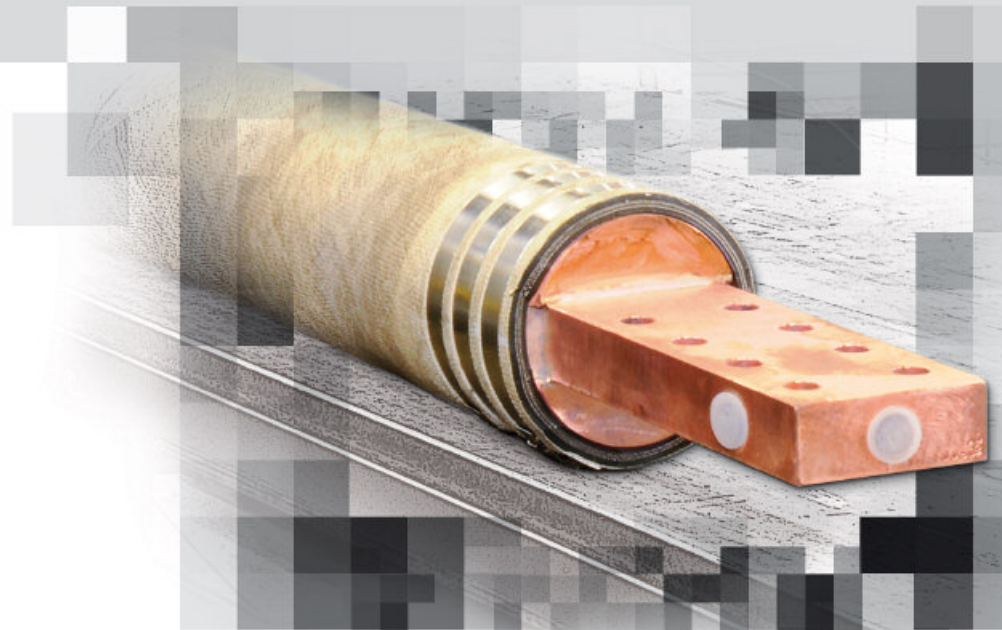




HIGH-CURRENT CABLES...

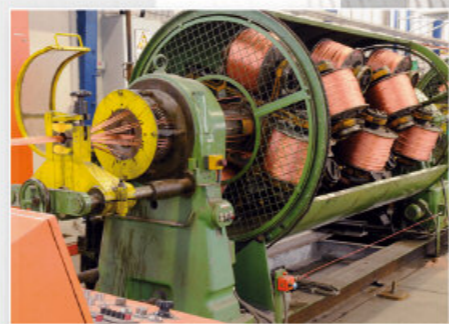


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IN-HOUSE STRANDING SHOP

Minimum cross-sections from 6mm² to maximum values of 1000 mm² individual cross-section and wire diameters from 0.25 mm to 1.0 mm are produced in our internal stranding shop.



▶ **LONG SERVICE LIVES, OPTIMAL GEOMETRY, HIGH QUALITY AND CUSTOMER REQUIREMENTS ARE THE FOCUS HERE.**

HIGH-CURRENT CABLES OF ALL SIZES



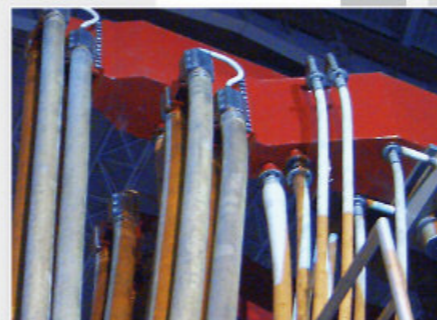
IN THE LAST 5 DECADES, FLOHE HAS SUPPLIED HIGH-CURRENT CABLES OF ALL SIZES INLAND AND ABROAD FOR WELL OVER 1000 ARC AND LADE FURNACES.

The air-cooled cables originally used have been almost completely replaced by water-cooled cables, due to the high increase in electrical furnace power. Today, almost only ultra-high-power-furnaces are built the world over, for which water-cooled multiple cables are used.

FLOHE has developed a multiple cable which meets the special requirements of modern high-power furnaces.

WE HAVE MAINLY FOCUSED ON:

- Optimal power transmission
- Low electrical losses
- Long service lives
- Optimal flow of cooling water
- Easy handling
- Low maintenance
- Short times for assembly and disassembly



FEATURES

WATER-COOLED FLOHE CABLES are designed in accordance with the latest findings from research and practice and are fitted with the following features as standard:

- The special water control in the cable head through diagonal boring ensures an optimal water flow.
- When stranding the individual conductors, many years of experience are built on and the rope lay and individual wire diameter selected so as to keep mechanical wear low.
- FLOHE cables are fitted with an anti-twist device in order to prevent the hoses from twisting and slipping in the case of extreme torsional forces.
- Our cable heads are made of pressed and not casted copper.
- The outer hose of the cable is of proven quality and has a highly heatproof special layer vulcanized onto the outside.

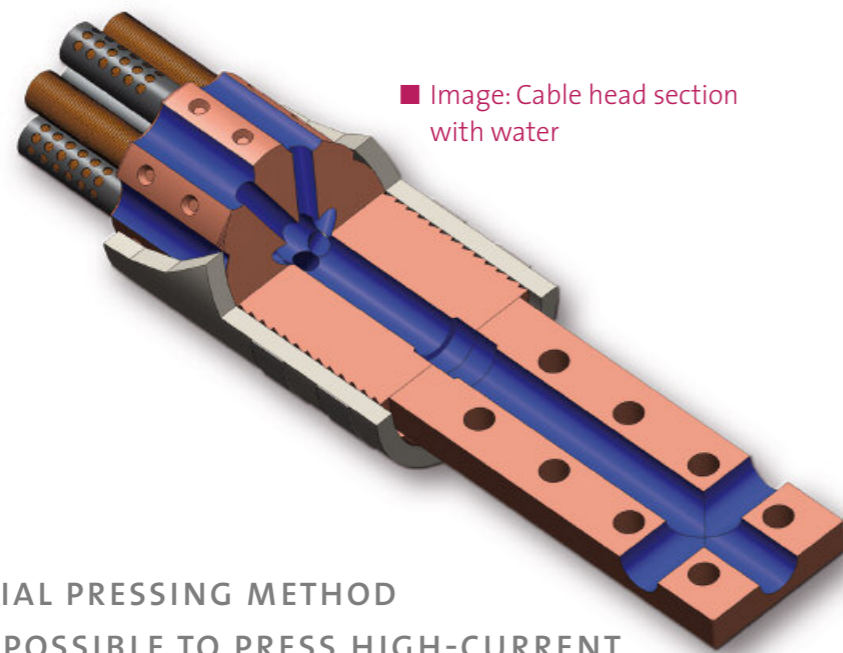
We also offer **DETAILED SOLUTIONS**, which have come from practical application and have now been used over and over for many years:

- Turning device for outer hoses
- Auxiliary heat hoses
- Friction wear protection layer
- Quick coupling cable and adapter



THE FLOHE PRODUCTION PROGRAMME GOES FROM THE PRODUCTION OF THE STRAND TO THE ROPE AND THE MULTIPLE CABLE.

Alongside service life optimisation, the cable stands out for its high customer-orientation. Unlike all conventional methods, our individual conductors are pressed in the cable head and not soldered. The poor method of inserting individual conductors by soldering them in has been set aside since the introduction of the FLOHE pressing method. The protective hoses used on the inside are of EPDM quality and are suitable for 120°C constant temperature.



■ Image: Cable head section with water

OUR SPECIAL PRESSING METHOD MAKES IT POSSIBLE TO PRESS HIGH-CURRENT CABLES WITH A CROSS-SECTION OF UP TO 8000 MM.

THIS MEANS:

- High strength with an absolutely firm seating of the individual conductor in the cable head boreholes.
- Optimal current conduction is achieved through pressing, since no line contact is made as when soldering, but genuine surface contact and all intermediate elements are made of E-Cu only and have the same conductance.
- Low electrical losses result from the reduced resistances, meaning more power in the furnaces.
- Pressed cables are more resilient than soldered ones. The service life of the cables is increased since the copper is not softened by heat when the individual conductors are soldered in.
- No crystallisation of tin through the combination of water and electricity.
- In the case of very poor water qualities with high quantities of chlorine, we will supply the copper strands in tin-coated execution on request.
- The special water control in the cable head through diagonal boring ensures an optimal water flow.

