

## SPECIFICATIONS

M/S

MODEL AC Servo Motor.  
MINAS Liqi (MSMD) Series (2500P/r Incremental )

Issued on Feb.15.2012

Changed on . . .

Received by

Date:

Motor Business Unit, Appliances Company  
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### 1. Scope

This specification relates to the servo motor of an AC servo system manufactured and delivered by Appliances Company, Panasonic Corporation.

### 2. Applicable models, Specification, Outside drawings.

| Applicable model | Specification ( Oil seal ) | Outside drawings              |
|------------------|----------------------------|-------------------------------|
| MSMD5AZJ1□       | SR-DSV10736 13-2 (None)    | SR-DSV1073601 (none of brake) |
|                  | 13-3 (Exist)               | SR-DSV1073602 (with brake)    |
| MSMD012J1□       | 13-4 (None)                | ↑                             |
|                  | 13-5 (Exist)               |                               |
| MSMD022J1□       | 13-6 (None)                | SR-DSV1073603 (none of brake) |
|                  | 13-7 (Exist)               | SR-DSV1073604 (with brake)    |
| MSMD042J1□       | 13-8 (None)                | ↑                             |
|                  | 13-9 (Exist)               |                               |
| MSMD082J1□       | 13-10 (None)               | SR-DSV1073605 (none of brake) |
|                  | 13-11 (Exist)              | SR-DSV1073606 (with brake)    |
| MSMD102J1□       | 13-12 (None)               | SR-DSV1073607 (none of brake) |
|                  | 13-13 (Exist)              | SR-DSV1073608 (with brake)    |

※ □ shows motor structure

| Oil Seal | Brake | Shaft structure |       |                        |
|----------|-------|-----------------|-------|------------------------|
|          |       | Straight        | D cut | With key and screw tap |
| None     | None  | A               | N     | S                      |
|          | Exist | B               | P     | T                      |
| Exist    | None  | C               | Q     | U                      |
|          | Exist | D               | R     | V                      |

### 3. Serial numbers (Production numbers)

The serial number of a motor nameplate means as follows:

Ex.: SER No. 12 02 0001  
 Christian year Production month Serial number

## 4. Performance

|                                      |  |
|--------------------------------------|--|
| (1) Heat resistance                  | Allowable ambient temperature (except for motor temperature rise)<br>Operating 0°C~+40°C Storing -20°C~+65°C<br>(The maximum allowable temperature:80°C,72hours normal humidity)   |
| (2) Humidity resistance              | Allowable ambient humidity 20~85%RH<br>(not to condense dew)   |
| (3) Insulation resistance            | 20MΩ or more when cool by DC 500V megger.<br>(motor unit : between motor frame and motor lead wire)  |
| (4) Dielectric strength              | To withstand AC 1500V for 1 minute. (sensed current:10mA)<br>(motor unit : between motor frame and motor lead wire)<br>To withstand AC 1000V for 1 minute. (sensed current:10mA)<br>(brake unit : between motor frame and brake lead wire) |
| (5) Allowable maximum rotating speed | 120% instantaneous of maximum speed. (100% utility of maximum speed)   |
| (6) Vibration resistance             | 49m/s <sup>2</sup> or less X,Y,Z directions<br>But when the motor doesn't operate, 24.5m/s <sup>2</sup> or less.   |
| (7) Impact resistance                | 98m/s <sup>2</sup> in X,Y,Z directions ; 3 times each  |
| (8) Dust-proof & Drip-proof          | Equivalent of IP65 * (Except for shaft through sections and connector sections)  |
| (9) Altitude                         | 1000m or less above sea level  |

\* IP65 is one of the designations that mean classification of degrees of protection defined by IEC60529 standard.  
It means that the test has been performed to check and the motor passed the test as a result.  
It does not guarantee to maintain the IP grade in the actual use.

## 5. Assembling precision

- (1) In accordance with the outside drawings.
  - The axial runout is measured in the lateral direction of the shaft.
  - The flange surface squareness and spigot eccentricity are measured in the vertical direction of the shaft.
- (2) End play (axial play) : 0.3mm or less.

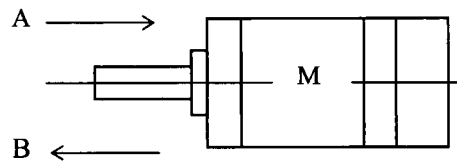
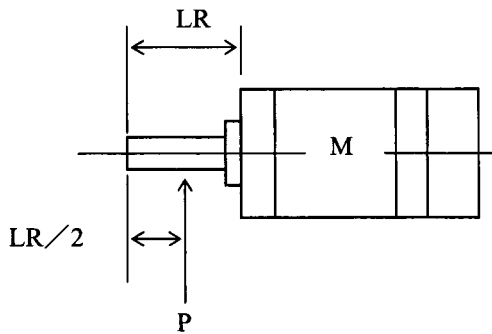
6. Shaft allowable load

Unit : [N]

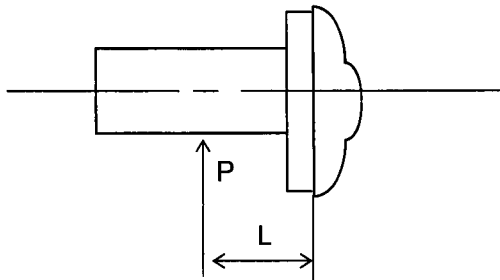
| Motor              | When assembling |             |             | When operating |             |
|--------------------|-----------------|-------------|-------------|----------------|-------------|
|                    | Radial load     | Thrust load |             | Radial load    | Thrust load |
|                    |                 | Direction A | Direction B |                |             |
| MSMD5AZ<br>MSMD012 | 147             | 88          | 117.6       | 68.6           | 58.8        |
| MSMD022<br>MSMD042 | 392             | 147         | 196         | 245            | 98          |
| MSMD082<br>MSMD102 | 686             | 294         | 392         | 392            | 147         |

Radial load ( P ) position

Thrust load direction



When a load position is changed, calculate allowable radial load P by the following relational expression, using load position's distance L from the mounting flange surface, and set the load below a value resulting from such calculation.



Unit : P [N] L [mm ]

| Applicable models | Relational expression of load and load position |
|-------------------|---|
| MSMD5AZ           | $P = \frac{3533}{L+39}$                         |
| MSMD012           | $P = \frac{4905}{L+59}$                         |
| MSMD022           | $P = \frac{14945}{L+46}$                        |
| MSMD042           | $P = \frac{19723}{L+65.5}$                      |
| MSMD082           | $P = \frac{37044}{L+77}$                        |
| MSMD102           | $P = \frac{43198}{L+92.7}$                      |

## 7. Rotary encoder specification

Incremental encoder 2500 P/r, Two-way communication

In accordance with the specification No.SX-DSV02371

## 8. Motor brake specification

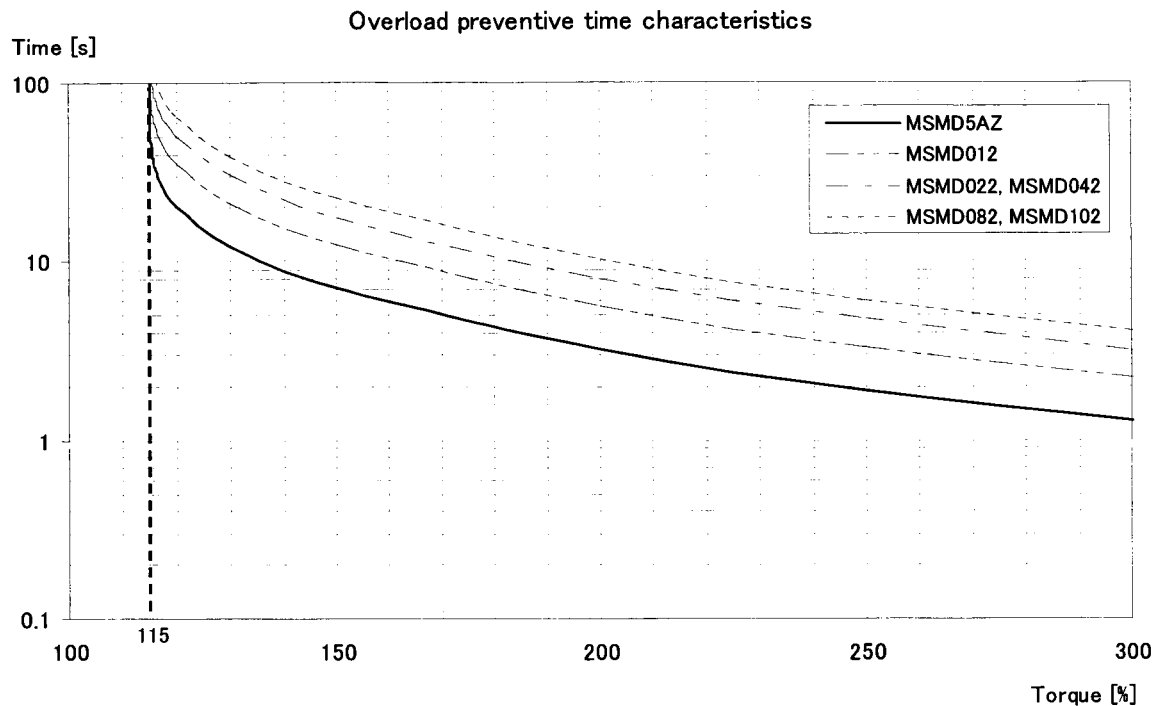
| Items                                     | Units                       | Applicable motor   |                    |                    |
|---|-----------------------------|--------------------|--------------------|--------------------|
|   |                             | MSMD5AZ<br>MSMD012 | MSMD022<br>MSMD042 | MSMD082<br>MSMD102 |
| Static friction torque                    | N·m                         | 0.29 or more       | 1.27 or more       | 2.45 or more       |
| Rotary part inertia                       | $10^{-4}$ kg·m <sup>2</sup> | 0.002              | 0.018              | 0.075              |
| Armature pull in time                     | ms                          | 35 or less         | 50 or less         | 70 or less         |
| Armature release time ※1                  | ms                          | 20 or less         | 15 or less         | 20 or less         |
| Release voltage                           | DC,V                        | 1 or more          | ←                  | ←                  |
| Excitation voltage                        | DC,V                        | 24±1.2             | ←                  | ←                  |
| Excitation current                        | DC,A                        | 0.3                | 0.36               | 0.42               |
| Allowable braking energy<br>; 1 time each | J                           | 39.2               | 137                | 196                |
| All allowable braking energy              | J                           | $4.9 \times 10^3$  | $44.1 \times 10^3$ | $147 \times 10^3$  |
| Allowable angular acceleration            | rad/s <sup>2</sup>          | 30000              | ←                  | ←                  |

(at 20°C)

※1 By varistor (TNR15G271K made by Nippon Chemi-Con Corporation. Z15D271 made by SEMITEC Corporation.)

- (1) Rotary part inertia and Excitation current (at DC24V) 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.

## 9. Time characteristics (our standard amplifier)



Please use the motor under conditions limiting effective torque within continuous duty zone of Speed -Torque characteristic .

About the Speed-Torque characteristic , please confirm each motor specification.

When anything other than our standard amplifier is used, be sure of setting its overload to the below time of the above.

As for the time characteristics of specific models, contact us to make an inquiry.

## 10. Compliance with safety standards

## (1) Compliance with UL and CSA standards

Applicable standards UL 1004  
CSA 22.2, No. 100.

File No. E327868

## (2) Compliance with CE

Applicable standards EN 60034-1 : 2004  
EN 60034-5 : 2001+A1:2007

TÜV Rheinland Product Safety GmbH  
Certificate No. R 50044108



## 11. Standard Life and Standard exchange time

### (1) Potential basic rated life of bearings (Calculated values)

90 % reliable fatigue life after dealing with its variation statistically, under the shaft allowable load, is 20,000 hours or more under the continuous application of the rated load.

Be sure that there is no repetitive shaking operation or no oscillation, which may cause fretting phenomena, within 45 degrees of motor shaft rotating angle.

### (2) Life time of rotary encoder

The life of a rotary encoder complying with its specification (LED light intensity half-life) shall be 30,000 hours or more under the continuous application of the rated load.

### (3) Life time of reduction gear.

The life of a reduction gear complying with its specification shall be 10,000 hours under the continuous application of rated load. (Basic rated life of the inside bearing of reduction gear)

### (4) Standard exchange time of oil seal (with oil seal)

5,000 hours under the continuous application of rated load.

(It changes with environment or usage)

## 12. Regarding the guarantee period

### 12-1 Guarantee period

The guarantee period shall be 1 year after delivery, or 1.5 years after a production month. However, the number of acceleration-deceleration cycles of a brake shall not exceed its life. Even if consumable parts (oil seals) are excluded.

Guarantee period has not been expired yet, the following cases are excluded:

- (1) Defects are caused by misuse, repair or modification by yourselves.
- (2) Defects are caused by dropping after purchase, or damage during transportation.
- (3) Defects are caused by use under the condition exceeding the specification of products.
- (4) Defects are caused by fire, earthquake, lightning stroke, wind and flood damage, salt damage, abnormal voltage, other natural disasters, casualty.
- (5) When a failure is attributable to entry of water / grease / metal strip / other foreign object.



### 12-2 Coverage of guarantee

As for defects that may occur under our responsibility during the guarantee period, we only undertake to exchange defective sections of the equipment or to repair it. The guarantee covers the delivered unit of a product only. Therefore, we are not in a position to accept any claim of consequential damage resulting from the defects of delivered products.



# Safety precautions

## 13. Safety Precautions

- The seriousness of injury or damage caused by using the product improperly without observing the indicated description is categorized using the signs below and the meaning is explained.

|  |   |
|--|---|
|  <b>Danger</b>  | The section with this sign contains items which are “assumed to cause imminently dangerous situation such as death or seriously injury if ignored.” |
|  <b>Caution</b> | The section with this sign contains items which are “assumed to cause injury or property damage only if ignored.”                                   |

- The type of description to be observed is categorized with the signs below and the meaning is explained.

|  |   |
|--|---|
|   | This sign shows that the item is “prohibited” to perform.                     |
|  | This sign shows that the item is a “compulsory” to be performed without fail. |

## **Danger**



- (1) Be sure not use the product in a place where the product may come in contact with foreign matter such as liquid like grinding oil, oil mist, and file dust, nor in an atmosphere of corrosive gas (such as H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, Cl<sub>2</sub>) or flammable gases, nor in a place near inflammable material.
- (2) Do not place inflammable material near a motor, an amplifier, or a regenerative resistance.
- (3) Do not drive the motor with external power.
- (4) Do not damage the cable nor place too much stress or heavy object on the cable. Do not pinch the cable.
- (5) Do not operate the product while the cable is dipped in oil or water.
- (6) Do not install the console near heating element such as a heater or a large-sized wire wound resistor.
- (7) Do not connect the motor to the commercial power source directly.
- (8) Do not use the product in a place where strong vibration or shock may be experienced.
- (9) Be sure not to touch the rotating part of the motor during operation.
- (10) Do not touch the keyway of the output axis of the motor with bare hands.
- (11) Be sure not to insert your hand into the amplifier.
- (12) Do not touch the motor, the heat sink of the amplifier nor the surrounding equipments since they will be hot.
- (13) Do not perform wiring nor operate the product with wet hand.

# Safety precautions

## Danger

- (14) Be sure that the wiring task is performed by electrical engineer.
- (15) There is no protective device attached to the motor other than the specified ones. Please protect them with an overcurrent protective device, a ground-fault circuit interrupter, an overtemperature preventing device, an emergency stop device, and the like.
- (16) When starting operation of the amplifier after an earthquake, please make sure that there is no abnormality as to the installation condition of the amplifier and the motor and the safety of the machine before starting operation.
- (17) When relocating, wiring, or checking the amplifier, leave it for the period of time indicated on the main body or longer after switching off the power, and confirm that there is no danger of electric shock, and then perform the task.
- (18) To prevent causing fire or accident resulting in injury or death due to improper installation or mounting at the occurrence of earthquake, please install or mount the device securely.
- (19) In order to be able to stop operating the device immediately and to cut off the device from the power source, install an external emergency stop circuit.
- (20) Install the motor, the amplifier, and the surrounding devices on nonflammables such as metal.
- (21) Perform wiring correctly and securely. Insecure and incorrect wiring may be the cause of abnormal motor operation and its damage by fire.  
Also, please make sure that no electrical conducting material such as a scrap of electric wire gets inside the amplifier at the time of performing installation and wiring task.
- (22) Connect the cables securely, and firmly insulate the current-carrying part with insulating material.
- (23) Be sure to install a no-fuse breaker to the power source.  
Also, make sure to connect the ground terminal or the ground lead to the ground.  
(In order to prevent electric shock and abnormal operation, the class D grounding  
(Grounding resistance: 100  $\Omega$  or lower) or higher is recommended.)

## Caution



- (24) When transferring the product, do not hold the cable or the axis of the motor.
- (25) Do not adjust or modify the gain of the amplifier extremely, nor let the operation or movement of the machine be unstable.
- (26) After recovering from power failure, do not get close to the machine because there is a possibility that the machine restarts suddenly.  
Setting must be made to the machine so that safety for the worker is ensured when the machine restarted suddenly.
- (27) Do not apply strong shock to the axis of the motor.
- (28) Do not apply strong shock to the product.
- (29) Be sure not to start or stop the motor with the electromagnetic contactor installed on the main power source side.
- (30) Do not switch on or off the main power supply of the amplifier frequently.
- (31) 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.
- (32) Be careful not to drop or to topple over the product when transferring or performing installation task.
- (33) Do not climb on the motor or place heavy object on the motor.
- (34) Do not cover the louver on the amplifier nor insert foreign matter.
- (35) Do not use the product in an area exposed to direct sunlight. And when storing the product, avoid direct sunlight and keep the temperature and the humidity within the range specified for when the product is in use.
- (36) Never overhaul or modify the motor.  
Overhauling will be performed at our company or at the retailers approved by our company.



