German Institute for Construction Technology

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Approval and certification body
for construction products and types of construction

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General Building Approval / General Construction Technique Approval

Approval No.: Z-1.5-174

Period of validity
from: 1 March 2026
to: 1 March 2031

Applicant:
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Max-Aicher GmbH & Co. KG
Max-Aicher-Allee 1+2
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Subject of this approval:
Threaded coupler connections and anchorages
of reinforcing steel B500B with threaded ribs (SAS 500)
Nominal diameter: 12 to 50 mm

The subject regulated above is hereby granted general building approval.
This approval comprises ten pages and 28 annexes.
The subject was first approved on 7 February 2001 and 29 March 2001.

I GENERAL PROVISIONS

1. This decision confirms the usability or applicability of the subject matter of the regulations within the meaning of the state building regulations.

2. This decision replaces the approvals, consents and certificates legally required for the execution of construction projects.

3. This decision is granted without prejudice to the rights of third parties, in particular private protective rights.

4. The user or applicant of the subject matter of the regulations is required—without prejudice to further provisions in the "Special Provisions"—to provide copies of this decision to those involved in the use or application of the subject matter of the regulations and to point out that this decision must be available at the place of use or application. Copies must also be made available to the authorities involved upon request.

5. This decision may only be reproduced in full. Partial publication requires the consent of the German Institute for Building Technology. Texts and drawings of advertising materials may not contradict this decision. Translations must include the note "Translation of the German original version not approved by the German Institute for Building Technology".

6. This decision is issued revocably. The provisions may be subsequently supplemented and amended, in particular if new technical findings require this.

7. This decision refers to the information provided by the applicant and the documents submitted. Any change of these principles is not covered by this decision and must be reported to the German Institute for Building Technology without delay.

II SPECIAL PROVISIONS

1 Subject matter of the approval and scope of use and application

The subject of the approval is coupling nuts and screwed anchorage elements for reinforcing steel with metric threaded ends (threaded bars) SAS 500 (B500B) with nominal diameters from 12 mm to 50 mm in accordance with general building authority approval No. Z-1.1-58.

The anchorage elements or applications consist of internal threads into which the threaded bars are screwed. By means of a counter nut (T 2003, T 2040) or a centrally applied tightening torque, a slip-resistant prestressing of the thread is generated.

For the formation of tensile and compressive joints of threaded bars of the same diameter, standard nuts (T 3003), hexagon nuts (T 3010) or coupling nuts (T 3087) are used.

Bonded connections of standard nuts (T 3003) or coupling nuts (T 3087) are to be carried out for nominal diameters from 12 mm to 32 mm with the SAS adhesive system "MABOND", whereby bonding over the entire connection length or as half-sleeve bonding is possible. Standard nuts with centering stop (T 3002) and coupling nuts with centering stop (T 3086) are used for the production of bonded half-sleeve joints. Half-sleeves can be designed as prefabricated system (T 3003/T 3087) with counter nuts or as prefabricated system (T 3002/T 3086 with MABOND).

Reduction sleeves (T 3102) are used for connecting SAS 500 threaded bars with different, in particular adjacent standardized diameter series.

Clamping nuts (T 3014) are used if the threaded bars SAS 500 to be connected are non-rotatable or if the clamping is intended at one side of a joint.

Bar threads and internal threads (female threads) of the threaded bars must have different pitches. The synchronization of the coupling of reinforced bars is achieved by means of a change section (T 3013), which has a corresponding metric thread on the outside and a bar thread on the inside for receiving the connection rods.

Contact sleeves (T 3006) are used for forming pure compression joints. The sleeve ensures the centric position of the bars, which are prestressed by a defined tightening torque.

The anchorage of threaded steel is carried out via anchor pieces or anchor plates in combination with anchor nuts or, by anchor plates with 30° cone, in combination with cap nuts or by anchor plates with 55° cone in combination with spherical nuts according to Annex 3. With counter nuts, the connection is secured against loosening.

For transmitting axial tensile and compressive forces from the threaded bar to a steel component, connection sleeves (T 3022 and T 3026) are used, which must be continuously welded to the component.

The subject of the approval is the planning, design and execution of mechanical connections and anchorages in accordance with DIN EN 1992-1-1 and DIN EN 1992-1-1/NA, Sections 8.4 and 8.7.

2 Provisions for the construction product(s)

2.1 Properties and composition

2.1.1 Material properties

The source materials for the connection and anchorage elements are specified in Annexes 4 and 5. The requirements for material properties set out in the standards below must be fulfilled.

Material designation	Material No.	Steel standard
S185	1.0035	DIN EN 10025-2
S235JR	1.0038	DIN EN 10025-2
S275JR	1.0044	DIN EN 10025-2
S355JR	1.0045	DIN EN 10025-2
S355J2	1.0577	DIN EN 10025-2
C45	1.0503	DIN EN ISO 683-1
C45+C	1.0503	DIN EN 10277-2
S355J2+C+C	1.0579	DIN EN 10277-2
EN-GJMW-400-5	EN-JM 1030	DIN EN 1562
EN-GJMW-450-7	EN-JM 1040	DIN EN 1562
EN-GJMW-550-4	EN-JM 1050	DIN EN 1562
EN-GJS-500-7	EN-JS 1050	DIN EN 1563
GE300	1.0558	DIN EN 10293
G34CrMo4	1.7230	DIN EN 10293
WRWRL		Data sheet

The chemical composition of the SAS adhesive system "MABOND" must comply with the information in the data sheet.

2.1.2 Geometry

The external dimensions of the connection and anchorage elements must comply with the specifications in Annexes 6 to 20. For the geometry of the threads including permissible tolerances, the requirements of the German Institute for Building Technology and the monitoring bodies involved shall apply.

2.2 Manufacturing, packaging, transport, storage and marking

2.2.1 Manufacturing

Depending on the material used (see Annexes 4 and 5), the connection and anchorage elements are either cast to their final shape during production or machined from solid steel bar stock, drilled and provided with an internal thread corresponding to the threaded bar. For sleeves T 3002 and T

3086, a centering insert is pressed in.

2.2.2 Packaging, transport and storage

The connection and anchorage elements must be packaged, transported and stored in such a way that they are protected against corrosion and mechanical damage until use at the construction site. The adhesive system "MABOND" must be protected from direct sunlight and stored dry at temperatures between +5 °C and +25 °C. Adhesive cartridges whose shelf life has expired must not be used.

2.2.3 Marking

The sleeves, anchorage elements and lock nuts must be marked with the applicant's identification mark at the locations specified in the associated annexes.

The delivery note of the connection and anchorage elements and the adhesive cartridge must be marked by the applicant with the mark of conformity (Ü mark) in accordance with the conformity marking regulations of the federal states. This marking may only be carried out if all requirements for the declaration of conformity according to Section 2.3 have been fulfilled.

The cartridge of the SAS adhesive system "MABOND" must be marked in accordance with the Ordinance on Hazardous Substances or the Hazardous Substances Regulation and provided with the inscription "Adhesive system MABOND" as well as information on shelf life and safety instructions. The installation instructions supplied with the adhesive system "MABOND" must contain information on safety instructions for handling hazardous substances.

2.3 Declaration of conformity

2.3.1 General

The confirmation of conformity of the construction product with the provisions of this general building authority approval must be carried out by means of a declaration of conformity from the manufacturer based on a factory production control and a certificate of conformity from a recognized certification body as well as regular external monitoring by a recognized inspection body in accordance with the following provisions. For the issuance of the certificate of conformity and for external monitoring, including the product tests to be carried out, the manufacturer of the construction product must involve a recognized certification body and an appropriate monitoring body.

The declaration of conformity must be submitted by the manufacturer by marking the construction product with the conformity mark (Ü mark) with reference to the intended use.

A copy of the certificate of conformity issued by the certification body must be submitted to the German Institute for Building Technology for information.

In addition, a copy of the initial test report must be submitted to the German Institute for Building Technology for information.

2.3.2 Factory production control

The manufacturer must set up and carry out factory production control. Factory production control means the continuous monitoring of production carried out by the manufacturer, which ensures that the construction products manufactured comply with the provisions of this general building authority approval.

Factory production control must include at least the measures specified in the "Principles for approval and monitoring testing of mechanical reinforcement splices" – version May 2007.

The geometry of the threads must be checked by means of a go/no-go gauge (statistical evaluation if necessary). According to statistical aspects, samples must be taken from the manufactured coupling nuts and their external dimensions must be verified.

For every 1000 manufactured connection parts, each type of connection or anchorage shall be tested. Samples are to be tested either as individual components or as an assembled connection or anchorage.

This connection or anchorage shall be tested in a tensile test for its load-bearing capacity. The test must be evaluated according to the assessment criteria of the "Principles for approval and monitoring testing of mechanical reinforcement splices" – version May 2007 – Sections 2.7.2 and 2.7.4.

The results of factory production control must be recorded and evaluated. The records must contain at least the following information:

– Designation of the construction product or source material and components,
– Type of inspection or test,
– Date of manufacture and testing of the construction product or source material or components,
– Results of inspections and tests and, where applicable, comparison with requirements,
– Signature of the person responsible for factory production control.

The records must be kept for at least five years and presented to the external monitoring body engaged. They must be submitted to the German Institute for Building Technology and the competent highest building supervisory authority upon request.

In the event of insufficient test results, the manufacturer must immediately take the necessary measures to remedy the deficiency. Construction products that do not meet the requirements must be handled in such a way that confusion with compliant products is excluded. After the deficiency has been remedied—if technically possible and necessary to verify the rectification—the relevant test must be repeated without delay.

2.3.3 External monitoring

At each manufacturing plant, the plant and the factory production control must be regularly inspected by external monitoring in accordance with the principles mentioned in Section 2.3.2, at least twice a year.

Within the scope of external monitoring, samples must be taken for independent testing in accordance with the principles specified in Section 2.3.2 and the details in the test plan.

The evaluations of the tests carried out as part of factory production control must be checked by means of tensile tests in accordance with Section 2.3.2.

The results of certification and external monitoring must be retained for at least five years. They must be submitted by the certification body or the monitoring body to the German Institute for Building Technology and the competent highest building supervisory authority upon request.

3 Provisions for planning, design and execution

3.1 General

Connections and anchorages must be planned and designed in accordance with the Technical Building Regulations, in particular DIN EN 1992-1-1 in conjunction with DIN EN 1992-1-1/NA, unless otherwise specified below.

The location and dimensions of the coupling sleeves and anchorages must be included in the reinforcement drawings and must comply with the requirements resulting from the installation instructions.

3.2 Verification in the ultimate limit states

3.2.1 Design for static and quasi-static actions

Connections and anchorages according to this approval may be subjected to static and quasi-static tensile and compressive loads up to 100% like an unspliced bar. DIN EN 1992-1-1, Section 8.7.2(4) applies.

3.2.2 Fatigue verification

Fatigue verification must be carried out in accordance with DIN EN 1992-1-1 and DIN EN 1992-1-1/NA, Section 6.8.

For the nominal diameter range from 12 to 32 mm, a stress range $\Delta\sigma Rsk$ = 75 N/mm² and from 40 to 50 mm $\Delta\sigma Rsk$ = 55 N/mm² is to be assumed for N* = 2·10^6 load cycles. The stress exponents of the Wöhler line are to be taken as k1 = 3 and k2 = 5 for N* = 4·10^6 load cycles (see DIN EN 1992-1-1, Fig. 6.30).

End anchorages with spherical nuts (T 2044) as well as with cap nuts (T 2944) with nominal diameters from 12 to 32 mm may be used under earth pressure (see Annexes 21, Figures 10 and 11).

