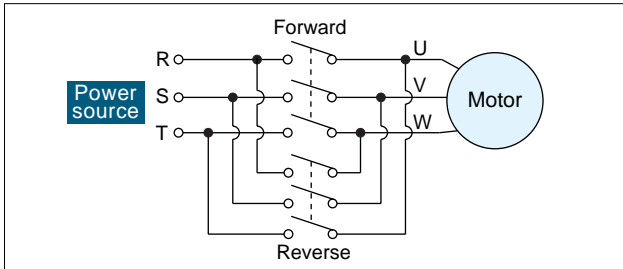


Gearmotor(With motor) Wiring/Terminal Box

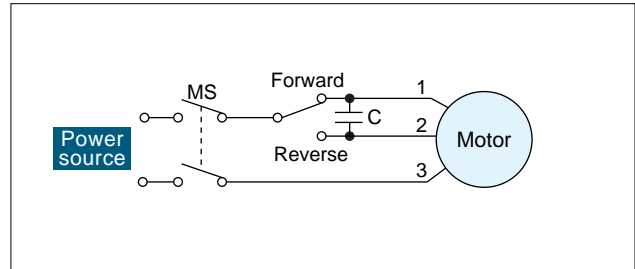
Wiring chart

3-Phase Motor



Mark in the Diagram	Lead Wire Type		Terminal Box Type
	200V	400V	Terminal Code
U	black	black	U
V	grey	brown	V
W	White	White	W

1-Phase Motor

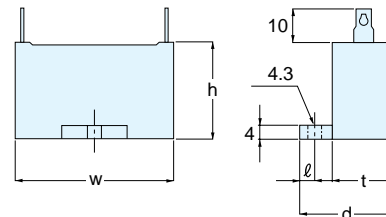


Mark in the Diagram	Lead Wire Type		Terminal Box Type
	100V	200V	Terminal Code
1	blue	brown	1
2	black	black	2
3	grey	grey	3

The rotation direction of the output shaft is shown in the performance table of respective model.

Capacitor

For operations of single-phase moter, capacitor is needed. Utilize the capacitor attached with products with proper wiring. Since reversible wiring (3 lead wires) is applied in the single-phase motor, forward and reverse rotations are easily changed like a 3-phase motor.



Withstand Voltage	Capacity (μF)	w	h	t	d	ℓ	Input power supply
220V	2.5	31	23.5	14.5	24.5	4.5	100V
	3.5	31	23.5	14.5	24.5		
	4.5	31	27	17	27		
	5	31	27	17	27		
	6	37	27	18	28		
	7	37	27	18	28		
	8	38	29	19	29		
	9	38	29	19	29		
	10	48	29	19	29		
	12	48	29	19	29		
	13	48	29	19	29		
	14	58	31	21	31		
	15	58	31	21	31		
20	58	35	22	32	7		
26	58	37	23.5	38.5			

Withstand Voltage	Capacity (μF)	w	h	t	d	ℓ	Input power supply	
440V	1	31	27	17	27	4.5	200V	
	1.2	37	27	18	28			
	1.5	38	31	21	31			
	1.7	38	31	21	31			
	2	48	29	19	29			
	2.2	48	29	19	29			
	2.5	48	31	21	31			
	3	58	31	21	31			
	3.2	58	31	21	31			
	3.5	58	31	21	31			
	5	58	37	23.5	38.5			7
	6.5	58	41	29	44			

For the capacitor volume, refer to the respective performance table.

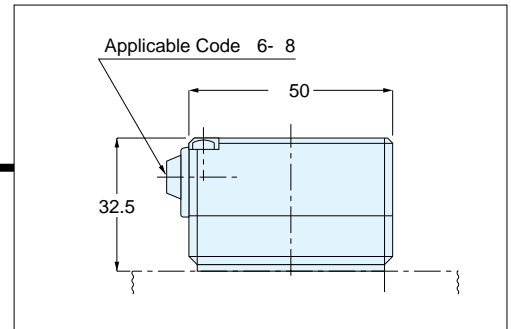
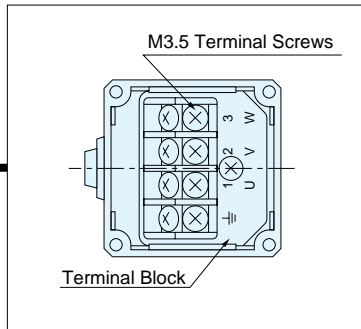
Terminal Box

As terminal box can be attached to GTR Mini-Series and GTR-L Series, instruct us when ordering.

Types and Structures

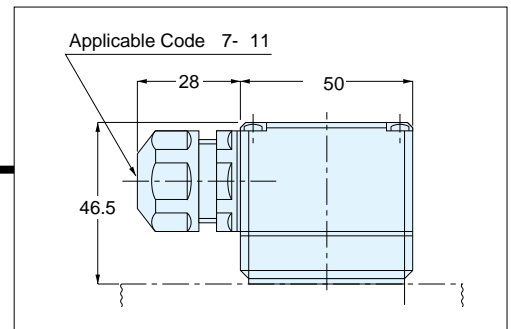
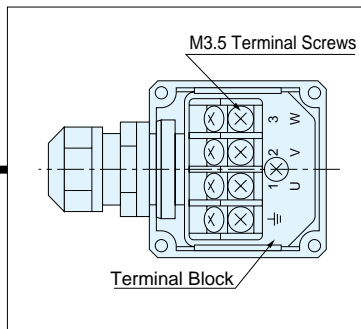
) T-Type Terminal Box

3-Phase 200V•400V / 1-Phase 100V•200V



)K-Type Terminal Box

3-Phase 200V•400V / 1-Phase 100V•200V



- Parallel Shaft Performance Table/ Dimension
- Gearmotor with Brake
- Water-resistant Gearmotor with Brake
- Speed Control Gearmotor
- Gearmotor with Clutch / Brake
- GT-Type Gearmotor with Brake
- Right Angle Shaft Performance Table/ Dimension
- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor
- Concentric Hollow Shaft Performance Table/ Dimension
- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor
- Parallel Shaft GTR-L Series Performance Table/ Dimension
- Reversible Gearmotor with Brake
- Speed Control Gearmotor with Brake
- Technical Information
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Gearmotor with Simplified Brake

Gearmotor with Simplified Brake

As simplified brakes(optional parts) can be attached to GTR Mini Series Gearmotors, instruct us when ordering.

- 1 A simplified braking mechanism is installed in order to minimize motor's coasting rotation.
- 2 This mechanism can be produced both for 3-phase and for single-phase.
- 3 The retaining torques are as shown in the Table-15. When required strong retention, select brake gearmotors.
- 4 The machine is 30 minutes-rating.

