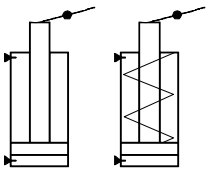

Double acting Single acting

## Advantages:



- ✓ **Clamping without shear force**
- ✓ **Compact design**
- ✓ **Very few parts**
- ✓ **Cost-efficient**
- ✓ **Length of clamping arm variable**
- ✓ **No interference contour while loading and unloading**
- ✓ **Mounting in feeder plate possible**

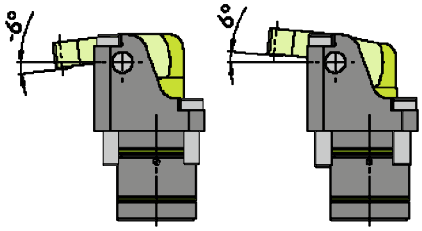
## Description:

Because of their compact design, rotary lever clamps are particularly suitable for use in clamping devices with low Installation spaces.

Due to the large opening angle of the clamping lever they allow easy loading and unloading of the fixture.

The lower housing part is recessed in the clamping fixture. Oil supply comes through drilled channels.

The clamping forces are depending on the length of release lever. Clamping forces and clamping lever lengths can be found on the following pages.



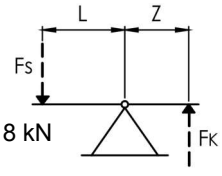
Clamping range from 6° to -6°

The rotary lever clamps are supplied with fixing screws.

The clamping levers are not included in the scope of supply. They must be ordered as an accessory (page 4-5).

The clamping forces are depending on the length of the lever. In a clamped position the lever should be at 90° angle to the housing.

Actual Clamping force Fs in response to the piston force FK and Length of lever arm L




Example:

Rotary lever clamp size 20
working pressure 400 bar, piston force FK = 18 kN
Dim. Z (page 3) = 15,0 mm
Length of lever L
Actual Clamping force Fs = 12,0 kN

$$\text{Clamping force } Fs = \frac{FK \times Z}{L} = \frac{18\text{ kN} \times 15{,}0\text{ mm}}{22{,}5\text{ mm}} = 12{,}0\text{ kN}$$

## Recommendations for use:

The clamping lever is actuated by the piston.

For single acting cylinders the clamping lever is opened via the spring return inside of the piston.
For double-acting cylinders this is done by the pressure media.

During the installation of the rotary lever clamp, the flange should be adjusted to the height of the workpiece.

For mounting on the device, housing blocks of aluminum and steel are available on request.

The cylinder is suitable for all mounting positions.

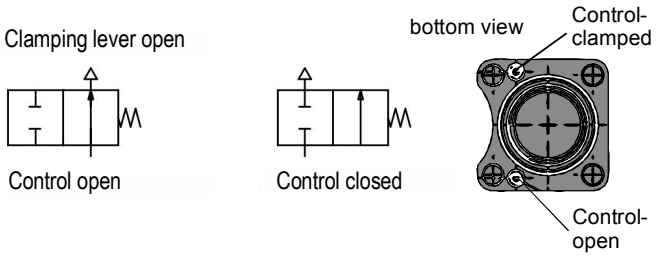
We recommend as a medium - hydraulic oils acc. DIN 51524 (HL, HLP).

Rotary lever clamps can generate high forces. Workpieces and fixtures must be designed for such loads.

During operation consists crushing hazard.
The accident prevention regulations are therefore mandatory.

The rotary lever clamping cylinders should be checked regularly for pollution and they have to be cleaned if necessary.

