



**Märkische Stanz-Partner**



**[führungssysteme]**  
**[guidingsystems]**

**Stand / Revision Status 30.10.2020**



## Inhalt Katalog 1: Stanznormalien (D)

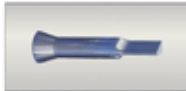
## Content Catalogue 1: Standard die components (D)

## STANZNORMALIEN / STANDARD DIE COMPONENTS

| Artikel<br>Article                               | Best.-Nr.<br>Order no. | Seite<br>Page |
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| <b>A</b>                                         |                        |               |
| Aufwerferstifte, gehärtet, DIN 1530 A – ISO 6750 | TH 750                 | TH 9          |
| Auswerferstifte, DIN 1530 Form D                 | TH 751                 | TH 10         |

Ein „Klick“ auf Artikelbezeichnung, Bestell-Nummer oder Seite im vorangestellten Inhaltsverzeichnis bringt Sie zum gewünschten Artikel.

„Clicking“ on the Article name, the Order- or Page-no. in the main table of contents opens the corresponding article-page.

| Inhalt                                                                              |                                             |                                      |                        |               |
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| Content                                                                             |                                             |                                      |                        |               |
| SCHNEIDELEMENTE / CUTTING ELEMENTS                                                  |                                             |                                      |                        |               |
|    | Schneidstempel                              | Punches                              | Best.-Nr.<br>Order no. | Seite<br>Page |
|  | <u>Schneidstempel DIN 9861, Form D, HSS</u> | <u>Punches DIN 9861, Form D, HSS</u> | <u>SE 775</u>          | <u>SF 1</u>   |

Ein „Klick“ auf Foto, Artikelbezeichnung, Bestell-Nummer oder Seite im Inhaltsverzeichnis des Registers bringt Sie unmittelbar zum gewünschten Artikel im Katalog.

„Clicking“ on the Photo, the Article name, the Order- or Page-no. in any register's table of contents opens the corresponding article-page.



Ein „Klick“ auf das CAD-Logo bringt Sie zu den CAD-Daten des gewünschten Artikels im CADENAS-Downloadportal.



„Clicking“ on the CAD-logo leads you to the CAD-file(s) of the corresponding article within the Cadenas download-portal.



Ein „Klick“ auf das MAIL-Logo generiert eine an die Märkischen Stanz-Partner adressierte e-mail, mit der Normbezeichnung des gewünschten Artikels in der Betreffzeile.



„Clicking“ on the MAIL-logo generates an e-mail addressed to the Stanz-Partners, showing the requested article in the subject heading.

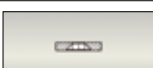


Ein „Klick“ auf das RETURN-Logo unten auf jeder Katalogseite bringt Sie zurück auf das Inhaltsverzeichnis des entsprechenden Registers.

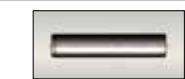


„Clicking“ on the RETURN-logo at the bottom of each catalog-page opens that specific register's table of contents.



|    | Führungselemente,<br>M-Line                                                                    | Guidingelements,<br>M-Line                                                                                             | Best.-Nr.<br>Order no.         | Seite<br>Page |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------|
|    | <u>Führungsbuchsen mit Bund,<br/>Kugelführung, M-Line, kurzer Bund</u>                         | <u>Leader pin bushings, with collar,<br/>ball bearing, M-Line, short headed</u>                                        | <b>FS 357</b>                  | <b>FS.16</b>  |
|    | <u>Führungsbuchsen mit Bund,<br/>Kugelführung, M-Line, langer Bund</u>                         | <u>Leader pin bushings, with collar,<br/>ball bearing, M-Line, long headed</u>                                         | <b>FS 353<br/>FS 358</b>       | <b>FS.16</b>  |
|    | <u>Führungsbuchsen mit Bund,<br/>Stahl/Bronze, M-Line, kurzer Bund</u>                         | <u>Leader pin bushings, with collar,<br/>steel/bronze, M-Line, short headed</u>                                        | <b>FS 331</b>                  | <b>FS.4</b>   |
|    | <u>Führungsbuchsen mit Bund,<br/>Stahl/Bronze, M-Line, langer Bund</u>                         | <u>Leader pin bushings, with collar,<br/>steel/bronze, M-Line, long headed</u>                                         | <b>FS 351<br/>FS 355</b>       | <b>FS.4</b>   |
|    | <u>Führungsbuchsen mit Bund,<br/>Stahlführung, M-Line, kurzer Bund<br/>RM-beschichtet</u>      | <u>Leader pin bushings, with collar,<br/>steel, M-Line, short headed<br/>RM-coated</u>                                 | <b>FS 330 RM</b>               | <b>FS.3</b>   |
|    | <u>Führungsbuchsen mit Bund,<br/>Stahlführung, M-Line, langer Bund<br/>RM-beschichtet</u>      | <u>Leader pin bushings, with collar,<br/>steel, M-Line, long headed<br/>RM-coated</u>                                  | <b>FS 340 RM<br/>FS 350 RM</b> | <b>FS.3</b>   |
|    | <u>Führungsbuchsen mit Festschmierstoff-<br/>ringen, M-Line, kurzer Bund</u>                   | <u>Leader pin bushings with self lubricating<br/>graphite rings, M-Line, short headed</u>                              | <b>FS 375</b>                  | <b>FS.5</b>   |
|    | <u>Führungsbuchsen mit Festschmierstoff-<br/>ringen, M-Line, langer Bund</u>                   | <u>Leader pin bushings with self lubricating<br/>graphite rings, M-Line, long headed</u>                               | <b>FS 371<br/>FS 374</b>       | <b>FS.5</b>   |
|  | <u>Führungssäulen, zylindrisch,<br/>zum Einpressen, M-Line</u>                                 | <u>Leader pins, cylindrical,<br/>for press fitting, M-Line</u>                                                         | <b>FS 320</b>                  | <b>FS.1</b>   |
|  | <u>Haltescheiben für Bundsäulen-<br/>befestigung</u>                                           | <u>Holding discs</u>                                                                                                   | <b>FS 398</b>                  | <b>FS.18</b>  |
|  | <u>Haltestücke</u>                                                                             | <u>Holding clamps</u>                                                                                                  | <b>FS 395 / A - D</b>          | <b>FS.18</b>  |
|  | <u>Kugelkäfige aus Messing, M-Line</u>                                                         | <u>Ball cages, brass, M-Line</u>                                                                                       | <b>FS 325</b>                  | <b>FS.17</b>  |
|  | <u>Schnellwechsel-Führungssäulen<br/>mit Bund, M-Line</u>                                      | <u>Quick change leader pins with collar,<br/>M-Line</u>                                                                | <b>FS 319</b>                  | <b>FS.2</b>   |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung, glatt,<br/>mit HALCO</u>                | <u>Modular System of interchangeable bu-<br/>shings with leader pin centering, straight,<br/>with HALCO</u>            | <b>FS 380/1</b>                | <b>FS.7</b>   |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung, glatt,<br/>mit HALCO/Kugelführung</u>   | <u>Modular System of interchangeable bu-<br/>shings with leader pin centering, straight,<br/>with HALCO/ball guide</u> | <b>FS 380/2</b>                | <b>FS.8</b>   |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung, glatt,<br/>mit Kugelführung</u>         | <u>Modular System of interchangeable bu-<br/>shings with leader pin centering, straight,<br/>with ball guide</u>       | <b>FS 380/3</b>                | <b>FS.9</b>   |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung mit Bund,<br/>mit HALCO</u>              | <u>Modular System of interchangeable<br/>bushings with leader pin centering with<br/>collar, with HALCO</u>            | <b>FS 381/1</b>                | <b>FS.10</b>  |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung mit Bund,<br/>mit HALCO/Kugelführung</u> | <u>Modular System of interchangeable<br/>bushings with leader pin centering with<br/>collar, with HALCO/ball guide</u> | <b>FS 381/2</b>                | <b>FS.11</b>  |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung mit Bund,<br/>mit Kugelführung</u>       | <u>Modular System of interchangeable<br/>bushings with leader pin centering with<br/>collar, with ball guide</u>       | <b>FS 381/3</b>                | <b>FS.12</b>  |
|  | <u>Wechselbuchsen-Systeme mit Säulen-<br/>zentrierung mit Flansch,<br/>mit HALCO</u>           | <u>Modular System of interchangeable<br/>bushings with leader pin centering with<br/>flange, with HALCO</u>            | <b>FS 382/1</b>                | <b>FS.13</b>  |



|    | <b>Führungselemente,<br/>M-Line</b>                                               | <b>Guidingelements,<br/>M-Line</b>                                                                      | <b>Best.-Nr.<br/>Order no.</b> | <b>Seite<br/>Page</b> |
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|    | Wechselbuchsen-Systeme mit Säulen-zentrierung mit Flansch, mit HALCO/Kugelführung | Modular System of interchangeable bushings with leader pin centering with flange, with HALCO/ball guide | FS 382/2                       | FS.14                 |
|    | Wechselbuchsen-Systeme mit Säulen-zentrierung mit Flansch, mit Kugelführung       | Modular System of interchangeable bushings with leader pin centering with flange, with ball guide       | FS 382/3                       | FS.15                 |
|    | <b>Führungssäulen</b>                                                             | <b>Leader pins</b>                                                                                      | <b>Best.-Nr.<br/>Order no.</b> | <b>Seite<br/>Page</b> |
|    | Führungssäulen für Großwerkzeuge nach DIN 9833                                    | Leader pins for large dies, DIN 9833                                                                    | FS 410<br>FS 412               | FS.21<br>FS.22        |
|    | Führungssäulen, zylindrisch, zum Einpressen, nach DIN 9825                        | Leader pins, cylindrical, for press fitting, DIN 9825                                                   | FS 420                         | FS.19                 |
|    | Schnellwechsel-Führungssäulen mit Bund                                            | Quick change leader pins with collar                                                                    | FS 419                         | FS.20                 |
|   | <b>Führungsbuchsen</b>                                                            | <b>Leader pin bushings</b>                                                                              | <b>Best.-Nr.<br/>Order no.</b> | <b>Seite<br/>Page</b> |
|  | Führungsbuchsen mit Bund, Bronze beschichtet, kurzer Bund                         | Leader pin bushings, with collar, bronze plated, short headed                                           | FS 631<br>FS 632               | FS.26<br>FS.27        |
|  | Führungsbuchsen mit Bund, Bronze beschichtet, langer Bund                         | Leader pin bushings, with collar, bronze plated, long headed                                            | FS 641, FS 651<br>FS 655       | FS.26<br>FS.27        |
|  | Führungsbuchsen mit Bund, Gleitschicht Sintermetall, kurzer Bund                  | Leader pin bushings, with collar, sinter-metal plated, short headed                                     | FS 731<br>FS 732               | FS.24<br>FS.25        |
|  | Führungsbuchsen mit Bund, Gleitschicht Sintermetall, langer Bund                  | Leader pin bushings, with collar, sinter-metal plated, long headed                                      | FS 741, FS 751<br>FS 755       | FS.24<br>FS.25        |
|  | Führungsbuchsen mit Bund, Kugelführung                                            | Leader pin bushings, with collar, for ball bearing application                                          | FS 457, FS 458<br>FS 453       | FS.28                 |
|  | Führungsbuchsen mit Bund, Stahlführung, kurzer Bund RM-beschichtet                | Leader pin bushings, with collar, steel, short headed RM-coated                                         | FS 430 RM<br>FS 439 RM         | FS.23                 |
|  | Führungsbuchsen mit Bund, Stahlführung, langer Bund RM-beschichtet                | Leader pin bushings, with collar, steel, long headed RM-coated                                          | FS 440 RM<br>FS 450 RM         | FS.23                 |
|  | Führungsbuchsen mit Festschmierstoff                                              | Leader pin bushings with self lubricating graphite plugs                                                | FS 462                         | FS.37                 |
|  | Führungsbuchsen mit Festschmierstoff NAAMS                                        | Leader pin bushings with self lubricating graphite plugs, NAAMS                                         | FS 461                         | FS.36                 |
|  | Führungsbuchsen mit Festschmierstoff nach DIN 9834 / ISO 9448                     | Leader pin bushings with self lubricating graphite plugs, DIN 9834 / ISO 9448                           | FS 460                         | FS.34                 |



|    | <b>Kugelkäfige und<br/>Befestigungselemente</b>               | <b>Ball cages and moun-<br/>ting elements</b>                          | <b>Best.-Nr.<br/>Order no.</b> | <b>Seite<br/>Page</b> |
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|    | Abgehängte Kugelkäfige                                        | Ball cages with circlip                                                | FS 424                         | FS.30<br>FS.31        |
|    | Befestigungselemente RA                                       | Mounting elements RA                                                   | FS 424 / RA                    | FS.33                 |
|    | Befestigungselemente SI                                       | Mounting elements SI                                                   | FS 424 / SI                    | FS.32                 |
|    | Befestigungselemente TR                                       | Mounting elements TR                                                   | FS 424 / TR                    | FS.32                 |
|    | Befestigungselemente VI                                       | Mounting elements VI                                                   | FS 424 / VI                    | FS.33                 |
|    | Kugelkäfige aus Messing                                       | Ball cages, brass                                                      | FS 425                         | FS.29                 |
|    | <b>Gleitplatten</b>                                           | <b>Wear plates</b>                                                     | <b>Best.-Nr.<br/>Order no.</b> | <b>Seite<br/>Page</b> |
|  | Führungslaschen, Stahl mit Festschmierstoff                   | Guide brackets, steel with self lubricating graphite plugs             | FS 509                         | FS.49                 |
|  | Gleitleisten VDI 3357 Bronze mit Festschmierstoff             | Wear strips VDI 3357 with self lubricating graphite plugs              | FS 506                         | FS.46                 |
|  | Gleitplatten, Bronze mit Festschmierstoff, 5 mm dick          | Wear plates, bronze with self lubricating graphite plugs, 5 mm thick   | FS 505                         | FS.45                 |
|  | Gleitplatten, Bronze mit Festschmierstoff, 10 mm dick         | Wear plates, bronze with self lubricating graphite plugs, 10 mm thick  | FS 503<br>FS 504               | FS.43<br>FS.44        |
|  | Gleitplatten VDI 3357 Bronze mit Festschmierstoff, 12 mm dick | Wear plates VDI 3357 with self lubricating graphite plugs, 12 mm thick | FS 502                         | FS.42                 |
|  | Gleitplatten VDI 3357 Bronze mit Festschmierstoff, 20 mm dick | Wear plates VDI 3357 with self lubricating graphite plugs, 20 mm thick | FS 500                         | FS.40                 |
|  | Gleitplatten VDI 3357, Stahl, 20 mm dick                      | Wear plates VDI 3357, steel, 20 mm thick                               | FS 501                         | FS.41                 |
|  | Prismenführungen, VDI 3357, Bronze mit Festschmierstoff       | „V“ drivers, VDI 3357, bronze with self lubricating graphite plugs     | FS 526                         | FS.53                 |
|  | Prismenführungen, VDI 3357, Stahl                             | „V“ drivers, VDI 3357, steel                                           | FS 524                         | FS.52                 |
|  | Überlaufkeile, VDI 3357, Bronze mit Festschmierstoff          | Cam dwells, VDI 3357, bronze with self lubricating graphite plugs      | FS 507                         | FS.47                 |
|  | Überlaufkeile, VDI 3357, Stahl                                | Cam dwells, VDI 3357, steel                                            | FS 508                         | FS.48                 |
|  | Winkelleisten, Bronze mit Festschmierstoff                    | „L“ shaped wear plates, bronze with self lubricating graphite plugs    | FS 510                         | FS.50                 |

|   | Gleitplatten                                         | Wear plates                                                                   | Best.-Nr.<br>Order no. | Seite<br>Page |
|-----------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------|------------------------|---------------|
|  | Winkelleisten, VDI 3357, Bronze mit Festschmierstoff | „L“ shaped wear plates, VDI 3357, bronze with self lubricating graphite plugs | FS 511                 | FS.51         |

|   | Zubehör Bereich Führungssysteme                                            | Elements product line „guiding systems“                                                                | Best.-Nr.<br>Order no. | Seite<br>Page |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------|---------------|
|  | Haltescheiben für Bundsäulenbefestigung                                    | Holding discs                                                                                          | FS 958                 | FS.39         |
|  | Haltestücke für Führungsbuchsen mit Festschmierstoff n.DIN 9834 / ISO 9448 | Holding clamps for bronze leader pin bushings with selflubricating graphite plugs, DIN 9834 / ISO 9448 | FS 460 HS              | FS.35         |
|  | Haltestücke für Säulen- und Buchsenbefestigung                             | Holding clamps for holding leader pins and -bushings                                                   | FS 955                 | FS.38         |

|        |                            |                            |                                                                                                       |
|--------|----------------------------|----------------------------|-------------------------------------------------------------------------------------------------------|
| FS 320 | Mat.: 1.7131 / 61 - 63 HRC | Mat.: 1.7131 / 61 - 63 HRC |  FS 320 / 25 x 200 |
|--------|----------------------------|----------------------------|-------------------------------------------------------------------------------------------------------|



| D     | L   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 224 | 250 | 280 | 315 | 355 | 400 | 450 | 500 | 600 | 700 | 800 |
| 19-20 | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     |     |     |     |     |
| 24-25 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |
| 30-32 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |
| 38-40 |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |
| 48-50 |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |
| 60-63 |     |     |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   |     |     |     |
| 80    |     |     |     |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   |

Schnellwechsel-Führungssäulen mit Bund, M-Line

Quick-change leader pins with collar, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



FS 319

Mat.: 1.7131 / 61 - 63 HRC

Mat.: 1.7131 / 61 - 63 HRC

FS 319 / 25 x 160

Lieferumfang:

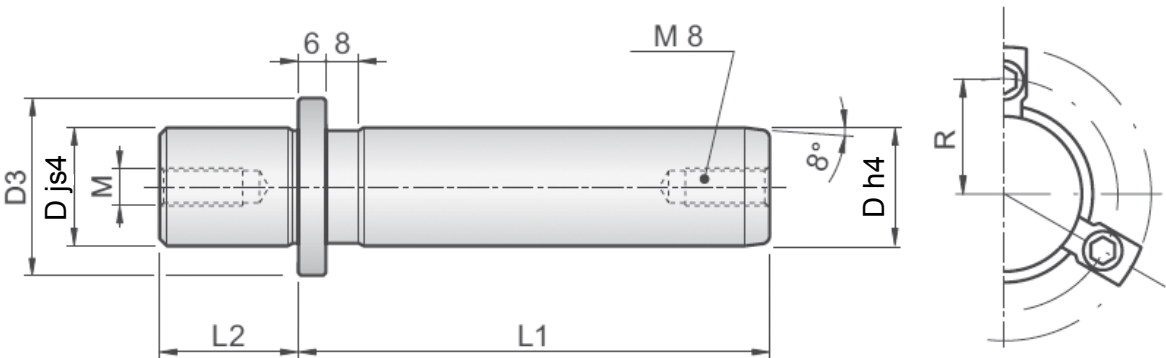
- 3 Halteklammern mit Schrauben  
alternativ, wenn angegeben:

- 1 Haltescheibe **FS 398** mit Schraube

Included:

- 3 holding clamps with screws  
alternatively, if specified:

- 1 mount disc **FS 398** with screw



| D     | D3 | M   | R    | L2 |
|-------|----|-----|------|----|
| 19-20 | 25 | M8  | 18,0 | 23 |
| 24-25 | 32 | M8  | 21,5 | 30 |
| 30-32 | 40 | M8  | 25,5 | 37 |
| 38-40 | 50 | M8  | 30,5 | 37 |
| 48-50 | 63 | M8  | 37,0 | 47 |
| 60-63 | 80 | M8  | 45,5 | 47 |
| 80    | 95 | M12 | 53,0 | 60 |

| D     | L1  |     |     |     |     |     |     |     |     |     |     |     |     |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 224 | 250 | 280 | 315 | 355 | 400 |
| 19-20 | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     |     |
| 24-25 | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |
| 30-32 |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |
| 38-40 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |
| 48-50 |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |
| 60-63 |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   |
| 80    |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   |

Führungsbuchsen mit Bund, RM-beschichtet, M-Line

Leader pin bushings with collar, RM plated, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



mit langem Bund/long-headed style

FS 340 ... RM

FS 350 ... RM

Mat.: 1.7131 / 61 - 63 HRC

RM-beschichtet (selbstschmierend)

Mat.: 1.7131 / 61 - 63 HRC

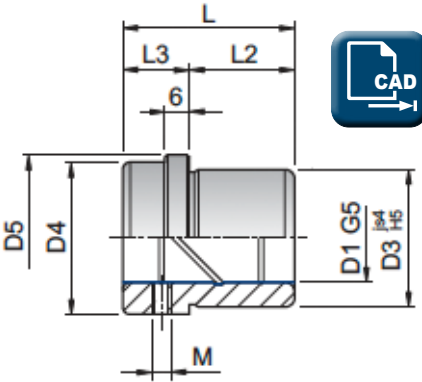
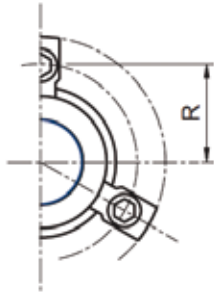
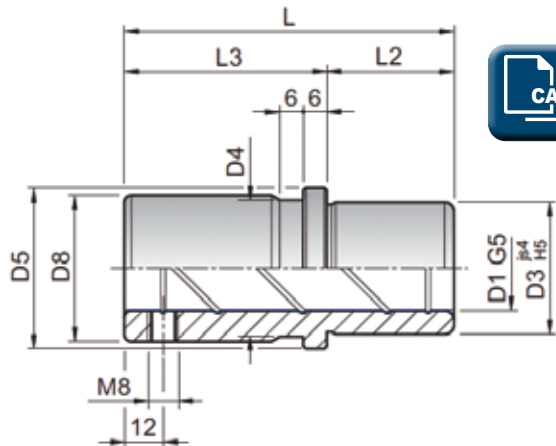
RM-coated (self lubricating)

Lieferumfang:

- 3 Halteklammern mit Schrauben

Included:

- 3 holding clamps with screws



mit kurzem Bund/short-headed style

FS 330 ... RM



| D1    | D3 | D4 | D5 | D8 | Artikelnummer<br>Article number | R    | L   | L2 | L3 |
|-------|----|----|----|----|---------------------------------|------|-----|----|----|
| 19-20 | 32 | 32 | 40 | –  | FS 330 ... RM                   | 26   | 35  | 23 | 12 |
| 19-20 | 32 | 32 | 40 | 39 | FS 340 ... RM                   | 26   | 43  | 23 | 20 |
| 19-20 | 32 | 32 | 40 | 39 | FS 350 ... RM                   | 26   | 59  | 23 | 36 |
| 24-25 | 40 | 40 | 48 | –  | FS 330 ... RM                   | 30   | 35  | 23 | 12 |
| 24-25 | 40 | 40 | 48 | 46 | FS 340 ... RM                   | 30   | 59  | 23 | 36 |
| 24-25 | 40 | 40 | 48 | 46 | FS 350 ... RM                   | 30   | 79  | 23 | 56 |
| 30-32 | 48 | 48 | 56 | –  | FS 330 ... RM                   | 33,5 | 42  | 30 | 12 |
| 30-32 | 48 | 48 | 56 | 53 | FS 340 ... RM                   | 33,5 | 75  | 30 | 45 |
| 30-32 | 48 | 48 | 56 | 53 | FS 350 ... RM                   | 33,5 | 93  | 30 | 63 |
| 38-40 | 58 | 58 | 66 | –  | FS 330 ... RM                   | 38,5 | 52  | 37 | 15 |
| 38-40 | 58 | 58 | 66 | 63 | FS 340 ... RM                   | 38,5 | 82  | 37 | 45 |
| 38-40 | 58 | 58 | 66 | 63 | FS 350 ... RM                   | 38,5 | 108 | 37 | 71 |
| 48-50 | 70 | 70 | 80 | –  | FS 330 ... RM                   | 45,5 | 65  | 47 | 18 |
| 48-50 | 70 | 70 | 80 | 77 | FS 340 ... RM                   | 45,5 | 97  | 47 | 50 |
| 48-50 | 70 | 70 | 80 | 77 | FS 350 ... RM                   | 45,5 | 127 | 47 | 80 |
| 60-63 | 85 | 85 | 95 | –  | FS 330 ... RM                   | 53   | 80  | 60 | 20 |
| 60-63 | 85 | 85 | 95 | 92 | FS 340 ... RM                   | 53   | 116 | 60 | 56 |
| 60-63 | 85 | 85 | 95 | 92 | FS 350 ... RM                   | 53   | 150 | 60 | 90 |

Führungsbuchsen mit Bund, Stahl/Bronze, M-Line

Leader pin bushings with collar, steel/bronze, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

mit langem Bund/long-headed style

FS 351  
FS 355

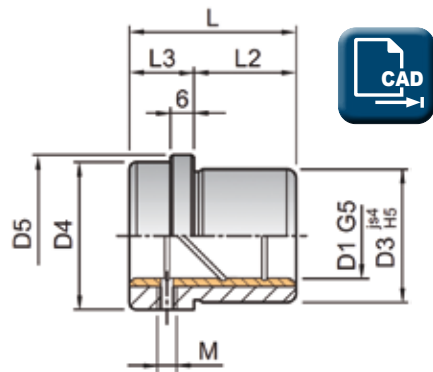
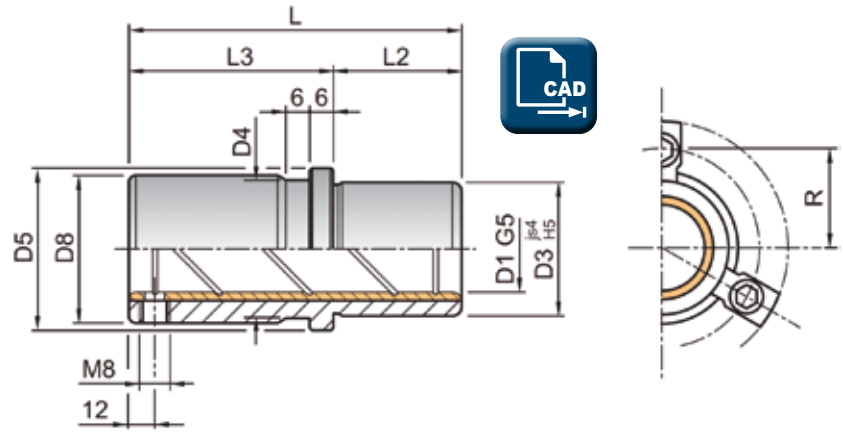
Mat.: 1.7131 + Bronze  
Härte: 61 - 63 HRC

Lieferumfang:  
• 3 Halteklammern mit Schrauben

Mat.: 1.7131 + bronze  
Hardness: 61 - 63 HRC

Included:  
• 3 holding clamps with screws

FS 331 / 25 x 35



Führungsbuchsen können auch  
RM-beschichtet werden /  
Leader pin bushings can be  
delivered RM-coated.

