

## Gear- boxes



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# D Gearbox

## Technical Data of Gearbox

### Definition and Function of Gearbox

It is a speed converter using gears and an instrumental device to reduce the rpm of motor into the required rpm and get a bigger torque.

### The Kind of DKM Gearbox

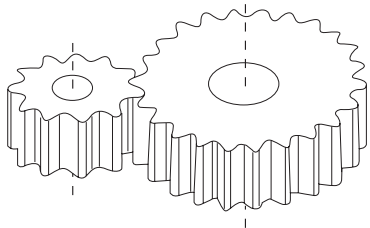
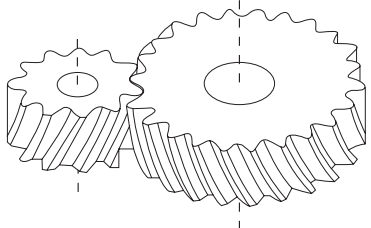
#### According to Frame Size

Frame Size □ 60mm Gearbox / Frame Size □ 70mm Gearbox / Frame Size □ 80mm Gearbox / Frame Size □ 90mm Gearbox / Frame Size □ 104mm Gearbox

#### According to Direction of Output Shaft of Gearbox

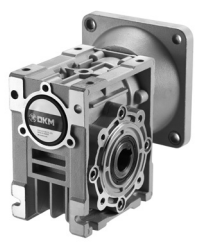
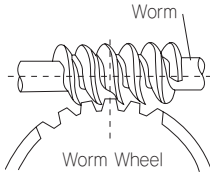
##### Parallel Gearbox

Parallel Gearbox is the most common type in small geared motor. DKM employs spur type and helical type. Especially the helical gear is employed for the low-noise and high-strength performance. Regarding noise the important part in gear is the contacting point with motor shaft which rotating rapidly. DKM employed helical gear which cut high precisely in that point and realized low-noise performance.

| General Box Type (GB Type)                                                                                                                                                     | Powerful Box Type (PB Type)                                                         | Powerful Flange Type (PF Type)                                                      | High Powerful Box Type (HB Type)                                                                                                                                                                                                                    | High Powerful Flange Type (HF Type)                                                   | Ultra Powerful Box Type (UB Type)                                                     | Inter-decimal Gearbox                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                             |  |  |                                                                                                                                                                  |  |  |  |
| Spur Gear                                                                                                                                                                      |                                                                                     |                                                                                     | Helical Gear                                                                                                                                                                                                                                        |                                                                                       |                                                                                       |                                                                                       |
| <p>The spur gear is cylindrical gear on which the teeth are cut parallel to the shaft.</p>  |                                                                                     |                                                                                     | <p>The helical gear has teeth cut in helical curve. Its high rate of contact has the advantages of low noise and higher strength comparing the spur gear.</p>  |                                                                                       |                                                                                       |                                                                                       |

##### Worm Gearbox

Worm Gearbox has the advantage of using the limited space with high efficiency and realizes the cost saving effect by the reduction of using power transmission part like coupling. DKM has worm solid type (for up to 120W) and worm hollow type (for 60W~200W).

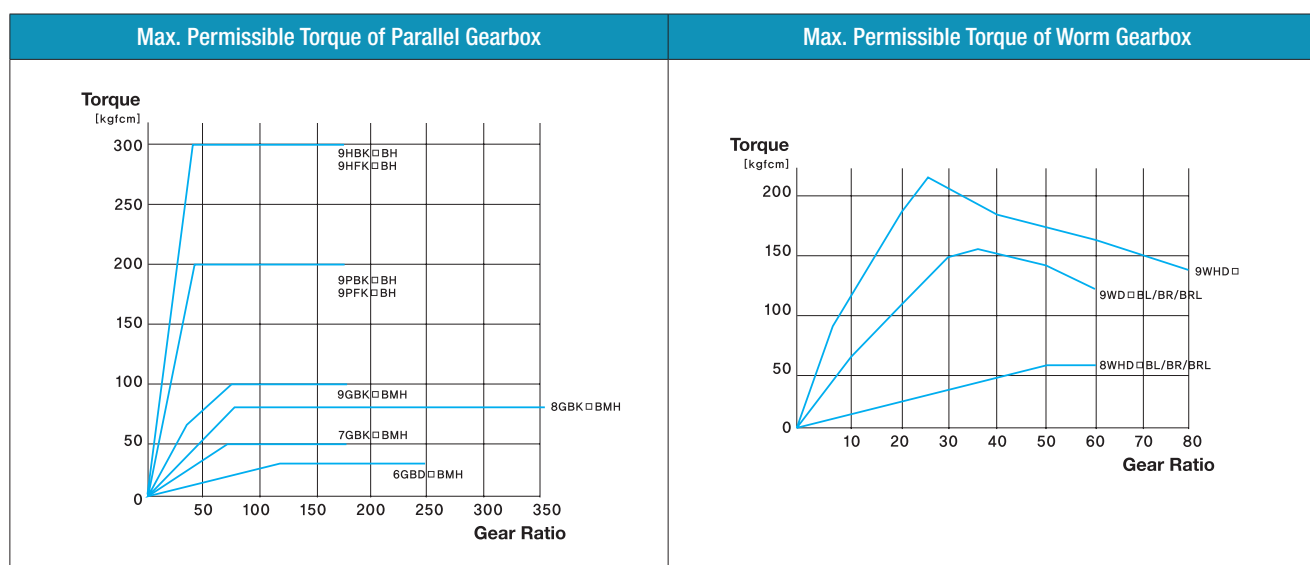
| Worm Solid Type (W Type, Left Output Shaft)                                         | Worm Solid Type (W Type, Right Output Shaft)                                        | Worm Solid Type (W Type, Bi-Directional Output Shaft)                               | Worm Hollow Type (WH Type)                                                            | Worm Wheel                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |  <p>Worm Gear transmits power to right-angle direction by threaded worm and worm wheel.</p> |

## List of Gearbox Type

| Type             | Motor Output     | Gearbox Model | Bearing Type                 | Frame Type  |
|------------------|------------------|---------------|------------------------------|-------------|
| Parallel Gearbox | 6W               | 6GBD□MH       | Metal Bearing                | Box Type    |
|                  | 6W, 10W, 15W     | 7GBK□BMH      | Ball Bearing + Metal Bearing | Box Type    |
|                  | 15W, 25W         | 8GBK□BMH      | Ball Bearing + Metal Bearing | Box Type    |
|                  | 40W              | 9GBK□BMH      | Ball Bearing + Metal Bearing | Box Type    |
|                  | 60W~120W         | 9PBK□BH       | Ball Bearing                 | Box Type    |
|                  |                  | 9PFK□BH       | Ball Bearing                 | Flange Type |
|                  | 60W~200W         | 9HBK□BH       | Ball Bearing                 | Box Type    |
|                  |                  | 9HFK□BH       | Ball Bearing                 | Flange Type |
|                  | 250W, 300W, 400W | 10UBK□BH      | Ball Bearing                 | Box Type    |
| Worm Gearbox     | 40W~120W         | 8WD□BL/BR/BRL | Ball Bearing                 | —           |
|                  | 60W~200W         | 9WD□BL/BR/BRL | Ball Bearing                 | —           |
|                  | 60W~200W         | 9WHD□—030     | Ball Bearing                 | —           |
|                  | 150W~200W        | 9WHD□—040     | Ball Bearing                 | —           |
|                  | 250W, 300W, 400W | 10WHD□—040    | Ball Bearing                 | —           |
|                  |                  |               |                              |             |
| Inter-decimal    | 15W, 25W         | 8XD10□□       | Metal Bearing                | Box Type    |
|                  | 40W~200W         | 9XD10□□       | Ball Bearing                 | Box Type    |

## Maximum Permissible Torque and Efficiency of Gearbox

The output torque of Gearbox is in proportion to the gear ratio. But there is limit in the size of load which can be applied to the Gearbox in specific gear ratio depending on gear construction and materials etc. affecting the Gearbox mechanical strength. This torque is called the maximum permissible torque. The maximum permissible torques of typical Gearbox are shown in the figure.



