

# DC GEARED MOTOR

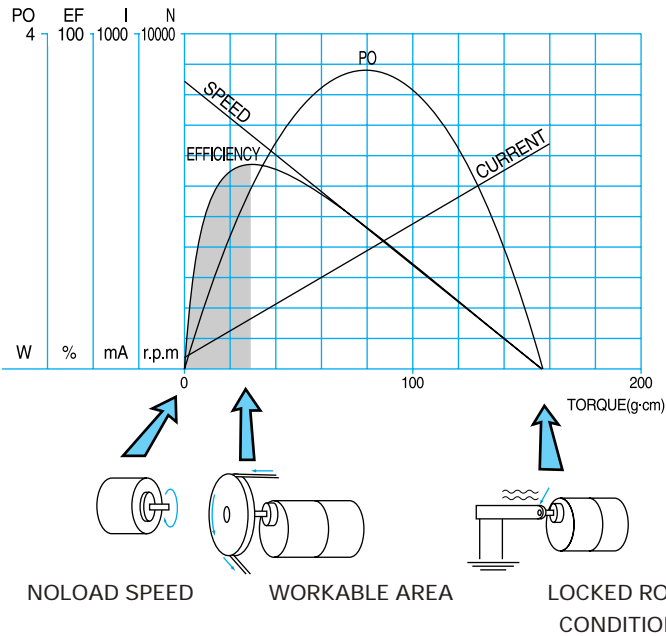
CATALOG '06



 **TSUKASA**

# DC MOTOR SPECIFICATIONS

## SPEED AND LOAD CHARACTERISTICS



The relationship between torque vs speed and current is linear as shown left; as the load on a motor increases, speed will decrease. The graph pictured here represents the characteristics of a typical motor.

As long as the motor is used in the area of high efficiency (as represented by the shaded area) long life and good performance can be expected. However, using the motor outside this range will result in high temperature rises and deterioration of motor parts.

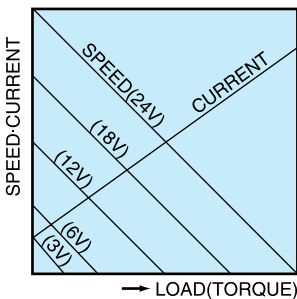
If voltage in continuous applied to a motor in a locked rotor condition, the motor will heat up and fail in a relatively short time. Therefore it is important that there is some form of protection against high temperature rises.

A motor's basic rating point is slightly lower than its maximum efficiency point.

Load torque can be determined by measuring the current drawn when the motor is attached to a machine whose actual load value is known.

We will select the most suitable motor for your application after receiving your information.

## AS APPLIED VOLTAGE WILL BE CHANGED



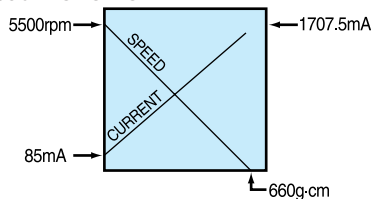
As shown left, if the applied voltage is changed, no load speed and starting torque also change in proportion to the voltage.

Speed characteristics at a given voltage are parallel to those at other voltages.

Thus, a DC motor can be used at a voltage lower than the rated voltage. But, below 1000 rpm, the speed becomes unstable, and the motor will not run smoothly.

## CHARACTERISTICS AND RATED PERFORMANCE OF A GEARED MOTOR

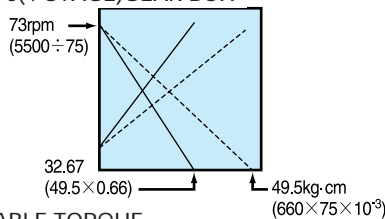
(A) ex. TG-85C MOTOR ONLY



Speed reduction by means of a gear box results in increased torque.

The reduction/increase is determined by the gear ratio and efficiency of the gear box.

(B) WITH 1/75(4-STAGE) GEAR BOX



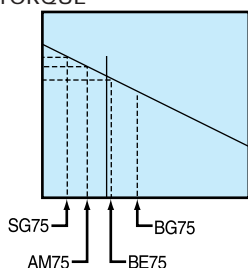
Over-all efficiency depends on the number of reduction stages : one average is 90% per stage. Therefore: a two stage reduction gives  $90 \times 90 = 81\%$ ; 3 stages will be 72.9% and a 4-stage reduction 66%.

The above mechanical loss effects the stall torque as shown left.

Stall torque of a geared motor can be calculated using the following formula:

—Motor stall torque  $\times$  gear ratio  $\times$  efficiency.

(C) ALLOWABLE TORQUE



The output loading on a gear box must never exceed the manufactures "specified rated torque" as this will cause premature gear failure.

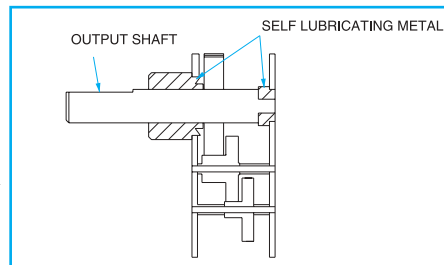
It is particularly important to observe this at slow output speeds when the calculated output torque exceeds the specified rated torque.

## ● GEAR BOX CONSTRUCTION AND FEATURES

**INTERMITTENT DUTY**  
 (Suitable for less than 2sec.)  
 (on & long enough off time)

**STANDARD TYPE**

**GL, VG, VM, LG, SG**  
**AGD, SS, BG, WM** ⇒



### STANDARD GEAR MECHANISM

Other than the output gear, the gears rotate around a shaft that is fixed to the plate.

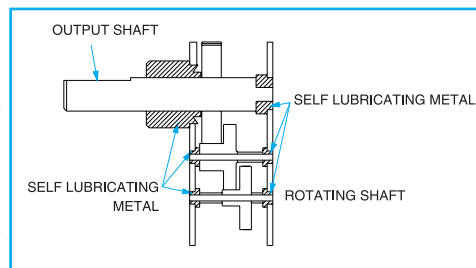
**HEAVY LOAD**

—self lubricating metal type.

**SM, AMD, BE, BM, JM** ⇒

—ballbearing at all stages

**AP** ⇒



### NON-LUBRICATED METAL BEARING GEAR MECHANISM

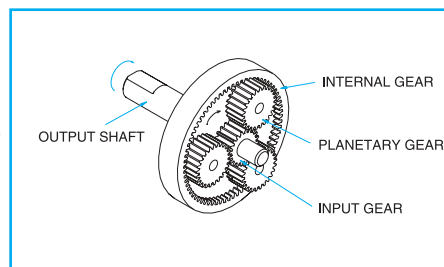
All gears, including the output gear, are attached to the shaft and supported by non-lubricated metal bearings. This type of mechanism is suitable for medium load applications and continuous duty cycle operation.

**LOW COST VERSION**—Plastic or sinterd metal. **EU, RU, VG, LG**

**COMPACT SIZE TYPE**

—Planetary

**GU, EU, RU, FU**  
**KU(KUP), SU** ⇒



### PLANETARY GEAR MECHANISM

A heavy duty type gear mechanism using 3 mating gears to transmit torque to the output shaft. This type of mechanism is suitable for limited space applications.

## Protection against overload and locked rotor

When the rotor is locked and voltage is applied to the motor terminals, the temperature of the motor windings will rise and eventually short-circuit.

The time until a short-circuit condition appears differs per motor type.

It is recommended that the motor is protected against such an overload by means of a fuse, current limiter or mechanical protection.

## Protection against RFI/EMI caused by PWM control

An internally installed suppressor reduces electrical commutation noise caused by the brushes. Depending on the requirements, extra precautions sometimes are recommended such as an external capacitor, or filter circuit.

When driven in PWM at certain Frequencies it may occur that a motor does not start due to the combination of driving frequency and internally fitted capacitive noise suppressor.

## Precautions for instantaneous reversing and dynamic braking

When the power supply to the motor is switched off, it is advisable to allow the motor to stop rotating before reversing the supply polarity.

Failure to do this will result in a very high instantaneous current.

It is possible to stop the motor within a few revolutions by applying a short-circuit across the motor terminals immediately after the motor is switched off. This method is very effective but may shorten brush life.

## Vertical mounting with shaft up

In some cases when a motor-gear is mounted in this position, traces of lubrication oil can contaminate the brushes and commutator thus shortening brush life or causing a short-circuit. Please contact us when vertical mounting is required.

## Speed detection and control

A number of models can be provided with a magnetic or optical encoder.

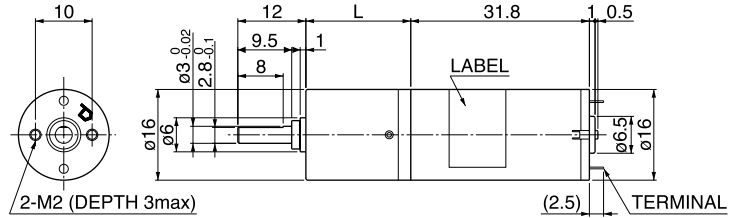
Please contact us for detailed information and assistance.

# TG-87 (1.7W) Ø 16, COMPACT SIZE.

APPLICATION : ATM, MONEY COUNTING MACHINE, CARD READER, SECURITY CAMERA, CARD DISPENSER, CASSETTE LOADING etc.

## GU

TG-87A  
TG-87B



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		3.5	4.9	12.5	17.3	24.1	44	61.2	85.1	118	155	216	300	418	581
TG-87A-GU (12V)	SPEED(r/min)	3336	2352	939	697	485	267	189	136	97.3	74.4	53.2	38.8	28.2	20.9
	TORQUE(mN-m)	2.9	4.9	9.8	14.7	19.6	34.3	49	68.6	98	107.8	147	196	245	245
	TORQUE(kg-cm)	0.03	0.05	0.1	0.1	0.2	0.3	0.5	0.7	1	1.1	1.6	2	2.5	2.5
TG-87B-GU (24V)	SPEED(r/min)	3336	2352	939	697	485	267	189	136	97.3	74.4	53.3	38.8	28.2	20.9
	TORQUE(mN-m)	2.9	4.9	9.8	9.8	19.6	29.4	49	68.6	98	107.8	156.8	196	245	245
	TORQUE(kg-cm)	0.03	0.05	0.1	0.1	0.2	0.3	0.5	0.7	1	1.1	1.6	2	2.5	2.5

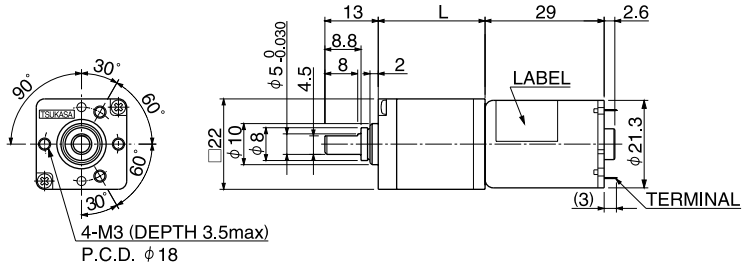
GU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/3.5-1/4.9	15.1	1	0.5	18
	1/12.5-1/24.1	18.5	2	1	21
	1/44-1/118	22	3	1.5	24
	1/155	25.5	4	1.5	28
	1/216-1/581	25.5	4	2.5	28

# TG-01 (0.4~0.8W) Ø 21.3, SLIM TYPE, COMPACT DESIGN.

APPLICATION : ATM, MONEY COUNTING MACHINE, CARD READER, BLINDS, SECURITY CAMERA, MEDICAL EQUIPMENT, CARD DISPENSER, CASSETTE LOADING etc.

