



TECHNICAL MANUAL

straub[®] 

the right connection

an OAliaxis company



Our experience – your guarantee

The name STRAUB is synonymous with expertise, quality and reliability. As an internationally renowned manufacturer of pipe joints, STRAUB not only invented "the original", it also owns the patents on several outstanding features that still make the famous STRAUB pipe coupling the unquestioned leader in its class. Our unique pipe coupling concept is backed by 40 years of experience and continuous development, guaranteeing Swiss quality and value.



Our solution – your added value

Our total product and customer focus enables us to respond quickly and efficiently to our customers' most stringent requirements. There is no substitute for our experience. STRAUB invented the "original" and continues to refine and improve the design today. Pipe couplings are our only business – we are passionate about what we do.



We obtained the ISO 9001 Quality Assurance Certificate in 1995 and ISO 14001 in 2008. This confirms proven STRAUB quality and made us once again world pioneers in the area of progressive sealing pipe joints.

The principle

One basic concept



Two types of STRAUB coupling

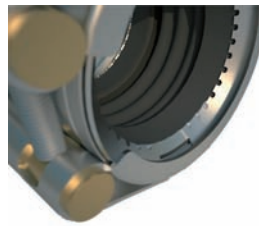
One unique technical principle: two basic types, but with innumerable applications, wherever pipes have to be joined together - that is the secret of STRAUB pipe joints. Based on the well-proven coupling technology, we combine different pipe materials for optimum solutions for customers.

Their safety and reliability have been examined and certificated by public authorities, insurance companies, technical inspectorates and licensing institutions for all the major industrial sectors in most industrial countries. You can rely on STRAUB couplings.

STRAUB-GRIP



Pull-out resistant



STRAUB-FLEX



Axially flexible



Properties

The progressive sealing effect

As the pressure in the pipe increases, so does the force on the sealing lips, due to the flow through the pressure equalisation channel.



The progressive anchoring effect

As the axial loading on the pipe increases due to increased internal pressure or external influences, the teeth bite even deeper into the pipe to compensate. The penetration depth of the anchoring ring teeth under pressure is 0.1 – 0.3 mm.



Benefits of STRAUB couplings

1. Universal use

- Suitable for any pipe material
- Compatible with any traditional jointing system
- Joins pipes of the same or dissimilar materials
- Leakproof joint for liquids, gas and for solids
- Quick and simple repairs of damaged pipes without service interruptions
- Installation and sealing principle consistent throughout the range
- Pull-out resistant or axially flexible available

2. Economical

- Pre-assembled design ensures simple and rapid installation
- For use on plain-end pipes without the need for costly pipe end preparation
- Simply cut pipes to length, center coupling and tighten bolts
- Suitable for thick or thin wall pipes (see page 54)
- No expensive installation tools required



3. Reliable

- Stress-free, flexible pipe joint
- Compensates axial movement and angular deflection
- Pressure-resistant and leak-proof even with inaccurate pipe assembly
- Dampens water-hammer, vibration and structure-borne noise



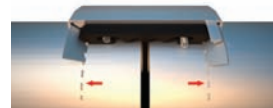
4. Easy handling

- Detachable and reusable
- Maintenance-free and trouble-free
- No time-consuming alignment and fitting work
- Easy installation technology
- No heat or fire hazard: can be fitted in fire risk or confined spaces without special equipment



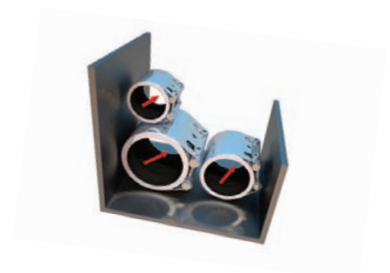
5. Durable

- Progressive sealing effect
- Progressive anchoring effect
- Corrosion resistant and temperature resistant
- Good resistance to chemicals
- Long service life



6. Space-saving

- Compact design for space-saving installation of pipes
- Allows the use of low profile pipe insulation
- Coupling can be rotated to provide easy access for installation
- Low weight



STRAUB Products



STRAUB-METAL-GRIP



STRAUB-METAL-GRIP GT



STRAUB-GRIP-L



**STRAUB-METAL-GRIP
FIRE-FENCE**



**STRAUB-GRIP-L
FIRE-FENCE**



STRAUB-ECO-GRIP



STRAUB-COMBI-GRIP



STRAUB-PLAST-GRIP



STRAUB-PLAST-PRO



STRAUB-FLEX



STRAUB-OPEN-FLEX



STRAUB-OPEN-FLEX GT



STRAUB-CLAMP SCE



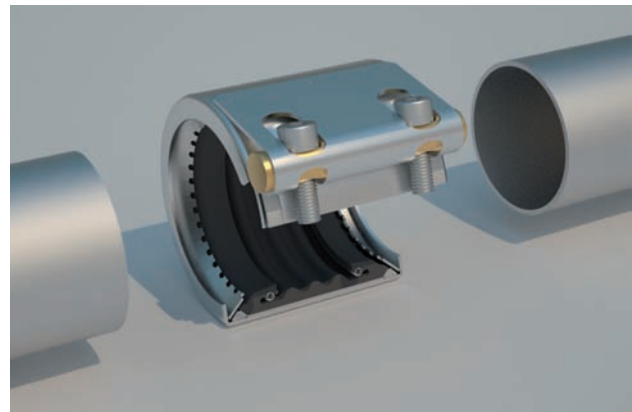
STRAUB-CLAMP SCZ

STRAUB-METAL-GRIP

In a class by itself – for demanding applications

STRAUB-METAL-GRIP is a high-performance coupling suitable for all pipe systems. This coupling is mainly used for building construction or civil engineering, power plants and demanding shipbuilding / offshore applications or as a machinery component.

STRAUB-METAL-GRIP also absorbs unexpected field stress and applies perfect for seismic retrofits.



Sectional view

Working pressure up to 67 bar
Outside diameters 30.0 up to 609.6 mm
Temperature range -30°C up to +100°C

Example for ordering:
STRAUB-METAL-GRIP 76.1 mm, EPDM/SS



STRAUB-METAL-GRIP as a high-quality pipe joint in a tunnel area; shock proofed up to 200 g



Cooling pipeline of an engine test facility with a working pressure of 6 bar and a temperature up to 60°C

STRAUB-METAL-GRIP GT

STRAUB-METAL-GRIP GT is especially designed, for example for:

- Sampling
- Drainage
- Venting
- System expansion or additional consumer

as a measuring-point for:

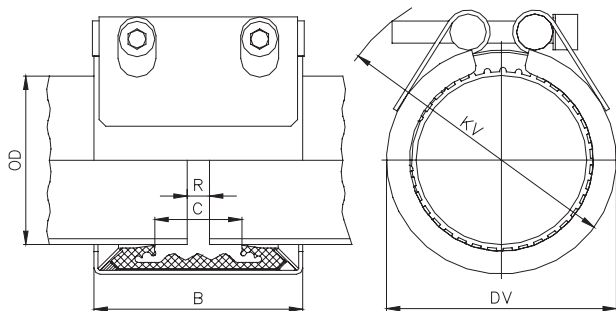
- Pressure
- Temperature
- Flow rate
- Operating checks

(STRAUB-OPEN-FLEX GT see page 35)



STRAUB-METAL-GRIP Ø 30.0 - 219.1 mm

Components / Materials	W1	W2	W4	W5 (on request)
Casing		AISI 304	AISI 304	
Bolts		AISI 4135	A4 - 80	
Bars		AISI 12 L 14, galvanised	AISI 304	
Anchoring rings		AISI 301	AISI 301	
Strip insert (option)		AISI 316 L / PVDF	AISI 316 L / PVDF	
Sealing sleeve	Temp.: -30°C up to +100°C			
EPDM	Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve	Temp.: -20°C up to +80°C			
NBR	Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve	Temp.: -20°C up to +125°C			
H-NBR (on request)	Medium: water, gas, oil, fuel and other hydrocarbons			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
30.0	29.5 - 30.5	67.0	46/67	18	47	70	5	5	10	6	8
33.7	33.2 - 34.2	62.0	46/67	18	52	75	5	5	10	6	8
38.0	37.5 - 38.5	58.0	61	19	58	90	5	5-10	15	6	8
42.4	41.9 - 42.9	53.0	61	20	62	90	5	5-10	15	6	8
44.5	44.0 - 45.0	48.0	61	20	64	95	5	5-10	15	6	8
48.3	47.8 - 48.8	44.0	61	20	68	95	5	5-10	15	6	8
54.0	53.5 - 54.5	39.0	77	38	74	100	5	5-15	20	6	8
57.0	56.4 - 57.6	37.0	77	32	77	105	5-10	5-25	20	6	8
60.3	59.7 - 60.9	37.0	77	32	82	110	5-10	5-25	20	6	8
63.5	62.9 - 64.1	37.0	77	0	84	114	5-10	5-25	35	6	8
76.1	75.3 - 76.9	56.0	94	39	100	130	5-10	5-25	35	8	10
84.0	83.2 - 84.8	45.0	94	39	112	140	5-10	5-25	35	8	10
88.9	88.0 - 89.8	41.0	94	39	117	145	5-10	5-25	35	8	10
104.0	103.0 - 105.0	37.0	94	39	133	160	5-10	5-25	35	8	10
108.0	106.9 - 109.1	35.0	94	39	133	160	5-10	5-25	35	8	10
114.3	113.2 - 115.4	34.0	94	39	139	165	5-10	5-25	35	8	10
129.0	127.7 - 130.3	33.0	108	43	160	190	5-15	5-25	60	10	12
133.0	131.7 - 134.3	33.0	108	43	160	190	5-15	5-25	60	10	12
139.7	138.3 - 141.1	32.0	109	43	168	200	5-15	5-25	60	10	12
154.0	152.5 - 155.5	32.0	109	51	186	215	5-15	5-25	60	10	12
159.0	157.4 - 160.6	31.0	109	43	187	215	5-15	5-25	60	10	12
168.3	166.6 - 170.0	29.0	109	43	200	230	5-15	5-25	60	10	12
219.1	216.9 - 221.3	26.0	150	60	259	295	5-15	5-35	100	14	16

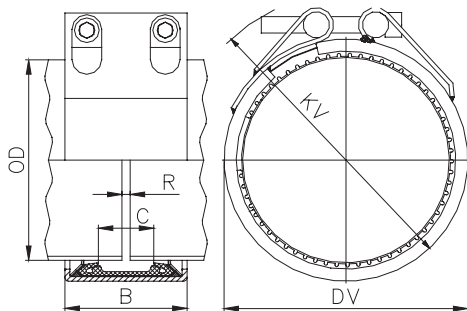
Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-METAL-GRIP Ø 180.0 - 609.6 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.			
Bolts	AISI 4135			
Bars	AISI 12 L 14, galvanised			
Anchoring rings	AISI 301			
Strip insert (option)	AISI 316 L / PVDF			
Sealing sleeve EPDM	Temp.: -30°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
180.0	178.0 - 182.0	29.0	148	67	225	285	5-15	5-35	150	17	20
193.7	192.0 - 195.5	29.0	148	67	239	300	5-15	5-35	150	17	20
200.0	198.0 - 202.0	28.0	148	67	245	305	5-15	5-35	180	17	20
206.0	204.0 - 208.0	28.0	148	67	251	310	5-15	5-35	180	17	20
244.5	242.0 - 247.0	27.0	148	67	290	345	5-15	5-35	180	17	20
267.0	264.5 - 269.5	24.0	148	67	312	365	5-15	5-35	180	17	20
273.0	270.5 - 275.5	21.0	148	67	318	370	5-15	5-35	180	17	20
323.9	320.5 - 327.0	18.0	148	67	369	420	5-15	5-35	230	17	20
355.6	352.0 - 359.0	17.0	148	67	401	450	5-15	5-35	230	17	20
406.4	402.5 - 410.5	14.0	148	67	451	500	5-15	5-35	230	17	20
457.2	452.5 - 462.0	8.0	148	67	502	550	5-15	5-35	250	17	20
508.0	503.0 - 513.0	6.0	148	67	604	600	5-15	5-35	250	17	20
558.8	554.0 - 564.0	6.0	148	67	604	650	5-15	5-35	300	17	20
609.6	604.5 - 614.5	5.0	148	67	655	700	5-15	5-35	300	17	20

STRAUB produces custom made couplings from 180.0 up to 609.6 mm

Remarks:

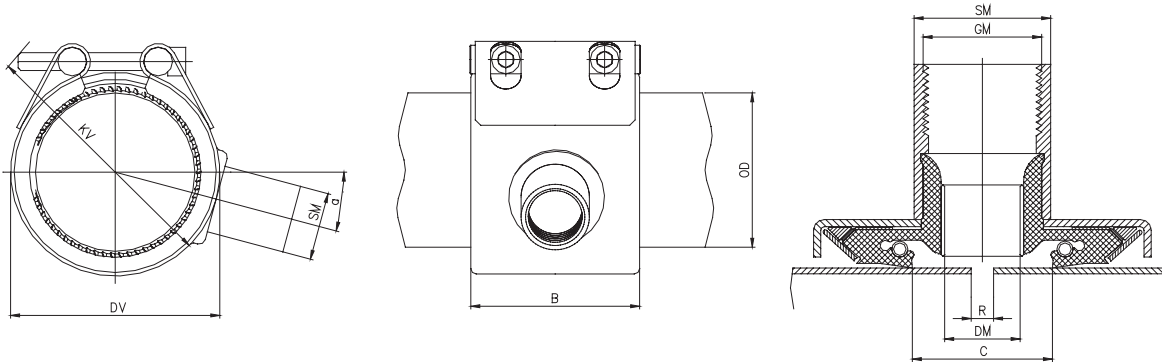
- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-METAL-GRIP GT Ø 60.3 - 139.7 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 304	AISI 304	
Bolts		AISI 4135	A4 - 80	
Bars		AISI 12 L 14, galvanised	AISI 304	
Anchoring rings		AISI 301	AISI 301	

Sealing sleeve EPDM
 Temp.: -20°C up to +70°C
 Medium: all qualities of water, waste water, air, solids and chemical products



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	SM [mm]	GM [Zoll]	DM [mm]	R without strip insert [mm]	α [°]	Torque rate [Nm]
60.3	59.7 - 60.9	37.0	77	32	82	110	32	3/4	15	5 - 10	40	25
76.1	75.3 - 76.9	56.0	94	39	100	130	38	1	21	5 - 10	33	35
88.9	88.0 - 89.8	41.0	94	39	117	145	38	1	21	5 - 10	15	35
114.3	113.2 - 115.4	34.0	94	39	139	165	38	1	21	5 - 10	0	35
139.7	138.3 - 141.1	32.0	109	43	168	200	38	1	21	5 - 10	0	60

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
 Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54

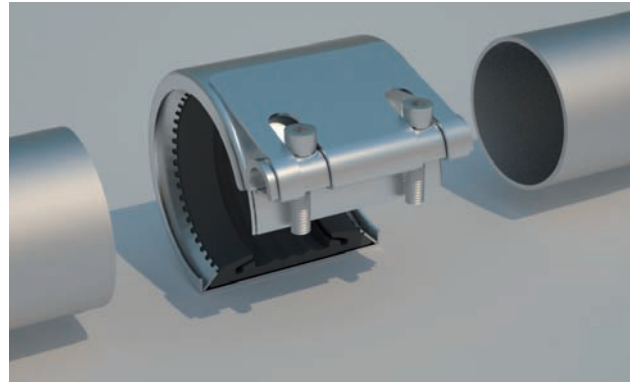
For IPS sizes in bold see page 54 for actual OD

STRAUB-GRIP-L

Standard duty – for industrial plant

STRAUB-GRIP-L is the light standard coupling series from STRAUB. It is particularly suitable for lighter pipes within the lower pressure range, e.g. for water and waste water treatment applications, industrial process pipe work and shipbuilding.

A special advantage is the light weight and the single bolt on the small diameters.



Sectional view

Working pressure up to 46 bar
Outside diameters 26.9 up to 609.6 mm
Temperature range -20°C up to +180°C
100% Stainless steel construction

Example for ordering:
STRAUB-GRIP-L 273.0 mm, EPDM/SS



Time-saving installation due to the single bolt system; Integration of controls and instruments into an aluminium extrusion unit



Prefabricated pipe section are installed with STRAUB-GRIP-L

STRAUB and membrane filtration



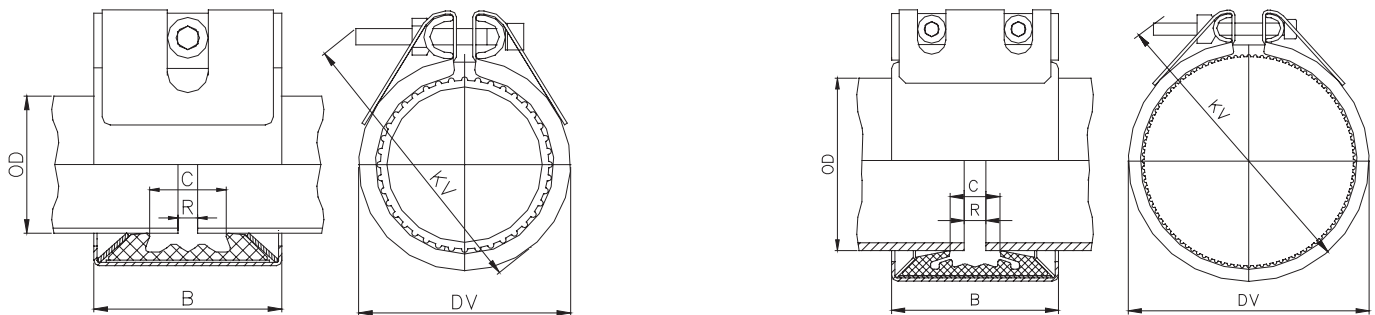
STRAUB offers interesting solutions for all drinking water applications, for example:

- Raw water supply
- Pure water discharge
- Connection of modules and end caps
- Connection of complete racks

STRAUB engineers also develop tailor-made solutions meeting the specific needs of our customers.

