



16 - Coolant Level Float Sensor

Chip Removal and Coolant - Service Manual

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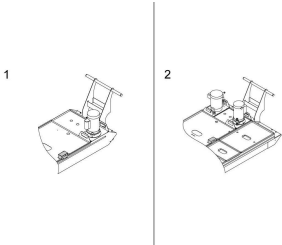
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16.1 COOLANT LEVEL FLOAT SENSOR - INSTALLATION

Coolant Level Float Sensor - NGC - Installation

AD0661

Introduction



This procedure tells you how to install the Coolant Float Sensor into the coolant tank.

Do this procedure for these tanks:

1. 55-gallon tank
2. 95-gallon tank

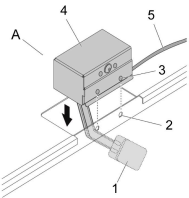
The machine software requirements:

- NGC Software

This procedure applies to the following P/N:

- **93-2876** FIELD INSTALL KIT CPK-MM EDU/UK
- **93-CS_GR** FIELD INSTALL CS-GR
- **93-1000353** COOLANT OPTION W/AUGER GM-2
- **93-1000354** COOLANT OPTION GR
- **93-1000396** COOLANT OPTION KIT GM-2 3AX
- **93-1000397** COOLANT OPTION KIT GM-2 5AX
- **93-4579** COOLANT FLOAT SVC KIT

Coolant Level Float Installation



1
Push **[POWER OFF]**.

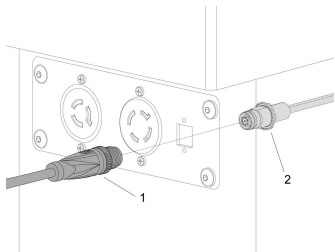
Put the float [1] from the coolant float assembly [A] into the tank.

If coolant tank has dimples [2], align the housing dimples [3] with the dimples of the side of the tank lid [2].

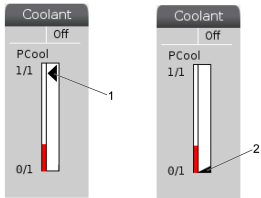
Push the housing [4] down into the cutout of the tank lid.

Put the cable [5] from the assembly to the coolant electrical connection panel.

Note: The location of the electrical connector panel changes with the machine type.



2
Connect the M12 cable [1] from the coolant float assembly [A] to the rear-panel coolant sensor [2].



3
Push **[POWER ON]**.

Insert Service USB key and go into Service Mode.

Push **[DIAGNOSTIC]**. Go to the Factory tab.

Push **[E-STOP]**.

Make sure the values for **Parameters 603** and **604** are correct. Refer to the tables below for the correct values of parameters.

To make sure the coolant tank float operates correctly, do these steps:

1. Push **[MEMORY]** on the pendant.
2. The upper-right corner of the screen shows a coolant level arrow. When the float goes up, the arrow goes up [1]. When the float goes down, the arrow goes down [2].

MILL MACHINE MODEL	PARAMETER 603 VALUE (NGC)	PARAMETER 604 VALUE (NGC)
DM, DT, EC, ES, GR, HS, UMC, VF, VR, VS	2580	3080
MM, SMM	2580	3080

LATHE MACHINE MODEL	PARAMETER 603 VALUE (NGC)	PARAMETER 604 VALUE (NGC)
TL-1, TL-2	0	0
ST-20 through ST-55, DS-30	2580	3080

16.2 COOLANT LEVEL FLOAT SENSOR - TROUBLESHOOTING GUIDE

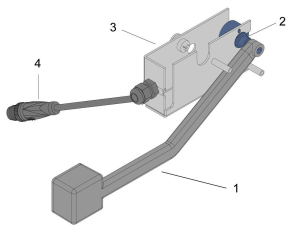
Coolant Float Sensor - Troubleshooting Guide

Coolant Level Float Sensor Inspection Report

⚠ Download and fillout the Coolant Float Sensor Inspection Report Checklist below before replacing any parts.

