

# Motor Specifications and Ratings 200V MAMA

## 100W to 750W Ultra low inertia Small capacity

		AC200V									
Motor model		MAMA		012P1 □	012S1 □	022P1 □	022S1 □	042P1 □	042S1 □	082P1 □	082S1 □
Applicable driver	Model No.	A4 series	MADDT1207		MBDDT2210		MCDDT3520		MDDDT5540		
		A4F series	MADDT1207F		MBDDT2210F		MCDDT3520F		MDDDT5540F		
		A4P series	MADDT1207P		MBDDT2210P		MCDDT3520P		MDDDT5540P		
	Frame symbol	Frame A		Frame B		Frame C		Frame D			
Power supply capacity (kVA)		0.3		0.5		0.9		1.6			
Rated output (W)		100		200		400		750			
Rated torque (N · m)		0.19		0.38		0.76		1.43			
Momentary Max. peak torque (N · m)		0.95		1.91		3.82		7.16			
Rated current (Arms)		0.9		1.54		3.1		5.1			
Max. current (Ao-p)		6.3		10.9		21.7		36.0			
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2									
	DV0P4283	No limit Note)2									
	DV0P4284	No limit Note)2									
Rated rotational speed (r/min)		5000									
Max. rotational speed (r/min)		6000									
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.025	0.035	0.078	0.088	0.14	0.15	0.50	0.51		
	With brake	0.029	0.039	0.11	0.12	0.17	0.18	0.58	0.59		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less									
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
Resolution per single turn		10000	131072	10000	131072	10000	131072	10000	131072		
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)									
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)									
	Ambient humidity	85%RH or lower (free from condensing)									
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust									
	Altitude	1000m or lower									
Vibration resistance		49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less		
Mass (kg), ( ) represents holding brake type		0.65 (0.85)	0.71 (0.91)	1.1 (1.5)	1.2 (1.6)	1.5 (1.9)	1.6 (2.0)	3.3 (4.0)	3.4 (4.1)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
Static friction torque (N · m)	0.29		2.45
Engaging time (ms)	35		70
Releasing time (ms) Note)4	10 (60)		20 (-)
Exciting current (DC) (A)	0.25		0.35
Releasing voltage	DC2V or more		
Exciting voltage	DC 24 V $\pm$ 5%		

Permissible load			
During assembly	Radial load P-direction (N)	147	686
	Thrust load A-direction (N)	88	294
	Thrust load B-direction (N)	117.6	392
During operation	Radial load P-direction (N)	68.6	392
	Thrust load A-direction (N)	49	68.6
	Thrust load B-direction (N)	49	68.6

For motor dimensions, refer to page A4-115, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

## Model designation MAMA series, 100W to 750W

e.g.)

M A M A 0 1 2 S 1 A

Symbol	Type
MAMA	Ultra low inertia (100W-750W)

Voltage specifications	
Symbol	Specifications
2	200V

Design or ler  
1: Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
A	●		●		●	
B	●			●	●	
E		●	●		●	
F		●		●	●	

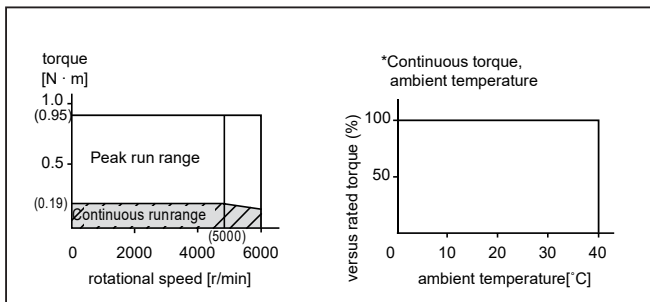
Motor rated output	
Symbol	Rated output
01	100W
02	200W
04	400W
08	750W

Rotary encoder specifications

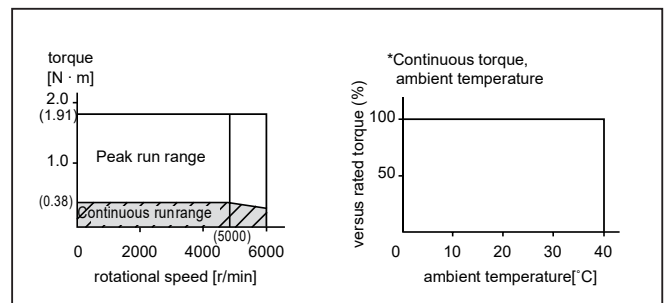
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

## Torque characteristics at AC200V of power voltage

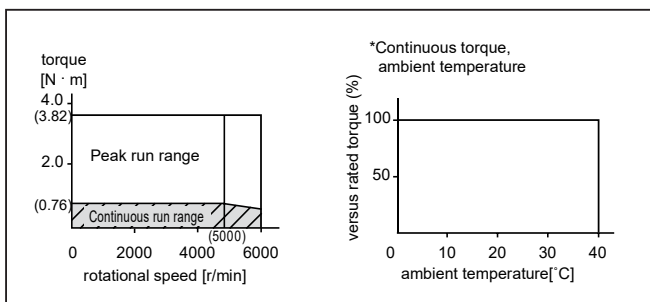
MAMA012



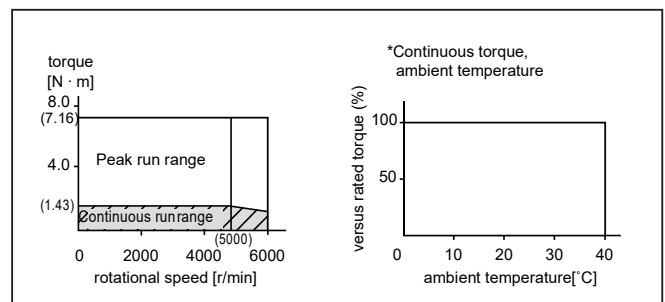
MAMA022



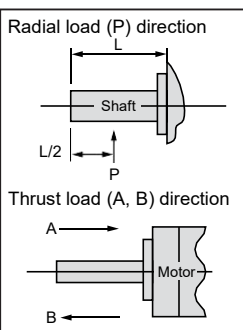
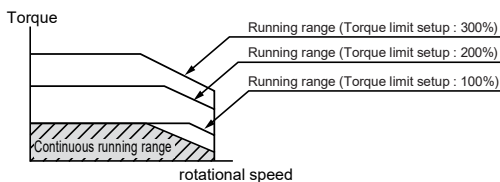
MAMA042



MAMA082



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 100V MSMD

## 50W to 100W Low inertia Small Capacity

		AC100V				
Motor model		MSMD	5AZP1□	5AZS1□	011P1□	011S1□
Applicable driver	Model No.	A4 series	MADDT1105		MADDT1107	
		A4F series	MADDT1105F		MADDT1107F	
		A4P series	MADDT1105P		MADDT1107P	
	Frame symbol		Frame A			
Power supply capacity (kVA)		0.5		0.4		
Rated output (W)		50		100		
Rated torque (N · m)		0.16		0.32		
Momentary Max. peak torque (N · m)		0.48		0.95		
Rated current (Arms)		1.1		1.7		
Max. current (Ao-p)		4.7		7.2		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2				
	DV0P4280	No limit Note)2				
Rated rotational speed (r/min)		3000				
Max. rotational speed (r/min)		5000				
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake	0.025		0.051		
	With brake	0.027		0.054		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
Resolution per single turn		10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)				
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage: -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)				
	Ambient humidity	85%RH or lower (free from condensing)				
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude	1000m or lower				
	Vibration resistance	49m/s <sup>2</sup> or less		49m/ s <sup>2</sup> or less		
Mass (kg), ( ) represents holding brake type		0.32 (0.53)		0.47 (0.68)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	0.29
Engaging time (ms)	35
Releasing time (ms) Note)4	20 (-)
Exciting current (DC) (A)	0.30
Releasing voltage	DC1V or more
Exciting voltage	DC 24 V ±5%

Permissible load		
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117
During operation	Radial load P-direction (N)	68
	Thrust load A-direction (N)	58
	Thrust load B-direction (N)	58

For motor dimensions, refer to page A4-116, and for the diver, refer to pages A4-22, 48 and 73.

## Model designation MSMD series, 50W to 100W

e.g.)

**M S M D 5 A Z S 1 S**

Symbol	Type
MSMD	Low inertia (50W-100W)

Voltage specifications	
Symbol	Specifications
1	100V
Z	100/200V (50W only)

Design order 1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, centertap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\*Motor with oil seal is manufactured by order.

Motor rated output	
Symbol	Rated output
5A	50W
01	100W

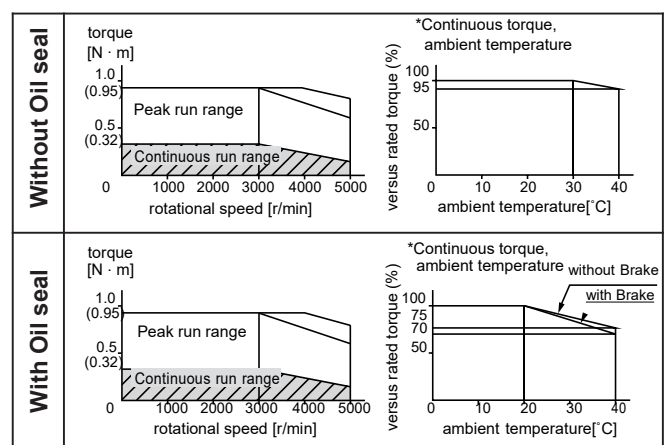
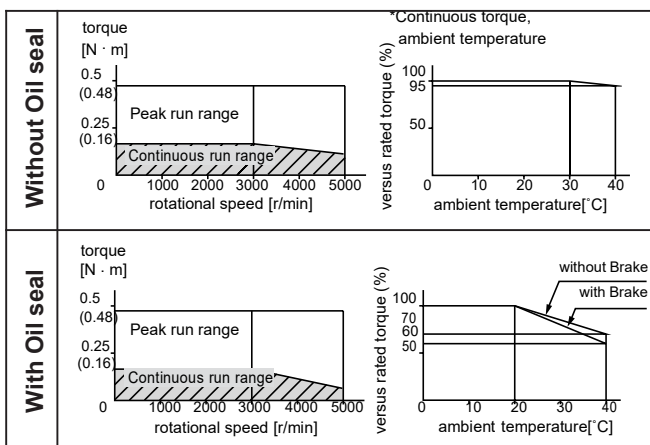
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

## Torque characteristics at AC100V of power voltage

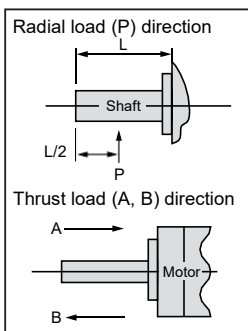
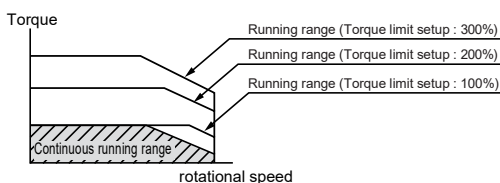
(Dotted line represents the torque at 10% less supply voltage.)

MSMD5AZ

MSMD011



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC115V (at 100V of the main voltage).
- If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D271 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 100V MSMD

## 200W to 400W Low inertia Small Capacity

		AC100V				
Motor model		MSMD	021P1□	021S1□	041P1□	041S1□
Applicable driver	Model No.	A4 series	MBDDT2110		MCDDT3120	
		A4F series	MBDDT2110F		MCDDT3120F	
		A4P series	MBDDT2110P		MCDDT3120P	
	Frame symbol	Frame B		Frame C		
Power supply capacity (kVA)		0.5		0.9		
Rated output (W)		200		400		
Rated torque (N · m)		0.64		1.3		
Momentary Max. peak torque (N · m)		1.91		3.8		
Rated current (Arms)		2.5		4.6		
Max. current (Ao-p)		10.6		19.5		
Regenerative brake frequency (times/min) Note)1	Without option	No limit		Note)2		
	DV0P4282	—		No limit Note)2		
	DV0P4283	No limit Note)2		—		
Rated rotational speed (r/min)		3000				
Max. rotational speed (r/min)		5000				
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.14		0.26		
	With brake	0.16		0.28		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resolution per single turn	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)				
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)				
	Ambient humidity	85%RH or lower (free from condensing)				
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude	1000m or lower				
	Vibration resistance	49m/s <sup>2</sup> or less				
Mass (kg), ( ) represents holding brake type		0.82 (1.3)		1.2 (1.7)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	1.27
Engaging time (ms)	50
Releasing time (ms) Note)4	15 (-)
Exciting current (DC) (A)	0.36
Releasing voltage	DC1V or more
Exciting voltage	DC 24 V $\pm$ 5%

Permissible load		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A-direction (N)	98
	Thrust load B-direction (N)	98

For motor dimensions, refer to page A4-117, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

## Model designation MSMD series, 200W to 400W

e.g.)