HOSE TECHNOLOGY

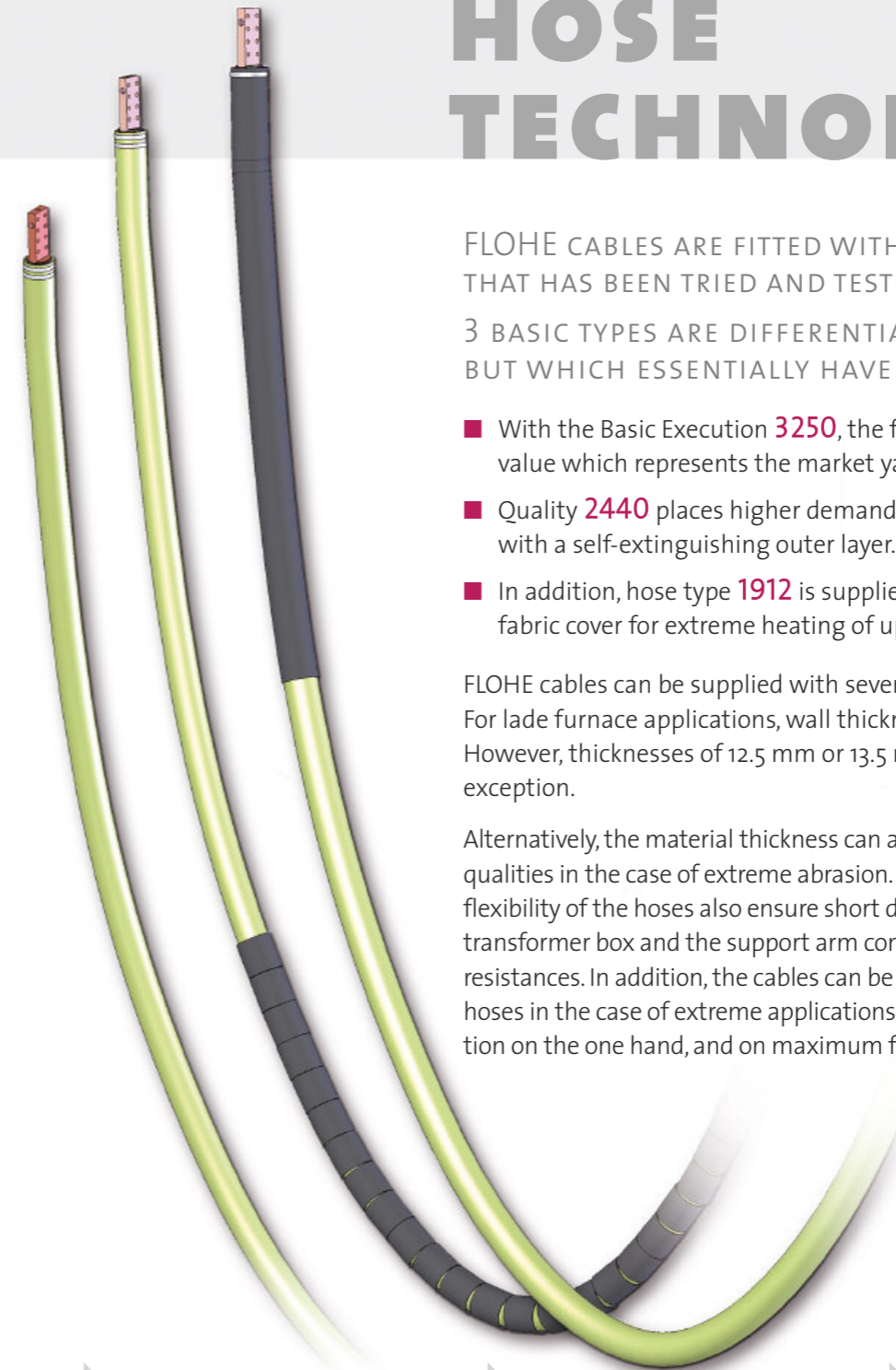
FLOHE CABLES ARE FITTED WITH A HOSE QUALITY THAT HAS BEEN TRIED AND TESTED FOR MANY YEARS.

3 BASIC TYPES ARE DIFFERENTIATED BETWEEN, BUT WHICH ESSENTIALLY HAVE THE SAME BASIS.

- With the Basic Execution **3250**, the focus is on a low abrasion value which represents the market yardstick.
- Quality **2440** places higher demands on radiant heat and is fitted with a self-extinguishing outer layer.
- In addition, hose type **1912** is supplied with a vulcanized-on glass fabric cover for extreme heating of up to 750°C.

FLOHE cables can be supplied with several different wall thicknesses. For ladle furnace applications, wall thicknesses of 10.0 mm are sufficient. However, thicknesses of 12.5 mm or 13.5 mm are used in EAF without exception.

Alternatively, the material thickness can also be increased to 20 mm in all qualities in the case of extreme abrasion. The small bending radii and high flexibility of the hoses also ensure short distances between the wall of the transformer box and the support arm connection, meaning lower secondary resistances. In addition, the cables can be fitted with additional protective hoses in the case of extreme applications. The focus is on extreme heat radiation on the one hand, and on maximum friction protection on the other.



▶ TYPE 3250

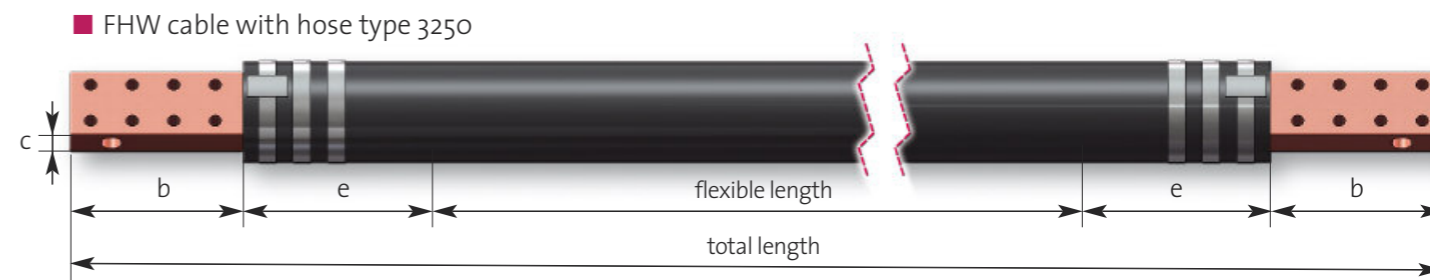
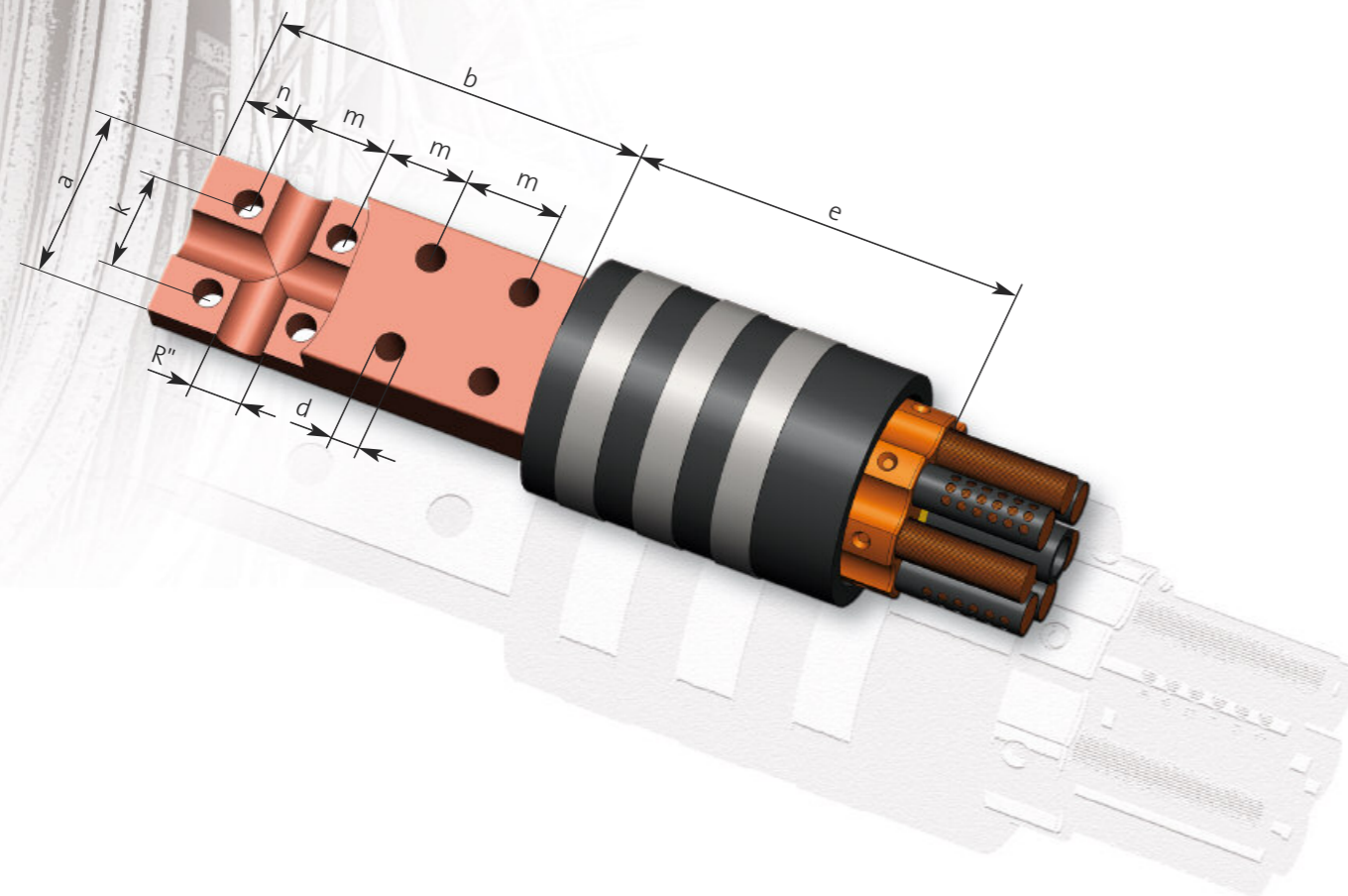
▶ TYPE 1912

▶ TYPE 2440



TYPE FHW

THE CLASSIC TYPE



FHW cable with hose type 3250 and buffer

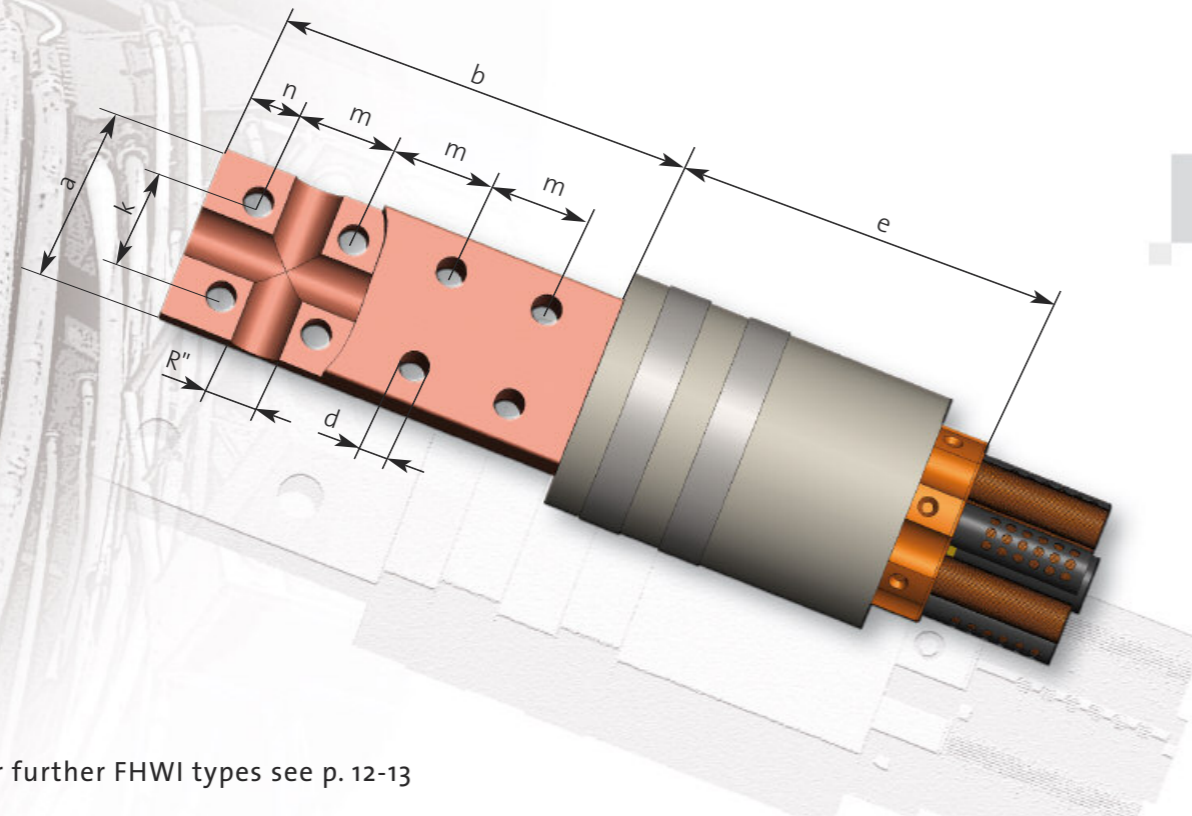


| Type | Individual conductor [mm ²] | GMR | FLOHE standard dimensions | | | | | | | | | |
|----------|---|------|---------------------------|-----|----|----|------|-----|----|------|----|------|
| | | | a | b | c | Ød | X·Ød | e | k | m | n | R'' |
| FHW 1200 | 3 x 400 | 20.0 | 65 | 180 | 35 | 14 | 6 | 175 | 40 | 50.0 | 30 | 3/4" |
| FHW 1600 | 4 x 400 | 28.0 | 80 | 175 | 35 | 18 | 6 | 175 | 52 | 60.0 | 25 | 3/4" |
| FHW 2000 | 5 x 400 | 31.0 | 93 | 175 | 35 | 18 | 6 | 175 | 50 | 50.0 | 30 | 3/4" |
| FHW 2400 | 6 x 400 | 36.0 | 91 | 200 | 40 | 18 | 6 | 175 | 60 | 60.0 | 20 | 1" |
| FHW 2800 | 7 x 400 | 39.0 | 97 | 210 | 50 | 18 | 8 | 230 | 60 | 50.0 | 25 | 1" |
| FHW 3200 | 8 x 400 | 43.0 | 109 | 200 | 50 | 18 | 8 | 230 | 60 | 50.0 | 20 | 1" |
| FHW 3600 | 9 x 400 | 47.0 | 120 | 210 | 50 | 18 | 8 | 230 | 65 | 50.0 | 25 | 1" |
| FHW 4000 | 10 x 400 | 57.5 | 140 | 300 | 50 | 18 | 8 | 230 | 76 | 63.5 | 40 | 1" |
| FHW 4400 | 11 x 400 | 58.0 | 140 | 300 | 50 | 18 | 8 | 230 | 76 | 63.5 | 40 | 1" |
| FHW 4800 | 12 x 400 | 62.5 | 140 | 300 | 60 | 22 | 8 | 230 | 76 | 63.5 | 40 | 1" |
| FHW 5200 | 13 x 400 | 70.0 | 155 | 300 | 60 | 22 | 8 | 230 | 76 | 63.5 | 40 | 1" |
| FHW 5600 | 14 x 400 | 78.0 | 169 | 300 | 60 | 22 | 8 | 230 | 76 | 63.5 | 40 | 1" |
| FHW 6000 | 15 x 400 | 80.0 | 170 | 300 | 60 | 22 | 8 | 230 | 76 | 63.5 | 40 | 1" |

Customer-specific dimensions of the connection available at any time.

| LWa x S | LWi x S | ØD | Bending radius [mm] | Resistance | | | Water l/min 1 m * | Type |
|------------|----------|-----|---------------------|------------|--------------------|----------|-------------------|----------|
| | | | | t=30°C DC | M OHM / m AC 50 Hz | AC 60 Hz | | |
| 75 x 10.0 | – | – | 350 | 14.12 | 17.97 | 19.77 | 0.84 | FHW 1200 |
| 90 x 13.5 | – | – | 400 | 11.40 | 12.40 | 14.90 | 0.92 | FHW 1600 |
| 100 x 13.5 | 19 x 5 | 177 | 430 | 9.12 | 10.33 | 10.73 | 1.19 | FHW 2000 |
| 100 x 13.5 | 19 x 5 | 177 | 430 | 7.60 | 9.17 | 9.72 | 1.53 | FHW 2400 |
| 110 x 13.5 | 30 x 6 | 187 | 480 | 6.52 | 8.42 | 9.10 | 1.92 | FHW 2800 |
| 120 x 13.5 | 38 x 6 | 197 | 520 | 5.70 | 8.00 | 8.29 | 2.37 | FHW 3200 |
| 133 x 13.5 | 50 x 8 | 213 | 580 | 5.07 | 7.00 | 7.52 | 2.63 | FHW 3600 |
| 150 x 13.5 | 60 x 10 | 230 | 650 | 4.56 | 6.17 | 6.40 | 2.86 | FHW 4000 |
| 150 x 13.5 | 70 x 8 | 230 | 650 | 4.15 | 5.87 | 6.08 | 3.30 | FHW 4400 |
| 160 x 13.5 | 70 x 10 | 240 | 700 | 3.80 | 5.47 | 5.61 | 3.66 | FHW 4800 |
| 170 x 13.5 | 80 x 10 | 250 | 750 | 3.51 | 5.10 | 5.29 | 4.00 | FHW 5200 |
| 180 x 13.5 | 90 x 10 | 260 | 800 | 3.26 | 4.84 | 5.00 | 4.41 | FHW 5600 |
| 190 x 13.5 | 100 x 10 | 270 | 860 | 3.04 | 4.35 | 4.65 | 4.55 | FHW 6000 |

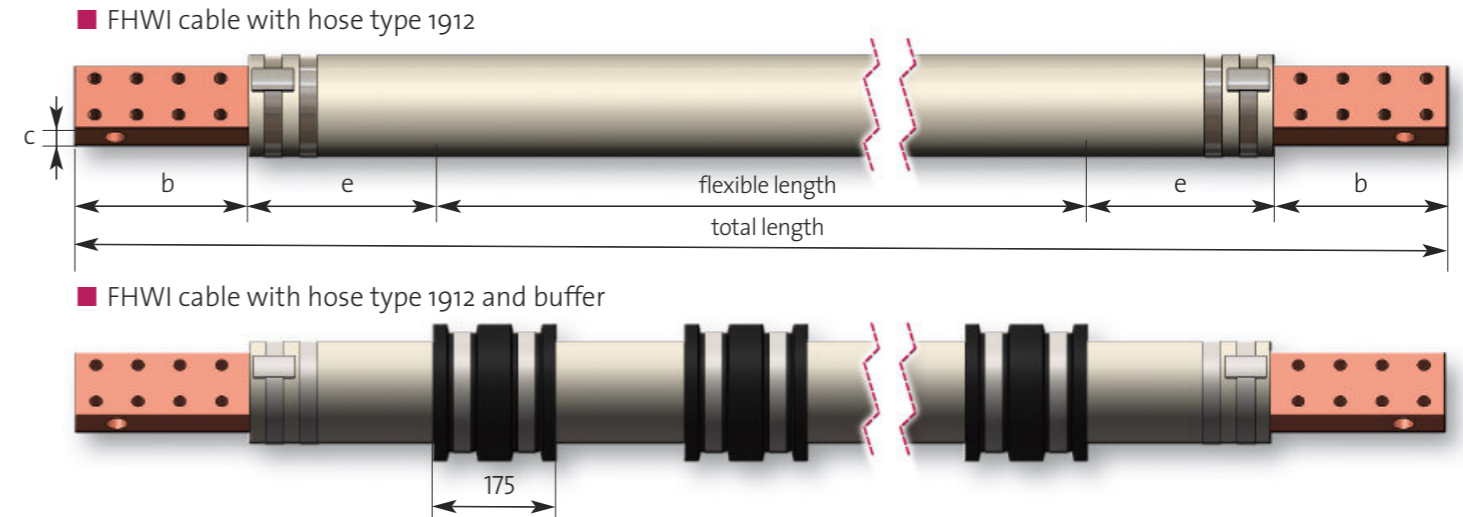
* based on a cross-section loading of 4.5 A/mm²



