INSTALLATION INSTRUCTIONS FOR QUALIFIED TECHNICIANS FOR CNG FILL- LINE BREAKAWAY DEVICES (FLB-1000 & FLB-5000)

207943
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ANSI/1AS NGV 4.4-1999
CSA 12.54-M99

FOR USE WITH ANY CERTIFIED ELECTRICALLY CONDUCTIVE HOSE INTENDED FOR FILLING COMPRESSED NATURAL GAS VEHICLES UP TO SERVICE PRESSURE OF 5000 PSI

SECTION A: INTRODUCTION

- ***How to use this Manual:***

  This manual has been prepared as a step by step users guide for the OPW FLB series of CNG Fill-Line Breakaway valves. This information is intended as a general outline to familiarize the installer/end user with the techniques and procedures used to install, reconnect and maintain the Breakaway device.

- ***General:***

  The FLB ("Breakaways") series of breakaways are intended to protect the dispenser, vehicle, fueling nozzle and end-user from damage if a vehicle moves away from the refueling point while the fueling nozzle is still coupled to the vehicle's fueling receptacle. The Breakaways are designed to be used with any certified hose intended for filling compressed natural gas vehicles (CNGV). The Breakaways operate at service pressure up to 5,000 psi and has an operating temperature range of -40°C to 85°C (-40°F to 185°F). These Breakaways are designed to separate within the range of 120 ±30 lbs. (534 ±134N) as specified by the ANSI NGV4.4, Breakaway Device Safety Standard.

SECTION B: INSTALLATION

The Inlet & Outlet Connections and Seals for the FLB's are as follows:

BREAKAWAY ITEM	INLET/OULET	SEAL
FLB-1000	SAE J1926-6 O-Ring boss Port, 9/16" -18 UNF Threads	Size # 906 (P/N 001146) 70 durometer NBR Nitrile
FLB-5000	SAE J1926-10 O-Ring boss port, 7/8" -14 UNF Threads	Size # 910 (P/N 001127) 70 durometer NBR Nitrile

CAUTION:
THE BREAKAWAYS MUST BE CONNECTED BETWEEN THE DISPENSER AND THE NOZZLE SO IT IS FREE TO ALIGN ITSELF IN A STRAIGHT MANNER BETWEEN ITS TWO HOSES (FIG.1).

All Breakaways require special installation precautions to ensure safe and reliable operation. The proper installation will conform to the requirements of authorities having jurisdiction or in the absence of requirements with the NFPA 52 standard, *Compressed Natural Gas (CNG) Vehicular Fuel Systems*, or *CAN/CSA-B108, NGV fueling stations installation code* as applicable.

INSTALLATION PROCEDURE:

Step 1: Inspect the unit and ensure that both halves are fully connected. If you can easily pull the two halves apart then please refer to *SECTION D* - Reassemble before continuing with the installation.
Step 2: Ensure that the threads on both the hose fitting, as well as the inlet and outlet ports, are clean and free of any debris, oil, grease or Teflon tape.
Step 3: Ensure that the proper sealing O-rings are installed on the male hose fittings according to the fitting

and O-ring manufacturer's instruction. These O-rings must be 70 Durometer Nitrile (NBR).
Two of these O-rings are included with each Assembly instruction sheet and must be installed. For additional O-rings contact OPW Customer Service. Order Part # 001146 for FLB-1000 and Part # 001127 for FLB-5000.

Step 4: Only use the wrench flats when tightening the hose to the Breakaways - do not grasp the housing.

Step 5: Ensure the flow direction arrow is pointing in the direction of the natural gas flow. (The arrow should point toward the fueling nozzle) (Fig.2)

Step 6: Using a properly sized wrench, tighten the fitting to a torque 25 ft-lbs. (34 Nm) to 30 ft-lbs. (40 Nm).

