

Ducted Systems Technical Services: YS Letter

Letter: YS-006-21

Date: May 25, 2021 Effective: April 1, 2021 Expires: April 1, 2024

To: S1 HVAC Branch and Distributor Principal, Sales Manager, Service Manager, Parts Manager, Warranty Manager, Training Manager, Delegated Administrator.
Ducted Systems Technical Services, DS Parts/S1, ES Americas, ADTI Channel, Account Representatives, Marketing, Sales, Warranty teams

Subject: **Reliability of modulating gas valve, factory directive concerning FC6, and change in warranty process regarding Critical Data Sheet requirement**

Product/s: Modulating Gas Furnace

Summary: Product history and improvements, Critical Data Sheet requirement removed when pictures and dealer invoice are provided. Previous YS letter updates requirement

Dear valued customer:

This Bulletin is 'Fix on Fail' only

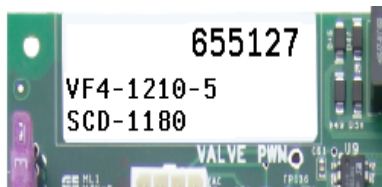
This bulletin covers ONLY Gen 2 modulating gas valves controlled by PWM (Pulse Width Modulation) signals with a date code prior to 1728 and Ignition Control board prior to SCD-1180 on ECM models.

The exception to this is on PSC blower modulating furnaces. There **was never** any software changes made regarding the gas valve or fault code prioritization on these control boards. Therefore, they will **always** have a software code lower than SCD-1162 and only the gas valve is covered by this letter on PSC models.

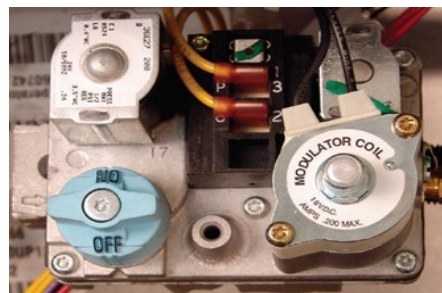
PARTS/UNITS NOT COVERED:

S1-37327916001 – GEN UPGRADE KIT, PSC MODULATING FURNACE

S1-37327916002 – GEN UPGRADE KIT, ECM MODULATING FURNACE



Control Board Software 1180 (Not Covered)



Gen 1 Gas Valve (Not Covered)

Generation 3 furnace models:**CP*C*****MP13****LP*C*****MP13****TP*C*****MP13****YP*C*****MP13****Generation 1 furnace models:****CM*M*****MP11****TM*M*****MP11****TP*C*****MP11****YM*M*****MP11****YP*C*****MP11****LM*M*****MP11****TP*C*****MP11****None of PSC model control boards are covered by this letter.****Exceptions for Generation 1 Models being covered:**

- **GEN 1 model was upgraded to GEN 2 using a kit prior to current failure and the valve date is before 1728 on the GEN 2 valve currently installed.**
- **GEN 1 model was upgraded to GEN 2 using a kit prior to current failure and control board software version is SCD-1162 or below on the GEN 2 board currently installed.**

Reliability of Modulating Gas Valve:

The reliability of the modulating gas valve has been factory monitored and verified to be drastically improved and is now at a fail rate on par with our standard 1 & 2 stage gas valves. This improvement was realized by a White Rogers redesign of the seating of the internal Drive Nut and Thrust Washer eliminating a stuck valve situation.

The redesign was introduced during the 28th week of 2017, unit serial number W1H7 or later. Revised gas valves will have the date code of 1728 or higher. The Source 1 part number of the valve has not changed.

The improvement is due to a machined groove in the actuator motor shaft that accepts an E-clip. The drive nut now seats against the E-clip eliminating all previous “clamping” and “compression” of the thrust washer.

Test and warranty data during an incubation period of nearly 3 years attests to the significant improvement and our renewed confidence in the valve.

Bottom line, if on a modulating gas furnace repair service call and **your diagnosis is indicating a stuck closed valve and the gas valve has a date code that** is earlier (smaller) than 1728, and ignition control software is SCD-1180 or later, change only the valve.

Gas Valve Replacement Labor Allowance

Should Gas Valve replacement be necessary, 1 hour Labor will be provided by filing a standard warranty claim referencing this YS letter and attaching a clear, legible photo of the existing gas valve nomenclature sticker along with dealers invoice to the warranty claim.



NOTE: Inclusion of a **clear legible photo of the gas valve label indicating a Date Code** that is earlier than 1728 (meaning a lower number) eliminates the requirement of filing a Critical Data Sheet with the warranty claim. If a photo and dealer invoice is **not** included with the warranty claim, a correctly filled out Critical Data Sheet is required.