**M S M D 0 2 1 S 1 S**

Symbol	Type
MSMD	Low inertia (200W-400W)

Voltage specifications	
Symbol	Specifications
1	100V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, centertap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\*Motor with oil seal is manufactured by order.

Motor rated output	
Symbol	Rated output
02	200W
04	400W

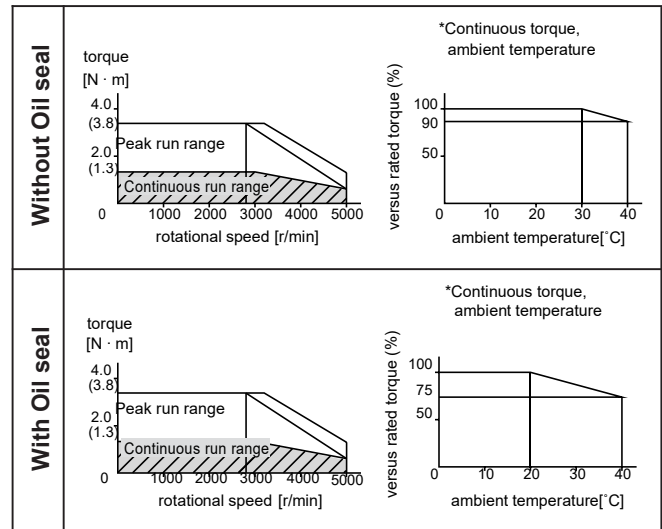
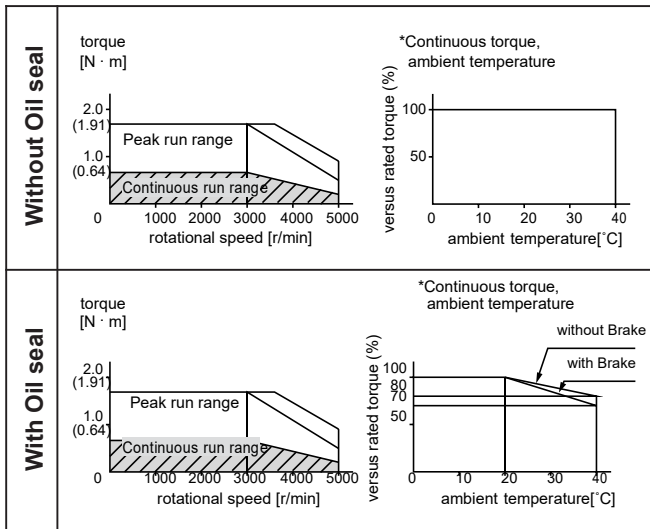
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

## Torque characteristics at AC100V of power voltage

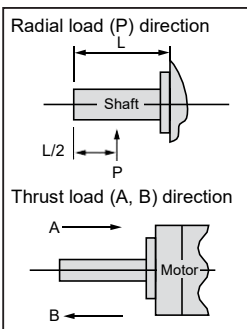
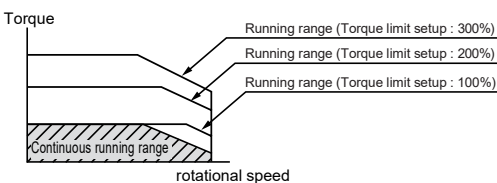
(Dotted line represents the torque at 10% less supply voltage.)

MSMD021

MSMD041



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC115V (at 100V of the main voltage).
  - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D271 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MSMD

## 50W to 100W Low inertia Small Capacity

		AC200V				
Motor model		MSMD	5AZP1□	5AZS1□	012P1□	012S1□
Applicable driver	Model No.	A4 series	MADDT1205			
		A4F series	MADDT1205F			
		A4P series	MADDT1205P			
	Frame symbol		Frame A			
Power supply capacity (kVA)		0.5		0.5		
Rated output (W)		50		100		
Rated torque (N · m)		0.16		0.32		
Momentary Max. peak torque (N · m)		0.48		0.95		
Rated current (Arms)		1.1				
Max. current (Ao-p)		4.7				
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2				
	DV0P4281	No limit Note)2				
Rated rotational speed (r/min)		3000				
Max. rotational speed (r/min)		5000				
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.025		0.051		
	With brake	0.027		0.054		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resolution per single turn	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)				
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)				
	Ambient humidity	85%RH or lower (free from condensing)				
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude	1000m or lower				
	Vibration resistance	49m/s <sup>2</sup> or less		49m/s <sup>2</sup> or less		
Mass (kg), ( ) represents holding brake type		0.32(0.53)		0.47(0.68)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	0.29
Engaging time (ms)	35
Releasing time (ms) Note)4	20 (-)
Exciting current (DC) (A)	0.30
Releasing voltage	DC1V or more
Exciting voltage	DC 24 V $\pm$ 5%

Permissible load		
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117
During operation	Radial load P-direction (N)	68
	Thrust load A-direction (N)	58
	Thrust load B-direction (N)	58

For motor dimensions, refer to page A4-116, and for the diver, refer to pages A4-22, 48 and 73.

## Model designation MSMD series, 50W to 100W

e.g.)

**M S M D 5 A Z S 1 S**

Symbol	Type
MSMD	Low inertia (50W-100W)

Voltage specifications	
Symbol	Specifications
2	200V
Z	100/200V (50W only)

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, centertap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\* Motor with oil seal is manufactured by order.

Motor rated output	
Symbol	Rated output
5A	50W
01	100W

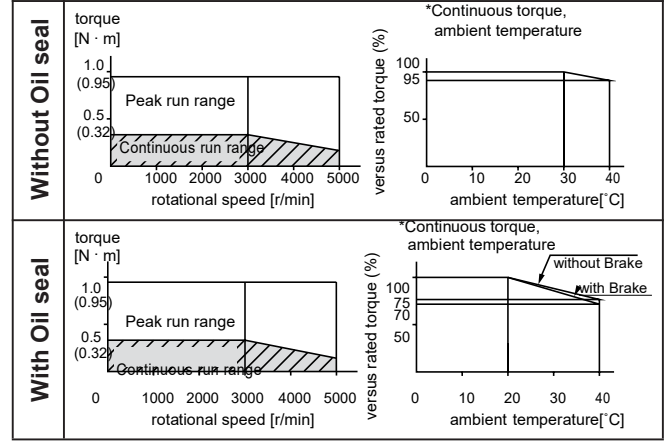
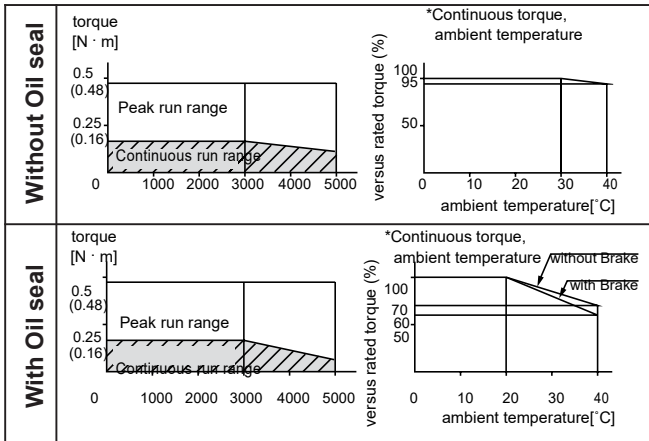
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

## Torque characteristics at AC200V of power voltage

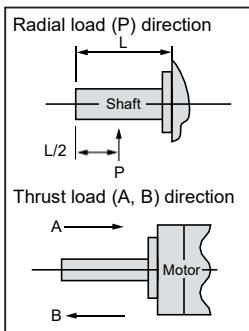
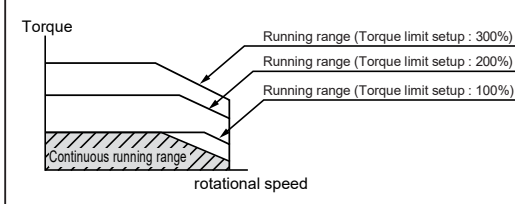
(Dotted line represents the torque at 10% less supply voltage.)

MSMD5AZ

MSMD012



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D271 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)



# Motor Specifications and Ratings 200V MSMD

## 200W to 750W Low inertia Small Capacity

		AC200V						
Motor model		MSMD	022P1□	022S1 □	042P1□	042S1□	082P1□	082S1□
Applicable driver	Model No.	A4 series	MADDT1207		MBDDT2210		MCDDT3520	
		A4F series	MADDT1207F		MBDDT2210F		MCDDT3520F	
		A4P series	MADDT1207P		MBDDT2210P		MCDDT3520P	
	Frame symbol		Frame A		Frame B		Frame C	
Power supply capacity (kVA)		0.5		0.9		1.3		
Rated output (W)		200		400		750		
Rated torque (N · m)		0.64		1.3		2.4		
Momentary Max. peak torque (N · m)		1.91		3.8		7.1		
Rated current (Arms)		1.6		2.6		4.0		
Max. current (Ao-p)		6.9		11.0		17.0		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2						
	DV0P4283	No limit Note)2						
Rated rotational speed (r/min)		3000						
Max. rotational speed (r/min)		5000				4500		
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.14		0.26		0.87		
	With brake	0.16		0.28		0.97		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				20 times or less		
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
Resolution per single turn		10000	131072	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage: -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)						
	Ambient humidity	85%RH or lower (free from condensing)						
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude	1000m or lower						
	Vibration resistance	49m/s <sup>2</sup> or less						
Mass (kg), ( ) represents holding brake type		0.82 (1.3)		1.2 (1.7)		2.3 (3.1)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)		
Static friction torque (N · m)	1.27	
Engaging time (ms)	50	
Releasing time (ms) Note)4	15 (-)	
Exciting current (DC) (A)	0.36	
Releasing voltage	DC1V or more	
Exciting voltage	DC 24 V $\pm$ 5%	

Permissible load			
During assembly	Radial load P-direction (N)	392	686
	Thrust load A-direction (N)	147	294
	Thrust load B-direction (N)	196	392
During operation	Radial load P-direction (N)	245	392
	Thrust load A-direction (N)	98	147
	Thrust load B-direction (N)	98	147

For motor dimensions, refer to page A4-117, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

## Model designation MSMD series, 200W to 750W

e.g.)

**M S M D 0 2 2 S 1 S**

Symbol	Type
MSMD	Low inertia (200W-750W)

Voltage specifications	
Symbol	Specifications
2	200V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, centertap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\*Motor with oil seal is manufactured by order.

Motor rated output	
Symbol	Rated output
02	200W
04	400W
08	750W

Rotary encoder specifications

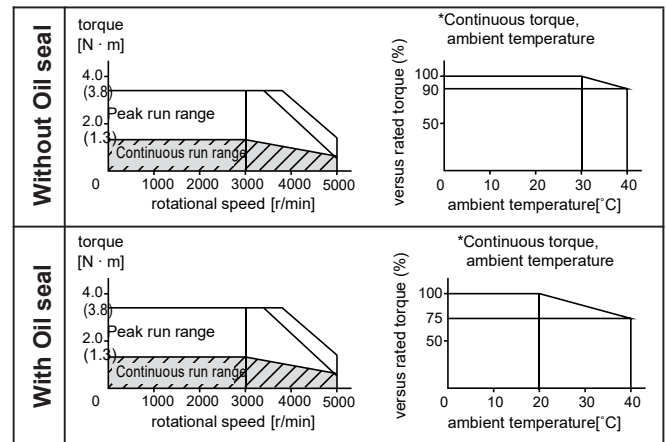
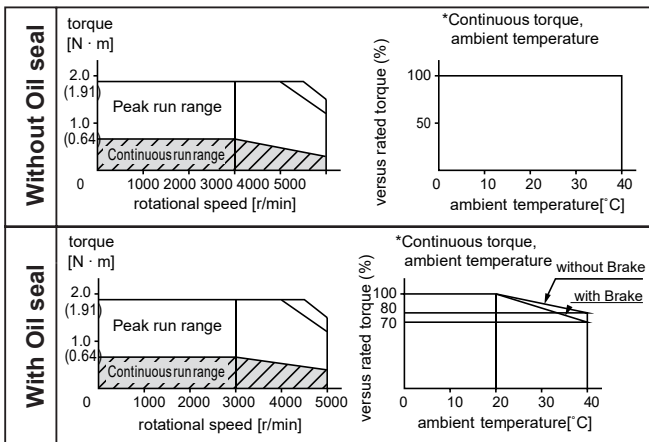
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

## Torque characteristics at AC200V of power voltage

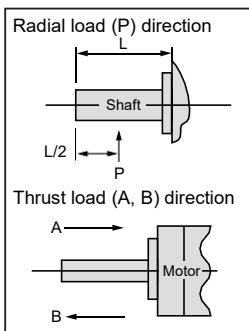
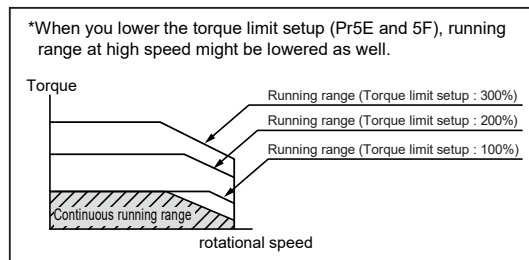
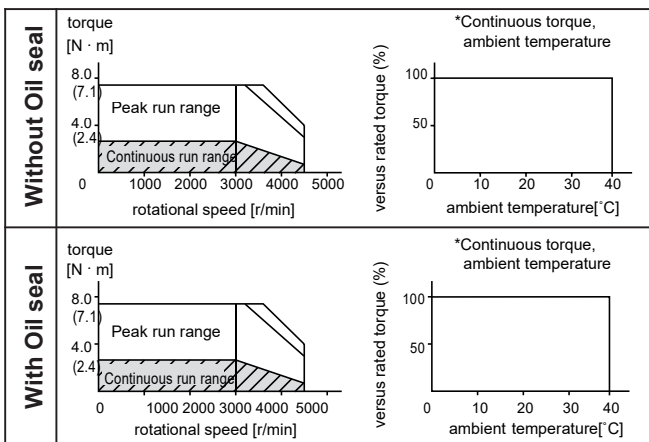
(Dotted line represents the torque at 10% less supply voltage.)

