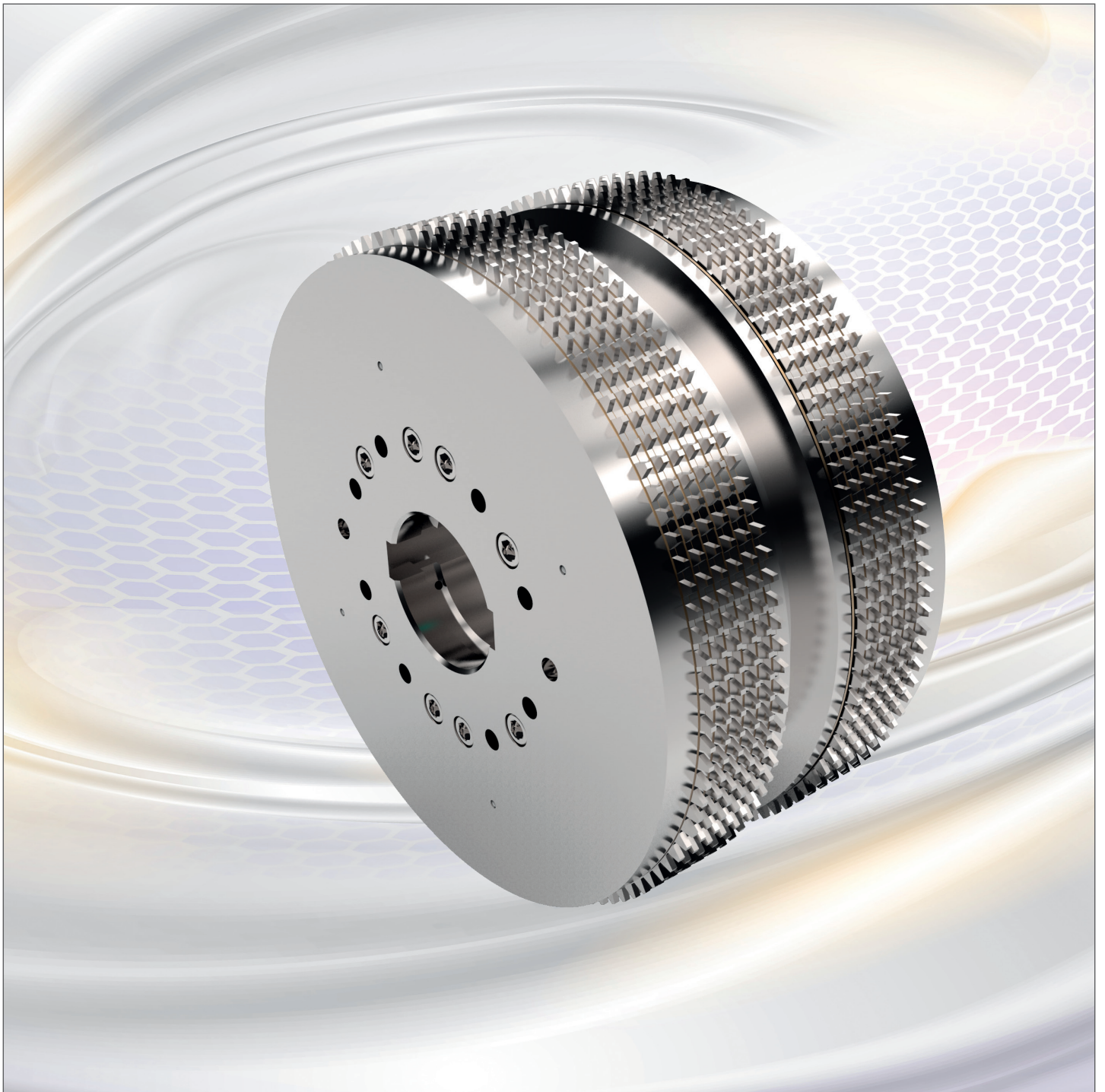


DESCH Lutex® CLUTCH/BRAKE COMBINATION

Type HKB and HKBT- hydraulically actuated



Description

The hydraulically actuated Lutex® HKB is a wet-type, multiple plate clutch/brake combination. When the HKB is not subjected to oil pressure, the brake is engaged by the pretensioned springs. When the hydraulic oil is fed into the cylinder, the piston overcomes the spring force and is pressed against the plate package of the clutch. The platepackage of the brake opens and the clutch engages. An overlap of clutch and brake functions is impossible.

