

Pipe connectors

General description of pipe connectors

STENFLEX® pipe connectors, just like STENFLEX® rubber expansion joints, have been used for more than 45 years as the preferred connection elements in appliance and piping engineering.

Pipe connectors are produced from top quality materials in large-scale industrial manufacturing. This guarantees a uniform high standard of quality and a long service life for our products.

STENFLEX® pipe connectors undergo constant quality monitoring to EN ISO 9001:2008 and come with type approval and suitability test certificates based on DIN 4809.

Purpose

Pipe connectors are used at appliances, motors, machines, pumps and compressors primarily for

- absorbing sound and vibration/oscillation transmission

in many different industries, such as

- Mechanical engineering
- Shipbuilding
- Domestic industry
- Heating systems
- Water supply/treatment systems

Development/Design

STENFLEX® pipe connectors are rated with state-of-the-art development tools (CAD, FEM), designed and optimized by experimentation already during the development phase.

As a result, they have outstanding absorbing properties. Standardized flange connections facilitate installation and safe integration in a pipe system.



Versions

STENFLEX® pipe connectors differ with regard to the following criteria:

- type (rubber-metal pipe connectors, steel pipe connectors)
- material (rated to the applications)

Pipe connectors are supplied ready for installation.



Rubber-metal pipe connector

Structure:

Rubber body with fully embedded steel flanges

Damping, movement compensation:

Rubber-metal pipe connectors dampen noise and vibration caused by appliances, motors or pumps. Movement cannot be absorbed by these rubber-metal pipe connectors.

Fixed points:

Robust pipe fixed points and correct pipeline routing are necessary to absorb the axial forces.



Steel pipe connector

Structure:

Steel bellows with damping connection parts (steel flange with inserted rubber flange).

Damping, movement compensation:

Steel pipe connectors dampen noise and oscillation caused by appliances, motors or pumps. Steel pipe connectors can also absorb movement.

Fixed points:

Robust pipe fixed points and correct pipeline routing are necessary to absorb the axial forces.

Pipe connectors

Structure

The STENFLEX® **rubber-metal pipe connector** has been optimized by calculation and experimentation to produce a well absorbing, pressure-resistant connecting element. This pipe connector consists of a cylindrical elastomer body with smooth inner surfaces and a fully embedded steel flange.

Absolute metallic separation of the steel flanges results in excellent noise or vibration damping by the elastomer body in-between. The pipe connectors have an integrated rubber sealing strip in the sealing area so that no additional gaskets are necessary (self-sealing).

The STENFLEX® **steel pipe connector** has also been optimized by calculation and experimentation, and is developed for higher temperatures. Stainless steel bellows are used as pressure-bearing flexible element in this pipe connector. They are integrated in the pipe system by means of special steel flanges equipped with noise- and oscillation damping elastomer elements. The elastomer element is self-sealing so that, here again, no additional gaskets are necessary in the steel pipe connector.



Rubber-metal pipe connector



Steel pipe connector

Rubber-metal pipe connector

Rubber grade	Trade name	Properties	Applications
CR Polychloroprene	Neoprene Baypren	Rubber grade with good oil, weather and flame resistance, very good ageing resistance. Resistant to various inorganic chemicals. Impermeable to gas for hydrocarbons. Temperature resistance in continuous operation* -30 °C to +100 °C.	Water, hot water, cooling water

Steel pipe connector

Bellows material	Material No. as per DIN EN	Designation as per DIN EN (DIN)	Properties	Applications
Stainless steel	1.4541	X6CrNiTi18-10	for aggressive media, good strength at low temperatures	Water, hot water

Rubber grade flange inserts	Trade names	Properties	Applications
EPDM Ethylene propylene diene terpolymer	Buna AP Keltan Vistalon	Heat- and weather-proof rubber grade with special resistance to highly oxidizing media and very many chemicals (not oil-resistant). Temperature resistance in continuous operation* -40 °C to +100 °C.	Water, hot water

* The given temperature for continuous operation refers solely to the rubber grade. When reinforcements or other filling material are embedded, the temperature resistance in continuous operation increases.