MSMD022

MSMD042



MSMD082



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).
  - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D271 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 100V MQMA

## 100W to 400W Low inertia, Flat, Small Capacity

		AC100V							
Motor model		MQMA		011P1 □	011S1 □	021P1 □	021S1 □	041P1 □	041S1 □
Applicable driver	Model No.	A4 series	MADDT1107		MBDDT2110		MCDDT3120		
		A4F series	MADDT1107F		MBDDT2110F		MCDDT3120F		
		A4P series	MADDT1107P		MBDDT2110P		MCDDT3120P		
	Frame symbol	Frame A		Frame B		Frame C			
Power supply capacity (kVA)		0.4		0.5		0.9			
Rated output (W)		100		200		400			
Rated torque (N · m)		0.32		0.64		1.3			
Momentary Max. peak torque (N · m)		0.95		1.91		3.82			
Rated current (Arms)		1.6		2.5		4.4			
Max. current (Ao-p)		6.9		10.5		18.6			
Regenerative brake frequency (times/min) Note)1	Without option			No limit Note)2					
	DV0P4280	No limit Note)2		_____		_____			
	DV0P4282	_____		_____		No limit Note)2			
	DV0P4283	_____		No limit Note)2		_____			
Rated rotational speed (r/min)				3000					
Max. rotational speed (r/min)				5000		4500			
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.09	0.10	0.34	0.35	0.64	0.65		
	With brake	0.12	0.13	0.42	0.43	0.72	0.73		
Recommended moment of inertia ratio of the load and the rotor Note)3				20 times or less					
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
	Resolution per single turn	10000	131072	10000	131072	10000	131072		
Protective enclosure rating				IP65 (except rotating portion of output shaft and lead wire end)					
Environment	Ambient temperature			0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)					
	Ambient humidity			85%RH or lower (free from condensing)					
	Installation location			Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude			1000m or lower					
	Vibration resistance	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less		
Mass (kg), ( ) represents holding brake type		0.65 (0.90)	0.75 (1.0)	1.3 (2.0)	1.4 (2.1)	1.8 (2.5)	1.9 (2.6)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)		
Static friction torque (N · m)	0.29	1.27
Engaging time (ms)	50	60
Releasing time (ms) Note)4	15 (100)	15 (100)
Exciting current (DC) (A)	0.29	0.41
Releasing voltage	DC1V or more	
Exciting voltage	DC 24 V $\pm$ 5%	

Permissible load			
During assembly	Radial load P-direction (N)	147	392
	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
During operation	Radial load P-direction (N)	68	245
	Thrust load A-direction (N)	58	98
	Thrust load B-direction (N)	58	98

For motor dimensions, refer to page A4-118, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

## Model designation MQMA series, 100W to 400W

e.g.)

**M Q M A 0 1 1 S 1 S**

Symbol	Type
MQMA	Low inertia (100W-400W)

Voltage specifications	
Symbol	Specifications
1	100V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, center tap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\*Motor with oil seal is manufactured by order.

Motor rated output

Symbol	Rated output
01	100W
02	200W
04	400W

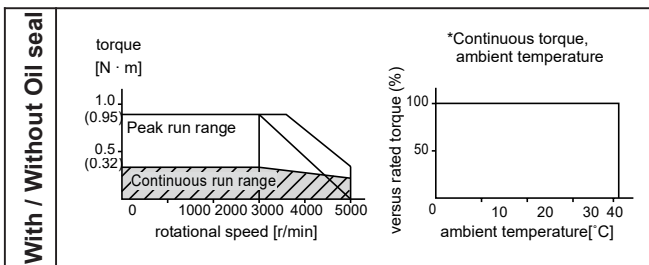
Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

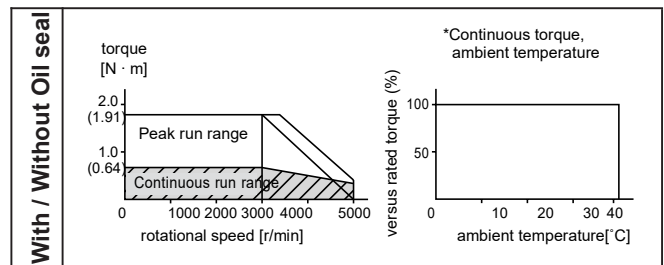
## Torque characteristics at AC100V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

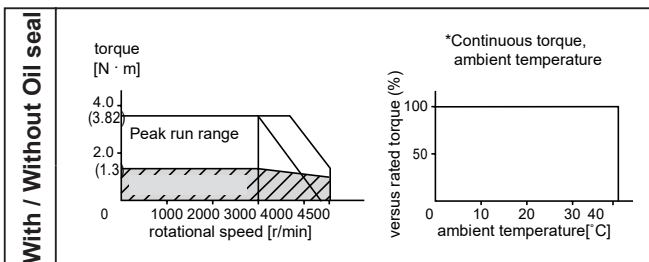
MQMA011



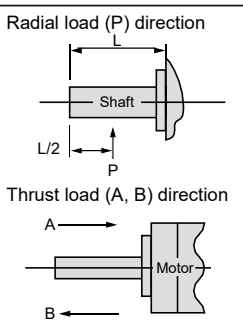
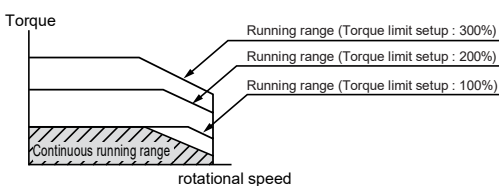
MQMA021



MQMA041



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC115V (at 100V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MQMA

## 100W to 400W Low inertia, Flat, Small Capacity

		AC200V						
Motor model		MQMA	012P1 <input type="checkbox"/>	012S1 <input type="checkbox"/>	022P1 <input type="checkbox"/>	022S1 <input type="checkbox"/>	042P1 <input type="checkbox"/>	042S1 <input type="checkbox"/>
Applicable driver	Model No.	A4 series	MADDT1205		MADDT1207		MBDDT2210	
		A4F series	MADDT1205F		MADDT1207F		MBDDT2210F	
		A4P series	MADDT1205P		MADDT1207P		MBDDT2210P	
	Frame symbol		Frame A				Frame B	
Power supply capacity (kVA)		0.3		0.5		0.9		
Rated output (W)		100		200		400		
Rated torque (N · m)		0.32		0.64		1.3		
Momentary Max. peak torque (N · m)		0.95		1.91		3.82		
Rated current (Arms)		1.0		1.6		2.5		
Max. current (Ao-p)		4.3		6.8		10.5		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2						
	DV0P4283	No limit Note)2						
Rated rotational speed (r/min)		3000						
Max. rotational speed (r/min)		5000						
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	0.090	0.100	0.340	0.350	0.640	0.650	
	With brake	0.120	0.130	0.420	0.430	0.720	0.730	
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less						
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
Resolution per single turn		10000	131072	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage: -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)						
	Ambient humidity	85%RH or lower (free from condensing)						
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude	1000m or lower						
Vibration resistance		49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/ s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	
Mass (kg), ( ) represents holding brake type		0.65 (0.90)	0.75 (1.0)	1.3 (2.0)	1.4 (2.1)	1.8 (2.5)	1.9 (2.6)	

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	0.29
Engaging time (ms)	50
Releasing time (ms) Note)4	15 (100)
Exciting current (DC) (A)	0.29
Releasing voltage	DC1V or more
Exciting voltage	DC 24 V $\pm$ 10%

Permissible load			
During assembly	Radial load P-direction (N)	147	392
	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
During operation	Radial load P-direction (N)	68	245
	Thrust load A-direction (N)	58	98
	Thrust load B-direction (N)	58	98

For motor dimensions, refer to page A4-118, and for the diver, refer to pages A4-22, 48 and 73.

## Model designation MQMA series, 100W to 400W

e.g.)

**M Q M A 0 1 2 S 1 S**

Symbol	Type
MQMA	Low inertia (100W-400W)

Voltage specifications	
Symbol	Specifications
2	200V

Design order 1 : Standard

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, center tap	without	with	without	with*
A	●		●		●	
B	●			●	●	
S		●	●		●	
T		●		●	●	

\*Motor with oil seal is manufactured by order.

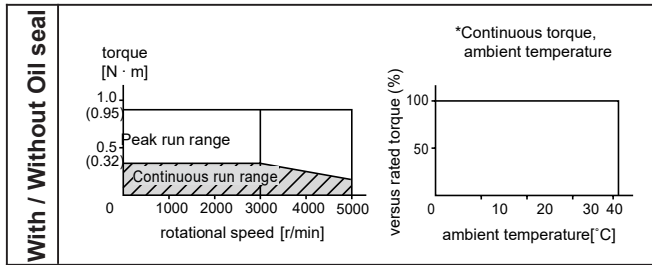
Motor rated output	
Symbol	Rated output
01	100W
02	200W
04	400W

Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

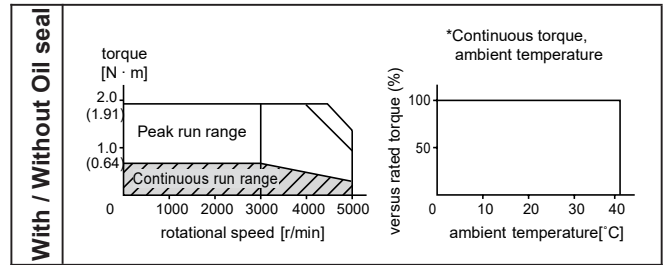
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

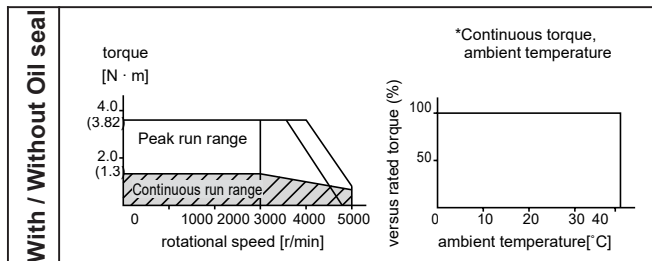
MQMA012



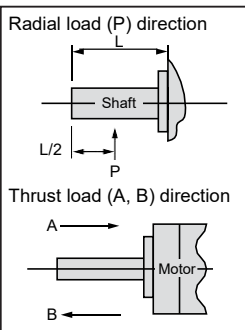
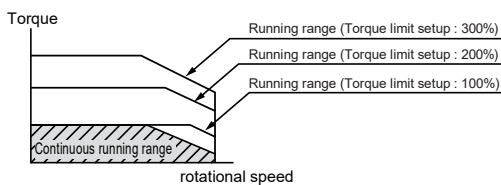
MQMA022



MQMA042



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MSMA

## 1.0kW to 2.0kW Low inertia, Medium Capacity

		AC200V						
Motor model		MSMA	102P□	102S□	152P□	152S□	202P□	202S□
Applicable driver	Model No.	A4 series	MDDDT5540			MEDDT7364		
		A4F series	MDDDT5540F			MEDDT7364F		
		A4P series	MDDDT5540P			MEDDT7364P		
	Frame symbol		Frame D			Frame E		
Power supply capacity (kVA)		1.8		2.3		3.3		
Rated output (W)		1000		1500		2000		
Rated torque (N · m)		3.18		4.77		6.36		
Momentary Max. peak torque (N · m)		9.5		14.3		19.1		
Rated current (Arms)		7.2		9.4		13.0		
Max. current (Ao-p)		30		40		56		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2						
	DV0P4284	No limit Note)2				-		
	DV0P4285 x 2	-				No limit Note)2		
Rated rotational speed (r/min)		3000						
Max. rotational speed (r/min)		5000						
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake	1.69		2.59		3.46		
	With brake	1.88		2.84		3.81		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less						
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
Resolution per single turn		10000	131072	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)						
	Ambient humidity	85%RH or lower (free from condensing)						
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude	1000m or lower						
	Vibration resistance	49m/s <sup>2</sup> or less						
Mass (kg), ( ) represents holding brake type		4.5 (5.1)		5.1 (6.5)		6.5 (7.9)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)				
Static friction torque (N · m)	4.9		7.8	
Engaging time (ms)	50		50	
Releasing time (ms) Note)4	15 (100)		15 (100)	
Exciting current (DC) (A)	0.74		0.81	
Releasing voltage	DC2V or more			
Exciting voltage	DC 24 V ±10%			

Permissible load			
During assembly	Radial load P-direction (N)	686	980
	Thrust load A-direction (N)	392	588
	Thrust load B-direction (N)	490	686
During operation	Radial load P-direction (N)	392	490
	Thrust load A-direction (N)	147	196
	Thrust load B-direction (N)	147	196

For motor dimensions, refer to page A4-119, and for the diver, refer to pages A4-23, 24, 49, 50, 74 and 75.

