

TORAFLEX® RUBBER JOINTS

S10 Single Sphere Type

Attributes of Design



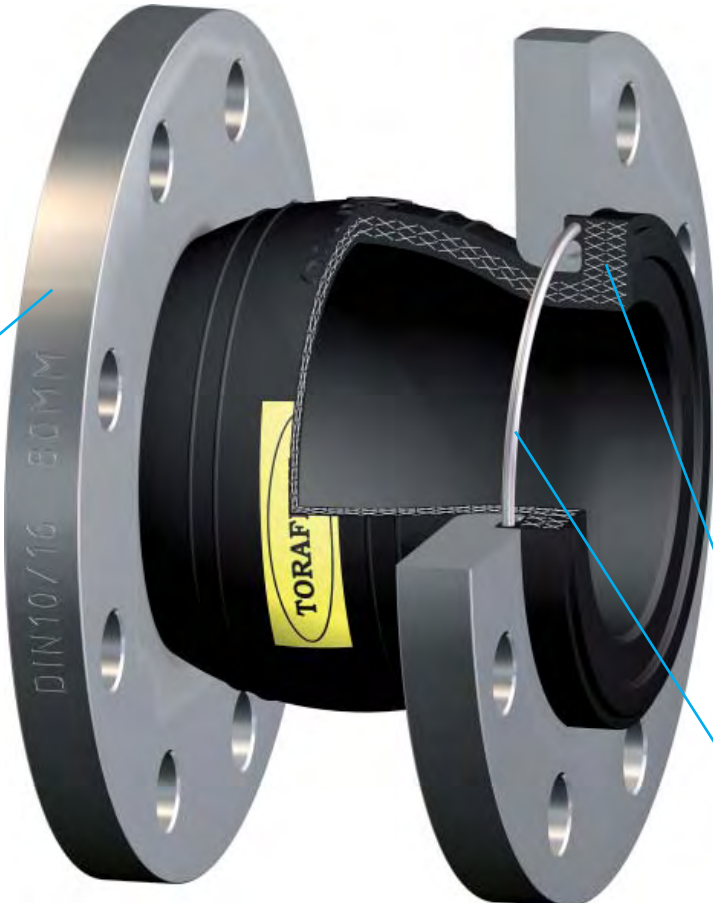
1 Spherical design for better strength and efficiency.

8 Light and easy to install, little installation space required, easy maintenance of replaceable bellows.

2 Precision injection moulded of synthetic rubber and nylon.

7 - 4 different allowable movements: axial compression and expansion, lateral and angular deflection.

3 Outer layer protects the bellows surface from eventual ozone attack, strikes and other environmental aggressions.



6 Loose flanges for easy assembly, specially machined to accept the full turned rubber, with standard execution in zinc plated steel.

4 Rugged design with high burst pressure, to absorb noise and vibration and withstand water hammers to a certain extent by:

- Inner Reinforcement placed in between the outer and inner layers. Made of Nylon plaited fabrics as standard, which provide high shell moulding resistance.
- End Bellows Reinforcement. Hardened steel wires to provide a greater consistence to the bellows outer neck.

