ORIENTAL MOTOR GENERAL CATALOG

A

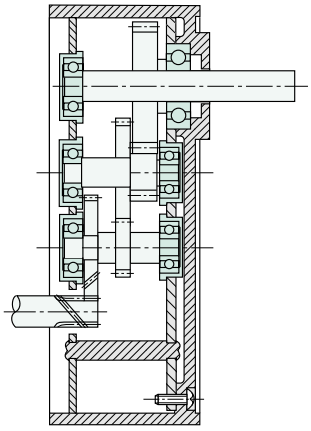
Gearheads

Features and Types·····A-214
Right Angle Gearheads·····A-216

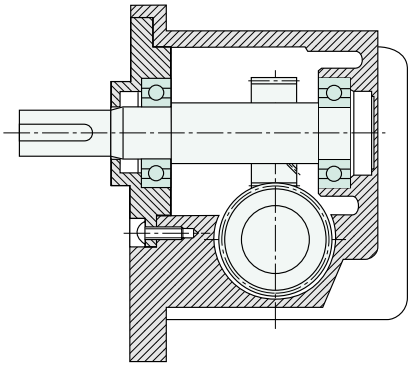
Features and Types of Gearheads

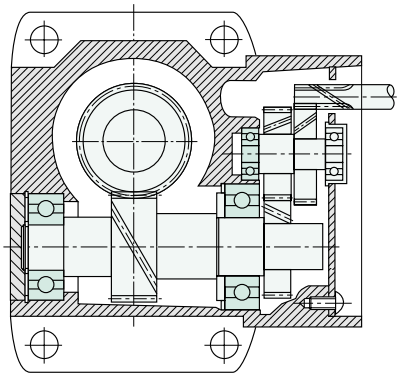
Oriental Motor gearheads are specially designed for easy and direct attachment to our AC motors that have a pinion shaft. The gearhead reduces the motor speed which increases the torque. A large number of gear ratios are available for many applications.

●Parallel Shaft Type



●Right Angle Type





Parallel Shaft Type Gearheads

Application	Gearhead Model	Gear Ratios	Decimal Gearheads
Light Load	**2GB□KA**	**3～360** 23 ratios	**2GB10XK**
	4GB□KA	**3～360** 23 ratios	**4GB10XK**
Normal Load	**0GN□KA**	**3～180** 20 ratios	—
	2GN□KA	**3～180** 20 ratios	**2GN10XK**
	3GN□KA	**3～180** 20 ratios	**3GN10XK**
	4GN□KA	**3～180** 20 ratios	**4GN10XK**
	5GN□KA	**3～180** 20 ratios	**5GN10XK**
Heavy Load	**5GU□KA**	**3～180** 20 ratios	**5GU10XKB**
	BH6G2-□	**3.6～180** 11 ratios	—
Brake Motor (Clutch & Brake Motor)	**5GC□KA**	**3.6～180** 11 ratios	—
	5GCH□KA		
High Speed (**FBLⅡ** Series)	**FBL575AW, CW, SW-□** (combination type) **FBL5120AW, CW, SW-□** (combination type)	**5～200** 8 ratios	—

- Enter the gear ratio in the box(□) within the model number.
- Specifications for gearheads with motors can be found on the individual motor's page.
- See Gearhead Selection on page A-19 for more information on the gear ratios.
- Gearheads in this catalog are shown with inch-sized output-shafts. Metric-sized output shafts are also available. Contact your local sales office or distributor for more information.

Right-Angle Type Gearheads

Gear Frame Size	Type of shaft	Gearhead Model	Gear Ratios	Maximum Permissible Torque
3.15in. sq. for 25W	Hollow shaft	**4GNRH**	3.6～180 11 ratios	69 lb-in 8 N·m
	Solid shaft	**4GN□RAA**	3.6～180 11 ratios	
3.54in. sq. for 40W	Hollow shaft	**5GN□RH**	3.6～180 11 ratios	87 lb-in 10 N·m
	Solid shaft	**5GN□RAA**	3～180 20 ratios	
3.54in. sq. for 60W and 90W	Hollow shaft	**5GU□RH**	3.6～180 11 ratios	174 lb-in 20 N·m
	Solid shaft	**5GU□RAA**	3～180 20 ratios	

- Enter the gear ratio in the box(□) within the model name.
- Features and specifications for right angle gearheads are shown on page A-216.
- Gearheads in this catalog are shown with inch-sized output-shafts. Metric-sized output shafts are also available. Contact your local sales office or distributor for more information.

Right-Angle Gearheads

Right-Angle gearheads are flange-mounted gearheads that use worm gears and special helical gears. They allow motors to be installed at right angles to the axis of equipment such as belt conveyors. They are available in hollow shaft RH and solid shaft RA models and are ideal for keeping equipment compact.

Features

- Right angle gearheads with mounting sizes of 3.15 inch square (for 25W) or 3.54 inch square (for 40 W) are available for the **GN** pinion mounting sizes of 3.54 inch (for 60 or 90 W) are available for the **GU** pinion. They can be connected to all Oriental Motor AC motors with the exception of clutch and brake and **FPW** washdown motors.
- The output shaft is perpendicular to the motor shaft, so the motor can be installed perpendicular to the axis being driven.
- Eleven gear ratios are available from 3.6:1 to 180:1. The optimum gear ratio can be selected just as with ordinary gearheads. The maximum permissible torques are also the same as for ordinary gearheads.
- Hollow shaft gearheads allow additional space savings and simpler mechanism designs since they do not require couplings for mounting. Usually, hollow shaft gearheads are locked with a torque arm when mounted so the gearhead does not rotate from the reactive force of the load. When mounted with a torque arm, no centering is needed, so it is faster to mount the gearhead on the device.

Product Number Code

5 GU 18 R AA

- **AA**: Type of shaft
  - **AA** : Solid type and inch-sized output shaft
  - **H** : Hollow type
- **18**: Gear Ratio
- **R** : Right Angle Gearhead
- **GU**: Gearhead Type
  - **GN**: **GN** pinion gear
  - **GU**: **GU** pinion gear
- **5**: Gearhead Frame Size
  - **4**: 3.15inch sq. (80mm sq.)
  - **5**: 3.54inch sq. (90mm sq.)