## Model designation MSMA series, 1.0kW to 2.0kW

e.g.)

**M S M A 1 0 2 S 1 G**

Symbol	Type
MSMA	Low inertia (1.0kW-2.0kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design or ler  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output	
Symbol	Rated output
10	1.0kW
15	1.5kW
20	2.0kW

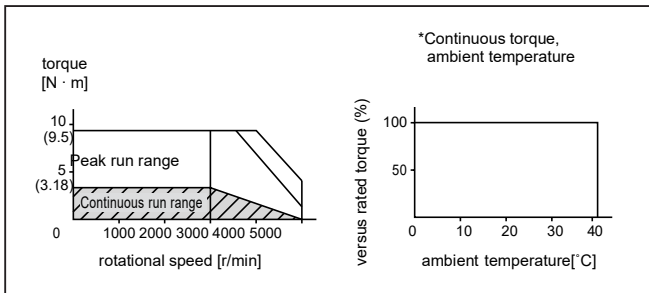
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Products are standard stock items or build to order items. See index (page F31).

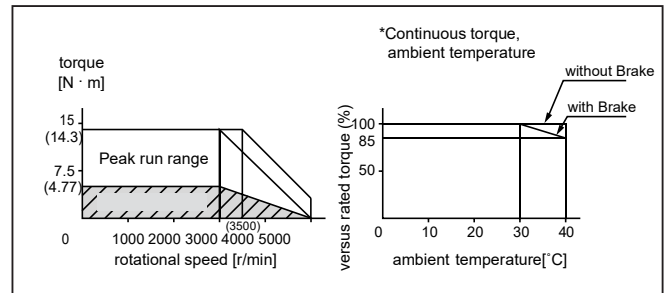
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

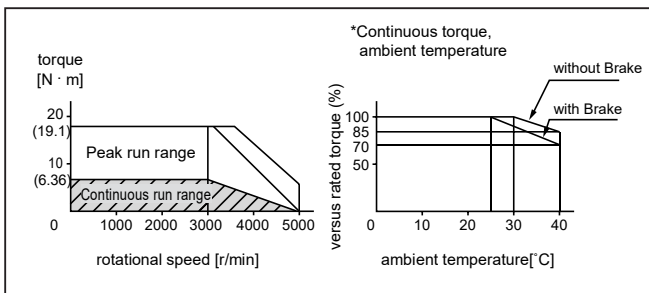
MSMA102



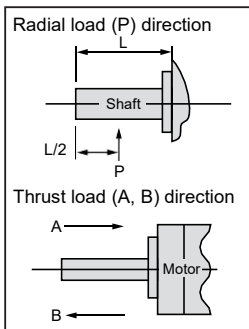
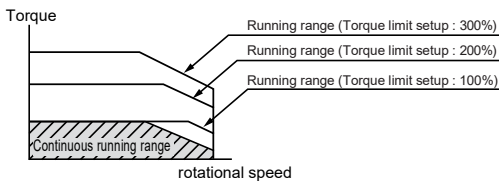
MSMA152



MSMA202



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in regenerative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)



# Motor Specifications and Ratings 200V MSMA

## 3.0kW to 5.0kW Low inertia, Medium Capacity

			AC200V					
Motor model		MSMA	302P1□	302S1□	402P1□	402S1□	502P1□	502S1□
Applicable driver	Model No.	A4 series	MFDDTA390		MFDDTB3A2			
		A4F series	MFDDTA390F		MFDDTB3A2F			
		A4P series	MFDDTA390P		MFDDTB3A2P			
	Frame symbol		Frame F					
Power supply capacity (kVA)			4.5		6.0		7.5	
Rated output (W)			3000		4000		5000	
Rated torque (N · m)			9.54		12.6		15.8	
Momentary Max. peak torque (N · m)			28.6		37.9		47.6	
Rated current (Arms)			18.6		24.7		28.5	
Max. current (Ao-p)			80		105		120	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2					326	
	DV0P4285 x 2	No limit Note)2						
Rated rotational speed (r/min)			3000					
Max. rotational speed (r/min)			5000		4500			
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake	6.77		12.7		17.8		
	With brake	7.45		14.1		19.7		
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less					
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
Resolution per single turn			10000	131072	10000	131072	10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)					
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)					
	Ambient humidity		85%RH or lower (free from condensing)					
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude		1000m or lower					
	Vibration resistance		49m/s <sup>2</sup> or less					
Mass (kg), ( ) represents holding brake type			9.3 (11.0)		12.9 (14.8)		17.3 (19.2)	

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
Static friction torque (N · m)		11.8	16.1
Engaging time (ms)		80	110
Releasing time (ms) Note)4		15 (100)	50 (130)
Exciting current (DC) (A)		0.81	0.90
Releasing voltage		DC2V or more	
Exciting voltage		DC 24 V ±10%	

Permissible load			
During assembly	Radial load P-direction (N)	980	
	Thrust load A-direction (N)	588	
	Thrust load B-direction (N)	686	
During operation	Radial load P-direction (N)	490	784
	Thrust load A-direction (N)	196	343
	Thrust load B-direction (N)	196	343

For motor dimensions, refer to page A4-120, and for the diver, refer to pages A4-24, 50 and 75.

## Model designation MSMA series, 3.0kW to 5.0kW

e.g.)

**M S M A 3 0 2 S 1 G**

Symbol	Type
MSMA	Low inertia (3.0kW-5.0kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design or ler  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output	
Symbol	Rated output
30	3.0kW
40	4.0kW
50	5.0kW

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

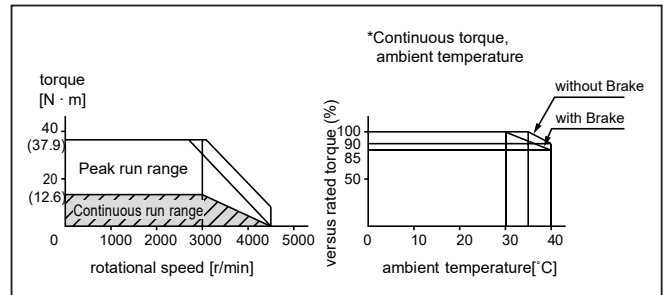
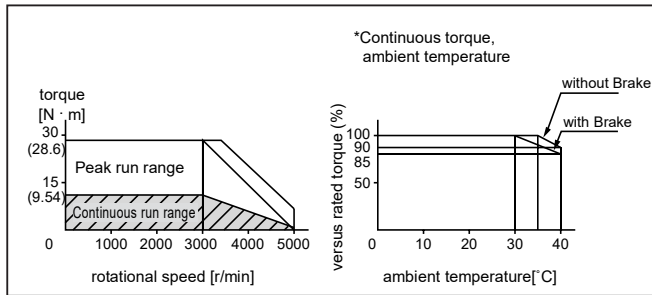
Products are standard stock items or build to order items. See index (page F31).

## Torque characteristics at AC200V of power voltage

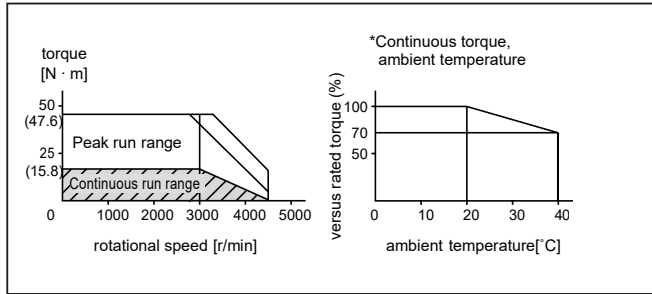
(Dotted line represents the torque at 10% less supply voltage.)

MSMA302

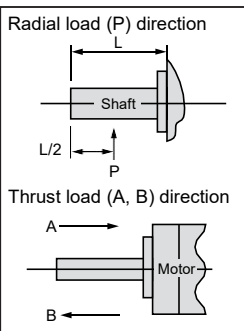
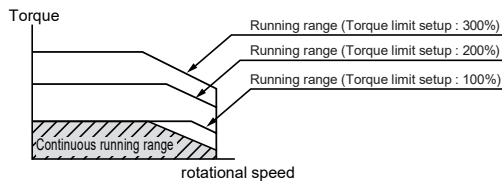
MSMA402



MSMA502



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MDMA

## 1.0kW to 1.5kW Low inertia, Medium Capacity

			AC200V			
Motor model		MDMA	102P1□	102S1□	152P1□	152S1□
Applicable driver	Model No.	A4 series	MDDDT3530		MDDDT5540	
		A4F series	MDDDT3530F		MDDDT5540F	
		A4P series	MDDDT3530P		MDDDT5540P	
		Frame symbol	Frame D			
Power supply capacity (kVA)			1.8		2.3	
Rated output (W)			1000		1500	
Rated torque (N · m)			4.8		7.15	
Momentary Max. peak torque (N · m)			14.4		21.5	
Rated current (Arms)			5.6		9.4	
Max. current (Ao-p)			24		40	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2			
	DV0P4284		No limit Note)2			
Rated rotational speed (r/min)			2000			
Max. rotational speed (r/min)			3000			
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		6.17		11.2	
	With brake		6.79		12.3	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
Resolution per single turn			10000	131072	10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)			
	Ambient humidity		85%RH or lower (free from condensing)			
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude		1000m or lower			
	Vibration resistance		49m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			6.8 (8.7)		8.5 (10.1)	

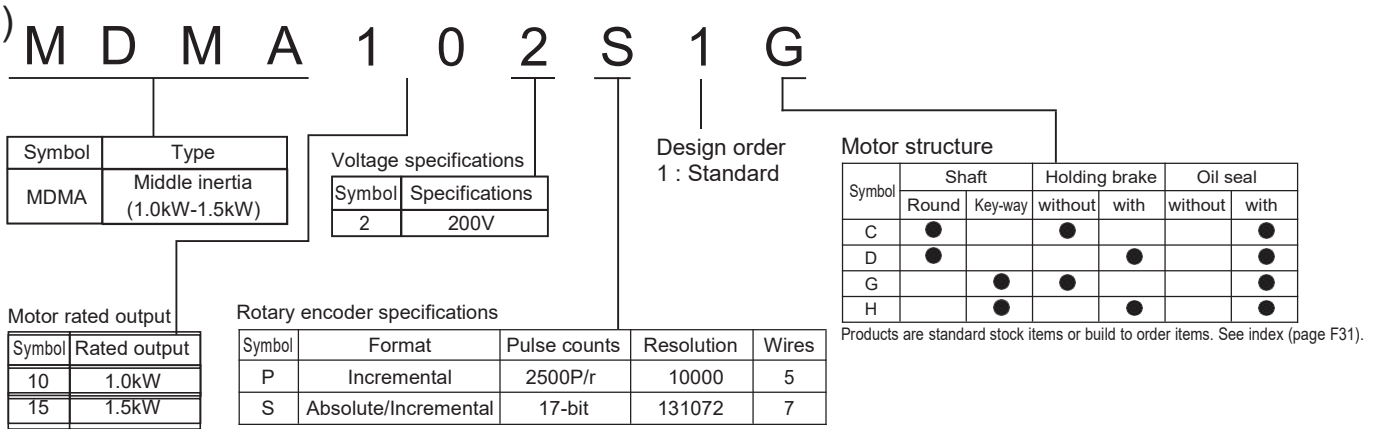
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
Static friction torque (N · m)		4.9	13.7
Engaging time (ms)		80	100
Releasing time (ms) Note)4		70 (200)	50 (130)
Exciting current (DC) (A)		0.59	0.79
Releasing voltage		DC2V or more	
Exciting voltage		DC 24 V ±10%	

Permissible load		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A-direction (N)	196
	Thrust load B-direction (N)	196

For motor dimensions, refer to page A4-121, and for the diver, refer to pages A4-23, 49 and 74.