**Optional with included pneumatical query available (page 2)!**




## Special solutions on request!

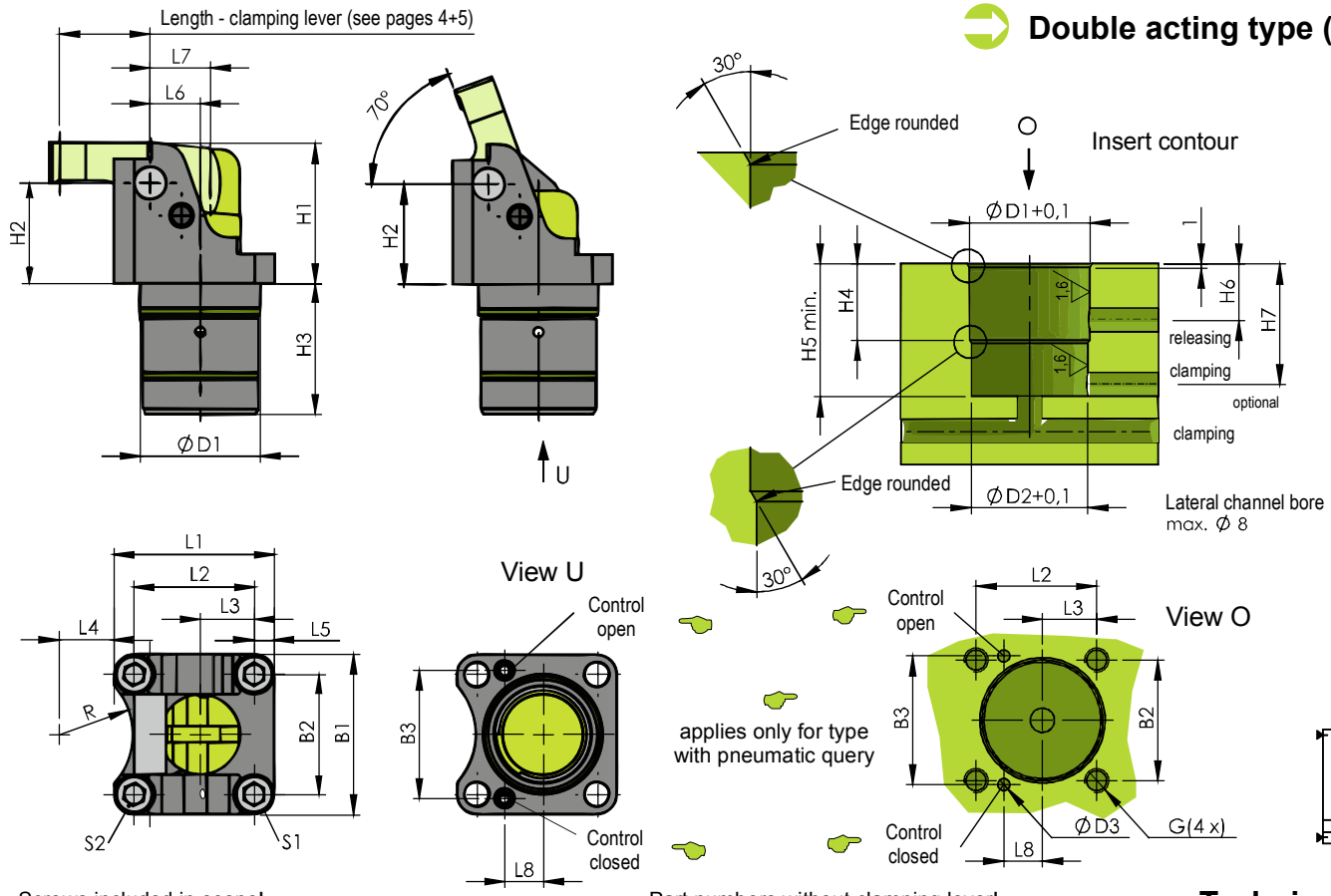
## Contact

iNOSOL GmbH
Frankfurter Str. 18
35315 Homberg/Ohm (Germany)

web: www.inosol.solutions
email: info@inosol.solutions
tel.: (+49) 6633 / 368 95 25

