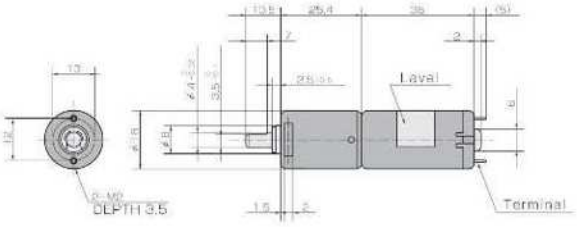
TGU16-L

(DC Motor with Brushes)

■Dimensions



Applications

Game machines, Automatic Teller machines (ATM), Door locks, Convey equipment, automatic and electrical curtains, Duplicators, and Robotics.

Standard specifications for Gearhead

Reduction ratio	Gear stages	Allowable Torque		Moment maximum load		Allowable radial load	Allowable axial load
		mN·m	kgf·cm	mN·m	kgf·cm	N	N
15~26	2	49	0.5	73.5	0.75	4.9	4.9
59~133	3	98	1.0	147.0	1.5	4.9	4.9

Characteristic for Geared Motor

Part No				TGU16—24L (24V type)						TGU16—12L (12V type)					
Reduction ratio	Gear stages	Direction	Weight	No-load		Rating				No-load		Rating			
				Rev.	Current	Torque		Rev.	Current	Rev.	Current	Torque		Rev.	Current
			g	r/min	mA	mN·m	kgf·cm	r/min	mA	r/min	mA	mN·m	kgf·cm	r/min	mA
15	2	CCW	51	828	55	9.8	0.1	759	102	622	65	9.8	0.1	560	136
20				633	55	9.8	0.1	593	91	476	65	9.8	0.1	439	119
26				484	55	19.6	0.2	437	110	364	65	19.6	0.2	321	148
59	3		52	212	55	49	0.5	187	122	160	65	49	0.5	137	166
78				162	55	58.8	0.6	145	117	122	65	58.8	0.6	106	158
101				124	55	78.4	0.8	110	118	93.3	65	78.4	0.8	80.8	160
133				94.9	55	98	1.0	84.8	115	71.4	65	98	1.0	62.2	155

Standard specifications for motor

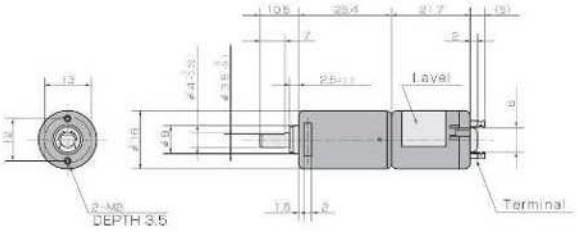
Type No.	Voltage	No-load		Rating					Starting			Weight	Brush	Noise element
		Rev.	Current	Output	Torque		Rev.	Current	Torque		Current			
	V	r/min	mA	W	mN·m	gf·cm	r/min	mA	mN·m	gf·cm	mA	g		
TP-1635B-24	DC24	13,300	35	1.4	1.18	12	11,600	110	9.20	93.9	621.8	27	Carbon	Varistor
TP-1635C-12	DC12	10,000	40	1.28	1.18	12	8,500	150	7.84	80.0	773.3	27	Carbon	Varistor

TOK BEARING CO.,LTD.

HEAD OFFICE, TOKYO, JAPAN – TEL : 81-3-3969-1534 FAX : 81-3-3969-9354
EMAIL : overseas@tok-bearing.co.jp

TGU16-S
(DC Motor with Brushes)

■Dimensions



Applications

Game machines, Automatic Teller machines (ATM), Door locks, Convey equipment, automatic and electrical curtains, Duplicators, and Robotics.

Standard specifications for Gearhead

Reduction ratio	Gear stages	Allowable Torque		Moment maximum load		Allowable radial load	Allowable axial load
		mN·m	kgf·cm	mN·m	kgf·cm	N	N
15~26	2	49	0.5	73.5	0.75	4.9	4.9
59~133	3	98	1.0	147.0	1.5	4.9	4.9

Characteristic for Geared Motor

Part No				TGU16-24S (24V type)						TGU16-12S (12V type)					
Reduction ratio	Gear stages	Direction	Weight	No-load		Rating				No-load		Rating			
				Rev.	Current	Torque		Rev.	Current	Rev.	Current	Torque		Rev.	Current
			g	r/min	mA	mN·m	kgf·cm	r/min	mA	r/min	mA	mN·m	kgf·cm	r/min	mA
15	2	CCW	39	1,279	60	5.88	0.06	1,192	89.2	588	55	5.88	0.06	501	84
20				978	60	7.84	0.08	911	89.8	449	55	7.84	0.08	382	85
26				748	60	9.8	0.1	699	88.5	344	55	9.8	0.1	294	83
59	3		40	328	60	19.6	0.2	307	87.7	151	55	19.6	0.2	130	83
78				251	60	19.6	0.2	238	81.2	115	55	19.6	0.2	103	76
101				192	60	29.4	0.3	181	84.3	88.1	55	29.4	0.3	77.3	79
133				147	60	39.2	0.4	138	84.8	67.4	55	39.2	0.4	58.9	80

Standard specifications for motor

Type No.	Voltage	No-load		Rating					Starting			Weight	Brush	Noise element
		Rev.	Current	Output	Torque		Rev.	Current	Torque		Current			
	V	r/min	mA	W	mN·m	gf·cm	r/min	mA	mN·m	gf·cm	mA	g		
TP-1621A-24	DC24	21,000	35	0.9	0.49	5.0	18,700	85	4.48	45.7	491.5	15	Carbon	Varistor
TP-1621A-12	DC12	10,500	25	0.4	0.29	5.0	8,200	75	2.24	22.8	253.3	15	Carbon	Varistor

