

DESCH Lutex® CLUTCH/BRAKE COMBINATION

Type LKB - pneumatically actuated



Lutex® clutch/brake combination LKB



Application of area

The pneumatically actuated Lutex® LKB is a dry running single plate combined clutch/brake (it is referred to the following text as the C-B-C). Originally developed for use on presses and shearing machines it is particularly suitable for applications where medium and large inertias are to be accelerated or decelerated. The heat resistant properties of the friction surfaces enables the Lutex® C-B-C to achieve the high operating cycle required by presses. Its compact construction allows the C-B-C to be mounted in a very small space between the machine frame and the flywheel. The C-B-C conforms to the safety requirements of the EN 692: 2005+A1:2009.

Function

The brake disc is mounted on the press/machine frame whilst the clutch disc is mounted on the flywheel. The piston is mounted on the hub and is free to move axially between the hub and the cylinder. In the depressurized mode compression springs keep the brake disc in contact with the cylinder. The brake is on. As air is flowing into the cylinder the spring tension is overcome and the brake begins to open, the increase in air pressure engages the clutch.

The friction discs are available with either 12-point or 2-point mounting (see table on page 3). In the 2-point system the mounting points can be either long or short depending upon the machine frame requirements.

Benefits of the Lutex® clutch/brake combination (C-B-C)

- The LKB series covers most of the standard mounting requirements
- Low-maintenance, safe, reliable
- Low moment of inertia
- Large shaft bore
- High heat resistance
- Low air consumption
- High frequency of operation
- High engagement repeatability
- Heavy duty friction linings with long life time
- 2-point mounting system with plastic collar for noise and vibration absorption
- Quick and easy replacement of the friction discs
- Several methods of mounting the friction discs
- Wide range of brake and clutch settings
- Mechanical wear adjustment (on sizes 30 to 75)
- Certificate of conformity to safety regulations
- Use of clamping elements (as an option)