## EU

TG-01F  
TG-01G  
TG-01H



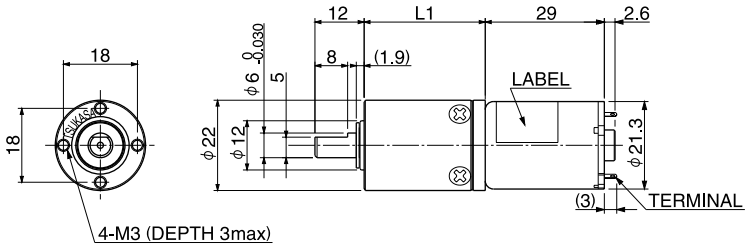
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		12.1	17.6	20.6	25.5	42.1	61.2	71.7	88.7	104	129				
TG-01F-EU (24V)	SPEED(r/min)	316	225	194	149	94.1	62.6	53	43	36.7	29.5				
	TORQUE(mN-m)	8.82	9.8	9.8	19.6	19.6	39.2	49	58.8	68.6	88.2				
	TORQUE(kg-cm)	0.09	0.1	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.9				
TG-01G-EU (24V)	SPEED(r/min)	609	425	365	289	177	121	103	83	70.9	57.1				
	TORQUE(mN-m)	8.82	8.82	9.8	19.6	19.6	39.2	49	58.8	68.6	88.2				
	TORQUE(kg-cm)	0.09	0.1	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.9				
TG-01H-EU (12V)	SPEED(r/min)	600	420	361	285	175	119	101	81.8	69.9	56.3				
	TORQUE(mN-m)	8.82	9.8	9.8	19.6	19.6	39.2	49	58.8	68.6	88.2				
	TORQUE(kg-cm)	0.09	0.1	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.9				

EU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/12.1-1/25.5	21	2	1	34
	1/42.1-1/129	26	3	1.5	36

## FU

TG-01F  
TG-01G  
TG-01H



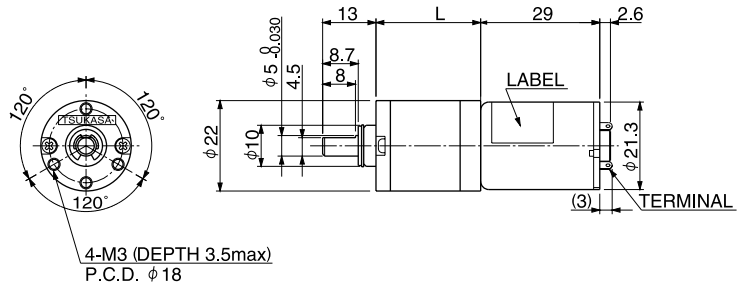
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		4	4.7	16	19	23	64	76	90	107	256	304	361	429	509
TG-01F-FU (24V)	SPEED(r/min)	1026	855	258	220	187	63.7	53.4	44.9	37.9	15.8	13.3	11.3	9.5	8
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	39.2	49	58.8	68.6	147	176.4	196	245	294
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.4	0.5	0.6	0.7	1.5	1.8	2	2.5	3
TG-01G-FU (24V)	SPEED(r/min)	1919	1604	481	409	347	119	100	84.3	71.1	29.7	25	21.2	17.8	14.9
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	39.2	49	49	68.6	147	176.4	196	245	294
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.4	0.5	0.5	0.7	1.5	1.8	2	2.5	3
TG-01H-FU (12V)	SPEED(r/min)	1924	1608	482	410	348	120	100	84.5	71.3	29.8	25.1	21.2	17.8	15
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	39.2	49	58.8	68.6	147	176	196	245	294
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.4	0.5	0.6	0.7	1.5	1.8	2	2.5	3

FU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/4-1/4.7	19.5	1	0.5	41
	1/16-1/23	24.5	2	1	49
	1/64-1/107	29.5	3	2	57
	1/256-1/509	34.5	4	3	66

# RU

TG-01F  
TG-01G  
TG-01H



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	
		3.7	5	13.4	18.3	25	49.3	67.2	91.7	125	181	246	336	458	625
TG-01F-RU (24V)	SPEED(r/min)	1108	815	301	227	170	82.6	60.9	44.1	33.2	23.3	17.4	12.9	9.5	7
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	29.4	39.2	58.8	58.8	58.8	58.8	58.8	58.8	58.8
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
TG-01G-RU (24V)	SPEED(r/min)	2079	1528	566	423	314	155	114	82.9	62	43.3	32.1	23.7	17.5	12.9
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	29.4	39.2	58.8	58.8	58.8	58.8	58.8	58.8	58.8
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
TG-01H-RU (12V)	SPEED(r/min)	2084	1532	567	424	315	155	114	83.1	62.1	43.4	32.2	23.8	17.5	12.9
	TORQUE(mN-m)	2.94	3.92	9.8	9.8	9.8	29.4	39.2	58.8	58.8	58.8	58.8	58.8	58.8	58.8
	TORQUE(kg-cm)	0.03	0.04	0.1	0.1	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6

RU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/3.7-1/5	15.5	1	0.3	24
	1/13.4-1/25	20.5	2	0.6	27
	1/49.3-1/125	25.5	3	0.6	30
	1/181-1/625	30.5	4	0.6	33

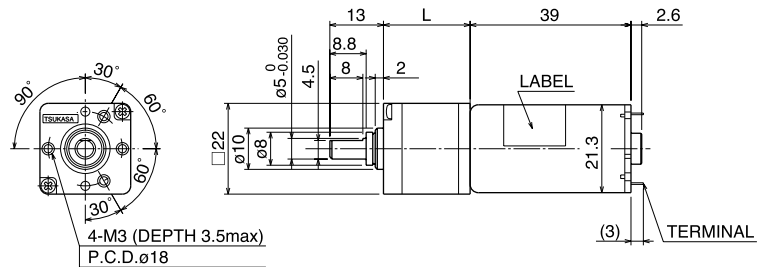
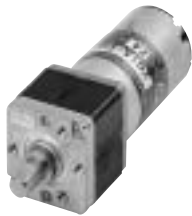
# TG-201

(1.1~2.0W) Ø 21.3, HIGH POWER  
SLIM TYPE, COMPACT DESIGN.

APPLICATION: ATM, MONEY COUNTING MACHINE, CARD READER, BLINDS, SECURITY CAMERA, MEDICAL EQUIPMENT, CARD DISPENSER, CASSETTE LOADING etc.

# EU

TG-201A  
TG-201B



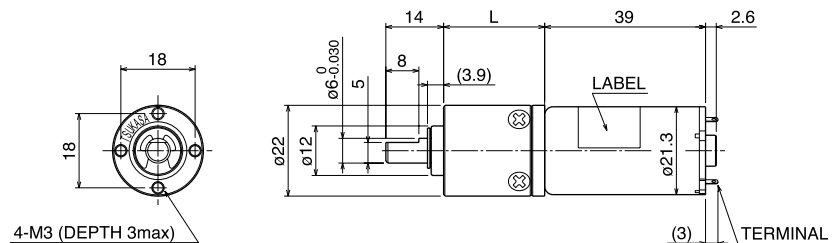
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	
		12.1	17.6	20.6	25.5	42.1	61.2	71.7	88.7	104	129
TG-201A-EU (24V)	SPEED(r/min)	358	246	205	165	101	69.7	59.3	47.8	41.9	34.8
	TORQUE(mN-m)	19.6	29.4	39.2	49	68.6	98	117.6	147	147	147
	TORQUE(kg-cm)	0.2	0.3	0.4	0.5	0.7	1	1.2	1.5	1.5	1.5
TG-201B-EU (24V)	SPEED(r/min)	541	359	313	246	151	103	87.5	72.7	63.2	52
	TORQUE(mN-m)	19.6	39.2	39.2	68.8	78.4	117.6	147	147	147	147
	TORQUE(kg-cm)	0.2	0.4	0.4	0.6	0.8	1.2	1.5	1.5	1.5	1.5

EU	GEAR RATIO	L (mm)	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
	1/12.1-1/25.5	21	2	98	1	34
	1/42.1-1/129	26	3	147	1.5	36

# FU

TG-201A  
TG-201B



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1		
		4	4.7	16	19	23	64	76	90	107	256	304	361	429	509
TG-201A-FU (24V)	SPEED(r/min)	1072	895	265	230	190	66.9	56.2	46.9	39.4	17.2	14.8	12.7	10.8	9.2
	TORQUE(mN-m)	7.84	9.8	29.4	29.4	39.2	98	117.6	147	176.4	294	294	294	294	294
	TORQUE(kg-cm)	0.08	0.1	0.3	0.3	0.4	1	1.2	1.5	1.8	3	3	3	3	3
TG-201B-FU (24V)	SPEED(r/min)	1581	1362	404	335	280	98.1	83	69.8	59.3	25.8	22.1	18.8	16	13.6
	TORQUE(mN-m)	9.8	9.8	29.4	39.2	49	127.4	147	176.4	196	294	294	294	294	294
	TORQUE(kg-cm)	0.1	0.1	0.3	0.4	0.5	1.3	1.5	1.8	2	3	3	3	3	3

FU	GEAR RATIO	L (mm)	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
	1/4-1/4.7	19.5	1	49	0.5	41
	1/16-1/23	24.5	2	98	1	49
	1/64-1/107	29.5	3	196	2	57
	1/256-1/509	34.5	4	294	3	66

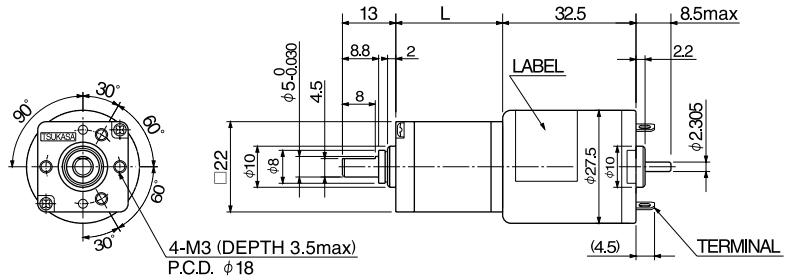
# TG-47

(0.9~3.6W) Ø 27, 5 SLOTS,  
LONG LIFE , ENCODER CAN BE MOUNTED.

APPLICATION: VENDING MACHINE , TICKETING MACHINE , GAMING MACHINE , ATM ,  
CUTTING MACHINE , BANKING MACHINE. etc.

