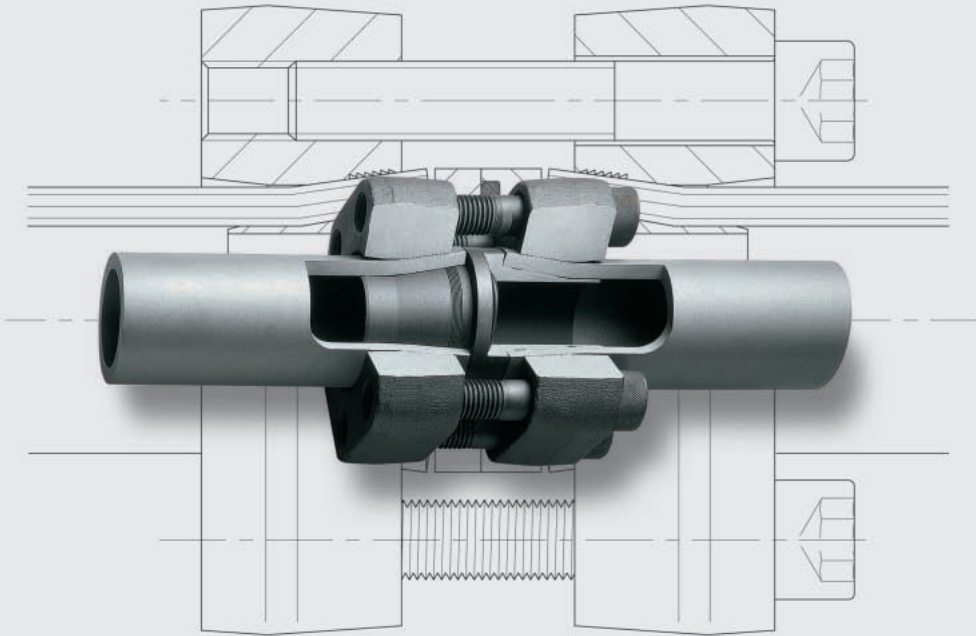




Flange couplings / ZAKO / ZAKO LP

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



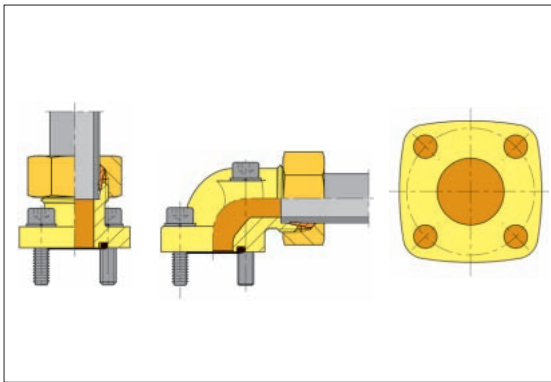
Product Information Flange Couplings

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.

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.

Flange couplings with square flange and cutting-ring connection



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

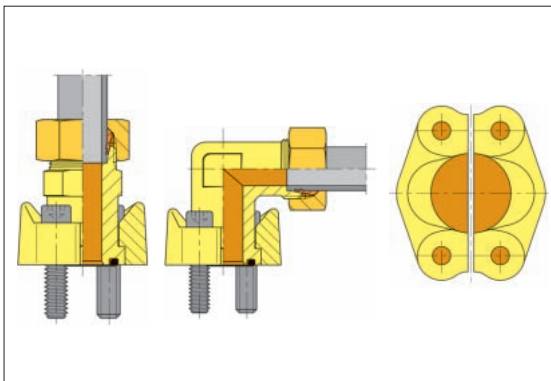
The VOSS ZAKO system with the 10° flare principle is available for especially high loads, such as vibrations and pressure jolts or high pressures with larger tube dimensions.

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.

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.

SAE flange couplings with cutting-ring connection





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!