Technical data

| Size | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|------------------------------------------|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Clutch ¹⁾ | T_u ¹⁾ Nm | 250 | 400 | 760 | 1500 | 3000 | 5700 | 7200 | 9000 | 13000 | 17500 | 23500 | 37000 | 56000 | 80000 | 115000 |
| Brake ³⁾ | T_s ²⁾ Nm | 140 | 225 | 430 | 850 | 1700 | 3200 | 4100 | 5100 | 7400 | 10000 | 13400 | 21000 | 32000 | 46000 | 65000 |
| Weight kg | LKB | 5,3 | 7,0 | 12,6 | 23,6 | 45,1 | 87,2 | 109 | 133,9 | 179 | 271 | 367 | 603 | 764 | 1048 | 1577 |
| | LKBZ | 5,7 | 7,6 | 14,2 | 25,6 | 49,0 | 95,8 | 118 | 143,8 | 194 | 294 | 395 | 649 | 811 | 1104 | 1662 |
| | LKBZU | 5,8 | 7,7 | 14,4 | 25,7 | 49,7 | 96,3 | 119 | 144,5 | 196 | 298 | 399 | 657 | 819 | 1115 | 1678 |
| | LKBBZ | 5,4 | 7,3 | 13,4 | 24,6 | 47,1 | 91,5 | 114 | 138,8 | 187 | 283 | 381 | 626 | 788 | 1076 | 1620 |
| | LKBBZU | 5,6 | 7,4 | 13,6 | 24,4 | 47,8 | 92,0 | 114 | 139,6 | 189 | 286 | 385 | 634 | 796 | 1087 | 1636 |
| J inside | kgm ² all types | 0,014 | 0,024 | 0,064 | 0,202 | 0,59 | 1,61 | 2,31 | 3,33 | 5,41 | 10,42 | 17,09 | 40,48 | 57,93 | 98,79 | 191,93 |
| J outside | LKB/LKBBZ/ LKBBZU | 0,004 | 0,006 | 0,017 | 0,047 | 0,16 | 0,58 | 0,81 | 1,14 | 1,88 | 3,78 | 6,84 | 13,10 | 14,07 | 25,72 | 43,69 |
| | LKBZ/LKBZU/LKBKZ | 0,007 | 0,010 | 0,035 | 0,074 | 0,25 | 0,90 | 1,18 | 1,62 | 2,56 | 5,51 | 9,07 | 19,04 | 19,04 | 36,76 | 63,07 |
| Cylinder volume | new ⁴⁾ | 0,04 | 0,05 | 0,08 | 0,19 | 0,3 | 0,5 | 0,6 | 0,8 | 1,2 | 1,7 | 2 | 2,9 | 4,1 | 5,1 | 8,8 |
| | worn ⁴⁾ | 0,06 | 0,09 | 0,15 | 0,31 | 0,6 | 0,9 | 1,2 | 1,5 | 2,3 | 3,4 | 4 | 6,3 | 10 | 12,6 | 18,4 |
| Max. speed | rpm ⁻¹ ⁵⁾ | 2800 | 2800 | 2500 | 1800 | 1400 | 1200 | 1100 | 1000 | 900 | 800 | 700 | 600 | 600 | 550 | 500 |
| Linear dimensions in mm | A ISO JS 10 ⁶⁾ | 230 | 250 | 315 | 390 | 495 | 610 | 645 | 695 | 770 | 880 | 970 | 1140 | 1140 | 1300 | 1465 |
| | A1 ISO JS 10 ⁶⁾ | 305 | 325 | 410 | 490 | 635 | 790 | 830 | 885 | 990 | 1135 | 1235 | 1450 | 1450 | 1645 | 1855 |
| | B | 262 | 282 | 360 | 435 | 560 | 695 | 730 | 780 | 870 | 1000 | 1090 | 1280 | 1280 | 1460 | 1625 |
| | B ₁ | 337 | 357 | 442 | 522 | 680 | 855 | 895 | 950 | 1075 | 1235 | 1335 | 1570 | 1570 | 1790 | 1995 |
| | c | 9 | 11 | 12 | 15 | 19 | 22 | 27 | 27 | 28 | 35 | 36 | 40 | 40 | 50 | 50 |
| | c ₁ | 25 | 20 | 35 | 35 | 45 | 50 | 50 | 50 | 60 | 70 | 70 | 90 | 90 | 90 | 110 |
| | c ₂ | 25 | 20 | 20 | 20 | 35 | 45 | 45 | 45 | 50 | 60 | 60 | 70 | 70 | 70 | 90 |
| | E | 11 | 11 | 16 | 16 | 20 | 27 | 27 | 27 | 29,5 | 38,5 | 38,5 | 44,5 | 44,5 | 44,5 | 50,5 |
| | E ₁ | 11 | 11 | 11 | 11 | 16 | 20 | 20 | 20 | 27 | 29,5 | 29,5 | 38,5 | 38,5 | 38,5 | 45,5 |