Pipe connectors

General description of pipe connectors

Connection parts

Flanges

The embedded steel flanges of the **rubber-metal pipe connectors** have threaded holes. Connection dimensions as per DIN 2501, PN 6 or PN 10. During installation, the screw lengths prescribed in the data sheets must be observed.

The steel and rubber flanges of the **steel pipe connector** are drilled for through bolts.








The connection dimensions as per DIN 2501, PN 10 or PN 16 are stated in the technical annex. The steel

flanges are electrogalvanized as corrosion protection.

Flange material for steel pipe connector	Material No. as per DIN EN	Designation as per DIN EN (DIN)
Unalloyed steel	1.0038	S235JR

Symbols for a quick product selection

The easy-to-find-list: symbols and their meaning. The colour bars of the following data sheets indicate small symbols depicting the special features of the corresponding types, for easy pre-selection.

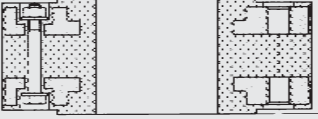
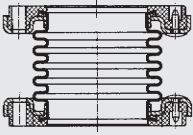
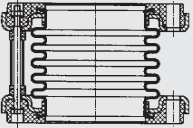
 Maximum product pressure rate	 Specially suitable for absorbing noise and vibration/oscillation	 Suitable for gaseous media
 Flange connection	 Resistant to hot water (combined with temperature symbol)	 Suitable for acids and lyes
 Minimum / maximum temperature		

Applications/Possible uses/Industries

		Rubber-metal pipe connectors	Steel pipe connectors	
<i>Basic pipe connector types</i>				
STENFLEX® Pipe connector types		GRV	SR-1	SR-2
Applications	Reducing tension			
	Absorbing vibration			
	Muffling noise			
Possible uses	Pipelines			
	Motors			
	Pumps			
	Fittings			
Industries	Domestic industry			
	Heating installations			

Table showing the prime applications, possible uses and industries

Program summary

Rubber-metal pipe connectors							
	Type	DN	Pressure rate bar	Max. operating temperature	Material	Connection parts/restraint elements	Page
	GRV	DN 20-200 DN 20-200	PN 6 PN 10	+100 °C +100 °C	CR CR	flange with female thread	2.5
Steel pipe connectors							
	SR-1	DN 32-200	PN 10	+120 °C	1.4541/ EPDM	rotating flange with rubber muffling	2.7
	SR-2	DN 32-200	PN 10	+120 °C	1.4541/ EPDM	rotating flange with rubber muffling and restraint	2.7

Rubber-metal pipe connector - Type GRV

Vibration and noise damper DN 20 – DN 200



TÜV type approved
for use in hot water heating systems
up to +100°C and max. 10 bar g
(TÜV Bayern, test no. 0101141)

Structure type GRV

- Rubber-metal pipe connector consisting of a cylindrical rubber body with fully embedded steel flanges
- Steel flanges with threaded holes
- Absolute metallic separation of the steel flanges
- From DN 50 elastic embedded spacing control bolts

Rubber body PN 6 / PN 10

- Cylindrical rubber body made of elastic synthetic rubber
- Smooth rubber core therefore no contact between medium and flange
- Self-sealing rubber raised face
- Electrical impedance 10^3 to 10^6 Ohm (DIN IEC 93, DIN 53 482)

Rubber grade*	Possible uses
CR	Hot water, cold water, acids, lyes

*Check or inquire about the resistance of the rubber grade to temperature and medium.

DN	DN 20-200	DN 20-200	Temperature
Pressure rate	PN 6	PN 10	
Max. perm. operating pressure	6 bar	10 bar	-30 °C to +100 °C
Bursting pressure	≥ 48 bar	≥ 48 bar	to +110 °C for brief periods*
Vacuum	0.05 bar abs.		

* For temps. exceeding +100 °C, the manufacturer's approval must be obtained for the corresponding operating conditions.

