

REFERENCE SPECIFICATIONS

M/S

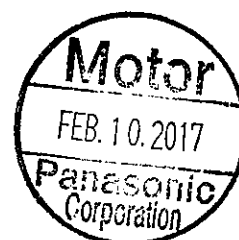
MODEL AC Servo Motor (□60 DC24 V, DC48 V)
MSMD0□□L1□ (23 bit absolute encoder)

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Motor Business Unit, Electromechanical Control Business Division,
Automotive & Industrial Systems Company, Panasonic Corporation

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Checked	Checked	Designed
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REVISIONS

No SX-DSV03163

[illegible]

1. Motor brake specification

Items	Units	Applicable motor		
		MSMD02 MSMD04		
Static friction torque	N·m	1.27 or more		
Rotary part inertia	$10^{-4}\text{kg}\cdot\text{m}^2$	0.018		
Armature pull in time	ms	50 or less		
Armature release time ※1	ms	15 or less		
Release voltage	DC,V	1 or more		
Excitation voltage	DC,V	24±1.2		
Excitation current	DC,A	0.36		
Allowable braking energy ; 1 time each	J	137		
All allowable braking energy	J	44.1×10^3		
Allowable angular acceleration	rad/s ²	30000		

(at 20 °C)

※1 By varistor (TND15G271K made by Nippon Chemi-Con Corporation.)

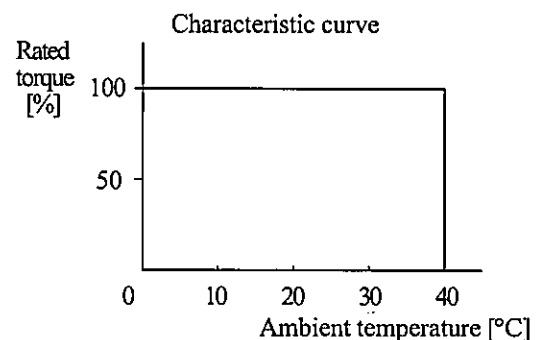
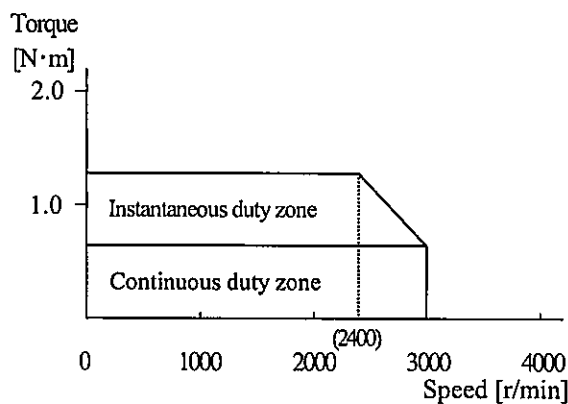
- (1) Rotary part inertia and Excitation current (at DC24 V) are representative characteristic values.
- (2) When the motor was forwarded, the brake's backlash is $\pm 1.0^\circ$ or less.
- (3) Power supply for motor brake must be prepared by user side.
(Either way of connection for polarity would be acceptable)
- (4) The above-mentioned all allowable braking energy shall be braking energy complying with the brake specification (braking energy capable of performing a suction motion in consideration of brake temperature increases).
- (5) The motor life with the repetitions of acceleration and deceleration at the above allowable angular acceleration : 10 million times.
(The number of acceleration-deceleration cycles until brake's backlash changes rapidly)
- (6) The series connection of the protection parts such as fuses is recommended in the case of the use with varistor.
- (7) Since the brake built in the motor is used for maintenance, do not use it as a stopping device (braking) to ensure the safety of the machine.

AC Servo Motor Specification

Motor model		MSMD02CL1□ (Without brake)	MSMD02CL1□ (With brake)	
Rated output	W	200	←	
Rating	%	100	←	
Number of poles		8	←	
Rated speed	r/min	3000	←	
Max. speed	r/min	3000	←	
Rated torque	N·m	0.64	←	
Max. torque	N·m	1.27	←	
Rated current	A(rms)	(9.4)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.14	0.16	
Electrical time constant	ms	(2.2)	←	
Mechanical time constant	ms	0.83	0.95	
Power rate	kW/s	29.0	25.4	
Momentary max. current	A(o-p)	(26.6)	←	
Demagnetization current	A(o-p)	40.0	←	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	2.5 \pm 10 %	←	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	5.3 \pm 10 %	←	
Torque constant	N·m/A(rms)	0.071 \pm 10 %	←	
	N·m/A(o-p)	0.050 \pm 10 %	←	
Phase resistance	Ω	0.10 \pm 7 %	←	
Phase inductance	mH	(0.22)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part : Gray
Mass	kg	0.8	1.3	
Structure		Totally-enclosed self-cooled type	←	Without oil seal
Supply voltage	V _{DC}	24	←	

