

# mitsubishi

MELDAS AC SERVO

## **MDS-B-SVJ2 Series** Manual for Replacing

BNP-B2202B (ENG)

[www.DataSheet4U.com](http://www.DataSheet4U.com)

## 1. Introduction

This manual contains points to change and examine when replacing the MDS-A-SVJ Series servo drive unit with the MDS-B-SVJ2 Series servo drive unit. In replacing, also refer to Specifications and Instruction Manual (BNP-B3937).

(Note) The software version of MDS-B-SVJ2 to which this manual (BNP-B2202B) applies is version C0 or later.

### 1-1 Features of MDS-B-SVJ2

The MDS-B-SVJ2 Series servo drive unit is for NC, which was developed as the successor model to the MDS-A-SVJ Series. It has such features as below compared with SVJ.

1. CE Marking compliant (Compliant to European Safety Standard)
2. Installation convertibility with all the capacities of the SVJ series
3. New model, HC motor supported
4. 100,000 pulse ENC supported (OSA104, OSE104)
5. Standard regenerative resistor is integrated in drive unit (All capacities other than 100W)
6. Possible to integrate the battery for the absolute positioning system (MR-BAT) in drive unit (Battery unit is also possible to use.)
7. By wiring the control power supply separately, possible to break the power supply for the main circuit by contactor
8. New functions added (External observer, overshoot compensation, adoptive filter, etc)
9. Motor brake and contactor control sequence output (DO output)

www.DataSheet4U.com

### 1-2 Specification of MDS-B-SVJ2

The specification of MDS-B-SVJ2 is as follows. For detailed specification, refer to Specifications and Instruction Manual (BNP-B3937).

| Servo drive unit model  |                                 | SVJ2-01                                                                                                                                                                                                                                                                                                          | SVJ2-03                     | SVJ2-04 | SVJ2-06 | SVJ2-07 | SVJ2-10 | SVJ2-20 |
|-------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|---------|---------|---------|---------|
| Power supply            | Voltage/Frequency               | Three-phase AC200 to 230V / 50, 60Hz                                                                                                                                                                                                                                                                             |                             |         |         |         |         |         |
|                         | Tolerable voltage fluctuation   | Three-phase AC170 to 253V / 50, 60Hz                                                                                                                                                                                                                                                                             |                             |         |         |         |         |         |
|                         | Tolerable frequency fluctuation | Within +/- 5%                                                                                                                                                                                                                                                                                                    |                             |         |         |         |         |         |
| Method                  |                                 | Sine wave PWM control and current control method                                                                                                                                                                                                                                                                 |                             |         |         |         |         |         |
| Dynamic brake           |                                 | Built-in                                                                                                                                                                                                                                                                                                         |                             |         |         |         |         |         |
| Regenerative resistor   |                                 | External only                                                                                                                                                                                                                                                                                                    | Built-in or external option |         |         |         |         |         |
| External digital input  |                                 | External emergency stop input                                                                                                                                                                                                                                                                                    |                             |         |         |         |         |         |
| External digital output |                                 | Contactor control output, brake control output                                                                                                                                                                                                                                                                   |                             |         |         |         |         |         |
| External analog output  |                                 | -/+ 10V, 2ch                                                                                                                                                                                                                                                                                                     |                             |         |         |         |         |         |
| Protection function     |                                 | Excessive current break, regenerative excessive voltage break, overload break (Electron thermal), servo motor excessive heat protection, detector error protection, regeneration error protection, insufficient voltage and momentary power failure protection, overspeed protection, excessive error protection |                             |         |         |         |         |         |
| Structure               |                                 | Protection method: IP20                                                                                                                                                                                                                                                                                          |                             |         |         |         |         |         |
| Weight [kg]             |                                 | 0.7                                                                                                                                                                                                                                                                                                              | 0.7                         | 0.7     | 1.1     | 1.5     | 2.0     | 2.0     |

### 1-3 Basic Rules in Replacing

To follow the content of this manual, the basic rules and compatibilities must be satisfied. If not, the installation of SVJ2 is considered to be newly selected installation.

In the case of replacing SVJ-01W or SVJ-03W (100V spec), carry out replacing after changing the power supply to be the three-phase 200V.

<Basic rules in replacing>

1. "Drive unit replacing" means replacing MDS-A-SVJ with MDS-B-SVJ2.
2. The basic idea of "replacing" is that replacing drive units after machine tool builders shift their orders for SVJ to those for SVJ2.
3. In selecting motor, select the one with which the equivalent output and control accuracy can be got.
4. The selected motor's flange diameter and shaft shape is compatible with the current one.