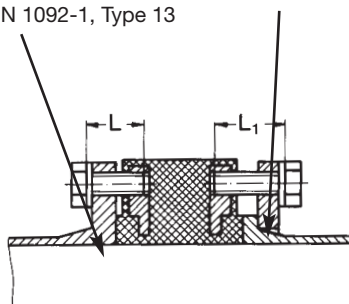
Flanges / screw lengths

Do not choose the screws to be too long; overlong screws damage the rubber body.

Please note the recommended screw length L and L₁ (see table).

Detailed installation instructions indicating the necessary torques are included with every pipe connector.

Flange EN 1092-1, Type 11 Flange EN 1092-1, Type 04
EN 1092-1, Type 13



Recommended screw lengths L and L₁

Applications

- for interrupting unwanted sound and noise transmission
 - in pipeline systems
 - in heating systems
 - at pumps
 - at control fittings
 - at machines
 - at fittings and appliances
- in domestic industry
 - in residential properties
 - in hospitals
 - in schools
 - in public buildings
- in industrial applications

Certificates

- Suitability approval for warm water and heating systems



STENFLEX® type GRV at pumps in a heating system

Dimensions **PN 6** standard program

DN	BL* mm	ø di inner ø mm	ø C Raised face ø mm	ø D Outer ø mm	G Thread- ø mm	L Threaded length mm	PN Flange connection EN 1092	Screws DIN 933		Washer DIN 125	Weight approx. kg
								Thread	L mm		
20	76	23	50	94	4 x M 10	14	6	M 10	25	10.5	1.4
25	76	29	60	104	4 x M 10	16	6	M 10	25	10.5	1.9
32	76	38	70	124	4 x M 12	16	6	M 12	30	13.0	2.5
40	76	44	80	134	4 x M 12	16	6	M 12	30	13.0	3.0
50	76	55	88	144	4 x M 12	16	6	M 12	30	13.0	3.1
65	76	71	108	164	4 x M 12	16	6	M 12	30	13.0	3.8
80	76	81	128	194	4 x M 16	18	6	M 16	35	17.0	6.0
100	76	108	148	214	4 x M 16	18	6	M 16	35	17.0	6.3
125	76	133	178	244	8 x M 16	18	6	M 16	35	17.0	7.8
150	76	160	202	270	8 x M 16	18	6	M 16	35	17.0	8.5
200	96	209	258	325	8 x M 16	20	6	M 16	40	17.0	13.2

*The measure BL (length) is approx. 6 mm shorter when fitted.

Dimensions **PN 10** standard program

DN	BL* mm	ø di inner ø mm	ø C Raised face ø mm	ø D Outer ø mm	G Thread- ø mm	L Threaded length mm	PN Flange connection EN 1092	Screws DIN 933			Washer DIN 125	Weight approx. kg
								Thread	L mm	L ₁ mm		
20	76	23	60	109	4 x M 12	14	10	M 12	30	40	13	2.0
25	76	29	70	119	4 x M 12	16	10	M 12	30	45	13	2.5
32	76	38	80	144	4 x M 16	16	10	M 16	35	45	17	3.8
40	76	44	90	154	4 x M 16	16	10	M 16	35	45	17	4.3
50	76	55	100	169	4 x M 16	16	10	M 16	35	50	17	4.7
65	76	71	115	189	4 x M 16	16	10	M 16	35	50	17	5.8
80	76	81	130	204	8 x M 16	18	10	M 16	40	55	17	6.8
100	76	108	158	224	8 x M 16	18	10	M 16	40	55	17	7.2
125	76	133	180	255	8 x M 16	18	10	M 16	40	55	17	9.0
150	76	160	210	291	8 x M 20	18	10	M 20	45	60	21	11.0
200	96	209	265	345	8 x M 20	20	10	M 20	45	65	21	16.8

*The measure BL (length) is approx. 6 mm shorter when fitted.

