



독일 OTT GmbH사와 기술제휴 및 특허출원

www.dkmmotor.com

고효율 프리미엄

헬리크로스 감속기

**DSY 신제품 출시** **NEW**

컴팩트 사이즈



苏州菲曼德精密机械设备有限公司



고토크

헬리크로스 감속기

294N.m



평행축 감속기

최대 40N.m



중공축 워름감속기

최대 36N.m



12N.m



모터, 감속기 분리 교체가능



DKM Drives Power of the World

苏州菲曼德精密机械设备有限公司

苏州菲曼德精密机械设备有限公司

## Contents ▶▶

### **A** Information

- A-01 Product Coding System
- A-04 Products Lineup
- A-08 General Information
- A-12 Terminology
- A-15 Caution for Using

### **B** AC Motors

- B-01 Technical Data of AC Motor
- B-06 Induction Motor
- B-48 2 Pole Motor
- B-66 Reversible Motor
- B-98 Electromagnetic Brake Motor
- B-138 Clutch & Brake Motor
- B-154 Torque Motor
- B-168 Speed Control System
  - B-171 Speed Controller FX1000A
  - B-173 Speed Controller DSK
  - B-175 Speed Controller DSXS
  - B-178 Speed Control Induction Motor
  - B-212 Speed Control Reversible Motor
  - B-240 Speed Control E.M. Brake Motor
  - B-266 Speed Control Clutch & Brake Motor

### **C** DC Motors

- C-01 Technical Data of DC Motor
- C-04 DC Motor
- C-17 Speed Controller DSD-90

### **D** Gearheads

- D-01 Technical Data of Gearhead
- D-07 Parallel Gearhead
- D-12 Worm Gearhead
- D-14 Inter-decimal Gearhead

### **E** Options

- E-01 Mounting Plate
- E-02 Extension Cable
- E-03 Output Flange / Output Shaft

# Gearhead

## Parallel Gearhead

- Frame Size: 60/70/80/90mm

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)



## Worm Gearhead

- Frame Size  
Worm Solid Type: 80/90mm  
Worm Hollow Type: 90mm

Worm Solid Type  
(W Type, Left Output Shaft)



Worm Hollow Type  
(WH Type)



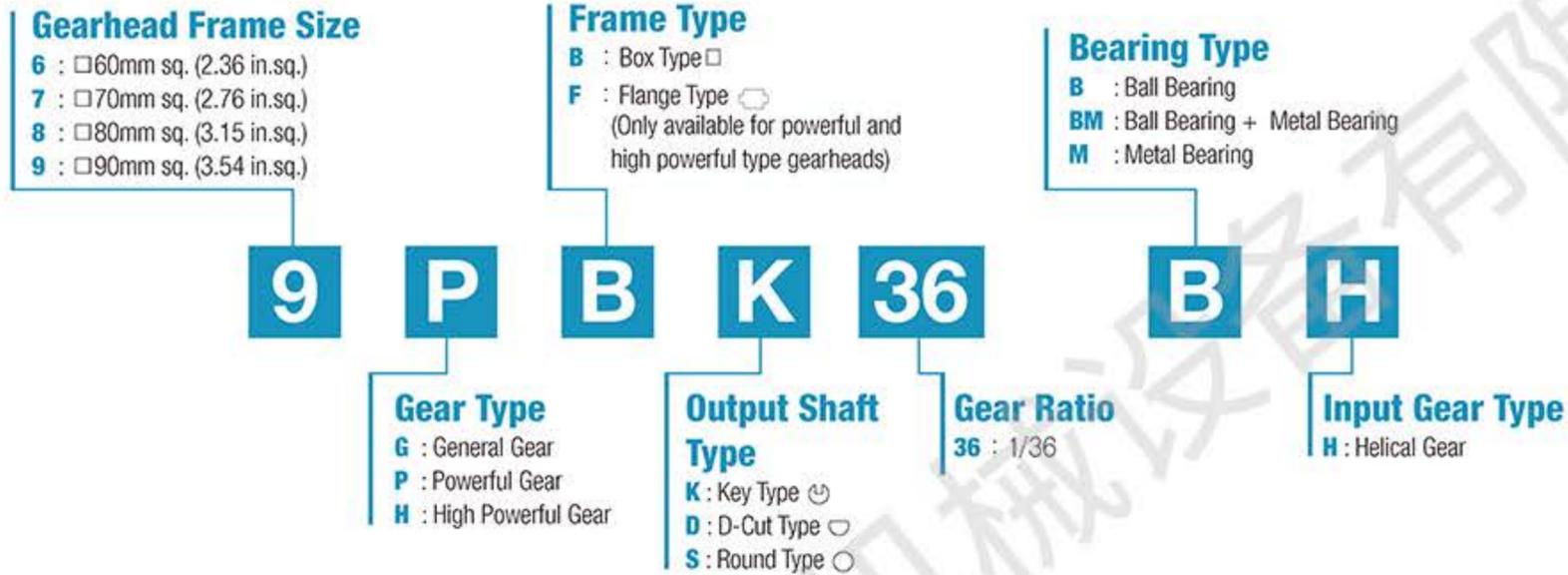
直交轴系列  
(HC系列)



