Version 23-02-2016

# Replacement 6748 Yaskawa servo Sigma2 items:

41563 SERVO MOTION CONTROLLER YASKAWA SGDH-02AE

41794 MOTOR SGMAH-(YASKAWA:01AAF41D / OMRON:01AAA61D-OY)

41862 MOTOR SGMAH-(YASKAWA:02AAF41D / OMRON:02AAA61D-OY)

41864 MOTOR SGMAH-(YASKAWA:02AAF4CD / OMRON:02AAA6CD-OY)

# To Sigma5


Sigma2

Sigma5

## Introduction

The Yaskawa Sigma2 servo controller and motors have been declared End Of Life by the manufacturer. A replacement series Sigma5 has been introduced which is not one to one compatible.

When a servo controller needs to be replaced by the new Sigma5 type it is needed to rewire the mains and motor connector to the new connectors. The connectors CN1 and CN2 remain compatible and can be reconnected to the new drive. The controller needs new parameters. The new Sigma5 controller is compatible with the old Sigma2 motor.
The new controller mounting holes are not compatible with the existing holes on the mounting plate. To prevent drilling new holes the replacement kit contains an adapter plate. This adapter plate cannot be used with the controllers for the fluxer, the assembly will be too high. New holes need to be drilled in this position.

When a Sigma2 motor needs to be replaced with a Sigma5 motor, the controller needs to be replaced as well. The old Sigma2 controller is not compatible with the new Sigma5 motor. The motor connections from Sigma2 and Sigma5 are not compatible. To prevent the replacement of connectors or the wiring in the cable ducts a short transfer cable is provided to connect the motor and encoder to the existing wiring.

### Changing the Sigma2 inverter 41563 to the new Sigma5 inverter 47077.

For the replacement of the Sigma2 controller the kit 713254 has been defined.

This kit contains:

| | |
|---|---|
| 47077 | SERVO MOTION CONTROLLER 0.2 KW YASK SGDV-1R6A01A |
| 441977 | PLATE MOUNTING 6X50X160 AL |

1 - Turn the main switch off and lock the main switch in the off position.

2 - Remove the old Sigma2 controller 41563

3 - The adapter plate is already mounted to the new controller. If the unit needs to be mounted in the fluxer control department the adapter plate needs to be removed. The assembly with adapter plate will be too high. In this case new holes need to be drilled.
Mount the new Sigma5 controller to the back panel.

4 - Rewire the connections from the old white connectors L1, L2,L1C,L2C and U,V,W to the new black connectors and connect the ground wire to the chassis.

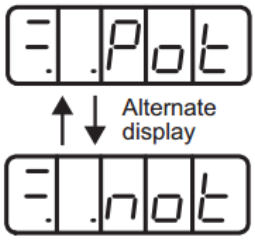
5 - Connect the connectors CN1 and CN2.

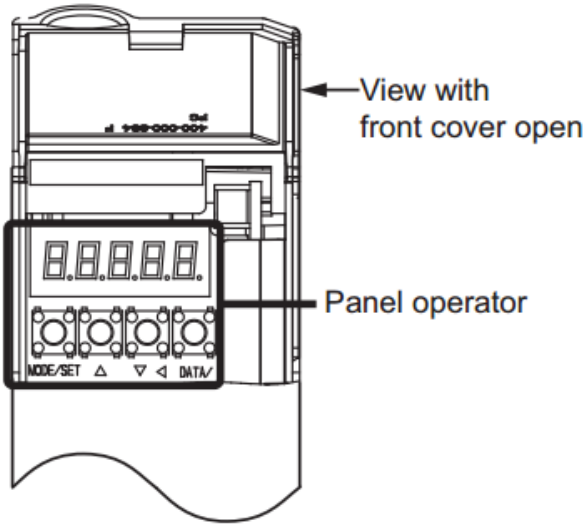
6 - Check the wiring.

7 - Switch on the machine.

8 – Setting of the new parameters.