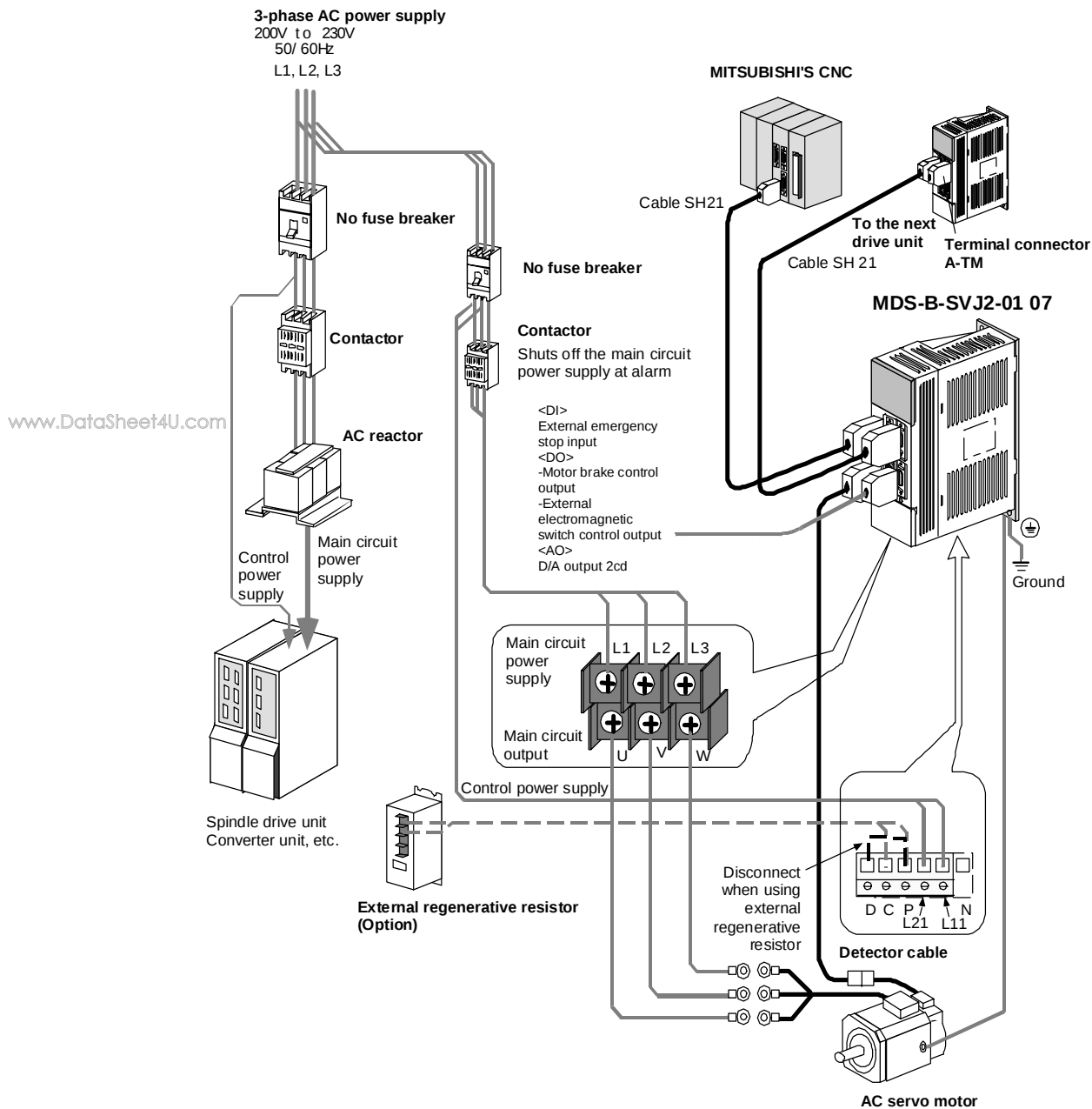
#### **1-4 Additional points compared with version B**

As the software version was upgraded to C0 from B (B0 to B4), functions below will be added by replacing SVJ with SVJ2.

1. All types of HC motors (HC52 to HC202, HC53 to HC153) are available, so the HA series motor can be replaced with the HC series.
2. Motors HA053 and HA13 can be replaced. (If replacing, the new motors should be HA053N and HA13N.)
3. Regenerative resistor of the SVJ series can be used. (Note that in this case, CE Marking cannot be acquired.)