## Safety precautions



- (37) Use the motor and the driver in the combination specified by our company. Please confirm the performance and the safety at your company when the motor is used in combination with another amplifier.
- (38) Due to the trouble with the motor or the driver combined, the motor may be damaged by fire, or smoking or dusting might occur. Please consider these possibilities when they are to be used in a clean room or the like.
- (39) Perform proper installation which is in proportion to the output and the weight of the main body.
- (40) Keep the ambient temperature and humidity of the installed motor within the range of allowable temperature and humidity.
- (41) Observe the specified installation method and the orientation of the product.
- (42) Keep a space as specified between the driver and the inner surface of the control panel, or between the amplifier and the other devices when installing the product.
- (43) Use the eyebolt attached to motor only for transferring the motor, but not for transferring the equipment.
- (44) Install a relay used to break the circuit at the time of emergency stop in series with the relay used to control the brake.
- (45) Fix the motor at the time of test run, and confirm its movement after isolating it from the mechanical system, and then mount it on the machine.  
(The motor should rotate smoothly at 30 r/min or so by the amplifier driving.)
- (46) Confirm that the power source specification is normal.
- (47) When an error has occurred, remove the cause and ensure the safety first, and after releasing the error, restart the machine.
- (48) The brake built in the motor may not be maintained due to its life span, the mechanical structure, and so on. Please install a stopping device to ensure the safety on the machine side.
- (49) Do not place obstacles around the motor, the amplifier, and the surrounding devices in order to keep an adequate amount of ventilation.
- (50) Maintenance should be performed by the specialist.
- (51) If the product is not to be used for a long period of time, be sure to turn off the power.

Please be sure to read the instruction manual (the safety section) before use.

We have been putting maximum effort to ensure the quality of this product. But since the possibility of the occurrence of the product's abnormal behavior not in accordance with the setting still exists due to the unexpectedly strong exogenous noise (including radiation and the like), the application of static electricity, or the rare event such as abnormality in the input power source, the wiring, and the parts, we ask our customers to take measures against the occurrence of unexpected behavior to fully ensure the safety.

## 14. Other cautions

- (1) Do not store the product in a place where the product may come in contact with rain or waterdrop, or where poisonous gas or liquid is stored.
- (2) Store the product in a place where direct sunlight can be avoided and where the temperature and humidity are within the specified range.  
If the product has been stored for a long period of time (one and a half years or longer), consult with us.
- (3) Since excessive loading of the product may be the cause of load collapsing, follow the instructions indicated.
- (4) Please make the final decision at your company as to the specification of the completed product, compliance with laws and regulations, and its compatibility with the equipments and parts attached by your company in respects such as the structure, dimensions, service life, and characteristics.
- (5) In the case of an axis with a key, it should be fixed not only with the key but also with a set of screws or the like, and a grease to prevent fretting should be applied to the joining section with the axis of the motor.
- (6) When the specification of the device of your company is to be changed, please carefully consider the compatibility with our motor.
- (7) When the motor is to be operated without electrically connecting the axis of the motor to the ground, depending on the actual equipment and the installing environment, problems such as the bearing sound will be louder may occur due to the occurrence of electrical corrosion at the motor bearing. So please confirm and verify the matter at your company.
- (8) Please confirm the strength of the axis at your company.  
(There should be no load heavier than the allowable weight on the axis during operation.)
- (9) An amount of grease (Albania No. 2: produced by Showa Shell Sekiyu) is applied to the end of the axis of this motor. Please consider its influence to materials such as plastic.
- (10) If a seal is required when mounting a device of your company on the mounting surface of our motor, please address the matter at your company.
- (11) When discarding the battery, isolate the battery with a tape or the like, and discard it according to the regulations of the local government.
- (12) When discarding the motor, dispose it as an industrial waste.
- (13) Some of the parts or the like may be modified to improve the performance, but the improvement will be implemented within the range of satisfying the items in this specification.
- (14) The specification change of the motor shall be implemented with the specification delivered by our company or a document specified by your company. And when the functions or characteristics are affected, the specification will be changed after being verified and confirmed with a prototype.
- (15) When the specification is changed, the price may also be changed in some cases.
- (16) If there is an item other than the items described in this specification and needs to be specified, please notify us beforehand.
- (17) If malfunctioning has occurred, the matter shall be addressed by discussing the matter with both parties according to the items indicated in this specification.
- (18) This product was designed to be used with general industrial products or the like. It is not designed to be used with a device dealing with human life or as a device to be used in unusual circumstances such as nuclear power management, use with aerospace instruments, use in transportation, use with medical equipments, use with various types of safety devices, or use with a device for which high level of cleanliness is required.

## Reliability evaluation items

The contents of this evaluation only cover items used for the design verification of selective models at the initial development stage, and do not guarantee all items from regular production.

(Basic evaluation conditions)

| Evaluation items  | Evaluation conditions   | Evaluation result   |
|---|---|---|
| Vibration resistance / heat cycle test                    | 20~3000Hz 49m/s <sup>2</sup> , with not more than 1.5mm amplitude 8 hours each for X, Y and Z directions<br>-30/+80°C 1 cycle   | No abnormality in outside appearance, structure and functions |
| Resonant point vibration endurance test                   | 49m/s <sup>2</sup> each for X, Y and Z directions<br>Number of cycles: 10 million cycles  | No abnormality in outside appearance, structure and functions |
| High temperature & high humidity electric conduction test | 60°C 95%RH 72-hour  | No abnormality in outside appearance, structure and functions |
| Heat shock resistance test                                | -20/+80°C 50 cycles   | No abnormality in outside appearance, structure and functions |
| Impact resistance test                                    | 490m/s <sup>2</sup> with L flange mounted<br>3 cycles each for X, Y and Z directions<br>196m/s <sup>2</sup> for items over 750W   | No abnormality in outside appearance, structure and functions |
| Rotor's high-speed rotation test                          | After 50 cycles of -20/80°C,<br>rotate a motor for 10 seconds at the speed of 10,000r/min at 100°C.<br>(As for items with the rated rotating speed of 3,000r/min., use the speed of 15,000r/min.) | No abnormality in outside appearance, structure and functions |
| Burnout test  | Apply the maximum current to let a motor burn out.<br>(Situation where the overload is negated.)  | No ignition<br>Not more than specified amount of smoke        |

## Delivery inspection items

| Inspection items                            | Inspection methods          | Quantity |
|---|-----------------------------|----------|
| Outside appearance                          | Visual inspection           | All      |
| Dimensions                                  | Slide gauge, Gauge          | Sampling |
| Withstand voltage                           | Withstand voltage tester    | All      |
| Insulation resistance                       | Insulation resistance meter | All      |
| Induced voltage constant                    | Automatic tester            | All      |
| Armature resistance                         | Ohm meter                   | All      |
| Encoder test and amplifier combination test | Automatic tester            | All      |
| Brake static friction torque                | Spring scale                | All      |
| Brake suction / release voltage             | Voltmeter                   | All      |
| Reduction gear                              | Hearing                     | All      |

AC Servo Motor Specification

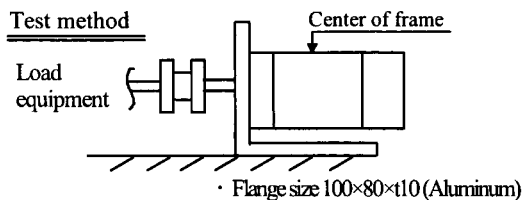
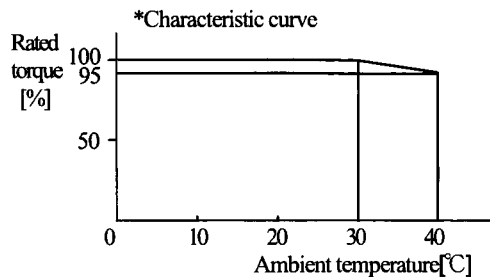
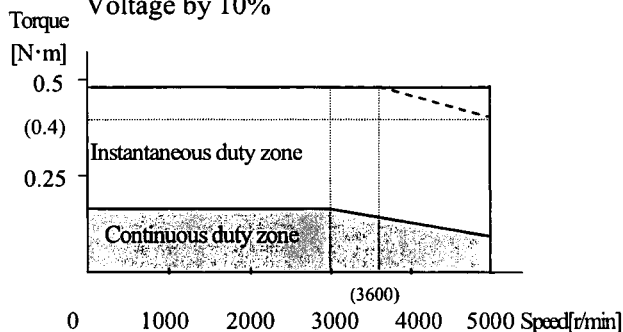
| Motor model                 |   | MSMD5AZJ1□<br>(none of brake)     | MSMD5AZJ1□<br>(with brake) |                         |
|-----------------------------|---|-----------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 50                                | ←                          |                         |
| Rating                      | %   | 100                               | (*100)                     | * refer to the          |
| Number of poles             |   | 8                                 | ←                          | characteristic          |
| Rated speed                 | r/min                                       | 3000                              | ←                          | curve below             |
| Max. speed                  | r/min                                       | 5000                              | ←                          |                         |
| Rated torque                | N·m   | 0.16                              | ←                          |                         |
| Max. torque                 | N·m   | 0.48                              | ←                          |                         |
| Rated current               | A(rms)                                      | (1.1)                             | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 0.025                             | 0.027                      |                         |
| Electrical time constant    | ms  | (0.70)                            | ←                          |                         |
| Mechanical time constant    | ms  | 1.56                              | 1.74                       |                         |
| Power rate                  | kW/s  | 10.4                              | 9.3                        |                         |
| Momentary max. current      | A(o-p)                                      | (4.7)                             | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 7.1                               | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | $5.1 \pm 10\%$                    | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | $10.7 \pm 10\%$                   | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | $0.14 \pm 10\%$                   | ←                          |                         |
|                             | N·m/A(o-p)                                  | $0.10 \pm 10\%$                   | ←                          |                         |
| Phase resistance            | $\Omega$                                    | $4.41 \pm 7\%$                    | ←                          |                         |
| Phase inductance            | mH  | (3.1)                             | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                            | ←                          |                         |
| Vibration class             |   | V-15                              | ←                          |                         |
| Paint color                 |   | None of paint                     | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.32                              | 0.53                       |                         |
| Structure                   |   | Totally-enclosed self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC  | 220                               | ←                          |                         |

- 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 AC 220V

Dotted line indicates fall of power supply

Voltage by 10%



## AC Servo Motor Specification

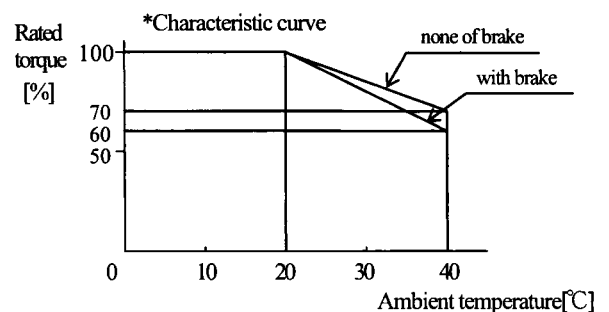
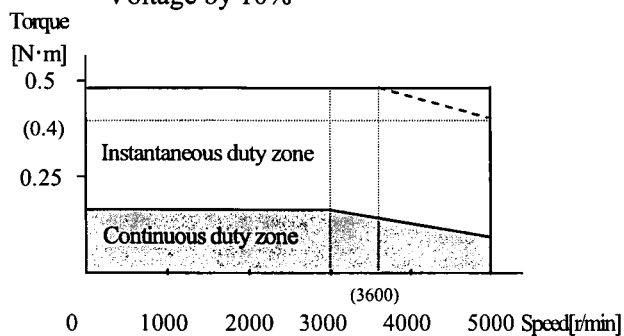
| Motor model                 |   | MSMD5AZJ1□<br>(none of brake)        | MSMD5AZJ1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 50                                   | ←                          |                         |
| Rating                      | %   | (*100)                               | ←                          | * refer to the          |
| Number of poles             |   | 8                                    | ←                          | characteristic          |
| Rated speed                 | r/min                                       | 3000                                 | ←                          | curve below             |
| Max. speed                  | r/min                                       | 5000                                 | ←                          |                         |
| Rated torque                | N·m   | 0.16                                 | ←                          |                         |
| Max. torque                 | N·m   | 0.48                                 | ←                          |                         |
| Rated current               | A(rms)                                      | (1.1)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 0.025                                | 0.027                      |                         |
| Electrical time constant    | ms  | (0.70)                               | ←                          |                         |
| Mechanical time constant    | ms  | 1.56                                 | 1.74                       |                         |
| Power rate                  | kW/s  | 10.4                                 | 9.3                        |                         |
| Momentary max. current      | A(o-p)                                      | (4.7)                                | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 7.1                                  | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | $5.1 \pm 10\%$                       | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | $10.7 \pm 10\%$                      | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | $0.14 \pm 10\%$                      | ←                          |                         |
|                             | N·m/A(o-p)                                  | $0.10 \pm 10\%$                      | ←                          |                         |
| Phase resistance            | $\Omega$                                    | $4.41 \pm 7\%$                       | ←                          |                         |
| Phase inductance            | mH  | (3.1)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.32                                 | 0.53                       |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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)

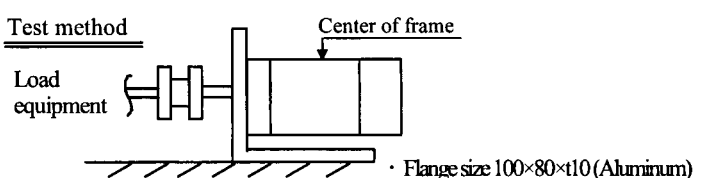
Amplifier power supply voltage : at AC 220V

Dotted line indicates fall of power supply

Voltage by 10%



Test method



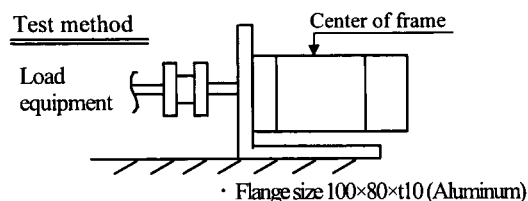
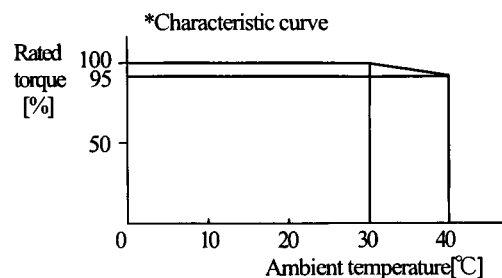
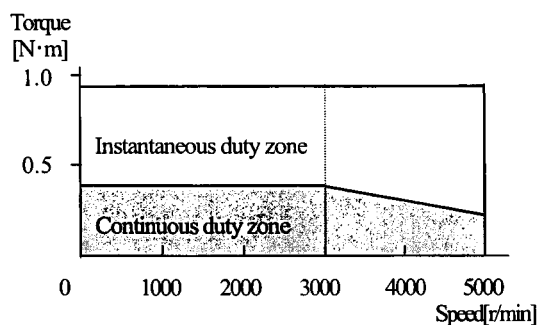


## AC Servo Motor Specification

| Motor model                 |   | MSMD012J1□<br>(none of brake)        | MSMD012J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 100                                  | ←                          |                         |
| Rating                      | %   | (*100)                               | ←                          | * refer to the          |
| Number of poles             |   | 8                                    | ←                          | characteristic          |
| Rated speed                 | r/min                                     | 3000                                 | ←                          | curve below             |
| Max. speed                  | r/min                                     | 5000                                 | ←                          |                         |
| Rated torque                | N·m                                       | 0.32                                 | ←                          |                         |
| Max. torque                 | N·m                                       | 0.95                                 | ←                          |                         |
| Rated current               | A(rms)                                    | (1.1)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4}$ kg·m <sup>2</sup>        | 0.051                                | 0.054                      |                         |
| Electrical time constant    | ms  | (0.79)                               | ←                          |                         |
| Mechanical time constant    | ms  | 1.08                                 | 1.14                       |                         |
| Power rate                  | kW/s                                      | 20.1                                 | 19.0                       |                         |
| Momentary max. current      | A(o-p)                                    | (4.7)                                | ←                          |                         |
| Demagnetization current     | A(o-p)                                    | 7.0                                  | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3}$ V(rms)/min <sup>-1</sup> | 10.4±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3}$ V(o-p)/min <sup>-1</sup> | 22.2±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                | 0.30±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                | 0.21±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 6.31±7%                              | ←                          |                         |
| Phase inductance            | mH  | (5.0)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.47                                 | 0.68                       |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC                                      | 220                                  | ←                          |                         |

- 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 90°C or less. (When ambient temperature is 40°C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at AC 220V

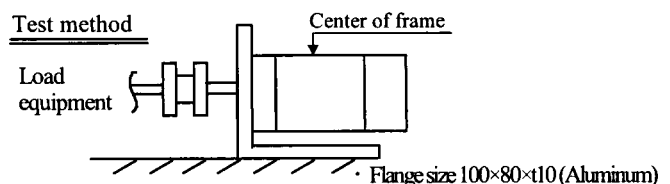
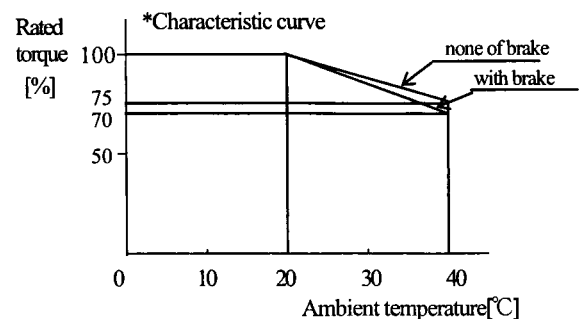
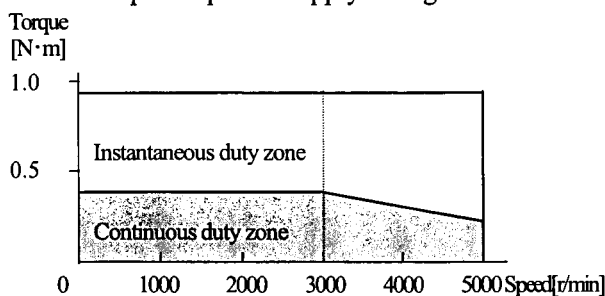