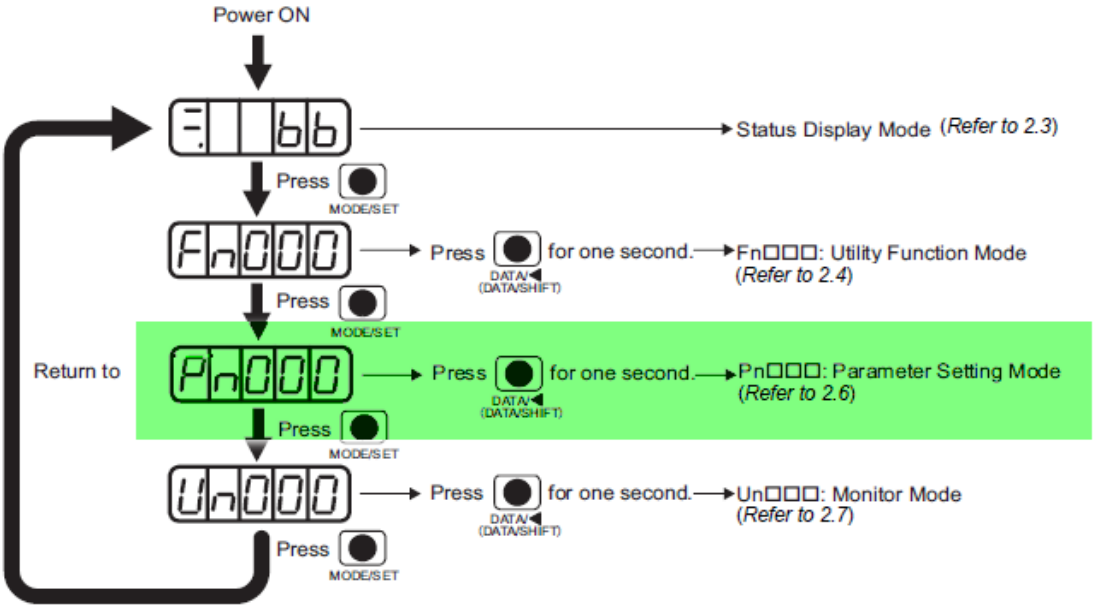
On the display the text “Pot” or “not” is blinking.



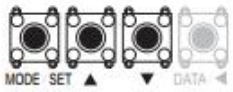
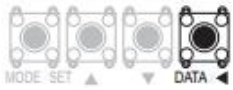
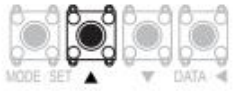
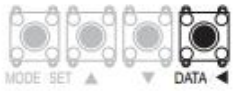

## Display Mode Selection

Press the MODE/SET Key to select a display mode in the following order.



Below a sample how to use the buttons for programming the servo parameters. This is only an example, the parameter is not in use in our case.

The example below shows how to change the speed loop gain (Pn100) from "40.0" to "100.0."

| Step | Display after Operation | Keys | Operation |
|---|---|---|---|
| 1 | Pn100 |   | Press the MODE/SET Key to select the parameter setting. If Pn100 is not displayed, press the UP or the DOWN Key to select Pn100. |
| 2 | 0040.0 |   | Press the DATA/SHIFT Key for approximately one second. The current data of Pn100 is displayed. |
| 3 | 0040.0 |   | Press the DATA/SHIFT Key to select "4". "4" will flash and be able to be changed. |
| 4 | 0100.0 |   | Keep pressing the UP Key until "0100.0" is displayed. |
| 5 | 0100.0 Display flashes. |   | Press the MODE/SET Key. The value flashes and is saved. The data for the speed loop gain (Pn100) is changed from "40.0" to "100.0." |
| 6 | Pn100 |   | Press the DATA/SHIFT Key for approximately one second. "Pn100" is displayed again. |

All parameter that need to be changed are listed on next page, all other parameters are factory default.

