GEWI® Threadbar System
High Yield Steel for Reinforcement of Concrete
Contents

GEWI® Threadbar System ................................................................. 4
Technical Data for the GEWI® Threadbar ...................................... 4
Couplers for GEWI® Threadbars .................................................. 5
Anchorages for GEWI® Threadbars .............................................. 5
GEWI® Threadbar Accessories .................................................. 6
Corrosion Protection .................................................................... 6
GEWI® Threadbar – Connecting Reinforcement ......................... 7
GEWI® Threadbar – Prefabricated Connecting Reinforcement ....... 8
GEWI® Threadbar – Prefabricated Connecting Reinforcement ....... 9
GEWI® Threadbar – Typical Applications for Reinforcing Concrete 10
GEWI® Threadbar – Further Applications ................................... 10
GEWI® Threadbar – Mounting Connecting Reinforcement .......... 11
GEWI® Threadbar – Assembly Instructions for Couplers ............. 11
Key features of the system are:

- Fully threaded bar – can be cut and coupled at any point.
- Robust threadform – ideal for construction site use.
- Coarse pitch threadform with two flats – ensures self-cleaning of thread.
- Fully galvanized systems – galvanized threadbars and accessories also available from stock.

The GEWI® Threadbar System consists of high yield GEWI® screwable steel and corresponding coupling and anchoring accessories, which enable easy connections to and anchorages of GEWI® steel. In accordance with the German certificates of approval Z-1.5-76, Z-1.5-149 and Z-1.5-2.

GEWI® Steel High Yield Threadbar is a highly ductile which features a coarse left-hand thread over its full length. The system is proven worldwide and offers versatility in a range of applications.

Manufactured in accordance with the German Certificate of Approval issued by the Deutsches Institut für Bautechnik, the system also offers general conformance with BS 4449:1997 (Carbon Steel Bars for Prestressing of Concrete).

The minimum specified characteristic yield strength is 500N/mm² for bar diameters 16 - 50mm and 555N/mm² for the 63.5mm diameter bar. 16 - 50mm bars can be welded using appropriate industry practices relative to the carbon content of the steel. Welding of the higher grade 63.5mm diameter bar is not recommended.

### Technical Data for the GEWI® Threadbar

<table>
<thead>
<tr>
<th>GEWI® Bar Diameter [mm]</th>
<th>Steel Grade Yield $f_y$/Tensile Strength $f_t$ ¹</th>
<th>Ultimate Tensile Force $F_t$ ²</th>
<th>Yield Force $F_y$</th>
<th>Cross Sectional Area [mm²]</th>
<th>Diameter over Threads [mm]</th>
<th>Bar Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>500/550</td>
<td>111</td>
<td>100</td>
<td>210</td>
<td>19</td>
<td>1.58</td>
</tr>
<tr>
<td>20</td>
<td>500/550</td>
<td>173</td>
<td>157</td>
<td>314</td>
<td>23</td>
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<tr>
<td>25</td>
<td>500/550</td>
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<td>245</td>
<td>491</td>
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<td>500/550</td>
<td>339</td>
<td>308</td>
<td>616</td>
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<td>500/550</td>
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<td>402</td>
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<td>982</td>
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</tr>
<tr>
<td>63.5</td>
<td>555/700</td>
<td>2,219</td>
<td>1,758</td>
<td>3,167</td>
<td>69</td>
<td>24.80</td>
</tr>
</tbody>
</table>

¹) GEWI® Threadbars also meet the requirements according UK standard (500/600 N/mm²) and Austrian standard (550/620 N/mm²).

²) For geotechnical applications, 75% of the ultimate tensile force $F_t$ may be used for testing

Modulus of elasticity: $E = 205,000 \text{N/mm}^2 \pm 5\%$.

Stock lengths: All bar diameters 12.0m. Tolerances $\pm$ 100mm. Special lengths up to 15.0m can be ordered. All bar diameters can be cut to length to suit customer requirements, or can be supplied bent.
Couplers for GEWI® Threadbars

Couplers allow GEWI® Threadbars to be coupled or extended reliably and efficiently. The choice of the type of coupler used depends on the application.

The static coupler is used either in constant tension applications or in a combination of tension and compression loading. The longer dynamic couplers are to be used when vibration and cyclical load reversals are anticipated. Lock nuts must be used at each end of the couplers. Torqued to a predetermined value, they prevent the development of cracks in structural concrete.

Coupler strength = 1.3 x Yield Strength of the bar in accordance with German Approval Certificates. According to UK Standards, this equates to 1.08 of Ultimate Strength.

Couplers for GEWI® Threadbars

- Anchorages which are to be embedded in concrete can be carried out using an anchor nut (hexagonal nut), a steel plate and a lock nut.
- In addition, an anchorage can be realized using a flanged nut and a lock nut.
- For the connection of GEWI® Threadbars with steel structures, a weldable anchor piece is available.

- For the connection of GEWI® Threadbars with different diameters, special transition couplers are available. In addition, DSI provides solutions for connecting fixed and therefore not pivotable GEWI® bars.

- This can be achieved by using grub screws and a center pin. The right position of the GEWI® Threadbars within the coupler can be checked easily using colored marks.

- However it is important that the two threadbars meet centrally within the coupler and remain so during installation to ensure a correct load transfer.

