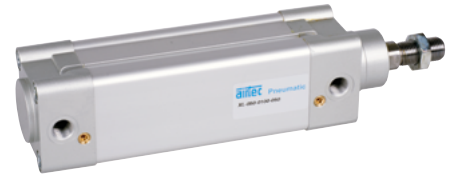


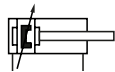
Technical details

| | |
|---------------------------|---|
| Operating pressure | 1 ... 10 bar |
| Temperature range | -20°C ... +80°C (XL, XLD, XLL) (XLH: -10°C ... +150°C, XLC/ XLCD: -40°C ...+80°C) |
| Max. stroke | 2800 mm |
| Medium | Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Alternatively the pressure dew point must be at least 10°C below lowest occurring ambient temperature. |
| Materials | Cylinder tube: Al (anodized) End caps: Al-die-cast (painted) Piston rod: steel hard chrome plated (optional 1.4301) Seals: PU, NBR (optional FKM) |
| | Cylinders in accordance with 2014/34/EU (ATEX) available. (Chapter 13) |

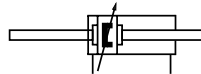


Double acting Al-profile cylinder with integrated sensor grooves, adjustable cushions and magnetic piston for proximity sensors. The sensors can be installed directly into the sensor grooves of the Al-profile. Standard stroke lengths in table below, additional lengths on request.

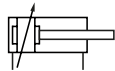
Versions



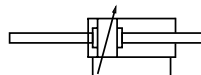
050, 054, 000, 004
double acting, adjustable cushioning,
with magnetic piston



450, 454, 400, 404
double acting, double end piston rod, adjustab-
le cushioning, with magnetic piston



152, 102
double acting, adjustable cushioning



552, 502
double acting, double end piston rod, adjusta-
ble cushioning

Order code

XL*-***-****-***-******

| | | | |
|---|--|--------------------|---|
| Series | <ul style="list-style-type: none"> XL standard XLC low temperature version XLCD low temperature version, with metal scraper XLD with metal scraper XLH high temperature version XLL low friction version | Options | <ul style="list-style-type: none"> ATEX cylinders in accordance with 2014/34/EU (ATEX) E8 piston rod seal E8, two-part, with plastic scraper |
| Piston Ø | <ul style="list-style-type: none"> 032 32 mm 040 40 mm 050 50 mm 063 63 mm 080 80 mm 100 100 mm 125 125 mm | Versions | <ul style="list-style-type: none"> 050 450 standard version 000 400 piston rod stainless steel 054 454 piston rod seal FKM 004 404 piston rod stainless steel , piston rod seal FKM 152 552 high temperature version (without magnetic piston) 102 502 high temperature version, piston rod stainless steel (without magnetic piston) |
| <p><i>Not all combinations are possible and available.</i></p> <p>* For longer stroke lengths please check the max buckling load.</p> | | Stroke (mm) | <ul style="list-style-type: none"> XXXX max. 2800 mm* Standard 25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500 mm |

