

HOLLOW-ARMATURE DC SERVOMOTORS

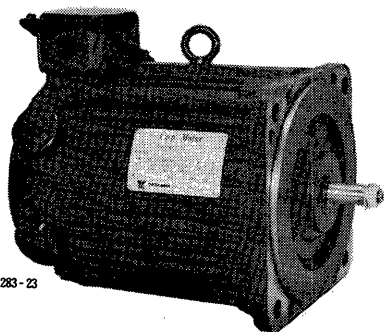
Cup™ Motors

TOTALLY-ENCLOSED SELF/FAN-COOLED

0.4 - 7.5kW
TYPE UGCMED - AA, UGCMFD - AA

The Cup Motor is a smooth-core armature type DC servomotor and consists of a unique hollow, cup-shaped armature and permanent magnets of salient magnetic pole construction.

This motor is a supreme aid in electronic servodrives and widely used for machine-tool applications.



283-23

TYPE UGCMED-37AA1

RATINGS AND SPECIFICATIONS

- Time Rating: Continuous
- Insulation: Class F
- Enclosure: Type UGCMED-04AA to 55AA[] - Totally-enclosed self-cooled (corresponding to IP44)
Type UGCMFD-75AA[] - Totally-enclosed fan-cooled (corresponding to IP44)
- Ambient Temperature: -10°C to +40°C
- Vibration: 15 μ or below
- Finish in Munsel Notation: N1.5
- Excitation: Permanent magnet
- Mounting: Flange-mounted type and foot-mounted type
- Drive Method: Direct drive, belt drive also available
- Accessory: Thermal overload relay type RH-35

Table 1 Ratings and Specifications

Item	Motor Type	UGCMED - 04 AA []	UGCMED - 08 AA []	UGCMED - 15 AA []	UGCMED - 22 AA []	UGCMED - 37 AA []	UGCMED - 55 AA []	UGCMFD - 75 AA []
Rated Output*	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5
Rated Torque*	kg.cm	22.3	41.7	83.5	123	206	306	417
Rated Speed*	rpm	1750	1750	1750	1750	1750	1750	1750
Rated Armature Voltage*	V	67	144	158	150	154	201	206
Rated Armature Current*	A	8.2	6.7	11.2	16.9	27.0	30.4	41.2
Power Rate*	kW/sec	2.13	3.78	6.63	9.56	13.7	12.4	23.1
Torque/Inertia*	rad/sec ²	976	929	810	793	677	415	565
Acceleration Constant*	msec	187	198	226	231	270	441	324
Instantaneous Max. Torque*	kg.cm	112	209	418	615	1030	918	918
Instantaneous Max. Armature Current*	A	40	33	55	84	133	91.2	91.2
Instantaneous Max. Speed*	rpm	2900	2900	2900	2900	2900	2100	2100
Armature Inertia (GD2/4)	kg.cm ²	22.4	44.2	101	152	298	723	723
Armature Resistance	Ω	1.3	3.06	1.34	0.7	0.34	0.36	0.36
Armature Inductance	mH	0.79	2.6	1.9	1.3	0.8	1.1	1.1
Voltage Constant	mV/rpm	30.5	69.1	82.0	79.9	84	111	111
Torque Constant	kg.cm/A	2.97	6.72	7.98	7.77	8.17	10.8	10.8
Friction Torque	kg.cm	0.67	0.8	0.95	0.95	1.67	2.6	2.6
Viscous Damping Coefficient	g.cm/rpm	0.15	0.29	0.53	0.73	1.29	4.3	4.3
Inertia Time Constant	msec	34.4	31.2	22.1	18.3	15.8	23	23
Inductive Time Constant	msec	0.61	0.85	1.42	1.86	2.35	3.0	3.0

* Values of asterisked ratings are the ones obtained at armature winding temperature of 100°C and, others at armature winding temperature of 20°C.

Notes:

1. Values of rated torque and armature current are obtained in the operation from DC power supply,

such as battery, at ambient temperature 40°C and below.

2. Instantaneous values of max. torque and max. armature current mean the allowable conduction time shown in Fig. 2 Starting and Overload Characteristics.



ELECTRIC CHARACTERISTICS

TORQUE-SPEED CHARACTERISTICS

Torque-speed characteristics shown in Fig. 1 are based on armature voltage and armature current maintained constant at an armature winding temperature of 100°C. The motor torque and speed can be obtained by the following formulas.

$$T = K_T \times (I_a - I_{ot})$$

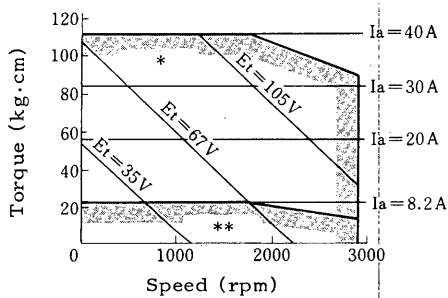
$$n = \frac{E_t - (R_{at} \cdot I_a + V_{Br})}{K_E} \times 103$$

I_{ot} and R_{at} are calculated as follows.

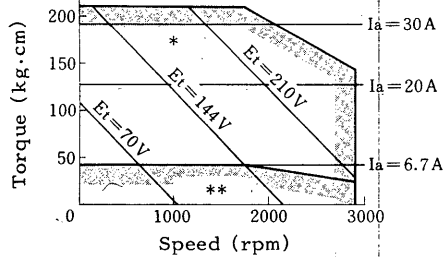
$$I_{ot} = \frac{T_f + F_d(20^\circ) \times 10^{-3} \times \frac{255}{(235 + n)} \times n}{K_T}$$

$$R_{at} = \frac{(235 + t)}{255} \times R_a(20^\circ)$$

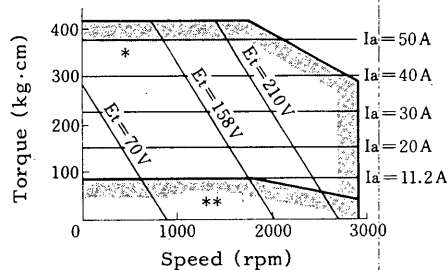
- T: Torque (kg.cm)
- K_T : Torque constant (kg.cm/A)
- I_a : Armature current (A)
- I_{ot} : No-load current (A) at $t^\circ\text{C}$ of armature winding
- n: Speed (rpm)
- E_t : Armature voltage (V)
- R_{at} : Armature resistance at $t^\circ\text{C}$ of armature winding
- R_a : Armature resistance at 20°C of armature winding
- V_{Br} : Brush drop voltage (V), approx. 1-2 V
- K_E : Induced voltage constant (mv/rpm)
- T_f : Friction torque (kg.cm)
- F_d : Viscous damping coefficient (g.cm/rpm)
- t: Armature temperature ($^\circ\text{C}$)



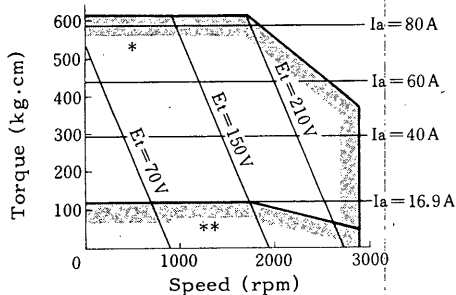
(a) Type UGC MED-04AA



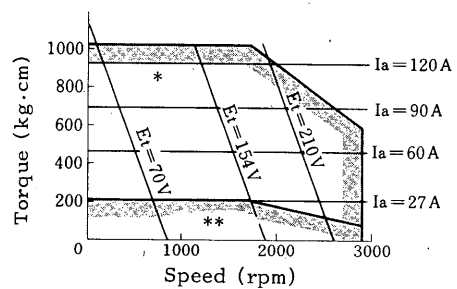
(b) Type UGC MED-08AA



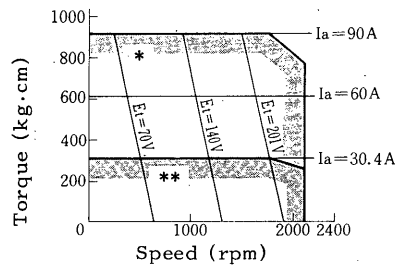
(c) Type UGC MED-15AA



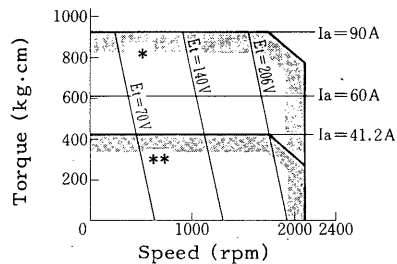
(d) Type UGC MED-22AA



(e) Type UGC MED-37AA



(f) Type UGC MED-55AA



(g) Type UGC MED-75AA

Fig. 1 Torque-Speed Characteristics

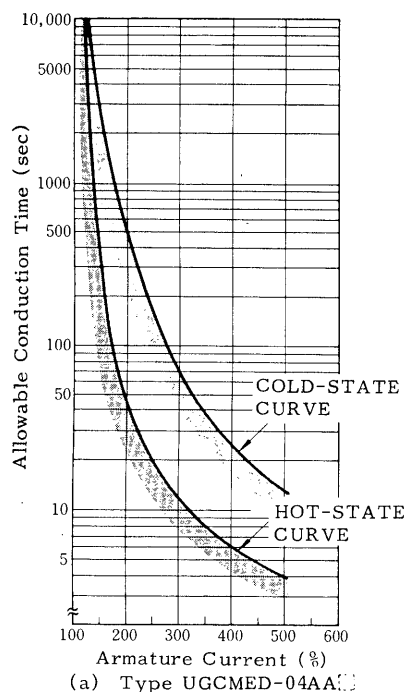
- * Instantaneous rating range
- ** Continuous rating range

