HANSA FLEX

TECHNICAL INFORMATION
FASTENING TECHNOLOGY

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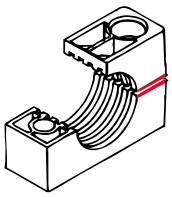
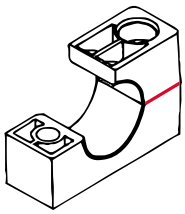
Technical Information for Fastening Technology

Contents

1. General information



Pipeline clamp



Hose clamp

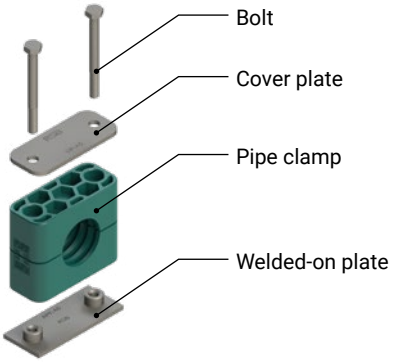
Pipeline clamps hold and guide individual and multiple pipelines. They must reliably absorb the occurring forces and either prevent, dampen or specifically guide the movements of the pipeline. The function and arrangement of the clamps along a length of pipeline determine their design as anchor or guide points.

Webs in the inner surface of the clamps dampen impacts and vibrations and absorb forces along the pipe axis. A gap between the two halves allows pre-tensioning of the blocks and a resulting compressive force on the pipe.

The use of clamps with a smooth inner surface and without pre-tension is recommended for retaining hoses and cables. These versions have different bore diameters, which are matched to the outside diameter of the hose.

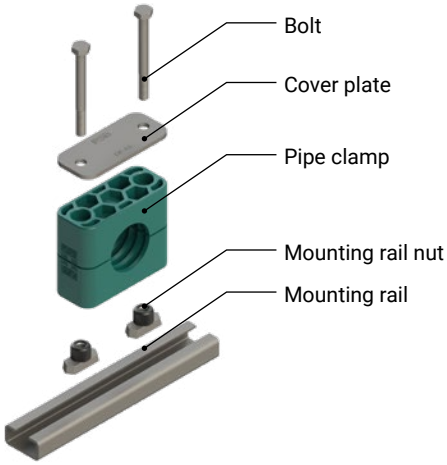
2. Installation

Installation on welded-on plates



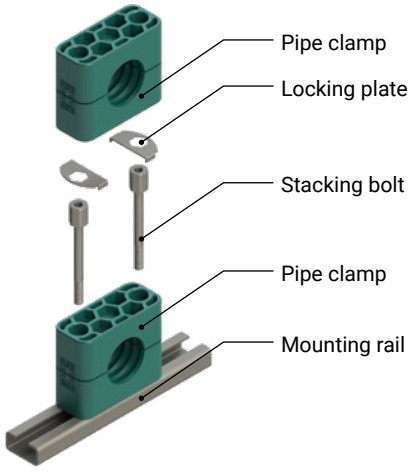
Weld the welded-on plates to a supporting surface strong enough to carry the applied loads. Take the alignment of the clamps into account. Fit the bottom clamp-half onto the welded-on plate, place the pipe into it, fit the second clamp-half and tighten with the bolts. Avoid pre-tensioning the blocks (the clamp halves should not touch after installation)! Do not weld with the plastic clamps in place! Elongated welded-on plates can be attached to the supporting surface with threaded fasteners.

Installation on mounting rails



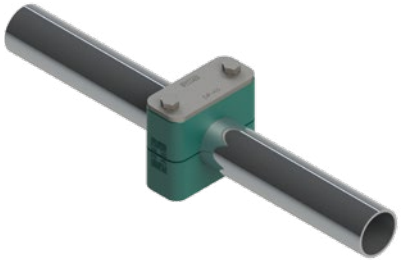
Mounting rails are available in four different heights and can be supplied in 1 or 2 m lengths as required. Weld mounting rails into place or screw them into place with fastening angles. Slide the mounting rails nuts into position and tighten them as far as they will go. No tightening is necessary for the heavy series. Fit the bottom clamp-half onto the mounting rail nuts, place the pipe into it, fit the second clamp-half and tighten with the bolts. The position of the clamp can be adjusted before tightening the bolts. Avoid pre-tensioning the blocks (the clamp halves should not touch after installation)!

Stacked installation



The system allows several clamps to be stacked one upon the other. They can be clamps of the same size or for different pipe diameters. A stacked installation uses special stacking bolts with locking plates to prevent them from rotating. Fit the bottom clamp-half onto the welded-on plate or mounting rail, place the pipe into it, fit the second clamp-half and tighten with the stacking bolts. The stacking bolts project beyond the top clamp-half. Put on the locking plates to prevent the stacking bolts from rotating. Fit the second pipe clamp onto the stacking bolts, and continue as above.

