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| Document No.: | SR-DSV12739 |
| Revision No.: | 0.0 |
| Date of Issue: | April 1, 2022 |
| Classification: | ■ New □ Change |

# SPECIFICATIONS

Product Name: AC Servo Motor

Product Series Name: MINAS A6 Low-voltage Series

Product Model Number: MQMF (23-bit absolute encoder specification)

| * If you received this specification, please fill in and sign the below and return 1 copy to us. |
|---|
| Received Date : |
| Executed by : |
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| Dept. : |

| | | | |
|---|---|---|---|
| Prepared by: Signature | T. Nozawa | Checked by: Signature | S. Nishio |
| Name (Print) | T.Nozawa | Name (Print) | Chief Engineer |
| Title | Engineer | Title | S.Nishio |
| Checked by: Signature | H. Okuno | Authorized by: Signature | M. Nishiyama |
| Name (Print) | Maneger | Name (Print) | General Maneger |
| Title | H.Okuno | Title | M.Nishiyama |

Motion Control Business Unit, Industrial Device Business Division
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If you have any questions, please contact the sales office or distributor of the product.



Panasonic

# REVISIONS

| Date | Rev. | Page | Description | Signed |
|---|---|---|---|---|
| Apr. 1, 2022 | 0.0 | — | NEWLY ISSUED | T.Nozawa |
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| | | | | |

# Table of Contents

# 1 Scope of Application

This specification document relates to the servo motor of the AC servo system manufactured and delivered by Motion Control Business Unit, Industrial Device Business Division, Panasonic Industry Co., Ltd.

This product is intended for use as industrial equipment. It must not be used for any other purpose (e.g., for home use).

## 2 Applicable Models, Specifications, Motor Dimensions, Applicable Servo Driver

| Applicable Models | Motor Rating | Other Specifications | Motor Dimensions | Applicable Servo Driver |
|---|---|---|---|---|
| MQMF01BL1□2 | 100 W, DC 48V | Without oil seal<br>With oil seal | SR-DSV1273901 (without brake)<br>SR-DSV1273902 (with brake) | MVDLN4B** |
| MQMF01CL1□2 | 100 W, DC 24 V | Without oil seal<br>With oil seal | ↑ | MVDLN5C** |
| MQMF1ECL1□2 | 133 W, DC 24 V | Without oil seal<br>With oil seal | SR-DSV1273903 (without brake)<br>SR-DSV1273904 (with brake) | MVDLN5C** |
| MQMF02BL1□2 | 200 W, DC 48 V | Without oil seal<br>With oil seal | ↑ | MVDLN5B** |
| MQMF2JBL1□2 | 266 W, DC 48 V | Without oil seal<br>With oil seal | ↑ | MVDLN5B** |

* See the table below for what the □ symbols in the applicable model names represent.

| Oil seal | Brake | Shaft | |
|---|---|---|---|
| | | Straight | With key and tap |
| Without | Without | A | S |
| | With | B | T |
| With | Without | C | U |
| | With | D | V |

The dimensions of the motor depend on whether or not it includes an oil seal.

For more information, refer to the Motor Dimension Drawing.

## 3 Serial No. (Prodution No.)

The serial no. on the motor name plate contains the following:

| Example SER No. | ２２ | ０４ | ０００１ |
|---|---|---|---|
| | Production year | Production month | Serial number |

## 4 Performance and Environmental Conditions

| | | |
|---|---|---|
| Performance | Insulation resistance | Motor unit : 20 MΩ or more when cool by DC500 V megger.<br>(Between motor frame and motor lead wire) |
| | Insulation voltage resistance | ● Motor unit : To withstand AC1000 V for 1 minute.<br>(Between motor frame and motor lead wire)<br>● Brake unit : To withstand AC1000 V for 1 minute.<br>(Between motor frame and brake lead wire) |
| | Allowable maximum speed | 120 % of the maximum speed. (Operational speed must be 100 % or less.) |
| | Vibration resistance | 49 $m/s^2$ or less X,Y,Z directions<br>(At center of frame,20 to 3000 Hz, with not more than 1.5mm amplitude)<br>But when the motor doesn't operate, 24.5 $m/s^2$ or less. |
| | Impact resistance | 98 $m/s^2$ in X,Y,Z directions ; 3 times each (Flange mounting position) |
| | IP rating(*1) (Dust-proof & Drip-proof) | Equivalent of IP65 (Except for shaft through sections and connector sections.) |
| Environmental condition | Heat resistance(*2) | Allowable ambient temperature (Except for motor temperature rise) Operating 0 ℃ to +40 ℃<br>Storing: -20 ℃ to +65 ℃ (The maximum storing temperature:80 ℃, accumulation 72 hours, normal humidity) |
| | Humidity resistance(*2) | Operating and storing 20 to 85 %RH (Not to condensation) |
| | Altitude | 1000 m or less above sea level |

*1 IP65 is one of the designations that mean classification of IP rating defined 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 rating in the actual use.

*2 Condensation is likely to occur if the temperature decreases.

## 5 Assembly Accuracy

1 Follows the Motor Dimension Drawing.

- Axial runout is measured in the lateral direction of the shaft.
- The flange surface perpendicularity and spigot eccentricity are measured in the vertical direction of the shaft.

2 End play (axial play): 0.3 mm or less. (Reference value)

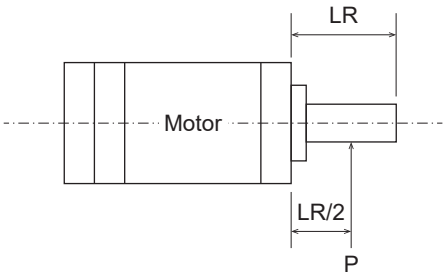
## 6 Shaft Allowable Load

Unit : [N]

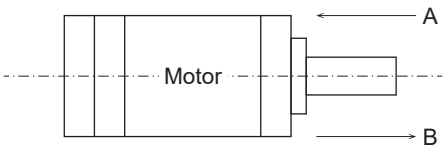
| Motor | When assembled | | | When operating | |
|---|---|---|---|---|---|
| | Radial load | Thrust load | | Radial load | Thrust load |
| | | Direction A | Direction B | | |
| MQMF01 | 147 | 88 | 117.6 | 68.6 | 58.8 |
| MQMF1E, MQMF02,MQMF2J | 392 | 147 | 196 | 245 | 98 |

For dimensions (LR), see the Motor Dimension Drawing.

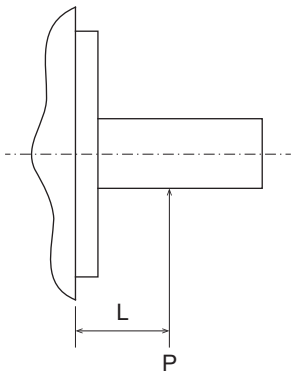
Radial load (P) position




Thrust load direction




When the load position is changed, calculate allowable radial load P using the following relational expressions. When doing so, use load position distance L from the mounting flange surface and set the load to a value less than or equal to the calculated result.




Unit:P[N], L[mm]

| Applicable Models | Relational expressions for load-to-load position |
|---|---|
| MQMF01 | $P = \frac{3420}{L+28.8}$ |
| MQMF1E<br>MQMF02 | $P = \frac{14639}{L+36}$ |
| MQMF2J | $P = \frac{17579}{L+48}$ |

## 7 Rotary Encoder Specifications

1 23-bit absolute encoder

2 For details, see specification document no. SX-DSV02998.

**Precautions for when replacing the battery of absolute encoders**

- Before replacing the battery, turn on the encoder's main power supply (5 V supplied to the encoder) and leave it on.
- Please note that if the battery is replaced while the encoder's main power supply is switched off, the data stored in the encoder will be lost.

## 8 Motor Brake Specifications

| Item | Unit | Applicable Models | |
|---|---|---|---|
| | | MQMF01 | MQMF1E,MQMF02, MQMF2J |
| Static friction torque(*1) | N・m | 0.39 or more | 1.6 or more |
| Rotary part inertia(*2) | $10^{-4}$ kg·m$^2$ | 0.018 | 0.075 |
| Armature pull-in time(*2) | ms | 15 or more | 70 or less |
| Armature release time(*2)(*3) | ms | 20 or less | ← |
| Release voltage(*1) | DC, V | 1 or more | ← |
| Excitation voltage | DC, V | 24 ± 2.4 | ← |
| Excitation current (at DC24 V)(*2) | DC, A | 0.30 | 0.36 |
| Allowable braking energy(*2) | J | 105 | 185 |
| All allowable braking energy(*2) | J | 44.1 × $10^3$ | 80.0 × $10^3$ |
| Allowable angular acceleration(*2) | rad/s$^2$ | 30000 | ← |

*1 Value of our delivery inspection.

*2 Representative value at 20 ℃.

*3 DC cut-off using a varistor (TND14V271K made by Nippon Chemi-Con Corporation).

1 This brake is a non-excitation brake.

2 Armature pull in time and Armature release time are delay time of brake operation.
Please confirm these by actual machine when motor is used.

3 The backlash for this brake should not exceed 2° at the time of shipping.

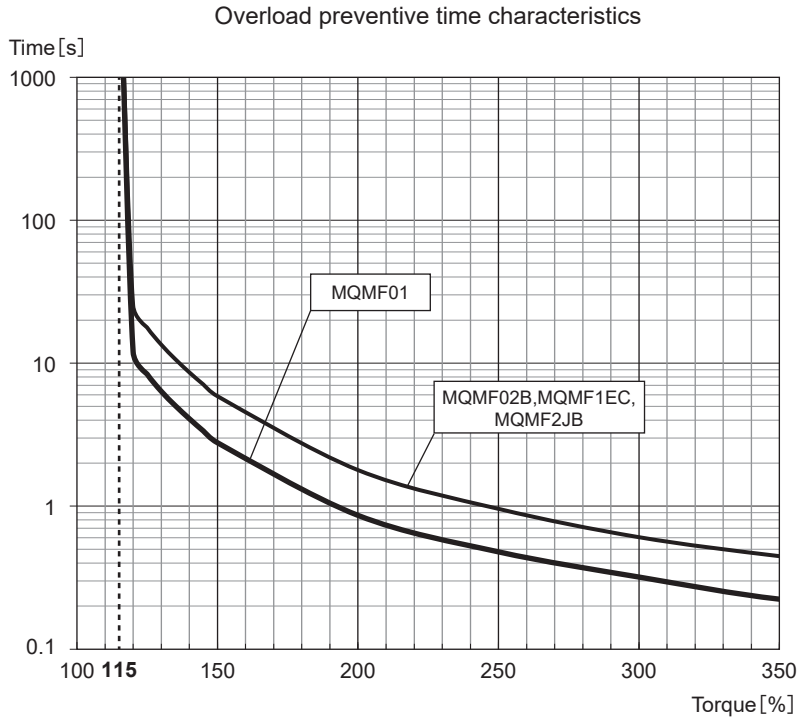
4 The brake power supply is to be provided by the user. (No polarity specified)

5 The allowable braking energy stated above represents the amount of braking that can be performed in compliance with brake specifications.
(braking energy capable of performing a suction motion in consideration of braking temperature increases)

6 The motor's life span is 10 million accelerations and decelerations at the allowable angular acceleration stated above.
(The number of accelerations and decelerations before brake backlash starts increasing rapidly)

7 When using a varistor, it is recommended to connect protective parts, such as fuses, in series.

## 9 Time Characteristics




The above time characteristics are obtained when our company standard servo driver is used.

Ensure that the effective torque is within the continuous duty zone of the Speed-Torque characteristics of each motor.

For Speed-Torque characteristics, please check the motor specifications.

When used in combination with a servo driver other than our standard servo driver, ensure that the overload setting for the servo driver is below the time stated above.

Please contact for the time characteristics of specific models.

## 10 Compliance with International Standards

List of compliance standards for servo motors

| | | Standard No. |
|---|---|---|
| European EU standards | Low voltage | EN 60034-1:2010<br>EN 60034-5:2001/A1:2007 |
| UL standards | | UL 1004-1, UL 1004-6 (File No. E327868) |
| CSA standards | | CSA 22.2, No. 100 |

## 11 Safety Precautions

This section explains precautions that must be taken to prevent harm to people and damage to property.

