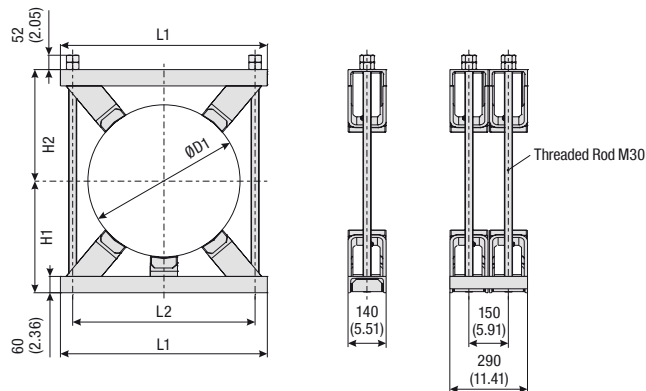
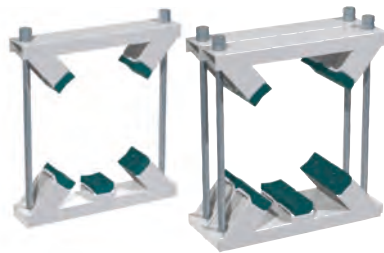


Construction Series

Types KS (Single Version) / DKS (Double Version)



Order Codes

Construction Series *KS*220*W7*PP

* Version Single version **KS**
 Double version **DKS**

* Exact outside diameter ØD1 (mm) **220**

* Material Code Steel, prime coated **W7**
 Steel, hot-dip galvanised **W40**

* Material of Plastic Pads (see below) **PP**

Please note: All items are supplied non-assembled.

Standard Materials for Plastic Pads



Polypropylene
 Colour: Green
 Material Code: **PP**

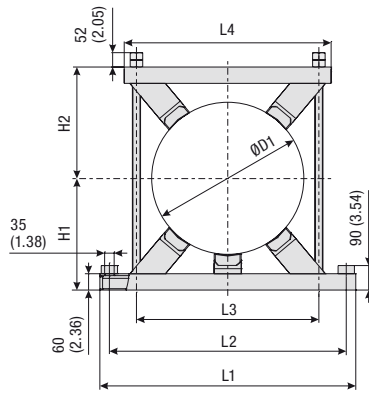


Polyamide
 Colour: Black
 Material Code: **PA**

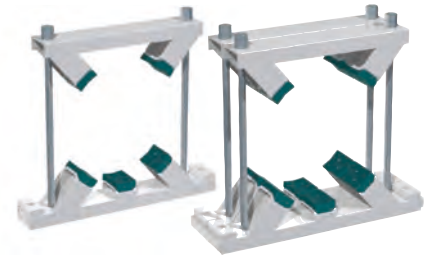
See page A86 for material properties and technical information.

Group	Outside Diameter ØD1 Pipe / Tube Diameter Range		Standard Diameters		Dimensions (mm/in)				No. of Plastic Pads
					L1	L2	H1	H2	
STAUFF	(mm)	(in)	(mm)	(in)					
1	220 ... 275	8.66 ... 10.85	220	8.66	420 16.54	330 12.99	220 8.66	220 8.66	4
			247	9.72					
			267	10.51					
			273	10.75					
2	276 ... 325	10.87 ... 12.80	280	11.02	460 18.11	370 14.57	240 9.45	240 9.45	4
			300	11.81					
			318	12.52					
			323,9	12.75					
3	326 ... 370	12.83 ... 14.57	355,6	14.00	510 20.08	420 16.53	260 10.23	260 10.23	4
			368	14.49					
4	371 ... 425	14.61 ... 16.73	390	15.35	570 22.44	480 18.89	290 11.42	290 11.42	4
			406,4	16.00					
5	426 ... 485	16.77 ... 19.09	457,2	18.00	620 24.41	530 20.87	305 12.01	305 12.01	4
			470	18.50					
6	486 ... 550	19.13 ... 21.65	490	19.29	680 26.77	590 23.23	370 14.57	370 14.57	4
			508	20.00					
			521	20.51					
			546	21.50					
7	551 ... 630	21.69 ... 24.80	558,8	22.00	760 29.92	670 26.38	410 16.14	410 16.14	5
			609,6	24.00					
8	631 ... 715	24.84 ... 28.15	711	28.00	845 33.27	755 29.72	452 17.80	452 17.80	5
9	716 ... 800	28.19 ... 31.50	762	30.00	940 37.00	850 33.46	495 19.49	495 19.49	5
10			813	32.00	990 38.97	900 35.43	500 19.69	500 19.69	5
11			1000	39.37	1200 47.24	1100 43.30	591,5 23.29	593 23.34	5
12			1016	40.00	1200 47.24	1100 43.30	602 23.70	602 23.70	5

Alternative outside diameters, materials and surface finishings are available upon request. Consult STAUFF for further information.



Construction Series for Anchor Bolt Fastening Types KSV (Single) / DKSV (Double)



Group STAUFF	Outside Diameter ØD1 Pipe / Tube Diameter Range		Standard Diameters		Dimensions (mm/in)						No. of Plastic Pads
	(mm)	(in)	(mm)	(in)	L1	L2	L3	L4	H1	H2	
1	220 ... 275	8.66 ... 10.85	220	8.66	580	330	490	420	220	220	4
			247	9.72							
			267	10.51							
			273	10.75							
2	276 ... 325	10.87 ... 12.80	280	11.02	620	370	530	460	240	240	4
			300	11.81							
			318	12.52							
			323,9	12.75							
3	326 ... 370	12.83 ... 14.57	355,6	14.00	670	420	580	510	260	260	4
			368	14.49							
4	371 ... 425	14.61 ... 16.73	390	15.35	750	480	640	570	290	290	4
			406,4	16.00							
5	426 ... 485	16.77 ... 19.09	457,2	18.00	800	530	730	620	305	305	4
			470	18.50							
6	486 ... 550	19.13 ... 21.65	490	19.29	860	590	790	680	370	370	4
			508	20.00							
			521	20.51							
			546	21.50							
7	551 ... 630	21.69 ... 24.80	558,8	22.00	940	670	870	760	410	410	5
			609,6	24.00							
8	631 ... 715	24.84 ... 28.15	711	28.00	1025	755	955	845	452	452	5
9	716 ... 800	28.19 ... 31.50	762	30.00	1120	850	1050	940	495	495	5
10			813	32.00	1170	900	1100	990	500	500	5
11			1000	39.37	1400	1100	1300	1200	591,5	593	5
12			1016	40.00	1400	1100	1300	1200	602	602	5

Alternative outside diameters, materials and surface finishings are available upon request. Consult STAUFF for further information.

Order Codes

Construction Series *KSV*220*W7*PP

* Version Single version Double version KSV DKSV

* Exact outside diameter ØD1 (mm) 220

* Material Code Steel, prime coated W7 Steel, hot-dip galvanised W40

* Material of Plastic Pads (see below) PP

Please note: All items are supplied non-assembled.

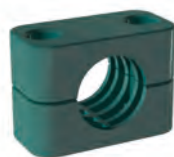
Standard Materials for Plastic Pads

Polypropylene
Colour: Green
Material Code: **PP**

Polyamide
Colour: Black
Material Code: **PA**

See page A86 for material properties and technical information.

Standard Clamp Body Materials



Material Code	PP	PA	AL	SA
Basic Material	Copolymeric Polypropylene	Polyamide	Aluminium AISi12	Thermoplastic Elastomer
Standard Colour	Green	Black	Natural	Black

Mechanical Properties				
Tensile E-Module	1073 N/mm ² (ISO 527)	> 1400 N/mm ² (ISO 527)	> 65000 N/mm ²	113 N/mm ² at +23 °C / +73.4 °F (ASTM D412)
Notch Impact Strength	7,5 kJ/m ² at +23 °C / +73.4 °F (acc. to Charpy / ISO 179/1eA)	> 15 kJ/m ² at +23 °C / +73.4 °F (acc. to Charpy / ISO 179/1eA)		
Low Temperature Notch Impact Strength	3,1 kJ/m ² at -30 °C / -22.0 °F (acc. to Charpy / ISO 179/1eA)	> 3 kJ/m ² at -30 °C / -22.0 °F (acc. to Charpy / ISO 179/1eA)		
Tensile Strength at Yield (Tensile Strength)	25 N/mm ² (ISO 527)	> 55 N/mm ² (ISO 527)	> 150 N/mm ² (ISO EN 10002)	15,9 N/mm ² (ASTM D412)
Ball Indentation Hardness (Brinell Hardness)	45,4 N/mm ² (ISO 2039-1)	> 65 N/mm ² (ISO 2039-1)	> 55 HBS	
Shore Hardness				87 A (ISO 868)

Thermal Properties				
Temperature Resistance (Continuous Exposure, Min ... Max)	-30 °C ... +90 °C / -22 °F ... +194 °F	-40 °C ... +120 °C / -40 °F ... +248 °F (Brief exposure up to +140 °C / +284 °F)	up to +300 °C / up to +572 °F	-40 °C ... +125 °C / -40 °F ... +257 °F

Chemical Properties				
Weak Acids	conditionally consistent	conditionally consistent	conditionally consistent	consistent
Solvents	conditionally consistent	conditionally consistent	conditionally consistent	conditionally consistent
Benzine	conditionally consistent	consistent	consistent	conditionally consistent
Mineral Oils	conditionally consistent	consistent	consistent	conditionally consistent
Other Oils	consistent	consistent	consistent	consistent
Alcohols	consistent	consistent	consistent	consistent
Seawater	consistent	consistent	consistent	consistent

The information for the Polyamide material PA and the Polyamide based materials PAV0 and PA-FF have been determined in a conditioned state according to ISO 1110.
For Aluminium, the tensile strength (under reversed bending stress) and impact bending strength both rise constantly at decreasing temperatures whilst the value for breaking elongation decreases.

Standard Rubber Insert Materials



Thermoplastic Elastomer (73 Shore-A)

Standard Material for STAUFF Group 4 and 6 (Standard Series)
Standard Material for STAUFF Group 4S to 6S (Heavy Series)

Mechanical Properties

Shore Hardness: 73 A (ISO 868)
Modulus of Elasticity: 16 N/mm² at +23 °C / +73.4 °F
(ASTM D 412)
Tensile Stress: 8,3 N/mm² (ASTM D 412)

Thermal Properties

Temperature Resistance: -40 °C ... +125 °C / -40 °F ... +257 °F

Chemical Properties

Consistent against weak acids and solvents;
conditionally consistent against benzine and mineral oils;
consistent against other oils, alcohols and sea water.

Elastomer (70 Shore-A)

Standard Material for STAUFF Group 7S to 10S (Heavy Series)

Mechanical Properties

Shore Hardness: 70 A (DIN 53505)
Tensile Strength at Yield: 9 N/mm² (DIN 53504)
Tensile Strain at Break: 400 % (DIN 53504)
Tear-Growth Resistance: 9 N/mm (DIN 53507-A)
Compression Set: 20 % (DIN 53517)
(22 h at +70 °C / +158 °F)

Consult STAUFF for further information.

Special Clamp Body Materials (Selection)

Preventive Fire Protection / Corrosion Prevention



PAVO	PA-FF	PPDA	PP6853	PP-AC
Polyamide	Polyamide	Polypropylene	Polypropylene	Polypropylene
Grey	Black	White	White	Natural / Uncoloured

1500 N/mm ² (ISO 527-1/2)	1100 N/mm ² (ISO 527-1/2)	2200 N/mm ² (ISO 527) at +23 °C / +73.4 °F: 50 mm/min	1440 N/mm ² (ICE 60811-1-1)	1073 N/mm ² (ISO 527)
35 kJ/m ² at +23 °C / +73.4 °F (acc. to Charpy / ISO 179/1eA)	20 kJ/m ² at +23 °C / +73.4 °F (acc. to Charpy / ISO 179/1eA)	11,8 kJ/m ² at +23 °C / +73.4 °F (acc. to IZOD / ISO 179/1eA)	16 kJ/m ² at +23 °C / +73.4 °F (acc. to IZOD / ISO 179/1eA)	7,5 kJ/m ² at +23 °C / +73.4 °F (acc. to Charpy / ISO 179/1eA)
		4,9 kJ/m ² at -25 °C / -13.0 °F (acc. to IZOD / ISO 179/1eA)		3,1 kJ/m ² at -30 °C / -22.0 °F (acc. to Charpy / ISO 179/1eA)
45 N/mm ² (ISO 527-1/2)	50 N/mm ² (ISO 527-1/2)	15,1 N/mm ² (ISO 527) at +23 °C / +73.4 °F: 50 mm/min	20,4 N/mm ² (ICE 60811-1-1)	25 N/mm ² (ISO 527)
100 N/mm ² (ISO 2039-1)	100 N/mm ² (ISO 2039-1)			45,4 N/mm ² (ISO 2039-1)

-30 °C ... +120 °C / -22 °F ... +248 °F	-30 °C ... +120 °C / -22 °F ... +248 °F	-25 °C ... +90 °C / -13 °F ... +194 °F	-25 °C ... +90 °C / -13 °F ... +194 °F	-30 °C ... +90 °C / -22 °F ... +194 °F
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Approvals / Special Properties				
Tested and approved according to UL94 (Vertical Burning Test) - Classification: 94V-0 (thickness: 0,4mm) Tested and approved according to DIN 5510, Part 2 - Combustibility classification: S3 - Smoke development classification: SR2 - Dripping classification: ST2 Tested and approved according to NF F 16-101 - Classification: I2 / F2 Halogen- and phosphor-free flame retardant system Oxygen index: 34,0% (according to ISO 4589-2) Flammability temperature: 299 °C / 570 °F (according to ISO 4589-3, Annex A) High durability, good UV, weathering and chemical resistance	Tested and approved according to DIN 5510, Part 2 - Combustibility classification: S4 - Smoke development classification: SR2 - Dripping classification: ST2 Oxygen index: 28,0% (according to ISO 4589-2) Flammability temperature: 327 °C / 621 °F (according to ISO 4589-3, Annex A) High durability (even at low temperatures), mechanical strength and rigidity, good attrition resistance and fatigue strength, good UV resistance	Tested and approved according to Def Stan 07-247 Assessment: category B Approved by the UK Ministry of Defence (MoD) Smoke index: 11,1% (according to Def Stan 02-711, thickness: 3,0 mm) Halogen-free flame retardant system Toxicity index: 0,9 / 100 g (according to Def Stan 02-713) Oxygen index: 30,9% (according to ISO 4589-2) Flammability temperature: 231 °C / 448 °F (according to ISO 4589-3, Annex A)	Tested and approved according to BS 6853 (Code of practice for fire precautions in the design/construction of passenger carrying trains) - Assessment: category 1a Compliant to the requirements of London Underground / Metronet (standard 2-01001-002: Fire Safety Performance of Materials) Tested and approved according to DIN 5510, Part 2 - Combustibility classification: S3 - Smoke development classification: SR2 - Dripping classification: ST2 Tested and approved according to Def Stan 07-247 - Assessment: category B Smoke index: 6,1% (according to Def Stan 02-711, thickness: 3,0 mm) Halogen-free flame retardant system Toxicity index: 0,9 / 100 g (according to Def Stan 02-713) Oxygen index: 42,0% (according to ISO 4589-2) Flammability temperature: 325 °C / 617 °F (according to ISO 4589-3, Annex A)	Successfully tested in salt spray cabinet trials according to ISO 9227 / ASTM B117 - Delays the formation of crevice corrosion by depositing a special corrosion protection inhibitor (which is added to the basic PP material during production) in the gap between clamp body and stainless steel pipe - Lengthens maintenance intervals - Minimises servicing requirements and costs - Delivers tremendous potential savings

Materials and Surface Finishings of Metal Parts

Materials

Unless otherwise stated, all metal parts (e.g. weld plates, cover plates, bolts, rail nuts, etc.) are made of **Carbon Steel St37** (surface finishing according to material code).

Besides that, all metal parts are also available **ex stock** in two different stainless steel qualities:

Stainless Steel V2A

- 1.4301 / 1.4305 (AISI 304 / 303)
- Material code: W4



Stainless Steel V4A

- 1.4401 / 1.4571 (AISI 316 / 316 Ti)
- Material code: W5

Alternative materials are available upon request. Consult STAUFF for further information.