- The calculation of permissible torque at output shaft of Gearbox is as below:

$$TG = TM \times i \times \eta$$

TG : Output torque of Gearbox

TM : Motor torque

i : Gear reduction ratio

$\eta$  : Gearbox efficiency

# D Gearbox

## Technical Data of Gearbox

### ● Efficiency of Parallel Gearbox

| Model \ Ratio | 2   | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 10 | 13  | 15 | 18 | 20  | 25  | 30 | 36 | 40 | 50  | 60  | 75 | 90 | 100 | 120 | 150 | 180 | 200 | 250 | 300 | 360 |
|---------------|-----|---|-----|---|---|-----|---|----|-----|----|----|-----|-----|----|----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 6GBD□MH       | 81% |   |     |   |   |     |   |    |     |    |    | 73% |     |    |    |    | 66% |     |    |    |     |     |     |     |     |     |     |     |
| 7GBK□BMH      |     |   |     |   |   |     |   |    |     |    |    |     |     |    |    |    |     |     |    |    |     |     |     |     |     |     |     |     |
| 8GBK□BMH      |     |   |     |   |   |     |   |    |     |    |    |     |     |    |    |    |     |     |    |    |     |     |     |     |     |     |     |     |
| 9GBK□BMH      |     |   |     |   |   |     |   |    |     |    |    |     |     |    |    |    |     |     |    |    |     |     |     |     |     |     |     |     |
| 9PB(F)K□BH    | 81% |   |     |   |   |     |   |    | 73% |    |    |     | 66% |    |    |    |     | 59% |    |    |     |     |     |     |     |     |     |     |
| 9HB(F)K□BH    |     |   |     |   |   |     |   |    |     |    |    |     |     |    |    |    |     |     |    |    |     |     |     |     |     |     |     |     |
| 10UBK□BH      | 81% |   |     |   |   |     |   |    | 73% |    |    |     | 66% |    |    |    |     | 59% |    |    |     |     |     |     |     |     |     |     |

\* The efficiency of Inter-decimal Gearbox (8XD10M□, 9XD10M□) is 81%.

### ● Efficiency of Worm Gearbox

| Model \ Ratio | 7.5 | 10 | 12 | 15 | 18 | 20 | 25 | 30  | 36 | 40 | 50 | 60 | 80 |
|---------------|-----|----|----|----|----|----|----|-----|----|----|----|----|----|
| 9WHD□-030     | 60% |    |    |    |    |    |    | 55% |    |    |    |    |    |
| 9WHD□-040     |     |    |    |    |    |    |    |     |    |    |    |    |    |
| 10WHD□-040    |     |    |    |    |    |    |    |     |    |    |    |    |    |

## Speed and Direction of Rotations

### Speed

This refers to the speed of rotation in the Gearbox output shaft. The speed is calculated by dividing the motor's synchronous speed by the gear ratio. The actual speed, according to the load condition, is 2~20% less than the displayed value.

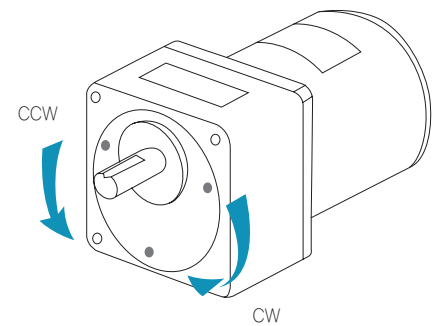
The speed is calculated with the following equation:

$$NG = \frac{NM}{i} \text{ [r/min]}$$

NG: Speed of Gearbox [r/min]  
NM: Speed of motor [r/min]  
i: Gear reduction ratio

### Direction of Rotation

This refers to the direction of rotation viewed from the output shaft. The direction of Gearbox shaft rotation may differ from motor shaft rotation depending on the gear ratio of the Gearbox.



### ● Rotating Direction of Gearbox Output Shaft

| Model \ Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 10 | 13 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 | 200 | 250 | 300 | 360 |
|---------------|---|---|-----|---|---|-----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 6GBD□MH       | — |   |     |   |   |     |   |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| 7GBK□BMH      | — |   |     | — |   |     |   | —  |    |    |    | —  |    |    |    | —  |    |    |    |    |     |     |     |     | —   | —   | —   | —   |
| 8GBK□BMH      | — |   |     |   |   |     |   | —  |    |    |    | —  |    |    |    | —  |    |    |    |    |     |     |     |     |     |     |     |     |
| 9GBK□BMH      |   |   |     |   |   |     |   |    |    |    |    | —  |    |    |    |    |    |    |    |    |     |     |     |     | —   | —   | —   | —   |
| 9PB(F)K□BH    |   |   |     |   |   |     |   | —  |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |     | —   | —   | —   | —   |
| 9HB(F)K□BH    | — |   |     | — |   | —   |   | —  |    |    |    |    |    |    |    | —  |    |    |    |    |     |     |     |     | —   | —   | —   | —   |
| 10UBK□BH      | — |   |     |   |   |     |   |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |

|   |                                 |
|---|---------------------------------|
| — | not available                   |
| ■ | same direction as the motor     |
| □ | opposite direction as the motor |

\* In case of using inter-decimal Gearbox, the rotating speed of output shaft will reduce by 10:1 but the rotating direction is the same as the Gearbox's direction.

## Gearbox Life Expectancy and Service Factor

- Life expectancy of Gearbox varies depending on load fluctuation and is determined by the 'service factor' based on its load. Service factor is a coefficient which is used to estimate the service life of the Gearbox. This value is generally derived from experience and based on type of the load and operating conditions. The standard life can be expected when the product is operated at service factor 1.0. The life of a component during particular application is estimated by dividing the standard life expectancy by the service factor. For example, if the motor is operating with an ordinary load for 8 continuous hours a day, the service factor is 1.0. Thus, if the operation continues within the permissible torque for the Gearbox and within the range of prescribed temperature (letting the Gearbox case temperature stay below 50°C), the life expectancy of the Gearbox is 10,000 hours for the ball bearing type and 2,000 hours for the metal type. However, if a ball bearing type of Gearbox is operating for 24 hours a day, the service factor becomes 1.5 so that the life expectancy decreases to 1/1.5. Therefore the service factor should be taken into account to select such a motor and a Gearbox which have biggest permissible torque.

### Example of Load and Service Factor

| Type of Load                 | Service Factor |             |              | Operation Example                 |
|------------------------------|----------------|-------------|--------------|-----------------------------------|
|                              | 5 hours/day    | 8 hours/day | 24 hours/day |                                   |
| Constant                     | 0.8            | 1.0         | 1.5          | Unidirectional, continuous run    |
| Light impact/Changeable load | 1.2            | 1.5         | 2.0          | Frequent start/stop, reverse      |
| Heavy impact                 | 1.5            | 2.0         | 2.5          | Very frequent start/stop, reverse |

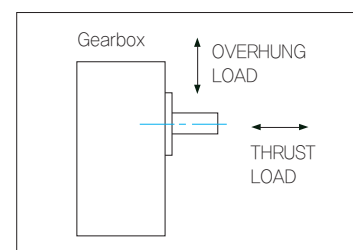
### Standard Life Expectancy

|                    |              |
|--------------------|--------------|
| Ball Bearing Type* | 10,000 hours |
| Metal Bearing Type | 2,000 hours  |

\* 5,000 hours when used on reversible motor

## Overhung Load and Thrust Load

- The overhung load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the Gearbox is coupled to the machine using a chain, belt, etc., but not when the Gearbox is directly connected to the coupling. The thrust load is defined as a load applied to the output shaft in the axial direction.