# ⚠ Safety precautions

The following symbols represent the extent of the harm or damage that may occur through improper use.

| | |
|---|---|
| ⚠ **Danger** | This indicates "a significant risk of death or serious injury". |
| ⚠ **Caution** | This indicates "a risk of minor injury or damage to property". |

The following symbols indicate how to comply with safety precautions.

| | |
|---|---|
|  | Something that you must **not** do. |
|  | Something you must do. |

## ⚠ Danger

- Ensure that the product is used in environments with a pollution degree of 2 or 1 (places free from dust, metal powders, oil mists, and other foreign objects, as well as liquids such as water, oil, or grinding fluids). Do not store or use near combustible materials or in an environment containing corrosive gases ($H_2S$, $SO_2$, $NO_2$, $Cl_2$, etc.) or flammable gases.
- Do not place flammable materials near the motor, servo driver, or regenerative resistor.
- Do not run the motor using an external power source. If the motor is run externally, it will start acting as an electricity generator. This may cause it to short-circuit during operation of the dynamic brake, which is integrated into the servo driver, resulting in smoke and dust being emitted. Doing so may also cause the dynamic brake to become disconnected, preventing it from functioning.
- Do not damage the cable, apply undue stress to it, place heavy objects on it, or pinch it.
- Do not use with the cable submerged in oil or water.
- Do not install the product next to heating elements such as heaters or large winding resistors.
  (Protection such as heat shields should be used to protect the product from heating elements.)
- Do not connect a commercial power supply directly to the motor.
- Do not use in places susceptible to strong vibrations or impacts. If installing a servo driver near a source of vibration, attach a vibration dampening device to the servo driver mounting surface.
- Do not touch the rotating parts of the motor during operation.
- Do not touch the keyway of the motor output shaft with bare hands.
- Do not put hands inside the servo driver.
- Do not touch the heat sink or devices surrounding the motor or servo driver, as they can get very hot.
- Do not performing wiring or operate the product with wet hands.
- Wiring work should be carried out by an electrical engineer.
- Motors other than that specified do not include protective devices. Protect them using overcurrent protection devices, ground-fault circuit interrupters, overheating prevention devices, emergency stop devices, etc.

# ⚠ Danger

- Before operating the servo driver following an earthquake, ensure that the servo driver and motor are properly installed and that the machine is safe.
- After the power supply is switched off, the internal circuit will be charged at high voltage for a period of time. When relocating, wiring, or inspecting the driver, ensure that the power supply input is completely disconnected on the outside of the servo driver and wait at least 15 minutes before carrying out any work.
- Install and set up the product so that it does not cause fire or personal injury in the event of an earthquake.
- Install an external emergency stop circuit must be installed to enable the power supply to be immediately disconnected in the event of an emergency.

  Failure of the combined motor and servo driver may result in smoke and dust being emitted. For example, if an electric current is passed through the regenerative control power transistor built into the servo driver following a short-circuit fault, the regenerative resistor installed outside the servo driver may overheat, leading to smoke and dust being emitted.

  If a regenerative resistor is connected to the outside of the servo driver, it must be installed so that the thermal protector or other overheating detection devices can detect abnormal overheating and to enable the power supply to be disconnected.
- Install the motor, servo driver, and surrounding devices to nonflammable materials such as metal.
- Ensure that the product is wired correctly and securely. Insecure or incorrect wiring may cause the motor to malfunction or lead to thermal damage. Also, do not allow any conductive materials such as wire debris to enter the servo driver during installation and wiring.
- Ensure that the cables are securely connected and that energized parts are insulated.
- Binding and inserting wires into a metal duct will cause the temperature to increase, which will result in reduced wire allowable current and possibly lead to thermal damage. Please consider the current reduction coefficient before deciding on how to wire the product.
- Be sure to install a molded case circuit breaker (MCCB) to the power supply. Also, make sure to ground the ground terminal or ground wire.

  D-type grounding or higher (ground resistance less than 100 Ω) is recommended in order to prevent electric shocks and malfunctions.
- Ensure that the power supply wire terminal, ground screws, and terminal box lid mounting bolts are securely tightened to the torque specified in the specifications document, and check that none are loose.
- When constructing a system using safety features, make sure you understand and comply with the relevant safety standards as well as the information in our user manuals or technical reference documents.

# ⚠ Caution

- When transporting the product, do not hold it by the cable or motor shaft.
- When adjusting the parameters of the servo driver, do not set the gain too high or make extreme modifications to settings simultaneously, as doing so may result in unstable operation.
- Following a power outage, do not get close to the machine once power is restored, as it may restart suddenly.
- Do not approach the motor or the machine when it is running during power-up to ensure safety in the event of an unexpected malfunction.
- Do not subject the motor shaft to strong shock.
- Do not use the electromagnetic contactor installed on the main power supply side to start or stop the motor.
- Do not turn the servo driver main power supply on and off more frequently than necessary.
- If the motor has a built-in brake, it is for maintenance purposes and should not be used as a stopping (braking) device in order to ensure machine safety.
- Do not drop or tip over the product during transportation or installation.
- Do not climb on the motor or place heavy objects on it.
- Do not cover the servo driver louver or allow any foreign objects to enter.
- Do not expose the product to direct sunlight. When storing the product, keep it away direct sunlight and store at temperatures and humidity within the specified ranges.
- Do not attempt to overhaul or modify the motor. Overhauls must be carried out by Panasonic or an authorized dealer.
- Do not start or stop the product by turning the servo-on command (SRV-ON) on or off as doing so may damage the dynamic braking circuit incorporated into the servo driver.

# ⚠ Caution

- Use the motor and servo driver in the combination specified by Panasonic. If combining the motor with a different servo driver, make sure to confirm its performance and safety.
- Failure of the motor or the servo driver it is combined with may result in thermal damage to the motor and may cause smoke and dust to be emitted. Please consider these possibilities when using the device in cleanrooms, etc.
- Make sure the device is mounted in a manner suitable for the power output and the weight of the unit.
- Keep the ambient temperature and humidity of the servo driver and motor are within the allowable ambient temperature and humidity ranges.
- Observe the specified mounting method and orientation.
- Keep the required distance between the servo driver and the control panel interior or other equipment.
- If an eyebolt is attached to the motor, it should only be used to lift the motor and not to lift any other equipment. The eyebolt should also not be used if a decelerator, face plate, etc., is attached.
- Because the eyebolt is not fully tightened, make sure it is properly screwed in and in the correct orientation before attempting to lift the motor. Also, do not tighten the eyebolt using tools, etc.
- Connect the brake control relay in series with the relay that disconnects in the event of an emergency stop.
- To perform a test run, secure the motor and check its operation with it disconnected from the mechanical system, then mount it onto the machine.
- Confirm that the input power supply voltage is in line with the servo driver specifications before turning it on and operating.

  Entering a voltage higher than the rated voltage could cause smoke and dust to be emitted inside the servo driver, which in some cases may cause the motor to malfunction or lead to thermal damage.
- In the event of an alarm, eliminate the cause of the alarm and restart the device.

  Restarting the device without eliminating the cause of the alarm may cause the motor to malfunction or lead to thermal damage.
- If the motor has a built-in brake, it may not last due to reasons such as its life span or mechanical structure. A stopping device must be installed on the machine side to ensure safety.
- Because the motor and servo driver emit heat while the motor is in operation, abnormal increases in the ambient temperature may occur if used in an enclosed area. Take care to ensure that the ambient temperatures of the motor and servo driver are within the operating range.
- Maintenance and inspections should be performed by a specialist.
- Make sure to turn off the power supply if the device will not be used for a long period of time.
- If the dynamic brake built into the servo driver is applied when the device is operating at a high speed, allow a stop time of approximately 10 minutes. Failure to do so may cause the internal circuit to disconnect or the brake to no longer be operable.
- Secure the cables so that they do not put stress on the connectors, terminal block, or other connections.

Be sure to read the safety instructions in the operating manual before use.

Because unexpected external noise (including radiation, etc.), static charge, input power supply, wiring, components, etc., can sometimes cause unexpected operation, we ask users to ensure adequate safety against unpredictable malfunctions.

## 12 Life Span and Standard Replacement Time

(these are not guaranteed)

1 Expected basic life span rating of bearings (calculated value)

With 90% reliability and statistically processed variances, the fatigue life is over 20,000 hours of continuous rated load at loads below the allowable load for the shaft.

Please ensure that the motor shaft does not repeatedly oscillate less than 45° as this can lead to fretting.

2 Expected life span of rotary encoder

The life span to fulfill the rotary encoder's specifications (half-life of LED lighting) is over 30,000 hours of continuous rated loads

3 Standard replacement time for oil seal (only motors with oil seal)

5,000 hours of continuous rated loads (depending on environment and usage method)

## 13 Warranty

1 Warranty period

The warranty period for the product is one year from the date of purchase or one year and six months from the date the product was manufactured.

However, for motors with brakes, the number of accelerations and decelerations of the shaft must not exceed the product's life span.

This does not apply to replacement parts (oil seal). (Only motors with oil seal)

The warranty will be void in any of the following cases, even within the warranty period:

- If the issue is due to incorrect use or improper repair/modification
- If the issue is due to the device being dropped after purchase or damaged during transit
- If the issue is due to the device being used outside of its specifications
- If the issue is due to a fire, earthquake, lightning strike, wind/water damage, salt damage, voltage abnormalities, other natural disasters, or natural damage
- If the issue is due to ingress of water, oil, metal fragments, or other foreign objects
- If parts with a stated standard life span have exceeded their respective life spans

2 Warranty coverage

If the product fails during the warranty period for reason in which our company is at fault, we will only replace or repair the defective parts of the device that were provided by us. Please note that our above-stated responsibility is limited to the replacement and repair of the equipment provided by us and that we do not accept any responsibility for damage to your company or any third party that may occur in connection with the failure of the equipment provided by us.

We do not accept responsibility for any equipment failures or damage to your company or any third party in the case of any of the exclusions set forth in ("1") above or in any of the following cases:

- If the equipment has been incorporated or used in a way that does not conform to the instructions or precautions set forth in this specifications document
- If the issue is due to a combination of products that incorporate different equipment
- If you fail to comply with the requests made to your company in this specifications document
- If the equipment failure is not caused by our company's actions

3 Warranty service

If you require the warranty service (fault cause investigation, repair, etc.), please contact the retailer from which you purchased the product.

If you wish to send it directly to us with the permission of the retailer, please receive a repair/investigation request form from the place of purchase, fill out the necessary information, and send it to our motor service desk along with the product.

As a general rule, you will be responsible for shipping costs.

## 14 Additional Precautions

1 Precautions to be taken when exporting the product or equipment incorporating the product

If the end user or end use of this product is related to the military or weaponry, etc., it may be subject to export restrictions as set forth in the Foreign Exchange and Foreign Trade Act. When exporting, please review and follow the necessary export procedures.

2 This product is designed for general industrial use. This product is not for use in devices critical to human wellbeing or in specialized environments, such as nuclear power control, aerospace equipment, transportation systems, medical equipment, various safety devices, or equipment that requires a high degree of cleanliness.

3 Please ensure that finished equipment complies with standards, laws, and regulations, and confirm that the structure, dimensions, life span, and characteristics of the product match those of your installed equipment and components.

4 Since it is possible, albeit unlikely, that your finished equipment will operate abnormally due to a malfunction of our product, please put in place failsafes and ensure adequate safety within the operational range of your site.

5 Make sure to follow indications as overloading products can cause loads to collapse.

6 If the shaft has a key, it should be secured not only with the key, but also with set screws, etc. Grease should also be applied to the section that joins with the motor shaft.

7 Ensure that the motor shaft is not operated without being electrically grounded, as this may lead to electrolytic corrosion of the motor bearing and increased bearing noise, depending on the machine and the installation environment.

8 Please check the strength of the shaft.

(During operation, do not place a load on the shaft that is greater than the allowable load.)

9 A tightening torque appropriate for the product mounting screws should be chosen to avoid loosening or damage, taking into account the strength of the screws used and the material to which they are mounted.