AC Servo Motor Specification

| Motor model                 |   | MSMD012J1□<br>(none of brake)        | MSMD012J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 100                                  | ←                          |                         |
| Rating                      | %   | (*100)                               | ←                          | * refer to the          |
| Number of poles             |   | 8                                    | ←                          | characteristic          |
| Rated speed                 | r/min                                       | 3000                                 | ←                          | curve below             |
| Max. speed                  | r/min                                       | 5000                                 | ←                          |                         |
| Rated torque                | N·m   | 0.32                                 | ←                          |                         |
| Max. torque                 | N·m   | 0.95                                 | ←                          |                         |
| Rated current               | A(rms)                                      | (1.1)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 0.051                                | 0.054                      |                         |
| Electrical time constant    | ms  | (0.79)                               | ←                          |                         |
| Mechanical time constant    | ms  | 1.08                                 | 1.14                       |                         |
| Power rate                  | kW/s  | 20.1                                 | 19.0                       |                         |
| Momentary max. current      | A(o-p)                                      | (4.7)                                | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 7.0                                  | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | 10.4±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | 22.2±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | 0.30±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                  | 0.21±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 6.31±7%                              | ←                          |                         |
| Phase inductance            | mH  | (5.0)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.47                                 | 0.68                       |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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 90°C or less. (When ambient temperature is 40°C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at AC 220V



## AC Servo Motor Specification

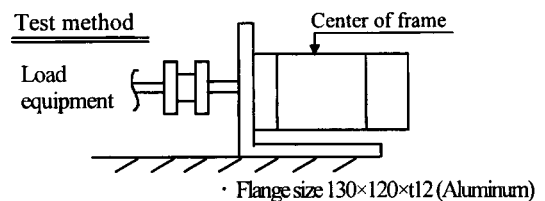
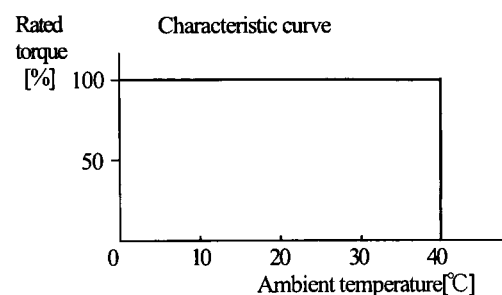
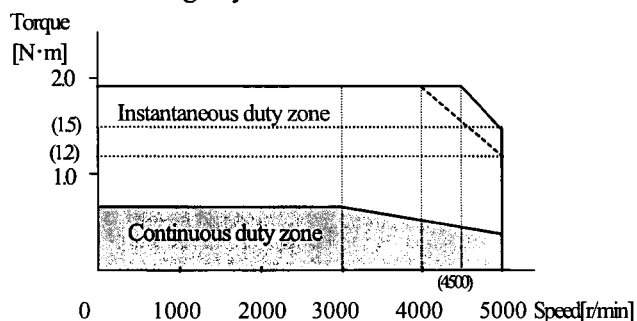
| Motor model                 |   | MSMD022J1□<br>(none of brake)        | MSMD022J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 200                                  | ←                          |                         |
| Rating                      | %   | 100                                  | ←                          |                         |
| Number of poles             |   | 8                                    | ←                          |                         |
| Rated speed                 | r/min                                     | 3000                                 | ←                          |                         |
| Max. speed                  | r/min                                     | 5000                                 | ←                          |                         |
| Rated torque                | N·m                                       | 0.64                                 | ←                          |                         |
| Max. torque                 | N·m                                       | 1.91                                 | ←                          |                         |
| Rated current               | A(rms)                                    | (1.6)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4}$ kg·m <sup>2</sup>        | 0.14                                 | 0.16                       |                         |
| Electrical time constant    | ms  | (2.6)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.71                                 | 0.84                       |                         |
| Power rate                  | kW/s                                      | 30.3                                 | 25.8                       |                         |
| Momentary max. current      | A(o-p)                                    | (6.9)                                | ←                          |                         |
| Demagnetization current     | A(o-p)                                    | 10.4                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3}$ V(rms)/min <sup>-1</sup> | 14.3±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3}$ V(o-p)/min <sup>-1</sup> | 30.4±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                | 0.41±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                | 0.29±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 3.0±7%                               | ←                          |                         |
| Phase inductance            | mH  | (7.6)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.82                                 | 1.3                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC                                      | 220                                  | ←                          |                         |

- 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 AC 220V

Dotted line indicates fall of power supply

Voltage by 10%



## AC Servo Motor Specification

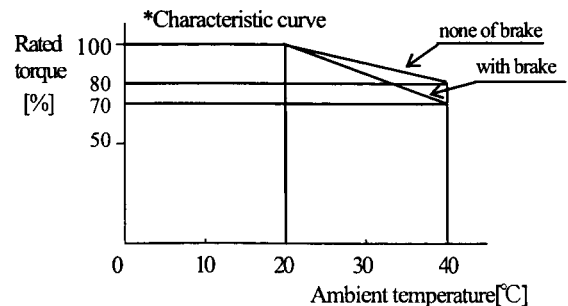
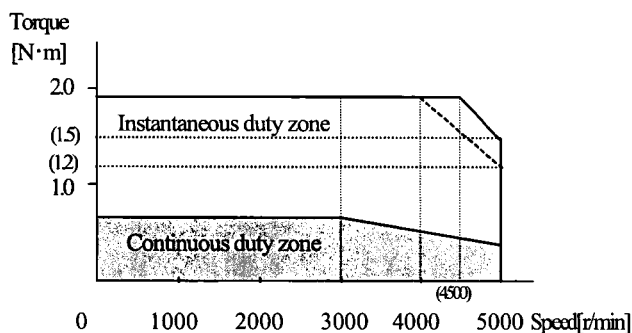
| Motor model                 |   | MSMD022J1□<br>(none of brake)        | MSMD022J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 200                                  | ←                          |                         |
| Rating                      | %   | (*100)                               | ←                          | * refer to the          |
| Number of poles             |   | 8                                    | ←                          | characteristic          |
| Rated speed                 | r/min                                       | 3000                                 | ←                          | curve below             |
| Max. speed                  | r/min                                       | 5000                                 | ←                          |                         |
| Rated torque                | N·m   | 0.64                                 | ←                          |                         |
| Max. torque                 | N·m   | 1.91                                 | ←                          |                         |
| Rated current               | A(rms)                                      | (1.6)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 0.14                                 | 0.16                       |                         |
| Electrical time constant    | ms  | (2.6)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.71                                 | 0.84                       |                         |
| Power rate                  | kW/s  | 30.3                                 | 25.8                       |                         |
| Momentary max. current      | A(o-p)                                      | (6.9)                                | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 10.4                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | 14.3 $\pm$ 10%                       | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | 30.4 $\pm$ 10%                       | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | 0.41 $\pm$ 10%                       | ←                          |                         |
|                             | N·m/A(o-p)                                  | 0.29 $\pm$ 10%                       | ←                          |                         |
| Phase resistance            | $\Omega$                                    | 3.0 $\pm$ 7%                         | ←                          |                         |
| Phase inductance            | mH  | (7.6)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 0.82                                 | 1.3                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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 AC 220V

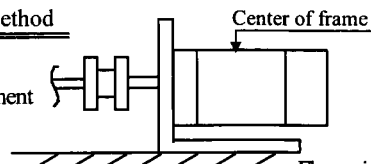
Dotted line indicates fall of power supply

Voltage by 10%



## Test method

Load equipment



Flange size 130×120×12 (Aluminum)

## AC Servo Motor Specification

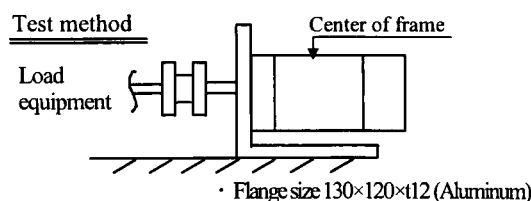
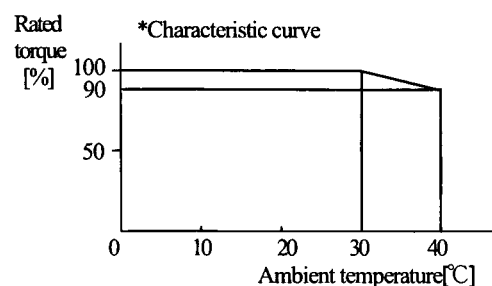
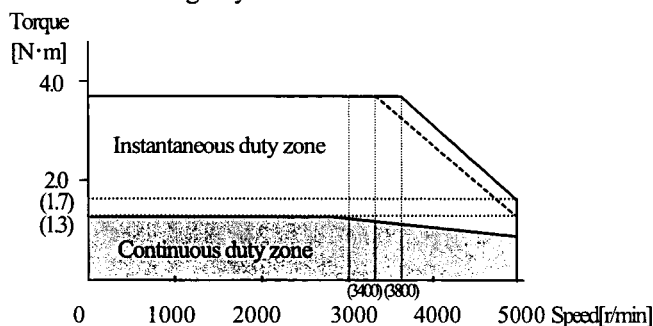
| Motor model                 |   | MSMD042J1□<br>(none of brake)        | MSMD042J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 400                                  | ←                          |                         |
| Rating                      | %   | 100                                  | (*100)                     | * refer to the          |
| Number of poles             |   | 8                                    | ←                          | characteristic          |
| Rated speed                 | r/min                                     | 3000                                 | ←                          | curve below             |
| Max. speed                  | r/min                                     | 5000                                 | ←                          |                         |
| Rated torque                | N·m                                       | 1.3                                  | ←                          |                         |
| Max. torque                 | N·m                                       | 3.8                                  | ←                          |                         |
| Rated current               | A(rms)                                    | (2.6)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4}$ kg·m <sup>2</sup>        | 0.26                                 | 0.28                       |                         |
| Electrical time constant    | ms  | (3.0)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.52                                 | 0.57                       |                         |
| Power rate                  | kW/s                                      | 62.5                                 | 57.2                       |                         |
| Momentary max. current      | A(o-p)                                    | (11.0)                               | ←                          |                         |
| Demagnetization current     | A(o-p)                                    | 16.5                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3}$ V(rms)/min <sup>-1</sup> | 17.9±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3}$ V(o-p)/min <sup>-1</sup> | 38.0±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                | 0.51±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                | 0.36±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 1.78±7%                              | ←                          |                         |
| Phase inductance            | mH  | (5.4)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 1.2                                  | 1.7                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC                                      | 220                                  | ←                          |                         |

- 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 AC 220V

Dotted line indicates fall of power supply

Voltage by 10%



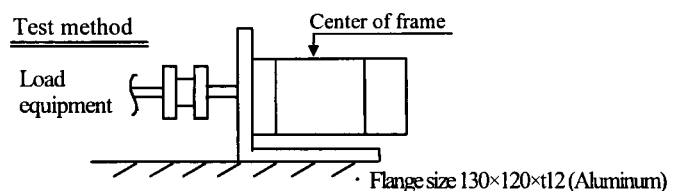
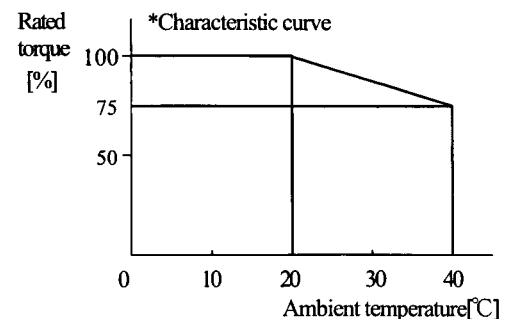
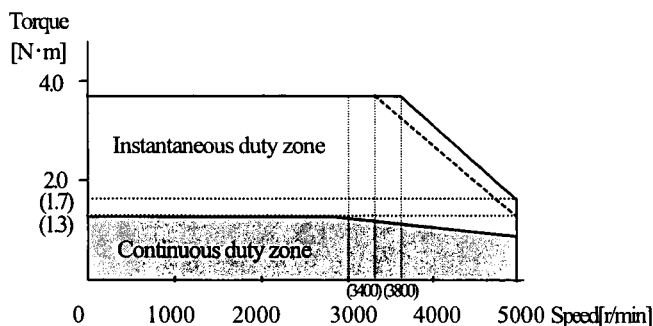
## AC Servo Motor Specification

| Motor model                 |   | MSMD042J1□<br>(none of brake)        | MSMD042J1□<br>(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   | 5000                                 | ←                          |                         |
| Rated torque                | N·m   | 1.3                                  | ←                          |                         |
| Max. torque                 | N·m   | 3.8                                  | ←                          |                         |
| Rated current               | A(rms)  | (2.6)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$           | 0.26                                 | 0.28                       |                         |
| Electrical time constant    | ms  | (3.0)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.52                                 | 0.57                       |                         |
| Power rate                  | kW/s  | 62.5                                 | 57.2                       |                         |
| Momentary max. current      | A(o-p)  | (11.0)                               | ←                          |                         |
| Demagnetization current     | A(o-p)  | 16.5                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V}(\text{rms})/\text{min}^{-1}$ | 17.9 $\pm$ 10%                       | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V}(\text{o-p})/\text{min}^{-1}$ | 38.0 $\pm$ 10%                       | ←                          |                         |
| Torque constant             | N·m/A(rms)  | 0.51 $\pm$ 10%                       | ←                          |                         |
|                             | N·m/A(o-p)  | 0.36 $\pm$ 10%                       | ←                          |                         |
| Phase resistance            | $\Omega$  | 1.78 $\pm$ 7%                        | ←                          |                         |
| Phase inductance            | mH  | (5.4)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 1.2                                  | 1.7                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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 AC 220V

Dotted line indicates fall of power supply Voltage by 10%



## AC Servo Motor Specification

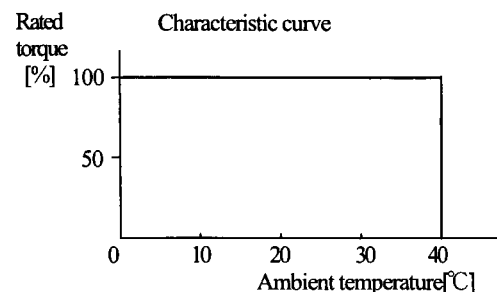
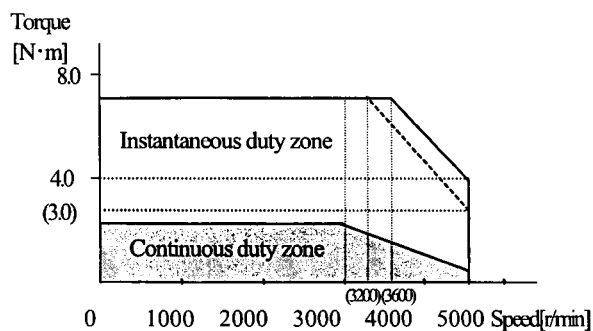
| Motor model                 |   | MSMD082J1□<br>(none of brake)        | MSMD082J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 750                                  | ←                          |                         |
| Rating                      | %   | 100                                  | ←                          |                         |
| Number of poles             |   | 8                                    | ←                          |                         |
| Rated speed                 | r/min                                       | 3000                                 |                            |                         |
| Max. speed                  | r/min                                       | 4500                                 | ←                          |                         |
| Rated torque                | N·m   | 2.4                                  | ←                          |                         |
| Max. torque                 | N·m   | 7.1                                  | ←                          |                         |
| Rated current               | A(rms)                                      | (4.0)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 0.87                                 | 0.97                       |                         |
| Electrical time constant    | ms  | (4.6)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.45                                 | 0.51                       |                         |
| Power rate                  | kW/s  | 66.0                                 | 58.9                       |                         |
| Momentary max. current      | A(o-p)                                      | (17.0)                               | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 26.3                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | 22.4±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | 47.6±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | 0.64±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                  | 0.45±10%                             | ←                          |                         |
| Phase resistance            | $\Omega$                                    | 0.72±7%                              | ←                          |                         |
| Phase inductance            | mH  | (3.3)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 2.3                                  | 3.1                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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 75°C or less. (When ambient temperature is 40°C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at AC 220V

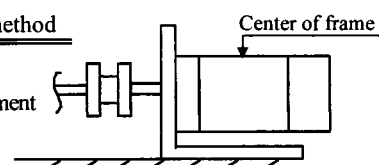
Dotted line indicates fall of power supply

Voltage by 10%



Test method

Load  
equipment



· Flange size 170×160×t12 (Aluminum)

