

## K-045

| Ratio  | Stages | $n_{1N}$<br>(1)<br>rpm | $n_{1Max}$<br>(2)<br>rpm | $T_{2N}$<br>(3)<br>N·m | $T_{2Max}$<br>(4)<br>N·m | $T_{2E}$<br>(5)<br>N·m | $F_{RMaxP}$<br>(7)<br>N | J<br>(8)<br>Kg·cm <sup>2</sup> | $C_H$<br>(6)<br>N·m/' | $C_P$<br>(7)<br>N·m/' | $\Delta\phi$<br>' | $\eta$<br>% | M<br>Kg      |
|--------|--------|------------------------|--------------------------|------------------------|--------------------------|------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|-------------------|-------------|--------------|
| 5.81   | 3      | 1400                   | 4500                     | 230                    | 265                      | 391                    | 3140                    | 3.6                            | 23                    | 26                    | 12                | 96          | 19.15 - 33.2 |
| 6.58   | 3      | 1400                   | 4500                     | 240                    | 276                      | 408                    | 3270                    | 2.8                            | 23                    | 26                    | 12                | 96          | 19.15 - 33.2 |
| 7.36   | 3      | 1400                   | 4500                     | 250                    | 288                      | 425                    | 3390                    | 2.3                            | 23                    | 26                    | 11                | 96          | 19.15 - 33.2 |
| 8.56   | 3      | 1400                   | 4500                     | 270                    | 311                      | 459                    | 3500                    | 1.8                            | 23                    | 26                    | 11                | 96          | 19.15 - 33.2 |
| 9.10   | 3      | 1400                   | 4500                     | 280                    | 322                      | 476                    | 3540                    | 1.6                            | 23                    | 26                    | 11                | 96          | 19.15 - 33.2 |
| 10.56  | 3      | 1400                   | 4500                     | 280                    | 322                      | 476                    | 3830                    | 1.2                            | 23                    | 26                    | 11                | 96          | 19.15 - 33.2 |
| 11.77  | 3      | 1400                   | 4500                     | 280                    | 322                      | 476                    | 4060                    | 1.0                            | 23                    | 26                    | 10                | 96          | 19.15 - 33.2 |
| 12.19  | 3      | 1400                   | 4500                     | 350                    | 402                      | 595                    | 3720                    | 2.4                            | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 13.65  | 3      | 1400                   | 4500                     | 360                    | 414                      | 612                    | 3890                    | 2.0                            | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 15.86  | 3      | 1400                   | 4500                     | 380                    | 437                      | 646                    | 4080                    | 1.6                            | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 16.86  | 3      | 1400                   | 4500                     | 380                    | 437                      | 646                    | 4230                    | 1.4                            | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 19.58  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 4440                    | 1.1                            | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 21.81  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 4710                    | 0.91                           | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 24.06  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 4970                    | 0.75                           | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 25.91  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5170                    | 0.68                           | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 29.32  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5520                    | 0.55                           | 29                    | 33                    | 8                 | 96          | 19.15 - 33.2 |
| 31.30  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5700                    | 0.50                           | 29                    | 33                    | 7                 | 96          | 19.15 - 33.2 |
| 35.39  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 1.3                            | 32                    | 36                    | 7                 | 94          | 19.15 - 33.2 |
| 39.61  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 1.1                            | 32                    | 36                    | 7                 | 94          | 19.15 - 33.2 |
| 46.03  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.88                           | 32                    | 36                    | 7                 | 94          | 19.15 - 33.2 |
| 48.95  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.80                           | 32                    | 36                    | 7                 | 94          | 19.15 - 33.2 |
| 56.83  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.64                           | 32                    | 36                    | 7                 | 94          | 19.15 - 33.2 |
| 63.30  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.54                           | 32                    | 36                    | 6                 | 94          | 19.15 - 33.2 |
| 69.84  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.45                           | 32                    | 36                    | 6                 | 94          | 19.15 - 33.2 |
| 75.20  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.42                           | 32                    | 36                    | 6                 | 94          | 19.15 - 33.2 |
| 85.12  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.35                           | 32                    | 36                    | 6                 | 94          | 19.15 - 33.2 |
| 90.86  | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.32                           | 32                    | 36                    | 6                 | 94          | 19.15 - 33.2 |
| 104.37 | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.26                           | 32                    | 36                    | 6                 | 93          | 19.15 - 33.2 |
| 121.48 | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.21                           | 32                    | 36                    | 6                 | 93          | 19.15 - 33.2 |
| 131.87 | 3      | 1400                   | 4500                     | 400                    | 460                      | 680                    | 5920                    | 0.18                           | 32                    | 36                    | 6                 | 93          | 19.15 - 33.2 |

(1) Rated input speed.

(2) Maximum Input Speed.

(3)  $T_{2N}$  value is calculated at  $n_{1N}$ , continuous duty cycle, uniform operation, KA=1 and unlimited theoretical life time as per ISO-6336 (NL>N00 in the Woehler line). The application factor KA according to DIN-3990-1 must be considered for each duty cycle and machine type.

(4)  $T_{2Max}$  only for very short time intervals.

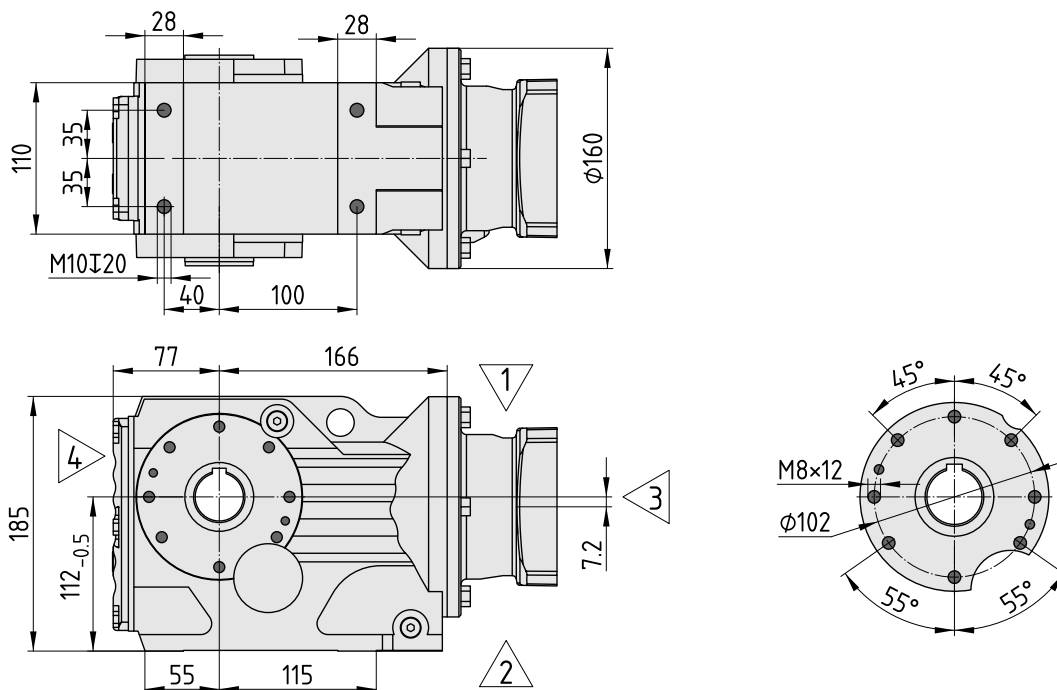
(5) Up to 1000 times during the gearbox's lifetime.

