50.8	71	60	16	M 10 x 35	25 x 3.53	50	0 3 05 38 20 81	0 3 05 38 20 07
1"	S 25	400	41	46	65	41	60	27.8	57.2	81	70	21	M 12 x 45	32.92 x 3.53	85	0 3 05 39 20 81	0 3 05 39 20 07
1"	S 30	400	41	50	68	41.5	60	27.8	57.2	81	70	21	M 12 x 45	32.92 x 3.53	85	0 3 05 40 20 81	0 3 05 40 20 07
1 1/4"	S 30	400	46	50	71	44.5	68	31.8	66.7	95	78	23	M 14 x 50	37.7 x 3.53	135	0 3 05 42 20 81	0 3 05 42 20 07
1 1/4"	S 38	315	46	60	76	45	68	31.8	66.7	95	78	23	M 14 x 50	37.7 x 3.53	135	0 3 05 44 20 81	0 3 05 44 20 07
1 1/2"	S 38	315	50	60	87	56	76	36.5	79.4	113	95	25	M 16 x 55	47.22 x 3.53	210	0 3 05 46 20 81	0 3 05 46 20 07

* Nm = Recommended tightening torques for cheese head screws M10 - 16 with friction value μ total 0,14

** With union nut and 2S cutting ring

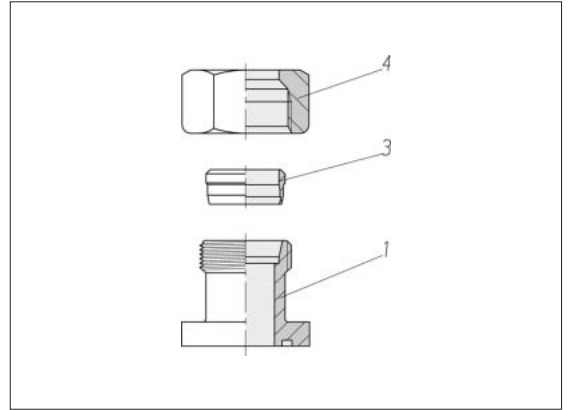
*** Sample product code, see: WFS62/16S

Flange couplings
with cutting-ring connection
Component parts



Straight flange couplings Component parts

With cutting-ring and square flange connection

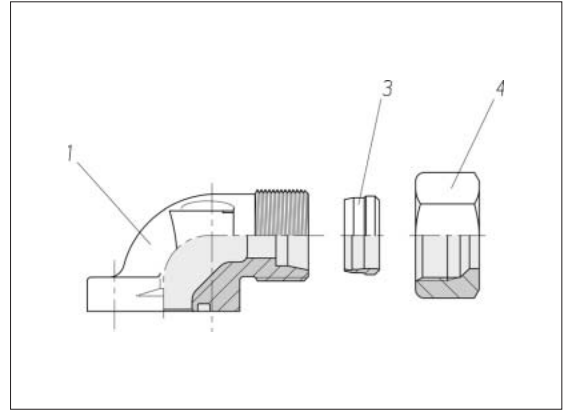


Series	PB	Hole circle dia.	kg/100 approx.	Order No. Part 1	Order No. Part 3	Order No. Part 4
L 10	315	35	9.5	0 7 95 36 20 00*	0 0 10 10 20 00	0 0 04 10 21 00
L 12	315	35	9.7	0 7 95 37 20 00	0 0 10 15 20 00	0 0 04 15 21 00
L 15	250	35	10.2	0 7 95 38 20 00	0 0 10 20 20 00	0 0 04 20 21 00
L 15	100	40	12.4	0 7 95 39 20 00	0 0 10 20 20 00	0 0 04 20 21 00
L 18	100	40	12.2	0 7 95 40 20 00	0 0 10 25 20 00	0 0 04 25 21 00
L 22	100	40	12.3	0 7 95 41 20 00	0 0 10 30 20 00	0 0 04 30 21 00
L 28	100	40	15.9	0 7 95 14 20 00	0 0 10 35 20 00	0 0 04 35 21 00
L 28	100	55	30.4	0 7 95 90 20 00	0 0 10 35 20 00	0 0 04 35 21 00
S 16	315	35	16.4	0 7 95 10 20 00	0 0 10 75 20 00	0 0 04 75 21 00

* Sample product code, see:
BFG10L/LK35OMD

Elbow flange couplings Component parts

With cutting-ring and square flange connection

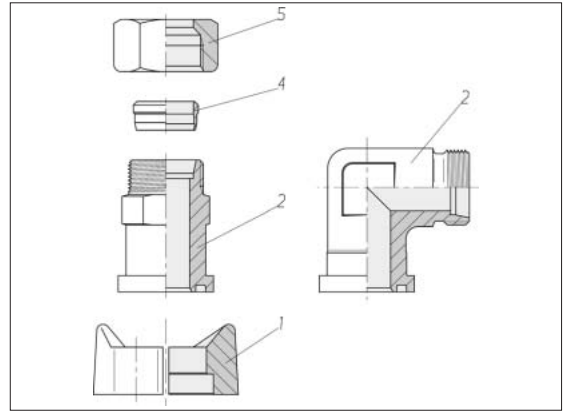


Series Tube OD	PB	Hole circle dia.	kg/100 approx.	Order No. Part 1	Order No. Part 3	Order No. Part 4
L 10	315	35	14.2	0 7 95 42 20 00*	0 0 10 10 20 00	0 0 04 10 21 00
L 12	315	35	15.7	0 7 95 62 20 00	0 0 10 15 20 00	0 0 04 15 21 00
L 15	250	35	15.0	0 7 95 63 20 00	0 0 10 20 20 00	0 0 04 20 21 00
L 15	100	40	20.1	0 7 95 64 20 00	0 0 10 20 20 00	0 0 04 20 21 00
L 18	100	35	17.9	0 7 95 45 20 00	0 0 10 25 20 00	0 0 04 25 21 00
L 18	100	40	16.9	0 7 95 43 20 00	0 0 10 25 20 00	0 0 04 25 21 00
L 22	100	40	17.7	0 7 95 44 20 00	0 0 10 30 20 00	0 0 04 30 21 00
L 28	100	40	26.0	0 7 95 15 20 00	0 0 10 35 20 00	0 0 04 35 21 00
L 35	100	40	32.2	0 7 95 27 20 00	0 0 10 40 20 00	0 0 04 40 21 00
L 35	100	55	46.6	0 7 95 17 20 00	0 0 10 40 20 00	0 0 04 40 21 00
S 12	315	35	27.1	0 7 95 88 20 00	0 0 10 15 20 00	0 0 04 65 21 00
S 16	315	35	17.3	0 7 95 25 20 00	0 0 10 75 20 00	0 0 04 75 21 00
S 20	315	35	22.3	0 7 95 11 20 00	0 0 10 80 20 00	0 0 04 80 21 00
S 20	250	55	44.9	0 7 95 18 20 00	0 0 10 80 20 00	0 0 04 80 21 00
S 20	250	40	20.2	0 7 95 13 20 00	0 0 10 80 20 00	0 0 04 80 21 00
S 25	250	55	49.1	0 7 95 89 20 00	0 0 10 85 20 00	0 0 04 85 21 00
S 30	250	55	49.8	0 7 95 24 20 00	0 0 10 90 20 00	0 0 04 90 21 00

* Sample product code, see:
BFW10L/LK35OMD

Straight/elbow flange couplings Component parts

With cutting-ring connection
and divided SAE flange
Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)



Flange size	Series	kg/100 approx.	Order No. Part 1*	kg/100 approx.	Order No. Part 2**	kg/100 approx.	Order No. Part 2***	Order No. Part 4	Order No. Part 5
3/4"	L 18	8.6	0 3 97 79 20 50	21.3	0 3 96 00 20 00	31.4	0 3 96 12 20 00	0 0 10 25 20 00	0 0 04 25 21 00
3/4"	L 22	8.6	0 3 97 79 20 50	20.2	0 3 96 01 20 00	29.6	0 3 96 13 20 00	0 0 10 30 20 00	0 0 04 30 21 00
1"	L 28	11.6	0 3 97 80 20 50	28.2	0 3 96 02 20 00	40.4	0 3 96 14 20 00	0 0 10 35 20 00	0 0 04 35 21 00
1 1/4"	L 35	15.7	0 3 97 81 20 50	36.3	0 3 96 03 20 00	67.0	0 3 96 15 20 00	0 0 10 40 20 00	0 0 04 40 21 00
1 1/4"	L 35	32.0	0 3 96 97 20 50	36.3	0 3 96 03 20 00	67.0	0 3 96 15 20 00	0 0 10 40 20 00	0 0 04 40 21 00
1 1/2"	L 42	45.5	0 3 97 82 20 50	48.2	0 3 96 04 20 00	110.9	0 3 96 16 20 00	0 0 10 45 20 00	0 0 04 45 21 00
3/4"	S 20	8.6	0 3 97 79 20 50	23.8	0 3 96 05 20 00	31.9	0 3 96 17 20 00	0 0 10 80 20 00	0 0 04 80 21 00
3/4"	S 25	8.6	0 3 97 79 20 50	24.1	0 3 96 06 20 00	33.3	0 3 96 18 20 00	0 0 10 85 20 00	0 0 04 85 21 00
1"	S 30	11.6	0 3 97 80 20 50	36.4	0 3 96 08 20 00	45.2	0 3 96 20 20 00	0 0 10 90 20 00	0 0 04 90 21 00
1 1/4"	S 25	15.7	0 3 97 81 20 50	43.3	0 3 96 07 20 00	62.2	0 3 96 19 20 00	0 0 10 85 20 00	0 0 04 85 21 00
1 1/4"	S 25	32.0	0 3 96 97 20 50	43.3	0 3 96 07 20 00	62.2	0 3 96 19 20 00	0 0 10 85 20 00	0 0 04 85 21 00
1 1/4"	S 30	15.7	0 3 97 81 20 50	43.8	0 3 96 09 20 00	69.4	0 3 96 21 20 00	0 0 10 90 20 00	0 0 04 90 21 00
1 1/4"	S 30	32.0	0 3 96 97 20 50	43.8	0 3 96 09 20 00	69.4	0 3 96 21 20 00	0 0 10 90 20 00	0 0 04 90 21 00
1 1/4"	S 38	15.7	0 3 97 81 20 50	53.2	0 3 96 10 20 00	76.5	0 3 96 22 20 00	0 0 10 95 20 00	0 0 04 95 21 00
1 1/4"	S 38	32.0	0 3 96 97 20 50	53.2	0 3 96 10 20 00	76.5	0 3 96 22 20 00	0 0 10 95 20 00	0 0 04 95 21 00
1 1/2"	S 38	45.5	0 3 97 82 20 50	63.2	0 3 96 11 20 00	98.3	0 3 96 23 20 00	0 0 10 95 20 00	0 0 04 95 21 00

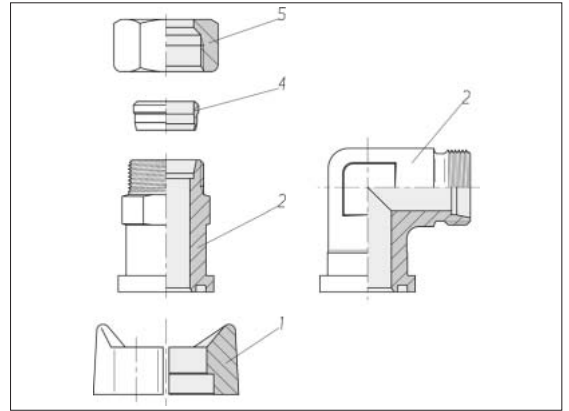
Order No. Part 1: in dependence on
screw size, see Pg. 223/224

* = 2 flange halves
** = Straight flange connecting piece
*** = Elbow flange connecting piece

Sample product code, see:
FHS33X
GFS33/18LX
WFS33/18LX

Straight/elbow flange couplings Component parts

With cutting-ring connection
and divided SAE flange
Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

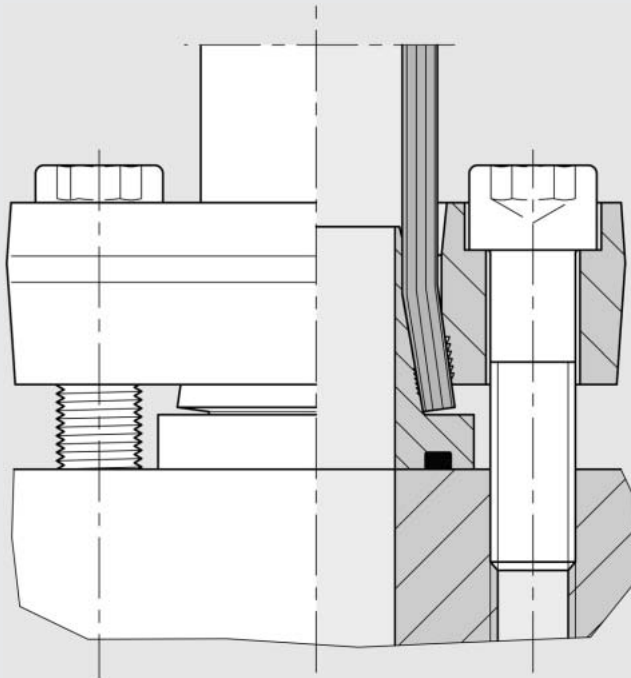


Flange size	Series	kg/100 approx.	Order No. Part 1*	kg/100 approx.	Order No. Part 2**	kg/100 approx.	Order No. Part 2***	Order No. Part 4	Order No. Part 5
1/2"	S 16	25.0	0 3 97 86 20 50	-	-	15.7	0 3 96 60 20 00	0 0 10 75 20 00	0 0 04 75 21 00
3/4"	S 16	33.2	0 3 97 87 20 50	27.2	0 3 96 24 20 00	43.0	0 3 96 36 20 00	0 0 10 75 20 00	0 0 04 75 21 00
3/4"	S 20	33.2	0 3 97 87 20 50	27.9	0 3 96 25 20 00	42.5	0 3 96 37 20 00	0 0 10 80 20 00	0 0 04 80 21 00
3/4"	S 25	33.2	0 3 97 87 20 50	30.0	0 3 96 26 20 00	45.8	0 3 96 38 20 00	0 0 10 85 20 00	0 0 04 85 21 00
1"	S 25	25.0	0 3 97 88 20 50	46.1	0 3 96 27 20 00	59.3	0 3 96 39 20 00	0 0 10 85 20 00	0 0 04 85 21 00
1"	S 30	25.0	0 3 97 88 20 50	43.4	0 3 96 28 20 00	61.2	0 3 96 40 20 00	0 0 10 90 20 00	0 0 04 90 21 00
1 1/4"	S 30	39.0	0 3 97 89 20 50	57.4	0 3 96 30 20 00	82.9	0 3 96 42 20 00	0 0 10 90 20 00	0 0 04 90 21 00
1 1/4"	S 38	39.0	0 3 97 89 20 50	64.8	0 3 96 32 20 00	96.5	0 3 96 44 20 00	0 0 10 95 20 00	0 0 04 95 21 00
1 1/2"	S 38	68.3	0 3 97 90 20 50	82.0	0 3 96 34 20 00	131.7	0 3 96 46 20 00	0 0 10 95 20 00	0 0 04 95 21 00