Types

Type of shaft	Gearhead Model
Hollow shaft	**4GN3.6RH~4GN180RH**
	5GN3.6RH~5GN180RH
	5GU3.6RH~5GU180RH
Solid shaft	**4GN3.6RAA~4GN180RAA**
	5GN3RAA~5GN180RAA
	5GU3RAA~5GU180RAA

■ Specifications

Gearhead Model	Gear Ratio	Maximum Permissible Torque lb-in (N · m)		Permissible Overhung Load lb (N) 0.4" from shaft end		Permissible Overhung Load lb (N) 0.8" from shaft end		Permissible Thrust Load lb	(N)
4GN□RH	**3.6~180**	69	(8)	55	(250)*	44	(220)*	22	(100)
5GN□RH	**3.6~180**	87	(10)	77	(350)*	68	(310)*	44	(200)
5GU□RH	**3.6~180**	174	(20)	123	(560)*	110	(500)*	55	(250)
4GN□RAA	**3.6~18**	69	(8)	22	(100)	33	(150)	22	(100)
	30~180			44	(200)	66	(300)		
5GN□RAA	**3~18**	87	(10)	55	(250)	77	(350)	44	(200)
	25~180			66	(300)	99	(450)		
5GU□RAA	**3~9**	174	(20)	88	(400)	110	(500)	55	(250)
	12.5~25			99	(450)	132	(600)		
	30~180			110	(500)	154	(700)		

* Overhung load values for hollowshaft models are distances from the flange mounting surface.
- Enter the gear ratio in the box(□) within the model name.
- **Caution:** Unlike most worm gear mechanisms, the right-angle gear does not have self-locking capabilities.

■ Calculating permissible overhung load for hollowshaft models

When the end of the shaft being driven is supported as in the figure below, calculate the permissible overhung load using the following equations.
(This mechanism is the most demanding in terms of overhung load.)

● 4GN□RH

$$\text{Permissible overhung load } W \text{ [lb]} = \frac{2.34}{2.34 + Lp} \times 65 \text{ [lb]}^*$$

* 65 (lb) : Permisible overhung load at flange mounting surface

● 5GN□RH

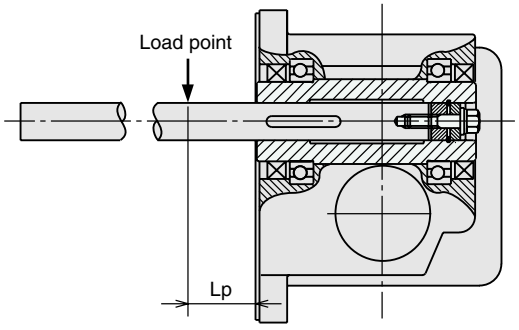
$$\text{Permissible overhung load } W \text{ [lb]} = \frac{2.76}{2.76 + Lp} \times 88 \text{ [lb]}^*$$

* 88 (lb) : Permisible overhung load at flange mounting surface

● 5GU□RH

$$\text{Permissible overhung load } W \text{ [lb]} = \frac{2.70}{270 + Lp} \times 142 \text{ [lb]}^*$$

* 142 (lb) : Permisible overhung load at flange mounting surface



Lp [inch] : Distance from flange mounting surface to overhung load point

■ Gearhead Efficiency

The permissible torques shown on the following page cover most motor combinations. For motor combinations not covered, use the efficiency value in the table below for your calculations.
When making a selection, remember that the transfer efficiency at startup is lower than at the rated speed.

Gearhead Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
4GN□RH	Rating	40%		50%	60%							
	Startup	40%		50%	54%							
5GN□RH	Rating	50%		68%			60%					
	Startup	50%		60%			54%					
5GU□RH	Rating	50%		68%			60%				50%	
	Startup	50%		60%			54%				45%	
4GN□RAA	Rating	50			60%							
	Startup	50			54%							

Gearhead Model \ Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5GN□RAA	Rating	68%									60%										
	Startup	60%									54%										
5GU□RAA	Rating	68%										60%							50%		
	Startup	60%										54%							45%		

■ Gearmotor — Torque Table

- The speed is calculated by dividing the motor's synchronous speed (60Hz: 1800 r/min) by the gear ratio. The actual speed is 2 ～ 20% less than the listed value, depending on the size of the load.
- The efficiency of the gear assembly at startup is lower than the rating, so output torque is lower.
- All output shafts rotate opposite to the direction of motor shaft rotation.

Induction Motors

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4IK25GN-AWU / 4GN□RH	Rating	2.1	3.5	6.6	13	16	27	32	53	69	69	69
		0.24	0.41	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	1.5	2.5	4.7	8.5	10	17	20	34	51	68	69
		0.17	0.29	0.54	0.97	1.2	1.9	2.3	3.9	5.8	7.8	8
5IK40GN-AWU / 5GN□RH	Rating	4.1	6.8	14	23	28	41	49	81	87	87	87
		0.47	0.78	1.6	2.7	3.2	4.7	5.6	9.4	10	10	10
	Startup	3.1	5.2	9.4	16	19	28	34	56	84	87	87
		0.36	0.6	1.1	1.8	2.2	3.2	3.9	6.5	9.7	10	10
5IK60GU-AWU / 5GU□RH	Rating	6.3	11	21	36	43	63	76	126	174	174	174
		0.73	1.2	2.5	4.1	5	7.3	8.7	15	20	20	20
	Startup	5	8.3	15	25	30	45	54	90	135	150	174
		0.58	0.96	1.7	2.9	3.5	5.2	6.2	10	16	17	20
5IK90GU-AWU / 5GU□RH	Rating	9.1	15	31	52	62	91	110	174	174	174	174
		1.1	1.8	3.6	6	7.2	11	13	20	20	20	20
	Startup	7	12	21	35	42	63	76	127	174	174	174
		0.81	1.4	2.4	4.1	4.9	7.3	8.7	15	20	20	20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4IK25GN-AWU / 4GN□RAA	Rating	2.7	4.4	6.6	13	16	27	32	53	69	69	69
		0.31	0.51	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	1.9	3.1	4.7	8.5	10	17	20	34	51	68	69
		0.22	0.36	0.54	0.97	1.2	1.9	2.3	3.9	5.8	7.8	8