(6)  $F_{RMax}$  for gearboxes with flange and hollow output shaft

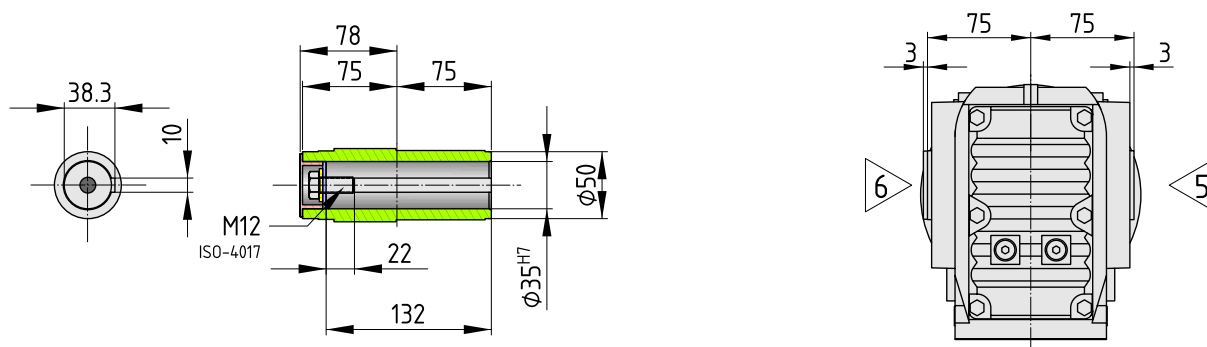
(7)  $F_{RMax}$  for gearboxes without flanges and with solid output shaft

(8) Varies depending on input.

### KB-045-00: Basic Design

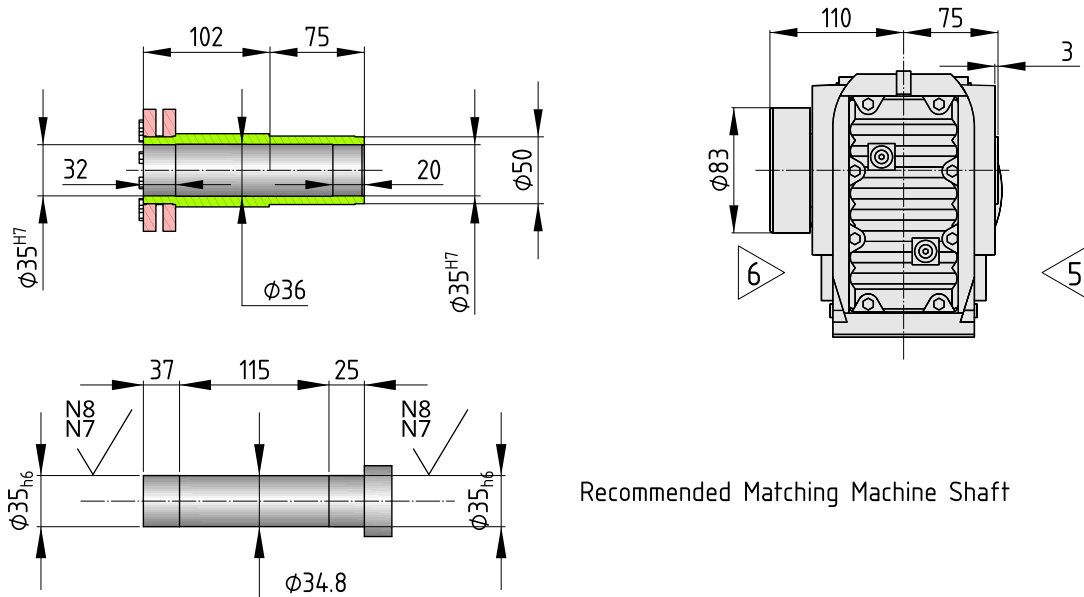


### KB-045-00-H: Hollow Shaft with Keyway



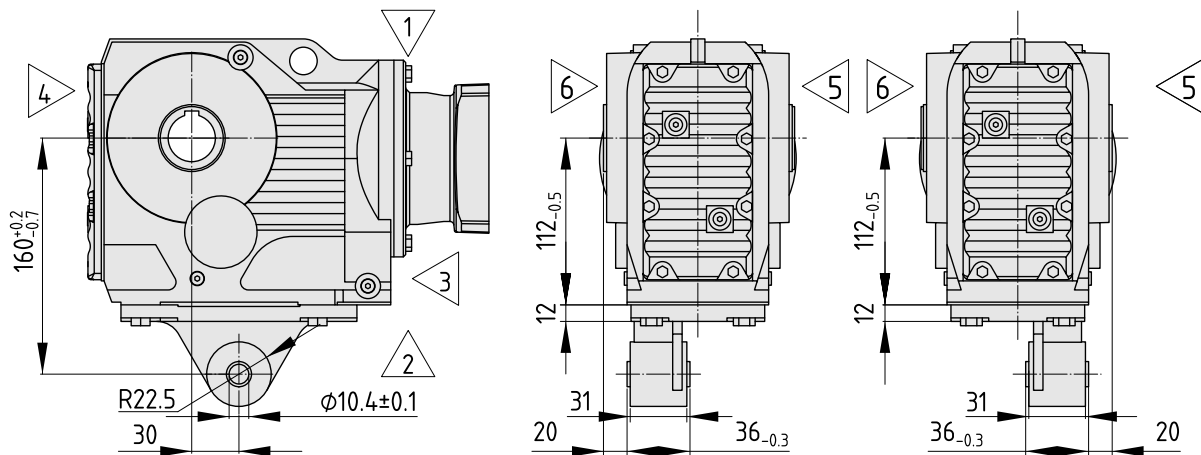
### KB-045-00-HS□: Hollow Shaft with Shrink Disk

The drawings depict the shrink disk on side 6 (HS56), but it can also be installed on side 5 (HS5).