STRAUB-GRIP-L Ø 26.9 - 219.1 mm

Components / Materials	W1	W2	W4	W5
Casing				AISI 316 L / 316 TI
Bolts				A4 - 80
U-Bars				AISI 316 L / 316 TI
Anchoring rings				AISI 301
Strip insert (option)				AISI 316 L / PVDF
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve H-NBR (on request)	Temp.: -20°C up to +125°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



26.9 - 60.3 with single bolt

OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
26.9	26.4 - 27.4	46.0	46	19	43	70	5	5	5	5	6
30.0	29.5 - 30.5	42.0	46	17	47	75	5	5	5	5	6
33.7	33.2 - 34.2	38.0	46	17	51	75	5	5	5	5	6
38.0	37.5 - 38.5	33.0	61	25	57	90	5	5-10	7.5	6	8
42.4	41.9 - 42.9	30.0	61	25	62	95	5	5-10	7.5	6	8
44.5	44.0 - 45.0	33.0	61	25	64	95	5	5-10	7.5	6	8
48.3	47.8 - 48.8	30.0	61	25	67	100	5	5-10	7.5	6	8
54.0	53.5 - 54.5	20.0	76	37	76	105	5-10	5-15	7.5	6	8
57.0	56.4 - 57.6	18.0	76	37	76	105	5-10	5-15	10	6	8
60.3	59.7 - 60.9	22.0	76	37	79	110	5-10	5-15	7.5	6	8
66.6	64.9 - 67.3	34.0	95	35	87	126	5-10	5-20	10	6	8
70.0	68.9 - 70.7	32.0	95	36	92	131	5-10	5-20	10	6	8
73.0	72.3 - 73.7	31.0	95	41	96	142	5-10	5-25	12	6	8
76.1	75.3 - 76.9	31.0	95	41	98	142	5-10	5-25	12	6	8
79.5	78.7 - 80.3	28.0	95	35	100	142	5-10	5-25	12	6	8
84.0	83.2 - 84.8	26.0	95	35	112	152	5-10	5-25	12	6	8
88.9	88.0 - 89.8	22.0	95	41	111	157	5-10	5-25	12	6	8
100.6	99.6 - 101.6	22.0	95	35	129	172	5-10	5-25	12	6	8
101.6	100.6 - 102.6	22.0	95	35	130	172	5-10	5-25	15	6	8
104.0	103.0 - 105.0	22.0	95	35	132	172	5-10	5-25	12	6	8
104.8	103.8 - 105.8	22.0	95	35	133	172	5-10	5-25	12	6	8
108.0	106.9 - 109.1	21.0	95	41	130	172	5-10	5-25	12	6	8
114.3	113.2 - 115.4	16.0	95	41	136	177	5-10	5-25	12	6	8
127.0	125.7 - 128.3	19.0	110	54	151	195	5-10	5-30	20	8	10
129.0	127.7 - 130.3	19.0	110	54	153	195	5-10	5-30	20	8	10
130.2	128.9 - 131.5	19.0	110	54	154	200	5-10	5-30	20	8	10
133.0	131.7 - 134.3	19.0	110	54	157	200	5-10	5-30	20	8	10
139.7	138.3 - 141.1	16.0	110	54	164	210	5-10	5-30	20	8	10
141.3	139.9 - 142.7	16.0	110	54	166	210	5-10	5-30	20	8	10
154.0	152.5 - 155.5	16.0	110	48	184	225	5-10	5-30	20	8	10
159.0	157.4 - 160.6	16.0	110	54	183	225	5-10	5-30	20	8	10
168.3	166.6 - 170.0	16.0	110	54	192	230	5-10	5-30	20	8	10
219.1	216.9 - 221.3	16.0	142	80	250	295	5-10	5-30	60	10	12

Remarks:

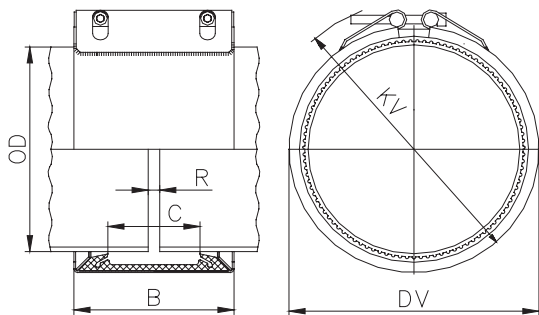
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- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-GRIP-L Ø 180.0 - 609.6 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 316 L / 316 TI		AISI 316 L / 316 TI
Bolts		AISI 4135		A4 - 80
Bars		AISI 12 L 14, galvanised		AISI 316 L
Anchoring rings		AISI 301		AISI 301
Strip insert (option)		AISI 316 L / HDPE		AISI 316 L / HDPE
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
180.0	178.0 - 182.0	16.0	141	80	205	255	5-10	5-35	50	10	12
193.7	192.0 - 195.5	16.0	141	80	224	270	5-10	5-35	50	10	12
200.0	198.0 - 202.0	15.0	141	80	230	275	5-10	5-35	50	10	12
204.0	202.0 - 206.0	14.0	141	80	234	280	5-10	5-35	50	10	12
206.0	204.0 - 208.0	14.0	141	80	234	280	5-10	5-35	50	10	12
244.5	242.0 - 247.0	9.0	141	80	275	320	5-10	5-35	50	10	12
250.0	247.5 - 252.5	9.0	141	80	280	325	5-10	5-35	50	10	12
254.0	251.5 - 256.5	9.0	141	80	284	325	5-10	5-35	50	10	12
256.0	253.5 - 258.5	9.0	141	80	284	325	5-10	5-35	50	10	12
267.0	264.5 - 269.5	8.0	141	80	297	340	5-10	5-35	50	10	12
273.0	270.5 - 275.5	7.0	141	80	303	345	5-10	5-35	60	10	12
304.0	301.0 - 307.0	6.0	141	80	334	375	5-10	5-35	60	10	12
306.0	303.0 - 309.0	6.0	141	80	334	375	5-10	5-35	60	10	12
323.9	320.5 - 327.0	5.0	141	80	354	395	5-10	5-35	60	10	12
355.6	352.0 - 359.0	4.0	141	80	386	425	5-10	5-35	60	10	12
406.4	402.5 - 410.5	3.0	141	80	436	470	5-10	5-35	60	10	12
457.2	452.5 - 461.5	2.0	141	80	487	520	5-10	5-35	60	10	12
508.0	503.5 - 512.5	2.0	141	80	538	570	5-10	5-35	60	10	12
558.8	554.5 - 563.5	2.0	141	80	589	620	5-10	5-35	60	10	12
609.6	605.5 - 614.0	1.0	141	80	640	670	5-10	5-35	60	10	12

STRAUB produces custom made couplings from 180.0 up to 609.6 mm

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-FIRE-FENCE

The fire resistant coupling - for use wherever fire protection is required by law

The STRAUB FIRE-FENCE combines functional design with the latest technologies. The STRAUB-FIRE-FENCE is based on the proven coupling technology, which has been developed for the shipbuilding industry. Meanwhile, the STRAUB-FIRE-FENCE is also successfully used for tunneling, fire hose applications and for engine developments, etc.

Even with its flame protection, the coupling is space saving, shows significantly improved crush resistance and, thanks to the innovative design, is also lighter. In the event of a fire, the intumescent fire protection coating expands, protectively enclosing the coupling. During this process, the coupling retains its full operational capability – without any limitations!

The STRAUB-FIRE-FENCE offers its innovative design, whilst retaining the traditional characteristics of classical STRAUB couplings.

Working pressure like STRAUB-GRIP-L,
STRAUB-METAL-GRIP and STRAUB-FLEX

Outside diameters:

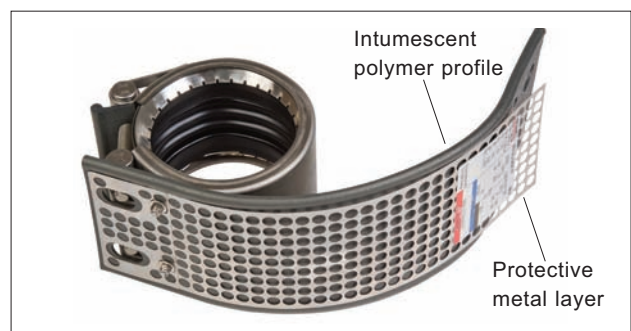
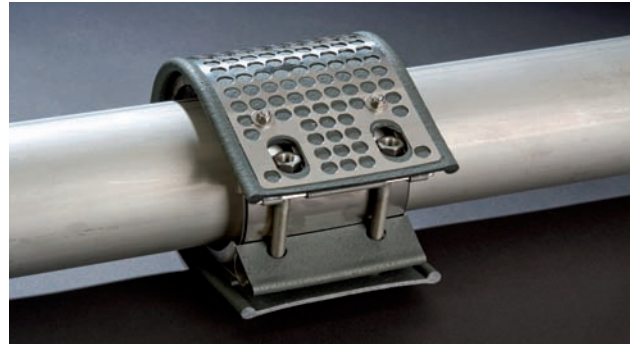
STRAUB-METAL-GRIP-FIRE-FENCE 30.0 – 457.2 mm

STRAUB-GRIP-L-FIRE-FENCE 26.9 – 406.4 mm

STRAUB-FLEX-FIRE-FENCE 48.3 – 457.2 mm

Example for ordering:

STRAUB-METAL-GRIP-FF 76.1 mm, EPDM/SS



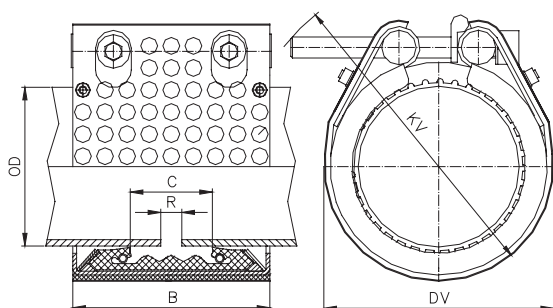
The FIRE-FENCE kit

STRAUB couplings that have already been installed can be quickly and easily upgraded to the STRAUB-FIRE-FENCE version using the FIRE-FENCE kit; available for models STRAUB-METAL-GRIP, STRAUB-GRIP-L, STRAUB-FLEX 1 and 2.



STRAUB-METAL-GRIP-FIRE-FENCE Ø 30.0 - 219.1 mm

Components / Materials	W1	W2	W4	W5 (on request)
Casing		AISI 304	AISI 304	
Bolts		AISI 4135	A4 - 80	
Bars		AISI 12 L 14, galvanised	AISI 304	
Anchoring rings		AISI 301	AISI 301	
Strip insert (option)		AISI 316 L / PVDF	AISI 316 L / PVDF	
Sealing sleeve EPDM	Temp.: -30°C bis +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C bis +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve H-NBR (on request)	Temp.: -20°C bis +125°C Medium: water, gas, oil, fuel and other hydrocarbons			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
30.0	29.5 - 30.5	67.0	46/67	18	57	75	5	5	10	6	8
33.7	33.2 - 34.2	62.0	46/67	18	62	80	5	5	10	6	8
38.0	37.5 - 38.5	58.0	71	19	68	95	5	5-10	15	6	8
42.4	41.9 - 42.9	53.0	71	20	72	95	5	5-10	15	6	8
44.5	44.0 - 45.0	48.0	71	20	74	100	5	5-10	15	6	8
48.3	47.8 - 48.8	44.0	71	20	78	100	5	5-10	15	6	8
54.0	53.5 - 54.5	39.0	87	38	84	105	5	5-15	20	6	8
57.0	56.4 - 57.6	37.0	87	32	87	110	5-10	5-25	20	6	8
60.3	59.7 - 60.9	37.0	87	32	87	115	5-10	5-25	20	6	8
63.5	62.9 - 64.1	37.0	87	32	94	119	5-10	5-25	35	6	8
76.1	75.3 - 76.9	56.0	110	39	110	135	5-10	5-25	35	8	10
84.0	83.2 - 84.8	45.0	110	39	122	145	5-10	5-25	35	8	10
88.9	88.0 - 89.8	41.0	110	39	127	150	5-10	5-25	35	8	10
104.0	103.0 - 105.0	37.0	110	39	143	165	5-10	5-25	35	8	10
108.0	106.9 - 109.1	35.0	110	39	143	165	5-10	5-25	35	8	10
114.3	113.2 - 115.4	34.0	110	39	149	170	5-10	5-25	35	8	10
129.0	127.7 - 130.3	33.0	124	43	170	195	5-15	5-25	60	10	12
133.0	131.7 - 134.3	33.0	125	43	170	195	5-15	5-25	60	10	12
139.7	138.3 - 141.1	32.0	125	43	178	205	5-15	5-25	60	10	12
154.0	152.5 - 155.5	32.0	125	51	196	220	5-15	5-25	60	10	12
159.0	157.4 - 160.6	31.0	125	43	197	220	5-15	5-25	60	10	12
168.3	166.6 - 170.0	29.0	125	43	210	235	5-15	5-25	60	10	12
219.1	216.9 - 221.3	26.0	166	60	269	300	5-15	5-35	100	14	16

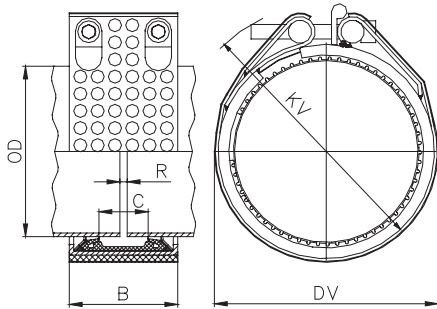
Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-METAL-GRIP-FIRE-FENCE Ø 244.5 - 457.2 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.			
Bolts	AISI 4135			
Bars	AISI 12 L 14, galvanised			
Anchoring rings	AISI 301			
Strip insert (option)	AISI 316 L / PVDF			
Sealing sleeve	Temp.: -30°C up to +100°C			
EPDM	Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve	Temp.: -20°C up to +80°C			
NBR	Medium: water, gas, oil, fuel and other hydrocarbons			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
244.5	242.0 - 247.0	27.0	164	67	300	350	5-15	5-35	180	17	20
267.0	264.5 - 269.5	24.0	164	67	322	370	5-15	5-35	180	17	20
273.0	270.5 - 275.5	21.0	164	67	328	375	5-15	5-35	180	17	20
323.9	320.5 - 327.0	18.0	164	67	379	425	5-15	5-35	230	17	20
355.6	352.0 - 359.0	17.0	164	67	411	455	5-15	5-35	230	17	20
406.4	402.5 - 410.5	14.0	164	67	461	505	5-15	5-35	230	17	20
457.2	452.5 - 462.0	8.0	164	67	512	555	5-15	5-35	250	17	20

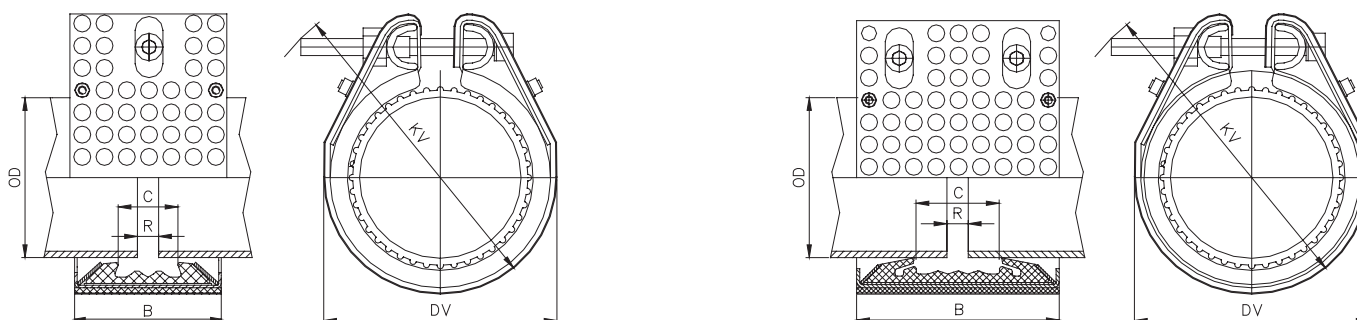
Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-GRIP-L-FIRE-FENCE Ø 26.9 - 219.1 mm

Components / Materials	W1	W2	W4	W5
Casing				AISI 316 L / 316 TI
Bolts				A4 - 80
U-Bars				AISI 316 L / 316 TI
Anchoring rings				AISI 301
Strip insert (option)				AISI 316 L / PVDF
Sealing sleeve EPDM	Temp.: -20°C up to +100°C	Medium: all qualities of water, waste water, air, solids and chemical products		
Sealing sleeve NBR	Temp.: -20°C up to +80°C	Medium: water, gas, oil, fuel and other hydrocarbons		
Sealing sleeve H-NBR (on request)	Temp.: -20°C up to +125°C	Medium: water, gas, oil, fuel and other hydrocarbons		
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C	Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)		



26.9 - 60.3 with single bolt

OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
26.9	26.4 - 27.4	46.0	56	19	53	75	5	5	5	5	6
30.0	29.5 - 30.5	42.0	56	17	57	80	5	5	5	5	6
33.7	33.2 - 34.2	38.0	56	17	61	80	5	5	5	5	6
38.0	37.5 - 38.5	33.0	71	25	67	95	5	5-10	7.5	6	8
42.4	41.9 - 42.9	30.0	71	25	72	100	5	5-10	7.5	6	8
44.5	44.0 - 45.0	33.0	71	25	74	100	5	5-10	7.5	6	8
48.3	47.8 - 48.8	30.0	71	25	77	105	5	5-10	7.5	6	8
54.0	53.5 - 54.5	20.0	86	37	86	110	5-10	5-15	7.5	6	8
57.0	56.4 - 57.6	18.0	86	37	86	110	5-10	5-15	10	6	8
60.3	59.7 - 60.9	22.0	86	37	89	115	5-10	5-15	7.5	6	8
66.6	64.9 - 67.3	34.0	111	35	97	131	5-10	5-20	10	6	8
70.0	68.9 - 70.7	32.0	111	36	102	136	5-10	5-20	10	6	8
73.0	72.3 - 73.7	31.0	111	41	106	147	5-10	5-25	12	6	8
76.1	75.3 - 76.9	31.0	111	41	108	147	5-10	5-25	12	6	8
79.5	78.7 - 80.3	28.0	111	35	110	147	5-10	5-25	12	6	8
84.0	83.2 - 84.8	26.0	111	35	122	157	5-10	5-25	12	6	8
88.9	88.0 - 89.8	22.0	111	41	121	162	5-10	5-25	12	6	8
100.6	99.6 - 101.6	22.0	111	35	139	177	5-10	5-25	12	6	8
101.6	100.6 - 102.6	22.0	111	35	140	177	5-10	5-25	15	6	8
104.0	103.0 - 105.0	22.0	111	35	142	177	5-10	5-25	12	6	8
104.8	103.8 - 105.8	22.0	111	35	143	177	5-10	5-25	12	6	8
108.0	106.9 - 109.1	21.0	111	41	140	177	5-10	5-25	12	6	8
114.3	113.2 - 115.4	16.0	111	41	146	182	5-10	5-25	12	6	8
127.0	125.7 - 128.3	19.0	126	54	161	200	5-10	5-30	20	8	10
129.0	127.7 - 130.3	19.0	126	54	163	200	5-10	5-30	20	8	10
130.2	128.9 - 131.5	19.0	126	54	164	205	5-10	5-30	20	8	10
133.0	131.7 - 134.3	19.0	126	54	167	205	5-10	5-30	20	8	10
139.7	138.3 - 141.1	16.0	126	54	174	215	5-10	5-30	20	8	10
141.3	139.9 - 142.7	16.0	126	54	176	215	5-10	5-30	20	8	10
154.0	152.5 - 155.5	16.0	126	48	194	230	5-10	5-30	20	8	10
159.0	157.4 - 160.6	16.0	126	54	193	230	5-10	5-30	20	8	10
168.3	166.6 - 170.0	16.0	126	54	202	235	5-10	5-30	20	8	10
219.1	216.9 - 221.3	16.0	158	80	260	300	5-10	5-30	60	10	12

Remarks:

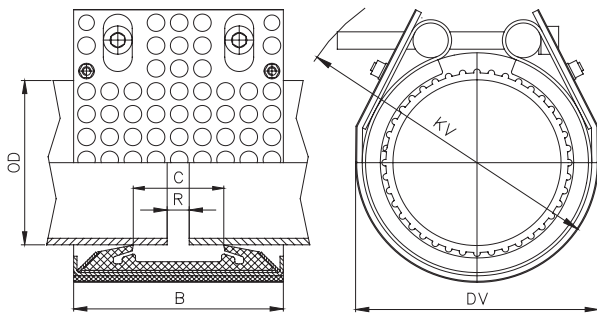
- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-GRIP-L-FIRE-FENCE Ø 180.0 - 406.4 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 316 L / 316 TI		AISI 316 L / 316 TI
Bolts		AISI 4135		A4 - 80
Bars		AISI 12 L 14, galvanised		AISI 316 L / 316 TI
Anchoring rings		AISI 301		AISI 301
Strip insert (option)		AISI 316 L / HDPE		AISI 316 L / HDPE
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
180.0	178.0 - 182.0	16.0	158	80	260	275	5-10	5-35	50	10	12
193.7	192.0 - 195.5	16.0	158	80	275	290	5-10	5-35	50	10	12
200.0	198.0 - 202.0	15.0	158	80	280	295	5-10	5-35	50	10	12
204.0	202.0 - 206.0	14.0	158	80	285	300	5-10	5-35	50	10	12
206.0	204.0 - 208.0	14.0	158	80	234	280	5-10	5-35	50	10	12
244.5	242.0 - 247.0	9.0	158	80	325	340	5-10	5-35	50	10	12
250.0	247.5 - 252.5	9.0	158	80	330	345	5-10	5-35	50	10	12
254.0	251.5 - 256.5	9.0	158	80	330	345	5-10	5-35	50	10	12
256.0	253.5 - 258.5	9.0	158	80	284	325	5-10	5-35	50	10	12
267.0	264.5 - 269.5	8.0	158	80	345	360	5-10	5-35	50	10	12
273.0	270.5 - 275.5	7.0	158	80	350	365	5-10	5-35	60	10	12
304.0	301.0 - 307.0	6.0	158	80	380	395	5-10	5-35	60	10	12
306.0	303.0 - 309.0	6.0	158	80	334	375	5-10	5-35	60	10	12
323.9	320.5 - 327.0	5.0	158	80	400	415	5-10	5-35	60	10	12
355.6	352.0 - 359.0	4.0	158	80	430	445	5-10	5-35	60	10	12
406.4	402.5 - 410.5	3.0	158	80	475	490	5-10	5-35	60	10	12

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-ECO-GRIP

Economical – for use in lower temperature and pressure ranges

The axial restraint STRAUB-ECO-GRIP is designated for applications in low pressure stages of up to 6 bar. As a result of its innovative, patented design it makes connecting smooth-ended pipes even more economical. The ready-to-use coupling is a removable and reusable design that makes connecting smooth-ended pipes even more economical. Due to the single bolt design and the slim casing it's a very space-saving product.

