PFEIFER

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# PFEIFER – Your specialist for ropes in cargo handling cranes

**PFEIFER**
**SEIL- UND HEBETECHNIK**
**GMBH**

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# Innovativ wire rope systems in cargo handling cranes

Moving means to set things in motion, to unfold dynamics, to create things. For us in the PFEIFER group, to move is very specific: it means that with our products from Wire Rope Technology, Rope and Lifting and Building Systems elevators, heavy loads on cranes, sheet metal coils, workpieces and precast concrete elements move. Our cable structure buildings are known all over the world, and so is our extensive knowledge on the dynamics of wire rope in all applications.

Moving also means for us that we don't sit still, we study, we learn, we apply and we invest. There is a reason why the PFEIFER group is one of Europe´s leading companies in Structures, Wire Rope Technology, Rope and Lifting and Building Systems.

We get things going – special requests by customers, efficient and practical solutions, technical expertise, quality and dependable service – these are the benefits for you as a partner.

**Gerhard Pfeifer,**
President of the PFEIFER group

The PFEIFER group is one of Europe´s leading companies in Structures, Wire Rope Technology, Rope and Lifting and Building Systems. The head-quarters are located in Memmingen, Germany. Numerous service centres and subsidiaries worldwide are responsible for sales and distribution.

The usual performances of rope drives at applications like goods-, bulk handling-, gravel conveyor- and incineration plant systems require right-handed (sZ) and left-handed (zS) non-rotation-resistent hoist ropes of the same construction and production.

The choice of a specific rope construction of our very extensive portfolio of non-rotation-resistent ropes for your plant requires the special application- and rope-know-how of our consultants, because of the dependence on cranesystem, operating conditions and abrasion behaviour of the rope – Please let our experts advise you!

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**Reduce every risk and trust in our longtime experience of correct rope selection!**


➜ Further infomation can be found under Products & Services at the PFEIFER web portal:
**www.pfeifer.info/ports**

# General information

## Requirements in wire ropes of handling facilities

### Technical requirements

- Sufficient breaking force
  Minimum breaking force ≥ data of crane test book / original rope
- Stable rope structure (not susceptible to structural damages like birdcage, corkscrew, formation of loops …)
- High bending cycles performance
- Suitable end terminations
- High, reproducible quality

### Maintenance

- Safe signalling of the discarding time (extraneous wearing)
- Easy assembly – packaging to special cusotmer demands (cable ring, disposable reel)

## PFEIFER rope classification



| | |
|---|---|
| **Premium-Line** | ■ Highest bending cycles performance<br>■ Very good characteristics values of performance also on the limits<br>■ High structure stability<br>■ High breaking force |
| **High-Performance-Line** | ■ High bending cycles performance<br>■ High structure stability |
| **Performance-Line** | ■ High bending cycles performance |
| **Standard-Line** | ■ Standard bending cycles performance |

# PFEIFER added value advantage


- Complete documentation and traceability
- High availability
- Attractive price
- Own material test centre
- Comprehensive stock

PFEIFER analyses all properties of wire ropes and applied materials with extensive tests to choose the right wire rope for your application and to optimize the lifetime in your equipment.

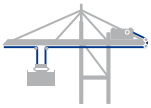
**Reduce every risk and trust in our longtime experience in choosing the right ropes!**

*Please let us advise you!*

# Hoisting and closing ropes

Extract from our in stock rope range

## **Stranded wire ropes** – Premium Line



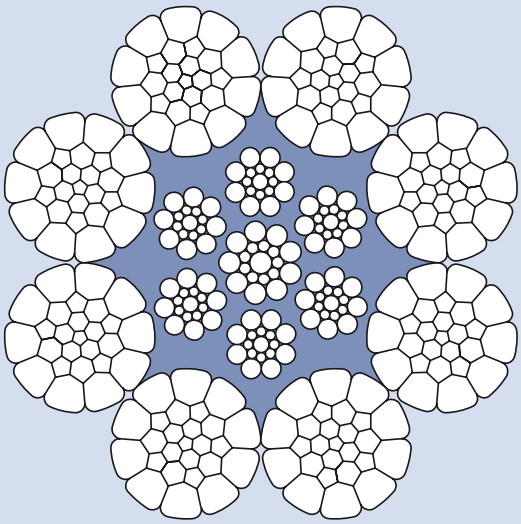
## P 129 Round strand rope, non rotation resistant

**Technical data**

| | |
|---|---|
| Average fill factor | 0,675 |
| average spinning loss factor 1770 N/mm² | 0,85 |
| average spinning loss factor 1960 N/mm² | 0,85 |
| average spinning loss factor 2160 N/mm² | 0,84 |
| Core | plastic coated steel core – therefore increased structural strength |
| Lay type | choice of regular/ordinary lay or langs lay |
| Lay direction | choice of right hand or left hand |
| Compacting | strands compacted – thereby extra wear resistant |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | 0 / +4,5 % |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 4 – 14 | 152 | 04 |
| from 15 – 44 | 208 | 09 |
| from 45 – 69 | 288 | 13 |
| from 70 – 100 | 328 | 13 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1770 | Minimum breaking force Fmin 1960 | Minimum breaking force Fmin 2160 |
|---|---|---|---|---|
| mm | kg/100 m | kN | kN | kN |
| 16 | 121 | 204 | 226 | 246 |
| 17 | 136 | 230 | 255 | 278 |
| 18 | 153 | 258 | 286 | 312 |
| 19 | 170 | 288 | 319 | 347 |
| 20 | 189 | 319 | 354 | 385 |
| 21 | 208 | 352 | 389 | 424 |
| 22 | 228 | 386 | 428 | 465 |
| 23 | 250 | 422 | 468 | 509 |
| 24 | 272 | 459 | 509 | 554 |
| 25 | 295 | 498 | 552 | 601 |
| 26 | 319 | 539 | 597 | 650 |
| 27 | 344 | 581 | 643 | 701 |
| 28 | 370 | 626 | 693 | 754 |
| 29 | 397 | 671 | 743 | 809 |
| 30 | 425 | 718 | 795 | 866 |
| 31 | 457 | 772 | 855 | 932 |
| 32 | 487 | 823 | 911 | 992 |
| 33 | 518 | 875 | 969 | 1055 |
| 34 | 549 | 929 | 1030 | 1121 |
| 35 | 582 | 984 | 1090 | 1187 |
| 36 | 616 | 1041 | 1153 | 1256 |

Other rope diameters and constructions on enquiry.
Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

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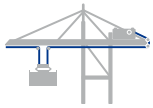
## **Stranded wire ropes** – High Performance Line



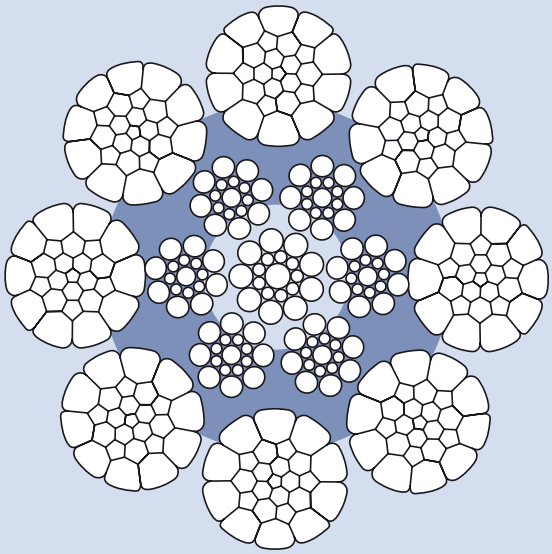
## P 929 — Round strand rope, non rotation resistant