5 Full turned rubber design, self-sealing, no additional gaskets are required; it prevents electrolytic corrosion.

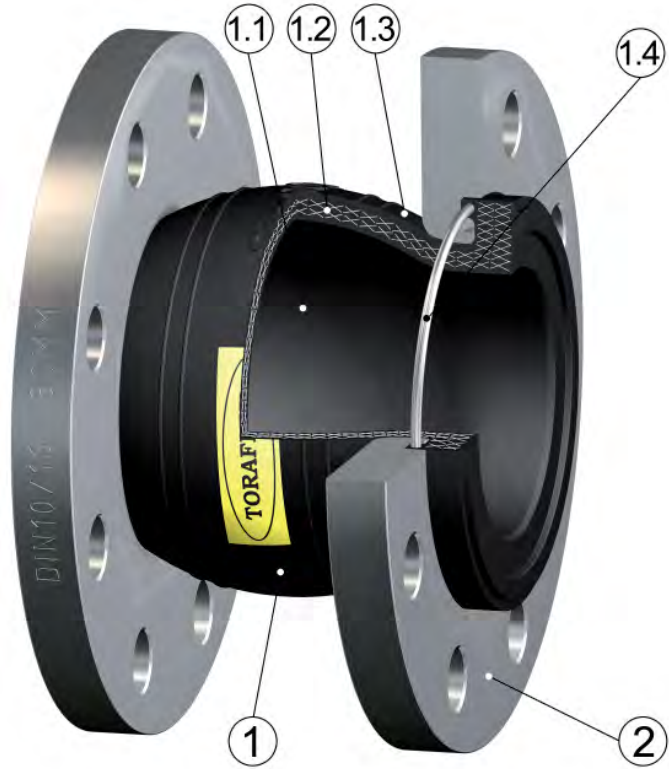
9 Lot number punched for full traceability purpose.



10 Rubber material identification and maximum service temperature.



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Parts and Materials

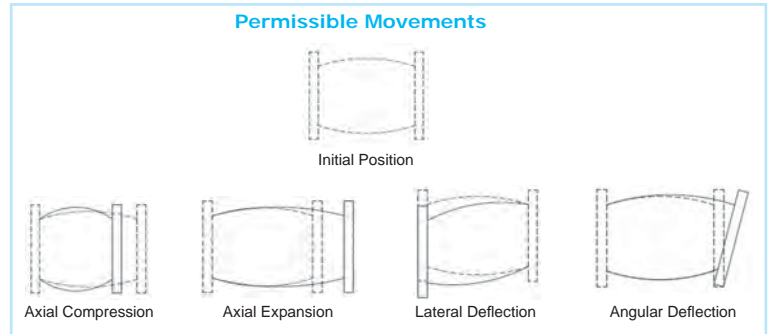
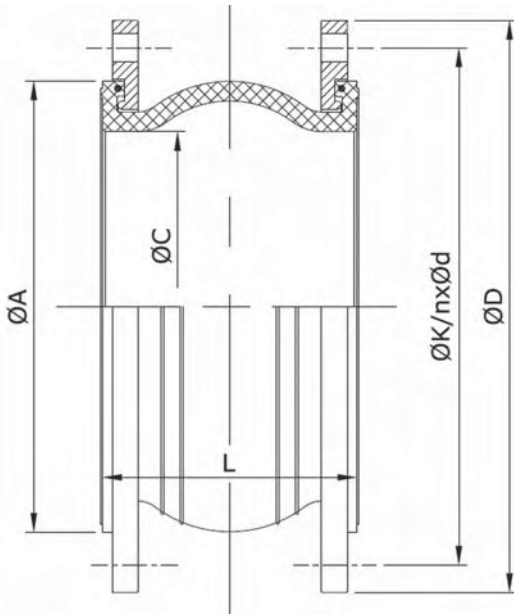


1- Vulcanised Rubber Bellows:	1.1 Rubber core (inner)
	1.2 Nylon tire cord
	1.3 Rubber cover (outer)
	1.4 Hard Steel Wire
Rubber options: EPDM, NBR, Hypalon, Neoprene, Viton, Butyl Rubber, Natural Rubber, PTFE/EPDM	
2- Loose Flanges:	
Standard Material: Carbon Steel Zinc Plated S235JR to EN10025 (old St 37-2 to DIN 17100)	
Flange Options: Stainless Steel AISI 304, AISI 316, etc.	

