

FUEL POINT

***DISPENSER RETROFIT INSTRUCTIONS
FOR SPECIAL NOZZLE APPLICATIONS***

C35796



GASBOY INTERNATIONAL, LLC



GASBOY

FUEL POINT DISPENSER RETROFIT PROCEDURE FOR SPECIAL NOZZLE APPLICATIONS

C35796

REV. 05/15/03

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 Retrofit Procedure For Special Nozzle Applications Manual* is provided to assist you in installing the following retrofit kits on your Fuel Point-equipped dispensers:

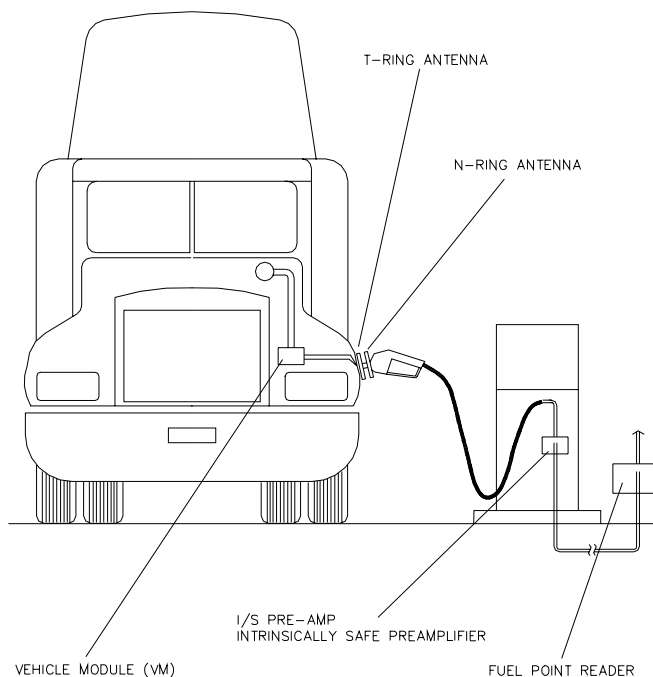
- gasoline and diesel nozzles larger than 1"
- compressed natural gas (CNG)
- propane nozzles

Faulty installations are the major cause of system malfunctions. The dispensers must be retrofitted as described in this manual to ensure the reliability and proper operation of the Fuel Point system. 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 will consist 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 Dispenser and Hose Retrofit Kits
- T-Ring Tank Antenna (See Manual C35699)
- Vehicles equipped with materials from Vehicle Installation Kits (See Manual C35699)
- Vehicle Module(s) (VM's)



FUELING SEQUENCE

Fueling a vehicle equipped 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 VM via nozzle (N-Ring) and tank (T-Ring) antennas to the Fuel Point Reader (FPR)
2. FPR communicates with fuel management system (FMS) CFN or 1000 FleetKey unit.
3. FMS authorizes and records vehicle data.
4. When you remove the nozzle, 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 INSTALLATION POINTERS - READ BEFORE PROCEEDING

We highly recommend modifying the hoses at a workbench using appropriate tools and components. For reliable and long lasting installations, pay particular attention to the following points as you read the remainder of this manual.

- Handle *internal* hose wire assembly carefully. Make sure that it doesn't become nicked or cut. Nicked or cut wire within the hose will allow fuel to enter and wick past o-ring seals inside the jacket leaking fuel inside the connectors and inside the amplifier j-box assembly in the base of the pump.
- If the system does not read the vehicle module after installation of the antenna, first check for continuity between the N-ring and the I/S preamp located in the J-box amplifier.
- PVC breakaways and nozzle covers are designed to conceal the breakaway connectors and wiring against vandalism. The covers must be properly installed.
- With nozzle hung on pump, add weep or drainage holes in the breakaway covers.

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, 4 are shared by up to 8 hoses. DL3,4 indicate the communications between the FP Reader and FMS unit. DL1,2 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 DL3,4. 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/out) you must delay about 5 seconds if communications is lost.*

