

INSTALLATION INSTRUCTIONS FOR QUALIFIED TECHNICIANS FOR FILL-LINE BREAKAWAY DEVICES (FLB)

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ANSI NGV 4.4

**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 series of breakaways ("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 Standard.

SECTION B: INSTALLATION

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

BREAKAWAY	INLET/OUTLET	SEAL
FLB-1000	SAE J1926-6 O-Ring boss Port, 9/16" -18 UNF	OPW P/N 001146
FLB-5000	SAE J1926-6 O-Ring boss Port, 7/8" -14 UNF	OPW P/N 001127

Tape
O-Ring
Here

Tape
O-Ring
Here

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

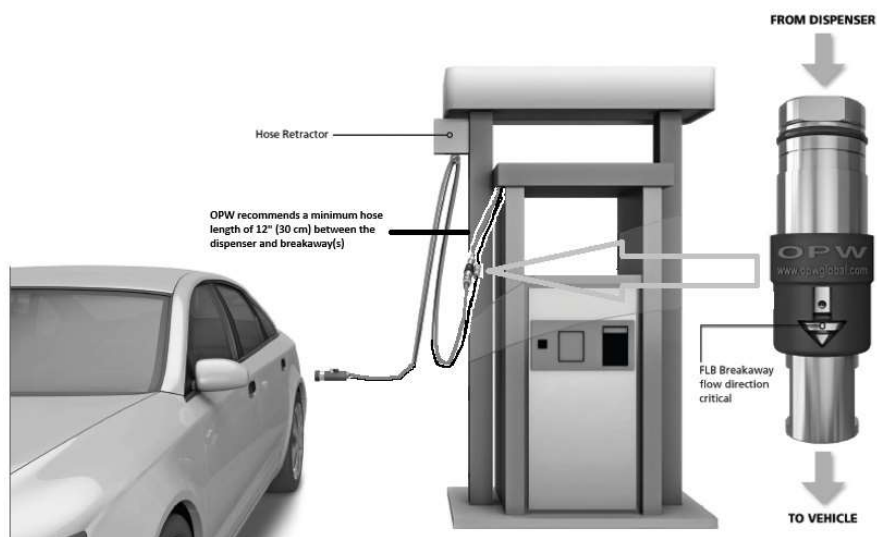


FIGURE: 1

FIGURE: 2

NOTE: OPW RECOMMENDS THE BREAKAWAY(S) BE CONNECTED TO THE DISPENSER WITH A HOSE OF APPROPRIATE LENGTH TO PROHIBIT THE BREAKAWAY(S) FROM CONTACTING THE GROUND. DURING A DRIVE OFF, THE HOSE ASSEMBLY SHALL PROMOTE A STRAIGHT LINE ALIGNMENT ALLOWING THE BREAKAWAYS TO OPERATE PROPERLY. SHOULD A HOSE RETRACTOR BE REQUIRED, THE HOSE CLAMP PLACEMENT AND DESIGN SHOULD NOT INTERFERE WITH THE OPERATION OF THE BREAKAWAYS(S).

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: re-assembly 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. Two of these O-rings are included with the RECONNECT KIT 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 on the cover should point toward the fueling nozzle)

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.

SECTION C: SEPARATION OF THE FLB BREAKAWAY

The FLB will split into two parts upon disconnection when the force is within the range of 120+/-30 lbs (534+/-134N) is applied axially to the breakaway coupling. (Figure 3).



Figure 3

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

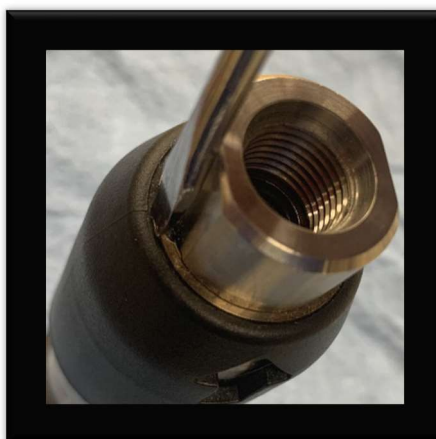
CAUTION: A HOSE BREAKAWAY EVENT IS INTENDED TO PROTECT THE FUELING DEVICE, DISPENSER, AND VEHICLE. HOSE STRETCH WILL CAUSE A WHIPPING ACTION AND MAY RESULT IN PERSONAL INJURY.