## AC Servo Motor Specification

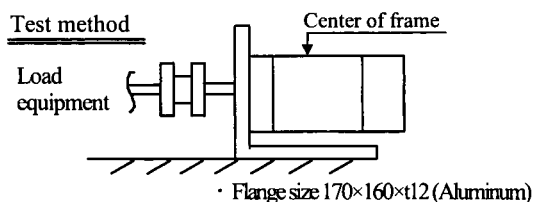
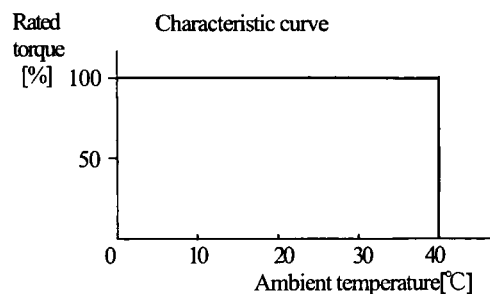
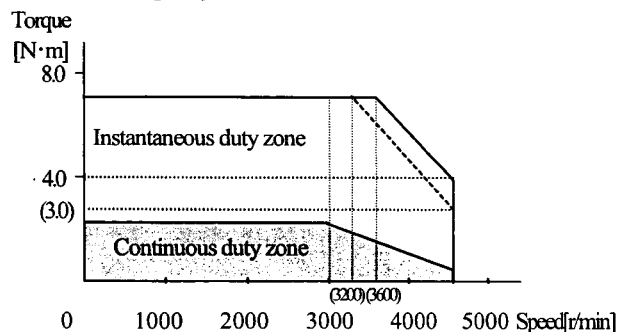
| Motor model                 |   | MSMD082J1□<br>(none of brake)        | MSMD082J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 750                                  | ←                          |                         |
| Rating                      | %   | 100                                  | ←                          |                         |
| Number of poles             |   | 8                                    | ←                          |                         |
| Rated speed                 | r/min                                     | 3000                                 | ←                          |                         |
| Max. speed                  | r/min                                     | 4500                                 | ←                          |                         |
| Rated torque                | N·m                                       | 2.4                                  | ←                          |                         |
| Max. torque                 | N·m                                       | 7.1                                  | ←                          |                         |
| Rated current               | A(rms)                                    | (4.0)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4}$ kg·m <sup>2</sup>        | 0.87                                 | 0.97                       |                         |
| Electrical time constant    | ms  | (4.6)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.45                                 | 0.51                       |                         |
| Power rate                  | kW/s                                      | 66.0                                 | 58.9                       |                         |
| Momentary max. current      | A(o-p)                                    | (17.0)                               | ←                          |                         |
| Demagnetization current     | A(o-p)                                    | 26.3                                 |                            |                         |
| Voltage constant per phase  | $\times 10^{-3}$ V(rms)/min <sup>-1</sup> | 22.4±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3}$ V(o-p)/min <sup>-1</sup> | 47.6±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                | 0.64±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                | 0.45±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 0.72±7%                              | ←                          |                         |
| Phase inductance            | mH  | (3.3)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 2.3                                  | 3.1                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC                                      | 220                                  | ←                          |                         |

- 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 75°C or less. (When ambient temperature is 40°C)
- Speed - Torque characteristic (Representative value)

Amplifier power supply voltage : at AC 220V

Dotted line indicates fall of power supply

Voltage by 10%





AC Servo Motor Specification

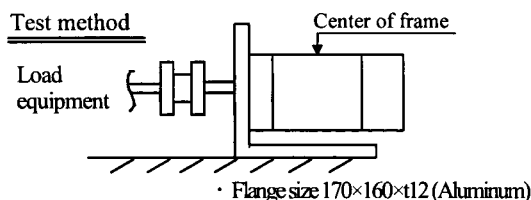
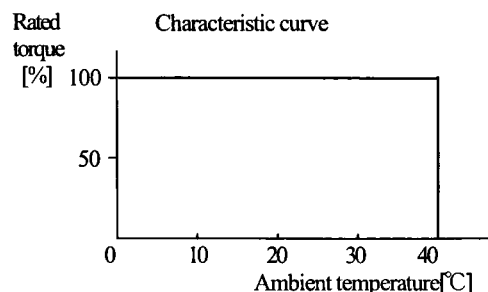
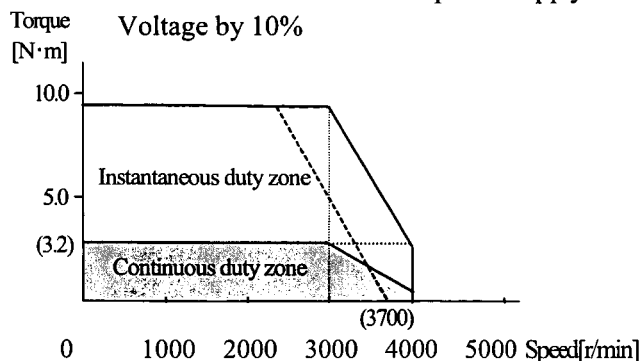
| Motor model                 |   | MSMD102J1□<br>(none of brake)        | MSMD102J1□<br>(with brake) |                         |
|-----------------------------|---|--------------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 1000                                 | ←                          |                         |
| Rating                      | %   | 100                                  | ←                          |                         |
| Number of poles             |   | 8                                    | ←                          |                         |
| Rated speed                 | r/min                                       | 3000                                 | ←                          |                         |
| Max. speed                  | r/min                                       | 4000                                 | ←                          |                         |
| Rated torque                | N·m   | 3.2                                  | ←                          |                         |
| Max. torque                 | N·m   | 9.5                                  | ←                          |                         |
| Rated current               | A(rms)                                      | (4.0)                                | ←                          |                         |
| Rotor inertia               | $\times 10^{-4} \text{kg} \cdot \text{m}^2$ | 1.16                                 | 1.26                       |                         |
| Electrical time constant    | ms  | (4.4)                                | ←                          |                         |
| Mechanical time constant    | ms  | 0.45                                 | 0.49                       |                         |
| Power rate                  | kW/s  | 87.3                                 | 80.4                       |                         |
| Momentary max.current       | A(o-p)                                      | (17.0)                               | ←                          |                         |
| Demagnetization current     | A(o-p)                                      | 25.5                                 | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3} \text{V(rms)/min}^{-1}$     | 29.7±10%                             | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3} \text{V(o-p)/min}^{-1}$     | 63.1±10%                             | ←                          |                         |
| Torque constant             | N·m/A(rms)                                  | 0.85±10%                             | ←                          |                         |
|                             | N·m/A(o-p)                                  | 0.60±10%                             | ←                          |                         |
| Phase resistance            | Ω   | 0.94±7%                              | ←                          |                         |
| Phase inductance            | mH  | (4.1)                                | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                               | ←                          |                         |
| Vibration class             |   | V-15                                 | ←                          |                         |
| Paint color                 |   | None of paint                        | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 2.8                                  | 3.6                        |                         |
| Structure                   |   | Totally-enclosed<br>self-cooled type | ←                          | none of oil seal        |
| Supply voltage              | V AC  | 220                                  | ←                          |                         |

- 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 AC 220V

Dotted line indicates fall of power supply

Voltage by 10%



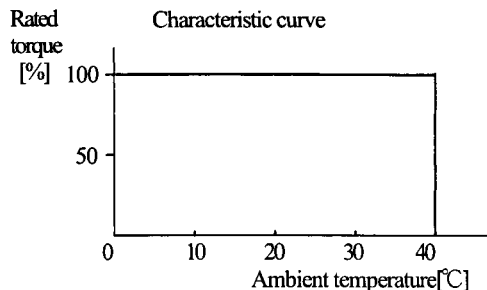
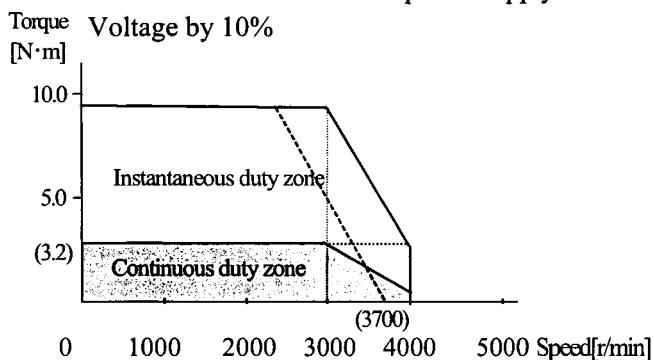
AC Servo Motor Specification

| Motor model                 |   | MSMD102J1□<br>(none of brake)     | MSMD102J1□<br>(with brake) |                         |
|-----------------------------|---|-----------------------------------|----------------------------|-------------------------|
| Rated output                | W   | 1000                              | ←                          |                         |
| Rating                      | %   | 100                               | ←                          |                         |
| Number of poles             |   | 8                                 | ←                          |                         |
| Rated speed                 | r/min                                     | 3000                              | ←                          |                         |
| Max. speed                  | r/min                                     | 4000                              | ←                          |                         |
| Rated torque                | N·m                                       | 3.2                               | ←                          |                         |
| Max. torque                 | N·m                                       | 9.5                               | ←                          |                         |
| Rated current               | A(rms)                                    | (4.0)                             | ←                          |                         |
| Rotor inertia               | $\times 10^{-4}$ kg·m <sup>2</sup>        | 1.16                              | 1.26                       |                         |
| Electrical time constant    | ms  | (4.4)                             | ←                          |                         |
| Mechanical time constant    | ms  | 0.45                              | 0.49                       |                         |
| Power rate                  | kW/s                                      | 87.3                              | 80.4                       |                         |
| Momentary max current       | A(o-p)                                    | (17.0)                            | ←                          |                         |
| Demagnetization current     | A(o-p)                                    | 25.5                              | ←                          |                         |
| Voltage constant per phase  | $\times 10^{-3}$ V(rms)/min <sup>-1</sup> | 29.7±10%                          | ←                          |                         |
| Excitation voltage constant | $\times 10^{-3}$ V(o-p)/min <sup>-1</sup> | 63.1±10%                          | ←                          |                         |
| Torque constant             | N·m/A(rms)                                | 0.85±10%                          | ←                          |                         |
|                             | N·m/A(o-p)                                | 0.60±10%                          | ←                          |                         |
| Phase resistance            | Ω   | 0.94±7%                           | ←                          |                         |
| Phase inductance            | mH  | (4.1)                             | ←                          | * Center Value          |
| Thermal class               |   | 130(B)                            | ←                          |                         |
| Vibration class             |   | V-15                              | ←                          |                         |
| Paint color                 |   | None of paint                     | ←                          | Plastic part :Dark gray |
| Mass                        | kg  | 2.8                               | 3.6                        |                         |
| Structure                   |   | Totally-enclosed self-cooled type | ←                          | with oil seal           |
| Supply voltage              | V AC                                      | 220                               | ←                          |                         |

- 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)

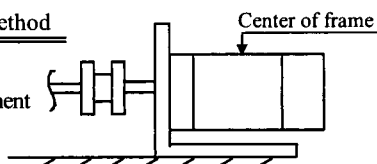
Amplifier power supply voltage: at AC 220V

Dotted line indicates fall of power supply



Test method

Load equipment



· Flange size 170×160×t12 (Aluminum)

SR-DSV1073601

Do NOT scale the drawings. Instead rely on the dimensions and their definitions.

Opponent connector (No belongings)

Motor connector (AMP)  
Cap : 172159-1  
Socket: 170362-1  
or 170366-1

Detector connector (AMP)  
Cap : 172160-1  
Socket: 170361-1  
or 170365-1

Rotary encoder unit

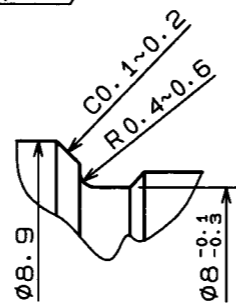
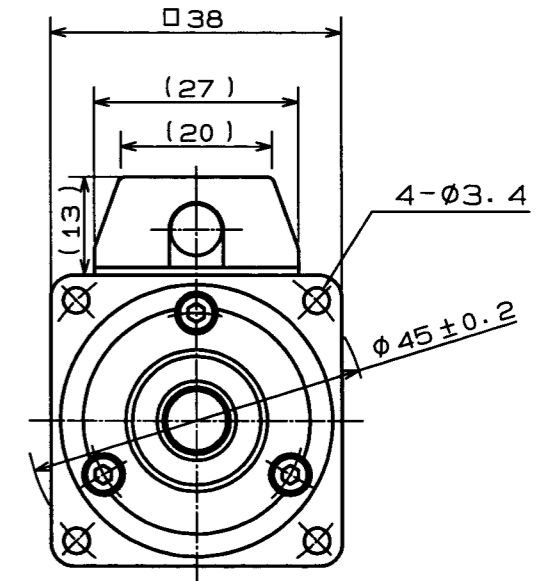
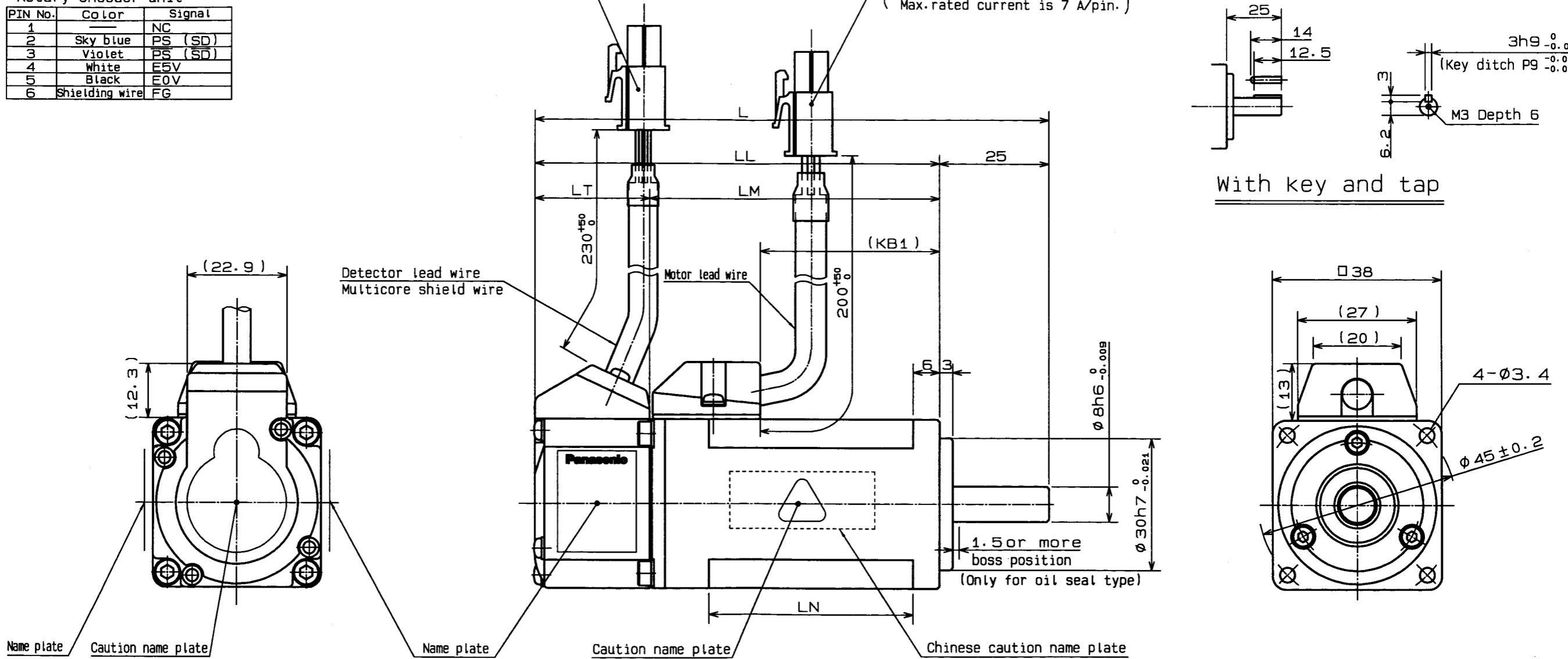
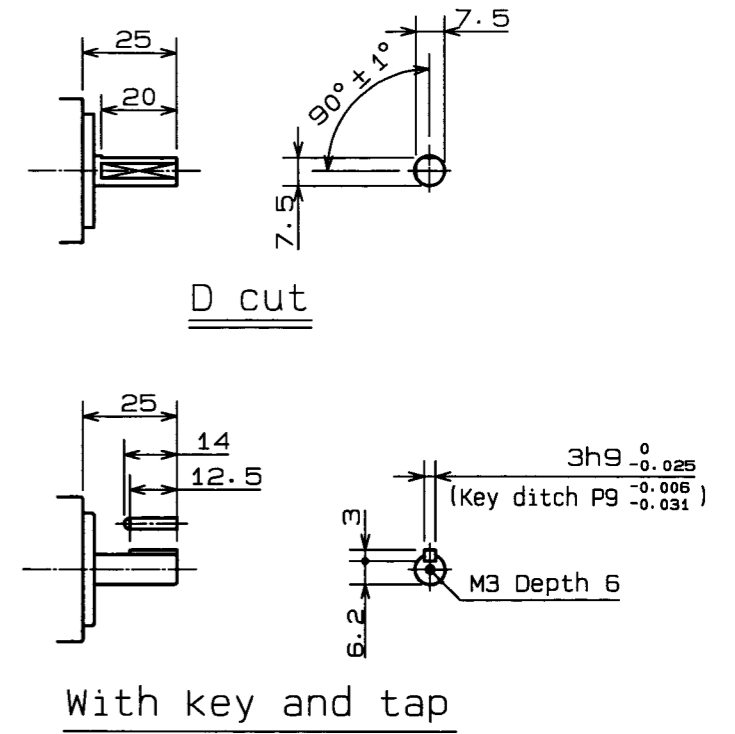
| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       |                | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | ESV     |
| 5       | Black          | EOV     |
| 6       | Shielding wire | FG      |

Motor unit

| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |

Detector connector (AMP)  
Plug: 172168-1  
Pin : 170359-1

Motor connector (AMP)  
Plug: 172167-1  
Pin : 170360-1  
(Caution  
Max. rated current is 7 A/pin.)