* = 2 flange halves
** = Straight flange connecting piece
*** = Elbow flange connecting piece

Sample product code, see:
FHS63X
GFS63/16SX
WFS63/16SX

ZAKO flared flanges complete

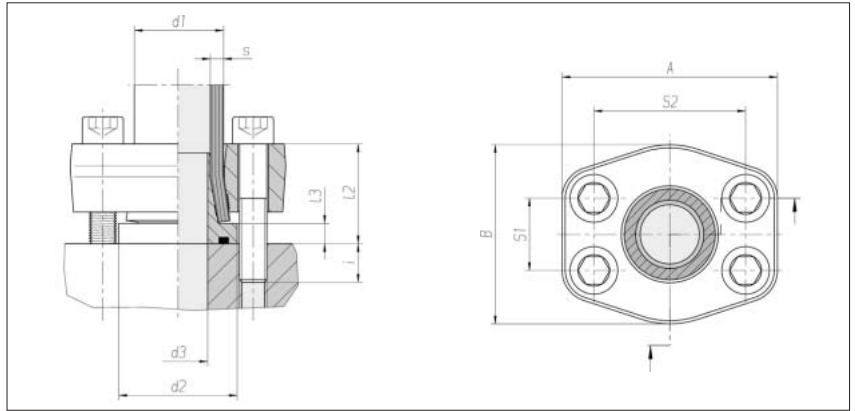


Experience plus ideas

Tube-to-port flange couplings ZAKO system

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar¹⁾



Flange size	Tube d1 x s	d2	d3	l2	l3	S1	S2	A	B	i	4 x cheese head screw.	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1/2"	16 x 2	30	10.5	32	8	17.5	38.1	55	45	13	M 8 x 45	35	43.9	0 5 13 00 19 00**	0 5 13 00 19 86
1/2"	16 x 2.5	30	10.5	32	8	17.5	38.1	55	45	13	M 8 x 45	35	43.9	0 5 13 01 19 00	0 5 13 01 19 86
1/2"	16 x 3	30	10.5	32	8	17.5	38.1	55	45	13	M 8 x 45	35	43.9	0 5 13 29 19 00	0 5 13 29 19 86
3/4"	20 x 2.5	38	13.5	32	8	22.2	47.6	65	50	13	M 10 x 45	69	54.7	0 5 13 02 19 00	0 5 13 02 19 86
3/4"	20 x 3	38	13.5	32	8	22.2	47.6	65	50	13	M 10 x 45	69	54.8	0 5 13 03 19 00	0 5 13 03 19 86
3/4"	20 x 3.5	38	13.5	32	8	22.2	47.6	65	50	13	M 10 x 45	69	55.0	0 5 13 21 19 00	0 5 13 21 19 86
3/4"	25 x 3	38	17	32.5	8.5	22.2	47.6	65	50	12.5	M 10 x 45	69	66.9	0 5 13 04 19 00	0 5 13 04 19 86
3/4"	25 x 4	38	17	32.5	8.5	22.2	47.6	65	50	12.5	M 10 x 45	69	67.3	0 5 13 22 19 00	0 5 13 22 19 86
1"	30 x 4	46	20	37.5	8.5	26.2	52.4	72	60	12.5	M 10 x 50	69	80.1	0 5 13 05 19 00	0 5 13 05 19 86
1"	30 x 5	46	20	37.5	8.5	26.2	52.4	72	60	12.5	M 10 x 50	69	81.3	0 5 13 25 19 00	0 5 13 25 19 86
1 1/4"	38 x 4	52	28	44	9	30.2	58.7	79	73	16	M 12 x 60	120	106.7	0 5 13 06 19 00	0 5 13 06 19 86
1 1/4"	38 x 5	52	28	44	9	30.2	58.7	79	73	16	M 12 x 60	120	107.2	0 5 13 07 19 00	0 5 13 07 19 86
1 1/4"	38 x 6	52	28	44	9	30.2	58.7	79	73	16	M 12 x 60	120	107.3	0 5 13 28 19 00	0 5 13 28 19 86
1 1/4"	42 x 2	52	34	44	9	30.2	58.7	79	73	16	M 10 x 60	69	80.1	0 5 13 16 19 00	0 5 13 16 19 86
1 1/2"	50 x 2.5	63	42	46	10	35.7	69.9	94	83	14	M 12 x 60	120	136.3	0 5 13 08 19 00	0 5 13 08 19 86
1 1/2"	50 x 5	63	42	46	10	35.7	69.9	94	83	14	M 12 x 60	120	136.9	0 5 13 09 19 00	0 5 13 09 19 86
1 1/2"	50 x 6	63	42	46	10	35.7	69.9	94	83	14	M 12 x 60	120	136.8	0 5 13 10 19 00	0 5 13 10 19 86
1 1/2"	50 x 8	63	42	46	10	35.7	69.9	94	83	14	M 12 x 60	120	140.0	0 5 13 20 19 00	0 5 13 20 19 86
2"	65 x 3	75	46	60	11	42.9	77.8	102	97	15	M 12 x 75	120	189.0	0 5 13 11 19 00	0 5 13 11 19 86
2"	65 x 4	75	46	60	11	42.9	77.8	102	97	15	M 12 x 75	120	183.0	0 5 13 12 19 00	0 5 13 12 19 86
2"	65 x 5	75	46	60	11	42.9	77.8	102	97	15	M 12 x 75	120	186.3	0 5 13 13 19 00	0 5 13 13 19 86
3"	80 x 3	100	71	66	16	61.9	106.4	135	131	24	M 16 x 90	295	405.6	0 5 13 14 19 00	0 5 13 14 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ According to the ASME Code, a reduced operating pressure applies for the flange sizes 2" and 3"

* Recommended tightening torques (Nm max.) at 10.9

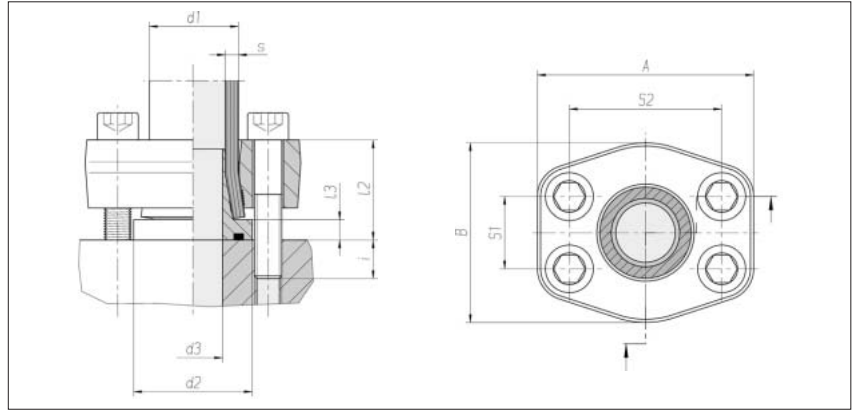
** Sample product code, see: FE-1620-8/3
*** without screws

Tube-to-port flange couplings ZAKO system

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible
operating pressure (PB)
250 bar¹⁾

Reducing couplings



Flange size	Tube d1 x s	d2	d3	l2 approx.	l3 approx.	S1	S2	A	B	i	4 x cheese approx. head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1"	25 x 3	38	17	38.5	8.5	26.2	52.4	72	60	16.5	M 10 x 55	69	64.0	0 5 13 23 19 00**	0 5 13 23 19 86
1"	25 x 4	38	17	38.5	8.5	26.2	52.4	72	60	16.5	M 10 x 55	69	64.6	0 5 13 24 19 00	0 5 13 24 19 86
1 1/4"	30 x 4	46	20	42	8.5	30.2	58.7	79	73	18	M 12 x 60	120	105.5	0 5 13 26 19 00	0 5 13 26 19 86
1 1/4"	30 x 5	46	20	43.5	8.5	30.2	58.7	79	73	16.5	M 12 x 60	120	105.7	0 5 13 27 19 00	0 5 13 27 19 86
2"	50 x 2.5	63	42	52.5	10	42.9	77.8	102	97	22.5	M 12 x 75	120	193.0	0 5 13 75 19 00	0 5 13 75 19 86
2"	50 x 5	63	42	53	10	42.9	77.8	102	97	22	M 12 x 75	120	193.2	0 5 13 76 19 00	0 5 13 76 19 86
2"	50 x 6	63	42	55	10	42.9	77.8	102	97	20	M 12 x 75	120	193.1	0 5 13 77 19 00	0 5 13 77 19 86
2"	50 x 8	63	42	56	10	42.9	77.8	102	97	19	M 12 x 75	120	197.4	0 5 13 78 19 00	0 5 13 78 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ According to the ASME Code, a reduced operating pressure applies for the flange sizes 2"

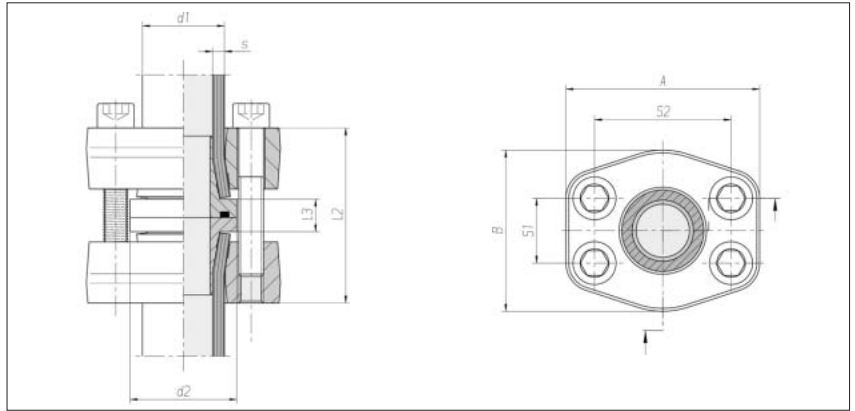
* Recommended tightening torques (Nm max.) at 10.9

** Sample product code, see: FE-2530-16/3
*** without screws

Tube-to-tube flange couplings ZAKO system

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar¹⁾



Flange size	Tube d1 x s	d2	l2 approx.	l3	S1	S2	A	B	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1/2"	16 x 2	30	61.5	13.5	17.5	38.1	55	45	M 8 x 55	35	77.5	0 5 14 00 19 00**	0 5 14 00 19 86
1/2"	16 x 2.5	30	61.5	13.5	17.5	38.1	55	45	M 8 x 55	35	77.5	0 5 14 01 19 00	0 5 14 01 19 86
1/2"	16 x 3	30	61.5	13.5	17.5	38.1	55	45	M 8 x 55	35	77.5	0 5 14 80 19 00	0 5 14 80 19 86
3/4"	20 x 2.5	38	61.5	13.5	22.2	47.6	65	50	M 10 x 55	69	96.6	0 5 14 02 19 00	0 5 14 02 19 86
3/4"	20 x 3	38	61.5	13.5	22.2	47.6	65	50	M 10 x 55	69	97.0	0 5 14 03 19 00	0 5 14 03 19 86
3/4"	20 x 3.5	38	61.5	13.5	22.2	47.6	65	50	M 10 x 55	69	97.4	0 5 14 81 19 00	0 5 14 81 19 86
3/4"	25 x 3	38	62	14	22.2	47.6	65	50	M 10 x 55	69	106.0	0 5 14 04 19 00	0 5 14 04 19 86
3/4"	25 x 4	38	62	14	22.2	47.6	65	50	M 10 x 55	69	106.4	0 5 14 82 19 00	0 5 14 82 19 86
1"	30 x 4	46	72.5	14.5	26.2	52.4	72	60	M 10 x 60	69	149.0	0 5 14 05 19 00	0 5 14 05 19 86
1"	30 x 5	46	72.5	14.5	26.2	52.4	72	60	M 10 x 60	69	151.2	0 5 14 85 19 00	0 5 14 85 19 86
1 1/4"	38 x 4	52	86	16	30.2	58.7	79	73	M 12 x 75	120	198.6	0 5 14 06 19 00	0 5 14 06 19 86
1 1/4"	38 x 5	52	86	16	30.2	58.7	79	73	M 12 x 75	120	197.1	0 5 14 07 19 00	0 5 14 07 19 86
1 1/4"	38 x 6	52	86	16	30.2	58.7	79	73	M 12 x 75	120	197.0	0 5 14 89 19 00	0 5 14 89 19 86
1 1/2"	50 x 2.5	63	89	17	35.7	69.9	94	83	M 12 x 75	120	255.8	0 5 14 08 19 00	0 5 14 08 19 86
1 1/2"	50 x 5	63	89	17	35.7	69.9	94	83	M 12 x 75	120	256.3	0 5 14 09 19 00	0 5 14 09 19 86
1 1/2"	50 x 6	63	89	17	35.7	69.9	94	83	M 12 x 75	120	255.8	0 5 14 10 19 00	0 5 14 10 19 86
1 1/2"	50 x 8	63	89	17	35.7	69.9	94	83	M 12 x 75	120	256.8	0 5 14 90 19 00	0 5 14 90 19 86
1 1/2"	50 x 9	63	89	17	35.7	69.9	94	83	M 12 x 75	120	257.1	0 5 14 91 19 00	0 5 14 91 19 86
2"	65 x 3	75	117	19	42.9	77.8	102	97	M 12 x 100	120	359.6	0 5 14 11 19 00	0 5 14 11 19 86
2"	65 x 4	75	117	19	42.9	77.8	102	97	M 12 x 100	120	353.2	0 5 14 12 19 00	0 5 14 12 19 86
2"	65 x 5	75	117	19	42.9	77.8	102	97	M 12 x 100	120	357.1	0 5 14 13 19 00	0 5 14 13 19 86
3"	80 x 3	100	129	29	61.9	106.4	135	131	M 16 x 110	295	756.0	0 5 14 14 19 00	0 5 14 14 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ According to the ASME Code, a reduced operating pressure applies for the flange sizes 2" and 3"

