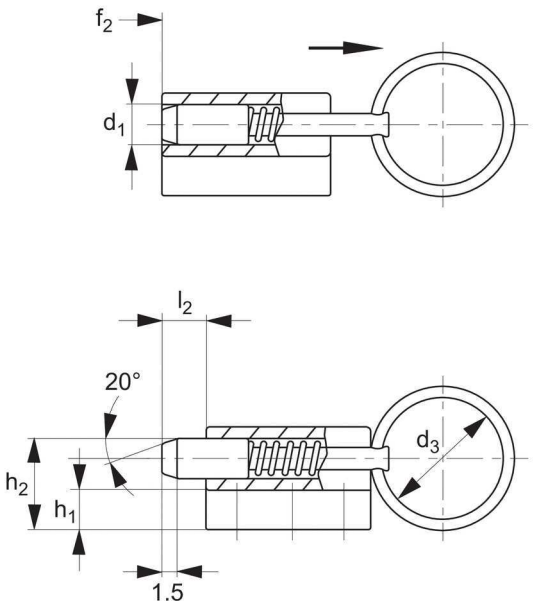
# Index Plungers - Pull Grip & Pull Ring

flange mounting - non-locking

**32540**




**Material**

Body: die cast zinc, black.
Pin: stainless steel 1.4305 (AISI 303).
Pull ring: stainless steel 1.4305 (AISI 303).

**Technical Notes**

**"Non Locking" type-** pin simply srings back when pull ring relased.

Integral mounting flange simplifies installation on flat surfaces.
Temperature resistant to 100°C.

**Tips**

Spring loads * = statistical average.

| Order No. | Type | $d_1$ h9 | $d_3$ | $b_1$ | $b_2$ | $b_3$ | $b_4$ -0,2 | $h_1$ | $h_2$ | $k_1$ ±0,05 | $k_2$ | $k_3$ | $k_4$ | $l_1$ | $l_2$ min. | Spring load* $f_1$ N ≈ | Spring load* $f_2$ N ≈ | g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32540.W0304 | Non Locking | 4 | 14 | 16,5 | 22 | 6 | 3,3 | 4,0 | 7,0 | 14 | 4,0 | 8 | 4,5 | 34,5 | 4 | 3 | 12 | 10 |
| 32540.W0305 | Non Locking | 5 | 18 | 22,0 | 28 | 8 | 4,3 | 4,5 | 9,5 | 18 | 5,0 | 10 | 7,0 | 45,0 | 5 | 5 | 24 | 20 |
| 32540.W0306 | Non Locking | 6 | 24 | 27,5 | 32 | 10 | 5,4 | 5,0 | 10,5 | 21 | 5,5 | 12 | 10,0 | 57,5 | 6 | 5 | 21 | 40 |
| 32540.W0308 | Non Locking | 8 | 30 | 33,0 | 34 | 12 | 5,4 | 6,0 | 12,5 | 23 | 5,5 | 12 | 15,5 | 71,0 | 8 | 6 | 22 | 58 |
| 32540.W0310 | Non Locking | 10 | 30 | 35,0 | 39 | 14,5 | 6,5 | 6,0 | 14,5 | 27 | 6,0 | 15 | 13,5 | 75,0 | 10 | 4 | 25 | 83 |

# Wixroyd Index Plungers

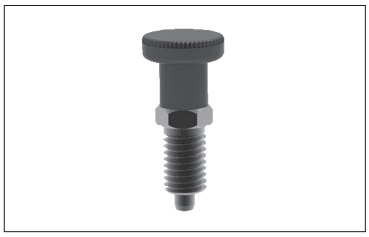
**32460 -32790**

## A wide selection of solutions

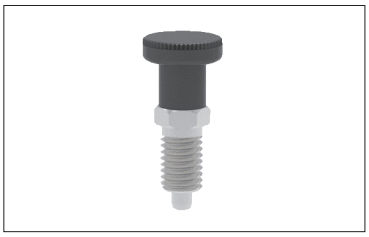
### Applications

- Locating and positioning.
- Indexing.
- Securing.
- Positive locking.
- Rapid adjustment of all kinds of tables, platforms and fixtures.
- Machine and fixture design.
- OEM products.
- Sports equipment.
- Medical aides (wheelchairs etc.).
- Aerospace.
- Machine cabinets.