COMPONENT OVERVIEW

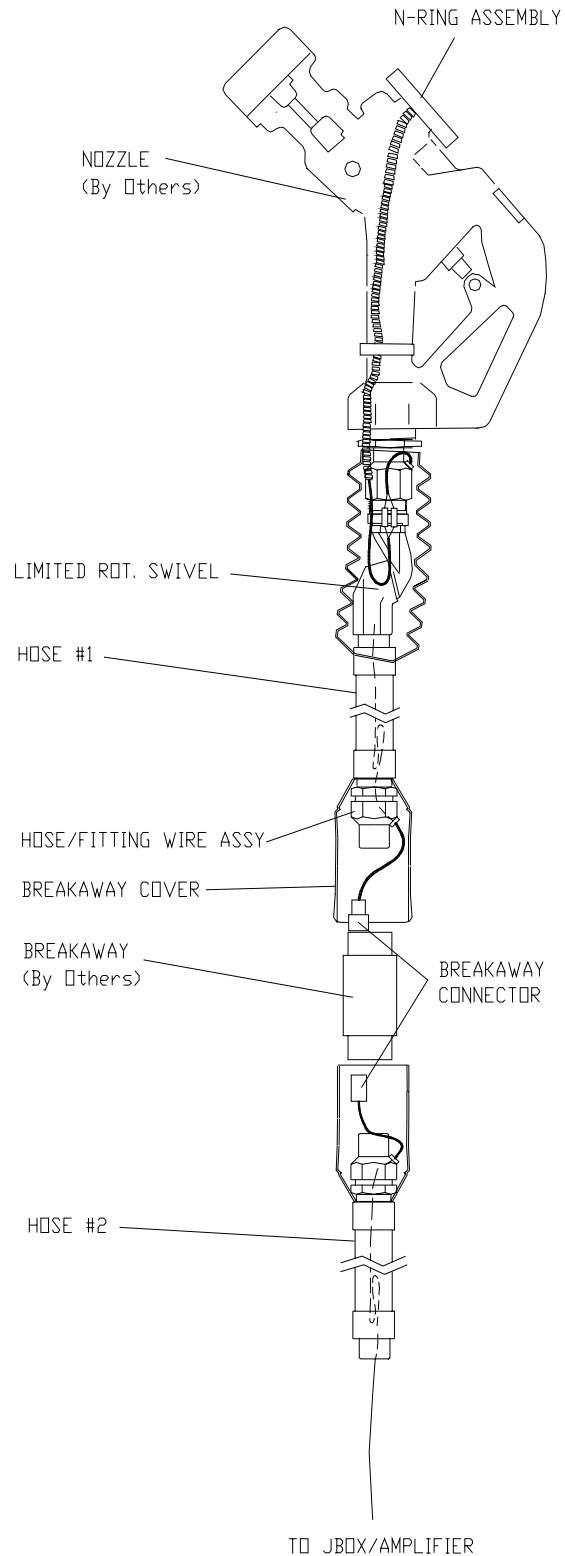
As you read the following descriptions, refer to the drawing at the right for an overall view of the assembled hose.

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

Kits are available in a variety of configurations 1" and 1-1/4" gas or diesel, CNG and Propane. Kits can be assembled to meet most popular applications based on the breakaway location. Factory assembled hose assemblies are available for internal wire applications. Kits include parts shown in the diagram at right. Nozzles and fuel breakaway and hoses are to be supplied by the installer. Factory-wired hoses include 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

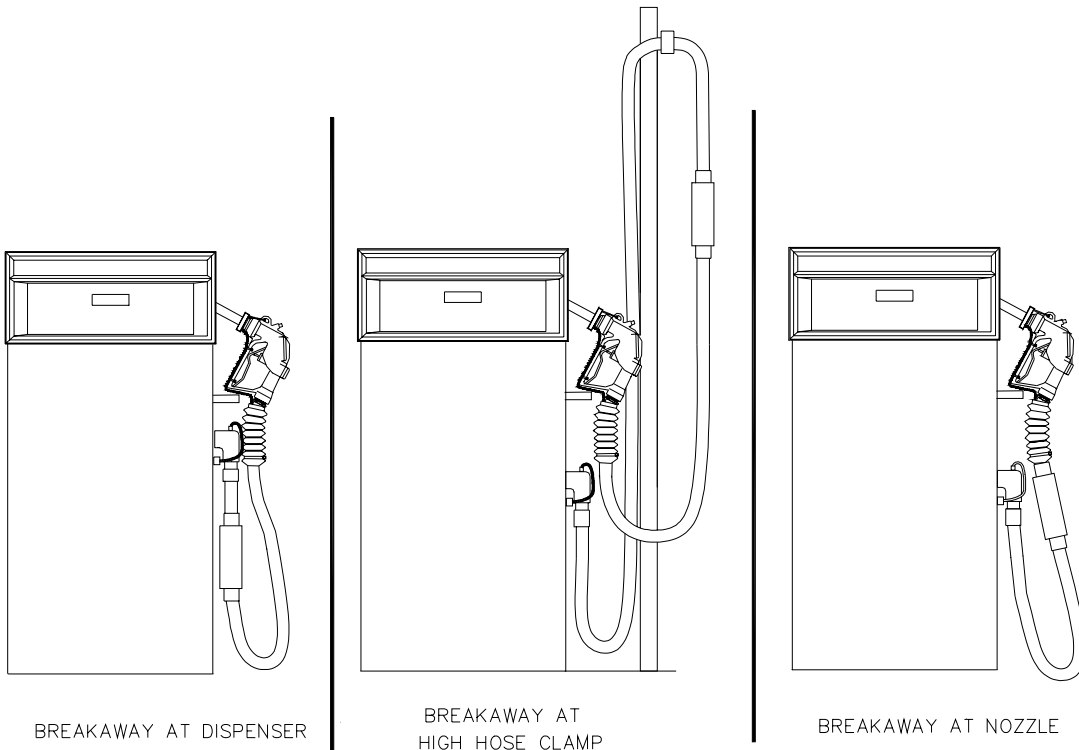
GETTING STARTED

GENERAL INFORMATION

The following procedures assume the dispenser to be modified 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 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 covered at all times to make it invisible to the user and to discourage tampering.

