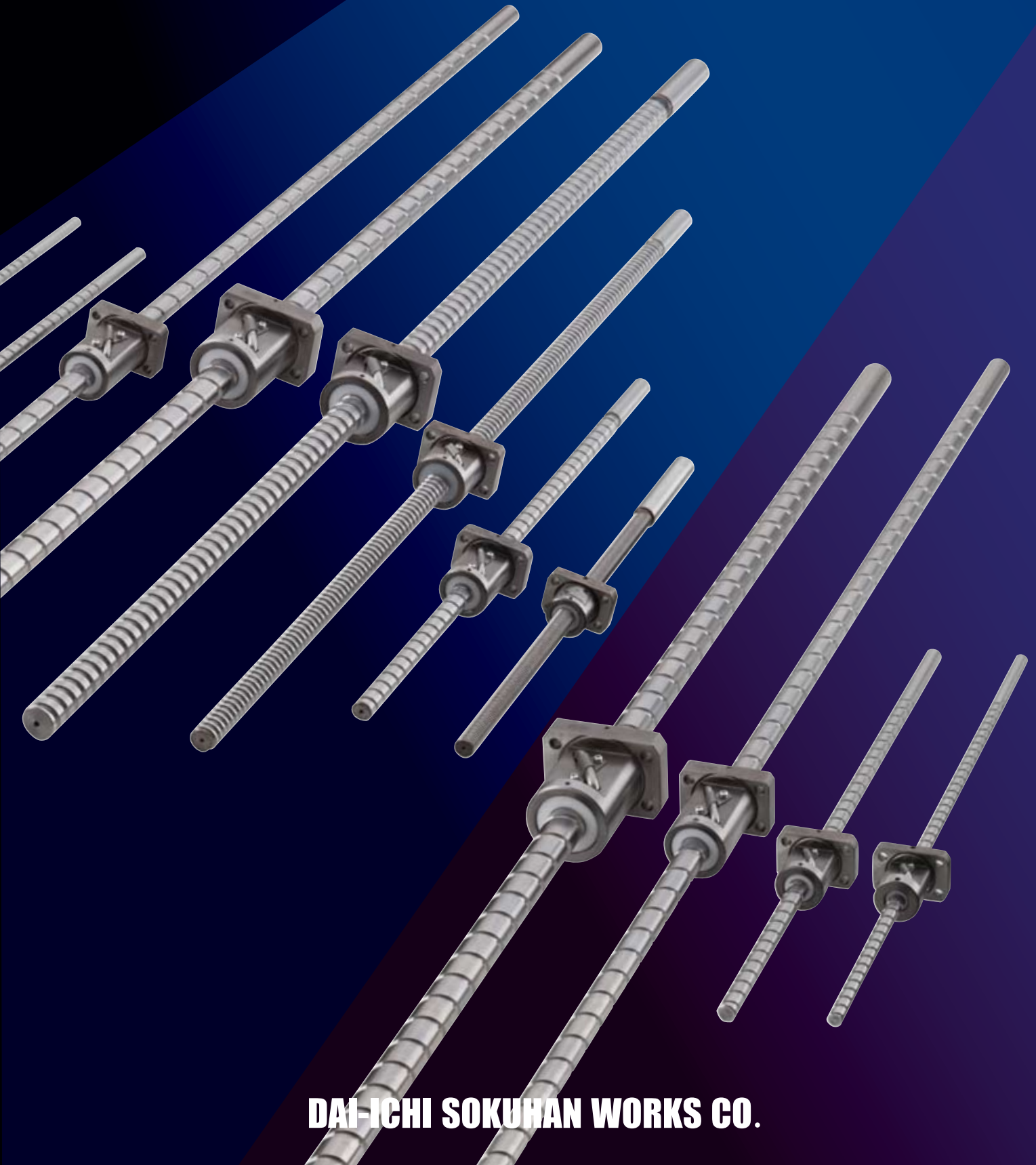




Grade C5/C7

# Un-Worked Shaft Ends Ball Screws



DAI-ICHI SOKUHAN WORKS CO.

## Standard Stock Series

**Accuracy grade C5 / GPR(Plate type)•GTR(Tube type)**

**Accuracy grade C7 / LPT(Plate type)•LTR(Tube type)**

- An ample variety of types to meet various applications.
- A full lineup of long stroke types.
- Short lead time and best cost performance achieved by special machining process.
- Nuts keep compatibility with those of the standard stock series. (Accuracy grade C3)

### • Option

OS units (Oil supply units) are mountable on the product with a diameter from 10 to 25mm.



Note : Refer to the catalog of OS units for detailed specifications.

### • Combination of nominal dia. and nominal lead.

unit : mm

| Nominal dia | Nominal lead |     |       |     |       |       |
|-------------|--------------|-----|-------|-----|-------|-------|
|             | 2            | 4   | 5     | 8   | 10    | 20    |
| 8           | ● ○          | ○   | ●     | ● ○ |       |       |
| 10          | ○            | ● ☆ | ○ ☆   |     | ● ○ ☆ |       |
| 12          | ● ○          |     | ● ○ ☆ |     | ● ○ ☆ | ● ○ ☆ |
| 15          |              |     | ● ○ ☆ |     | ● ○ ☆ | ● ○ ☆ |
| 16          | ●            |     |       |     |       |       |
| 20          |              |     | ● ○ ☆ |     | ● ○ ☆ | ● ○ ☆ |
| 25          |              |     | ○ ☆   |     | ○ ☆   | ○ ☆   |

● : Accuracy grade C5

○ : Accuracy grade C7

☆ : Oil supply unit is available.

- Identification numbers

**GTR** **12** **05** **E** **C5** **T** **- 300** **S01**

Type

Nominal diameter (mm)

Nominal lead (mm)

Number of circuits  
 R : 2.7 turns×1 circuit  
 E : 2.5 turns×1 circuit  
 A : 1.5 turns×1 circuit

Accuracy grade C5 C7

Thread length (mm)

Serial number

Axial clearance mark T : 0.005 include S : 0.020 include

- Tolerance of actual mean travel error ( $\pm e_p$ ) and variation ( $v_y$ )

unit : mm

| Accuracy grade                                 |         | C5  |                | C7  |                  |
|------------------------------------------------|---------|-----|----------------|-----|------------------|
| Item                                           |         | ±ep | v <sub>u</sub> | ±ep | v <sub>300</sub> |
| Effective thread length<br>l <sub>u</sub> (mm) |         |     |                |     |                  |
| above                                          | include |     |                |     |                  |
| —                                              | 125     | 18  | 18             | ※   | 52               |
| 125                                            | 200     | 20  | 18             |     |                  |
| 200                                            | 315     | 23  | 18             |     |                  |
| 315                                            | 400     | 25  | 20             |     |                  |
| 400                                            | 500     | 27  | 20             |     |                  |
| 500                                            | 630     | 30  | 23             |     |                  |
| 630                                            | 800     | 35  | 25             |     |                  |
| 800                                            | 1000    | 40  | 27             |     |                  |
| 1000                                           | 1250    | 46  | 30             |     |                  |
| 1250                                           | 1600    | 54  | 35             |     |                  |
| 1600                                           | 2000    | 65  | 40             |     |                  |

※The tolerances of Grade C7 conform to those of JIS B 1192 Conveyance type (Ct series), and the actual mean travel error is calculated from the variation for a 300mm-effective length using the following formula.