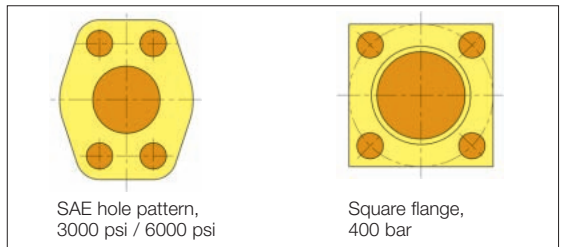


Fig. 1

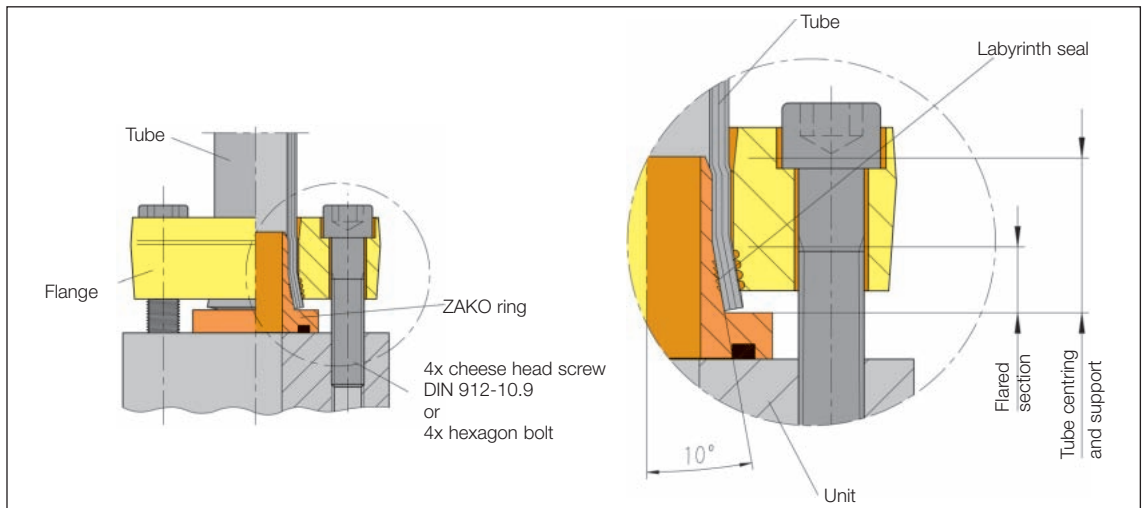


Fig. 2



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

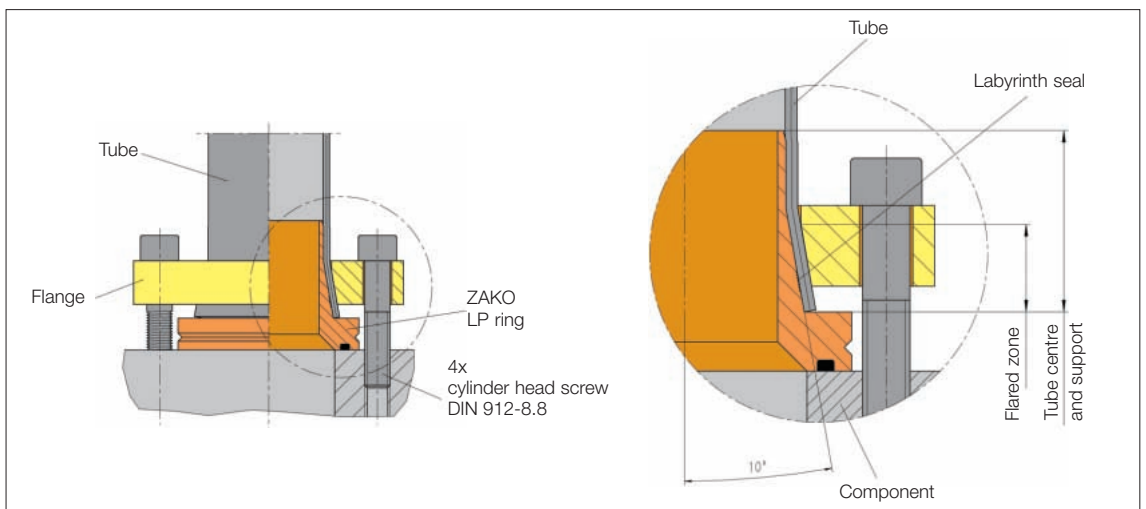
and flange connections. Due to this, further cost saving can be achieved because the tube bending processes and the resulting assembly times do not apply.

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.

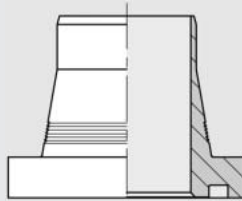
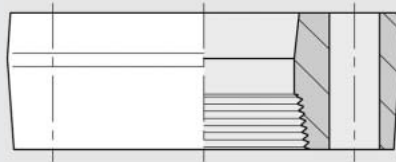
An overview of the features of the ZAKO Low Pressure tube coupling system are:

- 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.