HKB's are used especially in intermittently operating machines like presses, shearing machines, folding presses and similar ones. The use of a HKB is an investment into the future because of the nearly abrasion free operation, the low environmental hurt factor, the compact design at high torque ratings and at high operating frequency low power consumption as well.

The Lutex® HKB conforms to the safety requirements of the "employers' liability insurance association".

Standard toothed rings

Four standard designs (see Fig. 3) are available for each size, thus offering several installation possibilities. Each design can be used for the clutch or the brake. The connection bores for designs 1 to 3 are made to customer specifications.

Inner clutch

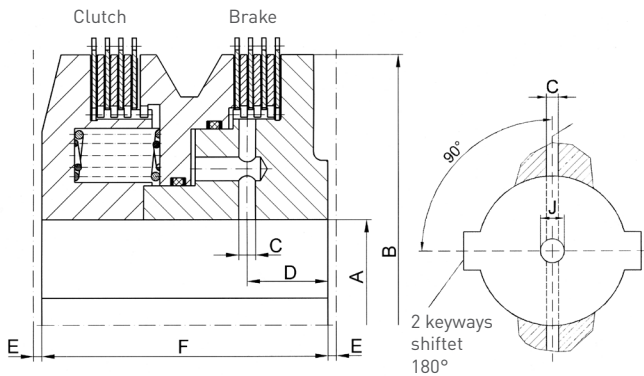


Fig. 1

Designating example

The clutch torque and the designs of the clutch and brake toothed rings are designated in the number key.

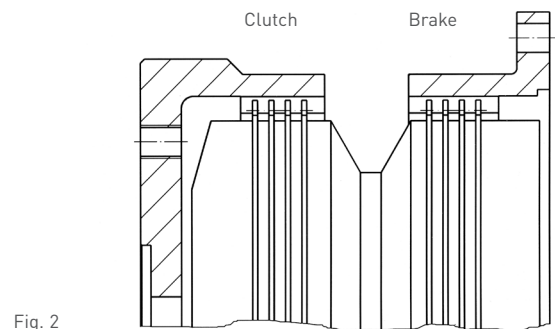
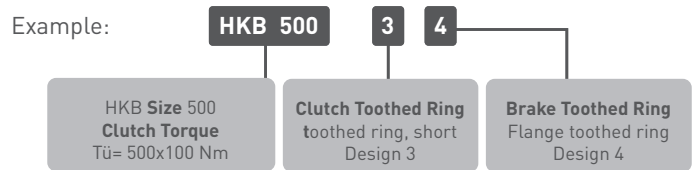


Fig. 2

Installation hints

Prior to installation we recommend that DESCH experts determine the selection of

- the necessary torques of clutch and brake
- the thermal load and the frequency of operations
- the necessary quantity of cooling oil
- the necessary hydraulic unit (optional)

The operation pressure is 60 bar. Installation is only possible in horizontal position. The bore of the HKB is made according to DIN 6885 with two keyways shifted 180° to each other (special keyways optional). Two bores for pressure oil inlet shifted 90° to keyways. Application of clamping elements (as an option).

