

## Replacing Yaskawa Sigma2 with a Sigma5 spindle servo drive

Note that the Sigma 5 drive won't work with a G3 control

**All power to the machine must be turned off before beginning this operation!**

### Preparation:

There is a small circuit board mounted on top of the Sigma 2 drive. Along its bottom edge there is either a terminal block with 9 wires in it, or a group of connectors for the same 9 wires. Only 2 of the wires are actually needed when the electrical panel has been adapted to a G4 control. The circuit board itself will not be used with the Sigma 5 inverter, but before removing it, separate the 2 wires from the rest.

Whether the board has a terminal block or the group of connectors, the first 3 wires, counting from the left, should be black, brown, and yellow, in that order.

Remove the black and yellow wires by unscrewing the screw terminals or clipping the wires at the point where they enter the connector. If you have to clip them, strip about 1/4" of insulation off the ends.

Splice the black wire to the yellow one. You can twist them together and use a small wire nut, or solder them together, or use a crimped splice terminal. If the rest of the wires on the circuit board are in screw terminals, remove them from the terminal block and tape each one up individually. If they're in connectors they can be unplugged and left as is.

There are 2 large cables connected to the amp. The one connected to the upper terminals is incoming 3-phase power, and the one connected to the lower terminals is power to the spindle motor. The 2 cables look identical and getting them crossed would be disastrous, so mark the upper cable by wrapping some electrical tape around it or attaching a tag to it so you can't mistake one cable for the other.

### Physical replacement:

Once you've spliced the 2 wires and removed the others from the circuit board on top of the servo amp, remove the rest of the wires and cables that are attached to the original amp and remove the amp from the panel by taking out the screws holding it to the panel. Loosen the screws at the bottom corners first, then remove the 2 at the top and lift the amp off of the bottom screws before pulling it away from the panel.

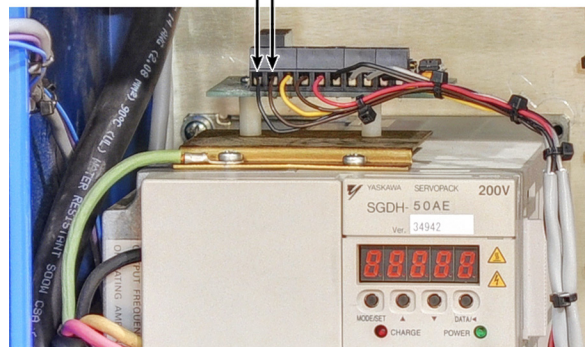
The new amp is not as wide as the old one, so you will only be able to use the mounting points on the right side of the amp. Remove the lower left screw from the panel and slip the lower-right screw slot of the new amp over the lower-right mounting screw, then replace the upper-right mounting screw to attach the amp to the panel. Tighten the lower-right screw and the amp is secure.

### Connections:

Most of the connections are handled by the connectors that plug into the front of the drive, and they are the same for the new drive as for the old one, except that the 9-pin "D" connector that is in CN3 on the Sigma 2 drive is not connected on the Sigma 5.

The power connections are shown on the next page.

Remove BLK and BRN wires and splice them together.  
All other wires should be taped and stowed.



**Power Connections:**

The top 3 terminals are for the power coming from the fuses (LINE IN).

Again, do not confuse these wires with the ones that go to the motor:

***If you connect these wires to the motor terminals the drive will be instantly destroyed when you turn the power on.***

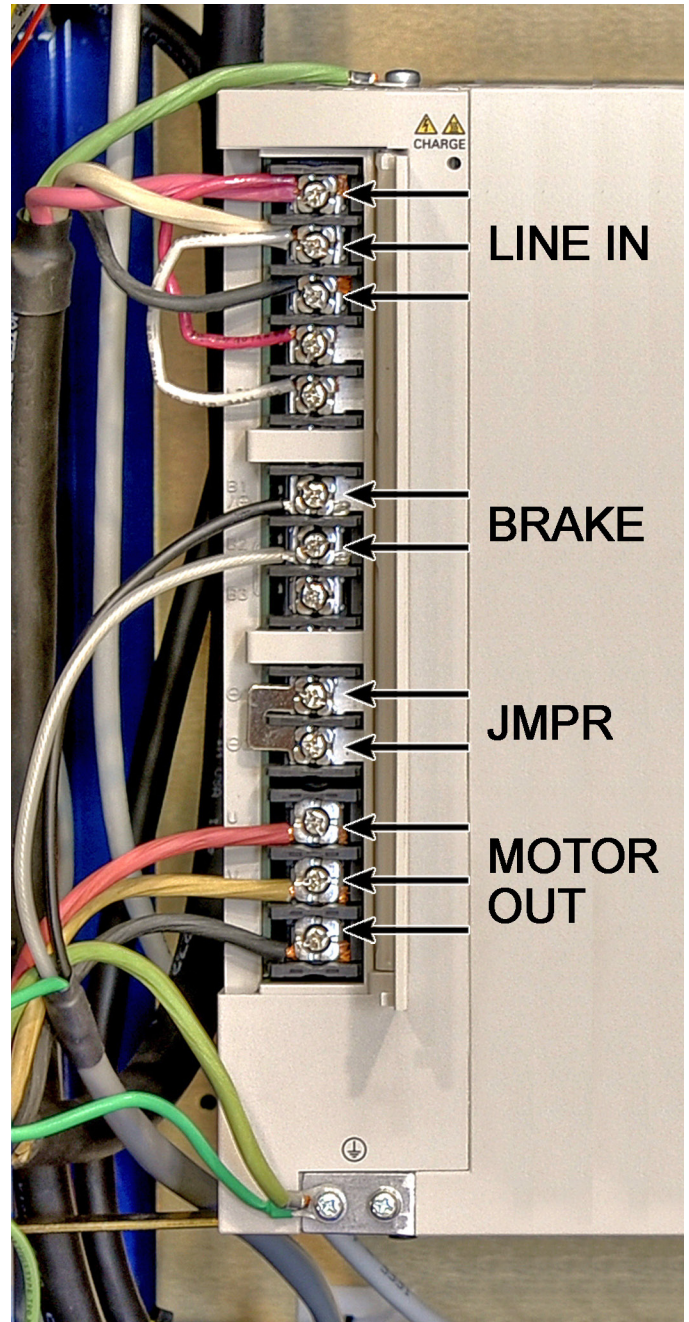
The green wire from the power cable is connected to a grounding screw on top of the drive.

Note that the the top 2 terminals also have jumper wires that go down to the 4th and 5th terminals.

The 6th and 7th terminals, with the gray and black wires, are for the external brake resistor. *If you are installing a Sigma5 drive that you got from some other source it may have a jumper installed between the 7th and 8th terminals from the top of the drive, and you will need to remove that jumper.*

The 9th and 10th terminals are jumpered together and that jumper needs to stay there.

The 11th,12th, and 13th terminals (MOTOR OUT) get the red, white, and black wires going to the motor, in that order. The green wire from the motor cable goes to the grounding screw at the bottom of the drive.



**Parameters:**

If you got the drive from us, it's already set up. If you got it from another source, contact us for programming documentation.