- Since the overhung load exerts a load directly on the bearing, it affects the life span of the Gearbox. The overhung load can be calculated from the following equation.

$$W = \frac{K \times T \times f}{r} \text{ [kg]}$$

**W:** Overhung load [kg]  
**K:** Weight coefficient by driving method (refer to the right table)  
**T:** Delivery force of a Gearbox output shaft [kgfcm]  
**f:** Service factor  
**r:** Effective radius of gear, pulley, etc. [cm]

### Load Coefficient by Driving Method

| Driving Method  | K    |
|-----------------|------|
| Chain, Sprocket | 1    |
| Gear            | 1.25 |
| V-Belt          | 1.5  |
| Plat-Belt       | 2.5  |

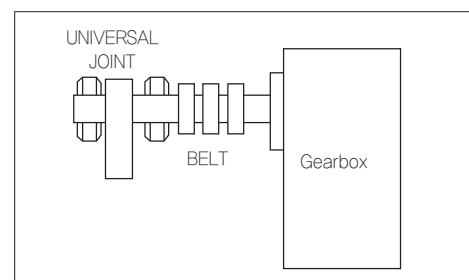
# D Gearbox

## Technical Data of Gearbox

- If the motor operates with the calculated overhung load exceeds the maximum allowable value in below table, the output shaft may bend and the fatigue deformation may occur due to the repeated load. So consider it and take care in sizing.

| Model                                            | Gear Ratio       | Permissible Overhung Load N  |                              | Permissible Thrust Load N |
|--------------------------------------------------|------------------|------------------------------|------------------------------|---------------------------|
|                                                  |                  | 10mm Distance from Shaft End | 20mm Distance from Shaft End |                           |
| <b>6GBD□MH</b>                                   | <b>3 ~ 18</b>    | 50                           | 80                           | 30                        |
|                                                  | <b>20 ~ 250</b>  | 120                          | 180                          |                           |
| <b>7GBK□BMH</b>                                  | <b>3 ~ 18</b>    | 80                           | 120                          | 40                        |
|                                                  | <b>25 ~ 180</b>  | 150                          | 250                          |                           |
| <b>8GBK□BMH</b>                                  | <b>3 ~ 18</b>    | 100                          | 150                          | 50                        |
|                                                  | <b>25 ~ 200</b>  | 200                          | 300                          |                           |
| <b>9GBK□BMH</b>                                  | <b>3 ~ 18</b>    | 250                          | 350                          | 100                       |
|                                                  | <b>25 ~ 180</b>  | 300                          | 450                          |                           |
| <b>9PBK□BH</b><br><b>9PFK□BH</b>                 | <b>3 ~ 9</b>     | 400                          | 500                          | 150                       |
|                                                  | <b>12.5 ~ 20</b> | 450                          | 600                          |                           |
|                                                  | <b>25 ~ 200</b>  | 500                          | 700                          |                           |
| <b>9HBK□BH</b><br><b>9HFK□BH</b>                 | <b>50 ~ 200</b>  | 400                          | 600                          | 150                       |
| <b>8WD□BL</b><br><b>8WD□BR</b><br><b>8WD□BRL</b> | <b>10 ~ 60</b>   | 300                          | 450                          | 100                       |
| <b>9WD□BL</b><br><b>9WD□BR</b><br><b>9WD□BRL</b> | <b>10 ~ 60</b>   | 500                          | 700                          | 150                       |

- In the case of that calculated overhung load value exceeds above allowable value, please set up the structure of the motor as below to withstand the overhung load.
- Also, if a load should be directly imposed on the output shaft, please place the load as near to the Gearbox as possible to avoid the one-sided load.
- In the case of that a helical gear or a worm gear is employed as an output delivery mechanism, make sure not to exceed both the overhung load and the thrust load simultaneously.



## Backlash Noise of Gearbox

### Operating Noise of Gearbox

The backlash noise can be indicated by operating noise value. DKM Gearbox's operating noise is like below.

| Frame Size | Limit of Operating Noise |
|------------|--------------------------|
| 70mm       | 40dB                     |
| 80mm       | 42dB                     |
| 90mm       | 49dB                     |

- Reference
- i) Operating noise value is the value measured beside Gearbox with 1m distance.
  - ii) dB (decibel) is a unit of measurement which is used to indicate how loud a sound is.
  - iii) Level of operating noise (Ref. value)
- 20dB** — The sound of a leaf is shaking
  - 30dB** — The sound in suburb of city in night time
  - 40dB** — The sound in a silent park
  - 50dB** — The sound in a silent office

## The Check Point of Gearbox Noise

### Noise in No Load

The backlash noise depends on the situation of load. For example, in case of no load rotation, gear could pop and crash between them therefore there could be little vibration and it could cause noise. This noise can be restrained and controlled by carrying some friction load.

### Noise in Mounting with Load

When mounting is not good in mounting plate, there could be some noise by vibration caused from eccentric force. In this case, please check the mounting situation.

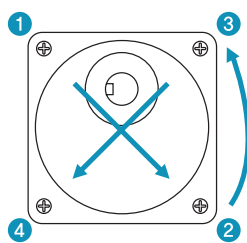
### Noise of Damaged Gear

In assembly Gearbox and motor, users have to turn the Gearbox slowly according to the shape of pinion. Otherwise gear could get damaged. And by over load gear could get damaged. As a result there may some abnormal noise in Gearbox. So please handle Gearbox with special care in assembly.

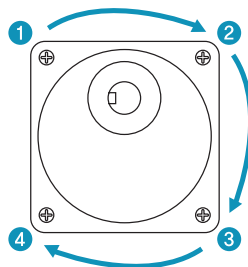
## Assembly Method of Motor and Gearbox

- To assemble the motor and the Gearbox, adjust the assembling faces together in such a way as shown in below figure and turn slowly to complete the assembly. When doing the assembly, special care should be taken neither to exert excessive force on the motor shaft nor to hit inside of the Gearbox. Otherwise, the gear will get damaged, resulting in an abnormal noise and a shortened lifetime of the motor.

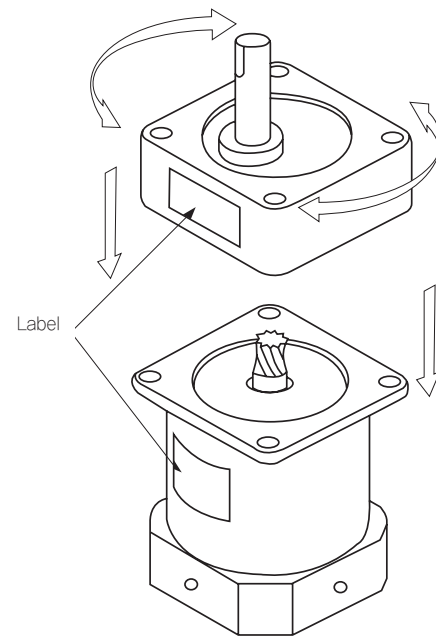
- Use the provided mounting screws for set mounting of Gearbox and motor, and tighten the screws correctly. Be sure there is no-gap between motor flange, Gearbox surface and the mounting surface.