SECTION D: SEPARATION OF THE FLB BREAKAWAY

Step 1: Depressurize the dispenser system and hoses before attempting any work.

Step 2: In case of a Drive Off Event, the Breakaway Assembly will already be separated from the Main Housing Assembly as shown.

Step 3: Use a screwdriver to remove the retaining ring and cover from the Breakaway Housing as needed.



Step 4: Inspect both parts of the breakaway. Please contact OPW customer service for replacement kits. For the FLB-1000, order the FLB-1000-RK replacement kit. For the FLB-5000, order the FLB-5000-RK replacement Kit. Lubricate the o-ring with a light grease like Parker Super O-Lube® (Silicone Base) before re-assembling.

PLEASE NOTE: OPW is phasing out the orange back-up rings from the parts kits (Figure 4) and replacing with a new larger o-ring (Figure 5). Parts kits made after September 2025 will not have the orange back-up rings as shown. They will have a larger o-rings (item #5) that will be installed into the grooves of the breakaway module (Figure 5).

ALL Parts in the kit shall be used. Do NOT mix the parts from older repair kits with parts from the new repair kits.



Figure 4. Breakaway Module with O-rings and backup rings



Figure 5. Breakaway Module with O-rings only

Kit Part Number: FLB-1000-RK (For the FLB-1000)			Kit Part Number: FLB-5000-RK (For the FLB-5000)		
Item	Quantity	Part Number / Description	Item	Quantity	Part Number / Description
1	2	001146 / O-Ring (for hose connection)	1	2	001127 / O-ring (for hose connection)
2	1	207225 / Retaining Ring	2	1	207664 / Retaining Ring
3	1	207233 / Cover	3	1	207198 / Cover
4	1	207629 / Garter Spring	4	1	207629 / Garter Spring
5	2	219578 / O-ring	5	2	219581 / O-ring
Suggested Tools Required: O-Ring Pick, Parker Super O-Lube® (Silicon Base), Screwdriver, Table Vise					

NOTE: O-rings in these kits may not be the same color as the original equipment

Step 5: Inspect the stationary module and ensure that the inner garter spring is present and properly situated in the groove (Figure 6). A replacement garter spring is available from OPW customer Service. For the FLB series, order spring P/N 207629.



Figure 6. Garter Spring Location

Step 6: Use a screwdriver as needed to place the cover and retaining ring back onto the breakaway module.

Please Note: the retaining ring on the FLB-5000 is installed on the inside of the cover

Step 7: Align the wrench flats on breakaway module to the anti-rotation tabs on Stationary module as shown in Figure 7. 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 module. *Approximately 20 ft. lbs. of force is required to reconnect breakaway.*



Figure 7. module alignment

Step 8: After re-assembly, test the unit for leaks. Slowly increase the system pressure in steps of 500psi and test the connection using a suitable leak detector (e.g. Snoop®). The test pressure should start at low (100psi /0.86MPa) first and finish at fill line pressure (3000-5000psi/ 20-35MPa). For safety reasons, always apply the pressure slowly and take your time checking for leaks to ensure a good connection.

CAUTION: ANY ATTEMPT TO REPAIR PERSISTENT LEAKS WILL VOID WARRANTY. CONTACT OPW CUSTOMER SERVICE FOR REPAIR OPTIONS

SECTION E: ROUTINE CHECKS

After One Year of Service:

- The unit should be routinely checked for leaks while under service pressure.
- This should be carried out by local service representative.

After Four Year of Service:

- The unit should be returned to OPW for rebuilding and replacement of all seals.
- This period should be reduced to twenty-four (24) months if the potential exists for misuse, abuse, if the FLB is used in an extreme environment, or if the breakaway has more than 20 separations.

PLEASE CONTACT OPW CUSTOMER SERVICE FOR TRAINING AND REPLACEMENT PARTS.