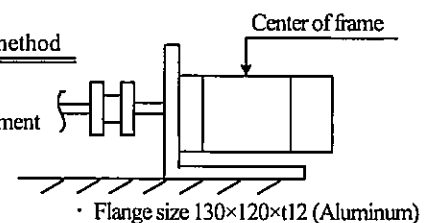
- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 70 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at DC24 V



Test method

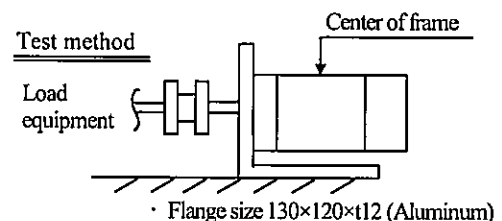
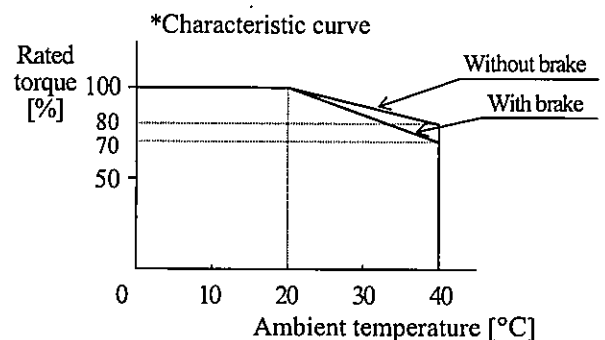
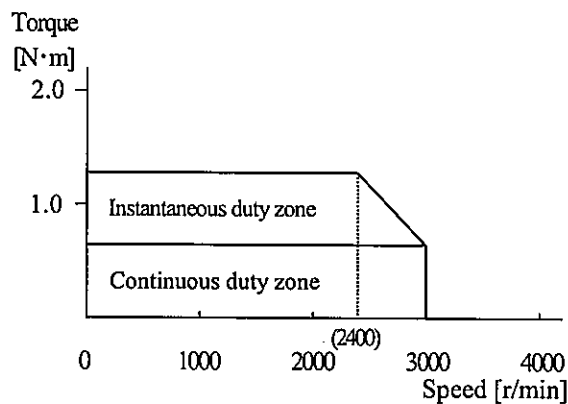
Load equipment



AC Servo Motor Specification

Motor model		MSMD02CL1□ (Without brake)	MSMD02CL1□ (With brake)	
Rated output	W	200	←	
Rating	%	(*100)	←	* refer to the
Number of poles		8	←	characteristic
Rated speed	r/min	3000	←	curve below
Max. speed	r/min	3000	←	
Rated torque	N·m	0.64	←	
Max. torque	N·m	1.27	←	
Rated current	A(rms)	(9.4)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.14	0.16	
Electrical time constant	ms	(2.2)	←	
Mechanical time constant	ms	0.83	0.95	
Power rate	kW/s	29.0	25.4	
Momentary max. current	A(o-p)	(26.6)	←	
Demagnetization current	A(o-p)	40.0	←	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	2.5 \pm 10 %	←	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	5.3 \pm 10 %	←	
Torque constant	N·m/A(rms)	0.071 \pm 10 %	←	
	N·m/A(o-p)	0.050 \pm 10 %	←	
Phase resistance	Ω	0.10 \pm 7 %	←	
Phase inductance	mH	(0.22)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part :Gray
Mass	kg	0.8	1.3	
Structure		Totally-enclosed self-cooled type	←	With oil seal
Supply voltage	V _{DC}	24	←	

- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 70 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC24 V

