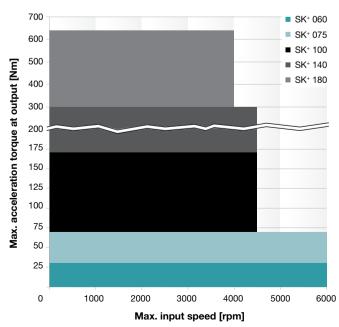
# SK+/SPK+ -

# Space-saving right-angle precision with output shaft

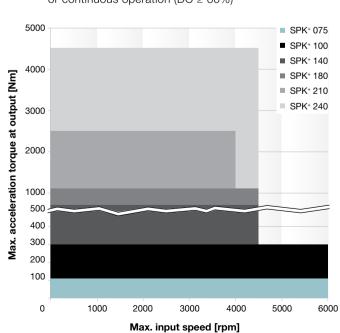


### Quick size selection

**SK**<sup>+</sup> **MF** (example for i = 5) For applications in cyclic operation (DC  $\le 60\%$ ) or continuous operation (DC  $\ge 60\%$ )



**SPK+ MF** (example for i = 25) For applications in cyclic operation (DC  $\le 60\%$ ) or continuous operation (DC  $\ge 60\%$ )



# Right-angle gearhead High End

# Versions and Applications

| Features                                     | <b>SK</b> +<br>MF version page 212 | <b>SPK</b> +<br>MF version page 222 |
|--|------------------------------------|-------------------------------------|
| Power density                                | ••                                 | ••                                  |
| Positioning accuracy<br>(e.g clamped drives) | ••                                 | •••                                 |
| Highly dynamic applications                  | ••                                 | ••                                  |
| Torsional rigidity                           | ••                                 | ••                                  |

# Product features

| Ratios c)                                      |                    | 3 – 100 | 12 – 10000 |
|--|--------------------|---------|------------|
| Torsional backlash                             | Standard           | ≤ 4     | ≤ 4        |
| [arcmin] ©                                     | Reduced            | -       | ≤ 2        |
| Output type*                                   |                    |         |            |
| Smooth output shaft                            |                    | •       | •          |
| Smooth output shaft,                           | rear side          | •       | •          |
| Keywayed output sha                            | ft                 | •       | •          |
| Keywayed output sha                            | ft, rear side      | •       | •          |
| Output shaft with invo                         | olute gearing      | •       | •          |
| Hollow shaft interface<br>Connected via shrink |                    | •       | •          |
| Mounted shaft<br>Connected via shrink          | disc               |         | •          |
| Closed cover, rear sid                         | е                  | •       | •          |
| Input type                                     |                    |         |            |
| Motor mounted version                          | on                 | •       | •          |
| Туре   |                    |         |            |
| ATEX a)  |                    | •       |            |
| Food-grade lubricatio                          | n <sup>a) b)</sup> | •       | •          |
| Corrosion resistant a) t                       | o)                 | •       | •          |
| Accessories                                    |                    |         |            |
| Coupling                                       |                    | •       | •          |
| Rack   |                    | •       | •          |
| Pinion   |                    | •       | •          |
| Shrink disc                                    |                    | •       | •          |
| torqXis sensor flange                          |                    | •       | •          |
| Intermediate plate for o                       | ooling connection  | •       | •          |



a) Power reduction: technical data available upon request b) Please contact WITTENSTEIN alpha c) In relation to reference sizes

 $<sup>^{\</sup>star}$  You can find order information for the relevant type of output on page 444.

# **SK+ 060 MF** 1/2-stage

|   |         |                 |                    |                                       |             |      | 1-stage | •    |      |         |          |             |          | 2-st      | tage |      |      |             |             |
|---|---------|-----------------|--------------------|---------------------------------------|-------------|------|---------|------|------|---------|----------|-------------|----------|-----------|------|------|------|-------------|-------------|
| Ratio <sup>a)</sup>   |         |                 | i                  |                                       | 3           | 4    | 5       | 7    | 10   | 12      | 16       | 20          | 25       | 28        | 35   | 40   | 50   | 70          | 100         |
| Max. acceleration torque  |         |                 | т                  | Nm                                    | 30          | 30   | 30      | 25   | 20   | 30      | 30       | 30          | 30       | 30        | 30   | 30   | 30   | 25          | 20          |
| (max. 1000 cycles per hour)   |         |                 | T <sub>2B</sub>    | in.lb                                 | 266         | 266  | 266     | 221  | 177  | 266     | 266      | 266         | 266      | 266       | 266  | 266  | 266  | 221         | 177         |
| Nominal output torque   |         |                 | T <sub>2N</sub>    | Nm                                    | 22          | 22   | 22      | 20   | 15   | 22      | 22       | 22          | 22       | 22        | 22   | 22   | 22   | 20          | 15          |
| (with $n_{1N}$ )  |         | -               | ZIV                | in.lb                                 | 195         | 195  | 195     | 177  | 133  | 195     | 195      | 195         | 195      | 195       | 195  | 195  | 195  | 177         | 133         |
| Emergency stop torque (permitted 1000 times during the service life of          | the ges | thead)          | T <sub>2Not</sub>  | Nm                                    | 40          | 50   | 50      | 45   | 40   | 50      | 50       | 50          | 50       | 50        | 50   | 50   | 50   | 45          | 40          |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c          | _       |                 | n <sub>1N</sub>    | in.lb<br>rpm                          | 354<br>2500 | 2700 | 3000    | 398  | 354  | 4400    | 4400     | 4400        | 4400     | 443       | 443  | 443  | 4800 | 398<br>5500 | 354<br>5500 |
| Max. continuous speed<br>(with 20% T <sub>2N</sub> and 20°C ambient temperature | e)      |                 | n <sub>1Ncym</sub> | rpm                                   | 3000        | 3500 | 4000    | 3500 | 3500 | 5000    | 5000     | 5000        | 5000     | 5000      | 5000 | 5000 | 5000 | 5500        | 5500        |
| Max. input speed  | _       |                 | n <sub>1Max</sub>  | rpm                                   | 6000        | 6000 | 6000    | 6000 | 6000 | 6000    | 6000     | 6000        | 6000     | 6000      | 6000 | 6000 | 6000 | 6000        | 6000        |
| Mean no load running torque   |         | al).            | T <sub>012</sub>   | Nm                                    | 1.2         | 1.1  | 1.0     | 1.2  | 1.1  | 0.2     | 0.2      | 0.2         | 0.2      | 0.2       | 0.2  | 0.1  | 0.1  | 0.1         | 0.1         |
| (with n,=3000 rpm and 20°C gearhead temp  | erature | ) <sup>u)</sup> | 012                | in.lb                                 | 10.6        | 9.7  | 8.9     | 10.6 | 9.7  | 1.8     | 1.8      | 1.8         | 1.8      | 1.8       | 1.8  | 0.9  | 0.9  | 0.9         | 0.9         |
| Max. torsional backlash   |         |                 | $j_t$              | arcmin                                |             | I    |         |      |      |         |          | ≤ 5         |          |           |      |      |      |             |             |
| Torsional rigidity  |         |                 | C <sub>t21</sub>   | Nm/ arcmin                            | 2.0         | 2.1  | 2.2     | 2.0  | 1.8  | 2.1     | 2.1      | 2.1         | 2.1      | 2.1       | 2.1  | 2.1  | 2.2  | 2.0         | 1.8         |
|   |         |                 | 127                | in.lb/ arcmin                         | 18          | 19   | 19      | 18   | 16   | 19      | 19       | 19          | 19       | 19        | 19   | 19   | 19   | 18          | 16          |
| Max. axial force e)   |         |                 | F <sub>2AMax</sub> | N<br>lb,                              |             |      |         |      |      |         |          | 2400<br>540 |          |           |      |      |      |             |             |
|   |         |                 |                    | N                                     |             |      |         |      |      |         |          | 2700        |          |           |      |      |      |             |             |
| Max. radial force e)  |         |                 | F <sub>2RMax</sub> | lb,                                   |             |      |         |      |      |         |          | 608         |          |           |      |      |      |             |             |
|   |         |                 |                    | Nm                                    |             |      |         |      |      |         |          | 251         |          |           |      |      |      |             |             |
| Max. tilting moment   |         |                 | M <sub>2KMax</sub> | in.lb                                 |             |      |         |      |      |         |          | 2220        |          |           |      |      |      |             |             |
| Efficiency at full load   |         |                 | η                  | %                                     |             |      | 96      |      |      |         |          | 94          |          |           |      |      |      |             |             |
| Service life (For calculation, see the Chapter "Information"                    | ı")     |                 | L                  | h                                     |             |      |         |      |      |         |          | > 20000     | )        |           |      |      |      |             |             |
|   |         |                 |                    | kg                                    |             |      | 2.9     |      |      |         |          | 3.2         |          |           | -    |      |      |             |             |
| Weight incl. standard adapter p   | late    |                 | m                  | lb <sub>m</sub>                       |             |      | 6.4     |      |      |         |          | 7.1         |          |           |      |      |      |             |             |
| Operating noise (with $n_1$ =3000 rpm no load)                                  |         |                 | L <sub>PA</sub>    | dB(A)                                 |             |      |         |      |      |         |          | ≤ 64        |          |           |      |      |      |             |             |
| May parmitted bayoing temperature   | oturo   |                 |                    | °C                                    |             |      |         |      |      |         |          | +90         |          |           |      |      |      |             |             |
| Max. permitted housing temper   | ature   |                 |                    | F                                     |             |      |         |      |      |         |          | 194         |          |           |      |      |      |             |             |
| Ambient temperature   |         |                 |                    | °C                                    |             |      |         |      |      |         |          | 0 to +40    |          |           |      |      |      |             |             |
|   |         |                 |                    | F                                     |             |      |         |      |      |         | 3        | 32 to 10    | 4        |           |      |      |      |             |             |
| Lubrication   |         |                 |                    |                                       |             |      |         |      |      |         | Lubr     | icated fo   | or life  |           |      |      |      |             |             |
| Paint   |         |                 |                    |                                       |             |      |         |      |      |         | Blu      | e RAL 5     | 002      |           |      |      |      |             |             |
| Direction of rotation   |         |                 |                    |                                       |             |      |         |      | ı    | Motor a | nd gearh | nead op     | posite d | irections | 3    |      |      |             |             |
| Protection class  |         |                 |                    |                                       |             |      |         |      |      |         |          | IP 65       |          |           |      |      |      |             |             |
| Mamont of inartic   | В       | 44              | ,                  | kgcm <sup>2</sup>                     |             |      |         |      |      | 0.09    | 0.09     | 0.07        | 0.07     | 0.06      | 0.06 | 0.06 | 0.06 | 0.06        | 0.06        |
| Moment of inertia (relates to the drive)  | В       | 11              | $J_{_{1}}$         | 10 <sup>-3</sup> in.lb.s <sup>2</sup> |             | -    | _       | -    |      | 0.08    | 0.08     | 0.07        | 0.06     | 0.06      | 0.06 | 0.05 | 0.05 | 0.05        | 0.05        |
| Clamping hub diameter [mm]  | С       | 14              | $J_{_{1}}$         | kgcm <sup>2</sup>                     | 0.52        | 0.44 | 0.40    | 0.36 | 0.34 | 0.20    | 0.20     | 0.19        | 0.19     | 0.18      | 0.18 | 0.17 | 0.17 | 0.17        | 0.17        |
|   |         |                 | J 1                | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 0.46        | 0.39 | 0.35    | 0.32 | 0.30 | 0.18    | 0.18     | 0.17        | 0.16     | 0.16      | 0.16 | 0.15 | 0.15 | 0.15        | 0.15        |
|   | Е       | 19              | $J_{i}$            | kgcm <sup>2</sup>                     | 0.87        | 0.79 | 0.75    | 0.71 | 0.70 | _       | _        | _           | _        | _         | _    | _    | _    | _           | _           |
|   |         |                 | <u> </u>           | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 0.77        | 0.70 | 0.66    | 0.63 | 0.62 |         |          |             |          |           |      |      |      | 1           |             |

 $Please\ contact\ us\ for\ information\ on\ the\ best\ configuration\ for\ S1\ conditions\ of\ use\ (continuous\ operation).$ 

All technical data for front output side applies.

Technical data for rearward output versions, see page 428.

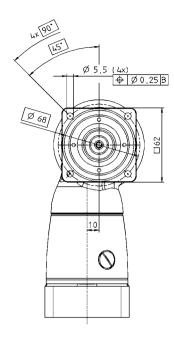
a) Other ratios available on request

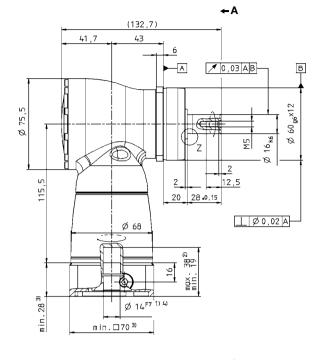
b) Higher speeds are possible if the nominal torque is reduced

c) For higher ambient temperatures, please reduce input speed

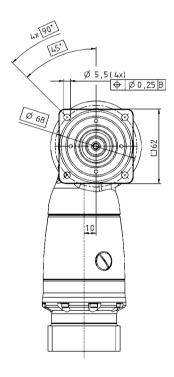
d) Idling torques decrease during operation

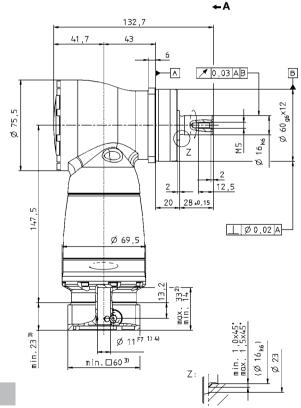
e) Refers to center of the output shaft or flange





#### 2-stage:

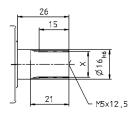




### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

28 ±0,15 25 M5x12,5 . Involute gearing DIN 5480 X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# **SK+ 075 MF** 1/2-stage