Correct



Wrong



# D Gearbox

## Parallel Gearbox

## GType General Box Type Gearbox

### Frame Size 60mm Model: 6GBD □ MH – Max. Permissible Torque

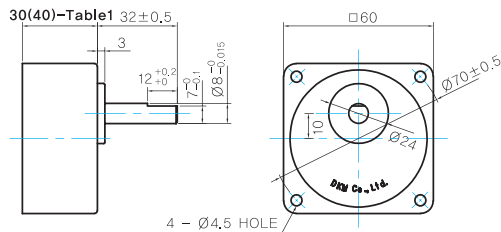
\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 3   | 3.6 | 5   | 6   | 7.5 | 9   | 10  | 12.5 | 15  | 18  | 20  | 25  | 30   | 36   | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  | 200  | 250  |
|--------------|------------|-------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | 60Hz       | r/min | 600 | 500 | 360 | 300 | 240 | 200 | 180 | 144  | 120 | 100 | 90  | 72  | 60   | 50   | 45   | 36   | 30   | 24   | 20   | 18   | 15   | 12   | 10   | 9    | 7.2  |
|              | 50Hz       |       | 500 | 417 | 300 | 250 | 200 | 166 | 150 | 120  | 100 | 83  | 75  | 60  | 50   | 41   | 37   | 30   | 25   | 20   | 16   | 15   | 12   | 10   | 8    | 7.5  | 6    |
| 6W           | 60Hz       | kgfcm | 1.0 | 1.3 | 1.7 | 2.1 | 2.6 | 3.1 | 3.5 | 4.4  | 5.2 | 6.3 | 6.3 | 7.9 | 9.5  | 11.3 | 12.6 | 14.3 | 17.1 | 21.4 | 25.7 | 28.6 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
|              | 50Hz       |       | 1.2 | 1.4 | 2.0 | 2.3 | 2.9 | 3.5 | 3.9 | 4.9  | 5.9 | 7.0 | 7.1 | 8.8 | 10.6 | 12.7 | 14.1 | 16.0 | 19.2 | 24.0 | 28.8 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |

- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- 3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.  
The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 4) Calculation of N.m  $\rightleftharpoons$  kgfcm X 0.98

### Dimensions

● Model: 6GBD □ MH



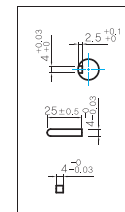
● GEARBOX OUTPUT SHAFT

| MODEL      | SPEC |
|------------|------|
| D-CUT TYPE |      |

● 30(40)-Table1

| SIZE(mm) | GEAR RATIO           |
|----------|----------------------|
| 30       | 6GBD3MH ~ 6GBD18MH   |
| 40       | 6GBD20MH ~ 6GBD250MH |

● KEY SPEC



### WEIGHT

| Model                   | WEIGHT(Kg) |
|-------------------------|------------|
| 6GBD3MH<br>~ 6GBD18MH   | 0,3        |
| 6GBD20MH<br>~ 6GBD40MH  | 0,32       |
| 6GBD50MH<br>~ 6GBD250MH | 0,34       |

### Frame Size 70mm Model: 7GBK □ BMH – Max. Permissible Torque

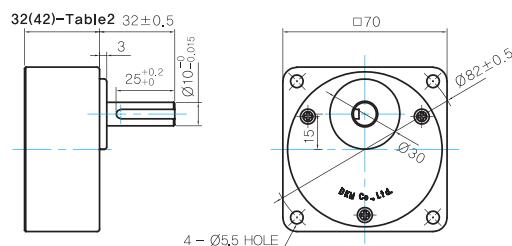
\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 3   | 3.6 | 6   | 7.5 | 9    | 12.5 | 15   | 18   | 25   | 30   | 36   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  |
|--------------|------------|-------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | 60Hz       | r/min | 600 | 500 | 300 | 240 | 200  | 144  | 120  | 100  | 72   | 60   | 50   | 36   | 30   | 24   | 20   | 18   | 15   | 12   | 10   |
|              | 50Hz       |       | 500 | 416 | 250 | 200 | 166  | 120  | 100  | 83   | 60   | 50   | 41   | 30   | 25   | 20   | 16   | 15   | 12.5 | 10   | 8.3  |
| 6W           | 60Hz       | kgfcm | 1.4 | 1.6 | 2.7 | 3.4 | 4.1  | 5.7  | 6.8  | 8.2  | 10.3 | 12.4 | 13.5 | 18.7 | 22.4 | 28.1 | 33.7 | 37.4 | 44.9 | 50.0 | 50.0 |
|              | 50Hz       |       | 1.7 | 2.1 | 3.5 | 4.4 | 5.2  | 7.3  | 8.7  | 10.5 | 13.1 | 15.8 | 17.1 | 23.8 | 28.6 | 35.7 | 42.8 | 47.6 | 50.0 | 50.0 | 50.0 |
| 10W          | 60Hz       | kgfcm | 1.7 | 2.1 | 3.4 | 4.3 | 5.2  | 7.2  | 8.6  | 10.3 | 12.9 | 15.5 | 16.9 | 23.5 | 28.2 | 35.2 | 42.2 | 46.9 | 50.0 | 50.0 | 50.0 |
|              | 50Hz       |       | 2.1 | 2.5 | 4.2 | 5.2 | 6.3  | 8.7  | 10.5 | 12.5 | 15.8 | 18.9 | 20.6 | 28.6 | 34.3 | 42.8 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| 15W          | 60Hz       | kgfcm | 2.5 | 3.0 | 5.0 | 6.2 | 7.5  | 10.4 | 12.5 | 14.9 | 18.8 | 22.5 | 24.5 | 34.0 | 40.8 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
|              | 50Hz       |       | 3.5 | 4.2 | 7.0 | 8.7 | 10.5 | 14.5 | 17.4 | 20.9 | 26.3 | 31.5 | 34.3 | 47.6 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |

- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- 3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.  
The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 4) Calculation of N.m  $\rightleftharpoons$  kgfcm X 0.98

## Dimensions

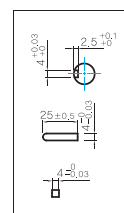
Model: 7GBK□BMH



GEARBOX OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

KEY SPEC



## WEIGHT

| Model                    | WEIGHT(Kg) |
|--------------------------|------------|
| 7GBK3BMH<br>~ 7GBK18BMH  | 0,36       |
| 7GBK25BMH<br>~ 7GBK30BMH | 0,44       |
| 7GBK36MH<br>~ 7GBK180MH  | 0,5        |

32(42)-Table2

| SIZE(mm) | GEAR RATIO             |
|----------|------------------------|
| 32       | 7GBK3BMH – 7GBK18BMH   |
| 42       | 7GBK25BMH – 7GBK180BMH |

## Frame Size 80mm Model: 8GBK□BMH Max. Permissible Torque

\* These are reference figures when the Gearbox is attached to the induction motor.

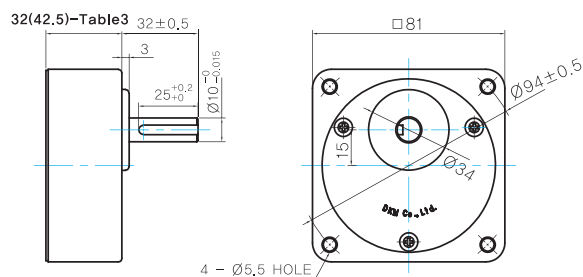
| Motor Output | Gear Ratio |       | 3   | 3.6 | 5   | 6    | 7.5  | 9    | 12.5 | 15   | 18   | 25   | 30   | 36   |
|--------------|------------|-------|-----|-----|-----|------|------|------|------|------|------|------|------|------|
|              | 60Hz       | r/min | 600 | 500 | 360 | 300  | 240  | 200  | 144  | 120  | 100  | 72   | 60   | 50   |
|              | 50Hz       |       | 500 | 417 | 300 | 250  | 200  | 167  | 120  | 100  | 83   | 60   | 50   | 42   |
| 15W          | 60Hz       | kgfcm | 3.0 | 3.6 | 5.0 | 6.0  | 7.5  | 9.0  | 12.5 | 14.9 | 17.9 | 22.5 | 27.0 | 29.4 |
|              | 50Hz       |       | 3.5 | 4.2 | 5.8 | 7.0  | 8.7  | 10.5 | 14.5 | 17.4 | 20.9 | 26.3 | 31.5 | 34.3 |
| 25W          | 60Hz       | kgfcm | 4.5 | 5.4 | 7.5 | 9.0  | 11.2 | 13.4 | 18.7 | 22.4 | 26.9 | 33.8 | 40.5 | 44.1 |
|              | 50Hz       |       | 5.5 | 6.6 | 9.1 | 11.0 | 13.7 | 16.4 | 22.8 | 27.4 | 32.9 | 41.3 | 49.5 | 53.9 |

| Motor Output | Gear Ratio |       | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  | 200  | 250  | 300  | 360  |
|--------------|------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | 60Hz       | r/min | 45   | 36   | 30   | 24   | 20   | 18   | 15   | 12   | 10   | 9    | 7    | 6    | 5    |
|              | 50Hz       |       | 38   | 30   | 25   | 20   | 17   | 15   | 13   | 10   | 8    | 7    | 6    | 5    | 5    |
| 15W          | 60Hz       | kgfcm | 32.6 | 40.8 | 49.0 | 61.2 | 73.4 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
|              | 50Hz       |       | 38.1 | 47.6 | 57.1 | 71.4 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| 25W          | 60Hz       | kgfcm | 49.0 | 61.2 | 73.4 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
|              | 50Hz       |       | 59.8 | 74.8 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |

- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- 3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.  
The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 4) Calculation of N.m  $\approx$  kgfcm X 0.98

## Dimensions

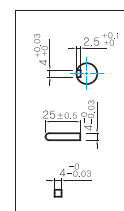
Model: 8GBK□BMH



GEARBOX OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

KEY SPEC



## WEIGHT

| Model                      | WEIGHT(Kg) |
|----------------------------|------------|
| 8GBK3BMH<br>~ 8GBK18BMH    | 0,48       |
| 8GBK25BMH<br>~ 8GBK30BMH   | 0,61       |
| 8GBK36BMH<br>~ 8GBK180BMH  | 0,67       |
| 8GBK200BMH<br>~ 8GBK360BMH | 0,63       |

32(42.5)-Table3

| SIZE(mm) | GEAR RATIO             |
|----------|------------------------|
| 32       | 8GBK3BMH – 8GBK18BMH   |
| 42.5     | 8GBK25BMH – 8GBK360BMH |

# D Gearbox

## Parallel Gearbox

### Frame Size 90mm Model: 9GBK□BMH – Max. Permissible Torque

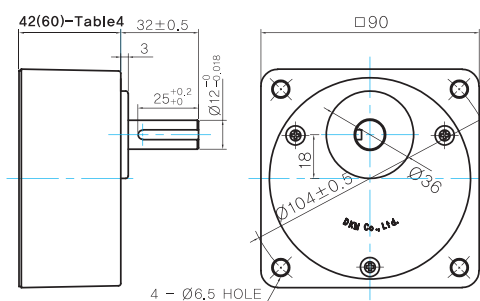
\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 2   | 3   | 3.6  | 5    | 6    | 7.5  | 9    | 10   | 12.5 | 15   | 18   | 25   | 30   | 36   | 40   | 50    | 60    | 75    | 90    | 100   | 120   | 150   | 180   | 200   |
|--------------|------------|-------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|              | 60Hz       | r/min | 900 | 600 | 500  | 360  | 300  | 240  | 200  | 180  | 144  | 120  | 100  | 72   | 60   | 50   | 45   | 36    | 30    | 24    | 20    | 18    | 15    | 12    | 10    | 9     |
|              | 50Hz       |       | 750 | 500 | 417  | 300  | 250  | 200  | 167  | 150  | 120  | 100  | 83   | 60   | 50   | 42   | 38   | 30    | 25    | 20    | 17    | 15    | 13    | 10    | 8     | 7.5   |
| 40W          | 60Hz       | kgfcm | 4,6 | 7,0 | 8,4  | 11,6 | 13,9 | 17,4 | 20,9 | 23,2 | 29,1 | 34,9 | 37,8 | 52,5 | 63,0 | 68,5 | 76,2 | 95,2  | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
|              | 50Hz       |       | 5,6 | 8,5 | 10,2 | 14,1 | 16,9 | 21,2 | 25,4 | 28,2 | 35,3 | 42,3 | 45,9 | 63,8 | 76,5 | 83,2 | 92,5 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |

- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- 3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.  
The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 4) Calculation of N.m  $\approx$  kgfcm X 0.98

### Dimensions

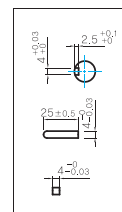
Model: 9GBK□BMH



GEARBOX OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

KEY SPEC



### WEIGHT

| Model                     | WEIGHT(Kg) |
|---------------------------|------------|
| 9GBK2BMH<br>~ 9GBK15BMH   | 0,67       |
| 9GBK18BMH<br>~ 9GBK30BMH  | 0,96       |
| 9GBK36BMH<br>~ 9GBK200BMH | 1,07       |

42(60)-Table4

| SIZE(mm) | GEAR RATIO             |
|----------|------------------------|
| 42       | 9GBK2BMH – 9GBK15BMH   |
| 60       | 9GBK18BMH – 9GBK200BMH |

### Gearbox Image

General Box Type

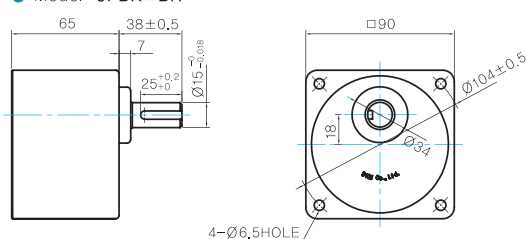


# PType

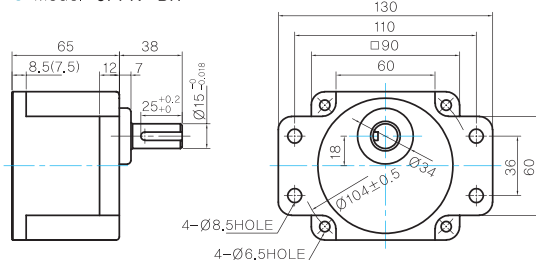
Powerful Box /  
Flange Type Gearbox

## Dimensions

Model: 9PBK□BH



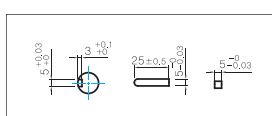
Model: 9PFK□BH



### MOTOR OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

### KEY SPEC



### WEIGHT

| Model                         | WEIGHT(Kg) |
|-------------------------------|------------|
| 9PB(F)K2BH<br>~ 9PB(F)K18BH   | 1.3        |
| 9PB(F)K20BH<br>~ 9PB(F)K180BH | 1.4        |

## Gearbox Images

9PBK□BH



9PFK□BH



## 9PBK□BH/9PFK□BH – Max. Permissible Torque

\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 2    | 3    | 3.6  | 5    | 6    | 7.5  | 9    | 12.5  | 15    | 18    | 20    |
|--------------|------------|-------|------|------|------|------|------|------|------|-------|-------|-------|-------|
|              | 60Hz       | r/min | 900  | 600  | 500  | 360  | 300  | 240  | 200  | 144   | 120   | 100   | 90    |
|              | 50Hz       |       | 750  | 500  | 417  | 300  | 250  | 200  | 167  | 120   | 100   | 83    | 75    |
| 60W          | 60Hz       | kgfcm | 7.0  | 10.5 | 12.5 | 17.4 | 20.9 | 26.1 | 31.4 | 39.4  | 47.3  | 56.7  | 57.1  |
|              | 50Hz       |       | 8.6  | 12.9 | 15.5 | 21.6 | 25.9 | 32.4 | 38.8 | 48.8  | 58.5  | 70.2  | 70.7  |
| 90W          | 60Hz       |       | 11.3 | 16.9 | 20.3 | 28.2 | 33.9 | 42.3 | 50.8 | 63.8  | 76.5  | 91.8  | 92.5  |
|              | 50Hz       |       | 12.3 | 18.4 | 22.1 | 30.7 | 36.9 | 46.1 | 55.3 | 69.4  | 83.3  | 99.9  | 100.6 |
| 120W         | 60Hz       |       | 12.6 | 18.9 | 22.7 | 31.5 | 37.8 | 47.3 | 56.8 | 71.3  | 85.5  | 102.6 | 103.4 |
|              | 50Hz       |       | 16.3 | 24.4 | 29.3 | 40.7 | 48.8 | 61.0 | 73.2 | 101.7 | 122.0 | 146.4 | 162.7 |

| Motor Output | Gear Ratio |       | 25    | 30    | 36    | 40    | 50    | 60    | 75    | 90    | 100   | 120   | 150   | 180   | 200   |
|--------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|              | 60Hz       | r/min | 72    | 60    | 50    | 45    | 36    | 30    | 24    | 20    | 18    | 15    | 12    | 10    | 9     |
|              | 50Hz       |       | 60    | 50    | 42    | 38    | 30    | 25    | 20    | 17    | 15    | 13    | 10    | 8     | 7.5   |
| 60W          | 60Hz       | kgfcm | 71.4  | 85.7  | 102.8 | 114.2 | 142.8 | 171.4 | 192.2 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
|              | 50Hz       |       | 88.4  | 106.1 | 127.3 | 141.4 | 176.8 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| 90W          | 60Hz       |       | 115.6 | 138.7 | 166.5 | 185.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
|              | 50Hz       |       | 125.8 | 151.0 | 181.2 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| 120W         | 60Hz       |       | 129.2 | 155.0 | 186.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
|              | 50Hz       |       | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |

1) Enter the gear ratio in the box (□) within the Gearbox model name.

