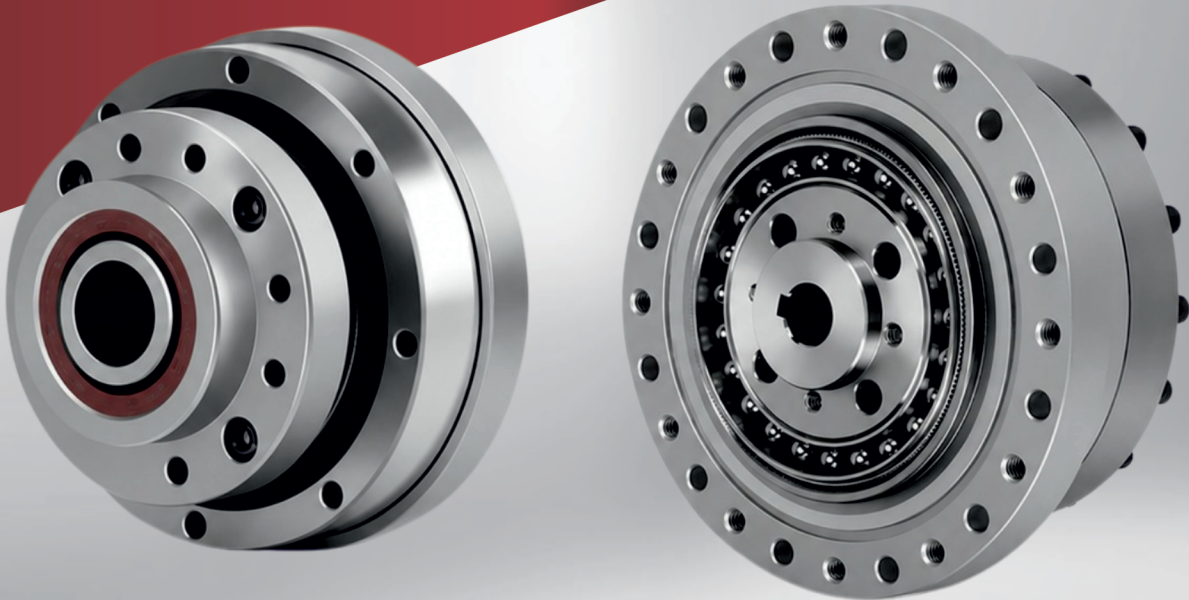


# Harmonic Reducer

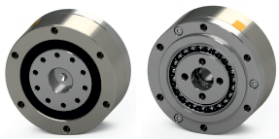


## Product overview

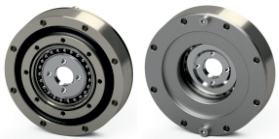
### Reducer product series



ZLCS series



ZLCD series



ZLHD series



ZLHS-C-III Series



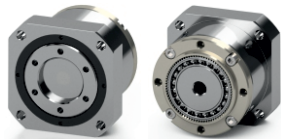
ZLHS-C-IV Series



ZLHS-TC-II Series



ZLHS-TC-III Series



ZLCS-MINI series



ZLSF series

PRODUCT FEATURES

Harmonic reducer is a new generation of practical products independently developed by our company, which has the following main features.



**High meshing rate**

When the number of meshing teeth is over 60%, the torque is large and stable.



**High precision**

Zero backlash, small backlash, transmission accuracy up to 12 arc seconds.



**No Claw**

Pawl phenomenon easily lead to gear wear and shorten the wave generator bearing life.



**Precise meshing**

Low noise, low vibration and long life.



**Independent design**

Has the ability to develop and design new products and non-standard products. The company can customize non-standard specifications and non-standard speed ratio harmonic reducer products according to user requirements; to meet the personalized needs of users.



**Independent tooth shape**

Based on the meshing theory, using sophisticated advanced mathematical calculations, mapping theory, simulation theory and other advanced technical means as the foundation; and led by a domestic researcher-level senior engineer (professor) team, successfully developed the first internationally compatible kinematic meshing Tm tooth profile of the trajectory.

Product application

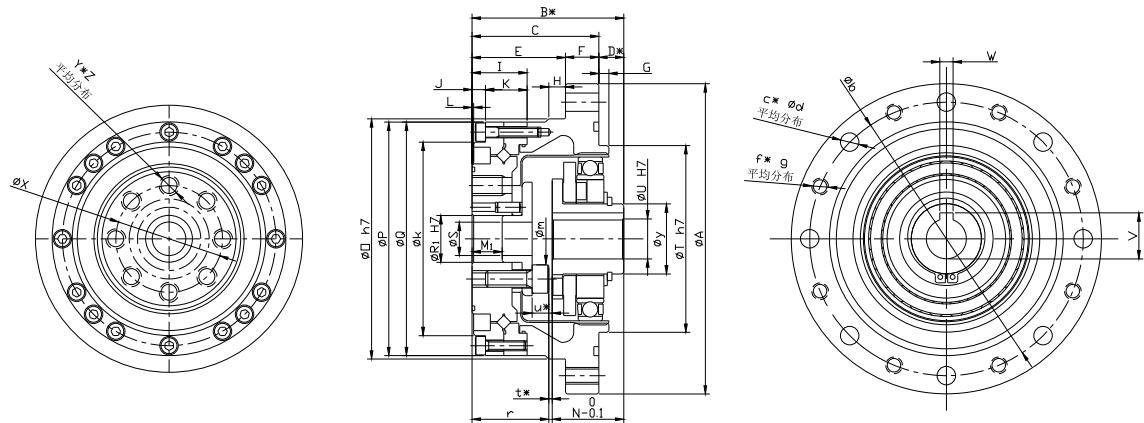
Harmonic reducer application industries: industrial robots, precision equipment instruments, radar communication equipment, printing machinery, textile machinery, semiconductor industry wafer transmission devices, printing and packaging machinery, medical equipment, metal forming machinery, instrumentation, optical manufacturing instruments, nuclear Facilities and aerodynamic experimental research and other fields.

Description Reducer

| ZLCS - 14 - 50 – C – I – SP                                              |      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
|--------------------------------------------------------------------------|------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|-----|-----|--|--------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|---|---|----|----|----|----|----|----|----|----|---------------|------|------|------|------|------|------|------|------|-----|-----|
| Serial Number                                                            | Name |      | Rule                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 1                                                                        | ZL   |      | Zhuolan brand.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 2                                                                        | CS   |      | <div><div></div>CS: Standard Cup</div> <div><div></div>HS: Hat Standard;</div> <div><div></div>CD: Cup Dwarf;</div> <div><div></div>HD: Hat Dwarf (super flat, hollow type);</div> <div><div></div>SM: Motor adapter type;</div> <div><div></div>SG: Gearbox type;</div> <div><div></div>SI: Commutator type;</div> <div><div></div>SF: Slim and lightweight.</div>                                                                                                                        |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 3                                                                        | 14   |      | <table><tr><th colspan="11">Specifications: Pitch circle diameter of the corresponding harmonic gear</th></tr><tr><td>Specification</td><td>5</td><td>8</td><td>11</td><td>14</td><td>17</td><td>20</td><td>25</td><td>32</td><td>40</td><td>45</td></tr><tr><td>Diameter (mm)</td><td>13.5</td><td>20.5</td><td>27.5</td><td>35.6</td><td>43.4</td><td>50.8</td><td>63.5</td><td>81.3</td><td>102</td><td>111</td></tr></table>                                                           |      |      |      |      |      |     |     |  | Specifications: Pitch circle diameter of the corresponding harmonic gear |  |  |  |  |  |  |  |  |  |  | Specification | 5 | 8 | 11 | 14 | 17 | 20 | 25 | 32 | 40 | 45 | Diameter (mm) | 13.5 | 20.5 | 27.5 | 35.6 | 43.4 | 50.8 | 63.5 | 81.3 | 102 | 111 |
| Specifications: Pitch circle diameter of the corresponding harmonic gear |      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| Specification                                                            | 5    | 8    | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 14   | 17   | 20   | 25   | 32   | 40  | 45  |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| Diameter (mm)                                                            | 13.5 | 20.5 | 27.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 35.6 | 43.4 | 50.8 | 63.5 | 81.3 | 102 | 111 |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 4                                                                        | 50   |      | Reduction ratio: typically 30, 50, 80, 100, 120, or 160.                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 5                                                                        | C    |      | <div><div></div>C: Combined type, i.e., integrated cross roller bearing;</div> <div><div></div>TC: Simple combination type.</div>                                                                                                                                                                                                                                                                                                                                                          |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 6                                                                        | I    |      | <div><div></div>Type I: Standard type, the input shaft is connected to the inner hole of the cam via a flat key;</div> <div><div></div>Type II: Cross-slider coupling type, the input shaft and cam are connected by a cross-slider coupling.</div> <div><div></div>Type III: Cylindrical hollow type, the input end component is connected to the hollow cam by screws;</div> <div><div></div>Type IV: Real shaft input type, the input end of the reducer includes an input shaft.</div> |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |
| 7                                                                        | SP   |      | Special specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |      |      |      |      |     |     |  |                                                                          |  |  |  |  |  |  |  |  |  |  |               |   |   |    |    |    |    |    |    |    |    |               |      |      |      |      |      |      |      |      |     |     |