Unit = Upper values : lb-in/Lower values : N·m

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5IK40GN-AWU / 5GN□RAA	Rating	4.6	5.5	7.7	9.2	12	14	19	23	28	34	41	49	68	81	87	87	87	87	87	87
		0.53	0.64	0.88	1.1	1.3	1.6	2.2	2.7	3.2	3.9	4.7	5.6	7.8	9.4	10	10	10	10	10	10
	Startup	3.1	3.8	5.2	6.3	7.8	9.4	13	16	19	23	28	34	47	56	70	84	87	87	87	87
		0.36	0.43	0.6	0.72	0.9	1.1	1.5	1.8	2.2	2.7	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10
5IK60GU-AWU / 5GU□RAA	Rating	7.2	8.6	12	14	18	21	30	36	43	60	63	76	105	126	158	174	174	174	174	174
		0.83	0.99	1.4	1.7	2.1	2.5	3.4	4.1	5	6.9	7.3	8.7	12	15	18	20	20	20	20	20
	Startup	5	6	8.3	10	12	15	21	25	30	42	45	54	75	90	112	135	150	150	174	174
		0.58	0.69	0.96	1.2	1.4	1.7	2.4	2.9	3.5	4.8	5.2	6.2	8.6	10	13	16	17	17	20	20
5IK90GU-AWU / 5GU□RAA	Rating	10	12	17	21	26	31	43	52	62	86	91	110	152	174	174	174	174	174	174	174
		1.2	1.4	2	2.4	3	3.6	5	6	7.2	9.9	11	13	18	20	20	20	20	20	20	20
	Startup	7	8.4	12	14	18	21	29	35	42	59	63	76	105	127	158	174	174	174	174	174
		0.81	0.97	1.4	1.6	2	2.4	3.4	4.1	4.9	6.8	7.3	8.7	12	15	18	20	20	20	20	20

Reversible Motors

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4RK25GN-AWU / 4GN□RH	Rating	2.1	3.5	6.6	13	16	27	32	53	69	69	69
		0.24	0.41	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	1.7	2.9	5.5	9.8	12	20	24	39	59	69	69
		0.2	0.34	0.63	1.1	1.4	2.3	2.7	4.5	6.8	8	8
5RK40GN-AWU / 5GN□RH	Rating	4.2	7	14	24	29	42	51	84	87	87	87
		0.49	0.81	1.7	2.8	3.3	4.9	5.8	9.7	10	10	10
	Startup	4.1	6.8	12	20	24	37	44	73	87	87	87
		0.47	0.78	1.4	2.3	2.8	4.2	5.1	8.4	10	10	10
5RK60GU-AWU / 5GU□RH	Rating	6.3	11	21	36	43	63	76	126	174	174	174
		0.73	1.2	2.5	4.1	5	7.3	8.7	15	20	20	20
	Startup	5.9	9.9	18	30	36	53	64	107	160	174	174
		0.68	1.1	2.1	3.4	4.1	6.2	7.4	12	18	20	20
5RK90GU-AWU / 5GU□RH	Rating	9.1	15	31	52	62	91	110	174	174	174	174
		1.1	1.8	3.6	6	7.2	11	13	20	20	20	20
	Startup	9.2	15	28	46	55	83	100	166	174	174	174
		1.1	1.8.	3.2	5.3	6.4	9.6	11	19	20	20	20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4RK25GN-AWU / 4GN□RAA	Rating	2.7	4.4	6.6	13	16	27	32	53	69	69	69
		0.31	0.51	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	2.2	3.6	5.5	9.8	12	20	24	39	59	70	69
		0.25	0.42	0.63	1.1	1.4	2.3	2.7	4.5	6.8	8	8

Unit = Upper values : lb-in/Lower values : N·m

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5RK40GN-AWU / 5GN□RAA	Rating	4.8	5.7	8	9.6	12	14	20	24	29	35	42	51	70	84	87	87	87	87	87	87
		0.55	0.66	0.92	1.1	1.4	1.7	2.3	2.8	3.3	4.1	4.9	5.8	8.1	9.7	10	10	10	10	10	10
	Startup	4.1	4.9	6.8	8.1	10	12	17	20	24	30	37	44	61	73	87	87	87	87	87	87
		0.47	0.56	0.78	0.94	1.2	1.4	2	2.3	2.8	3.5	4.2	5.1	7	8.4	10	10	10	10	10	10
5RK60GU-AWU / 5GU□RAA	Rating	7.2	8.6	12	14	18	21	30	36	43	60	63	76	105	126	158	174	174	174	174	174
		0.83	0.99	1.4	1.7	2.1	2.5	3.4	4.1	5	6.9	7.3	8.7	12	15	18	20	20	20	20	20
	Startup	5.9	7.1	9.9	12	15	18	25	30	36	50	53	64	89	107	134	160	174	174	174	174
		0.68	0.82	1.1	1.4	1.7	2.1	2.9	3.4	4.1	5.7	6.2	7.4	10	12	15	18	20	20	20	20
5RK90GU-AWU / 5GU□RAA	Rating	10	12	17	21	26	31	43	52	62	86	91	110	152	174	174	174	174	174	174	174
		1.2	1.4	2	2.4	3	3.6	5	6	7.2	9.9	11	13	18	20	20	20	20	20	20	20
	Startup	9.2	11	15	18	23	28	38	46	55	77	83	100	138	166	174	174	174	174	174	174
		1.1	1.3	1.8	2.1	2.7	3.2	4.4	5.3	6.4	8.9	9.6	11	16	19	20	20	20	20	20	20

Electromagnetic Brake Motors

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4RK25GN-AWMU / 4GN□RH	Rating	2.1	3.5	6.6	13	16	27	32	53	69	69	69
		0.24	0.41	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	1.7	2.5	5.5	9.8	12	20	24	39	59	69	69
		0.2	0.34	0.63	1.1	1.4	2.3	2.7	4.5	6.8	8	8
5RK40GN-AWMU / 5GN□RH	Rating	4.2	7	14	24	29	42	51	84	87	87	87
		0.49	0.81	1.7	2.8	3.3	4.9	5.8	9.7	10	10	10
	Startup	4.1	6.8	12	20	24	37	44	73	87	87	87
		0.47	0.78	1.4	2.3	2.8	4.2	5.1	8.4	10	10	10
5RK60GU-AWMU / 5GU□RH	Rating	6.3	11	21	36	43	63	76	126	174	174	174
		0.73	1.2	2.5	4.1	5	7.3	8.7	15	20	20	20
	Startup	5.9	9.9	18	30	36	53	64	107	160	174	174
		0.68	1.1	2.1	3.4	4.1	6.2	7.4	12	18	20	20
5RK90GU-AWMU / 5GU□RH	Rating	9.1	15	31	52	62	91	110	174	174	174	174
		1.1	1.8	3.6	6	7.2	11	13	20	20	20	20
	Startup	9.2	15	28	46	55	83	100	166	174	174	174
		1.1	1.8	3.2	5.3	6.4	9.6	11	19	20	20	20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model	Speed r/min	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**3.6**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
4RK25GN-AWMU / 4GN□RAA	Rating	2.7	4.4	6.6	13	16	27	32	53	69	69	69
		0.31	0.51	0.77	1.5	1.8	3.1	3.7	6.1	8	8	8
	Startup	2.2	3.6	5.5	9.8	12	20	24	39	59	69	69
		0.25	0.42	0.63	1.1	1.4	2.3	2.7	4.5	6.8	8	8