mit kurzem Bund/short-headed style  
FS 331



| D1    | D3 | D4 | D5 | D8 | Artikelnummer<br>Article number | R    | L   | L2 | L3 |
|-------|----|----|----|----|---------------------------------|------|-----|----|----|
| 19-20 | 32 | 32 | 40 | –  | FS 331                          | 26   | 35  | 23 | 12 |
| 19-20 | 32 | 32 | 40 | 39 | FS 351                          | 26   | 43  | 23 | 20 |
| 19-20 | 32 | 32 | 40 | 39 | FS 355                          | 26   | 59  | 23 | 36 |
| 24-25 | 40 | 40 | 48 | –  | FS 331                          | 30   | 35  | 23 | 12 |
| 24-25 | 40 | 40 | 48 | 46 | FS 351                          | 30   | 59  | 23 | 36 |
| 24-25 | 40 | 40 | 48 | 46 | FS 355                          | 30   | 79  | 23 | 56 |
| 30-32 | 48 | 48 | 56 | –  | FS 331                          | 33,5 | 42  | 30 | 12 |
| 30-32 | 48 | 48 | 56 | 53 | FS 351                          | 33,5 | 75  | 30 | 45 |
| 30-32 | 48 | 48 | 56 | 53 | FS 355                          | 33,5 | 93  | 30 | 63 |
| 38-40 | 58 | 58 | 66 | –  | FS 331                          | 38,5 | 52  | 37 | 15 |
| 38-40 | 58 | 58 | 66 | 63 | FS 351                          | 38,5 | 82  | 37 | 45 |
| 38-40 | 58 | 58 | 66 | 63 | FS 355                          | 38,5 | 108 | 37 | 71 |
| 48-50 | 70 | 70 | 80 | –  | FS 331                          | 45,5 | 65  | 47 | 18 |
| 48-50 | 70 | 70 | 80 | 77 | FS 351                          | 45,5 | 97  | 47 | 50 |
| 48-50 | 70 | 70 | 80 | 77 | FS 355                          | 45,5 | 127 | 47 | 80 |
| 60-63 | 85 | 85 | 95 | –  | FS 331                          | 53   | 80  | 60 | 20 |
| 60-63 | 85 | 85 | 95 | 92 | FS 351                          | 53   | 116 | 60 | 56 |
| 60-63 | 85 | 85 | 95 | 92 | FS 355                          | 53   | 150 | 60 | 90 |

[FS.4]

Führungsbuchsen mit Festschmierstoffringen, M-Line

Leader pin bushes with self lubricating graphite rings, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

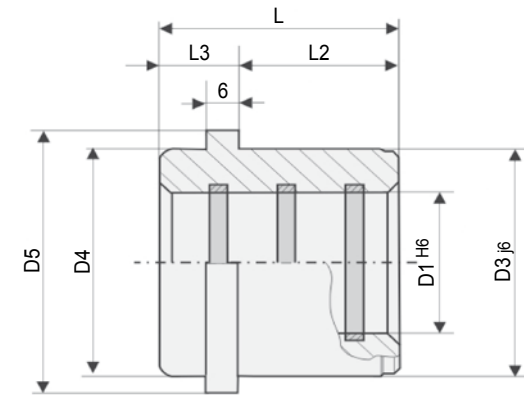
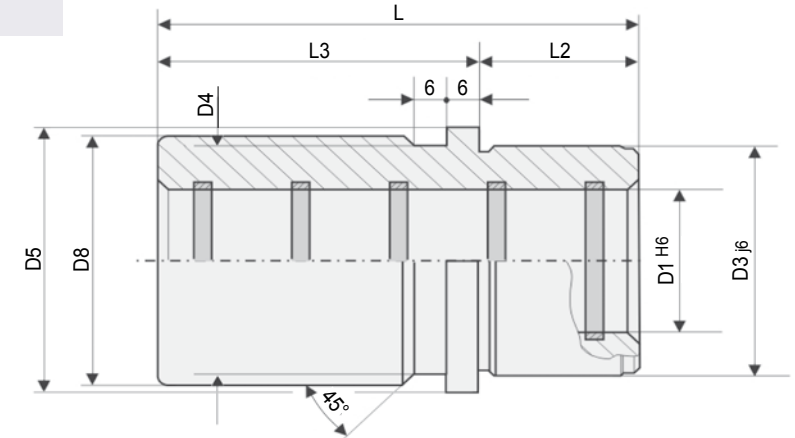
mit langem Bund/long-headed style

FS 371  
FS 374

Mat.: Bronze-Graphit

Mat.: Bronze-graphite

FS 371 / 019x59



mit kurzem Bund/short-headed style  
FS 375

| D1      | D3  | D4  | D5  | D8  | Artikelnummer<br>Article number | L   | L2 | L3 |
|---------|-----|-----|-----|-----|---------------------------------|-----|----|----|
| 019-020 | 32  | 32  | 40  | –   | FS 375                          | 35  | 23 | 12 |
| 019-020 | 32  | 32  | 40  | 39  | FS 371                          | 59  | 23 | 36 |
| 019-020 | 32  | 32  | 40  | 39  | FS 374                          | 43  | 23 | 20 |
| 024-025 | 40  | 40  | 48  | –   | FS 375                          | 35  | 23 | 12 |
| 024-025 | 40  | 40  | 48  | 46  | FS 371                          | 79  | 23 | 56 |
| 024-025 | 40  | 40  | 48  | 46  | FS 374                          | 59  | 23 | 36 |
| 030-032 | 48  | 48  | 56  | –   | FS 375                          | 42  | 30 | 12 |
| 030-032 | 48  | 48  | 56  | 53  | FS 371                          | 93  | 30 | 63 |
| 030-032 | 48  | 48  | 56  | 53  | FS 374                          | 75  | 30 | 45 |
| 038-040 | 58  | 58  | 66  | –   | FS 375                          | 52  | 37 | 15 |
| 038-040 | 58  | 58  | 66  | 63  | FS 371                          | 108 | 37 | 71 |
| 038-040 | 58  | 58  | 66  | 63  | FS 374                          | 82  | 37 | 45 |
| 048-050 | 70  | 70  | 80  | –   | FS 375                          | 65  | 47 | 18 |
| 048-050 | 70  | 70  | 80  | 77  | FS 371                          | 127 | 47 | 80 |
| 048-050 | 70  | 70  | 80  | 77  | FS 374                          | 97  | 47 | 50 |
| 060-063 | 85  | 85  | 95  | –   | FS 375                          | 80  | 60 | 20 |
| 060-063 | 85  | 85  | 95  | 92  | FS 371                          | 150 | 60 | 90 |
| 060-063 | 85  | 85  | 95  | 92  | FS 374                          | 116 | 60 | 56 |
| 080     | 105 | 105 | 118 | –   | FS 375                          | 80  | 60 | 20 |
| 080     | 105 | 105 | 118 | 115 | FS 371                          | 150 | 60 | 90 |
| 080     | 105 | 105 | 118 | 115 | FS 374                          | 120 | 60 | 60 |

[06.05.2020]

[06.05.2020]

[FS.5]



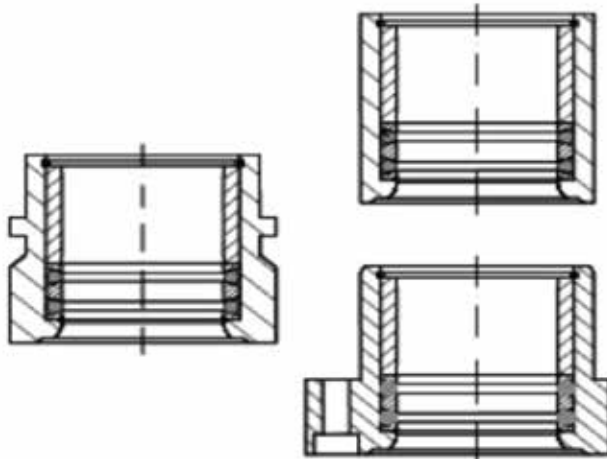
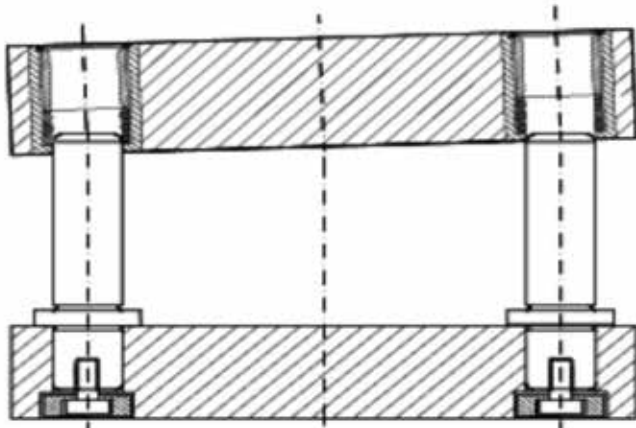
Beim Wechselbuchsen (WeBu) - System handelt es sich um die Paarung einer Stahl-Aufnahmebuchse (die über eine spezielle Geometrie zur automatischen Säulenzentrierung verfügt) mit entweder einer HALCO-Führungsbuchse, einer Kugelführung, oder einer Kombination dieser beiden. Die Buchsen sind miteinander austauschbar. Bei einer reinen Kugelführung empfehlen wir eine gehärtete Aufnahmebuchse.

Vorteil der „Wechselbarkeit“:

- Flexibilität in der Führungsauswahl

Vorteile der Säulenzentrierung:

- Das Zentrieren der Säulen in die Gleitführungen erfolgt automatisch, einfach und ohne Beschädigung. Ein Verkanten der Führungsplatte durch eine bzw. mehrere Führungseinheiten wird vermieden.
- Die Demontage und Montage von Werkzeugen und Vorrichtungen kann schneller ausgeführt werden, die Lebensdauer wird erhöht.



The modular bushings (ModBu) - system is the combination of a receiving steel bushing (with a special geometry for automatic leader pin centering) with either a HALCO guide bushing, a ball guide or a combination of both, all of them being interchangeable. For the complete ball guide option, we recommend a hardened receiving bushing.

Advantage of the „Interchangeability“:

- Flexibility in choosing guiding option

Advantages of the leader pin centering:

- The self-centering of the leader pins into the guide bushings happens automatically, simple and without damage ... and thereby avoids a tilting of the guide plate due to misalignment of one or more guiding units.
- The disassembly and assembly of dies, tools and fixtures can be carried out more quickly, the service life increases.



FS 380/1

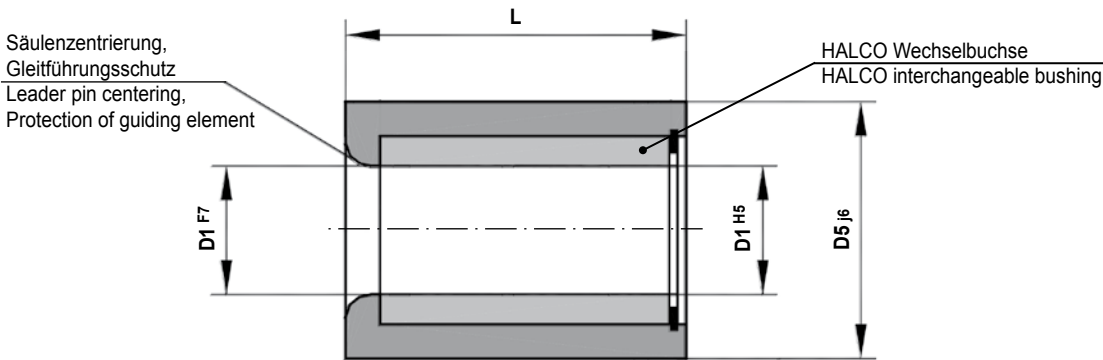
**Führungselement:**  
HALCO Wechselbuchse  
Mat.: Hochleistungs-Aluminium  
Oberflächenhärte: ~ 70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Klebspalt: min. 0,05 mm,  
Einpressen vermeiden

**Guiding element:**  
HALCO interchangeable bushing  
Mat.: high-performance Aluminum  
Surface hardness: ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Adhesive gap : 0,05 mm,  
Avoid pressing in

FS 380/1 / 32 x 60



| D1    | L  | D5 |
|-------|----|----|
| 19-20 | 30 | 32 |
| 19-20 | 37 | 32 |
| 19-20 | 47 | 32 |
| 19-20 | 60 | 32 |
| 24-25 | 37 | 40 |
| 24-25 | 47 | 40 |
| 24-25 | 60 | 40 |
| 24-25 | 77 | 40 |
| 30-32 | 47 | 48 |
| 30-32 | 60 | 48 |
| 30-32 | 77 | 48 |
| 30-32 | 95 | 48 |
| 38-40 | 47 | 58 |
| 38-40 | 60 | 58 |

| D1    | L   | D5  |
|-------|-----|-----|
| 38-40 | 77  | 58  |
| 38-40 | 95  | 58  |
| 38-40 | 120 | 58  |
| 48-50 | 47  | 70  |
| 48-50 | 60  | 70  |
| 48-50 | 77  | 70  |
| 48-50 | 95  | 70  |
| 48-50 | 120 | 70  |
| 60-63 | 77  | 85  |
| 60-63 | 95  | 85  |
| 60-63 | 120 | 85  |
| 80    | 120 | 105 |
| 80    | 135 | 105 |

FS 380/2

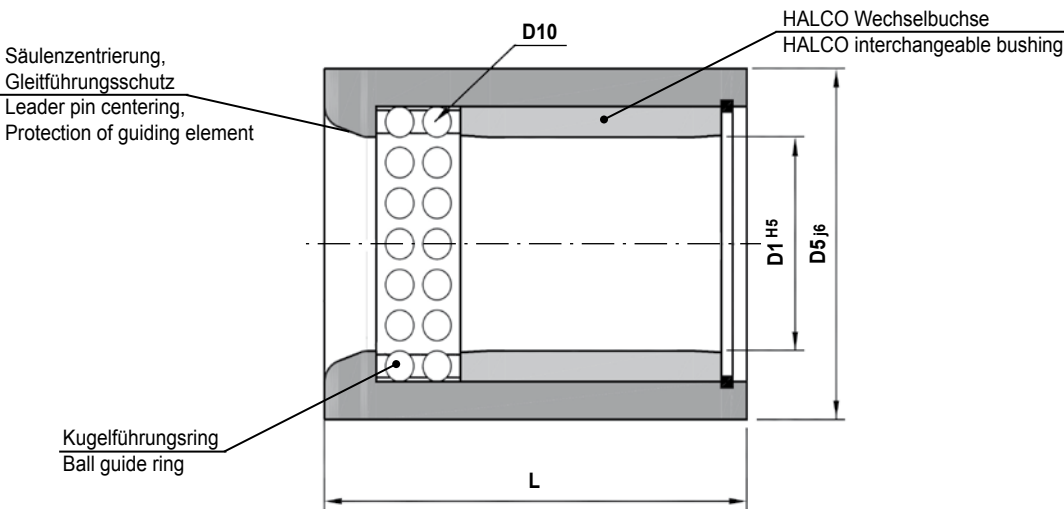
**Kombi-Führungselement:**  
Kugelführungsring zur Unterstützung  
der Säulenzentrierung kombiniert  
mit HALCO-Wechselbuchse  
Mat. Hochleistungs-Aluminium  
Oberflächenhärte = ~70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Klebspalt: min. 0,05 mm,  
Einpressen vermeiden

**Combined guide element:**  
Ball guide ring for supporting the  
leader pin centering, combined with  
HALCO interchangeable bushing.  
Mat. High performance aluminum  
Surface hardness = ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Adhesive gap : 0,05 mm,  
Avoid pressing in

FS 380/2 / 30 x 77



| D1 | L   | D5 | D10 |
|----|-----|----|-----|
| 19 | 60  | 32 | 3,5 |
| 20 | 60  | 32 | 3,0 |
| 24 | 60  | 40 | 3,5 |
| 24 | 77  | 40 | 3,5 |
| 25 | 60  | 40 | 3,0 |
| 25 | 77  | 40 | 3,0 |
| 30 | 60  | 48 | 5,0 |
| 30 | 77  | 48 | 5,0 |
| 30 | 95  | 48 | 5,0 |
| 32 | 60  | 48 | 4,0 |
| 32 | 77  | 48 | 4,0 |
| 32 | 95  | 48 | 4,0 |
| 38 | 60  | 58 | 5,0 |
| 38 | 77  | 58 | 5,0 |
| 38 | 95  | 58 | 5,0 |
| 38 | 120 | 58 | 5,0 |
| 40 | 60  | 58 | 4,0 |

| D1 | L   | D5  | D10 |
|----|-----|-----|-----|
| 40 | 77  | 58  | 4,0 |
| 40 | 95  | 58  | 4,0 |
| 40 | 120 | 58  | 4,0 |
| 48 | 77  | 70  | 6,0 |
| 48 | 95  | 70  | 6,0 |
| 48 | 120 | 70  | 6,0 |
| 50 | 77  | 70  | 5,0 |
| 50 | 95  | 70  | 5,0 |
| 50 | 120 | 70  | 5,0 |
| 60 | 77  | 85  | 6,5 |
| 60 | 95  | 85  | 6,5 |
| 60 | 120 | 85  | 6,5 |
| 63 | 77  | 85  | 5,0 |
| 63 | 95  | 85  | 5,0 |
| 63 | 120 | 85  | 5,0 |
| 80 | 120 | 105 | 6,0 |
| 80 | 135 | 105 | 6,0 |

FS 380/3

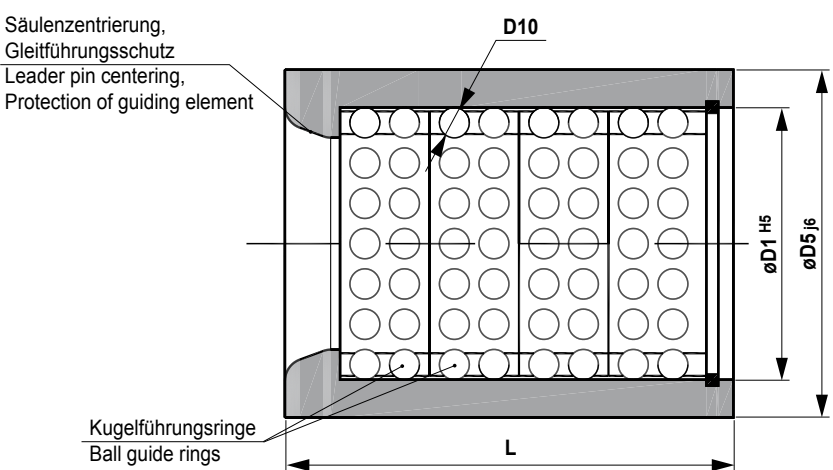
**Führungselement:**  
Endlos-Kugelführung  
für axiale und radiale Bewegung,  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Klebspalt: min. 0,05 mm,  
Einpressen vermeiden

**Guiding element:**  
Endless ball guide  
for axial and radial movement,  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Adhesive gap : 0,05 mm,  
Avoid pressing in

FS 380/3 / 30 x 77



| D1    | L  | D5 | D10     |
|-------|----|----|---------|
| 19-20 | 37 | 32 | 3,5-3,0 |
| 19-20 | 47 | 32 | 3,5-3,0 |
| 19-20 | 60 | 32 | 3,5-3,0 |
| 24-25 | 37 | 40 | 3,5-3,0 |
| 24-25 | 47 | 40 | 3,5-3,0 |
| 24-25 | 60 | 40 | 3,5-3,0 |
| 24-25 | 77 | 48 | 3,5-3,0 |
| 30-32 | 47 | 48 | 5,0-4,0 |
| 30-32 | 60 | 48 | 5,0-4,0 |
| 30-32 | 77 | 48 | 5,0-4,0 |
| 30-32 | 95 | 48 | 5,0-4,0 |
| 38-40 | 47 | 58 | 5,0-4,0 |
| 38-40 | 60 | 58 | 5,0-4,0 |

| D1    | L   | D5  | D10     |
|-------|-----|-----|---------|
| 38-40 | 77  | 58  | 5,0-4,0 |
| 38-40 | 95  | 58  | 5,0-4,0 |
| 38-40 | 120 | 58  | 5,0-4,0 |
| 48-50 | 60  | 70  | 6,0-5,0 |
| 48-50 | 77  | 70  | 6,0-5,0 |
| 48-50 | 95  | 70  | 6,0-5,0 |
| 48-50 | 120 | 70  | 6,0-5,0 |
| 60-63 | 77  | 85  | 6,5-5,0 |
| 60-63 | 95  | 85  | 6,5-5,0 |
| 60-63 | 120 | 85  | 6,5-5,0 |
| 80    | 120 | 105 | 6,0     |
| 80    | 135 | 105 | 6,0     |



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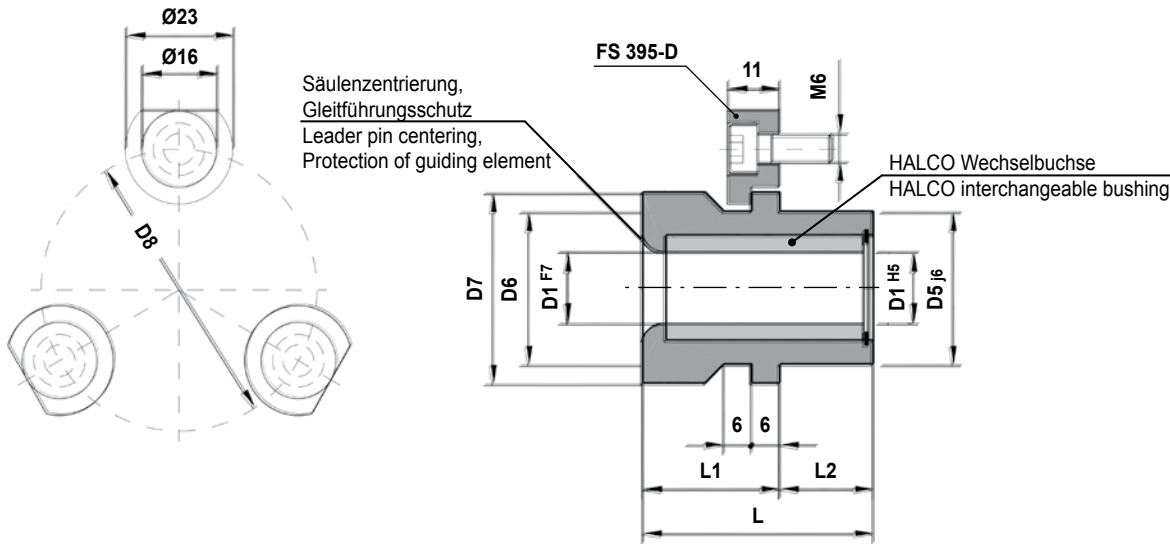
**Führungselement:**  
HALCO Wechselbuchse  
Mat. Hochleistungs-Aluminium  
Oberflächenhärte: ~ 70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Haltestücke gehören zum  
Lieferumfang!

**Guiding element:**  
HALCO interchangeable bushing  
Mat.: high-performance Aluminum  
Surface hardness: ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Tolerance to be bored: H6  
Avoid pressing in  
Holding clamps included

FS 381/1 / 30 x 77



| D1    | L   | D5  | D6  | D7  | D8  | L1 | L2 |
|-------|-----|-----|-----|-----|-----|----|----|
| 19-20 | 37  | 32  | 32  | 40  | 59  | 14 | 23 |
| 19-20 | 47  | 32  | 32  | 40  | 59  | 24 | 23 |
| 19-20 | 60  | 32  | 32  | 40  | 59  | 37 | 23 |
| 24-25 | 47  | 40  | 40  | 48  | 65  | 24 | 23 |
| 24-25 | 60  | 40  | 40  | 48  | 65  | 37 | 23 |
| 24-25 | 77  | 40  | 40  | 48  | 65  | 54 | 23 |
| 30-32 | 60  | 48  | 48  | 56  | 73  | 30 | 30 |
| 30-32 | 77  | 48  | 48  | 56  | 73  | 47 | 30 |
| 30-32 | 95  | 48  | 48  | 56  | 73  | 65 | 30 |
| 38-40 | 60  | 58  | 58  | 66  | 83  | 24 | 36 |
| 38-40 | 77  | 58  | 58  | 66  | 83  | 41 | 36 |
| 38-40 | 95  | 58  | 58  | 66  | 83  | 59 | 36 |
| 38-40 | 120 | 58  | 58  | 66  | 83  | 84 | 36 |
| 48-50 | 77  | 70  | 70  | 80  | 97  | 31 | 46 |
| 48-50 | 95  | 70  | 70  | 80  | 97  | 49 | 46 |
| 48-50 | 120 | 70  | 70  | 80  | 97  | 74 | 46 |
| 60-63 | 77  | 85  | 85  | 95  | 112 | 21 | 56 |
| 60-63 | 95  | 85  | 85  | 95  | 112 | 39 | 56 |
| 60-63 | 120 | 85  | 85  | 95  | 112 | 64 | 56 |
| 80    | 120 | 105 | 105 | 118 | 135 | 64 | 56 |
| 80    | 135 | 105 | 105 | 118 | 135 | 79 | 56 |

FS 381/2

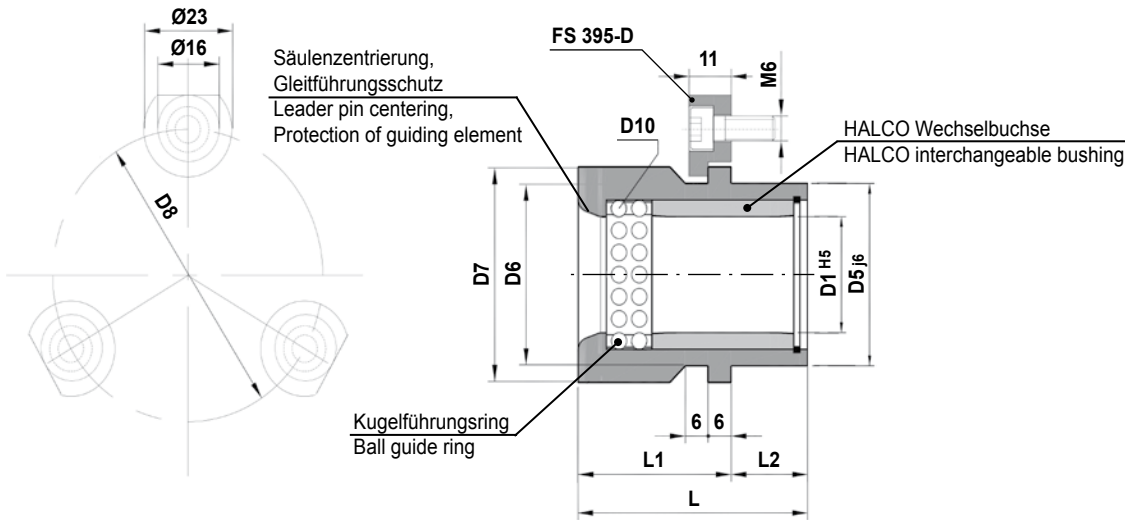
**Kombi-Führungselement:**  
Kugelführungsrings zur Unterstützung  
der Säulenzentrierung kombiniert  
mit HALCO-Wechselbuchse  
Mat. Hochleistungs-Aluminium  
Oberflächenhärte = ~70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Haltestücke gehören zum  
Lieferumfang!