2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.

3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.

The actual speed is 2~20% less than the displayed value, depending on the size of the load.

4) Calculation of N.m  $\approx$  kgfcm X 0.98

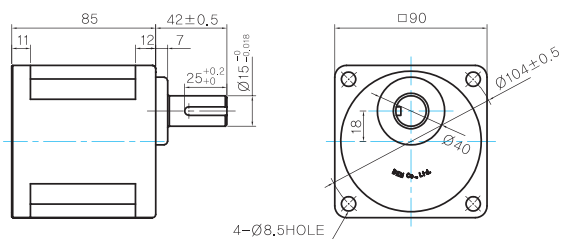
# D Gearbox

## Parallel Gearbox

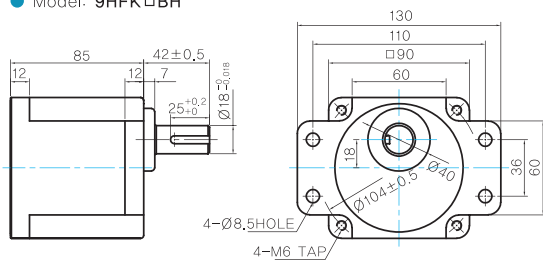
## H Type High Powerful Box / Flange Type Gearbox

### Dimensions

Model: 9HBK□BH



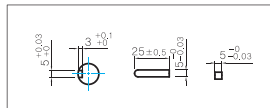
Model: 9HFK□BH



MOTOR OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

KEY SPEC



WEIGHT

| Model                          | WEIGHT(Kg) |
|--------------------------------|------------|
| 9HB(F)K3BH<br>~ 9HB(F)K9BH     | 1.45       |
| 9HB(F)K12.5BH<br>~ 9HB(F)K18BH | 1.5        |
| 9HB(F)K20BH<br>~ 9HB(F)K60BH   | 1.7        |
| 9HB(F)K75BH<br>~ 9HB(F)K180BH  | 1.8        |

### Gearbox Images

9HBK□BH



9HFK□BH



### 9HBK□BH/9HFK□BH – Max. Permissible Torque

\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio | 3    | 3.6  | 6    | 9     | 12.5  | 15    | 18    | 20    | 25    | 30    | 36    | 50    | 60    | 75    | 90    | 100   | 120   | 150   | 180   | 200   |
|--------------|------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|              |            |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 60W          | 60Hz       | 600  | 500  | 300  | 200   | 144   | 120   | 100   | 90    | 72    | 60    | 50    | 36    | 30    | 24    | 20    | 18    | 15    | 12    | 10    | 9     |
|              | 50Hz       | 500  | 417  | 250  | 167   | 120   | 100   | 83    | 75    | 60    | 50    | 42    | 30    | 25    | 20    | 17    | 15    | 13    | 10    | 8     | 7.5   |
| 90W          | 60Hz       | 10.5 | 12.5 | 20.9 | 31.4  | 39.4  | 47.3  | 56.7  | 57.1  | 71.4  | 85.7  | 102.8 | 142.8 | 171.4 | 192.2 | 230.6 | 256.2 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 12.9 | 15.5 | 25.9 | 38.8  | 48.8  | 58.5  | 70.2  | 70.7  | 88.4  | 106.1 | 127.3 | 176.8 | 212.2 | 237.9 | 285.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| 120W         | 60Hz       | 16.9 | 20.3 | 33.9 | 50.8  | 63.8  | 76.5  | 91.8  | 92.5  | 115.6 | 138.7 | 166.5 | 231.2 | 277.4 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 18.4 | 22.1 | 36.9 | 55.3  | 69.4  | 83.3  | 99.9  | 100.6 | 125.8 | 151.0 | 181.2 | 251.6 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| 150W         | 60Hz       | 18.9 | 22.7 | 37.8 | 56.8  | 71.3  | 85.5  | 102.6 | 103.4 | 129.2 | 155.0 | 186.0 | 258.4 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 24.4 | 29.3 | 48.8 | 73.2  | 91.9  | 110.3 | 132.3 | 133.3 | 166.6 | 199.9 | 239.9 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| 180W         | 60Hz       | 24.2 | 29.0 | 48.3 | 72.5  | 90.9  | 109.1 | 131.0 | 131.9 | 164.9 | 197.9 | 237.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 28.1 | 33.8 | 56.3 | 84.4  | 105.9 | 127.1 | 152.6 | 153.7 | 192.1 | 230.5 | 276.6 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| 200W         | 60Hz       | 27.4 | 32.9 | 54.8 | 82.2  | 103.1 | 123.8 | 148.5 | 149.6 | 187.0 | 224.4 | 269.3 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 34.9 | 41.8 | 69.7 | 104.6 | 131.3 | 157.5 | 189.0 | 190.4 | 238.0 | 285.6 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| 200W         | 60Hz       | 32.4 | 38.8 | 64.7 | 97.1  | 121.9 | 146.3 | 175.5 | 176.8 | 221.0 | 265.2 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
|              | 50Hz       | 37.4 | 44.8 | 74.7 | 112.1 | 140.6 | 168.8 | 202.5 | 204.0 | 255.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |

1) Enter the gear ratio in the box (□) within the Gearbox model name.

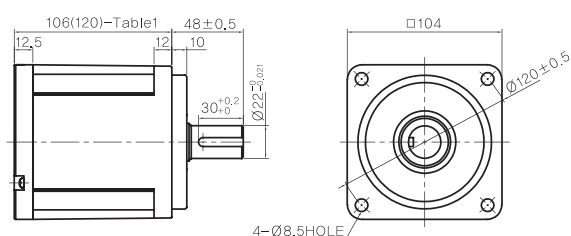
2) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.

3) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load. 4) Calculation of N.m  $\approx$  kgfcm X 0.98

# UType Ultra Powerful Box / Flange Type Gearbox

## Dimensions

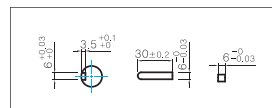
Model: 10UBK□BH



### MOTOR OUTPUT SHAFT

| MODEL    | SPEC |
|----------|------|
| KEY TYPE |      |

### KEY SPEC



### WEIGHT

| PART                       | WEIGHT(Kg) |
|----------------------------|------------|
| 10UBK3BH<br>~ 10UBK10BH    | 2.1        |
| 10UBK12.5BH<br>~ 10UBK18BH | 2.15       |
| 10UBK20BH<br>~ 10UBK60BH   | 2.2        |
| 10UBK75BH<br>~ 10UBK200BH  | 2.3        |