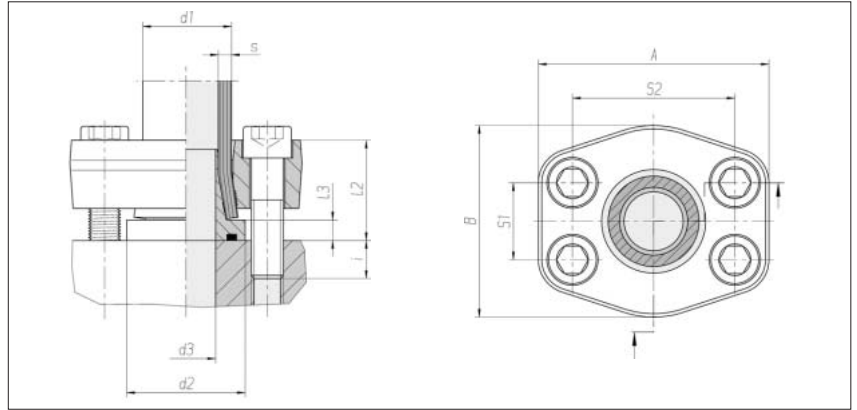
* Recommended tightening torques (Nm max.) at 10.9

** Sample product code, see: FG-1620-8/3
*** without screws

Tube-to-port flange couplings ZAKO system

Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar



Flange size	Tube d1 x s	d2	d3	l2	l3 approx.	S1	S2	A	B	i	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1/2"	16 x 2	30	10.5	32	8	18.3	40.5	56	48	12	M 8 x 40	35	38.6	0 5 13 52 19 00**	0 5 13 52 19 86
1/2"	16 x 2.5	30	10.5	32	8	18.3	40.5	56	48	12	M 8 x 40	35	38.6	0 5 13 30 19 00	0 5 13 30 19 86
1/2"	16 x 3	30	10.5	32	8	18.3	40.5	56	48	12	M 8 x 40	35	38.6	0 5 13 31 19 00	0 5 13 31 19 86
3/4"	20 x 2.5	38	13.5	37	8	23.9	50.8	71	60	13	M 10 x 40	69	69.2	0 5 13 53 19 00	0 5 13 53 19 86
3/4"	20 x 3	38	13.5	37	8	23.9	50.8	71	60	13	M 10 x 40	69	69.3	0 5 13 32 19 00	0 5 13 32 19 86
3/4"	20 x 3.5	38	13.5	37	8	23.9	50.8	71	60	13	M 10 x 40	69	69.6	0 5 13 33 19 00	0 5 13 33 19 86
3/4"	25 x 3	38	17	37.5	8.5	23.9	50.8	71	60	14.5	M 10 x 40	69	65.6	0 5 13 34 19 00	0 5 13 34 19 86
3/4"	25 x 4	38	17	37.5	8.5	23.9	50.8	71	60	14.5	M 10 x 40	69	66.0	0 5 13 35 19 00	0 5 13 35 19 86
1"	30 x 4	46	20	42.5	8.5	27.8	57.2	81	70	14.5	M 12 x 40	120	97.6	0 5 13 36 19 00	0 5 13 36 19 86
1"	30 x 5	46	20	42.5	8.5	27.8	57.2	81	70	14.5	M 12 x 40	120	98.7	0 5 13 37 19 00	0 5 13 37 19 86
1 1/4"	38 x 4	52	28	44	9	31.7	66.7	95	78	17.1	M 14 x 45	190	127.2	0 5 13 55 19 00	0 5 13 55 19 86
1 1/4"	38 x 5	52	28	44	9	31.7	66.7	95	78	17.1	M 14 x 45	190	127.0	0 5 13 38 19 00	0 5 13 38 19 86
1 1/4"	38 x 6	52	28	44	9	31.7	66.7	95	78	17.1	M 14 x 45	190	140.3	0 5 13 39 19 00	0 5 13 39 19 86
1 1/2"	50 x 5	63	36	56.5	10	36.5	79.4	113	95	22	M 16 x 60	295	230.8	0 5 13 56 19 00	0 5 13 56 19 86
1 1/2"	50 x 6	63	36	56.5	10	36.5	79.4	113	95	22	M 16 x 60	295	230.7	0 5 13 40 19 00	0 5 13 40 19 86
1 1/2"	50 x 8	63	36	56.5	10	36.5	79.4	113	95	22	M 16 x 60	295	233.1	0 5 13 41 19 00	0 5 13 41 19 86
2"	65 x 8	75	46	65	11	44.5	96.8	133	114	30	M 20 x 90	580	383.5	0 5 13 42 19 00	0 5 13 42 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

* Recommended tightening torques (Nm max.) at 10.9

** Sample product code, see: FE-1620-8/6

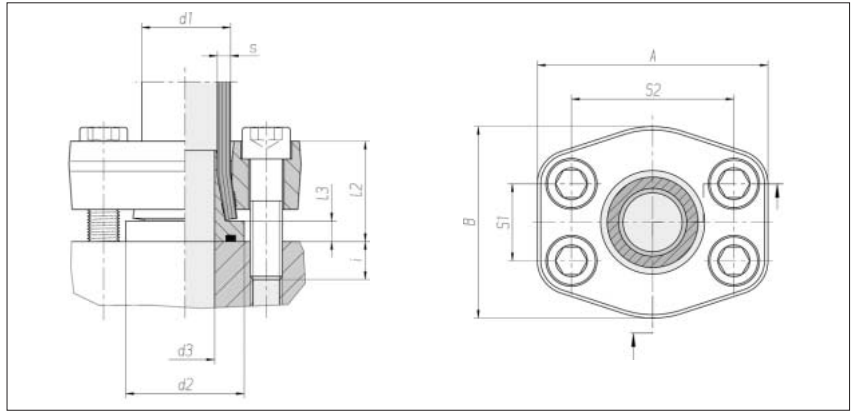
*** without screws

Tube-to-port flange couplings ZAKO system

Hole pattern according to
SAEJ 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar

Reducing couplings



Flange size	Tube d1 x s	d2	d3	l2 approx.	l3	S1	S2	A	B	i	4 x cheese approx. head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1"	38 x 5	46	26	43	9	27.8	57.2	81	70	14	M 12 x 40	120	89.9	0 5 13 54 19 00**	0 5 13 54 19 86
2"	50 x 5	63	36	58	10	44.5	96.8	133	114	32	M 20 x 90	580	438.5	0 5 13 57 19 00	0 5 13 57 19 86
2"	50 x 6	63	36	60	10	44.5	96.8	133	114	30	M 20 x 90	580	438.4	0 5 13 58 19 00	0 5 13 58 19 86
2"	50 x 8	63	36	61	10	44.5	96.8	133	114	29	M 20 x 90	580	440.7	0 5 13 43 19 00	0 5 13 43 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

* Recommended tightening torques (Nm max.) at 10.9

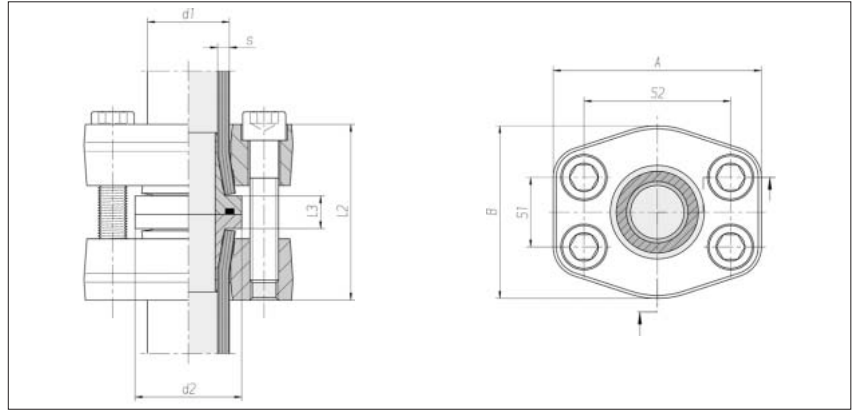
** Sample product code, see: FE-3850-16/6

*** without screws

Tube-to-tube flange couplings ZAKO system

Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar



Flange size	Tube d1 x s	d2	l2 approx.	l3	S1	S2	A	B	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
1/2"	16 x 2	30	61.5	13.5	18.3	40.5	56	48	M 8 x 50	35	72.0	0 5 14 50 19 00**	0 5 14 50 19 86
1/2"	16 x 2.5	30	61.5	13.5	18.3	40.5	56	48	M 8 x 50	35	72.0	0 5 14 30 19 00	0 5 14 30 19 86
1/2"	16 x 3	30	61.5	13.5	18.3	40.5	56	48	M 8 x 50	35	72.0	0 5 14 31 19 00	0 5 14 31 19 86
3/4"	20 x 2.5	38	71.5	13.5	23.9	50.8	71	60	M 10 x 50	69	132.5	0 5 14 51 19 00	0 5 14 51 19 86
3/4"	20 x 3	38	71.5	13.5	23.9	50.8	71	60	M 10 x 50	69	132.9	0 5 14 32 19 00	0 5 14 32 19 86
3/4"	20 x 3.5	38	71.5	13.5	23.9	50.8	71	60	M 10 x 50	69	133.2	0 5 14 33 19 00	0 5 14 33 19 86
3/4"	25 x 3	38	72	14	23.9	50.8	71	60	M 10 x 50	69	128.2	0 5 14 34 19 00	0 5 14 34 19 86
3/4"	25 x 4	38	72	14	23.9	50.8	71	60	M 10 x 50	69	128.9	0 5 14 35 19 00	0 5 14 35 19 86
1"	30 x 4	46	82.5	14.5	27.8	57.2	81	70	M 12 x 50	120	193.6	0 5 14 36 19 00	0 5 14 36 19 86
1"	30 x 5	46	82.5	14.5	27.8	57.2	81	70	M 12 x 50	120	195.8	0 5 14 37 19 00	0 5 14 37 19 86
1 1/4"	38 x 4	52	86	16	31.7	66.7	95	78	M 14 x 60	190	248.6	0 5 14 53 19 00	0 5 14 53 19 86
1 1/4"	38 x 5	52	86	16	31.7	66.7	95	78	M 14 x 60	190	248.9	0 5 14 38 19 00	0 5 14 38 19 86
1 1/4"	38 x 6	52	86	16	31.7	66.7	95	78	M 14 x 60	190	262.7	0 5 14 39 19 00	0 5 14 39 19 86
1 1/2"	50 x 5	63	110	17	36.5	79.4	113	95	M 16 x 75	295	442.6	0 5 14 54 19 00	0 5 14 54 19 86
1 1/2"	50 x 6	63	110	17	36.5	79.4	113	95	M 16 x 75	295	442.2	0 5 14 40 19 00	0 5 14 40 19 86
1 1/2"	50 x 8	63	110	17	36.5	79.4	113	95	M 16 x 75	295	444.7	0 5 14 41 19 00	0 5 14 41 19 86
1 1/2"	50 x 9	63	110	17	36.5	79.4	113	95	M 16 x 75	295	446.0	0 5 14 55 19 00	0 5 14 55 19 86
2"	65 x 8	75	127	19	44.5	96.8	133	114	M 20 x 110	580	699.0	0 5 14 42 19 00	0 5 14 42 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

* Recommended tightening torques (Nm max.) at 10.9

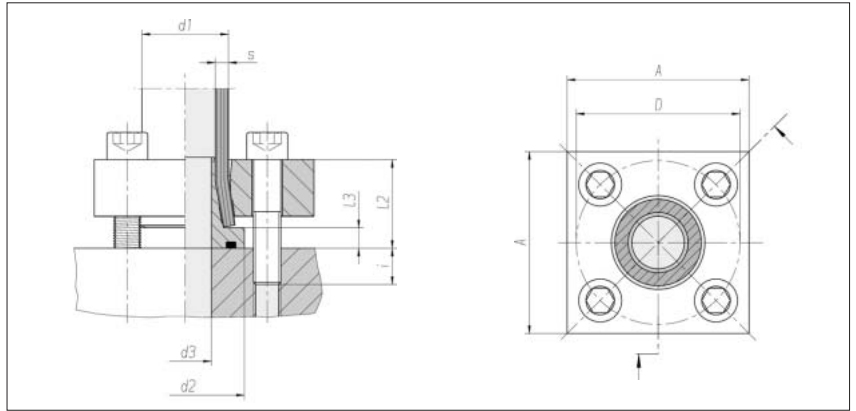
** Sample product code, see: FG-1620-8/6

*** without screws

Tube-to-port flange couplings ZAKO system

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar¹⁾



Flange size NW	Tube d1 x s	d2	d3	l2 approx.	l3	D	A	i approx.	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
12	16 x 2	30	10.5	28	8	42	50	12	M 8 x 40	35	42.2	0 5 15 15 19 00**	0 5 15 15 19 86
11	16 x 2.5	30	10.5	28	8	42	50	12	M 8 x 40	35	42.2	0 5 13 60 19 00	0 5 13 60 19 86
10	16 x 3	30	10.5	28	8	42	50	12	M 8 x 40	35	42.2	0 5 13 61 19 00	0 5 13 61 19 86
15	20 x 2.5	38	13.5	32	8	50	55	13	M 10 x 45	69	55.2	0 5 15 16 19 00	0 5 15 16 19 86
14	20 x 3	38	13.5	32	8	50	55	13	M 10 x 45	69	55.3	0 5 13 62 19 00	0 5 13 62 19 86
13	20 x 3.5	38	13.5	32	8	50	55	13	M 10 x 45	69	55.6	0 5 13 63 19 00	0 5 13 63 19 86
19	25 x 3	38	17	32.5	8.5	50	55	12.5	M 10 x 45	69	65.4	0 5 13 64 19 00	0 5 13 64 19 86
17	25 x 4	38	17	32.5	8.5	50	55	12.5	M 10 x 45	69	65.8	0 5 13 65 19 00	0 5 13 65 19 86
22	30 x 4	46	20	37.5	8.5	62	65	17.5	M 12 x 55	120	87.3	0 5 13 66 19 00	0 5 13 66 19 86
20	30 x 5	46	20	37.5	8.5	62	65	17.5	M 12 x 55	120	88.1	0 5 13 67 19 00	0 5 13 67 19 86
30	38 x 4	52	28	39	9	72	80	16	M 12 x 55 ¹⁾	120	124.4	0 5 15 17 19 00	0 5 15 17 19 86
28	38 x 5	52	28	39	9	72	80	16	M 12 x 55 ¹⁾	120	124.9	0 5 13 68 19 00	0 5 13 68 19 86
26	38 x 6	52	28	39	9	72	80	16	M 12 x 55 ¹⁾	120	125.1	0 5 13 69 19 00	0 5 13 69 19 86
45	50 x 2.5	63	42	56	10	85	85	19	M 14 x 75	190	197.4	0 5 15 00 19 00	0 5 15 00 19 86
40	50 x 5	63	42	56	10	85	85	19	M 14 x 75	190	197.9	0 5 15 23 19 00	0 5 15 23 19 86
38	50 x 6	63	42	56	10	85	85	19	M 14 x 75	190	197.9	0 5 15 24 19 00	0 5 15 24 19 86
34	50 x 8	63	42	56	10	85	85	19	M 14 x 75	190	201.1	0 5 15 01 19 00	0 5 15 01 19 86
32	50 x 9	63	42	56	10	85	85	19	M 14 x 75	190	201.1	0 5 15 25 19 00	0 5 15 25 19 86