Warning:

a. **Excessive over tightening will gall the threads and weaken the connection**
b. **Do not wrench across coupling**

Step 7: After installation, test the unit for leaks. Slowly pressurize and test the connection using a suitable leak detector (e.g. Snoop®). The test pressures should include both Low (100 psi /0.86 Mpa) and High (3,000-5,000 psi/20-35 Mpa). For safety reasons, always pressurize at the low pressure first.

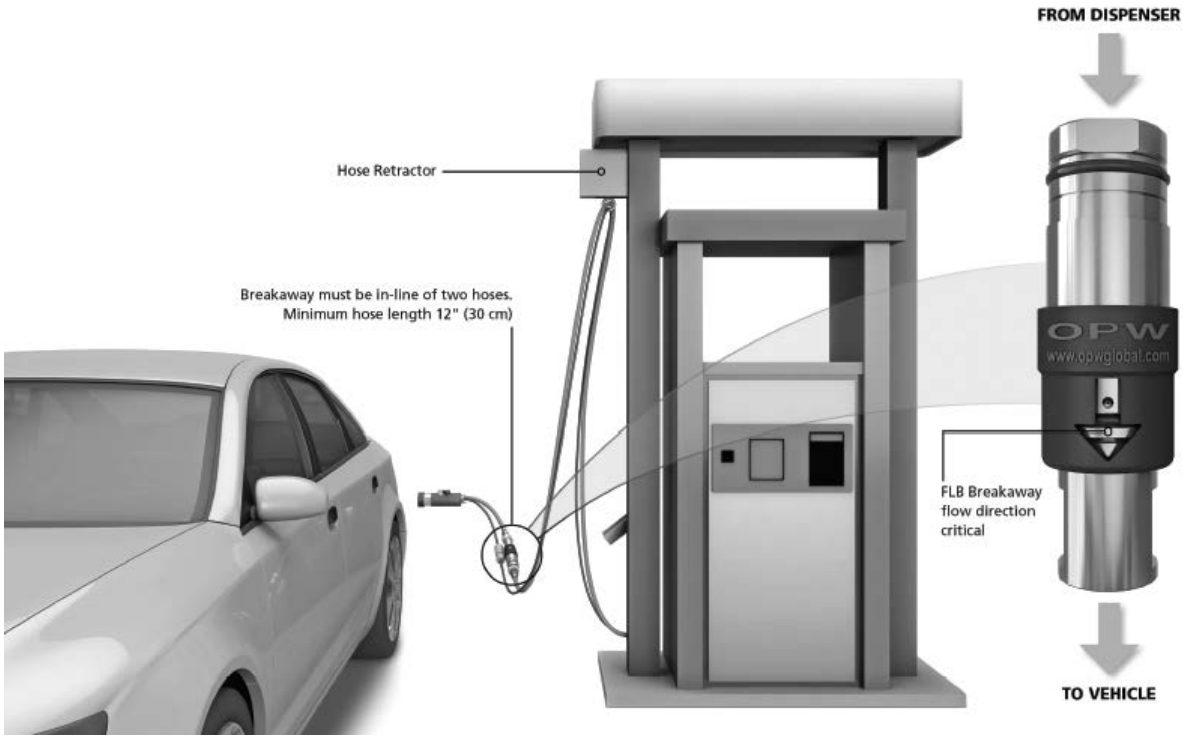

FIGURE: 1

FIGURE: 2

NOTE: IF A HOSE RETRACTOR IS USED IN THE DISPENSING APPLICATION THE BREAKAWAYS SHOULD BE INSTALLED DOWNSTREAM OF THE HOSE RETRACTOR CLAMP, I.E. BETWEEN THE RETRACTOR CLAMP AND THE NOZZLE. THIS WILL ALLOW THE BREAKAWAYS TO FUNCTION AS DESIGNED.

SECTION C: SEPARATION OF FLB

The Breakaways will split into two parts upon disconnection when a pull force of 120±30 lbs. (534±134N) is applied axially to the breakaway coupling. (Fig. 3)

FIGURE: 3

The Stationary Housing (Fig. 3) is the portion that remains permanently attached on the dispenser side of the hose. It shuts off the flow of natural gas from the dispenser. The Breakaway Housing (Fig. 3) on the vehicle side of the hose will detach and slowly vent off the gas stored in hose and nozzle that remain coupled to the vehicle. This is to ensure that the driver is not carrying a pressurized hose away from the station, thus eliminating a dangerous situation.