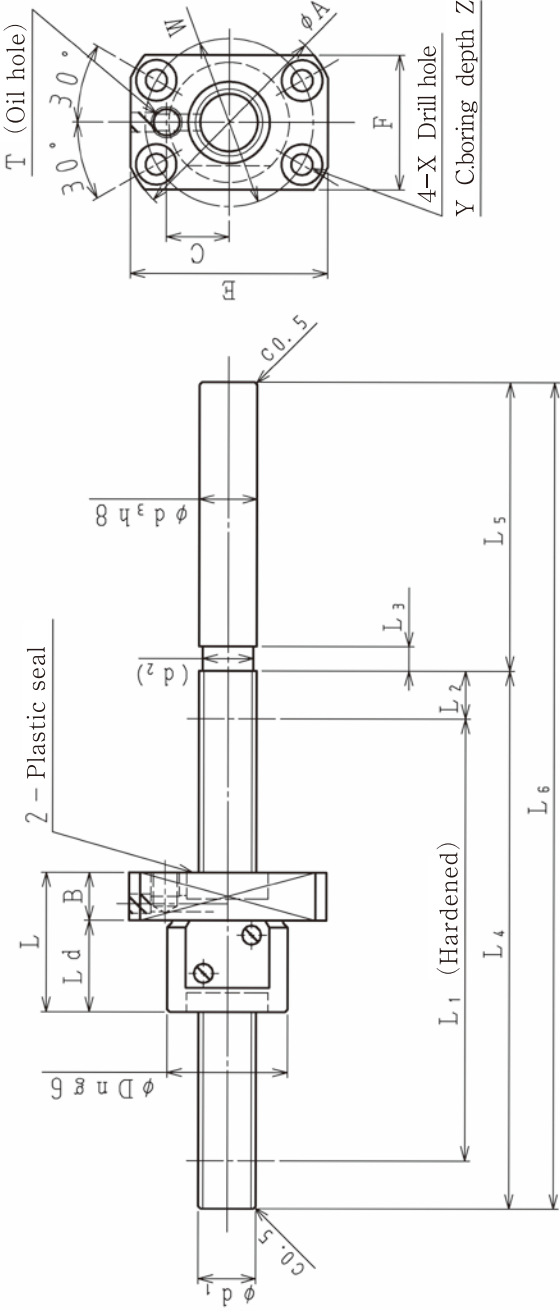
$$e_p = \frac{2 \cdot I_u}{300} \cdot v_{300}$$

- **Material and hardness of ball screws**

| Part name    | Material   | Heat treatment            | Hardness |
|--------------|------------|---------------------------|----------|
| ※Screw shaft | S55C       | Induction hardening       | 58~63HRC |
|              | AISI4150HV |                           |          |
| Nut          | SCM415H    | Carburizing and quenching | 58~63HRC |

※The material is selected depending on the grade of the product.  
C5 : S55C, C7 : AISI4150HV

Standard un-worked shaft end type Accuracy grade C5



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.

Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|-------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
|             | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| GPR0802RC5T | 8           | 6.6      | 2    | 1.5875   | 8.3  | 2.7 × 1                             | 1690               | 3085        | C5                | 0.005 include       |
| GPR1202RC5T | 12          | 10.6     | 2    | 1.5875   | 12.3 | 2.7 × 1                             | 2240               | 4555        |                   |                     |
| GPR1602RC5T | 16          | 14.6     | 2    | 1.5875   | 16.3 | 2.7 × 1                             | 2690               | 6030        |                   |                     |

unit : mm

Shapes and Dimensions of ball screw

Shapes and Dimensions of ball screw

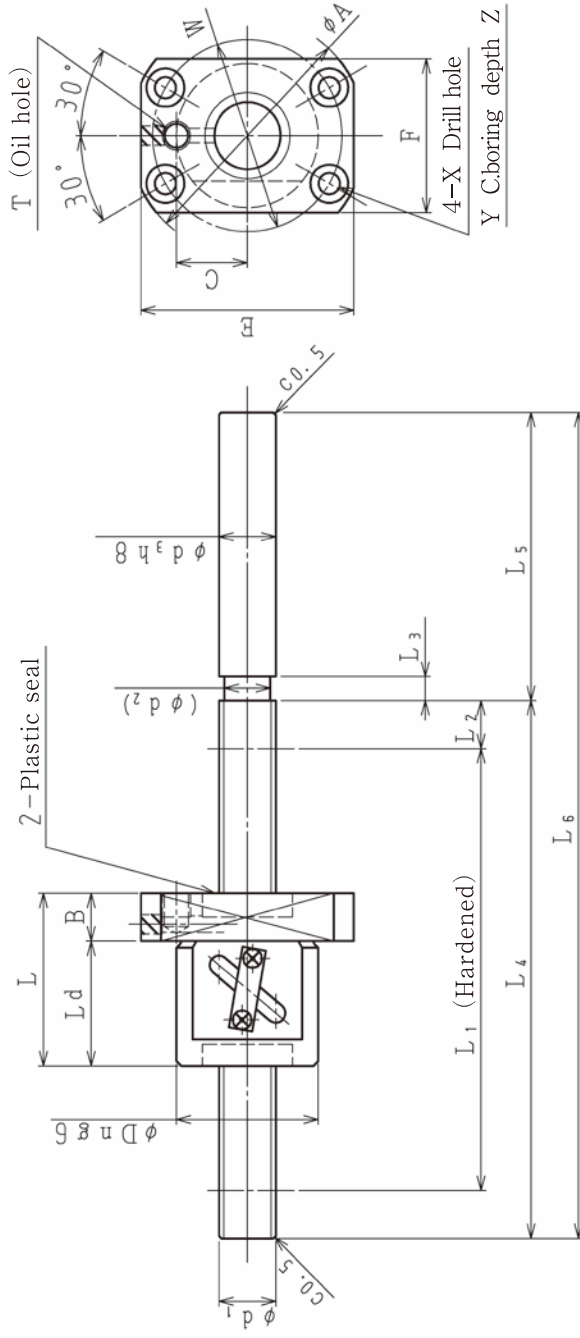
| Identification number | Shaft Dimensions |                |                |                |                |                | Nut Dimensions |                |                |                |    |    |                |    |    |    |    |    |    |     |     |     |
|-----------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----------------|----|----|----|----|----|----|-----|-----|-----|
|                       | L <sub>1</sub>   | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | L <sub>6</sub> | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | D <sub>n</sub> | A  | L  | L <sub>d</sub> | B  | E  | F  | W  | C  | T  | X   | Y   | Z   |
| GPR0802RC5T -220      | 123              | 17             | 3              | 160            | 60             | 220            | 8              | 6.5            | 10             | 20             | 40 | 25 | 19             | 6  | 36 | 25 | 30 | —  | —  | 4.5 | 8   | 4.4 |
| GPR1202RC5T -300      | 125              | 15             | 5              | 160            | 60             | 220            | 12             | 10.5           | 12             | 25             | 45 | 29 | 19             | 10 | 41 | 28 | 35 | 13 | M6 | 4.5 | 8   | 4.4 |
|                       | 205              |                |                | 240            |                | 300            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |     |
| GPR1602RC5T -400      | 205              | 15             | 5              | 240            | 60             | 300            | 16             | 14             | 16             | 30             | 53 | 30 | 19             | 11 | 48 | 32 | 41 | 16 | M6 | 5.5 | 9.5 | 5.4 |
|                       | 305              |                |                | 340            |                | 400            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |     |

unit : mm

unit : mm

2. Keep the nut travel within the range  $L_1$  when the ball screw is used.

## Standard un-worked shaft end type Accuracy grade C5



Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU.  
Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.