STARTING AND OVERLOAD CHARACTERISTICS

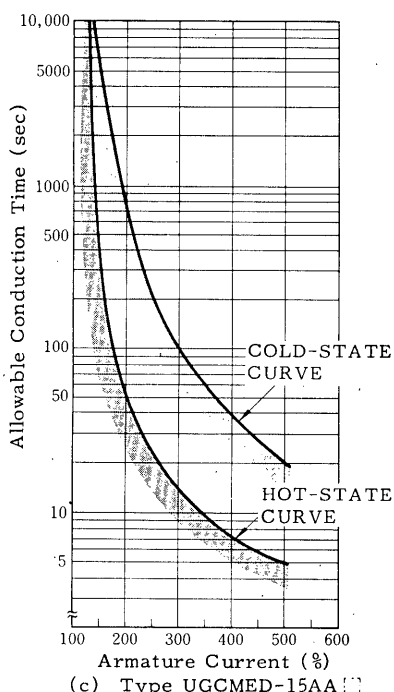
Fig. 2 shows the allowable conduction time of armature current at starting and overload operation. This should be known before operation to avoid the damage to armature insulation due to overheat.

Cold-state curves are obtained at starting operation when armature temperature is equal to ambient temperature.

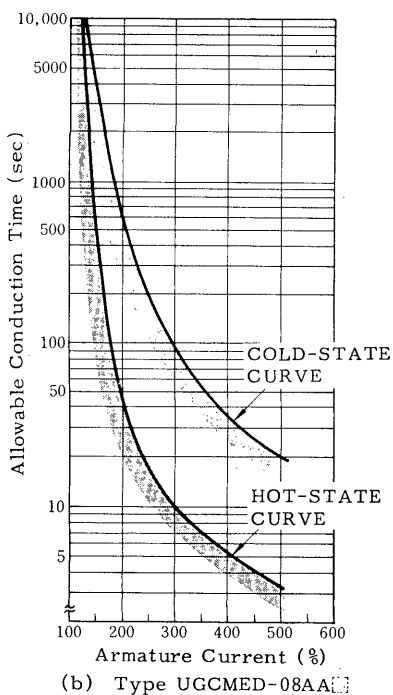
Hot-state curves are obtained when armature temperature is saturated at the rated operation.



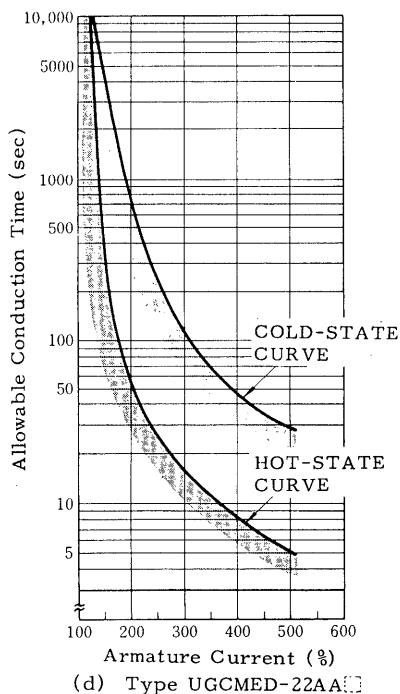
(a) Type UGCMED-04AA



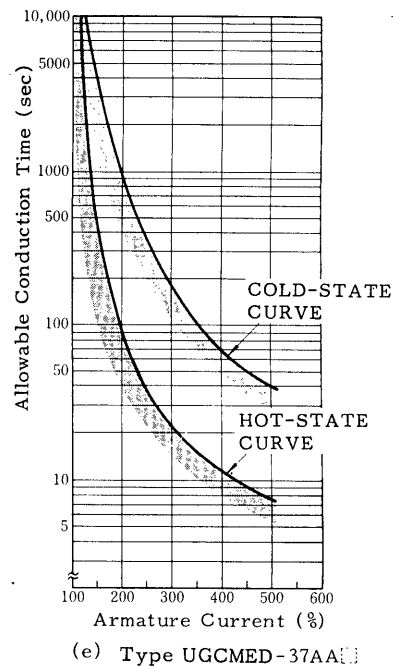
(c) Type UGCMED-15AA



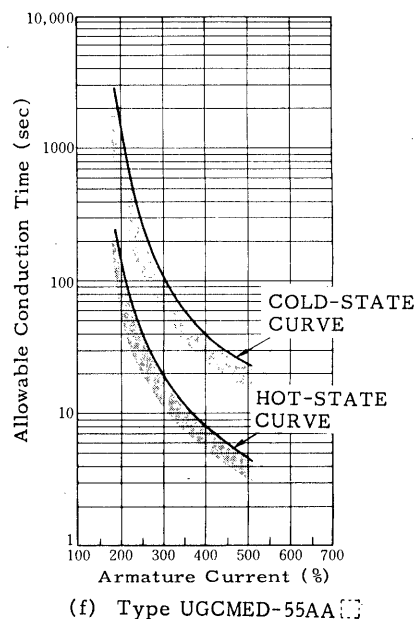
(b) Type UGCMED-08AA



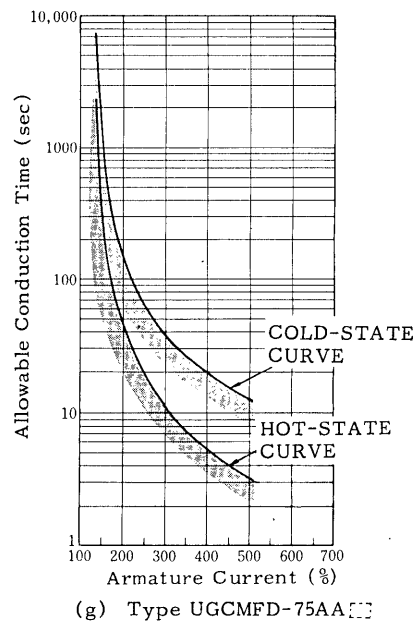
(d) Type UGCMED-22AA



(e) Type UGCMED-37AA



(f) Type UGCMED-55AA



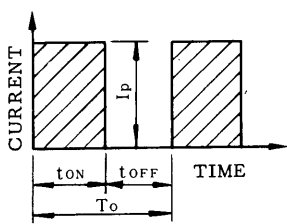
(g) Type UGCMFD-75AA

Fig. 2 Starting and Overload Characteristics (Cold- and Hot-State Curves)

ELECTRIC CHARACTERISTICS (CONT'D)

DUTY-CYCLE LOAD CHARACTERISTICS

As shown in Fig. 3, current conduction time ON TIME (t_{on}) is limited at duty-cycle operation. Refer to the examples 1 and 2.