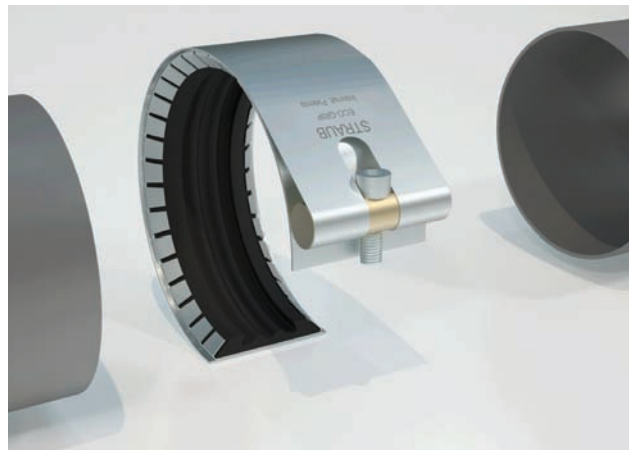
The STRAUB-ECO-GRIP device is designed to complement our range with an economical product which meets the requirements for pipe connections that are suited to low-stress applications in non-corrosive environments.

Application in the module of a water-treatment plant

Unmatched simple and efficient pipe connections!

STRAUB-ECO-GRIP is used where the load on the pipe system is low and appearance is also a matter of consideration; for example, for service and control lines in the industrial sector or for applications in plant engineering as well as process technology.

STRAUB-ECO-GRIP may also be applied on plastic pipes such as PVC, ABS and CPVC.



Sectional view

Working pressure up to 6 bar
Outside diameters 26.9 up to 168.3 mm
Temperature range -10°C up to +40°C

Example for ordering:
STRAUB-ECO-GRIP 168.3 mm, EPDM/SS

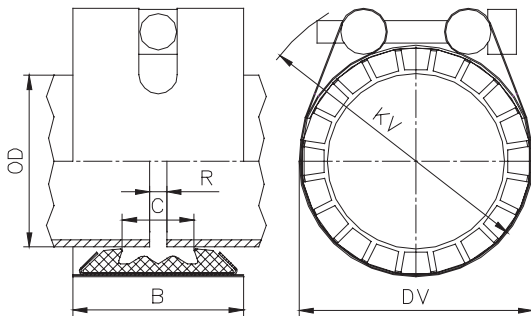


STRAUB-ECO-GRIP is suitable for the connection of sight glasses

STRAUB-ECO-GRIP Ø 26.9 - 168.3 mm

Components / Materials	W1	W2	W4	W5
Casing			AISI 301	
Bolts			A4 - 80	
Bars			AISI 316 L	
Anchoring rings			AISI 301	
Strip insert (option)			AISI 316 L	

Sealing sleeve Temp.: -10°C up to +40°C
EPDM Medium: all qualities of water, waste water, air, solids and chemical products



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
26.9	26.4 - 27.4	6.0	45	18	41	70	5	10	10	6	8
30.0	29.5 - 30.5	6.0	45	18	45	75	5	10	10	6	8
33.7	33.2 - 34.2	6.0	45	18	48	75	5	10	10	6	8
38.0	37.5 - 38.5	6.0	45	18	52	90	5	10	10	6	8
42.4	41.9 - 42.9	6.0	45	18	56	95	5	10	12	6	8
44.5	44.0 - 45.0	6.0	45	18	59	95	5	10	12	6	8
48.0	47.5 - 48.5	6.0	45	18	62	95	5	10	15	6	8
48.3	47.8 - 48.8	6.0	45	18	62	100	5	10	15	6	8
57.0	56.4 - 57.6	6.0	60	26	71	105	5	10	15	6	8
58.0	57.5 - 58.5	6.0	60	26	73	106	5	10	15	6	8
60.3	59.7 - 60.9	6.0	60	26	76	110	5	10	15	6	8
63.0	62.2 - 63.8	6.0	60	26	68	114	5	10	15	6	8
76.1	75.3 - 76.9	6.0	60	26	92	142	5	10	18	6	8
78.0	77.1 - 78.8	6.0	60	26	95	145	5	10	18	6	8
83.0	82.1 - 83.8	6.0	60	26	101	151	5	10	18	6	8
88.9	88.0 - 89.8	6.0	60	26	108	157	5	10	18	6	8
104.0	103.0 - 105.0	6.0	60	26	120	172	5	10	18	6	8
108.0	106.9 - 109.1	6.0	60	26	124	172	5	10	18	6	8
114.3	113.2 - 115.4	6.0	60	26	130	177	5	10	18	6	8
133.0	131.7 - 134.3	6.0	62	26	149	200	5	10	30	8	10
135.0	133.7 - 136.3	6.0	62	26	152	204	5	10	30	8	10
139.7	138.3 - 141.1	6.0	62	26	156	210	5	10	30	8	10
159.0	157.4 - 160.6	6.0	62	26	177	225	5	10	35	8	10
160.0	158.4 - 161.6	6.0	62	26	179	226	5	10	35	8	10
168.3	166.6 - 170.0	6.0	62	26	185	230	5	10	35	8	10

Remarks:

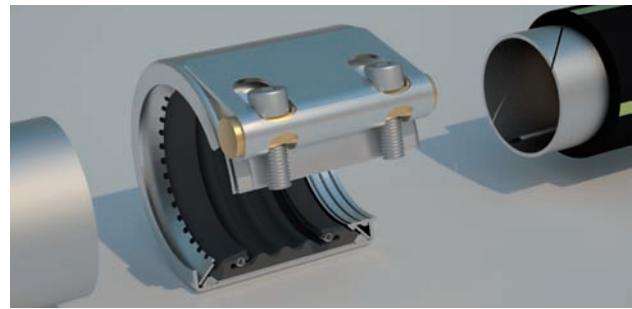
- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- The pressure values are valid on radial rigid carbon steel pipes under static loads
- For minimum wall-thickness of pipe, see page 54
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-COMBI-GRIP / STRAUB-PLAST-GRIP

Practical – for transitions

The STRAUB-COMBI-GRIP ensures a perfect connection at transitions between plastic and metal pipes by compensating different outside diameters. The advanced technology and high-specification manufacture ensure increased safety and reliability wherever this coupling is used.

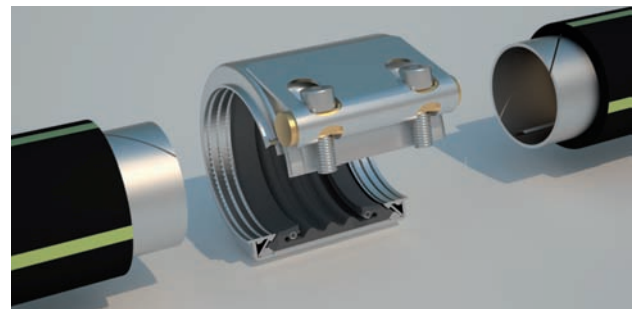


Sectional view

Example for ordering:
STRAUB-COMBI-GRIP 160.0 / 159.0 mm, EPDM/SS

Universal – for plastic pipes

The STRAUB-PLAST-GRIP is the ideal combination for thick- and thin-walled plastic tubes. It is used for gas and water supply applications, for industrial pipeline constructions, suction and pressure lines.



Sectional view

Example for ordering:
STRAUB-PLAST-GRIP 90.0 mm, EPDM/SS



Connection of PE and stainless steel pipes, which have been installed in a well room



Water treatment application; connections between the racks

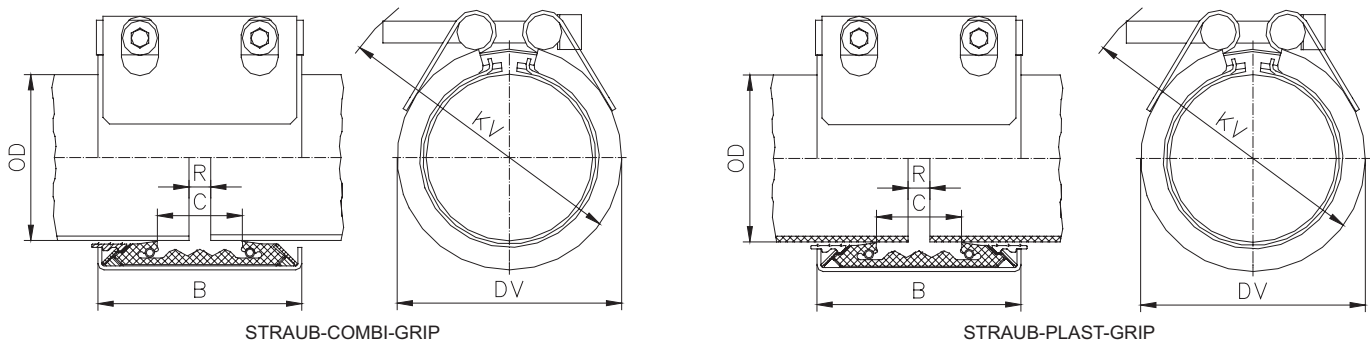
STRAUB Stiffening rings

Typical for pipes made of PE/PP materials are the deformation and thermal stretching characteristics. The material tends to flow under pressure and temperature influences. This process is largely dependent on time. External radial loading on the pipe requires the insertion of a STRAUB internal stiffening ring (two stiffening rings per joint; material AISI 316 L / DIN 1.4435). This also inhibits the tendency of the plastic to flow over the course of time.

For proper installation of the stiffening ring, the inside diameter of the plastic pipe (PE/PP) is required.

STRAUB-COMBI-GRIP / STRAUB-PLAST-GRIP Ø 40.0 - 160.0 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 304	AISI 304	
Bolts		AISI 4135	A4 - 80	
Bars		AISI 12 L 14, galvanised	AISI 304	
Anchoring rings		AISI 301 / 304	AISI 304	
Strip insert (option)		AISI 316 L / PVDF	AISI 316 L / PVDF	
Sealing sleeve EPDM	Temp.: Medium:	-20°C up to +100°C all qualities of water, waste water, air, solids and chemical products		
Sealing sleeve NBR	Temp.: Medium:	-20°C up to +80°C water, gas, oil, fuel and other hydrocarbons		



STRAUB-COMBI-GRIP

OD [mm]	Clamping range Plastic [mm]	Clamping range Metal [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
40.0/38.0	39.0 - 40.5	37.5 - 39.0	16.0	61	19	60	90	5	5-10	15	6	8
40.0/42.4	39.0 - 40.5	42.0 - 43.5	16.0	61	20	63	95	5	5-10	15	6	8
50.0/48.3	49.0 - 50.5	47.8 - 49.0	16.0	61	26	70	100	5	5-10	15	6	8
63.0/60.3	62.0 - 64.0	59.7 - 61.0	16.0	76	32	85	115	5-10	5-25	20	6	8
75.0/76.1	74.0 - 76.0	75.0 - 77.5	16.0	94	39	100	137	5-10	5-25	25	8	10
90.0/88.9	89.0 - 91.0	87.0 - 90.0	16.0	94	39	118	152	5-10	5-25	25	8	10
110.0/108.0	109.0 - 111.0	106.5 - 110.5	16.0	94	39	135	167	5-10	5-25	25	8	10
110.0/114.3	109.0 - 111.0	112.0 - 116.0	16.0	97	45	139	172	5-10	5-25	25	8	10
114.3/114.3	113.0 - 115.0	112.0 - 116.0	16.0	94	39	140	177	5-10	5-25	25	8	10
140.0/139.7	139.0 - 142.0	137.5 - 141.0	16.0	109	43	168	200	5-15	5-30	60	10	12
160.0/159.0 ¹	159.0 - 162.0	157.0 - 160.5	16.0	109	43	188	215	5-15	5-30	60	10	12

STRAUB-PLAST-GRIP

OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
40.0	39.0 - 40.5	16.0	61	19	60	90	5	5-15	15	6	8
50.0	49.0 - 50.5	16.0	61	61	70	100	5	5-15	15	6	8
63.0	62.0 - 64.0	16.0	76	76	85	115	5-10	5-20	20	6	8
75.0	74.0 - 76.0	16.0	94	94	99	137	5-10	5-25	25	8	10
90.0	89.0 - 91.0	16.0	94	94	118	152	5-10	5-25	25	8	10
110.0	109.0 - 111.0	16.0	94	94	135	167	5-10	5-25	25	8	10
114.3	113.0 - 115.0	16.0	94	94	139	172	5-10	5-30	25	10	12
125.0	124.0 - 126.0	16.0	94	94	152	185	5-15	5-30	60	10	12
140.0	139.0 - 142.0	16.0	108	108	168	200	5-15	5-30	60	10	12
160.0 ¹	159.0 - 162.0	16.0	109	109	188	215	5-15	5-25	60	10	12

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
- For the installation of pipes of pipes made of HDPE and PP, STRAUB stiffening rings are required
- Strip inserts are required for special applications, see page 43

¹ Available in version W2 only (anchoring ring on the plastic end made of 1.0036, galvanized)

For IPS sizes in bold see page 54 for actual OD

STRAUB-PLAST-PRO

Axial restraint connection of PE80 and PE100 pipes

Axially restrained full set allowing a quick and simple installation of pressure pipes made of polyethylene (PE). The full sets are available for pipes in dimension SDR 11 (63.0 - 110.0 mm, PN16) and SDR 17 (>110.0 - 355.0 mm, PN10). STRAUB-PLAST-PRO is particularly suitable for water, waste water, industrial plants and maintenance applications.

STRAUB-PLAST-PRO is applicable, whenever pipes cannot be connected by conventional technologies, like electro fusion. The unique full set offers the great advantage that pipes can easily be connected, without needing an external power supply and pipe end preparations, even under demanding external circumstances.

The pipes made of PE 80 or PE 100 are connected with a combination of liner and two connectors. STRAUB-PLAST-PRO is highly resistant to corrosion, thanks to the usage of first class materials.

PE pipes with additive protective layer and diffusion barrier layer are normally used, when drinking water lines have to be installed in contaminated soils. If the pipes are connected in a conventional manner, it is essential that the aluminium layer is removed. This operation is not necessary if STRAUB-PLAST-PRO will be used. STRAUB-PLAST-PRO connects such barrier layer pipes easily and safely without any pipe end preparation.



PE80 and PE100 pipes according to DIN 12201 / DIN 8074



STRAUB-PLAST-PRO Liner (illustrated STRAUB-PLAST-PRO L)



PE Pipe with aluminum layer

Example STRAUB-PLAST-PRO R (Reducer)



Slide the connectors over both pipes.



Push the reducer into the first tube until it stops



Push the tubes together as far as they will go.



Align the connectors to the pipe ends.



Tighten the locking bolts alternately with a torque wrench to the final torque rate indicated on the label of the connector.

The full set STRAUB-PLAST-PRO

Description

Scope of delivery

consisting of:

Liner

Connector

STRAUB-PLAST-PRO L

Coupler



+ 2x



STRAUB-PLAST-PRO LR

Repair-coupler
(Repairs up to 100 mm,
other lengths on request)



+ 2x



STRAUB-PLAST-PRO R

Reducer



+ 2x



STRAUB-PLAST-PRO B90

Elbow 90°



+ 2x



STRAUB-PLAST-PRO B45

Elbow 45°



+ 2x



STRAUB-PLAST-PRO T

Equal Tee



+ 3x



STRAUB-PLAST-PRO TFA

Flanged Branch Tee *



+ 2x



STRAUB-PLAST-PRO FB90

Duck Foot Bend 90° *



+ 1x



STRAUB-PLAST-PRO FA

Flange Adapter *
(Loose flange is included)



+ 1x



*Flange bolt set is not supplied (DIN EN 1092-1)

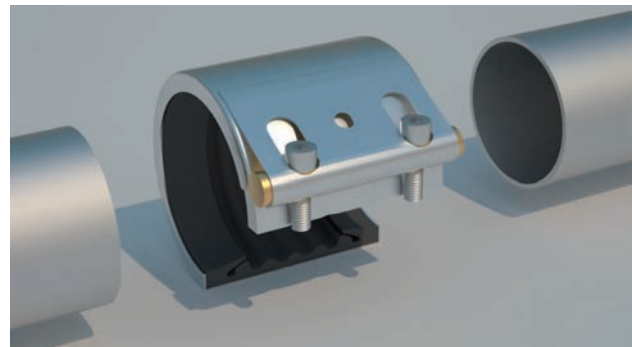
Example for your order: STRAUB-PLAST-PRO L 90.0, SDR 11

You will find the data sheets on our website www.straub.ch containing material specifications and all available diameters.

STRAUB-FLEX

The flexible – connection and compensator in one

STRAUB-FLEX is the axially flexible coupling for all pipe materials. This type of coupling not only connects pipes, it simultaneously compensates the axial movement, giving a significant added value to the coupling. STRAUB-FLEX absorbs noise and vibrations optimally.