**Technical data**

| | |
|---|---|
| Average fill factor | 0,66 |
| average spinning loss factor | 0,852 |
| Core | plastic coated steel core – therefore increased structural strength |
| Lay type | choice of regular/ordinary lay or langs lay |
| Lay direction | choice of right hand or left hand |
| Compacting | Compacted rope – therefore particularly resistance to crushing and abrasion |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | +2%/+4% |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 12 – 54 | 208 | 09 |
| from 56 – 72 | 328 | 13+ |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

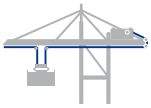
| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1960 | Minimum breaking force Fmin 2160 |
|---|---|---|---|
| mm | kg/100 m | kN | kN |
| 16 | 116 | 229 | 249 |
| 17 | 136 | 259 | 281 |
| 18 | 152 | 290 | 315 |
| 19 | 169 | 323 | 351 |
| 20 | 187 | 358 | 389 |
| 22 | 226 | 434 | 471 |
| 23 | 247 | 474 | 514 |
| 24 | 269 | 516 | 560 |
| 25 | 288 | 544 | 590,5 |
| 26 | 315 | 606 | 657 |
| 28 | 365 | 701 | 761 |
| 30 | 412 | 805 | 874 |
| 32 | 472 | 917 | 995 |
| 34 | 532 | 1035 | 1124 |
| 35 | 564 | 1097 | 1191 |
| 36 | 597 | 1161 | 1260 |

Other rope diameters and constructions on enquiry.
Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

## **Stranded wire ropes** – Performance Line



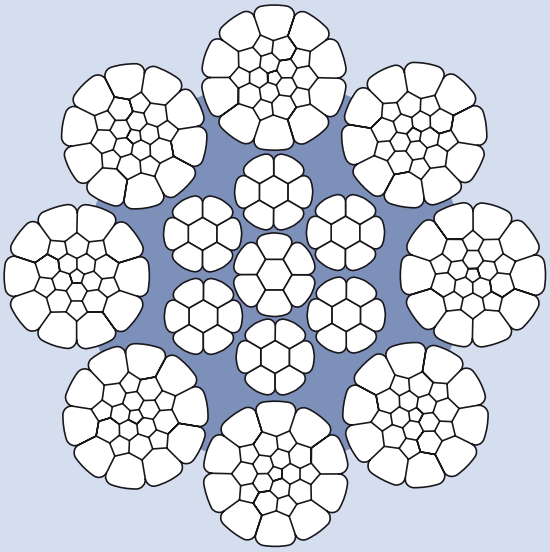
## P 1025 — Round strand rope, non rotation resistant

**Technical data**

| | |
|---|---|
| Average fill factor | 0,672 |
| average spinning loss factor 1960 N/mm² | 0,85 |
| average spinning loss factor 2160 N/mm² | 0,81 |
| Core | full plastic impregnation of the compacted steel core to further extend fatigue life, improve structural stability |
| Lay type | Ordinary lay |
| Lay direction | choice of right hand or left hand |
| Compacting | strands compacted – thereby extra wear resistant |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | +0/+5 % |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 13 – 15 | 136 | 03 |
| from 16 – 28 | 208 | 09 |
| from 30 – 42 | 248 | 11 |
| from 44 – 60 | 288 | 13 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1960 | Minimum breaking force Fmin 2160 |
|---|---|---|---|
| mm | kg/100 m | kN | kN |
| 16 | 114,8 | 229,4 | 242,4 |
| 18 | 147,9 | 288,2 | 307 |
| 19 | 163,2 | 323,5 | 342 |
| 20 | 183,8 | 355,5 | 379 |
| 22 | 217,3 | 433,7 | 458,5 |
| 24 | 254,8 | 514,3 | 556 |
| 25 | 286 | 558,2 | 602 |
| 26 | 305,4 | 607,8 | 655 |
| 28 | 355,4 | 697,3 | 748 |
| 30 | 412,8 | 803 | 864 |
| 32 | 469,4 | 911 | 968 |
| 34 | 526,1 | 1024,9 | 1091 |
| 36 | 596,9 | 1150 | 1217 |

Other rope diameters and constructions on enquiry.
Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

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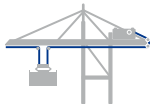
## **Uncompacted wire ropes** – Premium Line



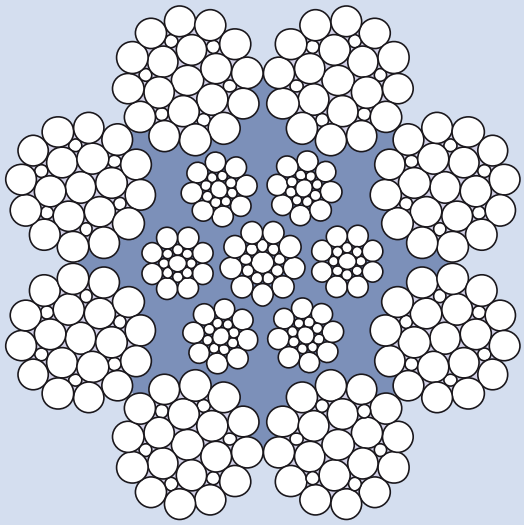
## P 124 Non-rotation-free high-performance rope

**Technical data**

| | |
|---|---|
| Average fill factor | 0,6226 |
| average spinning loss factor 1770 N/mm² | 0,845 |
| average spinning loss factor 1960 N/mm² | 0,845 |
| average spinning loss factor 2160 N/mm² | 0,835 |
| Core | plastic coated steel core – therefore increased structural strength |
| Lay type | Ordinary lay |
| Lay direction | choice of right hand or left hand |
| Compacting | not compacted |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | 0/+4,5 % |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 4 – 49 | 152 | 06 |
| from 50 – 69 | 288 | 13 |
| from 70 – 90 | 328 | 13 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

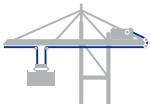
| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1770 | Minimum breaking force Fmin 1960 |
|---|---|---|---|
| mm | kg/100 m | kN | kN |
| 16 | 116 | 187 | 208 |
| 17 | 130 | 210 | 233 |
| 18 | 146 | 236 | 262 |
| 19 | 161 | 260 | 289 |
| 20 | 178 | 288 | 320 |
| 21 | 195 | 315 | 351 |
| 22 | 223 | 361 | 401 |
| 23 | 241 | 390 | 434 |
| 24 | 261 | 422 | 469 |
| 25 | 285 | 462 | 513 |
| 26 | 307 | 497 | 552 |
| 27 | 326 | 528 | 587 |
| 28 | 358 | 580 | 645 |
| 29 | 382 | 620 | 689 |
| 30 | 409 | 663 | 736 |
| 32 | 459 | 745 | 827 |
| 34 | 528 | 855 | 951 |
| 36 | 588 | 953 | 1058 |

Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

## **Uncompacted wire ropes** – High Performance Line



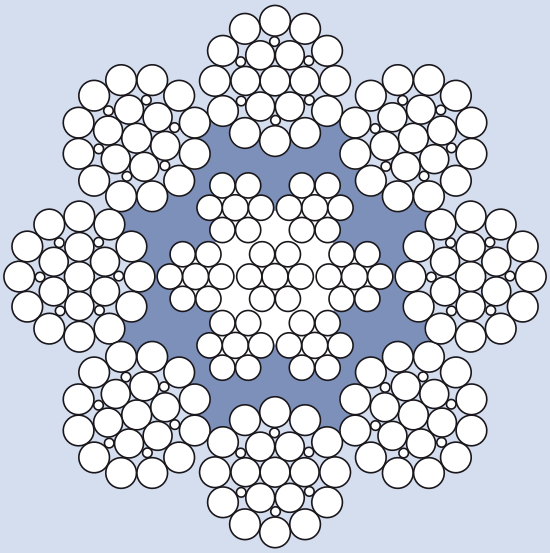
## P 324 Non-rotation-free high-performance rope

**Technical data**

| | |
|---|---|
| Average fill factor | 0,606 |
| average spinning loss factor | 0,891 |
| Core | plastic coated steel core – therefore increased structural strength |
| Lay type | Ordinary lay |
| Lay direction | choice of right hand or left hand |
| Compacting | not compacted |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | +2/+4 % |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 10 – 42 | 152 | 06 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1960 | Minimum breaking force Fmin 2160 |
|---|---|---|---|
| mm | kg/100 m | kN | kN |
| 16 | 108 | 212,7 | 234,5 |
| 18 | 137 | 269,3 | 296,8 |
| 19 | 153 | 300,1 | 330,7 |
| 20 | 169 | 332,4 | 366,4 |
| 22 | 205 | 402,3 | 443,3 |
| 24 | 243 | 478,7 | 527,6 |
| 26 | 285 | 561,9 | 619,2 |
| 28 | 331 | 651,6 | 718,2 |
| 30 | 380 | 748,1 | 824,3 |
| 32 | 432 | 851,2 | 938 |
| 34 | 488 | 960,9 | 1058,9 |
| 36 | 548 | 1077,2 | 1187,1 |

Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

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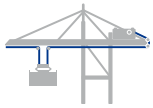
## **Uncompacted wire ropes** – Performance Line



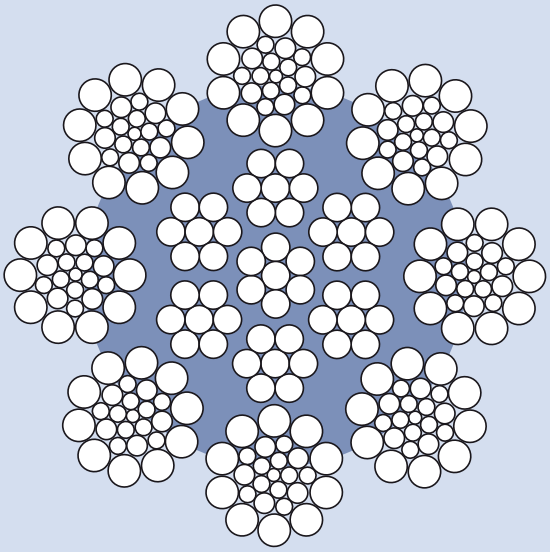
## P 1024 Round strand rope, non rotation resistant

**Technical data**

| | |
|---|---|
| Average fill factor | 0,634 |
| average spinning loss factor | 0,83 |
| Core | plastic coated steel core – therefore increased structural strength |
| Lay type | choice of regular/ordinary lay or langs lay |
| Lay direction | choice of right hand or left hand |
| Compacting | not compacted |
| Finish | Galvanized |
| Rope diameter tolerance | +0/+5% |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 13 – 15 | 136 | 03 |
| from 16 – 28 | 208 | 09 |
| from 30 – 44 | 248 | 11 |
| from 46 – 62 | 288 | 13 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

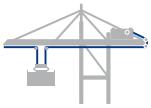
| Nominal rope Ø mm | Weight approx. kg/100 m | Minimum breaking force Fmin 1960 kN |
|---|---|---|
| 16 | 110,7 | 209 |
| 18 | 138,6 | 262 |
| 19 | 153,1 | 289 |
| 20 | 172 | 325 |
| 22 | 206,6 | 391 |
| 24 | 246,6 | 469 |
| 26 | 286 | 541 |
| 28 | 336,9 | 637 |
| 30 | 386,8 | 733 |
| 32 | 435 | 824 |
| 34 | 490,1 | 925 |
| 35 | 533,5 | 1008 |
| 36 | 555,3 | 1052 |

Other rope diameters and constructions on enquiry.
Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

Extract from our in stock rope range

## **Uncompacted wire ropes** – Standard Line



## PN 216/7

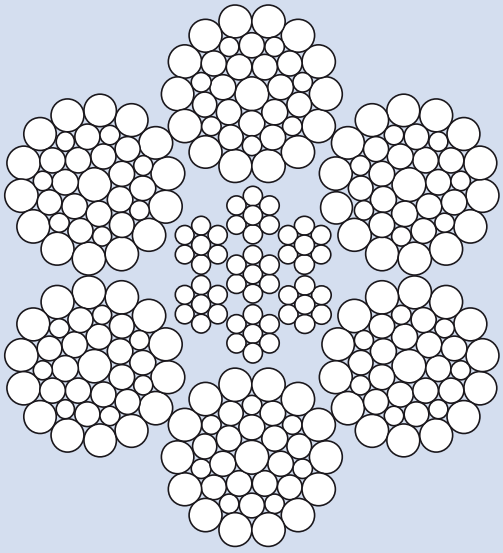
Standard round strand ropes

**Technical data**

| | |
|---|---|
| Average fill factor | 0,59 |
| Core | Steel core |
| Lay type | Ordinary lay |
| Lay direction | Right hand |
| Compacting | not compacted |
| Finish | choice of bright or galvanised |
| Rope diameter tolerance | +0/+5 % |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 8 – 100 | 216 | 09 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

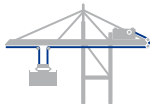
| Nominal rope Ø | Weight approx. | Minimum breaking force Fmin 1770 | Minimum breaking force Fmin 1960 | Minimum breaking force Fmin 2160 |
|---|---|---|---|---|
| mm | kg/100 m | kN | kN | kN |
| 8 | 26,2 | 40,3 | 44,7 | 49,2 |
| 9 | 33,1 | 51 | 56,5 | 62,3 |
| 10 | 40,9 | 63 | 69,8 | 76,9 |
| 11 | 49,5 | 76,2 | 84,4 | 93 |
| 12 | 58,9 | 90,7 | 100 | 111 |
| 13 | 69,1 | 106 | 118 | 130 |
| 14 | 80,2 | 124 | 137 | 151 |
| 15 | 92,6 | 142 | 158 | 174 |
| 16 | 105 | 161 | 179 | 197 |
| 18 | 133 | 204 | 226 | 249 |
| 20 | 164 | 252 | 279 | 308 |
| 22 | 198 | 305 | 338 | 372 |
| 24 | 236 | 363 | 402 | 443 |
| 26 | 276 | 426 | 472 | 520 |
| 28 | 321 | 494 | 547 | 603 |
| 32 | 419 | 645 | 715 | 787 |
| 34 | 473 | 728 | 806 | 888 |
| 36 | 530 | 817 | 904 | 997 |
| 38 | 591 | 910 | 1008 | 1110 |
| 40 | 654 | 1010 | 1120 | 1230 |
| 44 | 792 | 1220 | 1350 | 1490 |
| 48 | 942 | 1450 | 1610 | 1770 |
| 52 | 1110 | 1700 | 1890 | 2080 |
| 56 | 1280 | 1980 | 2190 | 2410 |
| 60 | 1470 | 2270 | 2510 | 2770 |

Other rope diameters and constructions on enquiry.

Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

# Hoisting and closing ropes

## **Uncompacted wire ropes** – Standard Line



## PN 216

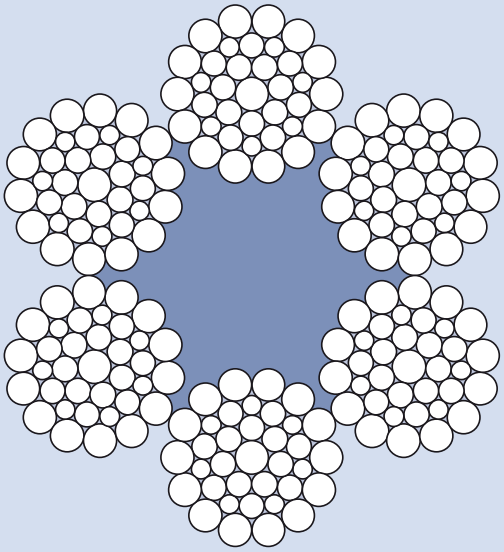
Standard round strand ropes

**Technical data**

| | |
|---|---|
| Average fill factor | 0,5 |
| Core | fibre core |
| Lay type | Ordinary lay |
| Lay direction | Right hand |
| Compacting | not compacted |
| Finish | choice of bright or galvanised |
| nominal metallic cross-sectional area factor C | 0,393 |

| Diameter range | Number of load-bearing wires in the external strands | RCN according to ISO 4309 |
|---|---|---|
| from 8 – 60 | 216 | 09 |

**WARNING:** Never use with a swivel – failure to comply may result in serious damages and injuries



Sample schematic of rope construction used for representative purposes only. Actual construction dependent upon rope diameter.

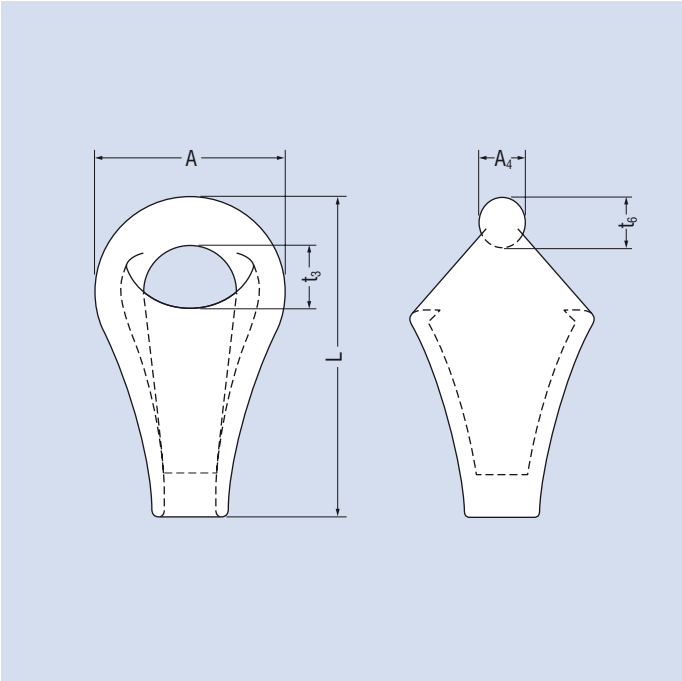
| Nominal rope Ø<br>mm | Weight approx.<br>kg/100 m | Minimum breaking force Fmin 1770<br>kN | Minimum breaking force Fmin 1960<br>kN |
|---|---|---|---|
| 14 | 71,9 | 114 | 127 |
| 16 | 94 | 150 | 166 |
| 18 | 119 | 189 | 210 |
| 20 | 147 | 234 | 259 |
| 22 | 178 | 283 | 313 |
| 24 | 211 | 336 | 373 |
| 26 | 248 | 395 | 437 |
| 28 | 288 | 458 | 507 |
| 32 | 376 | 598 | 662 |
| 36 | 476 | 757 | 838 |
| 40 | 587 | 935 | 1040 |
| 44 | 711 | 1130 | 1250 |
| 48 | 846 | 1350 | 1490 |

Other rope diameters and constructions on enquiry.
Please refer to our operating manual stranded ropes! Available at www.pfeifer.info/manual-strand-ropes

Special end terminations on request

## Rope socket Nemag
57A






**Technical data**

| | |
|---|---|
| Material | Cast steel (cold resistant to -20 °C) |
| Surface | Plain |
| Nominal tensile strength | ≤ 2160 N/mm² |

**Application area**

Round strand ropes

**Combination products**

Quick connecting link Nemag 548

Don't use non-rotation resistant and rotation resistant ropes with a turnable fixed point (e. g. swivel). The end termination has to be fixed against rotation as well. If this is not observed considerable damage, serious injury or death will occur.

| Reference no. | NG | ds | A | $A_4$ | L | $t_3$ | $t_6$ | MBL | WLL | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | mm | mm | kN | kg | kg |
| 235701 | 5 | 18 – 19 | 84 | 19 | 135 | 30 | 21 | 27,5 | 4500 | 1,3 |
| 235702 | 6 | 20 – 21 | 84 | 21 | 152 | 33 | 23 | 35 | 5000 | 1,7 |
| 214699 | 7 | 22 – 24 | 100 | 23 | 166 | 37 | 26 | 42,5 | 7000 | 2,3 |
| 199006 | 8 | 25 – 27 | 100 | 25 | 186 | 39 | 28 | 52,5 | 8000 | 3,2 |
| 214700 | 9 | 28 – 30 | 120 | 27 | 202 | 40 | 31 | 70 | 11000 | 4,1 |
| 235711 | 10 | 31 – 33 | 120 | 28,5 | 222 | 45 | 32 | 85 | 13000 | 5,2 |
| 178084 | 11 | 34 – 36 | 142 | 31,5 | 239 | 50 | 36 | 95 | 15000 | 6,4 |

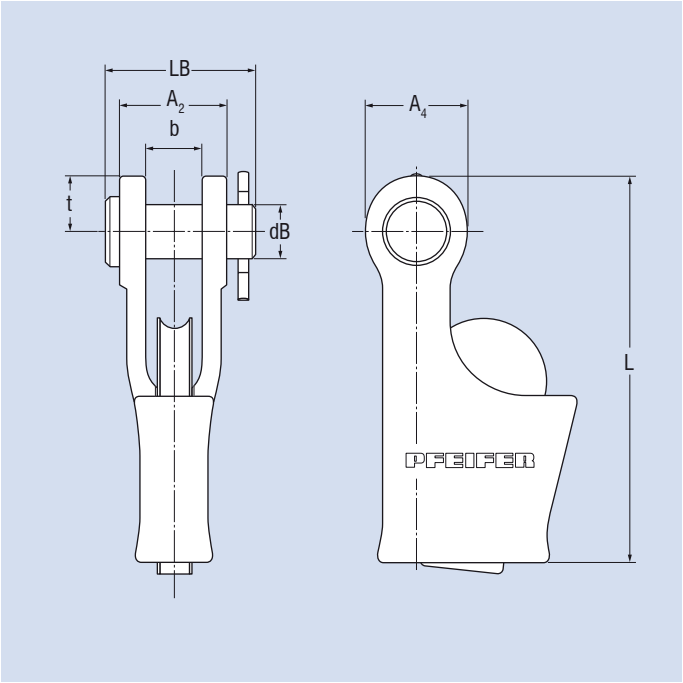
The working load is the recommended maximum load for grabbing operations when Quick Release Links and Rope Pear Sockets are passing over a special cable sheave. For other applications a safety factor in line with official international and national guidelines has to be adhered to.