Unit = Upper values : lb-in/Lower values : N·m

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5RK40GN-AWMU / 5GN□RAA	Rating	4.8	5.7	8	9.6	12	14	20	24	29	35	42	51	70	84	87	87	87	87	87	87
		0.55	0.66	0.92	1.1	1.4	1.7	2.3	2.8	3.3	4.1	4.9	5.8	8.1	9.7	10	10	10	10	10	10
	Startup	4.1	4.9	6.8	8.1	10	12	17	20	24	30	37	44	61	73	87	87	87	87	87	87
		0.47	0.56	0.78	0.94	1.2	1.4	2	2.3	2.8	3.5	4.2	5.1	7	8.4	10	10	10	10	10	10
5RK60GU-AWMU / 5GU□RAA	Rating	7.2	8.6	12	14	18	21	30	36	43	60	63	76	105	126	158	174	174	174	174	174
		0.83	0.99	1.4	1.7	2.1	2.5	3.4	4.1	5	6.9	7.3	8.7	12	15	18	20	20	20	20	20
	Startup	5.9	7.1	9.9	12	15	18	25	30	36	50	53	64	89	107	134	160	174	174	174	174
		0.68	0.82	1.1	1.4	1.7	2.1	2.9	3.4	4.1	5.7	6.2	7.4	10	12	15	18	20	20	20	20
5RK90GU-AWMU / 5GU□RAA	Rating	10	12	17	21	26	31	43	52	62	86	91	110	152	174	174	174	174	174	174	174
		1.2	1.4	2	2.4	3	3.6	5	6	7.2	9.9	11	13	18	20	20	20	20	20	20	20
	Startup	9.2	11	15	18	23	28	38	46	55	77	83	100	138	166	174	174	174	174	174	174
		1.1	1.3	1.8	2.1	2.7	3.2	4.4	5.3	6.4	8.9	9.6	11	16	19	20	20	20	20	20	20

Speed Control Motors **US** Series

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
US425-401U / 4GN□RH	1200r/min	2.5	4.2	7.8	16	19	31	38	63	69	69	69
		0.29	0.48	0.9	1.8	2.2	3.6	4.3	7.2	8	8	8
	90r/min	0.62	1	1.9	3.9	4.7	7.8	9.3	16	23	31	47
		0.072	0.12	0.23	0.45	0.54	0.9	1.1	1.8	2.7	3.6	5.4
	Startup	1.3	2.2	4.1	7.4	8.9	15	18	30	44	59	69
		0.15	0.25	0.47	0.85	1	1.7	2	3.4	5.1	6.8	8
US540-401U / 5GN□RH	1200r/min	4.1	6.8	14	23	28	41	49	81	87	87	87
		0.47	0.78	1.6	2.7	3.2	4.7	5.6	9.4	10	10	10
	90r/min	1.1	1.8	3.7	6.2	7.4	11	13	22	33	44	65
		0.13	0.21	0.43	0.71	0.86	1.3	1.5	2.5	3.8	5	7.6
	Startup	2.8	4.7	8.4	14	17	25	30	51	76	87	87
		0.32	0.54	0.97	1.6	1.9	2.9	3.5	5.8	8.7	10	10
US560-501U / 5GU□RH	1200r/min	7.7	13	26	43	52	77	92	153	174	174	174
		0.88	1.5	3	5	6	8.8	11	18	20	20	20
	90r/min	3.1	5.2	11	18	21	31	38	63	94	104	156
		0.36	0.6	1.2	2	2.4	3.6	4.3	7.2	11	12	18
	Startup	4.5	7.4	13	22	27	40	48	80	120	134	174
		0.51	0.86	1.5	2.6	3.1	4.6	5.5	9.2	14	15	20
US590-501U / 5GU□RH	1200r/min	11	19	39	65	78	114	137	174	174	174	174
		1.3	2.2	4.5	7.4	8.9	13	16	20	20	20	20
	90r/min	3.1	5.2	11	18	21	31	38	63	94	104	156
		0.36	0.6	1.2	2	2.4	3.6	4.3	7.2	11	12	18
	Startup	6.3	11	19	32	38	57	68	114	171	174	174
		0.73	1.2	2.2	3.6	4.4	6.6	7.9	13	20	20	20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
US425-401U / 4GN□RAA	1200r/min	3.1	5.2	7.8	16	19	31	38	63	69	69	69
		0.36	0.6	0.9	1.8	2.2	3.6	4.3	7.2	8	8	8
	90r/min	0.78	1.3	1.9	3.9	4.7	7.8	9.3	16	23	31	47
		0.09	0.15	0.23	0.45	0.54	0.9	1.1	1.8	2.7	3.6	5.4
	Startup	1.6	2.7	4.1	7.4	8.9	15	18	30	44	59	69
		0.19	0.32	0.47	0.85	1	1.7	2	3.4	5.1	6.8	8