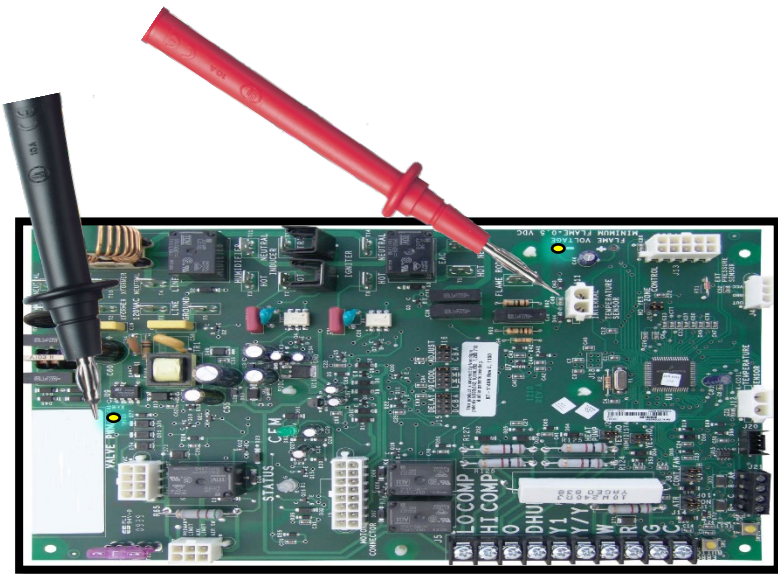
ECM Ignition Control Board Software Version SCD-1162 vs SCD-1180, FC6 cause and correction

In 2015 an engineering decision was made to change the software in the ignition control board to SCD-1162 in an attempt to reduce or prevent modulating gas valve failures, as detailed in ST-020-15.

Previous versions of the ignition control software were believed to be a factor in gas valve failures. In those previous versions, the ignition control board software sent a “Home” command to the gas valve. The gas valve has its own “Home” command. The two “Home” commands to the gas valve were deemed to be redundant and problematic.

When software version SCD-1162 was introduced there was an immediate positive impact on gas valve failures but, there was a sudden uptick in complaints about FC6 codes which was defined as “Modulated Gas Valve Current Failure” on Gen 1 and is now defined as “Gas Valve Communication” in Gen 2. Due to the failure history of the gas valve, FC6 was errantly recognized to be an indication of a gas valve that was stuck closed, it is not.

There is not a fault code for a “Gas Valve Stuck Closed” event. When the gas valve sticks closed all monitored sequence of operations are normal except that the gas valve does not open, therefore, the control will not be able to prove flame and after three retries you will get a fault code 7. To troubleshoot a fault code 7 verify incoming gas pressure then connect manometer to the manifold side. Once the valve clicks and it is calling for it to open you should read a PWM signal of 65% at the two test points for PWM signal, test points are pictured below:



FC6 was eventually recognized to be a high resistance electrical contact, for example, a higher than expected resistance across the Condensate Blocked Switch contacts. With a higher than normal resistance across its contacts, the switch could trigger the board to misidentify the event as an FC6 code. It was determined that SCD-1162 provided a too narrow of an acceptable resistance range across monitored contact points resulting in FC6 codes.

Software version SCD-1180 was released to eliminate the nuisance Fault Code 6 related to unexpected contact resistance.

Troubleshooting Fault Code 6:

- Place a jumper on the blocked drain switch and re-try ignition.
 - If this corrects the issue, a blocked drain switch will resolve the fault.
 - If the blocked drain switch is not the problem, is the furnace going through the ignition sequence correctly? The pressure transducer could be out of calibration.
- On a call for heat, does the furnace inducer ramp up, ramp down, ramp back up to the 70% rate and then the ignitor comes on?
 - If not, and a fault code 6 is present, replacing the control board will NOT resolve the issue. The transducer has most likely failed. The transducer output voltage needs to be compared to the corresponding pressure it is reading to see if it is reporting valid voltage.

If the above two bullets are correct the gas valve is most likely not communicating properly with the control. The best method to test is simply plug a new gas valve into the gas valve wiring (you do not need to physically install the valve) and observe the sequence of operation. If the unit ignition sequence now works correctly and gets to the point where the ignitor comes on and gas valve clicks, the replacement gas valve should be installed.

After you have determined the reason for the fault code 6 and if you find that the ignition control board has a software version that is lower than SCD-1180, replace the board.

ECM Ignition Control Replacement Labor Allowance

Should Ignition Control Board replacement be necessary 1 hour Labor will be provided by filing a standard warranty claim referencing this YS letter and a clear, legible photo of the existing Ignition Control Board nomenclature sticker indicating the SCD Version of the software, along with dealers invoice is required to receive warranty credit.



NOTE: Inclusion of a clear legible photo of the Ignition Control Board label indicating an SCD Version eliminates the requirement of filing a Critical Data Sheet with the warranty claim. If a photo and dealer invoice is **not** included with the warranty claim a correctly filled out Critical Data Sheet **is** required.

Labor Allowance when both the Modulating Gas Valve and the Ignition Control are concurrently replaced

When both the Modulating Gas Valve and the Ignition Control Board are being replaced a 2 hours labor allowance will be provided with the submission of a standard warranty claim, **clear legible photos of the valve and board labels must be** attached to the warranty claim along with dealers invoice and reference made to this YS letter.

Critical Data requirement change

Due to the historic frequency of repeat modulating gas valve failures the requirement of a Critical Data sheet will be suspended for warranty processing if a clear, legible **photos and dealers invoice are** included with the warranty **claim as noted above**.

Make All Previous YS Letter Updates

Furnaces should be updated to comply with all factory recommendations and previous YS letters with regards to Drain Pan Upgrades, Combustion Air Condensation Water Incursion, Venter Motors, Pressure Switches, Pressure Transducer, and Polarity to ensure the reliability of the furnace for the homeowner.

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