ACCESSORIES FOR PIPELINE CONSTRUCTION

Casing Spacers System raci

Data Sheet

GERMAN QUALITY
DIN EN ISO 9001:2015 CERTIFIED

System raci

PRODUCT INFORMATION

Raci casing spacers, with **ball shaped skids** in a completely **screwless version,** are extremely **fast to mount**.

The high flexibility of the spacers allows extreme bending of the parts. The very high number of ball-shaped skids ensures that the pipeline load is perfectly distributed.

The round skids work with **low friction** and provide a **high abrasion resistance**. Keeping a **stock** of raci spacers is **easy and highly economical** because very few different spacers need to be kept. The **unique non-metallic connection** makes the system perfectly suitable for cathodic protected steel pipelines.

Heavy duty spacers can be produced with **full material skids** on request. High-temperature material is also available for special requirements.

A highly shear-resistant, anti-slide butyl tape prevents the spacer rings from slipping on the pipe surface. This high-quality tape is reinforced with PE, facilitating safe functioning, even when high forces are exerted.Our material is 100% PE and 100% recyclable.

Raci spacer elements fit together easily and can be fastened using a standard pipe wrench or a special tightening tool for the heavier types. No time-consuming screwing of element to element has to be done on site.

The tooth connection system allows a quick and safe mounting on the carrier pipe.

Only seven basic types of spacers provide complete coverage for all pipes from 38 to 2500 mm.

This completely metal-free system provides extremely high mechanical load capacity.

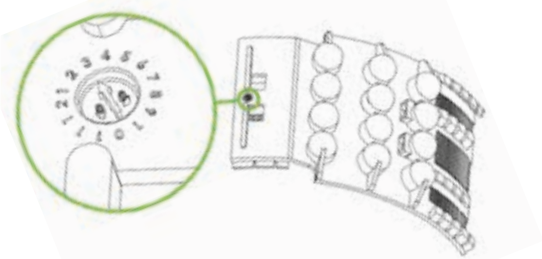
Yield strength	≥ 25 N/mm² (test acc. to UNI EN ISO 527-2)
Elongation at break	>200% (test acc. to UNI EN ISO 527-2)
Hardness shore D	64° - ASTM D 2240
Operating temperature	- 20°C up to + 40°C
Dielectric strength	> 37 kV/mm - ASTM D 149/64
UV stabilization	Good

N = short element

M = long element

M element + N element = example M/N spacer ring

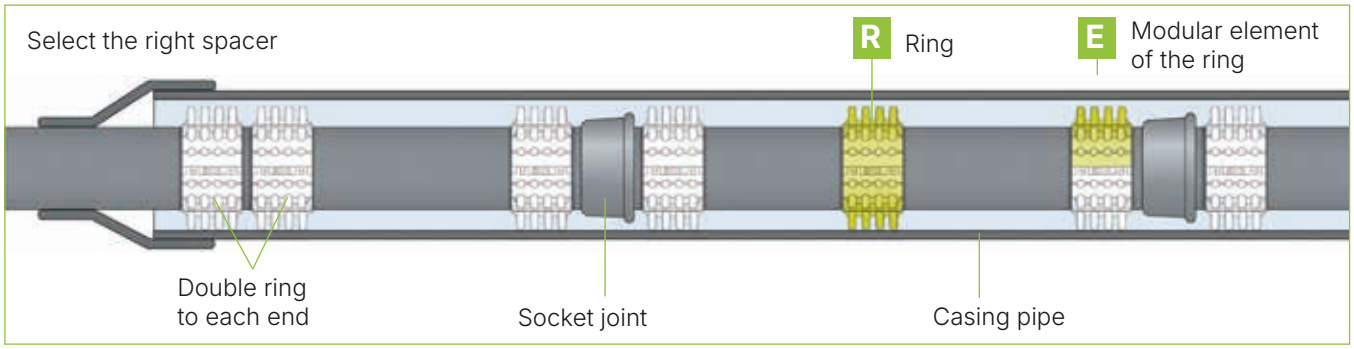
Each type of spacer can be assembled from long and short elements, here e.g. „M“ and „N“.



Batch number is marked to ensure traceability.

The right type of spacer depends on pipe sizes and the expected forces. A recommended distance between the rings and the necessary number of elements per ring can be determined using the following tables.