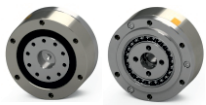


| ZLCS Series Rating Parameter Table |             |                            |                                     |                                                |                                        |                               |                           |          |             |
|------------------------------------|-------------|----------------------------|-------------------------------------|------------------------------------------------|----------------------------------------|-------------------------------|---------------------------|----------|-------------|
| Model                              | Speed ratio | Enter 2000rpm Rated torque | Start stop allowed when Peak torque | load average Allowable maximum value of torque | Instantaneous maximum allowable torque | Allowable maximum input speed | Allow average input speed | Backlash | Design life |
| /                                  | /           | Nm                         | Nm                                  | Nm                                             | Nm                                     | r/min                         | r/min                     | Arc sec  | Hour        |
| 14                                 | 30          | 3.8                        | 8.5                                 | 6.5                                            | 16                                     | 8000                          | 3500                      | =30      | 15000       |
|                                    | 50          | 5                          | 17                                  | 6.5                                            | 32                                     |                               |                           | =25      | 12000       |
|                                    | 80          | 7.3                        | 21                                  | 10                                             | 43                                     |                               |                           |          |             |
|                                    | 100         | 7.3                        | 25                                  | 10                                             | 49                                     |                               |                           |          |             |
| 17                                 | 30          | 8.5                        | 15                                  | 11.5                                           | 28                                     | 7000                          | 3500                      | =30      | 15000       |
|                                    | 50          | 15                         | 31                                  | 23                                             | 66                                     |                               |                           | =25      | 12000       |
|                                    | 80          | 20                         | 39                                  | 24                                             | 84                                     |                               |                           |          |             |
|                                    | 100         | 22                         | 48                                  | 35                                             | 84                                     |                               |                           |          |             |
|                                    | 120         | 22                         | 48                                  | 35                                             | 84                                     |                               |                           |          |             |
| 20                                 | 30          | 14                         | 25                                  | 18                                             | 47                                     | 6000                          | 3500                      | =30      | 15000       |
|                                    | 50          | 21                         | 52                                  | 31                                             | 91                                     |                               |                           | =25      | 12000       |
|                                    | 80          | 30                         | 70                                  | 42                                             | 115                                    |                               |                           |          |             |
|                                    | 100         | 35                         | 76                                  | 43                                             | 138                                    |                               |                           |          |             |
|                                    | 120         | 35                         | 81                                  | 43                                             | 138                                    |                               |                           |          |             |
|                                    | 160         | 35                         | 84                                  | 43                                             | 138                                    |                               |                           |          |             |
| 25                                 | 30          | 25                         | 47                                  | 35                                             | 91                                     | 5500                          | 3500                      | =30      | 15000       |
|                                    | 50          | 32                         | 91                                  | 51                                             | 179                                    |                               |                           | =25      | 12000       |
|                                    | 80          | 57                         | 125                                 | 82                                             | 243                                    |                               |                           |          |             |
|                                    | 100         | 62                         | 146                                 | 101                                            | 267                                    |                               |                           |          |             |
|                                    | 120         | 62                         | 155                                 | 101                                            | 289                                    |                               |                           |          |             |
|                                    | 160         | 62                         | 167                                 | 101                                            | 303                                    |                               |                           |          |             |
| 32                                 | 30          | 50                         | 93                                  | 70                                             | 190                                    | 4500                          | 3500                      | =30      | 15000       |
|                                    | 50          | 72                         | 205                                 | 102                                            | 360                                    |                               |                           | =25      | 12000       |
|                                    | 80          | 110                        | 290                                 | 158                                            | 546                                    |                               |                           |          |             |
|                                    | 100         | 124                        | 312                                 | 202                                            | 618                                    |                               |                           |          |             |
|                                    | 120         | 124                        | 333                                 | 202                                            | 645                                    |                               |                           |          |             |
|                                    | 160         | 124                        | 350                                 | 202                                            | 645                                    |                               |                           |          |             |
| 40                                 | 50          | 130                        | 375                                 | 186                                            | 650                                    | 4000                          | 3000                      | =30      | 15000       |
|                                    | 100         | 254                        | 551                                 | 360                                            | 950                                    |                               |                           | =25      | 12000       |
|                                    | 160         | 286                        | 612                                 | 439                                            | 1005                                   |                               |                           |          |             |
| 45                                 | 50          | 130                        | 375                                 | 186                                            | 650                                    | 4000                          | 3000                      | =30      | 15000       |
|                                    | 100         | 254                        | 551                                 | 360                                            | 950                                    |                               |                           | =25      | 12000       |
|                                    | 160         | 286                        | 612                                 | 439                                            | 1005                                   |                               |                           |          |             |

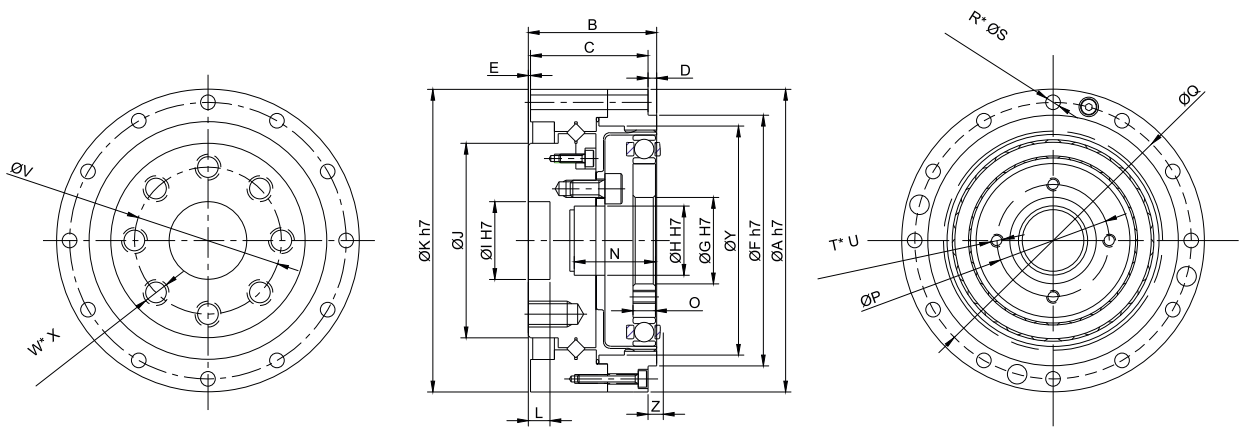
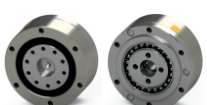


| ZLCS-XX-XX Series Size Chart   |                                 |                                 |                                   |                                   |                                   |                                   |                                   |
|--------------------------------|---------------------------------|---------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Model Symbol                   | 14                              | 17                              | 20                                | 25                                | 32                                | 40                                | 45                                |
| ØA                             | 73                              | 79                              | 93                                | 107                               | 138                               | 160                               | 180                               |
| B*                             | 41 <sup>0</sup> <sub>-0.9</sub> | 45 <sup>0</sup> <sub>-0.9</sub> | 45.5 <sup>0</sup> <sub>-0.9</sub> | 52 <sup>0</sup> <sub>-0.9</sub>   | 62 <sup>0</sup> <sub>-0.9</sub>   | 72.5 <sup>0</sup> <sub>-0.9</sub> | 79.5 <sup>0</sup> <sub>-0.9</sub> |
| C                              | 34                              | 37                              | 38                                | 46                                | 57                                | 66.5                              | 74                                |
| D*                             | 7 <sup>0</sup> <sub>-0.8</sub>  | 8 <sup>0</sup> <sub>-0.9</sub>  | 7.5 <sup>0</sup> <sub>-1.0</sub>  | 6 <sup>0</sup> <sub>-1.0</sub>    | 5 <sup>0</sup> <sub>-1.1</sub>    | 6 <sup>0</sup> <sub>-1.1</sub>    | 5.5 <sup>0</sup> <sub>-1.1</sub>  |
| E                              | 27                              | 29                              | 28                                | 36                                | 45                                | 50.5                              | 58                                |
| F                              | 7                               | 8                               | 10                                | 10                                | 12                                | 16                                | 16                                |
| G                              | 2                               | 2                               | 3                                 | 3                                 | 3                                 | 4                                 | 4                                 |
| H                              | 3.5                             | 4                               | 5                                 | 5                                 | 5                                 | 5                                 | 6                                 |
| I                              | 16.5                            | 16.5                            | 16.5                              | 18.5                              | 22.5                              | 24                                | 27                                |
| J                              | 4.5                             | 4.5                             | 4                                 | 4.5                               | 5.5                               | 7.5                               | 7                                 |
| K                              | 12                              | 12                              | 12.5                              | 14                                | 17                                | 16.5                              | 20                                |
| L                              | 0.5                             | 0.5                             | 0.5                               | 0.5                               | 1                                 | 1.5                               | 1                                 |
| M <sub>1</sub>                 | 9.4                             | 9.5                             | 9                                 | 12                                | 15                                | 5                                 | 6                                 |
| N <sup>0</sup> <sub>-0.1</sub> | 17.6                            | 19.5                            | 20.1                              | 20.2                              | 22                                | 27.5                              | 27.9                              |
| ØO h7                          | 56                              | 63                              | 72                                | 86                                | 113                               | 127                               | 148                               |
| ØP                             | 55                              | 62                              | 70                                | 85                                | 112                               | 126                               | 147                               |
| ØR <sub>1</sub> H7             | 11                              | 10                              | 14                                | 20                                | 26                                | 32                                | 32                                |
| ØS                             | 8                               | 7                               | 10                                | 15                                | 20                                | 24                                | 25                                |
| ØT h7                          | 38                              | 48                              | 56                                | 67                                | 90                                | 110                               | 124                               |
| ØU H7                          | 6                               | 8                               | 12                                | 14                                | 14                                | 14                                | 19                                |
| V                              | -                               | -                               | 13.8 <sup>+0.1</sup> <sub>0</sub> | 16.3 <sup>+0.1</sup> <sub>0</sub> | 16.3 <sup>+0.1</sup> <sub>0</sub> | 16.3 <sup>+0.1</sup> <sub>0</sub> | 21.8 <sup>+0.1</sup> <sub>0</sub> |
| W Js9                          | -                               | -                               | 4                                 | 5                                 | 5                                 | 5                                 | 6                                 |
| ØX                             | 23                              | 27                              | 32                                | 42                                | 55                                | 68                                | 82                                |
| Y                              | 6                               | 6                               | 8                                 | 8                                 | 8                                 | 8                                 | 8                                 |
| Z                              | M4*8                            | M5*10                           | M6*9                              | M8*12                             | M10*15                            | M10*15                            | M12*18                            |
| Øb                             | 65                              | 71                              | 82                                | 96                                | 125                               | 144                               | 164                               |
| c                              | 6                               | 6                               | 6                                 | 8                                 | 12                                | 10                                | 12                                |
| Ød                             | 4.5                             | 4.5                             | 5.5                               | 5.5                               | 6.6                               | 9                                 | 9                                 |
| f                              | 6                               | 6                               | 6                                 | 8                                 | 12                                | 8                                 | 12                                |
| g                              | M4                              | M4                              | M5                                | M5                                | M6                                | M8                                | M8                                |
| Øk                             | 31                              | 38                              | 45                                | 58                                | 78                                | 90                                | 107                               |
| Øm                             | 10                              | 10.5                            | 15.5                              | 20                                | 27                                | 34                                | 36                                |
| r                              | 21.4                            | 23.5                            | 23                                | 29                                | 37                                | 39.5                              | 45.5                              |
| Øy                             | 14                              | 18                              | 21                                | 26                                | 26                                | 32                                | 32                                |