10 Grease ((Shell Alvania Grease S 2) is applied to the end of the motor shaft. Please confirm whether this will impact plastics, etc., used by your company.

11 If a seal is required between the mounting surface of our motor and the equipment it is being mounted to, please source this independently.

12 Please be very careful when changing the specifications of your equipment to match our motor.

13 When disposing of the servo driver or motor, treat them as industrial waste.

14 When disposing of batteries, insulate them with tape and dispose of them in accordance with local regulations.

15 As long as you comply with this specifications document, certain components may be modified to improve performance, etc.

16 Changes to specifications shall be reflected in the delivery specifications document or in a document specified by your company. If this affects the function or characteristics of the product, the specifications will be changed following a test with a prototype.

17 Changes in specifications may affect the price of the product.

18 If you require clarification on something that is not covered by this specifications document, please contact us in advance.

19 In the event of a problem, the two parties shall resolve the issue following consultations as set forth in this specifications document.

20 Some faults may cause the emission of roughly one cigarette's worth of smoke, so please consider these possibilities when using the device in cleanrooms, etc.

21 Do not use detergents containing benzine, thinner, alcohol, acid, or alkaline as this may cause discoloration or damage to the product's exterior.

## 15 Other

Safety Precautions and Additional Precautions are for use with Panasonic's standard servo drivers and motors.
Check with your company when using in combination with your company's servo driver.

## 16 Reliability Evaluation Items

This evaluation was carried out on a representative model using the design verification items from the initial development stage.

This evaluation is not a guarantee for all instances of this product. (These are basic evaluation conditions.)

| Evaluation Item | Evaluation Criteria | Evaluation Result |
|---|---|---|
| Vibration resistance and thermal cycle test | 20～3000 Hz 49 $m/s^2$ , amplitude of 1.5 mm or less<br>X, Y, and Z directions, 8 hours each<br>-30/+80 °C for 1 cycle | No abnormalities in external appearance, structure, or function |
| Resonant point vibration endurance test | 49 $m/s^2$ , X, Y, and Z directions<br>Number of vibrations: 10 million | No abnormalities in external appearance, structure, or function |
| High-temperature, high-humidity electric conduction test | 60°C, 95% RH, 72 hours | No abnormalities in external appearance, structure, or function |
| Thermal shock resistance test | -20/+80 °C, 50 cycles | No abnormalities in external appearance, structure, or function |
| Impact resistance test | 490 $m/s^2$ with L flange installed<br>Directions X, Y, and Z, 3 times each<br>(196 $m/s^2$ for anything over 750 W) | No abnormalities in external appearance, structure, or function |
| Maximum rotor rotation speed test | -20/+80 °C, after 50 cycles<br>100°C, 10 seconds at 12,000 r/min. | No abnormalities in external appearance, structure, or function |
| Burnout test | Allow the motor to burnout at the maximum current<br>(Overloading disabled) | No fire<br>Smoke emitted within the stipulated amount |

## 17 Shipment Inspection Items

| Inspection Item | Inspection Method | Quantity |
|---|---|---|
| External appearance | Visual inspection | All |
| Dimensions | Caliper, gauge | Sampling |
| Insulation voltage resistance | High voltage insulation tester | All |
| Insulation resistance | Insulation resistance meter | All |
| Induced voltage constant | Automatic tester | All |
| Armature resistance | Ohm meter | All |
| Encoder test and driver combination test | Automatic tester | All |
| Brake static friction torque | Spring scale | All |
| Brake suction/release voltage | Voltmeter | All |

* The inspection method may be substituted by the method corresponding to the description.

## 18 AC Servo Motor Specifications

The following items are common to all pages.

- The Speed-Torque characteristics are adjusted for combination with our servo driver. (Representative values at 20 °C)
- The rated torque indicates the continuous allowable torque under our measurement conditions.

## 18.1 MQMF01BL1（100 W, DC 48 V）

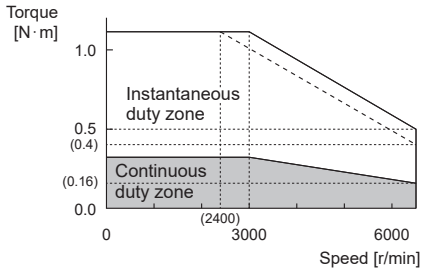
### ■ MQMF01BL1□2 Without oil seal

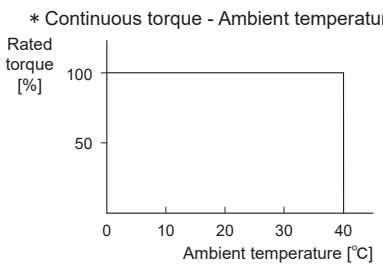
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 100 | ← | |
| Rating | % | 100 | ← | |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 6500 | ← | |
| Rated torque | N·m | 0.32 | ← | |
| Instantaneous maximum torque | N·m | 1.11 | ← | |
| Rated current | A(rms) | (4.5) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.15 | 0.18 | |
| Electrical time constant | ms | (1.5) | ← | |
| Mechanical time constant | ms | 2.6 | 3.1 | |
| Power rate | kW/s | 6.8 | 5.7 | |
| Instantaneous maximum current | A(o-p) | (22.5) | ← | |
| Demagnetizing current | A(o-p) | 34 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 2.7 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 5.8 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.078 ± 10 % | ← | |
| | N·m/A(o-p) | 0.055 ± 10 % | ← | |
| Phase resistance | Ω | 0.35 ± 7 % | ← | |
| Phase inductance | mH | (0.54) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 0.54 | 0.79 | |
| Structure | | Fully closed and self-cooling | ← | Without oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

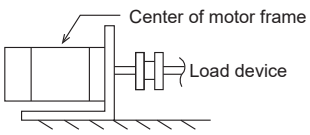
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：130×120×t12
Material：aluminum



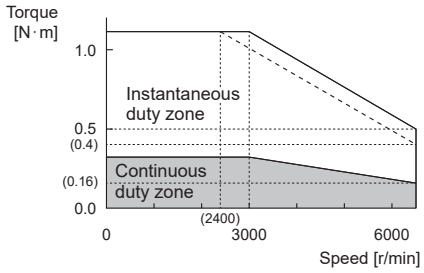
## ■ MQMF01BL1□2 With oil seal

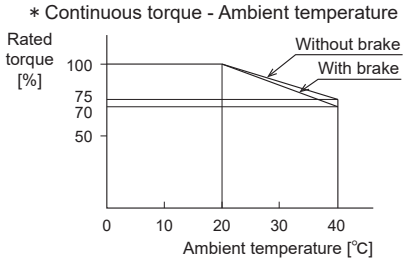
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 100 | ← | |
| Rating | % | (100) | ← | Refer to the characteristic curve shown below |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 6500 | ← | |
| Rated torque | N·m | 0.32 | ← | |
| Continuous stall torque | N·m | 1.11 | ← | |
| Rated current | A(rms) | (4.5) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.15 | 0.18 | |
| Electrical time constant | ms | (1.5) | ← | |
| Mechanical time constant | ms | 2.6 | 3.1 | |
| Power rate | kW/s | 6.8 | 5.7 | |
| Instantaneous maximum current | A(o-p) | (22.5) | ← | |
| Demagnetizing current | A(o-p) | 34 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 2.7 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 5.8 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.078 ± 10 % | ← | |
| | N·m/A(o-p) | 0.055 ± 10 % | ← | |
| Phase resistance | Ω | 0.35 ± 7 % | ← | |
| Phase inductance | mH | (0.54) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 0.57 | 0.82 | |
| Structure | | Fully closed and self-cooling | ← | With oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

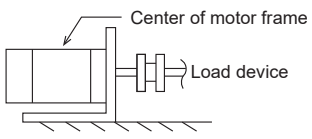
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：130×120×t12
Material：aluminum



## 18.2 MQMF01CL1（100 W, DC 24 V）

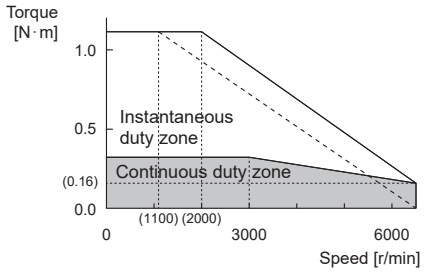
### ■ MQMF01CL1□2 Without oil seal

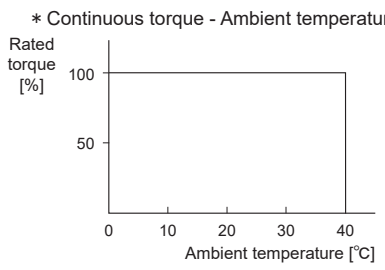
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 100 | ← | |
| Rating | % | 100 | ← | |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 6500 | ← | |
| Rated torque | N·m | 0.32 | ← | |
| Instantaneous maximum torque | N·m | 1.11 | ← | |
| Rated current | A(rms) | (8.4) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.15 | 0.18 | |
| Electrical time constant | ms | (1.5) | ← | |
| Mechanical time constant | ms | 2.9 | 3.5 | |
| Power rate | kW/s | 6.8 | 5.7 | |
| Instantaneous maximum current | A(o-p) | (41.6) | ← | |
| Demagnetizing current | A(o-p) | 62 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 1.4 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 3.1 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.041 ± 10 % | ← | |
| | N·m/A(o-p) | 0.029 ± 10 % | ← | |
| Phase resistance | Ω | 0.11 ± 7 % | ← | |
| Phase inductance | mH | (0.16) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 0.54 | 0.79 | |
| Structure | | Fully closed and self-cooling | ← | Without oil seal |
| Supply voltage | $V_{DC}$ | 24 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

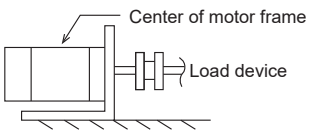
Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 24 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：130×120×t12
Material：aluminum



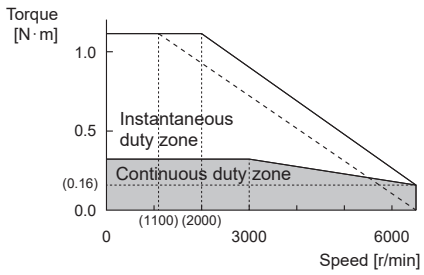
## ■ MQMF01CL1□2 With oil seal

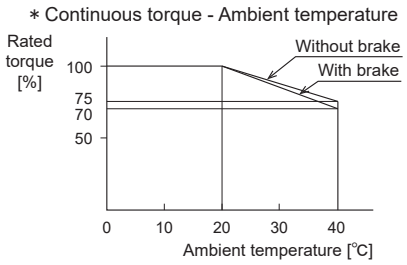
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 100 | ← | |
| Rating | % | (100) | ← | Refer to the characteristic curve shown below |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 6500 | ← | |
| Rated torque | N·m | 0.32 | ← | |
| Continuous stall torque | N·m | 1.11 | ← | |
| Rated current | A(rms) | (8.4) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.15 | 0.18 | |
| Electrical time constant | ms | (1.5) | ← | |
| Mechanical time constant | ms | 2.9 | 3.5 | |
| Power rate | kW/s | 6.8 | 5.7 | |
| Instantaneous maximum current | A(o-p) | (41.6) | ← | |
| Demagnetizing current | A(o-p) | 62 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 1.4 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 3.1 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.041 ± 10 % | ← | |
| | N·m/A(o-p) | 0.029 ± 10 % | ← | |
| Phase resistance | Ω | 0.11 ± 7 % | ← | |
| Phase inductance | mH | (0.16) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 0.57 | 0.82 | |
| Structure | | Fully closed and self-cooling | ← | With oil seal |
| Supply voltage | $V_{DC}$ | 24 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

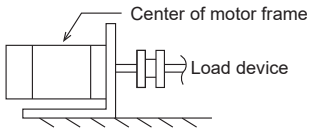
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 24 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：130×120×t12
Material：aluminum