**Dimensions correspond to nominal sizes without tolerance and without coating. Please contact us for exact measurements!**

## Open wedge socket PSH

95A

Clamps




### Technical data

| | |
|---|---|
| Material bolt | Quenched and tempered steel |
| Material housing | Cast steel (cold resistant to -40 °C) |
| Surface housing | Hot-dip galvanised |
| Material wedge | Cast steel (cold resistant to -40 °C) |
| Surface wedge | Hot-dip galvanised |
| Loss factor | 0,8 |

### Application area

Round strand ropes

### Combination products

Pouch Socket LH 570/85A
Swivel Pouch Socket LH 571/86A

Don't use non-rotation resistant and rotation resistant ropes with a turnable fixed point (e. g. swivel). The end termination has to be fixed against rotation as well. If this is not observed considerable damage, serious injury or death will occur.

| Reference no. | NG | ds | $A_2$ | $A_4$ | b | dB | LB | L | t | WLL | MBL | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | mm | mm | mm | mm | kN | kN | kg |
| 289721 | 8 / 7 | 7 | 36 | 36 | 18 | 16 | 52 | 130 | 18 | 20 | 70 | 0,8 |
| 289720 | 8 / 8 | 8 | 36 | 36 | 18 | 16 | 52 | 130 | 18 | 20 | 70 | 0,8 |
| 270717 | 10 / 9 | 9 | 42,5 | 40 | 20,5 | 21 | 59,5 | 145 | 22 | 35 | 110 | 1,2 |
| 270733 | 10 / 10 | 10 | 42,5 | 40 | 20,5 | 21 | 59,5 | 145 | 22 | 35 | 110 | 1,2 |
| 270718 | 13 / 11 | 11 | 50 | 50 | 25 | 26 | 71 | 180 | 27 | 55 | 185 | 2,6 |
| 270734 | 13 / 12 | 12 | 50 | 50 | 25 | 26 | 71 | 180 | 27 | 55 | 185 | 2,6 |
| 270735 | 13 / 13 | 13 | 50 | 50 | 25 | 26 | 71 | 180 | 27 | 55 | 185 | 2,6 |
| 270719 | 17 / 13 | 13 – 14 | 60 | 58 | 32 | 30 | 85 | 225 | 31 | 95 | 316 | 4,7 |
| 270736 | 17 / 15 | 15 – 16 | 60 | 58 | 32 | 30 | 85 | 225 | 31 | 95 | 316 | 4,7 |
| 270737 | 17 / 17 | 17 | 60 | 58 | 32 | 30 | 85 | 225 | 31 | 95 | 316 | 4,7 |
| 270720 | 19 / 16 | 16 – 17 | 72 | 67 | 38 | 35 | 99 | 255 | 36,5 | 120 | 395 | 6,5 |
| 270738 | 19 / 18 | 18 – 19 | 72 | 67 | 38 | 35 | 99 | 255 | 36,5 | 120 | 395 | 6,5 |
| 270721 | 23 / 19 | 19 – 20 | 83 | 80 | 45 | 41 | 115 | 300 | 44 | 170 | 580 | 9,8 |
| 270739 | 23 / 21 | 21 – 23 | 83 | 80 | 45 | 41 | 115 | 300 | 44 | 170 | 580 | 9,8 |
| 270722 | 26 / 23 | 23 – 24 | 96 | 96 | 51 | 50 | 129 | 330 | 53 | 220 | 740 | 14,5 |
| 270741 | 26 / 25 | 25 – 26 | 96 | 96 | 51 | 50 | 129 | 330 | 53 | 220 | 740 | 14,5 |
| 270724 | 29 / 27 | 27 – 29 | 107 | 108 | 57 | 57 | 145 | 375 | 59 | 275 | 920 | 20 |
| 270726 | 33 / 30 | 30 – 31 | 120 | 115 | 63 | 63,5 | 159 | 425 | 63,5 | 355 | 1190 | 31 |
| 270728 | 33 / 32 | 32 – 33 | 120 | 115 | 63 | 63,5 | 159 | 425 | 63,5 | 355 | 1190 | 31 |

Additional sizes on enquiry.

**Dimensions correspond to nominal sizes without tolerance and without coating. Please contact us for exact measurements!**

# Rope end terminations

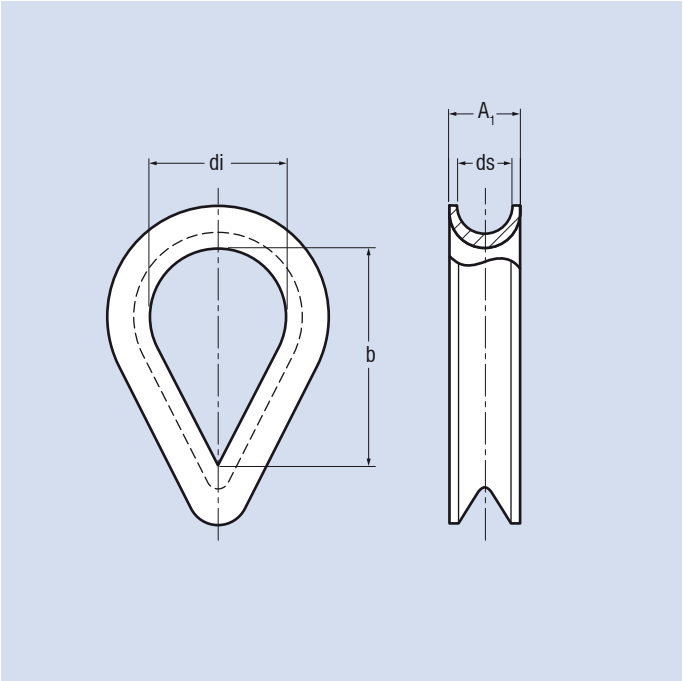
Special end terminations on request

## Thimble similar to DIN 6899

521 Thimbles

**Technical data**

| | |
|---|---|
| Material | Steel |
| Surface | zinc-plated |




Don't use non-rotation resistant and rotation resistant ropes with a turnable fixed point (e. g. swivel). The end termination has to be fixed against rotation as well. If this is not observed considerable damage, serious injury or death will occur.