Note

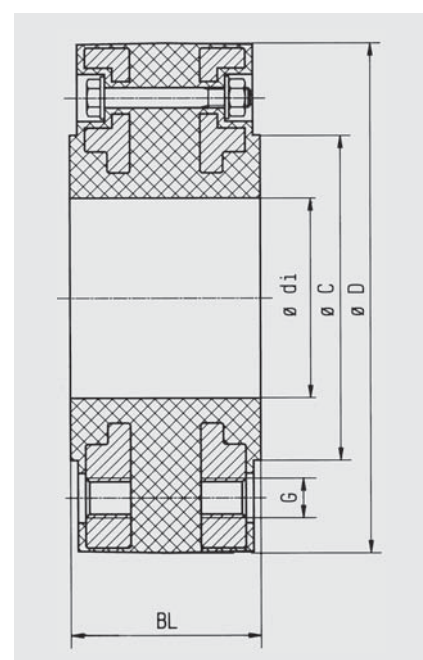
Do not use to absorb tensile force, expansion, tension; depending on temperature, STENFLEX® expansion joints made of rubber or steel should be used for this purpose.

Elastic elements in pipelines separate the rigid system and release the reaction force, produced by pipeline inner pressure. For the rubber-metal pipe connectors to work safely and reliably, it is presumed that the pipes are routed properly and the fixed points (HFP) are adequately rated to the reaction force.

Chemicals used for water treatment (particularly in heating systems and coolant systems) can corrode the materials of pipe connector. According to VDI Directive 2035, DIN 4809 part 1 and VGB R 455P, the manufacturer of the chemicals must state that the materials used in the pipe connector will not be damaged by the chemicals.

Please comply with the general technical instructions. Subject to technical alterations and deviations resulting from the manufacturing process.

Versions



Type GRV

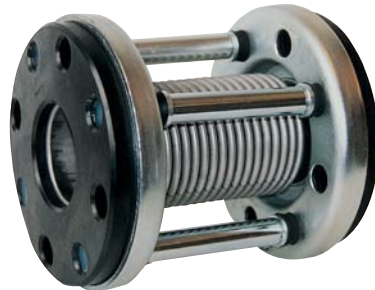
Rubber-metal pipe connector with elastic embedded spacing control bolt

Steel pipe connector - Type SR-1 and SR-2

Oscillation and noise damper DN 32 – DN 200



Type SR-1



Type SR-2

Structure type SR-1

- Vacuum-proof axial pipe connector consisting of a stainless steel bellows with oscillation and noise damping rubber elements

Structure type SR-2

- Vacuum-proof lateral pipe connector
- Design as type SR-1, also with tie rods/length limiters, carried elastically on silencing rubber
- Length limiters cannot fully absorb reaction force; sufficiently dimensioned fixed points are necessary

Steel bellows PN 10

Stainless steel bellows with flared ends of material 1.4541

Material grade*	Material No. as per DIN EN	Possible uses
Stainless steel	1.4541	Hot water, acids, lyes

Property	Pressure	Temperature
Max. perm. operating pressure	10 bar 6 bar	up to +100 °C up to +120 °C up to +130 °C for brief periods*

* > +120 °C the manufacturer's approval must be obtained for the corresponding operating conditions.

Flanges

Version

- Self-sealing, oscillation-, and noise-damping flanges
- Rubber elements encapsulated by sheet metal flanges
- Flared ends of steel bellows entirely embedded in rubber elements
- No metallic contact between steel bellows and mating flanges
- Flange drilling for through bolts

Dimensions

Standard: DN 32 - DN 150 (PN 16),
DN 200 (PN 10)
according to EN 1092

Connection dimensions see technical annex

Materials

Standard: 1.0038 (S235JR) + EPDM

Corrosion protection

Standard: electrogalvanized

Rubber grade**/rubber element	Possible uses
EPDM	Hot water, acids, lyes

**Check or inquire about the resistance of the rubber grade to temperature and medium.

Applications

- for reducing tension and damping oscillation and noise transmission at
 - motors
 - pumps
 - machines
- for installation in
 - industrial applications
 - heating systems
 - distribution station of district heating systems