Note: The input shafts of series 14 and 17 do not have keyways.



| ZLCD series rated parameter table |             |                              |                                     |                                                    |                                     |                             |                           |          |             |
|-----------------------------------|-------------|------------------------------|-------------------------------------|----------------------------------------------------|-------------------------------------|-----------------------------|---------------------------|----------|-------------|
| Model                             | Speed ratio | Enter 2000r/min Rated torque | Start stop allowed when Peak torque | load average Torque capacity allowed maximum value | momentary permission Maximum torque | maximum allowed input speed | Allow average input speed | Backlash | Design life |
| /                                 | /           | Nm                           | Nm                                  | Nm                                                 | Nm                                  | r/min                       | r/min                     | Arcsec   | Hour        |
| 14                                | 50          | 3.2                          | 10.5                                | 4.3                                                | 21                                  | 8000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 5                            | 17                                  | 7.2                                                | 32                                  |                             |                           |          |             |
| 17                                | 50          | 10                           | 21                                  | 16                                                 | 44                                  | 7000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 14                           | 34                                  | 25                                                 | 67                                  |                             |                           |          |             |
| 20                                | 50          | 14.5                         | 36                                  | 21                                                 | 65                                  | 6000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 25                           | 53                                  | 31                                                 | 89                                  |                             |                           |          |             |
|                                   | 160         | 25                           | 59                                  | 31                                                 | 89                                  |                             |                           |          |             |
| 25                                | 50          | 24                           | 65                                  | 34                                                 | 121                                 | 5500                        | 3500                      | =30      | 12000       |
|                                   | 100         | 43                           | 102                                 | 70                                                 | 175                                 |                             |                           |          |             |
|                                   | 160         | 43                           | 115                                 | 70                                                 | 196                                 |                             |                           |          |             |
| 32                                | 50          | 49                           | 143                                 | 70                                                 | 249                                 | 4500                        | 3500                      | =30      | 12000       |
|                                   | 100         | 91                           | 225                                 | 143                                                | 401                                 |                             |                           |          |             |
|                                   | 160         | 91                           | 249                                 | 143                                                | 420                                 |                             |                           |          |             |

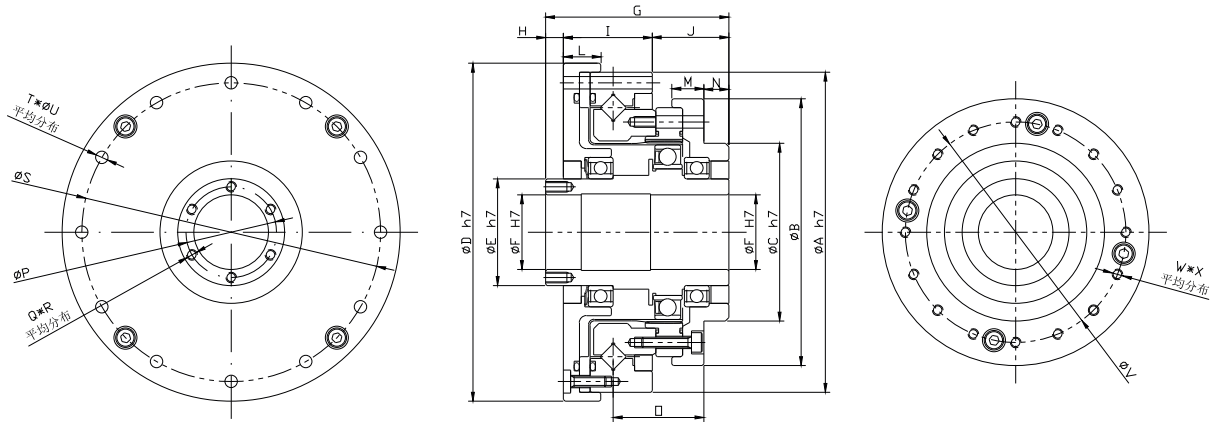


| ZLCD-XX-XX Series Size Chart |                                  |                                  |                                  |                                  |                                  |
|------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Model Symbol                 | 14                               | 17                               | 20                               | 25                               | 32                               |
| ØA h7                        | 55                               | 62                               | 70                               | 85                               | 112                              |
| B                            | 25                               | 26.5                             | 29.7                             | 37.1                             | 43                               |
| C                            | 23                               | 24.5                             | 27.7                             | 34.1                             | 40                               |
| D                            | 2                                | 2                                | 2                                | 3                                | 3                                |
| E                            | 0.5                              | 0.5                              | 0.5                              | 0.5                              | 1                                |
| ØF h7                        | 42.5                             | 49.5                             | 58                               | 73                               | 96                               |
| ØG H7                        | 11                               | 15                               | 20                               | 24                               | 32                               |
| ØH H7                        | 11                               | 11                               | 16                               | 20                               | 30                               |
| ØI H7                        | 12                               | 14                               | 18                               | 24                               | 32                               |
| ØJ                           | 31                               | 38                               | 45                               | 58                               | 78                               |
| ØK h7                        | 55                               | 62                               | 70                               | 85                               | 112                              |
| L                            | 5                                | 5                                | 5                                | 5.5                              | 5.5                              |
| M                            | 1.7 <sup>0</sup> <sub>-0.2</sub> | 1.7 <sup>0</sup> <sub>-0.2</sub> | 1.7 <sup>0</sup> <sub>-0.2</sub> | 2.6 <sup>0</sup> <sub>-0.2</sub> | 2.5 <sup>0</sup> <sub>-0.2</sub> |
| N                            | 14.8                             | 16.3                             | 18.8                             | 23.7                             | 30.6                             |
| Ø                            | 4 <sup>0</sup> <sub>-0.1</sub>   | 5 <sup>0</sup> <sub>-0.1</sub>   | 5.2 <sup>0</sup> <sub>-0.1</sub> | 6.3 <sup>0</sup> <sub>-0.1</sub> | 8.6 <sup>0</sup> <sub>-0.1</sub> |
| ØP(PCD)                      | 17                               | 21                               | 26                               | 30                               | 40                               |
| ØQ(PCD)                      | 49                               | 56                               | 64                               | 79                               | 104                              |
| R                            | 6                                | 10                               | 12                               | 18                               | 18                               |
| ØS                           | 3.4                              | 3.4                              | 3.4                              | 3.4                              | 4.5                              |
| b                            | 16.1                             | 16.1                             | 17.8                             | 22.9                             | 23.5                             |
| T                            | 4                                | 4                                | 4                                | 4                                | 4                                |
| U                            | M3                               | M3                               | M3                               | M3                               | M4                               |
| ØV(PCD)                      | 25                               | 27                               | 34                               | 42                               | 57                               |
| W                            | 10                               | 8                                | 8                                | 8                                | 10                               |
| X                            | M3*7                             | M5*8                             | M6*9                             | M8*12                            | M8*12                            |
| ØY                           | 38                               | 45                               | 53                               | 66                               | 86                               |
| Z                            | 3                                | 3                                | 3.5                              | 4.5                              | 5                                |