Detail of shaft step part (S=Free)

NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
 · Shaft end runout: 0.03 (shaft exit middle) (TIR value)  
 · Squareness of flange face to shaft: 0.08(φ37)  
 · Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)  
 2. For flange mounting bolts, use hexagonal socket head bolts.

|       |
|-------|
| TRACE |
| E-W   |
| SVM   |

| Model      | Rated Speed (r/min) | Output (W) | L   | LL | LM | LT | LN   | KB1  |
|------------|---------------------|------------|-----|----|----|----|------|------|
| MSMD5AZJ1□ | 3000                | 50         | 97  | 72 | 48 | 24 | 26.5 | 20.8 |
| MSMD012J1□ | ↑                   | 100        | 117 | 92 | 68 | 1  | 46.5 | 40.8 |

| Scale      | Panasonic Corporation    | Agreement | Model                          |
|------------|--------------------------|-----------|--------------------------------|
| 1 : 1      | 3rd Angle System Unit:mm |           | MSMD□□□J1□ □38                 |
| Designed   | Drawn                    | Checked   | Name                           |
| KUTSUKAKE  | KUTSUKAKE                | Tamura    | OUTLINE DRAWING(None of brake) |
| 2012/01/16 | 2012/01/16               | 2012.2.15 | No.                            |
|            |                          |           | SR-DSV1073601                  |



Do NOT scale the drawings. Instead rely on the dimensions and their definitions

|            |       |       |
|------------|-------|-------|
| MERCHAND G | CLASS | TRACE |
| SVM        | E-W   |       |

Opponent connector (No belongings)

Motor connector (AMP)  
 Cap : 172159-1  
 Socket : 170362-1  
 or 170366-1

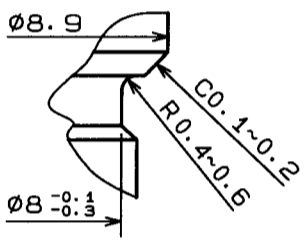
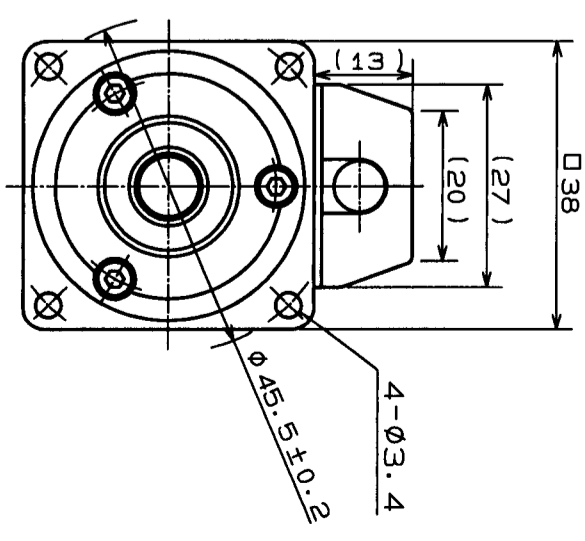
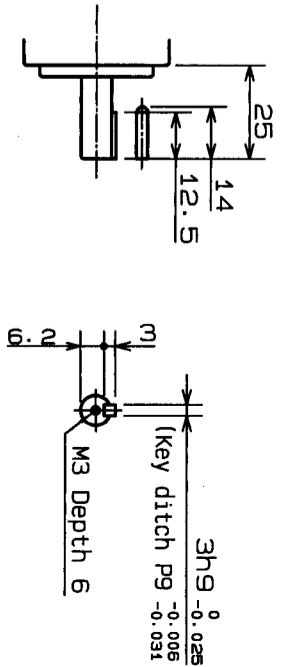
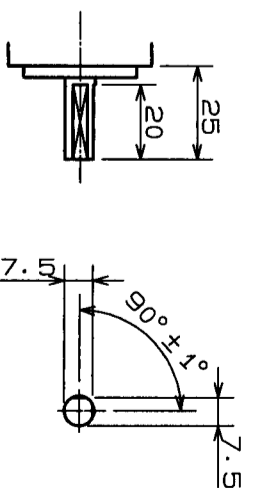
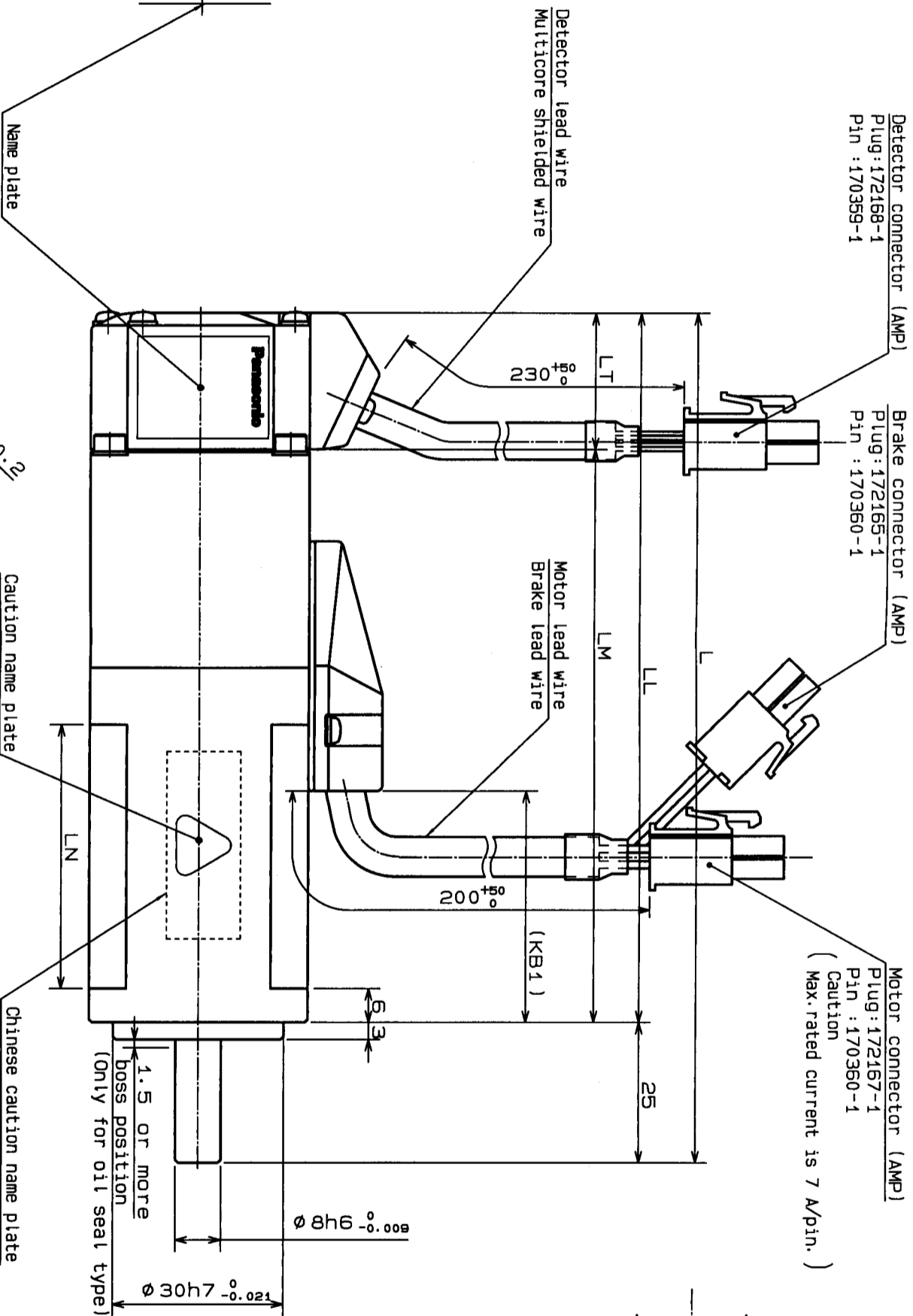
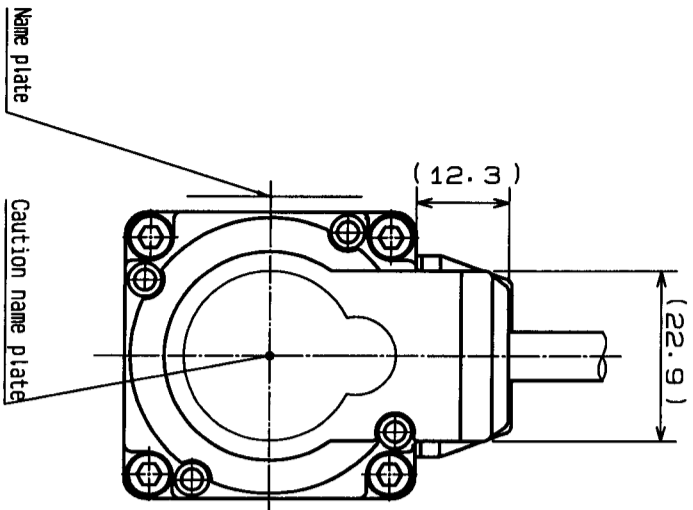
Detector connector (AMP)  
 Cap : 172160-1  
 Socket : 170361-1  
 or 170365-1

Brake connector (AMP)  
 Cap : 172157-1  
 Socket : 170362-1  
 or 170366-1

| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       | SKY blue       | PS (SD) |
| 2       | Violet         | PS (SD) |
| 3       | White          | ESV     |
| 4       | Black          | EOV     |
| 5       | Shielding wire | FG      |
| 6       |                |         |

| PIN No. | Color  | Signal |
|---------|--------|--------|
| 1       | Yellow | Brake  |
| 2       | Yellow | Brake  |

| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |



Detail of shaft step part (S-Free)

NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).

- Shaft end runout: 0.03 (shaft exit middle) (TIR value)
- Squariness of flange face to shaft: 0.08 (φ37)
- Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)
- 2. For flange mounting bolts: use hexagonal socket head bolts.

| Model      | Rated Speed (r/min) | Output (W) | L   | LL  | LM | LT | LN   | KB1  |
|------------|---------------------|------------|-----|-----|----|----|------|------|
| MSMD5AZJ1D | 3000                | 50         | 127 | 102 | 78 | 24 | 26.5 | 20.8 |
| MSMD012J1D | ↑                   | 100        | 147 | 122 | 98 | ↑  | 46.5 | 40.8 |

| Scale      | Scale      | Model                        | Model |
|------------|------------|------------------------------|-------|
| 1 : 1      | 1 : 1      | MSMD0000J1D                  | 038   |
| Designed   | Drawn      | Name                         | Model |
| KITSUKAKE  | KITSUKAKE  | OUTLINE DRAWING (With brake) |       |
| 2012/01/15 | 2012/01/15 | No.                          | Model |
|            |            | SR-DSV1073602                |       |

Do NOT scale the drawings. Instead rely on the dimensions and their definitions

Opponent connector (No belongings)

Motor connector (AMP)  
Cap :172159-1  
Socket:170362-1  
or 170366-1

Detector connector (AMP)  
Cap :172160-1  
Socket:170361-1  
or 170365-1

Brake connector (AMP)  
Cap :172157-1  
Socket:170362-1  
or 170366-1

Rotary encoder unit

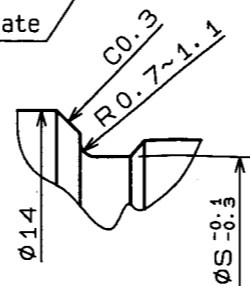
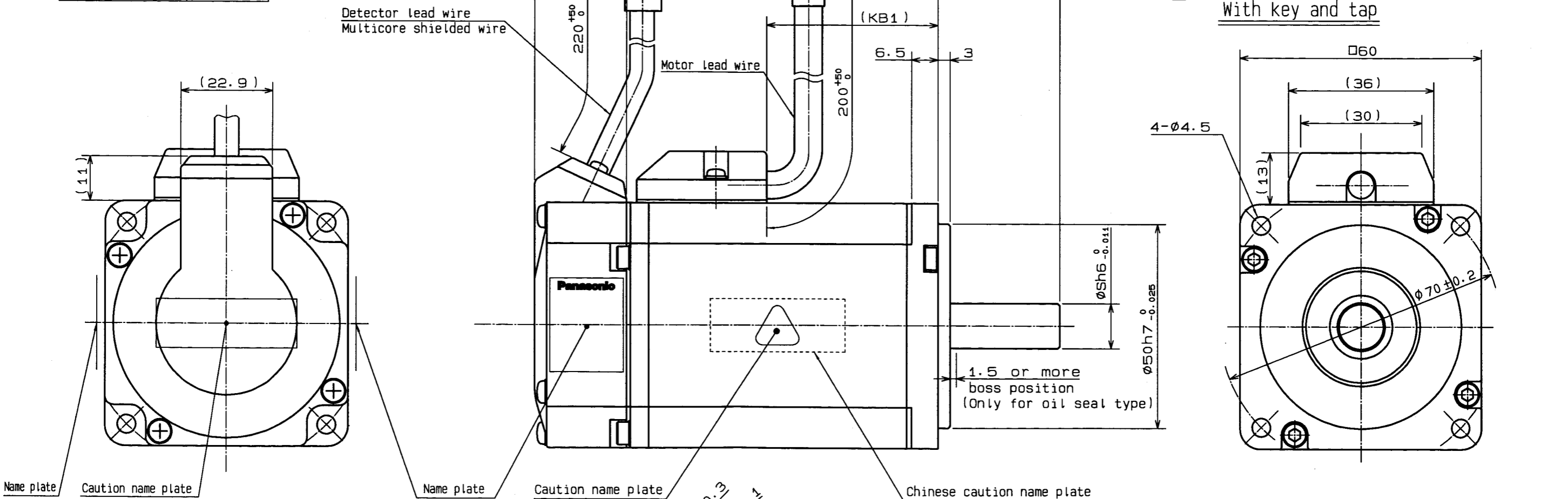
| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       |                | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | E5V     |
| 5       | Black          | E0V     |
| 6       | Shielding wire | FG      |

Motor unit

| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |

Detector connector (AMP)  
Plug:172168-1  
Pin :170359-1

Motor connector (AMP)  
Plug:172167-1  
Pin :170360-1  
Caution  
(Max. rated current is 7 A/pin.)



Detail of shaft step part (Free scale)  
(200W Only)

NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
·Shaft end runout: 0.03 (shaft exit middle) (TIR value)  
·Squareness of flange face to shaft: 0.08 (Ø52)  
·Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)  
2. For flange mounting bolts, use hexagonal socket head bolts.

| Model      | Rated Speed (r/min) | Output (W) | L     | LL   | LM   | S  | LT   | KB1  |
|------------|---------------------|------------|-------|------|------|----|------|------|
| MSMD022J1□ | 3000                | 200        | 109.5 | 79.5 | 57   | 11 | 22.5 | 22.5 |
| MSMD042J1□ | ↑                   | 400        | 129   | 99   | 76.5 | 14 | ↑    | 42   |

| Scale      | Panasonic Corporation |           |         |         | Agreement | Model                           |
|------------|-----------------------|-----------|---------|---------|-----------|---------------------------------|
| 1 : 1      | 3rd Angle System      |           |         |         | Unit:mm   | MSMD0□2J1□ □60                  |
| Designed   | Drawn                 | Checked   | Checked | Checked | Name      | OUTLINE DRAWING (None of brake) |
| KUTSUKAKE  | KUTSUKAKE             | Tamura    |         | SATO    | No.       | SR-DSV1073603                   |
| 2012/01/15 | 2012/01/15            | 2012.2.15 |         |         |           |                                 |



Do NOT scale the drawings. Instead rely on the dimensions and their definitions

Opponent connector (No belongings)

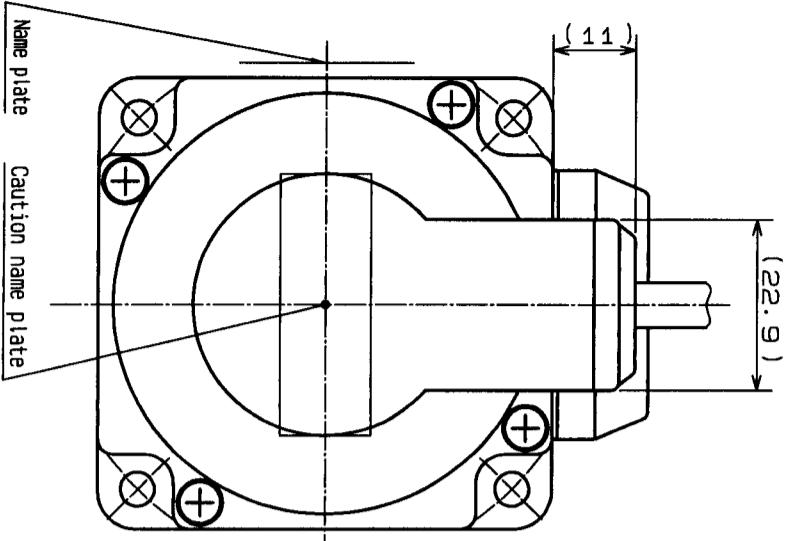
Motor connector (AMP)  
Cap : 172159-1  
Socket: 170362-1  
or 170366-1

Detector connector (AMP)  
Cap : 172160-1  
Socket: 170361-1  
or 170365-1

Brake connector (AMP)  
Cap : 172157-1  
Socket: 170362-1  
or 170366-1

| PIN No. | COLOR          | Signal  |
|---------|----------------|---------|
| 1       | NC             | PS (SD) |
| 2       | Sky Blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | ESV     |
| 5       | Black          | EOV     |
| 6       | Shielding wire | FG      |

