

USER MANUAL

GEAR HEAD

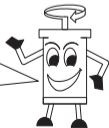
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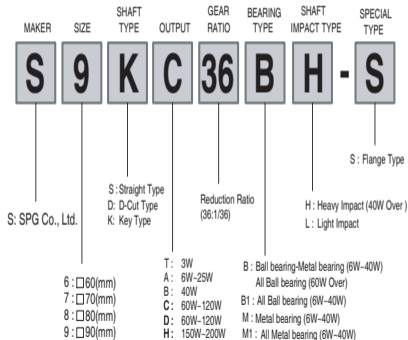
How are you? my name is SPG.

Thanks for using SPG motors.

Please read the manual in detail before use the products to be well aware of knowledge of the products, information to be safe, handling with care and using correctly. Also keep the manual in fixed place after reading for your reference in any time.



1. Reading Part numbers (Model names)



2. Confirmation with receiving the products

2.1 Confirmation of Products

Please check if all items in below are included in the package.
If there are any lack of items, or any damages,
please contact to the sales department in head office or local agent.

- Gear Head 1 pcs
- Mounting bolts, Nuts, Spring washers each 4 pcs
- Straight Key 1 pcs
(Only for Key-hole shaft type)
- Manual introduction 1 pcs

2.2 Confirmation of model name

Check the model name refers to
"1. Reading Part numbers" and contact to your
purchasing place if there is any difference.

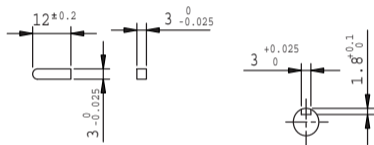


2.3 Charts for mounting bolts size.

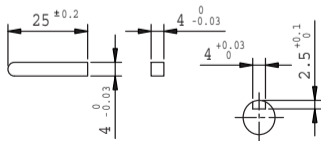
MODEL NAME			
<input type="checkbox"/> 60, 3W	S6DT3B~18B	M4*P0.7*L45	BOLT
	S6DT20B~250B	M4*P0.7*L55	
<input type="checkbox"/> 60, 6W	S6DA3B~18B	M4*P0.7*L50	
	S6DA20B~250B	M4*P0.7*L60	
	S6GX10B	M4*P0.7*L80/90	
<input type="checkbox"/> 70, 15W	S7KA3B~18B	M5*P0.8*L55	
	S7KA20B~200B	M5*P0.8*L65	
	S7GX10B	M5*P0.8*L90/100	
<input type="checkbox"/> 80, 25W	S8KA3B~18B	M5*P0.8*L55	
	S8KA20B~200B	M5*P0.8*L65	
	S8GX10B	M5*P0.8*L90/100	
<input type="checkbox"/> 90, 40W	S9KB3B~18B	M6*P1.0*L75	
	S9KB20B~200B	M6*P1.0*L85	
	S9GX10B	M6*P1.0*L112/122	
<input type="checkbox"/> 90 60~120W	S9KC3B~200B	M6*P1.0*L95	LENCH BOLT
	S9KC3B-S~200B-S	M6*P1.0*L25	
	S9KD3B~200B	M6*P1.0*L20	
	S9GX10B-S	M6*P1.0*L65/130	
<input type="checkbox"/> 90, 150-200W	S9KH3B~200B	M6*P1.0*L20	

2.4 Key & Key hole (Unit mm)

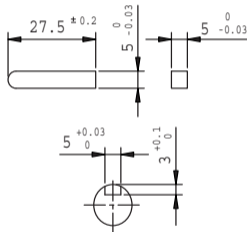
① □ 60 HEAD



② □ 70 □ 80 90 40W HEAD



③ □ 90 60~200W 2 HEAD



Please check the KEY which should be fit with the goods we provide. If there is not the KEY or something wrong, please contact and ask the shop where you buy the goods. sed can be ccircumstances. ity ng TP, t provided.ow to mount



3. Precautions for Operation (Characteristic, Caution)

3.1 Characteristic of products

3.1.1 What is the Gear Head?

- A speed reducer used gears in it. A mechanical equipment to have bigger torque with reduces speed from motors.