NOTE: UPON SEPARATION, A VERY LOUD NOISE SHOULD BE EXPECTED.

CAUTION: A HOSE BREAKAWAY EVENT IS INTENDED TO PROTECT THE FUELING DEVICE, DISPENSER, VEHICLE AND END-USER. HOSE STRETCH WILL CAUSE A WHIPPING ACTION FOR THE BREAKAWAY HOUSING. AS A RESULT, PERSONAL INJURY MAY OCCUR IF SOMEONE IS IN THE WAY OF THE HOSE DURING A BREAKAWAY EPISODE.

SECTION D: RE-ASSEMBLY AFTER BREAKAWAY

RECONNECTION PROCEDURE:

Step 1: Depressurize the dispenser system and hose before attempting reconnection.
Step2: Remove Breakaway Housing (Fig. 3) from the vehicle side of the hose.

FIGURE: 3

Step 3: Remove the retaining ring and cover from the Breakaway Housing. (Fig. 4)

FIGURE: 4

Step 4: Clean dirt or debris from both halves of the Breakaway unit before re-assembly is attempted.
Step 5: Inspect the Breakaway and Stationary Housings for any damage. (Fig. 5)

FIGURE: 5

Step 6: Make sure the O-ring seals have not been damaged (slits or rough spots). (Fig. 6) If the o-rings are damaged, please contact OPW Customer Service for replacements. For the FLB-1000 order Part # 207983 Repair Kit and for the FLB-5000 order Part # 207739 Repair Kit (See details below). If the O-rings are dry, lubricate them with the light grease, Parker Super O-Lube® (Silicon Base), before re-assembly. (Note: O-Ring Pick, Loctite®270, Parker Super O-Lube® (Silicon Base) are not included with repair kits).

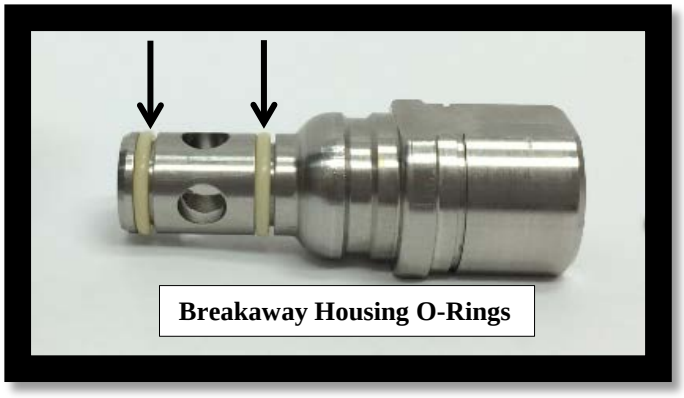

FIGURE: 6

Step 7: Inspect the Stationary Housing and ensure that the inner canted coil spring is present and properly situated in the groove (Fig. 7). A replacement Canted Coil Spring is available from OPW customer service. For FLB-1000 & FLB-5000 spring Part # 207629.

FIGURE: 7

Step 8: Reassemble cover on Breakaway Housing using retaining ring.
Step 9: Align Wrench Flats on Breakaway Housing to Anti-Rotation Tabs on Stationary Housing (Fig.8)