Fuel Point dispensers using 1" diameter hoses 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.

TESTED NOZZLES FOR USE WITH SPECIAL DISPENSER RETROFIT KITS

Refer to the list of nozzles pre-approved for use with Fuel Point and this manual and check each vehicle type for the following:

- Install a test N-ring on the nozzle. For each vehicle type, 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.

Nozzle MFR.	Gas/Diesel	CNG 3000	CNG 5000	Propane
OPW	1290	~	~	~
Emco/Wheaton	Posi-Lock	~	~	~
Staubli	~	CMV 08	~	~
Snap-Tite	~	NGVC2830	~	~
Sherex	~	~	C5000	~
Gascard	~	~		LG3
Fischer	~	~		M635-6

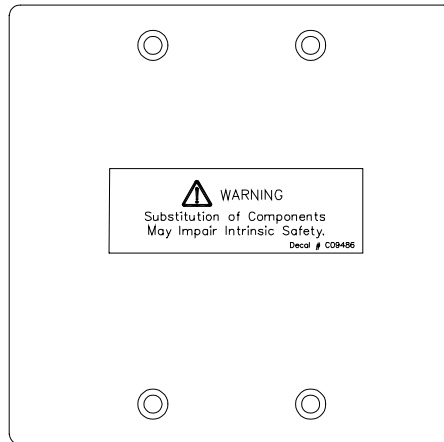
For other special applications, call GASBOY Technical Service at 1-800-444-5529.

DISPENSER RETROFIT KITS

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

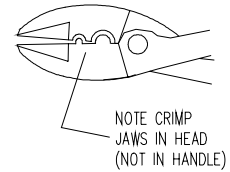
C07112 One Hose
C07116 Two Hose



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)



SPECIAL INTERNAL WIRE HOSE RETROFIT KITS

Retrofit Kits includes Fuel Point specific parts required to modify existing pumping units. , Dual Plane swivel included with 1" kits, Single Plane with 1-1/4" kits. Designed for use with most popular non-UL nozzles (1290 Series and Posilock). **Nozzles, Breakaway and Hoses to be furnished by the installer:**

1" P/N	Description	Max Hose Length
C07001	Standard Hose Retrofit Kit	13' (1+12)/(12+1')
C07127	High Hose Retrofit Kit	13' (6.5+ 6.5')
C07128	Extended Hose Retrofit Kit	21' (1+20')
C07129	Extended /High Hose Retrofit Kit	21' (06+15')
1-1/4" P/N	Description	Max Hose Length
C07427	Standard Hose Retrofit Kit	13' (1.5'+12)/(12+1.5')
C07428	Extended Hose Retrofit Kit	21' (1.5' + 20)

Special Internal Wire Factory-Wired Hose Assembly Kit

Special Factory-Wired hose assembly kits include Fuel Point components factory wired in hoses, complete with swivel, fittings and hose wires fully assembled. **Nozzles and breakaway to be furnished by the installer.**

1" P/N	Description	Max Hose Length
C07442	Standard Hose Assembly	13' (12+1')
C07443	Standard Hose Assembly	13' (1+12')
C07444	High Hose Retriever Hose Assembly	13' (6.5+ 6.5')
C07445	Extended Hose Assembly	21' (1+20')
C07446	Extended /High Hose Assembly	21' (06+15')
1-1/4" P/N	Description	Max Hose Length
C07429	Standard Hose Assembly	13' (1.5'+12)/(12+1.5')
C07430	Extended Hose Assembly	21' (1.5' + 20)

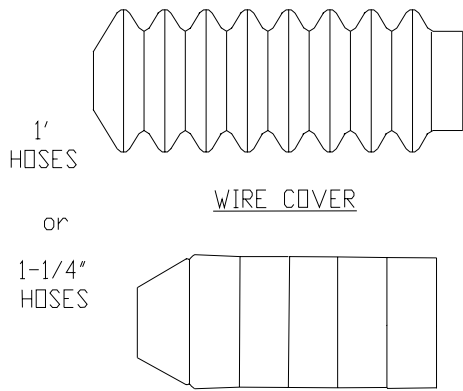
Special Alternate Fuel Hose Retrofit Kits

Special Factory Retrofit Kits for Alternate Fuels (3000 or 5000 PSI CNG & Propane) include Fuel Point components factory-wired . Hose wires can be modified to fit most applications.