2. Keep the nut travel within the range  $L_1$  when the ball screw is used.

## Specifications for ball screw

| Specifications for ball screw |             |          |      |          |      |                                     |                    |             |                   | unit : mm           |
|-------------------------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
| Type                          | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|                               | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| GTR1205EC5T                   | 12          | 9.8      | 5    | 2.3812   | 12.3 | 2.5 × 1                             | 3770               | 6320        | C5                | 0.005 include       |
| GTR1210EC5T                   |             | 10       | 10   |          |      |                                     | 3820               | 6480        |                   |                     |
| GTR1220AC5T                   |             | 20       | 20   |          |      |                                     | 2410               | 3920        |                   |                     |

## Shapes and Dimensions of ball screw

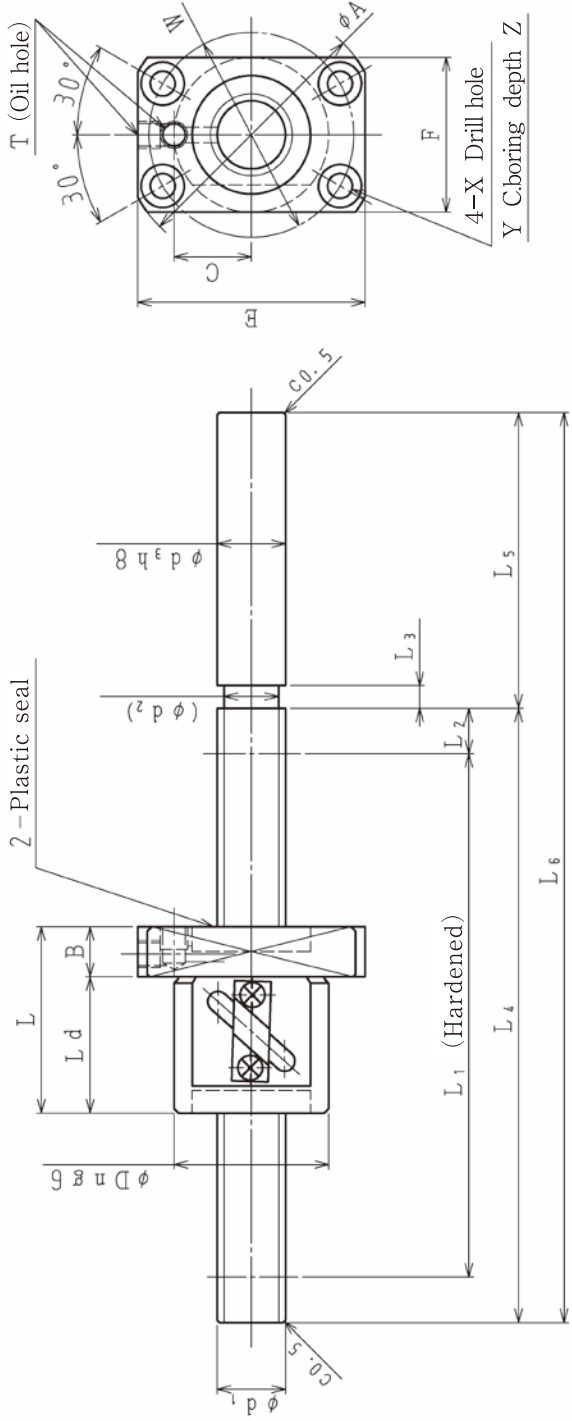
Shapes and Dimensions of ball screw

| Identification number       | Shaft Dimensions |    |    |     |    |     |    | Nut Dimensions |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
|-----------------------------|------------------|----|----|-----|----|-----|----|----------------|----|----|----|----|----|----|----|----|----|----|----|-----|---|-----|
|                             | L1               | L2 | L3 | L4  | L5 | L6  | d1 | d2             | d3 | Dn | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y | Z   |
| -300<br>GTR1205EC5T<br>-450 | 205              | 15 | 5  | 240 | 60 | 300 | 12 | 10.2           | 12 | 30 | 50 | 40 | 30 | 10 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                             | 355              |    |    | 450 |    |     |    |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
| -300<br>GTR1210EC5T<br>-450 | 205              | 15 | 5  | 240 | 60 | 300 | 12 | 10.2           | 12 | 30 | 50 | 50 | 40 | 10 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                             | 355              |    |    | 450 |    |     |    |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
| -450<br>GTR1220AC5T<br>-600 | 355              | 15 | 5  | 390 | 60 | 450 | 12 | 10.2           | 12 | 30 | 50 | 62 | 50 | 12 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                             | 505              |    |    | 600 |    |     |    |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |

unit : mm



Standard un-worked shaft end type Accuracy grade C5



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range  $L_1$  when the ball screw is used.

Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|-------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
|             | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| GTR1505EC5T | 15          | 12.2     | 5    | 3.175    | 15.5 | 2.5×1                               | 6610               | 12545       | C5                | 0.005 include       |
| GTR1510EC5T |             |          | 10   |          |      |                                     | 6610               | 12545       |                   |                     |