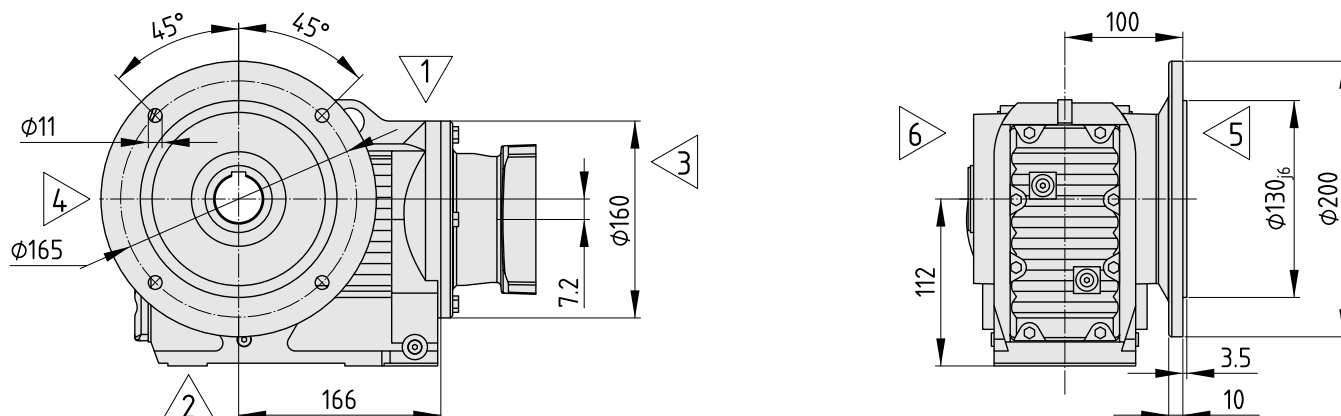
### Accessory: Torque Arm

Customer must specify if the torque arm should be placed closer to side 5 or 6.

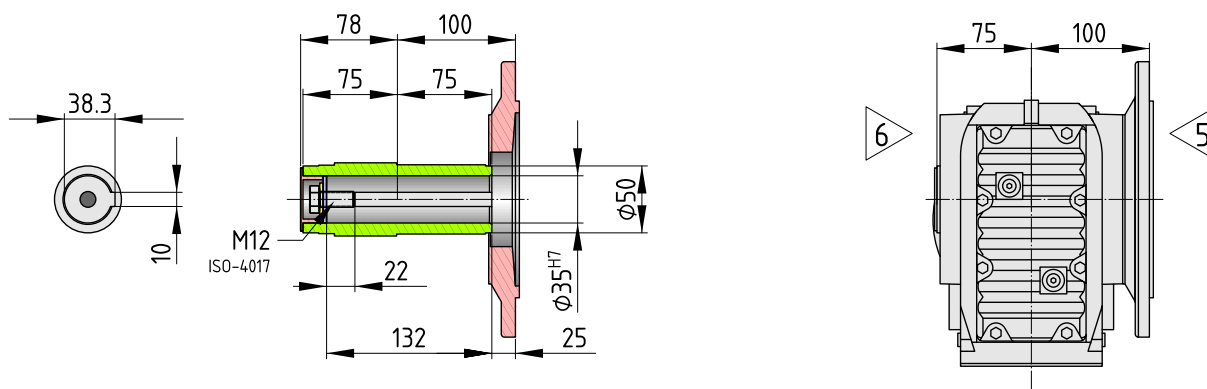


### KB-045-F□: B5 Flange Mounted

The drawings depict the flange on side 5 (F5), but it can also be installed on side 6 (F6).

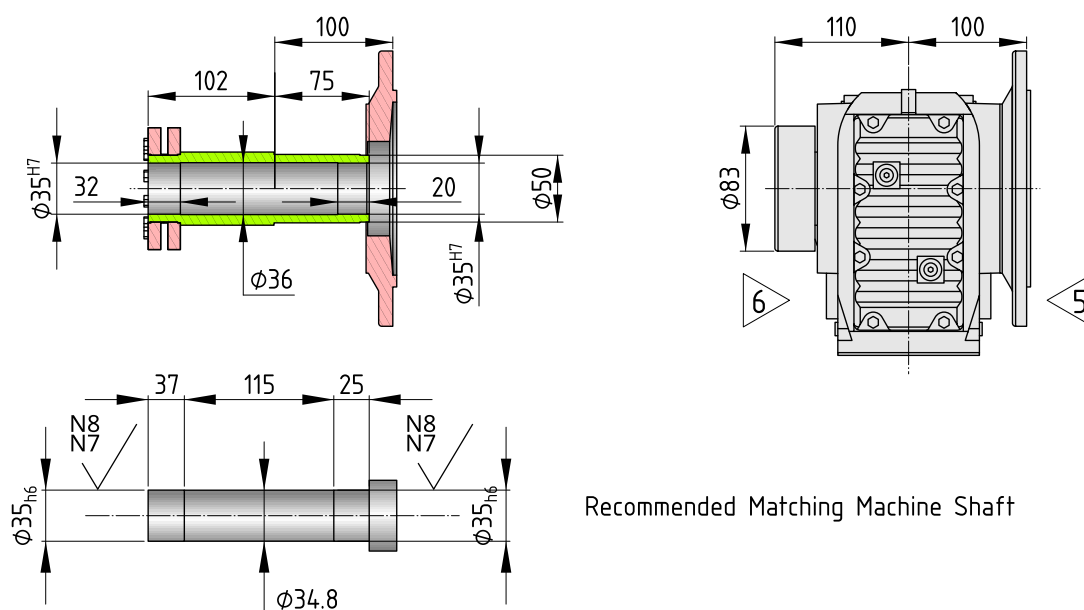


### KB-045-F□-H: Hollow Shaft with Keyway



### KB-045-F□-HS□: Hollow Shaft with Shrink Disk

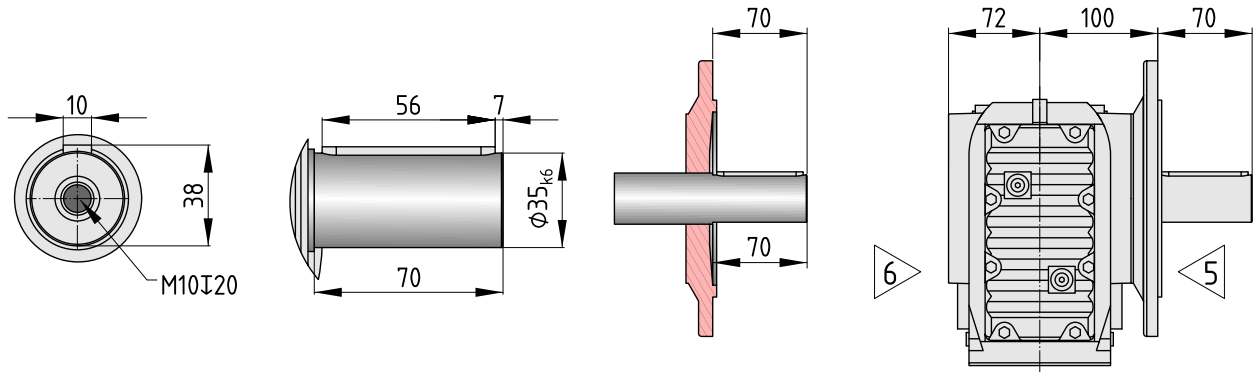
The drawings depict the shrink disk on side 6 (HS56), but it can also be installed on side 5 (HS5). It is always opposite to the flange.