## 18.3 MQMF1ECL1（133 W, DC 24 V）

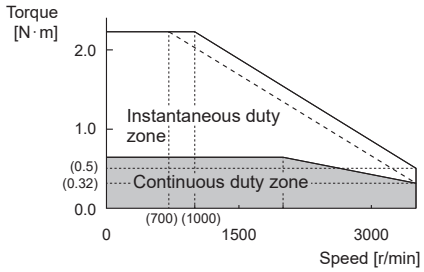
### ■ MQMF1ECL1□2 Without oil seal

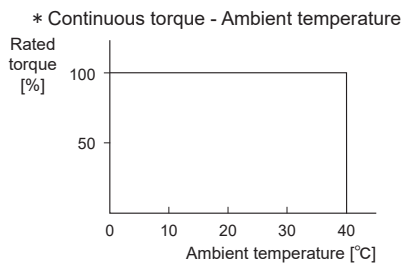
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 133 | ← | |
| Rating | % | 100 | ← | |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 2000 | ← | |
| Maximum speed | r/min | 3500 | ← | |
| Rated torque | N·m | 0.64 | ← | |
| Instantaneous maximum torque | N·m | 2.23 | ← | |
| Rated current | A(rms) | (8.6) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.50 | 0.59 | |
| Electrical time constant | ms | (2.6) | ← | |
| Mechanical time constant | ms | 3.1 | 3.7 | |
| Power rate | kW/s | 8.2 | 6.9 | |
| Instantaneous maximum current | A(o-p) | (42.6) | ← | |
| Demagnetizing current | A(o-p) | 64 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 2.7 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 5.6 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.076 ± 10 % | ← | |
| | N·m/A(o-p) | 0.054 ± 10 % | ← | |
| Phase resistance | Ω | 0.12 ± 7 % | ← | |
| Phase inductance | mH | (0.31) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 1.1 | 1.5 | |
| Structure | | Fully closed and self-cooling | ← | Without oil seal |
| Supply voltage | $V_{DC}$ | 24 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

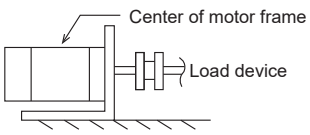
#### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 24 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：170×160×t12
Material：aluminum



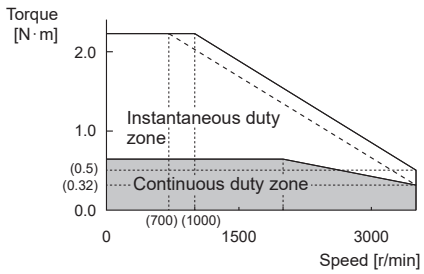
## ■ MQMF1ECL1□2 With oil seal

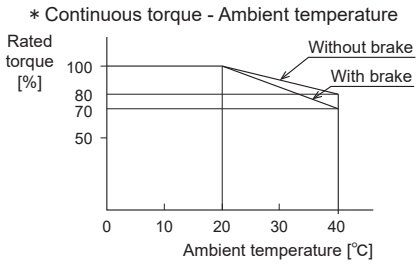
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 133 | ← | |
| Rating | % | (100) | ← | Refer to the characteristic curve shown below |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 2000 | ← | |
| Maximum speed | r/min | 3500 | ← | |
| Rated torque | N·m | 0.64 | ← | |
| Continuous stall torque | N·m | 2.23 | ← | |
| Rated current | A(rms) | (8.6) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.50 | 0.59 | |
| Electrical time constant | ms | (2.6) | ← | |
| Mechanical time constant | ms | 3.1 | 3.7 | |
| Power rate | kW/s | 8.2 | 6.9 | |
| Instantaneous maximum current | A(o-p) | (42.6) | ← | |
| Demagnetizing current | A(o-p) | 64 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 2.7 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 5.6 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.076 ± 10 % | ← | |
| | N·m/A(o-p) | 0.054 ± 10 % | ← | |
| Phase inductance | Ω | 0.12 ± 7 % | ← | |
| Thermal class | mH | (0.31) | ← | Center value |
| Vibration class | | 155(F) | ← | |
| Paint color | | V-15 | ← | |
| Mass | | Silver Partinally Black | ← | Plastic parts are black |
| Structure | kg | 1.2 | 1.6 | |
| Supply voltage | | Fully closed and self-cooling | ← | With oil seal |
| | $V_{DC}$ | 24 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

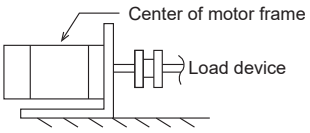
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 24 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：170×160×t12
Material：aluminum



## 18.4 MQMF02BL1（200 W, DC 48 V）

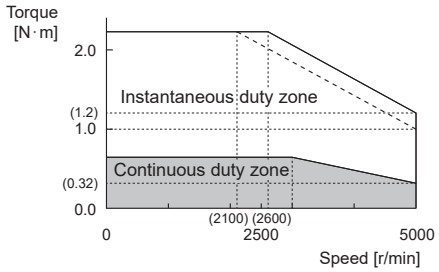
### ■ MQMF02BL1□2 Without oil seal

| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 200 | ← | |
| Rating | % | 100 | ← | |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 5000 | ← | |
| Rated torque | N·m | 0.64 | ← | |
| Instantaneous maximum torque | N·m | 2.23 | ← | |
| Rated current | A(rms) | (6.9) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.50 | 0.59 | |
| Electrical time constant | ms | (2.7) | ← | |
| Mechanical time constant | ms | 2.9 | 3.5 | |
| Power rate | kW/s | 8.2 | 6.9 | |
| Instantaneous maximum current | A(o-p) | (34.2) | ← | |
| Demagnetizing current | A(o-p) | 51 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 3.3 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 7.1 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.096 ± 10 % | ← | |
| | N·m/A(o-p) | 0.068 ± 10 % | ← | |
| Phase resistance | Ω | 0.18 ± 7 % | ← | |
| Phase inductance | mH | (0.48) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 1.1 | 1.5 | |
| Structure | | Fully closed and self-cooling | ← | Without oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

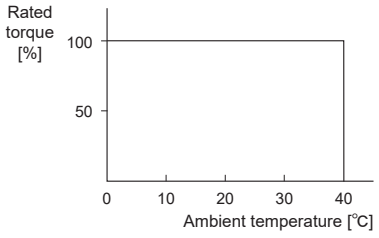
- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

#### Speed-Torque characteristics (representative values)

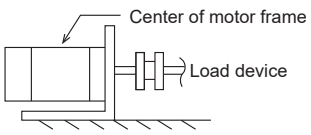
Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




∗ Continuous torque - Ambient temperature




Measurement conditions
Flange size：170×160×t12
Material：aluminum



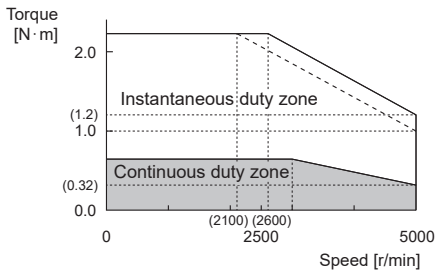
## ■ MQMF02BL1□2 With oil seal

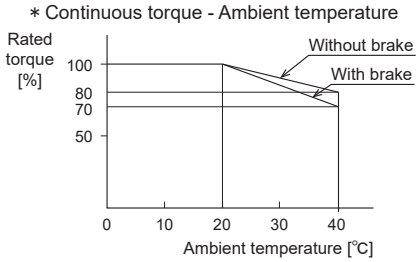
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 200 | ← | |
| Rating | % | (100) | ← | Refer to the characteristic curve shown below |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 3000 | ← | |
| Maximum speed | r/min | 5000 | ← | |
| Rated torque | N·m | 0.64 | ← | |
| Continuous stall torque | N·m | 2.23 | ← | |
| Rated current | A(rms) | (6.9) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.50 | 0.59 | |
| Electrical time constant | ms | (2.7) | ← | |
| Mechanical time constant | ms | 2.9 | 3.5 | |
| Power rate | kW/s | 8.2 | 6.9 | |
| Instantaneous maximum current | A(o-p) | (34.2) | ← | |
| Demagnetizing current | A(o-p) | 51 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 3.3 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 7.1 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.096 ± 10 % | ← | |
| | N·m/A(o-p) | 0.068 ± 10 % | ← | |
| Phase resistance | Ω | 0.18 ± 7 % | ← | |
| Phase inductance | mH | (0.48) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 1.2 | 1.6 | |
| Structure | | Fully closed and self-cooling | ← | With oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

- The temperature at the center of the motor frame should not exceed 65 °C during use. (When the ambient temperature is 40 °C)

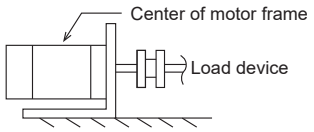
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：170×160×t12
Material：aluminum



## 18.5 MQMF2JBL1（266 W, DC 48 V）

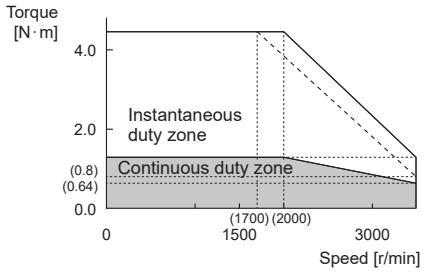
### ■ MQMF2JBL1□2 Without oil seal

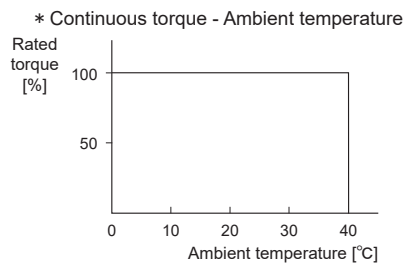
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 266 | ← | |
| Rating | % | 100 | ← | |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 2000 | ← | |
| Maximum speed | r/min | 3500 | ← | |
| Rated torque | N·m | 1.27 | ← | |
| Instantaneous maximum torque | N·m | 4.46 | ← | |
| Rated current | A(rms) | (8.4) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.98 | 1.06 | |
| Electrical time constant | ms | (2.8) | ← | |
| Mechanical time constant | ms | 1.8 | 2.0 | |
| Power rate | kW/s | 16.5 | 15.2 | |
| Instantaneous maximum current | A(o-p) | (41.5) | ← | |
| Demagnetizing current | A(o-p) | 62 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 5.3 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 11.3 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.15 ± 10 % | ← | |
| | N·m/A(o-p) | 0.11 ± 10 % | ← | |
| Phase resistance | Ω | 0.15 ± 7 % | ← | |
| Phase inductance | mH | (0.41) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 1.5 | 2.0 | |
| Structure | | Fully closed and self-cooling | ← | Without oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

- The temperature at the center of the motor frame should not exceed 70 °C during use. (When the ambient temperature is 40 °C)

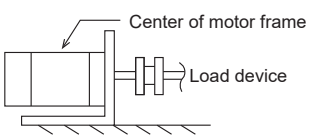
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：170×160×t12
Material：aluminum