Duty cycle α
 $= \frac{t_{on}}{T_o} \times 100(\%)$
 Where I_p :
 Peak load current ratio (%)
 t_{on} : ON TIME
 t_{off} : OFF TIME
 T_o : One cycle time

Fig. 3 Duty-cycle Operation

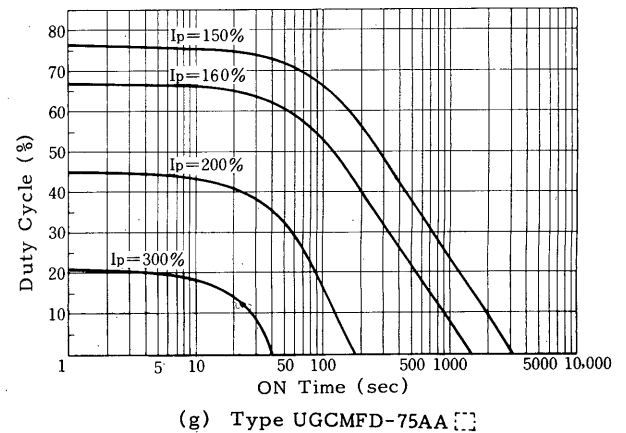
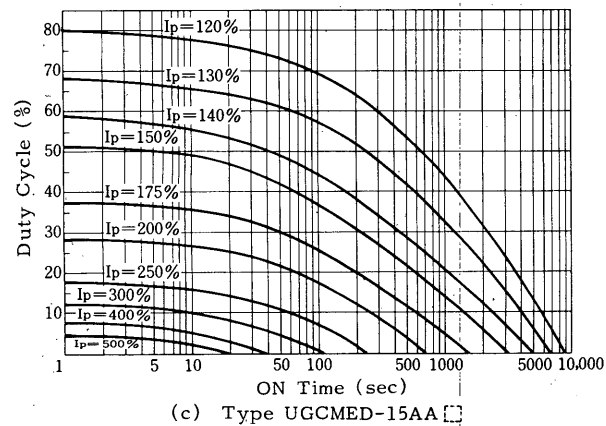
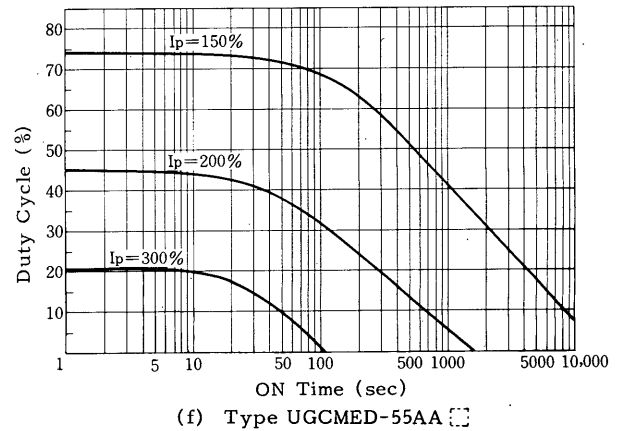
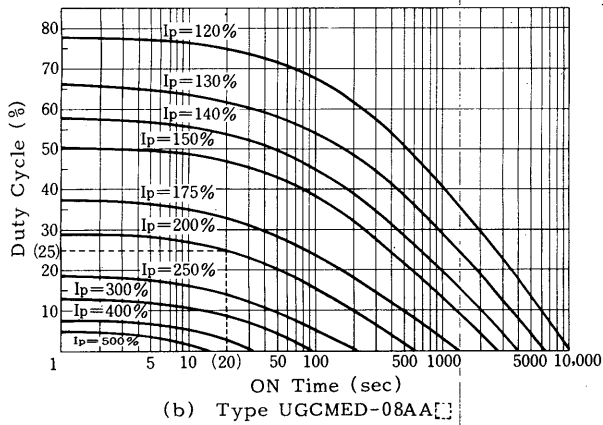
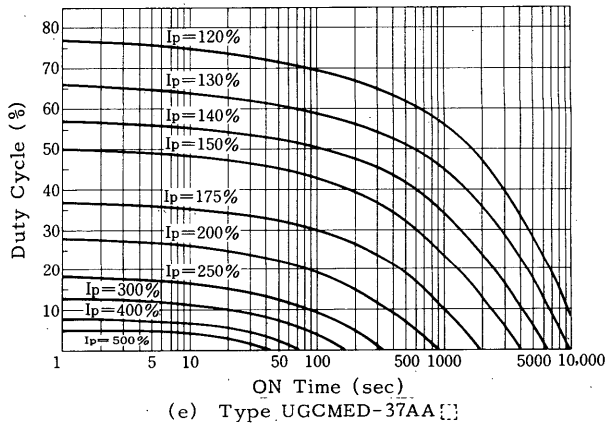
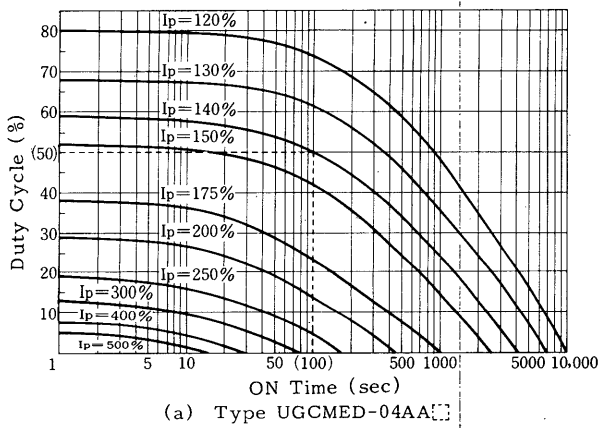
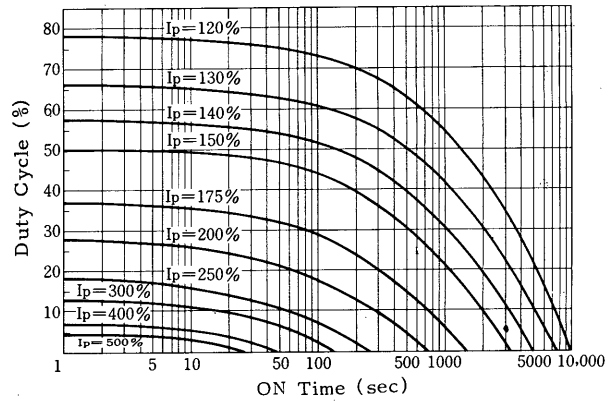


Fig. 4 Duty-cycle Load Characteristics

Example 1

Dotted line in Fig. 4(a) shows that maximum ON TIME (t_{on}) is 100 sec when peak load current ratio (I_p) is 140% and duty-cycle (α) is 50%.

Example 2

Dotted line in Fig. 4(b) shows that duty cycle is 25% when ON TIME is 20 sec and I_p is 200%. Consequently the required OFF TIME (t_{off}) can be obtained from the equation below.

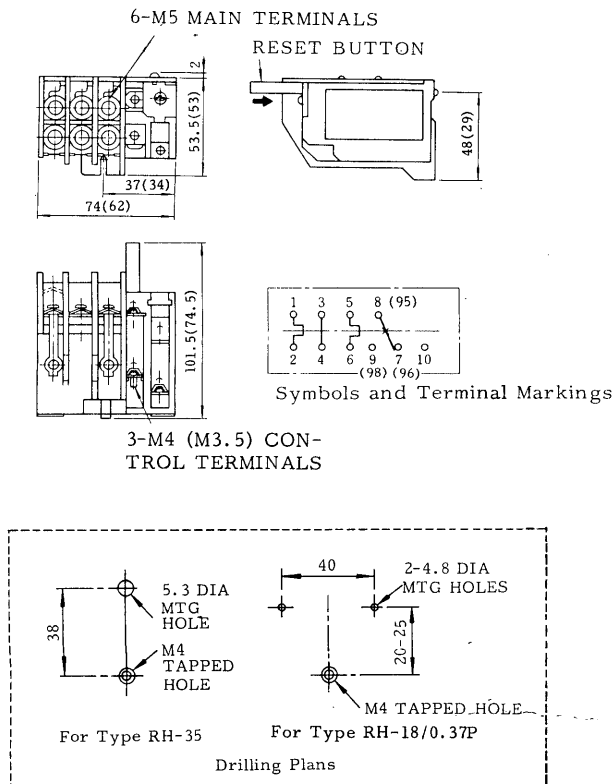
$$t_{off} = \left(\frac{100}{\alpha} - 1 \right) \times t_{on}$$

$$= \left(\frac{100}{25} - 1 \right) \times 20 = 60 \text{ sec}$$

As explained above, when any two of three duty-cycle load characteristics elements (ON TIME, duty-cycle, peak load current ratio) are given, the other must be obtained from the graph. As for the value of I_p , the waveform factor should be always considered.

OVERLOAD PROTECTION

It is recommended that the motor be provided with YASKAWA thermal overload relay type RH-35 for overload protection (See Fig. 5, 6 and Table 2). For Cup motor with a cooling fan, thermal overload relay type RH-18/0.37P (nominal current 0.37 A) is required for a fan motor.

