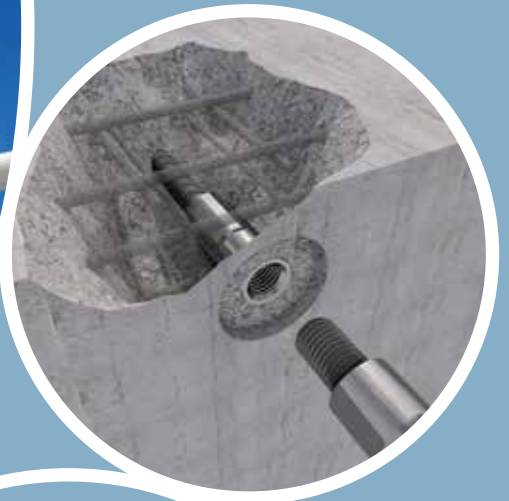




**PFEIFER**

# PH Reinforcement Connection System

for permanent reinforcement  
connections or continuations

planning & installation



|                                         |    |
|-----------------------------------------|----|
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| Dimensioning .....                      | 30 |
| Installation .....                      | 32 |



More information online:  
**PH Reinforcement Connection System**

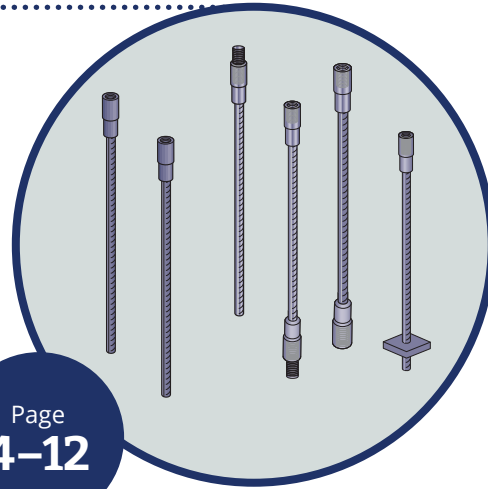
# Table of contents/execution types

## Products

### Female Bars

- ▶ Straight Female Bar
- ▶ Female Bar in special length
- ▶ Female Bar with Connection Bolt
- ▶ Female Bar with Connection Bolt in special length
- ▶ Reducing Female Bar
- ▶ Double Female Bar
- ▶ Double Female Bar with Connection Bolt
- ▶ Female Bar with welded anchor plate

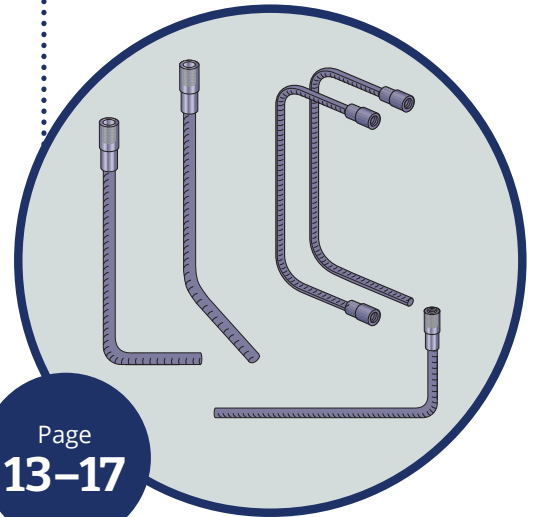
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**4–12**



### Bent Female Bars

- ▶ Bent Female Bar
- ▶ Hooked Female Bar
- ▶ Female Bar with bent in Special Angle
- ▶ Female Bar as U-shaped Stirrup
- ▶ Double Female Bar as U-shaped Stirrup

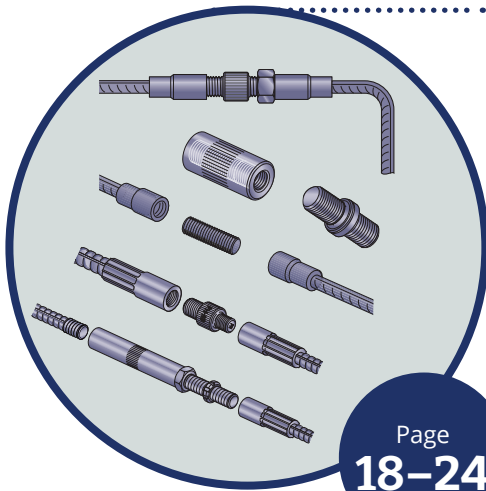
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**13–17**



### Connecting and reducing elements

- ▶ Connection Bolt with torque control
- ▶ Connection Bolt
- ▶ Coupling Sleeve
- ▶ Right-left-thread Connection Bolt
- ▶ Reducing Bolt
- ▶ Reducing Socket
- ▶ Positioning Connector

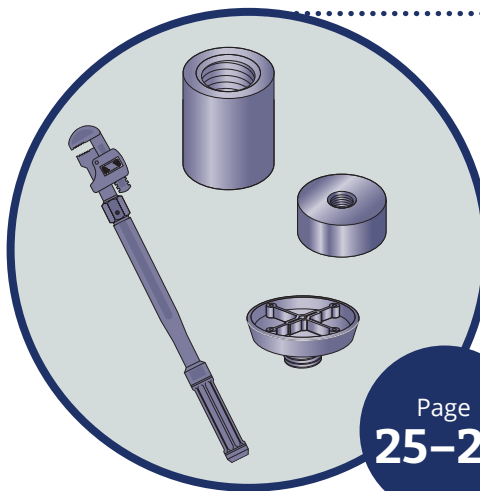
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**18–24**



### Adapter

- ▶ Welding Socket
- ▶ End Anchorage Plate
- ▶ Pin Plate PH Nail Plate
- ▶ Torque Wrench

Page  
**25–29**



- Usability in earthquake zones on demand
- Practical through realization of safe construction stages – no predruding bars with risk of accidents
- No drilling of the formwork necessary
- European Technical Assessment (ETA)

#### Component recommendation

- pillar
- foundations
- beams
- downstand beam
- bridge construction components
- wind turbine tower

#### Technical data

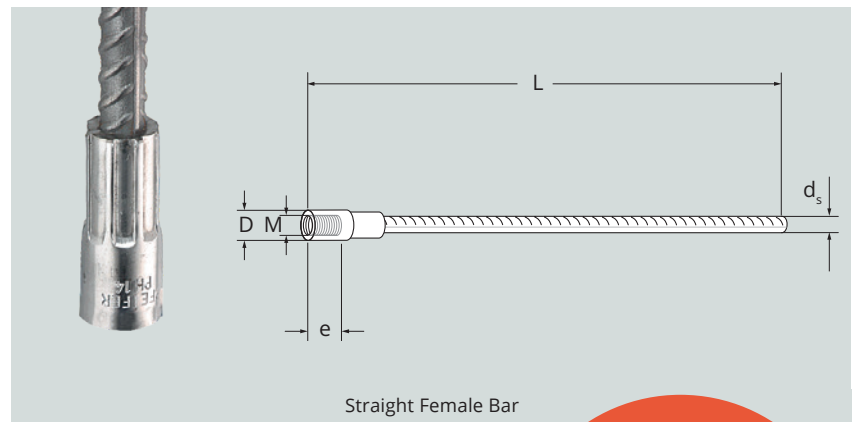
- **material:** black steel

#### Options on request

- Other lengths; with left-hand thread (important when using Right-left-thread Connection Bolt); with Reducing Socket; with bending (also in special angles); with angled hook; as U-shaped stirrup; as Double Female Bar (also in U-shaped stirrup or with Connection Bolt, see page 21); with welded anchor plate

## Straight Female Bar

- For screw connection of concrete elements
- Straight reinforcement bar with pressed-on socket and internal thread is used in combination with connecting or reducing elements and another Female Bar



#### Notice:

All variants also available with left-hand thread.  
Order example:  
**PH-MU-12/800 LH**



#### Straight Female Bar

| Type designation           |       |    | PH-MU-8/350 | PH-MU-8/550 | PH-MU-10/400 | PH-MU-10/690 | PH-MU-12/400 | PH-MU-12/570 | PH-MU-12/800 | PH-MU-12/1500 |
|----------------------------|-------|----|-------------|-------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Diameter concrete steel    | $d_s$ | mm | 8           | 8           | 10           | 10           | 12           | 12           | 12           | 12            |
| Total length               | L     | mm | 350         | 550         | 400          | 690          | 400          | 570          | 800          | 1500          |
| Thread type                |       |    | M 12        | M 12        | M 14         | M 14         | M 16         | M 16         | M 16         | M 16          |
| Screw-in depth             | e     | mm | 15          | 15          | 17           | 17           | 20           | 20           | 20           | 20            |
| Outer diameter socket      | D     | mm | 16          | 16          | 19,2         | 19,2         | 22,3         | 22,3         | 22,3         | 22,3          |
| Ref. no.                   |       |    | 135178      | 119055      | 135179       | 135181       | 119056       | 119057       | 119058       | 119059        |
| Pin Plate PH (see page 27) |       |    |             |             |              |              |              |              |              |               |
| Colour                     |       |    | black       |             | white        |              | yellow       |              |              |               |
| Ref. no.                   |       |    | 118515      | 118515      | 391648       | 391648       | 118516       | 118516       | 118516       | 118516        |

### Straight Female Bar

| Type designation        |                |    | PH-<br>MU-14/400 | PH-<br>MU-14/660 | PH-<br>MU-14/930 | PH-<br>MU-14/1500 | PH-<br>MU-16/400 | PH-<br>MU-16/1020 | PH-<br>MU-16/1440 | PH-<br>MU-16/2000 |
|-------------------------|----------------|----|------------------|------------------|------------------|-------------------|------------------|-------------------|-------------------|-------------------|
| Diameter concrete steel | d <sub>s</sub> | mm | 14               | 14               | 14               | 14                | 16               | 16                | 16                | 16                |
| Total length            | L              | mm | 400              | 660              | 930              | 1500              | 400              | 1020              | 1440              | 2000              |
| Thread type             |                |    | M 18             | M 18             | M 18             | M 18              | M 20             | M 20              | M 20              | M 20              |
| Screw-in depth          | e              | mm | 22               | 22               | 22               | 22                | 24               | 24                | 24                | 24                |
| Outer diameter socket   | D              | mm | 25,5             | 25,5             | 25,5             | 25,5              | 28,8             | 28,8              | 28,8              | 28,8              |
| Ref. no.                |                |    | 119061           | 119062           | 119063           | 119064            | 119065           | 119067            | 119069            | 119070            |

### Pin Plate PH (see page 27)

|          |  |  |        |        |        |        |        |        |        |        |
|----------|--|--|--------|--------|--------|--------|--------|--------|--------|--------|
| Colour   |  |  | blue   |        |        |        | white  |        |        |        |
| Ref. no. |  |  | 118517 | 118517 | 118517 | 118517 | 118518 | 118518 | 118518 | 118518 |

### Straight Female Bar

| Type designation        |                |    | PH-<br>MU-20/400 | PH-<br>MU-20/1280 | PH-<br>MU-20/1800 | PH-<br>MU-20/3000 | PH-<br>MU-25/400 | PH-<br>MU-25/1600 | PH-<br>MU-25/2260 | PH-<br>MU-25/3600 |
|-------------------------|----------------|----|------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|
| Diameter concrete steel | d <sub>s</sub> | mm | 20               | 20                | 20                | 20                | 25               | 25                | 25                | 25                |
| Total length            | L              | mm | 400              | 1280              | 1800              | 3000              | 400              | 1600              | 2260              | 3600              |
| Thread type             |                |    | M 24             | M 24              | M 24              | M 24              | M 30             | M 30              | M 30              | M 30              |
| Screw-in depth          | e              | mm | 32               | 32                | 32                | 32                | 40               | 40                | 40                | 40                |
| Outer diameter socket   | D              | mm | 35,3             | 35,3              | 35,3              | 35,3              | 44,1             | 44,1              | 44,1              | 44,1              |
| Ref. no.                |                |    | 119071           | 119073            | 119075            | 119076            | 119078           | 119081            | 119082            | 119083            |

### Pin Plate PH (see page 27)

|          |  |  |        |        |        |        |        |        |        |        |
|----------|--|--|--------|--------|--------|--------|--------|--------|--------|--------|
| Colour   |  |  | grey   |        |        |        | red    |        |        |        |
| Ref. no. |  |  | 118519 | 118519 | 118519 | 118519 | 118520 | 118520 | 118520 | 118520 |

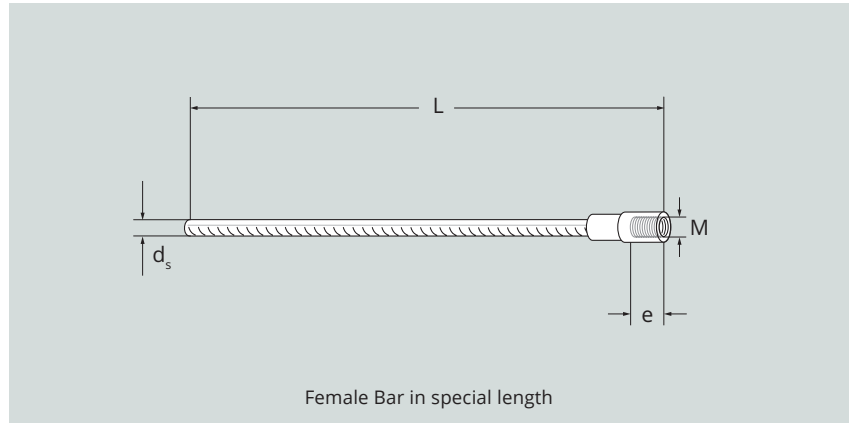
### Straight Female Bar

| Type designation        |                |    | PH-<br>MU-28/400 | PH-<br>MU-28/1790 | PH-<br>MU-28/2530 | PH-<br>MU-28/3600 | PH-<br>MU-32/2000 | PH-<br>MU-32/2900 | PH-<br>MU-40/2200 | PH-<br>MU-40/3500 |
|-------------------------|----------------|----|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Diameter concrete steel | d <sub>s</sub> | mm | 28               | 28                | 28                | 28                | 32                | 32                | 40                | 40                |
| Total length            | L              | mm | 400              | 1790              | 2530              | 3600              | 2000              | 2900              | 2200              | 3500              |
| Thread type             |                |    | M 36             | M 36              | M 36              | M 36              | M 42              | M 42              | M 52              | M 52              |
| Screw-in depth          | e              | mm | 42               | 42                | 42                | 42                | 52                | 52                | 70                | 70                |
| Outer diameter socket   | D              | mm | 51               | 51                | 51                | 51                | 55,8              | 55,8              | 70                | 70                |
| Ref. no.                |                |    | 119084           | 119088            | 119089            | 119090            | 135176            | 135363            | 149175            | 149176            |

### Pin Plate PH (see page 27)

|          |  |  |        |        |        |        |        |        |        |        |
|----------|--|--|--------|--------|--------|--------|--------|--------|--------|--------|
| Colour   |  |  | black  |        |        |        | grey   |        | yellow |        |
| Ref. no. |  |  | 118521 | 118521 | 118521 | 118521 | 391655 | 391655 | 391656 | 391656 |