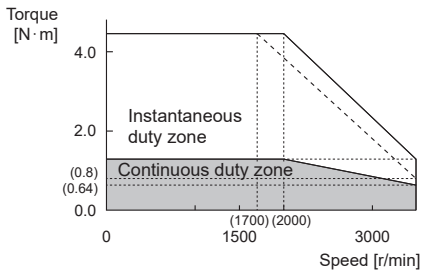
## ■ MQMF2JBL1□2 With oil seal

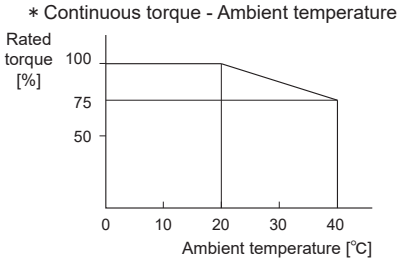
| Items | Units | Without brake | With brake | Remarks |
|---|---|---|---|---|
| Rated output | W | 266 | ← | |
| Rating | % | (100) | ← | Refer to the characteristic curve shown below |
| Number of poles | | 10 | ← | |
| Rated speed | r/min | 2000 | ← | |
| Maximum speed | r/min | 3500 | ← | |
| Rated torque | N·m | 1.27 | ← | |
| Continuous stall torque | N·m | 4.46 | ← | |
| Rated current | A(rms) | (8.4) | ← | |
| Rotor inertia | $\times 10^{-4}$ kg·m$^2$ | 0.98 | 1.06 | |
| Electrical time constant | ms | (2.8) | ← | |
| Mechanical time constant | ms | 1.8 | 2.0 | |
| Power rate | kW/s | 16.5 | 15.2 | |
| Instantaneous maximum current | A(o-p) | (41.5) | ← | |
| Demagnetizing current | A(o-p) | 62 | ← | |
| Voltage constant per phase | $\times 10^{-3}$ V(rms)/min$^{-1}$ | 5.3 ± 10 % | ← | |
| Induced voltage constant | $\times 10^{-3}$ V(o-p)/min$^{-1}$ | 11.3 ± 10 % | ← | |
| Torque constant | N·m/A(rms) | 0.15 ± 10 % | ← | |
| | N·m/A(o-p) | 0.11 ± 10 % | ← | |
| Phase resistance | Ω | 0.15 ± 7 % | ← | |
| Phase inductance | mH | (0.41) | ← | Center value |
| Thermal class | | 155(F) | ← | |
| Vibration class | | V-15 | ← | |
| Paint color | | Silver Partinally Black | ← | Plastic parts are black |
| Mass | kg | 1.6 | 2.1 | |
| Structure | | Fully closed and self-cooling | ← | With oil seal |
| Supply voltage | $V_{DC}$ | 48 | ← | |

- The temperature at the center of the motor frame should not exceed 70 °C during use. (When the ambient temperature is 40 °C)

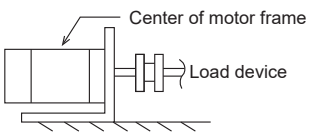
### Speed-Torque characteristics (representative values)

Servo driver power supply voltage：DC 48 V (Dotted line indicates 10 % drop in power supply voltage)




Measurement conditions
Flange size：170×160×t12
Material：aluminum



## Appendix Motor Dimension Drawing

- No. SR-DSV1273901
- No. SR-DSV1273902
- No. SR-DSV1273903
- No. SR-DSV1273904

## Appendix Structure Section View Drawing

- No. SR-DSV1273905
- No. SR-DSV1273906

## Appendix Name Plate Description

- No. SR-DSV1273907

SR-DSV1273901

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

## Opponent connector (No belongings)

Motor connector(JST)
Cap :F31MSF-04V-KX
Socket:SF3M-41GF-M2.0N

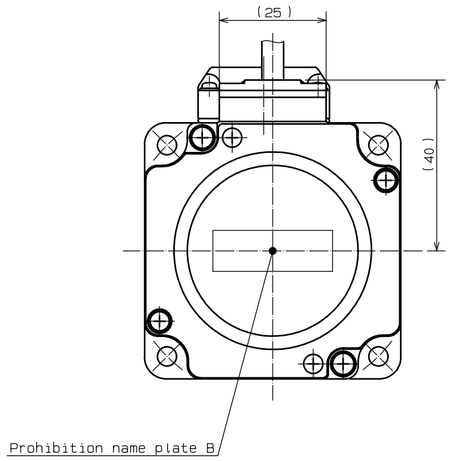
Detector connector(TE)
Cap :172161-1
Socket:170361-3 (gold plated)
or 170365-3 (gold plated)

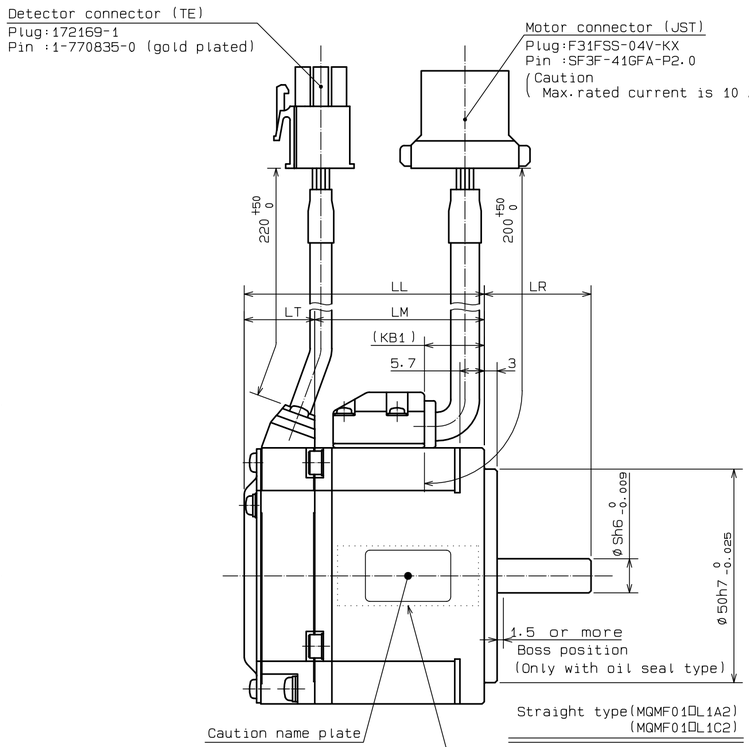
Rotary encoder unit
(Absolute)

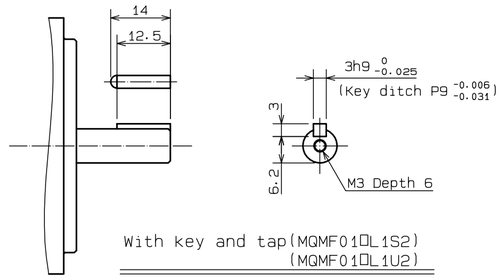
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | BAT+ |
| 2 | Pink | BAT- |
| 3 | Black | FG |
| 4 | Sky blue | PS(SD) |
| 5 | Violet | $\overline{PS(SD)}$ |
| 6 | ——— | NC |
| 7 | White | E5 V |
| 8 | Black | E0 V |
| 9 | ——— | NC |

Motor unit

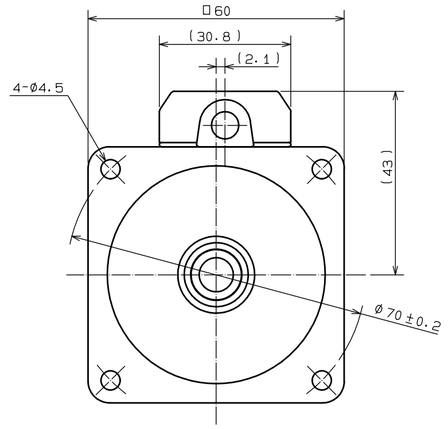
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | U |
| 2 | White | V |
| 3 | Black | W |
| 4 | Green/Yellow | E |

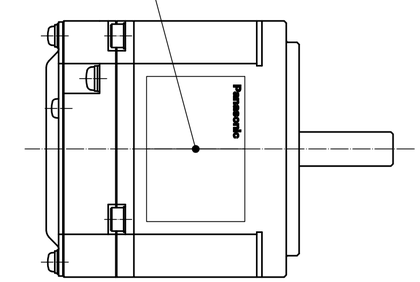


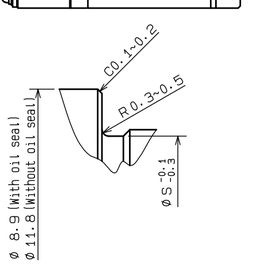




With key and tap(MQMF01□L1S2)
(MQMF01□L1U2)




Detail of shaft step part
(S=Free)

| Model | Oil seal | Rated Speed (r/min) | Output (W) | LL | LR | LM | S | LT | KB1 |
|---|---|---|---|---|---|---|---|---|---|
| MQMF01□L1□2 | Without | 3000 | 100 | 56.2 | 25 | 39.7 | 8 | 16.5 | 14 |
| MQMF01□L1□2 | With | ↑ | ↑ | 59.7 | ↑ | 43.2 | ↑ | ↑ | 17.5 |

NOTES
1. The assembly accuracy conforms to the Japan Machine Tool Association Standard (MAS402-1981). (TIR value)
   ·Shaft end runout: 0.015 (shaft exit middle)
   ·Perpendicularity of flange face to shaft: 0.04 (ø70)
   ·Eccentricity of flange fitting outside diameter to shaft: 0.03 (middle of spigot)
2. For flange mounting bolts, use hexagonal socket head bolts.

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

| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| 1 : 1 | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF01□L1□2 □60 |
| Name | MOTOR DIMENSION DRAWING(WITHOUT BRAKE) |
| No. | SR-DSV1273901 |

SR-DSV1273902

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

## Opponent connector (No belongings)

Motor connector(JST)
Cap :F31MSF-04V-KX
Socket:SF3M-41GF-M2.0N

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

Detector connector(TE)
Cap :172161-1
Socket:170361-3(gold plated)
or 170365-3(gold plated)

Rotary encoder unit
(Absolute)

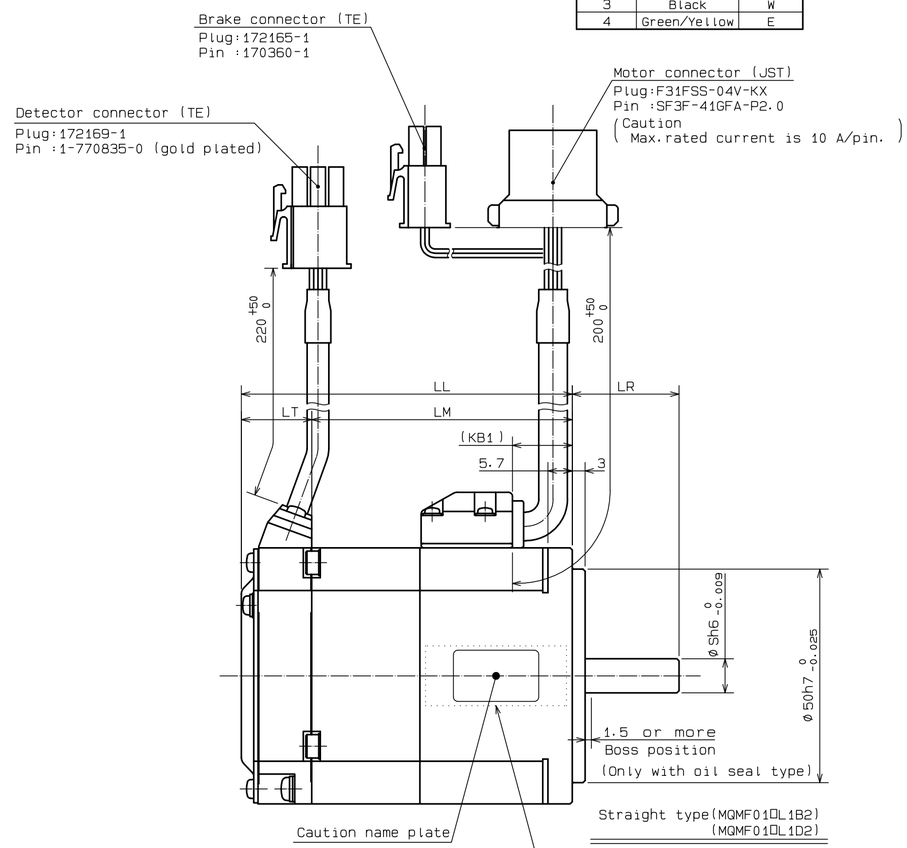
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | BAT+ |
| 2 | Pink | BAT- |
| 3 | Black | FG |
| 4 | Sky blue | PS(SD) |
| 5 | Violet | $\overline{PS(SD)}$ |
| 6 | ——— | NC |
| 7 | White | E5V |
| 8 | Black | E0V |
| 9 | ——— | NC |

Brake unit

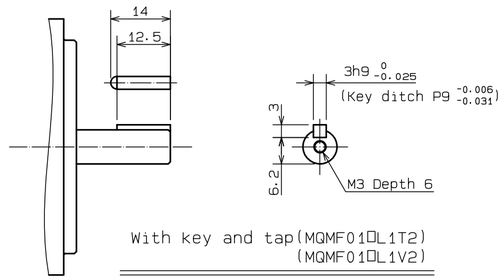
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Yellow | Brake |
| 2 | Yellow | Brake |