Shapes and Dimensions of ball screw

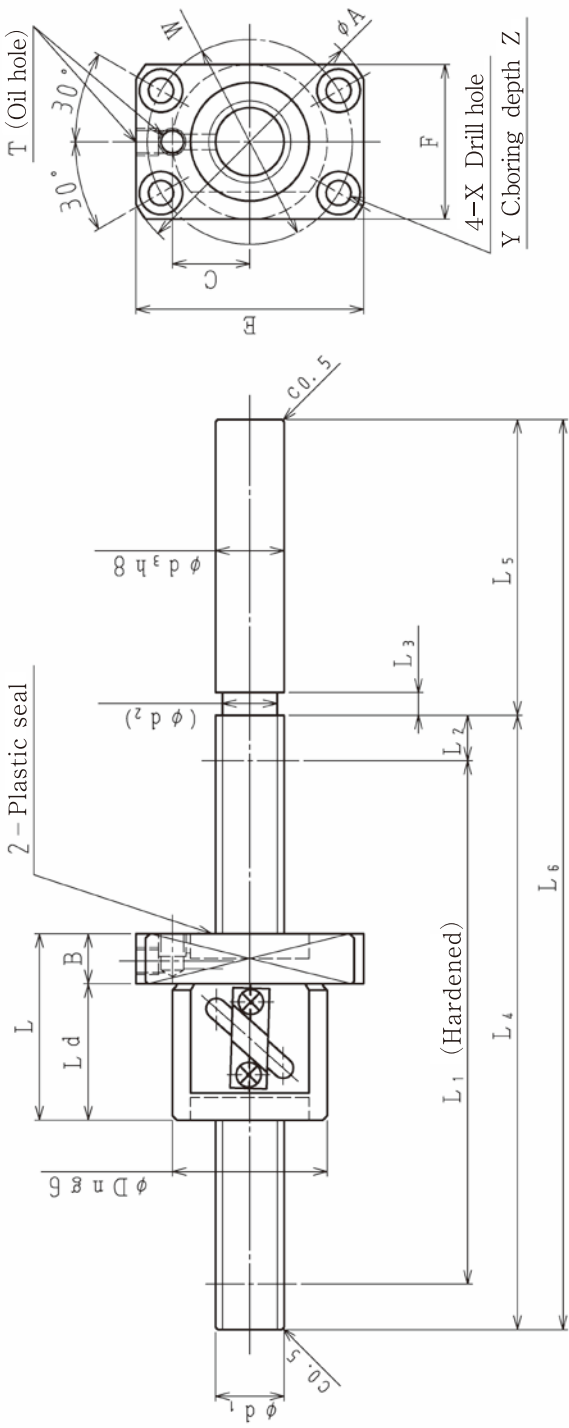
Shapes and Dimensions of ball screw

| Identification number | Shaft Dimensions |     |      |     |      |     | Nut Dimensions |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|-----------------------|------------------|-----|------|-----|------|-----|----------------|------|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|
|                       | L1               | L2  | L3   | L4  | L5   | L6  | d1             | d2   | d3 | Dn | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y   | Z   |  |
| GTR1505EC5T           | -300             | 205 |      | 240 |      | 300 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -450             | 355 |      | 390 |      | 450 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -600             | 505 | 15   | 540 | 60   | 600 | 15             | 12.2 | 15 | 34 | 57 | 41 | 30 | 11 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4 |  |
|                       | -750             | 655 |      | 690 |      | 750 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -900             | 805 |      | 840 |      | 900 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
| GTR1510EC5T           | -300             | 205 |      | 240 |      | 300 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -450             | 355 |      | 390 |      | 450 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -600             | 505 | 15   | 540 | 60   | 600 | 15             | 12.2 | 15 | 34 | 57 | 51 | 40 | 11 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4 |  |
|                       | -750             | 655 |      | 690 |      | 750 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                       | -900             | 805 |      | 840 |      | 900 |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
| -1100                 | 1005             |     | 1040 |     | 1100 |     |                |      |    |    |    |    |    |    |    |    |    |    |    |     |     |     |  |

unit : mm

unit : mm

# Standard un-worked shaft end type Accuracy grade C5



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.

## Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD   | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|-------------|-------------|----------|------|----------|-------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
|             | Nominal dia | Root dia |      |          |       |                                     | Dynamic load       | Static load |                   |                     |
| GTR1520AC5T | 15          | 12.4     | 20   | 3.175    | 15.75 | 1.5×1                               | 4230               | 7840        | C5                | 0.005 include       |
| GTR2005EC5T | 20          | 17.2     | 5    |          | 20.5  | 2.5×1                               | 8150               | 17150       |                   |                     |

unit : mm

## Shapes and Dimensions of ball screw

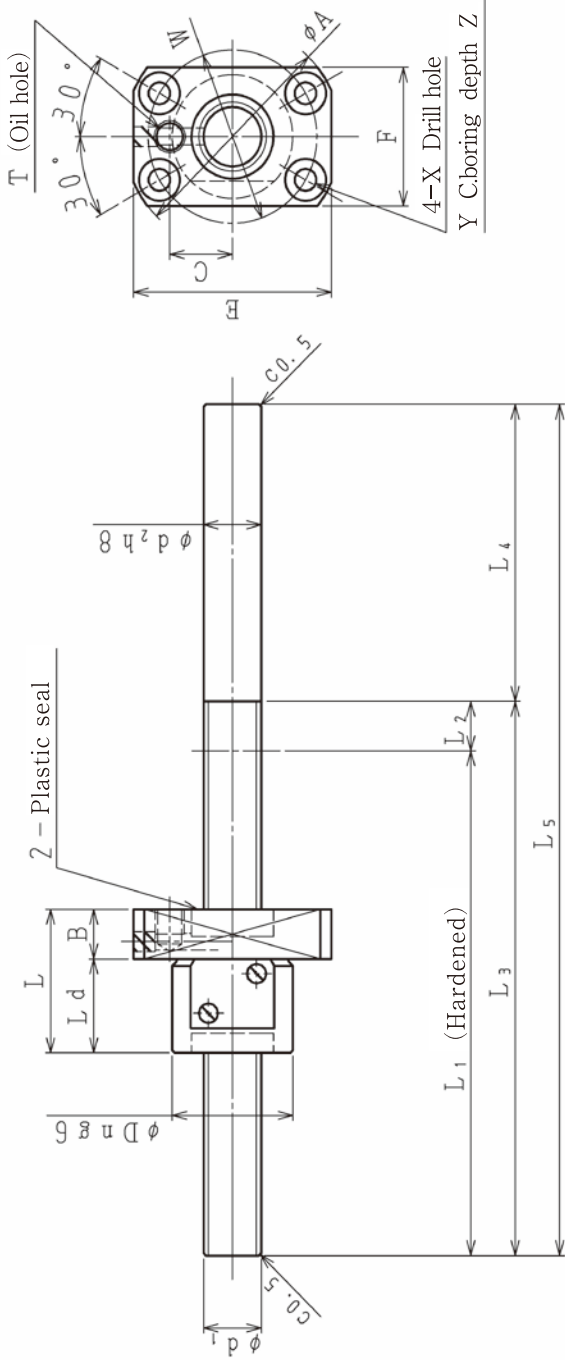
| Shapes and Dimensions of ball screw |       |                  |                |                |                |                |                |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     | unit : mm |  |
|-------------------------------------|-------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----------------|----|----|----|----|----|----|-----|-----|-----------|--|
| Identification number               |       | Shaft Dimensions |                |                |                |                |                |                |                | Nut Dimensions |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     |       | L <sub>1</sub>   | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | L <sub>6</sub> | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | D <sub>n</sub> | A  | L  | L <sub>d</sub> | B  | E  | F  | W  | C  | T  | X   | Y   | Z         |  |
| GTR1520AC5T                         | -450  | 355              |                |                | 390            |                | 450            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -600  | 505              |                |                | 540            |                | 600            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -750  | 655              |                |                | 690            |                | 750            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -900  | 805              | 15             | 5              | 840            | 60             | 900            | 15             | 12.2           | 15             | 34             | 57 | 62 | 50             | 12 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4       |  |
|                                     | -1000 | 905              |                |                | 940            |                | 1000           |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -1100 | 1005             |                |                | 1040           |                | 1100           |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -1300 | 1205             |                |                | 1240           |                | 1300           |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
| GTR2005EC5T                         | -400  | 285              |                |                | 320            |                | 400            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -600  | 485              | 15             | 5              | 520            | 80             | 600            | 20             | 17.2           | 20             | 44             | 67 | 41 | 30             | 11 | 60 | 44 | 55 | 22 | M6 | 5.5 | 9.5 | 5.4       |  |
|                                     | -800  | 685              |                |                | 720            |                | 800            |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |
|                                     | -1000 | 885              |                |                | 920            |                | 1000           |                |                |                |                |    |    |                |    |    |    |    |    |    |     |     |           |  |

unit : mm



| Shapes and Dimensions of ball screw |  |                  |      |    |      |    |      |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    | unit : mm |
|-------------------------------------|--|------------------|------|----|------|----|------|----|------|----|----|----------------|----|----|----|----|----|----|----|---|----|-----|----|-----------|
| Identification number               |  | Shaft Dimensions |      |    |      |    |      |    |      |    |    | Nut Dimensions |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | L1               | L2   | L3 | L4   | L5 | L6   | d1 | d2   | d3 | Dn | A              | L  | Ld | B  | E  | F  | W  | C  | T | X  | Y   | Z  |           |
| GTR2010EC5T                         |  | -600             | 485  |    | 515  |    | 600  |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -800             | 685  |    | 715  |    | 800  |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1000            | 885  | 10 | 915  | 85 | 1000 | 20 | 17.2 | 20 | 46 | 74             | 54 | 41 | 13 | 66 | 46 | 59 | 24 |   | M6 | 6.6 | 11 | 6.5       |
|                                     |  | -1300            | 1185 |    | 1215 |    | 1300 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1500            | 1385 |    | 1415 |    | 1500 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
| GTR2020AC5T                         |  | -800             | 685  |    | 715  |    | 800  |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1000            | 885  |    | 915  |    | 1000 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1300            | 1185 | 10 | 1215 | 85 | 1300 | 20 | 17.2 | 20 | 46 | 74             | 70 | 55 | 15 | 66 | 46 | 59 | 24 |   | M6 | 6.6 | 11 | 6.5       |
|                                     |  | -1500            | 1385 |    | 1415 |    | 1500 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1650            | 1535 |    | 1565 |    | 1650 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |
|                                     |  | -1800            | 1685 |    | 1715 |    | 1800 |    |      |    |    |                |    |    |    |    |    |    |    |   |    |     |    |           |

# Standard un-worked shaft end type Accuracy grade C7



Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.