# Female Bar in special length



## Female Bar in special length

| Type designation        |           |    | PH-MUL-8               | PH-MUL-10              | PH-MUL-12              | PH-MUL-14              | PH-MUL-16              | PH-MUL-20              | PH-MUL-25              | PH-MUL-28              | PH-MUL-32              | PH-MUL-40              |
|-------------------------|-----------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$     | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |           |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Total length            | $L^{1)}$  | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum    | $L_{min}$ | mm | 160                    | 192                    | 223                    | 255                    | 288                    | 353                    | 441                    | 510                    | 558                    | 700                    |
| Screw-in depth          | e         | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Ref. no.                |           |    | 020028                 | 020029                 | 020030                 | 020031                 | 020032                 | 020033                 | 020034                 | 020035                 | 020036                 | 020037                 |

## Pin Plate PH (see page 27)

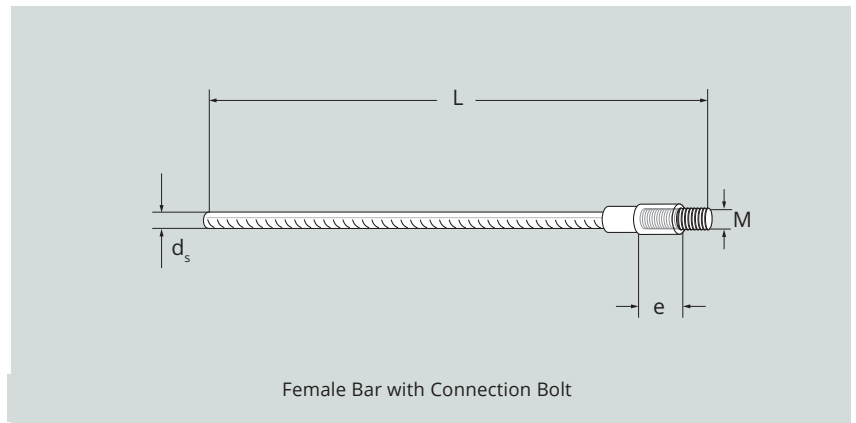
| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

## Nail Plate (see page 28)

| Type designation |  |  | - | NT-14  | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

# Female Bar with Connection Bolt



Female Bar with Connection Bolt

| Type designation        |                |    | PH-MUK-8 | PH-MUK-8 | PH-MUK-10 | PH-MUK-10 | PH-MUK-12 | PH-MUK-12 | PH-MUK-12 | PH-MUK-12 |
|-------------------------|----------------|----|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Diameter concrete steel | d <sub>s</sub> | mm | 8        | 8        | 10        | 10        | 12        | 12        | 12        | 12        |
| Total length            | L              | mm | 364      | 564      | 417       | 707       | 420       | 590       | 820       | 1520      |
| Thread type             |                |    | M 12     | M 12     | M 14      | M 14      | M 16      | M 16      | M 16      | M 16      |
| Screw-in depth          | e              | mm | 15       | 15       | 17        | 17        | 20        | 20        | 20        | 20        |
| Outer diameter socket   | D              | mm | 16       | 16       | 19,2      | 19,2      | 22,3      | 22,3      | 22,3      | 22,3      |
| Ref. no.                |                |    | 544715   | 544716   | 544717    | 544718    | 571745    | 544722    | 544723    | 544724    |

Female Bar with Connection Bolt

| Type designation        |                |    | PH-MUK-14 | PH-MUK-14 | PH-MUK-14 | PH-MUK-14 | PH-MUK-16 | PH-MUK-16 | PH-MUK-16 | PH-MUK-16 | PH-MUK-20 | PH-MUK-20 |
|-------------------------|----------------|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Diameter concrete steel | d <sub>s</sub> | mm | 14        | 14        | 14        | 14        | 16        | 16        | 16        | 16        | 20        | 20        |
| Total length            | L              | mm | 422       | 682       | 952       | 1522      | 425       | 1045      | 1465      | 2025      | 433       | 1313      |
| Thread type             |                |    | M 18      | M 18      | M 18      | M 18      | M 20      | M 20      | M 20      | M 20      | M 24      | M 24      |
| Screw-in depth          | e              | mm | 22        | 22        | 22        | 22        | 24        | 24        | 24        | 24        | 32        | 32        |
| Outer diameter socket   | D              | mm | 25,5      | 25,5      | 25,5      | 25,5      | 28,8      | 28,8      | 28,8      | 28,8      | 35,3      | 35,3      |
| Ref. no.                |                |    | 571746    | 544726    | 544727    | 544728    | 571747    | 544729    | 544730    | 544731    | 571748    | 544732    |

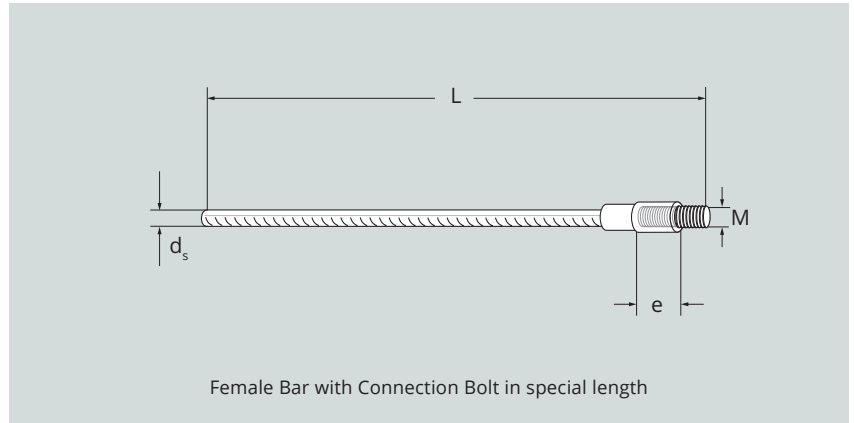
Female Bar with Connection Bolt

| Type designation        |                |    | PH-MUK-20 | PH-MUK-20 | PH-MUK-25 | PH-MUK-25 | PH-MUK-25 | PH-MUK-25 | PH-MUK-28 | PH-MUK-28 | PH-MUK-28 | PH-MUK-28 |
|-------------------------|----------------|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Diameter concrete steel | d <sub>s</sub> | mm | 20        | 20        | 25        | 25        | 25        | 25        | 28        | 28        | 28        | 28        |
| Total length            | L              | mm | 1833      | 3033      | 440       | 1640      | 2300      | 3640      | 443       | 1833      | 2573      | 3643      |
| Thread type             |                |    | M 24      | M 24      | M 30      | M 30      | M 30      | M 30      | M 36      | M 36      | M 36      | M 36      |
| Screw-in depth          | e              | mm | 32        | 32        | 40        | 40        | 40        | 40        | 42        | 42        | 42        | 42        |
| Outer diameter socket   | D              | mm | 35,3      | 35,3      | 44,1      | 44,1      | 44,1      | 44,1      | 51        | 51        | 51        | 51        |
| Ref. no.                |                |    | 544734    | 544735    | 571750    | 544736    | 544737    | 544738    | 571751    | 544739    | 544744    | 544745    |

Female Bar with Connection Bolt

| Type designation        |                |    | PH-MUK-32 | PH-MUK-32 | PH-MUK-40 | PH-MUK-40 |
|-------------------------|----------------|----|-----------|-----------|-----------|-----------|
| Diameter concrete steel | d <sub>s</sub> | mm | 32        | 32        | 40        | 40        |
| Total length            | L              | mm | 2053      | 2953      | 2273      | 3573      |
| Thread type             |                |    | M 42      | M 42      | M 52      | M 52      |
| Screw-in depth          | e              | mm | 52        | 52        | 70        | 70        |
| Outer diameter socket   | D              | mm | 55,8      | 55,8      | 70        | 70        |
| Ref. no.                |                |    | 544746    | 544748    | 544749    | 544750    |

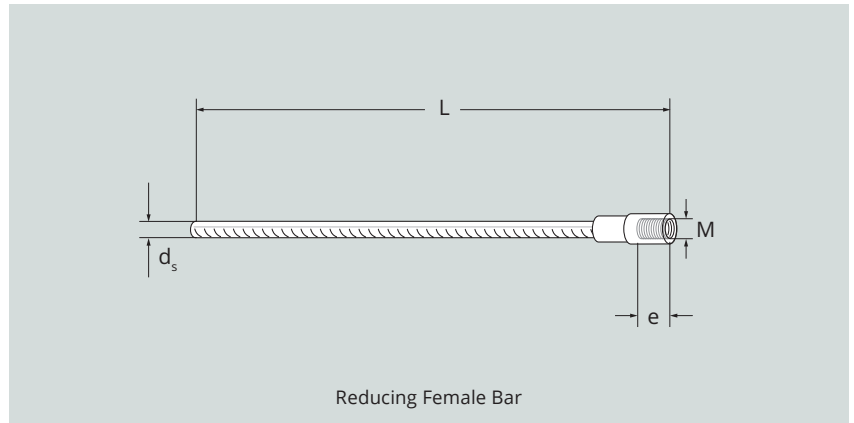
# Female Bar with Connection Bolt in special length



Female Bar with Connection Bolt in special length

| Type designation        |           |    | PH-MUK-8               | PH-MUK-10              | PH-MUK-12              | PH-MUK-14              | PH-MUK-16              | PH-MUK-20              | PH-MUK-25              | PH-MUK-28              | PH-MUK-32              | PH-MUK-40              |
|-------------------------|-----------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$     | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Total length            | L         | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum    | $L_{min}$ | mm | 160                    | 192                    | 223                    | 255                    | 288                    | 353                    | 441                    | 510                    | 558                    | 700                    |
| Thread type             |           |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Screw-in depth          | e         | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Outer diameter socket   | D         | mm | 16                     | 19,2                   | 22,3                   | 25,5                   | 28,8                   | 35,3                   | 44,1                   | 51                     | 55,8                   | 70                     |
| Ref. no.                |           |    | 020318                 | 020319                 | 020320                 | 020321                 | 020322                 | 020323                 | 020324                 | 020325                 | 020326                 | 020327                 |

# Reducing Female Bar



## Reducing Female Bar

| Type designation        |           |    | PH-MUR-12/10           | PH-MUR-14/12           | PH-MUR-16/14           | PH-MUR-20/16           | PH-MUR-25/20           | PH-MUR-28/25           | PH-MUR-32/28           | PH-MUR-40/32           |
|-------------------------|-----------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$     | mm | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |           |    | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   |
| Total length            | $L^{1)}$  | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum    | $L_{min}$ | mm | 223                    | 255                    | 288                    | 353                    | 441                    | 510                    | 558                    | 700                    |
| Screw-in depth          | e         | mm | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Ref. no.                |           |    | 020203                 | 020204                 | 020205                 | 020206                 | 020207                 | 020208                 | 020209                 | 020210                 |

## Pin Plate PH (see page 27)

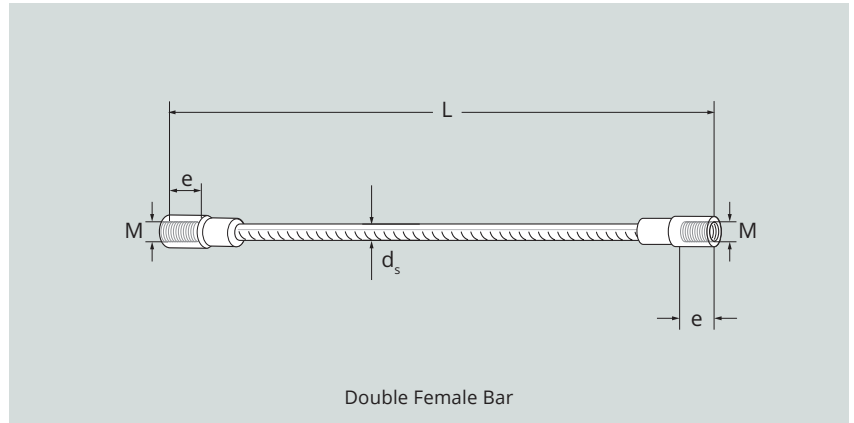
| Type designation |  |  | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - |
|------------------|--|--|---|----------|----------|----------|----------|----------|----------|---|
| Colour           |  |  | - | yellow   | blue     | white    | grey     | red      | black    | - |
| Ref. no.         |  |  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - |

## Nail Plate (see page 28)

| Type designation |  |  | NT-14  | - | - | - | - | - | - | NT-42  |
|------------------|--|--|--------|---|---|---|---|---|---|--------|
| Colour           |  |  | white  | - | - | - | - | - | - | grey   |
| Ref. no.         |  |  | 391648 | - | - | - | - | - | - | 391655 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

# Double Female Bar



## Double Female Bar

| Type designation        |                |    | PH-DM-8                | PH-DM-10               | PH-DM-12               | PH-DM-14               | PH-DM-16               | PH-DM-20               | PH-DM-25               | PH-DM-28               | PH-DM-32               | PH-DM-40               |
|-------------------------|----------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$          | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |                |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Total length            | $L^{1)}$       | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum    | $L_{min}^{2)}$ | mm | 190                    | 200                    | 205                    | 210                    | 225                    | 240                    | 295                    | 315                    | 330                    | 400                    |
| Screw-in depth          | e              | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Ref. no.                |                |    | 020058                 | 020059                 | 020060                 | 020061                 | 020062                 | 020063                 | 020064                 | 020065                 | 020066                 | 020067                 |

## Pin Plate PH (see page 27)

| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

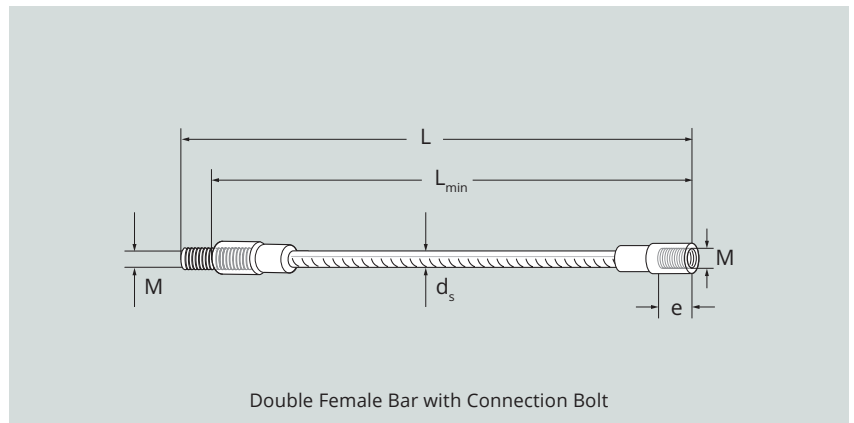
## Nail Plate (see page 28)

| Type designation |  |  | - | NT-140 | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