Recommended Matching Machine Shaft

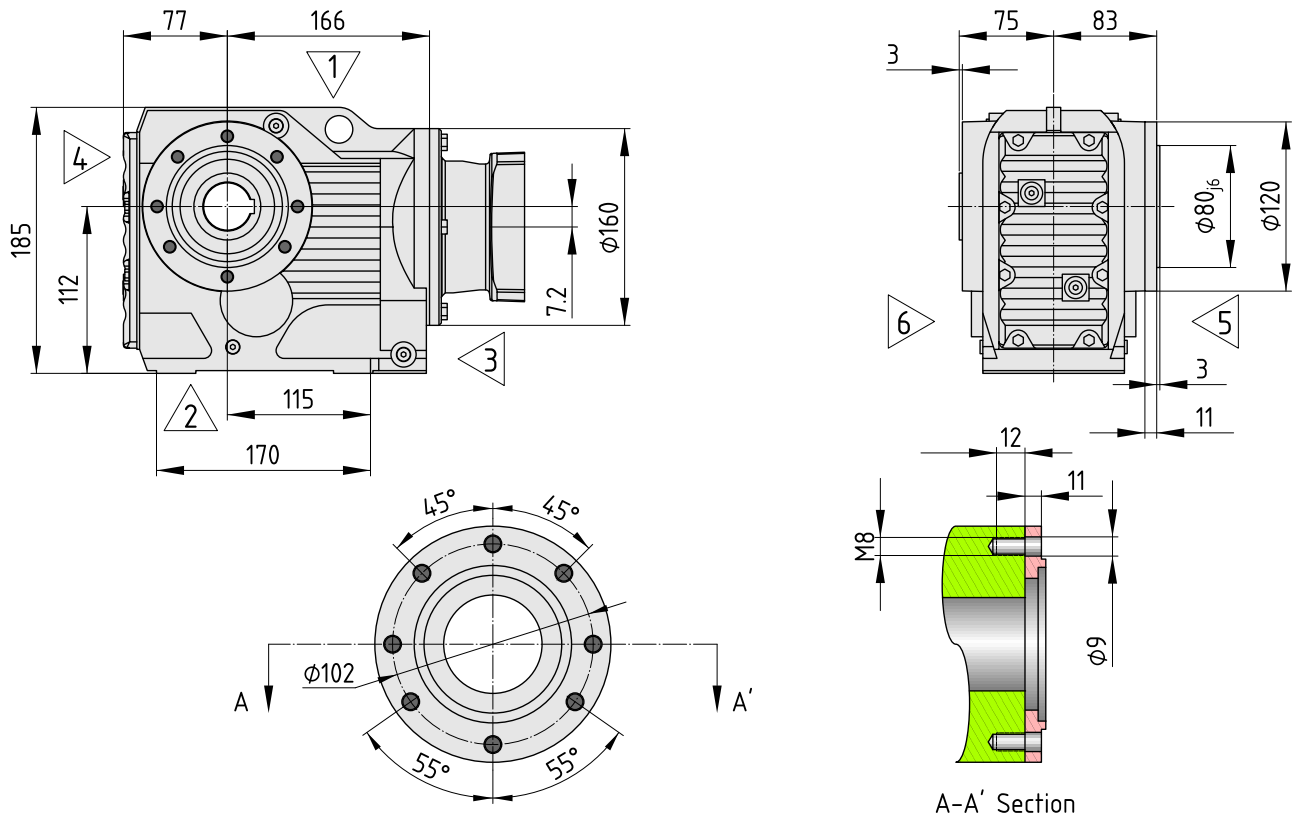
### KB-045-F□-P□: Single Solid Shaft with Key

The drawings depict the solid shaft on side 5 (P5), but it can also be installed on side 6 (P6). It is always on the same side as the flange.

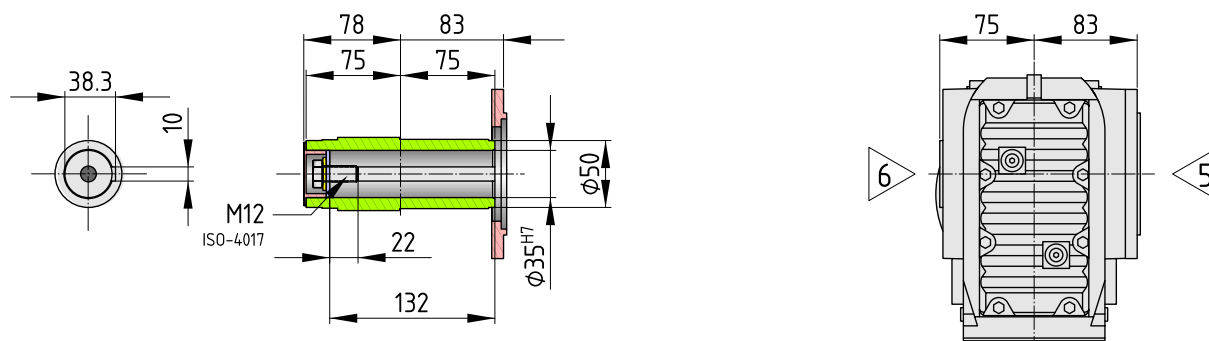


### KB-045-Z□: B5 Flange Mounted

The drawings depict the flange on side 5 (Z5), but it can also be installed on side 6 (Z6).

