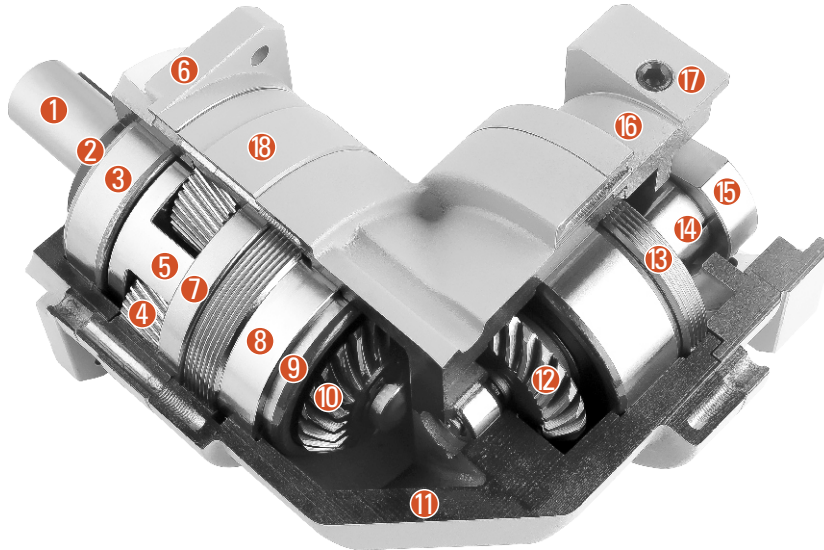


# SBFWR/SAE/FWR SERIES GEAR BOX

## Sectional drawing



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Solar wheel
- ⑥ Front cover
- ⑦ Output shaft rear bearing
- ⑧ Adjusting nut
- ⑨ Double row angular contact bearing
- ⑩ Output bevel gear
- ⑪ Right angle box
- ⑫ Input bevel gear
- ⑬ Lock nut
- ⑭ Input coupling
- ⑮ Locking device
- ⑯ Rear cover
- ⑰ Rear cover gasket
- ⑱ Inner ring gear

## Type and model number

| SBFW Reducers |              |           |            | Servo motor |   |            |           |
|---------------|--------------|-----------|------------|-------------|---|------------|-----------|
| <u>060</u>    | <u>SBFWR</u> | <u>10</u> | <u>( )</u> | <u>(S)</u>  | - | <u>400</u> | <u>T1</u> |
| ①             | ②            | ③         | ④          | ⑤           |   | ⑥          | ⑦         |

① Gear head frame size: 060/090/60/90

② Gear head series code:  
SBFWR: Square mounting flange series

③ Gear ratio: Single stage 10

④ Accuracy  
Output shaft load value at  $\pm 3\%$  of allowable output torque

|           | Cabin seat | Stage | Standard (omitted) |
|-----------|------------|-------|--------------------|
| 060SBFWR  |            | 1     | 8                  |
|           |            | 2     | 12                 |
| 090SBFWR  |            | 1     | 8                  |
|           |            | 2     | 12                 |
| 60SAE/FWR |            | 1     | 10                 |
|           |            | 2     | 15                 |
| 90SAE/FWR |            | 1     | 10                 |
|           |            | 2     | 15                 |

Input shaft type

S: Overall locking (Omitted) (Can be used regardless of whether the motor has a keyway)

⑤ S1: Locking with locking ring (Can be used regardless of whether the motor has a keyway)

S2: Lock with keyway (Input shaft with key)