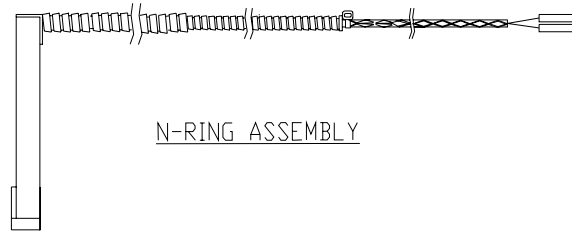
C07450	Standard Hose Assembly	26' (06'+20')
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INTERNAL WIRE RETROFIT KITS

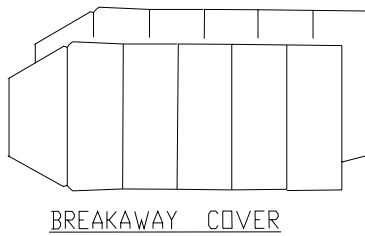
ITEM #1



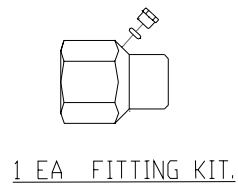
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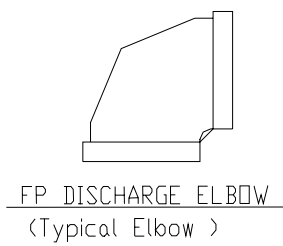
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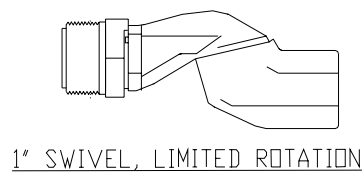
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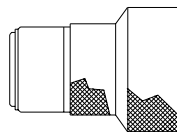
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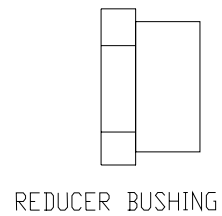
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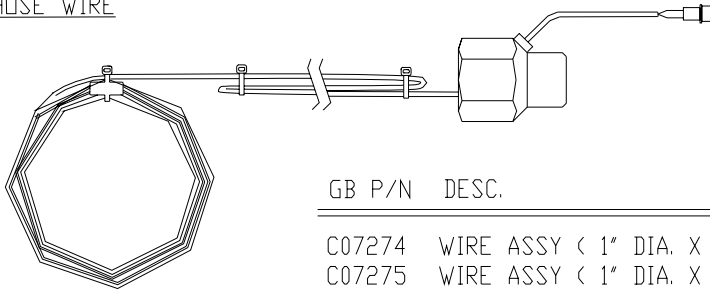
or



ITEM #7



SHORT HOSE WIRE



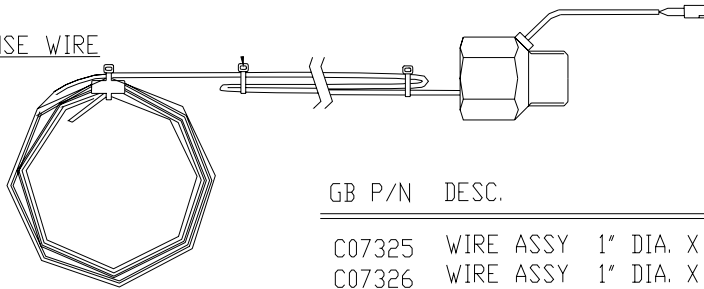
GB P/N DESC.

C07274 WIRE ASSY (1" DIA. X 1 FT. WHIP HOSE)
 C07275 WIRE ASSY (1" DIA. X 8 FT HOSE MAX)

C07423 WIRE ASSY 1-1/4" DIA. X 1.5 FT. WHIP HOSE
 C07424 WIRE ASSY 1-1/4" DIA. X 6-8 FT HOSE

1 EA. SHORT HOSE WIRE (FROM LIST)

LONG HOSE WIRE



GB P/N DESC.

C07325 WIRE ASSY 1" DIA. X 6-8 FT HOSE MAX.
 C07326 WIRE ASSY 1" DIA. X 12-15 FT HOSE MAX
 C07327 WIRE ASSY 1" DIA. X 20 FT HOSEMAX.