3. Screw tightening torques and radial pipe retaining forces



The screw tightening torques and axial pipe retaining forces given below relate to installations with welded-on plates, cover plates and hex-headed bolts in accordance with ISO 4014/4017 (DIN 931/933). The axial pipe retaining force (in accordance with DIN 3015 Part 10) is an average value, calculated from three tests at 23 °C with a grade St 37 steel pipe in accordance with DIN 2448 in which static friction is assumed. When the clamp is subjected to the given test force (F) in the axial direction of the pipe, the pipe does not slip in the clamp.

Pipe clamps in accordance with DIN 3015-1, light series

Size	Mounting bolt ISO 4014/4017 (DIN 931/933)	Polypropylene		Polyamide		Aluminium	
		Bolt tightening torque	Pipe retaining force F	Bolt tightening torque	Pipe retaining force F	Bolt tightening torque	Pipe retaining force F
	mm	Nm	kN	Nm	kN	Nm	kN
0	M6	8	0.6	10	0.6		
1	M6	8	1.1	10	0.7	12	4.2
2	M6	8	1.2	10	0.8	12	4.3
3	M6	8	1.4	10	1.6	12	4.8
4	M6	8	1.5	10	1.7	12	5.0
5	M6	8	1.9	10	2.0	12	7.3
6	M6	8	2.0	10	2.5	12	8.9

Pipe clamps in accordance with DIN 3015-2, heavy series

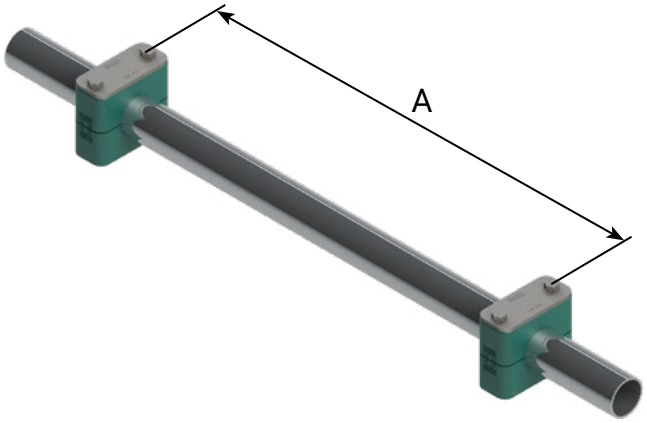
Size	Mounting bolt ISO 4014/4017 (DIN 931/933)	Polypropylene		Polyamide		Aluminium	
		Bolt tightening torque	Pipe retaining force F	Bolt tightening torque	Pipe retaining force F	Bolt tightening torque	Pipe retaining force F
	mm	Nm	kN	Nm	kN	Nm	kN
1	M10	12	1.6	20	4.2	30	12.1
2	M10	12	2.9	20	4.5	30	15.1
3	M10	15	3.3	25	5.1	35	15.5
4	M12	30	8.2	40	9.3	55	29.4
5	M16	45	11.0	55	15.8	120	34.8
6	M20	80	14.0	150	21.0	220	50.0
7	M24	110	28.0	200	32.0	250	70.6
8	M30	180	40.0	350	48.0	500	84.5
9	M30	200	119.0	370	125.0	500	181.5
10	M30	270	168.0	450	180.0	600	244.5

Pipe clamps in accordance with DIN 3015-3 (double clamps)

Size	Mounting bolt ISO 4014/4017 (DIN 931/933)	Polypropylene		Polyamide	
		Bolt tightening torque	Pipe retaining force F	Bolt tightening torque	Pipe retaining force F
	mm	Nm	kN	Nm	kN
1	M6	5	0.9	6	0.9
2	M8	12	2.1	12	2.2
3	M8	12	1.9	12	2.0
4	M8	12	2.7	12	2.9
5	M8	8	1.7	8	2.5

4. Recommended clamp spacing

The clamp spacing given for each pipe outside diameter range is a guidance value based on static loading.



Outside pipe diameter	Clamp spacing A
mm	m
6.0 – 12.7	1.0
12.7 – 22.0	1.2
22.0 – 32.0	1.5
32.0 – 38.0	2.0
38.0 – 57.0	2.7
57.0 – 75.0	3.0
75.0 – 76.1	3.5
76.1 – 88.9	3.7
88.9 – 102.0	4.0
102.0 – 114.0	4.5
114.0 – 168.0	5.0
168.0 – 219.0	6.0
219.0 – 324.0	6.7
324.0 – 356.0	7.0
356.0 – 406.0	7.5

5. Pipe bend installation

The installation of pipe bends usually involves attaching the pipe bend with pipe clamps immediately before and after the bend. This arrangement ensures the stability and safety of the whole pipeline. The clamps keep the pipe in place and minimise potential movements or vibrations. It is essential that the pipe clamps are correctly attached to ensure that the pipeline functions properly and no loads or stresses are transferred onto the pipe, which otherwise could lead to damage. Moreover, it is important that the pipe bend is mounted in a way that allows enough space for the thermal expansion of the pipe. This can often be achieved through the use of compensation loops or flexible pipe connections that allow the pipe to move without exerting loads on the pipe, the mountings or the supporting surface.