Specifications(Guideline values) Table-15

Frame	Capacity	Retaining Torque N·cm{ gf·cm }	Overrun (Rotation Speed)
G-12·22 H-15·22 F2S-12 F2F-15	15W	2.9{ 300 }	3 ~ 5
	25W		
	40W		
	60W		
G-15·28·32 H-18·28·32 F2S-15 F2F-18	25W	5.9{ 600 }	3 ~ 5
	40W		
	60W		
	90W		
G-18·40 H-40	40W	7.4{ 750 }	10 ~ 15
	60W		
	90W		

* Values in "Overrun" column are the ones at no load.

Reversible Gearmotor

Reversible Gearmotors(optional) can be applied to GTR-L Series gearmotors (with motor).

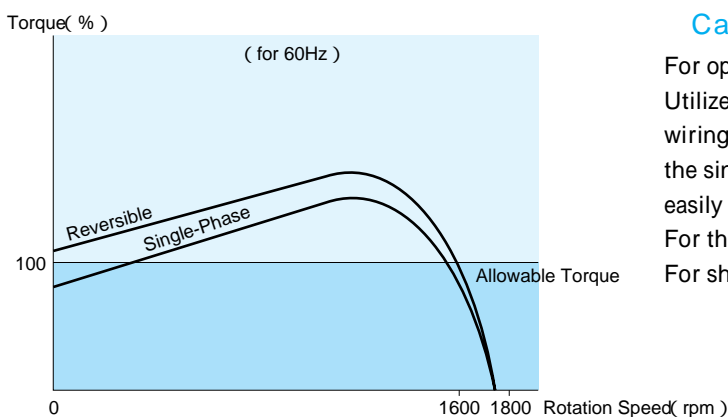
- 1 Although all the products of single-phase motor are originally arranged wiring for reversible operation, the "Reversible Gearmotor" is the one installed with simplified braking mechanism which improves the instant reverse operation.
- 2 The retaining torques are as shown in the Table-16. When required strong retention, select brake gearmotors.
- 3 The machine is 30 minutes-rating.

Specifications(Guideline values) Table-16

Frame	Capacity	Retaining Torque N·cm{ gf·cm }	Overrun (Rotation Speed)
10	6W	0.7{ 70 }	2 ~ 3
	10W		
12	15W	1.4{ 140 }	3 ~ 4
	25W		
15	25W	2.9{ 200 }	3 ~ 5
	40W		

* Values in "Overrun" column are the ones at no load.

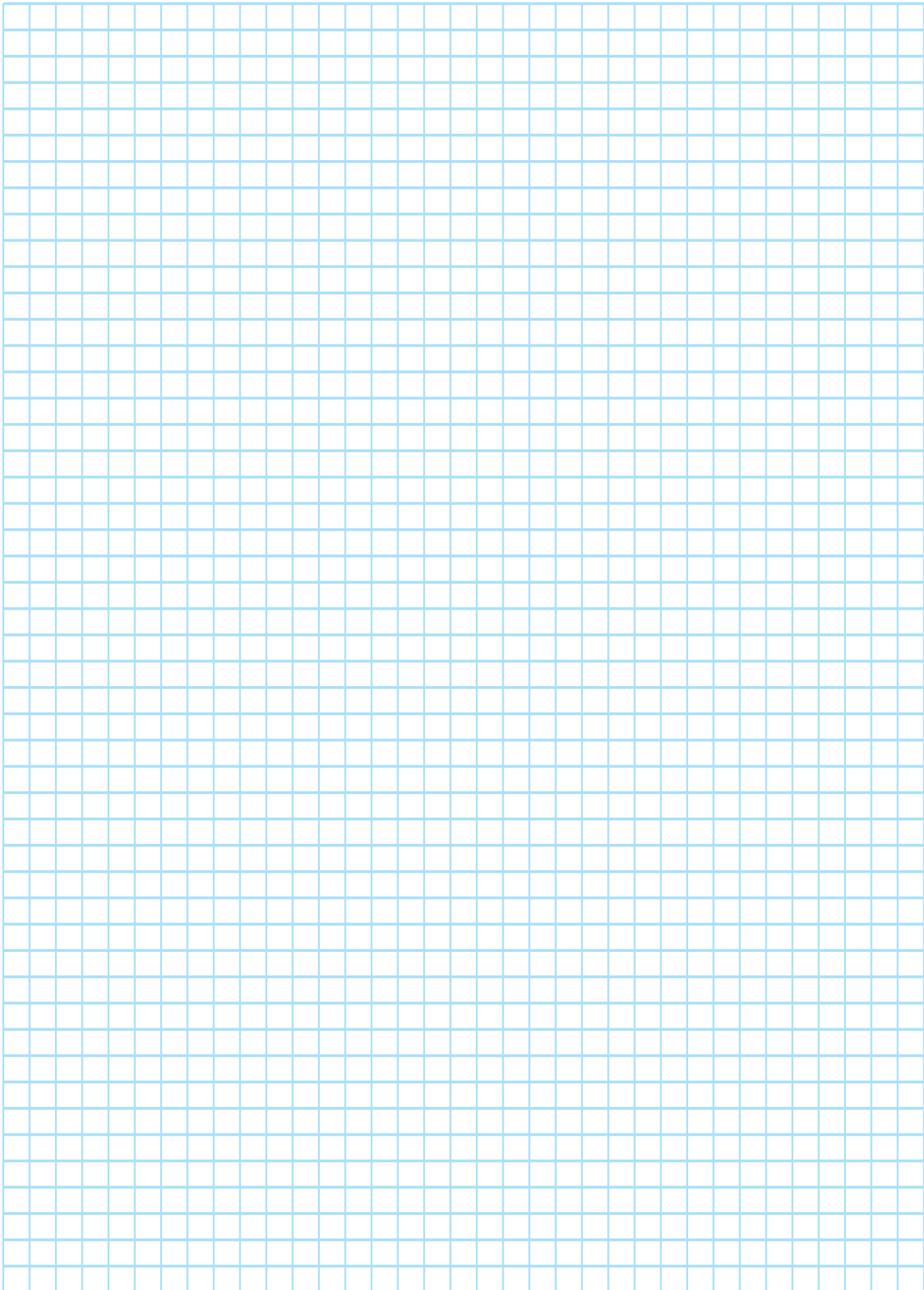
Torque Rotation Speed Characteristics



* Shown above is a representative torque-curve. When details of the torque-curve are required, ask us.

Capacitor

For operations of Reversible gearmotor, capacitor is needed. Utilize the capacitor attached with products with proper wiring. Since reversible wiring (3 lead wires) is applied in the single-phase motor, forward and reverse rotations are easily changed like a 3-phase motor. For the volume of capacitor, refer to the performance table. For shape and dimension, refer to P. E30.