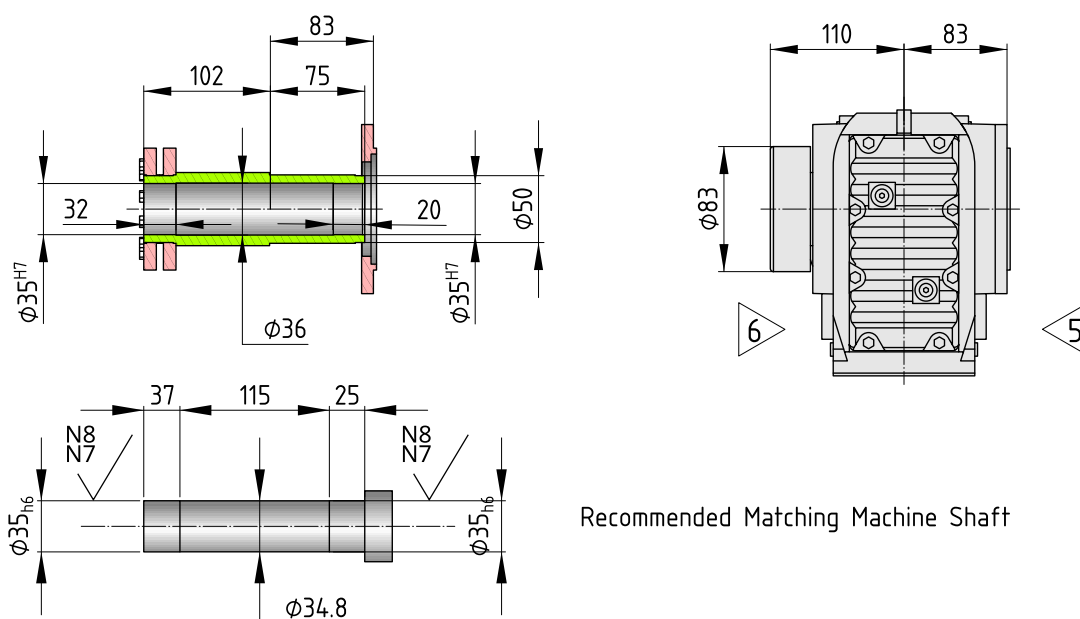


### KB-045-Z□-H: Hollow Shaft with Keyway



### KB-045-Z□-HS□: Hollow Shaft with Shrink Disk

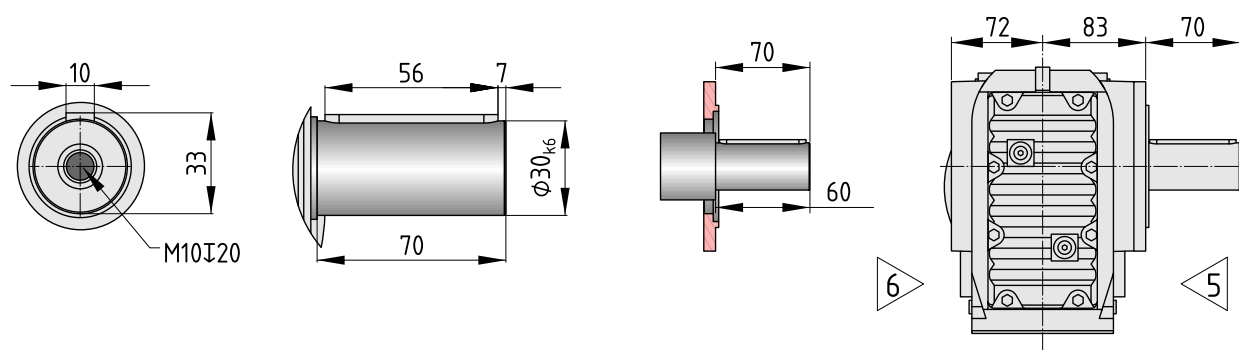
The drawings depict the shrink disk on side 6 (HS56), but it can also be installed on side 5 (HS5). It is always opposite to the flange.