| Reference no. | NG | ds | $A_1$ | b | di | Weight |
|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | kg |
| 111332 | 14 | 12 – 13 | 17,5 | 51 | 32 | 0,1 |
| 111333 | 16 | 14 – 15 | 20 | 58 | 36 | 0,14 |
| 111334 | 18 | 16 – 17 | 22 | 64 | 40 | 0,19 |
| 111335 | 20 | 18 – 18 | 24,5 | 72 | 45 | 0,29 |
| 111336 | 22 | 19 – 20 | 27 | 80 | 50 | 0,55 |
| 111337 | 24 | 21 – 22 | 30 | 90 | 56 | 0,5 |
| 111338 | 26 | 23 – 24 | 33 | 99 | 62 | 0,59 |
| 111339 | 28 | 25 – 26 | 35 | 112 | 70 | 0,82 |
| 111340 | 30 | 27 – 28 | 37 | 120 | 75 | 1 |
| 111341 | 32 | 29 – 30 | 39 | 128 | 80 | 1,3 |
| 111342 | 34 | 31 – 32 | 41 | 152 | 95 | 1,6 |
| 111343 | 36 | 33 – 34 | 43 | 160 | 100 | 1,7 |
| 111345 | 38 | 35 – 36 | 45 | 176 | 110 | 1,62 |
| 111346 | 40 | 37 – 38 | 48 | 184 | 115 | 2,75 |
| 111347 | 42 | 39 – 40 | 50 | 192 | 120 | 3 |
| 111348 | 45 | 41 – 42 | 57 | 240 | 150 | 3,5 |
| 111349 | 50 | 43 – 47 | — | 245 | 160 | 5,4 |

**Dimensions correspond to nominal sizes without tolerance and without coating. Please contact us for exact measurements!**

# Further products and services

## Rope accessories

### Connecting links

For fast and simple connection and fastening options of steel wire ropes

Available in various versions

### Swivels

To avoid the rope torque being transmitted to the load and thus causing great damage

### Bolts

For fast and stable securing in the most diverse areas of application


### Manual strand ropes

Detailed manual for the proper use of your strand ropes with useful tips to extend the rope lifetime

Further languages on request

Included in each Rope Service Starter Kit and the measurement equipment cases 75/150 or available as PDF in the PFEIFER download centre at:

→ **www.pfeifer.info/manual-strand-ropes**

# Rope service and rope handling

## Rope lubrication RL-S & RL-B

| Product | | Part.-No. |
|---|---|---|
| 12 x Spray | 600 ml | 245066 |
| Bucket | 10 l | 212406 |
| Bucket | 30 l | 212405 |

Maintain your wire ropes with the proper re-lubricant and extend the lifetime.

Save costs for new ropes and rope changes by extended lifetime.

We can offer re-lubricating large rope lengths using a special re-lubrication device. Our service team comes to you worldwide and saves you cost intensive trips with your crane.

## Rope measurement

- Groove gauges
- Caliper gauges
- Sets

Use our special measurement devices from the rope specialist to reduce costs by extending the lifetime.

Based on our long-term practical experience of rope drive inspection, we created a measurement devices program. These measurement devices are used by our rope experts for each inspection and thereby approved for general use.

## Tools for working on ropes

- Crimping pliers
- Wire rope cutter

So that you can also easily carry out minor work on ropes, PFEIFER offers you a selection of different tools for working on ropes.

## Rope assembly aids

- Winding blocks
- Rope tensioning clamps
- Cable grips

PFEIFER rope assembly aids assist you reliably in the attachment and replacement of your steel ropes.

## Innovative packaging solutions

- Reels
- Stand for reels

PFEIFER-reels and PFEIFER-stands for reels – the perfect combination for your ropes:

- Optimized packaging sizes
- Simplified transport – to be taken by forklift
- Stands for reels are gently for reels and ropes
- Prevention of transport mistakes and resulting damages
- Heat treatment according to ISPM 15

# Rope services

## Rope analysis

- PFEIFER analyses with extensive tests in the central Rope and Material Test Centre all properties of wire ropes and applied materials at the headquarter in Memmingen as well as at further machines at PFEIFER DRAKO in Mülheim/Ruhr. Also necessary tests can be done locally in our global subsidiaries.
- Aware that not only the usual catalog values such as weight per meter and minimum breaking force decide on the performance of wire ropes, all properties of the ropes are determined at PFEIFER in extensive tests.
- Equipped with this knowledge, we will choose the right wire rope for your application and so we optimize the lifetime of your equipment.

Test Facility for Determining Bending Fatigue

Spectral Analysis

Multi Layer Spooling Test Tower

Magnaflux Test

Rope Efficiency Test Facility

**Further Offers:**

Test Facility for Lateral Pressure Resistance

Coat Thickness Measuring Ultrasonic

Torsion Test Facility

Microscopic Analysis

Elongation and Pull Test Facility

Hardness Test

Notch Impact Test

Dye Penetrate Test

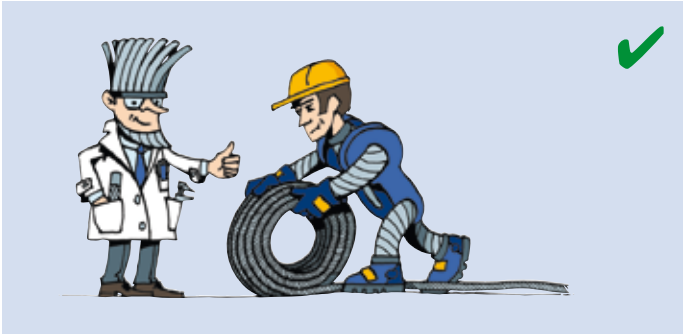
Tension Fatigue Test Facility

Pull Test Facility 800 kN

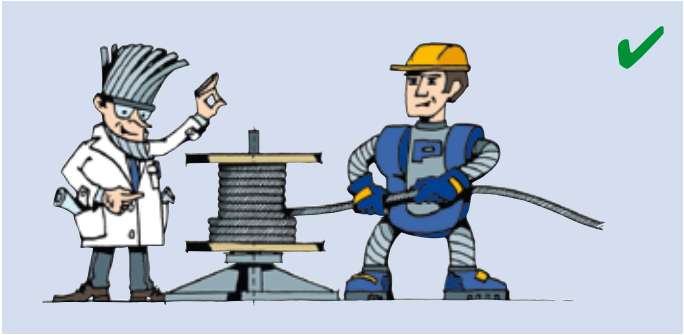
Pull Test Facility 6,000 kN

# Correct handling of wire ropes

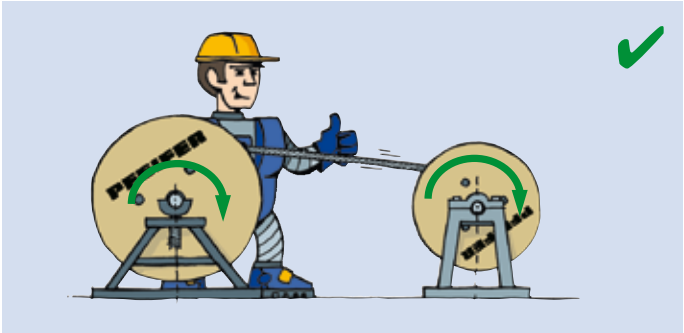
## Spooling of wire ropes



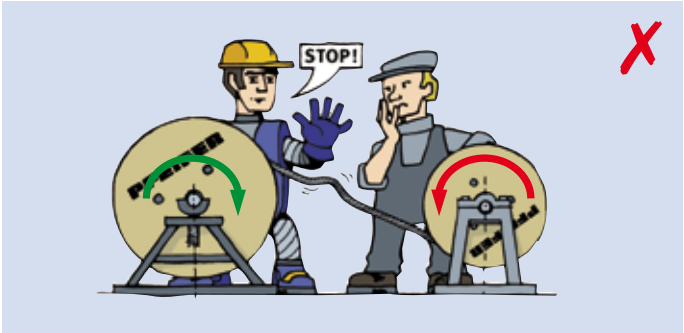
**Correct**
Lay wire rope rings on clean ground. Please consider the preferred bending direction when rewinding the rope.



