

PFEIFER



Building projects without hindrances



02/2015

PFEIFER PH Reinforcement Continuity System

**PFEIFER
SEIL- UND HEBETECHNIK
GMBH**

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Open road without restricted freedom of movement or increased risk of accidents due to protruding reinforcement bars – build with the PFEIFER PH Reinforcement Continuity System



Our products are manufactured by experienced employees at our head office in Memmingen. Modern, electronically-controlled machines ensure continuously monitored, consistent quality in the manufacturing and swaging of sockets. Since the founding of our company we have maintained a sophisticated quality assurance system that guarantees the safety of our products.

The certification awarded to us for quality management in accordance with DIN EN ISO 9001 is merely the proof of a safety principle that has worked well for decades.





Advantages in planning

- General German Technical Approval No. Z-1.5-226
- Full strength is maintained within the joint zone
- Comprehensive system equipment, such as reducing bolts, welding sockets and positioning connectors
- Also permitted for non-predominantly static loading
- Maximum load capacity is transmitted 100% safely and reliably
- Load bearing overlapping joint possible (the length of the continuity reinforcement need not be known at the time of ordering)
- Concrete interlock after removal of the plastic nail plate



Advantages in use

- Since the continuity reinforcement can only be screwed in shortly before the concrete is poured, all areas are freely accessible up to that time, and there is no risk of tripping or injury due to protruding bars
- Simplest possible fastening of the female bar to the formwork with the aid of the supplied nailing plate
- No drilling of formwork is required
- Thanks to the use of standardised lengths, bars from the PH system can be used flexibly - even changes of design at short notice are no problem here



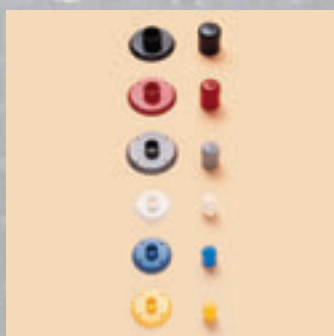
Advantages due to economic success

- Flexible planning
- Fast implementation of construction
- Approved special solutions, such as reducers for the economical reduction of diameters
- Fast delivery due to standard range



Advantages due to quality

- Industrial pre-manufactured quality connection (with proprietary and external monitoring) eliminates the necessity for checks on the building site or for sending samples for building material tests
- No corrosion or contamination due to thread protection system with plastic caps
- Thanks to the use of ductile, approved BST 500 S reinforcing steel, no risk of brittle failure when bending
- Safety due to colour coding
- No reduction factor such as with bent back connections



Combination of PFEIFER female and male bars is ideal for all standard applications



General technical approval

- 100% bar force transmission for tensile and compressive forces
- Safety with regard to building laws due to complete approved system for static and dynamic loads



Practicality

- Standard threads – commercially-available bolts with M-threads can be screwed in
- No necessity to drill the formwork
- Colour coding – fast identification of diameter just by means of the colour
- No necessity to use locknuts for securing the connection
- Easy-to-use nailing plate for horizontal fixing – push on ... half a turn ... fixed!
- No bothersome, protruding reinforcement bars
- Complete from diameters of 8 to 40 mm



Purchase

- competitive price
- Standard lengths are deliverable immediately
- Special versions are possible
- Simple ordering procedure



PFEIFER female bars

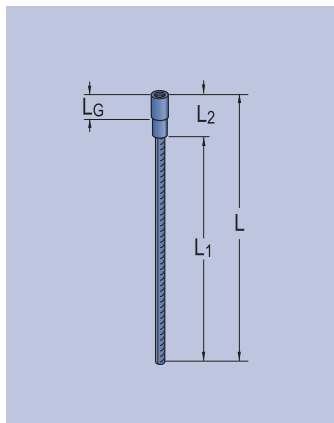


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**PH reinforcement
continuity system**

Female bars

PFEIFER straight female bars ☐ standard lengths



Note:
Short bars (40 cm) are
available for welding

Type	Ø _s [mm]	Thread	L ± 1,0 [cm]	L ₁ [cm]	L ₂ [cm]	L ₃ [mm]	A _s [mm ²]	adm. F [kN]	Weight [kg]	Ref. no.
PH-MU 8	8	M 12	35	31	4	15	50	21,9	0,16	05.320.082.035
PH-MU 8	8	M 12	55	51	4	15	50	21,9	0,24	05.320.082.055
PH-MU 10	10	M 14	40	35,5	4,5	17	78	34,1	0,29	05.320.102.040
PH-MU 10	10	M 14	69	64,5	4,5	17	78	34,1	0,46	05.320.102.069
PH-MU 12	12	M 16	57	52	5	20	113	49,2	0,57	05.320.122.057
PH-MU 12	12	M 16	80	75	5	20	113	49,2	0,78	05.320.122.080
PH-MU 12	12	M 16	150	145	5	20	113	49,2	1,40	05.320.122.150
PH-MU 14	14	M 18	66	60,2	5,8	22	154	66,9	0,90	05.320.142.066
PH-MU 14	14	M 18	93	87,2	5,8	22	154	66,9	1,22	05.320.142.093
PH-MU 14	14	M 18	150	144,2	5,8	22	154	66,9	1,91	05.320.142.150
PH-MU 16	16	M 20	102	95,5	6,5	24	201	87,4	1,75	05.320.162.102
PH-MU 16	16	M 20	144	137,5	6,5	24	201	87,4	2,42	05.320.162.144
PH-MU 16	16	M 20	200	193,5	6,5	24	201	87,4	3,30	05.320.162.200
PH-MU 20	20	M 24	128	119,5	8,5	32	314	136,6	3,45	05.320.202.128
PH-MU 20	20	M 24	180	171,5	8,5	32	314	136,6	4,73	05.320.202.180
PH-MU 20	20	M 24	300	291,5	8,5	32	314	136,6	7,69	05.320.202.300
PH-MU 25	25	M 30	160	149,7	10,3	40	491	213,4	6,70	05.320.252.160
PH-MU 25	25	M 30	226	215,7	10,3	40	491	213,4	9,24	05.320.252.226
PH-MU 25	25	M 30	360	349,7	10,3	40	491	213,4	14,50	05.320.252.360
PH-MU 28	28	M 36	179	166,6	12,4	42	616	267,7	9,47	05.320.282.179
PH-MU 28	28	M 36	253	240,6	12,4	42	616	267,7	13,05	05.320.282.253
PH-MU 28	28	M 36	360	347,6	12,4	42	616	267,7	18,22	05.320.282.360
PH-MU 32	32	M 42	200	186,3	13,7	52	804	349,7	13,55	05.320.322.200
PH-MU 32	32	M 42	290	276,3	13,7	52	804	349,7	19,23	05.320.322.290
PH-MU 40	40	M 52	350	333,0	17,0	70	1257	546,3	36,1	05.320.402.350

Sample order:

PH-MU 12
Ref. no. 05.320.122.057

PFEIFER straight female bars ☐ special lengths

Maximum length L up to 600 cm
Shorter lengths are available as standard, to min. L = 2 · L₂
Length tolerance L ± 1.0 cm

Sample order:

PH-MU 12, L = 160 cm
Ref. no. 05.320.122.160

Material used for the PFEIFER PH reinforcement continuity system

B500 B ribbed reinforcing steel
according to DIN 488, highly
ductile, carrying General German
technical approval

Products of the PH system be
delivered without any corrosion
protection!

Weight calculation for special lengths

$$W_{\text{special bar}} = W_{\text{standard bar}} + (L_{\text{special bar}} - L_{\text{standard bar}}) \cdot w / 100$$

W in [kg]
L in [cm]

w is determined from the table below:

Typ	Ø _s [mm]	g 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

Outer socket diameter

Type	Ø _s	Ø socket [mm]
PH 8	8	16,0
PH 10	10	19,2
PH 12	12	22,3
PH 14	14	25,5
PH 16	16	28,8
PH 20	20	35,3
PH 25	25	44,1
PH 28	28	51,0
PH 32	32	55,8
PH 40	40	70,0

PFEIFER female bars

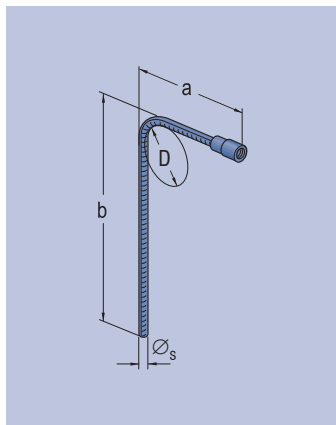


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**PH reinforcement
continuity system**