For welded connections, the load-bearing capacity of the weld seam shall be additionally taken into account.

3.3 Concrete cover and bar spacing

For the covering of the outer edges of a sleeve, an anchorage element or a nut, as well as for the clear distances between adjacent sleeves, anchorage elements or nuts, the same values as for unspliced bars according to DIN EN 1992-1-1 and DIN EN 1992-1-1/NA, Sections 4.4.1 and 8.2 shall apply.

The clear distances required for installation must remain unaffected.

3.4 Axial and edge distances of intermediate and end anchorages

The axial and edge distances according to Annexes 23 to 25 apply for the corresponding specified anchor plates and the respective specified minimum concrete strength class.

Deviating from this, the axial distances of the anchorages may be reduced by up to 15% in one direction, provided that the minimum required distance of the reinforcement remains and the axial distance is increased in the direction perpendicular to it by the same relative amount.

If the anchorages cannot be arranged in one axis, the anchorages must be offset by at least 1.5 times the axial spacing (for nominal diameters from 12 to 32 mm) and by twice the axial spacing plus the bar direction (for nominal diameters from 40 to 50 mm) in accordance with Annex 23.

The above provisions apply to intermediate and end anchorages.

3.5 Connection of steel concrete - steel component

With the welded connections (T 3022 and T 3026) according to Annexes 17 and 18, the reinforcing steel of a steel concrete component is connected to a steel component. Only normal forces may be transmitted.

Steel components, welded connection piece and lock nuts must be protected against corrosion in accordance with the provisions applicable to the application case, see DIN EN ISO 12944-5.

When welding over corrosion protection coating systems, the requirements of DASt Guideline 006 must be observed.

3.6 Bending

The planned bending of a bar must begin at a distance of at least 5·ϕ from the sleeve end (ϕ = nominal diameter of the bent bar).

If sleeve bars are bent in the manufacturing plant using special devices, the distance to the sleeve end may be reduced to 2·ϕ.

3.7 Provisions for execution

3.7.1 General

Only individual components that are marked in accordance with Section 2.2.3 may be used.

For tightening the screwed sleeve connections and anchorages, only tightening devices whose functionality and accuracy have been verified may be used. The magnitude of the tightening torque shall be as specified in Annex 1.

The sleeve connections and anchorages may only be installed by trained personnel. The applicant must provide written work instructions for this purpose.

The dimensions of the connection and anchorage elements, in particular the length of the nuts and their arrangement, must comply with the design drawings (reinforcement drawings).

The threads of bars, connection and anchorage elements must be clean and free of loose rust and harmful substances (corrosion). Light surface corrosion is permitted.

3.7.2 Screwed sleeve joints

The design of screwed sleeve joints is shown in Annex 21.

Suitable, durable marking must be provided at a distance of 20 cm from the bar end with which the sleeve is to be connected via the bar thread.

When using standard nuts (T 3003) according to Annex 14, the connection bar must always be longitudinally movable and freely rotatable. If it is not freely rotatable, long coupling nuts (T 3010) according to Annex 15 must be used.

With clamping nuts, the bars to be connected must be immovable and non-rotatable.

For tensile joints, shorter lock nuts (T 2040) according to Annex 9 may be used; for compression joints, except for contact sleeves which are used without lock nuts, the longer lock nuts (T 2003) according to Annex 7 must always be used.

For tensile and compression joints of bars with different nominal diameters, reduction sleeves (T 3102) according to Annex 20 must be used. The length of the lock nuts depends on the load.

3.7.3 Bonded sleeve joints

For the execution of bonded sleeve joints, the requirements for preparation of the adhesive system as well as installation of the connections according to Annexes 27 and 28 must be observed.

The required adhesive quantities depending on the diameters of the threaded steel to be connected and the processing and curing times of the adhesive are specified in Annex 26.

3.7.4 Intermediate and end anchorages

For the formation of the anchorages and the required axial and edge distances as well as the required transverse reinforcement, Annexes 23 to 25 apply.

Anchorages according to Annex 23 must be executed in concrete with a minimum compressive strength class of C20/25 and anchorages according to Annexes 24 and 25 in concrete with a minimum compressive strength class of C25/30.

3.7.5 Welding connections

For connecting the welded parts T 3022 and T 3026 according to Annexes 17 and 18 with a steel component, an approved WPS welding instruction according to DIN EN ISO 15609-1 must be available, which is to be observed by the welding personnel.

Before welding, a welding procedure qualification record according to DIN EN 1090-1, Table B.1 must be available. Welders must have valid welder qualification certificates according to DIN EN ISO 9606-1.

Welded connections may be used under tensile loading with short nuts (T 2040) and must be tightened under compressive loading with long nuts (T 2003).

3.7.6 Monitoring of the manufacture of sleeve connections and anchorages on the construction site

For screwed connections or anchorages, the screw-in depth must be checked based on the markings at a distance of 20 cm from the respective bar end. The installation of the specified lock nuts depending on the type of loading (short or long) must be verified.

During the production of bonded connections, the site manager or a qualified representative of the site management must be present at the construction site. Proper execution of the work must be ensured.

Compliance with the provisions listed in Sections 3.7.1 to 3.7.5 must be ensured, in particular the central positioning of the sleeves and the observance of the tightening torques.

The tightening devices must be checked annually for compliance with the setting accuracy.

3.7.7 Notification to the building supervisory authority

The building supervisory authority or the party commissioned by it for construction supervision must be notified before the manufacture of screwed sleeve connections or end anchorages.

The executing company must provide a declaration of conformity in accordance with §§ 16a Para. 5 in conjunction with 21 Para. 2 MBO to confirm compliance of the construction with the general construction permit covered by this notice.

The following technical specifications are referred to in this notice:

DIN EN 1090-1:2012-02 Execution of steel structures and aluminium structures – Part 1: Requirements for conformity assessment of structural components; German version EN 1090-1:2009+A1:2011

DIN EN 1090-2:2018-09 Execution of steel structures and aluminium structures – Part 2: Technical requirements for the execution of steel structures; German version EN 1090-2:2018

DIN EN 1562:2019-06 Founding – Tempering castings; German version EN 1562:2019

DIN EN 1563:2019-04 Founding – Spheroidal graphite cast irons; German version EN 1563:2018

DIN EN 1992-1-1:2011-01 + A1:2015-03 Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings; German version EN 1992-1-1:2004+AC:2010 and EN 1992-1-1:2004/A1:2014

DIN EN 1992-1-1/NA:2013-04 + A1:2015-12 National Annex – Nationally determined parameters – Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings; amendment A1

DIN EN 10025-2:2019-10 Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels; German version EN 10025-2:2019

DIN EN 10277-2:2008-06 Bright steel products – Technical delivery conditions – Part 2: Steels for general engineering purposes; German version EN 10277-2:2008

DIN EN 10293:2015-04 Steel castings for general applications; German version

DIN EN ISO 683-1:2018-09 Heat-treatable steels, alloy steels and free-cutting steels – Part 1: Non-alloy quenched and tempered steels (ISO 683-1:2016); German version EN ISO 683-1:2018

DIN EN ISO 9606-1:2017-02 Qualification testing of welders – Fusion welding – Part 1: Steels (ISO 9606-1:2012 including Cor 1:2012 and Cor 2:2013); German version EN ISO 9606-1:2017

DIN EN ISO 9692-1:2013-12 Welding and related processes – Types of joint preparation – Part 1: Manual metal arc welding, gas-shielded metal arc welding, gas welding, TIG welding and beam welding of steels (ISO 9692-1:2013); German version EN ISO 9692-1:2013

DIN EN ISO 12944-5:2018-06 Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 5: Protective paint systems (ISO 12944-5:2018); German version EN ISO 12944-5:2018

DIN EN ISO 15609-1:2005-01 Specification and qualification of welding procedures for metallic materials – Welding procedure specification – Part 1: Arc welding (ISO 15609-1:2004); German version EN ISO 15609-1:2004

DASt Guideline 006:2008 Overwelding of fabrication coatings (FB) in steel construction

Data sheet Filed with the German Institute for Building Technology and the body involved in external monitoring

Test plan Filed with the German Institute for Building Technology and the body involved in external monitoring

Dipl.-Ing. Beatrix Wittstock Head of Division

Certified Kisan

Marking		Ø	Nominal diameter Ø – Thread bar									
			12	14	16	20	25	28	32	40	43	50
Description	Number	Pos.										
Anchor plate, cone, 30°	T1928-Ø	1	●	●	●	●	●	●	●	●	–	●
Anchor nut	T2002-Ø	2	●	●	●	●	●	●	●	●	●	●
Lock nut, long	T2003-Ø	3	●	●	●	●	●	●	●	●	●	●
Lock nut, long, cast	T2003-ØC	4	●	●	●	●	●	●	●	●	●	●
Anchor plate	T2008-Ø	5	–	–	–	–	–	–	–	●	–	●
Anchor plate, cone, 55°	T2011-Ø	6	–	–	●	●	●	●	●	●	●	●
Anchor nut, long	T2024-Ø	7	●	●	●	●	●	●	●	–	–	–
Lock nut, short	T2040-Ø	8	–	●	●	●	●	●	●	●	●	●
Lock nut, short, cast	T2040-ØC	9	–	–	●	●	●	●	●	●	●	●
Dome nut, 55°	T2044-Ø	10	–	–	●	●	●	●	●	●	●	●
Anchor piece	T2073-Ø	11	●	●	●	●	●	●	●	●	●	●
Anchor plate, flat	T2139-Ø	12	●	●	●	●	●	●	●	●	●	●
Anchor plate, flat	T2140-Ø	26	●	●	●	●	●	●	●	●	●	●
Anchor plate, flat	T2141-Ø	27	●	●	●	●	●	●	●	●	●	●
Anchor nut with flange	T2163-Ø	13	–	–	–	–	–	–	–	●	●	●
Dome nut, 30°	T2944-Ø	14	●	●	●	●	●	●	●	●	–	●
Coupler, standard center stop	T3002-Ø	15	●	●	●	●	●	●	●	–	–	–
Coupler, standard	T3003-Ø	16	●	●	●	●	●	●	●	●	●	●
Contact coupler	T3006-Ø	17	–	–	–	●	●	●	●	●	●	●
Hexagonal coupler, long	T3010-Ø	18	●	●	●	●	●	●	●	●	●	●
Change over coupler	T3013-Ø	19	●	●	●	●	●	●	●	●	●	●
Tensioning coupler	T3014-Ø	20	●	●	●	●	●	●	●	●	●	●
Welding bolt, round	T3022-Ø	21	●	●	●	●	●	●	●	●	●	●
Welding bolt, hexagonal	T3026-Ø	22	●	●	●	●	●	●	●	●	●	●
Thread coupler, center stop	T3086-Ø	23	–	–	●	●	●	●	●	–	–	–
Thread coupler	T3087-Ø	24	–	–	●	●	●	●	●	–	–	–
Reducing coupler, round*	T3102-Ø	25	●	●	●	●	●	●	●	●	●	●

Type of application	Ø	Torque moment [kNm]									
		12	14	16	20	25	28	32	40	43	50
Torqued coupling		0,08	0,15	0,20	0,40	0,70	0,95	1,60	2,90	5,00	8,00
Glued coupling		0,08	0,15	0,20	0,40	0,60	0,60	0,70	-	-	-
End anchorage		0,08	0,15	0,20	0,40	0,70	0,95	1,60	2,90	5,00	8,00
Contact coupler		~0,1	~0,1	~0,1	~0,1	~0,1	~0,1	~0,1	~0,1	~0,1	~0,1

* For reducing couplers T 3102 use the torque moment of the smaller bar.