## EU

TG-47A  
TG-47B  
TG-47C



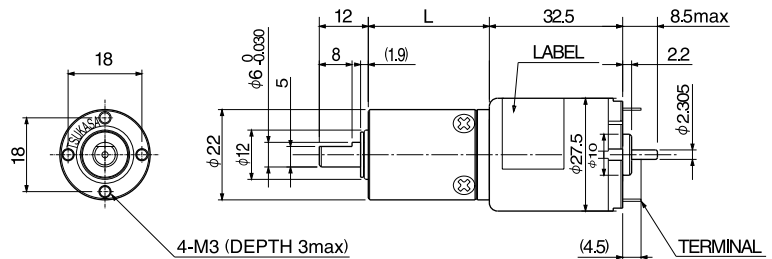
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1 12.1	1 17.6	1 20.6	1 25.5	1 42.1	1 61.2	1 71.7	1 88.7	1 104	1 129
TG-47A-EU (24V)	SPEED(r/min)	378	252	207	165	103	69.7	58.8	47.8	40.8	33.7
	TORQUE(mN-m)	9.8	19.6	29.4	39.2	49	78.4	98	117.6	137.2	147
	TORQUE(kg-cm)	0.1	0.2	0.3	0.4	0.5	0.8	1	1.2	1.4	1.5
TG-47B-EU (24V)	SPEED(r/min)	568	375	327	257	158	108	91.3	76.2	66.3	54.7
	TORQUE(mN-m)	19.6	39.2	39.2	58.8	78.4	117.6	147	147	147	147
	TORQUE(kg-cm)	0.2	0.4	0.4	0.6	0.8	1.2	1.5	1.5	1.5	1.5
TG-47C-EU (12V)	SPEED(r/min)	386	257	212	169	105	71.1	60	48.7	41.6	34.4
	TORQUE(mN-m)	9.8	19.6	29.4	39.2	49	78.4	98	117.6	137.2	147
	TORQUE(kg-cm)	0.1	0.2	0.3	0.4	0.5	0.8	1	1.2	1.4	1.5

EU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/12.1-1/25.5	21	2	1	34
	1/42.1-1/129	26	3	1.5	36

## FU

TG-47A  
TG-47B  
TG-47C



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1 4	1 4.7	1 16	1 19	1 23	1 64	1 76	1 90	1 107	1 256	1 304	1 361	1 429	1 509
TG-47A-FU (24V)	SPEED(r/min)	1055	894	273	235	192	66.9	55.8	46.9	39.6	16.5	14.3	12.3	10.6	9.1
	TORQUE(mN-m)	6.86	7.84	19.6	19.6	29.4	78.4	98	117.6	137.2	294	294	294	294	294
	TORQUE(kg-cm)	0.07	0.08	0.2	0.2	0.3	0.8	1	1.2	1.4	3	3	3	3	3
TG-47B-FU (24V)	SPEED(r/min)	1651	1426	423	350	292	102	86.6	72.8	62	27.1	23.2	19.8	16.9	14.4
	TORQUE(mN-m)	9.8	9.8	29.4	39.2	49	127.4	147	176.4	196	294	294	294	294	294
	TORQUE(kg-cm)	0.1	0.1	0.3	0.4	0.5	1.3	1.5	1.8	2	3	3	3	3	3
TG-47C-FU (24V)	SPEED(r/min)	2289	1970	561	469	394	136	114	99.4	85.8	37.3	31.9	27.2	23.1	19.6
	TORQUE(mN-m)	9.8	9.8	39.2	49	58.8	166.6	196	196	196	294	294	294	294	294
	TORQUE(kg-cm)	0.1	0.1	0.4	0.5	0.6	1.7	2	2	2	3	3	3	3	3
TG-47C-FU (12V)	SPEED(r/min)	1076	912	278	240	196	68.2	56.9	47.8	40.4	16.9	14.6	12.6	10.8	9.3
	TORQUE(mN-m)	6.86	7.84	19.6	19.6	29.4	78.4	98	117.6	137.2	294	294	294	294	294
	TORQUE(kg-cm)	0.07	0.08	0.2	0.2	0.3	0.8	1	1.2	1.4	3	3	3	3	3

FU	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/4-1/4.7	19.5	1	0.5	41
	1/16-1/23	24.5	2	1	49
	1/64-1/107	29.5	3	2	57
	1/256-1/509	34.5	4	3	66

## VG

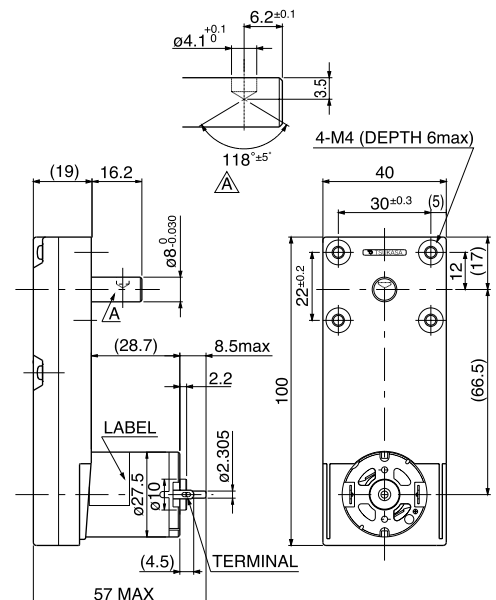
TG-47A  
TG-47B  
TG-47C



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1 100	1 125	1 230	1 280	1 500
TG-47A-VG (24V)	SPEED(r/min)	42.2	34.1	18.7	15.5	8.3
	TORQUE(mN-m)	107.8	137.2	245	245	490
	TORQUE(kg-cm)	1.1	1.4	2.5	2.5	5
TG-47B-VG (24V)	SPEED(r/min)	65.2	53.4	28.8	23.8	13.4
	TORQUE(mN-m)	166.6	196	392	392	588
	TORQUE(kg-cm)	1.7	2	4	4	6
TG-47C-VG (24V)	SPEED(r/min)	88.2	71.5	38.5	31.3	18.4
	TORQUE(mN-m)	196	245	490	539	588
	TORQUE(kg-cm)	2	2.5	5	5.5	6
TG-47C-VG (12V)	SPEED(r/min)	40.5	32.7	18	14.9	8
	TORQUE(mN-m)	107.8	137.2	245	245	490
	TORQUE(kg-cm)	1.1	1.4	2.5	2.5	5

VG	GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/100	5	392	4	115
	1/125	5	392	4	115
	1/230	5	588	6	115
	1/280	6	588	6	120
	1/500	6	588	6	120







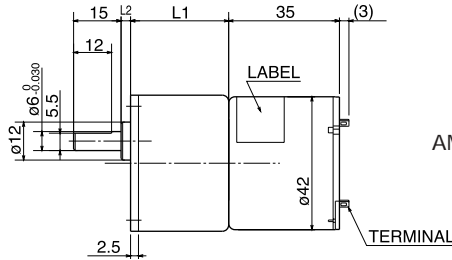
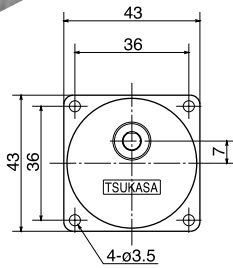
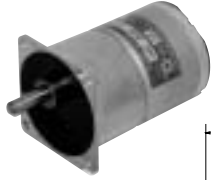
# TG-06

(4.3~4.4W) Ø 42, 5 SLOTS,  
HIGH POWER, COMPACT SIZE.

APPLICATION: VENDING MACHINE, BANKING MACHINE, COIN HOPPER, CUTTER,  
GAMING MACHINE, MEDICAL EQUIPMENT. etc.

## AGD/AMD

TG-06D  
TG-06E



AGD	GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/5-1/10	26	0.5	2	1	90
	1/12.5-1/30	26	3	3	2	95
	1/36-1/100	26	5.5	4	3	100
	1/120-1/300	31	3	5	6	105
	1/360-1/1000	31	5.5	6	6	110
	1/1500-1/3000	31	8	7	6	115

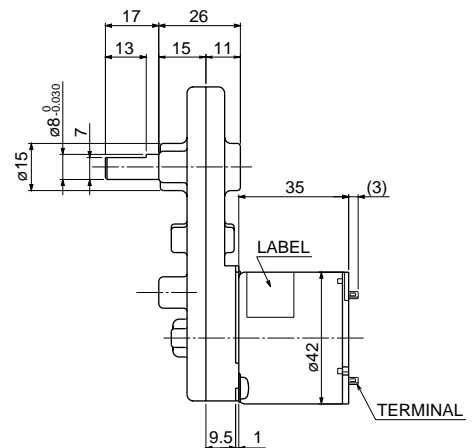
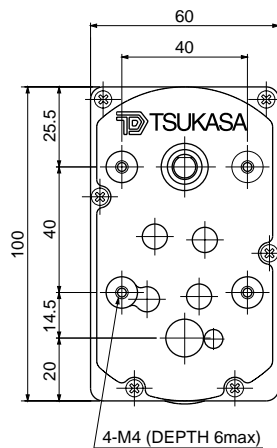
AMD	GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/5-1/10	26	4	2	1	110
	1/12.5-1/18	26	6.5	3	3.5	115
	1/25-1/36	26	6.5	3	4	115
	1/50-1/75	31	4	4	5	115
	1/90-1/150	31	4	4	7	115
	1/180-1/500	31	6.5	5	7	120

Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
		5	10	15	18	25	30	36	50	60	75	100	120	150	200	250	300	500	750	1000	1500
TG-06D-AGD (12V)	SPEED(r/min)	835	418	283	232	167	141	120	84.9	73.1	60.4	46.7	35.9	29.8	23.1	18.9	15.9	9.8	6.6	5	3.3
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	196	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-06E-AGD (24V)	SPEED(r/min)	825	413	279	229	165	139	118	83.7	71.7	59	45.4	35.3	29.1	22.5	18.3	15.4	9.4	6.4	4.8	3.2
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	196	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-06D-AMD (12V)	SPEED(r/min)	835	418	283	232	167	141	117	84.9	71.1	56.6	41.7	35.6	29.6	22.7	18.6	15.8	9.8	—	—	—
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	245	294	343	441	637	686	686	686	686	686	686	—	—	—
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2.5	3	3.5	4.5	6.5	7	7	7	7	7	7	—	—	—
TG-06E-AMD (24V)	SPEED(r/min)	825	413	279	229	165	139	115	83.7	70	55.8	41.2	35	28.9	22.2	18.1	15.3	9.4	—	—	—
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	245	294	343	441	637	686	686	686	686	686	686	—	—	—
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2.5	3	3.5	4.5	6.5	7	7	7	7	7	7	—	—	—

## BG

TG-06D  
TG-06E



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	
		12.5	25	36	60	100	150	200	300	500	700
TG-06D-BG (12V)	SPEED(r/min)	334	167	117	70.7	42	28.3	21	15.4	9.1	6.7
	TORQUE(mN-m)	88.2	176.4	245	392	686	980	1372	980	1960	1960
	TORQUE(kg-cm)	0.9	1.8	2.5	4	7	10	14	10	20	20
TG-06E-BG (24V)	SPEED(r/min)	330	165	115	69.7	41.5	27.9	20.7	15	8.8	6.5
	TORQUE(mN-m)	88.2	176.4	245	392	686	980	1372	980	1960	1960
	TORQUE(kg-cm)	0.9	1.8	2.5	4	7	10	14	10	20	20

BG	GEAR RATIO	STAGE	TORQUE (kg-cm)	WEIGHT (g)
	1/12.5-1/18	3	7	315
	1/25-1/90	3	10	315
	1/100-1/200	3	15	315
	1/250, 1/500, 1/700	4	20	315
	1/300	4	10	285

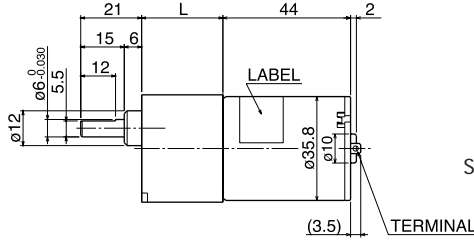
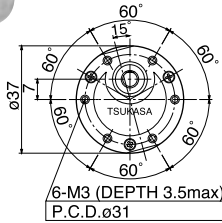
# TG-85

(5.5~8.0W) Ø 35.8, 5 SLOTS, COMPACT SIZE,  
HIGH TORQUE WITH LOW NOISE.