Sectional view

Working pressure up to 16 / 25 bar
 Outside diameters 48.3 up to 4064 mm
 (available for all pipes from 172 mm up to 4064 mm)
 Temperature range -20°C up to +180°C

Example for ordering:
 STRAUB-FLEX 1L 76.1 mm, EPDM/SS



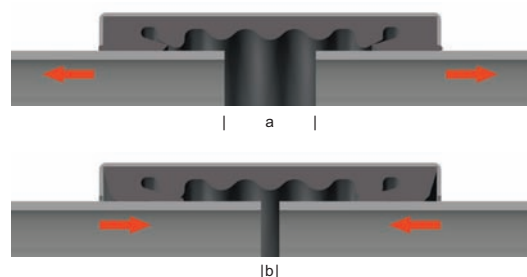
For the installation of an adapter piece



STRAUB-FLEX used as a compensator on unstable ground

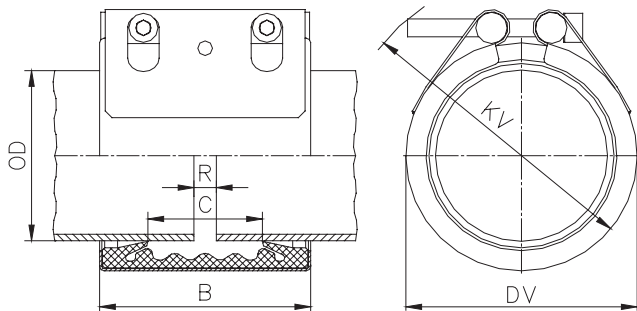
Compensation of axial movement

Max. axial movement	
STRAUB-type	Δl (a-b) [mm]
FLEX 1 / OPEN-FLEX 1	5
FLEX 2 / OPEN-FLEX 2	10
FLEX 3 / OPEN-FLEX 3	15
FLEX 3.5 / OPEN-FLEX 3.5	15
FLEX 4 / OPEN-FLEX 4	20



STRAUB-FLEX 1L Ø 48.3 - 168.3 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 304 / 316 L		AISI 316 L / 316 TI
Bolts		AISI 4135		A4 - 80
Bars		AISI 12 L 14, galvanised		AISI 316 L
Strip insert (option)		AISI 316 L / PVDF		AISI 316 L / PVDF
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve FPM / FKM²	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
48.3²	47.0 - 49.5	25.0	75	35	70	85	5	15	7.5	6	8
54.0 ²	52.5 - 55.5	25.0	75	35	76	90	5	15	7.5	6	8
57.0 ²	55.5 - 58.5	25.0	75	35	79	95	5	15	7.5	6	8
60.3	59.0 - 61.5	25.0	75	35	82	95	5	15	7.5	6	8
73.0	71.5 - 74.5	25.0	94	51	95	117	5	25	7.5	6	8
76.1	74.5 - 77.5	25.0	94	51	98	122	5	25	7.5	6	8
84.0	82.5 - 85.5	24.0	94	51	106	127	5	25	7.5	6	8
88.9	87.5 - 90.5	24.0	94	51	111	132	5	25	7.5	6	8
100.6	99.0 - 102.5	23.0	94	51	123	147	5	25	7.5	6	8
101.6	100.0 - 103.5	23.0	94	51	124	147	5	25	7.5	6	8
104.0	102.5 - 105.5	22.0	94	51	126	147	5	25	7.5	6	8
104.8	103.0 - 106.5	22.0	94	51	127	147	5	25	7.5	6	8
108.0	106.5 - 109.5	22.0	94	51	130	152	5	25	7.5	6	8
114.3	112.5 - 116.0	21.0	94	51	136	157	5	25	7.5	6	8
127.0	125.0 - 129.0	19.0	107	62	149	165	5	35	10	8	10
129.0	127.0 - 131.0	18.0	107	62	151	165	5	35	10	8	10
130.2	128.5 - 132.0	18.0	107	62	152	165	5	35	10	8	10
133.0	131.0 - 135.0	16.0	107	62	155	170	5	35	10	8	10
139.7	138.0 - 141.5	16.0	107	62	162	175	5	35	10	8	10
141.3	139.5 - 143.0	16.0	107	62	163	180	5	35	10	8	10
154.0	152.0 - 156.0	16.0	107	62	176	190	5	35	10	8	10
159.0	157.0 - 161.0	16.0	107	62	181	195	5	35	10	8	10
168.3	166.0 - 170.5	16.0	107	62	190	205	5	35	10	8	10

Remarks:

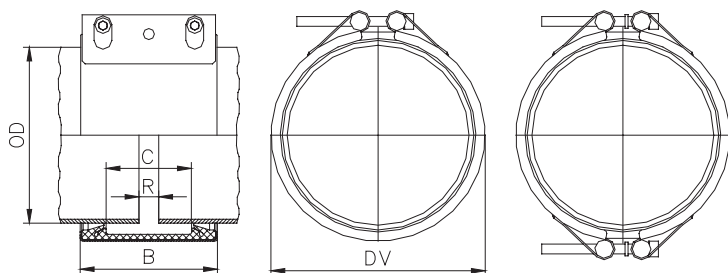
- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43

² FPM / FKM only available in STRAUB-OPEN-FLEX version, see page 30

For IPS sizes in bold see page 54 for actual OD

STRAUB-FLEX 2 Ø 172.0 - 2032.0 mm

Components / Materials	W1	W2	W4 (only for L-version)	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI	AISI 304	AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135	AISI 316 L	A4 - 80
Bars	AISI 12 L 14, galvanised	AISI 12 L 14, galvanised	AISI 316 L	AISI 316 L
Strip insert (option)	AISI 316 L / HDPE	AISI 316 L / HDPE	AISI 316 L / HDPE	AISI 316 L / PVDF
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



B Width of pipe coupling:
 FLEX 2 L = 138 mm
 FLEX 2 LS = 139 mm
 FLEX 2 LU = 141 mm
 FLEX 2 LV = 141 mm
 FLEX 2 H = 142 mm
 FLEX 2 XS = 148 mm

DV Outside diameter of the coupling installed = OD+27 mm
 C Distance between sealing lips = 91 mm
 R_{max.} Distance between pipe ends with strip insert = 35 mm
 Distance between pipe ends without strip insert = 10 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]						Torque rate [Nm]						
		L	LS	LU	LV (LDX)	H	XS	L	LS	LU	LV (LDX)	H	XS	
172.0	170 - 174	13.0						10						
180.0	178 - 182	12.0	16.5	25.0				10	15	30				
200.0	198 - 202	11.0	15.0	25.0				10	15	30				
219.1	217 - 222	10.0	13.5	25.0				10	15	30				
250.0	248 - 253	9.0	12.0	24.0				10	15	30				
267.0	264 - 270	8.0	11.0	22.5				15	15	30				
273.0	270 - 276	8.0	11.0	22.0	25.0	25.0	25.0	15	15	30	40	30	110	
304.0	301 - 307	7.0	10.0	19.5	25.0	25.0	25.0	15	20	30	40	30	110	
323.9	321 - 327	7.0	9.5	18.5	25.0	25.0	25.0	15	20	30	40	40	30	110
355.6	353 - 358	6.0	8.5	17.0	25.0	25.0	25.0	15	20	30	40	30	110	
406.4	404 - 409	5.5	7.5	15.0	25.0	22.0	25.0	20	20	30	50	40	120	
457.2	454 - 460	5.0	6.5	13.0	25.0	19.0	25.0	20	20	40	50	40	120	
508.0	505 - 511	4.5	6.0	12.0	24.0	17.0	25.0	20	25	40	60	40	120	
558.8	556 - 562	4.0	5.5	10.5	22.0	16.0	25.0	25	25	40	60	50	140	
609.6	606 - 613	3.5	5.0	10.0	20.0	14.0	25.0	25	25	40	60	50	140	
711.2	708 - 715		4.0	8.5	17.0	12.0	25.0			30	50	70	50	140
762.0	758 - 766		4.0	8.0	16.0	12.0	23.5			30	50	70	60	160
812.8	809 - 817		3.5	7.5	15.0	11.0	22.0			30	50	70	60	160
914.4	910 - 918		3.5	6.5	13.0	10.0	20.0			35	60	80	60	160
1016.0	1012 - 1020		3.0	6.0	11.0	9.0	18.0			35	60	80	70	160
1117.6	1114 - 1122		2.5	5.5	10.0	8.0	16.0			40	60	80	70	180
1219.2	1215 - 1224		2.5	5.0	9.0	7.0	15.0			40	60	90	70	180
1320.8	1316 - 1325		2.5	4.5	8.5	7.0	15.0			40	60	90	70	180
1422.4	1418 - 1427		2.0	4.0	8.0	6.0	14.0			40	60	90	70	180
1524.0	1519 - 1529		2.0	4.0	8.0	6.0	14.0			40	60	90	80	200
1600.0	1595 - 1605		2.0	4.0	7.5	6.0	13.0			40	60	90	80	200
1625.6	1621 - 1631			3.0	7.0	6.0	13.0				80	100	85	200
1727.2	1722 - 1732			3.0	6.5	5.5	12.0				80	100	90	200
1828.8	1824 - 1834			2.5	6.0	5.0	11.0				90	110	95	220
1930.4	1925 - 1935			2.0	6.0	4.5	10.0				100	120	100	220
2032.0	2027 - 2037			2.0	5.5	4.0	10.0				100	120	110	240

STRAUB produces custom made couplings from 172.0 up to 2032.0 mm

Remarks:

- Follow fitting / disassembly instructions
- Available in one- or two-piece version
- PS = Working pressure considering the application loads
 Test pressure = PS x 1.5 (for example industry, water supply etc.)
 Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43
- L-, LS- and LU-version in W2 or W5
- LV(LDX)-version in W5
- H- and XS-version in W1

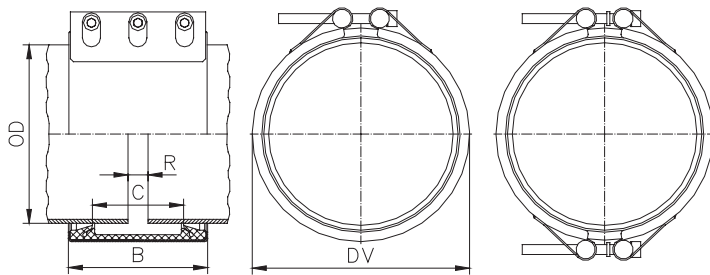
For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-FLEX 3 Ø 219.1 - 4064.0 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI		AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135		A4 - 80
Bars	AISI 12 L 14, galvanised	AISI 12 L 14, galvanised		AISI 316 L
Strip insert (option)	AISI 316 L / HDPE	AISI 316 L / HDPE		AISI 316 L / HDPE

Sealing sleeve EPDM	Temp.: -20°C up to +100°C
	Medium: all qualities of water, waste water, air, solids and chemical products
Sealing sleeve NBR	Temp.: -20°C up to +80°C
	Medium: water, gas, oil, fuel and other hydrocarbons
Sealing sleeve FPM / FKM (on request)	Temp.: -20°C up to +180°C
	Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)



B	Width of pipe coupling: FLEX 3 LS = 210 mm FLEX 3 LV = 211 mm FLEX 3 H = 212 mm FLEX 3 X = 218 mm
DV	Outside diameter of the coupling installed = OD+38 mm
C	Distance between sealing lips = 127 mm
R _{max}	Distance between pipe ends with strip insert = 60 mm Distance between pipe ends without strip insert = 15 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]				Torque rate [Nm]			
		LS	LV (LDX)	H	X	LS	LV (LDX)	H	X
219.1	216 - 222	18.0				40			
250.0	247 - 253	16.0				40			
267.0	264 - 270	15.0				40			
273.0	270 - 276	15.0				40			
304.0	301 - 307	13.0				40			
323.9	321 - 327	13.0	25.0	25.0		40	70	60	
355.6	352 - 358	12.0	25.0	25.0		40	70	60	
406.4	403 - 409	10.0	25.0	25.0		40	70	60	
457.2	454 - 460	9.0	25.0	24.0		40	70	60	
508.0	504 - 512	8.0	23.0	22.0		40	70	60	
558.8	555 - 562	7.0	21.0	20.0	25.0	40	70	60	90
609.6	606 - 613	6.5	19.0	17.0	25.0	40	70	60	90
711.2	707 - 715	5.5	16.0	15.0	25.0	40	70	60	90
762.0	758 - 766	5.0	15.0	14.0	25.0	40	70	60	90
812.8	809 - 817	5.0	14.5	13.0	25.0	50	70	60	110
914.4	910 - 918	4.5	12.5	11.5	23.0	50	80	80	110
1016.0	1012 - 1020	4.0	11.0	10.5	20.0	50	80	80	125
1117.6	1113 - 1122	3.5	10.0	9.5	18.0	50	80	80	125
1219.2	1215 - 1224	3.5	9.0	8.5	17.0	50	90	100	140
1320.8	1316 - 1325	3.0	9.0	8.0	16.0	50	90	100	140
1422.4	1418 - 1427	3.0	8.0	7.5	15.0	60	90	100	160
1524.0	1519 - 1529	2.5	8.0	7.0	14.0	60	90	100	160
1600.0	1595 - 1605	2.5	7.5	6.5	13.5	60	90	110	160
1625.6	1621 - 1631	2.5	7.0	6.5	13.0	60	100	120	180
1727.2	1722 - 1732	2.5	7.0	6.0	12.0	60	100	120	180
1828.8	1824 - 1834	2.0	6.0	5.5	11.0	60	110	120	200
1930.4	1925 - 1935	2.0	6.0	5.5	11.0	60	120	140	200
2032.0	2027 - 2037	2.0	5.5	5.0	10.0	60	120	140	220
2268.0	2263 - 2273		5.0	4.0	9.0		130	150	240
2540.0	2535 - 2545		4.0	3.5	8.0		140	170	260
2794.0	2789 - 2799		3.5	3.0	7.0		140	180	270
3048.0	3043 - 3053		3.0	3.0	6.5		150	200	290
3302.0	3296 - 3308		2.5 ³	2.5 ³	6.0		160	220	310
3556.0	3548 - 3562		2.0 ³	2.5 ³	5.5		180	230	330
3810.0	3804 - 3816		1.5 ³	2.0 ³	5.0		200	250	340
4064.0	4058 - 4070		1.0 ³	2.0 ³	5.0		210	270	350

STRAUB produces custom made couplings from 219.1 up to 4064.0 mm

Remarks:

- Follow fitting / disassembly instructions
- Available in one- or two-piece version
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43

- LS-version in W2 or W5
- LV(LDX)-version in W5
- H- and X-version in W1

For IPS sizes in bold see page 54 for actual OD

³ Available in three-piece version only

Typing errors may occur. Technical details are subject to change

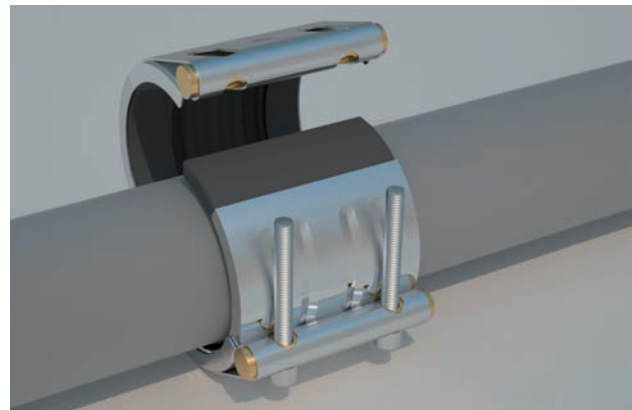
STRAUB-OPEN-FLEX

Opening

The Straub-OPEN-FLEX is available in a number of different versions: hinged, one-piece or two-piece.

The great advantage of STRAUB-OPEN-FLEX is that it can be fitted to existing pipes in situ, without any need to remove and relay the pipes. This makes it the ideal solution for permanent repairs of pipe joints, cracks, etc.

The specifications and properties are the same as the STRAUB-FLEX. For the installation of STRAUB-OPEN-FLEX 1 and 2, the fitting tool is required (see page 44).



Example for ordering:
STRAUB-OPEN-FLEX 1L 76.1 mm, EPDM/SS



STRAUB-OPEN-FLEX 1
hinge design



STRAUB-OPEN-FLEX 2 / 3
two-piece casing design



STRAUB-OPEN-FLEX 2 / 3
slotted design



STRAUB-OPEN-FLEX 3.5 / 4
two-piece casing design

STRAUB-OPEN-FLEX GT

Wrap-around coupling with side outlet

The STRAUB-OPEN-FLEX GT combines all the advantages of the original, with the added benefit of a side outlet. A simple, low-cost solution for a wide range of applications, including venting, sample-taking, measurement points and system extensions. Connection possibilities with threaded fittings and STRAUB couplings.

- Available for all STRAUB-OPEN-FLEX 1 from 73.0 mm, STRAUB-OPEN-FLEX 2, 3, 3.5 and 4

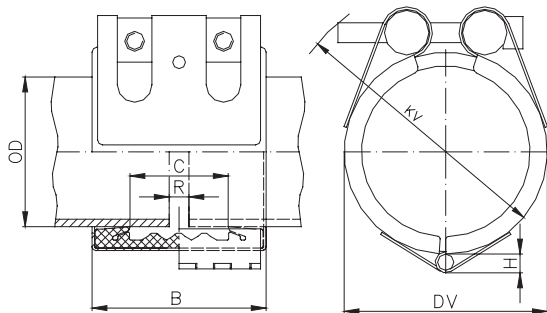
(STRAUB-METAL-GRIP GT see page 10)



STRAUB-OPEN-FLEX 1L Ø 48.3 - 168.3 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 316 L / 316 TI		AISI 316 L / 316 TI
Bolts		AISI 4135		A4 - 80
Bars		AISI 12 L 14, galvanised		AISI 316 L
Strip insert (option)		AISI 316 L / PVDF from 180 mm HDPE		AISI 316 L / PVDF from 180 mm HDPE

Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons
Sealing sleeve FPM / FKM	Temp.: -20°C up to +180°C Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)



Height (H):		
OD	48.3 - 60.3:	7.0 mm
OD	73.0 - 114.3:	9.0 mm
OD	127.0 - 168.3:	9.5 mm

OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	R without strip insert [mm]	R with strip insert [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
48.3	47.0 - 49.5	25.0	75	35	70	85	5	15	7.5	6	8
54.0	52.5 - 55.5	25.0	75	35	76	90	5	15	7.5	6	8
57.0	55.5 - 58.5	25.0	75	35	79	95	5	15	7.5	6	8
60.3	59.0 - 61.5	25.0	75	35	82	95	5	15	7.5	6	8
73.0	71.5 - 74.5	25.0	94	51	95	117	5	25	10	6	8
76.1	74.5 - 77.5	25.0	94	51	98	122	5	25	10	6	8
84.0	82.5 - 85.5	24.0	94	51	106	127	5	25	10	6	8
88.9	87.5 - 90.5	24.0	94	51	111	132	5	25	10	6	8
100.6	99.0 - 102.5	23.0	94	51	123	147	5	25	10	6	8
101.6	100.0 - 103.5	23.0	94	51	124	147	5	25	10	6	8
104.0	102.5 - 105.5	22.0	94	51	126	147	5	25	10	6	8
104.8	103.0 - 106.5	22.0	94	51	127	147	5	25	10	6	8
108.0	106.5 - 109.5	22.0	94	51	130	152	5	25	10	6	8
114.3	112.5 - 116.0	21.0	94	51	136	157	5	25	10	6	8
118.0	116.0 - 120.0	20.0	94	51	140	162	5	25	10	6	8
127.0	125.0 - 129.0	19.0	107	62	149	165	5	35	12	8	10
129.0	127.0 - 131.0	18.0	107	62	151	165	5	35	12	8	10
130.2	128.5 - 132.0	18.0	107	62	152	165	5	35	12	8	10
133.0	131.0 - 135.0	16.0	107	62	155	170	5	35	12	8	10
139.7	138.0 - 141.5	16.0	107	62	162	175	5	35	12	8	10
141.3	139.5 - 143.0	16.0	107	62	163	180	5	35	12	8	10
154.0	152.0 - 156.0	16.0	107	62	176	190	5	35	12	8	10
159.0	157.0 - 161.0	16.0	107	62	181	195	5	35	12	8	10
168.3	166.0 - 170.5	16.0	107	62	190	205	5	35	12	8	10

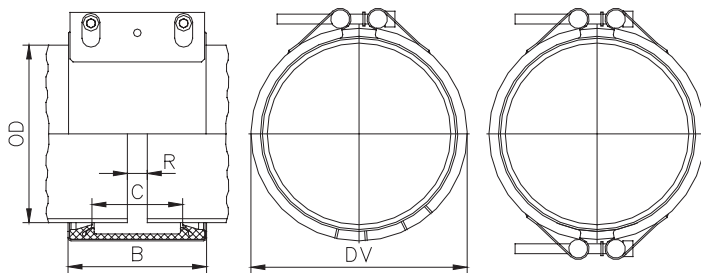
Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43

For IPS sizes in bold see page 54 for actual OD

STRAUB-OPEN-FLEX 2 Ø 172.0 - 2032.0 mm

Components / Materials	W1	W2	W4 (only for L-version)	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI	AISI 304	AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135	AISI 316 L	A4 - 80
Bars	AISI 12 L 14, galvanised	AISI 12 L 14, galvanised	AISI 316 L	AISI 316 L
Strip insert (option)	AISI 316 L / HDPE	AISI 316 L / HDPE	AISI 316 L / HDPE	AISI 316 L / HDPE
Sealing sleeve	Temp.: -20°C up to +100°C			
EPDM	Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve	Temp.: -20°C up to +80°C			
NBR	Medium: water, gas, oil, fuel and other hydrocarbons			
Sealing sleeve	Temp.: -20°C up to +180°C			
FPM / FKM	Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)			