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

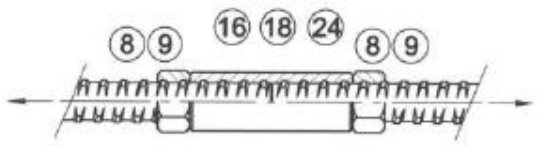
Annex 1

Overview accessories

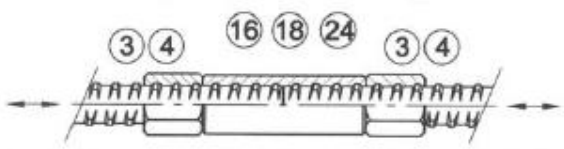
Coupler connection:

Coupler, standard; hexagonal coupler, long; threaded coupler

- tensile load

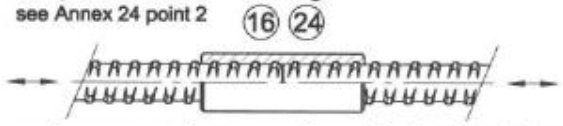


- compression and alternating load

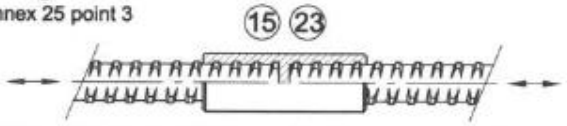


Glued coupler connection

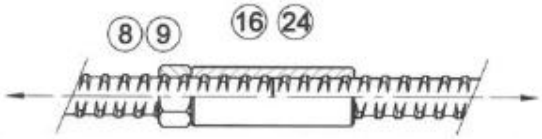
- torque coupler connection with glue, tensile load, compression and alternating load
  see Annex 24 point 2



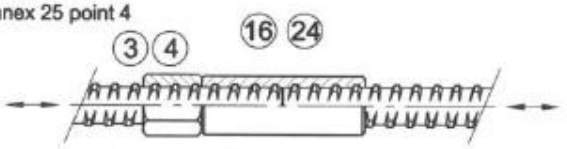
- pre torque coupler connection with glue, compression and alternating load
  see Annex 25 point 3



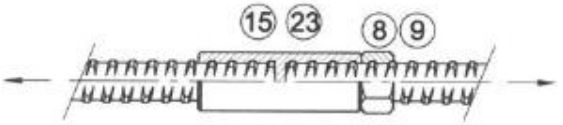
- pre torque coupler connection with glue, tensile load
  see Annex 25 point 4



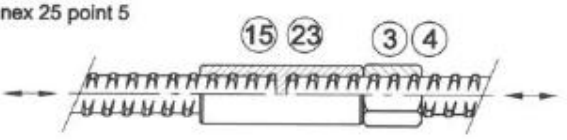
- pre torque coupler connection with glue, compression and alternating **load**
  see Annex 25 point 4



- pre torque coupler connection with glue, tensile load
  see Annex 25 point 5

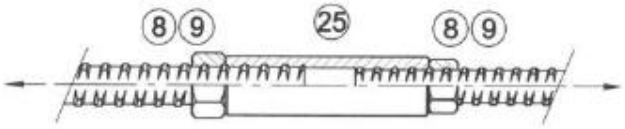


- pre torque coupler connection with glue, compression and alternating **load**
  see Annex 25 point 5

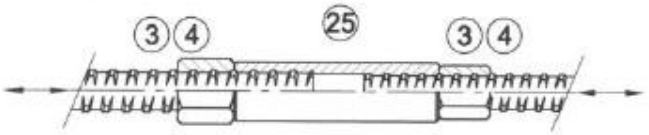


Reducing coupler

- tensile load

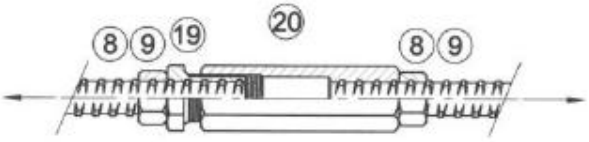


- compression and alternating **load**

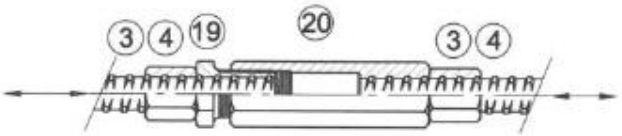


Turnbuckle

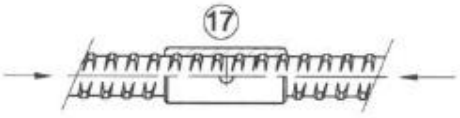
- tensile load



- compression and alternating **load**



Contact coupler - compression



Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

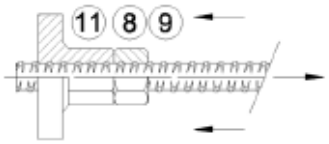
System overview coupler connection

Annex 2

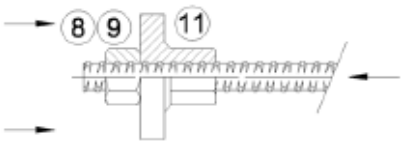
End anchorage:

Anchor piece

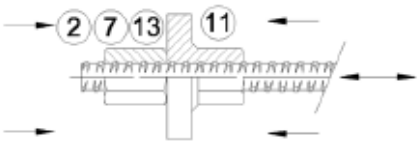
tensile load



compression

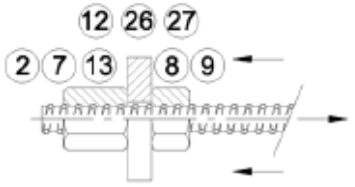


compression and alternating load

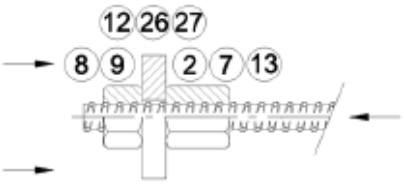


Anchor plate

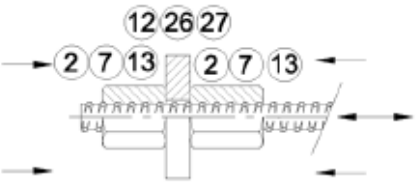
tensile load



compression

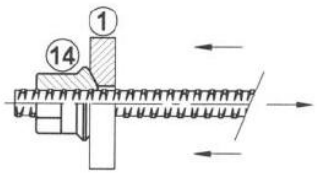


compression and alternating load



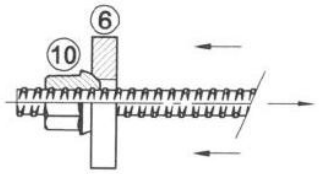
Dome nut 30° not torqued

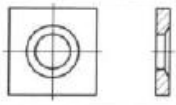
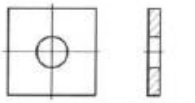
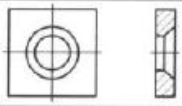
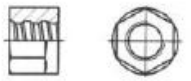
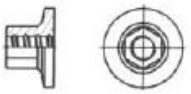
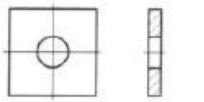
compression

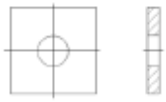


Dome nut 55° not torqued

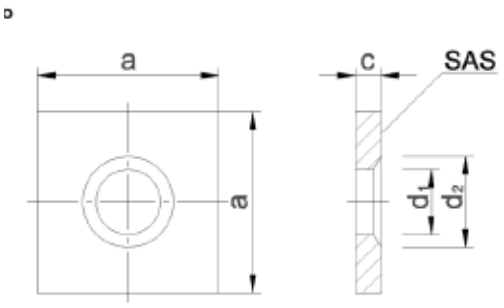
compression



Number	Description	Sketch	Material
T 1928	**Anchor plate,** cone, 30° (Annex 6 / Pos. 1)		Ø12-50 - DIN EN 10025-2 - S185; S235JR Ø12-50 - DIN EN 10025-2 - S275JR; S355JR
T 2002	**Anchor nut** (Annex 6 / Pos. 2)		Ø12-50 - DIN EN 10277-2 - S355J2C+C Ø12-50 - DIN EN 10277-2 - C45+C
T 2003	**Lock nut,** long (Annex 7 / Pos. 3)		Ø12-50 - DIN EN 10277-2 - S355J2C+C Ø12-32 - DIN EN 10083-2 - C 45+N Ø12-50 - DIN EN 10277-2 - C 45+C
T 2003 C	**Lock nut,** long, cast (Annex 7 / Pos. 4)		Ø12-50 - DIN EN 10293 - G34CrMo4 Ø12-50 - DIN EN 10293 - GE 300 Ø12-50 - DIN EN 1563 - EN-GJS-500-7
T 2008	**Anchor plate** (Annex 8 / Pos. 5)		Ø40-50 - DIN EN 10025-2 - S185; S235JR Ø40-50 - DIN EN 10025-2 - S275JR; S355JR
T 2011	**Anchor plate, cone, 55°** (Annex 8 / Pos. 6)		Ø16-50 - DIN EN 10025-2 - S185; S235JR Ø16-50 - DIN EN 10025-2 - S275JR; S355JR
T 2024	**Anchor nut,** long (Annex 9 / Pos. 7)		Ø12-32 - DIN EN 10277-2 - S355J2C+C Ø12-32 - DIN EN 10277-2 - C45+C
T 2040	**Lock nut,** short (Annex 9 / Pos. 8)		Ø14-50 - DIN EN 10277-2 - S355J2C+C Ø14-32 - DIN EN 10083-2 - C 45+N Ø14-50 - DIN EN 10277-2 - C 45+C
T 2040 C	**Lock nut, short, cast** (Annex 10 / Pos. 9)		Ø16-50 - DIN EN 10293 - G34CrMo4 Ø16-50 - DIN EN 10293 - GE 300 Ø16-50 - DIN EN 1563 - EN-GJS-500-7
T 2044	**Dome nut, 55°** (Annex 10 / Pos. 10)		Ø16-32 - DIN EN 10083-2 - C 45+QT Ø40-50 - DIN EN 1563 - EN-GJS-500-7
T 2073	**Anchor piece** (Annex 11 / Pos. 11)		Ø12-50 - DIN EN 1562 - EN-GJMW-400-5 Ø12-50 - DIN EN 1562 - EN-GJMW-550-4 Ø12-50 - DIN EN 1562 - EN-GJMW-450-7 Ø12-50 - DIN EN 1563 - EN-GJS-500-7 Ø40-50 - DIN EN 10293 - G34CrMo4 Ø40-50 - DIN EN 10293 - GE 300
T 2139	**Anchor plate,** flat (Annex 11 / Pos. 12)		Ø12-50 - DIN EN 10025-2 - S185; S235JR Ø12-50 - DIN EN 10025-2 - S275JR; S355JR