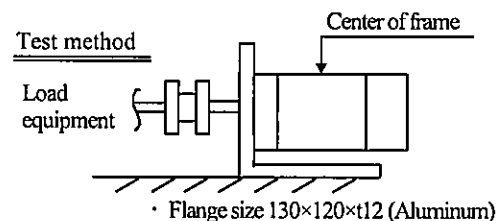
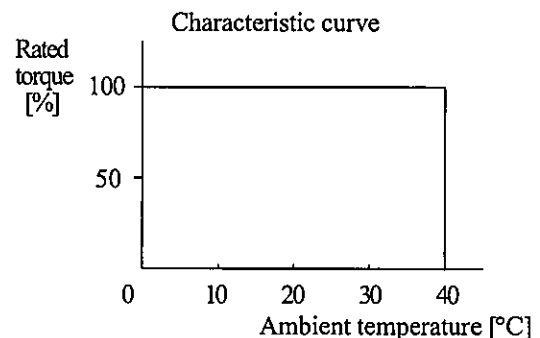
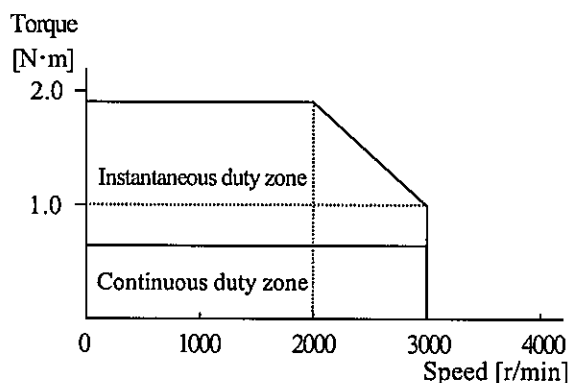


AC Servo Motor Specification

Motor model		MSMD02BL1□ (Without brake)	MSMD02BL1□ (With brake)	
Rated output	W	200	←	
Rating	%	100	←	
Number of poles		8	←	
Rated speed	r/min	3000	←	
Max. speed	r/min	3000	←	
Rated torque	N·m	0.64	←	
Max. torque	N·m	1.91	←	
Rated current	A(rms)	(5.2)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.14	0.16	
Electrical time constant	ms	(2.5)	←	
Mechanical time constant	ms	0.72	0.82	
Power rate	kW/s	29.0	25.4	
Momentary max. current	A(o-p)	(22.5)	←	
Demagnetization current	A(o-p)	30.0	←	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	4.3 \pm 10 %	←	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	9.1 \pm 10 %	←	
Torque constant	N·m/A(rms)	0.122 \pm 10 %	←	
	N·m/A(o-p)	0.087 \pm 10 %	←	
Phase resistance	Ω	0.26 \pm 7 %	←	
Phase inductance	mH	(0.65)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part : Gray
Mass	kg	0.8	1.3	
Structure		Totally-enclosed self-cooled type	←	Without oil seal
Supply voltage	V _{DC}	48	←	

- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 70 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)

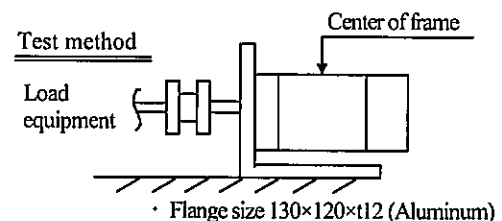
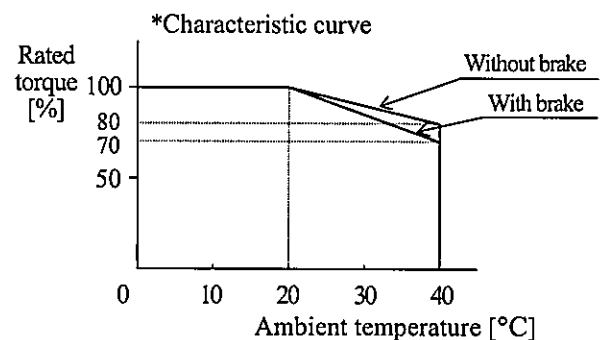
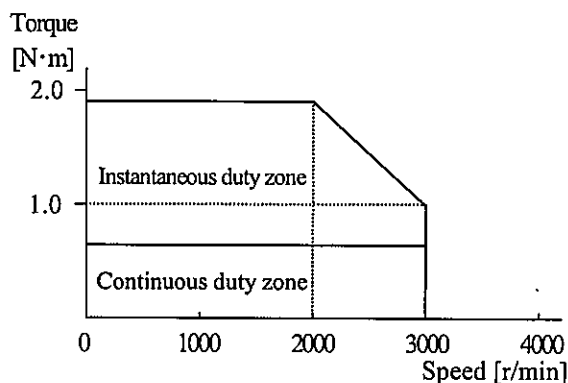
Amplifier power supply voltage : at DC48 V