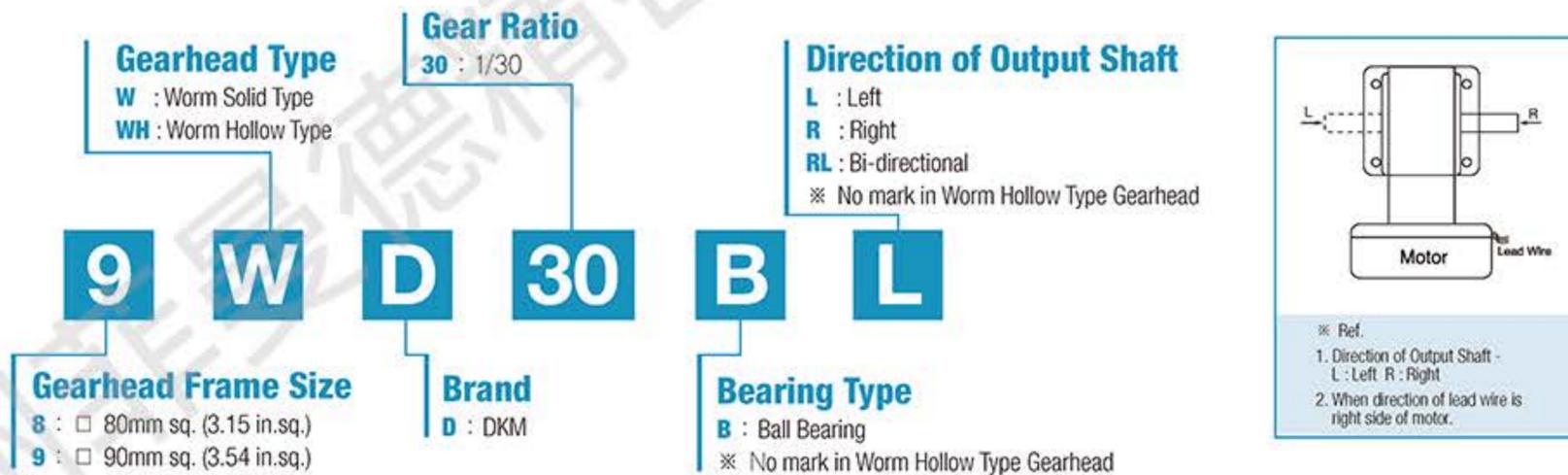
中间减速箱 10:1  
(8XD10BMH/9XD10BH)



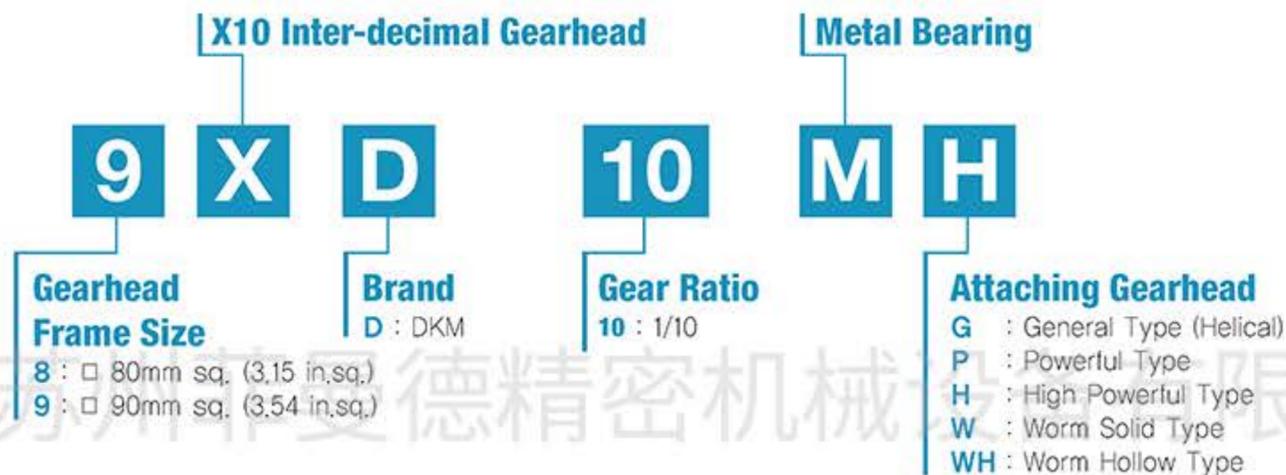
## Parallel Gearhead



## Worm Gearhead



## Inter-decimal Gearhead



In case of requiring high gear reduction ratio that cannot be generated by single gearhead, please use Inter-decimal gearhead with general gearhead. 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.

# D Gearheads

## Technical Data of Gearhead

### Definition and Function of Gearhead

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 Gearhead

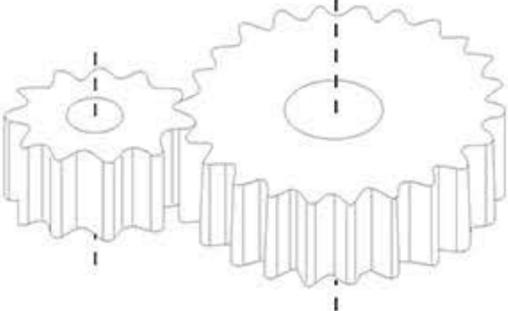
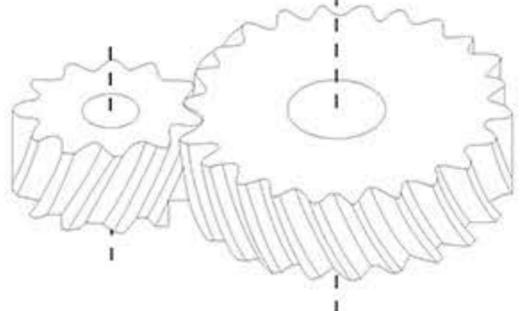
#### According to Frame Size

Frame Size □60mm GEARHEAD / Frame Size □70mm GEARHEAD / Frame Size □80mm GEARHEAD / Frame Size □90mm GEARHEAD

#### According to Direction of Output Shaft of Gearhead

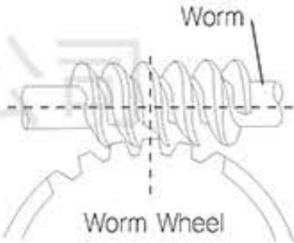
##### Parallel Gearhead

Parallel Gearhead 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)	Inter-decimal Gearhead
					
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 Gearhead

Worm Gearhead 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).