| | H | 20 | 20 | 25 | 25 | 25 | 35 | 35 | 35 | 35 | 45 | 45 | 45 | 45 | 45 | 45 |
| | H ₁ | 20 | 20 | 20 | 20 | 25 | 25 | 25 | 25 | 35 | 35 | 35 | 45 | 45 | 45 | 45 |
| | G | 17 | 18 | 20 | 22 | 29 | 32 | 37,5 | 38 | 42,5 | 48 | 55 | 65 | 70 | 75 | 90 |
| | G ₁ | 11 | 12 | 15 | 18 | 22,5 | 26,5 | 29,5 | 29,5 | 31 | 35,5 | 38,5 | 45 | 49 | 54 | 61 |
| | G ₂ | 17 | 21 | 23 | 30,5 | 36,5 | 42,5 | 48 | 49,5 | 56 | 64,5 | 72 | 85 | 141 | 144 | 180 |
| | G ₃ | 56 | 64 | 73 | 90 | 110 | 135 | 150 | 155 | 170 | 195 | 215 | 260 | 320 | 350 | 410 |
| | L | 50 | 58 | 65 | 82 | 100 | 125 | 140 | 145 | 160 | 185 | 205 | 250 | 310 | 340 | 400 |
| | L ₁ | 55 | 62 | 78 | 95 | 112 | 135 | 148 | 155 | 165 | 186 | 202 | 248 | 257 | 288 | 325 |
| | L ₂ | 26,5 | 30 | 38 | 50 | 52 | 66 | 75 | 82 | 83 | 98 | 110 | 145 | 148 | 172 | 170 |
| | L ₃ | 16 | 20 | 20 | 25 | 35 | 40 | 45 | 45 | 50 | 60 | 70 | 70 | 70 | 90 | 90 |
| L ₄ | 55,5 | 58 | 72 | 86 | 104 | 127 | 140 | 145 | 155 | 176 | 192 | 233 | 242 | 273 | 308 | |
| L ₅ | 13 | 14 | 17 | 23 | 21,5 | 31,5 | 37,5 | 47 | 42 | 52,5 | 61,5 | 87,5 | 84 | 103 | 92 | |
| s | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| t | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | |
| o | 7 | 7 | 10 | 13 | 13 | 13 | 13 | 13 | 13 | 15 | 15 | 15 | 20 | 20 | 22 | |
| D _a | 196 | 220 | 275 | 347 | 435 | 535 | 570 | 620 | 680 | 775 | 865 | 1000 | 1000 | 1150 | 1290 | |
| D ₁ | 80 | 85 | 105 | 125 | 155 | 175 | 185 | 190 | 210 | 245 | 280 | 320 | 320 | 365 | 420 | |
| D ₂ | 166 | 188 | 235 | 304 | 380 | 465 | 497 | 543 | 593 | 675 | 755 | 885 | 885 | 1005 | 1140 | |
| D ₅ ISO k6 ⁶⁾ | 14 | 14 | 22 | 22 | 30 | 40 | 40 | 40 | 45 | 55 | 55 | 65 | 65 | 65 | 80 | |
| D ₆ ISO k6 ⁶⁾ | 14 | 14 | 14 | 14 | 22 | 30 | 30 | 30 | 40 | 45 | 45 | 55 | 55 | 55 | 65 | |
| d | 7 | 8 | 8,5 | 12 | 14 | 14 | 18 | 18 | 18 | 20 | 20 | 24 | 28 | 30 | 32 | |
| d ₁ ⁷⁾ | M5 | M5 | M6 | M8 | M10 | M14 | M14 | M14 | M14 | M16 | M20 | M24 | M24 | M24 | M30 | |
| d ₄ | M4 x 12 | M4 x 12 | M5 x 16 | M5 x 16 | M5 x 16 | M6 x 20 | M6 x 20 | M6 x 20 | M6 x 20 | M8 x 25 | M8 x 25 | M8 x 25 | M8 x 25 | M8 x 25 | M8 x 25 | |
| d ₇ | M4 x 12 | M4 x 12 | M4 x 12 | M4 x 12 | M5 x 16 | M5 x 16 | M5 x 16 | M5 x 16 | M6 x 20 | M6 x 20 | M6 x 20 | M8 x 25 | M8 x 25 | M8 x 25 | M8 x 25 | |
| K JS 10 ⁶⁾ | 182 | 205 | 255 | 325 | 408 | 500 | 536 | 584 | 640 | 725 | 810 | 945 | 945 | 1080 | 1220 | |
| Z - 0,1 | 10 | 10 | 12 | 15 | 18 | 25 | 25 | 25 | 30 | 35 | 40 | 40 | 40 | 50 | 50 | |
| D _{max} (ISO H7) ⁸⁾ | 35 | 40 | 52 | 70 | 90 | 110 | 115 | 125 | 140 | 160 | 180 | 210 | 210 | 240 | 270 | |
| keyway DIN 6885 | | | | | | | | | | | | | | | | |
| D _{min} (ISO H7) | 20 | 25 | 35 | 40 | 45 | 45 | 60 | 60 | 70 | 70 | 80 | 90 | 90 | 130 | 165 | |

In the range of max. speed (ca. $0,7 \times n_{max}$) we recommend dynamical balancing.

1) T_u = static torque at $p = 6$ bar

2) T_s = dynamic torque

3) Alteration of clutch/brake torque relation possible. Details on request

4) Type with reduced cylinder volume on request

5) Not permitted for operation with single strokes

6) Tolerances for connecting parts

7) Self-locking screws

8) Clamping elements on request

Types

| Type | Mounting of the friction disc | | | | | |
|--------|-------------------------------|------------|-------------|-------------|------------|--|
| | brake disc | | | clutch disc | | |
| | 12 - point | 2 - point | | 12 - point | 2 - point | |
| | short strap | long strap | short strap | short strap | long strap | |
| LKB | • | | | • | | |
| LKBZ | | • | | | • | |
| LKBBZ | | • | | • | | |
| LKBZU | | | • | | • | |
| LKBBZU | | | • | • | | |

Type LKB

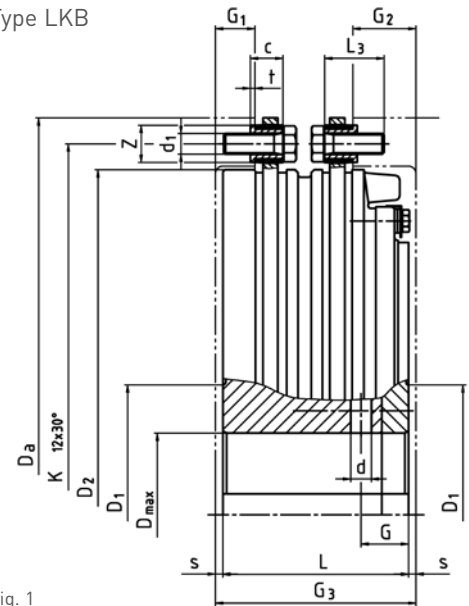


Fig. 1

Type LKBZ

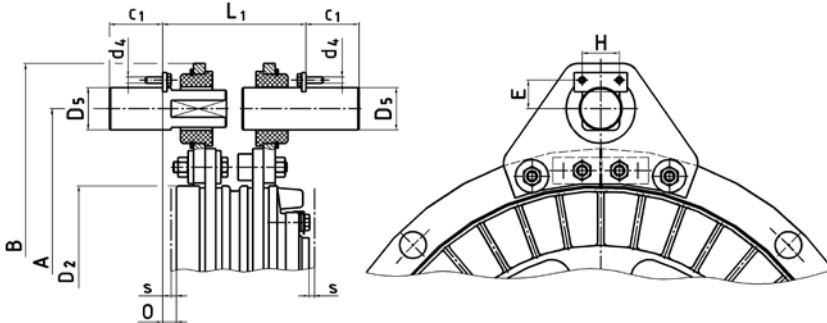


Fig. 2

Type LKBBZ

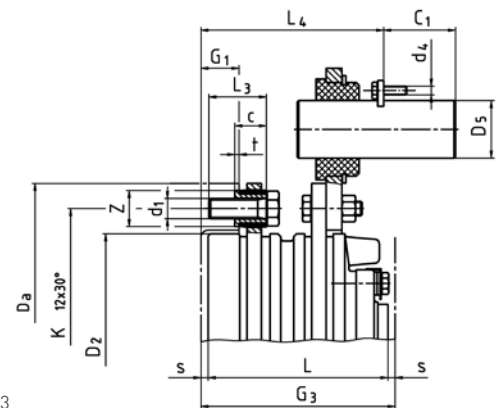


Fig. 3

Type LKBZU

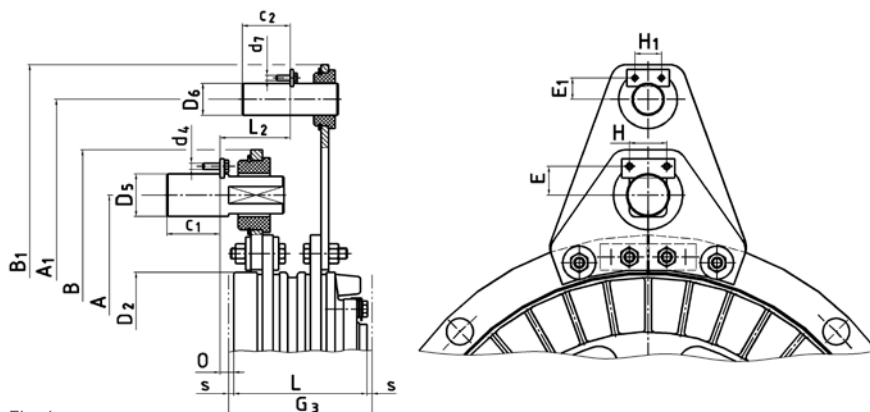


Fig. 4

Type LKBBZU

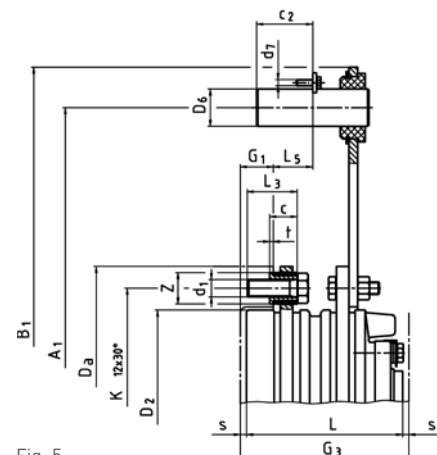


Fig. 5

Air supply

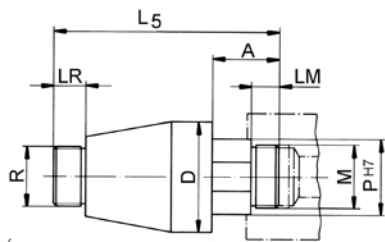
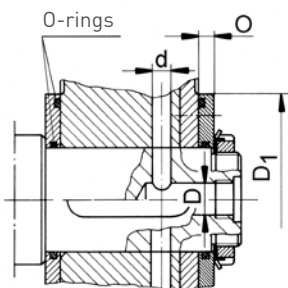


Fig. 6

Direct connection of the press safety valve or the electromagnetic valve with rotating air supply is possible. A rotary air supply system for higher speed is available as an option.

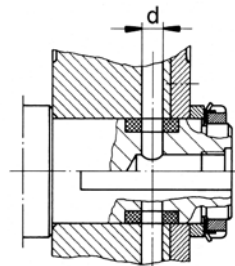