Artikel	Benennung	Darstellung	Werkstoff
T 2140	**Anchor plate,** flat (Annex 12 / Pos.26)		Ø12-50 - DIN EN 10025-2 - S355JR
T 2141	**Anchor plate,** flat (Annex 12 / Pos.27)		Ø12-50 - DIN EN 10025-2 - S355JR
T 2163	**Anchor nut with flange** (Annex 13 / Pos.13)		Ø40-50 - DIN EN 10293 - G34CrMo4 Ø40-50 - DIN EN 10293 - GE 300 Ø40-50 - DIN EN 1563 - EN-GJS-500-7
T 2944	**Dome nut, 30°** (Annex 13 / Pos.14)		Ø12-50 - DIN EN 1562 - EN-GJMW-400-5 Ø12-50 - DIN EN 1562 - EN-GJMW-550-4 Ø12-50 - DIN EN 1562 - EN-GJMW-450-7 Ø12-50 - DIN EN 1563 - EN-GJS-500-7 Ø40-50 - DIN EN 10293 - G34CrMo4 Ø40-50 - DIN EN 10293 - GE 300
T 3002	**Coupler**, center stop (Annex 13 / Pos.15)		Ø12-32 - DIN EN 10025-2 - S355J2 Ø12-32 - DIN EN 10025-2 - S355JR Ø12-32 - DIN EN ISO 683-1 - C 45
T 3003	**Coupler,** standard (Annex 13 / Pos.16)		Ø12-50 - DIN EN 10025-2 - S355J2 Ø12-32 - DIN EN 10025-2 - S355JR Ø12-50 - DIN EN ISO 683-1 - C 45
T 3006	**Contact Coupler** (Annex 14 / Pos.17)		Ø12-50 - DIN EN 10025-2 - S355J2 Ø12-32 - DIN EN 10025-2 - S355JR Ø12-50 - DIN EN ISO 683-1 - C 45
T 3010	**Hexagonal coupler** (Annex 14 / Pos.18)		Ø12-50 - DIN EN 10277-2 - S355J2C+C Ø12-50 - DIN EN 10277-2 - C 45+C
T 3013	**Change over coupler** (Annex 15 / Pos.19)		Ø12-50 - DIN EN 10277-2 - S355J2C+C Ø12-50 - DIN EN 10277-2 - C 45+C
T 3014	**Tension coupler** (Annex 15 / Pos.20)		Ø12-50 - DIN EN 10277-2 - S355J2C+C Ø12-50 - DIN EN 10277-2 - C 45+C
T 3022	**Welding bolt, round** (Annex 16 / Pos.21)		Ø12-50 - DIN EN 10025-2 - S355J2 Ø12-32 - DIN EN 10025-2 - S355JR
T 3026	**Welding bolt, hexagonal** (Annex 17 / Pos.22)		Ø12-50 - DIN EN 10277-2 - S355J2C+C
T 3086	**Thread coupler, center stop** (Annex 18 / Pos.23)		Ø16-32 - WRWRL
T 3087	**Thread coupler** (Annex 18 / Pos.24)		Ø16-32 - WRWRL
T 3102	**Reducing coupler, round** (Annex 19 / Pos.25)		Ø12-50 - DIN EN 10025-2 - S355J2 Ø12-32 - DIN EN 10025-2 - S355JR Ø12-50 - DIN EN ISO 683-1 - C 45

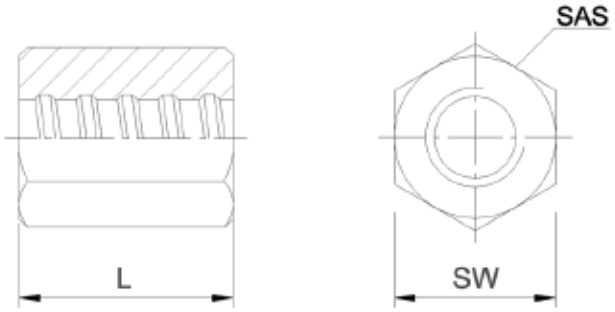
① Anchor plate, cone 30° T1928-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d1 [mm]	d2 [mm]
12	50	8	16	26
14	50	8	18	28
16	60	8	20	30
20	70	12	25	35
25	90	15	30	40
28	100	15	33	45
32	120	20	40	50
40	150	30	47	60
50	190	45	58	75

② Anchor nut T2002-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]
12	22	25
14	27	35
16	32	40
20	36	45
25	41	50
28	46	55
32	55	60
40	65	70
43	70	75
50	80	90

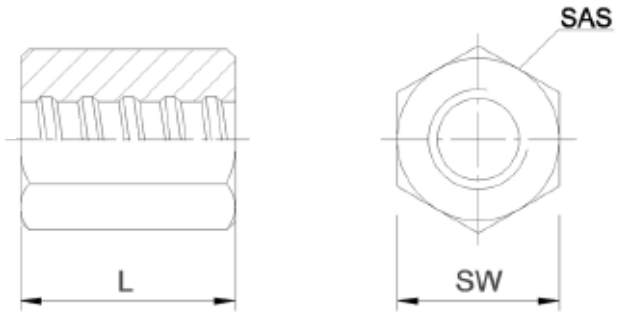
Note: Material specifications – Annex 4 to 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Anchor pate, cone 30°, T1928-Ø**
Anchor nut T2002-Ø

Annex 6

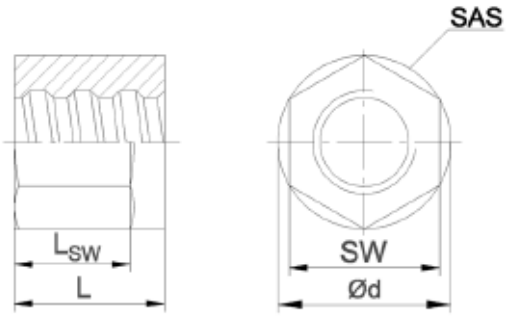
③ **Lock nut,** long **T2003-Ø**



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]
12	19	20
14	27	25
16	32	30
20	32	40
25	41	40
28	41	45
32	50	50
40	60	65
43	70	65
50	80	80

④ **Lock nut,** long, cast, **T2003-ØC**

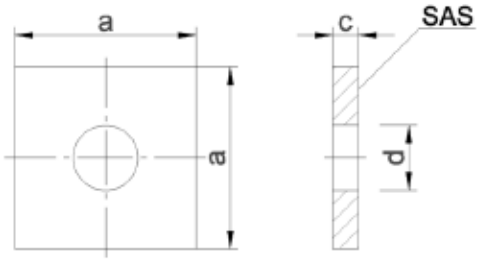


SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	L_{SW} [mm]	Ød [mm]
12	19	20	15	22
14	27	25	20	31
16	32	30	25	37
20	32	40	35	37
25	41	40	35	47
28	41	45	40	47
32	50	50	40	58
40	60	65	50	69
43	70	65	50	81
50	80	80	60	92

Note: Material specifications – Annex 4 to 5

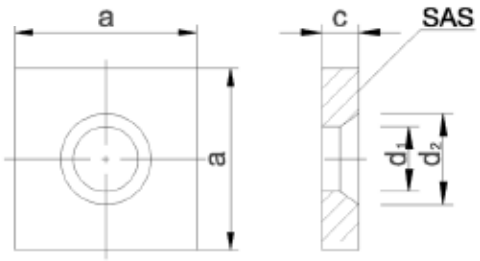
5 Anchor plate, T2008-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d [mm]
40	120	17	45
50	150	20	58

6 Anchor plate, cone, 55° T2011-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d_1 [mm]	d_2 [mm]
16	60	10	25	33
20	70	12	30	44
25	90	15	35	49
28	100	15	40	54
32	120	20	52	60
40	150	30	65	76
43	160	40	75	93
50	190	45	83	96

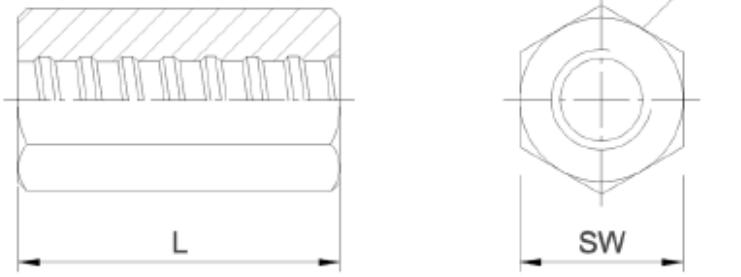
Note: Material specifications – Annex 4 to 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Anchor plate, T2008-Ø**
Anchor plate, cone, 55°, T2011-Ø

Annex 8

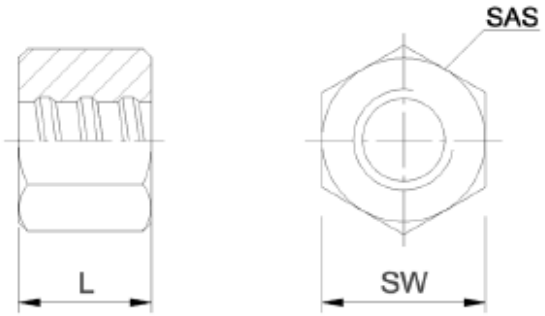
⑦ **Anchor nut,** long
T2024-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]
12	22	35
14	27	45
16	32	50
20	32	65
25	41	75
28	41	85
32	50	90

⑧ **Lock nut,** short,
T2040-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]
14	27	15
16	32	20
20	32	20
25	41	20
28	41	25
32	50	30
40	60	35
43	70	40
50	80	50

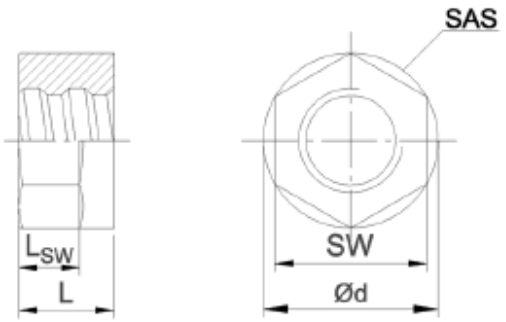
Note: Material specifications – Annex 4 to 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Anchor nut, long, T2024-Ø**
Lock nut, short, T2040-Ø

Annex 9

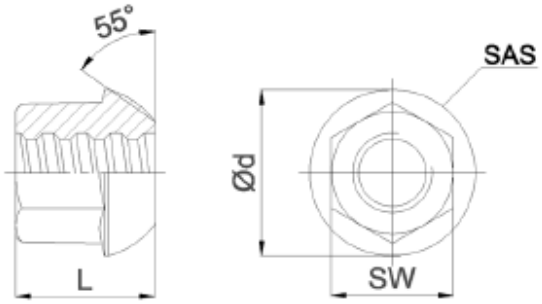
⑨ **Lock nut,** short, cast
T2040-ØC



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	L_{SW} [mm]	Ød [mm]
16	32	20	-	-
20	32	20	-	-
25	41	20	-	-
28	41	25	-	-
32	50	30	25	58
40	60	35	29	69
43	70	40	34	81
50	80	50	42	92

⑩ **Dome nut 55°,**
T2044-ØC



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	Ød [mm]
16	27	33	35
20	36	42	49
25	41	45	55
28	41	54	62
32	46	57	70
40	60	70	88
43	70	80	100
50	80	85	107

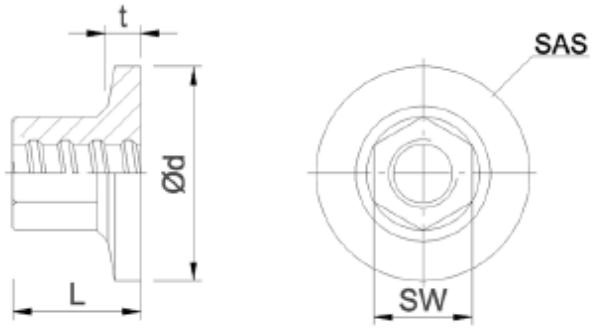
Note: Material specifications – Annex 4 to 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Lock nut, short, cast, T2040-ØC**
Dome nut 55°, T2044-ØC