Rotary encoder unit

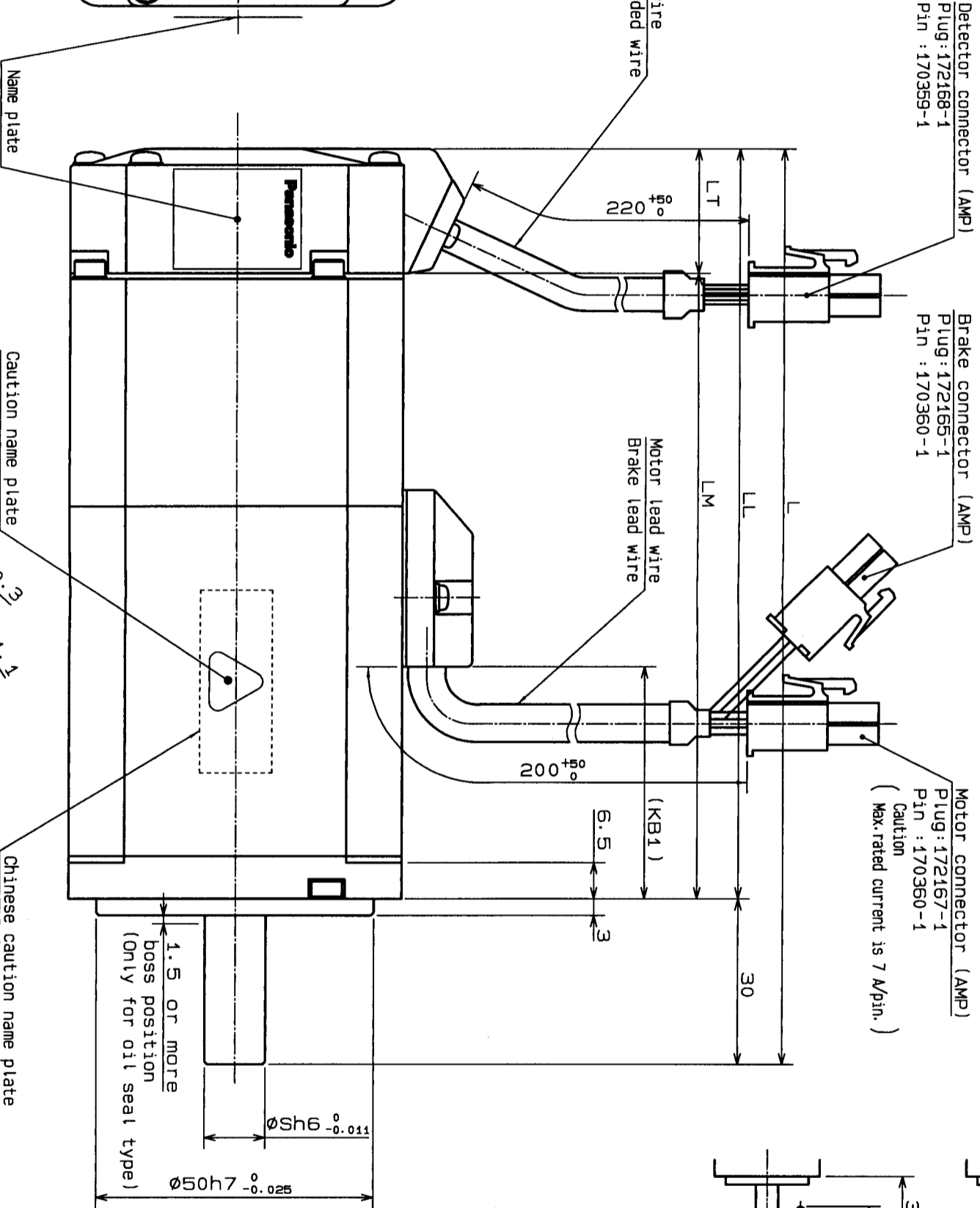


Brake unit

| PIN No. | COLOR  | Signal |
|---------|--------|--------|
| 1       | Yellow | Brake  |
| 2       | Yellow | Brake  |

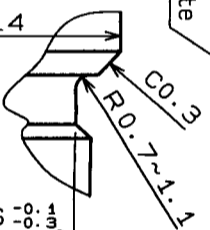
Motor unit

| PIN No. | COLOR        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |



Detail of shaft step part (Free scale)

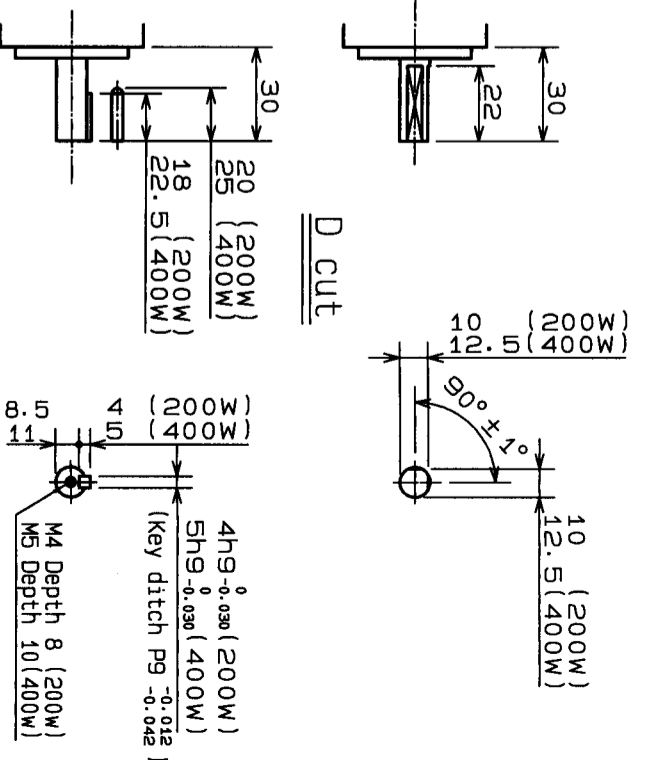
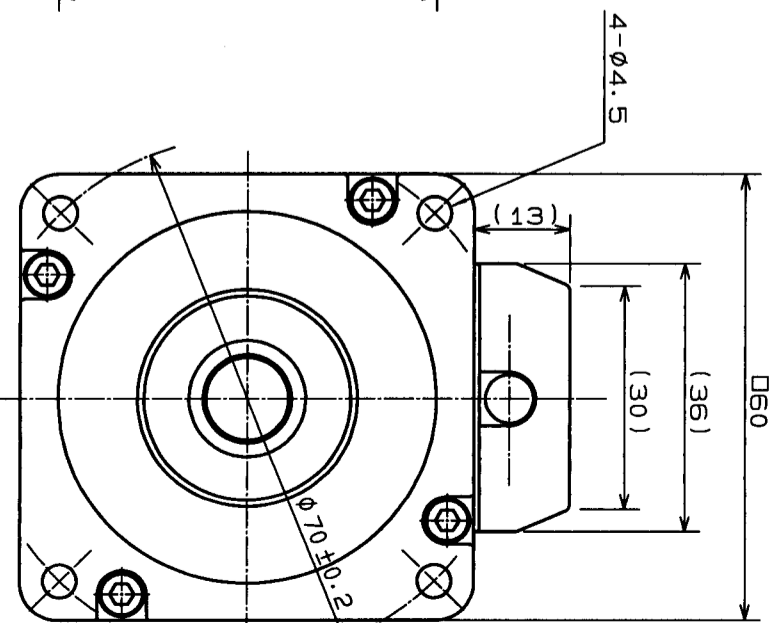
(200W Only)



NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).

- Shaft end runout: 0.03 (shaft exit middle) (TIR value)
- Squariness of flange face to shaft: 0.08 (Ø52)
- Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)
- 2. For flange mounting bolts, use hexagonal socket head bolts.

With key and tap



|            |       |       |
|------------|-------|-------|
| MERCHAND G | CLASS | TRACE |
| SVM        | E-W   |       |

| Model      | Rated Speed (r/min) | Output (W) | L     | LL    | LM   | S  | LT   | KB1  |
|------------|---------------------|------------|-------|-------|------|----|------|------|
| MSMD022J1D | 3000                | 200        | 146   | 116   | 93.5 | 11 | 22.5 | 22.5 |
| MSMD042J1D | 1                   | 400        | 165.5 | 135.5 | 113  | 14 | 1    | 42   |

| Scale      | Panasonic Corporation    | Agreement | Model                        |
|------------|--------------------------|-----------|------------------------------|
| 1 : 1      | 3rd Angle System Unit:mm |           | MSMD002J1D D60               |
| Designed   | Drawn                    | Checked   | Name                         |
| KUTSUJAKE  | KUTSUJAKE                | Tanaka    | OUTLINE DRAWING (With brake) |
| 2012/01/16 | 2012/01/16               | 2012.2.15 | No.                          |
|            |                          |           | SR-DSV1073604                |

SR-DSV1073605

Do NOT scale the drawings. Instead rely on the dimensions and their definitions.

Opponent connector (No belongings)

Motor connector (AMP)  
 Cap : 172159-1  
 Socket : 170362-1  
 or 170366-1

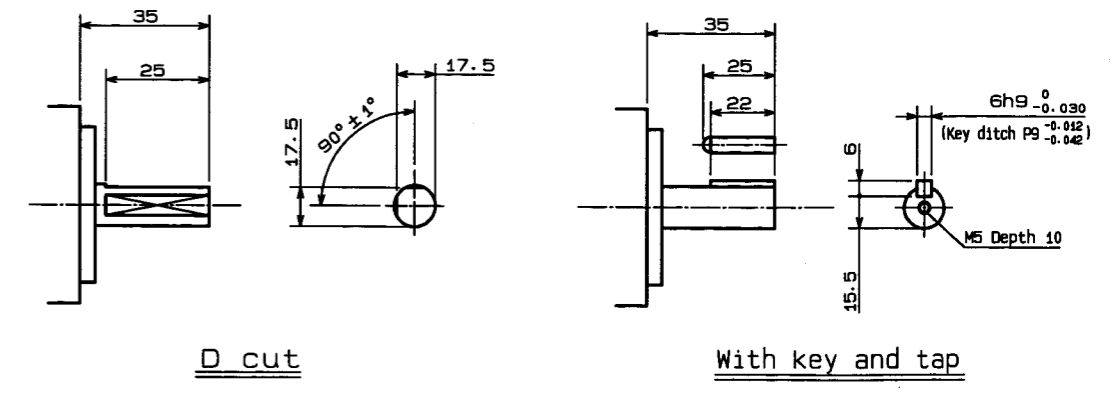
Detector connector (AMP)  
 Cap : 172160-1  
 Socket : 170361-1  
 or 170365-1

Rotary encoder unit

| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       | —              | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | FSV     |
| 5       | Black          | FOV     |
| 6       | Shielding wire | FG      |

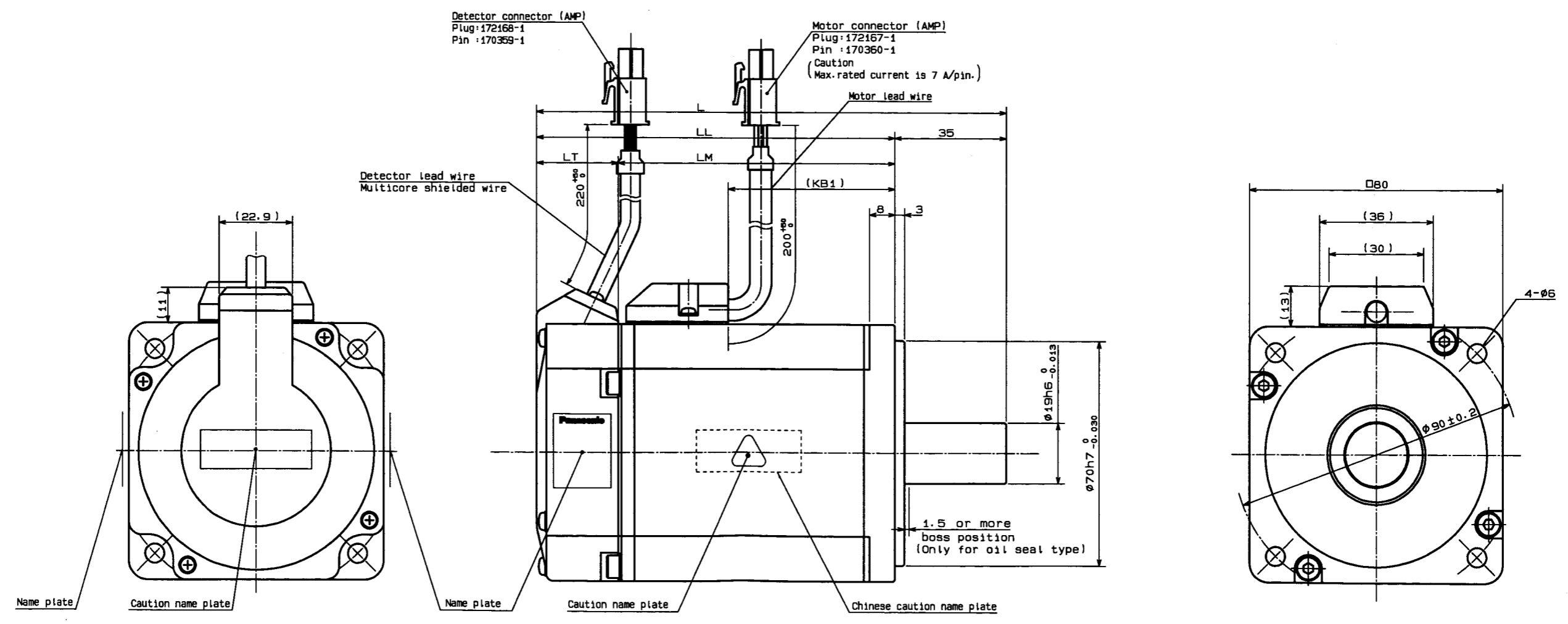
Motor unit

| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |



Detector connector (AMP)  
 Plug: 172168-1  
 Pin : 170359-1

Motor connector (AMP)  
 Plug: 172167-1  
 Pin : 170360-1  
 Caution  
 (Max. rated current is 7 A/pin.)



NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
 · Shaft end runout: 0.03 (shaft exit middle) (TIR value)  
 · Squareness of flange face to shaft: 0.08 (ø72)  
 · Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)

2. For flange mounting bolts, use hexagonal socket head bolts.

| Model      | Rated Speed (r/min) | Output (W) | L     | LL    | LM   | LT   | KB1  |
|------------|---------------------|------------|-------|-------|------|------|------|
| MSMD082J10 | 3000                | 750        | 147.2 | 112.2 | 86.7 | 25.5 | 52.2 |

| Scale      | Panasonic Corporation | Agreement  | Model          |
|------------|-----------------------|------------|----------------|
| 1 : 1      | 3rd Angle System      | Unit: mm   | MSMD082J10 □80 |
| Designed   | Drawn                 | Checked    | Checked        |
| KUTSUKAKE  | KUTSUKAKE             | Tamura     | SATO           |
| 2012/11/16 | 2012/11/16            | 2012.11.16 | No.            |
|            |                       |            | SR-DSV1073605  |

REVISION CLASS TRACE E-W SVM

SR-DSV1073606

Do NOT scale the drawings. Instead rely on the dimensions and their definitions.

Opponent connector (No belongings)

Motor connector (AMP)  
Cap : 172159-1  
Socket : 170362-1  
or 170366-1

Detector connector (AMP)  
Cap : 172160-1  
Socket : 170361-1  
or 170365-1

Brake connector (AMP)  
Cap : 172157-1  
Socket : 170362-1  
or 170366-1

Rotary encoder unit

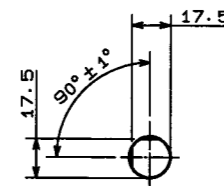
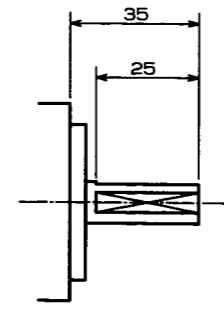
| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       | —              | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | F5V     |
| 5       | Black          | F0V     |
| 6       | Shielding wire | FG      |

Brake unit

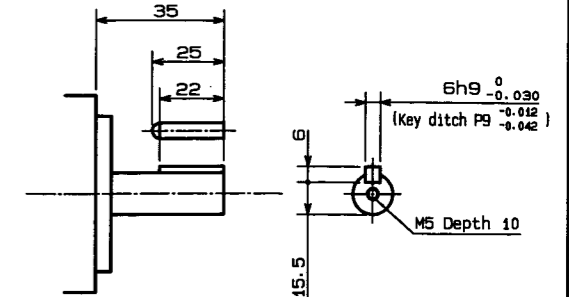
| PIN No. | Color  | Signal |
|---------|--------|--------|
| 1       | Yellow | Brake  |
| 2       | Yellow | Brake  |

Motor unit

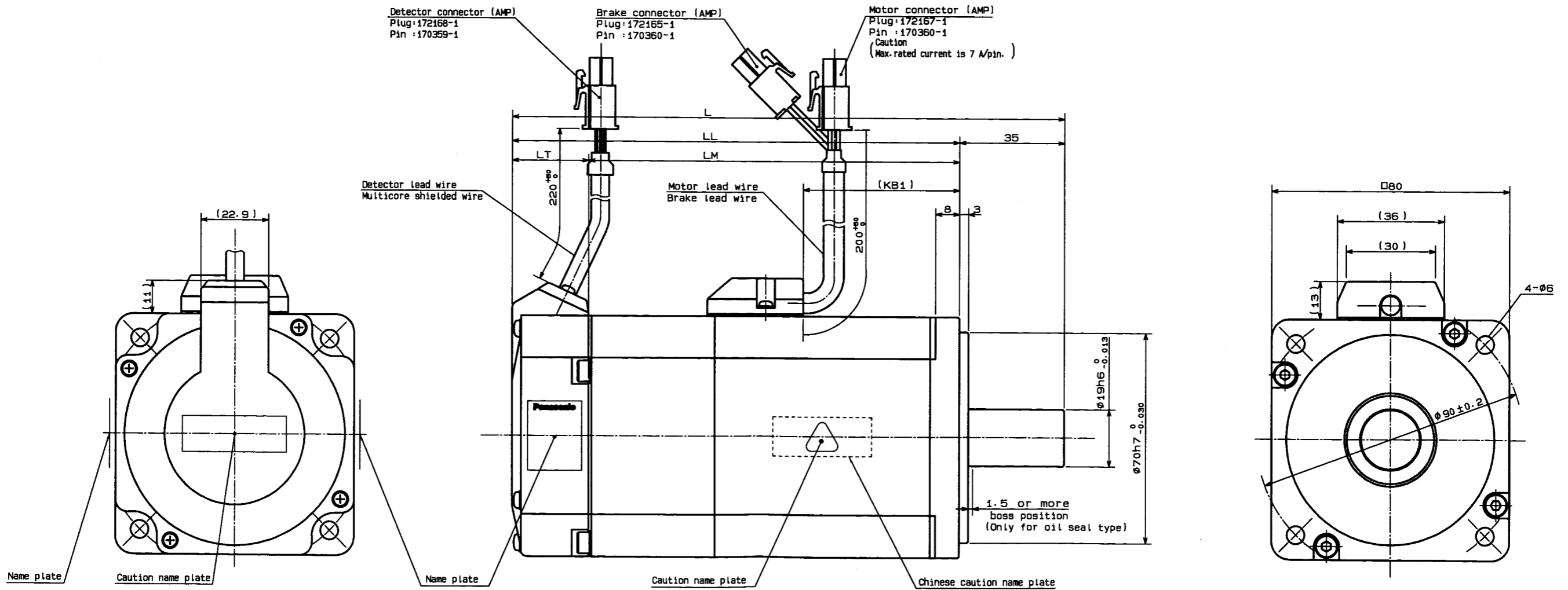
| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |



D cut



With key and tap



| Model      | Rated Speed (r/min) | Output (W) | L     | LL    | LM    | LT   | KB1  |
|------------|---------------------|------------|-------|-------|-------|------|------|
| MSMD082J1□ | 3000                | 750        | 184.2 | 149.2 | 123.7 | 25.5 | 52.2 |

NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
 · Shaft end runout: 0.03 (shaft exit middle) (TIR value)  
 · Squareness of flange face to shaft: 0.08 (Ø72)  
 · Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)  
 2. For flange mounting bolts, use hexagonal socket head bolts.