Parallel Shaft Performance Table/
Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch /Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/
Dimension

Reversible Gearmotor with Brake

Speed Control Gearmotor with Brake

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Gearmotor with Brake Specifications/Structure/Wiring

Brake Specifications

GTR Mini Series G·GT·H·F2-Type

[For gearmotors with water-resistant brake, refer to <P. E44>.]

Table-17

Item	Motor	3-Phase[200V·400V]					1-Phase[200V]				
		15W	25W	40W	60W	90W	15W	25W	40W	60W	90W
Brake Type		"Power-off, Brake-on" (Spring Close) Type									
Rated Torque N·m (kgf·m) <1500~1800rpm>		0.37 { 0.038 }					0.54 { 0.055 }				
Voltage (Average)		DC90V					DC45V				
Power (75 %)		12W					10W				
Current (at 75 %)		0.13A					0.22A				
Allowable Work Emax J (kgf·m)		2.9 × 10 ⁴ { 3 × 10 ⁶ }									
Allowable Braking Frequency		10 times per minute									

GTR-L Series G-Type

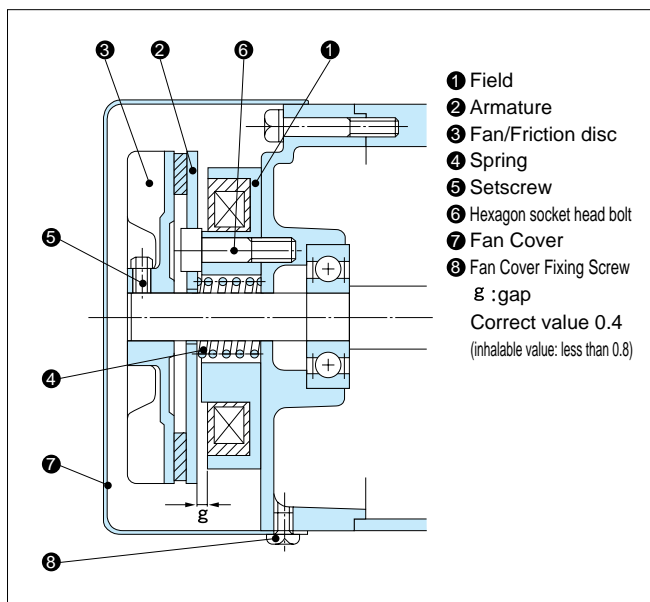
Table-18

Item	Motor	3-Phase[200V·400V]			1-Phase[100V]					1-Phase[200V]			
		15W	25W	40W	6W	10W	15W	25W	40W	10W	15W	25W	40W
Brake Type		"Power-off, Brake-on" (Spring Close) Type											
Rated Torque N·m (kgf·m) <1500~1800rpm>		0.22 { 0.022 }			0.16 { 0.016 }		0.22 { 0.022 }			0.16 { 0.016 }		0.22 { 0.022 }	
Voltage (Average)		DC90V			DC45V					DC90V			
Power (75 %)		4.5W			5.0W					4.5W			
Current (at 75 %)		0.05A			0.11A					0.05A			
Allowable Work Emax J (kgf·m)		1.5 × 10 ⁴ { 1.5 × 10 ⁶ }											
Allowable Braking Frequency		10 times per minute											

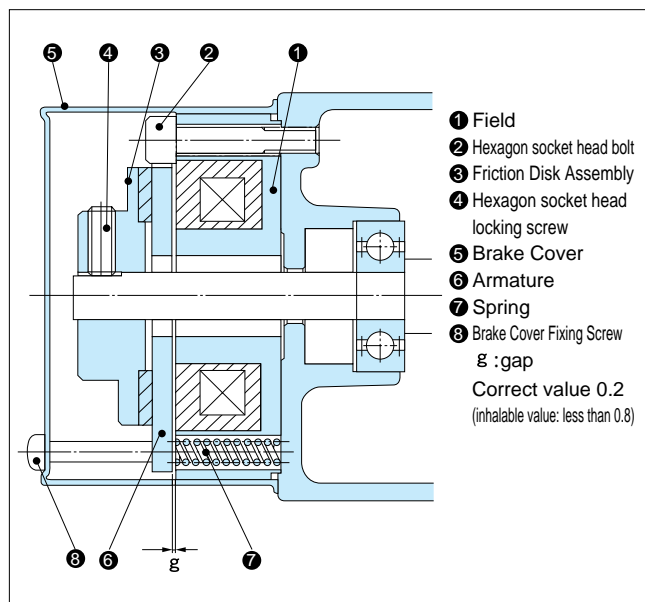
- Note** 1) Guideline values of allowable braking frequency for avoiding excessive motor temperature rise are given above. Braking frequency can be increased under light loads or where cooling of motor is sufficiently enough. (Be sure to maintain the motor surface temperature below 90 °C.)
 2) Avoid continuous energizing to the brake coil while the motor stops.
 3) Use the attached standard rectifier for the brake power supply. If another type of rectifier is to be used, consult us.
 4) The values of rated torque are guidelines and not the guaranteed values.

