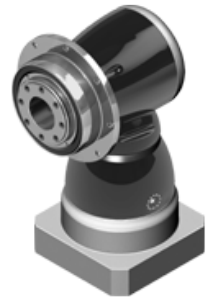


# KH series

## Overview

- Black coated steel housing, aluminum output and motor adapter flange
- Steel output shaft, flange ISO 9409
- Hypoid gear design
- Nominal torques:
  - $T_{2N}$  : 18 Nm – 1.600 Nm
- Ratios
  - 1-stage : 3 / 4 / 5 / 7 / 10
- Low backlash
  - 1-stage :  $\leq 3$  arcmin
- High efficiency
  - 1-stage :  $\geq 96\%$
- Easy mount
- High accuracy
- The output shaft rotates in the same direction as the servomotor
- Available sizes: KH 064 / KH 090 / KH 110 / KH 140 / KH 200 / KH 255 / KH 285



# Specifications

| KH  |            | Stage | Ratio <sup>(1)</sup> | KH 064                               | KH 090 | KH 110 | KH 140 | KH 200 | KH 255 | KH 285 |
|---|------------|-------|----------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|
| Nominal output torque $T_{2N}$            | Nm         | 1     | 3                    | 25                                   | 50     | 110    | 210    | 420    | 820    | 1.600  |
|   |            |       | 4                    | 25                                   | 60     | 110    | 210    | 420    | 820    | 1.600  |
|   |            |       | 5                    | 25                                   | 60     | 110    | 210    | 420    | 820    | 1.600  |
|   |            |       | 7                    | 23                                   | 50     | 100    | 200    | 390    | 750    | 1.400  |
|   |            |       | 10                   | 18                                   | 40     | 85     | 170    | 360    | 600    | 1.100  |
| Emergency stop torque $T_{2NOT}$          | Nm         | 1     | 3~10                 | 2 times of nominal torque $T_{2N}$   |        |        |        |        |        |        |
| Max. Acceleration torque $T_{2B}$         | Nm         | 1     | 3~10                 | 1,5 times of nominal torque $T_{2N}$ |        |        |        |        |        |        |
| No load running torque <sup>(4)</sup>     | Nm         | 1     | 3~10                 | 0,9                                  | 1,6    | 3,2    | 4,2    | 9,6    | 16,5   | 26,4   |
| Backlash <sup>(2)</sup>                   | arcminutes | 1     | 3~10                 | ≤ 3                                  | ≤ 3    | ≤ 3    | ≤ 3    | ≤ 3    | ≤ 3    | ≤ 3    |
| Torsional rigidity                        | Nm/arcmin  | 1     | 3~10                 | 1,1                                  | 4,5    | 10     | 23     | 54     | 90     | 170    |
| Nominal input speed $n_{1N}$              | rpm        | 1     | 3~10                 | 3.000                                | 2.800  | 2.700  | 2.000  | 2.000  | 2.000  | 1.500  |
| Max. input speed $n_{1B}$                 | rpm        | 1     | 3~10                 | 6.000                                | 6.000  | 4.500  | 4.500  | 4.000  | 3.000  | 2.500  |
| Max. radial load $F_{2rB}$ <sup>(3)</sup> | N          | 1     | 3~10                 | 2.400                                | 4.500  | 5.100  | 13.000 | 28.700 | 36.200 | 58.300 |
| Max. axial load $F_{2aB}$ <sup>(3)</sup>  | N          | 1     | 3~10                 | 1.200                                | 2.250  | 2.550  | 6.500  | 14.350 | 18.100 | 29.150 |
| Service Life <sup>(5)</sup>               | hr         | 1     | 3~100                | 20.000                               |        |        |        |        |        |        |
| Operating temperature                     | °C         | 1     | 3~100                | 0° C ~ +90°C                         |        |        |        |        |        |        |
| Degree of Protection                      |            | 1     | 3~100                | IP65                                 |        |        |        |        |        |        |
| Lubrication                               |            | 1     | 3~100                | Synthetisch lubrication grease       |        |        |        |        |        |        |
| Mounting position                         |            | 1     | 3~100                | All directions                       |        |        |        |        |        |        |
| Running noise <sup>(4)</sup>              | dB (A)     | 1     | 3~100                | ≤ 64                                 | ≤ 66   | ≤ 66   | ≤ 68   | ≤ 68   | ≤ 70   | ≤ 72   |
| Efficiency $\eta$                         | %          | 1     | 3~10                 | ≥ 96%                                |        |        |        |        |        |        |

(1) Ratio (  $i = N_{in} / N_{out}$  )

(2) Backlash is measured at 2% of Nominal output torque  $T_{2N}$ .