## Double acting type (Steel)



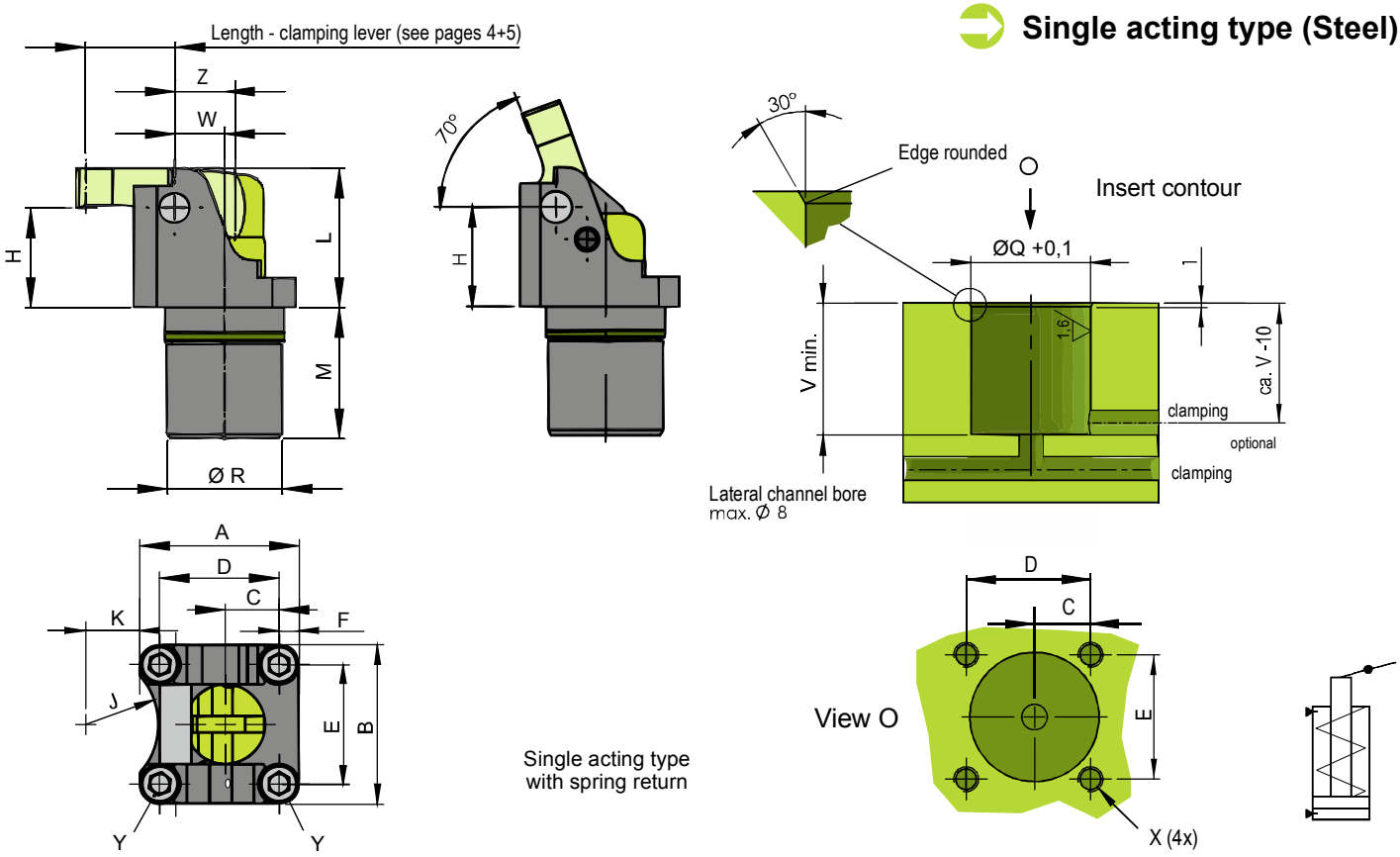

Screws included in scope!

Part numbers without clamping lever!