COOLANT FLOAT SENSOR INSPECTION REPORT

Introduction



The image shows the following components of the Coolant Float Sensor:

- 1. Float [1]
- 2. Potentiometer [2]
- 3. Potentiometer Cover (not shown for clarity)
- 4. Bracket [3]
- 5. Power Cord [4]

Symptom Table

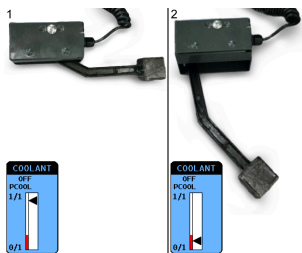
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
The coolant level sensor displays an incorrect coolant level.	The sensor is damaged, or the float cannot move.	Check all of the wires and clear chips blocking the float. Inspect for any leaks. If issue still proceeds, follow the Malfunctioning Sensor section below.
	The cable is unplugged or damaged.	Make sure that the cable is securely connected and is not damaged.
	The Factory Settings 603 and 604 have incorrect values	Refer to Coolant Float Sensor - Installation - AD0661 procedure to see the correct parameter values.
Coolant level sensor displays 0% with no change when level sensor is moved up/down.	The sensor is damaged, or the float cannot move.	Check all of the wires and clear chips blocking the float. Inspect for any leaks. If issue still proceeds, follow the Malfunctioning Sensor section below.
	The I/O PCB isn't configured properly with the coolant level sensor.	Display analog input 13 while manually moving the coolant level float up/down. The input value should change from ~2500 to ~3150. If the input value remains the same, make sure that I/O configuration is correct. A-Input 13 should be mapped to P43.1. Refer to I/O Mapping section below.

Malfunctioning Sensor



In the first image, you can see the location of the coolant level sensor on the coolant tank.

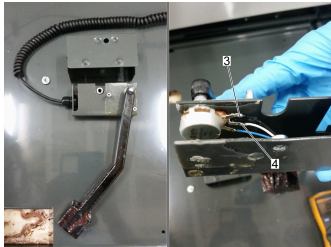
If your coolant level sensor does not display the correct level on the screen, look in the coolant tank to make sure a chip build-up does not block the float from moving freely. Also, inspect the float for any leaks to make sure no coolant has wept in.



Corrective Action:

Make sure the coolant level sensor operates correctly:

- Press **[MEMORY]**. The upper-right corner of the screen will show the coolant level.
- Remove the coolant float sensor from the tank and manually move the float to max and min



conditions. The coolant level indicator on the screen should move at a slow pace. It takes approximately (1) minute to move from empty [2] to full [1] on the screen, but it starts to move immediately.

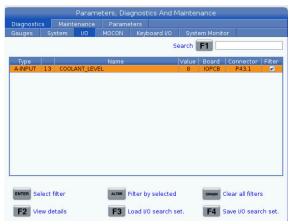
- If the coolant level sensor does not operate correctly, unplug the coolant level sensor from the machine. Remove the cover to access the wires of the variable resistor.
- Measure the resistance across the white and black wires [3/4] when the float is up and down. The resistance should be approximately 371 Ohms when the float is up and 286 Ohms when it is down.

NOTE: Do not remove the coating around the wire, rather take the reading at the M12.

- Make sure that the coolant level sensor M12 cable is securely connected, and is not damaged.
- Check the other end of the M12 cable that is currently plugged into the machine. Make sure the voltage across pin 3 and pin 4 reads 5V.
- If another machine is present, test float on different machine.
- If the coolant level sensor continues to read incorrectly, and you have completed the troubleshooting instructions, replace the sensor.

IMPORTANT: When returning the sensor, make sure to include an error report with a video showing the coolant level inside the tank and on the pendant's screen.

I/O Mapping



The coolant level float sensor is controlled by analog input 13. The analog input uses an electronic counter to measure the input voltage signal. This input voltage signal is shown in the value section. For more information, refer to the [ANALOG SENSORS - TROUBLESHOOTING GUIDE](#).

As the coolant lowers in the tank, the less input voltage there should be. As the coolant raises in the tank, the more input voltage there should be. When moving the coolant level float, the voltage value should change from ~2500 to ~3150.

The coolant level float sensor is connected to the I/O board at pin 43 shown in the connector section. Check the end of the M12 cable that is plugged into the I/O board to make sure the voltage across pin 3 and 4. If the 5VDC is not present, then troubleshoot the I/O PCB refer to the [I/O PCB - TROUBLESHOOTING GUIDE](#).

Electrical Schematic