APPLICATION: COPY MACHINE, VENDING MACHINE, BANKING MACHINE, PRINTER,  
HOPPER, CUTTER, ATM, MEDICAL EQUIPMENT. etc.

## SG/SM

TG-85B  
TG-85C  
TG-85E



SG					
GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)	
1/5-1/10	20.5	2	1	100	
1/12.5-1/30	23	3	2	105	
1/36-1/100	25.5	4	3	110	
1/120-1/300	28	5	6	115	
1/360-1/1000	30.5	6	6	120	
1/1500-1/3000	33	7	6	125	

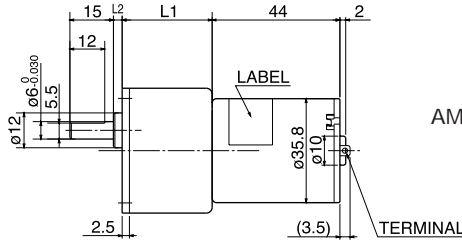
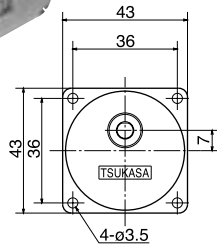
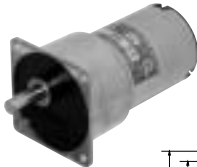
SM					
GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)	
1/5-1/10	23	2	1	100	
1/12.5-1/30	25.5	3	2	105	
1/36-1/100	28	4	3	110	
1/120-1/300	30.5	5	6	115	
1/360-1/1000	33	6	6	120	

Allowable torque-speed characteristics

MODEL	GEAR RATIO	TORQUE (kg-cm)																			
		1/5	1/10	1/15	1/18	1/25	1/30	1/36	1/50	1/60	1/75	1/100	1/120	1/150	1/200	1/250	1/300	1/500	1/750	1/1000	1/1500
TG-85B-SG (12V)	SPEED(r/min)	913	448	295	247	179	154	125	92.4	78.9	64.6	49.6	38.9	32	24.6	20	16.8	10.3	6.9	5.2	3.5
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85C-SG (24V)	SPEED(r/min)	910	447	294	247	179	153	125	91.9	78.3	63.9	49	38.7	31.7	24.3	19.7	16.6	10.1	6.8	5.1	3.4
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85E-SG (24V)	SPEED(r/min)	1302	643	425	356	257	219	180	131	111	90.1	68.6	55	44.7	34.1	27.6	23.1	14	9.4	7.1	4.7
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85B-SM (12V)	SPEED(r/min)	913	448	295	247	179	154	125	92.4	78.9	64.6	49.6	38.9	32	24.6	20	16.8	10.3	6.9	5.2	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	—
TG-85C-SM (24V)	SPEED(r/min)	910	447	294	247	179	153	125	91.9	78.3	64	49	38.7	31.7	24.3	19.7	16.6	10.1	6.8	5.1	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	—
TG-85E-SM (24V)	SPEED(r/min)	1302	643	425	356	257	219	180	131	111	90.1	68.6	55	44.7	34.1	27.6	23.1	14	9.4	7.1	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	—

## AGD/AMD

TG-85B  
TG-85C  
TG-85E



AGD					
GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/5-1/10	26	0.5	2	1	90
1/12.5-1/30	26	3	3	2	95
1/36-1/100	26	5.5	4	3	100
1/120-1/300	31	3	5	6	105
1/360-1/1000	31	5.5	6	6	110
1/1500-1/3000	31	8	7	6	115

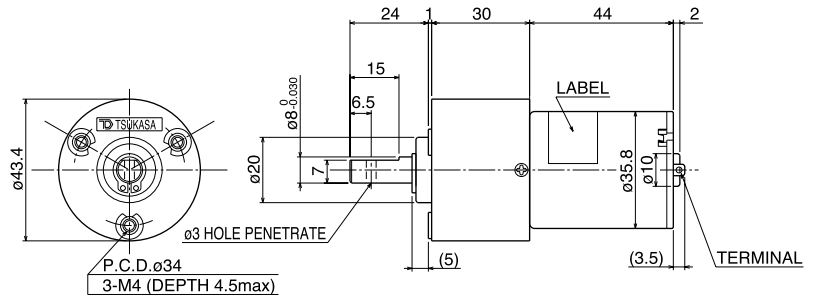
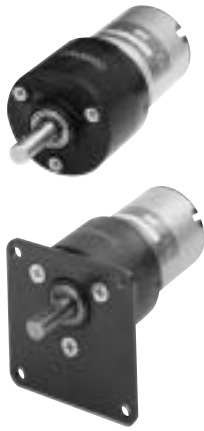
AMD					
GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/5-1/10	26	4	2	1	110
1/12.5-1/18	26	6.5	3	3.5	115
1/25-1/36	26	6.5	3	4	115
1/50-1/75	31	4	4	5	115
1/90-1/150	31	4	4	7	115
1/180-1/500	31	6.5	5	7	120

Allowable torque-speed characteristics

MODEL	GEAR RATIO	TORQUE (kg-cm)																			
		1/5	1/10	1/15	1/18	1/25	1/30	1/36	1/50	1/60	1/75	1/100	1/120	1/150	1/200	1/250	1/300	1/500	1/750	1/1000	1/1500
TG-85B-AGD (12V)	SPEED(r/min)	913	448	295	247	179	154	125	92.4	78.9	64.6	49.6	38.9	32	24.6	20	16.8	10.3	6.9	5.2	3.5
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85C-AGD (24V)	SPEED(r/min)	910	447	294	247	179	153	125	91.9	78.3	63.9	49	38.7	31.7	24.3	19.7	16.6	10.1	6.8	5.1	3.4
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85E-AGD (24V)	SPEED(r/min)	1302	643	425	356	257	219	180	131	111	90.1	68.6	55	44.7	34.1	27.6	23.1	14	9.4	7.1	4.7
	TORQUE(mN-m)	9.2	88.2	127.4	147	196	196	245	294	294	294	294	588	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2	2.5	3	3	3	3	6	6	6	6	6	6	6	6	6
TG-85B-AMD (12V)	SPEED(r/min)	913	448	295	247	179	148	124	90.2	74.2	60.6	45.1	38.7	31.8	24.3	19.8	16.7	10.2	—	—	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	245	294	343	441	490	686	686	686	686	686	686	686	—	—	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2.5	3	3.5	4.5	5	7	7	7	7	7	7	7	—	—	—
TG-85C-AMD (24V)	SPEED(r/min)	910	447	294	247	179	148	124	89.9	74.1	60.4	45	38.4	31.5	24	19.5	16.5	10.1	—	—	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	245	294	343	441	490	686	686	686	686	686	686	686	—	—	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2.5	3	3.5	4.5	5	7	7	7	7	7	7	7	—	—	—
TG-85E-AMD (24V)	SPEED(r/min)	1302	643	425	356	257	214	178	129	107	86.5	64.6	54.8	44.6	33.8	27.4	23	14	—	—	—
	TORQUE(mN-m)	39.2	88.2	127.4	147	196	245	294	343	441	490	686	686	686	686	686	686	686	—	—	—
	TORQUE(kg-cm)	0.4	0.9	1.3	1.5	2	2.5	3	3.5	4.5	5	7	7	7	7	7	7	7	—	—	—

# KU

TG-85B  
TG-85C  
TG-85E



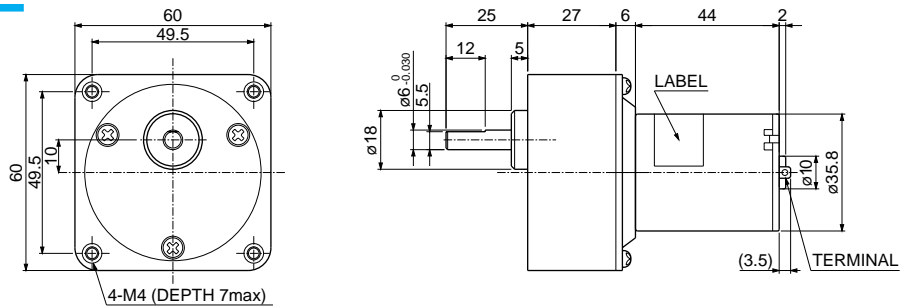
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1
		24	75	96	144	216
TG-85B-KU (12V)	SPEED(r/min)	187	58.8	46.3	31.5	22.2
	TORQUE(mN-m)	196	588	735	980	980
	TORQUE(kg-cm)	2	6	7.5	10	10
TG-85C-KU (24V)	SPEED(r/min)	187	58.7	46.3	31.4	22
	TORQUE(mN-m)	196	588	735	980	980
	TORQUE(kg-cm)	2	6	7.5	10	10
TG-85E-KU (24V)	SPEED(r/min)	269	84.7	66.7	45	31.1
	TORQUE(mN-m)	196	588	735	980	980
	TORQUE(kg-cm)	2	6	7.5	10	10

GEAR RATIO	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
1/24	2	980	10	135
1/75	3	980	10	135
1/96	3	980	10	135
1/144	3	980	10	135
1/216	3	980	10	135

