

## HS2000 Trouble 1

Phenomenon: The WACS head stops at Z origin during calibration or upon occurrence of a calibration alarm. Occurs only with the WACS head.

### <Cause>

- Abnormal oscillation at Z origin due to the effect of external noise on the shielding wires of the HS3/HS5 cables.

### <Check method, temporary measure>

- Add one extra line to calibration program 08010 to lower the calibration start position.

Since abnormal oscillation is more likely to occur when the sensor gets further away from the material (Z origin) due to the effect of external noise, bring the sensor closer to the material until abnormal oscillation is no longer observed and then start calibration.

08100 (HS98 REGULATION);

#26=25;

#32=1;

1F [#4006 NE20] G0T01;

#32=25.4;

N1 G91 G88 Z0;

G91 G00 Z-100;

W722; (Copying ON)

M727; (Position)

⋮  
⋮

→

Add this line to lower the calibration start position.  
If the problem still persists with the setting “-100,” increase the value to -110, -120 and so on, and check.  
(Various values have been entered in the past, such as -100 and -165.)

- If normal calibration can be performed after implementing this measure, external noise is a likely cause.

### <Countermeasure>

- Remove external noise.

### <Temporary measure 2>

- If the model is  $\beta$ , change the wiring destination of the HS3 shielded cable from TMN to FG.

Note) In this case, HS-WACS (cooling cut) can no longer be used on the FO/ $\theta$  due to conflict of certain characteristics such as cable length.

(This doesn't apply to  $\beta$ . HS-WACS is not provided with  $\alpha$  and APE.)



FO: Inside of NC operation panel

Phenomenon: The WACS head stops at Z origin during calibration or upon occurrence of a calibration alarm. Occurs only with the WACS head.

- Since 08010 is write-protected, the user cannot change or copy the program.
- If possible, the user should create the following calibration program and check the resulting phenomenon before the service staff arrives.

Temporary calibration program

0\_\_\_\_\_ (HS98 REGULATION) →

The user can assign a convenient program number.

```
#26=30;
#32=1;
IF [#4006 NE20] G0T01;
#32=25.4;
N1 G91 G88 Z0;
G91 G00 Z-100;      →
M722;
M727;
G90 G00 Z [#26/#32];
WHILE [#1001 NE1] D01;
G91 G00 Z-[0.1/#32];
END1;
G91 G00 Z [3/#32];
G04;
WHILE [#1001 NE1] D01;
G91 G00 Z-[0.02/#32];
G04 X0.02;
END1;
G92 G90 Z0;
G00 Z [2.8/#32];
G04 X0.5;
M727;
G00 Z [1.5/#32];
G04 X0.5;
M727;
G00 Z [0.2/#32];
G04 X0.5;
M727;
G91 G88 Z0;
G90 G92 Z#5023;
M727;
M723;
M30;
```

Add this line to lower the calibration start position.  
If the problem still persists with the setting “-100,”  
increase the value to -110, -120 and so on, and check.  
(Various values have been entered in the past, such as  
-100 and -165.)

## HS2000 Trouble 2

Phenomenon: The Z-axis rises during processing (applicable to all HS sensor heads).

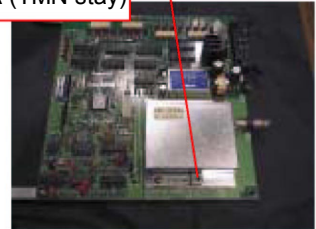
<Cause>

- One likely cause is short-circuit caused by a broken shield of the HS3 cable.

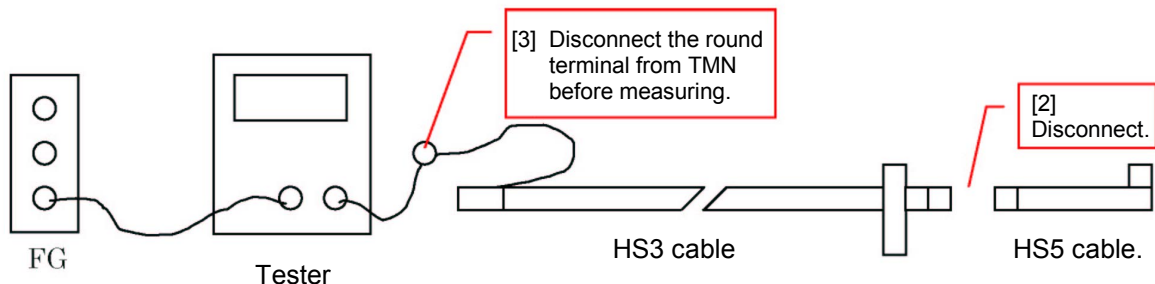
<Check method>

- [1] Remove the shielded cable connected to A (TMN).
- [2] Disconnect the HS3 cable from the HS5 cable (to free the head end of the HS3 cable).
- [3] Using a tester, measure the resistance between the FG terminal block in the NC operation panel and the shielded cable.

[1] Detail of A (TMN stay)



HS2000 board



- [4] Move the sensor head over the full strokes of respective axes (X, Y, Z) and check if the resistance value changes.  
If the resistance is infinitely large, the cable is normal (since the other end is free).  
If the resistance is several kilo-ohms to several tens of kilo-ohms, the cable is abnormal (shorted at some point).  
If the cable is found abnormal, broken cable cover and other problems are considered.

<Temporary measure>

- Change the wiring destination of the HS3 shielded cable from TMN to FG.

Note) Note that HS-WACS (cooling cut) can no longer be used on the FO/θ due to conflict of certain characteristics such as cable length.  
(This doesn't apply to  $\alpha$ ,  $\beta$  or APE.)



FO: Inside of NC operation panel