**Combined guide element:**  
Ball guide ring for supporting the  
leader pin centering, combined with  
HALCO interchangeable bushing.  
Mat. High performance aluminum  
Surface hardness = ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Tolerance to be bored: H6  
Avoid pressing in  
Holding clamps included

FS 381/2 / 48 x 120



| D1    | L   | D5  | D6  | D7  | D8  | L1 | L2 | D10     |
|-------|-----|-----|-----|-----|-----|----|----|---------|
| 19-20 | 60  | 32  | 32  | 40  | 59  | 37 | 23 | 3,5-3,0 |
| 24-25 | 60  | 40  | 40  | 48  | 65  | 37 | 23 | 3,5-3,0 |
| 24-25 | 77  | 40  | 40  | 48  | 65  | 54 | 23 | 3,5-3,0 |
| 30-32 | 60  | 48  | 48  | 56  | 73  | 30 | 30 | 5,0-4,0 |
| 30-32 | 77  | 48  | 48  | 56  | 73  | 47 | 30 | 5,0-4,0 |
| 30-32 | 95  | 48  | 48  | 56  | 73  | 65 | 30 | 5,0-4,0 |
| 38-40 | 60  | 58  | 58  | 66  | 83  | 24 | 36 | 5,0-4,0 |
| 38-40 | 77  | 58  | 58  | 66  | 83  | 41 | 36 | 5,0-4,0 |
| 38-40 | 95  | 58  | 58  | 66  | 83  | 59 | 36 | 5,0-4,0 |
| 38-40 | 120 | 58  | 58  | 66  | 83  | 84 | 36 | 5,0-4,0 |
| 48-50 | 77  | 70  | 70  | 80  | 97  | 31 | 46 | 6,0-5,0 |
| 48-50 | 95  | 70  | 70  | 80  | 97  | 49 | 46 | 6,0-5,0 |
| 48-50 | 120 | 70  | 70  | 80  | 97  | 74 | 46 | 6,0-5,0 |
| 60-63 | 77  | 85  | 85  | 95  | 112 | 21 | 56 | 6,5-5,0 |
| 60-63 | 95  | 85  | 85  | 95  | 112 | 39 | 56 | 6,5-5,0 |
| 60-63 | 120 | 85  | 85  | 95  | 112 | 64 | 56 | 6,5-5,0 |
| 80    | 120 | 105 | 105 | 118 | 135 | 64 | 56 | 6,0     |
| 80    | 135 | 105 | 105 | 118 | 135 | 79 | 56 | 6,0     |

FS 381/3

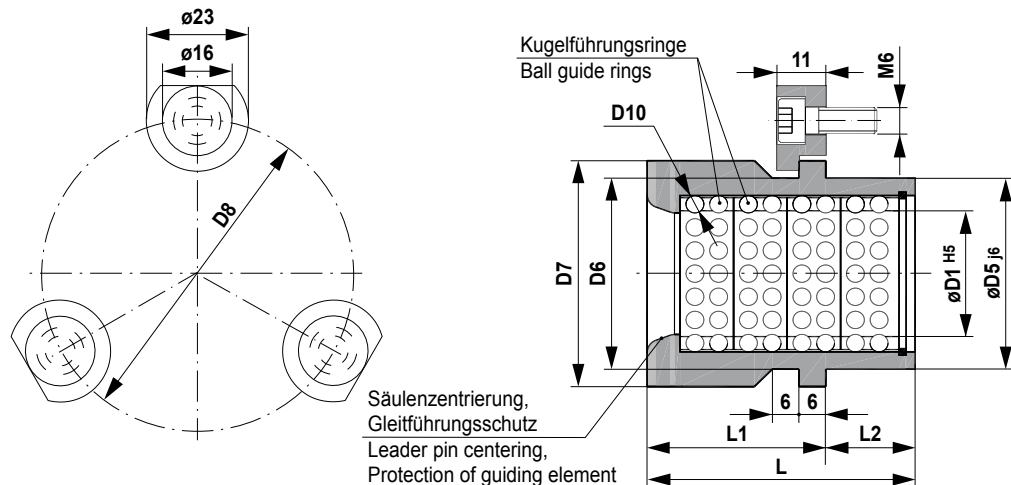
**Führungselement:**  
Endlos-Kugelführung  
für axiale und radiale Bewegung,  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Haltestücke gehören zum  
Lieferumfang!

**Guiding element:**  
Endless ball guide  
for axial and radial movement,  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Tolerance to be bored: H6  
Avoid pressing in  
Holding clamps included

 FS 381/3 / 19 x 47



| D1    | L   | D5  | D6  | D7  | D8  | L1 | L2 | D10     |
|-------|-----|-----|-----|-----|-----|----|----|---------|
| 19-20 | 37  | 32  | 26  | 40  | 59  | 14 | 23 | 3,5-3,0 |
| 19-20 | 47  | 32  | 26  | 40  | 59  | 24 | 23 | 3,5-3,0 |
| 19-20 | 60  | 32  | 26  | 40  | 59  | 37 | 23 | 3,5-3,0 |
| 24-25 | 47  | 40  | 31  | 48  | 65  | 24 | 23 | 3,5-3,0 |
| 24-25 | 60  | 40  | 31  | 48  | 65  | 37 | 23 | 3,5-3,0 |
| 24-25 | 77  | 40  | 31  | 48  | 65  | 54 | 23 | 3,5-3,0 |
| 30-32 | 60  | 48  | 40  | 56  | 73  | 30 | 30 | 5,0-4,0 |
| 30-32 | 77  | 48  | 40  | 56  | 73  | 47 | 30 | 5,0-4,0 |
| 30-32 | 95  | 48  | 40  | 56  | 73  | 65 | 30 | 5,0-4,0 |
| 38-40 | 60  | 58  | 48  | 66  | 83  | 24 | 36 | 5,0-4,0 |
| 38-40 | 77  | 58  | 48  | 66  | 83  | 41 | 36 | 5,0-4,0 |
| 38-40 | 95  | 58  | 48  | 66  | 83  | 59 | 36 | 5,0-4,0 |
| 38-40 | 120 | 58  | 48  | 66  | 83  | 84 | 36 | 5,0-4,0 |
| 48-50 | 77  | 70  | 60  | 80  | 97  | 31 | 46 | 6,0-5,0 |
| 48-50 | 95  | 70  | 60  | 80  | 97  | 49 | 46 | 6,0-5,0 |
| 48-50 | 120 | 70  | 60  | 80  | 97  | 74 | 46 | 6,0-5,0 |
| 60-63 | 77  | 85  | 85  | 95  | 112 | 21 | 56 | 6,5-5,0 |
| 60-63 | 95  | 85  | 85  | 95  | 112 | 39 | 56 | 6,5-5,0 |
| 60-63 | 120 | 85  | 85  | 95  | 112 | 64 | 56 | 6,5-5,0 |
| 80    | 120 | 105 | 105 | 118 | 135 | 64 | 56 | 6,0     |
| 80    | 135 | 105 | 105 | 118 | 135 | 79 | 56 | 6,0     |

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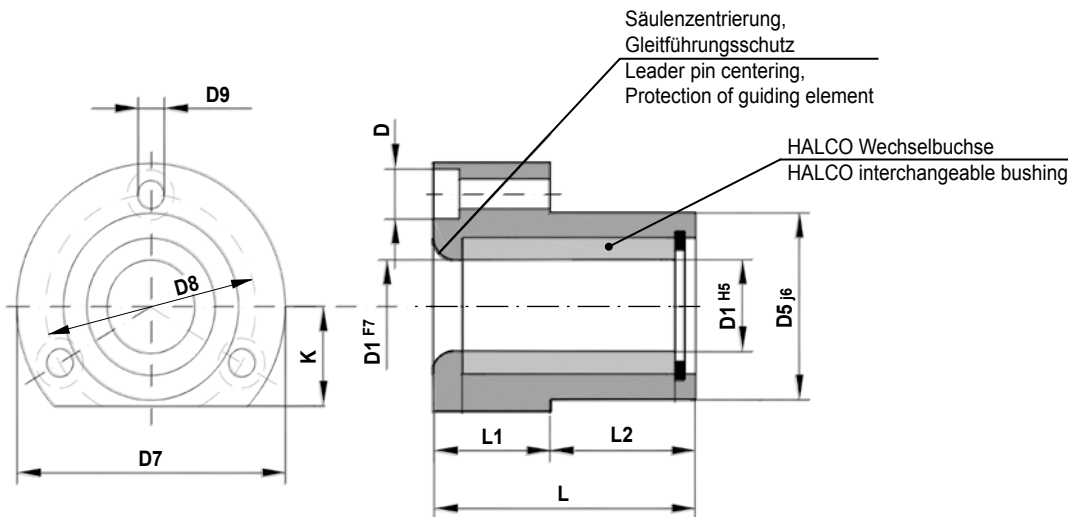
**Führungselement:**  
HALCO Wechselbuchse  
Mat. Hochleistungs-Aluminium  
Oberflächenhärte: ~ 70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Schrauben bitte gesondert bestellen.

**Guiding element:**  
HALCO interchangeable bushing  
Mat.: high-performance Aluminum  
Surface hardness: ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Tolerance to be bored: H6  
Avoid pressing in  
Screws to be ordered separately.

 FS 382/1 / 40 x 47



| D1    | L   | D   | D5  | D7  | D8  | D9  | L1 | L2 | K  |
|-------|-----|-----|-----|-----|-----|-----|----|----|----|
| 19-20 | 37  | 8   | 32  | 52  | 40  | 4,5 | 14 | 23 | 18 |
| 19-20 | 60  | 8   | 32  | 52  | 40  | 4,5 | 24 | 36 | 18 |
| 24-25 | 37  | 9,5 | 40  | 63  | 50  | 5,5 | 14 | 23 | 23 |
| 24-25 | 47  | 9,5 | 40  | 63  | 50  | 5,5 | 24 | 23 | 23 |
| 24-25 | 60  | 9,5 | 40  | 63  | 50  | 5,5 | 30 | 30 | 23 |
| 30-32 | 37  | 9,5 | 48  | 72  | 58  | 5,5 | 14 | 23 | 28 |
| 30-32 | 60  | 9,5 | 48  | 72  | 58  | 5,5 | 24 | 36 | 28 |
| 30-32 | 77  | 9,5 | 48  | 72  | 58  | 5,5 | 31 | 46 | 28 |
| 38-40 | 47  | 11  | 58  | 85  | 70  | 6,6 | 17 | 30 | 33 |
| 38-40 | 60  | 11  | 58  | 85  | 70  | 6,6 | 24 | 36 | 33 |
| 38-40 | 77  | 11  | 58  | 85  | 70  | 6,6 | 31 | 46 | 33 |
| 48-50 | 60  | 14  | 70  | 104 | 86  | 9   | 24 | 36 | 38 |
| 48-50 | 77  | 14  | 70  | 104 | 86  | 9   | 31 | 46 | 38 |
| 48-50 | 95  | 14  | 70  | 104 | 86  | 9   | 49 | 46 | 38 |
| 48-50 | 120 | 14  | 70  | 104 | 86  | 9   | 64 | 56 | 38 |
| 60-63 | 95  | 14  | 85  | 120 | 100 | 9   | 49 | 46 | 46 |
| 60-63 | 120 | 14  | 85  | 120 | 100 | 9   | 64 | 56 | 46 |
| 80    | 120 | 18  | 105 | 148 | 125 | 11  | 64 | 56 | 56 |
| 80    | 135 | 18  | 105 | 148 | 125 | 11  | 59 | 76 | 56 |



FS 382/2

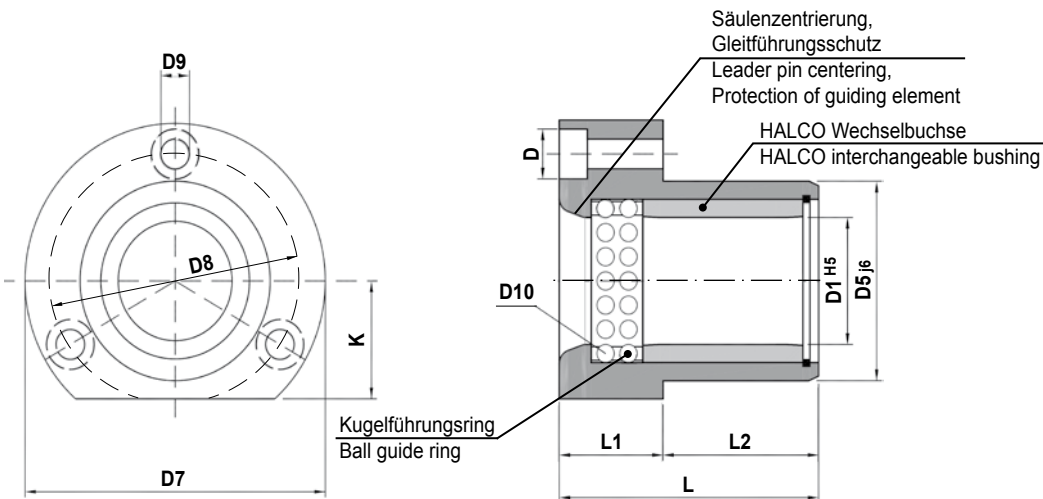
**Kombi-Führungselement:**  
Kugelführungsring zur Unterstützung der Säulenzentrierung kombiniert mit HALCO-Wechselbuchse  
Mat. Hochleistungs-Aluminium  
Oberflächenhärte = ~70 HRC  
wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Schrauben bitte gesondert bestellen.

**Combined guide element:**  
Ball guide ring for supporting the leader pin centering, combined with HALCO interchangeable bushing.  
Mat. High performance aluminum  
Surface hardness = ~ 70 HRC  
maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4  
Tolerance to be bored: H6  
Avoid pressing in  
Screws to be ordered separately.

FS 382/2 / 19 x 60



| D1    | L   | D5  | D7  | D8  | D9  | L1 | L2 | K  | D10     |
|-------|-----|-----|-----|-----|-----|----|----|----|---------|
| 19-20 | 60  | 32  | 52  | 40  | 4,5 | 24 | 36 | 18 | 3,5-3,0 |
| 24-25 | 60  | 40  | 63  | 50  | 5,5 | 30 | 30 | 23 | 3,5-3,0 |
| 30-32 | 60  | 48  | 72  | 58  | 5,5 | 24 | 36 | 28 | 5,0-4,0 |
| 30-32 | 77  | 48  | 72  | 58  | 5,5 | 31 | 46 | 28 | 5,0-4,0 |
| 38-40 | 60  | 58  | 85  | 70  | 6,6 | 24 | 36 | 33 | 5,0-4,0 |
| 38-40 | 77  | 58  | 85  | 70  | 6,6 | 31 | 46 | 33 | 5,0-4,0 |
| 48-50 | 77  | 70  | 104 | 86  | 9   | 31 | 46 | 38 | 6,0-5,0 |
| 48-50 | 95  | 70  | 104 | 86  | 9   | 49 | 46 | 38 | 6,0-5,0 |
| 48-50 | 120 | 70  | 104 | 86  | 9   | 64 | 56 | 38 | 6,0-5,0 |
| 60-63 | 95  | 85  | 120 | 100 | 9   | 49 | 46 | 46 | 6,5-5,0 |
| 60-63 | 120 | 85  | 120 | 100 | 9   | 64 | 56 | 46 | 6,5-5,0 |
| 80    | 120 | 105 | 148 | 125 | 11  | 64 | 56 | 56 | 6,0     |
| 80    | 135 | 105 | 148 | 125 | 11  | 59 | 76 | 56 | 6,0     |



FS 382/3

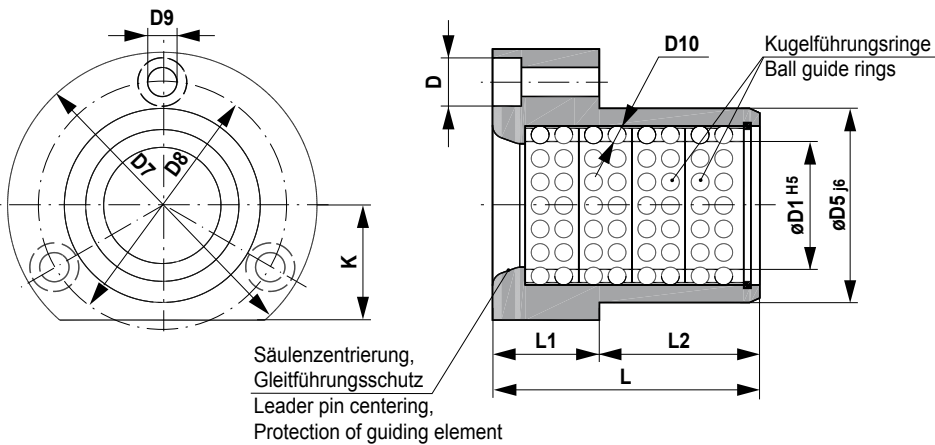
**Führungselement:**  
Endlos-Kugelführung für axiale und radiale Bewegung, wartungsfrei

**Stahl-Aufnahmebuchse:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Toleranz der Aufnahmebohrung: H6  
Einpressen vermeiden  
Schrauben bitte gesondert bestellen.

**Guiding element:**  
Endless ball guide for axial and radial movement, maintenance-free

**Receiving steel bushing:**  
~ DIN 9831 / ISO 9448  
Mat.: 42CrMo4, 61 - 63 HRC  
Tolerance to be bored: H6  
Avoid pressing in  
Screws to be ordered separately.

FS 382/3 / 20 x 60



| D1    | L   | D5  | D7  | D8  | D9  | L1 | L2 | K  | D10     |
|-------|-----|-----|-----|-----|-----|----|----|----|---------|
| 19-20 | 37  | 32  | 52  | 40  | 4,5 | 14 | 23 | 18 | 3,5-3,0 |
| 19-20 | 60  | 32  | 52  | 40  | 4,5 | 24 | 36 | 18 | 3,5-3,0 |
| 24-25 | 37  | 40  | 63  | 50  | 5,5 | 14 | 23 | 23 | 3,5-3,0 |
| 24-25 | 47  | 40  | 63  | 50  | 5,5 | 24 | 23 | 23 | 3,5-3,0 |
| 24-25 | 60  | 40  | 63  | 50  | 5,5 | 30 | 30 | 23 | 3,5-3,0 |
| 30-32 | 60  | 48  | 72  | 58  | 5,5 | 24 | 36 | 28 | 5,0-4,0 |
| 30-32 | 77  | 48  | 72  | 58  | 5,5 | 31 | 46 | 28 | 5,0-4,0 |
| 38-40 | 47  | 58  | 85  | 70  | 6,6 | 17 | 30 | 33 | 5,0-4,0 |
| 38-40 | 60  | 58  | 85  | 70  | 6,6 | 24 | 36 | 33 | 5,0-4,0 |
| 38-40 | 77  | 58  | 85  | 70  | 6,6 | 31 | 46 | 33 | 5,0-4,0 |
| 48-50 | 60  | 70  | 104 | 86  | 9   | 24 | 36 | 38 | 6,0-5,0 |
| 48-50 | 77  | 70  | 104 | 86  | 9   | 31 | 46 | 38 | 6,0-5,0 |
| 48-50 | 95  | 70  | 104 | 86  | 9   | 49 | 46 | 38 | 6,0-5,0 |
| 48-50 | 120 | 70  | 104 | 86  | 9   | 64 | 56 | 38 | 6,0-5,0 |
| 60-63 | 95  | 85  | 120 | 100 | 9   | 49 | 46 | 46 | 6,5-5,0 |
| 60-63 | 120 | 85  | 120 | 100 | 9   | 64 | 56 | 46 | 6,5-5,0 |
| 80    | 120 | 105 | 148 | 125 | 11  | 64 | 56 | 56 | 6,0     |
| 80    | 135 | 105 | 148 | 125 | 11  | 59 | 76 | 56 | 6,0     |



Führungsbuchsen mit Bund, Kugelführung, M-Line

Leader pin bushings with collar, ball bearing, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

mit langem Bund/long-headed style

FS 358  
FS 353

Mat.: 1.7131 / 61 - 63 HRC

Mat.: 1.7131 / 61 - 63 HRC

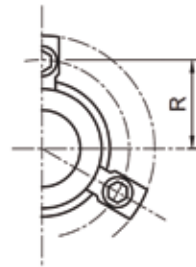
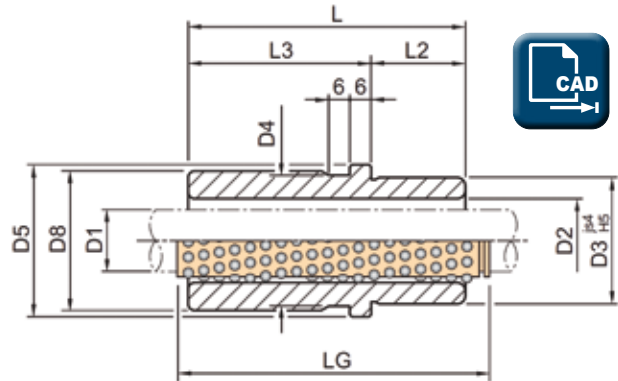
Lieferumfang:

- 3 Halteklammern mit Schrauben

Included:

- 3 holding clamps with screws

FS 358 / 25 x 59



Führungsbuchsen können auch  
RM-beschichtet werden /  
Leader pin bushings can be  
delivered RM-coated.

mit kurzem Bund/short-headed style

FS 357



| D1    | D2    | D3  | D4  | D5  | D8  | Artikelnummer<br>Article number | R    | L   | L2 | L3 | Vorschlag<br>Proposal<br>LG |
|-------|-------|-----|-----|-----|-----|---------------------------------|------|-----|----|----|-----------------------------|
| 19-20 | 25-26 | 32  | 32  | 40  | –   | FS 357                          | 26   | 35  | 23 | 12 | 45                          |
| 19-20 | 25-26 | 32  | 32  | 40  | 39  | FS 358                          | 26   | 43  | 23 | 20 | 56                          |
| 19-20 | 25-26 | 32  | 32  | 40  | 39  | FS 353                          | 26   | 59  | 23 | 36 | 71                          |
| 24-25 | 30-31 | 40  | 40  | 48  | –   | FS 357                          | 30   | 35  | 23 | 12 | 45                          |
| 24-25 | 30-31 | 40  | 40  | 48  | 46  | FS 358                          | 30   | 59  | 23 | 36 | 71                          |
| 24-25 | 30-31 | 40  | 40  | 48  | 46  | FS 353                          | 30   | 79  | 23 | 56 | 95                          |
| 30-32 | 38-40 | 48  | 48  | 56  | –   | FS 357                          | 33,5 | 42  | 30 | 12 | 56                          |
| 30-32 | 38-40 | 48  | 48  | 56  | 53  | FS 358                          | 33,5 | 75  | 30 | 45 | 95                          |
| 30-32 | 38-40 | 48  | 48  | 56  | 53  | FS 353                          | 33,5 | 93  | 30 | 63 | 120                         |
| 38-40 | 46-48 | 58  | 58  | 66  | –   | FS 357                          | 38,5 | 52  | 37 | 15 | 63                          |
| 38-40 | 46-48 | 58  | 58  | 66  | 63  | FS 358                          | 38,5 | 82  | 37 | 45 | 105                         |
| 38-40 | 46-48 | 58  | 58  | 66  | 63  | FS 353                          | 38,5 | 108 | 37 | 71 | 120                         |
| 48-50 | 56-58 | 70  | 70  | 80  | –   | FS 357                          | 45,5 | 65  | 47 | 18 | 80                          |
| 48-50 | 56-58 | 70  | 70  | 80  | 77  | FS 358                          | 45,5 | 97  | 47 | 50 | 120                         |
| 48-50 | 56-58 | 70  | 70  | 80  | 77  | FS 353                          | 45,5 | 127 | 47 | 80 | 140                         |
| 60-63 | 68-71 | 85  | 85  | 95  | –   | FS 357                          | 53   | 80  | 60 | 20 | 95                          |
| 60-63 | 68-71 | 85  | 85  | 95  | 92  | FS 358                          | 53   | 116 | 60 | 56 | 140                         |
| 60-63 | 68-71 | 85  | 85  | 95  | 92  | FS 353                          | 53   | 150 | 60 | 90 | 160                         |
| 80    | 92    | 105 | 105 | 118 | –   | FS 357                          | 64,5 | 80  | 60 | 20 | 120                         |
| 80    | 92    | 105 | 105 | 118 | 115 | FS 358                          | 64,5 | 120 | 60 | 60 | 140                         |
| 80    | 92    | 105 | 105 | 118 | 115 | FS 353                          | 64,5 | 150 | 60 | 90 | 160                         |

Kugelkäfige aus Messing, M-Line

Ball cages, brass, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 325

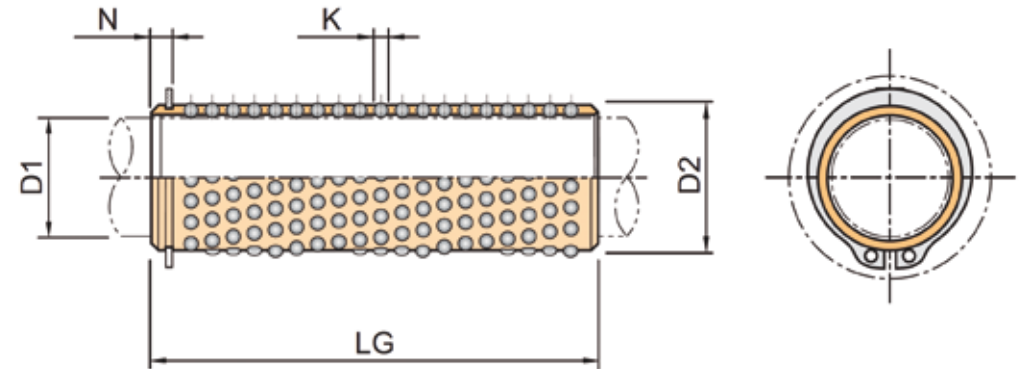
Mat.: Messing  
Stahlkugeln: Güteklasse AAA

Mat.: Brass  
Steel balls, grade AAA

Sicherungsring im Lieferumfang  
enthalten.

Safety ring included

FS 325 / 25 x 71



| D1 | LG |    |    |    |    |    |    |    |     |     |     |     |     |     |     | D2 | K | N    |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|---|------|
|    | 40 | 45 | 50 | 56 | 63 | 71 | 80 | 95 | 105 | 120 | 140 | 160 | 180 | 200 | 240 |    |   |      |
| 19 |    | ●  |    | ●  |    | ●  | ●  | ●  |     |     |     |     |     |     |     | 25 | 3 | 2,9  |
| 20 |    | ●  |    | ●  |    | ●  | ●  | ●  |     |     |     |     |     |     |     | 26 | 3 | 2,9  |
| 24 | ●  | ●  |    | ●  |    | ●  | ●  | ●  |     | ●   |     |     |     |     |     | 30 | 3 | 3,2  |
| 25 | ●  | ●  |    | ●  |    | ●  | ●  | ●  |     | ●   |     |     |     |     |     | 31 | 3 | 3,2  |
| 30 | ●  | ●  | ●  | ●  |    | ●  | ●  | ●  | ●   | ●   | ●   | ●   |     |     |     | 38 | 4 | 3,95 |
| 32 | ●  | ●  | ●  | ●  |    | ●  | ●  | ●  | ●   | ●   | ●   | ●   |     |     |     | 40 | 4 | 3,95 |
| 38 |    | ●  | ●  | ●  | ●  |    | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 46 | 4 | 3,95 |
| 40 |    | ●  | ●  | ●  | ●  |    | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 48 | 4 | 3,95 |
| 48 |    |    | ●  |    | ●  |    | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 56 | 4 | 4,25 |
| 50 |    |    | ●  |    | ●  |    | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 58 | 4 | 4,25 |
| 60 |    |    |    |    |    |    |    | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 68 | 4 | 4,75 |
| 63 |    |    |    |    |    |    |    | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | 71 | 4 | 4,75 |
| 80 |    |    |    |    |    |    |    |    |     | ●   | ●   | ●   | ●   | ●   | ●   | 92 | 6 | 6,15 |

Haltestücke / Haltescheiben, M-Line

Holding clamps / Holding discs, M-Line

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



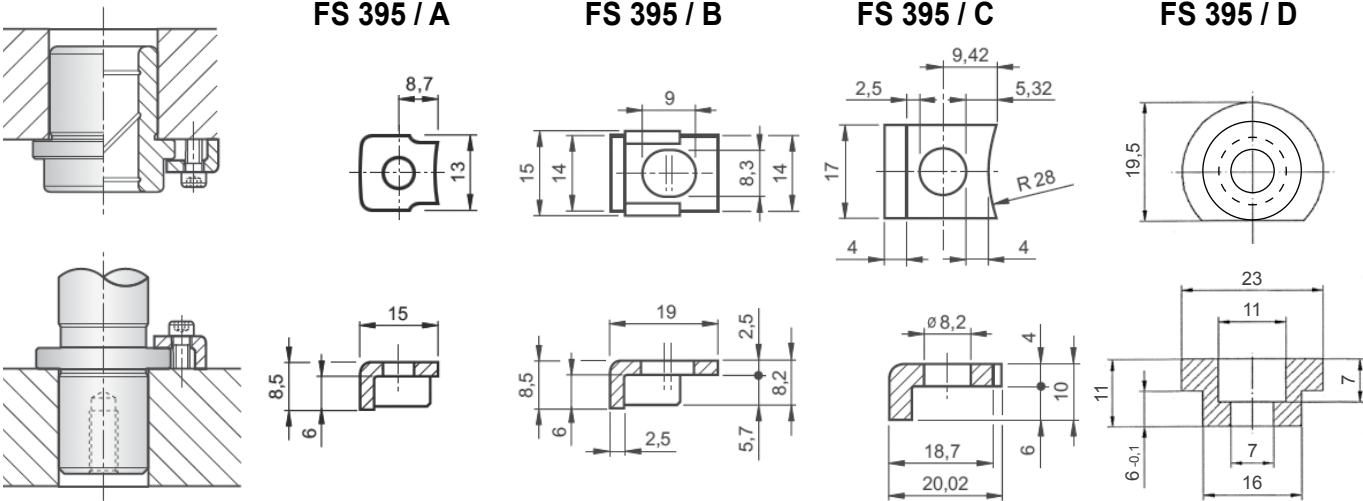
FS 395 / A - D

FS 395 / A für Ø 19-20, 24-25  
FS 395 / B für Ø 19-20, 24-25, 30-32, 38-40, 48-50, 60-63, 80  
FS 395 / C für Ø 30-32, 38-40, 48-50, 60-63, 80  
FS 395 / A for Ø 19-20, 24-25  
FS 395 / B for Ø 19-20, 24-25, 30-32, 38-40, 48-50, 60-63, 80  
FS 395 / C for Ø 30-32, 38-40, 48-50, 60-63, 80

FS 395 / A



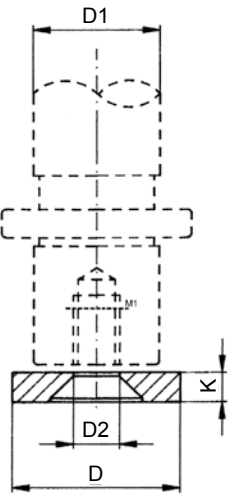
Haltestücke werden mit Schrauben geliefert.  
Holding clamps include screws.