## Gearbox Images



## 10UBK□BH – Max. Permissible Torque

### 400W 3Phase 60HZ

| Motor Model   | Gearbox Model | Gear Ratio | 3    | 3.6  | 5   | 6     | 7.5  | 9     | 10    | 12.5  | 15    | 18   | 20   | 25   | 30   | 36   | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  |
|---------------|---------------|------------|------|------|-----|-------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|               |               | r/min      | 600  | 500  | 360 | 300   | 240  | 200   | 180   | 144   | 120   | 100  | 90   | 72   | 60   | 50   | 45   | 36   | 30   | 24   | 20   | 18   | 15   | 12   | 10   |
| 10IDG6-400F-T | 10UBK□BH      | kgfcm      | 60   | 75   | 100 | 120   | 150  | 180   | 185   | 225   | 275   | 300  | 300  | 300  | 300  | 350  | 350  | 350  | 400  | 400  | 400  | 400  | 400  | 400  | 400  |
|               |               | N.m        | 5.88 | 7.35 | 9.8 | 11.76 | 14.7 | 17.64 | 18.13 | 22.05 | 26.95 | 29.4 | 29.4 | 29.4 | 29.4 | 34.3 | 34.3 | 34.3 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 |

### 300W 3Phase 60HZ

| Motor Model   | Gearbox Model | Gear Ratio | 3    | 3.6  | 5   | 6     | 7.5  | 9     | 10    | 12.5  | 15    | 18   | 20   | 25   | 30   | 36   | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  |
|---------------|---------------|------------|------|------|-----|-------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|               |               | r/min      | 600  | 500  | 360 | 300   | 240  | 200   | 180   | 144   | 120   | 100  | 90   | 72   | 60   | 50   | 45   | 36   | 30   | 24   | 20   | 18   | 15   | 12   | 10   |
| 10IDG6-300F-T | 10UBK□BH      | kgfcm      | 60   | 75   | 100 | 120   | 150  | 180   | 185   | 225   | 275   | 300  | 300  | 300  | 300  | 350  | 350  | 350  | 400  | 400  | 400  | 400  | 400  | 400  | 400  |
|               |               | N.m        | 5.88 | 7.35 | 9.8 | 11.76 | 14.7 | 17.64 | 18.13 | 22.05 | 26.95 | 29.4 | 29.4 | 29.4 | 29.4 | 34.3 | 34.3 | 34.3 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 |

### 300W 3Phase 50HZ

| Motor Model   | Gearbox Model | Gear Ratio | 3    | 3.6  | 5    | 6     | 7.5   | 9     | 10    | 12.5  | 15   | 18    | 20   | 25   | 30   | 36   | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  |
|---------------|---------------|------------|------|------|------|-------|-------|-------|-------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|               |               | r/min      | 500  | 417  | 300  | 250   | 200   | 167   | 150   | 120   | 100  | 83    | 75   | 60   | 50   | 42   | 37.5 | 30   | 25   | 20   | 16.7 | 15   | 12.5 | 10   | 8    |
| 10IDG6-300F-T | 10UBK□BH      | kgfcm      | 55   | 70   | 95   | 110   | 140   | 170   | 170   | 210   | 250  | 270   | 300  | 300  | 300  | 350  | 350  | 350  | 400  | 400  | 400  | 400  | 400  | 400  | 400  |
|               |               | N.m        | 5.39 | 6.86 | 9.31 | 10.78 | 13.72 | 16.66 | 16.66 | 20.58 | 24.5 | 26.46 | 29.4 | 29.4 | 29.4 | 34.3 | 34.3 | 34.3 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 |

### 250W 3Phase 50HZ

| Motor Model   | Gearbox Model | Gear Ratio | 3   | 3.6  | 5    | 6   | 7.5   | 9     | 10   | 12.5  | 15    | 18    | 20    | 25    | 30   | 36   | 40   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  |
|---------------|---------------|------------|-----|------|------|-----|-------|-------|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
|               |               | r/min      | 500 | 417  | 300  | 250 | 200   | 167   | 150  | 120   | 100   | 83    | 75    | 60    | 50   | 42   | 37.5 | 30   | 25   | 20   | 16.7 | 15   | 12.5 | 10   | 8    |
| 10IDG6-250F-T | 10UBK□BH      | kgfcm      | 50  | 60   | 80   | 100 | 120   | 145   | 150  | 185   | 220   | 240   | 270   | 335   | 400  | 400  | 400  | 400  | 400  | 400  | 400  | 400  | 400  | 400  | 400  |
|               |               | N.m        | 4.9 | 5.88 | 7.84 | 9.8 | 11.76 | 14.21 | 14.7 | 18.13 | 21.56 | 23.52 | 26.46 | 32.83 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 |

1. 10IDG6-400F : 3Phase 220/380V 60Hz 2. 10IDG7-300F : 3Phase 230/400V 50Hz  
3. 10IDG8-300F : 3Phase 440V 50Hz 4. 10IDGE-250F : 1Phase 220V 50Hz 5. 10IDGD-300F : 1Phase 220V 60Hz

# D Gearbox

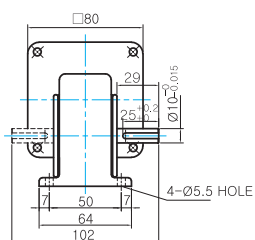
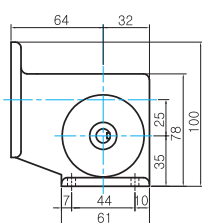
## Worm Gearbox

# W Type

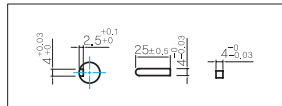
## Worm Solid Type Gearbox

### Dimensions

Model: 8WD□BL/BR/BRL



#### KEY SPEC



#### WEIGHT

| Model         | WEIGHT(Kg) |
|---------------|------------|
| 8WD□BL/BR/BRL | 0,67       |

### 8WD□BL/□BR/□BRL Max. Permissible Torque

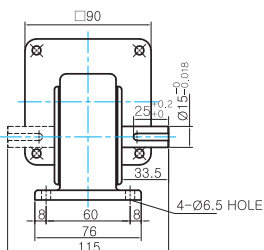
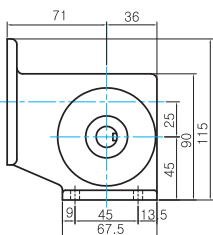
\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 10   | 12   | 15   | 18   | 25   | 30   | 36   | 50   | 60   |
|--------------|------------|-------|------|------|------|------|------|------|------|------|------|
|              | 60Hz       | r/min | 180  | 150  | 120  | 100  | 72   | 60   | 50   | 36   | 30   |
|              | 50Hz       |       | 150  | 125  | 100  | 83   | 60   | 50   | 42   | 30   | 25   |
| 15W          | 60Hz       | kgfcm | 9.8  | 11.5 | 13.9 | 16.0 | 21.0 | 23.8 | 27.6 | 36.0 | 39.6 |
|              | 50Hz       |       | 11.5 | 13.4 | 16.2 | 18.6 | 24.5 | 27.7 | 32.3 | 42.0 | 46.2 |
| 25W          | 60Hz       | kgfcm | 14.8 | 17.3 | 20.8 | 24.0 | 31.5 | 35.6 | 41.5 | 54.0 | 59.4 |
|              | 50Hz       |       | 18.0 | 21.1 | 25.4 | 29.3 | 38.5 | 43.6 | 50.7 | 66.0 | 72.6 |

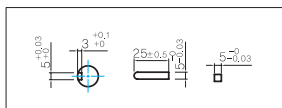
- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 3) Calculation of N.m  $\approx$  kgfcm X 0.98

### Dimensions

Model: 9WD□BL/BR/BRL



#### KEY SPEC



#### WEIGHT

| Model         | WEIGHT(Kg) |
|---------------|------------|
| 9WD□BL/BR/BRL | 1,0        |