System raci

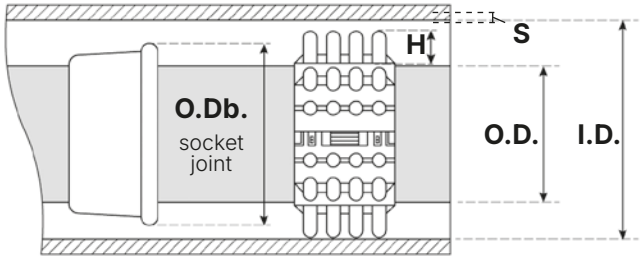


1. Choose possible types of spacers

2. When there are various choices, select the spacer according to the expected load. In case of doubt, choose the more stable type.

3. Select skid height:

- OD: Outside diameter carrier pipe
- ID: Inside diameter casing pipes
- O.Db : Outside diameter bell



Consider a clearance of height min. 12-15 mm when selecting the maximum skid height.

Skids should be min. 15 mm higher than the OD of a bell. Number of spacers =

Length of the crossing/recommended distance +3

Rollers for spacers system raci

System raci

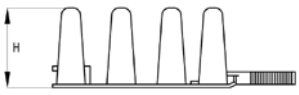
A/B Type spacers
Max. load capacity
180 kg/ring
Available skid heights:
19, 36 and 50 mm
Length of elements usable:
Type A = 105-122 mm
Type B = 87-103 mm
Width 100 mm

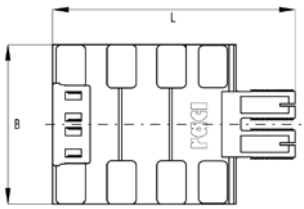
No special tool necessary!

OD pipe in mm min.	max.	No. of Elements / ring A	B	max. distance recommended
55,4	65,6*	-	2	1,5 m
61,3	71,5*	1	1	1,5 m
67,3	77,4*	2	-	1,5 m
82,9	94,4	-	3	1,5 m
89,1	104,3	1	2	1,5 m
101,1	116	3	-	1,5 m
110,8	131,2	-	4	1,5 m
116,6	137,1	1	3	1,5 m
134,7	154,8	4	-	1,5 m
150,3	175,8	2	3	1,5 m
168,5	193,5	5	-	1,5 m
193,5	229,6**	-	7	1,0 m
202,2	232,2**	6	-	1,0 m
230	254**	6	1	1,0 m
255	279**	7	1	1,0 m
280	309,6**	8	-	1,0 m

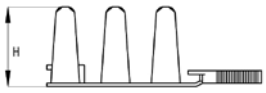
*S/T spacers are preferred for these sizes
**M/N spacers are recommended for these sizes

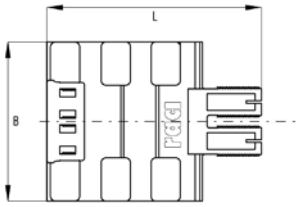
A type spacers





B type spacers





Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
A	113-128	100	19, 36, 50	180
B	95-110	100		180

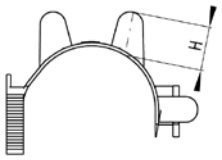
Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

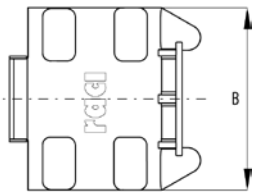
S/T Type spacers
Max. load capacity
110 kg/ring
Available skid height:
19 mm
Length of elements usable:
Type S = 92-109 mm
Type T = 117-132 mm
Width 85 mm

No special tool necessary!

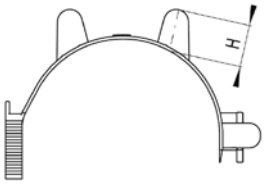
OD pipe in mm min.	max.	No. of Elements / ring S	T	max. distance recommended
59	68	2	–	1,5 m
69	75	1	1	1,5 m
76	84	–	2	1,5 m
88	102	3	–	1,5 m
103	107	2	1	1,5 m
108	114	1	2	1,5 m
115	120	–	3	1,5 m
121	132	4	–	1,5 m
133	140	3	1	1,5 m
141	146	2	2	1,5 m
147	152	1	3	1,5 m
153	168	–	4	1,5 m