|   |          |        |                    |                                       |           |             | 1-stage     | )          |            |             |             |             |          | 2-st        | age         |             |             |            |            |
|---|----------|--------|--------------------|---------------------------------------|-----------|-------------|-------------|------------|------------|-------------|-------------|-------------|----------|-------------|-------------|-------------|-------------|------------|------------|
| Ratio <sup>a)</sup>   |          |        | i                  |                                       | 3         | 4           | 5           | 7          | 10         | 12          | 16          | 20          | 25       | 28          | 35          | 40          | 50          | 70         | 100        |
| Max. acceleration torque  |          |        | 7                  | Nm                                    | 70        | 70          | 70          | 60         | 50         | 70          | 70          | 70          | 70       | 70          | 70          | 70          | 70          | 60         | 50         |
| (max. 1000 cycles per hour)   |          |        | T <sub>2B</sub>    | in.lb                                 | 620       | 620         | 620         | 531        | 443        | 620         | 620         | 620         | 620      | 620         | 620         | 620         | 620         | 531        | 443        |
| Nominal output torque   |          |        | T <sub>2N</sub>    | Nm                                    | 50        | 50          | 50          | 45         | 40         | 50          | 50          | 50          | 50       | 50          | 50          | 50          | 50          | 45         | 40         |
| (with $n_{_{7N}}$ )   |          |        | ZIV                | in.lb                                 | 443       | 443         | 443         | 398        | 354        | 443         | 443         | 443         | 443      | 443         | 443         | 443         | 443         | 398        | 354        |
| Emergency stop torque (permitted 1000 times during the service life of t                  | the dea  | rhead) | T <sub>2Not</sub>  | Nm<br>in.lb                           | 95<br>841 | 115<br>1018 | 115<br>1018 | 110<br>974 | 100<br>885 | 115<br>1018 | 115<br>1018 | 115<br>1018 | 115      | 115<br>1018 | 115<br>1018 | 115<br>1018 | 115<br>1018 | 110<br>974 | 100<br>885 |
| Nominal input speed (with T <sub>20</sub> and 20°C ambient temperature) <sup>b), c)</sup> |          |        | n <sub>1N</sub>    | rpm                                   | 2300      | 2500        | 2800        | 2800       | 2800       | 3500        | 3500        | 3500        | 3500     | 3500        | 3500        | 3500        | 3800        | 4500       | 4500       |
| Max. continuous speed (with 20% T <sub>2N</sub> and 20°C ambient temperature              | )        |        | n <sub>1Ncym</sub> | rpm                                   | 3000      | 3500        | 4000        | 3500       | 3500       | 4500        | 4500        | 4500        | 4500     | 4500        | 4500        | 4500        | 4500        | 4500       | 4500       |
| Max. input speed  |          |        | n <sub>1Max</sub>  | rpm                                   | 6000      | 6000        | 6000        | 6000       | 6000       | 6000        | 6000        | 6000        | 6000     | 6000        | 6000        | 6000        | 6000        | 6000       | 6000       |
| Mean no load running torque   |          | d)     | T <sub>012</sub>   | Nm                                    | 2.0       | 1.7         | 1.5         | 2.0        | 1.8        | 0.3         | 0.3         | 0.2         | 0.2      | 0.2         | 0.2         | 0.1         | 0.1         | 0.1        | 0.1        |
| (with n,=3000 rpm and 20°C gearhead temper  | erature) |        | 012                | in.lb                                 | 18        | 15          | 13          | 18         | 16         | 2.7         | 2.7         | 1.8         | 1.8      | 1.8         | 1.8         | 0.9         | 0.9         | 0.9        | 0.9        |
| Max. torsional backlash   |          |        | $j_t$              | arcmin                                |           | T           |             | Г          |            |             |             | ≤ 4         |          | 1           |             | 1           |             |            |            |
| Torsional rigidity  |          |        | C <sub>t21</sub>   | Nm/ arcmin<br>in.lb/ arcmin           | 5.0       | 5.5         | 6.0         | 6.0        | 6.0        | 5.5         | 5.5         | 5.5         | 5.5      | 5.5         | 5.5         | 5.5         | 6.0         | 6.0        | 6.0        |
|   |          |        |                    | In.ib/ arcmin                         | 44        | 49          | 53          | 53         | 53         | 49          | 49          | 49<br>3400  | 49       | 49          | 49          | 49          | 53          | 53         | 53         |
| Max. axial force e)   |          |        | F <sub>2AMax</sub> | lb,                                   |           |             |             |            |            |             |             | 765         |          |             |             |             |             |            |            |
|   |          |        | _                  | N                                     |           |             |             |            |            |             | -           | 4000        |          | -           |             | -           |             | -          |            |
| Max. radial force e)  |          |        | F <sub>2RMax</sub> | lb <sub>f</sub>                       |           |             |             |            |            |             |             | 900         |          |             |             |             |             |            |            |
| Max. tilting moment   |          |        | M <sub>2KMax</sub> | Nm<br>in.lb                           |           |             |             |            |            |             |             | 437<br>3867 |          |             |             |             |             |            |            |
| Efficiency at full load   |          |        | η                  | %                                     |           |             | 96          |            |            |             |             | 94          |          |             |             |             |             |            |            |
| Service life (For calculation, see the Chapter "Information                               | 1")      |        | L <sub>h</sub>     | h                                     |           |             |             |            |            |             |             | > 20000     | )        |             |             |             |             |            |            |
| Weight incl. standard adapter pl  | late     |        | m                  | kg<br>lb <sub>m</sub>                 |           |             | 4.8         |            |            |             |             | 5.4<br>11.9 |          |             |             |             |             |            |            |
| Operating noise (with n,=3000 rpm no load)  |          |        | L <sub>PA</sub>    | dB(A)                                 |           |             |             |            |            |             |             | ≤ 66        |          |             |             |             |             |            |            |
|   |          |        |                    | °C                                    |           |             |             |            |            |             |             | +90         |          |             |             |             |             |            |            |
| Max. permitted housing tempera  | ature    |        |                    | F                                     |           |             |             |            |            |             |             | 194         |          |             |             |             |             |            |            |
| Ambient temperature   |          |        |                    | °C                                    |           |             |             |            |            |             |             | 0 to +40    |          |             |             |             |             |            |            |
| 7 tribioni tomporaturo  |          |        |                    | F                                     |           |             |             |            |            |             |             | 32 to 10    | 4        |             |             |             |             |            |            |
| Lubrication   |          |        |                    |                                       |           |             |             |            |            |             | Lubr        | icated fo   | or life  |             |             |             |             |            |            |
| Paint   |          |        |                    |                                       |           |             |             |            |            |             | Blu         | e RAL 5     | 002      |             |             |             |             |            |            |
| Direction of rotation   |          |        |                    |                                       |           |             |             |            |            | Motor a     | nd gearl    | nead op     | posite d | irections   | 3           |             |             |            |            |
| Protection class  |          |        |                    |                                       |           |             |             |            |            |             |             | IP 65       |          |             |             |             |             |            |            |
| Moment of inertia   | С        | 14     |                    | kgcm <sup>2</sup>                     |           | _           |             | _          | ļ.         | 0.28        | 0.27        | 0.23        | 0.23     | 0.20        | 0.20        | 0.18        | 0.18        | 0.18       | 0.18       |
| (relates to the drive)  | Ŭ        | 1**    | $J_{_1}$           | 10 <sup>-3</sup> in.lb.s <sup>2</sup> |           | _           |             | _          |            | 0.25        | 0.24        | 0.21        | 0.20     | 0.18        | 0.18        | 0.16        | 0.16        | 0.16       | 0.16       |
| Clamping hub diameter [mm]  | Е        | 19     | $J_1$              | kgcm <sup>2</sup>                     | 1.46      | 1.19        | 1.06        | 0.95       | 0.90       | 0.73        | 0.71        | 0.68        | 0.67     | 0.63        | 0.62        | 0.63        | 0.63        | 0.63       | 0.63       |
|   |          |        | <u> </u>           | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 1.29      | 1.05        | 0.94        | 0.84       | 0.79       | 0.64        | 0.63        | 0.60        | 0.59     | 0.55        | 0.55        | 0.56        | 0.55        | 0.55       | 0.55       |
|   | Н        | 28     | $J_{1}$            | kgcm <sup>2</sup>                     | 2.88      | 2.61        | 2.47        | 2.37       | 2.31       | -           | -           | -           | _        | -           | -           | -           | -           | -          | -          |
|   |          |        |                    | 10 11.10.0                            | 2.00      | 2.01        | 2.13        | 2.10       | 2.04       |             |             |             |          |             |             | L           |             |            |            |

 $Please\ contact\ us\ for\ information\ on\ the\ best\ configuration\ for\ S1\ conditions\ of\ use\ (continuous\ operation).$ 

All technical data for front output side applies.

Technical data for rearward output versions, see page 428.

a) Other ratios available on request

b) Higher speeds are possible if the nominal torque is reduced

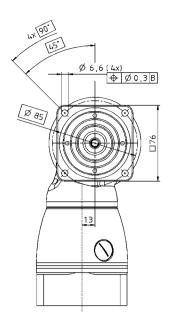
c) For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

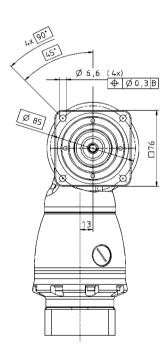
e) Refers to center of the output shaft or flange

←A

### 1-stage:

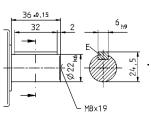


#### 2-stage:

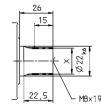


### Alternatives: Output shaft variants

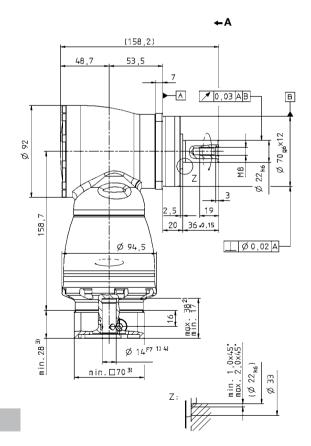
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 22 x 1.25 x 30 x 16 x 6m



# (158,2) 48,7 53,5 Α **▼** 0,03 AB В ā 70, 22 k6 Ø œ Σ 129 20 36 •0,15 Ø 91 min.33<sup>3)</sup>. Ø 19<sup>F7</sup> 1) 4) min.□90 <sup>3)</sup>



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# **SK+ 100 MF** 1/2-stage

|   |         |       |                            |                                       |            |            | 1-stage    | •          |           |             |            |                 |            | 2-st       | tage       |            |            |            |      |
|---|---------|-------|----------------------------|---------------------------------------|------------|------------|------------|------------|-----------|-------------|------------|-----------------|------------|------------|------------|------------|------------|------------|------|
| Ratio <sup>a)</sup>   |         |       | i                          |                                       | 3          | 4          | 5          | 7          | 10        | 12          | 16         | 20              | 25         | 28         | 35         | 40         | 50         | 70         | 100  |
| Max. acceleration torque  |         |       | T <sub>2B</sub>            | Nm                                    | 170        | 170        | 170        | 145        | 125       | 170         | 170        | 170             | 170        | 170        | 170        | 170        | 170        | 145        | 125  |
| (max. 1000 cycles per hour)   |         |       | 28                         | in.lb                                 | 1505       | 1505       | 1505       | 1283<br>90 | 1106      | 1505<br>100 | 1505       | 1505            | 1505       | 1505       | 1505       | 1505       | 1505       | 1283<br>90 | 1106 |
| Nominal output torque   |         |       | T <sub>2N</sub>            | Nm<br>in.lb                           | 100<br>885 | 100<br>885 | 100<br>885 | 797        | 80<br>708 | 885         | 100<br>885 | 100<br>885      | 100<br>885 | 100<br>885 | 100<br>885 | 100<br>885 | 100<br>885 | 797        | 708  |
| Emergency stop torque   |         |       | _                          | Nm                                    | 220        | 260        | 260        | 255        | 250       | 260         | 260        | 260             | 260        | 260        | 260        | 260        | 260        | 255        | 250  |
| (permitted 1000 times during the service life of the                    | ne gear | head) | T <sub>2Not</sub>          | in.lb                                 | 1947       | 2301       | 2301       | 2257       | 2213      | 2301        | 2301       | 2301            | 2301       | 2301       | 2301       | 2301       | 2301       | 2257       | 2213 |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c) |         |       | n <sub>1N</sub>            | rpm                                   | 2200       | 2400       | 2700       | 2500       | 2500      | 3100        | 3100       | 3100            | 3100       | 3100       | 3100       | 3100       | 3500       | 4200       | 4200 |
| Max. continuous speed (with 20% $T_{2N}$ and 20°C ambient temperature)  |         |       | n <sub>1Ncym</sub>         | rpm                                   | 3000       | 3400       | 3800       | 3400       | 3400      | 4000        | 4000       | 4000            | 4000       | 4000       | 4000       | 4000       | 4000       | 4200       | 4200 |
| Max. input speed  |         |       | n <sub>1Max</sub>          | rpm                                   | 4500       | 4500       | 4500       | 4500       | 4500      | 4500        | 4500       | 4500            | 4500       | 4500       | 4500       | 4500       | 4500       | 4500       | 4500 |
| Mean no load running torque   |         |       | T                          | Nm                                    | 3.8        | 3.0        | 2.3        | 3.5        | 2.8       | 0.6         | 0.6        | 0.5             | 0.4        | 0.4        | 0.3        | 0.2        | 0.2        | 0.2        | 0.2  |
| (with n,=3000 rpm and 20°C gearhead temper                              | rature) | d)    | T <sub>012</sub>           | in.lb                                 | 34         | 27         | 20         | 31         | 25        | 5.3         | 5.3        | 4.4             | 3.5        | 3.5        | 2.7        | 1.8        | 1.8        | 1.8        | 1.8  |
| Max. torsional backlash   |         |       | $j_t$                      | arcmin                                |            |            |            |            |           |             |            | ≤ 4             |            |            |            |            |            |            |      |
| Torsional rigidity  |         |       | C <sub>121</sub>           | Nm/ arcmin                            | 10         | 11         | 13         | 13         | 13        | 11          | 11         | 11              | 11         | 11         | 11         | 11         | 13         | 13         | 13   |
| <b>5</b> ,  |         |       | 121                        | in.lb/ arcmin                         | 89         | 97         | 115        | 115        | 115       | 97          | 97         | 97              | 97         | 97         | 97         | 97         | 115        | 115        | 115  |
| Max. axial force <sup>e)</sup>  |         |       | F <sub>2AMax</sub>         | lb,                                   |            |            |            |            |           |             |            | 5700<br>1283    |            |            |            |            |            |            |      |
| L. (1.5 a)  |         |       | _                          | N                                     |            |            |            |            |           |             |            | 6300            |            |            |            |            |            |            |      |
| Max. radial force e)  |         |       | F <sub>2RMax</sub>         | lb <sub>f</sub>                       |            |            |            |            |           |             |            | 1418            |            |            |            |            |            |            |      |
| Max. tilting moment   |         |       | M <sub>2KMax</sub>         | Nm<br>in.lb                           |            |            |            |            |           |             |            | 833<br>7370     |            |            |            |            |            |            |      |
| Efficiency at full load   |         |       | η                          | %                                     |            |            | 96         |            |           |             |            | 94              |            |            |            |            |            |            |      |
| Service life (For calculation, see the Chapter "Information"            | ')      |       | L <sub>h</sub>             | h                                     |            |            |            |            |           |             |            | > 20000         | )          |            |            |            |            |            |      |
| Weight incl. standardadapter pla  | te      |       | m                          | kg                                    |            |            | 9.3        |            |           |             |            | 10.0            |            |            |            |            |            |            |      |
|   |         |       |                            | lb <sub>m</sub>                       |            |            | 21         |            |           |             |            | 22              |            |            |            |            |            |            |      |
| Operating noise (with n,=3000 rpm no load)                              |         |       | L <sub>PA</sub>            | dB(A)                                 |            |            |            |            |           |             |            | ≤ 66            |            |            |            |            |            |            |      |
| Max. permitted housing tempera  | ture    |       |                            | °C                                    |            |            |            |            |           |             |            | +90             |            |            |            |            |            |            |      |
|   |         |       |                            | F<br>°C                               |            |            |            |            |           |             |            | 194<br>0 to +40 | )          |            |            |            |            |            |      |
| Ambient temperature   |         |       |                            | F                                     |            |            |            |            |           |             |            | 32 to 10        |            |            |            |            |            |            |      |
| Lubrication   |         |       |                            |                                       |            |            |            |            |           |             | Lubr       | icated fo       | or life    |            |            |            |            |            |      |
| Paint   |         |       |                            |                                       |            |            |            |            |           |             | Blu        | e RAL 5         | 002        |            |            |            |            |            |      |
| Direction of rotation   |         |       |                            |                                       |            |            |            |            | ı         | Motor a     | nd gearh   | nead op         | posite d   | irections  | 6          |            |            |            |      |
| Protection class  |         |       |                            |                                       |            |            |            |            |           |             |            | IP 65           |            |            | ,          |            |            |            |      |
| Moment of inertia   | E       | 10    | ,                          | kgcm <sup>2</sup>                     |            |            |            |            |           | 1.02        | 0.97       | 0.86            | 0.84       | 0.75       | 0.74       | 0.69       | 0.69       | 0.68       | 0.68 |
| (relates to the drive)  | =       | 19    | J <sub>1</sub>             | 10 <sup>-3</sup> in.lb.s <sup>2</sup> |            | -          | _          | -          |           | 0.91        | 0.86       | 0.76            | 0.74       | 0.66       | 0.66       | 0.61       | 0.61       | 0.60       | 0.60 |
| Clamping hub diameter [mm]  | G       | 24    | $J_{1}$                    | kgcm <sup>2</sup>                     | -          | _          | -          | _          | -         | 2.59        | 2.54       | 2.42            | 2.40       | 2.31       | 2.30       | 2.26       | 2.25       | 2.25       | 2.25 |
| -   |         |       |                            | tgcm <sup>2</sup>                     | 4.64       | 3.80       | 3.34       | 2.98       | 2.79      | 2.29        | 2.25       | 2.14            | 2.13       | 2.05       | 2.04       | 2.00       | 1.99       | 1.99       | 1.99 |
|   | Н       | 28    | $J_{_1}$                   | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 4.10       | 3.36       | 2.95       | 2.64       | 2.47      | -           | -          | -               | -          | -          | -          | -          | -          | -          | -    |
|   | K       | 38    | ,                          | kgcm <sup>2</sup>                     | 11.9       | 11.0       | 10.6       | 10.2       | 10.0      |             |            | _               |            | _          | _          | _          | _          | l _        | _    |
|   | 14      | 00    | $J_{\scriptscriptstyle 1}$ | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 10.5       | 9.77       | 9.37       | 9.05       | 8.89      |             | _          | _               |            |            |            |            |            |            |      |

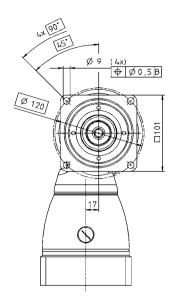
a) Other ratios available on request

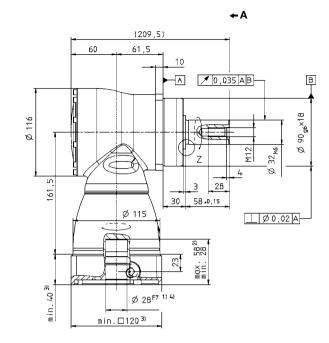
 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

c) For higher ambient temperatures, please reduce input speed

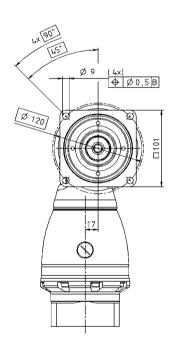
d) Idling torques decrease during operation

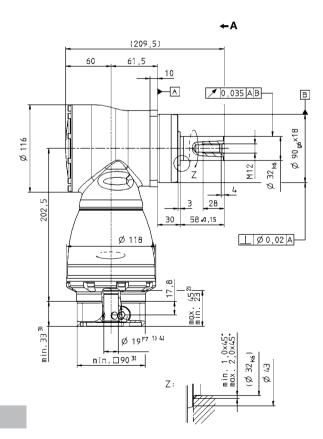
e) Refers to center of the output shaft or flange