Brake Structure

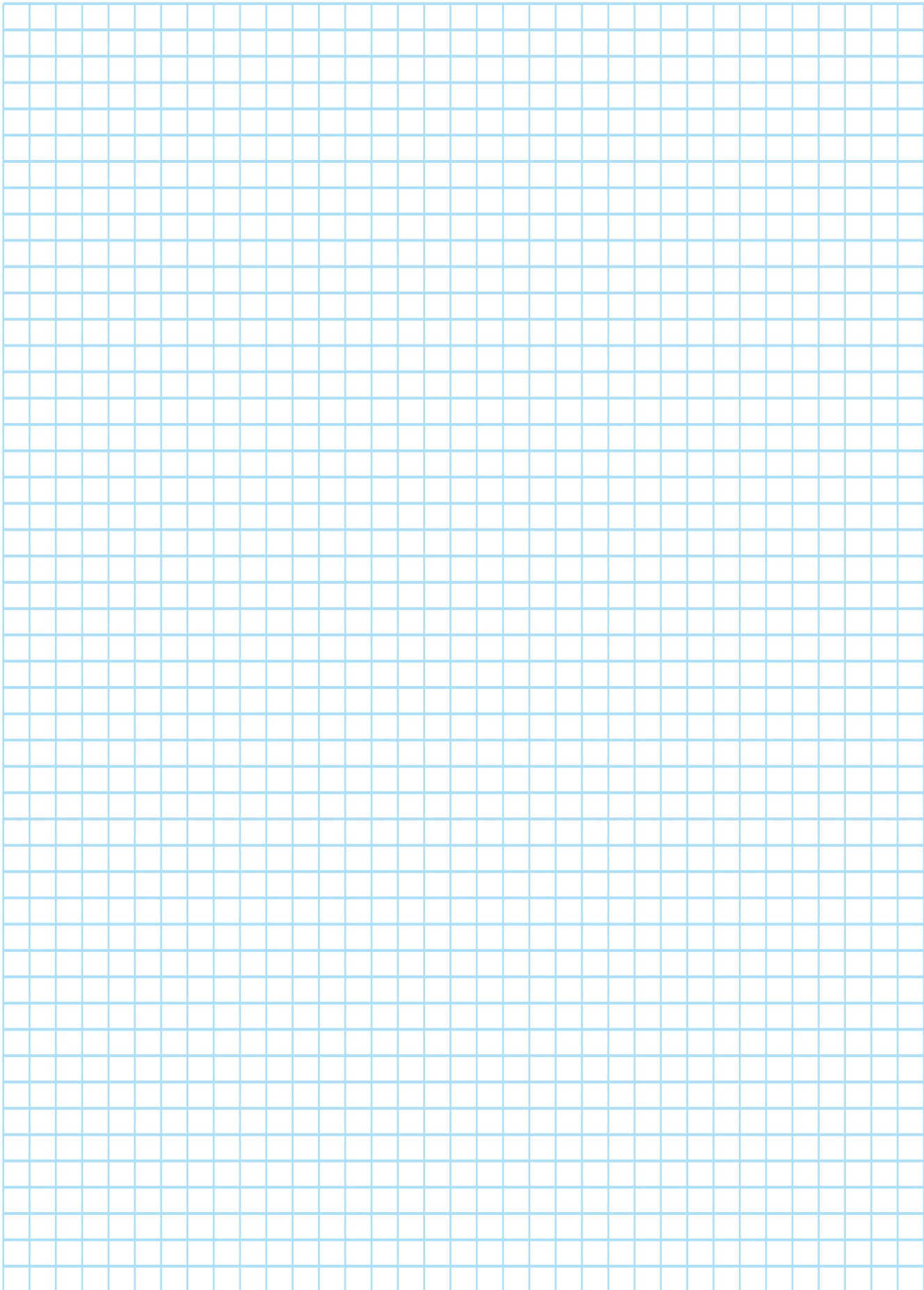
GTR Mini Series G·GT·H·F2-Type



GTR-L Series G-Type



For gearmotors with water-resistant brake, refer to <P.E45>



Parallel Shaft Performance Table/
Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch /Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Concentric Solid Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/
Dimension

Reversible Gearmotor with Brake

Speed Control Gearmotor with Brake

Technical Information

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Gearmotor with Brake Wiring

Types of Wiring and Selecting Points

Wiring	Selecting Point	Inverter	Hoisting Operation	Wire Saving	Braking Delay
DC Switching	Because of the shortest braking delay time, most appropriate for the application which needs sudden braking such as hoisting operation.	(Usable)	(Optimum)		
AC Switching (A)	Separate circuit can be employed for motor and brake. Therefore, most appropriate for inverter drive operation.	(Optimum)	(Usable)		
AC Switching (B)	This is the simplest way. Operation can be done only by connecting to the power source. You can save wiring.	×(Unusable)	×(Unusable)		

Note)Braking delay time indicates interval between switching off and brake on. (Not the braking time.)
 For braking delay time by wiring method, refer to Table-19 on page E37.
 In case braking time is needed, refer to the calculation method on page E10.

Wiring Method [Standard Voltage]

No.	Motor Capacity Designation 3-Phase [T15 ~ T90]	Motor Capacity Designation 1-Phase [S06 ~ S90]
1.DC Switching		
2.AC Switching(A)	<p>Blue for Rectifie Blue should be short circuited.</p>	<p>Blue for Rectifie Blue should be short circuited.</p>
3.AC Switching(B)	<p>Blue for Rectifie Blue should be short circuited.</p>	<p>Blue for Rectifie Blue should be short circuited.</p>

S: Rotation Changeover Switch C: Capacitor MS: Electro-Magnetic Switch -N : Surge Suppressor (option)

- Note** 1) For the application of vertical motion such as lifting, DC Switching wiring should be employed.
 2) It is recommended to insert surge suppressor between contact points in DC Switching circuit. (Varistor Voltage 423 ~ 517V)
 3) In case of single-phase 100V, the voltage applied to the input side of the rectifier A200-D90 (A100-D45) will be AC100V and the output side, DC45V.
 4) The electro-magnetic switch with the rated current of over 6A(AC200V) is recommended for the relay for brake circuit. In case DC Switching wiring is employed, in order to shield the inductive load (DC coil), DC110V, DC13 class is recommended. Also, in case of employing a noncontact relay, it is recommended to use the rated voltage of AC240V equivalent (half-wave rectification switching available).
 5) Since the rectifier contains diodes, improper wiring may cause fatal short-circuiting. Therefore, special care should be given to the wiring.
 6) For wirings and cautions in case of inverter drive, refer to page E76.

Wiring Method [High Voltage]

No.	Motor Capacity Designation 3-Phase [T15W ~ T90W]	Motor Capacity Designation 1-Phase [S10W ~ S90W]
1.DC Switching		
2.AC Switching(A)		
3.AC Switching(B)		

S: Rotation Changeover Switch C: Capacitor MS: Electro-Magnetic Switch -N: Surge Suppressor (option)

- Note**
- 1) For the application of vertical motion such as lifting, DC Switching wiring should be employed.
 - 2) It is recommended to insert surge suppressor between contact points in DC Switching circuit. (Varistor Voltage 423 ~ 517V)
 - 3) The electro-magnetic switch with the rated current of over 6A(AC200V) is recommended for the relay for brake circuit. In case DC Switching wiring is employed, in order to shield the inductive load (DC coil), DC110V, DC13 class is recommended. Also, in case of employing a noncontact relay, it is recommended to use the rated voltage of AC240V equivalent (half-wave rectification switching available).
 - 4) Since the rectifier contains diodes, improper wiring may cause fatal short-circuiting. Therefore, special care should be given to the wiring.
 - 5) AS for the 3-phase/double voltage model or over 230V model, be sure to connect 200V leads(red, 0.75 ~ 2.2kW for B terminal), which are extended out from the motor for the brake supply, to the input of rectifier. In case of the operation by inverter drive, the 200V terminal extended from the motor is not feasible. For details, contact us. For cautions in case of inverter drive, refer to page E76.

Braking Delay Time : ta

Braking delay time indicates interval (second) between switching off and brake on.
(Not the braking time.)

