

# D Safe G Hazard Alert

## CSA RECALL - VOLUNTARY CORRECTIVE ACTION PROGRAM FOR FUELMAKER MODEL C3 NATURAL GAS VEHICLE REFUELING APPLIANCES

Date of Issue: 23 MAR 2000

File: 1006-7 (D Safe G3)

Alert #: H-000303\_e

The following hazard alert has originated from CSA International

Telephone: 416.747.4000 Fax: 416.747-4149 Website: [www.csa-international.org](http://www.csa-international.org)

March 10, 2000

APB- 2

To: Canadian Gas Inspection Authorities  
Canadian Gas Utilities  
Canadian Advisory Council on Electrical Safety  
Association of Canadian Fire Marshals/Fire Commissioners  
Health Canada Product Safety Branch

**Subject: Voluntary Corrective Action Program for FuelMaker Model C3 Natural Gas Vehicle Refueling Appliance**

Dear Sir/Madam:

For your information, please find attached a copy of an Emergency Shut-down Notice issued February 11, 2000 and an Addendum to this Notice issued February 15, 2000 by Fuel Maker for their model C3 vehicle refueling appliances.

As the result of Fuel Maker's investigation into a recent incident they have determined that foreign material entered the system during servicing and blocked certain internal passages of the unit preventing the safety and operating controls from performing as intended. This situation was compounded by a specific sealing plate/o-ring combination used on the unit involved. Although this plate/o-ring combination is unlikely to have been used on more than 20 units FuelMaker has made a decision to replace the sealing plate/o-ring combinations on all C3 units. Existing records will allow FuelMaker to trace all units in service and to arrange for inspection and refitting through their dealer network.

Your cooperation in further distributing this advisory will be appreciated.

Yours truly,

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**FUELMAKER C3 VRA**  
**EMERGENCY SHUT-DOWN NOTICE**  
**TO ALL DEALERS AND OWNERS**  
**Friday, February 11, 2000**

**URGENT: UPON RECEIPT OF THIS NOTICE, PLEASE SHUT DOWN EVERY C3 IN YOUR ORGANIZATION AND AT CUSTOMER SITES. PLEASE LOCK THE ELECTRICAL AND NATURAL GAS SUPPLY TO THE C3 SO IT REMAINS INOPERABLE AND SECURE.**

Background:

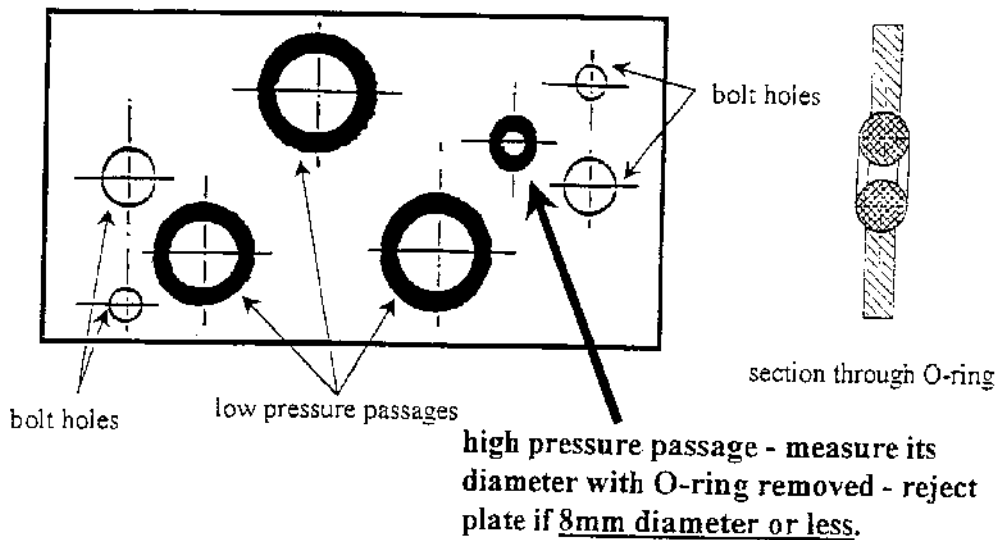
On Saturday, February 5, 2000, at approximately 9:00 AM, a delivery truck/van at a coffee delivery business in Montreal experienced a rupture of a natural gas fuel storage tank. No one was injured. There was no fire. The truck/van was seriously damaged.

The vehicle had four natural gas storage tanks of 40 to 70 liters each on board. Only one of the tanks ruptured. The tanks were made of steel. Apparently, the tanks were over ten years old and

had recently been hydrostatically tested and recertified.

The vehicle was connected to a FuelMaker C3 vehicle refueling appliance at the time. The C3 had been hooked up Friday evening after work. The C3 was approximately nine years old. It had a refurbished compressor installed recently.

Field Investigation:



A FuelMaker engineering team visited the accident site Tuesday, February 8. The ruptured tank and the C3 were sent to an independent

laboratory for analysis and testing. On Thursday, February 10, engineering consultants and FuelMaker engineers continued their investigation into the cause(s) for this accident.