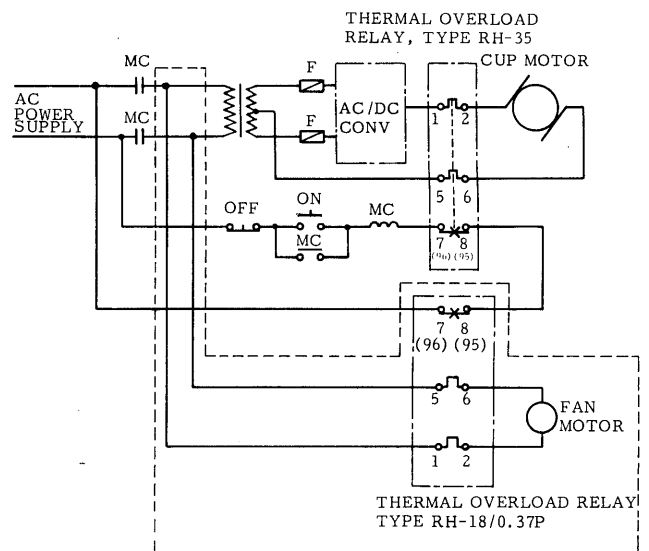


Note: Dimensions and terminal markings in parentheses are for type RH-18/0.37P

Fig. 5 Dimensions of Thermal Overload Relays Type RH-35 and RH-18/0.37P

Table 2 Selection of Thermal Overload Relay for Cup Motor

Motor Type	Thermal Overload Relay Type	Nominal Current (A)
UGCMED-04 AA	RH-35/7.8 HV	7.8
UGCMED-08 AA	RH-35/6.9 HV	6.9
UGCMED-15 AA	RH-35/11.5 HV	11.5
UGCMED-22 AA	RH-35/17 HV	17
UGCMED-37 AA	RH-35/27 HV	27
UGCMED-55 AA	RH-35/30 HV	30
UGCMFD-75 AA (With a cooling fan)	RH-35/41.2 HV	41.2
	RH-18/0.37 P	0.37



Note: Cup motor with a cooling fan (7.5 kW) requires the wiring in dashed lines.

Fig. 6 Connection Diagram of Thermal Overload Relays, Type RH-35 and RH-18/0.37P

MECHANICAL CHARACTERISTICS

BEARINGS AND ALLOWABLE LOAD

Table 3 shows bearing types and allowable load according to the motor.

Motor Type	Bearing No.		Allowable Thrust Load (kg)	Allowable Equivalent Radial Load (kg)
	Drive End	Opp. Drive End		
UGCMED-04 AA	6205 ZZ	6003 ZZ	40	90
UGCMED-08 AA	6206 ZZ	6204 ZZ	50	120
UGCMED-15 AA	6208 ZZ	6204 ZZ	70	180
UGCMED-22 AA	6208 ZZ	6204 ZZ	70	180
UGCMED-37 AA	6209 ZZ	6206 ZZ	65	200
UGCMED-55 AA	6210 ZZ	6206 ZZ	85	250
UGCMFD-75 AA	6210 ZZ	6206 ZZ	85	250

Notes:

- Bearings are packed with lithium base grease for high temperature use.
- Allowable thrust load is obtained from operation of the motor at rated speed and rated torque.
- Allowable equivalent radial load is maximum radial load insuring the specified bearing life during continuous operation at rated speed.

MECHANICAL CHARACTERISTICS (CONT'D)

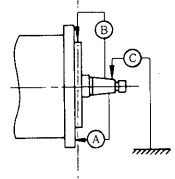
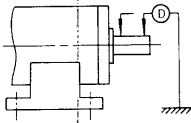
INSTALLATION

MECHANICAL SPECIFICATIONS

LOCATION

Table 4 Mechanical Specifications

Use the motor under the following conditions.

Item	Motor Output (kW)	Accuracy			Reference Diagram
		0.4 0.75 1.5	2.2 3.7	5.5 7.5	
Flange surface perpendicular to shaft (A)		0.04	0.04	0.067	
Flange diameter concentric to shaft (B)		0.02	0.023	0.038	
Shaft run out (C)		0.02	0.02	0.04	
Shaft run out (D)		0.03	0.03	0.05	

- Indoors
- Free from corrosive and/or explosive gases
- Ambient temperature -10°C to $+40^{\circ}\text{C}$
- Clean and dry
- Accessible for inspection and cleaning

The motor must be protected from oil or water drops. When the motor is used at a place where it is exposed to oil or water splashes, the motor must be provided with a protective cover or liquid gasket.

(ADVICE ON LOCATION)

Where a standard Cup motor is used in a place where water and oil drops prevail, provide a cover with the motor to protect from the liquids. Oil or water on a commutator affects good commutation.

The motor with an oil seal and an O ring is also available on request. See Table 6 and Fig. 7.

Keep in mind that the motor cannot be operated in the locations where corrosive liquids like chemicals and brine, flammable gases or corrosive gases such as chlorine gas, hydrogen gas, and oxygen gas, inert gas prevail.

COMMUTATOR BRUSH

Table 5 shows commutator brush according to motor type. Commutator brush life depends on type of service. In general, the brush wears approximately 1 to 1.5 mm per 1000 operation hours.

Compared with other DC motors, Cup Motor features better commutating ability and requires less maintenance. However, in adverse environmental conditions—high humidity, existence of reducing gas like ammonia, oxidizing gas like chlorine gas and sulfuric acid gas—commutation sparks become a little larger. Vibration due to misalignment will also result in commutation failure.

Table 6 Motor Type, Oil Seal and O Ring

Motor Type	Oil Seal Type	O Ring Type
UGC MED-04 AA	SBX 2-22388	AG55
UGC MED-08 AA	SBX 2-26428	AG65
UGC MED-15 AA	SBX 2-36507	AG80
UGC MED-22 AA	SBX 2-36507	AG80
UGC MED-37 AA	SBX 2-40608	AG85
UGC MED-55 AA	SBX 2-45609	AG90
UGC MFD-75 AA	SBX 2-45609	AG90

Table 5 Application of Commutator Brush

Cup Motor Type	Brush Size (mm)	Q'ty	Remarks
UGC MED-04 AA	6 × 12.5 × 22	4	Length limit of brush: 6 mm (Initial length: 22 mm)
UGC MED-08 AA	6 × 12.5 × 22	4	
UGC MED-15 AA	6 × 12.5 × 22	4	
UGC MED-22 AA	6 × 12.5 × 22	4	
UGC MED-37 AA	6 × 12.5 × 22	6	
UGC MED-55 AA	8 × 12.5 × 22	6	
UGC MFD-75 AA	8 × 12.5 × 22	6	

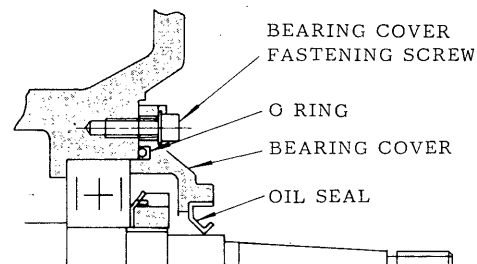


Fig. 7 Construction of Bearing Section with Oil Seal and O Ring

COEFFICIENT DEPENDING ON AMBIENT TEMPERATURE

When an ambient temperature is 40°C and over, operate the motor at less than a rated output. The output can be obtained by the following formula.

$$\text{Rated Output} \times \left(\frac{\text{Coefficient depending on Ambient Temperature}}{\text{Ambient Temperature}} \right) = \text{Output to be Used}$$

Ambient Temperature	Coefficient
50°C	0.9
60°C	0.8
70°C	0.7

CUP MOTORS WITH GEAR REDUCER

RATINGS AND SPECIFICATIONS

Gear Reducer Type: Type FE
 Enclosure: Foot-mounted
 Efficiency of Reducer: 95%
 Lubrication: Oil bath method
 Gearing: Two-stage gears
 Maximum Motor Speed: 1750 rpm

INSTALLATION

As Cup motor with gear reducer is designed to be used containing lubricating oil in its gear casing, horizontal installation is ideal.

When application requires the inclined installation of the motor, mount the motor within the allowable mounting angle shown in Table 8.