Table-19

No.	Braking Delay Time:ta(second)
1.DC Switching	0.005 ~ 0.015
2.AC Switching(A)	0.03 ~ 0.10
3.AC Switching(B)	0.1 ~ 0.2

Parallel Shaft Performance Table/ Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch /Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/ Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Performance Table/ Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/ Dimension

Reversible Gearmotor with Brake

Speed Control Gearmotor with Brake

Technical Information

Standard Motors

Cautions for Safety

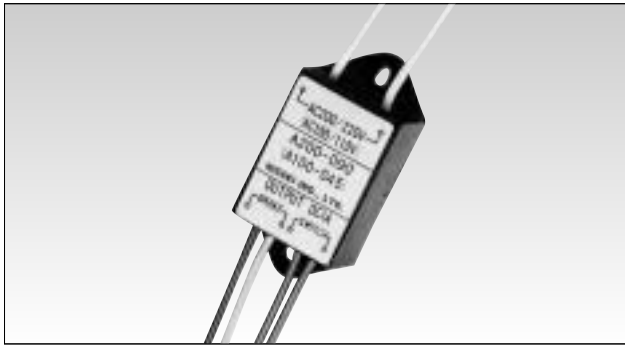
Option

Gearmotor with Brake Rectifier/Surge Suppressor/Terminal Box

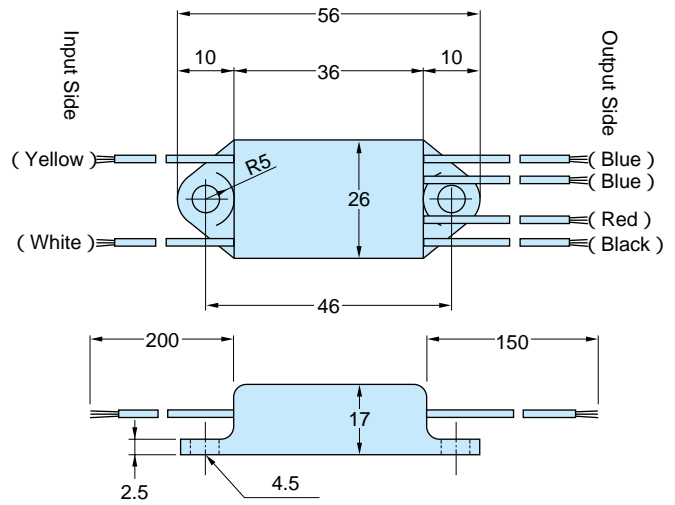
Rectifier

The supplied rectifier A200-D90 (A100-D45) or A100-D90 is required for the brake operation of the gearmotor with brake. Since the braking delay time differs according to the brake wiring, select the most appropriate wiring method for the application, referring to page E36 ~ E37.

The rectifier basically contains a surge absorber. However, if a risk is foreseen, add another surge absorber or noise filter for safety sake.

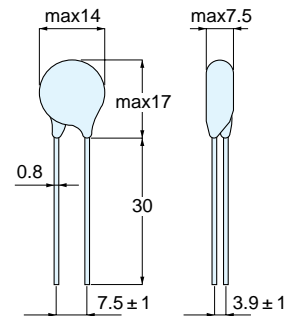
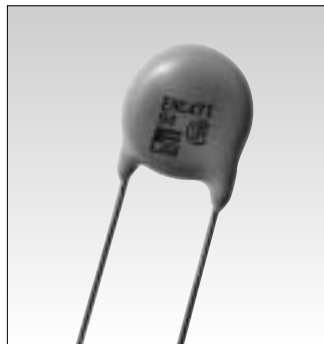


A 200-D90 Dimension Diagram (A100-D45)



Surge Suppressor/Option No. OP-ENC471D-10A

For use in cutting off the sparks of a brake switch for DC switching or AC line switching.



Parallel Shaft Performance Table/Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch/Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Performance Table/Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/Dimension

Reversible Gearmotor with Brake

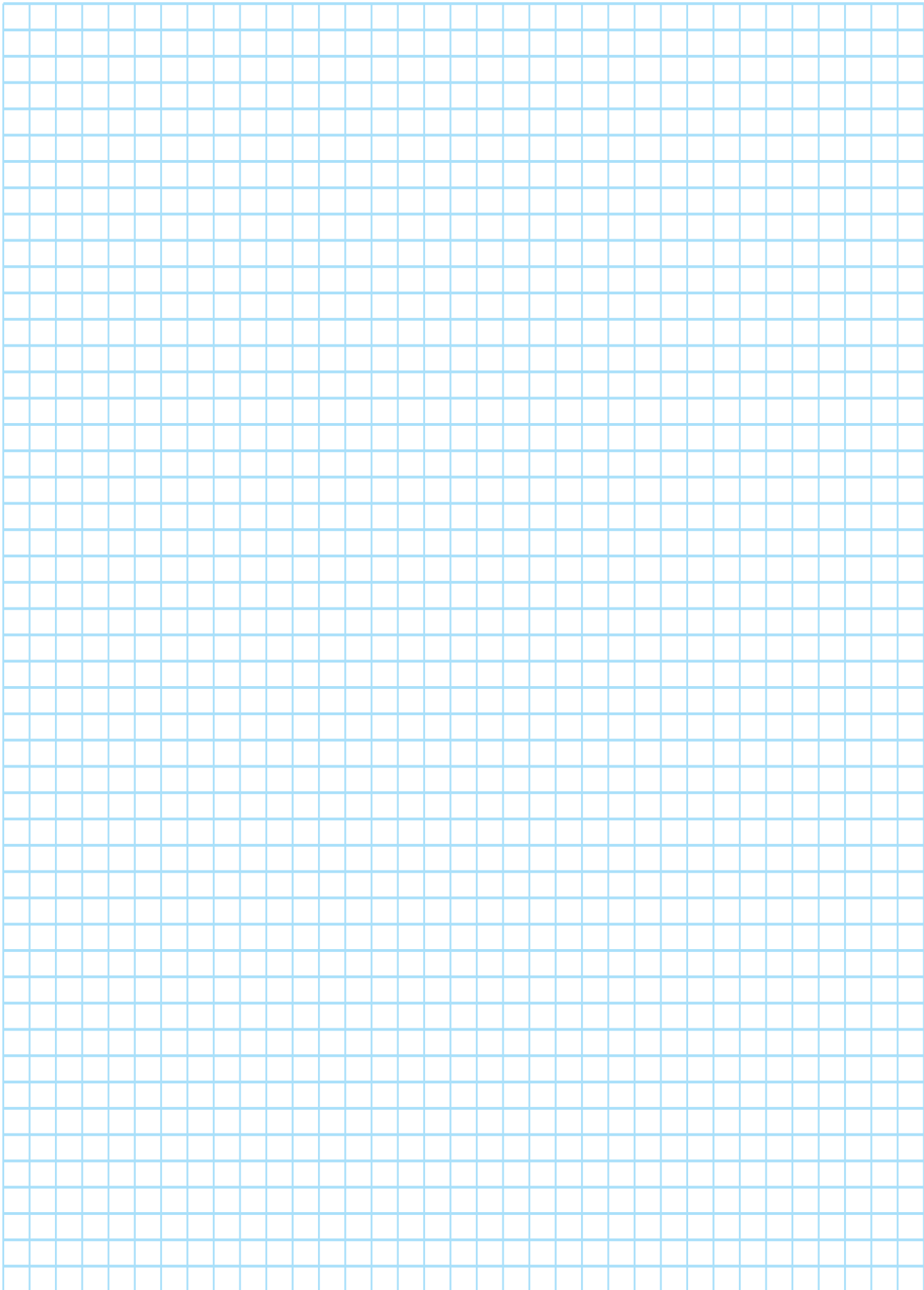
Speed Control Gearmotor with Brake

Technical Information

Standard Motors

Cautions for Safety

Option



Parallel Shaft Performance Table/
Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch /Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Concentric Solid Shaft Performance Table/
Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/
Dimension