## 1-5 Basic Configuration of MDS-B-SVJ2

<MDS-B-SVJ2-01 to MDS-B-SVJ2-07>



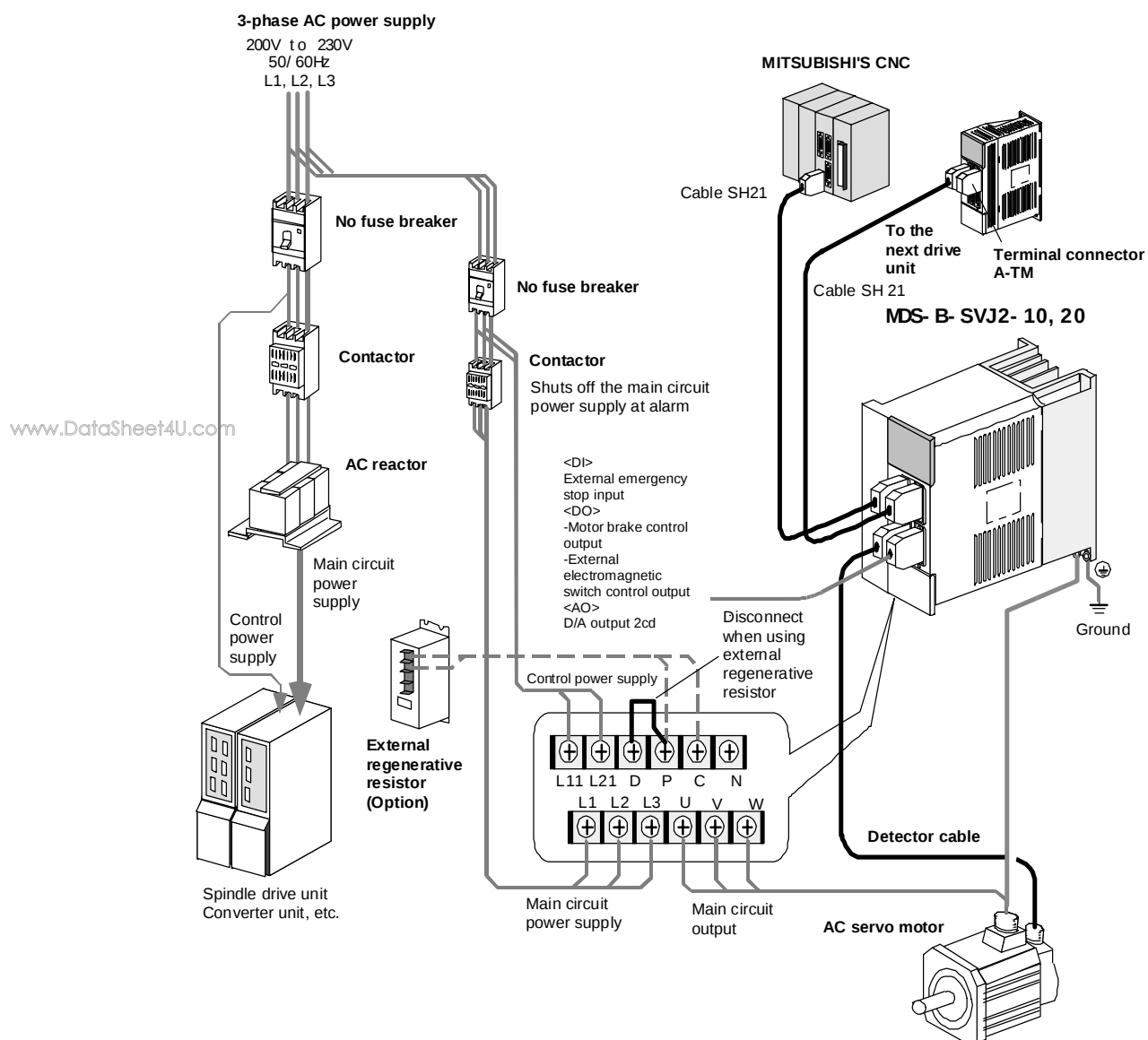
**Danger**

When the power supply is shared with converter, if the total current capacity is over 60A, set up a no fuse breaker and contactor for the main circuit power supply for SVJ2 separately.

If you use a no fuse breaker that is shared with a large capacity unit, the breaker sometimes doesn't work for short circuit accident of a small capacity drive unit, which may cause fire. For SVJ2, select a breaker whose type is NF60 or lower.

(For selecting no fuse breakers, refer to Specifications and Instruction Manual.)

<MDS-B-SVJ2-10 to MDS-B-SVJ2-20>



## 2 POINTS TO EXAMINE IN REPLACING

In replacing, examine the points in the table below.