Motor unit

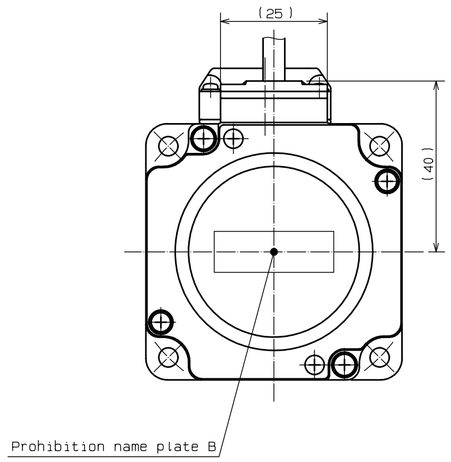
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | U |
| 2 | White | V |
| 3 | Black | W |
| 4 | Green/Yellow | E |

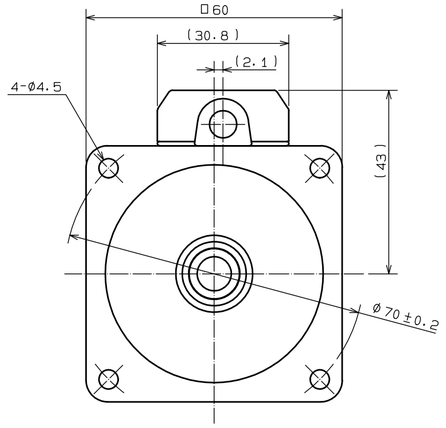


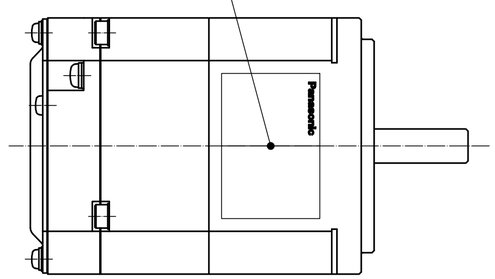

Straight type(MQMF01□L1B2)
(MQMF01□L1D2)



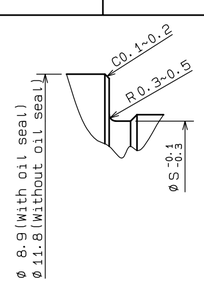

With key and tap(MQMF01□L1T2)
(MQMF01□L1V2)




| Model | Oil seal | Rated Speed (r/min) | Output (W) | LL | LR | LM | S | LT | KB1 |
|---|---|---|---|---|---|---|---|---|---|
| MQMF01□L1□2 | Without | 3000 | 100 | 77.5 | 25 | 61 | 8 | 16.5 | 14 |
| MQMF01□L1□2 | With | ↑ | ↑ | 81 | ↑ | 64.5 | ↑ | ↑ | 17.5 |




Detail of shaft step part
(S=Free)

NOTES
1. The assembly accuracy conforms to the Japan Machine Tool Association Standard (MAS402-1981). (TIR value)
   ·Shaft end runout: 0.015 (shaft exit middle)
   ·Perpendicularity of flange face to shaft: 0.04 (ø70)
   ·Eccentricity of flange fitting outside diameter to shaft: 0.03 (middle of spigot)
2. For flange mounting bolts, use hexagonal socket head bolts.

| MERCHAND | CLASS | TRACE |
|---|---|---|
| SVM | E | |

| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| 1 : 1 | 3rd Angle System | Unit:mm | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF01□L1□2 □60 |
| Name | MOTOR DIMENSION DRAWING(WITH BRAKE) |
| No. | SR-DSV1273902 |

SR-DSV1273903

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

## Opponent connector (No belongings)

Motor connector(JST)
Cap :F31MSF-04V-KX
Socket:SF3M-41GF-M2.0N

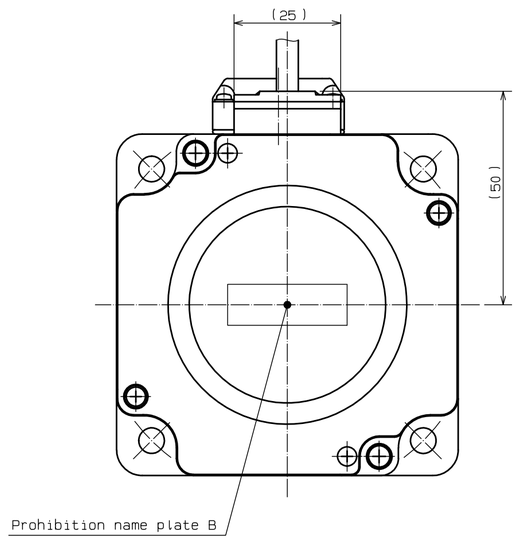
Detector connector(TE)
Cap :172161-1
Socket:170361-3(gold plated)
or 170365-3(gold plated)

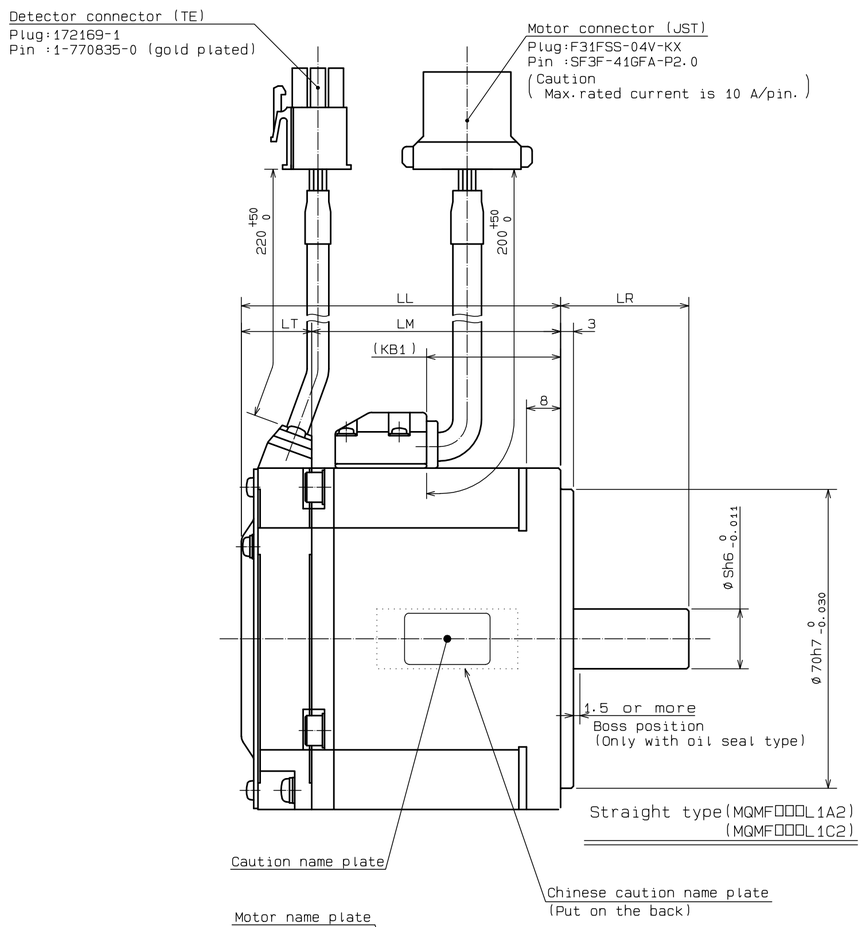
Motor unit

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

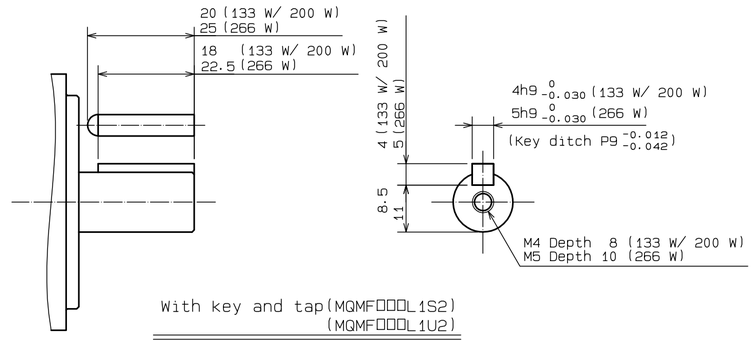
Rotary encoder unit
(Absolute)

| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | BAT+ |
| 2 | Pink | BAT- |
| 3 | Black | FG |
| 4 | Sky blue | PS(SD) |
| 5 | Violet | $\overline{PS(SD)}$ |
| 6 | ——— | NC |
| 7 | White | E5V |
| 8 | Black | E0V |
| 9 | ——— | NC |

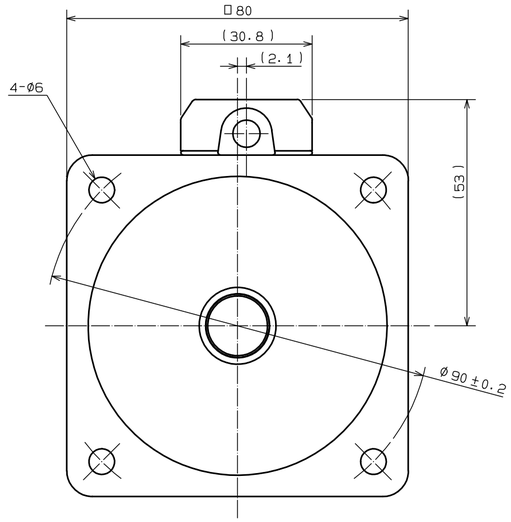


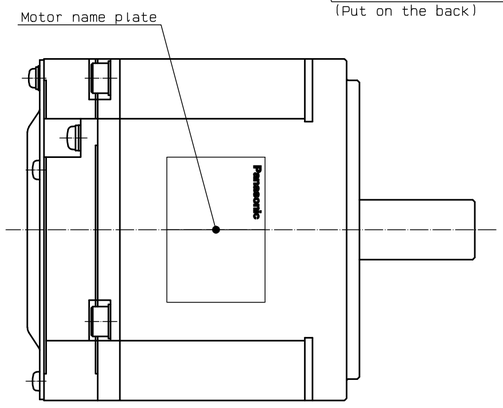




Straight type(MQMF□□□L1A2)
(MQMF□□□L1C2)

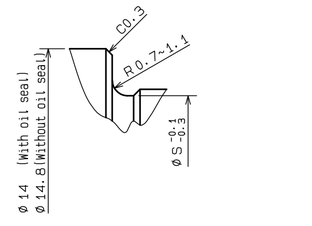



With key and tap(MQMF□□□L1S2)
(MQMF□□□L1U2)




| Model | Oil seal | Rated speed (r/min) | Output (W) | LL | LR | LM | S | LT | KB1 |
|---|---|---|---|---|---|---|---|---|---|
| MQMF1ECL1□2 | Without | 2000 | 133 | 62.3 | 30 | 45.8 | 11 | 16.5 | 18.9 |
| MQMF02BL1□2 | ↑ | 3000 | 200 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| MQMF2JBL1□2 | ↑ | 2000 | 266 | 74.8 | ↑ | 58.3 | 14 | ↑ | 31.4 |
| MQMF1ECL1□2 | With | 2000 | 133 | 65.8 | ↑ | 49.3 | 11 | ↑ | 22.4 |
| MQMF02BL1□2 | ↑ | 3000 | 200 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| MQMF2JBL1□2 | ↑ | 2000 | 266 | 78.3 | ↑ | 61.8 | 14 | ↑ | 34.9 |




Detail of shaft step part (S=Free)

(266 W motor with oil seal
don't have shaft step.)

NOTES
1. The assembly accuracy conforms to the Japan Machine Tool Association Standard (MAS402-1981).
(TIR value)
·Shaft end runout: 0.015 (shaft exit middle)
·Perpendicularity of flange face to shaft: 0.04 (Ø90)
·Eccentricity of flange fitting outside diameter to shaft: 0.03 (middle of spigot)
2. For flange mounting bolts, use hexagonal socket head bolts.

| MERCHAND | CLASS | TRACE |
|---|---|---|
| SVM | E | |

| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| 1 : 1 | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF□□□L1□2 □80 |
| Name | MOTOR DIMENSION DRAWING(WITHOUT BRAKE) |
| No. | SR-DSV1273903 |

SR-DSV1273904

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

## Opponent connector (No belongings)

Motor connector(JST)
Cap :F31MSF-04V-KX
Socket:SF3M-41GF-M2.0N

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

Detector connector(TE)
Cap :172161-1
Socket:170361-3(gold plated)
or 170365-3(gold plated)

Rotary encoder unit
(Absolute)

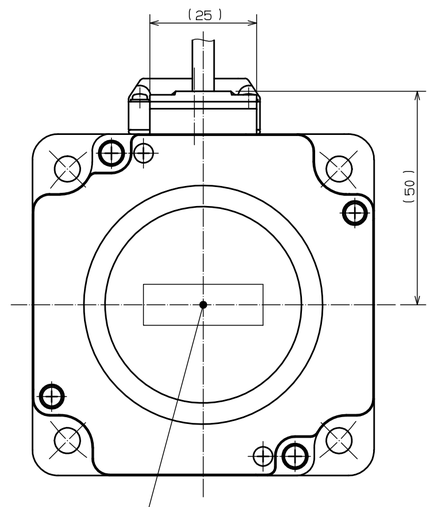
| Pin No. | Color | Signal |
|---|---|---|
| 1 | Red | BAT+ |
| 2 | Pink | BAT- |
| 3 | Black | FG |
| 4 | Sky blue | PS(SD) |
| 5 | Violet | $\overline{PS(SD)}$ |
| 6 | —— | NC |
| 7 | White | E5V |
| 8 | Black | E0V |
| 9 | —— | NC |

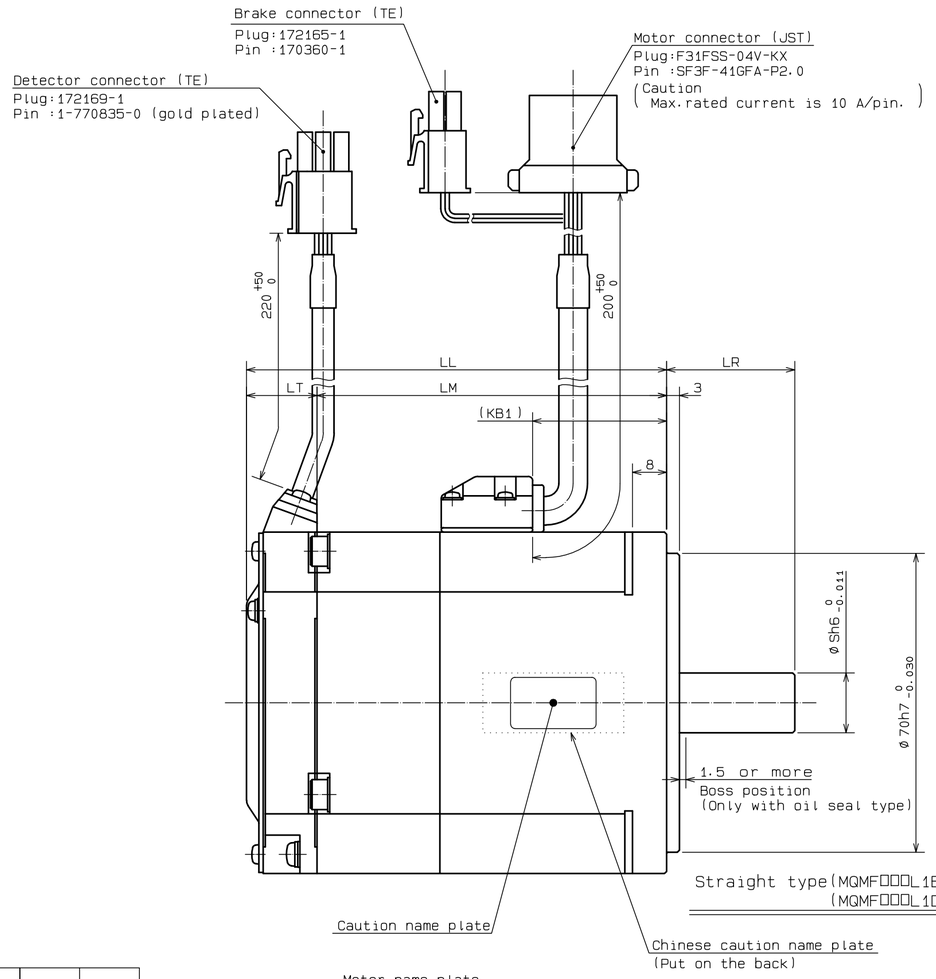
Brake unit

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

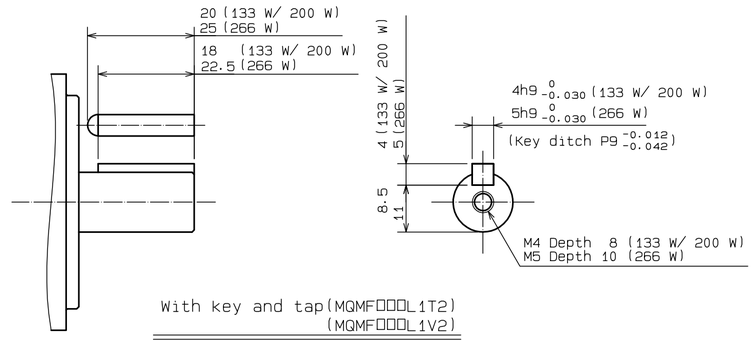
Motor unit

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

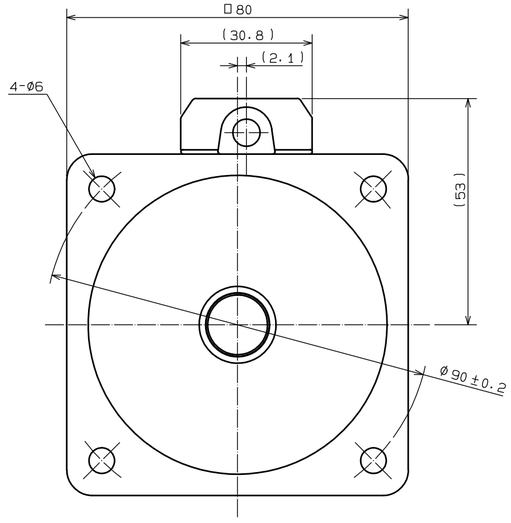


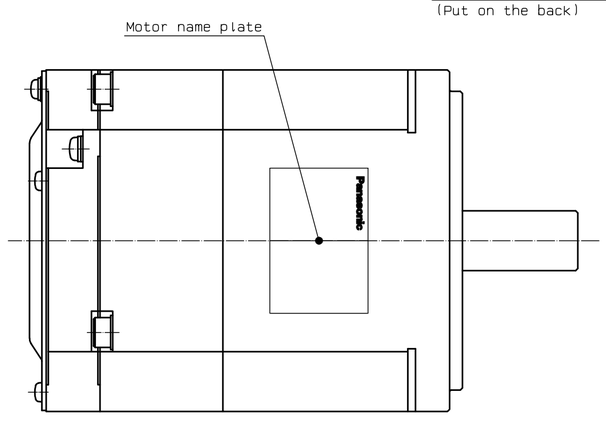

Straight type(MQMF□□□L1B2)
(MQMF□□□L1D2)

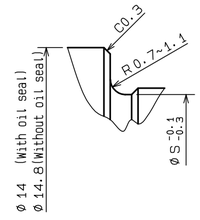



With key and tap(MQMF□□□L1T2)
(MQMF□□□L1V2)




| Model | Oil seal | Rated speed (r/min) | Output (W) | LL | LR | LM | S | LT | KB1 |
|---|---|---|---|---|---|---|---|---|---|
| MQMF1ECL1□2 | Without | 2000 | 133 | 85.9 | 30 | 69.4 | 11 | 16.5 | 18.9 |
| MQMF02BL1□2 | ↑ | 3000 | 200 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| MQMF2JBL1□2 | ↑ | 2000 | 266 | 98.4 | ↑ | 81.9 | 14 | ↑ | 31.4 |
| MQMF1ECL1□2 | With | 2000 | 133 | 89.4 | ↑ | 72.9 | 11 | ↑ | 22.4 |
| MQMF02BL1□2 | ↑ | 3000 | 200 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| MQMF2JBL1□2 | ↑ | 2000 | 266 | 101.9 | ↑ | 85.4 | 14 | ↑ | 34.9 |




Detail of shaft step part (S=Free)

(266 W motor with oil seal
don't have shaft step.)

NOTES
1. The assembly accuracy conforms to the Japan Machine Tool Association Standard (MAS402-1981).
(TIR value)
·Shaft end runout: 0.015 (shaft exit middle)
·Perpendicularity of flange face to shaft: 0.04 (Ø90)
·Eccentricity of flange fitting outside diameter to shaft: 0.03 (middle of spigot)
2. For flange mounting bolts, use hexagonal socket head bolts.

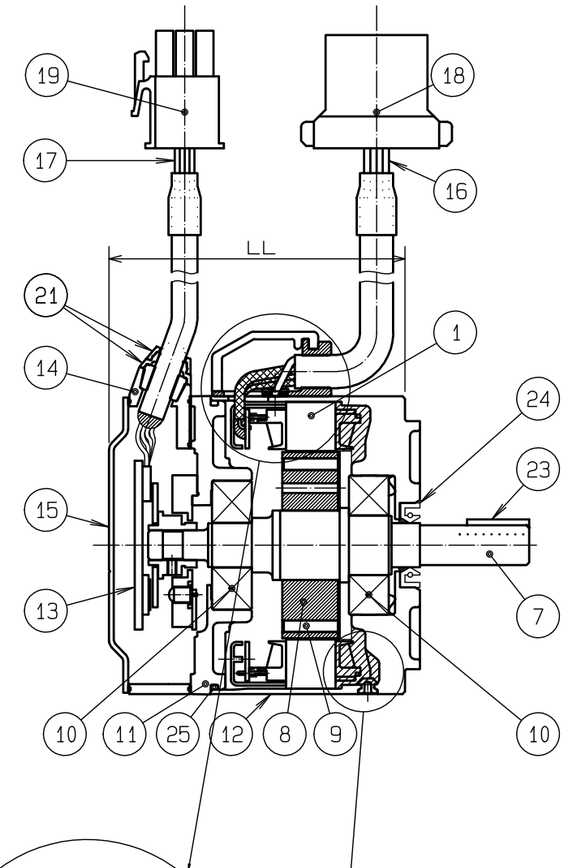
| | | | | |
|---|---|---|---|---|
| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
| 1 : 1 | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

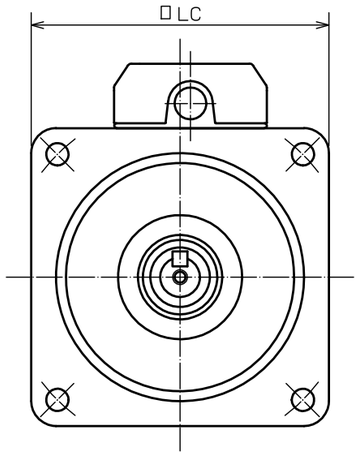
| | |
|---|---|
| Model | MQMF□□□L1□2 □80 |
| Name | MOTOR DIMENSION DRAWING(WITH BRAKE) |
| No. | SR-DSV1273904 |

