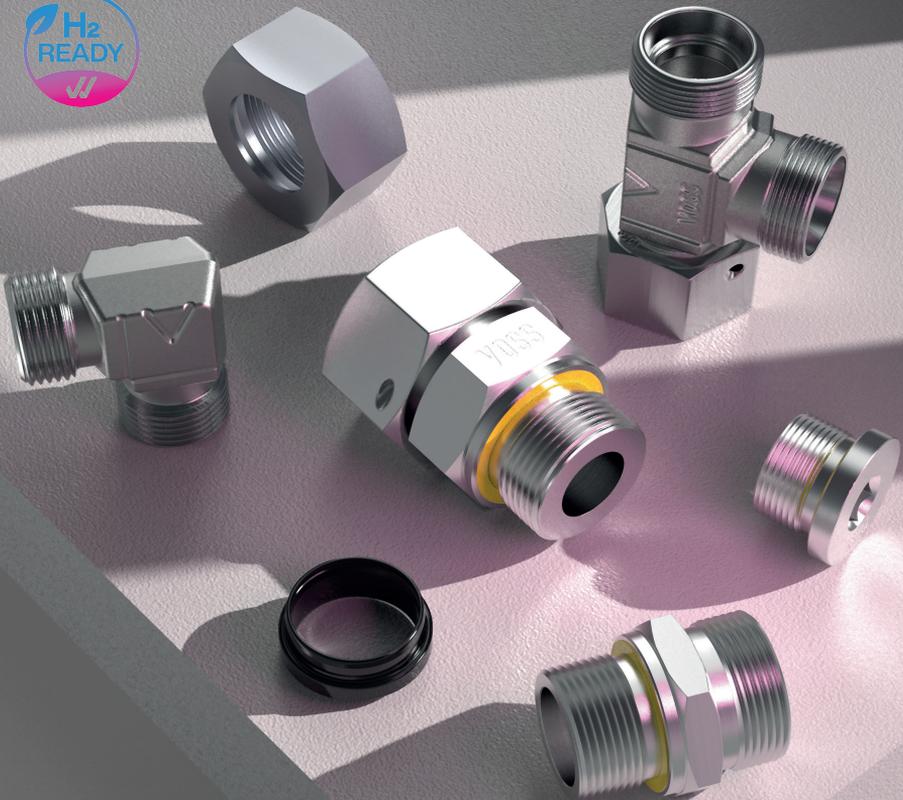


VOSS

Tube coupling technology for gas supply

The DVGW-certified VOSS connection program



Important notes

For the reliable performance of the VOSS products, compliance with the respective assembly instructions, compliance with the general technical instructions and the consideration of the current standardization and regulations of the general mechanical engineering is a basic requirement. Please always use the latest version.

This catalogue edition replaces all previously published technical documents. Consequently, all previous documents lose their validity with immediate effect!

Subject to technical modifications; misprints and errors excepted.

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Retailer directory

To find the addresses of our worldwide retailers, please visit
www.voss.net/en/find-a-sales-partner.

VOSS

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**Your system partner for
fluid management**

| We are VOSS

As a leading system partner for fluid management, VOSS develops and produces innovative line and connection systems for mobile and stationary applications.

Our solutions set standards in the fields of hydraulics, pneumatics, fuel supply, thermal management and exhaust technology – with the highest quality and lasting reliability.

With over 90 years of experience and a deep-rooted spirit of innovation, we are shaping the technologies of tomorrow. Our developments pave the way for sustainable future solutions, including battery energy storage systems, battery management in vehicles, hydrogen lines for fuel cell systems and lines for the production and distribution of green hydrogen.

As a medium-sized group with 24 companies in 14 countries, we are there for you worldwide and together form the VOSS Holding with its headquarters in Wipperfürth, North Rhine-Westphalia. Our global network is complemented by sales partners in more than 50 countries.

VOSS is wholly owned by the non-profit Hans Hermann Voss Foundation, which for more than 30 years has supported projects in the natural sciences and research, education and training, youth and the elderly, as well as charitable causes.

The headquarters: Factory and administration Wipperfürth



I Responsibility and sustainability

For VOSS, sustainability is not a trend, but a deep rooted principle that governs our daily actions. Inspired by the guiding idea of the founder's son Hans Hermann Voss, who always focused on the welfare of our employees, society and the environment, we have been committed to sustainable solutions for decades.

Many measures that we have already implemented successfully now meet the requirements of the EU's Corporate Sustainability Reporting Directive (CSRD). Our annual sustainability report provides a transparent insight into our progress and initiatives.

Protection of the environment

In order to consistently reduce our environmental footprint, we pursue ambitious environmental goals. We rely on energy-efficient and resource-efficient production processes and the increased use of renewable energies in our worldwide plants. With clearly defined measures, we work towards CO₂ neutral-ity and make an active contribution to promoting climate-friendly technologies with our innovative product solutions.

Human welfare

Our employees are our most valuable asset. Their commitment, talents and achievements are the key to our success. Therefore, we strive to provide them not only with a secure workplace, but also with a motivating and appreciative working environment.

Occupational safety and health are our top priority. We implement targeted measures to protect our employees in the best possible way and to ensure optimal working conditions. On the basis of our values, we stand for tolerance, diversity and equality and show social commitment.

Responsible action

Our daily activities are geared towards the sustainable and long-term future of VOSS. In doing so, we act responsibly, fairly and transparently – always in accordance with basic democratic principles and all applicable regulations and laws. This obligation is firmly anchored in our core guidelines: the Compliance Policy, the Code of Ethics and the Code of Conduct. These are open to our employees, suppliers and customers and form the basis for a trusting cooperation.

Certificates according to ISO 14001, ISO 50001, ISO 45001, IATF 16949 and ISO 9001 underline our systematic approach to the highest quality and continuous improvement in all areas.

PV system at the Wipperfürth plant



Chromium VI-free electroplating



Certificates for the VOSS sites



Competences of the VOSS Group

From the individual design of your fluid system to the development of innovative products, prototype construction and series production, to intelligent logistics concepts and practice-oriented training – VOSS offers you holistic solutions from a single source.

Our cooperation is as individual as our customers: whether global players with worldwide locations, specialized niche

providers, long-term business partners with constant demand or innovators looking for customized solutions – VOSS develops tailor-made concepts for sustainable success.

Product range

Ready-to-install lines and components from VOSS set standards in functional reliability, tightness, ease of assembly and durability of fluid systems. A wide range of system solutions, materials and variants is available for tubes and hoses, connecting elements, valves and sensors, for measuring and control technology, pre-assembly devices and tools.

This is the basis on which the unique VOSS specialty is created: individual developments matched exactly to the requirements of our customers – from individual components to complete tube systems.



Tube connections



Measuring couplings



Pre-assembly devices and tools



Ready-to-install lines



Plug-in systems



Manifolds and in-line connectors



Modules



Valves



Sensors

Industry solutions



Mobile machinery



Agricultural engineering



Stationary systems



Rail technology



Energy generation and storage



Marine and offshore



Trucks and buses



Cars and vans



Energy infrastructure

VOSS products are used in a wide range of industries. For their highly different conditions of use and corresponding requirements of the fluid systems, our solutions shape the state of the art:

- For stationary and mobile applications with different material demands and environmental influences
- For various application media, which require special material compatibility and reliable sealing at the connection points
- For system requirements from low pressure to high pressure and from lowest to highest temperatures
- For delicate and heavy-duty line systems
- For different installation conditions on site

With our system expertise, we offer our customers holistic solutions from a single source – individual, reliable and pioneering.

Media competence

Hydraulic oil

CNG & LNG

Compressed air

AdBlue®

Liquid fuels

Hydrogen

Coolant

Cleaning fluids

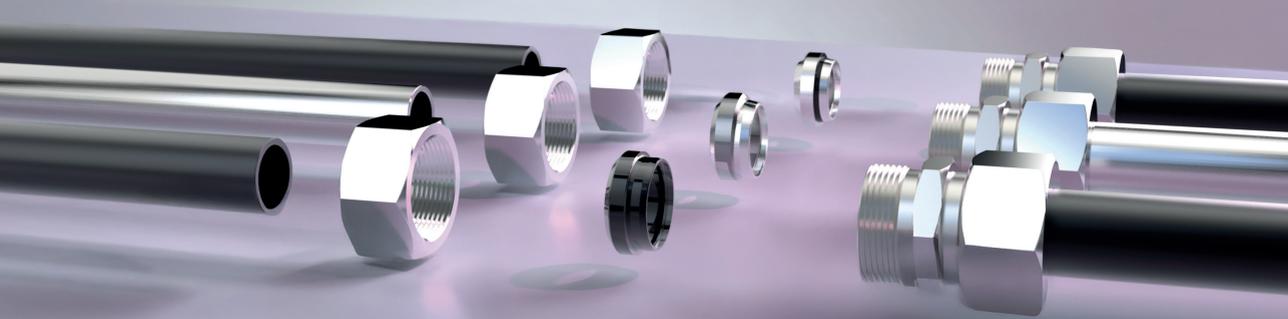
Water

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Overview VOSS Tube connection systems

The right connections for all applications



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The right connections for your gas application at a glance	P.13
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VOSS 24° tube connection systems in steel - H2ready

VOSS Fluid, premium manufacturer of connection systems for fluid technology, now also offers solutions for hydrogen applications in stationary gas pressure control and measurement technology.

This means that a large proportion of VOSS products are optimally prepared for the use of hydrogen as an energy carrier. With this forward-looking development, VOSS is helping to turn sustainable and innovative energy concepts into reality.

While the market has been characterized by stainless steel products until now, VOSS can provide the required hydrogen tightness for its steel components and the *VOSSRing^M* cutting ring couplings as well as the associated 24° connection and DKO connections.

The new "H2ready tested" certification certifies the suitability for hydrogen-natural gas mixtures in any volume ratio – from 100% natural gas to 100% hydrogen.

The test mark certificates were issued by the DBI test laboratory in Freiberg, a recognized test laboratory of the DVGW. They confirm the suitability of the products for use in hydrogen applications in the public gas supply.

Hydrogen compatibility

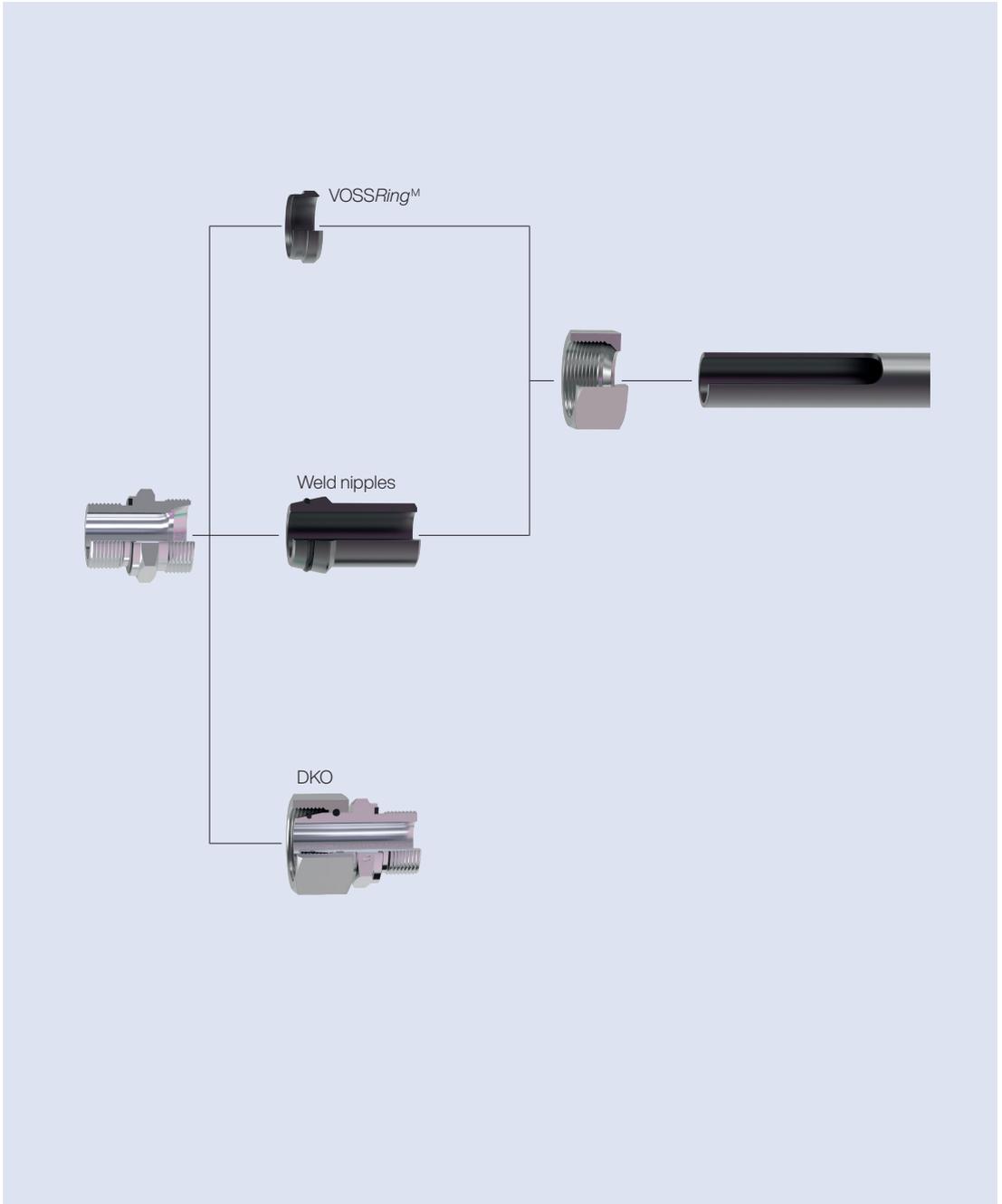
Additional tests for long-term behavior and hydrogen embrittlement were also carried out: a selection of VOSS couplings were exposed to hydrogen for more than 1,000 hours – at high temperatures and far above the maximum operating pressures of the DVGW control system. Subsequently, stress tests were carried out, which showed that the hydrogen does not damage the components and that these are suitable for hydrogen.

This logo indicates the product status "H2ready tested" on the following catalog pages:



| The right connections

for your gas application at a glance



VOSS connecting range

with DVGW type examination certificatet

Tube connecting parts



Male stud connectors



Unions



Adjustable couplings with tube socket



24° taper couplings DKO



Weld connectors



Bulkhead connections



Component parts and accessories for couplings



Couplings program

with a wide range of system solutions

Full offer in premium quality

According to this principle, VOSS Fluid produces one of the most extensive product ranges of tube connection systems. The entire product range is available as a catalog program.

The product range includes cutting ring couplings and supplementary accessories. A further particular emphasis is placed on the development of customer-specific system solutions. VOSS Fluid handles the entire package, from project planning, engineering, production and assembly to special logistics services.

VOSS Fluid offers convincing economic concepts and improvement approaches that take into account the procurement costs, the assembly effort, the sustainability of coupling tightness and long-term corrosion protection.

The complete product range is optimally protected against corrosion by the high-quality chromium (VI)-free surface coating VOSS coat as standard. Extensive salt spray tests in accordance with DIN EN ISO 9227 have shown that no basic metal corrosion occurs even at 1,000 hours under practical conditions, i.e. after handling and assembly.

The company's consistent quality policy and the defined quality objectives – all of which are reflected in the necessary certifications and approvals of the relevant associations and specialist bodies – have ensured VOSS Fluid a leading position in all established markets for many years.

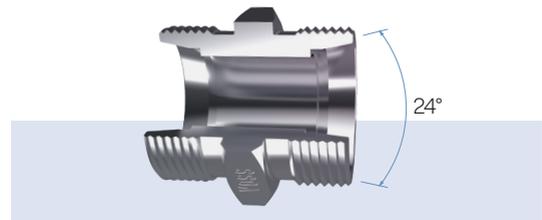


VOSS 24° couplings

VOSS 24° tube couplings to ISO 8434-1 are among the most widely used connection systems in hydraulics worldwide. Especially in Europe, Asia and South America, this type of tube connection has become established through a variety of advantages.

The product line comprises a light and heavy series (L and S), which differ in terms of different pressure levels and dimensions. All nominal pressure data (PN) is designed with quadruple safety.

Depending on the specific application, various connection systems can be adapted on the tube connection side. The 24° inner cone serves here as a sealing surface.



Through worldwide depots with a wide range of systems and a global network of authorized dealers, VOSS Fluid stands for the very highest availability of products and offers particularly economical delivery systems. These range from a KANBAN Full Service to the complete optimization of the customer's supply chain.

With regular training courses and application-related information, VOSS Fluid offers a wide range of special services. The internal and inter-company logistics of the entire VOSS Group provide considerable cost advantages, which make it possible for customers to plan their production precisely in time and in line with capacity without having to build up their own inventories.

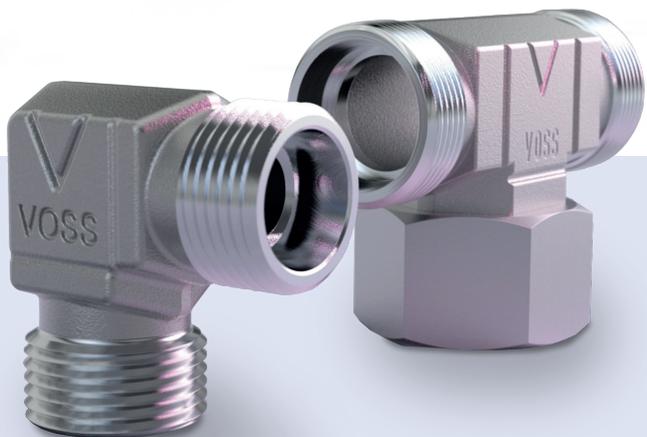
The wide range of couplings from VOSS Fluid includes a wide variety of designs, such as angled, T or L couplings. These are available in different designs, as a connecting or bulkhead coupling, as a male stud connector or adjustable coupling.

On the screw-in side, a variety of threads and types of seals according to international standards are available.

| Key benefits

of the 24° couplings

- The connection type with 24° inner cone is leaktight and resistant to alternating bending loads, pressure pulses and tearing of the tube.
- The tube connections can be easily produced.
- The tube connection can be detached as often as required. This is especially important in the case of maintenance and servicing.
- Depending on the intended use, various tube connection systems can be combined with the 24° coupling bodies. This opens up the possibility of producing an additional soft-sealing system from a purely metallic sealing system.
- There is a large variety of types from which it is possible to select according to the modular principle. Special couplings or unnecessary tube bends and installation space can thus be saved. In the screw-in variants, too, a wide variety of metric and inch threads and types of seals can be selected.
- The 24° system is a worldwide standard and is therefore very widespread, especially in Europe, Asia and South America. Hose fittings can also be connected without any problems.
- In the case of the 24° connection system, as a rule, no retightening of the coupling is necessary.
- Due to the optimal tube clamping in the 24° coupling system, the tube connection remains flexible enough to cushion vibrations of the tube system. On the other hand, captive connections remain rigid and frequently tend to tear off the tube connection.
- All VOSS couplings are provided with VOSS coat surface protection as standard. This offers the highest level of protection against corrosion.
- The function of the entire connection system has been confirmed by many independent certification companies.
- VOSS 24° couplings can also be used in other applications, e.g. in the stationary gas and hydrogen industry. Contact us about our solutions for these areas of application!



The path to permanently leak-free connections

Permanently leak-free joints increase the efficiency of your products and enhance your product image. The variety of VOSS connection systems and the wide range of variants offer the right alternative for almost every application.

Taking the respective application into account, we recommend the following for the design and selection of the correct connecting system:

1 Pay attention to the basics!

Before selecting the connection system, important parameters such as pressure, volume flow, ambient temperature, external influences, standardization and/or legislation and the type of load should be known. One important additional decision criterion should be the cost-effectiveness of the connection. In addition to the incurred purchase price, the procurement costs, the installation effort, the sustainability of the sealing function and the long-term corrosion protection must also be included in the total cost consideration.

3 If possible, use a continuous soft-sealing system!

Soft-sealing systems prevent even the smallest leakage paths, which can be caused by setting of the connection, temperature fluctuations and vibrations. The VOSS Fluid product range enables the consistent use of elastomers on the tube connection and threaded side of the connection. Please note the different material properties of the sealing materials.

5 Profit from our broad application competence!

VOSS Fluid and our authorized specialist dealers have a wide range of knowledge for almost every application. Take advantage of our experience and get customized advice before selecting a system.

7 Check your tube and hose installation!

Make sure that your tube and hose assemblies are professionally laid and supported at regular intervals. Excessively rigid constructions cannot absorb vibrations, while carelessly supported tube systems tend to vibrate.

2 Assemble exclusively according to the VOSS assembly instructions!

Leaky connections are mainly caused by assembly errors. That is why it is necessary to follow the assembly and operating instructions carefully. VOSS Fluid offers comprehensive training material as well as practical seminars on all aspects of tube connections. On request, we will also be happy to conduct these at your company and provide valuable tips, specially designed for your production processes.

4 Rely consistently on VOSS products!

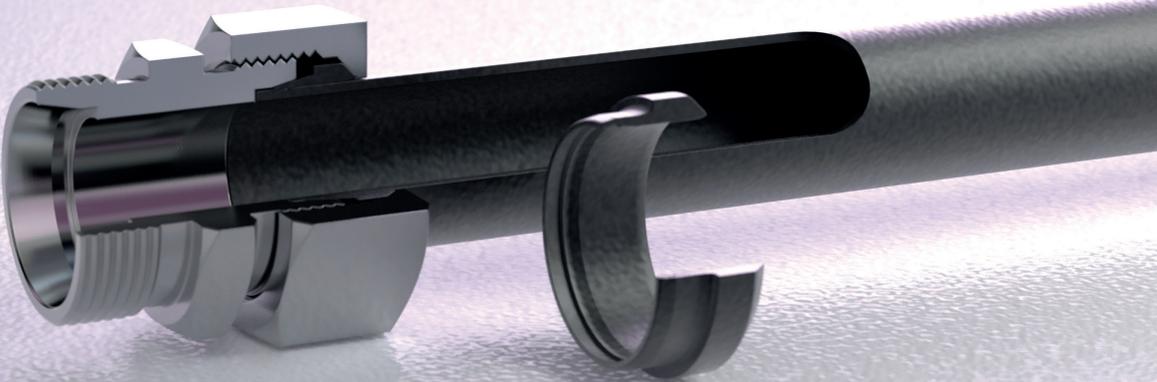
In general, it is possible to use different coupling components from different manufacturers, however, we recommend using only VOSS components. The VOSS products are perfectly matched to each other, guaranteeing the best function and quality.

6 Have yourself regularly audited by VOSS Fluid!

Check at regular intervals whether changes have resulted in your internal production processes, for example due to new assembly personnel or worn machines and tools. We offer auditing as a service, during which we check your assembly on site.

Cutting ring system VOSSRing^M

Highest leak-protection thanks to optimized tube cuts



Product information VOSSRing^M

VOSSRing^M offers you all the advantages of previous 24° cutting ring systems and raises them to a new level of quality and safety. The special focus during development was on the easy and process-safe assembly, reliable protection against leakage and the use of extremely durable materials. The result is a cutting ring system that is secure all-round, both in assembly and in usage, made by VOSS.

We have perfectly matched all properties of the VOSSRing^M cutting ring system to each other for full system performance.

Highest corrosion-protection with VOSS coat BLACK

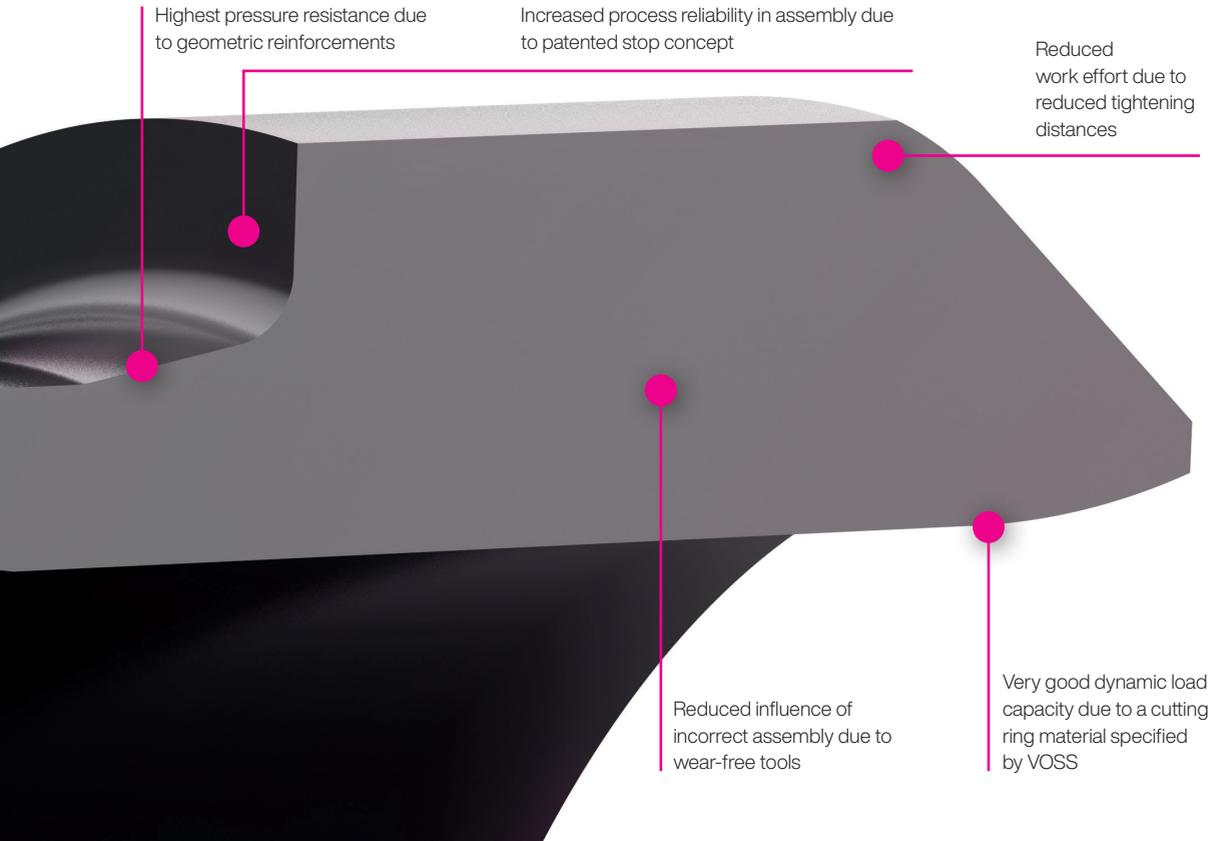
Highest leak-protection thanks to optimized tube cuts

VOSS coat BLACK

Since 2007, VOSS has been setting standards with VOSS coat, the zinc-nickel-based surface, now also used with the VOSSRing^M cutting ring system. To avoid confusion and to make the assembly process safe, the new VOSSRing^M is coated with a BLACK coating. VOSS coat BLACK guarantees maximum service life.

- 1,000 hours corrosion resistance in salt spray test under realistic conditions
- More than 2,000 hours of corrosion resistance during the salt spray test under laboratory conditions in the unmounted state
- Much more resistant to damage to the base layer
- Sustainable production by using the latest in-house galvanizing

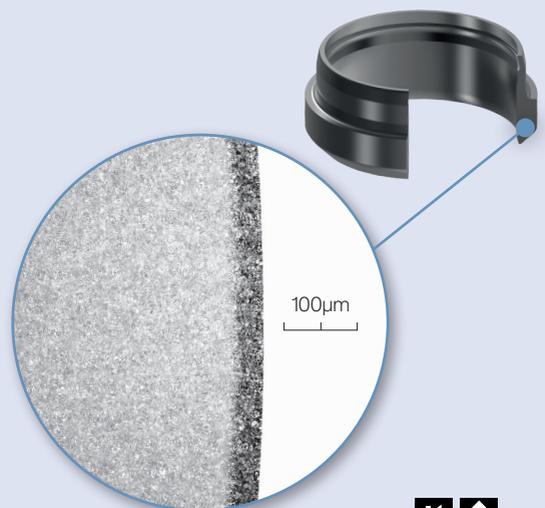




High-tech materials

For our *VOSSRing[®]* cutting rings we use a specially developed material with very narrow tolerances for the alloying components. This guarantees high strength of the extremely homogeneous, fine-grained structure with high toughness and fracture resistance.

Our further improved hardening process produces a very thin and extremely hard surface layer. This ensures a precise and optimal cut in steel and stainless steel tubes and only a slight spring-back after assembly.



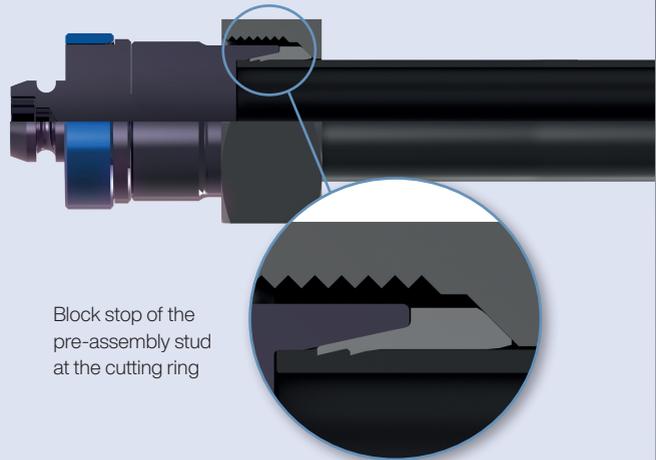
Optimization of pre- and final assembly

Precise pre-assembly through the patented stop concept

For the VOSSRing^M cutting ring system, both machines and manual assembly studs are available for pre-assembly. Both are made of wear-free high-performance steel and offer up to 20 times longer tool life.

With a specially developed material, we prevent the expansion of the cone contour. Regular tests for suitability for function therefore become unnecessary. When the limit of use is reached, the stud breaks. Assembly errors due to tool wear are thus effectively prevented.

Due to the integrated stop function, the pre-assembly path is exactly maintained due to the design. The pre-assembly stud comes into contact with the cutting ring with a defined stop surface at the end point of pre-assembly. The pre-assembly path is terminated at the optimum point. When using the manual assembly stud, a significant increase in force is noticeable. Overassembly is effectively prevented. The tube connection is permanently leak-free.



Block stop of the pre-assembly stud at the cutting ring

Reliable final assembly

through geometric optimizations

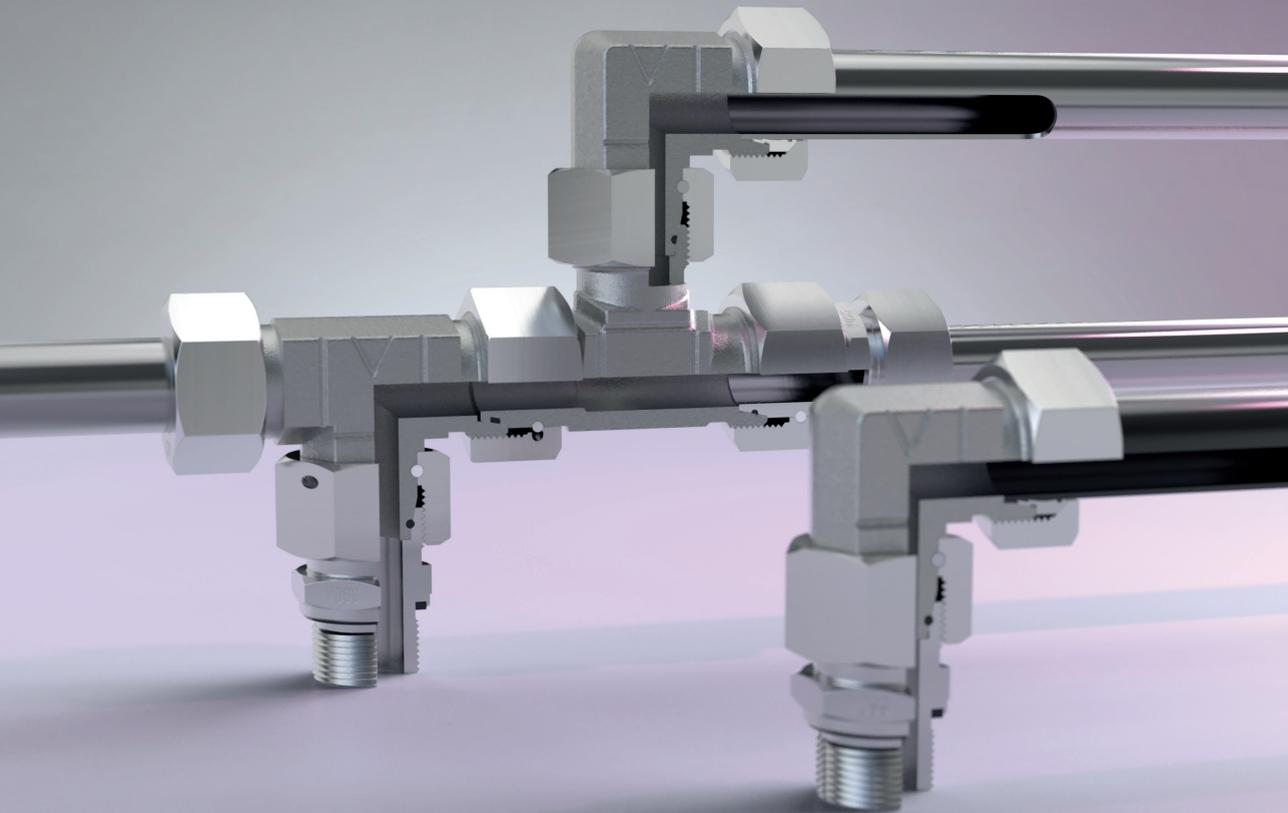
The quality of the VOSSRing^M cutting ring system is also evident in efficient final assembly. The geometric optimization in the tube stop area gives the installer a number of advantages:

- Final assembly distance reduced from 90° to 30°
- Significantly reduced work effort
- Simplified final assembly in tight installation situations

In addition, an additional free space is defined by the extended end face of the pre-assembly tool, which permits a re-cutting of the cutting ring during the later final assembly. In this way, an optimum incision and seating of the cutting ring is achieved even in the course of a problem-free, process-reliable and standard-compliant repeated assembly.

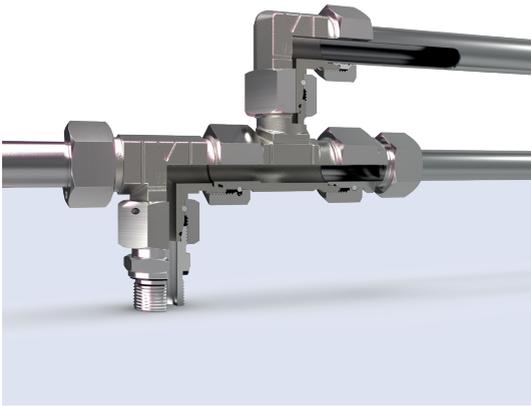
| Taper coupling VOSS DKO

The complete product spectrum of direction adjustable couplings



Product information

Taper coupling VOSS DKO



The 24° taper coupling is a logical further development of the adjustable coupling with tube extension and pre-assembled cutting ring. The sealing cone attached to the fitting body ensures a particularly secure and permanently stable connection.

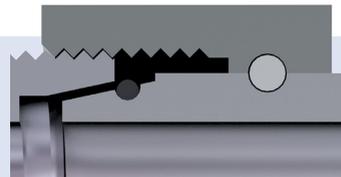
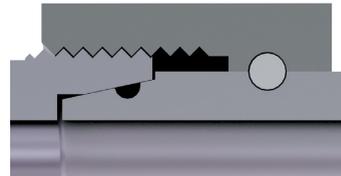
The retaining function is performed by a special union nut with a wire pin located in a groove. Following final assembly the interlocked union nut ensures a coupling that is resistant to tearing out.

Sealing is provided by the embedded O-ring. This way a fine seal is achieved.

With a wide spectrum of various types, all standard combinations of adjustable couplings can be produced. The connection dimensions correspond exactly to ISO 8434-1. This provides interchangeability with the traditional adjustable spigot version.

Special features:

- With its precisely chambered O-ring seal, the VOSS DKO taper coupling ensures improvement when it comes to leak-proofing and precision sealing.
- It also remains functionally reliable and permanently tight under extreme operating conditions, such as pressure surges, reverse bending moments and vibrations.
- The VOSS DKO taper coupling can be easily and reliably installed. An optimum final function is produced with a short tightening distance and practice-oriented final tightening force.
- Repeated installation is possible – frequently and without any issues.



High material compaction

General note

For the functional performance of the taper coupling, exact compliance with the assembly instructions and the instructions in the technical notes is of paramount importance.

Distance adapters with taper and O-ring

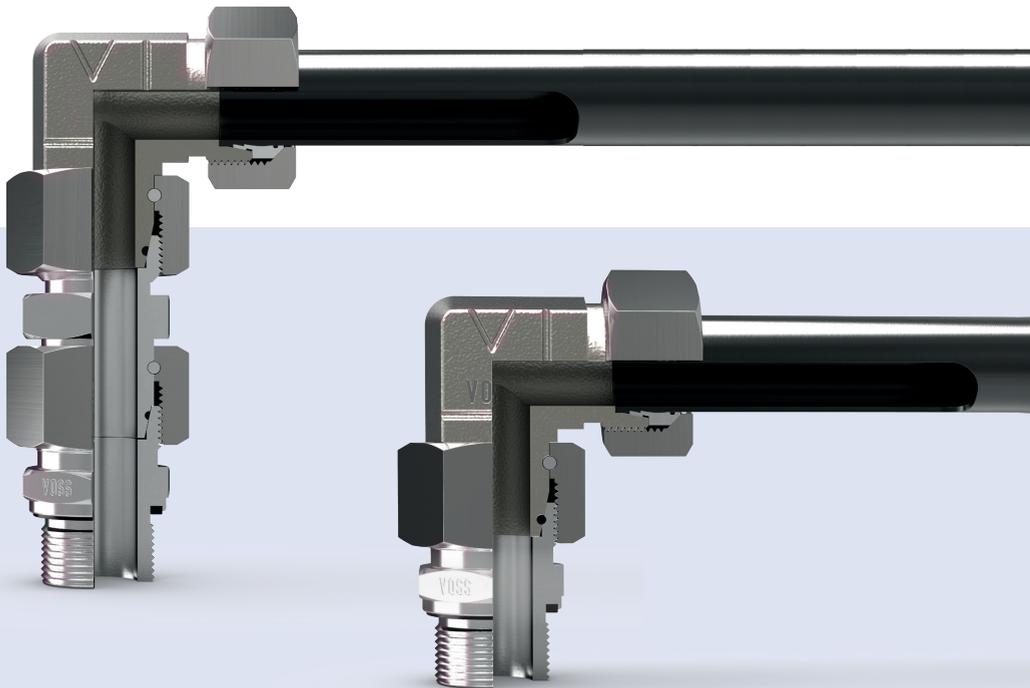
The distance adapter, fitting hole shape W according to ISO 8434-1, is mainly used for extending over-built couplings.

In addition, existing cutting ring connections can be replaced without major effort, for example during maintenance work. Existing tubes can be used further in this case.



2

Distance adapters with taper and O-ring



Certification and approvals

VOSS Fluid is certified according to ISO 9001, ISO 14001 and ISO 50001 by TÜV Rheinland.

The standard VOSS tube connections are approved by all major inspection agencies.

- DNV
- Lloyds Register of Shipping
- Bureau Veritas
- American Bureau of Shipping
- US Coast Guard
- DVGW
- German Bundeswehr
- Technical Committee "Mechanical Engineering, Lifting Equipment, Smelting and Rolling Plants" (MHHW) of the HVBG-BGZ

Other approvals on request.

Attention!

Our approvals relate to specific products and designs, applications and operating conditions. As the validity of the authorizations by the authorizing body is limited in time, they are renewed before the respective expiry date. Detailed information is provided in the marketing authorization.

Please request the latest version of the approvals from us. We are also happy to advise you extensively on the topic of approvals and applications.

Approvals for applications in the field of gas according to DVGW

The following VOSS Fluid tube coupling systems are approved by DVGW for the gas field of application (gas transport, plant construction, natural gas filling stations, gas vehicles, liquefied gas plants):

- Cutting ring system VOSSRing^M
- Cutting ring system VOSS ES-4
- Tube forming system VOSSForm^{SQR}
- Taper coupling VOSS DKO

Contact us on our H2ready solutions!

Authorized gases according to DVGW worksheet G 260:

- Compressed air
- Natural gas
- LPG

Working pressure:

- A MOP is required for heavy series connections (max. operating pressure) of up to 250 bar.
- In the light series, a MOP of 250 bar is permitted up to tube OD 18; from tube OD 22, a restriction of 160 bar is imposed.

Operating temperature:

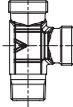
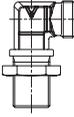
- Between -20 °C and +60 °C

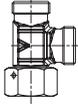
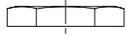


Tube connecting parts, 24° connecting pieces and single parts/accessories

The complete program acc. to ISO 8434

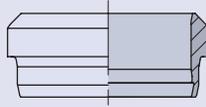


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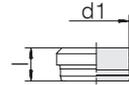
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Blanking plugs / tube blanking screws	PLIH / PLEH				
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	—+—
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I Cutting rings



I VOSS Ring^M cutting rings



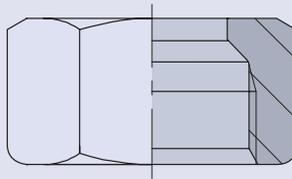
Series Tube OD d1	l	Order-No.	Designation
L/S 6	9.2	0019002100	24-VRM-L/S6
L/S 8	9.2	0019052100	24-VRM-L/S8
L/S 10	10	0019102100	24-VRM-L/S10
L/S 12	10	0019152100	24-VRM-L/S12
L 15	10.2	0019202100	24-VRM-L15
L 18	10.5	0019252100	24-VRM-L18
L 22	11.2	0019302100	24-VRM-L22
L 28	11.2	0019352100	24-VRM-L28
L 35	13.4	0019402100	24-VRM-L35
L 42	13.4	0019452100	24-VRM-L42
S 14	10.2	0019702100	24-VRM-S14
S 16	10.2	0019752100	24-VRM-S16
S 20	13	0019802100	24-VRM-S20
S 25	13	0019852100	24-VRM-S25
S 30	13.6	0019902100	24-VRM-S30
S 38	13.5	0019952100	24-VRM-S38

Cutting-rings for tube OD
6 - 12 mm are identical for
series L + S.

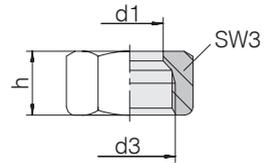
PSR06LX
ISO 8434-1-CR-L6-St



I DIN union nuts



I Union nuts



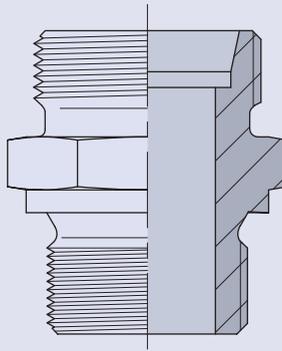
Series Tube OD d1	d3	SW3	h	Order-No.	Designation
L 6	M 12 x 1.5	14	15.5	0004002100	24-N-L6
L 8	M 14 x 1.5	17	15.5	0004052100	24-N-L8
L 10	M 16 x 1.5	19	16.5	0004102100	24-N-L10
L 12	M 18 x 1.5	22	16.5	0004152100	24-N-L12
L 15	M 22 x 1.5	27	18	0004202100	24-N-L15
L 18	M 26 x 1.5	32	19	0004252100	24-N-L18
L 22	M 30 x 2	36	21	0004302100	24-N-L22
L 28	M 36 x 2	41	21	0004352100	24-N-L28
L 35	M 45 x 2	50	24	0004402100	24-N-L35
L 42	M 52 x 2	60	24	0004452100	24-N-L42
S 6	M 14 x 1.5	17	17.5	0004502100	24-N-S6
S 8	M 16 x 1.5	19	17.5	0004552100	24-N-S8
S 10	M 18 x 1.5	22	18.5	0004602100	24-N-S10
S 12	M 20 x 1.5	24	18.5	0004652100	24-N-S12
S 14	M 22 x 1.5	27	21.5	0004702100	24-N-S14
S 16	M 24 x 1.5	30	21.5	0004752100	24-N-S16
S 20	M 30 x 2	36	25	0004802100	24-N-S20
S 25	M 36 x 2	46	27	0004852100	24-N-S25
S 30	M 42 x 2	50	29	0004902100	24-N-S30
S 38	M 52 x 2	60	32.5	0004952100	24-N-S38

To reduce the assembly forces,
the union nuts are
coated with wax lubricant.