**After programming of the first 2 parameters switch the machine off, wait 10 seconds until the display clears and switch the machine on again. This is needed to be able to change the other parameters.**

After repowering the display will show “BB”.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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| | | | | | | | | | |
| | Sigma V Settings | | | | | | | | |
| | | | | | | | | | |
| **Parameter PN** | **Description** | **Factory default** | **Robot-X-1** | **Robot-Y-2** | **Robot-Z-3** | **Robot-U-4** | **Multi fluxer-X-5** | **Multi fluxer-Y-6** | **If tandem Multi fluxer-Y-6** |
| PN000 | Basic Function Select Switch 0 | 0000H | 0021H | 0021H | 0021H | 0021H | 0020H | 0020H | 0020H |
| PN00B | Application Function Select Switch B | 0000H | 0101H | 0101H | 0101H | 0101H | 0101H | 0101H | 0101H |
| Switch machine off, wait 10 seconds and switch on again to be able to change the following parameters. | | | | | | | | | |
| PN103 | Moment of Inertia Ratio % | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PN170 | Tuning-less Function Related Switch | 1401H | 1400H | 1400H | 1400H | 1400H | 1400H | 1400H | 1400H |
| PN402 | Forward torque limit | 800 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| PN403 | Reverse torque limit | 800 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| PN407 | Speed limit durring torque control | 10000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| PN408 | Torque function switches | 0000 | - | - | - | - | 0001 | 0001 | 000 |
| PN409 | Notch filter frequency | 5000 | - | - | - | - | 100 | 100 | 100 |
| PN50A | Input signal selections 1 | 2100H | 8100H | 8100H | 8110H | 8100H | 8100H | 8100H | 8100H |
| PN50B | Input signal selections 2 | 6543H | 6548H | 6548H | 6548H | 6548H | 6548H | 6548H | 6548H |
| PN50E | Output signal selection 1 | 3211H | - | - | 3011H | - | - | - | - |
| PN50F | Output signal selection 2 | 0000H | 0000H | 0000H | 0200H | 0000H | 0000H | 0000H | 0000H |

9 - Switch the machine off with the main switch, wait 10 seconds and switch the machine on again.

10 - The replacement is ready, the new controller should work with the existing Sigma2 motor.

If there is doubt at start if all parameters are at factory default it is possible to force the controller to factory default by next procedure.

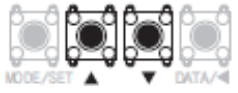
# Initializing Parameter Settings (Fn005)

This function is used when returning to the factory settings after changing parameter settings.

IMPORTANT

- Be sure to initialize the parameter settings while the servo ON (/S_ON) signal is OFF.
- After initialization, turn OFF the power supply and then turn ON again to validate the settings.

Follow the steps below to initialize the parameter setting.

| Step | Display after Operation | Keys | Operation |
|---|---|---|---|
| 1 | Fn000 |   | Press the MODE/SET Key to select the utility function mode. |
| 2 | Fn005 |   | Press the UP or DOWN Key to select Fn005. |
| 3 | P.InIt |   | Press the DATA/SHIFT Key for approximately one second. The display shown on the left appears. Note: When "no-oP" blinks for approximately one second, the write prohibited setting is set in Fn010. Change the setting in Fn010, and press the key again after enabling writing. (Refer to *7.12*.) |
| 4 | P.InIt Display blinks |   | Press the MODE/SET Key. Then, the parameters will be initialized. During initialization, the display shown on the left blinks. |
| 5 | donE Display blinks | | When the initialization of parameter setting completes, the display shown on the left blinks for about one second. |
| 6 | P.InIt | | The display changes from "donE" to the display shown on the left. |
| 7 | Fn005 |   | Press the DATA/SHIFT Key for approximately one second. "Fn005" is displayed again. |
| 8 | Turn OFF the power and then turn ON again to validate the setting. | | |

## Changing a Sigma2 motor to a Sigma5 motor.

The Sigma5 motor is not compatible with the Sigma2 controller. When a motor needs to be changed also the controller needs to be changed. For the controller follow the procedure as described before.

For the replacement of a Sigma2 motor 3 kits are defined:

713556 for the replacement of a fluxer or U-rotation motor 41794.

713557 for the replacement of an X or Y axle motor 41862.

713558 for the replacement of the Z-axle motor with brake 41864.

The kits contain the parts needed to change the controller, the particular new Sigma5 motor and 2 convertor cables which connect the new motor to the existing motor and encoder connections.

Due to lack of space the Z-motor has a special connector adaption.

Mechanical mounting hole diagram Sigma5 controller: