

Swivel joints



Basic information

Hoses are designed to convey all types of media flexibly from A to B. Depending on the formulation, they must withstand very different pressures, media, consistencies and temperatures.

However, they are not designed to cope with mechanical loads such as tensile forces, abrasion, bending or torsion. Some problems can be alleviated by proper handling. However, they can also be solved – by using suitable fittings and systems by RS.

Take the torsion problem, for example.

RS has it all figured out and simply transfers the rotary forces from the overloaded hose to fittings that are specially designed for the purpose.

The advantage is obvious: The once-off investment in high-quality and long-lasting swivel joints turns the “consumable” hose into longer-lasting component of the hose line. And a long-lasting product represents a pure cost saving.

Application areas

- Loading processes
- Coupling stations
- Filling processes

Your benefits at a glance

- Reduced wear in hose lines and pipelines
- Simplified handling for coupling operations
- Over 100 swivel joints available from stock
- Customer-specific special versions from DN 13 to DN 100



Swivel joints

Swivel joints at a glance 4-7

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The TOP 5 application areas

	Chemicals				Gas			Tanker trucks			
Dry disconnect couplings (dry break couplings)	TR series  1" - 6"	TM series TMV  1" - 4"	TMM  1" - 4"	TK series  1" - 4"	TDV  1" - 2"	TD series	TDM  1" - 2"	TR series  1" - 6"			
Safety breakaway couplings	ABV  1" - 4"	ABV-S  1" - 4"	ABVM  6" - 12"	ABVM  2" - 6"	ABVL  2" - 6"	ASVL  2" - 8"	ABVN  2"	ABFC  2"	ABML  2" - 6"	ABV  1" - 4"	ABVL  2" - 6"
Hose loading arms	SGA  Length 2,5 m - 6 m DN 25 - DN 100										
Swivel joints/ Ball swivel joints	DG  1/2" - 4"	DGLL  1" - 3"	Radial stress-resistant swivel joints	KDG  1" - 4"	DG  1/2" - 2"	Hose swivel joints  1/2" - 2"	Heavy version  1/2" - 2"	DGLL  1" - 3"			
Quick couplings	Quick couplings  1" - 2"	Storz coupling  1" - 4"	Tank truck couplings  2" - 4"				Quick coupling  1" - 2"				
Adapters	Reducers  1/2" - 4"	Flange threaded nipples  1/2" - 4"	Reducing nipples  1/2" - 4"	Double nipples  1/2" - 2"	Reducers  1/2" - 2"		Reducers  1/2" - 4"				
Hose connection fittings	Press sleeves  DN 25 - DN 100 Support	Couplings with threaded ferrules  ECTFE-coating	Clamps  DN 13 - DN 100 PP	Clamps  DN 13 - DN 100	Clamps  Support	Clamps  Support	Press sleeves  DN 25 - DN 100 Support				
Standard fittings	TAL-Connect  DN 10 - DN 100										
Steam cleaners	DSG  3/4"			DSG  3/4"							

Swivel joints



Silo				Mechanical and plant engineering					Petrochemicals					
TM series	TKU series	TR Container-ausführung		TR series TRV	TRM	TM series TMV	TMM	TKU series	TR series TRV	TRM	TM series TMV	TMM	TKU series	
1" - 4"	1" - 4"			1" - 6"	1" - 6"	1" - 4"	1" - 4"	1" - 4"	1" - 6"	1" - 6"	1" - 4"	1" - 4"	1" - 4"	
1" - 4"	6" - 12"	2" - 6"		1" - 4"	1" - 4"	6" - 12"			1" - 4"	1" - 4"	6" - 12"	2" - 6"		
2" - 8"	2"	2"	2" - 6"	2" - 6"	2" - 8"	2"	2"		2" - 6"	2" - 8"	2"	2"	2" - 6"	
2" - 6 m	DN 25 - DN 100			Length 2,5 m - 6 m		DN 25 - DN 100			Length 2,5 m - 6 m		DN 25 - DN 100			
1" - 4"	Hose swivel joints			1" - 3"		Radial stress-resistant swivel joints			1/2" - 4"	Hose swivel joints				
Radial stress-resistant swivel joints				3/4" - 4"		3/4" - 4"			1" - 3"	Radial stress-resistant swivel joints		1" - 4"		
1" - 4"	Tank truck couplings			1" - 2"		1" - 4"	Tank truck couplings			1/2" - 4"	1/2" - 4"	Tank truck couplings		
1/2" - 4"	Reducing nipples			1/2" - 4"		1/2" - 4"	Reducers			1/2" - 4"	1/2" - 4"	Reducing nipples		
Couplings with threaded ferrules				DN 25 - DN 100		Couplings with threaded ferrules	DN 13 - DN 100			Couplings with threaded ferrules		Clamps		
ECTFE-coating				Support		ECTFE-coating		PP			Support		Support	
1/2" - 4"	DN 13 - DN 200	1/2" - 3"	DN 13 - DN 100	DN 13 - DN 100	1/2" - 4"	DN 13 - DN 200	1/2" - 3"	DN 13 - DN 100	DN 13 - DN 200	DN 13 - DN 100	DN 13 - DN 100	DN 13 - DN 100	DN 13 - DN 100	
				TAL-Connect										
				DN 10 - DN 100										
3/4"									3/4"					

Overview of swivel joints

Swivel joint DG

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Torsion protection that can be fitted along the line – universally deployable for hose lines that are moved at regular intervals, such as those in loading, filling, and tanking systems or mixing stations.

Nominal widths

DN 13 to DN 100

- **Materials**
Stainless steel 1.4571
Brass 2.0401
Hastelloy 2.4610
Others on request
- **Connections**
Female thread and/or
Male thread
- **Seals**
FKM, FEP, NBR, FFKM,
EPDM
Others on request
- **Pressure area**
0,5 to 16 bar
- **Temperature range**
-20 °C to 120 °C, dependent
on sealant
Lower or higher
temperatures also possible

Universal swivel joint for virtually every application scenario

Hose swivel joint SDL/SDS

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Torsion protection that is fitted directly in the hose – universally deployable for hose lines that are moved at regular intervals, such as those in loading, filling, and tanking systems or mixing stations.

Nominal widths

DN 13, DN 19, DN 25,
DN 38, DN 50
Others on request

- **Materials**
Stainless steel
1.4571 / 1.4301
Others on request
- **Connections**
Male thread
- **Seals**
FKM, NBR, EPDM
Others on request
- **Pressure area**
SDL: 0,5 to 16 bar
SDS: 0,5 to 25 bar
- **Temperature range**
-20 °C to 180 °C,
dependent on sealant
Lower or higher
temperatures also possible

Swivel joint for direct installation in the hose line with hose support similar to EN 14420-2 or EN 14423

Machine swivel joint DGLL

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Torsion protection that can be fitted along the line with industrial bearings - for use in mechanical engineering/robotics for hose lines and pipelines that are subjected to constant movement.

Nominal widths

DN 25, DN 40, DN 80
Others on request

- **Materials**
Stainless steel 1.4571
Others on request
- **Connections**
Female thread and/or
Male thread
- **Seals**
FKM, NBR
Others on request
- **Pressure area**
DN 25 and DN 40:
0,5 to 25 bar
DN 80: 0,5 to 10 bar
- **Temperature range**
-20 °C to 100 °C,
dependent on sealant
Lower or higher
temperatures also possible

Swivel joint for applications where freedom of rotation must remain high even under pressure

Steam swivel joint DDG

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Double-row torsion protection that can be fitted along the line – specially developed for use with steam and hot water – with steam-proof seals and suitable for the high proof pressures in steam hoses.

Nominal widths

DN 13, DN 19 and DN 25
Others on request

- **Materials**
Stainless steel
1.4571 / 1.4301
Others on request
- **Connections**
Female thread and/or
Male thread
- **Seals**
FFKM, EPDM
Others on request
- **Pressure area**
EPDM: 0,5 bis 18 bar
FFKM: 0,5 bis 25 bar
- **Temperature range**
EPDM: 0 °C to 180 °C
FFKM: 0 °C to 225 °C

Swivel joint specially for use with steam/hot water

Abrasive swivel joint ADG Page 20



Torsion protection that can be fitted along the line with integrated solids stripper – for use with liquids containing solid matter.

- **Nominal widths**
DN 25, DN 80
Others on request
- **Materials**
Stainless steel 1.4571
Others on request
- **Connections**
Female thread and/or
Male thread
- **Seals**
FKM
Others on request
- **Pressure area**
0,5 to 16 bar
- **Temperature range**
-20 °C to 120 °C,
dependent on sealant
Lower or higher
temperatures also possible

Swivel joint in which e.g. solid matter must be kept away from the sealants

Radial stress-resistant swivel joint QDG Page 22



Torsion protection with double ball paths that can be fitted along the line – to be used in all situations where process-related higher lateral forces are exerted on the swivel joint, such as in pipelines.

- **Nominal widths**
DN 20 to DN 100
- **Materials**
Stainless steel 1.4571
Hastelloy 2.4610
Others on request
- **Connections**
Female thread and/or
Male thread
- **Seals**
FKM, FEP, NBR, FFKM,
EPDM
Others on request
- **Pressure area**
0,5 to 25 bar
- **Temperature range**
-20 °C to 120 °C,
dependent on sealant
Lower or higher
temperatures also possible

Swivel joint specially for use with high transverse loads

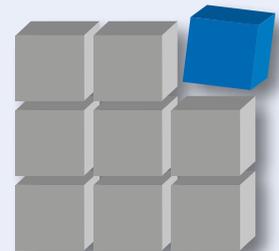
Ball swivel joints KDG Page 24



Torsion, bending and kink protection that can be fitted along the line – for applications with restricted movement conditions and/or larger movement radii of the hose line.

- **Nominal widths**
DN 25 to DN 100
- **Materials**
Stainless steel
1.4571 / 1.4301
Brass 2.0401
Others on request
- **Connections**
Female thread and/or
Mail thread, flange
- **Seals**
FKM, NBR, FFKM, EPDM
Others on request
- **Pressure area**
DN 25 bis DN 80:
0,5 to 16 bar
DN 100: 0,5 to 10 bar
- **Temperature range**
-20 °C to 120 °C,
dependent on sealant
Lower or higher
temperatures also possible

Swivel joint with angle compensation, swivel angle: 50° (+/- 25° from the axis)



Additional customer-specific designs on request.



Swivel joints

Universal swivel joint for virtually every application scenario

Torsion protection that can be fitted along the line – universally deployable for hose lines that are moved at regular intervals, such as those in loading, filling, and tanking systems or mixing stations.

Hoses are designed to convey all types of media flexibly from A to B. Depending on the formulation, they must withstand very different pressures, media, consistencies and temperatures.

However, they are not designed to cope with mechanical loads such as tensile forces, abrasion, bending or torsion.

Some problems can be alleviated by proper handling. However, they can also be solved – by using suitable fittings and systems by RS.

Take the torsion problem, for example. RS has it all figured out and simply transfers the rotary forces from the overloaded hose to fittings that are specially designed for the purpose.



The advantage is obvious: The once-off investment in high-quality and long-lasting swivel joints turns the “consumable” hose into longer-lasting component of the hose line. And a long-lasting product represents a pure cost saving.

Hoses are an investment. However, the situation is often different in practice. Careless handling quickly leads to damage, therefore resulting in costs. Careful handling, on the other hand, extends the lifetime of the hose and saves money in the process. This applies in virtually all sectors involved in professional fluid handling.

Your benefits at a glance

- Adjustable
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- prevents hose torsion

Application

- Universal torsion protection for hoses during loading
- Highly versatile for different industries

Additional technical information

Technical data

- High-quality sealing materials
O-ring: FKM
EPDM
FEP
NBR
FFKM
Others on request
- Materials: Stainless steel (1.4571)
Brass (2.0401)
Others on request
- Connection: Female thread and/or
male thread
- Nominal widths: DN 13 to DN 100
- Temperature range: -20 °C to 120 °C
Dependent on sealant
Lower or higher
temperatures also possible
- Pressure area: 0,5 to 16 bar

Zertifikate

- TA-Luft, GOST-R

Dimensions and weights

DN	13	15	20	25
Connection	G 3/8"	G 1/2"	G 3/4"	G 1"
D (mm)	29	34	38	44
L1 (mm)	52	52	53	60,5
L2 (mm)	41,5	41,5	42,5	48
SW	27	32	36	41
Weight* (kg)	0,16	0,21	0,24	0,34

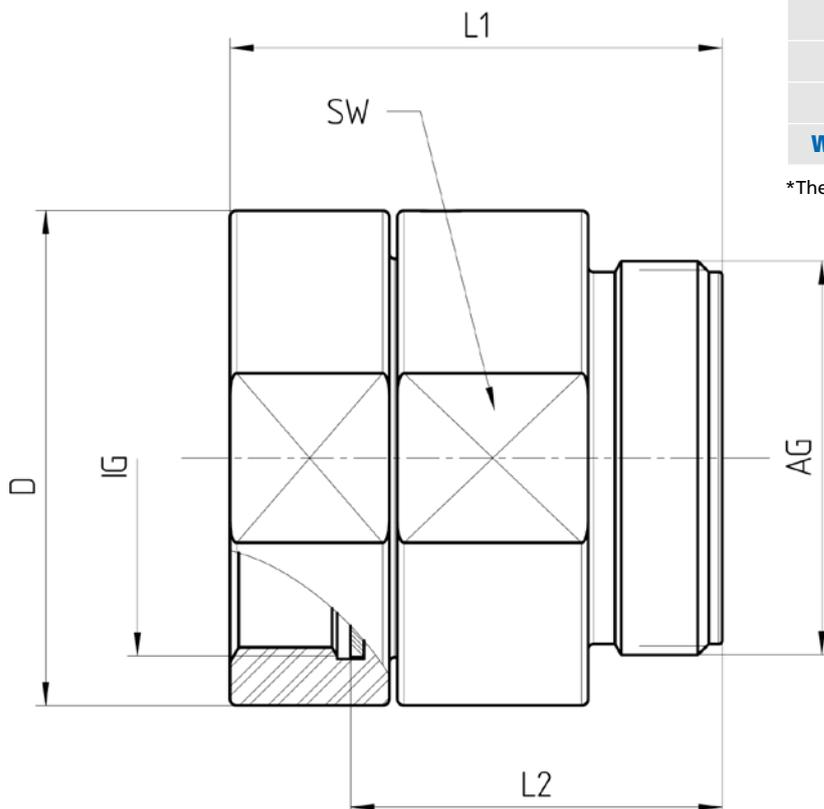
Dimensions and weights

DN	32	40	50
Connection	G 1 1/4"	G 1 1/2"	G 2"
D (mm)	53	58	74,5
L1 (mm)	56	62	73,5
L2 (mm)	44	46	55,5
SW	50	55	70
Weight* (kg)	0,44	0,57	0,95

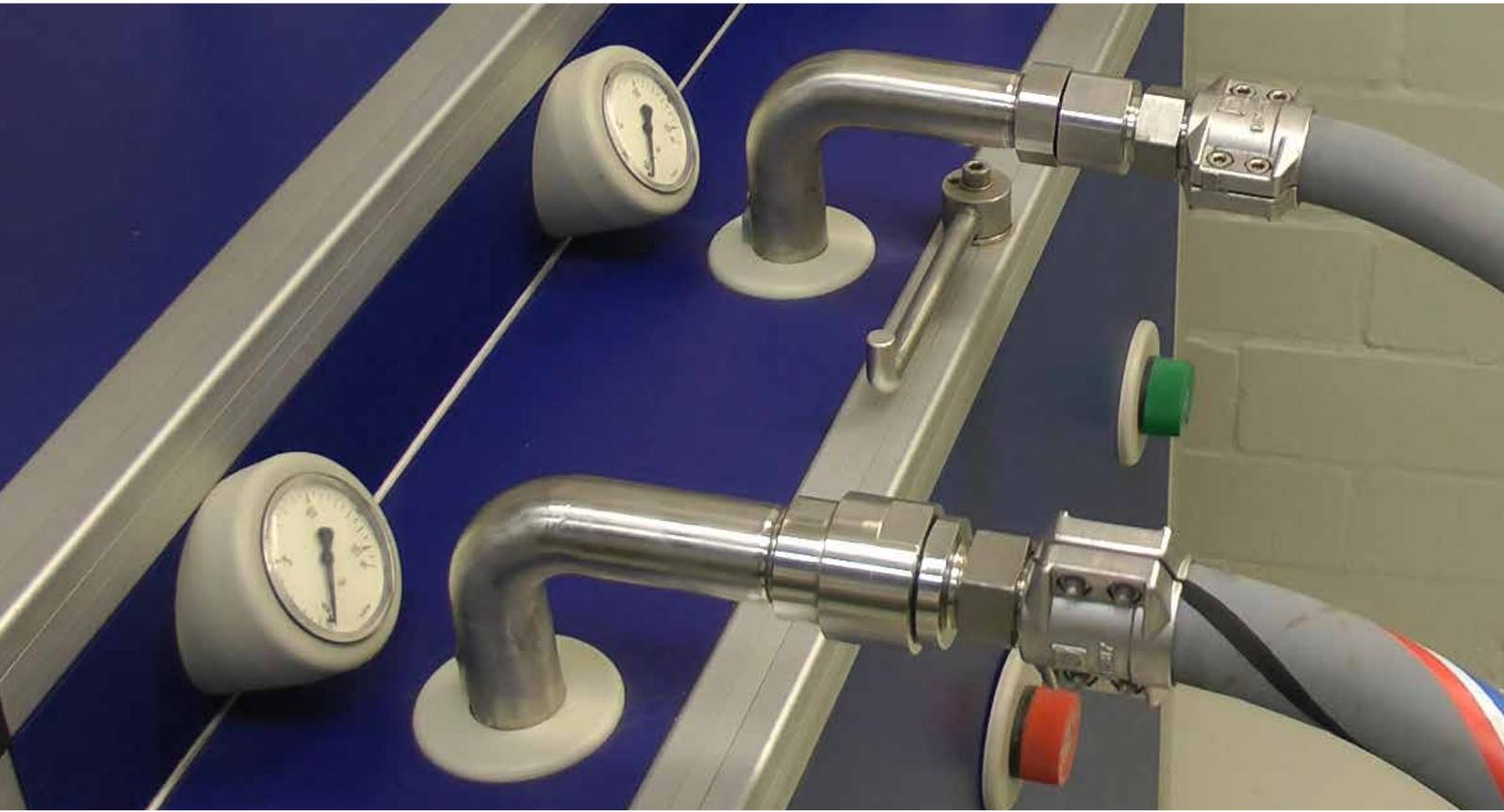
Dimensions and weights

DN	65	80	100
Connection	G 2 1/2"	G 3"	G 4"
D (mm)	90	105	130
L1 (mm)	77,5	79,5	82,5
L2 (mm)	56,5	59,5	60,5
SW	85	100	125
Weight* (kg)	1,28	1,65	2,25

*The weight applies to stainless steel only.



In use

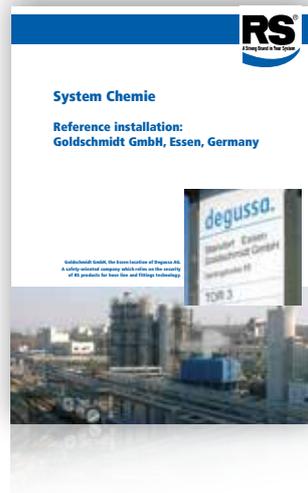


The references

**Infracor,
Marl**



**Evonik Goldschmidt GmbH
(chemical manufacturing), Essen**





Hose swivel joint

Swivel joint for direct installation in the hose line

Torsion protection that is fitted directly in the hose – universally deployable for hose lines that are moved at regular intervals, such as those in loading, filling, and tanking systems or mixing stations.

RS hose swivel joints are swivel joints with an integrated hose support. The direct connection to the hose line is similar to the hose couplings in accordance with EN ISO 14420-2 (DIN 2817) for the SDL hose swivel joint or in accordance with EN ISO 14423 (DIN 2826) for the SDS hose swivel joint. Its use means that an additional fitting is no longer required. The resulting interface, which can form an additional wear point or a potential leak, is thus also eliminated. Particularly when dealing with steam, hose swivel joints are a popular variant. They are used in the chemicals sector, in plant engineering and power plant construction and in hose stations.

Hoses are designed to convey all types of media flexibly from A to B. Depending on the formulation, they must withstand very different pressures, media, consistencies and temperatures. However, they are not designed to cope with mechanical loads such as tensile forces, abrasion, bending or torsion. Some prob-



lems can be alleviated by proper handling. However, they can also be solved – by using suitable fittings and systems by RS. Take the torsion problem, for example. RS has it all figured out and simply transfers the rotary forces from the overloaded hose to fittings that are specially designed for the purpose.

The advantage is obvious: The once-off investment in high-quality and long-lasting swivel joints turns the “consumable” hose into longer-lasting component of the hose line. And a long-lasting product represents a pure cost saving.

Hoses are an investment. However, the situation is often different in practice. Careless handling quickly leads to damage, therefore resulting in costs. Careful handling, on the other hand, extends the lifetime of the hose and saves money in the process. This applies in virtually all sectors involved in professional fluid handling.

Your benefits at a glance

- Adjustable
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- Prevents hose torsion

Application

- Torsion protection can be connected to the hose line without additional sealing points
- Highly versatile for different industries
- Chemicals/petrochemicals: SDL (similar to safety clamp screw couplings in accordance with EN ISO 14420-2 (DIN 2817))
- Steam: SDS (similar to safety clamp screw couplings in accordance with EN ISO 14423 (DIN 2826))

Technische Zusatzinformationen

Technical data

- High-quality sealing materials
O-ring: FKM
NBR
EPDM
Others on request
- Materials: Stainless steel (1.4571 / 1.4301)
Others on request
- Connection: Male thread
- Nominal widths: DN 13, DN 19 and DN 25
Others on request
- Temperature range: -20 °C to 180 °C
- Pressure area: SDL: 0,5 to 16 bar
SDS: 0,5 to 25 bar
- Connection similar to hose support in accordance with EN ISO 14420-2 or EN ISO 14423

Certificates

- TA-Luft (German Technical Instructions on Air Quality Control), GOST-R

Dimensions and weights SDS

DN	13	19	19	19
Connection	R 1/2"	R 1/2"	R 3/4"	R 1"
D1 (mm)	29	29	29	40
D2 (mm)	13	19	19	19
L1 (mm)	91	91	90,5	94
L2 (mm)	16	16	17	20
L3 (mm)	45	52	52	52
SW	27	27	27	36
Weight* (kg)	0,14	0,18	0,2	0,26

Dimensions and weights SDS

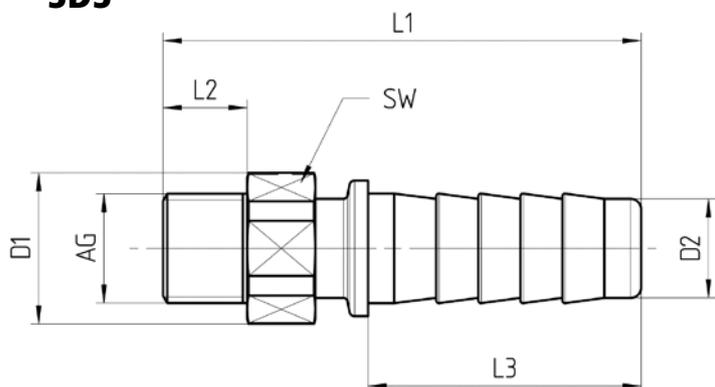
DN	25	38	50
Connection	R 3/4"	G 1 1/2"	G 2"
D1 (mm)	29	68	78
D2 (mm)	25	38	50
L1 (mm)	93,5	169	178
L2 (mm)	17	18	20
L3 (mm)	52	72	75
SW	27	60	70
Weight* (kg)	0,24	1,3	1,72

Dimensions and weights SDL

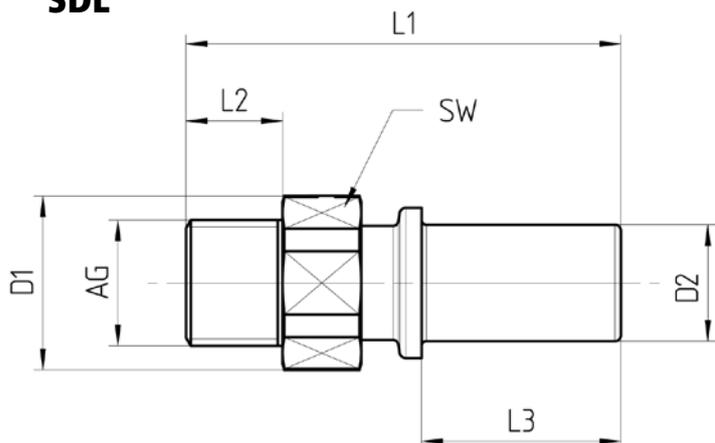
DN	13	19	19
Connection	R 1/2"	R 1/2"	R 3/4"
D1 (mm)	29	29	29
D2 (mm)	13,4	19,4	19,4
L1 (mm)	73	73	73
L2 (mm)	17	17	17
L3 (mm)	34,5	34,5	34,5
SW	27	27	27
Weight* (kg)	0,12	0,15	0,16

*The weight applies to stainless steel only.

SDS



SDL



In use



The references

Infracor, Marl

Reference 

**Infracor Lager- und Speditions-GmbH,
Marl**

In particular areas, Infracor provides the highest safety requirements, such as the highest safety standards.



Evonik Goldschmidt GmbH (chemical manufacturing), Essen

Reference 

System Chemie

Reference installation:
Goldschmidt GmbH, Essen, Germany

Goldschmidt GmbH, the Essen location of Degussa AG, a highly technical company with a focus on the research of its products for fine- and filling technology.





Machine swivel joints

Swivel joint for applications where freedom of rotation must remain high even under high pressure

Torsion protection that can be fitted along the line with industrial bearings - for use in mechanical engineering/robotics for hose lines that are subjected to constant movement.



The DGLL machine swivel joint was specially developed for mechanical engineering in conjunction with users, e.g. for robotics applications with extreme loads. In the automotive industry, for example, production frequently takes place around the clock. The swivel joint must turn reliably and precisely thousands of times per day.

An error that occurs here puts the entire production process at risk. Time-consuming and costly maintenance work can only be carried out while machines are at a standstill. It's a situation that calls for a reliable product.

The extremely long-lasting DGLL machine swivel joint stands

out because it uses an industrial ball bearing along with particularly low-friction X-rings as the sealant. This significantly reduces the influence of the medium's pressure on the swivel joint's ability to move compared with a standard swivel joint.

As a result, the DGLL, which is particularly smooth-running compared with conventional swivel joints especially when under pressure, is also ideal for use in applications involving high load changes in robotics as well as in mechanical and plant engineering.

Your benefits at a glance

- Low friction even during rotational movements under pressure
- Adjustable
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- prevents hose torsion

Application

- Smooth-running rotary connection e.g. for robot arms
- Highly versatile for different industries

Additional technical information

Technical data

- High-quality sealing materials
O-ring: FKM
NBR
Others on request
- Materials: Stainless steel (1.4571)
Others on request
- Connection: Female thread and/or
male thread
- Nominal widths: DN 25, DN 40 and DN 80
other on request
- Temperature range: -20 °C to 100 °C
Dependent on sealant
Lower or higher
temperatures possible
- Pressure area: DN 25, DN 40: 0,5 to 25 bar
DN 80: 0,5 to 10 bar

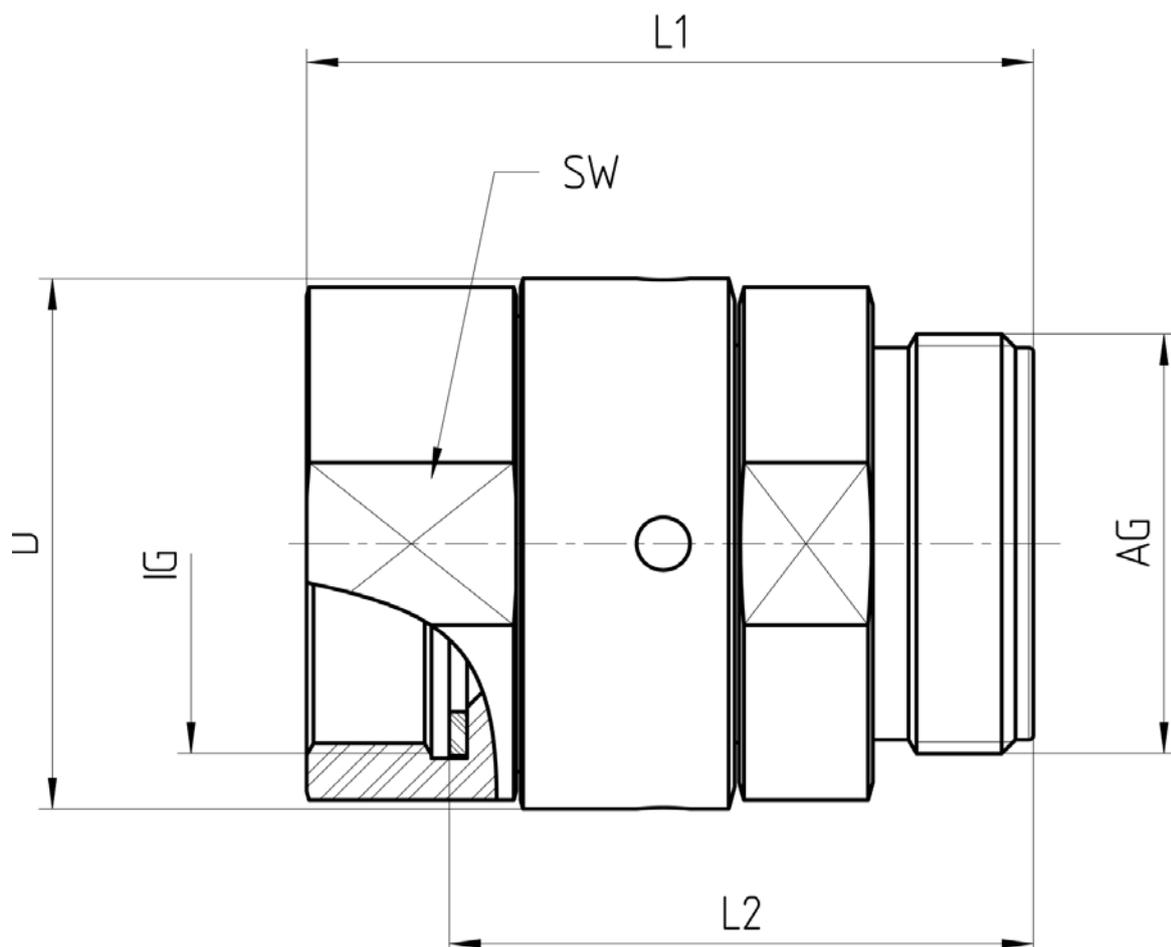
Certificates

- TA-Luft (German Technical Instructions on Air Quality Control)

Dimensions and weights

DN	19	25	25	40	80
Connection	G 3/4"	G 1"	G 1"	G 1 1/2"	G 3"
D (mm)	40	44,5	50	60	129
L1 (mm)	78,5	80	71,5	81,5	133
L2 (mm)	68	67,5	59	64,5	112
SW	34	41	41	55	100
Weight* (kg)	0,45	0,55	0,57	0,89	5

*The weight applies to stainless steel only.



In use



The references

Vehicle component production, Landshut

Reference 

Vehicle component production
Landshut

Production of plastic parts
using injection molding technology





Steam swivel joints

Swivel joint specially for use with steam/hot water

Double-row torsion protection that can be fitted along the line – specially developed for use with steam and hot water – with steam-proof seals and suitable for the high proof pressures in steam hoses.



The steam swivel joint is a variant of the radial stress-resistant, double-row swivel joints with a particular focus on steam or hot-water applications.

Unlike standard double-row sealing joints, the sealant is made of a special, steam-resistant elastomer. The structure of the swivel joint is particularly robust so that the swivel joint can also withstand the increased requirements of a steam hose pipe test with 5 times the testing pressure. The wall strength was also increased.

Steam and hot water is used in industry either as a heat

exchanger or as a cleaning or sterilisation medium. In addition, the specially developed steam hoses are not protected per se against damage due to torsion. In these situations, the use of a swivel joint is a proven means of protecting the steam line from damage. Depending on the temperature range or pressure of the medium to be transferred, steam or hot water can pose a significant hazard for the operators of a steam hose line should the hose line fail due to wear and tear.

Your benefits at a glance

- Adjustable
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- Prevents hose torsion

Application

- Steam
- Hot water

Additional technical information

Technical data

- High-quality sealing materials
O-ring: FFKM
EPDM
Others on request
- Materials: Stainless steel (1.4571/1.4301)
Others on request
- Connection: Female thread and/or
male thread
- Nominal widths: DN 13, DN 19 and DN 25
- Temperature range: EPDM: 0 °C to 180 °C;
FFKM: 0°C to 225 °C
- Pressure aera: EPDM: 0,5 to 18 bar
FFKM: 0,5 to 25 bar

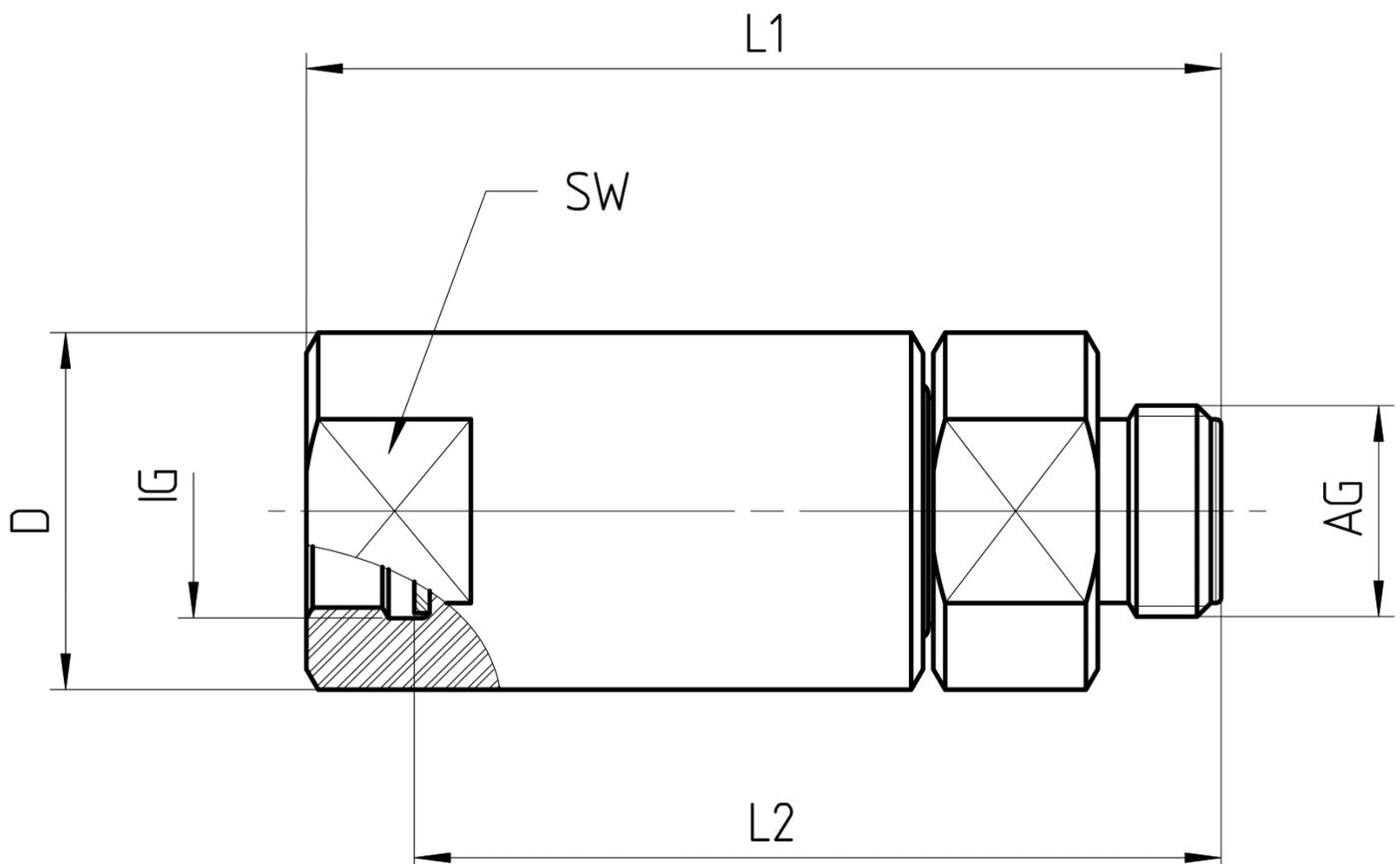
Certificates

- TA-Luft
(German Technical Instructions on Air Quality Control)

Dimensions and weights

DN	13	19	25
Connection	G 1/2"	G 3/4"	G 1"
D (mm)	35	44	48
L1 (mm)	89	91	91
L2 (mm)	78,5	80,5	79
SW	30	41	41
Weight* (kg)	0,46	0,76	0,76

*The weight applies to stainless steel only.



In use



The references

**Infracor,
Marl**





Abrasive swivel joints

Swivel joint in which e.g. solid matter is kept away from the sealants

Torsion protection that can be fitted along the line with integrated solids stripper – for use with liquids containing solid matter. The abrasive swivel joint is a version of the radial stress-resistant, double-row swivel joint featuring an additional stripper made of PTFE. The stripper prohibits the penetration of solid particles into the sealant area. This significantly increases the gasket's idle time in comparison to the standard swivel joints.



The fluid to be loaded is not always free of solid matter. Particularly when transporting crude oil or in the paint and coatings industry, the media contain solid matter such as sand and pigments.

In conventional swivel joints, this solid matter can very quickly cause the mechanical destruction of the seals used. For this reason, the abrasive swivel joint is equipped with a stripper,

which is fitted in front of the actual seal. This prevents the solid matter coming into contact with the seal in the first place.

The service life of a swivel joint used to convey solid matter or abrasive media is thus significantly extended. This saves maintenance and repair costs and enhances safety during the loading process.

Your benefits at a glance

- Not sensitive to solid matter in the medium
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- prevents hose torsion

Application

- Media with solid matter content
- Paints and coatings (pigments)

Additional technical information

Technical data

- High-quality sealing materials
O-Ring: FKM, FFKM, EPDM, NBR
solids stripper: PTFE
Others on request
- Materials: Stainless steel (1.4571)
Others on request
- Connection: Female thread and/or
male thread
- Nominal widths: DN 25 to DN 100
- Temperature range: -20 °C to 120 °C
Dependent on sealant
Lower or higher
temperatures also possible
- Pressure area: 0,5 to 16 bar

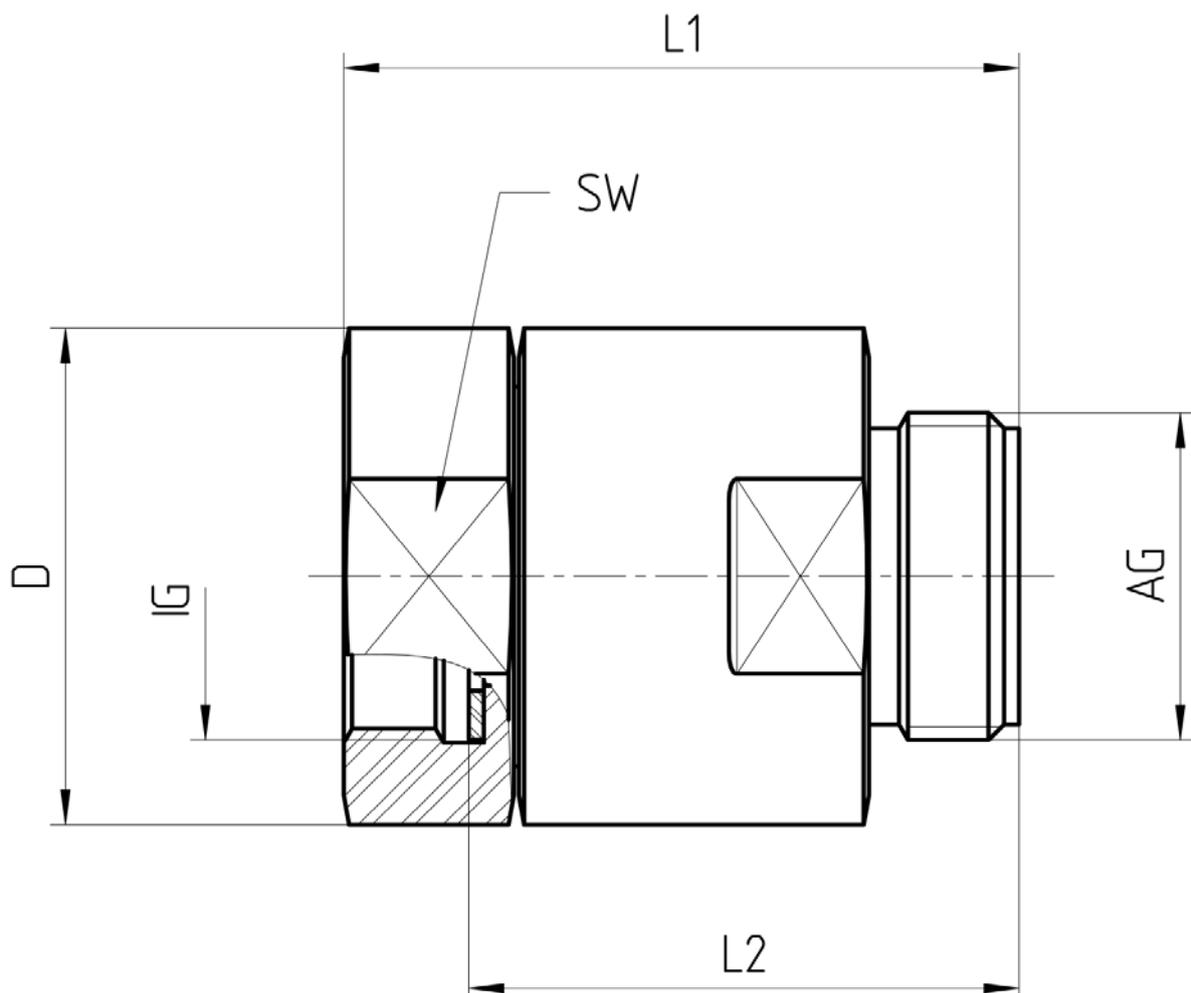
Certificates

- TA-Luft
(German Technical Instructions on Air Quality Control)

Dimensions and weights

DN	25	80
Connection	G 1"	3" NPT IG
D (mm)	50	105
L1 (mm)	67,5	124,5
L2 (mm)	55	--
SW	46	100
Weight* (kg)	0,58	3,45

*The weight applies to stainless steel only.





Radial stress-resistant swivel joints

Swivel joint specially for use under high transverse loads

Torsion protection with double ball paths that can be fitted along the line – to be used in all situations where process-related higher lateral forces are exerted on the swivel joint. The radial stress-resistant swivel joint is an enhancement of the standard swivel joint for applications involving higher mechanical loads, such as those caused by bending moments. It is equipped with two ball paths in order to securely absorb any possible moments and radial forces. This alleviates the strain on the seal in the swivel joint and increases the lifetime of the swivel joint.



Depending on version or installation position of a hose line or pipeline, the swivel joint may be subject to a transverse load (“bending”) e.g. due to the weight of the hose line or pipeline. Conventional swivel joints are not sufficiently dimensioned for this type of load. This is where the radial stress-resistant swivel joint comes into play. Equipped with structural measures such as two ball tracks and, depending

on the version, two seals, it is capable of absorbing these radial forces. Compared with a conventional swivel joint with just one ball track, the radial stress-resistant swivel joint offers a significantly longer service life and therefore lower maintenance and repair costs under the given operating conditions.

Your benefits at a glance

- Absorbs bending moments and radial forces
- Easy to clean
- Reliable even at the lowest pressure
- Compact construction
- Easy to maintain
- Permits modular use
- Long lifetime
- prevents hose torsion

Application

- Heavy or very stiff hose lines
- Pipelines

Additional technical information

Technical data

- High-quality sealing materials
O-ring: FKM
Others on request
- Materials: Stainless steel (1.4571)
Others on request
- Connection: Female thread and/or
male thread
- Nominal widths: DN 20 to DN 100
- Temperature range: -20 °C to 120 °C
Dependent on sealant
Lower or higher
temperatures also possible
- Pressure area: 0,5 to 25 bar

Certificates

- TA-Luft
(German Technical Instructions on Air Quality Control)

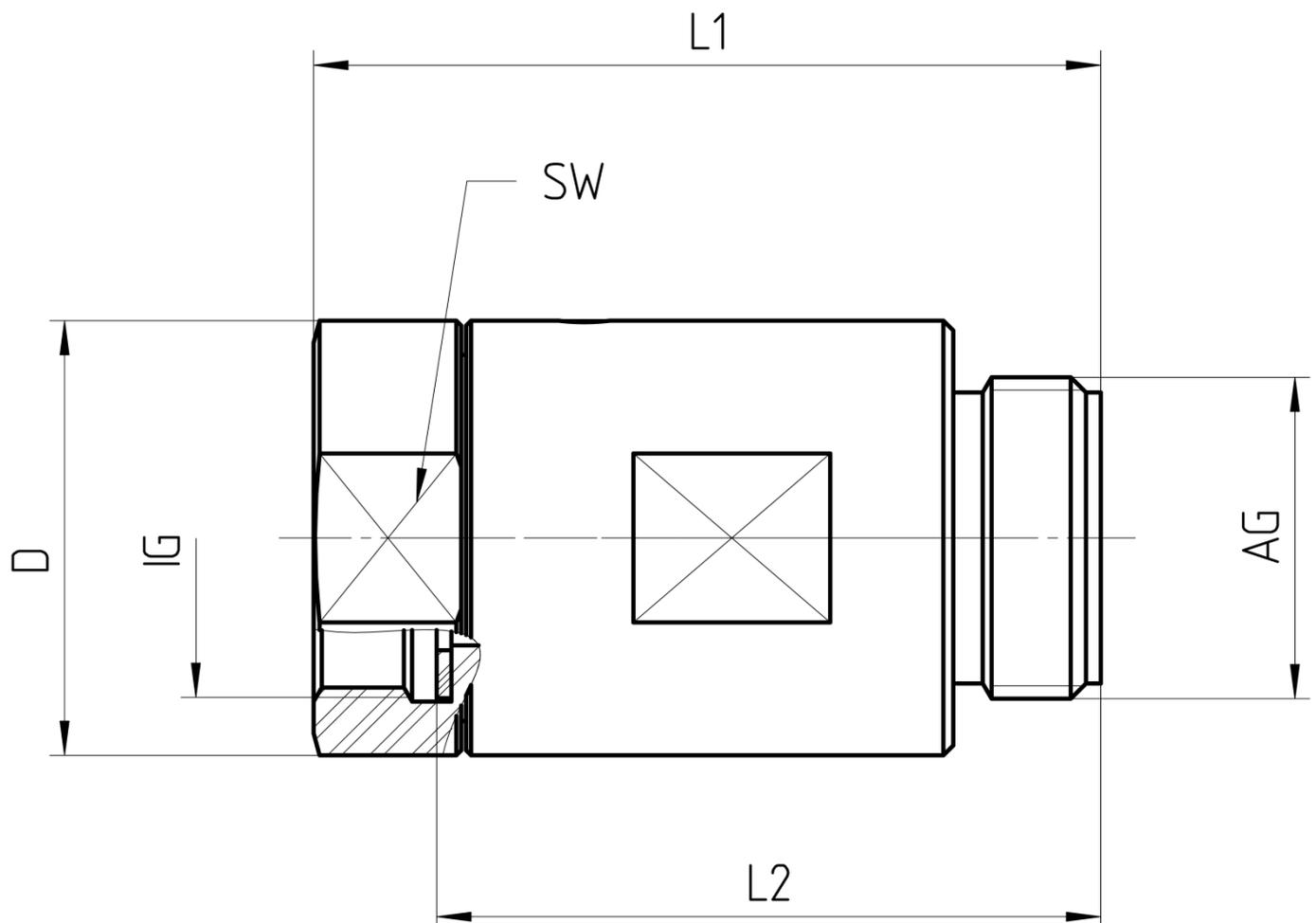
Dimensions and weights

DN	19	25	32
Connection	G 3/4"	G 1"	G 1 1/4"
D (mm)	40	48	53
L1 (mm)	78,5	91	100
L2 (mm)	68	79	88
SW	34	41	50
Weight* (kg)	0,45	0,76	0,95

Dimensions and weights

DN	40	50	80
Connection	G 1 1/2"	G 2"	G 3"
D (mm)	58	75	105
L1 (mm)	107	110	117
L2 (mm)	91	92	97
SW	50	70	100
Weight* (kg)	1,2	1,7	2,9

*The weight applies to stainless steel only.





