

NATIONAL TECHNICAL ASSESSMENT

ITB-KOT-2023/2586 rev. 1

This National Technical Assessment has been issued in accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on National Technical Assessments (Journal of Laws of 2016, Item 1968) by the Building Research Institute in Warsaw, at the request of:

SIKLA GmbH
In der Lache 17, 78056 VS Schwenningen, Germany
SIKLA Polska Sp. z o.o.
ul. Spółdzielcza 55, 58-500 Jelenia Góra

National Technical Assessment ITB-KOT-2019/0808 Rev. 1 is a positive assessment of the performance of the following construction products for their intended use:

**SIKLA system components for fixing of ducts
and installations**

Date of validity of the National Technical
Assessment:

29th of December 2028

DIRECTOR
of the Building Institute
Robert Geryło
D.Eng.

Stamp of ITB

Warsaw, 29th of December 2023

Building Research Institute

ul. Filtrowa 1, 00-611 Warsaw

tel.: 22 825 04 71; NIP: 525 000 93 58; KRS: 0000158785

1. Technical description of the product

The subject of this National Technical Assessment are the components of the SIKLA pipe support system. The products covered by the National Technical Assessment are manufactured by SIKLA GmbH, In der Lache 17, 78056 VS Schwenningen, Germany, at its production plant in Germany.

The authorised representative of the manufacturer in Poland is SIKLA Polska Sp. z o.o., ul. Spółdzielcza55, 58-500 Jelenia Góra.

The National Technical Assessment shall cover the product types specified by the manufacturer and derived from the performance characteristics given in section 3 and the combination of materials and components. The National Technical Assessment covers the following products:

- adapter NT CC 41 DIN3015, (fig. A1),
- adapter NT CC 41 DIN3015 VA, (fig. A1),
- channel connector SK, (fig. A2),
- channel connector SK HCP, (fig. A2),
- fixing bracket MW 90° W Stabil VA, (fig. A3),
- block set PBS CC 27, (fig. A4),
- corner bracket EW 41-1, (fig. A5),
- corner bracket EW 41-1 HCP, (fig. A5),
- angle connector EV CC 41-1, (fig. A6),
- angle connector EV CC 41-1 HCP, (fig. A6),
- angle connector EV CC 41-2, (fig. A7),
- angle connector EV CC 41-2 W, (fig. A7),
- angle connector EV CC 41-2 HCP, (fig. A7),
- angle connector EV CC 41-2 W HCP, (fig. A7),
- angle connector EV CC 41-3, (fig. A8),
- angle connector EV CC 41-3 HCP, (fig. A8),
- angle connector EV CC 41-4, (fig. A9),
- angle connector EV CC 41-4 HCP, (fig. A9),
- angle connector EV CC 41-5, (fig. A10),
- angle connector EV CC 41-5 HCP, (fig. A10),
- fixing bracket MW LL, (fig. A11),
- pipe clamps Stabil D-1/2", (fig. A12),
- pipe clamps Stabil D-1/2" with lining, (fig. A13),
- pipe clamps Stabil D-3G HCP, (fig. A14),
- pipe clamps Stabil D-3G Silicon, (fig. A15),
- pipe clamps Stabil D-A, (fig. A16),
- pipe clamps SRS VA, (fig. A17),
- pipe clamps SRS VA with lining, (fig. A18),
- chilled water clamp AKS 13, AKS 19 i AKS 25, (fig. A19),
- fixed point clamps FS, (fig. A20)
- pipe loops RSL N VA, (fig. A21),

- pipe loops RSL N Silicon, (fig. A22),
- U-bolt support UBF, (fig. A23),
- insulated foot plates SHB HCP, (fig. A24),
- insulated foot plates SHB SQF-L, (fig. A25),
- mounting plate GPL Siaqua, (fig. A26),
- twin holder DHP M8, (fig. A27),
- web plate KNO, (fig. A28),
- beam clamp TCS 41, (fig. A29),
- beam clamp TCS 41 HCP, (fig. A29),
- support joint SG, (fig. A30),
- joint JOI 41 R, (fig. A31),
- joint JOI 41 S, (fig. A32),
- joint JOI 41 HCP, (fig. A33),
- support cone SMD 1, (fig. A34),
- sound absorption units SDE, (fig. A35),
- sound absorption element GMT M8, (fig. A36),
- support bracket WK CC 100/100-40, (fig. A37),
- support bracket WK CC 150/150, (fig. A37),
- tie rod STR, STR VA i STR HCP, (fig. A38),
- cantilever brackets AK CC, (fig. A39),
- channel holder MOF 27, (fig. A40),
- T-bracket MOS 27, (fig. A41),
- eye bolt SCR, (fig. A42),
- eye socket SCB VA, (fig. A43),
- threaded clevis GWB, (fig. A44),
- rod coupling AD IG/IG VA, (fig. A45),
- rod coupling AD AG/IG, (fig. A46),
- ducting angle LUW F, (fig. A47),
- ducting angle LUW, (fig. A48),
- ducting angle LUW A, (fig. A49),
- ducting angle LUW Stabil, (fig. A50),
- ducting bracket LCO, (fig. A51),
- ducting clamps PLU 2G-N, (fig. A52),
- ducting clamps PLU from DN 560, (fig. A53),
- ducting clamps PLU 1G with lining, (fig. A54),
- ducting clamps PLU 2G-N with lining, (fig. A55),
- ducting clamps PLU from DN 560 with lining, (fig. A56),
- ducting clamps PLU TOP 2G with lining, (fig. 57),
- perforated tape BND, (fig. A58),
- ducting strap LUB, (fig. A59),

The dimensions of the SIKLA system components are given in Annex A. The dimensional tolerances of the elements correspond to tolerance class m according to PN-ISO 965-2:2001. Deviations of the remaining dimensions of components covered by this National Technical Assessment correspond to tolerance class *m* according to PN-EN 22768-1:1999 standard.

The materials of which the SIKLA system components are made are given in Annex B, Table B1. SIKLA system components are used with the supplementary accessories shown in Annex D (fig. D1-D11).

2. Intended use of the product

The SIKLA system components are designed for suspension of pipes in accordance with the performance characteristics specified in section 3.

The design load capacity of SIKLA system components are given in Annex C.

For corrosion protection reasons, SIKLA fastening system components made of aluminium grade EN AW-1060 according to standard PN-EN 573-3+A1:2022, STAN H24 according to standard PN-EN 515:2017 can be used in corrosion conditions cat. C1, C2 and C3 according to standard PN-EN ISO 9223:2012.

For corrosion protection reasons, SIKLA fastening system components made of steel with zinc coating should be used according to standard PN-EN ISO 14713-1:2017 and PN-EN ISO 9223:2012

Components of Sikla system made of stainless steel should be used according to Annex A of standard PN-EN 1993-1-4:2007+NA:2010+A1:2015:2021, in corrosive environments:

- C1 ÷ C3 acc. PN-EN ISO 9223:2012 – for stainless steel grade 1.4310 acc. PN-EN 10088-1:2014,
- C1 ÷ C4 acc. PN-EN ISO 9223:2012 – for stainless steel A4 acc. PN-EN ISO 3506:2020 and for stainless steel 1.4404 and 1.4571 acc. PN-EN 10088-1:2014,
- C1 ÷ C5 acc. PN-EN ISO 9223:2012 – for stainless steel 1.4529 acc. PN-EN 10088-1:2014.

The products covered by this National Technical Assessment shall be used in accordance with a technical design developed taking into account:

- Polish standards and technical and construction regulations, in particular the Regulation of the Minister of Infrastructure of 12 April 2002 on technical conditions to be met by buildings and their location (Journal of Laws of 2022, Item 1225),
- the provisions of this National Technical Assessment of Building Research Institute,
- the recommendations contained in the technical manual drawn up by the manufacturer and supplied to the recipients.

3. The performance of the product and the methods used for its assessment

3.1. Product performance characteristic

3.1.1. Characteristic and design load capacity. Design load capacity of Sikla system components are given in Annex C. Design load capacity determined based on characteristic load capacity are given including safety factor 2,0

3.1.2. Durability. For components including zinc coatings with thicknesses not less than those given in Annex B, table B, ensure durability of the components to the extent specified in Section 2. For components made of aluminium and stainless steel, grade durability of material ensures durability of the components to the extent specified in Section 2

3.2. Methods used to assess the performance

3.2.1. Characteristic and design load capacity. The characteristic load test is carried out in conditions corresponding to the service conditions applying the loads specified by the manufacturer. The test is carried out using two criteria: the ultimate limit state (destructive force) and additionally, in the case of covers, the serviceability limit state criterion (deformation not exceeding 2% of the diameter and not exceeding 1.5 mm, and the higher value is taken). Characteristic values are determined using the statistical method, assuming the 0,05 quantile of the normal distribution. To determine the design resistances, the characteristic values obtained from the tests (ultimate limit state criterion) must be divided by a safety factor as defined in point 3.1.1.

3.2.2. Durability. The zinc coating thickness test is performed according to PN-EN ISO 2808:2020 or PN-EN ISO 3497:2004.

4. Packing, transportation and storage, labelling of products

The products covered by this National Technical Assessment should be delivered in the manufacturer's original packaging and stored and transported in accordance with the manufacturer's instructions. The method of marking products with the construction mark should be in accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the method of declaring the performance of construction products and the method of marking them with the construction mark (Journal of Laws of 2023, Item 873).

The marking of the product with the construction mark shall be accompanied by following information:

- the last two digits of the year in which the construction mark was first affixed to the construction product,
- the name and registered address of the manufacturer or an identification mark enabling the name and registered address of the manufacturer to be unequivocally identified,
- name and designation of the construction product type,
- number and year of issue of the national technical assessment according to which the performance was declared (ITB-KOT-2023/2586 rev. 1),

- number of the national declaration of performance,
- the level or class of performance declared,
- the address of the manufacturer's website if the national declaration of performance is made available on it.

A safety data sheet and/or information on hazardous substances contained in a construction product, as referred to in Article 31 or 33 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency, should be supplied or, where appropriate, made available together with the national declaration of performance.

Furthermore, the labelling of a construction product which is a hazardous mixture under the REACH Regulation should be in accordance with the requirements of Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (CLP), amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

5. Assessment and verification of constancy of performance

5.1. National system of assessment and verification of constancy of performance

According to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the method of declaring the performance of construction products and the method of marking them with the construction mark (Journal of Laws of 2023, Item 873) system 3 of assessment and verification of constancy of performance shall be applied.

5.2. Type testing

The performance characteristics assessed in point 3 shall be type-tested for products as long as there is no change in raw materials, components, production line or plant.

5.3. Factory production control

The manufacturer shall have a factory production control system in place at the manufacturing site. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of policies and procedures, including records of testing. The factory production control shall be adapted to the production technology and shall ensure that the declared performance of the product is maintained in series production.

The factory production control shall include the specification and testing of raw materials and components, in-process inspection and testing (according to Section 5.4) carried out by the manufacturer in accordance with an established test plan and according to the rules and procedures laid down in the factory production control documentation.

The results of production control should be systematically recorded. The records of the register should confirm that the products meet the criteria for assessment and verification of constancy of

performance. Individual products or batches of products and related production details must be fully identifiable and reproducible.

5.4. Follow-up tests

5.4.1. Testing plan. The testing plan includes:

- a) ongoing testing,
- b) periodic testing.

5.4.2. Ongoing testing. Ongoing testing includes inspection of:

- shape and dimensions,
- zinc layer thickness for parts made of zinc coated steel.

5.4.3. Periodic testing. Periodic testing includes verification of lead capacity.

5.5. Frequency of testing

Ongoing tests should be carried out in accordance with an established test plan, but not less frequently than for each batch of products. The batch size shall be specified in the factory production control documentation. Periodic tests should be carried out at least once every 3 years.

6. Comments

6.1. The National Technical Assessment ITB-KOT-2023/2586 rev. 1 is a positive assessment of the performance of those essential characteristics of the SIKLA system components which, in accordance with the intended use resulting from the provisions of the Assessment, affect the fulfilment of the basic requirements by the construction works in which the products will be used.

6.2. The National Technical Assessment ITB-KOT-2023/2586 rev. 1 is not a document authorising the marking of a construction product with a construction mark.

In accordance with the Act on construction products of 16 April 2004 (Journal of Laws of 2021, Item 1213) the products covered by this National Technical Assessment may be placed on the market or made available on the domestic market if the manufacturer has assessed and verified the constancy of performance, drawn up a national declaration of performance in accordance with the National Technical Assessment ITB-KOT-2023/2586 rev. 1 and labelled the products with the construction mark, in accordance with applicable regulations.

6.3. The National Technical Assessment ITB-KOT-2023/2586 rev. 1 does not infringe the rights arising from provisions on industrial property protection, in particular the Act of 30 June 2000. - Industrial Property Law (Journal of Laws of 2023, Item 1170). It is the responsibility of the users of this National Technical Assessment to ensure these rights.

6.4. By issuing a National Technical Assessment, the Building Research Institute is not responsible for any possible infringement of exclusive and acquired rights.

6.5. The National Technical Assessment does not relieve the product manufacturer of its responsibility for the correct quality of the products and building contractors of their responsibility for their correct application.

6.6. The validity of the National Technical Assessment may be renewed for further periods not exceeding 5 years.

7. List of documents used in the proceedings

7.1. Reports, test reports, assessment and classifications

- 1) 0536/23/Z00NZK rev.2 Technical opinion. Building Structures, Geotechnics and Concrete Department laboratory of ITB, Warsaw 2023.
- 2) LZK01-00536/23/Z00NZK. Test report. Building Structures, Geotechnics and Concrete Department laboratory of ITB, Warsaw 2023.
- 3) LZK02-00536/23/Z00NZK. Test report. Building Structures, Geotechnics and Concrete Department laboratory of ITB, Warsaw 2023.
- 4) LZM00-00605/23/Z00NZM. Test report. Building Materials Laboratory (LZM) of ITB, Warsaw 2023 r.

7.2. Standards and related documents

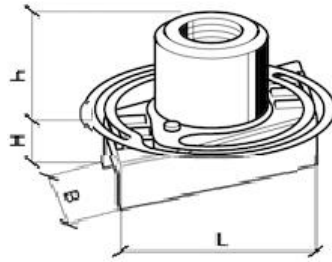
PN-EN 22768-1:1999	<i>General Tolerances. Tolerances for linear and angular dimensions without individual tolerance indications</i>
PN-ISO 965-2:2001	<i>ISO general purpose metric screw threads. Tolerances. Part 2: Limits of sizes for general purpose external and internal screw threads. Medium quality.</i>
PN-EN ISO 14713-1:2017	<i>Zinc coatings. Guidelines and recommendations for the protection against corrosion of iron and steel in structures. Parts 1: General principles of design and corrosion resistance</i>
PN-EN ISO 9223:2012	<i>Corrosion of metals and alloys. Corrosivity of atmospheres. Classification, determination and estimation.</i>
PN-EN 1993-1-4:2007 +NA:2010+A1:2015 +A2:2021	<i>Eurocode 3. Design of steel structures. Part 1-4: General rules. Supplementary rules for stainless steel</i>
PN-EN ISO 2808:2020	<i>Paints and varnishes. Determination of film thickness</i>
PN-EN ISO 3497:2004	<i>Metallic coatings. Measurement of coating thickness. X-ray spectrometric methods.</i>
PN-EN 10149-2:2014	<i>Hot rolled flat products made of high yield strength steels for cold forming. Parts 2: Technical delivery conditions for thermomechanically rolled steels</i>
PN-EN 10088-1:2014	<i>Stainless steels. Part 1: List of stainless steels</i>

PN-EN 10025-2:2019	<i>Hot rolled products of structural steels. Part 2: Technical delivery conditions for non-alloy structural steels</i>
PN-EN 1562:2019	<i>Founding. Malleable cast irons</i>
PN-EN 10111:2009	<i>Continuously hot rolled low carbon steel sheet and strip for cold forming. Technical delivery conditions</i>
PN-EN ISO 898-1:2013	<i>Mechanical properties of fasteners made of carbon steel and alloy steel. Part 1: Bolts, screws and studs with specified property classes. Coarse thread and fine pitch thread.</i>
PN-EN ISO 898-2:2023	<i>Fasteners. Mechanical properties of fasteners made of carbon steel and alloy steel. Part 2: Nuts with specified property classes</i>
PN-EN 10346:2015	<i>Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions</i>
PN-EN 10216-1:2014	<i>Seamless steel tubes for pressure purposes. Technical delivery conditions. Part 1: Non-alloy steel tubes with specified room temperature properties</i>
PN-EN ISO 3506-1:2020	<i>Fasteners. Mechanical properties of corrosion-resistant stainless steel fasteners. Part 1: Bolts, screws and study with specified grades and property classes</i>
PN-EN 515:2017	<i>Aluminium and aluminium alloys. Wrought products. Temper designations</i>
PN-EN 573-3+A1:2022	<i>Aluminium and aluminium alloys. Chemical composition and form of wrought products. Part 3: Chemical composition and form of products</i>
PN-EN 485-1:2016	<i>Aluminium and aluminium alloys. Sheets, strips and plates. Part 1: Technical delivery and inspection conditions</i>
ITB-KOT-2019/0808 rev.1	<i>Sikla pipe support system components</i>

Annexes

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Annex A.



