GGM

Manual
GEAR HEAD

Thank you for buying GGM products.
Before use this product, read well manual certainly and understand all about knowledge, safety information and cautions of product, and use right way. After read, please be sure to keep fixed place to refer anytime.

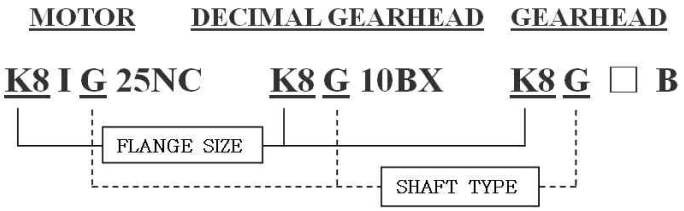
1. Confirmation at product arrival

Open box packaging and make sure that all of the parts are equipped as follows:

- GEAR HEAD – 1 unit
- KEY – 1 piece (exception for D-CUT)
  (There is not included that is not key spline processing at output shaft
- BOLT for mounting, NUT, SPRING WASHER, flat WASHER – 4 pieces
  (There are not included NUT in K9P□BU, K9P□BUF)
- Manual(This booklet) – 1 copy

2. Caution at use

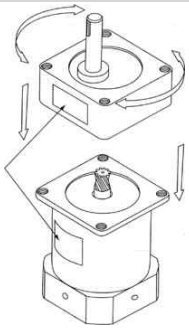
- Please confirm model name of GEAR HEAD and MOTOR.
- Confirm MOTOR and GEAR HEAD that is possible to assemble.
- Please take care and assemble MOTOR SHAFT not to be damaged when assemble MOTOR.



- Assembly is possible only when FLANGE SIZE and GEAR HEAD TYPE are same.
- Use DECIMAL GEAR HEAD only in occasion that RATIO is more than 1/200.
- Use mounting BOLT in parts when install MOTOR and GEAR HEAD.

Install and use at following places.
- In places of ambient temperature –10~40℃, humidity fewer than 85%
- Direct ray of light, water and oil are less places
- Places where vibration and impact are small
- Places where flammabe GAS, corrosive GAS are not generated.

3. How to assemble GEAR HEAD MOTOR

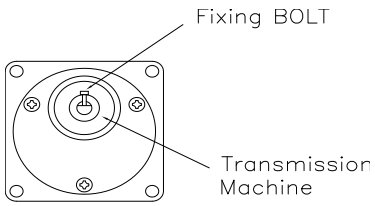


- Assemble MOTOR and GEAR HEAD adjusting assembling surfaces as like figure and turning reducer gently.
- If apply excessive force to MOTOR SHAFT or when it comes to GEAR HEAD inside, abnormal sounds is produced and life-time is fallen by damage of GEAR so that please pay attention especially when do assembling.

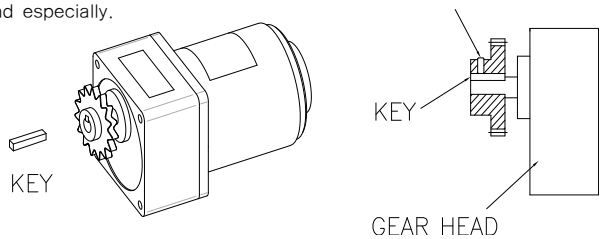
When assemble GEAR HEAD of MOTOR, use BOLT in accessories without niche between assembling surfaces

4. How to fix the load

- There are KEY grooving processing and □D-CUT processing (K6G) to fix the load on the output shaft. • In case it is D-CUT processing, fix firmly using fixing BOLT to avoid slip the load on processing PART of D-CUT. .
- In case of KEY groove processing, fix using accessories KEY by processing KEY groove on transmission mechanic such as CHAIN, PULLEY, SPROCKET etc..



- If apply impact when fix transmission mechanic to GEAR HEAD output shaft, it may cause damage of GEAR HEAD and shorten BOT lifespan so that keep in mind especially.



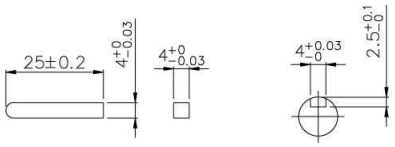
5. Accessory specification

Applicable MOTOR	GEAR HEAD Name	KEY SIZE	Mounting BOLT		Mounting holes reference dimensions			
			Standards	Kinds	ØA	ØB	C	4-ØD
□60 6W	K6G3~18B(C)	–	M4 x P0.7 x 50	Round -head bolt	70	24	10	4.5
	K6G20~250B(C)	–	M4 x P0.7 x 60		70	24	10	4.5
	K6G10BX	–	M4 x P0.7 x 85		70	–	–	4.5
□70 15W	K7G3~18B(C)	4x4x25-1R	M5 x P0.8 x 50		82	30	15	5.5
	K7G20~200B(C)	4x4x25-1R	M5 x P0.8 x 65		82	30	15	5.5
	K7G10BX	–	M5 x P0.8 x 90		82	–	–	5.5
□80 25W	K8G3~18B(C)	4x4x25-1R	M5 x P0.8 x 50		94	34	15	5.5
	K8G20~250B(C)	4x4x25-1R	M5 x P0.8 x 65		94	34	15	5.5
	K8G10BX	–	M5 x P0.8 x 95		94	–	–	5.5
□90 40W	K9G3~18B(C)	4x4x25-1R	M6 x P1.0 x 65	Hexag on	104	36	18	6.5
	K9G20~200B(C)	4x4x25-1R	M6 x P1.0 x 80		104	36	18	6.5
	K9G10BX	–	M6 x P1.0 x 120	Round	104	–	–	6.5
□90 60~120W	K9P3~200B	5x5x25-1R	M6 x P1.0 x 95	Hexag onal socket -head bolt	104	34	18	6.5
	K9P3~200BF	5x5x25-1R	M6 x P1.0 x 25		110 x36	34	18	8.5
□90 150~200W	K9P3~200BU	5x5x25-1R	M6 x P1.0 x 20		104	40	18	6.5
	K9P3~200BUF	5x5x25-1R			110 x36	34	18	8.5
□90 60~200W	K9P10BX	–	M6 x P1.0 x 140		104	–	–	6.5

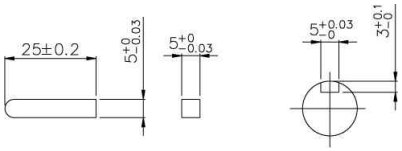
"A" that is attachment hole dimension of □ 90 type FLANGE TYPEs (goods ended product name by BF, BUF)is displayed as horizontal direction distance(110) x vertical direction distance(36).

■ Measurement of KEY and KEY Groove

1) □70, □80, □90 40W용

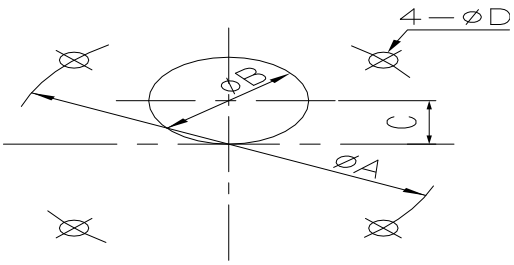


2) □90 60~200W용



■ Mounting HOLE reference Drawing

※ ØB is SIZE of the product appearance.
Please make hole with enough space.



6. Direction of rotation and transmission efficiency of GEAR HEAD

• There are same direction and opposite direction against MOTOR of rotational direction of GEAR HEAD output shaft by deceleration ratio.
• In case use DECIMAL GEAR HEAD (1/10), it is the same as direction of rotation of a MOTOR unit.

■ Rotational Direction of GEAR HEAD

Model Name of GEAR HEAD	Moderation Ratio	
	Same direction with MOTOR	Opposite direction with MOTOR
K6G□B, K6G□C	3 ~ 18	20 ~ 40
	50 ~ 200	
K7G□B, K7G□C	3 ~ 18	20 ~ 40
	50 ~ 200	
K8G□B, K8G□C	3 ~ 18	20 ~ 40
	50 ~ 200	
K9G□B, K9G□C	3 ~ 18	20 ~ 40
	50 ~ 200	
K9P□B, K9P□BF	3 ~ 10	12.5 ~ 20
K9P□BU, K9P□BUF	25 ~ 60	75 ~ 200

■ Transmission Efficiency of GEAR HEAD

Model Name	3~10	12.5~18	20	25~40	50	60	75~200
K6G□B(C)	81%		73%		66%		
K7G□B(C)							
K8G□B(C)							
K9G□B(C)							
K9P□B, BF	81%	73%		66%			59%
K9P□BU, BUF							

Same direction with MOTOR Opposite direction with MOTOR

※ Output TORQUE after assemble GEAR HEAD is TORQUE of MOTOR x GEAR HEAD Moderation Ratio x transmission efficiency of GEAR HEAD

7. GEAR HEAD Life time and SERVICE FACTOR

• Life-time of GEAR HEAD is usually decided by supporting method of shaft, but there is a lot of hanging situations so that uses generally coefficient of SERVICE FACTOR according to kind of load.
• When use GEAR HEAD in Allowances TORQUE, rated lifetime of METAL TYPE is 2000 hours and BALL BEARING TYPE is available to use up to 5000 hours.
• In case of operated following condition, Rated Lifetime means amount of time just before stop of GEAR HEAD because MOTOR TORQUE was impossible to pass to GEAR HEAD output shaft.
1. In case of used within Allowances TORQUE
2. In case of load operation without any load change in a certain direction
3. Occasion that is operating 8 hours in a day
4. BEARING temperature – METAL TYPE : 50℃
BALL BEARING : 80℃

SERVICE FACTOR of this occasion says sf=1

If operate GEAR HEAD of BALL BEARING TYPE 24 hours a day, SERVICE FACTOR amounts becomes as 1.5 so that lifetime is decreased as 1/1.5. Therefore, use selecting the largest Allowances TORQUE and GEAR HEAD considering SERVICE FACTOR.

(Table 1) SERVICE FACTOR and Examples of loads

Kind of Load	Examples of loads	SERVICE FACTOR		
		5hr/day	8hr/day	24hr/day
General Load	BELT CONVEOR, At continuous operation to one direction	0.8	1.0	1.5
Light shock load	Frequent starting/operation, CAM drive	1.2	1.5	2.0
Medium shock load	Frequent reverse operation, instantaneous stop of REVERSIBLE MOTOR	1.5	2.0	2.5
Heavy shock load	Frequent moment arrest by TORQUE MOTOR	2.0~2.5	2.5~3.0	3.0~3.5

8. The maximum Allowances TORQUE of GEAR HEAD

• Output TORQUE of GEAR HEAD increases proportionally depending on the amount of deceleration ratio, but load TORQUE applying to GEAR HEAD is limited depending on GEAR material and other conditions.
• This is called as the maximum Allowances TORQUE that is prescribed by size of GEAR HEAD, deceleration ratio so that use in Allowances TORQUE range.

9. OVERHANG load and THRUST load

• OVERHANG load means load that is applying to right angle direction on output shaft where escaped supporting devices of more than 2 places, and THRUST load means load that is applying on output shaft.
• In case of use transmission mechanics such as CHAIN, toothed wheel, BELT etc. in GEAR HEAD output shaft, there is applying OVERHANG load (Figure 1)
• OVERHANG load acts as load directly to GEAR HEAD and influences for reducer life-time.
• OVERHANG load can save by following way.

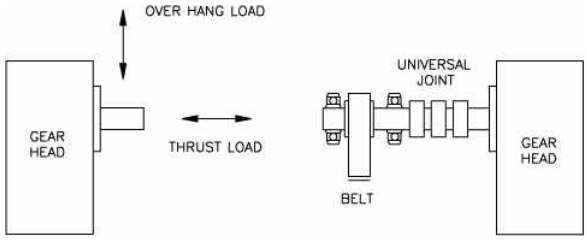
$$W = \frac{KxTxf}{r} \ [Kg]$$

W : OVERHANG Load
K : Load factor by operating method (Table 2)
T: Transmitting power in GEAR HEAD output shaft [kg·cm]
f : SERVICE FACTOR (Table 2)
r: effective radius[cm] of toothed wheel, PULLEY etc.

(Table 2))Load factor by operating method

operating method	K
CHAIN, SPROCKET	1
toothed wheel	1.25
V-BELT	1.5
PLATE-BELT	2.5

• When use calculated OVERHANG load values exceeding the tolerance (Table 3), there occurs damage and flexure of output shaft in short perio. Pay attention because bring fatigue damage by repeated load.
• In such a case, should be installed with structure that can bear for OVERHANG load and(Figure 2).
OVERHANG Load and THRUST Load cause big effect on BEARING life-time that please use within allowances reffering table below.
• In case of use HELICAL GEAR, WORM GEAR for transmission mechanic, use not to exceed allowable value of OVERHANG load and also THRUST load at the same time.



(Figure1)

(Figure2)

(Table 3) Allowances OVERHANG load and Allowances THRUST load

Model Name	Moderation Ratio	Maximum Allowances TORQUE (kg-cm)	Allowances OVERHANG Load(kg)	Allowances THRUST Load(kg)
K6G□B K6G□C	3~18	1~6	8	3
	20~250	6~30	12	
K7G□B K7G□C	3~18	3~18	8	4
	20~200	2~50	15	
K8G□B K8G□C	3~18	2~25	10	5
	20~250	30~80	20	
K9G□B K9G□C	3~18	4~40	25	10
	20~200	40~100	30	
K9P□B K9P□BF	3~9	8~40	40	15
	12.5~20	40~80	45	
	25~60	50~200	50	
	75~200			
K9P□BU K9P□BUF	3~200	18~300	40	15

※Caution : Maximum Allowances TORQUE differs according to deceleration ratio. Use within Allowances TORQUE according to fit in each deceleration ratio. METAL BEARING TYPE (labeled "M" products in names) allowed OVERHANG Load the value should be used in less than 70% of above value.

※ Please contact your dealer or our 2nd factory for Product inquiries and A/S request

GGM CO. LTD., Leader of geared motor. http://www.ggm.co.kr

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