6. PARA system

Pipe and hose in the same clamp

Practically tool-free line installation is finally a reality: the SRS PARA Clamp by HANSA-FLEX has a unique click system to allow secure premounting of pipelines and hose lines in a matter of seconds. Line installation using this system could not be quicker, easier or more secure – and it can be done by a single installer.

The clever offset split insertion system with engagement hooks allows secure premounting of lines. They are held absolutely securely until final system installation. The modular design allows lines of different diameters to be mounted on the same multi-hole clamp. Grooved and smooth inserts for pipe and hose lines allow the two types of line to be efficiently mounted parallel to one another in the same pipe run.

Installation could not be easier:

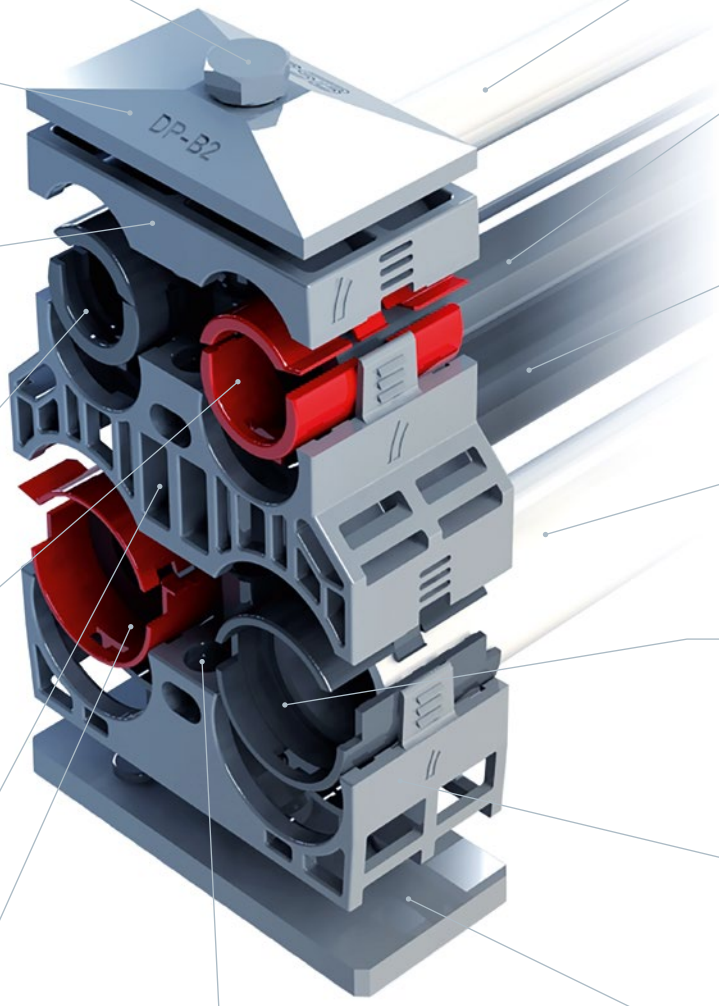
1. Attach clamp base and compatible insert

2. Click the pipe or hose line into the clamp

3. Click in a suitable counter-piece

4. The lines are held absolutely securely until final system installation

Typical example set-up of the modular PARA system



SRS AS 3 D
Hexagon bolt double pipe BG 3

SRS DP 2 D
Cover plate for double pipe clamp BG 2

SRS O TR 218 D PARA
Double pipe clamp ø 18 mm BG 2 top

SRS EIN R 212 PARA
Insert for BG 2, grooved for ø 12 mm pipe

SRS EIN S 213.5 PARA
Insert BG 2, smooth for ø 13.5 mm hose

SRS MK TR 325 218 D PARA
Double pipe clamp ø 18/25 mm BG 2/3 combination

SRS EIN S 323 PARA
Insert for BG 2, smooth for ø 23 mm hose

SRS AF 3 PARA
Assembly bolt PARA-clamp BG 3

Pipeline
ø 12 mm

Hose line
ø 13.5 mm

Hose line
ø 23 mm

Pipeline
ø 22 mm

SRS EIN R 322 PARA
Insert for BG 3, grooved for ø 22 mm pipe

SRS U TR 325 D PARA
Double pipe clamp ø 25 mm BG 3 bottom

SRS SP 3 D VZ
Welded-on base plate Double pipe BG 3

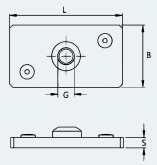
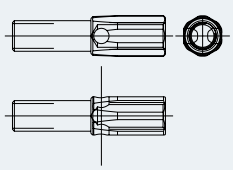
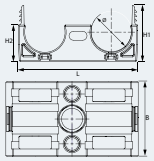
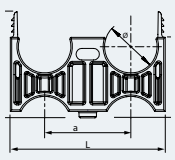
T