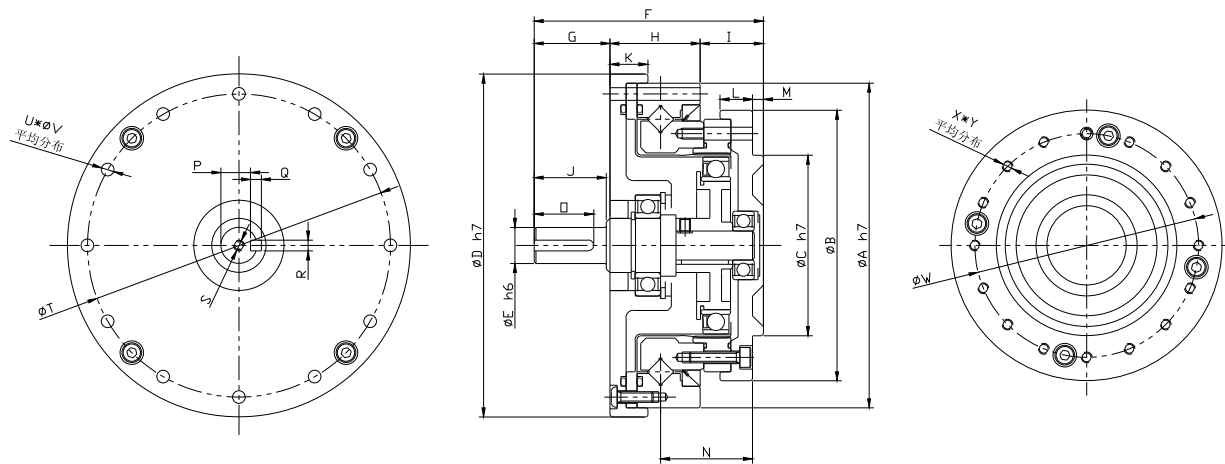




| ZLHS Series Rated Parameter Table |             |                              |                                     |                                                    |                                        |                             |                           |          |             |
|-----------------------------------|-------------|------------------------------|-------------------------------------|----------------------------------------------------|----------------------------------------|-----------------------------|---------------------------|----------|-------------|
| Model                             | Speed ratio | Enter 2000r/min Rated torque | Start stop allowed when Peak torque | load average Torque capacity allowed maximum value | Instantaneous maximum allowable torque | maximum allowed input speed | Allow average input speed | Backlash | Design life |
| /                                 | /           | Nm                           | Nm                                  | Nm                                                 | Nm                                     | r/min                       | r/min                     | Arc sec  | Hour        |
| 14                                | 30          | 3.8                          | 8.5                                 | 6.5                                                | 16                                     | 8000                        | 3500                      | =30      | 15000       |
|                                   | 50          | 5                            | 17                                  | 6.5                                                | 32                                     |                             |                           | =25      | 12000       |
|                                   | 80          | 7.3                          | 21                                  | 10                                                 | 43                                     |                             |                           |          |             |
|                                   | 100         | 7.3                          | 25                                  | 10                                                 | 49                                     |                             |                           |          |             |
| 17                                | 30          | 8.5                          | 15                                  | 11.5                                               | 28                                     | 7000                        | 3500                      | =30      | 15000       |
|                                   | 50          | 15                           | 31                                  | 23                                                 | 66                                     |                             |                           | =25      | 12000       |
|                                   | 80          | 20                           | 39                                  | 24                                                 | 84                                     |                             |                           |          |             |
|                                   | 100         | 22                           | 48                                  | 35                                                 | 84                                     |                             |                           |          |             |
|                                   | 120         | 22                           | 48                                  | 35                                                 | 84                                     |                             |                           |          |             |
| 20                                | 30          | 14                           | 25                                  | 18                                                 | 47                                     | 6000                        | 3500                      | =30      | 15000       |
|                                   | 50          | 21                           | 52                                  | 31                                                 | 91                                     |                             |                           | =25      | 12000       |
|                                   | 80          | 30                           | 70                                  | 42                                                 | 115                                    |                             |                           |          |             |
|                                   | 100         | 35                           | 76                                  | 43                                                 | 138                                    |                             |                           |          |             |
|                                   | 120         | 35                           | 81                                  | 43                                                 | 138                                    |                             |                           |          |             |
|                                   | 160         | 35                           | 84                                  | 43                                                 | 138                                    |                             |                           |          |             |
| 25                                | 30          | 25                           | 47                                  | 35                                                 | 91                                     | 5500                        | 3500                      | =30      | 15000       |
|                                   | 50          | 32                           | 91                                  | 51                                                 | 179                                    |                             |                           | =25      | 12000       |
|                                   | 80          | 57                           | 125                                 | 82                                                 | 243                                    |                             |                           |          |             |
|                                   | 100         | 62                           | 146                                 | 101                                                | 267                                    |                             |                           |          |             |
|                                   | 120         | 62                           | 155                                 | 101                                                | 289                                    |                             |                           |          |             |
|                                   | 160         | 62                           | 167                                 | 101                                                | 303                                    |                             |                           |          |             |
| 32                                | 30          | 50                           | 93                                  | 70                                                 | 190                                    | 4500                        | 3500                      | =30      | 15000       |
|                                   | 50          | 72                           | 205                                 | 102                                                | 360                                    |                             |                           | =25      | 12000       |
|                                   | 80          | 110                          | 290                                 | 158                                                | 546                                    |                             |                           |          |             |
|                                   | 100         | 124                          | 312                                 | 202                                                | 618                                    |                             |                           |          |             |
|                                   | 120         | 124                          | 333                                 | 202                                                | 645                                    |                             |                           |          |             |
|                                   | 160         | 124                          | 350                                 | 202                                                | 645                                    |                             |                           |          |             |
| 40                                | 50          | 130                          | 375                                 | 186                                                | 650                                    | 4000                        | 3000                      | =30      | 15000       |
|                                   | 100         | 254                          | 551                                 | 360                                                | 950                                    |                             |                           | =25      | 12000       |
|                                   | 160         | 286                          | 612                                 | 439                                                | 1005                                   |                             |                           |          |             |
| 45                                | 50          | 130                          | 375                                 | 186                                                | 650                                    | 4000                        | 3000                      | =30      | 15000       |
|                                   | 100         | 254                          | 551                                 | 360                                                | 950                                    |                             |                           | =25      | 12000       |
|                                   | 160         | 286                          | 612                                 | 439                                                | 1005                                   |                             |                           |          |             |

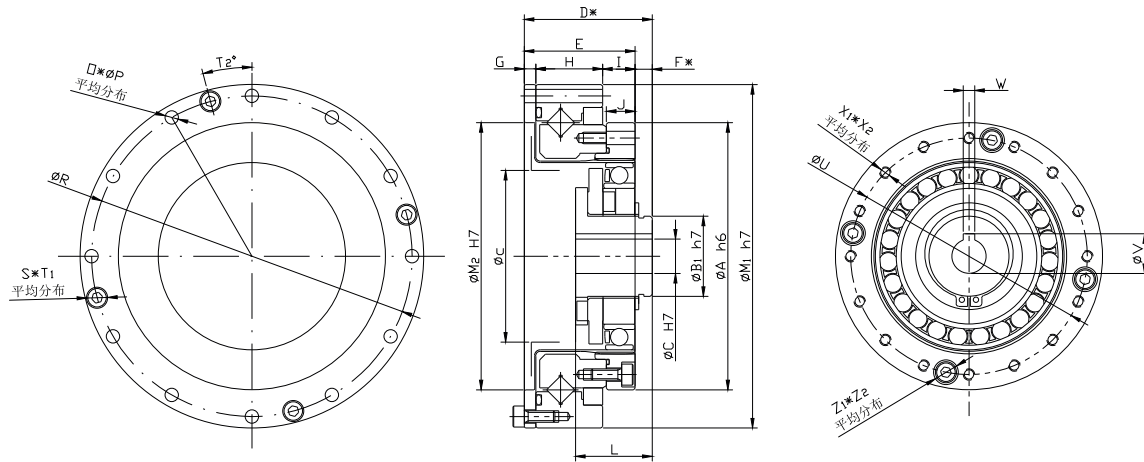


| ZLHS-XX-XX-C-III Series Size Chart |          |           |      |      |      |       |       |
|------------------------------------|----------|-----------|------|------|------|-------|-------|
| Model Symbol                       | 14       | 17        | 20   | 25   | 32   | 40    | 45    |
| ØA h7                              | 70       | 80        | 90   | 110  | 142  | 170   | 190   |
| ØB                                 | 54       | 64        | 75   | 90   | 115  | 140   | 160   |
| ØC h7                              | 36       | 45        | 50   | 60   | 85   | 100   | 120   |
| ØD h7                              | 74       | 84        | 95   | 115  | 147  | 175   | 195   |
| ØE h7                              | 20       | 25        | 30   | 38   | 45   | 59    | 64    |
| ØF h7                              | 14       | 19        | 21   | 29   | 36   | 46    | 52    |
| G                                  | 52.5     | 56.5      | 51.5 | 55.5 | 65.5 | 79    | 85    |
| H                                  | 12       | 12        | 5    | 6    | 7    | 8     | 8     |
| I                                  | 20.5     | 23        | 25   | 26   | 32   | 38    | 42    |
| J                                  | 20       | 21.5      | 21.5 | 23.5 | 26.5 | 33    | 35    |
| K                                  | 6.5      | 6.5       | -    | -    | -    | -     | -     |
| L                                  | 9        | 10        | 10.5 | 10.5 | 12   | 14    | 15    |
| M                                  | 8        | 8.5       | 9    | 8.5  | 9.5  | 13    | 12    |
| N                                  | 7.5      | 8.5       | 7    | 6    | 5    | 7     | 7     |
| O                                  | 21.7     | 23.9      | 25.5 | 29.6 | 36.4 | 44    | 47.5  |
| ØP(P)                              | (2.5)    | (2.5)     | 25.5 | 33.5 | 40.5 | 52    | 58    |
| Q                                  | 3        | 3         | 6    | 6    | 6    | 6     | 6     |
| R                                  | M3       | M3        | M3*6 | M3*6 | M3*6 | M4*8  | M4*8  |
| ØS                                 | 64       | 74        | 84   | 102  | 132  | 158   | 180   |
| T                                  | 8        | 12        | 12   | 12   | 12   | 12    | 18    |
| ØU                                 | 3.5      | 3.5       | 3.5  | 4.5  | 5.5  | 6.6   | 6.6   |
| ØV                                 | 44       | 54        | 62   | 77   | 100  | 122   | 140   |
| W                                  | 12平均分布中8 | 20平均分布中16 | 16   | 16   | 16   | 16    | 12    |
| X                                  | M3*5     | M3*6      | M3*6 | M4*7 | M5*8 | M6*10 | M8*10 |
| ØY                                 | 36       | 45        | -    | -    | -    | -     | -     |
| Z                                  | 5.5      | 5.5       | -    | -    | -    | -     | -     |