Continuation on page 241

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Triple safety

* Recommended tightening torques
(Nm max.) at 10.9

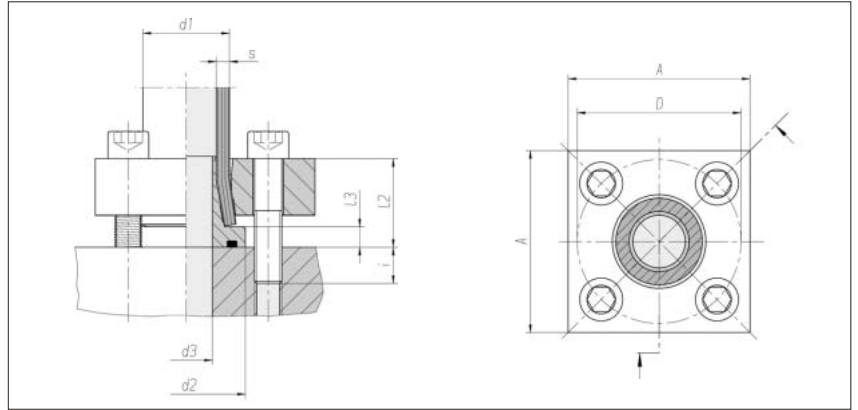
** Sample product code, see:
FE-1620

*** without screws

Tube-to-port flange couplings ZAKO system

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar¹⁾



Flange size NW	Tube d1 x s	d2	d3	l2 approx.	l3 approx.	D	A	i	4 x cheese head screw approx.	Nm*	kg/100 approx.	Order No. complete	Order No. ***
45	50 x 2.5	63	42	56	10	98	100	19	M 16 x 75	295	290.1	0 5 15 18 19 00**	0 5 15 18 19 86
40	50 x 5	63	42	56	10	98	100	19	M 16 x 75	295	290.5	0 5 15 19 19 00	0 5 15 19 19 86
38	50 x 6	63	42	56	10	98	100	19	M 16 x 75	295	290.5	0 5 13 70 19 00	0 5 13 70 19 86
34	50 x 8	63	42	56	10	98	100	19	M 16 x 75	295	294.0	0 5 13 71 19 00	0 5 13 71 19 86
32	50 x 9	63	42	56	10	98	100	19	M 16 x 75	295	294.0	0 5 15 20 19 00	0 5 15 20 19 86
54	60 x 3	75	47	64	15	98	100	26	M 16 x 90	295	289.0	0 5 15 02 19 00	0 5 15 02 19 86
50	60 x 5	75	47	64	15	98	100	26	M 16 x 90	295	295.0	0 5 15 21 19 00	0 5 15 21 19 86
40	60 x 10	75	47	64	15	98	100	26	M 16 x 90	295	292.0	0 5 15 03 19 00	0 5 15 03 19 86
49	65 x 8	75	46	60	11	118	120	30	M 20 x 90	580	430.5	0 5 13 72 19 00	0 5 13 72 19 86
50	75 x 12.5	95	45	72	16	118	120	28	M 20 x 100	580	522.0	0 5 13 80 19 00	0 5 13 80 19 86
74	80 x 3	100	71	76	16	145	150	34	M 24 x 110	800	820.0	0 5 15 04 19 00	0 5 15 04 19 86
64	80 x 8	100	60	80	16	145	150	30	M 24 x 110	800	861.0	0 5 15 22 19 00	0 5 15 22 19 86
60	80 x 10	100	60	80	16	145	150	30	M 24 x 110	800	859.0	0 5 13 73 19 00	0 5 13 73 19 86
60	88 x 14	110	54	84	20	145	150	36	M 24 x 120	800	951.0	0 5 13 81 19 00	0 5 13 81 19 86
70	101.6 x 16	114	62	88.5	20	145	150	32	M 24 x 120	800	1132.0	0 5 13 83 19 00	0 5 13 83 19 86
80	114.3 x 17.5	140	74	92	20	175	180	38	M 30 x 130	1500	1400.0	0 5 15 64 19 00	0 5 15 64 19 86
80	120 x 20	140	74	92	20	175	180	38	M 30 x 130	1500	1347.0	0 5 13 82 19 00	0 5 13 82 19 86

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ Triple safety

* Recommended tightening torques (Nm max.) at 10.9

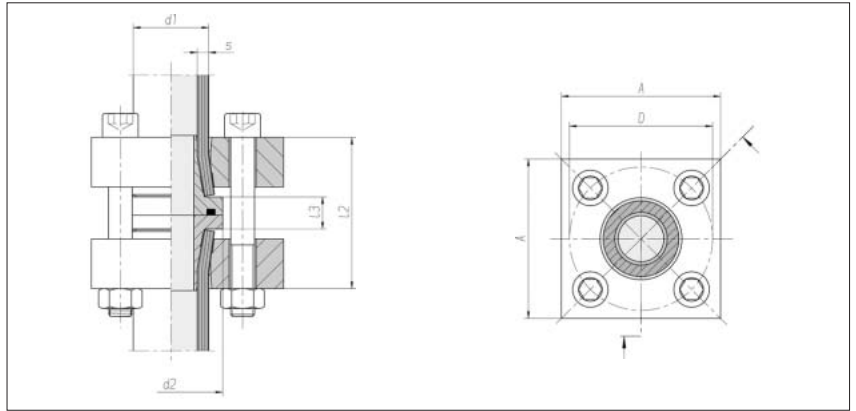
** Sample product code, see: FE-5025

*** without screws

Tube-to-tube flange couplings ZAKO system

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar¹⁾



Flange size NW	Tube d1 x s	d2	l2 approx.	l3	D	A	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
12	16 x 2	30	53.5	13.5	42	50	M 8 x 65	35	81.2	0 5 15 30 19 00**	0 5 15 30 19 86
11	16 x 2.5	30	53.5	13.5	42	50	M 8 x 65	35	81.3	0 5 14 60 19 00	0 5 14 60 19 86
10	16 x 3	30	53.5	13.5	42	50	M 8 x 65	35	81.4	0 5 14 61 19 00	0 5 14 61 19 86
15	20 x 2.5	38	61.5	13.5	50	55	M 10 x 75	69	106.3	0 5 15 31 19 00	0 5 15 31 19 86
14	20 x 3	38	61.5	13.5	50	55	M 10 x 75	69	106.8	0 5 14 62 19 00	0 5 14 62 19 86
13	20 x 3.5	38	61.5	13.5	50	55	M 10 x 75	69	107.1	0 5 14 63 19 00	0 5 14 63 19 86
19	25 x 3	38	62	14	50	55	M 10 x 75	69	126.6	0 5 14 64 19 00	0 5 14 64 19 86
17	25 x 4	38	62	14	50	55	M 10 x 75	69	127.3	0 5 14 65 19 00	0 5 14 65 19 86
22	30 x 4	46	72.5	14.5	62	65	M 12 x 90	120	168.0	0 5 14 66 19 00	0 5 14 66 19 86
20	30 x 5	46	72.5	14.5	62	65	M 12 x 90	120	170.4	0 5 14 67 19 00	0 5 14 67 19 86
30	38 x 4	52	76	16	72	80	M 12 x 90 ¹⁾	120	243.1	0 5 15 32 19 00	0 5 15 32 19 86
28	38 x 5	52	76	16	72	80	M 12 x 90 ¹⁾	120	243.4	0 5 14 68 19 00	0 5 14 68 19 86
26	38 x 6	52	76	16	72	80	M 12 x 90 ¹⁾	120	243.5	0 5 14 69 19 00	0 5 14 69 19 86
45	50 x 2.5	63	109	17	85	85	M 14 x 120	190	379.3	0 5 15 10 19 00	0 5 15 10 19 86
40	50 x 5	63	109	17	85	85	M 14 x 120	190	379.8	0 5 15 38 19 00	0 5 15 38 19 86
38	50 x 6	63	109	17	85	85	M 14 x 120	190	379.3	0 5 15 39 19 00	0 5 15 39 19 86
34	50 x 8	63	109	17	85	85	M 14 x 120	190	385.5	0 5 15 11 19 00	0 5 15 11 19 86
32	50 x 9	63	109	17	85	85	M 14 x 120	190	385.9	0 5 15 40 19 00	0 5 15 40 19 86

Continuation on page 243

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Triple safety

* Recommended tightening torques
(Nm max.) at 10.9

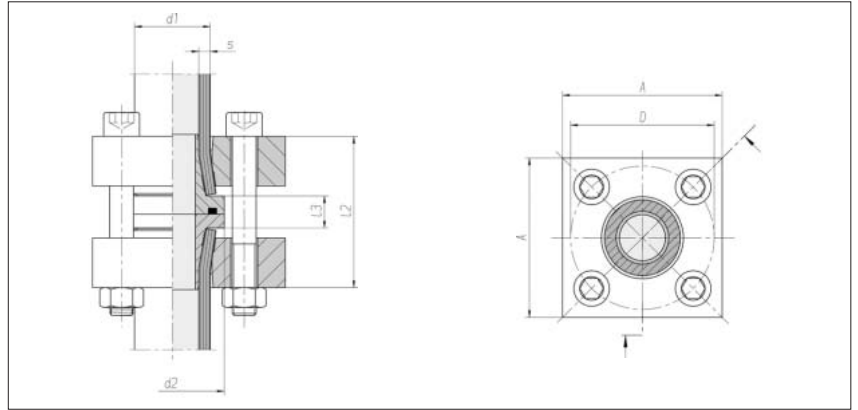
** Sample product code, see:
FG-1620

*** without screws

Tube-to-tube flange couplings ZAKO system

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar¹⁾



Flange size NW	Tube d1 x s	d2	l2 approx.	l3	D	A	4 x cheese head screw	Nm*	kg/100 approx.	Order No. complete	Order No. ***
45	50 x 2.5	63	109	17	98	100	M 16 x 130	295	565.2	0 5 15 33 19 00	0 5 15 33 19 86
40	50 x 5	63	109	17	98	100	M 16 x 130	295	565.7	0 5 15 34 19 00	0 5 15 34 19 86
38	50 x 6	63	109	17	98	100	M 16 x 130	295	565.2	0 5 14 70 19 00	0 5 14 70 19 86
34	50 x 8	63	109	17	98	100	M 16 x 130	295	571.4	0 5 14 71 19 00	0 5 14 71 19 86
32	50 x 9	63	109	17	98	100	M 16 x 130	295	571.8	0 5 15 35 19 00	0 5 15 35 19 86
54	60 x 3	75	115	27	98	100	M 16 x 140	295	551.0	0 5 15 12 19 00	0 5 15 12 19 86
50	60 x 5	75	115	27	98	100	M 16 x 140	295	568.3	0 5 15 36 19 00	0 5 15 36 19 86
40	60 x 10	75	115	27	98	100	M 16 x 140	295	554.8	0 5 15 13 19 00	0 5 15 13 19 86
49	65 x 8	75	117	19	118	120	M 20 x 140	580	820.0	0 5 14 72 19 00	0 5 14 72 19 86
50	75 x 12.5	95	150	28	118	120	M 20 x 180	580	1003.0	0 5 15 41 19 00	0 5 15 41 19 86
74	80 x 3	100	134	29	145	150	M 24 x 180	800	1580.0	0 5 15 19 19 00	0 5 15 19 19 86
64	80 x 8	100	141	36	145	150	M 24 x 180	800	1658.0	0 5 15 37 19 00	0 5 15 37 19 86
60	80 x 10	100	141	36	145	150	M 24 x 180	800	1654.0	0 5 14 73 19 00	0 5 14 73 19 86
60	88 x 14	110	172	36	145	150	M 24 x 200	800	1796.0	0 5 15 42 19 00	0 5 15 42 19 86
70	101.6 x 16	114	173	36	145	150	M 24 x 160	800	2054.0	0 5 14 75 19 00	0 5 14 75 19 86
80	114.3 x 17.5	140	180	36	175	180	M 30 x 170	1500	2565.0	0 5 15 65 19 00	0 5 15 65 19 86
80	120 x 20	140	180	36	175	180	M 30 x 170	1500	2465.0	0 5 14 74 19 00	0 5 14 74 19 86

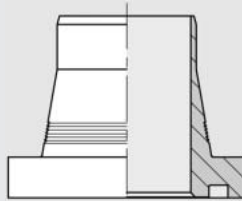
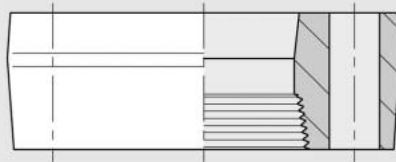
When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ Triple safety

* Recommended tightening torques (Nm max.) at 10.9

*** without screws

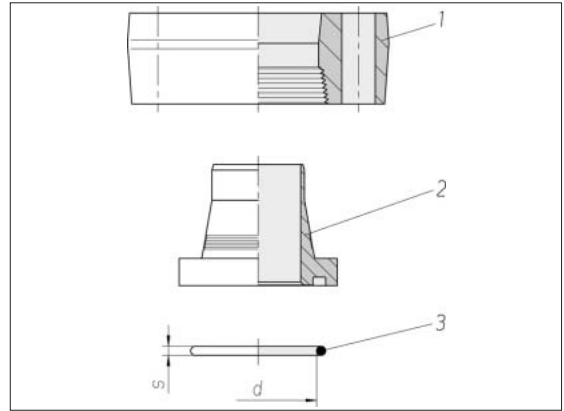
ZAKO flared flanges Component parts



Tube-to-port flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	O-ring d x s	Order No. Part 3
1/2"	16 x 2	30.6	0 5 10 00 19 00*	4.1	0 0 36 00 99 00**	18.6 x 3.5	0 9 06 74 99 90
1/2"	16 x 2.5	30.6	0 5 10 00 19 00	4.1	0 0 36 02 99 00	18.6 x 3.5	0 9 06 74 99 90
1/2"	16 x 3	30.6	0 5 10 00 19 00	4.1	0 0 36 04 99 00	18.6 x 3.5	0 9 06 74 99 90
3/4"	20 x 2.5	33.7	0 5 10 01 19 00	6.5	0 0 36 06 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	20 x 3	33.7	0 5 10 01 19 00	6.6	0 0 36 08 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	20 x 3.5	33.7	0 5 10 01 19 00	6.9	0 0 36 10 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	25 x 3	45.5	0 5 10 02 19 00	6.9	0 0 36 12 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	25 x 4	45.5	0 5 10 02 19 00	7.2	0 0 36 14 99 00	25 x 3.5	0 9 06 71 99 90
1"	25 x 3	45.5	0 5 10 04 19 00	6.9	0 0 36 12 99 00	25 x 3.5	0 9 06 71 99 90
1"	25 x 4	45.5	0 5 10 04 19 00	7.2	0 0 36 14 99 00	25 x 3.5	0 9 06 71 99 90
1"	30 x 4	54.1	0 5 10 05 19 00	10.3	0 0 36 16 99 00	32.9 x 3.5	0 9 06 72 99 90
1"	30 x 5	54.1	0 5 10 05 19 00	11.5	0 0 36 18 99 00	32.9 x 3.5	0 9 06 72 99 90
1"	38 x 5	54.1	0 5 10 06 19 00	11.6	0 0 36 20 99 00	32.9 x 3.5	0 9 06 72 99 90
1 1/4"	30 x 4	69.8	0 5 10 08 19 00	10.3	0 0 36 16 99 00	32.9 x 3.5	0 9 06 72 99 90
1 1/4"	30 x 5	69.8	0 5 10 08 19 00	11.5	0 0 36 18 99 00	32.9 x 3.5	0 9 06 72 99 90
1 1/4"	38 x 4	66.8	0 5 10 10 19 00	14.5	0 0 36 22 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/4"	38 x 5	66.8	0 5 10 10 19 00	15.0	0 0 36 24 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/4"	38 x 6	66.8	0 5 10 10 19 00	15.2	0 0 36 26 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/4"	42 x 2	65.8	0 5 10 16 19 00	15.9	0 0 36 60 99 00	37.7 x 3.5	0 9 06 73 99 90

Continuation on page 247

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Complete with O-ring
(unmounted)

Sample product code, see:

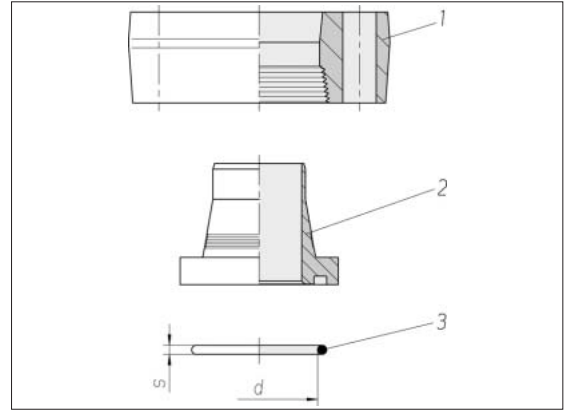
* FE-1600-8/3

** K-1620-8

Tube-to-port flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar²⁾



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	O-ring d x s	Order No. Part 3
1 1/2"	50 x 2.5	83.3	0 5 10 11 19 00*	27.6	0 0 36 28 99 00**	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 5	83.3	0 5 10 11 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 6	83.3	0 5 10 11 19 00	28.0	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 8	83.3	0 5 10 11 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 9	83.3	0 5 10 11 19 00	31.0	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 2.5	136.1	0 5 10 15 19 00	27.6	0 0 36 28 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 5	136.1	0 5 10 15 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 6	136.1	0 5 10 15 19 00	28.0	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 8	136.1	0 5 10 15 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 9	136.1	0 5 10 15 19 00	31.0	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	65 x 3	123.4	0 5 10 12 19 00	35.2	0 0 36 38 99 00	60 x 3.5	0 9 07 54 99 90
2"	65 x 4	123.4	0 5 10 12 19 00	28.8	0 0 36 40 99 00	60 x 3.5	0 9 07 54 99 90
2"	65 x 5	123.4	0 5 10 12 19 00	32.6	0 0 36 42 99 00	56.7 x 3.5	0 9 06 55 99 90
3"	80 x 3	250.7	0 5 10 14 19 00	86.9	0 0 36 48 99 00	85.3 x 3.5	0 9 06 85 99 90

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

¹⁾ Complete with O-ring (unmounted)

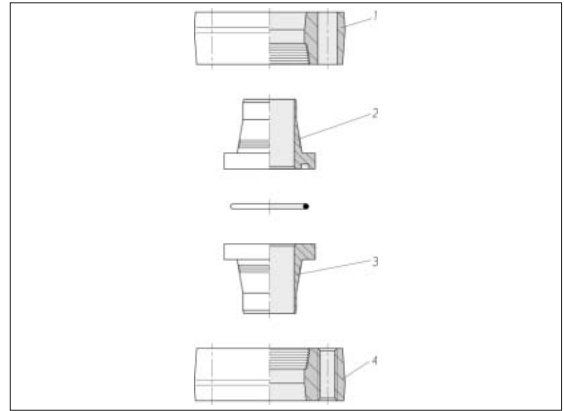
²⁾ According to the ASME Code, a reduced operating pressure applies for the flange sizes 2" and 3"

Sample product code, see:
* FE-5000-24/3
** K-5025-24

Tube-to-tube flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar²⁾



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	kg/100 approx.	Order No. Part 3	kg/100 approx.	Order No. Part 4
1/2"	16 x 2	30.6	0 5 10 00 19 00**	4.1	0 0 36 00 99 00**	3.3	0 0 36 01 19 00**	28.6	0 5 10 50 19 00**
1/2"	16 x 2.5	30.6	0 5 10 00 19 00	4.1	0 0 36 02 99 00	3.4	0 0 36 03 19 00	28.6	0 5 10 50 19 00
1/2"	16 x 3	30.6	0 5 10 00 19 00	4.1	0 0 36 04 99 00	3.5	0 0 36 05 19 00	28.6	0 5 10 50 19 00
3/4"	20 x 2.5	33.7	0 5 10 01 19 00	6.5	0 0 36 06 99 00	5.3	0 0 36 07 19 00	34.0	0 5 10 51 19 00
3/4"	20 x 3	33.7	0 5 10 01 19 00	6.6	0 0 36 08 99 00	5.7	0 0 36 09 19 00	34.0	0 5 10 51 19 00
3/4"	20 x 3.5	33.7	0 5 10 01 19 00	6.9	0 0 36 10 99 00	5.7	0 0 36 11 19 00	34.0	0 5 10 51 19 00
3/4"	25 x 3	45.5	0 5 10 02 19 00	6.9	0 0 36 12 99 00	5.6	0 0 36 13 19 00	30.8	0 5 10 52 19 00
3/4"	25 x 4	45.5	0 5 10 02 19 00	7.2	0 0 36 14 99 00	5.9	0 0 36 15 19 00	30.8	0 5 10 52 19 00
1"	30 x 4	54.1	0 5 10 05 19 00	10.3	0 0 36 16 99 00	8.8	0 0 36 17 19 00	57.7	0 5 10 55 19 00
1"	30 x 5	54.1	0 5 10 05 19 00	11.5	0 0 36 18 99 00	9.9	0 0 36 19 19 00	57.7	0 5 10 55 19 00
1 1/4"	38 x 4	66.8	0 5 10 10 19 00	14.5	0 0 36 22 99 00	13.9	0 0 36 23 19 00	73.4	0 5 10 57 19 00
1 1/4"	38 x 5	66.8	0 5 10 10 19 00	15.0	0 0 36 24 99 00	13.7	0 0 36 25 19 00	73.4	0 5 10 57 19 00
1 1/4"	38 x 6	66.8	0 5 10 10 19 00	15.2	0 0 36 26 99 00	13.6	0 0 36 27 19 00	73.4	0 5 10 57 19 00
1 1/4"	42 x 2	46.0	0 5 10 16 19 00	16.0	0 0 36 60 99 00	15.0	0 0 36 61 19 00	48.0	0 5 10 63 19 00
1 1/2"	50 x 2.5	83.3	0 5 10 11 19 00	27.6	0 0 36 28 99 00	24.9	0 0 36 29 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 5	83.3	0 5 10 11 19 00	28.1	0 0 36 30 99 00	24.9	0 0 36 31 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 6	83.3	0 5 10 11 19 00	28.0	0 0 36 32 99 00	24.4	0 0 36 33 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 8	83.3	0 5 10 11 19 00	31.3	0 0 36 34 99 00	27.4	0 0 36 35 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 9	83.3	0 5 10 11 19 00	31.0	0 0 36 36 99 00	27.1	0 0 36 37 19 00	90.0	0 5 10 58 19 00
2"	65 x 3	123.4	0 5 10 12 19 00	35.2	0 0 36 38 99 00	32.4	0 0 36 39 19 00	129.4	0 5 10 59 19 00
2"	65 x 4	123.4	0 5 10 12 19 00	28.8	0 0 36 40 99 00	26.9	0 0 36 41 19 00	129.4	0 5 10 59 19 00
2"	65 x 5	123.4	0 5 10 12 19 00	32.6	0 0 36 42 99 00	32.0	0 0 36 43 19 00	129.4	0 5 10 59 19 00
3"	80 x 3	250.7	0 5 10 14 19 00	86.9	0 0 36 48 99 00	79.8	0 0 36 49 19 00	257.9	0 5 10 61 19 00

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

²⁾ According to the ASME Code,
a reduced operating pressure
applies for the flange sizes 2" and 3"

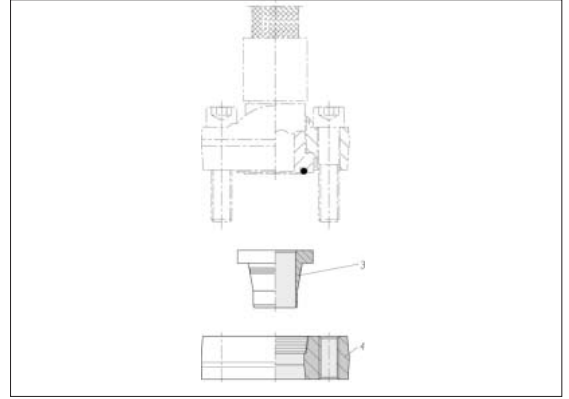
¹⁾ Complete with O-ring
(supplied as separate part)

** Sample product code, see:
(Part 1 to Part 4)
FE-1600-8/3
K-1620-8
KO-1620-8
FV-1600-8/3

Tube-to-hose flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
Standard series
(3000 psi)

Max. permissible operating
pressure (PB) 250 bar¹⁾



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 3	kg/100 approx.	Order No. Part 4
1/2"	16 x 2	3.3	0 0 36 01 19 00*	28.6	0 5 10 50 19 00**
1/2"	16 x 2.5	3.4	0 0 36 03 19 00	28.6	0 5 10 50 19 00
1/2"	16 x 3	3.5	0 0 36 05 19 00	28.6	0 5 10 50 19 00
3/4"	20 x 2.5	5.3	0 0 36 07 19 00	34.0	0 5 10 51 19 00
3/4"	20 x 3	5.7	0 0 36 09 19 00	34.0	0 5 10 51 19 00
3/4"	20 x 3.5	5.7	0 0 36 11 19 00	34.0	0 5 10 51 19 00
3/4"	25 x 3	5.6	0 0 36 13 19 00	30.8	0 5 10 52 19 00
3/4"	25 x 4	5.9	0 0 36 15 19 00	30.8	0 5 10 52 19 00
1"	30 x 4	8.8	0 0 36 17 19 00	57.7	0 5 10 55 19 00
1"	30 x 5	9.9	0 0 36 19 19 00	57.7	0 5 10 55 19 00
1 1/4"	30 x 4	8.8	0 0 36 17 19 00	75.5	0 5 10 62 19 00
1 1/4"	30 x 5	9.9	0 0 36 19 19 00	75.5	0 5 10 62 19 00
1 1/4"	38 x 4	13.9	0 0 36 23 19 00	73.4	0 5 10 57 19 00
1 1/4"	38 x 5	13.7	0 0 36 25 19 00	73.4	0 5 10 57 19 00
1 1/4"	38 x 6	13.6	0 0 36 27 19 00	73.4	0 5 10 57 19 00
1 1/4"	42 x 2	16.0	0 0 36 61 19 00	48.0	0 5 10 63 19 00
1 1/2"	50 x 2.5	24.9	0 0 36 29 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 5	24.9	0 0 36 31 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 6	24.4	0 0 36 33 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 8	27.4	0 0 36 35 19 00	90.0	0 5 10 58 19 00
1 1/2"	50 x 9	27.1	0 0 36 37 19 00	90.0	0 5 10 58 19 00
2"	65 x 3	32.4	0 0 36 39 19 00	129.4	0 5 10 59 19 00
2"	65 x 4	26.9	0 0 36 41 19 00	129.4	0 5 10 59 19 00
2"	65 x 5	32.0	0 0 36 43 19 00	129.4	0 5 10 59 19 00
3"	80 x 3	79.8	0 0 36 49 19 00	257.9	0 5 10 61 19 00

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

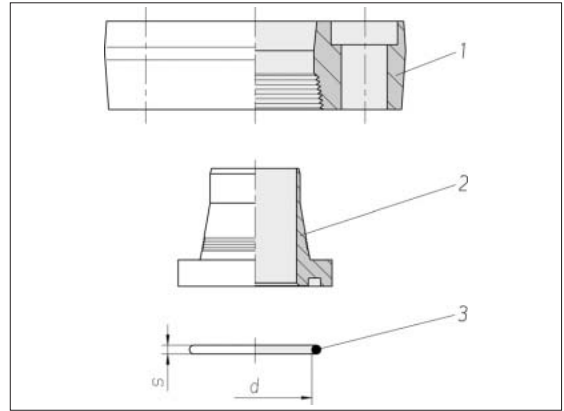
¹⁾ According to the ASME Code,
a reduced operating pressure
applies for the flange sizes 2" and 3"

Sample product code, see:
* KO-1620-8
** FV-1600-8/3

Tube-to-port flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	O-ring d x s	Order No. Part 3
1/2"	16 x 2	26.1	0 5 10 20 19 00*	4.1	0 0 36 00 99 00**	18.6 x 3.5	0 9 06 74 99 90
1/2"	16 x 2.5	26.1	0 5 10 20 19 00	4.1	0 0 36 02 99 00	18.6 x 3.5	0 9 06 74 99 90
1/2"	16 x 3	26.1	0 5 10 20 19 00	4.1	0 0 36 04 99 00	18.6 x 3.5	0 9 06 74 99 90
3/4"	20 x 2.5	49.4	0 5 10 21 19 00	6.5	0 0 36 06 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	20 x 3	49.4	0 5 10 21 19 00	6.6	0 0 36 08 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	20 x 3.5	49.4	0 5 10 21 19 00	6.9	0 0 36 10 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	25 x 3	45.5	0 5 10 22 19 00	6.9	0 0 36 12 99 00	25 x 3.5	0 9 06 71 99 90
3/4"	25 x 4	45.5	0 5 10 22 19 00	7.2	0 0 36 14 99 00	25 x 3.5	0 9 06 71 99 90
1"	30 x 4	68.7	0 5 10 23 19 00	10.3	0 0 36 16 99 00	32.9 x 3.5	0 9 06 72 99 90
1"	30 x 5	68.7	0 5 10 23 19 00	11.5	0 0 36 18 99 00	32.9 x 3.5	0 9 06 72 99 90
1"	38 x 5	59.6	0 5 10 24 19 00	11.7	0 0 36 20 99 00	32.9 x 3.5	0 9 06 72 99 90
1 1/4"	38 x 4	86.1	0 5 10 25 19 00	14.5	0 0 36 22 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/4"	38 x 5	86.1	0 5 10 25 19 00	15.0	0 0 36 24 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/4"	38 x 6	86.1	0 5 10 25 19 00	15.1	0 0 36 26 99 00	37.7 x 3.5	0 9 06 73 99 90
1 1/2"	50 x 5	154.0	0 5 10 28 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 6	154.0	0 5 10 28 19 00	28.0	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 8	154.0	0 5 10 28 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
1 1/2"	50 x 9	154.0	0 5 10 28 19 00	31.0	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 5	304.0	0 5 10 32 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 6	304.0	0 5 10 32 19 00	28.0	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 8	304.0	0 5 10 32 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	50 x 9	304.0	0 5 10 32 19 00	31.0	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90
2"	65 x 8	248.3	0 5 10 30 19 00	47.1	0 0 36 44 99 00	56.7 x 3.5	0 9 06 55 99 90