| Rotor size R | G ^{3/8} | G ^{1/2} | G ^{3/4} | G1 | G1 ^{1/4} | G1 ^{1/2} | G2 |
|-----------------------------|------------------|------------------|------------------|----------|-------------------|-------------------|----------|
| Part number | 653 | 654 | 655 | 656 | 657 | 658 | 659 |
| Max. speed [rpm] | 2800 | 2500 | 1400 | 1200 | 800 | 700 | 600 |
| A | 26,5 | 35,5 | 37,5 | 37,5 | 42 | 42 | 51 |
| LM | 14 | 15 | 15 | 15 | 22 | 22 | 25 |
| LR | 12 | 12 | 16 | 18 | 20 | 22 | 25 |
| D | 38 | 55 | 65 | 65 | 88 | 88 | 110 |
| M | M 16 | M 35x1,5 | M 35x1,5 | M 35x1,5 | M 50x1,5 | M 50x1,5 | M 65x1,5 |
| p H7 | 20 | 40 | 40 | 40 | 60 | 60 | 70 |
| L5 | 81,5 | 115,5 | 123,5 | 125,5 | 149 | 151 | 214 |
| Suitable for Lutex® LKB-... | 05-10 | 10-20 | 20-30 | 25-40 | 45-60 | 55-65 | 65-75 |

Shaft sealing



Cover seal is only available with a closed keyway

Fig. 7



Grooved shaft seal is available with an open keyway

Fig. 8

The diameter "D" of the shaft bore should be approximately 1.4 times that of the air supply bore, diameter "d".

Examples of installation

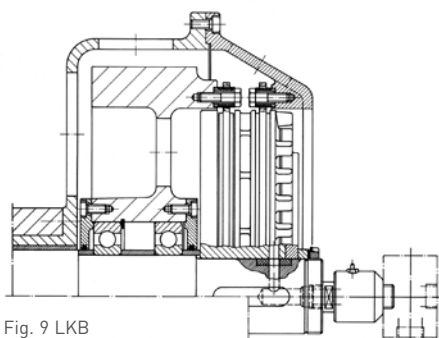


Fig. 9 LKB

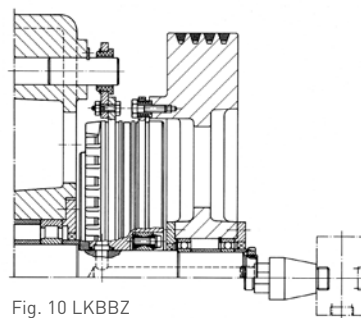


Fig. 10 LKBBZ

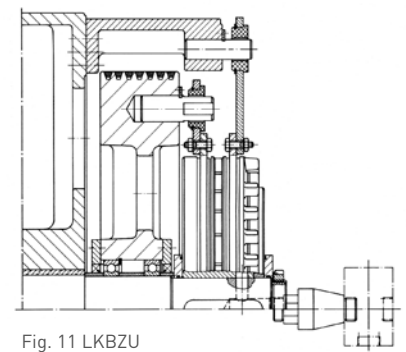


Fig. 11 LKBZU

Other products for press drives

- Lutex® LS - Pneumatically actuated clutch/brake combination with high torque at small dimensions
- Lutex® HKB, HKBT - Hydraulically actuated clutch/brake combination: separate clutch - separate brake
- 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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