#### 2-stage:



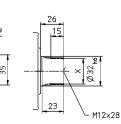


### Alternatives: Output shaft variants

M12x28

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

50



Involute gearing DIN 5480 X = W 32 x 1.25 x 30 x 24 x 6m

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# **SK+ 140 MF** 1/2-stage

|   |                    |                       |              |              | 1-stage      | )            |             |              |              |               |              | 2-st         | age          |              |              |              |              |
|---|--------------------|-----------------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ratio <sup>a)</sup>   | i                  |                       | 3            | 4            | 5            | 7            | 10          | 12           | 16           | 20            | 25           | 28           | 35           | 40           | 50           | 70           | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                                | T <sub>2B</sub>    | Nm<br>in.lb           | 300<br>2655  | 300<br>2655  | 300<br>2655  | 250<br>2213  | 210<br>1859 | 300<br>2655  | 300<br>2655  | 300<br>2655   | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 250<br>2213  | 210<br>1859  |
| Nominal output torque (with n <sub>n</sub> )  | T <sub>2N</sub>    | Nm<br>in.lb           | 190<br>1682  | 190<br>1682  | 190<br>1682  | 175<br>1549  | 160<br>1416 | 190<br>1682  | 190<br>1682  | 190<br>1682   | 190<br>1682  | 190<br>1682  | 190<br>1682  | 190<br>1682  | 190<br>1682  | 175<br>1549  | 160<br>1419  |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead | T <sub>2Not</sub>  | Nm<br>in.lb           | 400<br>3540  | 500<br>4425  | 500<br>4425  | 450<br>3983  | 400<br>3540 | 500<br>4425  | 500<br>4425  | 500<br>4425   | 500<br>4425  | 500<br>4425  | 500<br>4425  | 500<br>4425  | 500<br>4425  | 450<br>3983  | 400<br>3540  |
| Nominal input speed (with T <sub>2N</sub> and 20°C ambient temperature) b), c)      | n <sub>1N</sub>    | rpm                   | 1900         | 2000         | 2200         | 2000         | 2000        | 2900         | 2900         | 2900          | 2900         | 2900         | 2900         | 2900         | 3200         | 3200         | 3900         |
| Max. continuous speed<br>(with 20% T <sub>2M</sub> and 20°C ambient temperature)    | n <sub>1Ncym</sub> | rpm                   | 2500         | 2800         | 3100         | 2800         | 2800        | 4000         | 4000         | 4000          | 4000         | 4000         | 4000         | 4000         | 4200         | 4200         | 4200         |
| Max. input speed  | n <sub>1Max</sub>  | rpm                   | 4500         | 4500         | 4500         | 4500         | 4500        | 4500         | 4500         | 4500          | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature) d)     | T <sub>012</sub>   | Nm<br>in.lb           | 7.0<br>62    | 5.2<br>46    | 4.5<br>40    | 7.5<br>66    | 5.5<br>49   | 1.4<br>12.4  | 0.9          | 0.7<br>6.2    | 0.5<br>4.4   | 0.5<br>4.4   | 0.4<br>3.5   | 0.4<br>3.5   | 0.3<br>2.7   | 0.3<br>2.7   | 0.3<br>2.7   |
| Max. torsional backlash   | $j_t$              | arcmin                |              |              |              |              |             |              |              | ≤ 4           |              |              |              |              |              |              |              |
| Torsional rigidity  | C <sub>t21</sub>   | Nm/ arcmin            | 27<br>239    | 30<br>266    | 32<br>283    | 32<br>283    | 32<br>283   | 29<br>257    | 29<br>257    | 29<br>257     | 29<br>257    | 29<br>257    | 29<br>257    | 29<br>257    | 31<br>274    | 31<br>274    | 31<br>274    |
| Max. axial force e)   | F <sub>2AMax</sub> | N<br>lb <sub>t</sub>  |              |              |              |              |             |              |              | 9900<br>2228  |              |              |              |              |              |              |              |
| Max. radial force <sup>e)</sup>   | F <sub>2RMax</sub> | N<br>lb,              |              | ,            | ,            |              |             |              |              | 9500<br>2138  |              | ,            |              |              |              |              |              |
| Max. tilting moment   | M <sub>2KMax</sub> | Nm<br>in.lb           |              |              |              |              |             |              |              | 1692<br>14974 |              |              |              |              |              |              |              |
| Efficiency at full load   | η                  | %                     |              |              | 96           |              |             |              |              | 94            |              |              |              |              |              |              |              |
| Service life (For calculation, see the Chapter "Information")                       | L <sub>h</sub>     | h                     |              |              |              |              |             |              |              | > 20000       | 1            |              |              |              |              |              |              |
| Weight incl. standardadapter plate  | m                  | kg<br>lb <sub>m</sub> |              |              | 22.6<br>50   |              |             |              |              | 25.0<br>55    |              |              |              |              |              |              |              |
| Operating noise (with n,=3000 rpm without load)                                     | L <sub>PA</sub>    | dB(A)                 |              |              |              |              |             | •            |              | ≤ 68          |              |              |              |              |              |              |              |
| Max. permitted housing temperature  |                    | °C<br>F               |              |              |              |              |             |              |              | +90<br>194    |              |              |              |              |              |              |              |
| Ambient temperature   |                    | °C<br>F               |              |              |              |              |             |              |              | 0 to +40      |              |              |              |              |              |              |              |
| Lubrication   |                    |                       |              |              |              |              |             |              |              | icated fo     |              |              |              |              |              |              |              |
| Paint   |                    |                       |              |              |              |              |             |              | Blu          | e RAL 5       | 002          |              |              |              |              |              |              |
| Direction of rotation   |                    |                       |              |              |              |              |             | Motor a      | nd gearh     | nead op       | oosite d     | irections    | 3            |              |              |              |              |
| Protection class  |                    |                       |              |              |              |              |             |              |              | IP 65         |              |              |              |              |              |              |              |
| Moment of inertia G 24 (relates to the drive)                                       | J,                 | kgcm <sup>2</sup>     | -            | -            | -            | -            | -           | 4.21<br>3.73 | 3.85<br>3.41 | 3.28<br>2.90  | 3.17<br>2.80 | 2.78<br>2.46 | 2.73         | 2.48         | 2.46         | 2.43<br>2.15 | 2.42         |
| Clamping hub diameter [mm]  | J,                 | kgcm <sup>2</sup>     | 25.0<br>22.1 | 19.1<br>16.9 | 16.3<br>14.4 | 14.1<br>12.4 | 12.8        | 11.1<br>9.83 | 10.7<br>9.51 | 10.2<br>9.01  | 10.1         | 9.69<br>8.58 | 9.64<br>8.53 | 9.39<br>8.31 | 9.37<br>8.29 | 9.34<br>8.27 | 9.33<br>8.26 |

a) Other ratios available on request

All technical data for front output side applies.

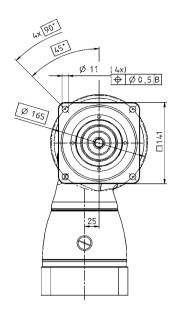
Technical data for rearward output versions, see page 428.

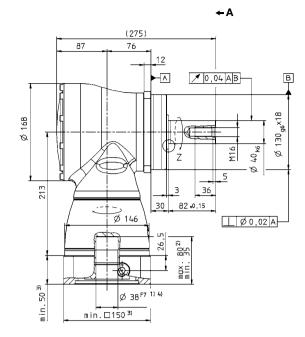
 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

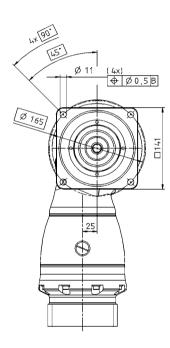
d) Idling torques decrease during operation

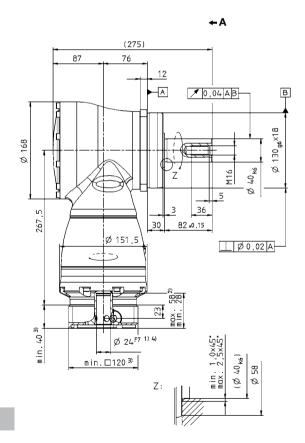
e) Refers to center of the output shaft or flange





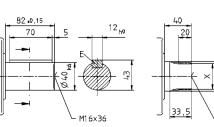
#### 2-stage:





### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 X = W 40 x 2 x 30 x 18 x 6m

M16x36

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# **SK+ 180 MF** 1/2-stage

|  |                    |                          |              |              | 1-stage      | )            |             |              |              |               |              | 2-st         | age          |             |             |              |              |
|--|--------------------|--------------------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|---------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|
| Ratio <sup>a)</sup>  | i                  |                          | 3            | 4            | 5            | 7            | 10          | 12           | 16           | 20            | 25           | 28           | 35           | 40          | 50          | 70           | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                                 | T <sub>2B</sub>    | Nm<br>in.lb              | 640<br>5664  | 640<br>5664  | 640<br>5664  | 550<br>4868  | 470<br>4160 | 640<br>5664  | 640<br>5664  | 640<br>5664   | 640<br>5664  | 640<br>5664  | 640<br>5664  | 640<br>5664 | 640<br>5664 | 550<br>4868  | 470<br>4160  |
| Nominal output torque  | T <sub>2N</sub>    | Nm<br>in.lb              | 400          | 400          | 400          | 380          | 360<br>3186 | 400          | 400          | 400           | 400          | 400          | 400          | 400         | 400         | 380          | 360<br>3186  |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T <sub>2Not</sub>  | Nm<br>in.lb              | 900          | 1050         | 1050         | 970<br>8585  | 900         | 1050         | 1050         | 1050          | 1050         | 1050         | 1050         | 1050        | 1050        | 970<br>8585  | 900          |
| Nominal input speed (with T <sub>m</sub> and 20°C ambient temperature) b), c)        | n <sub>1N</sub>    | rpm                      | 1600         | 1800         | 2000         | 1800         | 1800        | 2700         | 2700         | 2700          | 2700         | 2700         | 2700         | 2700        | 2900        | 3200         | 3400         |
| Max. continuous speed (with 20% T <sub>2W</sub> and 20°C ambient temperature)        | n <sub>1Ncym</sub> | rpm                      | 2000         | 2400         | 2800         | 2500         | 2500        | 3500         | 3500         | 3500          | 3500         | 3500         | 3500         | 3500        | 3500        | 3800         | 3800         |
| Max. input speed   | n <sub>1Max</sub>  | rpm                      | 4000         | 4000         | 4000         | 4000         | 4000        | 4000         | 4000         | 4000          | 4000         | 4000         | 4000         | 4000        | 4000        | 4000         | 4000         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature) d)      | T <sub>012</sub>   | Nm<br>in.lb              | 14.5<br>128  | 12.0<br>106  | 10.0<br>89   | 15.0<br>133  | 12.5<br>111 | 3.0<br>26.6  | 2.3          | 1.8<br>15.9   | 1.6<br>14.2  | 1.3<br>11.5  | 1.2<br>10.6  | 0.9<br>8.0  | 0.9<br>8.0  | 0.9<br>8.0   | 0.9          |
| Max. torsional backlash  | $j_t$              | arcmin                   |              |              |              |              |             |              |              | ≤ 4           |              |              |              |             |             |              |              |
| Torsional rigidity   | C <sub>121</sub>   | Nm/ arcmin in.lb/ arcmin | 64<br>566    | 71<br>628    | 79<br>699    | 78<br>690    | 77<br>681   | 71<br>628    | 71<br>628    | 71<br>628     | 71<br>628    | 71<br>628    | 71<br>628    | 71<br>628   | 78<br>690   | 78<br>690    | 78<br>690    |
| Max. axial force e)  | F <sub>2AMax</sub> | N<br>Ib,                 | 300          | 020          | 099          | 030          | 001         | 020          | 020          | 14200<br>3195 | 020          | 020          | 020          | 020         | 090         | 090          | 090          |
| Max. radial force e)   | F <sub>2RMax</sub> | N<br>Ib,                 |              |              |              |              |             |              |              | 14700         |              |              |              |             |             |              |              |
| Max. tilting moment  | M <sub>2KMax</sub> | Nm<br>in.lb              |              |              |              |              |             |              |              | 3213<br>28435 |              |              |              |             |             |              |              |
| Efficiency at full load  | η                  | %                        |              |              | 96           |              |             |              |              | 94            |              |              |              |             |             |              |              |
| Service life (For calculation, see the Chapter "Information")                        | L                  | h                        |              |              |              |              |             |              |              | > 20000       | )            |              |              |             |             |              |              |
| Weight incl. standardadapter plate   | m                  | kg<br>lb <sub>m</sub>    |              |              | 45.4<br>100  |              |             |              |              | 48<br>106     |              |              |              |             |             |              |              |
| Operating noise (with n,=3000 rpm no load)   | L <sub>PA</sub>    | dB(A)                    |              |              | 100          |              |             |              |              | ≤ 68          |              |              |              |             |             |              |              |
| Max. permitted housing temperature   |                    | °C<br>F                  |              |              |              |              |             |              |              | +90<br>194    |              |              |              |             |             |              |              |
| Ambient temperature  |                    | °C<br>F                  |              |              |              |              |             |              |              | 0 to +40      |              |              |              |             |             |              |              |
| Lubrication  |                    |                          |              |              |              |              |             |              |              | cated fo      |              |              |              |             |             |              |              |
| Paint  |                    |                          |              |              |              |              |             |              | Blu          | e RAL 5       | 002          |              |              |             |             |              | ,            |
| Direction of rotation  |                    |                          |              |              |              |              |             | Motor a      | nd gearh     | nead opp      | oosite d     | irections    | <b>3</b>     |             |             |              |              |
| Protection class   |                    |                          |              |              |              |              |             |              |              | IP 65         |              |              |              |             |             |              |              |
| Moment of inertia K 38 (relates to the drive)  | J,                 | kgcm <sup>2</sup>        | -            | -            | -            | -            | -           | 15.3<br>13.6 | 14.0<br>12.3 | 12.3<br>10.9  | 12.0<br>10.6 | 10.9<br>9.65 | 10.7<br>9.48 | 10.1        | 10.0        | 9.95<br>8.81 | 9.91<br>8.77 |
| Clamping hub diameter [mm] M 48  | $J_{1}$            | kgcm <sup>2</sup>        | 73.3<br>64.9 | 51.6<br>45.6 | 42.1<br>37.3 | 34.0<br>30.1 | 29.7        | 30.0         | 28.7         | 27.1          | 26.7         | 25.6<br>22.7 | 25.4<br>22.5 | 24.8        | 24.7        | 24.7         | 24.6         |

a) Other ratios available on request

All technical data for front output side applies.

Technical data for rearward output versions, see page 428.

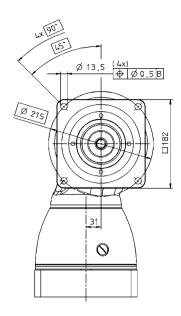
 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

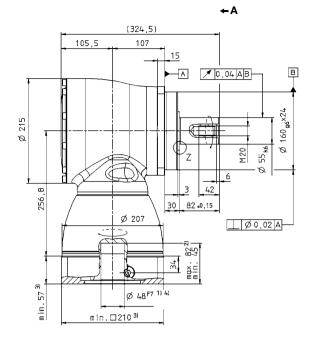
 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

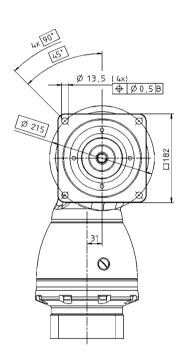
e) Refers to center of the output shaft or flange

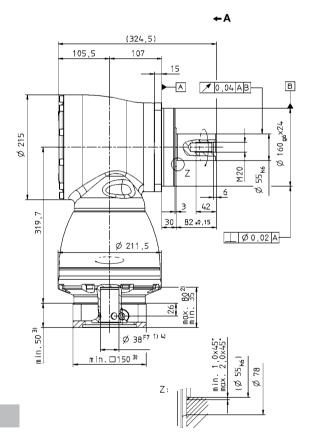






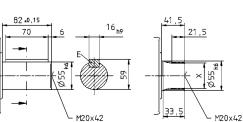
#### 2-stage:





### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 X = W 55 x 2 x 30 x 26 x 6m

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# **SPK+ 075 MF** 2-stage

|  |         |        |                    |                                       |             |             |             |              | 2-st        | tage         |             |             |             |              |
|--|---------|--------|--------------------|---------------------------------------|-------------|-------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|--------------|
| Ratio <sup>a)</sup>  |         |        | i                  |                                       | 12          | 16          | 20          | 25           | 28          | 35           | 40          | 50          | 70          | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                     |         |        | T <sub>2B</sub>    | Nm<br>in.lb                           | 110<br>974  | 110<br>974  | 110<br>974  | 110<br>974   | 110<br>974  | 110<br>974   | 80<br>974   | 100<br>885  | 110<br>974  | 90<br>797    |
| Nominal output torque  |         |        | T <sub>2N</sub>    | Nm<br>in.lb                           | 75<br>664   | 75<br>664   | 75<br>664   | 75<br>664    | 75<br>664   | 75<br>664    | 60          | 75<br>664   | 75<br>664   | 52<br>460    |
| Emergency stop torque (permitted 1000 times during the service life of t | he ges  | rhead) | T <sub>2Not</sub>  | Nm<br>in.lb                           | 160<br>1416 | 160<br>1416 | 200         | 200          | 250<br>2213 | 175<br>1549  | 120         | 150<br>1328 | 210         | 200<br>1770  |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c)  |         |        | n <sub>1N</sub>    | rpm                                   | 2000        | 2400        | 2400        | 2700         | 2400        | 2500         | 2500        | 2500        | 2500        | 2500         |
| Max. continuous speed (with 20% $T_{2N}$ and 20°C ambient temperature)   |         |        | n <sub>1Ncym</sub> | rpm                                   | 3000        | 3400        | 3400        | 3800         | 3400        | 3200         | 3200        | 3200        | 3200        | 3200         |
| Max. input speed   |         |        | n <sub>1Max</sub>  | rpm                                   | 6000        | 6000        | 6000        | 6000         | 6000        | 6000         | 6000        | 6000        | 6000        | 6000         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead tempe    | erature | ) d)   | T <sub>012</sub>   | Nm<br>in.lb                           | 1.5<br>13.3 | 1.3<br>11.5 | 1.2<br>10.6 | 1.2<br>10.6  | 1.2<br>10.6 | 1.3<br>11.5  | 1.3<br>11.5 | 1.3<br>11.5 | 1.3<br>11.5 | 1.3<br>11.5  |
| Max. torsional backlash  |         | ,      | $j_t$              | arcmin                                | 10.0        | 11.0        | 10.0        |              |             | / Reduced ≤  |             | 11.5        | 11.0        | 11.0         |
| Torsional rigidity   |         |        | C <sub>121</sub>   | Nm/ arcmin                            |             |             |             |              |             | 10           |             |             |             |              |
| Max. axial force <sup>e)</sup>   |         |        | F <sub>2AMax</sub> | in.lb/arcmin                          |             |             |             |              | 33          | 39<br>350    |             |             |             |              |
| Max. radial force <sup>e)</sup>  |         |        | F <sub>2RMax</sub> | lb <sub>f</sub>                       |             |             |             |              | 40          | 53           |             |             |             |              |
| Max. tilting moment  |         |        |                    | lb <sub>f</sub><br>Nm                 |             |             |             |              |             | 00<br>36     |             |             |             |              |
| wax. titting moment  |         |        | M <sub>2KMax</sub> | in.lb                                 |             |             |             |              | 20          | )89          |             |             |             |              |
| Efficiency at full load  |         |        | η                  | %                                     |             |             |             |              | 9           | 94           |             |             |             |              |
| Service life (For calculation, see the Chapter "Information              | ")      |        | L <sub>h</sub>     | h                                     |             |             |             |              | > 20        | 0000         |             |             |             |              |
| Weight incl. standard adapter pl   | ate     |        | m                  | kg<br>lb <sub>m</sub>                 |             |             |             |              |             | 1.5          |             |             |             |              |
| Operating noise (with n,=3000 rpm no load)                               |         |        | L <sub>PA</sub>    | dB(A)                                 |             |             |             |              | ≤           | 66           |             |             |             |              |
| Max. permitted housing tempera   | ature   |        |                    | °C                                    |             |             |             |              |             | 90           |             |             |             |              |
|  |         |        |                    | F<br>°C                               |             |             |             |              |             | 94<br>+40    |             |             |             |              |
| Ambient temperature  |         |        |                    | F                                     |             |             |             |              |             | 104          |             |             |             |              |
| Lubrication  |         |        |                    |                                       |             |             |             |              | Lubricate   | ed for life  |             |             |             |              |
| Paint  |         |        |                    |                                       |             |             |             |              | Blue R/     | AL 5002      |             |             |             |              |
| Direction of rotation  |         |        |                    |                                       |             |             |             | Motor a      | nd gearhead | d opposite d | lirections  |             |             |              |
| Protection class   |         |        |                    |                                       |             |             |             |              | IP          | 65           |             |             |             |              |
| Moment of inertia  | С       | 14     | J,                 | kgcm <sup>2</sup>                     | 0.54        | 0.45        | 0.44        | 0.40         | 0.44        | 0.36         | 0.35        | 0.34        | 0.34        | 0.34         |
| (relates to the drive) Clamping hub diameter [mm]                        | _       |        |                    | kgcm <sup>2</sup>                     | 0.48        | 0.40        | 0.39        | 0.35<br>0.75 | 0.39        | 0.32<br>0.71 | 0.31        | 0.30        | 0.30        | 0.30<br>0.69 |
|  | Е       | 19     | J,                 | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 0.79        | 0.71        | 0.70        | 0.66         | 0.70        | 0.63         | 0.62        | 0.62        | 0.62        | 0.61         |

<sup>&</sup>lt;sup>a)</sup> Other ratios up to i=1000 available on request

All technical data for front output side applies.