Analysis of the field investigation results on Friday, February 11, indicate a possibility of a specific sealing plate / O-ring combination installed on some FuelMaker C3 Control Units that may contribute to the compromise of the burst disk safety system. Should a piece of debris be introduced during servicing, it could lodge itself, and result in overpressurization of the vehicle tank(s). Since even the remotest possibility of tank overpressurization is unacceptable. FuelMaker recommends immediate action.

Action:

There were 1950 C3 VRAs sold between 1990 and 1992. FuelMaker believes that approximately 20 sealing plate / O-ring combinations must be found and replaced.

**Dealers, service organizations, and customers must shut down every C3 in service today, Friday, February 11 2000. Dealers must immediately notify their customers.**

Every C3 must be inspected for this sealing plate / O-ring combination before putting the C3 back in service. A sketch showing this sealing plate / O-ring combination will be sent shortly.

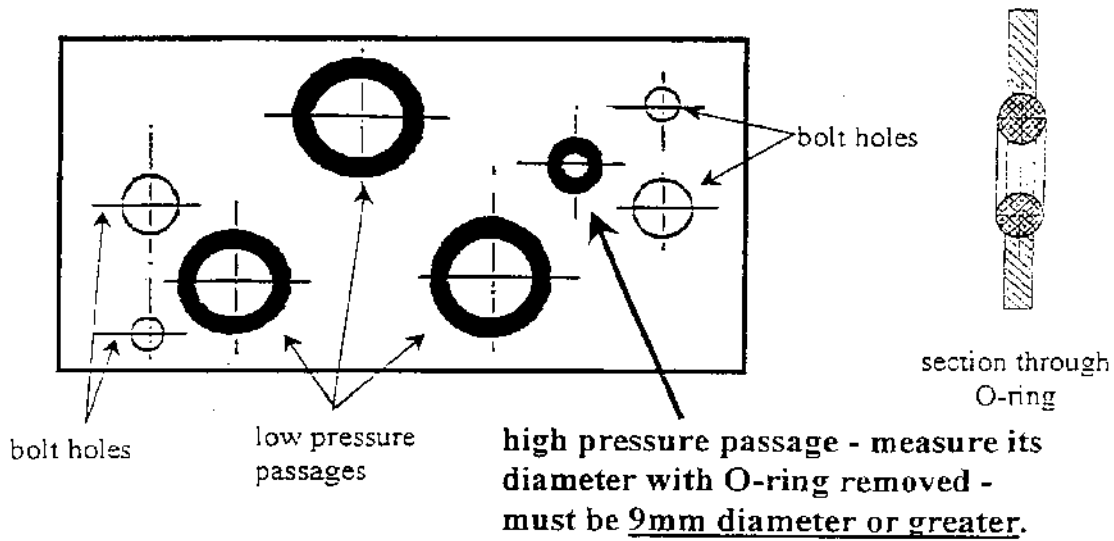
If a C3 is found to contain a "Sketch A" sealing plate / O-ring combination, it should be replaced with a "Sketch B" part. C3s with a "Sketch B" sealing plate / O-ring combination may be returned to service.

Dealers and service organizations should check their stock of FuelMaker Part Numbers CON-265-003, 27.0011, complete C3 VRAs, and spare C3 Control Units to verify whether they conform to the sealing plate / O-ring combination "Sketch B".

All FM4 and FMQ models have a completely different burst disk safety system configuration and are not affected at all.

**If you have any questions, call FuelMaker Technical Service at 1-800-263-8569.**

**Sketch A  
(refer to Emergency Shut-Down Notice)**

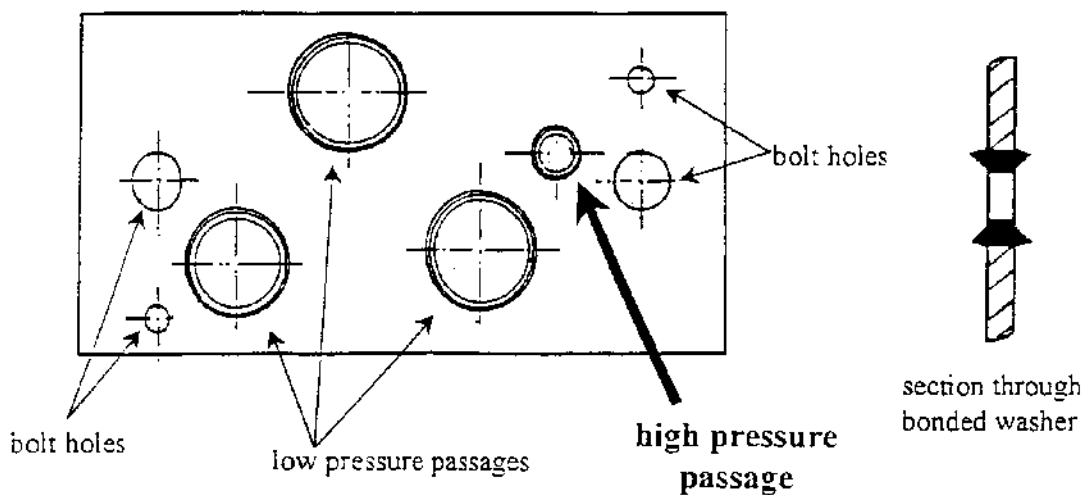


This is a “Sealing Plate / O-ring combination” consisting of O-rings sitting in the openings in the metal plate. It must be replaced if the high pressure opening in the metal, measured without the O-ring in place, is less than 8mm diameter.