FS 398

Mat.: C 40, brüniert  
Scheibe wird mit Schraube befestigt  
Mat.: C 40, gunmetal-finished  
Mount disc with screw.

FS 398 / 1



| Ausführung<br>Style | D1    | D  | K  | D2   |
|---------------------|-------|----|----|------|
| 1                   | 19-20 | 25 | 6  | 8,5  |
| 2                   | 24-25 | 32 | 6  | 8,5  |
| 3                   | 30-32 | 40 | 6  | 8,5  |
| 4                   | 38-40 | 50 | 6  | 8,5  |
| 5                   | 48-50 | 60 | 6  | 8,5  |
| 6                   | 60-63 | 70 | 6  | 8,5  |
| 7                   | 80    | 93 | 12 | 12,5 |

Führungssäulen, zylindrisch, zum Einpressen, DIN 9825

Leader pins, cylindrical, for press fitting, DIN 9825

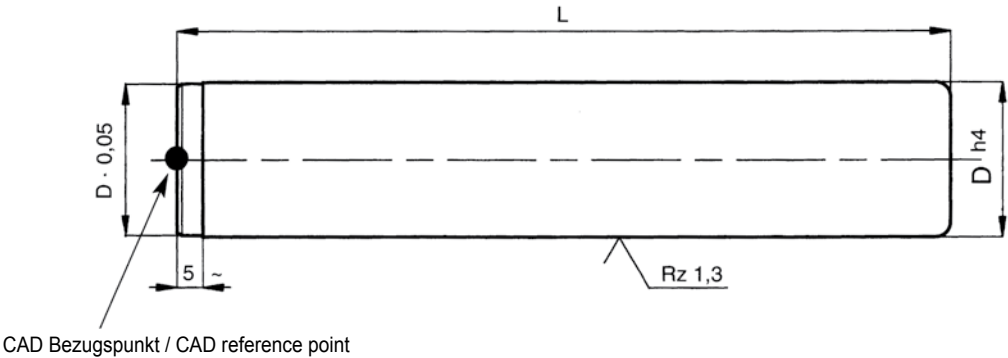
FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



FS 420

Mat.: 1.5732 / 61 - 63 HRC  
Mat.: 1.5732 / 61 - 63 HRC

FS 420 / 24 x 200



| D     | L   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Aufnahmebohrung<br>Mounting hole<br>R7 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------------------------------|
|       | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 210 | 220 | 230 | 240 | 250 | 260 | 270 | 280 | 300 | 320 | 350 |                                        |
| 18-19 | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     |     |     |     |     |     |     | -0,020<br>-0,041                       |
| 24-25 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     | -0,020<br>-0,041                       |
| 30-32 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     | -0,025<br>-0,050                       |
| 40-42 |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | -0,025<br>-0,050                       |
| 50-52 |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | -0,030<br>-0,060                       |
| 63    |     |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | -0,030<br>-0,060                       |
| 80    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | •   | •   | •   | •   | -0,032<br>-0,062                       |



FS 419

Mat.: 1.5732 / 61 - 63 HRC

Mat.: 1.5732 / 61 - 63 HRC

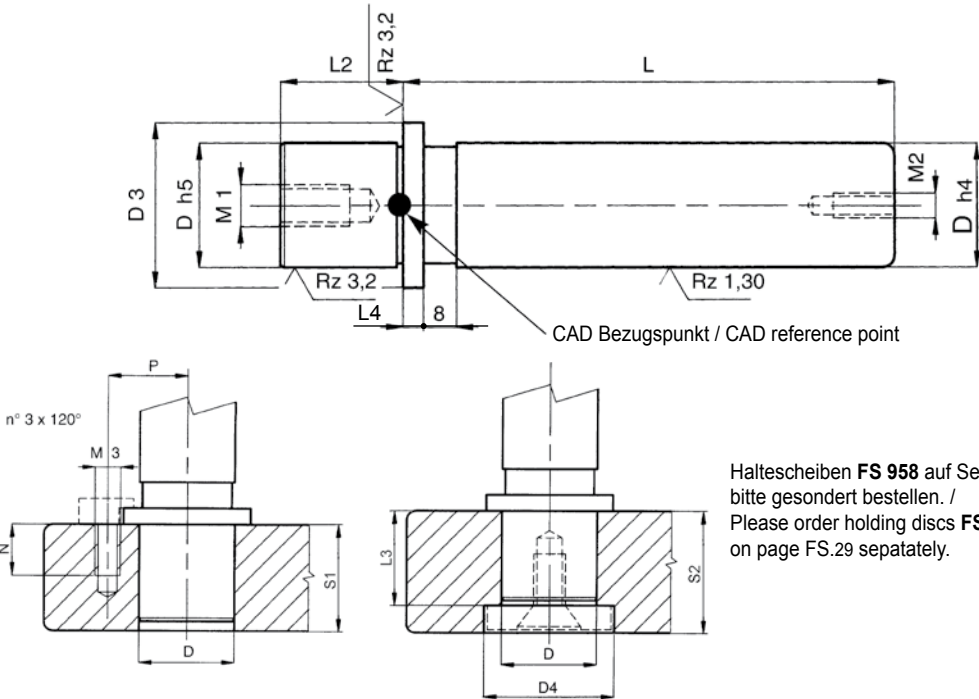
FS 419 / 25 x 160

Lieferumfang:

- 3 Halteklammern mit Schrauben (D ≤ 80 mm)

Included:

- 3 holding clamps with screws (D ≤ 80 mm)



Haltescheiben **FS 958** auf Seite FS.29  
bitte gesondert bestellen. /  
Please order holding discs **FS 958**  
on page FS.29 separately.



| D   | D3  | D4  | L2 | L3 | L4 | M1  | M2  | M3 | N  | P    | S1min | S2min |
|-----|-----|-----|----|----|----|-----|-----|----|----|------|-------|-------|
| 18  | 25  | 27  | 20 | 21 | 5  | M8  | M6  | M6 | 12 | 16   | 23    | 28    |
| 19  | 25  | 27  | 20 | 21 | 5  | M8  | M6  | M6 | 12 | 16   | 23    | 28    |
| 24  | 32  | 34  | 25 | 26 | 5  | M10 | M6  | M6 | 12 | 19,5 | 28    | 33    |
| 25  | 32  | 34  | 25 | 26 | 5  | M10 | M6  | M6 | 12 | 19,5 | 28    | 33    |
| 30  | 40  | 41  | 30 | 31 | 5  | M10 | M6  | M8 | 16 | 25   | 33    | 38    |
| 32  | 40  | 41  | 30 | 31 | 5  | M10 | M6  | M8 | 16 | 25   | 33    | 38    |
| 40  | 50  | 52  | 35 | 36 | 5  | M12 | M8  | M8 | 16 | 30   | 38    | 48    |
| 42  | 50  | 52  | 35 | 36 | 5  | M12 | M8  | M8 | 16 | 30   | 38    | 48    |
| 50  | 62  | 64  | 45 | 46 | 5  | M12 | M8  | M8 | 16 | 36   | 48    | 58    |
| 52  | 62  | 64  | 45 | 46 | 5  | M12 | M8  | M8 | 16 | 36   | 48    | 58    |
| 63  | 73  | 75  | 49 | 50 | 5  | M12 | M10 | M8 | 16 | 41,5 | 53    | 63    |
| 80  | 93  | 95  | 59 | 60 | 5  | M12 | M10 | M8 | 16 | 51,5 | 63    | 73    |
| 100 | 120 | 122 | 80 | 81 | 8  | M16 | M16 | —  | —  | —    | —     | 104   |

| D     | L   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Aufnahmebohrung<br>Mounting hole<br>JS6 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------------------------|
|       | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 |                                         |
| 18-19 | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     |     |     |     |     | ±0,006                                  |
| 24-25 | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     |     |     | ±0,006                                  |
| 30-32 |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   |     |     |     |     |     | ±0,006                                  |
| 40-42 |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | ±0,006                                  |
| 50-52 |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | •   | ±0,006                                  |
| 63    |     |     |     |     |     |     | •   |     | •   | •   | •   | •   | •   | •   | •   | •   | ±0,010                                  |
| 80    |     |     |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | •   | •   | ±0,010                                  |
| 100   |     |     |     |     |     |     |     |     |     |     | •   | •   | •   | •   | •   | •   | ±0,010                                  |



FS 410

Mat.: Stahl

Oberflächenhärte: 60 - 64 HRC

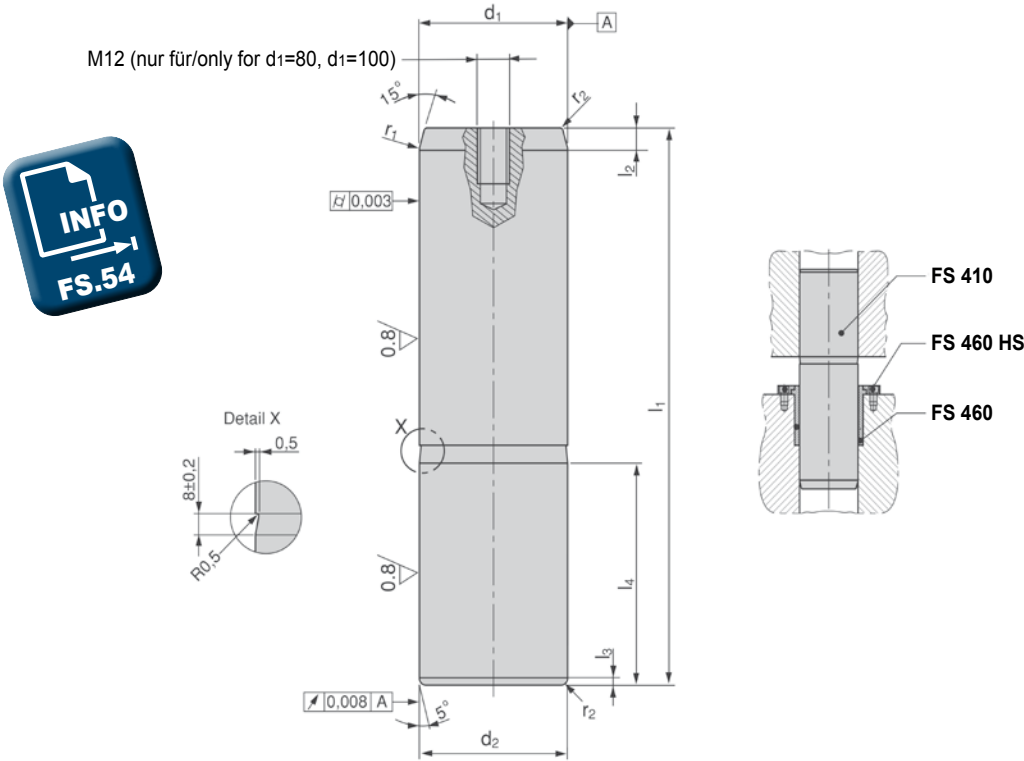
Einhärtungstiefe: 1,5 + 1 mm

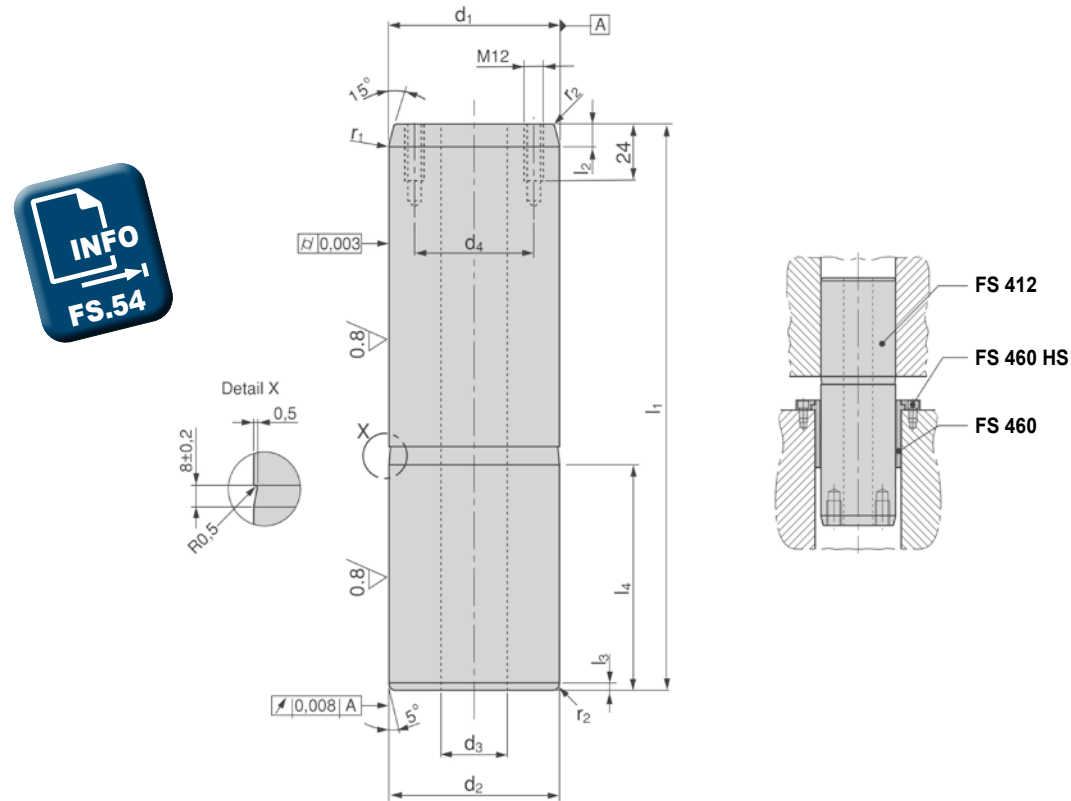
Mat.: steel

Surface hardness: 60 - 64 HRC

Hardening depth: 1,5 + 1 mm

FS 410 / 50 x 200



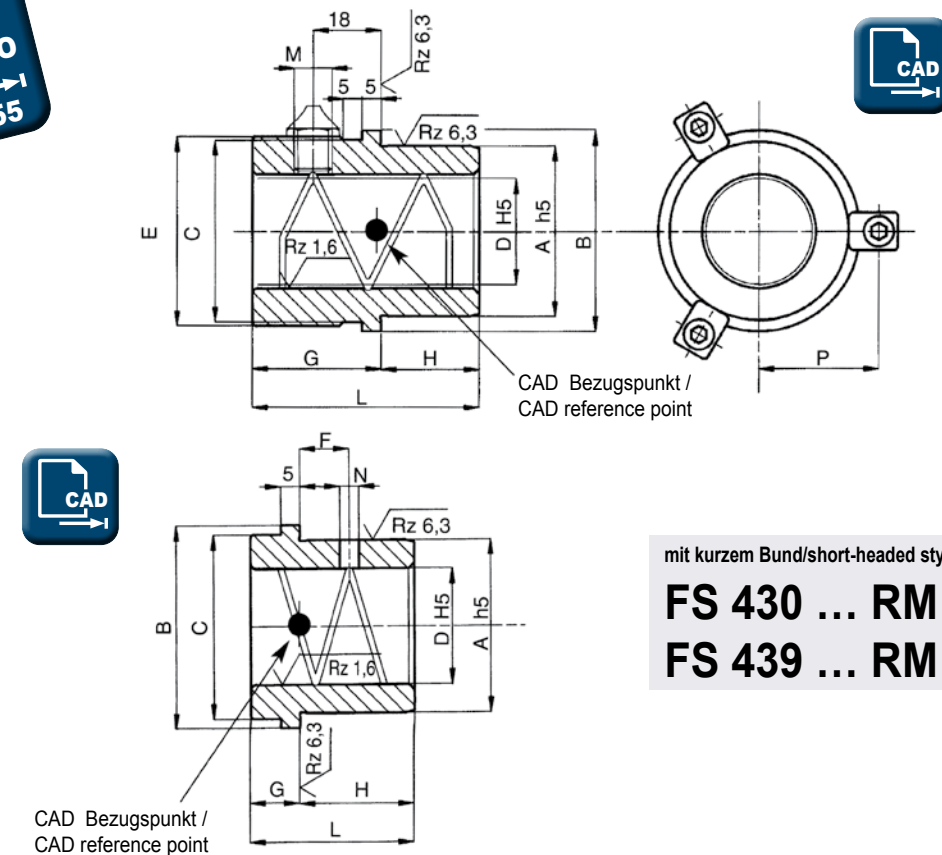
 **FS 412 / 50 x 200**

| d1  | l1  |     |     |     |     |     |     |     |     |     | l2   | l3   | l4   | d2  | d3 | d4   | r1 | r2 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|----|------|----|----|
| f6  | 200 | 224 | 250 | 280 | 315 | 355 | 400 | 450 | 500 | 560 | +0,8 | +0,8 | +0,8 | r6  | ±2 | +0,8 |    |    |
| 80  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |     | 10   | 4    | 100  | 80  | 40 | 58   | 8  | 3  |
| 100 |     | ●   | ●   | ●   | ●   | ●   | ●   | ●   |     |     | 10   | 4    | 125  | 100 | 50 | 72   | 10 | 3  |
| 125 |     |     |     |     | ●   | ●   | ●   | ●   | ●   |     | 12   | 4    | 140  | 125 | 65 | 90   | 12 | 4  |
| 160 |     |     |     |     |     |     | ●   | ●   | ●   | ●   | 12   | 5    | 180  | 160 | 95 | 132  | 18 | 4  |

 **FS 450 / 40 x 90 / RM**

Included:

- 3 holding clamps with screws



FS 430 ... RM  
FS 439 ... RM



| D     | A  | B  | C  | Artikelnummer<br>Article number | E  | F  | G  | H  | L   | M       | N | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|-------|----|----|----|---------------------------------|----|----|----|----|-----|---------|---|------|----------------------------------------|
| 18-19 | 28 | 34 | 29 | FS 430 ... RM                   | –  | 8  | 13 | 18 | 31  | –       | 5 | 20,5 | 28 <sup>+0,013</sup>                   |
| 18-19 | 28 | 34 | 29 | FS 439 ... RM                   | –  | 8  | 13 | 37 | 50  | –       | 5 | 20,5 | 28 <sup>+0,013</sup>                   |
| 18-19 | 28 | 34 | 29 | FS 440 ... RM                   | 31 | –  | 32 | 18 | 50  | M6      | – | 20,5 | 28 <sup>+0,013</sup>                   |
| 18-19 | 28 | 34 | 29 | FS 450 ... RM                   | 31 | –  | 33 | 27 | 60  | M6      | – | 20,5 | 28 <sup>+0,013</sup>                   |
| 24-25 | 38 | 44 | 39 | FS 430 ... RM                   | –  | 9  | 13 | 23 | 36  | –       | 5 | 25,5 | 38 <sup>+0,016</sup>                   |
| 24-25 | 38 | 44 | 39 | FS 439 ... RM                   | –  | 12 | 13 | 42 | 55  | –       | 5 | 25,5 | 38 <sup>+0,016</sup>                   |
| 24-25 | 38 | 44 | 39 | FS 440 ... RM                   | 41 | –  | 32 | 23 | 55  | M10 x 1 | – | 25,5 | 38 <sup>+0,016</sup>                   |
| 24-25 | 38 | 44 | 39 | FS 450 ... RM                   | 41 | –  | 38 | 32 | 70  | M10 x 1 | – | 25,5 | 38 <sup>+0,016</sup>                   |
| 30-32 | 45 | 53 | 48 | FS 430 ... RM                   | –  | 11 | 13 | 30 | 43  | –       | 5 | 31,5 | 45 <sup>+0,016</sup>                   |
| 30-32 | 45 | 53 | 48 | FS 439 ... RM                   | –  | 19 | 13 | 47 | 60  | –       | 5 | 31,5 | 45 <sup>+0,016</sup>                   |
| 30-32 | 45 | 53 | 48 | FS 440 ... RM                   | 50 | –  | 34 | 26 | 60  | M10 x 1 | – | 31,5 | 45 <sup>+0,016</sup>                   |
| 30-32 | 45 | 53 | 48 | FS 450 ... RM                   | 50 | –  | 43 | 37 | 80  | M10 x 1 | – | 31,5 | 45 <sup>+0,016</sup>                   |
| 40-42 | 54 | 63 | 58 | FS 430 ... RM                   | –  | 11 | 13 | 38 | 51  | –       | 8 | 36,5 | 54 <sup>+0,019</sup>                   |
| 40-42 | 54 | 63 | 58 | FS 439 ... RM                   | –  | 19 | 13 | 54 | 67  | –       | 8 | 36,5 | 54 <sup>+0,019</sup>                   |
| 40-42 | 54 | 63 | 58 | FS 440 ... RM                   | 60 | –  | 37 | 30 | 67  | M10 x 1 | – | 36,5 | 54 <sup>+0,019</sup>                   |
| 40-42 | 54 | 63 | 58 | FS 450 ... RM                   | 60 | –  | 43 | 47 | 90  | M10 x 1 | – | 36,5 | 54 <sup>+0,019</sup>                   |
| 50-52 | 65 | 79 | 74 | FS 430 ... RM                   | –  | 14 | 13 | 48 | 61  | –       | 8 | 44,5 | 65 <sup>+0,019</sup>                   |
| 50-52 | 65 | 79 | 74 | FS 439 ... RM                   | –  | 19 | 13 | 62 | 75  | –       | 8 | 44,5 | 65 <sup>+0,019</sup>                   |
| 50-52 | 65 | 79 | 74 | FS 440 ... RM                   | 76 | –  | 40 | 35 | 75  | M10 x 1 | – | 44,5 | 65 <sup>+0,019</sup>                   |
| 50-52 | 65 | 79 | 74 | FS 450 ... RM                   | 76 | –  | 43 | 57 | 100 | M10 x 1 | – | 44,5 | 65 <sup>+0,019</sup>                   |

Führungsbuchsen mit Bund, Stahlführung

Leader pin bushings with collar, steel

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



mit langem Bund/long-headed style

FS 741

FS 751

FS 755

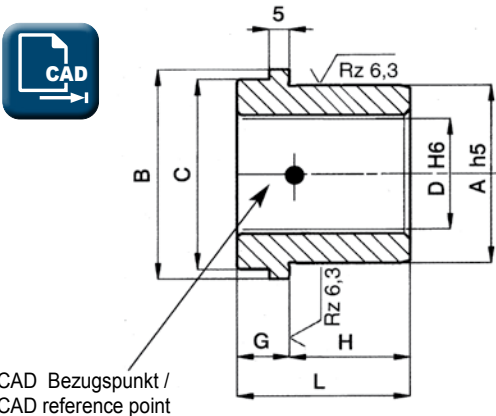
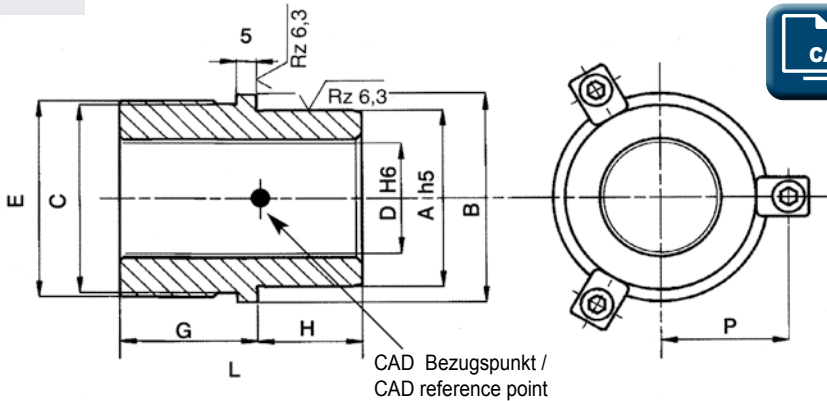
Mat.: Stahl 61 - 63 HRC  
Sinter: 40 - 50 HRC

Lieferumfang:  
• 3 Halteklammern mit Schrauben

Mat.: Steel 61 - 63 HRC  
Sinter: 40 - 50 HRC

Included:  
• 3 holding clamps with screws

FS 751 / 30 x 90



mit kurzem Bund/short-headed style

FS 731

FS 732



| D     | A  | B  | C  | Artikelnummer<br>Article number | E  | G  | H  | L   | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|-------|----|----|----|---------------------------------|----|----|----|-----|------|----------------------------------------|
| 18-19 | 28 | 34 | 29 | FS 731                          | –  | 13 | 18 | 31  | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 732                          | –  | 13 | 37 | 50  | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 741                          | 31 | 32 | 18 | 50  | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 751                          | 31 | 43 | 27 | 70  | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 755                          | 31 | 52 | 18 | 70  | 20,5 | 28+0,013                               |
| 24-25 | 38 | 44 | 39 | FS 731                          | –  | 13 | 23 | 36  | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 732                          | –  | 13 | 42 | 55  | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 741                          | 41 | 32 | 23 | 55  | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 751                          | 41 | 48 | 32 | 80  | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 755                          | 41 | 57 | 23 | 80  | 25,5 | 38+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 731                          | –  | 13 | 30 | 43  | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 732                          | –  | 13 | 47 | 60  | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 741                          | 50 | 34 | 26 | 60  | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 751                          | 50 | 53 | 37 | 90  | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 755                          | 50 | 64 | 26 | 90  | 31,5 | 45+0,016                               |
| 40-42 | 54 | 63 | 58 | FS 731                          | –  | 13 | 38 | 51  | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 732                          | –  | 13 | 54 | 67  | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 741                          | 60 | 37 | 30 | 67  | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 751                          | 60 | 53 | 47 | 100 | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 755                          | 60 | 70 | 30 | 100 | 36,5 | 54+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 731                          | –  | 13 | 48 | 61  | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 732                          | –  | 13 | 62 | 75  | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 741                          | 76 | 40 | 35 | 75  | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 751                          | 76 | 53 | 57 | 110 | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 755                          | 76 | 75 | 35 | 110 | 44,5 | 65+0,019                               |