K: With keyway

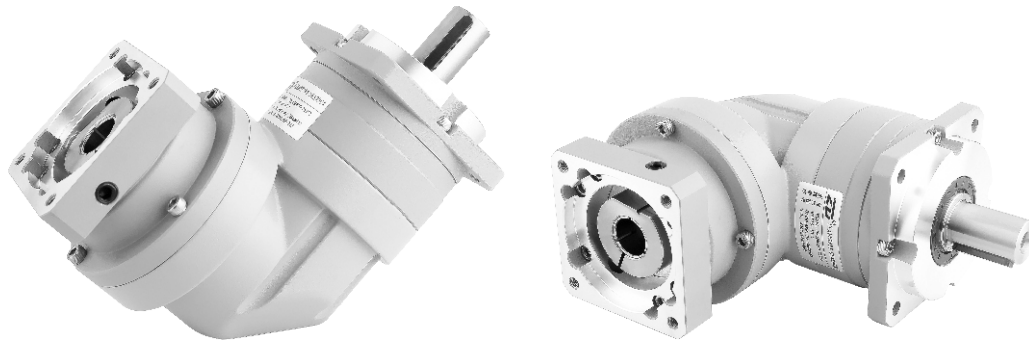
A: Other adapters (Please contact us)

⑥ Applicable servo motor power (W)

⑦ Corresponding dimension table of input flange and servo motor ( )

# SBFWR/SAE/FWR PLANETARY GEAR BOX

## Product diagram



## Technical information

| Product type                  |      | 060SBFWR                    | 090SBFWR | 60SAE/FWR                   | 90SAE/FWR | Reduction ratio | Stage |  |
|-------------------------------|------|-----------------------------|----------|-----------------------------|-----------|-----------------|-------|--|
| Rated output torque           | N.M  | 45                          | 120      | 31                          | 85        | 3               | 1     |  |
|                               |      | 40                          | 130      | 50                          | 95        | 4               |       |  |
|                               |      | 50                          | 150      | 41                          | 105       | 5               |       |  |
|                               |      | 40                          | 130      | 30                          | 93        | 7               |       |  |
|                               |      | 35                          | 110      | 23                          | 83        | 8               |       |  |
|                               |      | 30                          | 90       | 18                          | 70        | 10              |       |  |
|                               |      | 45                          | 120      | 31                          | 115       | 15              | 2     |  |
|                               |      | 40                          | 130      | 50                          | 130       | 20              |       |  |
|                               |      | 50                          | 150      | 41                          | 135       | 25              |       |  |
|                               |      | 40                          | 150      | 41                          | 125       | 35              |       |  |
|                               |      | 35                          | 150      | 41                          | 115       | 40              |       |  |
|                               |      | 50                          | 150      | 41                          | 135       | 50              |       |  |
|                               |      | 45                          | 110      | 23                          | 83        | 64              |       |  |
|                               |      | 40                          | 120      | 30                          | 110       | 70              |       |  |
|                               |      | 35                          | 110      | 23                          | 83        | 80              |       |  |
|                               |      | 30                          | 90       | 18                          | 73        | 100             |       |  |
| Life                          | Hour | 20000                       |          |                             |           |                 |       |  |
| Instant emergency stop torque | N.M  | 3 times rated output torque |          | 2 times rated output torque |           |                 | -     |  |

| Product type          | 060SBFWR             | 090SBFWR | 60SAE/FWR | 90SAE/FWR | Unit | Stage |
|-----------------------|----------------------|----------|-----------|-----------|------|-------|
| Radial force          | 1100                 | 3000     | 750       | 2100      | N    | -     |
| Axial force           | 630                  | 1230     | 375       | 1050      | N    | -     |
| Full load efficiency  | ≥ 97                 |          |           |           | %    | 1     |
|                       | ≥ 94                 |          |           |           |      | 2     |
| Weight                | 1.6                  | 5.6      | 1.5       | 5.6       | Kg   | 1     |
|                       | 1.9                  | 6.3      | 1.8       | 6.3       |      | 2     |
| Operating temperature | -10~+90              |          |           |           | °C   | -     |
| Protection level      | IP65                 |          |           |           |      |       |
| Lubrication method    | Lifetime lubrication |          |           |           |      |       |
| Installation method   | Any                  |          |           |           |      |       |

Maximum radial force and maximum axial force, when the output is 100RPM, it acts on the center position (L/2) of the output shaft.