Ball swivel joints

Swivel joint with angle compensation, swivel angle: 50° (+/- 25° from the axis)

The patented RS ball swivel joint was designed primarily to prevent the kinking and torsion of hose lines.



With a swivel angle of approx. 50° overall, it effectively improves the capacity of hoses to bend without being damaged. This prevents many types of damage that are otherwise caused by tight bending of hoses.

The flow characteristics of our ball swivel joint are optimised to avoid any narrowing or protruding edges in the flow of product.

The swivel angle of 50° can be further increased by using several RS ball swivel joints connected in series.

The RS ball swivel joint not only expands the freedom of movement of the hose line, but also make life easier for service staff and relieves the burden on maintenance personnel. It's an "all-rounder" product that can be used for applications in practically every sector involved in professional fluid handling.

Your benefits at a glance

- Protects hoses and fittings
- Increases the service life of the hose line
- Lengthens the maintenance intervals of hose lines
- Optimum flow characteristics
- Can be used in confined spaces

Application

- Torsion protection with integrated kink protection
- Highly versatile for different industries



Additional technical information

Technical data

- High-quality sealing materials
O-ring: FKM
EPDM
NBR
FFKM
Others on request
- Materials: Stainless steel (1.4571/1.4301)
Brass (2.0401)
Others on request
- Connection: Female thread and/or
male thread
flange
- Nominal widths: DN 25 to DN 100
- Temperature range: -20 °C to 120 °C
Dependent on sealant Lower
or higher temperatures also
possible
- Pressure area: 0,5 to 16 bar
DN 100: 0,5 to 10 bar
- Swivel angle: 50°

Certificates

- TA-Luft
(German Technical Instructions on Air Quality Control)

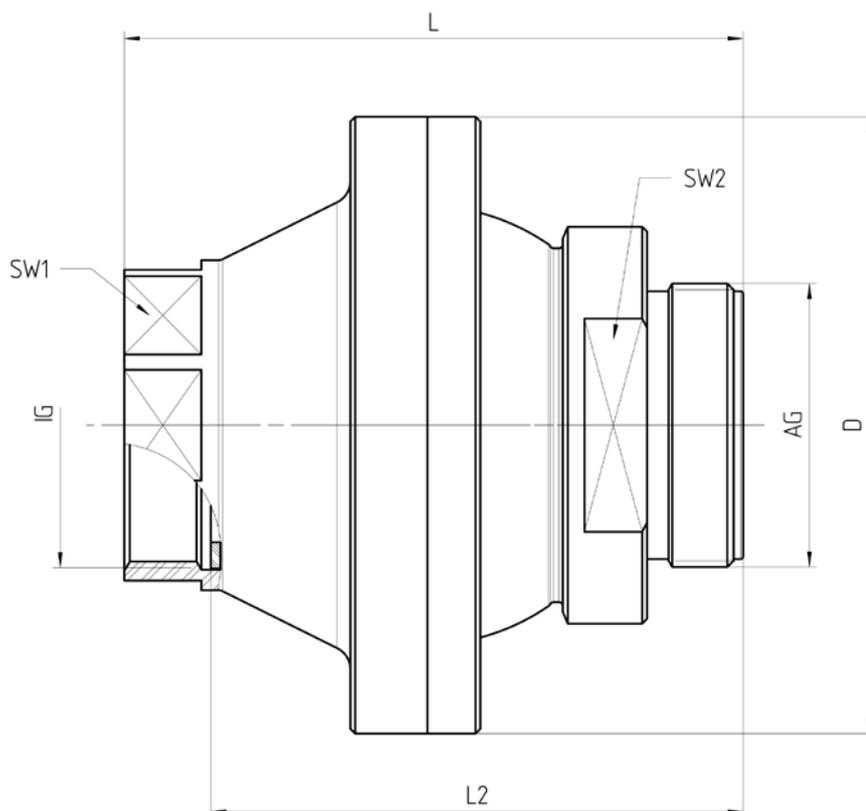
Dimensions and weights

DN	25	32	40
Connection	G 1"	G 1 1/4"	G 1 1/2"
D (mm)	78	96	104
L1 (mm)	85	99	112,5
L2 (mm)	72,5	85	96,5
SW1	36	50	55
SW2	36	50	55
Weight* (kg)	0,86	1,68	2,09

Dimensions and weights

DN	50	80	100
Connection	G 2"	G 3"	G 4"
D (mm)	129	179	218
L1 (mm)	127	169	216
L2 (mm)	110,5	148	195
SW1	65	96	126
SW2	70	100	126
Weight* (kg)	3,10	7,30	13,04

*The weight applies to stainless steel only.
Flange versions available on request



In use



The references

Evonik Goldschmidt GmbH
(chemical manufacturing), Essen

RS
Lösungen für Sie

System Chemie

Reference installation:
Goldschmidt GmbH, Essen, Germany

degussa.
Essen
Goldschmidt GmbH
Königsplatz 10
42699 Solingen

Goldschmidt GmbH, the main location of Degussa AG, is a reference installation with which we are the provider of all products for heat loss and filling technology.



RS references for swivel joints

Evonik Goldschmidt GmbH (chemical manufacturing), Essen



System Chemie

Reference installation:
Goldschmidt GmbH, Essen, Germany



Goldschmidt GmbH, the Essen location of Degussa AG. A safety-oriented company which relies on the security of RS products for hose line and fittings technology.



Infracor, Marl

Reference



Infracor Lager- und Speditions-GmbH,
Marl



Ex-protection zone, hazardous chemicals: The highest safety requirements apply here. And the highest safety standards also.



Vehicle component production, Landshut

Reference



Vehicle component production
Landshut



Production of chassis parts:
component factory in Landshut/Lower Bavaria.

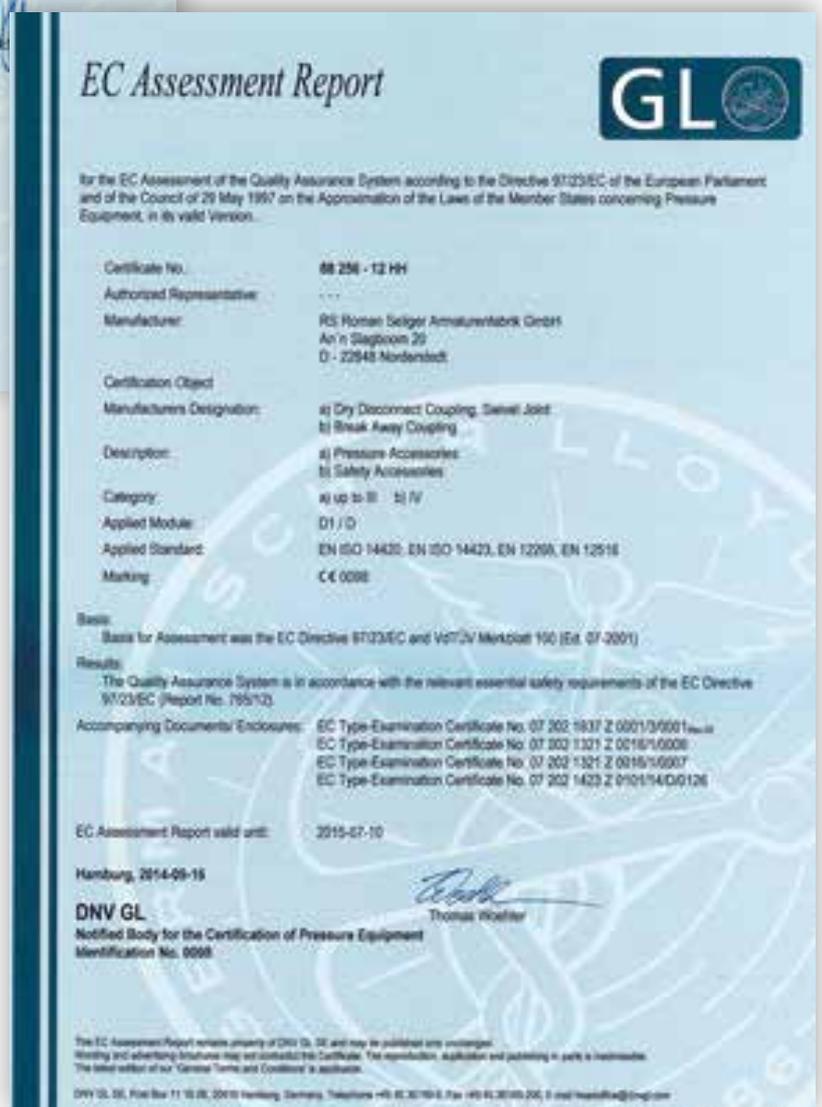


RS certificates for swivel joints



**Certificate Quality Management
System acc. to ISO9001:2008 standard**

Development, production and distribution of couplings and control equipment for hose and pipework systems



