

Diagnostic Procedure

Blue iQ[®] Fault Code 6958



FC	SPN	FMI	Title
6958	6647	6	Gaseous Fuel High Pressure Shutoff Valve Circuit - Current Above Normal or Grounded Circuit

Part(s) Affected supply solenoid valve (SSV)

Diagnostic Overview

Fault Code 6958 is a fault triggered when the Blue iQ[®] Fuel System Control Module (FSCM) detects supply solenoid valve (SSV) power shorted to ground.

Warning Statements Used in this Procedure

NOTICE

NOTICE is used to address practices not related to physical injury, such as best practices or tips to help an operation or procedure go smoothly and prevent equipment damage.

Tools Required

Item	Purpose
digital multimeter (DMM)	resistance and voltage measurements
J1939 OBD-II diagnostic interface	connect vehicle to Cummins [®] INSITE [™] on PC
Cummins [®] INSITE [™]	diagnostic software
test lead kit	properly test and back probe circuit terminals and connectors
infrared non-contact thermometer	accurately measure SSV coil temperature

NOTICE

Never probe an electrical connection with anything other than a properly sized and shaped test lead; doing so may result in damage to terminals.

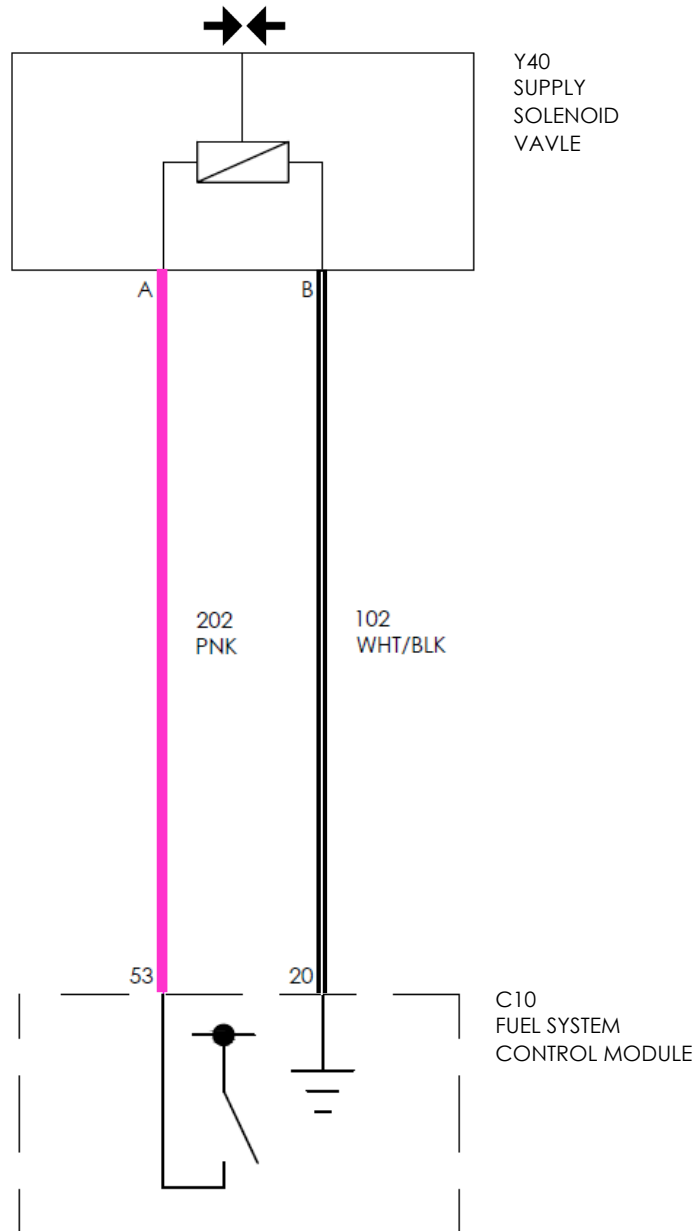
NOTICE

Perform Initial Vehicle Check procedure (refer to *DSM.0009*) prior to performing diagnostic instructions listed below.