Unit = Upper values : lb-in/Lower values : N·m

Model \ Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
US540-401U / 5GN□RAA	1200r/min	4.6	5.5	7.7	9.2	12	14	19	23	28	34	41	49	68	81	87	87	87	87	87	87
		0.53	0.64	0.88	1.1	1.3	1.6	2.2	2.7	3.2	3.9	4.7	5.6	7.8	9.4	10	10	10	10	10	10
	90r/min	1.2	1.5	2.1	2.5	3.1	3.7	5.2	6.2	7.4	9.1	11	13	18	22	27	33	36	44	55	65
		0.14	0.17	0.24	0.29	0.36	0.43	0.6	0.71	0.86	1.1	1.3	1.5	2.1	2.5	3.2	3.8	4.2	5	6.3	7.6
	Startup	2.8	3.4	4.7	5.6	7	8.4	12	14	17	21	25	30	42	51	63	76	84	87	87	87
		0.32	0.39	0.54	0.65	0.81	0.97	1.4	1.6	1.9	2.4	2.9	3.5	4.9	5.8	7.3	8.7	9.7	10	10	10
US560-501U / 5GU□RAA	1200r/min	8.7	10	14	17	22	26	36	43	52	72	77	92	128	153	174	174	174	174	174	174
		1	1.2	1.7	2	2.5	3	4.2	5	6	8.3	8.8	11	15	18	20	20	20	20	20	20
	90r/min	3.5	4.3	5.9	7.1	8.9	11	15	18	21	30	31	38	52	63	78	94	104	104	130	156
		0.41	0.49	0.68	0.82	1	1.2	1.7	2	2.4	3.4	3.6	4.3	6	7.2	9	11	12	12	15	18
	Startup	4.5	5.3	7.4	8.9	11	13	19	22	27	37	40	48	67	80	100	120	134	134	167	174
		0.51	0.62	0.86	1	1.3	1.5	2.1	2.6	3.1	4.3	4.6	5.5	7.7	9.2	12	14	15	15	19	20
US590-501U / 5GU□RAA	1200r/min	13	16	22	26	32	39	54	65	78	108	114	137	174	174	174	174	174	174	174	174
		1.5	1.8	2.5	3	3.7	4.5	6.2	7.4	8.9	12	13	16	20	20	20	20	20	20	20	20
	90r/min	3.5	4.3	5.9	7.1	8.9	11	15	18	21	30	31	38	52	63	78	94	104	104	130	156
		0.41	0.49	0.68	0.82	1	1.2	1.7	2	2.4	3.4	3.6	4.3	6	7.2	9	11	12	12	15	18
	Startup	6.3	7.6	11	13	16	19	26	32	38	53	57	68	95	114	142	171	174	174	174	174
		0.73	0.87	1.2	1.5	1.8	2.2	3	3.6	4.4	6.1	6.6	7.9	11	13	16	20	20	20	20	20

Speed Control Motors **SC** Series Induction Type

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
SC425-401WU / 4GN□RH	1200r/min	2 0.23	3.3 0.38	6.2 0.72	12 1.4	15 1.7	25 2.9	30 3.5	50 5.8	69 8	69 8	69 8
	90r/min	0.54 0.062	0.9 0.1	1.7 0.19	3.4 0.39	4.1 0.46	6.8 0.77	8.1 0.93	14 1.5	20 2.3	27 3.1	41 4.6
	Startup	1.3 0.14	2.1 0.24	3.9 0.45	7 0.81	8.4 0.97	14 1.6	17 1.9	28 3.2	42 4.9	56 6.5	69 8
SC540-401WU / 5GN□RH	1200r/min	5 0.58	8.3 0.96	17 2	28 3.3	34 3.9	50 5.8	60 6.9	87 10	87 10	87 10	87 10
	90r/min	0.96 0.099	1.4 0.17	2.9 0.34	4.8 0.56	5.8 0.67	8.6 0.99	10 1.2	17 2	26 3	34 4	51 5.9
	Startup	2.7 0.31	4.4 0.51	8 0.92	13 1.5	16 1.8	24 2.8	29 3.3	48 5.5	72 8.3	87 10	87 10
SC560-501WU / 5GU□RH	1200r/min	6.1 0.7	10 1.2	21 2.4	35 4	41 4.8	61 7	73 8.4	122 14	174 20	174 20	174 20
	90r/min	1.5 0.17	2.5 0.29	5 0.58	8.4 0.97	10 1.2	15 1.7	18 2.1	30 3.4	45 5.1	50 5.7	74 8.6
	Startup	5.5 0.63	9.1 1.1	16 1.9	27 3.2	33 3.8	49 5.7	59 6.8	98 11	148 17	164 19	174 20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
SC425-401WU / 4GN□RAA	1200r/min	2.5 0.29	4.2 0.48	6.2 0.72	12 1.4	15 1.7	25 2.9	30 3.5	50 5.8	69 8	69 8	69 8
	90r/min	0.68 0.077	1.1 0.13	1.7 0.19	3.4 0.39	4.1 0.46	6.8 0.77	8.1 0.93	14 1.5	20 2.3	27 3.1	41 4.6
	Startup	1.6 0.18	2.6 0.3	3.9 0.45	7 0.81	8.4 0.97	14 1.6	17 1.9	28 3.2	42 4.9	56 6.5	69 8

Unit = Upper values : lb-in/Lower values : N·m

Model \ Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
SC540-401WU / 5GN□RAA	1200r/min	5.7 0.65	6.8 0.78	9.4 1.1	11 1.3	14 1.6	17 2	24 2.7	28 3.3	34 3.9	42 4.8	50 5.8	60 6.9	83 9.6	87 10	87 10	87 10	87 10	87 10	87 10	87 10
	90r/min	0.97 0.11	1.2 0.13	1.6 0.19	1.9 0.22	2.4 0.28	2.9 0.34	4 0.47	4.8 0.56	5.8 0.67	7.1 0.83	8.6 0.99	10 1.2	14 1.7	17 2	21 2.5	26 3	29 3.3	34 4	43 5	51 5.9
	Startup	2.7 0.31	3.2 0.37	4.4 0.51	5.3 0.61	6.6 0.77	8 0.92	11 1.3	13 1.5	16 1.8	20 2.3	24 2.8	29 3.3	40 4.6	48 5.5	60 6.9	72 8.3	80 9.2	87 10	87 10	87 10
SC560-501WU / 5GU□RAA	1200r/min	6.9 0.8	8.3 0.95	12 1.3	14 1.6	17 2	21 2.4	29 3.3	35 4	41 4.8	58 6.6	61 7	73 8.4	102 12	122 14	152 18	174 20	174 20	174 20	174 20	174 20
	90r/min	1.7 0.19	2 0.23	2.8 0.32	3.4 0.39	4.2 0.48	5 0.58	7 0.81	8.4 0.97	10 1.2	14 1.6	15 1.7	18 2.1	25 2.9	30 3.4	37 4.3	45 5.1	50 5.7	50 5.7	62 7.1	74 8.6
	Startup	5.5 0.63	6.6 0.76	9.1 1.1	11 1.3	14 1.6	16 1.9	23 2.6	27 3.2	33 3.8	46 5.3	49 5.7	59 6.8	82 9.5	98 11	123 14	148 17	164 19	164 19	174 20	174 20