M06LX
ISO 8434-1-N-L6-St



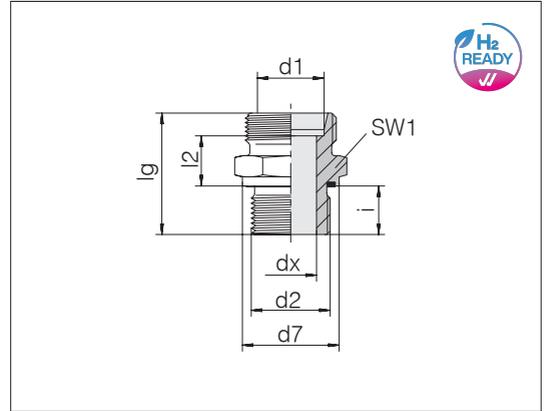
I Male stud connectors



I Male stud connectors

Male thread: Metric fine thread, cylindrical
 Threaded stud: ISO 9974-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
Tube OD											
d1											
L 6	M 10 x 1	13.9	4	23.5	8.5	14	8	15	1.4	7012754300	24-SDS-L6-M10E-NBR-YEL ¹⁾
L 6	M 12 x 1	16.9	4	27	10	17	10	25	2.8	7012739200	24-SDS-L6-M12x1E-NBR-YEL
L 6	M 12 x 1.5	16.9	4	29	10	17	12	25	2.3	7012739300	24-SDS-L6-M12E-NBR-YEL
L 6	M 14 x 1.5	18.9	4	29	10	19	12	50	3.4	7012739400	24-SDS-L6-M14E-NBR-YEL
L 6	M 16 x 1.5	21.9	4	30.5	11.5	22	12	70	3.4	7012739500	24-SDS-L6-M16E-NBR-YEL
L 6	M 18 x 1.5	23.9	4	30.5	11.5	24	12	90	3.6	7012739600	24-SDS-L6-M18E-NBR-YEL
L 8	M 10 x 1	13.9	4	24.5	9.5	14	8	15	1.6	7012739700	24-SDS-L8-M10E-NBR-YEL
L 8	M 12 x 1.5	16.9	6	29	10	17	12	25	2.1	7012739800	24-SDS-L8-M12E-NBR-YEL ¹⁾
L 8	M 14 x 1.5	18.9	6	29	10	19	12	50	2.8	7012739900	24-SDS-L8-M14E-NBR-YEL
L 8	M 16 x 1.5	21.9	6	30.5	11.5	22	12	70	4.1	7012740000	24-SDS-L8-M16E-NBR-YEL
L 8	M 18 x 1.5	23.9	6	30.5	11.5	24	12	90	5.0	7012740100	24-SDS-L8-M18E-NBR-YEL
L 8	M 22 x 1.5	26.9	6	34	13	27	14	130	5.5	7012740200	24-SDS-L8-M22E-NBR-YEL
L 10	M 10 x 1	13.9	4	25.5	10.5	17	8	15	2.3	7012740300	24-SDS-L10-M10E-NBR-YEL
L 10	M 12 x 1	16.9	6	28	11	17	10	25	2.6	7012740400	24-SDS-L10-M12x1E-NBR-YEL
L 10	M 12 x 1.5	16.9	6	30	11	17	12	25	2.4	7012740500	24-SDS-L10-M12E-NBR-YEL
L 10	M 14 x 1.5	18.9	7	30	11	19	12	50	2.9	7012740600	24-SDS-L10-M14E-NBR-YEL ¹⁾
L 10	M 16 x 1.5	21.9	7	31.5	12.5	22	12	70	4.2	7012740700	24-SDS-L10-M16E-NBR-YEL
L 10	M 18 x 1.5	23.9	8	31.5	12.5	24	12	90	4.9	7012740800	24-SDS-L10-M18E-NBR-YEL
L 10	M 22 x 1.5	26.9	8	35	14	27	14	130	8.0	7012740900	24-SDS-L10-M22E-NBR-YEL
L 12	M 10 x 1	13.9	4	27	12	19	8	15	2.7	7012741000	24-SDS-L12-M10E-NBR-YEL
L 12	M 12 x 1.5	16.9	6	31.5	12.5	19	12	25	3.0	7012741100	24-SDS-L12-M12E-NBR-YEL
L 12	M 14 x 1.5	18.9	7	30	11	19	12	50	2.9	7012741200	24-SDS-L12-M14E-NBR-YEL
L 12	M 16 x 1.5	21.9	9	31.5	12.5	22	12	70	3.9	7012741300	24-SDS-L12-M16E-NBR-YEL ¹⁾
L 12	M 18 x 1.5	23.9	9	31.5	12.5	24	12	90	4.4	7012741400	24-SDS-L12-M18E-NBR-YEL
L 12	M 22 x 1.5	26.9	9	35	14	27	14	130	6.4	7012741500	24-SDS-L12-M22E-NBR-YEL
L 12	M 26 x 1.5	31.9	10	37	14	32	16	180	10.0	7012741600	24-SDS-L12-M26E-NBR-YEL
L 15	M 12 x 1.5	16.9	6	32	13	24	12	25	4.8	7012741700	24-SDS-L15-M12E-NBR-YEL
L 15	M 16 x 1.5	21.9	9	32	13	24	12	70	4.8	7012741800	24-SDS-L15-M16E-NBR-YEL
L 15	M 18 x 1.5	23.9	11	32.5	13.5	24	12	90	5.1	7012741900	24-SDS-L15-M18E-NBR-YEL ¹⁾
L 15	M 22 x 1.5	26.9	12	36	15	27	14	130	7.1	7012742000	24-SDS-L15-M22E-NBR-YEL
L 15	M 26 x 1.5	31.9	12	38	15	32	16	180	11.3	7012742100	24-SDS-L15-M26E-NBR-YEL

¹⁾ Standard size

Example for comp.:
 GE06LMEDOMD
 ISO 8434-1-SDS-L6xM10x1-E-St

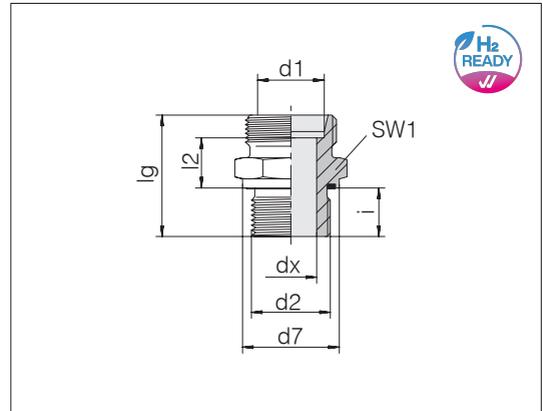
Continued on following page



I Male stud connectors

Male thread: Metric fine thread, cylindrical
 Threaded stud: ISO 9974-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



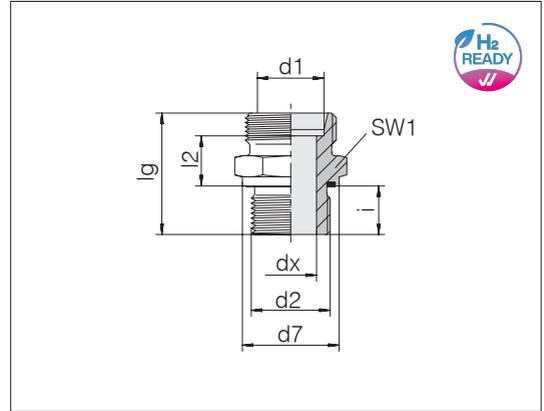
Series Tube OD d1	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 18	M 18 x 1.5	23.9	11	33.5	14	27	12	90	6.5	7012742200	24-SDS-L18-M18E-NBR-YEL
L 18	M 22 x 1.5	26.9	14	36	14.5	27	14	130	7.4	7012742300	24-SDS-L18-M22E-NBR-YEL ¹⁾
L 18	M 26 x 1.5	31.9	15	38	14.5	32	16	180	9.4	7012742400	24-SDS-L18-M26E-NBR-YEL
L 18	M 27 x 2	31.9	15	43	19.5	32	16	180	14.8	7012742500	24-SDS-L18-M27E-NBR-YEL
L 18	M 33 x 2	39.9	15	41	15.5	41	18	230	16.0	7012742600	24-SDS-L18-M33E-NBR-YEL
L 22	M 18 x 1.5	23.9	11	35.5	16	32	12	90	9.0	7012742700	24-SDS-L22-M18E-NBR-YEL
L 22	M 22 x 1.5	26.9	14	38	16.5	32	14	130	9.0	7012742800	24-SDS-L22-M22E-NBR-YEL
L 22	M 26 x 1.5	31.9	18	40	16.5	32	16	180	10.1	7012742900	24-SDS-L22-M26E-NBR-YEL ¹⁾
L 22	M 27 x 2	31.9	18	40	16.5	32	16	180	10.8	7012743000	24-SDS-L22-M27E-NBR-YEL
L 22	M 33 x 2	39.9	19	43	17.5	41	18	230	18.6	7012743100	24-SDS-L22-M33E-NBR-YEL
L 28	M 18 x 1.5	23.9	11	36.5	17	41	12	90	12.9	7012743200	24-SDS-L28-M18E-NBR-YEL
L 28	M 22 x 1.5	26.9	14	39	17.5	41	14	130	13.7	7012743300	24-SDS-L28-M22E-NBR-YEL
L 28	M 26 x 1.5	31.9	18	43	19.5	41	16	180	16.2	7012743400	24-SDS-L28-M26E-NBR-YEL
L 28	M 33 x 2	39.9	23	43	17.5	41	18	230	16.4	7012743500	24-SDS-L28-M33E-NBR-YEL ¹⁾
L 28	M 42 x 2	49.9	23	46	18.5	50	20	330	32.2	7012743600	24-SDS-L28-M42E-NBR-YEL
L 35	M 33 x 2	39.9	23	46	17.5	46	18	230	21.7	7012743700	24-SDS-L35-M33E-NBR-YEL
L 35	M 42 x 2	49.9	30	48	17.5	50	20	330	27.3	7012743800	24-SDS-L35-M42E-NBR-YEL ¹⁾
L 42	M 42 x 2	49.9	30	50	19	55	20	330	33.6	7012743900	24-SDS-L42-M42E-NBR-YEL
L 42	M 48 x 2	54.9	36	52	19	55	22	500	34.6	7012744000	24-SDS-L42-M48E-NBR-YEL ¹⁾

¹⁾ Standard size

I Male stud connectors

Male thread: Metric fine thread, cylindrical
 Threaded stud: ISO 9974-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



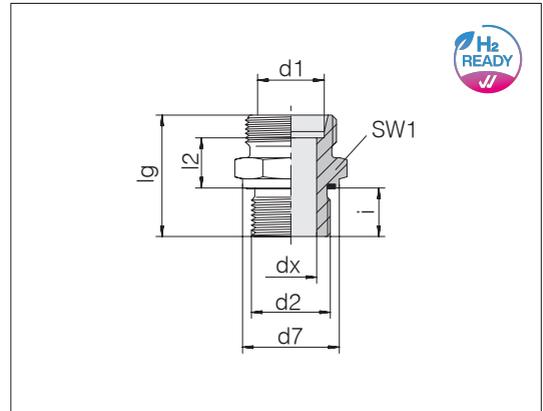
Series	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
S 6	M 12 x 1.5	16.9	4	32	13	17	12	50	2.9	7012744100	24-SDS-S6-M12E-NBR-YEL ¹⁾
S 8	M 12 x 1.5	16.9	4	34	15	17	12	50	3.8	7012744200	24-SDS-S8-M12E-NBR-YEL
S 8	M 14 x 1.5	18.9	5	34	15	19	12	60	4.1	7012744300	24-SDS-S8-M14E-NBR-YEL ¹⁾
S 8	M 18 x 1.5	23.9	5	36.5	17.5	24	12	90	6.5	7012744400	24-SDS-S8-M18E-NBR-YEL
S 8	M 22 x 1.5	26.9	5	41	20	27	14	130	10.4	7012744500	24-SDS-S8-M22E-NBR-YEL
S 10	M 12 x 1.5	16.9	4	34.5	15	19	12	50	4.5	7012744600	24-SDS-S10-M12E-NBR-YEL
S 10	M 16 x 1.5	21.9	7	34.5	15	22	12	80	5.3	7012744700	24-SDS-S10-M16E-NBR-YEL ¹⁾
S 10	M 18 x 1.5	23.9	7	36.5	17	24	12	90	7.6	7012744800	24-SDS-S10-M18E-NBR-YEL
S 12	M 12 x 1.5	16.9	4	36	16.5	22	12	50	5.2	7012744900	24-SDS-S12-M12E-NBR-YEL
S 12	M 14 x 1.5	18.9	5	36	16.5	22	12	60	6.2	7012745000	24-SDS-S12-M14E-NBR-YEL
S 12	M 16 x 1.5	21.9	7	36	16.5	22	12	80	6.9	7012745100	24-SDS-S12-M16E-NBR-YEL
S 12	M 18 x 1.5	23.9	8	36.5	17	24	12	90	7.1	7012745200	24-SDS-S12-M18E-NBR-YEL ¹⁾
S 12	M 22 x 1.5	25.9	8	39	17.5	27	14	130	10.0	7012745400	24-SDS-S12-M20E-NBR-YEL
S 12	M 22 x 1.5	26.9	8	39	17.5	27	14	130	10.2	7012745300	24-SDS-S12-M22E-NBR-YEL
S 14	M 14 x 1.5	25.9	10	41	19	27	14	130	9.4	7012745600	24-SDS-S14-M20E-NBR-YEL ¹⁾
S 14	M 18 x 1.5	23.9	8	39	19	24	12	90	7.7	7012745500	24-SDS-S14-M18E-NBR-YEL
S 16	M 16 x 1.5	21.9	7	39	18.5	27	12	80	8.4	7012745700	24-SDS-S16-M16E-NBR-YEL
S 16	M 18 x 1.5	23.9	10	38.5	18	27	12	90	8.1	7012745800	24-SDS-S16-M18E-ID10-NBR-YEL
S 16	M 22 x 1.5	26.9	12	41	18.5	27	14	130	9.6	7012745900	24-SDS-S16-M22E-NBR-YEL ¹⁾
S 16	M 27 x 2	31.9	12	45	20.5	32	16	200	15.7	7012746000	24-SDS-S16-M27E-NBR-YEL
S 20	M 22 x 1.5	26.9	12	45	20.5	32	14	130	13.9	7012746100	24-SDS-S20-M22E-NBR-YEL
S 20	M 26 x 1.5	31.9	16	47	20.5	32	16	190	16.3	7012746200	24-SDS-S20-M26E-NBR-YEL
S 20	M 27 x 2	31.9	16	47	20.5	32	16	200	15.1	7012746300	24-SDS-S20-M27E-NBR-YEL ¹⁾
S 25	M 26 x 1.5	31.9	16	51	23	41	16	190	25.0	7012746400	24-SDS-S25-M26E-NBR-YEL
S 25	M 27 x 2	31.9	16	51	23	41	16	200	23.7	7012746500	24-SDS-S25-M27E-NBR-YEL
S 25	M 33 x 2	39.9	20	53	23	41	18	250	26.5	7012746600	24-SDS-S25-M33E-NBR-YEL ¹⁾
S 30	M 33 x 2	39.9	20	55	23.5	46	18	250	34.9	7012746700	24-SDS-S30-M33E-NBR-YEL
S 30	M 42 x 2	49.9	25	57	23.5	50	20	500	41.7	7012746800	24-SDS-S30-M42E-NBR-YEL ¹⁾
S 38	M 48 x 2	54.9	32	64	26	55	22	600	56.4	7012746900	24-SDS-S38-M48E-NBR-YEL ¹⁾

¹⁾ Standard size

I Male stud connectors

Male thread: BSPP thread, cylindrical
 Threaded stud: ISO 1179-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	G 1/8 A	13.9	4	23.5	8.5	14	8	20	1.3	7012747000	24-SDS-L6-G1/8E-NBR-YEL ¹⁾
L 6	G 1/4 A	18.9	4	29	10	19	12	50	2.7	7012747100	24-SDS-L6-G1/4E-NBR-YEL
L 6	G 3/8 A	21.9	4	30.5	11.5	22	12	80	3.8	7012747200	24-SDS-L6-G3/8E-NBR-YEL
L 8	G 1/8 A	13.9	4	24.5	9.5	14	8	20	1.5	7012747300	24-SDS-L8-G1/8E-NBR-YEL
L 8	G 1/4 A	18.9	6	29	10	19	12	50	2.7	7012747400	24-SDS-L8-G1/4E-NBR-YEL ¹⁾
L 8	G 3/8 A	21.9	6	30.5	11.5	22	12	80	4.4	7012747500	24-SDS-L8-G3/8E-NBR-YEL
L 8	G 1/2 A	26.9	6	33	12	27	14	100	7.2	7012747600	24-SDS-L8-G1/2E-NBR-YEL
L 8	G 3/4 A	31.9	6	36	13	32	16	180	10.0	7012747700	24-SDS-L8-G3/4E-NBR-YEL
L 10	G 1/8 A	13.9	4	25.5	10.5	17	8	20	2.0	7012747800	24-SDS-L10-G1/8E-NBR-YEL
L 10	G 1/4 A	18.9	6	30	11	19	12	50	2.9	7012747900	24-SDS-L10-G1/4E-NBR-YEL ¹⁾
L 10	G 3/8 A	21.9	8	31.5	12.5	22	12	80	4.2	7012748000	24-SDS-L10-G3/8E-NBR-YEL
L 10	G 1/2 A	26.9	8	34	13	27	14	100	6.3	7012748100	24-SDS-L10-G1/2E-NBR-YEL
L 12	G 1/8 A	13.9	4	26.5	11.5	19	8	20	2.8	7013972800	24-SDS-L12-G1/8E-NBR-YEL
L 12	G 1/4 A	18.9	6	31.5	12.5	19	12	50	3.2	7012748200	24-SDS-L12-G1/4E-NBR-YEL
L 12	G 3/8 A	21.9	9	31.5	12.5	22	12	80	4.2	7012748300	24-SDS-L12-G3/8E-NBR-YEL ¹⁾
L 12	G 1/2 A	26.9	10	34	13	27	14	100	6.7	7012748400	24-SDS-L12-G1/2E-NBR-YEL
L 12	G 3/4 A	31.9	10	37	14	32	16	180	11.7	7012748500	24-SDS-L12-G3/4E-NBR-YEL
L 15	G 1/4 A	18.9	6	32	13	24	12	50	3.9	7012748600	24-SDS-L15-G1/4E-NBR-YEL
L 15	G 3/8 A	21.9	9	32.5	13.5	24	12	80	5.1	7012748700	24-SDS-L15-G3/8E-NBR-YEL
L 15	G 1/2 A	26.9	11	35	14	27	14	100	7.1	7012748800	24-SDS-L15-G1/2E-NBR-YEL ¹⁾
L 15	G 3/4 A	31.9	12	38	15	32	16	180	11.7	7012748900	24-SDS-L15-G3/4E-NBR-YEL
L 15	G 1 A	39.9	11	41	16	41	18	230	22.8	7012749000	24-SDS-L15-G1E-NBR-YEL
L 18	G 3/8 A	21.9	9	33.5	14	27	12	80	6.6	7012749100	24-SDS-L18-G3/8E-NBR-YEL
L 18	G 1/2 A	26.9	14	36	14.5	27	14	100	7.0	7012749200	24-SDS-L18-G1/2E-NBR-YEL ¹⁾
L 18	G 3/4 A	31.9	15	38	14.5	32	16	180	10.9	7012749300	24-SDS-L18-G3/4E-NBR-YEL
L 18	G 1 A	39.9	15	41	15.5	41	18	230	16.7	7012749400	24-SDS-L18-G1E-NBR-YEL
L 18	G 1 1/4 A	49.9	15	44	16.5	50	20	330	37.9	7012749500	24-SDS-L18-G11/4E-NBR-YEL
L 22	G 1/2 A	26.9	14	38	16.5	32	14	100	8.7	7012749600	24-SDS-L22-G1/2E-NBR-YEL
L 22	G 3/4 A	31.9	18	40	16.5	32	16	180	10.2	7012749700	24-SDS-L22-G3/4E-NBR-YEL ¹⁾
L 22	G 1 A	39.9	19	43	17.5	41	18	230	18.4	7012749800	24-SDS-L22-G1E-NBR-YEL
L 22	G 1 1/4 A	49.9	19	46	18.5	50	20	330	37.5	7012749900	24-SDS-L22-G11/4E-NBR-YEL

¹⁾ Standard size

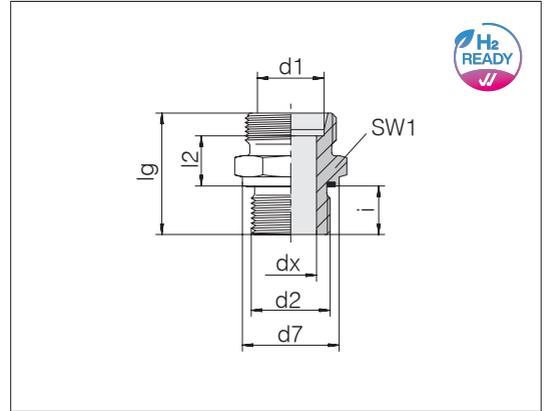
Example for comp. :
 GE06LREDO MD
 ISO 8434-1-SDS-L6xG1/8A-E-St

Continued on following page

I Male stud connectors

Male thread: BSPP thread, cylindrical
 Threaded stud: ISO 1179-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 28	G 3/4 A	31.9	18	41	17.5	41	16	180	14.6	7012750000	24-SDS-L28-G3/4E-NBR-YEL
L 28	G 1 A	39.9	23	43	17.5	41	18	230	16.5	7012750100	24-SDS-L28-G1E-NBR-YEL ¹⁾
L 28	G 1 1/4 A	49.9	23	46	18.5	50	20	330	25.2	7012750200	24-SDS-L28-G11/4E-NBR-YEL
L 35	G 1 A	39.9	23	46	17.5	46	18	230	23.8	7012750300	24-SDS-L35-G1E-NBR-YEL
L 35	G 1 1/4 A	49.9	30	48	17.5	50	20	330	27.1	7012750400	24-SDS-L35-G11/4E-NBR-YEL ¹⁾
L 35	G 1 1/2 A	54.9	30	52	19.5	55	22	500	37.4	7012750500	24-SDS-L35-G11/2E-NBR-YEL
L 42	G 1 1/4 A	49.9	30	50	19	55	20	330	33.6	7012750600	24-SDS-L42-G11/4E-NBR-YEL
L 42	G 1 1/2 A	54.9	36	52	19	55	22	500	34.3	7012750700	24-SDS-L42-G11/2E-NBR-YEL ¹⁾
S 6	G 1/4 A	18.9	4	32	13	19	12	60	3.5	7012750800	24-SDS-S6-G1/4E-NBR-YEL ¹⁾
S 6	G 3/8 A	21.9	4	34.5	15.5	22	12	90	6.0	7012750900	24-SDS-S6-G3/8E-NBR-YEL
S 6	G 1/2 A	26.9	4	39	18	27	14	150	8.6	7012751000	24-SDS-S6-G1/2E-NBR-YEL
S 8	G 1/4 A	18.9	5	34	15	19	12	60	4.1	7012751100	24-SDS-S8-G1/4E-NBR-YEL ¹⁾
S 8	G 3/8 A	21.9	5	34.5	15.5	22	12	90	5.7	7012751200	24-SDS-S8-G3/8E-NBR-YEL
S 8	G 1/2 A	26.9	5	39	18	27	14	150	9.5	7012751300	24-SDS-S8-G1/2E-NBR-YEL
S 10	G 1/4 A	18.9	5	34	14.5	19	12	60	4.2	7012751400	24-SDS-S10-G1/4E-NBR-YEL
S 10	G 3/8 A	21.9	7	34.5	15	22	12	90	5.5	7012751500	24-SDS-S10-G3/8E-NBR-YEL ¹⁾
S 10	G 1/2 A	26.9	7	39	17.5	27	14	150	8.9	7012751600	24-SDS-S10-G1/2E-NBR-YEL
S 12	G 1/4 A	18.9	5	36	16.5	22	12	60	5.6	7012751700	24-SDS-S12-G1/4E-NBR-YEL
S 12	G 3/8 A	21.9	8	36.5	17	22	12	90	6.2	7012751800	24-SDS-S12-G3/8E-NBR-YEL ¹⁾
S 12	G 1/2 A	26.9	8	39	17.5	27	14	150	9.1	7012751900	24-SDS-S12-G1/2E-NBR-YEL
S 12	G 3/4 A	31.9	8	43	19.5	32	16	200	13.4	7012752000	24-SDS-S12-G3/4E-NBR-YEL
S 14	G 3/8 A	21.9	8	39	19	24	12	90	8.3	7012752100	24-SDS-S14-G3/8E-NBR-YEL
S 14	G 1/2 A	26.9	10	41	19	27	14	150	9.6	7012752200	24-SDS-S14-G1/2E-NBR-YEL ¹⁾
S 16	G 1/4 A	18.9	5	38	17.5	27	12	60	8.4	7012752300	24-SDS-S16-G1/4E-NBR-YEL
S 16	G 3/8 A	21.9	8	38.5	18	27	12	90	8.1	7012752400	24-SDS-S16-G3/8E-NBR-YEL
S 16	G 1/2 A	26.9	12	41	18.5	27	14	150	9.2	7012752500	24-SDS-S16-G1/2E-NBR-YEL ¹⁾
S 16	G 3/4 A	31.9	12	45	20.5	32	16	200	13.8	7012752600	24-SDS-S16-G3/4E-NBR-YEL
S 16	G 1 A	39.9	12	49	22.5	41	18	250	23.7	7012752700	24-SDS-S16-G1E-NBR-YEL

¹⁾ Standard size

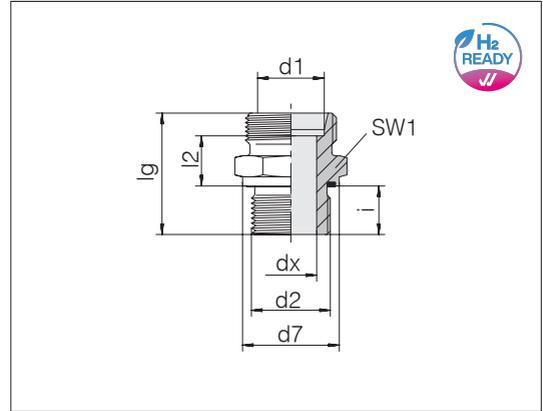
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I Male stud connectors

Male thread: BSPP thread, cylindrical
 Threaded stud: ISO 1179-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d7	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
S 20	G 1/2 A	26.9	12	45	20.5	32	14	150	13.5	7012752800	24-SDS-S20-G1/2E-NBR-YEL
S 20	G 3/4 A	31.9	16	47	20.5	32	16	200	14.9	7012752900	24-SDS-S20-G3/4E-NBR-YEL ¹⁾
S 20	G 1 A	39.9	16	51	22.5	41	18	250	25.0	7012753000	24-SDS-S20-G1E-NBR-YEL
S 25	G 1/2 A	26.9	12	49	23	41	14	150	23.9	7012753100	24-SDS-S25-G1/2E-NBR-YEL
S 25	G 3/4 A	31.9	16	51	23	41	16	200	23.7	7012753200	24-SDS-S25-G3/4E-NBR-YEL
S 25	G 1 A	39.9	20	53	23	41	18	250	26.3	7012753300	24-SDS-S25-G1E-NBR-YEL ¹⁾
S 25	G 1 1/4 A	49.9	20	55	23	50	20	500	46.7	7012753400	24-SDS-S25-G11/4E-NBR-YEL
S 30	G 3/4 A	31.9	16	53	23.5	46	16	200	31.7	7012753500	24-SDS-S30-G3/4E-NBR-YEL
S 30	G 1 A	39.9	20	55	23.5	46	18	250	33.0	7012753600	24-SDS-S30-G1E-NBR-YEL
S 30	G 1 1/4 A	49.9	25	57	23.5	50	20	500	41.9	7012753700	24-SDS-S30-G11/4E-NBR-YEL ¹⁾
S 30	G 1 1/2 A	54.9	25	62	26.5	55	22	600	64.0	7012753800	24-SDS-S30-G111/2E-NBR-YEL
S 38	G 3/4 A	31.9	16	58	26	55	16	200	50.1	7012753900	24-SDS-S38-G3/4E-NBR-YEL
S 38	G 1 A	39.9	20	60	26	55	18	250	44.9	7012754000	24-SDS-S38-G1E-NBR-YEL
S 38	G 1 1/4 A	49.9	25	62	26	55	20	500	55.5	7012754100	24-SDS-S38-G11/4E-NBR-YEL
S 38	G 1 1/2 A	54.9	32	64	26	55	22	600	55.9	7012754200	24-SDS-S38-G111/2E-NBR-YEL ¹⁾

¹⁾ Standard size

I Male stud connectors

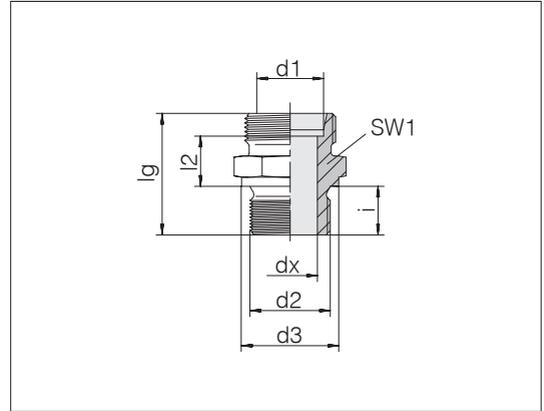
Male thread: Metric fine thread, cylindrical

Threaded stud: DIN 3852-1 Form A

Sealing type: Sealing ring

Sealing material: e.g. copper sealing ring

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d3	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	M 10 x 1	14	4	23.5	8.5	14	8	20	1.4	0707002000	24-SDS-L6-M10A ¹⁾
L 6	M 12 x 1.5	17	4	27	10	17	12	30	2.4	0785172000	24-SDS-L6-M12A
L 8	M 10 x 1	14	4	24.5	9.5	17	8	20	1.9	0707062000	24-SDS-L8-M10A
L 8	M 12 x 1.5	17	6	29	10	17	12	30	2.2	0707052000	24-SDS-L8-M12A ¹⁾
L 8	M 16 x 1.5	21	6	30.5	11.5	22	12	90	4.3	0707082000	24-SDS-L8-M16A
L 8	M 18 x 1.5	23	6	30.5	11.5	24	12	100	5.2	0707092000	24-SDS-L8-M18A
L 10	M 14 x 1.5	19	7	30	11	19	12	50	3.0	0707102000	24-SDS-L10-M14A ¹⁾
L 10	M 16 x 1.5	21	7	31.5	12.5	22	12	90	4.3	0707122000	24-SDS-L10-M16A
L 10	M 18 x 1.5	23	8	31.5	12.5	24	12	100	5.0	0707132000	24-SDS-L10-M18A
L 12	M 12 x 1.5	17	5	31.5	12.5	19	12	30	3.1	0707192000	24-SDS-L12-M12A
L 12	M 14 x 1.5	19	7	31.5	12.5	19	12	50	3.4	0707162000	24-SDS-L12-M14A
L 12	M 16 x 1.5	21	9	31.5	12.5	22	12	90	4.0	0707152000	24-SDS-L12-M16A ¹⁾
L 12	M 18 x 1.5	23	10	31.5	12.5	24	12	100	4.7	0707172000	24-SDS-L12-M18A
L 12	M 22 x 1.5	27	9	35	14	27	14	110	8.1	0707182000	24-SDS-L12-M22A
L 15	M 14 x 1.5	19	7	32	13	24	12	50	4.7	0707242000	24-SDS-L15-M14A
L 15	M 16 x 1.5	21	9	32.5	13.5	22	12	90	4.7	0707212000	24-SDS-L15-M16A
L 15	M 18 x 1.5	23	11	32.5	13.5	24	12	100	5.2	0707202000	24-SDS-L15-M18A ¹⁾
L 15	M 22 x 1.5	27	12	36	15	27	14	110	7.7	0707222000	24-SDS-L15-M22A
L 15	M 26 x 1.5	31	12	38	15	32	16	130	11.7	0799922000	24-SDS-L15-M26A
L 18	M 18 x 1.5	23	11	32.5	13	27	12	100	6.3	0707262000	24-SDS-L18-M18A
L 18	M 22 x 1.5	27	14	36	14.5	27	14	110	7.6	0707252000	24-SDS-L18-M22A ¹⁾
L 18	M 26 x 1.5	31	15	38	14.5	32	16	130	11.0	0707272000	24-SDS-L18-M26A
L 22	M 18 x 1.5	23	11	36	16.5	32	12	100	8.7	0707332000	24-SDS-L22-M18A
L 22	M 22 x 1.5	27	14	38.5	17	32	14	110	9.7	0707312000	24-SDS-L22-M22A
L 22	M 26 x 1.5	31	18	40	16.5	32	16	130	10.3	0707302000	24-SDS-L22-M26A ¹⁾
L 22	M 27 x 2	32	18	45	21.5	32	16	150	12.9	0707342000	24-SDS-L22-M27A
L 28	M 22 x 1.5	27	14	39	17.5	41	14	110	13.5	0707382000	24-SDS-L28-M22A
L 28	M 26 x 1.5	31	18	43	19.5	41	16	130	16.1	0707362000	24-SDS-L28-M26A
L 28	M 33 x 2	39	23	43	17.5	41	18	350	16.9	0707352000	24-SDS-L28-M33A ¹⁾
L 35	M 42 x 2	49	30	48	17.5	50	20	550	28.4	0707402000	24-SDS-L35-M42A ¹⁾

¹⁾ Standard size

Threaded stud in acc. with DIN 3852-1 Form A are approved for use for gas supply in accordance with DIN 3387-1.

Example for comp.:
GE06LMAX

Continued on following page



I Male stud connectors

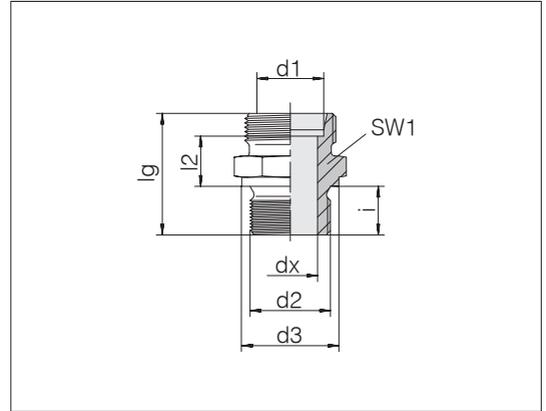
Male thread: Metric fine thread, cylindrical

Threaded stud: DIN 3852-1 Form A

Sealing type: Sealing ring

Sealing material: e.g. copper sealing ring

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d3	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
S 6	M 12 x 1.5	17	4	32	13	17	12	30	3.0	0707502000	24-SDS-S6-M12A ¹⁾
S 8	M 14 x 1.5	19	5	34	15	19	12	50	4.3	0707552000	24-SDS-S8-M14A ¹⁾
S 12	M 18 x 1.5	23	8	36.5	17	24	12	100	7.2	0707652000	24-SDS-S12-M18A ¹⁾
S 16	M 18 x 1.5	23	9	38.5	18	24	12	100	7.6	0707782000	24-SDS-S16-M18A-ID9

¹⁾ Standard size

I Male stud connectors

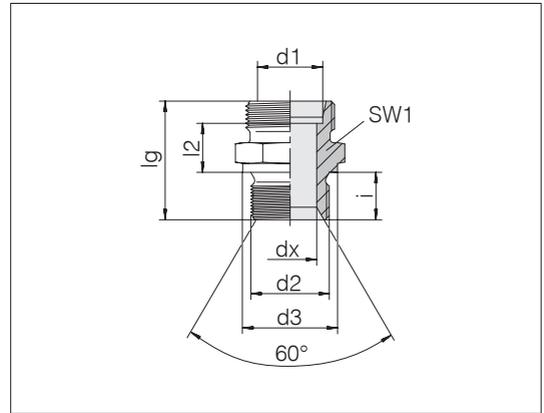
Male thread: BSPP thread, cylindrical

Threaded stud: DIN 3852-2 Form A

Sealing type: Sealing ring

Sealing material: e.g. copper sealing ring

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d3	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	G 1/8 A	14	4	23.5	8.5	14	8	20	1.4	0708002000	24-SDS-L6-G1/8A-CH60 ¹⁾
L 6	G 1/4 A	18	4	28	9	19	12	45	2.5	0708022000	24-SDS-L6-G1/4A-CH60
L 6	G 3/8 A	22	4	30.5	11.5	22	12	80	4.2	0708032000	24-SDS-L6-G3/8A-CH60
L 8	G 1/8 A	14	4	24.5	9.5	17	8	20	1.8	0708062000	24-SDS-L8-G1/8A-CH60
L 8	G 1/4 A	18	6	29	10	19	12	45	2.7	0708052000	24-SDS-L8-G1/4A-CH60 ¹⁾
L 8	G 3/8 A	22	6	30.5	11.5	22	12	80	4.2	0708072000	24-SDS-L8-G3/8A-CH60
L 10	G 1/4 A	18	7	30	11	19	12	45	2.7	0708102000	24-SDS-L10-G1/4A-CH60 ¹⁾
L 10	G 3/8 A	22	7	31.5	12.5	22	12	80	4.3	0708122000	24-SDS-L10-G3/8A-CH60
L 10	G 1/2 A	26	7	34	13	27	14	90	6.8	0708132000	24-SDS-L10-G1/2A-CH60
L 12	G 1/4 A	18	7	31	12	19	12	45	3.1	0708162000	24-SDS-L12-G1/4A-CH60
L 12	G 3/8 A	22	9	31.5	12.5	22	12	80	4.6	0708152000	24-SDS-L12-G3/8A-CH60 ¹⁾
L 12	G 1/2 A	26	9	34	13	27	14	90	6.7	0708172000	24-SDS-L12-G1/2A-CH60
L 15	G 3/8 A	22	9	32.5	13.5	24	12	80	5.1	0708212000	24-SDS-L15-G3/8A-CH60
L 15	G 1/2 A	26	11	35	14	27	14	90	7.7	0708202000	24-SDS-L15-G1/2A-CH60 ¹⁾
L 15	G 3/4 A	32	12	38	15	32	16	220	11.2	0708222000	24-SDS-L15-G3/4A-CH60
L 18	G 3/8 A	22	9	33.5	14	27	12	80	6.6	0708262000	24-SDS-L18-G3/8A-CH60
L 18	G 1/2 A	26	14	36	14.5	27	14	90	7.1	0708252000	24-SDS-L18-G1/2A-CH60 ¹⁾
L 18	G 3/4 A	32	15	38	14.5	32	16	220	10.6	0708272000	24-SDS-L18-G3/4A-CH60
L 22	G 1/2 A	26	14	38	16.5	32	14	90	8.8	0708312000	24-SDS-L22-G1/2A-CH60
L 22	G 3/4 A	32	18	40	16.5	32	16	220	10.2	0708302000	24-SDS-L22-G3/4A-CH60 ¹⁾
L 22	G 1 A	39	19	42	16.5	41	18	350	16.7	0708322000	24-SDS-L22-G1A-CH60
L 28	G 1/2 A	26	14	39	17.5	41	14	90	13.2	0708382000	24-SDS-L28-G1/2A-CH60
L 28	G 3/4 A	32	18	43	19.5	41	16	220	16.2	0708362000	24-SDS-L28-G3/4A-CH60
L 28	G 1 A	39	23	43	17.5	41	18	350	16.7	0708352000	24-SDS-L28-G1A-CH60 ¹⁾
L 35	G 1 1/4 A	49	30	48	17.5	50	20	400	27.2	0708402000	24-SDS-L35-G11/4A-CH60 ¹⁾
L 42	G 1 1/4 A	49	30	50	19	55	20	400	33.4	0708462000	24-SDS-L42-G11/4A-CH60
L 42	G 1 1/2 A	55	36	52	19	55	22	700	34.5	0708452000	24-SDS-L42-G11/2A-CH60 ¹⁾

¹⁾ Standard size

Threaded stud in acc. with DIN 3852-2 Form A are approved for use for gas supply in accordance with DIN 3387-1.

Example for comp.: GE06LRA

Continued on following page



I Male stud connectors

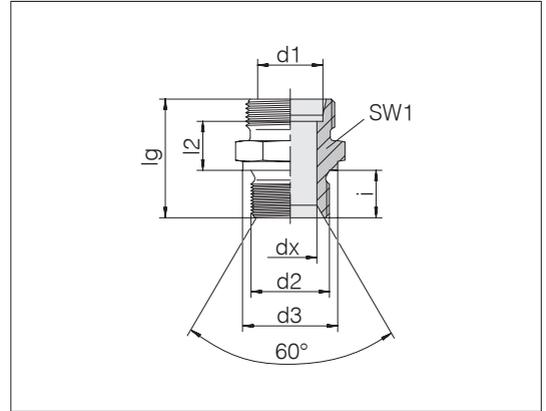
Male thread: BSPP thread, cylindrical

Threaded stud: DIN 3852-2 Form A

Sealing type: Sealing ring

Sealing material: e.g. copper sealing ring

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d3	dx	lg	l2	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
S 6	G 1/8 A	14	4	27.5	12.5	17	8	20	2.4	0708512000	24-SDS-S6-G1/8A-ID4/CH60
S 6	G 1/4 A	18	4	32	13	19	12	45	3.4	0708502000	24-SDS-S6-G1/4A-CH60 ¹⁾
S 8	G 1/8 A	14	4	29.5	14.5	17	8	20	3.0	0708562000	24-SDS-S8-G1/8A-ID4/CH60
S 8	G 1/4 A	18	5	34	15	19	12	45	4.1	0708552000	24-SDS-S8-G1/4A-CH60 ¹⁾
S 8	G 3/8 A	22	5	34.5	15.5	22	12	80	5.5	0708572000	24-SDS-S8-G3/8A-CH60
S 10	G 1/4 A	18	5	34	14.5	19	12	45	4.1	0708612000	24-SDS-S10-G1/4A-CH60
S 10	G 3/8 A	22	7	34.5	15	22	12	80	5.5	0708602000	24-SDS-S10-G3/8A-CH60 ¹⁾
S 10	G 1/2 A	26	7	39	17.5	27	14	90	9.2	0708622000	24-SDS-S10-G1/2A-CH60
S 12	G 1/4 A	18	5	36	16.5	22	12	45	5.7	0708662000	24-SDS-S12-G1/4A-CH60
S 12	G 3/8 A	22	8	36.5	17	22	12	80	6.1	0708652000	24-SDS-S12-G3/8A-CH60 ¹⁾
S 12	G 1/2 A	26	8	39	17.5	27	14	90	9.3	0708672000	24-SDS-S12-G1/2A-CH60
S 14	G 1/2 A	26	10	41	19	27	14	90	9.4	0708702000	24-SDS-S14-G1/2A-CH60 ¹⁾
S 16	G 3/8 A	22	9	39	18.5	24	12	80	7.4	0708762000	24-SDS-S16-G3/8A-CH60
S 16	G 1/2 A	26	12	41	18.5	27	14	90	9.0	0708752000	24-SDS-S16-G1/2A-CH60 ¹⁾
S 16	G 3/4 A	32	12	45	20.5	32	16	220	14.9	0708772000	24-SDS-S16-G3/4A-CH60
S 16	G 1 A	39	12	49	22.5	41	18	350	23.1	0708782000	24-SDS-S16-G1A-CH60
S 20	G 1/2 A	26	12	45	20.5	32	14	90	13.3	0708812000	24-SDS-S20-G1/2A-CH60
S 20	G 3/4 A	32	16	47	20.5	32	16	220	16.3	0708802000	24-SDS-S20-G3/4A-CH60 ¹⁾
S 20	G 1 A	39	16	51	22.5	41	18	350	24.3	0708822000	24-SDS-S20-G1A-CH60
S 25	G 3/4 A	32	16	51	23	41	16	220	23.6	0708862000	24-SDS-S25-G3/4A-CH60
S 25	G 1 A	39	20	53	23	41	18	350	25.7	0708852000	24-SDS-S25-G1A-CH60 ¹⁾
S 30	G 3/4 A	32	16	53	23.5	46	16	220	29.6	0708932000	24-SDS-S30-G3/4A-CH60
S 30	G 1 A	39	20	55	23.5	46	18	350	31.9	0708912000	24-SDS-S30-G1A-CH60
S 30	G 1 1/4 A	49	25	57	23.5	50	20	400	40.3	0708902000	24-SDS-S30-G11/4A-CH60 ¹⁾
S 38	G 1 A	39	20	60	26	55	18	350	49.4	0708982000	24-SDS-S38-G1A-CH60
S 38	G 1 1/4 A	49	25	62	26	55	20	400	53.9	0708962000	24-SDS-S38-G11/4A-CH60
S 38	G 1 1/2 A	55	32	64	26	55	22	700	55.0	0708952000	24-SDS-S38-G11/2A-CH60 ¹⁾

¹⁾ Standard size

I Male stud connectors

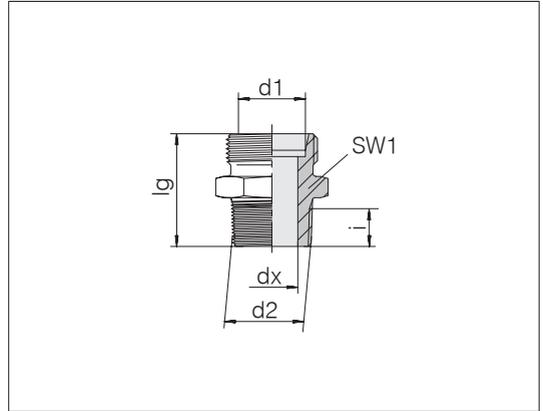
Male thread: Metric fine thread, tapered

Threaded stud: DIN 3852-1 Form C

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	dx	lg	SW1	i	kg/100 ca.	Order-No.	Designation	
Tube OD d1									
L 6	M 10 x 1 keg	4	22	14	6	1.3	0702002000	24-SDS-L6-M10T	¹⁾
L 8	M 10 x 1 keg	4	23	17	6	2.0	0702072000	24-SDS-L8-M10T	
L 8	M 12 x 1.5 keg	6	27	17	9	2.1	0702052000	24-SDS-L8-M12T	¹⁾
L 10	M 14 x 1.5 keg	7	28	17	9	2.5	0702102000	24-SDS-L10-M14T	¹⁾
L 12	M 16 x 1.5 keg	9	29	19	9	3.2	0702152000	24-SDS-L12-M16T	¹⁾
L 15	M 18 x 1.5 keg	11	30	24	9	4.7	0702202000	24-SDS-L15-M18T	¹⁾
L 18	M 22 x 1.5 keg	14	33	27	11	6.8	0702252000	24-SDS-L18-M22T	¹⁾
S 6	M 12 x 1.5 keg	4	30	17	9	2.8	0702502000	24-SDS-S6-M12T	¹⁾
S 8	M 14 x 1.5 keg	5	32	17	9	3.7	0702552000	24-SDS-S8-M14T	¹⁾
S 10	M 16 x 1.5 keg	7	32	19	9	4.3	0702602000	24-SDS-S10-M16T	¹⁾
S 12	M 18 x 1.5 keg	8	34	22	9	6.0	0702652000	24-SDS-S12-M18T	¹⁾
S 14	M 20 x 1.5 keg	10	38	27	11	8.7	0702702000	24-SDS-S14-M20T	¹⁾
S 16	M 22 x 1.5 keg	12	38	27	11	9.0	0702752000	24-SDS-S16-M22T	¹⁾

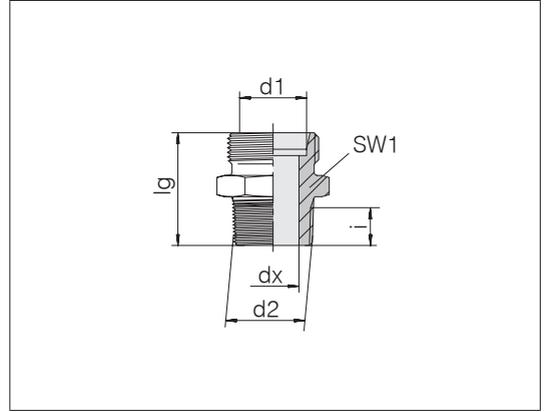
¹⁾ Standard size

Example for comp. :
GE06LMkegX
DIN 2353-AL6-St

I Male stud connectors

Male thread: BSPT thread, tapered
 Threaded stud: DIN 3852-2 Form C
 Sealing type: Tapered thread
 Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dx	lg	SW1	i	kg/100 ca.	Order-No.	Designation
L 6	R 1/8	4	22	14	6.2	1.2	0704002000	24-SDS-L6-R1/8T ¹⁾
L 6	R 1/4	4	26	14	9.3	1.9	0704022000	24-SDS-L6-R1/4T
L 6	R 3/8	4	28	19	9.3	3.6	0704032000	24-SDS-L6-R3/8T
L 8	R 1/8	4	23	14	6.2	1.5	0704062000	24-SDS-L8-R1/8T
L 8	R 1/4	6	27	17	9.3	2.2	0704052000	24-SDS-L8-R1/4T ¹⁾
L 8	R 3/8	6	28	19	9.3	3.4	0704072000	24-SDS-L8-R3/8T
L 8	R 1/2	6	30	24	10.4	5.9	0704082000	24-SDS-L8-R1/2T
L 10	R 1/4	7	28	17	9.3	2.3	0704102000	24-SDS-L10-R1/4T ¹⁾
L 10	R 3/8	8	28	19	9.3	3.1	0704122000	24-SDS-L10-R3/8T
L 10	R 1/2	8	31	24	10.4	5.6	0704132000	24-SDS-L10-R1/2T
L 12	R 1/4	7	29	19	9.3	2.8	0704162000	24-SDS-L12-R1/4T
L 12	R 3/8	9	29	19	9.3	3.3	0704152000	24-SDS-L12-R3/8T ¹⁾
L 12	R 1/2	9	31	24	10.4	5.5	0704172000	24-SDS-L12-R1/2T
L 12	R 3/4	9	34	30	12.4	8.2	0704182000	24-SDS-L12-R3/4T
L 15	R 1/4	7	30	24	9.3	4.4	0704232000	24-SDS-L15-R1/4T
L 15	R 3/8	11	30	24	9.3	4.4	0704212000	24-SDS-L15-R3/8T
L 15	R 1/2	11	32	24	10.4	5.8	0704202000	24-SDS-L15-R1/2T ¹⁾
L 18	R 1/2	14	33	27	10.4	6.4	0704252000	24-SDS-L18-R1/2T ¹⁾
L 18	R 3/4	14	35	30	12.4	10.9	0704272000	24-SDS-L18-R3/4T
L 22	R 1/2	14	35	32	10.4	8.1	0704312000	24-SDS-L22-R1/2T
L 22	R 3/4	18	37	32	12.4	9.6	0704302000	24-SDS-L22-R3/4T ¹⁾
L 28	R 3/4	18	38	41	12.4	13.9	0704362000	24-SDS-L28-R3/4T
L 28	R 1	23	40	41	13.4	15.6	0704352000	24-SDS-L28-R1T ¹⁾
L 42	R 1 1/4	30	47	55	15.4	34.5	7006496200	24-SDS-L42-R11/4T

¹⁾ Standard size

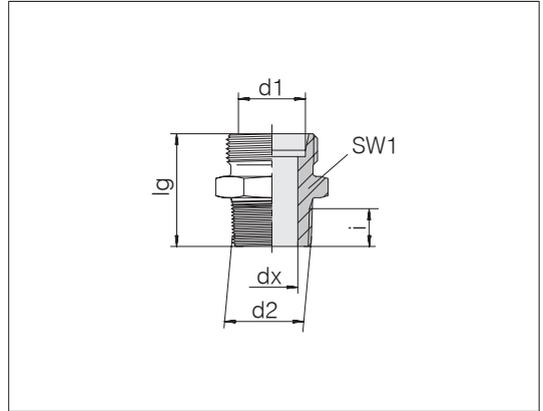
Threaded stud in acc. with DIN 3852-2 Form C are approved for use for gas supply in accordance with DIN 3387-1.

Example for comp.:
 GE06LRkegX
 DIN 2353-BL6-St

I Male stud connectors

Male thread: BSPT thread, tapered
 Threaded stud: DIN 3852-2 Form C
 Sealing type: Tapered thread
 Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dx	lg	SW1	i	kg/100 ca.	Order-No.	Designation
S 6	R 1/4	4	30	17	9.3	3.0	0704502000	24-SDS-S6-R1/4T ¹⁾
S 8	R 1/4	5	32	17	9.3	3.4	0704552000	24-SDS-S8-R1/4T ¹⁾
S 10	R 3/8	7	32	19	9.3	4.4	0704602000	24-SDS-S10-R3/8T ¹⁾
S 12	R 1/4	6	34	22	9.3	5.4	0704662000	24-SDS-S12-R1/4T
S 12	R 3/8	8	34	22	9.3	5.8	0704652000	24-SDS-S12-R3/8T ¹⁾
S 14	R 3/8	8	36	24	9.3	6.8	0704712000	24-SDS-S14-R3/8T
S 14	R 1/2	10	38	27	10.4	8.9	0704702000	24-SDS-S14-R1/2T ¹⁾
S 16	R 3/8	9	36	27	9.3	7.9	0704762000	24-SDS-S16-R3/8T
S 16	R 1/2	12	38	27	10.4	8.5	0704752000	24-SDS-S16-R1/2T ¹⁾
S 20	R 1/2	14	42	32	10.4	12.2	0704812000	24-SDS-S20-R1/2T
S 20	R 3/4	16	44	32	12.4	14.1	0704802000	24-SDS-S20-R3/4T ¹⁾

¹⁾ Standard size

Operating pressure PB 630 only
 applies if holes with
 female conical threads are available.

I Male stud connectors

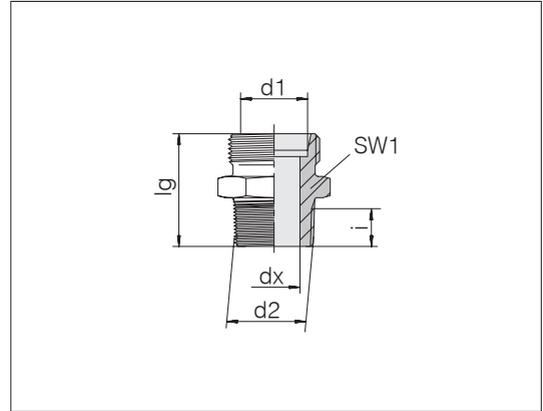
Male thread: NPT thread, tapered

Threaded stud: ASME B1.20.1

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dx	lg	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation	
L 6	1/8 NPT	4	23.9	12	6.7	15	1.2	0706002000	24-SDS-L6-N1/8T	¹⁾
L 6	1/4 NPT	4	30	17	10.2	35	2.6	0706022000	24-SDS-L6-N1/4T	
L 8	1/8 NPT	5	24.9	14	6.7	15	1.5	0706062000	24-SDS-L8-N1/8T	
L 8	1/4 NPT	6	30.1	17	10.2	35	2.5	0706052000	24-SDS-L8-N1/4T	¹⁾
L 8	3/8 NPT	6	31.2	19	10.4	55	3.9	0706072000	24-SDS-L8-N3/8T	
L 8	1/2 NPT	6	35.8	24	13.6	110	7.1	0706082000	24-SDS-L8-N1/2T	
L 10	1/8 NPT	4	27	17	6.7	15	2.3	0706112000	24-SDS-L10-N1/8T	
L 10	1/4 NPT	7	31.1	17	10.2	35	2.5	0706102000	24-SDS-L10-N1/4T	¹⁾
L 10	3/8 NPT	8	32.2	19	10.4	55	3.7	0706122000	24-SDS-L10-N3/8T	
L 10	1/2 NPT	8	37.8	24	13.6	110	7.2	0706132000	24-SDS-L10-N1/2T	
L 12	1/4 NPT	7	32	19	10.2	35	3.2	0706162000	24-SDS-L12-N1/4T	
L 12	3/8 NPT	9	32.2	19	10.4	55	3.6	0706152000	24-SDS-L12-N3/8T	¹⁾
L 12	1/2 NPT	10	36.8	24	13.6	110	6.4	0706172000	24-SDS-L12-N1/2T	
L 15	3/8 NPT	9	33.2	24	10.4	55	5.2	0706212000	24-SDS-L15-N3/8T	
L 15	1/2 NPT	11	37.8	24	13.6	110	6.8	0706202000	24-SDS-L15-N1/2T	¹⁾
L 18	3/8 NPT	9	34.2	27	10.4	55	8.0	0706262000	24-SDS-L18-N3/8T	
L 18	1/2 NPT	14	38.8	27	13.6	110	7.2	0706252000	24-SDS-L18-N1/2T	¹⁾
L 18	3/4 NPT	14	39.1	30	13.9	175	9.1	0706272000	24-SDS-L18-N3/4T	
L 22	1/2 NPT	14	40.8	32	13.6	110	9.9	0706312000	24-SDS-L22-N1/2T	
L 22	3/4 NPT	18	41.1	32	13.9	175	10.1	0706302000	24-SDS-L22-N3/4T	¹⁾
L 28	1 NPT	23	47	41	17.3	265	17.2	0706352000	24-SDS-L28-N1T	¹⁾
L 35	1 1/4 NPT	30	50.6	46	18	315	25.6	0706402000	24-SDS-L35-N11/4T	¹⁾
L 42	1 1/4 NPT	30	52.6	55	25.6	315	37.4	7011121800	24-SDS-L42-N11/4T	
L 42	1 1/2 NPT	36	53	55	18.4	385	35.2	0706452000	24-SDS-L42-N11/2T	¹⁾

¹⁾ Standard size

Threaded stud NPT in acc. with ASME are approved for use for gas supply in acc. with DIN 3387-1.