3.1.2 Characteristic of gear head

- Compact but has large transmission value
- Keep on the gear ratio without sliding
- Big range of gear ratio.
- Has durability

3.1.3 Gear ratio

- The gear ratio in the engaging gear is a value obtained by dividing the number of teeth in the driving gear, and SPG has gone through precision process for the motor shaft and helical gears, and as a result, we could make a remarkable reduction of noise level to 10~15dB. We also have various standard gear ranges from 1:3 thru 1:200. (for □6W, 1:3 thru 1:250).

- Use inter-decimal gear head (1:10) for necessary of more than 1:200.

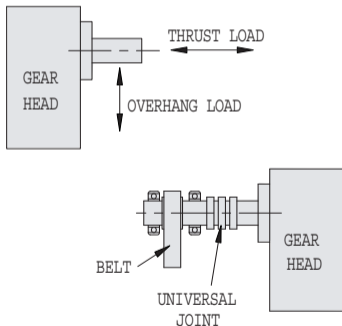
3.2 Precaution of using

3.2.1 Condition of using

- Ambient temperature on -10~ +40 °C, Humidity Max.85%
- Avoid the place has a lot amount of straight sunlight, water and oil.
- Avoid the place has amount of dusty, inflammable gas, or corrosive gas.



3.2.2 Overhang Load and Thrust Load



(Picture, 3-1)

- Do not exceed the torque of overhang load and thrust load at the same time in case of uses of Helical gear or Worm gear is employed as transmission equipments.
- Also, place the load to close in gear head in case of connecting the load to output shaft directly to avoid it loaded in one side.

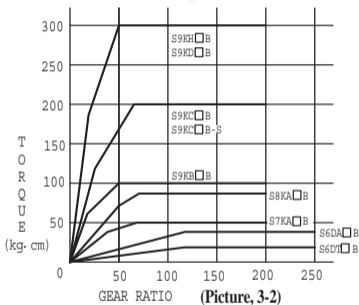
• Install the structure as (picture, 3-1) in case of overhang load is over the torque in chart.
(Refer to catalogue for calculation of overhang load)



• Chart for permissible overhang load and thrust load

MODEL	GEAR RATIO	MAX. PERMISSIBLE TORQUE (kg·cm)	PERMISSIBLE OVERHANG LOAD (kg)	PERMISSIBLE THRUST LOAD (kg)
S6DT □ B	3~18	0.5~3	5	3
	20~250	3~15		
S6DA □ B	3~18	1~6	6	3
	20~250	6~30	15	
S7KA □ B	3~18	3~18	10	4
	20~200	20~50	20	
S8KA □ B	3~18	2~25	12	5
	20~200	30~80	24	
S9KB □ B ()	3~18	4~40	30	10
	20~200	40~100	37	
S9KC □ ()	3~10	8~40	45	15
	12.5~20	40~80	52	
S9KC □ B () -S	25~60	50~200	60	
	75~200			
S9KD □ B S9KH □ B	3~200	18~300	55	

3.2.3 Max. Permissible Torque of Gear Head



- Permissible torque is limited by material although the output torque of the gear head is in proportion to gear ratio. It calls Max. permissible torque and determined by size of gear head and gear ratio.

- For example, 40W induction motor combined with 1:40 gear ratio, Rated torque of S9I40GB is 2.5Kg · cm

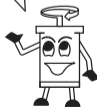
$$T_G = T_M \cdot i \cdot \eta = 2.5 \cdot 100 \cdot 0.66 = 165 \text{Kg} \cdot \text{cm}$$

T_G : OUTPUT TORQUE OF GEAR HEAD
 T_M : MOTOR TORQUE
 i : GEAR RATIO OF GEAR HEAD
 η : TRANSMISSION EFFICIENCY OF GEAR HEAD

The Max. permissible torque of S9KB100B stipulates 100Kg · cm as (Picture 3-2) although, the calculation is 165Kg · cm

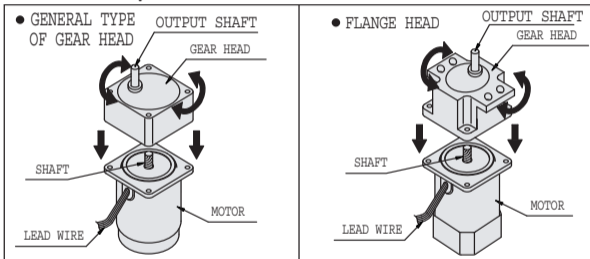
MODEL \ GEAR RATIO	3~10	12.5~18	20	25~40	50	60	75~200	250
S6DA(T) <input type="checkbox"/> B	81%		73%		66%			
S7KA <input type="checkbox"/> B								
S8KA <input type="checkbox"/> B								
S9KB <input type="checkbox"/> B ()								
S9KC <input type="checkbox"/> B ()	81%		73%		66%		59%	
S9KC <input type="checkbox"/> B-S								
S9KD <input type="checkbox"/> B								
S9KH <input type="checkbox"/> B								