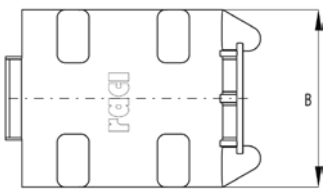
S type spacers





T type spacers

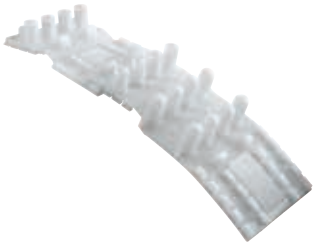




Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
S	94-110	85	19	110
T	119-135	85	19	110

Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

System raci



F/G Type spacers
Max. load capacity
500 kg/ring
Available skid heights:
25, 41 and 60 mm
Length of elements usable:
Type F = 198-228 mm
Type G = 95-121 mm
Width 130 mm

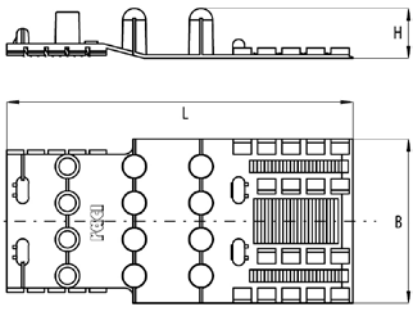
ICD Type spacers
Max. load capacity
200 kg/ring
Available skid height
15 mm
Length of elements usable:
Type I = 130-160 mm
Type C = 180-250 mm
Type D = 240-310 mm
Width 63 mm

Use tightening clamp Type F/G, M/N, L or lever

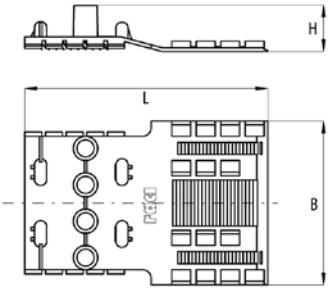
OD pipe in mm min.	max.	No. of Elements / ring F	G	max. distance recommended
116*	145*	2	–	2 m
124*	150*	1	2	2 m
154	182	2	1	2 m
189	217	3	–	2 m
219	256	3	1	1,5 m
254	282	4	–	1,5 m
283	315	4	1	1,5 m
316	345	5	–	1,5 m

*S/T or A/B spacers are recommended for these pipe sizes

F type spacers



G type spacers



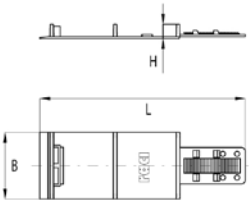
Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
F	197-237	130	25, 41, 60	500
G	91-129	130	25, 41, 60	500

Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

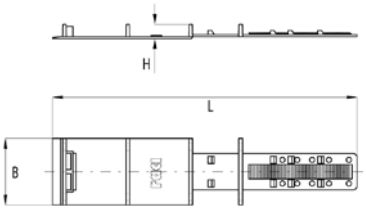
No special tool necessary

OD pipe in mm min.	max.	No. of Elements / ring I	C	D	max. distance recommended
42	52	1	–	–	1 m
58	79	–	1	–	1 m
80	93	–	–	1	1 m
94	100	2	–	–	1 m
101	120	1	1	–	1 m
121	145	–	2	–	1 m
146	165	–	1	1	1 m
166	197	–	–	2	1 m

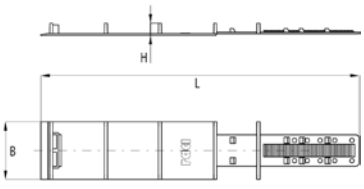
I type spacers



C type spacers



D type spacers



Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
I	130-160	63	15	200
C	180-250	63	15	200
D	240-310	63	15	200

Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

System raci

M/N Type spacers
Max. load capacity
1.000 kg/ring
Available skid heights:
18, 36, 50, 75 and 90 mm
Length of elements usable:
Type M = 265-320 mm
Type N = 185-240 mm
Width 180 mm

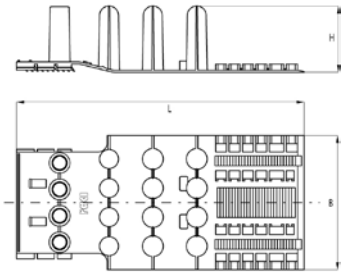
E/H Type spacers
Max. load capacity
2.700 kg/ring
Available skid heights:
25, 41, 60, 90, 110, 130 mm
Length of elements usable:
Type E = 280-320 mm
Type H = 130-170 mm
Width 225 mm