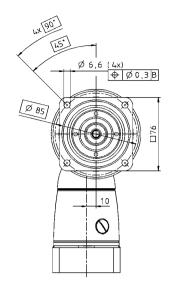
Technical data for rearward output versions, see page 428.

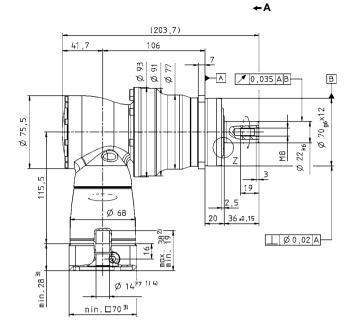
<sup>&</sup>lt;sup>b)</sup> Higher speeds are possible if the nominal torque is reduced

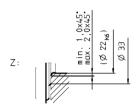
 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange

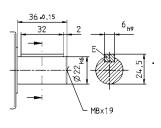




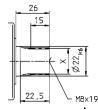


### Alternatives: Output shaft variants

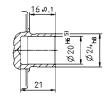
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# **SPK+ 075 MF** 3-stage

|   |                       |  |             |              |            |              |              |              | 3-st         | age          |              |              |           |              |              |              |
|---|-----------------------|--|-------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|
| Ratio <sup>a)</sup>   | i                     |  | 64          | 84           | 100        | 125          | 140          | 175          | 200          | 250          | 280          | 350          | 400       | 500          | 700          | 1000         |
| Max. acceleration torque (max. 1000 cycles per hour)                                      | T <sub>2B</sub>       | Nm<br>in.lb  | 110<br>974  | 110<br>974   | 110<br>974 | 110<br>974   | 110<br>974   | 110<br>974   | 110<br>974   | 110<br>974   | 110<br>974   | 110<br>974   | 80<br>708 | 100<br>885   | 110<br>974   | 90<br>797    |
| Nominal output torque   | T <sub>2N</sub>       | Nm<br>in.lb  | 75<br>664   | 75<br>664    | 75<br>664  | 75<br>664    | 75<br>664    | 75<br>664    | 75<br>664    | 75<br>664    | 75<br>664    | 75<br>664    | 60<br>531 | 75<br>664    | 75<br>664    | 52<br>460    |
| Emergency stop torque (permitted 1000 times during the service life of the gearher        | ad) T <sub>2Not</sub> | Nm<br>in.lb  | 160<br>1416 | 160<br>1416  | 200        | 200          | 200          | 200          | 200          | 200          | 250<br>2213  | 175<br>1549  | 120       | 150<br>1328  | 210          | 200          |
| Nominal input speed (with T <sub>2N</sub> and 20°C ambient temperature) <sup>b), c)</sup> | n <sub>1N</sub>       | rpm  | 4400        | 4400         | 4400       | 4400         | 4400         | 4400         | 4400         | 4800         | 4400         | 4800         | 5500      | 5500         | 5500         | 5500         |
| Max. continuous speed (with 20% $T_{2N}$ and 20°C ambient temperature)                    | n <sub>1Ncym</sub>    | rpm  | 5000        | 5000         | 5000       | 5000         | 5000         | 5000         | 5000         | 5000         | 5000         | 5000         | 5500      | 5500         | 5500         | 5500         |
| Max. input speed  | n <sub>1Max</sub>     | rpm  | 6000        | 6000         | 6000       | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000      | 6000         | 6000         | 6000         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature) d            | T <sub>012</sub>      | Nm<br>in.lb  | 0.3         | 0.3<br>2.7   | 0.3        | 0.3<br>2.7   | 0.3          | 0.3<br>2.7   | 0.2          | 0.2          | 0.2          | 0.2<br>1.8   | 0.2       | 0.2<br>1.8   | 0.2          | 0.2<br>1.8   |
| Max. torsional backlash   | $j_t$                 | arcmin   |             |              |            |              |              |              | dard ≤ 5     |              |              |              |           |              |              |              |
| Torsional rigidity  | C <sub>121</sub>      | Nm/ arcmin   |             |              |            |              |              |              |              | 0            |              |              |           |              |              |              |
| Max. axial force e)   | F <sub>2AMax</sub>    | N<br>Ib,   |             |              |            |              |              |              |              | 50           |              |              |           |              |              |              |
| Max. radial force <sup>e)</sup>   | F <sub>2RMax</sub>    | N  |             |              |            |              |              |              | 40           | 00           |              |              |           |              |              |              |
| Max. tilting moment   | M <sub>2KMax</sub>    | lb <sub>f</sub>  |             |              |            |              |              |              | 23           | 36           |              |              |           |              |              |              |
| Efficiency at full load   | η                     | in.lb  |             |              |            |              |              |              |              | 89<br>2      |              |              |           |              |              |              |
| Service life (For calculation, see the Chapter "Information")                             | L <sub>h</sub>        | h  |             |              |            |              |              |              | > 20         | 0000         |              |              |           |              |              |              |
| Weight incl. standard adapter plate   | m                     | kg   |             |              |            |              |              |              |              | .5           |              |              |           |              |              |              |
| Operating noise   | L <sub>PA</sub>       | lb <sub>m</sub>  |             |              |            |              |              |              |              | 2.2<br>66    |              |              |           |              |              |              |
| (with $n_{,=}$ 3000 rpm no load)  Max. permitted housing temperature                      |                       | °C   |             |              | -          |              |              |              |              | 90           |              |              | -         |              |              |              |
| Ambient temperature   |                       | F<br>°C  |             |              |            |              |              |              |              | 94<br>+40    |              |              |           |              |              |              |
|   |                       | F  |             | -            |            |              |              |              |              | 104          |              |              |           |              |              |              |
| Lubrication   |                       |  |             |              |            | ,            |              |              | Lubricate    |              | -            |              |           |              |              |              |
| Paint   |                       |  |             | -            |            |              |              |              | Blue RA      | AL 5002      |              |              |           |              |              |              |
| Direction of rotation   |                       |  |             |              |            |              | Мо           | tor and      | gearhead     | l opposit    | e direction  | ons          |           |              |              |              |
| Protection class  |                       | 1  |             |              |            |              |              | _            |              | 65           |              |              |           |              |              |              |
| (relates to the drive)  | 11 J,                 | kgcm <sup>2</sup>  | 0.09        | 0.07         | 0.08       | 0.07         | 0.06         | 0.06         | 0.06         | 0.06         | 0.06         | 0.06         | 0.06      | 0.06         | 0.06         | 0.06         |
| Clamping hub diameter [mm]  | 14 J,                 | kgcm <sup>2</sup><br>10 <sup>-3</sup> in.lb.s <sup>2</sup> | 0.20        | 0.18<br>0.16 | 0.19       | 0.19<br>0.17 | 0.18<br>0.16 | 0.18<br>0.16 | 0.17<br>0.15 | 0.17<br>0.15 | 0.17<br>0.15 | 0.17<br>0.15 | 0.17      | 0.17<br>0.15 | 0.17<br>0.15 | 0.17<br>0.15 |

<sup>&</sup>lt;sup>a)</sup> Other ratios up to i=1000 available on request

All technical data for front output side applies.

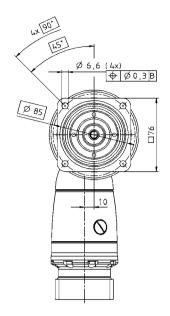
Technical data for rearward output versions, see page 428.

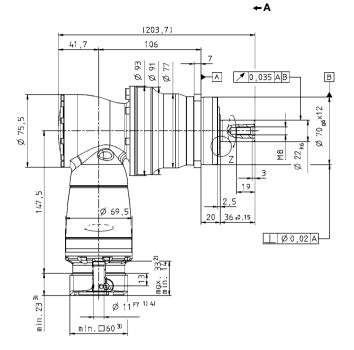
<sup>&</sup>lt;sup>b)</sup> Higher speeds are possible if the nominal torque is reduced

 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange

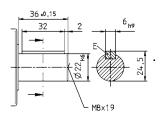




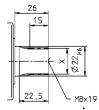
 $(\varnothing~22_{\rm k6})$ Z:

### Alternatives: Output shaft variants

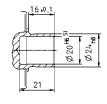
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



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# SPK+ 100 MF 2-stage

|  |                   |                    |  |              |              |              |              | 2-si         | tage         |              |              |              |              |
|--|-------------------|--------------------|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ratio a)   |                   | i                  |  | 12           | 16           | 20           | 25           | 28           | 35           | 40           | 50           | 70           | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                           |                   | T <sub>2B</sub>    | Nm<br>in.lb  | 280<br>2478  | 280<br>2478  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 200<br>1770  | 250<br>2213  | 300<br>2655  | 225<br>1991  |
| Nominal output torque  |                   | T <sub>2N</sub>    | Nm   | 180          | 180          | 175          | 175          | 170          | 175          | 160          | 175          | 170          | 120          |
| (with $n_{n}$ )  Emergency stop torque   |                   | T <sub>2Not</sub>  | in.lb<br>Nm  | 1593<br>400  | 1593<br>400  | 1549<br>500  | 1549<br>500  | 1505<br>625  | 1549<br>500  | 1416<br>400  | 1549<br>500  | 1505<br>625  | 1062<br>500  |
| (permitted 1000 times during the service life of the ge<br>Nominal input speed |                   |                    | in.lb<br>rpm   | 3540<br>2000 | 3540<br>2400 | 4425<br>2400 | 4425<br>2700 | 5531<br>2400 | 4425<br>2500 | 3540<br>2500 | 4425<br>2500 | 5531<br>2500 | 4425<br>2500 |
| (with $T_{av}$ and 20°C ambient temperature) b), c)  Max. continuous speed     |                   | n <sub>1N</sub>    |  |              | 3400         | 3400         | 3800         | 3400         | 3200         | 3200         | 3200         |              | 3200         |
| (with 20% $T_{\rm 2W}$ and 20°C ambient temperature)                           |                   | n <sub>1Ncym</sub> | rpm  | 3000         |              |              |              |              |              |              |              | 3200         |              |
| Max. input speed   | - '               | n <sub>1Max</sub>  | rpm  | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature)   | re) <sup>d)</sup> | T <sub>012</sub>   | Nm<br>in.lb  | 2.5<br>22.1  | 2.1<br>18.6  | 2.0<br>17.7  | 1.8<br>15.9  | 2.0<br>17.7  | 2.2<br>19.5  | 2.0<br>17.7  | 2.0<br>17.7  | 2.0<br>17.7  | 2.0<br>17.7  |
| Max. torsional backlash  | J                 | $\dot{J}_t$        | arcmin   |              |              |              | St           | andard ≤ 4   | / Reduced ≤  | <u> 2</u>    |              |              |              |
| Torsional rigidity   |                   | C <sub>t21</sub>   | Nm/ arcmin   |              |              |              |              |              | 31<br>74     |              |              |              |              |
| Max. axial force e)  |                   | F <sub>2AMax</sub> | N<br>lb,   |              |              |              |              |              | 350<br>271   |              |              |              |              |
| Max. radial force <sup>e)</sup>  |                   | F <sub>2RMax</sub> | N  |              |              |              |              | 63           | 300          |              |              |              |              |
| Max. tilting moment  |                   | M <sub>2KMax</sub> | lb <sub>f</sub><br>Nm                                      |              |              |              |              | 4            | 118<br>87    |              |              |              |              |
| Efficiency at full load  |                   | η                  | in.lb<br>%   |              |              |              |              |              | 310<br>94    |              |              |              |              |
| Service life   |                   |                    |  |              |              |              |              |              |              |              |              |              |              |
| (For calculation, see the Chapter "Information")                               |                   | L <sub>h</sub>     | h<br>kg  |              |              |              |              |              | 0000<br>     |              |              |              |              |
| Weight incl. standard adapter plate  | ,                 | m                  | lb <sub>m</sub>  |              |              |              |              |              | 1.4          |              |              |              |              |
| Operating noise<br>(with n,=3000 rpm no load)                                  |                   | L <sub>PA</sub>    | dB(A)  |              |              |              |              | ≤            | 68           |              |              |              |              |
| Max. permitted housing temperatur  | е                 |                    | °C<br>F  |              |              |              |              |              | 90<br>94     |              |              |              |              |
| Ambient temperature  |                   |                    | °C<br>F  |              |              |              |              | 0 to         | +40          |              |              |              |              |
| Lubrication  |                   |                    | г  |              |              |              |              |              | ed for life  |              |              |              |              |
| Paint  |                   |                    |  |              |              |              |              | Blue R/      | AL 5002      |              |              |              |              |
| Direction of rotation  |                   |                    |  |              |              |              | Motor a      | nd gearhead  | d opposite d | irections    |              |              |              |
| Protection class   |                   |                    |  |              |              |              |              |              | 65           |              |              |              |              |
|  | 1.0               | ,                  | kgcm <sup>2</sup>  | 1.48         | 1.20         | 1.17         | 1.05         | 1.15         | 0.95         | 0.90         | 0.89         | 0.89         | 0.89         |
| Moment of inertia  (relates to the drive)                                      | 19                | $J_{_1}$           | 10 <sup>-3</sup> in.lb.s <sup>2</sup>                      | 1.31         | 1.06         | 1.04         | 0.93         | 1.02         | 0.84         | 0.79         | 0.79         | 0.79         | 0.78         |
| Clamping hub diameter [mm]   | 28                | $J_{_{1}}$         | kgcm <sup>2</sup><br>10 <sup>-3</sup> in.lb.s <sup>2</sup> | 2.89         | 2.62         | 2.59         | 2.46<br>2.18 | 2.56<br>2.27 | 2.36<br>2.09 | 2.31         | 2.31         | 2.30         | 2.30         |

<sup>&</sup>lt;sup>a)</sup> Other ratios up to i=1000 available on request

All technical data for front output side applies.

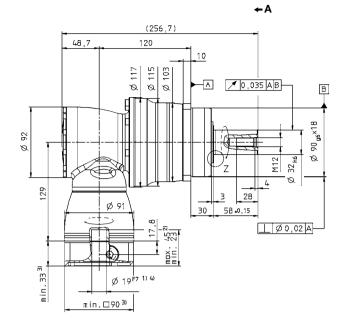
Technical data for rearward output versions, see page 428.