Table 7 Cup Motor Type and Gear Reducer Specifications

Cup Motor Type	Reduction Ratio	GD ² of Gear Reducer (kg·cm ²)	Gear Reducer Frame No.
UGCMED-04 AA 1	1/10	12.3	EF-7
	1/15	9.6	EF-7
	1/20	10.5	EF-7
	1/30	13.3	EF-9
UGCMED-08 AA 1	1/10	36.3	EF-10
	1/15	26.5	EF-10
	1/20	30.1	EF-10
UGCMED-15 AA 1	1/10	36.3	EF-10
	1/15	26.5	EF-10
	1/20	30.1	EF-10
UGCMED-22 AA 1	1/10	36.3	EF-10
	1/15	37.5	EF-11
	1/20	41.8	EF-11
UGCMED-37 AA 1	1/10	97.1	EF-12
	1/15	67.2	EF-12
	1/20	77.6	EF-12
UGCMED-55 AA 1	1/10	225.0	EF-14
	1/15	108.0	EF-14
	1/20	130.0	EF-14
UGCMFD-75 AA 1	1/10	255.0	EF-14
	1/15	240.0	EF-15
	1/20	314.0	EF-15
	1/30	375.0	EF-17

Table 8 Allowable Inclining Angle

Inclined Positions	Gear Reducer Frame No.	Allowable Inclined Angle (α°)							
		EF-7	EF-9	EF-10	EF-11	EF-12	EF-14	EF-15	EF-17
Shaft Extension Down	1/10	25	27	26	23	26	25	20	20
	1/15	25	27	26	23	26	25	20	20
	1/20	25	27	26	23	26	25	20	20
	1/30	25	27	26	23	26	25	20	20
Shaft Extension Up	1/10	4	5	0	0	5	0	3	2
	1/15	4	13	8	0	5	6	3	5
	1/20	4	13	8	0	5	6	3	5
	1/30	4	13	13	6	5	6	10	5
Oil Gage Side Down	1/10	5	7	5	8	25	10	20	15
	1/15	5	7	10	8	25	25	20	25
	1/20	20	35	25	8	25	25	0	25
	1/30	20	35	35	25	25	25	30	25
Oil Gage Side Up	1/10	20	20	20	20	20	20	20	20
	1/15	20	20	20	20	20	20	20	20
	1/20	20	20	20	20	20	20	20	20
	1/30	20	20	20	20	20	20	20	20

CUP MOTORS WITH GEAR REDUCER (CONT'D)

OVERHUNG LOAD ON SHAFT EXTENSION

Table 9 shows allowable overhung load on shaft extension.

Table 9 Allowable Overhung Load on Shaft Extension (kg)

Gear Reducer Frame No.	Output Speed (rpm)							
	EF-7	EF-9	EF-10	EF-11	EF-12	EF-14	EF-15	EF-17
360	360	590	680	770	870	1100	1320	—
300	380	620	710	810	910	1150	1390	—
180	440	720	820	930	1030	1300	1570	1810
150	460	760	860	970	1080	1360	1650	1900
120	520	830	960	1070	1190	1510	1800	2120
100	540	870	1010	1120	1230	1570	1880	2200
90	570	910	1050	1170	1300	1660	1990	2250
75	600	950	1090	1220	1350	1720	2060	2330
60	770	1070	1210	1380	1520	1920	2310	2600
50	820	1130	1270	1450	1590	2000	2410	2710
40	—	1250	1430	1600	1800	2240	2660	3030
33	—	1320	1510	1680	1890	2340	2780	3150

MAXIMUM STARTING FREQUENCY

Table 10 shows maximum starting frequency corresponding to starting torque under 0.2 sec. of starting time. Starting time is set by starting torque, load GD^2 and speed. Determine the starting frequency to be within the value in Table 10.

Table 10 Maximum Starting Frequency

Starting Torque	Maximum Starting Frequency
300% of Motor Rated Torque	.5 Operations/min. .1 Operation/min. for 7.5 kW 1/30 type only.
250% of Motor Rated Torque	.10 Operations/min.

CUP MOTORS WITH TACHOMETERS AND MAGNETIC BRAKES

Cup motors form an ideal combination with a DC tachometer for speed control, an optical tachometer for position control, or a magnetic brake.

Table 11 shows a combination of cup motors, tachometers and magnetic brakes.

Table 11 Combination of Cup Motors, Tachometers and Magnetic Brakes

Cup Motor Type	Magnetic Brake Type	Detectors		
		DC Tachometer Generator Type	Feedback Unit Type TFUE-	Optical Tachometer Type UTOPE-
UGCMED-04AA	SCEB/80-0.5T1	UGTGIM-7LVH	02 C7, 03 C7	02 ECL, 03 ECL
UGCMED-08AA	SCEB/80-1.2T1		360 C7, 04 C7	360 ECL, 04 ECL
UGCMED-15AA	SCEB/80-2.5T		450 C7, 05 C7	450 ECL, 05 ECL
UGCMED-22AA	SCEB/80-2.5T		07 C7, 08 C7	07 ECL, 08 ECL
UGCMED-37AA	SCEB/80-5T		10 C7, 15 C7	10 ECL, 15 ECL
UGCMED-55AA	SCEB/80-5T		18 C7, 20 C7	18 ECL, 20 ECL
UGCMFD-75AA	SCEB/80-5T		25 C7, 30 C7	25 ECL, 30 ECL

Note: Controllers for magnetic brakes are also available on request. See Fig. 8.

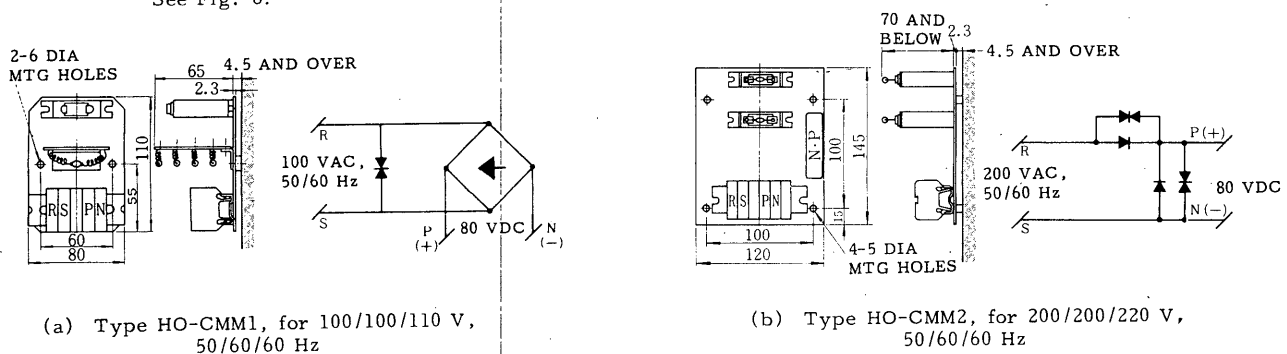
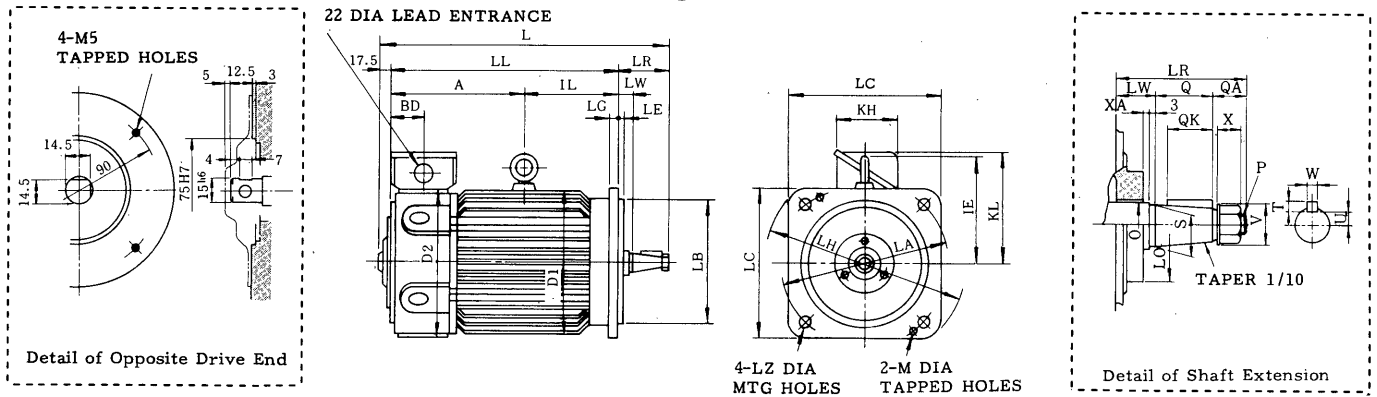