# BE

TG-85B  
TG-85C  
TG-85E



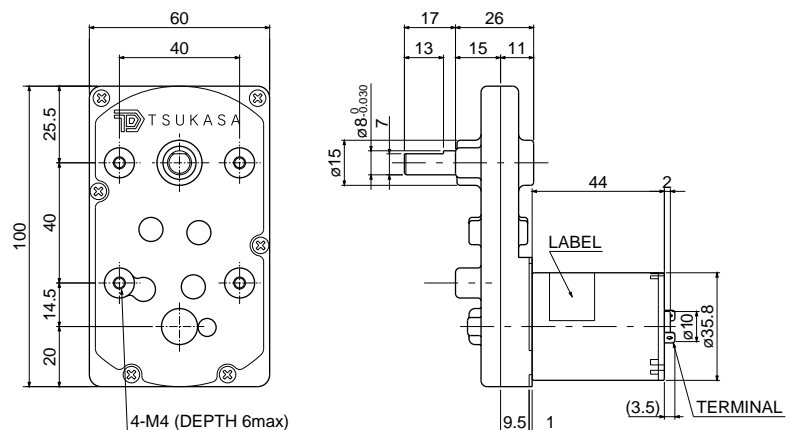
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
		5	10	12.5	15	18	25	30	50	75	100	150	200	300	500	750	1000
TG-85B-BE (12V)	SPEED(r/min)	926	448	354	295	247	185	148	89.7	59.6	44.5	30.3	23.7	16.1	10	6.8	5.1
	TORQUE(mN-m)	39.2	88.2	117.6	127.4	147	196	245	392	539	735	980	980	980	980	980	980
	TORQUE(kg-cm)	0.4	0.9	1.2	1.3	1.5	2	2.5	4	5.5	7.5	10	10	10	10	10	10
TG-85C-BE (24V)	SPEED(r/min)	922	447	354	294	247	185	148	89.5	59.6	44.5	30.2	23.5	16	9.9	6.7	5.1
	TORQUE(mN-m)	39.2	88.2	117.6	127.4	147	196	245	392	539	735	980	980	980	980	980	980
	TORQUE(kg-cm)	0.4	0.9	1.2	1.3	1.5	2	2.5	4	5.5	7.5	10	10	10	10	10	10
TG-85E-BE (24V)	SPEED(r/min)	1321	643	510	425	356	267	214	129	85.6	64.1	43.3	33.3	22.4	13.8	9.3	7
	TORQUE(mN-m)	39.2	88.2	117.6	127.4	147	196	245	392	539	735	980	980	980	980	980	980
	TORQUE(kg-cm)	0.4	0.9	1.2	1.3	1.5	2	2.5	4	5.5	7.5	10	10	10	10	10	10

GEAR RATIO	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/3-1/12.5	2	10	255
1/15-1/60	3	10	270
1/75-1/250	4	10	285
1/300-1/1000	5	10	300

# BG

TG-85B  
TG-85C  
TG-85E



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	
		12.5	25	36	60	100	150	200	300	500	700
TG-85B-BG (12V)	SPEED(r/min)	359	179	124	74.2	44.4	29.5	22.7	16.4	9.7	7.1
	TORQUE(mN-m)	98	196	294	490	833	1274	1470	980	1960	1960
	TORQUE(kg-cm)	1	2	3	5	8.5	13	15	10	20	20
TG-85C-BG (24V)	SPEED(r/min)	358	179	124	74.1	44.3	29.4	22.6	16.2	9.6	7
	TORQUE(mN-m)	98	196	294	490	833	1274	1470	980	1960	1960
	TORQUE(kg-cm)	1	2	3	5	8.5	13	15	10	20	20
TG-85E-BG (24V)	SPEED(r/min)	515	257	178	107	63.9	42.5	32.4	22.7	13.5	9.8
	TORQUE(mN-m)	98	196	294	490	833	1274	1470	980	1960	1960
	TORQUE(kg-cm)	1	2	3	5	8.5	13	15	10	20	20

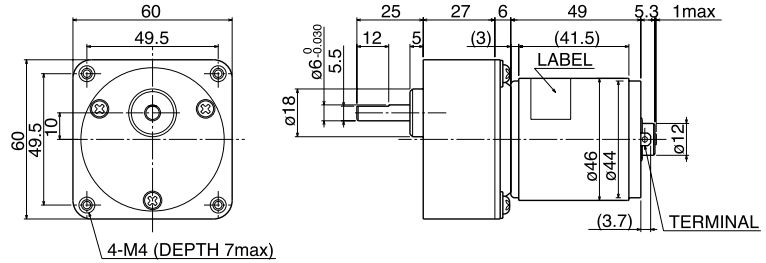
GEAR RATIO	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/12.5-1/18	3	7	315
1/25-1/90	3	10	315
1/100-1/200	3	15	315
1/250, 1/500, 1/700	4	20	315
1/300	4	10	285

# TG-401 (11W) Ø 46, 5 SLOTS, LONG LIFE.

APPLICATION : PRINTER , PLOTTER , HOPPER , GAMING MACHINE , VENDING MACHINE , BANKING MACHINE. etc.

## BE

TG-401A



Allowable torque-speed characteristics

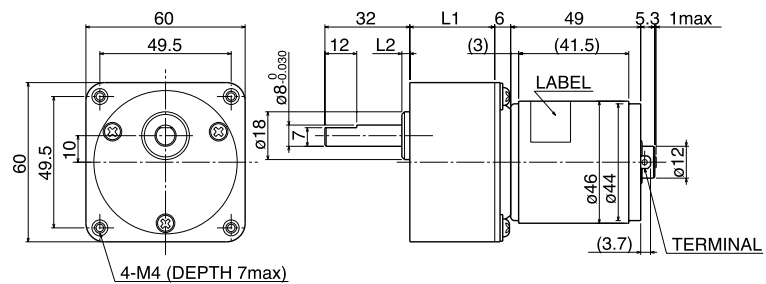
MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		5	10	12.5	15	18	25	30	50	75	100	150	200	300	500	750	1000
TG-401A-BE (24V)	SPEED(r/min)	803	396	384	268	224	164	132	79.3	54.8	42.8	29.7	22.7	15.3	9.3	6.3	4.7
	TORQUE(mN-m)	98	196	245	245	294	441	539	882	980	980	980	980	980	980	980	980
	TORQUE(kg-cm)	1	2	2.5	2.5	3	4.5	5.5	9	10	10	10	10	10	10	10	10

BE

GEAR RATIO	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
1/3-1/12.5	2	980	10	255
1/15-1/60	3	980	10	270
1/75-1/250	4	980	10	285
1/300-1/1000	5	980	10	300

## BM

TG-401A



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1
		5	10	12.5	18	25	30	50	75	100	120	150	180
TG-401A-BM (24V)	SPEED(r/min)	793	396	317	224	159	132	79.3	53	39.2	32.8	26.3	24.1
	TORQUE(mN-m)	98	196	245	294	441	539	882	1176	1666	1960	2450	2450
	TORQUE(kg-cm)	1	2	2.5	3	4.5	5.5	9	12	17	20	25	25

BM

GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
1/3A 1/15	32	3	2	1470	15	310
1/18A 1/60	42	5	3	2450	25	400
1/75A 1/180	42	5	4	2450	25	430

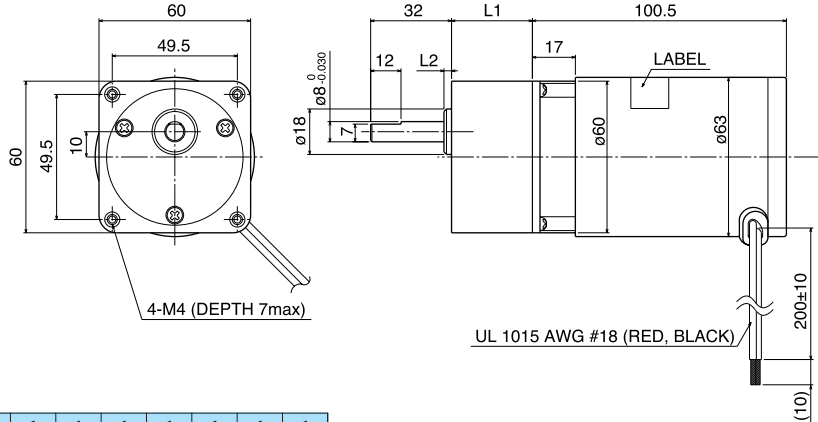


# TG-77

(26W) Ø 63, 12 SLOTS,  
HIGH POWER, LONG LIFE.

## BM

TG-77A



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1
		5	10	12.5	18	25	30	50	75	100	120	150	180
TG-77A-BM (24V)	SPEED(r/min)	501	250	200	139	100	83.8	52.4	35.9	27.4	23.1	18.6	16.7
	TORQUE(mN-m)	392	784	980	1274	1764	2058	2450	2450	2450	2450	2450	2450
	TORQUE(kg-cm)	4	8	10	13	18	21	25	25	25	25	25	25

BM

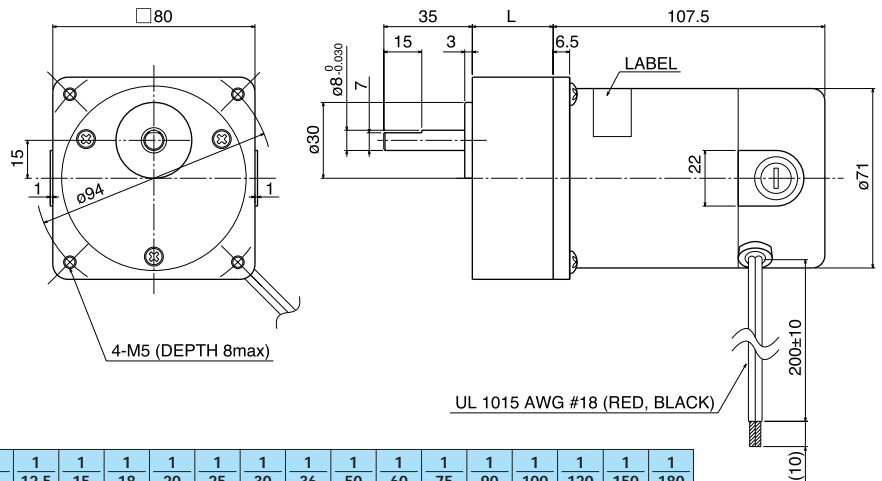
GEAR RATIO	L1 (mm)	L2 (mm)	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
1/3-1/15	32	3	2	1470	15	310
1/18-1/60	42	5	3	2450	25	400
1/75-1/180	42	5	4	2450	25	430

# TG-78

(46W) Ø 71, 12 SLOTS,  
HIGH POWER, LONG LIFE.

## JM

TG-78A



Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
		5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	
TG-78A-JM (24V)	SPEED(r/min)	609	521	427	362	304	236	203	174	150	124	106	87.6	62	52.8	42.8	36.2	32.9	27.7	22.5	18.9	
	TORQUE(mN-m)	490	490	490	490	980	1470	1470	1470	1960	1960	1960	2450	3920	3920	3920	3920	3920	3920	3920	3920	3920
	TORQUE(kg-cm)	5	5	5	5	10	15	15	15	20	20	20	25	40	40	40	40	40	40	40	40	40

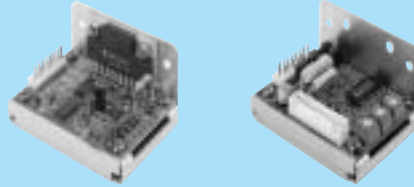
JM

GEAR RATIO	L (mm)	STAGE	TORQUE (mN-m)	TORQUE (kg-cm)	WEIGHT (g)
1/5-1/9	32	2	490	5	500
1/10	32	2	980	10	500
1/12.5-1/18	32	2	1470	15	500
1/20-1/30	42.5	3	1960	20	650
1/36	42.5	3	2450	25	650
1/50-1/60	42.5	3	3920	40	650
1/75-1/180	42.5	4	3920	40	750

# TG-55

(1.6~8.8W) BRUSHLESS MOTOR, LONG LIFE, INNER ROTOR.