Annex 10

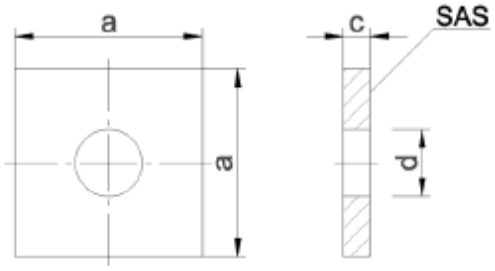
11 Anchor piece T2073-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	Ød [mm]	t [mm]
12	30	33	50	8
14	30	33	50	8
16	30	33	50	8
20	36	40	65	10
25	41	45	70	10
28	46	50	90	12
32	50	60	100	20
40	65	70	120	17
43	70	80	130	22
50	80	85	150	20

12 Anchor plate, flat T2139-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d [mm]
12	50	8	16
14	50	8	18
16	60	8	20
20	70	12	25
25	90	15	30
28	100	15	33
32	120	20	40
40	150	30	47
43	160	40	50
50	190	45	58

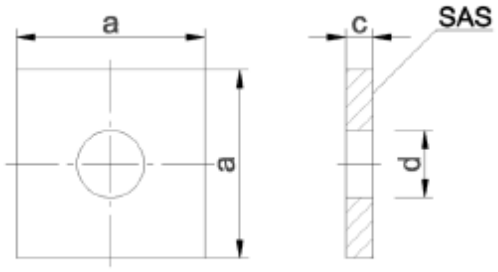
Note: Material specifications – Annex 4 to 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Annex 11

Accessories: **Anchor piece T 2073-Ø**
Anchor plate T 2139-Ø

26 Anchor plate, flat T2140-Ø

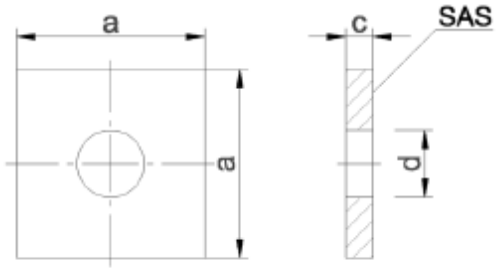


SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d [mm]
12	25	8	16
14	30	8	18
16	35	10	20
20	45	12	25
25	50	15	30
28	60	20	33
32	65	20	40
40	80	25	47
43	90	25	50
50	105	30	58

Note: Material specifications – Annex 5

27 Anchor plate, flat T2141-Ø

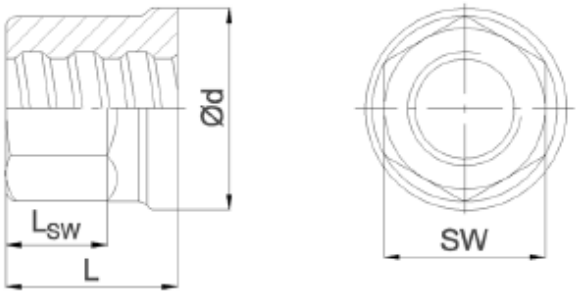


SAS = Manufacturer's Mark

Nenn-Ø [mm]	a [mm]	c [mm]	d [mm]
12	30	10	16
14	35	12	18
16	40	12	20
20	50	15	25
25	60	20	30
28	65	25	33
32	75	25	40
40	95	30	47
43	100	35	50
50	120	35	58

Note: Material specifications – Annex 5

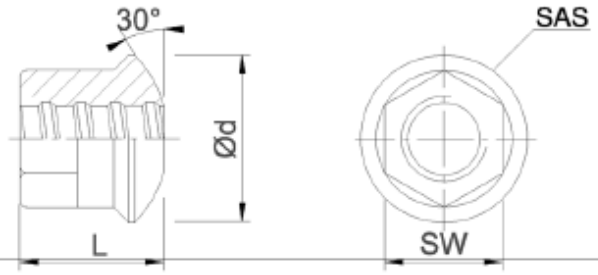
13 **Anchor nut** with flange
T2163-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	L_{SW} [mm]	Ød [mm]
40	65	70	40	85
43	70	80	50	90
50	80	85	50	100

14 **Dome nut,** 30°
T2944-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	Ød [mm]
12	30	33	40
14	30	33	40
16	30	33	40
20	36	40	51
25	41	45	54
28	41	50	58
32	50	60	62
40	65	70	85
50	80	85	100

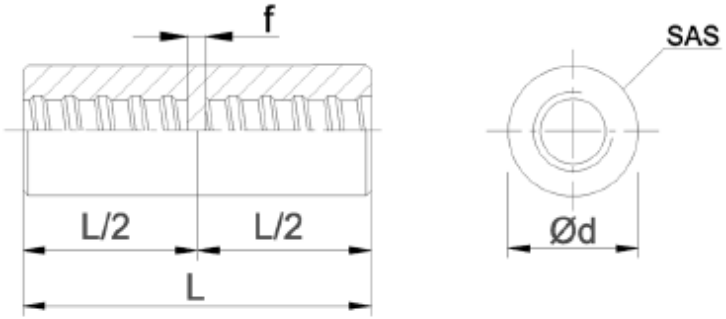
Note: Material specifications – Annex 4 and 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Anchor nut with flange T 2163-Ø**
Dome nut 30°, T 2944-Ø

Annex 13

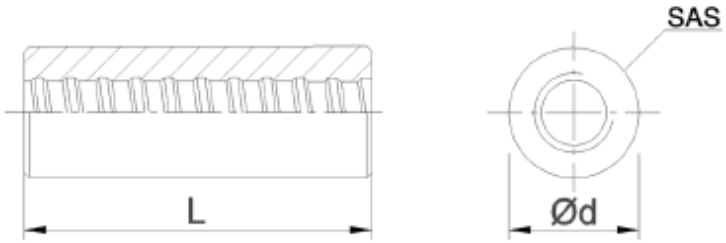
15 **Coupler,** standard with centre stop
T3002-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	Ød [mm]	L [mm]	f [mm]
12	22	60	5
14	27	75	5
16	32	90	5
20	36	105	5
25	40	115	6
28	45	125	6
32	52	140	6

16 **Coupler,** standard
T3003-Ø

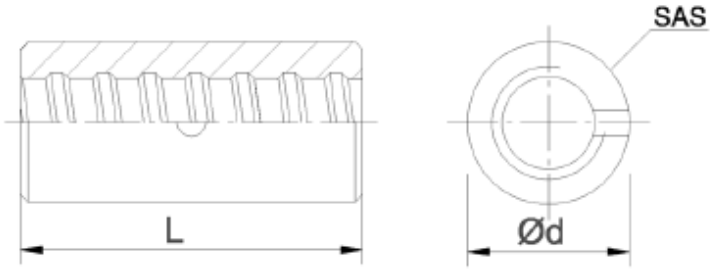


SAS = Manufacturer's Mark

Nenn-Ø [mm]	Ød [mm]	L [mm]
12	22	60
14	27	75
16	32	90
20	36	105
25	40	115
28	45	125
32	52	140
40	65	160
43	80	170
50	80	200

Note: Material specifications – Annex 4 and 5

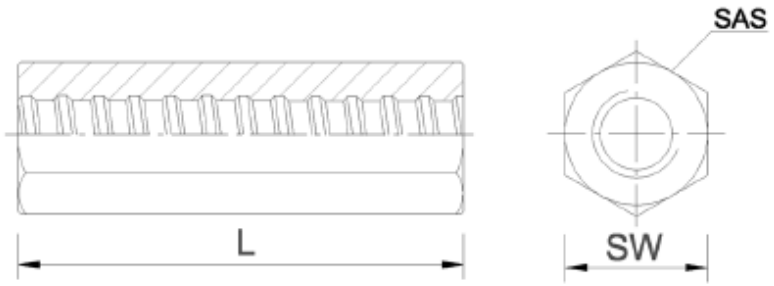
17 Contact coupler, T3006-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	Ød [mm]	L [mm]
20	32	70
25	36	80
28	40	85
32	45	90
40	54	120
43	60	130
50	65	160

18 Hexagonal coupler, long T3010-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]
12	22	80
14	27	100
16	32	120
20	32	140
25	41	160
28	41	180
32	50	180
40	65	210
43	70	220
50	80	240

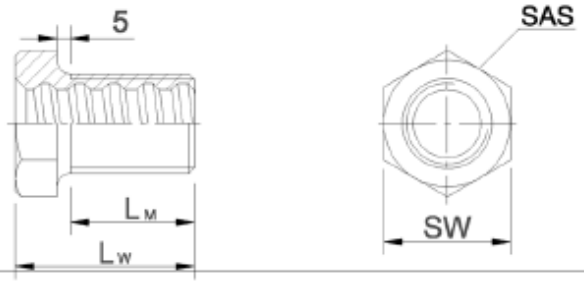
Note: Material specifications – Annex 4 and 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Contact coupler, T 3006-Ø**
Hexagonal coupler, long T 3010-Ø

Annex 15

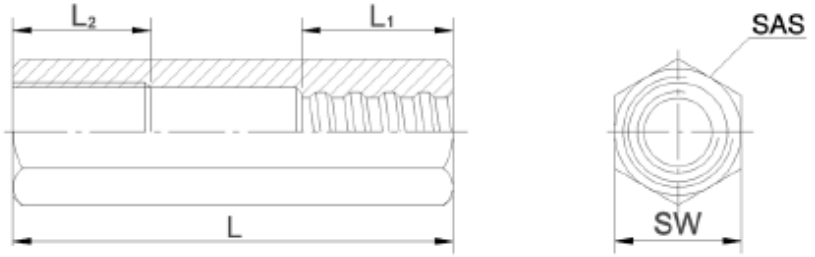
19 Change over coupler, T3013-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L_W [mm]	L_M [mm]
12	32	40	22
14	32	45	26
16	36	50	30
20	41	60	40
25	46	65	45
28	50	70	50
32	60	80	55
40	80	95	65
43	90	105	70
50	100	110	80

20 Tension coupler T3014-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	L_1 [mm]	L_2 [mm]
12	32	105	35	30
14	32	115	40	35
16	36	125	45	40
20	41	145	50	45
25	46	160	55	50
28	50	175	60	55
32	60	190	65	60
40	80	225	75	70
43	90	245	80	80
50	100	270	90	90

Turnbuckle T3105-Ø consists of change over coupler T3013-Ø and tensioning coupler T3014-Ø

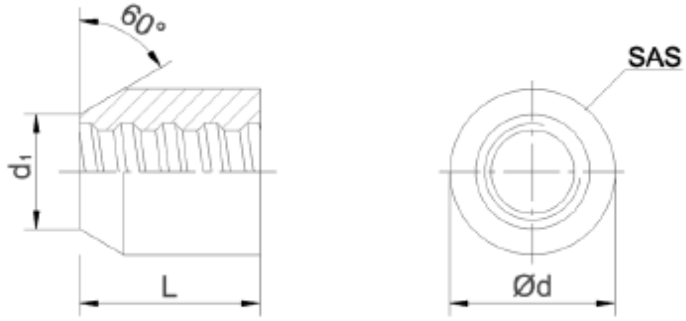
Note: Material specifications – Annex 4 and 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Change over coupler, T 3013-Ø**
Tensioning coupler, T 3014-Ø

Annex16

21 **Welding bolt,** round
T3022-Ø

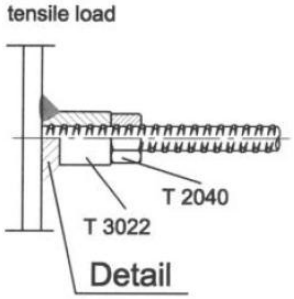


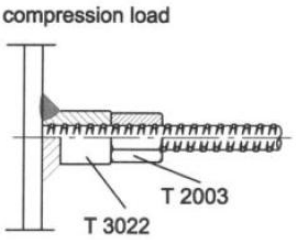
SAS = Manufacturer's Mark

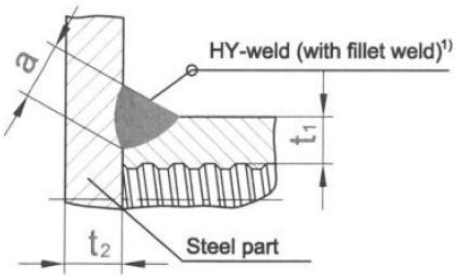
Nenn-Ø [mm]	Ød [mm]	L [mm]	d_1 [mm]
12	30	30	20
14	36	40	25
16	40	45	30
20	45	50	31
25	50	55	38
28	55	60	38
32	60	65	42
40	80	80	57
43	90	90	65
50	90	90	65

Note: Material specifications – Annex 4 and 5

Welding connection







[1)] if (Ød-d_1)/2<a

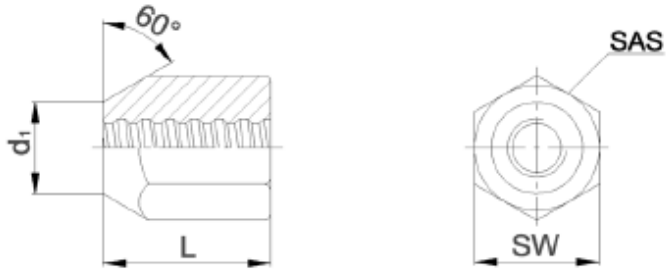
Nom-Ø [mm]	Wall thickness t_1 [mm]	a [mm]
12	8	Preparation acc. to DIN EN ISO 9692-1 Verification acc. to DIN EN 1090-2
14	9	
16	11	
20	11	
25	11	
28	12	
32	12	
40	17	
43	20	
50	17	

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Annex 17

Accessories: **Welding bolt, round T 3022-Ø**

22 **Welding bolt,**
hexagonal
T3026-Ø



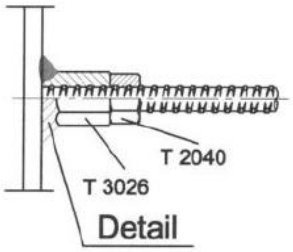
SAS = Manufacturer's Mark

Nenn-Ø [mm]	SW [mm]	L [mm]	d_1 [mm]
12	32	40	20
14	36	50	25
16	41	55	30
20	46	65	31
25	50	75	38
28	55	85	38
32	60	90	42
40	80	100	54
43	80	100	65
50	90	120	70

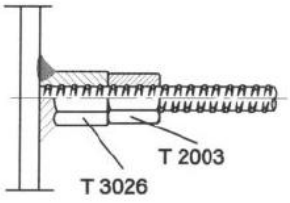
Note: Material specifications – Annex 4 and 5

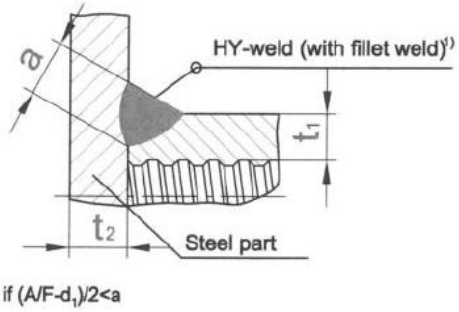
Welding connection

tensile load



compression load





[1)] if $(A/F-d_1)/2<a$

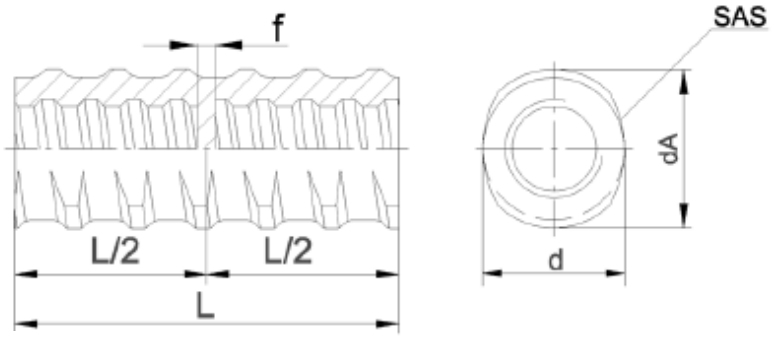
Nom-Ø [mm]	Wall thickness t_1 [mm]	a [mm]
12	8	Preparation acc. to
14	9	DIN EN ISO 9692-1
16	11	Verification acc. to
20	11	DIN EN 1090-2
25	11	
28	12	
32	12	
40	17	
43	20	
50	17	

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Annex 18

Accessories: **Welding bolt, hexagonal T 3026-Ø**

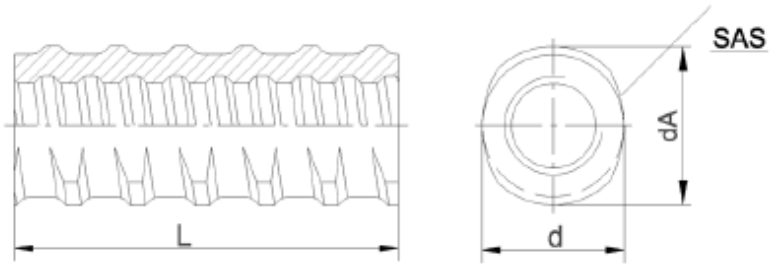
23 **Thread coupler with** center stop
T3086-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	d [mm]	dA [mm]	L [mm]	f [mm]
16	26,5	31	90	5
20	32	37	105	5
25	40	46	115	6
28	47	53	125	6
32	57	64	140	6

24 **Thread coupler**
T3087-Ø



SAS = Manufacturer's Mark

Nenn-Ø [mm]	d [mm]	dA [mm]	L [mm]
16	26,5	31	90
20	32	37	105
25	40	46	115
28	47	53	125
32	57	64	140

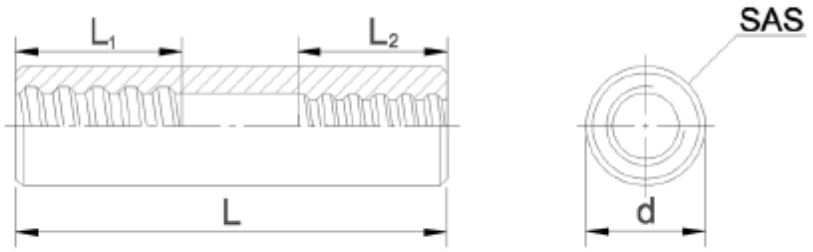
Note: Material specifications – Annex 4 and 5

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Accessories: **Thread coupler with center stop T 3086-Ø**
Thread coupler, T 3087

Annex 19

25 **Reducing coupler,** round
T3102-Ø



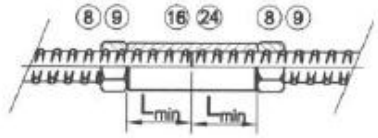
SAS = Manufacturer's Mark

Nenn-Ø [mm]	Ød [mm]	L [mm]	L_1 [mm]	L_2 [mm]
16/12	32	100	45	30
16/14	32	120	45	40
20/16	36	130	50	45
25/20	40	150	55	50
28/20	45	150	50	50
28/25	45	170	65	55
32/25	52	180	70	55
32/28	52	180	70	65
40/32	65	210	80	70
43/40	80	225	85	80
50/40	80	240	100	80
50/43	80	250	100	85

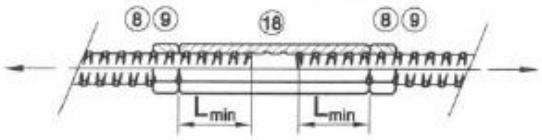
Note: Material specifications – Annex 4 and 5

Coupler connection - tensile load

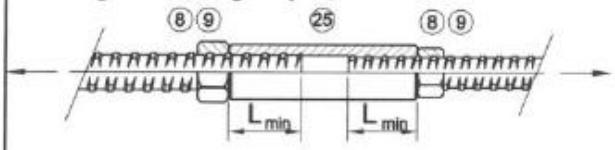
Drawing 1: Coupler, standard Ø12 - 50; thread coupler Ø12 - 32



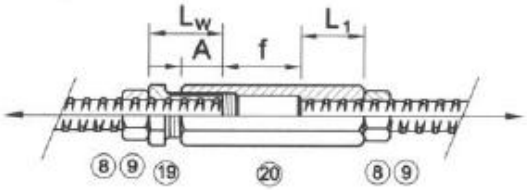
Drawing 2: Hexagonal coupler, long Ø12 - 50



Drawing 3: Reducing coupler, round Ø12 - 50



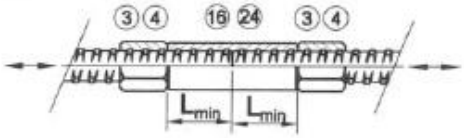
Drawing 5: Turnbuckle Ø12 - 50



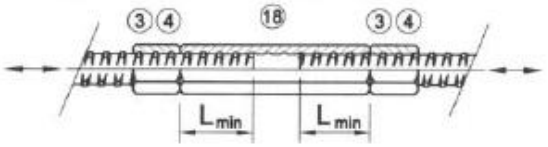
Thread bar	Ø [mm]	12	14	16	20	25	28	32	40	43	50
	L1 [mm]	35	40	45	50	55	60	65	75	80	90
Screw	LW [mm]	40	45	50	60	65	70	80	95	105	110
penetration	min A [mm]	19	22	25	30	35	40	45	50	60	70
Thread bar	f [mm]	51	53	55	65	70	75	80	100	105	110
distance	(+/- 5mm)										

Coupler connection - compression and alternating load

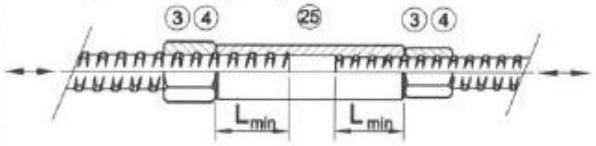
Drawing 6: Coupler, standard Ø12 - 50; thread coupler Ø12 - 32



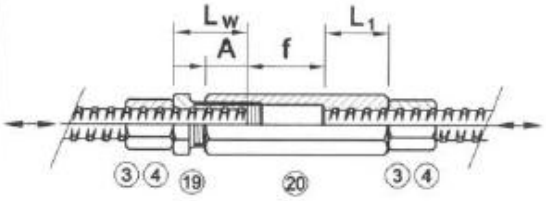
Drawing 7: Hexagonal coupler, long Ø12 - 50



Drawing 8: Reducing coupler, round Ø12 - 50



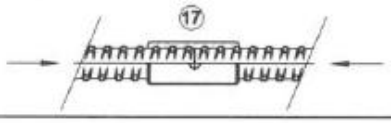
Drawing 10: Turnbuckle Ø12 - 50



Thread bar	Ø [mm]	12	14	16	20	25	28	32	40	43	50
	L1 [mm]	35	40	45	50	55	60	65	75	80	90
Screw	LW [mm]	40	45	50	60	65	70	80	95	105	110
penetration	min A [mm]	19	22	25	30	35	40	45	50	60	70
Thread bar	f [mm]	51	53	55	65	70	75	80	100	105	110
distance	(+/- 5mm)										

Coupler connection - compression load

Drawing 11: Contact pile - Contact coupler Ø20 - 50;