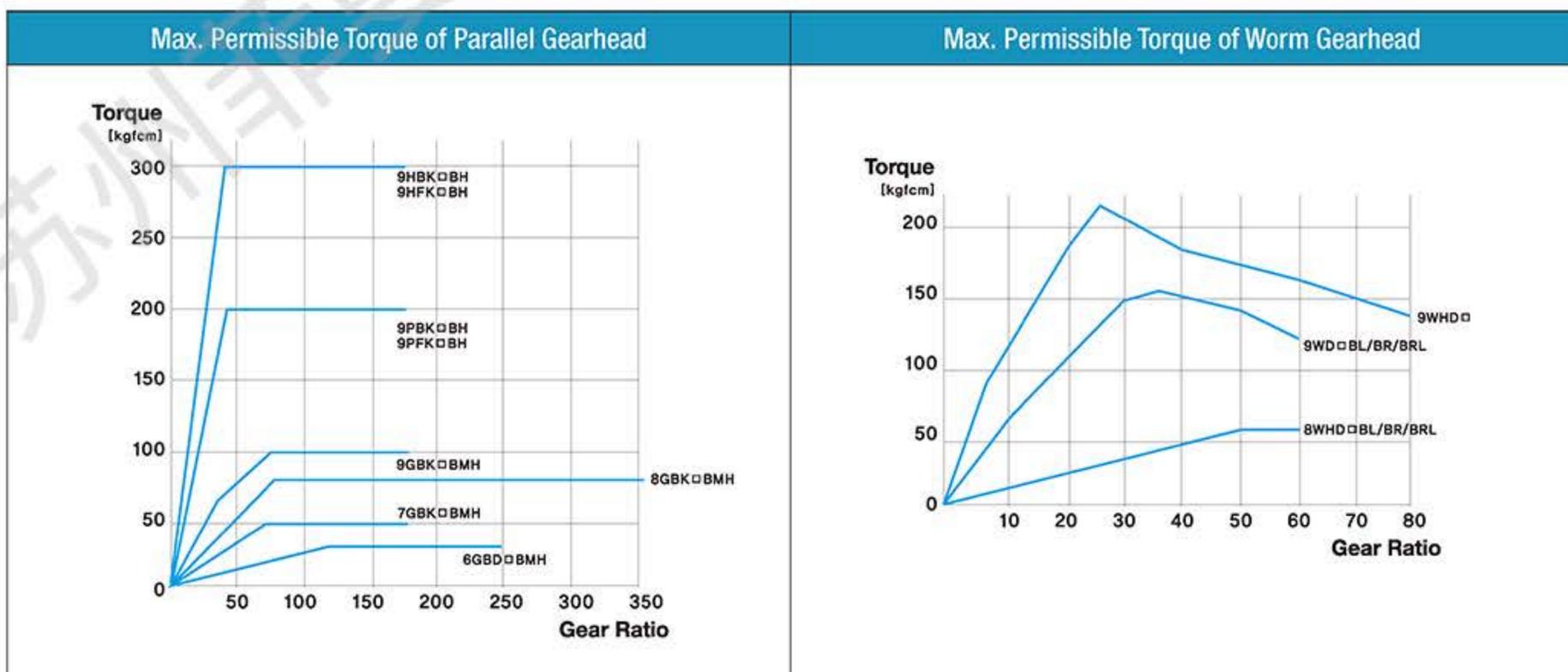
Worm Solid Type (W Type, Left Output Shaft)	Worm Solid Type (W Type, Right Output Shaft)	Worm Solid Type (W Type, Bi-Directional Output Shaft)	Worm Hollow Type (WH Type)	Worm Wheel
				 <p>Worm Gear transmits power to right-angle direction by threaded worm and worm wheel.</p>

## List of Gearhead Type

Type	Motor Output	Gearhead Model	Bearing Type	Frame Type	
Parallel Gearhead	G Type (General)	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
	P Type (Powerful)	60W~120W	9PBK□BH	Ball Bearing	Box Type
			9PFK□BH	Ball Bearing	Flange Type
H Type (High Powerful)	60W~200W	9HBK□BH	Ball Bearing	Box Type	
		9HFK□BH	Ball Bearing	Flange Type	
Worm Gearhead	W Type (Worm Solid)	15W, 25W	8WD□BL/□BR/□BRL	Ball Bearing	-
		40W~120W	9WD□BL/□BR/□BRL	Ball Bearing	-
	WH Type (Worm Hollow)	60W~200W	9WHD□	Ball Bearing	-
Inter-decimal Gearhead	15W, 25W	8XD10M□	Metal Bearing	Box Type	
	40W~200W	9XD10M□	Metal Bearing	Box Type	

## Maximum Permissible Torque and Efficiency of Gearhead

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



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

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

TG : Output torque of gearhead

TM : Motor torque

i : Gear reduction ratio

$\eta$  : Gearhead efficiency

# D Gearheads

## Technical Data of Gearhead

### ● Efficiency of Parallel Gearhead

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	81%											73%					66%											
8GBK□BMH	81%											73%					66%											
9GBK□BMH	81%											73%					66%											
9PBK□BH	81%											73%					66%											
9PFK□BH	81%											73%					66%											
9HBK□BH	81%											73%					66%											
9HFK□BH	81%											73%					66%											

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

### ● Efficiency of Worm Gearhead

Model \ Ratio	7.5	10	12	15	18	20	25	30	36	40	50	60	80
8WD □BL/□BR/□BRL	60%												80
9WD □BL/□BR/□BRL	60%												80
9WHD□	60%						55%						80

## ⊙ Speed and Direction of Rotations

### ⊙ Speed

This refers to the speed of rotation in the gearhead 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.