B	Width of pipe coupling:
	OPEN-FLEX 2 L = 138 mm
	OPEN-FLEX 2 LS = 139 mm
	OPEN-FLEX 2 LU = 141 mm
	OPEN-FLEX 2 LV = 141 mm
	OPEN-FLEX 2 H = 142 mm
	OPEN-FLEX 2 XS = 148 mm
DV	Outside diameter of the coupling installed = OD+27 mm
C	Distance between sealing lips = 91 mm
R_{max.}	Distance between pipe ends with strip insert = 35 mm
	Distance between pipe ends without strip insert = 10 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]						Torque rate [Nm]						
		L	LS	LU	LV (LDX)	H	XS	L	LS	LU	LV (LDX)	H	XS	
172.0	170 - 174	13.0 ⁴						10						
180.0	178 - 182	12.0 ⁴	16.5 ⁴	25.0				10	15	30				
200.0	198 - 202	11.0 ⁴	15.0 ⁴	25.0				10	15	30				
219.1	217 - 222	10.0⁴	13.5⁴	25.0				10	15	30				
250.0	248 - 253	9.0 ⁴	12.0 ⁴	24.0				10	15	30				
267.0	264 - 270	8.0 ⁴	11.0 ⁴	22.5				15	15	30				
273.0	270 - 276	8.0⁴	11.0⁴	22.0	25.0	25.0	25.0	15	15	30	40	30	110	
304.0	301 - 307	7.0 ⁴	10.0 ⁴	19.5	25.0	25.0	25.0	15	20	30	40	30	110	
323.9	321 - 327	7.0⁴	9.5⁴	18.5	25.0	25.0	25.0	15	20	30	40	30	110	
355.6	353 - 358	6.0⁴	8.5⁴	17.0	25.0	25.0	25.0	15	20	30	40	30	110	
406.4	404 - 409	5.5⁴	7.5⁴	15.0	25.0	22.0	25.0	20	20	30	50	40	120	
457.2	454 - 460	5.0⁴	6.5⁴	13.0	25.0	19.0	25.0	20	20	40	50	40	120	
508.0	505 - 511	4.5⁴	6.0⁴	12.0⁴	24.0	17.0	25.0	20	25	40	60	40	120	
558.8	556 - 562	4.0⁴	5.5⁴	10.5⁴	22.0	16.0	25.0	25	25	40	60	50	140	
609.6	606 - 613	3.5⁴	5.0⁴	10.0⁴	20.0	14.0	25.0	25	25	40	60	50	140	
711.2	708 - 715		4.0 ⁴	8.5 ⁴	17.0	12.0	25.0		30	50	70	50	140	
762.0	758 - 766		4.0 ⁴	8.0 ⁴	16.0	12.0	23.5		30	50	70	60	160	
812.8	809 - 817		3.5 ⁴	7.5 ⁴	15.0	11.0	22.0		30	50	70	60	160	
914.4	910 - 918		3.5 ⁴	6.5 ⁴	13.0	10.0	20.0		35	60	80	60	160	
1016.0	1012 - 1020		3.0 ⁴	6.0 ⁴	11.0	9.0	18.0		35	60	80	70	160	
1117.6	1114 - 1122		2.5 ⁴	5.5 ⁴	10.0	8.0	16.0		40	60	80	70	180	
1219.2	1215 - 1224		2.5 ⁴	5.0 ⁴	9.0	7.0	15.0		40	60	90	70	180	
1320.8	1316 - 1325		2.5	4.5	8.5	7.0	15.0		40	60	90	70	180	
1422.4	1418 - 1427		2.0	4.0	8.0	6.0	14.0		40	60	90	70	180	
1524.0	1519 - 1529		2.0	4.0	8.0	6.0	14.0		40	60	90	80	200	
1600.0	1595 - 1605		2.0	4.0	7.5	6.0	13.0		40	60	90	80	200	
1625.6	1621 - 1631			3.0	7.0	6.0	13.0			80	100	85	200	
1727.2	1722 - 1732			3.0	6.5	5.5	12.0			80	100	90	200	
1828.8	1824 - 1834			2.5	6.0	5.0	11.0			90	110	95	220	
1930.4	1925 - 1935			2.0	6.0	4.5	10.0			100	120	100	220	
2032.0	2027 - 2037			2.0	5.5	4.0	10.0			100	120	110	240	

STRAUB produces custom made couplings from 172.0 up to 2032.0 mm

Remarks:

- Follow fitting / disassembly instructions
- All STRAUB-OPEN-FLEX 2 available in two-piece version
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43
- L-, LS- and LU-version in W2 or W5
- LV(LDX)-version in W5
- H- and XS-version in W1

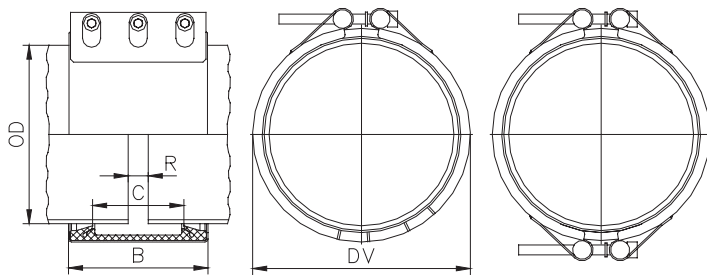
⁴ One-piece version in slotted design

For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-OPEN-FLEX 3 Ø 219.1 - 4064.0 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI		AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135		A4 - 80
Bars	AISI 12 L 14, galvanised	AISI 12 L 14, galvanised		AISI 316 L
Strip insert (option)	AISI 316 L / HDPE	AISI 316 L / HDPE		AISI 316 L / HDPE
Sealing sleeve EPDM	Temp.: -20°C up to +100°C	Medium: all qualities of water, waste water, air, solids and chemical products		
Sealing sleeve NBR	Temp.: -20°C up to +80°C	Medium: water, gas, oil, fuel and other hydrocarbons		
Sealing sleeve FPM / FKM (on request)	Temp.: -20°C up to +180°C	Medium: ozone, oxygen, acids, gas, oil and fuel (only with strip insert)		



B	Width of pipe coupling: OPEN-FLEX 3 LS = 210 mm OPEN-FLEX 3 LV = 211 mm OPEN-FLEX 3 H = 221 mm OPEN-FLEX 3 X = 218 mm
DV	Outside diameter of the coupling installed = OD+38 mm
C	Distance between sealing lips = 127 mm
R_{max.}	Distance between pipe ends with strip insert = 60 mm Distance between pipe ends without strip insert = 15 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]				Torque rate [Nm]			
		LS	LV (LDX)	H	X	LS	LV (LDX)	H	X
219.1	216 - 222	18.0				40			
250.0	247 - 253	16.0				40			
267.0	264 - 270	15.0				40			
273.0	270 - 276	15.0				40			
304.0	301 - 307	13.0				40			
323.9	321 - 327	13.0	25.0	25.0		40	70	60	
355.6	352 - 358	12.0	25.0	25.0		40	70	60	
406.4	403 - 409	10.0	25.0	25.0		40	70	60	
457.2	454 - 460	9.0	25.0	24.0		40	70	60	
508.0	504 - 512	8.0 ⁴	23.0	22.0		40	70	60	
558.8	555 - 562	7.0 ⁴	21.0	20.0	25.0	40	70	60	90
609.6	606 - 613	6.5 ⁴	19.0	17.0	25.0	40	70	60	90
711.2	707 - 715	5.5 ⁴	16.0	15.0	25.0	40	70	60	90
762.0	758 - 766	5.0 ⁴	15.0	14.0	25.0	40	70	60	90
812.8	809 - 817	5.0 ⁴	14.5	13.0	25.0	50	70	60	110
914.4	910 - 918	4.5 ⁴	12.5	11.5	23.0	50	80	80	110
1016.0	1012 - 1020	4.0 ⁴	11.0	10.5	20.0	50	80	80	125
1117.6	1113 - 1122	3.5 ⁴	10.0	9.5	18.0	50	80	80	125
1219.2	1215 - 1224	3.5 ⁴	9.0	8.5	17.0	50	90	100	140
1320.8	1316 - 1325	3.0	9.0	8.0	16.0	50	90	100	140
1422.4	1418 - 1427	3.0	8.0	7.5	15.0	60	90	100	160
1524.0	1519 - 1529	2.5	8.0	7.0	14.0	60	90	100	160
1600.0	1595 - 1605	2.5	7.5	6.5	13.5	60	90	110	160
1625.6	1621 - 1631	2.5	7.0	6.5	13.0	60	100	120	180
1727.2	1722 - 1732	2.5	7.0	6.0	12.0	60	100	120	180
1828.8	1824 - 1834	2.0	6.0	5.5	11.0	60	110	120	200
1930.4	1925 - 1935	2.0	6.0	5.5	11.0	60	120	140	200
2032.0	2027 - 2037	2.0	5.5	5.0	10.0	60	120	140	220
2268.0	2263 - 2273		5.0	4.0	9.0		130	150	240
2540.0	2535 - 2545		4.0	3.5	8.0		140	170	260
2794.0	2789 - 2799		3.5	3.0	7.0		140	180	270
3048.0	3043 - 3053		3.0	3.0	6.5		150	200	290
3302.0	3296 - 3308		2.5 ³	2.5 ³	6.0		160	220	310
3556.0	3548 - 3562		2.0 ³	2.5 ³	5.5		180	230	330
3810.0	3804 - 3816		1.5 ³	2.0 ³	5.0		200	250	340
4064.0	4058 - 4070		1.0 ³	2.0 ³	5.0		210	270	350

STRAUB produces custom made couplings from 219.1 up to 4064.0 mm

Remarks:

- Follow fitting / disassembly instructions
- All STRAUB-OPEN-FLEX 3 available in two-piece version
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications, see page 43

- LS-version in W2 or W5
- LV(LDX)-version in W5
- H- and X-version in W1

For IPS sizes in bold see page 54 for actual OD

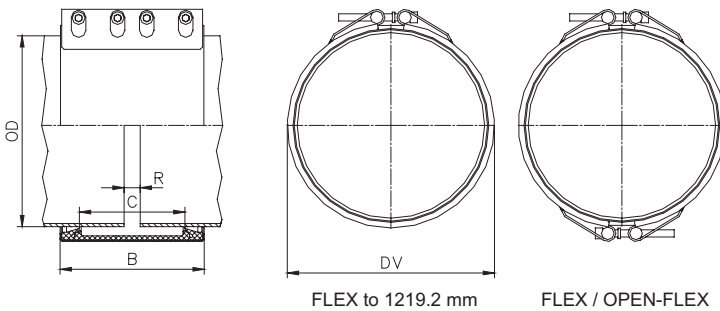
³ Available in three-piece version only

⁴ One-piece version in slotted design

Typing errors may occur. Technical details are subject to change

STRAUB-FLEX / STRAUB-OPEN-FLEX 3.5 Ø 323.9 - 4064.0 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.			S32101 (LDX)
Bolts	AISI 4135			A4 - 80
Bars	AISI 12 L 14, galvanised			AISI 316 L
Strip insert	AISI 301 / HDPE			AISI 301 / HDPE
Sealing sleeve EPDM	Temp.: -20°C up to +100°C Medium: all qualities of water, waste water, air, solids and chemical products			
Sealing sleeve NBR	Temp.: -20°C up to +80°C Medium: water, gas, oil, fuel and other hydrocarbons			



- B Width of pipe coupling:
FLEX / OPEN-FLEX 3.5 LV = 310 mm
FLEX / OPEN-FLEX 3.5 H = 311 mm
- DV Outside diameter of the coupling installed = OD+38 mm
- C Distance between sealing lips = 227 mm
- R_{max.} Distance between pipe ends with strip insert = 120 mm
Distance between pipe ends without strip insert = 20 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]		Torque rate [Nm]	
		LV (LDX)	H	LV (LDX)	H
323.9⁵	320 - 327	25.0	25.0	50	50
355.6⁵	352 - 370	25.0	25.0	50	50
406.4⁵	402 - 410	25.0	25.0	50	50
457.2⁵	453 - 461	25.0	25.0	50	50
508.0⁵	504 - 512	23.0	23.0	50	50
558.8⁵	555 - 563	21.0	21.0	50	50
609.6⁵	605 - 614	19.0	19.0	50	50
655.0 ⁵	651 - 659	17.0	17.0	50	50
711.2 ⁵	707 - 715	16.0	16.0	50	50
762.0 ⁵	758 - 766	15.0	15.0	50	50
812.8 ⁵	809 - 817	14.0	14.0	50	50
914.4 ⁵	910 - 918	12.0	12.0	60	60
1016.0 ⁵	1011 - 1021	11.0	11.0	60	60
1117.6 ⁵	1112 - 1123	10.0	10.0	70	70
1219.2 ⁵	1214 - 1224	9.0	9.0	80	80
1422.4	1417 - 1427	7.0	8.0	80	80
1524.0	1519 - 1529	7.0	7.5	80	80
1625.0	1620 - 1630	6.0	7.0	90	90
1727.2	1722 - 1732	6.0	6.5	90	90
1828.8	1824 - 1834	5.0	6.0	110	100
1930.4	1925 - 1935	4.5	5.5	110	110
2032.0	2026 - 2038	4.0	5.0	120	120
2268.0	2262 - 2274	3.5	4.5	130	130
2540.0	2534 - 2546	3.0	4.0	140	140
2794.0	1788 - 2800	2.5	3.5	140	140
3048.0	3042 - 3054	2.0	3.0	160	160
3302.0	3296 - 3308	1.5 ³	3.0 ³	170	170
3556.0	3550 - 3562	1.5 ³	3.0 ³	180	180
3810.0	3804 - 3816	1.0 ³	2.5 ³	190	190
4064.0	4058 - 4070	1.0 ³	2.5 ³	210	210

STRAUB produces custom made couplings from 323.9 up to 4064.0 mm

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts are required for special applications (included), see page 43
- LV(LDX)-version in W5
- H-version in W1

³ Available in three-piece version only

⁵ STRAUB-FLEX available in one-piece version as well

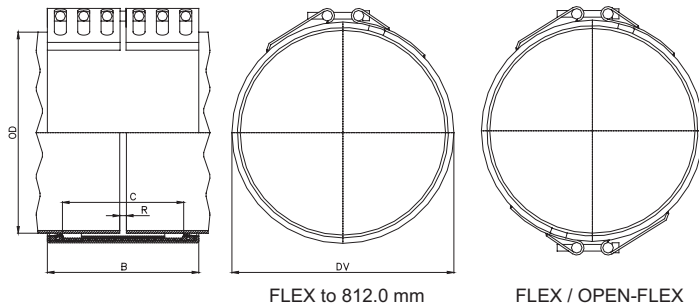
For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-FLEX / STRAUB-OPEN-FLEX 4 Ø 323.9 - 4064.0 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106 , hot-dip galv.			S32101 (LDX)
Bolts	AISI 4135			A4 - 80
Bars	AISI 12 L 14, galvanised			AISI 316 L
Strip insert	AISI 301 / HDPE			AISI 301 / HDPE

Sealing sleeve EPDM Temp.: -20°C up to +100°C
 Medium: all qualities of water, waste water, air, solids and chemical products



B Width of pipe coupling:
 FLEX / OPEN-FLEX 4 LV = 443 mm
 FLEX / OPEN-FLEX 4 H = 444 mm
 DV Outside diameter of the coupling installed = OD+48 mm
 C Distance between sealing lips = 350 mm
 R_{max.} Distance between pipe ends with strip insert = 200 mm
 Distance between pipe ends without strip insert = 20 mm

Pipe OD [mm]	Clamping range [mm]	Working pressure PS [bar]		Torque rate [Nm]	
		LV (LDX)	H	LV (LDX)	H
323.9 ⁵	320 - 327	25.0	25.0	40	40
355.6 ⁵	352 - 359	25.0	25.0	40	40
406.4 ⁵	403 - 409	25.0	25.0	40	40
457.2 ⁵	454 - 460	24.0	25.0	40	40
508.0 ⁵	505 - 512	22.0	23.0	40	40
558.8 ⁵	555 - 562	20.0	21.0	40	40
609.6 ⁵	606 - 613	19.0	19.0	40	40
655.0 ⁵	652 - 658	18.0	18.0	40	40
711.2 ⁵	707 - 715	16.0	17.0	40	40
762.0 ⁵	758 - 766	15.0	16.0	40	40
812.8 ⁵	809 - 817	14.0	14.0	50	50
914.4	910 - 918	12.0	13.0	50	50
1016.0	1012 - 1020	10.0	11.0	60	60
1117.6	1113 - 1122	10.0	10.0	60	60
1219.2	1215 - 1224	9.0	9.0	70	70
1422.4	1418 - 1427	7.0	8.0	70	70
1524.0	1519 - 1529	6.0	7.0	80	80
1625.0	1621 - 1631	6.0	7.0	80	80
1727.2	1722 - 1732	6.0	7.0	90	90
1828.8	1824 - 1834	5.0	6.0	100	100
1930.4	1925 - 1935	5.0	6.0	110	110
2032.0	2027 - 2037	4.0	5.0	120	120
2268.0	2263 - 2273	3.5	4.5	130	130
2540.0	2535 - 2545	3.0	4.0	140	140
2794.0	2798 - 2799	3.0	3.0	140	140
3048.0	3043 - 3053	2.0	3.0	160	160
3302.0	3296 - 3308	2.0 ³	3.0 ³	170	170
3556.0	3548 - 3562	1.5 ³	2.5 ³	180	180
3810.0	3804 - 3816	1.0 ³	2.0 ³	190	190
4064.0	4058 - 4070	1.0 ³	2.0 ³	210	210

STRAUB produces custom made couplings from 323.9 up to 4064.0 mm

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
 Test pressure = PS x 1.5 (for example industry, water supply etc.)
 Burst pressure = approx. PS x 2
- Strip inserts are required for special applications (included) , see page 43
- LV(LDX)-version in W5
- H-version in W1

³ Available in three-piece version only

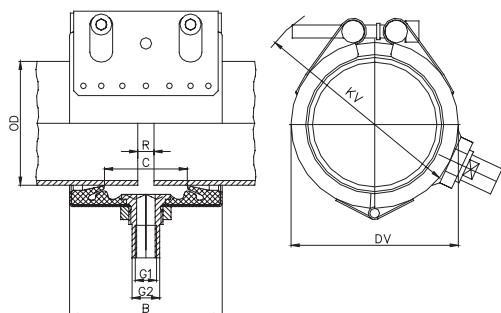
⁵ STRAUB-FLEX available in one-piece version as well

For IPS sizes in bold see page 54 for actual OD

Typing errors may occur. Technical details are subject to change

STRAUB-OPEN-FLEX 1L GT Ø 73.0 - 168.3 mm

Components / Materials	W1	W2	W4	W5
Casing		AISI 316 L / 316 TI		AISI 316 L / 316 TI
Bolts		AISI 4135		A4 - 80
Bars		AISI 12 L 14, galvanised		AISI 316 L
Sealing sleeve EPDM	Temp.: -20°C up to +70°C	Medium: all qualities of water, waste water, air, solids and chemical products		
Sealing sleeve NBR	Temp.: -20°C up to +70°C	Medium: water, gas, oil, fuel and other hydrocarbons		



OD [mm]	Clamping range [mm]	PS [bar]	B [mm]	C [mm]	DV [mm]	KV [mm]	G1 [Zoll]	G2 [Zoll]	Torque rate [Nm]
73.0	71.5 - 74.5	16.0	94	51	95	117	1/4	1/2	10
76.1	74.5 - 77.5	16.0	94	51	98	122	1/4	1/2	10
84.0	82.5 - 85.5	16.0	94	51	106	127	1/4	1/2	10
88.9	87.5 - 90.5	16.0	94	51	111	132	1/4	1/2	10
100.6	99.0 - 102.5	16.0	94	51	123	147	1/4	1/2	10
101.6	100.0 - 103.5	16.0	94	51	124	147	1/4	1/2	10
104.0	102.5 - 105.5	16.0	94	51	126	147	1/4	1/2	10
104.8	103.0 - 106.5	16.0	94	51	127	147	1/4	1/2	10
108.0	106.5 - 109.5	16.0	94	51	130	152	1/4	1/2	10
114.3	112.5 - 116.0	16.0	94	51	136	157	1/4	1/2	10
118.0	116.0 - 120.0	16.0	94	51	140	162	1/4	1/2	10
127.0	125.0 - 129.0	16.0	107	62	149	165	3/4	1	12
129.0	127.0 - 131.0	16.0	107	62	151	165	3/4	1	12
130.2	128.5 - 132.0	16.0	107	62	152	165	3/4	1	12
133.0	131.0 - 135.0	16.0	107	62	155	170	3/4	1	12
139.7	138.0 - 141.5	16.0	107	62	162	175	3/4	1	12
141.3	139.5 - 143.0	16.0	107	62	163	180	3/4	1	12
154.0	152.0 - 156.0	16.0	107	62	176	190	3/4	1	12
159.0	157.0 - 161.0	16.0	107	62	181	195	3/4	1	12
168.3	166.0 - 170.5	16.0	107	62	190	205	3/4	1	12

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Strip inserts not to be applied / not suitable for vacuum applications
- STRAUB-OPEN-FLEX 2 GT, 3 GT, 3.5 GT and 4 GT with outlet G3/4" / 1" available as well; other outlets on request

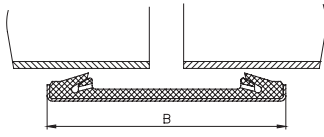
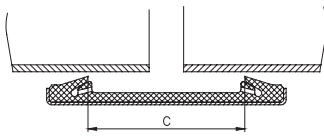
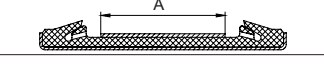
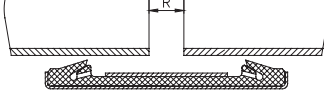

For IPS sizes in bold see page 54 for actual OD

STRAUB-FLEX / STRAUB-OPEN-FLEX overview

■ one-piece ■ two-piece ■ from 3048.0 mm three-piece

4H	323.9	812.8	4064.0
4LV	323.9	812.8	4064.0
3.5H	323.9	1219.2	4064.0
3.5LV	323.9	1219.2	4064.0
3X	558.8	2032.0	4064.0
3H	323.9	2032.0	4064.0
3LV	323.9	2032.0	4064.0
3LS	219.1	2032.0	(OPEN-FLEX slotted 508.0 - 1219.1)
2XS	273.0	2032.0	
2H	273.0	2032.0	
2LV	273.0	2032.0	
2LU	180.0	2032.0	(OPEN-FLEX slotted 508.0 - 1219.1)
2LS	180.0	1600.0	(OPEN-FLEX slotted 180.0 - 1219.1)
2L	172.0	609.6	(OPEN-FLEX slotted 172.0 - 609.6)
1L	48.3 - 168.3	48.3 - 168.3	(OPEN-FLEX with hinge 48.3 - 168.3)

Specification STRAUB-FLEX / STRAUB-OPEN-FLEX

	Drawing	FLEX 2	FLEX 3	FLEX 3.5	FLEX 4
Width of casing B [mm] Type LV		141	211	310	444
Distance between sealing lips C [mm]		91	127	227	350
Strip inserts A [mm]		70	100	200	300
Gap between pipe ends R without strip inserts [mm]		10	15	20	20
Gap between pipe ends R with strip inserts [mm]		35	60	120	200
Max. axial movement [mm]		10	15	15	20

STRAUB-STEP-FLEX

The pipe connection for different pipe diameters

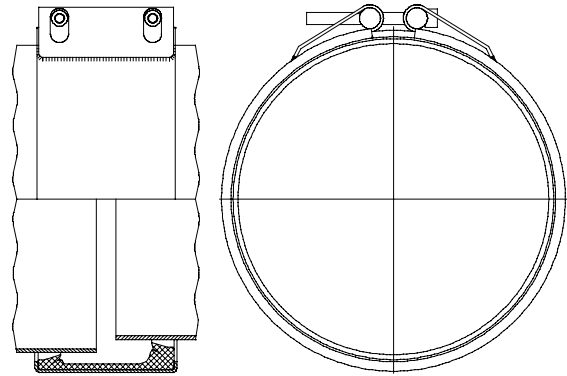
STRAUB-STEP-FLEX overcomes large diameter differences from 10 to 30mm. In order to protect the sealing sleeve, a stainless steel strip insert is included.