Certificate 97/23/EG

Quality Management System acc. to Pressure Equipment directive 97/23/EC - Module D/D1 – Manufacture of Dry Disconnect and Break-away Couplings

RS certificates for swivel joints



QMS - TDT

(Transportowy Dozór Techniczny)

Equipment for loading systems (including dry-connect couplings and breakaway couplings) destined for the delivery to Poland



TA-Luft-certificate

The technical guide for air pollution prevention is an administrative directive derived from the German Federal Emission Protection law. The compliance with the requested limit values is being tested and attested according to VDI regulation 2200. No specific products are being certified but sealing systems and material combinations. (Specific TA-Luft-permissions/-certificates upon request)



Zertifikat

Fa. Roman Seliger

Ein Drehgelenk

Typ: DG G1 1/2" IG x G1 1/2" AG aus Edelstahl
mit O-Ring aus Dichtungswerkstoff Viton

der Fa. Roman Seliger wurde von uns nach 50 Drehungen um 360° gemäß den Vorgaben der TA Luft (2002) und VDI 2440 (2000) bei einem inneren Überdruck von 40 bar und Raumtemperatur einer Leckageuntersuchung unterzogen. Danach erfüllt das Drehgelenk die Anforderung:

Einhaltung einer Leckagerate von $<10^{-4}$ mbar^l / (s·m)

Die Prüfmatur mit dem Dichtungswerkstoff aus Viton erfüllt damit die Anforderung bezüglich der Gleichwertigkeit gemäß Ziffer 3.3.1.3 der Technischen Anleitung Luft (TA Luft / VDI 2440).

Nach Angaben der Fa. Roman Seliger wird das gleiche Dichtsystem hinsichtlich Konstruktion und Dichtungswerkstoffe auch bei den Drehgelenken der Abmessung 1" bis 4" (DN 25, DN 32, DN 50, DN 65, DN 80 und DN 100) verwendet. Die Prüfergebnisse sind daher auch auf diese Drehgelenke übertragbar.

Dieses Zertifikat gilt nur in Verbindung mit unserem Prüfbericht Nr. WE 2007 11 030 / 5.2 und den dort beschriebenen Prüf- und Randbedingungen.

Frankfurt am Main Höchst, den 07.07.2008

Dr.-Ing. Friedrich Stoll
(Leiter Werkstofftechnik)

Willi Hafenecker
(Prüftechniker)

Hinweise:
• Die Ergebnisse beziehen sich ausschließlich auf die untersuchten Gegenstände.
• Ohne schriftliche Genehmigung der TÜV SÜD Chemie Service GmbH, Werkstofftechnik, darf dieser Bericht nicht auszugsweise vervielfältigt werden.



Zertifikat

Fa. Roman Seliger

Ein Drehgelenk

DG G1 1/2" IG x G1 1/2" AG aus Messing
mit O-Ring aus Dichtungswerkstoff Viton

der Fa. Roman Seliger wurde von uns nach 50 Drehungen um 360° gemäß den Vorgaben der TA Luft (2002) und VDI 2440 (2000) bei einem inneren Überdruck von 40 bar und Raumtemperatur einer Leckageuntersuchung unterzogen. Danach erfüllt das Drehgelenk die Anforderung:

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Nach Angaben der Fa. Roman Seliger wird das gleiche Dichtsystem hinsichtlich Konstruktion und Dichtungswerkstoffe auch bei den Drehgelenken der Abmessung 1" bis 4" (DN 25, DN 32, DN 50, DN 65, DN 80 und DN 100) verwendet. Die Prüfergebnisse sind daher auch auf diese Drehgelenke übertragbar.

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Zertifikat

Fa. Roman Seliger

Ein Kugeldrehgelenk Typ KDG G2"AG x G2"AG, mit Dichtwerkstoff FKM (Viton) und ein Kugeldrehgelenk Typ KDG G2"AG x G2"AG, mit Dichtwerkstoff FEP der Fa. Roman Seliger wurde von uns nach 50 Drehungen um 360° gemäß den Vorgaben der TA Luft (2002) und VDI 2440 (2000) bei einem inneren Überdruck von 16 bar und Raumtemperatur einer Leckageuntersuchung unterzogen. Danach erfüllen die Kugeldrehgelenke die Anforderung:

Einhaltung einer Leckagerate von $<10^{-4}$ mbar^l / (s·m)

Die Prüfarmaturen mit den Dichtungswerkstoffen aus FKM und FEP (Dichtungs-Hersteller Fa. Höfert) erfüllen damit die Anforderung bezüglich der Gleichwertigkeit gemäß Ziffer 3.3.1.3 der Technischen Anleitung Luft (TA Luft / VDI 2440).

Nach Angaben der Fa. Roman Seliger wird das gleiche Dichtsystem hinsichtlich Konstruktion und Dichtungswerkstoffe auch bei den Kugeldrehgelenken der Abmessung 1", 3" und 4" verwendet. Die Prüfergebnisse sind daher auch auf diese Kugeldrehgelenke übertragbar.

Dieses Zertifikat gilt nur in Verbindung mit unserem Prüfbericht Nr. WE 2007 11 030 / 5.1 und den dort beschriebenen Prüf- und Randbedingungen.

Frankfurt am Main Höchst, den 29.04.2008

Dr.-Ing. Friedrich Stoll
(Leiter Werkstofftechnik)

Hafenecker
(Prüftechniker)

Hinweise:
• Die Ergebnisse beziehen sich ausschließlich auf die untersuchten Gegenstände.
• Ohne schriftliche Genehmigung der TÜV SÜD Chemie Service GmbH, Werkstofftechnik, darf dieser Bericht nicht auszugsweise vervielfältigt werden.



Threads and flanges

1 Threaded connections

Threaded connections are generally classified according to male and female thread. A further distinction is then made according to thread types, which perform very different sealing functions quite apart from the thread structure.

Some threads transfer the force in order to create a flat and conical seal (not in the thread). The other type of seal is created in the thread itself.

Overview of threads commonly used in fitting technology

Description		Standard	Application areas
General	International		
G-thread	BSP	DIN EN ISO 228	General industry
R-thread	BSPT	DIN 2999/EN 10226 1-3	
NPS	NPS	ANSI/ASME B 1.20.1	
NPT	NPT	ANSI/ASME B 1.20.1/3	
Milk pipe round thread	Round thread	DIN 405 1-2	Foodstuffs, Pharmaceutical
ACME	ACME	ASME B1.5	Gas
Metric ISO-thread	Metric thread	DIN 13	Hydraulics
51/2" rail tank wagon thread	–	DIN 11	Loading rail tank wagons

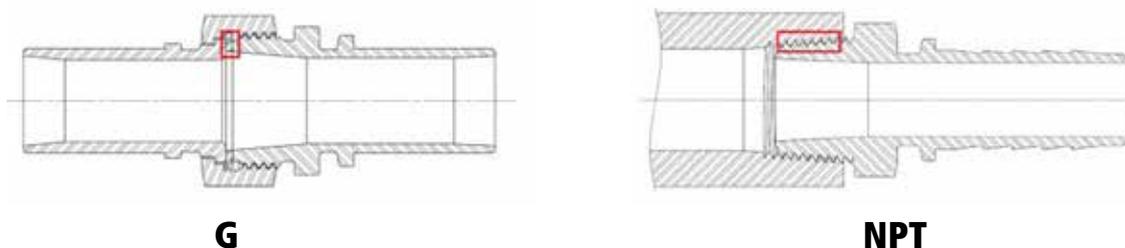
Overview of identifying features

Thread	Male thread	Female thread
G-thread	cylindrical	cylindrical with seal
R-thread	conical	cylindrical without seal
NPS	cylindrical	cylindrical with seal
NPT	conical	conical
Milk pipe round thread	cylindrical with seal	cylindrical
ACME	cylindrical with seal	cylindrical with sealing face
M-thread	cylindrical with cone	cylindrical with conical face
51/2" rail tank wagon thread	cylindrical	cylindrical with seal

Overview of types of seal

Thread	Seal type	Sealing point	Compatibility	Notes
G-thread	flat	Thread seal	R-thread	if male thread flat sealing
R-thread	conical	Thread + sealing band	G-thread	if male thread flat sealing
NPS	flat	Thread seal	NPT	
NPT	thread	Thread + sealing band	NPS	if male thread flat sealing
Milk pipe round thread	flat	Thread seal	–	
ACME	flat	Thread seal	–	
M-thread	conical	Cone / metallic	–	24 or 60 degree cone
51/2" rail tank wagon thread	flat	Thread seal	–	

For safety couplings with threaded connections usually only G and NPT threads are used.



2 Flange connections

Flange connections are divided into lapped flanges and fixed flanges. The lapped flange can be turned on the hose coupling or on the plant and can be aligned with its counterpiece. As the name implies, fixed flanges are fixed to the plant or to the hose and cannot be turned. For this reason, a hose fitted with flanged connections at both ends will have a lapped flange on at least one end. This prevents hose torsion, which occurs if both ends are fitted with fixed flanges.

Flanged connections are generally standardized in the same way as threads. These standards are broken down further into pressure stages. Depending on the pressure stage, the flanges differ, for example, in terms of outer diameter, hole circle, number of holes, flange width etc. Lapped and fixed flanges of the same standards and pressure level are compatible with each other. ANSI (ASA) flanges are not compatible with DIN or EN flanges.