| HKB Size | Torques | | Max. Speed ⁴⁾ min ⁻¹ | Cylinder-volume cm ³ | I inside kgm ² | Weight Inside Clutch kg | Dimensions in mm | | | | | | | |
|----------|-------------------------------|------------------------------|--|---------------------------------|---------------------------|-------------------------|------------------|------|-----|----|-----|---|-------|-----|
| | Clutch Tü ^{1) 3)} Nm | Brake Ts ^{1) 3)} Nm | | | | | A | | B | C | D | E | F | J |
| | | | | | | | min. | max. | | | | | | |
| 32 | 3 150 | 1 060 | 1700 | 8 | 0,08 | 17,5 | 45 | 80 | 196 | 6 | 31 | 5 | 110 | 8,5 |
| 50 | 5 000 | 1 560 | 1700 | 12 | 0,10 | 21 | 45 | 80 | 196 | 6 | 31 | 5 | 126,5 | 8,5 |
| 63 | 6 300 | 2 120 | 1300 | 13 | 0,28 | 36 | 60 | 100 | 254 | 8 | 36 | 5 | 135 | 12 |
| 100 | 10 000 | 3 120 | 1300 | 19 | 0,33 | 44 | 60 | 100 | 254 | 8 | 36 | 5 | 156 | 12 |
| 125 | 12 500 | 4 250 | 1000 | 21 | 0,90 | 74 | 75 | 125 | 320 | 10 | 48 | 5 | 170 | 14 |
| 200 | 20 000 | 6 250 | 1000 | 31 | 1,10 | 90 | 75 | 125 | 320 | 10 | 48 | 5 | 196 | 14 |
| 250 | 25 000 | 8 500 | 850 | 40 | 2,50 | 130 | 95 | 160 | 394 | 12 | 60 | 5 | 205 | 18 |
| 400 | 40 000 | 12 500 | 850 | 60 | 3,00 | 154 | 95 | 160 | 394 | 12 | 60 | 5 | 237 | 18 |
| 500 | 50 000 | 17 000 | 680 | 73 | 7,20 | 250 | 120 | 200 | 496 | 15 | 65 | 5 | 230 | 22 |
| 800 | 80 000 | 25 000 | 680 | 110 | 8,50 | 303 | 120 | 200 | 496 | 15 | 65 | 5 | 266 | 22 |
| 1000 | 100 000 | 30 000 | 540 | 122 | 25 | 503 | 150 | 250 | 630 | 20 | 85 | 5 | 265 | 30 |
| 1450 | 145 000 | 44 000 | 540 | 186 | 30 | 633 | 150 | 250 | 630 | 20 | 120 | 5 | 330 | 30 |
| 2000 | 200 000 | 63 000 | 440 | 320 | 82 | 1170 | 180 | 310 | 780 | 24 | 103 | 5 | 370 | 34 |
| 3200 | 320 000 | 100 000 | 440 | 450 | 98 | 1420 | 180 | 310 | 780 | 24 | 103 | 5 | 460 | 34 |

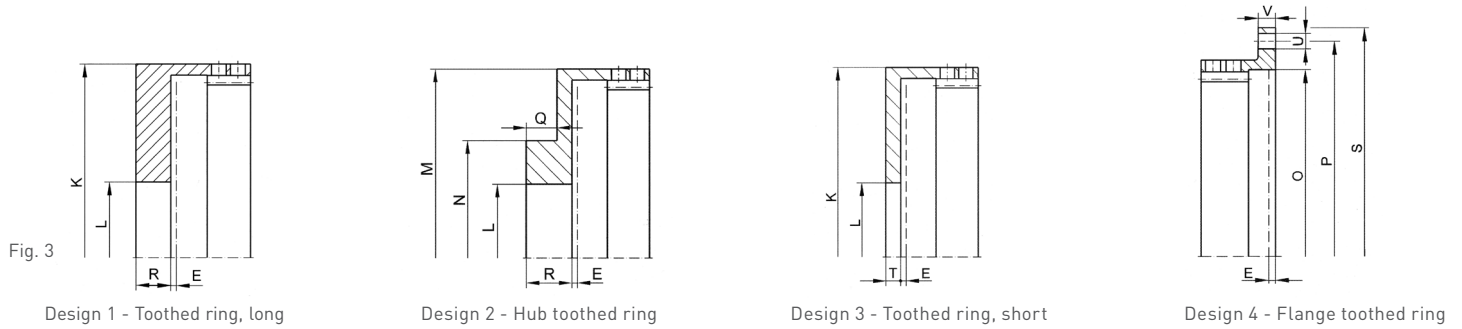
1) Tü = static torque at 60 bar

2) Ts = dynamic torque

3) Alteration for clutch/brake torque relation possible by manufacturer

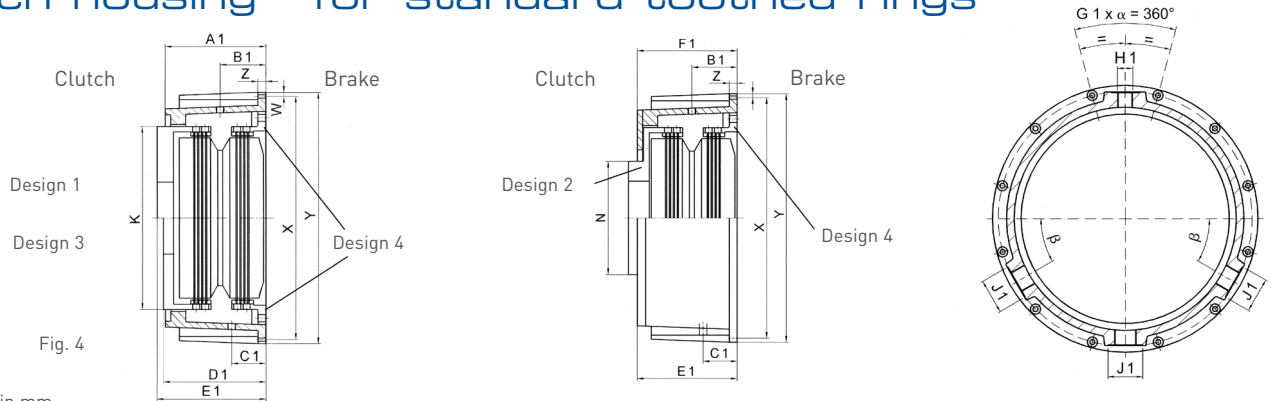
4) Not permitted for operation with single strokes