C07425 WIRE ASSY 1-1/4" DIA. X 12-15 FT HOSE
 C07426 WIRE ASSY 1-1/4" DIA. X 20 FT HOSE

1 LONG HOSE WIRE (FROM LIST)

USING THIS MANUAL

The remainder of this manual contains procedures for assembling your antenna and hose. Section 3 contains the steps for Internal Wire hoses; Section 4 contains the steps for alternate fuels. The steps for hose retrofit are summarized below:

- **Internal Wire Hose Kits**
 - Step A: Disassemble Hose
 - Step B: Construct Hose Assemblies
 - Step C: Final Assembly
 - Step D: Reassemble Hose to Pump
 - Step E: Complete N-Ring Wiring
 - Step F: Apply Power and Check Installation

- **Alternate Fuels Kits**
 - General Information
 - Alternate Fuels Kit Components
 - Step A: Disassemble Hose
 - Step B: Construct Hose Assemblies
 - Step C: Final Assembly
 - Step D: Reassemble Hose to Pump
 - Step E: Complete N-Ring Wiring
 - Step F: Apply Power and Check Installation

Section 3

INTERNAL WIRE RETROFIT KITS

STEP A: DISASSEMBLE HOSE

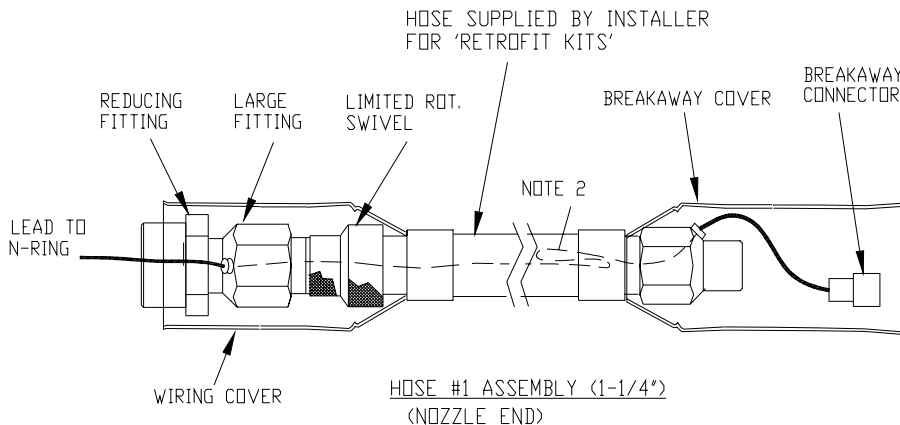
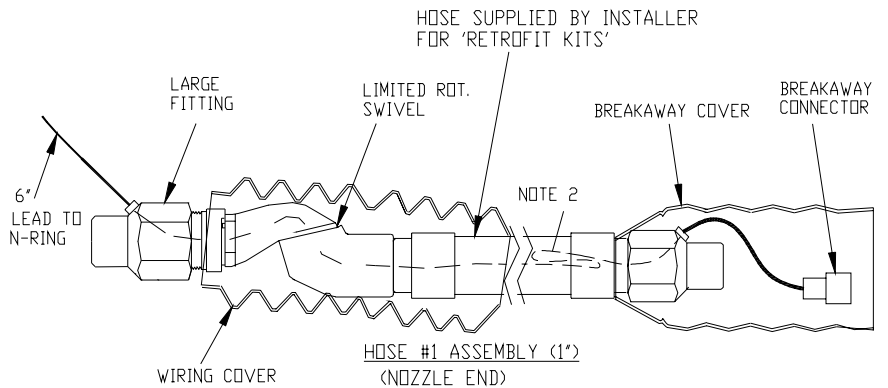
1. Turn off dispenser power.
2. Remove hose assembly at the discharge elbow. Be sure to put container under fitting to avoid spillage.
3. Drain and wipe hose to remove fuel residue and move to a safe, well-ventilated location away from the fueling site,
4. For hose retrofit kits, follow Steps B through 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

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.**

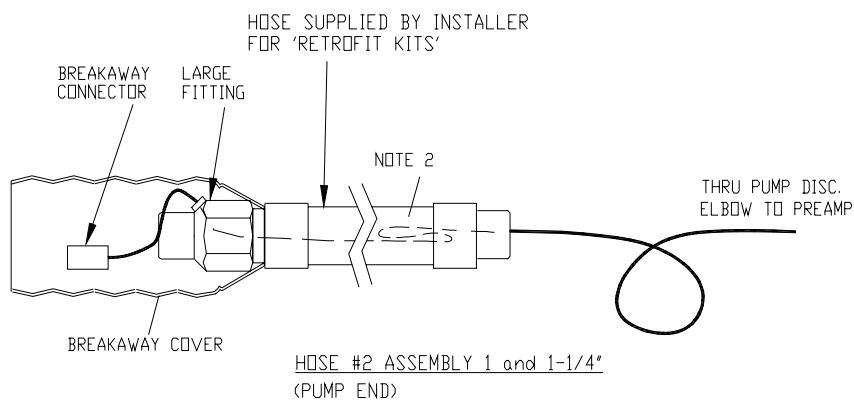
1. Refer to the pump diagram found earlier in this manual and determine the hose style required (breakaway at nozzle, pump, or mid-hose at high hose clamp).
2. Starting at the breakaway end, carefully snake loose end of appropriate wire assembly through the hose, taking care not to disturb the slack 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)

- 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.
- Assemble PVC cover as shown and proceed to **STEP C: FINAL HOSE AND NOZZLE ASSEMBLY**.