Speed Control Motors **SC** Series Reversible Type

Hollow shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
SC425-411WU / 4GN□RH	1200r/min	2.6 0.3	4.3 0.49	8 0.92	16 1.8	19 2.2	32 3.7	38 4.4	64 7.4	69 8	69 8	69 8
	90r/min	1.2 0.14	2 0.23	3.7 0.43	7.4 0.86	8.9 1	15 1.7	18 2.1	30 3.4	45 5.1	59 6.8	69 8
	Startup	1.4 0.16	2.3 0.26	4.3 0.5	7.7 0.89	9.3 1.1	15 1.8	19 2.1	31 3.6	46 5.3	62 7.1	69 8
SC540-411WU / 5GN□RH	1200r/min	5 0.58	8.3 0.96	17 2	28 3.3	34 3.9	50 5.8	60 6.9	87 10	87 10	87 10	87 10
	90r/min	2 0.23	3.4 0.39	6.9 0.8	12 1.3	14 1.6	20 2.3	24 2.8	41 4.7	61 7	81 9.4	87 10
	Startup	3.3 0.38	5.5 0.63	9.9 1.1	16 1.9	20 2.3	30 3.4	35 4.1	59 6.8	87 10	87 10	87 10
SC560-511WU / 5GU□RH	1200r/min	6.2 0.72	10 1.2	21 2.4	35 4.1	42 4.9	62 7.2	75 8.6	125 14	174 20	174 20	174 20
	90r/min	1.9 0.22	3.1 0.36	6.4 0.73	11 1.2	13 1.5	19 2.2	23 2.6	38 4.3	56 6.5	63 7.2	94 11
	Startup	5.6 0.65	9.4 1.1	17 1.9	28 3.2	34 3.9	51 5.8	61 7	101 12	152 17	169 19	174 20

Solid shaft (All output shafts rotate opposite to the direction of motor shaft rotation.)

Unit = Upper values:lb-in/Lower values:N·m

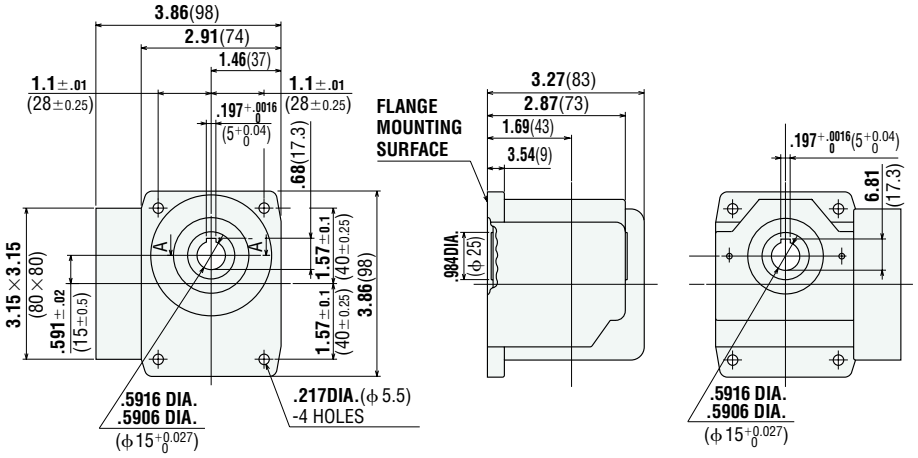
Model \ Gear Ratio		3.6	6	9	15	18	30	36	60	90	120	180
SC425-411WU / 4GN□RAA	1200r/min	3.2 0.37	5.3 0.62	8 0.92	16 1.8.	19 2.2	32 3.7	38 4.4	64 7.4	69 8	69 8	69 8
	90r/min	1.5 0.17	2.5 0.29	3.7 0.43	7.4 0.86	8.9 1	15 1.7	18 2.1	30 3.4	45 5.1	59 6.8	69 8
	Startup	1.7 0.2	2.9 0.33	4.3 0.5	7 0.81	8.4 0.97	14 1.6	17 1.9	28 3.2	42 4.9	56 6.5	69 8

Unit = Upper values : lb-in/Lower values : N·m

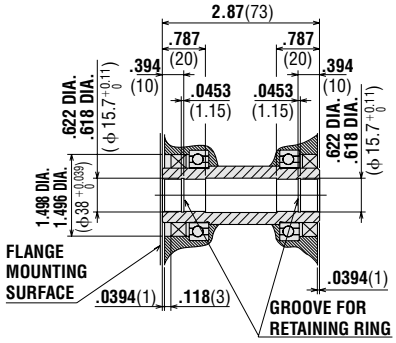
Model \ Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
SC540-411WU / 5GN□RAA	1200r/min	5.7 0.65	6.8 0.78	9.4 1.1	11 1.3	14 1.6	17 2	24 2.7	28 3.3	34 3.9	42 4.8	50 5.8	60 6.9	83 9.6	87 10	87 10	87 10	87 10	87 10	87 10	87 10
	90r/min	2.3 0.27	2.8 0.32	3.8 0.44	4.6 0.53	5.8 0.66	6.9 0.8	9.6 1.1	12 1.3	14 1.6	17 2	20 2.3	24 2.8	34 3.9	41 4.7	51 5.9	61 7	68 7.8	81 9.4	87 10	87 10
	Startup	3.3 0.38	3.9 0.45	5.5 0.63	6.6 0.76	8.2 0.95	9.9 1.1	14 1.6	16 1.9	20 2.3	25 2.8	30 3.4	35 4.1	49 5.7	59 6.8	74 8.5	87 10	87 10	87 10	87 10	87 10
SC560-511WU / 5GU□RAA	1200r/min	7.1 0.82	8.5 0.98	12 1.4	14 1.6	18 2	21 2.4	29 3.4	35 4.1	42 4.9	59 6.8	62 7.2	75 8.6	104 12	125 14	156 18	174 20	174 20	174 20	174 20	174 20
	90r/min	2.1 0.24	2.6 0.29	3.5 0.41	4.3 0.49	5.3 0.61	6.4 0.73	8.9 1	11 1.2	13 1.5	18 2	19 2.2	23 2.6	31 3.6	38 4.3	47 5.4	56 6.5	63 7.2	63 7.2	78 9	94 11
	Startup	5.6 0.65	6.8 0.78	9.4 1.1	11 1.3	14 1.6	17 1.9	23 2.7	28 3.2	34 3.9	47 5.4	51 5.8	61 7	84 9.7	101 12	127 15	152 17	169 19	169 19	174 20	174 20

■ Dimensions Scale 1/4, Unit=inch (mm)