<sup>2)</sup> Shorter lengths are possible on request

# Double Female Bar with Connection Bolt



## Double Female Bar with Connection Bolt

| Type designation        |           |    | PH-DMK-8               | PH-DMK-10              | PH-DMK-12              | PH-DMK-14              | PH-DMK-16              | PH-DMK-20              | PH-DMK-25              | PH-DMK-28              | PH-DMK-32              | PH-DMK-40              |
|-------------------------|-----------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$     | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |           |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Total length            | $L^{1)}$  | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum    | $L_{min}$ | mm | 190                    | 200                    | 205                    | 210                    | 225                    | 240                    | 295                    | 315                    | -                      | -                      |
| Screw-in depth          | e         | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Ref. no.                |           |    | 020308                 | 020309                 | 020310                 | 020311                 | 020312                 | 020313                 | 020314                 | 020315                 | 020316                 | 020317                 |

## Pin Plate PH (see page 27)

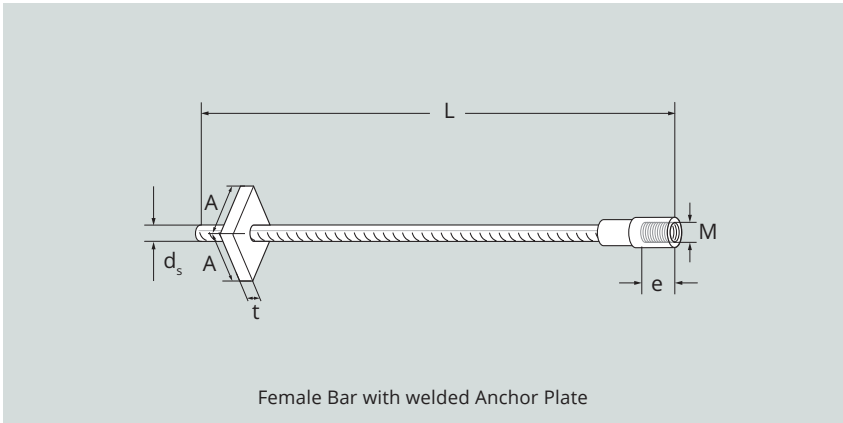
| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

## Nail Plate (see page 28)

| Type designation |  |  | - | NT-14  | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

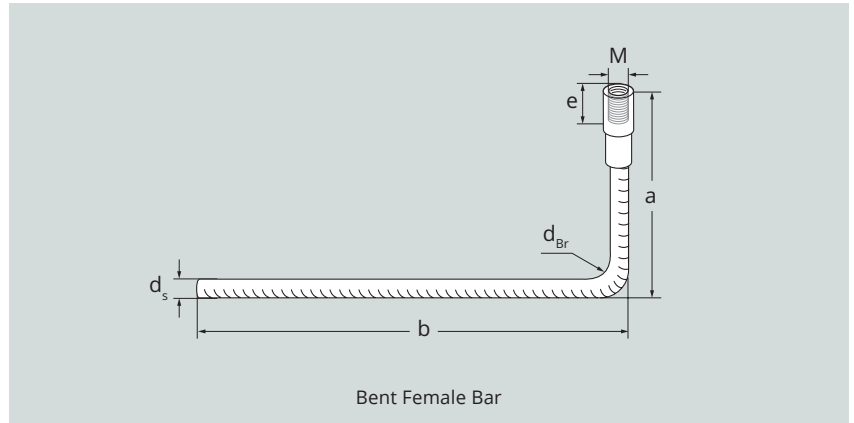
# Female Bar with welded Anchor Plate



| Female Bar with welded Anchor Plate |                  |    |                        |                        |                        |                        |                        |                        |                        |
|-------------------------------------|------------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Type designation                    |                  |    | PH-AP-12               | PH-AP-14               | PH-AP-16               | PH-AP-20               | PH-AP-25               | PH-AP-28               | PH-AP-32               |
| Diameter concrete steel             | d <sub>s</sub>   | mm | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     |
| Thread type                         |                  |    | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   |
| Total length                        | L <sup>1)</sup>  | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Total length Minimum                | L <sub>min</sub> | mm | 223                    | 255                    | 288                    | 353                    | 360                    | 360                    | 558                    |
| Screw-in depth                      | e                | mm | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     |
| Plate thickness                     | t                | mm | 10                     | 10                     | 12                     | 12                     | 20                     | 20                     | 20                     |
| Plate width                         | A                | mm | 50                     | 50                     | 70                     | 70                     | 90                     | 100                    | 110                    |
| Ref. no.                            |                  |    | 020080                 | 020081                 | 020082                 | 020083                 | 020084                 | 020085                 | 020086                 |
| Pin Plate PH (see page 27)          |                  |    |                        |                        |                        |                        |                        |                        |                        |
| Type designation                    |                  |    | PH-ST-12               | PH-ST-14               | PH-ST-16               | PH-ST-20               | PH-ST-25               | PH-ST-28               | -                      |
| Colour                              |                  |    | yellow                 | blue                   | white                  | grey                   | red                    | black                  | -                      |
| Ref. no.                            |                  |    | 118516                 | 118517                 | 118518                 | 118519                 | 118520                 | 118521                 | -                      |
| Nail Plate (see page 28)            |                  |    |                        |                        |                        |                        |                        |                        |                        |
| Type designation                    |                  |    | -                      | -                      | -                      | -                      | -                      | -                      | NT-42                  |
| Colour                              |                  |    | -                      | -                      | -                      | -                      | -                      | -                      | grey                   |
| Ref. no.                            |                  |    | -                      | -                      | -                      | -                      | -                      | -                      | 391655                 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

# Bent Female Bar



## Bent Female Bar

| Type designation        |                               |    | PH-MB-8                | PH-MB-10               | PH-MB-12               | PH-MB-14               | PH-MB-16               | PH-MB-20               | PH-MB-25               | PH-MB-28               | PH-MB-32               | PH-MB-40               |
|-------------------------|-------------------------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$                         | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |                               |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Screw-in depth          | e                             | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Dimension 1             | a <sup>1)</sup>               | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 1 minimum     | a <sub>min</sub>              | mm | 120                    | 136                    | 150                    | 170                    | 200                    | 250                    | 300                    | 340                    | 475                    | 555                    |
| Dimension 2             | b                             | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 2 minimum     | b <sub>min</sub>              | mm | 120                    | 120                    | 130                    | 130                    | 150                    | 220                    | 260                    | 250                    | 550                    | 600                    |
| Bending roller diameter | d <sub>Br</sub> <sup>2)</sup> | mm | 80                     | 100                    | 120                    | 140                    | 160                    | 200                    | 250                    | 280                    | 320                    | 400                    |
| Ref. no.                |                               |    | 020038                 | 020039                 | 020040                 | 020041                 | 020042                 | 020043                 | 020044                 | 020045                 | 020046                 | 020047                 |

## Pin Plate PH (see page 27)

| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

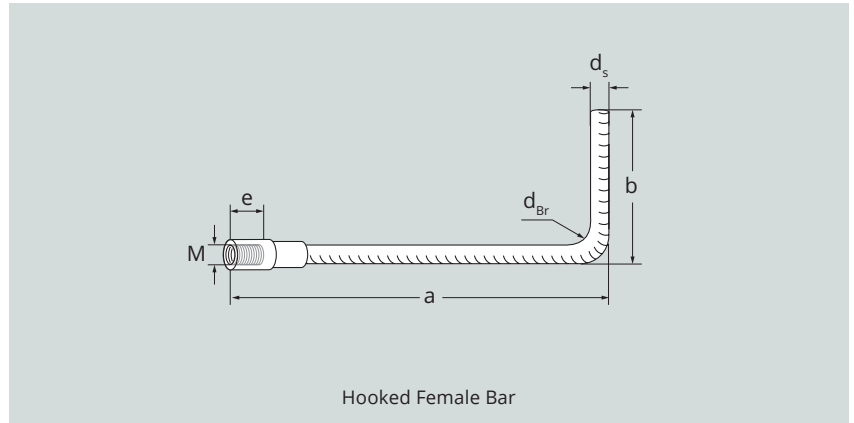
## Nail Plate (see page 28)

| Type designation |  |  | - | NT-14  | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

<sup>2)</sup> Bending roller diameter 10 d<sub>s</sub>, deviating bending roller diameters on request

# Hooked Female Bar



## Hooked Female Bar

| Type designation        |                  |    | PH-MW-8                | PH-MW-10               | PH-MW-12               | PH-MW-14               | PH-MW-16               | PH-MW-20               | PH-MW-25               | PH-MW-28               | PH-MW-32               | PH-MW-40               |
|-------------------------|------------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$            | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |                  |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Screw-in depth          | e                | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Dimension 1             | a <sup>1)</sup>  | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 1 minimum     | a <sub>min</sub> | mm | 85                     | 85                     | 120                    | 125                    | 140                    | 210                    | 260                    | 280                    | 355                    | 380                    |
| Dimension 2             | b                | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 2 minimum     | b <sub>min</sub> | mm | 85                     | 85                     | 110                    | 130                    | 140                    | 190                    | 210                    | 220                    | 500                    | 500                    |
| Bending roller diameter | d <sub>Br</sub>  | mm | 32                     | 40                     | 48                     | 56                     | 64                     | 140                    | 175                    | 200                    | 220                    | 300                    |
| Ref. no.                |                  |    | 020048                 | 020049                 | 020050                 | 020051                 | 020052                 | 020053                 | 020054                 | 020055                 | 020056                 | 020057                 |

## Pin Plate PH (see page 27)

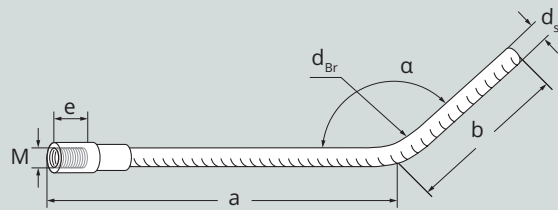
| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

## Nail Plate (see page 28)

| Type designation |  |  | - | NT-140 | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

# Female Bar with bent in Special Angle



Female Bar with bent in Special Angle

## Female Bar with bent in Special Angle

| Type designation        |                 |    | PH-MB-8                | PH-MB-10               | PH-MB-12               | PH-MB-14               | PH-MB-16               | PH-MB-20               | PH-MB-25               | PH-MB-28               | PH-MB-32               | PH-MB-40               |
|-------------------------|-----------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$           | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |                 |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Screw-in depth          | e               | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Dimension 1             | a <sup>1)</sup> | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 2             | b               | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Bending roller diameter | $d_{Br}$        | mm | 80                     | 100                    | 120                    | 140                    | 160                    | 200                    | 250                    | 280                    | 320                    | 400                    |
| Angle                   | $\alpha$        | °  | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Ref. no.                |                 |    | 020387                 | 020388                 | 020389                 | 020390                 | 020391                 | 020392                 | 020393                 | 020394                 | 020395                 | 020396                 |

## Pin Plate PH (see page 27)

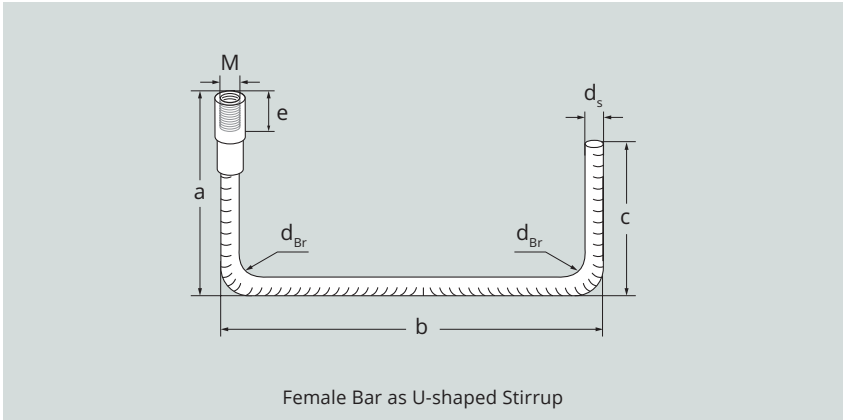
| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

## Nail Plate (see page 28)

| Type designation |  |  | - | NT-140 | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

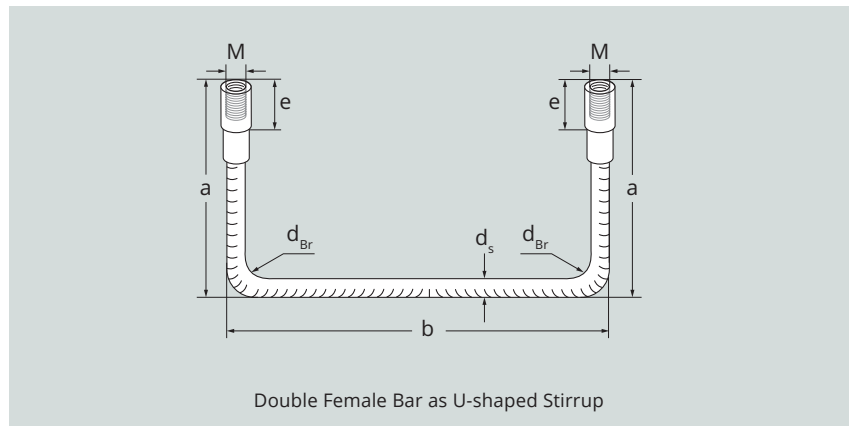
# Female Bar as U-shaped Stirrup



| Female Bar as U-shaped Stirrup |               |    | PH-U                   |
|--------------------------------|---------------|----|------------------------|
| Type designation               |               |    | Customer specification |
| Diameter concrete steel        | $d_s$         | mm |                        |
| Thread type <sup>1)</sup>      |               |    | –                      |
| Dimension 1                    | $a^{1)}$      | mm | Customer specification |
| Dimension 2                    | $b$           | mm | Customer specification |
| Dimension 3                    | $c$           | mm | Customer specification |
| Bending roller diameter        | $d_{Br}^{2)}$ | mm | Customer specification |
| Angle                          | $\alpha$      | °  | Customer specification |
| Ref. no.                       | 020328        |    |                        |

<sup>1)</sup> depending on the selected bar diameter  $d_s$   
<sup>2)</sup> Length without PH Pin Plate or Nail Plate

# Double Female Bar as U-shaped Stirrup



## Double Female Bar as U-shaped Stirrup

| Type designation        |               |    | PH-DU-8                | PH-DU-10               | PH-DU-12               | PH-DU-14               | PH-DU-16               | PH-DU-20               | PH-DU-25               | PH-DU-28               | PH-DU-32               | PH-DU-40               |
|-------------------------|---------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Diameter concrete steel | $d_s$         | mm | 8                      | 10                     | 12                     | 14                     | 16                     | 20                     | 25                     | 28                     | 32                     | 40                     |
| Thread type             |               |    | M 12                   | M 14                   | M 16                   | M 18                   | M 20                   | M 24                   | M 30                   | M 36                   | M 42                   | M 52                   |
| Screw-in depth          | e             | mm | 15                     | 17                     | 20                     | 22                     | 24                     | 32                     | 40                     | 42                     | 52                     | 70                     |
| Dimension 1             | $a^{1)}$      | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 1 minimum     | $a_{min}$     | mm | 110                    | 135                    | 150                    | 170                    | 200                    | 250                    | 300                    | 350                    | 380                    | 490                    |
| Dimension 2             | b             | mm | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification | Customer specification |
| Dimension 2 minimum     | $b_{min}$     | mm | 280                    | 280                    | 280                    | 280                    | 280                    | 620                    | 630                    | 640                    | 650                    | 680                    |
| Bending roller diameter | $d_{Br}^{2)}$ | mm | 80                     | 100                    | 120                    | 140                    | 160                    | 200                    | 250                    | 280                    | 320                    | 400                    |
| Ref. no.                |               |    | 020068                 | 020069                 | 020070                 | 020071                 | 020072                 | 020073                 | 020074                 | 020075                 | 020076                 | 020077                 |