| Category                                | Different points between SVJ and SVJ2                                                  | Points to examine                                                                                                                                                                                                                                                                    | Note                                                |
|-----------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Space                                   | Connection directions of wiring are different.                                         | Is there enough wiring space under the unit?                                                                                                                                                                                                                                         |                                                     |
|                                         |                                                                                        | Are the wires long enough for SVJ2?                                                                                                                                                                                                                                                  |                                                     |
|                                         | Regenerative resistors are different.                                                  | Is there space left for mounting regenerative resistor?                                                                                                                                                                                                                              |                                                     |
|                                         | Unit capacity is different.                                                            | Is there enough space? (As the depth of the unit is longer. This point applies only to the case of HA-ME/MH73)                                                                                                                                                                       |                                                     |
| Wiring                                  | Connection directions of wiring are different.                                         | Are the wires long enough? Do they reach the terminal box of SVJ2?                                                                                                                                                                                                                   |                                                     |
|                                         | The control power supply is separate.                                                  | The control power input is connector. (SVJ2-07 and drive unit with smaller capacity)                                                                                                                                                                                                 |                                                     |
|                                         | Regenerative resistor is separate.                                                     | The regenerative resistor's connection is connector. (SVJ2-07 and drive unit with smaller capacity)                                                                                                                                                                                  |                                                     |
|                                         | Ground with chassis.                                                                   | Is FG wiring length enough?                                                                                                                                                                                                                                                          |                                                     |
| Motor                                   | Motor series is changed.                                                               | Can your current motor continue to be used?<br>-In the case of HA motor, should the motor be replaced to be the new model (HC)?<br>-Can your current motor continue to be used?<br>-With the current motor, does ENC have to be changed?<br>-Is it necessary to change to new motor? | Refer to TABLE FOR MOTOR REPLACING.                 |
| Cable                                   | Motor series is changed.                                                               | Can your current ENC cable be used?                                                                                                                                                                                                                                                  |                                                     |
| Regenerative resistor                   | Regenerative resistor series is changed.                                               | Do you prefer to continue to use the regenerative resistor for SVJ? (In this case, CE Marking cannot be acquired.)<br>In selecting the regenerative resistor for SVJ2, take the regenerative load of the current regenerative resistor into consideration.                           | Refer to TABLE FOR REGENERATIVE RESISTOR REPLACING. |
| No fuse breaker                         | Select the product with the same capacity.                                             | Use the product with the same capacity.<br>However, in the case of replacing SVJ-06 with SVJ2-07, capacity is bigger.                                                                                                                                                                |                                                     |
| Contactor                               | Select the product with the same capacity.                                             | Use the product with the same capacity.<br>As SVJ, contactor does not have to be equipped. (Note that in this case, CE Marking cannot be acquired basically.)<br>However, in the case of replacing SVJ-06 with SVJ2-07, capacity is bigger.                                          |                                                     |
|                                         | The control power supply is separately wired.                                          | Input the control power supply directly from the no fuse breaker.<br>Use contactor only for the main circuit.                                                                                                                                                                        |                                                     |
| Battery for absolute positioning system | The built-in one (MR-BAT) can be used.                                                 | Battery unit (MDS-A-BAT) can be also used.                                                                                                                                                                                                                                           |                                                     |
| Parameter                               | Change parameters that have to be changed.                                             | Change parameters that have to be changed.                                                                                                                                                                                                                                           | Refer to TABLE FOR MOTOR REPLACING.                 |
|                                         |                                                                                        | Is servo tuning necessary?                                                                                                                                                                                                                                                           |                                                     |
| 100V spec                               | The SVJ2 Series doesn't have the 100V specification, change to the 200V specification. |                                                                                                                                                                                                                                                                                      |                                                     |