▶▶ PTO – for further FHWI types see p. 12-13

TYPE FHWI

▶▶ THE INTERNATIONAL TYPE ◀◀

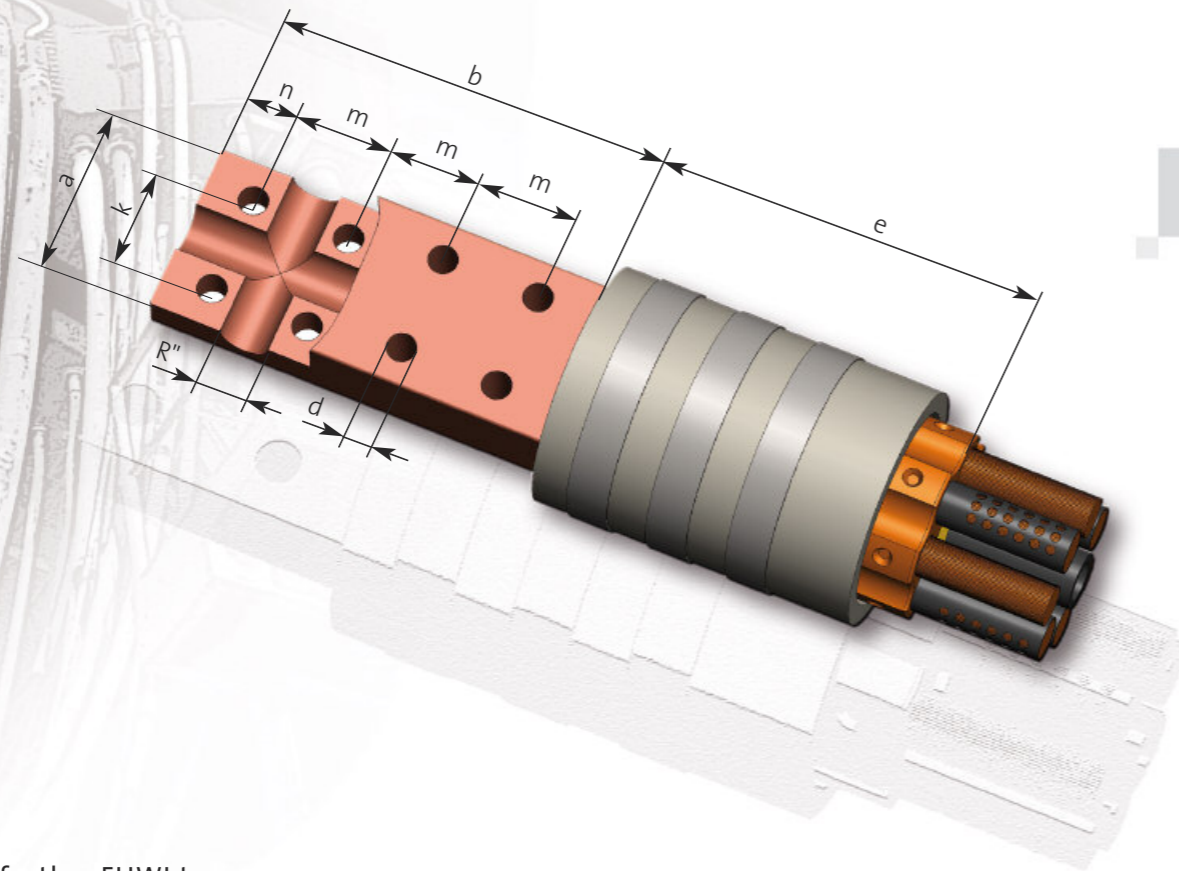


| Type | Individual conductor [mm ²] | Cross-section [mm ²] | GMR | FLOHE standard dimensions | | | | | | | | | |
|------------|---|----------------------------------|------|---------------------------|-----|----|----|--------|-----|----|----|----|------|
| | | | | a | b | c | ∅d | X · ∅d | e | k | m | n | R'' |
| FHWI 1500A | 5 x 286 | 1430 | 30.0 | 80 | 175 | 35 | 18 | 6 | 175 | 50 | 50 | 30 | 3/4" |
| FHWI 1500B | 4 x 381 | 1524 | 28.9 | 80 | 175 | 35 | 18 | 6 | 175 | 50 | 50 | 30 | 3/4" |
| FHWI 1500C | 3 x 500 | 1500 | 28.6 | 80 | 180 | 35 | 18 | 6 | 175 | 50 | 50 | 30 | 3/4" |
| FHWI 2000A | 7 x 286 | 2002 | 38.4 | 90 | 210 | 40 | 18 | 8 | 194 | 50 | 50 | 30 | 3/4" |
| FHWI 2000B | 5 x 381 | 1905 | 33.8 | 90 | 210 | 40 | 18 | 8 | 194 | 50 | 50 | 30 | 3/4" |
| FHWI 2000C | 4 x 500 | 2000 | 31.3 | 80 | 210 | 40 | 18 | 8 | 194 | 50 | 50 | 30 | 3/4" |
| FHWI 2500A | 8 x 286 | 2288 | 42.4 | 95 | 230 | 50 | 18 | 8 | 194 | 60 | 60 | 20 | 1" |
| FHWI 2500B | 7 x 381 | 2667 | 42.7 | 95 | 230 | 50 | 18 | 8 | 194 | 60 | 60 | 20 | 1" |
| FHWI 2500C | 5 x 500 | 2500 | 36.3 | 85 | 230 | 50 | 18 | 8 | 194 | 55 | 60 | 20 | 1" |
| FHWI 2500E | 4 x 600 | 2400 | 35.4 | 85 | 230 | 50 | 18 | 8 | 194 | 55 | 60 | 20 | 1" |
| FHWI 2500F | 3 x 750 | 2250 | 33.0 | 85 | 230 | 50 | 18 | 8 | 194 | 55 | 60 | 20 | 1" |
| FHWI 3000A | 10 x 286 | 2860 | 51.3 | 110 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 3000B | 8 x 381 | 3048 | 47.6 | 105 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 3000C | 6 x 500 | 3000 | 40.7 | 95 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 3000E | 5 x 600 | 3000 | 40.4 | 95 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 3500A | 12 x 286 | 3432 | 59.8 | 120 | 250 | 50 | 18 | 8 | 194 | 65 | 60 | 30 | 1" |
| FHWI 3500B | 9 x 381 | 3429 | 53.6 | 120 | 250 | 50 | 18 | 8 | 194 | 65 | 60 | 30 | 1" |
| FHWI 3500C | 7 x 500 | 3500 | 46.1 | 105 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 3500E | 6 x 600 | 3600 | 45.8 | 105 | 250 | 50 | 18 | 8 | 194 | 60 | 60 | 30 | 1" |
| FHWI 4000A | 14 x 286 | 4004 | 68.7 | 120 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 4000B | 10 x 381 | 3810 | 57.5 | 120 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |
| FHWI 4000C | 8 x 500 | 4000 | 51.1 | 120 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |
| FHWI 4000E | 7 x 600 | 4200 | 48.7 | 120 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |
| FHWI 4000F | 5 x 750 | 3750 | 47.0 | 120 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |

Customer-specific dimensions of the connection available at any time.

| LW _a x S | LW _i x S | ∅D | Bending radius [mm] | Resistance | | | Water l/min 1 m* | Type |
|---------------------|---------------------|-----|---------------------|------------|--------------------|----------|------------------|------------|
| | | | | t=30°C DC | M OHM / m AC 50 Hz | AC 60 Hz | | |
| 90 x 10.0 | – | 160 | 400 | 12.27 | 15.65 | 17.22 | 1.02 | FHWI 1500A |
| 90 x 10.0 | – | 160 | 400 | 11.51 | 14.65 | 16.12 | 1.06 | FHWI 1500B |
| 90 x 10.0 | – | 160 | 400 | 11.70 | 14.87 | 16.36 | 1.05 | FHWI 1500C |
| 100 x 10.0 | 25 x 5 | 170 | 430 | 8.76 | 11.06 | 12.17 | 1.40 | FHWI 2000A |
| 100 x 10.0 | – | 170 | 430 | 9.21 | 11.72 | 12.89 | 1.30 | FHWI 2000B |
| 90 x 10.0 | – | 160 | 400 | 8.77 | 11.15 | 12.27 | 1.40 | FHWI 2000B |
| 110 x 12.5 | 30 x 5.5 | 185 | 480 | 7.67 | 9.67 | 10.64 | 1.10 | FHWI 2500A |
| 110 x 12.5 | 25 x 7 | 185 | 480 | 6.58 | 8.37 | 9.21 | 1.90 | FHWI 2500B |
| 100 x 10.0 | – | 170 | 430 | 7.02 | 8.92 | 9.81 | 1.70 | FHWI 2500C |
| 100 x 10.0 | – | 170 | 430 | 7.31 | 9.27 | 10.20 | 1.70 | FHWI 2500E |
| 100 x 10.0 | – | 170 | 430 | 7.80 | 9.88 | 10.87 | 1.60 | FHWI 2500F |
| 133 x 12.5 | 50 x 5 | 208 | 580 | 6.13 | 7.72 | 8.49 | 2.00 | FHWI 3000A |
| 120 x 12.5 | 35 x 5 | 195 | 520 | 5.76 | 7.26 | 7.99 | 2.10 | FHWI 3000B |
| 110 x 12.5 | 25 x 5 | 185 | 480 | 5.85 | 7.38 | 8.12 | 2.10 | FHWI 3000C |
| 110 x 12.5 | – | 185 | 480 | 5.85 | 7.42 | 8.16 | 2.10 | FHWI 3000E |
| 150 x 12.5 | 60 x 7 | 225 | 650 | 5.11 | 6.43 | 7.07 | 2.40 | FHWI 3500A |
| 133 x 12.5 | 40 x 7 | 208 | 580 | 5.12 | 6.44 | 7.08 | 2.40 | FHWI 3500B |
| 120 x 12.5 | 25 x 5 | 195 | 520 | 5.01 | 6.32 | 6.95 | 2.50 | FHWI 3500C |
| 120 x 12.5 | 25 x 5 | 195 | 520 | 4.87 | 6.14 | 6.75 | 2.50 | FHWI 3500E |
| 170 x 13.5 | 80 x 7 | 247 | 750 | 4.38 | 5.51 | 6.06 | 2.80 | FHWI 4000A |
| 150 x 12.5 | 50 x 7 | 225 | 650 | 4.60 | 5.80 | 6.38 | 2.70 | FHWI 4000B |
| 133 x 12.5 | 38 x 6 | 208 | 580 | 4.39 | 5.52 | 6.07 | 2.80 | FHWI 4000C |
| 133 x 12.5 | 30 x 5.5 | 208 | 580 | 4.18 | 5.26 | 5.79 | 2.90 | FHWI 4000E |
| 133 x 12.5 | – | 208 | 580 | 4.68 | 5.93 | 6.52 | 2.70 | FHWI 4000F |

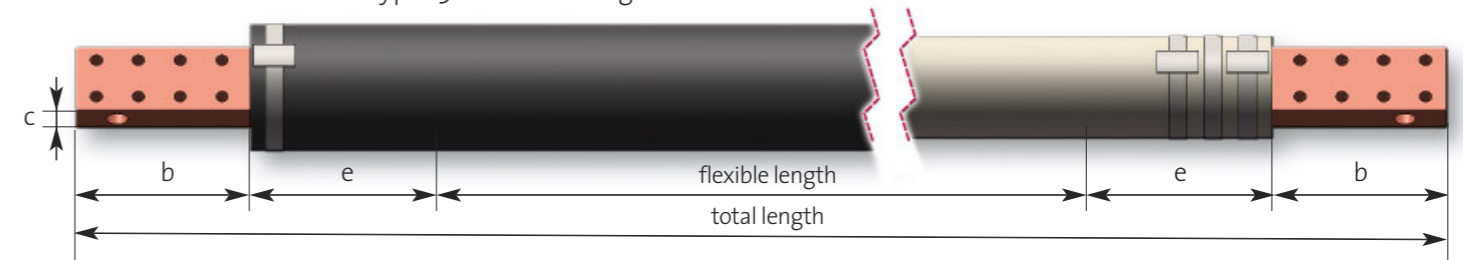
* based on a cross-section loading of 4.5 A/mm²



TYPE FHWI

▶▶ THE INTERNATIONAL TYPE ◀◀

■ FHWI cable with hose type 1912 and covering hose



■ FHWI cable with hose type 1912 and spacer



◀◀ PTO – for further FHWI types see p. 10-11

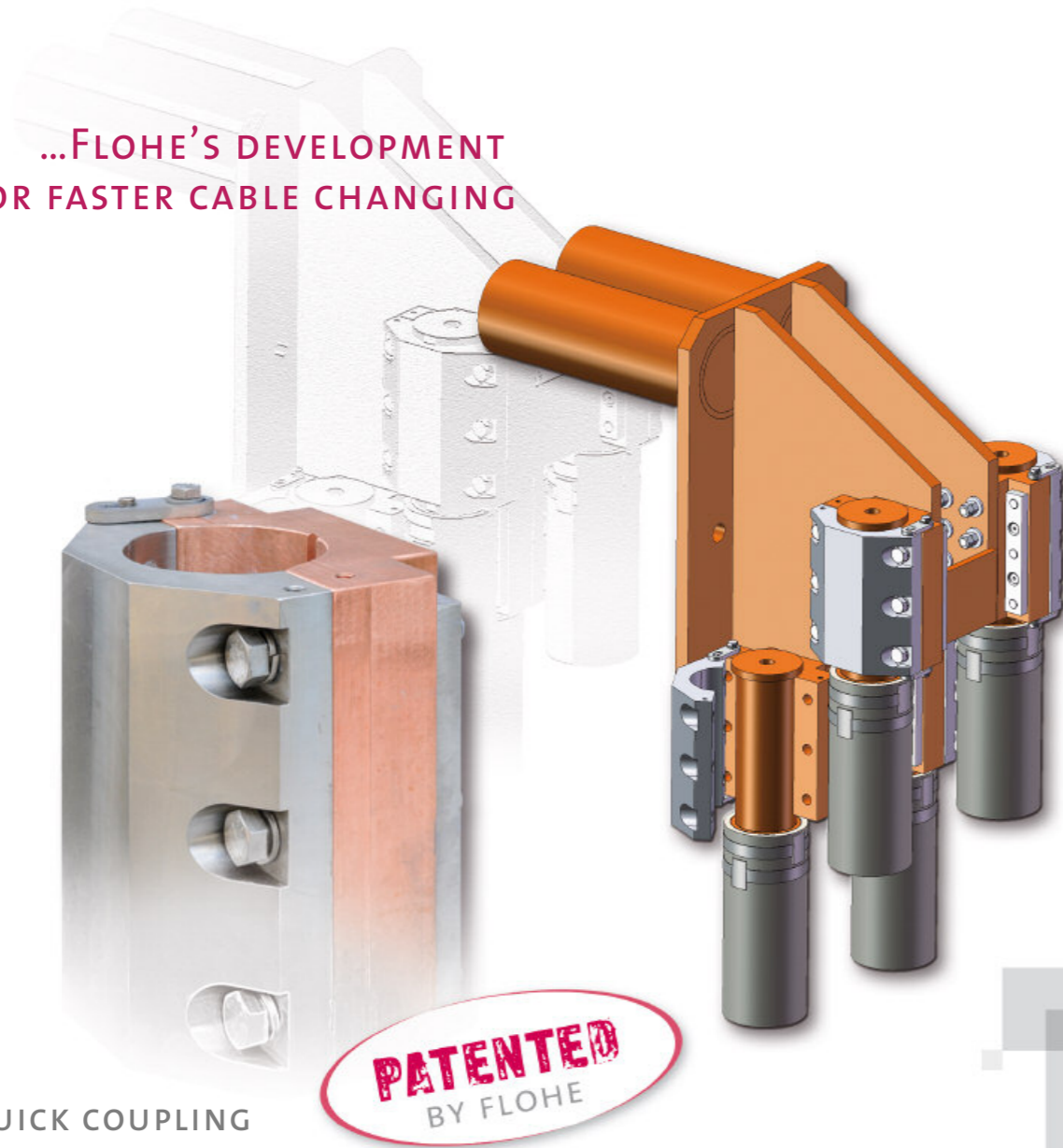
| Type | Individual conductor [mm ²] | Cross-section [mm ²] | GMR | FLOHE standard dimensions | | | | | | | | | |
|------------|---|----------------------------------|-------|---------------------------|-----|----|----|--------|-----|----|----|----|--------|
| | | | | a | b | c | ∅d | X · ∅d | e | k | m | n | R'' |
| FHWI 4500A | 15 x 286 | 4290 | 74.7 | 130 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 4500B | 12 x 381 | 4572 | 68.5 | 130 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 4500C | 9 x 500 | 4500 | 58.0 | 130 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |
| FHWI 4500E | 8 x 600 | 4800 | 54.7 | 130 | 300 | 50 | 22 | 8 | 194 | 76 | 65 | 40 | 1" |
| FHWI 5000B | 13 x 381 | 4953 | 72.5 | 140 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 5000C | 10 x 500 | 5000 | 63.0 | 140 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 5500B | 15 x 381 | 5715 | 82.9 | 160 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 5500C | 11 x 500 | 5500 | 67.0 | 160 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 5500E | 9 x 600 | 5400 | 65.1 | 150 | 300 | 50 | 22 | 8 | 230 | 76 | 65 | 40 | 1" |
| FHWI 6000B | 16 x 381 | 6096 | 87.43 | 160 | 300 | 60 | 22 | 8 | 230 | 89 | 65 | 40 | 1" |
| FHWI 6000C | 12 x 500 | 6000 | 72.95 | 145 | 300 | 60 | 22 | 8 | 230 | 89 | 65 | 40 | 1" |
| FHWI 6000E | 10 x 600 | 6000 | 65.09 | 155 | 300 | 60 | 22 | 8 | 230 | 89 | 65 | 40 | 1" |
| FHWI 6000F | 8 x 750 | 6000 | 57.65 | 145 | 300 | 60 | 22 | 8 | 230 | 89 | 65 | 40 | 1" |
| FHWI 6500C | 13 x 500 | 6500 | 78.93 | 155 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 6500E | 11 x 600 | 6600 | 71.05 | 155 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 7000C | 14 x 500 | 7000 | 82.91 | 165 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 7000E | 12 x 600 | 7200 | 71.0 | 165 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 7000F | 9 x 750 | 6750 | 68.1 | 165 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 7500C | 15 x 500 | 7500 | 89.9 | 175 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 7500F | 10 x 750 | 7500 | 73.4 | 175 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |
| FHWI 8000C | 16 x 500 | 8000 | 93.88 | 185 | 360 | 60 | 22 | 10 | 230 | 89 | 72 | 30 | 1 1/4" |