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Joint Dimensions and Permissible Movements



DN		BUILDING LENGTH (mm)		MAX. MOVEMENTS ALLOWED FROM INITIAL POSITION*				ΦA (mm)	ΦC (mm)	Approx. Weight (kg)	
Inch	mm	INITIAL (L)	TOLERANCE INSTALLED (min-max)	AXIAL COMPRESSION (mm)	AXIAL EXPANSION (mm)	LATERAL DEFLECTION (mm)	ANGULAR DEFLECTION			PN10	PN16/ASA150
1.1/4"	32	95	89-97	8	4	8	15°	68	35	3,2	3,2
1.1/2"	40	95	89-97	8	5	8	15°	68	37	4	4
2"	50	105	99-107	8	6	8	15°	86	50	5	5
2.1/2"	65	115	107-118	12	6	10	15°	106	65	6	6
3"	80	130	122-133	12	10	10	15°	118	72	8	8
4"	100	135	122-140	18	10	12	15°	152	98	9	9
5"	125	170	156-175	18	10	12	15°	182	122	11	11
6"	150	180	167-185	18	10	12	15°	213	146	13	13
8"	200	205	186-212	25	14	22	15°	262	194	19	19
10"	250	240	221-247	25	14	22	15°	323	245	24	27
12"	300	260	241-267	25	14	22	15°	372	295	29	33
14"	350	265	246-273	25	14	22	15°	409	320	39	48
16"	400	265	246-273	25	14	22	15°	471	365	48	62
18"	450	265	246-273	25	14	22	15°	520	420	56	73
20"	500	265	246-273	25	14	22	15°	572	480	69	111
24"	600	265	246-273	25	14	22	15°	690	585	71	138

Dimensions are expressed in mm, and subjected to manufacturing tolerances. Data can be altered without notice by our Design Department for the product benefit.

* The stated movements are solely valid with the joint subject to a single movement direction. Values are proportionally reduced along with the movement combination.

* Given tolerance installed and movements allowed are valid for rubber bellows. For bellows with PTFE sleeve, values must be reduced by 1/2.

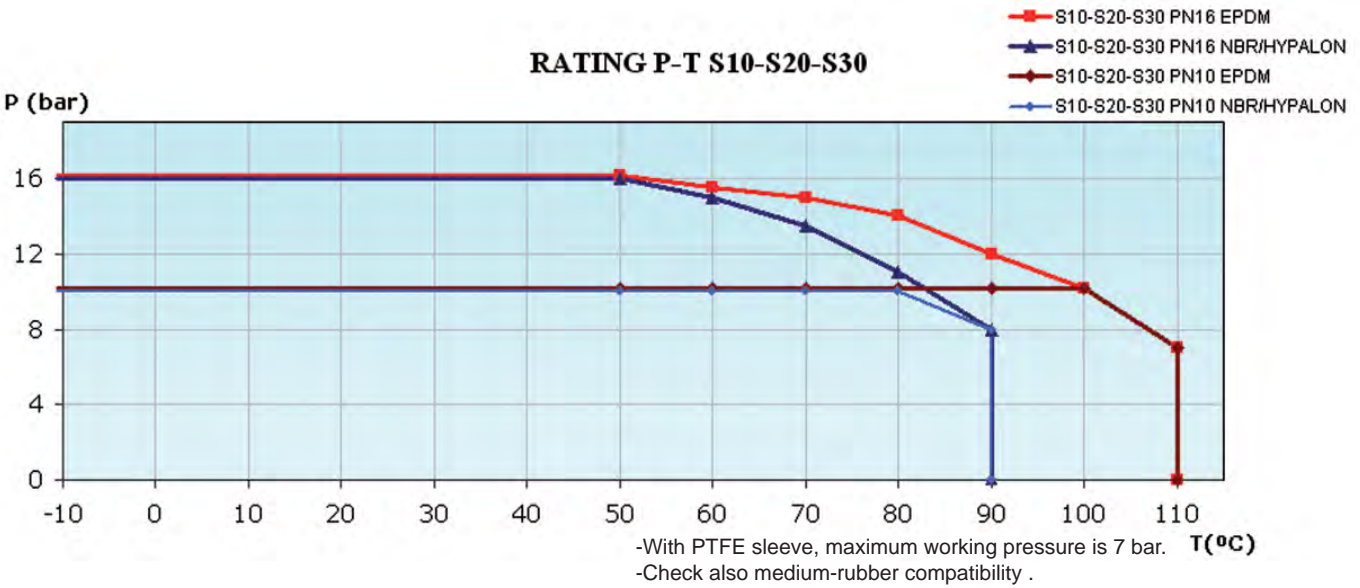
* Increasing temperatures reduce the permissible movements capacity and number of cycles.