Use tightening clamp Type F/G, M/N, L

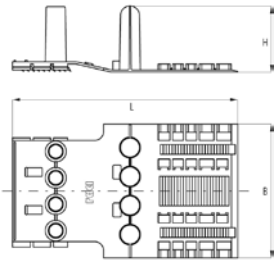
OD pipe in mm min.	max.	No. of Elements/ring M	N	max. distance recommended
160*	201	2	-	2 m
202	227	1	2	2 m
228	252	2	1	2 m
253	286	3	-	2 m
287	311	2	2	2 m
312	337	3	1	2 m
338	395	4	-	2 m
396	421	4	1	2 m
422	505	5	-	2 m
506	590	6	-	1,5 m
591	674	7	-	1,5 m
675	759	8	-	1,5 m

*F/G spacers are recommended for these pipe sizes

M type spacers



N type spacers



Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
M	265-320	180	18, 36, 50, 75, 90	1000
N	185-240	180		1000

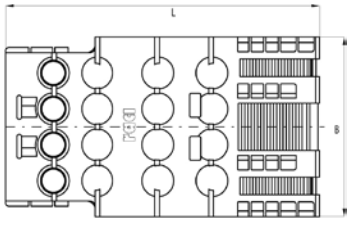
Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

Attention: For spacers with skids above 125 mm, the max. load capacity reduces to 50% of the given value. NEVER forget anti sliding tape.

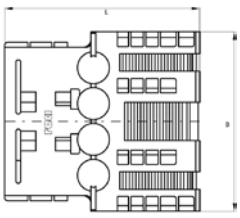
Use tightening clamp Type E/H

OD pipe in mm min.	max.	No. of Elements/ring E	H	max. distance recommended
306*	354	3	1	2 m
355	397	4	–	2 m
398	457	4	1	2 m
458	489	5	–	2 m
490	549	5	1	2 m
550	580	6	–	2 m
581	641	6	1	2 m
642	732	7	–	2 m
733	800	8	–	1,8 m
801	900	9	–	1,8 m
901	1000	10	–	1,8 m
1001	1099	11	–	1,8 m
1100	1191	12	–	1,8 m
1192	1283	13	–	1,5 m
1284	1374	14	–	1,5 m
1375	1466	15	–	1,2 m
1467	1558	16	–	1,2 m
1559	1650	17	–	1,2 m
1651	1741	18	–	1 m
1742	1833	19	–	1 m
1834	1925	20	–	0,8 m
1926	2108	21	–	0,7 m
2109	2200	23	–	0,7 m
2201	2292	24	–	0,7 m

E type spacers



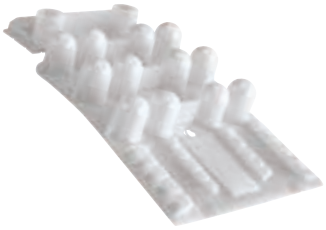
H type spacers



Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
E	280-335	225	25, 41, 60	2700
H	130-185	225	90	
			110, 130	

Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

System raci

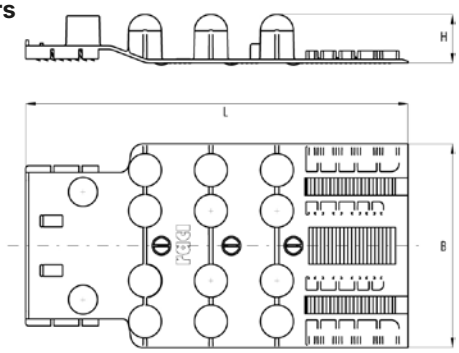


L Type spacers
Available skid heights:
25, 50, 75, 100, 125, 150, 175 and 200 mm
Length of element usable:
Type L = 280-325 mm
Width 210 mm

Use tightening clamp Type F/G, M/N, L

OD pipe in mm		No. of elements per ring	max. distance recommended	
min.	max.		Water	Gas
355	397	4	2,5 m	2,5 m
450	510	5	2,5 m	2,5 m
540	610	6	2,5 m	2,5 m
625	715	7	2,5 m	2,5 m
715	805	8	2,5 m	2,5 m
805	895	9	2 m	2,5 m
895	985	10	2 m	2,5 m
985	1075	11	1,5 m	2,5 m
1075	1160	12	1 m	2 m
1160	1250	13	1 m	2 m
1250	1340	14	1 m	2 m
1340	1430	15	0,8 m	2 m
1430	1520	16	0,8 m	2 m
1520	1610	17	0,5 m	2 m
1610	1750	18	0,5 m	2 m