- 2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.
- 3. Contact us if you need to change the un-worked shaft end length(L<sub>4</sub>).

## Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|-------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
|             | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| LPR0802RC7S | 8           | 6.6      | 2    | 1.5875   | 8.3  | 2.7 × 1                             | 1690               | 3085        | C7                | 0.020 include       |
| LPR1002RC7S | 10          | 8.6      |      |          | 10.3 |                                     | 1980               | 3820        |                   |                     |
| LPR1202RC7S | 12          | 10.6     |      |          | 12.3 |                                     | 2240               | 4555        |                   |                     |

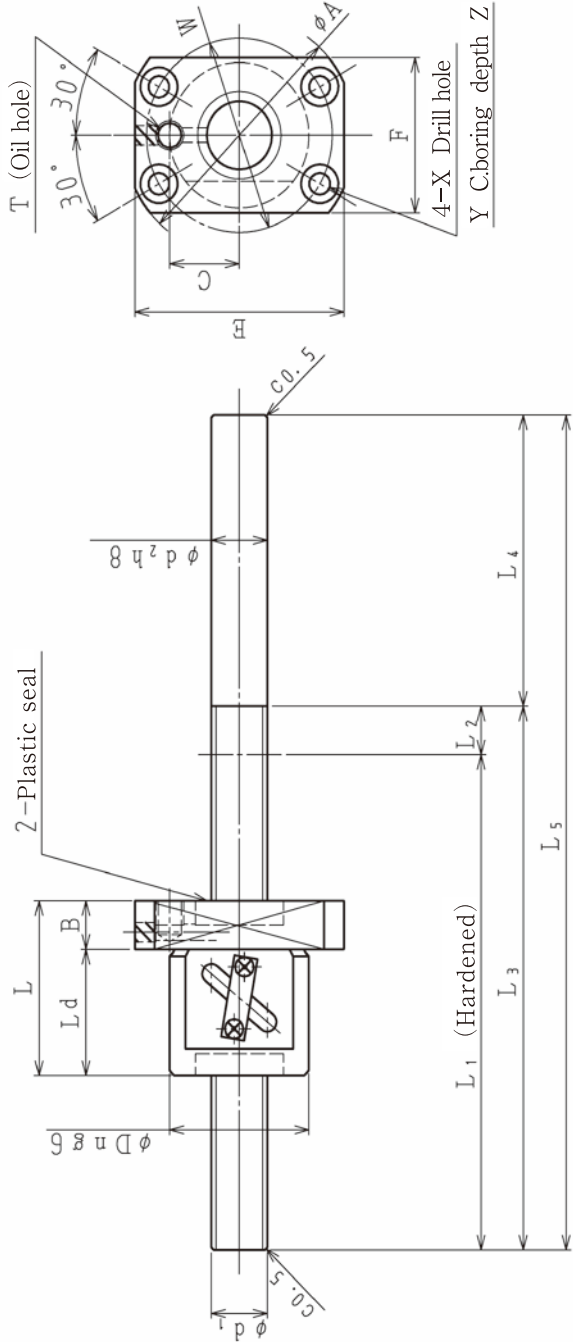
unit : mm

## Shapes and Dimensions of ball screw

| Identification number               | Shaft Dimensions |                |                |                |                |                |                |                |    |    | Nut Dimensions |    |    |    |    |    |    |     |   |     |
|-------------------------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----------------|----|----|----|----|----|----|-----|---|-----|
|                                     | L <sub>1</sub>   | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | d <sub>1</sub> | d <sub>2</sub> | D <sub>n</sub> | A  | L  | L <sub>d</sub> | B  | E  | F  | W  | C  | T  | X   | Y | Z   |
| -200<br>LPR0802RC7S<br>-400         | 120              | 20             | 140            | 60             | 200            | 8              | 8              | 20             | 40 | 25 | 19             | 6  | 36 | 25 | 30 | —  | —  | 4.5 | 8 | 4.4 |
|                                     | 320              |                | 340            |                | 400            |                |                |                |    |    |                |    |    |    |    |    |    |     |   |     |
| -400<br>LPR1002RC7S<br>-750         | 320              | 20             | 340            | 60             | 400            | 10             | 10             | 23             | 43 | 29 | 19             | 10 | 39 | 27 | 33 | 12 | M6 | 4.5 | 8 | 4.4 |
|                                     | 670              |                | 690            |                | 750            |                |                |                |    |    |                |    |    |    |    |    |    |     |   |     |
| -250<br>LPR1202RC7S<br>-500<br>-750 | 170              | 20             | 190            | 60             | 250            | 12             | 12             | 25             | 45 | 29 | 19             | 10 | 41 | 28 | 35 | 13 | M6 | 4.5 | 8 | 4.4 |
|                                     | 420              |                | 440            |                | 500            |                |                |                |    |    |                |    |    |    |    |    |    |     |   |     |
|                                     | 670              |                | 690            |                | 750            |                |                |                |    |    |                |    |    |    |    |    |    |     |   |     |

unit : mm

Standard un-worked shaft end type Accuracy grade C7



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.
3. Contact us if you need to change the un-worked shaft end length(L<sub>4</sub>).

Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns×circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |  |
|-------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|--|
|             | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |  |
| LTR0804EC7S | 8           | 6.2      | 4    | 2.000    | 8.3  | 2.5×1                               | 2420               | 3620        | C7                | 0.020 include       |  |
| LTR0808AC7S |             |          | 8    |          |      | 1.5×1                               | 1450               | 2155        |                   |                     |  |
| LTR1005EC7S | 10          | 8.2      | 5    |          | 10.3 | 2.5×1                               | 2730               | 4410        |                   |                     |  |
| LTR1010AC7S |             |          | 10   |          |      | 1.5×1                               | 1720               | 2745        |                   |                     |  |