- Transmission efficiency of Interdecimal gear head is 81%



4. Installation of products and assembly

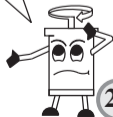
4.1 Motor assembly with Gear Head



⚠ (Caution)

Gears in gear head can get damage, like scratches or chopping during assembling motor and gear head if it forced to be assembled. Then it can be caused abnormal noise or shorter life of gear head.

- ① Place motor to output shaft directs to up. Choose direction of gear head with considering direction of out-coming lead wire.
- ② Needs to be careful between motor shaft and gear trails of inside gearbox. Turning right and left slightly to do not crush hardly and make easy of assembling
- ③ Use the provided mounting screws for set mounting of gear head & motor.



4.2 Precaution of assembly

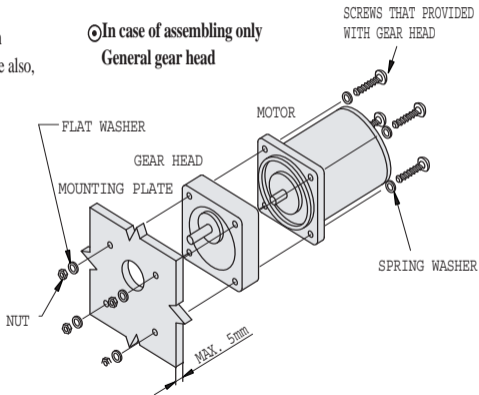
- Make holes in mounting plate and use bolts, provided with gearbox to fix a motor and gear head on the mounting plate also, be sure there is no gap between motor flange, gear head surface and the mounting surface.
- Use provided bolts to assemble gear head & motor sets. Use mounting plate Max.5mm thickness to conclude assembly properly

⚠ Caution

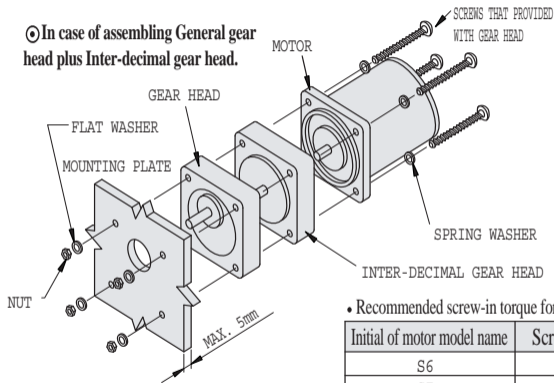
Use extra bolts for assembling mounting plates with S9KC□B-S, S9KD□B, S9KH□B. Because these gear heads provides only bolts for mounting with motors.



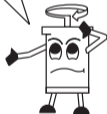
⊙ In case of assembling only
General gear head



⊙ In case of assembling General gear head plus Inter-decimal gear head.



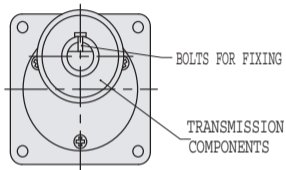
- Needs extra bolts upon the thickness of gear head because only one size of bolt, for high-gear ratio is provided



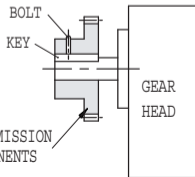
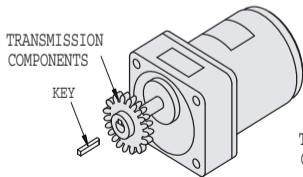
• Recommended screw-in torque for mounting bolts

Initial of motor model name	Screw type	Recommended Torque for screw-in
S6	M4	2.0N·m (20Kg·cm)
S7	M5	2.5N·m (25Kg·cm)
S8	M5	2.5N·m (25Kg·cm)
S9	M6	3.0N·m (30Kg·cm)

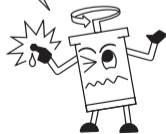
4.3 Assembly components of transmission



- There are Key-cut type output shaft of gear head for assemble with transmission components which has outer diameter tolerance h7, and D-cut shaft.
- In case of using D-cut, fix the bolt properly on D-cut shaft to do not slip.
- In case of using Key-cut shaft, fix the key on transmission equipments such as, Chain, Pulley and Sprocket.



