

# **FUEL POINT**

***DISPENSER AND HOSE RETROFIT***

***INSTALLATION MANUAL***

**C35593**

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**GASBOY INTERNATIONAL LLC**





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**DISPENSER AND HOSE RETROFIT**

**INSTALLATION**

**MANUAL**

**C35593**

**REV. 03/28/03**

**INSTALLERS - IMPORTANT**

**In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Fuel Point System. Please leave this manual with the system owner after the installation is complete.**

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**GASBOY INTERNATIONAL LLC LANSDALE, PA**

# IMPORTANT WARNINGS AND SAFEGUARDS

Gasoline and petroleum products are flammable. To avoid injury or death to persons or damage to equipment or property, follow these listed warnings and other warnings and precautions outlined in this manual when installing, using, or working around this equipment. Check with GASBOY Technical Services for compatibility of liquids with pump materials.

## TURN OFF AND LOCK OUT ALL POWER TO PUMP BEFORE PERFORMING SERVICE, MAINTENANCE OR IN THE EVENT OF A FUEL SPILL.

All products must be installed by a qualified installer and used in conformance with all building, fire, and environmental codes and other safety requirements applicable to its installation and use, including, but not limited to, NFPA 30, NFPA 30A, NFPA 395 & NFPA 70. A qualified installer is familiar with fuel systems installations under the above stated building, fire, and environmental codes and other safety requirements for the particular type of installation.

This product is only part of a fuel dispensing system and additional equipment and accessories, such as, but not limited to, breakaway connectors, shear valves, pressure regulators, flow limiters, and other safety devices may be necessary to meet the applicable codes.

For maximum safety, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system. Instructions regarding proper operation of the equipment along with the appropriate safety warnings should be posted in plain view at the fuel island.

Before performing service or maintenance (including changing of fuel filters or strainers) or in the event of a fuel spill, turn off and lock out all power to the system. In battery-powered pumps, disconnect power source. In submersible pump applications, turn off and lock out power at the master panel and close any impact valves to the submersible pump and any other dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when dispensers share a common submersible pump or starter relay. Also block islands so no vehicles can pull up to the dispenser when the dispenser is being worked on.

**DO NOT** use Teflon tape for any pipe threads in the product.

**DO NOT** use consumer pumps for pumping fuel or additives into aircraft.

**DO NOT** use commercial pumps for direct fueling of aircraft without filters and separators necessary to ensure product purity.

**DO NOT** use where sanitary design is required (for food products for human consumption) or with water-based liquids.

**DO NOT** smoke near the pump or when using the pump.

**DO NOT** use near open flame or electrical equipment which may ignite fumes.

**DO NOT** permit the dispensing of gasoline or other petroleum products into a vehicle with its motor running.

**DO NOT** permit the dispensing of gasoline or other petroleum products into unapproved containers or into approved containers in or on vehicles including trucks. All containers must be filled on the ground to prevent static discharge. Always use Approved and Listed hoses and nozzles with electric pumps and dispensers.

**DO NOT** block open the nozzle in any manner. Nozzles shall conform to UL and NFPA code requirements for attended or unattended service.

**DO** ensure that the pump is equipped with proper filters based on the product being dispensed and its intended use.

**DO** wear safety goggles and protective clothes when dispensing any liquid which may be potentially harmful or hazardous.

**DO** keep all parts of body and loose clothing clear of belts, pulleys, and other exposed moving parts at all times.

**DO** require washing and changing of clothes if fuel is spilled on a person or his/her clothing. Keep away from open flames, sparks, or people smoking.

**DO** provide a receptacle for catching product from pump/meter when servicing.

**DO** clean up product spills on the driveway. Turn off and lock out all power prior to cleanup.

**DO** insure pump is properly grounded.

**DO** insure hose is compatible with fluid being dispensed.

**DO** inspect hose, nozzle, and pump on a regular basis for wear, damage, or other conditions which may create a safety or environmental hazard.

**DO** make sure all pipe threads are properly cut and the inside reamed to remove burrs. Use UL classified gasoline-resisting compound on all joints of gasoline handling piping. Sealing compound must also be resistant to Gasohol (Ethanol and Methanol). Use gasoline-resistant pipe compound on male threads only; pipe compound used on female threads can be squeezed into the supply line where it can enter the product stream and become lodged in the pump or meter.

**DO** ensure that junction box covers are in place and properly tightened. Mating surfaces between the box and cover must be free of dirt, nicks, and scratches. All unused entries into the junction box must be properly plugged.

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## Section 1

# INTRODUCTION

## PURPOSE

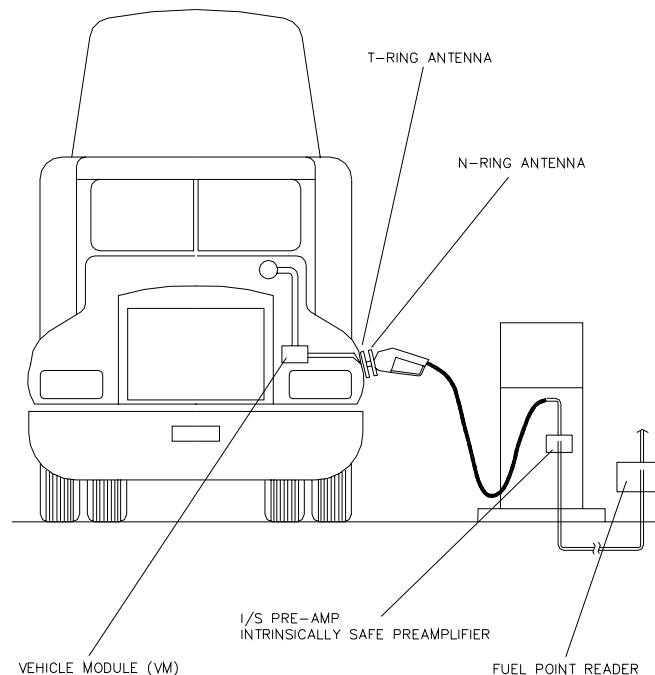
The *GASBOY Fuel Point Dispenser and Hose Retrofit Installation Manual* is provided to assist you in installing the Listed dispenser retrofit kits for the Fuel Point system on your pumps. This manual should be supplied to the installer prior to installation to ensure your components are installed properly. Faulty installations are the major cause of system malfunctions. The system components must be installed as described in this manual to ensure the reliability and proper operation of the system. Please read this entire manual before starting installation.

GASBOY provides a toll-free number for customers and installers having any questions pertaining to the installation: 1-800-444-5529

## SYSTEM OVERVIEW

Fuel Point adapts to Listed GASBOY fuel management systems for hassle-free fueling. System applications determine actual components required. Your system may consist of several or all of the following components:

- a GASBOY fuel management system (FMS) (Listed models 1000, 1000P, or 2000S CFN)
- Fuel Point Reader (FPR)
- Pumps/dispensers modified using Listed Dispenser and Hose Retrofit Kits (consisting of I/S Pre-amp and one or two kits)
- Vehicles equipped with materials from Vehicle Installation Kits (See Manual C35699)
- Vehicle Module(s) (VM's)



## **FUELING SEQUENCE**

Fueling a vehicle with a Fuel Point Vehicle Module (VM) is accomplished as follows:

1. Insert nozzle into vehicle tank. Vehicle ID, fuel control and odometer/hour data is automatically transmitted from the VM via nozzle (N-Ring) and tank (T-Ring) antennas to the Fuel Point Reader (FPR).
2. FPR communicates with the Fuel Management System (FMS) CFN or 1000 FleetKey unit.
3. FMS authorizes and records vehicle data.
4. When the nozzle is removed, it suspends the transaction, Reinsertion resumes transaction.
5. Transaction terminates when dispenser is turned off, nozzle is inserted into another vehicle, or suspended transaction is not resumed.
6. Transactions are stored in memory for on-demand retrieval and logger printout.

## **IMPORTANT HOSE MODIFICATION POINTERS - READ BEFORE PROCEEDING**

Modifying the hose at a work bench is recommended. Use appropriate tools and components. For reliable and long-lasting installations pay particular attention to the following points as you read the remainder of the manual:

- Handle the internal hose wire assemblies carefully. Make sure the wire doesn't become nicked or cut. A damaged wire within the hose will allow fuel to enter and wick past O-ring seals inside the jacket, leaking fuel at the connectors and inside the J-box/pre-amp assembly in the base of the pump.
- If the system does not read the VM after installation of the antenna, first check for continuity between the N-ring and pre-amp located in the J-box amplifier.
- PVC breakaway and nozzle covers are designed to conceal the breakaway connectors and wire. The covers must be properly installed.



## TESTING THE FUEL POINT INSTALLATION

The following test procedures are helpful:

- If the system is set up for use with cards or key activation, first test the pump using the card or key. Pump a small amount of fuel and check the logger printout to insure the correct amount is registered. This will test the complete system without the Fuel Point.
- If a master authorizer is available and programmed for the site, it can be used to test the pump assembly. Hold the authorizer near the N-ring and activate.
- Test the modified pump with a vehicle equipped for use with Fuel Point.
- Verify the hose wiring. At the amplifier/j-box 35 to 40 ohms through the N-ring is required.
- The following chart provides details for using the Fuel Point Reader LED indicators (on C08886 PCB) while troubleshooting wiring problems. The chart assumes only one vehicle is fueling as DL3 and 4 are shared by up to 8 hoses. DL3 and 4 indicate the communications between the FP Reader and FMS unit. DL1 and 2 indicate communications between the FP Reader and Vehicle Module.