## Technical Data

| Size | 12 | 16 | 20 | 25 | 32 | 40 | 50 |
|---|---|---|---|---|---|---|---|
| B1 | 27,00 | 34,00 | 40,00 | 52,00 | 66,00 | 78,00 | 98,00 |
| B2 | 19,50 | 25,00 | 30,00 | 38,50 | 49,00 | 59,00 | 74,00 |
| B3 | 22,60 | 27,00 | 32,00 | 42,00 | 53,00 | 64,00 | 80,00 |
| D1 | 20,00 | 24,00 | 30,00 | 36,00 | 45,00 | 55,00 | 66,00 |
| D2 | 19,40 | 23,00 | 29,00 | 35,00 | 44,00 | 53,00 | 64,00 |
| D3 max. | Ø 2 | Ø 3 | Ø 3 | Ø 3 | Ø 6 | Ø 6 | Ø 6 |
| G | M4 x 8 | M5 x 11 | M6 x 10 | M8 x 12 | M10 x 16 | M12 x 18 | M16 x 23 |
| H1 | 21,00 | 28,00 | 35,00 | 43,75 | 56,00 | 70,00 | 87,50 |
| H2 | 15,00 | 20,00 | 25,00 | 31,25 | 40,00 | 50,00 | 62,50 |
| H3 | 21,00 | 26,00 | 32,50 | 37,00 | 42,00 | 47,00 | 57,50 |
| H4 | 14,00 | 17,00 | 19,00 | 20,00 | 23,00 | 25,00 | 30,00 |
| H5 | 21,50 | 26,50 | 33,00 | 38,00 | 43,00 | 48,00 | 58,50 |
| H6 | 11,00 | 13,00 | 14,00 | 15,00 | 17,00 | 19,00 | 24,00 |
| H7 | 23,00 | 26,00 | 31,00 | 33,00 | 38,00 | 40,00 | 53,00 |
| L1 | 26,00 | 32,00 | 40,00 | 49,00 | 62,00 | 74,00 | 92,00 |
| L2 | 18,50 | 23,00 | 30,00 | 35,50 | 45,00 | 55,00 | 68,00 |
| L3 | 8,75 | 9,50 | 13,50 | 14,75 | 18,50 | 21,50 | 25,75 |
| L4 | 7,50 | 10,00 | 13,50 | 11,00 | 9,00 | 12,00 | 14,50 |
| L5 | 3,75 | 4,50 | 5,00 | 6,75 | 8,50 | 9,50 | 12,00 |
| L6 | 7,50 | 10,00 | 12,50 | 15,63 | 20,00 | 25,00 | 31,25 |
| Z | 9,00 | 12,00 | 15,00 | 18,75 | 24,00 | 30,00 | 37,50 |
| L8 | 5,40 | 7,20 | 9,60 | 11,00 | 13,00 | 14,00 | 17,50 |
| R Radius | 10,60 | 14,20 | 18,20 | 18,70 | 19,70 | 24,70 | 31,00 |
| S1* | M4 x 10 | M5 x 16 | M6 x 16 | M8 x 20 | M10 x 25 | M12 x 30 | M16 x 40 |
| S2* | M4 x 25 | M5 x 35 | M6 x 40 | M8 x 50 | M10 x 65 | M12 x 80 | M16 x 100 |
| Effective piston area ($cm^2$) | 1,77 | 2,54 | 4,52 | 7,06 | 10,17 | 15,90 | 23,75 |
| Piston force at 100 bar (kN) | 1,7 | 2,5 | 4,5 | 7,0 | 10,1 | 15,9 | 23,7 |
| Piston force at 400 bar (kN) | 7,0 | 10,1 | 18,0 | 28,2 | 40,6 | 63,6 | 95,0 |
| Volume (ccm) | 1,06 | 2,03 | 4,52 | 8,82 | 16,27 | 31,80 | 58,20 |
| Weight | 115 g | 265 g | 550 g | 855 g | 1755 g | 2625 g | 5325 g |
| Part number **without** pneum. query | IRLC12-001 | IRLC16-001 | IRLC20-001 | IRLC25-001 | IRLC32-001 | IRLC40-001 | IRLC50-001 |
| Part number **with** pneum. query | IRLC12-002 | IRLC16-002 | IRLC20-002 | IRLC25-002 | IRLC32-002 | IRLC40-002 | IRLC50-002 |

## Single acting type (Steel)




Screws included in scope!

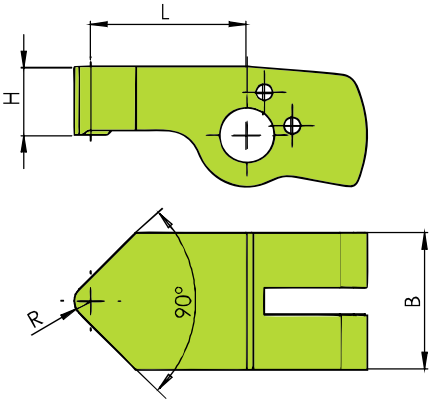
Part numbers without clamping lever!