Reversible Gearmotor with Brake

Speed Control Gearmotor with Brake

Technical Information

Standard Motors

Cautions for Safety

Option

Gearmotor with Brake Terminal Box (Option)


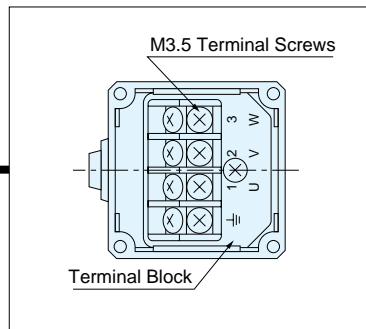
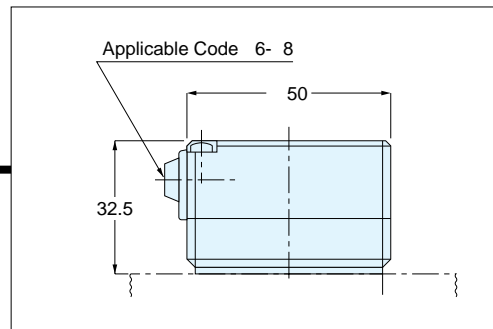
Terminal box can be attached to GTR Mini-Series and GTR-L Series. Instruct us when ordering.

Types and Constructions

T-Type Terminal Box

3-Phase 200V•400V / 1-Phase 100V•200V


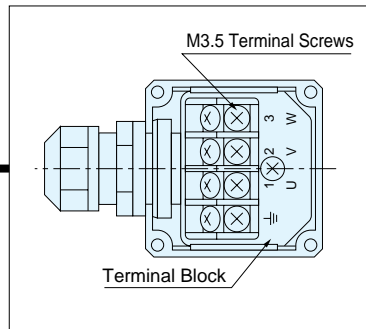
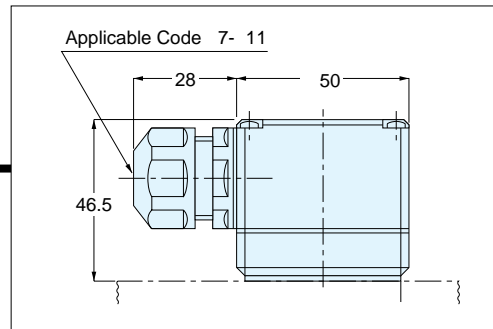
The photo indicates the case of GTR Mini Series.

K-Type Terminal Box

3-Phase 200V•400V / 1-Phase 100V•200V


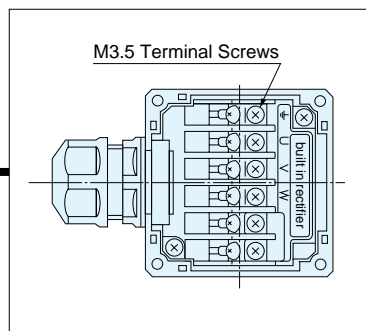
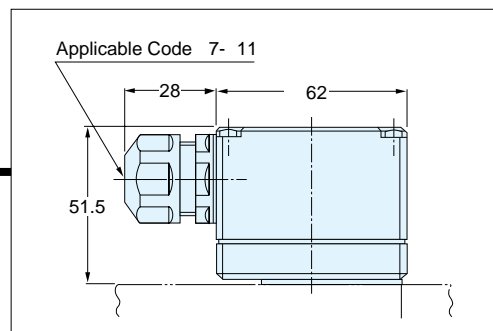
The photo indicates the case of GTR Mini Series.

C- Type Terminal Box (Rectifier built-in)


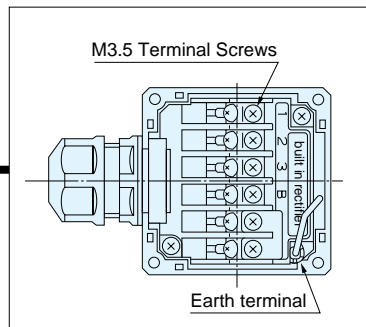
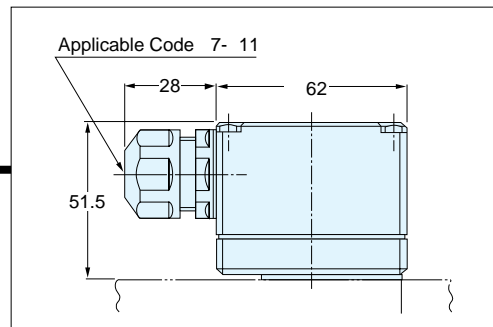
3-Phase 200V•400V

The photo indicates the case of GTR Mini Series.

1-Phase 100V•200V

The photo indicates the case of GTR Mini Series.

- Parallel Shaft Performance Table/ Dimension
- Gearmotor with Brake
- Water-resistant Gearmotor with Brake
- Speed Control Gearmotor
- Gearmotor with Clutch / Brake
- GT-Type Gearmotor with Brake
- Right Angle Shaft Performance Table/ Dimension
- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor
- Concentric Hollow Shaft Concentric Solid Shaft Performance Table/ Dimension
- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor
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- Reversible Gearmotor with Brake
- Speed Control Gearmotor with Brake
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- Option

C-Type Terminal Box(built in rectifier) Wiring Types, Specifications and Selecting Points

Wiring	Specs. and Selecting Points	Inverter(3-Phase)	Hoisting Operation	Wire Saving	Braking Delay
AC Switching(B)	C-Type terminal box contains built-in rectifier and is connected in "AC Switching(B)". Therefore, just connect power supply source to the terminals for start operation. Also you can modify to "DC Switching" by just taking off the connecting plate.	× (Unusable)	× (Unusable)		
DC Switching	Because of the shortest braking delay time, This is appropriate for the application which needs sudden braking such as hoisting operation.	× (Unusable)	(Optimum)		
AC Switching(A)	Separate circuit can be employed for motor and brake. Therefore, most appropriate for inverter drive operation. Wiring with 200V supply is appropriate for the standard voltage. As for the double voltage supply, use the 200V terminal (red lead wire) which is extended out from the motor. (Not fixed to the terminal block.) Since the AC Switching(A) wiring is a custom specification, direct us when ordering.	(Optimum)	(Usable)		
Independent Rectifier	The brake lead wire is taken into the terminal box and fixed in the terminal block. Rectifier is not built-in. Any wiring can be feasible according to the customer's specification, for example, putting the rectifier within the switchboard, etc. As for the double voltage supply, use the 200V terminal (red lead wire) which is extended out from the motor. (Not fixed to the terminal block.) Since the model with independent rectifier is a custom specification, direct us when ordering. As the rectifier is attached, select the most appropriate wiring method, referring the wiring diagram on page E36.	Application differs according to the wiring method in the switchboard of the rectifier. (AC Switching(A), AC Switching (B) or DC Switching)			

Note 1) "braking delay time" means the time from turn off switch to start braking motion, not the total time for braking.
 For braking delay time cause of wiring method, please refer to page E237chart-19.
 Please refer to calculated data according to page E10.