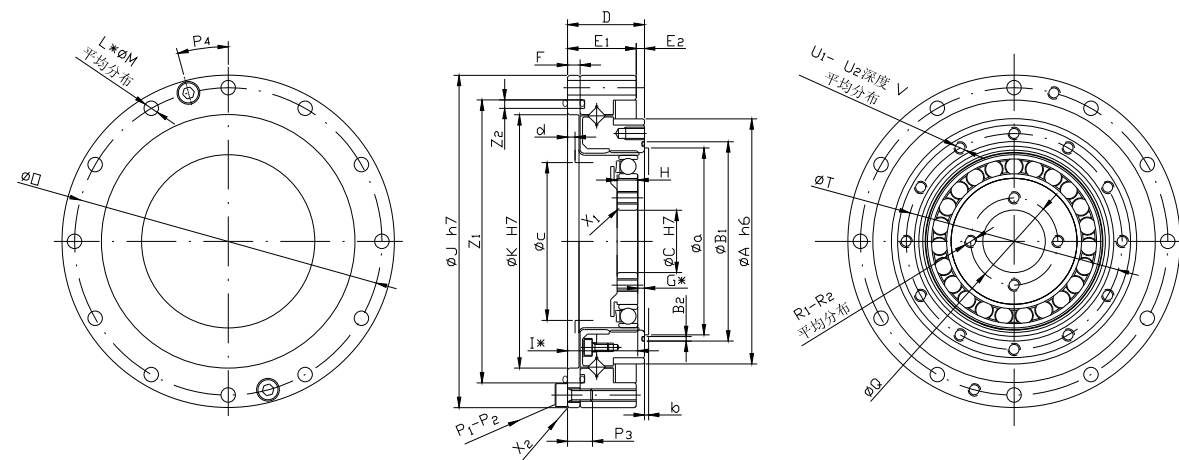
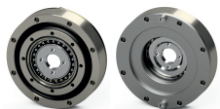
ZLHS-XX-XX-C-I Series Size Chart

| Model Symbol | 14       | 17        | 20                               | 25                              | 32                              | 40                              | 45                                |
|--------------|----------|-----------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------------|
| ØA h7        | 70       | 80        | 90                               | 110                             | 142                             | 170                             | 190                               |
| ØB           | 54       | 64        | 75                               | 90                              | 115                             | 140                             | 160                               |
| ØC h7        | 36       | 45        | 50                               | 60                              | 85                              | 100                             | 120                               |
| ØD h7        | 74       | 84        | 95                               | 115                             | 147                             | 175                             | 195                               |
| ØE h6        | 6        | 8         | 10                               | 14                              | 14                              | 16                              | 19                                |
| F            | 50.5     | 56        | 63.5                             | 72.5                            | 84.5                            | 100                             | 108                               |
| G            | 15       | 17        | 21                               | 26                              | 26                              | 31                              | 31                                |
| H            | 20.5     | 23        | 25                               | 26                              | 32                              | 38                              | 42                                |
| I            | 15       | 16        | 17.5                             | 20.5                            | 26.5                            | 31                              | 35                                |
| J            | 14       | 16        | 20                               | 25                              | 25                              | 30                              | 30                                |
| K            | 9        | 10        | 10.5                             | 10.5                            | 12                              | 14                              | 15                                |
| L            | 8        | 8.5       | 9                                | 8.5                             | 9.5                             | 13                              | 12                                |
| M            | 2.5      | 3         | 3                                | 3                               | 5                               | 5                               | 7                                 |
| N            | 21.7     | 23.9      | 25.5                             | 29.6                            | 36.4                            | 44                              | 47.5                              |
| O            | 11       | 12        | 16.5                             | 22.5                            | 22.5                            | 27.5                            | 28                                |
| P            | -        | -         | 8.2 <sup>0</sup> <sub>-0.1</sub> | 11 <sup>0</sup> <sub>-0.1</sub> | 11 <sup>0</sup> <sub>-0.1</sub> | 13 <sup>0</sup> <sub>-0.1</sub> | 15.5 <sup>0</sup> <sub>-0.1</sub> |
| Q            | 0.5      | 0.5       | 3 <sup>0</sup> <sub>-0.025</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 6 <sup>0</sup> <sub>-0.03</sub>   |
| R            | -        | -         | 3 <sup>0</sup> <sub>-0.025</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 5 <sup>0</sup> <sub>-0.03</sub> | 6 <sup>0</sup> <sub>-0.03</sub>   |
| S            | -        | -         | M3*6                             | M5*10                           | M5*10                           | M5*10                           | M6*12                             |
| ØT           | 64       | 74        | 84                               | 102                             | 132                             | 158                             | 180                               |
| U            | 8        | 12        | 12                               | 12                              | 12                              | 12                              | 18                                |
| ØV           | 3.5      | 3.5       | 3.5                              | 4.5                             | 5.5                             | 6.6                             | 6.6                               |
| ØW           | 44       | 54        | 62                               | 77                              | 100                             | 122                             | 140                               |
| X            | 12平均分布中8 | 20平均分布中16 | 16                               | 16                              | 16                              | 16                              | 12                                |
| Y            | M3*5     | M3*6      | M3*6                             | M4*7                            | M5*8                            | M6*10                           | M8*10                             |



ZLHS-XX-XX-TC-II Series Size Chart

| Model Symbol        | 14                                | 17                                | 20                                | 25                                | 32                              | 40                                | 45                                |
|---------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|
| ØA h6               | 50                                | 60                                | 70                                | 85                                | 110                             | 135                               | 155                               |
| ØB <sub>1</sub>     | 14                                | 18                                | 21                                | 26                                | 26                              | 32                                | 32                                |
| ØC                  | 6                                 | 8                                 | 9                                 | 11                                | 14                              | 14                                | 19                                |
| D*                  | 28.5 <sup>0</sup> <sub>-0.8</sub> | 32.5 <sup>0</sup> <sub>-0.9</sub> | 33.5 <sup>0</sup> <sub>-1.0</sub> | 37 <sup>0</sup> <sub>-1.1</sub>   | 44 <sup>0</sup> <sub>-1.1</sub> | 53 <sup>0</sup> <sub>-1.1</sub>   | 58 <sup>0</sup> <sub>-1.1</sub>   |
| E                   | 23.5                              | 26.5                              | 29                                | 34                                | 42                              | 51                                | 56.5                              |
| F*                  | 5                                 | 6                                 | 4.5                               | 3                                 | 2                               | 2                                 | 1.5                               |
| G                   | 2.4                               | 3                                 | 3                                 | 3.3                               | 3.6                             | 4                                 | 4.5                               |
| H                   | 14.1                              | 16                                | 17.5                              | 18.7                              | 23.4                            | 29                                | 32                                |
| I                   | 7                                 | 7.5                               | 8.5                               | 12                                | 15                              | 18                                | 20                                |
| J                   | 6                                 | 6.5                               | 7.5                               | 10                                | 14                              | 17                                | 19                                |
| L                   | 17.6 <sup>0</sup> <sub>-0.1</sub> | 19.5 <sup>0</sup> <sub>-0.1</sub> | 20.1 <sup>0</sup> <sub>-0.1</sub> | 20.2 <sup>0</sup> <sub>-0.1</sub> | 22 <sup>0</sup> <sub>-0.1</sub> | 27.5 <sup>0</sup> <sub>-0.1</sub> | 27.9 <sup>0</sup> <sub>-0.1</sub> |
| ØM <sub>1</sub> h7  | 70                                | 80                                | 90                                | 110                               | 142                             | 170                               | 190                               |
| ØM <sub>2</sub> h7  | 48                                | 60                                | 70                                | 88                                | 114                             | 140                               | 158                               |
| O                   | 8                                 | 12                                | 12                                | 12                                | 12                              | 12                                | 18                                |
| ØP                  | 3.5                               | 3.5                               | 3.5                               | 4.5                               | 5.5                             | 6.6                               | 6.6                               |
| ØR                  | 64                                | 74                                | 84                                | 102                               | 132                             | 158                               | 180                               |
| S                   | 2                                 | 4                                 | 4                                 | 4                                 | 4                               | 6                                 | 6                                 |
| T <sub>1</sub>      | M3*6                              | M3*6                              | M3*8                              | M3*8                              | M4*8                            | M4*10                             | M4*8                              |
| T <sub>2</sub> (角度) | 22.5°                             | 15°                               | 15°                               | 15°                               | 15°                             | 15°                               | 10°                               |
| ØU                  | 44                                | 54                                | 62                                | 77                                | 100                             | 122                               | 140                               |
| V                   | -                                 | -                                 | 10.4                              | 12.8                              | 16.3                            | 16.3                              | 21.8                              |
| W Js9               | -                                 | -                                 | 3                                 | 4                                 | 5                               | 5                                 | 6                                 |
| X <sub>1</sub>      | 12平均分布中8                          | 12平均分布中16                         | 16                                | 16                                | 16                              | 16                                | 12                                |
| X <sub>2</sub>      | M3*5                              | M3*6                              | M3*6                              | M4*7                              | M5*8                            | M6*10                             | M8*10                             |
| Y <sub>1</sub>      | Ø3.5*6                            | Ø3.5*6.5                          | Ø3.5*7.5                          | Ø4.5*10                           | Ø5.5*14                         | Ø6.6*17                           | Ø9*19                             |
| Y <sub>2</sub>      | 0.25                              | 0.25                              | 0.25                              | 0.25                              | 0.25                            | 0.3                               | 0.5                               |
| Z <sub>1</sub>      | 4                                 | 4                                 | 4                                 | 4                                 | 4                               | 4                                 | 4                                 |
| Z <sub>2</sub>      | M3*6                              | M3*6                              | M3*8                              | M3*10                             | M4*16                           | M5*20                             | M5*20                             |
| Øc                  | 31                                | 38                                | 45                                | 56                                | 73                              | 90                                | 101                               |
| d                   | 1.7                               | 2.1                               | 2                                 | 2                                 | 2                               | 2                                 | 2.3                               |