Circuit / System Verification

1. Connect the Cummins® INSITE™ diagnostic tool to the vehicle and navigate to the “Agility® Fuel Delivery System, CM1881 AFS(18)”.
2. Record all active and stored fault codes and parameters prior to clearing fault codes using INSITE™.
3. Observe and record **Gaseous Fuel High Pressure Shutoff Valve** data from INSITE™—is data within reasonable operating range?
 - a. **If not within range** proceed to **Circuit/System Testing**.
 - b. **If within range** proceed to Step 4.
4. Operate the vehicle in the same conditions for enabling the fault code or within the same conditions that triggered the fault code based on recorded data.
5. Verify that the fault code does not set. **If any fault code sets** proceed to **Circuit/System Testing**.
6. While observing the **Gaseous Fuel High Pressure Shutoff Valve** parameters in INSITE™ perform a wiggle test on the SSV and FSCM connectors and harness to test for poor or intermittent connections.
 - a. **If any fault code sets**, proceed to **Circuit/System Testing**.
 - b. **If no fault sets**, system is functioning to design intent.
7. Review **Circuit Schematic** and **Connector End Views** to locate test points.

SSV Circuit Diagram



Circuit / System Testing

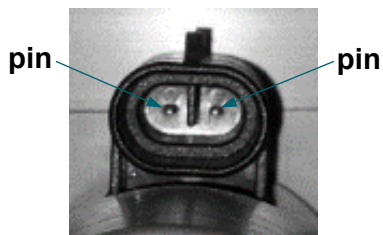
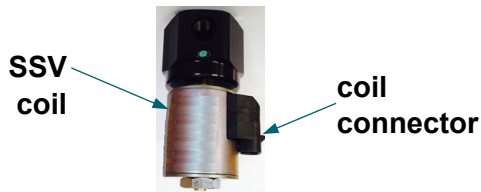
Step 1 Use a non-contact infrared thermometer to measure SSV coil temperature.

↳ Record temperature.

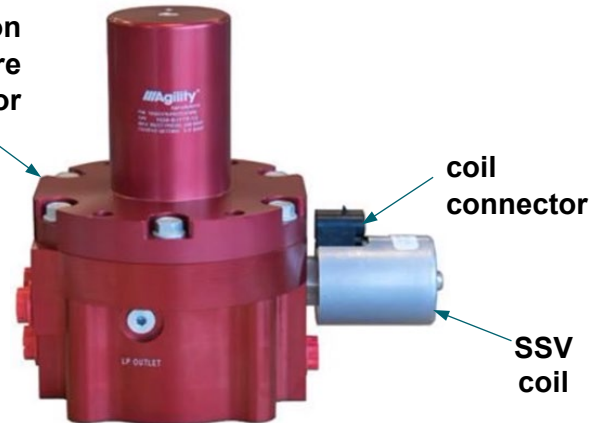
↳ Proceed to Step 2.

Step 2

- Ignition Off.
- Disconnect SSV coil from Blue iQ® harness.
- Use a DMM with appropriate test leads measure resistance across **SSV coil connector pins**.



Marathon pressure regulator



extended range pressure regulator with integrated SSV

↳ Record the ohms reading.

➤ Refer to the appropriate 12V or 24V SSV coil resistance table (*below*) to confirm whether ohms at temperature values are within operating specifications.

Step 2
(continued)

Standalone Supply Solenoid Valve (SSV)

12V Supply Solenoid Valve (SSV) Resistance at Temperature Chart



Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
-40	-40	5.1	5.3	5.6
-35	-31	5.3	5.5	5.7
-30	-22	5.4	5.6	5.8
-25	-13	5.6	5.8	6.0
-20	-4	5.7	5.9	6.1
-15	5	5.8	6.0	6.2
-10	14	6.0	6.2	6.4
-5	23	6.1	6.3	6.5
0	32	6.2	6.4	6.7
5	41	6.4	6.6	6.8
10	50	6.5	6.7	6.9
15	59	6.7	6.9	7.1
20	68	6.8	7.0	7.2
25	77	6.9	7.1	7.3
30	86	7.1	7.3	7.5

Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
35	95	7.2	7.4	7.6
40	104	7.3	7.6	7.8
45	113	7.5	7.7	7.9
50	122	7.6	7.8	8.0
55	131	7.8	8.0	8.2
60	140	7.9	8.1	8.3
65	149	8.0	8.2	8.4
70	158	8.2	8.4	8.6
75	167	8.3	8.5	8.7
80	176	8.4	8.7	8.9
85	185	8.6	8.8	9.0
90	194	8.7	8.9	9.1
95	203	8.9	9.1	9.3
100	212	9.0	9.2	9.4
105	221	9.1	9.3	9.5

24V Supply Solenoid Valve (SSV) Resistance at Temperature Chart



Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
-40	-40	20.3	21.8	23.2
-35	-31	20.9	22.3	23.8
-30	-22	21.5	22.9	24.3
-25	-13	22.0	23.5	24.9
-20	-4	22.6	24.0	25.4
-15	5	23.1	24.6	26.0
-10	14	23.7	25.1	26.6
-5	23	24.3	25.7	27.1
0	32	24.8	26.3	27.7
5	41	25.4	26.8	28.2
10	50	25.9	27.4	28.8
15	59	26.5	27.9	29.4
20	68	27.1	28.5	29.9
25	77	27.6	29.1	30.5
30	86	28.2	29.6	31.1

Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
35	95	28.8	30.2	31.6
40	104	29.3	30.7	32.2
45	113	29.9	31.3	32.7
50	122	30.4	31.9	33.3
55	131	31.0	32.4	33.9
60	140	31.6	33.0	34.4
65	149	32.1	33.5	35.0
70	158	32.7	34.1	35.5
75	167	33.2	34.7	36.1
80	176	33.8	35.2	36.7
85	185	34.4	35.8	37.2
90	194	34.9	36.3	37.8
95	203	35.5	36.9	38.3
100	212	36.0	37.5	38.9
105	221	36.6	38.0	39.5

Resistance within range per above specifications?

Yes

↳ Proceed to Step 3.

No

- ↳ Replace supply solenoid valve (SSV) coil.
- ↳ After repair is complete, proceed to Reassembly and Validation.

Step 2
(continued)

Marathon Extended Range Pressure Regulator Integrated Supply Solenoid Valve (SSV)

12V Supply Solenoid Valve (SSV) Resistance at Temperature Chart



Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
-40	-40	8.6	8.8	9.0
-35	-31	8.8	9.0	9.3
-30	-22	9.1	9.3	9.5
-25	-13	9.3	9.5	9.7
-20	-4	9.5	9.7	9.9
-15	5	9.7	10.0	10.2
-10	14	10.0	10.2	10.4
-5	23	10.2	10.4	10.6
0	32	10.4	10.6	10.8
5	41	10.6	10.9	11.1
10	50	10.9	11.1	11.3
15	59	11.1	11.3	11.5
20	68	11.3	11.5	11.8
25	77	11.6	11.8	12.0
30	86	11.8	12.0	12.2

Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
35	95	12.0	12.2	12.4
40	104	12.2	12.4	12.7
45	113	12.5	12.7	12.9
50	122	12.7	12.9	13.1
55	131	12.9	13.1	13.3
60	140	13.1	13.4	13.6
65	149	13.4	13.6	13.8
70	158	13.6	13.8	14.0
75	167	13.8	14.0	14.2
80	176	14.1	14.3	14.5
85	185	14.3	14.5	14.7
90	194	14.5	14.7	14.9
95	203	14.7	14.9	15.2
100	212	15.0	15.2	15.4
105	221	15.2	15.4	15.6

24V Supply Solenoid Valve (SSV) Resistance at Temperature Chart



Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
-40	-40	32.3	34.6	36.9
-35	-31	33.2	35.5	37.8
-30	-22	34.1	36.4	38.6
-25	-13	35.0	37.3	39.5
-20	-4	35.9	38.2	40.4
-15	5	36.8	39.1	41.3
-10	14	37.7	39.9	42.2
-5	23	38.6	40.8	43.1
0	32	39.5	41.7	44.0
5	41	40.3	42.6	44.9
10	50	41.2	43.5	45.8
15	59	42.1	44.4	46.7
20	68	43.0	45.3	47.5
25	77	43.9	46.2	48.4
30	86	44.8	47.1	49.3