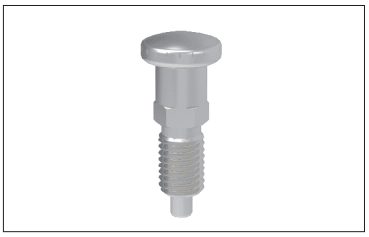
### Materials



**Steel with plastic grip**

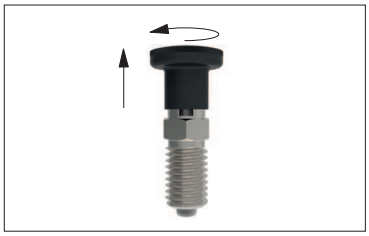


**Stainless with plastic grip**

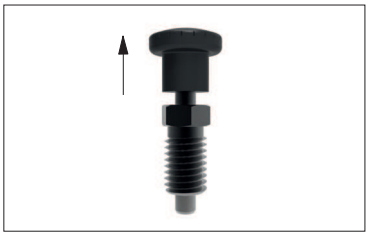


**Stainless body and grip**

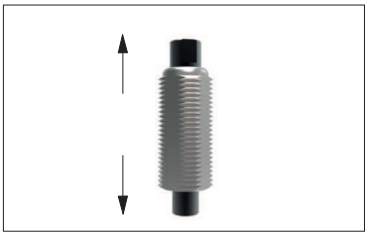
### Locking or non locking



**Locking (park)**



**Non locking (spring back)**



**Push pull**

### Handling and actuation methods

**Standard grip**

**Lever grip**

**T-handle**

**Pull ring**

**Threaded for bespoke handle**

### Mounting options

**Fine threaded (standard)**

**Coarse thread**

**Flange mount**

**Thin wall mount**

**Weldable**

### Additional technical notes

- Unless otherwise stated, grips on index plungers are not removeable.
- Many of the pins on index plungers are toleranced to either the pin or the hole. Please refer to the specific product table.
- Index plungers are not recommended for shear load applications.

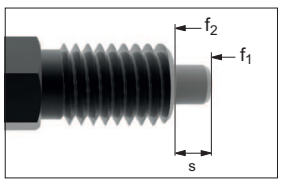
| | Pin Tol. | Hole Tol. |
|---|---|---|
| 1 | $h_9$ | +0,03<br>+0,08 |
| 2 | -0,02<br>-0,04 | $H_7$ |

### Spring loads

**s** Stroke, or movement of plunger's pin.

**$f_1$** The force required in Newtons (N) to over come the static strength of the spring and achieve initial movement of the plunger's pin.

**$f_2$** The force required in Newtons (N) to fully compress the spring until the pin is fully depressed against the plunger's body.

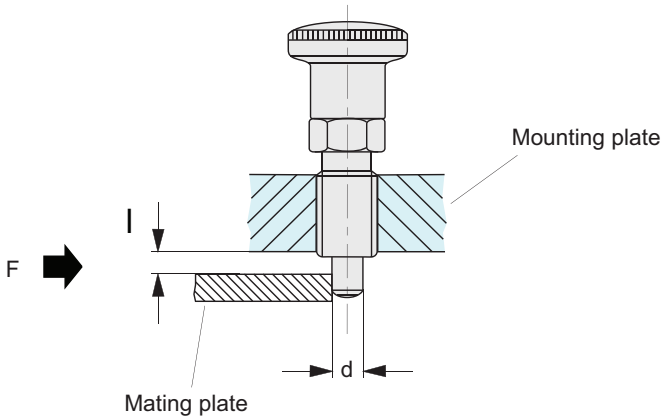


# Computing the strength of index plungers

for shear loads / flexure loads of the plunger pin

## Flexure loads

As soon as a gap l exists between the mounting plate in which the index plunger is installed, and the mating or base plate, the load must be considered to be as per a flexure load, with rod clamped at one side.
With this approach, the calculation is made against the bending of the index plunger.




## Formulas for computation

| Resistance torque | Flexural stress | Flexural strength |
|---|---|---|
| $W = \frac{\pi \times d^3}{32}$ | $M_b = \sigma_b \times W$ | $F = \frac{M_b}{l} = \frac{\sigma_b \times \pi \times d^3}{l \times 32}$ |

## Material characteristics

The yield or substitute yield limit (Re / Rp 0,2) shown in the table opposite has been determine in tension tests involving tension specimen in accordance with DIN 50125-B6-30.
These tests constitute the basis for the load bearing details given.

| Material Description | Material no. | Re in N/mm²(≈ per. flexural tension $\sigma_b$) |
|---|---|---|
| C45Pb | 1.0504 | 560 |
| X 10 CrNiS 18 9A | ISI 303 | 580 |