Certificates

- CE (DGR 97/23/EC)



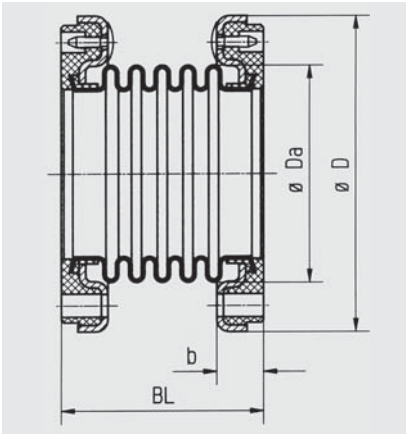
STENFLEX® type SR-2 at pumps

Dimensions standard program

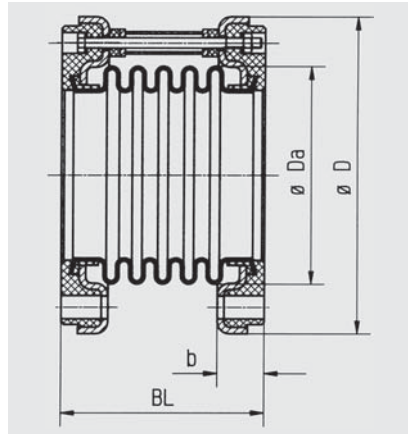
DN	BL	Pres- sure rate bar	A Effective bellows cross sectional area cm ²	ø Da Bellows outer ø mm	PN Flange connec- tion EN 1092	ø D Flange outer ø mm	b Flange thick- ness mm	Screws			Washer DIN 125	Weight type SR-1 approx. kg	Weight type SR-2 approx. kg
								Thread	L mm	L ₁ mm			
32	152	10	16	54	16	140	32	M 16	75	90	17	1.7	1.8
40	155	10	25	66	16	150	35	M 16	75	90	17	2.3	2.4
50	178	10	35	78	16	165	35	M 16	80	90	17	2.9	3.0
65	185	10	55	96	16*	185	38	M 16	80	90	17	4.2	4.3
80	190	10	79	115	16	200	38	M 16	90	100	17	4.4	4.6
100	195	10	115	137	16	220	40	M 16	90	100	17	5.8	6.0
125	215	10	175	168	16	250	42	M 16	90	100	17	7.8	8.2
150	250	10	245	196	16	285	44	M 20	90	100	21	9.8	10.3
200	250	10	423	253	10	340	44	M 20	90	100	21	14.5	15.0

*With 4 flange borings.

Versions

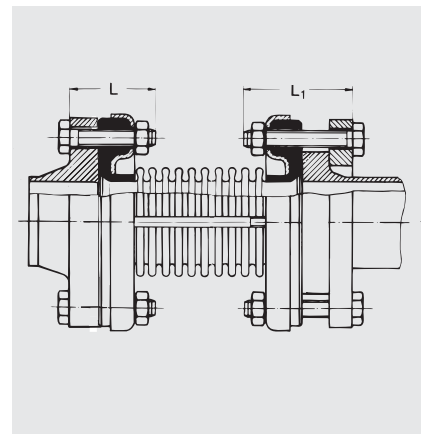


Type SR-1
Steel pipe connector



Type SR-2
Steel pipe connector with tie
rods/length limiters, carried elastically
on silencing rubber

Screw lengths



Recommended screw length L and L₁

Note

Please note the recommended screw length L and L₁ (see table).

Please comply with the general technical instructions.

Subject to technical alterations and deviations resulting from the manufacturing process.

Detailed installation instructions indicating the necessary torques are included with every pipe connector.

Chemicals used for water treatment (particularly in heating systems and coolant systems) can corrode the materials of pipe connector. According to VDI Directive 2035, DIN 4809 part 1 and VGB R 455P, the manufacturer of the chemicals must state that the materials used in the pipe connector will not be damaged by the chemicals.