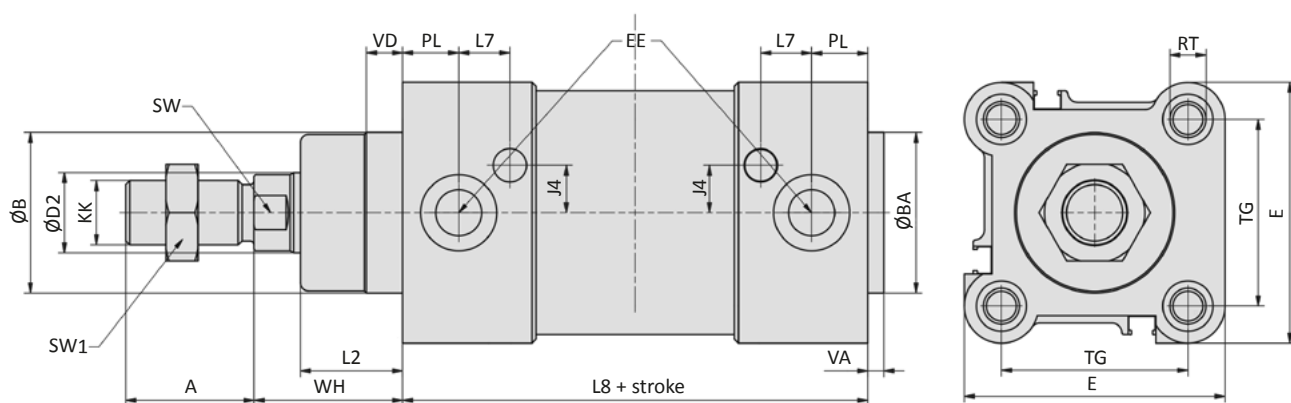
Series XL

ISO 1552, double acting

Technical data

| Model-no.: | XL-032-... | XL-040-... | XL-050-... | XL-063-... | XL-080-... | XL-100-... | XL-125-... | |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------|
| Piston \varnothing (mm) | 32 | 40 | 50 | 63 | 80 | 100 | 125 | |
| Force at 6 bar (N) | Extension | 434 | 678 | 1060 | 1682 | 2713 | 4239 | 6623 |
| | Retraction | 373 | 570 | 890 | 1513 | 2448 | 3974 | 6189 |
| Connection | G1/8 | G1/4 | G1/4 | G3/8 | G3/8 | G1/2 | G1/2 | |
| Piston rod thread | M10 x 1.25 | M12 x 1.25 | M16 x 1.5 | M16 x 1.5 | M20 x 1.5 | M20 x 1.5 | M27 x 2 | |
| Cushioning length (mm) | 27 | 29 | 32 | 32 | 32 | 32 | 42 | |

Dimensions series XL

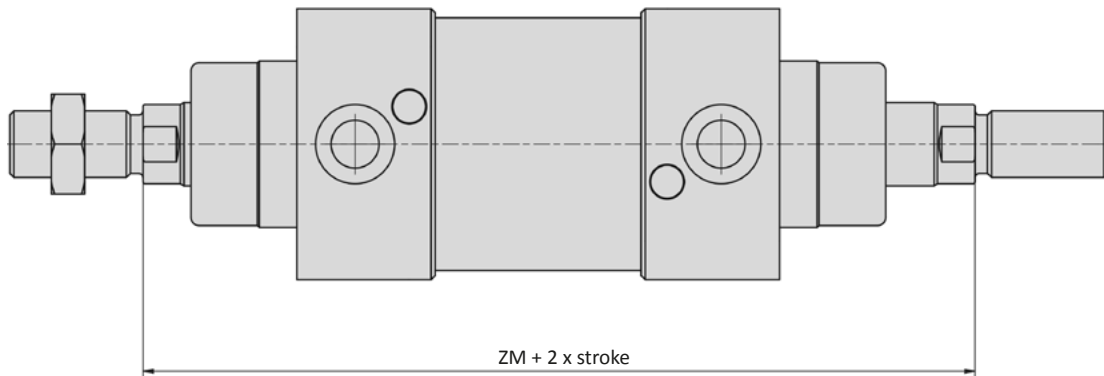


| Piston \varnothing | A | $\varnothing B$ | $\varnothing BA$ | $\varnothing D2$ | E | EE | J4 | KK | L2 |
|----------------------|----|-----------------|------------------|------------------|-------|------|-----|------------|------|
| 32 | 22 | 30 | 30 | 12 | 47 | G1/8 | 6 | M10 x 1.25 | 18 |
| 40 | 24 | 35 | 35 | 16 | 54 | G1/4 | 9 | M12 x 1.25 | 22 |
| 50 | 32 | 40 | 40 | 20 | 63 | G1/4 | 8 | M16 x 1.5 | 25.5 |
| 63 | 32 | 45 | 45 | 20 | 74 | G3/8 | 9.5 | M16 x 1.5 | 25 |
| 80 | 40 | 45 | 45 | 25 | 93.5 | G3/8 | 14 | M20 x 1.5 | 35 |
| 100 | 40 | 55 | 55 | 25 | 110 | G1/2 | 15 | M20 x 1.5 | 38 |
| 125 | 54 | 60 | 60 | 32 | 137.5 | G1/2 | 15 | M27 x 2 | 46 |