## Technical Data

| Size | 12 | 16 | 20 | 25 | 32 | 40 | 50 |
|---|---|---|---|---|---|---|---|
| A | 26,00 | 32,00 | 40,00 | 49,00 | 62,00 | 74,00 | 92,00 |
| B | 27,00 | 34,00 | 40,00 | 52,00 | 66,00 | 78,00 | 98,00 |
| C | 8,75 | 9,50 | 13,50 | 14,75 | 18,50 | 21,50 | 25,75 |
| D | 18,50 | 23,00 | 30,00 | 35,50 | 45,00 | 55,00 | 68,00 |
| E | 19,50 | 25,00 | 30,00 | 38,50 | 49,0 | 59,0 | 74,0 |
| F | 3,75 | 4,50 | 5,00 | 6,75 | 8,50 | 9,50 | 12,00 |
| H | 15,00 | 20,00 | 25,00 | 31,25 | 40,00 | 50,00 | 62,50 |
| J Radius | 10,60 | 14,20 | 18,20 | 18,70 | 19,70 | 24,70 | 31,00 |
| K | 7,50 | 10,00 | 13,50 | 11,00 | 9,00 | 12,00 | 14,50 |
| L | 21,00 | 28,00 | 35,00 | 43,75 | 56,00 | 70,00 | 87,50 |
| M | 23,00 | 26,00 | 32,50 | 37,00 | 47,00 | 55,00 | 62,50 |
| Q Ø | 20,00 | 24,00 | 30,00 | 36,00 | 45,00 | 55,00 | 66,00 |
| R Ø | 20,00 | 24,00 | 30,00 | 36,00 | 45,00 | 55,00 | 66,00 |
| V | 23,50 | 26,50 | 33,00 | 38,00 | 48,00 | 56,00 | 63,50 |
| W | 7,50 | 10,00 | 12,50 | 15,63 | 20,00 | 25,00 | 31,25 |
| X | M4x8 | M5x11 | M6x10 | M8x12 | M10x16 | M12x18 | M16x23 |
| Y (acc. to DIN 6912)* | M4x10/ M4x25 | M5x16/ M5x35 | M6x16/ M6x40 | M8x20/ M8x50 | M10x25/ M10x65 | M12x30/ M12x80 | M16x40/ M16x100 |
| Z | 9,00 | 12,00 | 15,00 | 18,75 | 24,00 | 30,00 | 37,50 |
| Effective piston area ($cm^2$) | 1,13 | 2,01 | 3,14 | 4,91 | 8,04 | 12,57 | 19,63 |
| Piston force at 100 bar (kN) | 1,1 | 1,9 | 3,0 | 4,7 | 7,8 | 12,3 | 19,3 |
| Piston force at 400 bar (kN) | 4,4 | 7,9 | 12,4 | 19,4 | 32,0 | 50,0 | 78,2 |
| Volume (ccm) | 0,68 | 1,61 | 3,14 | 6,14 | 12,90 | 25,20 | 49,10 |
| Weight | 110 g | 200 g | 405 g | 700 g | 1400 g | 2460 g | 5070 g |
| Part number | IRLC12-003 | IRLC16-003 | IRLC20-003 | IRLC25-003 | IRLC32-003 | IRLC40-003 | IRLC50-003 |

## Clamping lever - Standard

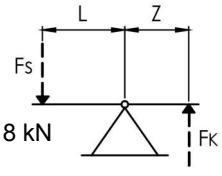
Steel carbonized 1.7131 (16MnCr5)




| Part number | Size | Clamping force at 100 bar [kN] | L | B | H | R |
|---|---|---|---|---|---|---|
| 10 1301 | 12 | 1,7 | 9,0 | 12 | 6,0 | 1,5 |
| 10 1302 | 12 | 1,1 | 13,5 | 12 | 6,0 | 1,5 |
| 10 1303 | 12 | 0,8 | 18,0 | 12 | 6,0 | 1,5 |
| 10 1304 | 12 | 0,7 | 22,5 | 12 | 6,0 | 1,5 |
| 10 1305 | 16 | 2,5 | 12,0 | 16 | 8,0 | 2,0 |
| 10 1306 | 16 | 1,7 | 18,0 | 16 | 8,0 | 2,0 |
| 10 1307 | 16 | 1,2 | 24,0 | 16 | 8,0 | 2,0 |
| 10 1308 | 16 | 1,0 | 30,0 | 16 | 8,0 | 2,0 |
| 10 1309 | 20 | 4,5 | 15,0 | 20 | 10,0 | 2,5 |
| 10 1310 | 20 | 3,0 | 22,5 | 20 | 10,0 | 2,5 |
| 10 1311 | 20 | 2,2 | 30,0 | 20 | 10,0 | 2,5 |
| 10 1312 | 20 | 1,8 | 37,5 | 20 | 10,0 | 2,5 |
| 10 1313 | 25 | 7,0 | 19,0 | 25 | 12,5 | 3,0 |
| 10 1314 | 25 | 4,7 | 28,5 | 25 | 12,5 | 3,0 |
| 10 1315 | 25 | 3,5 | 38,0 | 25 | 12,5 | 3,0 |
| 10 1316 | 25 | 2,8 | 47,5 | 25 | 12,5 | 3,0 |
| 10 1317 | 32 | 10,1 | 24,0 | 32 | 16,0 | 4,0 |
| 10 1318 | 32 | 6,7 | 36,0 | 32 | 16,0 | 4,0 |
| 10 1319 | 32 | 5,0 | 48,0 | 32 | 16,0 | 4,0 |
| 10 1320 | 32 | 4,0 | 60,0 | 32 | 16,0 | 4,0 |
| 10 1321 | 40 | 15,9 | 30,0 | 40 | 20,0 | 5,0 |
| 10 1322 | 40 | 10,6 | 45,0 | 40 | 20,0 | 5,0 |
| 10 1323 | 40 | 7,9 | 60,0 | 40 | 20,0 | 5,0 |
| 10 1324 | 40 | 6,3 | 75,0 | 40 | 20,0 | 5,0 |
| 10 1325 | 50 | 23,4 | 38,0 | 50 | 25,0 | 6,0 |
| 10 1326 | 50 | 15,9 | 56,0 | 50 | 25,0 | 6,0 |
| 10 1327 | 50 | 11,8 | 75,0 | 50 | 25,0 | 6,0 |
| 10 1328 | 50 | 9,5 | 94,0 | 50 | 25,0 | 6,0 |