Manufacture Design Standards

- QA certified to EN ISO 9001 procedures.
- Testing procedure according to EN12266-1.
- Marking according to EN19.
- Flanges drilled to EN1092-1 PN10, PN16, or ASME B16.5 ASA150.
- Rubber Joints are excluded from the Pressure Equipment Directive PED 97/23/CE, according to its article 1.3-15.

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Rubber Bellows - Working Parameters



JOINT	BURST PRESSURE
S10-S20 DN32-200 (1.1/4"-8")	60 bar
S10-S20 DN200-600 (10"-24")	40 bar
S30 DN15-80 (1/2"-3")	30 bar

VACUUM APPLICATION

Rubber Joints are resistant to negative pressures to a certain extent. They can become wrinkled depending on vacuum suction degree; herewith the guidelines for vacuum applications:

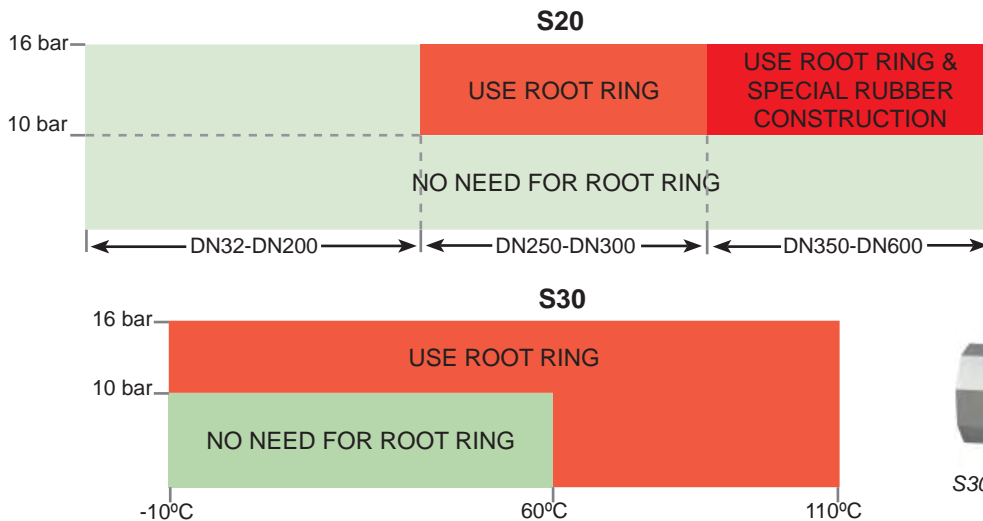
JOINT	TEMPORAL VACUUM LIMIT
S10 DN32-200 (1.1/4"-8")	-0,55 bar-g (0,45 bar-abs)
S10 DN250-600 (10"-24")	-0,25 bar-g (0,75 bar-abs)
S20 DN32-600 (1.1/4"-24")	-0,25 bar-g (0,75 bar-abs)
S30 DN15-80 (1/2"-3")	

For temporal vacuum service beyond these limits, or in case of permanent vacuum service at any value, use special joints with vacuum ring and limit rods assembled as shown in figure at left.



Limits rods for vacuum application in S10 and S20 Joints

USE OF ROOT RINGS FOR DOUBLE SPHERE RUBBER JOINTS



S20 with root ring split type



S30 with root ring integral type