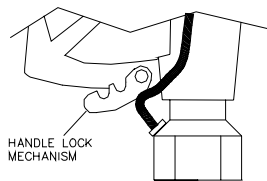


STEP C: FINAL ASSEMBLY

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.

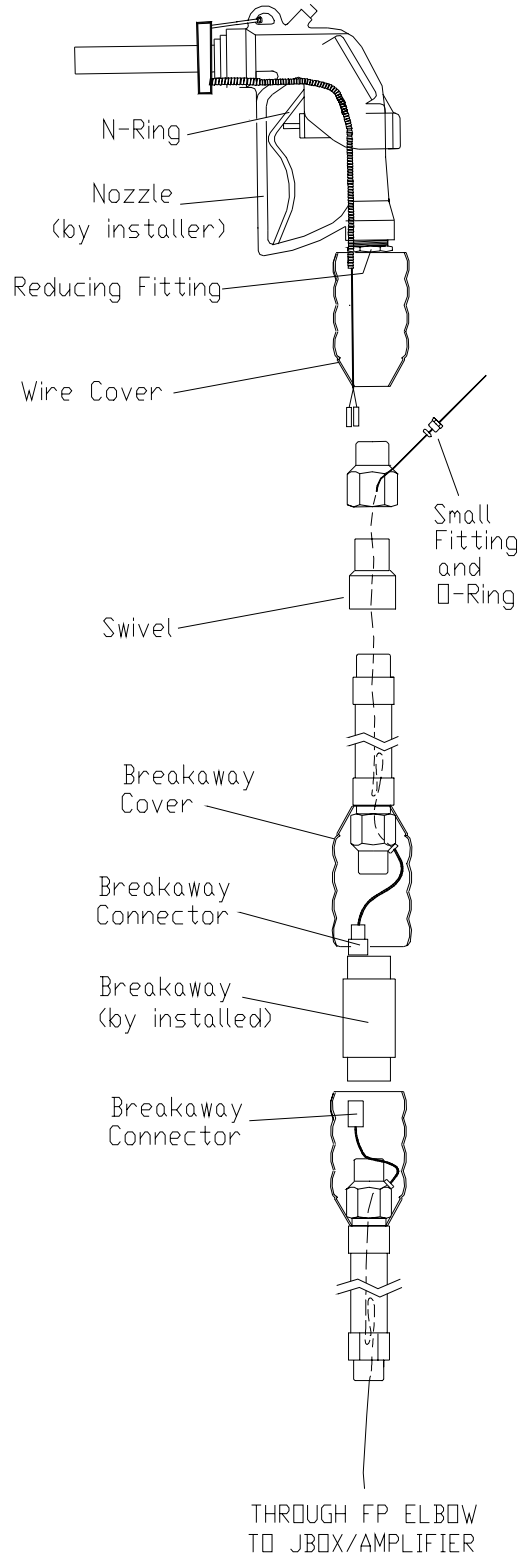
Assembly Note: To strip hose wire, first score outer jacket using 12AWG stripper setting, then strip using 10AWG setting.

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.



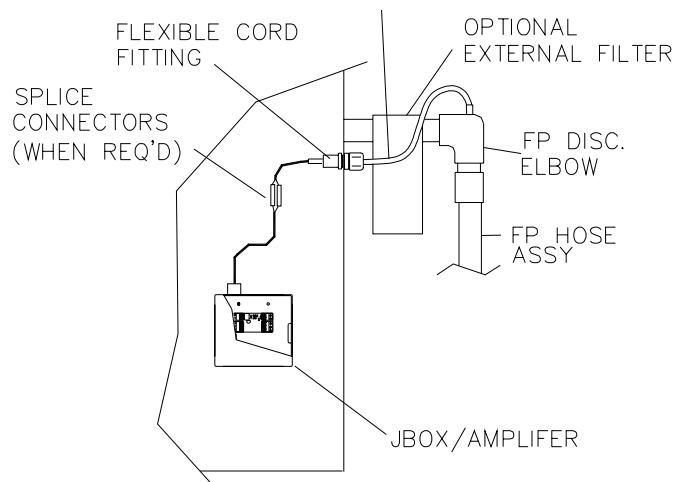
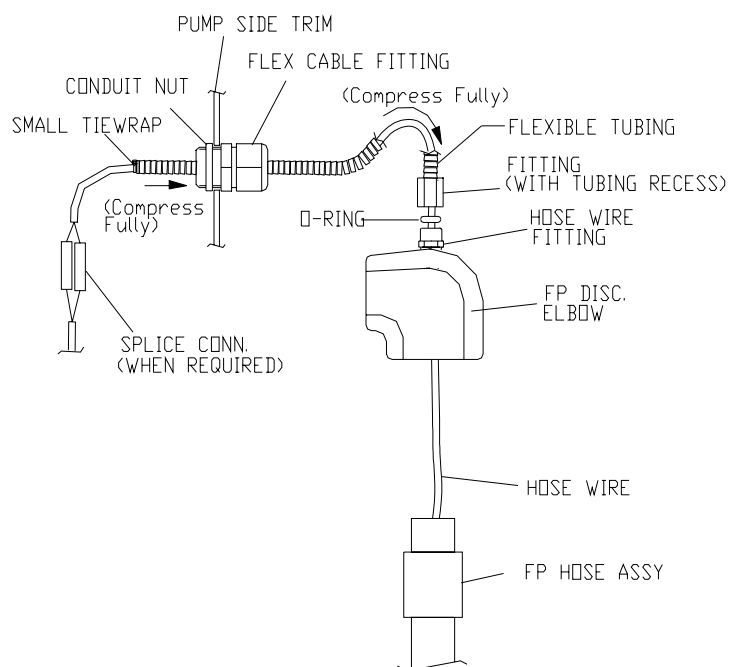
STEP D : REASSEMBLE HOSE TO PUMP