## Model designation MDMA series, 1.0kW to 1.5kW

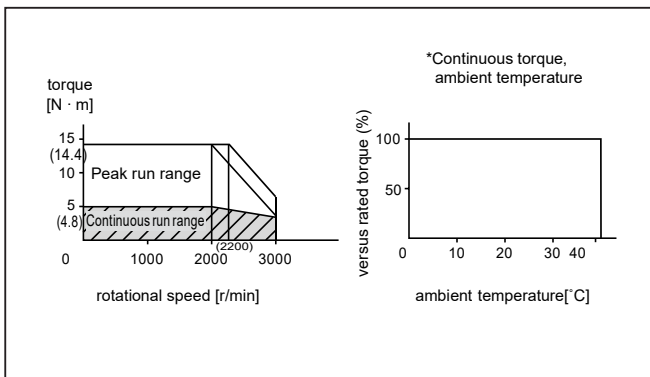
e.g.)



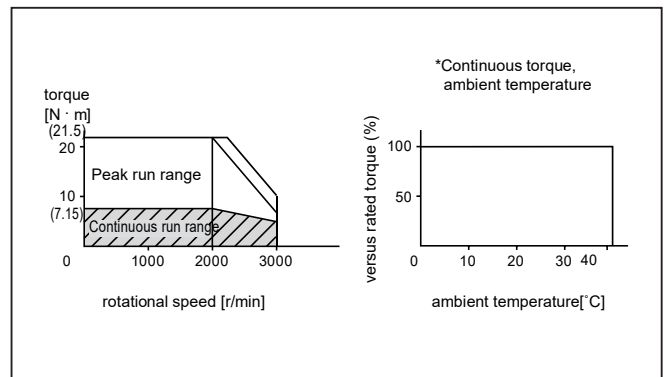
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

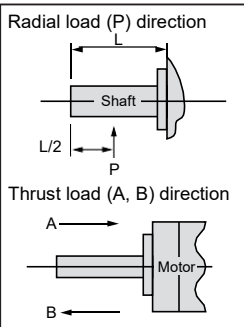
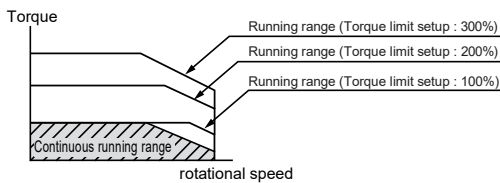
MDMA102



MDMA152



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).
- If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Shizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MDMA

## 2.0kW to 3.0kW Middle inertia, Medium Capacity

			AC200V			
Motor model		MDMA	202P1□	202S1□	302P1□	302S1□
Applicable driver	Model No.	A4 series	MEDDT7364		MFDDTA390	
		A4F series	MEDDT7364F		MFDDTA390F	
		A4P series	MEDDT7364P		MFDDTA390P	
	Frame symbol		Frame E		Frame F	
Power supply capacity (kVA)			3.3		4.5	
Rated output (W)			2000		3000	
Rated torque (N · m)			9.54		14.3	
Momentary Max. peak torque (N · m)			28.5		42.9	
Rated current (Arms)			12.3		17.8	
Max. current (Ao-p)			52		76	
Regenerative brake frequency (times/min) Note)1	Without option		No limit		Note)2	
	DV0P4285 x 2		No limit		Note)2	
Rated rotational speed (r/min)			2000			
Max. rotational speed (r/min)			3000			
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		15.2		22.3	
	With brake		16.7		24.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
			Resolution per single turn	10000	131072	10000
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)			
	Ambient humidity		85%RH or lower (free from condensing)			
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude		1000m or lower			
	Vibration resistance		49m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			10.6 (12.5)		14.6 (16.5)	

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
Static friction torque (N · m)		13.7	16.1
Engaging time (ms)		100	110
Releasing time (ms) Note)4		50 (130)	50 (130)
Exciting current (DC) (A)		0.79	0.90
Releasing voltage		DC2V or more	
Exciting voltage		DC 24 V ±10%	

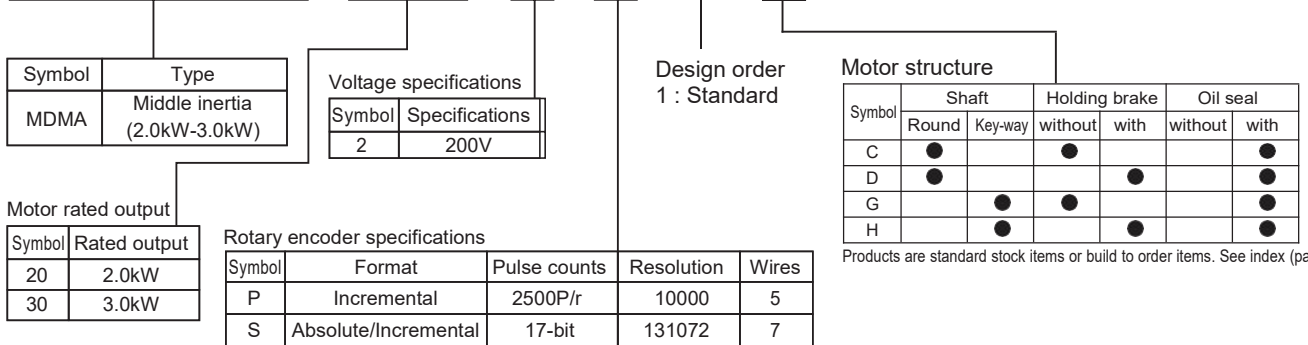
Permissible load			
During assembly	Radial load P-direction (N)	980	980
	Thrust load A-direction (N)	588	588
	Thrust load B-direction (N)	686	686
During operation	Radial load P-direction (N)	490	784
	Thrust load A-direction (N)	196	343
	Thrust load B-direction (N)	196	343

For motor dimensions, refer to page A4-122, and for the diver, refer to pages A4-24, 50 and 75.

## Model designation MDMA series, 2.0kW to 3.0kW

e.g.)

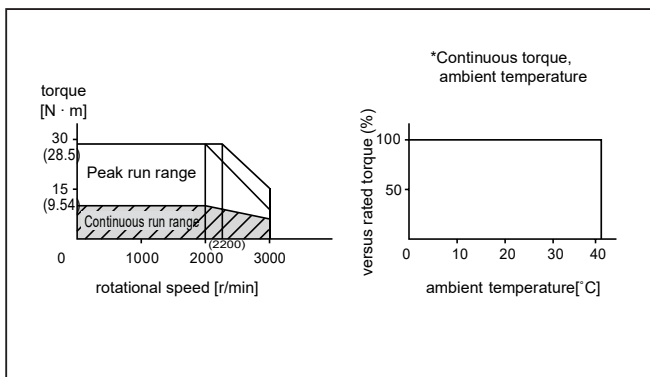
**M D M A 2 0 2 S 1 G**



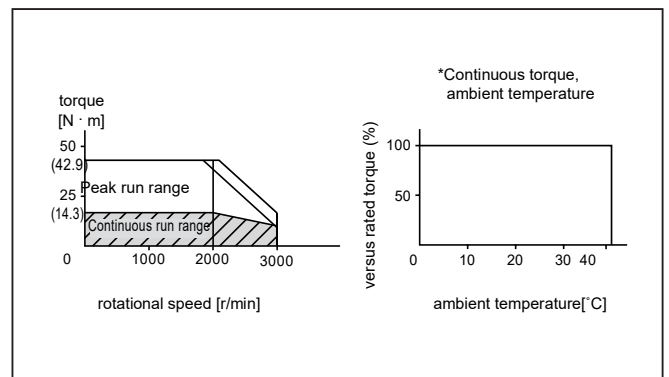
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

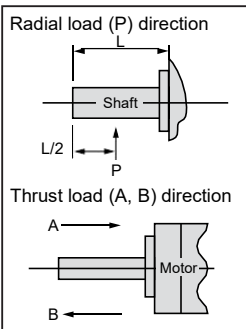
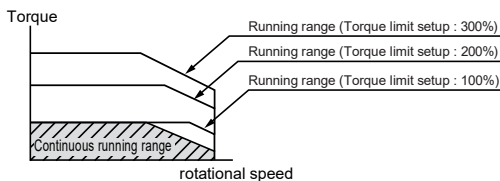
MDMA202



MDMA302



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MDMA

## 4.0kW to 7.5kW Middle inertia, Medium Capacity

		AC200V							
Motor model		MDMA	402P1□	402S1□	502P1□	502S1□	752P1□	752S1□	
Applicable driver	Model No.	A4 series	MFDDTB3A2			MGDDTC3B4			
		A4F series	MFDDTB3A2F			MGDDTC3B4F			
		A4P series	MFDDTB3A2P			—			
	Frame symbol	Frame F			Frame G				
Power supply capacity (kVA)			6.0		7.5		11		
Rated output (W)			4000		5000		7500		
Rated torque (N · m)			18.8		23.8		48		
Momentary Max. peak torque (N · m)			56.4		71.4		119		
Rated current (Arms)			23.4		28.0		46.6		
Max. current (Ao-p)			100.0		120.0		165.0		
Regenerative brake frequency (times/min) Note)1	Without option		250		94		No limit	Note)2	
	DV0P4285 x 2		No limit		Note)2		—		
	DV0P4285 x 4		—				No limit	Note)2	
Rated rotational speed (r/min)			2000				1500		
Max. rotational speed (r/min)			3000				3000		
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		42.5		60.7		99.0		
	With brake		46.8		66.7		105.0		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less						
Rotary encoder specifications			2500P/r Incremental		17-bit Absolute/ Incremental		2500P/r Incremental		17-bit Absolute/ Incremental
	Resolution per single turn		10000		131072		10000		131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)						
	Ambient humidity		85%RH or lower (free from condensing)						
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude		1000m or lower						
	Vibration resistance		49m/s <sup>2</sup> or less			24m/ s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			18.8 (21.3)		25.0 (28.5)		41.0 (45.0)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)				
Static friction torque (N · m)		21.5	24.5	58.8
Engaging time (ms)		90	80	150
Releasing time (ms) Note)4		35 (150)	25 (200)	50 (130)
Exciting current (DC) (A)		1.10	1.30	1.40
Releasing voltage		DC2V or more		
Exciting voltage		DC 24 V ±10%		

Permissible load				
During assembly	Radial load P-direction (N)	1666		2058
	Thrust load A-direction (N)	784		980
	Thrust load B-direction (N)	980		1176
During operation	Radial load P-direction (N)	784		1176
	Thrust load A-direction (N)	343		490
	Thrust load B-direction (N)	343		490

For motor dimensions, refer to page A4-123, and for the diver, refer to pages A4-24, 25, 50, 51 and 75.

## Model designation MDMA series, 4.0kW to 7.5kW

e.g.)

M D M A 4 0 2 S 1 G

Symbol	Type
MDMA	Middle inertia (4.0kW-7.5kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output	
Symbol	Rated output
40	4.0kW
50	5.0kW
75	7.5kW

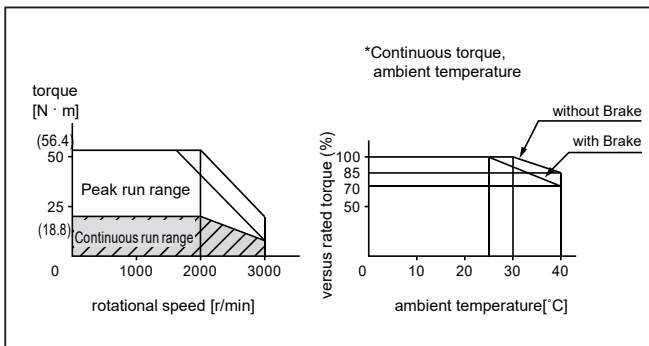
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Products are standard stock items or build to order items. See index (page F31).