Example for comp.: GE06L1/8NPTX

I Male stud connectors

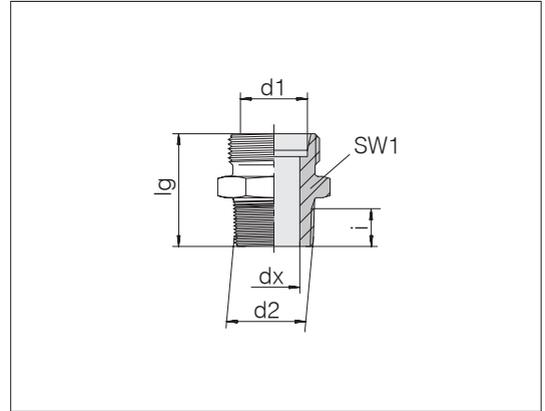
Male thread: NPT thread, tapered

Threaded stud: ASME B1.20.1

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	dx	lg	SW1	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
Tube OD									
d1									
S 6	1/4 NPT	4	33.1	17	10.2	35	3.3	0706502000	24-SDS-S6-N1/4T ¹⁾
S 8	1/4 NPT	5	35.1	17	10.2	35	3.8	0706552000	24-SDS-S8-N1/4T ¹⁾
S 8	3/8 NPT	8	35	19	10.4	55	4.5	0706572000	24-SDS-S8-N3/8T
S 10	1/8 NPT	4	30.9	19	6.7	15	4.0	0706632000	24-SDS-S10-N1/8T
S 10	1/4 NPT	5	35.1	19	10.2	35	4.3	0706612000	24-SDS-S10-N1/4T
S 10	3/8 NPT	7	35.2	19	10.4	55	4.8	0706602000	24-SDS-S10-N3/8T ¹⁾
S 10	1/2 NPT	7	41.8	24	13.6	110	9.0	0706622000	24-SDS-S10-N1/2T
S 12	1/4 NPT	5	37.1	22	10.2	35	5.8	0706662000	24-SDS-S12-N1/4T
S 12	3/8 NPT	8	37.2	22	10.4	55	6.2	0706652000	24-SDS-S12-N3/8T ¹⁾
S 12	1/2 NPT	8	41.8	24	13.6	110	9.0	0706672000	24-SDS-S12-N1/2T
S 14	3/8 NPT	8	39	24	10.4	55	7.2	0706712000	24-SDS-S14-N3/8T
S 14	1/2 NPT	10	43.8	27	13.6	110	9.9	0706702000	24-SDS-S14-N1/2T ¹⁾
S 16	3/8 NPT	8	39.2	27	10.4	55	8.4	0706762000	24-SDS-S16-N3/8T
S 16	1/2 NPT	12	43.8	27	13.6	110	9.4	0706752000	24-SDS-S16-N1/2T ¹⁾
S 16	3/4 NPT	12	44	30	13.9	175	13.5	0706772000	24-SDS-S16-N3/4T
S 20	1/2 NPT	14	47.8	32	13.6	110	12.7	0706812000	24-SDS-S20-N1/2T
S 20	3/4 NPT	16	48.1	32	13.9	175	14.9	0706802000	24-SDS-S20-N3/4T ¹⁾
S 20	1 NPT	16	55	36	17.3	265	25.0	0706822000	24-SDS-S20-N1T
S 25	3/4 NPT	18	52.1	41	13.9	175	22.7	0706862000	24-SDS-S25-N3/4T
S 25	1 NPT	20	57	41	17.3	265	28.1	0706852000	24-SDS-S25-N1T ¹⁾
S 30	1 NPT	22	59	46	17.3	265	32.2	0706912000	24-SDS-S30-N1T
S 30	1 1/4 NPT	23	59.6	46	18	315	39.3	0706902000	24-SDS-S30-N11/4T ¹⁾
S 38	1 1/2 NPT	32	65	55	18.4	385	57.2	0706952000	24-SDS-S38-N11/2T ¹⁾

¹⁾ Standard size

I Male stud elbows

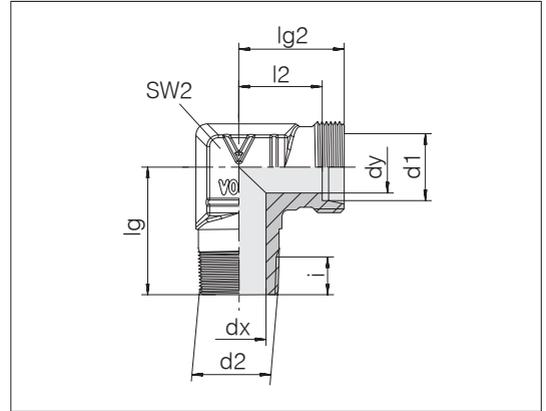
Male thread: Metric fine thread, tapered

Threaded stud: DIN 3852-1 Form C

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation	
L 6	M 10 x 1 keg	4	4	20	19	12	12	9	2.9	0714002000	24-SDE-L6-M10T-P	¹⁾
L 8	M 12 x 1.5 keg	6	6	26	21	14	14	9	4.3	0714052000	24-SDE-L8-M12T-P	¹⁾
L 10	M 14 x 1.5 keg	7	8	27	22	15	17	12	6.2	0714102000	24-SDE-L10-M14T-P	¹⁾
L 12	M 16 x 1.5 keg	9	10	28	24	17	19	12	8.5	0714152000	24-SDE-L12-M16T	¹⁾
L 12	M 18 x 1.5 keg	11	10	32	28	21	19	9	8.2	0714172000	24-SDE-L12-M18T	
L 15	M 18 x 1.5 keg	11	12	32	28	21	19	12	8.3	0714202000	24-SDE-L15-M18T	¹⁾
L 18	M 22 x 1.5 keg	14	15	36	31	23.5	24	11	13.0	0714252000	24-SDE-L18-M22T	¹⁾
S 6	M 12 x 1.5 keg	4	4	26	23	16	12	12	5.2	0714502000	24-SDE-S6-M12T	¹⁾
S 8	M 14 x 1.5 keg	5	5	27	24	17	17	9	7.4	0714552000	24-SDE-S8-M14T-P	¹⁾
S 10	M 16 x 1.5 keg	7	7	28	25	17.5	19	9	10.1	0714602000	24-SDE-S10-M16T-P	¹⁾
S 12	M 18 x 1.5 keg	8	8	28	29	21.5	22	9	12.9	0714652000	24-SDE-S12-M18T-P	¹⁾
S 14	M 20 x 1.5 keg	10	10	32	30	22	19	11	10.4	0714702000	24-SDE-S14-M20T	¹⁾
S 16	M 22 x 1.5 keg	12	12	32	33	24.5	24	11	14.5	0714752000	24-SDE-S16-M22T	¹⁾

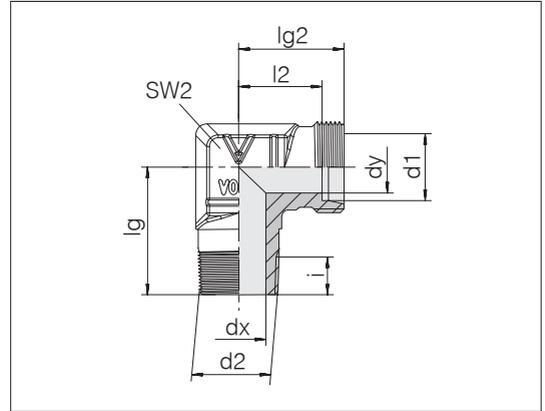
¹⁾ Standard size

Example for comp. :
WE06LMX
DIN 2353-FL6-St

I Male stud elbows

Male thread: BSPT thread, tapered
 Threaded stud: DIN 3852-2 Form C
 Sealing type: Tapered thread
 Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
L 6	R 1/8	4	4	20	19	12	12	6.2	2.7	0716002000	24-SDE-L6-R1/8T-P ¹⁾
L 6	R 1/4	7	4	26	21	14	14	9.3	4.5	0716022000	24-SDE-L6-R1/4T-P
L 6	R 3/8	9	4	27	24	17	17	9.3	6.8	0716032000	24-SDE-L6-R3/8T-P
L 8	R 1/8	4	6	26	21	14	14	6.2	4.6	0716062000	24-SDE-L8-R1/8T-P
L 8	R 1/4	6	6	26	21	14	14	9.3	4.8	0716052000	24-SDE-L8-R1/4T-P ¹⁾
L 8	R 3/8	8	6	28	22	15	19	9.3	8.8	0716072000	24-SDE-L8-R3/8T-P
L 10	R 1/8	4	7	25	22	15	17	6.2	6.7	0716112000	24-SDE-L10-R1/8T-P
L 10	R 1/4	7	8	27	22	15	17	9.3	5.9	0716102000	24-SDE-L10-R1/4T-P ¹⁾
L 10	R 3/8	7	7	28	24	17	19	9.3	9.3	0716122000	24-SDE-L10-R3/8T-P
L 10	R 1/2	11	7	34	27	20	19	10.4	9.6	0716132000	24-SDE-L10-R1/2T
L 12	R 1/4	7	9	28	24	17	19	9.3	8.5	0716162000	24-SDE-L12-R1/4T-P
L 12	R 3/8	9	10	28	24	17	19	9.3	9.1	0716152000	24-SDE-L12-R3/8T-P ¹⁾
L 12	R 1/2	11	9	34	27	20	19	10.4	9.7	0716172000	24-SDE-L12-R1/2T
L 15	R 3/8	9	11	32	28	21	19	9.3	9.0	0716212000	24-SDE-L15-R3/8T
L 15	R 1/2	11	12	34	28	21	19	10.4	9.5	0716202000	24-SDE-L15-R1/2T ¹⁾
L 15	R 3/4	16	12	42	28.5	21.5	27	12.4	18.6	0716222000	24-SDE-L15-R3/4T
L 18	R 1/2	14	15	36	31	23.5	24	14	12.6	0716252000	24-SDE-L18-R1/2T ¹⁾
L 18	R 3/4	18	15	42	35	27.5	27	12.4	20.2	0716272000	24-SDE-L18-R3/4T
L 22	R 3/4	18	19	42	35	27.5	27	12.4	17.3	0716342000	24-SDE-L22-R3/4T

¹⁾ Standard size

Example for comp. :
 WE06LRX
 DIN 2353-GL6-St

Continued on following page



I Male stud elbows

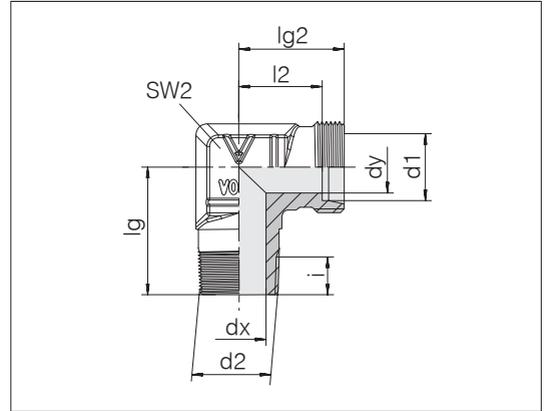
Male thread: BSPT thread, tapered

Threaded stud: DIN 3852-2 Form C

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
S 6	R 1/4	4	4	26	23	16	14	9.3	5.4	0716502000	24-SDE-S6-R1/4T-P ¹⁾
S 8	R 1/4	5	5	27	24	17	17	6.2	7.0	0716552000	24-SDE-S8-R1/4T-P ¹⁾
S 10	R 1/4	5	7	27	25	17.5	19	6.2	9.3	0716612000	24-SDE-S10-R1/4T-P
S 10	R 3/8	7	7	28	25	17.5	19	9.3	10.2	0716602000	24-SDE-S10-R3/8T-P ¹⁾
S 10	R 1/2	10	7	34	27	19.5	19	14	11.5	0716622000	24-SDE-S10-R1/2T
S 12	R 3/8	8	8	28	29	21.5	22	9.3	12.7	0716652000	24-SDE-S12-R3/8T-P ¹⁾
S 12	R 1/2	11	8	34	29	21.5	19	10.4	10.3	0716672000	24-SDE-S12-R1/2T
S 14	R 1/4	7	10	30	30	22	19	9.3	9.3	0716732000	24-SDE-S14-R1/4T
S 14	R 3/8	8	10	30	30	22	19	9.3	9.7	0716712000	24-SDE-S14-R3/8T
S 14	R 1/2	10	10	32	30	22	19	10.4	10.5	0716702000	24-SDE-S14-R1/2T ¹⁾
S 16	R 1/2	12	12	32	33	24.5	24	14	13.9	0716752000	24-SDE-S16-R1/2T ¹⁾
S 16	R 3/4	16	12	42	33	24.5	27	12.4	18.9	0716772000	24-SDE-S16-R3/4T
S 20	R 1/2	12	16	40	37	26.5	27	10.4	21.6	0716812000	24-SDE-S20-R1/2T
S 20	R 3/4	16	16	42	37	26.5	27	12.4	21.7	0716842000	24-SDE-S20-R3/4T ¹⁾

¹⁾ Standard size

I Male stud elbows

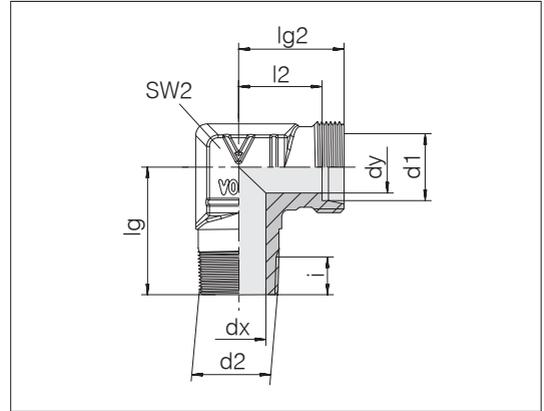
Male thread: NPT thread, tapered

Threaded stud: ASME B1.20.1

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	dx	dy	lg	lg2	l2	SW2	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
Tube OD	d1											
L 6	1/8 NPT	4	4	20	19	12	12	6.7	15	3.0	0718002000	24-SDE-L6-N1/8T-P ¹⁾
L 6	1/4 NPT	4	4	26	21	14	14	10.2	35	4.9	0718022000	24-SDE-L6-N1/4T-P
L 8	1/4 NPT	6	6	26	21	14	14	10.2	35	4.7	0718052000	24-SDE-L8-N1/4T-P ¹⁾
L 10	1/4 NPT	7	7	27	22	15	17	10.2	35	6.2	0718102000	24-SDE-L10-N1/4T-P ¹⁾
L 10	3/8 NPT	9	8	28	24	17	19	10.4	55	9.1	0718122000	24-SDE-L10-N3/8T-P
L 12	1/4 NPT	7	9	28	24	17	19	10.2	35	8.6	0718162000	24-SDE-L12-N1/4T-P
L 12	3/8 NPT	9	9	28	24	17	19	10.4	55	9.0	0718152000	24-SDE-L12-N3/8T-P ¹⁾
L 12	1/2 NPT	12	9	33	28	21	24	13.6	110	12.3	0718172000	24-SDE-L12-N1/2T
L 15	1/2 NPT	11	11	36	31	24	24	13.6	110	14.2	0718202000	24-SDE-L15-N1/2T ¹⁾
L 18	1/2 NPT	14	14	37	31	23.5	24	13.6	110	12.9	0718252000	24-SDE-L18-N1/2T ¹⁾
L 22	3/4 NPT	18	19	42	35	27.5	27	13.9	175	17.4	0718302000	24-SDE-L22-N3/4T ¹⁾
L 28	1 NPT	23	24	48	38	30.5	36	20.6	265	28.5	0718352000	24-SDE-L28-N1T ¹⁾
L 35	1 1/4 NPT	30	30	54	45	34.5	41	21.2	315	47.7	0718402000	24-SDE-L35-N11/4T ¹⁾
L 42	1 1/2 NPT	36	36	61	51	40	50	18.4	385	72.3	0718452000	24-SDE-L42-N11/2T ¹⁾
S 6	1/4 NPT	4	4	26	23	16	14	10.2	35	5.6	0718502000	24-SDE-S6-N1/4T-P ¹⁾
S 8	1/4 NPT	5	5	27	24	17	17	10.2	35	7.3	0718552000	24-SDE-S8-N1/4T-P ¹⁾
S 10	3/8 NPT	7	7	28	25	17.5	19	10.4	55	10.4	0718602000	24-SDE-S10-N3/8T-P ¹⁾
S 12	3/8 NPT	8	8	29	29	21.5	22	10.4	55	12.6	0718652000	24-SDE-S12-N3/8T-P ¹⁾
S 14	1/2 NPT	10	10	33	33	25	24	13.6	110	14.9	0718702000	24-SDE-S14-N1/2T ¹⁾
S 16	1/2 NPT	12	12	36	33	24.5	24	16.2	110	14.6	0718752000	24-SDE-S16-N1/2T ¹⁾
S 16	3/4 NPT	16	12	42	33	24.5	27	13.9	175	24.2	7006788500	24-SDE-S16-N3/4T
S 20	3/4 NPT	16	16	42	37	26.5	27	13.9	175	21.5	0718802000	24-SDE-S20-N3/4T ¹⁾
S 25	1 NPT	20	20	49	42	30	36	20.6	265	37.6	0718852000	24-SDE-S25-N1T ¹⁾
S 30	1 1/4 NPT	25	25	54	49	35.5	41	18	315	64.8	0718902000	24-SDE-S30-N11/4T ¹⁾
S 38	1 1/2 NPT	32	32	61	57	41	50	18.4	385	97.1	0718952000	24-SDE-S38-N11/2T ¹⁾

¹⁾ Standard size

Example for comp. :
WE06L1/8NPTX

I Male stud run tees

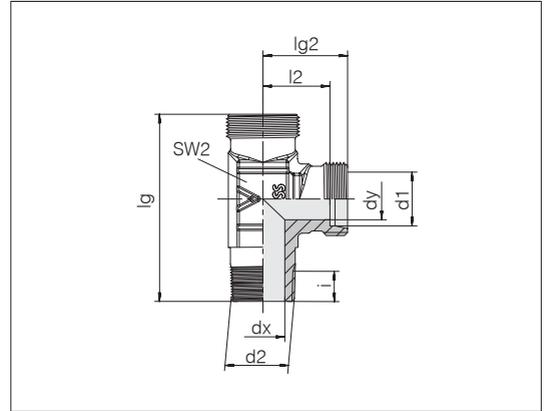
Male thread: Metric fine thread, tapered

Threaded stud: DIN 3852-1 Form C

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



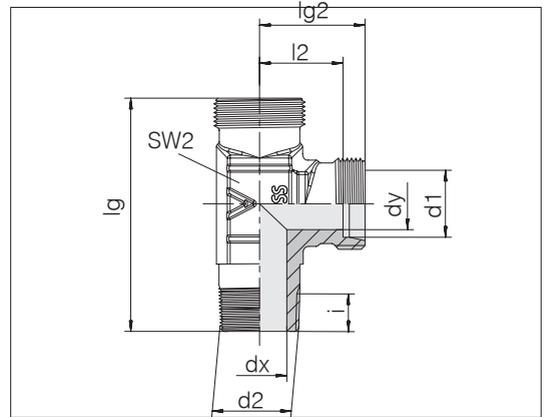
Series	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
Tube OD d1											
L 6	M 10 x 1 keg	4	4	39	19	12	12	6	3.8	0722002000	24-SDL-L6-M10T-P
L 8	M 12 x 1.5 keg	6	6	47	21	14	14	9	5.4	0722052000	24-SDL-L8-M12T-P
L 10	M 14 x 1.5 keg	7	8	49	22	15	17	12	7.2	0722102000	24-SDL-L10-M14T-P
L 12	M 16 x 1.5 keg	9	10	52	24	17	19	9	10.1	0722152000	24-SDL-L12-M16T-P
L 15	M 18 x 1.5 keg	11	12	60	28	21	19	9	10.4	0722202000	24-SDL-L15-M18T
L 18	M 22 x 1.5 keg	14	15	67	31	23.5	24	11	16.5	0722252000	24-SDL-L18-M22T
S 6	M 12 x 1.5 keg	4	4	49	23	16	14	9	7.0	0722502000	24-SDL-S6-M12T-P
S 8	M 14 x 1.5 keg	5	5	51	24	17	17	9	9.3	0722552000	24-SDL-S8-M14T-P
S 10	M 16 x 1.5 keg	7	7	53	25	17.5	19	9	11.8	0722602000	24-SDL-S10-M16T-P
S 12	M 18 x 1.5 keg	8	8	57	29	21.5	22	9	16.8	0722652000	24-SDL-S12-M18T-P
S 14	M 20 x 1.5 keg	10	10	62	30	22	19	11	13.2	0722702000	24-SDL-S14-M20T
S 16	M 22 x 1.5 keg	12	12	65	33	24.5	24	11	16.5	0722752000	24-SDL-S16-M22T

Example for comp. :
LE06LMX
DIN 2353-AAL6-St

I Male stud run tees

Male thread: BSPT thread, tapered
 Threaded stud: DIN 3852-2 Form C
 Sealing type: Tapered thread
 Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



Series	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
Tube OD d1											
L 6	R 1/8	4	4	39	19	12	12	6.2	3.7	0724002000	24-SDL-L6-R1/8T-P
L 8	R 1/4	6	6	47	21	14	14	9.3	5.6	0724052000	24-SDL-L8-R1/4T-P
L 10	R 1/4	7	8	49	22	15	17	9.3	7.3	0724102000	24-SDL-L10-R1/4T-P
L 12	R 3/8	9	10	52	24	17	19	9.3	9.8	0724152000	24-SDL-L12-R3/8T-P
L 15	R 1/2	11	12	62	28	21	19	14	11.7	0724202000	24-SDL-L15-R1/2T
L 18	R 1/2	14	15	67	31	23.5	24	10.4	15.7	0724252000	24-SDL-L18-R1/2T
S 6	R 1/4	4	4	49	23	16	14	9.3	12.1	0724502000	24-SDL-S6-R1/4T-P
S 8	R 1/4	5	5	51	24	17	17	9.3	9.0	0724552000	24-SDL-S8-R1/4T-P
S 10	R 3/8	7	7	53	25	17.5	19	9.3	11.9	0724602000	24-SDL-S10-R3/8T-P
S 12	R 3/8	8	8	57	29	21.5	22	9.3	16.2	0724652000	24-SDL-S12-R3/8T-P
S 14	R 1/2	10	10	62	30	22	19	10.4	13.7	0724702000	24-SDL-S14-R1/2T
S 16	R 1/2	12	12	65	33	24.5	24	10.4	16.5	0724752000	24-SDL-S16-R1/2T

Example for comp. :
 LE06LRX
 DIN 2353-ABL6-St



I Male stud branch tees

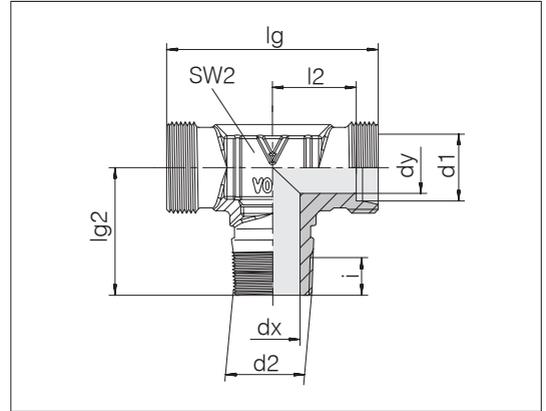
Male thread: Metric fine thread, tapered

Threaded stud: DIN 3852-1 Form C

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1



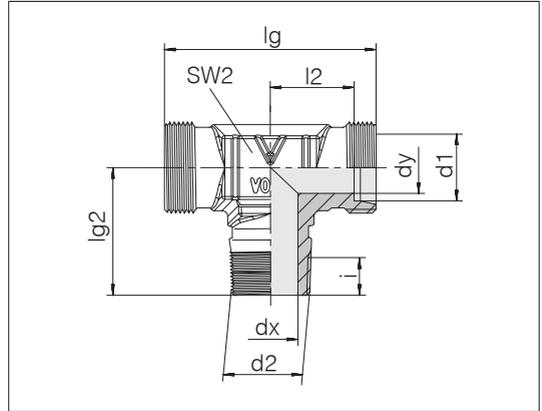
Series	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
Tube OD	d1										
L 6	M 10 x 1 keg	4	4	38	20	12	12	6	3.6	0728002000	24-SDT-L6-M10T-P
L 8	M 12 x 1.5 keg	6	6	42	26	14	12	9	4.3	0728052000	24-SDT-L8-M12T
L 10	M 14 x 1.5 keg	7	8	44	27	15	17	9	7.2	0728102000	24-SDT-L10-M14T-P
L 12	M 16 x 1.5 keg	9	10	48	28	17	19	9	9.8	0728152000	24-SDT-L12-M16T-P
L 15	M 18 x 1.5 keg	11	12	56	32	21	19	12	10.2	0728202000	24-SDT-L15-M18T
L 18	M 22 x 1.5 keg	14	15	62	36	23.5	24	11	14.1	0728252000	24-SDT-L18-M22T
S 6	M 12 x 1.5 keg	4	4	46	26	16	14	9	6.6	0728502000	24-SDT-S6-M12T-P
S 8	M 14 x 1.5 keg	5	5	48	27	17	17	9	9.2	0728552000	24-SDT-S8-M14T-P
S 10	M 16 x 1.5 keg	7	7	50	28	17.5	19	9	12.1	0728602000	24-SDT-S10-M16T-P
S 12	M 18 x 1.5 keg	8	8	58	28	21.5	17	12.5	12.0	0728652000	24-SDT-S12-M18T
S 14	M 20 x 1.5 keg	10	10	60	32	22	19	14	13.2	0728702000	24-SDT-S14-M20T
S 16	M 22 x 1.5 keg	12	12	66	32	24.5	24	14	16.1	0728752000	24-SDT-S16-M22T

Example for comp. :
TE06LMX
DIN 2353-ML6-St

I Male stud branch tees

Male thread: BSPT thread, tapered
 Threaded stud: DIN 3852-2 Form C
 Sealing type: Tapered thread
 Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1

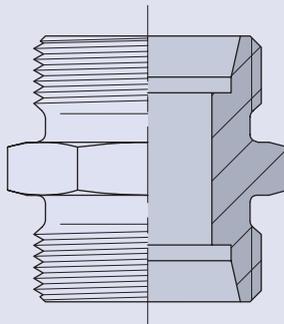


Series	d2	dx	dy	lg	lg2	l2	SW2	i	kg/100 ca.	Order-No.	Designation
Tube OD											
d1											
L 6	R 1/8	4	4	38	20	12	12	6.2	3.6	0730002000	24-SDT-L6-R1/8T-P ¹⁾
L 8	R 1/4	6	6	42	26	14	14	9.3	5.8	0730052000	24-SDT-L8-R1/4T-P ¹⁾
L 10	R 1/4	7	8	44	27	15	17	9.3	7.2	0730102000	24-SDT-L10-R1/4T-P ¹⁾
L 12	R 1/4	7	9	48	28	17	19	9.3	10.2	0730162000	24-SDT-L12-R1/4T-P ¹⁾
L 12	R 3/8	9	10	48	28	17	19	9.3	10.0	0730152000	24-SDT-L12-R3/8T-P ¹⁾
L 15	R 1/2	11	12	56	34	21	19	10.4	11.6	0730202000	24-SDT-L15-R1/2T ¹⁾
L 18	R 1/2	14	15	62	36	23.5	24	10.4	15.7	0730252000	24-SDT-L18-R1/2T ¹⁾
S 6	R 1/4	4	4	46	26	16	14	9.3	7.1	0730502000	24-SDT-S6-R1/4T-P ¹⁾
S 8	R 1/4	5	5	48	27	17	17	9.3	9.2	0730552000	24-SDT-S8-R1/4T-P ¹⁾
S 10	R 3/8	7	7	50	28	17.5	19	9.3	12.1	0730602000	24-SDT-S10-R3/8T-P ¹⁾
S 12	R 3/8	8	8	58	28	21.5	22	9.3	16.3	0730652000	24-SDT-S12-R3/8T-P ¹⁾
S 14	R 1/2	10	10	60	32	22	19	10.4	13.8	0730702000	24-SDT-S14-R1/2T ¹⁾
S 16	R 1/2	12	12	66	32	24.5	24	10.4	18.5	0730752000	24-SDT-S16-R1/2T ¹⁾

¹⁾ Standard size

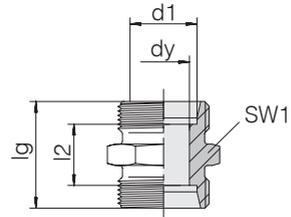
Example for comp. :
 TE06LRX
 DIN 2353-NL6-St

I Unions



I Unions

Tube coupling: 24° in acc. with ISO 8434-1



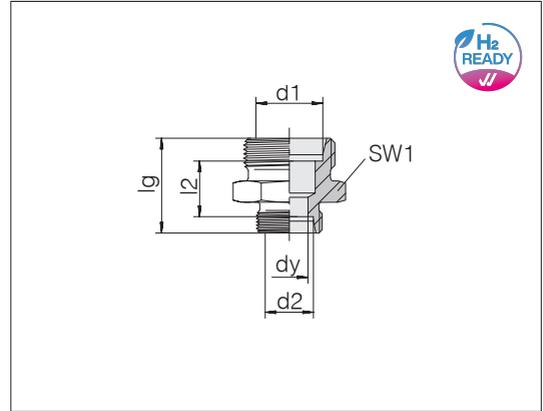
Series Tube OD d1	dy	lg	l2	SW1	kg/100 ca.	Order-No.	Designation
L 6	4	24	10	12	1.2	0712002000	24-S-L6
L 8	6	25	11	14	1.6	0712052000	24-S-L8
L 10	8	27	13	17	2.2	0712102000	24-S-L10
L 12	10	28	14	19	2.8	0712152000	24-S-L12
L 15	12	30	16	24	4.9	0712202000	24-S-L15
L 18	15	31	16	27	6.7	0712252000	24-S-L18
L 22	19	35	20	32	8.8	0712302000	24-S-L22
L 28	24	36	21	41	13.6	0712352000	24-S-L28
L 35	30	41	20	46	21.0	0712402000	24-S-L35
L 42	36	43	21	55	29.4	0712452000	24-S-L42
S 6	4	30	16	14	2.5	0712502000	24-S-S6
S 8	5	32	18	17	3.7	0712552000	24-S-S8
S 10	7	32	17	19	4.3	0712602000	24-S-S10
S 12	8	34	19	22	5.9	0712652000	24-S-S12
S 14	10	38	22	24	7.5	0712702000	24-S-S14
S 16	12	38	21	27	8.7	0712752000	24-S-S16
S 20	16	44	23	32	14.2	0712802000	24-S-S20
S 25	20	50	26	41	25.0	0712852000	24-S-S25
S 30	25	54	27	46	32.3	0712902000	24-S-S30
S 38	32	61	29	55	53.8	0712952000	24-S-S38

Example for comp. :
G06LX
ISO 8434-1-S-L6-St



I Straight reducers

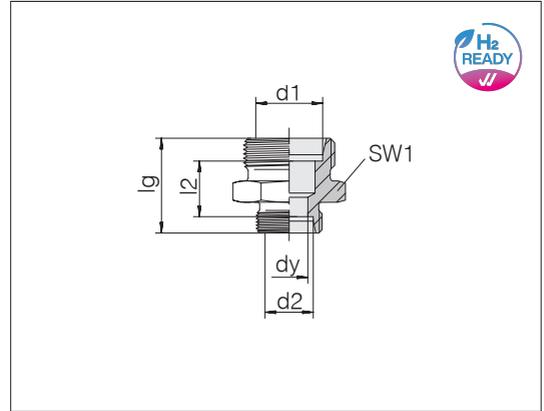
Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	Series Tube OD d2	dy	lg	l2	SW1	kg/100 ca.	Order-No.	Designation
L 8	L 6	4	25	11	14	1.5	0712062000	24-S-L8-L6
L 10	L 6	4	26	12	17	2.0	0712122000	24-S-L10-L6
L 10	L 8	6	26	12	17	2.1	0712112000	24-S-L10-L8
L 12	L 10	8	28	14	19	2.7	0712162000	24-S-L12-L10
L 12	L 6	4	27	13	19	2.5	0712182000	24-S-L12-L6
L 12	L 8	6	27	13	19	2.6	0712172000	24-S-L12-L8
L 15	L 10	8	29	15	24	4.1	0712222000	24-S-L15-L10
L 15	L 12	10	29	15	24	4.2	0712212000	24-S-L15-L12
L 15	L 6	4	28	14	24	3.8	0712242000	24-S-L15-L6
L 15	L 8	6	28	14	24	4.0	0712232000	24-S-L15-L8
L 18	L 10	8	30	15.5	27	5.6	0712282000	24-S-L18-L10
L 18	L 12	10	30	15.5	27	5.7	0712272000	24-S-L18-L12
L 18	L 15	12	31	16.5	27	6.1	0712262000	24-S-L18-L15
L 18	L 8	6	29	14.5	27	6.0	0712292000	24-S-L18-L8
L 22	L 10	8	32	17.5	32	7.5	0712342000	24-S-L22-L10
L 22	L 12	10	32	17.5	32	7.6	0712332000	24-S-L22-L12
L 22	L 15	12	33	18.5	32	8.1	0712322000	24-S-L22-L15
L 22	L 18	15	33	18	32	8.6	0712312000	24-S-L22-L18
L 28	L 10	8	33	18.5	41	12.2	0711822000	24-S-L28-L10
L 28	L 12	10	33	18.5	41	12.2	0712392000	24-S-L28-L12
L 28	L 15	12	34	19.5	41	12.2	0712382000	24-S-L28-L15
L 28	L 18	15	34	19	41	12.3	0712372000	24-S-L28-L18
L 28	L 22	19	36	21	41	13.2	0712362000	24-S-L28-L22
L 35	L 22	19	39	21	46	19.0	0712422000	24-S-L35-L22
L 35	L 28	24	39	21	46	19.0	0712412000	24-S-L35-L28
L 42	L 28	24	41	22.5	55	26.8	0712472000	24-S-L42-L28
L 42	L 35	30	43	21.5	55	29.3	0712462000	24-S-L42-L35

I Straight reducers

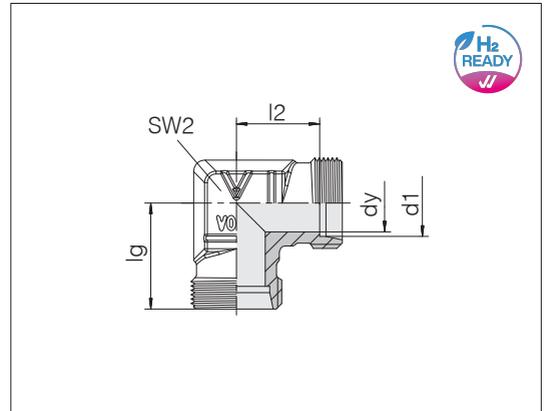
Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	Series Tube OD d2	dy	lg	l2	SW1	kg/100 ca.	Order-No.	Designation
S 8	S 6	4	32	18	17	3.4	0712562000	24-S-S8-S6
S 10	S 6	4	32	17.5	19	4.0	0712622000	24-S-S10-S6
S 10	S 8	5	32	17.5	19	4.2	0712612000	24-S-S10-S8
S 12	S 10	7	34	19	22	5.8	0712662000	24-S-S12-S10
S 12	S 6	4	34	19.5	22	5.4	0712682000	24-S-S12-S6
S 12	S 8	5	34	19.5	22	5.6	0712672000	24-S-S12-S8
S 14	S 10	7	36	20.5	24	6.9	0712722000	24-S-S14-S10
S 14	S 12	8	36	20.5	24	7.0	0712712000	24-S-S14-S12
S 16	L 12	10	35	19.5	27	7.7	0711982000	24-S-S16-L12
S 16	L 15	12	36	20.5	27	7.9	0799632000	24-S-S16-L15
S 16	S 10	7	36	20	27	7.9	0712782000	24-S-S16-S10
S 16	S 12	8	36	20	27	8.0	0712772000	24-S-S16-S12
S 16	S 14	10	38	21.5	27	8.7	0712762000	24-S-S16-S14
S 16	S 8	5	36	20.5	27	7.8	0712792000	24-S-S16-S8
S 20	L 15	12	40	22.5	32	13.9	0796222000	24-S-S20-L15
S 20	S 10	7	40	22	32	12.2	0712842000	24-S-S20-S10
S 20	S 12	8	40	22	32	12.5	0712832000	24-S-S20-S12
S 20	S 14	10	42	23.5	32	12.9	0712822000	24-S-S20-S14
S 20	S 16	12	42	23	32	12.9	0712812000	24-S-S20-S16
S 25	S 16	12	46	25.5	41	22.0	0712872000	24-S-S25-S16
S 25	S 20	16	48	25.5	41	23.2	0712862000	24-S-S25-S20
S 30	S 20	16	50	26	46	29.4	0712922000	24-S-S30-S20
S 30	S 25	20	52	26.5	46	31.1	0712912000	24-S-S30-S25
S 38	S 25	20	57	29	55	48.2	0712972000	24-S-S38-S25
S 38	S 30	25	59	29.5	55	48.8	0712962000	24-S-S38-S30

I Union elbows

Tube coupling: 24° in acc. with ISO 8434-1

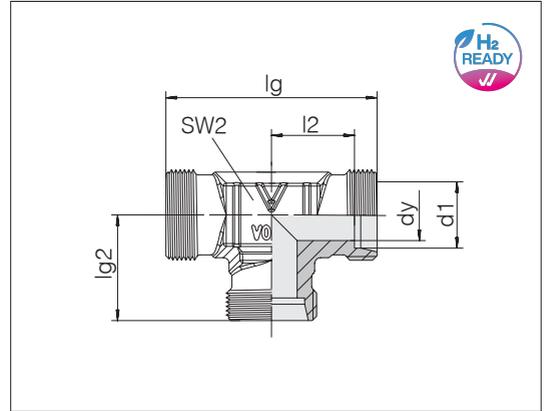


Series Tube OD d1	dy	lg	l2	SW2	kg/100 ca.	Order-No.	Designation
L 6	4	19	12	12	2.8	0720002000	24-E-L6-P
L 8	6	21	14	14	4.1	0720052000	24-E-L8-P
L 10	8	22	15	17	5.6	0720102000	24-E-L10-P
L 12	10	24	17	19	7.7	0720152000	24-E-L12-P
L 15	12	28	21	19	7.4	0720202000	24-E-L15
L 18	15	31	23.5	24	11.9	0720252000	24-E-L18
L 22	19	35	27.5	27	15.2	0720302000	24-E-L22
L 28	24	38	30.5	36	25.1	0720352000	24-E-L28
L 35	30	45	34.5	41	43.1	0720402000	24-E-L35
L 42	36	51	40	50	78.2	0720452000	24-E-L42
S 6	4	23	16	14	5.1	0720502000	24-E-S6-P
S 8	5	24	17	17	7.2	0720552000	24-E-S8-P
S 10	7	25	17.5	19	9.8	0720602000	24-E-S10-P
S 12	8	29	21.5	22	14.4	0720652000	24-E-S12-P
S 14	10	30	22	19	10.4	0720702000	24-E-S14
S 16	12	33	24.5	24	12.7	0720752000	24-E-S16
S 20	16	37	26.5	27	20.5	0720802000	24-E-S20
S 25	20	42	30	36	34.9	0720852000	24-E-S25
S 30	25	49	35.5	41	58.8	0720902000	24-E-S30
S 38	32	57	41	50	103.1	0720952000	24-E-S38

Example for comp. :
W06LX
ISO 8434-1-E-L6-St

I Union tees

Tube coupling: 24° in acc. with ISO 8434-1



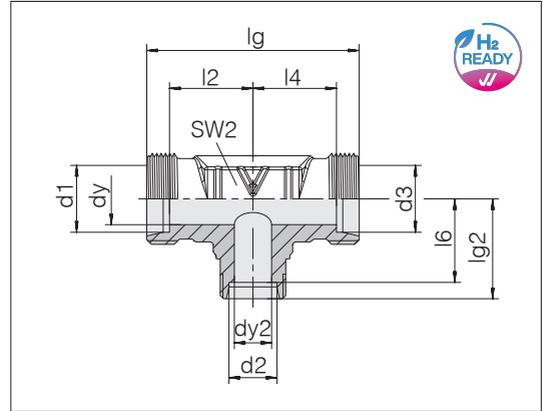
Series Tube OD d1	dy	lg	lg2	l2	SW2	kg/100 ca.	Order-No.	Designation
L 6	4	38	19	12	12	3.5	0734002000	24-T-L6-P
L 8	6	42	21	14	14	5.1	0734052000	24-T-L8-P
L 10	8	44	22	15	17	6.7	0734102000	24-T-L10-P
L 12	10	48	24	17	19	9.1	0734152000	24-T-L12-P
L 15	12	56	28	21	19	10.0	0734202000	24-T-L15
L 18	15	62	31	23.5	24	15.0	0734252000	24-T-L18
L 22	19	70	35	27.5	27	18.6	0734302000	24-T-L22
L 28	24	76	38	30.5	36	29.9	0734352000	24-T-L28
L 35	30	90	45	34.5	41	52.3	0734402000	24-T-L35
L 42	36	102	51	40	50	91.5	0734452000	24-T-L42
S 6	4	46	23	16	14	6.7	0734502000	24-T-S6-P
S 8	5	48	24	17	17	9.1	0734552000	24-T-S8-P
S 10	7	50	25	17.5	19	11.5	0734602000	24-T-S10-P
S 12	8	58	29	21.5	22	17.3	0734652000	24-T-S12-P
S 14	10	60	30	22	19	13.1	0734702000	24-T-S14
S 16	12	66	33	24.5	24	16.5	0734752000	24-T-S16
S 20	16	74	37	26.5	27	26.0	0734802000	24-T-S20
S 25	20	84	42	30	36	43.6	0734852000	24-T-S25
S 30	25	98	49	35.5	41	71.5	0734902000	24-T-S30
S 38	32	114	57	41	50	125.8	0734952000	24-T-S38

Example for comp. :
T06LX
ISO 8434-1-T-L6-St



I Tee reducers

Tube coupling: 24° in acc. with ISO 8434-1



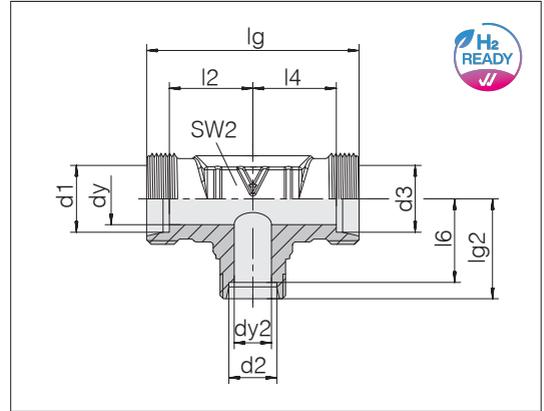
Series Tube OD d1	d2	d3	dy	dy2	lg	lg2	l2	l4	l6	SW2	kg/100 ca.	Order-No.	Designation
L 6	8	6	4	6	42	21	14	14	14	14	5.1	0799772000	24-T-L6-L8-L6-P
L 6	10	6	4	8	44	22	15	15	15	17	6.6	0799562000	24-T-L6-L10-L6-P
L 8	6	8	6	4	42	21	14	14	14	14	5.2	0734062000	24-T-L8-L6-L8-P
L 8	8	6	4	6	42	21	14	14	14	14	5.0	0799592000	24-T-L8-L8-L6-P
L 8	10	8	6	8	44	22	15	15	15	17	6.9	0799762000	24-T-L8-L10-L8-P
L 8	12	8	6	10	48	24	17	17	17	19	9.7	0799512000	24-T-L8-L12-L8-P
L 10	6	10	8	4	44	22	15	15	15	17	6.6	0734122000	24-T-L10-L6-L10-P
L 10	6	6	4	4	44	22	15	15	15	17	6.5	0799572000	24-T-L10-L6-L6-P
L 10	8	10	8	6	44	22	15	15	15	17	6.7	0734112000	24-T-L10-L8-L10-P
L 10	10	6	4	8	44	22	15	15	15	17	6.5	0733542000	24-T-L10-L10-L6-P
L 10	12	10	8	10	48	24	17	17	17	19	8.9	0799522000	24-T-L10-L12-L10-P
L 10	15	10	8	11	56	28	21	21	21	19	10.5	0799462000	24-T-L10-L15-L10
L 12	6	12	10	4	48	24	17	17	17	19	9.4	1794292000	24-T-L12-L6-L12
L 12	8	12	10	6	48	24	17	17	17	19	9.3	0734172000	24-T-L12-L8-L12-P
L 12	8	8	6	6	48	24	17	17	17	17	9.3	1794262000	24-T-L12-L8-L8
L 12	10	10	8	8	48	24	17	17	17	19	9.2	0797322000	24-T-L12-L10-L10-P
L 12	10	12	10	8	48	24	17	17	17	19	9.0	0734162000	24-T-L12-L10-L12-P
L 12	12	10	8	10	48	24	17	17	17	19	9.1	0799552000	24-T-L12-L12-L10-P
L 12	12	8	6	10	48	24	17	17	17	19	9.2	0799542000	24-T-L12-L12-L8-P
L 12	15	12	10	12	56	28	21	21	21	19	9.9	0799472000	24-T-L12-L15-L12
L 12	18	12	10	15	62	31	24	24	23.5	24	15.5	0799382000	24-T-L12-L18-L12
L 12	22	12	10	19	70	35	28	28	27.5	27	23.5	0796532000	24-T-L12-L22-L12
L 15	6	15	12	4	56	28	21	21	21	19	10.2	0734242000	24-T-L15-L6-L15
L 15	8	15	12	6	56	28	21	21	21	19	10.2	0734232000	24-T-L15-L8-L15
L 15	10	10	8	8	56	28	21	21	21	19	9.9	0799492000	24-T-L15-L10-L10
L 15	10	15	12	8	56	28	21	21	21	19	9.8	0734222000	24-T-L15-L10-L15
L 15	12	12	10	10	56	28	21	21	21	19	9.9	0797612000	24-T-L15-L12-L12
L 15	12	15	12	10	56	28	21	21	21	19	9.9	0734212000	24-T-L15-L12-L15
L 15	15	10	8	12	56	28	21	21	21	19	10.0	0799942000	24-T-L15-L15-L10
L 15	15	12	10	12	56	28	21	21	21	19	9.9	0797732000	24-T-L15-L15-L12
L 15	18	15	12	15	62	31	24	24	23.5	24	19.3	0799952000	24-T-L15-L18-L15