Motor Driver Circuit for TG-55

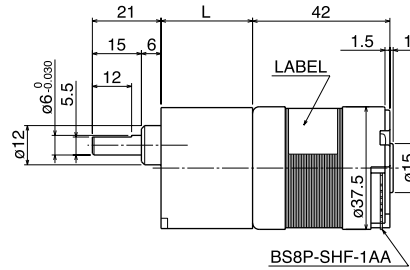
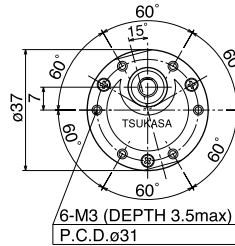


TCP-S VI

TCP-S12B-55

## SM

TG-55A  
TG-55B  
TG-55C



SM

GEAR RATIO	L (mm)	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/5-1/10	23	2	1	100
1/12.5-1/30	25.5	3	2	105
1/36-1/100	28	4	3	110
1/120-1/300	30.5	5	6	115
1/360-1/1000	33	6	6	120

Allowable torque-speed characteristics

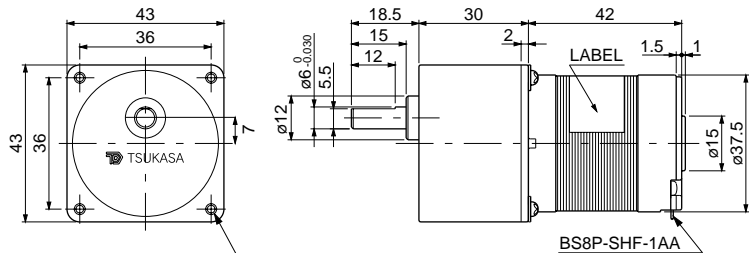
MODEL	GEAR RATIO	GEAR RATIO																		
		1/5	1/10	1/15	1/18	1/25	1/30	1/36	1/50	1/60	1/75	1/100	1/120	1/150	1/200	1/250	1/300	1/500	1/750	1/1000
TG-55A-SM (12V)	SPEED(r/min)	305	153	105	84.7	61.1	52.3	44.7	31.4	27.6	23.3	18.4	13.4	11.4	9	7.5	6.4	3.9	2.7	2
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	196	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2	3	3	3	3	6	6	6	6	6	6	6	6
TG-55B-SM (12V)	SPEED(r/min)	473	253	158	133	105	91.8	69.7	55.1	47.6	39.5	30.7	23.3	19.4	15.2	12.4	10.5	6.5	4.4	3.3
	TORQUE(mN-m)	58.8	98	156.8	186.2	196	196	294	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.6	1	1.6	1.9	2	2	3	3	3	3	3	6	6	6	6	6	6	6	6
TG-55C-SM (12V)	SPEED(r/min)	708	354	240	196	142	120	101	71.9	61.9	51.1	39.5	30.4	25.2	19.6	16	13.5	8.3	5.6	4.2
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	196	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2	3	3	3	3	6	6	6	6	6	6	6	6
TG-55A-SM (24V)	SPEED(r/min)	591	339	203	179	139	119	93.6	71.6	61.1	50.1	38.5	30.2	24.8	19.1	15.5	13.1	8	5.4	4
	TORQUE(mN-m)	78.4	98	196	196	196	196	294	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.8	1	2	2	2	2	3	3	3	3	3	6	6	6	6	6	6	6	6
TG-55B-SM (24V)	SPEED(r/min)	1120	581	374	313	237	203	161	122	104	84.6	64.7	51.2	41.9	32.1	26.1	21.9	13.3	9	6.8
	TORQUE(mN-m)	58.8	98	156.8	186.2	196	196	294	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.6	1	1.6	1.9	2	2	3	3	3	3	3	6	6	6	6	6	6	6	6
TG-55C-SM (24V)	SPEED(r/min)	1541	770	518	428	308	259	218	155	132	107	82	65.3	53.3	40.8	33	27.7	16.8	11.3	8.5
	TORQUE(mN-m)	39.2	78.4	98	127.4	176.4	196	196	294	294	294	294	588	588	588	588	588	588	588	588
	TORQUE(kg-cm)	0.4	0.8	1	1.3	1.8	2	2	3	3	3	3	6	6	6	6	6	6	6	6

## AP

TG-55A  
TG-55B  
TG-55C



(HC TYPE)



Allowable torque-speed characteristics

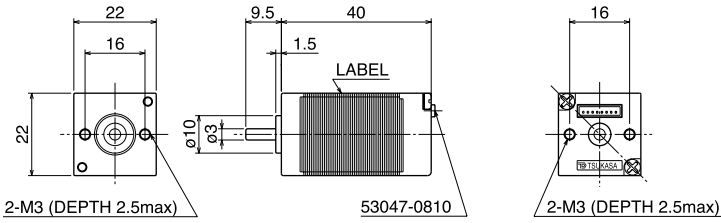
MODEL	GEAR RATIO	GEAR RATIO														
		1/6	1/8	1/13	1/16	1/20	1/27	1/32	1/43	1/53	1/67	1/81	1/89	1/108	1/133	
TG-55A-AP (12V)	SPEED(r/min)	271	191	119	98	78.4	57.5	49.8	36.7	30.4	23.5	19.2	17.5	14.2	11.5	
	TORQUE(mN-m)	39.2	58.8	88.2	107.8	137.2	186.2	196	245	294	392	490	539	686	833	
	TORQUE(kg-cm)	0.4	0.6	0.9	1.1	1.4	1.9	2	2.5	3	4	5	5.5	7	8.5	
TG-55B-AP (12V)	SPEED(r/min)	399	285	182	150	124	93.7	73.1	55.7	45.4	29.8	26.8	22.4	19.5		
	TORQUE(mN-m)	68.6	98	137.2	166.6	196	245	343	392	490	637	735	833	980	980	
	TORQUE(kg-cm)	0.7	1	1.4	1.7	2	2.5	3.5	4	5	6.5	7.5	8.5	10	10	
TG-55C-AP (12V)	SPEED(r/min)	611	437	274	226	182	133	113	83.6	69.1	53.9	44.2	40.2	32.8	26.6	
	TORQUE(mN-m)	39.2	58.8	88.2	107.8	137.2	186.2	196	245	294	392	490	539	686	833	
	TORQUE(kg-cm)	0.4	0.6	0.9	1.1	1.4	1.9	2	2.5	3	4	5	5.5	7	8.5	
TG-55A-AP (24V)	SPEED(r/min)	505	392	231	196	158	115	92.6	68.7	57.3	44.6	37.2	35	30.5	25.8	
	TORQUE(mN-m)	88.2	98	176.4	196	245	343	441	539	637	833	980	980	980	980	
	TORQUE(kg-cm)	0.9	1	1.8	2	2.5	3.5	4.5	5.5	6.5	8.5	10	10	10	10	
TG-55B-AP (24V)	SPEED(r/min)	939	677	431	356	291	216	173	131	107	84	70	63.2	52.5	44.2	
	TORQUE(mN-m)	68.6	98	137.2	166.6	196	245	343	392	490	637	735	833	980	980	
	TORQUE(kg-cm)	0.7	1	1.4	1.7	2	2.5	3.5	4	5	6.5	7.5	8.5	10	10	
TG-55C-AP (24V)	SPEED(r/min)	1310	944	595	491	395	289	242	180	149	117	95.9	87.1	71.5	57.9	
	TORQUE(mN-m)	39.2	58.8	88.2	107.8	137.2	186.2	196	245	294	392	490	539	686	833	
	TORQUE(kg-cm)	0.4	0.6	0.9	1.1	1.4	1.9	2	2.5	3	4	5	5.5	7	8.5	

AP

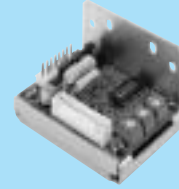
GEAR RATIO	STAGE	TORQUE (kg-cm)	WEIGHT (g)
1/6-1/8	2	1	205
1/13-1/16	3	2	220
1/20	3	2.5	220
1/27	3	3.5	220
1/32	3	4.5	220
1/43	4	5.5	235
1/53	4	6.5	235
1/67	4	8.5	235
1/81-1/133	4	10	235

# TG-22 (2.6W) BRUSHLESS MOTOR, LONG LIFE, INNER ROTOR.

APPLICATION: SPOOL DISPLAY, BANKING MACHINE, SECURITY CAMERA, CUTTER. etc.



Motor Driver Circuit for TG-22

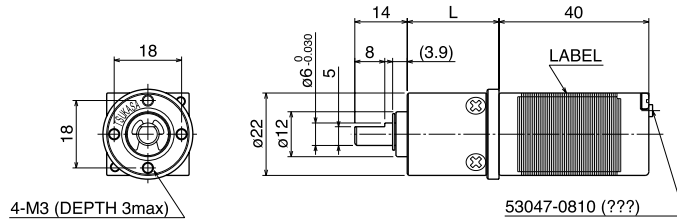


TCP-S12B-22A  
TCP-S12B-22D

TYPE	RATED VOLTAGE (V)	NO-LOAD SPEED (r/min)	NO-LOAD CURRENT (mA)	TORQUE (mN-m)	TORQUE (g-cm)	RATED SPEED (r/min)	RATED CURRENT (mA)	DIRECTION OF ROTATION	WEIGHT (g)	NOTE
TG-22A	24	5250	48	5.88	60	4270	190	BOTH DIRECTIONS	95	
TG-22D	12	5250	100	5.88	60	4270	380	BOTH DIRECTIONS	95	

## FU

TG-22A  
TG-22D



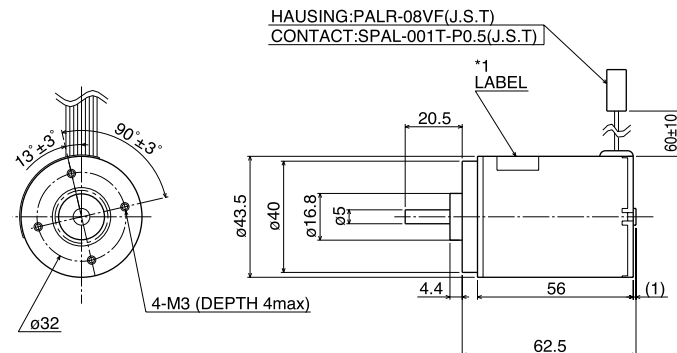
Allowable torque-speed characteristics

MODEL	GEAR RATIO	1			
		4	16	64	256
TG-22A-FU (24V)	SPEED(r/min)	1026	257	67	18.5
	TORQUE(mN-m)	19.6	68.6	196	294
	TORQUE(kg-cm)	0.2	0.7	2	3
TG-22D-FU (12V)	SPEED(r/min)	1026	257	67	18.5
	TORQUE(mN-m)	19.6	68.6	196	294
	TORQUE(kg-cm)	0.2	0.7	2	3