DL4	DL3	DL2	DL1
*	*	*	*
Red	Grn	Red	Grn

Pump/Nozzle Status	Indicator Status	Remarks
Not Pump/Nozzle dependent	DL4,3 Flashing	RS 485 communications. Should be flashing continuously. Should mirror the 2 Red LED's on RS 485 PCB.
Nozzle inserted in vehicle	DL1 flashes once	Acknowledges Vehicle present.
Nozzle inserted in vehicle	DL1,2 flash rapidly	Vehicle Module sending data to FP Reader.
Nozzle starts fueling	DL1 flashes on-off	Indicates nozzle is still present in vehicle.
Nozzle removed	DL1 ceases flashing after short delay.	System in suspend mode. Allows fueler to start fueling second tank.

**NOTE:** *Turning the pump handle to off or a system time out will cease all activity on DL3 and 4. When testing several vehicles, a small quantity of fuel should be pumped. If quantity is not pumped, the system will shut off after a programmable number of no quantity operations. The system must be re-enabled at the terminal. Refer to the appropriate manual for system in use. When testing several transactions (nozzle in/outs) you must delay about 5 seconds if communications is lost.*

## COMPONENT OVERVIEW

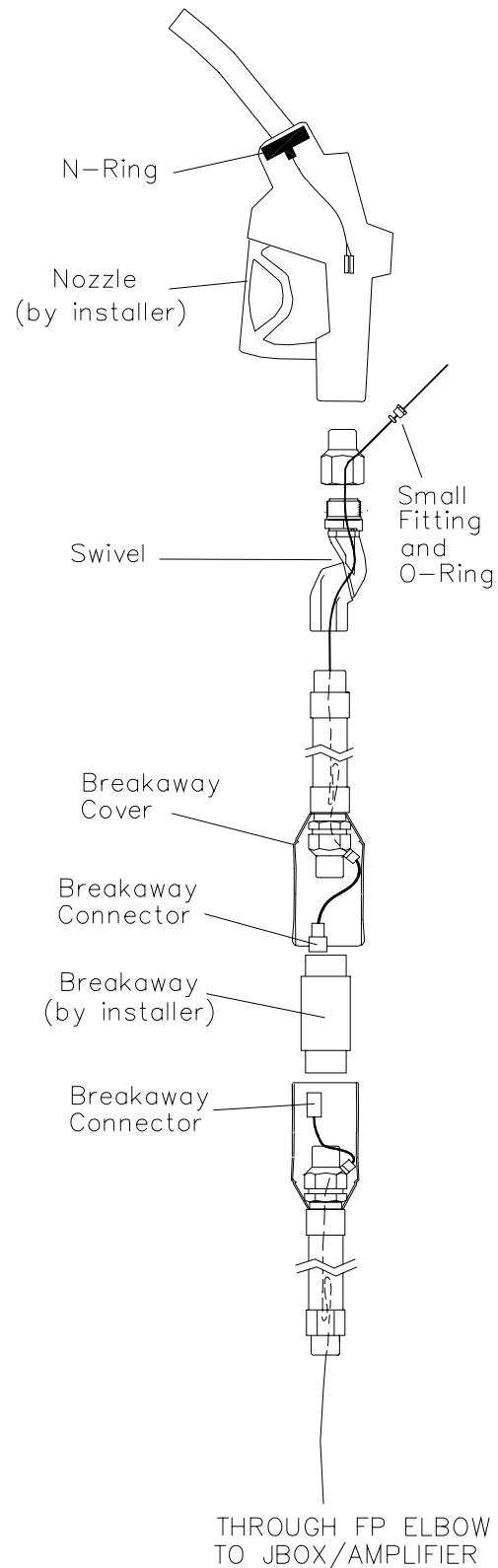
As you read the following descriptions, refer to the drawing at the right for an overall view of the assembled hose.

The GASBOY Fuel Point system requires modification of existing pumps and hoses using retrofit kits or installing internal-wired, factory-assembled hoses. Each hose outlet requires a Fuel Point Amplifier available in single, twin or 2-4 hose multiple product assemblies. Hose retrofit kits provide the parts for field modification of UL-approved fueling dispensers and pumps. To discourage tampering, hose wiring is internal to the hose or enclosed in flexible metal tubing. Connectors are concealed by PVC covers and the breakaway connector can be reconnected after drive-offs

Hose assemblies and kits are available in a variety of configurations for UL-Listed  $\frac{3}{4}$ " and 1" standard and most Vapor Recovery style nozzles. Kits can be assembled differently based on the breakaway location. A list of kits and assembly instructions are discussed later in this manual. Kits include parts shown in the diagram at right except hoses, nozzles and fuel breakaway which are to be supplied by the installer. Wired hoses include same parts plus the hoses.

The N-Ring assembly (nozzle antenna) mounts at the base of the fueling spout of the nozzle. The N-Ring transmits and receives communications to and from a Fuel Point-equipped vehicle via a T-Ring (tank ring antenna).

The hose wire provides communications between the N-ring and Fuel Point J-Box/Amplifier mounted in the base of the pump. Internal hose wiring enters and exits the hose through special brass fittings outfitted with O-ring compression seals. Hose wires are constructed with a factory-installed *slack loop* to compensate for hose stretch that can occur during a drive-off.



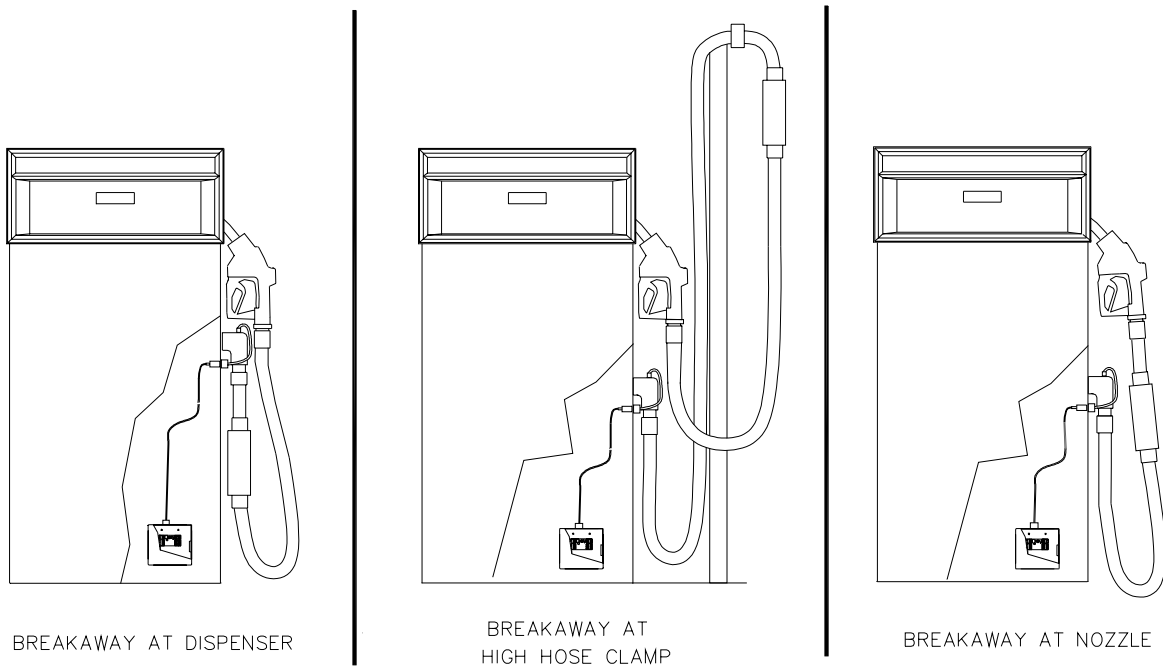
## Section 2

# GETTING STARTED

### GENERAL INFORMATION

The following procedures assume the dispenser to be modified is UL-Listed and has been installed according to the applicable codes, including a Listed hose assembly, hose nozzle valve, and breakaway installed according to the manufacturer's instructions. Apply a UL-classified pipe lubricant/sealant to all pipe threads. Communications from the vehicle to the Fuel Point reader are provided by the hose wire. GASBOY recommends that this wire be concealed from the end user to discourage tampering.

Fuel Point dispensers may be configured in three styles depending on the individual application. Give careful consideration to the hose style.



Style 1 (Breakaway at Dispenser) and Style 3 (Breakaway at Nozzle) can be constructed from standard kits. Be sure to specify the kit that meets your particular hose length requirements. Style 3 (Breakaway at the High Hose Clamp) should be specified when a high hose feature is to be used. Extended hose kits provide for up to a 20-foot main hose length. Style 1 or 2 should be used where nozzle weight may be a consideration.

## BEFORE YOU BEGIN

**CAUTION:** *Assembly and installation of required components may require drilling and/or sealing parts. Always assemble hose, nozzles, and any components away from the fuel site in a safe environment where potentially hazardous fumes are not present.*

Use conduit layout drawings in the *Fuel Point Reader Manual, C35628* and check installation for Fuel Point conduits and J-boxes.