## Pin Plate PH (see page 27)

| Type designation |  |  | PH-ST-8 | - | PH-ST-12 | PH-ST-14 | PH-ST-16 | PH-ST-20 | PH-ST-25 | PH-ST-28 | - | - |
|------------------|--|--|---------|---|----------|----------|----------|----------|----------|----------|---|---|
| Colour           |  |  | black   | - | yellow   | blue     | white    | grey     | red      | black    | - | - |
| Ref. no.         |  |  | 118515  | - | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   | - | - |

## Nail Plate (see page 28)

| Type designation |  |  | - | NT-140 | - | - | - | - | - | - | NT-42  | NT-52  |
|------------------|--|--|---|--------|---|---|---|---|---|---|--------|--------|
| Colour           |  |  | - | white  | - | - | - | - | - | - | grey   | yellow |
| Ref. no.         |  |  | - | 391648 | - | - | - | - | - | - | 391655 | 391656 |

<sup>1)</sup> Length without PH Pin Plate or Nail Plate

<sup>2)</sup> Bending roller diameter 10  $d_s$ , deviating bending roller diameters on request

- High-strength material
- General type approval (abG)
- European Technical Assessment (ETA)
- Simple installation
- No torque wrench necessary
- Quality inspection through simple visual inspection

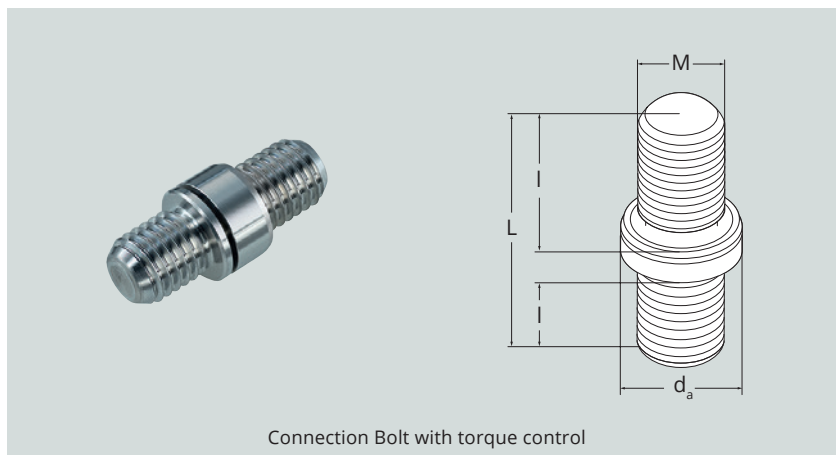
#### Technical data

- **Material:** black steel



## Connection Bolt with torque control

- For connecting of two PH Female Bars
- Easiest assembly – no torque wrench necessary



Connection Bolt with torque control

#### Connection Bolt with torque control

| Type designation            |                |    | PH-KD-8/36 | PH-KD-10/44 | PH-KD-12/50 | PH-KD-14/55 | PH-KD-16/59 | PH-KD-20/75 | PH-KD-25/92 | PH-KD-28/96 | PH-KD-32/115 | PH-KD-40/153 |
|-----------------------------|----------------|----|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| Thread type                 |                | mm | M 12       | M 14        | M 16        | M 18        | M 20        | M 24        | M 30        | M 36        | M 42         | M 52         |
| Für Diameter concrete steel |                | mm | 8          | 10          | 12          | 14          | 16          | 20          | 25          | 28          | 32           | 40           |
| Bolt length                 | L              | mm | 36         | 44          | 50          | 55          | 59          | 75          | 92          | 96          | 115          | 153          |
| Thread length               | l              | mm | 12         | 16          | 19          | 20,5        | 22,5        | 30,5        | 38          | 40          | 50           | 68           |
| Outer diameter              | d <sub>a</sub> | mm | 16         | 19          | 21,5        | 24          | 27,5        | 34          | 43          | 50          | 53,5         | 68           |
| Ref. no.                    |                |    | 535963     | 535964      | 535965      | 535966      | 535967      | 535968      | 535969      | 535970      | 535971       | 535972       |

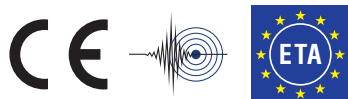
- Usability in earthquake zones on request
- High-strength material
- European Technical Assessment (ETA)

#### Technical data

- **Material:** black steel

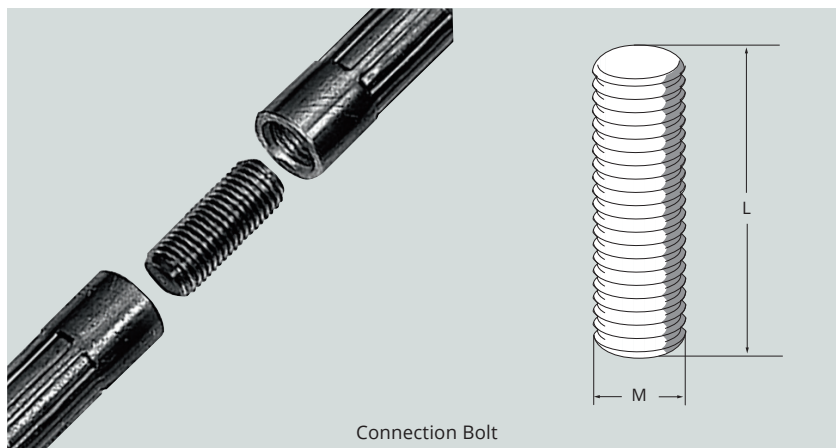
#### Options on request

- Connection Bolt PH-KD with torque control



## Connection Bolt

- For connecting of two PH Female Bars
- Simply screw the Female Bars into the coupling socket from both sides.



#### Connection Bolt

| Type designation            |   |    | PH-K-8/28 | PH-K-10/34 | PH-K-12/40 | PH-K-14/43 | PH-K-16/50 | PH-K-20/65 | PH-K-25/80 | PH-K-28/85 | PH-K-32/106 | PH-K-40/145 |
|-----------------------------|---|----|-----------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|
| Thread type                 |   |    | M 12      | M 14       | M 16       | M 18       | M 20       | M 24       | M 30       | M 36       | M 42        | M 52        |
| For Diameter concrete steel |   | mm | 8         | 10         | 12         | 14         | 16         | 20         | 25         | 28         | 32          | 40          |
| Bolt length                 | L | mm | 28        | 34         | 40         | 43         | 50         | 65         | 80         | 85         | 106         | 145         |
| Ref. no.                    |   |    | 119263    | 135169     | 135170     | 119264     | 119265     | 119266     | 119267     | 119268     | 135171      | 149216      |

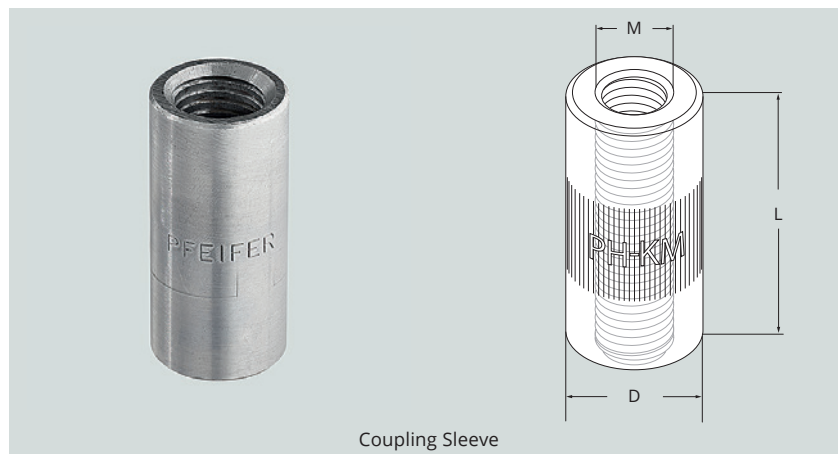
#### Technical data

► **Material:** black steel



# Coupling Sleeve

► For connecting of two PH Female Bars with Connection Bolt



Coupling Sleeve

#### Coupling Sleeve

| Type designation            |   |    | PH-KM-12 | PH-KM-14 | PH-KM-16 | PH-KM-20 | PH-KM-25 | PH-KM-28 | PH-KM-32 |
|-----------------------------|---|----|----------|----------|----------|----------|----------|----------|----------|
| For Diameter concrete steel |   | mm | 12       | 14       | 16       | 20       | 25       | 28       | 32       |
| Total length                | L | mm | 45       | 52       | 58       | 73       | 88       | 90       | 111      |
| Thread type                 |   |    | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     | M 42     |
| Outer diameter socket       | D | mm | 22,3     | 25,5     | 28,8     | 35,3     | 44,1     | 51       | 55,8     |
| Ref. no.                    |   |    | 363511   | 363512   | 363513   | 363514   | 363515   | 363516   | 363517   |

- Innovative connection even with complicated reinforcement routing
- High-strength material
- European Technical Assessment (ETA)

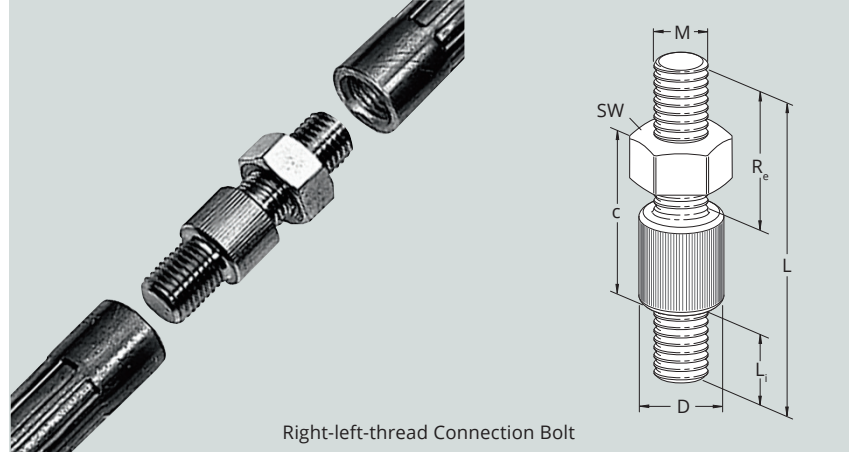
#### Technical data

- **Material:** black steel



## Right-left-thread Connection Bolt

- For connecting angled PH Female Bars
- If angled Female Bars are placed next to each other a free redation of the bars is not possible – due to the opposite threads of the coupler, the components can still be screwed together.
- Connection of PH Female Bar with left-hand thread and PH Female Bar with right-hand thread



Right-left-thread Connection Bolt

#### Right-left-thread Connection Bolt

| Type designation            |                  |    | PH-RL-8/61 | PH-RL-10/71 | PH-RL-12/79 | PH-RL-14/84 | PH-RL-16/90 | PH-RL-20/109 | PH-RL-25/131 | PH-RL-28/145 | PH-RL-32/170 |
|-----------------------------|------------------|----|------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| For Diameter concrete steel |                  | mm | 8          | 10          | 12          | 14          | 16          | 20           | 25           | 28           | 32           |
| Total length                | L                | mm | 61         | 71          | 79          | 85          | 90          | 109          | 131          | 145          | 170          |
| Thread type                 |                  |    | M 12       | M 14        | M 16        | M 18        | M 20        | M 24         | M 30         | M 36         | M 42         |
| Wrench size                 | SW               | mm | 19         | 22          | 24          | 27          | 30          | 36           | 46           | 55           | 65           |
| Outer diameter socket       | D                | mm | 16,5       | 18,5        | 20,5        | 24          | 27          | 33,5         | 42           | 48,5         | 50,5         |
| Length right-hand thread    | Re               | mm | 24         | 30          | 35          | 39          | 42          | 53           | 67           | 74           | 90           |
| Length left-hand thread     | Li               | mm | 12         | 16          | 19          | 21          | 23          | 31           | 39           | 41           | 50           |
| Minimum distance nut        | C <sub>min</sub> | mm | 37         | 39          | 41          | 43          | 44          | 47           | 53           | 63           | 70           |
| Ref. no.                    |                  |    | 119269     | 135172      | 135173      | 119270      | 119271      | 119272       | 119273       | 119274       | 135174       |

- Economic grading of the reinforcement cross-sections
- High-strength material
- European Technical Assessment (ETA)

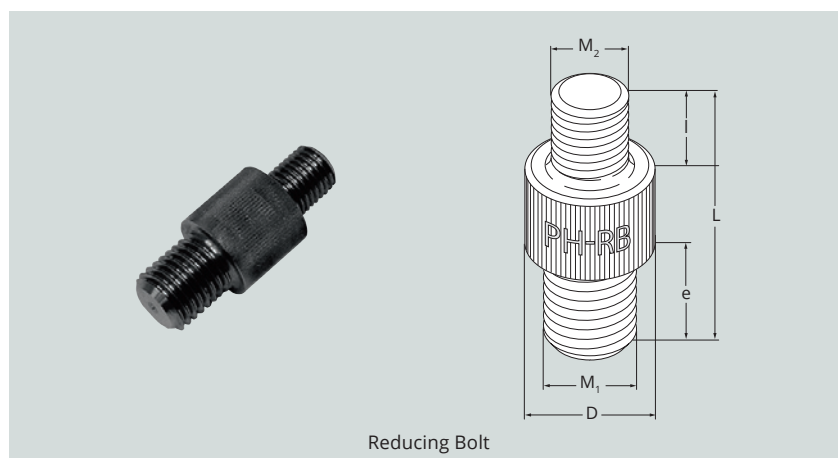
#### Technical data

- **Material:** black steel



## Reducing Bolt

- For connecting two PH Female Bars with different diameters
- Use for ascending screw reinforcement over several floors where the statically necessary cross-sections are reduced floor by floor



