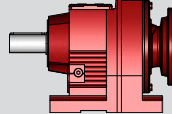


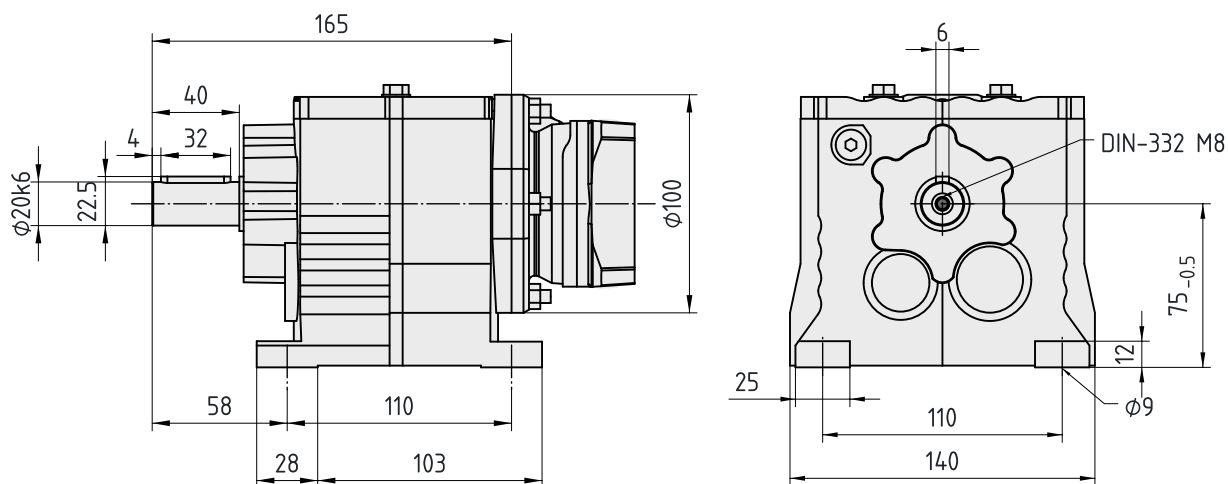
# Gearboxes

## R Helical Gearboxes

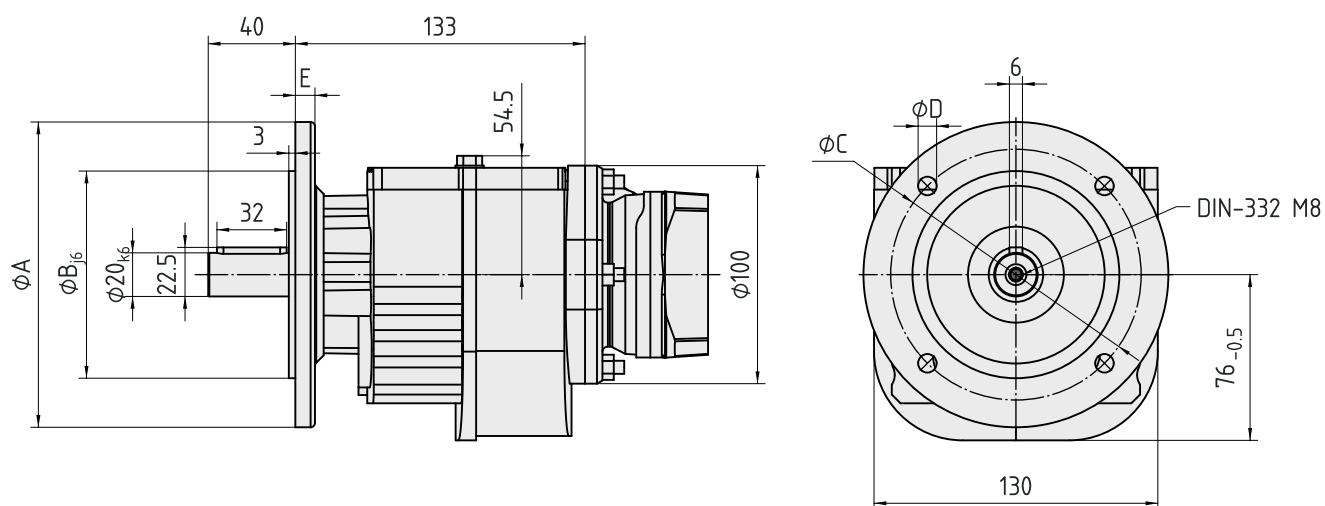
| R-015 |        |                               |                                 |                               |                                 |                               |                        |                                |            |         |        |  |
|-------|--------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|------------------------|--------------------------------|------------|---------|--------|-------------------------------------------------------------------------------------|
| Ratio | Stages | n <sub>1N</sub><br>(1)<br>rpm | n <sub>1Max</sub><br>(2)<br>rpm | T <sub>2N</sub><br>(3)<br>N·m | T <sub>2Max</sub><br>(4)<br>N·m | T <sub>2E</sub><br>(5)<br>N·m | F <sub>RMax</sub><br>N | J<br>(6)<br>Kg·cm <sup>2</sup> | C<br>N·m/' | Δφ<br>' | η<br>% | M<br>Kg                                                                             |
| 3.83  | 2      | 1400                          | 4500                            | 45                            | 52                              | 77                            | 820                    | 0.46                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 4.51  | 2      | 1400                          | 4500                            | 48                            | 54                              | 82                            | 870                    | 0.35                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 5.09  | 2      | 1400                          | 4500                            | 51                            | 55                              | 87                            | 890                    | 0.29                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 5.76  | 2      | 1400                          | 4500                            | 53                            | 59                              | 90                            | 930                    | 0.24                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 6.15  | 2      | 1400                          | 4500                            | 54                            | 57                              | 92                            | 950                    | 0.22                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 7.04  | 2      | 1400                          | 4500                            | 55                            | 58                              | 94                            | 1010                   | 0.18                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 7.55  | 2      | 1400                          | 4500                            | 56                            | 59                              | 95                            | 1040                   | 0.16                           | 3          | 0       | 97     | 4.3-5.8                                                                             |
| 8.63  | 2      | 1400                          | 4500                            | 72                            | 86                              | 122                           | 1090                   | 0.39                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 10.15 | 2      | 1400                          | 4500                            | 77                            | 86                              | 131                           | 1140                   | 0.30                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 11.45 | 2      | 1400                          | 4500                            | 81                            | 86                              | 138                           | 1180                   | 0.26                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 12.98 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1230                   | 0.21                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 13.84 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1270                   | 0.20                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 15.84 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1350                   | 0.16                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 16.99 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1400                   | 0.15                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 19.71 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1500                   | 0.12                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 23.15 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1620                   | 0.09                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 25.23 | 2      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1680                   | 0.08                           | 4.4        | 0       | 96     | 4.3-5.8                                                                             |
| 24.07 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1650                   | 0.41                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 28.32 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.32                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 31.94 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.27                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 36.20 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.22                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 38.61 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.20                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 44.18 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.17                           | 4.6        | 0       | 93     | 4.6-6.1                                                                             |
| 47.44 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.25                           | 4.6        | 0       | 92     | 4.6-6.1                                                                             |
| 53.76 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.21                           | 4.6        | 0       | 92     | 4.6-6.1                                                                             |
| 57.35 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.19                           | 4.6        | 0       | 92     | 4.6-6.1                                                                             |
| 65.61 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.16                           | 4.6        | 0       | 92     | 4.6-6.1                                                                             |
| 70.39 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.14                           | 4.6        | 0       | 91     | 4.6-6.1                                                                             |
| 81.64 | 3      | 1400                          | 4500                            | 85                            | 86                              | 145                           | 1770                   | 0.11                           | 4.6        | 0       | 91     | 4.6-6.1                                                                             |