Designation	L [mm]	B [mm]	H [mm]	h [mm]	Thread
NT CC 41-M6 / NT CC 41-M6 VA	34	24	9	16	M6
NT CC 41-M8 / NT CC 41-M8 VA	34	24	9	16	M8
NT CC 41-M10 / NT CC 41-M10 VA	34	24	9	16	M10
NT CC 41-M12 / NT CC 41-M12 VA	34	24	9	16	M12

Fig. A1. Adapter NT CC 41 DIN3015 and NT CC 41 DIN3015 VA

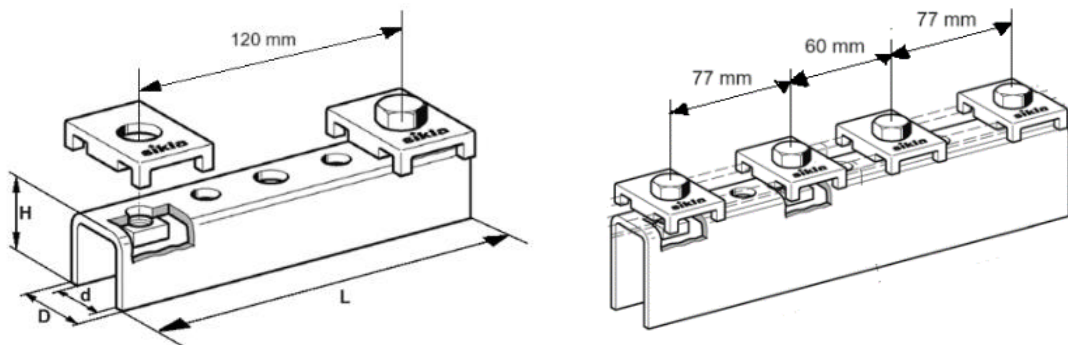
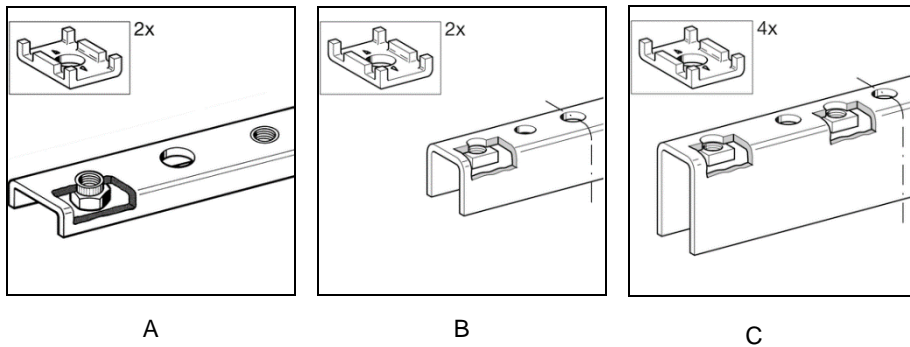
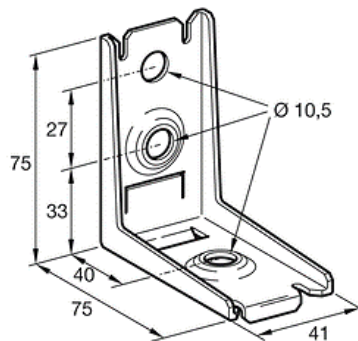


Fig. A2. Channel connectors SK and SK HCP

Designation	Figure	H [mm]	D [mm]	d [mm]	L [mm]	Thread
SK 41/21-31 SK HCP 41/21-31	A	18	34	26	160	M10
SK 41/41-45 SK HCP 41/41-45	B	31	34	26	160	M10
SK 41/52 SK HCP 41/52	C	50	34	26	260	M10
SK 41/62 SK HCP 41/62	C	50	34	26	260	M10
SK 41-75/65 SK HCP 41-75/65	C	50	34	26	260	M10
SK 41-75/75 SK HCP 41-75/75	C	50	34	26	260	M10

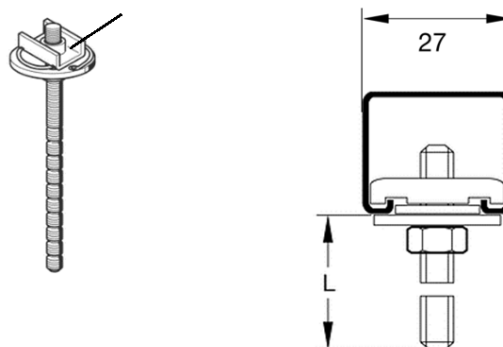
cd. Fig. A2. Channel connectors SK and SK HCP



Designation	Thickness [mm]
MW 90°	2,5

Fig. A3. Fixing bracket MW 90° W Stabil VA

Channel nut NT CC 27



Designation	L [mm]	Thread
M8 x 35	35	M8
M8 x 75	75	M8
M8 x 125	125	M8
M8 x 175	175	M8
M8 x 275	275	M8

Fig. A4. Block set PBS CC 27

(channel nut NT CC 27 included into ITB-KOT-2019/0808 rev.1)

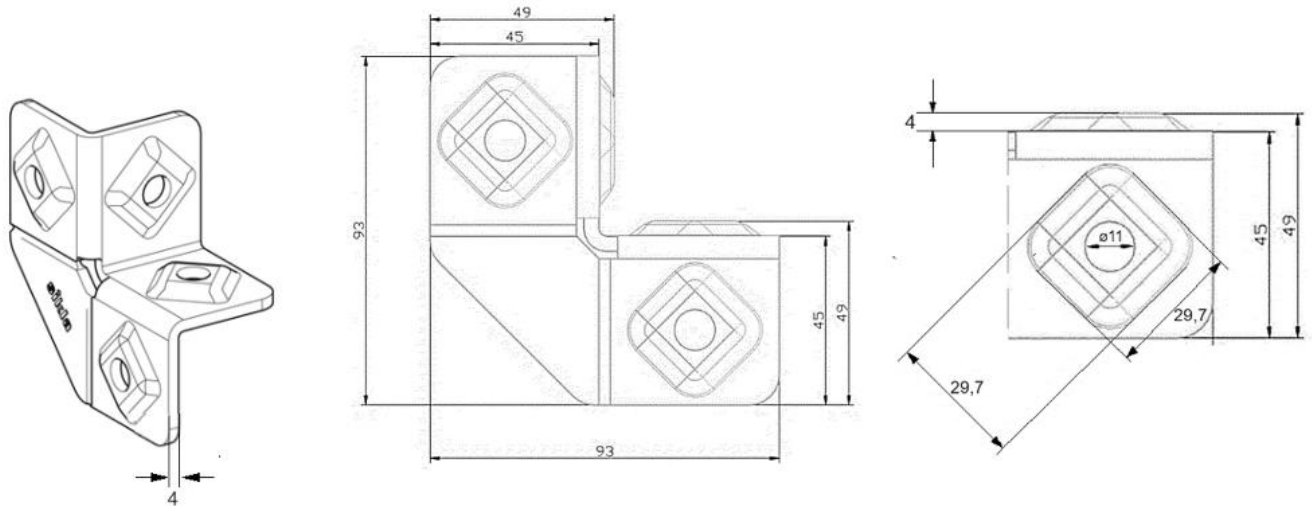


Fig. A5. Corner brackets EW 41-1 and EW 41-1 HCP

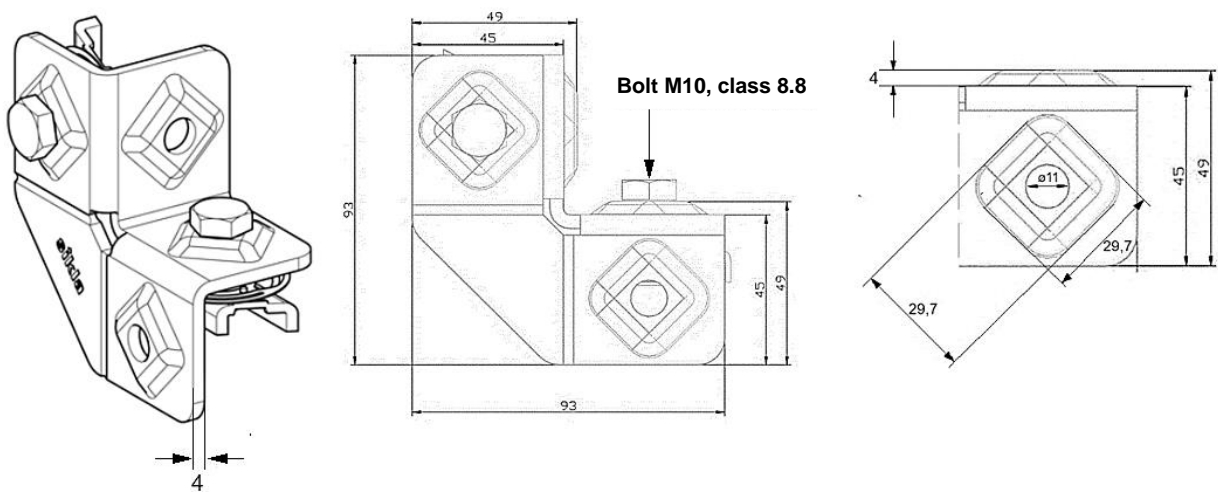


Fig. A6. Angle connectors EV CC 41-1 and EV CC 41-1 HCP

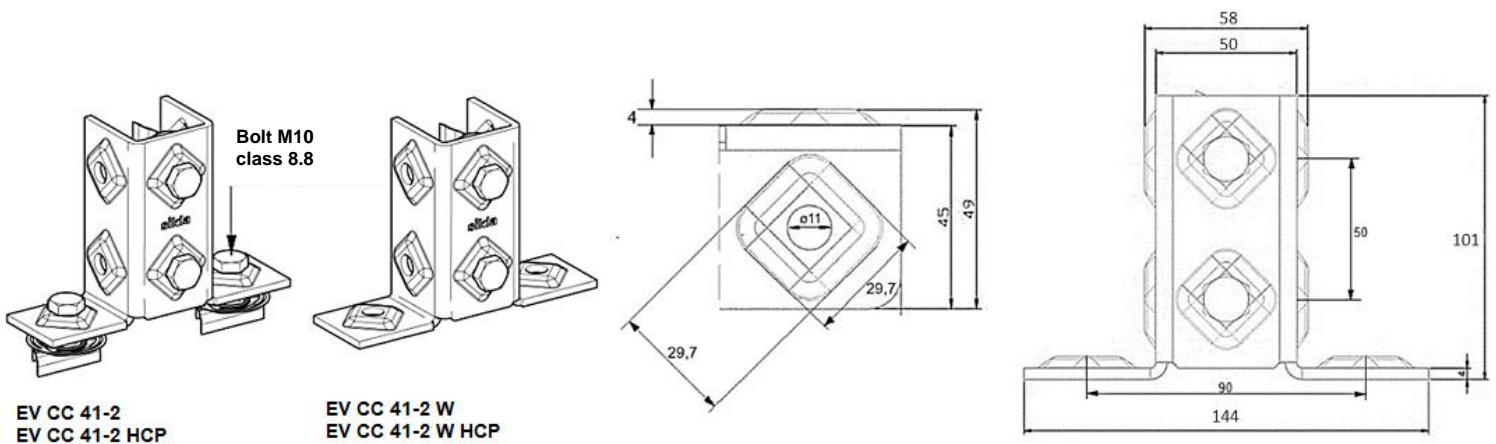


Fig. A7. Angle connectors EV CC 41-2, EV CC 41-2 W, EV CC 41-2 HCP and EV CC 41-2 W HCP

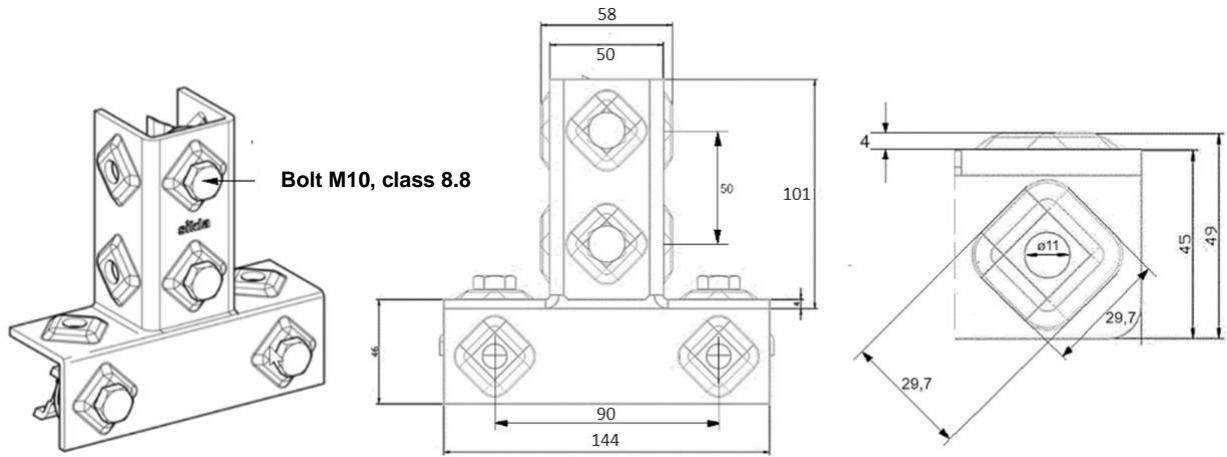


Fig. A8. Angle connectors EV CC 41-3 and EV CC 41-3 HCP

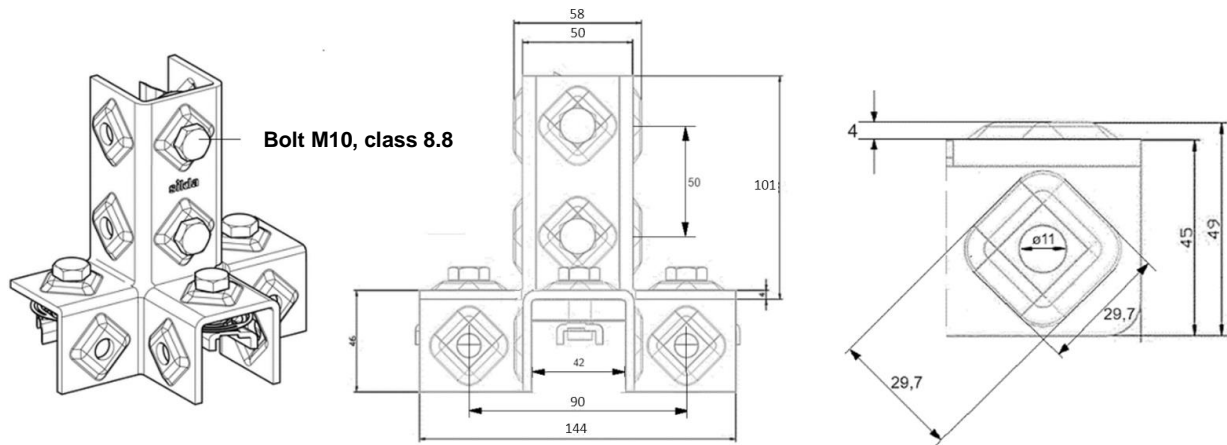


Fig. A9. Angle connectors EV CC 41-4 and EV CC 41-4 HCP

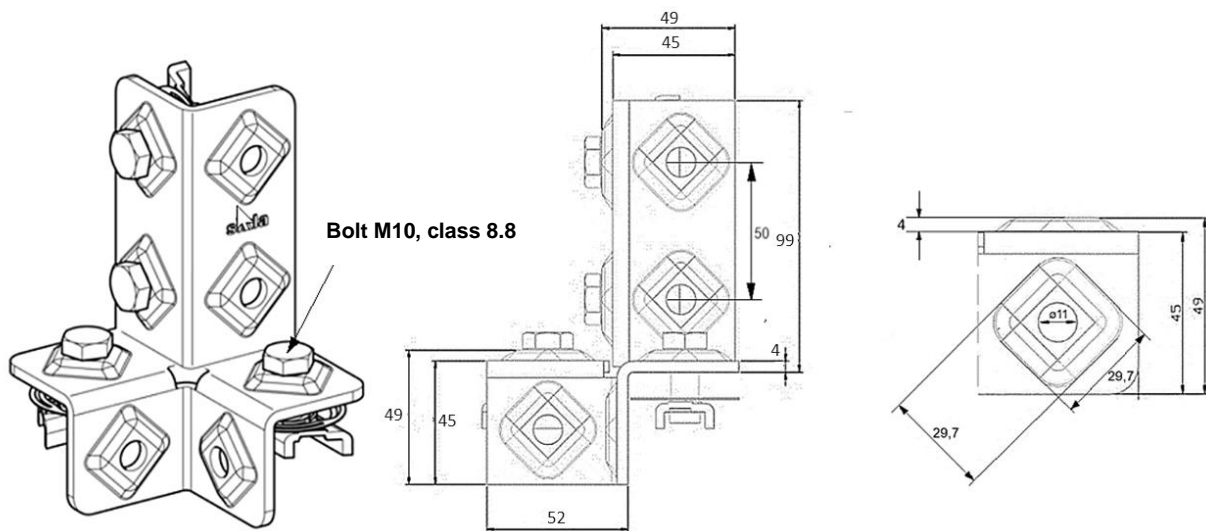
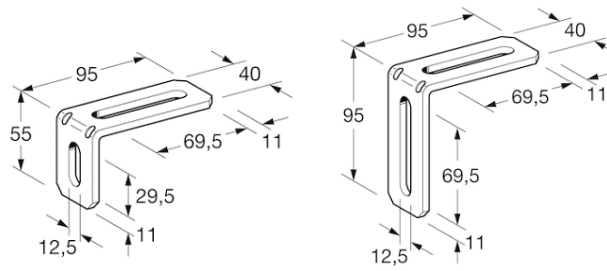
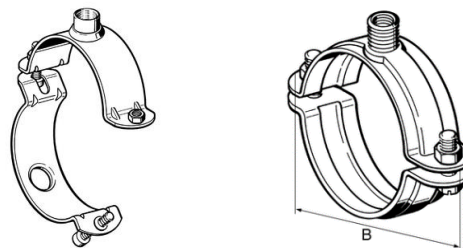


Fig. A10. Angle connectors EV CC 41-5 and EV 41-5 HCP



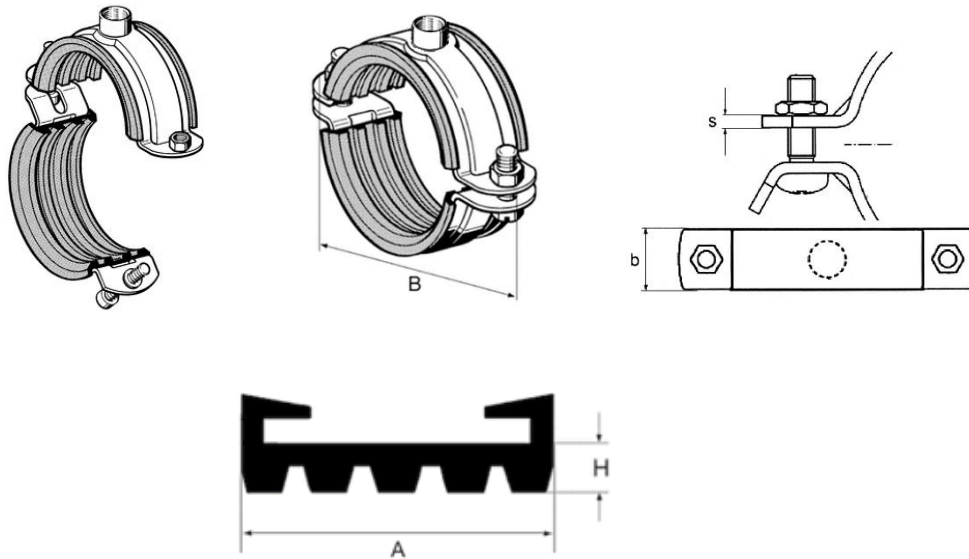
Designation	Thickness [mm]
MW LL 95/55/90°	5
MW LL 95/95/90°	5