All installations must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.

## APPROVED NOZZLES FOR USE WITH DISPENSER RETROFIT KITS

Standard interchangeable UL-Listed 3/4 and 1" nozzles may be used with Fuel Point. Nozzle selection may be affected by vehicle type, vehicle tank configurations, locations and opening diameter. With the nozzle antenna ring (N-ring) installed, check each vehicle for the following:

- Install a test N-ring on the nozzle. For each vehicle, check the read distance from the N-ring to vehicle tank (T-ring). Fuel Point will communicate when the rings are no more than 9" apart provided there is no metal blocking the signal (because N-ring is inside fill collar opening).
- Check that the nozzle spout is fully inserted into the vehicle's tank opening and the vehicle can be safely fueled. If necessary, use a nozzle with a longer spout (OPW 7H with #5 BHB-0125 12" spout or Richards Mark 12). Note that longer nozzle may affect pump nozzle hook/boot configuration.

Vapor Recovery nozzles approved for use with Fuel Point are listed in the table below.

Nozzle MFR.	V/R Balanced Short Spout	V/R Balanced Long Spout	V/R Assisted
OPW	211V & 211VXS	11VF & 111VXS	11VA & 11VAA
Emco/Wheaton	4015	A4001 & A4005	A4500 & A4505
Husky	5010	5210	V3
Healy	~	~	400 & 600
Catlow	~	~	VM-1

**NOTE:** *The above nozzles are only to be used if the dispenser "replacement label" indicates acceptability.*

For other special applications, call GASBOY Technical Service at 1-800-444-5529.

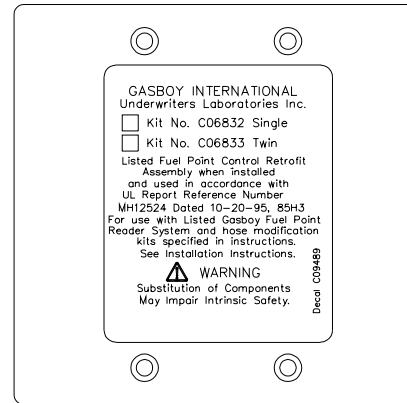
## DISPENSER RETROFIT J-BOX ASSEMBLIES

For Fuel Point, each pump or dispenser will require at least one **J-Box/Amplifier Assembly** and one **Hose Retrofit Kit** for each hose outlet from the list below.

### J-Box/Amplifier Assembly

C06832 One Hose

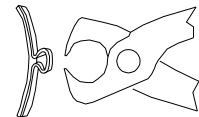
C06833 Two Hose



## UNPACKING THE DISPENSER RETROFIT KIT

The contents of the hose modification kit portion of the dispenser retrofit kit is broken down on the following two pages. You will need the following tools to complete this installation:

- pipe wrenches
- screwdrivers
- meter
- small crescent wrench
- electrical tape
- electrician's snake or pull wire
- scissors
- ruler
- UL-classified pipe thread sealant
- O-Ring lubricant (Parker O-Lube or equivalent)
- 6" Heavy-duty tapered Head Cutters Pliers (Klein, #490PL108)
- Automatic Single Squeeze wire stripper (Stripmaster, #462ST028)
- channel lock pliers
- special clamp pincer tool for VR and VA nozzles
- Crimp tool with crimp mechanism in head, not in handle, (T&B #WT-111 or Klein #490ST016)



NARROW JAW  
PINCER TOOL  
(RECOMMENDED)

## FUEL POINT HOSE RETROFIT KITS

Retrofit Kits include Fuel Point specific parts required to modify existing pumping units. Dual Plane swivel is included with kit. **Hoses, nozzles and breakaways are supplied by the installer.**

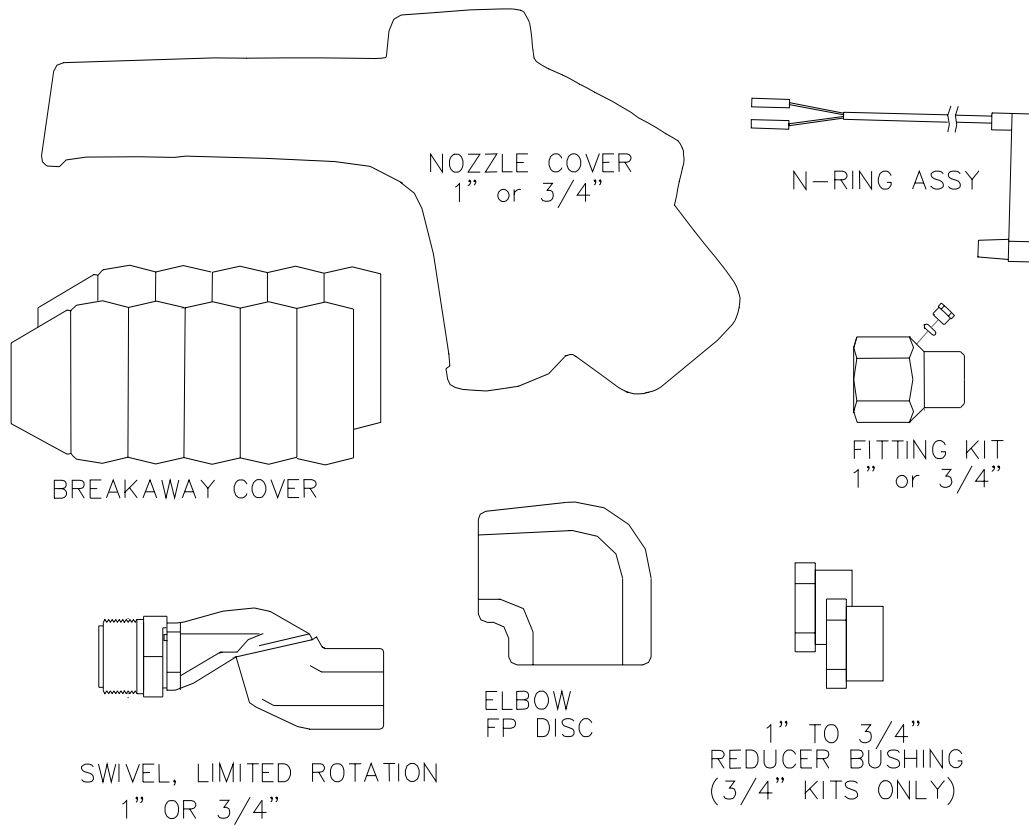
¾" P/N	1" P/N	V/R	Description	Max Hose Length
C07100	C07101	C07407	Standard Retrofit Hose Kit	13' (1+12')/(12+1')
C07102	C07103	C07106	High Hose Retriever Retrofit Kit	13' (6.5+ 6.5')
C07183	C07104	C07408	Extended Hose Kit Retrofit Kit	21' (1+20')
C07440	C07105	~	Extended High Hose Retrofit Kit	21' (6+15')*
C07400	C07401	C07109	Overhead Hose Retrofit Kit	10' (9'+1)

### Internal Wire Factory-Wired Hose Assembly Kit

Factory-wired hose assembly kits include Fuel Point components factory-wired in hoses, complete with swivel, fittings and hose wires fully assembled. **Nozzles and breakaways are to supplied by the installer**

¾ P/N	1" P/N	Description	Hose Length
C07290	C07295	Wired Hose Assy Kit Standard B/A @ Pump	13' (12+1)
C07291	C07296	Wired Hose Assy Kit Standard B/A @ Nozzle	13' (1+12)
C07292	C07297	Wired Hose Assy Kit High Hose B/A Mid.	12' (6 + 6)
C07293	C07298	Wired Hose Assy Kit Extended B/A @ Nozz	21' (1 + 20)
C07441	C07402	Wired Hose Assy Kit Extd/High Hose B/A @ Mid.	20' (6 + 15)*
C07294	C07299	Wired Hose Assy Kit Overhead B/A @ Pump	10' (9 + 1)

\*NOTE: Use this kit for applications where lower nozzle mounting height does not allow for proper hose hangup, such as Gasboy 1" Front Load 9800A and 215A/216A Series Pumps.

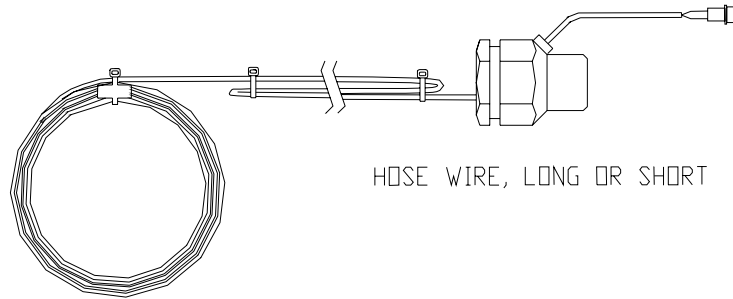


**Kit Contents**

- |   |        |  |
|---|--------|--|
| 1 | 012116 | Nozzle Cover, 3/4"                       |
|   | 012113 | Nozzle Cover, 1"                         |
| 2 | C07279 | N-Ring Assembly                          |
| 3 | 012181 | Breakaway Cover, Qty. 2                  |
| 4 | C07347 | Fitting Kit, 3/4"                        |
|   | C07349 | Fitting Kit, 1"                          |
| 5 | 003622 | Elbow, FP Disc                           |
| 6 | 064574 | Swivel, Limited Rotation, 3/4"           |
|   | 064575 | Swivel, Limited Rotation, 1"             |
| 7 | C09848 | Reducer Bushing, Qty. 2 (3/4" kits only) |

(See next page for Hose Wire Parts)

**Kit Contents (Continued)**





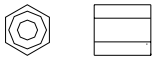
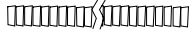



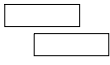
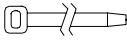

HOSE WIRE, LONG OR SHORT

- 8 Short Hose Wire, Qty. 1
  - C07341 Wire Assy., 3/4" dia. x 1' whip hose
  - C07342 Wire Assy., 3/4" dia. x 8' hose max.
  