Reducing Bolt

#### Reducing Bolt

| Type designation              |                 |    | PH-RB-12/10 | PH-RB-14/12 | PH-RB-16/14 | PH-RB-16/12 | PH-RB-20/16 | PH-RB-25/20 |
|-------------------------------|-----------------|----|-------------|-------------|-------------|-------------|-------------|-------------|
| For Diameter concrete steel 1 | d <sub>s1</sub> | mm | 12          | 14          | 16          | 16          | 20          | 25          |
| Thread size site 1            | M1              |    | M 16        | M 18        | M 20        | M 20        | M 24        | M 30        |
| For Diameter concrete steel 2 | d <sub>s2</sub> | mm | 10          | 12          | 14          | 12          | 16          | 20          |
| Thread size site 2            | M2              |    | M 14        | M 16        | M 18        | M 16        | M 20        | M 24        |
| Total length                  | L               | mm | 60          | 65          | 69          | 67          | 79          | 95          |
| Screw-in depth                | e               | mm | 19          | 21          | 23          | 23          | 31          | 39          |
| Thread length                 | I               | mm | 16          | 19          | 21          | 19          | 23          | 31          |
| Outer diameter socket         | D               | mm | 20,5        | 24          | 27          | 27          | 33,5        | 42          |
| Ref. no.                      |                 |    | 211277      | 211278      | 211279      | 211285      | 211280      | 211281      |

#### Reduzierbolzen

| Type designation              |                 |    | PH-RB-28/25 | PH-RB-28/20 | PH-RB-32/25 | PH-RB-32/28 | PH-RB-40/32 |
|-------------------------------|-----------------|----|-------------|-------------|-------------|-------------|-------------|
| For Diameter concrete steel 1 | d <sub>s1</sub> | mm | 28          | 28          | 32          | 32          | 40          |
| Thread size site 1            | M1              |    | M 36        | M 36        | M 42        | M 42        | M 52        |
| For Diameter concrete steel 2 | d <sub>s2</sub> | mm | 25          | 20          | 25          | 28          | 32          |
| Thread size site 2            | M2              |    | M 30        | M 24        | M 30        | M 36        | M 42        |
| Total length                  | L               | mm | 110         | 102         | 119         | 121         | 160         |
| Screw-in depth                | e               | mm | 41          | 41          | 50          | 50          | 70          |
| Thread length                 | I               | mm | 39          | 31          | 39          | 41          | 50          |
| Outer diameter socket         | D               | mm | 48,5        | 48,5        | 50,5        | 50,5        | 70,5        |
| Ref. no.                      |                 |    | 211282      | 211286      | 211287      | 211283      | 211284      |

- Economic grading of the reinforcement cross-sections
- European Technical Assessment (ETA)

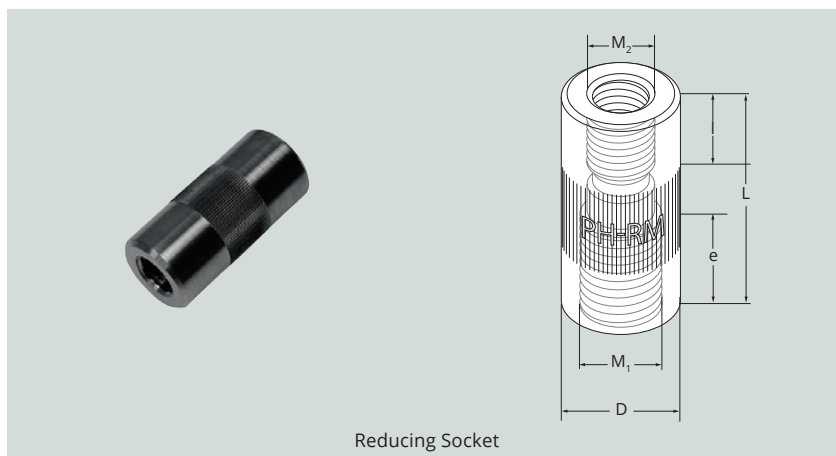
#### Technical data

- **Material:** black steel



## Reducing Socket

- For connecting two PH Female Bars incl. Connection Bolts with different diameters
- Use for ascending screw reinforcement over several floors, where the statically necessary cross-sections are reduced floor by floor.



#### Reducing Socket

| Type designation              |                                                                                         |    | PH-RM-12/10 | PH-RM-14/12 | PH-RM-16/14 | PH-RM-20/16 | PH-RM-25/20 | PH-RM-28/25 | PH-RM-32/28 | PH-RM-16/12 | PH-RM-28/20 | PH-RM-32/25 |
|-------------------------------|-----------------------------------------------------------------------------------------|----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| For Diameter concrete steel 1 | d <sub>s1</sub>                                                                         | mm | 12          | 14          | 16          | 20          | 25          | 28          | 28          | 16          | 28          | 32          |
| Thread size site 1            | M1                                                                                      |    | M 16        | M 18        | M 20        | M 24        | M 30        | M 36        | M 42        | M 20        | M 36        | M 42        |
| For Diameter concrete steel 2 | d <sub>s2</sub>                                                                         | mm | 10          | 12          | 14          | 16          | 20          | 25          | 32          | 12          | 20          | 25          |
| Thread size site 2            | M2                                                                                      |    | M 14        | M 16        | M 18        | M 20        | M 24        | M 30        | M 36        | M 16        | M 24        | M 30        |
| Total length                  | L                                                                                       | mm | 50          | 55          | 60          | 75          | 90          | 105         | 115         | 60          | 95          | 115         |
| Screw-in depth                | e                                                                                       | mm | 20          | 22          | 24          | 32          | 40          | 42          | 52          | 24          | 42          | 52          |
| Thread length                 | l                                                                                       | mm | 17          | 20          | 22          | 24          | 32          | 40          | 42          | 20          | 32          | 40          |
| Outer diameter socket         | D                                                                                       | mm | 22          | 25          | 30          | 35          | 45          | 50          | 55          | 30          | 50          | 55          |
| Ref. no.                      | 211288   211289   211290   211291   211292   211293   211294   211296   211297   211298 |    |             |             |             |             |             |             |             |             |             |             |

- Flexible due to practical tolerance zones
- High-strength material
- European Technical Assessment (ETA)

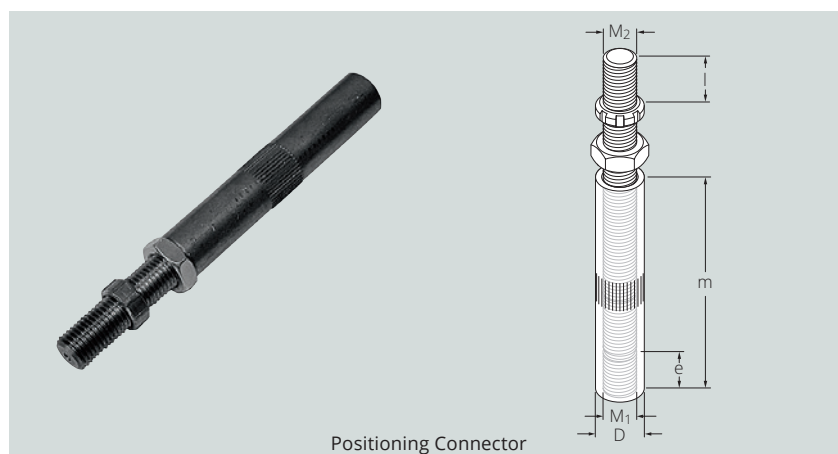
#### Technical data

- **Material:** black steel



## Positioning Connector

- For connecting PH Female Bars that are not freely redatable
- Stepless adjustment of the installation length possible. Fixation via lock nut



#### Positioning Connector

| Type designation            |    |    | PH-PA-12 | PH-PA-14 | PH-PA-16 | PH-PA-20 | PH-PA-25 | PH-PA-28 | PH-PA-32 | PH-PA-40 |
|-----------------------------|----|----|----------|----------|----------|----------|----------|----------|----------|----------|
| For Diameter concrete steel |    | mm | 12       | 14       | 16       | 20       | 25       | 28       | 32       | 40       |
| Thread size site 1          | M1 |    | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     | M 42     | M 52     |
| Thread size site 2          | M2 |    | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     | M 42     | M 52     |
| Screw-in depth              | e  | mm | 20       | 22       | 24       | 32       | 40       | 42       | 52       | 70       |
| Thread length               | l  | mm | 30       | 32       | 36       | 44       | 58       | 60       | 72       | 90       |
| Outer diameter socket       | D  | mm | 22,3     | 25,5     | 28,8     | 35,3     | 44,1     | 51       | 55,8     | 70       |
| Socket length               | m  | mm | 115      | 125      | 130      | 180      | 210      | 220      | 260      | 320      |
| Ref. no.                    |    |    | 211299   | 211300   | 211301   | 211302   | 211303   | 211304   | 211305   | 211306   |

- Good weldable material
- European Technical Assessment (ETA)

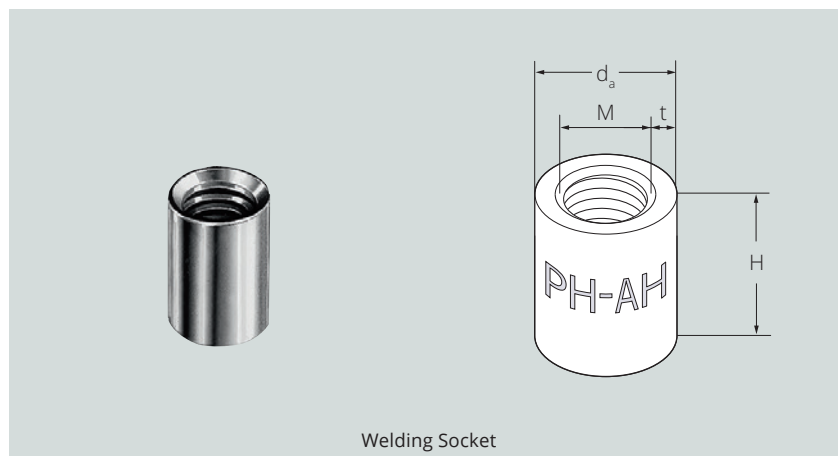
#### Technical data

- **Material:** black steel



## Welding Socket

- For the connection of reinforcement screw connections and steel construction elements
- The socket is welded onto the steel component, into which a PH Female Bar with coupling/reducing element can be screwed in
- Side of the weld seam without thread, opposite side with defined screw-in depth for PH components



#### Welding Socket

| Type designation            |                |    | PH-AH-12 | PH-AH-14 | PH-AH-16 | PH-AH-20 | PH-AH-25 | PH-AH-28 | PH-AH-32 | PH-AH-40 |
|-----------------------------|----------------|----|----------|----------|----------|----------|----------|----------|----------|----------|
| For Diameter concrete steel |                | mm | 12       | 14       | 16       | 20       | 25       | 28       | 32       | 40       |
| Thread type                 |                |    | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     | M 42     | M 52     |
| Socket height               | H              | mm | 35       | 40       | 40       | 50       | 60       | 65       | 75       | 90       |
| Outer diameter              | d <sub>a</sub> | mm | 25       | 27       | 30       | 40       | 50       | 55       | 60       | 75       |
| Wall thickness socket       | t              | mm | 5,5      | 5,75     | 6,25     | 9,5      | 11,75    | 11,5     | 11,25    | 14       |
| Ref. no.                    |                |    | 211307   | 211308   | 211309   | 211310   | 211311   | 211312   | 211313   | 211314   |

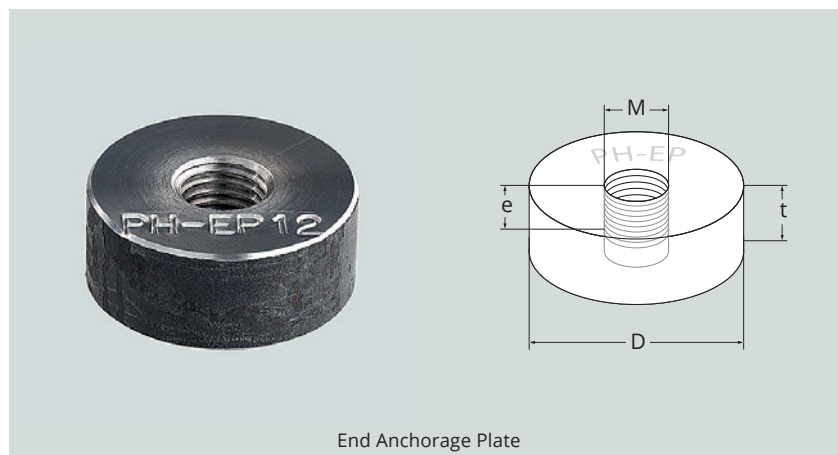
- Realization of an end anchorage according to standard IN EN 1992-1-1
- Dynamic stresses possible

#### Technical data

- **Material:** black steel

## End Anchorage Plate

- For the realization of an end anchorage in the reinforcement guide
- The End Anchorage Plate is combined with PH Female Bars and Connection Bolts
- The products are simply screwed together via the internal thread of the plate. Thus, loads can be transferred from a PH screw connection or an overlap joint into the component



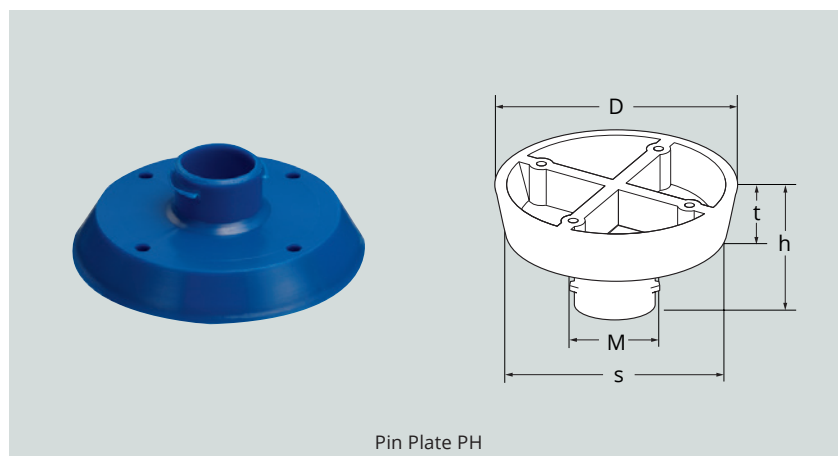
#### End Anchorage Plate

| Type designation            |   |    | PH-EP-12 | PH-EP-14 | PH-EP-16 | PH-EP-20 | PH-EP-25 | PH-EP-28 |
|-----------------------------|---|----|----------|----------|----------|----------|----------|----------|
| For Diameter concrete steel |   | mm | 12       | 14       | 16       | 20       | 25       | 28       |
| Thread type                 |   |    | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     |
| Screw-in depth              | e | mm | 16       | 18       | 20       | 24       | 30       | 36       |
| Outer diameter socket       | D | mm | 45       | 55       | 60       | 75       | 95       | 105      |
| Plate thickness             | t | mm | 19       | 21       | 23       | 27       | 33       | 39       |
| Ref. no.                    |   |    | 218365   | 218366   | 218367   | 218368   | 218369   | 218370   |

- Flexible formwork fastening – gluing, nailing, screwing
- Colour-coded Nail Plates for quick assignment of the system size

## Pin Plate PH

- For formwork fixing of PH Female Bars
- Also protects the internal thread of the sleeves from contamination and damage