TRADE MARK  
CLASS E-W  
SYM

|           |                       |           |         |                              |
|-----------|-----------------------|-----------|---------|------------------------------|
| Scale     | Panasonic Corporation | Agreement | Model   | MSMD082J1□ □80               |
| 1 : 1     | 3rd Angle System      | Unit:mm   | Name    | OUTLINE DRAWING (With brake) |
| Designed  | Drawn                 | Checked   | Checked |                              |
| KUTSUKAKE | KUTSUKAKE             | Tamura    | SATO    |                              |
| 2012/1/18 | 2012/1/18             | 2012.1.15 | No.     | SR-DSV1073606                |



SR-DSV1073607

Do NOT scale the drawings. Instead rely on the dimensions and their definitions.

Opponent connector (No belongings)

Motor connector (AMP)  
Cap :172159-1  
Socket:170362-1  
or 170366-1

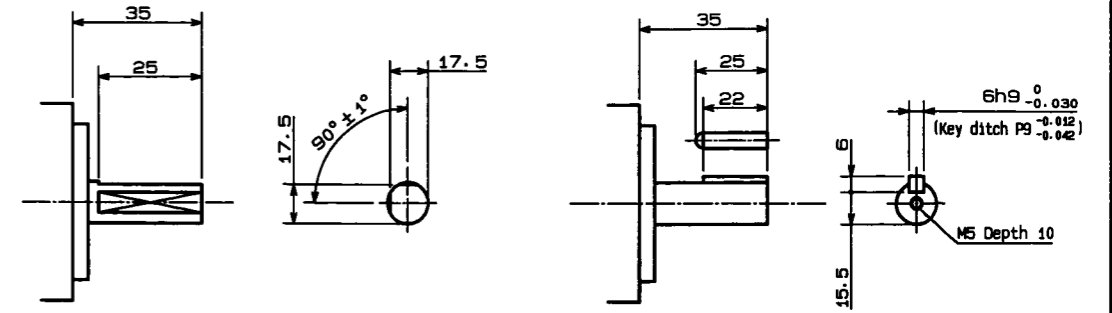
Detector connector (AMP)  
Cap :172160-1  
Socket:170361-1  
or 170365-1

Rotary encoder unit

| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       | —              | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | E5V     |
| 5       | Black          | E0V     |
| 6       | Shielding wire | FG      |

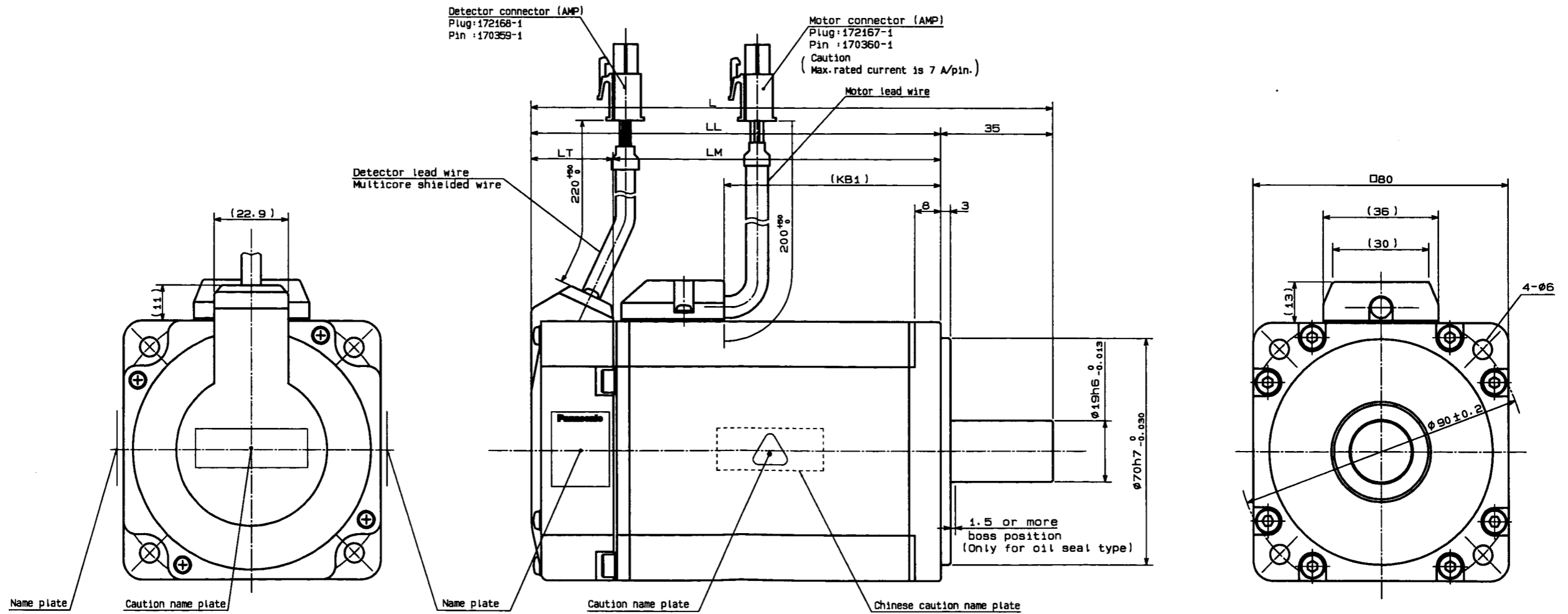
Motor unit

| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | F      |



D cut

With key and tap



NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
 ·Shaft end runoff: 0.03 (shaft exit middle) (TIR value)  
 ·Squareness of flange face to shaft: 0.08(ø72)  
 ·Eccentricity of flange fitting outside diameter to shaft: 0.05 (middle of spigot)  
 2. For flange mounting bolts, use hexagonal socket head bolts.

| Model      | Rated Speed (r/min) | Output (w) | L     | LL    | LM    | LT   | KB1  |
|------------|---------------------|------------|-------|-------|-------|------|------|
| MSMD102J10 | 3000                | 1000       | 162.2 | 127.2 | 101.7 | 25.5 | 67.2 |

| Scale     | Panasonic Corporation    | Agreement | Model                           |
|-----------|--------------------------|-----------|---------------------------------|
| 1 : 1     | 3rd Angle System Unit:mm |           | MSMD102J10 80                   |
| Designed  | Drawn                    | Checked   | Checked                         |
| KUTSUKAKE | KUTSUKAKE                | Tamura    | SATO                            |
| 2012/1/15 | 2012/1/15                | 2012.2.11 |                                 |
|           |                          |           | Name                            |
|           |                          |           | OUTLINE DRAWING (None of brake) |
|           |                          |           | No.                             |
|           |                          |           | SR-DSV1073607                   |

REWORK CLASS E-W TRAGE

SR-DSV1073608

Do NOT scale the drawings. Instead rely on the dimensions and their definitions.

Opponent connector (No belongings)

Motor connector (AMP)  
Cap :172159-1  
Socket:170362-1  
or 170366-1

Detector connector (AMP)  
Cap :172160-1  
Socket:170361-1  
or 170365-1

Brake connector (AMP)  
Cap :172157-1  
Socket:170362-1  
or 170366-1

Rotary encoder unit

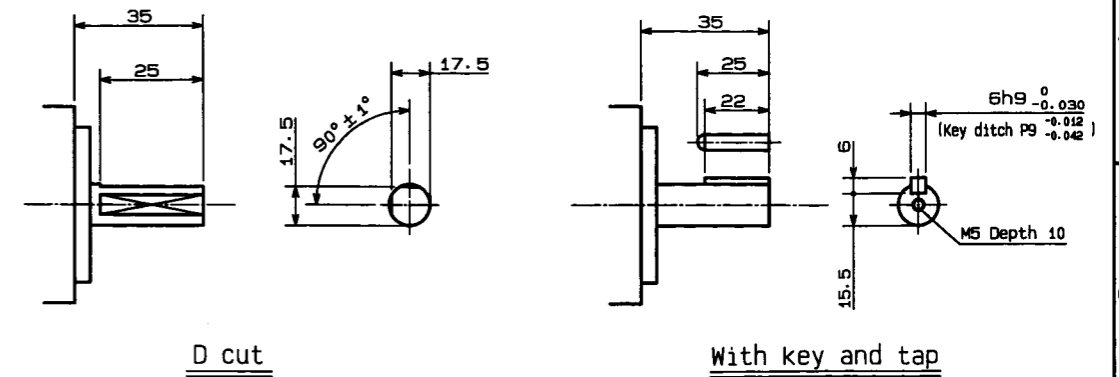
| PIN No. | Color          | Signal  |
|---------|----------------|---------|
| 1       |                | NC      |
| 2       | Sky blue       | PS (SD) |
| 3       | Violet         | PS (SD) |
| 4       | White          | ESV     |
| 5       | Black          | EOV     |
| 6       | Shielding wire | FG      |

Brake unit

| PIN No. | Color  | Signal |
|---------|--------|--------|
| 1       | Yellow | Brake  |
| 2       | Yellow | Brake  |

Motor unit

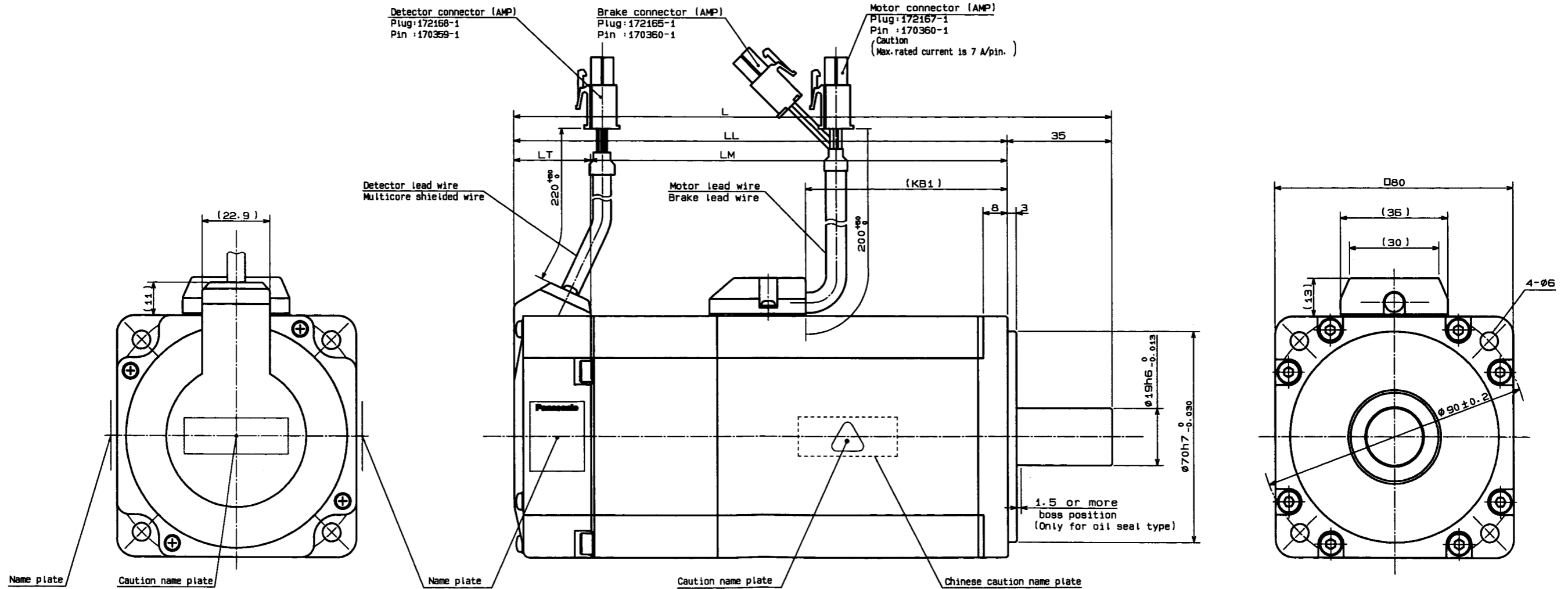
| PIN No. | Color        | Signal |
|---------|--------------|--------|
| 1       | Red          | U      |
| 2       | White        | V      |
| 3       | Black        | W      |
| 4       | Green/Yellow | E      |



Detector connector (AMP)  
Plug:172168-1  
Pin :170359-1

Brake connector (AMP)  
Plug:172165-1  
Pin :170360-1

Motor connector (AMP)  
Plug:172167-1  
Pin :170360-1  
(Caution  
Max. rated current is 7 A/pin.)



NOTE 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981).  
·Shaft end runout: 0.03 (shaft exit middle) (TIR value)  
·Squareness of flange face to shaft: 0.08 (Ø72)  
·Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)

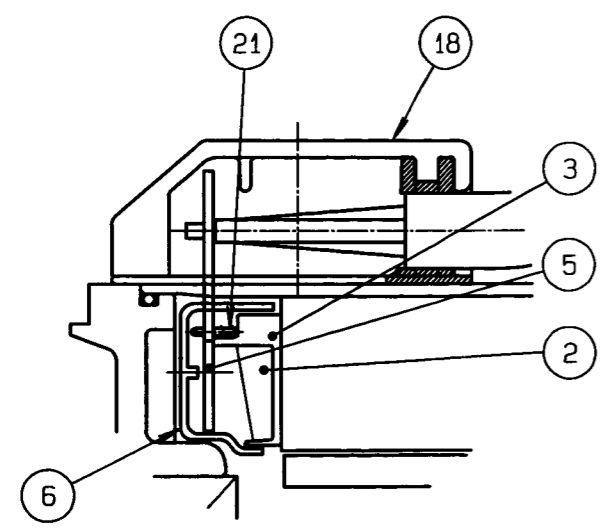
2. For flange mounting bolts, use hexagonal socket head bolts.

| Model      | Rated Speed (r/min) | Output (W) | L     | LL    | LM    | LT   | KB1  |
|------------|---------------------|------------|-------|-------|-------|------|------|
| MSMD102J1□ | 3000                | 1000       | 199.2 | 164.2 | 138.7 | 25.5 | 67.2 |

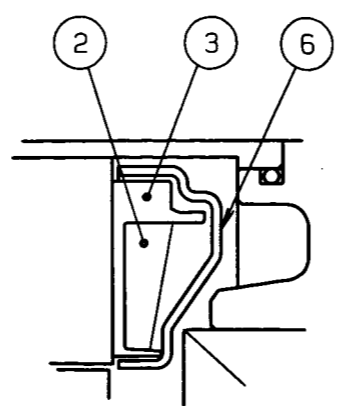
REWORK CLASS E-W SVM

| Scale      | Panasonic Corporation | Agreement | Model          |
|------------|-----------------------|-----------|----------------|
| 1 : 1      | 3rd Angle System      | Unit:mm   | MSMD102J1□ □80 |
| Designed   | Drawn                 | Checked   | Checked        |
| KUTSUKAKE  | KUTSUKAKE             | Tamura    | SATO           |
| 2012/01/18 | 2012/01/18            | 2012.2.15 | No.            |
|            |                       |           | SR-DSV1073608  |

Do NOT scale the drawings.  
Instead rely on the dimensions  
and their definitions