Female bars

PFEIFER bent female bars



Type	Ø _s [mm]	Thread	D ≈ 10 Ø _s [cm]	b _{min.} [cm]	a _{min.} [cm]	Bending value x [cm]	Ref. no.
PH-MB 8	8	M 12	8,0	12,0	12,0	2,8	05.322.082
PH-MB 10	10	M 14	10,0	12,0	13,5	3,6	05.322.102
PH-MB 12	12	M 16	12,0	13,0	15,0	3,8	05.322.122
PH-MB 14	14	M 18	14,0	15,0	17,0	4,6	05.322.142
PH-MB 16	16	M 20	16,0	15,0	20,0	5,5	05.322.162
PH-MB 20	20	M 24	20,0	22,0	25,0	6,7	05.322.202
PH-MB 25	25	M 30	25,0	26,0	30,0	8,2	05.322.252
PH-MB 28	28	M 36	28,0	26,0	35,0	9,2	05.322.282
PH-MB 32	32	M 42	32,0	26,0	38,0	10,3	05.322.322

L = straight length

L = a + b - x (with x from the table
and a to be freely chosen,
but not smaller than a min)
b = L - a + x
a = L - b + x

Standard bending diameter

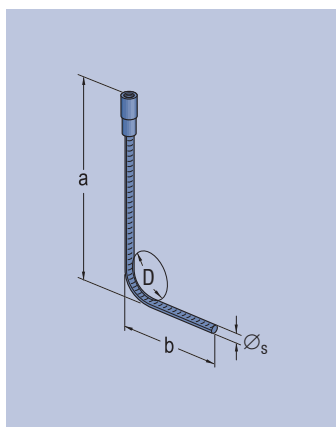
d_{Br} = 10 Ø_s

Deviations from bending diameter
according to DIN EN 1992-1-1

Sample order:

PH-MB 12, a = 20 cm, b = 40.8 cm
Ref. no. 05.322.122

PFEIFER hooked female bars



Type	Ø _s [mm]	Thread	D ≈ 4 to 7 Ø _s [cm]	a _{min.} [cm]	b _{min.} [cm]	Bending value x [cm]	Ref. no.
PH-MW 8	8	M 12	3,2	8,5	12,0	2,0	05.332.082
PH-MW 10	10	M 14	4,0	9,5	12,0	2,3	05.332.102
PH-MW 12	12	M 16	4,8	12,0	12,0	2,5	05.332.122
PH-MW 14	14	M 18	5,6	13,5	13,0	3,0	05.332.142
PH-MW 16	16	M 20	6,4	15,0	15,0	3,2	05.332.162
PH-MW 20	20	M 24	14,0	21,0	20,0	5,4	05.332.202
PH-MW 25	25	M 30	17,5	27,0	21,0	6,6	05.332.252
PH-MW 28	28	M 36	20,0	31,0	22,0	7,7	05.332.282
PH-MW 32	32	M 42	22,5	34,0	22,0	9,0	05.332.322

L = straight length

L = a + b - x (with x from the table
and b to be freely chosen,
but not smaller than b min)
b = L - a + x
a = L - b + x

Bending diameter

d_{Br} = 4 Ø_s for Ø_s < 20 mm

d_{Br} = 7 Ø_s for Ø_s ≥ 20 mm

b min. according to DIN EN 1992-1-1

Sample order

PH-MW 12, a = 49.5 cm, b = 10 cm
Ref. no. 05.322.122

PFEIFER male bars

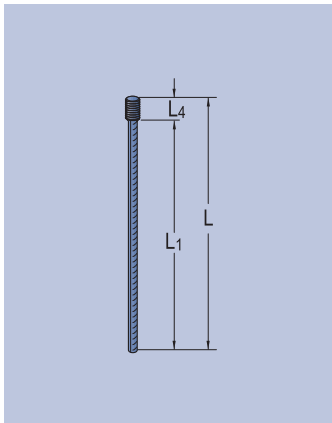


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**PH reinforcement
continuity system**

Male bars

PFEIFER straight male bars ☐ standard lengths



Note:
Short bars (40 cm) for welding,
see page 10!

Type	\varnothing_s [mm]	Thread	$L \pm 1,0$ [cm]	L_1 [cm]	L_4 [cm]	A_s [mm ²]	adm. F [kN]	Weight [kg]	Ref. no.
PH-A 12	12	M 16	57	55,3	1,7	113	49,2	0,51	05.321.122.057
PH-A 12	12	M 16	80	78,3	1,7	113	49,2	0,71	05.321.122.080
PH-A 12	12	M 16	150	148,3	1,7	113	49,2	1,33	05.321.122.150
PH-A 14	14	M 18	66	64	2	154	66,9	0,80	05.321.142.066
PH-A 14	14	M 18	93	91	2	154	66,9	1,12	05.321.142.093
PH-A 14	14	M 18	150	148	2	154	66,9	1,81	05.321.142.150
PH-A 16	16	M 20	102	99,7	2,3	201	87,4	1,61	05.321.162.102
PH-A 16	16	M 20	144	141,7	2,3	201	87,4	2,27	05.321.162.144
PH-A 16	16	M 20	200	197,7	2,3	201	87,4	3,15	05.321.162.200
PH-A 20	20	M 24	128	125	3	314	136,6	3,16	05.321.202.128
PH-A 20	20	M 24	180	177	3	314	136,6	4,44	05.321.202.180
PH-A 20	20	M 24	300	297	3	314	136,6	7,40	05.321.202.300
PH-A 25	25	M 30	160	156,2	3,8	491	213,4	6,17	05.321.252.160
PH-A 25	25	M 30	226	222,2	3,8	491	213,4	8,71	05.321.252.226
PH-A 25	25	M 30	360	356,2	3,8	491	213,4	13,87	05.321.252.360
PH-A 28	28	M 36	179	175	4	616	267,7	8,65	05.321.282.179
PH-A 28	28	M 36	253	249	4	616	267,7	12,23	05.321.282.253
PH-A 28	28	M 36	360	356	4	616	267,7	17,90	05.321.282.360

For the bar diameters 8, 10, 32 and 40 mm, the PFEIFER PH-MU female bar in combination with the PFEIFER PH-K threaded connecting bolt is available as an alternative.

Sample order:

PH-A 20
Ref. no. 05.321.202.180

PFEIFER straight male bars ☐ special lengths

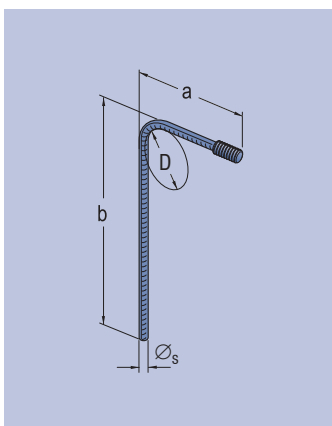
Maximum length L up to 370 cm
Minimum length L min = 3 · L 4
Length tolerance L ± 1.0 cm
Delivery time to be agreed upon

Lengths over 370 cm can be
implemented as a female bar with
threaded connecting bolt!

Sample order:

PH-A 20, L = 360 cm
Ref. no. 05.321.202.360

PFEIFER bent male bars



Type	\varnothing_s [mm]	Thread	$D = 10 \varnothing_s$ [cm]	a min [cm]	Bending value x [cm]	Ref. no.
PH-AB 12	12	M 16	12,0	16,4	3,8	05.323.122
PH-AB 14	14	M 18	14,0	19,3	4,6	05.323.142
PH-AB 16	16	M 20	16,0	22,3	5,5	05.323.162
PH-AB 20	20	M 24	20,0	26,7	6,7	05.323.202
PH-AB 25	25	M 30	25,0	32,4	8,2	05.323.252
PH-AB 28	28	M 36	28,0	35,8	9,2	05.323.282

L = straight length (maximum 3,7 m)

$L = a + b - x$ (with x from the table)
 $b = L - a + x$ and a to be freely chosen,
 $a = L - b + x$ but not smaller than a min)

**Standard-
bending diameter**
 $d_{Br} = 10 \varnothing_s$

Sample order:

PH-AB 20, a = 35 cm, b = 151.7 cm
Ref. no. 05.323.202

Please consider: the bent male bar can no longer be aligned with the bent end after screwing into the concreted-in female bar. If alignment is necessary, we recommend the use of a right-left threaded connecting bolt in combination with two female bars (page 16).