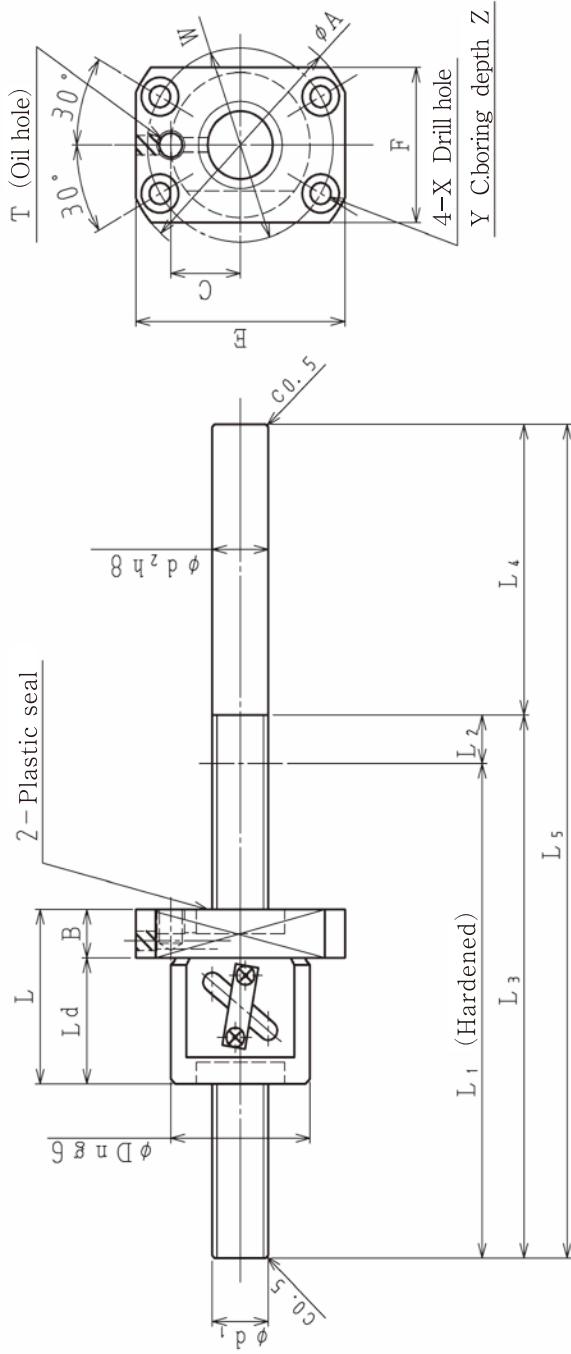
unit : mm

Shapes and Dimensions of ball screw

| Identification number |                     | Shaft Dimensions |    |     |     |     | Nut Dimensions |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
|-----------------------|---------------------|------------------|----|-----|-----|-----|----------------|----|----|----|----|----|----|----|----|----|----|----|-----|---|-----|
|                       |                     | L1               | L2 | L3  | L4  | L5  | d1             | d2 | Dn | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y | Z   |
| -200                  | LTR0804EC7S<br>-400 | 120              | 20 | 140 | 60  | 200 | 8              | 8  | 24 | 44 | 33 | 25 | 8  | 40 | 27 | 34 | —  | —  | 4.5 | 8 | 4.4 |
|                       |                     | 320              |    | 340 | 400 |     |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
| -200                  | LTR0808AC7S<br>-400 | 120              | 20 | 140 | 60  | 200 | 8              | 8  | 24 | 44 | 36 | 28 | 8  | 40 | 27 | 34 | —  | —  | 4.5 | 8 | 4.4 |
|                       |                     | 320              |    | 340 | 400 |     |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
| -420                  | LTR1005EC7S<br>-780 | 340              | 20 | 360 | 60  | 420 | 10             | 10 | 26 | 46 | 40 | 30 | 10 | 42 | 28 | 36 | 14 | M6 | 4.5 | 8 | 4.4 |
|                       |                     | 700              |    | 720 | 780 |     |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |
| -420                  | LTR1010AC7S<br>-780 | 320              | 20 | 340 | 80  | 420 | 10             | 10 | 26 | 46 | 40 | 30 | 10 | 42 | 28 | 36 | 14 | M6 | 4.5 | 8 | 4.4 |
|                       |                     | 680              |    | 700 | 780 |     |                |    |    |    |    |    |    |    |    |    |    |    |     |   |     |

unit : mm

# Standard un-worked shaft end type Accuracy grade C7



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.
3. Contact us if you need to change the un-worked shaft end length(L<sub>4</sub>).

## Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits turns/circuit | Basic load ratings |             | Accuracy grade | Axial clearance max |
|-------------|-------------|----------|------|----------|------|----------------------------------|--------------------|-------------|----------------|---------------------|
|             | Nominal dia | Root dia |      |          |      |                                  | Dynamic load       | Static load |                |                     |
| LTR1205EC7S | 12          | 9.8      | 5    | 2.3812   | 12.3 | 2.5×1                            | 3770               | 6320        | C7             | 0.020 include       |
| LTR1210EC7S |             | 10.0     | 10   |          | 12.5 | 2.5×1                            | 3820               | 6480        |                |                     |
| LTR1220AC7S |             |          | 20   |          |      | 1.5×1                            | 2410               | 3920        |                |                     |

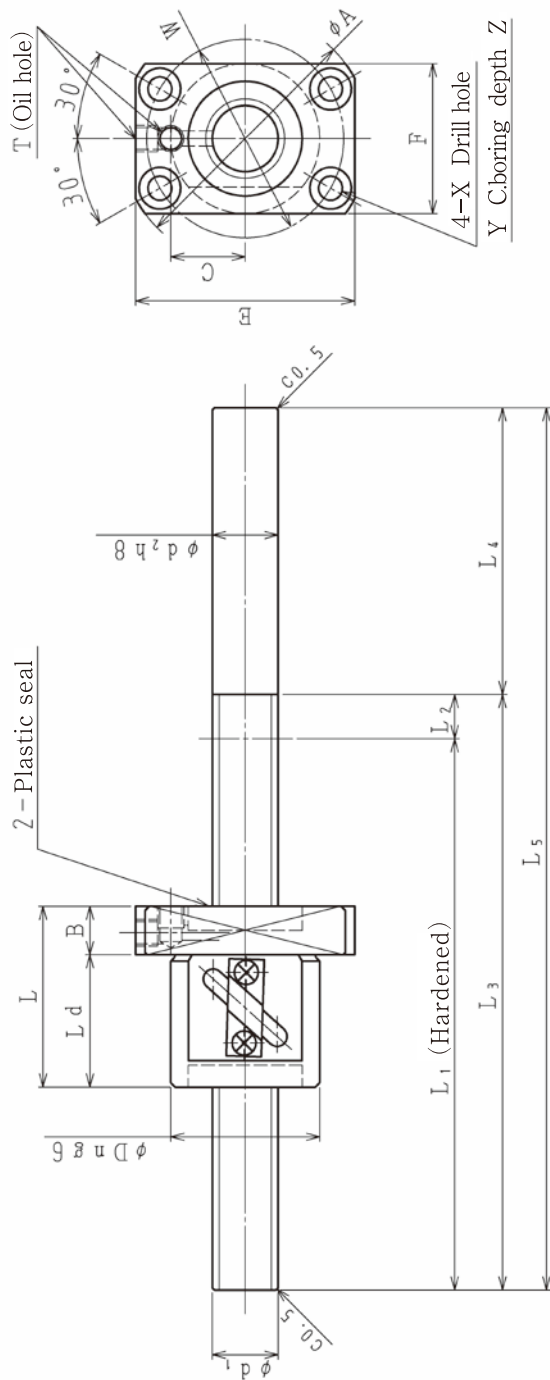
unit : mm

## Shapes and Dimensions of ball screw

unit : mm

| Identification number | Shaft Dimensions |    |     |    |      |    |    | Nut Dimensions |    |    |    |    |    |    |    |    |    |     |   |     |
|-----------------------|------------------|----|-----|----|------|----|----|----------------|----|----|----|----|----|----|----|----|----|-----|---|-----|
|                       | L1               | L2 | L3  | L4 | L5   | d1 | d2 | Dn             | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y | Z   |
| LTR1205EC7S           | 170              | 20 | 190 | 60 | 250  | 12 | 12 | 30             | 50 | 40 | 30 | 10 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                       | 420              |    | 500 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
|                       | 670              |    | 750 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
| LTR1210EC7S           | 170              | 20 | 190 | 60 | 250  | 12 | 12 | 30             | 50 | 50 | 40 | 10 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                       | 420              |    | 500 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
|                       | 670              |    | 750 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
| LTR1220AC7S           | 920              | 20 | 940 | 60 | 1000 | 12 | 12 | 30             | 50 | 62 | 50 | 12 | 45 | 32 | 40 | 15 | M6 | 4.5 | 8 | 4.4 |
|                       | 420              |    | 500 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
|                       | 670              |    | 750 |    |      |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |
| -1000                 | 920              |    | 940 |    | 1000 |    |    |                |    |    |    |    |    |    |    |    |    |     |   |     |

## Standard un-worked shaft end type Accuracy grade C7



Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.