FU	GEAR RATIO	L (mm)	STAGE	TORQUE	TORQUE	WEIGHT
				(mN-m)	(kg-cm)	(g)
	1/4	19.5	1	49	0.5	41
	1/16	24.5	2	98	1	49
	1/64	29.5	3	196	2	57
	1/256	34.5	4	294	3	66

# TG-99A (30W) BRUSHLESS MOTOR, LONG LIFE, INNER ROTOR, HIGH POWER.

TG-99A

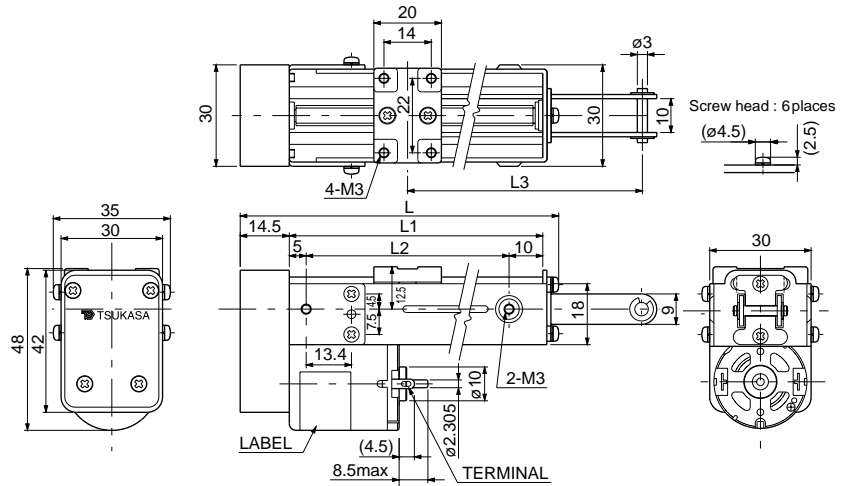
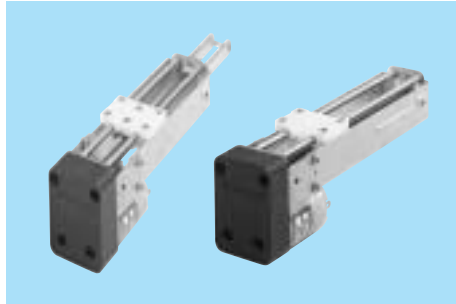


TYPE	RATED VOLTAGE (V)	NO-LOAD SPEED (r/min)	NO-LOAD CURRENT (mA)	TORQUE (mN-m)	TORQUE (g-cm)	RATED SPEED (r/min)	RATED CURRENT (mA)	DIRECTION OF ROTATION	WEIGHT (g)	NOTE
TG-99A	24	3500	243	78	800	2810	1292	BOTH DIRECTIONS	370	

# Linear motion unit and Other motion unit

## Linear motion unit (LA type)

### TG-47-LA

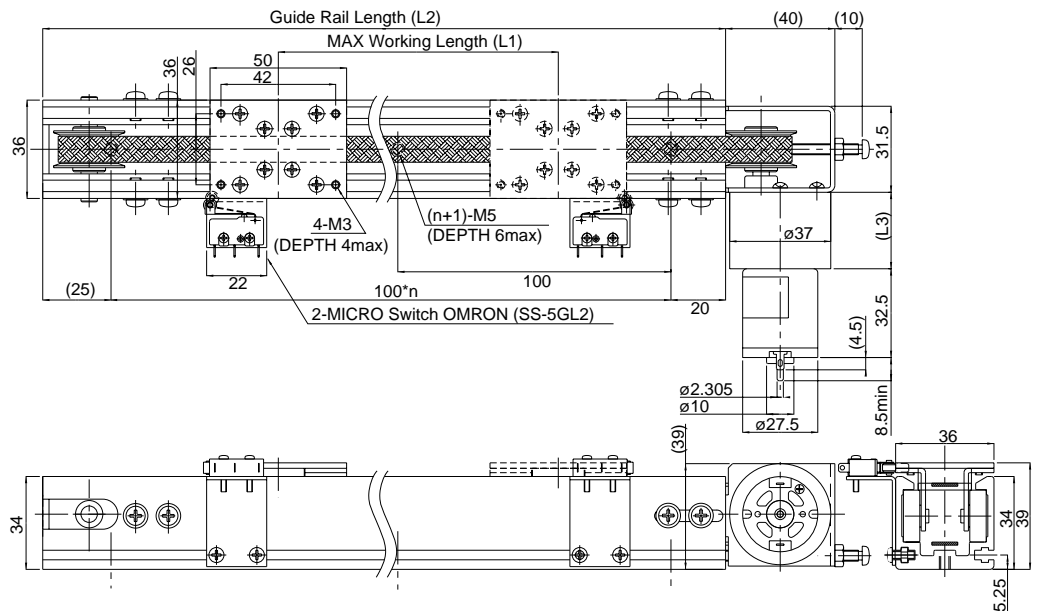
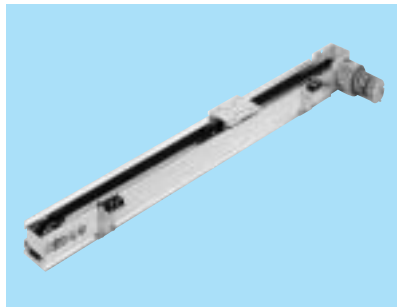


#### Specification

MOTOR TYPE	47A	47B	47C
Working LENGTH [mm]	MAX.50, 75, 100		
PULL FORCE [kgf]	1.0		
SPEED [mm/sec]	12.6	20.4	27.7
RATED CURRENT [mA] (DC24V)	MAX.130	MAX.180	MAX.210

## Linear motion unit (LC type)

### TG-47-LC



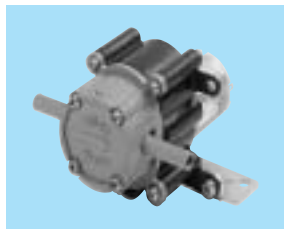
#### Specification

MOTOR TYPE	TG-47A	TG-47B	TG-47C
Working LENGTH [mm]	300, 500, 700 *		
PULL FORCE (N) [kgf]	9.8-39.2 (1.0-4.0)		
SPEED [mm/sec]	5-360		

Please ask sales office for other length.

# Gear pump

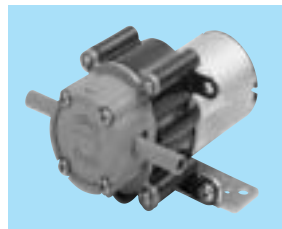
## TG-47C-PU-DB4-KA, 24V



### Specification

MODEL	TG-47C-PU-DB4-KA,24
VOLTAGE	24V
RATED DELIVERY PRESSURE [MPa]	0.05
RATED DELIVERY PRESSURE [kg/cm <sup>2</sup> ]	0.5
RATED DELIVERY FLOW [cc/min] (MIN)	350
RATED CURRENT [mA] (MAX)	240

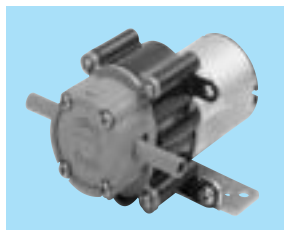
## TG-85E-PU-DB4-KA, 24V



### Specification

MODEL	TG-85E-PU-DB4-KA,24
VOLTAGE	24V
RATED DELIVERY PRESSURE [MPa]	0.05
RATED DELIVERY PRESSURE [kg/cm <sup>2</sup> ]	0.5
RATED DELIVERY FLOW [cc/min] (MIN)	220
RATED CURRENT [mA] (MAX)	350

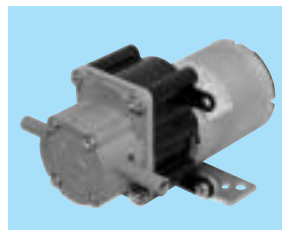
## TG-85E-PU-EB4-KA, 24V



### Specification

MODEL	TG-85E-PU-EB4-KA,24
VOLTAGE	24V
RATED DELIVERY PRESSURE [MPa]	0.1
RATED DELIVERY PRESSURE [kg/cm <sup>2</sup> ]	1
RATED DELIVERY FLOW [cc/min] (MIN)	430
RATED CURRENT [mA] (MAX)	500

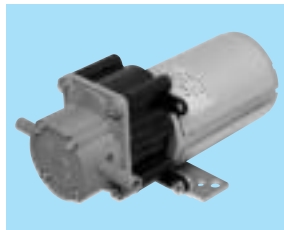
## TG-30S-PU-EB-KA, 24V



### Specification

MODEL	TG-30S-PU-EB-KA,24
VOLTAGE	24V
RATED DELIVERY PRESSURE [MPa]	0.1
RATED DELIVERY PRESSURE [kg/cm <sup>2</sup> ]	1
RATED DELIVERY FLOW [cc/min] (MIN)	1800
RATED CURRENT [mA] (MAX)	1300

## TG-21Q-PU-EB-KA, 24V

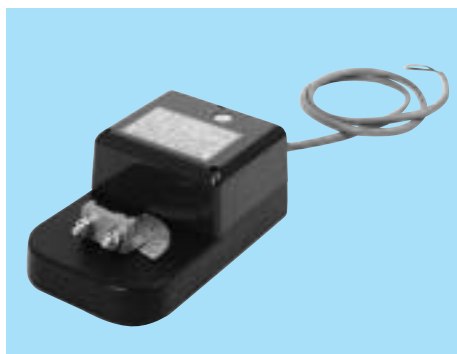


### Specification

MODEL	TG-21Q-PU-EB-KA,24
VOLTAGE	24V
RATED DELIVERY PRESSURE [MPa]	0.1
RATED DELIVERY PRESSURE [kg/cm <sup>2</sup> ]	1
RATED DELIVERY FLOW [cc/min] (MIN)	1400
RATED CURRENT [mA] (MAX)	1500

# Rotary actuator

## MA



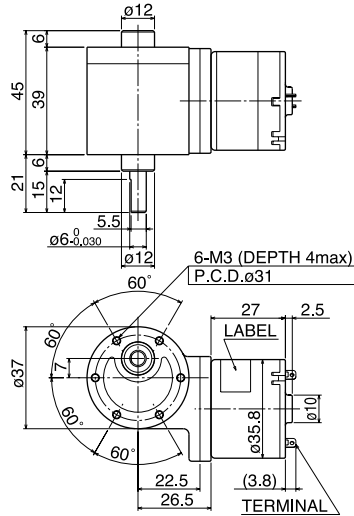
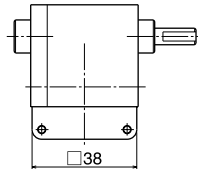
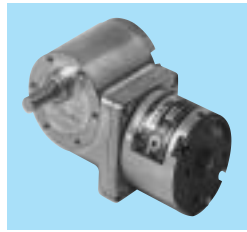
### Specification