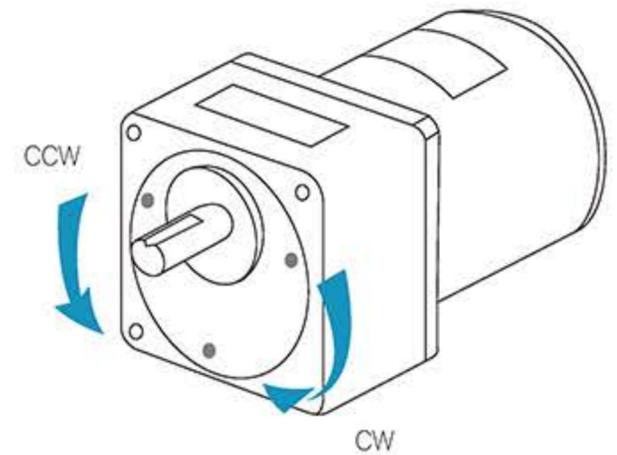
The speed is calculated with the following equation:

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

NG: Speed of gearhead [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 gearhead shaft rotation may differ from motor shaft rotation depending on the gear ratio of the gearhead.



### ● Rotating Direction of Gearhead 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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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

## Gearhead Life Expectancy and Service Factor

- Life expectancy of gearhead 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 gearhead. 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 gearhead and within the range of prescribed temperature (letting the gearhead case temperature stay below 50°C), the life expectancy of the gearhead is 10,000 hours for the ball bearing type and 2,000 hours for the metal type. However, if a ball bearing type of gearhead 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 gearhead 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

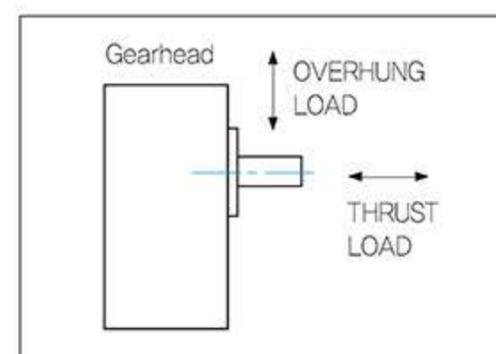
### Standard Life Expectancy

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 gearhead is coupled to the machine using a chain, belt, etc., but not when the gearhead 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 gearhead. The overhung load can be calculated from the following equation.

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

**W:** Overhung load [kg]  
**K:** Weight coefficient by driving method (refer to the right table)  
**T:** Delivery force of a gearhead 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

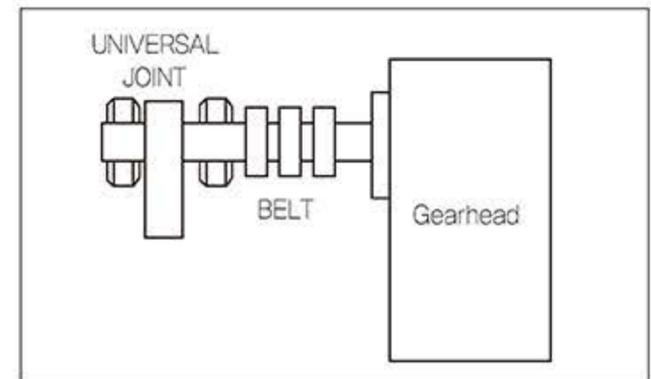
# D Gearheads

## Technical Data of Gearhead

- 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	
6GBD□MH	3 ~ 18	50	80	30
	20 ~ 250	120	180	
7GBK□BMH	3 ~ 18	80	120	40
	25 ~ 180	150	250	
8GBK□BMH	3 ~ 18	100	150	50
	25 ~ 360	200	300	
9GBK□BMH	3 ~ 18	250	350	100
	25 ~ 180	300	450	
9PBK□BH 9PFK□BH	3 ~ 9	400	500	150
	12.5 ~ 20	450	600	
	25 ~ 180	500	700	
9HBK□BH 9HFK□BH	50 ~ 180	400	600	150
8WD□BL 8WD□BR 8WD□BRL	10 ~ 60	300	450	100
9WD□BL 9WD□BR 9WD□BRL	10 ~ 60	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 gearhead 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 Gearhead

### Operating Noise of Gearhead

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

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

- Reference
- Operating noise value is the value measured beside gearhead with 1m distance.
  - dB (decibel) is a unit of measurement which is used to indicate how loud a sound is.
  - 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 Gearhead 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.

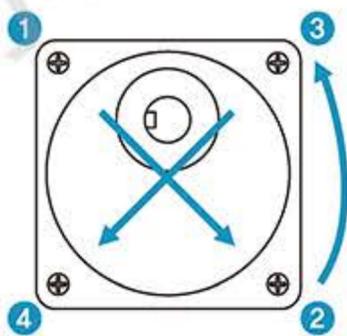
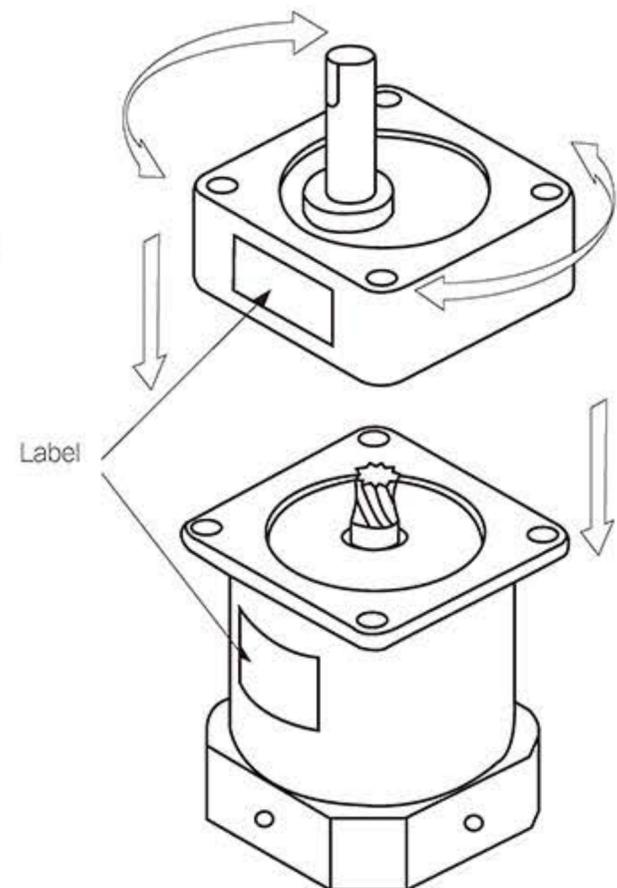
### ● Noise of Damaged Gear