(1) Rated input speed.  
 (2) Maximum Input Speed.  
 (3) T2N value is calculated at n1n, 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) T2Max only for very short time intervals.  
 (5) Up to 1000 times during the gearbox's lifetime.  
 (6) Varies depending on input.

### RG-015: Foot Mounted



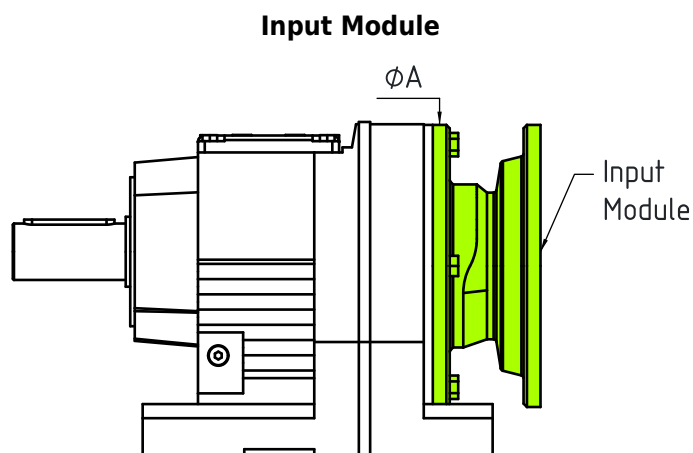
### RF□-015: Flange Mounted



| Flange         | A   | B  | C   | D   | E |
|----------------|-----|----|-----|-----|---|
| <b>RF1-015</b> | 120 | 80 | 100 | 6.5 | 8 |
| <b>RF2-015</b> | 140 | 95 | 115 | 8.5 | 9 |