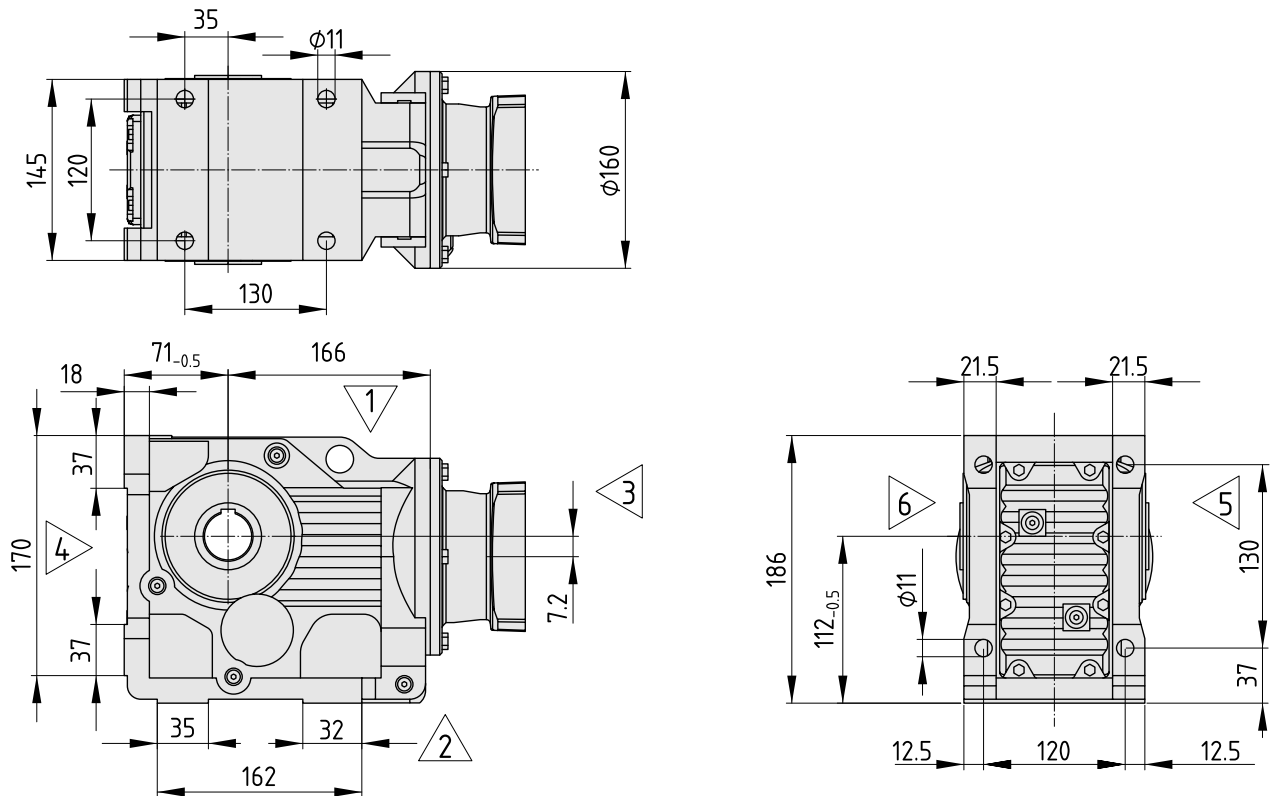
Recommended Matching Machine Shaft

### KB-045-Z□-P□: Single Solid Shaft with Key

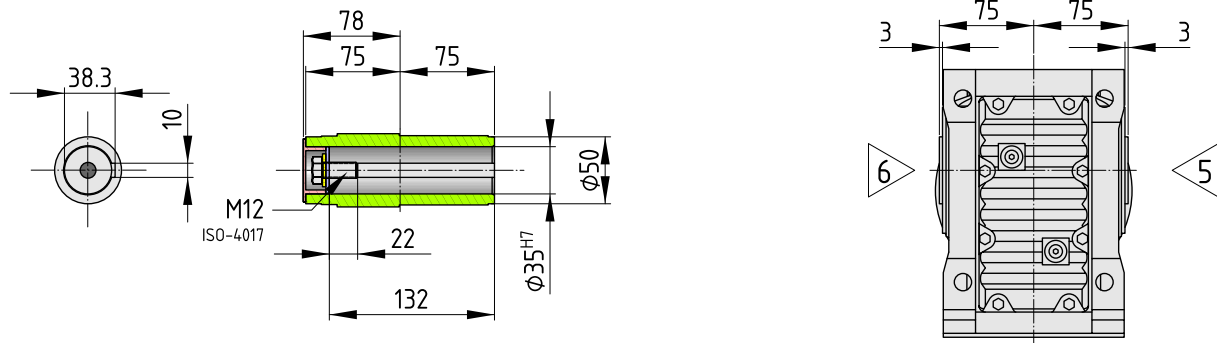
The drawings depict the solid shaft on side 5 (P5), but it can also be installed on side 6 (P6). It is always on the same side as the flange.



### KG-045-00: Foot Mounted

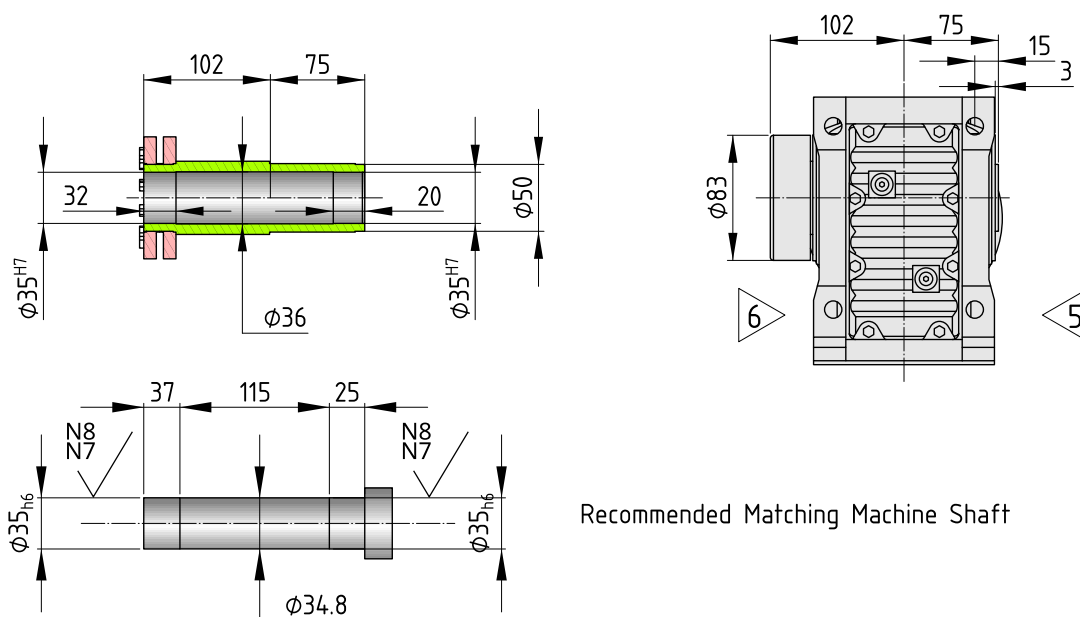


### KG-045-00-H: Hollow Shaft with Keyway

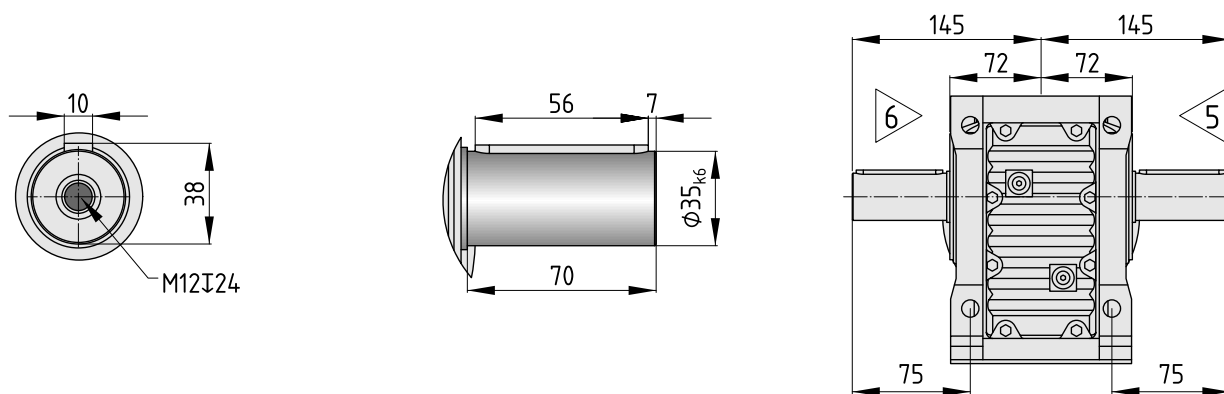


### KG-045-00-HS□: Hollow Shaft with Shrink Disk

The drawings depict the shrink disk on side 6 (HS56), but it can also be installed on side 5 (HS5).