  - C07274 Wire Assy., 1" dia. x 1' whip hose
  - C07275 Wire Assy., 1" dia. x 8' hose max.
  
- 9 Long Hose Wire, Qty. 1
  - C07345 Wire Assy., 3/4" dia. x 6-8' hose max.
  - C07346 Wire Assy., 3/4" dia. x 12-15' hose max.
  - C07344 Wire Assy., 3/4" dia. x 20' hose max.
  
  - C07325 Wire Assy., 1" dia. x 6-8' hose max.
  - C07326 Wire Assy., 1" dia. x 12-15' hose max.
  - C07327 Wire Assy., 1" dia. x 20' hose max.



## INTERNAL WIRE RETROFIT COMPONENTS

### Internal Wire Small Parts Kit, C07348

	1	C35972	Fitting, Hose Wire, Qty. 1
	2	048865	O-Ring Seal, Qty. 2
	3	C35999	Fitting, O-Ring, Tubing, Qty. 1
	4	C36004	Tubing, Qty. 1
	5	C09756	Plastic Bushing, Qty. 2
	6	C09767	Fitting, 1/2" NPT Sealing, Qty. 1
	7	039130	Nut, Conduit, 1/2" NPT, Qty. 1
	8	C08899	Connector, Sealing Butt, Qty. 2
	9	C08879	Tiewrap, Large, Qty. 2
	10	0M0042	Tiewrap, Small, Qty. 2

## **USING THIS MANUAL**

The remainder of this manual contains procedures for assembling your antenna and hose. The steps for hose retrofit are summarized below:

### **STANDARD HOSE RETROFIT**

- **STEP A: DISASSEMBLE HOSE**
- **STEP B: CONSTRUCT HOSE ASSEMBLIES (INTERNAL WIRE)**
  - Hose #1 Assembly, Nozzle End
  - Hose #2 Assembly, Nearest Pump
- **STEP C: FINAL HOSE AND NOZZLE ASSEMBLY**
- **STEP D: REASSEMBLE**
  - Hose to Pump
- **STEP E: COMPLETE N-RING WIRING**
- **STEP F: APPLY POWER AND CHECK INSTALLATION**

### **VAPOR RECOVERY RETROFIT**

- **STEP A: CONSTRUCT VAPOR RECOVERY HOSE ASSEMBLIES**
  - Hose 1 Assembly, Pump End
  - Hose 2 Assembly, Nozzle End
- **STEP B: NOZZLE ASSEMBLY**
- **STEP C: FINAL VAPOR RECOVERY HOSE ASSEMBLY**
- **STEP D: REASSEMBLE HOSE TO PUMP**
- **STEP E: COMPLETE N-RING WIRING**
- **STEP F: APPLY POWER AND CHECK INSTALLATION**

## *Section 3*

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# **STANDARD INTERNAL WIRE HOSE RETROFIT**

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### **STEP A: DISASSEMBLE HOSE**

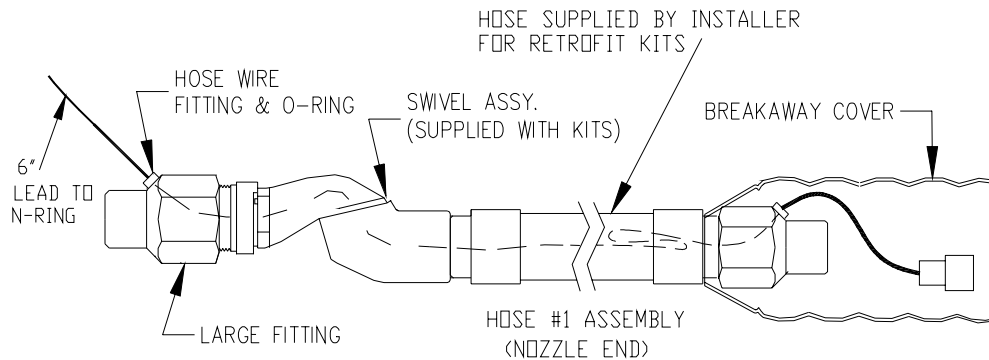
1. Turn off pump power.
2. Remove hose assembly at the discharge elbow fitting. Be sure to provide a container under the fitting to avoid any product spillage on the ground.
3. Drain and wipe hose to remove fuel residue and move to a safe location away from the fueling site.
4. For Hose Retrofit Kits, follow Steps B through F.
5. For installation of a factory-wired hose, refer to assembled hose drawings in Step B and proceed directly to Step C and follow Steps C through F.

## STEP B: CONSTRUCT HOSE ASSEMBLIES (INTERNAL WIRE)

### HOSE #1 ASSEMBLY (Nozzle End)

*NOTE: All pipe threads must have UL-approved sealant applied and threads tightened fully. Nozzle and breakaway are supplied by installer.*

1. Refer to the pump diagram found earlier in this manual and determine the hose style required (breakaway at nozzle, pump, or mid-hose at high hose clamp).
2. Starting at the breakaway end, carefully snake loose end of appropriate wire assembly through the hose, taking care not to disturb the slack loop. Apply thread lubricant, thread hose to large fitting and tighten fully.
3. Assemble the PVC breakaway cover as shown.
4. Use a pull wire and feed loose hose wire through swivel supplied with the kit. Apply thread sealant and thread swivel to hose end.
5. Continuing at the swivel, locate the large fitting kit and remove small compression fitting and O-ring and feed loose hose wire through large brass fitting and out the wire exit hose. Reassemble the O-ring and compression fitting and tighten fully. Gently tug on the wire to confirm it is fully sealed.

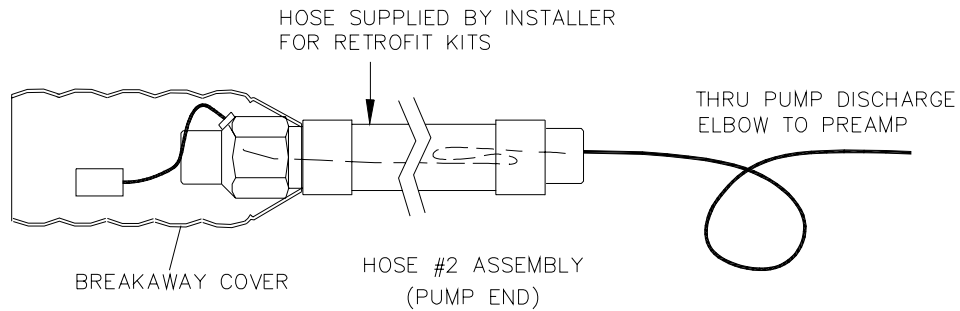


6. Set hose assembly aside and continue by assembling hose 2.

## STEP B (CONT'D): CONSTRUCT HOSE ASSEMBLIES

### Hose #2 Assembly (Nearest Pump)

7. Continuing at the breakaway, locate the second hose wire assembly from the kit and carefully snake loose end through the hose (taking care not to disturb the slack loop), apply sealant and thread large fitting on hose and fully tighten.
8. Assemble PVC cover as shown and proceed to **STEP C: FINAL HOSE AND NOZZLE ASSEMBLY.**

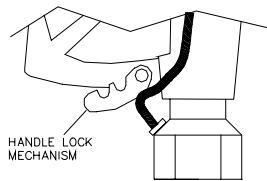


## STEP C: FINAL HOSE AND NOZZLE ASSEMBLY

1. **Assemble Breakaway and Nozzle:** Determine fuel flow direction and apply thread sealant to all tapered threads. Assemble breakaway between Hose #1 and Hose #2 according to manufacturer's directions. Install nozzle to Fuel Point fitting on Hose #1. Tighten all connections fully.
2. **Complete N-Ring Wiring:** Assemble N-ring on nozzle. Strip 1-1/2" from hose wire outer jacket and 1/4" from 2 wires and crimp hose wire to N-ring butt connectors. Pull nozzle cover over the nozzle, arrange wire to conceal and tie-wrap as needed. Stretch PVC cover to conceal brass wire exit and tie-wrap to close.