Fig. A11. Fixing brackets MW LL



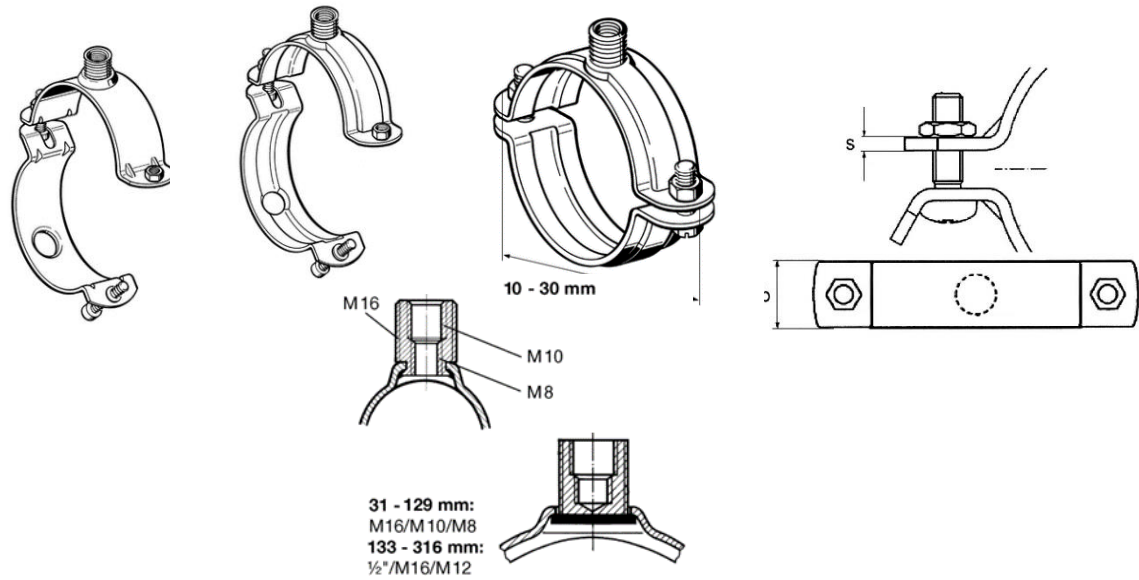
Clamp span [mm]	Clamp dimensions width x thickness [mm x mm]	B [mm]	Bolt class	Bolt size	Nut class	Nut size	Connection
20 ÷ 24	25 x 2,0	62	4.6	M6	5	M6	1/2"
25 ÷ 30	25 x 2,0	68	4.6	M6	5	M6	1/2"
31 ÷ 35	30 x 2,5	75	4.6	M6	5	M6	1/2"
40 ÷ 45	30 x 2,5	85	4.6	M6	5	M6	1/2"
48 ÷ 53	30 x 2,5	93	4.6	M6	5	M6	1/2"
54 ÷ 59	30 x 2,5	104	4.6	M6	5	M6	1/2"
60 ÷ 65	30 x 2,5	110	4.6	M6	5	M6	1/2"
67 ÷ 72	30 x 2,5	117	4.6	M6	5	M6	1/2"
76 ÷ 81	30 x 3,0	142	8.8	M8	8	M8	1/2"
88 ÷ 93	30 x 3,0	154	8.8	M8	8	M8	1/2"
102 ÷ 108	30 x 3,0	169	8.8	M8	8	M8	1/2"
110 ÷ 116	30 x 3,0	177	8.8	M8	8	M8	1/2"
124 ÷ 129	30 x 3,0	190	8.8	M8	8	M8	1/2"
133 ÷ 140	40 x 4,0	207	8.8	M10	8	M10	1/2"
140 ÷ 148	40 x 4,0	215	8.8	M10	8	M10	1/2"
149 ÷ 155	40 x 4,0	222	8.8	M10	8	M10	1/2"
159 ÷ 165	40 x 4,0	232	8.8	M10	8	M10	1/2"
167 ÷ 173	40 x 4,0	240	8.8	M10	8	M10	1/2"
176 ÷ 184	40 x 4,0	263	8.8	M12	8	M12	1/2"
188 ÷ 194	40 x 4,0	273	8.8	M12	8	M12	1/2"
199 ÷ 205	40 x 4,0	284	8.8	M12	8	M12	1/2"
205 ÷ 214	40 x 4,0	295	8.8	M12	8	M12	1/2"
219 ÷ 225	40 x 4,0	304	8.8	M12	8	M12	1/2"
244 ÷ 250	40 x 4,0	329	8.8	M12	8	M12	1/2"
267 ÷ 273	40 x 4,0	352	8.8	M12	8	M12	1/2"
278 ÷ 284	40 x 4,0	363	8.8	M12	8	M12	1/2"
297 ÷ 303	40 x 4,0	382	8.8	M12	8	M12	1/2"

Fig. A12. Pipe clamps Stabil D-1/2"



Clamp span [mm]	Clamp dimensions b x s [mm x mm]	B [mm]	A [mm]	H [mm]	Bolt class	Bolt size	Nut class	Nut size	Connection
19 ÷ 23	25 x 2,0	68	31	4,5	4.6	M6	5	M6	1/2"
24 ÷ 28	30 x 2,5	75	38	4,0	4.6	M6	5	M6	1/2"
33 ÷ 37	30 x 2,5	85	38	4,0	4.6	M6	5	M6	1/2"
40 ÷ 45	30 x 2,5	93	38	4,0	4.6	M6	5	M6	1/2"
47 ÷ 52	30 x 2,5	104	38	4,0	4.6	M6	5	M6	1/2"
53 ÷ 58	30 x 2,5	110	38	4,0	4.6	M6	5	M6	1/2"
60 ÷ 65	30 x 2,5	117	38	4,0	4.6	M6	5	M6	1/2"
67 ÷ 72	30 x 3,0	142	38	4,0	8.8	M8	8	M8	1/2"
73 ÷ 78	30 x 3,0	148	38	4,0	8.8	M8	8	M8	1/2"
79 ÷ 85	30 x 3,0	154	38	4,0	8.8	M8	8	M8	1/2"
88 ÷ 93	30 x 3,0	163	38	4,0	8.8	M8	8	M8	1/2"
100 ÷ 106	30 x 3,0	177	38	4,0	8.8	M8	8	M8	1/2"
108 ÷ 115	30 x 3,0	185	38	4,0	8.8	M8	8	M8	1/2"
124 ÷ 129	40 x 4,0	207	48	6,0	8.8	M10	8	M10	1/2"
131 ÷ 137	40 x 4,0	215	48	6,0	8.8	M10	8	M10	1/2"
138 ÷ 144	40 x 4,0	222	48	6,0	8.8	M10	8	M10	1/2"
148 ÷ 154	40 x 4,0	232	48	6,0	8.8	M10	8	M10	1/2"
156 ÷ 162	40 x 4,0	240	48	6,0	8.8	M10	8	M10	1/2"
165 ÷ 171	40 x 4,0	263	48	6,0	8.8	M10	8	M10	1/2"
176 ÷ 183	40 x 4,0	273	48	6,0	8.8	M12	8	M12	1/2"
188 ÷ 194	40 x 4,0	284	48	6,0	8.8	M12	8	M12	1/2"
196 ÷ 203	40 x 4,0	295	48	6,0	8.8	M12	8	M12	1/2"
205 ÷ 214	40 x 4,0	304	48	6,0	8.8	M12	8	M12	1/2"
219 ÷ 225	40 x 4,0	315	48	6,0	8.8	M12	8	M12	1/2"
244 ÷ 250	40 x 4,0	340	48	6,0	8.8	M12	8	M12	1/2"
267 ÷ 273	40 x 4,0	363	48	6,0	8.8	M12	8	M12	1/2"
299 ÷ 305	40 x 4,0	382	48	6,0	8.8	M12	8	M12	1/2"

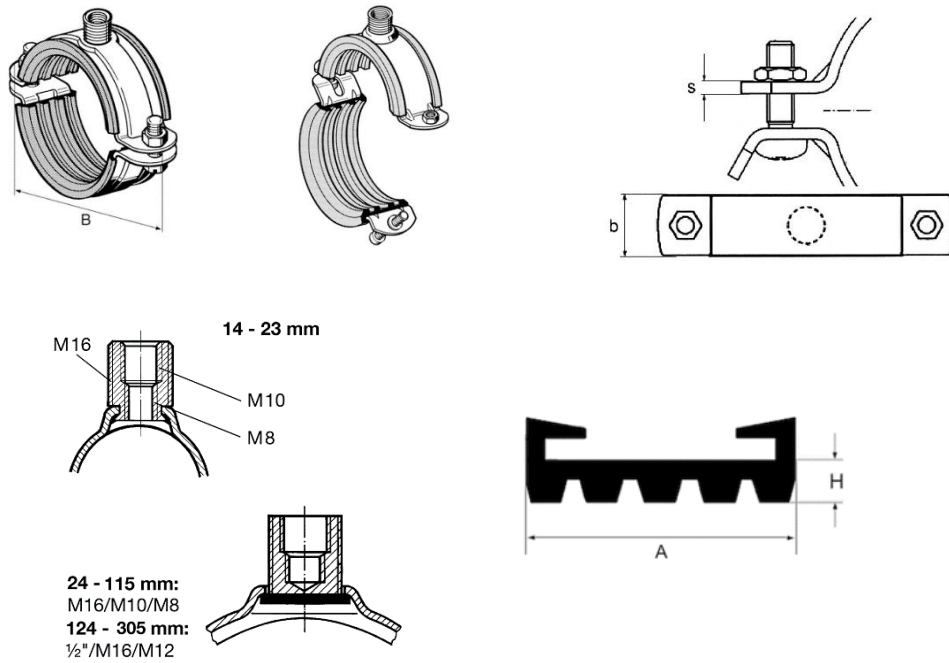
Fig. A13. Pipe clamps Stabil D-1/2" with lining



Clamp span [mm]	Clamp dimensions b x s [mm x mm]	B [mm]	Bolt class	Bolt size	Nut class	Nut size	Connection
10 ÷ 14	25 x 2,0	60	4.6	M6	5	M6	M16/M10/M8
15 ÷ 19	25 x 2,0	57	4.6	M6	5	M6	M16/M10/M8
20 ÷ 24	25 x 2,0	63	4.6	M6	5	M6	M16/M10/M8
25 ÷ 30	30 x 2,5	69	4.6	M6	5	M6	M16/M10/M8
31 ÷ 35	30 x 2,5	74	4.6	M6	5	M6	M16/M10/M8
40 ÷ 45	30 x 2,5	85	4.6	M6	5	M6	M16/M10/M8
48 ÷ 53	30 x 2,5	94	4.6	M6	5	M6	M16/M10/M8
54 ÷ 59	30 x 2,5	101	4.6	M6	5	M6	M16/M10/M8
60 ÷ 65	30 x 2,5	108	4.6	M6	5	M6	M16/M10/M8
67 ÷ 72	30 x 2,5	114	4.6	M6	5	M6	M16/M10/M8
76 ÷ 81 M ¹⁾	30 x 3,0	137	8.8	M8	8	M8	M16/M10/M8
82 ÷ 87 M ¹⁾	30 x 3,0	143	8.8	M8	8	M8	M16/M10/M8
88 ÷ 93 M ¹⁾	30 x 3,0	149	8.8	M8	8	M8	M16/M10/M8
102 ÷ 108 M ¹⁾	30 x 3,0	163	8.8	M8	8	M8	M16/M10/M8
110 ÷ 116 M ¹⁾	30 x 3,0	171	8.8	M8	8	M8	M16/M10/M8
124 ÷ 129 M ¹⁾	30 x 3,0	184	8.8	M8	8	M8	M16/M10/M8
133 ÷ 140	40 x 4,0	210	8.8	M10	8	M10	1/2"/M16/M12
140 ÷ 148	40 x 4,0	218	8.8	M10	8	M10	1/2"/M16/M12
149 ÷ 155	40 x 4,0	225	8.8	M10	8	M10	1/2"/M16/M12
159 ÷ 165	40 x 4,0	235	8.8	M10	8	M10	1/2"/M16/M12
167 ÷ 173	40 x 4,0	243	8.8	M10	8	M10	1/2"/M16/M12
176 ÷ 184	40 x 4,0	255	8.8	M12	8	M12	1/2"/M16/M12
188 ÷ 194	40 x 4,0	265	8.8	M12	8	M12	1/2"/M16/M12
199 ÷ 205	40 x 4,0	276	8.8	M12	8	M12	1/2"/M16/M12
207 ÷ 216	40 x 4,0	287	8.8	M12	8	M12	1/2"/M16/M12
219 ÷ 225	40 x 4,0	296	8.8	M12	8	M12	1/2"/M16/M12
244 ÷ 250	40 x 4,0	321	8.8	M12	8	M12	1/2"/M16/M12
267 ÷ 273	40 x 4,0	344	8.8	M12	8	M12	1/2"/M16/M12
278 ÷ 284	40 x 4,0	355	8.8	M12	8	M12	1/2"/M16/M12
297 ÷ 303	40 x 4,0	374	8.8	M12	8	M12	1/2"/M16/M12
310 ÷ 316	40 x 4,0	387	8.8	M12	8	M12	1/2"/M16/M12

¹⁾M – metric thread

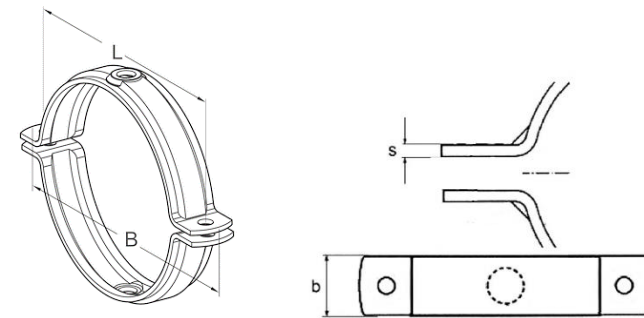
Fig. A14. Pipe clamps Stabil D-3G HCP



Clamp span [mm]	Clamp dimensions b x s [mm x mm]	B [mm]	A [mm]	H [mm]	Bolt class	Bolt size	Nut class	Nut size	Connection
14 ÷ 18	25 x 2,0	63	31	4,5	4.6	M6	5	M6	M16/M10/M8
19 ÷ 23	25 x 2,0	69	31	4,5	4.6	M6	5	M6	M16/M10/M8
24 ÷ 28	30 x 2,5	74	38	4,0	4.6	M6	5	M6	M16/M10/M8
29 ÷ 33	30 x 2,5	81	38	4,0	4.6	M6	5	M6	M16/M10/M8
33 ÷ 37	30 x 2,5	85	38	4,0	4.6	M6	5	M6	M16/M10/M8
40 ÷ 45	30 x 2,5	94	38	4,0	4.6	M6	5	M6	M16/M10/M8
47 ÷ 52	30 x 2,5	104	38	4,0	4.6	M6	5	M6	M16/M10/M8
53 ÷ 58	30 x 2,5	110	38	4,0	4.6	M6	5	M6	M16/M10/M8
60 ÷ 65	30 x 2,5	117	38	4,0	4.6	M6	5	M6	M16/M10/M8
67 ÷ 72 M ¹⁾	30 x 3,0	137	38	4,0	8.8	M8	8	M8	M16/M10/M8
73 ÷ 78 M ¹⁾	30 x 3,0	143	38	4,0	8.8	M8	8	M8	M16/M10/M8
79 ÷ 85 M ¹⁾	30 x 3,0	149	38	4,0	8.8	M8	8	M8	M16/M10/M8
88 ÷ 93 M ¹⁾	30 x 3,0	157	38	4,0	8.8	M8	8	M8	M16/M10/M8
100 ÷ 106 M ¹⁾	30 x 3,0	171	38	4,0	8.8	M8	8	M8	M16/M10/M8
108 ÷ 115 M ¹⁾	30 x 3,0	180	38	4,0	8.8	M8	8	M8	M16/M10/M8
124 ÷ 129	40 x 4,0	210	48	6,0	8.8	M10	8	M10	1/2"/M16/M12
131 ÷ 137	40 x 4,0	218	48	6,0	8.8	M10	8	M10	1/2"/M16/M12
138 ÷ 144	40 x 4,0	225	48	6,0	8.8	M10	8	M10	1/2"/M16/M12
148 ÷ 154	40 x 4,0	235	48	6,0	8.8	M10	8	M10	1/2"/M16/M12
156 ÷ 162	40 x 4,0	243	48	6,0	8.8	M10	8	M10	1/2"/M16/M12
165 ÷ 171	40 x 4,0	255	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
177 ÷ 183	40 x 4,0	265	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
188 ÷ 194	40 x 4,0	276	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
196 ÷ 203	40 x 4,0	287	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
205 ÷ 214	40 x 4,0	296	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
219 ÷ 225	40 x 4,0	307	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
244 ÷ 250	40 x 4,0	332	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
267 ÷ 273	40 x 4,0	355	48	6,0	8.8	M12	8	M12	1/2"/M16/M12
299 ÷ 305	40 x 4,0	387	48	6,0	8.8	M12	8	M12	1/2"/M16/M12

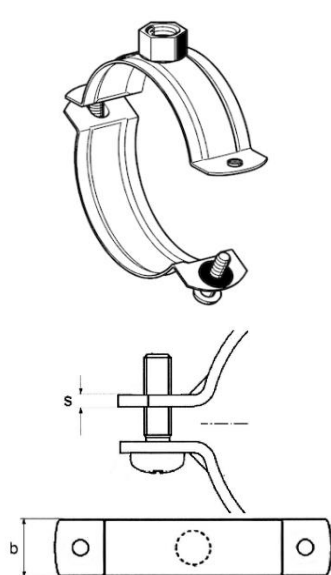
¹⁾ M – metric thread

Fig. A15. Pipe clamps Stabil D-3G Silicon



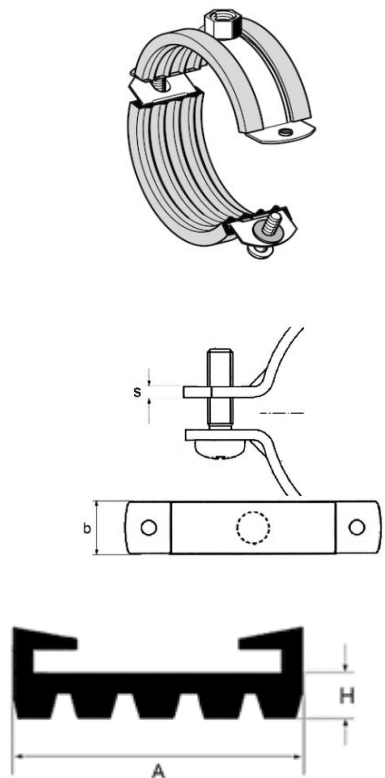
Clamp span [mm]	Clamp dimensions b x s [mm x mm]	B [mm]	L [mm]
31 ÷ 35	30 x 2,5	70,5	52,5
40 ÷ 45	30 x 2,5	82	64
48 ÷ 53	30 x 2,5	90,5	72,5
54 ÷ 59	30 x 2,5	101	83
60 ÷ 65	30 x 2,5	108	90
67 ÷ 72	30 x 2,5	114	96
76 ÷ 81	30 x 3,0	137	115
82 ÷ 87	30 x 3,0	143	121
88 ÷ 93	30 x 3,0	149	127
102 ÷ 108	30 x 3,0	163	141
110 ÷ 116	30 x 3,0	171	149
124 ÷ 129	30 x 3,0	184	162
133 ÷ 140	40 x 4,0	210	181
140 ÷ 148	40 x 4,0	218	189
149 ÷ 155	40 x 4,0	225	196
159 ÷ 165	40 x 4,0	235	206
167 ÷ 173	40 x 4,0	243	214
176 ÷ 184	40 x 4,0	255	226
188 ÷ 194	40 x 4,0	265	236
199 ÷ 205	40 x 4,0	276	247
207 ÷ 216	40 x 4,0	287	258
219 ÷ 225	40 x 4,0	296	267
244 ÷ 250	40 x 4,0	321	292
267 ÷ 273	40 x 4,0	344	315
278 ÷ 284	40 x 4,0	355	326
297 ÷ 303	40 x 4,0	374	345
316 ÷ 324	50 x 5,0	440	390
348 ÷ 356	50 x 5,0	471	421
360 ÷ 368	50 x 5,0	482	432
399 ÷ 407	50 x 5,0	520	470
411 ÷ 419	70 x 6,0	532	482
500 ÷ 508	70 x 6,0	619	569
513 ÷ 521	70 x 6,0	631	581