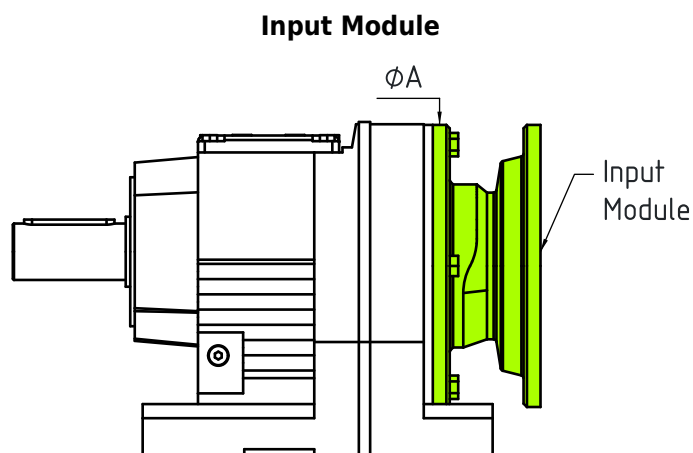


### KG-045-00-P□ / KG-045-00-DP: Single/Double Solid Shaft with Key



## Input Modules

To simplify input module selection, Servotak uses modular input blocks. Each gearbox size and family combination has a interface code, that lets you quickly determine which input modules can be installed. Input modules are shared between R, F and K gearboxes. A is the diameter of the interface flange for that gearbox.



| Reference     | Interface Code | A   |
|---------------|----------------|-----|
| <b>R□-015</b> | A              | 105 |
| <b>R□-025</b> | B              | 120 |
| <b>R□-035</b> | B              | 120 |
| <b>R□-045</b> | C              | 160 |
| <b>R□-055</b> | C              | 160 |
| <b>R□-065</b> | C              | 160 |
| <b>R□-075</b> | D              | 200 |
| <b>R□-085</b> | E              | 250 |
| <b>R□-095</b> | F              | 300 |
| <b>R□-105</b> | G              | 350 |
| <b>R□-135</b> | H              | 400 |
| <b>R□-145</b> | I              | 450 |
| <b>R□-165</b> | J              | 550 |

| Reference     | Interface Code | A   |
|---------------|----------------|-----|
| <b>F□-035</b> | B              | 120 |
| <b>F□-045</b> | B              | 120 |
| <b>F□-055</b> | C              | 160 |
| <b>F□-065</b> | C              | 160 |
| <b>F□-075</b> | D              | 200 |
| <b>F□-085</b> | E              | 250 |
| <b>F□-095</b> | F              | 300 |
| <b>F□-105</b> | G              | 350 |
| <b>F□-125</b> | I              | 450 |
| <b>F□-155</b> | J              | 550 |

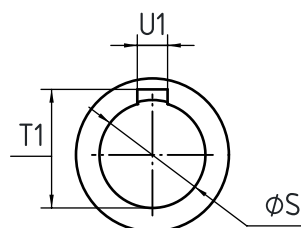
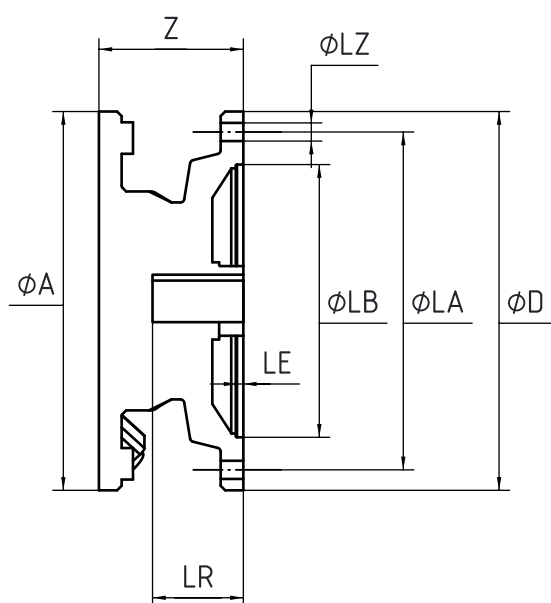
| Reference     | Interface Code | A   |
|---------------|----------------|-----|
| <b>K□-035</b> | B              | 120 |
| <b>K□-045</b> | C              | 160 |
| <b>K□-055</b> | C              | 160 |
| <b>K□-065</b> | C              | 160 |
| <b>K□-075</b> | D              | 200 |
| <b>K□-085</b> | E              | 250 |
| <b>K□-095</b> | F              | 300 |
| <b>K□-105</b> | G              | 350 |
| <b>K□-125</b> | I              | 450 |
| <b>K□-155</b> | J              | 550 |
| <b>K□-165</b> | J              | 550 |
| <b>K□-185</b> | J              | 550 |

## IEC Motor Flanges

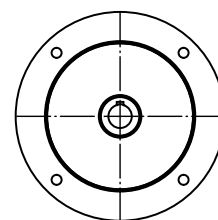
Each standard IEC motor flange has a set number of interfaces with which it is compatible. Z5 is the length of the input flange, and sometimes varies between interfaces. All IEC motor flanges are for IM B5 / IM V1 / IM V3 Motors.

| Motor Size | Interface Code   | Z  |
|------------|------------------|----|
| <b>63</b>  | A, B, C          | 50 |
| <b>63</b>  | D                | 54 |
| <b>71</b>  | A, B, C, D       | 54 |
| <b>80</b>  | A, B, C, D, E    | 69 |
| <b>90</b>  | B, C, D, E       | 69 |
| <b>100</b> | C, D, E, F, G    | 81 |
| <b>112</b> | C, D, E, F, G    | 81 |
| <b>132</b> | D, E, F, G, H, I | 92 |

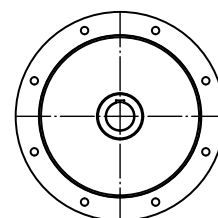
| Motor Size | Interface Code | Z   |
|------------|----------------|-----|
| <b>160</b> | E, F           | 125 |
| <b>160</b> | G, H, I, J     | 124 |
| <b>180</b> | E, F           | 125 |
| <b>180</b> | G, H, I, J     | 124 |
| <b>200</b> | F, G, H, I, J  | 144 |
| <b>225</b> | F, G, H, I, J  | 159 |
| <b>250</b> | I, J           | 180 |
| <b>280</b> | I, J           | 180 |