In assembly gearhead and motor, users have to turn the gearhead 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 gearhead. So please handle gearhead with special care in assembly.

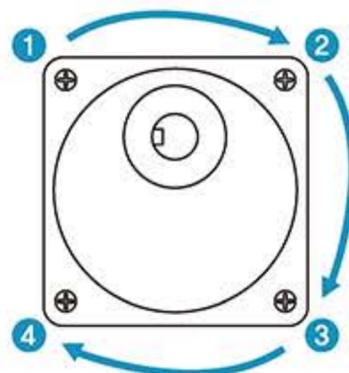
## 🔗 Assembly Method of Motor and Gearhead

- To assemble the motor and the gearhead, 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 gearhead. 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 gearhead and motor, and tighten the screws correctly. Be sure there is no-gab between motor flange, gearhead surface and the mounting surface.



Correct



Wrong

# D Gearheads

## Parallel Gearhead

### GType General Box Type Gearhead

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

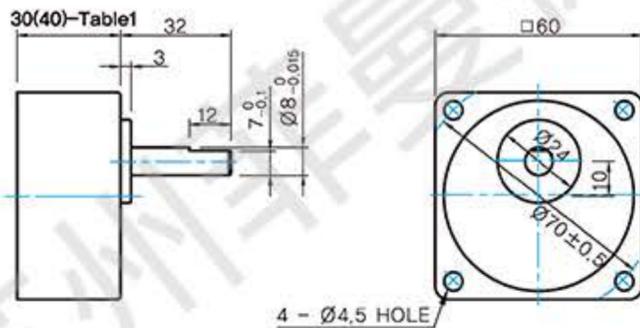
\* These are reference figures when the gearhead is attached to the induction motor.

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	r/min	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	kgfcm	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 gearhead 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: 6GBD □ MH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
D-CUT TYPE	

WEIGHT

Model	WEIGHT(Kg)
6GBD3MH ~ 6GBD18MH	0.3
6GBD20MH ~ 6GBD40MH	0.32
6GBD50MH ~ 6GBD250MH	0.34

30(40)-Table1

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

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

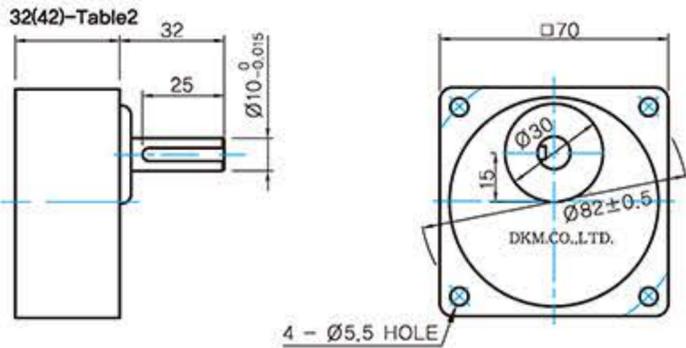
\* These are reference figures when the gearhead is attached to the induction motor.

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	r/min	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	kgfcm	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	kgfcm	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	kgfcm	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 gearhead 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

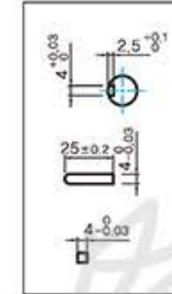
Model: 7GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC



WEIGHT

Model	WEIGHT(Kg)
7GBK3BMH ~ 7GBK18BMH	0.36
7GBK25BMH ~ 7GBK30BMH	0.44
7GBK36BMH ~ 7GBK180BMH	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 gearhead is attached to the induction motor.

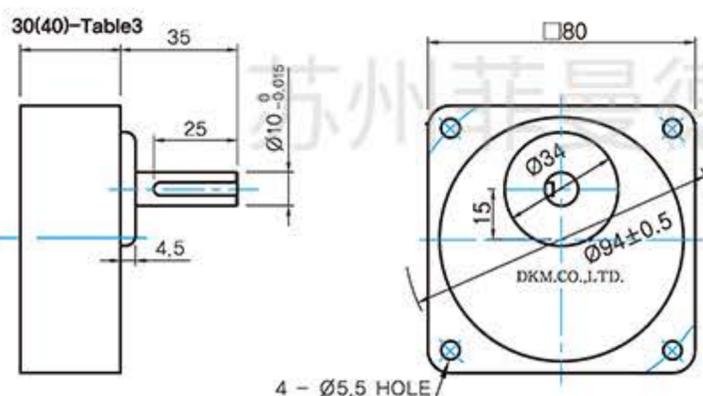
Motor Output	Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36
	60Hz	50Hz	r/min											
15W	60Hz	50Hz	600	500	360	300	240	200	144	120	100	72	60	50
	kgfcm		3.0	3.6	5.0	6.0	7.5	9.0	12.5	14.9	17.9	22.5	27.0	29.4
25W	60Hz	50Hz	500	417	300	250	200	167	120	100	83	60	50	42
	kgfcm		3.5	4.2	5.8	7.0	8.7	10.5	14.5	17.4	20.9	26.3	31.5	34.3
25W	60Hz	50Hz	4.5	5.4	7.5	9.0	11.2	13.4	18.7	22.4	26.9	33.8	40.5	44.1
	kgfcm		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	50Hz	r/min												
15W	60Hz	50Hz	45	36	30	24	20	18	15	12	10	9	7	6	5
	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
25W	60Hz	50Hz	38	30	25	20	17	15	13	10	8	7	6	5	5
	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
25W	60Hz	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
	kgfcm		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 gearhead 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