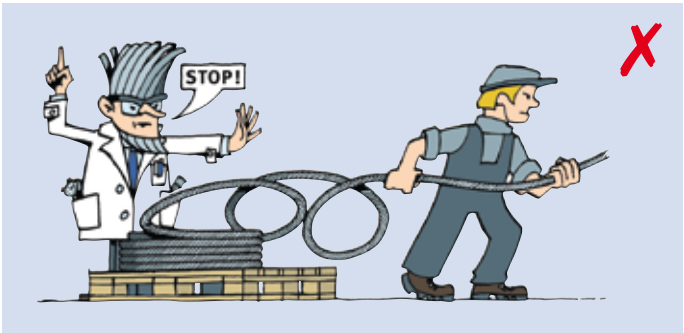
**Correct**
Place reel on a suitable frame or spike, draw-off straight. Make absolutely sure that the rope is not fouled.



**Correct**
When winding on a rope drum, pay attention to the direction of rotation and the right distance between reel and drum. A too small distance can cause torsional damage in the rope during later operation.



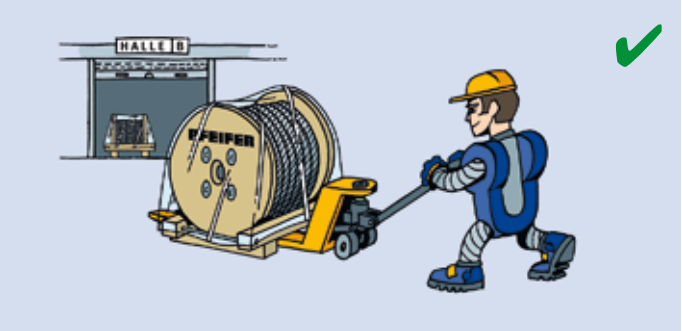

**Wrong**
Drawing-off the rope of a ring or over the flange of the reel as well as counterwise spooling cause “twist” for each winding in the rope. Loops may occur, which may result in bends under tension.



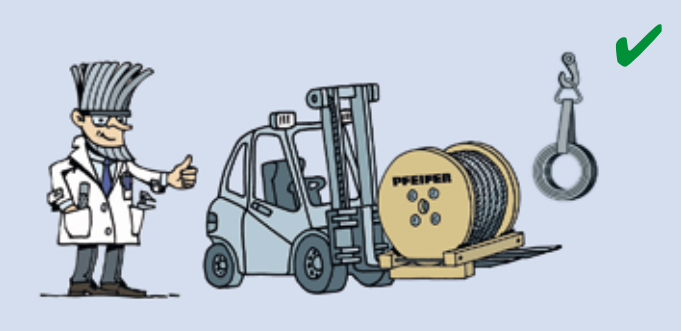

Detailed handling constructions you will find in our operating manual for stranded ropes in the PFEIFER download centre at:

➜ **www.pfeifer.info/ manual-strand-ropes**

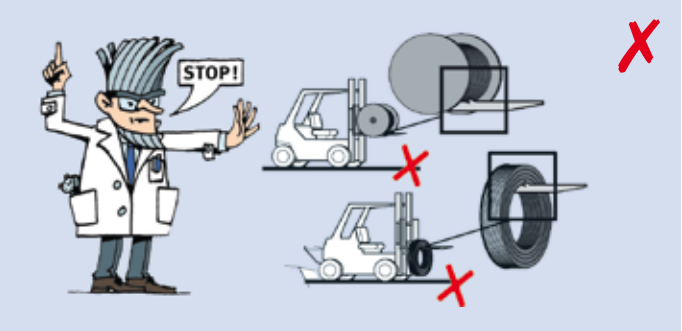
# Storage and transport of wire ropes




**Correct**
Store wire ropes dry and cool. Avoid ground contact, so that humidity can not taper the rope. Take off air and water tight transport packing. Humidity causes oxidation.

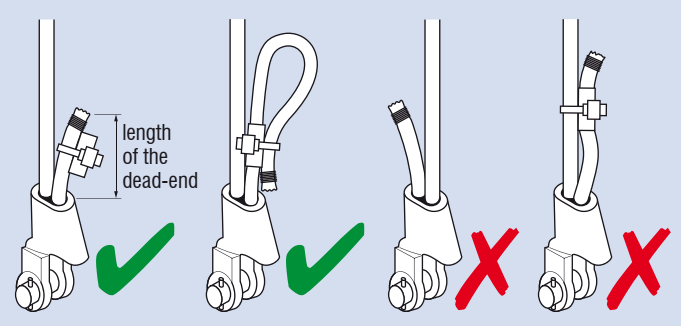



**Correct**
Protect the rope of crushes and kinks.




**Wrong**
Improper transportation of wire rope reels and rings will cause irreparable damage to wires, strands or the rope structure.

# Instructions for use




With the use of wedge sockets the rope is introduced on the balanced side so that under load the center line of the rope is in-line with the bolt hole. The dead end is passed through the asymmetric side and is secured with a rope clip.

The length of the dead-end should be 10 x the nominal rope diameter, at least 150 mm. The rope clip must be applied only to the loose, unloaded rope end, never on both strands. The maximum operating temperature for wedge sockets is 200 °C / 400 F.

Detailed handling constructions you will find in our operating manual for wedge sockets in the PFEIFER download centre at:

➜ **www.pfeifer.info/manual-wedge-socket**

**Instruction**
When a rope is to be re-terminated with a wedge socket assembly this can only be achieved by shortening the rope. No part of any previous flattening and/or damaged rope should be on the standing part of the rope or within the clamping area between either side of the socket body and the wedge.

# Installation of wire ropes

Wire ropes can easily be damaged and must therefore be handled with utmost care during transport and unloading.

Only the installation of an untwisted an undamaged rope will guarantee a trouble-free operation. Ropes must always be uncoiled from the reel or the ring in the direction of winding. Lateral uncoiling of the rope causes twisting and can lead to destruction by kink formation. It is recommended to use a frame-mounted reel for coiling the rope onto the drum. Coiling in the direction of bend gives an excellent fit on the drum and avoids that any additional tension is built-up in the rope. Never drag ropes over soil or dirt.

For installing the new rope it has to be fixed to the still mounted old one or an auxiliary rope. Connection between the two ropes can be achieved either by a cable grip or two welded pad eyes connected with a swivel.
Any transmission of torsion to the new rope from either the old one or the auxiliary rope must be definitively avoided. Nonrotating ropes must be protected from torsion by insertion of a swivel.

**Multi-layer operation requires that even the lower layers must be tightly coiled with a pretension of 1–2 % of the minimum breaking load of the rope. It is attained by braking the reel.**

The end termination of non-rotation resistant and rotation resistant ropes has to be fixed on both end terminations against rotation.