Führungsbuchsen mit Bund, Stahlführung

Leader pin bushings with collar, steel

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



mit langem Bund/long-headed style

FS 741

FS 751

FS 755

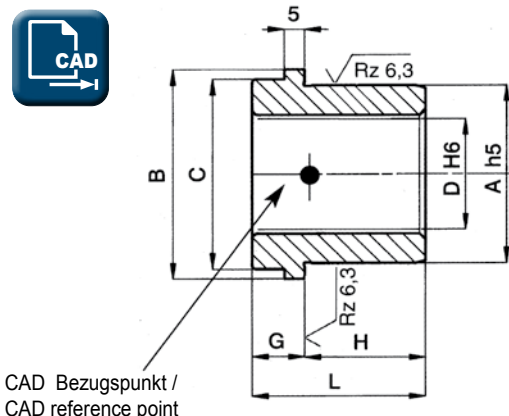
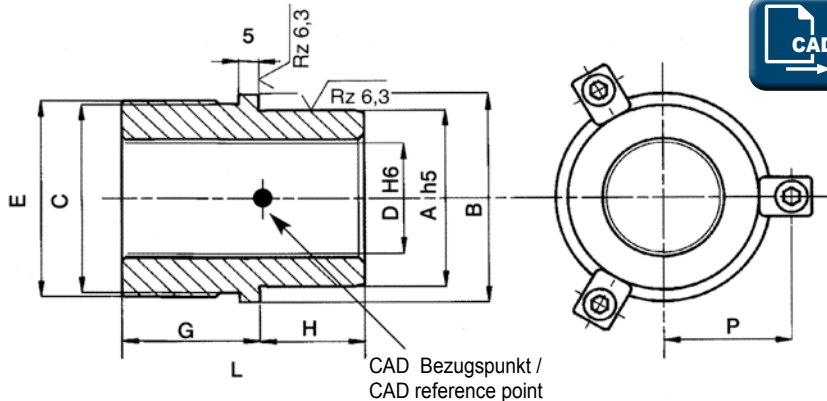
Mat.: Stahl 61 - 63 HRC  
Sinter: 40 - 50 HRC

Lieferumfang:  
• 3 Halteklammern mit Schrauben

Mat.: Steel 61 - 63 HRC  
Sinter: 40 - 50 HRC

Included:  
• 3 holding clamps with screws

FS 751 / 63 x 130



mit kurzem Bund/short-headed style

FS 731

FS 732



| D  | A   | B   | C   | Artikelnummer<br>Article number | E   | G   | H  | L   | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|----|-----|-----|-----|---------------------------------|-----|-----|----|-----|------|----------------------------------------|
| 63 | 81  | 92  | 87  | FS 731                          | –   | 13  | 61 | 74  | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 732                          | –   | 13  | 77 | 90  | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 741                          | 89  | 42  | 48 | 90  | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 751                          | 89  | 63  | 67 | 130 | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 755                          | 89  | 82  | 48 | 130 | 51   | 81+0,022                               |
| 80 | 100 | 111 | 106 | FS 731                          | –   | 13  | 78 | 91  | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 741                          | 108 | 52  | 48 | 100 | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 751                          | 108 | 73  | 77 | 150 | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 755                          | 108 | 102 | 48 | 150 | 60,5 | 100+0,022                              |



Führungsbuchsen mit Bund, Bronze beschichtet

Leader pin bushings with collar, bronze plated

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



mit langem Bund/long-headed style

FS 641

FS 651

FS 655

Mat.: 1.6757 / 61 - 63 HRC  
Bronze: 40 - 45 HRC

Mat.: 1.6757 / 61 - 63 HRC  
Bronze: 40 - 45 HRC

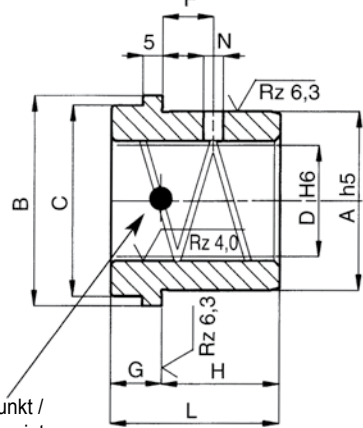
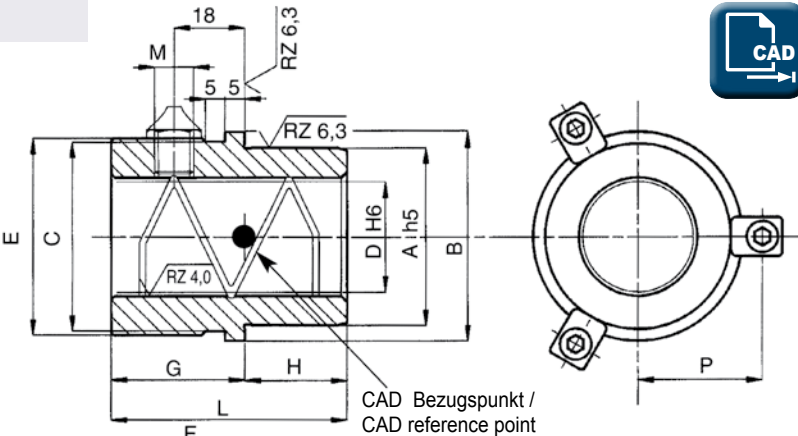
FS 651 / 30 x 90

Lieferumfang:

- 3 Halteklammern mit Schrauben

Included:

- 3 holding clamps with screws



mit kurzem Bund/short-headed style

FS 631

FS 632

CAD Bezugspunkt /  
CAD reference point



| D     | A  | B  | C  | Artikelnummer<br>Article number | E  | F  | G  | H  | L   | M       | N | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|-------|----|----|----|---------------------------------|----|----|----|----|-----|---------|---|------|----------------------------------------|
| 18-19 | 28 | 34 | 29 | FS 631                          | –  | 8  | 13 | 18 | 31  | –       | 5 | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 632                          | –  | 8  | 13 | 37 | 50  | –       | 5 | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 641                          | 31 | –  | 32 | 18 | 50  | M6      | – | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 651                          | 31 | –  | 43 | 27 | 70  | M6      | – | 20,5 | 28+0,013                               |
| 18-19 | 28 | 34 | 29 | FS 655                          | 31 | –  | 52 | 18 | 70  | M6      | – | 20,5 | 28+0,013                               |
| 24-25 | 38 | 44 | 39 | FS 631                          | –  | 12 | 13 | 23 | 36  | –       | 5 | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 632                          | –  | 12 | 13 | 42 | 55  | –       | 5 | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 641                          | 41 | –  | 32 | 23 | 55  | M10 x 1 | – | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 651                          | 41 | –  | 48 | 32 | 80  | M10 x 1 | – | 25,5 | 38+0,016                               |
| 24-25 | 38 | 44 | 39 | FS 655                          | 41 | –  | 57 | 23 | 80  | M10 x 1 | – | 25,5 | 38+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 631                          | –  | 16 | 13 | 30 | 43  | –       | 5 | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 632                          | –  | 16 | 13 | 47 | 60  | –       | 5 | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 641                          | 50 | –  | 34 | 26 | 60  | M10 x 1 | – | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 651                          | 50 | –  | 53 | 37 | 90  | M10 x 1 | – | 31,5 | 45+0,016                               |
| 30-32 | 45 | 53 | 48 | FS 655                          | 50 | –  | 64 | 26 | 90  | M10 x 1 | – | 31,5 | 45+0,016                               |
| 40-42 | 54 | 63 | 58 | FS 631                          | –  | 19 | 13 | 38 | 51  | –       | 8 | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 632                          | –  | 19 | 13 | 54 | 67  | –       | 8 | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 641                          | 60 | –  | 37 | 30 | 67  | M10 x 1 | – | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 651                          | 60 | –  | 53 | 47 | 100 | M10 x 1 | – | 36,5 | 54+0,019                               |
| 40-42 | 54 | 63 | 58 | FS 655                          | 60 | –  | 70 | 30 | 100 | M10 x 1 | – | 36,5 | 54+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 631                          | –  | 19 | 13 | 48 | 61  | –       | 8 | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 632                          | –  | 19 | 13 | 62 | 75  | –       | 8 | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 641                          | 76 | –  | 40 | 35 | 75  | M10 x 1 | – | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 651                          | 76 | –  | 53 | 57 | 110 | M10 x 1 | – | 44,5 | 65+0,019                               |
| 50-52 | 65 | 79 | 74 | FS 655                          | 76 | –  | 75 | 35 | 110 | M10 x 1 | – | 44,5 | 65+0,019                               |

Führungsbuchsen mit Bund, Bronze beschichtet

Leader pin bushings with collar, bronze plated

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



mit langem Bund/long-headed style

FS 641

FS 651

FS 655

Mat.: 1.6757 / 61 - 63 HRC  
Bronze: 40 - 45 HRC

Mat.: 1.6757 / 61 - 63 HRC  
Bronze: 40 - 45 HRC

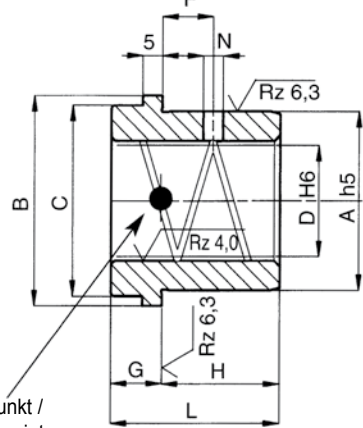
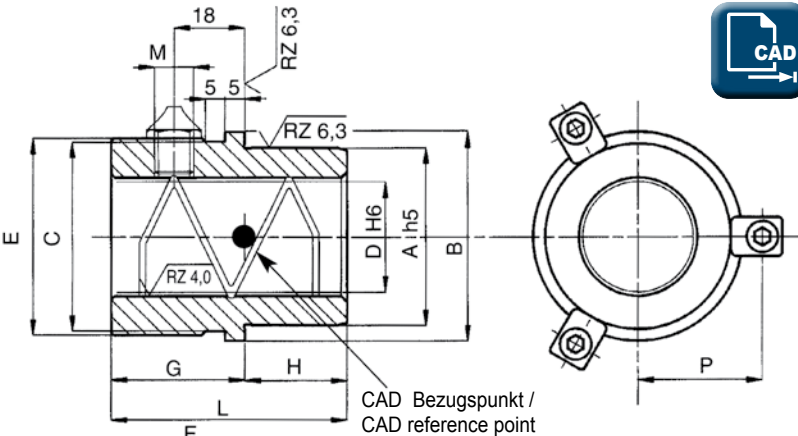
FS 651 / 63 x 130

Lieferumfang:

- 3 Halteklammern mit Schrauben

Included:

- 3 holding clamps with screws



mit kurzem Bund/short-headed style

FS 631

FS 632

CAD Bezugspunkt /  
CAD reference point



| D  | A   | B   | C   | Artikelnummer<br>Article number | E   | F  | G   | H  | L   | M       | N | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|----|-----|-----|-----|---------------------------------|-----|----|-----|----|-----|---------|---|------|----------------------------------------|
| 63 | 81  | 92  | 87  | FS 631                          | –   | 19 | 13  | 61 | 74  | –       | 8 | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 632                          | –   | 19 | 13  | 77 | 90  | –       | 8 | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 641                          | 89  | –  | 42  | 48 | 90  | M10 x 1 | – | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 651                          | 89  | –  | 63  | 67 | 130 | M10 x 1 | – | 51   | 81+0,022                               |
| 63 | 81  | 92  | 87  | FS 655                          | 89  | –  | 82  | 48 | 130 | M10 x 1 | – | 51   | 81+0,022                               |
| 80 | 100 | 111 | 106 | FS 631                          | –   | 19 | 13  | 78 | 91  | –       | 8 | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 641                          | 108 | –  | 52  | 48 | 100 | –       | 8 | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 651                          | 108 | –  | 73  | 77 | 150 | M10 x 1 | – | 60,5 | 100+0,022                              |
| 80 | 100 | 111 | 106 | FS 655                          | 108 | –  | 102 | 48 | 150 | M10 x 1 | – | 60,5 | 100+0,022                              |



Führungsbuchsen mit Bund, Kugelführung

Leader pin bushings with collar, ball bearing

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



FS 457  
FS 458  
FS 453

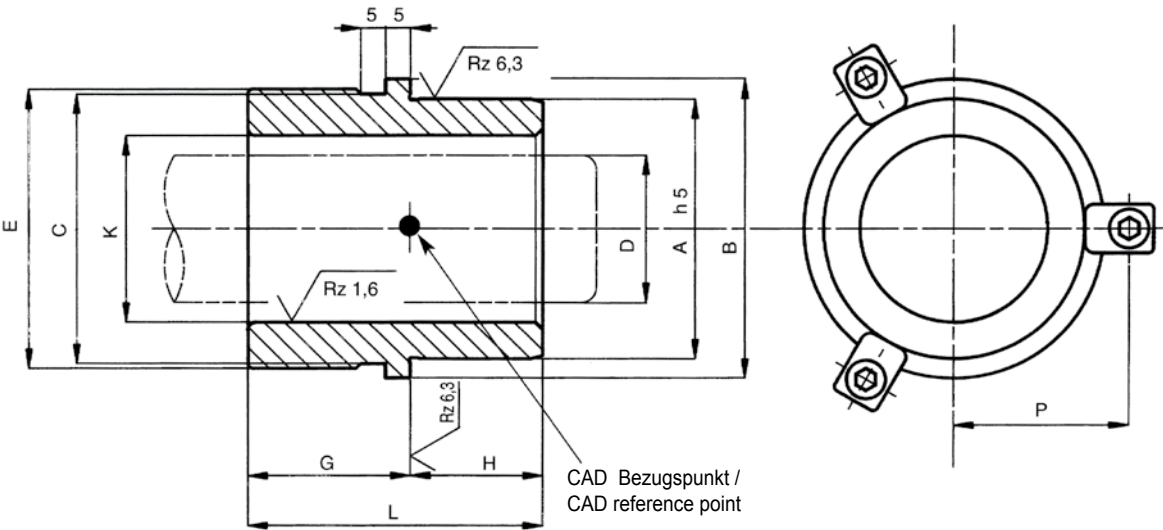
Mat.: 1.6757 / 61 - 63 HRC

Mat.: 1.6757 / 61 - 63 HRC

Lieferumfang:  
• 3 Halteklammern mit Schrauben

Included:  
• 3 holding clamps with screws

FS 453 / 30 x 90



| D     | K     | A  | B  | C  | Artikelnummer<br>Article number | E  | G  | H  | L   | P    | Aufnahmebohrung<br>Mounting hole<br>H6 |
|-------|-------|----|----|----|---------------------------------|----|----|----|-----|------|----------------------------------------|
| 18-19 | 24-25 | 34 | 40 | 34 | FS 457                          | –  | 13 | 18 | 31  | 23,5 | 34 <sup>+0,013</sup>                   |
| 18-19 | 24-25 | 34 | 40 | 34 | FS 458                          | 36 | 32 | 18 | 50  | 23,5 | 34 <sup>+0,013</sup>                   |
| 18-19 | 24-25 | 34 | 40 | 34 | FS 453                          | 36 | 43 | 27 | 70  | 23,5 | 34 <sup>+0,013</sup>                   |
| 24-25 | 30-31 | 44 | 50 | 44 | FS 457                          | –  | 13 | 22 | 35  | 28,5 | 44 <sup>+0,016</sup>                   |
| 24-25 | 30-31 | 44 | 50 | 44 | FS 458                          | 46 | 33 | 22 | 55  | 28,5 | 44 <sup>+0,016</sup>                   |
| 24-25 | 30-31 | 44 | 50 | 44 | FS 453                          | 46 | 48 | 32 | 80  | 28,5 | 44 <sup>+0,016</sup>                   |
| 30-32 | 38-40 | 53 | 61 | 55 | FS 457                          | –  | 13 | 27 | 40  | 35,5 | 53 <sup>+0,016</sup>                   |
| 30-32 | 38-40 | 53 | 61 | 55 | FS 458                          | 57 | 33 | 27 | 60  | 35,5 | 53 <sup>+0,016</sup>                   |
| 30-32 | 38-40 | 53 | 61 | 55 | FS 453                          | 57 | 53 | 37 | 90  | 35,5 | 53 <sup>+0,016</sup>                   |
| 40-42 | 48-50 | 62 | 71 | 65 | FS 457                          | –  | 13 | 32 | 45  | 40,5 | 62 <sup>+0,019</sup>                   |
| 40-42 | 48-50 | 62 | 71 | 65 | FS 458                          | 67 | 40 | 27 | 67  | 40,5 | 62 <sup>+0,019</sup>                   |
| 40-42 | 48-50 | 62 | 71 | 65 | FS 453                          | 67 | 53 | 47 | 100 | 40,5 | 62 <sup>+0,019</sup>                   |
| 50-52 | 58-60 | 73 | 87 | 81 | FS 457                          | –  | 13 | 37 | 50  | 48,5 | 73 <sup>+0,019</sup>                   |
| 50-52 | 58-60 | 73 | 87 | 81 | FS 458                          | 83 | 43 | 32 | 75  | 48,5 | 73 <sup>+0,019</sup>                   |
| 50-52 | 58-60 | 73 | 87 | 81 | FS 453                          | 83 | 53 | 57 | 110 | 48,5 | 73 <sup>+0,019</sup>                   |

ØD = 63 und 80 auf Anfrage / ØD = 63 and 80 on request

Kugelkäfige aus Messing

Ball cages, brass

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS



FS 425

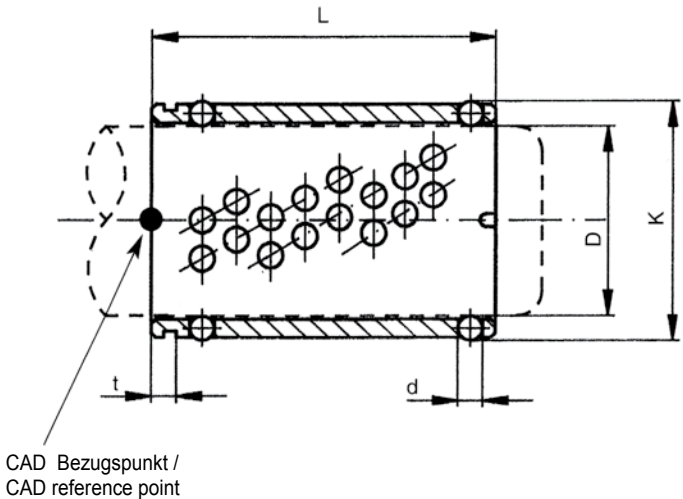
Mat.: Messing  
Stahlkugeln: Güteklasse AAA

Mat.: Brass  
Steel balls, grade AAA

FS 425 / 25 x 90

Sicherungsring im Lieferumfang  
enthalten.

Safety ring included



| D  | K  | d | t   | L   | Anzahl Kugeln<br>Number of balls |
|----|----|---|-----|-----|----------------------------------|
| 18 | 24 | 3 | 2,9 | 45  | 144                              |
|    |    |   |     | 56  | 176                              |
| 19 | 25 |   |     | 71  | 224                              |
|    |    |   |     | 80  | 272                              |
| 24 | 30 | 3 | 3,6 | 45  | 171                              |
| 25 | 31 |   |     | 71  | 285                              |
|    |    |   |     | 90  | 361                              |
| 30 | 38 | 4 | 4,8 | 56  | 160                              |
|    |    |   |     | 75  | 228                              |
| 32 | 40 |   |     | 95  | 300                              |
| 40 | 48 | 4 | 4,8 | 105 | 340                              |
| 42 | 50 |   |     | 63  | 230                              |
|    |    |   |     | 80  | 299                              |
| 50 | 58 | 4 | 5,5 | 120 | 460                              |
|    |    |   |     | 80  | 336                              |
| 52 | 60 |   |     | 95  | 405                              |
|    |    |   |     | 140 | 616                              |

ØD = 63 und 80 auf Anfrage / ØD = 63 and 80 on request



FS 424

Mat.: Aluminium  
Stahlkugeln: Güteklasse AAA

Mat.: Aluminium  
Steel balls, grade AAA

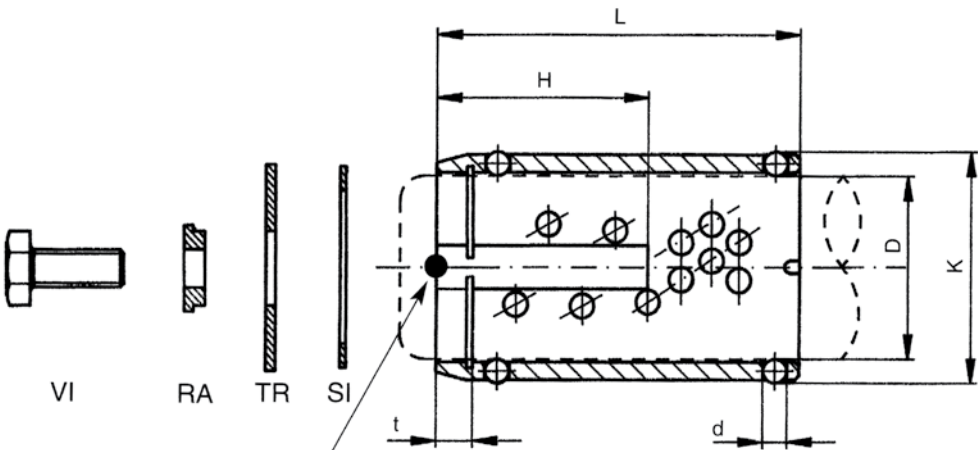
FS 424 / 32 x 105

Jeder Kugelkäfig wird mit Befestigungselementen (siehe Seite FS.32/33) geliefert.

Each ball cage supplied with mounting elements (please see page FS.32/33).

Kugelkäfige vorzugsweise für den Einbau im Unterteil.

Ball cages, preferably for mounting in the lower half of the die.



CAD Bezugspunkt /  
CAD reference point



| D  | K  | d | t | H  | L   | Anzahl Kugeln<br>Number of balls |
|----|----|---|---|----|-----|----------------------------------|
| 18 | 24 | 3 | 4 | 24 | 44  | 66                               |
| 18 | 24 | 3 | 4 | 36 | 60  | 93                               |
| 18 | 24 | 3 | 4 | 44 | 80  | 141                              |
| 19 | 25 | 3 | 4 | 24 | 44  | 66                               |
| 19 | 25 | 3 | 4 | 36 | 60  | 93                               |
| 19 | 25 | 3 | 4 | 44 | 80  | 141                              |
| 24 | 30 | 3 | 4 | 32 | 52  | 100                              |
| 24 | 30 | 3 | 4 | 40 | 72  | 149                              |
| 24 | 30 | 3 | 4 | 48 | 92  | 198                              |
| 25 | 31 | 3 | 4 | 32 | 52  | 100                              |
| 25 | 31 | 3 | 4 | 40 | 72  | 149                              |
| 25 | 31 | 3 | 4 | 48 | 92  | 198                              |
| 30 | 38 | 4 | 5 | 35 | 60  | 112                              |
| 30 | 38 | 4 | 5 | 45 | 75  | 145                              |
| 30 | 38 | 4 | 5 | 55 | 105 | 204                              |
| 32 | 40 | 4 | 5 | 35 | 60  | 112                              |
| 32 | 40 | 4 | 5 | 45 | 75  | 145                              |
| 32 | 40 | 4 | 5 | 55 | 105 | 204                              |



FS 424

Mat.: Aluminium  
Stahlkugeln: Güteklasse AAA

Mat.: Aluminium  
Steel balls, grade AAA

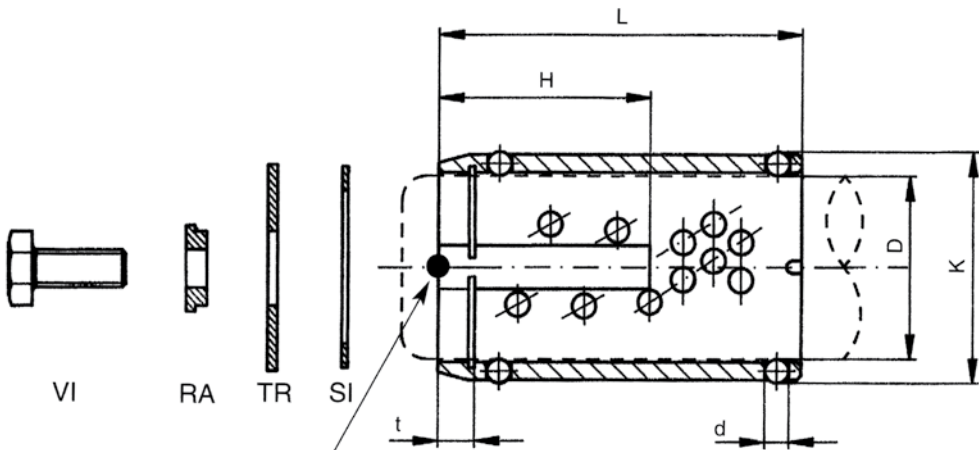
FS 424 / 52 x 105

Jeder Kugelkäfig wird mit Befestigungselementen (siehe Seite FS.32/33) geliefert.

Each ball cage supplied with mounting elements (please see page FS.32/33).

Kugelkäfige vorzugsweise für den Einbau im Unterteil.

Ball cages, preferably for mounting in the lower half of the die.