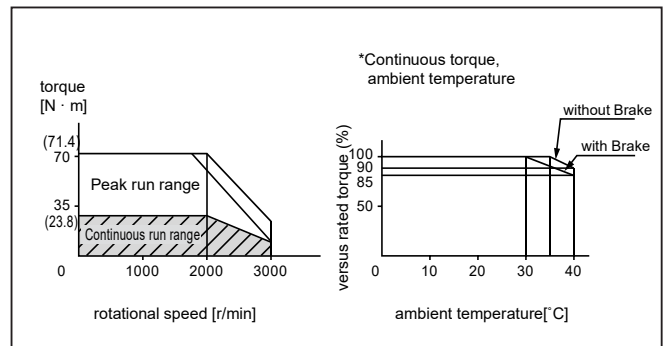
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

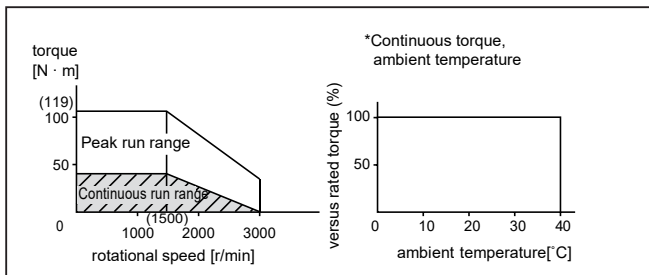
MDMA402



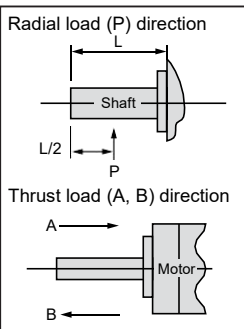
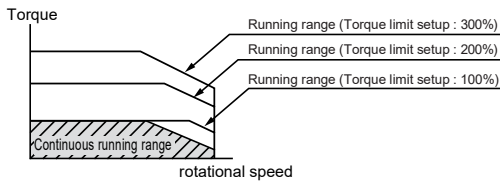
MDMA502



MDMA752



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).
  - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)



# Motor Specifications and Ratings 200V MGMA

## 900W to 2.0kW Middle inertia, Medium Capacity

			AC200V			
Motor model		MGMA	092P1□	092S1□	202P1□	202S1□
Applicable driver	Model No.	A4 series	MDDDT5540		MFDDTA390	
		A4F series	MDDDT5540F		MFDDTA390F	
		A4P series	MDDDT5540P		MFDDTA390P	
		Frame symbol	Frame D		Frame F	
Power supply capacity (kVA)			1.8		3.8	
Rated output (W)			900		2000	
Rated torque (N · m)			8.62		19.1	
Momentary Max. peak torque (N · m)			19.3		44	
Rated current (Arms)			7.6		18.5	
Max. current (Ao-p)			24.0		60.0	
Regenerative brake frequency (times/min) Note)1	Without option		No limit		Note)2	
	DV0P4284		No limit		Note)2	
	DV0P4285 x 2		————		No limit Note)2	
Rated rotational speed (r/min)			1000			
Max. rotational speed (r/min)			2000			
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		11.2		35.5	
	With brake		12.3		41.4	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
Resolution per single turn			10000	131072	10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)			
	Ambient humidity		85%RH or lower (free from condensing)			
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude		1000m or lower			
	Vibration resistance		49m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			8.5 (10.0)		17.5 (21.0)	

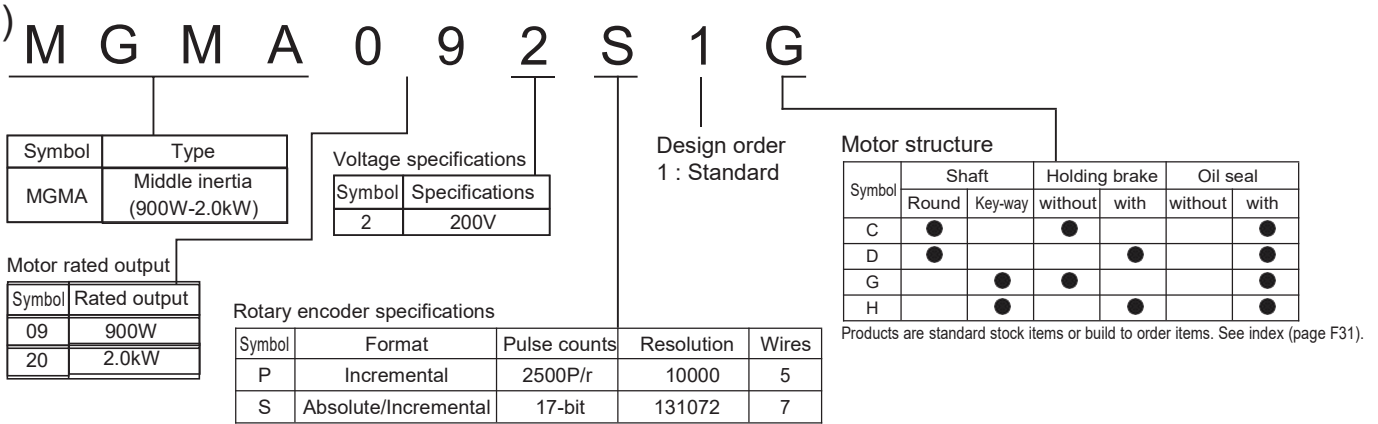
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)				
Static friction torque (N · m)	13.7		24.5	
Engaging time (ms)	100		80	
Releasing time (ms) Note)4	50 (130)		25 (200)	
Exciting current (DC) (A)	0.79		1.30	
Releasing voltage	DC2V or more			
Exciting voltage	DC 24 V ±10%			

Permissible load			
During assembly	Radial load P-direction (N)	980	1666
	Thrust load A-direction (N)	588	784
	Thrust load B-direction (N)	686	980
During operation	Radial load P-direction (N)	686	1176
	Thrust load A-direction (N)	196	490
	Thrust load B-direction (N)	196	490

For motor dimensions, refer to page A4-124, and for the diver, refer to pages A4-23, 24, 49, 50, 74 and 75.

## Model designation MGMA series, 900W to 2.0kW

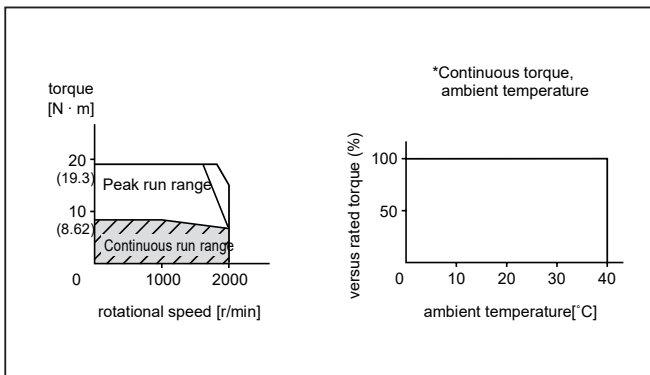
e.g.)



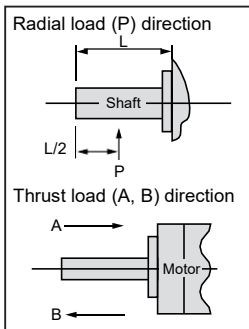
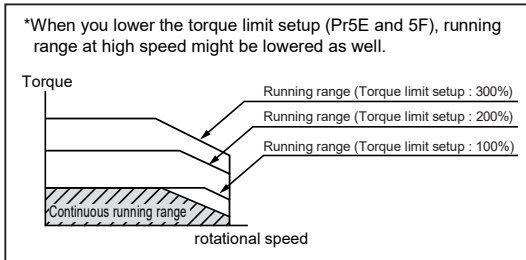
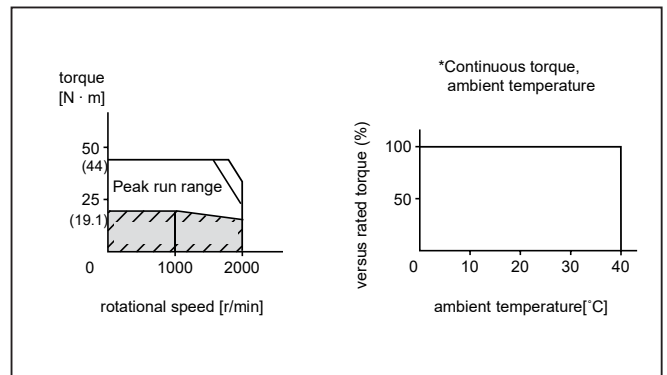
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

MGMA092



MGMA202



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).
- If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MGMA

## 3.0kW to 6.0kW Middle inertia, Medium Capacity

		AC200V						
Motor model		MGMA	302P1□	302S1□	452P1□	452S1□	602P1□	602S1□
Applicable driver	Model No.	A4 series	MFDDTB3A2			MGDDTC3B4		
		A4F series	MFDDTB3A2F			MGDDTC3B4F		
		A4P series	MFDDTB3A2 P			—		
	Frame symbol	Frame F			Frame G			
Power supply capacity (kVA)		4.5		7.5		11		
Rated output (W)		3000		4500		6000		
Rated torque (N · m)		28.4		42.9		57.2		
Momentary Max. peak torque (N · m)		63.7		107		137		
Rated current (Arms)		24		33		47.0		
Max. current (Ao-p)		80.0		118		170.0		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2						
	DV0P4285 x 2	No limit Note)2				—		
	DV0P4285 x 4	—				No limit Note)2		
Rated rotational speed (r/min)		1000						
Max. rotational speed (r/min)		2000						
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake	55.7		80.9		99		
	With brake	61.7		86.9		108		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less						
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
Resolution per single turn		10000	131072	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)						
	Ambient humidity	85%RH or lower (free from condensing)						
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude	1000m or lower						
	Vibration resistance	49m/s <sup>2</sup> or less				24m/s <sup>2</sup> or less		
Mass (kg), ( ) represents holding brake type		25.0 (28.5)		34.0 (39.5)		41.0 (45.0)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	58.8
Engaging time (ms)	150
Releasing time (ms) Note)4	50 (130)
Exciting current (DC) (A)	1.40
Releasing voltage	DC2V or more
Exciting voltage	DC 24 V ±10%

Permissible load		
During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1470
	Thrust load A-direction (N)	490
	Thrust load B-direction (N)	490

For motor dimensions, refer to page A4-125, 128 and for the diver, refer to pages A4-24, 25, 50, 51 and 75.

## Model designation MGMA series, 3.0kW to 6.0kW

e.g.)

M G M A 3 0 2 S 1 G

Symbol	Type
MGMA	Middle inertia (3.0kW-6.0kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order 1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output	
Symbol	Rated output
30	3.0kW
45	4.5kW
60	6.0kW

Rotary encoder specifications

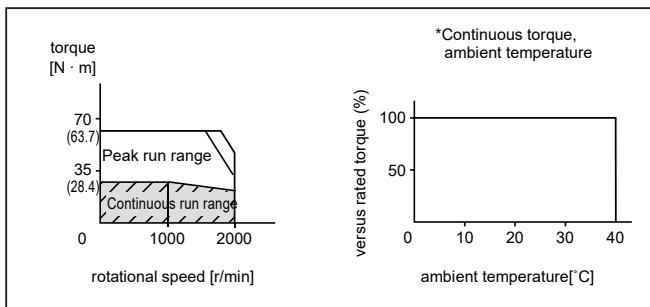
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Products are standard stock items or build to order items. See index (page F31).

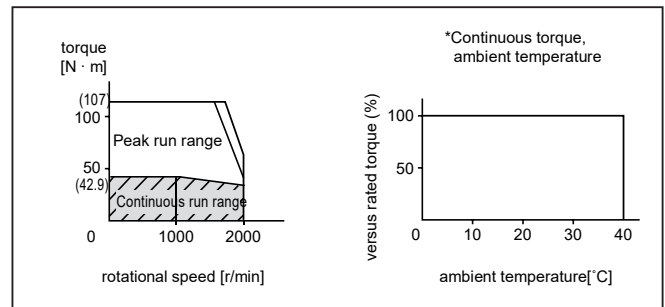
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

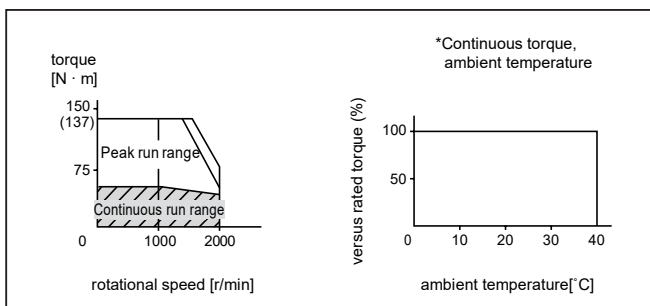
MGMA302



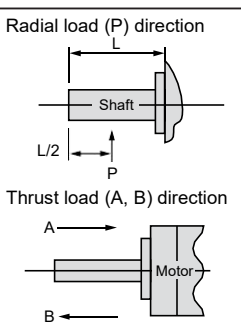
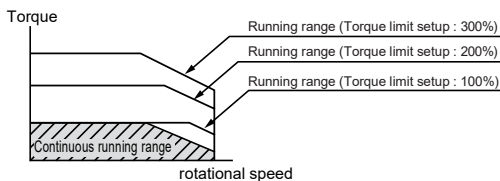
MGMA452



MGMA602



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.  
 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.  
 4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
 ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MFMA

## 400W to 1.5kW Middle inertia, Medium Capacity

		AC200V				
Motor model		MFMA	042P1□	042S1□	152P1□	152S1□
Applicable driver	Model No.	A4 series	MCDDT3520		MDDDT5540	
		A4F series	MCDDT3520F		MDDDT5540F	
	Frame symbol	A4P series	MCDDT3520P		MDDDT5540P	
			Frame C		Frame D	
Power supply capacity (kVA)			0.9		2.3	
Rated output (W)			400		1500	
Rated torque (N · m)			1.9		7.15	
Momentary Max. peak torque (N · m)			5.3		21.5	
Rated current (Arms)			2.8		9.5	
Max. current (Ao-p)			12.0		40.0	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2		100	
	DV0P4283		No limit Note)2		—	
	DV0P4284		—		No limit Note)2	
Rated rotational speed (r/min)			2000			
Max. rotational speed (r/min)			3000			
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake		2.45		20.1	
	With brake		2.7		21.5	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
	Resolution per single turn		10000	131072	10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)			
	Ambient humidity		85%RH or lower (free from condensing)			
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude		1000m or lower			
	Vibration resistance		49m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			4.7 (6.7)		11.0 (14.0)	