| Piston \varnothing | L7 | L8 | PL | RT | SW | SW1 | TG | VA | VD | WH |
|----------------------|-------|-----|------|-----|----|-----|------|----|-----|----|
| 32 | 11.5 | 94 | 12.5 | M6 | 10 | 17 | 32.5 | 4 | 9.5 | 26 |
| 40 | 13 | 105 | 14 | M6 | 13 | 19 | 38 | 4 | 9.5 | 30 |
| 50 | 12.75 | 106 | 14 | M8 | 17 | 24 | 46.5 | 4 | 9.5 | 37 |
| 63 | 14.5 | 121 | 16.5 | M8 | 17 | 24 | 56.5 | 4 | 9.5 | 37 |
| 80 | 13.75 | 128 | 17 | M10 | 22 | 30 | 72 | 4 | 10 | 46 |
| 100 | 15.5 | 138 | 18 | M10 | 22 | 30 | 89 | 4 | 10 | 51 |
| 125 | 20 | 160 | 18 | M12 | 27 | 41 | 110 | 6 | 11 | 65 |

| Piston \varnothing (mm) | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Weight (kg) 0 mm stroke | 0.617 | 0.925 | 1.421 | 1.950 | 3.250 | 4.396 | 6.391 |
| Weight (kg) each 100 mm stroke | 0.286 | 0.403 | 0.528 | 0.597 | 0.861 | 0.946 | 1.517 |

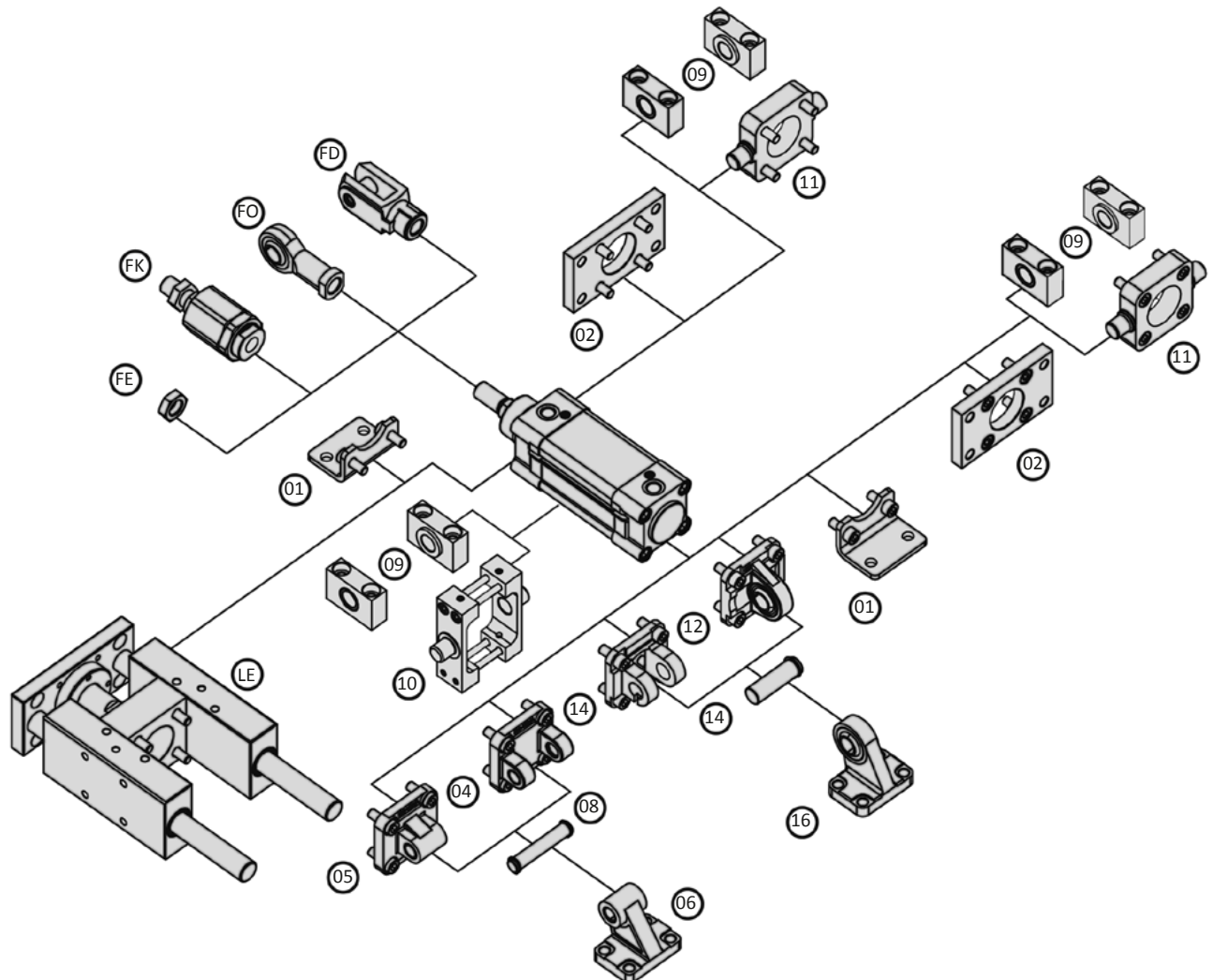
Dimensions series XL (addition at double end piston rod)



| | | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| Piston Ø (mm) | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| ZM | 146 | 165 | 180 | 195 | 220 | 240 | 290 |

| | | | | | | | |
|--------------------|-------|-------|-------|-------|-------|-------|-------|
| Piston Ø (mm) | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| Weight (kg) | 0.702 | 1.065 | 1.713 | 2.208 | 3.780 | 5.057 | 9.387 |
| 0 mm stroke | | | | | | | |
| each 100 mm stroke | 0.374 | 0.559 | 0.768 | 0.837 | 1.243 | 1.328 | 2.143 |

Mounting accessories XLB-xxx-yy



Force chart cylinders (N)

| Piston-Ø | Piston rod Ø (mm) | Pressure in bar | | | | | | |
|----------|----------------------|-----------------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 32 | | 145 | 217 | 289 | 362 | 434 | 506 | 579 |
| | 12 | 124 | 187 | 249 | 311 | 373 | 435 | 497 |
| 40 | | 226 | 339 | 452 | 565 | 678 | 791 | 904 |
| | 16 | 190 | 285 | 380 | 475 | 570 | 665 | 760 |
| 50 | | 353 | 530 | 707 | 883 | 1060 | 1236 | 1413 |
| | 20 | 297 | 445 | 593 | 742 | 890 | 1039 | 1187 |
| 63 | | 561 | 841 | 1122 | 1402 | 1682 | 1963 | 2243 |
| | 20 | 504 | 756 | 1009 | 1261 | 1513 | 1765 | 2017 |
| 80 | | 904 | 1356 | 1809 | 2261 | 2713 | 3165 | 3617 |
| | 25 | 816 | 1224 | 1632 | 2040 | 2448 | 2856 | 3264 |
| 100 | | 1413 | 2120 | 2826 | 3533 | 4239 | 4946 | 5652 |
| | 25 | 1325 | 1987 | 2649 | 3312 | 3974 | 4636 | 5299 |
| 125 | | 2208 | 3312 | 4416 | 5520 | 6623 | 7727 | 8831 |
| | 32 | 2063 | 3095 | 4126 | 5158 | 6189 | 7221 | 8252 |

| | |
|--|-------------------|
| | extension force* |
| | retraction force* |

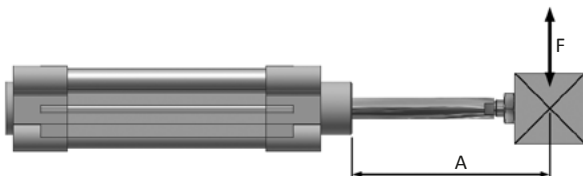
* A correction factor of 0.9 for the internal friction is already calculated.