PFEIFER male bars

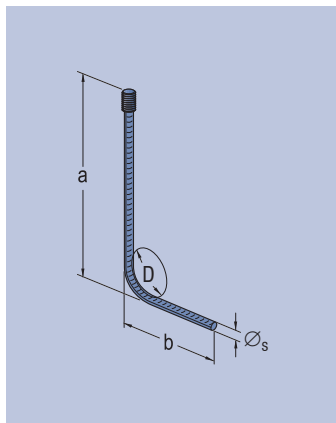


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**PH reinforcement
continuity system**

Male bars

PFEIFER hooked male bars



L = straight length (maximum 3,6 m)

$L = a + b - x$ (with x from the table)
 $b = L - a + x$ and b to be freely chosen,
 $a = L - b + x$ but not smaller than b min)

Type	\varnothing_s [mm]	Thread	D = 4 to 7 \varnothing_s [cm]	b _{min} [cm]	Bending value x [cm]	Ref. no.
PH-AW 12	12	M 16	4,8	9,7	2,5	05.327.122
PH-AW 14	14	M 18	5,0	11,4	3	05.327.142
PH-AW 16	16	M 20	6,4	12,6	3,2	05.327.162
PH-AW 20	20	M 24	14,0	18,8	5,4	05.327.202
PH-AW 25	25	M 30	17,5	23,2	6,6	05.327.252
PH-AW 28	28	M 36	20,0	26,8	7,7	05.327.282

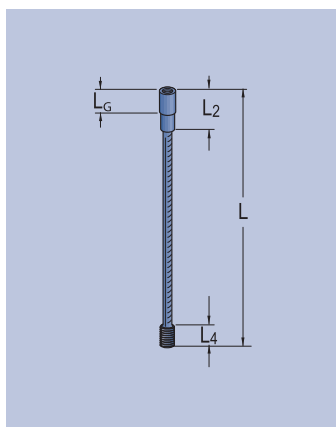
Bending diameter

$d_{br} = 4 \varnothing_s$ for $\varnothing_s < 20$ mm
 $d_{br} = 7 \varnothing_s$ for $\varnothing_s = 20$ mm
b min. according to DIN EN 1992-1-1

Sample order:

PH-AW 12, a = 49,5 cm, b = 10 cm
Ref. no. 05.327.122

PFEIFER male bars with socket



Type	\varnothing_s [mm]	Thread	L _G [cm]	L ₂ [cm]	L ₄ [cm]	Ref. no.
PH-AM 12	12	M 16	2,0	5,1	1,7	05.325.122
PH-AM 14	14	M 18	2,2	5,8	2	05.325.142
PH-AM 16	16	M 20	2,4	6,6	2,3	05.325.162
PH-AM 20	20	M 24	3,2	8,5	3	05.325.202
PH-AM 25	25	M 30	4,0	10,3	3,8	05.325.252
PH-AM 28	28	M 36	4,2	12,4	4	05.325.282

Note: If the length of the bar is critical, please consider that the nailing plate is 8 mm thick.

Sample order:

PH-AM 28
Ref. no. 05.325.282.258

PFEIFER male bars with socket □ special lengths

Maximum length L up to 360 cm
Length tolerance L ± 1.0 cm

Male bars with sockets in standard lengths or smaller are available at short notice. Other special lengths are available on request.

Sample order:

PH-AM 20, L = 360 cm
Ref. no. 05.325.202.360

PFEIFER special female bars

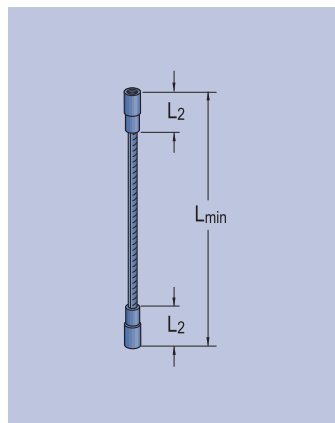


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**PH reinforcement
continuity system**

Special female bars

PFEIFER double female bars



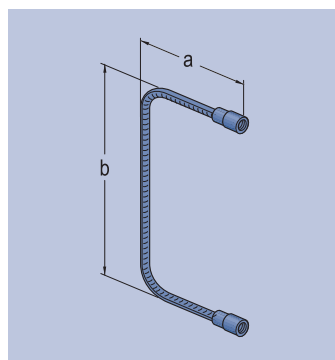
Type	\varnothing_s [mm]	Thread	$L_{min} \pm 1,0$ [cm]	L_2 [cm]	Ref. no.
PH-DM 8	8	M 12	13,0	4,0	05.324.082
PH-DM 10	10	M 14	13,0	4,5	05.324.102
PH-DM 12	12	M 16	13,0	5,1	05.324.122
PH-DM 14	14	M 18	13,5	5,8	05.324.142
PH-DM 16	16	M 20	16,5	6,5	05.324.162
PH-DM 20	20	M 24	20,0	8,5	05.324.202
PH-DM 25	25	M 30	29,5	10,3	05.324.252
PH-DM 28	28	M 36	31,5	12,3	05.324.282
PH-DM 32	32	M 42	on enquiry	13,7	05.324.322
PH-DM 40	40	M 52	on enquiry	17,0	05.324.402

Note: If the length of the bar is critical for the sizes PH 12–28, please consider that the nailing plate is 8 mm thick.

Sample order:

PH-DM 20
Ref. no. 05.324.202.180

PFEIFER double female bars as U-shaped



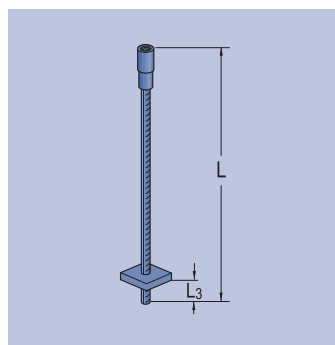
Type	\varnothing_s [mm]	Thread	min a [mm]	min b [mm]	Ref. no.
PH-U 12	12	M 16	140	280	05.334.122
PH-U 14	14	M 18	140	280	05.334.142
PH-U 16	16	M 20	150	280	05.334.162
PH-U 20	20	M 24	300	600	05.334.202
PH-U 25	25	M 30	300	600	05.334.252
PH-U 28	28	M 36	310	600	05.334.282

U-shaped stirrup in diameters 8, 10, 32 and 40 mm are available upon special enquiry.

Sample enquiry:

PH-U 16, a = 20 cm, b = 30 cm
Ref. no. 05.334.162

PFEIFER female bars with welded anchor plate



Maximum length L up to 600 cm
Length tolerance L ± 1.0 cm

Type	\varnothing_s [mm]	Thread	Anchor plate A/B/d [mm]	L_3 [cm]	Ref. no.
PH-AP 12	12	M 16	50/ 50/10	12	05.326.122
PH-AP 14	14	M 18	50/ 50/10	14	05.326.142
PH-AP 16	16	M 20	70/ 70/12	16	05.326.162
PH-AP 20	20	M 24	70/ 70/12	20	05.326.202
PH-AP 25	25	M 30	90/ 90/20	25	05.326.252
PH-AP 28	28	M 36	100/100/20	28	05.326.282



Please note that the anchoring in concrete must be carried out by the responsible engineer.



Usable only for predominantly static loads.



For dynamic loads, see PFEIFER PH-EP end anchor on page 19

Sample order:

PH-AP 20, L = 360 cm
Ref. no. 05.326.202.360

PFEIFER female and male bars for welding

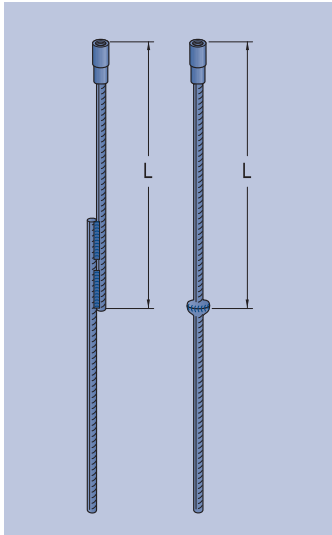


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PH reinforcement
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Welding bars

PFEIFER female bars for welding

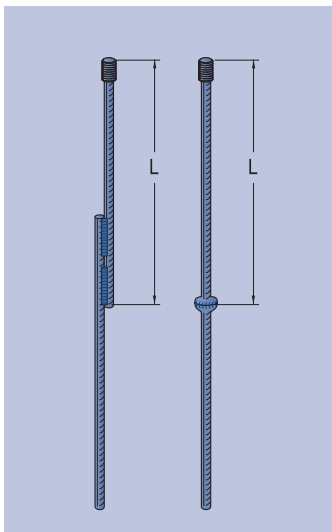


Type	Ø _s [mm]	L [cm]	A _s [mm ²]	adm. F [kN]	Weight [kg]	Ref. no.
PH-MU 12	12	40	113	49,2	0,42	05.320.122.040
PH-MU 14	14	40	154	66,9	0,58	05.320.142.040
PH-MU 16	16	40	201	87,4	0,77	05.320.162.040
PH-MU 20	20	40	314	136,6	1,25	05.320.202.040
PH-MU 25	25	40	491	213,4	2,00	05.320.252.040
PH-MU 28	28	40	616	267,7	2,69	05.320.282.040

Sample order:

PH-MU 20
Ref. no. 05.320.202.040

PFEIFER male bars for welding



Type	Ø _s [mm]	L [cm]	A _s [mm ²]	adm. F [kN]	Weight [kg]	Ref. no.
PH-A 12	12	40	113	49,2	0,35	05.321.122.040
PH-A 14	14	40	154	66,9	0,48	05.321.142.040
PH-A 16	16	40	201	87,4	0,63	05.321.162.040
PH-A 20	20	40	314	136,6	0,99	05.321.202.040
PH-A 25	25	40	491	213,4	1,54	05.321.252.040
PH-A 28	28	40	616	267,7	1,93	05.321.282.040

Sample order:

PH-A 20
Ref. no. 05.321.202.040

Installation accessories for the PFEIFER PH reinforcement continuity system

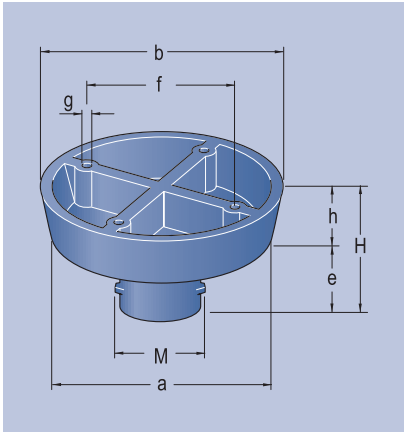


PFEIFER

PH reinforcement continuity system

Installation accessories

PFEIFER nailing plates
☐ formwork fixing and thread protection



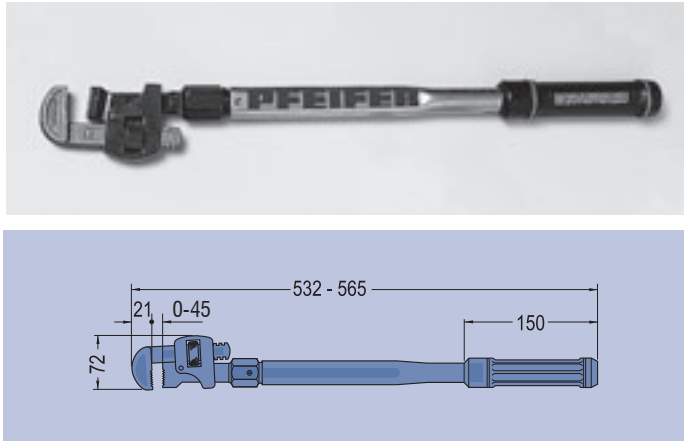
The female bars are delivered complete with nailing plates to aid assembly and to protect the internal thread. The female bar can hence be nailed to the formwork in the precise position. The reinforcing steel must additionally be fixed to the reinforcement by means of wire. The PFEIFER colour coding is of particular importance. This ensures that sizes can be identified easily on the building site, because the male bars are also fitted with corresponding colour-coded thread protection caps.

for type	Thread	Colour coding	Dimensions in mm							Ref. no.
			b	a	H	h	e	f	w	
PH 12	M 16	yellow	55	45	18	8	10	39	3	05.203.160
PH 14	M 18	blue	55	45	18	8	10	39	3	05.203.180
PH 16	M 20	white	55	45	20	8	12	39	3	05.203.200
PH 20	M 24	grey	80	70	20	8	12	61	3	05.203.240
PH 25	M 30	antique red	80	70	23	8	15	61	3	05.203.300
PH 28	M 36	black	80	70	25	8	15	61	3	05.203.360

Nailing plates are supplied with every female bar as standard. Additional quantities of PFEIFER nailing plates can be ordered in all sizes and amounts using the above ref. no.

We recommend the PFEIFER plastic nailing plates (ref. no. 05.200) for fixing the sizes PH-MU 8 and PH-MU 10. The sizes PH-MU 32 and PH-MU 40 should be covered by the small sealing caps (ref. no. 05.216).

PFEIFER torque wrench



We supply the PFEIFER torque wrench for final tightening of the male bars to the correct torque. It has adjustable, self-locking, toothed jaws that grip the reinforcing bars securely. The torque range can be adjusted to suit all reinforcing bar sizes (torque wrench range 30 to 200 Nm).

Ref. no. 05.328.001

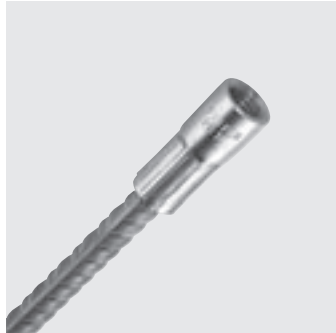
Tightening torques	
for type	M _T [Nm]
PH 8	20
PH 10	25
PH 12	30
PH 14	40
PH 16	60
PH 20	80
PH 25	100
PH 28	140
PH 32	180
PH 40	200

Installation instructions for the PFEIFER PH reinforcement continuity system

PFEIFER

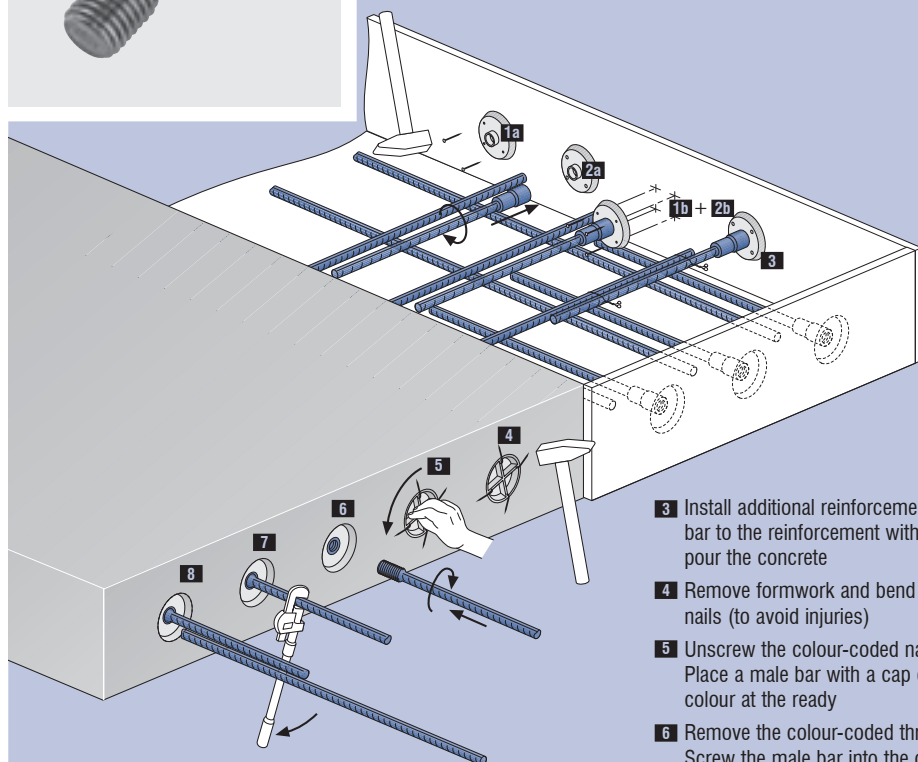
PH reinforcement continuity system

Installation instructions



Only PFEIFER reinforcement continuity system components must be installed together. Combinations with parts made by other manufacturers are dangerous, for example due to variations in threads and bar diameters and are therefore not permitted.

Since the nailing plate cannot absorb any fixing moment, the reinforcing bar must additionally be fixed with wire to the reinforcement so that the socket does not become detached from the nailing plate during concreting.



1a Nail the nailing plate to the formwork

2a Push on the female bar and turn it 90°

1b + 2b Alternatively: push the nailing plate onto the female bar and nail them both to the formwork

3 Install additional reinforcements; fix the bar to the reinforcement with wire and pour the concrete

4 Remove formwork and bend over the nails (to avoid injuries)

5 Unscrew the colour-coded nailing plates. Place a male bar with a cap of the same colour at the ready

6 Remove the colour-coded threaded cap. Screw the male bar into the clean thread of the female bar by hand or using a wrench

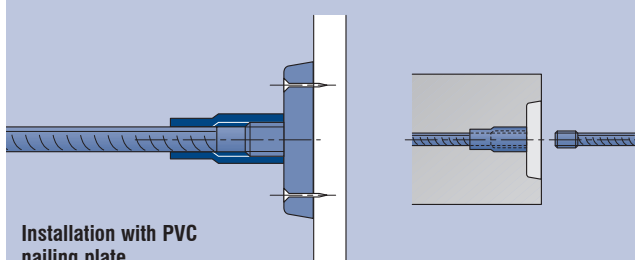
7 Apply the specified torque with a torque wrench

8 Install additional reinforcements; fix with wire and pour the concrete

PFEIFER alternative methods of installation

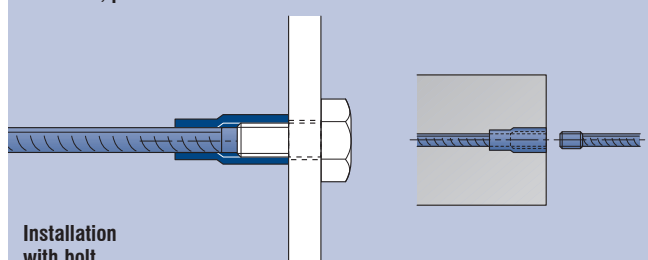
Whereas recessed installation is achieved by nailing the nailing plate to the formwork, a flush installation of the female bar is also possible using a normal hexagonal-head bolt.