Standard toothed rings - optionally for clutch or brake



| HKB Size | Weight and mass moment of inertia I outside | | | | | | | | Dimensions of toothed rings in mm | | | | | | | | | | | | |
|----------|---|------------------|----------|------------------|----------|------------------|----------|------------------|-----------------------------------|-----|------|-----|-----|-----|-----|----|-----|-----|----|----|----|
| | Design 1 | | Design 2 | | Design 3 | | Design 4 | | E | K | L | M | N | O | P | Q | R | S | T | U | V |
| | kg | kgm ² | kg | kgm ² | kg | kgm ² | kg | kgm ² | f 7 | f 7 | min. | f 7 | f 7 | H 7 | | | f 7 | | | | |
| 32 | 11 | 0,107 | 6,7 | 0,065 | 6,2 | 0,067 | 3,6 | 0,05 | 5 | 230 | 80 | 230 | 160 | 215 | 245 | 26 | 35 | 260 | 16 | 9 | 11 |
| 50 | 11 | 0,115 | 7,0 | 0,072 | 6,7 | 0,075 | 4,2 | 0,06 | 5 | 230 | 80 | 230 | 160 | 215 | 245 | 26 | 35 | 260 | 16 | 9 | 11 |
| 63 | 20 | 0,310 | 12,3 | 0,20 | 11 | 0,19 | 6,1 | 0,15 | 5 | 290 | 80 | 290 | 200 | 275 | 310 | 28 | 40 | 330 | 18 | 11 | 12 |
| 100 | 21 | 0,340 | 13 | 0,22 | 12 | 0,22 | 7,2 | 0,18 | 5 | 290 | 80 | 290 | 200 | 275 | 310 | 28 | 40 | 330 | 18 | 11 | 12 |
| 125 | 42 | 1,120 | 29 | 0,80 | 24 | 0,72 | 12,6 | 0,50 | 5 | 380 | 100 | 365 | 250 | 350 | 400 | 30 | 45 | 425 | 20 | 14 | 16 |
| 200 | 44 | 1,210 | 31 | 0,90 | 26 | 0,81 | 14,6 | 0,60 | 5 | 380 | 100 | 365 | 250 | 350 | 400 | 30 | 45 | 425 | 20 | 14 | 16 |
| 250 | 62 | 2,3 | 46 | 1,70 | 35 | 1,44 | 20,3 | 1,18 | 5 | 440 | 130 | 440 | 340 | 415 | 470 | 32 | 55 | 500 | 25 | 18 | 20 |
| 400 | 65 | 2,5 | 49 | 1,90 | 38 | 1,68 | 24 | 1,44 | 5 | 440 | 130 | 440 | 340 | 415 | 470 | 32 | 55 | 500 | 25 | 18 | 20 |
| 500 | 118 | 7,1 | 80 | 4,90 | 67 | 4,6 | 36 | 3,50 | 5 | 560 | 165 | 560 | 400 | 530 | 590 | 40 | 65 | 630 | 30 | 22 | 25 |
| 800 | 124 | 7,9 | 86 | 5,70 | 73 | 5,3 | 42 | 4,30 | 5 | 560 | 165 | 560 | 400 | 530 | 590 | 40 | 65 | 630 | 30 | 22 | 25 |
| 1000 | 194 | 18,4 | 146 | 14 | 130 | 14 | 68 | 10,8 | 5 | 700 | 200 | 700 | 500 | 670 | 750 | 45 | 80 | 800 | 40 | 30 | 30 |
| 1450 | 207 | 21 | 160 | 17 | 144 | 17 | 80 | 13,4 | 5 | 700 | 200 | 700 | 500 | 670 | 750 | 45 | 80 | 800 | 40 | 30 | 30 |
| 2000 | 432 | 64 | 304 | 45 | 261 | 43 | 146 | 35 | 5 | 870 | 250 | 870 | 640 | 830 | 930 | 60 | 100 | 990 | 50 | 33 | 40 |
| 3200 | 462 | 72 | 333 | 53 | 291 | 52 | 174 | 43 | 5 | 870 | 250 | 870 | 640 | 830 | 930 | 60 | 100 | 990 | 50 | 33 | 40 |