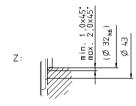
 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

<sup>&</sup>lt;sup>c)</sup> For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

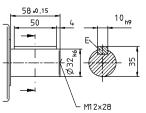
e) Refers to center of the output shaft or flange



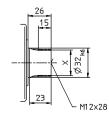


### Alternatives: Output shaft variants

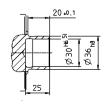
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# SPK+ 100 MF 3-stage

|  |                    |                   |              |              |             |              |              |              | 3-st         | tage         |              |              |              |              |              |              |
|--|--------------------|-------------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ratio a)   | i                  |                   | 64           | 84           | 100         | 125          | 140          | 175          | 200          | 250          | 280          | 350          | 400          | 500          | 700          | 1000         |
| Max. acceleration torque (max. 1000 cycles per hour)                                 | T <sub>2B</sub>    | Nm<br>in.lb       | 280<br>2478  | 280<br>2478  | 300<br>2655 | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 300<br>2655  | 200<br>1770  | 250<br>2213  | 300<br>2655  | 225<br>1991  |
| Nominal output torque  | T <sub>2N</sub>    | Nm<br>in.lb       | 180<br>1593  | 180<br>1593  | 175<br>1549 | 175<br>1549  | 175<br>1549  | 175<br>1549  | 175<br>1549  | 175<br>1549  | 170<br>1505  | 175<br>1549  | 160<br>1416  | 175<br>1549  | 170<br>1505  | 120<br>1062  |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T <sub>2Not</sub>  | Nm<br>in.lb       | 400<br>3540  | 400          | 500<br>4425 | 500<br>4425  | 500          | 500<br>4425  | 500          | 500<br>4425  | 625<br>5531  | 500<br>4425  | 400          | 500<br>4425  | 625<br>5531  | 500          |
| Nominal input speed (with T <sub>2N</sub> and 20°C ambient temperature) b), c)       | n <sub>1N</sub>    | rpm               | 3500         | 3500         | 3500        | 3500         | 3500         | 3500         | 3500         | 3800         | 3500         | 3800         | 4500         | 4500         | 4500         | 4500         |
| Max. continuous speed (with 20% T <sub>2W</sub> and 20°C ambient temperature)        | n <sub>1Ncym</sub> | rpm               | 4500         | 4500         | 4500        | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         |
| Max. input speed   | n <sub>1Max</sub>  | rpm               | 6000         | 6000         | 6000        | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         | 6000         |
| Mean no load running torque<br>(with n,=3000 rpm and 20°C gearhead temperature) d)   | T <sub>012</sub>   | Nm<br>in.lb       | 0.4<br>3.5   | 0.3<br>2.7   | 0.3         | 0.3<br>2.7   | 0.3          | 0.3<br>2.7   | 0.2          | 0.2<br>1.8   | 0.2          | 0.2          | 0.2          | 0.2<br>1.8   | 0.2          | 0.2          |
| Max. torsional backlash  | $j_t$              | arcmin            |              |              |             |              |              |              |              | / Reduce     |              | -            |              |              |              |              |
| Torsional rigidity   | C <sub>121</sub>   | Nm/ arcmin        |              |              |             |              |              |              |              | 74           |              |              |              |              |              |              |
| Max. axial force <sup>e)</sup>   | F <sub>2AMax</sub> | N<br>Ib,          |              |              |             |              |              |              |              | 550          |              |              |              |              |              |              |
| Max. radial force <sup>e)</sup>  | F <sub>2RMax</sub> | N                 |              |              |             |              |              |              | 63           | 800          |              |              |              |              |              |              |
| Max. tilting moment  | M <sub>2KMax</sub> | lb <sub>f</sub>   |              |              |             |              |              |              | 48           | 87           |              |              |              |              |              |              |
| Efficiency at full load  | η                  | in.lb             |              |              |             |              |              |              |              | 310<br>02    |              |              |              |              |              |              |
| Service life (For calculation, see the Chapter "Information")                        | L <sub>n</sub>     | h                 |              |              |             |              |              |              | > 20         | 0000         |              |              |              |              |              |              |
| Weight incl. standard adapter plate  | m                  | kg                |              |              |             |              |              |              |              | 0.3          |              |              |              |              |              |              |
| Operating noise  | L <sub>PA</sub>    | dB(A)             |              |              |             |              |              |              |              | 68           |              |              |              |              |              |              |
| (with n,=3000 rpm no load)  Max. permitted housing temperature                       |                    | °C                |              |              |             |              |              |              | +!           | 90           |              |              |              |              |              |              |
|  |                    | °C                |              |              |             |              |              |              |              | 94<br>+40    |              |              |              |              |              |              |
| Ambient temperature  |                    | F                 |              |              |             |              |              |              |              | 104          |              |              |              |              |              |              |
| Lubrication  |                    |                   |              |              |             |              |              |              | Lubricate    | ed for life  |              |              |              |              |              |              |
| Paint  |                    |                   |              |              |             |              |              |              | Blue RA      | AL 5002      |              |              |              |              |              |              |
| Direction of rotation  |                    |                   |              |              |             |              | Мс           | otor and     | gearhead     | d opposit    | e direction  | ons          |              |              |              |              |
| Protection class   |                    |                   |              |              |             |              |              |              | IP           | 65           |              |              |              |              |              |              |
| Moment of inertia C 14   | $J_{1}$            | kgcm <sup>2</sup> | 0.28<br>0.25 | 0.23         | 0.24        | 0.23<br>0.20 | 0.21         | 0.20<br>0.18 | 0.19         | 0.18<br>0.16 | 0.19<br>0.17 | 0.18<br>0.16 | 0.18         | 0.18<br>0.16 | 0.18         | 0.18<br>0.16 |
| Clamping hub diameter [mm]   | J <sub>1</sub>     | kgcm <sup>2</sup> | 0.72<br>0.64 | 0.63<br>0.56 | 0.68        | 0.68         | 0.63<br>0.56 |

<sup>&</sup>lt;sup>a)</sup> Other ratios up to i=1000 available on request

All technical data for front output side applies.

Technical data for rearward output versions, see page 428.

 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

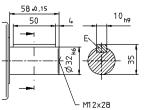
e) Refers to center of the output shaft or flange

←A

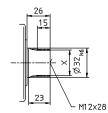
Z:

### Alternatives: Output shaft variants

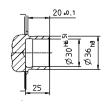
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# SPK+ 140 MF 2-stage

|  |           |                    |  |              |              |               |               | 2-st          | tage          |              |               |               |              |
|--|-----------|--------------------|--|--------------|--------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|
| Ratio <sup>a)</sup>  |           | i                  |  | 12           | 16           | 20            | 25            | 28            | 35            | 40           | 50            | 70            | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                           |           | T <sub>2B</sub>    | Nm<br>in.lb  | 600<br>5310  | 600<br>5310  | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 500<br>4425  | 600<br>5310   | 600<br>5310   | 480<br>4248  |
| Nominal output torque  |           | T <sub>2N</sub>    | Nm<br>in.lb  | 360<br>3186  | 360<br>3186  | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 320          | 360<br>3186   | 360<br>3186   | 220          |
| Emergency stop torque (permitted 1000 times during the service life of the     | nearhe:   | T <sub>2Not</sub>  | Nm<br>in.lb  | 1000         | 1000<br>8850 | 1250<br>11063 | 1250<br>11063 | 1250<br>11063 | 1250<br>11063 | 1000         | 1250<br>11063 | 1250<br>11063 | 1000         |
| Nominal input speed (with T <sub>2N</sub> and 20°C ambient temperature) b), c) | - g       | n <sub>1N</sub>    | rpm  | 1900         | 2300         | 2300          | 2600          | 2300          | 2300          | 2300         | 2300          | 2300          | 2300         |
| Max. continuous speed (with 20% $T_{2N}$ and 20°C ambient temperature)         |           | n <sub>1Ncym</sub> | rpm  | 2700         | 3100         | 3100          | 3500          | 3100          | 3000          | 3000         | 3000          | 3000          | 3000         |
| Max. input speed   |           | n <sub>1Max</sub>  | rpm  | 4500         | 4500         | 4500          | 4500          | 4500          | 4500          | 4500         | 4500          | 4500          | 4500         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead tempera        | ature) d) | T <sub>012</sub>   | Nm<br>in.lb  | 4.0<br>35.4  | 3.7<br>32.7  | 3.6<br>31.9   | 2.8<br>24.8   | 3.5<br>31     | 3.9<br>34.5   | 3.1<br>27.4  | 3.1<br>27.4   | 3.1<br>27.4   | 3.1<br>27.4  |
| Max. torsional backlash  |           | $j_t$              | arcmin   | 33.4         | 32.1         | 31.9          | l             |               | / Reduced ≤   |              | 21.4          | 21.4          | 27.4         |
| Torsional rigidity   |           | C <sub>t21</sub>   | Nm/ arcmin   |              |              |               |               | 5             | 53            |              |               |               |              |
|  |           |                    | in.lb/ arcmin  |              |              |               |               |               | 69<br>370     |              |               |               |              |
| Max. axial force el  |           | F <sub>2AMax</sub> | lb <sub>f</sub>  |              |              |               |               | -             | 221           |              |               |               |              |
| Max. radial force e)   |           | F <sub>2RMax</sub> | lb <sub>f</sub>  |              |              |               |               |               | 26            |              |               |               |              |
| Max. tilting moment  |           | M <sub>2KMax</sub> | Nm<br>in.lb  |              |              |               |               |               | 52<br>125     |              |               |               |              |
| Efficiency at full load  |           | η                  | %  |              |              |               |               | g             | 94            |              |               |               |              |
| Service life<br>(For calculation, see the Chapter "Information")               |           | L <sub>h</sub>     | h  |              |              |               |               | > 20          | 0000          |              |               |               |              |
| Weight incl. standard adapter plat   | te        | m                  | kg   |              |              | ,             |               |               | 20            |              |               | ,             |              |
| Operating noise (with n, = 3000 rpm no load)                                   |           | L <sub>PA</sub>    | lb <sub>m</sub>  |              |              |               |               |               | 68            |              |               |               |              |
| Max. permitted housing temperate   | ure       |                    | °C   |              |              |               |               | +             | 90            |              |               |               |              |
|  |           |                    | F<br>°C  |              |              |               |               |               | 94<br>+40     |              |               |               |              |
| Ambient temperature  |           |                    | F  |              |              |               |               |               | 104           |              |               |               |              |
| Lubrication  |           |                    |  |              |              |               |               | Lubricate     | ed for life   |              |               |               |              |
| Paint  |           |                    |  |              |              |               |               | Blue R        | AL 5002       |              |               |               |              |
| Direction of rotation  |           |                    |  |              |              |               | Motor a       | nd gearhead   | d opposite d  | irections    |               |               |              |
| Protection class   |           |                    |  |              | ,            |               |               | IP            | 65            | ,            |               |               |              |
|  | H 2       | 8 J,               | kgcm²  | 4.68         | 3.82         | 3.75          | 3.31          | 3.68          | 2.97          | 2.80         | 2.79          | 2.78          | 2.77         |
| (relates to the drive) Clamping hub diameter [mm]                              | 1/ /      |                    | 10 <sup>-3</sup> in.lb.s <sup>2</sup><br>kgcm <sup>2</sup> | 4.14<br>11.8 | 3.38<br>11.0 | 3.32<br>10.9  | 2.93<br>10.5  | 3.26<br>10.9  | 2.63<br>10.1  | 2.48<br>9.96 | 9.95          | 2.46<br>9.94  | 2.45<br>9.94 |
|  | K 3       | 8 J <sub>1</sub>   | 10 <sup>-3</sup> in.lb.s <sup>2</sup>                      | 10.5         | 9.73         | 9.66          | 9.27          | 9.60          | 8.97          | 8.82         | 8.81          | 8.80          | 8.79         |

a) Other ratios up to i=1000 available on request

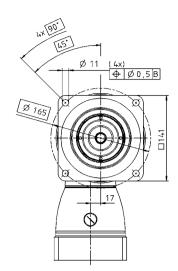
All technical data for front output side applies. Technical data for rearward output versions, see page 428.

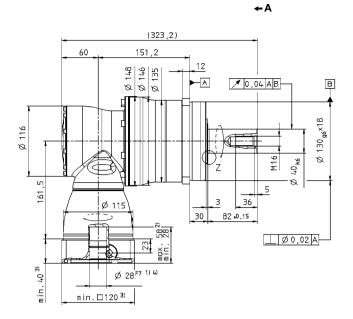
b) Higher speeds are possible if the nominal torque is reduced

 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

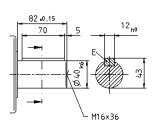
e) Refers to center of the output shaft or flange



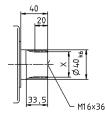


Ø 58 Ø Z:

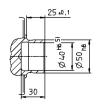
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# SPK+ 140 MF 3-stage

|  |           |         |                    |                                       |  |             |               |               |               |               | 3-st          | age           |               |               |             |               |               |             |
|--|-----------|---------|--------------------|---------------------------------------|--|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|-------------|
| Ratio <sup>a)</sup>  |           |         | i                  |                                       | 64                                     | 84          | 100           | 125           | 140           | 175           | 200           | 250           | 280           | 350           | 400         | 500           | 700           | 1000        |
| Max. acceleration torque (max. 1000 cycles per hour)                         |           |         | T <sub>2B</sub>    | Nm<br>in.lb                           | 600<br>5310                            | 600<br>5310 | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 600<br>5310   | 500<br>4425 | 600<br>5310   | 600<br>5310   | 480<br>4248 |
| Nominal output torque (with $n_{yy}$ )                                       |           |         | T <sub>2N</sub>    | Nm<br>in.lb                           | 360<br>3186                            | 360<br>3186 | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 360<br>3186   | 320<br>2832 | 360<br>3186   | 360<br>3186   | 220<br>1947 |
| Emergency stop torque<br>(permitted 1000 times during the service life of    | the gea   | urhead) | T <sub>2Not</sub>  | Nm<br>in.lb                           | 1000                                   | 1000        | 1250<br>11063 | 1000        | 1250<br>11063 | 1250<br>11063 | 1000        |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c)      |           |         | n <sub>1N</sub>    | rpm                                   | 3100                                   | 3100        | 3100          | 3100          | 3100          | 3100          | 3100          | 3500          | 3100          | 3500          | 4200        | 4200          | 4200          | 4200        |
| Max. continuous speed (with 20% T <sub>2N</sub> and 20°C ambient temperature |           |         | n <sub>1Ncym</sub> | rpm                                   | 4000                                   | 4000        | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4200        | 4200          | 4200          | 4200        |
| Max. input speed   |           |         | n <sub>1Max</sub>  | rpm                                   | 4500                                   | 4500        | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500        | 4500          | 4500          | 4500        |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temp         | orati ira | v q)    | T <sub>012</sub>   | Nm                                    | 0.7                                    | 0.4         | 0.6           | 0.5           | 0.5           | 0.4           | 0.3           | 0.3           | 0.3           | 0.3           | 0.3         | 0.3           | 0.3           | 0.3         |
|  | erature   | •)      |                    | in.lb                                 | 6.2                                    | 3.5         | 5.3           | 4.4           | 4.4           | 3.5           | 2.7           | 2.7           | 2.7           | 2.7           | 2.7         | 2.7           | 2.7           | 2.7         |
| Max. torsional backlash  |           |         | $j_t$              | arcmin                                | Standard ≤ 4 / Reduced ≤ 2             |             |               |               |               |               |               |               |               |               |             |               |               |             |
| Torsional rigidity   |           |         | C <sub>121</sub>   | Nm/ arcmin in.lb/ arcmin              | 53                                     |             |               |               |               |               |               |               |               |               |             |               |               |             |
| Max. axial force e   |           |         | F <sub>2AMax</sub> | N                                     | 9870                                   |             |               |               |               |               |               |               |               |               |             |               |               |             |
|  |           |         |                    | lb <sub>f</sub>                       |  |             |               |               |               |               | 94            |               |               |               |             |               |               |             |
| Max. radial force e)   |           |         | F <sub>2RMax</sub> | lb <sub>f</sub>                       |  |             |               |               |               |               |               | 26            |               |               |             |               |               |             |
| Max. tilting moment  |           |         | M <sub>2KMax</sub> | Nm<br>in.lb                           |  |             |               |               |               |               | 95            |               |               |               |             |               |               |             |
| Efficiency at full load  |           |         | η                  | %                                     |  |             |               |               |               |               |               | 2             |               |               |             |               |               |             |
| Service life (For calculation, see the Chapter "Information"                 | ۱")       |         | L <sub>h</sub>     | h                                     |  |             |               |               |               |               | > 20          | 0000          |               |               |             |               |               |             |
| Weight incl. standard adapter p  | late      |         | m                  | kg                                    |  |             |               |               |               |               | 20            | ).7           |               |               |             |               |               |             |
|  |           |         |                    | lb <sub>m</sub>                       |  |             |               |               |               |               | 45            | 5.7           |               |               |             |               |               |             |
| Operating noise (with n,=3000 rpm no load)                                   |           |         | $L_{PA}$           | dB(A)                                 |  |             |               |               |               |               | <             | 68            |               |               |             |               |               |             |
| Max. permitted housing temper  | ature     | ,       |                    | °C                                    |  |             |               |               |               |               |               | 90            |               |               |             |               |               |             |
|  |           |         |                    | F<br>°C                               |  |             |               |               |               |               | 19<br>0 to    |               |               |               |             |               |               |             |
| Ambient temperature  |           |         |                    | F                                     |  |             |               |               |               |               | 32 to         |               |               |               |             |               |               |             |
| Lubrication  |           |         |                    |                                       |  |             |               |               |               |               | Lubricate     | ed for life   |               |               |             |               |               |             |
| Paint  |           |         |                    |                                       | Blue RAL 5002                          |             |               |               |               |               |               |               |               |               |             |               |               |             |
| Direction of rotation  |           |         |                    |                                       | Motor and gearhead opposite directions |             |               |               |               |               |               |               |               |               |             |               |               |             |
| Protection class   |           |         |                    |                                       | IP 65                                  |             |               |               |               |               |               |               |               |               |             |               |               |             |
| Moment of inertia  | Е         | 19      | J,                 | kgcm <sup>2</sup>                     |  |             |               |               |               |               |               |               |               |               | 0.69        |               |               |             |
| (relates to the drive)   | Ē         |         | -1                 | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 0.89                                   | 0.67        | 0.78          | 0.75          | 0.67          | 0.66          | 0.62          | 0.61          | 0.62          | 0.61          | 0.61        | 0.61          | 0.61          | 0.61        |
| Clamping hub diameter [mm]   | G         | 24      | $J_{_{1}}$         | kgcm <sup>2</sup>                     | 2.57                                   | 2.32        | 2.44          | 2.42          | 2.32          | 2.31          | 2.26          | 2.25          | 2.26          | 2.25          | 2.25        | 2.25          | 2.25          | 2.25        |
|  |           |         | <u> </u>           | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 2.27                                   | 2.05        | 2.16          | 2.14          | 2.05          | 2.04          | 2.00          | 1.99          | 2.00          | 1.99          | 1.99        | 1.99          | 1.99          | 1.99        |

a) Other ratios up to i=1000 available on request

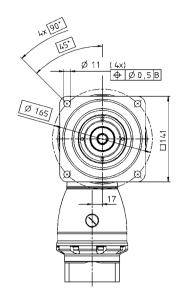
All technical data for front output side applies. Technical data for rearward output versions, see page 428.