(3) Applied to the output shaft center @ 100 rpm .

(4) These values are measured by gearbox with ratio = 10 (1-stage) or ratio = 100 (2-stage) at 3.000 rpm without load.

(5) For continuous operation, the service life is less than 10.000 hrs.

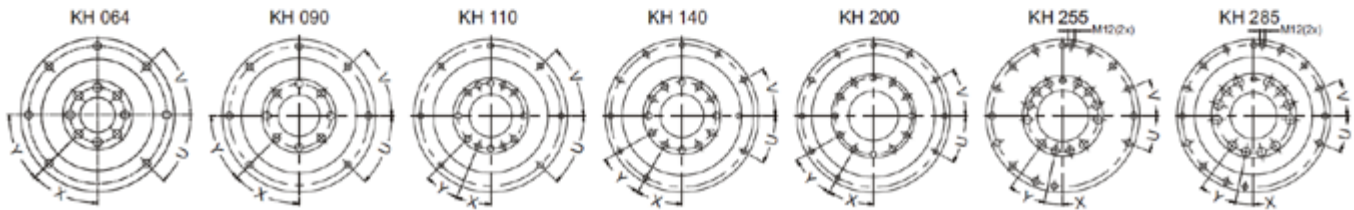
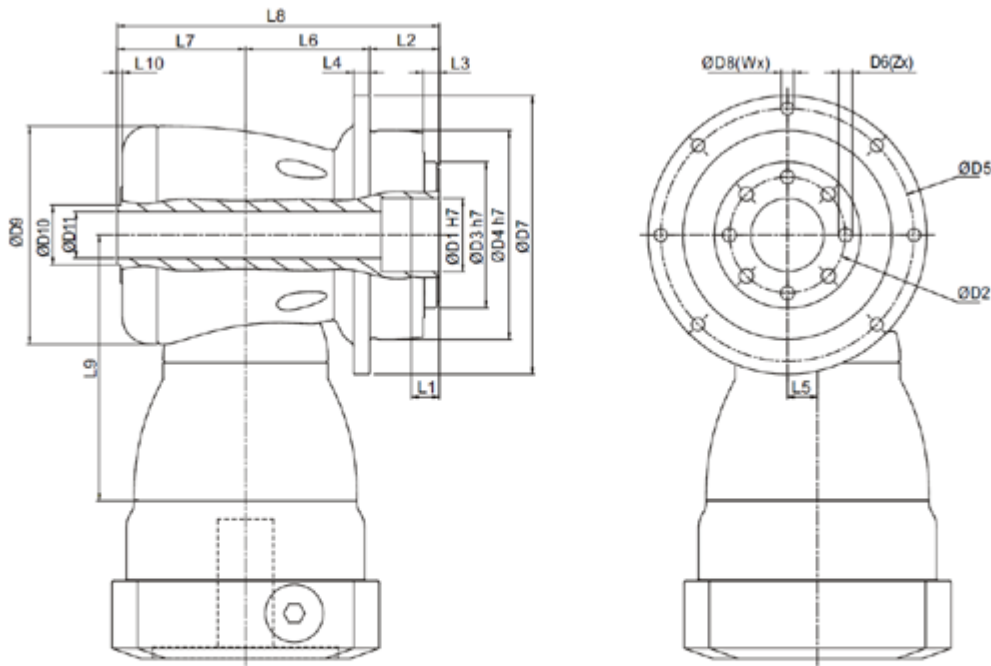
# Inertia