### 3. TABLE FOR MOTOR REPLACING

| SVJ capacity            | Current motor | SVJ2 capacity                                                            | New motor   | ENC cable exchange | Parameter change |                |                |           | Servo tuning |             |
|-------------------------|---------------|--------------------------------------------------------------------------|-------------|--------------------|------------------|----------------|----------------|-----------|--------------|-------------|
|                         |               |                                                                          |             |                    | SV009<br>SV010   | SV011<br>SV012 | SV019<br>SV020 | SV025     |              |             |
| SVJ-01<br>or<br>SVJ-01W | HA-FE053      | SVJ2-01<br><br>(When replacing 01W, change power supply to 3-phase 200V) | ⇒HA-FF053   | Necessary          | 2048→8192        | 256→500        | 4→8            | 337C→227C | Unnecessary  |             |
|                         | HA-FH053      |                                                                          | ⇒HA-FF053   | Necessary          | 2048→8192        | 256→500        | 8              | 227C      | Unnecessary  |             |
|                         | HA-FE13       |                                                                          | ⇒HA-FF13    | Necessary          | 2048→4096        | 256→300        | 4→8            | 337D→227D | Unnecessary  |             |
|                         | HA-FH13       |                                                                          | ⇒HA-FF13    | Necessary          | 2048→4096        | 256→300        | 8              | 227D      | Unnecessary  |             |
|                         | HA-ME053      |                                                                          | ⇒HC-MF053   | Necessary          | 2048→4096        | 256→200        | 4→8            | 339C→229C | Necessary    |             |
|                         | HA-MH053      |                                                                          | ⇒HC-MF053   | Necessary          | 2048→4096        | 256→200        | 8              | 229C      | Necessary    |             |
|                         | HA-ME13       |                                                                          | ⇒HC-MF13    | Necessary          | 2048→4096        | 256→300        | 4→8            | 339D→229D | Necessary    |             |
|                         | HA-MH13       |                                                                          | ⇒HC-MF13    | Necessary          | 2048→4096        | 256→300        | 8              | 229D      | Necessary    |             |
| SVJ-01                  | HA053-E30     | SVJ2-01                                                                  | ⇒HA053N-E33 | Necessary          | 2048             | 256            | 10→25          | 338C→228C | Unnecessary  |             |
|                         | HA13-E30      |                                                                          | ⇒HA13N-E33  | Necessary          | 2048             | 256            | 10→25          | 338D→228D | Unnecessary  |             |
| SVJ-03<br>or<br>SVJ-03W | HA-FE23       | SVJ2-03<br><br>(When replacing 03W, change power supply to 3-phase 200V) | ⇒HA-FF23    | Necessary          | 2048→4096        | 256→700        | 4→8            | 337E→227E | Unnecessary  |             |
|                         | HA-FH23       |                                                                          | ⇒HA-FF23    | Necessary          | 2048→4096        | 256→700        | 8              | 227E      | Unnecessary  |             |
|                         | HA-FE33       |                                                                          | ⇒HA-FF33    | Necessary          | 2048→4096        | 256→500        | 4→8            | 337F→227F | Unnecessary  |             |
|                         | HA-FH33       |                                                                          | ⇒HA-FF33    | Necessary          | 2048→4096        | 256→500        | 8              | 227F      | Unnecessary  |             |
|                         | HA-ME23       |                                                                          | ⇒HC-MF23    | Necessary          | 2048→4096        | 256→400        | 4→8            | 339E→229E | Necessary    |             |
|                         | HA-MH23       |                                                                          | ⇒HC-MF23    | Necessary          | 2048→4096        | 256→400        | 8              | 229E      | Necessary    |             |
| SVJ-03                  | HA23N-E30     | SVJ2-03                                                                  | →HA23N-E33  | Unnecessary        | 2048             | 256            | 25             | 006E→228E | Unnecessary  |             |
|                         | HA23N-E33     |                                                                          | *HA23N-E33  | Unnecessary        | 2048             | 256            | 25             | 006E→228E | Unnecessary  |             |
|                         | HA23N-A33     |                                                                          | *HA23N-A33  | Unnecessary        | 2048             | 256            | 25             | 226E→228E | Unnecessary  |             |
|                         | HA23N-E42     |                                                                          | *HA23N-E42  | Unnecessary        | 2048             | 256            | 100            | 226E→228E | Unnecessary  |             |
|                         | HA23N-A42     |                                                                          | *HA23N-A42  | Unnecessary        | 2048             | 256            | 100            | 226E→228E | Unnecessary  |             |
|                         | HA33N-E30     |                                                                          | →HA33N-E33  | Unnecessary        | 2048             | 256            | 25             | 006F→228F | Unnecessary  |             |
|                         | HA33N-E33     |                                                                          | *HA33N-E33  | Unnecessary        | 2048             | 256            | 25             | 006F→228F | Unnecessary  |             |
|                         | HA33N-A33     |                                                                          | *HA33N-A33  | Unnecessary        | 2048             | 256            | 25             | 226F→228F | Unnecessary  |             |