ZAKO flared flanges
Component parts



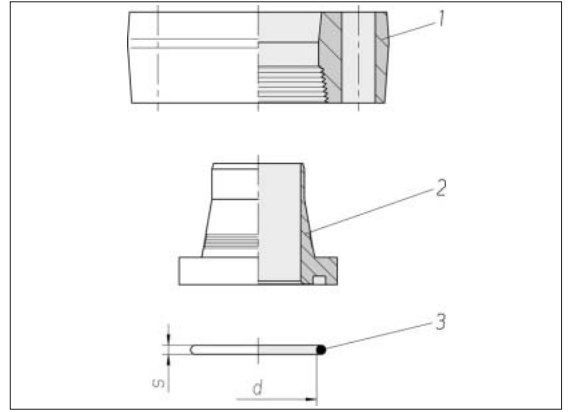
Experience plus ideas



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.

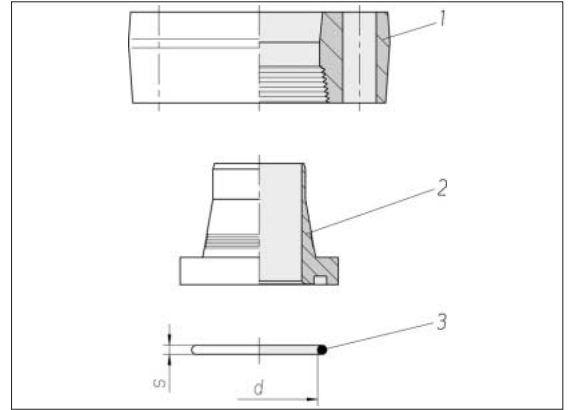
¹⁾ Complete with O-ring
(unmounted)

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"

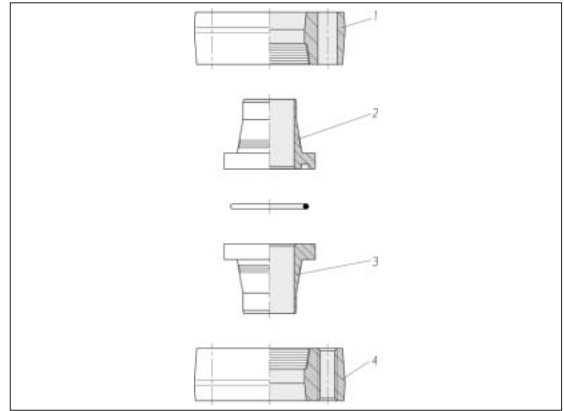
Sample product code, see:
* FE-5000-24/3
** K-5025-24



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"

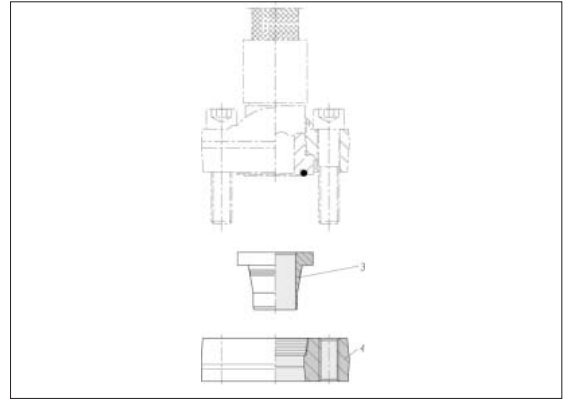
¹⁾ Complete with O-ring
(supplied as separate part)

** 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"

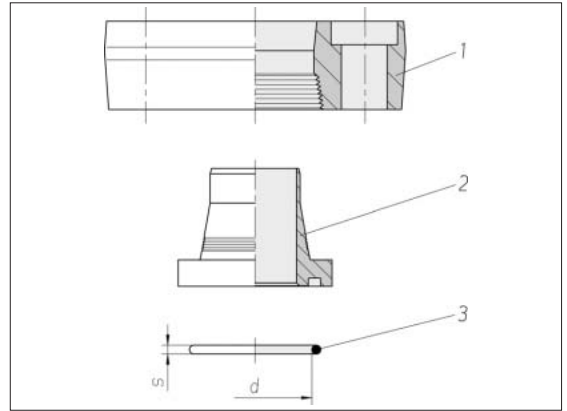
Sample product code, see:
* KO-1620-8
** FV-1600-8/3



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.