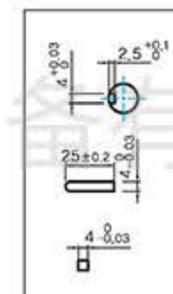
Model: 8GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC



WEIGHT

Model	WEIGHT(Kg)
8GBK3BMH ~ 8GBK18BMH	0.48
8GBK25BMH ~ 8GBK30BMH	0.61
8GBK36BMH ~ 8GBK180BMH	0.67
8GBK200BMH ~ 8GBK360BMH	0.63

30(40)-Table3

SIZE(mm)	GEAR RATIO
30	8GBK3BMH - 8GBK18BMH
40	8GBK25BMH - 8GBK360BMH

# D Gearheads

## Parallel Gearhead

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

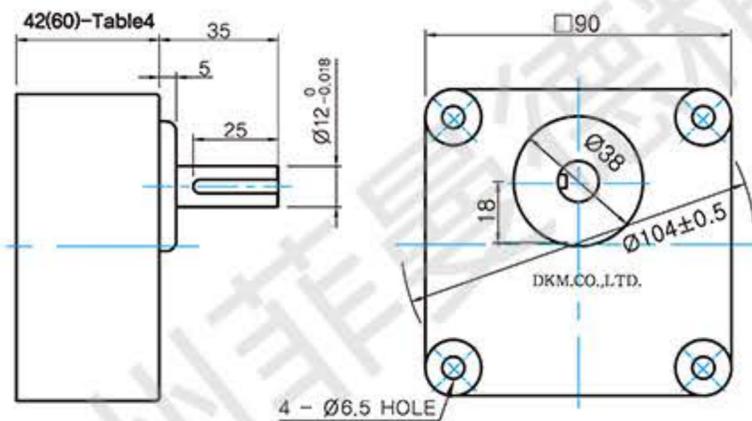
\* These are reference figures when the gearhead is attached to the induction motor.

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
	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
40W	50Hz	r/min	750	500	417	300	250	200	167	150	120	100	83	60	50	42	38	30	25	20	17	15	13	10	8
	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
	50Hz	kgfcm	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

- 1) Enter the gear ratio in the box (□) within the gearhead 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

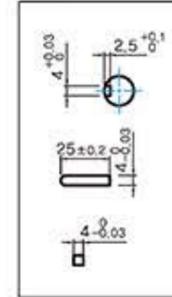
Model: 9GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC



42(60)-Table4

SIZE(mm)	GEAR RATIO
42	9GBK2BMH - 9GBK15BMH
60	9GBK18BMH - 9GBK180BMH

### WEIGHT

Model	WEIGHT(Kg)
9GBK2BMH ~ 9GBK15BMH	0.67
9GBK18BMH ~ 9GBK30BMH	0.96
9GBK36BMH ~ 9GBK180BMH	1.07

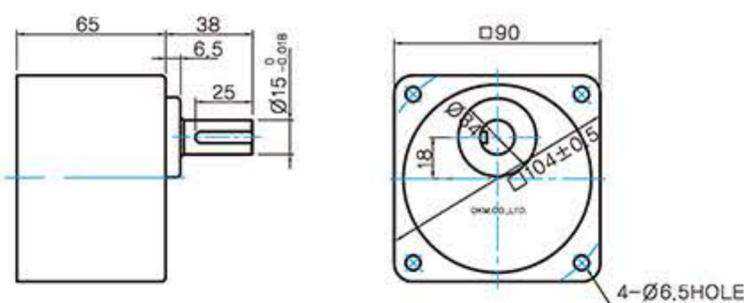
### Gearhead Image



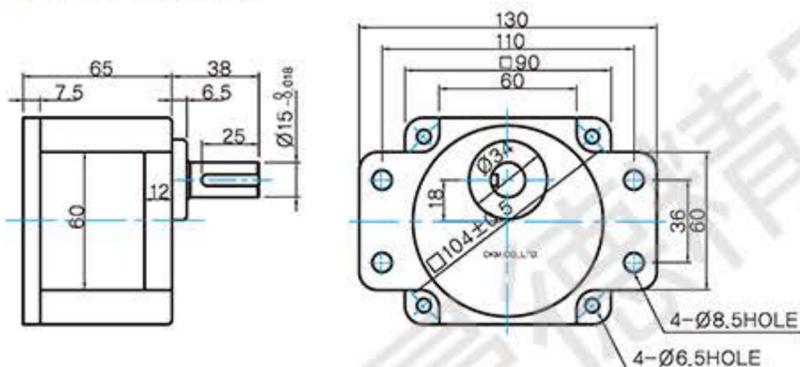
# P Type Powerful Box / Flange Type Gearhead