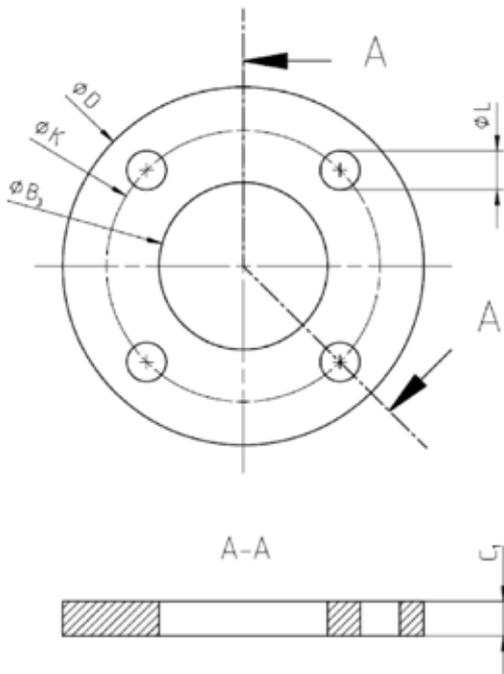
Flanged connections are attached at the front with the aid of a suitable flange seal, screwed on with nuts and bolts and thus sealed.

Safety couplings with flanged connections are always delivered with fixed flanges.

Typical flange standards compared according to pressure levels

Pressure stage	Standards			
	DIN/EN		ANSI (ASA) B16.5	
	Lapped flange	Fixed flange	Lapped flange	Fixed flange
PN10/16	DIN 2673	DIN 2633	ANSI ASA 150PSI	
	EN 1092 Type = 04/34	EN 1092 Type 11		
PN25/40	DIN 2676	DIN 2635	ANSI ASA 300PSI	
	EN 1092 Type = 04/34	EN 1092 Type 11		

Threads and flanges



D	Flange outer diameter
K	Hole circle diameter
B3	Central hole diameter
L	Hole diameter
C1	Flange thickness

3 Materials

3.1 Materials for fitting bodies

For a wide range of fittings, there are also a large number of possible materials. Depending on the fitting, these materials are selected based on standards and/or applications. Factors such as strength, chemical and thermal resistance as well as manufacturing processes play a major role in the choice of material.

The following main groups products are used in the most diverse variants and qualities in valve technology:

Overview of the most widely used materials in valve technology

Materials by manufacturing process				
Material groups	Machined (turned/milled)	Cast	Forged	Injected
Steel	1.0254, 1.0570, 1.0038, 1.0718	–	–	–
Stainless steel 2A grade	1.4301, 1.4305, 1.4541	–	–	–
Stainless steel 4A grade	1.4571, 1.4404, 1.4435	1.4401, 1.4408	–	–
Hastelloy	2.4610, 2.4602, 2.4600, 2.4819	–	–	–
Brass	CW614N, CW617N	CW614N, CW617N	CW614N, CW617N	–
Aluminium	EN AW-6060	EN AC-47000	EN AW-6082	–
Plastics	Polypropylene, PEEK	–	–	Polyamide

For safety couplings stainless steel, aluminum, or (rarely) brass are usually used.

3.2 Materials for seals

The large number of thread and coupling seals require varied variety of materials for seals. Elastomeric seals are common for this purpose.

Overview and characteristics of the most widely used sealants in fitting technology

Material	Chemical properties	Physical properties
FKM/FPM (Viton)	good general chemical resistance good ozone & weathering resistance	High temperature resistance For water & water steam max. 60°C Operating temperature -20° – +200°C
NBR (Perbunan)	good resistance to petroleum & fuel limited ozone & weathering resistance	good mechanical properties (abrasion resistance) good low-temperature behaviour Operating temperature -50° – +110°C
Polyurethan (Vulkulan)	good resistance to petroleum & fuel poor chemical resistance	good mechanical strength (wear & tear resistance, elasticity) Operating temperature -40° – +110°C
PTFE (Teflon)	universal chemical resistance good ozone & weathering resistance	Good anti-friction properties High temperature resistance Operating temperature -40° – +250°C
CSM (Hypalon)	good acid & lye resistance good resistance to petroleum & fuel	good mechanical strength (wear & tear resistance, elasticity) Operating temperature -35° – +140°C
FFKM (Kalrez)	excellent chemical resistance	High temperature resistance Operating temperature -25° – +225°C
Novapress Multi	good steam & hot-water resistance good resistance to petroleum & fuel	High pressure resistance Operating temperature -25° – +250°C
EPDM	good steam & hot-water resistance poor resistance to petroleum & fuel good ozone & weathering resistance	good mechanical strength (wear & tear resistance) Operating temperature -50° – +180°C

Depending on the particular application, a suitable sealant must also be used in addition to the suitable fitting material.

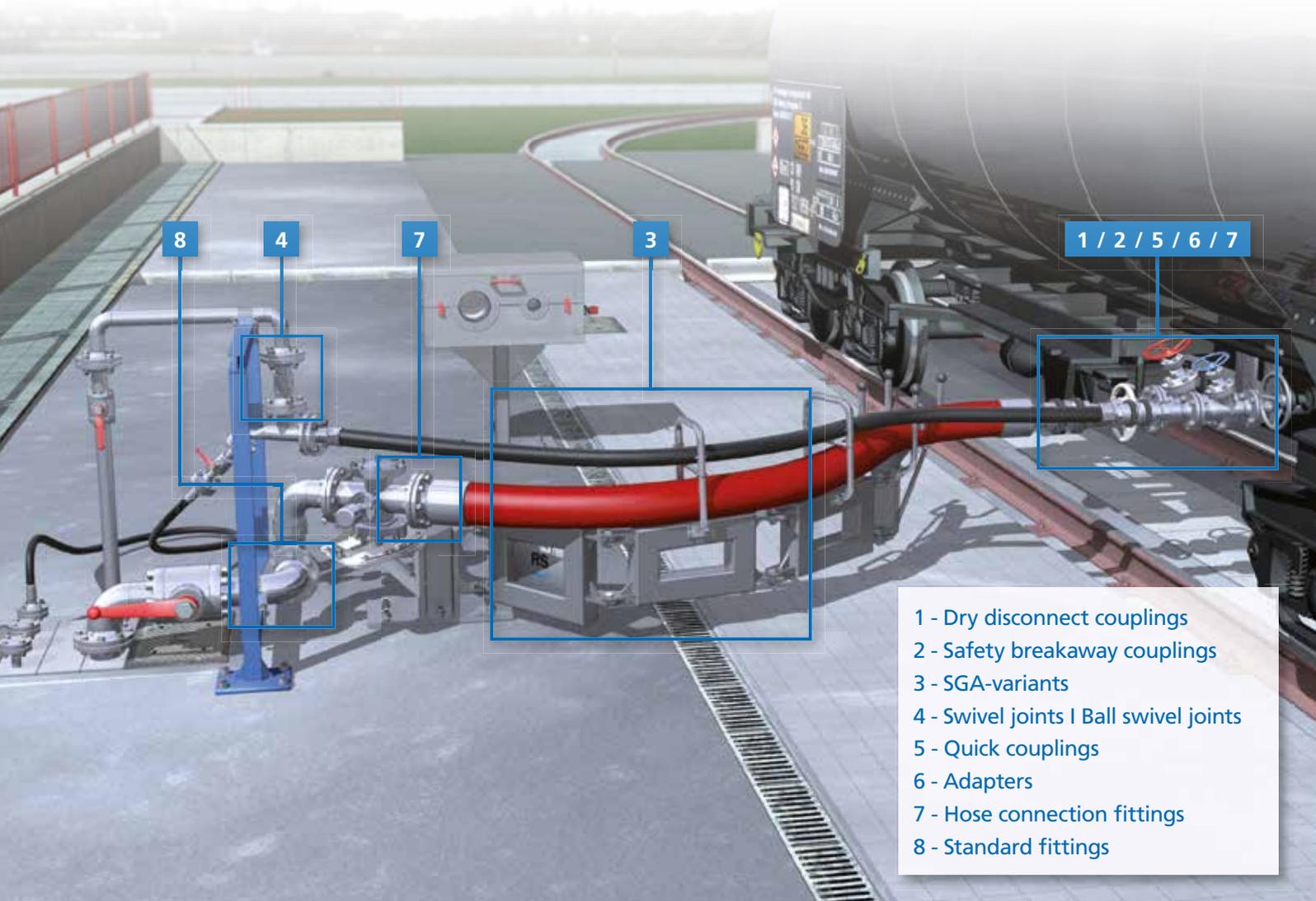
3.3 Surface finishing / surface protection

corrosive media call for special fittings which provide suitable surface protection.

For protection against aggressive media such as acids and lyes, highly chemical-resistant fluoroplastic coatings are used. These include PTFE, FEP, E-CTFE, ETFE, or PFA.

This coating is applied to those parts of the fitting getting in contact with the media. Unfortunately not all parts of a coupling assembly can be coated. In this case highly chemical-resistant materials like nickel-based alloys (e.g. Hastelloy or Inconel) are used.

All RS ranges



- 1 - Dry disconnect couplings
- 2 - Safety breakaway couplings
- 3 - SGA-variants
- 4 - Swivel joints I Ball swivel joints
- 5 - Quick couplings
- 6 - Adapters
- 7 - Hose connection fittings
- 8 - Standard fittings



Roman Seliger

Numbers – Data – Facts



RS - a global mid-sized company based in Norderstedt near Hamburg - is considered one of the leading manufacturers in the hose line and valve technology sector for the reliable conveyance and control of a wide variety of media. RS products are used in demanding applications from plant engineering to the chemical and pharmaceutical industry and at the interface between industry and logistics. The managing director is Dr. -Ing. Jens Reppenhagen.

RS

Roman Seliger

Armaturenfabrik GmbH

An'n Slagboom 20

D-22848 Norderstedt

Telephone +49 40 523064-11

Fax +49 40 523064-25

info@rs-seliger.de

www.rs-seliger.de