To timber formwork:



Installation with PVC nailing plate

To timber, plastic or steel formwork:



Installation with bolt

Flexibility due to technically mature connecting and anchoring elements for every application



Construction supervision authority approval

- 100 % bar force transmission for tensile and compressive forces
- Safety with regard to building laws thanks to approved reducing and connecting solutions
- End anchors also for dynamic loads



Practicality

- Standard threads – commercially-available bolts with M-threads can be screwed in without problem
- Simplest way to reduce diameters in the joint area using PH-RM reducing socket and PH-RB reducing bolt
- Connection of non-rotating bars with the right-left connector
- Connection to steelwork elements using the welding socket
- No necessity to use locknuts for securing the connection
- Solutions for every area of application



Purchase

- Competitive standard parts
- Short-notice delivery from stock
- No cost-intensive special solutions required
- Complete range



PFEIFER threaded connecting bolts

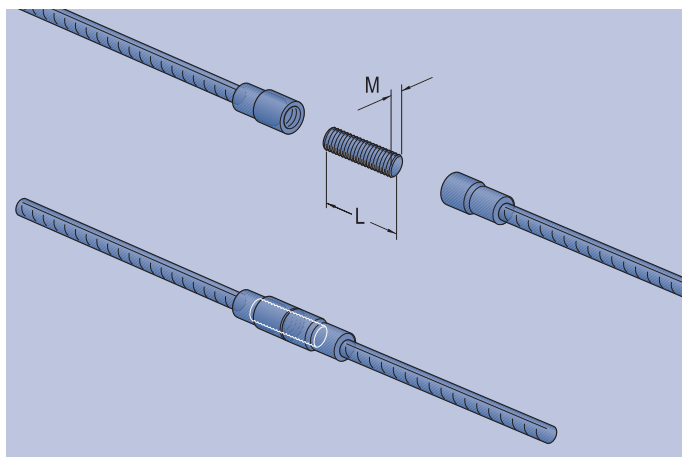


PFEIFER

**PH reinforcement
continuity system**

Threaded connecting bolts

PFEIFER threaded connecting bolts



Type	Thread	A _{sp} [mm ²]	F _{u, min} [kN]	L [mm]	Weight kg/100 St.	Ref. no.
PH-K 8	M 12	84,3	67	30	2,18	05.329.082
PH-K 10	M 14	115	92	34	3,48	05.329.102
PH-K 12	M 16	157	125	40	4,31	05.329.122
PH-K 14	M 18	192	154	45	6,03	05.329.142
PH-K 16	M 20	245	196	50	8,65	05.329.162
PH-K 20	M 24	353	282	65	16,62	05.329.202
PH-K 25	M 30	561	449	80	33,03	05.329.252
PH-K 28	M 36	817	654	85	57,72	05.329.282
PH-K 32	M 42	1121	896	106	96,90	05.329.322
PH-K 40	M 52	1758	1406	145	218,30	05.329.402

Material: strength 8.8

The two female bars with normal right-hand thread shown in the diagram must be ordered separately. **No** left-hand thread is required.

Installation instructions for PFEIFER threaded connecting bolts

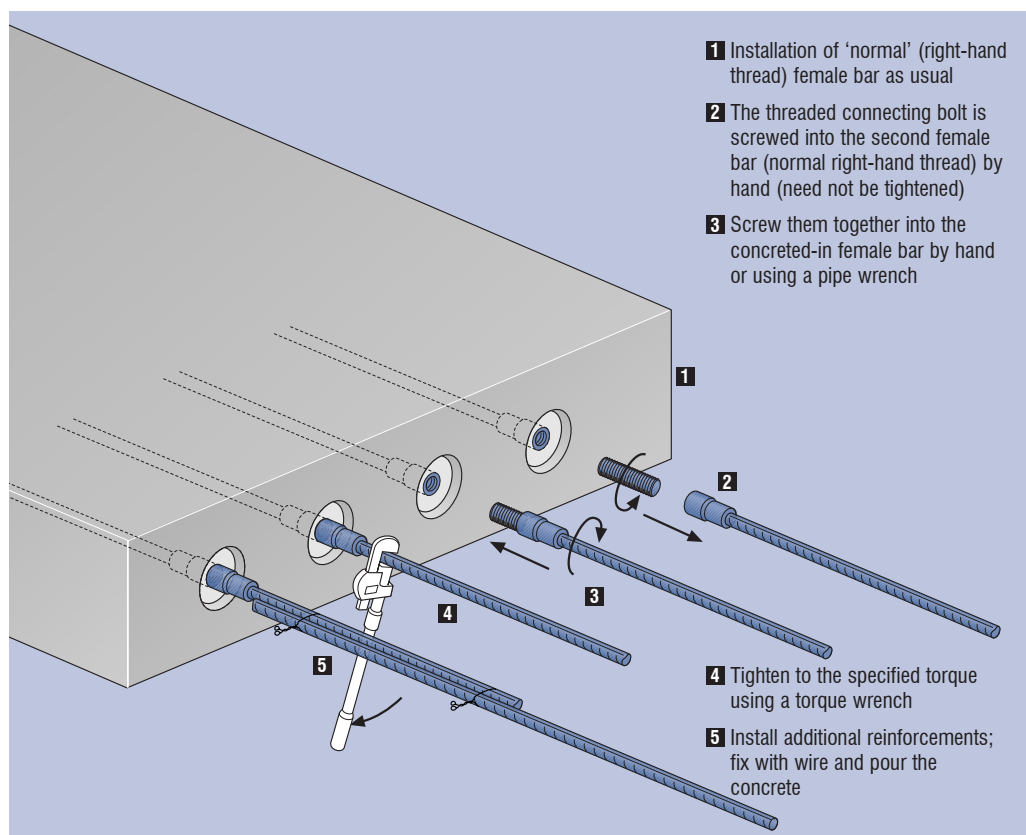
It is sometimes more advantageous to use a special version of a female bar than a male bar, for example when a bar of a special length needs to be manufactured quickly.

The load-bearing connection is made using a high-strength threaded connecting bolt. Full force transmission is ensured here.

The advantage in this case is that no female bars with left-hand threads are required.

When tightening the second right-hand threaded female bar, the required torque for the whole assembly is achieved at the same time.

Caution! Due to a lack of space in the construction, the free ends of bent bars often cannot be screwed into already concreted-in female bars because they hinder each other when screwing. The right-left threaded connecting bolt must be used in such cases.



PFEIFER right-left threaded connecting bolt

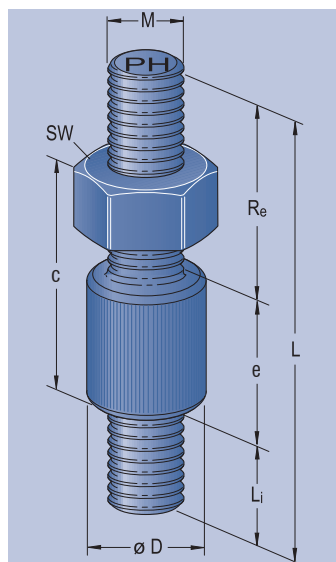


PFEIFER

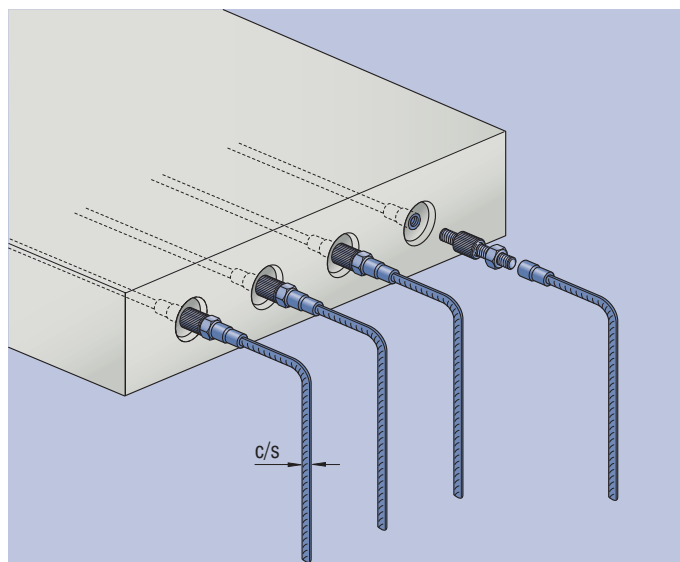
PH reinforcement continuity system

Right-left threaded connecting bolt

PFEIFER right-left threaded connecting bolt



In the case that several bent bars have to be installed so close together that free turning of the bent bars is impossible, PFEIFER supplies the right-left threaded connecting bolt. The installation of non-rotating bars is hence possible without problems.