## 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 |

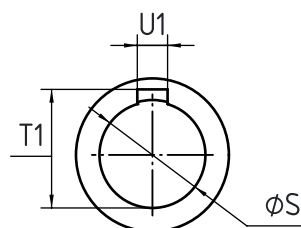
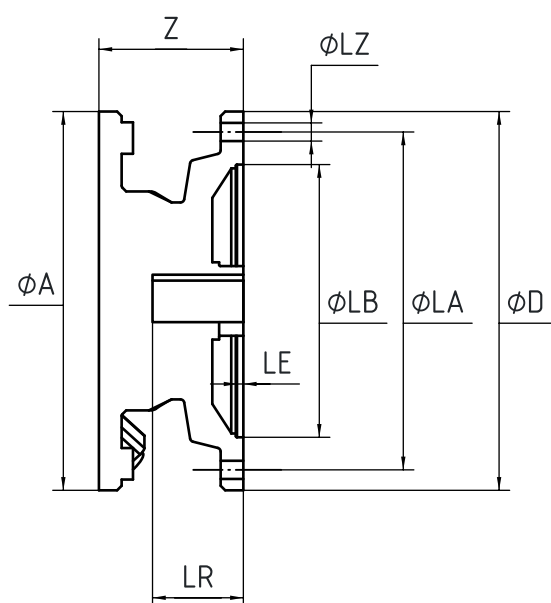
| Reference     | Interface Code | A   |
|---------------|----------------|-----|
| <b>K□-035</b> | B              | 120 |
| <b>K□-045</b> | C              | 160 |
| <b>K□-055</b> | C              | 160 |
| <b>K□-065</b> | C              | 160 |
| <b>K□-075</b> | D              | 200 |
| <b>K□-085</b> | 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

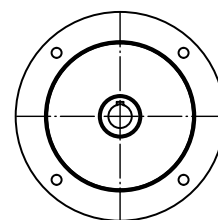
Each standard IEC motor flange has a set number of interfaces with which it is compatible. Z5 is the length of the input flange, and sometimes varies between interfaces. All IEC motor flanges are for IM B5 / IM V1 / IM V3 Motors.

| 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 |

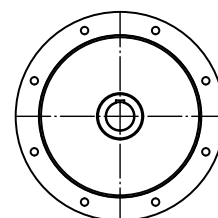
| Motor Size | Interface Code | Z   |
|------------|----------------|-----|
| <b>160</b> | E, F           | 125 |
| <b>160</b> | G, H, I, J     | 124 |
| <b>180</b> | E, F           | 125 |
| <b>180</b> | G, H, I, J     | 124 |
| <b>200</b> | F, G, H, I, J  | 144 |
| <b>225</b> | F, G, H, I, J  | 159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



**Fig. 1**



**Fig. 2**

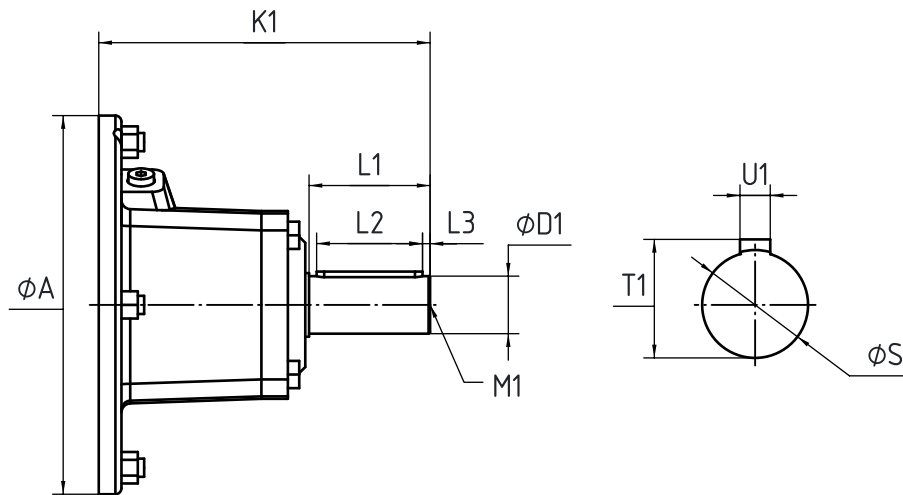


| Motor Size | LB  | LA  | LE  | D   | LZ  | S  | LR  | T1   | U1 | Fig |
|------------|-----|-----|-----|-----|-----|----|-----|------|----|-----|
| <b>63</b>  | 95  | 115 | 3.5 | 140 | M08 | 11 | 23  | 12.8 | 4  | 1   |
| <b>71</b>  | 110 | 130 | 3.5 | 160 | M08 | 14 | 30  | 16.3 | 5  | 1   |
| <b>80</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

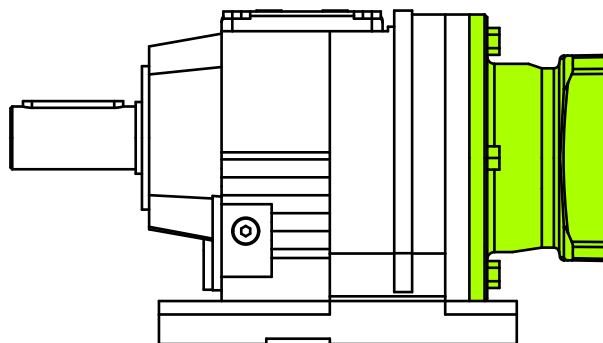
Each solid input shaft has a set of interfaces with which it is compatible. K1 is the length from the interface to the tip of the shaft.

| 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.