**Fig. 1**



**Fig. 2**

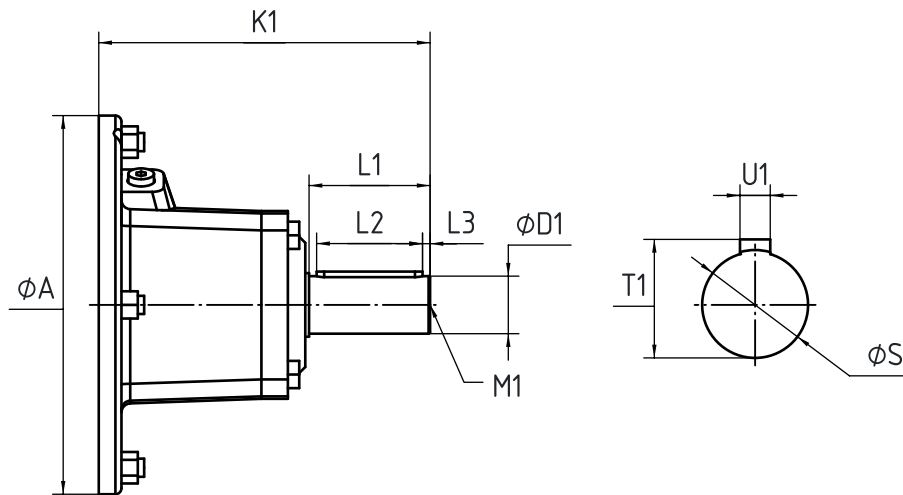


| Motor Size | LB  | LA  | LE  | D   | LZ  | S  | LR  | T1   | U1 | Fig |
|------------|-----|-----|-----|-----|-----|----|-----|------|----|-----|
| <b>63</b>  | 95  | 115 | 3.5 | 140 | M08 | 11 | 23  | 12.8 | 4  | 1   |
| <b>71</b>  | 110 | 130 | 3.5 | 160 | M08 | 14 | 30  | 16.3 | 5  | 1   |
| <b>80</b>  | 130 | 165 | 4.5 | 200 | M10 | 19 | 40  | 21.8 | 6  | 1   |
| <b>90</b>  | 130 | 165 | 4.5 | 200 | M10 | 24 | 50  | 27.3 | 8  | 1   |
| <b>100</b> | 180 | 215 | 5   | 250 | M12 | 28 | 60  | 31.3 | 8  | 1   |
| <b>112</b> | 180 | 215 | 5   | 250 | M12 | 28 | 60  | 31.3 | 8  | 1   |
| <b>132</b> | 230 | 265 | 5   | 300 | M12 | 38 | 80  | 41.3 | 10 | 1   |
| <b>160</b> | 250 | 300 | 6   | 350 | M16 | 42 | 110 | 45.3 | 12 | 1   |
| <b>180</b> | 250 | 300 | 6   | 350 | M16 | 48 | 110 | 51.8 | 14 | 1   |
| <b>200</b> | 300 | 350 | 7   | 400 | M16 | 55 | 110 | 59.3 | 16 | 1   |
| <b>225</b> | 350 | 400 | 7   | 450 | M16 | 60 | 140 | 64.4 | 18 | 2   |
| <b>250</b> | 450 | 500 | 7   | 550 | M16 | 65 | 140 | 69.4 | 18 | 2   |
| <b>280</b> | 450 | 500 | 7   | 550 | M16 | 75 | 140 | 79.9 | 20 | 2   |

## Solid Input Shafts

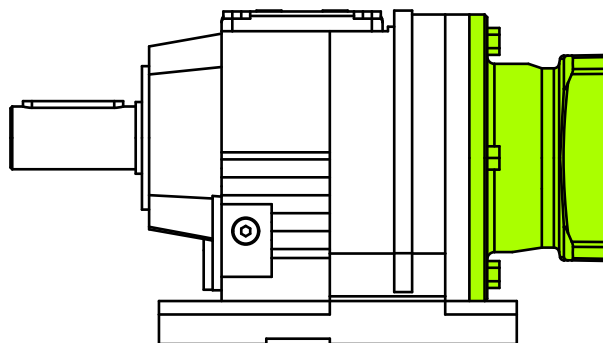
Each solid input shaft has a set of interfaces with which it is compatible. K1 is the length from the interface to the tip of the shaft.

| Shaft Size     | Interface Code | K1  |
|----------------|----------------|-----|
| <b>E14×30</b>  | A              | 72  |
| <b>E16×40</b>  | B              | 102 |
| <b>E19×40</b>  | B              | 130 |
| <b>E19×40</b>  | C              | 123 |
| <b>E19×40</b>  | D              | 116 |
| <b>E19×40</b>  | E              | 111 |
| <b>E24×50</b>  | C              | 159 |
| <b>E24×50</b>  | D              | 151 |
| <b>E28×60</b>  | E              | 156 |
| <b>E28×60</b>  | F              | 151 |
| <b>E28×60</b>  | G              | 145 |
| <b>E38×80</b>  | D              | 224 |
| <b>E38×80</b>  | E              | 219 |
| <b>E38×80</b>  | F              | 214 |
| <b>E38×80</b>  | G              | 208 |
| <b>E38×80</b>  | H              | 201 |
| <b>E38×80</b>  | I              | 193 |
| <b>E42×110</b> | E              | 292 |
| <b>E42×110</b> | F              | 287 |
| <b>E42×110</b> | G              | 281 |
| <b>E42×110</b> | H              | 274 |
| <b>E42×110</b> | I              | 266 |
| <b>E42×110</b> | J              | 258 |
| <b>E48×110</b> | F              | 327 |
| <b>E48×110</b> | G              | 321 |
| <b>E48×110</b> | H              | 314 |
| <b>E48×110</b> | I              | 306 |
| <b>E48×110</b> | J              | 298 |
| <b>E55×110</b> | H              | 308 |
| <b>E55×110</b> | I              | 300 |
| <b>E55×110</b> | J              | 292 |
| <b>E70×140</b> | I              | 383 |
| <b>E70×140</b> | J              | 374 |



| Shaft Size     | D1 | L1  | L13 | L14 | T1   | U1 | M   |
|----------------|----|-----|-----|-----|------|----|-----|
| <b>E14×30</b>  | 14 | 30  | 4   | 22  | 16   | 5  | M05 |
| <b>E16×40</b>  | 16 | 40  | 4   | 32  | 18   | 5  | M05 |
| <b>E19×40</b>  | 19 | 40  | 4   | 32  | 21.5 | 6  | M06 |
| <b>E24×50</b>  | 24 | 50  | 5   | 40  | 27   | 8  | M08 |
| <b>E28×60</b>  | 28 | 60  | 5   | 50  | 31   | 8  | M10 |
| <b>E38×80</b>  | 38 | 80  | 5   | 70  | 41   | 10 | M12 |
| <b>E42×110</b> | 42 | 110 | 10  | 70  | 45   | 12 | M16 |
| <b>E48×110</b> | 48 | 110 | 10  | 80  | 51.5 | 14 | M16 |
| <b>E55×110</b> | 55 | 110 | 10  | 90  | 59   | 16 | M20 |
| <b>E70×140</b> | 70 | 140 | 15  | 110 | 74.5 | 20 | M20 |

## Servomotor Flanges



Since servomotors, unlike IEC motors, don't have standard dimensions, it is necessary to know the exact dimensions of the servomotor to ascertain the correct input flange for it. Input flanges are often custom made for the customer's order, which allows Servotak to provide flanges for basically every servomotor. The structure of the reference for the servomotor input flange is detailed at the end of this document, Order References chapter.