Clutch housing - for standard toothed rings



Dimensions in mm

| HKB Size | K f 7 | N f 7 | W | X | Y f 7 | Z | A1 | B1 | C1 | D1 | E1 | F1 | H1 | J1 | G1 x α° | β° | |
|----------|-------|-------|----|------|-------|----|-------|-----|-----|-------|-------|-------|-------|-------|---------|----|----|
| 32 | 230 | 160 | 9 | 305 | 325 | 11 | 117 | 60 | 40 | 136 | 155 | 147 | G ¾ | G ¾ | 8 | 45 | 40 |
| 50 | 230 | 160 | 9 | 305 | 325 | 11 | 137,5 | 70 | 40 | 152,5 | 171,5 | 163,5 | G ¾ | G ¾ | 8 | 45 | 40 |
| 63 | 290 | 200 | 11 | 385 | 410 | 11 | 140 | 75 | 50 | 163 | 185 | 177 | G ¾ | G 1 | 8 | 45 | 40 |
| 100 | 290 | 200 | 11 | 385 | 410 | 11 | 161 | 80 | 50 | 184 | 206 | 198 | G ¾ | G 1 | 8 | 45 | 40 |
| 125 | 380 | 250 | 11 | 480 | 505 | 14 | 180 | 90 | 60 | 200 | 225 | 217 | G 1 | G 1 ¼ | 8 | 45 | 40 |
| 200 | 380 | 250 | 11 | 480 | 505 | 14 | 206 | 105 | 60 | 226 | 251 | 243 | G 1 | G 1 ¼ | 8 | 45 | 40 |
| 250 | 440 | 340 | 11 | 555 | 580 | 15 | 205 | 105 | 70 | 240 | 270 | 261 | G 1 | G 1 ½ | 12 | 30 | 30 |
| 400 | 440 | 340 | 11 | 555 | 580 | 15 | 244 | 125 | 70 | 272 | 302 | 293 | G 1 | G 1 ½ | 12 | 30 | 30 |
| 500 | 560 | 400 | 11 | 685 | 710 | 16 | 255 | 120 | 80 | 270 | 305 | 295 | G 1 | G 1 ½ | 12 | 30 | 30 |
| 800 | 560 | 400 | 11 | 685 | 710 | 16 | 290 | 140 | 80 | 306 | 341 | 331 | G 1 | G 1 ½ | 12 | 30 | 30 |
| 1000 | 700 | 500 | 14 | 870 | 900 | 20 | 299 | 138 | 110 | 315 | 355 | 345 | G 1 | G 2 | 12 | 30 | 30 |
| 1450 | 700 | 500 | 14 | 870 | 900 | 20 | 364 | 170 | 110 | 380 | 420 | 410 | G 1 | G 2 | 12 | 30 | 30 |
| 2000 | 870 | 640 | 18 | 1070 | 1110 | 25 | 440 | 180 | 110 | 430 | 480 | 465 | G 1 ½ | G 2 ½ | 20 | 18 | 36 |
| 3200 | 870 | 640 | 18 | 1070 | 1110 | 25 | 530 | 220 | 110 | 520 | 570 | 555 | G 1 ½ | G 2 ½ | 20 | 18 | 36 |