Customer-specific dimensions of the connection available at any time.

| LWa x S | LWi x S | ∅D | Bending radius [mm] | Resistance | | | Water l/min 1 m * | Type |
|------------|----------|-----|---------------------|------------|--------------------|----------|-------------------|------------|
| | | | | t=30°C DC | M OHM / m AC 50 Hz | AC 60 Hz | | |
| 180 x 13.5 | 90 x 10 | 257 | 800 | 4.09 | 5.14 | 5.65 | 3.00 | FHWI 4500A |
| 160 x 13.5 | 70 x 8 | 237 | 700 | 3.84 | 4.82 | 5.30 | 3.20 | FHWI 4500B |
| 150 x 12.5 | 50 x 7 | 225 | 650 | 3.90 | 4.91 | 5.40 | 3.10 | FHWI 4500C |
| 140 x 12.5 | 40 x 6.5 | 215 | 620 | 3.65 | 4.60 | 5.06 | 3.40 | FHWI 4500E |
| 170 x 13.5 | 80 x 7 | 247 | 750 | 3.54 | 4.45 | 4.90 | 3.50 | FHWI 5000B |
| 160 x 13.5 | 60 x 7 | 237 | 700 | 3.51 | 4.41 | 4.85 | 3.50 | FHWI 5000C |
| 190 x 15.0 | 90 x 10 | 270 | 860 | 3.07 | 3.86 | 4.25 | 4.00 | FHWI 5500B |
| 170 x 13.5 | 70 x 8 | 247 | 750 | 3.19 | 4.01 | 4.41 | 3.80 | FHWI 5500C |
| 160 x 13.5 | 60 x 7 | 237 | 700 | 3.25 | 4.08 | 4.49 | 3.80 | FHWI 5500E |
| 210 x 15.0 | 110 x 10 | 290 | 1050 | 2.88 | 3.61 | 3.97 | 4.30 | FHWI 6000B |
| 180 x 15.0 | 80 x 7 | 260 | 800 | 2.92 | 3.67 | 4.04 | 4.20 | FHWI 6000C |
| 170 x 13.5 | 60 x 7 | 247 | 750 | 2.92 | 3.68 | 4.05 | 4.20 | FHWI 6000E |
| 160 x 13.5 | 40 x 6.5 | 237 | 700 | 2.92 | 3.68 | 4.05 | 4.20 | FHWI 6000F |
| 190 x 15.0 | 90 x 10 | 270 | 860 | 2.70 | 3.39 | 3.73 | 4.50 | FHWI 6500C |
| 180 x 15.0 | 70 x 8 | 260 | 800 | 2.66 | 3.34 | 3.67 | 4.60 | FHWI 6500E |
| 200 x 15.0 | 90 x 10 | 280 | 1010 | 2.51 | 3.15 | 3.47 | 4.90 | FHWI 7000C |
| 190 x 15.0 | 70 x 8 | 270 | 860 | 2.44 | 3.06 | 3.37 | 5.00 | FHWI 7000E |
| 180 x 15.0 | 60 x 7 | 260 | 800 | 2.60 | 3.27 | 3.60 | 4.70 | FHWI 7000E |
| 210 x 15.0 | 102 x 10 | 290 | 1050 | 2.34 | 2.94 | 3.23 | 5.20 | FHWI 7500C |
| 200 x 15.0 | 70 x 8 | 280 | 1010 | 2.34 | 2.94 | 3.23 | 5.20 | FHWI 7500F |
| 220 x 15.0 | 110 x 10 | 300 | 1095 | 2.19 | 2.75 | 3.03 | 5.60 | FHWI 8000C |

* based on a cross-section loading of 4.5 A/mm²

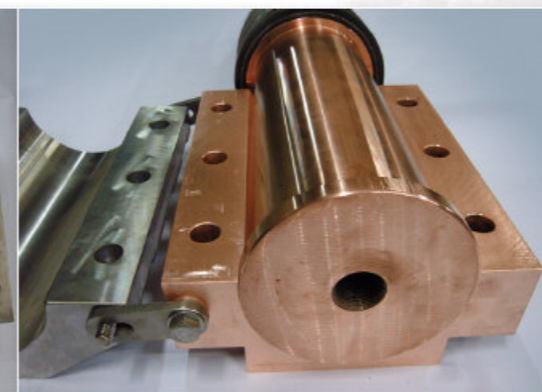
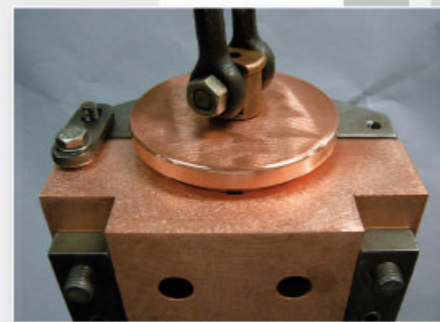
...FLOHE'S DEVELOPMENT
FOR FASTER CABLE CHANGING



QUICK COUPLING
TYPE FSR

THIS SYSTEM CAN BE IMPLEMENTED
IN ALMOST ANY EXISTING ARC FURNACE.

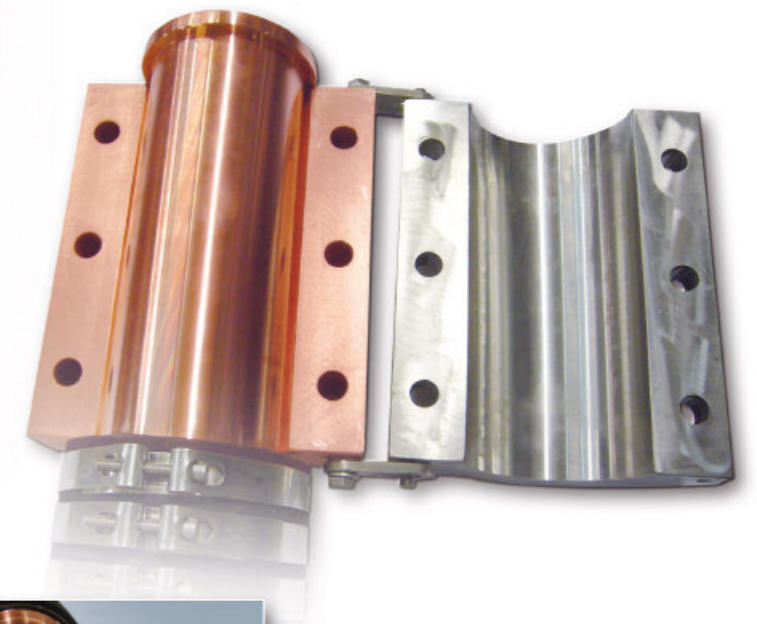
- For this purpose, adapters made of copper and high-strength high-grade steel are mounted to the support arms and the high-current line in the transformer house using screws.
- The equipment is characterised by easy and quick handling.
- The pressure plate is held in position by hinges during the cable change.



TYPE FHWNT

▶▶ THE FAST TYPE ◀◀

- The system of the FHWNT round cable and of the associated FSR quick-action coupling leads to a reduction in changing times by up to 80% during scheduled and unscheduled downtimes.
- This system is mounted onto the existing configuration once only and constantly ensures the predicted savings.



The technical data corresponds
to the FHWI cable
see pages 10-11 and 12-13.

FLOHE INVENTED THE FIRST CABLE WITH A SWIVEL DEVICE AS EARLY AS IN 1987 AND HAS SINCE THEN INSTALLED WELL OVER 5000 CABLES WITH THIS TECHNOLOGY.

Constant torsional strains arise during POWER ON, particularly for TWIN shell furnaces of all designs (EAF and LF). In the case of standard cables, the torsion must be absorbed by the connection of the hose and cable head and fastening technology. In order to minimise the strains and extend the service life of the hose, this feature is recommended.

This also applies for high-grade steel furnaces, which conventionally tap via a casting spout. In this case, short-term and extreme torsional loads occur which are a considerable strain for the hose.

ALL FLOHE HIGH-CURRENT CABLES ARE AVAILABLE WITH A SWIVEL DEVICE.

The swivel device is built in on one side of the cable as standard. We do not recommend fitting on both sides.

- At the time of the order, a "D" is to be affixed behind the type and cross-section designation for the swivel device see example: „FHW14000CDx9000“



3-STAGE-SYSTEM

RESTORING YOUR OLD CABLES HAS NOW BEEN ONE OF OUR ROUTINE TASKS FOR OVER 40 YEARS.

We repair with state-of-the-art methods according to our tried-and-tested stage system. A cable repair report is drawn up for each cable awaiting repair after it is received. The individual repair steps can be seen from this.