Air consumption cylinder (NI for a single stroke of 100 mm, based upon extension)

| Piston-Ø | Pressure in bar | | | | | | |
|----------|-----------------|------|------|------|------|------|-------|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 32 | 0,24 | 0,32 | 0,40 | 0,48 | 0,56 | 0,64 | 0,72 |
| 40 | 0,38 | 0,50 | 0,63 | 0,75 | 0,88 | 1,01 | 1,13 |
| 50 | 0,59 | 0,79 | 0,98 | 1,18 | 1,37 | 1,57 | 1,77 |
| 63 | 0,94 | 1,25 | 1,56 | 1,87 | 2,18 | 2,49 | 2,81 |
| 80 | 1,51 | 2,01 | 2,51 | 3,02 | 3,52 | 4,02 | 4,52 |
| 100 | 2,36 | 3,14 | 3,93 | 4,71 | 5,50 | 6,28 | 7,07 |
| 125 | 3,72 | 4,96 | 6,21 | 7,42 | 8,64 | 9,91 | 11,14 |

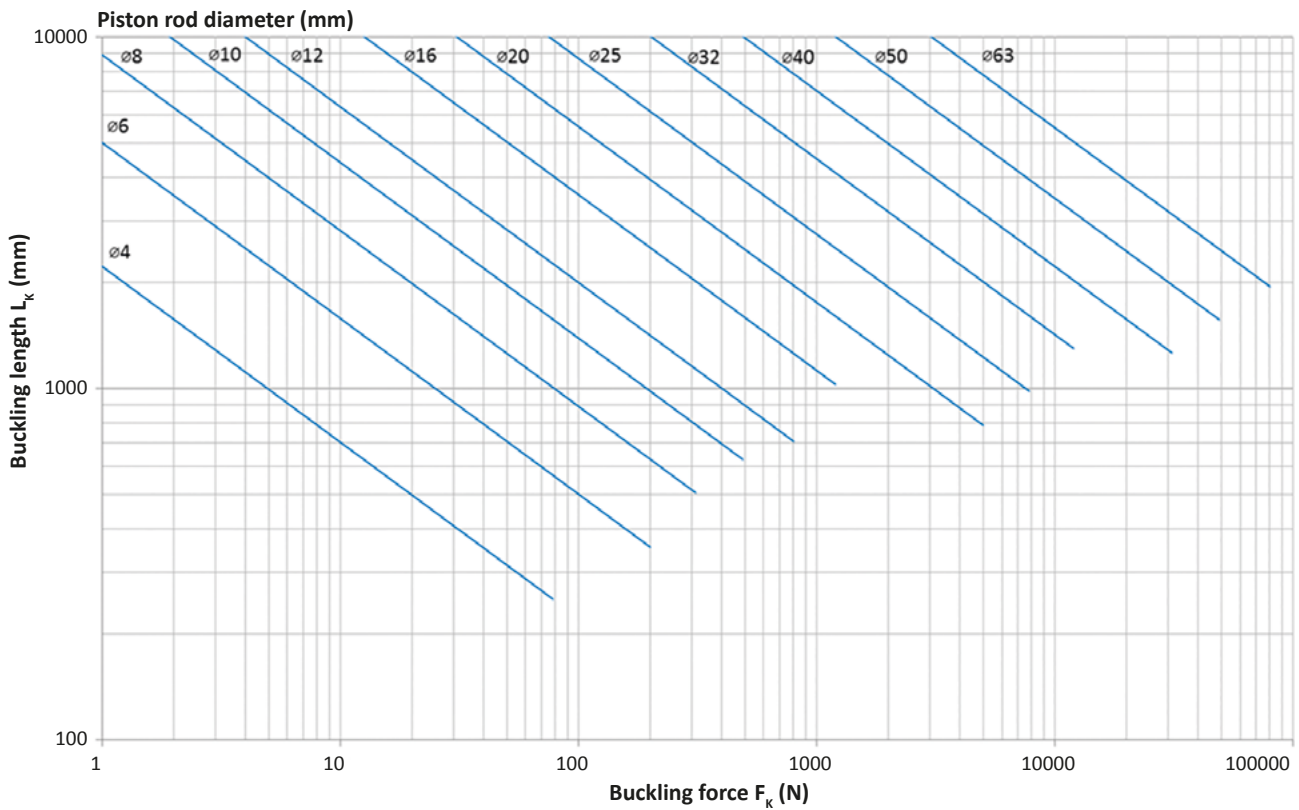
Required flow rate (NI/min at p = 6 bar)

| Piston-Ø | speed (m/s) | | | | |
|----------|-------------|------|------|------|-------|
| | 0,25 | 0,5 | 1 | 1,5 | 2 |
| 32 | 84 | 169 | 338 | 506 | 675 |
| 40 | 132 | 264 | 528 | 791 | 1055 |
| 50 | 206 | 412 | 824 | 1236 | 1649 |
| 63 | 327 | 654 | 1309 | 1963 | 2617 |
| 80 | 528 | 1055 | 2110 | 3165 | 4220 |
| 100 | 824 | 1649 | 3297 | 4946 | 6594 |
| 125 | 1288 | 2576 | 5152 | 7727 | 10303 |

Permissible side load F (N)


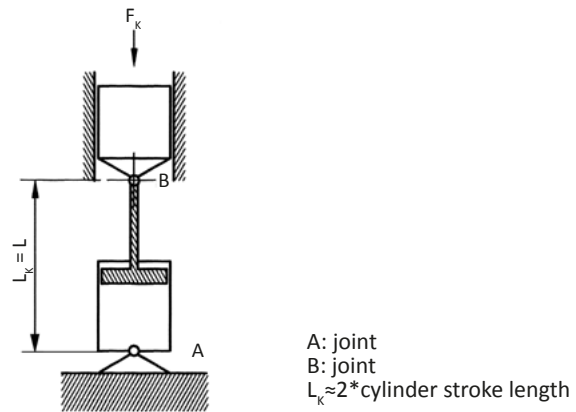
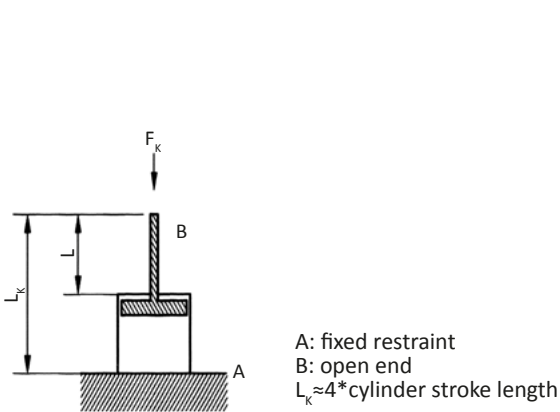
| Piston-Ø | Distance A (mm) | | | | | | | | | | | |
|----------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 25 | 40 | 50 | 80 | 100 | 125 | 160 | 200 | 250 | 320 | 400 | 500 |
| 32 | 75 | 55 | 50 | 40 | 34 | 28 | 23 | 20 | 16 | 12 | 9 | 7 |
| 40 | 175 | 150 | 130 | 105 | 91 | 78 | 62 | 55 | 45 | 35 | 28 | 21 |
| 50 + 63 | 220 | 180 | 170 | 130 | 120 | 105 | 90 | 80 | 65 | 52 | 43 | 33 |
| 80 + 100 | 500 | 450 | 400 | 350 | 310 | 270 | 230 | 205 | 180 | 150 | 125 | 100 |
| 125 | 810 | 710 | 680 | 590 | 520 | 470 | 420 | 390 | 330 | 270 | 230 | 200 |

Critical load diagram for the piston rod



First elastic case of buckling

Second elastic case of buckling



Knowing the actual buckling case, either 1 or 2, and knowing the requested stroke length you can calculate the buckling length L_k . If you know the buckling force F_k (compressive force) you determine in the diagram above the intersection of both data. Choose the next graph line above to get the necessary rod diameter.