Lutex® clutch/brake combination Type HKBT

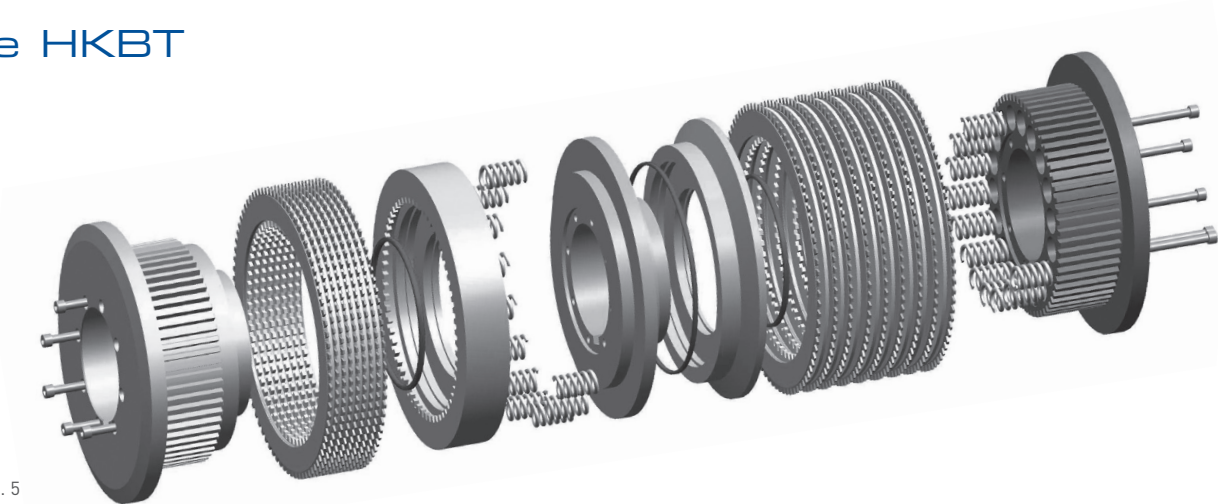


Fig. 5

Description

The Lutex® clutch series HKBT consists of a separate clutch and a separate brake. This type was designed for special requirements of engagement. The HKBT series is based on the standard HKB series and is executed with pressure springs and friction discs according to customer requirements. The HKBT series is transmitting clutch torques in the range of 3 to 500 kNm. The design of the brake allows the usage of more pressure springs and therefore an increase of the brake torque up to 50%. Clutch and brake can be controlled by one or two pressure lines.

Controlling the HKBT with one pressure line

When one pressure line is used clutch and brake piston are forced by the same pressure. The relation of the spring quantities is responsible for the engagement behaviour of the system. If the spring force is greater on the brake, in a certain pressure range there will be an overlapping of the torques of clutch and brake at the same time. This is advantageous to avoid a falling

down of the press slide during the inching mode. If the spring force is greater on the clutch the opposite effect appears. In a certain pressure range no clutch and brake torque is engaged. This can be useful if a running-in idle is required e. g. for a creep speed drive.

Controlling the HKBT with two pressure lines

Clutch and brake are driven separately. This allows an engaging with a defined overlapping of clutch and brake torque or in the opposite way an idle run of the HKBT. The high dynamic proportional valves control the HKBT in a very sensitive way. The flexibility of the pressure control allows to use a clutch with low pressure force and high clutch torque or to use a brake with max. spring force and maximum brake torque. The full potential of the HKBT can be used.

The required multi-channel rotating unions to supply the HKBT with pressure and cooling oil also belong to the scope of supply of DESCH.

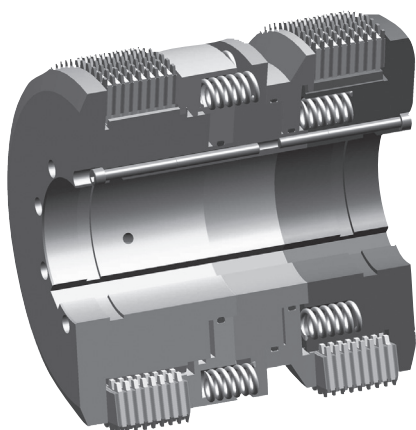


Fig. 6
Lutex® Clutch/Brake Combination
Type HKBT

Benefits of the clutch/brake combination

- Very low maintenance, safe and reliable
- Low mass moment of inertia
- Great max. bore diameter
- Shortest engagement times
- Separate controlling of clutch and brake allows the most flexible way to handle the clutch, overlapping of clutch and brake torque or idle run is possible.
- Sinter bronze friction discs with very high durability
- Controlling of clutch and brake by one or two pressure lines