2. Keep the nut travel within the range  $L_1$  when the ball screw is used.
3. Contact us if you need to change the un-worked shaft end length ( $L_4$ ).

## Specifications for ball screw

| Specifications for ball screw |             |          |      |          |      |                                     |                    |             |                   | unit : mm           |
|-------------------------------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
| Type                          | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns×circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|                               | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| LTR1505EC7S                   | 15          | 12.2     | 5    | 3.175    | 15.5 | 2.5×1                               | 6610               | 12545       | C7                | 0.020 include       |
| LTR1510EC7S                   |             | 10       | 6610 |          |      |                                     | 12545              |             |                   |                     |
| LTR1520AC7S                   |             | 20       | 4230 |          |      |                                     | 7840               |             |                   |                     |

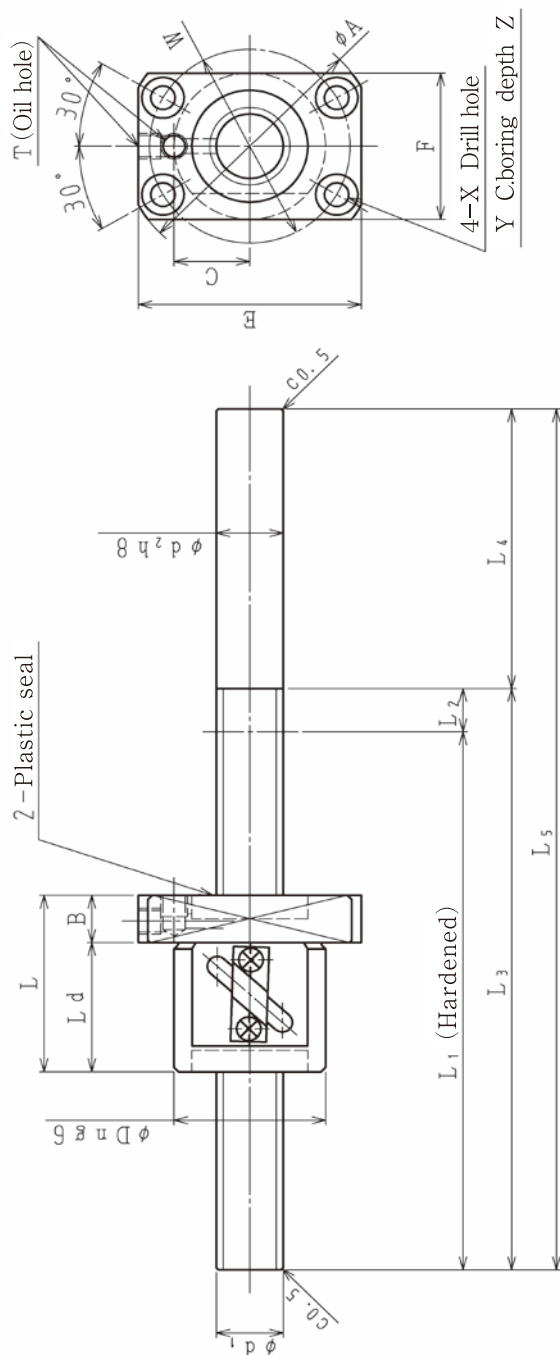
## Shapes and Dimensions of ball screw

Shapes and Dimensions of ball screw

| Identification number                 | Shaft Dimensions |                |                |                |                |                | Nut Dimensions |    |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       | L <sub>1</sub>   | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | d <sub>1</sub> | d <sub>2</sub> | Dn | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y   | Z   |
| -500<br>LTR1505EC7S<br>-1000<br>-1500 | 420              | 20             | 440            | 60             | 500            | 15             | 15             | 34 | 57 | 41 | 30 | 11 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4 |
|                                       | 920              |                | 940            |                | 1000           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       | 1420             |                | 1440           |                | 1500           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |
| -500<br>LTR1510EC7S<br>-1000<br>-1500 | 420              | 20             | 440            | 60             | 500            | 15             | 15             | 34 | 57 | 51 | 40 | 11 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4 |
|                                       | 920              |                | 940            |                | 1000           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       | 1420             |                | 1440           |                | 1500           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |
| -500<br>LTR1520AC7S<br>-1000<br>-1500 | 420              | 20             | 440            | 60             | 500            | 15             | 15             | 34 | 57 | 62 | 50 | 12 | 50 | 34 | 45 | 17 | M6 | 5.5 | 9.5 | 5.4 |
|                                       | 920              |                | 940            |                | 1000           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       | 1420             |                | 1440           |                | 1500           |                |                |    |    |    |    |    |    |    |    |    |    |     |     |     |

unit : mm

## Standard un-worked shaft end type Accuracy grade C7



Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.

2. Keep the nut travel within the range  $L_1$  when the ball screw is used.
3. Contact us if you need to change the un-worked shaft end length ( $L_4$ ).

## Specifications for ball screw

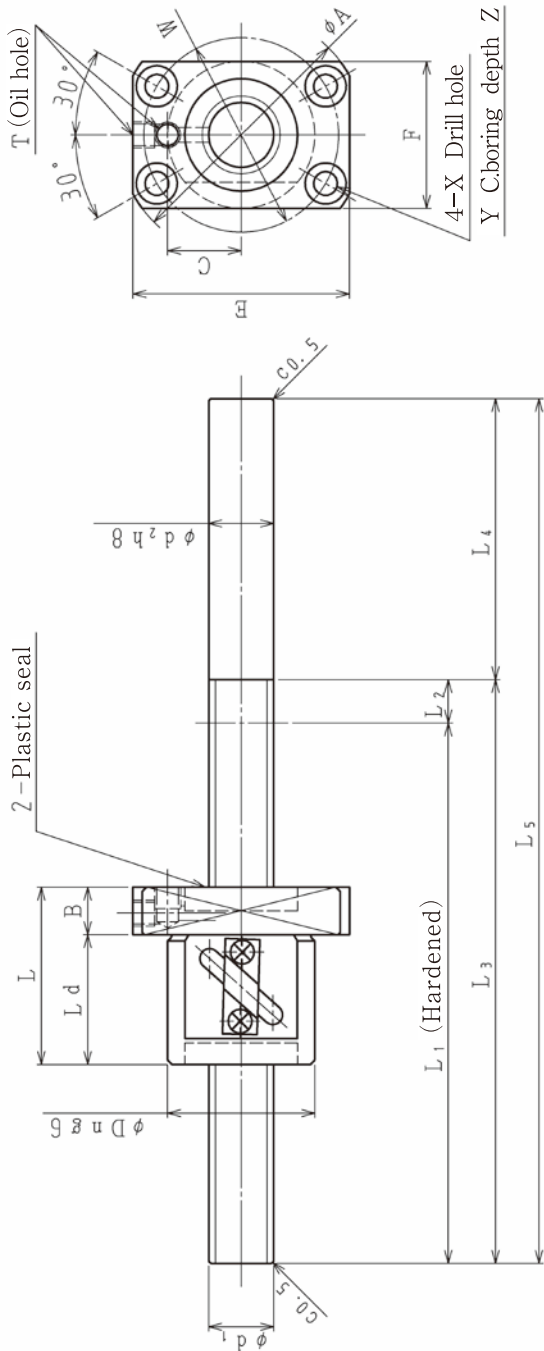
| Specifications for ball screw |      |             |          |      |          |      |                                     |                    |             |                   | unit : mm           |
|-------------------------------|------|-------------|----------|------|----------|------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
| Type                          |      | Screw shaft |          | Lead | Ball dia | BCD  | Number of circuits<br>turns/circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|                               |      | Nominal dia | Root dia |      |          |      |                                     | Dynamic load       | Static load |                   |                     |
| LTR2005                       | EC7S | 20          | 17.2     | 5    | 3.175    | 20.5 | 2.5 × 1                             | 8150               | 17150       | C7                | 0.020 include       |
| LTR2010                       | EC7S |             | 16.8     | 10   | 3.969    | 21   |                                     | 11100              | 22100       |                   |                     |
| LTR2020                       | AC7S |             |          | 20   |          |      |                                     | 6710               | 12640       |                   |                     |

## Shapes and Dimensions of ball screw

[illegible]



# Standard un-worked shaft end type Accuracy grade C7



- Note) 1. The shaft end needs to be re-machined before use, and we recommend the work be performed by ISSOKU. Please be noted that we will not assure the accuracy of the product with a shaft end that is machined by anyone other than ISSOKU.
2. Keep the nut travel within the range L<sub>1</sub> when the ball screw is used.
3. Contact us if you need to change the un-worked shaft end length(L<sub>4</sub>).