ZLHD-XX-XX Series Size Chart

| Model Symbol    | 14                                | 17                                | 20                                | 25                                 | 32                                 |
|-----------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------|
| ØA h6           | 49 <sup>0</sup> <sub>-0.016</sub> | 59 <sup>0</sup> <sub>-0.019</sub> | 69 <sup>0</sup> <sub>-0.019</sub> | 84 <sup>0</sup> <sub>-0.022</sub>  | 110 <sup>0</sup> <sub>-0.022</sub> |
| ØB <sub>1</sub> | 39.1 <sup>+0.1</sup> <sub>0</sub> | 48 <sup>+0.1</sup> <sub>0</sub>   | 56.8 <sup>+0.1</sup> <sub>0</sub> | 70.5 <sup>+0.1</sup> <sub>0</sub>  | 92 <sup>+0.1</sup> <sub>0</sub>    |
| B <sub>2</sub>  | 0.8 <sup>+0.15</sup> <sub>0</sub> | 1.1 <sup>+0.25</sup> <sub>0</sub> | 1.4 <sup>+0.25</sup> <sub>0</sub> | 1.7 <sup>+0.25</sup> <sub>0</sub>  | 2 <sup>+0.25</sup> <sub>0</sub>    |
| ØC H7           | 11 <sup>+0.018</sup> <sub>0</sub> | 15 <sup>+0.018</sup> <sub>0</sub> | 20 <sup>+0.021</sup> <sub>0</sub> | 24 <sup>+0.021</sup> <sub>0</sub>  | 32 <sup>+0.025</sup> <sub>0</sub>  |
| D               | 17.5 <sup>±0.1</sup>              | 18.5 <sup>±0.1</sup>              | 19 <sup>±0.1</sup>                | 22 <sup>±0.1</sup>                 | 27.9 <sup>±0.1</sup>               |
| E <sub>1</sub>  | 15.5                              | 16.5                              | 17                                | 20                                 | 23.6                               |
| E <sub>2</sub>  | 2                                 | 2                                 | 2                                 | 2                                  | 4.3                                |
| F               | 2.4                               | 3                                 | 3                                 | 3.3                                | 3.6                                |
| G*              | 1.8                               | 1.6                               | 1.2                               | 0.4                                | 0.6                                |
| H               | 4 <sup>0</sup> <sub>-0.1</sub>    | 5 <sup>0</sup> <sub>-0.1</sub>    | 5.2 <sup>0</sup> <sub>-0.1</sub>  | 6.3 <sup>0</sup> <sub>-0.1</sub>   | 8.6 <sup>0</sup> <sub>-0.1</sub>   |
| I*              | 15.7 <sup>0</sup> <sub>-0.2</sub> | 16.9 <sup>0</sup> <sub>-0.2</sub> | 17.8 <sup>0</sup> <sub>-0.2</sub> | 21.6 <sup>0</sup> <sub>-0.2</sub>  | 27.3 <sup>0</sup> <sub>-0.2</sub>  |
| ØJ h7           | 70 <sup>0</sup> <sub>-0.03</sub>  | 80 <sup>0</sup> <sub>-0.03</sub>  | 90 <sup>0</sup> <sub>-0.035</sub> | 110 <sup>0</sup> <sub>-0.035</sub> | 142 <sup>0</sup> <sub>-0.04</sub>  |
| ØK H7           | 50 <sup>+0.025</sup> <sub>0</sub> | 61 <sup>+0.03</sup> <sub>0</sub>  | 71 <sup>+0.03</sup> <sub>0</sub>  | 88 <sup>+0.035</sup> <sub>0</sub>  | 114 <sup>+0.035</sup> <sub>0</sub> |
| ØM              | 3.5                               | 3.5                               | 3.5                               | 4.5                                | 5.5                                |
| ØO              | 64                                | 74                                | 84                                | 102                                | 132                                |
| P <sub>1</sub>  | 2                                 | 2                                 | 2                                 | 4                                  | 4                                  |
| P <sub>2</sub>  | M3                                | M3                                | M3                                | M3                                 | M4                                 |
| P <sub>3</sub>  | 6                                 | 6                                 | 6                                 | 8                                  | 10                                 |
| P <sub>4</sub>  | 22.5°                             | 15°                               | 15°                               | 15°                                | 15°                                |
| ØQ              | 17                                | 21                                | 26                                | 30                                 | 40                                 |
| R <sub>1</sub>  | 4                                 | 4                                 | 4                                 | 4                                  | 4                                  |
| R <sub>2</sub>  | M3                                | M3                                | M3                                | M3                                 | M4                                 |
| ØT              | 43                                | 52                                | 61.4                              | 76                                 | 99                                 |
| U <sub>1</sub>  | 8                                 | 12                                | 12                                | 12                                 | 12                                 |
| U <sub>2</sub>  | M3                                | M3                                | M3                                | M4                                 | M5                                 |
| V               | 4.5                               | 4.5                               | 4.5                               | 6                                  | 8                                  |
| X <sub>1</sub>  | C0.4                              | C0.4                              | C0.5                              | C0.5                               | C0.5                               |
| X <sub>2</sub>  | C0.4                              | C0.4                              | C0.5                              | C0.5                               | C0.5                               |
| Z <sub>1</sub>  | 57 <sup>+0.1</sup> <sub>0</sub>   | 68.1 <sup>+0.1</sup> <sub>0</sub> | 78 <sup>+0.1</sup> <sub>0</sub>   | 94.8 <sup>+0.1</sup> <sub>0</sub>  | 123 <sup>+0.1</sup> <sub>0</sub>   |
| Z <sub>2</sub>  | 2 <sup>+0.25</sup> <sub>0</sub>   | 2 <sup>+0.25</sup> <sub>0</sub>   | 2.7 <sup>+0.25</sup> <sub>0</sub> | 2.4 <sup>+0.25</sup> <sub>0</sub>  | 2.7 <sup>+0.25</sup> <sub>0</sub>  |
| Øa              | 36.5                              | 45                                | 53                                | 66                                 | 86                                 |
| b               | 1                                 | 1                                 | 1.5                               | 1.5                                | 2                                  |
| Øc              | 31                                | 38                                | 45                                | 56                                 | 73                                 |
| d               | 1.4                               | 1.8                               | 1.7                               | 1.8                                | 1.8                                |



ZLCS-mini Series Rating Parameter Table

| Model | Speed ratio | Enter 2000r/min Rated torque | Start stop allowed when Peak torque | load average Torque capacity allowed maximum value | momentary permission Maximum torque | maximum allowed input speed | Allow average input speed | Backlash | Design life |
|-------|-------------|------------------------------|-------------------------------------|----------------------------------------------------|-------------------------------------|-----------------------------|---------------------------|----------|-------------|
| /     | /           | Nm                           | Nm                                  | Nm                                                 | Nm                                  | r/min                       | r/min                     | Arcsec   | Hour        |

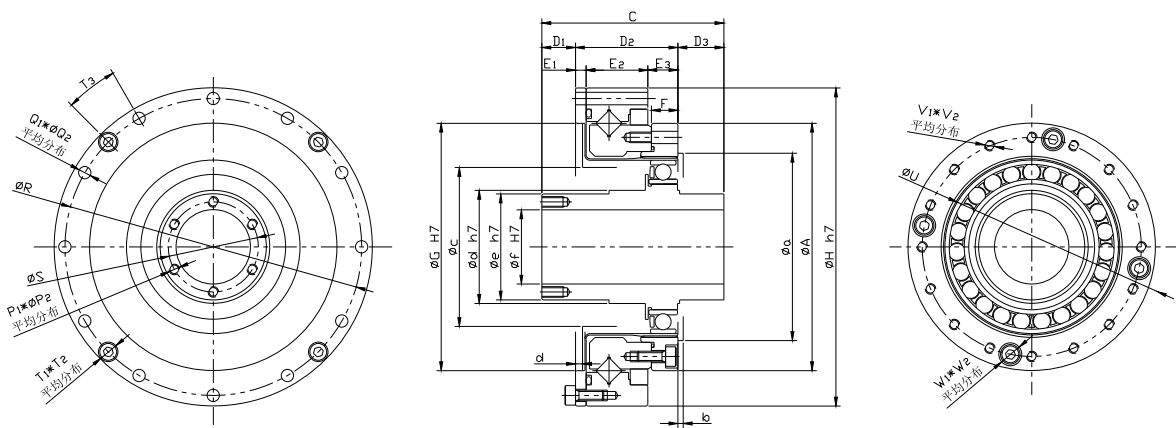
ZLCS-mini-XX-XX Size Chart

| Model Symbol | 5                                | 8                                | 11                               | 14                               |
|--------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| ØA           | 29                               | 43.5                             | 8000 58                          | 73                               |
| B*           | 20.5                             | 31                               | 38.3                             | 45                               |
| C            | 1.25                             | 24.5                             | 30                               | 37.5                             |
| D*           | 4.8 <sup>0</sup> <sub>-0.2</sub> | 6.5 <sup>0</sup> <sub>-0.3</sub> | 8.3 <sup>0</sup> <sub>-0.7</sub> | 7.5 <sup>0</sup> <sub>-0.8</sub> |
| E            | 12.7                             | 19                               | 23.5                             | 28                               |
| F            | 3                                | 5.5                              | 6.5                              | 9.5                              |
| G            | 1.3                              | 1.5                              | 2                                | 2.5                              |
| H            | 3.1                              | 3                                | 3                                | 5                                |
| I            | 0.5                              | 0.5                              | 0.5                              | 1.5                              |
| J            | 2                                | 2                                | 3                                | 2.5                              |
| K            | 2                                | 2                                | 2                                | 2                                |
| L            | M2*3                             | M2*3                             | M3*4                             | M3*4                             |
| M            | 1.7                              | 2.2                              |                                  | 3.5                              |
| N            | 6                                | 12                               |                                  | 17.6                             |
| O            | 4.85                             | 7.3                              |                                  | 11.4                             |
| ØP h7        | 20.5                             | 31                               |                                  | 51                               |
| ØQ           | 13                               | 20                               |                                  | 33.5                             |
| ØR H7        | 5                                | 9                                |                                  | 15                               |
| ØS h6        | 17                               | 26                               | 35                               | 43                               |
| ØT H7        | 3                                | 3                                | 5                                | 6                                |
| □U           | 22±0.42                          | 32±0.46                          | 43±0.5                           | 53±0.5                           |
| ØV           | 9.8                              | 15.5                             | 20.5                             | 25.5                             |
| ØW           | 25                               | 37.5                             | 50                               | 62                               |
| X            | 3                                | 4                                | 6                                | 6                                |
| Y            | M2*3                             | M3*4                             | M3*5                             | M4*6                             |
| a            | 2                                | 2                                | 2                                | 2                                |
| b            | M2                               | M3                               | M4                               | M5                               |
| c            | 2                                | 2                                | 2                                | 2                                |
| Ød           | 2.3                              | 3.4                              | 4.5                              | 5.5                              |