Temp.		Resistance (Ω)		
$^{\circ}\text{C}$	$^{\circ}\text{F}$	Min	Nominal	Max
35	95	45.7	47.9	50.2
40	104	46.6	48.8	51.1
45	113	47.5	49.7	52.0
50	122	48.4	50.6	52.9
55	131	49.2	51.5	53.8
60	140	50.1	52.4	54.7
65	149	51.0	53.3	55.6
70	158	51.9	54.2	56.4
75	167	52.8	55.1	57.3
80	176	53.7	56.0	58.2
85	185	54.6	56.8	59.1
90	194	55.5	57.7	60.0
95	203	56.4	58.6	60.9
100	212	57.3	59.5	61.8
105	221	58.1	60.4	62.7

Resistance range per above specifications?

Yes

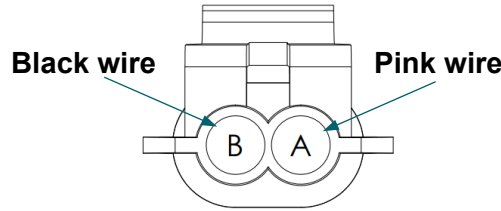
↳ Proceed to Step 3.

No

↳ Replace supply solenoid valve (SSV) coil.

↳ After repair is complete, proceed to Reassembly and Validation.

- Step 3**
- Ignition Off.
 - Disconnect Blue iQ® harness from FSCM.
 - Use a DMM and appropriate test leads to measure resistance from SSV harness connector **Cavity A** to **known good ground**.



SSV harness connector end view

Resistance reading between zero and 1 ohms?

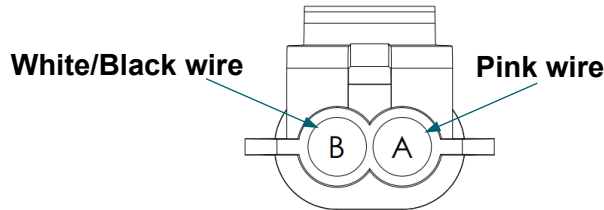
Yes

- ↳ Repair or replace Pink wire from Cavity A of SSV harness connector to FSCM harness connector Pin 53. Refer to *DSM.0036 Harness and Wire Repair Manual*.
- ↳ After repair is complete, proceed to **Reassembly and Validation**.

No?

- ↳ Proceed to Step 4.

- Step 4**
- Ignition Off.
 - Use a DMM and appropriate test leads to measure resistance from SSV harness connector **Cavity A** to SSV harness connector **Cavity B**.



SSV harness connector end view

Resistance reading between zero and 1 ohms?

Yes

- ↳ Repair or replace Pink wire from Cavity A of SSV harness connector to FSCM harness connector Pin 53. Refer to *DSM.0036 Harness and Wire Repair Manual*.
- ↳ Repair or replace White/Black wire from Cavity B of SSV harness connector to FSCM harness connector Pin 20. Refer to *DSM.0036 Harness and Wire Repair Manual*.
- ↳ After repair is complete, proceed to **Reassembly and Validation**.

No

- ↳ FSCM fault suspected; contact Hexagon Agility® Technical Support.

Reassembly and Validation

After completing all repairs, always perform the following steps to confirm the issue is fixed:

1. Reconnect all connectors and verify connections are secure.
2. Reattach any enclosure covers and close any fuel system doors.
3. Clear fault codes using Cummins® INSITE™ tool.
4. Run vehicle until it reaches normal operating temperature. *Refer to OEM instructions.*
5. If fault is cleared, return vehicle to duty.

If fault is not cleared, contact Hexagon Agility® Technical Support.

Hexagon Agility® Customer Care and Technical Services

Fuel system warranty or non-warranty product support may be obtained by calling or emailing Hexagon Agility® Customer Care and Technical Services (CCTS).

Please provide **your name, phone number, email address, and complete vehicle information: VIN, year, make, model, mileage, unit number vehicle owner, and current vehicle location.** A service advisor will contact you to arrange vehicle repair or ship a part.

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