|                         | HA33N-E42     |                                                                          | *HA33N-E42  | Unnecessary        | 2048             | 256            | 100            | 226F→228F | Unnecessary  |             |
|                         | HA33N-A42     |                                                                          | *HA33N-A42  | Unnecessary        | 2048             | 256            | 100            | 226F→228F | Unnecessary  |             |
|                         | HA-ME43       | →SVJ2-04                                                                 | ⇒HC-MF43    | Necessary          | 2048→4096        | 256→300        | 4→8            | 3390→2290 | Necessary    |             |
|                         | HA-MH43       | ⇒HC-MF43                                                                 | Necessary   | 2048→4096          | 256→300          | 8              | 2290           | Necessary |              |             |
|                         | SVJ-06        | HA-FE43                                                                  | →SVJ2-04    | ⇒HA-FF43           | Necessary        | 2048→4096      | 768→700        | 4→8       | 3370→2270    | Unnecessary |
|                         |               | HA-FH43                                                                  |             | ⇒HA-FF43           | Necessary        | 2048→4096      | 768→700        | 8         | 2270         | Unnecessary |
| HA-FE63                 |               | SVJ2-06                                                                  | ⇒HA-FF63    | Necessary          | 2048→4096        | 768→700        | 4→8            | 3371→2271 | Unnecessary  |             |
| HA-FH63                 |               |                                                                          | ⇒HA-FF63    | Necessary          | 2048→4096        | 768→700        | 8              | 2271      | Unnecessary  |             |
| HA40N-E30               |               |                                                                          | →HA40N-E33  | Unnecessary        | 2048             | 512            | 25             | 0000→2200 | Unnecessary  |             |
|                         |               |                                                                          | →HC52-E33   | Unnecessary        | 2048→8192        | 512            | 25             | 0000→22B0 | Necessary    |             |
| HA40N-E33               |               |                                                                          | *HA40N-E33  | Unnecessary        | 2048             | 512            | 25             | 0000→2200 | Unnecessary  |             |
|                         |               |                                                                          | →HC52-E33   | Unnecessary        | 2048→8192        | 512            | 25             | 0000→22B0 | Necessary    |             |
| HA40N-A33               |               |                                                                          | *HA40N-A33  | Unnecessary        | 2048             | 512            | 25             | 2200      | Unnecessary  |             |
|                         |               |                                                                          | →HC52-A33   | Unnecessary        | 2048→8192        | 512            | 25             | 2200→22B0 | Necessary    |             |
| HA40N-E42               |               |                                                                          | *HA40N-E42  | Unnecessary        | 2048             | 512            | 100            | 2200      | Unnecessary  |             |
|                         |               |                                                                          | →HC52-E42   | Unnecessary        | 2048→8192        | 512            | 100            | 2200→22B0 | Necessary    |             |
| HA40N-A42               |               |                                                                          | *HA40N-A42  | Unnecessary        | 2048             | 512            | 100            | 2200      | Unnecessary  |             |
|                         |               |                                                                          | →HC52-A42   | Unnecessary        | 2048→8192        | 512            | 100            | 2200→22B0 | Necessary    |             |
| HA43N-E30               |               |                                                                          | →HA43N-E33  | Unnecessary        | 2048             | 256/512        | 25             | 0080→2280 | Unnecessary  |             |
|                         |               |                                                                          | →HC53-E33   | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 0080→22C0 | Necessary    |             |
| HA43N-E33               |               |                                                                          | *HA43N-E33  | Unnecessary        | 2048             | 256/512        | 25             | 0080→2280 | Unnecessary  |             |
|                         |               |                                                                          | →HC53-E33   | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 0080→22C0 | Necessary    |             |
| HA43N-A33               |               |                                                                          | *HA43N-A33  | Unnecessary        | 2048             | 256/512        | 25             | 2280      | Unnecessary  |             |
|                         |               |                                                                          | →HC53-A33   | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 2280→22C0 | Necessary    |             |
| HA43N-E42               |               |                                                                          | *HA43N-E42  | Unnecessary        | 2048             | 256/512        | 100            | 2280      | Unnecessary  |             |
|                         |               |                                                                          | →HC53-E42   | Unnecessary        | 2048→4096        | 256/512→256    | 100            | 2280→22C0 | Necessary    |             |
| HA43N-A42               |               |                                                                          | *HA43N-A42  | Unnecessary        | 2048             | 256/512        | 100            | 2280      | Unnecessary  |             |
|                         |               |                                                                          | →HC53-A42   | Unnecessary        | 2048→4096        | 256/512→256    | 100            | 2280→22C0 | Necessary    |             |