Fig. 8 Controllers for Magnetic Brakes

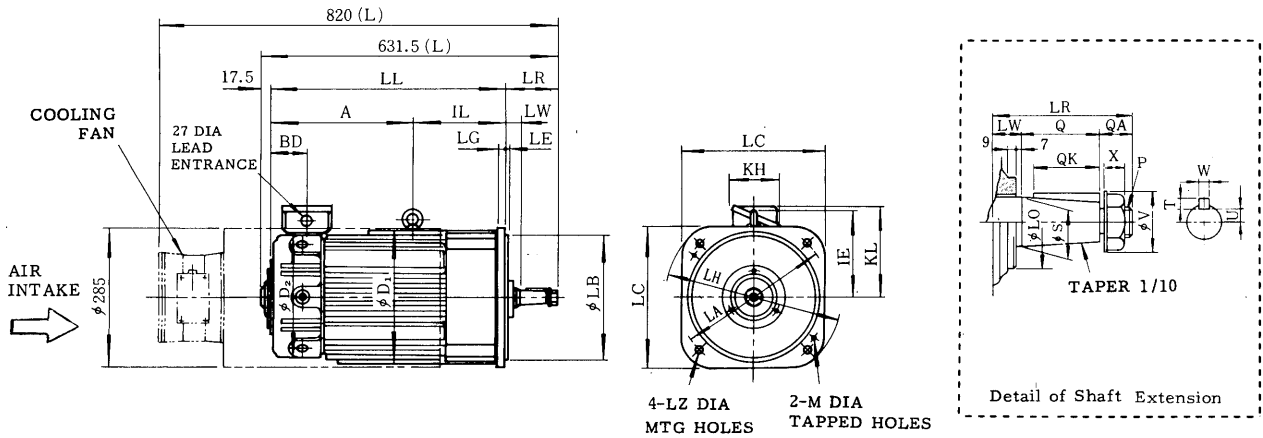
DIMENSIONS in mm

FLANGE-MOUNTED TYPE

Drawing 1



Drawing 2



Type	Drawing	A	BD	D1	D2	IE	IL	KH	KL	L	LL	Flange								
												LA	LB	LC	IE	LG	LW	LZ	M	LH
UGCMED-04 AA 1*	1	—	30	153	166	—	—	94	125	250.5	175	185	150 ⁰ _{-0.040}	162	6	11	18	11	10	220
UGCMED-08 AA 1*	1	—	30	173	179	—	—	94	132	273.5	198	215	180 ⁰ _{-0.040}	190	6	13	18	14	12	250
UGCMED-15 AA 1	1	141	30	199	204	135	100	94	141	316.5	241	215	180 ⁰ _{-0.040}	190	6	13	18	14	12	250
UGCMED-22 AA 1	1	166	30	199	204	135	122	94	141	385.5	288	235	200 ⁰ _{-0.046}	210	6	15	20	14	12	270
UGCMED-37 AA 1	1	221	49	216	214	144	162	94	163	480.5	383	265	230 ⁰ _{-0.046}	240	6	15	20	14	12	300
UGCMED-55 AA 1	2	320	104	275	268	175	192	94	176	631.5	512	300	250 ⁰ _{-0.046}	280	6	20	22	18	16	342
UGCMFD-75 AA 1†	2	320	104	275	268	175	192	94	196	820	512	300	250 ⁰ _{-0.046}	280	6	20	22	18	16	342

Type	Drawing	Shaft Extension											Key			Approx. Weight (kg)
		LO	O	P	Q	QA	S	U	V	X	IR	XA	W	T	QK	
UGCMED-04 AA 1*	1	45	22	M10 P1.25	28	12	16	4.3	22	10.3	58	5.5	5	5	25	12
UGCMED-08 AA 1*	1	50	26	M10 P1.25	28	12	19	5.8	22	10.3	58	6	5	5	25	18
UGCMED-15 AA 1	1	65	36	M10 P1.25	28	12	19	5.8	22	10.3	58	5.5	5	5	25	26
UGCMED-22 AA 1	1	65	36	M16 P1.5	42	18	28	8.95	32	15.6	80	5.5	7	7	35	35
UGCMED-37 AA 1	1	70	40	M16 P1.5	42	18	28	8.95	32	15.6	80	6	7	7	35	53
UGCMED-55 AA 1	2	70	—	M24 P2.0	58	22	38	13	48	22.2	102	—	10	8	50	95
UGCMFD-75 AA 1†	2	70	—	M24 P2.0	58	22	38	13	48	22.2	102	—	10	8	50	109

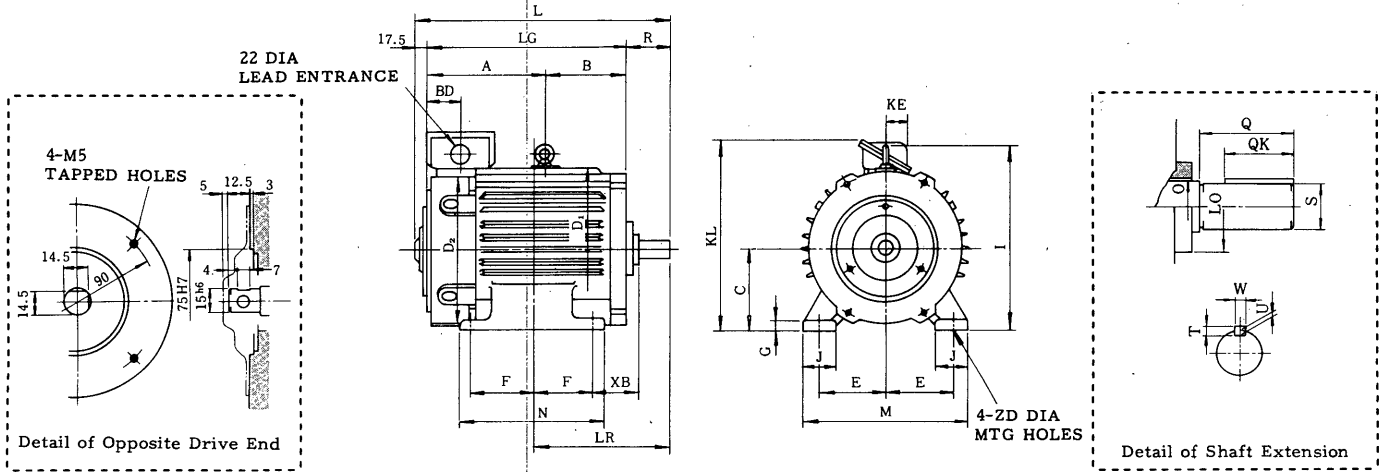
* Not provided with an eyebolt.
 † Provided with a cooling fan.

Note: Power supply to fan motor is three-phase, 200/220 VAC, 50/60 Hz.

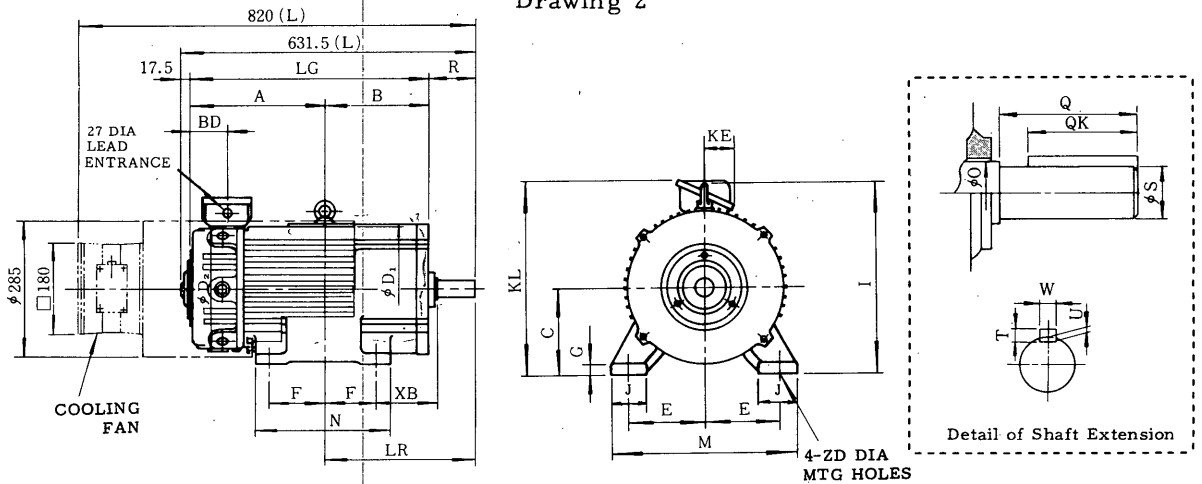
DIMENSIONS (CONT'D)