Example for comp. :
TR06/08/06LX

Continued on following page

I Tee reducers

Tube coupling: 24° in acc. with ISO 8434-1



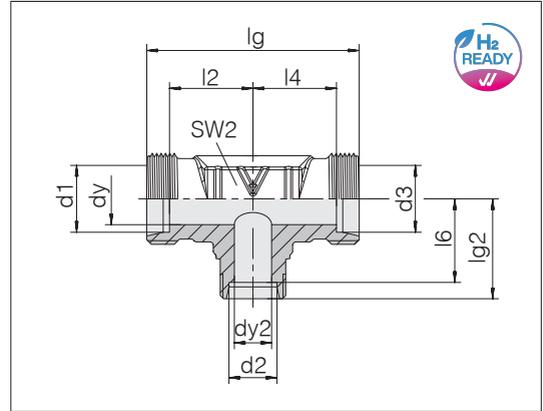
Series Tube OD d1	d2	d3	dy	dy2	lg	lg2	l2	l4	l6	SW2	kg/100 ca.	Order-No.	Designation
L 15	22	15	12	19	70	35	28	28	27.5	27	22.6	0799972000	24-T-L15-L22-L15
L 18	8	18	15	6	62	31	23.5	23.5	24	24	19.0	0734292000	24-T-L18-L8-L18
L 18	10	10	8	8	62	31	23.5	24	24	24	15.2	0799402000	24-T-L18-L10-L10
L 18	10	18	15	8	62	31	23.5	23.5	24	24	15.4	0734282000	24-T-L18-L10-L18
L 18	12	18	15	10	62	31	23.5	23.5	24	24	15.1	0734272000	24-T-L18-L12-L18
L 18	15	15	12	12	62	31	23.5	24	24	24	18.9	0799412000	24-T-L18-L15-L15
L 18	15	18	15	12	62	31	23.5	23.5	24	24	15.4	0734262000	24-T-L18-L15-L18
L 18	18	10	8	15	62	31	23.5	24	23.5	24	15.1	0799422000	24-T-L18-L18-L10
L 18	18	15	12	15	62	31	23.5	24	23.5	24	18.9	0799442000	24-T-L18-L18-L15
L 18	22	15	12	19	70	35	27.5	28	27.5	27	23.3	0799742000	24-T-L18-L22-L15
L 18	22	18	15	19	70	35	27.5	27.5	27.5	27	22.2	0799962000	24-T-L18-L22-L18
L 22	10	22	19	8	70	35	27.5	27.5	28	27	20.4	0734342000	24-T-L22-L10-L22
L 22	12	22	19	10	70	35	27.5	27.5	28	27	19.7	0734332000	24-T-L22-L12-L22
L 22	15	15	12	12	70	35	28	27.5	28	27	21.2	0799362000	24-T-L22-L15-L15
L 22	15	22	19	12	70	35	27.5	27.5	28	27	19.9	0734322000	24-T-L22-L15-L22
L 22	18	18	15	15	70	35	27.5	27.5	27.5	27	21.2	0733562000	24-T-L22-L18-L18
L 22	18	22	19	15	70	35	27.5	27.5	27.5	27	20.5	0734312000	24-T-L22-L18-L22
L 22	22	18	15	19	70	35	27.5	27.5	27.5	27	19.8	0733652000	24-T-L22-L22-L18
L 22	28	22	19	24	76	38	30.5	30.5	30.5	36	36.4	0796512000	24-T-L22-L28-L22
L 28	10	28	24	8	76	38	30.5	30.5	31	36	31.8	0799312000	24-T-L28-L10-L28
L 28	12	28	24	10	76	38	30.5	30.5	31	36	32.1	0734392000	24-T-L28-L12-L28
L 28	15	28	24	12	76	38	30.5	30.5	31	36	32.3	0734382000	24-T-L28-L15-L28
L 28	18	28	24	15	76	38	30.5	30.5	30.5	36	31.7	0734372000	24-T-L28-L18-L28
L 28	22	22	19	19	76	38	30.5	30.5	30.5	36	32.3	0796352000	24-T-L28-L22-L22
L 28	22	28	24	19	76	38	30.5	30.5	30.5	36	30.0	0734362000	24-T-L28-L22-L28
L 28	35	28	24	30	90	45	37.5	37.5	34.5	41	61.8	1734082000	24-T-L28-L35-L28
L 28	42	28	24	36	102	51	43.5	43.5	40	50	112.0	1734102000	24-T-L28-L42-L28
L 35	18	35	30	15	90	45	34.5	34.5	37.5	41	60.0	0734432000	24-T-L35-L18-L35
L 35	28	28	24	24	90	45	34.5	37.5	37.5	41	59.0	1734042000	24-T-L35-L28-L28
L 35	28	35	30	24	90	45	34.5	34.5	37.5	41	54.0	0734412000	24-T-L35-L28-L35
L 35	42	35	30	36	102	51	40.5	40.5	40	50	106.0	1734092000	24-T-L35-L42-L35

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I Tee reducers

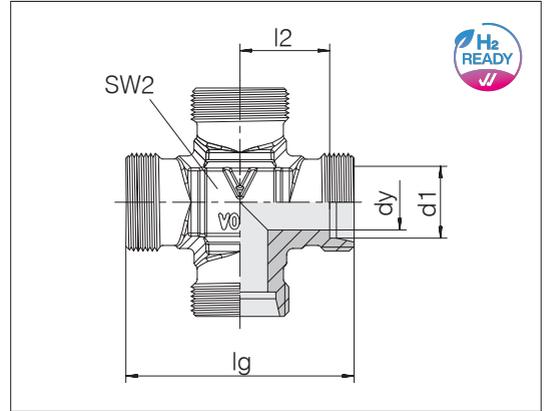
Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	d3	dy	dy2	lg	lg2	l2	l4	l6	SW2	kg/100 ca.	Order-No.	Designation
L 42	18	42	36	15	102	51	40	40	43.5	50	92.2	0734492000	24-T-L42-L18-L42
L 42	22	42	36	19	102	51	40	40	43.5	50	101.6	0734482000	24-T-L42-L22-L42
L 42	28	42	36	24	102	51	40	40	43.5	50	97.4	0734472000	24-T-L42-L28-L42
L 42	35	42	36	30	102	51	40	40	40.5	50	93.5	0734462000	24-T-L42-L35-L42
S 10	6	10	7	4	50	25	17.5	17.5	18	19	11.7	0734622000	24-T-S10-S6-S10-P
S 12	8	12	8	5	58	29	21.5	21.5	22	22	17.5	0734672000	24-T-S12-S8-S12-P
S 12	8	8	5	5	58	29	21.5	22	22	22	16.9	0799302000	24-T-S12-S8-S8-P
S 12	10	12	8	7	58	29	21.5	21.5	21.5	22	17.6	0734662000	24-T-S12-S10-S12-P
S 12	16	12	8	12	66	33	25.5	25.5	24.5	24	17.7	0797822000	24-T-S12-S16-S12
S 16	6	16	12	4	66	33	24.5	24.5	26	24	16.8	0799292000	24-T-S16-S6-S16
S 16	8	16	12	5	66	33	24.5	24.5	26	24	17.1	0734792000	24-T-S16-S8-S16
S 16	10	16	12	7	66	33	24.5	24.5	25.5	24	17.1	0734782000	24-T-S16-S10-S16
S 16	12	16	12	8	66	33	24.5	24.5	25.5	24	16.9	0734772000	24-T-S16-S12-S16
S 16	16	10	12	12	66	33	24.5	25.5	24.5	24	21.1	7009071100	24-T-S16-S16-S10
S 16	20	16	12	16	74	37	28.5	28.5	26.5	27	26.7	0799222000	24-T-S16-S20-S16
S 20	10	20	16	7	74	37	26.5	26.5	29.5	27	26.4	0734842000	24-T-S20-S10-S20
S 20	12	20	16	8	74	37	26.5	26.5	29.5	27	26.5	0734832000	24-T-S20-S12-S20
S 20	16	16	12	12	74	37	26.5	28.5	28.5	27	25.3	0795972000	24-T-S20-S16-S16
S 20	16	20	16	12	74	37	26.5	26.5	28.5	27	25.9	0734812000	24-T-S20-S16-S20
S 20	25	20	16	20	84	42	31.5	31.5	30	36	45.3	0797452000	24-T-S20-S25-S20
S 25	12	25	20	8	84	42	30	30	34.5	36	44.8	0734892000	24-T-S25-S12-S25
S 25	16	25	20	12	84	42	30	30	33.5	36	44.5	0734872000	24-T-S25-S16-S25
S 25	18	25	20	15	84	42	30	30	34.5	36	46.6	1796912000	24-T-S25-L18-S25
S 25	20	25	20	16	84	42	30	30	31.5	36	43.4	0734862000	24-T-S25-S20-S25
S 25	25	20	16	20	84	42	30	31.5	30	36	47.4	0733572000	24-T-S25-S25-S20
S 25	30	25	20	25	98	49	37	37	35.5	41	77.8	0733982000	24-T-S25-S30-S25
S 30	16	30	25	12	98	49	35.5	35.5	40.5	41	79.0	0734932000	24-T-S30-S16-S30
S 30	20	30	25	16	98	49	35.5	35.5	38.5	41	71.0	0734922000	24-T-S30-S20-S30
S 30	38	30	25	32	114	57	43.5	43.5	41	50	138.6	0733622000	24-T-S30-S38-S30
S 38	16	38	32	12	114	57	41	41	48.5	50	120.4	0734992000	24-T-S38-S16-S38
S 38	25	38	32	20	114	57	41	41	45	50	118.3	0734972000	24-T-S38-S25-S38
S 38	38	25	20	32	114	57	41	45	41	50	134.1	0733482000	24-T-S38-S38-S25

I Union crosses

Tube coupling: 24° in acc. with ISO 8434-1

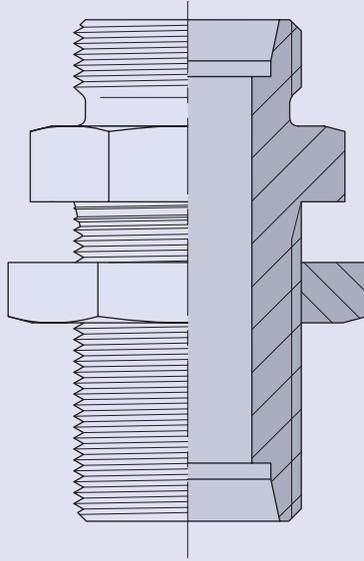


Series Tube OD d1	dy	lg	l2	SW2	kg/100 ca.	Order-No.	Designation
L 6	4	38	12	12	3.9	0736002000	24-K-L6
L 8	6	42	14	12	4.6	0736052000	24-K-L8
L 10	8	44	15	14	5.2	0736102000	24-K-L10
L 12	10	48	17	17	8.2	0736152000	24-K-L12
L 15	12	56	21	19	12.7	0736202000	24-K-L15
L 18	15	62	23.5	24	18.8	0736252000	24-K-L18
L 22	19	70	27.5	27	21.0	0736302000	24-K-L22
L 28	24	76	30.5	36	34.6	0736352000	24-K-L28
L 35	30	90	34.5	41	62.3	0736402000	24-K-L35
L 42	36	102	40	50	94.5	0736452000	24-K-L42
S 6	4	46	16	12	6.6	0736502000	24-K-S6
S 8	5	48	17	14	8.1	0736552000	24-K-S8
S 10	7	50	17.5	17	10.7	0736602000	24-K-S10
S 12	8	58	21.5	17	14.9	0736652000	24-K-S12
S 14	10	60	22	19	15.8	0736702000	24-K-S14
S 16	12	66	24.5	24	23.3	0736752000	24-K-S16
S 20	16	74	26.5	27	29.4	0736802000	24-K-S20
S 25	20	84	30	36	51.9	0736852000	24-K-S25
S 30	25	98	35.5	41	89.0	0736902000	24-K-S30
S 38	32	114	41	50	140.3	0736952000	24-K-S38

Example for comp. :
K06LX
ISO 8434-1-K-L6-St

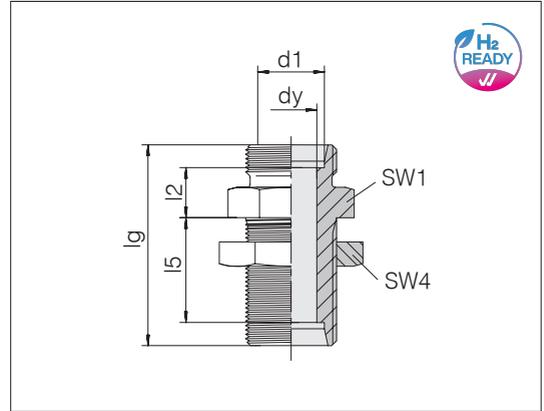


I Bulkhead unions



Bulkhead unions

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d_y	l_g	l_2	l_5	SW1	SW4	kg/100 ca.	Order-No.	Designation
L 6	4	48	7	27	17	17	3.8	0137002066	24-BHSLN-L6
L 8	6	49	8	27	19	19	4.9	0137052066	24-BHSLN-L8
L 10	8	52	10	28	22	22	6.6	0137102066	24-BHSLN-L10
L 12	10	53	10	29	24	24	7.6	0137152066	24-BHSLN-L12
L 15	12	57	12	31	27	30	12.8	0137202066	24-BHSLN-L15
L 18	15	61	13.5	32.5	32	36	19.9	0137252066	24-BHSLN-L18
L 22	19	66	16.5	34.5	36	41	24.8	0137302066	24-BHSLN-L22
L 28	24	69	18.5	35.5	41	46	33.8	0137352066	24-BHSLN-L28
L 35	30	76	18.5	36.5	50	55	53.9	0137402066	24-BHSLN-L35
L 42	36	77	19	36	60	65	75.6	0137452066	24-BHSLN-L42
S 6	4	55	12	29	19	19	6.5	0137502066	24-BHSLN-S6
S 8	5	56	13	29	22	22	8.7	0137552066	24-BHSLN-S8
S 10	7	59	14.5	29.5	24	24	11.0	0137602066	24-BHSLN-S10
S 12	8	60	14.5	30.5	27	27	13.9	0137652066	24-BHSLN-S12
S 14	10	65	17	32	30	30	17.8	0137702066	24-BHSLN-S14
S 16	12	65	16.5	31.5	32	32	19.7	0137752066	24-BHSLN-S16
S 20	16	72	17.5	33.5	41	41	34.5	0137802066	24-BHSLN-S20
S 25	20	79	20	35	46	46	49.2	0137852066	24-BHSLN-S25
S 30	25	86	21.5	37.5	50	50	61.7	0137902066	24-BHSLN-S30
S 38	32	91	22	37	65	65	108.0	0137952066	24-BHSLN-S38

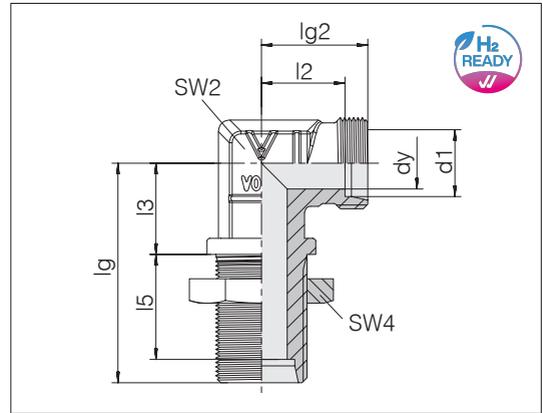
Bulkhead material thickness
max. 16 mm.

Example for comp. :
SV06LOMD
ISO 8434-1-BHSLN-L6-St



I Bulkhead elbows

Tube coupling: 24° in acc. with ISO 8434-1

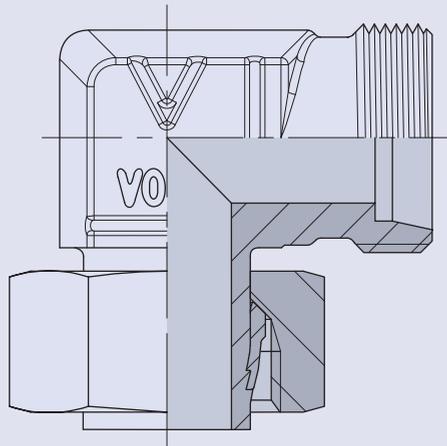


Series Tube OD d1	dy	lg	lg2	l2	l3	l5	SW2	SW4	kg/100 ca.	Order-No.	Designation
L 6	4	48	19	12	14	27	12	17	4.9	0138002066	24-BHELN-L6
L 8	6	51	21	14	17	27	12	19	6.1	0138052066	24-BHELN-L8
L 10	8	38	22	15	18	31	14	22	7.6	7011216000	24-BHELN-L10-LG38/TL20
L 10	8	53	22	15	18	28	14	22	7.9	0138102066	24-BHELN-L10
L 12	10	56	24	17	20	29	17	24	9.6	0138152066	24-BHELN-L12
L 15	12	61	28	21	23	31	19	30	16.9	0138202066	24-BHELN-L15
L 18	15	64	31	23.5	24	32.5	24	36	25.5	0138252066	24-BHELN-L18
L 22	19	72	35	27.5	30	34.5	27	41	31.8	0138302066	24-BHELN-L22
L 28	24	77	38	30.5	34	35.5	36	46	46.2	0138352066	24-BHELN-L28
L 35	30	86	45	34.5	39	36.5	41	55	76.9	0138402066	24-BHELN-L35
L 42	36	90	51	40	43	36	50	65	112.3	0138452066	24-BHELN-L42
S 6	4	53	23	16	17	29	12	19	7.6	0138502066	24-BHELN-S6
S 8	5	54	24	17	18	29	14	22	10.2	0138552066	24-BHELN-S8
S 10	7	57	25	17.5	20	29.5	17	24	12.4	0138602066	24-BHELN-S10
S 12	8	59	29	21.5	21	30.5	17	27	16.0	0138652066	24-BHELN-S12
S 14	10	63	30	22	23	32	19	30	19.6	0138702066	24-BHELN-S14
S 16	12	64	33	24.5	24	31.5	24	32	23.8	0138752066	24-BHELN-S16
S 20	16	74	37	26.5	30	33.5	27	41	39.9	0138802066	24-BHELN-S20
S 25	20	81	42	30	34	35	36	46	60.9	0138852066	24-BHELN-S25
S 30	25	90	49	35.5	39	37.5	41	50	93.2	0138902066	24-BHELN-S30
S 38	32	96	57	41	43	37	50	65	144.9	0138952066	24-BHELN-S38

Bulkhead material thickness
max. 16 mm.

Example for comp. :
WSV06LOMD
ISO 8434-1-BHELN-L6-St

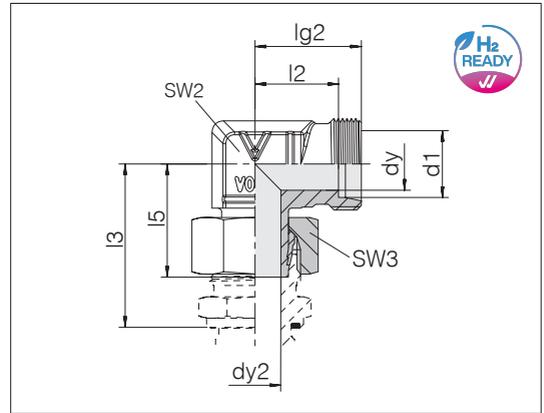
Adjustable couplings with tube socket



I Swivel elbows

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	dy2	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	3.5	19	12	34.5	26	12	14	2.8	0158032007	24-SWE-L6
L 8	6	5	21	14	37.5	27.5	12	17	3.8	0158082007	24-SWE-L8
L 10	8	7	22	15	40	29	14	19	5.0	0158132007	24-SWE-L10
L 12	10	9	24	17	42	29.5	17	22	6.6	0158182007	24-SWE-L12
L 15	12	11	28	21	46	32.5	19	27	11.5	0158232007	24-SWE-L15
L 18	15	14	31	23.5	50	35.5	24	32	17.8	0158282007	24-SWE-L18
L 22	19	17	35	27.5	55	38.5	27	36	23.5	0158332007	24-SWE-L22
L 28	24	22.5	38	30.5	59	41.5	36	41	34.1	0158382007	24-SWE-L28
L 35	30	28.5	45	34.5	68.5	51	41	50	57.7	0158432007	24-SWE-L35
L 42	36	35	51	40	75	56	50	60	87.2	0158482007	24-SWE-L42
S 6	4	3.5	23	16	40	27	12	17	4.4	0158532007	24-SWE-S6
S 8	5	4.5	24	17	42.5	27.5	14	19	5.9	0158582007	24-SWE-S8
S 10	7	6	25	17.5	45	30	17	22	8.3	0158632007	24-SWE-S10
S 12	8	7	29	21.5	48	31	17	24	10.5	0158682007	24-SWE-S12
S 14	10	9	30	22	54	35	19	27	14.6	0158732007	24-SWE-S14
S 16	12	11	33	24.5	55	36.5	24	30	19.9	0158782007	24-SWE-S16
S 20	16	15	37	26.5	65	44.5	27	36	29.4	0158832007	24-SWE-S20
S 25	20	18	42	30	73	50	36	46	54.1	0158882007	24-SWE-S25
S 30	25	23	49	35.5	78.5	55	41	50	76.2	0158932007	24-SWE-S30
S 38	32	29	57	41	89	63	50	60	118.9	0158982007	24-SWE-S38

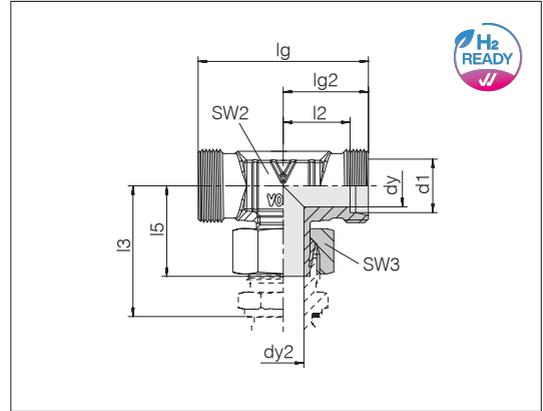
Example for comp. :
EWW06LOMD



I Swivel branch tees

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



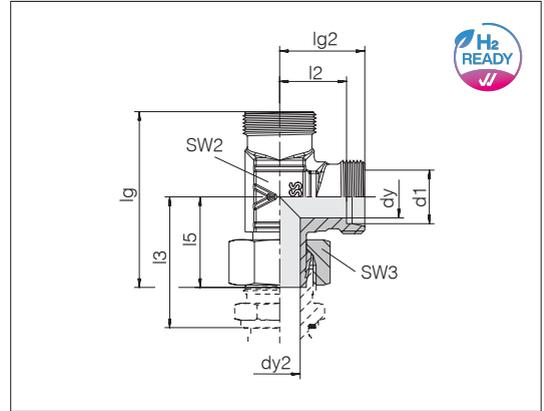
Series Tube OD d1	dy	dy2	lg	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	3.5	38	19	12	34.5	26	12	14	3.8	0160032007	24-SWT-L6
L 8	6	5	42	21	14	37.5	27.5	12	17	4.8	0160082007	24-SWT-L8
L 10	8	7	44	22	15	40	29	14	19	6.0	0160132007	24-SWT-L10
L 12	10	9	48	24	17	42	29.5	17	22	7.9	0160182007	24-SWT-L12
L 15	12	11	56	28	21	46	32.5	19	27	14.2	0160232007	24-SWT-L15
L 18	15	14	62	31	23.5	50	35.5	24	32	21.1	0160282007	24-SWT-L18
L 22	19	17	70	35	27.5	55	38.5	27	36	27.8	0160332007	24-SWT-L22
L 28	24	22.5	76	38	30.5	59	41.5	36	41	38.6	0160382007	24-SWT-L28
L 35	30	28.5	90	45	34.5	68.5	51	41	50	66.0	0160432007	24-SWT-L35
L 42	36	35	102	51	40	75	56	50	60	101.8	0160482007	24-SWT-L42
S 6	4	3.5	46	23	16	40	27	12	17	5.8	0160532007	24-SWT-S6
S 8	5	4.5	48	24	17	42.5	27.5	14	19	7.6	0160582007	24-SWT-S8
S 10	7	6	50	25	17.5	45	30	17	22	10.3	0160632007	24-SWT-S10
S 12	8	7	58	29	21.5	48	31	17	24	13.5	0160682007	24-SWT-S12
S 14	10	9	60	30	22	54	35	19	27	17.9	0160732007	24-SWT-S14
S 16	12	11	66	33	24.5	55	36.5	24	30	24.1	0160782007	24-SWT-S16
S 20	16	15	74	37	26.5	65	44.5	27	36	34.8	0160832007	24-SWT-S20
S 25	20	18	84	42	30	73	50	36	46	63.0	0160882007	24-SWT-S25
S 30	25	23	98	49	35.5	78.5	55	41	50	90.8	0160932007	24-SWT-S30
S 38	32	29	114	57	41	89	63	50	60	141.7	0160982007	24-SWT-S38

Example for comp. :
EVT06LOMD

I Swivel run tees

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Series	dy	dy2	lg	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
Tube OD												
d1												
L 6	4	3.5	45	19	12	34.5	26	12	14	3.4	0162032007	24-SWL-L6
L 8	6	5	48.5	21	14	37.5	27.5	12	17	4.7	0162082007	24-SWL-L8
L 10	8	7	51	22	15	40	29	14	19	6.0	0162132007	24-SWL-L10
L 12	10	9	53.5	24	17	42	29.5	17	22	7.9	0162182007	24-SWL-L12
L 15	12	11	60.5	28	21	46	32.5	19	27	13.7	0162232007	24-SWL-L15
L 18	15	14	66.5	31	23.5	50	35.5	24	32	20.8	0162282007	24-SWL-L18
L 22	19	17	73.5	35	27.5	55	38.5	27	36	27.2	0162332007	24-SWL-L22
L 28	24	22.5	79.5	38	30.5	59	41.5	36	41	39.1	0162382007	24-SWL-L28
L 35	30	28.5	96	45	34.5	68.5	51	41	50	66.1	0162432007	24-SWL-L35
L 42	36	35	107	51	40	75	56	50	60	100.6	0162482007	24-SWL-L42
S 6	4	3.5	50	23	16	40	27	12	17	5.6	0162532007	24-SWL-S6
S 8	5	4.5	51.5	24	17	42.5	27.5	14	19	7.8	0162582007	24-SWL-S8
S 10	7	6	55	25	17.5	45	30	17	22	10.3	0162632007	24-SWL-S10
S 12	8	7	60	29	21.5	48	31	17	24	13.4	0162682007	24-SWL-S12
S 14	10	9	65	30	22	54	35	19	27	17.7	0162732007	24-SWL-S14
S 16	12	11	69.5	33	24.5	55	36.5	24	30	22.5	0162782007	24-SWL-S16
S 20	16	15	81.5	37	26.5	65	44.5	27	36	34.8	0162832007	24-SWL-S20
S 25	20	18	92	42	30	73	50	36	46	63.5	0162882007	24-SWL-S25
S 30	25	23	104	49	35.5	78.5	55	41	50	91.4	0162932007	24-SWL-S30
S 38	32	29	120	57	41	89	63	50	60	141.7	0162982007	24-SWL-S38

Example for comp. :
EVL06LOMD



I Swivel connectors

Male thread: NPT thread, tapered

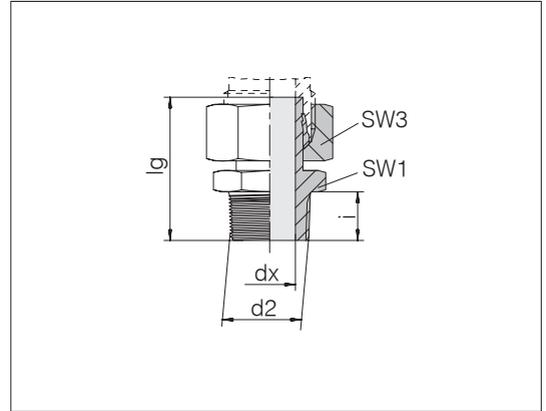
Threaded stud: ASME B1.20.1

Sealing type: Tapered thread

Sealing material: e.g. PTFE sealing tape

Tube coupling: 24° in acc. with ISO 8434-1

Tube socket pre-assembled



Series Tube OD	d2	dx	lg	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	1/8 NPT	3.5	33	11	14	9.9	15	2.2	0172802007	24-SWSDS-L6-N1/8T
L 8	1/4 NPT	5	39.6	14	17	15.1	35	3.5	0172812007	24-SWSDS-L8-N1/4T
L 10	1/4 NPT	7	40.6	14	19	15.1	35	4.2	0172822007	24-SWSDS-L10-N1/4T
L 12	3/8 NPT	7	43	19	22	15.2	55	7.2	0172832007	24-SWSDS-L12-N3/8T
L 15	1/2 NPT	11	48.5	22	27	19.8	110	11.0	0172842007	24-SWSDS-L15-N1/2T
L 18	1/2 NPT	13	48	22	32	19.8	110	13.0	0172852007	24-SWSDS-L18-N1/2T
L 22	3/4 NPT	17	50	27	36	20.1	175	18.2	0172862007	24-SWSDS-L22-N3/4T
L 28	1 NPT	22.5	57	36	41	25	265	25.9	0172872007	24-SWSDS-L28-N1T
L 35	1 1/4 NPT	29	65	46	50	25.6	315	42.8	0172882007	24-SWSDS-L35-N11/4T
L 42	1 1/2 NPT	35	69	50	60	26	385	57.5	0172892007	24-SWSDS-L42-N11/2T
S 6	1/4 NPT	3.5	40	14	17	15.1	35	4.3	0172902007	24-SWSDS-S6-N1/4T
S 8	1/4 NPT	4.5	42	14	19	15.1	35	4.9	0172912007	24-SWSDS-S8-N1/4T
S 10	3/8 NPT	6	44	19	22	15.2	55	8.0	0172922007	24-SWSDS-S10-N3/8T
S 12	3/8 NPT	7	46	19	24	15.2	55	8.6	0172932007	24-SWSDS-S12-N3/8T
S 14	1/2 NPT	9	53	22	27	19.8	110	13.8	0172942007	24-SWSDS-S14-N1/2T
S 16	1/2 NPT	11	52.8	22	30	19.8	110	14.7	0172952007	24-SWSDS-S16-N1/2T
S 20	3/4 NPT	15	60	27	36	20.1	175	23.9	0172962007	24-SWSDS-S20-N3/4T
S 25	1 NPT	18	69	36	46	25	265	46.0	0172972007	24-SWSDS-S25-N1T
S 30	1 1/4 NPT	22.5	72.6	46	50	25.6	315	65.2	0172982007	24-SWSDS-S30-N11/4T
S 38	1 1/2 NPT	28.5	83	50	60	26	385	86.3	0172992007	24-SWSDS-S38-N11/2T

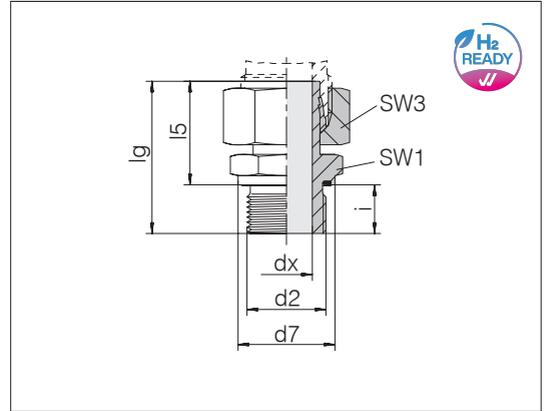
Example for comp. :
EVGE06L1/8NPT

I Swivel connectors

Male thread: Metric fine thread, cylindrical
 Threaded stud: ISO 9974-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1

Tube socket pre-assembled



Series Tube OD	d2	d7	dx	lg	l5	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	M 10 x 1	13.9	3.5	32.5	24.5	14	14	8	15	2.3	7013967800	24-SWSDS-L6-M10E-NBR-YEL ¹⁾
L 8	M 12 x 1.5	16.9	5	38.5	26.5	17	17	12	25	3.9	7013967900	24-SWSDS-L8-M12E-NBR-YEL ¹⁾
L 10	M 14 x 1.5	18.9	7	39.5	27.5	19	19	12	50	4.9	7013968000	24-SWSDS-L10-M14E-NBR-YEL ¹⁾
L 12	M 16 x 1.5	21.9	9	42.5	30.5	22	22	12	70	6.8	7013968100	24-SWSDS-L12-M16E-NBR-YEL ¹⁾
L 15	M 18 x 1.5	23.9	11	43.5	31.5	24	27	12	90	9.8	7013968200	24-SWSDS-L15-M18E-NBR-YEL ¹⁾
L 18	M 22 x 1.5	26.9	14	45.5	31.5	27	32	14	130	14.0	7013968300	24-SWSDS-L18-M22E-NBR-YEL ¹⁾
L 22	M 26 x 1.5	31.9	17	48.5	32.5	32	36	16	180	19.4	7013968400	24-SWSDS-L22-M26E-NBR-YEL ¹⁾
L 28	M 33 x 2	39.9	22.5	53	35	41	41	18	230	27.0	7013968500	24-SWSDS-L28-M33E-NBR-YEL ¹⁾
L 35	M 42 x 2	49.9	28.5	62.5	42.5	50	50	20	330	45.3	7013968600	24-SWSDS-L35-M42E-NBR-YEL ¹⁾
L 42	M 48 x 2	54.9	35	68.5	46.5	55	60	22	500	62.7	7013968700	24-SWSDS-L42-M48E-NBR-YEL ¹⁾
S 6	M 12 x 1.5	16.9	3.5	39	27	17	17	12	50	4.3	7013968800	24-SWSDS-S6-M12E-NBR-YEL ¹⁾
S 8	M 14 x 1.5	18.9	4.5	41.5	29.5	19	19	12	60	6.0	7013968900	24-SWSDS-S8-M14E-NBR-YEL ¹⁾
S 10	M 16 x 1.5	21.9	6	44	32	22	22	12	80	8.6	7013969000	24-SWSDS-S10-M16E-NBR-YEL ¹⁾
S 12	M 18 x 1.5	23.9	7	46	34	24	24	12	90	10.9	7013969100	24-SWSDS-S12-M18E-NBR-YEL ¹⁾
S 14	M 20 x 1.5	25.9	9	50.5	36.5	27	27	14	130	14.6	7013969200	24-SWSDS-S14-M20E-NBR-YEL ¹⁾
S 16	M 22 x 1.5	26.9	11	51	37	27	30	14	130	16.7	7013969300	24-SWSDS-S16-M22E-NBR-YEL ¹⁾
S 20	M 27 x 2	31.9	15	59	43	32	36	16	200	25.4	7013969400	24-SWSDS-S20-M27E-NBR-YEL ¹⁾
S 25	M 33 x 2	39.9	18	66	48	41	46	18	250	48.6	7013969500	24-SWSDS-S25-M33E-NBR-YEL ¹⁾
S 30	M 42 x 2	49.9	23	71	51	50	50	20	500	66.2	7013969600	24-SWSDS-S30-M42E-NBR-YEL ¹⁾
S 38	M 48 x 2	54.9	29	82	60	55	60	22	600	93.3	7013969700	24-SWSDS-S38-M48E-NBR-YEL ¹⁾

¹⁾ Standard size

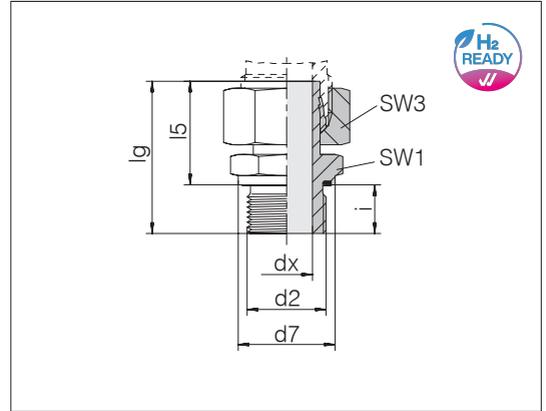
Example for comp.:
 EVGE06LMED

I Swivel connectors

Male thread: BSPP thread, cylindrical
 Threaded stud: ISO 1179-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow

Tube coupling: 24° in acc. with ISO 8434-1

Tube socket pre-assembled



Series Tube OD	d2	d7	dx	lg	l5	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	G 1/8 A	13.9	3.5	32.5	24.5	14	14	8	20	2.3	7013969800	24-SWSDS-L6-G1/8E-NBR-YEL ¹⁾
L 6	G 1/4 A	18.9	3.5	38	26	19	14	12	50	3.9	7013969900	24-SWSDS-L6-G1/4E-NBR-YEL
L 8	G 1/4 A	18.9	4.5	41.5	29.5	19	17	12	50	4.6	7013970000	24-SWSDS-L8-G1/4E-NBR-YEL ¹⁾
L 8	G 3/8 A	21.9	4.5	43	31	22	17	14	80	6.0	7013970100	24-SWSDS-L8-G3/8E-NBR-YEL
L 10	G 1/4 A	18.9	6	39.5	27.5	19	19	12	50	5.0	7013970200	24-SWSDS-L10-G1/4E-NBR-YEL ¹⁾
L 10	G 3/8 A	21.9	7	41	29	22	19	12	80	6.4	7013970300	24-SWSDS-L10-G3/8E-NBR-YEL
L 12	G 1/4 A	18.9	6	45.5	33.5	19	22	12	50	7.0	7013970400	24-SWSDS-L12-G1/4E-NBR-YEL
L 12	G 3/8 A	21.9	7	46	34	22	22	12	80	8.0	7013970500	24-SWSDS-L12-G3/8E-NBR-YEL ¹⁾
L 12	G 1/2 A	26.9	7	48.5	34.5	27	22	14	100	10.1	7013970600	24-SWSDS-L12-G1/2E-NBR-YEL
L 15	G 3/8 A	21.9	9	43.5	31.5	22	27	12	80	9.4	7013970700	24-SWSDS-L15-G3/8E-NBR-YEL
L 15	G 1/2 A	26.9	11	46	32	27	27	14	100	11.7	7013970800	24-SWSDS-L15-G1/2E-NBR-YEL ¹⁾
L 18	G 1/2 A	26.9	14	45.5	31.5	27	32	14	100	13.4	7013970900	24-SWSDS-L18-G1/2E-NBR-YEL ¹⁾
L 22	G 1/2 A	26.9	14	46.5	32.5	27	36	14	100	15.4	7013971000	24-SWSDS-L22-G1/2E-NBR-YEL
L 22	G 3/4 A	31.9	18	48.5	32.5	32	36	16	180	18.4	7013971100	24-SWSDS-L22-G3/4E-NBR-YEL ¹⁾
L 28	G 1 A	39.9	22.5	53	35	41	41	18	230	26.8	7013971200	24-SWSDS-L28-G1E-NBR-YEL ¹⁾
L 35	G 1 1/4 A	49.9	29	62.5	42.5	50	50	20	330	43.9	7013971300	24-SWSDS-L35-G11/4E-NBR-YEL ¹⁾
L 42	G 1 1/2 A	54.9	35	68.5	46.5	55	60	22	500	62.3	7013971400	24-SWSDS-L42-G11/2E-NBR-YEL ¹⁾
S 6	G 1/4 A	18.9	3.5	39	27	19	17	12	60	4.9	7013971500	24-SWSDS-S6-G1/4E-NBR-YEL ¹⁾
S 8	G 1/4 A	18.9	4.5	41.5	29.5	19	19	12	60	5.8	7013971600	24-SWSDS-S8-G1/4E-NBR-YEL ¹⁾
S 10	G 3/8 A	21.9	6	44	32	22	22	12	90	8.7	7013971700	24-SWSDS-S10-G3/8E-NBR-YEL ¹⁾
S 12	G 3/8 A	21.9	7	46	34	22	24	12	90	9.9	7013971800	24-SWSDS-S12-G3/8E-NBR-YEL ¹⁾
S 12	G 1/2 A	26.9	7	48.5	34.5	27	24	14	150	12.8	7013971900	24-SWSDS-S12-G1/2E-NBR-YEL
S 14	G 1/2 A	26.9	9	50.5	36.5	27	27	14	150	15.4	7013972000	24-SWSDS-S14-G1/2E-NBR-YEL ¹⁾
S 16	G 1/2 A	26.9	11	51	37	27	30	14	150	16.2	7013972100	24-SWSDS-S16-G1/2E-NBR-YEL ¹⁾
S 16	G 3/4 A	31.9	11	55	39	32	30	16	200	22.7	7013972200	24-SWSDS-S16-G3/4E-NBR-YEL
S 20	G 1/2 A	26.9	12	55	41	27	36	14	150	24.2	7013972300	24-SWSDS-S20-G1/2E-NBR-YEL
S 20	G 3/4 A	31.9	15	59	43	32	36	16	200	25.5	7013972400	24-SWSDS-S20-G3/4E-NBR-YEL ¹⁾
S 25	G 1 A	39.9	18	66	48	41	46	18	250	48.8	7013972500	24-SWSDS-S25-G1E-NBR-YEL ¹⁾
S 30	G 1 1/4 A	49.9	22.5	71	51	50	50	20	500	66.7	7013972600	24-SWSDS-S30-G11/4E-NBR-YEL ¹⁾
S 38	G 1 1/2 A	54.9	28.5	82	60	55	60	22	600	95.3	7013972700	24-SWSDS-S38-G11/2E-NBR-YEL ¹⁾

¹⁾ Standard size

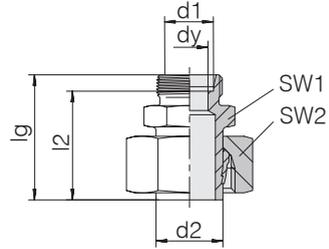
Example for comp. :
 EVGE06LRED

I Tube end reducers

with hexagon for locking

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Tube socket d2	Series Tube OD d1	dy	lg	l2	SW1	SW2	kg/100 ca.	Order-No.	Designation
L 6	LL 4	3	31	27	11	14	2.1	0188462074	24-SWS-L6-LL4
L 8	L 6	4	33	26	12	17	2.9	0148052074	24-SWS-L8-L6
L 10	L 6	4	34	27	12	19	3.4	0148112074	24-SWS-L10-L6
L 10	L 8	6	35	28	14	19	3.8	0148102074	24-SWS-L10-L8
L 12	L 10	8	38	31	17	22	5.2	0148152074	24-SWS-L12-L10
L 12	L 6	4	37	30	14	22	4.7	0148172074	24-SWS-L12-L6
L 12	L 8	6	37	30	14	22	4.8	0148162074	24-SWS-L12-L8
L 12	S 8	5	39	32	17	22	5.7	0186092074	24-SWS-L12-S8
L 15	L 10	8	39	32	17	27	7.7	0148212074	24-SWS-L15-L10
L 15	L 12	10	40	33	19	27	8.2	0148202074	24-SWS-L15-L12
L 15	L 6	4	38	31	17	27	7.4	0148232074	24-SWS-L15-L6
L 15	L 8	6	38	31	17	27	7.5	0148222074	24-SWS-L15-L8
L 18	L 10	8	38.5	31.5	19	32	10.2	0148272074	24-SWS-L18-L10
L 18	L 12	10	38.5	31.5	19	32	10.3	0148262074	24-SWS-L18-L12
L 18	L 15	12	39.5	32.5	24	32	11.9	0148252074	24-SWS-L18-L15
L 18	L 6	4	37.5	30.5	19	32	11.0	0148292074	24-SWS-L18-L6
L 18	L 8	6	37.5	30.5	19	32	10.2	0148282074	24-SWS-L18-L8
L 18	S 16	12	50	41.5	30	32	19.2	0196612074	24-SWS-L18-S16
L 22	L 10	8	39.5	32.5	24	36	14.1	0148332074	24-SWS-L22-L10
L 22	L 12	10	39.5	32.5	24	36	14.1	0148322074	24-SWS-L22-L12
L 22	L 15	12	40.5	33.5	24	36	14.7	0148312074	24-SWS-L22-L15
L 22	L 18	15	41.5	34	27	36	16.2	0148302074	24-SWS-L22-L18
L 22	L 6	4	41	34	24	36	14.8	0199032074	24-SWS-L22-L6
L 22	L 8	6	38.5	31.5	24	36	14.5	0148342074	24-SWS-L22-L8
L 22	S 20	16	50.5	40	32	36	21.5	0198362074	24-SWS-L22-S20
L 28	L 10	8	41	34	30	41	17.8	0148392074	24-SWS-L28-L10
L 28	L 12	10	41	34	30	41	18.3	0148382074	24-SWS-L28-L12
L 28	L 15	12	42	35	30	41	18.4	0148372074	24-SWS-L28-L15
L 28	L 18	15	43	35.5	30	41	19.1	0148362074	24-SWS-L28-L18

Other diameter combinations available upon request.

Example for comp. :
KOR08/06LOMD

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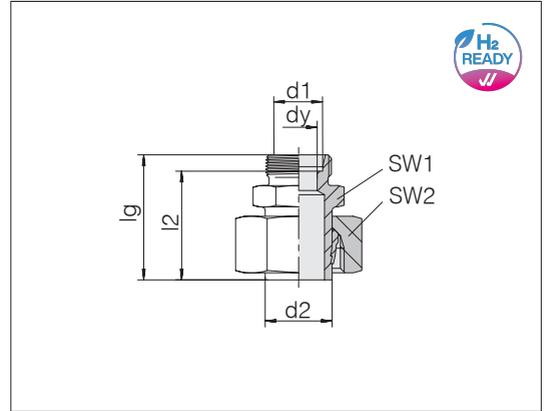


I Tube end reducers

with hexagon for locking

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Tube socket d2	Series Tube OD d1	dy	lg	l2	SW1	SW2	kg/100 ca.	Order-No.	Designation
L 28	L 22	19	45	37.5	32	41	20.2	0148352074	24-SWS-L28-L22
L 28	L 6	4	42	35	30	41	19.1	0198652074	24-SWS-L28-L6
L 28	L 8	6	42	35	30	41	17.5	0199022074	24-SWS-L28-L8
L 28	S 25	20	58	46	41	41	38.7	0197632074	24-SWS-L28-S25
L 35	L 10	8	49	42	36	50	28.8	0198892074	24-SWS-L35-L10
L 35	L 12	10	47.5	40.5	36	50	28.6	0148442074	24-SWS-L35-L12
L 35	L 15	12	48.5	41.5	36	50	29.1	0148432074	24-SWS-L35-L15
L 35	L 18	15	49.5	42	36	50	28.7	0148422074	24-SWS-L35-L18
L 35	L 22	19	51.5	44	36	50	28.8	0148412074	24-SWS-L35-L22
L 35	L 28	24	52.5	45	41	50	31.8	0148402074	24-SWS-L35-L28
L 35	L 8	6	48	41	36	50	27.9	0198712074	24-SWS-L35-L8
L 42	L 10	8	51	44	46	60	44.2	0199802074	24-SWS-L42-L10
L 42	L 12	10	51	44	46	60	45.2	0199812074	24-SWS-L42-L12
L 42	L 15	12	52	45	46	60	45.0	0148492074	24-SWS-L42-L15
L 42	L 18	15	52	44.5	46	60	46.2	0148482074	24-SWS-L42-L18
L 42	L 22	19	54	46.5	46	60	44.9	0148472074	24-SWS-L42-L22
L 42	L 28	24	55	47.5	46	60	45.1	0148462074	24-SWS-L42-L28
L 42	L 35	30	58	47.5	46	60	47.8	0148452074	24-SWS-L42-L35

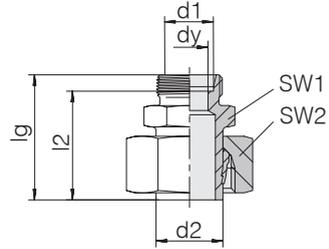
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I Tube end reducers

with hexagon for locking

Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Tube socket d2	Series Tube OD d1	dy	lg	l2	SW1	SW2	kg/100 ca.	Order-No.	Designation
S 8	S 6	4	37	30	14	19	4.4	0148552074	24-SWS-S8-S6
S 10	S 6	4	39	32	14	22	5.9	0148612074	24-SWS-S10-S6
S 10	S 8	5	41	34	17	22	6.7	0148602074	24-SWS-S10-S8
S 12	L 12	7	38	31	19	24	6.9	0198922074	24-SWS-S12-L12
S 12	S 10	7	41	33.5	19	24	7.8	0148652074	24-SWS-S12-S10
S 12	S 6	4	39	32	14	24	6.6	0148672074	24-SWS-S12-S6
S 12	S 8	5	41	34	17	24	7.4	0148662074	24-SWS-S12-S8
S 14	S 10	7	44	36.5	19	27	10.6	0148712074	24-SWS-S14-S10
S 14	S 12	8	46	38.5	22	27	12.0	0148702074	24-SWS-S14-S12
S 14	S 6	4	42	35	17	27	9.6	0148732074	24-SWS-S14-S6
S 14	S 8	5	44	37	17	27	10.0	0148722074	24-SWS-S14-S8
S 16	L 12	10	43	36	19	30	11.6	1148022074	24-SWS-S16-L12
S 16	L 15	12	46	39	24	30	13.4	0197872074	24-SWS-S16-L15
S 16	S 10	7	44	36.5	19	30	11.9	0148772074	24-SWS-S16-S10
S 16	S 12	8	46	38.5	22	30	13.3	0148762074	24-SWS-S16-S12
S 16	S 14	10	48	40	24	30	14.7	0148752074	24-SWS-S16-S14
S 16	S 6	4	42	35	17	30	11.1	0148792074	24-SWS-S16-S6
S 16	S 8	5	44	37	17	30	11.6	0148782074	24-SWS-S16-S8
S 20	L 15	12	51	44	24	36	18.6	0198902074	24-SWS-S20-L15
S 20	L 18	14	51	43.5	27	36	20.6	0198912074	24-SWS-S20-L18
S 20	S 10	7	48	40.5	22	36	16.8	0148832074	24-SWS-S20-S10
S 20	S 12	8	50	42.5	22	36	17.9	0148822074	24-SWS-S20-S12
S 20	S 14	10	52	44	24	36	19.1	0148812074	24-SWS-S20-S14
S 20	S 16	12	52	43.5	27	36	20.3	0148802074	24-SWS-S20-S16
S 20	S 6	4	47	40	22	36	7.4	0199012074	24-SWS-S20-S6
S 20	S 8	5	48	41	22	36	17.2	0148842074	24-SWS-S20-S8
S 25	L 18	15	51	43.5	27	46	31.7	0198622074	24-SWS-S25-L18
S 25	L 22	18	55	47.5	32	46	36.0	0198372074	24-SWS-S25-L22
S 25	S 10	7	51	43.5	27	46	31.9	0148892074	24-SWS-S25-S10
S 25	S 12	8	53	45.5	27	46	32.6	0148882074	24-SWS-S25-S12
S 25	S 14	10	55	47	27	46	33.1	0148872074	24-SWS-S25-S14
S 25	S 16	12	55	46.5	27	46	33.2	0148862074	24-SWS-S25-S16
S 25	S 20	16	59	48.5	32	46	37.0	0148852074	24-SWS-S25-S20

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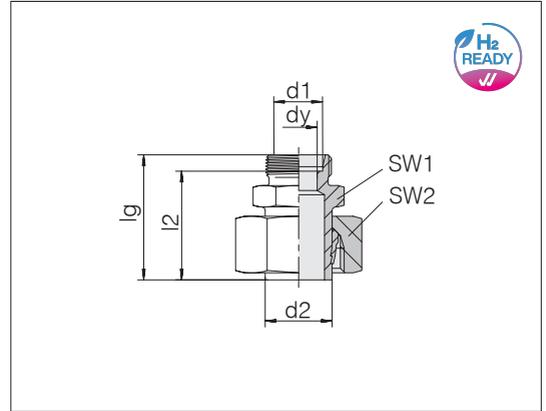