Fig. A16. Pipe clamps Stabil D-A



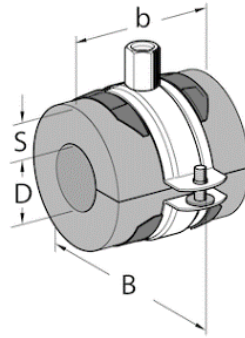
Clamp span [mm]	Clamp dimensions b x s [mm x mm]	Bolt class	Bolt size	Connection
13 ÷ 18	20 x 1,5	A50	M5	M8
19 ÷ 27	20 x 1,5	A50	M5	M8
27 ÷ 30	20 x 1,5	A50	M5	M8
32 ÷ 36	20 x 1,5	A50	M5	M8
40 ÷ 44	20 x 1,5	A50	M5	M8
48 ÷ 54	20 x 1,5	A50	M6	M8
60 ÷ 66	20 x 1,5	A50	M6	M8
68 ÷ 73	20 x 1,5	A50	M6	M8
75 ÷ 80	20 x 2,0	A50	M6	M10
84 ÷ 89	20 x 2,0	A50	M6	M10
102 ÷ 108	20 x 2,0	A50	M6	M10
110 ÷ 115	20 x 2,0	A50	M6	M10
129 ÷ 140	20 x 2,5	A50	M6	M10
159 ÷ 169	20 x 2,5	A50	M6	M10

Fig. A17. Pipe clamps SRS VA



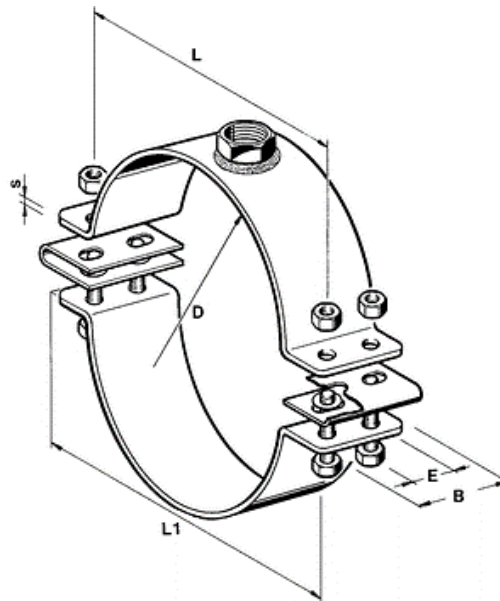
Clamp span [mm]	Clamp dimensions b x s [mm x mm]	A [mm]	H [mm]	Bolt class	Bolt size	Connection
12 ÷ 15	20 x 1,5	23	1,5	A50	M5	M8
15 ÷ 19	20 x 1,5	23	1,5	A50	M5	M8
20 ÷ 23	20 x 1,5	23	1,5	A50	M5	M8
25 ÷ 28	20 x 1,5	23	1,5	A50	M5	M8
32 ÷ 35	20 x 1,5	23	1,5	A50	M5	M8
40 ÷ 45	20 x 1,5	23	1,5	A50	M6	M8
48 ÷ 52	20 x 1,5	23	1,5	A50	M6	M8
52 ÷ 58	20 x 1,5	23	1,5	A50	M6	M8
60 ÷ 64	20 x 1,5	23	1,5	A50	M6	M8
67 ÷ 72	20 x 2,0	29,5	3,0	A50	M6	M10
73 ÷ 80	20 x 2,0	29,5	3,0	A50	M6	M10
86 ÷ 91	20 x 2,0	29,5	3,0	A50	M6	M10
102 ÷ 108	20 x 2,0	29,5	3,0	A50	M6	M10
110 ÷ 115	20 x 2,5	29,5	3,0	A50	M6	M10
135 ÷ 143	20 x 2,5	29,5	3,0	A50	M6	M10
149 ÷ 161	20 x 2,5	29,5	3,0	A50	M6	M10
162 ÷ 170	20 x 2,5	29,5	3,0	A50	M6	M10

Fig. A18. Pipe clamps SRS VA with lining



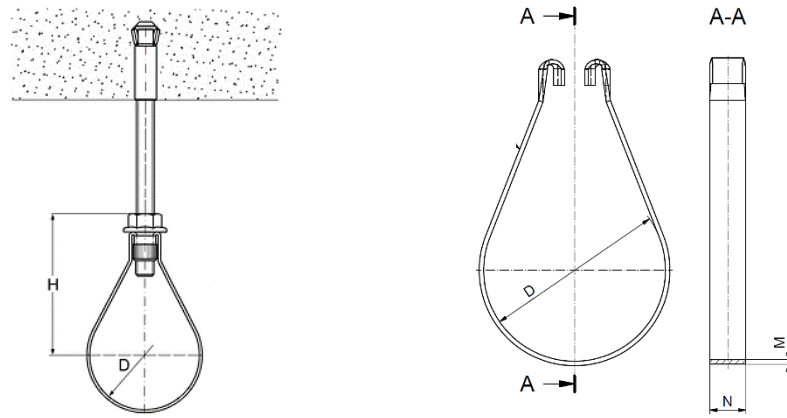
Designation	D [mm]	B [mm]	b [mm]	S - insulation [mm]	Bolt class	Bolt size	Connection
AKS 13-10	10,0	69	80	13	4.6	M5	M8/M10
AKS 13-12	12,0	76	80	13	4.6	M5	M8/M10
AKS 13-15	15,0	76	80	13	4.6	M5	M8/M10
AKS 13-18	18,0	76	80	13	4.6	M5	M8/M10
AKS 13-22	22,0	92	80	13	4.6	M6	M8/M10
AKS 13-25	25,0	92	80	13	4.6	M6	M8/M10
AKS 13-28	28,0	99	80	13	4.6	M6	M8/M10
AKS 13-30	30,0	99	80	13	4.6	M6	M8/M10
AKS 13-35	35,0	105	80	13	4.6	M6	M8/M10
AKS 13-42	42,0	112	80	13	4.6	M6	M8/M10
AKS 13-48	48,3	125	80	13	4.6	M6	M8/M10
AKS 13-54	54,0	125	80	13	4.6	M6	M8/M10
AKS 13-60	60,3	134	80	13	4.6	M6	M8/M10
AKS 19-10	10,0	92	80	19	4.6	M6	M8/M10
AKS 19-12	12,0	92	80	19	4.6	M6	M8/M10
AKS 19-15	15,0	99	80	19	4.6	M6	M8/M10
AKS 19-18	18,0	99	80	19	4.6	M6	M8/M10
AKS 19-22	22,0	105	80	19	4.6	M6	M8/M10
AKS 19-25	25,0	105	80	19	4.6	M6	M8/M10
AKS 19-28	28,0	112	80	19	4.6	M6	M8/M10
AKS 19-30	30,0	112	80	19	4.6	M6	M8/M10
AKS 19-35	35,0	125	80	19	4.6	M6	M8/M10
AKS 19-42	42,0	125	80	19	4.6	M6	M8/M10
AKS 19-48	48,3	134	80	19	4.6	M6	M8/M10
AKS 19-54	54,0	141	80	19	4.6	M6	M8/M10
AKS 19-60	60,3	147	80	19	4.6	M6	M8/M10
AKS 25-10	10,0	105	80	25	4.6	M6	M8/M10
AKS 25-12	12,0	105	80	25	4.6	M6	M8/M10
AKS 25-15	15,0	105	80	25	4.6	M6	M8/M10
AKS 25-18	18,0	112	80	25	4.6	M6	M8/M10
AKS 25-22	22,0	112	80	25	4.6	M6	M8/M10
AKS 25-25	25,0	125	80	25	4.6	M6	M8/M10
AKS 25-28	28,0	125	80	25	4.6	M6	M8/M10
AKS 25-30	30,0	125	80	25	4.6	M6	M8/M10
AKS 25-35	35,0	134	80	25	4.6	M6	M8/M10
AKS 25-42	42,0	141	80	25	4.6	M6	M8/M10
AKS 25-48	48,3	147	80	25	4.6	M6	M8/M10
AKS 25-54	54,0	151	80	25	4.6	M6	M8/M10
AKS 25-60	60,3	160	80	25	4.6	M6	M8/M10

Fig. A19. Chilled water clamps AKS 13, AKS 19 and AKS 25



d [mm]	B [mm]	S [mm]	E [mm]	L [mm]	L1 [mm]	Bolt class	Bolt size	Nut class	Nut size	Connection
21,3	80	5	45	74	106	8.8	M16	8	M16	M16
26,9	80	5	45	79	111	8.8	M16	8	M16	M16
33,7	80	5	45	86	118	8.8	M16	8	M16	M16
42,4	80	5	45	95	127	8.8	M16	8	M16	M16
45	80	5	45	97	129	8.8	M16	8	M16	M16
48,3	80	5	45	101	133	8.8	M16	8	M16	M16
57	80	6	45	109	141	8.8	M16	8	M16	M16
60,3	80	6	45	113	145	8.8	M16	8	M16	M16
76,1	80	6	45	129	161	8.8	M16	8	M16	M16
88,9	80	6	45	141	173	8.8	M16	8	M16	M16
108	100	6	50	166	214	8.8	M16	8	M16	M16
114	100	6	50	172	220	8.8	M16	8	M16	M16
133	100	6	50	191	239	8.8	M16	8	M16	M16
139	100	6	50	198	246	8.8	M16	8	M16	M16
159	100	6	50	207	255	8.8	M16	8	M16	M16
168	100	6	50	217	265	8.8	M16	8	M16	M16
219	100	6	50	278	326	8.8	M16	8	M16	M16
274	100	6	50	331	379	8.8	M16	8	M16	M16
324	100	8	50	390	438	8.8	M16	8	M16	M16
356	100	8	50	422	470	8.8	M16	8	M16	M16
368	100	8	50	434	482	8.8	M16	8	M16	M16
407	100	8	50	473	521	8.8	M16	8	M16	M16
419	100	8	50	485	533	8.8	M16	8	M16	M16
508	100	8	50	574	622	8.8	M16	8	M16	M16
521	100	8	50	587	635	8.8	M16	8	M16	M16

Fig. A20. Fixed point clamps FS



Designation	D [mm]	M [mm]	N [mm]	H [mm]	Connection
26,9	27	1,5	12	65	M8/M10
33,7	34	1,5	12	65	M8/M10
42,4	43	1,5	12	65	M8/M10
48,3	49	1,5	12	70	M8/M10
60,3	61	1,5	12	79	M8/M10
76,1	77	2,5	15	98	M8/M10
88,9	90	2,5	15	113	M8/M10
108	110	2,5	15	142	M8/M10
114,3	115	2,5	15	142	M8/M10
133	135	2,5	15	155	M12
139,7	142	2,5	15	155	M12
159	161	2,5	15	185	M12
168,3	170	2,5	15	185	M12
219,1	221	2,5	25	239	M16

Fig. A21. Pipe loops RSL N VA

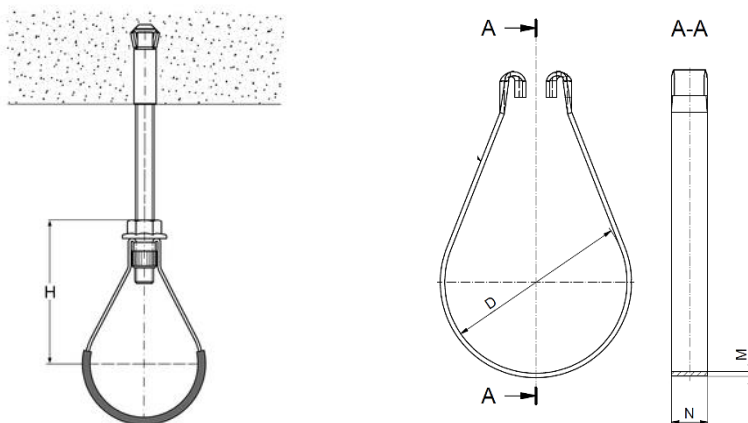


Fig. A22. Pipe loops RSL N Silicon

Designation	D [mm]	M [mm]	N [mm]	H [mm]	Connection
26,9	27	1,5	12	65	M8/M10
33,7	34	1,5	12	65	M8/M10
42,4	43	1,5	12	65	M8/M10
48,3	49	1,5	12	70	M8/M10
60,3	61	1,5	12	79	M8/M10
76,1	77	2,5	15	98	M8/M10
88,9	90	2,5	15	113	M8/M10
108	110	2,5	15	142	M8/M10
114,3	115	2,5	15	142	M8/M10
133	135	2,5	15	155	M12
139,7	142	2,5	15	155	M12
159	161	2,5	15	185	M12
168,3	170	2,5	15	185	M12
219,1	221	2,5	25	239	M16

cd. Fig. A22. Pipe loops RSL N Silicon

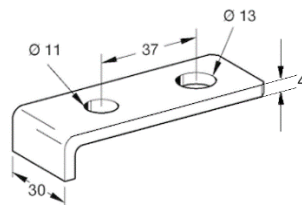
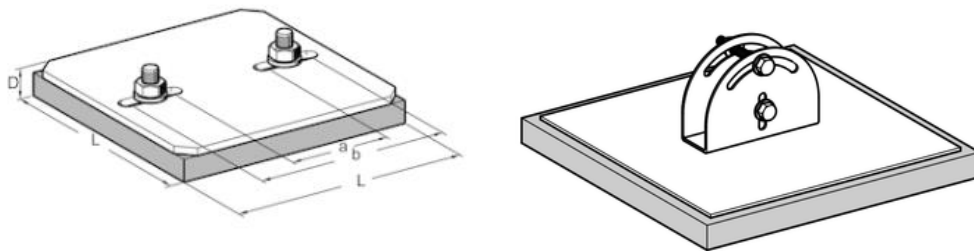
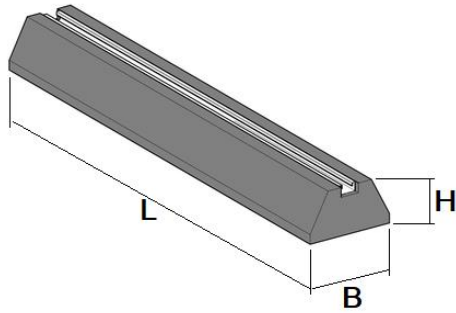


Fig. A23. U-bolt support UBF



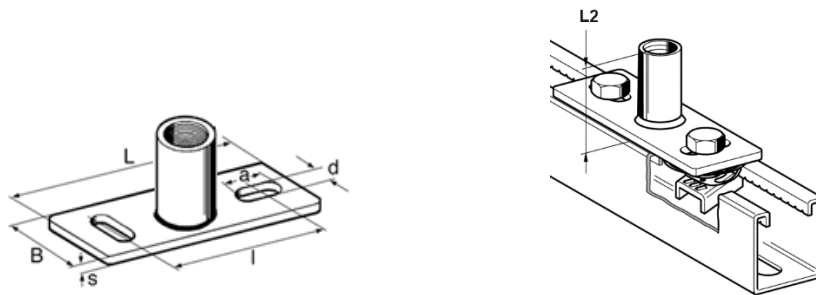
Designation	L [mm]	a [mm]	b [mm]	D [mm]	Bolt class	Bolt size	Nut class	Nut size
SHB 160 HCP	164 x 164	65	131	20	8.8	M10	8	M10
SHB 300 HCP	304 x 304	65	131	20	8.8	M12	8	M12
SHB 450 HCP	454 x 454	65	131	21	8.8	M12	8	M12
SHB 600 HCP	604 x 604	65	131	23	8.8	M12	8	M12
SHB 41-4 HCP	200 x 200	80	120	15	8.8	M10	8	M10
SHB 41-5 HCP	350 x 350	80	120	15	8.8	M12	8	M12
SHB 41-6 HCP	350 x 350	80	120	15	8.8	M12	8	M12
SHB 41-7 HCP	350 x 350	80	120	15	8.8	M12	8	M12
SHB 41-8 HCP	350 x 350	80	120	15	8.8	M12	8	M12

Fig. A24. Insulated foot plates SHB HCP



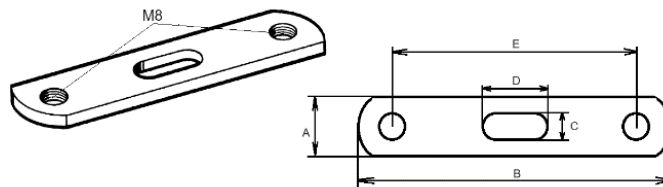
Designation	L [mm]	B [mm]	H [mm]
SQF-L 250	250	183	100
SQF-L 400	400	183	100
SQF-L 600	600	185	100
SQF-L 1000	1000	183	100
SQF-LS 600	600	130	100

Fig. A25. Insulated foot plates SHB SQF-L



Designation	L1 x B x s [mm x mm x mm]	d x a [mm x mm]	L2 [mm]	l [mm]	Connection
GPL M16	120 x 40 x 4	11 x 25	37	80	M16
GPL 1/2"	120 x 40 x 4	11 x 25	37	80	1/2"
GPL 3/8"	120 x 40 x 4	11 x 25	37	80	3/8"
GPL 1/2" Stabil	120 x 40 x 8	12,5 x 25	37	80	1/2"

Fig. A26. Mounting plate GPL Siaqua



Designation	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
65 mm	20	86	25	8	65
85 mm	20	106	25	8	85
105 mm	20	126	25	8	105