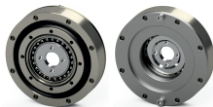


ZLHS series

ZLHS series



| ZLHS-XX-XX-TC-II Series Size Chart |                                   |                                   |                                   |                                   |                                   |                                 |                                   |
|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|---------------------------------|-----------------------------------|
| Model Symbol                       | 14                                | 17                                | 20                                | 25                                | 32                                | 40                              | 45                                |
| ØA h6                              | 50                                | 60                                | 70                                | 85                                | 110                               | 135                             | 155                               |
| C                                  | 52.5 <sup>0</sup> <sub>-0.1</sub> | 56.5 <sup>0</sup> <sub>-0.1</sub> | 51.5 <sup>0</sup> <sub>-0.1</sub> | 55.5 <sup>0</sup> <sub>-0.1</sub> | 65.5 <sup>0</sup> <sub>-0.1</sub> | 79 <sup>0</sup> <sub>-0.1</sub> | 85 <sup>0</sup> <sub>-0.1</sub>   |
| D <sub>1</sub> *                   | 16 <sup>+0.8</sup> <sub>0</sub>   | 16 <sup>+0.9</sup> <sub>0</sub>   | 9.5 <sup>+1.0</sup> <sub>0</sub>  | 10 <sup>+1.1</sup> <sub>0</sub>   | 12 <sup>+1.1</sup> <sub>0</sub>   | 13 <sup>+1.1</sup> <sub>0</sub> | 13.5 <sup>+1.1</sup> <sub>0</sub> |
| D <sub>2</sub>                     | 23.5                              | 26.5                              | 29                                | 34                                | 42                                | 51                              | 56.5                              |
| D <sub>3</sub> *                   | 13                                | 14                                | 13                                | 11.5                              | 11.5                              | 15                              | 15                                |
| E <sub>1</sub>                     | 2.4                               | 3                                 | 3                                 | 3.3                               | 3.6                               | 4                               | 4.5                               |
| E <sub>2</sub>                     | 14.1                              | 16                                | 17.5                              | 18.7                              | 23.4                              | 29                              | 32                                |
| E <sub>3</sub>                     | 7                                 | 7.5                               | 8.5                               | 12                                | 15                                | 18                              | 20                                |
| F                                  | 6                                 | 6.5                               | 7.5                               | 10                                | 14                                | 17                              | 19                                |
| ØG H6                              | 48                                | 60                                | 70                                | 88                                | 114                               | 140                             | 158                               |
| ØH h6                              | 70                                | 80                                | 90                                | 110                               | 142                               | 170                             | 190                               |
| P <sub>1</sub>                     | 3                                 | 3                                 | 6                                 | 6                                 | 6                                 | 6                               | 6                                 |
| P <sub>2</sub>                     | M3(顶丝)                            | M3(顶丝)                            | M3*6                              | M3*6                              | M3*6                              | M4*8                            | M4*8                              |
| Q <sub>1</sub>                     | 8                                 | 12                                | 12                                | 12                                | 12                                | 12                              | 18                                |
| ØQ <sub>2</sub>                    | 3.5                               | 3.5                               | 3.5                               | 4.5                               | 5.5                               | 6.6                             | 6.6                               |
| ØR                                 | 64                                | 74                                | 84                                | 102                               | 132                               | 158                             | 180                               |
| ØS                                 | -                                 | -                                 | 25.5                              | 33.5                              | 40.5                              | 52                              | 58                                |
| T <sub>1</sub>                     | 2                                 | 4                                 | 4                                 | 4                                 | 4                                 | 6                               | 6                                 |
| T <sub>2</sub>                     | M3*6                              | M3*6                              | M3*6                              | M3*8                              | M4*8                              | M4*10                           | M4*10                             |
| T <sub>3</sub> (角度)                | 22.5°                             | 15°                               | 15°                               | 15°                               | 15°                               | 15°                             | 10°                               |
| ØU                                 | 44                                | 54                                | 62                                | 77                                | 100                               | 122                             | 140                               |
| V <sub>1</sub>                     | 12平均分布中8                          | 20平均分布中16                         | 16                                | 16                                | 16                                | 16                              | 12                                |
| V <sub>2</sub>                     | M3*5                              | M3*6                              | M3*6                              | M4*7                              | M5*8                              | M6*10                           | M8*10                             |
| V <sub>3</sub>                     | Ø3.5*6                            | Ø3.5*6.5                          | Ø3.5*7.5                          | Ø4.5*10                           | Ø5.5*14                           | Ø6.6*17                         | Ø9*19                             |
| W <sub>1</sub>                     | 4                                 | 4                                 | 4                                 | 4                                 | 4                                 | 4                               | 4                                 |
| W <sub>2</sub>                     | M3*6                              | M3*6                              | M3*8                              | M3*10                             | M4*16                             | M5*20                           | M5*20                             |
| Øa                                 | 38                                | 45                                | 53                                | 66                                | 86                                | 106                             | 119                               |
| b                                  | 1                                 | 1                                 | 1.5                               | 1.5                               | 1.5                               | 2                               | 2                                 |
| Øc                                 | 31                                | 38                                | 45                                | 56                                | 73                                | 90                              | 101                               |
| d                                  | 1.7                               | 2.1                               | 2                                 | 2                                 | 2                                 | 2                               | 2.3                               |
| Øf                                 | 14                                | 19                                | 21                                | 29                                | 36                                | 46                              | 52                                |



ZLHD series

ZLHD series

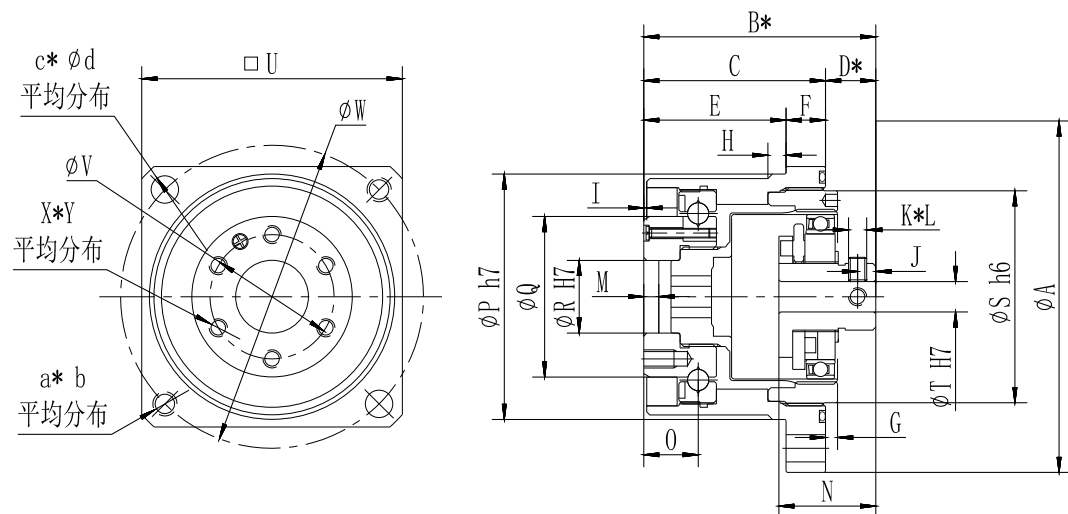
| ZLHD Series Rated Parameter Table |             |                              |                                     |                                                    |                                     |                             |                           |          |             |
|-----------------------------------|-------------|------------------------------|-------------------------------------|----------------------------------------------------|-------------------------------------|-----------------------------|---------------------------|----------|-------------|
| Model                             | Speed ratio | Enter 2000r/min Rated torque | Start stop allowed when Peak torque | load average Torque capacity allowed maximum value | momentary permission Maximum torque | maximum allowed input speed | Allow average input speed | Backlash | Design life |
| /                                 | /           | Nm                           | Nm                                  | Nm                                                 | Nm                                  | r/min                       | r/min                     | Arcsec   | Hour        |
| 14                                | 50          | 3.2                          | 10.5                                | 4.3                                                | 21                                  | 8000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 5                            | 17                                  | 7.2                                                | 32                                  |                             |                           |          |             |
| 17                                | 50          | 10                           | 21                                  | 16                                                 | 44                                  | 7000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 14                           | 34                                  | 25                                                 | 67                                  |                             |                           |          |             |
| 20                                | 50          | 14.5                         | 36                                  | 21                                                 | 65                                  | 6000                        | 3500                      | =30      | 12000       |
|                                   | 100         | 25                           | 53                                  | 31                                                 | 89                                  |                             |                           |          |             |
|                                   | 160         | 25                           | 59                                  | 31                                                 | 89                                  |                             |                           |          |             |
| 25                                | 50          | 24                           | 65                                  | 34                                                 | 121                                 | 5500                        | 3500                      | =30      | 12000       |
|                                   | 100         | 43                           | 102                                 | 70                                                 | 175                                 |                             |                           |          |             |
|                                   | 160         | 43                           | 115                                 | 70                                                 | 196                                 |                             |                           |          |             |
| 32                                | 50          | 49                           | 143                                 | 70                                                 | 249                                 | 4500                        | 3500                      | =30      | 12000       |
|                                   | 100         | 91                           | 225                                 | 143                                                | 401                                 |                             |                           |          |             |
|                                   | 160         | 91                           | 249                                 | 143                                                | 420                                 |                             |                           |          |             |