Pin Plate PH

| Type designation             |                |    | PH-ST-12 | PH-ST-16 | PH-ST-18 | PH-ST-20 | PH-ST-24 | PH-ST-30 | PH-ST-36 |
|------------------------------|----------------|----|----------|----------|----------|----------|----------|----------|----------|
| For Diameter concrete steel  |                | mm | 8        | 12       | 14       | 16       | 20       | 25       | 28       |
| Type/Size                    |                |    | PH 8     | PH 12    | PH 14    | PH 16    | PH 20    | PH 25    | PH 28    |
| Thread type                  |                |    | M 12     | M 16     | M 18     | M 20     | M 24     | M 30     | M 36     |
| Colour                       |                |    | black    | yellow   | blue     | white    | grey     | red      | black    |
| Outer diameter               | d <sub>0</sub> | mm | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
| Screw-in depth               | e              | mm | 10       | 10       | 10       | 12       | 12       | 15       | 15       |
| Diameter lower edge, outside | s              | mm | 45       | 45       | 45       | 45       | 70       | 70       | 70       |
| Total height                 | h              | mm | 18       | 18       | 18       | 20       | 20       | 23       | 25       |
| Plate thickness              | t              | mm | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
| Hole spacing                 | L              | mm | 39       | 39       | 39       | 39       | 61       | 61       | 61       |
| Outer diameter socket        | D              | mm | 55       | 55       | 55       | 55       | 80       | 80       | 80       |
| Ref. no.                     |                |    | 118515   | 118516   | 118517   | 118518   | 118519   | 118520   | 118521   |

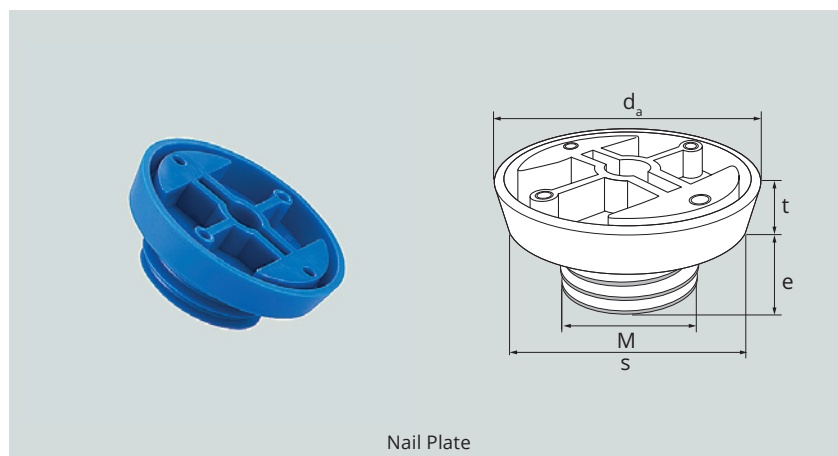
- ▶ Short threads save assembly time
- ▶ Particularly robust and dimensionally stable polyethylene plastic
- ▶ Predrilled nail holes facilitate nail insertion
- ▶ Two countersunk nail holes for a particularly smooth recess surface
- ▶ Colour coding for quick assignment in the thread system
- ▶ Various coordinated closure solutions available

#### Technische Daten

- ▶ **Material:** plastic

## Nail Plate

- ▶ Simple formwork fastening of threaded anchors
- ▶ Screw the nail plate into the anchor and nail, screw or glue it to the formwork



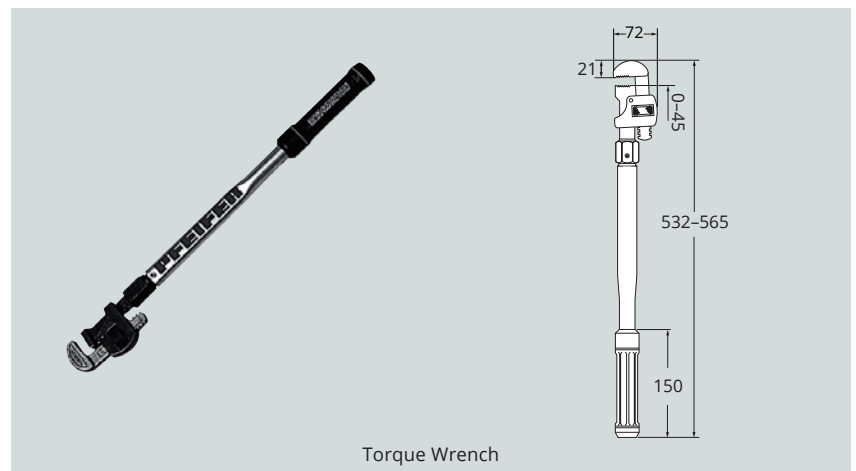
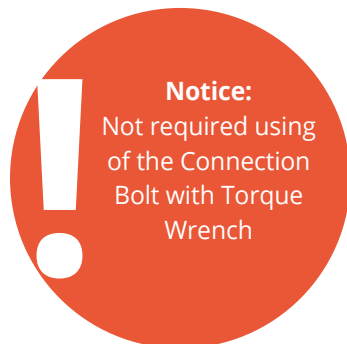
#### Nail Plate

| Type designation             |       |    | NT-14   | NT-42   | NT-52   |
|------------------------------|-------|----|---------|---------|---------|
| Type/Size                    |       |    | Rd/M 14 | Rd/M 42 | Rd/M 52 |
| Thread                       |       |    | M 14    | M 42    | M 52    |
| Colour                       |       |    | white   | grey    | yellow  |
| Outer diameter               | $d_a$ | mm | 59      | 67,5    | 81      |
| Diameter lower edge, outside | s     | mm | 55,5    | 63      | 76      |
| Screw-in depth               | e     | mm | 10      | 20      | 20      |
| Plate thickness              | t     | mm | 10      | 13      | 13      |
| Ref. no.                     |       |    | 391648  | 391655  | 391656  |

- **Controlled, approval-compliant torque**
- **Self-locking, serrated gripper jaws**
- **Wide torque range from 40 to 200 Nm**

## Torque Wrench

- Tightening of connections (e. g. of the PH system) under a controlled torque in conformity with the approval



### Torque Wrench

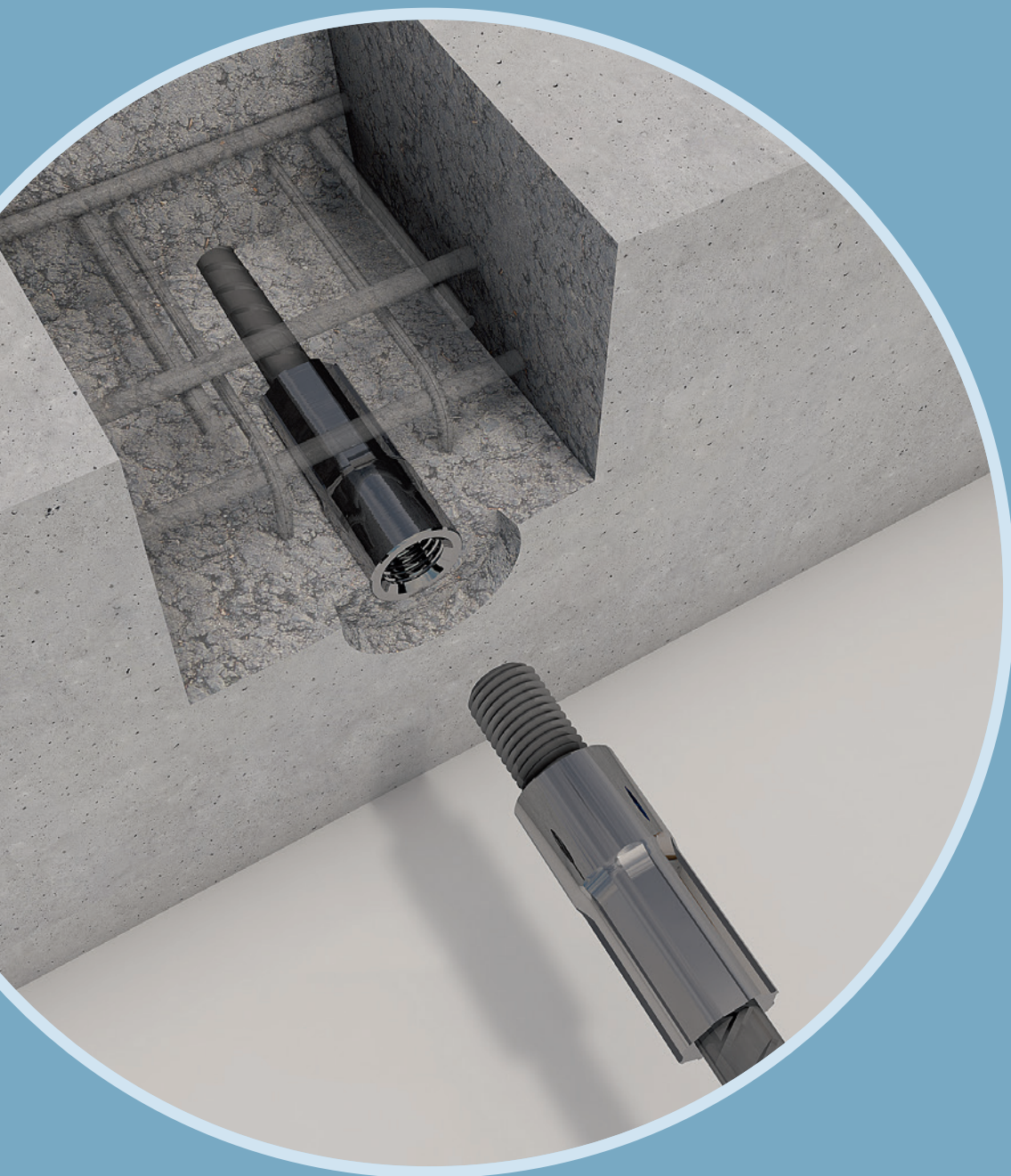
| Type designation                |                |    | DZ-14-40 |
|---------------------------------|----------------|----|----------|
| For Diameter concrete steel min | d <sub>s</sub> | mm | 14       |
| For Diameter concrete steel max | d <sub>s</sub> | mm | 40       |
| Ref. no.                        | 219272         |    |          |

### Assembly torques M<sub>T</sub> PH-System

| at type | M <sub>T</sub> |
|---------|----------------|
| PH-8    | 20             |
| PH-10   | 25             |
| PH-12   | 30             |
| PH-14   | 40             |
| PH-16   | 60             |
| PH-20   | 80             |
| PH-25   | 100            |
| PH-28   | 140            |
| PH-32   | 180            |
| PH-40   | 200            |

Application area  
Torque Wrench

# CE marking



| <div><br/>20</div> <div>Europäische Technische Bewertung<br/>European Technical Assessment</div> <div>ETA-20/0259</div> <div>Europäische Bewertungsdokument<br/>European Assesment Document</div> <div>EAD 160129-00-0301</div> <div>Leistungserklärung<br/>Declaration of Performance</div> <div>320/321/PH/01-2025</div> <div>Notifizierte Stelle / Kennnummer<br/>Notified body / identification number</div> <div>Technische Universität München<br/>TUM 1211</div> <div>Instytut Techniki Budowlanej<br/>ITB 1488</div> | <div><div>PFEIFER Bewehrungsanschlusssystem PH<br/>Mechanisches Verbindungssystem für Betonstabstahl</div><div>PFEIFER Rebar Coupler System PH<br/>Mechanical splices of reinforcing steel bars</div></div> <div><div>PFEIFER Seil- und Hebetechnik GmbH<br/>Dr.-Karl-Lenz-Straße 66<br/>D-87700 Memmingen</div><div>www.pfeifer.info</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                        |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------|---------------------------------------------------|--------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <table><tr><th>Verbindung<br/>Connection</th><th colspan="2">Leistung gemäß ETA-20/0259<br/>Performance according to ETA-20/0259</th></tr><tr><td>PH-MU + PH-K/PH-KD + PH-MU<br/>(Herstellwerk 1+2)<br/>(Manufacturing Plant 1+2)</td><td>Länge Verbindung, Widerstand Dehnung, Schlupf, Ermüdungsfestigkeit<br/>Length of connection, resistance, elongation, slip, fatigue strength</td><td>Anhang C2, Tabelle C3+C4<br/>Annex C2, Table C3+C4</td></tr><tr><td>PH-MU + PH-K + PH-MU<br/>(Herstellwerk 2)<br/>(Manufacturing Plant 2)</td><td>Widerstand Seismik<br/>Resistance to seismic action</td><td>Anhnag C2, Tabelle C3+C4<br/>Annex C2, Table C3+C4</td></tr><tr><td>PH-MU + PH-RL + PH-MU LH<br/>(Herstellwerk 1)<br/>(Manufacturing Plant 1)</td><td>Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br/>Length of connection, resistance, elongation, slip, fatigue strength</td><td>Anhang C4, Tabellen C7+C8<br/>Annex C4, Table C7+C8</td></tr><tr><td>PH-MU +PH-RB + PH-MU<br/>(Herstellwerk 1)<br/>(Manufacturing Plant 1)</td><td>Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br/>Length of connection, resistance, elongation, slip, fatigue strength</td><td>Anhang C5, Tabellen C9+C10<br/>Annex C5, Table C9+C10</td></tr><tr><td>PH-MUR + PH-K/PH-KD + PH-MU<br/>(Herstellwerk 1)<br/>(Manufacturing Plant 1)</td><td>Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br/>Length of connection, resistance, elongation, slip, fatigue strength</td><td>Anhang C7, Tabellen C13+C14<br/>Annex C7, Table C13+C14</td></tr><tr><td>PH-MU + PH-PA + PH-K/PH-KD + PH-MU<br/>(Herstellwerk 1)<br/>(Manufacturing Plant 1)</td><td>Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br/>Length of connection, resistance, elongation, slip, fatigue strength</td><td>Anhang C8, Tabellen C15+C16<br/>Annex C8, Table C15+C16</td></tr><tr><td>PH-AH + PH-K/PH-KD + PH-MU<br/>(Herstellwerk 1)<br/>(Manufacturing Plant 1)</td><td>Länge Verbindung, Widerstand, Dehnung, Schlupf<br/>Length of connection, resistance, elongation, slip</td><td>Anhang C9, Tabellen C17+C18<br/>Annex C9, Table C17+C18</td></tr><tr><td>allgemein<br/>general</td><td>Widerstand Brandbeanspruchung<br/>Reaction to fire</td><td>Baustoffklasse: A1<br/>Material fire classification: A1</td></tr></table> | Verbindung<br>Connection                               | Leistung gemäß ETA-20/0259<br>Performance according to ETA-20/0259 |  | PH-MU + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1+2)<br>(Manufacturing Plant 1+2) | Länge Verbindung, Widerstand Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength | Anhang C2, Tabelle C3+C4<br>Annex C2, Table C3+C4 | PH-MU + PH-K + PH-MU<br>(Herstellwerk 2)<br>(Manufacturing Plant 2) | Widerstand Seismik<br>Resistance to seismic action | Anhnag C2, Tabelle C3+C4<br>Annex C2, Table C3+C4 | PH-MU + PH-RL + PH-MU LH<br>(Herstellwerk 1)<br>(Manufacturing Plant 1) | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength | Anhang C4, Tabellen C7+C8<br>Annex C4, Table C7+C8 | PH-MU +PH-RB + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1) | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength | Anhang C5, Tabellen C9+C10<br>Annex C5, Table C9+C10 | PH-MUR + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1) | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength | Anhang C7, Tabellen C13+C14<br>Annex C7, Table C13+C14 | PH-MU + PH-PA + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1) | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength | Anhang C8, Tabellen C15+C16<br>Annex C8, Table C15+C16 | PH-AH + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1) | Länge Verbindung, Widerstand, Dehnung, Schlupf<br>Length of connection, resistance, elongation, slip | Anhang C9, Tabellen C17+C18<br>Annex C9, Table C17+C18 | allgemein<br>general | Widerstand Brandbeanspruchung<br>Reaction to fire | Baustoffklasse: A1<br>Material fire classification: A1 |
| Verbindung<br>Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Leistung gemäß ETA-20/0259<br>Performance according to ETA-20/0259                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                        |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MU + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1+2)<br>(Manufacturing Plant 1+2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Länge Verbindung, Widerstand Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Anhang C2, Tabelle C3+C4<br>Annex C2, Table C3+C4      |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MU + PH-K + PH-MU<br>(Herstellwerk 2)<br>(Manufacturing Plant 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Widerstand Seismik<br>Resistance to seismic action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Anhnag C2, Tabelle C3+C4<br>Annex C2, Table C3+C4      |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MU + PH-RL + PH-MU LH<br>(Herstellwerk 1)<br>(Manufacturing Plant 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Anhang C4, Tabellen C7+C8<br>Annex C4, Table C7+C8     |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MU +PH-RB + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Anhang C5, Tabellen C9+C10<br>Annex C5, Table C9+C10   |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MUR + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Anhang C7, Tabellen C13+C14<br>Annex C7, Table C13+C14 |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-MU + PH-PA + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Länge Verbindung, Widerstand, Dehnung, Schlupf, Ermüdungsfestigkeit<br>Length of connection, resistance, elongation, slip, fatigue strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Anhang C8, Tabellen C15+C16<br>Annex C8, Table C15+C16 |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| PH-AH + PH-K/PH-KD + PH-MU<br>(Herstellwerk 1)<br>(Manufacturing Plant 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Länge Verbindung, Widerstand, Dehnung, Schlupf<br>Length of connection, resistance, elongation, slip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Anhang C9, Tabellen C17+C18<br>Annex C9, Table C17+C18 |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |
| allgemein<br>general                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Widerstand Brandbeanspruchung<br>Reaction to fire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Baustoffklasse: A1<br>Material fire classification: A1 |                                                                    |  |                                                                               |                                                                                                                                            |                                                   |                                                                     |                                                    |                                                   |                                                                         |                                                                                                                                             |                                                    |                                                                     |                                                                                                                                             |                                                      |                                                                            |                                                                                                                                             |                                                        |                                                                                   |                                                                                                                                             |                                                        |                                                                           |                                                                                                      |                                                        |                      |                                                   |                                                        |