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.

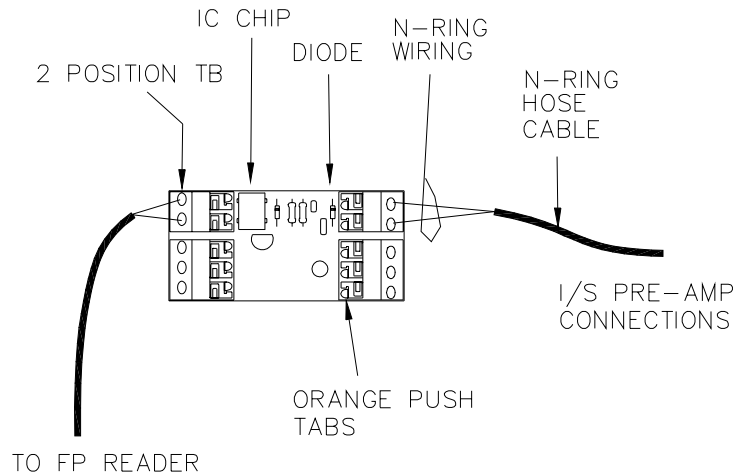
3. **Complete hose wire installation:**
NOTE: Use UL approved thread sealant on all tapered threads.

- a. Remove the existing discharge elbow and discard. Install Fuel Point elbow from kit.
- 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).

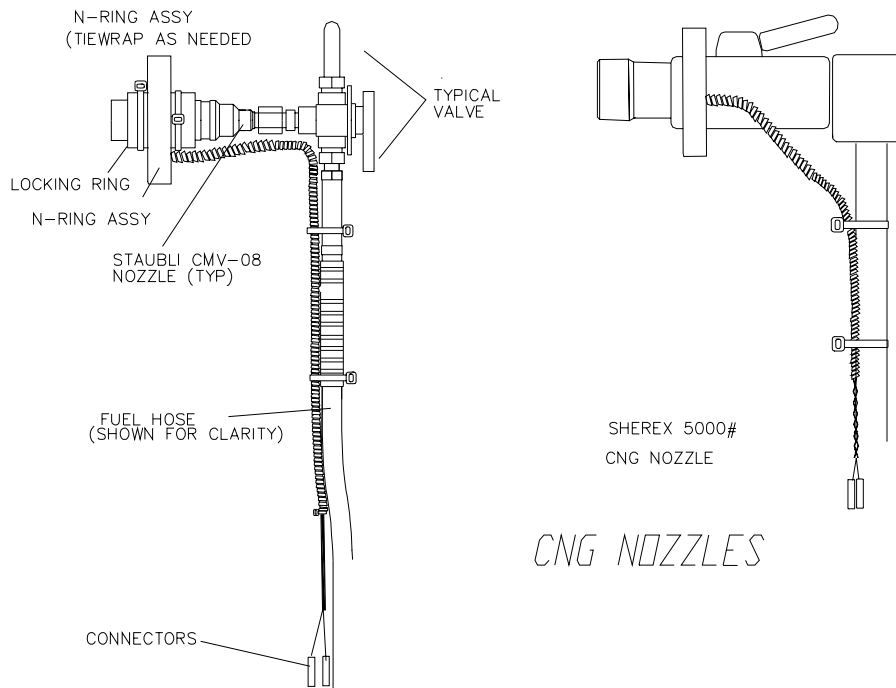
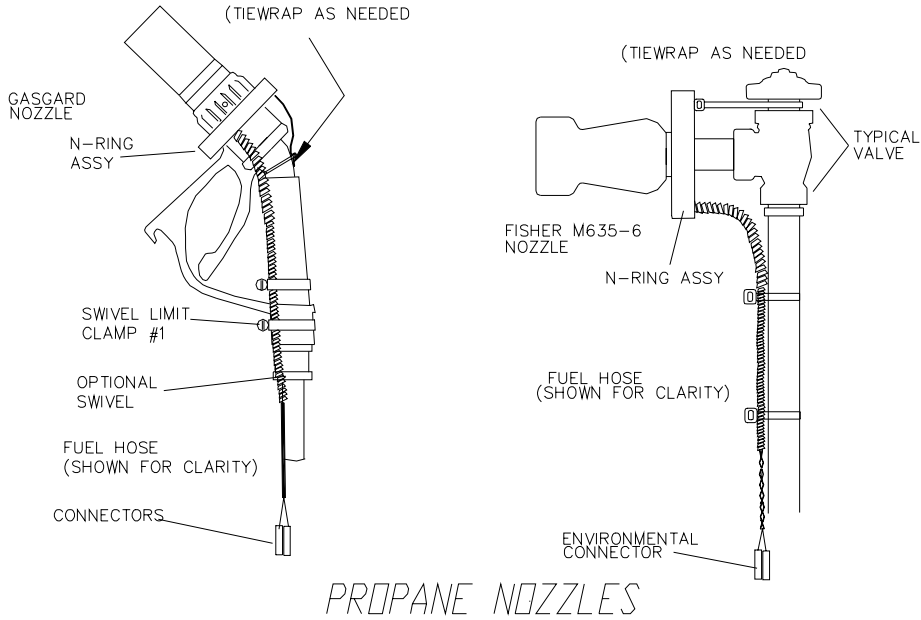
WARNING: A nick or cut in the hose wire located within the hose will allow fuel to enter the jacket interior and travel past o-ring seals. Fuel will be found in connectors and/or J-box. When this occurs, immediately remove the pump from service and install new hose wiring.