**MUST BE  
REPLACED**

### Sketch B

(Refer to Emergency Shut-Down Notice)



This is a “Bonded Washer Sealing Plate”. The rubber washers are bonded to the openings in the metal plate (the rubber is formed around the edge of the metal so that it cannot separate). This plate may be left in service.

This is a “Sealing Plate / O-ring combination” consisting of O-rings sitting in the openings in the metal plate. It is okay if the high pressure opening in the metal, measured without the O-ring in place, is greater than 9mm. This plate may be left in service.

**FUELMAKER C3 VRA EMERGENCY SHUT-DOWN NOTICE**  
**FEBRUARY 15, 2000**

Following the communication dated February 11, 2000 re “**FUELMAKER C3 VRA EMERGENCY SHUT DOWN NOTICE TO ALL DEALERS AND OWNERS**”.

You were requested to shut down all C3s until satisfactory inspection of the sealing plate / O-ring combination had been completed and some of the plates replaced.

Further engineering evaluation and feedback from the field has made it clear that precise measurement of the sealing plate dimensions is impractical. Therefore, **ALL C3s MUST BE INSPECTED AND ALL SEALING PLATE / O-RING COMBINATIONS SHOULD BE REPLACED WITH NEW PLATES SUPPLIED BY FUELMAKER.** Please return all old sealing plate / O-ring combinations to FuelMaker.

The C3s should remain shut down until the sealing plate / O-ring combinations are replaced. An adequate supply should be available in about 3 weeks.

The sealing plate / O-ring combination is an important safety component of the C3. It is integral to the proper functioning of the high-pressure burst disk relief system.

Rubber O-rings are subject to deterioration over time. Since the C3s are between 8 and 10 years old, many of the sealing plate / O-ring combinations to be inspected will have reached the end of their service life in any event. Replacement of all sealing plate / O-ring combinations will avoid any risk of misidentification in the field. Please disregard the previously sent “Sketch A and B” instructions.

If the C3 needs to be restarted prior to the arrival of the replacement plates and in order to ensure safe operation, please refer to the attached addendum for instructions. If you have any questions, please call FuelMaker Technical Support Group at 1-800-263-8569 (North America) or 001-416-674-3034 extension 258 (International) from 8:00 AM to 5:00 PM EST, Monday through Friday, to review the details of the specific procedures required.

Please advise the number of sealing plate / O-ring combinations you require. They will be sent by courier as soon as possible. Also please return to FuelMaker for replacement all sealing plate/ O-ring combinations you have as spare parts.

**C3 EMERGENCY SHUTDOWN NOTICE**  
**ADDENDUM**

C3s may be operated pending replacement of the Sealing Plate / O-ring combinations under the following conditions. If you have any questions call FuelMaker technical service at 1-800-263-8569:

1. In the case of direct vehicle time-fill:
  - a. The pressure rise monitoring must be turned on in all cases (see the attached sheet titled “DIP Switch Setting” ).
  - b. The blowdown system must be tested for functionality. This can be done by filling the vehicle, or a test Kit, to at least 2000 psi, and checking that the nozzle can be

easily disconnected within 20 seconds of the C3 shutting off. When filling to a vehicle you can close the tank valve to speed up the fill process.

- c. Instruct the customer to check the fill pressure wherever possible (for example whenever there is a gauge on the vehicle) and to listen for the system blowdown at the end of each fill. **It is important to emphasize that he should call for service if he ever has difficulty disconnecting from the vehicle.**
2. In the case of filling to a storage system, the C3 can continue operating provided that the storage system is protected by a separate pressure relief system. **The relief devices built into the valves of the storage cylinders are NOT a suitable pressure relief device. They are only activated in the case of a fire. The storage system must have a certified safety relief valve designed to open whenever the pressure exceeds the pressure rating of the storage cylinders.**

In addition, check the final fill pressure by observing a pressure gauge on the system or by filling a test kit. Verify that the blow down system is functioning at the end of the fill cycle by listening for a clearly audible internal hiss when the C3 shuts down.

## DIP Switch Setting

- Switch #1 - Normally in the OFF position - gives pressure rise monitoring based on a tank volume of 140 litres (37 U.S. gal). Place in ON position to allow tank volume of 280 litres (74 U.S. gal)**
- Switch #2 - Normally in the OFF position- You can leave it unchanged. Place in ON position to enable remote interlock (gas detector).
- Switch #3 - Place in OFF position to allow pressure rise monitoring**
- Switch #4 - Leave in OFF position
- Switch #5 - Leave in OFF position