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Complete with O-ring
(supplied as separate part)

Sample product code, see:

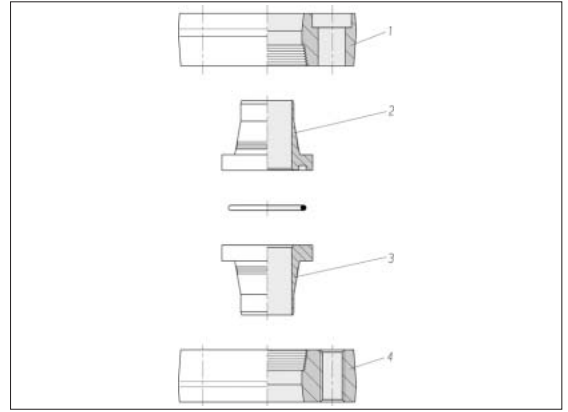
* FE-1600-8/6

** K-1620-8

Tube-to-tube flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx. Part 2 ¹⁾	Order No.	kg/100 approx. Part 3	Order No.	kg/100 approx. Part 4	Order No.
1/2"	16 x 2	26.1	0 5 10 20 19 00**	4.1	0 0 36 00 99 00**	3.3	0 0 36 01 19 00**	28.5	0 5 10 70 19 00**
1/2"	16 x 2.5	26.1	0 5 10 20 19 00	4.1	0 0 36 02 99 00	3.4	0 0 36 03 19 00	28.5	0 5 10 70 19 00
1/2"	16 x 3	26.1	0 5 10 20 19 00	4.1	0 0 36 04 99 00	3.5	0 0 36 05 19 00	28.5	0 5 10 70 19 00
3/4"	20 x 2.5	49.4	0 5 10 21 19 00	6.5	0 0 36 06 99 00	5.3	0 0 36 07 19 00	55.7	0 5 10 71 19 00
3/4"	20 x 3	49.4	0 5 10 21 19 00	6.6	0 0 36 08 99 00	5.7	0 0 36 09 19 00	55.7	0 5 10 71 19 00
3/4"	20 x 3.5	49.4	0 5 10 21 19 00	6.9	0 0 36 10 99 00	5.7	0 0 36 11 19 00	55.7	0 5 10 71 19 00
3/4"	25 x 3	45.5	0 5 10 22 19 00	6.9	0 0 36 12 99 00	5.6	0 0 36 13 19 00	52.6	0 5 10 72 19 00
3/4"	25 x 4	45.5	0 5 10 22 19 00	7.2	0 0 36 14 99 00	5.9	0 0 36 15 19 00	52.6	0 5 10 72 19 00
1"	30 x 4	68.7	0 5 10 23 19 00	10.3	0 0 36 16 99 00	8.8	0 0 36 17 19 00	82.0	0 5 10 73 19 00
1"	30 x 5	68.7	0 5 10 23 19 00	11.5	0 0 36 18 99 00	9.9	0 0 36 19 19 00	82.0	0 5 10 73 19 00
1 1/4"	38 x 4	86.1	0 5 10 25 19 00	14.5	0 0 36 22 99 00	13.9	0 0 36 23 19 00	100.5	0 5 10 75 19 00
1 1/4"	38 x 5	86.1	0 5 10 25 19 00	15.0	0 0 36 24 99 00	13.6	0 0 36 25 19 00	100.5	0 5 10 75 19 00
1 1/4"	38 x 6	86.1	0 5 10 25 19 00	15.1	0 0 36 26 99 00	13.5	0 0 36 27 19 00	100.5	0 5 10 75 19 00
1 1/2"	50 x 5	154.0	0 5 10 28 19 00	28.1	0 0 36 30 99 00	24.9	0 0 36 31 19 00	177.2	0 5 10 76 19 00
1 1/2"	50 x 6	154.0	0 5 10 28 19 00	28.0	0 0 36 32 99 00	24.4	0 0 36 33 19 00	177.2	0 5 10 76 19 00
1 1/2"	50 x 8	154.0	0 5 10 28 19 00	31.3	0 0 36 34 99 00	27.4	0 0 36 35 19 00	177.2	0 5 10 76 19 00
1 1/2"	50 x 9	154.0	0 5 10 28 19 00	31.0	0 0 36 36 99 00	27.1	0 0 36 37 19 00	177.2	0 5 10 76 19 00
2"	65 x 8	230.0	0 5 10 30 19 00	47.1	0 0 36 44 99 00	42.6	0 0 36 45 19 00	253.1	0 5 10 77 19 00

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Complete with O-ring
(supplied as separate part)

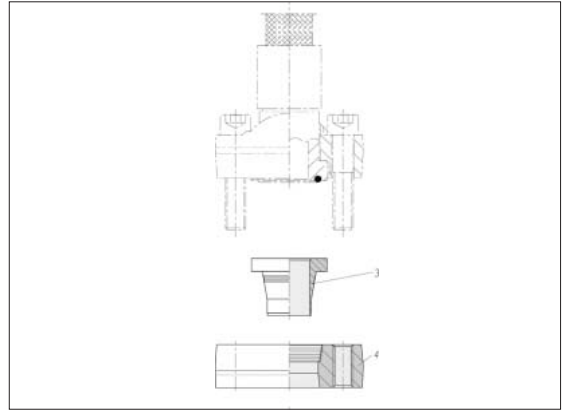
** Sample product code, see:
(Part 1 to Part 4)
FE-1600-8/6

K-1620-8
KO-1620-8
FV-1600-8/6

Tube-to-hose flange couplings ZAKO system Component parts

Hole pattern according to
SAE J 518 C / ISO 6162
High-pressure series
(6000 psi)

Max. permissible operating
pressure (PB) 400 bar



Flange size	Tube d1 x s	kg/100 approx.	Order No. Part 3	kg/100 approx.	Order No. Part 4
1/2"	16 x 2	3.3	0 0 36 01 19 00*	28.5	0 5 10 70 19 00**
1/2"	16 x 2.5	3.4	0 0 36 03 19 00	28.5	0 5 10 70 19 00
1/2"	16 x 3	3.5	0 0 36 05 19 00	28.5	0 5 10 70 19 00
3/4"	20 x 2.5	5.3	0 0 36 07 19 00	55.7	0 5 10 71 19 00
3/4"	20 x 3	5.7	0 0 36 09 19 00	55.7	0 5 10 71 19 00
3/4"	20 x 3.5	5.7	0 0 36 11 19 00	55.7	0 5 10 71 19 00
3/4"	25 x 3	5.6	0 0 36 13 19 00	52.6	0 5 10 72 19 00
3/4"	25 x 4	5.9	0 0 36 15 19 00	52.6	0 5 10 72 19 00
1"	30 x 4	8.8	0 0 36 17 19 00	82.0	0 5 10 73 19 00
1"	30 x 5	9.8	0 0 36 19 19 00	82.0	0 5 10 73 19 00
1"	38 x 5	11.0	0 0 36 21 19 00	70.1	0 5 10 74 19 00
1 1/4"	38 x 4	13.8	0 0 36 23 19 00	100.5	0 5 10 75 19 00
1 1/4"	38 x 5	13.6	0 0 36 25 19 00	100.5	0 5 10 75 19 00
1 1/4"	38 x 6	13.5	0 0 36 27 19 00	100.5	0 5 10 75 19 00
1 1/2"	50 x 6	24.4	0 0 36 33 19 00	177.2	0 5 10 76 19 00
1 1/2"	50 x 8	27.4	0 0 36 35 19 00	177.2	0 5 10 76 19 00
1 1/2"	50 x 9	27.1	0 0 36 37 19 00	177.2	0 5 10 76 19 00
2"	65 x 8	42.6	0 0 36 45 19 00	253.1	0 5 10 77 19 00

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

Sample product code, see:

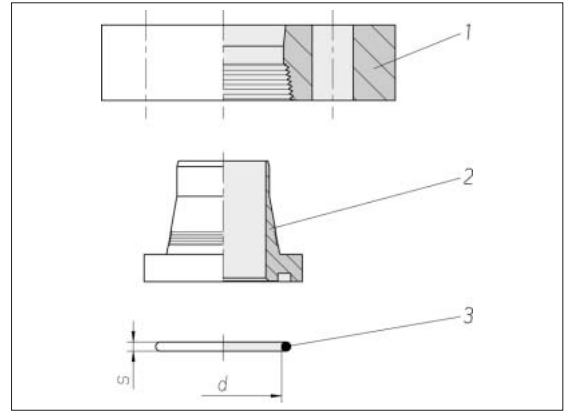
* KO-1620-8

** FV-1600-8/6

Tube-to-port flange couplings ZAKO system Component parts

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar²⁾



Flange size NW	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	O-ring d x s	Order No. Part 3
12	16 x 2	30.6	0 5 11 00 19 00*	4.1	0 0 36 00 99 00**	18.6 x 3.5	0 9 06 74 99 90
11	16 x 2.5	30.6	0 5 11 00 19 00	4.1	0 0 36 02 99 00	18.6 x 3.5	0 9 06 74 99 90
10	16 x 3	30.6	0 5 11 00 19 00	4.1	0 0 36 04 99 00	18.6 x 3.5	0 9 06 74 99 90
15	20 x 2.5	35.2	0 5 11 01 19 00	6.5	0 0 36 06 99 00	25 x 3.5	0 9 06 71 99 90
14	20 x 3	35.2	0 5 11 01 19 00	6.6	0 0 36 08 99 00	25 x 3.5	0 9 06 71 99 90
13	20 x 3.5	35.2	0 5 11 01 19 00	6.9	0 0 36 10 99 00	25 x 3.5	0 9 06 71 99 90
19	25 x 3	45.0	0 5 11 02 19 00	6.9	0 0 36 12 99 00	25 x 3.5	0 9 06 71 99 90
17	25 x 4	45.0	0 5 11 02 19 00	7.3	0 0 36 14 99 00	25 x 3.5	0 9 06 71 99 90
22	30 x 4	54.8	0 5 11 03 19 00	10.3	0 0 36 16 99 00	32.9 x 3.5	0 9 06 72 99 90
20	30 x 5	54.8	0 5 11 03 19 00	11.5	0 0 36 18 99 00	32.9 x 3.5	0 9 06 72 99 90
30	38 x 4	87.7	0 5 11 04 19 00	14.5	0 0 36 22 99 00	37.7 x 3.5	0 9 06 73 99 90
28	38 x 5	87.7	0 5 11 04 19 00	15.0	0 0 36 24 99 00	37.7 x 3.5	0 9 06 73 99 90
26	38 x 6	87.7	0 5 11 04 19 00	15.2	0 0 36 26 99 00	37.7 x 3.5	0 9 06 73 99 90
45	50 x 2.5	129.0	0 5 11 22 19 00	27.6	0 0 36 28 99 00	47.2 x 3.5	0 9 06 54 99 90
40	50 x 5	129.0	0 5 11 22 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
38	50 x 6	129.0	0 5 11 22 19 00	28.1	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
34	50 x 8	129.0	0 5 11 22 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
32	50 x 9	129.0	0 5 11 22 19 00	31.5	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90
45	50 x 2.5	207.7	0 5 11 05 19 00	27.6	0 0 36 28 99 00	47.2 x 3.5	0 9 06 54 99 90
40	50 x 5	207.7	0 5 11 05 19 00	28.1	0 0 36 30 99 00	47.2 x 3.5	0 9 06 54 99 90
38	50 x 6	207.7	0 5 11 05 19 00	28.1	0 0 36 32 99 00	47.2 x 3.5	0 9 06 54 99 90
34	50 x 8	207.7	0 5 11 05 19 00	31.3	0 0 36 34 99 00	47.2 x 3.5	0 9 06 54 99 90
32	50 x 9	207.7	0 5 11 05 19 00	31.5	0 0 36 36 99 00	47.2 x 3.5	0 9 06 54 99 90

Continuation on page 254

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

²⁾ According to the ASME Code, a reduced operating pressure applies for the flange size NW 40
Order No.: 0 5 11 25 19 00

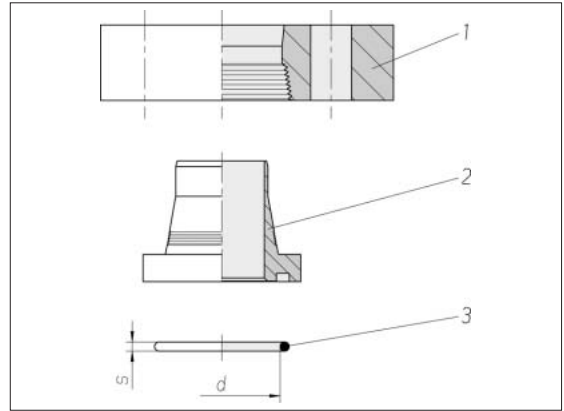
¹⁾ Complete with O-ring (supplied as separate part)

Sample product code, see:
* FE-1600
** K-1620-8

Tube-to-port flange couplings ZAKO system Component parts

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar²⁾



Flange size NW	Tube d1 x s	kg/100 approx.	Order No. Part 1	kg/100 approx.	Order No. Part 2 ¹⁾	O-ring d x s	Order No. Part 3
54	60 x 3	182.2	0 5 11 23 19 00*	43.9	0 0 36 52 99 00**	56.7 x 3.5	0 9 06 55 99 90
50	60 x 5	182.2	0 5 11 23 19 00	50.0	0 0 36 58 99 00	56.7 x 3.5	0 9 06 55 99 90
40	60 x 10	182.2	0 5 11 23 19 00	47.1	0 0 36 54 99 00	56.7 x 3.5	0 9 06 55 99 90
40	60 x 10	383.7	0 5 11 25 19 00	88.7	0 0 36 81 99 00	60 x 5	0 9 01 09 99 90
49	65 x 8	280.2	0 5 11 06 19 00	47.1	0 0 36 44 99 00	56.7 x 3.5	0 9 06 55 99 90
50	75 x 12.5	307.0	0 5 11 08 19 00	99.0	0 0 36 62 99 00	60 x 5	0 9 01 09 99 90
74	80 x 3	552.0	0 5 11 07 19 00	86.9	0 0 36 48 99 00	85.3 x 3.5	0 9 06 85 99 90
64	80 x 8	552.0	0 5 11 07 19 00	128.1	0 0 36 56 99 00	75 x 5	0 9 07 66 99 90
60	80 x 10	552.0	0 5 11 07 19 00	126.3	0 0 36 50 99 00	75 x 5	0 9 07 66 99 90
60	88 x 14	576.0	0 5 11 09 19 00	158.0	0 0 36 64 99 00	75 x 5	0 9 07 66 99 90
50	75 x 12.5	584.0	0 5 11 24 19 00	150.0	0 0 36 80 99 00	75 x 5	0 9 07 66 99 90
70	101.6 x 16	648.0	0 5 11 13 19 00	172.0	0 0 36 86 99 00	80 x 5	0 9 01 13 99 90
80	114.3 x 17.5	760.0	0 5 11 41 19 00	260.0	0 0 36 98 99 00	95 x 5	0 9 01 12 99 90
80	120 x 20	725.8	0 5 11 11 19 00	260.0	0 0 36 84 99 00	95 x 5	0 9 01 12 99 90

When selecting the tube dimensions, refer to the pressure specifications of the tube manufacturer.