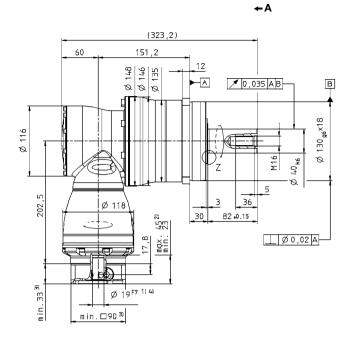
b) Higher speeds are possible if the nominal torque is reduced

 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange

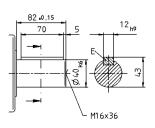




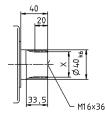
(\$ 40 kg)

### Alternatives: Output shaft variants

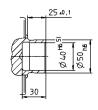
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html



# SPK+ 180 MF 2-stage

|   |                    |                       |              |              |              |              | 2-st         | tage         |              |              |              |              |
|---|--------------------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ratio a)  | i                  |                       | 12           | 16           | 20           | 25           | 28           | 35           | 40           | 50           | 70           | 100          |
| Max. acceleration torque (max. 1000 cycles per hour)                                | T <sub>2B</sub>    | Nm<br>in.lb           | 1100<br>9735 | 1100<br>9735 | 1100<br>9735 | 1100<br>9735 | 1100<br>9735 | 1100<br>9735 | 840<br>7434  | 1050<br>9293 | 1100<br>9735 | 880<br>7788  |
| Nominal output torque   | T <sub>2N</sub>    | Nm                    | 750          | 750          | 750          | 750          | 750          | 750          | 640          | 750          | 750          | 750          |
| (with n <sub>n</sub> ,)  Emergency stop torque                                      |                    | in.lb<br>Nm           | 6638<br>1600 | 6638<br>1600 | 6638<br>2000 | 6638<br>2000 | 6638<br>2750 | 6638<br>2000 | 5664<br>1600 | 6638<br>2000 | 6638<br>2750 | 6638<br>2200 |
| (permitted 1000 times during the service life of the gearhead)  Nominal input speed | T <sub>2Not</sub>  | in.lb                 | 14160        | 14160        | 17700        | 17700        | 24338        | 17700        | 14160        | 17700        | 24338        | 19470        |
| (with T <sub>2N</sub> and 20°C ambient temperature) <sup>b), c)</sup>               | n <sub>1N</sub>    | rpm                   | 1600         | 1900         | 1900         | 2100         | 1900         | 2100         | 2100         | 2100         | 2100         | 2100         |
| Max. continuous speed (with 20% T <sub>2N</sub> and 20°C ambient temperature)       | n <sub>1Ncym</sub> | rpm                   | 2300         | 2600         | 2600         | 2800         | 2600         | 3000         | 3000         | 3000         | 3000         | 3000         |
| Max. input speed  | n <sub>1Max</sub>  | rpm                   | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         | 4500         |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature) d)     | T <sub>012</sub>   | Nm<br>in.lb           | 9.0<br>79.7  | 6.5<br>57.5  | 6.5<br>57.5  | 5.5<br>48.7  | 6.0<br>53.1  | 8.0<br>70.8  | 6.0<br>53.1  | 6.0<br>53.1  | 6.0<br>53.1  | 6.0<br>53.1  |
| Max. torsional backlash   | $j_t$              | arcmin                |              |              | 57.15        |              |              | / Reduced ≤  |              |              |              | 2011         |
| Torsional rigidity  | C <sub>121</sub>   | Nm/ arcmin            |              |              |              |              |              | 75<br>549    |              |              |              |              |
| Max. axial force <sup>e)</sup>  | F <sub>2AMax</sub> | N<br>lb,              |              |              |              |              |              | 150          |              |              |              |              |
| Max. radial force e)  | F <sub>2RMax</sub> | N<br>lb,              |              |              |              |              | 14           | 700          |              |              |              |              |
| Max. tilting moment   | M <sub>2KMax</sub> | Nm<br>in.lb           |              |              |              |              | 16           | 160          |              |              |              |              |
| Efficiency at full load   | η                  | %                     |              |              |              |              | g            | )4           |              |              |              |              |
| Service life (For calculation, see the Chapter "Information")                       | L                  | h                     |              |              |              |              | > 20         | 0000         |              |              |              |              |
| Weight incl. standardadapter plate  | m                  | kg<br>lb <sub>m</sub> |              |              |              |              |              | 15           |              |              |              |              |
| Operating noise (with n,=3000 rpm no load)  | L <sub>PA</sub>    | dB(A)                 |              |              |              |              |              | 70           |              |              |              |              |
| Max. permitted housing temperature  |                    | °C                    |              |              |              |              |              | 90           |              |              |              |              |
| Ambient temperature   |                    | °C                    |              |              |              |              | 0 to         |              |              |              |              |              |
| Lubrication   |                    | F                     |              |              |              |              |              | ed for life  |              |              |              |              |
| Paint   |                    |                       |              |              |              |              |              | AL 5002      |              |              |              |              |
| Direction of rotation   |                    |                       |              |              |              | Motor a      |              | d opposite d | irections    |              |              |              |
| Protection class  |                    |                       |              |              |              | WOLOI di     |              | 65           |              |              |              |              |
| Moment of inertia   |                    | kacm²                 | 24.7         | 10.5         | 10.0         | 16.2         |              | ı            | 10.0         | 10.0         | 10.7         | 10.7         |
| (relates to the drive) K 38  Clamping hub diameter [mm]                             | $J_{_{1}}$         | kgcm <sup>2</sup>     | 24.7         | 19.5<br>17.2 | 19.0         | 16.3<br>14.4 | 18.6<br>16.5 | 14.0<br>12.4 | 12.9         | 12.8         | 12.7         | 12.7<br>11.2 |

a) Other ratios up to i=1000 available on request

All technical data for front output side applies.

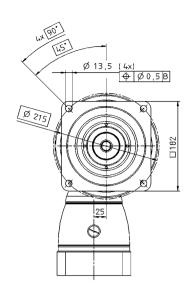
Technical data for rearward output versions, see page 428.

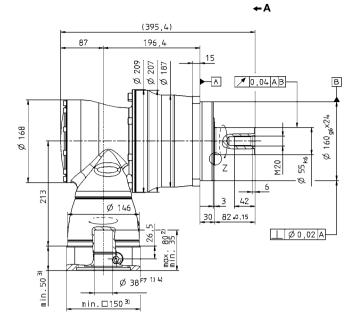
b) Higher speeds are possible if the nominal torque is reduced

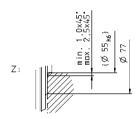
c) For higher ambient temperatures, please reduce input speed

d Idling torques decrease during operation

e) Refers to center of the output shaft or flange



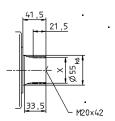




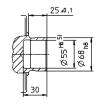
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

M20×42

Involute gearing DIN 5480 in mm X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

# SPK+ 180 MF 3-stage

|   |         |                 |                    |                                       |  |               |               |               |               |               | 3-st          | age           |               |               |               |               |               |               |
|---|---------|-----------------|--------------------|---------------------------------------|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Ratio <sup>a)</sup>   |         |                 | i                  |                                       | 64                                     | 84            | 100           | 125           | 140           | 175           | 200           | 250           | 280           | 350           | 400           | 500           | 700           | 1000          |
| Max. acceleration torque (max. 1000 cycles per hour)                            |         |                 | T <sub>2B</sub>    | Nm<br>in.lb                           | 1100<br>9735                           | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 1100<br>9735  | 840<br>7434   | 1050<br>9293  | 1100<br>9735  | 880<br>7788   |
| Nominal output torque (with $n_{,\nu}$ )  |         |                 | T <sub>2N</sub>    | Nm<br>in.lb                           | 750<br>6638                            | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 750<br>6638   | 640<br>5664   | 750<br>6638   | 750<br>6638   | 750<br>6638   |
| Emergency stop torque (permitted 1000 times during the service life of          | the gea | rhead)          | T <sub>2Not</sub>  | Nm<br>in.lb                           | 1600<br>14160                          | 1600<br>14160 | 2000<br>17700 | 2000<br>17700 | 2000<br>17700 | 2000<br>17700 | 2000<br>17700 | 2000<br>17700 | 2750<br>24338 | 2000<br>17700 | 1600<br>14160 | 2000<br>17700 | 2750<br>24338 | 2200<br>19470 |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c)         | )       |                 | n <sub>1N</sub>    | rpm                                   | 2900                                   | 2900          | 2900          | 2900          | 2900          | 2900          | 2900          | 3200          | 2900          | 3200          | 3900          | 3900          | 3900          | 3900          |
| Max. continuous speed<br>(with 20% T <sub>2N</sub> and 20°C ambient temperature | e)      |                 | n <sub>1Ncym</sub> | rpm                                   | 4000                                   | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4200          | 4200          | 4200          | 4200          |
| Max. input speed  |         |                 | n <sub>1Max</sub>  | rpm                                   | 4500                                   | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temp            | erature | ) <sup>d)</sup> | T <sub>012</sub>   | Nm<br>in.lb                           | 1<br>8.9                               | 0.5<br>4.4    | 0.8<br>7.1    | 0.6<br>5.3    | 0.6<br>5.3    | 0.5<br>4.4    | 0.5<br>4.4    | 0.4<br>3.5    | 0.5<br>4.4    | 0.4<br>3.5    | 0.4<br>3.5    | 0.4<br>3.5    | 0.4<br>3.5    | 0.4<br>3.5    |
| Max. torsional backlash   |         |                 | $j_t$              | arcmin                                | 0.5                                    | 7.7           | 7.1           | 0.0           | 0.0           |               |               | / Reduce      |               | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           |
| Torsional rigidity  | -       |                 | C <sub>121</sub>   | Nm/ arcmin                            |  |               |               |               |               |               | 1             |               |               |               |               |               |               |               |
| Max. axial force <sup>e)</sup>  |         |                 | F <sub>2AMax</sub> | in.lb/arcmin                          | 1549<br>14150                          |               |               |               |               |               |               |               |               |               |               |               |               |               |
| Max. radial force <sup>9)</sup>   |         |                 | F <sub>2RMax</sub> | lb <sub>f</sub>                       | 3184<br>14700                          |               |               |               |               |               |               |               |               |               |               |               |               |               |
| Max. tilting moment   |         |                 | M <sub>2KMax</sub> | lb <sub>f</sub><br>Nm                 |  |               |               |               |               |               |               | 00            |               |               |               |               |               |               |
| -   | _       |                 | 2KMax              | in.lb                                 |  |               |               |               |               |               |               | 160           |               |               |               |               |               |               |
| Efficiency at full load   |         |                 | η                  | %                                     |  |               |               |               |               |               | 9             | 2             |               |               |               |               |               |               |
| Service life (For calculation, see the Chapter "Information                     | י")     |                 | L <sub>h</sub>     | h                                     |  |               |               |               |               |               | > 20          |               |               |               |               |               |               |               |
| Weight incl. standardadapter pla  | ate     |                 | m                  | kg<br>lb_                             |  |               |               |               |               |               | 10            |               |               |               |               |               |               |               |
| Operating noise (with $n_1$ =3000 rpm no load)                                  |         |                 | L <sub>PA</sub>    | dB(A)                                 |  |               |               |               |               |               | <             | 70            |               |               |               |               |               |               |
| Max. permitted housing temper   | ature   |                 |                    | °C                                    |  |               |               |               |               |               |               | 90            |               |               |               |               |               |               |
|   |         |                 |                    | F<br>°C                               |  |               |               |               |               |               | 0 to          | 94<br>+40     |               |               |               |               |               |               |
| Ambient temperature   | -       |                 |                    | F                                     |  |               |               |               |               |               | 32 to         | 104           |               |               |               |               |               |               |
| Lubrication   |         |                 |                    |                                       |  |               |               |               |               |               | Lubricate     | ed for life   | !             |               |               |               |               |               |
| Paint   |         |                 |                    |                                       | Blue RAL 5002                          |               |               |               |               |               |               |               |               |               |               |               |               |               |
| Direction of rotation   |         |                 |                    |                                       | Motor and gearhead opposite directions |               |               |               |               |               |               |               |               |               |               |               |               |               |
| Protection class  |         |                 |                    |                                       | IP 65                                  |               |               |               |               |               |               |               |               |               |               |               |               |               |
| Moment of inertia   | G       | 24              | J,                 | kgcm <sup>2</sup>                     | 3.97<br>3.51                           | 2.82          | 3.36<br>2.97  | 3.22<br>2.85  | 2.82          | 2.75<br>2.43  | 2.50          | 2.47          | 2.50          | 2.44          | 2.42          | 2.42          | 2.42          | 2.42          |
| (relates to the drive) Clamping hub diameter [mm]                               | 1/      | 00              | ,                  | kgcm <sup>2</sup>                     | 10.90                                  | 9.74          | 10.30         | 10.10         | 9.74          | 9.66          | 9.41          | 9.38          | 9.41          | 9.38          | 9.33          | 9.33          | 9.33          | 9.33          |
|   | K       | 38              | J <sub>1</sub>     | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 9.65                                   | 8.62          | 9.12          | 8.94          | 8.62          | 8.55          | 8.33          | 8.30          | 8.33          | 8.30          | 8.26          | 8.26          | 8.26          | 8.26          |

<sup>&</sup>lt;sup>a)</sup> Other ratios up to i=1000 available on request

All technical data for front output side applies.

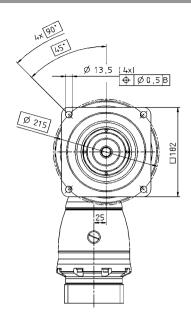
Technical data for rearward output versions, see page 428.

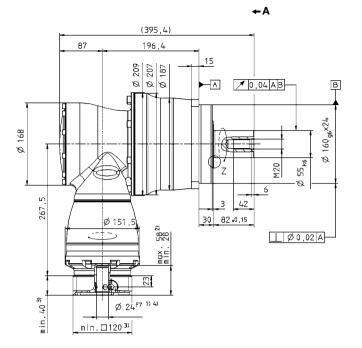
 $<sup>^{\</sup>mbox{\scriptsize b)}}$  Higher speeds are possible if the nominal torque is reduced

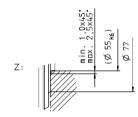
c) For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange





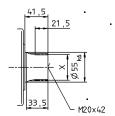


### Alternatives: Output shaft variants

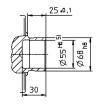
Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

M20×42

Involute gearing DIN 5480 in mm X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under

CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html Motor mounting according to operating manual

# SPK+ 210 MF 2-stage

|   |                    |                                       |                |               |               |               | 2-st          | tage          |               |               |               |               |
|---|--------------------|---------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Ratio <sup>a)</sup>   | i                  |                                       | 12             | 16            | 20            | 25            | 28            | 35            | 40            | 50            | 70            | 100           |
| Max. acceleration torque (max. 1000 cycles per hour)                                  | T <sub>2B</sub>    | Nm<br>in.lb                           | 2500<br>22125  | 2500<br>22125 | 2500<br>22125 | 2500<br>22125 | 2400<br>21240 | 2400<br>21240 | 1850<br>16373 | 2300<br>20355 | 2400<br>21240 | 1900<br>16815 |
| Nominal output torque (with $n_{,m}$ )  | T <sub>2N</sub>    | Nm<br>in.lb                           | 1500           | 1500          | 1500          | 1500          | 1400          | 1500          | 1400          | 1500          | 1400          | 1000          |
| Emergency stop torque  (permitted 1000 times during the service life of the gearhea   | T <sub>2Not</sub>  | Nm                                    | 13.275<br>3600 | 13275<br>4200 | 13275<br>5200 | 13275<br>5200 | 12390<br>5200 | 13275<br>5200 | 12390<br>3600 | 13275<br>4500 | 12390<br>5200 | 5000          |
| Nominal input speed (with $T_{2N}$ and 20°C ambient temperature) b), c)               | n <sub>1N</sub>    | in.lb<br>rpm                          | 31860<br>1500  | 37170<br>1700 | 46020<br>1700 | 46020<br>1900 | 46020<br>1700 | 46020<br>1900 | 31860<br>1700 | 39825<br>1700 | 46020<br>1700 | 44250<br>1700 |
| Max. continuous speed (with 20% $T_{\infty}$ and 20°C ambient temperature)            | n <sub>1Ncym</sub> | rpm                                   | 1900           | 2300          | 2300          | 2700          | 2300          | 2700          | 2400          | 2400          | 2400          | 2400          |
| Max. input speed  | n <sub>1Max</sub>  | rpm                                   | 4000           | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temperature) d)       | T <sub>012</sub>   | Nm<br>in.lb                           | 18.5<br>163.7  | 17.0<br>150.5 | 15.0<br>132.8 | 13.0<br>115.1 | 14.0<br>123.9 | 12.0<br>106.2 | 15.0<br>132.8 | 15.0<br>132.8 | 14.0<br>123.9 | 13.0<br>115.1 |
| Max. torsional backlash   | $j_t$              | arcmin                                | 100.7          | 100.0         | 102.0         |               | tandard ≤4    | I             |               | 102.0         | 120.0         | 110.1         |
| Torsional rigidity  | C <sub>121</sub>   | Nm/ arcmin                            | 300<br>2.655   | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  |
| Max. axial force <sup>e)</sup>  | F <sub>2AMax</sub> | N                                     | 2.055          | 2.055         | 2.055         | 2.000         | 300           | 000           | 2.055         | 2.055         | 2.000         | 2.000         |
| Max. radial force e)  | F <sub>2RMax</sub> | lb <sub>f</sub>                       |                |               |               |               | 210           | 750<br>000    |               |               |               |               |
| Max. tilting moment   | M <sub>2KMax</sub> | lb <sub>f</sub>                       |                |               |               |               | 31            | 25<br>00      |               |               |               |               |
| Efficiency at full load   | η                  | in.lb                                 |                |               |               |               |               | 435<br>04     |               |               |               |               |
| Service life  | L <sub>b</sub>     | h                                     |                |               |               |               | > 20          | 0000          |               |               |               |               |
| (For calculation, see the Chapter "Information")  Weight incl. standard adapter plate | m                  | kg                                    |                |               |               |               |               | 32            |               |               |               |               |
| Operating noise   | L <sub>PA</sub>    | lb <sub>m</sub>                       |                |               |               |               | 18<br>≤       |               |               |               |               |               |
| (with n,=3000 rpm no load)  Max. permitted housing temperature                        |                    | °C                                    |                |               |               |               |               | 90            |               |               |               |               |
| Ambient temperature   |                    | °C                                    |                |               |               |               |               | 94<br>+40     |               |               |               |               |
| Lubrication   |                    | F                                     |                |               |               |               |               | ed for life   |               |               |               |               |
| Paint   |                    |                                       |                |               |               |               | ,             | AL 5002       |               |               |               |               |
| Direction of rotation   |                    |                                       |                |               |               | Motor         | nd gearhead   |               | directions    |               |               |               |
|   |                    |                                       |                |               |               | iviolor ar    |               |               | an GUIUI IS   |               |               |               |
| Protection class  |                    |                                       |                |               |               |               |               | 65            |               |               |               | _             |
| Moment of inertia (relates to the drive) Clamping hub diameter [mm]  M 48             | $J_{i}$            | kgcm²                                 | 78.80          | 54.60         | 53.00         | 43.40         | 51.50         | 42.20         | 30.20         | 30.00         | 29.80         | 29.80         |
| -   |                    | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 69.74          | 48.32         | 46.91         | 38.41         | 45.58         | 37.35         | 26.73         | 26.55         | 26.37         | 26.37         |

a) Other ratios available on request

All technical data for front output side applies.

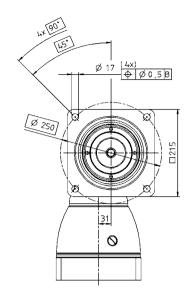
Technical data for rearward output versions, see page 428.

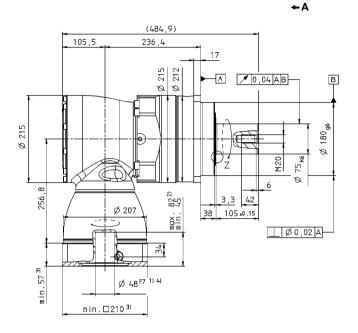
 $<sup>^{\</sup>mbox{\tiny b)}}$  Higher speeds are possible if the nominal torque is reduced

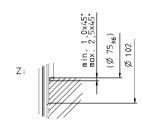
 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange



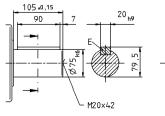


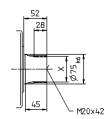


### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm X = W 70 x 2 x 30 x 34 x 6m, DIN 5480





See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# SPK+ 210 MF 3-stage

|  |          |         |                    |  |  |   |               |               | ,             |                | 3-st           | age           |               |               |               |               |               |               |
|--|----------|---------|--------------------|--|--|---|---------------|---------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Ratio <sup>a)</sup>  |          |         | i                  |  | 64                                     | 84  | 100           | 125           | 140           | 175            | 200            | 250           | 280           | 350           | 400           | 500           | 700           | 1000          |
| Max. acceleration torque (max. 1000 cycles per hour)   |          |         | T <sub>2B</sub>    | Nm<br>in.lb  | 2400<br>21240                          | 2400<br>21240   | 2500<br>22125 | 2500<br>22125 | 2500<br>22125 | 2500<br>22125  | 2500<br>22125  | 2500<br>22125 | 2400<br>21240 | 2400<br>21240 | 1900<br>16815 | 2350<br>20798 | 2400<br>21240 | 1900<br>16815 |
| Nominal output torque (with $n_{\text{\tiny IN}}$ )  |          |         | T <sub>2N</sub>    | Nm<br>in.lb  | 1500<br>13275                          | 1500<br>13275   | 1500<br>13275 | 1500<br>13275 | 1500<br>13275 | 1500<br>13275  | 1500<br>13275  | 1500<br>13275 | 1400<br>12390 | 1400<br>12390 | 1500<br>13275 | 1500<br>13275 | 1400<br>12390 | 1000<br>8850  |
| Emergency stop torque (permitted 1000 times during the service life of the service lif | the gea  | arhead) | T <sub>2Not</sub>  | Nm<br>in.lb  | 4200<br>37170                          | 3600<br>31860   | 5200<br>46020 | 5200<br>46020 | 5200<br>46020 | 5200<br>46020  | 5200<br>46020  | 5200<br>46020 | 5200<br>46020 | 5200<br>46020 | 3600<br>31860 | 4500<br>39825 | 5200<br>46020 | 5000          |
| Nominal input speed (with T <sub>2N</sub> and 20°C ambient temperature) <sup>b), c)</sup>  |          |         | n <sub>1N</sub>    | rpm  | 2700                                   | 2700  | 2700          | 2700          | 2700          | 2700           | 2700           | 2900          | 2700          | 2900          | 3400          | 3400          | 3400          | 3400          |
| Max. continuous speed (with 20% T <sub>2N</sub> and 20°C ambient temperature)  |          |         | n <sub>1Ncym</sub> | rpm  | 3500                                   | 3500  | 3500          | 3500          | 3500          | 3500           | 3500           | 3500          | 3500          | 3500          | 3500          | 3500          | 3800          | 3800          |
| Max. input speed   |          |         | n <sub>1Max</sub>  | rpm  | 4000                                   | 4000  | 4000          | 4000          | 4000          | 4000           | 4000           | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          | 4000          |
| Mean no load running torque  |          | . d)    | T <sub>012</sub>   | Nm   | 2.4                                    | 1.2   | 1.9           | 1.7           | 1.3           | 1.3            | 1.0            | 1.0           | 1.0           | 1.0           | 1.0           | 1.0           | 1.0           | 1.0           |
| (with n,=3000 rpm and 20°C gearhead tempe  | erature, |         | 012                | in.lb  | 21.2                                   | 21.2   10.6   16.8   15.0   11.5   11.5   8.9   8.9   8.9   8.9   8.9   8.9   8.9 |               |               |               |                |                |               |               | 8.9           | 8.9           | 8.9           |               |               |
| Max. torsional backlash  |          |         | $\dot{J}_t$        | arcmin   |  |   |               |               |               | Stan           | dard ≤4        | / Reduce      | ed ≤2         |               |               |               |               |               |
| Torsional rigidity   |          |         | C <sub>121</sub>   | Nm/ arcmin   | 300<br>2.655                           | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655   | 300<br>2.655   | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  | 300<br>2.655  |
| Max. axial force <sup>e)</sup>   |          |         | F <sub>2AMax</sub> | N  | 2.000                                  | 30000<br>6750   |               |               |               |                |                |               |               |               |               |               |               |               |
| Max. radial force <sup>e)</sup>  |          |         | IU <sub>1</sub>    |  |  |   |               |               |               |                |                |               |               |               |               |               |               |               |
|  |          |         |                    | lb <sub>f</sub><br>Nm                                      |  |   |               |               |               |                |                | 25<br>00      |               |               |               |               |               |               |
| Max. tilting moment  |          |         | M <sub>2KMax</sub> | in.lb  |  |   |               |               |               |                | 274            | 435           |               |               |               |               |               |               |
| Efficiency at full load  |          |         | η                  | %  |  |   |               |               |               |                | 9              | 2             |               |               |               |               |               |               |
| Service life<br>(For calculation, see the Chapter "Information"  | ")       |         | L                  | h  |  |   |               |               |               |                | > 20           | 0000          |               |               |               |               |               |               |
| Weight incl. standard adapter pl   | ate      |         | m                  | kg   |  |   |               |               |               |                |                | 6             |               |               |               |               |               |               |
| Operating noise  |          |         | L <sub>PA</sub>    | dB(A)  |  |   |               |               |               |                |                | 90<br>71      |               |               |               |               |               |               |
| (with n,=3000 rpm no load)   |          |         | □ <sub>PA</sub>    | °C   |  |   |               |               |               |                |                | 90            |               |               |               |               |               |               |
| Max. permitted housing tempera   | ature    | !       |                    | F  |  |   |               |               |               |                | <del>+</del> ; |               |               |               |               |               |               |               |
|  |          |         |                    | °C   |  |   |               |               |               |                |                | +40           |               |               |               |               |               |               |
| Ambient temperature  |          |         |                    | F  |  |   |               |               |               |                | 32 to          | 104           |               |               |               |               |               |               |
| Lubrication  |          |         |                    |  |  |   |               |               |               | l              | Lubricate      | ed for life   | <b>)</b>      |               |               |               |               |               |
| Paint  |          |         |                    |  | Blue RAL 5002                          |   |               |               |               |                |                |               |               |               |               |               |               |               |
| Direction of rotation  |          |         |                    |  | Motor and gearhead opposite directions |   |               |               |               |                |                |               |               |               |               |               |               |               |
| Protection class   |          |         |                    |  |  |   |               |               |               |                | IP             | 65            |               |               |               |               |               |               |
| Moment of inertia  | K        | 38      | J,                 | kgcm <sup>2</sup>  | 14.00                                  | 10.90   | 12.30         | 12.00         | 10.90         | 10.70          | 10.10          | 10.00         | 10.10         | 10.00         | 9.90          | 9.90          | 9.90          | 9.90          |
| (relates to the drive)   | _        | -       |                    | 10 <sup>-3</sup> in.lb.s <sup>2</sup>                      | 12.39                                  | 9.65  | 10.89         | 10.62         | 9.65          | 9.47           | 8.94           | 8.85          | 8.94          | 8.85          | 8.76          | 8.76          | 8.76          | 8.76          |
| Clamping hub diameter [mm]   | M        | 48      | $J_{_1}$           | kgcm <sup>2</sup><br>10 <sup>-3</sup> in.lb.s <sup>2</sup> | 28.70                                  | 25.60<br>22.66  | 27.10         | 26.70         | 26.70         | 25.60<br>22.66 | 24.80          | 24.70         | 24.80         | 24.70         | 24.60         | 24.60         | 24.60         | 24.60         |
|  |          |         |                    | 10 - II1.ID.S²   | 25.40                                  | 22.00   | 23.98         | 23.03         | 23.63         | 22.00          | 21.95          | 21.80         | 21.95         | 21.80         | 21.//         | 21.//         | 21.77         | 21.//         |

a) Other ratios available on request

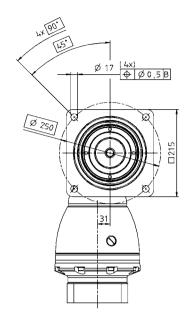
All technical data for front output side applies. Technical data for rearward output versions, see page 428.

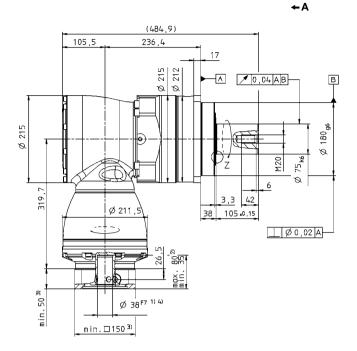
b) Higher speeds are possible if the nominal torque is reduced

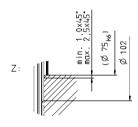
<sup>©</sup> For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange



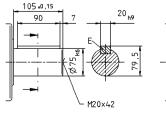


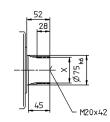


### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm X = W 70 x 2 x 30 x 34 x 6m, DIN 5480





See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# **SPK+ 240 MF** 3-stage

|  |                    |                                       |       |       |       |       |       |           | 3-st          | age      |            |       |       |       |       |       |
|--|--------------------|---------------------------------------|-------|-------|-------|-------|-------|-----------|---------------|----------|------------|-------|-------|-------|-------|-------|
| Ratio <sup>a)</sup>  | i                  |                                       | 48    | 64    | 100   | 125   | 140   | 175       | 200           | 250      | 280        | 350   | 400   | 500   | 700   | 1000  |
| Max. acceleration torque   | _                  | Nm                                    | 4500  | 4500  | 4500  | 4500  | 4500  | 4500      | 4500          | 4500     | 4300       | 4500  | 4000  | 4300  | 4300  | 3400  |
| (max. 1000 cycles per hour)  | T <sub>2B</sub>    | in.lb                                 | 39825 | 39825 | 39825 | 39825 | 39825 | 39825     | 39825         | 39825    | 38055      | 39825 | 35400 | 38055 | 38055 | 30090 |
| Nominal output torque  | _                  | Nm                                    | 2500  | 2500  | 2500  | 2500  | 2500  | 2500      | 2500          | 2500     | 2300       | 2500  | 2500  | 2500  | 2300  | 1700  |
| (with $n_{1N}$ )   | T <sub>2N</sub>    | in.lb                                 | 22125 | 22125 | 22125 | 22125 | 22125 | 22125     | 22125         | 22125    | 20355      | 22125 | 22125 | 22125 | 20355 | 15045 |
| Emergency stop torque  |                    | Nm                                    | 6400  | 8000  | 8500  | 8500  | 8500  | 8500      | 8500          | 8500     | 8500       | 8500  | 8500  | 8500  | 8500  | 6800  |
| (permitted 1000 times during the service life of the gearhead)                         | T <sub>2Not</sub>  | in.lb                                 | 56640 | 70800 | 75225 | 75225 | 75225 | 75225     | 75225         | 75225    | 75225      | 75225 | 75225 | 75225 | 75225 | 60180 |
| Nominal input speed (with $T_{\rm 2N}$ and 20°C ambient temperature) <sup>b), c)</sup> | n <sub>1N</sub>    | rpm                                   | 1800  | 1900  | 1900  | 2100  | 1900  | 2100      | 2100          | 2100     | 2100       | 2100  | 2100  | 2100  | 2100  | 2100  |
| Max. continuous speed<br>(with 20 % T <sub>2N</sub> and 20°C ambient temperature)      | n <sub>1Ncym</sub> | rpm                                   | 2000  | 2200  | 2600  | 2600  | 2300  | 2300      | 2300          | 2300     | 2300       | 2300  | 2300  | 2300  | 2300  | 2300  |
| Max. input speed   | n <sub>1Max</sub>  | rpm                                   | 4500  | 4500  | 4500  | 4500  | 4500  | 4500      | 4500          | 4500     | 4500       | 4500  | 4500  | 4500  | 4500  | 4500  |
| Mean no load running torque  |                    | Nm                                    | 11.0  | 8.0   | 7.0   | 7.0   | 8.0   | 8.0       | 7.0           | 6.0      | 6.0        | 6.0   | 6.0   | 6.0   | 6.0   | 6.0   |
| (with n <sub>1</sub> =3000 rpm and 20°C gearhead temperature) <sup>d)</sup>            | T <sub>012</sub>   | in.lb                                 | 94.3  | 70.8  | 62.0  | 62.0  | 70.8  | 70.8      | 62.0          | 53.1     | 53.1       | 53.1  | 53.1  | 53.1  | 53.1  | 53.1  |
| Max. torsional backlash  | $j_t$              | arcmin                                |       |       |       |       |       | Standa    | rd ≤5,5 /     | Reduce   | d ≤3,5     |       |       |       |       |       |
|  |                    | Nm/ arcmin                            | 510   | 510   | 510   | 510   | 510   | 510       | 510           | 510      | 510        | 510   | 510   | 510   | 510   | 510   |
| Torsional rigidity   | C <sub>t21</sub>   | in.lb/ arcmin                         | 4.514 | 4.514 | 4.514 | 4.514 | 4.514 | 4.514     | 4.514         | 4.514    | 4.514      | 4.514 | 4.514 | 4.514 | 4.514 | 4.514 |
|  |                    | N                                     |       |       |       |       |       | l         | 330           | 000      |            | I     |       |       |       | l .   |
| Max. axial force e)  | F <sub>2AMax</sub> | lb,                                   |       |       |       |       |       |           | 74            | 25       |            |       |       |       |       |       |
|  | _                  | N                                     |       |       |       |       |       |           | 300           | 000      |            |       |       |       |       |       |
| Max. radial force e)   | F <sub>2RMax</sub> | lb,                                   |       |       |       | -     |       |           | 67            | 50       |            |       |       |       |       |       |
|  |                    | Nm                                    |       |       |       |       |       |           | 50            | 00       |            |       |       |       |       |       |
| Max. tilting moment  | M <sub>2KMax</sub> | in.lb                                 |       |       |       |       |       |           | 442           | 250      |            |       |       |       |       |       |
| Efficiency at full load  | η                  | %                                     |       |       |       |       |       |           | 9             | 2        |            |       |       |       |       |       |
| Service life (For calculation, see the Chapter "Information")                          | L <sub>h</sub>     | h                                     |       |       |       |       |       |           | > 20          | 0000     |            |       |       |       |       |       |
|  |                    | kg                                    |       |       |       |       |       |           | 9             | 3        |            |       |       |       |       |       |
| Weight incl. standard adapter plate  | m                  | lb <sub>m</sub>                       |       |       |       |       |       |           | 20            |          |            |       |       |       |       |       |
| Operating noise  |                    | ] ** m                                |       |       |       |       |       |           |               |          |            |       |       |       |       |       |
| (with $n_i$ =3000 rpm no load)   | L <sub>PA</sub>    | dB(A)                                 |       |       |       |       |       |           | ≤ '           |          |            |       |       |       |       |       |
| Max. permitted housing temperature   |                    | °C                                    |       |       |       | -     |       |           |               | 90       |            |       |       |       |       |       |
|  |                    | F<br>°C                               |       |       |       |       |       |           | 19            |          |            |       |       |       |       |       |
| Ambient temperature  |                    | °C<br>F                               |       |       |       |       |       |           | 0 to<br>32 to |          |            |       |       |       |       |       |
|  |                    | Г                                     |       |       |       | -     |       |           | 32 10         | 104      |            |       |       |       |       |       |
| Lubrication  |                    | Lubricated for life                   |       |       |       |       |       |           |               |          |            |       |       |       |       |       |
| Paint  |                    |                                       |       |       |       |       |       |           | Blue RA       | L 5002   |            |       |       |       |       |       |
| Direction of rotation  |                    |                                       |       |       |       |       | Mo    | tor and g | gearhead      | opposite | e directio | ons   |       |       |       |       |
| Protection class   |                    |                                       |       |       |       |       |       |           | IP            | 65       |            |       |       |       |       |       |
| Moment of inertia (relates to the drive)   | ,                  | kgcm²                                 | 26.5  | 20.00 | 17.00 | 17.00 | 15.00 | 15.00     | 13.00         | 13.00    | 13.00      | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |
| (relates to the drive) K 38  | $J_1$              | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 23.40 | 17.70 | 15.05 | 15.05 | 13.28 | 13.28     | 11.51         | 11.51    | 11.51      | 11.51 | 11.51 | 11.51 | 11.51 | 11.51 |

a) Other ratios available on request

All technical data for front output side applies.