Note: Legend accessories s. Annex 1
The minimum screw penetration L_{min} is the half of the length of the standard coupler T 3003 of the respective diameter (see Annex 13, Pos. 16)

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

Coupler connection

Annex 21

Tension load

Bild 1 Ø12 - 50

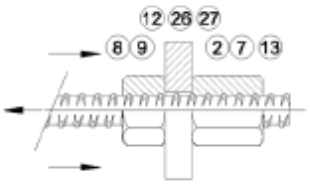


Bild 2 Ø12 - 50

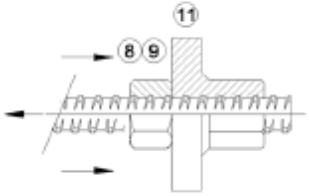
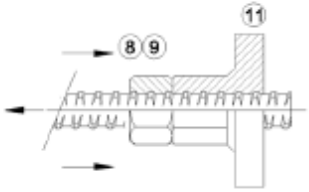


Bild 3 Ø12 - 50



Compression load

Bild 4 Ø12 - 50

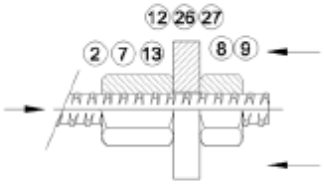


Bild 5 Ø12 - 50

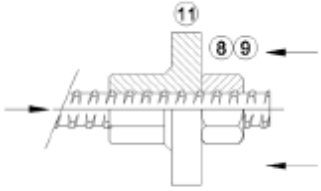
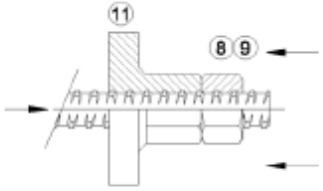


Bild 6 Ø12 - 50



Alternating load

Bild 7 Ø12 - 50

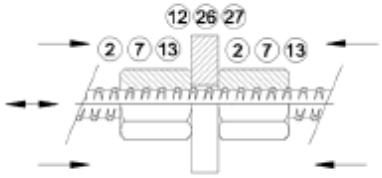


Bild 8 Ø12 - 50

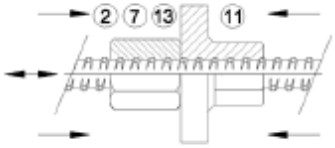
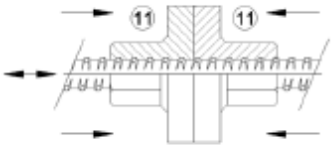


Bild 9 Ø12 - 50



Supported with angular compensation

Bild 10 Ø16 - 50

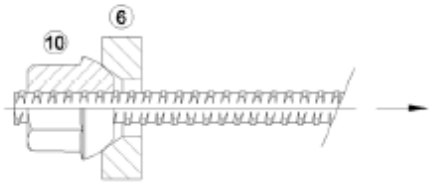
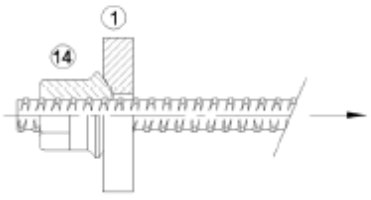


Bild 11 Ø12 -50



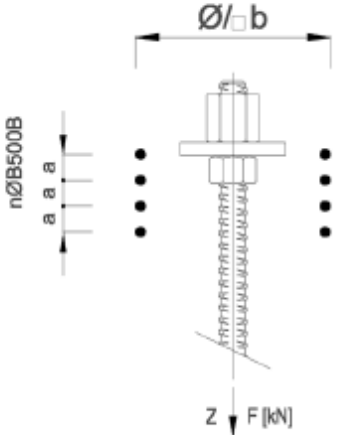
Note: accessories Annex 1

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

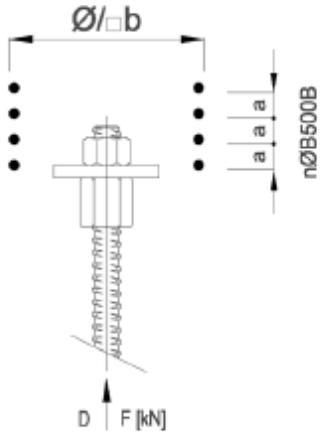
Installation of the End Anchorages

Annex 22

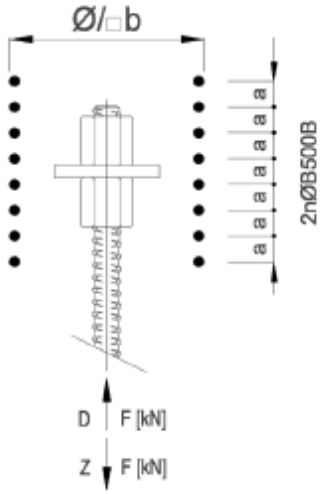
Tension load



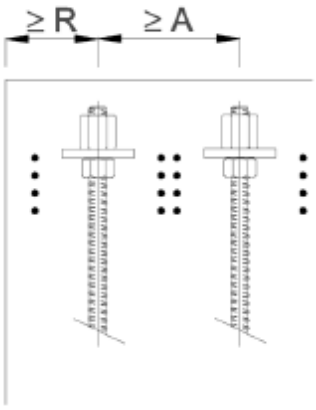
Compression load



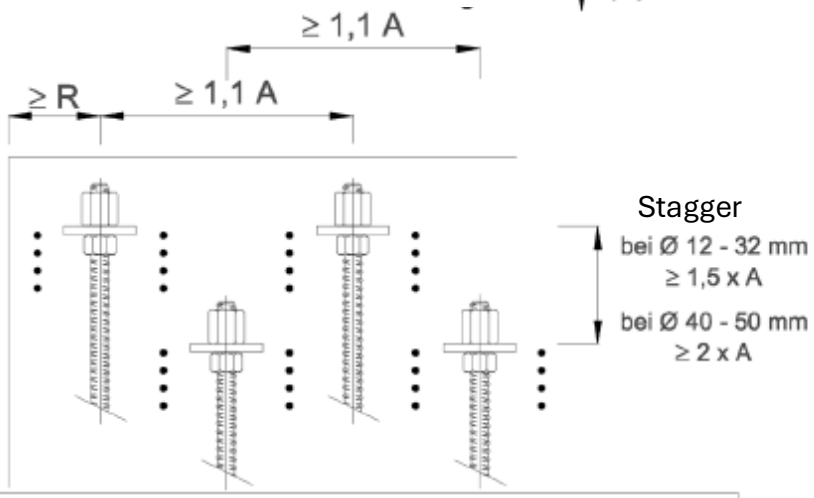
Alternating load



Non-staggered anchoring



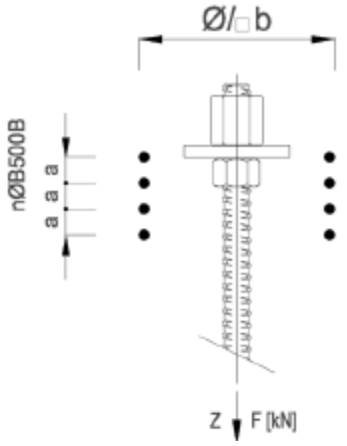
Staggered anchoring



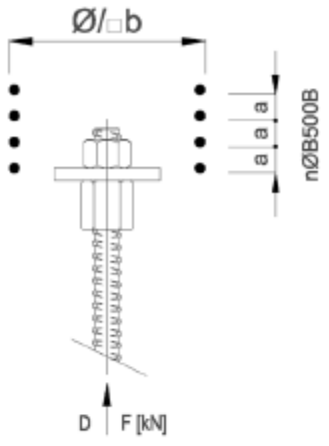
Thread bar	Centre distance [1]	Edge distance [2]	Additional reinforcement [3] (B500B)				
Ø [mm]	A [mm]	R [mm]	n	Ø [mm]	b [mm]	a [mm]	α_1 [4] [mm]
12	80	A/2 + nom c	2	6	60	25	-
14	90	A/2 + nom c	3	6	65	30	-
16	100	A/2 + nom c	3	6	80	30	-
20	130	A/2 + nom c	3	6	100	30	-
25	150	A/2 + nom c	4	6	130	40	-
28	165	A/2 + nom c	4	6	145	40	-
32	180	A/2 + nom c	3	8	155	50	-
40	250	A/2 + nom c	3	10	220	45	0,4
43	260	A/2 + nom c	5	10	235	45	0,4
50	270	A/2 + nom c	5	10	250	45	0,4

1) Centre distances between anchorages may be reduced in one direction by up to 15%, the centre distances in the other, vertical direction must be increased by the identical percentage
2) Concrete cover nom c according to DIN EN 1992-1-1
3) If the centre and edge distances are doubled, an additional reinforcement is not required
4) α_1 - factor to take the type of anchorage into account according to DIN EN 1992-1-1, section 8.4.4

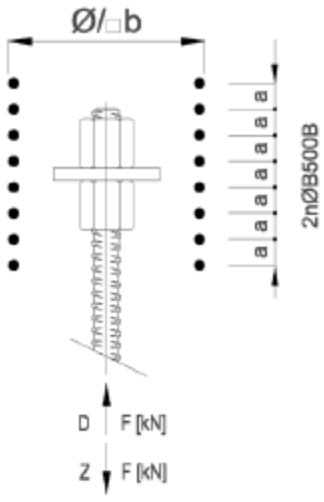
Tension load



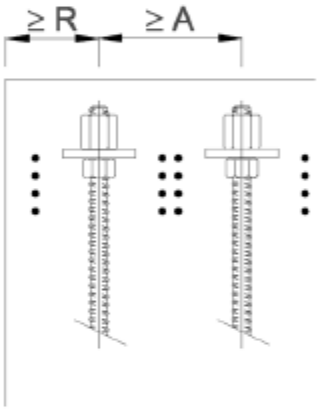
Compression load



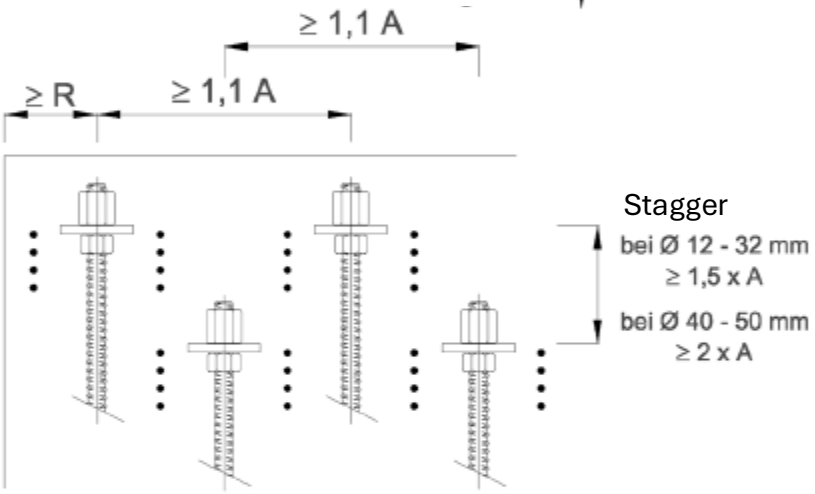
Alternating load



Non-staggered anchoring



Staggered anchoring



Thread bar	Centre distance	Edge distance	Additional reinforcement (spiral B500B)			
Ø [mm]	A [mm]	R [mm]	n	Ø [mm]	b [mm]	a [mm]
12	120	A/2 + nom c	2	6	75	14
14	140	A/2 + nom c	2	6	90	16
16	160	A/2 + nom c	2	6	100	18
20	200	A/2 + nom c	2	6	125	23
25	245	A/2 + nom c	3	6	155	28
28	275	A/2 + nom c	3	6	170	31
32	315	A/2 + nom c	4	8	195	36
40	395	A/2 + nom c	4	10	240	44
43	425	A/2 + nom c	5	10	260	48
50	495	A/2 + nom c	5	12	295	50