**It is NOT allowed to use non-rotation resistant or rotation resistant ropes with a turnable fixed point (e. g. swivel).**

**If the lower layers on the drum are hardly or seldom used the pretension of the entire rope has to be renewed from time to time. To renew the pretension in the hoist ropes the complete rope has to be spooled off and wound up again with tension of approximately 2 % of the minimum breaking force or 10 % of the maximum line pull force in operation. Ropes work most efficient if is always used the entire rope length.**

If the rope areas are used unequal the rope can be turned after a certain time. In multi-layer spooling the lifetime of the rope can be significantly extended by cutting away the length of half the drum diameter from the rope at the fastening point of the drum. Through this procedure the predamaged rope areas are relocated from the climbing zones on the drum into the parallel zones. The shortening procedure can be carried out, at most, two times.

# Discarding time for wire ropes according to ISO 4309

**Exemplary for single layer and parallel-closed ropes**

Number of visible wire breaks, reached or exceeded, occurring in single-layer and parallel-closed ropes, signalling discard of rope

| RCN | Total number of load-bearing wires in the outer layer of strands in the rope[a] *n* | Number of visible outer wire breaks[b] | | | | | |
|---|---|---|---|---|---|---|---|
| | | Sections of rope, running over steel sheaves and/or spooled on a single layer drum (random distribution of wire breaks) | | | | Sections of wire rope spooled onto a multilayer drum[c] | |
| | | Classes M1 to M4 or calss unknown[d] | | | | All Classes | |
| | | Ordinary lay | | Langs lay | | Ordinary and langs lay | |
| | | over a length of | | | | | |
| | | $6d$[e] | $30d$[e] | $6d$[e] | $30d$[e] | $6d$[e] | $30d$[e] |
| 01 | $n \leq 50$ | 2 | 4 | 1 | 2 | 4 | 8 |
| 02 | $51 \leq n \leq 75$ | 3 | 6 | 2 | 3 | 6 | 12 |
| 03 | $76 \leq n \leq 100$ | 4 | 8 | 2 | 4 | 8 | 16 |
| 04 | $101 \leq n \leq 120$ | 5 | 10 | 2 | 5 | 10 | 20 |
| 05 | $121 \leq n \leq 140$ | 6 | 11 | 3 | 6 | 12 | 22 |
| 06 | $141 \leq n \leq 160$ | 6 | 13 | 3 | 6 | 12 | 26 |
| 07 | $161 \leq n \leq 180$ | 7 | 14 | 4 | 7 | 14 | 28 |
| 08 | $181 \leq n \leq 200$ | 8 | 16 | 4 | 8 | 16 | 32 |
| 09 | $201 \leq n \leq 220$ | 9 | 18 | 4 | 9 | 18 | 36 |
| 10 | $221 \leq n \leq 240$ | 10 | 19 | 5 | 10 | 20 | 38 |
| 11 | $241 \leq n \leq 260$ | 10 | 21 | 5 | 10 | 20 | 42 |
| 12 | $261 \leq n \leq 280$ | 11 | 22 | 6 | 11 | 22 | 44 |
| 13 | $281 \leq n \leq 300$ | 12 | 24 | 6 | 12 | 24 | 48 |
| | $n > 300$ | $0{,}04 \times n$ | $0{,}08 \times n$ | $0{,}02 \times n$ | $0{,}04 \times n$ | $0{,}08 \times n$ | $0{,}16 \times n$ |

NOTE Ropes having outer strands of Seale construction where the number of wires in each strand is 19 or less (e. g. 6 × 19 Seale) are placed in this table two rows above that row in which the construction would normally be placed based on the number of load bearing wires in the outer layer of strands.

RCN = Rope category number

[a] For the purpose of this International Standard, filler wires are not regarded as load-bearing wires and are not included in the values of *n*.

[b] A broken wire has two ends (counted as one wire).

[c] The values apply to deterioration that occurs at the cross-over zones and interference between wraps due to fleet angle effects (and not to those sections of rope which only work in sheaves and do not spool on the drum).

[d] Twice the number of broken wires listed may be applied to ropes on mechanisms whose classification is known to be M5 to M8.

[e] $d$ = nominal rope diameter

Detailed handling constructions you will find in our operating manual for stranded ropes in the PFEIFER download centre at:

➜ **www.pfeifer.info/ manual-strand-ropes**

# Discard

⚠ **Warning: Considering security ropes should be taken off operation in time, if one of the following criterias apply:**

- Broken strand
- Local concentration of wire breaks
- Achievement of type and number of wire breaks according to the tablets
- Corkscrew deformation (fig. 1)
- Corkscrew (fig. 2)
- Hairpin like escape of wires (fig. 3)
- Decrease of diameter – regarding the nominal rope diameter
- Local increase of diameter
- Heavy corrosion: The surface of the wires is strongly affected or rosty dust comes out of the rope
- Loose rope structure (fig. 4)
- Constriction (fig. 5)
- Kinks or flattened areas(fig. 6 + 8)
- Bends or other deformations (fig 7)
- bluish discoloration, broken or fused wires due to heat effects or electric arc

If several of the above mentioned criterias apply, they need to be considered in their entirety. Therefore ropes need to discarded, if none of the criteria are completely but some partially fulfilled. For example: Light Corkscrew with some broken wires.

The above criteria are an excerpt from the ISO 4309 maintenance and care, inspection and storage. Consequently, these criteria do not replace the instructions and requirements for inspection and maintenance of wire ropes as written in the standard. For evaluation of the discard criteria please refer to our original operating manual for strand ropes!

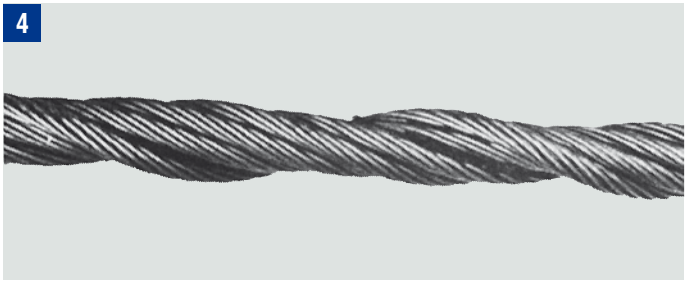
If in doubt on the estimation of the cable damage, the rope must be discarded or your rope specialist needs to be contacted: wirerope@pfeifer.de or via phone +49 (0) 83 31-937-301.

Looping on a wire rope

3

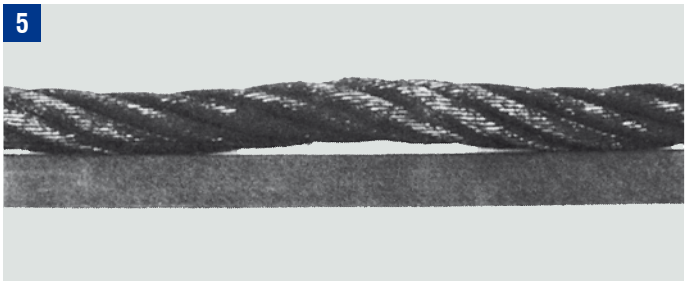
Through corrosion and wear heavy loose strand

4



Constriction due to a broken rope core

5



Flattened wire rope caused by over-ride

6

Corkscrew deformation

1

Basket deformation

2

Bend caused by a pinched rope sling

7

Kind caused by mechanical impact

8

PFEIFER

# PFEIFER – at your service all over the world



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