²⁾ According to the ASME Code, a reduced operating pressure applies for the flange size NW 40
Order No.: 0 5 11 25 19 00

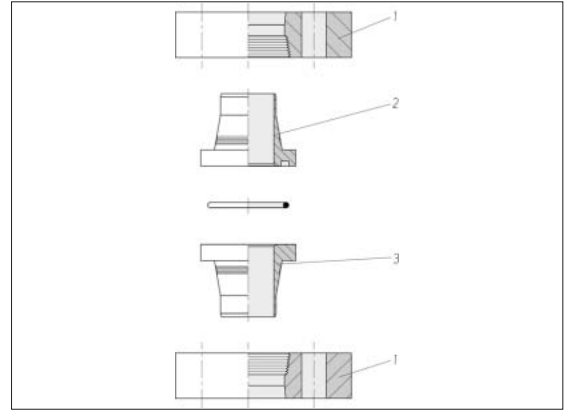
¹⁾ Complete with O-ring (supplied as separate part)

Sample product code, see:
* FE-6000
** K-6030-8

Tube-to-tube flange couplings ZAKO system Component parts

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar



Flange size NW	Tube d1 x s	kg/100 approx.	Order No. Part 1 ²⁾	kg/100 approx.	Order No. Part 2 ¹⁾	kg/100 approx.	Order No. Part 3
12	16 x 2	30.6	0 5 11 00 19 00*	4.1	0 0 36 00 99 00*	3.3	0 0 36 01 19 00*
11	16 x 2.5	30.6	0 5 11 00 19 00	4.1	0 0 36 02 99 00	3.4	0 0 36 03 19 00
10	16 x 3	30.6	0 5 11 00 19 00	4.1	0 0 36 04 99 00	3.5	0 0 36 05 19 00
15	20 x 2.5	35.2	0 5 11 01 19 00	6.5	0 0 36 06 99 00	5.3	0 0 36 07 19 00
14	20 x 3	35.2	0 5 11 01 19 00	6.6	0 0 36 08 99 00	5.7	0 0 36 09 19 00
13	20 x 3.5	35.2	0 5 11 01 19 00	6.9	0 0 36 10 99 00	5.7	0 0 36 11 19 00
19	25 x 3	45.0	0 5 11 02 19 00	6.9	0 0 36 12 99 00	5.6	0 0 36 13 19 00
17	25 x 4	45.0	0 5 11 02 19 00	7.3	0 0 36 14 99 00	5.9	0 0 36 15 19 00
22	30 x 4	54.8	0 5 11 03 19 00	10.3	0 0 36 16 99 00	8.8	0 0 36 17 19 00
20	30 x 5	54.8	0 5 11 03 19 00	11.5	0 0 36 18 99 00	9.8	0 0 36 19 19 00
30	38 x 4	87.7	0 5 11 04 19 00	14.5	0 0 36 22 99 00	13.9	0 0 36 23 19 00
28	38 x 5	87.7	0 5 11 04 19 00	15.0	0 0 36 24 99 00	13.7	0 0 36 25 19 00
26	38 x 6	87.7	0 5 11 04 19 00	15.2	0 0 36 26 99 00	13.6	0 0 36 27 19 00
45	50 x 2.5	129.0	0 5 11 22 19 00	27.6	0 0 36 28 99 00	24.9	0 0 36 29 19 00
40	50 x 5	129.0	0 5 11 22 19 00	28.1	0 0 36 30 99 00	24.9	0 0 36 31 19 00
38	50 x 6	129.0	0 5 11 22 19 00	28.1	0 0 36 32 99 00	24.4	0 0 36 33 19 00
34	50 x 8	129.0	0 5 11 22 19 00	31.3	0 0 36 34 99 00	27.4	0 0 36 35 19 00
32	50 x 9	129.0	0 5 11 22 19 00	31.5	0 0 36 36 99 00	27.6	0 0 36 37 19 00
45	50 x 2.5	207.7	0 5 11 05 19 00*	27.6	0 0 36 28 99 00	24.9	0 0 36 29 19 00
40	50 x 5	207.7	0 5 11 05 19 00	28.1	0 0 36 30 99 00	24.9	0 0 36 31 19 00
38	50 x 6	207.7	0 5 11 05 19 00	28.1	0 0 36 32 99 00	24.4	0 0 36 33 19 00
34	50 x 8	207.7	0 5 11 05 19 00	31.3	0 0 36 34 99 00	27.4	0 0 36 35 19 00
32	50 x 9	207.7	0 5 11 05 19 00	31.5	0 0 36 36 99 00	27.6	0 0 36 37 19 00

Continuation on page 256

When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Complete with O-ring
(supplied as separate part)

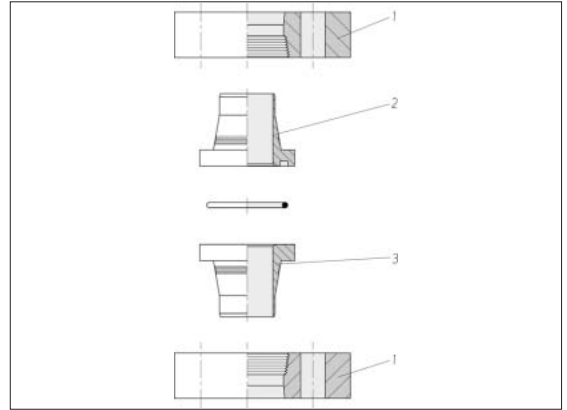
²⁾ 2 each per tube-to-tube flange
coupling

Sample product code, see:
* FE-1600
K-1620-8
KO-1620-8

Tube-to-tube flange couplings ZAKO system Component parts

VOSS square
flange hole pattern
High-pressure series

Max. permissible operating
pressure (PB) 400 bar



Flange size NW	Tube d1 x s	kg/100 approx.	Order No. Part 1 ²⁾	kg/100 approx.	Order No. Part 2 ¹⁾	kg/100 approx.	Order No. Part 3
54	60 x 3	182.2	0 5 11 23 19 00*	43.9	0 0 36 52 99 00*	40.0	0 0 36 53 19 00*
50	60 x 5	182.2	0 5 11 23 19 00	50.0	0 0 36 58 99 00	51.0	0 0 36 59 19 00
40	60 x 10	182.2	0 5 11 23 19 00	47.5	0 0 36 54 99 00	40.0	0 0 36 55 19 00
49	65 x 8	280.2	0 5 11 06 19 00	47.1	0 0 36 44 99 00	42.6	0 0 36 45 19 00
50	75 x 12.5	307.0	0 5 11 08 19 00	99.0	0 0 36 62 99 00	94.0	0 0 36 63 19 00
74	80 x 3	552.0	0 5 11 07 19 00	86.9	0 0 36 48 99 00	79.8	0 0 36 49 19 00
64	80 x 8	552.0	0 5 11 07 19 00	128.1	0 0 36 56 99 00	122.3	0 0 36 57 19 00
60	80 x 10	552.0	0 5 11 07 19 00	126.3	0 0 36 50 99 00	120.1	0 0 36 51 19 00
60	88 x 14	576.0	0 5 11 09 19 00	158.0	0 0 36 64 99 00	154.0	0 0 36 65 19 00
70	101.6 x 16	400.0	0 5 11 13 19 00	172.0	0 0 36 86 99 00	154.0	0 0 36 87 19 00
70	101.6 x 16	420.0	0 5 11 14 19 00	–	–	–	–
80	114.3 x 17.5	772.5	0 5 11 41 19 00	260.0	0 0 36 98 99 00	230.0	0 0 36 99 19 00
80	120 x 20	725.8	0 5 11 11 19 00	260.0	0 0 36 84 99 00	230.0	0 0 36 83 19 00
80	120 x 20	759.5	0 5 11 12 19 00	–	–	–	–

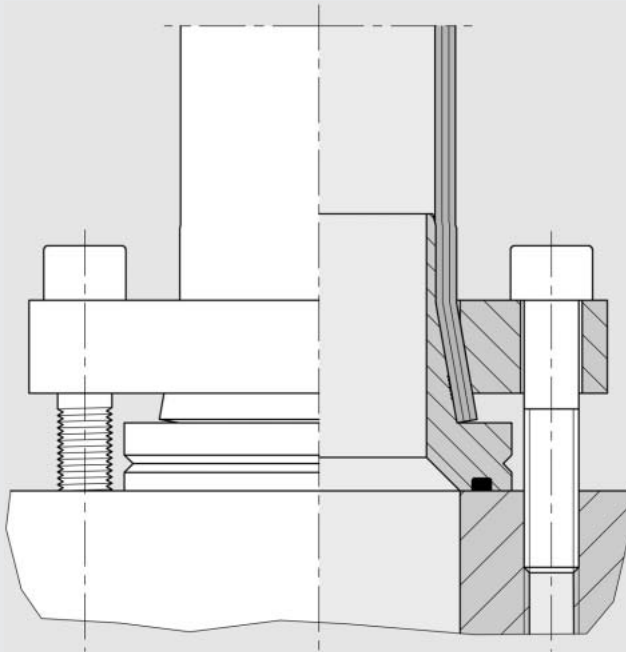
When selecting the tube dimensions,
refer to the pressure specifications of
the tube manufacturer.

¹⁾ Complete with O-ring
(supplied as separate part)

²⁾ 2 each per tube-to-tube flange
coupling

Sample product code, see:
* FE-6000
K-6030-8
KO-6030-8

ZAKO Low Pressure

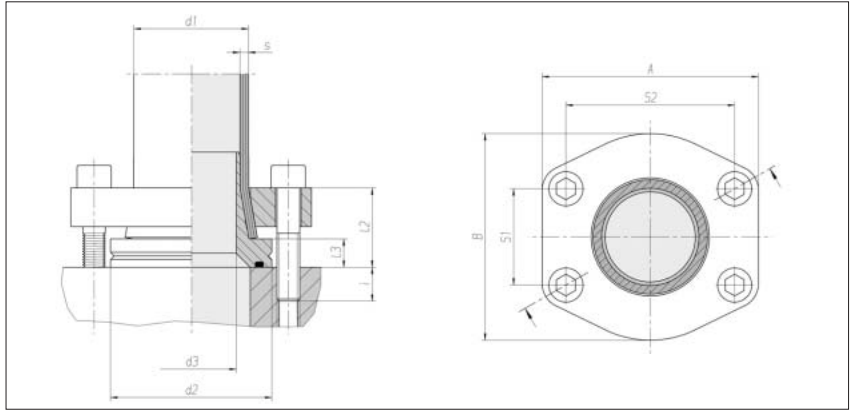


Experience plus ideas

Tube-to-port flange couplings ZAKO system Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1

Max. permissible operating
pressure (PB) 60 bar



Flange size NW	Tube d1 x s	d2	d3	l2	l3	S1	S2	A	B	i	4 x cheese head screw*	Nm**	kg/100 approx.	Order No.
1 1/2"	48.3 x 3.2	63	39	35	10	35.7	69.9	94	83	15.5	M 12 x 50	85	82.6	0 5 18 60 20 00
1 1/2"	48.3 x 4	63	36.5	35	10	35.7	69.9	94	83	15.5	M 12 x 50	85	85.1	0 5 18 62 20 00
2"	60.3 x 3.6	72	49	42	15	42.9	77.8	102	97	18	M 12 x 60	85	109.8	0 5 18 80 20 00
2 1/2"	60.3 x 3.6	85	49	42	15	50.8	88.9	114	109	18	M 12 x 60	85	161.8	0 5 18 64 20 00
2 1/2"	60.3 x 4.5	85	47.5	42	15	50.8	88.9	114	109	18	M 12 x 60	85	149.5	0 5 18 66 20 00
3"	76.1 x 3.6	100	65.5	50	16	61.9	106.4	135	131	20	M 16 x 70	210	262.2	0 5 18 68 20 00
3"	76.1 x 4.5	100	63.5	50	16	61.9	106.4	135	131	20	M 16 x 70	210	216.8	0 5 18 70 20 00
3 1/2"	88.9 x 3.6	114	78	56	20	69.9	120.7	152	140	19	M 16 x 75	210	341.0	0 5 18 72 20 00
3 1/2"	88.9 x 5	114	74.5	56	20	69.9	120.7	152	140	19	M 16 x 75	210	347.2	0 5 18 74 20 00
5"	114.3 x 3.6	150	103	57	20	92.1	152.4	184	181	18.5	M 16 x 75	210	525.1	0 5 18 76 20 00
5"	114.3 x 6.3	150	96	57	20	92.1	152.4	184	181	18.5	M 16 x 75	210	548.7	0 5 18 78 20 00

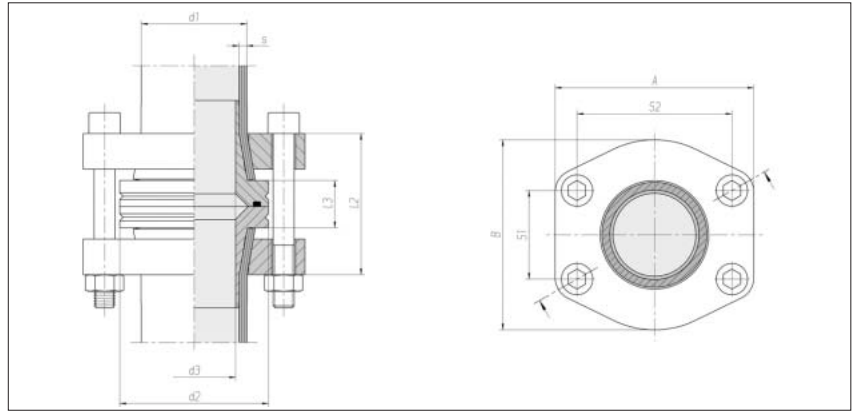
* Screws according to DIN 912,
property class 8.8