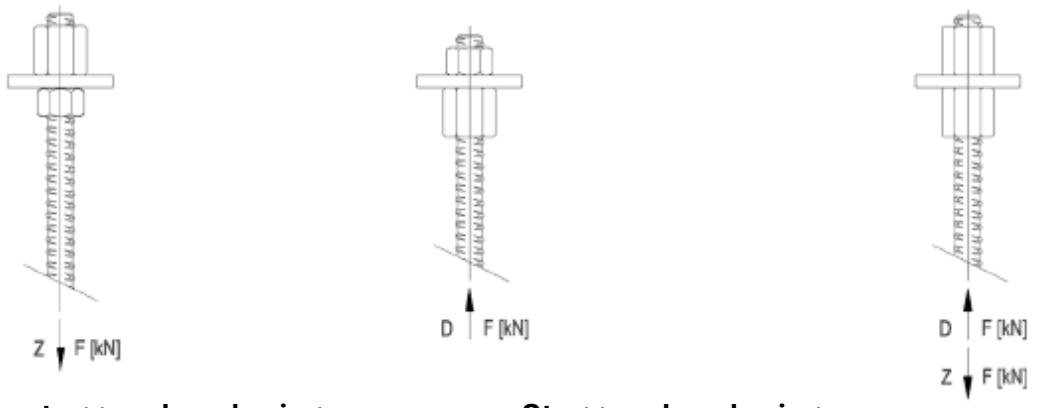
Concrete cover nom c acc. DIN EN 1992-1-1

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

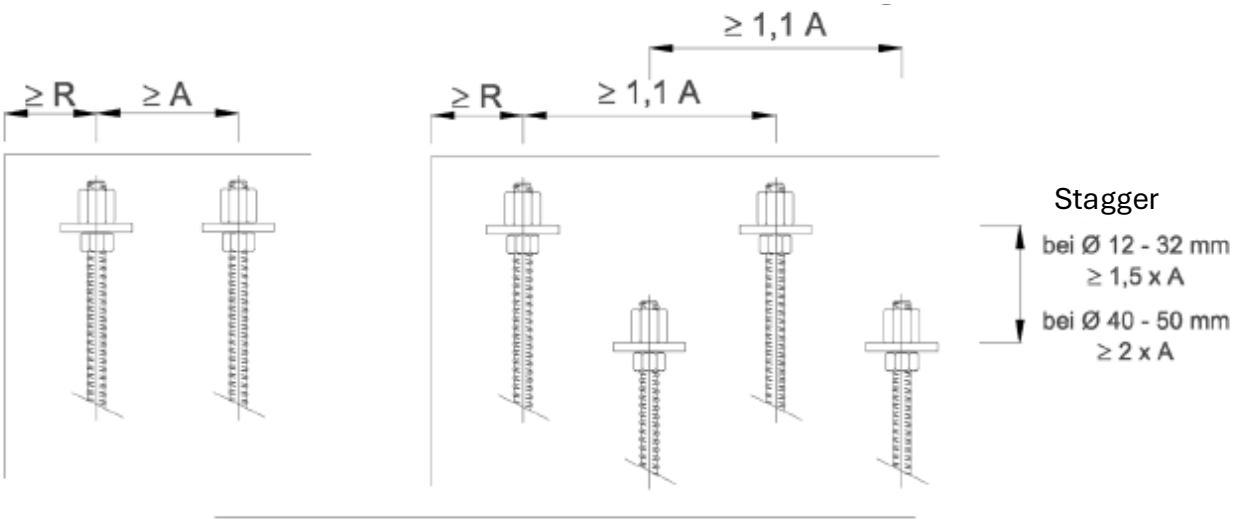
Axis and Edge Distances T2140-Ø
Concrete strength ≥ C25/30

Annex 24

Tension load **Compression load** **Alternating load**



Non-staggered anchoring **Staggered anchoring**



Thread bar	Centre distance	Edge distance
Ø [mm]	A [mm]	R [mm]
12	110	A/2 + nom c
14	125	A/2 + nom c
16	145	A/2 + nom c
20	180	A/2 + nom c
25	225	A/2 + nom c
28	250	A/2 + nom c
32	285	A/2 + nom c
40	355	A/2 + nom c
43	380	A/2 + nom c
50	445	A/2 + nom c

Concrete cover nom c acc. DIN EN 1992-1-1

Threaded Coupler Connections and Anchorages for Concrete Reinforcing Bars with Threaded Ribs, SAS 500 (B500B), Nominal Diameter 12 to 50 mm

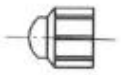
Axis and Edge Distances T2141-Ø
Concrete strength ≥ C25/30

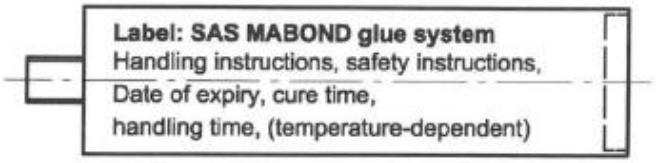
Annex 25

SAS Glue system: MABOND

Glue cartridge
Vinyl ester consisting of 2 components
A component (resin)
B component (hardener)

Screw cap





Static mixer

Table 1: Handling times and cure times

Temperature	Maximum handling time	Minimum cure time	
		Dry coupler connection	Wet coupler connection
+ 40°C	1.4 min	15 min	30 min
+ 35°C bis + 39°C	1.4 min	20 min	40 min
+ 30°C bis + 34°C	2 min	25 min	50 min
+ 20°C bis + 29°C	4 min	45 min	1:30 h
+ 10°C bis + 19°C	6 min	1:20 h	2:40 h
+ 5°C bis + 9°C	12 min	2:00 h	4:00 h
0°C bis + 4°C	20 min	3:00 h	6:00 h
- 4°C bis - 1°C	45 min	5:30 h	11:00 h [1)]
- 5°C	90 min	5:30 h	11:00 h [1)]

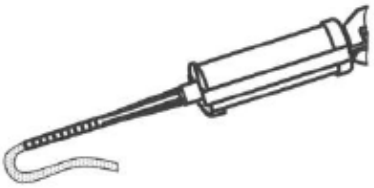
[1)] It shall be ensured that the coupling is free of any ice formation

Table 2: Glue quantities

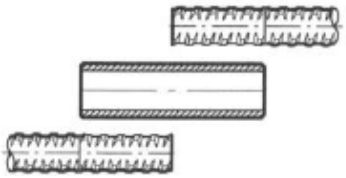
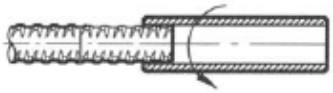
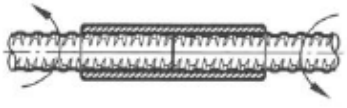
	coupler connection	pre torqued coupler connection
Thread bar diameter	Glue quantity	Glue quanitiy
[mm]	[ml]	[ml]
12	3,2	1,6
14	4,8	2,4
16	6,5	3,3
20	11,3	5,7
25	13,0	6,5
28	16,0	8,0
32	23,0	11,5

Screwed couplers and anchorages of reinforcing bars with thread ribs SAS 500 (B500B), nominal diameters: 12 bis 50 mm	**Annex 26**
Glued couplings: Product and application instructions	

1. Preparation of the SAS MABOND glue system

1.1		Do not use glue beyond its expiration date! Remove the screw cap from the glue cartridge. Screw the static mixer onto the glue cartridge. Use a new static mixer for every new cartridge. Never use the cartridge without static mixer and helix mixer.
1.2		Insert the glue cartridge into the applicator gun and dispense glue (approx. 2 full strokes or an approx. 10 cm long glue strand) until the dispensed injection glue shows an constant grey colour. This first glue feed may not be used.

2. Assembly of glued standard splice (glued on both sides on construction site)

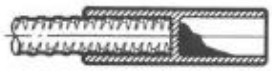
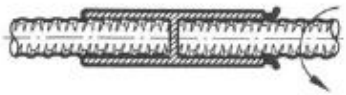
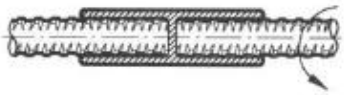
2.1		Mark both bars (half the length of the standard coupler T3003 (16) or tread coupler T3087 (24))
2.2		Screw the coupler onto bar 1 (two thread pitches)
2.3		Fill in glue according to Table 2, Annex 23
2.4		Screw in bar 2 until glue exits from one coupler end
2.5		Further screw in the coupler up to the marking on bar 1
2.6		Screw in bar 2 until: - The faces of bar 1 and 2 bear against each other - The markings on bar 1 and 2 are identically positioned in relation to the coupler - Glue exits from both coupler ends
2.7		Torque the connection (bar 1 against bar 2) using the torque specified in Annex 1 "glued coupling"

Screwed couplers and anchorages of reinforcing bars with thread ribs
SAS 500 (B500B), nominal diameters: 12 bis 50 mm

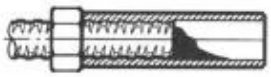
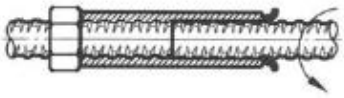
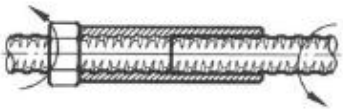
Glued couplings:
Assembly instructions coupling system

Annex 27

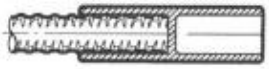
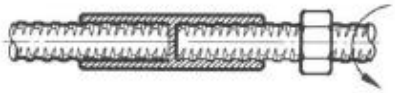
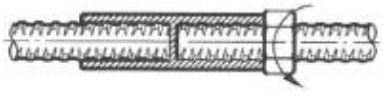
3. Assembly of glued splices with centre stop (pre-glued half splice)

3.1		Delivered as half splice glued on one end. Coupler with centre stop (15) or threaded coupler with centre stop. (23) Fill in glue according to Table 2, Annex 23
3.2		Screw in the connecting bar until: - The face of the connecting bar makes contact - Glue exits from the coupler end
3.3		Locking of the connection Glued end using the torque specified in Annex 1 "glued coupling". To assemble the pre-fabricated half splice Torque as specified in Annex 1 "glued coupling"

4. Assembly of glued splice (pre-locked half splice)

4.1		Delivered as half splice pre-locked on one end Coupler, standard (16) or threaded coupler. (24) Fill in glue according to Table 2, Annex 23
4.2		Screw in the connecting bar until: - The face of the connecting bar makes contact - Glue exits from the coupler end
4.3		Torque the connection Glued end using the torque specified in Annex 1 "glued coupling". To assemble the pre-fabricated half splice Torque as specified in Annex 1 "glued splice"

5. Assembly of the locked splice with centre stop (pre-glued half splice)

5.1		Delivered as half splice pre-glued on one end Coupler with centre stop (15) or threaded coupler with centre stop (23)
5.2		Screw in the connecting bar until: - The face of the connecting bar makes contact
5.3		Screw on the lock nut and torque Torque as specified in Annex 1 "torqued coupling"

Screwed couplers and anchorages of reinforcing bars with thread ribs
SAS 500 (B500B), nominal diameters: 12 bis 50 mm

Glued couplings:
Assembly instructions coupling system

Annex 28