# SBFWR/SAE/FWR PLANETARY GEAR BOX

## Technical information

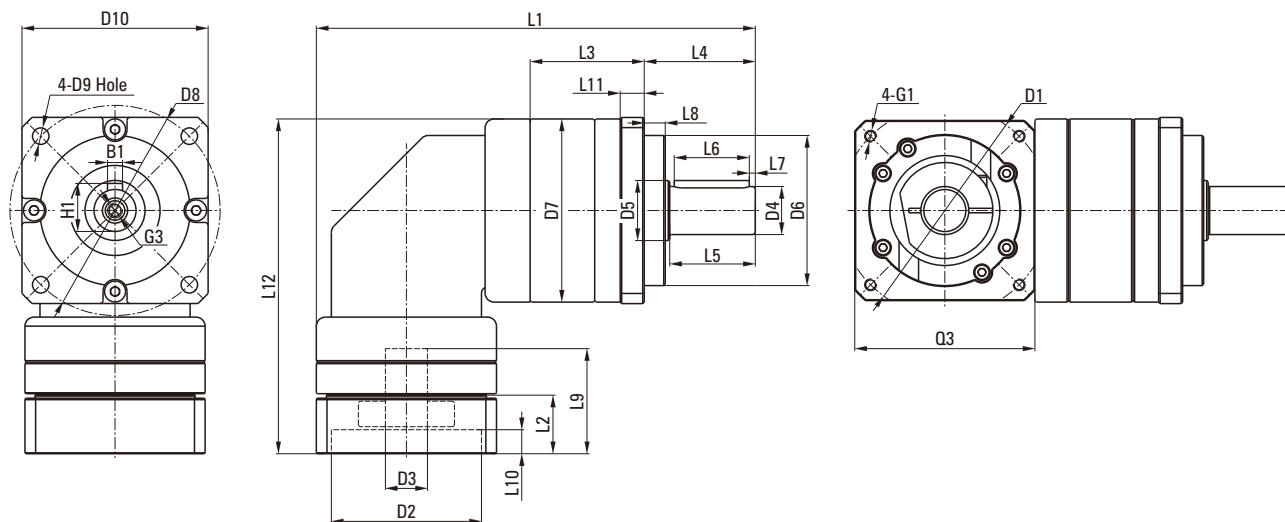
| Product type      |                   | 060SBFWR | 090SBFWR | 60SAE/FWR | 90SAE/FWR | Reduction ratio | Stage |
|-------------------|-------------------|----------|----------|-----------|-----------|-----------------|-------|
| Moment of inertia | Kgcm <sup>2</sup> | 0.3      | 2.3      | 0.3       | 2.3       | 3               | 1     |
|                   |                   | 0.3      | 2.3      | 0.3       | 2.3       | 4               |       |
|                   |                   | 0.3      | 2.3      | 0.3       | 2.3       | 5               |       |
|                   |                   | 0.3      | 2.3      | 0.3       | 2.3       | 7               |       |
|                   |                   | 0.3      | 2.3      | 0.3       | 2.3       | 8               |       |
|                   |                   | 0.3      | 2.3      | 0.3       | 2.3       | 10              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 15              | 2     |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 20              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 25              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 35              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 40              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 50              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 64              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 70              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 80              |       |
|                   |                   | 0.07     | 0.3      | 0.07      | 0.3       | 100             |       |

| Product type            |                   | 060SBFWR | 090SBFWR | 60SAE/FWR | 90SAE/FWR | Stage |
|-------------------------|-------------------|----------|----------|-----------|-----------|-------|
| Backlash                | arcmin            | ≤8       | ≤8       | ≤10       | ≤10       | 1     |
|                         |                   | ≤12      | ≤12      | ≤15       | ≤15       | 2     |
| Torsion resistance      | N.M/arcmin        | 7        | 14       | 1.8       | 4.5       | -     |
| Noise                   | dB(A)             | ≤65      |          | ≤73       |           | -     |
| Output speed            | min <sup>-1</sup> | 6000     | 6000     | 4500      | 4500      | -     |
| Recommended input speed | min <sup>-1</sup> | 3000     | 3000     | 3000      | 3000      | -     |

1. Moment of inertia is related to input shaft.
2. Noise detection standard, distance 1m, measured at input speed of 3000 rpm with no load.