ZLCS-mini series

ZLCS-mini series



ZLCS-mini-XX-XX Size Chart

| Model Symbol | 5                                | 8                                | 11                               | 14                               |
|--------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| ØA           | 29                               | 43.5                             | 58                               | 73                               |
| B*           | 20.5                             | 31                               | 38.3                             | 45                               |
| C            | 15.7                             | 24.5                             | 30                               | 37.5                             |
| D*           | 4.8 <sup>0</sup> <sub>-0.2</sub> | 6.5 <sup>0</sup> <sub>-0.3</sub> | 8.3 <sup>0</sup> <sub>-0.7</sub> | 7.5 <sup>0</sup> <sub>-0.8</sub> |
| E            | 12.7                             | 19                               | 23.5                             | 28                               |
| F            | 3                                | 5.5                              | 6.5                              | 9.5                              |
| G            | 1.3                              | 1.5                              | 2                                | 2.5                              |
| H            | 2                                | 3                                | 3                                | 5                                |
| I            | 0.5                              | 0.5                              | 0.5                              | 1.5                              |
| J            | 2                                | 2                                | 3                                | 2.5                              |
| K            | 2                                | 2                                | 2                                | 2                                |
| L            | M2*3                             | M2*3                             | M3*4                             | M3*4                             |
| M            | 1.7                              | 2.2                              | 2.5                              | 3.5                              |
| N            | 6                                | 12                               | 16                               | 17.6                             |
| O            | 4.85                             | 7.3                              | 9                                | 11.4                             |
| ØP h7        | 20..5                            | 31                               | 40.5                             | 51                               |
| ØQ           | 13                               | 20                               | 26.5                             | 33.5                             |
| ØR H7        | 5                                | 9                                | 12                               | 15                               |
| ØS h6        | 17                               | 26                               | 35                               | 43                               |
| ØT H7        | 3                                | 3                                | 5                                | 6                                |
| □U           | 22±0.42                          | 32±0.46                          | 43±0.5                           | 53±0.5                           |
| ØV           | 9.8                              | 15.5                             | 20.5                             | 25.5                             |
| ØW           | 25                               | 37.5                             | 50                               | 62                               |
| X            | 3                                | 4                                | 6                                | 6                                |
| Y            | M2*3                             | M3*4                             | M3*5                             | M4*6                             |
| a            | 2                                | 2                                | 2                                | 2                                |
| b            | M2                               | M3                               | M4                               | M5                               |
| c            | 2                                | 2                                | 2                                | 2                                |
| Ød           | 2.3                              | 3.4                              | 4.5                              | 5.5                              |



ZLSF series

- lighter;
- thinner;
- More concise.



ZLSF series

ZLSF-XX-XX Series Parameter Table

| Model | Speed ratio | Enter 2000r/min Rated torque | start stop<br>Stop time<br>allowed<br>Xu Defeng<br>value torque | average<br>negative<br>load torque<br>permission<br>maximum value | moment<br>allow<br>maximum<br>Torque | allow<br>Highest<br>enter<br>Speed | allow<br>average<br>enter<br>Speed | Backlash | Design life |
|-------|-------------|------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|----------|-------------|
| /     | /           | Nm                           | Nm                                                              | Nm                                                                | Nm                                   | r/min                              | r/min                              | Arcsec   | Hour        |
| 11    | 30          | 2                            | 4.1                                                             | 3.1                                                               | 8                                    | 5000                               | 3000                               | =30      | 9000        |
|       | 50          | 3.1                          | 7.8                                                             | 5                                                                 | 15                                   |                                    |                                    | =25      |             |
|       | 100         | 4.5                          | 10                                                              | 8.2                                                               | 22                                   |                                    |                                    | =25      |             |
| 14    | 30          | 3.1                          | 6                                                               | 4.5                                                               | 12                                   | 5000                               | 3000                               | =30      | 9000        |
|       | 50          | 3.8                          | 12                                                              | 5.5                                                               | 25                                   |                                    |                                    | =25      |             |
|       | 100         | 6.6                          | 18                                                              | 8.5                                                               | 38                                   |                                    |                                    | =25      |             |
| 17    | 30          | 6.5                          | 12                                                              | 9.5                                                               | 24                                   | 5000                               | 3000                               | =30      | 9000        |
|       | 50          | 12                           | 25                                                              | 18                                                                | 50                                   |                                    |                                    | =25      |             |
|       | 100         | 16                           | 37                                                              | 28                                                                | 71                                   |                                    |                                    | =25      |             |
| 20    | 30          | 11                           | 20                                                              | 14                                                                | 32                                   | 5000                               | 3000                               | =30      | 9000        |
|       | 50          | 17                           | 41                                                              | 24                                                                | 68                                   |                                    |                                    | =25      |             |
|       | 100         | 28                           | 60                                                              | 34                                                                | 98                                   |                                    |                                    | =25      |             |

Features:

- Lightweight: The entire machine weighs 150~500g;
- Ultra-flat: Overall thickness 20~27.6mm;
- Hollow type: can meet the requirements of hollow threading.

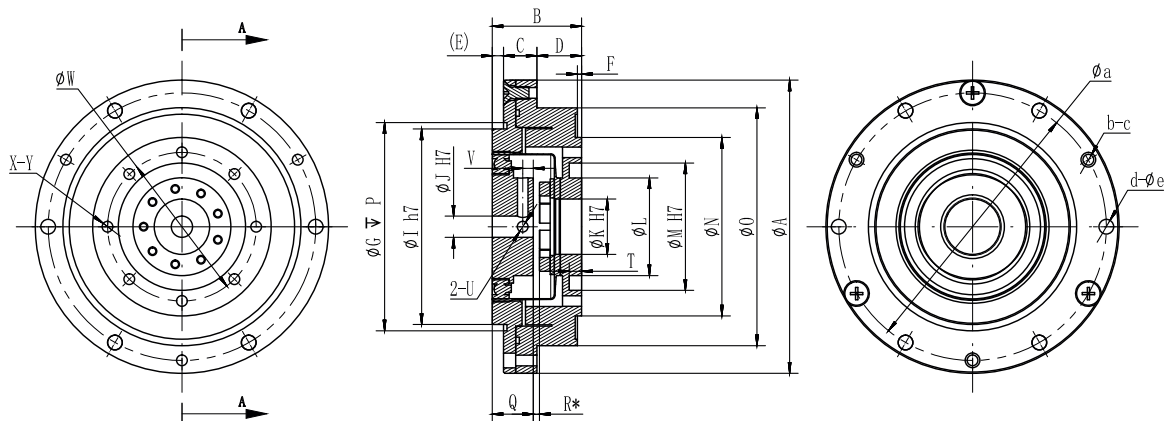
Typical applications:

- Wearable devices: rehabilitation and assistive robots;
- Robotic arm: Desktop collaborative robot.



## ZLSF series

## ZLSF series



**ZLSF-XX-XX Series Size Chart**

| Model Symbol | 11     | 14    | 17   | 20   |
|--------------|--------|-------|------|------|
| Ø A          | 55     | 69    | 80   | 95   |
| B            | 20     | 21.05 | 24.6 | 28.6 |
| C            | 7      | 7.9   | 9.5  | 12.3 |
| D            | 10     | 10.5  | 11.5 | 11.5 |
| E            | 3      | 2.65  | 3.6  | 4.8  |
| F            | 1      | 1     | 0.5  | 0.5  |
| Ø G          | 38     | 49    | 53   | 61   |
| Ø I h7       | 35     | 46    | 50   | 58   |
| Ø J H7       | 5      | 5     | 6.35 | 6.35 |
| Ø K H7       | 9      | 13    | 16   | 16   |
| Ø L          | 18     | 23    | 30   | 32   |
| Ø M H7       | 24     | 30    | 40   | 50   |
| Ø N          | 34     | 42    | 50   | 69   |
| Ø O          | 45     | 56    | 67   | 82   |
| P            | 0.85   | 0.85  | 0.85 | 0.85 |
| Q            | 9.8    | 9.7   | 11.4 | 12   |
| R *          | 0.8    | 1.5   | 1.4  | 2.5  |
| T            | 2      | 2.9   | 3    | 3    |
| U            | M3     | M3    | M3   | M4   |
|              | 2.5    | 2.5   | 2.65 | 3    |
| Ø W          | 29     | 35    | 45   | 56   |
| X            | 8      | 8     | 10   | 16   |
| Y            | M2.5x4 | M3x5  | M3x6 | M3x6 |
| Ø a          | 50     | 63    | 74.2 | 88.5 |
| b            | 3      | 3     | 4    | 4    |
| c            | M2.5   | M3    | M3   | M3   |
| d            | 6      | 6     | 8    | 8    |
| Ø e          | 2.6    | 3.5   | 3.5  | 3.5  |