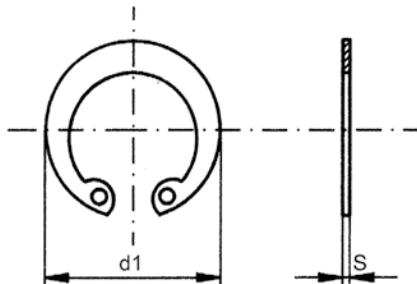


CAD Bezugspunkt /  
CAD reference point



| D  | K  | d | t | H  | L   | Anzahl Kugeln<br>Number of balls |
|----|----|---|---|----|-----|----------------------------------|
| 40 | 48 | 4 | 5 | 40 | 70  | 159                              |
| 40 | 48 | 4 | 5 | 50 | 85  | 198                              |
| 40 | 48 | 4 | 5 | 75 | 120 | 288                              |
| 42 | 50 | 4 | 5 | 40 | 70  | 159                              |
| 42 | 50 | 4 | 5 | 50 | 85  | 198                              |
| 42 | 50 | 4 | 5 | 75 | 120 | 288                              |
| 50 | 58 | 4 | 5 | 45 | 90  | 245                              |
| 50 | 58 | 4 | 5 | 55 | 105 | 293                              |
| 50 | 58 | 4 | 5 | 80 | 130 | 363                              |
| 52 | 60 | 4 | 5 | 45 | 90  | 245                              |
| 52 | 60 | 4 | 5 | 55 | 105 | 293                              |
| 52 | 60 | 4 | 5 | 80 | 130 | 363                              |

FS 424 / SI

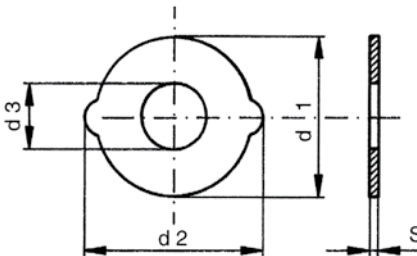


FS 424 / SI 1



| Größe<br>Size | D<br>FS 424 | d1 | S    |
|---------------|-------------|----|------|
| SI 1          | 18          | 19 | 1    |
| SI 2          | 19          | 20 | 1    |
| SI 3          | 24          | 25 | 1,2  |
| SI 4          | 25          | 26 | 1,2  |
| SI 5          | 30          | 31 | 1,2  |
| SI 6          | 32          | 33 | 1,2  |
| SI 7          | 40          | 41 | 1,75 |
| SI 8          | 42          | 43 | 1,75 |
| SI 9          | 50          | 51 | 2    |
| SI 10         | 52          | 53 | 2    |

FS 424 / TR

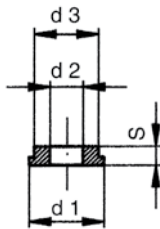


FS 424 / TR 1



| Größe<br>Size | D<br>FS 424 | d1   | d2   | d3 | S   |
|---------------|-------------|------|------|----|-----|
| TR 1          | 18          | 17,5 | 20,8 | 12 | 1,5 |
| TR 2          | 19          | 18,5 | 21,8 | 12 | 1,5 |
| TR 3          | 24          | 23,5 | 26,8 | 12 | 1,5 |
| TR 4          | 25          | 24,5 | 27,8 | 12 | 1,5 |
| TR 5          | 30          | 29,5 | 34,2 | 12 | 1,5 |
| TR 6          | 32          | 31,5 | 36,2 | 12 | 1,5 |
| TR 7          | 40          | 39,5 | 44,2 | 15 | 2   |
| TR 8          | 42          | 41,5 | 46,2 | 15 | 2   |
| TR 9          | 50          | 49,5 | 54,2 | 15 | 2   |
| TR 10         | 52          | 51,5 | 56,5 | 15 | 2   |

FS 424 / RA

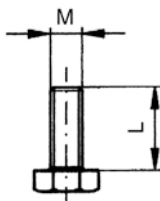


FS 424 / RA 1



| Größe<br>Size | D<br>FS 424 | d1 | d2  | d3   | S   |
|---------------|-------------|----|-----|------|-----|
| RA 1          | 18          | 14 | 6,3 | 11,8 | 3,5 |
| RA 1          | 19          | 14 | 6,3 | 11,8 | 3,5 |
| RA 1          | 24          | 14 | 6,3 | 11,8 | 3,5 |
| RA 1          | 25          | 14 | 6,3 | 11,8 | 3,5 |
| RA 1          | 30          | 14 | 6,3 | 11,8 | 3,5 |
| RA 1          | 32          | 14 | 6,3 | 11,8 | 3,5 |
| RA 2          | 40          | 18 | 8,3 | 14,7 | 4,5 |
| RA 2          | 42          | 18 | 8,3 | 14,7 | 4,5 |
| RA 2          | 50          | 18 | 8,3 | 14,7 | 4,5 |
| RA 2          | 52          | 18 | 8,3 | 14,7 | 4,5 |

FS 424 / VI



FS 424 / VI 1



| Größe<br>Size | D<br>FS 424 | M  | L  |
|---------------|-------------|----|----|
| VI 1          | 18          | M6 | 15 |
| VI 1          | 19          | M6 | 15 |
| VI 1          | 24          | M6 | 15 |
| VI 1          | 25          | M6 | 15 |
| VI 1          | 30          | M6 | 15 |
| VI 1          | 32          | M6 | 15 |
| VI 2          | 40          | M8 | 18 |
| VI 2          | 42          | M8 | 18 |
| VI 2          | 50          | M8 | 18 |
| VI 2          | 52          | M8 | 18 |



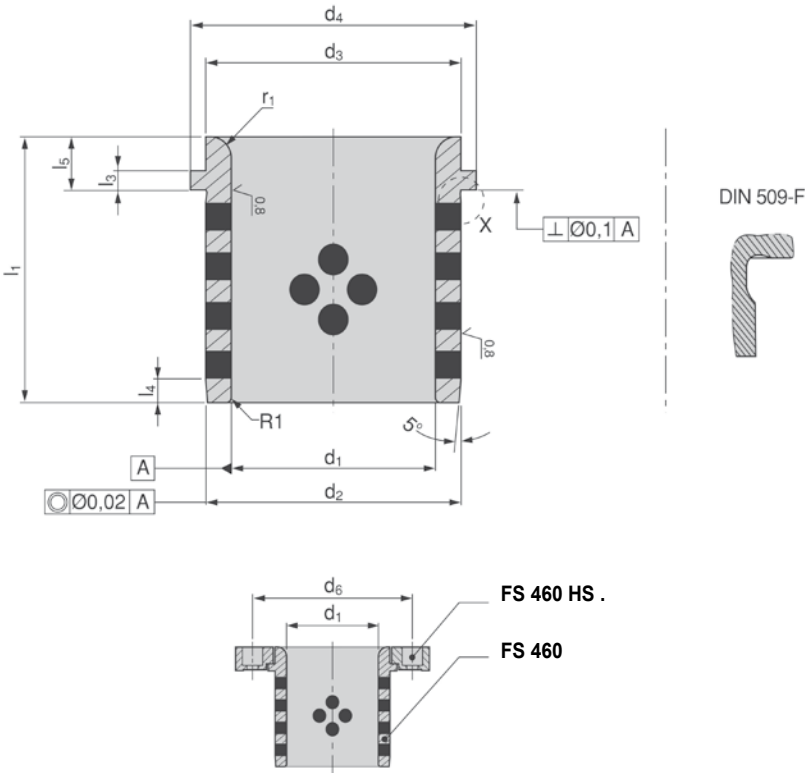
FS 460

mit Bund  
Mat.: Bronze-Graphit

with collar  
Mat.: Bronze-graphite

FS 460 / 40

Haltestücke bitte gesondert bestellen! Holding clamps need to be ordered separately!



| d1<br>H7 | d2<br>h6 | d3<br>-0,25 | d4<br>-0,8 | d6<br>±0,3 | l1<br>-0,5/-1 | l3<br>±0,1 | l4<br>±1 | l5<br>-0,5 | r1 | Haltestücke Typ<br>Holding clamps type |
|----------|----------|-------------|------------|------------|---------------|------------|----------|------------|----|----------------------------------------|
| 25       | 32       | 32          | 40         | 58         | 40            | 6,3        | 3        | 10         | 3  | FS 460 HS 1                            |
| 32       | 40       | 40          | 50         | 66         | 50            | 6,3        | 4        | 12         | 3  | FS 460 HS 1                            |
| 40       | 50       | 50          | 63         | 79         | 63            | 6,3        | 5        | 15         | 3  | FS 460 HS 1                            |
| 50       | 63       | 63          | 71         | 89         | 71            | 6,3        | 6,3      | 17         | 5  | FS 460 HS 1                            |
| 63       | 80       | 80          | 90         | 123        | 80            | 10         | 8        | 19         | 6  | FS 460 HS 2                            |
| 80       | 100      | 100         | 112        | 143        | 100           | 10         | 10       | 22         | 8  | FS 460 HS 2                            |
| 100      | 125      | 125         | 140        | 168        | 125           | 10         | 12,5     | 21         | 10 | FS 460 HS 2                            |
| 125      | 160      | 160         | 180        | 203        | 160           | 10         | 16       | 30         | 12 | FS 460 HS 2                            |
| 160      | 200      | 200         | 220        | 243        | 200           | 10         | 16       | 32         | 18 | FS 460 HS 2                            |



FS 460 HS .

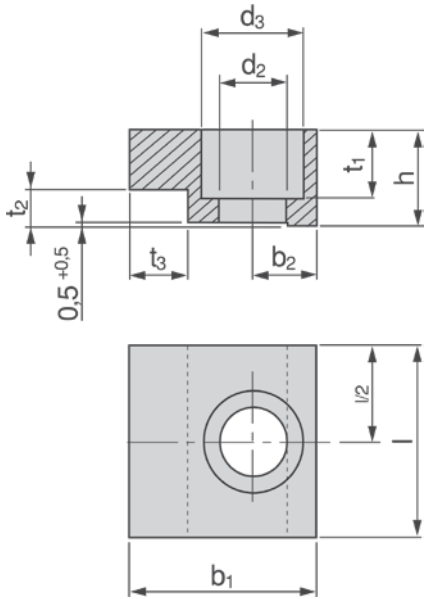
für Führungsbuchse FS 460  
nach DIN 9834 / ISO 9448

for leader pin bushings FS 460  
DIN 9834 / ISO 9448

FS 460 HS 1

Mat.: CK45

Mat.: CK45



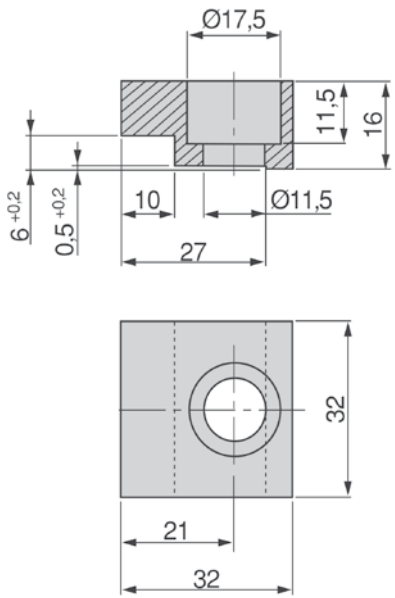
| Typ<br>Type | b1 | b2   | d2<br>+0,2 | d3<br>+0,2 | h  | l<br>-0,3 | t1   | t2  | t3 | Ø Buchse<br>Ø Bushing | Schraube<br>Screw |
|-------------|----|------|------------|------------|----|-----------|------|-----|----|-----------------------|-------------------|
| HS 1        | 20 | 7,5  | 7          | 11         | 10 | 20        | 7    | 6,3 | 5  | 25-50                 | M6x16             |
| HS 2        | 32 | 11,0 | 11,5       | 17,5       | 16 | 32        | 11,5 | 10  | 10 | 63-160                | M10x20            |

FS 460 HS 3

Mat.: CK45

Mat.: CK45

FS 460 HS 3





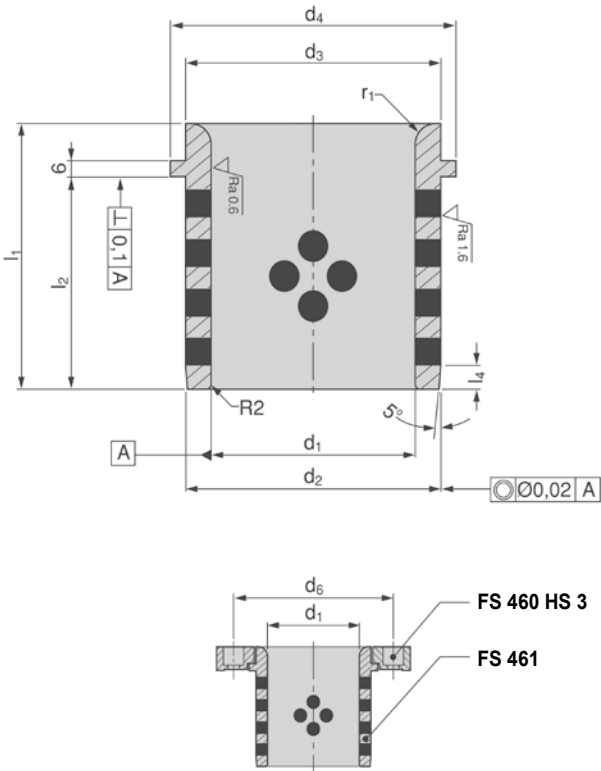
FS 461

mit Bund  
Mat.: Bronze-Graphit

with collar  
Mat.: Bronze-graphite

FS 461 / 40

Haltestücke bitte gesondert bestellen! Holding clamps need to be ordered separately!



| d1<br>H7 | d2<br>g6 | d3<br>-0,25 | d4<br>-0,8 | d6<br>±0,3 | l1<br>-0,5 | l2  | l4 | r1 | Haltestücke Typ<br>Holding clamps type |
|----------|----------|-------------|------------|------------|------------|-----|----|----|----------------------------------------|
| 25       | 32       | 32          | 40         | 75         | 40         | 30  | 4  | 3  | FS 460 HS 3                            |
| 32       | 40       | 40          | 50         | 83         | 50         | 40  | 4  | 3  | FS 460 HS 3                            |
| 40       | 50       | 50          | 63         | 93         | 63         | 50  | 5  | 3  | FS 460 HS 3                            |
| 50       | 63       | 63          | 71         | 106        | 71         | 56  | 6  | 5  | FS 460 HS 3                            |
| 63       | 80       | 80          | 90         | 123        | 80         | 63  | 8  | 6  | FS 460 HS 3                            |
| 80       | 100      | 100         | 112        | 143        | 100        | 80  | 10 | 8  | FS 460 HS 3                            |
| 100      | 125      | 125         | 140        | 168        | 125        | 106 | 12 | 10 | FS 460 HS 3                            |
| 125      | 160      | 160         | 180        | 203        | 160        | 132 | 12 | 12 | FS 460 HS 3                            |

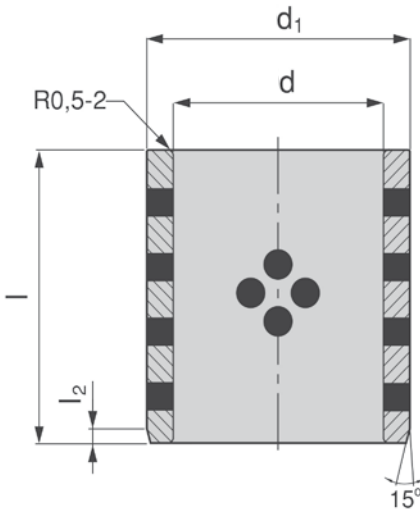


FS 462

ohne Bund  
Mat.: Bronze-Graphit

without collar  
Mat.: Bronze-graphite

FS 462 / 20 x 28 x 30



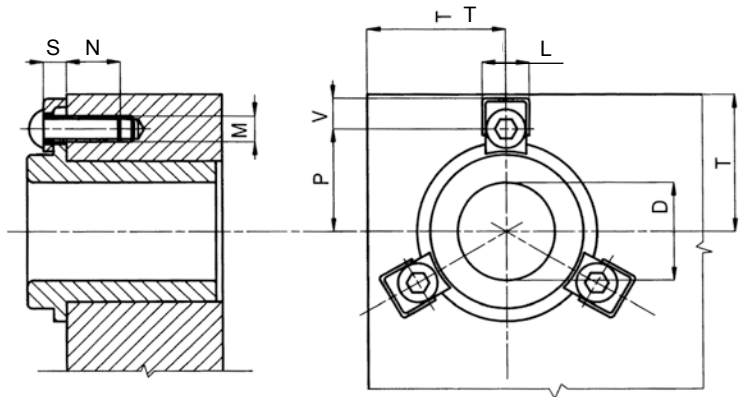
| d   | d1  | l<br>-0,1/-0,3 |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     | l2 |
|-----|-----|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|----|
| F7  | m6  | 8              | 10 | 12 | 15 | 16 | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 100 | 120 |    |
| 8   | 12  | •              | •  | •  | •  |    |    |    |    |    |    |    |    |    |    |     |     | 2  |
| 10  | 14  |                | •  | •  | •  |    | •  |    |    |    |    |    |    |    |    |     |     | 2  |
| 12  | 18  |                | •  | •  |    | •  | •  | •  | •  |    |    |    |    |    |    |     |     | 2  |
| 16  | 22  |                |    | •  |    | •  | •  | •  | •  | •  |    |    |    |    |    |     |     | 2  |
| 18  | 24  |                |    |    |    |    | •  | •  | •  | •  | •  |    |    |    |    |     |     | 2  |
| 20  | 28  |                |    |    |    |    | •  | •  | •  | •  | •  |    |    |    |    |     |     | 2  |
| 20  | 30  |                |    |    |    | •  | •  | •  | •  | •  | •  |    |    |    |    |     |     | 2  |
| 25  | 33  |                |    |    |    |    | •  | •  | •  | •  | •  | •  |    |    |    |     |     | 2  |
| 25  | 35  |                |    |    |    |    | •  | •  | •  | •  | •  | •  |    |    |    |     |     | 2  |
| 30  | 38  |                |    |    |    |    |    | •  | •  | •  | •  | •  | •  |    |    |     |     | 2  |
| 30  | 40  |                |    |    |    |    | •  |    | •  | •  | •  | •  | •  |    |    |     |     | 2  |
| 35  | 44  |                |    |    |    |    |    |    |    |    | •  | •  |    |    |    |     |     | 2  |
| 35  | 45  |                |    |    |    |    |    |    | •  |    | •  | •  | •  |    |    |     |     | 2  |
| 40  | 50  |                |    |    |    |    |    | •  | •  | •  | •  | •  | •  |    |    |     |     | 2  |
| 40  | 55  |                |    |    |    |    |    |    |    |    |    | •  | •  |    |    |     |     | 2  |
| 50  | 60  |                |    |    |    |    |    |    |    |    |    | •  | •  | •  |    |     |     | 2  |
| 50  | 62  |                |    |    |    |    |    |    |    |    |    |    | •  | •  |    |     |     | 2  |
| 50  | 65  |                |    |    |    |    |    |    |    |    |    | •  |    | •  |    |     |     | 2  |
| 60  | 75  |                |    |    |    |    |    |    |    |    |    | •  | •  |    | •  |     |     | 2  |
| 70  | 85  |                |    |    |    |    |    |    |    |    |    |    | •  | •  | •  | •   |     | 2  |
| 80  | 96  |                |    |    |    |    |    |    |    |    |    |    | •  |    |    | •   |     | 2  |
| 80  | 100 |                |    |    |    |    |    |    |    |    |    |    | •  |    |    | •   | •   | 2  |
| 100 | 120 |                |    |    |    |    |    |    |    |    |    |    |    |    |    |     | •   | 2  |
| 110 | 130 |                |    |    |    |    |    |    |    |    |    |    |    |    | •  |     | •   | 2  |
| 130 | 150 |                |    |    |    |    |    |    |    |    |    |    |    |    |    | •   |     | 4  |

FS 955

Haltestücke werden mit Schrauben  
geliefert

Holding clamps come with correspon-  
ding screws

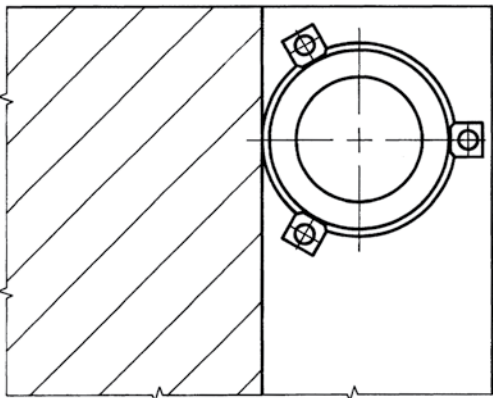
FS 955 / A



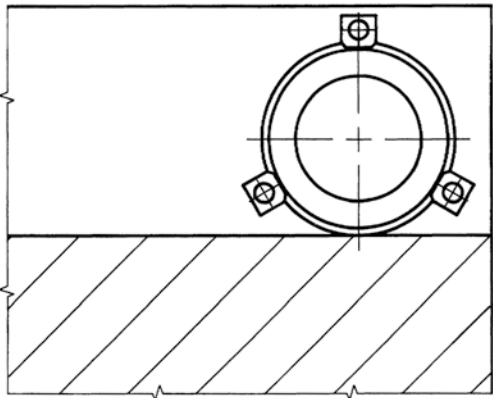
| Ausführung<br>Style | D     | L    | M  | N  | S   | V   |
|---------------------|-------|------|----|----|-----|-----|
| A                   | 18-19 | 12   | M6 | 12 | 6,7 | 6,0 |
| A                   | 24-25 | 12   | M6 | 12 | 6,7 | 6,0 |
| B                   | 30-32 | 14,5 | M8 | 16 | 7   | 7,2 |
| B                   | 40-42 | 14,5 | M8 | 16 | 7   | 7,2 |
| B                   | 50-52 | 14,5 | M8 | 16 | 7   | 7,2 |
| B                   | 63-80 | 14,5 | M8 | 16 | 7   | 7,2 |

| für Bundbuchsen mit Stahl- oder Bronzebeschichtung<br>for leader pin bushings with collar steel or bronze-plated |      |    | für Bundbuchsen mit Kugelführung<br>for leader pin bushings with collar ball cage |      |    |
|------------------------------------------------------------------------------------------------------------------|------|----|-----------------------------------------------------------------------------------|------|----|
| D                                                                                                                | P    | T  | D                                                                                 | P    | T  |
| 18-19                                                                                                            | 20,5 | 32 | 18-19                                                                             | 23,5 | 35 |
| 24-25                                                                                                            | 25,5 | 37 | 24-25                                                                             | 28,5 | 40 |
| 30-32                                                                                                            | 31,5 | 44 | 30-32                                                                             | 35,5 | 48 |
| 40-42                                                                                                            | 36,5 | 49 | 40-42                                                                             | 40,5 | 53 |
| 50-52                                                                                                            | 44,5 | 57 | 50-52                                                                             | 48,5 | 61 |
| 63                                                                                                               | 51   | 64 |                                                                                   |      |    |
| 80                                                                                                               | 60,5 | 73 |                                                                                   |      |    |

Anordnung der Haltestücke bei Stahlgestellen / Location of holding clamps in die sets



Position Z



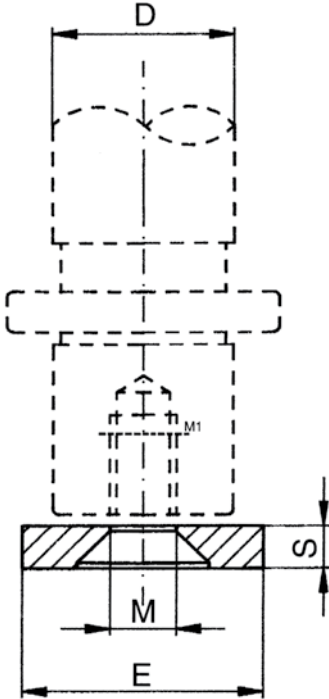
Position X

FS 958

Mat.: C 40, brüniert  
Scheibe wird mit Schraube befestigt

Mat.: C 40, gunmetal-finished  
Mount disc with screw.

FS 958 / A



| Ausführung<br>Style | D     | E   | S  | M   |
|---------------------|-------|-----|----|-----|
| A                   | 18-19 | 25  | 6  | M8  |
| B                   | 24-25 | 32  | 7  | M10 |
| C                   | 30-32 | 40  | 7  | M10 |
| D                   | 40-42 | 50  | 9  | M12 |
| E                   | 50-52 | 62  | 9  | M12 |
| F                   | 63    | 73  | 9  | M12 |
| G                   | 80    | 93  | 12 | M12 |
| H                   | 100   | 120 | 20 | M16 |

Gleitplatten VDI 3357, Bronze mit Festschmierstoff, 20 mm dick

Wear plates VDI 3357, bronze with self lubricating graphite plugs, 20 mm thick



FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 500

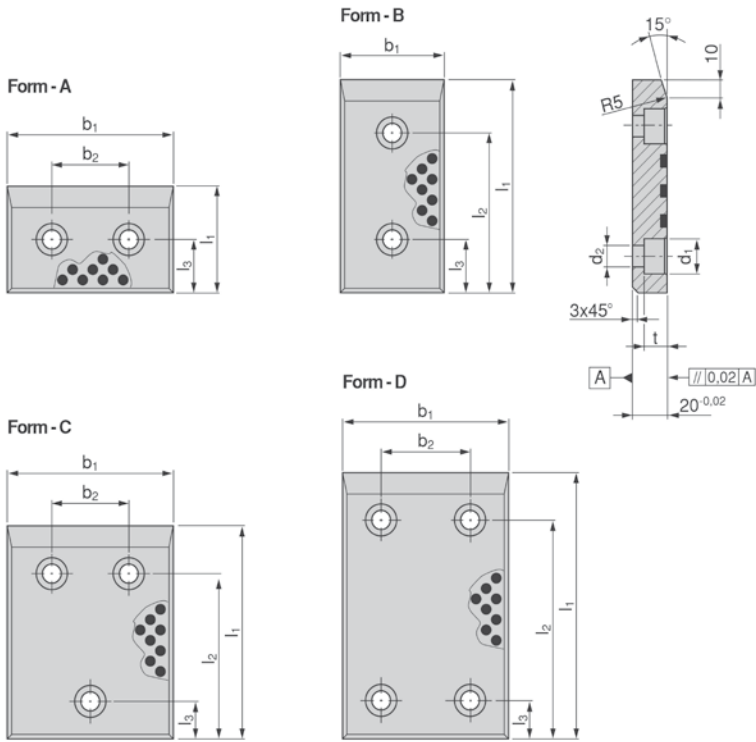
Mat.: Bronze

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze

Bronze wear plates with self lubricating graphite plugs ensure even during long-term production cycles a low maintenance operation.

FS 500 / 50 x 100



| b1  | l1  | Form | b2 | d1 | d2   | l2  | l3 | t  |
|-----|-----|------|----|----|------|-----|----|----|
| 50  | 80  | B    | -  | 15 | 9    | 55  | 25 | 9  |
| 50  | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 50  | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 50  | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 50  | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |
| 80  | 50  | A    | 30 | 15 | 9    | -   | 25 | 9  |
| 80  | 80  | B    | -  | 20 | 13,5 | 55  | 25 | 13 |
| 80  | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 80  | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 80  | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 80  | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |
| 80  | 250 | B    | -  | 20 | 13,5 | 210 | 40 | 13 |
| 80  | 315 | B    | -  | 20 | 13,5 | 275 | 40 | 13 |
| 100 | 50  | A    | 50 | 20 | 13,5 | -   | 25 | 13 |
| 100 | 80  | A    | 50 | 20 | 13,5 | -   | 40 | 13 |
| 100 | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 100 | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 100 | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 100 | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |

| b1  | l1  | Form | b2  | d1 | d2   | l2  | l3 | t  |
|-----|-----|------|-----|----|------|-----|----|----|
| 100 | 250 | B    | -   | 20 | 13,5 | 210 | 40 | 13 |
| 100 | 315 | B    | -   | 20 | 13,5 | 275 | 40 | 13 |
| 125 | 50  | A    | 75  | 20 | 13,5 | -   | 25 | 13 |
| 125 | 80  | A    | 75  | 20 | 13,5 | -   | 40 | 13 |
| 125 | 100 | C    | 75  | 20 | 13,5 | 75  | 25 | 13 |
| 125 | 125 | C    | 75  | 20 | 13,5 | 100 | 25 | 13 |
| 125 | 160 | C    | 75  | 20 | 13,5 | 135 | 25 | 13 |
| 125 | 200 | C    | 75  | 20 | 13,5 | 175 | 25 | 13 |
| 125 | 250 | C    | 75  | 20 | 13,5 | 210 | 40 | 13 |
| 125 | 315 | C    | 75  | 20 | 13,5 | 275 | 40 | 13 |
| 160 | 50  | A    | 110 | 20 | 13,5 | -   | 25 | 13 |
| 160 | 80  | A    | 110 | 20 | 13,5 | -   | 40 | 13 |
| 160 | 100 | C    | 110 | 20 | 13,5 | 75  | 25 | 13 |
| 160 | 125 | C    | 110 | 20 | 13,5 | 100 | 25 | 13 |
| 160 | 160 | C    | 110 | 20 | 13,5 | 135 | 25 | 13 |
| 160 | 200 | C    | 110 | 20 | 13,5 | 175 | 25 | 13 |
| 160 | 250 | D    | 110 | 20 | 13,5 | 210 | 40 | 13 |
| 160 | 315 | D    | 110 | 20 | 13,5 | 275 | 40 | 13 |

Gleitplatten VDI 3357, Stahl, 20 mm dick

Wear plates VDI 3357, steel, 20 mm thick



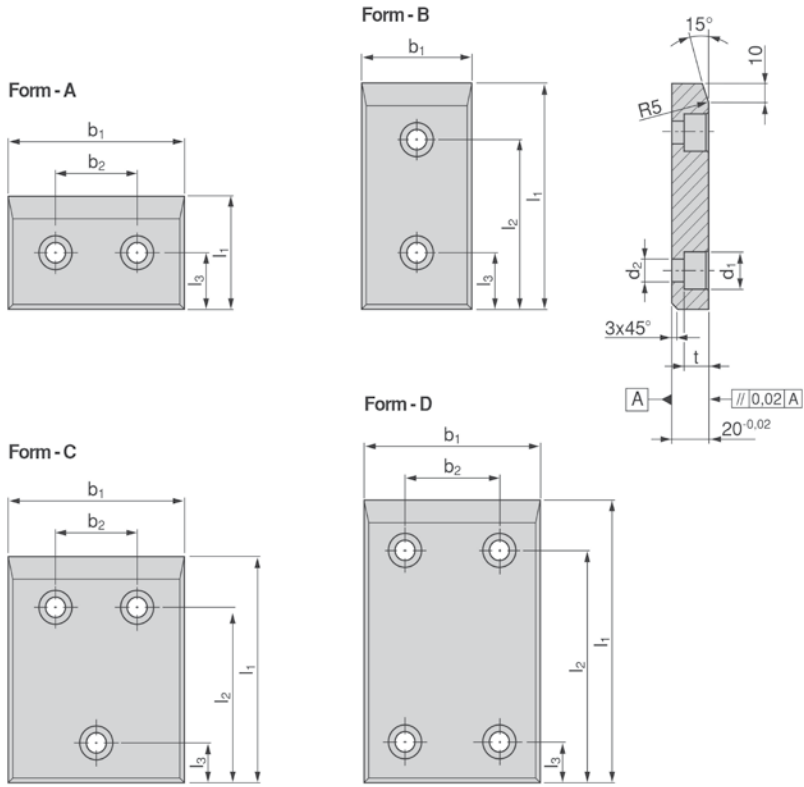
FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 501