FOOT-MOUNTED TYPE

Drawing 1



Drawing 2

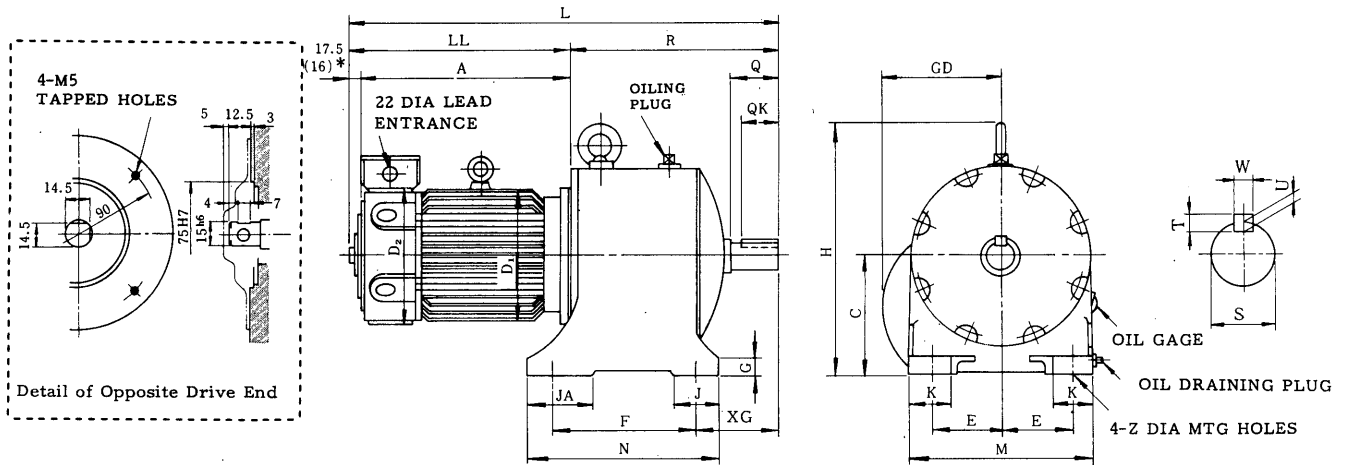


Type	Drawing	A	BD	B	C ⁰ _{-0.5}	D1	E	F	G	XB	I	J	L	M	N	LR	D2
UGCMED-04 AA 4*	1	—	30	—	90	153	70	50	15	56	—	40	250.5	180	130	146	166
UGCMED-08 AA 4*	1	—	30	—	100	173	80	56	15	63	—	40	273.5	200	147	159	179
UGCMED-15 AA 4	1	141	30	106	100	199	80	70	15	63	235	40	316.5	200	180	173	204
UGCMED-22 AA 4	1	166	30	128	112	199	95	70	15	70	247	40	385.5	230	180	200	204
UGCMED-37 AA 4	1	221	49	168	132	216	108	89	18	89	276	50	480.5	266	228	238	214
UGCMED-55 AA 4	2	299	104	217	160	286	127	105	20	130	338	66	631.5	320	270	315	268
UGCMFD-75 AA 4†	2	299	104	217	160	286	127	105	20	130	338	66	820	320	270	315	268

Type	Drawing	R	IG	KE	KL	ZD	Shaft Extension				Key				Approx. Weight (kg)
							Q	S	O	LO	U	T	W	QK	
UGCMED-04 AA 4*	1	52	181	45	215	10	40	16 ⁰ _{-0.011}	22	45	3	5	5	25	13
UGCMED-08 AA 4*	1	52	204	45	232	12	40	19 ⁰ _{-0.013}	26	50	3	5	5	25	19
UGCMED-15 AA 4	1	52	247	45	241	12	40	19 ⁰ _{-0.013}	36	65	3	5	5	25	27
UGCMED-22 AA 4	1	74	294	45	253	12	60	28 ⁰ _{-0.013}	36	65	4	7	7	45	36
UGCMED-37 AA 4	1	74	389	45	295	12	60	28 ⁰ _{-0.013}	40	70	4	7	7	45	54
UGCMED-55 AA 4	2	98	516	45	336	15	80	32 ⁰ _{-0.016}	38	70	4.5	8	10	65	97
UGCMFD-75 AA 4†	2	98	516	45	336	15	80	32 ⁰ _{-0.016}	38	70	4.5	8	10	65	111

* Not provided with an eyebolt.
 † Provided with a cooling fan.

CUP MOTOR WITH REDUCTION GEAR



Type	Reduction Ratio	Reducer Frame No.	A	C	D ₁	E	G	GD	H	J	JA	K	M	N	R	XG	Z	LL	L	F	D ₂				
UGCMED-04 AA 1 G	10, 15, 20	E-7	175	132 ⁰ _{-0.5}	153	85	22	130	285	60	90	55	230	230	237	75	15	192.5	429.5	190	166				
	30	E-9		160 ⁰ _{-0.5}		90	25	155	330	65		65	250	255	269	95			461.5	205					
UGCMED-08 AA 1 G	10, 15, 20, 30	E-10	198	180 ⁰ _{-0.5}	173	110	30	170	370	70	100	65	290	275	298	110	20	215.5	513.5	215	179				
	10, 15, 20	E-10	241	180 ⁰ _{-0.5}	199	110	30	170	370	70	100	65	290	275	298	110	20	258.5	556.5	215	204				
30	E-11	200 ⁰ _{-0.5}		185				405	120										75	300		310	324	120	582.5
UGCMED-22 AA 1 G	10	E-10	288	180 ⁰ _{-0.5}	199	110	30	170	370	70	100	65	290	275	298	110	20	305.5	603.5	215	204				
	15, 20	E-11		200 ⁰ _{-0.5}				185	405										120	75		300	310	324	120
	30	E-12		212 ⁰ _{-0.5}				130	35	210	445	80	130	85	350	340	355	130	25	660.5		280			
UGCMED-37 AA 1 G	10, 15, 20	E-12	383	212 ⁰ _{-0.5}	216	130	35	210	445	80	130	85	350	340	359	130	25	400.5	759.5	280	214				
	30	E-14		250 ⁰ _{-0.5}		150	40	245	505										140	90		395	370	391	140
UGCMED-55 AA 1 G	10, 15, 20	E-14	512	250 ⁰ _{-0.5}	275	150	40	245	505	80	140	90	395	370	397	140	25	529.5	926.5	310	290				
	30	E-15		280 ⁰ ₋₁		160		270	555	105	150								420	415		429	150	958.5	345
UGCMFD-75 AA 1 G	10	E-14	512	250 ⁰ _{-0.5}	275	150	40	245	505	80	140	90	395	370	397	140	25	718	1115	310	290				
	15, 20	E-15		280 ⁰ ₋₁		160		270	555	105	150								420	415		435	150	1153	345
	30	E-17		300 ⁰ ₋₁		175		45	295	595	110								180	105		455	490	501	170

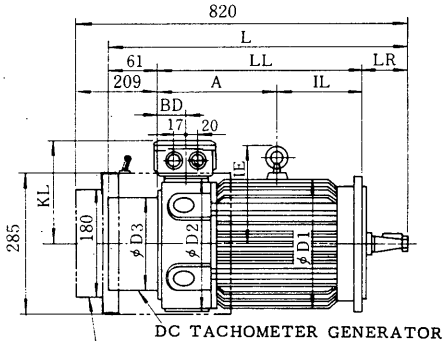
Type	Reduction Ratio	Reducer Frame No.	Shaft Extension						Approx. Weight (kg)			
			Q	QK	S	T	U	W				
UGCMED-04 AA 1 G	10, 15, 20	E-7	56	50	31.5 ^{+0.025} _{+0.009}	8	4.5	10	39			
	30	E-9	71	65	40 ^{+0.025} _{+0.009}				47			
UGCMED-08 AA 1 G	10, 15, 20, 30	E-10	80	73	45 ^{+0.025} _{+0.009}	8	4.5	12	66			
	10, 15, 20	E-10	80	73	45 ^{+0.025} _{+0.009}				74			
UGCMED-15 AA 1 G	10, 15, 20	E-10	80	73	45 ^{+0.025} _{+0.009}	8	4.5	12	86			
	30	E-11	90	81	50 ^{+0.025} _{+0.009}				86			
UGCMED-22 AA 1 G	10	E-10	80	73	45 ^{+0.025} _{+0.009}	8	4.5	12	83			
	15, 20	E-11	90	81	50 ^{+0.025} _{+0.009}				95			
	30	E-12	100	92.5	56 ^{+0.030} _{+0.011}				10	5	15	115
UGCMED-37 AA 1 G	10, 15, 20	E-12	100	92.5	56 ^{+0.030} _{+0.011}	10	5	15	133.5			
	30	E-14	112	104	63 ^{+0.030} _{+0.011}				12	6	18	168.5
UGCMED-55 AA 1 G	10, 15, 20	E-14	112	104	63 ^{+0.030} _{+0.011}	12	6	18	212			
	30	E-15		105	71 ^{+0.030} _{+0.011}				13	7	20	252
UGCMFD-75 AA 1 G	10	E-14	112	104	63 ^{+0.030} _{+0.011}	12	6	18	226			
	15, 20	E-15		105	71 ^{+0.030} _{+0.011}				13	7	20	266
	30	E-17		125	118				80 ^{+0.030} _{+0.011}	13	7	20

† Provided with a cooling fan.