## Dimensions

● Model: 9PBK□BH



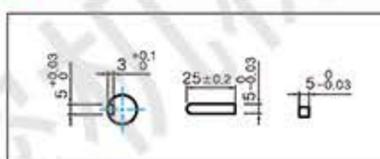
● Model: 9PFK□BH



● MOTOR OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

● KEY SPEC



● WEIGHT

Model	WEIGHT(Kg)
9PB(F)K2BH ~ 9PB(F)K18BH	1.3
9PB(F)K20BH ~ 9PB(F)K180BH	1.4

## Gearhead Images



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

\* These are reference figures when the gearhead 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
60W	50Hz		750	500	417	300	250	200	167	120	100	83	75
	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
	60Hz	r/min	72	60	50	45	36	30	24	20	18	15	12	10
60W	50Hz		60	50	42	38	30	25	20	17	15	13	10	8
	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
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	
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
	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
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
	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

1) Enter the gear ratio in the box (□) within the gearhead 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

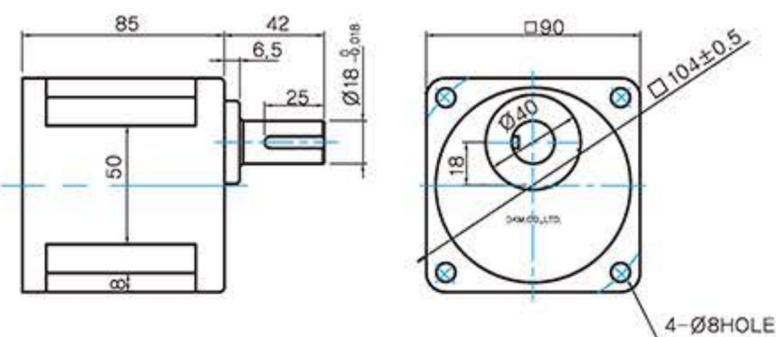
# D Gearheads

## Parallel Gearhead

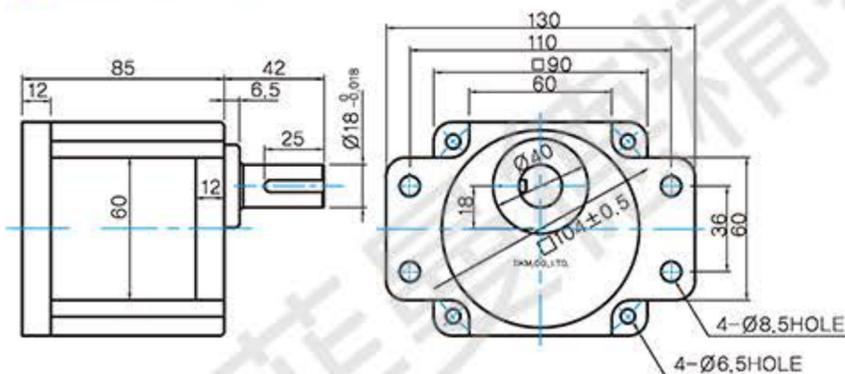
### H Type High Powerful Box / Flange Type Gearhead

#### Dimensions

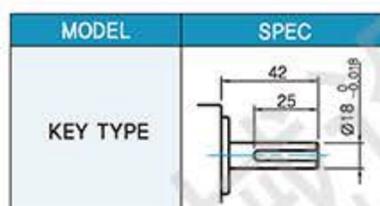
● Model: 9HBK□BH



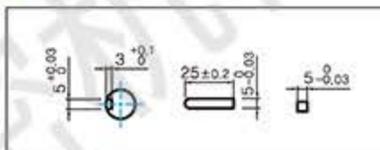
● Model: 9HFK□BH



● MOTOR OUTPUT SHAFT



● KEY SPEC



● WEIGHT

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

#### Gearhead Images



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

\* These are reference figures when the gearhead 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
	60Hz	50Hz	r/min																		
60W	60Hz	50Hz	600	500	300	200	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
	60Hz	50Hz	500	417	250	167	120	100	83	75	60	50	42	30	25	20	17	15	13	10	8
90W	60Hz	50Hz	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
	60Hz	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
120W	60Hz	50Hz	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
	60Hz	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
150W	60Hz	50Hz	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
	60Hz	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
180W	60Hz	50Hz	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
	60Hz	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
200W	60Hz	50Hz	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
	60Hz	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
200W	60Hz	50Hz	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
	60Hz	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

1) Enter the gear ratio in the box (□) within the gearhead 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.

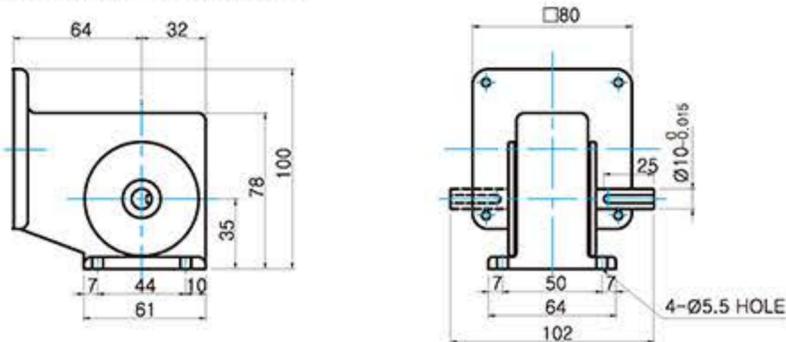
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

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

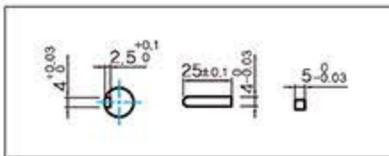
## W Type Worm Solid Type Gearhead

### 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

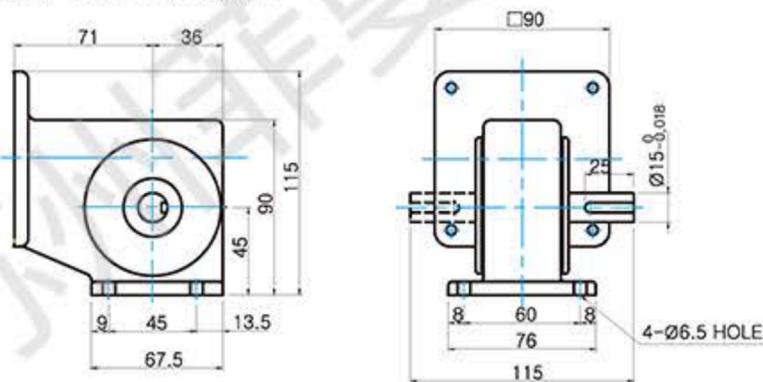
\* These are reference figures when the gearhead is attached to the induction motor.