7. PARA system connection matrix

How the individual components fit together

				BG 2		
				Clamp bottom part	Clamp top part	
				SRS U TR 218 D PARA	SRS O TR 218 D PARA	
BG 2	Pipe	ø 15 mm	SRS EIN R 215 PARA	✓	✓	
	Pipe	ø 12 mm	SRS EIN R 212 PARA	✓	✓	
	Hose	ø 13.5 mm	SRS EIN S 213.5 PARA	✓	✓	
	Hose	ø 17.3 mm	SRS EIN S 217.3 PARA			
BG 3	Pipe	ø 18 mm	SRS EIN R 318 PARA			
	Pipe	ø 20 mm	SRS EIN R 320 PARA			
	Pipe	ø 22 mm	SRS EIN R 322 PARA			
	Pipe	ø 15 mm	SRS EIN R 315 PARA			
	Hose	ø 23 mm	SRS EIN S 323 PARA			
	Hose	ø 18 mm	SRS EIN S 318 PARA			
	Hose	ø 17.3 mm	SRS EIN S 317.3 PARA			
	Hose	ø 20 mm	SRS EIN S 320 PARA			
BG 2	Clamp bottom part	ø 18 mm	SRS U TR 218 D PARA		✓	
	Clamp top part	ø 18 mm	SRS O TR 218 D PARA	✓		
	Clamp middle part	ø 18 mm	SRS M TR 218 D PARA	✓		
	Assembly bolt		SRS AF 2 PARA	✓		
BG 3	Clamp bottom part	ø 25 mm	SRS U TR 325 D PARA			
	Clamp top part	ø 25 mm	SRS O TR 325 D PARA			
	Clamp middle part	ø 25 mm	SRS M TR 325 D PARA			
	Assembly bolt		SRS AF 3 PARA			
BG 2 / BG 3	Clamp middle combination part		SRS MK TR 325 218 D PARA		✓	
BG 2	Bolt		SRS AS 2 D (M8 x 35)	✓	✓	
	Bolt		SRS IS 2 D (M8 x 35)	✓	✓	
	Bolt		SRS AS 5 D (M8 x 60)	✓	✓	
	Bolt		SRS IS 5 D (M8 x 60)	✓	✓	
BG 3	Bolt		SRS AS 3 D (M8 x 45)			
	Bolt		SRS IS 3 D (M8 x 45)			

Individual components of the PARA system

Welded-on plate	Assembly bolt	Clamp bottom part	Clamp middle part	
				
Product No.	**Product No.**	**Product No.**	**Product No.**	
SRS SP D	SRS AF PARA	SRS U TR D PARA	SRS M TR D PARA	

BG 2	BG 3			BG 2 / BG 3
Clamp middle part	**Clamp bottom part**	**Clamp top part**	**Clamp middle part**	**Clamp middle combination part**
SRS M TR 218 D PARA	SRS U TR 325 D PARA	SRS O TR 325 D PARA	SRS M TR 325 D PARA	SRS MK TR 325 218 D PARA
✓				✓
✓				✓
✓				✓
	✓	✓	✓	✓
	✓	✓	✓	✓
	✓	✓	✓	✓
	✓	✓	✓	✓
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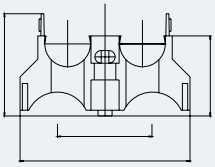
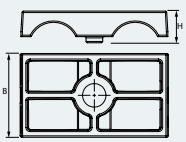
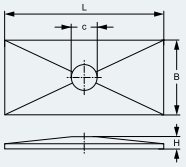
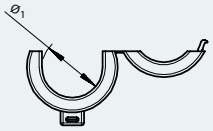
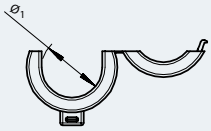
	✓	✓		

Clamp combination part	Clamp top part	Cover plate	Insert for hose	Insert for pipe
				
Product No.	**Product No.**	**Product No.**	**Product No.**	**Product No.**
SRS MK TR D PARA	SRS O TR D PARA	SRS DP D	SRS EIN S PARA	SRS EIN R PARA