# SBFWR/SAFWR PLANETARY GEAR BOX-MECHANICAL PARAMETER

## Dimensional drawing



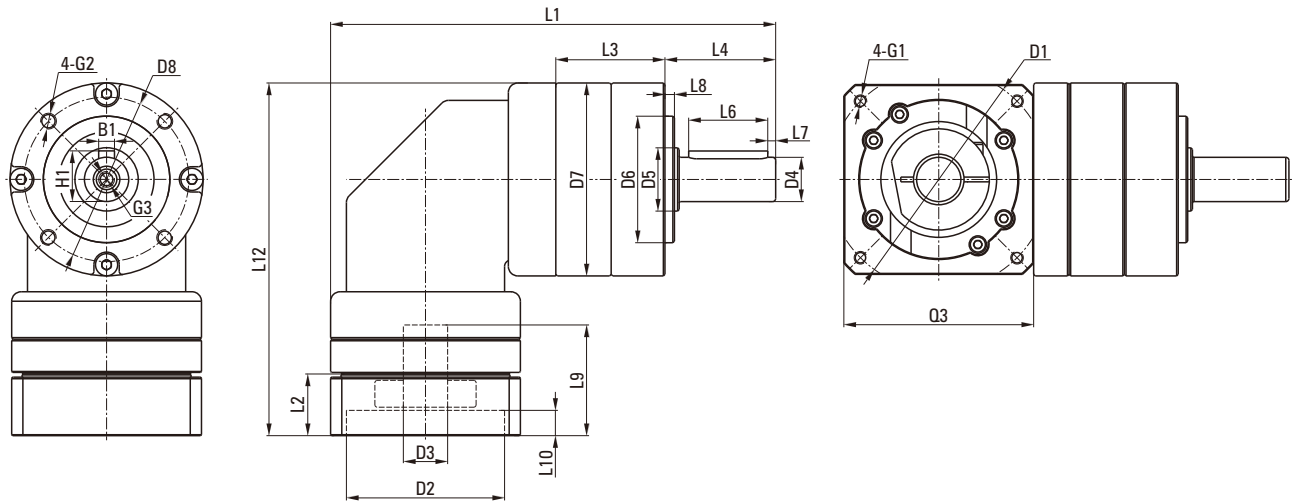
## Dimensional table

Unit: mm

| Product type                           | 060SBFWR |       | 090SBFWR |       | 60SAFWR |       | 90SAFWR |       |
|--|----------|-------|----------|-------|---------|-------|---------|-------|
| Number of stage                        | 1        | 2     | 1        | 2     | 1       | 2     | 1       | 2     |
| L1 overall length                      | 146.2    | 165.7 | 206.5    | 229.9 | 140.7   | 160.2 | 204.5   | 227.9 |
| L3 body length                         | 38       | 57.5  | 45.5     | 68.9  | 34.5    | 54    | 51.5    | 74.9  |
| <b>Output</b>                          |          |       |          |       |         |       |         |       |
| L4 output shaft length                 | 37       |       | 48       |       | 35      |       | 40      |       |
| L5 output length to the shaft shoulder | 28.5     |       | 36       |       | 30.5    |       | 36      |       |
| L6 key length                          | 25       |       | 32       |       | 25      |       | 28      |       |
| L7 key length to shaft end             | 2        |       | 2        |       | 2.5     |       | 4       |       |
| L8 boss thickness                      | 7        |       | 10       |       | 3       |       | 3       |       |
| L11 output flange thickness            | 8        |       | 10       |       | 8       |       | 10      |       |
| D4 output shaft diameter               | Φ16h7    |       | Φ22h7    |       | Φ14h7   |       | Φ20h7   |       |
| D5 shaft shoulder diameter             | Φ20      |       | Φ30      |       | Φ20     |       | Φ30     |       |
| D6 spigot diameter                     | Φ50h7    |       | Φ80h7    |       | Φ50h7   |       | Φ80h7   |       |
| D7 body diameter                       | Φ61      |       | Φ90      |       | Φ61     |       | Φ90     |       |
| D8 hole circle                         | Φ70      |       | Φ100     |       | Φ70     |       | Φ100    |       |
| D9 mounting hole                       | Φ5.5     |       | Φ6.5     |       | Φ5.5    |       | Φ6.5    |       |
| D10 mounting width                     | □62      |       | □90      |       | □62     |       | □90     |       |
| B1 key width                           | 5        |       | 6        |       | 5       |       | 6       |       |
| H1 key height                          | 18       |       | 24.5     |       | 16      |       | 22.5    |       |
| G3 center screw hole                   | M5X15    |       | M8X18    |       | M5X15   |       | M6X18   |       |
| <b>Input</b>                           |          |       |          |       |         |       |         |       |
| L2 input flange length                 | 19.5     |       | 20.5     |       | 19.5    |       | 20.5    |       |
| L9 motor shaft length                  | 30       |       | 40       |       | 30      |       | 40      |       |