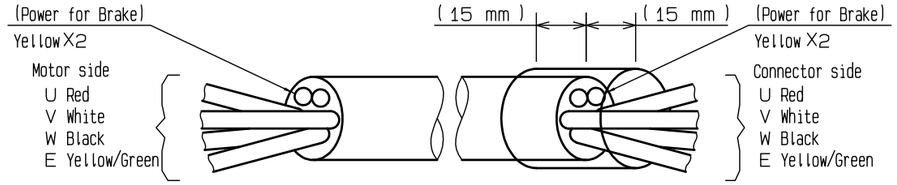
MERCHAND SVM | CLASS E | TRACE

SR-DSV1273905

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

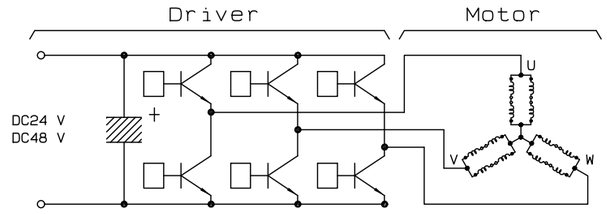


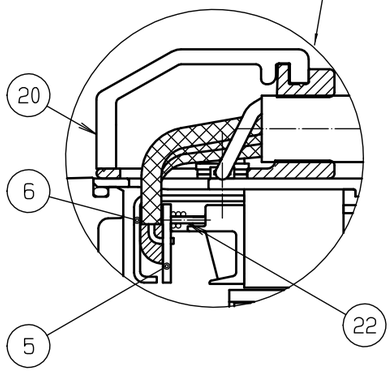



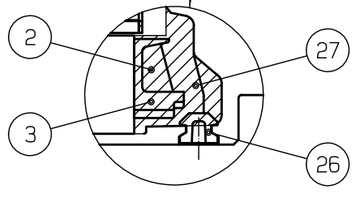

Detail of Motor lead wire

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




Detail of lead wire connection part




Detail of output shaft side coil end part

| Model | Oil seal | LC | LL |
|---|---|---|---|
| MQMF01□L1□2 | Without | 60 | 56.2 |
| MQMF1ECL1□2 | ↑ | 80 | 62.3 |
| MQMF02BL1□2 | ↑ | 80 | 62.3 |
| MQMF2JBL1□2 | ↑ | 80 | 74.8 |
| MQMF01□L1□2 | With | 60 | 59.7 |
| MQMF1ECL1□2 | ↑ | 80 | 65.8 |
| MQMF02BL1□2 | ↑ | 80 | 65.8 |
| MQMF2JBL1□2 | ↑ | 80 | 78.3 |

| No. | Name | Material | Qt. |
|---|---|---|---|
| 27 | Potting | Epoxy resin | |
| 26 | Bush | Nitrile rubber | 1 |
| 25 | O-ring | Nitrile rubber | 1 |
| 24 | Oil seal | Nitrile rubber | 1 |
| 23 | Key | Steel | 1 |
| 22 | Pin | Phosphor copper | 24 |
| 21 | Detector lead fixer | Polyamide | 1 |
| 20 | Motor lead fixer | Polyamide | 1 |
| 19 | Detector connector | Polyamide (UL94V-0) | 1 |
| 18 | Motor connector | Polybutylene terephthalate (UL94V-0) | 1 |
| 17 | Detector leads | Cabtire cable 6 wires UL2589 AWG28, FG wire | |
| 16 | Motor leads | Cabtire cable 6 wires UL2103<br>(Motor lead wire AWG18 + Brake lead wire AWG20) | |
| 15 | RE cover B | SPCC (Painted) | 1 |
| 14 | RE cover A | Polyamide | 1 |
| 13 | Detector | 23bit absolute | 1 |
| 12 | Frame | Alminium (Painted) | 1 |
| 11 | End bracket | Alminium (Raw material) | 1 |
| 10 | Ball bearing | Bearing steels | 2 |
| 9 | Permanent magnet | Rare earth magnet | |
| 8 | Rotor core | Electorical steel | |
| 7 | Motor shaft | Steel | 1 |
| 6 | Insulating cap | Polyethylene terephthalate | 1 |
| 5 | Printing circuit board | Composite | 1 |
| 4 | Slot insulator | Polyester film | |
| 3 | End insulator | Polyethylene terephthalate | 24 |
| 2 | Winding | Polyester enameled copper wire | |
| 1 | Stator core | Electrical steel | |

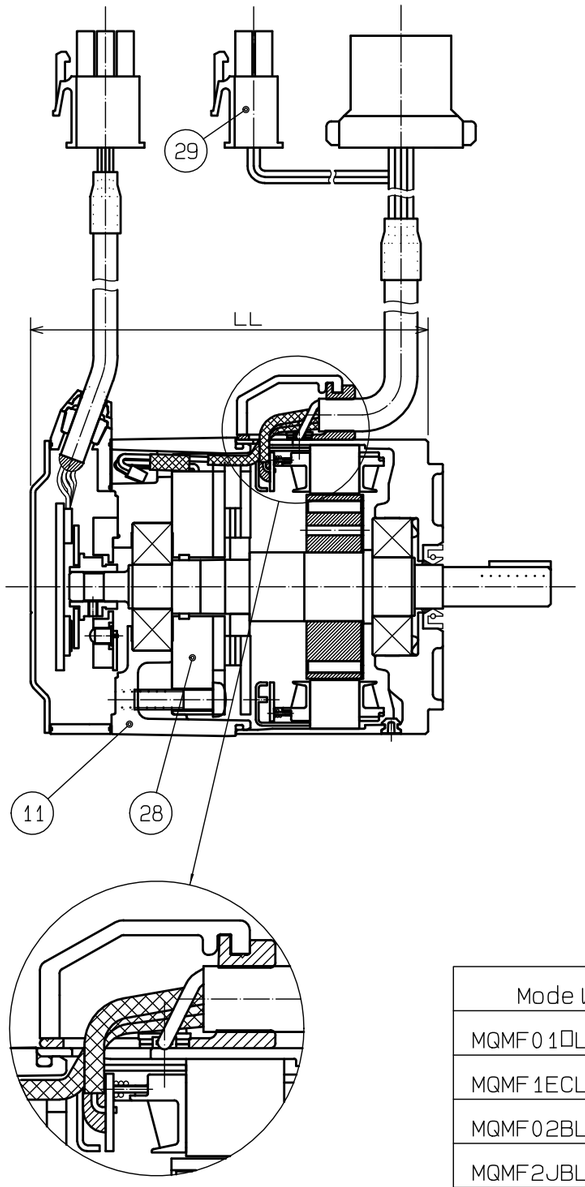
| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF□□□L1□2 |
| Name | STRUCTURE SECTION VIEW DRAWING (Without Brake) |
| No. | SR-DSV1273905 |

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

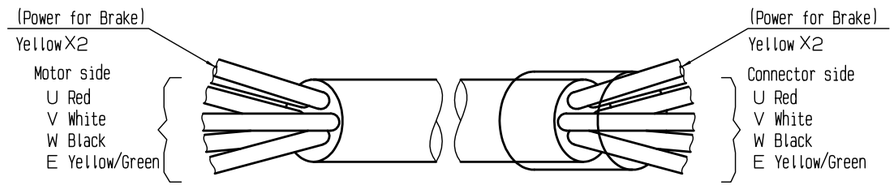
SR-DSV1273906

Do NOT scale the drawings,
instead rely on the dimensions
and their definitions





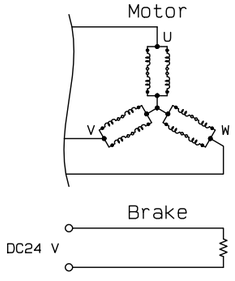

Detail of lead wire connection part




Detail of Motor lead wire
Detail of Brake lead wire

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

| Model | Oil seal | LC | LL |
|---|---|---|---|
| MQMF01□L1□2 | Without | 60 | 77.5 |
| MQMF1ECL1□2 | ↑ | 80 | 85.9 |
| MQMF02BL1□2 | ↑ | 80 | 85.9 |
| MQMF2JBL1□2 | ↑ | 80 | 98.4 |
| MQMF01□L1□2 | With | 60 | 81.0 |
| MQMF1ECL1□2 | ↑ | 80 | 89.4 |
| MQMF02BL1□2 | ↑ | 80 | 89.4 |
| MQMF2JBL1□2 | ↑ | 80 | 101.9 |




| No. | Name | Material | Qt. |
|---|---|---|---|
| 29 | Brake connector | Polyamide (UL94V-0) | 1 |
| 28 | Brake | Non excited actuating type brake | 1 |
| 27 | Potting | Epoxy resin | |
| 26 | Bush | Nitrile rubber | 1 |
| 25 | O-ring | Nitrile rubber | 1 |
| 24 | Oil seal | Nitrile rubber | 1 |
| 23 | Key | Steel | 1 |
| 22 | Pin | Phosphor copper | 24 |
| 21 | Detector lead fixer | Polyamide | 1 |
| 20 | Motor lead fixer | Polyamide | 1 |
| 19 | Detector connector | Polyamide (UL94V-0) | 1 |
| 18 | Motor connector | Polybutylene terephthalate (UL94V-0) | 1 |
| 17 | Detector leads | Cabtire cable 6 wires UL2589 AWG28, FG wire | |
| 16 | Motor leads | Cabtire cable 6 wires UL2103<br>(Motor lead wire AWG18 + Brake lead wire AWG20) | |
| 15 | RE cover B | SPCC (Painted) | 1 |
| 14 | RE cover A | Polyamide | 1 |
| 13 | Detector | 23bit absolute | 1 |
| 12 | Frame | Alminium (Painted) | 1 |
| 11 | End bracket | Alminium (Painted) | 1 |
| 10 | Ball bearing | Bearing steels | 2 |
| 9 | Permanent magnet | Rare earth magnet | |
| 8 | Rotor core | Electorical steel | |
| 7 | Motor shaft | Steel | 1 |
| 6 | Insulating cap | Polyethylene terephthalate | 1 |
| 5 | Printing circuit board | Composite | 1 |
| 4 | Slot insulator | Polyester film | |
| 3 | End insulator | Polyethylene terephthalate | 24 |
| 2 | Winding | Polyester enameled copper wire | |
| 1 | Stator core | Electrical steel | |

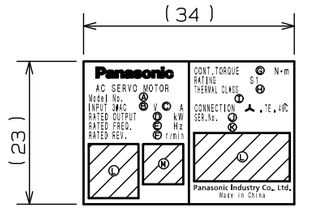
| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| 1 | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF□□□L1□2 |
| Name | STRUCTURE SECTION VIEW DRAWING (With Brake) |
| No. | SR-DSV1273906 |

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

SR-DSV1273907

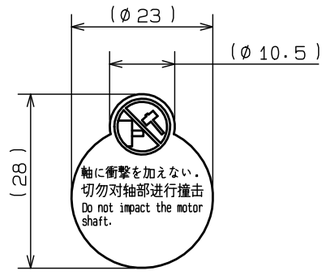
Do NOT scale the drawings.
instead rely on the dimensions
and their definitions



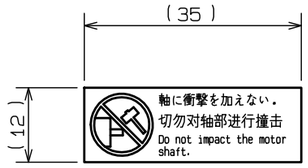

Motor name plate

Motor name plate described contents

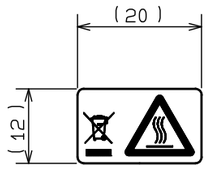
Ⓐ Model name
Ⓑ Rated voltage
Ⓒ Rated current
Ⓓ Rated output
Ⓔ Rated frequency
Ⓕ Rated speed
Ⓖ Rated torque
Ⓗ Thermal class
Ⓘ Dust-proof & Drip-proof
Ⓙ Serial No.
Ⓚ Production date
Ⓛ Standard mark
Ⓜ QR code



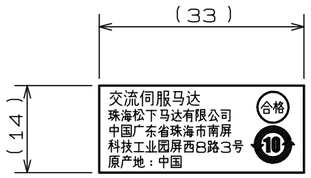

Prohibition name plate A




Prohibition name plate B




Caution name plate




Chinese caution name plate

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

| Scale | Panasonic Industry Co., Ltd. | | | Agreement |
|---|---|---|---|---|
| 1 : 1 | 3rd Angle System Unit:mm | | | |
| Designed | Drawn | Checked | Checked | Checked |
| NOZAWA | NOZAWA | NISHIO | | OKUNO |
| 2022/04/01 | 2022/04/01 | 2022/04/01 | | 2022/04/01 |

| | |
|---|---|
| Model | MQMF Serise □60、□80 |
| Name | NAME PLATE DESCRIPTION |
| No. | SR-DSV1273907 |