Because of the differences in diameter, internal forces (refer to the table of forces below) always press the STRAUB-STEP-FLEX coupling towards the smaller pipe diameter which therefore has to be prevented from slipping by appropriate measures; a coupling retainer is available on request. Such retainers are not required for non-pressurised applications.

STRAUB-STEP-FLEX couplings are available in FLEX 2 or FLEX 3 widths.

- STEP-FLEX 2 from 250 up to 812.8 mm (LS, LU, LV, H, XS)
- STEP-FLEX 3 from 914.4 up to 4064.0 mm (LS, LV, H, X)

All STRAUB-STEP-FLEX specifications are identical to those of the respective STRAUB-FLEX devices.



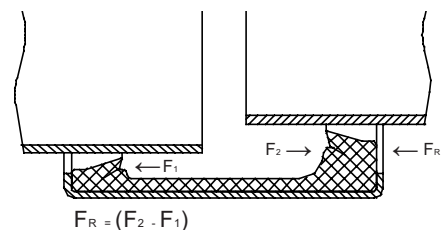
Drawing STRAUB-STEP-FLEX 2



Compensation of diameter differences when installing controls and instruments

Example for ordering:
 STRAUB-STEP-FLEX 2LS 275 / 260 mm, EPDM/SS
 STRAUB-STEP-FLEX 3H 1190 / 1120 mm, EPDM/GALV

Table of forces for coupling retainer



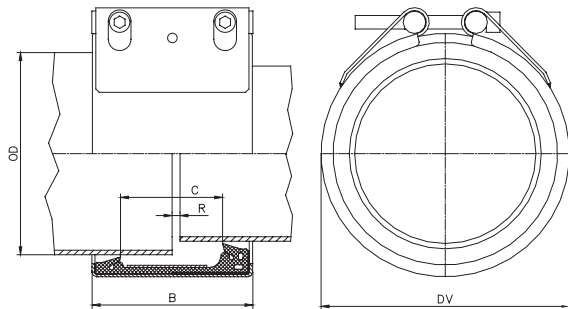
Type	Pipe 1 [mm]	Pipe 2 [mm]	PS max. [bar]	Coupling retainer (FR at PS max.) [N]	PS min. [bar]	Coupling retainer (FR at PS min.) [N]
STRAUB-STEP-FLEX 2	250.0	280.0	24.0	29960	12.0	14980
	323.9	353.0	25.0	38860	9.5	14690
	406.4	436.0	25.0	48940	7.5	14680
	609.6	639.0	25.0	72040	5.0	14410
	812.8	842.0	22.0	82938	3.5	13195
STRAUB-STEP-FLEX 3	1219.2	1249.0	17.0	98160	3.5	20210
	1600.0	1630.0	13.5	102690	2.5	19020
	2032.0	2062.0	10.0	96410	2.0	19280
	3048.0	3078.0	6.5	93770	3.0	43280
	4064.0	4094.0	5.0	96060	1.0	19210

Intermediate values can be interpolated

STRAUB-STEP-FLEX 2 Ø 250.0 - 812.8 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI		AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135		A4 - 80
Bars	AISI 14 L 14, galvanised	AISI 12 L 14, galvanised		AISI 316 L
Strip insert	AISI 316 L	AISI 316 L		AISI 316 L

Sealing sleeve EPDM	Temp.:	-20°C up to +100°C
	Medium:	all qualities of water, waste water, air, solids and chemical products



B	Width of pipe coupling:	
	STEP-FLEX 2 LS =	139 mm
	STEP-FLEX 2 LU =	141 mm
	STEP-FLEX 2 LV =	141 mm
	STEP-FLEX 2 H =	142 mm
DV	Outside diameter of the coupling installed =	OD+27 mm
	Distance between sealing lips =	91 mm
R _{max}	Distance between pipe ends with strip insert =	35 mm
	Distance between pipe ends without strip insert =	10 mm

Pipe 1 OD [mm]	Pipe 2 [min - max]	Working pressure PS [bar]					Torque rate [Nm]				
		LS	LU	LV (LDX)	H	XS	LS	LU	LV (LDX)	H	XS
250.0	220 - 280	12.0	24.0				15	30			
267.0	237 - 297	11.0	22.5				15	30			
273.0	243 - 303	11.0	22.0	25.0	25.0	25.0	15	30	40	30	110
304.0	274 - 334	10.0	19.5	25.0	25.0	25.0	20	30	40	30	110
323.9	293 - 353	9.5	18.5	25.0	25.0	25.0	20	30	40	30	110
355.6	325 - 385	8.5	17.0	25.0	25.0	25.0	20	30	40	30	110
406.4	376 - 436	7.5	15.0	25.0	22.0	25.0	20	30	50	40	120
457.2	427 - 487	6.5	13.0	25.0	19.0	25.0	20	40	50	40	120
508.0	478 - 538	6.0	12.0	24.0	17.0	25.0	25	40	60	40	120
558.8	528 - 588	5.5	10.5	22.0	16.0	25.0	25	40	60	50	140
609.6	579 - 639	5.0	10.0	20.0	14.0	25.0	25	40	60	50	140
711.2	681 - 741	4.0	8.5	17.0	12.0	25.0	30	50	70	50	140
762.0	732 - 792	4.0	8.0	16.0	12.0	23.5	30	50	70	60	160
812.8	782 - 842	3.5	7.5	15.0	11.0	22.0	30	50	70	60	160

STRAUB produces custom made couplings from 250.0 up to 812.8 mm

Remarks:

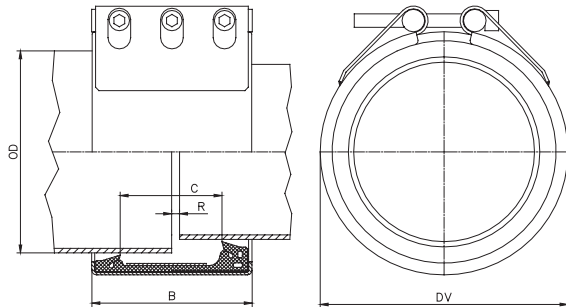
- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
Test pressure = PS x 1.5 (for example industry, water supply etc.)
Burst pressure = approx. PS x 2
- Stainless steel strip insert included
- Available in one-piece version only
- LS- and LU-version in W2 or W5
- LV(LDX)-version in W5
- H- and XS-version in W1

For IPS sizes in bold see page 54 for actual OD

STRAUB-STEP-FLEX 3 Ø 914.4 - 4064.0 mm

Components / Materials	W1	W2	W4	W5
Casing	AISI A106, hot-dip galv.	AISI 316 L / 316 TI		AISI 316 L / 316 TI / S32101 (LDX)
Bolts	AISI 4135	AISI 4135		A4 - 80
Bars	AISI 12 L 14, galvanised	AISI 12 L 14, galvanised		AISI 316 L
Strip insert	AISI 316 L	AISI 316 L		AISI 316 L

Sealing sleeve EPDM Temp.: -20°C up to +100°C
 Medium: all qualities of water, waste water, air, solids and chemical products



- B Width of pipe coupling:
 STEP-FLEX 3 LS = 210 mm
 STEP-FLEX 3 LV = 211 mm
 STEP-FLEX 3 H = 212 mm
 STEP-FLEX 3 X = 218 mm
- DV Outside diameter of the coupling installed = OD+38 mm
- C Distance between sealing lips = 127 mm
- R_{max.} Distance between pipe ends with strip insert = 60 mm
 Distance between pipe ends without strip insert = 15 mm

Pipe 1 OD [mm]	Pipe 2 [min - max]	Working pressure PS [bar]				Torque rate [Nm]			
		LS	LV (LDX)	H	X	LS	LV (LDX)	H	X
914.4	884 - 944	4.5	12.5	11.5	23.0	50	80	80	110
1016.0	986 - 1046	4.0	11.0	10.5	20.0	50	80	80	125
1117.6	1087 - 1147	3.5	10.0	9.5	18.0	50	80	80	125
1219.2	1189 - 1249	3.5	9.0	8.5	17.0	50	90	100	140
1320.8	1290 - 1350	3.0	9.0	8.0	16.0	50	90	100	140
1422.4	1392 - 1452	3.0	8.0	7.5	15.0	60	90	100	160
1524.0	1494 - 1554	2.5	8.0	7.0	14.0	60	90	100	160
1600.0	1570 - 1630	2.5	7.5	6.5	13.5	60	90	110	170
1625.4	1595 - 1655	2.5	7.0	6.5	13.0	60	100	120	180
1727.2	1697 - 1757	2.5	7.0	6.0	12.0	60	100	120	180
1828.8	1798 - 1858	2.0	6.0	5.5	11.0	60	110	120	200
1930.4	1900 - 1960	2.0	6.0	5.5	10.0	60	120	140	200
2032.0	2002 - 2062	2.0	5.5	5.0	10.0	60	120	140	220
2268.0 ⁶	2238 - 2298				9.0				240
2540.0 ⁶	2510 - 2570				8.0				260
2794.0 ⁶	2764 - 2824				7.0				270
3048.0 ⁶	3018 - 3078				6.5				290
3302.0 ⁶	3272 - 3332				6.0				310
3556.0 ⁶	3526 - 3586				5.5				330
3810.0 ⁶	3780 - 3840				5.0				340
4064.0 ⁶	4034 - 4094				5.0				350

STRAUB produces custom made couplings from 914.4 up to 4064.0 mm

Remarks:

- Follow fitting / disassembly instructions
- PS = Working pressure considering the application loads
 Test pressure = PS x 1.5 (for example industry, water supply etc.)
 Burst pressure = approx. PS x 2
- Stainless steel strip insert included
- Available in one-piece version only
- LS-version in W2 or W5
- LV(LDX)-version in W5
- H- and X-version in W1

⁶ On request

For IPS sizes in bold see page 54 for actual OD

STRAUB-CLAMP

Repair clamp in one or two piece version

Repair clamps for safely and reliably sealing damaged pipes made from a wide range of materials (steel, cast iron, ductile cast iron, fibre cement, PVC). The repair clamp must be at least as long as the outside diameter of the pipe being repaired. Prepare the pipe surfaces in accordance with the general installation requirements (please refer to STRAUB-CLAMP installation instructions).

The STRAUB-Clamp is available with NBR and EPDM sealing sleeves.



Example for ordering:
STRAUB-CLAMP SCE 88.0 mm, EPDM/SS,
one-piece, width 300 mm

STRAUB-CLAMP SCZ 190.0 mm, NBR/SS,
two-piece, width 400 mm



Damaged pipes can be repaired safely and reliably with STRAUB-CLAMP



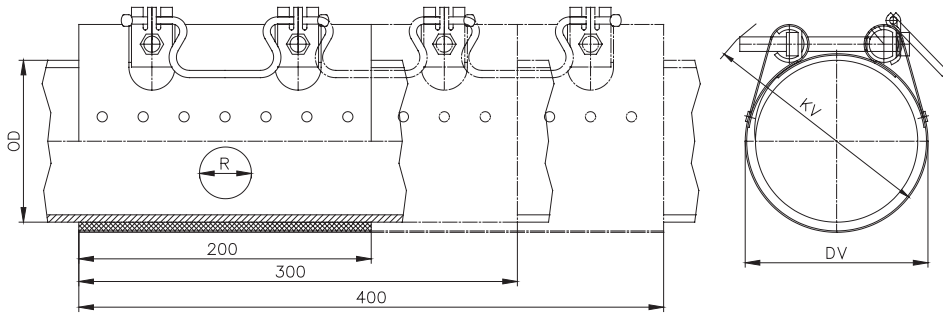
Repair of large damaged areas up to 250 mm

Ten good reasons to use STRAUB-CLAMP

1. Ideal for repairing large damaged areas up to 250 mm
2. The large-surface waffle profile reduces the required tightening torque, extending the life of the rubber
3. One size spans a wide range (up to 20 mm)
4. Integrated ergonomic hand grips for easy handling
5. No loose screws or parts when opening; both the one-piece and two-piece repair clamps are complete units
6. High level of corrosion resistance. Modern manufacturing methods, including pressure jointing, prevent changes in the material structure and stresses in the material
7. The entire repair clamp is made from stainless steel (1.4301)
8. The stainless steel screws are coated with MoS₂, ensuring smooth tightening to the specified torque
9. Installation with standard tools (torque wrench with hex socket) – without extensions
10. Swiss quality product

STRAUB-CLAMP SCE Ø 44.0 - 330.0 mm

Components	Materials
Casing	AISI 304
Bolts	A2 - 70
Bars	AISI 304
Sealing sleeve EPDM	Temp.: -5°C up to +40°C Medium: all qualities of water, waste water, air, solids and chemical products
Sealing sleeve NBR	Temp.: -5°C up to +40°C Medium: water, gas, oil, fuel and other hydrocarbons



Clamp length	R _{max}
200 mm	50 mm
300 mm	150 mm
400 mm	250 mm

OD [mm]	Clamping range [mm]	PN ⁷ [bar]	2 locking bolts [mm]	3 locking bolts [mm]	4 locking bolts [mm]	DV [mm]	KV [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
44.0	44 - 48	16.0	200	300		60	117	20	17	10
48.0	48 - 52	16.0	200	300		64	120	20	17	10
54.0	54 - 58	16.0	200	300		70	125	20	17	10
60.0	60 - 67	16.0	200	300		79	127	20	17	10
67.0	67 - 74	16.0	200	300		86	130	20	17	10
70.0	70 - 77	16.0	200	300		89	135	20	17	10
75.0	75 - 83	16.0	200	300		65	138	20	17	10
82.0	82 - 89	16.0	200	300	400	101	145	20	17	10
87.0	87 - 95	16.0	200	300	400	107	149	20	17	10
88.0	88 - 98	16.0	200	300	400	110	149	20	17	10
95.0	95 - 104	16.0	200	300	400	116	155	20	17	10
108.0	108 - 118	16.0	200	300	400	120	166	20	17	10
113.0	113 - 123	16.0	200	300	400	135	171	20	17	10
118.0	118 - 128	16.0	200	300	400	140	175	20	17	10
120.0	120 - 131	16.0	200	300	400	143	176	20	17	10
132.0	132 - 142	16.0	200	300	400	154	188	35	19	12
135.0	135 - 145	16.0	200	300	400	157	191	35	19	12
139.0	139 - 149	16.0	200	300	400	161	195	35	19	12
145.0	145 - 155	16.0	200	300	400	167	201	35	19	12
159.0	159 - 170	16.0	200	300	400	182	214	35	19	12
167.0	167 - 178	16.0	200	300	400	190	221	35	19	12
176.0	176 - 187	16.0	200	300	400	199	230	35	19	12
193.0	193 - 203	10.0	200	300	400	215	247	35	19	12
215.0	215 - 225	10.0	200	300	400	237	268	35	19	12
228.0	228 - 239	10.0	200	300		251	281	35	19	12
240.0	240 - 250	10.0	200	300		262	292	35	19	12
261.0	261 - 271	10.0	200	300		283	313	35	19	12
269.0	269 - 280	10.0	200	300		292	321	35	19	12
280.0	280 - 291	10.0		300		303	332	35	19	12
315.0	315 - 325	10.0		300		337	366	40	19	12
320.0	320 - 330	10.0		300		342	371	40	19	12

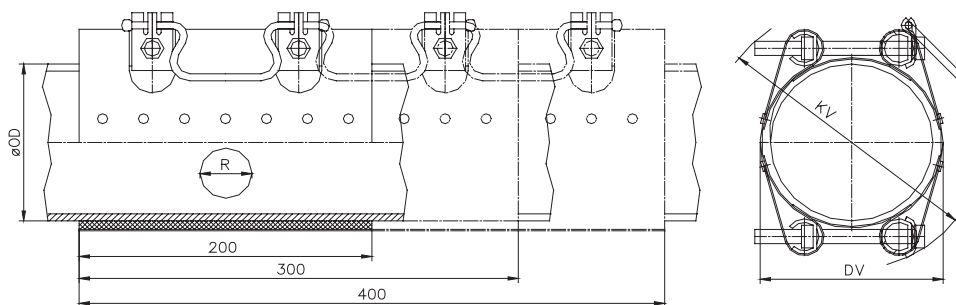
Remarks:

- Follow fitting instructions
- Different pipe diameters (transition) are not possible
- Test pressure = PN x 1.5
- Radial length of damaged area max. 20% of pipe outside diameters
- The repair clamp must be centred over the damaged area

⁷ Working pressure for gas: max. 5 bar

STRAUB-CLAMP SCZ Ø 88.0 - 440.0 mm

Components	Materials
Casing	AISI 304
Bolts	A2 - 70
Bars	AISI 304
Sealing sleeve EPDM	Temp.: -5°C up to +40°C Medium: all qualities of water, waste water, air, solids and chemical products
Sealing sleeve NBR	Temp.: -5°C up to +40°C Medium: water, gas, oil, fuel and other hydrocarbons