VOLTAGE	AC/DC24V
WORKABLE RANGE	90°
TORQUE	15Nm (153kg-cm)
SPEED	90° /min
MATELJAL	PBT
WEIGHT	1.2kg

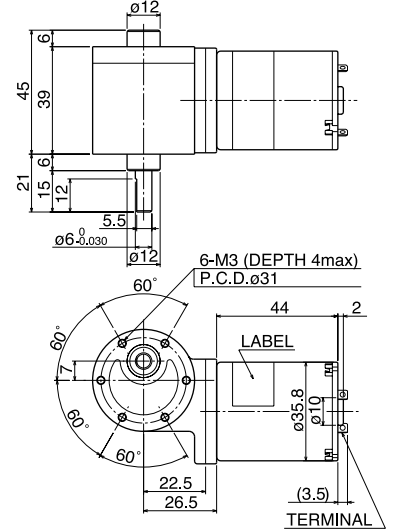
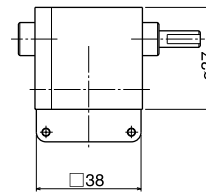
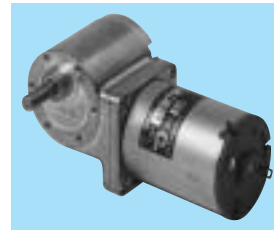
180° and 360° type are not standard products.

# Worm gear box

## TG-05-WM



## TG-85-WM



Allowable torque-speed characteristics

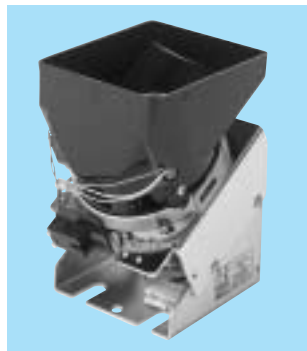
MODEL	GEAR RATIO	1	1	1	1	1	1
		48	113	145	263	338	435
TG-05J-WM (24V)	SPEED(r/min)	76.7	32.8	25.9	14.1	11	8.6
	TORQUE(mN-m)	78.4	166.6	196	343	441	539
	TORQUE(kg-cm)	0.8	1.7	2	3.5	4.5	5.5
TG-05K-WM (24V)	SPEED(r/min)	113	48.4	38.2	20.8	16.2	12.7
	TORQUE(mN-m)	78.4	166.6	196	343	441	539
	TORQUE(kg-cm)	0.8	1.7	2	3.5	4.5	5.5
TG-05L/P-WM (24V)	SPEED(r/min)	163	69.7	55.9	29.9	23.3	18.3
	TORQUE(mN-m)	88.2	186.2	196	392	490	588
	TORQUE(kg-cm)	0.9	1.9	2	4	5	6
TG-05L/P-WM (12V)	SPEED(r/min)	78.5	33.3	26	14.7	11.1	8.8
	TORQUE(mN-m)	49	107.8	137.2	196	294	343
	TORQUE(kg-cm)	0.5	1.1	1.4	2	3	3.5

Allowable torque-speed characteristics

MODEL	GEAR RATIO	1	1	1	1	1	1
		48	113	145	263	338	435
TG-85B-WM (12V)	SPEED(r/min)	92.7	39.2	30.8	17.9	14.3	11.3
	TORQUE(mN-m)	196	441	539	588	588	588
	TORQUE(kg-cm)	2	4.5	5.5	6	6	6
TG-85C-WM (24V)	SPEED(r/min)	92.5	39.2	30.7	17.8	14.1	11.1
	TORQUE(mN-m)	196	441	539	588	588	588
	TORQUE(kg-cm)	2	4.5	5.5	6	6	6
TG-85E-WM (24V)	SPEED(r/min)	133	56.6	44.3	25.2	19.9	15.7
	TORQUE(mN-m)	196	441	539	588	588	588
	TORQUE(kg-cm)	2	4.5	5.5	6	6	6

# Coin Hopper

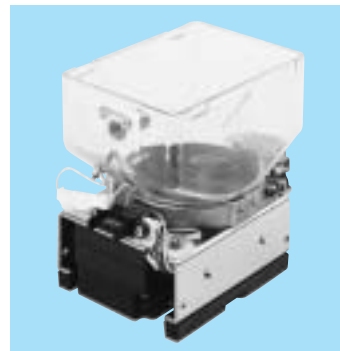
## VL-5



Specification

COIN SIZE	φ20~φ31
	1.2~2.2mm Thickness
COIN TANK CAPACITY	about 350pcs (254coin)
SPEED	MAX 560coins/min
VOLTAGE	DC24V

## VL-7



Specification

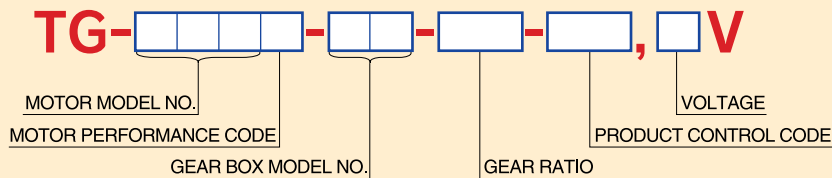
COIN SIZE	φ20~φ31
	1.2~2.2mm Thickness
COIN TANK CAPACITY	about 500pcs (254coin)
SPEED	MAX 610coins/min
VOLTAGE	DC24V

# GEARED MOTORS SELECTION GUIDE

SPECIFICATIONS OF MOTORS						MATCHING GEAR BOX																					
MODEL	OUTPUT	VOLTAGE (V)	RATED TORQUE		RATED SPEED (rpm)	GU	EU	RU	FU	KU (KUP)	SU	GL	VG	VM	LG	SG	SM	AGD	AMD	SS	WM	BG	BE	BM	AP	JM	
			(mN-m)	(g-cm)																							
TG-87A	1.7W	12	1.47	15	11000	●																					
TG-87B	1.7W	24	1.47	15	11000	●																					
TG-01F	0.4W	24	0.98	10	4250		●	●	●																		
TG-01G	0.8W	24	0.98	10	8000		●	●	●																		
TG-01H	0.8W	12	0.98	10	8000		●	●	●																		
TG-201A	1.1W	24	2.45	25	4300		●		●																		
TG-201B	2.0W	24	2.94	30	6400		●		●																		
TG-47A	0.9W	24	1.96	20	4262		●		●				●	●	●	●	●	●	●			●	▲				
TG-47B	2.0W	24	2.94	30	6530		●		●				●	●	●	●	●	●	●			●	▲				
TG-47C	3.6W	24	3.92	40	8782				●				●	●	●	●	●	●	●			●	▲				
TG-47C	0.9W	12	1.96	20	4387		●		●				●	●	●	●	●	●	●			●	▲				
TG-205A	10W	24V	11.8	120	8621							●															
TG-205B	6.2W	24V	8.82	90	6800							●															
TG-205C	2.9W	24V	7.84	80	3620							●															
TG-70A	3.1W	24	5.88	60	5060				●			●	●			●	●	●	●				▲				
TG-301A	1.2W	24	1.96	20	5976									●	●	●	●	●	●		●		●				
TG-05D	2.2W	6	3.92	40	5350					●	●				●	●	●	●	●			●	●	●	●	●	●
TG-05J	1.7W	24	3.92	40	4200					●	●				●	●	●	●	●		●	●	●	●	●	●	●
TG-05K	2.5W	24	3.92	40	6100					●	●				●	●	●	●	●		●	●	●	●	●	●	●
TG-05L/P	3.5W	24	3.92	40	8650					●	●				●	●	●	●	●		●	●	●	●	●	●	●
TG-05L/P	1.2W	12	2.94	30	4040					●	●				●	●	●	●	●		●	●	●	●	●	●	●
TG-05R	2.3W	12	3.92	40	5700					●	●				●	●	●	●	●		●	●	●	●	●	●	●
TG-06F	3.3W	24	7.84	80	4000											●	●	●	●			▲	▲	▲			
TG-06D	4.4W	12	9.8	100	4250					●	●					●	●	●	●			●	●	●	●	●	●
TG-06E	4.3W	24	9.8	100	4200					●	●					●	●	●	●			●	●	●	●	●	●
TG-85B	5.5W	12	11.8	120	4500					●	●					●	●	●	●		●	●	●	●	●	●	●
TG-85C	5.5W	24	11.8	120	4500					●	●					●	●	●	●		●	●	●	●	●	●	●
TG-85E	8.0W	24	11.8	120	6500					●	●					●	●	●	●		●	●	●	●	●	●	●
TG-57A	8.4W	24	11.8	120	6800											▲	▲	▲	●			●	●	●		●	●
TG-401A	11W	24	25.5	260	4000																						
TG-30P/S	11W	24	23.5	240	4562					●	●																
TG-21Q	13W	24	29.4	300	4350																		●	●	●		●
TG-21R	17W	12	29.4	300	5650																		●	●	●		●
TG-77A	26W	24	98	1000	2550																					●	
TG-78A	46W	24	147	1500	3000																						●
TG-22A	2.6W	24	5.88	60	4270				●																		
TG-22D	2.6W	12	5.88	60	4270				●																		
TG-58B	1.9W	24	3.92	40	4650											●	●	●	●			●				●	
TG-58C	3.9W	24	7.84	80	4800											●	●	●	●			●				●	
TG-55A	1.6W	12	9.8	100	1550					●	●						●		●			●	●	●	●	●	●
TG-55A	6.2W	24	19.6	200	3000					●	●						●		●			●	●	●	●	●	●
TG-55B	3.7W	12	14.7	150	2400					●	●						●		●			●	●	●	●	●	●
TG-55B	8.8W	24	14.7	150	5700					●	●						●		●			●	●	●	●	●	●
TG-55C	3.7W	12	9.8	100	3600					●	●						●		●			●	●	●	●	●	●
TG-55C	8.1W	24	9.8	100	7850					●	●						●		●			●	●	●	●	●	●
TG-99A	30W	24V	78	800	2810																						

● Can be assembled. ▲ Please feel free to ask Sales Dept. Possibly available.

## EXPLANATION OF MODEL NUMBER

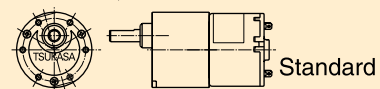


- KA** Standard product.
- KB** Std., with leads (1=200mm Red, Black)
- KC** AGD, AMD with M3 mounting holes.
- KD** M3 mounting holes and leads.
- HA-HD** Shape is KA-KD but helical gear.

- D, E and F**   ..... Custom made product.
- V, S and Q, R**   ..... Sample or pre-production unit.

### Example

TG-05K-SG-150-KA, 24V



TG-05K-SG-150-F038, 24V