L type spacers



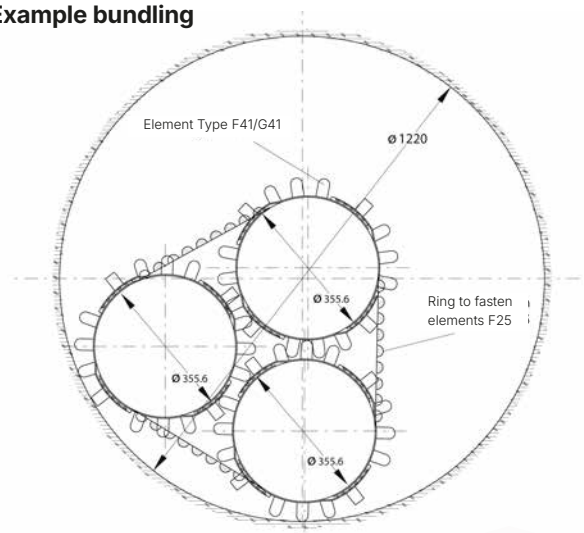
Type	Length	Width (B)	Height (H)	max. load
	mm	mm	mm	kg
L25 L50	280-325	210	25, 50	3000
L75 L100			75, 100	2500
L125			125	2000
L150 L175 L200			150, 175, 200	1500

Max. load has been calculated for a static state. If there are dynamic forces, these need to be considered in addition.

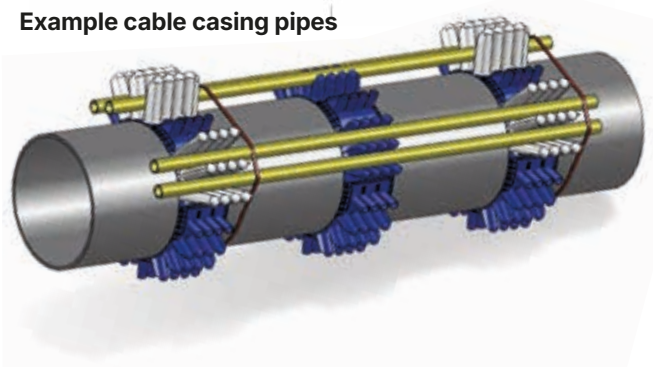
SPECIAL APPLICATION

You need to bring **several pipes** through one casing! We calculate the **bundle** for you or find a **customized solution**.

Example bundling



Example cable casing pipes



System raci with Integrated High-performance Plastic Rollers

E41 Roller Type spacers
Max. load capacity:
2000 kg
Available skid height:
41 mm
Length of elements usable:
280-320 mm
Width 225 mm

PRODUCT INFORMATION

These plastic spacer rings are a combination of the tried and trusted spacers in the series E/H with additional **rollers made from glass-fibre-reinforced high-performance plastic** (PA 30). The roller elements have a ball shape that ensures a **particularly high load capacity**. The combination of materials and the stability of the roller axles mean that **frictional force is reduced** by up to 54% **during feedthrough**, in comparison to a feedthrough without rollers. As this product does not contain any metallic connecting pieces, it is absolutely suitable for deployment with cathodically-protected steel pipeline constructions.

ADVANTAGES

- Rollers pre-installed by supplier
- Frictional force reduced by up to 54% during feedthrough
- Low roller height means they are suitable for use in tight spaces
- **Completely metal-free design**
- Fast and easy installation
- Our modular system ensures that this product is fully compatible with existing spacers and tools