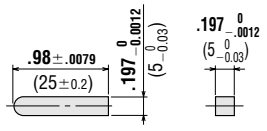
●4GN□RH Weight:3.5 lb. (1.6 kg)



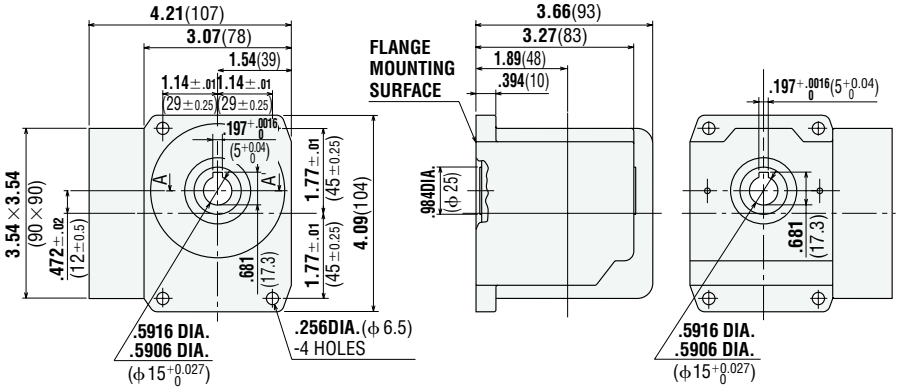
Section AA'



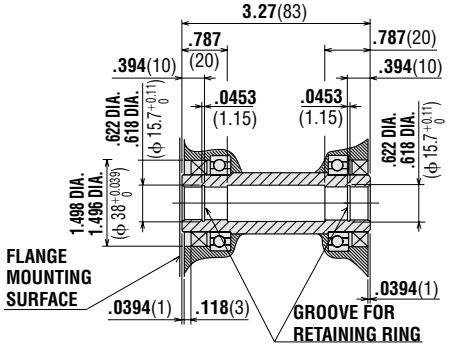
●**Key** Scale 1/2, Unit=inch (mm)



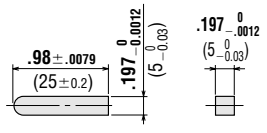
●5GN□RH Weight : 4.4 lb. (2.0 kg)



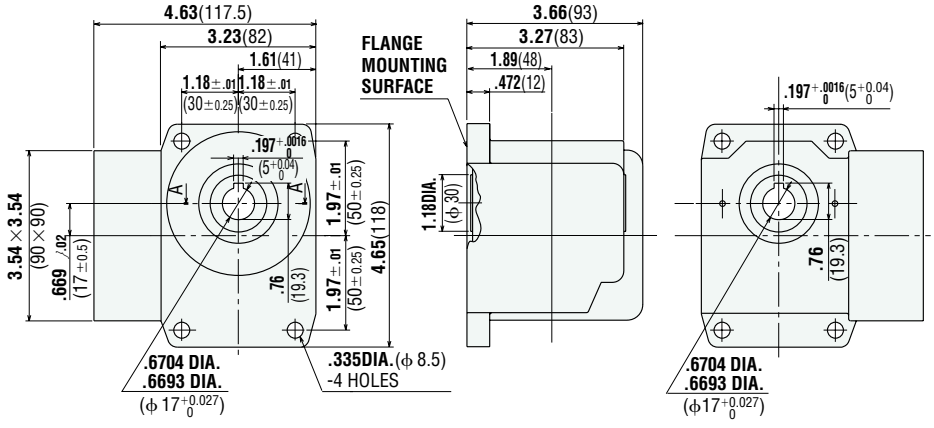
Section AA'



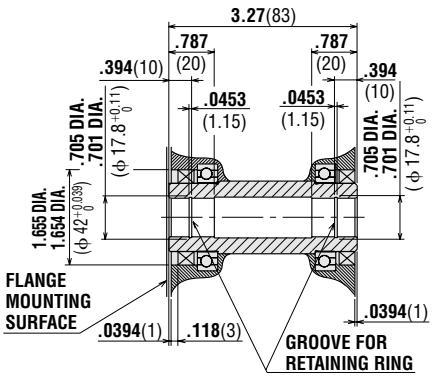
●**Key** Scale 1/2, Unit=inch (mm)



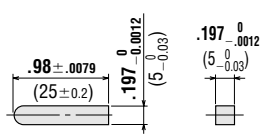
●5GU□RH Weight : 5.5 lb. (2.5 kg)



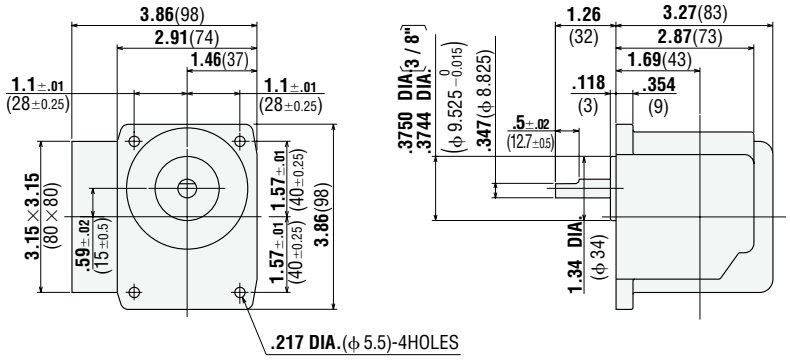
Section AA'



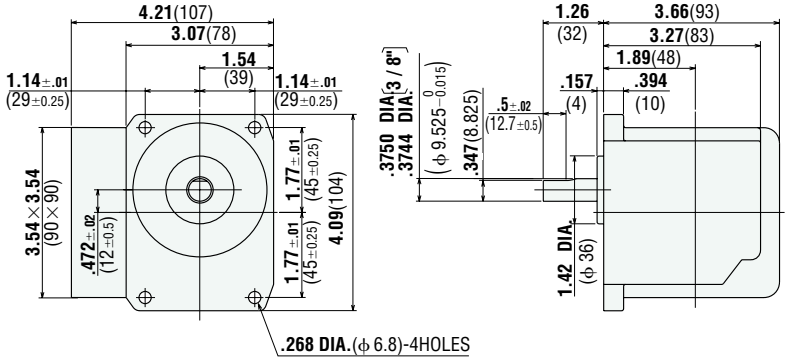
●**Key** Scale 1/2, Unit=inch (mm)