Dokument Nr. / Document No. 583481

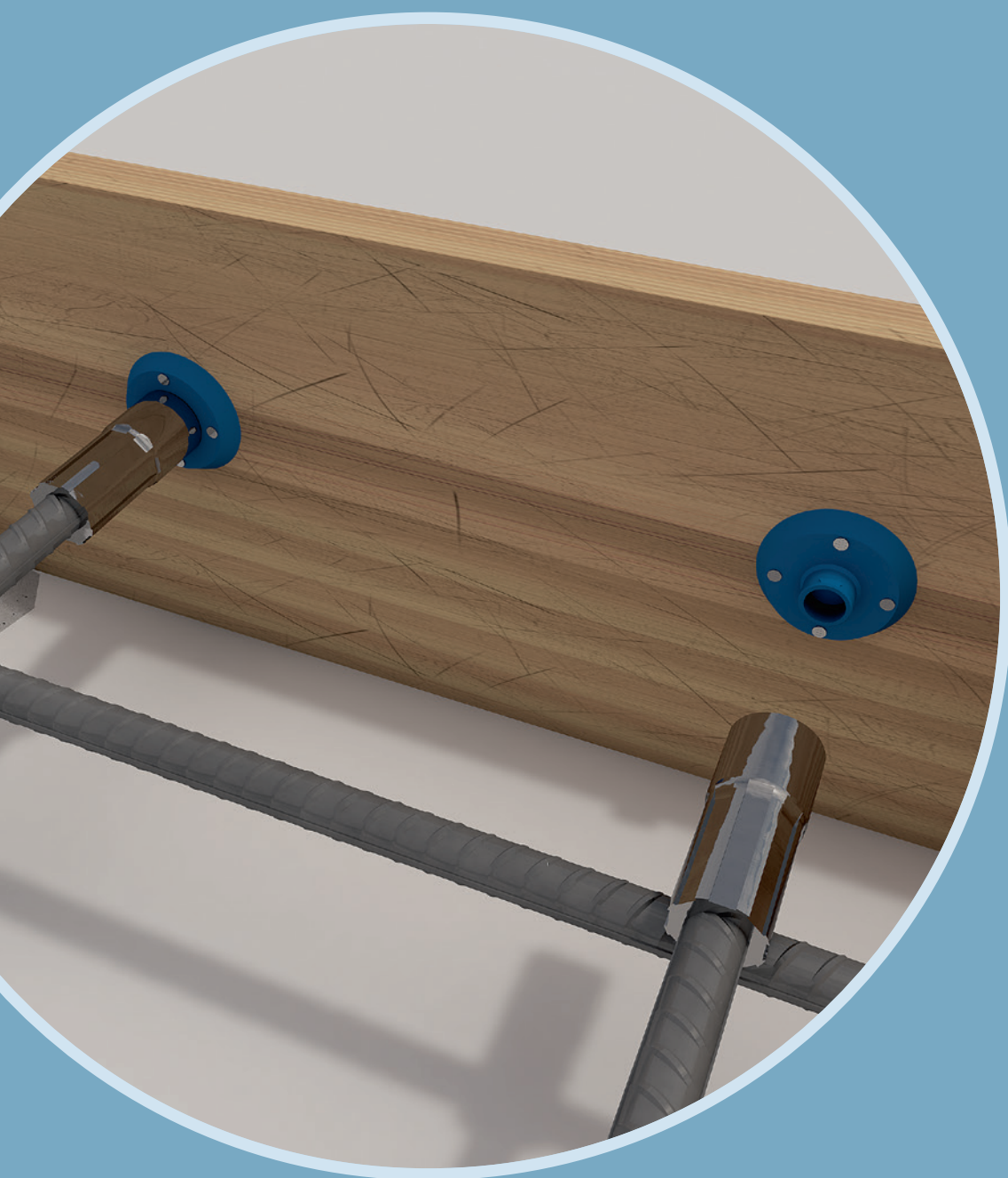
Version 21.07.2025

You can find further information in the approvals or certificates available at:

[www.pfeifer.info/ph-reinforcement](http://www.pfeifer.info/ph-reinforcement)

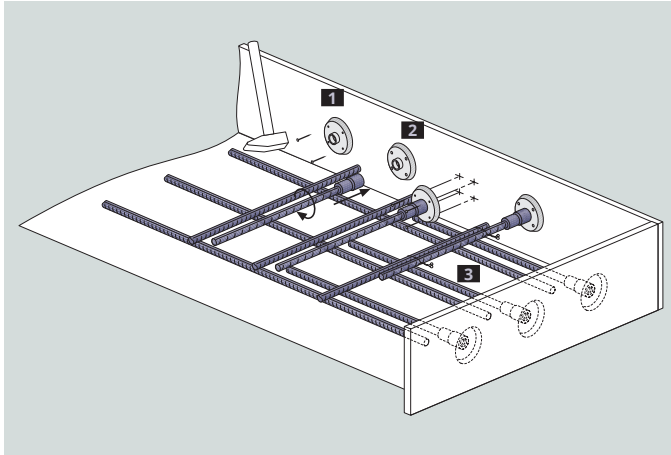


# Installation



# Installation instructions precast factory

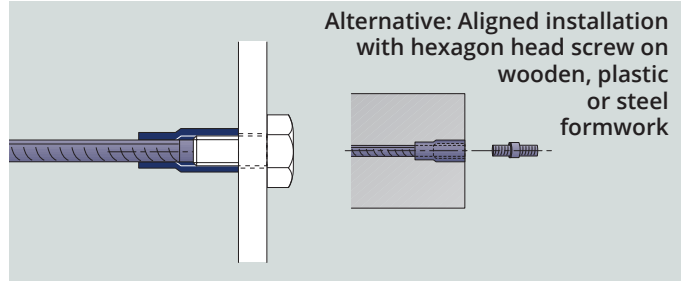
## Female Bar PH-MU



- 1 Nailing the Pin Plate to the formwork
- 2 Press on Female Bar and turn 90°. Alternative: Plug the Pin Plate into the
- 3 Install further reinforcement, connect Female Bar to the reinforcement and concreting

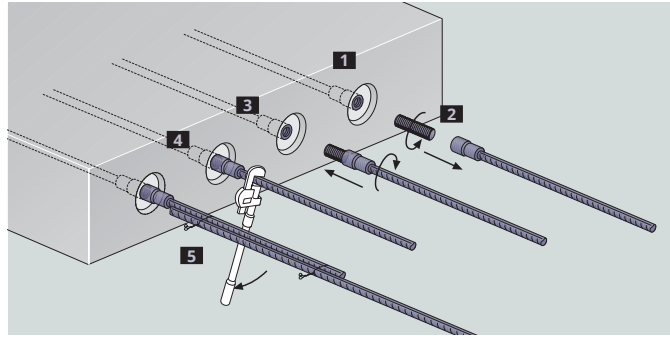
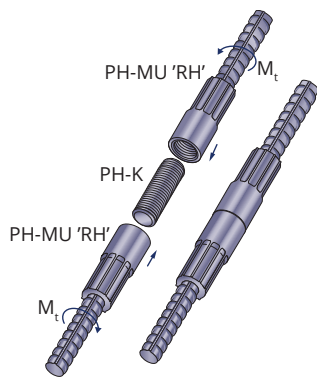
Female Bar and nail it onto the formwork.

- 3 Install further reinforcement, connect Female Bar to the reinforcement and concreting



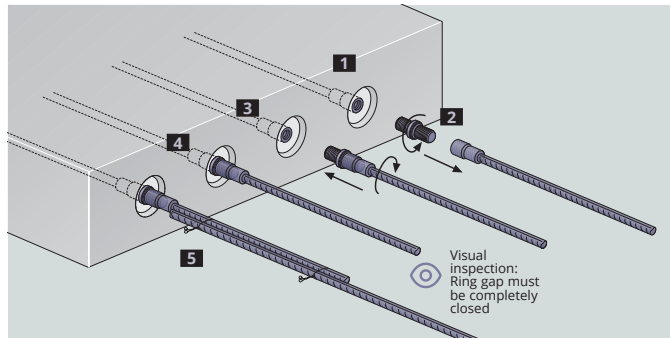
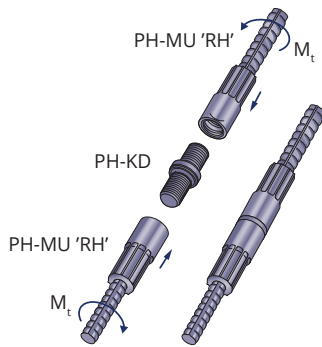
Alternative: Aligned installation with hexagon head screw on wooden, plastic or steel formwork

## Female Bar PH-MU with Connection Bolt PH-K



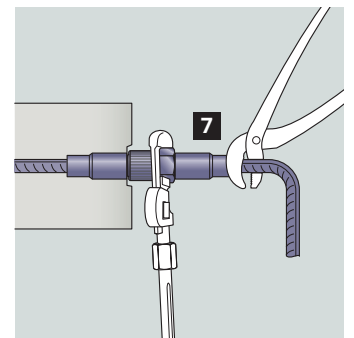
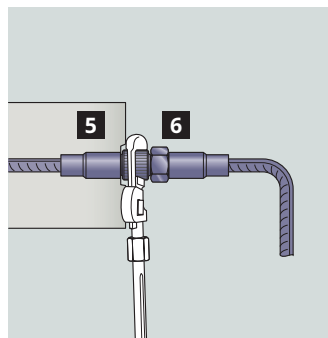
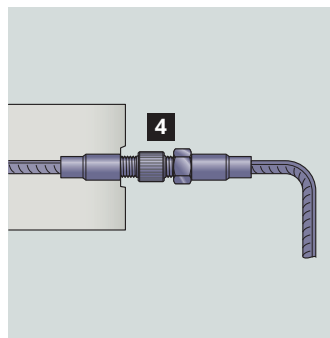
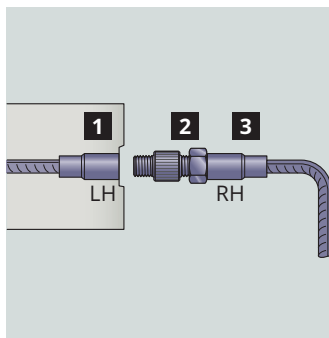
- 1 Unscrew colour-coded Pin Plate
- 2 Screwing in the Connection Bolt into the second Female Bar (normal right-hand thread) by hand (does not have to be tightened)
- 3 Screw together into embedded Female Bar with hand or pipe wrench
- 4 Apply torque with Torque Wrench
- 5 Anodising further reinforcement

## Female Bar PH-MU with Connecting Bolt with torque control PH-KD



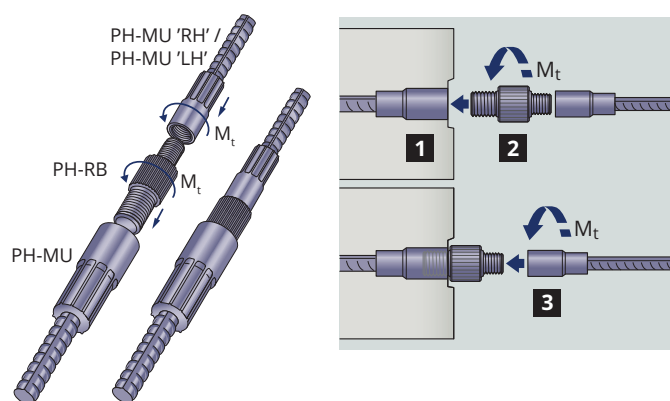
- 1 Unscrew colour-coded Pin Plate
- 2 Screwing in the Connection Bolt into the second Female Bar (normal right-hand thread) by hand (does not have to be tightened)
- 3 Screw together into embedded Female Bar with hand or pipe wrench
- 4 Anodising further reinforcement