Surface Finishings

Unless otherwise stated, all metal parts made of Carbon Steel St37 are available with the following standard surface finishings:

Carbon Steel St37, untreated

- Material code: W1

Carbon Steel St37, phosphated

- Fe/Znph r 10 according to DIN EN 12476
- Material code: W2

Carbon Steel St37, zinc/nickel-plated

- Fe/ZnNi (12...16) 6+6//A//T2 according to DIN 50962
- More than 720 hours resistance against red rust / base metal corrosion in the salt spray test to DIN EN ISO 9227
- Free of hexavalent chromium Cr(VI)
- RoHS compliant according to 2002/95/EC (Restrictions of the Use of Hazardous Substances)
- ELV compliant according to 2000/53/EC (End of Life Vehicles Directive)
- Material code: W3

Alternative surface finishings are available upon request. Consult STAUFF for further information.



Original STAUFF Cover Plate with Zinc/Nickel-Coating:
No signs of corrosion after 528 hours in the salt spray chamber!



Original STAUFF Cover Plates with alternative surface finishings widely-used by competitors in the market (from left to right):

- Galvanisation and blue-chromating after 96 hours
- Galvanisation and yellow-chromating after 192 hours
- Zinc-coating, thick-film passivation and sealing after 192 hours

In all three cases, signs of corrosion are quite clearly visible!

Consult STAUFF and ask for a detailed report.

Thread Conversion Chart

Metric ISO vs. Unified Coarse (UNC) Thread

Unless otherwise stated, all threaded parts available with Metric ISO thread or unified coarse (UNC) thread.

Standard Series (DIN 3015, Part 1)

Group STAUFF	DIN	Thread Metric ISO	Unified Coarse
1 to 8	0 to 8	M6	1/4-20 UNC

Heavy Series (DIN 3015, Part 2)

Group STAUFF	DIN	Thread Metric ISO	Unified Coarse
3S to 5S	1 to 3	M10	3/8-16 UNC
6S	4	M12	7/16-14 UNC
7S	5	M16	5/8-11 UNC
8S	6	M20	3/4-10 UNC
9S	7	M24	7/8-9 UNC
10S	8	M30	1-1/8-7 UNC
11S to 12S	9 to 10	M30	1-1/4-7 UNC

Twin Series (DIN 3015, Part 3)

Group STAUFF	DIN	Thread Metric ISO	Unified Coarse
1D	1	M6	1/4-20 UNC
2D to 5D	2 to 5	M8	5/16-18 UNC

Property Classes / Grades of Bolts and Screws



Hexagon Head Bolt



Socket Cap Screw



Slotted Head Screw

Bolt / Screw Type	Material Code	Property Class / Grade Metric ISO Threaded Bolts / Screws	Unified Coarse Threaded Bolts / Screws
Hexagon Head Bolt Type AS	W1, W2, W3	8.8 (according to DIN EN ISO 898)	5 (according to SAE J429)
	W4	A2-70 (according to DIN EN ISO 3506)	AISI 304 / B8 (according to ASTM A193)
	W5	A4-70 (according to DIN EN ISO 3506)	AISI 316 / B8M (according to ASTM A193)
Socket Cap Screw Type IS	W1, W2, W3	8.8 (according to DIN EN ISO 898)	5 (according to SAE J429)
	W4	A2-70 (according to DIN EN ISO 3506)	AISI 304 / B8 (according to ASTM A193)
	W5	A4-70 (according to DIN EN ISO 3506)	AISI 316 / B8M (according to ASTM A193)
Slotted Head Screw Type LI	W1, W2, W3	4.8 (according to DIN EN ISO 898)	2 (according to SAE J429)
	W4	A2-70 (according to DIN EN ISO 3506)	AISI 304 / B8 (according to ASTM A193)
	W5	A4-70 (according to DIN EN ISO 3506)	AISI 316 / B8M (according to ASTM A193)

Unless otherwise stated, the above mentioned property classes / grades apply as standards for bolts and screws supplied by STAUFF. The information indicate the minimum requirements; higher property classes are available upon request. Consult STAUFF for details.