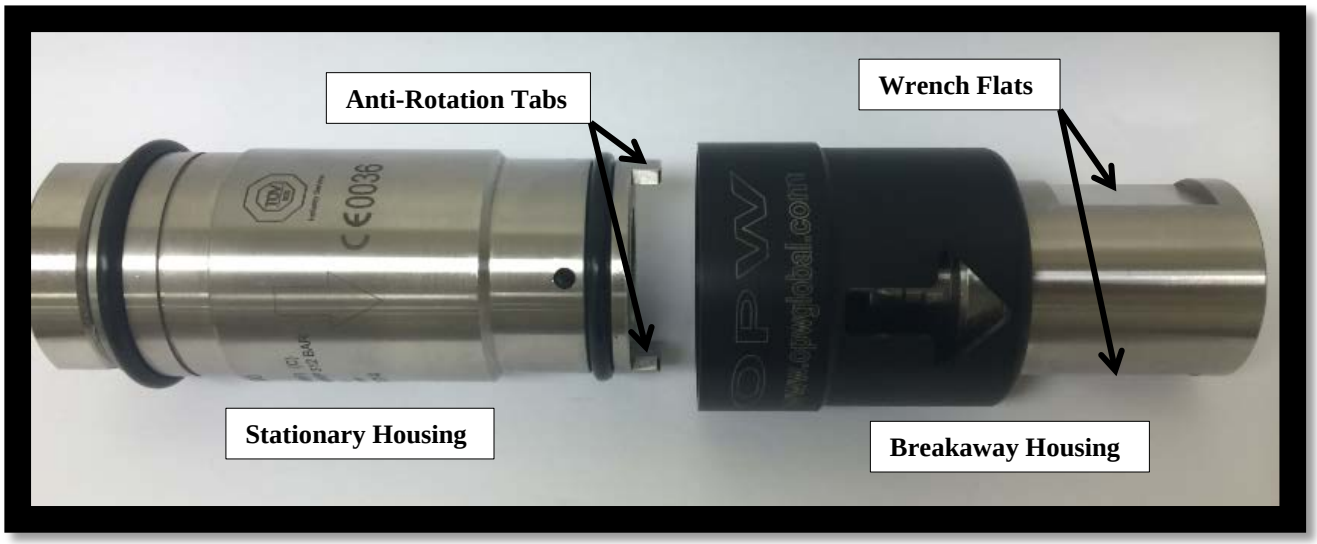

FIGURE: 8

Step 10: Push the Breakaway Module into the Stationary Module until a definite click is felt and the wrench flats are in the groove on the Stationary Housing. Approximately 20 ft. lbs. of force are required to reconnect breakaway.
Step 11: After Reassembly, test the Breakaways for leaks. Slowly increase the system pressure in steps of 500 psi and test the connection using a suitable leak detector (e.g. Snoop®). The test pressure should start at low (100 psi/0.86Mpa) first and finish at fill line pressure (3,000psi-5,000psi/20Mpa-35Mpa). For safety reasons, always apply the pressure slowly and take your time checking for leaks to ensure a good reconnection has been made.

KIT PART NUMBER : 207983 (FLB-1000 REPAIR KIT)			
SR NO	PART NUMBER	DESCRIPTION	QUANTITY
1	001146	O-RING	2
2	207629	CANTED COIL SPRING	1
3	208182	O-RING	3
4	208179	O-RING	1
5	208183	O-RING	1
6	207231	O-RING	2
7	206906	RETAINING RING	1
8	207222	OUTLET POPPET	1
9	207223	SPRING SUPPORT	1
10	207965	INSTRUCTION SHEET	1

KIT PART NUMBER : 207739 (FLB-5000 REPAIR KIT)			
SR NO	PART NUMBER	DESCRIPTION	QUANTITY
1	001127	O-RING	2
2	207629	CANTED COIL SPRING	1
3	208184	O-RING	3
4	208085	O-RING	1
5	208186	O-RING	1
6	207195	RETAINING RING	1
7	207188	OUTLET POPPET	1
8	207189	SPRING SUPPORT	1
9	207965	INSTRUCTION SHEET	1

SECTION E: ROUTINE CHECKS

Routine Service:

- As part of the end-user's preventative maintenance program/schedule, the Breakaways should be routinely checked for damage or leaks by a qualified technician

After Four Years of Service:

- The unit should be returned to OPW for Rebuilding. Please contact OPW Customer Service for assistance.
- This period should be reduced to 24 months if the potential exists for misuse, abuse, if the Breakaways are used in extreme environmental surroundings.

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