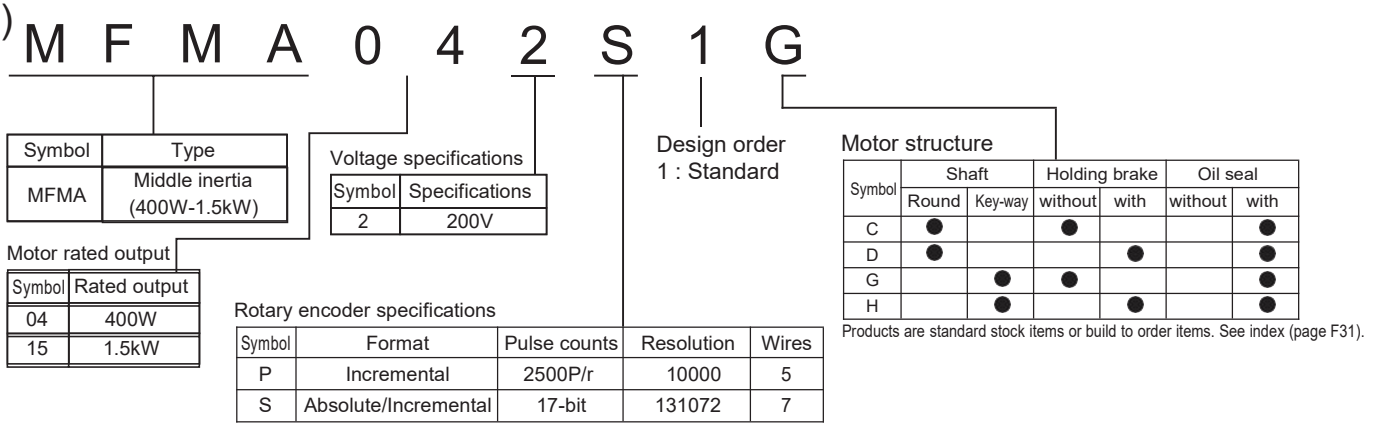
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)		
Static friction torque (N · m)		4.9      7.8
Engaging time (ms)		80      80
Releasing time (ms) Note)4		70      35
Exciting current (DC) (A)		0.59      0.83
Releasing voltage		DC2V or more
Exciting voltage		DC 24 V $\pm$ 10%

Permissible load		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	392      490
	Thrust load A-direction (N)	147      196
	Thrust load B-direction (N)	147      196

For motor dimensions, refer to page A4-127, and for the diver, refer to pages A4-23, 49 and 74.

## Model designation MFMA series, 400W to 1.5kW

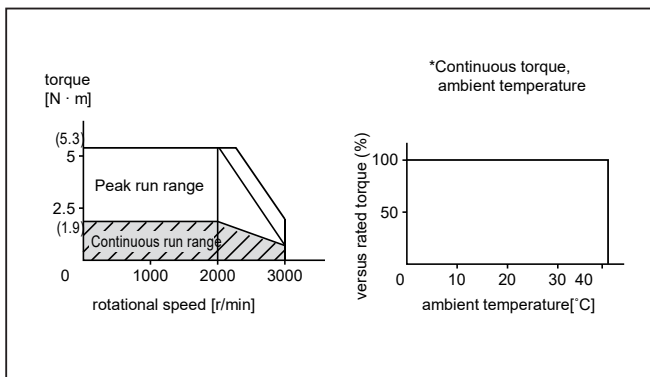
e.g.)



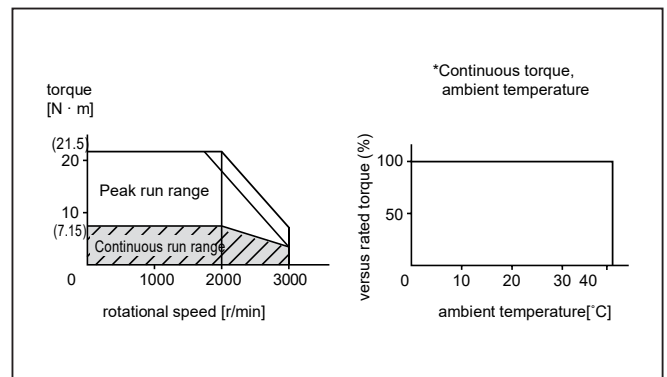
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

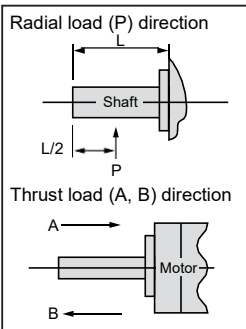
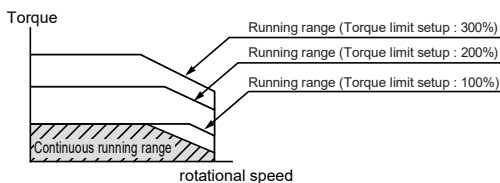
MFMA042 □ □



MFMA152 □ □



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MFMA

## 2.5kW to 4.5kW Middle inertia, Medium Capacity

			AC200V			
Motor model		MFMA	252P1□	252S1□	452P1□	452S1□
Applicable driver	Model No.	A4 series	MEDDT7364		MFDDTB3A2	
		A4F series	MEDDT7364F		MFDDTB3A2F	
		A4P series	MEDDT7364 P		MFDDTB3A2P	
	Frame symbol	Frame E		Frame F		
Power supply capacity (kVA)			3.8		6.8	
Rated output (W)			2500		4500	
Rated torque (N · m)			11.8		21.5	
Momentary Max. peak torque (N · m)			30.4		54.9	
Rated current (Arms)			13.4		23.5	
Max. current (Ao-p)			57.0		100.0	
Regenerative brake frequency (times/min) Note)1	Without option		75		67	
	DV0P4285 x 2		No limit	Note)2	375	
Rated rotational speed (r/min)			2000			
Max. rotational speed (r/min)			3000			
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		41.3		72.3	
	With brake		45.3		78.5	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
			Resolution per single turn	10000	131072	10000
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)			
	Ambient humidity		85%RH or lower (free from condensing)			
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude		1000m or lower			
	Vibration resistance		49m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type			14.8 (17.5)		19.9 (24.3)	

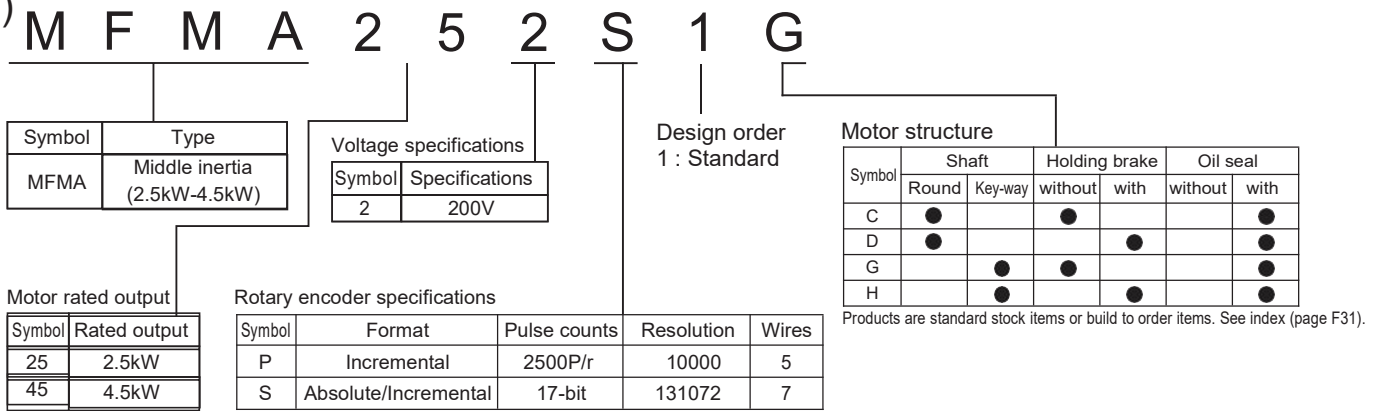
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)		
Static friction torque (N · m)	21.6	
Engaging time (ms)	150	
Releasing time (ms) Note)4	100 (450)	
Exciting current (DC) (A)	0.75	
Releasing voltage	DC2V or more	
Exciting voltage	DC 24 V ±10%	

Permissible load		
During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	294

For motor dimensions, refer to page A4-128, and for the diver, refer to pages A4-24, 50 and 75.

## Model designation MFMA series, 2.5kW to 4.5kW

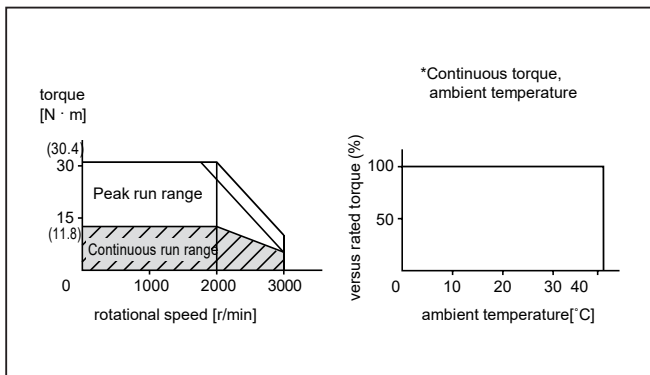
e.g.)



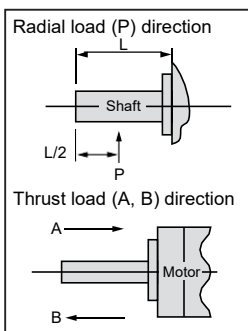
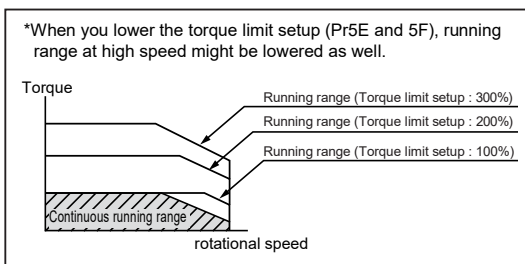
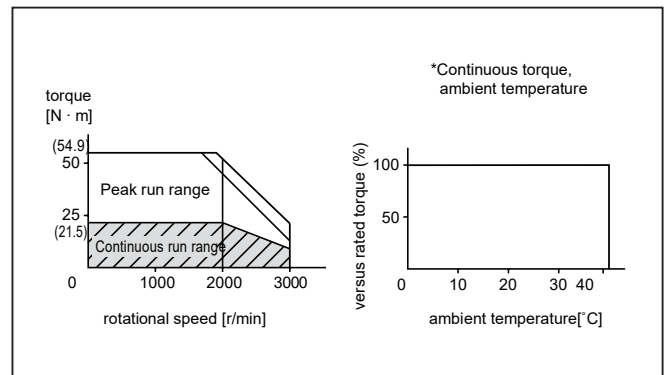
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

MFMA252 □ □



MFMA452 □ □



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).
  - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)



# Motor Specifications and Ratings 200V MHMA

## 500W to 1.5kW High inertia, Medium Capacity

		AC200V						
Motor model		MHMA	052P1□	052S1□	102P1□	102S1□	152P1□	152S1□
Applicable driver	Model No.	A4 series	MCDDT3520		MDDDT3530		MDDDT5540	
		A4F series	MCDDT3520F		MDDDT3530F		MDDDT5540F	
		A4P series	MCDDT3520P		MDDDT3530P		MDDDT5540P	
	Frame symbol	Frame C			Frame D			
Power supply capacity (kVA)		1.1		1.8		2.3		
Rated output (W)		500		1000		1500		
Rated torque (N · m)		2.38		4.8		7.15		
Momentary Max. peak torque (N · m)		6.0		14.4		21.5		
Rated current (Arms)		3.2		5.6		9.4		
Max. current (Ao-p)		11.5		24.0		40.0		
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2	33		25		
	DV0P4283	No limit	Note)2	—————				
	DV0P4284	—————		No limit Note)2				
Rated rotational speed (r/min)		2000						
Max. rotational speed (r/min)		3000						
Moment of inertia of rotor ( $\times 10^{-4}$ kg · m <sup>2</sup> )	Without brake	14.0		26.0		42.9		
	With brake	15.2		27.2		44.1		
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less						
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resolution per single turn	10000	131072	10000	131072	10000	131072	
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)						
Environment	Ambient temperature	0 to 40 °C (free from freezing), Storage : -20 to +65 °C (Max. temperature guarantee 80 °C for 72 hours <Nomal temperature>)						
	Ambient humidity	85%RH or lower (free from condensing)						
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude	1000m or lower						
	Vibration resistance	49m/s <sup>2</sup> or less						
Mass (kg), ( ) represents holding brake type		5.3 (6.9)		8.9 (9.5)		10.0 (11.6)		

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
Static friction torque (N · m)	4.9		13.7
Engaging time (ms)	80		100
Releasing time (ms) Note)4	70 (200)		50 (130)
Exciting current (DC) (A)	0.59		0.79
Releasing voltage	DC2V or more		
Exciting voltage	DC 24 V $\pm$ 10%		

Permissible load			
During assembly	Radial load P-direction (N)	980	
	Thrust load A-direction (N)	588	
	Thrust load B-direction (N)	686	
During operation	Radial load P-direction (N)	490	
	Thrust load A-direction (N)	196	
	Thrust load B-direction (N)	196	

For motor dimensions, refer to page A4-129, and for the diver, refer to pages A4-23, 49 and 74.