AC Servo Motor Specification

Motor model		MSMD02BL1□ (Without brake)	MSMD02BL1□ (With brake)	
Rated output	W	200	←	
Rating	%	(*100)	←	* refer to the
Number of poles		8	←	characteristic
Rated speed	r/min	3000	←	curve below
Max. speed	r/min	3000	←	
Rated torque	N·m	0.64	←	
Max. torque	N·m	1.91	←	
Rated current	A(rms)	(5.2)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.14	0.16	
Electrical time constant	ms	(2.5)	←	
Mechanical time constant	ms	0.72	0.82	
Power rate	kW/s	29.0	25.4	
Momentary max. current	A(o-p)	(22.5)	←	
Demagnetization current	A(o-p)	30.0	←	
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Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	9.1 \pm 10 %	←	
Torque constant	N·m/A(rms)	0.122 \pm 10 %	←	
	N·m/A(o-p)	0.087 \pm 10 %	←	
Phase resistance	Ω	0.26 \pm 7 %	←	
Phase inductance	mH	(0.65)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part : Gray
Mass	kg	0.8	1.3	
Structure		Totally-enclosed self-cooled type	←	With oil seal
Supply voltage	V _{DC}	48	←	

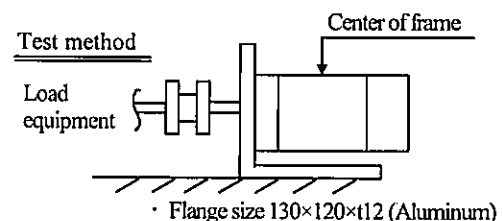
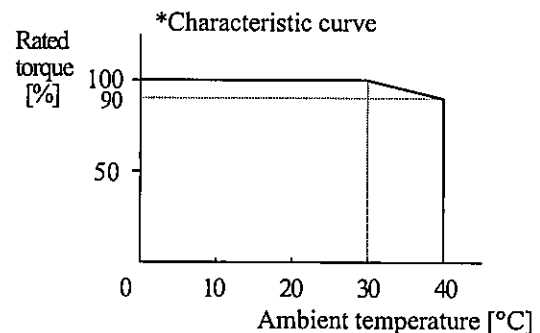
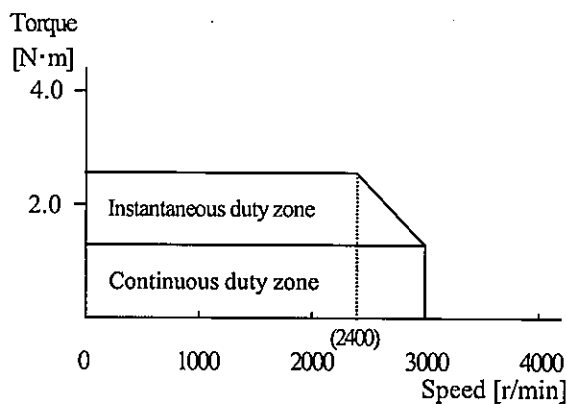
- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 70 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC48 V



AC Servo Motor Specification

Motor model		MSMD04BL1□ (Without brake)	MSMD04BL1□ (With brake)	
Rated output	W	400	←	
Rating	%	100	(*100)	* refer to the
Number of poles		8	←	characteristic
Rated speed	r/min	3000	←	curve below
Max. speed	r/min	3000	←	
Rated torque	N·m	1.27	←	
Max. torque	N·m	2.54	←	
Rated current	A(rms)	(8.6)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.26	0.28	
Electrical time constant	ms	(2.8)	←	
Mechanical time constant	ms	0.58	0.63	
Power rate	kW/s	62.4	58.0	
Momentary max. current	A(o-p)	(24.3)	←	
Demagnetization current	A(o-p)	36.5	←	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	5.4 \pm 10 %	←	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	11.5 \pm 10 %	←	
Torque constant	N·m/A(rms)	0.156 \pm 10 %	←	
	N·m/A(o-p)	0.110 \pm 10 %	←	
Phase resistance	Ω	0.18 \pm 7 %	←	
Phase inductance	mH	(0.50)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part :Gray
Mass	kg	1.2	1.7	
Structure		Totally-enclosed self-cooled type	←	Without oil seal
Supply voltage	V _{DC}	48	←	

- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 85 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC48 V

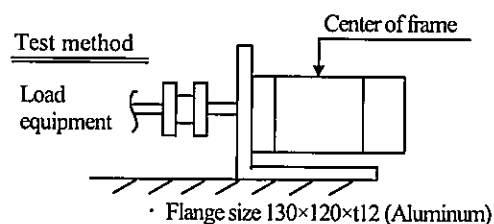
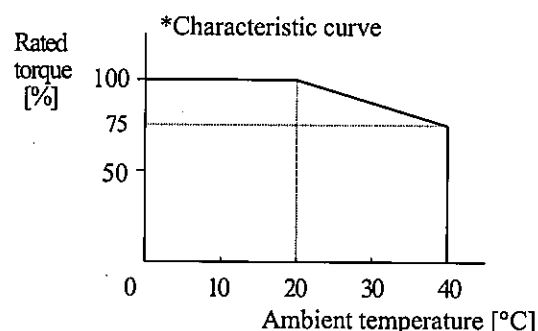
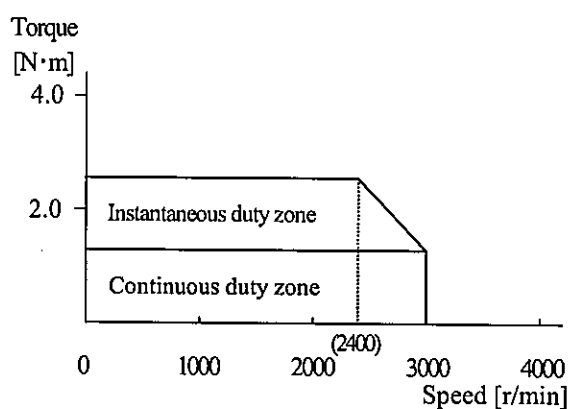


AC Servo Motor Specification


Motor model		MSMD04BL1□ (Without brake)	MSMD04BL1□ (With brake)	
Rated output	W	400	←	
Rating	%	(*100)	←	* refer to the
Number of poles		8	←	characteristic
Rated speed	r/min	3000	←	curve below
Max. speed	r/min	3000	←	
Rated torque	N·m	1.27	←	
Max. torque	N·m	2.54	←	
Rated current	A(rms)	(8.6)	←	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.26	0.28	
Electrical time constant	ms	(2.8)	←	
Mechanical time constant	ms	0.58	0.63	
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Demagnetization current	A(o-p)	36.5	←	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	5.4 ± 10 %	←	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	11.5 ± 10 %	←	
Torque constant	N·m/A(rms)	0.156 ± 10 %	←	
	N·m/A(o-p)	0.110 ± 10 %	←	
Phase resistance	Ω	0.18 ± 7 %	←	
Phase inductance	mH	(0.50)	←	* Center value
Thermal class		130(B)	←	
Vibration class		V-15	←	
Paint color		Without paint	←	Plastic part : Gray
Mass	kg	1.2	1.7	
Structure		Totally-enclosed self-cooled type	←	With oil seal
Supply voltage	V _{DC}	48	←	

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- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- Set the temperature of center of frame to 85 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at DC48 V



Scale	Panasonic Corporation			Agreement	Model	MSMD0□□L1□ □60
1 : 1	3rd Angle System		Unit:mm			
Designed	Drawn	Checked	Checked	Checked	Name	OUTLINE DRAWING (WITHOUT BRAKE)
MIYAZAKI	MIYAZAKI	Nishio		Kira		
2017/02/10	2017/02/10	2017/2/10		2017/2/10	No.	SX-DSV0316301

Scale	Panasonic Corporation			Agreement	Model	MSMD0□□L1□ □60
1 : 1	 3rd Angle System	Unit:mm				
Designed	Drawn	Checked	Checked	Checked	Name	OUTLINE DRAWING (WITH BRAKE)
MIYAZAKI	MIYAZAKI	Nishio		Kira	No.	SX-DSV0316302
2017/02/10	2017/02/10	2010/12/10		2017/2/10		