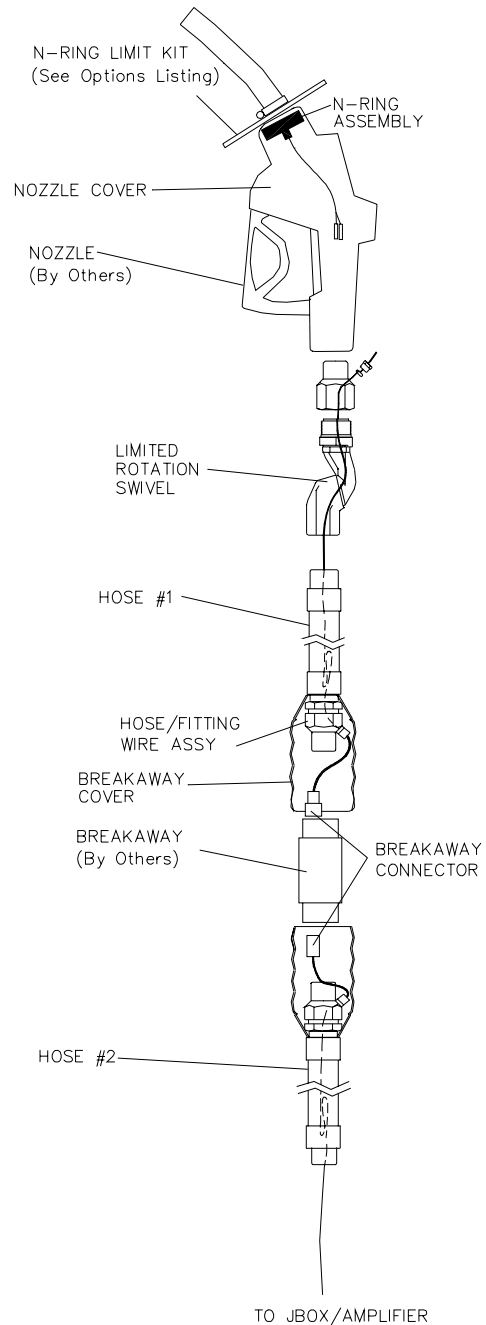
*Assembly Note: To strip hose wire, first score outer jacket using 12AWG stripper setting, then strip using 10AWG setting.*

3. **Test N-Ring Wiring:** Use ohmmeter and test N-ring circuit for approximately a 35 ohm reading.
4. **Test hose** mechanically to insure nozzle shutoff mechanism is operational and all fittings are fully tightened.



NOZZLE ASSEMBLY

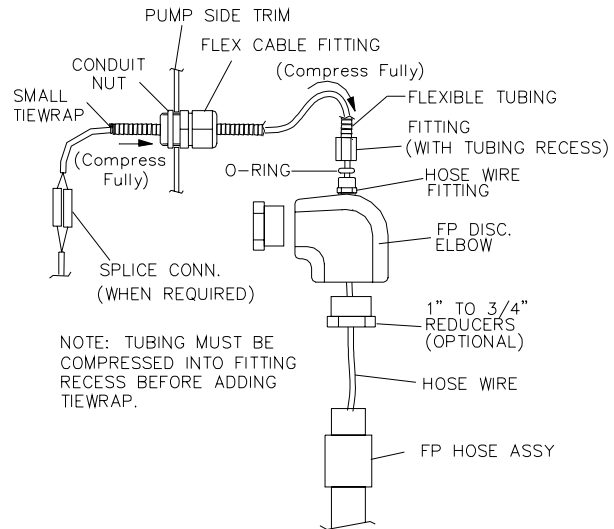
5. Nozzles vary in design. If the handle locking mechanism does not operate freely, remove the lock bracket or replace with a nozzle with mechanism designed within handle area.



## STEP D : REASSEMBLE

### Hose to Pump

1. **Install the J-Box/amplifier:** Unless installed previously, remove the cover and install the portable cord fitting and thread it to the J-Box. Thread the assembly onto the I/S conduit which was installed previously according to the *Fuel Point Reader Manual, C35628*. Assemble the wired hose to the pump.

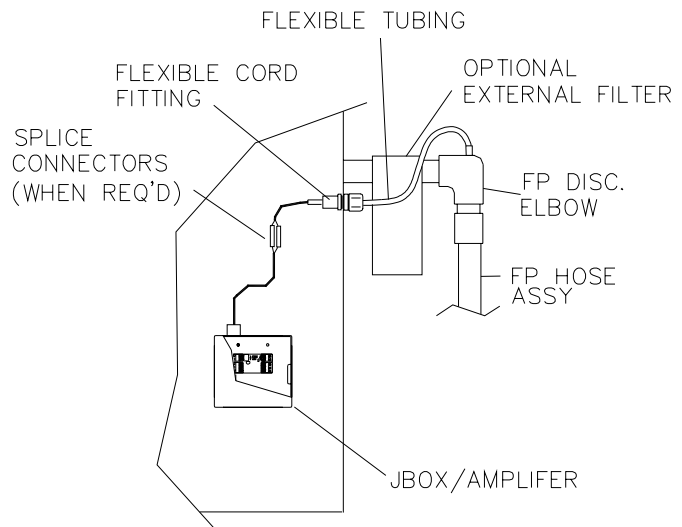


2. **Locate and install flex cable fitting:** Determine a location to install the flex cable fitting (furnished with the hose kit). Mark the location and remove the pump trim panel to a safe location and machine a 7/8" hole. Reinstall the trim panel and install the flex cable fitting with conduit nut supplied. Fully compress tubing in fitting recess and secure with tiewrap.

3. **Complete hose wire installation:**

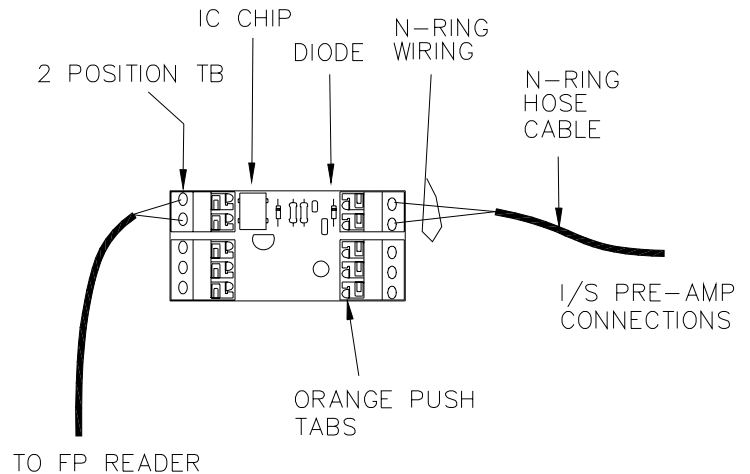
*NOTE: Use UL approved thread sealant on all tapered threads.*

- a. Remove the existing discharge elbow and discard. Install Fuel Point elbow from kit. For 3/4" hose installations install the two reducer bushings supplied.
- b. Assemble supplied hose wire fitting and tighten fully with wrench.
- c. Use Hose 2 Assembly and feed hose wire loose end through the elbow and out the small exit fitting.
- d. Cut hose wire lead to approximately 24" from end of hose, saving the trimmed wire for later use.
- e. Assemble O-ring (using O-ring lubricant), tube fitting, tubing and nylon bushing supplied. Tighten fitting completely using wrench.
- f. Fully compress tubing against fitting in recess and add tiewrap to hold in place.
- g. Feed tubing and wire through the flex cable fitting, adjust and tighten.
- h. Using trimmed wire, splice to hose wire using butt connectors supplied and route to J-Box/amplifier.
- i. Strip wire and connect to amplifier.



## STEP E: COMPLETE N-RING WIRING

1. At the J-Box, cut the pump wire to about a 15" length and remove 2" of outer jacket. Strip (2) wires 3/8" from the N-Ring hose cable. You are now ready to make the final N-Ring connections.
2. The N-Ring hose cable connects to the two (2) section terminals nearest the diode. To insert, press the orange tabs and insert wire. Release tab and verify a tight connection.



**CAUTION:** Wire polarity is not important, but connection to the wrong side of the pre-amp assembly will cause damage!!!

## STEP F: APPLY POWER AND CHECK INSTALLATION

**IMPORTANT:** Before applying power and checking installation, all wiring must be complete from Fuel Point Reader to Junction Box Pre-amp. Refer to the appropriate installation/operation manuals to verify this.

1. Return power to pumps and fuel management system. Switch system to AUTO operation. For mechanical pumps, the switches are located on the pump control unit; for GASBOY electronic pumps, these switches are on the CPU board behind the bezel assembly. For other manufacturer's pumps, refer to their installation/operation manuals.
2. Test the installation on a vehicle equipped to operate with Fuel Point. If communications are intermittent, check and insure the N-ring and T-ring are within 9" of each other and the N-ring communications path to the T-ring is not blocked by the metal fill tube (see TIP 1).

*TIP 1: Vehicles with large metal fill pipes can allow the nozzle to be fully inserted in the tank opening. The metal fill tube can block N-ring communications. If this condition exists, use a nozzle with a extra long spout and provide a mechanism to hold the spout at a 5" to 9" gap with the ring communication path unobstructed.*

Once the system is communicating, pump a small amount of fuel and check for fuel leaks at all threaded hose connections. For internally-wired hoses, check all O-ring seals and check for faulty hose wires (see TIP 2).

*TIP 2: If hose assembly leaks at one of the O-ring seals, tighten the pressure fitting only as needed. Do not overtighten; this can also cause leaks. Finger tight, plus 1/4 to 3/8 turns is sufficient torque to seal.*

Internally wired hoses must be checked for damaged internal hose wiring (see WARNING).