## Calculation example, load values

Example:
Index plungers with a bolt diameter of 5 mm made of steel with a yield limit of Re = 560 N/mm², calculation against permanent deformation, the maximum permissible flexural strength is calculated as:

$$F_{per} = \frac{560\ N/mm^2 \times \pi \times (5mm)^3}{2mm \times 32} = 3430\ N$$

| | max. flexural strength F in N, acc. to material and gap l differentiated | | | |
|---|---|---|---|---|
| d Bolt diameter | C45Pb/1.0504 l = 2 mm | l = 3 mm | X 10 CrNiS 18 9/1.4305 l = 2 mm | l = 3 mm |
| 3 | 740 | 490 | 760 | 510 |
| 4 | 1750 | 1170 | 1820 | 1210 |
| 5 | 3430 | 2290 | 3550 | 2370 |
| 65 | 930 | 3950 | 6140 | 4100 |
| 8 | 14070 | 9380 | 14570 | 9710 |
| 10 | 27480 | 18320 | 28470 | 18980 |
| 12 | 47490 | 31660 | 49190 | 32790 |
| 16 | 90070 | 102940 | 93290 | 119020 |

## Safety information

On principle, the design also needs an adequate safety coefficient to be taken into account. The usual safety coefficients under static load 1.2 to 1.5; pulsating 1.8 to 2.4 and alternating 3 to 4.

Disclaimer:
You should carry out your own test series to verify whether a certain product is suitable for your specific applications.

# Computing the strength of index plungers

for shear loads / flexure loads of the plunger pin

## Shear loads

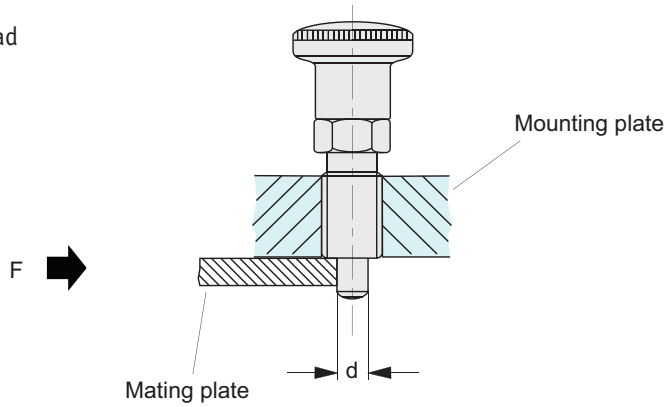
Providing only a very small gap exists between the mounting plate in which the index plunger is installed, and the mounting plate or base plate, the load can be calculated as a clean shear action.

As this is normally not the case, the “flexure” load should be used - see following page.

Approximately 80 % of the bolt’s tensile strength is assumed for the shear strength. This approach calculates against the tensile strength Rm, i.e. against the index pin shearing off.

To ensure the permanent and proper function of the index plunger, the yield limit Re must be considered in place of the tensile strength Rm.

Stop using the index plunger if the pin is damaged or deformed.




## Formulas for computation

| Bolt cross-section | Limit tension | Shear force |
|---|---|---|
| $S = \frac{d^2 \times \pi}{4}$ | $\tau_a = 0{,}8 \times R_m$ | $F = S \times \tau_a = \frac{d^2 \times \pi}{4} \times 0{,}8 \times R_m$ |

## Material characteristics

The tensile strength shown in the table opposite (Rm) and the yield or substitute yield limit (Re / Rp 0,2) have been determine in tension tests involving tension specimen in accordance with DIN 50125- B6-30

These tests constitute the basis for the load bearing details given.

| Material Description | Material no. | Re in N/mm² | Rm in N/mm² |
|---|---|---|---|
| C45Pb | 1.0504 | 560 | 640 |
| X 10 CrNiS 18 9A | ISI 303 | 580 | 740 |

## Calculation example, load values

Example:

Index plungers with a bolt diameter of 6 mm made of Stainless Steel with a yield limit of Re = 580 N/mm², calculation against permanent deformation, the maximum permissible shear stress is calculated as:

$$F_{per} = \frac{(6\ mm)^2 \times \pi}{4} \times 0.8 \times 580\ N/mm^2 = 13120\ N$$

| d Bolt diametre | max. force F in N, acc. to material and strength value differs C45Pb/1.05045 at Re | C45Pb/1.05045 at Rm | X 10 CrNiS 18 9/1.4305 at Re | X 10 CrNiS 18 9/1.4305 at Rm |
|---|---|---|---|---|
| 3 | 3160 | 3610 | 3270 | 4180 |
| 4 | 5620 | 6430 | 5830 | 7430 |
| 58 | 790 | 10050 | 9110 | 11620 |
| 6 | 12660 | 14470 | 13120 | 16730 |
| 8 | 22510 | 25730 | 23320 | 29750 |
| 10 | 35180 | 40210 | 36440 | 46490 |
| 12 | 50660 | 57900 | 52470 | 66950 |
| 16 | 90070 | 102940 | 93290 | 119020 |

## Safety information

On principle, the design also needs an adequate safety coefficient to be taken into account. The usual safety coefficients under static load 1.2 to 1,5; pulsating 1.8 to 2.4 and alternating 3 to 4.

Disclaimer:

You should carry out your own test series to verify whether a certain product is suitable for your specific applications.