I Tube end reducers

with hexagon for locking

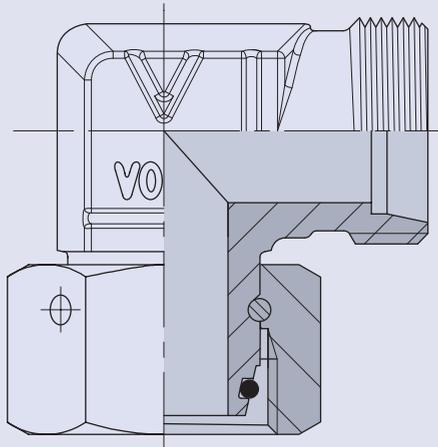
Tube socket pre-assembled

Tube coupling: 24° in acc. with ISO 8434-1



Tube socket d2	Series Tube OD d1	dy	lg	l2	SW1	SW2	kg/100 ca.	Order-No.	Designation
S 25	S 6	4	51	44	27	46	31.2	0198992074	24-SWS-S25-S6
S 25	S 8	5	51	44	27	46	31.5	0199002074	24-SWS-S25-S8
S 30	S 12	8	56	48.5	32	50	37.5	0148942074	24-SWS-S30-S12
S 30	S 14	10	58	50	32	50	18.1	0148932074	24-SWS-S30-S14
S 30	S 16	12	58	49.5	32	50	37.9	0148922074	24-SWS-S30-S16
S 30	S 20	16	62	51.5	32	50	39.9	0148912074	24-SWS-S30-S20
S 30	S 25	20	66	54	41	50	49.4	0148902074	24-SWS-S30-S25
S 30	S 8	5	59	52	32	50	40.9	0198972074	24-SWS-S30-S8
S 38	S 10	7	62	54.5	41	60	28.2	0199872074	24-SWS-S38-S10
S 38	S 12	8	62	54.5	41	60	60.9	0199882074	24-SWS-S38-S12
S 38	S 16	12	64	55.5	41	60	58.9	0148982074	24-SWS-S38-S16
S 38	S 20	16	68	57.5	41	60	60.5	0148972074	24-SWS-S38-S20
S 38	S 25	20	72	60	41	60	64.5	0148962074	24-SWS-S38-S25
S 38	S 30	25	74	60.5	46	60	71.4	0148952074	24-SWS-S38-S30

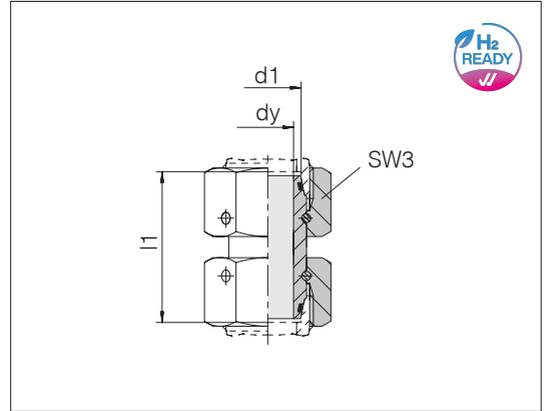
I 24° taper couplings (DKO)



I Swivel unions

With taper and O-ring
fit in bore type
W DIN 3861/ISO 8434-1

Standard O-ring material is FKM



Series Tube OD d1	dy	l1	SW3	kg/100 ca.	Order-No.	Designation
L 6	2.5	33.5	14	2.9	1178342058	24-SW2OS-L6-CP1
L 6	2.5	36	14	3.0	1178352058	24-SW2OS-L6-CP2
L 6	2.5	38	14	3.1	1178002058	24-SW2OS-L6 ¹⁾
L 8	4	33.5	17	4.4	1178852058	24-SW2OS-L8-CP1
L 8	4	36	17	4.6	1178372058	24-SW2OS-L8-CP2
L 8	4	39.5	17	4.6	1178012058	24-SW2OS-L8 ¹⁾
L 10	6	34	19	5.5	1178472058	24-SW2OS-L10-CP1
L 10	6	37	19	5.9	1178382058	24-SW2OS-L10-CP2
L 10	6	39.5	19	6.0	1178022058	24-SW2OS-L10 ¹⁾
L 12	8	34	22	7.4	1178752058	24-SW2OS-L12-CP1
L 12	8	37	22	7.7	1178392058	24-SW2OS-L12-CP2
L 12	8	39.5	22	7.9	1178032058	24-SW2OS-L12 ¹⁾
L 15	10	40	27	14.3	1178442058	24-SW2OS-L15-CP12
L 15	10	42.5	27	14.8	1178042058	24-SW2OS-L15 ¹⁾
L 18	13	39	32	17.6	1178452058	24-SW2OS-L18-CP1
L 18	13	42.5	32	18.3	1178802058	24-SW2OS-L18-CP2
L 18	13	45	32	18.8	1178052058	24-SW2OS-L18 ¹⁾
L 22	17	44	36	24.4	1178652058	24-SW2OS-L22-CP1
L 22	17	46.5	36	25.1	1178812058	24-SW2OS-L22-CP2
L 22	17	49.5	36	25.6	1178062058	24-SW2OS-L22 ¹⁾
L 28	22	48	41	31.2	1178482058	24-SW2OS-L28-CP12
L 28	22	51.5	41	31.7	1178072058	24-SW2OS-L28 ¹⁾
L 35	28	52	50	45.1	1178822058	24-SW2OS-L35-CP1
L 35	28	57.5	50	48.3	1178832058	24-SW2OS-L35-CP2
L 35	28	61	50	49.8	1178082058	24-SW2OS-L35 ¹⁾
L 42	34	57.5	60	74.6	1178842058	24-SW2OS-L42-CP12
L 42	34	62.5	60	78.1	1178092058	24-SW2OS-L42 ¹⁾

¹⁾ Standard size

Example for comp. :
GZ06LVT

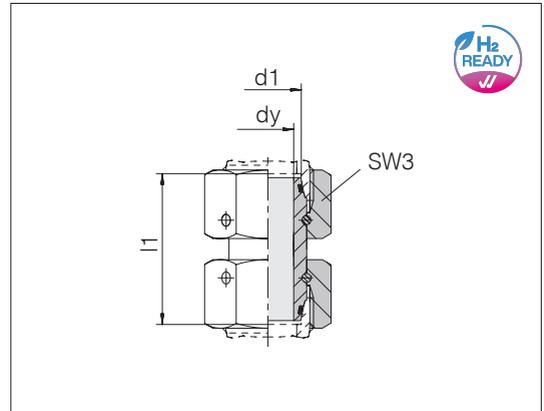
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I Swivel unions

With taper and O-ring
fit in bore type
W DIN 3861/ISO 8434-1

Standard O-ring material is FKM



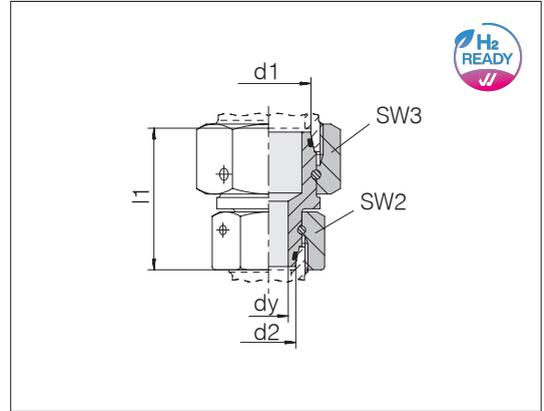
Series Tube OD d1	dy	l1	SW3	kg/100 ca.	Order-No.	Designation
S 6	2.5	33	17	4.2	1178862058	24-SW2OS-S6-CP1
S 6	2.5	39	17	4.6	1178872058	24-SW2OS-S6-CP2
S 6	2.5	40.5	17	4.7	1178102058	24-SW2OS-S6 ¹⁾
S 8	4	34	19	5.6	1178882058	24-SW2OS-S8-CP1
S 8	4	39	19	6.0	1178892058	24-SW2OS-S8-CP2
S 8	4	40.5	19	6.1	1178112058	24-SW2OS-S8 ¹⁾
S 10	6	35	22	7.7	1178902058	24-SW2OS-S10-CP1
S 10	6	43.5	22	8.5	1178122058	24-SW2OS-S10-CP2 ¹⁾
S 12	8	38	24	9.7	1178912058	24-SW2OS-S12-CP1
S 12	8	44	24	10.4	1178132058	24-SW2OS-S12-CP2 ¹⁾
S 14	9	41	27	14.4	1178922058	24-SW2OS-S14-CP1
S 14	9	48.5	27	15.6	1178142058	24-SW2OS-S14-CP2 ¹⁾
S 16	11	42	30	17.5	1178932058	24-SW2OS-S16-CP1
S 16	11	49	30	18.6	1178152058	24-SW2OS-S16-CP2 ¹⁾
S 20	14	48	36	26.1	1178942058	24-SW2OS-S20-CP1
S 20	14	60.5	36	29.6	1178162058	24-SW2OS-S20-CP2 ¹⁾
S 25	16	73	46	63.1	1178712058	24-SW2OS-S25-LG73
S 25	16	107	46	80.4	1178722058	24-SW2OS-S25-LG107
S 25	18	54.5	46	51.7	1178952058	24-SW2OS-S25-CP1
S 25	18	65.5	46	56.4	1178962058	24-SW2OS-S25-CP2
S 25	18	67.5	46	56.9	1178172058	24-SW2OS-S25 ¹⁾
S 30	23	62	50	63.1	1178702058	24-SW2OS-S30-CP1
S 30	23	72.5	50	68.6	1178182058	24-SW2OS-S30-CP2 ¹⁾
S 38	30	67	60	86.7	1178692058	24-SW2OS-S38-CP1
S 38	30	83	60	99.6	1178192058	24-SW2OS-S38-CP2 ¹⁾

¹⁾ Standard size

I Swivel reducers

With taper and O-ring
fit in bore type
W DIN 3861/ISO 8434-1

Standard O-ring material is FKM

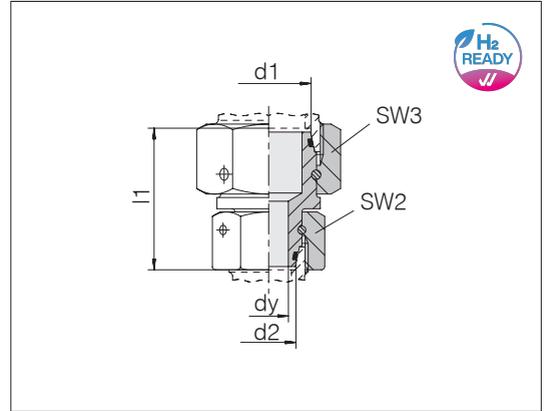


Series Tube OD d1	Series Tube OD d2	dy	l1	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	S 6	2.5	34	17	14	3.7	1180262058	24-SW2OS-L6-S6-CP1
L 6	S 6	2.5	37.5	17	14	3.9	1178232058	24-SW2OS-L6-S6-CP2
L 8	L 6	2.5	34	14	17	3.8	1180002058	24-SW2OS-L8-L6-CP1
L 8	S 8	4	34.5	19	17	5.3	1180272058	24-SW2OS-L8-S8-CP1
L 10	L 6	2.5	34	14	19	4.4	1178662058	24-SW2OS-L10-L6-CP1
L 10	L 8	4	34.5	17	19	5.2	1180012058	24-SW2OS-L10-L8-CP1
L 10	S 10	6	35	22	19	6.8	1180282058	24-SW2OS-L10-S10-CP1
L 10	S 10	6	40	22	19	7.2	1178242058	24-SW2OS-L10-S10-CP2
L 12	L 10	6	34.5	19	22	6.8	1180042058	24-SW2OS-L12-L10-CP1
L 12	L 10	6	37.5	19	22	7.1	1178682058	24-SW2OS-L12-L10-CP2
L 12	L 6	2.5	34.5	14	22	5.4	1180022058	24-SW2OS-L12-L6-CP1
L 12	L 8	4	34.5	17	22	6.2	1180032058	24-SW2OS-L12-L8-CP1
L 12	S 12	8	37.5	24	22	8.9	1180292058	24-SW2OS-L12-S12-CP1
L 12	S 12	8	40.5	24	22	9.3	1178252058	24-SW2OS-L12-S12-CP2
L 15	L 10	6	38	19	27	10.5	1178222058	24-SW2OS-L15-L10-CP12
L 15	L 12	8	39	22	27	11.4	1178432058	24-SW2OS-L15-L12-CP1
L 15	L 8	4	38	17	27	9.6	1178612058	24-SW2OS-L15-L8-CP12
L 18	L 10	6	37.5	19	32	12.2	1180062058	24-SW2OS-L18-L10-CP1
L 18	L 12	8	37.5	22	32	13.1	1180072058	24-SW2OS-L18-L12-CP1
L 18	L 15	10	40.5	27	32	16.5	1180082058	24-SW2OS-L18-L15-CP1
L 18	L 15	10	45	27	32	17.3	1178202058	24-SW2OS-L18-L15
L 18	S 16	11	41.5	30	32	18.2	1180302058	24-SW2OS-L18-S16-CP1
L 22	L 12	8	43.5	22	36	18.1	1180092058	24-SW2OS-L22-L12-CP1
L 22	L 15	10	43.5	27	36	20.2	1180102058	24-SW2OS-L22-L15-CP12
L 22	L 18	13	44	32	36	22.1	1178212058	24-SW2OS-L22-L18-CP1
L 22	S 20	14	47	36	36	25.9	1180312058	24-SW2OS-L22-S20-CP1
L 22	S 20	14	53.5	36	36	27.5	1178262058	24-SW2OS-L22-S20-CP2
L 28	L 15	10	46	27	41	24.8	1180112058	24-SW2OS-L28-L15
L 28	L 18	13	46	32	41	26.0	1178622058	24-SW2OS-L28-L18-CP2
L 28	L 22	17	46	36	41	28.2	1178302058	24-SW2OS-L28-L22-CP1
L 28	S 25	18	50.5	46	41	40.8	1180322058	24-SW2OS-L28-S25-CP1

I Swivel reducers

With taper and O-ring
fit in bore type
W DIN 3861/ISO 8434-1

Standard O-ring material is FKM



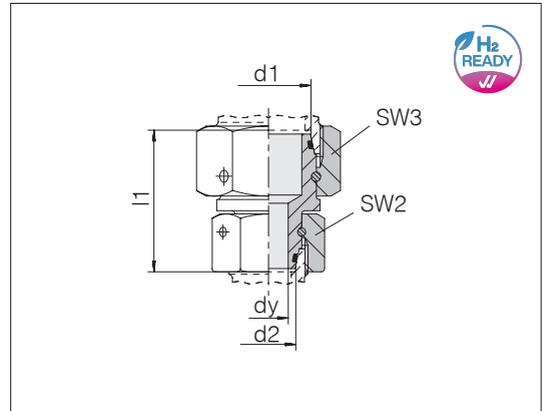
Series Tube OD d1	Series Tube OD d2	dy	l1	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 35	L 18	13	51	32	50	37.5	1180122058	24-SW2OS-L35-L18-CP12
L 35	L 22	17	51	36	50	38.4	1180132058	24-SW2OS-L35-L22-CP1
L 35	L 28	22	51	41	50	40.3	1180142058	24-SW2OS-L35-L28-CP1
L 35	L 28	22	52.5	41	50	41.0	1178672058	24-SW2OS-L35-L28-CP2
L 35	S 30	23	59	50	50	55.8	1180332058	24-SW2OS-L35-S30-CP1
L 42	L 22	17	54	36	60	55.7	1180152058	24-SW2OS-L42-L22
L 42	L 28	22	54	41	60	57.5	1178632058	24-SW2OS-L42-L28-CP2
L 42	L 35	28	56.5	50	60	62.5	1178642058	24-SW2OS-L42-L35-CP1
L 42	S 38	30	62	60	60	78.3	1180342058	24-SW2OS-L42-S38-CP1
L 42	S 38	30	66	60	60	84.1	1178282058	24-SW2OS-L42-S38-CP2
S 8	S 6	2.5	34	17	19	5.2	1180162058	24-SW2OS-S8-S6-CP1
S 10	S 6	2.5	34.5	17	22	6.2	1180172058	24-SW2OS-S10-S6-CP1
S 10	S 8	4	34.5	19	22	6.8	1180182058	24-SW2OS-S10-S8-CP1
S 10	S 8	4	41	19	22	7.7	1178492058	24-SW2OS-S10-S8-CP2
S 12	S 10	6	38	22	24	9.0	1178502058	24-SW2OS-S12-S10-CP1
S 12	S 6	2.5	37.5	17	24	7.6	1180192058	24-SW2OS-S12-S6-CP1
S 12	S 8	4	37.5	19	24	8.0	1178742058	24-SW2OS-S12-S8-CP1
S 16	L 15	10	41	27	30	16.1	1180352058	24-SW2OS-S16-L15-CP1
S 16	L 15	10	45	27	30	16.8	1178292058	24-SW2OS-S16-L15-CP2
S 16	S 10	6	41.5	22	30	13.5	1178522058	24-SW2OS-S16-S10-CP1
S 16	S 12	8	41.5	24	30	14.1	1178532058	24-SW2OS-S16-S12-CP1
S 20	L 18	13	47	32	36	23.9	1180362058	24-SW2OS-S20-L18-CP1
S 20	S 12	8	47	24	36	19.8	1180202058	24-SW2OS-S20-S12-CP1
S 20	S 12	8	52	24	36	21.4	1178542058	24-SW2OS-S20-S12-CP2
S 20	S 16	11	47.5	30	36	23.0	1178552058	24-SW2OS-S20-S16-CP1
S 25	L 18	13	47.5	32	46	35.4	1178762058	24-SW2OS-S25-L18-CP1
S 25	L 22	17	50.5	36	46	38.9	1180372058	24-SW2OS-S25-L22-CP1
S 25	S 16	11	51	30	46	36.2	1178562058	24-SW2OS-S25-S16-CP1
S 25	S 20	14	53	36	46	40.2	1178572058	24-SW2OS-S25-S20

Continued on following page

I Swivel reducers

With taper and O-ring
fit in bore type
W DIN 3861/ISO 8434-1

Standard O-ring material is FKM



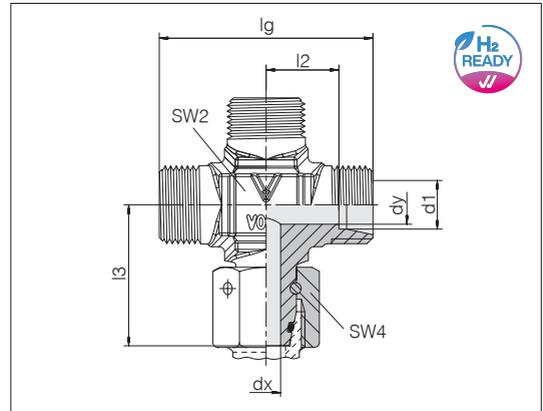
Series Tube OD d1	Series Tube OD d2	dy	l1	SW2	SW3	kg/100 ca.	Order-No.	Designation
S 30	L 28	22	58	41	50	51.9	1178272058	24-SW2OS-S30-L28-CP1
S 30	S 16	11	58	30	50	44.9	1180212058	24-SW2OS-S30-S16-CP1
S 30	S 20	14	59	36	50	47.9	1180222058	24-SW2OS-S30-S20-CP1
S 30	S 25	18	60.5	46	50	58.9	1180232058	24-SW2OS-S30-S25-CP1
S 30	S 25	18	69.5	46	50	65.2	1178582058	24-SW2OS-S30-S25
S 38	L 35	28	61.5	50	60	70.3	1178732058	24-SW2OS-S38-L35-CP1
S 38	S 20	14	61.5	36	60	62.5	1180242058	24-SW2OS-S38-S20-CP1
S 38	S 25	18	63	46	60	72.7	1178592058	24-SW2OS-S38-S25-CP1
S 38	S 30	23	66.5	50	60	77.2	1180252058	24-SW2OS-S38-S30
S 38	S 30	23	78	50	60	89.1	1178602058	24-SW2OS-S38-S30-CP2

I Union crosses

With taper and O-ring

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



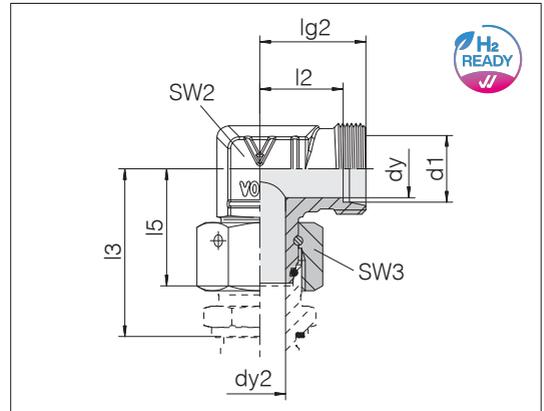
Series Tube OD d1	dx	dy	lg	l2	l3	SW2	SW4	Order-No.	Designation
L 6	2.5	4	38	12	24	12	14	1190412058	24-SWOK-L6
L 8	4	6	42	14	27.5	17	17	1196702058	24-SWOK-L8
L 10	6	8	44	15	29	17	19	1196962058	24-SWOK-L10
L 12	8	10	48	17	29.5	17	22	1196952058	24-SWOK-L12
L 15	10	12	56	21	32.5	24	27	1196262058	24-SWOK-L15
L 18	13	15	68	26.5	38.5	27	32	1196792058	24-SWOK-L18
L 35	28	30	90	34.5	51	41	50	1190662058	24-SWOK-L35
L 42	34	36	102	40	56	50	60	1194942058	24-SWOK-L42

I Swivel elbows

With taper and O-ring

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	dy2	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	2.5	19	12	34.5	26	12	14	4.1	1158032058	24-SWOE-L6-P
L 8	6	4	21	14	37.5	27.5	14	17	6.2	1158082058	24-SWOE-L8-P
L 10	8	6	22	15	40	29	14	19	5.3	1158132058	24-SWOE-L10
L 12	10	8	24	17	42	29.5	17	22	10.1	1158182058	24-SWOE-L12
L 15	12	10	28	21	46	32.5	19	27	12.9	1158232058	24-SWOE-L15
L 18	15	13	31	23.5	50	35.5	24	32	18.6	1158282058	24-SWOE-L18
L 22	19	17	35	27.5	55	38.5	27	36	25.3	1158332058	24-SWOE-L22
L 28	24	22	38	30.5	59	41.5	36	41	34.2	1158382058	24-SWOE-L28
L 35	30	28	45	34.5	68.5	51	41	50	57.4	1158432058	24-SWOE-L35
L 42	36	34	51	40	75	56	50	60	103.0	1158482058	24-SWOE-L42
S 6	4	2.5	23	16	40	27	14	17	6.2	1158532058	24-SWOE-S6-P
S 8	5	4	24	17	42.5	27.5	17	19	8.5	1158582058	24-SWOE-S8-P
S 10	7	6	25	17.5	45	30	19	22	12.2	1158632058	24-SWOE-S10-P
S 12	8	8	29	21.5	48	31	17	24	10.8	1158682058	24-SWOE-S12
S 14	10	9	30	22	54	35	19	27	14.9	1158732058	24-SWOE-S14
S 16	12	11	33	24.5	55	36.5	24	30	20.1	1158782058	24-SWOE-S16
S 20	16	14	37	26.5	65	44.5	27	36	30.5	1158832058	24-SWOE-S20
S 25	20	18	42	30	73	50	36	46	55.4	1158882058	24-SWOE-S25
S 30	25	23	49	35.5	78.5	55	41	50	77.9	1158932058	24-SWOE-S30
S 38	32	30	57	41	89	63	50	60	118.6	1158982058	24-SWOE-S38

Example for comp. :
EW06LVITOMD
ISO 8434-1-SWOE-L6-St

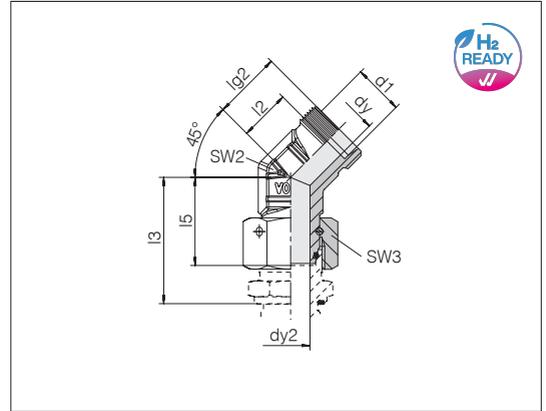


I Swivel 45° elbows

With taper and O-ring

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	dy2	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	2.5	21	14	34.5	26	19	14	6.9	1170032058	24-SWOE45-L6
L 8	6	4	22	15	37.5	27.5	19	17	7.0	1170082058	24-SWOE45-L8
L 10	8	6	23	16	40	29	19	19	7.8	1170132058	24-SWOE45-L10
L 12	10	8	24	17	42	29.5	19	22	8.6	1170182058	24-SWOE45-L12
L 15	12	10	24	17	46	32.5	19	27	12.6	1170232058	24-SWOE45-L15
L 18	15	13	26.5	19	50	35.5	24	32	17.8	1170282058	24-SWOE45-L18
L 22	19	17	30	22.5	55	38.5	27	36	23.6	1170332058	24-SWOE45-L22
L 28	24	22	32	24.5	59	41.5	36	41	33.6	1170382058	24-SWOE45-L28
L 35	30	28	37.5	27	68.5	51	41	50	54.6	1170432058	24-SWOE45-L35
L 42	36	34	38	27	75	56	50	60	83.6	1170482058	24-SWOE45-L42
S 6	4	2.5	23	16	40	27	19	17	7.3	1170532058	24-SWOE45-S6
S 8	5	4	23	16	42.5	27.5	19	19	8.2	1170582058	24-SWOE45-S8
S 10	7	6	24	16.5	45	30	19	22	9.5	1170632058	24-SWOE45-S10
S 12	8	8	24.5	17	48	31	19	24	11.2	1170682058	24-SWOE45-S12
S 14	10	9	25	17	54	35	19	27	13.6	1170732058	24-SWOE45-S14
S 16	12	11	27.5	19	55	36.5	24	30	18.8	1170782058	24-SWOE45-S16
S 20	16	14	32	21.5	65	44.5	27	36	28.6	1170832058	24-SWOE45-S20
S 25	20	18	35	23	73	50	36	46	52.3	1170882058	24-SWOE45-S25
S 30	25	23	37.5	24	78.5	55	41	50	69.7	1170932058	24-SWOE45-S30
S 38	32	30	44	28	89	63	50	60	106.8	1170982058	24-SWOE45-S38

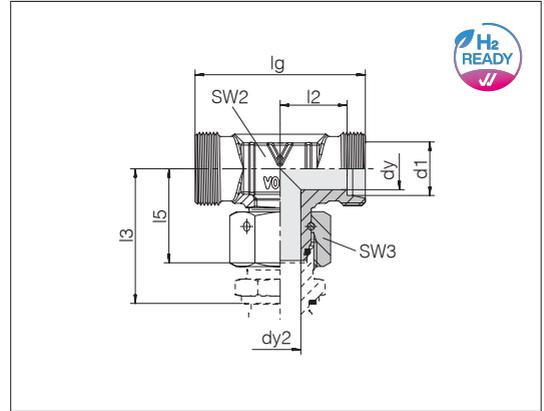
Example for comp. :
EV06LVITOMD
ISO 8434-1-SWOE45-L6-St

I Swivel branch tees

With taper and O-ring

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	dy2	lg	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	2.5	38	12	34.5	26	12	14	4.9	1160032058	24-SWOT-L6-P
L 8	6	4	42	14	37.5	27.5	14	17	6.9	1160082058	24-SWOT-L8-P
L 10	8	6	44	15	40	29	14	19	9.2	1160132058	24-SWOT-L10
L 12	10	8	48	17	42	29.5	19	22	12.0	1160182058	24-SWOT-L12-P
L 15	12	10	56	21	46	32.5	19	27	15.4	1160232058	24-SWOT-L15
L 18	15	13	62	23.5	50	35.5	24	32	21.5	1160282058	24-SWOT-L18
L 22	19	17	70	27.5	55	38.5	27	36	27.7	1160332058	24-SWOT-L22
L 28	24	22	76	30.5	59	41.5	36	41	39.7	1160382058	24-SWOT-L28
L 35	30	28	90	34.5	68.5	51	41	50	68.0	1160432058	24-SWOT-L35
L 42	36	34	102	40	75	56	50	60	113.8	1160482058	24-SWOT-L42
S 6	4	2.5	46	16	40	27	14	17	7.7	1160532058	24-SWOT-S6-P
S 8	5	4	48	17	42.5	27.5	17	19	10.5	1160582058	24-SWOT-S8-P
S 10	7	6	50	17.5	45	30	19	22	14.0	1160632058	24-SWOT-S10-P
S 12	8	8	58	21.5	48	31	17	24	13.5	1160682058	24-SWOT-S12
S 14	10	9	60	22	54	35	19	27	18.1	1160732058	24-SWOT-S14
S 16	12	11	66	24.5	55	36.5	24	30	24.6	1160782058	24-SWOT-S16
S 20	16	14	74	26.5	65	44.5	27	36	35.6	1160832058	24-SWOT-S20
S 25	20	18	84	30	73	50	36	46	63.7	1160882058	24-SWOT-S25
S 30	25	23	98	35.5	78.5	55	41	50	91.6	1160932058	24-SWOT-S30
S 38	32	30	114	41	89	63	50	60	147.8	1160982058	24-SWOT-S38

Example for comp. :
ET06LVITOMD
ISO 8434-1-SWOBT-L6-St

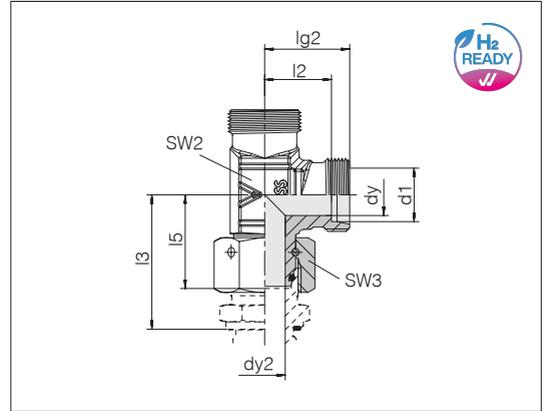


I Swivel run tees

With taper and O-ring

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	dy2	lg2	l2	l3	l5	SW2	SW3	kg/100 ca.	Order-No.	Designation
L 6	4	2.5	19	12	34.5	26	12	14	4.8	1162032058	24-SWOL-L6-P
L 8	6	4	21	14	37.5	27.5	14	17	7.0	1162082058	24-SWOL-L8-P
L 10	8	6	22	15	40	29	14	19	9.6	1162132058	24-SWOL-L10
L 12	10	8	24	17	42	29.5	19	22	12.0	1162182058	24-SWOL-L12-P
L 15	12	10	28	21	46	32.5	19	27	15.4	1162232058	24-SWOL-L15
L 18	15	13	31	23.5	50	35.5	24	32	21.3	1162282058	24-SWOL-L18
L 22	19	17	35	27.5	55	38.5	27	36	28.1	1162332058	24-SWOL-L22
L 28	24	22	38	30.5	59	41.5	36	41	39.2	1162382058	24-SWOL-L28
L 35	30	28	45	34.5	68.5	51	41	50	67.7	1162432058	24-SWOL-L35
L 42	36	34	51	40	75	56	50	60	112.4	1162482058	24-SWOL-L42
S 6	4	2.5	23	16	40	27	12	17	7.8	1162532058	24-SWOL-S6
S 8	5	4	24	17	42.5	27.5	17	19	10.2	1162582058	24-SWOL-S8-P
S 10	7	6	25	17.5	45	30	19	22	14.0	1162632058	24-SWOL-S10-P
S 12	8	8	29	21.5	48	31	17	24	13.3	1162682058	24-SWOL-S12
S 14	10	9	30	22	54	35	19	27	18.0	1162732058	24-SWOL-S14
S 16	12	11	33	24.5	55	36.5	24	30	22.6	1162782058	24-SWOL-S16
S 20	16	14	37	26.5	65	44.5	27	36	35.3	1162832058	24-SWOL-S20
S 25	20	18	42	30	73	50	36	46	62.8	1162882058	24-SWOL-S25
S 30	25	23	49	35.5	78.5	55	41	50	91.7	1162932058	24-SWOL-S30
S 38	32	30	57	41	89	63	50	60	149.3	1162982058	24-SWOL-S38

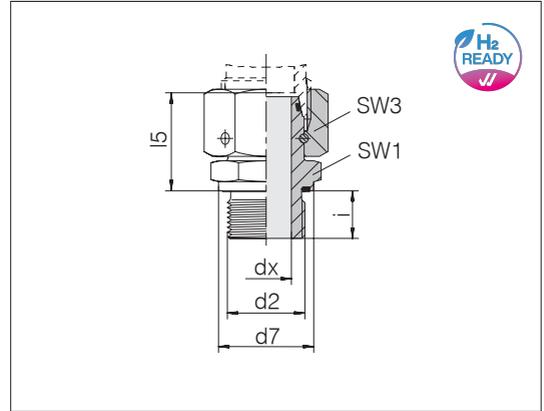
Example for comp. :
EL06LVITOMD
ISO 8434-1-SWORT-L6-St

I Swivel connectors

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

Male thread: Metric fine thread, cylindrical
Threaded stud: ISO 9974-2 Form E
Sealing type: Profile sealing ring PEFLEX
Sealing material: NBR - Yellow

Standard O-ring material (DKO) is FKM



Series Tube OD	d2	d7	dx	l5	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	M 8 x 1	11.9	2.5	24.5	12	14	8	12	2.2	7013972900	24-SWOSDS-L6-M8E-NBR-YEL
L 6	M 10 x 1	13.9	2.5	24.5	14	14	8	15	2.6	7013973000	24-SWOSDS-L6-M10E-NBR-YEL ¹⁾
L 8	M 12 x 1.5	16.9	4	26.5	17	17	12	25	4.4	7013973200	24-SWOSDS-L8-M12E-NBR-YEL ¹⁾
L 8	M 14 x 1.5	18.9	4	27.5	19	17	12	50	6.0	7013973100	24-SWOSDS-L8-M14E-NBR-YEL
L 10	M 12 x 1.5	16.9	6	26.5	17	19	12	25	4.8	7013973500	24-SWOSDS-L10-M12E-NBR-YEL
L 10	M 14 x 1.5	18.9	6	27.5	19	19	12	50	5.7	7013973300	24-SWOSDS-L10-M14E-NBR-YEL ¹⁾
L 10	M 16 x 1.5	21.9	6	30.5	22	19	12	70	4.0	7013973400	24-SWOSDS-L10-M16E-NBR-YEL
L 12	M 16 x 1.5	21.9	8	30.5	22	22	12	70	8.3	7013973600	24-SWOSDS-L12-M16E-NBR-YEL ¹⁾
L 12	M 18 x 1.5	23.9	8	30.5	24	22	12	90	10.3	7013973700	24-SWOSDS-L12-M18E-NBR-YEL
L 12	M 22 x 1.5	26.9	8	30.5	27	22	14	130	11.1	7013973800	24-SWOSDS-L12-M22E-NBR-YEL
L 15	M 18 x 1.5	23.9	10	31.5	24	27	12	90	11.9	7013973900	24-SWOSDS-L15-M18E-NBR-YEL ¹⁾
L 15	M 22 x 1.5	26.9	10	32	27	27	14	130	13.2	7013974000	24-SWOSDS-L15-M22E-NBR-YEL
L 18	M 22 x 1.5	26.9	13	31.5	27	32	14	130	15.3	7013974100	24-SWOSDS-L18-M22E-NBR-YEL ¹⁾
L 18	M 26 x 1.5	31.9	13	31.5	32	32	16	180	19.5	7013974200	24-SWOSDS-L18-M26E-NBR-YEL
L 22	M 26 x 1.5	31.9	17	32.5	32	36	16	180	20.2	7013974300	24-SWOSDS-L22-M26E-NBR-YEL ¹⁾
L 28	M 33 x 2	39.9	22	35	41	41	18	230	28.6	7013974400	24-SWOSDS-L28-M33E-NBR-YEL ¹⁾
L 35	M 42 x 2	49.9	28	42.5	50	50	20	330	50.0	7013974500	24-SWOSDS-L35-M42E-NBR-YEL ¹⁾
L 42	M 48 x 2	54.9	34	46.5	55	60	22	500	71.6	7013974600	24-SWOSDS-L42-M48E-NBR-YEL ¹⁾
S 6	M 12 x 1.5	16.9	2.5	27	17	17	12	50	4.7	7013974700	24-SWOSDS-S6-M12E-NBR-YEL ¹⁾
S 6	M 16 x 1.5	21.9	2.5	32	22	17	12	80	8.1	7013974800	24-SWOSDS-S6-M16E-NBR-YEL
S 8	M 14 x 1.5	18.9	4	29.5	19	19	12	60	6.4	7013974900	24-SWOSDS-S8-M14E-NBR-YEL ¹⁾
S 8	M 16 x 1.5	21.9	4	32	22	19	12	80	8.6	7013975000	24-SWOSDS-S8-M16E-NBR-YEL
S 10	M 16 x 1.5	21.9	6	32	22	22	12	80	9.0	7013975100	24-SWOSDS-S10-M16E-NBR-YEL ¹⁾
S 12	M 16 x 1.5	21.9	6	33	22	24	12	80	10.1	7013975200	24-SWOSDS-S12-M16E-NBR-YEL
S 12	M 18 x 1.5	23.9	8	34	24	24	12	90	11.1	7013975300	24-SWOSDS-S12-M18E-NBR-YEL ¹⁾
S 14	M 20 x 1.5	25.9	9	36.5	27	27	14	130	15.7	7013975400	24-SWOSDS-S14-M20E-NBR-YEL ¹⁾
S 16	M 22 x 1.5	26.9	11	37	27	30	14	130	17.6	7013975500	24-SWOSDS-S16-M22E-NBR-YEL ¹⁾
S 20	M 22 x 1.5	26.9	12	40.5	27	36	14	200	23.5	7013975600	24-SWOSDS-S20-M22E-NBR-YEL
S 20	M 27 x 2	31.9	14	43	32	36	16	200	27.6	7013975700	24-SWOSDS-S20-M27E-NBR-YEL ¹⁾
S 25	M 33 x 2	39.9	18	48	41	46	18	250	50.5	7013975800	24-SWOSDS-S25-M33E-NBR-YEL ¹⁾
S 30	M 42 x 2	49.9	23	51	50	50	20	500	69.7	7013975900	24-SWOSDS-S30-M42E-NBR-YEL ¹⁾
S 38	M 48 x 2	54.9	30	60	55	60	22	600	76.4	7013976000	24-SWOSDS-S38-M48E-NBR-YEL ¹⁾

¹⁾ Standard size

Example for comp. :
EGE06LMED
ISO 8434-1-SWOSDS-L6xM10x1-E-St

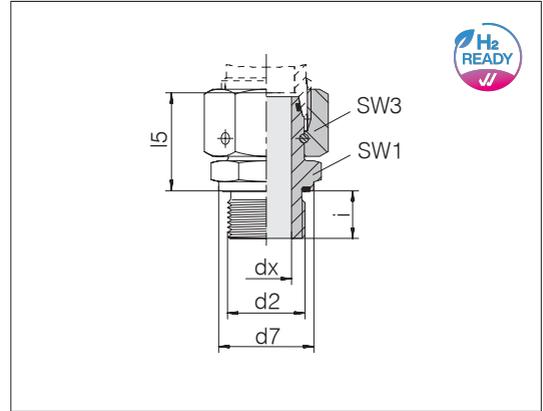


I Swivel connectors

With taper and O-ring
suitable in bore form W DIN 3861/ISO 8434-1

Male thread: BSPP thread, cylindrical
Screw-in stud: ISO 1179-2 Form E
Sealing type: Profile sealing ring PEFLEX
Sealing material: NBR - Yellow

Standard O-ring material (DKO) is FKM



Series Tube OD	d2	d7	dx	l5	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
L 6	G 1/8 A	13.9	2.5	24.5	14	14	8	20	2.6	7013976100	24-SWOSDS-L6-G1/8E-NBR-YEL ¹⁾
L 8	G 1/8 A	13.9	4	24	14	17	8	20	3.3	7013976200	24-SWOSDS-L8-G1/8E-NBR-YEL
L 8	G 1/4 A	18.9	4	29.5	19	17	12	50	5.7	7013976300	24-SWOSDS-L8-G1/4E-NBR-YEL ¹⁾
L 10	G 1/4 A	18.9	6	27.5	19	19	12	50	5.6	7013976400	24-SWOSDS-L10-G1/4E-NBR-YEL ¹⁾
L 10	G 3/8 A	21.9	6	28	22	19	12	80	7.3	7013976500	24-SWOSDS-L10-G3/8E-NBR-YEL
L 12	G 1/4 A	18.9	6	27.5	19	22	12	50	6.9	7013730500	24-SWOSDS-L12-G1/4E-NBR-YEL
L 12	G 3/8 A	21.9	8	34	22	22	12	80	9.6	7013976800	24-SWOSDS-L12-G3/8E-NBR-YEL ¹⁾
L 15	G 3/8 A	21.9	9	32	22	27	12	80	11.6	7013977000	24-SWOSDS-L15-G3/8E-NBR-YEL
L 15	G 1/2 A	26.9	10	32	27	27	14	100	14.1	7013977100	24-SWOSDS-L15-G1/2E-NBR-YEL ¹⁾
L 15	G 3/4 A	31.9	10	30.5	32	27	16	180	15.4	7013977200	24-SWOSDS-L15-G3/4E-NBR-YEL
L 18	G 1/2 A	26.9	13	31.5	27	32	14	100	14.4	7013977300	24-SWOSDS-L18-G1/2E-NBR-YEL ¹⁾
L 18	G 3/4 A	31.9	13	31.5	32	32	16	180	17.2	7013977400	24-SWOSDS-L18-G3/4E-NBR-YEL
L 22	G 1/2 A	26.9	14	32.5	27	36	14	100	17.1	7013977500	24-SWOSDS-L22-G1/2E-NBR-YEL
L 22	G 3/4 A	31.9	17	32.5	32	36	16	180	20.1	7013730800	24-SWOSDS-L22-G3/4E-NBR-YEL ¹⁾
L 28	G 3/4 A	31.9	17	35	32	41	16	180	23.5	7013977700	24-SWOSDS-L28-G3/4E-NBR-YEL
L 28	G 1 A	39.9	22	35	41	41	18	230	29.3	7013730700	24-SWOSDS-L28-G1E-NBR-YEL ¹⁾
L 35	G 1 1/4 A	49.9	28	42.5	50	50	20	330	50.9	7013977900	24-SWOSDS-L35-G1 1/4E-NBR-YEL ¹⁾
L 42	G 1 1/2 A	54.9	34	46.5	55	60	22	500	72.2	7013978000	24-SWOSDS-L42-G1 1/2E-NBR-YEL ¹⁾

¹⁾ Standard size

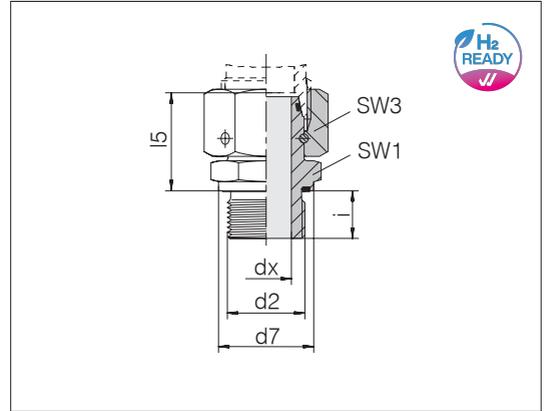
Example for comp. :
EGE06LRED
ISO 8434-1-SWOSDS-L6x1/8A-E-St

I Swivel connectors

With taper and O-ring
suitable in bore form W DIN 3861/ISO 8434-1

Male thread: BSPP thread, cylindrical
Screw-in stud: ISO 1179-2 Form E
Sealing type: Profile sealing ring PEFLEX
Sealing material: NBR - Yellow

Standard O-ring material (DKO) is FKM



Series	d2	d7	dx	l5	SW1	SW3	i	Nm -10 %	kg/100 ca.	Order-No.	Designation
S 6	G 1/4 A	18.9	2.5	27	19	17	12	60	5.4	7013978100	24-SWOSDS-S6-G1/4E-NBR-YEL ¹⁾
S 8	G 1/4 A	18.9	4	29.5	19	19	12	60	6.4	7013978200	24-SWOSDS-S8-G1/4E-NBR-YEL ¹⁾
S 10	G 1/4 A	18.9	5	32	22	22	12	60	8.7	7013978300	24-SWOSDS-S10-G1/4E-NBR-YEL ¹⁾
S 10	G 3/8 A	21.9	6	32	22	22	12	90	9.4	7013978400	24-SWOSDS-S10-G3/8E-NBR-YEL ¹⁾
S 12	G 1/4 A	18.9	5	30.5	19	24	12	60	7.9	7013978500	24-SWOSDS-S12-G1/4E-NBR-YEL ¹⁾
S 12	G 3/8 A	21.9	8	34	22	24	12	90	10.0	7013978600	24-SWOSDS-S12-G3/8E-NBR-YEL ¹⁾
S 12	G 1/2 A	26.9	8	36	27	24	14	150	14.4	7013729800	24-SWOSDS-S12-G1/2E-NBR-YEL ¹⁾
S 14	G 1/2 A	26.9	9	36.5	27	27	14	150	16.4	7013978800	24-SWOSDS-S14-G1/2E-NBR-YEL ¹⁾
S 16	G 1/2 A	26.9	11	37	27	30	14	150	17.1	7013729700	24-SWOSDS-S16-G1/2E-NBR-YEL ¹⁾
S 16	G 3/4 A	31.9	11	39.5	32	30	16	200	24.4	7013979000	24-SWOSDS-S16-G3/4E-NBR-YEL ¹⁾
S 20	G 3/4 A	31.9	14	43	32	36	16	200	27.2	7013979200	24-SWOSDS-S20-G3/4E-NBR-YEL ¹⁾
S 25	G 3/4 A	31.9	16	48	32	46	16	200	39.7	7013979300	24-SWOSDS-S25-G3/4E-NBR-YEL ¹⁾
S 25	G 1 A	39.9	18	48	41	46	18	250	50.6	7013979400	24-SWOSDS-S25-G1E-NBR-YEL ¹⁾
S 30	G 1 A	39.9	18	51.5	41	50	18	250	54.4	7013979500	24-SWOSDS-S30-G1E-NBR-YEL ¹⁾
S 30	G 1 1/4 A	49.9	23	51	50	50	20	500	68.5	7013979600	24-SWOSDS-S30-G11/4E-NBR-YEL ¹⁾
S 38	G 1 1/4 A	49.9	25	54.5	50	60	20	500	78.9	7013979700	24-SWOSDS-S38-G11/4E-NBR-YEL ¹⁾
S 38	G 1 1/2 A	54.9	30	60	55	60	22	600	95.5	7013979800	24-SWOSDS-S38-G11/2E-NBR-YEL ¹⁾

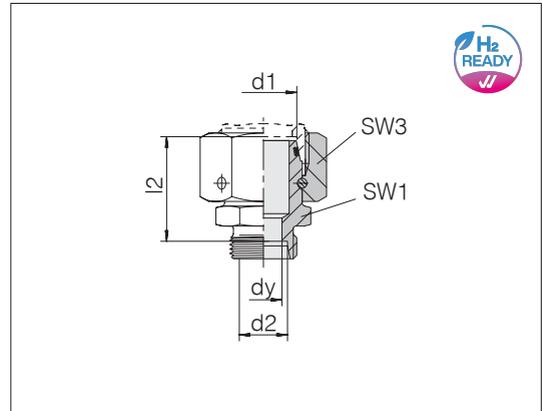
¹⁾ Standard size

I Tube end reducers

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



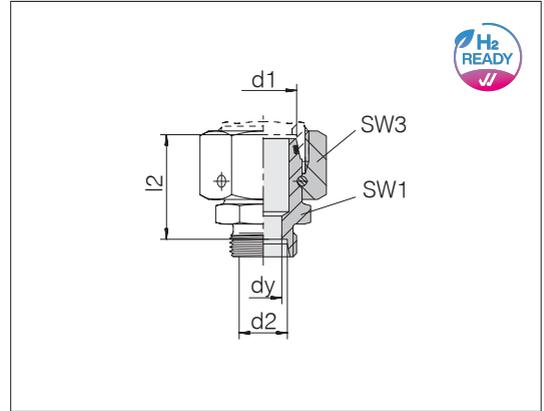
Series Tube OD d1	Series Tube OD d2	dy	l2	SW1	SW3	kg/100 ca.	Order-No.	Designation
L 8	L 6	4	23.5	12	17	2.9	1181002058	24-SWOS-L8-L6
L 10	L 6	4	25	14	19	3.8	1181012058	24-SWOS-L10-L6
L 10	L 8	6	25	14	19	3.8	1181022058	24-SWOS-L10-L8
L 10	S 8	5	28	17	19	4.9	1181962058	24-SWOS-L10-S8
L 12	L 10	8	26	17	22	5.2	1181052058	24-SWOS-L12-L10
L 12	L 6	4	25	17	22	5.0	1181032058	24-SWOS-L12-L6
L 12	L 8	6	25	17	22	5.1	1181042058	24-SWOS-L12-L8
L 12	S 6	4	28	17	22	5.6	1181952058	24-SWOS-L12-S6
L 12	S 8	5	28	17	22	6.0	1181982058	24-SWOS-L12-S8
L 15	L 10	8	29	19	27	8.9	1181082058	24-SWOS-L15-L10
L 15	L 12	10	29	19	27	9.0	1181092058	24-SWOS-L15-L12
L 15	L 18	10	31	27	27	11.8	1181942058	24-SWOS-L15-L18
L 15	L 6	4	28	19	27	8.7	1181062058	24-SWOS-L15-L6
L 15	L 8	6	28	19	27	8.8	1181072058	24-SWOS-L15-L8
L 15	S 8	5	30	19	27	9.4	1181992058	24-SWOS-L15-S8
L 18	L 10	8	29	24	32	11.2	1181122058	24-SWOS-L18-L10
L 18	L 12	10	29	24	32	11.3	1181132058	24-SWOS-L18-L12
L 18	L 15	12	30	24	32	11.8	1181142058	24-SWOS-L18-L15
L 18	L 6	4	28	24	32	11.1	1181102058	24-SWOS-L18-L6
L 18	L 8	6	28	24	32	11.1	1181112058	24-SWOS-L18-L8
L 18	S 8	5	30	24	32	11.6	1181972058	24-SWOS-L18-S8
L 22	L 10	8	33	27	36	15.7	1181172058	24-SWOS-L22-L10
L 22	L 12	10	33	27	36	16.1	1181182058	24-SWOS-L22-L12
L 22	L 15	12	34	27	36	16.2	1181192058	24-SWOS-L22-L15
L 22	L 18	15	33.5	27	36	16.6	1181202058	24-SWOS-L22-L18
L 22	L 6	4	32	27	36	15.4	1181152058	24-SWOS-L22-L6
L 22	L 8	6	32	27	36	15.5	1181162058	24-SWOS-L22-L8
L 28	L 10	8	35	32	41	20.1	1181232058	24-SWOS-L28-L10
L 28	L 12	10	35	32	41	20.1	1181242058	24-SWOS-L28-L12
L 28	L 15	12	36	32	41	20.6	1181252058	24-SWOS-L28-L15