Use tightening clamp Type E/H

OD pipe in mm		No. of elements/ring		max. distance recommended
from	to	E41 roller	H41*	
355	397	4	–	2 m
398	457	4	1	2 m
458	489	5	–	2 m
490	549	5	1	2 m
550	580	6	–	2 m
581	641	6	1	2 m
642	732	7	–	2 m
733	800	8	–	1,8 m
801	900	9	–	1,8 m
901	1000	10	–	1,8 m
1001	1099	11	–	1,8 m
1100	1191	12	–	1,8 m
1192	1283	13	–	1,5 m
1284	1374	14	–	1,5 m
1375	1466	15	–	1,2 m
1467	1558	16	–	1,2 m
1559	1650	17	–	1,2 m
1651	1741	18	–	1 m
1742	1833	19	–	1 m
1834	1925	20	–	0,8 m
1926	2108	21	–	0,7 m
2109	2200	23	–	0,7 m
2201	2292	24	–	0,7 m

*Type H41 is a connecting piece with only one row of skids without rollers

Type	Length	Width (B)	Height (H)	max. load	Art. No.
	mm	mm	mm	kg	
E41 Roller	280-320	225	41	2000	17084

System raci - Rollers for Spacers

ROLLERS FOR SPACERS M75 AND E90

- One or two rollers per element usable
- 300 kg max. load per roller
- Roller M max. height 85 mm
- Roller E max height 110 mm
- Reduces friction more than 50%
- Roller made from fibre-reinforced polyamide
- Wheel axle made from galvanised steel
- Easy plug-in mounting

Description	Skid height	Art.-No.
Roller for casing spacer M/75 Max. load 300 kg/Roller at vertical load	height 85 mm overall	17086
Roller for casing spacer E/90 Max. load 300 kg/ Roller at vertical load	height 110 mm overall	17085

Plug rollers into the flat spacer before fastening onto pipe

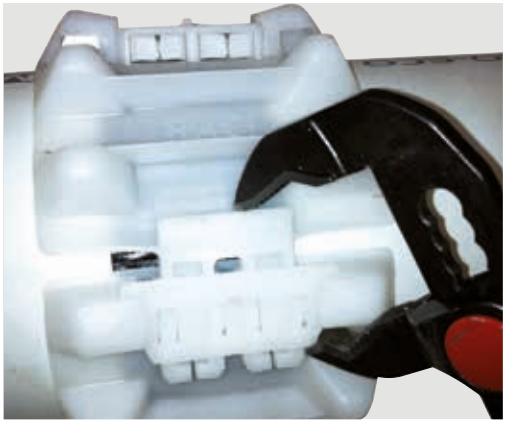
System raci

APPLICATION INSTRUCTIONS

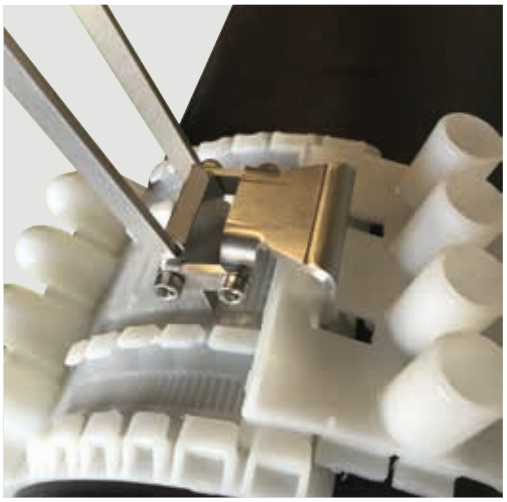
Before mounting please choose the right spacer and the right **number of elements** per ring for your application. A double ring of spacers is mounted at the end and the beginning of the crossing.

1. For preparation, pre-fix the right number of elements per ring by inserting two or three teeth. DO NOT CLOSE THE RING. Decide the spacers´ position on the carrier pipe. Apply **anti slide tape** under each ring to avoid movement of the rings on the pipe surface.
2. To mount on the pipe, connect ends of the ring by inserting two or three teeth deep.
3. Tighten all element connections evenly until the ring is fixed on the pipe properly. Do not fasten the elements unequally.
4. The minimum **overlap of the connection zones is 50%**, better 2/3. If the spacers are applied one or more days before insertion, the rings **MUST be tightened again**.