Type	Ø _s [mm]	Thread M	D [mm]	L [mm]	R _e [mm]	L _i [mm]	c _{min} [mm]	e [mm]	SW [mm]	A _{sp} [mm ²]	F _{u, min} [kN]	Weight [kg]	Ref. no.
PH-RL 8	8	M 12	16,5	61	24	12	37	25	19	84,3	67	0,08	05.330.082
PH-RL 10	10	M 14	18,5	71	30	16	39	25	22	115,0	92	0,14	05.330.102
PH-RL 12	12	M 16	20,5	79	35	19	41	25	24	157	125	0,14	05.330.122
PH-RL 14	14	M 18	24	85	39	21	43	25	27	192	159	0,20	05.330.142
PH-RL 16	16	M 20	27	90	42	23	44	25	30	245	203	0,27	05.330.162
PH-RL 20	20	M 24	33,5	109	53	31	47	25	36	353	293	0,46	05.330.202
PH-RL 25	25	M 30	42	131	67	39	53	25	46	561	466	0,85	05.330.252
PH-RL 28	28	M 36	48,5	145	74	41	63	30	55	817	678	1,32	05.330.282
PH-RL 32	32	M 42	50,5	170	90	50	70	30	65	1121	896	2,36	05.330.322
PH-RL 40	40	M 52	70,5	230	120	70	90	40	80	1758	1406	5,05	05.330.402

Material: Strength 8.8

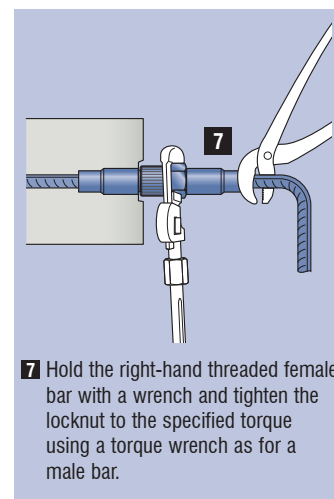
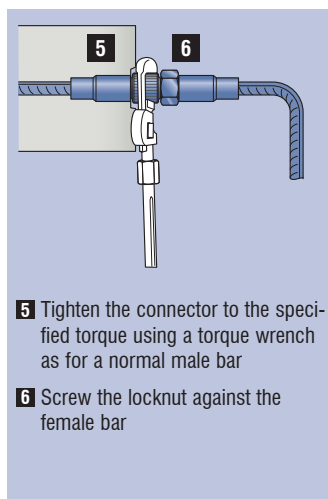
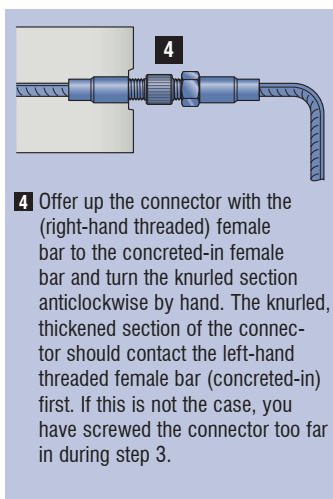
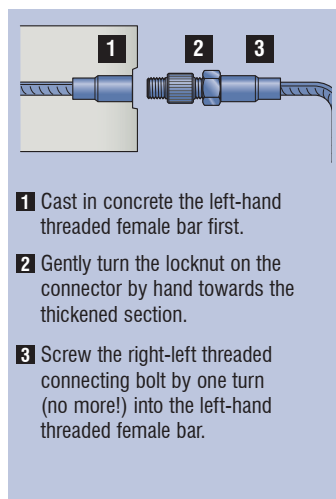
Please note:

When using the right-left threaded connecting bolt, one of the female bars to be connected must have a left-hand thread. You can order this female bar by adding the suffix 'Li' as in the adjacent ordering example.

Sample order:

PH-MU 12 Li	Ref. no. 05.320.122.057
PH-RL 12	Ref. no. 05.330.122
PH-MB 12, a = 20 cm, b = 40,8 cm	Ref. no. 05.322.122

Installation instructions for the PFEIFER right-left threaded connecting bolt



PFEIFER positioning connector PFEIFER welding socket

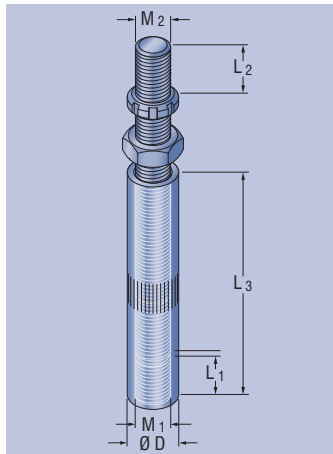


PFEIFER

**PH reinforcement
continuity system**

**Positioning connector
Welding socket**

PFEIFER positioning connector



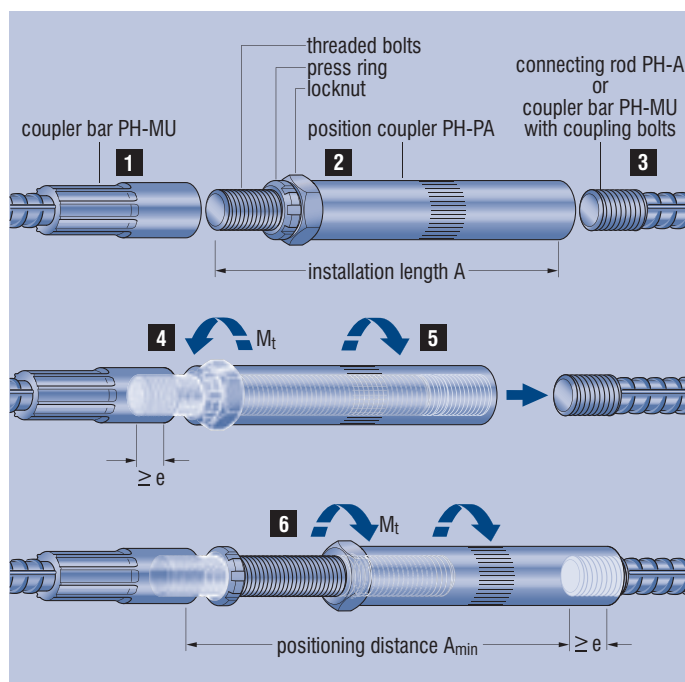
The PFEIFER PH-PA positioning socket offers the user the possibility to connect together two PH-MU reinforcing female bars that are not freely rotating but can

be shifted axially to a certain extent. The minimum and maximum distances can be obtained from the following table.

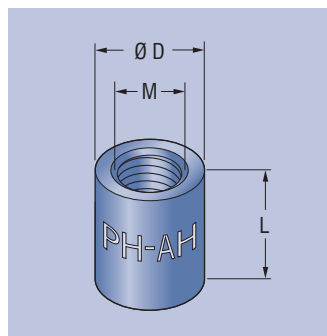
Type	M ₁ M ₂	L ₁ [mm]	L ₂ [mm]	L ₃ [mm]	A, min [mm]	A, max [mm]	I [mm]	Weight [kg]	Ref. no.
PH-PA 12	M 16	20	30	120	166	182	20	0,40	05.393.122
PH-PA 14	M 18	22	32	128	178	194	22	0,60	05.393.142
PH-PA 16	M 20	24	34	136	190	210	24	0,80	05.393.162
PH-PA 20	M 24	32	42	188	254	287	32	1,50	05.393.202
PH-PA 25	M 30	40	50	222	302	332	40	2,80	05.393.252
PH-PA 28	M 36	42	52	230	318	354	42	3,94	05.393.282
PH-PA 32	M 42	52	62	278	382	427	52	5,60	05.393.322
PH-PA 40	M 20	70	80	350	482	527	70	10,90	05.393.402

Installation instructions for the PFEIFER positioning connector

- 1 Already installed female bar with right-hand thread. (Caution! positioning connector can only be used with right-hand threaded female or male bars!)
- 2 Place the positioning socket, with the bolt screwed in completely, between the two bars to be connected.
- 3 Connecting bar moveable to a limited extent (it must be possible to compensate the normal building tolerances in the axial and transverse directions, so that the thread pitches meet).
- 4 The positioning connector is screwed with the threaded bolt into the concreted-in female bar and tightened to the torque specified according to the diameter.
- 5 The socket section of the positioning connector is screwed out within the limits of the approved tolerances until the male bar is screwed in completely.
- 6 The connection is secured by tightening the locknut to the torque specified according to the diameter.



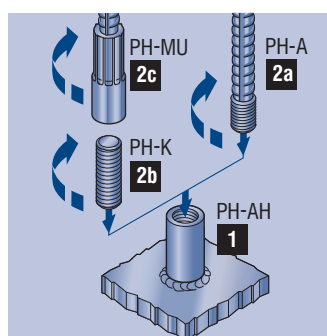
PFEIFER welding socket



PFEIFER welding sockets are intended for areas in which steelwork and reinforced concrete parts are combined. By means of simply welding the PH-AH socket on, a connection can be made between the steelwork and the concrete part. The required thickness of the welded seam must be verified by the responsible engineer in accordance with DIN 18800.

Type	M ₁	Usable thread length e [mm]	L [mm]	Ø D [mm]	Socket wall thickness t [mm]	Weight [kg]	Ref. no.
PH-AH 12	M 16	≥ 20	35	25	5,50	0,09	05.394.122
PH-AH 14	M 18	≥ 22	40	27	5,75	0,12	05.394.142
PH-AH 16	M 20	≥ 24	40	30	6,25	0,14	05.394.162
PH-AH 20	M 24	≥ 32	50	40	9,50	0,35	05.394.202
PH-AH 25	M 30	≥ 40	60	50	11,75	0,65	05.394.252
PH-AH 28	M 36	≥ 42	65	55	11,50	0,78	05.394.282
PH-AH 32	M 42	≥ 52	75	60	11,25	0,98	05.394.322
PH-AH 40	M 52	≥ 70	90	75	14,00	1,81	05.394.402

Installation instructions for the PFEIFER welding socket



- 1 The welding socket is fixed to the steel part to be connected by means of a welded seam to be determined by the responsible engineer.
- 2 The male bar (2a) or female bar with connecting bolt (2b & 2c) is screwed completely into the socket and secured with the required tightening torque.

PFEIFER reducing bolt PFEIFER reducing socket

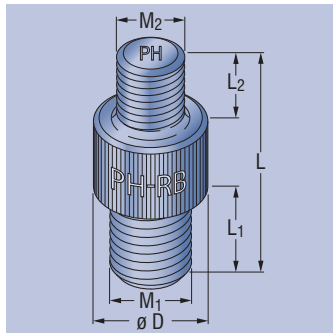


PFEIFER

**PH reinforcement
continuity system**

**Reducing bolt
Reducing socket**

PFEIFER reducing bolt



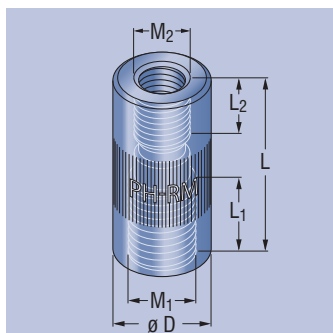
PFEIFER PH-RB reducing bolts are now available for the even more economical reduction of reinforcement cross-sections according to static requirements. The reduction of diameters, which for example in the case of continuous

columns often occurs in the upper floors where the load is lower, can hence be implemented without overlapping joints. As a result of the elimination of the overlapping joints it is easier to work in these areas due to the sparser reinforcement, and the geometrical reinforcement content can be reduced in this area.

The reducing bolts are predominantly used in combination with PH-MU female bars.

Type	M ₁	M ₂	L ₁ [mm]	L ₂ [mm]	L [mm]	ø D [mm]	Weight [kg]	Ref. no.
PH-RB 12/10	M 16	M 14	19	16	60	20,5	0,11	05.390.12.10
PH-RB 14/12	M 18	M 16	21	19	65	24,0	0,15	05.390.14.12
PH-RB 16/14	M 20	M 18	23	21	69	27,0	0,19	05.390.16.14
PH-RB 20/16	M 24	M 20	31	23	79	33,5	0,31	05.390.20.16
PH-RB 25/20	M 30	M 24	39	31	95	42,0	0,55	05.390.25.20
PH-RB 28/25	M 36	M 30	41	39	110	48,5	0,90	05.390.28.25
PH-RB 32/28	M 42	M 36	50	41	121	50,5	1,21	05.390.32.28
PH-RB 40/32	M 52	M 42	70	50	160	70,5	2,70	05.390.40.32
PH-RB 16/12	M 20	M 16	23	19	67	27,0	0,19	05.390.16.12
PH-RB 28/20	M 36	M 24	41	31	102	48,5	0,81	05.390.28.20
PH-RB 32/25	M 42	M 30	50	39	119	50,5	1,11	05.390.32.25

PFEIFER reducing socket



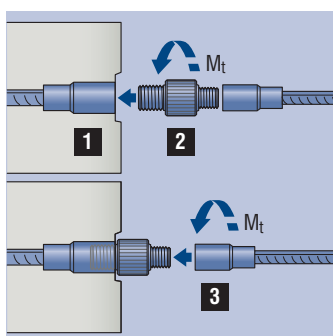
The more economical reduction of reinforcement cross-sections according to static requirements can also be achieved using PFEIFER PH-RM reducing sockets. As with the reducing bolts,

the reinforcement can be implemented in particular for small columns cross-sections very cheaply and in an assembly-friendly manner due to the space-saving implementation of the joint.

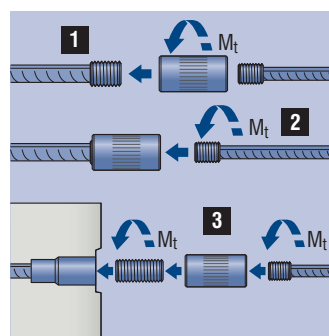
All threads must be screwed in completely. Care must be taken that the corresponding torques according to approval are achieved.

Type	M ₁	M ₂	L ₁ [mm]	L ₂ [mm]	L [mm]	ø D [mm]	Weight [kg]	Ref. no.
PH-RM 12/10	M 16	M 14	20	17	50	22	0,09	05.391.12.10
PH-RM 14/12	M 18	M 16	22	20	55	25	0,12	05.391.14.12
PH-RM 16/14	M 20	M 18	24	22	60	30	0,21	05.391.16.14
PH-RM 20/16	M 24	M 20	32	24	75	35	0,36	05.391.20.16
PH-RM 25/20	M 30	M 24	40	32	90	45	0,75	05.391.25.20
PH-RM 28/25	M 36	M 30	42	40	105	50	0,98	05.391.28.25
PH-RM 32/28	M 42	M 36	52	42	115	55	1,16	05.391.32.28
PH-RM 16/12	M 20	M 16	24	20	60	30	0,22	05.391.16.12
PH-RM 28/20	M 36	M 24	42	32	95	50	0,95	05.391.28.20
PH-RM 32/25	M 42	M 30	52	40	115	55	1,26	05.391.32.25

Installation instructions for PFEIFER PH reducing bolts/sockets



- 1 Concreted-in female bar with larger diameter.
- 2 The larger thread of the reducing bolt is screwed into the concreted-in female bar and secured with the required tightening torque.
- 3 The female bar with the smaller diameter is screwed onto the remaining threaded bolt until the entire thread is screwed in. The bar must be tightened to the corresponding torque in this case also.



- 4 The reducing socket is screwed onto one of the male bars and secured with the corresponding torque.
 - 5 Then the second male bar with a different diameter is screwed completely into the other thread of the socket and tightened to the torque specified according to the diameter.
- As an alternative to male bars, female bars with threaded connecting bolts can also be used in this type of connection!

PFEIFER reducing female bar PFEIFER end anchoring plate

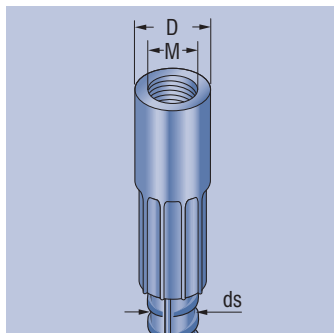


PFEIFER

**PH reinforcement
continuity system**

**Reducing female bar
End anchoring plate**

PFEIFER reducing female bar



Unlike the reducing sockets or bolts, when the PH-MUR reducing female bar is used, the female bar is already fitted with a socket that has a smaller diameter thread. Hence a smaller male bar can be screwed in directly and the use of an additional element is not neces-

sary. Here too, the advantage lies in the economical reduction of reinforcement diameters without overlapping joints.

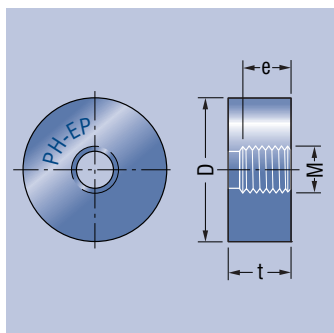
Unlike reducing sockets and bolts, the tightening torque of the bar being screwed in must be taken into account

when connecting the female and male bar together. All threads must be screwed in completely.

Type	M	Usable thread length [mm]	\varnothing_s [mm]	D [mm]	Ref. no.
PH-MUR 12/10	M 14	≥ 17	12	22,3	05.392.12.10
PH-MUR 14/12	M 16	≥ 20	14	25,5	05.392.14.12
PH-MUR 16/14	M 18	≥ 22	16	28,8	05.392.16.14
PH-MUR 20/16	M 20	≥ 24	20	35,3	05.392.20.16
PH-MUR 25/20	M 24	≥ 32	25	44,1	05.392.25.20
PH-MUR 28/25	M 30	≥ 40	28	51,0	05.392.28.25
PH-MUR 32/28	M 36	≥ 42	32	55,8	05.392.32.28
PH-MUR 40/32	M 42	≥ 52	40	70,0	05.392.40.32

Note: PH-MUR reducing female bars are manufactured to length in relation to the project and are not stock items. The installation instructions for normal PH female bars can be applied analogously here.

PFEIFER end anchoring plate



The PFEIFER PH-EP end anchoring plate allows users also to implement dynamic loads in accordance with DIN EN 1992-1-1. To this end the planner must determine the anchoring in accordance with the above-mentioned

section of the standard. Any splitting forces which occur are absorbed by the reinforcement specified in the approval or in the following table.