## Calculation

Actual Clamping force $F_S$ in response to the piston force $F_K$ and Length of lever arm L




Example:

Rotary lever clamp size 20
working pressure 400 bar, piston force $F_K$ = 18 kN
Dim. Z (page 3) = 15,0 mm
Length of lever L
Actual Clamping force $F_S$ = 12,0 kN

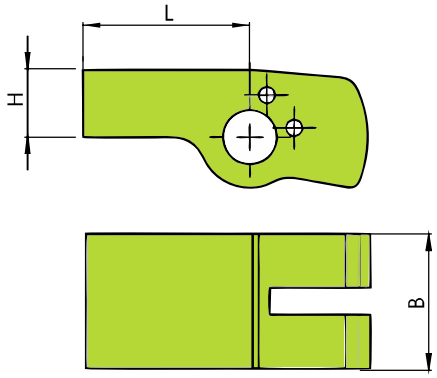
$$\text{Clamping force } F_S = \frac{F_K \times Z}{L} = \frac{18\text{ kN} \times 15{,}0\text{ mm}}{22{,}5\text{ mm}} = 12{,}0\text{ kN}$$

**Attention:**

On request for size 16-50 there are clamping levers available with a modified operating point. For these ones the clamping length is the same, but the operating point corresponding to the piston is moved. Herewith the clamping force can be increased about the factor 1,2 to 1,5.

Steel (not carbonized) 1.7131 (16MnCr5)
Tool steel 1.2842 (90MnCrV8)

## Clamping lever - semifinished




| Part number Steel | Part number Tool-steel | Size | L | B | H |
|---|---|---|---|---|---|
| 10 1331 | 10 2328 | 12 | 15 | 12 | 6,0 |
| 10 1332 | 10 2329 | 12 | 24 | 12 | 6,0 |
| 10 1333 | 10 2330 | 16 | 20 | 16 | 8,0 |
| 10 1334 | 10 2331 | 16 | 32 | 16 | 8,0 |
| 10 1335 | 10 2332 | 20 | 25 | 20 | 10,0 |
| 10 1336 | 10 2333 | 20 | 40 | 20 | 10,0 |
| 10 1337 | 10 2334 | 25 | 31 | 25 | 12,5 |
| 10 1338 | 10 2335 | 25 | 50 | 25 | 12,5 |
| 10 1339 | 10 2336 | 32 | 40 | 32 | 16,0 |
| 10 1340 | 10 2337 | 32 | 64 | 32 | 16,0 |
| 10 1341 | 10 2338 | 40 | 50 | 40 | 20,0 |
| 10 1342 | 10 2339 | 40 | 80 | 40 | 20,0 |
| 10 1343 | 10 2340 | 50 | 62 | 50 | 25,0 |
| 10 1344 | 10 2341 | 50 | 100 | 50 | 25,0 |

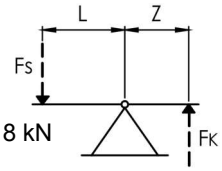
**Attention:**

Clamping levers from 16MnCr5 must be hardened after mechanical processing!

Special levers on Request!

## Calculation

Actual Clamping force Fs in response to the piston force FK and Length of lever arm L

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Dim. Z (page 3) = 15,0 mm
Length of lever L
Actual Clamping force Fs = 12,0 kN

$$\text{Clamping force } Fs = \frac{FK \times Z}{L} = \frac{18\text{ kN} \times 15{,}0\text{ mm}}{22{,}5\text{ mm}} = 12{,}0\text{ kN}$$