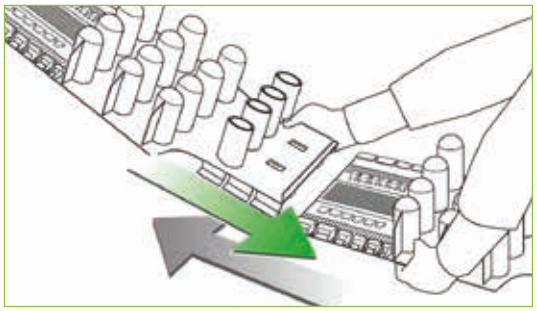
NO Special clamp for type A/B, S/T and I/C/D



Assembly with F/G tightening lever



1



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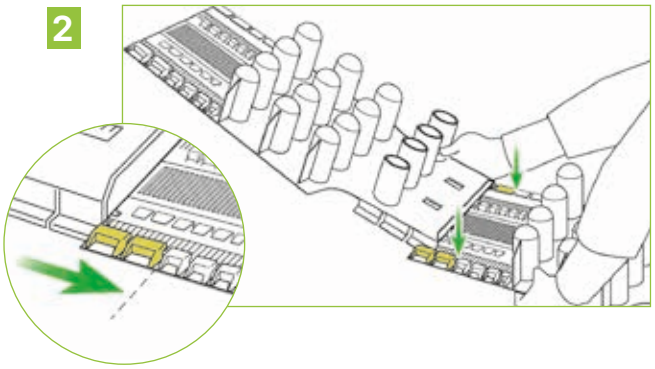

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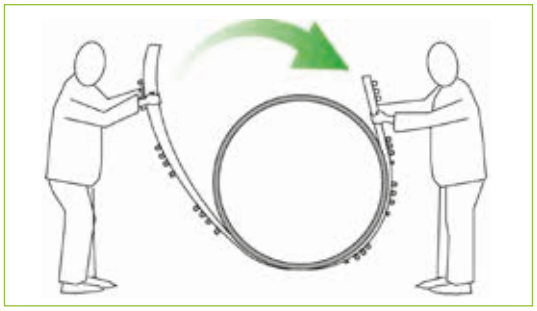

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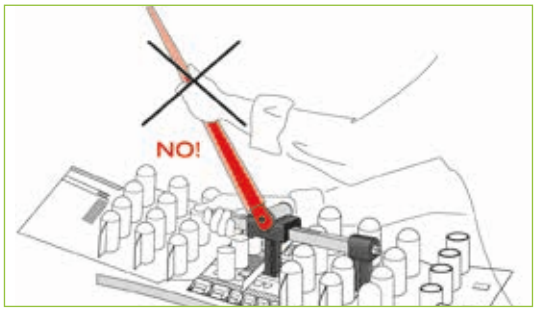


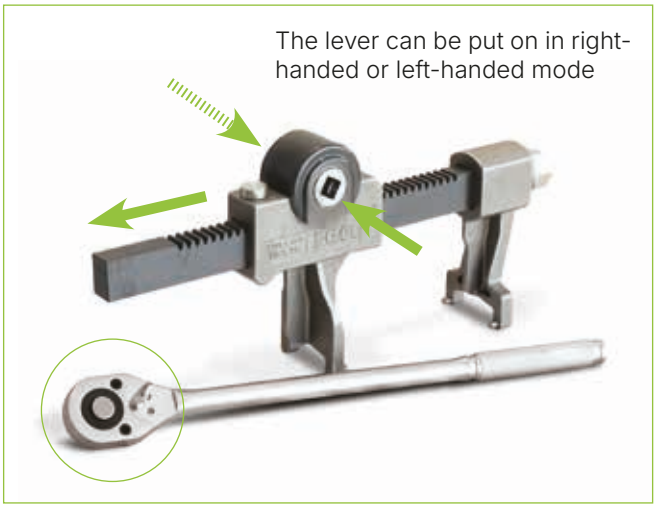
Never use an extended lever.

System raci

FASTENING CLAMPS

- Screwless and easy fixing tool
- High quality steel lever
- Long lever allows easy application
- Hardened main steel bar
- Usable in both directions
- Left and right hand use possible
- Supplied in high quality tool box

Fastening clamp



Fastening clamps can be rented from 4 pipes.

Type	Art.-No.
Fastening clamp for Type M/N, F/G and L Skid hight max. 90 mm	17070
Fastening clamp for Type M/N and L Skid hight max. 200 mm	17077
Fastening clamp for Type E/H	17072

TIGHTENING LEVER FOR F/G SPACERS

- Long lever for easy application
- Designed for F/G spacers
- Cost effective tool for pipes up to 12“ (DN300), especially for a few rings only
- Made of stainless steel

Type	Art.-No.
F/G tightening lever	17076

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