- 1 ■ **IN BASIC REPAIR...** we change the outer hose together with buffer or all covering hoses, polish the contact surfaces, check the flow rate and measure the electrical conductivity. As an option and depending on the equipment, we overhaul each turning device in this step, exchange the sealing set and measure the true running of the rotating sleeve.
- 2 ■ **IN THE SECOND STAGE...** a so-called inner repair is carried out according to the damage to the copper strands. If we discover damages on the rope which are greater than 5% or if the electrical conductivity deviates significantly, the entire rope strands are exchanged. The old rope heads are reused however. After repair the cable has the same electrical values as a new cable. The mechanical proportions are also equal to those of a new one. All wearing parts of the turning device are replaced automatically in this repair step. All in all, this restoration is in no way inferior to new production.
- 3 ■ **IN THE THIRD STAGE...** the entire cable is scrapped and a completely new cable is produced – in case there are damages on the rope heads as well as the rope strands.

Of course, in addition to cable repair, we also offer you the **ASSEMBLY AND DISASSEMBLY SERVICE** performed by our qualified employees.

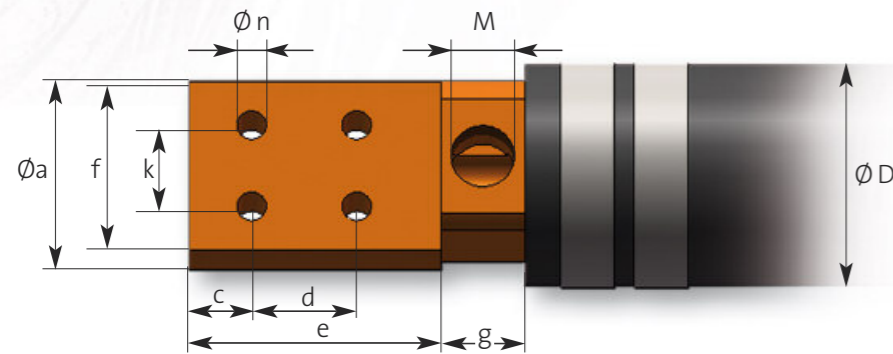
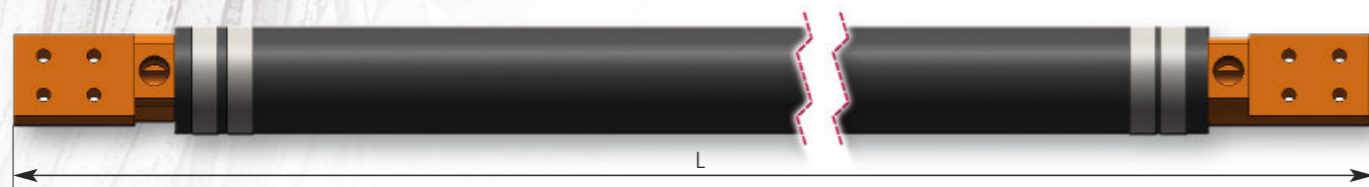
This team is available to you 24h a day and can be contacted on our service telephone number at any time.

We guarantee you first-class, speedy and reliable work.

☎ +49 (0) 700 - 700 300 10

▶▶▶ TYPE FDD ◀◀◀

THE FDD CABLE TYPE IS PARTICULARLY SUITABLE FOR THE CONNECTION OF MEDIUM CURRENTS WITH SMALL CROSS-SECTIONS AND STANDS OUT FOR ITS COMPACT FORM DESPITE HIGH CURRENT DENSITIES.



■ It is characterised by its water control, where the supply takes place behind the connection and then branches out in a star shape within the cable. The cable is also characterised by its small bending radius and high flexibility.

| Type | Measurements | | | | | | | | | | | Nominal cross-section mm ² | Nominal current at 50 Hz A | W/m | m ³ /h* | Bending radius mm |
|----------|--------------|----|----|----|-----|-----|----|----|----|-------|----|---------------------------------------|----------------------------|------|--------------------|-------------------|
| | a | b | c | d | ØD | e | f | g | k | M | n | | | | | |
| FDD 600 | 60 | 22 | 25 | 50 | 76 | 100 | 55 | 40 | 40 | R1/4" | 14 | 600 | 6000 | 1290 | 0.44 | 340 |
| FDD 700 | 70 | 22 | 25 | 50 | 86 | 100 | 66 | 40 | 40 | R1/4" | 14 | 700 | 7500 | 1505 | 0.52 | 360 |
| FDD 800 | 70 | 22 | 25 | 50 | 86 | 100 | 66 | 40 | 40 | R3/4" | 14 | 800 | 8000 | 1720 | 0.59 | 360 |
| FDD 900 | 70 | 25 | 25 | 50 | 86 | 100 | 65 | 40 | 40 | R1" | 14 | 900 | 9000 | 1934 | 0.67 | 360 |
| FDD 1000 | 70 | 25 | 25 | 50 | 86 | 100 | 65 | 40 | 40 | R1" | 14 | 900 | 10000 | 2150 | 0.74 | 360 |
| FDD 1200 | 70 | 30 | 30 | 50 | 86 | 120 | 63 | 40 | 40 | R1" | 14 | 1200 | 12000 | 2579 | 0.89 | 360 |
| FDD 1300 | 80 | 30 | 30 | 50 | 86 | 120 | 74 | 40 | 40 | R1" | 14 | 1300 | 13000 | 2794 | 0.96 | 380 |
| FDD 1600 | 90 | 35 | 30 | 50 | 105 | 120 | 83 | 40 | 40 | R1" | 14 | 1600 | 16000 | 3439 | 1.18 | 400 |
| FDD 1800 | 100 | 35 | 30 | 50 | 125 | 120 | 93 | 40 | 40 | R1" | 14 | 1800 | 18000 | 3869 | 1.33 | 415 |
| FDD 2000 | 100 | 35 | 30 | 50 | 125 | 120 | 93 | 40 | 40 | R1" | 14 | 2000 | 20000 | 4299 | 1.48 | 415 |

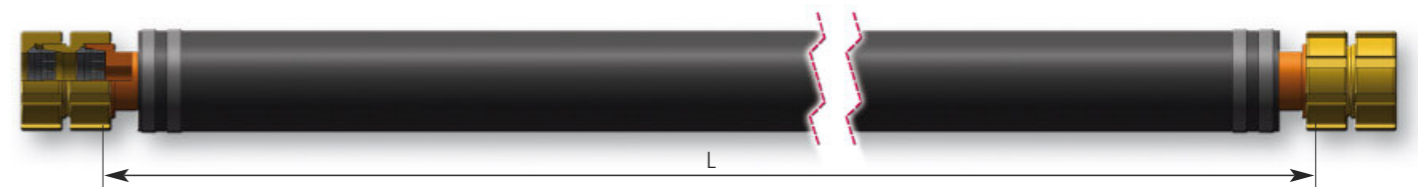
* Cooling water consumption per cable at 4000 mm overall length Δ_t = 10 K

Technical data:
Cable material: see p. 7 "hose technology"

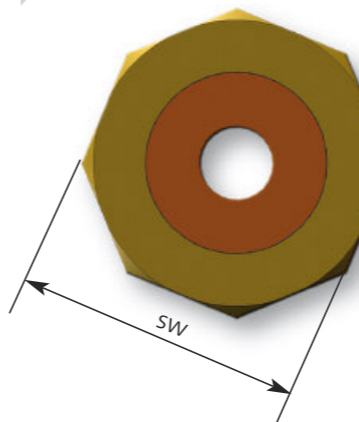
ESR / REDUCTION

▶▶▶ TYPE FHVV ◀◀◀

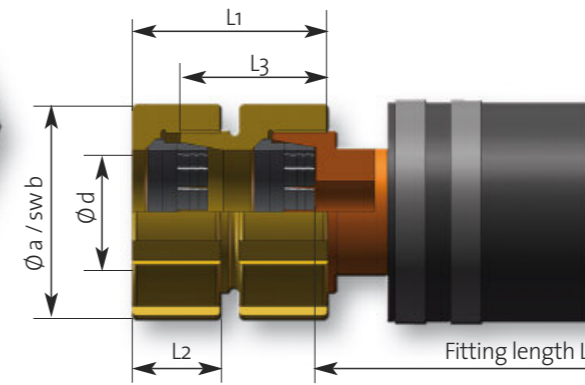
CABLE TYPE FHVV IS ESPECIALLY DESIGNED FOR FREQUENCY PLANTS WHERE THE CABLES ARE ATTACHED TO THE EXISTING PIPELINE BY MEANS OF A PIPE CONNECTION.



FKV3 WITH OCTAGON NUT



TYPE FKV3 CONNECTION WITH GROOVE NUT



■ The power transmission is implemented for each side using two silver-plated contact rings. The nuts can be supplied both as groove nuts and as hexagon/octagon nuts.