I Tube end reducers

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	Series Tube OD d2	dy	l2	SW1	SW3	kg/100 ca.	Order-No.	Designation
L 28	L 18	15	35.5	32	41	21.0	1181262058	24-SWOS-L28-L18
L 28	L 22	19	37.5	32	41	21.0	1181272058	24-SWOS-L28-L22
L 28	L 8	6	34	32	41	20.1	1181222058	24-SWOS-L28-L8
L 28	S 16	12	36.5	32	41	21.5	1181922058	24-SWOS-L28-S16
L 28	S 20	16	36.5	32	41	23.2	1181912058	24-SWOS-L28-S20
L 35	L 10	8	38	41	50	32.3	1181302058	24-SWOS-L35-L10
L 35	L 12	10	38	41	50	31.3	1181312058	24-SWOS-L35-L12
L 35	L 15	12	39	41	50	31.6	1181322058	24-SWOS-L35-L15
L 35	L 18	15	38.5	41	50	31.9	1181332058	24-SWOS-L35-L18
L 35	L 22	19	40.5	41	50	32.1	1181342058	24-SWOS-L35-L22
L 35	L 28	24	40.5	41	50	32.3	1181352058	24-SWOS-L35-L28
L 35	L 6	4	37	41	50	31.9	1181282058	24-SWOS-L35-L6
L 35	L 8	6	37	41	50	30.6	1181292058	24-SWOS-L35-L8
L 42	L 10	8	41.5	50	60	52.8	1181372058	24-SWOS-L42-L10
L 42	L 12	10	41.5	50	60	51.8	1181382058	24-SWOS-L42-L12
L 42	L 15	12	42.5	50	60	53.4	1181392058	24-SWOS-L42-L15
L 42	L 18	15	42	50	60	52.7	1181412058	24-SWOS-L42-L18
L 42	L 22	19	44	50	60	51.5	1181422058	24-SWOS-L42-L22
L 42	L 28	24	44	50	60	51.5	1181432058	24-SWOS-L42-L28
L 42	L 35	30	43	50	60	53.1	1181442058	24-SWOS-L42-L35
L 42	L 6	4	40.5	50	60	52.5	1181812058	24-SWOS-L42-L6
L 42	L 8	6	40.5	50	60	51.9	1181362058	24-SWOS-L42-L8

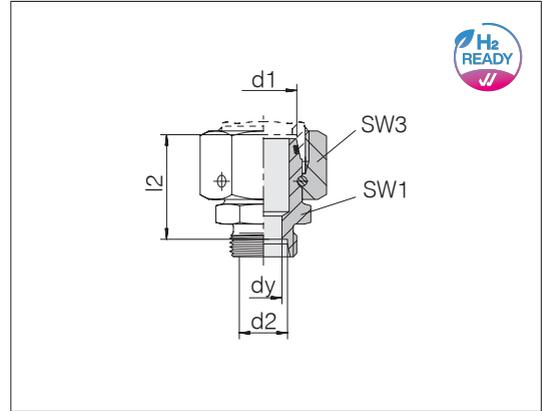
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I Tube end reducers

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	Series Tube OD d2	dy	l2	SW1	SW3	kg/100 ca.	Order-No.	Designation
S 8	S 6	4	27	14	19	4.3	1181452058	24-SWOS-S8-S6
S 10	S 6	4	27.5	17	22	5.5	1181462058	24-SWOS-S10-S6
S 10	S 8	5	27.5	17	22	5.7	1181472058	24-SWOS-S10-S8
S 12	S 10	7	29.5	19	24	7.3	1181502058	24-SWOS-S12-S10
S 12	S 6	4	30	19	24	7.0	1181482058	24-SWOS-S12-S6
S 12	S 8	5	30	19	24	7.1	1181492058	24-SWOS-S12-S8
S 14	S 10	7	31	22	27	10.2	1181532058	24-SWOS-S14-S10
S 14	S 12	8	31	22	27	10.4	1181542058	24-SWOS-S14-S12
S 14	S 6	4	31	19	27	9.4	1181512058	24-SWOS-S14-S6
S 14	S 8	5	31.5	19	27	9.5	1181522058	24-SWOS-S14-S8
S 16	L 12	10	32	22	30	11.6	1181932058	24-SWOS-S16-L12
S 16	L 15	11	38.8	24	30	14.4	1198602058	24-SWOS-S16-L15
S 16	S 10	7	31.5	22	30	11.7	1181572058	24-SWOS-S16-S10
S 16	S 12	8	31.5	22	30	12.0	1181582058	24-SWOS-S16-S12
S 16	S 14	10	33	24	30	12.8	1181592058	24-SWOS-S16-S14
S 16	S 6	4	32	22	30	11.4	1181552058	24-SWOS-S16-S6
S 16	S 8	5	32	22	30	11.6	1181562058	24-SWOS-S16-S8
S 20	L 15	12	36	27	36	16.6	1197582058	24-SWOS-S20-L15
S 20	L 22	19	35.5	32	36	21.2	1191252058	24-SWOS-S20-L22
S 20	S 10	7	35.5	27	36	17.0	1181622058	24-SWOS-S20-S10
S 20	S 12	8	35.5	27	36	17.3	1181632058	24-SWOS-S20-S12
S 20	S 16	12	36.5	27	36	17.9	1181652058	24-SWOS-S20-S16
S 20	S 6	4	36	27	36	17.0	1181602058	24-SWOS-S20-S6
S 20	S 8	5	36	27	36	17.2	1181612058	24-SWOS-S20-S8
S 25	L 18	15	38	32	46	31.5	1198612058	24-SWOS-S25-L18
S 25	S 10	7	38	32	46	31.2	1181682058	24-SWOS-S25-S10
S 25	S 12	8	38	32	46	31.3	1181692058	24-SWOS-S25-S12
S 25	S 16	12	39	32	46	31.7	1181712058	24-SWOS-S25-S16
S 25	S 20	16	39	32	46	32.8	1181722058	24-SWOS-S25-S20
S 25	S 6	4	38.5	32	46	30.9	1181662058	24-SWOS-S25-S6
S 25	S 8	5	38.5	32	46	30.9	1181672058	24-SWOS-S25-S8
S 30	L 22	19	45.5	41	50	40.9	1198072058	24-SWOS-S30-L22
S 30	S 10	7	43.5	41	50	40.4	1181752058	24-SWOS-S30-S10

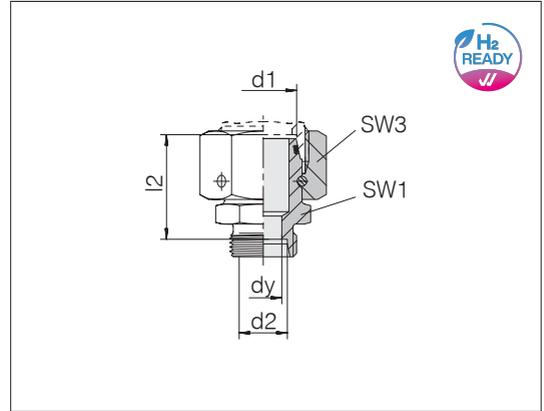
Continued on following page

I Tube end reducers

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

Standard material of O-rings is FKM

Tube coupling: 24° in acc. with ISO 8434-1



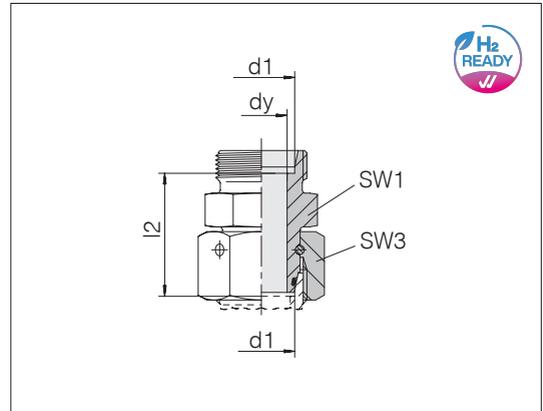
Series Tube OD d1	Series Tube OD d2	dy	l2	SW1	SW3	kg/100 ca.	Order-No.	Designation
S 30	S 12	8	43.5	41	50	40.5	1181762058	24-SWOS-S30-S12
S 30	S 16	12	44.5	41	50	40.6	1181782058	24-SWOS-S30-S16
S 30	S 20	16	44.5	41	50	42.2	1181792058	24-SWOS-S30-S20
S 30	S 25	20	45	41	50	44.8	1181802058	24-SWOS-S30-S25
S 30	S 6	4	44	41	50	40.4	1181732058	24-SWOS-S30-S6
S 30	S 8	5	44	41	50	39.9	1181742058	24-SWOS-S30-S8
S 38	S 10	7	47	50	60	58.4	1181842058	24-SWOS-S38-S10
S 38	S 12	8	47	50	60	59.2	1181852058	24-SWOS-S38-S12
S 38	S 16	12	48	50	60	59.2	1181862058	24-SWOS-S38-S16
S 38	S 20	16	48	50	60	59.7	1181872058	24-SWOS-S38-S20
S 38	S 25	20	48.5	50	60	62.3	1181882058	24-SWOS-S38-S25
S 38	S 30	25	49	50	60	63.6	1181892058	24-SWOS-S38-S30
S 38	S 6	4	47.5	50	60	57.6	1181822058	24-SWOS-S38-S6
S 38	S 8	5	47.5	50	60	57.8	1181832058	24-SWOS-S38-S8

I Distance adapters

With taper and O-ring

Standard material of O-rings is FKM

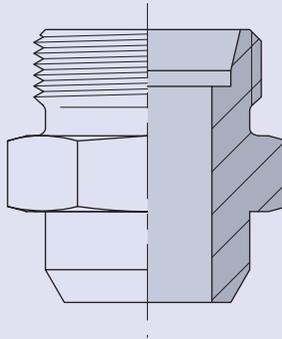
Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	dy	l2	SW1	SW3	kg/100 ca.	Order-No.	Designation
L 6	2.5	36	12	14	3.7	1191402058	24-SWOS-L6
L 8	4	36	14	17	5.0	1191412058	24-SWOS-L8
L 10	6	36	17	19	6.6	1191422058	24-SWOS-L10
L 12	8	36	19	22	8.7	1191862058	24-SWOS-L12
L 15	10	36	24	27	13.2	1191432058	24-SWOS-L15
L 18	13	36	27	32	16.8	1191882058	24-SWOS-L18
L 22	17	40	32	36	23.0	1191872058	24-SWOS-L22
L 28	22	40	41	41	29.7	1191892058	24-SWOS-L28
L 35	28	50	46	50	49.0	1191902058	24-SWOS-L35
L 42	34	60	55	60	85.0	1191912058	24-SWOS-L42
S 6	2.5	36	14	17	5.3	1191442058	24-SWOS-S6
S 8	4	36	17	19	7.0	1191492058	24-SWOS-S8
S 10	6	36	19	22	8.7	1191522058	24-SWOS-S10
S 12	8	36	22	24	10.4	1191482058	24-SWOS-S12
S 14	9	40	24	27	14.7	1191532058	24-SWOS-S14
S 16	11	40	27	30	17.8	1191542058	24-SWOS-S16
S 20	14	46	32	36	28.0	1191512058	24-SWOS-S20
S 25	18	50	41	46	50.3	1191502058	24-SWOS-S25
S 30	23	56	46	50	65.6	1191342058	24-SWOS-S30
S 38	30	60	55	60	93.6	1191692058	24-SWOS-S38

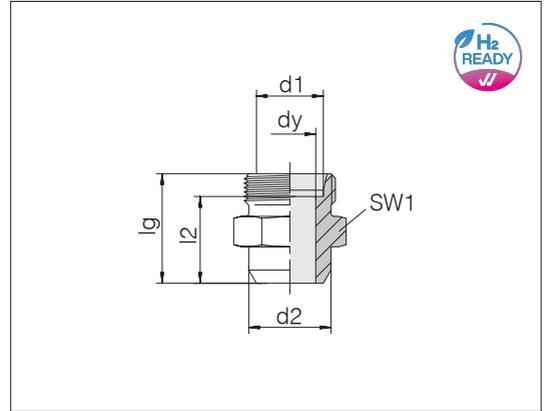
Example for comp. :
DA06LOMD

| Weld connectors



I Weld connectors

Tube coupling: 24° in acc. with ISO 8434-1



Series Tube OD d1	d2	dy	lg	l2	SW1	kg/100 ca.	Order-No.	Designation
L 6	10	4	21	14	12	1.0	0739000000	24-WDS-L6-C00
L 8	12	6	23	16	14	1.5	0739050000	24-WDS-L8-C00
L 10	14	8	25	18	17	2.1	0739100000	24-WDS-L10-C00
L 12	16	10	25	18	19	2.6	0739150000	24-WDS-L12-C00
L 15	19	12	29	22	22	4.3	0739200000	24-WDS-L15-C00
L 18	22	15	31	23.5	27	6.6	0739250000	24-WDS-L18-C00
L 22	27	19	36	28.5	32	9.7	0739300000	24-WDS-L22-C00
L 28	32	24	38	30.5	41	15.9	0739350000	24-WDS-L28-C00
L 35	40	30	43	32.5	46	22.8	0739400000	24-WDS-L35-C00
L 42	46	36	46	35	55	32.8	0739450000	24-WDS-L42-C00
S 6	11	4	26	19	14	2.1	0739500000	24-WDS-S6-C00
S 8	13	5	28	21	17	3.0	0739550000	24-WDS-S8-C00
S 10	15	7	30	22.5	19	4.0	0739600000	24-WDS-S10-C00
S 12	17	8	32	24.5	22	5.5	0739650000	24-WDS-S12-C00
S 14	19	10	35	27	24	7.0	0739700000	24-WDS-S14-C00
S 16	21	12	35	26.5	27	8.3	0739750000	24-WDS-S16-C00
S 20	26	16	40	29.5	32	12.9	0739800000	24-WDS-S20-C00
S 25	31	20	44	32	41	22.2	0739850000	24-WDS-S25-C00
S 30	36	25	49	35.5	46	29.5	0739900000	24-WDS-S30-C00
S 38	44	32	54	38	55	45.5	0739950000	24-WDS-S38-C00

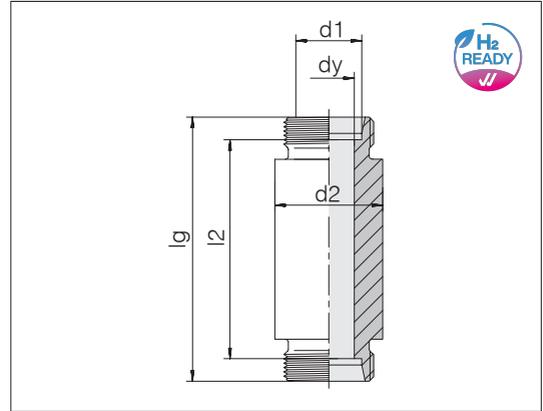
The customer is responsible for designing the proper welded connection.

Example for comp. :
AS06LX
ISO 8434-1-WDS-L6-St



I Weld bulkhead connectors

Tube coupling: 24° in acc. with ISO 8434-1



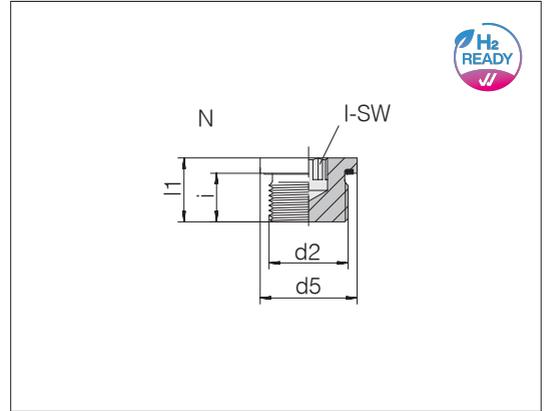
Series Tube OD d1	d2	dy	lg	l2	kg/100 ca.	Order-No.	Designation
L 6	18	4	70	56	10.3	0741000000	24-WDBHS-L6-C00
L 8	20	6	70	56	12.1	0741050000	24-WDBHS-L8-C00
L 10	22	8	72	58	14.3	0741100000	24-WDBHS-L10-C00
L 12	25	10	72	58	17.7	0741150000	24-WDBHS-L12-C00
L 15	28	12	84	70	25.9	0741200000	24-WDBHS-L15-C00
L 18	32	15	84	69	33.4	0741250000	24-WDBHS-L18-C00
L 22	36	19	88	73	40.0	0741300000	24-WDBHS-L22-C00
L 28	40	24	88	73	44.5	0741350000	24-WDBHS-L28-C00
L 35	50	30	92	71	72.3	0741400000	24-WDBHS-L35-C00
L 42	60	36	92	70	100.5	0741450000	24-WDBHS-L42-C00
S 6	20	4	74	60	13.5	0741500000	24-WDBHS-S6-C00
S 8	22	5	74	60	16.2	0741550000	24-WDBHS-S8-C00
S 10	25	7	74	59	20.0	0741600000	24-WDBHS-S10-C00
S 12	28	8	74	59	25.0	0741650000	24-WDBHS-S12-C00
S 14	30	10	88	72	33.7	0741700000	24-WDBHS-S14-C00
S 16	35	12	88	71	44.4	0741750000	24-WDBHS-S16-C00
S 20	38	16	92	71	51.5	0741800000	24-WDBHS-S20-C00
S 25	45	20	96	72	72.3	0741850000	24-WDBHS-S25-C00
S 30	50	25	100	73	87.3	0741900000	24-WDBHS-S30-C00
S 38	60	32	104	72	125.1	0741950000	24-WDBHS-S38-C00

The customer is responsible for designing the proper welded connection.

Example for comp. :
ESV06LX
ISO 8434-1-WDBHS-L6-St

I Blanking plugs for ports

Male thread: Metric fine thread, cylindrical
 Threaded stud: ISO 9974-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow



d2	d5	l1	I-SW	i	Style	Nm -10 %	kg/100 ca.	Order-No.	Designation
M 8 x 1	12	12.3	4	8	N	10	0.5	7013964800	GP-PLIH-M8E-NBR-YEL-C21
M 10 x 1	14	12.3	5	8	N	12	0.7	7013964900	GP-PLIH-M10E-NBR-YEL-C21
M 12 x 1.5	17	17.3	6	12	N	23	1.4	7013965100	GP-PLIH-M12E-NBR-YEL-C21
M 14 x 1.5	19	17.3	6	12	N	30	1.9	7013965200	GP-PLIH-M14E-NBR-YEL-C21
M 16 x 1.5	21.9	17.3	8	12	N	50	2.4	7013965400	GP-PLIH-M16E-NBR-YEL-C21
M 18 x 1.5	23.9	17.3	8	12	N	65	3.2	7013965500	GP-PLIH-M18E-NBR-YEL-C21
M 20 x 1.5	25.9	19.3	10	14	N	75	4.0	7013965700	GP-PLIH-M20E-NBR-YEL-C21
M 22 x 1.5	27	19.3	10	14	N	90	5.0	7013965800	GP-PLIH-M22E-NBR-YEL-C21
M 24 x 1.5	29.9	19.3	12	14	N	90	5.8	7013965900	GP-PLIH-M24E-NBR-YEL-C21
M 26 x 1.5	31.9	21.3	12	16	N	110	7.4	7013966000	GP-PLIH-M26E-NBR-YEL-C21
M 27 x 2	32	21.3	12	16	N	130	7.7	7013966100	GP-PLIH-M27E-NBR-YEL-C21
M 33 x 2	39.9	22.8	17	16	N	225	12.4	7013966200	GP-PLIH-M33E-NBR-YEL-C21
M 42 x 2	49.9	22.8	22	16	N	310	18.6	7013966400	GP-PLIH-M42E-NBR-YEL-C21
M 48 x 2	55	22.8	24	16	N	380	24.4	7013966600	GP-PLIH-M48E-NBR-YEL-C21

Other sizes on request.

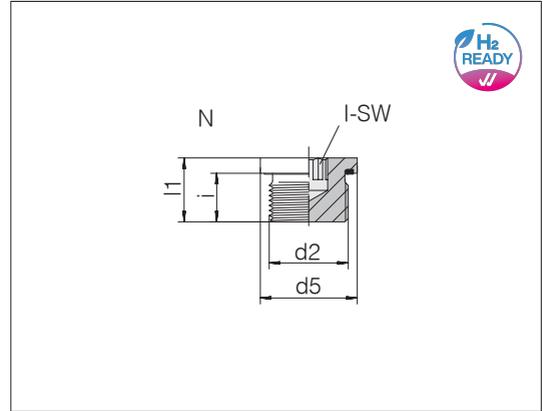
Threaded ports as per ISO 9974-1/
 DIN 3852, form X.
 d5 = d4 narrow

Example for comp. :
 VSTI&X1ED



I Blanking plugs for ports

Male thread: BSPP thread, cylindrical
 Threaded stud: ISO 1179-2 Form E
 Sealing type: Profile sealing ring PEFLEX
 Sealing material: NBR - Yellow



d2	d5	l1	I-SW	i	Style	Nm -10 %	kg/100 ca.	Order-No.	Designation
G 1/8 A	14	12.3	5	8	N	12	0.7	7013966700	GP-PLIH-G1/8E-NBR-YEL-C21
G 1/4 A	18.9	17.3	6	12	N	25	1.8	7013966800	GP-PLIH-G1/4E-NBR-YEL-C21
G 3/8 A	22	17.3	8	12	N	50	2.7	7013966900	GP-PLIH-G3/8E-NBR-YEL-C21
G 1/2 A	26.9	19.3	10	14	N	70	4.4	7013967000	GP-PLIH-G1/2E-NBR-YEL-C21
G 3/4 A	32	21.3	12	16	N	120	7.5	7013967100	GP-PLIH-G3/4E-NBR-YEL-C21
G 1 A	39.9	22.8	17	16	N	200	12.3	7013967200	GP-PLIH-G1E-NBR-YEL-C21
G 1 1/4 A	49.9	22.8	22	16	N	320	19.4	7013967400	GP-PLIH-G1 1/4E-NBR-YEL-C21
G 1 1/2 A	55	22.8	24	16	N	400	25.2	7013967600	GP-PLIH-G1 1/2E-NBR-YEL-C21

Other sizes on request.

Threaded ports as per ISO 9974-1/
 DIN 3852, form X.
 d5 = d4 narrow

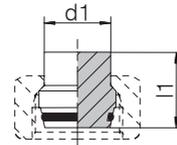
Example for comp. :
 VST11/8ED

I Caps

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

For blind connections of tube couplings

Standard O-ring material is FKM



Series Tube OD d1	l1	kg/100 ca.	Order-No.	Designation
L/S 6	18.5	0.6	1793142058	24-PLO-L/S6
L/S 8	19	1.0	1793152058	24-PLO-L/S8
L/S 10	20	1.6	1793162058	24-PLO-L/S10
L/S 12	20.5	2.2	1793172058	24-PLO-L/S12
L 15	20.5	3.2	1793082058	24-PLO-L15
L 18	22.5	5.1	1793092058	24-PLO-L18
L 22	25	8.1	1793102058	24-PLO-L22
L 28	25.5	13.0	1793112058	24-PLO-L28
L 35	30	24.0	1793122058	24-PLO-L35
L 42	30	34.6	1793132058	24-PLO-L42
S 14	22.5	3.2	1793182058	24-PLO-S14
S 16	23	4.1	1793192058	24-PLO-S16
S 20	28.5	8.0	1793202058	24-PLO-S20
S 25	29	12.4	1793212058	24-PLO-S25
S 30	30.5	18.2	1793222058	24-PLO-S30
S 38	33	31.5	1793232058	24-PLO-S38

Example for comp. :
VKA06VIT

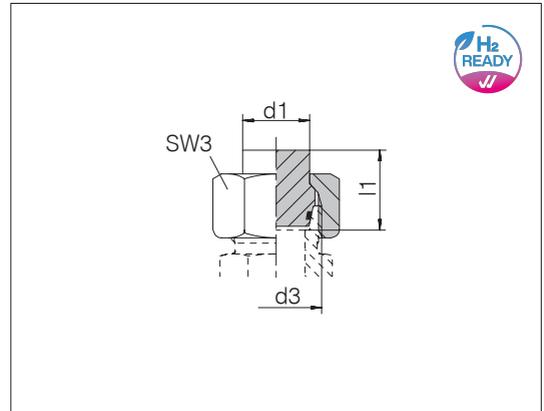


I Caps

With taper and O-ring
fit in bore type W DIN 3861/ISO 8434-1

For blind connections of tube couplings

Standard O-ring material is FKM

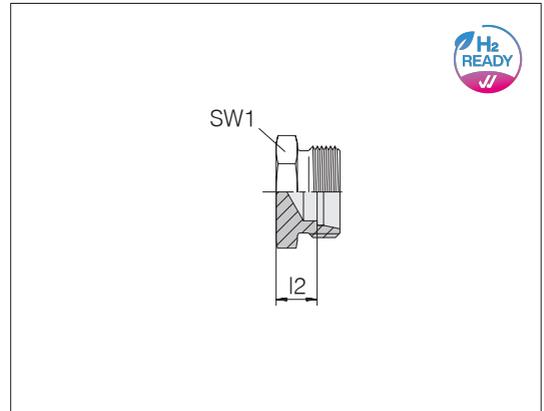


Series Tube OD d1	d3	l1	SW3	kg/100 ca.	Order-No.	Designation
L 6	M 12 x 1.5	18.5	14	1.6	1193042058	24-PLOC-L/S6
L 8	M 14 x 1.5	19	17	2.5	1193052058	24-PLOC-L8
L 10	M 16 x 1.5	20	19	3.4	1193062058	24-PLOC-L/S10
L 12	M 18 x 1.5	20.5	22	4.8	1193072058	24-PLOC-L/S12
L 15	M 22 x 1.5	20.5	27	7.5	1193082058	24-PLOC-L15
L 18	M 26 x 1.5	23.4	32	11.4	1193092058	24-PLOC-L18
L 22	M 30 x 2	25.9	36	16.3	1193102058	24-PLOC-L22
L 28	M 36 x 2	26.4	41	21.7	1193112058	24-PLOC-L28
L 35	M 45 x 2	32	50	37.4	1193122058	24-PLOC-L35
L 42	M 52 x 2	32.5	60	55.9	1193132058	24-PLOC-L42
S 6	M 14 x 1.5	18.9	17	2.4	1193142058	24-PLOC-S6
S 8	M 16 x 1.5	19.4	19	3.1	1193152058	24-PLOC-S8
S 10	M 18 x 1.5	20.9	22	4.7	1193162058	24-PLOC-S10
S 12	M 20 x 1.5	21.4	24	5.7	1193172058	24-PLOC-S12
S 14	M 22 x 1.5	23.9	27	8.5	1193182058	24-PLOC-S14
S 16	M 24 x 1.5	24.9	30	10.7	1193192058	24-PLOC-S16
S 20	M 30 x 2	30.5	36	18.3	1193202058	24-PLOC-S20
S 25	M 36 x 2	32.5	46	33.0	1193212058	24-PLOC-S25
S 30	M 42 x 2	35.5	50	39.8	1193222058	24-PLOC-S30
S 38	M 52 x 2	40.5	60	62.8	1193232058	24-PLOC-S38

Example for comp. :
VKAM06LVIT

I Plugs

Tube coupling: 24° in acc. with ISO 8434-1

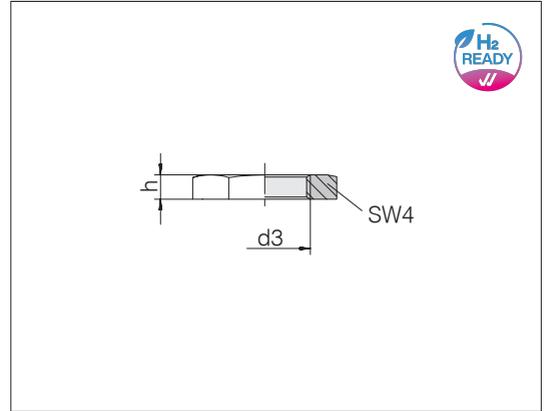


Series Tube OD	l2	SW1	kg/100 ca.	Order-No.	Designation
L 6	7	12	0.8	0793342000	24-TBS-L6
L 8	8	14	1.2	0793352000	24-TBS-L8
L 10	9	17	1.6	0793362000	24-TBS-L10
L 12	10	19	2.2	0793372000	24-TBS-L12
L 15	11	24	3.8	0793382000	24-TBS-L15
L 18	11.5	27	5.4	0793392000	24-TBS-L18
L 22	13.5	32	7.7	0793402000	24-TBS-L22
L 28	14.5	41	13.3	0793412000	24-TBS-L28
L 35	14.5	46	20.1	0793422000	24-TBS-L35
L 42	18.5	55	34.0	0793432000	24-TBS-L42
S 6	11	14	1.6	0793442000	24-TBS-S6
S 8	13	17	2.6	0793452000	24-TBS-S8
S 10	12.5	19	3.1	0793462000	24-TBS-S10
S 12	14.5	22	4.5	0793472000	24-TBS-S12
S 14	16	24	5.9	0793482000	24-TBS-S14
S 16	15.5	27	6.8	0793492000	24-TBS-S16
S 20	17.5	32	12.0	0793502000	24-TBS-S20
S 25	20	41	21.3	0793512000	24-TBS-S25
S 30	20.5	46	28.1	0793522000	24-TBS-S30
S 38	23	55	49.8	0793532000	24-TBS-S38

Example for comp. :
ROV06LX

I Hexagonal nuts

For bulkhead couplings



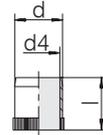
d3	SW4	h	kg/100 ca.	Order-No.	Designation
M 12 x 1.5	17	6	0.7	0081002100	24-LN-L6-IM12
M 14 x 1.5	19	6	0.8	0081022100	24-LN-L8-S6-IM14
M 16 x 1.5	22	6	1.0	0081042100	24-LN-L10-S8-IM16
M 18 x 1.5	24	6	1.2	0081062100	24-LN-L12-S10-IM18
M 20 x 1.5	27	6	1.5	0081082100	24-LN-S12-IM20
M 22 x 1.5	30	7	2.2	0081102100	24-LN-L15-S14-IM22
M 24 x 1.5	32	7	2.4	0081122100	24-LN-S16-IM24
M 26 x 1.5	36	8	3.8	0081142100	24-LN-L18-IM26
M 30 x 2	41	8	4.9	0081162100	24-LN-L22-S20-IM30
M 36 x 2	46	9	5.9	0081182100	24-LN-L28-S25-IM36
M 42 x 2	50	9	5.8	0081202100	24-LN-S30-IM42
M 45 x 2	55	9	7.5	0081222100	24-LN-L35-IM45
M 52 x 2	65	10	12.1	0081262100	24-LN-L42-S38-IM52

Example for comp. :
GM06LX
ISO 8434-1-LN-L6-St

I Reinforcing sleeves

For thin-walled steel tubes

Material: Steel



for tube OD x wall thickness	d	d4	l	kg/100 ca.	Order-No.	Designation
6 x 1	4	2.6	14	0.1	0020732000	24-RS-4-ST
8 x 1	6	4.6	14	0.1	0020752000	24-RS-6-ST
10 x 1	8	6.6	16.5	0.2	0020772000	24-RS-8-ST
12 x 1	10	8.6	16.5	0.2	0020792000	24-RS-10-ST
14 x 1	12	10.1	17	0.4	0020812000	24-RS-12-ST
16 x 1	14	12.1	17	0.4	0020832000	24-RS-14-ST
18 x 1 / 20 x 2	16	14.1	19	0.6	0020852000	24-RS-16-ST
22 x 1	20	18.1	20	0.8	0020882000	24-RS-20-ST
22 x 2	18	16.1	20	0.6	0020872000	24-RS-18-ST
25 x 2	21	19.1	21.5	0.8	0020892000	24-RS-21-ST
28 x 1 / 30 x 2	26	24.3	23.5	1.3	0020922000	24-RS-26-ST
28 x 2	24	22.3	23.5	1.1	0020912000	24-RS-24-ST
35 x 2	31	28.6	26.5	2.0	0020592000	24-RS-31-ST
38 x 2	34	31.6	26.5	2.6	0020962000	24-RS-34-ST
42 x 2	38	35.6	21	2.0	0020982000	24-RS-38-ST
15 x 1 / 16 x 1.5	13	11.1	17	0.4	0020822000	24-RS-13-ST
18 x 1.5	15	13.1	19	0.6	0020842000	24-RS-15-ST
22 x 1.5	19	17.1	16	0.6	0020452000	24-RS-19-ST
25 x 1.5	22	20.1	23.5	1.0	0020902000	24-RS-22-ST
35 x 1.5 / 38 x 3	32	29.6	26.5	1.9	0020942000	24-RS-32-ST
42 x 1.5	39	36.6	21	2.0	0020992000	24-RS-39-ST
6 x 0.75	4.5	3.1	14	0.1	0020742000	24-RS-4,5-ST
20 x 1.5	17	15.1	20	0.6	0020862000	24-RS-17-ST
28 x 1.5 / 30 x 2.5	25	23.3	23.5	0.9	0020532000	24-RS-25-ST
35 x 2.5	30	27.6	26.5	1.9	0020932000	24-RS-30-ST
38 x 2.5	33	30.6	26.5	2.0	0020952000	24-RS-33-ST
42 x 2.5	37	34.6	21	2.0	0020972000	24-RS-37-ST

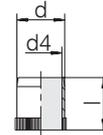
Example for comp. :
VH04CFX



I Reinforcing sleeves

For thin-walled stainless steel tubes

Material: Stainless steel



for tube OD x wall thickness	d	d4	l	kg/100 ca.	Order-No.	Designation
6 x 1	4	2.5	17	0.1	1020006000	24-RS-4-SST
8 x 1	6	4.5	14	0.1	1020016000	24-RS-6-SST
10 x 1	8	6.5	15.5	0.2	1020026000	24-RS-8-SST
12 x 1	10	8.5	15.5	0.2	1020036000	24-RS-10-SST
14 x 1	12	10.5	17	0.4	1020046000	24-RS-12-SST
16 x 1	14	12	17	0.4	1020066000	24-RS-14-SST
18 x 1 / 20 x 2	16	14	18	0.6	1020086000	24-RS-16-SST
22 x 1	20	18	20	0.8	1020126000	24-RS-20-SST
22 x 2	18	16	20	0.6	1020106000	24-RS-18-SST
25 x 2	21	19	21.5	0.8	1020136000	24-RS-21-SST
28 x 1 / 30 x 2	26	24	23.5	1.3	1020176000	24-RS-26-SST
28 x 2	24	22	23.5	1.1	1020156000	24-RS-24-SST
35 x 2	31	28	26.5	2.0	1020196000	24-RS-31-SST
42 x 2	38	35	26.5	2.0	1020226000	24-RS-38-SST
15 x 1 / 16 x 1.5	13	11.5	17	0.4	1020056000	24-RS-13-SST
18 x 1.5	15	13	18	0.6	1020076000	24-RS-15-SST
22 x 1.5	19	17	20	0.6	1020116000	24-RS-19-SST
25 x 1.5	22	20	24	1.0	1020146000	24-RS-22-SST
35 x 1.5 / 38 x 3	32	29.5	26.5	1.9	1020206000	24-RS-32-SST
20 x 1.5	17	15	20	0.6	1020096000	24-RS-17-SST
28 x 1.5 / 30 x 2.5	25	23	23.5	1.0	1020166000	24-RS-25-SST
35 x 2.5	30	27.8	26.5	1.9	1020186000	24-RS-30-SST
38 x 2.5	33	30	26.5	2.0	1020216000	24-RS-33-SST

Example for comp. :
VH0471X

I Sealing rings

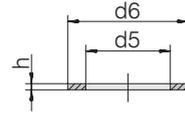


Sealing rings for threaded studs according to

DIN 3852-1 Form A (metric)

DIN 3852-2 Form A (BSPP)

The standard material of the sealing rings is copper



Male connector	d5	d6	h	kg/100 ca.	Order-No.	Designation
M 10 x 1 / G 1/8 A	10.2	13.9	1	0.1	0082115900	GP-SR-A10x14-CO-7603-PU100
M 12 x 1.5	12.2	16.9	1.5	0.1	7004600100	GP-SR-A12x17-CO-7603-PU100
M 14 x 1.5	14.2	17.9	1.5	0.1	7004600200	GP-SR-A14x18-CO-7603-PU100
M 16 x 1.5	16.2	19.9	1.5	0.1	7004600300	GP-SR-A16x20-CO-7603-PU100
M 18 x 1.5	18.2	21.9	1.5	0.2	7004600400	GP-SR-A18x22-CO-7603-PU50
M 22 x 1.5	22.2	26.9	1.5	0.2	7004600500	GP-SR-A22x27-CO-7603-PU50
M 26 x 1.5	26.3	30.9	2	0.4	7004600600	GP-SR-A26x31-CO-7603-PU25
M 27 x 2	27.3	31.9	2	0.4	7004600800	GP-SR-A27x32-CO-7603-PU25
M 33 x 2 / G 1 A	33.3	38.9	2	0.5	0082585900	GP-SR-A33x39-CO-7603-PU25
M 42 x 2 / G 1 1/4 A	42.3	48.9	2	0.8	0082665900	GP-SR-A42x49-CO-7603-PU25
M 48 x 2 / G 1 1/2 A	48.3	54.9	2	0.9	0082705900	GP-SR-A48x55-CO-7603-PU25
G 1/4 A	13.3	17.9	1.5	0.1	7001613800	GP-SR-A13,3x17,9x1,5-CO-PU100
G 3/8 A	17.2	20.9	1.5	0.1	7003166000	GP-SR-A17x21-CO-7603-PU50
G 1/2 A	21.2	25.9	1.5	0.2	0082385900	GP-SR-A21x26-CO-7603-PU50
G 3/4 A	26.6	31.9	2	0.4	7001613900	GP-SR-A26,6x31,9x2-CO-PU25

The order is placed in packaging units, for example PU100=packing unit 100 pieces.

Pre-assembly devices and tools

Safe and reliable processes for every connection.



Content	Type/Page				
Pre-assembly and final assembly devices	Manual pre-assembly studs universal	Manual pre-assembly studs VOSS <i>Ring^M</i>	Type 80 N3	Type 81 EasyPress	Type 90 Basic II
	P.126	P.128	P.130	P.132	P.134
	Type 90 Comfort				
	P.136				
Testing equipment and tools	Cone gauges	Inspection gauges	Thread gauge board	Tube bending device	Saw device
	P.140	P.142	P.144	P.145	P.146
	Manual deburring tool	Assembly training and audits			
	P.147	P.148			
Pre- and final assembly tools	Pre-assembly stud universal	Pre-assembly stud VOSS <i>Ring^M</i>	Support plate	Device for reversed cutting ring assembly	Pre-assembly tools for cutting ring assemblies universal
	P.150	P.152	P.154	P.156	P.157



I Why VOSS pre-assembly devices

Our pre-assembly devices and tools have been specially designed for one-off and for series production and match our entire coupling system right down to the last detail. We offer appropriate solutions for all requirements – safe and

economical pre-assembly for initial production and for maintenance work. From simple manual assembly tools right up to automatic devices with tool recognition, VOSS offers a wide range of tools.

Safe and reliable pre-assembly and final assembly processes

Device designation	Type 1 EasyTight	Type 80 N3	Type 81 EasyPress	Type 90 Basic II	Type 90 Comfort
One-off assembly	•	•	•	•	•
Series assembly	•			•	•
Automatic tool recognition					•
Reverse stroke optimization				•	•
Semi-automatic tooling					•
Touch screen					•
Error detection					•
Including calibration service					•
Free parameter definition acc. to customer requirements					•
"Countdown" workpiece				•	•
Freely programmable workpiece counter					•
Optional pedal switch				•	•
Tube OD	16–42 mm	6–42 mm	6–42 mm	6–42 mm	6–42 mm
Handheld device	•		•		
Floor-mounted device		•		•	•
Systems:					
Cutting ring systems	•	•	•	•	•
Electrical connection	18 V battery	–	18 V battery	400 V/16 A	400 V/16 A
Dimensions (wxhxd) in mm	280x180x60	185x267x590	410x380x90	681x260x520	800x308x615
Weight	5.2 kg	15 kg	7 kg	66 kg	90 kg

100 % fault-free cutting ring assembly: Pre-assembly studs made of high performance steel

Tool service life extended by more than 20 times plus built-in wear indicator



Two versions of the VOSS pre-assembly tools for cutting rings are available: a basic version and a more sophisticated version made of high performance steel.

Normal pre-assembly studs wear faster so that they have to be checked using a gauge after every 50 pre-assembly operations. This is time-consuming, is a potential source of faults and therefore means adhering to a tool test plan.

Our solution: durable tools made of high performance steel. Typical tool wear no longer occurs, there are no test and inspection intervals and the service life is very long – up to 20 times that of conventional tools. When the stud reaches the usable tolerance limits, its front end breaks off, forcing the user to replace it. This ensures fault-free processes in your company.

- Basic version: accuracy has to be checked using a gauge after every 50 pre-assembly processes
- High performance steel version: no inspection/checking required, service life up to 20 times longer, clear indication when service tolerance limit is reached
- Also available as manual pre-assembly studs for use in a vise
- Version for Type 90 Comfort: contains an integrated RFID chip as well
- All tools have the same mounting and can be used in any corresponding pre-assembly device

VOSS pre-assembly and final assembly devices

For safe and economical assembly



I Manual pre-assembly studs universal

Always within reach



Universally applicable for individual assembly of a wide variety of cutting rings in a vise.

Whether on the construction site or during service work: With the manual pre-assembly studs, all types of cutting rings in the Tube OD range from 6–42 mm can be pre-assembled easily and precisely. At the same time, the actual screw connection stud remains protected from wear.

- Suitable for all common cutting rings
- for individual manual pre-assembly work
- wear-resistant

Systems

- Cutting rings VOSSRing^M, 2SVA, ES-4, ES-4VA

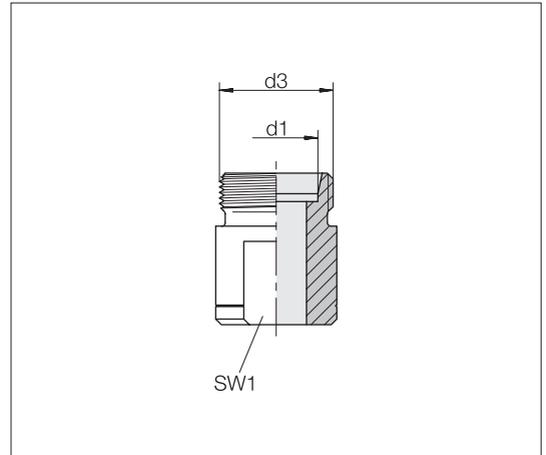
Compatibility

- Tube OD 6–42 mm

Applications

- On-site service work requiring a vise

Overview of all versions and order details



Series	d3	SW1	Order-No.	Designation	Order-No.	Designation
Tube OD				Pre-assembly stud		Pre-assembly stud
d1				Standard		High-performance steel
LL 4	M 8 x 1	7	5993950000	TD-CRPT-LL4-M	5993993000	TD-CRPT-LL4-M-PM
LL 6	M 10 x 1	9	5993952000	TD-CRPT-LL6-M	5993993200	TD-CRPT-LL6-M-PM
LL 8	M 12 x 1	11	5993953000	TD-CRPT-LL8-M	5993993300	TD-CRPT-LL8-M-PM
L 6	M 12 x 1.5	11	5993954000	TD-CRPT-L6-M	5993993400	TD-CRPT-L6-M-PM
L 8	M 14 x 1.5	12	5993955000	TD-CRPT-L8-M	5993993500	TD-CRPT-L8-M-PM
L 10	M 16 x 1.5	14	5993956000	TD-CRPT-L10-M	5993993600	TD-CRPT-L10-M-PM
L 12	M 18 x 1.5	17	5993957000	TD-CRPT-L12-M	5993993700	TD-CRPT-L12-M-PM
L 15	M 22 x 1.5	19	5993958000	TD-CRPT-L15-M	5993993800	TD-CRPT-L15-M-PM
L 18	M 26 x 1.5	24	5993959000	TD-CRPT-L18-M	5993993900	TD-CRPT-L18-M-PM
L 22	M 30 x 2	27	5993960000	TD-CRPT-L22-M	5993994000	TD-CRPT-L22-M-PM
L 28	M 36 x 2	32	5993961000	TD-CRPT-L28-M	5993994100	TD-CRPT-L28-M-PM
L 35	M 45 x 2	41	5993962000	TD-CRPT-L35-M	5993994200	TD-CRPT-L35-M-PM
L 42	M 52 x 2	46	5993963000	TD-CRPT-L42-M	5993994300	TD-CRPT-L42-M-PM
S 6	M 14 x 1.5	12	5993964000	TD-CRPT-S6-M	5993994400	TD-CRPT-S6-M-PM
S 8	M 16 x 1.5	14	5993965000	TD-CRPT-S8-M	5993994500	TD-CRPT-S8-M-PM
S 10	M 18 x 1.5	17	5993966000	TD-CRPT-S10-M	5993994600	TD-CRPT-S10-M-PM
S 12	M 20 x 1.5	17	5993967000	TD-CRPT-S12-M	5993994700	TD-CRPT-S12-M-PM
S 14	M 22 x 1.5	19	5993968000	TD-CRPT-S14-M	5993994800	TD-CRPT-S14-M-PM
S 16	M 24 x 1.5	22	5993969000	TD-CRPT-S16-M	5993994900	TD-CRPT-S16-M-PM
S 20	M 30 x 2	27	5993970000	TD-CRPT-S20-M	5993995000	TD-CRPT-S20-M-PM
S 25	M 36 x 2	32	5993971000	TD-CRPT-S25-M	5993995100	TD-CRPT-S25-M-PM
S 30	M 42 x 2	36	5993972000	TD-CRPT-S30-M	5993995200	TD-CRPT-S30-M-PM
S 38	M 52 x 2	46	5993973000	TD-CRPT-S38-M	5993995300	TD-CRPT-S38-M-PM

I Manual pre-assembly studs VOSSRing^M

Always prepared



For the safe individual assembly of VOSSRing^M cutting rings in a vise.

If a VOSSRing^M has to be replaced on-site or during servicing, a manual pre-assembly stud should be used. This allows a connection to be made without subjecting the actual coupling connecting piece to wear.

- Specifically for the VOSSRing^M
- for individual manual pre-assembly work
- wear-resistant

Systems

- Cutting ring VOSSRing^M

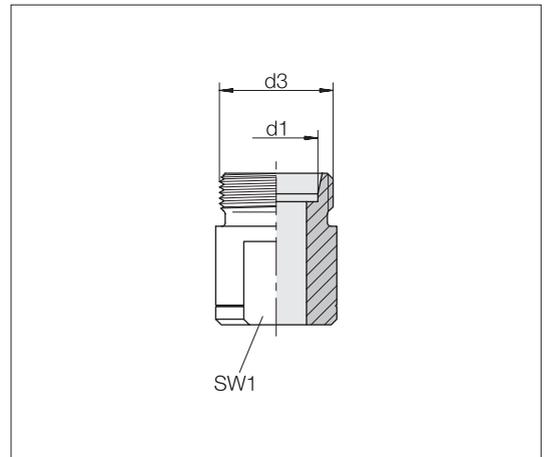
Compatibility

- Tube OD 6–42 mm

Applications

- On-site service work requiring a vise

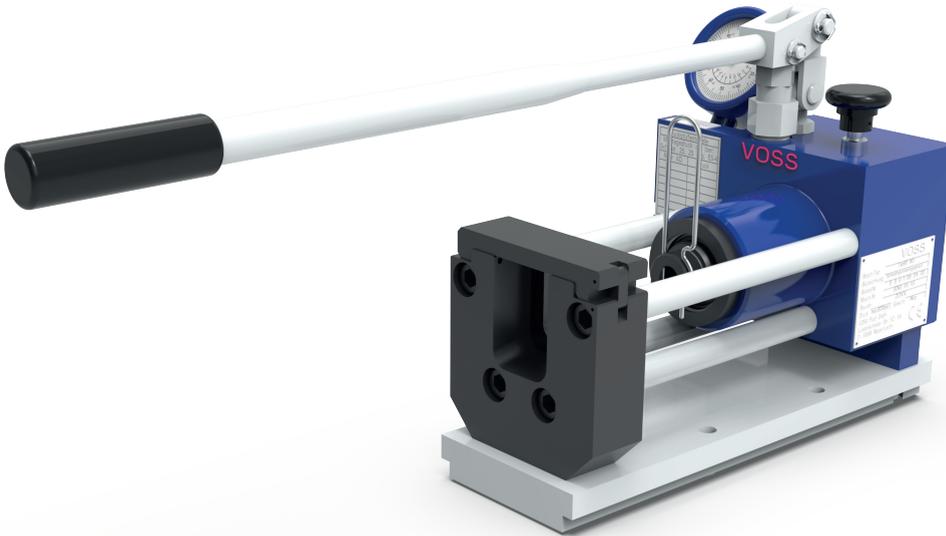
Overview of all versions and order details



Series Tube OD d1	d3	SW1	Order-No.	Designation Pre-assembly stud High-performance steel
L 6	M 12 x 1.5	10	5993234100	TD-VRPT-L6-M-PM
L 8	M 14 x 1.5	12	5993234200	TD-VRPT-L8-M-PM
L 10	M 16 x 1.5	13	5993234300	TD-VRPT-L10-M-PM
L 12	M 18 x 1.5	14	5993234400	TD-VRPT-L12-M-PM
L 15	M 22 x 1.5	19	5993234500	TD-VRPT-L15-M-PM
L 18	M 26 x 1.5	22	5993234600	TD-VRPT-L18-M-PM
L 22	M 30 x 2	24	5993234700	TD-VRPT-L22-M-PM
L 28	M 36 x 2	30	5993234800	TD-VRPT-L28-M-PM
L 35	M 45 x 2	36	5993234900	TD-VRPT-L35-M-PM
L 42	M 52 x 2	41	5993235000	TD-VRPT-L42-M-PM
S 6	M 14 x 1.5	12	5993235100	TD-VRPT-S6-M-PM
S 8	M 16 x 1.5	13	5993235200	TD-VRPT-S8-M-PM
S 10	M 18 x 1.5	14	5993235300	TD-VRPT-S10-M-PM
S 12	M 20 x 1.5	17	5993235400	TD-VRPT-S12-M-PM
S 14	M 22 x 1.5	19	5993235500	TD-VRPT-S14-M-PM
S 16	M 24 x 1.5	19	5993235600	TD-VRPT-S16-M-PM
S 20	M 30 x 2	24	5993235700	TD-VRPT-S20-M-PM
S 25	M 36 x 2	30	5993235800	TD-VRPT-S25-M-PM
S 30	M 42 x 2	36	5993235900	TD-VRPT-S30-M-PM
S 38	M 52 x 2	41	5993236000	TD-VRPT-S38-M-PM

I VOSS Type 80 N3

The star of the construction site



Also suitable for 10° flared coupling systems

Lots of tubing at a lot of different, difficult-to-access places? The handy VOSS Type 80 N3 tool takes on any service work challenge. Its extending side surfaces allow it to be securely gripped in a vise or be bolted directly onto the workbench. Tool sets are easily exchanged and the pressure gauge, in conjunction with the settings printed on the device, ensure precision assembly results. This is the portable field service device for pre-assembly work if no electric mains power is available.