| Model No.              | KH 064             | KH 090  | KH 110  | KH 140  | KH 200  | KH 255  | KH 285  |
|------------------------|--------------------|---------|---------|---------|---------|---------|---------|
| $\emptyset^{(A)}$ (C3) | 1-stage            | 1-stage | 1-stage | 1-stage | 1-stage | 1-stage | 1-stage |
| 8                      | 0,10               | -       | -       | -       | -       | -       | -       |
| 11                     | 0,17               | 0,18    | -       | -       | -       | -       | -       |
| 14                     | 0,20               | 0,50    | -       | -       | -       | -       | -       |
| 19                     | -                  | 0,63    | 1,66    | -       | -       | -       | -       |
| 24                     | -                  | 4,42    | 4,82    | 4,96    | -       | -       | -       |
| 28                     | -                  | -       | 6,05    | 6,00    | -       | -       | -       |
| 32                     | -                  | -       | 8,38    | 8,70    | 9,93    | -       | -       |
| 35                     | -                  | -       | 13,86   | 14,23   | 15,15   | 15,62   | 23,34   |
| 38                     | kg*cm <sup>2</sup> | -       | 18,87   | 19,88   | 20,69   | 21,61   | 23,34   |
| 42                     | -                  | -       | -       | 21,75   | 22,26   | 23,36   | 24,97   |
| 48                     | -                  | -       | -       | 53,91   | 55,55   | 58,28   | 60,43   |
| 55                     | -                  | -       | -       | -       | -       | 86,65   | 88,67   |
| 60                     | -                  | -       | -       | -       | -       | -       | 111,89  |

(A)  $\emptyset$  Input shaft diameter

# Sizes

KH-series:



| Dimensions  | KH 064    | KH 090   | KH 110   | KH 140      | KH 200      | KH 255    | KH 285      |
|-------------|-----------|----------|----------|-------------|-------------|-----------|-------------|
|             | 1-stage   | 1-stage  | 1-stage  | 1-stage     | 1-stage     | 1-stage   | 1-stage     |
| D1 H7       | 20        | 31,5     | 40       | 50          | 80          | 100       | 100         |
| D2          | 31,5      | 50       | 63       | 80          | 125         | 140       | 160         |
| D3 h7       | 40        | 63       | 80       | 100         | 160         | 180       | 200         |
| D4 h7       | 64        | 90       | 110      | 140         | 200         | 255       | 285         |
| D5          | 79        | 109      | 135      | 168         | 233         | 280       | 310         |
| D6          | M5x0,8Px8 | M6x1Px10 | M6x1Px12 | M8x1,25Px15 | M10x1,5Px20 | M16x2Px25 | M20x2,5Px31 |
| D7          | 88        | 120      | 147      | 180         | 249,5       | 302       | 332         |
| D8          | 4,5       | 5,5      | 5,5      | 6,6         | 9           | 13,5      | 13,5        |
| D9          | 73        | 94       | 116      | 163         | 210         | 255       | 300         |
| D10         | 18,5      | 25,8     | 36,8     | 55,2        | 69,2        | 82,2      | 92,2        |
| D11         | 10        | 20       | 28       | 40          | 55          | 62        | 70          |
| L1          | 8         | 12       | 12       | 12          | 16          | 20        | 20          |
| L2          | 19,5      | 30       | 29       | 38          | 50          | 66        | 75          |
| L3          | 4         | 7        | 7        | 7,5         | 8,5         | 13,5      | 16,5        |
| L4          | 5         | 7        | 8        | 10          | 12          | 18        | 20          |
| L5          | 10        | 13       | 17       | 25          | 31          | 36        | 43          |
| L6          | 43        | 53,5     | 67       | 81          | 117         | 132       | 160,5       |
| L7          | 46        | 55,3     | 71,3     | 91,8        | 118         | 134       | 168         |
| L8          | 108,5     | 138,8    | 167,3    | 210,8       | 285         | 332       | 403,5       |
| L9          | 94        | 114,5    | 129      | 173,5       | 228         | 265,5     | 294,5       |
| L10         | 1,5       | 2,3      | 3        | 2,8         | 3           | 3         | 3           |
| X in graden | 45°       | 45°      | 22,5°    | 30°         | 30°         | 12°       | 12°         |
| Y in graden | 45°       | 45°      | 22,5°    | 30°         | 30°         | 24°       | 24°         |
| Z           | 8         | 8        | 12       | 12          | 12          | 12        | 12          |

|             |     |     |     |     |     |       |       |
|-------------|-----|-----|-----|-----|-----|-------|-------|
| U in graden | 45° | 45° | 45° | 30° | 30° | 22,5° | 22,5° |
| V in graden | 45° | 45° | 45° | 30° | 30° | 22,5° | 22,5° |
| W           | 7   | 7   | 7   | 10  | 10  | 13    | 13    |

(1) Input dimensions vary according to motor flange. Please contact Apex Dynamics for details.