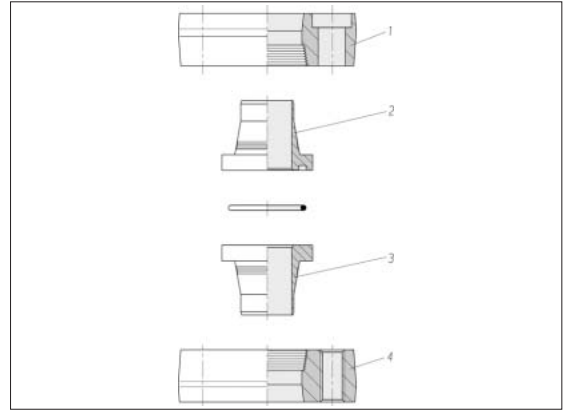
¹⁾ Complete with O-ring
(supplied as separate part)

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.	Order No. Part 2 ¹⁾	kg/100 approx.	Order No. Part 3	kg/100 approx.	Order No. Part 4
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

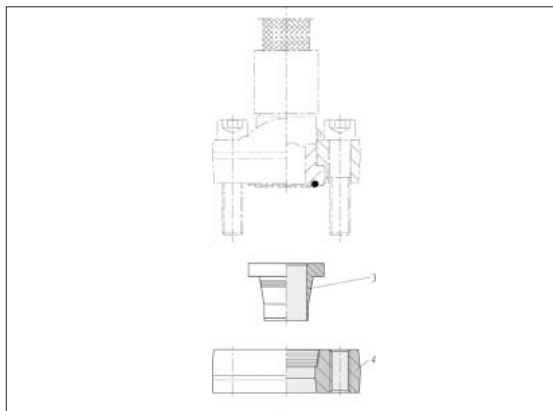
K-1620-8
KO-1620-8
FV-1600-8/6



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:

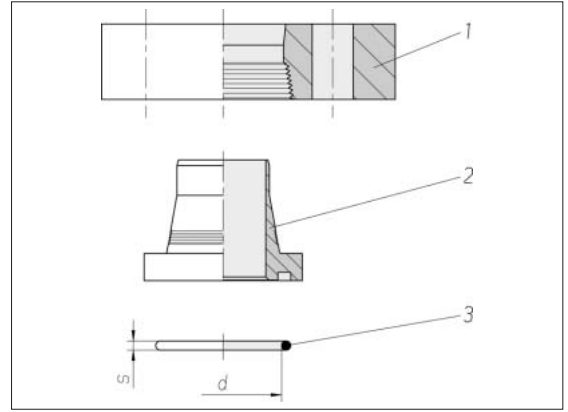
* KO-1620-8

** 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

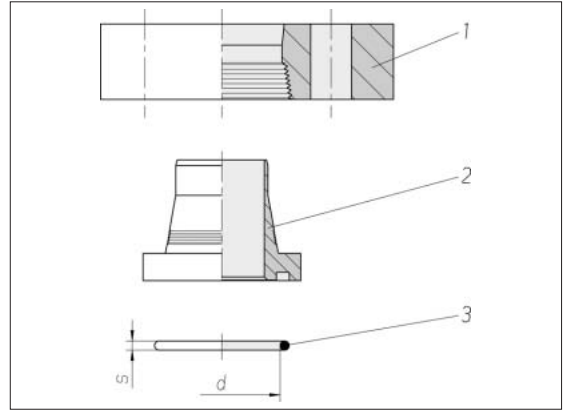


LEHENGOMK, S. A.

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

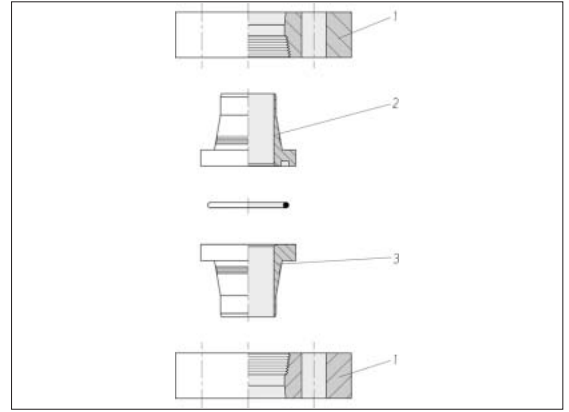
¹⁾ Complete with O-ring (supplied as separate part)

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)

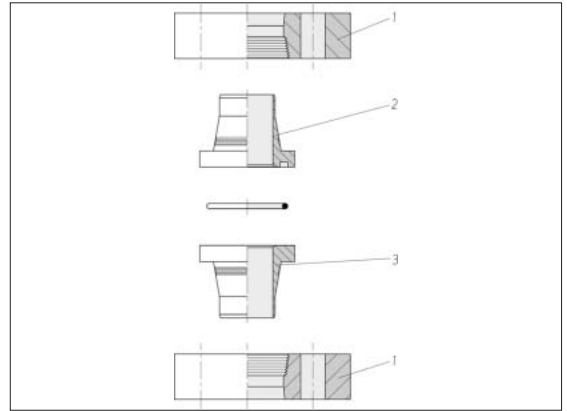
²⁾ 2 each per tube-to-tube flange coupling

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