| SVJ capacity | Current motor | SVJ2 capacity | New motor   | ENC cable exchange | Parameter change |                |                |           | Servo tuning |
|--------------|---------------|---------------|-------------|--------------------|------------------|----------------|----------------|-----------|--------------|
|              |               |               |             |                    | SV009<br>SV010   | SV011<br>SV012 | SV019<br>SV020 | SV025     |              |
| SVJ-06       | HA-ME73       | →SVJ2-07      | ⇒HC-MF73    | Necessary          | 2048→4096        | 512→300        | 4→8            | 3391→2291 | Necessary    |
|              | HA-MH73       |               | ⇒HC-MF73    | Necessary          | 2048→4096        | 512→300        | 8              | 2291      | Necessary    |
| SVJ-10       | HA80N-E30     | SVJ2-10       | →HA80N-E33  | Unnecessary        | 2048             | 512            | 25             | 0001→2201 | Unnecessary  |
|              |               |               | →HC102-E33  | Unnecessary        | 2048→8192        | 512→384        | 25             | 0001→22B1 | Necessary    |
|              | HA80N-E33     |               | *HA80N-E33  | Unnecessary        | 2048             | 512            | 25             | 0001→2201 | Unnecessary  |
|              |               |               | →HC102-E33  | Unnecessary        | 2048→8192        | 512→384        | 25             | 0001→22B1 | Necessary    |
|              | HA80N-A33     |               | *HA80N-A33  | Unnecessary        | 2048             | 512            | 25             | 2201      | Unnecessary  |
|              |               |               | →HC102-A33  | Unnecessary        | 2048→8192        | 512→384        | 25             | 0001→22B1 | Necessary    |
|              | HA80N-E42     |               | *HA80N-E42  | Unnecessary        | 2048             | 512            | 100            | 2201      | Unnecessary  |
|              |               |               | →HC102-E42  | Unnecessary        | 2048→8192        | 512→384        | 100            | 2201→22B1 | Necessary    |
|              | HA80N-A42     |               | *HA80N-A42  | Unnecessary        | 2048             | 512            | 100            | 2201      | Unnecessary  |
|              |               |               | →HC102-A42  | Unnecessary        | 2048→8192        | 512→384        | 100            | 2201→22B1 | Necessary    |
|              | HA83N-E30     |               | →HA83N-E33  | Unnecessary        | 2048             | 256/512        | 25             | 0081→2281 | Unnecessary  |
|              |               |               | →HC103-E33  | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 0081→22C1 | Necessary    |
|              | HA83N-E33     |               | *HA83N-E33  | Unnecessary        | 2048             | 256/512        | 25             | 0081→2281 | Unnecessary  |
|              |               |               | →HC103-E33  | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 0081→22C1 | Necessary    |
|              | HA83N-A33     |               | *HA83N-A33  | Unnecessary        | 2048             | 256/512        | 25             | 2281      | Unnecessary  |
|              |               |               | →HC103-A33  | Unnecessary        | 2048→4096        | 256/512→256    | 25             | 2281→22C1 | Necessary    |
|              | HA83N-E42     |               | *HA83N-E42  | Unnecessary        | 2048             | 256/512        | 100            | 2281      | Unnecessary  |
|              |               |               | →HC103-E42  | Unnecessary        | 2048→4096        | 256/512→256    | 100            | 2281→22C1 | Necessary    |
|              | HA83N-A42     |               | *HA83N-A42  | Unnecessary        | 2048             | 256/512        | 100            | 2281      | Unnecessary  |
|              |               |               | →HC103-A42  | Unnecessary        | 2048→4096        | 256/512→256    | 100            | 2281→22C1 | Necessary    |
| SVJ-20       | HA93N-E30     | SVJ2-20       | →HA93N-E33  | Unnecessary        | 2048             | 512            | 25             | 008A→228A | Unnecessary  |
|              |               |               | →HC153-E33  | Unnecessary        | 2048→4096        | 512→256        | 25             | 008A→22C2 | Necessary    |
|              | HA93N-E33     |               | *HA93N-E33  | Unnecessary        | 2048             | 512            | 25             | 008A→228A | Unnecessary  |
|              |               |               | →HC153-E33  | Unnecessary        | 2048→4096        | 512→256        | 25             | 008A→22C2 | Necessary    |
|              | HA93N-A33     |               | *HA93N-A33  | Unnecessary        | 2048             | 512            | 25             | 228A      | Unnecessary  |
|              |               |               | →HC153-A33  | Unnecessary        | 2048→4096        | 512→256        | 25             | 228A→22C2 | Necessary    |
|              | HA93N-E42     |               | *HA93N-E42  | Unnecessary        | 2048             | 512            | 100            | 228A      | Unnecessary  |
|              |               |               | →HC153-E42  | Unnecessary        | 2048→4096        | 512→256        | 100            | 228A→22C2 | Necessary    |
|              | HA93N-A42     |               | *HA93N-A42  | Unnecessary        | 2048             | 512            | 100            | 228A      | Unnecessary  |
|              |               |               | →HC153-A42  | Unnecessary        | 2048→4096        | 512→256        | 100            | 228A→22C2 | Necessary    |
|              | HA100N-E30    |               | →HA100N-E33 | Unnecessary        | 2048             | 256/512        | 25             | 0002→2202 | Unnecessary  |
|              |               |               | →HC202-E33  | Unnecessary        | 2048→4096        | 256/512→384    | 25             | 0002→22B4 | Necessary    |
|              | HA100N-E33    |               | *HA100N-E33 | Unnecessary        | 2048             | 256/512        | 25             | 0002→2202 | Unnecessary  |
|              |               |               | →HC202-E33  | Unnecessary        | 2048→4096        | 256/512→384    | 25             | 0002→22B4 | Necessary    |
|              | HA100N-A33    |               | *HA100N-A33 | Unnecessary        | 2048             | 256/512        | 25             | 2202      | Unnecessary  |
|              |               |               | →HC202-A33  | Unnecessary        | 2048→4096        | 256/512→384    | 25             | 2202→22B4 | Necessary    |
|              | HA100N-E42    |               | *HA100N-E42 | Unnecessary        | 2048             | 256/512        | 100            | 2202      | Unnecessary  |
|              |               |               | →HC202-E42  | Unnecessary        | 2048→4096        | 256/512→384    | 100            | 2202→22B4 | Necessary    |
|              | HA100N-A42    |               | *HA100N-A42 | Unnecessary        | 2048             | 256/512        | 100            | 2202      | Unnecessary  |
|              |               |               | →HC202-A42  | Unnecessary        | 2048→4096        | 256/512→384    | 100            | 2202→22B4 | Necessary    |