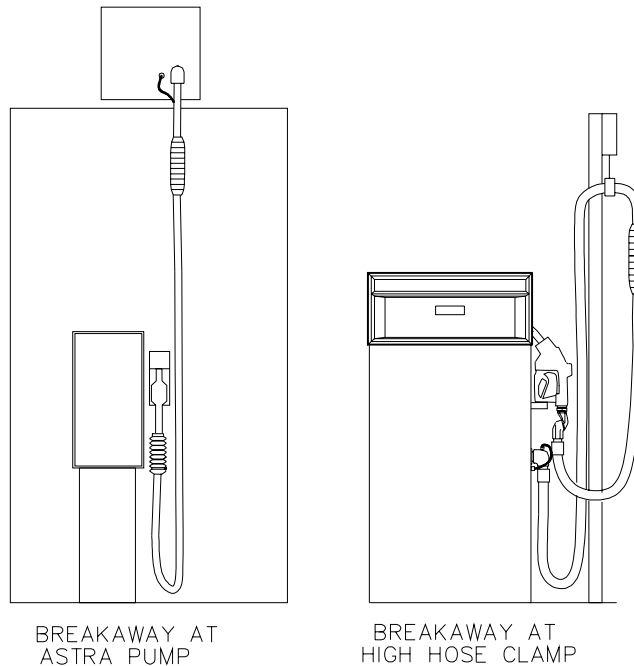
**WARNING:** A nick or cut in the hose wire located within the hose will allow fuel to enter the jacket interior and travel past o-ring seals. Fuel will be found in connectors and/or J-box. When this occurs, immediately remove the pump from service and install new hose wiring.



## Section 4

# VAPOR RECOVERY RETROFIT KITS

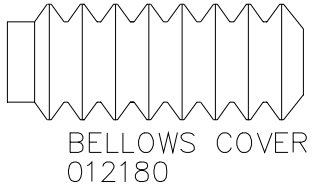
Fuel point Vapor Recovery Kits are available in several styles for most common applications. Two style kits are available depending on the type pumping unit used.



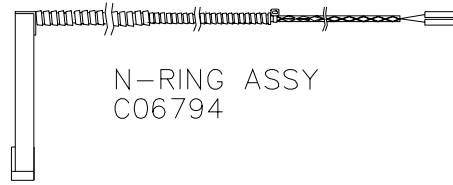
Standard single and twin pumps with a high hose retriever require High Hose retrofit kit. Due to varying hose lengths used in these applications, the hose wire assemblies are available for 4-1/2' hose, breakaway at the nozzle and 6-1/2' hose, breakaway at the pump. The kit includes additional parts for field-modification of other hose lengths.

Kits are available for GASBOY Astra pumps in standard lengths or extended for hoses up to and including 20' lengths. These kits require field modifications due to the unlimited hose lengths encountered.

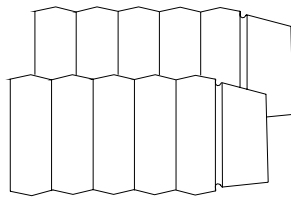
**VAPOR RECOVERY SMALL PARTS KIT, C07389**



BELLOWS COVER  
012180

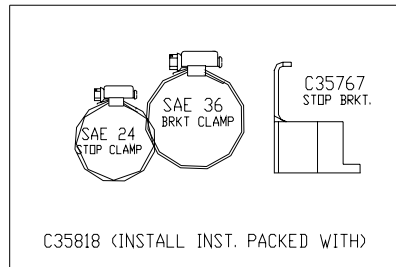


N-RING ASSY  
C06794



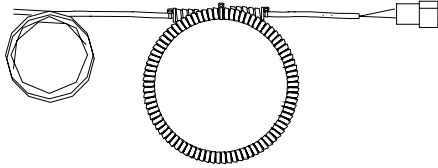
BREAKAWAY COVERS  
012183

SWIVEL LIMIT KIT (3 INCLUDED)  
C07073



C35818 (INSTALL INST. PACKED WITH)

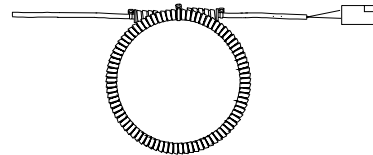
TO PRE-AMP



GB#	DESC.
C07393	PUMP WIRE (MPD) 01' MAX. HOSE
C07420	PUMP WIRE (STD) 01' MAX. HOSE
C07395	PUMP WIRE (HH) 6.5' MAX. HOSE

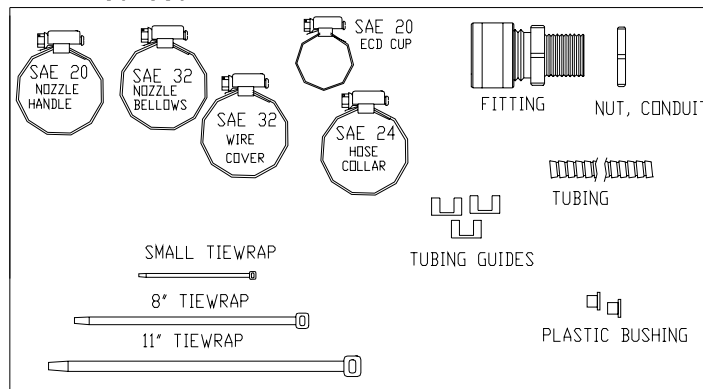
BREAKAWAY  
CONNECTOR

TO N-RING



GB#	DESC.
C07394	HOSE WIRE (HH) 6.5' MAX. HOSE
C07392	HOSE WIRE (MPD) 09' MAX. HOSE
C07421	HOSE WIRE (STD) 12' MAX. HOSE
C07422	HOSE WIRE (EXTD) 20' MAX. HOSE

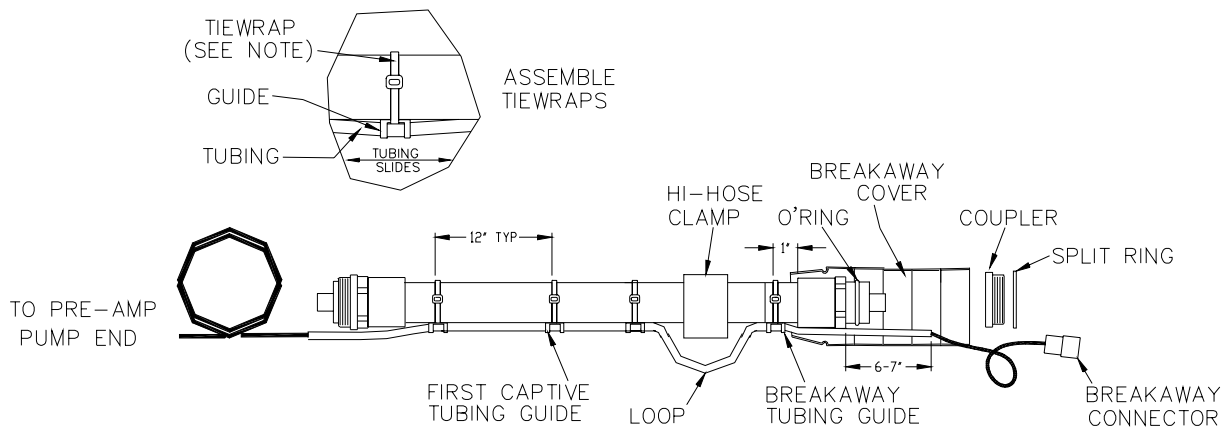
SMALL PARTS KIT  
C07389



## STEP A: CONSTRUCT VAPOR RECOVERY HOSE ASSEMBLIES

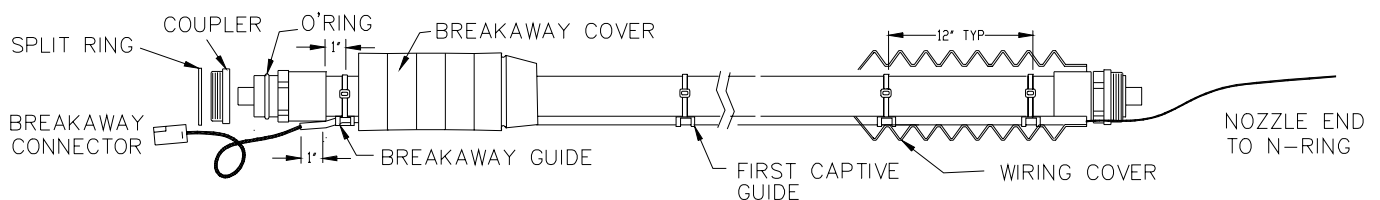
### Hose 1 Assembly (Pump End)

1. Balanced hose assemblies require removal of one threaded coupler before proceeding. Starting at the breakaway end, remove split ring and carefully remove coupler. Be careful not to damage the O-ring seals. Set aside coupler and split ring for re-installation during **Step C: Final Vapor Recovery**. (For high hose retractor applications, add the high hose clamp approximately 6" from the hose end.)
2. Add PVC wire covers, trimming as needed with sharp scissors. Do not over-trim openings, covers should fit tightly around hose.
3. Locate the appropriate wire assembly from the kit and assemble to the hose with 8" tiewraps approximately at 12" centers (See diagram below). Slide tiewraps between the tubing and the guide. Tiewraps must be assembled to allow the wire assembly to slide through the plastic guides. (See diagram below). Do not tighten fully to allow adjustment during **Final Assembly**. Inspect and lubricate O-ring and reassemble coupler to hose end. When a clamp is used, adjust tubing to form a 2-3" loop.