Fig. A27. Twin holder DHP M8

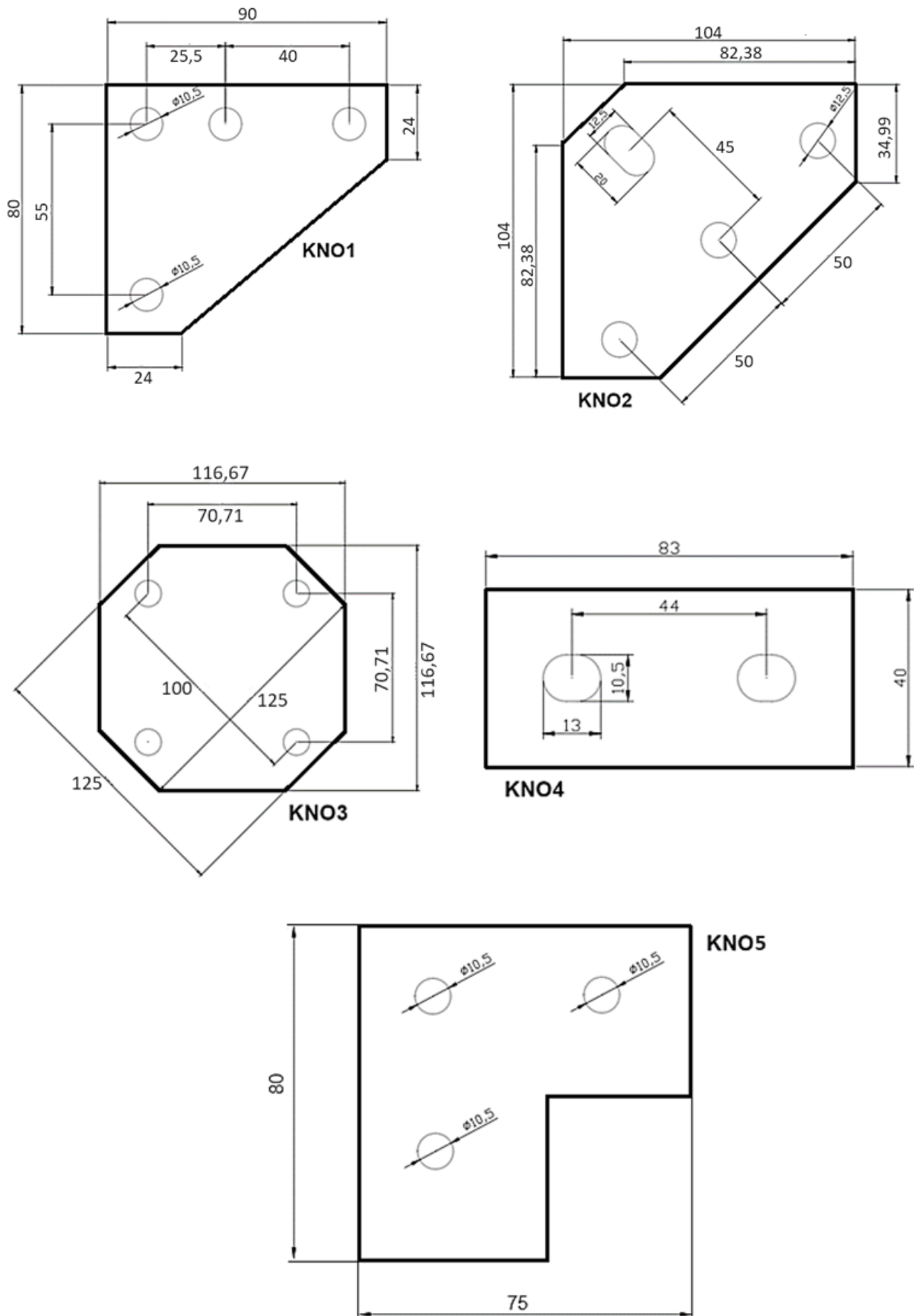


Fig. A28. Web plates KNO

Designation	A [mm]	B [mm]	s [mm]	Hole diameter [mm]
KNO 1	80	90	3	10,5
KNO 2	105	105	5	12,5
KNO 3	125	125	5	12,5
KNO 4	40	83	6	10,5
KNO 5	80	75	8	10,5

cd. Fig. A28. Web plates KNO

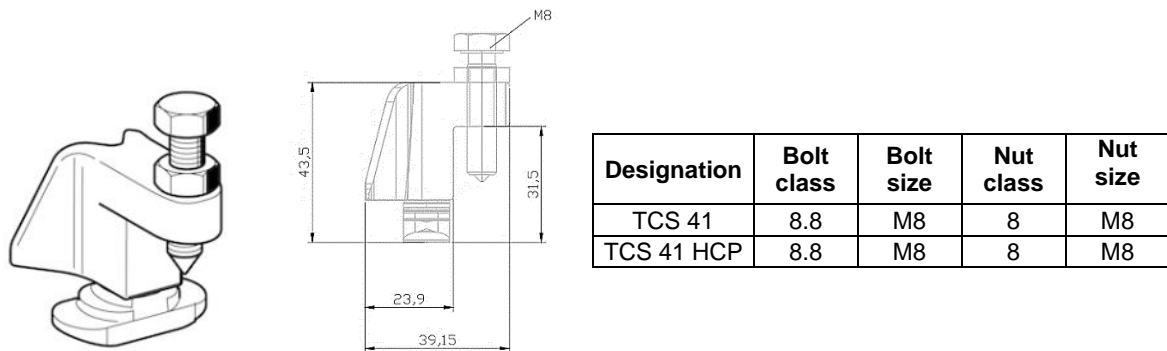


Fig. A29. Beam clamps TCS 41 and TCS 41 HCP

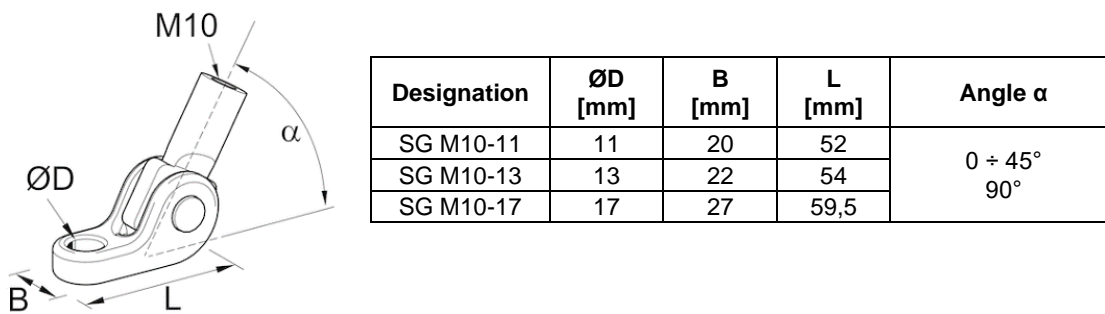


Fig. A30. Support joints SG

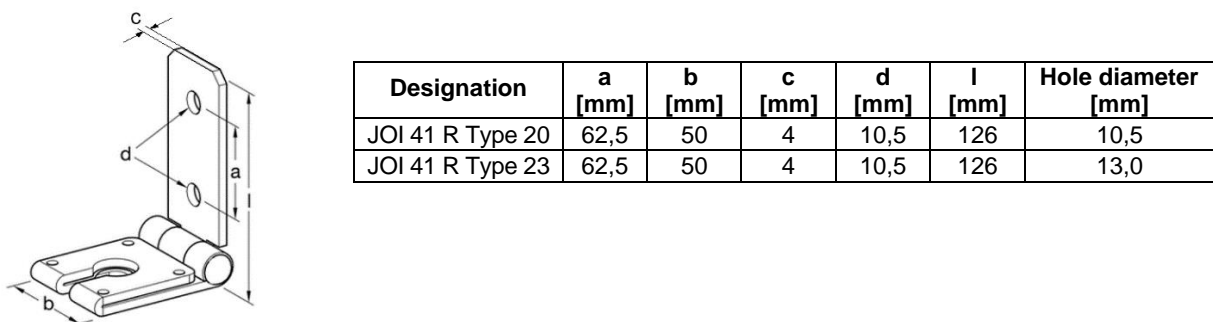
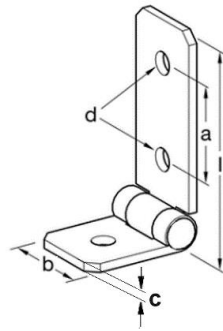
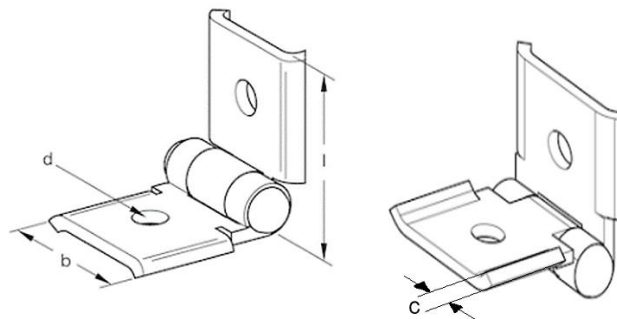


Fig. A31. Joints JOI 41 R



Designation	a [mm]	b [mm]	c [mm]	d [mm]	l [mm]
JOI 41 S	44	40	4	10,5	98

Fig. A32. Joints JOI 41 S

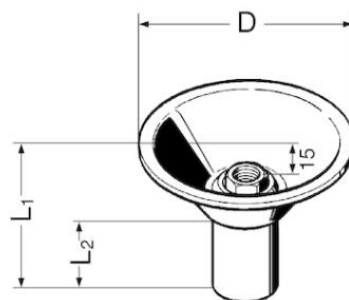


JOI 41 V

JOI 41 Z

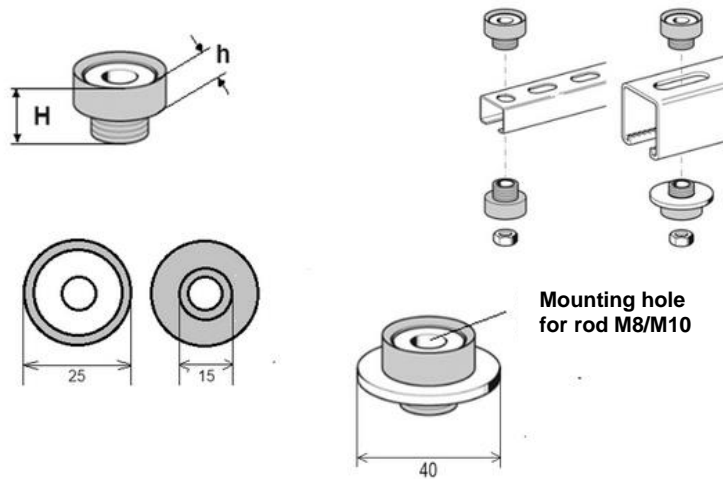
Designation	d [mm]	b [mm]	c [mm]	l [mm]
JOI 41 V	10,5	48	4	54
JOI 41 Z	10,5	48	4	54

Fig. A33. Joints JOI 41 HCP



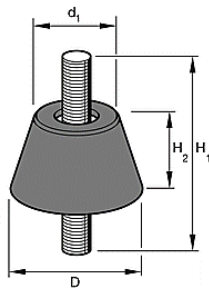
Designation	Connection	D [mm]	L1 [mm]	L2 [mm]
SMD 1-10	M10	92	71	46
SMD 1-12	M12	92	71	46
SMD 1-16	M16	92	65	39
SMD 1-1/2"	1/2"	92	60	34
SMD 1-3/4"	3/4"	92	60	36

Fig. A34. Support cones SMD 1



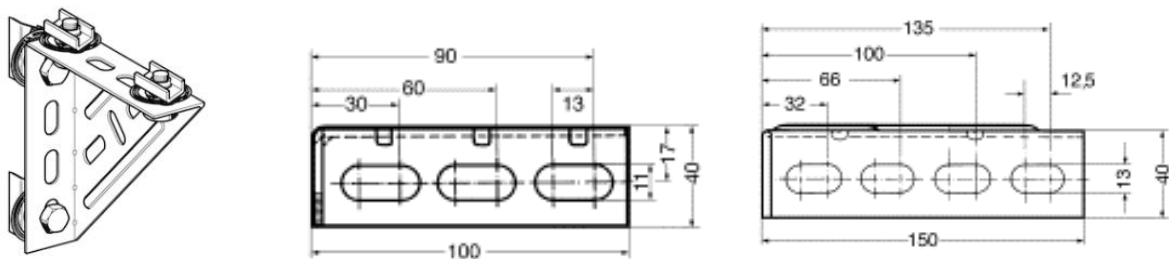
Designation	Height H [mm]	Collar height h [mm]	Washer diameter [mm]	Hole diameter [mm]
SDE 27	15	7	40	10,5
SDE 41	18	10	40	10,5

Fig. A35. Sound absorption units SDE



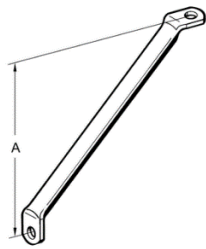
Designation	Connection	D [mm]	d1 [mm]	H1 [mm]	H2 [mm]
GMT M8	M8	40	26	63	24

Fig. A36. Sound absorption element GMT M8



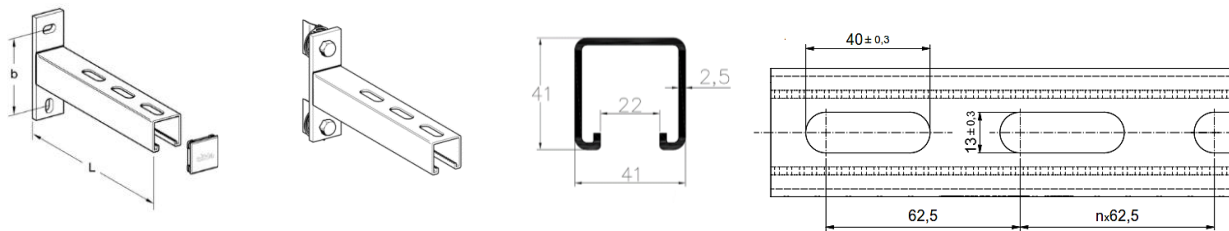
Designation	Bolt class	Thickness [mm]
WK CC 100/100-40	8.8	2,5
WK CC 150/150	8.8	3,5

Fig. A37. Support brackets WK CC 100/100-40 and WK CC 150/150



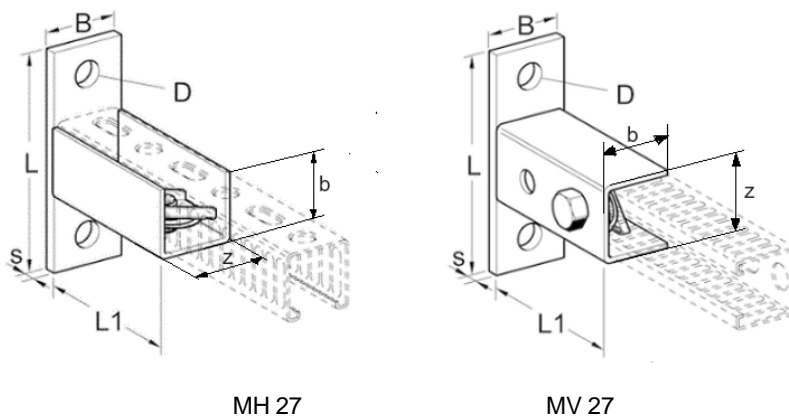
Designation	Rod diameter	Hole diameter [mm]	A [mm]	Bolt size
STR 300/200 STR HCP 300/200	1/2"	11	210	M10
STR 550/350 STR VA 550/350 STR HCP 550/350	1/2"	11	365	M10
STR 725/400 STR HCP 725/400	3/4"	11	400	M10
STR 880/550 STR HCP 880/550	3/4"	11	550	M10

Fig. A38. Tie rods STR, STR VA and STR HCP



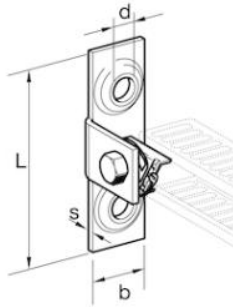
Designation	L [mm]	Plate dimensions [mm x mm x mm]	b [mm]	Plate hole dimensions [mm x mm]	Bolt class
41/41 - 200	196	134 x 40 x 8	100	13 x 18	8.8
41/41 - 260	258	134 x 40 x 8	100	13 x 18	8.8
41/41 - 320	321	134 x 40 x 8	100	13 x 18	8.8
41/41 - 445	446	134 x 40 x 8	100	13 x 18	8.8
41/41 - 570	571	134 x 40 x 8	100	13 x 18	8.8
41/41 - 820	821	134 x 40 x 8	100	13 x 18	8.8
41/41 - 1010	1008	134 x 40 x 8	100	13 x 18	8.8

Fig. A39. Cantilever bracket AK CC



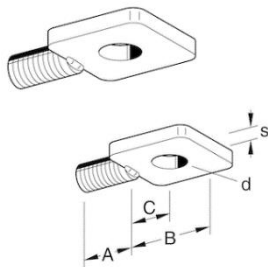
Designation	Plate dimensions L x B x s [mm]	D [mm]	L1 [mm]	b [mm]	z [mm]	Profile thickness [mm]
MH 27	88 x 30 x 5	9	70	28	31,5	2
MV 27	88 x 30 x 5	9	70	28	31,5	2

Fig. A40. Channel holder MOF 27



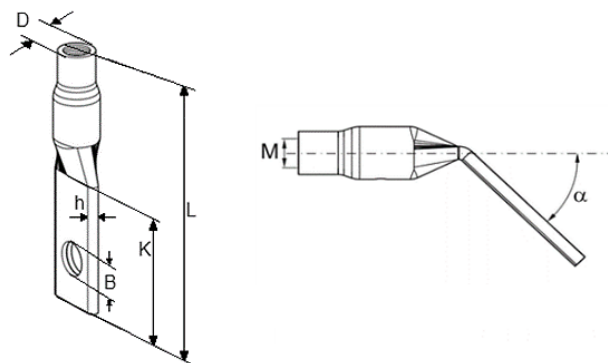
Designation	b x s [mm x mm]	L [mm]	d [mm]	Bolt class
MV 27	26 x 3	88	10,5	8.8

Fig. A41. T-bracket MOS MV 27



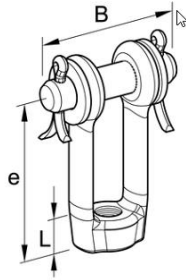
Designation	A [mm]	B [mm]	C [mm]	d [mm]	s [mm]
M8 x 20	20,0	33,0	17,0	10,0	4,5
M8 x 40	40,0	33,0	17,0	10,0	4,5
M10 x 20	20,0	33,0	16,0	12,5	4,8
M10 x 40	40,0	33,0	16,0	12,5	4,8
M12 x 40	40,0	33,0	16,0	12,5	6,0
M16 x 25	22,0	40,0	33,0	17,0	10,0

Fig. A42. Eye bolt SCR



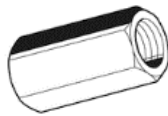
Designation	M thread	α [°]	L [mm]	K [mm]	B [mm]	D [mm]	H [mm]
M12-13-0°	M12	0	100	50	13	13	4
M12-13-45°	M12	45	94,5	44,5	13	13	4
M12-17-45°	M12	45	100	50	13	17	4
M16-17-0°	M16	0	100	50	17	17	5,2
M16-17-45°	M16	45	100	50	17	17	5,2
M20-21-0°	M20	0	100	50	21	21	6
M20-21-45°	M20	45	100	50	21	21	6

Fig. A43. Eye socket SCB VA



Designation	Thread	e [mm]	B [mm]	L [mm]
GWB M10	M10	52,5	40	10
GWB M12	M12	70,5	50	12
GWB M16	M16	80,0	60	16

Fig. A44. Threaded clevis GWB



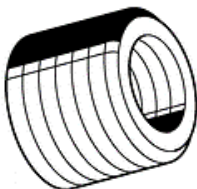
Form A



Form B

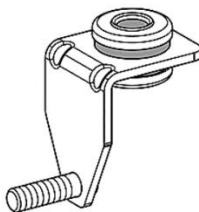
Designation	Connection	Form	Length [mm]
M16/M12	M16/M12	A	35
M16/M16	M16/M16	A	30
1/2"/M16	1/2"/M16	A	40
1/2"/1/2"	1/2"/1/2"	A	35
3/4"/M16	3/4"/M16	A	35
3/4"/1/2"	3/4"/1/2"	A	35
1"/M16	1"/M16	B	40
1"/1/2"	1"/1/2"	B	40