### 9WD□BL/□BR/□BRL Max. Permissible Torque

\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 10   | 12   | 15    | 18    | 25    | 30    | 36    | 50    | 60    |
|--------------|------------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|
|              | 60Hz       | r/min | 180  | 150  | 120   | 100   | 72    | 60    | 50    | 36    | 30    |
|              | 50Hz       |       | 150  | 125  | 100   | 83    | 60    | 50    | 42    | 30    | 25    |
| 40W          | 60Hz       | kgfcm | 23.0 | 26.9 | 32.3  | 37.3  | 49.0  | 55.4  | 64.5  | 84.0  | 92.4  |
|              | 50Hz       |       | 27.9 | 32.6 | 39.3  | 45.3  | 59.5  | 67.3  | 78.3  | 102.0 | 112.2 |
| 60W          | 60Hz       | kgfcm | 34.4 | 40.3 | 48.5  | 55.9  | 73.5  | 83.2  | 96.8  | 126.0 | 122.4 |
|              | 50Hz       |       | 42.6 | 49.9 | 60.1  | 69.3  | 91.0  | 103.0 | 119.8 | 142.9 | 122.4 |
| 90W          | 60Hz       | kgfcm | 55.8 | 65.3 | 78.5  | 90.6  | 119.0 | 134.6 | 153.1 | 142.9 | 122.4 |
|              | 50Hz       |       | 60.7 | 71.0 | 85.5  | 98.6  | 129.5 | 146.5 | 153.1 | 142.9 | 122.4 |
| 120W         | 60Hz       | kgfcm | 62.3 | 73.0 | 87.8  | 101.2 | 133.0 | 150.5 | 153.1 | 142.9 | 122.4 |
|              | 50Hz       |       | 80.4 | 94.1 | 113.2 | 130.5 | 142.9 | 163.3 | 153.1 | 142.9 | 122.4 |

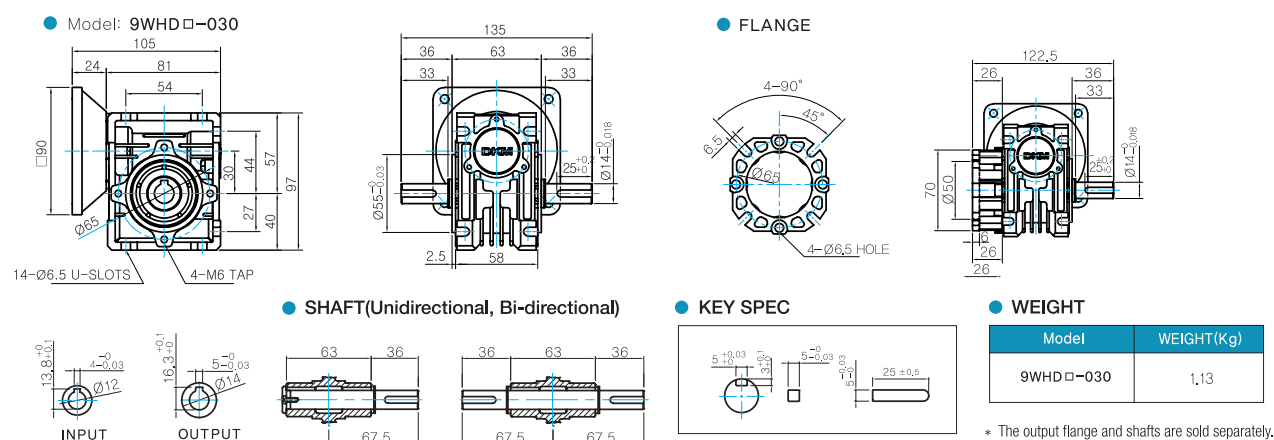
- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 3) Calculation of N.m  $\approx$  kgfcm X 0.98

### Gearbox Images



# WH<sub>Type</sub> Worm Hollow Type Gearbox

## Dimensions



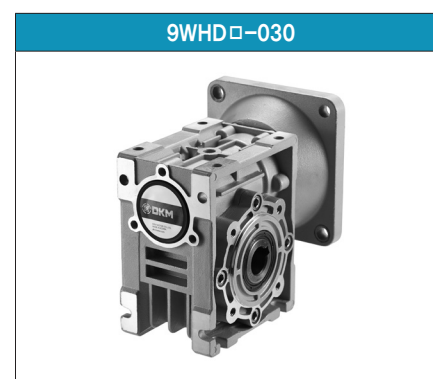
## 9WHD□-030 – Max. Permissible Torque

\* These are reference figures when the Gearbox is attached to the induction motor.

| Motor Output | Gear Ratio |       | 7.5  | 10    | 15    | 20    | 25    | 30    | 40    | 50    | 60    | 80    |
|--------------|------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|              | 60Hz       | r/min | 240  | 180   | 120   | 90    | 72    | 60    | 45    | 36    | 30    | 22    |
|              | 50Hz       |       | 200  | 150   | 100   | 75    | 60    | 50    | 38    | 30    | 25    | 18    |
| 60W          | 60Hz       | kgfcm | 26.5 | 34.0  | 47.9  | 60.5  | 69.3  | 80.6  | 99.1  | 113.4 | 126.0 | 132.7 |
|              | 50Hz       |       | 32.8 | 42.1  | 59.3  | 74.9  | 85.8  | 99.8  | 122.7 | 140.4 | 156.0 | 132.7 |
| 90W          | 60Hz       |       | 42.8 | 55.1  | 77.5  | 97.9  | 112.2 | 130.6 | 160.5 | 173.5 | 163.3 | 132.7 |
|              | 50Hz       |       | 46.6 | 59.9  | 84.4  | 106.6 | 122.1 | 142.1 | 174.6 | 173.5 | 163.3 | 132.7 |
| 120W         | 60Hz       |       | 47.9 | 61.6  | 86.6  | 109.4 | 125.4 | 145.9 | 179.4 | 173.5 | 163.3 | 132.7 |
|              | 50Hz       |       | 61.7 | 79.4  | 111.7 | 141.1 | 161.7 | 188.2 | 183.7 | 173.5 | 163.3 | 132.7 |
| 150W         | 60Hz       |       | 61.1 | 78.6  | 110.6 | 139.7 | 160.1 | 186.2 | 183.7 | 173.5 | 163.3 | 132.7 |
|              | 50Hz       |       | 71.2 | 91.5  | 128.8 | 162.7 | 186.5 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| 180W         | 60Hz       |       | 69.3 | 89.1  | 125.4 | 158.4 | 181.5 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
|              | 50Hz       |       | 88.2 | 113.4 | 159.6 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| 200W         | 60Hz       |       | 81.9 | 105.3 | 148.2 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
|              | 50Hz       |       | 94.5 | 121.5 | 171.0 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |

- 1) Enter the gear ratio in the box (□) within the Gearbox model name.
- 2) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 3) Calculation of N.m  $\approx$  kgfcm X 0.98

## Gearbox Image



## Worm Gearbox

 **Dimensions**

## 10WHD □ - 040 – Max. Permissible Torque

 **Gearbox Image**

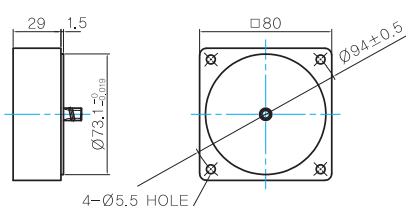
# Inter-decimal Gearbox

**Frame Size 80mm Model : 8XD10□□**  
**Frame Size 90mm Model : 9XD10□□**

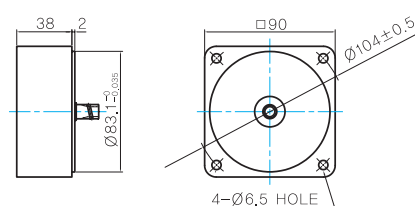
- In case of requiring high gear reduction ratio that cannot be generated by single Gearbox, please use Inter-decimal Gearbox with general Gearbox. And please be advised that in this case only revolution speed of output shaft will reduce by 10:1 without increasing of maximum permissible torque.
- Enter the model type of attaching Gearbox (G/P/Z) in the box □ within the model name.

## Dimensions

● Model: 8XD10□□



● Model: 9XD10□□



● WEIGHT

| Model   | WEIGHT(Kg) |
|---------|------------|
| 8XD10□□ | 0,44       |
| 9XD10□□ | 0,5        |

## Gearbox Image