Mat.: 16MnCr5  
Oberflächenhärte: 60 - 64 HRC

Mat.: 16MnCr5  
Surface hardness: 60 - 64 HRC

FS 501 / 80 x 50



| b1  | l1  | Form | b2 | d1 | d2   | l2  | l3 | t  |
|-----|-----|------|----|----|------|-----|----|----|
| 50  | 80  | B    | -  | 15 | 9    | 55  | 25 | 9  |
| 50  | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 50  | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 50  | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 50  | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |
| 80  | 50  | A    | 30 | 15 | 9    | -   | 25 | 9  |
| 80  | 80  | B    | -  | 20 | 13,5 | 55  | 25 | 13 |
| 80  | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 80  | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 80  | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 80  | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |
| 80  | 250 | B    | -  | 20 | 13,5 | 210 | 40 | 13 |
| 80  | 315 | B    | -  | 20 | 13,5 | 275 | 40 | 13 |
| 100 | 50  | A    | 50 | 20 | 13,5 | -   | 25 | 13 |
| 100 | 80  | A    | 50 | 20 | 13,5 | -   | 40 | 13 |
| 100 | 100 | B    | -  | 20 | 13,5 | 75  | 25 | 13 |
| 100 | 125 | B    | -  | 20 | 13,5 | 100 | 25 | 13 |
| 100 | 160 | B    | -  | 20 | 13,5 | 135 | 25 | 13 |
| 100 | 200 | B    | -  | 20 | 13,5 | 175 | 25 | 13 |

| b1  | l1  | Form | b2  | d1 | d2   | l2  | l3 | t  |
|-----|-----|------|-----|----|------|-----|----|----|
| 100 | 250 | B    | -   | 20 | 13,5 | 210 | 40 | 13 |
| 100 | 315 | B    | -   | 20 | 13,5 | 275 | 40 | 13 |
| 125 | 50  | A    | 75  | 20 | 13,5 | -   | 25 | 13 |
| 125 | 80  | A    | 75  | 20 | 13,5 | -   | 40 | 13 |
| 125 | 100 | C    | 75  | 20 | 13,5 | 75  | 25 | 13 |
| 125 | 125 | C    | 75  | 20 | 13,5 | 100 | 25 | 13 |
| 125 | 160 | C    | 75  | 20 | 13,5 | 135 | 25 | 13 |
| 125 | 200 | C    | 75  | 20 | 13,5 | 175 | 25 | 13 |
| 125 | 250 | C    | 75  | 20 | 13,5 | 210 | 40 | 13 |
| 125 | 315 | C    | 75  | 20 | 13,5 | 275 | 40 | 13 |
| 160 | 50  | A    | 110 | 20 | 13,5 | -   | 25 | 13 |
| 160 | 80  | A    | 110 | 20 | 13,5 | -   | 40 | 13 |
| 160 | 100 | C    | 110 | 20 | 13,5 | 75  | 25 | 13 |
| 160 | 125 | C    | 110 | 20 | 13,5 | 100 | 25 | 13 |
| 160 | 160 | C    | 110 | 20 | 13,5 | 135 | 25 | 13 |
| 160 | 200 | C    | 110 | 20 | 13,5 | 175 | 25 | 13 |
| 160 | 250 | D    | 110 | 20 | 13,5 | 210 | 40 | 13 |
| 160 | 315 | D    | 110 | 20 | 13,5 | 275 | 40 | 13 |



Gleitplatten VDI 3357, Bronze mit Festschmierstoff, 12 mm dick

Wear plates VDI 3357, bronze with self lubricating graphite plugs, 12 mm thick



FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 502

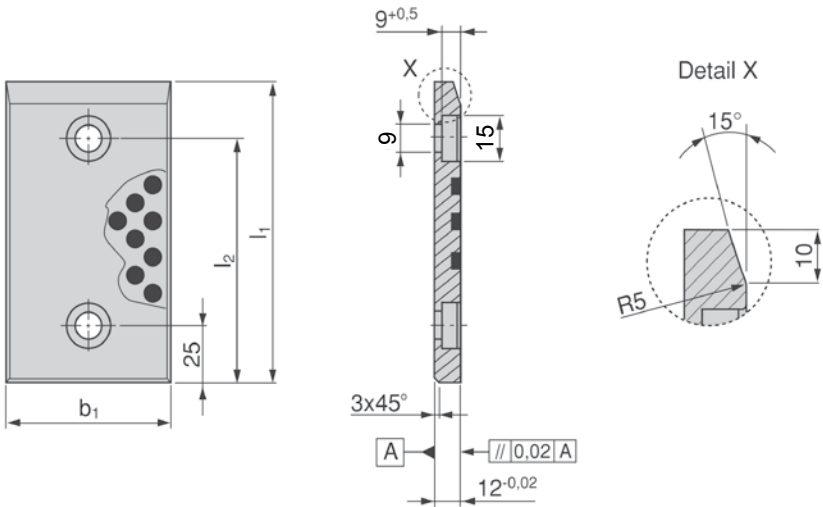
Mat.: Bronze

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze

Bronze wear plates with self lubricating graphite plugs ensure even during long-term production cycles a low maintenance operation.

FS 502 / 30 x 80



| b1 | l1  | l2  |
|----|-----|-----|
| 30 | 80  | 55  |
| 30 | 100 | 75  |
| 30 | 125 | 100 |
| 30 | 160 | 135 |
| 30 | 200 | 175 |
| 40 | 80  | 55  |
| 40 | 100 | 75  |
| 40 | 125 | 100 |
| 40 | 160 | 135 |
| 40 | 200 | 175 |
| 50 | 80  | 55  |
| 50 | 100 | 75  |
| 50 | 125 | 100 |

| b1 | l1  | l2  |
|----|-----|-----|
| 50 | 160 | 135 |
| 50 | 200 | 175 |
| 60 | 80  | 55  |
| 60 | 100 | 75  |
| 60 | 125 | 100 |
| 60 | 160 | 135 |
| 60 | 200 | 175 |
| 80 | 80  | 55  |
| 80 | 100 | 75  |
| 80 | 125 | 100 |
| 80 | 160 | 135 |
| 80 | 200 | 175 |

Gleitplatten, Bronze mit Festschmierstoff, 10 mm dick

Wear plates, bronze with self lubricating graphite plugs, 10 mm thick



FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 503

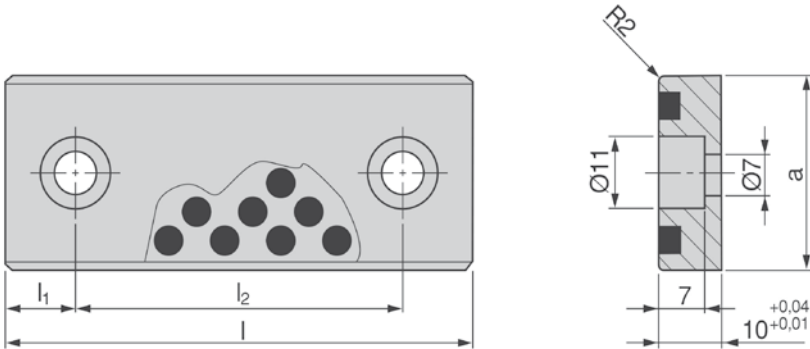
Mat.: Bronze-Graphit

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze-graphite

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.

FS 503 / 18 x 125



| a  | l   | l1 | l2  |
|----|-----|----|-----|
| 18 | 75  | 15 | 45  |
| 18 | 100 | 25 | 50  |
| 18 | 125 | 25 | 75  |
| 18 | 150 | 25 | 100 |
| 28 | 75  | 15 | 45  |
| 28 | 100 | 25 | 50  |
| 28 | 125 | 25 | 75  |
| 28 | 150 | 25 | 100 |
| 38 | 75  | 15 | 45  |
| 38 | 100 | 25 | 50  |
| 38 | 125 | 25 | 75  |
| 38 | 150 | 25 | 100 |
| 48 | 75  | 15 | 45  |
| 48 | 100 | 25 | 50  |
| 48 | 125 | 25 | 75  |
| 48 | 150 | 25 | 100 |



Gleitplatten, Bronze mit Festschmierstoff, 10 mm dick

Wear plates, bronze with self lubricating graphite plugs, 10 mm thick

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 504

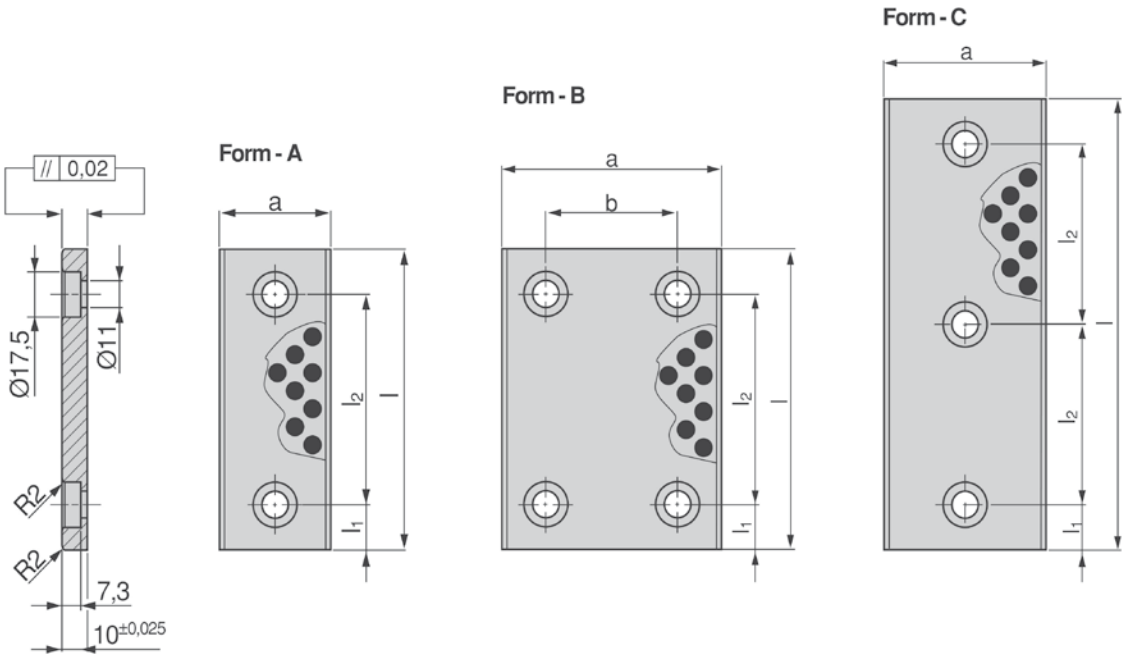
Mat.: Bronze-Graphit

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze-graphite

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.

FS 504 / 48 x 150



| a  | l   | Form | b | l1 | l2  |
|----|-----|------|---|----|-----|
| 28 | 75  | A    | - | 15 | 45  |
| 28 | 100 | A    | - | 25 | 50  |
| 28 | 125 | A    | - | 25 | 75  |
| 28 | 150 | A    | - | 25 | 100 |
| 38 | 75  | A    | - | 15 | 45  |
| 38 | 100 | A    | - | 25 | 50  |
| 38 | 125 | A    | - | 25 | 75  |
| 38 | 150 | A    | - | 25 | 100 |
| 48 | 75  | A    | - | 15 | 45  |
| 48 | 100 | A    | - | 25 | 50  |
| 48 | 125 | A    | - | 25 | 75  |
| 48 | 150 | A    | - | 25 | 100 |
| 48 | 200 | A    | - | 50 | 100 |
| 58 | 75  | A    | - | 15 | 45  |
| 58 | 100 | A    | - | 25 | 50  |
| 58 | 125 | A    | - | 25 | 75  |
| 58 | 150 | A    | - | 25 | 100 |

| a   | l   | Form | b   | l1 | l2  |
|-----|-----|------|-----|----|-----|
| 58  | 200 | A    | -   | 50 | 100 |
| 75  | 75  | A    | -   | 15 | 45  |
| 75  | 100 | A    | -   | 25 | 50  |
| 75  | 125 | A    | -   | 25 | 75  |
| 75  | 150 | A    | -   | 25 | 100 |
| 75  | 200 | C    | -   | 25 | 75  |
| 100 | 100 | B    | 50  | 25 | 50  |
| 100 | 125 | B    | 50  | 25 | 75  |
| 100 | 150 | B    | 50  | 25 | 100 |
| 100 | 200 | B    | 50  | 25 | 150 |
| 100 | 250 | B    | 50  | 25 | 200 |
| 125 | 150 | B    | 50  | 25 | 100 |
| 125 | 200 | B    | 50  | 25 | 150 |
| 125 | 250 | B    | 50  | 25 | 200 |
| 150 | 150 | B    | 100 | 25 | 100 |
| 150 | 200 | B    | 100 | 25 | 150 |

Gleitplatten, Bronze mit Festschmierstoff, 5 mm dick

Wear plates, bronze with self lubricating graphite plugs, 5 mm thick

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

FS 505

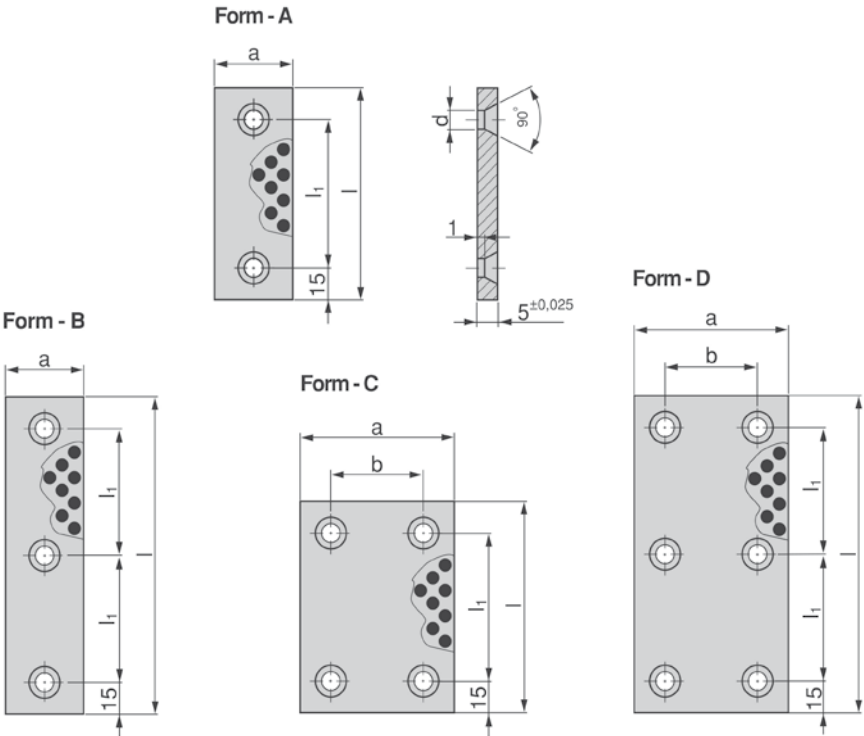
Mat.: Bronze-Graphit

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze-graphite

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.

FS 505 / 75 x 75



| a   | l   | Form | b  | d   | l1 |
|-----|-----|------|----|-----|----|
| 18  | 50  | A    | -  | 6,5 | 20 |
| 18  | 75  | A    | -  | 6,5 | 45 |
| 18  | 100 | A    | -  | 6,5 | 70 |
| 18  | 150 | B    | -  | 6,5 | 60 |
| 28  | 50  | A    | -  | 9   | 20 |
| 28  | 75  | A    | -  | 9   | 45 |
| 28  | 100 | A    | -  | 9   | 70 |
| 28  | 150 | B    | -  | 9   | 60 |
| 38  | 50  | A    | -  | 9   | 20 |
| 38  | 75  | A    | -  | 9   | 45 |
| 38  | 100 | A    | -  | 9   | 70 |
| 38  | 150 | B    | -  | 9   | 60 |
| 48  | 75  | A    | -  | 9   | 45 |
| 48  | 100 | A    | -  | 9   | 70 |
| 48  | 125 | A    | -  | 9   | 95 |
| 48  | 150 | B    | -  | 9   | 60 |
| 75  | 75  | C    | 45 | 9   | 45 |
| 75  | 100 | C    | 45 | 9   | 70 |
| 75  | 125 | C    | 45 | 9   | 95 |
| 75  | 150 | D    | 45 | 9   | 60 |
| 100 | 100 | C    | 70 | 9   | 70 |
| 100 | 125 | C    | 70 | 9   | 95 |
| 100 | 150 | D    | 70 | 9   | 60 |



FS 506

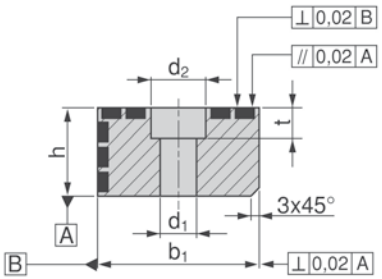
mit 2 Gleitflächen  
Mat.: Bronze-Graphit

with 2 slide surfaces  
Mat.: Bronze-graphite

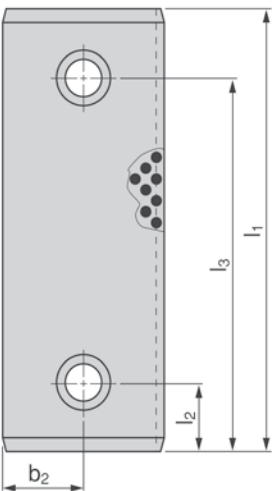
FS 506 / 15 x 110

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

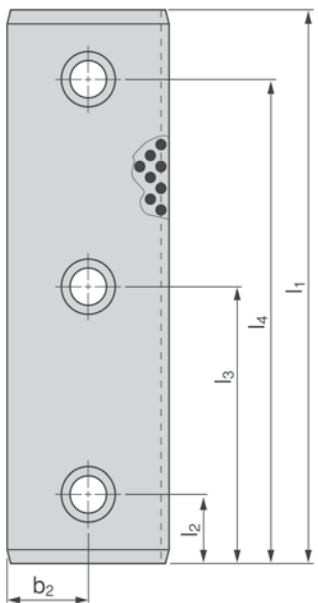
Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.



Form - A



Form - B



| h     | l1  | Form | b1    | b2   | d1   | d2  | l2 | l3   | l4   | t    |
|-------|-----|------|-------|------|------|-----|----|------|------|------|
| -0,02 | H7  |      | -0,02 |      | H13  | H13 |    | ±0,2 | ±0,2 | +0,5 |
| 12    | 110 | A    | 25    | 12,5 | 9    | 15  | 25 | 85   | -    | 8,5  |
| 12    | 120 | A    | 25    | 12,5 | 9    | 15  | 25 | 95   | -    | 8,5  |
| 15    | 110 | A    | 25    | 12,5 | 11   | 18  | 25 | 85   | -    | 10,5 |
| 15    | 120 | A    | 25    | 12,5 | 11   | 18  | 25 | 95   | -    | 10,5 |
| 30    | 125 | A    | 60    | 30   | 13,5 | 20  | 25 | 100  | -    | 13   |
| 30    | 160 | A    | 60    | 30   | 13,5 | 20  | 25 | 135  | -    | 13   |
| 30    | 200 | B    | 60    | 30   | 13,5 | 20  | 25 | 100  | 175  | 13   |
| 40    | 125 | A    | 60    | 30   | 13,5 | 20  | 25 | 100  | -    | 13   |
| 40    | 160 | A    | 60    | 30   | 13,5 | 20  | 25 | 135  | -    | 13   |
| 40    | 200 | B    | 60    | 30   | 13,5 | 20  | 25 | 100  | 175  | 13   |



FS 507

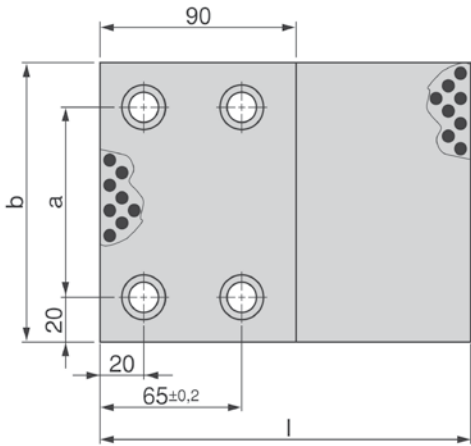
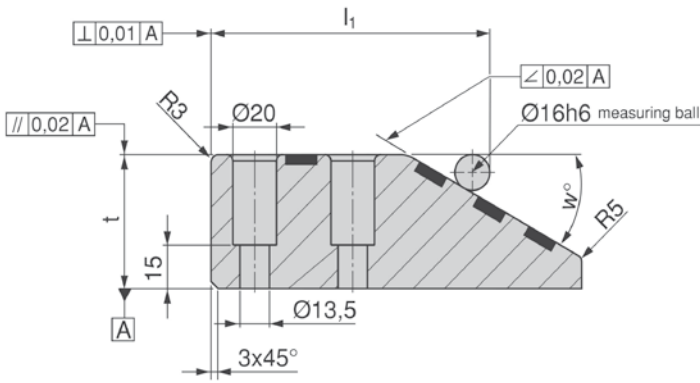
mit 2 Gleitflächen  
Mat.: Bronze-Graphit

with 2 slide surfaces  
Mat.: Bronze-graphite

FS 507 /  
125 x 170 x 45

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.



| b   | l   | t    | a   | l1     | w   |
|-----|-----|------|-----|--------|-----|
|     |     | ±0,1 |     | ±0,5   |     |
| 100 | 170 | 45   | 60  | 143,37 | 20° |
| 125 | 170 | 45   | 85  | 143,37 | 20° |
| 150 | 170 | 45   | 110 | 143,37 | 20° |
| 100 | 150 | 45   | 60  | 127,86 | 30° |
| 100 | 170 | 60   | 60  | 127,86 | 30° |
| 125 | 150 | 45   | 85  | 127,86 | 30° |
| 125 | 170 | 60   | 85  | 127,86 | 30° |
| 150 | 150 | 45   | 110 | 127,86 | 30° |
| 150 | 170 | 60   | 110 | 127,86 | 30° |

Überlaufkeile VDI 3357, Stahl

Cam dwells VDI 3357, steel

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

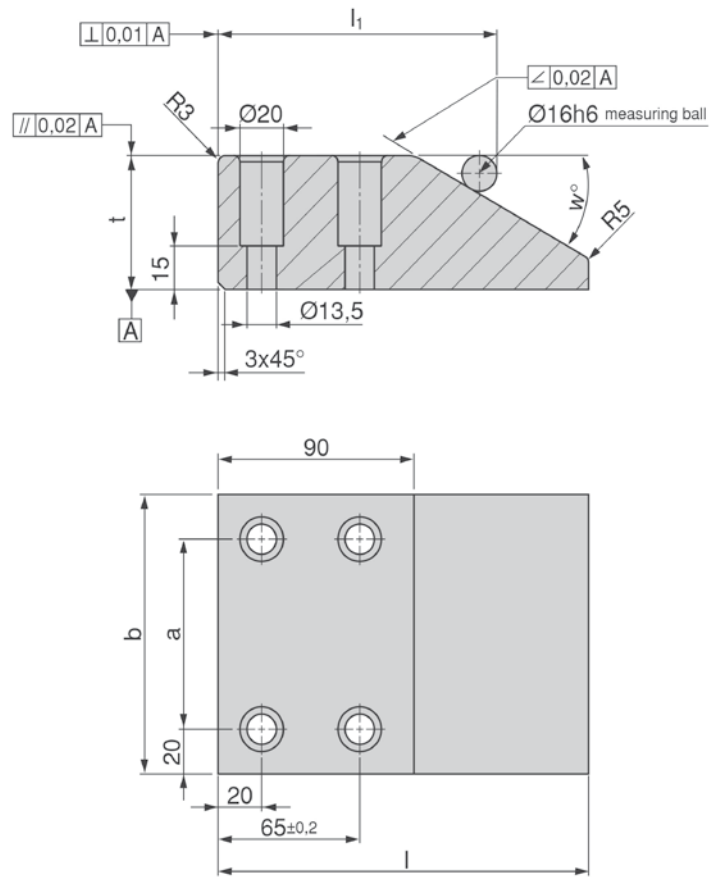


FS 508

Mat.: X153CrMoV12  
Oberflächenhärte: 60 - 62 HRC

Mat.: X153CrMoV12  
Surface hardness: 60 - 62 HRC

FS 508 /  
125 x 170 x 45



| b   | l   | t<br>±0,1 | a   | l1<br>±0,5 | w   |
|-----|-----|-----------|-----|------------|-----|
| 100 | 170 | 45        | 60  | 143,37     | 20° |
| 125 | 170 | 45        | 85  | 143,37     | 20° |
| 150 | 170 | 45        | 110 | 143,37     | 20° |
| 100 | 150 | 45        | 60  | 127,86     | 30° |
| 100 | 170 | 60        | 60  | 127,86     | 30° |
| 125 | 150 | 45        | 85  | 127,86     | 30° |
| 125 | 170 | 60        | 85  | 127,86     | 30° |
| 150 | 150 | 45        | 110 | 127,86     | 30° |
| 150 | 170 | 60        | 110 | 127,86     | 30° |

Führungslaschen, Stahl mit Festschmierstoff

Guide brackets, steel with self lubricating graphite plugs

FÜHRUNGSSYSTEME / GUIDINGSYSTEMS

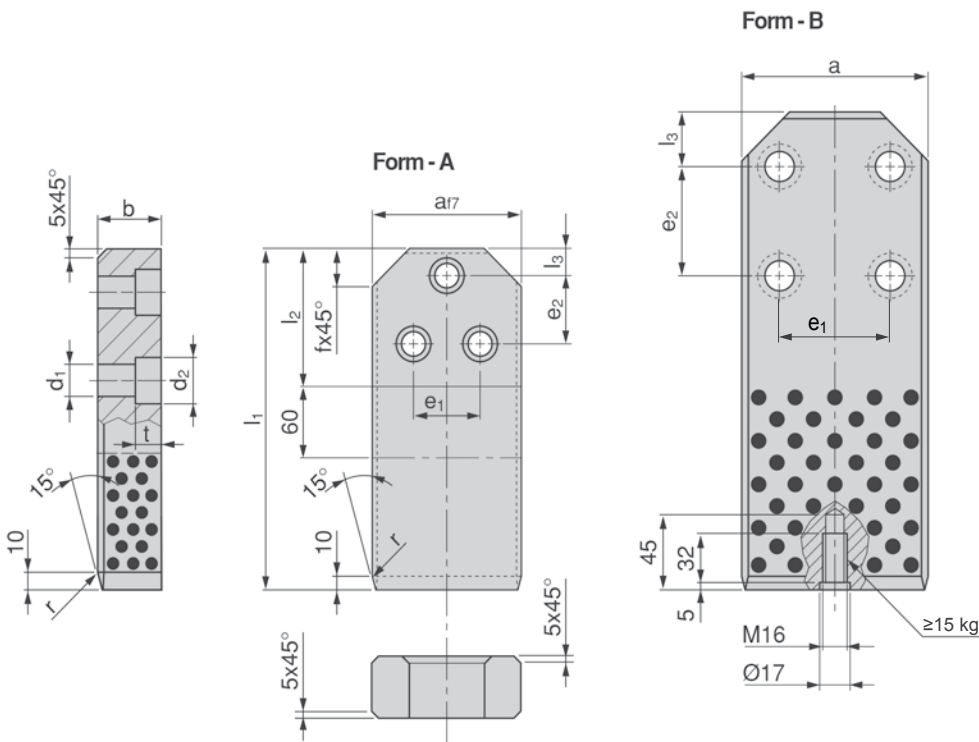


FS 509

Mat.: CK45  
Oberflächenhärte: 58 - 60 HRC

Mat.: CK45  
Surface hardness: 58 - 60 HRC

FS 509 /  
63 x 180 x 36



| a   | l1  | b  | l2  | l3 | e1  | e2  | d1 | d2 | t    | f  | r    | Form |
|-----|-----|----|-----|----|-----|-----|----|----|------|----|------|------|
| 63  | 180 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 63  | 200 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 63  | 224 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 71  | 180 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 71  | 200 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 71  | 224 | 36 | 90  | 20 | 50  | 50  | 14 | 20 | 16   | 18 | 16   | A    |
| 90  | 200 | 36 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 90  | 224 | 36 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 90  | 250 | 36 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 90  | 200 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 90  | 224 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 90  | 250 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 112 | 200 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 112 | 224 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 112 | 250 | 45 | 100 | 20 | 50  | 50  | 18 | 26 | 21   | 28 | 25   | A    |
| 140 | 315 | 45 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 140 | 400 | 45 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 140 | 315 | 56 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 140 | 400 | 56 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 190 | 315 | 45 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 190 | 400 | 45 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 190 | 315 | 56 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 190 | 400 | 56 | 150 | 40 | 90  | 80  | 22 | 33 | 25,5 | 36 | 31,5 | B    |
| 240 | 500 | 56 | 250 | 40 | 160 | 160 | 26 | 40 | 30,5 | 36 | 31,5 | B    |
| 240 | 630 | 56 | 250 | 40 | 160 | 160 | 26 | 40 | 30,5 | 36 | 31,5 | B    |