⚠ Caution
 Do not impact on shaft during fixing the transmission components.
 It can be caused damage or shorter life on gear heads.



4. 4 Shaft Direction of rotations on gear head.

- Direction of rotations

GEAR RATIO MODEL	3~10	12.5~18	20	25~40	50	60	75~200	250
S6DA <input type="checkbox"/> B								
S7KA <input type="checkbox"/> B								
S8KA <input type="checkbox"/> B								
S9KB <input type="checkbox"/> B ()								
S9KC <input type="checkbox"/> B ()								
S9KC <input type="checkbox"/> B-S								
S9KD <input type="checkbox"/> B								
S9KH <input type="checkbox"/> B								

Same direction
with Motor

Opposite
direction with
Motor

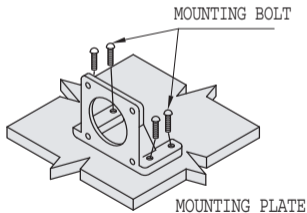
- Output direction is same in case of using inter-decimal gear head.



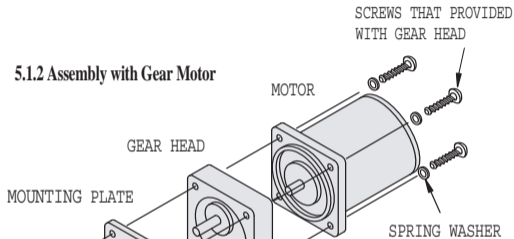
5. Assembly with Option items

5.1 Assembly mounting plate

5.1.1 Installation mounting plate



5.1.2 Assembly with Gear Motor



⚠ Caution) Please be careful when you assemble motor. There must be no gap between Motor FLANGE side and Gear Box. Please assemble softly SHAFT and GEAR BOX. Gear teeth may be affected by strong press.



6. Trouble shooting

When your motor does not operate normally, check the following points and take the necessary steps. If the motor still does not work even all result are normal after checking, please contact to head office or local agent but do not disassemble the motor.

PHENOMENON	CHECK POINT
Output shaft does not rotate, or runs in slow	<ul style="list-style-type: none"> ① Is proper voltage applied to the motor? ② Are lead wires connected correctly? ③ Is the load too large? ④ Is capacitors connected as diagram and same value as written on name plate?
Motor rotates in a wrong direction	<ul style="list-style-type: none"> ① Is wiring correct as instructed in the connecting diagram? Confirm the diagram again. ② The direction of rotation of output shaft may be reserved due to the reduction ratio of gear head (refer to Gear head manual)? ③ Did you view of the motor from the wrong direction? (Instructed CW and CCW from the view of motor output shaft side)

Sounds abnormal noise	<ul style="list-style-type: none"> ① Are motor and gear head mounted correctly? ② Did you use same type of gear head shafts as motor shaft?
Output shaft stops suddenly	<ul style="list-style-type: none"> ① Is the motor TP (Thermal Protector) type? ② Did transmission components get damaged or did not connect properly? ③ Does motor or gear head end the life expectation? ④ Does output shaft break down? ⑤ Gears can get damaged if only motor runs (if so, it may over loaded, please check permissible torque refer to "3.2.3 Permissible Torque of Gear Head"

7. Formalities of A/S

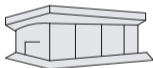


Occurrence complaints
or damages of products.



Acceptance
complaints or A/S

Management and
Completion of A/S
(After Service)



domestic agents or
overseas agents



Head office

SPG can exchange and compensate inferior motors according to each case of inferior motors' status which are after serviced. We can claim the cost based on the inferior motors' status.



■ Agents information

- Can find each local agent at our homepage,
www.spg.co.kr



⊙ Anyone needs CAD drawings can
download at our home page.

◆ The specification or out-looking of motors can be changed for developing products
without a report to customers.

Further details are required, contact to R&D or Sales dept. of head office.



SPG Co., Ltd.

<http://www.spg.co.kr>

■ Head office

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