(Note 1) The arrow at the head of the SVJ2 capacity (→) means the capacity is not the same as the previous one.

(Note 2) The meaning of the symbols at the head of the new motor is as follows.

\*: Your current motor can be used.

→: By changing the detectors, your current motor can be used.

⇒: The motors must be replaced.

(Note 3) As for parameter values, the value before the arrow is the value to change. (Conventional parameter → New parameter) If there is only one value in a cell, it means that change is not necessary.

(Note 4) "256/512" in parameter change cells of SV011 and SV012 means "SV011=256, SV012=512".

(Note 5) If servo tuning is necessary, gain and filter (VGN, PGN, etc.) must be tuned after replacing.

#### 4.TABLE FOR REGENERATIVE RESISTOR REPLACING

| Current regenerative resistor | Connection    | Regenerative resistor efficiency | Current regenerative load level | Capacity of new drive unit      | New regenerative resistor  | Regenerative resistor efficiency | Parameter change SV036 |
|-------------------------------|---------------|----------------------------------|---------------------------------|---------------------------------|----------------------------|----------------------------------|------------------------|
| No regenerative resistor      |               |                                  |                                 | SVJ2-01                         | No regenerative resistor   |                                  | 1000                   |
| MR-RB013                      | 1             | 18W                              |                                 | When continuing to use MR-RB013 |                            |                                  | 1100→9100              |
|                               |               |                                  | Lower than 40%                  | SVJ2-01                         | MR-RB032                   | 30W                              | 1100→1200              |
|                               |               |                                  |                                 | SVJ2-03 to 06                   | Standard built-in resistor | 10W                              | 1100→1000              |
|                               |               |                                  |                                 | SVJ2-07                         | Standard built-in resistor | 20W                              | 1100→1000              |
|                               |               |                                  | Higher than 40%                 | SVJ2-01 to 06                   | MR-RB032                   | 30W                              | 1100→1200              |
|                               |               |                                  |                                 | SVJ2-07                         | Standard built-in resistor | 20W                              | 1100→1000              |
| MR-RB033                      | 1             | 36W                              |                                 | When continuing to use MR-RB033 |                            |                                  | 1200→9200              |
|                               |               |                                  | Lower than 60%                  | SVJ2-01 to 07                   | MR-RB032                   | 30W                              | 1200                   |
|                               |               |                                  | Higher than 40%                 | SVJ2-01 to 07                   | MR-RB12                    | 100W                             | 1200→1300              |
|                               | 2 in parallel | 72W                              |                                 | When continuing to use MR-RB033 |                            |                                  | 1200→9200              |
|                               |               |                                  | No limit                        | SVJ2-10 to 20                   | Standard built-in resistor | 100W                             | 1200→1000              |
|                               | 4 in parallel | 144W                             |                                 | When continuing to use MR-RB033 |                            |                                  | 1200→9200              |
|                               |               |                                  | Lower than 50%                  | SVJ2-20                         | Standard built-in resistor | 100W                             | 1200→1000              |
|                               |               |                                  | Higher than 50%                 | SVJ2-20                         | MR-RB30                    | 300W                             | 1200→1500              |
| MR-RB064                      | 1             | 72W                              |                                 | When continuing to use MR-RB064 |                            |                                  | 1300→9300              |
|                               |               |                                  | No limit                        | SVJ2-10 to 20                   | Standard built-in resistor | 100W                             | 1300→1000              |
|                               | 2 in parallel | 144W                             |                                 | When continuing to use MR-RB064 |                            |                                  | 1300→9300              |
|                               |               |                                  | Lower than 50%                  | SVJ2-20                         | Standard built-in resistor | 100W                             | 1300→1000              |
|                               |               |                                  | Higher than 50%                 | SVJ2-20                         | MR-RB30                    | 300W                             | 1300→1500              |
|                               | 2 in parallel | 144W                             |                                 | When continuing to use MR-RB064 |                            |                                  | 1F00→9F00              |
|                               |               |                                  |                                 | SVJ2-06 to 07                   | MR-RB12                    | 100W                             | 1F00→1300              |
|                               |               |                                  |                                 | SVJ2-06 to 07                   | MR-RB32                    | 300W                             | 1F00→1400              |
| MR-RB34                       | 1             | 300W                             |                                 | When continuing to use MR-RB34  |                            |                                  | 1400→9400              |
|                               |               |                                  | No limit                        | SVJ2-10 to 20                   | MR-RB30                    | 300W                             | 1400                   |
|                               | 2 in parallel | 600W                             |                                 | When continuing to use MR-RB34  |                            |                                  | 1400→9400              |
|                               |               |                                  | Lower than 60%                  | SVJ2-20                         | MR-RB50                    | 500W                             | 1400→1600              |
| MR-RB063                      | 1             | 72W                              |                                 | When continuing to use MR-RB063 |                            |                                  | 1500→9500              |
|                               |               |                                  | No limit                        | SVJ2-01 to 07                   | MR-RB12                    | 100W                             | 1500→1300              |
|                               | 2 in parallel | 144W                             |                                 | When continuing to use MR-RB063 |                            |                                  | 1500→9500              |
|                               |               |                                  | Lower than 50%                  | SVJ2-10 to 20                   | Standard built-in resistor | 100W                             | 1500→1000              |
|                               |               |                                  | Higher than 50%                 | SVJ2-10 to 20                   | MR-RB30                    | 300W                             | 1500                   |
|                               | 4 in parallel | 288W                             |                                 | When continuing to use MR-RB063 |                            |                                  | 1500→9500              |
|                               |               |                                  | No limit                        | SVJ2-20                         | MR-RB30                    | 300W                             | 1500                   |

(Note 1) If you use regenerative resistors for SVJ, CE Marking cannot be acquired basically.

(Note 2) In replacing regenerative resistor for SVJ2, different regenerative resistors will be chosen depending on the regenerative load (thermo monitor) of the current regenerative resistor for SVJ. Select regenerative resistors by taking the necessary regenerative efficiency for SVJ into consideration.

(Note 3) As for parameter values, the value before the arrow is the value before changing. If there is only one value in a cell, it means that change is not necessary.