Rotary unions for pressure oil feed

for axial and radial outlet

installation into shaft

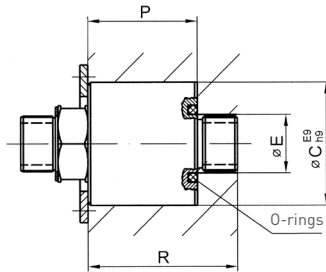
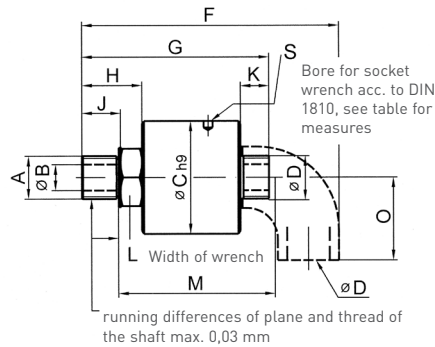


Fig. 7

| A | B | C | D | E | F | G | H | J | K | L | M | O | P | R | S |
|-------|------|-------|-------|----|-----|-----|----|----|----|----|-----|----|--------|----|---|
| RH | | E9/h9 | RH | | | | | | | | | | - 0,25 | | |
| G 3/8 | 9,5 | 42 | G | 18 | 119 | 93 | 26 | 16 | 12 | 19 | 93 | 25 | 54,5 | 67 | 4 |
| G 1/2 | 12,7 | 55 | G 1/2 | 22 | 138 | 109 | 34 | 19 | 14 | 24 | 107 | 28 | 60,5 | 75 | 6 |
| G 3/4 | 17,5 | 63 | G 3/4 | 28 | 158 | 122 | 34 | 19 | 16 | 30 | 124 | 33 | 71,5 | 88 | 6 |

Operating data

max. oil pressure 60 bar
max. temperature 120°C
max. speed 1500 rpm

Type 1 without angle piece
Type 2 with angle piece
Type 3 with O-ring
Type 4 with O-ring and angle piece

Recommendation for installation

Clamp flexible hose line or elbow fitting piece into the bench vice and fasten the oil press inlet by means of the socket wrench, than screw the oil press inlet into shaft. 2- and 3-channel oil feed on request.

Examples of installation

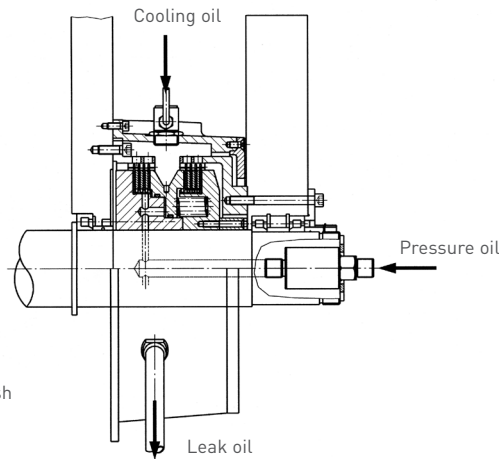


Fig. 8
HKB with splash lubrication

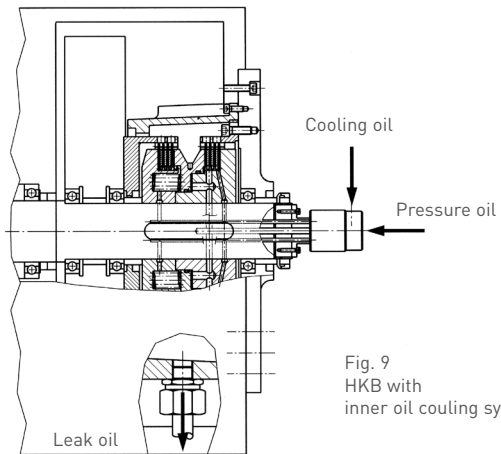


Fig. 9
HKB with inner oil cooling system

Other products for press drives

- Lutex® LKB, LS - Pneumatically actuated clutch/brake combination with high torque at small dimensions
- DESCH Complete Press Drive KA - Complete press drives. (either hydraulically or pneumatically operated) together with planetary gearbox and flywheel
- DESCH Complete Press Drive KAS - Complete press drives with hydraulically actuated clutch and brake, with planetary gearbox, flywheel and additionally with an engageable gear step
- DESCH Complete Press Drive KAE - Complete press drives with planetary gearbox, pneumatically or hydraulically actuated clutch/brake combination and a flywheel. KAE with integrated torque motor inside of the flywheel
- DESCH Servox® type series - one- or two-stage planetary gearbox with hydraulically released brake and with adaptor for common torque motors, also available with spur gear for up to 4 motors
- Further components - Quick exhaust module, crankshafts, flywheels, pulleys, hydraulic power units and accessories
- Customised solutions on request!

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