DIMENSIONS (CONT'D)

CUP MOTOR WITH AUXILIARY EQUIPMENT

Cup Motor with DC Tachometer Generator

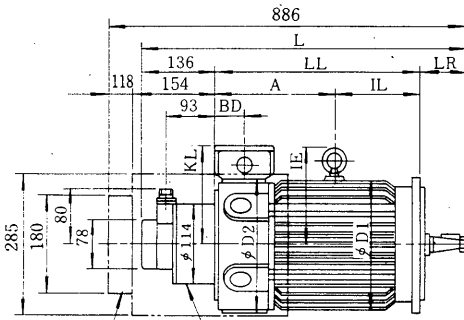


DC TACHOMETER GENERATOR

COOLING FAN
(For only Type UGCMFD-75A11)

Type	A	BD	D1	D2	D3	IE	IL	KL	L	LL	LR	Approx. Weight (kg)
UGCMED-04AA106	—	27	153	166	120	—	—	137	291	172	58	15
UGCMED-08AA106	—	27	173	179	152	—	—	144	314	195	58	21
UGCMED-15AA106	138	27	199	204	152	135	100	153	357	238	58	29
UGCMED-22AA106	163	27	199	204	152	135	122	153	426	285	80	38
UGCMED-37AA106	218	46	216	214	152	144	162	175	521	380	80	56
UGCMED-55AA106	317	101	275	268	152	175	192	176	672	509	102	98
UGCMFD-75AA106	317	101	275	268	152	175	192	176	672	509	102	112

Cup Motor with Feedback Unit

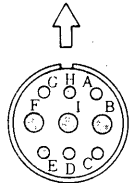


FEEDBACK UNIT

COOLING FAN
(For only Type UGCMFD-75A11)

Type	A	BD	D1	D2	IE	IL	KL	L	LL	LR	Approx. Weight (kg)
UGCMED-04AA10F	—	30	153	166	—	—	125	369	175	58	15
UGCMED-08AA10F	—	30	173	179	—	—	132	392	198	58	21
UGCMED-15AA10F	141	30	199	204	135	100	141	435	241	58	29
UGCMED-22AA10F	166	30	199	204	135	122	141	504	288	80	38
UGCMED-37AA10F	221	49	216	214	144	162	163	599	383	80	56
UGCMED-55AA10F	320	104	275	268	175	192	176	750	512	102	98
UGCMFD-75AA10F	320	104	275	268	175	192	176	750	512	102	112

Opposite Drive End



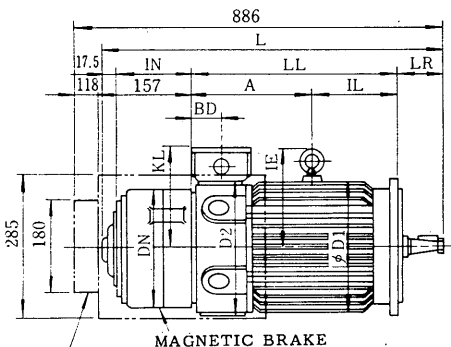
Terminals

- A: Channel A Output
- B: Channel B Output
- C: Origin pulse Output
- D: Common
- E: +12 VDC Input
- F: Ground

- G: Tach-Gen Output ⊕
- H: Tach-Gen Input ⊖
- I: Spare

Feedback Unit Terminals

Cup Motor with Magnetic Brake

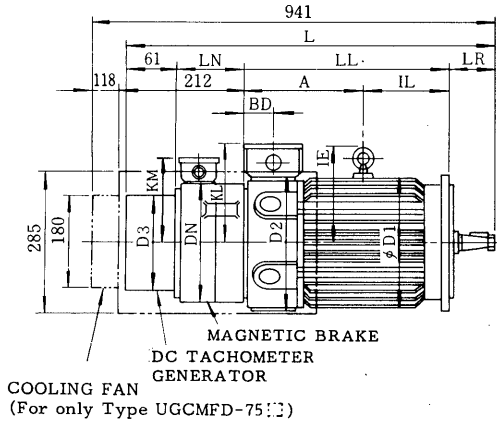


MAGNETIC BRAKE

COOLING FAN
(For only Type UGCMFD-75A11)

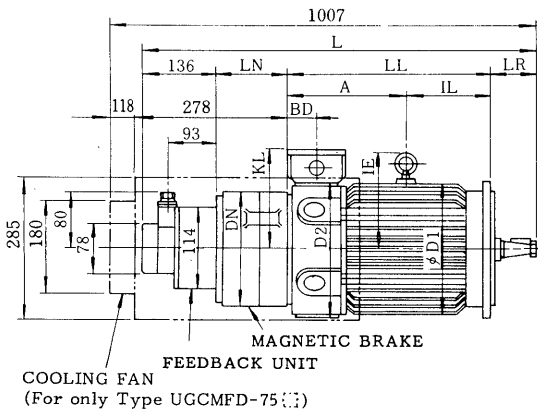
Type	A	BD	D1	D2	DN	IE	IL	KL	L	LL	LN	LR	Approx. Weight (kg)
UGCMED-04AA10B	—	27	153	166	152	—	—	125	289	172	101	58	18
UGCMED-08AA10B	—	27	173	179	152	—	—	132	312	195	101	58	27
UGCMED-15AA10B	138	27	199	204	178	135	100	141	362	238	108	58	39
UGCMED-22AA10B	163	27	199	204	178	135	122	141	409	285	108	80	48
UGCMED-37AA10B	218	46	216	214	202	144	162	163	520	380	124	80	71
UGCMED-55AA10B	317	101	275	268	202	175	192	176	752.5	509	124	102	113
UGCMFD-75AA10B	317	101	275	268	202	175	192	176	752.5	509	124	102	127

Cup Motor with Magnetic Brake and DC Tachometer Generator



Type	A	BD	D1	D2	D3	DN	IE	IL	KL	KM	L	LL	LN	LR	Approx. Weight (kg)
UGCMED-04AA1OW	—	27	153	166	120	152	—	—	125	120	389	172	98	58	21
UGCMED-08AA1OW	—	27	173	179	152	152	—	—	132	120	412	195	98	58	30
UGCMED-15AA1OW	138	27	199	204	152	178	135	100	141	133	462	238	105	58	42
UGCMED-22AA1OW	163	27	199	204	152	178	135	122	141	133	531	285	105	80	51
UGCMED-37AA1OW	218	46	216	214	152	202	144	162	163	145	642	380	121	80	74
UGCMED-55AA1OW	317	101	275	268	152	202	175	192	176	145	793	509	121	102	116
UGCMFD-75AA1OW	317	101	275	268	152	202	175	192	176	145	793	509	121	102	130

Cup Motor with Magnetic Brake and Feedback Unit



Type	A	BD	D1	D2	DN	IE	IL	KL	L	LL	LN	LR	Approx. Weight (kg)
UGCMED-04AA1OZ	—	27	153	166	152	—	—	125	467	172	101	58	21
UGCMED-08AA1OZ	—	27	173	179	152	—	—	132	490	195	101	58	30
UGCMED-15AA1OZ	138	27	199	204	178	135	100	141	540	238	108	58	42
UGCMED-22AA1OZ	163	27	199	204	178	135	122	141	609	285	108	80	51
UGCMED-37AA1OZ	218	46	216	214	202	144	162	163	720	380	124	80	74
UGCMED-55AA1OZ	317	101	275	268	202	175	192	176	871	509	124	102	116
UGCMFD-75AA1OZ	317	101	275	268	202	175	192	176	871	509	124	102	130

ORDERING INFORMATION

- Application
- Type
- Ratings: output, voltage, current, torque, speed
- Environmental conditions: ambient temperature, location
- Others to be specified



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