Fig. A45. Rod coupling AD IG/IG VA

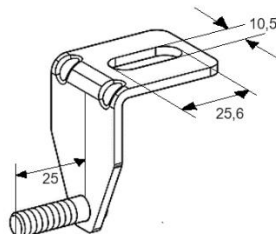


Designation	Internal thread	External thread	Length [mm]
16/10	M10	M16	13
16/12	M12	M16	13

Fig. A46. Rod coupling AD AG/IG



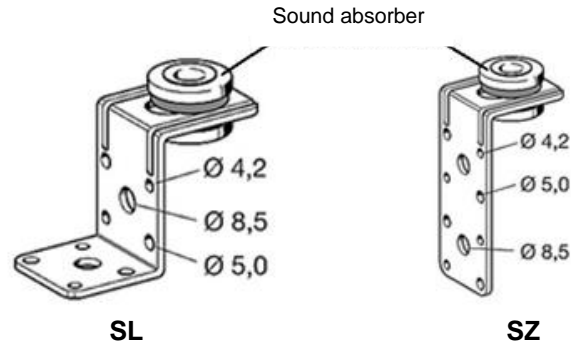
SF



F

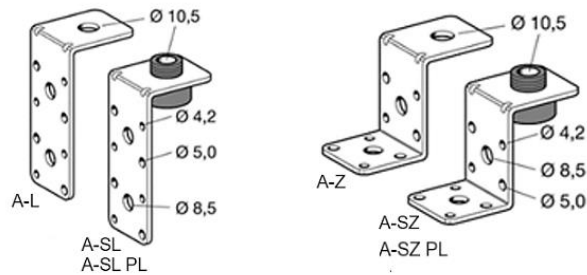
Designation	Thread	Plate width x thickness [mm]
F M8	M8	35 x 3,0
SF M8	M8	35 x 3,0
SF M10	M10	35 x 3,0

Fig. A47. Ducting angle LUW F



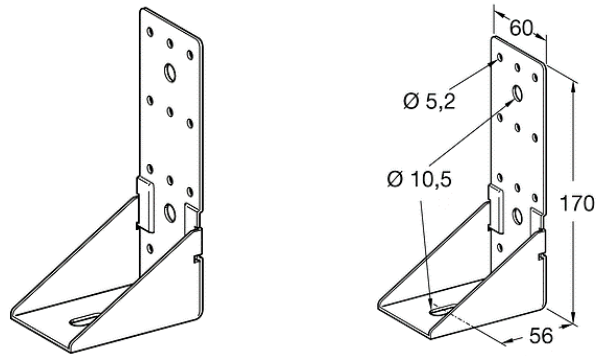
Designation	Connection	Regulation of sound absorber [mm]	Plate width x thickness [mm]	Length [mm]
SL	M8/M10	13	35 x 2,5	41/85
SZ	M8/M10	13	35 x 2,5	41/53/34

Fig. A48. Ducting angle LUW



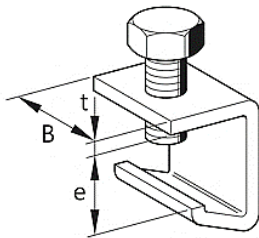
Designation	Connection	Plate width x thickness [mm]	Length [mm]
A-L / A-SL	M8/M10	35 x 2,0	35 / 85
A-Z / A-SZ	M8/M10	35 x 2,0	35 / 46 / 38
A-SL PL	M8/M10	25 x 1,8	40 / 96
A-SZ PL	M8/M10	30 x 2,0	38 / 63 / 38

Fig. A49. Ducting angle LUW A



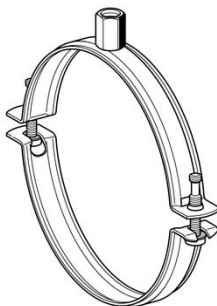
Designation	Thickness [mm]
170/90	2

Fig. A50. Ducting angle LUW Stabil



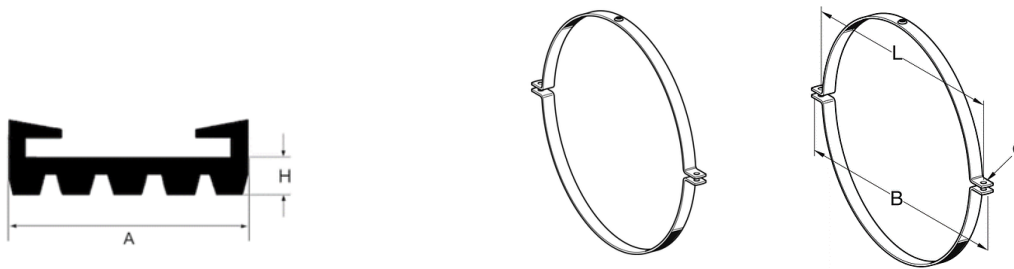
Designation	B [mm]	e [mm]	t [mm]	Bolt class	Bolt size
20/40	29,0	23,0	2,5	8.8	M8

Fig. A51. Ducting bracket LCO



Clamp span [mm]	Clamp dimensions b x s [mm x mm]	Connection	Bolt class	Bolt size
71 ÷ 200	20 x 1,5	M8/M10	4.6	M6
224 ÷ 500	25 x 1,5	M8/M10	4.6	M6

Fig. A52. Ducting clamps PLU 2G-N



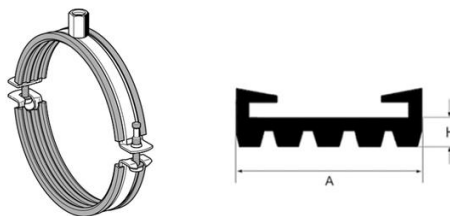
Designation	Clamp dimensions b x s [mm x mm]	B [mm]	L [mm]	d [mm]
560	30 x 2,5	630	604	12,5
600	30 x 2,5	672	646	12,5
630	30 x 2,5	702	676	12,5
710	30 x 2,5	782	756	12,5
800	30 x 2,5	872	846	12,5
900	30 x 2,5	972	946	12,5
1000	40 x 3,0	1076	1050	12,5
1120	40 x 3,0	1196	1170	12,5
1250	40 x 3,0	1325	1299	12,5

Fig. A53. Ducting clamps PLU from DN 560



Clamp span [mm]	Clamp dimensions, [mm x mm]	A [mm]	H [mm]	Connection	Bolt class	Bolt size
80 ÷ 450	25 x 1,5	27	4,5	M8 + M10	4.6	M6
500 ÷ 600	25 x 2,0	27	4,5	M8	4.6	M8
630 ÷ 1600	25 x 2,0	27	4,5	-	-	-

Fig. A54. Ducting clamps PLU 1G with lining



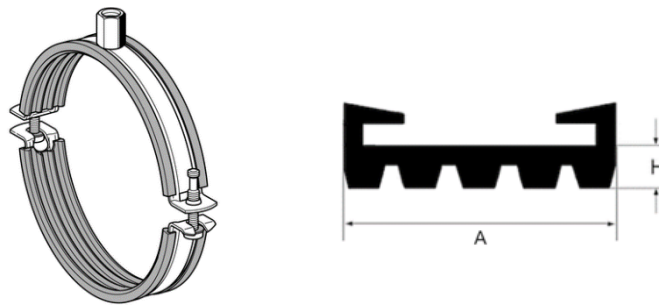
Clamp span [mm]	Clamp dimensions, [mm x mm]	A [mm]	H [mm]	Connection	Bolt class	Bolt size
71 ÷ 200	20 x 1,5	22,8	4,5	M8 / M10	4.6	M6
224 ÷ 500	25 x 1,5	27,8	4,5	M8 / M10	4.6	M6

Fig. A55. Ducting clamps PLU 2G-N with lining



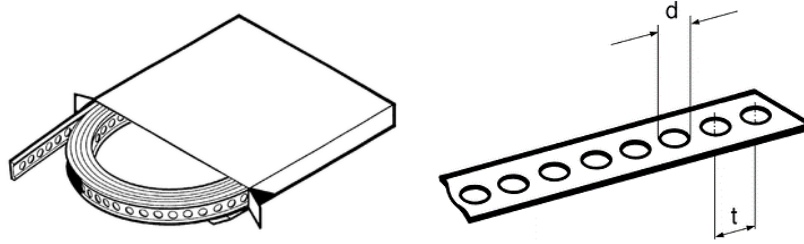
Designation	Clamp dimensions, width x thickness [mm x mm]	B [mm]	L [mm]	d [mm]	A [mm]	H [mm]
560	30 x 2,5	630	604	12,5	32,8	4,5
600	30 x 2,5	672	646	12,5	32,8	4,5
630	30 x 2,5	702	676	12,5	32,8	4,5
710	30 x 2,5	782	756	12,5	32,8	4,5
800	30 x 2,5	872	846	12,5	32,8	4,5
900	30 x 2,5	972	946	12,5	32,8	4,5
1000	40 x 3,0	1076	1050	12,5	42,8	4,5
1120	40 x 3,0	1196	1170	12,5	42,8	4,5
1250	40 x 3,0	1325	1299	12,5	42,8	4,5

Fig. A56. Ducting clamps PLU from DN 560 with lining



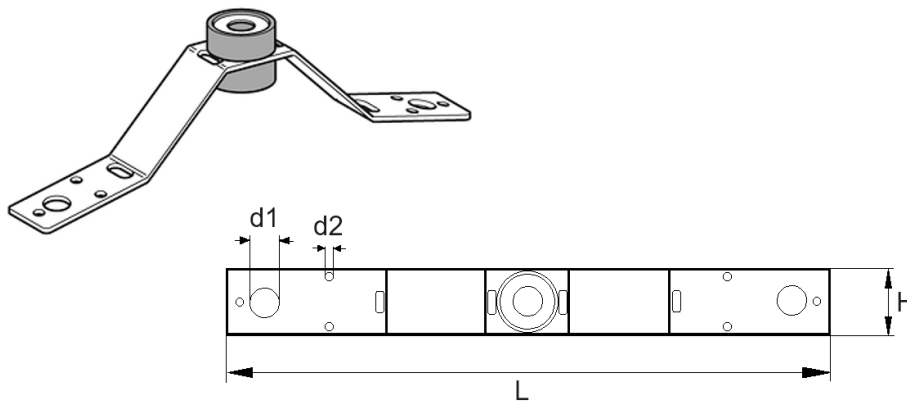
Clamp span [mm]	Clamp dimensions [mm x mm]	Connection	Bolt class	Bolt size
71 ÷ 200	20 x 1,5	M8 / M10	4.6	M6
224 ÷ 500	25 x 1,5	M8 / M10	4.6	M6

Fig. A57. Ducting clamps PLU TOP 2G with lining



Designation	d [mm]	t [mm]	Tape width [mm]	Tape thickness [mm]
19	6,5	15	19	2,5

Fig. A58. Perforated tape BND



Designation	Hole diameter [mm]	d1 [mm]	d2 [mm]	L [mm]	H [mm]	Tape thickness [mm]	Dedicated rod size
LUB	10,5	10	4,5	190	25	2,2	M8 / M10

Fig. A59. Ducting strap LUB

Annex B.

Table B1

No.	Item designation		Material	Standard	Coating method	Coating thickness, [μm]
1	2		3	4	5	6
1	Adapter NT CC 41 DIN3015	plate	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014	galvanic	≥ 8
		channel nut	steel 1.4310	PN-EN 10088-1:2014	-	-
		adapter	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018	galvanic	≥ 8
2	Adapter NT CC 41 DIN3015 VA	plate	steel 1.4404	PN-EN 10088-1:2014	-	-
		channel nut	steel 1.4310			
		adapter	steel 1.4404 / 1.4571			
3	Channel connector SK	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		paw	cast iron EN-GJMB-350-10	PN-EN 1562:2019		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
4	Channel connector SK HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		paw	cast iron EN-GJMB-350-10	PN-EN 1562:2019		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
4	Fixing bracket MW 90° W Stabil VA		steel 1.4571 / 1.4404	PN-EN 10088-1:2014	-	-
5	Block set PBS CC 27	rod	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014	hot-dip	≥ 8
		channel nut	steel 1.4310	PN-EN 10088-1:2014	-	-
6	Corner bracket EW 41-1		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 8
7	Corner bracket EW 41-1 HCP		steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
8	Angle connector EV CC 41-1	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
9	Angle connector EV CC 41-1 HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
10	Angle connector EV CC 41-2 i EV CC 41-2 W	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
11	Angle connector EV CC 41-2 HCP i EV CC 41-2 W HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
12	Angle connector EV CC 41-3	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
13	Angle connector EV CC 41-3 HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-2:2014		
14	Angle connector		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12

	EV CC 41-4	channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-2:2014		
15	Angle connector EV CC 41-4 HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-2:2014		
16	Angle connector EV CC 41-5	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
17	Angle connector EV CC 41-5 HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		channel nut	steel S355MC (1.0976) / S420MC (1.0980)	PN-EN 10149-2:2014		
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		channel nut	steel 1.4310	PN-EN 10088-1:2014		
18	Fixing bracket MW LL	steel S235JR (1.0038)		PN-EN 10025-2:2019	galvanic	≥ 12
19	Pipe clamps Stabil D-1/2"	clamps	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 5 i 8	PN-EN ISO 898-2:2023		
		bolt	class 4.6 i 8.8	PN-EN ISO 898-1:2013		
20	Pipe clamps Stabil D-1/2" with lining	clamps	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		nut	class 5 i 8	PN-EN ISO 898-2:2023		
			class 8	PN-EN ISO 898-2:2023		
		bolt	class 4.6 i 8.8	PN-EN ISO 898-1:2013		
		lining	EPDM	-		
21	Pipe clamps Stabil D-3G HCP	clamps	steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 5 i 8	PN-EN ISO 898-2:2023		
		bolt	class 4.6 i 8.8	PN-EN ISO 898-1:2013		
22	Pipe clamps Stabil D-3G Silicon	clamps	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 5 i 8	PN-EN ISO 898-2:2023		
		bolt	class 4.6 i 8.8	PN-EN ISO 898-1:2013		
		lining	silicon C 5625	-		
23	Pipe clamps Stabil D-A	steel S235JR (1.0038) / steel DD13		PN-EN 10025-2:2019 / PN-EN 10111:2009	galvanic	≥ 12
24	Pipe clamps SRS VA	clamps	steel 1.4401 / 1.4571	PN-EN 10088-1:2014	-	-
		bolt	class 8.8	PN-EN ISO 898-1:2013		
24	Pipe clamps SRS VA with lining	clamps	steel 1.4401 / 1.4571	PN-EN 10088-1:2014	-	-
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		lining	EPDM	-		
25	Chilled water clamps AKS 13, AKS 19 and AKS 25	clamps	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		bolt	class 4.6	PN-EN ISO 898-1:2013		
		lining	elastomeric foam	-		
26	Fixed points clamps FS	clamps	steel DX51D	PN-EN 10346:2015	galvanic	≥ 12
		bolts	class 8.8	PN-EN ISO 898-1:2013		
			steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
		nuts	class 8	PN-EN ISO 898-2:2023		
27	Pipe loops RSL N VA	loop	steel 1.4571 / 1.4401	PN-EN 10088-1:2014	-	-
		threaded sleeve	steel 1.4571 / 1.4401	PN-EN 10088-1:2014		

		flange nut	class A4-70 / A5-70	PN-EN ISO 3506- 1:2020		
28	Pipe loops RSL N Silicon	loop	steel DX51D / DX52D / S235JR (1.0038)	PN-EN 10346:2015 PN-EN 10025-2:2019	galvanic	≥ 12
		threaded sleeve	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
		flange nut	class8	PN-EN ISO 898-2:2023		
		lining	silicon C 5625	-	-	-
29	U-bolt support UBF	steel S235JR (1.0038)		PN-EN 10025-2:2019	galvanic	≥ 12
30	Insulated foot plate SHB HCP	plate	steel S235JRG	PN-EN 10025-2:2019	flake galv.	≥ 20
		bolts	class 8.8	PN-EN ISO 898-1:2013	hot-dip	≥ 15
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 8	PN-EN ISO 898-2:2023		
rubber	Regupol 6010 / Regupol 6510	-	-	-		
31	Insulated foot plate SHB SQF-L	body	SBR	-	-	-
		channel	aluminium EN AW-1060 STAN H24; aluminium tape	PN-EN 573-3+A1:2022 PN-EN 515:2017 PN-EN 485-1:2016		
		channel support	steel S235JRG2	PN-EN 10025-2:2019	galvanic	≥ 8
32	Mounting plate GPL Siaqua	threaded sleeve	steel DD11	PN-EN 10111:2009	galvanic	≥ 12
		plate	steel S235JRG2	PN-EN 10025-2:2019		
33	Twin holder DHP M8		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
34	Web plate KNO		steel DD11	PN-EN 10111:2009	galvanic	≥ 12
35	Beam clamp TCS 41	body	cast iron EN-GJMB-550-4	PN-EN 1562:2019	galvanic	≥ 12
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
class 8	PN-EN ISO 898-2:2023					
36	Beam clamp TCS 41 HCP	body	cast iron GJMB-550-4	PN-EN 1562:2019	hot-dip	≥ 15
		bolt	class 8.8	PN-EN ISO 898-1:2013		
		nut	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
class 8	PN-EN ISO 898-2:2023					
37	Support joint SG		cast iron GS240 / steel S235JR (1.0038)	PN-EN 10340:2009 / PN-EN 10025-2:2019	galvanic	≥ 12
38	Joint JOI 41 R	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		pivot	steel DD11	PN-EN 10111:2009		
39	Joint JOI 41 S	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		pivot	steel DD11	PN-EN 10111:2009		
40	Joint JOI 41 HCP	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	flake galv.	≥ 15
		pivot	steel DD11	PN-EN 10111:2009		
41	Support cone SMD 1		steel S235JR (1.0038) / DC04	PN-EN 10025-2:2019/ PN-EN 10130:2009	galvanic	≥ 12
42	Sound absorption units SDE	inner part	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 8
		washer	steel DD11	PN-EN 10111:2009	galvanic	≥ 8
		isolation	natural rubber Shore 45±5°	-	-	-
43	Sound absorption element GMT M8	rod	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 8
		rubber	natural rubber Shore 45±5°	-	-	-
44	Support bracket WK HCP		steel S235JR (1.0038)	PN-EN 10025-2:2019	hot-dip	≥ 15
			steel DX51D / DX52D / S250GD (1.0242)	PN-EN 10346:2015		
45	Support brackets WK CC 100/100-40 WK CC 150/150	console	steel DD11	PN-EN 10111:2009	galvanic	≥ 4
		bolt	class 8.8	PN-EN ISO 898-1:2013		
46	Tie rod STR i STR HCP		steel P235TR1 (1.0254)	PN-EN 10216-1:2014	hot-dip	≥ 15
47	Tie rod STR VA		steel 1.4571	PN-EN 10088-1:2014	-	-
48	Cantilever bracket AK CC	console	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		bolt	class 8.8	PN-EN ISO 898-1:2013		

49	Channel holder MOF 27		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
50	T-bracket MOS 27	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		bolt	class 8.8	PN-EN ISO 898-1:2013		
51	Eye bolt SCR		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 8
52	Eye socket SCB VA		steel 1.4404/1.4571/1.4529	PN-EN 10088-1:2014	-	-
53	Threaded clevis GWB		steel S235JRG2 / S355J2G3	PN-EN 10025-2:2019	hot-dip	≥ 15
54	Rod coupling AD IG/IG VA, AD AG/IG		steel 1.4571	PN-EN 10088-1:2014	-	-
55	Ducting angle LUW F		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
56	Ducting angle LUW	body	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		inner part	steel DX51D	PN-EN 10346:2015		
		sound absorber	EPDM	-		
57	Ducting angle LUW A	body	steel DX52D	PN-EN 10346:2015	galvanic	≥ 12
		inner part	steel S235JR (1.0038)	PN-EN 10025-2:2019		
		sound absorber	TPE	-		
58	Ducting angle LUW Stabil		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 8
59	Ducting bracket LCO	bolt	class 8.8	PN-EN ISO 898-1:2013	galvanic	≥ 8
		body	steel S235JR (1.0038)	PN-EN 10025-2:2019		
60	Ducting clamps PLU 2G-N	connection	steel DD11	PN-EN 10111:2009	galvanic	≥ 12
		clamps	steel DX51D	PN-EN 10346:2015		
		bolt	steel 11SMnPb30	PN-EN ISO 683-4:2018		
			class 4.6	PN-EN ISO 898-1:2013		
61	Ducting clamps PLU od DN 560		steel DX51D / DX52D	PN-EN 10346:2015	galvanic	≥ 12
62	Ducting clamps PLU 1G with lining	connection	steel DD11	PN-EN 10111:2009	galvanic	≥ 12
		clamps	steel DX51D	PN-EN 10346:2015		
		bolt	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 4.6	PN-EN ISO 898-1:2013		
		lining	EPDM	-		
63	Ducting clamps PLU 2G-N with lining	connection	steel DD11	PN-EN 10111:2009	galvanic	≥ 12
		clamps	steel DX51D	PN-EN 10346:2015		
		bolt	steel 11SMnPb30 (1.0718)	PN-EN ISO 683-4:2018		
			class 4.6	PN-EN ISO 898-1:2013		
		lining	EPDM	-		
64	Ducting clamps PLU od DN 560 with lining	clamps	steel DX51D / DX52D	PN-EN 10346:2015	galvanic	≥ 12
		lining	EPDM	-	-	-
65	Ducting clamps PLU TOP 2G with lining	connection	steel DD11	PN-EN 10111:2009	galvanic	≥ 12
		clamps	steel DX51D	PN-EN 10346:2015		
		bolt	steel 11SMnPb30	PN-EN ISO 683-4:2018		
			class 4.6	PN-EN ISO 898-1:2013		
		lining	EPDM	-		
66	Perforated tape BND		steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
67	Ducting strap LUB	metal stripe	steel S235JR (1.0038)	PN-EN 10025-2:2019	galvanic	≥ 12
		sound absorber	TPE	-	-	-

Annex C.