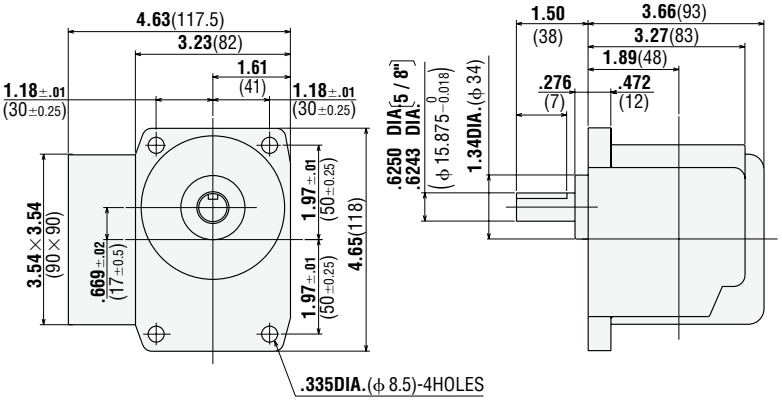
●4GN□RAA Weight : 3.5lb. (1.6kg)



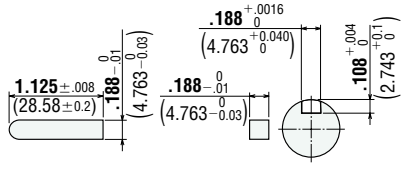
●5GN□RAA Weight : 4.4lb. (2.0kg)



●5GU□RAA Weight : 5.5lb. (2.5kg)



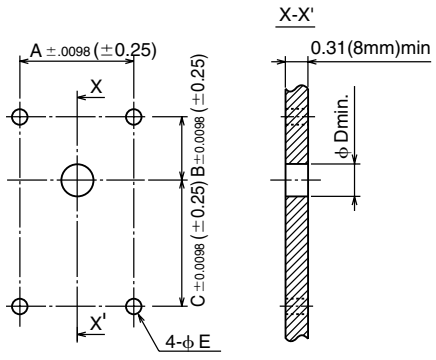
●Key and Key Slot Scale 1/2, Unit = inch (mm)



● Dimensions of gearhead mount

Allow at least 0.31inch (8mm) for the thickness of the mounting plate and use screws of appropriate length.

●**Cross Section** Unit = inch (mm)



Unit = inch (mm)

Type	Model	A	B	C	ϕ D	ϕ E
Hollow shaft	**4GN□RH**	2.20 (56)	0.98 (25)	2.17 (55)	0.59DIA. (ϕ 15)	0.22DIA. (ϕ 5.5)
	5GN□RH	2.28 (58)	1.30 (33)	2.24 (57)	0.59DIA. (ϕ 15)	0.26DIA. (ϕ 6.5)
	5GU□RH	2.36 (60)	1.30 (33)	2.64 (67)	0.67DIA. (ϕ 17)	0.33DIA. (ϕ 8.5)
Solid shaft	**4GN□RAA**	2.20 (56)	0.98 (25)	2.17 (55)	1.38DIA. (ϕ 35)	0.22DIA. (ϕ 5.5)
	5GN□RAA	2.28 (58)	1.30 (33)	2.24 (57)	1.46DIA. (ϕ 37)	0.27DIA. (ϕ 6.8)
	5GU□RAA	2.36 (60)	1.30 (33)	2.64 (67)	1.38DIA. (ϕ 35)	0.33DIA. (ϕ 8.5)

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

● Example of Mounting the Load

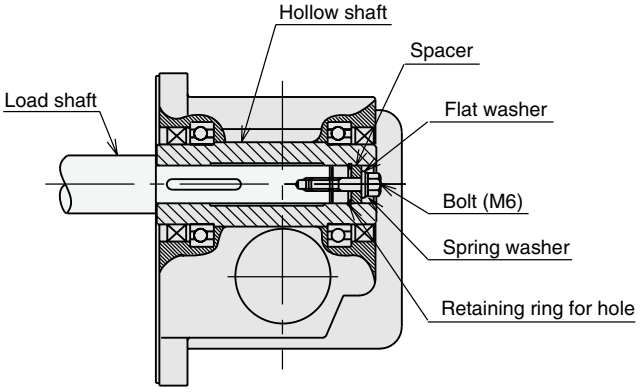
The diagrams below show how to mount loads depending on the shape of the shaft. Use the key provided with the product by fastening it to the shaft. Apply a coating of molybdenum disulfide or similar grease to the inner diameter of the load shaft to prevent binding. Recommended load shaft dimensions are shown below.

Unit = inch (mm)

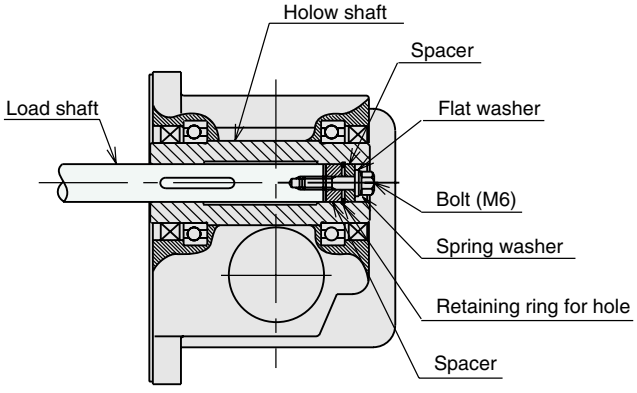
Model	Inner diameter of hollow-shaft	Recommended load shaft diameter
4GN□RH	0.5906DIA. $^{+0.0011}_{0}$ (ϕ 15 $^{+0.027}_{0}$)	0.5906DIA. $^{0}_{-0.0007}$ (ϕ 15 $^{0}_{-0.018}$)
5GN□RH	0.5906DIA. $^{+0.0011}_{0}$ (ϕ 15 $^{+0.027}_{0}$)	0.5906DIA. $^{0}_{-0.0007}$ (ϕ 15 $^{0}_{-0.018}$)
5GU□RH	0.6693DIA. $^{+0.0011}_{0}$ (ϕ 17 $^{+0.027}_{0}$)	0.6693DIA. $^{0}_{-0.0007}$ (ϕ 17 $^{0}_{-0.018}$)

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

Stepped-down shafts



Straight load shafts



Note: If the bolt extends out more than 0.157inch (4mm) from the end of the hollow shaft, no safety cover can be installed. (**RH** model hollow shaft gearheads include safety covers.)