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

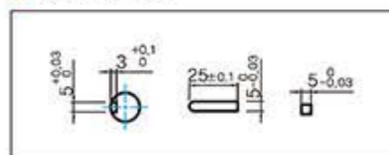
- 1) Enter the gear ratio in the box (□) within the gearhead model name.
- 2) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load.
- 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 gearhead is attached to the induction motor.

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

- 1) Enter the gear ratio in the box (□) within the gearhead 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

### Gearhead Images



# D Gearheads

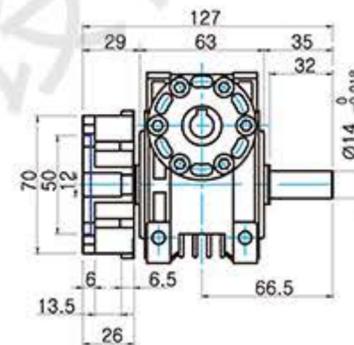
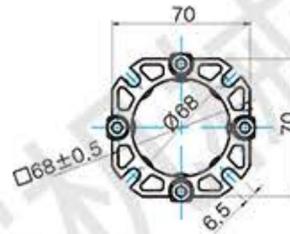
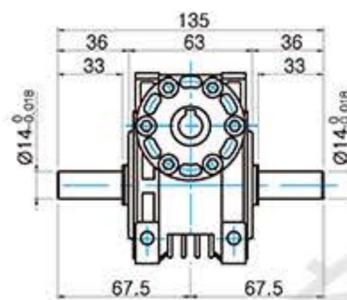
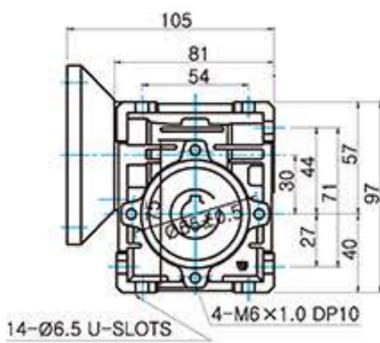
## Worm Gearhead

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

### Dimensions

● Model: 9WHD□

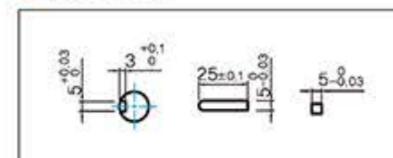
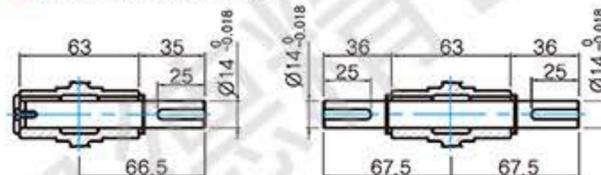
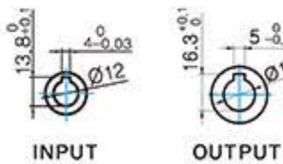
● FLANGE



● SHAFT(한방향, 양방향)

● KEY SPEC

● WEIGHT



Model	WEIGHT(Kg)
9WHD□	1.13

\* 출력 Flange와 Shaft는 별매입니다.

### 9WHD□ – Max. Permissible Torque

\* These are reference figures when the gearhead 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
60W	50Hz		200	150	100	75	60	50	38	30	25	18
	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

### Gearhead Image



1) Enter the gear ratio in the box (□) within the gearhead 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 ≙ kgfcm X 0.98

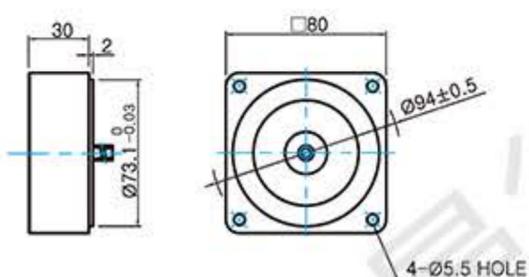
# Inter-decimal Gearhead

- Frame Size 80mm Model : 8XD10M□**  
**Frame Size 90mm Model : 9XD10M□**

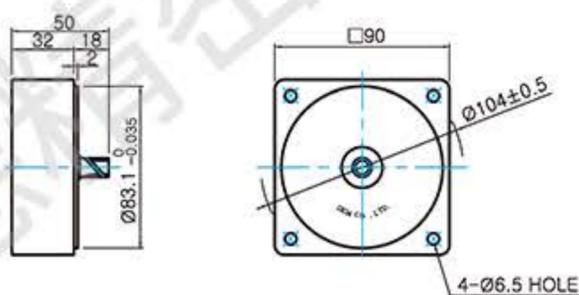
- In case of requiring high gear reduction ratio that cannot be generated by single gearhead, please use Inter-decimal Gearhead with general gearhead. And please be advised that in this case only revolution speed of output shaft will reduce by 10:1 without increasing of maximum permissible torque.
-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

## Dimensions

● Model: 8XD10M□



● Model: 9XD10H□



● WEIGHT

Model	WEIGHT(Kg)
8XD10M□	0.44
9XD10M□	0.5

## Gearhead Image