** Recommended tightening torque
(Nm max.) at friction coefficient
 μ total: 0,14

Tube-to-tube flange couplings ZAKO system Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1

Max. permissible operating
pressure (PB) 60 bar



Flange size NW	Tube d1 x s	d2	d3	l2 approx.	l3	S1	S2	A	B	4 x cheese head screw*	Nm**	kg/100 approx.	Order No.
1 1/2"	48.3 x 3.2	63	39	66	17	35.7	69.9	94	83	M 12 x 80	85	168.0	0 5 18 61 20 00
1 1/2"	48.3 x 4	63	36.5	66	17	35.7	69.9	94	83	M 12 x 80	85	173.0	0 5 18 63 20 00
2"	60.3 x 3.6	72	49	81	27	42.9	77.8	102	97	M 12 x 100	85	222.0	0 5 18 81 20 00
2 1/2"	60.3 x 3.6	85	49	81	27	50.8	88.9	114	109	M 12 x 100	85	323.0	0 5 18 65 20 00
2 1/2"	60.3 x 4.5	85	47.5	81	27	50.8	88.9	114	109	M 12 x 100	85	302.0	0 5 18 67 20 00
3"	76.1 x 3.6	100	65.5	96	28	61.9	106.4	135	131	M 16 x 110	210	530.0	0 5 18 69 20 00
3"	76.1 x 4.5	100	63.5	96	28	61.9	106.4	135	131	M 16 x 110	210	446.0	0 5 18 71 20 00
3 1/2"	88.9 x 3.6	114	78	108	36	69.9	120.7	152	140	M 16 x 130	210	682.0	0 5 18 73 20 00
3 1/2"	88.9 x 5	114	74.5	108	36	69.9	120.7	152	140	M 16 x 130	210	693.0	0 5 18 75 20 00
5"	114.3 x 3.6	150	103	108	36	92.1	152.4	184	181	M 16 x 130	210	1044.0	0 5 18 77 20 00
5"	114.3 x 6.3	150	96	108	36	92.1	152.4	184	181	M 16 x 130	210	1087.0	0 5 18 79 20 00

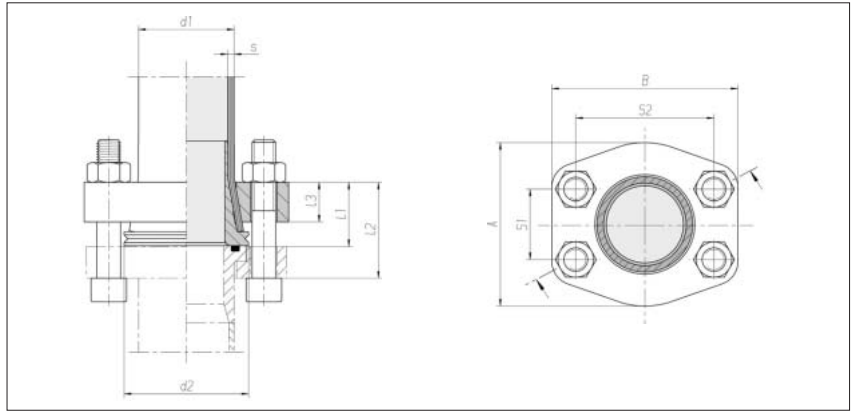
* Screws according to DIN 912,
property class 8.8

** Recommended tightening torque
(Nm max.) at friction coefficient
 μ total: 0,14

Tube-to-tube flange couplings ZAKO system Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1

Max. permissible operating
pressure (PB) 60 bar



Flange size NW	Tube d1 x s	d2	l1 approx.	l2 approx.	l3	S1	S2	A	B	4 x cheese head screw*	Nm**	kg/100 approx.	Order No.
1 1/2"	48.3 x 3.2	63	31.5	47.5	20	35.7	69.9	83	94	M12 x 70	85	86.0	0 5 18 82 20 00
1 1/2"	48.3 x 4	63	31.5	47.5	20	35.7	69.9	83	94	M12 x 70	85	88.0	0 5 18 83 20 00
2"	60.3 x 3.6	72	39	55	20.5	42.9	77.8	97	102	M12 x 80	85	113.0	0 5 18 84 20 00
2 1/2"	60.3 x 3.6	85	39	58	20.5	50.8	88.9	109	114	M12 x 80	85	161.0	0 5 18 85 20 00
2 1/2"	60.3 x 4.5	85	39	58	20.5	50.8	88.9	109	114	M12 x 80	85	152.0	0 5 18 86 20 00
3"	76.1 x 3.6	100	46	68	27	61.9	106.4	131	135	M16 x 90	210	268.0	0 5 18 87 20 00
3"	76.1 x 4.5	100	46	68	27	61.9	106.4	131	135	M16 x 90	210	229.0	0 5 18 88 20 00
3 1/2"	88.9 x 3.6	114	52	74	27.5	69.9	120.7	140	152	M16 x 110	210	341.0	0 5 18 89 20 00
3 1/2"	88.9 x 5	114	52	74	27.5	69.9	120.7	140	152	M16 x 110	210	347.0	0 5 18 90 20 00
5"	114.3 x 3.6	150	52.5	80.5	27.5	92.1	152.4	181	184	M16 x 110	210	519.0	0 5 18 91 20 00
5"	114.3 x 6.3	150	52.5	80.5	27.5	92.1	152.4	181	184	M16 x 110	210	539.0	0 5 18 92 20 00

* Screws according to DIN 912,
property class 8.8

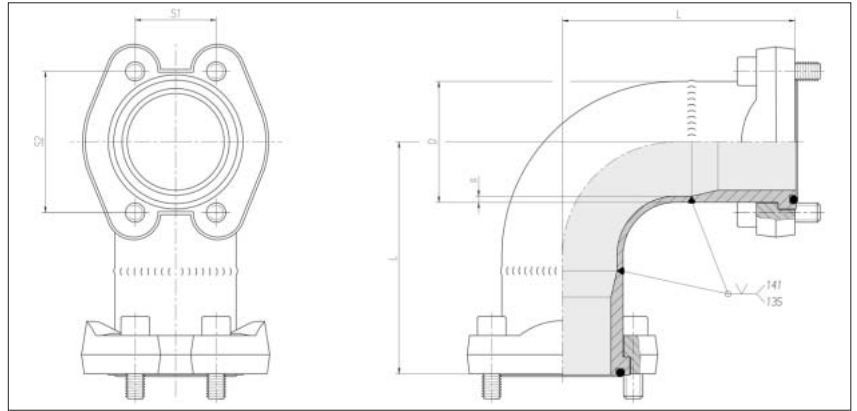
** Recommended tightening torque
(Nm max.) at friction coefficient
 μ total: 0,14

Tube-to-tube flange couplings ZAKO system Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1

90° bend

Max. permissible operating
pressure (PB) 60 bar



Flange size NW	L	S1	S2	4 x cheese head screw*	O-ring	Nm**	Order No.
1 1/2"	102	35.7	69.9	M 12 x 35	47.22 x 3.53	85	0 5 00 58 20 00
2"	111	42.9	77.8	M 12 x 35	56.74 x 3.53	85	0 5 00 60 20 00
2 1/2"	127	50.8	88.9	M 12 x 40	69.44 x 3.53	85	0 5 00 62 20 00
3"	130	61.9	106.4	M 16 x 45	85.32 x 3.53	210	0 5 00 64 20 00
3 1/2"	152	69.9	120.7	M 16 x 45	98.02 x 3.53	210	0 5 00 66 20 00
5"	175	92.1	152.4	M 16 x 50	136.12 x 3.53	210	0 5 00 68 20 00

* Screws according to DIN 912,
property class 8.8

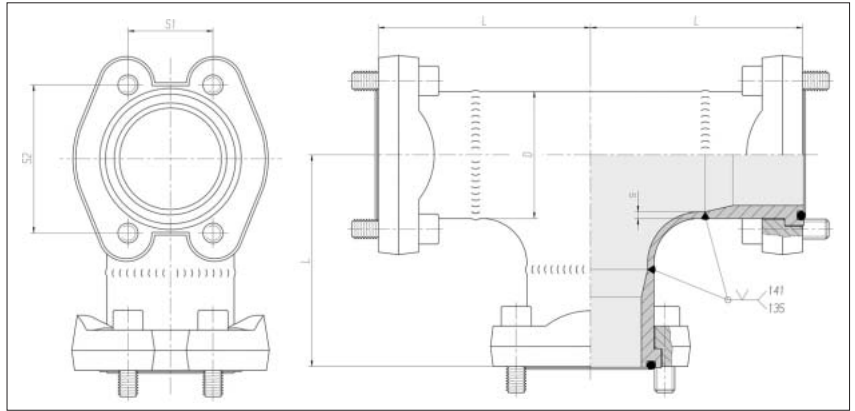
** Recommended tightening torque
(Nm max.) at friction coefficient
 μ total: 0,14

Tube-to-tube flange couplings ZAKO system Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1

T- piece

Max. permissible operating
pressure (PB) 60 bar

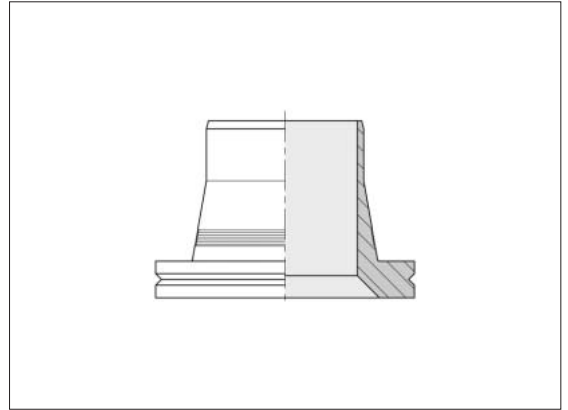


Flange size NW	L	S1	S2	4 x cheese Zyl.-Schr.*	O-ring	Nm**	Order No.
1 1/2"	102	35.7	69.9	M 12 x 35	47.22 x 3.53	85	0 5 00 59 20 00
2"	111	42.9	77.8	M 12 x 35	56.74 x 3.53	85	0 5 00 61 20 00
2 1/2"	127	50.8	88.9	M 12 x 40	69.44 x 3.53	85	0 5 00 63 20 00
3"	130	61.9	106.4	M 16 x 45	85.32 x 3.53	210	0 5 00 65 20 00
3 1/2"	152	69.9	120.7	M 16 x 45	98.02 x 3.53	210	0 5 00 67 20 00
5"	175	92.1	152.4	M 16 x 50	136.12 x 3.53	210	0 5 00 69 20 00

* Screws according to DIN 912,
property class 8.8

** Recommended tightening torque
(Nm max.) at friction coefficient
 μ total: 0,14

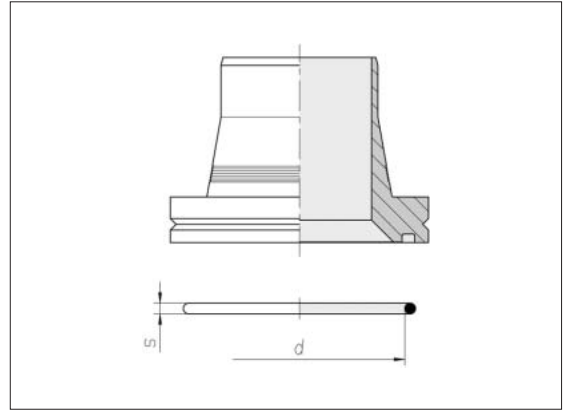
ZAKO ring
ZAKO system
Low Pressure



Flange size NW	Tube d x s	Order No.
1 1/2"	48.3 x 3.2	0 5 17 11 20 00
1 1/2"	48.3 x 4	0 5 17 01 20 00
2"	60.3 x 3.6	0 5 17 21 20 00
2 1/2"	60.3 x 3.6	0 5 17 13 20 00
2 1/2"	60.3 x 4.5	0 5 17 03 20 00
3"	76.1 x 3.6	0 5 17 15 20 00
3"	76.1 x 4.5	0 5 17 05 20 00
3 1/2"	88.9 x 3.6	0 5 17 17 20 00
3 1/2"	88.9 x 5	0 5 17 07 20 00
5"	114.3 x 3.6	0 5 17 19 20 00
5"	114.3 x 6.3	0 5 17 09 20 00

ZAKO ring with O-ring ZAKO system Low Pressure

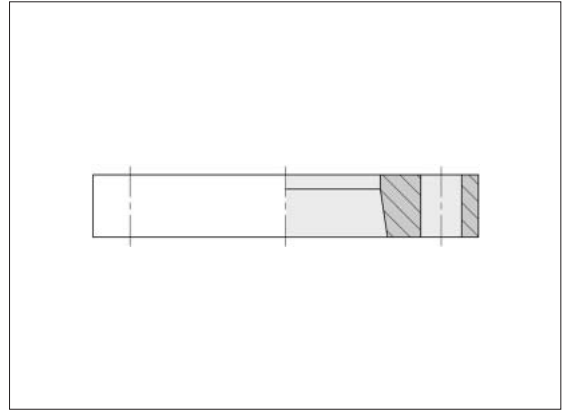
O-ring is supplied
seperately



Flange size NW	Tube d x s	O-ring d x s	Order No.
1 1/2"	48.3 x 3.2	47.22 x 3.53	0 5 17 10 20 67
1 1/2"	48.3 x 4	47.22 x 3.53	0 5 17 00 20 67
2"	60.3 x 3.6	56.74 x 3.53	0 5 17 20 20 67
2 1/2"	60.3 x 3.6	69.44 x 3.53	0 5 17 12 20 67
2 1/2"	60.3 x 4.5	69.44 x 3.53	0 5 17 02 20 67
3"	76.1 x 3.6	85.32 x 3.53	0 5 17 14 20 67
3"	76.1 x 4.5	85.32 x 3.53	0 5 17 04 20 67
3 1/2"	88.9 x 3.6	98.02 x 3.53	0 5 17 16 20 67
3 1/2"	88.9 x 5	98.02 x 3.53	0 5 17 06 20 67
5"	114.3 x 3.6	136.12 x 3.53	0 5 17 18 20 67
5"	114.3 x 6.3	136.12 x 3.53	0 5 17 08 20 67

SAE- flange
ZAKO system
Low Pressure

Hole pattern according to
SAE J 518 C / ISO 6162-1



Flange size NW	Tube AD	Order No.
1 1/2"	48.3	0 5 18 10 20 00
2"	60.3	0 5 18 15 20 00
2 1/2"	60.3	0 5 18 11 20 00
3"	76.1	0 5 18 12 20 00
3 1/2"	88.9	0 5 18 13 20 00
5"	114.3	0 5 18 14 20 00