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⚠ Cautions for the Use of DC Geared Motors

1. Be sure to use our product under ambient conditions in a temperature range from -10 to +50°C and a relative humidity range from 30 to 90%RH (no condensation).
   The numerical values of all properties given in this catalogue are based on a temperature of 23°C and a relative humidity of 65%RH. Remember that using it in a high-humidity environment will cause problems such as corrosion of component parts and loss of product characteristics. Use the product with due caution.
2. Store this product at temperatures from -20°C to +60°C and relative humidity from 10 to 95%RH (no condensation).
   Remember that in the event that the product is kept in ambient conditions outside the guaranteed this will cause problems such as corrosion of component parts and loss of product characteristics. Use the product with due caution.
3. Use screws of the length range stated in the catalogue when you install the DC geared motor. If you use screws that are longer than the range stated in the catalogue, they will make contact with the interior parts of the gear head, causing problems.
4. Do not install the DC motor output shaft facing upwards. (Gear grease applied to the gear will gradually infiltrate inside the motor interior as time passes. If the infiltrated grease settles on the commutator of the motor it will mix with the friction powder of the motor brush and the mixture will enter the grooves in the commutator, causing a short-circuit between the coils.)
   (If you do use the output shaft facing upwards we can provide means against oil ingress, so be sure to contact us.)
5. If you continue to operate (energize) the motor at overload conditions, this causes problems in that motor performance will deteriorate and the insulation coating of the motor coils (copper wires) will melt and release smoke and burn out (layer short). Examples of how you can prevent are: (1) If you detect a current surge, use a time-lag fuse to interrupt the current. (2) You may use a current protection element with favorable recovery properties (posister or polyswitch). If you have detected an overload or locking condition of the machine or the electric motor you may use the method of switching the motor drive circuit OFF. Be sure to provide protection measures for the motor.
6. Do not lock or apply an impact load to the output side of the gear head during operation. Caution is required, as this would cause serious difficulty due to the gear teeth breaking.
7. Caution is required in case of continuous operation with a gear head structure designed for intermittent operation, as in this case the slide faces of the inner diameter of the gear and the shaft column would develop head due to friction and may result in a burnout.
8. Many DC brush motors use carbon brushes. Beware that when you operate the motor at low speed using, for example, a low voltage or PWM control (the speed you should aim at should be 2,500 rpm or less for the motor alone) the friction powder of the brush will settle in the commutator grooves and cause a short-circuit between the windings. (This will not only lead to the motor developing smoke and burning damage (layer short) but may also lead to a burnout of the motor driver.)
9. When the motor suddenly reverses during DC gear motor operation or while it rotates due to inertia after switching OFF the power supply, electricity is generated (back flow). The start current + the generation of electricity will result in a large current flowing. As this can cause serious problems, including the development of smoke and burning damage of the motor drive circuit and the motor, be sure not to always reverse the motor's sense of rotation until after you have stopped the motor.
10. When you use PWM control, pay attention to the details of item 8 and to the frequency range that is used. As a result of the phase properties of each motor and motor drive circuits and of the noise element (Varister, electrolytic capacitor) that is built into the motor, troubles such as resonance (abnormal noise), heat evolution, and motor stop may occur depending on the frequency range. Be sure therefore to check the optimum frequency range for each motor.
11. Beware that the amount of overrun of each motor unit will vary depending on the ambient conditions and the characteristics of each motor. Beware that restraining (locking) the output shaft forcibly from outside while the motor is in inertial motion after switching the motor OFF or causing the overrun motion to decelerate by instantaneous reversal of direction of rotation will lead to breakdown.
12. Beware that the noise of our DC brush motor can have an adverse effect on the peripheral circuits.
13. In the event that additional work is performed after delivery of our product be sure to remember that such work will be outside the scope of warranty.
14. If you add gears or a pulley to the output shaft of the DC geared motor, be sure to take the following details fully into consideration.
    If you mount by pressure fit do not apply a load in excess of the maximum allowable load in the thrust direction of the output shaft.
    In case of installation using an adhesive, make sure that the adhesive will not adhere to, or accumulate on, the sliding surface of the inner diameter of the output shaft bearing metal and the outer circumference of the output shaft. Furthermore, beware that the use of volatile adhesives will lead to the formation of hazardous gases.
15. Be sure to pay proper attention to overtensioning the belt when you use the drive source (gear, pulley, etc.) you have attached to the output shaft of the DC geared motor. Remember that the application of a thrust or radial load in excess of the maximum allowable load will cause problems.
16. Be sure to pay proper attention to ensure that when you solder leads and ceramic capacitors to the input terminals of the DC geared motor, the tip of the soldering iron does not have an excessively high temperature and the work time during which the soldering iron makes contact is not too long.
17. Be sure to remember that dropping the DC geared motor and applying impact from outside will result in problems including damage of parts and the gears coming out of mesh. Also beware that applying impact to the input terminal will result in problems such as poor electrical contact due to stress acting on the connection between the motor terminal and the interior of the motor.
18. The DC geared motor is operated letting it rotate from the motor side. Be sure not to let it rotate from the output shaft side. Beware that this would damage the gear.

* When using, be sure to pay proper attention to the above details. If you have any uncertainty or query please do not hesitate to contact our sales representative in charge.