2) In case of inverter drive, "AC Switching(B)" wiring and "DC Switching" wiring are not feasible, while "AC Switching(A)" wiring is feasible. (Custom specs.) However, the lead wire 200V terminal extended out from the motor body cannot be used. Contact us for details. For cautions for inverter drive, refer to page E76.

Rated Current

The rated current values listed on the motor performance table on page E14 ~ E22 are the ones for motor itself. For rectifier built-in type terminal box, the current value through brake should be taken into account. For details, consult us.

Parallel Shaft Performance Table/ Dimension

- Gearmotor with Brake
- Water-resistant Gearmotor with Brake
- Speed Control Gearmotor
- Gearmotor with Clutch /Brake
- GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/ Dimension

- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor

Concentric Hollow Shaft Performance Table/ Dimension

- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor


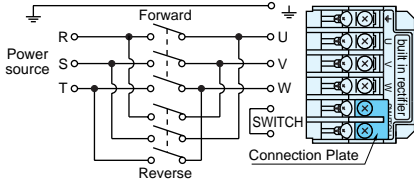

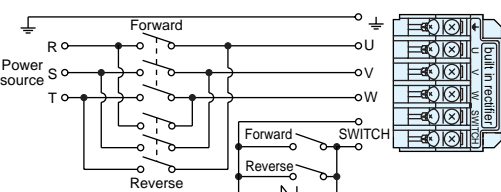

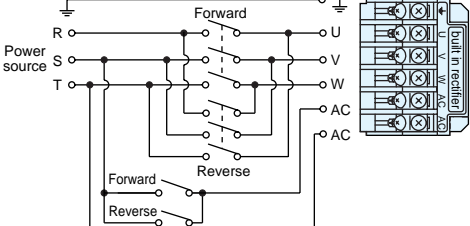
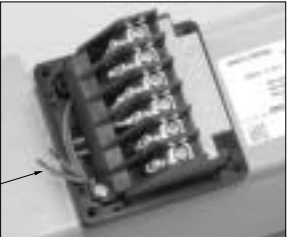
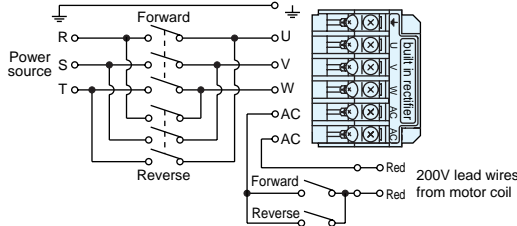

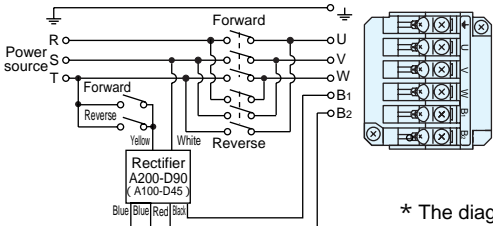
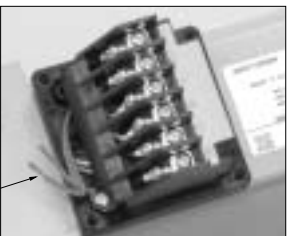
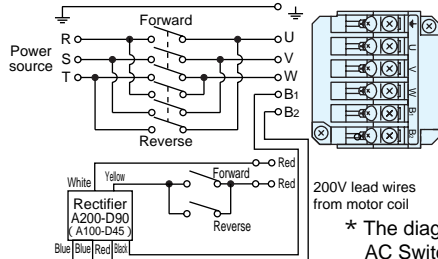
Parallel Shaft GTR-L Series Performance Table/ Dimension

- Reversible Gearmotor with Brake
- Speed Control Gearmotor with Brake


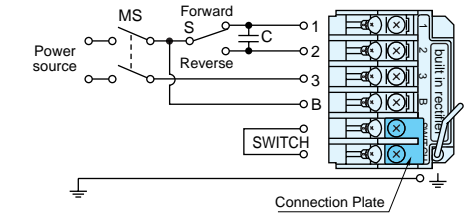

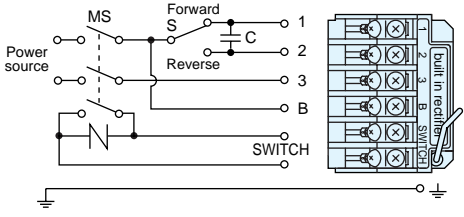

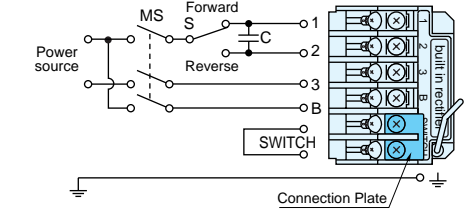
Technical Information

- Standard Motors
- Cautions for Safety
- Option

Wiring Method for C-Type Terminal Box(3-Phase)

Wiring	3-Phase	
AC Switching(B)	Standard Specifications/ High voltage	 
DC Switching	Standard Specifications/ High voltage	 
AC Switching(A) (Specific wiring)	Standard Specifications	 
AC Switching(A) (Specific wiring)	High voltage 200V lead wires from motor coil	 
Independent Rectifier (Specific wiring)	Standard Specifications	  <p>* The diagram shown is for AC Switching (A).</p>
Independent Rectifier (Specific wiring)	High voltage 200V lead wires from motor coil	  <p>* The diagram shown is for AC Switching (A).</p>

Wiring Method for C-Type Terminal Box(1-Phase)

Wiring	1-Phase		
AC Switching(B)	Standard Specifications/ High voltage		
DC Switching	Standard Specifications/ High voltage		
AC Switching(A) (Specific wiring)	Standard Specifications/ High voltage		