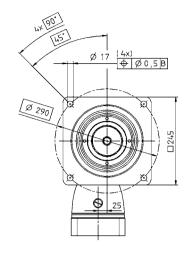
Technical data for rearward output versions, see page 428.

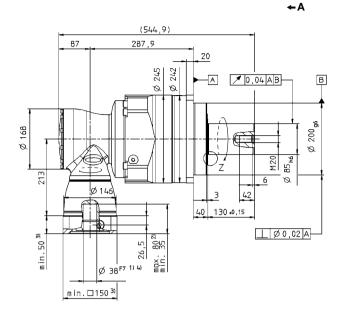
 $<sup>^{\</sup>mbox{\tiny b)}}$  Higher speeds are possible if the nominal torque is reduced

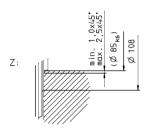
 $<sup>^{\</sup>mbox{\tiny c)}}$  For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange







### Alternatives: Output shaft variants

M20×42

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

125

22<sub>h9</sub> - M20×42

Involute gearing DIN 5480 in mm X = W 80 x 2 x 30 x 38 x 6m, DIN 5480

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# **SPK+ 240 MF** 4-stage i=144-1000

|  |         |                  |                    |                                       |  |               |               |               |               |               | 4-stage               | •             |               |               |               |               |               |
|--|---------|------------------|--------------------|---------------------------------------|--|---------------|---------------|---------------|---------------|---------------|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Ratio <sup>a)</sup>  |         |                  | i                  |                                       | 144                                    | 192           | 256           | 300           | 375           | 420           | 500                   | 560           | 600           | 700           | 800           | 875           | 1000          |
| Max. acceleration torque (max. 1000 cycles per hour)                       |         |                  | T <sub>2B</sub>    | Nm<br>in.lb                           | 4500<br>39825                          | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825         | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 |
| Nominal output torque (with $n_{10}$ )                                     |         |                  | T <sub>2N</sub>    | Nm<br>in.lb                           | 2500                                   | 2500          | 2500          | 2500          | 2500          | 2500          | 2500                  | 2500          | 2500          | 2500          | 2500          | 2500          | 2500          |
| Emergency stop torque  |         |                  | T <sub>2Not</sub>  | Nm                                    | 22125<br>8000                          | 22125<br>8000 | 22125<br>8000 | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 | 22125<br>8500         | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 |
| (permitted 1000 times during the service life of Nominal input speed       |         | arhead)          | n <sub>1N</sub>    | in.lb<br>rpm                          | 70800<br>2700                          | 70800<br>2900 | 70800         | 75225<br>2900 | 75225<br>2900 | 75225<br>2900 | 75225<br>2900         | 75225<br>2900 | 75225<br>2900 | 75225<br>2900 | 75225<br>2900 | 75225<br>2900 | 75225<br>3200 |
| (with $T_{2N}$ and 20°C ambient temperature) b), c)  Max. continuous speed |         |                  | n <sub>1Ncym</sub> | rpm                                   | 3800                                   | 4000          | 4000          | 4000          | 4000          | 4000          | 4000                  | 4000          | 4000          | 4000          | 4000          | 4000          | 4200          |
| (with 20% T <sub>2N</sub> and 20°C ambient temperature)  Max. input speed  | e)<br>  |                  | n <sub>1Max</sub>  | rpm                                   | 4500                                   | 4500          | 4500          | 4500          | 4500          | 4500          | 4500                  | 4500          | 4500          | 4500          | 4500          | 4500          | 4500          |
| Mean no load running torque  |         |                  | _                  | Nm                                    | 3.2                                    | 2.3           | 1.6           | 1.3           | 0.7           | 0.9           | 0.9                   | 0.8           | 0.7           | 0.7           | 0.6           | 0.6           | 0.5           |
| (with n,=3000 rpm and 20°C gearhead temp                                   | erature | e) <sup>d)</sup> | T <sub>012</sub>   | in.lb                                 | 28.3                                   | 20.4          | 14.2          | 11.5          | 6.2           | 8.0           | 8.0                   | 7.1           | 6.2           | 6.2           | 5.3           | 5.3           | 4.4           |
| Max. torsional backlash  |         |                  | $j_t$              | arcmin                                | Standard ≤5,5 / Reduced ≤3,5           |               |               |               |               |               |                       |               |               |               |               |               |               |
| Torsional rigidity   |         |                  | C <sub>121</sub>   | Nm/ arcmin                            | 510                                    | 510           | 510           | 510           | 510           | 510           | 510                   | 510           | 510           | 510           | 510           | 510           | 510           |
|  |         |                  | - 121              | in.lb/ arcmin                         | 4.514                                  | 4.514         | 4.514         | 4.514         | 4.514         | 4.514         | 4.514                 | 4.514         | 4.514         | 4.514         | 4.514         | 4.514         | 4.514         |
| Max. axial force e)  |         |                  | F <sub>2AMax</sub> | N<br>lb <sub>f</sub>                  |  |               |               |               |               |               | 33000<br>7425         |               |               |               |               |               |               |
| Max. radial force e)   |         |                  | F <sub>2RMax</sub> | N<br>lb,                              |  | ,             |               | ,             |               | ,             | 30000<br>6750         | -             |               | -             | ,             | ,             |               |
| Max. tilting moment  |         |                  | M <sub>2KMax</sub> | Nm<br>in.lb                           |  |               |               |               |               |               | 5000<br>44250         |               |               |               |               |               |               |
| Efficiency at full load  |         |                  | η                  | %                                     |  |               |               |               |               |               | 90                    |               |               |               |               |               |               |
| Service life (For calculation, see the Chapter "Information"               | n")     |                  | L <sub>h</sub>     | h                                     |  |               |               |               |               |               | > 20000               |               |               |               |               |               |               |
| Weight incl. standard adapter p  | late    |                  | m                  | kg<br>lb <sub>m</sub>                 |  |               |               |               |               |               | 96<br>212             |               |               |               |               |               |               |
| Operating noise (with n,=3000 rpm no load)                                 |         |                  | L <sub>PA</sub>    | dB(A)                                 |  |               |               |               |               |               | ≤ 71                  |               |               |               |               |               |               |
| Max. permitted housing temper  | atur    | <u> </u>         |                    | °C                                    |  |               |               |               |               |               | +90                   |               |               |               |               |               |               |
|  |         | -                |                    | F<br>°C                               |  |               |               |               |               |               | 194                   |               |               |               |               |               |               |
| Ambient temperature  |         |                  |                    | °C<br>F                               |  |               |               |               |               |               | 0 to +40<br>32 to 104 |               |               |               |               |               |               |
| Lubrication  |         |                  |                    |                                       |  |               |               |               |               | Lub           | ricated fo            | or life       |               |               |               |               |               |
| Paint  |         |                  |                    |                                       |  |               |               |               |               | Blu           | ue RAL 50             | 002           |               |               |               |               |               |
| Direction of rotation  |         |                  |                    |                                       | Motor and gearhead opposite directions |               |               |               |               |               |                       |               |               |               |               |               |               |
| Protection class   |         |                  |                    |                                       |  |               |               |               |               |               | IP 65                 |               |               |               |               |               |               |
| Moment of inertia  | G       | 24               | J,                 | kgcm <sup>2</sup>                     | 5.96                                   | 4.30          | 3.90          | 3.32          | 3.31          | 2.80          | 3.18                  | 2.80          | 2.49          | 2.73          | 2.49          | 2.73          | 2.46          |
| (relates to the drive)   | G       | 24               | J 1                | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 5.28                                   | 3.81          | 3.45          | 2.94          | 2.93          | 2.48          | 2.82                  | 2.47          | 2.21          | 2.42          | 2.20          | 2.42          | 2.18          |
| Clamping hub diameter [mm]   | K       | 38               | $J_1$              | kgcm <sup>2</sup>                     | 12.87<br>11.39                         | 11.19<br>9.91 | 10.81<br>9.57 | 10.23<br>9.05 | 9.05          | 9.72<br>8.60  | 10.09                 | 9.71<br>8.59  | 9.40          | 9.65<br>8.54  | 9.40          | 9.65<br>8.54  | 9.37<br>8.29  |
|  |         | 1                |                    | 10 111.10.5                           | 11.39                                  | J 5.51        | 9.57          | 9.05          | 9.00          | 0.00          | 0.93                  | 0.59          | 0.32          | 0.54          | 0.32          | 0.34          | 0.29          |

a) Other ratios available on request

All technical data for front output side applies.

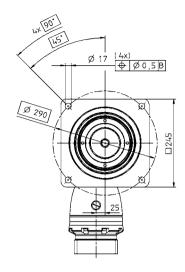
Technical data for rearward output versions, see page 428.

<sup>&</sup>lt;sup>b)</sup> Higher speeds are possible if the nominal torque is reduced

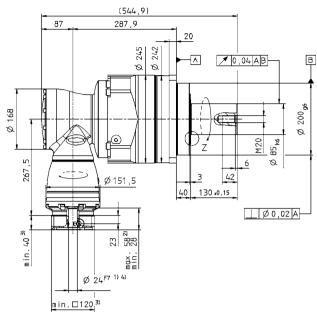
<sup>©</sup> For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange



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( Ø 85 k6) Z:

### Alternatives: Output shaft variants

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

125

22<sub>h9</sub> M20×42

Involute gearing DIN 5480 in mm X = W 80 x 2 x 30 x 38 x 6m, DIN 5480

- M20×42

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under



# **SPK+ 240 MF** 4-stage i=1225-10000

|   |                        |                       |                                       |               |               |               |               | 4-stage               |                |               |               |               |
|---|------------------------|-----------------------|---------------------------------------|---------------|---------------|---------------|---------------|-----------------------|----------------|---------------|---------------|---------------|
| Ratio <sup>a)</sup>   |                        | i                     |                                       | 1225          | 1400          | 1750          | 2000          | 2800                  | 3500           | 5000          | 7000          | 10000         |
| Max. acceleration torque (max. 1000 cycles per hour)                        |                        | T <sub>2B</sub>       | Nm<br>in.lb                           | 4500<br>39825 | 4500<br>39825 | 4500<br>39825 | 4200<br>37170 | 4300<br>38055         | 4500<br>39825  | 4300<br>38055 | 4300<br>38055 | 3400<br>30090 |
| Nominal output torque (with $n_{vo}$ )                                      |                        | T <sub>2N</sub>       | Nm<br>in.lb                           | 2500          | 2500          | 2500          | 2500          | 2300                  | 2500           | 2500          | 2300          | 1700          |
| Emergency stop torque   |                        | and T <sub>2Not</sub> | Nm                                    | 22125<br>8500 | 22125<br>8500 | 22125<br>8500 | 22125<br>8000 | 20355<br>8500         | 22125<br>8500  | 22125<br>8500 | 20355<br>8500 | 15045<br>6800 |
| (permitted 1000 times during the service life of Nominal input speed        | the gearh              | ead) <sup>2Not</sup>  | in.lb<br>rpm                          | 75225<br>2900 | 75225<br>2900 | 75225<br>3200 | 70800<br>3900 | 75225<br>3900         | 75225<br>3900  | 75225<br>3900 | 75225<br>3900 | 60180<br>3900 |
| (with $T_{z_N}$ and 20°C ambient temperature) b), c)  Max. continuous speed | -                      |                       |                                       | 4000          | 4000          | 4200          | 4200          | 4200                  | 4200           | 4200          | 4200          | 4200          |
| (with 20 % T <sub>2N</sub> and 20°C ambient temperature                     | )                      | n <sub>1Ncyn</sub>    |                                       |               |               |               |               |                       |                |               |               |               |
| Max. input speed  |                        | n <sub>1Max</sub>     | rpm                                   | 4500<br>0.6   | 4500<br>0.6   | 4500<br>0.4   | 4500<br>0.4   | 4500<br>0.4           | 4500<br>0.4    | 4500<br>0.4   | 4500          | 4500<br>0.3   |
| Mean no load running torque (with n,=3000 rpm and 20°C gearhead temper      | erature) <sup>d)</sup> | T <sub>012</sub>      | in.lb                                 | 5.3           | 5.3           | 3.5           | 3.5           | 3.5                   | 3.5            | 3.5           | 2.7           | 2.7           |
| Max. torsional backlash   |                        | $j_t$                 | arcmin                                |               | ı             |               | Standard      | d ≤5,5 / Redu         | ced ≤3,5       |               |               |               |
| Torsional rigidity  |                        | C <sub>121</sub>      | Nm/ arcmin                            | 510           | 510           | 510           | 510           | 510                   | 510            | 510           | 510           | 510           |
| Max. axial force <sup>®</sup>   |                        |                       | in.lb/arcmin                          | 4.514         | 4.514         | 4.514         | 4.514         | 4.514<br>33000        | 4.514          | 4.514         | 4.514         | 4.514         |
| iviax. axiai iorce  |                        | F <sub>2AMax</sub>    | lb <sub>f</sub>                       |               |               |               |               | 7425                  |                |               |               |               |
| Max. radial force <sup>e)</sup>   |                        | F <sub>2RMax</sub>    | N<br>lb <sub>f</sub>                  |               |               |               |               | 30000<br>6750         |                |               |               |               |
| Max. tilting moment   |                        | M <sub>2KM</sub>      | Nm<br>in.lb                           |               |               |               |               | 5000<br>44250         |                |               |               |               |
| Efficiency at full load   |                        | η                     | %                                     |               |               |               |               | 90                    |                |               |               |               |
| Service life (For calculation, see the Chapter "Information                 | ")                     | L <sub>n</sub>        | h                                     |               |               |               |               | > 20000               |                |               |               |               |
| Weight incl. standard adapter pl  | ate                    | m                     | kg                                    |               |               |               |               | 96<br>212             |                |               |               |               |
| Operating noise   |                        | L <sub>PA</sub>       | lb <sub>m</sub>                       |               |               |               |               | ≤ 71                  |                |               |               |               |
| (with n <sub>1</sub> = 3000 rpm no load)                                    |                        |                       | °C                                    |               |               |               |               | +90                   |                |               |               |               |
| Max. permitted housing tempera  | ature                  |                       | F                                     |               |               |               |               | 194                   |                |               |               |               |
| Ambient temperature   |                        |                       | °C<br>F                               |               |               |               |               | 0 to +40<br>32 to 104 |                |               |               |               |
| Lubrication   |                        |                       |                                       |               |               |               | Lu            | ubricated for l       | ife            |               |               |               |
| Paint   |                        |                       |                                       |               |               |               | E             | Blue RAL 500          | 2              |               |               |               |
| Direction of rotation   |                        |                       |                                       |               |               |               | Motor and ge  | arhead oppo           | site direction | s             |               |               |
| Protection class  |                        |                       |                                       |               |               |               |               | IP 65                 |                |               |               |               |
| Moment of inertia   |                        | 24 /                  | kgcm²                                 | 2.73          | 2.49          | 2.46          | 2.42          | 2.42                  | 2.42           | 2.42          | 2.42          | 2.42          |
| (relates to the drive)  | G                      | 24 J,                 | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 2.42          | 2.20          | 2.17          | 2.14          | 2.14                  | 2.14           | 2.14          | 2.14          | 2.14          |
| Clamping hub diameter [mm]  | K                      | 38 J,                 | kgcm <sup>2</sup>                     | 9.64          | 9.40          | 9.37          | 9.33          | 9.33                  | 9.33           | 9.33          | 9.33          | 9.33          |
|   |                        | 1                     | 10 <sup>-3</sup> in.lb.s <sup>2</sup> | 8.53          | 8.32          | 8.29          | 8.26          | 8.26                  | 8.26           | 8.26          | 8.26          | 8.26          |

a) Other ratios available on request

All technical data for front output side applies.

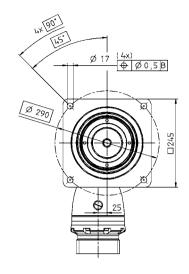
Technical data for rearward output versions, see page 428.

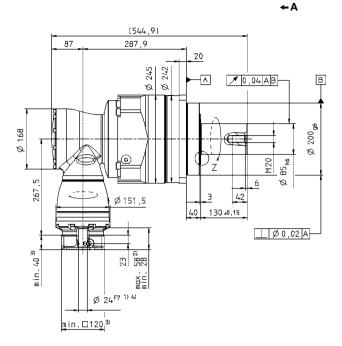
<sup>&</sup>lt;sup>b)</sup> Higher speeds are possible if the nominal torque is reduced

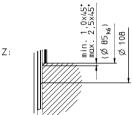
<sup>©</sup> For higher ambient temperatures, please reduce input speed

d) Idling torques decrease during operation

e) Refers to center of the output shaft or flange







### Alternatives: Output shaft variants

M20×42

22<sub>h9</sub>

Keywayed output shaft in mm E = key as per DIN 6885, sheet 1, form A

130 ±0,15

125

- M20×42

Involute gearing DIN 5480 in mm X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions  $\pm 1 \text{ mm}$ 

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



CAD data is available under http://www.wittenstein-alpha.de/en/info-and-cad-finder.html CAD data is available under