The table below shows the technical measurements

| Current pipe Ød | General dimensions | | | | Dimensions of groove nut | | Dimensions of octagon nut | |
|-----------------|--------------------|-------------------------------|---------------------------|---------------------------------|--------------------------|---------------------|-------------------------------------|---|
| | Thread size M | Fitting length L ₁ | Nut groove L ₂ | Outer nut groove L ₃ | Groove nut Øa | Groove outer nut Øa | Octagon nut width across flats SW b | Octagon outer nut width across flats SW b |
| 28 | 45 x 1.5 | 76 | 35 | 35 | 65 | 65 | 55 | 55 |
| 30 | 45 x 1.5 | 76 | 35 | 35 | 65 | 65 | 55 | 55 |
| 35 | 48 x 1.5 | 80 | 35 | 35 | 70 | 70 | 55 | 55 |
| 40 | 60 x 1.5 | 80 | 35 | 35 | 80 | 80 | 55 | 55 |
| 42 | 60 x 1.5 | 80 | 35 | 35 | 80 | 80 | 55 | 55 |
| 48 | 60 x 1.5 | 80 | 35 | 35 | 85 | 85 | 55 | 55 |
| 50 | 64 x 1.5 | 80 | 35 | 35 | 85 | 85 | 55 | 55 |
| 58 | 76 x 1.5 | 80 | 35 | 35 | 95 | 95 | 55 | 55 |
| 60 | 76 x 1.5 | 80 | 35 | 35 | 95 | 95 | 55 | 55 |
| 70 | 85 x 1.5 | 80 | 35 | 35 | 105 | 105 | 55 | 55 |

▶▶▶ HOSE COUPLINGS ◀◀◀
(KAMLOCK)



| Type | Size |
|--|---|
| MALE PART WITH HOSE NIPPLE SMOOTH (TYPE E) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |
| FEMALE PART WITH HOSE NIPPLE SMOOTH (TYPE C) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |
| MALE PART WITH WITH INTERNAL THREAD (TYPE A) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |
| FEMALE PART WITH WITH INTERNAL THREAD (TYPE D) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |
| FEMALE PART WITH WITH EXTERNAL THREAD (TYPE F) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |
| FEMALE PART WITH WITH EXTERNAL THREAD (TYPE B) | 1/2" / DN13, 3/4" / DN19, 1" / DN25, 1 1/2" / DN38, 2" / DN50, 2 1/2" / DN63, 3" / DN75, 4" / DN100 |

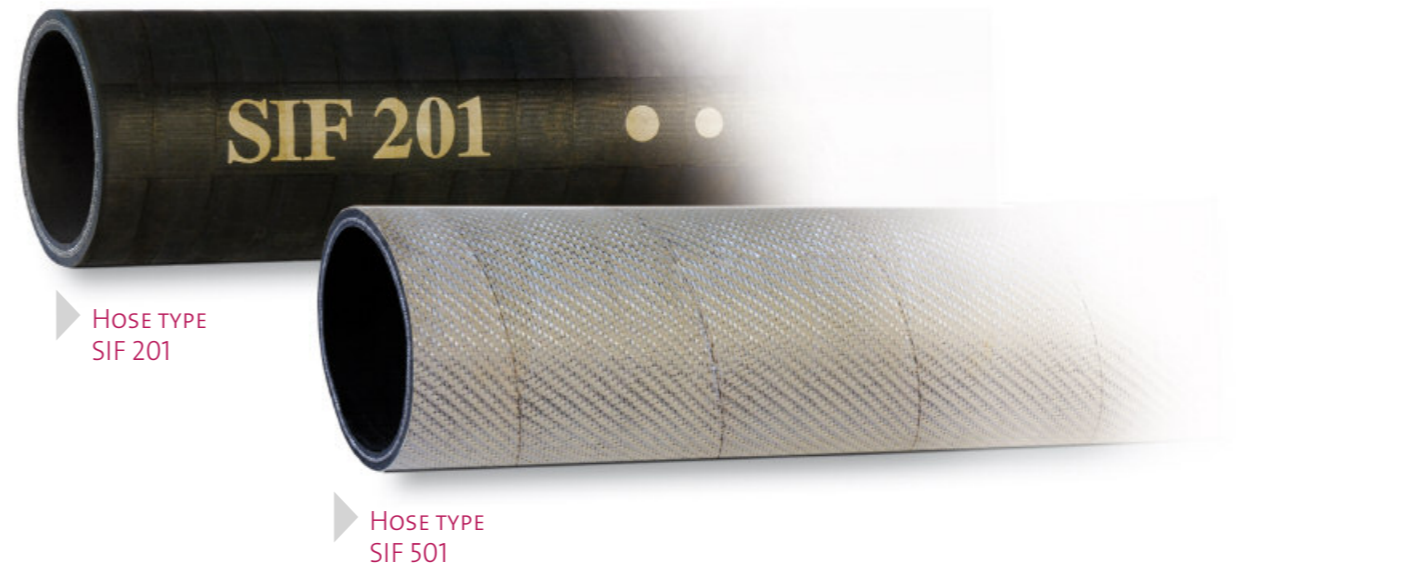
▶▶▶ HOSE CLIPS ◀◀◀



| Type | Size |
|---------|---|
| IT-BAND | 1", 3/4", 1/2", 3/8" |
| TRIDON | 10-22, 14-27, 27-51, 40-64, 46-70, 59-83, 71-95, 84-108, 127-178, 165-216, 242-292 |
| GBS | 125, 135, 145, 158, 160, 165, 173, 175, 187, 190, 197, 200, 207, 210, 217, 220, 230 |

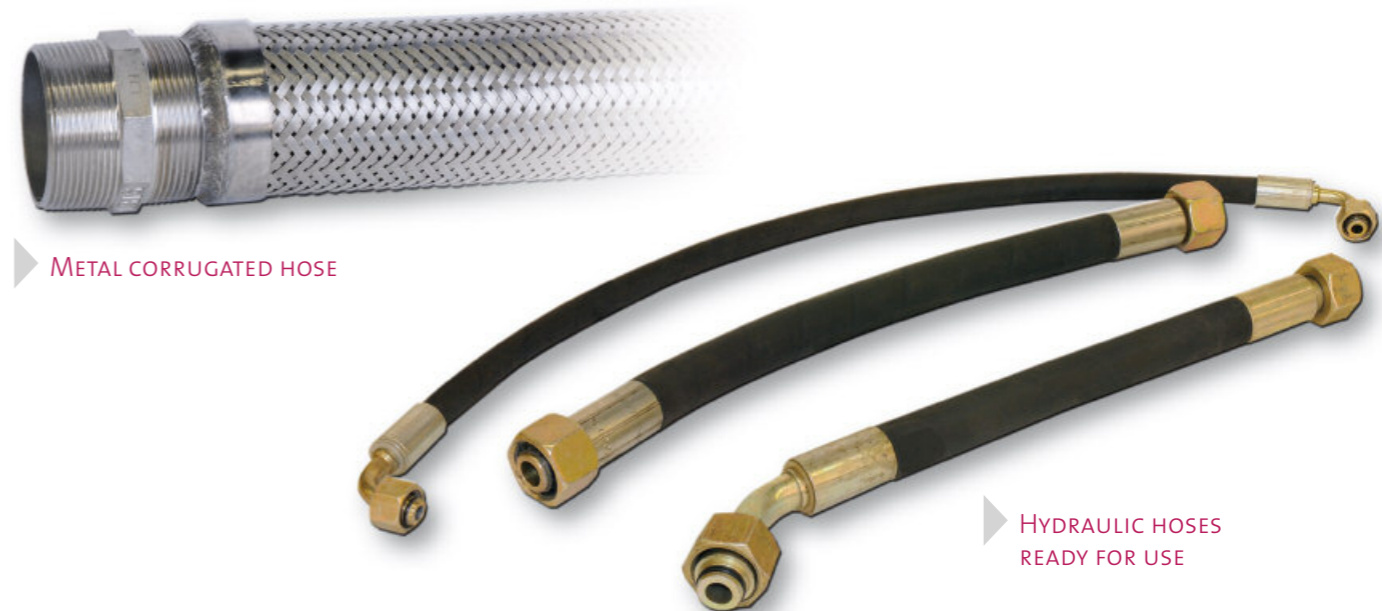
HOSES

ALONGSIDE THE PROVEN HOSE QUALITIES FOR HIGH-CURRENT CABLES, FLOHE OFFERS ALL COOLING WATER CONNECTIONS IN SPECIAL RUBBER EXECUTION WITH THE APPROPRIATE HOSE CONNECTION ELEMENTS AND FASTENING TECHNOLOGY.



▶ HOSE TYPE SIF 201

▶ HOSE TYPE SIF 501



▶ METAL CORRUGATED HOSE

▶ HYDRAULIC HOSES READY FOR USE

THE SERVICE LIFE OF THE CABLE HOSES IS SOMETIMES REDUCED ENORMOUSLY BY VARIOUS INFLUENCES IN THE FORM OF FRICTION, RADIANT HEAT AND METAL SPLASHES.



ACCORDING TO THE PROBLEM AREA, WE HAVE DEVELOPED DIVERSE SOLUTIONS FOR THIS

... which are already being used by various customers.

- Rubber auxiliary hose
- Silicone auxiliary hose
- Kevlar auxiliary hose
- Spacer

While spacers are primarily for combating friction wear, rubber, silicone and Kevlar hoses are 3 different solutions which can be used at temperatures from 100°C to 750°C. It is to be considered that as the temperature resistance increases, the abrasion resistance rises diagonally with it.

GET IN CONTACT WITH US.

PRODUCT OVERVIEW

FOR OVER 60 YEARS:

▶▶▶ **COMPETENCE IN ENGINEERING + MANUFACTURING** ◀◀◀

...FROM THE INDIVIDUAL COMPONENT TO THE COMPLEX HIGH-CURRENT SYSTEM

■ EAF / LF / ESR



■ SUPPORT ARM TECHNOLOGY / HIGH-CURRENT LINES



■ EXPANSION JOINTS



■ ELECTROLYSIS: BUSBARS / SWITCH GEARS





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WE ARE THERE FOR YOU
24 HRS A DAY