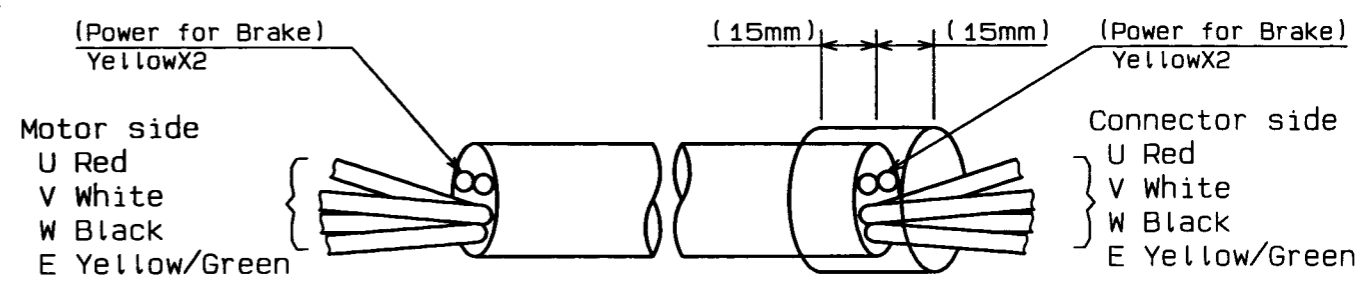
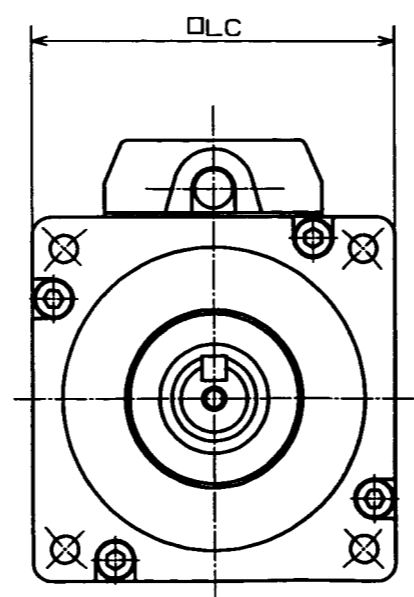
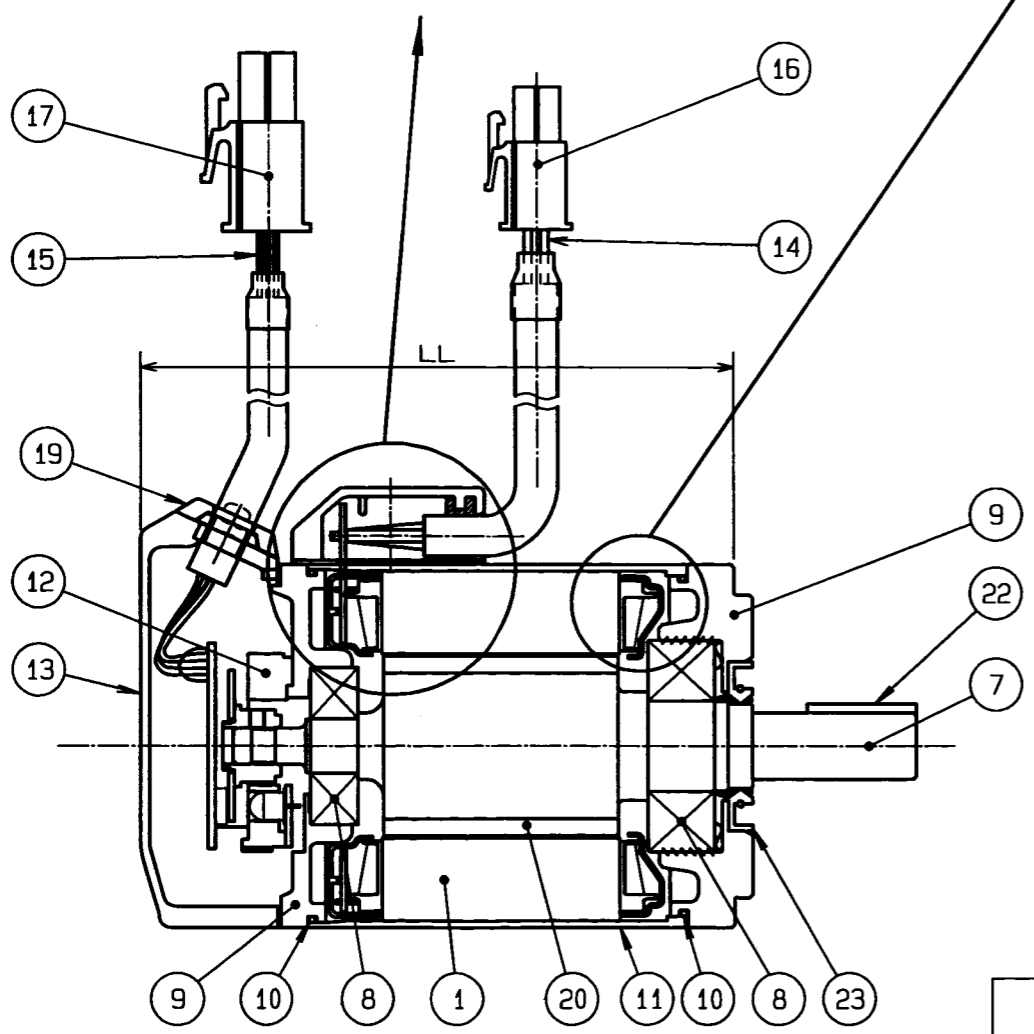


Detail of lead wire connection part



Detail of output shaft side coil end part

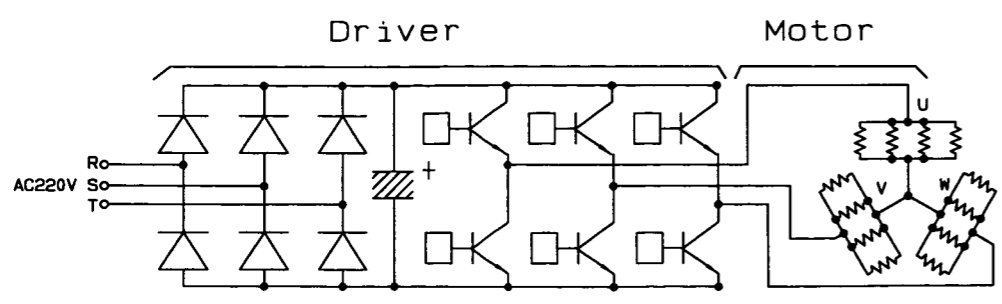
| No. | Color        | Signal |
|-----|--------------|--------|
| 1   | Red          | U      |
| 2   | White        | V      |
| 3   | Black        | W      |
| 4   | Yellow/Green | FG     |
| 5   | Yellow       |        |
| 6   | Yellow       |        |



Detail of Motor lead wire

|    |                        |  |    |
|----|------------------------|--|----|
| 23 | Oil seal               | Nitrile rubber   | 1  |
| 22 | Key                    | S45C   | 1  |
| 21 | Pin                    | Phosphor copper  | 24 |
| 20 | Permanent magnet       | Rare earth magnet  | 1  |
| 19 | Encoder lead fixer     | Polyamide  | 1  |
| 18 | Motor lead fixer       | Polyamide  | 1  |
| 17 | Encoder connector      | Polyamide (UL94V-0)  | 1  |
| 16 | Motor connector        | Polyamide (UL94V-0)  | 1  |
| 15 | Encoder leads          | Multi-core ETFE wire UL2589  |    |
| 14 | Motor leads            | Cabtire cable 6 wires UL 2103 KXLPEC<br>Wire composition:6 core polyethelene wire (UL 3266.AWG 20) |    |
| 13 | RE cover               | Polyamide  | 1  |
| 12 | Detector               | 2500 P/R   | 1  |
| 11 | Frame                  | Alminium   | 1  |
| 10 | O-ring                 | Nitrile rubber   | 2  |
| 9  | End bracket            | Alminium   | 2  |
| 8  | Ball bearing           | Bearing steels   | 2  |
| 7  | Motor shaft            | S45C, SCM435   | 1  |
| 6  | Insulating cap         | Polyethylene terephthalate   | 1  |
| 5  | Printing circuit board | Composite  | 1  |
| 4  | Slot insulator         | Polyester film   | 24 |
| 3  | End insulator          | Polyethylene terephthalate   | 24 |
| 2  | Winding                | Polyester enameled copper wire   |    |
| 1  | Stator                 | Electrical steel   |    |

| Model      | LC | LL    |
|------------|----|-------|
| MSMD5AZJ1D | 38 | 72    |
| MSMD012J1D | 38 | 92    |
| MSMD022J1D | 60 | 79.5  |
| MSMD042J1D | 60 | 99    |
| MSMD082J1D | 80 | 112.2 |
| MSMD102J1D | 80 | 127.2 |

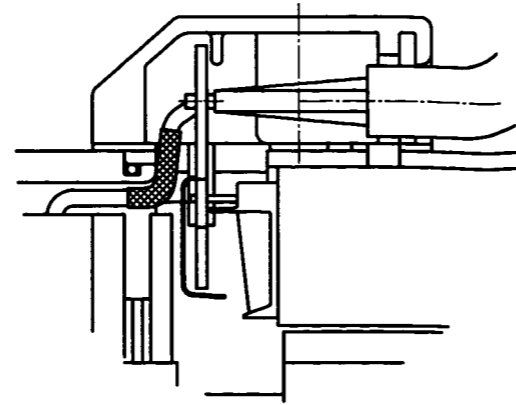


| No.        | Name  | Material  | Qt.       |
|------------|---|-----------|-----------|
| Scale      | Panasonic Corporation                             |           | Agreement |
|            | 3rd Angle System                                  |           | Unit:mm   |
| Designed   | Drawn   | Checked   | Checked   |
| KUTSUKAKE  | KUTSUKAKE   | Tamura    | SATO      |
| 2012/01/16 | 2012/01/16  | 2012.2.15 |           |
| Model      | MSMD□□□J1□  |           |           |
| Name       | STRUCTURE SECTION VIEW DRAWING<br>(None of brake) |           |           |
| No.        | SR-DSV1073609                                     |           |           |

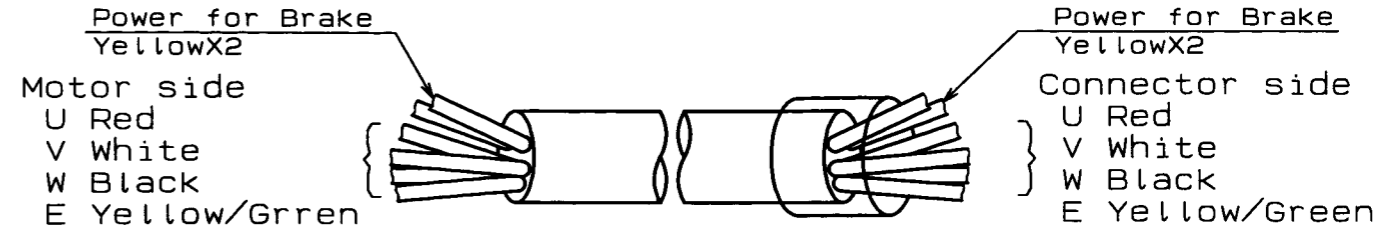
Do NOT scale the drawings. Instead rely on the dimensions and their definitions

TRACE  
CLASS E  
SVM

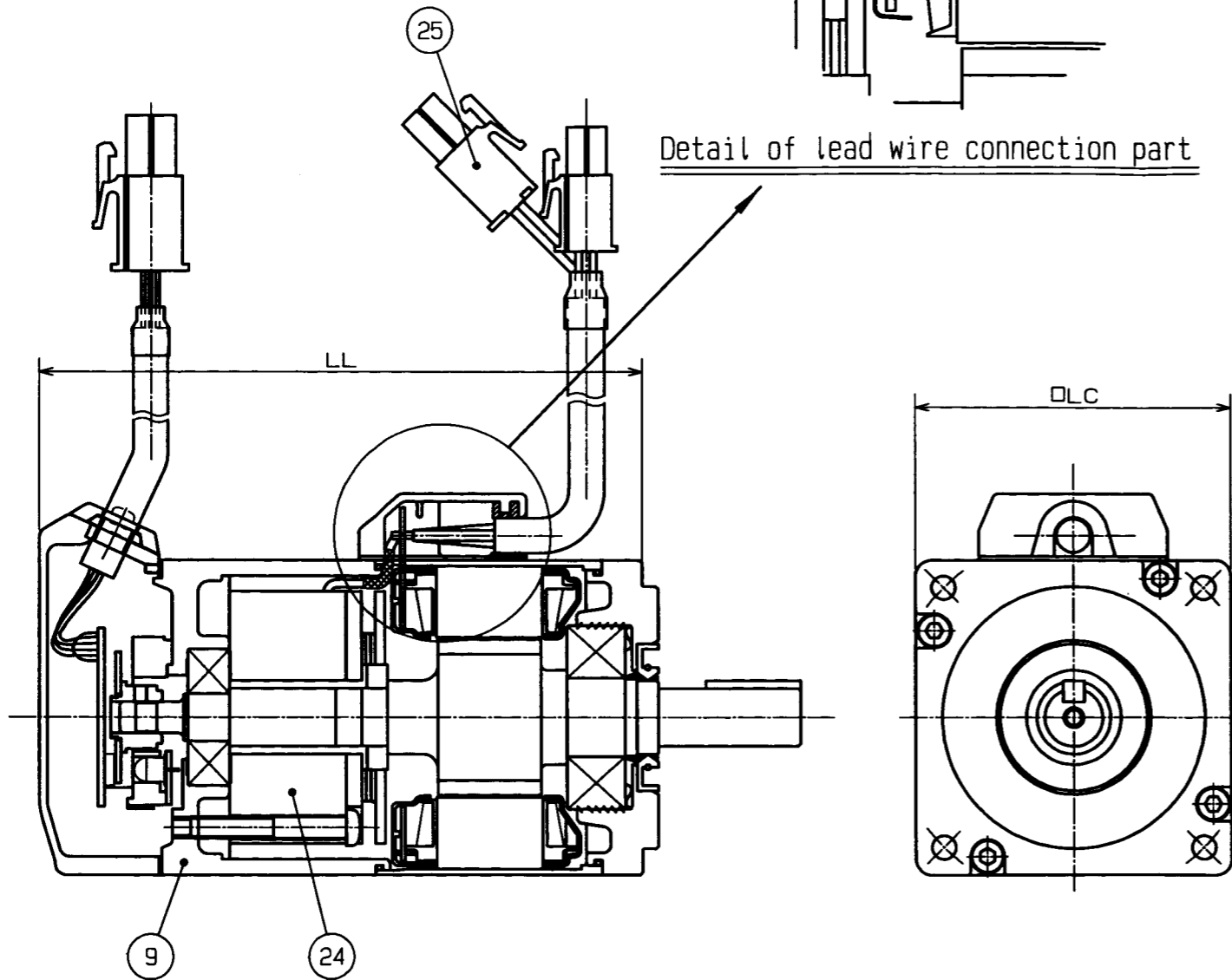
| No. | Color        | Signal |
|-----|--------------|--------|
| 1   | Red          | U      |
| 2   | White        | V      |
| 3   | Black        | W      |
| 4   | Yellow/Green | FG     |
| 5   | Yellow       | Brake  |
| 6   | Yellow       | Brake  |



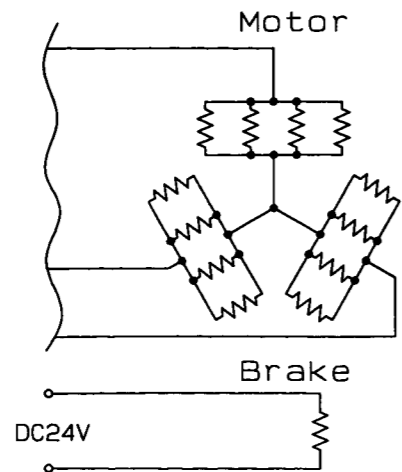
Detail of lead wire connection part



Detail of Motor lead wire  
Detail of Brake lead wire



|    |                        |  |    |
|----|------------------------|--|----|
| 25 | Brake connector        | Polyamide (UL94V-0)  | 1  |
| 24 | Brake                  | Yoke:Steel<br>Coil:Polyesterimide enameled copper wire<br>Brake leads:Fluorinated ethylene prorylene wire UL 1332/CSA HF18-1 AWG24 | 1  |
| 23 | Oil seal               | Nitrile rubber   | 1  |
| 22 | Key                    | S45C   | 1  |
| 21 | Pin                    | Phosphor copper  | 24 |
| 20 | Permanent magnet       | Rare earth magnet  | 1  |
| 19 | Encoder lead fixer     | Polyamide  | 1  |
| 18 | Motor lead fixer       | Polyamide  | 1  |
| 17 | Encoder connector      | Polyamide (UL94V-0)  | 1  |
| 16 | Motor connector        | Polyamide (UL94V-0)  | 1  |
| 15 | Encoder leads          | Multi-core ETFE wire UL2589  |    |
| 14 | Motor leads            | Cabtire cable 6 wires UL 2103 KXLPEC<br>Wire composition:6 core polyethelene wire (UL 3266.AWG 20)                                 |    |
| 13 | RE cover               | Polyamide  | 1  |
| 12 | Detector               | 2500 P/R   | 1  |
| 11 | Frame                  | Alminium   | 1  |
| 10 | O-ring                 | Nitrile rubber   |    |
| 9  | End bracket            | Alminium   | 2  |
| 8  | Ball bearing           | Bearing steels   | 2  |
| 7  | Motor shaft            | S45C.SCM435  | 1  |
| 6  | Insulating cap         | Polyethylene terephthalate   | 1  |
| 5  | Printing circuit board | Composite  | 1  |
| 4  | Slot insulator         | Polyester film   | 24 |
| 3  | End insulator          | Polyethylene terephthalate   | 24 |
| 2  | Winding                | Polyester enameled copper wire   |    |
| 1  | Stator                 | Electrical steel   |    |



| Model      | LC | LL    |
|------------|----|-------|
| MSMD5AZJ10 | 38 | 102   |
| MSMD012J10 | 38 | 122   |
| MSMD022J10 | 60 | 116   |
| MSMD042J10 | 60 | 135.5 |
| MSMD082J10 | 80 | 149.2 |
| MSMD102J10 | 80 | 164.2 |

| No.        | Name                  | Material  | Qt.           |
|------------|-----------------------|-----------|---------------|
| Scale      | Panasonic Corporation |           | Agreement     |
| Designed   | 3rd Angle System      |           | Model         |
|            | Unit:mm               |           |               |
| Drawn      | Checked               | Checked   | Name          |
| KUTSUKAKE  | KUTSUKAKE             | Tamura    | SATO          |
| 2012/01/16 | 2012/01/16            | 2012.2.15 | No.           |
|            |                       |           | SR-DSV1073610 |