## Specifications for ball screw

| Type        | Screw shaft |          | Lead | Ball dia | BCD   | Number of circuits<br>turns×circuit | Basic load ratings |             | Accuracy<br>grade | Axial clearance max |
|-------------|-------------|----------|------|----------|-------|-------------------------------------|--------------------|-------------|-------------------|---------------------|
|             | Nominal dia | Root dia |      |          |       |                                     | Dynamic load       | Static load |                   |                     |
| LTR2505EC7S | 25          | 22.2     | 5    | 3.175    | 25.5  | 2.5×1                               | 7970               | 19340       | C7                | 0.020 include       |
| LTR2510EC7S |             | 20.5     | 10   | 4.7625   | 26.25 | 1.5×1                               | 13120              | 27000       |                   |                     |
| LTR2520AC7S |             | 21.3     | 20   |          |       |                                     | 8540               | 16900       |                   |                     |

unit : mm

## Shapes and Dimensions of ball screw

| Identification number |       | Shaft Dimensions |    |      |     |      | Nut Dimensions |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|-----------------------|-------|------------------|----|------|-----|------|----------------|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                       |       | L1               | L2 | L3   | L4  | L5   | d1             | d2 | Dn | A  | L  | Ld | B  | E  | F  | W  | C  | T  | X   | Y   | Z   |
| LTR2505EC7S           | -500  | 315              |    | 335  |     | 500  |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -1000 | 815              | 20 | 835  | 165 | 1000 | 25             | 25 | 50 | 73 | 40 | 29 | 11 | 66 | 50 | 61 | 25 | M6 | 5.5 | 9.5 | 5.4 |
|                       | -1500 | 1315             |    | 1165 |     | 1500 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -2000 | 1815             |    | 1835 |     | 2000 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
| LTR2510EC7S           | -500  | 310              |    | 330  |     | 500  |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -1000 | 810              | 20 | 830  | 170 | 1000 | 25             | 25 | 58 | 92 | 67 | 52 | 15 | 82 | 58 | 74 | 30 | M6 | 9   | 14  | 9   |
|                       | -1500 | 1310             |    | 1330 |     | 1500 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -2000 | 1810             |    | 1830 |     | 2000 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
| LTR2520AC7S           | -500  | 310              |    | 330  |     | 500  |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -1000 | 810              | 20 | 830  | 170 | 1000 | 25             | 25 | 58 | 92 | 75 | 57 | 18 | 82 | 58 | 74 | 30 | M6 | 9   | 14  | 9   |
|                       | -1500 | 1310             |    | 1330 |     | 1500 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
|                       | -2000 | 1810             |    | 1830 |     | 2000 |                |    |    |    |    |    |    |    |    |    |    |    |     |     |     |

unit : mm

unit : mm

# Safety precautions

In order to prevent injury to users or other persons and damage to property and to enable ball screws to display their functions fully, pay careful attention to the following points concerning design and handling.

## Design

-  1. When designing the screw shaft ends, make one side of shaft ends smaller than the dimension of minor diameter of screw shaft so that the screw thread cuts through.
-  2. When designing the area around the screw attachment, arrange the structure so that the screw can be attached removing the unit.
-  3. If a ball screw is attached to equipment vertically, attach a dropping-prevention device either to the equipment itself or to the ball screw for safety.
-  4. Intrusion of foreign matter can cause abnormal wear to the ball screw, damage to the ball circulating path, or a situation in which operation is impossible. To prevent these occurrences, provide some sort of dust cover when using ball screws in an environment which is liable to be dusty.
-  5. For safety reasons, make sure the design observes the permissible load and the permissible number of rotations.
-  6. When using ball screws in an extreme temperature environment, make sure the design takes into account the loss of accuracy caused by high temperature, choice of lubricant, heat resistance temperature of the ball screw (normally 80°C) etc.

## Additional machining

-  1. Additional machining may cause a loss of accuracy due to disassembling, of the shortening of service life of ball screw due to intrusion of foreign matter. Specify beforehand.

## Lubrication

-  1. Check the condition of the lubricant before use. If lubrication is insufficient, the functions of ball screw will be impaired within a short period of time.
-  2. If lubricating grease has been applied, the screw can be used as it is. However, if foreign matter become attached to the grease surface in the course of handling, wash the screw with pure kerosene (Be careful with water.) and apply a fresh coat of new grease, using the same type of grease as that used originally.
-  3. Check the lubricating grease between one and two months after initial operation and if it is found to be dirty, wipe off the old grease and apply a sufficient coating of new grease. Thereafter, check and replenishments should normally be carried out every 6 to 12 months or after 1000-2000 hours of use. However, this varies according to the environment in which ball screws are used, so establish the intervals of check as appropriate. In case of oil lubrication, make sure oil does not run out.

## Handling and assembly

-  1. Do not attempt to disassemble a ball screw. The ball may fall, the preload may change, or foreign matter may enter, causing a loss of accuracy, shortening the life of the ball screw, and giving rise to accidents. If you need to disassemble a ball screw, we will do this work for you (for a fee).
-  2. The shaft and/or nut of a ball screw may become separated and fall due to their own weight, so take care to avoid injuries. If you allow them to fall by mistake, it is essential to ask the manufacturer to reassemble the screw and inspect its accuracy, (for a fee).
-  3. If you drop a ball screw accidentally, subject it to a hard impact, or allow it to overrun, this may cause the ball to fall and/or damage the rotating parts, the screw shaft external diameter, the screw groove surface, the ball, etc., as well as affecting rotation, precision, and the life. In some instances, accidents may occur. Please ask the manufacturer to inspect the screw (for a fee).
-  4. When mounting a ball screw, pay careful attention to the accuracy of the attachment sections. Make sure the shaft holders supporting the ball screw and the bracket attaching the nut are aligned and check the run out of the nut attachment surface. The misalignment cause unbalanced load (radial load, moment load) on the ball screw, resulting in faulty operation, shorter life, heat generation, and an increase in the drive torque.
-  5. Forcing the screw into the housing may cause distortion of the nut which means the accuracy cannot be maintained and the life of the screw is shortened. Make sure there is a suitable clearance.

## Storing

-  1. Store screws in the same state as when purchased. Do not open the packing unnecessarily or tear the internal wrapping. This can cause dirt to enter or produce rust resulting in poorer functioning.
-  2. When storing for a long time, take suitable precautions to prevent dust and rust and store in the positions described below. Make periodic inspections to check the dust and rust situation.
  - ①. Store horizontally in the packing provided at the time of purchase.
  - ②. Store horizontally in a clean place against a cross tie.
  - ③. Store by hanging vertically in a clean place making sure there is no falling down.



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