- operating lever and mounting can be removed to facilitate transportation

Order-No.
5991080400

Designation
TD-TYPE80N3

Dimensions

Width:	190 mm
Height:	267 mm
Depth:	590 mm
Weight:	15 kg

Systems

- Cutting rings VOSSRing^M, 2SVA, ES-4, ES-4VA:
- 6-42 mm Tube OD
- BV-10: 6-42 mm Tube OD
- ZAKO: up to 38 mm Tube OD

Applications

- Mobile device for maintenance and service work, easy assembly, with mounting options

Optimal accessories for every situation



Universal tool inserts

More information: from P. 150



VOSSRing™ tool inserts

More information: from P. 152



Support plate

More information: P. 154



Cone gauges

More information: P. 140



Inspection gauge

More information: P. 142

VOSS Type 81 EasyPress

Simple. Fast. Powerful.



Type 81 EasyPress is the compact, battery-powered pre-assembly device for cutting ring systems with Tube outer diameters from 6 to 42 mm.

With electronic pressure adjustment, ergonomic design, and a weight of only 7 kg, it enables fast, precise, and safe pre-assembly – even in hard-to-reach installation locations. This significantly minimizes the pressure adjustment and time required for each pre-assembly, which can be completed in seconds.

Equipped with a powerful 18 V Li-ion-battery, the EasyPress can handle up to 200 work cycles per charge, making it ideal for flexible use on the construction site or in the workshop.

Order-No. 7013562500	Designation TD-TYPE81C
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Dimensions	
Width:	410 mm
Height:	380 mm
Depth:	90 mm
Weight:	7 kg

Device for electrical mains power

- 18V 5.0Ah Li-ion battery

Systems

- Cutting rings VOSSRing[®], 2SVA, ES-4, ES-4VA:
6–42 mm Tube OD

Applications

- On-site assembly and mobile operations
- Assembly in hard-to-reach places
- Industrial maintenance and repair

Scope of delivery

- 2x 18V 5.0Ah Li-ion battery
- Battery charger (Quick)
- Heavy Duty suitcase
- Shoulder strap



4

Optimal accessories for every situation



Pre-assembly tools

More information:

P.157



Machine holder

Order-No.

7014772800



Table stand

Order-No.

7014523500



Tripod stand

Order-No.

7014523600

Additional accessories may be necessary for application-specific requirements – we will support you in selecting suitable components.

I VOSS Type 90 Basic II

Serial reproducibility



For machine-assisted pre-assembly

One shop floor, but multiple workplaces? The easily transported VOSS Type 90 Basic II ensures reliable series pre-assembly of cutting ring couplings everywhere with reproducible results. The automated pre-assembly process ensures consistently good results and the adjustable working pressure allows the pre-assembly process to be adjusted to match varying assembly parameters. One especially practical feature: system-related setting values are printed directly on the device casing. These can be adjusted individually and are shown clearly on a large display. The built-in count-down workpiece counter makes sure that not a single tube too many or too few is pre-assembled.

- Weighs just 66 kg
- Easy to operate, integrated workpiece counter, easy tool change
- Intelligent controls lead to short cycle times
- Pedal switch available as an option

Other power supply ratings upon request

Order-No. 5992892000	Designation TD-TYPE90B2
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Dimensions	
Width:	681 mm
Height:	260 mm
Depth:	520 mm
Weight:	66 kg
Noise level:	60 dBA

Device for electrical mains power

- 400 V / 16 A / 50 Hz / 3 Ph

Systems

- Cutting rings VOSSRing^M, 2SVA, ES-4, ES-4VA: 6-42 mm Tube OD
- BV-10 (machine conversion by VOSS service): 6-42 mm Tube OD
- ZAKO (machine conversion by VOSS service): up to 38 mm Tube OD

Application

- Bench-top device for shop-floor use, larger production runs

Optimal accessories for every situation



Universal tool inserts

More information: from P. 150



VOSSRing™ tool inserts

More information: from P. 152



Support plate

More information: P. 154



Device for reversed cutting ring assembly

More information: P. 156



Foot switch

Order-No. 9799600139



Tool holder

Order-No. 5994030300



Cone gauges

More information: P. 140



Inspection gauge

More information: P. 142

Additional accessories may be necessary for application-specific requirements – we will support you in selecting suitable components.

VOSS Type 90 Comfort

Maximum process reliability



Automatic RFID tool recognition prevents errors and lowers production costs.

Pre-assembly work for large series production has its own special requirements. Tools have to be exchanged quickly, cycle times must be extremely short but not a single fault is permitted since this might render an entire lot unusable. The answer to such demands is the VOSS Type 90 Comfort. This device reads the RFID chips integrated in the VOSS tools and then adjusts parameters automatically to suit the tool. In this way, the shortest tooling times possible can be achieved, while effectively preventing operator errors – even when tools have to be exchanged often and fast. Simple, precise, safe and reliable – especially suitable for tight tube bends.

- Automatic pressure settings
- Tool recognition via RFID chip
- Programmable workpiece counter
- Pre-assembly controlled in relation to tool travel
- Touch-panel, intuitive menu guidance
- Including on-site calibration service
- Pedal switch available as an option
- Error detection

Order-No. 5992893000	Designation TD-TYPE90C2
--------------------------------	-----------------------------------

Dimensions

Width:	800 mm
Height:	308 mm
Depth:	615 mm
Depth (with conversion kit):	636 mm
Weight:	90 kg
Noise level:	70 dBA

Device for electrical mains power

- 400 V / 16 A / 50 Hz / 3 Ph

Systems

- Cutting rings VOSSRing^M, 2SVA, ES-4, ES-4VA:
6–42 mm Tube OD
- BV-10 (machine conversion by VOSS service):
6–42 mm Tube OD
- ZAKO (machine conversion by VOSS service):
up to 38 mm Tube OD

Application

- For series production on shop floors, offering maximum process safety and reliability

Optimal accessories for every situation



Universal tool inserts

More information: from P. 150



VOSSRing™ tool inserts

More information: from P. 152



Support plate

More information: P. 154



Device for reversed cutting ring assembly

More information: P. 156



Foot switch

Order-No. 9799600139



Tool holder

Order-No. 5994030300



Cone gauges

More information: P. 140



Inspection gauge

More information: P. 142

I VOSS Testing equipment and tools

Quality straight from the source



VOSS cone gauges for pre-assembly studs

For checking the 24° cone of a stud



Hardened pre-assembly studs for cutting ring pre-assembly are wear-resistant, thus achieving consistent pre-assembly results. To maintain these results, the tools must be checked at regular intervals, since they are nevertheless subject to a certain degree of wear.

In addition to a visual inspection for damage or cracks, the checks must also include verification of the stud dimensions using a gauge. This involves checking the internal conical bore of the pre-assembly stud after every 50 applications.

VOSS taper gauges are available individually or as a complete set containing all sizes of the light-weight and heavy-duty versions in a practical plastic case.

Systems

- Pre-assembly studs made of hardened steel

Overview of all versions and order details



Series Tube OD	Order-No.	Designation
L 6	5991001000	TD-CG-L/S6
L 8	5991001100	TD-CG-L/S8
L 10	5991001200	TD-CG-L/S10
L 12	5991001300	TD-CG-L/S12
L 15	5991001400	TD-CG-L15
L 18	5991001500	TD-CG-L18
L 22	5991001600	TD-CG-L22
L 28	5991001700	TD-CG-L28
L 35	5991001800	TD-CG-L35
L 42	5991001900	TD-CG-L42
S 6	5991001000	TD-CG-L/S6
S 8	5991001100	TD-CG-L/S8
S 10	5991001200	TD-CG-L/S10
S 12	5991001300	TD-CG-L/S12
S 14	5991002000	TD-CG-S14
S 16	5991002100	TD-CG-S16
S 20	5991002200	TD-CG-S20
S 25	5991002300	TD-CG-S25
S 30	5991002400	TD-CG-S30
S 38	5991002500	TD-CG-S38
Cone gauges complete in handy case	5994090049	TD-CG

I VOSS inspection gauges

For inspection of cutting ring pre-assemblies



VOSS supplies inspection gauges to check the results of cutting ring pre-assembly and which can be used to evaluate pre-assembly in conjunction with visual inspection of the pushed-up tube material. To establish a permanently leak-tight cutting ring coupling, the pre-assembled end of the tube must have contact in the coupling and the cutting ring must be inserted securely into the 24° conical recess. A closed force transmission path and the resulting safe connection can only be achieved by the interaction of this geometry with a strong ring of raised tube material. The VOSS taper gauge is used as an auxiliary device for evaluating cutting ring pre-assemblies and summarizing the geometry situation in the form of legible values.

Operating principle:

The results are checked by measuring the pre-assembled tube end. This is done by pushing the tube end into the conical opening of the taper gauge and screwing on the union nut manually, hand-tight, without a spanner. The pointer of the dial will move until the cutting ring cone is in contact with the tapered hole in the gauge. The indicated value must be within specified limits. If the value is below the specified range, the assembly is probably faulty and the cutting ring is too near the end of the tube. If the value is higher than the specified range, it must be assumed that the cutting ring is too far from the end of the tube.

Systems

- Cutting rings VOSSRing^M, 2SVA, ES-4, ES-4VA: 6–42 mm Tube OD

Applications

- Series production of tubings
- Inspection of pre-configured tubings

Caution!

The inspection gauge does not eliminate the need to visually check for excessive or too little pre-assembly pressures (by checking the height of tube material pushed up by the first cutting ring edge)!

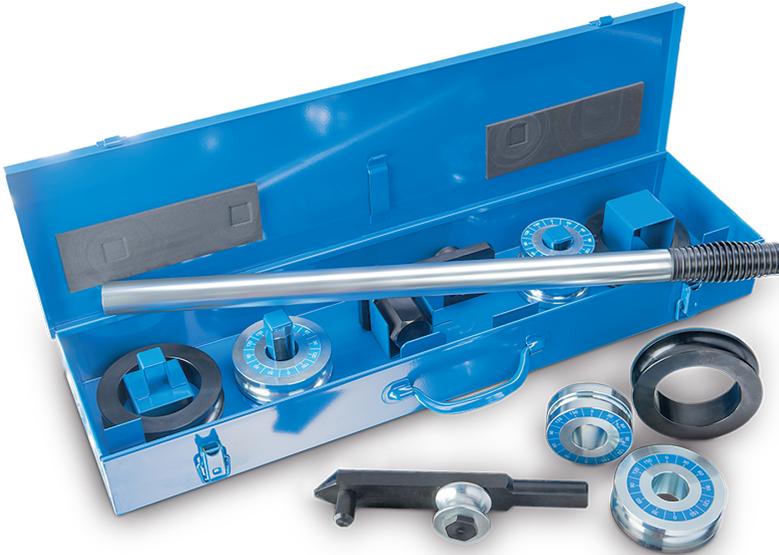
Overview of all versions and order details



Series Tube OD	Order-No.	Designation
LL 16	5994503649	TD-TGCR-LL16
LL 18	7005991100	TD-TGCR-LL18
L 6	5994502249	TD-TGCR-L6
L 8	5994502349	TD-TGCR-L8
L 10	5994502449	TD-TGCR-L10
L 12	5994502549	TD-TGCR-L12
L 15	5994502649	TD-TGCR-L15
L 18	5994502749	TD-TGCR-L18
L 22	5994502849	TD-TGCR-L22
L 28	5994503749	TD-TGCR-L28
L 35	5994503849	TD-TGCR-L35
L 42	5994503949	TD-TGCR-L42
S 6	5994502949	TD-TGCR-S6
S 8	5994503049	TD-TGCR-S8
S 10	5994503149	TD-TGCR-S10
S 12	5994503249	TD-TGCR-S12
S 14	5994503349	TD-TGCR-S14
S 16	5994503449	TD-TGCR-S16
S 20	5994503549	TD-TGCR-S20
S 25	5994504049	TD-TGCR-S25
S 30	5994504149	TD-TGCR-S30
S 38	5994504249	TD-TGCR-S38

I VOSS tube bending device

Reliable radii



Light-weight manual bending device, vise-mounting, for accurate bending of tubes with ODs of 8 mm–22 mm.

- For tubes with outer diameters of 8, 10, 12, 14, 16, 18, 20 and 22 mm
- Including a sturdy metal case
- Degree graduation marks on the bending templates make accurate bending of tubes easier
- Highly suitable for on-site use as the device can be simply held in a vise.

Order-No.
5994060000

Designation
TD-TBM1

Dimensions

Width: 650 mm
Height: 190 mm
Depth: 75 mm
Weight: 14 kg

Application

- Transportable, single production on site

I Saw device

Robust and compact design



This sturdy and handy saw device is particularly suitable for preparing steel or stainless steel tubes quickly for cutting ring assembly.

All common tube sizes from 6–42 mm tube outer diameter can be worked with the aid of this device. A guide rail ensures a parallel saw cut.

- Secure vise mounting and firm tube clamping
- Saw blade guide (replaceable when worn)
- Ensures the required perpendicularity for tube ends

Order-No.
5994050000

Designation
TD-AFHS6-42

Type
Device

Order-No.
7005382900

Designation
TD-SPSET-AFHS

Type
Spare parts kit comprising two-part saw blade guide and spacer

I Manual deburring tool

Deburring tubes professionally and quickly



The manual deburring tool is ideal for inner and outer deburring of steel or stainless steel tubes. The range of application is from tube inner diameter or tube outer diameter 8–35 mm.

- Simultaneous machining of the inner and outer surfaces
- Secure grip thanks to knurled outer surface
- Metallic, robust base
- Preset cutting angle for optimal results

Order-No.
5994049900

Designation
TD-MTD-8-35

Type
Tool

Safety is gained and maintained through training.

Assembly training and audits in VOSS quality



The biggest enemy of hydraulic systems is leakage. There are many possible sources of error, but human error is usually the key factor.

Only highly qualified employees can identify and avoid potential errors at an early stage. VOSS offers regular training courses for this purpose. These take place at our premises in Wipperfürth or at our customer sites worldwide.

As part of an assembly audit, we observe your employees at work, analyze processes, inspect assembly stations and equipment, and ultimately develop a customized training program that will increase productivity in the long term. Fewer errors, faster results, lower costs.

- Assembly training courses for employee qualification in theory and practice
- Assembly audits for process reliability: Review of all assembly processes, including inspection of pre-assembly equipment and tools on site

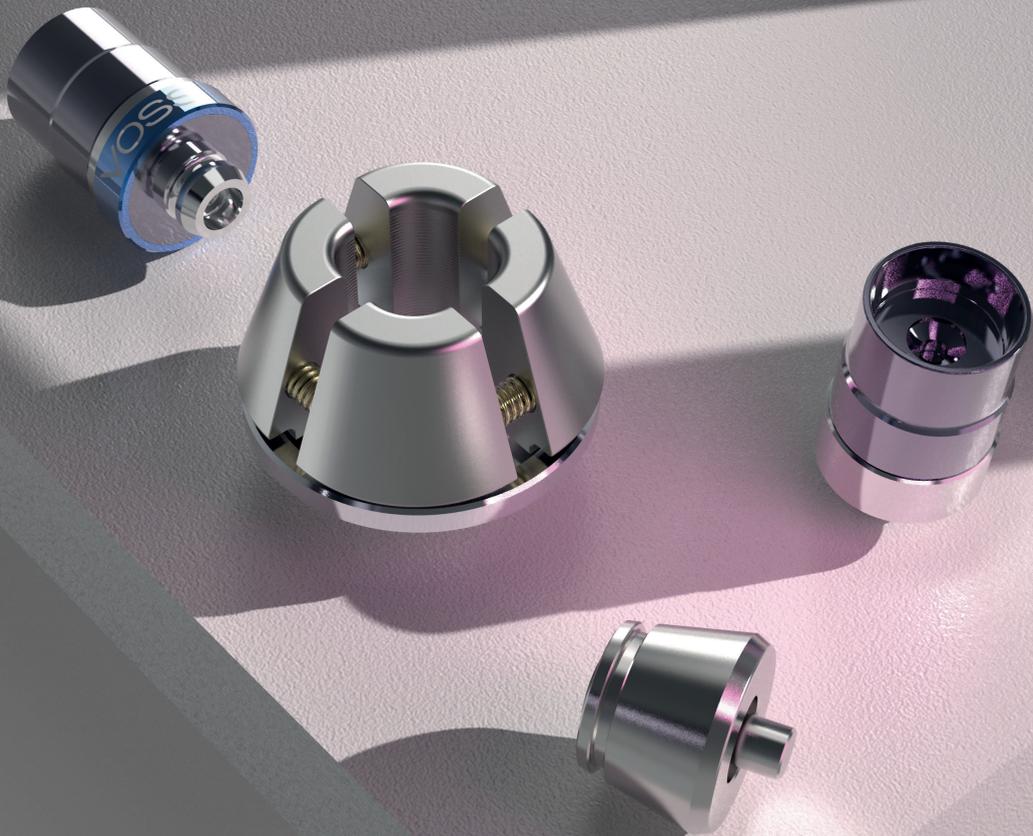


Request now!

If required, please send inquiries directly to: Anfrage@voss.net

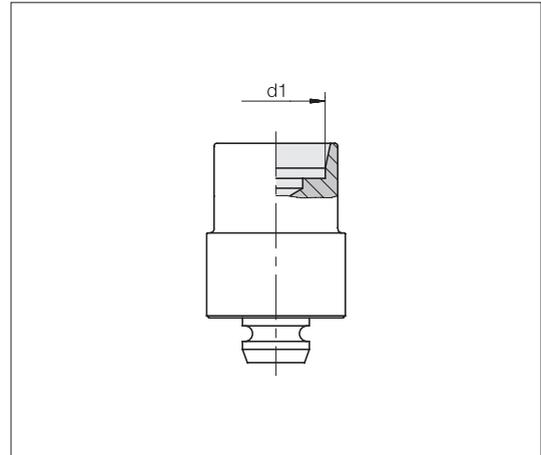
VOSS pre- and final assembly tools

Reliability right down to the last detail



Pre-assembly stud Universal

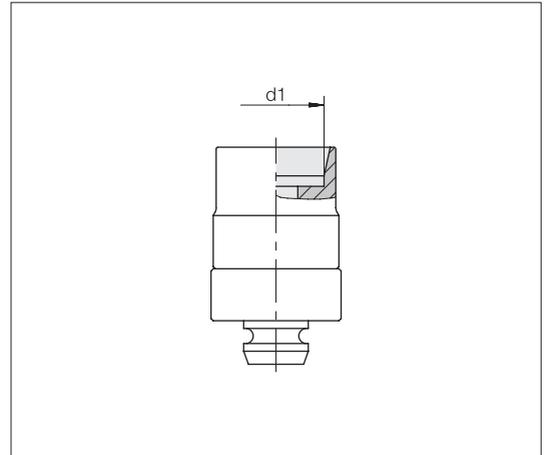
Compatible with
Type 80 N3 and Type 90 Basic II



Series Tube OD $d1$	Order-No.	Designation Pre-assembly stud Standard	Order-No.	Designation Pre-assembly stud High-performance steel
L 6	5991207300	TD-CRPT-L6-MT	5993861400	TD-CRPT-L6-MT-PM
L 8	5991208300	TD-CRPT-L8-MT	5993861600	TD-CRPT-L8-MT-PM
L 10	5991209300	TD-CRPT-L10-MT	5993861800	TD-CRPT-L10-MT-PM
L 12	5991210300	TD-CRPT-L12-MT	5993862000	TD-CRPT-L12-MT-PM
L 15	5991211300	TD-CRPT-L15-MT	5993862300	TD-CRPT-L15-MT-PM
L 18	5991212300	TD-CRPT-L18-MT	5993862500	TD-CRPT-L18-MT-PM
L 22	5991213300	TD-CRPT-L22-MT	5993862700	TD-CRPT-L22-MT-PM
L 28	5991214300	TD-CRPT-L28-MT	5993862900	TD-CRPT-L28-MT-PM
L 35	5991215300	TD-CRPT-L35-MT	5993863100	TD-CRPT-L35-MT-PM
L 42	5991216300	TD-CRPT-L42-MT	5993863300	TD-CRPT-L42-MT-PM
S 6	5991217300	TD-CRPT-S6-MT	5993861500	TD-CRPT-S6-MT-PM
S 8	5991218300	TD-CRPT-S8-MT	5993861700	TD-CRPT-S8-MT-PM
S 10	5991219300	TD-CRPT-S10-MT	5993861900	TD-CRPT-S10-MT-PM
S 12	5991220300	TD-CRPT-S12-MT	5993862100	TD-CRPT-S12-MT-PM
S 14	5991221300	TD-CRPT-S14-MT	5993862200	TD-CRPT-S14-MT-PM
S 16	5991222300	TD-CRPT-S16-MT	5993862400	TD-CRPT-S16-MT-PM
S 20	5991223300	TD-CRPT-S20-MT	5993862600	TD-CRPT-S20-MT-PM
S 25	5991224300	TD-CRPT-S25-MT	5993862800	TD-CRPT-S25-MT-PM
S 30	5991225300	TD-CRPT-S30-MT	5993863000	TD-CRPT-S30-MT-PM
S 38	5991226300	TD-CRPT-S38-MT	5993863200	TD-CRPT-S38-MT-PM

Pre-assembly stud Universal

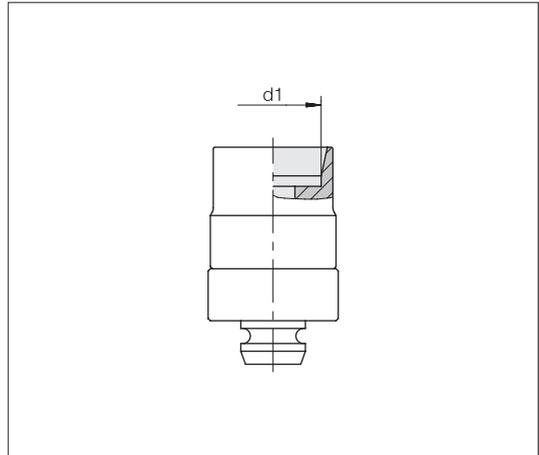
Compatible with
Type 90 Comfort



Series Tube OD d1	Order-No.	Designation Pre-assembly stud Standard with RFID	Order-No.	Designation Pre-assembly stud High-performance steel with RFID
L 6	5993975449	TD-CRPT-L6-LG45,5-MT-RFID	5993974149	TD-CRPT-L6-LG45,5-MT-PM-RFID
L 8	5993975549	TD-CRPT-L8-LG45,5-MT-RFID	5993974249	TD-CRPT-L8-LG45,5-MT-PM-RFID
L 10	5993975649	TD-CRPT-L10-LG45,5-MT-RFID	5993974349	TD-CRPT-L10-LG45,5-MT-PM-RFID
L 12	5993975749	TD-CRPT-L12-LG45,5-MT-RFID	5993974449	TD-CRPT-L12-LG45,5-MT-PM-RFID
L 15	5993975849	TD-CRPT-L15-LG43,5-MT-RFID	5993879549	TD-CRPT-L15-LG43-MT-PM-RFID
L 18	5993851800	TD-CRPT-L18-MT-RFID	5993871800	TD-CRPT-L18-MT-PM-RFID
L 22	5993852000	TD-CRPT-L22-MT-RFID	5993872000	TD-CRPT-L22-MT-PM-RFID
L 28	5993975949	TD-CRPT-L28-LG41-MT-RFID	5993879649	TD-CRPT-L28-LG41-MT-PM-RFID
L 35	5993852400	TD-CRPT-L35-MT-RFID	5993872400	TD-CRPT-L35-MT-PM-RFID
L 42	5993976049	TD-CRPT-L42-LG36-MT-RFID	5993974549	TD-CRPT-L42-LG36-MT-PM-RFID
S 6	5993878849	TD-CRPT-S6-LG43,5-MT-RFID	5993976149	TD-CRPT-S6-LG43,5-MT-PM-RFID
S 8	5993878949	TD-CRPT-S8-LG43,5-MT-RFID	5993975049	TD-CRPT-S8-LG43,5-MT-PM-RFID
S 10	5993879049	TD-CRPT-S10-LG43,5-MT-RFID	5993975149	TD-CRPT-S10-LG43,5-MT-PM-RFID
S 12	5993879149	TD-CRPT-S12-LG43,5-MT-RFID	5993975249	TD-CRPT-S12-LG43,5-MT-PM-RFID
S 14	5993851500	TD-CRPT-S14-MT-RFID	5993871500	TD-CRPT-S14-MT-PM-RFID
S 16	5993851700	TD-CRPT-S16-MT-RFID	5993871700	TD-CRPT-S16-MT-PM-RFID
S 20	5993851900	TD-CRPT-S20-MT-RFID	5993871900	TD-CRPT-S20-MT-PM-RFID
S 25	5993852100	TD-CRPT-S25-MT-RFID	5993872100	TD-CRPT-S25-MT-PM-RFID
S 30	5993879249	TD-CRPT-S30-LG31-MT-RFID	5993975349	TD-CRPT-S30-LG31-MT-PM-RFID

Pre-assembly stud VOSSRing^M

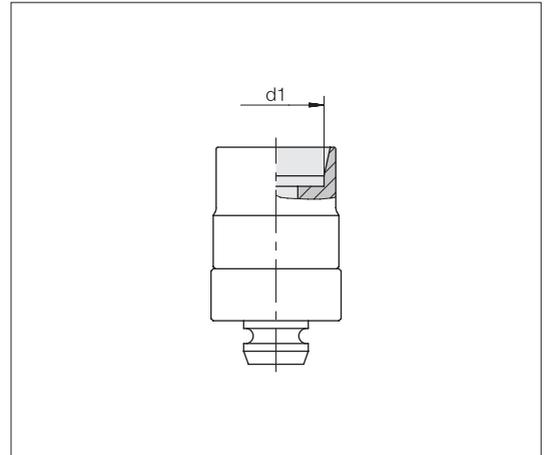
Compatible with
Type 80 N3 and Type 90 Basic II



Series Tube OD d1	Order-No.	Designation Pre-assembly stud High-performance steel
L 6	5993230300	TD-VRPT-L6-MT-PM
L 8	5993230400	TD-VRPT-L8-MT-PM
L 10	5993230500	TD-VRPT-L10-MT-PM
L 12	5993230600	TD-VRPT-L12-MT-PM
L 15	5993230700	TD-VRPT-L15-MT-PM
L 18	5993230800	TD-VRPT-L18-MT-PM
L 22	5993230900	TD-VRPT-L22-MT-PM
L 28	5993231000	TD-VRPT-L28-MT-PM
L 35	5993231100	TD-VRPT-L35-MT-PM
L 42	5993231200	TD-VRPT-L42-MT-PM
S 6	5993231300	TD-VRPT-S6-MT-PM
S 8	5993231400	TD-VRPT-S8-MT-PM
S 10	5993231500	TD-VRPT-S10-MT-PM
S 12	5993231600	TD-VRPT-S12-MT-PM
S 14	5993231700	TD-VRPT-S14-MT-PM
S 16	5993231800	TD-VRPT-S16-MT-PM
S 20	5993231900	TD-VRPT-S20-MT-PM
S 25	5993232000	TD-VRPT-S25-MT-PM
S 30	5993232100	TD-VRPT-S30-MT-PM
S 38	5993232200	TD-VRPT-S38-MT-PM

Pre-assembly stud VOSSRing^M

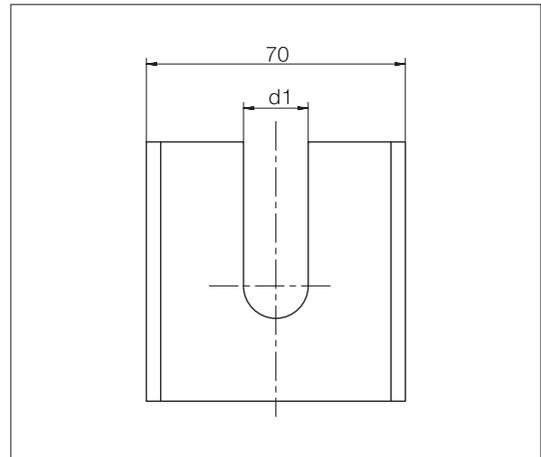
Compatible with
Type 90 Comfort



Series Tube OD d1	Order-No.	Designation Pre-assembly stud High-performance steel with RFID
L 6	5993230349	TD-VRPT-L6-MT-PM-RFID
L 8	5993230449	TD-VRPT-L8-MT-PM-RFID
L 10	5993230549	TD-VRPT-L10-MT-PM-RFID
L 12	5993230649	TD-VRPT-L12-MT-PM-RFID
L 15	5993230749	TD-VRPT-L15-MT-PM-RFID
L 18	5993230849	TD-VRPT-L18-MT-PM-RFID
L 22	5993230949	TD-VRPT-L22-MT-PM-RFID
L 28	5993231049	TD-VRPT-L28-MT-PM-RFID
L 35	5993231149	TD-VRPT-L35-MT-PM-RFID
L 42	5993231249	TD-VRPT-L42-MT-PM-RFID
S 6	5993231349	TD-VRPT-S6-MT-PM-RFID
S 8	5993231449	TD-VRPT-S8-MT-PM-RFID
S 10	5993231549	TD-VRPT-S10-MT-PM-RFID
S 12	5993231649	TD-VRPT-S12-MT-PM-RFID
S 14	5993231749	TD-VRPT-S14-MT-PM-RFID
S 16	5993231849	TD-VRPT-S16-MT-PM-RFID
S 20	5993231949	TD-VRPT-S20-MT-PM-RFID
S 25	5993232049	TD-VRPT-S25-MT-PM-RFID
S 30	5993232149	TD-VRPT-S30-MT-PM-RFID
S 38	5993232249	TD-VRPT-S38-MT-PM-RFID

I Support plate

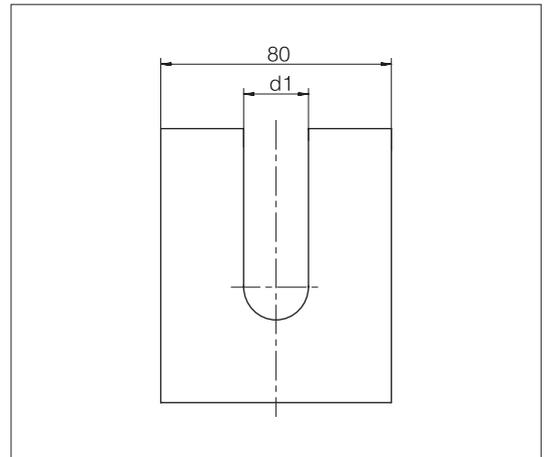
Compatible with
Type 80 N3



Series Tube OD d1	Order-No.	Designation Support plate
LL 6	5991327100	TD-CRCB-L/S6-TYPE80
LL 8	5991328100	TD-CRCB-L/S8-TYPE80
L 6	5991327100	TD-CRCB-L/S6-TYPE80
L 8	5991328100	TD-CRCB-L/S8-TYPE80
L 10	5991329100	TD-CRCB-L/S10-TYPE80
L 12	5991330100	TD-CRCB-L/S12-TYPE80
L 15	5991331100	TD-CRCB-L15-TYPE80
L 18	5991332100	TD-CRCB-L18-TYPE80
L 22	5991333100	TD-CRCB-L22-TYPE80
L 28	5991334100	TD-CRCB-L28-TYPE80
L 35	5991335100	TD-CRCB-L35-TYPE80
L 42	5991336100	TD-CRCB-L42-TYPE80
S 6	5991327100	TD-CRCB-L/S6-TYPE80
S 8	5991328100	TD-CRCB-L/S8-TYPE80
S 10	5991329100	TD-CRCB-L/S10-TYPE80
S 12	5991330100	TD-CRCB-L/S12-TYPE80
S 14	5991337100	TD-CRCB-S14-TYPE80
S 16	5991338100	TD-CRCB-S16-TYPE80
S 20	5991339100	TD-CRCB-S20-TYPE80
S 25	5991340100	TD-CRCB-S25-TYPE80
S 30	5991341100	TD-CRCB-S30-TYPE80
S 38	5991342100	TD-CRCB-S38-TYPE80

I Support plate

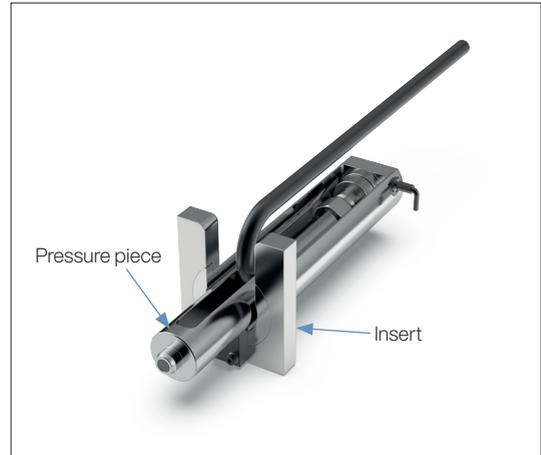
Compatible with
Type 90 Basic II and Type 90 Comfort



Series Tube OD d1	Order-No.	Designation Support plate
LL 6	5991327300	TD-CRCB-L/S6
LL 8	5991328300	TD-CRCB-L/S8
L 6	5991327300	TD-CRCB-L/S6
L 8	5991328300	TD-CRCB-L/S8
L 10	5991329300	TD-CRCB-L/S10
L 12	5991330300	TD-CRCB-L/S12
L 15	5991331300	TD-CRCB-L15
L 18	5991332300	TD-CRCB-L18
L 22	5991333300	TD-CRCB-L22
L 28	5991334300	TD-CRCB-L28
L 35	5991335300	TD-CRCB-L35
L 42	5991336300	TD-CRCB-L42
S 6	5991327300	TD-CRCB-L/S6
S 8	5991328300	TD-CRCB-L/S8
S 10	5991329300	TD-CRCB-L/S10
S 12	5991330300	TD-CRCB-L/S12
S 14	5991337300	TD-CRCB-S14
S 16	5991338300	TD-CRCB-S16
S 20	5991339300	TD-CRCB-S20
S 25	5991340300	TD-CRCB-S25
S 30	5991341300	TD-CRCB-S30
S 38	5991342300	TD-CRCB-S38

Device for reversed cutting ring assembly

Compatible with
Type 90 Basic II and Type 90 Comfort



Type/size	Order-No.	Designation
Insert		
L/S 6 to L 18	7005412200	TD-CRARPAC-6-18-TYPE90
Pressure piece for type 90 Basic II		
L/S 6	7005410200	TD-CRTP-L/S6-TYPE90
L/S 8	7005410100	TD-CRTP-L/S8-TYPE90
L/S 10	7005410000	TD-CRTP-L/S10-TYPE90
L/S 12	7005409900	TD-CRTP-L/S12-TYPE90
S 14	7005409800	TD-CRTP-S14-TYPE90
L 15	7005409700	TD-CRTP-L15-TYPE90
S 16	7005409600	TD-CRTP-S16-TYPE90
L 18	7005409500	TD-CRTP-L18-TYPE90
Pressure piece for Type 90 Comfort with RFID		
L 6	7005411400	TD-CRTP-L6-RFID-TYPE90C2
S 6	7005411300	TD-CRTP-S6-RFID-TYPE90C2
L 8	7005411200	TD-CRTP-L8-RFID-TYPE90C2
S 8	7005411100	TD-CRTP-S8-RFID-TYPE90C2
L 10	7005411000	TD-CRTP-L10-RFID-TYPE90C2
S 10	7005409000	TD-CRTP-S10-RFID-TYPE90C2
L 12	7005408000	TD-CRTP-L12-RFID-TYPE90C2
S 12	7005407000	TD-CRTP-S12-RFID-TYPE90C2
S 14	7005406000	TD-CRTP-S14-RFID-TYPE90C2
L 15	7005405000	TD-CRTP-L15-RFID-TYPE90C2
S 16	7005404000	TD-CRTP-S16-RFID-TYPE90C2
L 18	7005403000	TD-CRTP-L18-RFID-TYPE90C2

Pre-assembly tools for cutting ring assemblies Universal

Compatible with
Type 81 EasyPress



Series Tube OD	Order-No.	Designation
L 6	7013497300	TD-CRPT-L6-TYPE81
L 8	7013497500	TD-CRPT-L8-TYPE81
L 10	7013497700	TD-CRPT-L10-TYPE81
L 12	7013497900	TD-CRPT-L12-TYPE81
L 15	7013498200	TD-CRPT-L15-TYPE81
L 18	7013498400	TD-CRPT-L18-TYPE81
L 22	7013498600	TD-CRPT-L22-TYPE81
L 28	7013498800	TD-CRPT-L28-TYPE81
L 35	7013499000	TD-CRPT-L35-TYPE81
L 42	7013499200	TD-CRPT-L42-TYPE81
S 6	7013497400	TD-CRPT-S6-TYPE81
S 8	7013497600	TD-CRPT-S8-TYPE81
S 10	7013497800	TD-CRPT-S10-TYPE81
S 12	7013498000	TD-CRPT-S12-TYPE81
S 14	7013498100	TD-CRPT-S14-TYPE81
S 16	7013498300	TD-CRPT-S16-TYPE81
S 20	7013498500	TD-CRPT-S20-TYPE81
S 25	7013498700	TD-CRPT-S25-TYPE81
S 30	7013498900	TD-CRPT-S30-TYPE81
S 38	7013499100	TD-CRPT-S38-TYPE81

I Assembly instructions

For process-safe and correct pre-assembly
and final assembly



5

Content	Type/Page
Important notes on VOSS assembly instructions	P.162
Assembly instructions VOSS <i>Ring^M</i> tube couplings in conjunction with universal pre-assembly stud	P.164
Assembly instructions VOSS <i>Ring^M</i> tube couplings in conjunction with VOSS <i>Ring</i> pre-assembly stud	P.169
Assembly instructions Tapper (DKO)	P.175

Important notes on VOSS assembly instructions

In order to ensure maximum performance and functional reliability of VOSS products, the respective assembly instructions, operating conditions and tube recommendations have to be adhered to.

We recommend that you use VOSS pre-assembly devices at all times. The use of pre-assembly devices is a strict requirement from tube sizes L18/S16 and larger! It is absolutely essential to follow the operating instructions for the respective pre-assembly device used.

Do not start with assembly until you are absolutely sure that you have understood the operating and assembly instructions for each VOSS pre-assembly device or machine, tool and product. Incorrect handling leads to risks regarding safety and leak-tightness and can result in failure of the entire connection.

It is impossible for the manufacturer to monitor whether the user is adhering to the operating and assembly instructions for individual pre-assembly devices or machines, tools and products, as well as what conditions prevail and what methods are used for installation, operation, application and maintenance of the individual products. Improper workmanship can lead to material damage, which in turn may pose a danger to life and limb. This means that VOSS Fluid GmbH can accept no responsibility or liability for loss, damage or costs incurred due to faulty installation, improper operation or incorrect application and maintenance or from any related issue. Failure to heed this warning will lead to loss of guarantee.

VOSS Fluid GmbH reserves the right to make changes or additions to the information provided without prior notification. Customers can obtain the latest version of the operating and assembly instructions upon request, or from our download area at: www.voss.net

General notes on VOSS assembly instructions

Make sure that all components, including the tubes, are clean before assembly is started and that they remain clean during the entire assembly process. Soiled components may lead to failure of the system.

Before starting assembly, make sure that you have carried out all preparatory work in accordance with the respective instructions.

Specifications concerning permissible steel tubes:

Seamless, cold-drawn and normalized precision steel tubes as specified in DIN EN 10305-4, material E235+N, mat. no. 1.0308+N or E355, mat. no. 1.0580. The tubes must be ordered by specifying the outer diameter and the inner diameter.

Specifications concerning permissible stainless steel tubes:

Seamless, cold-drawn and solution-annealed, scale-free stainless steel tubes in CFA or CFD delivery condition of dimensions and tolerances according to DIN EN 10305-1 and all other delivery conditions as specified in DIN EN 10216-5, material X6CrNiMoTi17-12-2, mat. no. 1.4571. The tubes must be ordered by specifying the outer diameter and the inner diameter.

The tubes should be prepared with the same thoroughness as pre-assembly and final assembly of the connection. Especially when using long tubes, check the end sections for damage or distortion.

We recommend that pre-assembled tubes which are not to be finally assembled yet should be fitted with protective caps.

Marking a stroke on the union nut and the tube makes it easier to achieve the correct number of turns when tightening the coupling.

Before starting to assemble VOSS components with elastomer seals, always check that:

- the nut and the seal surfaces are clean and undamaged and/or
- the elastomer sealing is clean and undamaged.

Determining the tightening torque for screw couplings

The tightening torques specified in the catalogue apply under the following conditions:

- Steel fittings with VOSS coat surface coating
- The specified nominal pressure ranges assume that the mating material has a tensile strength of $\geq 600 \text{ N/mm}^2$
- Our recommendations on lubrication of the threaded studs are observed

If other values for strength, modulus of elasticity and friction-surface combinations are used, the user has to adapt the tightening torque empirically.

The recommended tightening torques have to be adhered to if the pressure range is to be fully utilized and the appropriate safety level is to be maintained.

The recommended tightening torques for the threads are given in the tables for the respective type of thread.

Explanation of symbols and other notes



Visual inspection



Turn until hand-tight or carry out another manual activity



Use the tool to tighten the coupling according to the instructions



Oil and lubricate at the point marked with an arrow

All dimensions in millimetres [mm]

Assembly instructions

VOSSRing^M tube couplings

in conjunction with universal pre-assembly stud

1 Notes

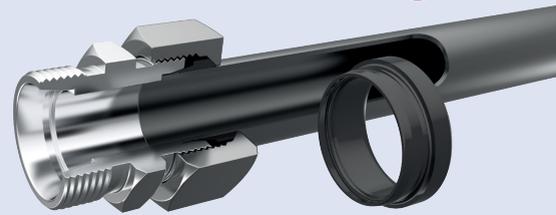
These assembly instructions describe the pre-assembly of the VOSSRing^M in conjunction with the universal pre-assembly stud in steel or heavy duty steel.

However, to use the VOSSRing^M, the use of the specially developed VOSSRing pre-assembly stud is nevertheless recommended. Only in this way can the patented stop function and the shortened 30° final assembly route be used.

Before starting assembly work please consider the general notes in the latest VOSS catalog and check that your assembly instructions are up to date!

These assembly instructions describe the manual mounting options provided in DIN 3859-2.

However, we always recommend assembly using VOSS pre-assembly devices and tools. Here the respective operating instructions must be observed.



For use with steel and stainless steel tubes according to VOSS specification (see introduction assembly instructions).

Attention!

Please note the recommendation on the use of support sleeves for thin-walled steel tubes and soft tubes of non-ferrous metals and support sleeves of material 1.4571 for thin-walled stainless steel tubes.

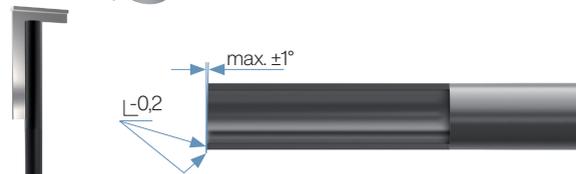
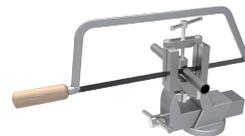
2 Tube preparation

2.1 Minimum dimensions of the straight tube ends must be taken into account for determining the tube lengths.

Series	Tube OD [mm]	H [mm]	L [mm]
L	6/8	31	39
L	10/12	33	42
L	15	36	45
L	18	38	48
L	22/28	42	53
L	35/42	48	60

Series	Tube OD [mm]	H [mm]	L [mm]
S	6/8	35	44
S	10/12	37	47
S	14/16	43	54
S	20	50	63
S	25	54	68
S	30	58	72
S	38	65	82

With machine pre-assembly, the minimum lengths are contained in the respective operating instructions of the pre-assembly devices.



2.2 Cut the tube at a right angle and at least 10 mm away from the manufacturer's or supplier's cut. An angular tolerance of ±1° is permissible. Do not use tube cutters or abrasive cutting machines.



2.3 Slightly deburr tube ends inside and outside.
Clean tube.

Attention!

Tubes cut crookedly or improperly deburred reduce service life and the tightness of the connection.

2.4 Assembly of VOSS reinforcement sleeves

- 1a. Lightly coat the outer circumference of the steel sleeve with lubricant (e.g. mineral-oil based hydraulic oil HLP32). Then insert the sleeve into the tube up to the knurled section.
- 1b. Lightly coat the outer circumference of the stainless steel sleeve with assembly paste (e.g. assembly paste MPE). Then insert the sleeve into the tube up to the knurled section.
2. Use a hammer (plastic or hard rubber) to drive in the sleeve totally. In doing so, the knurled section is pressed against the inner wall of the tube and prevents the sleeve from being displaced or falling out.



Sleeve inserted



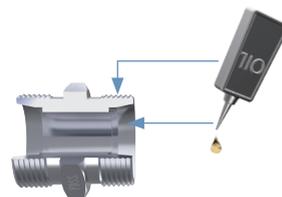
Sleeve driven in

5

Series	Tube-OD [mm]	Wall thickness [mm]						
		0.5	0.75	1	1.5	2	2.5	3
L	6	•	•					
L	8	•	•					
L	10	•	•					
L	12	•	•	•				
L	15	•	•	•				
L	18	•	•	•	•			
L	22	•	•	•	•	•		
L	28	•	•	•	•	•		
L	35	•	•	•	•	•	•	
L	42	•	•	•	•	•	•	
S	6	•	•					
S	8	•	•					
S	10	•	•					
S	12	•	•	•				
S	14	•	•	•				
S	16	•	•	•	•			
S	20	•	•	•	•	•		
S	25	•	•	•	•	•		
S	30	•	•	•	•	•	•	
S	38	•	•	•	•	•	•	•

3 Assembly preparation

3.1 Lightly lubricate the thread, the cutting ring, the tube end and the taper of the coupling connecting piece and/or the manual pre-assembly mandrel (e.g. using mineral-oil based hydraulic oil HLP32 or, with stainless steel, assembly paste MPE).

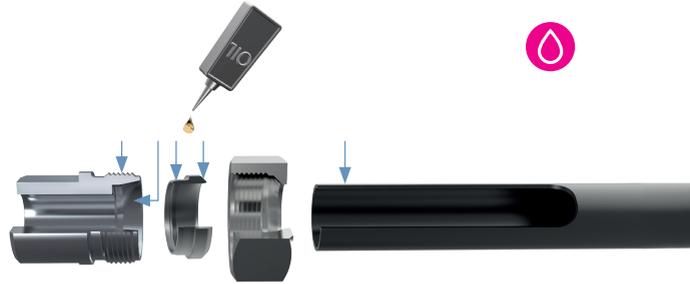


VOSSRing^M in conjunction with universal pre-assembly stud

3.2 Put the union nut and the VOSSRing^M on the tube end one after the other. The cutting edges of the VOSSRing^M point towards the tube end.

Attention!

Make sure that the VOSSRing^M is in the right position!



4 Pre-assembly

VOSSRing^M can be pre-assembled directly in the coupling connecting piece or with a hardened universal pre-assembly stud.

Hardened pre-assembly studs in steel are low-wear and enable uniform assembly results. Approximately every 50 pre-assemblies, accuracy to gauge must be checked.

Pre-assembly studs in heavy duty steel have up to 20x longer service life and a "wear inspection". If the usage limit is reached, the front end of the stud breaks off.

Attention!

Universal pre-assembly studs that are not true to gauge or damaged in the cone area must be replaced!

When mounting these directly in the coupling connecting piece, this may be used only once for pre-assembly!

All given assembly instructions must be strictly adhered to! Otherwise the coupling could leak or the tube may be torn out of the coupling!

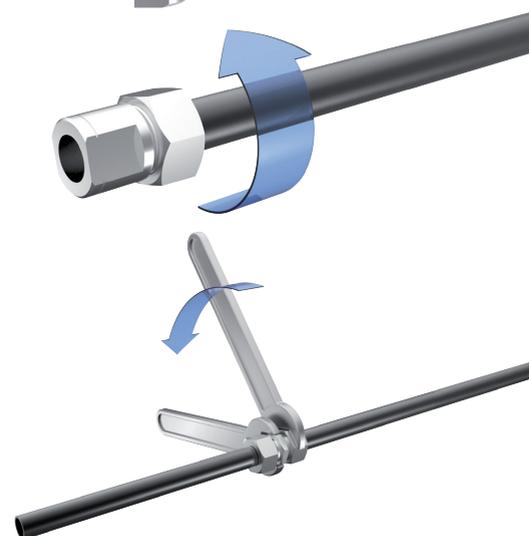
4.1 Insert the tube end into the 24° taper as far as it will go and press on it. The tube must be held in as far as it can go during the assembly process in order to avoid faulty assembly.

4.2 Tighten the union nut until it is hand tight.

4.3 Tighten the union nut with a wrench to an outer tube.

- tube OD up to 18 mm
1 1/2 turns
- tube OD from 20 mm
1 1/4 turns

For assembly into the tube hold the coupling connecting piece in place with a wrench. For compliance with the specified number of turns, marking lines are recommended on the union nut and tube.



outer tube diameter up to 18 mm 1 1/2 turns
to tube outer diameter from 20 mm, 1 1/4 turns



outer tube diameter up to 18 mm 1 1/2 turns
to tube outer diameter from 20 mm, 1 1/4 turns



5 Assembly inspection

Loosen the nut and check the shoulder throw-up.

The shoulder throw-up should cover approximately 80 % of the cutting-edge front face. With thin-walled tubes and stainless steel tubes the shoulder throw-up has shown to be as markedly less.

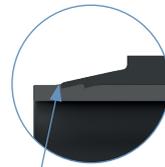
In this position, it is still permissible for the cutting ring to turn on the tube. Any dirt must be removed.

Attention!

If not enough tube material has been raised, the procedure must be repeated using more force. The result must be rechecked.