## Right-left-thread Connection Bolt PH-RL



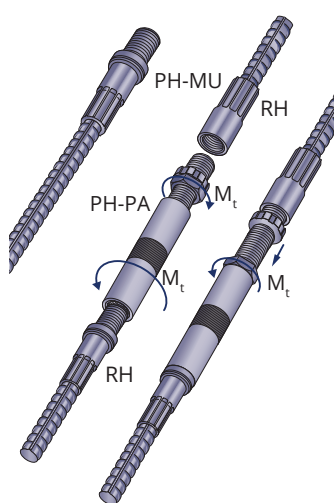
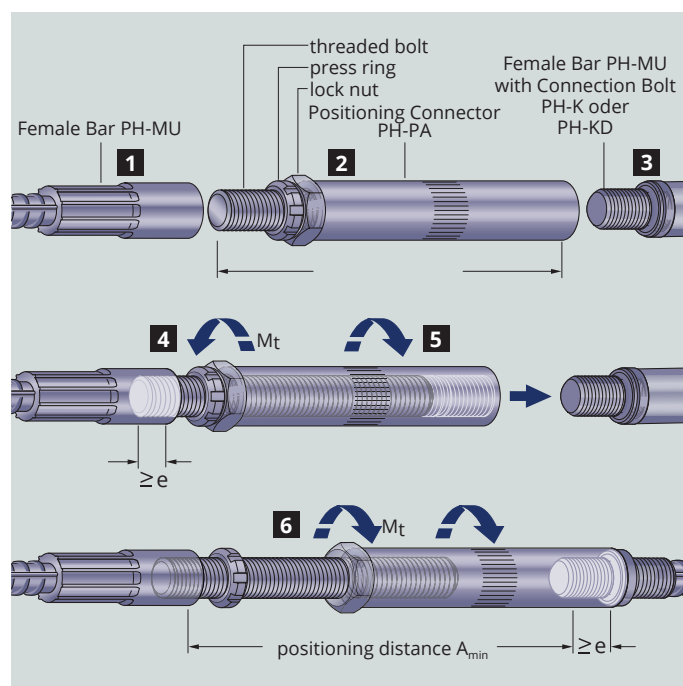
- 1 Left-hand threaded Female Bar set in concrete first.
- 2 Turn lock nut on the coupler against thickening by hand.
- 3 Turn Right-left-thread Connection Bolt once (no more!) into the right-hand threaded socket
- 4 Turn coupler with connection socket bar into concreted Female Bar **clockwise** by hand. First the knurled thickening of the coupler is at the left-hand threaded Connecting Bolt (set in concrete). If this is not the case, it should not be screwed too deep at step 3.
- 5 Tighten the coupler with Torque Wrench to the nominal torque as with for normal Male Bar.
- 6 Screw lock nut against coupler
- 7 Hold right Female Bar with pliers and tighten lock nut with torque tongs to torque as for Male Bar.

## Assembly instructions construction site



- 1** Concreted Female Bar with larger diameter.
- 2** Reducing Bolt with the larger thread is turned into the Female Bar set in concrete and tightened with the required tightening torque.
- 3** The Female Bar of the smaller diameter is screwed on the remaining threaded bolt, until the entire thread is screwed in. The bar is also tightened with the corresponding torque.

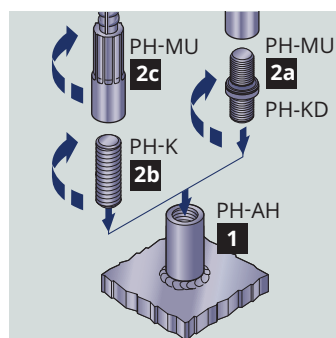
## Positioning Connector PH-PA



- 
- 1** Already installed Female Bar with right-hand thread.  
(Attention: Use only Positioning connection with right-hand thread socket or Connecting Bar!)
- 2** Positioning socket with completely screwed bolt is to be placed in between the connected bars.
- 3** Conditionally displaceable Male Bar (customary position tolerances must be observed in axial direction and transverse direction so that the threads meet).
- 4** The positioning connection is screwed into the Female Bar set in concrete with the threaded bolt and tightened with the diameter-related torque.
- 5** The socket part of the positioning connection is screwed out within the approval tolerances until the Male Bar is completely screwed in.
- 6** By tightening the socket and the lock nut with the diameter-related tightening torque the connection is secured.

| <b>A</b><br>[mm] | <b>A<sub>min</sub></b><br>[mm] | <b>A<sub>max</sub></b><br>[mm] |
|------------------|--------------------------------|--------------------------------|
| 163              | 166                            | 182                            |
| 176              | 178                            | 194                            |
| 190              | 190                            | 210                            |
| 250              | 254                            | 287                            |
| 299              | 302                            | 332                            |
| 314              | 318                            | 354                            |
| 373              | 382                            | 427                            |
| 456              | 482                            | 527                            |

## Welding Socket PH-AP



- 1 The Welding Socket is attached to the steel component to be connected by means of a weld seam, which is to be dimensioned by the responsible planner.
- 2 The Male Bar (2a) or female bar with Connection Bolt (2b and 2c) is screwed completely into the socket and secured with the required tightening torque.

## End Anchorage Plate PH-EP

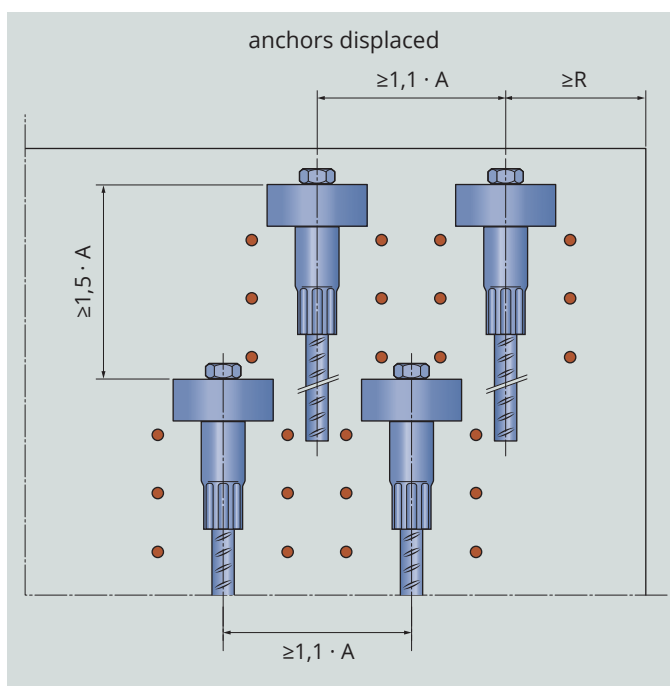
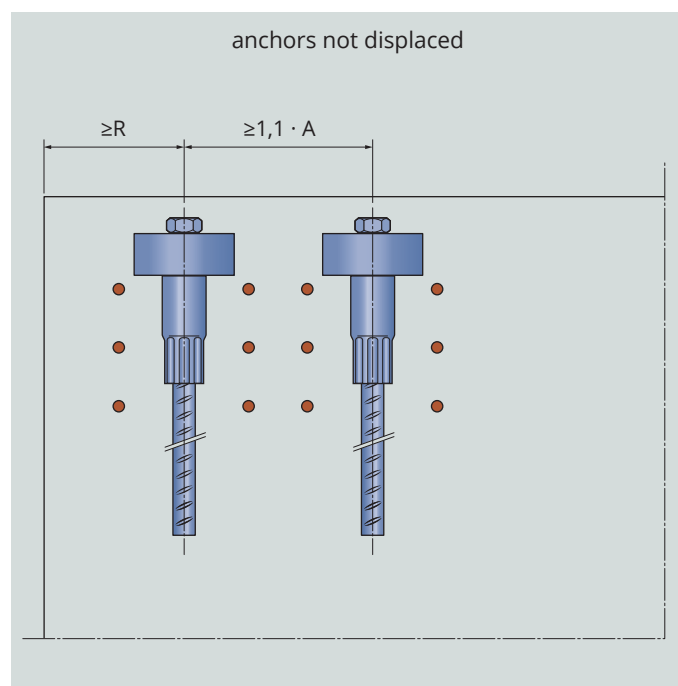
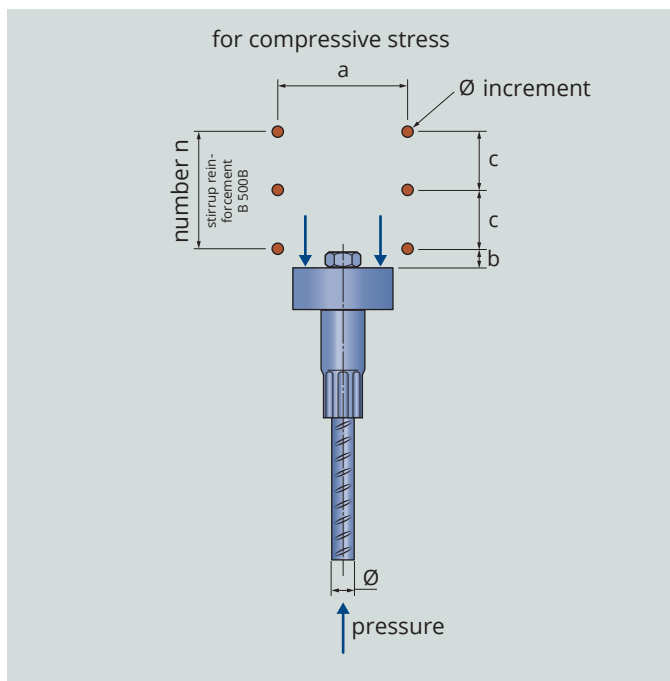
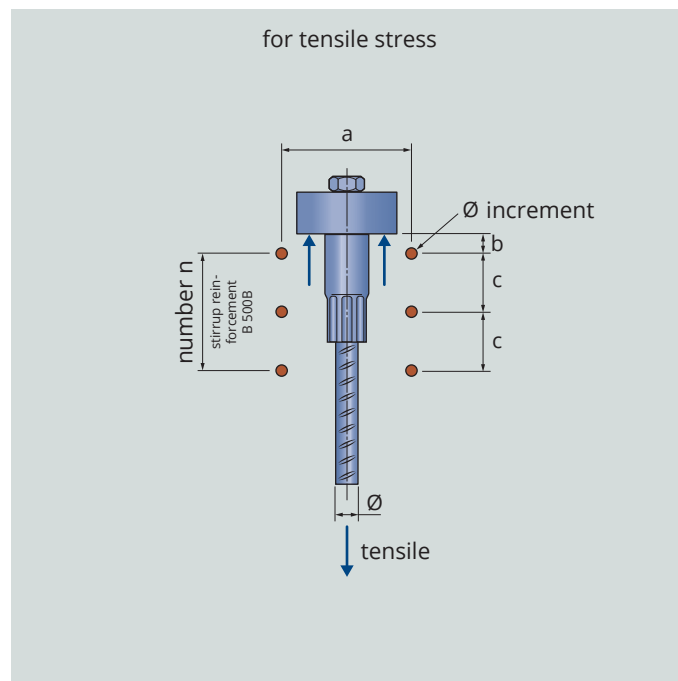


Table 1: End Anchorage Plate PH-EP – spacing and reinforcement

| Type<br>labelling | Center<br>distance | Edge<br>distance | Supplementary reinforcement B500A                                                                                      |                        |           |           |           |
|-------------------|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|-----------|-----------|
|                   |                    |                  | closed stirrups according to DIN EN 1992-1-1/Na, Figure NA.8.5 g<br>or helical reinforcement made of reinforcing steel |                        |           |           |           |
|                   | A<br>[mm]          | R<br>[mm]        | Number n<br>[-]                                                                                                        | Ø <sub>increment</sub> | a<br>[mm] | b<br>[mm] | c<br>[mm] |
| PH-EP 12          | 85                 | 65               | 3                                                                                                                      | 6                      | 60        | 20        | 28        |
| PH-EP 14          | 85                 | 65               | 3                                                                                                                      | 6                      | 60        | 20        | 28        |
| PH-EP 16          | 100                | 70               | 3                                                                                                                      | 6                      | 70        | 20        | 30        |
| PH-EP 20          | 130                | 85               | 4                                                                                                                      | 6                      | 100       | 20        | 32        |
| PH-EP 25          | 145                | 95               | 4                                                                                                                      | 6                      | 120       | 15        | 41        |
| PH-EP 28          | 170                | 105              | 3                                                                                                                      | 6                      | 140       | 10        | 41        |

## Other information:

Table 2: Torques

| Type labelling | Nominal-Ø BSt<br>Ø<br>[mm] | Assembly torque<br>M <sub>T</sub><br>[Nm] |
|----------------|----------------------------|-------------------------------------------|
| PH 8           | 8                          | 20                                        |
| PH 10          | 10                         | 25                                        |
| PH 12          | 12                         | 30                                        |
| PH 14          | 14                         | 40                                        |
| PH 16          | 16                         | 60                                        |
| PH 20          | 20                         | 80                                        |
| PH 25          | 25                         | 100                                       |
| PH 28          | 28                         | 140                                       |
| PH 32          | 32                         | 180                                       |
| PH 40          | 40                         | 200                                       |

Torques not required for connection with Connection Bolt with torque control PH-KD

Table 4: Weight determination for special lengths

|                                                                                                                        |                        |
|------------------------------------------------------------------------------------------------------------------------|------------------------|
| $G_{\text{special bar}} = G_{\text{standard bar}} + (L_{\text{special bar}} - L_{\text{standard bar}}) \times g / 100$ | G in [kg]<br>L in [cm] |
|------------------------------------------------------------------------------------------------------------------------|------------------------|

Where g is determined according to the table below:

| Type  | Ø <sub>s</sub><br>[mm] | g<br>[kg/100 cm] |
|-------|------------------------|------------------|
| PH 8  | 8                      | 0,40             |
| PH 10 | 10                     | 0,61             |
| PH 12 | 12                     | 0,89             |
| PH 14 | 14                     | 1,21             |
| PH 16 | 16                     | 1,58             |
| PH 20 | 20                     | 2,47             |
| PH 25 | 25                     | 3,85             |
| PH 28 | 28                     | 4,83             |
| PH 32 | 32                     | 6,31             |
| PH 40 | 40                     | 9,86             |

Table 3: Outer diameter sockets PH-MU and PH-KM

| Type labelling | Sockets<br>Ø<br>[mm] |
|----------------|----------------------|
| PH 8           | 16,0                 |
| PH 10          | 19,2                 |
| PH 12          | 22,3                 |
| PH 14          | 25,5                 |
| PH 16          | 28,8                 |
| PH 20          | 35,3                 |
| PH 25          | 44,1                 |
| PH 28          | 51,0                 |
| PH 32          | 55,8                 |
| PH 40          | 70,0                 |

### Material used for PFEIFER Reinforcement Connection System PH

Generally approved reinforcing steel bars B500 B according to DIN 488, high ductility

Other types of reinforcing steel bars are available on request

Products of the PH system are supplied as standard without corrosion predection delivered!

## Notes

This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

## Notes

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.



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