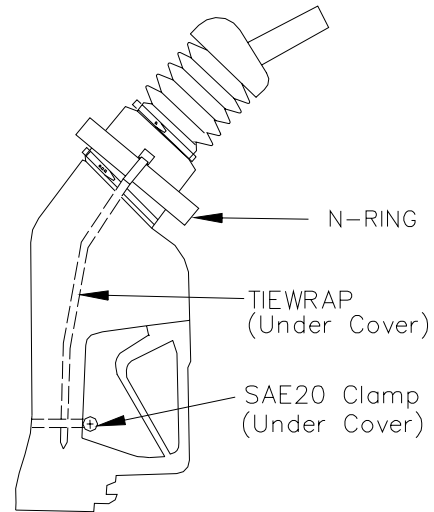
### Hose 2 Assembly (Nozzle End)

4. Assemble the nozzle end hose repeating Steps 1-3. Hose wire tubing is furnished to fit popular hose lengths. The small parts kit contains parts to lengthen the tubing two additional feet. For additional lengths less than two feet, the tubing can be cut to desired length using a hacksaw and then deburred using a small file. To assemble the added tubing, start at the nozzle end (end without connector) and cut the tiewrap. Assemble bushings and tubing, compress slightly and hold in place using the small tiewrap supplied with the kit.

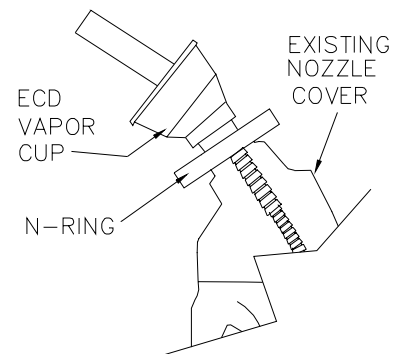


## STEP B: NOZZLE ASSEMBLY

1. See Vapor Recovery Nozzle list (Section 2) for nozzles approved by UL for use with Fuel Point. Locate the N-Ring assembly and follow Step 2 for balanced nozzle assemblies or follow Step 3 for Vapor Assist nozzles.
2. For balanced nozzles with bellows, measure the diameter of the bellows at the base of the spout just above the check valve, if present. Trim the N-ring membrane to a diameter slightly smaller than the measured diameter. Pull the N-ring assembly over the bellows end cap and position it at the bellows base.

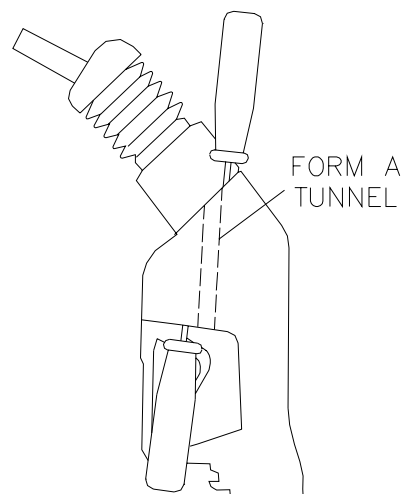


3. For assist-style nozzles using an ECD cup: Increase the size of the opening in the N-ring membrane enough to slip over the ECD cup. Position the N-ring at the base of the nozzle spout.
4. Carefully feed the N-Ring cable under the nozzle cover and along one side of the nozzle (See *TIP below*). On the opposite side of the N-Ring, install an 11" tie-wrap and feed the tail under the cover and down the opposite side of the nozzle.



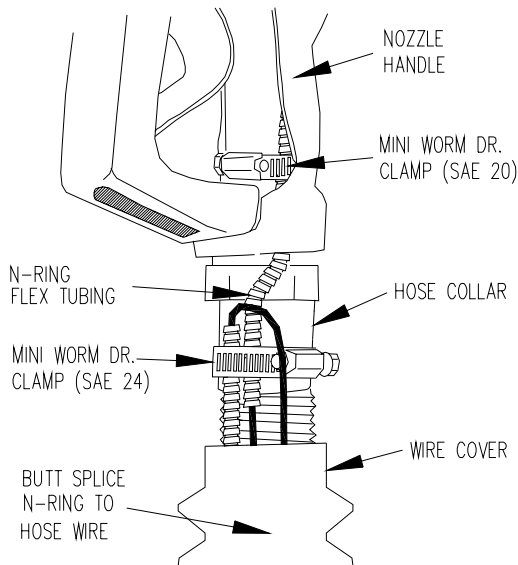
*TIP: Using two large screwdrivers, insert one from the fuel spout end and the second from the opposite end forming a tunnel to feed the cable and the tie-wrap under the nozzle cover. Lift handles to enlarge the tunnel.*

5. Assemble an SAE 20 mini-clamp around the nozzle handle under the PVC cover to hold the cable and tie-wrap in place (see diagram above right). Adjust the tubing and clamp so the does not interfere with the nozzle handle operation. Set assembled nozzle aside for final assembly later.

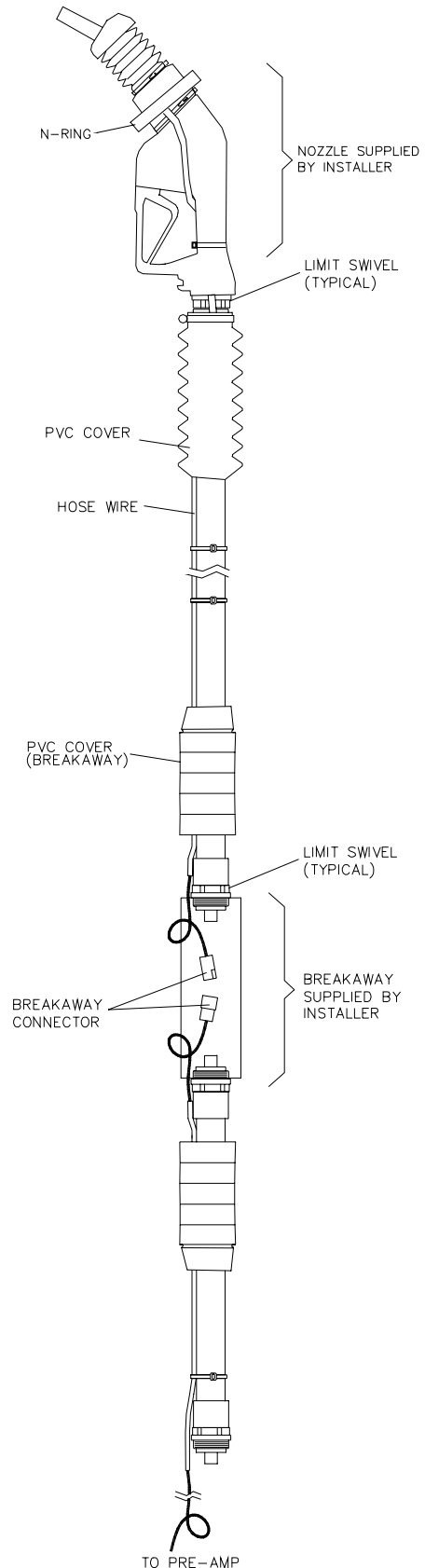


### STEP C: FINAL VAPOR RECOVERY HOSE ASSEMBLY

1. **Assemble Breakaway and Nozzle:** Determine fuel flow direction and assemble the fuel breakaway between hose #1 and hose #2 according to manufacturer's directions. Tighten all connections fully.
2. **Complete N-Ring Wiring:** Strip 1-1/2" from outer jacket and 1/4" from 2 wires and crimp hose wire to N-ring butt connectors. Clamp hose and N-ring tubing using SAE 24 clamp provided. (see diagram below). Test assembly to insure clamped tubing restricts the swivel action at the nozzle coupling.



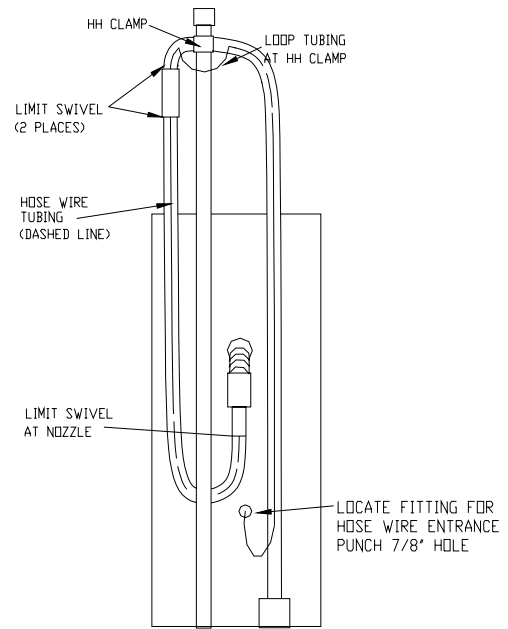
3. **Test N-Ring Wiring:** Mate the breakaway connectors and test n-ring circuit for approximately a 35 ohm reading.
4. **Test Mechanical Assembly:** Insure nozzle shutoff mechanism operates correctly and all threads are tightened fully.