FS 510

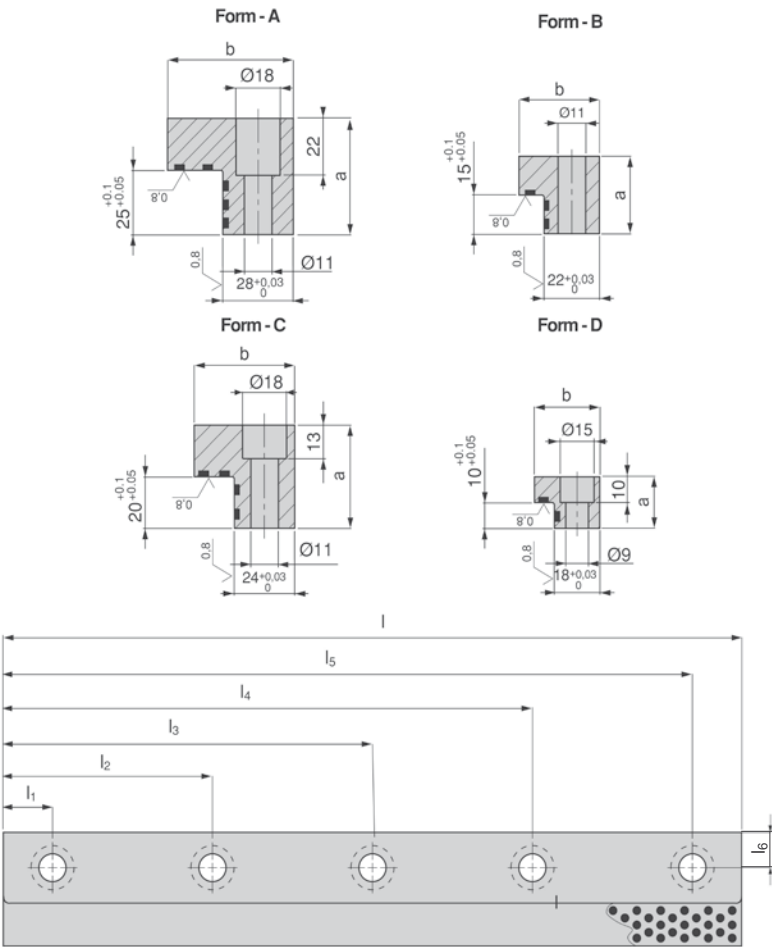
Mat.: Bronze-Graphit

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze-graphite

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.

FS 510 /  
20 x 26 x 100



| a<br>±0,25 | b<br>±0,25 | l   | Form | l1 | l2  | l3  | l4  | l5  | l6 | Bohrungen<br>Holes |
|------------|------------|-----|------|----|-----|-----|-----|-----|----|--------------------|
| 20         | 26         | 100 | D    | 20 | 80  | -   | -   | -   | 9  | 2                  |
| 20         | 26         | 150 | D    | 20 | 75  | 130 | -   | -   | 9  | 3                  |
| 20         | 26         | 200 | D    | 20 | 75  | 125 | 180 | -   | 9  | 4                  |
| 30         | 32         | 100 | B    | 20 | 80  | -   | -   | -   | 11 | 2                  |
| 30         | 32         | 150 | B    | 20 | 75  | 130 | -   | -   | 11 | 3                  |
| 30         | 32         | 200 | B    | 20 | 75  | 125 | 180 | -   | 11 | 4                  |
| 30         | 32         | 250 | B    | 20 | 90  | 160 | 230 | -   | 11 | 4                  |
| 40         | 40         | 160 | C    | 15 | 145 | -   | -   | -   | 12 | 2                  |
| 40         | 40         | 250 | C    | 15 | 145 | 225 | -   | -   | 12 | 3                  |
| 45         | 50         | 200 | A    | 20 | 75  | 125 | 180 | -   | 14 | 4                  |
| 45         | 50         | 250 | A    | 20 | 90  | 160 | 230 | -   | 14 | 4                  |
| 45         | 50         | 300 | A    | 20 | 85  | 150 | 215 | 280 | 14 | 5                  |
| 45         | 50         | 350 | A    | 20 | 100 | 175 | 250 | 330 | 14 | 5                  |

FS 511

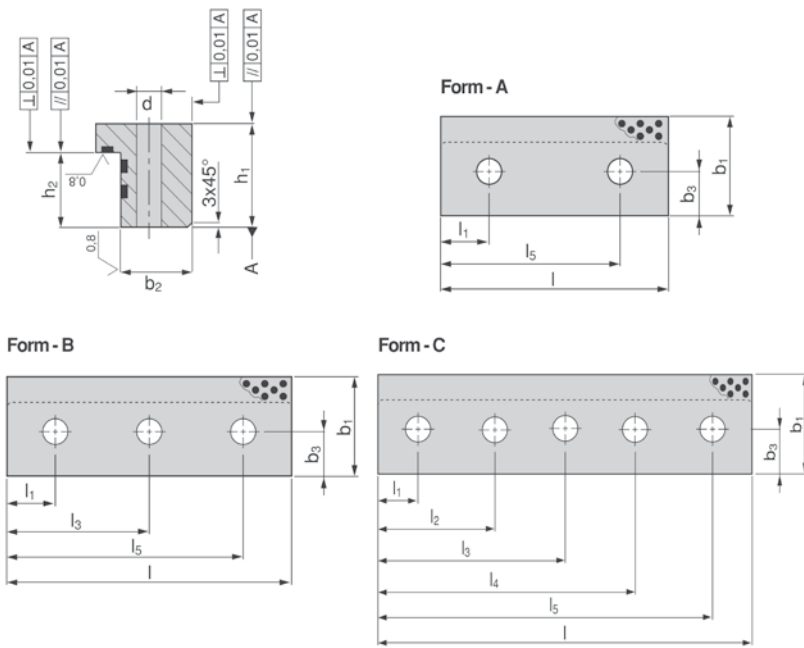
Mat.: Bronze-Graphit

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Mat.: Bronze-graphite

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.

FS 511 /  
55 x 55 x 100



| b1<br>±0,2 | h1<br>±0,2 | l<br>-0,2 | Form | b2<br>-0,02 | b3<br>±0,2 | d<br>H13 | l1<br>±0,2 | l2<br>±0,2 | l3<br>±0,2 | l4<br>±0,2 | l5<br>±0,2 | h2<br>+0,02 |
|------------|------------|-----------|------|-------------|------------|----------|------------|------------|------------|------------|------------|-------------|
| 55         | 55         | 100       | A    | 37          | 20         | 13,5     | 27,5       | -          | -          | -          | 72,5       | 39          |
| 55         | 55         | 160       | A    | 37          | 20         | 13,5     | 27,5       | -          | -          | -          | 132,5      | 39          |
| 70         | 75         | 160       | A    | 50          | 30         | 17,5     | 35         | -          | -          | -          | 125        | 55          |
| 70         | 75         | 200       | A    | 50          | 30         | 17,5     | 35         | -          | -          | -          | 165        | 55          |
| 70         | 75         | 250       | B    | 50          | 30         | 17,5     | 35         | -          | 125        | -          | 215        | 55          |
| 70         | 75         | 400       | C    | 50          | 30         | 17,5     | 35         | 125        | 200        | 275        | 365        | 55          |
| 85         | 90         | 160       | A    | 63          | 38         | 22       | 42,5       | -          | -          | -          | 117,5      | 65          |
| 85         | 90         | 200       | A    | 63          | 38         | 22       | 42,5       | -          | -          | -          | 157,5      | 65          |
| 85         | 90         | 250       | B    | 63          | 38         | 22       | 42,5       | -          | 125        | -          | 207,5      | 65          |
| 85         | 90         | 400       | C    | 63          | 38         | 22       | 42,5       | 125        | 200        | 275        | 357,5      | 65          |

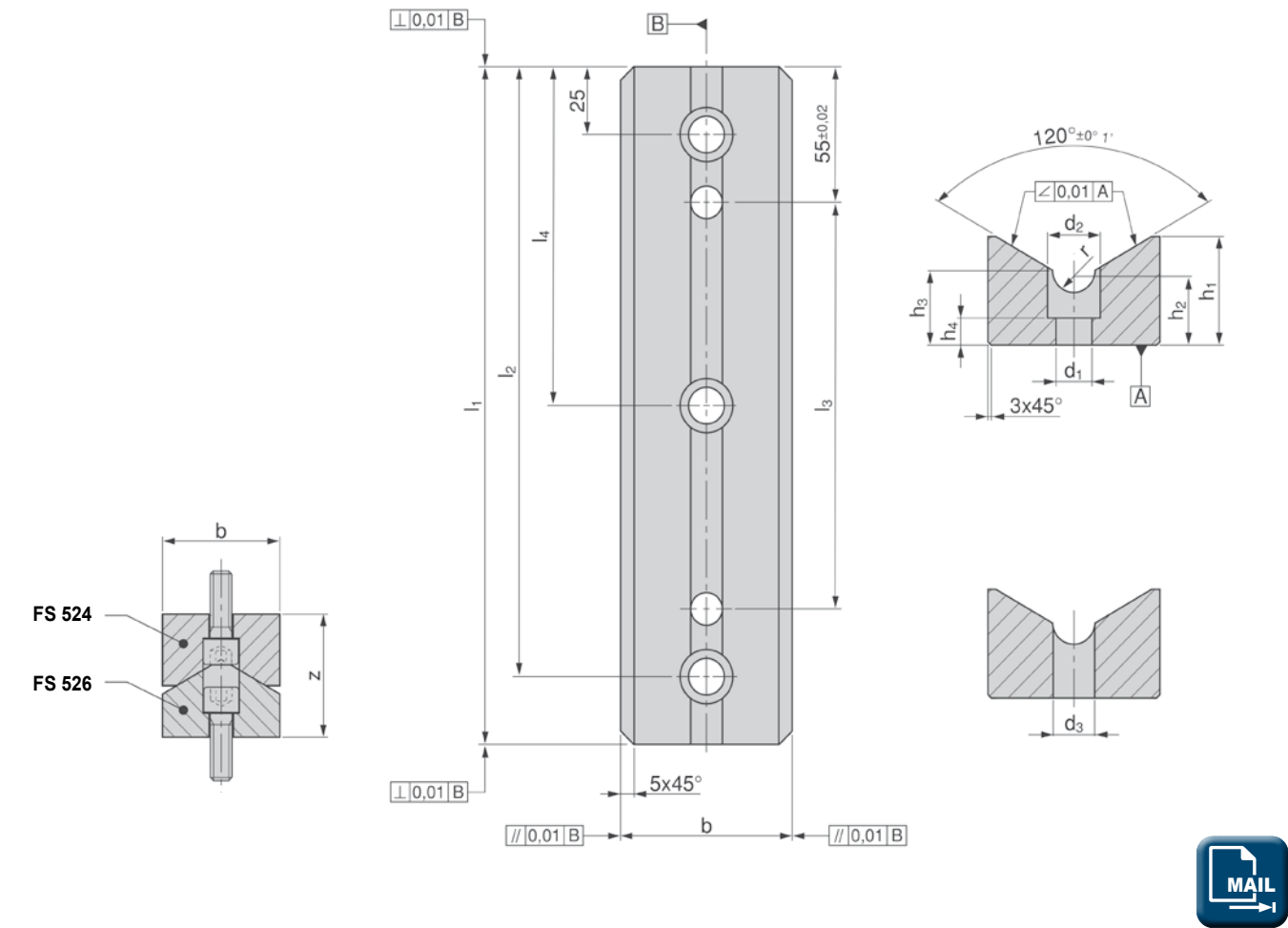


FS 524

Mat.: CK45  
Oberflächenhärte: 56 - 60 HRC

Mat.: CK45  
Surface hardness: 56 - 60 HRC

FS 524 / 65 x 150



| b   | l1   | d1   | d2  | d3 | h1   | h2    | h3   | h4 | l2   | l3    | l4   | r  | z     |
|-----|------|------|-----|----|------|-------|------|----|------|-------|------|----|-------|
| h6  | -0,2 | H13  | H13 | H7 | ±0,2 | ±0,01 | ±0,2 |    | ±0,2 | ±0,01 | ±0,2 |    | +0,05 |
| 65  | 150  | 13,5 | 20  | 12 | 35   | 18    | 22   | 8  | 125  | 45    | -    | 7  | 65    |
| 65  | 200  | 13,5 | 20  | 12 | 35   | 18    | 22   | 8  | 175  | 95    | -    | 7  | 65    |
| 65  | 250  | 13,5 | 20  | 12 | 35   | 18    | 22   | 8  | 225  | 145   | 125  | 7  | 65    |
| 65  | 300  | 13,5 | 20  | 12 | 35   | 18    | 22   | 8  | 275  | 195   | 150  | 7  | 65    |
| 125 | 150  | 17,5 | 26  | 16 | 60   | 28    | 34   | 15 | 125  | 45    | -    | 10 | 85    |
| 125 | 200  | 17,5 | 26  | 16 | 60   | 28    | 34   | 15 | 175  | 95    | -    | 10 | 85    |
| 125 | 250  | 17,5 | 26  | 16 | 60   | 28    | 34   | 15 | 225  | 145   | 125  | 10 | 85    |
| 125 | 300  | 17,5 | 26  | 16 | 60   | 28    | 34   | 15 | 275  | 195   | 150  | 10 | 85    |



FS 526

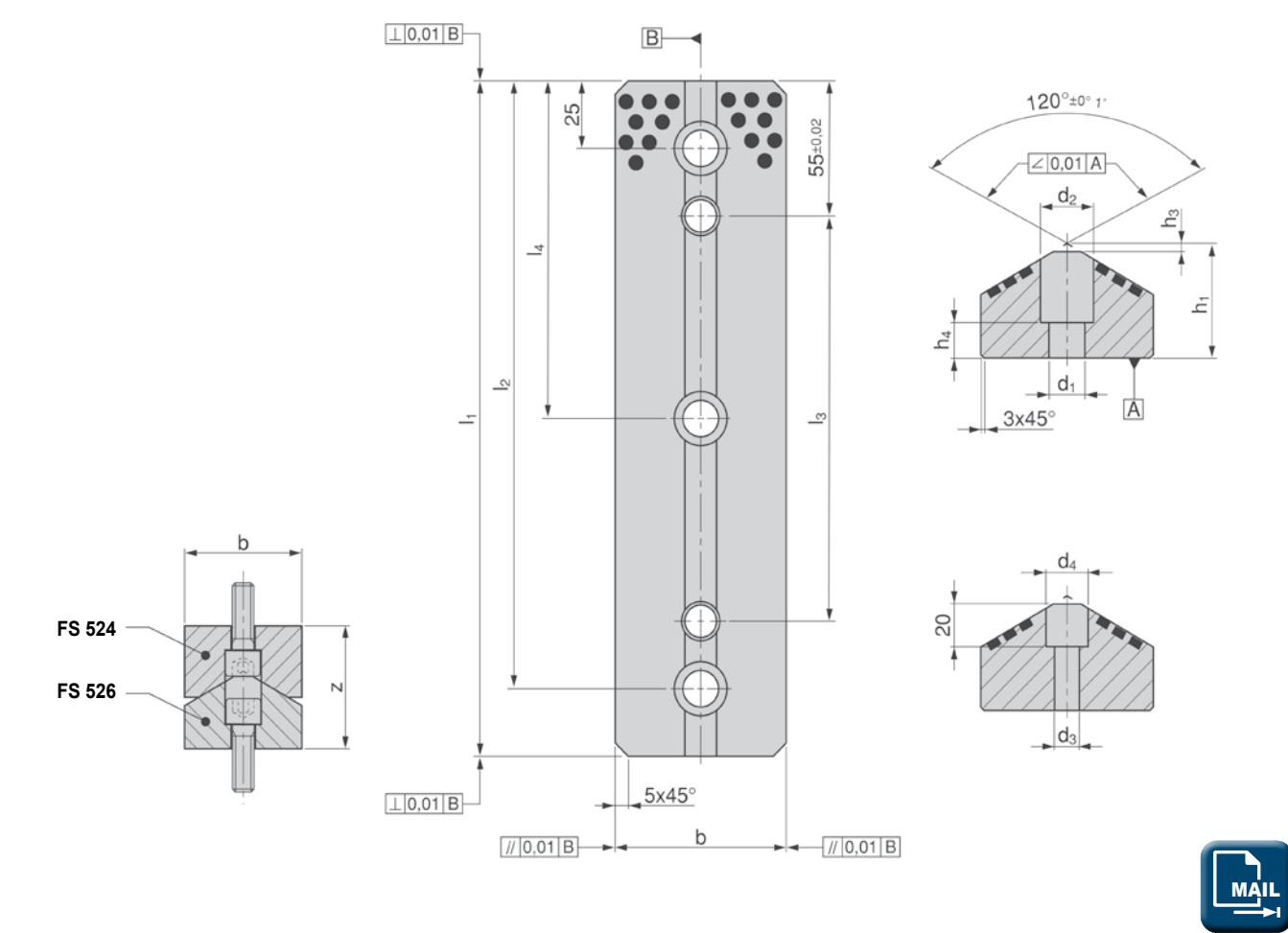
Mat.: Bronze-Graphit

Mat.: Bronze-graphite

FS 526 / 65 x 150

Gleitplatten aus Bronze mit Festschmierstoff-Einsätzen gewährleisten auch im Dauerbetrieb einen wartungsarmen Einsatz.

Bronze wear plates with self lubricating graphite plugs ensure a low maintenance operation, even during long-term production cycles.



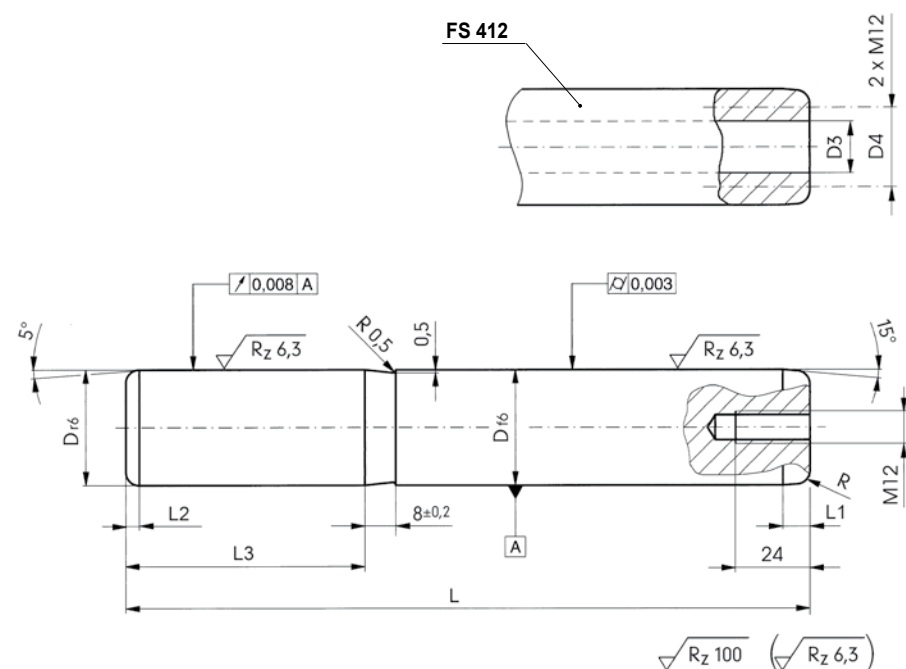
| b   | l1   | d1   | d2  | d3 | d4  | h1    | h3 | l2   | l3    | l4   | z     |
|-----|------|------|-----|----|-----|-------|----|------|-------|------|-------|
| h6  | -0,2 | H13  | H13 | H7 | H13 | ±0,01 |    | ±0,2 | ±0,01 | ±0,2 | +0,05 |
| 65  | 150  | 13,5 | 20  | 12 | 14  | 47    | 3  | 125  | 45    | -    | 65    |
| 65  | 200  | 13,5 | 20  | 12 | 14  | 47    | 3  | 175  | 95    | -    | 65    |
| 65  | 250  | 13,5 | 20  | 12 | 14  | 47    | 3  | 225  | 145   | 125  | 65    |
| 65  | 300  | 13,5 | 20  | 12 | 14  | 47    | 3  | 275  | 195   | 150  | 65    |
| 125 | 150  | 17,5 | 26  | 16 | 18  | 57    | 5  | 125  | 45    | -    | 85    |
| 125 | 200  | 17,5 | 26  | 16 | 18  | 57    | 5  | 175  | 95    | -    | 85    |
| 125 | 250  | 17,5 | 26  | 16 | 18  | 57    | 5  | 225  | 145   | 125  | 85    |
| 125 | 300  | 17,5 | 26  | 16 | 18  | 57    | 5  | 275  | 195   | 150  | 85    |



## FS 410 FS 412

Technischer Hinweis:  
Säulen-Aufnahmebohrungen: H7  
Säulentyp **FS 410** kann ab ø80 mm mit 2 Transportgewinden M12 geliefert werden (bitte angeben).  
Säulentyp **FS 412** bis ø63 mm ohne Hohlbohrung, ab ø80 mm mit Hohlbohrung und 2 Transportgewinden M12 (bitte angeben).  
Passende Führungsbuchsen finden Sie auf Seite FS.34

Technical recommendation:  
Leader pin mounting holes: H7  
Leader pin type **FS 410** with 80 mm diameter and larger can be supplied with two transport-threads M12 (please specify when ordering).  
Leader pin type **FS 412** up to 63 mm without internal hole, 80 mm diameter and larger with internal hole and with two transport-threads M12 (please specify when ordering).



## FS 330 ... RM FS 340 ... RM FS 350 ... RM FS 430 ... RM FS 439 ... RM FS 440 ... RM FS 450 ... RM

Bei RM-Coat handelt es sich um eine dunkelblaugraue Gleitstoffbeschichtung auf Basis Wolframdisulfid (WS2) mit einer Stärke von 0,0005 - 0,0015 mm, die bei Raumtemperatur aufgebracht wird und bis 650° C stabil bleibt.

Sie reduziert - abhängig vom spezifischen Anwendungsfall - die Reibung um bis zu 70%, was zu einer signifikanten Verbesserungen der Schmier- und Gleiteigenschaften der beschichteten Teile führt. Außer einer leichten anfänglichen Schmierung und bei den üblichen Wartungen kann der Schmiermittel-Einsatz in vielen Fällen reduziert werden, wobei meist zusätzlich noch eine deutliche Verlängerung der Standzeiten zu verzeichnen ist.

Sie kann nicht nur, aber auch, auf andere Beschichtungen - wie z.B. PVD und CVD - zusätzlich aufgetragen werden.

Typische Anwendungsbeispiele finden sich beim Umformen, in Wälz- und Gleitlagern und in der Vakuumtechnik. Erstklassige Resultate werden auch im gesamten Bereich der Spritzgießtechnik erzielt, angefangen bei den Führungselementen bis hin zur Beschichtung von komplexen, schwer entformbaren Konturkernen.

Um eine bestmögliche Verbindung zum Trägermaterial zu gewährleisten, müssen die zu beschichtenden Teile vollständig (von Ölen / Fetten, Staub u.ä.) gesäubert werden.

Die Beschichtung lässt sich nur durch mechanische Bearbeitung wieder entfernen.

Die Technik der Wolframdisulfid-Beschichtung findet sich in jedem amerikanischen Flugzeug. Sie ist unter den strengen Auflagen der amerikanischen NAMS - Class 6 getestet und als bio-kompatibel eingestuft worden. Der Beschichtungs-Prozess wird in Übereinstimmung mit den US-Militär - Spezifikationen DOD-L-85645 A Type 1 ausgeführt.

Im Programm der Märkischen Stanz-Partner werden die Artikel der Serie **FS 330 / ... bis FS 350 / ...** standardmäßig mit RM-Coat beschichtet, bei allen anderen Führungs- und Funktionsteilen nach Rücksprache bzw. nach Anforderung.

Bezüglich weiterer Anwendungsfälle sprechen Sie uns gerne an.

RM-Coat ist eine dunkelblaugraue tungsten disulfid (WS2) Gleitstoffbeschichtung, die bei Raumtemperatur aufgetragen wird und bis 650° C stabil bleibt.

Abhängig von der spezifischen Anwendung, reduziert diese Beschichtung die Reibung um bis zu 70%, was zu einer signifikanten Verbesserung der Gleiteigenschaften der beschichteten Teile führt. Außer einer leichten anfänglichen Schmierung und bei den üblichen Wartungen kann der Schmiermittel-Einsatz in vielen Fällen reduziert werden, wobei meist zusätzlich noch eine deutliche Verlängerung der Standzeiten zu verzeichnen ist.

Die RM Beschichtung kann (nicht muss!) auf andere Beschichtungen wie PVD und CVD aufgetragen werden.

Typische Anwendungsbeispiele finden sich beim Umformen, in Wälz- und Gleitlagern und in der Vakuumtechnik. Erstklassige Resultate werden auch im gesamten Bereich der Spritzgießtechnik erzielt, angefangen bei den Führungselementen bis hin zur Beschichtung von komplexen, schwer entformbaren Konturkernen.

Um eine hervorragende Verbindung zwischen der Beschichtung und dem Trägermaterial zu gewährleisten, muss das zu beschichtende Bauteil vollständig (von Ölen / Fetten, Staub, Öl, Schmiermittel etc.) gereinigt werden.

Die Beschichtung kann nur mechanisch entfernt werden.

Die Beschichtungstechnik wird in jedem amerikanischen Flugzeug eingesetzt. Sie ist unter den strengen Auflagen der amerikanischen NAMS - Class 6 getestet und als bio-kompatibel eingestuft worden. Der Beschichtungs-Prozess wird in Übereinstimmung mit den US-Militär - Spezifikationen DOD-L-85645 A Type 1 ausgeführt.

In unserem Programm werden die Artikel der Serie **FS 330 / ... bis FS 350 / ...** standardmäßig mit RM-Coat beschichtet, bei allen anderen Führungs- und Funktionsteilen nach Rücksprache bzw. nach Anforderung.

Bitte kontaktieren Sie uns für spezifische Anwendungsfälle.

[FS]