## Model designation MHMA series, 500W to 1.5kW

e.g.)

M H M A 0 5 2 S 1 G

Symbol	Type
MHMA	High inertia (500W-1.5kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order 1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Products are standard stock items or build to order items. See index (page F31).

Motor rated output	
Symbol	Rated output
05	0.5kW
10	1.0kW
15	1.5kW

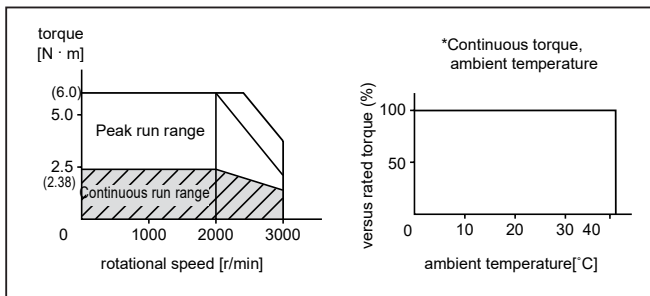
Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

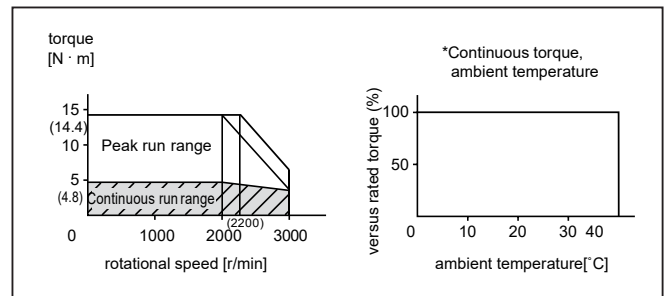
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

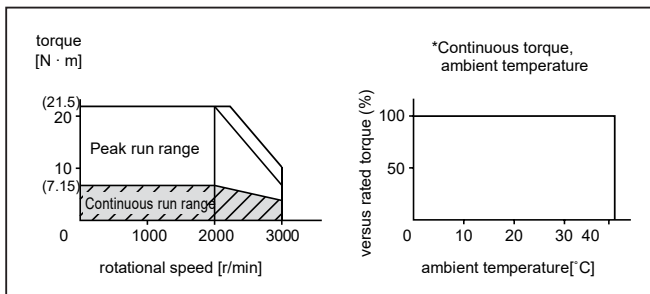
MHMA052



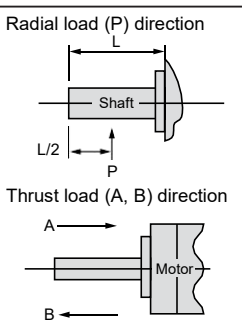
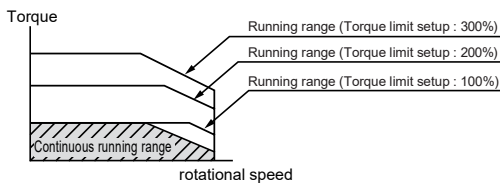
MHMA102



MHMA152



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings **200V** MHMA

## 2.0kW to 5.0kW High inertia, Medium Capacity

		AC200V								
Motor model		MHMA	202P□	202S□	302P□	302S□	402P□	402S□	502P□	502S□
Applicable driver	Model No.	A4 series	MEDDT7364		MFDDTA390		MFDDTB3A2			
		A4F series	MEDDT7364F		MFDDTA390F		MFDDTB3A2F			
		A4P series	MEDDT7364 P		MFDDTA390P		MFDDTB3A2 P			
Frame symbol		Frame E			Frame F					
Power supply capacity (kVA)		3.3			4.5		6.0		7.5	
Rated output (W)		2000			3000		4000		5000	
Rated torque (N · m)		9.54			14.3		18.8		23.8	
Momentary Max. peak torque (N · m)		28.5			42.9		56.4		71.4	
Rated current (Arms)		12.3			17.8		23.4		28.0	
Max. current (Ao-p)		52.0			76.0		100.0		120.0	
Regenerative brake frequency (times/min) Note)1	Without option	38			43		32		20	
	DV0P4285	100			—————					
	DV0P4285 x 2	—————			No limit Note)2		200		150	
Rated rotational speed (r/min)		2000								
Max. rotational speed (r/min)		3000								
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake	62.0			94.1		120.0		170.0	
	With brake	67.9			100.0		126.0		176.0	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less								
Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	17-bit Absolute/ Incremental
Resolution per single turn		10000	131072	10000	131072	10000	131072	10000	131072	131072
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)								
Environment	Ambient temperature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)								
	Ambient humidity	85%RH or lower (free from condensing)								
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust								
	Altitude	1000m or lower								
	Vibration resistance	49m/s <sup>2</sup> or less								
Mass (kg), ( ) represents holding brake type		16.0 (19.5)			18.2 (21.7)		22.0 (25.5)		26.7 (30.2)	

<b>Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)</b>	
Static friction torque (N · m)	24.5
Engaging time (ms)	80
Releasing time (ms) Note)4	25 (200)
Exciting current (DC) (A)	1.30
Releasing voltage	DC2V or more
Exciting voltage	DC 24 V ±10%

Permissible load		
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A-direction (N)	343
	Thrust load B-direction (N)	343

For motor dimensions, refer to page A4-130, and for the diver, refer to pages A4-24, 50 and 75.

## Model designation MHMA series, 2.0kW to 5.0kW

e.g.)

M H M A 2 0 2 S 1 G

Symbol	Type
MHMA	High inertia (2.0kW-5.0kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order  
1: Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output	
Symbol	Rated output
20	2.0kW
30	3.0kW
40	4.0kW
50	5.0kW

Rotary encoder specifications

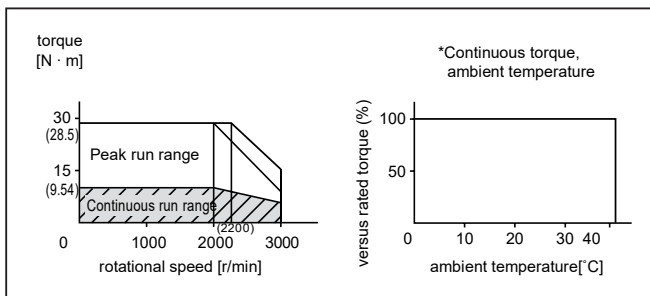
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Products are standard stock items or build to order items. See index (page F31).

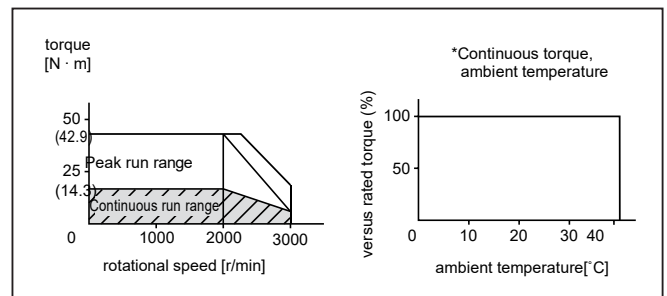
## Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

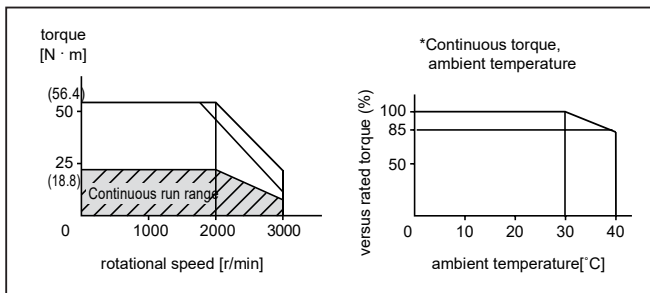
MHMA202



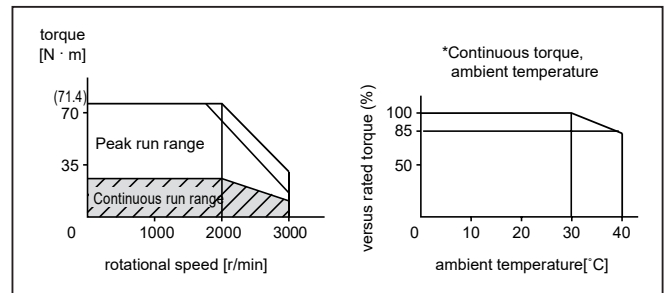
MHMA302



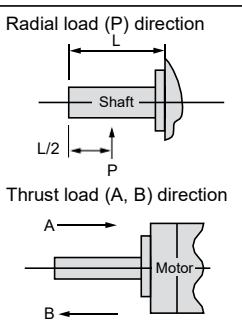
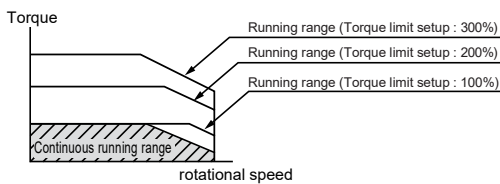
MHMA402



MHMA502



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent). ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MHMA

## 7.5kW High inertia, Large Capacity

			AC200V	
Motor model		MHMA	752P□	752S□
Applicable driver	Model No.	A4 series	MGDDTC3B4	
		A4F series	MGDDTC3B4F	
		A4P series	—	
	Frame symbol		Frame G	
Power supply capacity (kVA)			11	
Rated output (W)			7500	
Rated torque (N · m)			48	
Momentary Max. peak torque (N · m)			119	
Rated current (Arms)			46.6	
Max. current (Ao-p)			165.0	
Regenerative brake frequency (times/min) Note)1	Without option		0	
	DV0P4285 x 4		No limit	Note)2
Rated rotational speed (r/min)			1500	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		282	
	With brake		288	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental
Resolution per single turn			10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)	
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max. temperature guarantee 80°C for 72 hours <Nomal temperature>)	
	Ambient humidity		85%RH or lower (free from condensing)	
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust	
	Altitude		1000m or lower	
	Vibration resistance		24m/s <sup>2</sup> or less	
Mass (kg), ( ) represents holding brake type			43.5 (47.5)	

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)	
Static friction torque (N · m)	58.8
Engaging time (ms)	150
Releasing time (ms) Note)4	50 (130)
Exciting current (DC) (A)	1.40
Releasing voltage	DC2V or more
Exciting voltage	DC 24 V ±10%

Permissible load		
During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A-direction (N)	490
	Thrust load B-direction (N)	490

For motor dimensions, refer to page A4-131, and for the diver, refer to pages A4-25 and 51.

**Model designation MHMA series, 7.5kW**

e.g.)

**M H M A 7 5 2 S 1 G**

Symbol	Type
MHMA	High inertia (7.5kW)

Symbol	Rated output
75	7.5kW

Voltage specifications	
Symbol	Specifications
2	200V

Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Design order 1 : Standard

Motor structure

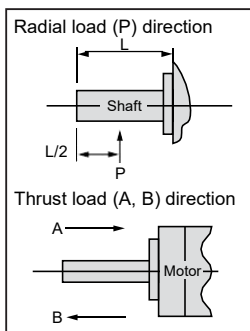
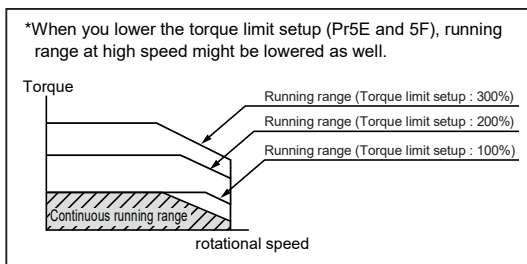
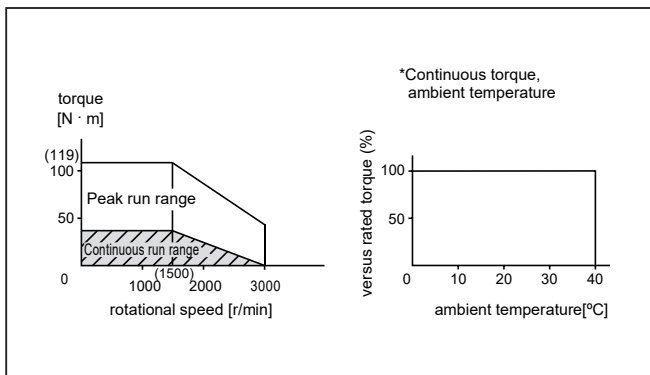
Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Products are standard stock items or build to order items. See index (page F31).

**Torque characteristics at AC200V of power voltage**

(Dotted line represents the torque at 10% less supply voltage.)

MHMA752□ □



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/ratedspeed).
  - Power supply voltage is AC230V (at 200V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in generative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).  
( ) represents the actually measured value using a diode (200V, 1A or equivalent)