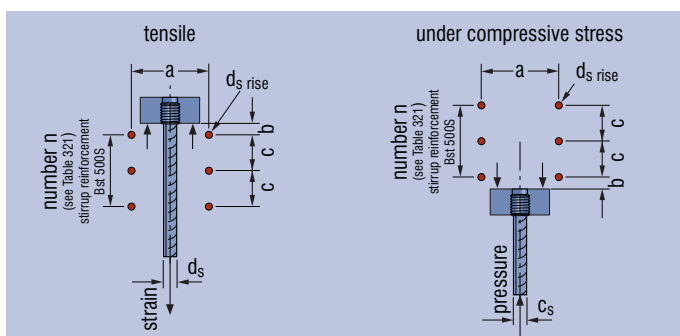
The end anchoring plate is simply screwed onto the PFEIFER PH male bar

with the torque specified in the approval and is then ready to be used immediately. Use with PFEIFER female bars is not intended in the given sizes.

These should be enquired about separately in relation to the project.

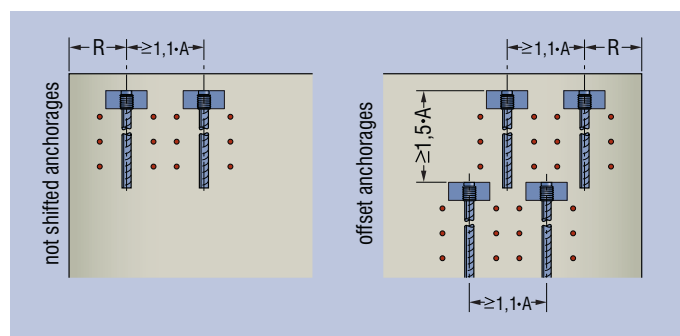
Type	\varnothing_s [mm]	Thread	e [m]	D [mm]	t [mm]	A [mm]	R [mm]	Qty n	$d_{s, Extra}$	a [mm]	b [mm]	c [mm]	Ref. no.
PH-EP 12	12	M 16	16	45	19	85	65	3	6	60	20	28	05.395.122
PH-EP 14	14	M 18	18	55	21	85	65	3	6	60	20	28	05.395.142
PH-EP 16	16	M 20	20	60	23	100	70	3	6	70	20	30	05.395.162
PH-EP 20	20	M 24	24	75	27	130	85	4	6	100	20	32	05.395.202
PH-EP 25	25	M 30	30	95	33	145	95	4	6	120	15	41	05.395.252
PH-EP 28	28	M 36	36	105	39	170	105	3	6	140	10	41	05.395.282

Installation instructions for the PFEIFER end anchoring plate

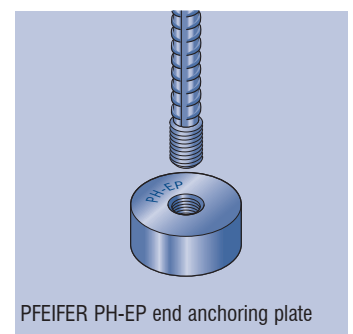
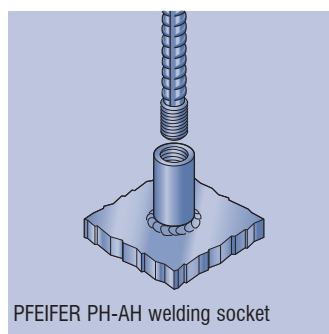
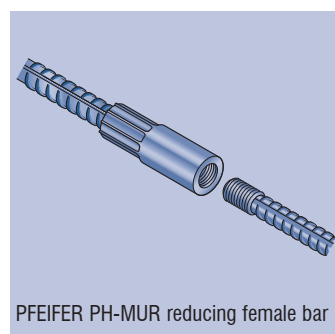
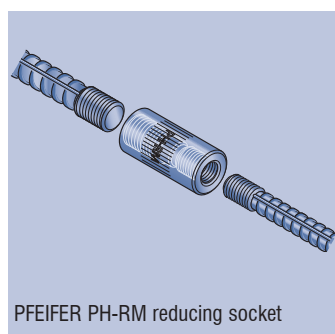
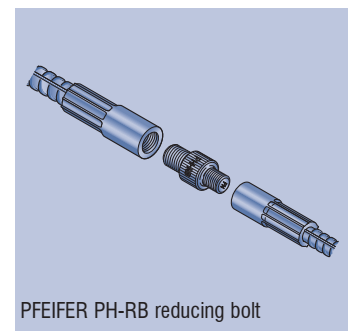
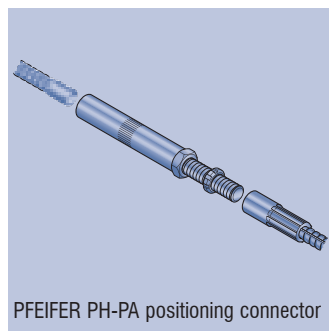
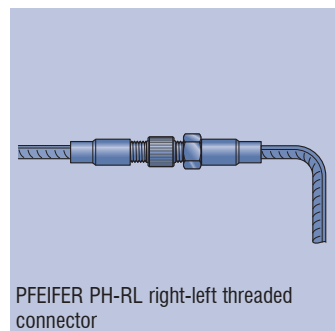
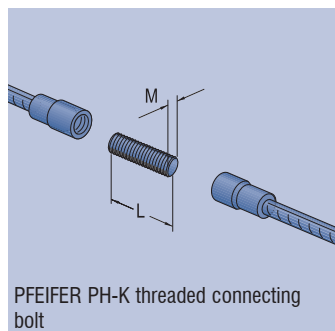
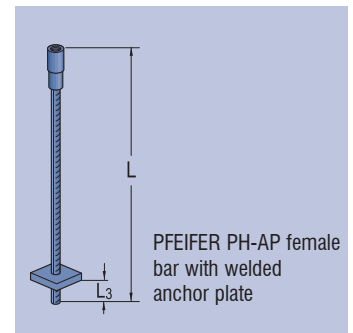
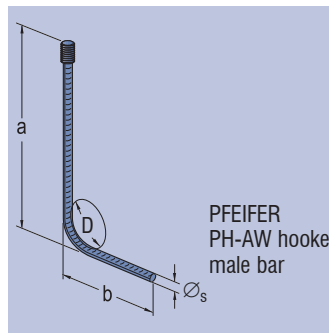
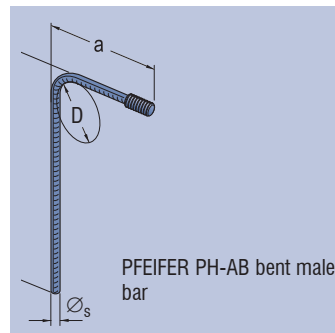
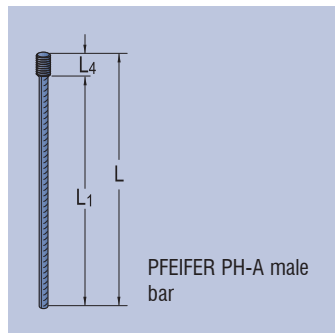
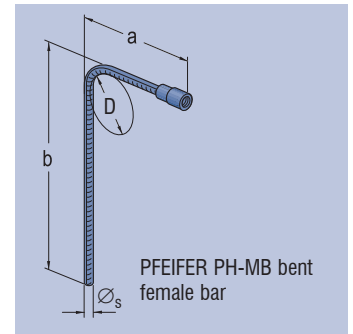
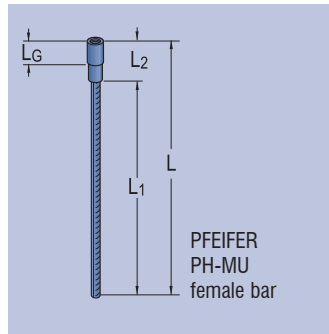
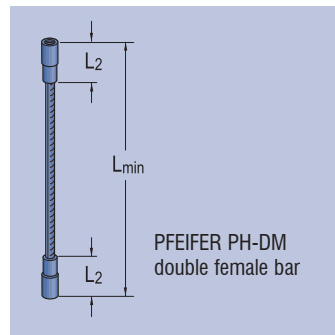
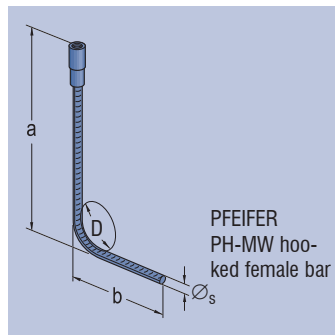


















After the end anchoring plate has been screwed to the PFEIFER PH-A male bar in accordance with the approval, the bar can be installed together with the plate. Fundamentally, verification must be provided by the planner according to

DIN 1992-1-1. The reinforcement shown in the illustration on the left is merely a reinforcement that absorbs splitting forces from the end anchoring. A distinction must be made here between compressive and tensile forces.



Likewise, the specified minimum distance to the edge and the intermediate distances according to the drawing and the table must be complied with.



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