Clamp length	R _{max}
200 mm	50 mm
300 mm	150 mm
400 mm	250 mm

OD [mm]	Clamping range [mm]	PN ⁷ [bar]	2 locking bolts [mm]	3 locking bolts [mm]	4 locking bolts [mm]	DV [mm]	KV [mm]	Torque rate [Nm]	Allen head [mm]	Thread M...
88.0	88 - 110	16.0	200	300	400	117	186	20	17	10
100.0	100 - 120	16.0	200	300	400	132	197	20	17	10
108.0	108 - 128	16.0	200	300	400	140	204	20	17	10
114.0	114 - 134	16.0	200	300	400	146	209	20	17	10
120.0	120 - 140	16.0	200	300	400	152	215	20	17	10
130.0	130 - 150	16.0	200	300	400	162	288	20	19	12
140.0	140 - 160	16.0	200	300	400	172	237	35	19	12
159.0	159 - 180	16.0	200	300	400	192	255	35	19	12
168.0	168 - 189	16.0	200	300	400	201	264	35	19	12
190.0	190 - 210	16.0	200	300	400	190	284	35	19	12
210.0	210 - 230	10.0	200	300	400	242	303	35	19	12
218.0	218 - 238	10.0	200	300	400	252	312	35	19	12
240.0	240 - 260	10.0	200	300	400	272	332	35	19	12
269.0	269 - 289	10.0	200	300	400	301	360	35	19	12
282.0	282 - 302	10.0	200	300	400	314	373	35	19	12
315.0	315 - 335	10.0	200	300	400	347	405	40	19	12
322.0	322 - 344	10.0		300	400	356	413	40	19	12
337.0	337 - 358	6.0		300	400	370	427	40	19	12
347.0	347 - 367	6.0		300	400	379	436	40	19	12
365.0	365 - 385	5.0			400	397	453	40	19	12
390.0	390 - 410	5.0			400	422	478	40	19	12
410.0	410 - 430	5.0			400	442	498	40	19	12
420.0	420 - 440	5.0			400	452	508	40	19	12

Remarks:

- Follow fitting instructions
- Different pipe diameters (transition) are not possible
- Test pressure = PN x 1.5
- Radial length of damaged area max. 20% of pipe outside diameters
- The repair clamp must be centred over the damaged area

⁷ Working pressure for gas: max. 5 bar

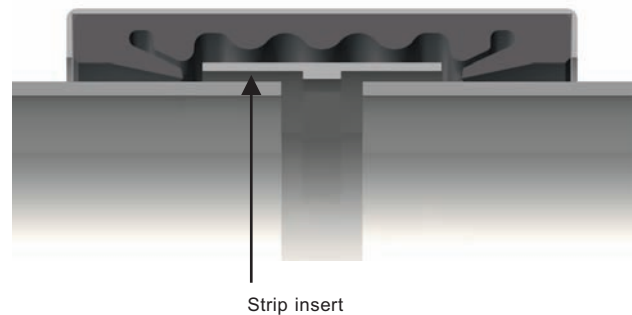
Accessories

Strip inserts

Strip inserts protect the sealing sleeve against mechanical or chemical damage in the pipe end area. Strip inserts are required for:

- Excessive distance between pipe ends
- Axial movement (expansion, contraction)
- Angular deflection and axial misalignment
- Vacuum (e.g. suction line)
- External pressure (e.g. underwater pipeline)
- High temperature
- Fuel and combustibles
- Swelling of the rubber caused by contact with chemicals

Subsequent installation of strip inserts for all types of couplings is possible. Strip insert quality depends on the medium and temperature. Plastic strip inserts will have to be applied for normal temperatures and chemicals, steel strip inserts for higher temperatures, vacuum and external pressure. Also, a combination of plastic and steel strip inserts is possible. T-profile inserts prevent drifting of the coupling from its centre position, if excessive axial movement and dynamic alternating stress occurs.



Coupling Type / Size	Stainless steel		Plastic		T-Profile	
	AISI 316 L	AISI 301	PVDF	HDPE	PVDF	HDPE
STRAUB-FLEX 1 / OPEN-FLEX 1	x		x		X (from 76.1 mm)	
STRAUB-FLEX 2 / OPEN-FLEX 2	x			x		x
STRAUB-FLEX 3 / OPEN-FLEX 3	x			x		x
STRAUB-FLEX 3.5 / OPEN-FLEX 3.5		x		x		
STRAUB-FLEX 4 / OPEN-FLEX 4		x		x		
STRAUB-METAL-GRIP	x		x			
STRAUB-GRIP-L						
26.9 - 168.3 mm	x		x			
180.0 - 609.6 mm	x			x		
STRAUB-ECO-GRIP	x					
STRAUB-PLAST / COMBI-GRIP	x		x			

Torque Wrench

To ensure successful use of STRAUB couplings, a torque wrench must be used.

The torque ranges required are covered using the following torque wrenches:

Torque Wrench 1/2"
2 - 25 Nm
10 - 100 Nm
20 - 200 Nm
70 - 230 Nm
60 - 300 Nm
75 - 400 Nm



For coupling diameters of > 1000 mm, extended inserts must be used. The torque wrenches as well as the appropriate inserts are commercially available or can be purchased from STRAUB.

STRAUB-OPEN-FLEX fitting tool

To install them, STRAUB-OPEN-FLEX couplings are opened and put around the pipe. During installation, the mating surfaces of the sealing sleeve are pressed onto each other thus providing absolute tightness. An assembly tool must be used to create the necessary pressing force for installing the sealing sleeves with the minimum of effort in the easiest way.

- Can be used for all OPEN-FLEX 1 and 2 couplings
- Minimum effort required
- Space-saving (detachable handle)
- Clamping force can be created by using a spindle, spanner or socket wrench including ratchet
- Design is suitable for use on site
- For openings from 20 through 210 mm



Tensioning Strap

For mounting the STRAUB-OPEN-FLEX couplings of all types and sizes, tensioning straps help installing the couplings; particularly in the case of two-piece casing designs. Several strap lengths for coupling diameters of < 300 mm and > 300 mm are used.



Long Catch Bolt

Long catch bolts help installing the STRAUB-OPEN-FLEX 3, 3.5, and 4 types. During installation, a standard bolt is replaced by a long catch bolt (ideally located in the middle of the lock).

This bolt is used to tension the coupling until the standard bolt can be installed into the studs. Then the longer catch bolt is removed and replaced by the standard bolt.



Earthing Conductor

The STRAUB earthing conductor replaces the external jumper cable. If required, an electrical jumper cable from pipe to pipe can be established using a metallic earthing conductor placed in the coupling. In contrast to STRAUB-GRIP couplings, STRAUB FLEX and STRAUB-OPEN-FLEX couplings have no electrical conductivity and should be considered as insulating connections.

- Explosion protection (prevents static charging)
- Corrosion protection
- Electrically conductive connection between metallic pipes
- Earthing connection for cable conduits

Our earthing conductor system has been tested by the SEV (Swiss Association for Electrical Engineering, Power and Information Technologies) on the basis of SEV 04 ATEX 0167 (EN 1127-1:2007 and EN 13463-1:2009)*.

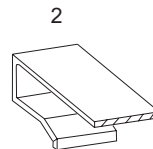
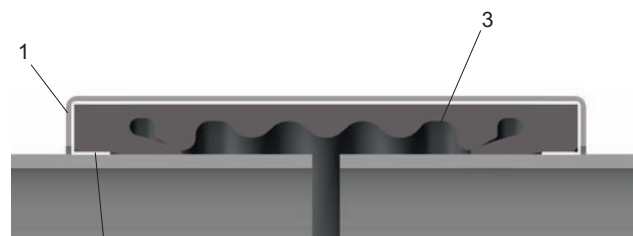
*The ATEX name refers to the French abbreviation for "Atmosphère explosible" and is used as a synonym for the directives of the European Union in the field of explosion protection.

Stiffening Rings

Typical for pipes made of PE / PP materials are the deformation and thermal stretching characteristics. The material tends to flow under pressure and temperature influences. This process is largely dependent on time. External radial loading on the pipe requires the use of a STRAUB internal stiffening ring, e.g. with STRAUB-PLAST-GRIP or STRAUB-FLEX, which also inhibits the tendency of the plastic to flow over the course of time.

The stiffening rings are available in slotted design from 40 mm up to 315 mm and in welded design from 355 up to 1600 mm. They are made of stainless steel (AISI 316 L / DIN 1.4435). When ordering, the exact inner diameter, SDR number or the wall thickness of the pipe is required.

Plastic pipes (PVC, ABS and CPVC) do not require stiffening rings if the temperature of the medium is below 30°C.



- 1 = Housing
2 = Earthing conductor
(available from Ø 73 mm)
3 = Sealing sleeve

Pipe Supports

Pipe supports can be designed as fixed, guide or anchor points. Proper application of these components depends on the coupling version used (axial restraint or axial flexibility).

Axial thrust protectors (tie rods) are used together with STRAUB-FLEX applications and are designed to accept axial tensile forces. Any calculations, design, and supply are provided by STRAUB.



Lock Parts

Lock parts, as a replacement, are available for each type of coupling.



Shaped Parts

Shaped parts made from stainless steel, fitted with extended cylindrical pipe ends:

- Pipe bends
- T fittings and cross fittings
- Reducers



STRAUB-PROTEX

With the STRAUB-PROTEX, leak-proof and electrically conducting cable conduits can be connected with one another. The special sealing lip on the coupling protects the cable from mechanical influences and dampness from outside. There is no additional protection against corrosion required, thanks to the stainless steel casing and lock parts.

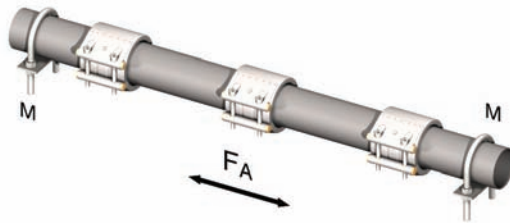
The STRAUB-PROTEX includes the earthing conductor system, which has been tested by the SEV (Swiss Association for Electrical Engineering, Power and Information Technologies).



STRAUB - Forces to avoid

K
Force
[N]

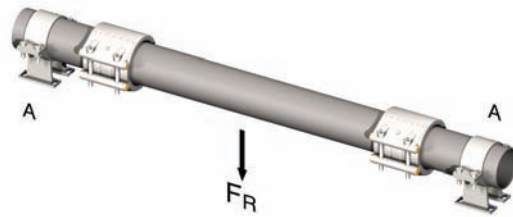
Axial force F_A



Not absorbed by STRAUB FLEX
• Sliding Support (M)

K
Load
[N]

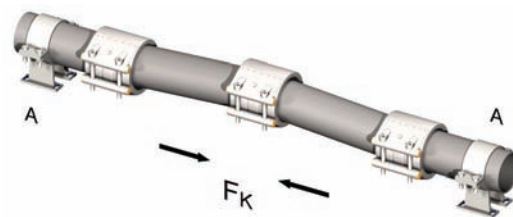
Weight F_R



Not absorbed by STRAUB FLEX and GRIP
• Anchor point (A)

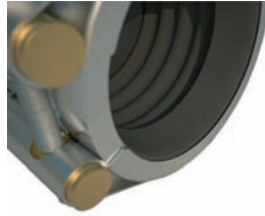



K
Knee
[N]

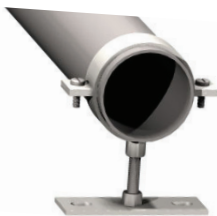





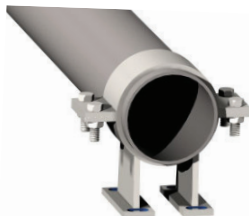

Axial buckling load F_K



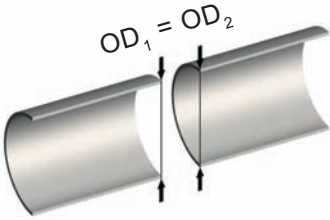
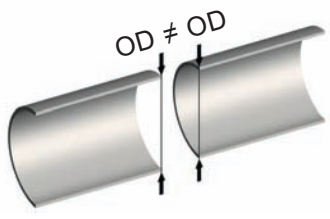
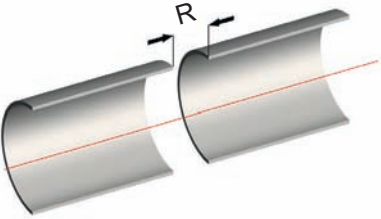
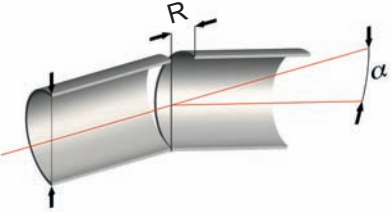
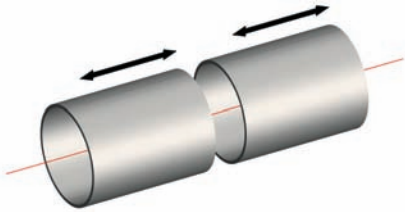
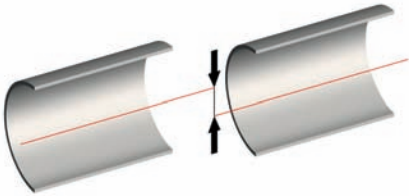
Not absorbed by STRAUB FLEX and GRIP
• Anchor point (A)

Installation Hints

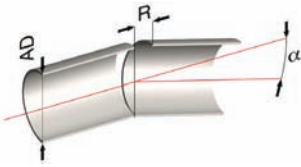
Type	Property	Representation	Symbol
STRAUB-FLEX coupling	Axially flexible		
STRAUB-GRIP coupling	Restraint, with anchoring ring		

Hanger / Support	Unrestricted to all sides		
Sliding pipe guide	Axially unrestricted		
Mounting / Fixed point	For accepting reaction forces from STRAUB-FLEX couplings		
Anchor point	For accepting the STRAUB-FLEX coupling stress and the stress resulting from internal force		

Fitting Tolerances / Approximate values

	<p>Clamping range Connecting two pipes with equal outside diameter. For clamping range see product datasheets.</p>																		
	<p>Different diameters Connecting two pipes with different outside diameters:</p> <ul style="list-style-type: none"> • up to 9 mm OD-difference with STRAUB-FLEX • from 10 mm OD-difference with STRAUB-STEP-FLEX 																		
	<p>Setting gap between pipe ends R Setting gap of 5 mm is recommended (see next page)</p>																		
	<p>Angular deflection α Setting gap between pipe ends due to angular deflection</p> <table border="1" data-bbox="820 1319 1422 1494"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Outside diameter OD [mm]</th> <th rowspan="2">α [degree]</th> </tr> <tr> <th>GRIP</th> <th>FLEX/OPEN-FLEX</th> </tr> </thead> <tbody> <tr> <td>up to 60.3</td> <td>up to 60.3</td> <td>5</td> </tr> <tr> <td>from 66.0</td> <td>from 66.0</td> <td>4</td> </tr> <tr> <td>from 219.1</td> <td>from 219.1</td> <td>2</td> </tr> <tr> <td>up to 609.6</td> <td>from 812.8</td> <td>1</td> </tr> </tbody> </table>		Outside diameter OD [mm]		α [degree]	GRIP	FLEX/OPEN-FLEX	up to 60.3	up to 60.3	5	from 66.0	from 66.0	4	from 219.1	from 219.1	2	up to 609.6	from 812.8	1
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	<p>Axial movement I STRAUB-FLEX and STRAUB-OPEN-FLEX couplings act as expansion joints within stated limits (see page 25)</p> <p>Reaction for STRAUB-FLEX couplings:</p> <table border="1" data-bbox="820 1738 1422 1807"> <thead> <tr> <th>\varnothing in mm</th> <th>101.6</th> <th>168.0</th> <th>219.1</th> <th>355.6</th> <th>558.8</th> <th>812.8</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>3800</td> <td>4800</td> <td>5600</td> <td>7300</td> <td>9800</td> <td>12500</td> </tr> </tbody> </table>	\varnothing in mm	101.6	168.0	219.1	355.6	558.8	812.8	N	3800	4800	5600	7300	9800	12500				
\varnothing in mm	101.6	168.0	219.1	355.6	558.8	812.8													
N	3800	4800	5600	7300	9800	12500													
	<p>Axial misalignment Connecting of two pipes with axial misalignment. Maximum allowed 1% of outside diameter (max. 3 mm)</p>																		

Setting gap between pipe ends due to angular deflection α



OD Ø mm	α in degrees						
	1	2	4	6	8	10	12
	R mm	R mm	R mm	R mm	R mm	R mm	R mm
26.9	0.5	1	2	3	4	5	6
30.0	0.5	1	2	3	4	5	6
33.7	0.5	1	2	3	4	6	7
38.0	1	1	3	4	5	7	8
40.0	1	2	3	4	6	7	8
42.4	1	2	3	4	6	7	9
44.5	1	2	3	5	6	8	9
48.3	1	2	3	5	7	8	10
50.0	1	2	4	5	7	9	11
54.0	1	2	4	6	8	9	11
57.0	1	2	4	6	8	10	12
60.3	1	2	4	6	8	11	13
63.0	1	2	4	7	9	11	13
75.0	1	3	5	8	11	13	16
76.1	1	3	5	8	11	13	16
84.0	2	3	6	9	12	15	18
88.9	2	3	6	9	12	16	19
90.0	2	3	6	9	13	16	19
104.0	2	4	7	11	15	18	22
108.0	2	4	8	11	15	19	23
110.0	2	4	8	12	15	19	23
114.3	2	2	8	12	16	20	24
125.0	2	2	9	13	17	22	26
129.0	2	5	9	14	18	23	27
133.0	2	5	9	14	19	23	28
139.7	2	5	10	15	20	24	29
140.0	2	5	10	15	20	24	29
154.0	3	5	11	16	22	27	32
159.0	3	6	11	17	22	28	33
160.0	3	6	11	17	22	28	33
168.3	3	6	12	18	24	30	35

OD Ø mm	α in degrees					
	1	2	3	4	6	8
	R mm	R mm	R mm	R mm	R mm	R mm
180.0	3	6	9	13	19	25
200.0	4	7	11	14	21	28
219.1	4	8	12	15	23	31
244.5	4	9	13	17	26	34
250.0	4	9	13	17	26	35
267.0	5	9	14	19	28	37
273.0	5	10	14	19	29	38
304.0	5	11	16	21	32	42
323.9	6	11	17	23	34	45
355.6	6	12	19	25	37	50
406.4	7	14	21	28	43	57
457.2	8	16	24	32	48	
508.0	9	18	27	36	53	
559.0	10	20	29	39	59	
575.0	10	20	30	40		
609.6	11	21	32	43		
711.2	12	25	37	50		
762.0	13	27	40	53		
812.8	14	28	43	57		
914.4	16	32	48			
1016.0	18	36	53			
1117.6	20	39	59			
1219.2	21	43				
1320.8	23	46				
1422.4	25	50				
1524.0	27	53				
1625.6	28	57				
1727.2	30					
1828.8	32					
1930.4	34					
2032.0	36					

Gaps between pipe ends are created by angular deflection, inaccurate assembly and changes in length. This gap must not exceed the value R (R = pipe end gap / may be obtained from product datasheet).

Using a strip insert (also refer to page 43), the pipe and gap can be enlarged. This maximum value depends on the design of each coupling type and may be obtained from the relevant product datasheet.