- The static coupler is used either in constant tension applications or in a combination of tension and compression loading. The longer dynamic couplers are to be used when vibration and cyclical load reversals are anticipated. Lock nuts must be used at each end of the couplers. Torqued to a predetermined value, they prevent the development of cracks in structural concrete.

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- For the connection of GEWI® Threadbars with steel structures, a weldable anchor piece is available.
## GEWI® Threadbar Accessories

### Nominal Diameter

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Flat Plate</th>
<th>Hexagonal Nut</th>
<th>Recessed Plate</th>
<th>Domed Nut</th>
<th>Formed Plate</th>
<th>Hemisphere</th>
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<tbody>
<tr>
<td>[mm]</td>
<td>Stock Size *</td>
<td>AF</td>
<td>Length</td>
<td>Stock Size *</td>
<td>AF</td>
<td>Length</td>
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* Anchor plates can be supplied in any size to suit customer requirements.

### Torque

<table>
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<tr>
<th>Diameter</th>
<th>Static Coupler(a)</th>
<th>Static Coupler(a)</th>
<th>Dynamic Coupler(b)</th>
<th>Lock Nut</th>
<th>Flanged Anchor Nut</th>
<th>Torque</th>
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<tbody>
<tr>
<td>[mm]</td>
<td>Dia.</td>
<td>Length</td>
<td>Dia.</td>
<td>Length</td>
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<td>106</td>
<td>260</td>
<td>102</td>
<td>260</td>
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</table>

* Torque applied to lock nut using hydraulic torque wrench.

(a) Cast coupler
(b) Machined coupler

### Corrosion Protection

- Galvanizing acc. to EN ISO 1461 : 1999
- Rock Bolts
- Soil Nails
- Temporary Ground Anchors
- Double Corrosion Protection acc. to BS 8081 : 1989
  - Permanent Soil Nails
  - Permanent Ground Anchors
The GEWI® connecting reinforcement consists of prefabricated GEWI® couplers for the use in construction joints.

The transmission of the forces of the construction joint to the reinforcement of the adjacent concrete takes place by bond.

The GEWI® connecting systems with straight reinforcement consist of coupler bars type M and coupler bars type A. These are provided in three standard lengths which cover the range of the required embedment length.

The GEWI® connecting bar type M is to be fixed to the formwork. For this purpose, special plugs are available which can be nailed on the formwork.

In case of lack of free space, can be shortened the connecting reinforcement by using:
- Hook Bar Type W
- Loop Bar Type S
- End Anchoring Bar Type E.

The GEWI® connecting bar type P is recommended when a load transmission through a reinforced concrete wall is to be realized.

These types of connecting reinforcement are not on stock and will be customized on demand.
## Standard Lengths

<table>
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<tr>
<th></th>
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<tr>
<th>Ø [mm]</th>
<th>GEWI® Designation</th>
<th>Coupler Bar Type A</th>
<th>Lap Length</th>
<th>Weight [kg]</th>
<th>Total Length [mm]</th>
<th>Length of Coupler Part [mm]</th>
<th>Lock Nut Standard T 2003 [mm]</th>
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<tbody>
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<td>8.41</td>
<td>1,230</td>
<td>120</td>
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Customized Products

Hook Bar Type W

Specifications

GEWI® Ø - x/y/dbr

Ø diameter GEWI® BSt 500 S
x total length
y hook length
dbr bending diameter
lb, net anchorage length
lm, M length of coupler part

Loop Bar Type S

Specifications

GEWI® S Ø - x/y/dbr

Ø diameter GEWI® BSt 500 S
x total length
y loop width
dbr bending diameter
lb, net anchorage length
lm, M length of coupler part
yA center distance

End Anchorage Bar Type E

Specifications

GEWI® E Ø - x

Ø diameter GEWI® BSt 500 S
x total length

Connecting Bar Type P

Specifications

GEWI® P Ø - x

Ø diameter GEWI® BSt 500 S
x fitting length
Examples for roof connections

Examples for connecting bending reinforcement

Examples for a fixed column support

Examples for a frame corner and a consite

GEWI® Threadbar – Further Applications
The **GEWI®** connecting reinforcement
- Coupler Bar Type M
- Hook Bar Type W
- Loop Bar Type S
- Anchoring Bar Type E
- Connecting Bar Type P

are delivered with a pre-mounted coupler and are to be fixed to the formwork prior concreting.

**GEWI® Threadbar – Assembly Instructions for Couplers**

The assembly of **GEWI®** coupler can be carried out fast and simple in the following way:
1. Marking of the screw-in length at the fifth rib to ensure the turn in of four ribs of the rod.
2. Screwing on a lock nut and a coupler on steel rod 1 and a lock nut on steel rod 2.
3. Joining the steel rods together and screwing up the coupler. Checking with the marking if booth steel rods are turned in sufficiently into the coupler.
4. Hand-screwing the lock nuts against the coupler.
5. Locking the nut with the required torque using special torque wrenches.

**Installation procedure for the **GEWI®** connecting reinforcement**

1. Nail the plug on the formwork in the desired position.
2. Screw on the **GEWI®** Coupler Bar Type M manually.
3. After the formwork has been demoulded, screw off the plug.
4. Screw in the **GEWI®** Coupler Bar Type A and lock it with the required torque.
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