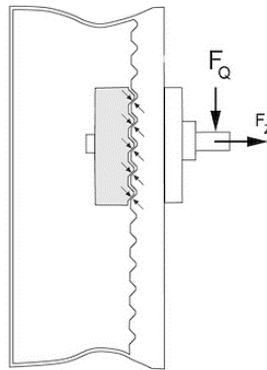


Fig. C1. Force diagram (ref. to Table C1)

Table C1. Design capacity load for NT CC 41 DIN3015 and NT CC 41 DIN3015 VA

No.	Channel thickness [mm]	NT CC 41 DIN3015		NT CC 41 DIN3015 VA	
		Design capacity load			
		F _Z [kN]	F _Q [kN]	F _Z [kN]	F _Q [kN]
1	2	3	4	5	6
1	2,0	3,2	0,9	3,2	0,9
2	2,5	3,2	1,0	3,2	1,0

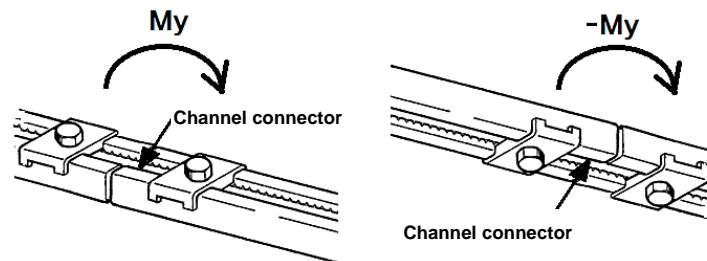


Fig. C2. Bending force diagram (ref. to Table C2)

Table C2. Design capacity load for channel connectors SK and SK HCP

1	Designation	Design capacity load	
		Bending moment My [kNm]	Bending moment - My [kNm]
2	3	4	
Channel connectors SK (galvanic zinc coating)			
1	SK 41/21-31	0,29	0,29
2	SK 41/41-45	0,8	0,34
3	SK 41/52	2,4	1,06
4	SK 41/62	2,4	1,06
5	SK 41-75/65	2,06	2,39
6	SK 41-75/75	2,06	2,39

cd. Table C2. Design capacity load for channel connectors SK and SK HCP

No.	Designation	Design capacity load	
		Bending moment My [kNm]	Bending moment - My [kNm]
1	2	3	4
Channel connectors SK (galvanic zinc coating)			
7	SK HCP 41/21-31	0,29	0,29
8	SK HCP 41/41-45	0,8	0,34
9	SK HCP 41/52	2,4	1,06
10	SK HCP 41/62	2,4	1,06
11	SK HCP 41-75/65	2,06	2,39
12	SK HCP 41-75/75	2,06	2,39

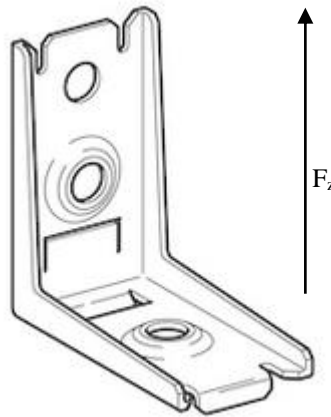


Fig. C3. Force diagram (ref. to Table C3)

Table C3. Design capacity load for fixing bracket MW 90° W Stabil VA

Designation	Design capacity load Fz [kN]
1	2
MW 90° W Stabil VA	2,5

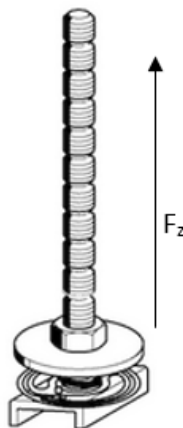


Fig. C4. Force diagram (ref. to Table C4)

Table C4. Design capacity load for block set PBS CC 27

Designation	Design capacity load F_z [kN]
1	2
PBS CC 27	1,5

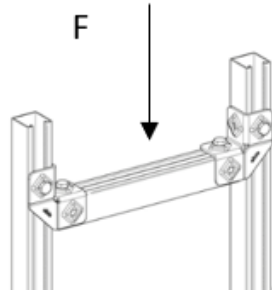


Fig. C5. Force diagram (ref. to Table C5)

Table C5. Design capacity load for corner brackets EW 41-1 and EW 41-1 HCP

Design capacity load F [kN]
1
5,0 kN load applied as centric load to each traverse fixed with two corner bracket EW 41-1

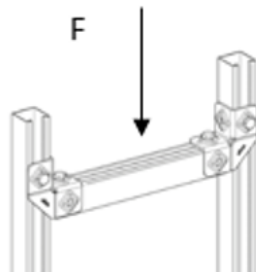


Fig. C6. Force diagram (ref. to Table C6)

Table C6. Design capacity load for angle connector EV CC 41-1 and EV CC 41-1 HCP

Design capacity load F [kN]
1
5,0 kN load applied as centric load to each traverse fixed with two angle connector EV 41-1

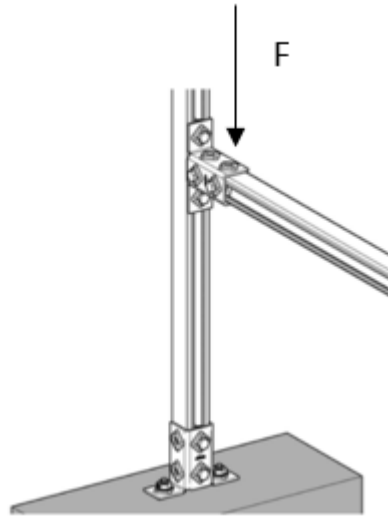


Fig. C7. Force diagram (ref. to Table C7)

Table C7. Design capacity load for angle connector EV CC 41-2, EV CC 41-2 W, EV CC 41-2 HCP and EV CC 41-2 W HCP

Design capacity load F [kN]
1
5,0

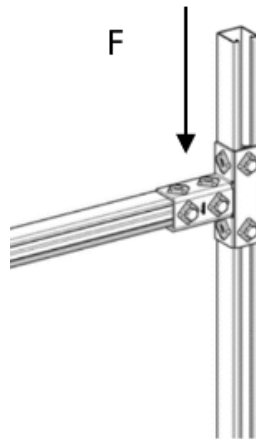


Fig. C8. Force diagram (ref. to Table C8)

Table C8. Design capacity load for angle connector EV CC 41-3 and EV CC 41-3 HCP

Design capacity load F [kN]
1
5,0

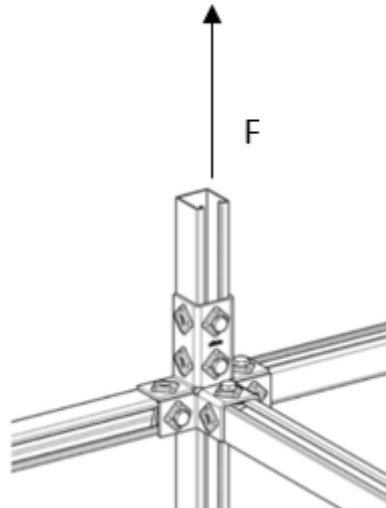


Fig. C5. Force diagram (ref. to Table C9)

Table C9. Design capacity load for angle connectors EV CC 41-4 and EV CC 41-4 HCP

Design capacity load F [kN]
1
3,3 kN load applied as centric load to each traverse fixed with two angle connector EV 41-4

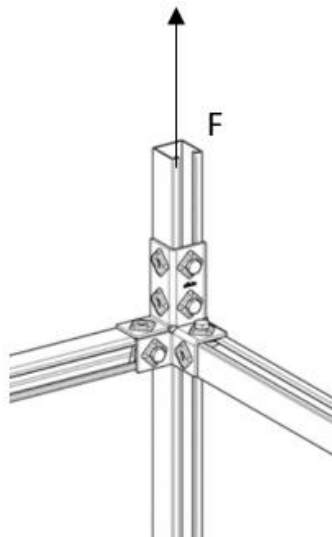


Fig. C6. Force diagram (ref. to Table C10)

Table C10. Design capacity load for angle connectors EV CC 41-5 and EV CC 41-5 HCP

Design capacity load F [kN]
1
5,0 kN load applied as centric load to each traverse fixed with two angle connector EV 41-5

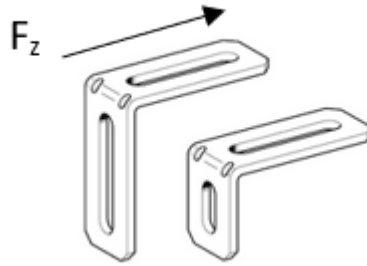


Fig. C11. Force diagram (ref. to Table C11)

Table C11. Design capacity load for fixing brackets MW LL

No.	Designation	Design capacity load F [kN]
1	2	3
1	MW LL 95/55/90°	4,5
2	MW LL 95/95/90°	4,5

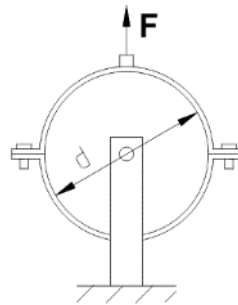


Fig. C12. Force diagram (ref. to Tables C12 ÷ C20)

Table C12. Design capacity load for pipe clamps Stabil D-1/2"

No.	Designation	Design extension capacity load F [kN]
1	2	3
1	20 ÷ 72	4,0
2	76 ÷ 129	5,0
3	133 ÷ 173	8,0
4	176 ÷ 303	12,5

Table C13. Design capacity load for pipe clamps Stabil D-1/2" with lining

No.	Designation	Design extension capacity load F [kN]
1	2	3
1	19 ÷ 65	4,0
2	67 ÷ 115	5,0
3	124 ÷ 171	8,0
4	176 ÷ 305	12,5

Table C14. Design capacity load for pipe clamps Stabil D-3G HCP

No.	Designation	Design tensile capacity load F [kN]
1	2	3
1	10 ÷ 30	2,0
2	31 ÷ 129	5,0
3	133 ÷ 173	8,0
4	176 ÷ 316	12,5

Table C15. Design capacity load for pipe clamps Stabil D-3G Silicon

No.	Designation	Design tensile capacity load F [kN]
1	2	3
1	14 ÷ 23	1,8
2	24 ÷ 65	2,0
3	67 ÷ 115	2,0
4	124 ÷ 162	2,9
5	165 ÷ 214	3,5
6	219 ÷ 305	7,5

Table C16. Design capacity load for pipe clamps Stabil D-A

No.	Designation	Design tensile capacity load F [kN]
1	2	3
1	31 ÷ 72	4,0
2	76 ÷ 129	5,0
3	133 ÷ 303	10,0
4	316 ÷ 521	12,5

Table C17. Design capacity load for pipe clamps SRS VA

No.	Designation	Design tensile capacity load F [kN]
1	2	3
1	13 ÷ 73	0,6
2	75 ÷ 169	2,5

Table C18. Design capacity load for pipe clamps SRS VA with lining

No.	Designation	Design tensile capacity load F [kN]
1	2	3
1	12 ÷ 64	0,6
2	67 ÷ 170	2,5

Table C19. Design capacity load for chilled water clamps AKS 13, AKS 19, AKS 25

No.	AKS 13	Design tensile capacity load F [kN]	AKS 19	Design tensile capacity load F [kN]	AKS 25	Design tensile capacity load F [kN]
1	2	3	4	5	6	7
1	AKS 13-10	0,01	AKS 19-10	0,01	AKS 25-10	0,01
2	AKS 13-12	0,01	AKS 19-12	0,01	AKS 25-12	0,01
3	AKS 13-15	0,01	AKS 19-15	0,01	AKS 25-15	0,01
4	AKS 13-18	0,01	AKS 19-18	0,01	AKS 25-18	0,01
5	AKS 13-22	0,02	AKS 19-22	0,02	AKS 25-22	0,02
6	AKS 13-25	0,03	AKS 19-25	0,03	AKS 25-25	0,04
7	AKS 13-28	0,05	AKS 19-28	0,05	AKS 25-28	0,05
8	AKS 13-30	0,07	AKS 19-30	0,07	AKS 25-30	0,07
9	AKS 13-35	0,07	AKS 19-35	0,07	AKS 25-35	0,07
10	AKS 13-42	0,09	AKS 19-42	0,09	AKS 25-42	0,09
11	AKS 13-48	0,17	AKS 19-48	0,17	AKS 25-48	0,17
12	AKS 13-54	0,19	AKS 19-54	0,19	AKS 25-54	0,19
13	AKS 13-60	0,25	AKS 19-60	0,25	AKS 25-60	0,25

Table C20. Design capacity load for fixed point clamps FS

No.	Diameter [mm]	Design capacity load in direction of longitudinal axis of rod [kN]
1	2	3
1	21,3 ÷ 33,7	35,2
2	42,4 ÷ 60,3	34,9
3	76,1 ÷ 114	33,8
4	133 ÷ 168	32,2
5	219 ÷ 274	28,4
6	324 ÷ 368	24,3
7	407 ÷ 521	14,3

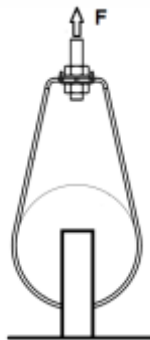


Fig. C13. Force diagram (ref. to Table C21)

Table C21. Design capacity load for pipe loops RSL N VA, RSL N Silicon

No.	Diameter [mm]	Design capacity load [kN]
1	2	3
1	26,9 ÷ 60,3	2,0
2	76,1 ÷ 114,3	3,5
3	133 ÷ 168,3	5,0
4	219,1	8,5

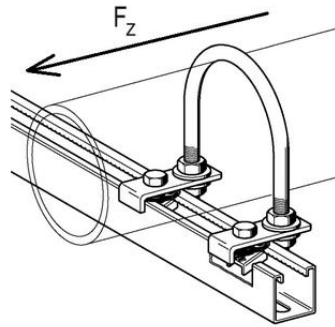


Fig. C14. Force diagram (ref. to Table C22)

Table C22. Design capacity load for U-bolt support UBF

No.	Designation	Design capacity load [kN]
1	2	3
1	UB F ½" - 1 ½"	0,5
2	UB F 2" - 3"	1,2
3	UB F 4" - 6"	1,4
4	UB F 8" - 12"	1,4 ¹⁾
5	UB F 378 – 530	1,4 ¹⁾

¹⁾ load for pair of UBF

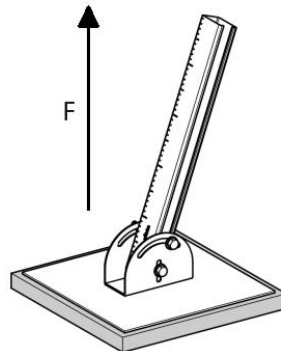


Fig. C15. Force diagram (ref. to Table C23)

Table C23. Design capacity load for insulated foot plates SHB HCP

No.	Designation	Design capacity load - tensile strength [N/mm ²]
1	2	3
1	SHB 160 HCP	0,4
2	SHB 300 HCP	0,4
3	SHB 450 HCP	0,4
4	SHB 600 HCP	0,4
5	SHB 41-4 HCP	0,4
6	SHB 41-5 HCP	0,4
7	SHB 41-6 HCP	0,4
8	SHB 41-7 HCP	0,4
9	SHB 41-8 HCP	0,4

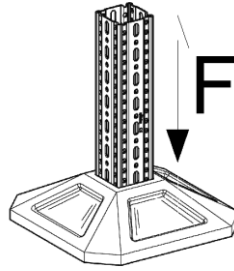


Fig. C16. Force diagram (ref. to Table C24)

Table C24. Design capacity load for insulated foot plates SHB SQF-L

Poz.	Designation	Design compressive load capacity [kN]
1	2	3
1	SQF-L 250	16,0
2	SQF-L 400	16,0
3	SQF-L 600	16,0
4	SQF-L 1000	16,0
5	SQF-LS 600	16,0

Table C25. Design capacity load for mounting plate GPL Siaqua

Poz.	Designation	Design capacity load - tensile strength [kN]
1	2	3
1	GPL M16	10,68
2	GPL 3/8"	11,81
3	GPL 1/2"	11,81
4	GPL 1/2" Stabil	29,35

Table C26. Design capacity load for twin holder DHP M8

Poz.	Designation	Design capacity load - tensile strength [kN]
1	2	3
1	65 mm	0,2
2	85 mm	0,16
3	105 mm	0,12

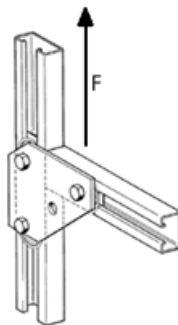


Fig. C17. Force diagram (ref. to Table C27)