Assembly set-up time and dimension comparison


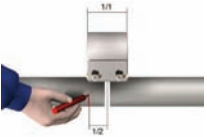

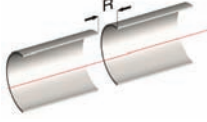
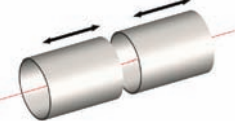
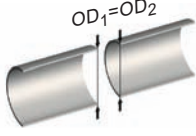
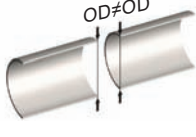
The installation time includes:




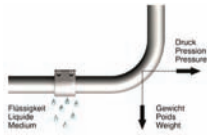





- Marking of half the coupling width on both pipe ends
- Fitting the coupling over pipe ends and correct alignment
- Tightening the bolts with a torque wrench

Pipe OD		Ominal diameter		Installation time per coupling [min]
metric [mm]	IPS [inch]	metric [DN]	IPS [Nom]	
26.9	1.050	20	3/4	2
30.0	1.180	25	1.2	2
33.7	1.325	25	1	2
38.0	1.495	32	1.5	2
42.4	1.670	32	1 1/4	2
44.5	1.750	40	1.75	2
48.3	1.900	40	1 1/2	2
54.0	2.125	50	2.125	3
57.0	2.245	50	2.25	3
60.3	2.375	50	2	3
66.6	2.625	65	2 1/2	4
73.0	2.875	65	2 1/2	4
76.1	(3.000)	65	(30.D.)	4
79.5	3.125	65	3	4
84.0	3.305	80	3.3	4
88.9	3.500	80	3	4
100.6	3.960	80	(3)	5
101.6	(4.000)	90	(3 1/2)	5
104.0	4.095	100	4.1	5
104.8	4.125	100	(4)	5
108.0	4.250	100	4 1/4	5
114.3	4.500	100	4	5
127.0	5.000	100	4 1/2	6
129.0	5.080	125	5	6
130.2	5.125	125	(5)	6
133.0	5.235	125	5 1/4	6
139.7	(5.500)	125	(5 1/2)	6
141.3	5.565	125	5	6
154.0	6.065	150	6.1	7
159.0	6.260	150	6 1/4	7
168.3	6.625	150	6	7
219.1	8.625	200	8	9
244.5	9.625	225	9	10
267.0	10.510	250	10.5	10
273.0	10.750	250	10	10
323.9	12.750	300	12	12
355.6	14.000	350	14	12
406.4	16.000	400	16	12
457.2	18.000	450	18	12
508.0	20.000	500	20	12
558.8	22.000	550	22	12
609.6	24.000	600	24	12

Fitting- / Disassembly Instructions STRAUB couplings

Please note complete fitting instructions for each type of coupling

Preparation																			
	<p>Deburr and remove sharp edges from pipe ends. Clean the pipe surface of impurities (bad coating)</p> <p>→ No loose matter under sealing lips.</p>																		
	<p>Mark half-width of pipe coupling on both pipe ends as fitting guide</p>																		
	<p>Remove plastic packing straps and fit the pipe coupling over the pipe end</p> <ul style="list-style-type: none"> • Do not dismantle the pipe joint • Do not drop the pipe joint 																		
Pipe alignment																			
	<p>Setting gap between pipe ends</p> <p>A space between pipe ends can arise through misalignment, inaccurate assembly or changes in length. STRAUB couplings can bridge spaces between pipe ends; please note the R value given in the technical datasheets (strip inserts see page 43).</p>																		
	<table border="0"> <tr> <td>Axial movement ΔL STRAUB-FLEX and STRAUB-OPEN-FLEX couplings act as expansion joints within stated limits</td> <td>Max. axial movement STRAUB-Type</td> <td>mm ΔL</td> </tr> <tr> <td></td> <td>FLEX 1 / OPEN-FLEX 1</td> <td>5</td> </tr> <tr> <td></td> <td>FLEX 2 / OPEN-FLEX 2</td> <td>10</td> </tr> <tr> <td></td> <td>FLEX 3 / OPEN-FLEX 3</td> <td>15</td> </tr> <tr> <td></td> <td>FLEX 3.5 / OPEN-FLEX 3.5</td> <td>15</td> </tr> <tr> <td></td> <td>FLEX 4 / OPEN-FLEX 4</td> <td>20</td> </tr> </table>	Axial movement ΔL STRAUB-FLEX and STRAUB-OPEN-FLEX couplings act as expansion joints within stated limits	Max. axial movement STRAUB-Type	mm ΔL		FLEX 1 / OPEN-FLEX 1	5		FLEX 2 / OPEN-FLEX 2	10		FLEX 3 / OPEN-FLEX 3	15		FLEX 3.5 / OPEN-FLEX 3.5	15		FLEX 4 / OPEN-FLEX 4	20
Axial movement ΔL STRAUB-FLEX and STRAUB-OPEN-FLEX couplings act as expansion joints within stated limits	Max. axial movement STRAUB-Type	mm ΔL																	
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	FLEX 2 / OPEN-FLEX 2	10																	
	FLEX 3 / OPEN-FLEX 3	15																	
	FLEX 3.5 / OPEN-FLEX 3.5	15																	
	FLEX 4 / OPEN-FLEX 4	20																	
	<p>Clamping range</p> <p>Connecting two pipes with equal outside diameter (see also datasheets)</p>																		
	<p>Outside diameter difference</p> <p>Up to \varnothing 100 mm → 2 mm From \varnothing100 mm → 2 % From \varnothing 300 mm → 6 mm</p>																		
	<p>Do not work beyond limits or add them together!</p> <p>Limits are for static loads and radially rigid pipes only. For dynamic forces like pressure surges and thrust, apply a safety factor (contact your local partner or the manufacturer).</p>																		

Bolting	
	Adjust pipe coupling then tighten bolts lightly and alternately with a ratched wrench or power wrench
	Do not rotate pipe coupling on the pipe once teeth are engaged
	Tighten the locking bolts with a torque wrench to the final prescribed torque rate engraved on the pipe coupling's outer surface; the torque wrench must be set accordingly
	Failure prevention: Do not tighten bolts above prescribed torque rate. Trouble shooting: In case of leakage, clean pipe and sealing lips surface before installing pipe coupling again. Detachable and reusable (see disassembly instruction).
Safety measures before removing pipe joint	
	Verify that there is no pressure inside the coupling. Discharge the pipeline. Protect yourself against the medium. Make sure that the pipes are not held by the coupling.
Disassembly	
	Loosen bolts alternately but do not remove completely. Do not rotate pipe coupling on pipe as long as teeth are engaged.
Loosen teeth engagement (applicable for GRIP couplings only)	
	Insert tool underneath casing and lift. Caution - Do not harm sealing sleeve!
Remove pipe joint	
	Slide pipe coupling to the side. Caution! Sealing lip may touch pipe end. Turn and move pipe joint smoothly. Clean pipe coupling and relubricate bolts with an appropriate lubricant before refitting.
Caution	
	Pipe couplings can not take shearing forces (see installation consideration). STRAUB pipe couplings are maintenance-free, i.e. never retighten bolts; contact factory for minimum wall thickness of pipe.
	Additional corrosion protection (see page 57): If risk of corrosion exists, for long term pipe coupling protection use shrink sleeves or protection tapes. This is especially necessary where couplings are used underground.

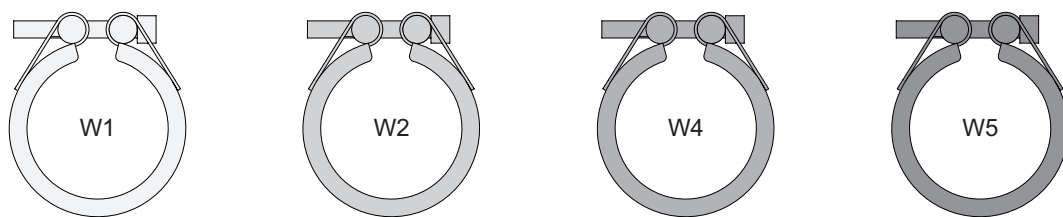
Dimensions and minimum wall thickness at nominal pressure PS

Pipe OD		Nominal diameter		Minimum wall thickness		
Metric (mm)	IPS (inch)	Metric (DN)	IPS (Nom)	Stainless steel		
				STRAUB-GRIP-L STRAUB-METAL-GRIP STRAUB-ECO-GRIP	CuNi10Fe (DIN) CuNi10Mn1FE (ISO) STRAUB-GRIP-L STRAUB-ECO-GRIP	
				(mm)	(mm)	
26.9	1.050	20	3/4	1.5	1.5	
30.0	1.180	25	1.2	1.5	1.5	
33.7	1.325	25	1	1.5	2.0	
38.0	1.495	32	1.5	1.5	2.0	
42.4	1.670	32	1 1/4	1.5	2.0	
44.5	1.750	40	1.75	1.5	2.0	
48.3	1.900	40	1 1/2	1.5	2.0	
50.8	2			1.5	2.0	
54.0	2.125	50	2.125	1.5	2.0	
57.0	2.245	50	2.25	1.5	2.0	
60.3	2.375	50	2	1.5	2.0	
66.6	2.625	65	2 1/2	2.0	2.0	
70.0	2.756	65	2 1/2	2.0	2.0	
73.0	2.875	65	2 1/2	2.0	2.0	
76.1	(3.000)	65	(30.D.)	2.0	2.0	
79.5	3.125	65	3	2.0	2.0	
84.0	3.305	80	3.3	2.0	2.0	
88.9	3.500	80	3	2.0	2.0	
100.6	3.960	90	(3)	2.0	2.3	
101.6	(4.000)	100	(3 1/2)	2.0	2.3	
104.0	4.095	100	4.1	2.0	2.3	
104.8	4.125	100	(4)	2.0	2.3	
108.0	4.250	100	4 1/4	2.0	2.3	
114.3	4.500	100	4	2.0	2.3	
127.0	5.000	100	4 1/2	2.6	3.0	
129.0	5.080	125	5	2.6	3.0	
130.2	5.125	125	(5)	2.6	3.0	
131.0 [§]				3.0		
133.0	5.235	125	5 1/4	2.6	3.0	
139.7	(5.500)	125	(5 1/2)	2.6	3.0	
141.3	5.565	125	5	2.6	3.0	
154.0	6.065	150	6.1	2.6	3.0	
155.0 [§]				2.5		
159.0	6.260	150	6 1/4	2.6	3.0	
168.3	6.625	150	6	2.6	3.5	
193.7	7.625	200	7.6	3.0	3.5	
206.0 [§]				3.0		
219.1	8.625	200	8	3.0	3.5	
				STRAUB-GRIP-L	STRAUB-METAL-GRIP	
244.5	9.625	225	9	3.0	on request	4.5
256.0 [§]				3.0	on request	
267.0	10.510	250	10.5	3.0	on request	4.5
273.0	10.750	250	10	3.0	on request	5.0
306.0 [§]				3.0	on request	
323.9	12.750	300	12	3.0	on request	5.5
355.6	14.000	350	14	3.0	on request	6.0
406.4	16.000	400	16	3.0	on request	8.0
457.2	18.000	450	18	3.0	on request	9.0
508.0	20.000	500	20	3.0	on request	10.0
558.8	22.000	550	22	3.0	on request	10.0
609.6	24.000	600	24	3.0	on request	12.0

• Thinner walls are possible at lower pressures; please ask the factory

[§] Standard pipe dimension for stainless steel (outer diameter related to the wall thickness)

Material specifications of STRAUB couplings



	Materials							
	DIN	AISI	DIN	AISI	DIN	AISI	DIN	AISI
Components	W1		W2		W4		W5	
Casing	1.0570 hot-dip galv.	1024	1.4301/1.4571/ 1.4404	304/316T 316L	1.4301	304	1.4571/1.4404	316Ti/ 316L
Bolts	1.7220	4135	1.7220	4135	1.4404/1.4571	316L	1.4404/1.4435	316L
Bars	1.0737 galv.	12L14	1.0737 galv.	12L14	1.4404/1.4435	316L	1.4404/1.4435	316L
Anchoring ring	1.4310	301	1.4310/1.4301	301	1.4310/1.4301	301	1.4310	301
Strip insert (optional)	1.4435 PVDF/HDPE	316L	1.4435 PVDF/HDPE	316L	1.4435 PVDF/HDPE	316L	1.4435 PVDF/HDPE	316L

Corrosion Resistance

Material sub group	Class of material	EN	ASTM (AISI)	UNS	Trade name	Strength (N/mm ²)	Structure	PRE	Sensitivity compared with hole and crack corrosion
FE1	1	1.4410		S32750	SAF 2507	550	Super Duplex	42.5	extremely low
		1.4547		S31254	254 SMO	320	Super Austenit	44	
		1.4501		S32760	4501	550	Super Duplex	42	
				N08367	AL-6XN	310	Super Austenit	44	
	2	1.3964				365	Austenit	36	very low
		1.4462		S32205	2205	500	Duplex	34	
		1.4539		N08904	904L	240	Austenit	37	
	4 (V4A)	1.4401	316	S31600		240	Austenit	25	low
		1.4404	316L	S31603		240	Austenit	26	
		1.4435	316L	S31603		240	Austenit	28	
		1.4571	316Ti	S31635		240	Austenit	25	
		1.4162	S32101	S32101	LDX 2101	530	Lean Duplex	26	
FE2	(V2A)	1.4301	304	S30400		220	Austenit	19	high
		1.4310	301	S30100		250	Austenit	18	
		1.0737							very high
		1.0570							very high

Duplex = Ferritic / Austenitic structure

Lean Duplex = PRE below 30


Super Duplex = PRE over 40

PRE (Pitting Resistance Equivalent / Pitting index) = %Cr + 3.3 x %MO + 16 x %N

Materials = DIN86128

Corrosion Checklist

Corrosivity category (ISO12944, EN 12500)	Application example	Corrosivity	Inside	Outdoors	W1	W2	W4	W5 or better
C1-C2	Building construction, building systems, underground car parks	insignificant, low	C1: Heated buildings with low air humidity C2: Occasional condensation, insignificant air contamination	C1: Dry and cold climate zones C2: Very rural and generally dry areas				
C3	Building construction, building systems, low environmental demands	moderate	Production areas with intermittent condensation and moderate air contamination	Temperate climates, low air contamination, middle-sized city climate, virtually no road salting				
C4	Process pipes, applications in urban areas	high	Production areas with continuous condensation and/or high air contamination (mines, tunnels)	Industrial and city areas with temperate climate but high air contamination, areas affected by road salting (bridges)				
C5 (C5-I)	Industrial, areas near industry	very high	Inside damp, often condensation, no chlorides or sulphates	Temperate climate with high air contamination, particles containing sulphates, soot, dust of unknown composition				
C5-M (maritime climate)	Shipbuilding, machine rooms, coastal climate roofed	high	Inside damp, often condensation, no chlorides or sulphates	Roofed, no direct precipitation but coastal maritime climate or less than 5 km inland				
C5-M (maritime climate)	Shipbuilding, bilge, systems, coastal climate open to weather	very high	Condensation, no cleaning of surfaces, high temperatures above 30° C, salts containing chloride or sulphate particles with the possibility of concentration	Open to weather, coastal or off-shore areas, splash water zone, less than 5 km inland, possibly industrial				
Im1 – Im3 (immersion)	Im1: Underground applications	Im2: Applications in contact with fresh water, drinking water, municipal sewage system		Im3: Applications in sea or brack water				

 high corrosivity

 low corrosivity

Corrosion Protection Application

Application of corrosion protection agents depends on the corrosivity category of the environment or of the soil. Generally, W1 and W2 design couplings have to be protected against corrosion if use in soil or corrosive environment is to be expected. An example of how to correctly apply corrosion protection is given in the following assembly description of a dual-strip system corrosion protection.

Example no.1: STRAUB-COMBI-GRIP 48.3 / 50 mm (zinc-plated lock)



Remove the type ID label and clean the coupling using acetone. On both coupling sides, place a mark at a distance of...



...10cm. Apply primer within the two marks. Seal any cavities and transitions...



... using joint sealer, particularly in the lock area. Fill the cavities.



Ensure that the transition between coupling and pipe is as smooth as possible.



Evenly wrap the inner strip within the two marks.



Place the protective strip within the two marks.

Example no.2: STRAUB-FLEX 2 XS 1229.0 mm (zinc-plated housing and lock)



Mechanically clean the locations to be protected and wipe as dry as possible. If necessary, use a flame...



...to dry any cavities around the lock. Seal any cavities and transitions using joint sealer, particularly in the lock area.



Wrap and press the corrosion protection strip around the coupling in three layers - avoid cavities.



Apply PE tape onto the corrosion protection strip as mechanical protection. Overlap the strip at 100mm on both sides



Apply one layer of pipe protection matting around the corrosion protection creating an overlap of approx. 200mm on both sides.



Using a gentle flame, heat the surface under the overlap and press down to fix the matting.

The two examples are only to illustrate how to apply corrosion protection. Any coupling dimension can be protected against corrosion this way. Alternatively, there are other similar procedures. Please apply the corrosion protection according to the application instructions of the corrosion protection manufacturer or consult STRAUB directly.

Facts worth knowing about STRAUB couplings

- Maintenance** STRAUB couplings are absolutely maintenance-free
- Regular testing** STRAUB couplings do not require any regular testing
- Reusability** STRAUB couplings can be removed and reused several times. Please refer to relevant assembly / disassembly instructions
- Torque rate** Thanks to the low torque rate, the service life of the coupling is significantly increased. In no case, may the torque indicated on the coupling label be exceeded.



Label

Address →

Material class →

Serial number and production date →

Follow assembly instructions →

Use torque wrench →

← Item no.

← Diameter in mm and inch

← Coupling type

← Sealing material

← Torque in Nm and lbf.ft

← Bar code with item number

← Distance between pipe ends (without strip insert)

PS: nominal pressure
 PN: working pressure
 (e.g. for shipbuilding)

Technical short check list

Date:		Issued by:	
Customer:			
Dimensions 1: OD1 :mm ID1 :mm or WT1 :mm or tube serial no: Material 1: <input type="checkbox"/> Carbon steel <input type="checkbox"/> Stainless steel <input type="checkbox"/> GRP <input type="checkbox"/> PE/PP <input type="checkbox"/> PVC <input type="checkbox"/>	Dimensions 2: OD2 :mm ID2 :mm or WT2 :mm or tube serial no: Material 2: <input type="checkbox"/> Carbon steel <input type="checkbox"/> Stainless steel <input type="checkbox"/> GRP <input type="checkbox"/> PE/PP <input type="checkbox"/> PVC <input type="checkbox"/>		
Coupling: <input type="checkbox"/> Pull out resistant (GRIP) <input type="checkbox"/> Axially flexible (FLEX) <input type="checkbox"/> Repair type (OPEN-FLEX) Medium: <input type="checkbox"/> Air <input type="checkbox"/> Water <input type="checkbox"/> Gas <input type="checkbox"/> Fuel <input type="checkbox"/> Chemical products Specification Chemical formula Concentration%	Casing: <input type="checkbox"/> ss <input type="checkbox"/> galv. Lock parts: <input type="checkbox"/> ss <input type="checkbox"/> galv. Pressure: Working pressurebar Test pressurebar (System pressure)bar Vacuummbar Temperature (medium): max. °C min. °C Gap between pipe ends: R max. mm		
Quantities required:			
Remarks:			
Straub solution: (to be completed by our application engineers			
Issued by:		Date:	

Our quality and engineering competency

The name STRAUB is synonymous with extensive coupling expertise in joining pipes. This expertise goes far beyond the development and manufacture of solid quality products. We assume responsibility for everything related to pipes and offer you individual solutions matched to your specific requirements.

In doing so, we will accompany you through all processes of your project – from the first consultancy on site through project planning and engineering to the assembly and regular maintenance work around the whole world.



Situation analysis

The starting phase is especially decisive for the success of a project. The basis is a comprehensive onsite analysis.



Pre-Engineering

Optimisation starts with a rough planning of the project. In cooperation with you we will develop a basis for a decision on the required solution.



Engineering

We take over the detailed planning, budgeting and the whole project management for you.



System procurement and quality assurance

We procure optimally matched components, test them and thus secure the quality of the entire system.



Assembly / Commissioning

Our assistance with the assembly and comprehensive system introduction on site will save time, prevent mistakes and thus increase economic efficiency.



Service and maintenance

Even when a project is completed we will be there for you – with service and support.

Our services

The installation package

For comprehensive projects we will offer you, on request, our complete installation package as an attractive addition. It includes on-site survey, the coordination and organisation of the assembly and commissioning as well as the official acceptance of your project, taking into account all technical as well as country and industry-specific statutory provisions.



The service package

Durable bonds – for us this also means long-time customer relationships based on partnership. Upon request, after joint projects have been completed, you will benefit from a comprehensive service package with extended guarantees, annual maintenance and competent consultancy through our service team.

We will be happy to inform you personally about our comprehensive services.



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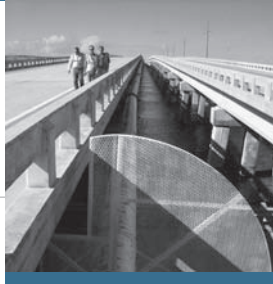
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STRAUB couplings:

Well-proven quality solutions for countless applications



Water

Drinking water treatment
Irrigation

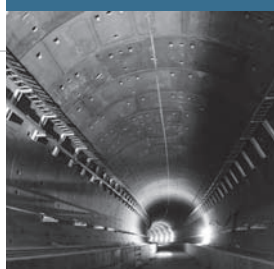
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