| L10 spigot depth                       | 8        |       | 7        |       | 8       |       | 7       |       |
| D1 mounting hole distribution circle   | Φ70      |       | Φ90      |       | Φ70     |       | Φ90     |       |
| D2 spigot diameter                     | Φ50G7    |       | Φ70G7    |       | Φ50G7   |       | Φ70G7   |       |
| D3 input shaft diameter                | ≤Φ14G7   |       | ≤Φ19G7   |       | ≤Φ14G7  |       | ≤Φ19G7  |       |
| G1 mounting threads X depth            | M4X10    |       | M5X12    |       | M4X10   |       | M5X12   |       |
| Q3 input flange                        | □60      |       | □80      |       | □60     |       | □80     |       |

# SAEWR PLANETARY GEAR BOX-MECHANICAL PARAMETER

## Dimensional drawing



## Dimensional table

Unit: mm

| Product type                           | 60SAEWR |       | 90SAEWR |       |
|--|---------|-------|---------|-------|
|  | 1       | 2     | 1       | 2     |
| Number of stage                        | 1       | 2     | 1       | 2     |
| L1 overall length                      | 140.7   | 160.2 | 204.5   | 227.9 |
| L3 body length                         | 34.5    | 54    | 51.5    | 74.9  |
| <b>Output</b>                          |         |       |         |       |
| L4 output shaft length                 | 35      |       | 40      |       |
| L5 output length to the shaft shoulder | 30.5    |       | 36      |       |
| L6 key length                          | 25      |       | 28      |       |
| L7 key length to shaft end             | 2.5     |       | 4       |       |
| L8 boss thickness                      | 3       |       | 3       |       |
| D4 output shaft diameter               | Φ14h7   |       | Φ20h7   |       |
| D5 shaft shoulder diameter             | Φ20     |       | Φ30     |       |
| D6 spigot diameter                     | Φ40h7   |       | Φ60h7   |       |
| D7 body diameter                       | Φ61     |       | Φ90     |       |
| D8 hole circle                         | Φ52     |       | Φ70     |       |
| B1 key width                           | 5       |       | 6       |       |
| H1 key height                          | 16      |       | 22.5    |       |
| G2 mounting screw hole                 | M5X10   |       | M6X12   |       |
| G3 center screw hole                   | M5X15   |       | M6X18   |       |
| <b>Input</b>                           |         |       |         |       |
| L2 input flange length                 | 19.5    |       | 20.5    |       |
| L9 motor shaft length                  | 30      |       | 40      |       |
| L10 spigot depth                       | 8       |       | 7       |       |
| D1 mounting hole distribution circle   | Φ70     |       | Φ90     |       |
| D2 spigot diameter                     | Φ50G7   |       | Φ70G7   |       |
| D3 input shaft diameter                | ≤Φ14G7  |       | ≤Φ19G7  |       |
| G1 mounting threads X depth            | M4X10   |       | M5X12   |       |
| Q3 input flange                        | □60     |       | □80     |       |