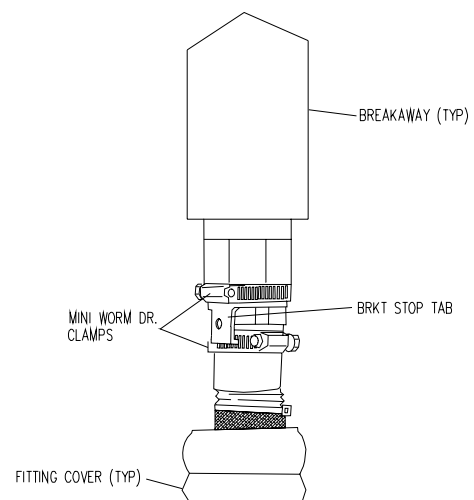
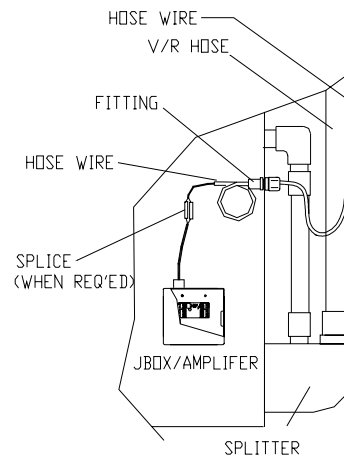
## STEP D: REASSEMBLE HOSE TO PUMP

1. **Install the J-Box/Amplifier:** Unless installed previously, remove the cover and thread the portable cord fitting to J-Box. Thread J-Box to I/S metal conduit installed previously according to the *Fuel Point Reader Manual C35628*. Assemble the wired hose to the pump.
2. **Locate and Install Flex Cable Fitting:** Determine a location to install the flex cable fitting furnished in the small parts kit. Mark the location and remove the pump trim panel to a safe location and machine a 7/8" diameter hole. Reinstall the trim panel and install the fitting with conduit nut supplied. For installations using GASBOY-furnished hoses with swivel lock mechanisms, proceed to **Step E: Complete N-Ring Wiring**.

*NOTE: Excess hose wire length can be coiled and stored within the pumping unit.*

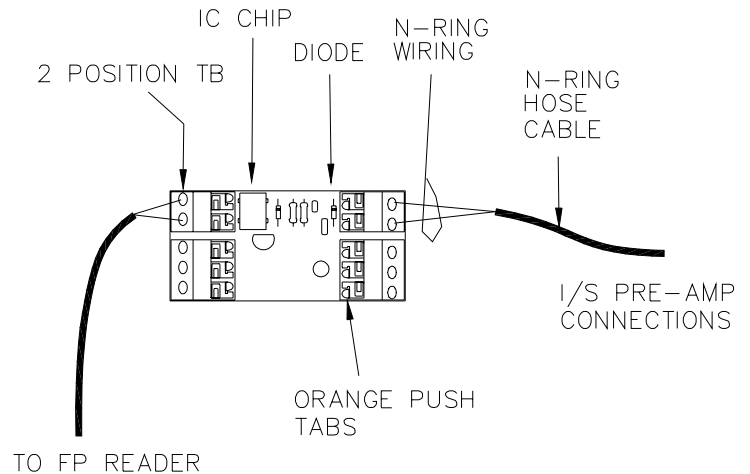


3. **Install Swivel Limit Mechanisms:-** Fuel Point-wired hoses cannot have continuous swivel motion in the hose assembly. Swivel Limit Kits are furnished and are to be installed following the diagram at the right.
4. Clamp the aluminum stop bracket to the breakaway using clamp furnished. **WARNING: Do not clamp to the hose coupling. Operation of the swivel and stop bracket can loosen the threaded coupling.**
5. Install the stop clamp as shown and tighten fully.
6. Slide all PVC covers in place and proceed to **Step E: Complete N-Ring Wiring**.



## STEP E: COMPLETE N-RING WIRING

1. At the J-Box, cut the pump wire to about a 15" length and remove 2" of outer jacket. Strip (2) wires 3/8" from the N-Ring hose cable. You are now ready to make the final N-Ring connections.
2. The N-Ring hose cable connects to the two (2) section terminals nearest the diode. To insert, press the orange tabs and insert wire. Release tab and verify a tight connection.



**CAUTION:** Wire polarity is not important, but connection to the wrong side of the pre-amp assembly will cause damage!!!

## STEP F: APPLY POWER AND CHECK INSTALLATION

**IMPORTANT:** Before applying power and checking installation, all wiring must be complete from Fuel Point Reader to Junction Box Pre-amp. Refer to the appropriate installation/operation manuals to verify this.

1. Return power to pumps and fuel management system. Switch system to AUTO operation. For mechanical pumps, the switches are located on the pump control unit; for GASBOY electronic pumps, these switches are on the CPU board behind the bezel assembly. For other manufacturer's pumps, refer to their installation/operation manuals.
2. Test the installation on a vehicle equipped to operate with Fuel Point. If communications are intermittent, check and insure the N-ring and T-ring are within 9" of each other and the N-ring communications path to the T-ring is not blocked by the metal fill tube (see TIP 1).

*TIP 1: Vehicles with large metal fill pipes can allow the nozzle to be fully inserted in the tank opening. The metal fill tube can block N-ring communications. If this condition exists, use a nozzle with a extra long spout and provide a mechanism to hold the spout at a 5" to 9" gap with the ring communication path unobstructed.*

Once the system is communicating, pump a small amount of fuel and check for fuel leaks at all threaded hose connections. For internally-wired hoses, check all O-ring seals and check for faulty hose wires (see TIP 2).

*TIP 2: If hose assembly leaks at one of the O-ring seals, tighten the pressure fitting only as needed. Do not overtighten; this can also cause leaks. Finger tight, plus 1/4 to 3/8 turns is sufficient torque to seal.*

Internally wired hoses must be checked for damaged internal hose wiring (see WARNING).

**WARNING:** A nick or cut in the hose wire located within the hose will allow fuel to enter the jacket interior and travel past o-ring seals. Fuel will be found in connectors and/or J-box. When this occurs, immediately remove the pump from service and install new hose wiring.

# WARRANTY

## General Statements:

Gasboy International LLC. warrants all new equipment manufactured by Gasboy against defective material and/or workmanship, for the warranty period specified below, when the equipment is installed in accordance with specifications prepared by Gasboy.

This warranty does not cover damage caused by accident, abuse, Acts of God, lack of surveillance of automatic recording systems, negligence, mis-application, faulty installation, improper or unauthorized maintenance, installation or use in violation of product manuals, instructions, or warnings. Under no circumstance shall Gasboy be liable for any indirect, special, or consequential damages, losses, or expenses to include, but not limited to, loss of product, loss of profits, litigation fees, or the use, or inability to use, our product for any for any purpose whatsoever.

Parts Only - During the warranty period, Gasboy will, at its option, repair or replace defective parts returned transportation prepaid to its factory.

On-Site Labor Included - Gasboy will also provide, within the Continental United States and during the warranty period, the services of an Authorized Service Representative (ASR) for on-site repair or replacement of defective parts.

Replacement Parts - Any system components that are not part of the original system order, including Island Card Readers, Pump Control Units, etc., are considered replacement parts.

Equipment	Term	Coverage
Commercial Pumps and Dispensers Full-Cabinet Consumer Pumps	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Small Transfer Pumps, Meters, Pressure Regulators	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- Excepting the Model 2020 Hand Pump, which has a 90-day warranty from date of GASBOY International's invoice.	Parts Only.
Keytrol	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Fuel Management Systems: - CFN/ Profit Point - Series 1000/Fleetkey - TopKAT - Fuel Point Readers (sold with new systems)	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- The basic warranty only applies to systems which have been started up by a Gasboy Authorized Service Representative (ASR).	Parts and Labor.
Additional Fuel Point Items: - Fuel Point Readers sold for retrofitting existing systems. - Fuel Point vehicle and dispenser components.	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts Only.
Encoders, Embossers, Modems, CRTs, and Logger Printers	Purchased with Fuel Management System (Encoders, Embossers only): 90 days from the date of start-up by a Gasboy ASR, or 180 days from date of Gasboy International's invoice, whichever occurs first.  Purchased with Fuel Management System (Modems, CRTs, and Logger Printers only): Matches system warranty.  Purchased Separately: 90 days from date of Gasboy International's invoice to the purchaser.	Purchased with System (Encoders, Embossers only): Parts only.  Purchased with System (Modems, CRTs, Logger Printers only): Matches system warranty.  Purchased Separately: Parts Only.
Air Diaphragm Pumps	Three years from date of purchase (for full warranty description, see Price List).	Parts Only.
Items not manufactured by Gasboy (ex. automatic nozzles, hoses, swivels, etc.)	Not warranted by Gasboy International (consult original manufacturer's warranty).	Not Applicable.
Replacement Parts	One year from date of Gasboy International's invoice to the purchaser.	Parts Only.

To the extent permitted by law, this warranty is made in lieu of all other warranties, expressed or implied, including warranties of freedom from patent infringement, or merchantability, or fitness for a particular purpose, or arising from a course of dealing or usage of trade. No one is authorized to vary the terms of the warranty nor may anyone make any warranty of representation, or assume any liability other than that herein stated, in connection with the sale described herein. The acceptance of any order by Gasboy International is expressly made subject to the purchaser's agreement to these conditions.



**GASBOY INTERNATIONAL LLC**

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