Parallel Shaft
Performance
Table/
Dimension

Gearmotor
with Brake

Water-
resistant
Gearmotor
with Brake

Speed
Control
Gearmotor

Gearmotor
with Clutch
/Brake

GT-Type
Gearmotor
with Brake

Right Angle Shaft
Performance
Table/
Dimension

Gearmotor
with Brake

With Water-
resistant -
Brake Motor

Speed
Control
Gearmotor

Concentric Hollow Shaft
Concentric Solid Shaft
Performance Table/
Dimension

Gearmotor
with Brake

With Water-
resistant
Brake Motor

Speed
Control
Gearmotor

Parallel Shaft
GTR-L Series
Performance
Table/
Dimension

Reversible
Gearmotor
with Brake

Speed
Control
Gearmotor
with Brake

Technical
Information

Standard
Motors

Cautions
for Safety

Option

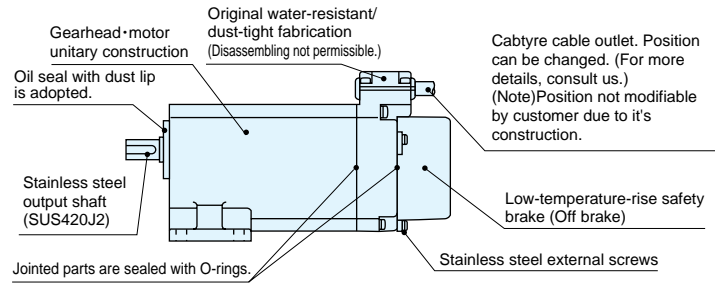
Water-Resistant Gearmotor (With Motor) / Water-Resistant Gearmotor with Brake

Characteristics/Wiring/ Specifications/Structure

Characteristics

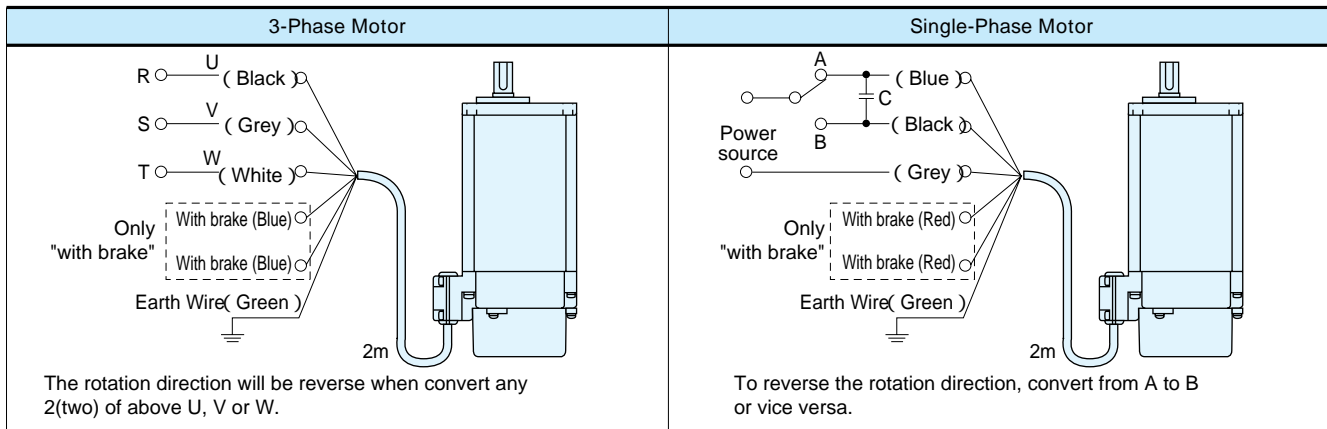
Gearmotors conform to IP65 of IEC Standard.

Suitable for the circumstances where water fly and/or periodical cleaning by water is being done.
 "IP65" stand for the grade of dust-tight and water-tight.
 The first digit "6" indicates "Perfect dust-tight structure" and the second digit "5" indicates "Protection from water jet in all direction".
 Note) Uses in water or under high-hydrostatic pressure are not permitted.



Lead Wire and Wiring

Note) For more details of Brake Gearmotor, refer to <P. E46>.



- Note 1) The voltage between the capacitor terminals of the single-phase motor will become nearly twice as much as that in the power source of the motor. Therefore, be sure to insulate wires at the terminals for safety.
 2) Do not damage the lead wire inside when peeling off the outer sheath of cab tyre cable.
 3) When using the machine in the circumstance where water may spatter during operation, it is recommended to use circuit breaker for safety.

Capacitor

For operations of single-phase motor, capacitor is needed. Utilize the capacitor attached with products with proper wiring. Since reversible wiring (3 lead wires) is applied in the single-phase motor, forward and reverse rotations are easily changed like a 3-phase motor.
 For the volume of capacitor, refer to the performance table. For shape and dimension, refer to P.E30.

Brake Specifications

GTR Mini-Series G·H·F2 (F2S) Type (Water-resistant)

Table-20

Motor·Output Shaft Frame Number	3-Phase[200V]			3-Phase[200V]				Single-Phase[100V]		Single-Phase[100V]		
	15W	25W	40W	25W	40W	60W	90W	15W	25W	25W	40W	60W
	G-12 H-15 F-12	G-12 H-15 F-12	G-12 H-15 F-12	G-15	G-15 G-18 H-18 F-15	G-15 G-18 H-18 F-15	G-18 H-18 F-15	G-12 H-15 F-12	G-12 H-15 F-12	G-15	G-15 G-18 H-18 F-15	G-18
Brake Type	"Power-off, Brake-on" (Spring Close) Type											
Rated Torque N·m (kgf·m) <1500~1800rpm>	0.32~0.033 }			0.72~0.073 }				0.32~0.033 }		0.72~0.073 }		
Voltage (Average)	DC90V						DC45V					
Power (at 75)	5.6W			6.5W				5.1W		6.4W		
Current (at 75)	0.06A			0.07A				0.12A		0.14A		
Allowable Work Emax J (kgf·m)	2.5 × 10 ⁴ ~ 2.5 × 10 ⁶ }			2.9 × 10 ⁴ ~ 3 × 10 ⁶ }				2.5 × 10 ⁴ ~ 2.5 × 10 ⁶ }		2.9 × 10 ⁴ ~ 3 × 10 ⁶ }		
Allowable Braking Frequency	10 times per minutes											

- Note 1) Guideline values of allowable braking frequency for avoiding excessive motor temperature rise are given above. Braking frequency can be increased under light loads or where cooling of motor is sufficiently enough. (Be sure to maintain the motor surface temperature below 90 .)
 2) Avoid continuous energizing to the brake coil while the motor stops.
 3) Use the attached standard rectifier for the brake power supply. If another type of rectifier is to be used, consult us.
 4) The values of rated torque are guidelines and not the guaranteed values.