Note:

We recommend the use of the VOSS gauge to check the correct axial position of the cutting ring.



Shoulder throw-up about 80 %



6 Final assembly

6.1 Lightly lubricate the thread, the pre-assembled tube end and the taper of the coupling connecting piece easily with lubricant (e.g. using mineral-oil based hydraulic oil HLP32 or, with stainless steel, assembly paste MPE).

6.2 Carefully insert the pre-assembled tube end into the coupling connecting piece. Then tighten the union nut until it is hand tight.

Attention!

If the VOSSRing^M was pre-assembled in the coupling connecting piece, the same coupling connecting piece used for the direct assembly must be used again for the final assembly.

6.3 Tighten the nut with a wrench until there is a noticeable force increase. As a result, the coupling components are elastically stressed.

Then tighten another **1/4 turn**.

Attention!

When tightening up the coupling connecting piece for the final time, always hold it in wrench or clamp it in a vise.



approx. 1/4 turn



7 Repeat assembly

For repeated assembly, the union nut is tightened with the same force as during the initial assembly.



VOSSRing^M in conjunction with universal pre-assembly

8 Coupling surface

VOSS coat corrosion protection is based on a zinc-nickel base coat, passivating and as a rule a sealing.

9 Tube type

Seamless, normalized precision steel tubes as per DIN EN 10305-4, material E235+N, material number 1.0308+N or E355, material number 1.0580. Please order the tubes by the external diameter and interior diameter.

Thin-walled steel tubes are provided with reinforcing sleeves to stabilize the connection.

10 Approved operating temperature range

The permissible ambient temperature ranges from -20 °C to +60 °C.

11 Scope of application

Ideal for gases as per DVGW Worksheet G 260.

Assembly instructions VOSSRing^M tube couplings

in conjunction with VOSSRing pre-assembly stud

1 Notes

Before starting assembly work please consider the general notes in the latest VOSS catalog and check that your assembly instructions are up to date!

These assembly instructions describe the manual mounting options provided in DIN 3859-2.

However, we always recommend assembly using VOSS pre-assembly devices and tools. Here the respective operating instructions must be observed.

To use the VOSSRing^M the use of specially developed VOSSRing pre-assembly mandrel is recommended. Only in this way can the patented stop function and the shortened 30° final assembly route be used.

Conventional VOSS pre-assembly mandrels can also be used. However, in this case separate installation instructions must be observed.



For use with steel and stainless steel tubes according to VOSS specification (see introduction assembly instructions).

Attention!

Please note the recommendation on the use of support sleeves for thin-walled steel pipes and soft tubes of non-ferrous metals and support sleeves of material 1.4571 for thin-walled stainless steel tubes.

5

2 Tube preparation

2.1 Minimum dimensions of the straight tube ends must be taken into account for determining the tube lengths.

Series	Tube OD [mm]	H [mm]	L [mm]
L	6/8	31	39
L	10/12	33	42
L	15	36	45
L	18	38	48
L	22/28	42	53
L	35/42	48	60

Series	Tube OD [mm]	H [mm]	L [mm]
S	6/8	35	44
S	10/12	37	47
S	14/16	43	54
S	20	50	63
S	25	54	68
S	30	58	72
S	38	65	82

With machine pre-assembly, the minimum lengths are contained in the respective operating instructions of the pre-assembly devices.



VOSSRing^M in conjunction with VOSSRing pre-assembly stud

2.2 Cut the tube at a right angle and at least 10 mm away from the manufacturer's or supplier's cut. An angular tolerance of $\pm 1^\circ$ is permissible. Do not use tube cutters or abrasive cutting machines.



2.3 Slightly deburr tube ends inside and outside. Clean tube.

Attention!

Tubes cut crookedly or improperly deburred reduce service life and the tightness of the connection.

2.4 Assembly of VOSS reinforcement sleeves.

- 1a. Lightly coat the outer circumference of the steel sleeve with lubricant (e.g. mineral-oil based hydraulic oil HLP32). Then insert the sleeve into the tube up to the knurled section.
- 1b. Lightly coat the outer circumference of the stainless steel sleeve with assembly paste (e.g. assembly paste MPE). Then insert the sleeve into the tube up to the knurled section.
2. Use a hammer (plastic or hard rubber) to drive in the sleeve totally. In doing so, the knurled section is pressed against the inner wall of the tube and prevents the sleeve from being displaced or falling out.



Sleeve inserted



Sleeve driven in

Series	Tube OD [mm]	Wall thickness [mm]						
		0.5	0.75	1	1.5	2	2.5	3
L	6	•	•					
L	8	•	•					
L	10	•	•					
L	12	•	•	•				
L	15	•	•	•				
L	18	•	•	•	•			
L	22	•	•	•	•	•		
L	28	•	•	•	•	•		
L	35	•	•	•	•	•	•	
L	42	•	•	•	•	•	•	
S	6	•	•					
S	8	•	•					
S	10	•	•					
S	12	•	•	•				
S	14	•	•	•				
S	16	•	•	•	•			
S	20	•	•	•	•	•		
S	25	•	•	•	•	•		
S	30	•	•	•	•	•	•	
S	38	•	•	•	•	•	•	•

3 Assembly preparation

3.1 Lightly lubricate the thread, the cutting ring, the tube end and the taper of the coupling connecting piece and/or the manual pre-assembly mandrel (e.g. using mineral-oil based hydraulic oil HLP32 or, with stainless steel, assembly paste MPE).

3.2 Put the union nut and the VOSSRing^M on the tube end one after the other. The cutting edges of the VOSSRing^M point towards the tube end.

Attention!

Make sure that the VOSSRing^M is in the right position!



4 Pre-assembly

The VOSSRing^M can be pre-assembled directly in the coupling connecting piece or using the hardened VOSSRing pre-assembly mandrel.

VOSSRing pre-assembly mandrels for heavy-duty steel show no typical wear and have no inspection intervals. When the usage limits of the pre-assembly mandrel are reached, the front end breaks off, so that a replacement must be made.

Attention!

When mounting these directly in the coupling connecting piece, this may be used only once for pre-assembly!

All given assembly instructions must be strictly adhered to! Otherwise the coupling could leak or the tube may be torn out of the coupling!

4.1 Insert the tube end into the 24° taper as far as it will go and press on it. The tube must be held in as far as it can go during the assembly process in order to avoid faulty assembly.

4.2 Tighten the union nut until it is hand tight.



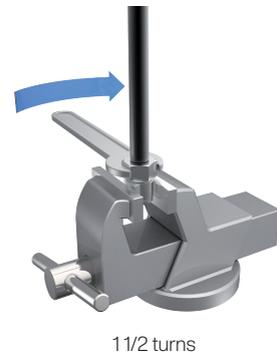
VOSSRing^M in conjunction with VOSSRing pre-assembly stud

4.3 Tighten the nut
1 1/2 turns with the wrench.

Notes:

In pre-assembly in the patented VOSSRing pre-assembly mandrel, the end of assembly is easily recognizable after about 1 1/2 turns thanks to the block stop installation or a noticeable force increase.

For assembly into the tube hold the coupling connecting piece in place with a wrench. For compliance with the specified number of turns marking lines are recommended on the union nut and tube.



5 Assembly inspection

Loosen the nut and check the shoulder throw-up.

The shoulder throw-up should cover the cutting-edge front face completely, i.e. cover approximately 100%. With thin-walled tubes and stainless steel tubes the shoulder throw-up has shown to be as markedly less.

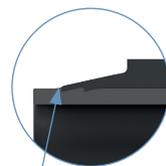
In this position, it is still permissible for the cutting ring to turn on the tube. Any dirt must be removed.

Attention!

If not enough tube material has been raised, the procedure must be repeated using more force. The result must be rechecked.

Note:

We recommend the use of the VOSS gauge to check the correct axial position of the cutting ring.



Shoulder throw-up about 100%



6 Final assembly

6.1 Lightly lubricate the thread, the pre-assembled tube end and the taper of the coupling connecting piece easily with lubricant (e.g. using mineral-oil based hydraulic oil HLP32 or, with stainless steel, assembly paste MPE).

6.2 Carefully insert the pre-assembled tube end into the coupling connecting piece. Then tighten the union nut until it is hand tight.

Attention!

If the *VOSSRing^M* was pre-assembled in the coupling connecting piece, the same coupling connecting piece used for the direct assembly must be used again for the final assembly.

6.3 Tighten the union nut with a wrench until there is a noticeable force increase. As a result, the coupling components are elastically stressed and the state of assembly after pre-assembly is once again achieved.

6.4 Then tighten a further **30° final assembly route**. As a result of this, a lower final cut of the cutting ring is achieved and an absolute tightness guaranteed.

Attention!

When tightening up the coupling connecting piece for the final time, always hold it in wrench or clamp it in a vise.



7 Repeat assembly

The repeated assembly is carried out identically to the final assembly.

7.1 Tighten the nut with a wrench until there is a noticeable force increase.

7.2 Then tighten a further 30° final assembly route.

VOSSRing^M in conjunction with VOSSRing pre-assembly stud

8

Coupling surface

VOSS coat corrosion protection is based on a zinc-nickel base coat, passivating and as a rule a sealing.

9

Tube type

Seamless, normalized precision steel tubes as per DIN EN 10305-4, material E235+N, material number 1.0308+N or E355, material number 1.0580. Please order the tubes by the external diameter and interior diameter.

Thin-walled steel tubes are provided with reinforcing sleeves to stabilize the connection.

10

Approved operating temperature range

The permissible ambient temperature ranges from -20 °C to +60 °C.

11

Scope of application

Ideal for gases as per DVGW Worksheet G 260.

I Assembly instructions Tapper (DKO)

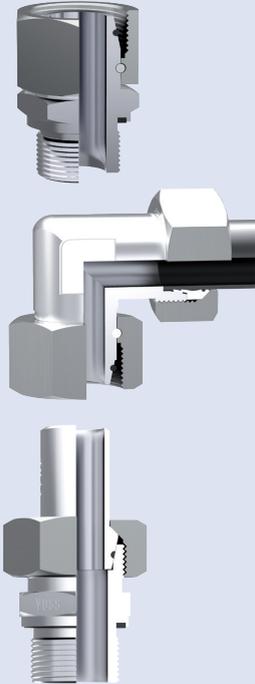
1 Notes

Before starting the assembly work, read and observe the general notes in the latest VOSS catalogue and check that your assembly instructions are up to date.

These assembly instructions describe the assembly of VOSS couplings and coupling parts with taper coupling (DKO) according to ISO 8434-1.

Attention!

When the tube coupling is being connected, the DKO coupling must always be held with a spanner to counter tightening torques.



5

2 Assembly of the taper coupling

Assembly procedure

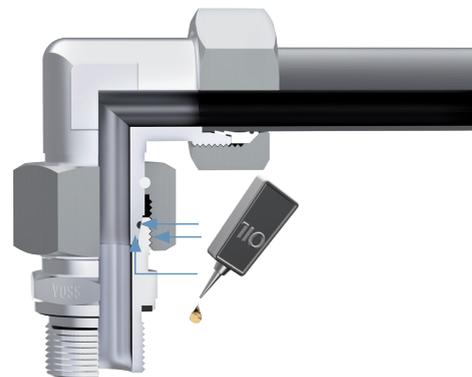
1. Check that the O-ring is not twisted and that it is bedded correctly in the groove of the taper.
2. Lubricate the threads, the cone surface and the O-ring lightly (e.g. using mineral-oil based hydraulic fluid HLP32).
3. Keeping the taper aligned, insert it into the cone and press it in firmly.

Attention!

After this step, no further alignment correction is allowed.

4. Turn the union nut until it is hand-tight.
5. Then use a spanner to finally tighten up the coupling by distance dependent assembly.

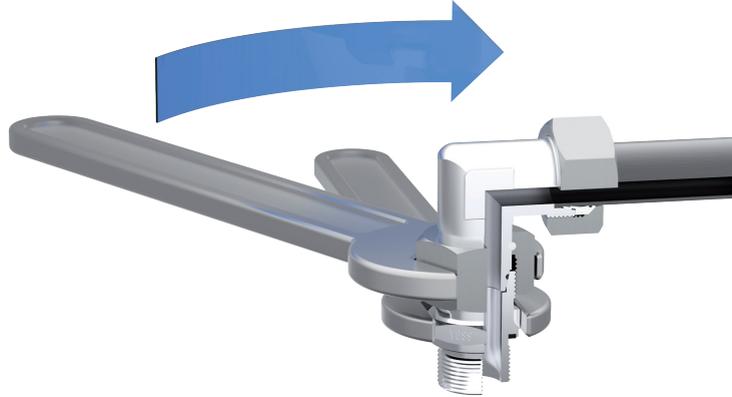
Marking a stroke on the DKO union nut and the coupling connecting piece makes it easier to achieve the correct number of turns when tightening the coupling.



DKO

Attention!

The DKO coupling must be tightened by turning the union nut, not the counter connecting piece.



3 Assembly parameters

As an alternative to achieving pre-assembly and final assembly states by distance dependent assembly, the tightening torques can be applied directly. The stated tightening torques are guideline values which have been determined under the following conditions:

Series	Tube OD [mm]	Union nut thread	Number of turns, first assembly	Number of turns, re-assembly	Tightening torque [Nm] ±5 %
L	6	M 12 x 1.5	approx. 2/3	approx. 1/3	20
L	8	M 14 x 1.5	approx. 2/3	approx. 1/3	30
L	10	M 16 x 1.5	approx. 2/3	approx. 1/3	40
L	12	M 18 x 1.5	approx. 2/3	approx. 1/3	50
L	15	M 22 x 1.5	approx. 2/3	approx. 1/3	70
L	18	M 26 x 1.5	approx. 1/2	approx. 1/3	90
L	22	M 30 x 2	approx. 1/2	approx. 1/3	120
L	28	M 36 x 2	approx. 1/3	approx. 1/3	160
L	35	M 45 x 2	approx. 1/3	approx. 1/3	250
L	42	M 52 x 2	approx. 1/3	approx. 1/4	380
S	6	M 14 x 1.5	approx. 2/3	approx. 1/3	25
S	8	M 16 x 1.5	approx. 2/3	approx. 1/3	40
S	10	M 18 x 1.5	approx. 2/3	approx. 1/3	50
S	12	M 20 x 1.5	approx. 2/3	approx. 1/3	60
S	16	M 24 x 1.5	approx. 1/2	approx. 1/3	85
S	20	M 30 x 2	approx. 1/2	approx. 1/3	140
S	25	M 36 x 2	approx. 1/3	approx. 1/4	190
S	30	M 42 x 2	approx. 1/3	approx. 1/4	270
S	38	M 52 x 2	approx. 1/3	approx. 1/4	400

4 Coupling surface

VOSS coat corrosion protection is based on a zinc-nickel base coat, passivating and as a rule a sealing.

5 Tube type

Seamless, normalized precision steel tubes as per DIN EN 10305-4, material E235+N, material number 1.0308+N or E355, material number 1.0580. Please order the tubes by the external diameter and interior diameter.

Thin-walled steel tubes are provided with reinforcing sleeves to stabilize the connection.

6 Approved operating temperature range

The permissible ambient temperature ranges from -20 °C to +60 °C.

7 Scope of application

Ideal for gases as per DVGW Worksheet G 260.



I General technical notes

Technical comments · Sealing types and threaded ports



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Additional lengths when designing tube assemblies	P.182
Calculating the equivalent straight tube length	P.183
VOSS coat	P.184
Media resistance of VOSS couplings	P.190
Ozone resistance of elastomer seals	P.191
Preventing faults and correcting malfunctions	VOSS Ring ^M DKO 24° couplings
	P.193 P.196 P.197



Additional lengths when designing tube assemblies

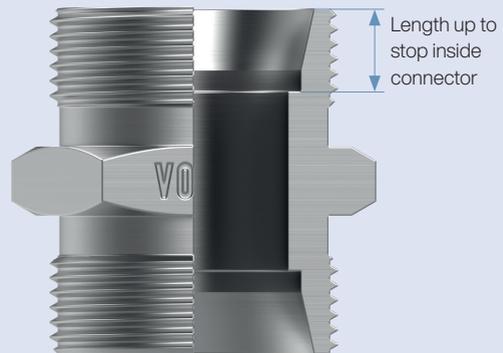
The following must be taken into consideration when calculating the length of tubing required for a given assembly length:

- minimum lengths of straight tube sections and of tube elbows*
- additional dimensions in the coupling connector
- additional tube sections (flaring, bend radii, elbow lengths, straight sections)

In addition, we recommend that in case of doubt some extra length be added when designing the ends of the tubes. This allows the tube length to be adjusted before commencing pre-assembly for the VOSS coupling system, if necessary.

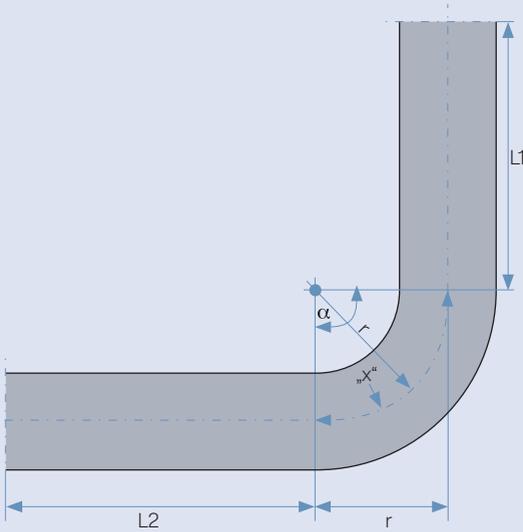
Dimension inside coupling connecting piece

Tube OD	Length up to stop inside connector [mm]
L 6	7
L 8	7
L 10	7
L 12	7
L 15	7
L 18	7,5
L 22	7,5
L 28	7,5
L 35	10,5
L 42	11
S 6	7
S 8	7
S 10	7,5
S 12	7,5
S 14	8
S 16	8,5
S20	10,5
S25	12
S30	13,5
S38	16



* Depends on the coupling system and pre-assembly system used.

I Calculating the equivalent straight tube length



L = total equivalent straight tube length

x = equivalent tube length of elbow

α = bend angle

r = radius

$$x = \frac{\alpha \cdot 2 \cdot r \cdot \pi}{360^\circ}$$

$$L = L1 + L2 + x$$

Please note that the bend radius is determined by the bend template of the device.

I Conceived and thought through

VOSS coat

✓ Corrosion resistance
in perfection

Pioneer in zinc-nickel applications since 2007 – and still a clear leader.

EC directive 2000/53/EC on end-of-life vehicles was amended in 2007, partially banning the use of hexavalent chromium in materials and vehicles components. For us, this meant that the era of yellow chromate corrosion protection coatings had come to an end. The technological characteristics of available alternatives – using zinc as a base coat with thick-film passivation – fell a great deal short of VOSS quality requirements, and were clearly a step in the wrong direction. This move was and still is unacceptable to VOSS, since we always strive to increase the benefits for customers in our products and solutions.

Our solution: VOSS zinc-nickel surface finishes. The relevant characteristics of these coatings even surpass those of yellow-chromate finishes. Users were especially delighted by their corrosion resistance – 10 times better than before. In 2007, this was a huge leap forward in the hydraulic coupling technology market.

The steel is given three coats to provide optimum corrosion protection: a zinc-nickel base coat, a passivation layer and a sealing coat. In 2009, we set up our own electroplating competence center in which we produce and enhance our surface finishes.

Features we provide as standard are options elsewhere.

Our surface finishes have set the benchmark for corrosion resistance in all market sectors and have been used in our entire product range all around the world since 2007, at high availability levels. For you, as a customer, this means maximum process reliability for your applications, homogeneous selection of parts, no danger of confusing items. Suitable for use in hydraulic presses, plant construction, agricultural and construction machinery, conveyor engineering as well as for injection-molding machines and machine tools.



After comparative testing in a salt-spray chamber for 720 hours



VOSS Zink-Nickel



Zinc + passivation + sealing coat

The trademark for corrosion protection



Our surface finish is much more than just a simple coating. This is why we have made it a trademark: VOSS coat. VOSS coat is synonymous with corrosion protection in perfection, focussing on technology, sustainability and human health and safety.

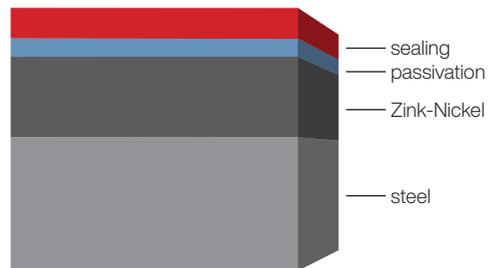
VOSS coat is the result of continuous improvement – for example of friction coefficients, layer thickness relationships and visual impression. These are the result of many years of experience in production processes and with customer applications furthered by our own research and development work. Only VOSS unites this comprehensive know-how under one roof – operating a proprietary VOSS coat competence center including an electroplating test line. In this way we make sure that our corrosion protection meets your strictest standards. To achieve a measurable technological lead for you.

A technological lead, achieved by hard work

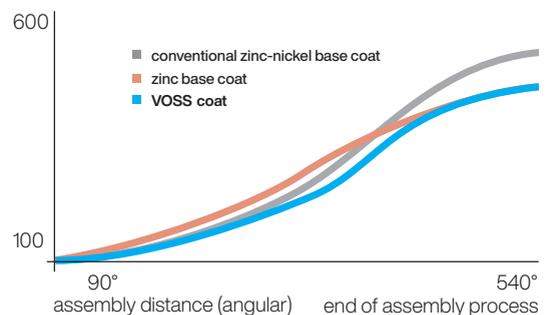
VOSS coat is the outcome of many years of in-house engineering that considers all the factors leading to increased benefits for the customers. Not only have we achieved an extremely high level of corrosion protection but also user-friendly handling in practical applications.

- **1,000 hours corrosion resistance in productive applications following shipping, handling and assembly.**
Tested using random samples in the assembled state taken from series production. In view of the microscopic lesions which can occur during assembly, this is the only way of obtaining a reliable estimate of the service life to be expected in the customer's applications. Under laboratory conditions, the service life of unassembled parts exceeds 2,000 hours. After this, red rust starts to develop, whereas white rust only appears in the form of a light grey film. In addition, samples for our own quality assurance tests are taken from all production lots.
- **Assembly testing of cutting ring coupling (size S30)**
VOSS coat ensures optimum assembly torques.

VOSS coat finish cross-section



Assembly torque, in Nm





Individual plant control programs: a separate program for controlling 12 parameters is compiled for each of our 6,600 articles.

- **Perfect assembly torques – not too high and not too low**

How to avoid assemblies being too tight or too slack – thanks to our consistent quality – in all tube connections. Our own research, development and production have enabled us to continually improve the friction coefficient of VOSS coat to equal the best zinc surface finishes and have reached a value considerably lower than that of other zinc-nickel coatings.

- **Best possible process reliability thanks to a modern in-house electroplating plant with online sensors and analysis systems**

This plant is designed exclusively for tube couplings – a unique feature. This is where we work to enhance our electroplating processes – in the electroplating test laboratory for chemical components, and in the engineering department for production procedures. In series of tests, the 12 program parameters are adjusted individually for each one of our 6,600 articles in order to optimize processes for all geometries and sizes. We have developed the racks and baskets used to move the articles through the plant ourselves and are continually improving these to achieve a degree of specialization impossible with outsourced processing. We conform without exception to the European Community Regulation on chemicals and their safe use (REACH), of course.

VOSS electroplating test laboratory: where VOSS coat is being permanently improved



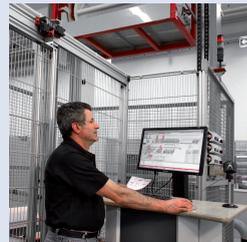
Sustainability: only achievable from scratch if everything is under our control

Since 2009, we have been operating the VOSS coat competence center, with a floor area of 5,000 m², at our headquarters. To provide the best possible working conditions, the facility has two storeys: on the ground floor, all goods are transported and the test batches are fed to the racks and drums for the electroplating plant, then a lift system conveys them to the second floor. The actual electroplating process is carried out there and no workers are required on this floor. We can control all process steps in the plant and optimize them to suit our requirements, sustainably and without compromises.

- **Energy-efficient production:**
Alone the sophisticated energy optimization measures (e. g. heat recovery installations) installed when the facility was built, bring annual energy savings of more than 490 MWh. This is the annual electric energy consumption of approximately 160 domestic dwellings.
- **Emission reductions (air pollution, water and noise):**
Extract air is drawn directly from the space above the baths and is cleaned by an air scrubber. This brings pollutant levels in the exhaust air down to values exceeding the lower limits by a factor of more than 250. The same principle applies to our responsible use of water: instead of using valuable drinking-quality water, we use process water. Waste water is cleaned and its pH value neutralized by sophisticated processes at our own treatment plant. And our electroplating plant fulfils the strictest noise emission regulations for mixed-utilization urban areas as well.
- **Reduction of potential environmental hazards:**
We use environment-friendly materials.
- **Raw-material efficiency and recycling:**
The online analysis process optimizes the useful life of baths to achieve low resource consumption. Metal residues are reprocessed and thus returned to the raw-material cycle.



Process chemistry – the essence of VOSS coat. Thanks to automated concentration correction in baths, process parameters remain within tight tolerances.



The entire plant operation is controlled from the ground floor. All process steps and parameters are displayed and indicated in real time on control monitors.



Our plant technology is specifically designed to prevent damage to threads.



All bath parameters are continuously monitored. Chemicals are added in a fully automatic process to maintain the correct concentration.

The individual: at the focus of all our activities

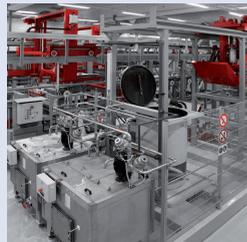


Technology improves products. Sustainability ensures efficiency and conservation of resources. But only by combining these two factors do we really benefit the human beings involved. VOSS coat benefits everyone, now and in the future – staff and our customers alike.

- **Productive working conditions for our staff:**
Employees and chemicals are separated by construction measures. Since concentration-adjustment dosing of the process baths is fully automated and requires no manual work, contact to chemicals is avoided. Ergonomical workplaces, eliminating lifting movements, for example, prevent fatigue and the errors associated with this.
- **Process stability in the interest of our customers:**
Our good process stability, in conjunction with excellent component assembly characteristics, virtually eliminates faults which might occur due to excessively tight or slack assemblies. Coating processes specifically developed for our products ensure consistently high corrosion protection – at all times – for the entire product range.
- **Nickel release:**
Our nickel release rate is more than 50 times lower than the limit values defined in EC regulation 1907/2006 for the release of nickel by objects coming into direct and prolonged contact with human skin.



Process optimization has led to shorter product immersion times at our facility than in other electroplating plants. This means even less stress on the material.



Our flexible plant controls allow customer-specific post-processing.



After electroplating, each production lot is subjected to quality control inspection of both the thickness and the chemical composition of the coating. The results of the inspections are documented.



Extract air is drawn directly from the space above the baths and scrubbed before being exhausted. Heat energy is recovered and recycled.

VOSS coat

✓ Corrosion resistance
in perfection

VOSS coat: in a class of its own

Corrosion protection is only as good as the weakest component. So it is best not to have any weakest component. VOSS coat sets the standard when it comes to improving corrosion protection in your entire system. Safety which improves your products and impresses your customers.

Reliability:

- 1,000 hours corrosion resistance under practical conditions.
- A technological leader among surfaces, thanks to many years of experience, research and development.
- Sustainable production in our own VOSS coat competence centre.
- More than 30 % of all users in Germany choose VOSS coat.
- High availability and delivery readiness: lean, rapid supply chains.
- Image enhancement and a high resale value for your machinery and plant, thanks to uncompromisingly high-quality components.
- Enhanced customer satisfaction due to minimum risk of complaint.
- Application engineering: customer specifications can be realized by our own employees (e.g. in the case of prototypes).
- Assuring the future through our own research and cooperation with universities and other higher education institutions.

Media resistance of VOSS couplings

The VOSS coat surface finish is compatible with all normal hydraulic fluids. However, as VOSS Fluid products are used in a wide range of applications, they will also come into contact with other media such as newly-developed synthetic hydraulic fluids, fuels, cleansing agents, lubricants, gases or corrosive alkaline or acid liquids. If you are planning to use media which cannot be described as a hydraulic oil commonly used in

mechanical engineering applications, we recommend that you examine their suitability prior to use. Please note that not only their stability when used with VOSS Fluid surface coatings has to be taken into consideration, but also their compatibility with elastomers and other hydraulic components as well. An overview is given in the following table, which is only meant to serve as a guide:

Medium	Coupling material		Dichtungswerkstoff		
	steel	Stainless steel 1.4571	NBR	FKM	EPDM
Acetone	resistant	resistant	resistant	resistant	resistant
Ethanol (ethyl alcohol)	resistant	resistant	resistant	resistant	resistant
Ether	resistant	resistant	resistant	resistant	resistant
ASTM – oil No. 1-3	resistant	resistant	resistant	resistant	resistant
ASTM – oil No. 4	resistant	resistant	resistant	resistant	resistant
Brake fluid	resistant	resistant	resistant	resistant	resistant
Gasolene (petrol)	resistant	resistant	resistant	resistant	resistant
Benzene	resistant	resistant	resistant	resistant	resistant
Steam	resistant	resistant	resistant	resistant	resistant
Diesel fuel	resistant	resistant	resistant	resistant	resistant
Biodiesel HVO 100	resistant	resistant	resistant	resistant	resistant
Compressed air (dry)	resistant	resistant	resistant	resistant	resistant
Natural gas	resistant	resistant	resistant	resistant	resistant
Natural gas with up to 100 % hydrogen by volume	resistant	resistant	resistant	resistant	resistant
Petroleum oil	resistant	resistant	resistant	resistant	resistant
Liquid propane (LPG)	resistant	resistant	resistant	resistant	resistant
Transmission oil	resistant	resistant	resistant	resistant	resistant
Glycol (ethylene glycol)	resistant	resistant	resistant	resistant	resistant
Fuel oil	resistant	resistant	resistant	resistant	resistant
Hydraulic fluids (petroleum-based) HL/HLP	resistant	resistant	resistant	resistant	resistant
Hydraulic fluids (polyglycol-based) HEPG	resistant	resistant	resistant	resistant	resistant
Hydraulic oils (bio-oil based) HEES	resistant	resistant	resistant	resistant	resistant
Hydraulic fluids (synthet. ester) HEES	resistant	resistant	resistant	resistant	resistant
Bio-hydraulic oil (biodegradable)	resistant	resistant	resistant	resistant	resistant
Hydraulic fluids HFC	resistant	resistant	resistant	resistant	resistant
Carbon dioxide	resistant	resistant	resistant	resistant	resistant
Carbon monoxide	resistant	resistant	resistant	resistant	resistant
Methane	resistant	resistant	resistant	resistant	resistant
Methanol (methyl alcohol)	resistant	resistant	resistant	resistant	resistant
Mineral oils	resistant	resistant	resistant	resistant	resistant
Unprocessed natural gas	resistant	resistant	resistant	resistant	resistant
Kerosene	resistant	resistant	resistant	resistant	resistant
Crude petroleum oil	resistant	resistant	resistant	resistant	resistant
Shell Naturelle, HF-E-46	resistant	resistant	resistant	resistant	resistant
Silicone oils	resistant	resistant	resistant	resistant	resistant
Skydrol 500	resistant	resistant	resistant	resistant	resistant
Skydrol 7000	resistant	resistant	resistant	resistant	resistant
Sea water	resistant	resistant	resistant	resistant	resistant

■ resistant
 ■ resistant under certain conditions
 ■ not resistant

* resistance depends on temperature

** sour gas requires reduction of material hardness when stainless steel is used

Please note that any material's resistance to aggressive media depends on the temperature of the media when used.



I Ozone resistance of elastomer seals

Ozone is a gas occurring naturally in the atmosphere and which protects the environment against solar ultraviolet radiation.

However, ozone is also a very strong oxidizing agent that attacks virtually all organic compounds. Elastomer seal materials, e. g. NBR, are particularly sensitive in this respect. Even a low atmospheric ozone concentration can impair product quality and service life considerably.

Ozone cracks the polymer chains of the seal material, thereby increasing the danger of tearing, even at low strain values (less than 10 %). This risk may even be increased under certain temperatures and humidity conditions.

In our production and storage processes, VOSS Fluid always ensures optimum conditions for the seal materials used. For example, all seals are protected against heat exposure, direct sunlight and soiling. Long storage times are also avoided.

To prevent damage, you should observe the following notes on storing seal materials:

- Elastomers must be stored at a temperature between +5 °C and +25 °C.
- Deformation of the seals during storage should be avoided.
- Seal materials should be protected against direct contact with heat sources or lighting fixtures. Direct sunlight or strong artificial lighting with an ultraviolet component must also be avoided.
- Extremely damp and extremely dry conditions must be avoided. There must be no condensation, which means that the relative humidity of the storage spaces must be lower than 70 %.
- Packaging, particularly plastic bags, must be protected against UV radiation.
- Please note that ozone can also be emitted by other sources, which means that the storerooms may not contain any mercury-vapour lamps, high-voltage equipment and electric motors or other equipment which might cause arcing or electrostatic discharges. Exposure to combustion exhaust fumes and organic gases must also be avoided.
- While in storage, elastomer seals must not be allowed to come into contact with solvents, oil and grease.
- The service life of seals depends to a large extent on the type of elastomer used. Under ideal conditions, seals made of NBR and HNBR can be stored for up to 6 years and FKM seals for up to 10 years.
- Seals pre-assembled on the couplings must be inspected for damage and contamination before they are finally installed.

Preventing faults and correcting malfunctions

All VOSS Fluid products have been carefully designed, taking into account ease of assembly, user-friendliness and the product's ability to reliably fulfil the intended purpose.

In order to ensure these qualities while the products are in use, the careful choice of hydraulic coupling systems along with their correct assembly and installation are of tremendous importance.

Almost 85 % of all failures are due to assembly or installation faults, leading to impaired sealing functions or even complete failure of the coupling or connection.

Distribution of causes of assembly faults:

- approx. 55 % too slack assembly for tube OD 20–42 mm
- approx. 40 % over-tightening for tube OD 6–18 mm
- approx. 5 % other assembly/installation faults

Faulty hydraulic lines not only lead to immense re-working costs and image loss, they can also have serious consequences such as accidents, fire hazards and environmental damage.

On the following pages, you will find system-related notes which will help you identify potential faults causes and take preventive action.

You must on all accounts observe the notes in this catalogue as well as the assembly and operating instructions for VOSS tube connection systems, tools and pre-assembly devices.

In addition, we recommend regular user training and assembly auditing by our qualified staff.



VOSSRing^M cutting ring couplings



Problem: "leaks"

Characteristic	Preventive measures
Inadequate penetration of cutting ring / not enough tube material raised in front of first cutting edge	Observe the specified tightening paths (number of turns) when manually pre-assembling the coupling
	<ul style="list-style-type: none"> - Mark strokes on parts to allow visual control of the rotation angle - Use lubricants to reduce the assembly forces required
	Use pre-assembly devices and VOSS tools
	Observe the specified pre-assembly device parameter settings
	<ul style="list-style-type: none"> - Inspect and check the pre-assembly devices regularly
	Select tubes as specified in DIN EN 10305-4
	Do not use rotary grinder or tube cutter
No visibly raised tube material in front of the first cutting edge / cutting ring is jammed on the tube	Only deburr tube edges internally and externally, do not sharpen them. Check deburring tool regularly.
	Cut tubes at right angles.
	Ensure that the area where the tube was cut is free of contamination, metal chips and paint
Tube has been pressed away from under the cutting ring / the tube bulges	The tube must be pushed firmly against the stop in the stud
	<ul style="list-style-type: none"> - Ensure that the assembly is not subject to stress during installation
Constriction behind the cutting ring / damaged thread / after being slackened, the nut cannot be unscrewed any further by hand / the nut bulges / damage to the hex spanner surfaces	Use pre-assembly devices and VOSS tools
	For thin-walled tubes, use suitable reinforcing supports
	Observe the specified tightening paths when manually assembling the coupling
	<ul style="list-style-type: none"> - Mark strokes on parts to allow visual control of the rotation angle - Use lubricants to reduce the required assembly forces
	Use pre-assembly devices and VOSS tools
	Observe the specified pre-assembly device parameter settings
	<ul style="list-style-type: none"> - Inspect and check the pre-assembly devices regularly
Select tubes as specified in DIN EN 10305-4	
Cutting ring is obviously too near the tube end / stud connector has expanded	Avoid frequent re-tightening of the coupling after assembly
	Avoid using extenders for small tubes and couplings
	Inspect and check the pre-assembly devices regularly
	<ul style="list-style-type: none"> - Use taper gauges
	Do not re-use screw coupling parts more than once
	Use pre-assembly stud, "high-strength material" version
	Use VOSS test gauges to check cutting-ring positions

VOSSRing^M cutting ring couplings



Problem: “leaks”

Characteristic	Preventive measures
Damage found on cutting ring after pre-assembly	<p>Inspect and check the pre-assembly devices regularly</p> <ul style="list-style-type: none"> - Inspect internal cone surfaces for damage and/or contamination <p>Using suitable lubricants increases tool service life</p>
Cutting ring leaks repeatedly	<p>Select the suitable system for the respective application (depending on temperature, pressure and type of load)</p> <p>Use a soft-sealing system (ES-4 / VOSSForm^{SOFT} / BV-10)</p> <p>Avoid duplicate dimension notations; take expansion loops into consideration to permit stress-free installation</p> <p>Use tube saddles or clamps</p> <p>Provide specified minimum length of straight tube leading to elbow</p>
Cutting ring has penetrated unevenly	<p>Provide specified minimum length of straight tube leading to elbow</p> <p>Select tubes as specified in DIN EN 10305-4</p>
Slight oil film around the coupling	<p>Only apply a small amount of lubricant to the components during assembly</p> <p>Degrease the components after assembly</p>
Components bind at surfaces in contact with one another	<p>Use suitable stainless steel assembly paste</p> <p>Apply sufficient lubricant to the contact surfaces</p> <p>Only use hardened pre-assembly studs for manual pre-assembly work</p> <p>Use pre-assembly devices and VOSS tools</p>



Problem: “tube rupture”

Characteristic	Preventive measures
Tube breaks off directly behind union nut	<p>Use tube saddles or clamps</p> <p>Ensure that components are not subject to stresses in installed condition, avoid shear loads</p> <p>Select the most suitable system for the respective application (depending on temperature, pressure and type of load)</p>
Tube breaks off directly behind the cutting ring	<p>Stop tightening as soon as the cutting ring has reached the block</p> <p>Avoid using extenders for small tubes and couplings</p>



Problem “tube pulled out of coupling”

Characteristic	Preventive measures
Cutting ring peels off the tube due to too shallow incision	<p>Before every final assembly, check the amount of tube material raised by the first cutting edge</p> <p>Re-assemble and tighten up cutting-ring couplings which were inadequately tightened</p>
No visibly raised tube material in front of the first cutting edge / cutting ring is jammed on the tube	Before every final assembly, check the amount of tube material raised by the first cutting edge
Cutting ring has been placed on tube the wrong way around	Check that the cutting ring faces the correct direction

VOSS taper seal couplings DKO



Problem: “leaks”

Characteristic	Preventive measures
Nut comes loose during operation	<p>Observe the specified tightening paths (number of turns) when finally assembling the coupling</p> <ul style="list-style-type: none"> - Mark strokes on parts to allow visual control of the rotation angle - Use lubricants to reduce the required assembly forces <p>Observe specified tightening torque where this is the assembly criterion</p>
Damaged thread / after being slackened, the nut cannot be unscrewed any further by hand / the nut bulges / damage to the hex spanner surfaces / wire pin has come out of the groove	<p>Observe the specified tightening paths (number of turns) when finally assembling the coupling</p> <ul style="list-style-type: none"> - Mark strokes on parts to allow visual control of the rotation angle - Use lubricants to reduce the required assembly forces <p>Avoid using extenders for small tubes and couplings</p>
Missing O-ring	<p>Check that all components are in place before assembling the coupling</p> <p>Install the soft-seal</p>
Slight oil film around the coupling	<p>Only apply a small amount of lubricant to the components during assembly.</p> <p>Degrease the components after assembly</p>
Damaged O-ring	<p>Align DKO coupling properly before tightening it by hand. Hold the connecting piece body with a spanner to counter tightening torque when finally tightening up the connection</p> <p>Use lubricants to reduce the assembly forces required and to reduce soft-seal wear</p> <p>Ensure that components are not subject to stresses in installed condition, avoid shear loads</p>
Couplings leak repeatedly	<p>Select the most suitable system for the application (depending on temperature, pressure and type of load and stress)</p>



Problem: “tube rupture”

Characteristic	Preventive measures
DKO coupling cracks open radially along the groove for the wire pin	<p>Install the connected tubes and hoses in such a way that no additional shear loads will act on the coupling</p> <p>Ensure that the components are not subjected to stresses in the installed state</p>

VOSS 24° couplings



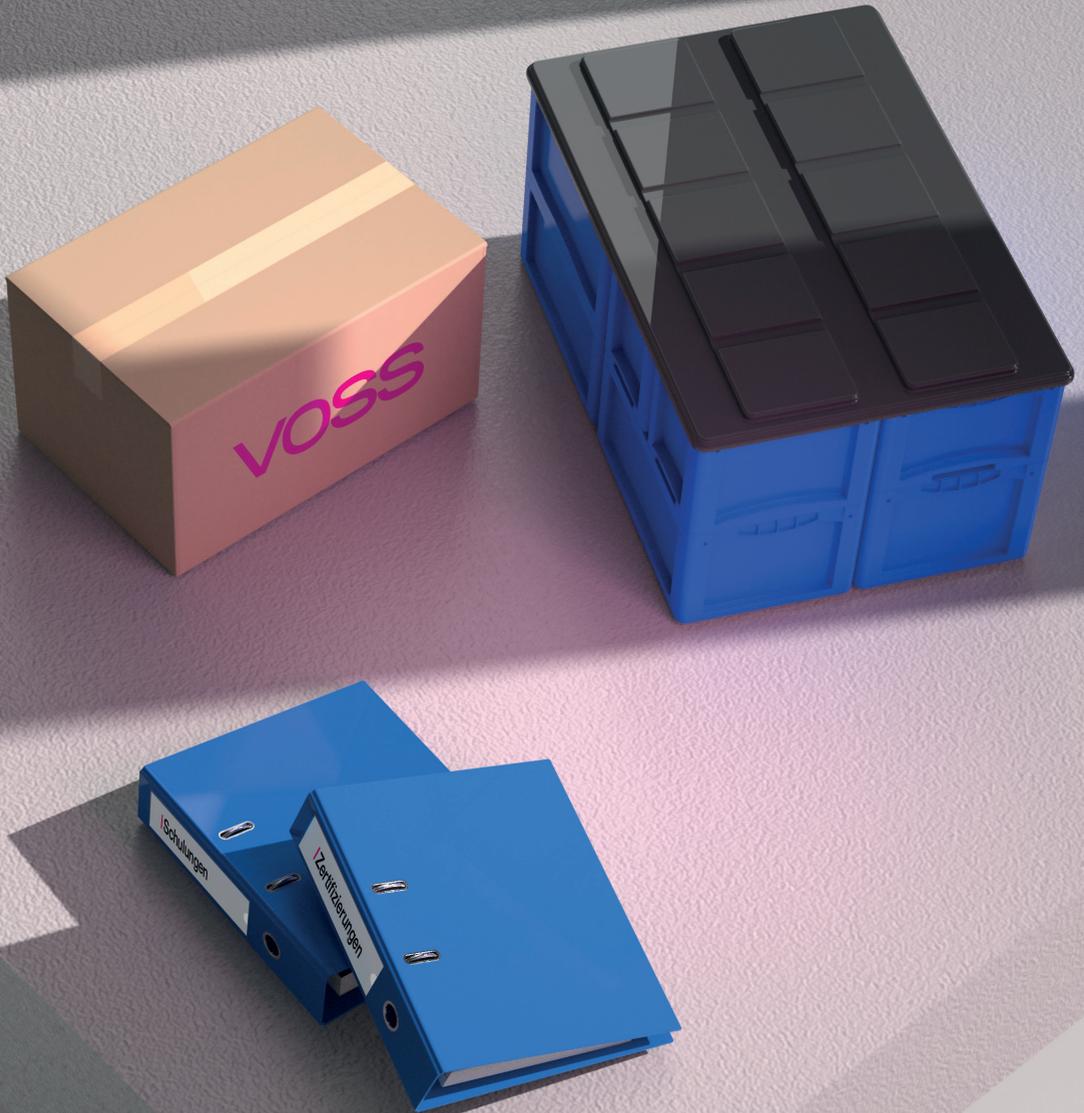
Problem: "leaks"

Characteristic	Preventive measures
Screwed connection pulls out of the threads	Observe all specified tightening torques - Use lubricants
Damaged thread / damage to the hex spanner surfaces	Observe all specified tightening torques - Use lubricants Avoid frequent re-tightening of the coupling after assembly Avoid using extenders for small tubes and couplings
Thread tears away	Observe all specified tightening torques Use a spanner to hold the coupling body when assembling the coupling
Missing seal (PEFLEX or O-ring)	Check that all components are in place before assembling the coupling Install the soft-seal
Threaded section cannot be screwed into the female part	Check whether the threads are imperial or metric (danger of confusion) - Use the VOSS thread gauge board to determine the thread type and size
Leaks in the threads	Keep sealing surfaces and soft-seals clean Use the correct type of seal for every threaded hole Avoid screwing conical male stud connectors into cylindrical threaded holes - Use components with adjustable screw connections as an alternative
Leakage at recesses	When re-assembling used components, especially male stud connectors with a sealing edge (form B), renew the recess every time Use the correct type of seal for every threaded bore
Damaged thread / hairline cracks in the male stud connector	Correct handling and transportation Inspect and check coupling components before assembly Check that the DKO cone has a stop to prevent over-tightening of the connection
Slight oil film around the coupling	Only apply a small amount of lubricant to the components during assembly Degrease the components after assembly

Characteristic	Preventive measures
Components bind at surfaces in contact with one another	<ul style="list-style-type: none"> Use suitable stainless steel assembly paste Apply sufficient lubricant to the contact surfaces
Male stud connectors cannot be unscrewed manually after being initially slackened	<ul style="list-style-type: none"> Observe the tightening torques specified for the respective mating materials Use suitable lubricants
Metal chips in the threaded hole	Clean the threads

I Services

Increase process reliability, reduce lead times and save process costs through tailor-made solutions



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Our service for permanent leak-tightness and efficiency	P.202
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VOSS

Our service for permanent leak-tightness and efficiency

Assembly trainings and audits, with VOSS quality

Exclude all sources of error and let us advise you!

The biggest enemy of the hydraulic system is leakage. There are many possible sources of error, but most often humans are the key. Only highly qualified employees can detect and avoid potential errors at an early stage. VOSS offers regular training courses for this purpose: tailored to the customer's needs, directly on the customer's premises or in our training facilities.

Within the scope of an assembly audit, we look over your employees' shoulders, analyze processes, check assembly stations and equipment and ultimately work out a tailor-made training course that sustainably increases productivity: fewer errors, faster results and lower costs. In this way, continuous improvements to your processes and compliance with the highest safety standards can be ensured.

Our offer

- General training program in hydraulic application technology
- Optimization workshops tailored to customer processes
- Assembly training courses for the qualification of employees in theory and practice
- Assembly audits

Your added value: solutions for maximum economic efficiency

Increase the efficiency of your hydraulic applications!

The high added value by VOSS Fluid products and services provides your products and systems with lasting technical and economic advantages. This added value is defined by the three core competencies from the areas of development and production, long-term corrosion protection and availability and services.

New potential for improvement for the customer is constantly being tapped through constant critical scrutiny of the company's own processes, ongoing investments and the deployment of qualified specialist personnel.

Thanks to their high product quality and user-friendliness, VOSS Fluid product solutions always guarantee sustained leak protection without a negative influence on the overall system costs.

- High process reliability in assembly
- Short assembly times, high productivity
- Avoid rework
- Permanently leak-free connections
- Use of the optimal components/systems
- Improving the quality of your product
- Reduce the costs of your production



Sustainable surface coating by the specialist

Protect your machines and systems against corrosion during a lifetime of use!

The process-safe VOSS coat surface coating ensures best corrosion protection properties and thus ensures optimum protection of VOSS products.

The in-house galvanic plant at VOSS works without chromium VI, uses very little water and produces a coating that provides highly sustainable corrosion protection throughout its lifetime. This is another step we are taking to integrate innovative and environmentally friendly technologies into our processes.

- Highest corrosion protection in hydraulic connection technology
- Optimum design of in-house electroplating to avoid thread damage
- Continuous further development of the surface to improve corrosion protection and mountability
- Optimize your corrosion protection measures
- Increase your customers satisfaction

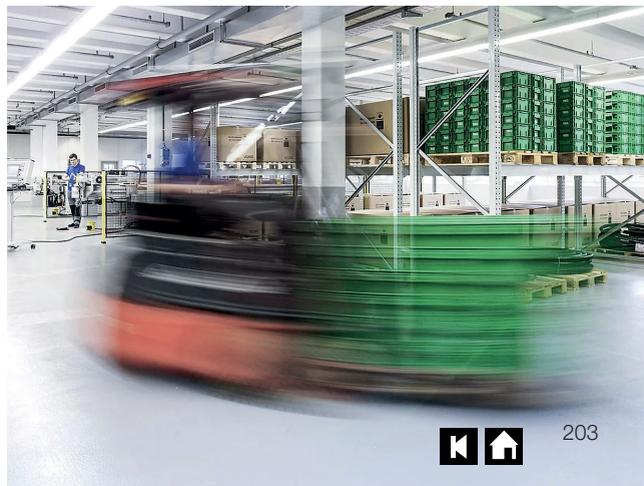
Intelligent logistics concepts tailored to your needs

Optimize your supply chain with the highest regional availability and comprehensive services!

Only a fraction of the cost of connection components is accounted for by the actual product. The proportion of logistics costs is disproportionately high for these C parts. However, a lack of components causes the same trouble in assembly as the absence of A parts.

VOSS Fluid knows the specific needs of the customers and has corresponding logistics solutions which lead to significant savings in process costs, reduction of throughput times and high process reliability. A logistics solution based on the specific application is developed and practiced in cooperation with the customer.

- Delivery service level > 99 %
- Reduction of your inventory levels and replenishment times
- Complete support for KANBAN implementation
- Analysis and documentation of consumption
- Web-KANBAN as online monitoring of your entire coupling logistics
- Simplification/automation of your supply chain
- Reduction of your materials management costs



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