Table C27. Design capacity load for web plate KNO

Designation	Design capacity load - tensile strength [kN]
1	2
KNO1, KNO2, KNO3, KNO4, KNO5	2 / joint

Table C28. Design capacity load for beam clamps TCS 41 / TCS 41 HCP

No.	Designation	Design capacity load - tensile strength [kN]
1	2	3
1	TCS 41	4
2	TCS 41 HCP	4

Table C29. Design capacity load for support joint SG

No.	Designation	Angle range [α]	Design capacity load - shear strength [kN]
1	2	3	4
1	SG M10-11	0 ÷ 45°	15
		90°	5
2	SG M10-13	0 ÷ 45°	15
		90°	6
3	SG M10-17	0 ÷ 45°	15
		90°	7

Table C30. Design capacity load for joints JOI 41 R

Designation	Design capacity load - shear strength [kN]
1	2
JOI 41 R Type 20 / JOI 41 R Type 23	2,0

Table C31. Design capacity load for joint JOI 41 S

Designation	Design capacity load - shear strength [kN]
1	2
JOI 41 S	2,0

Table C32. Design capacity load for joints JOI 41 HCP

No.	Designation	Design capacity load - shear strength [kN]
1	2	3
1	JOI 41 V	2,0
2	JOI 41 Z	2,0

Table C33. Design capacity load for support cones SMD 1-1/2", SMD 1-3/4", SMD 1-10, SMD 1-12, SMD 1-16

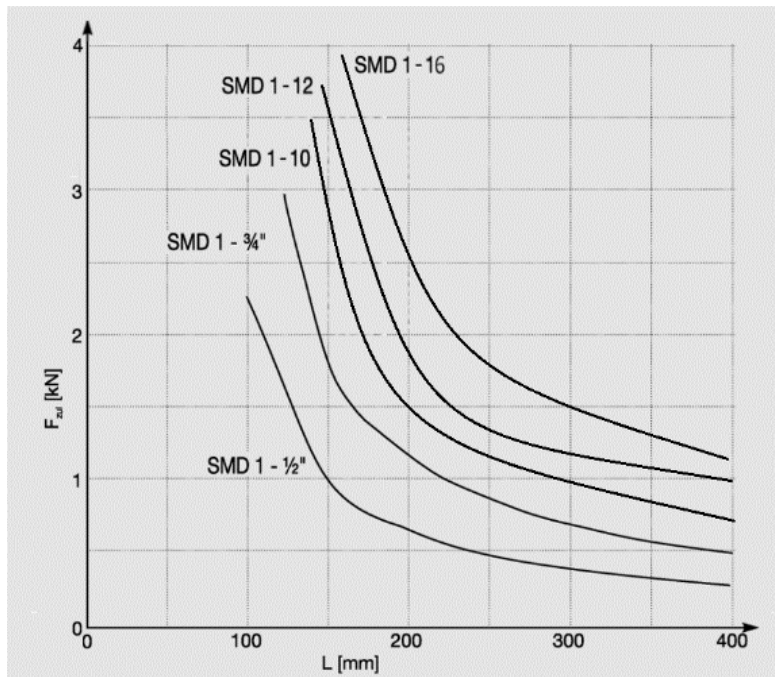


Table C34. Design capacity load for sound absorption units SDE

Designation	Design compressive load capacity [kN]
1	2
SDE 27, SDE 41	0,7

Table C35. Design capacity load for sound absorption element GMT M8

Designation	Design capacity load - tensile strength [kN]
1	2
GMT M8	0,2

Table C36. Design capacity load for support brackets WK CC 100/100-40 i WK CC 150/150

Design load capacity shown as charts, in where:
 F – Bending design load capacity, L – arm of load for cantilever system

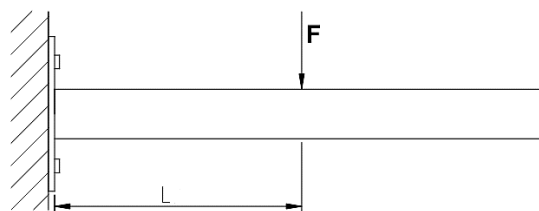
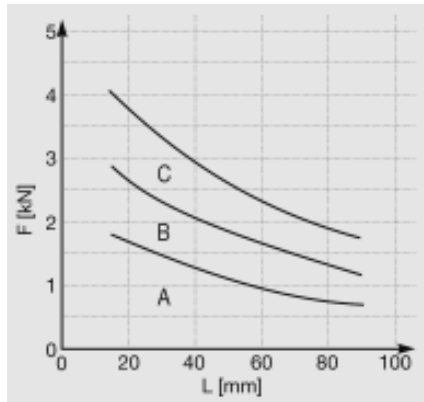


Fig. C18. Force diagram

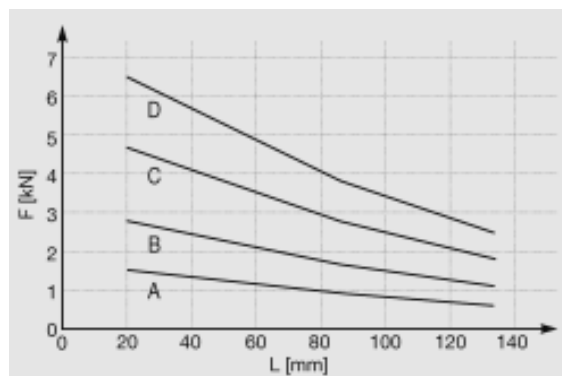
c.d. Table C36. Design capacity load for support brackets WK CC 100/100-40 and WK CC 150/150

a) design capacity load for support brackets WK CC 100/100-40



Curve	Location and load class of anchors fixing support brackets to the wall [kN]	Anchors spacing [mm]	Maximum deflection arrow [mm]	σ_{dop} [N/mm ²]
A	top 1,5 down 1,5	70	1	≤ 160
B	top 2,5 down 1,5			
C	top 3,5 down 1,5			

b) design capacity load for support brackets WK CC 150/150



Curve	Location and load class of anchors fixing support brackets to the wall [kN]	Anchors spacing [mm]	Maximum deflection arrow [mm]	σ_{dop} [N/mm ²]
A	top 1,5 down 1,5	70	1	≤ 160
B	top 2,5 down 1,5			
C	top 3,5 down 1,5			

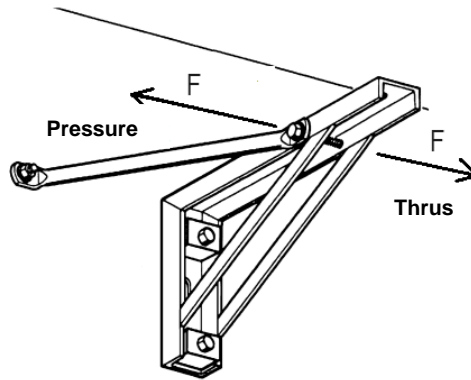


Fig. C19. Force diagram for thrust and pressure (ref. to Table C37)

Table C37. Design capacity load for tie rods STR, STR VA, STR HCP

No.	Designation	Design capacity load thrust and pressure [kN]
1	2	3
1	300/200	7,0
2	550/350	7,0
3	725/400	12,0
4	880/550	120

Table C38. Design capacity load for cantilever bracket AK CC

Anchors' lead class:

A = 1,5 kN

B = 2,5 kN

C = 3,5 kN

D = 6,0 kN

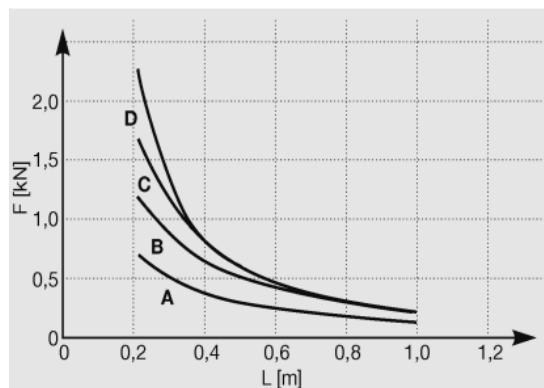


Table C39. Design capacity load for channel holder MOF 27

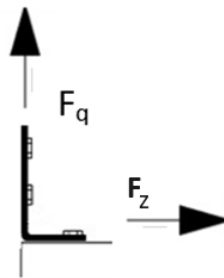
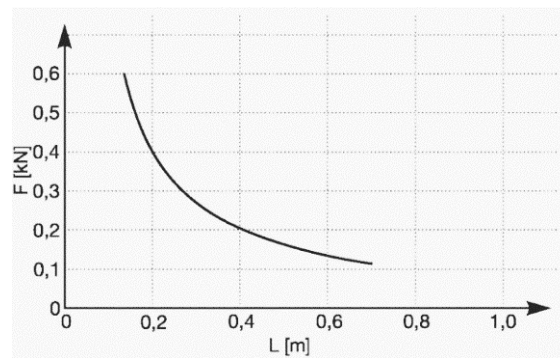


Fig. C20. Force diagram (ref. to Table C40)

Table C40. Design capacity load for T-bracket MOS MV 27

Designation	Design load capacity	
	F _z [kN]	F _q [kN]
1	2	3
MOS MV 27	1,5	0,8

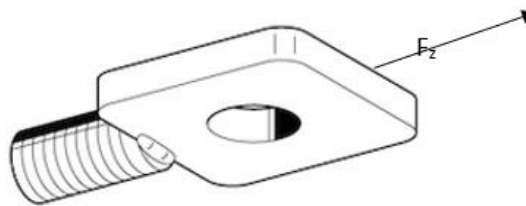


Fig. C21. Force diagram (ref. to Table C41)

Table C41. Design capacity load for eye bolt SCR

No.	Designation	Design load capacity F _z [kN]
1	2	3
1	M8 x 20	8,0
2	M8 x 40	8,0
3	M10 x 20	12,5
4	M10 x 40	12,5
5	M12 x 40	16,1
6	M16 x 25	25,0

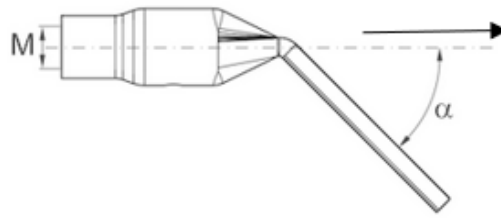


Fig. C22. Force diagram (ref. to Table C42)

Table C42. Design load capacity for eye socket SCB VA

Designation	Design load capacity	
	$F_z 0^\circ$ [kN]	$F_z 45^\circ$ [kN]
1	2	3
SCB VA	13	5



Fig. C23. Force diagram (ref. to Table C43)

Table C43. Design load capacity for threaded clevis GWB

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	GWB M10	13,6
2	GWB M12	21,4
3	GWB M16	45,3

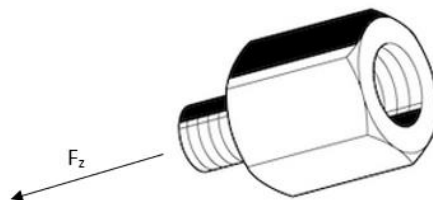


Fig. C24. Force diagram (ref. to Table C44 - C45)

Table C44. Design load capacity for rod coupling AD IG/IG VA

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	M16/M12	18,1
2	M16/M16	33,8
3	1/2"/M16	18,0
4	1/2"/1/2"	18,0
5	3/4"/M16	28,3
6	3/4"/1/2"	18,0
7	1"/M16	33,8
8	1"/1/2"	18,0

Table C45. Design load capacity for rod coupling AD AG/IG

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	16/10	12,5
2	16/12	18,1

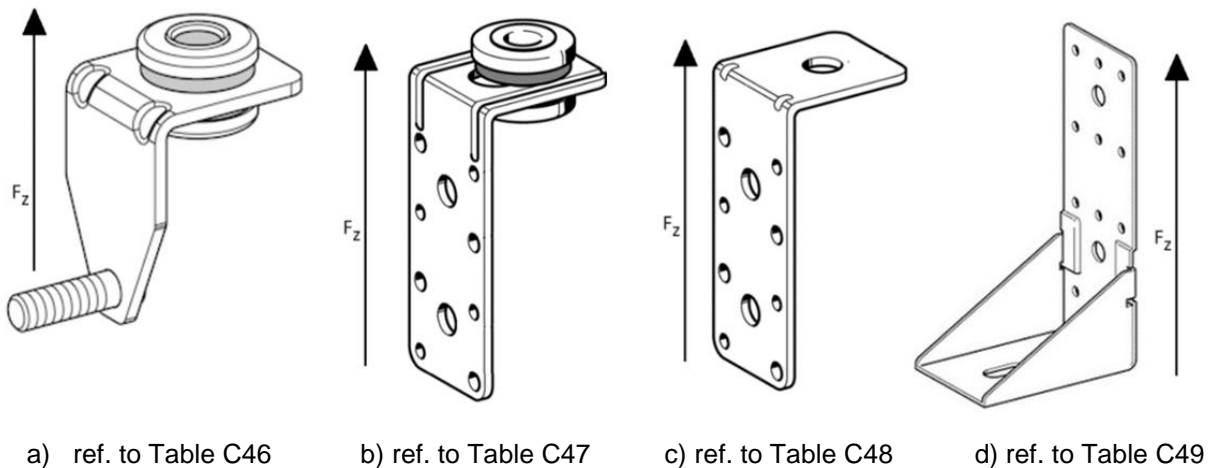


Fig. C25. Force diagram (ref. to Table C46 ÷ C49)

Table C46. Design load capacity for ducting angle LUW F

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	F M8	0,8
2	SF M8	0,8
3	SF M10	0,8

Table C47. Design load capacity for ducting angle LUW

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	SL	0,8
2	SZ	0,8

Table C48. Design load capacity for ducting angle LUW A

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	A-L / A-Z	0,5
2	A-SL / A-SZ	0,3
3	A-SL PL / A-SZ PL	0,3

Table C49. Design load capacity for ducting angle LUW Stabil

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	170/90	2,0

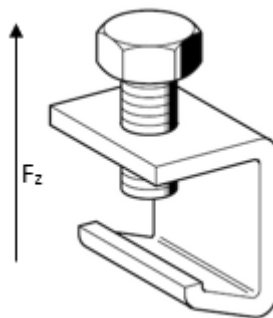


Fig. C25. Force diagram (ref. to Table C50)

Table C50. Design load capacity for ducting bracket LCO

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	20/40	0,7

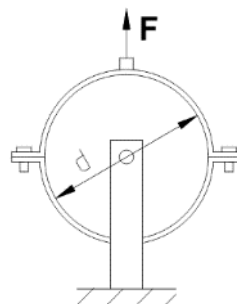


Fig. C26. Force diagram (ref. to Table C51 ÷ C58)

Table C51. Design load capacity for ducting clamps PLU 2G-N

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	71 ÷ 200	0,8
2	224 ÷ 500	1,0

Table C52. Design load capacity for ducting clamps PLU from DN 560

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	560 ÷ 900	1,5
2	1000 ÷ 1250	2,5

Table C53. Design load capacity for ducting clamps PLU 1G with lining

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	80 ÷ 500	0,8
2	560 ÷ 1600	1,0

Table C54. Design load capacity for ducting clamps PLU 2G-N with lining

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	71 ÷ 200	0,8
2	224 ÷ 500	1,0

Table C55. Design load capacity for ducting clamps PLU from DN 560 with lining

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	560 ÷ 900	1,5
2	1000 ÷ 1250	2,5

Table C56. Design load capacity for ducting clamps PLU TOP 2G with lining

No.	Designation	Design load capacity F_z [kN]
1	2	3
1	71 ÷ 200	0,8
2	224 ÷ 500	1,0

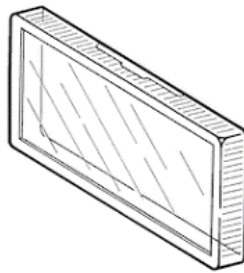
Table C57. Design load capacity for perforated tape BND

Designation	Design load capacity F_z [kN]
1	2
19	0,5

Table C58. Design load capacity for ducting strap LUB

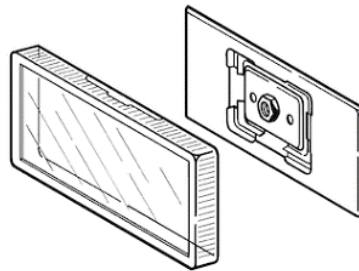
Designation	Design load capacity F_z [kN]
1	2
LUB	0,3

Annex D.



Material: PS

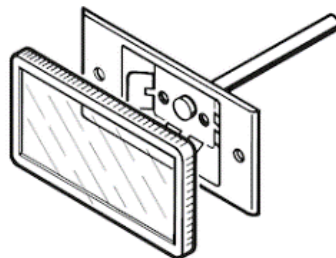
Fig. D1. Clear plastic cover SHA



Materials:

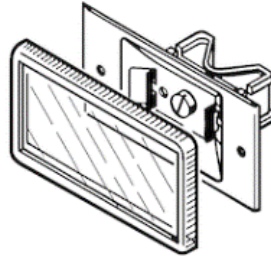
- a) carbon steel zinc coated ($Zn \geq 8 \mu m$) – for screw holder SHT
- b) stainless steel – for screw holder SHT A2

Fig. D2. Screw holder SHT and SHT A2



Material: carbon steel zinc coated ($Zn \geq 8 \mu m$)

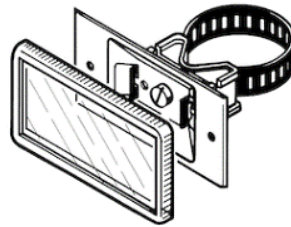
Fig. D3. Welding holder UNI



Material:

- a) carbon steel zinc coated ($Zn \geq 8 \mu m$) - for UNI w/o fixing strap
- b) stainless steel – for UNI A2 w/o fixing strap

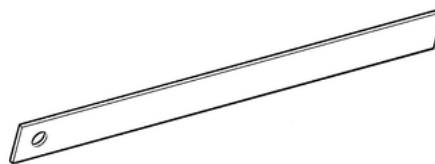
Fig. D4. Universal holder w/o fixing strap UNI and UNI A2



Material:

- a) carbon steel zinc coated ($Zn \geq 8 \mu m$) - for UNI with fixing strap
- b) stainless steel – for UNI A2 with fixing strap

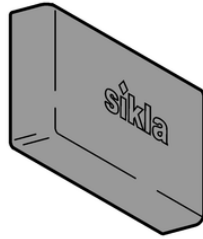
Fig. D5. Universal holder with fixing strap UNI and UNI A2



Material: carbon steel zinc coated ($Zn \geq 8 \mu m$)

Designation	Length [mm]	Hole diameter [mm]	Dimensions b x s [mm x mm]
SL 1	400	11	20 x 2,5
SL 2	400	13	30 x 2,5
SL 3	400	17	40 x 3,0

Fig. D6. Safety strap SL VdS



Material: HD-PE

Fig. D7. End cap ADK WK



Material: PA

Fig. D8. Cabel bracket KHP



Material: EPDM

Fig. D9. Rubber profile SAL EPDM sk



Material: silicon C 5625 RED

Fig. D10. Rubber profile SAL silicon sk