Section 4

RETROFIT KITS FOR ALTERNATE FUELS

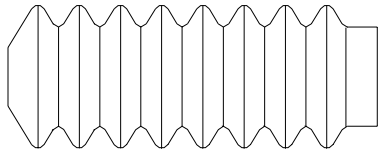
GENERAL INFORMATION

Fuel Point Alternate Fuel Kit is adaptable to popular fuels and nozzles (See Complete List of Tested Nozzles in the front of this manual).



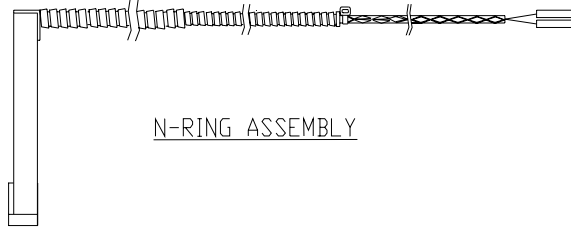
ALTERNATE FUELS KIT COMPONENTS

ITEM #1



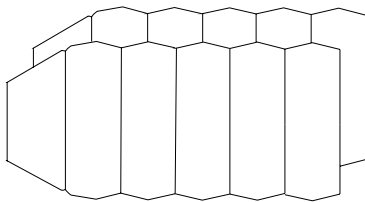
N-RING ASSEMBLY

ITEM #2



N-RING ASSEMBLY

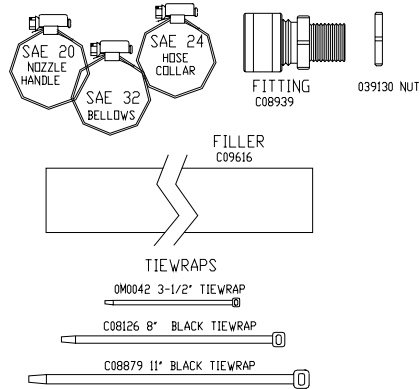
ITEM #3



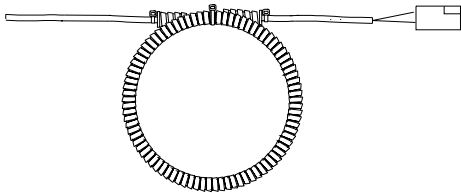
BREAKAWAY COVER

ITEM #10

SMALL PARTS KIT (C07451)

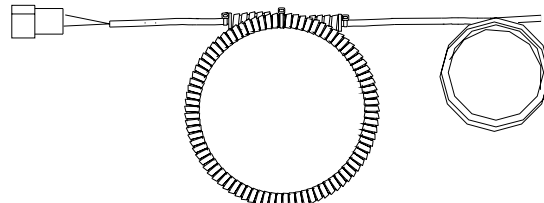


ITEM #8



HOSE WIRE (NOZ. END)

ITEM #9



PUMP WIRE

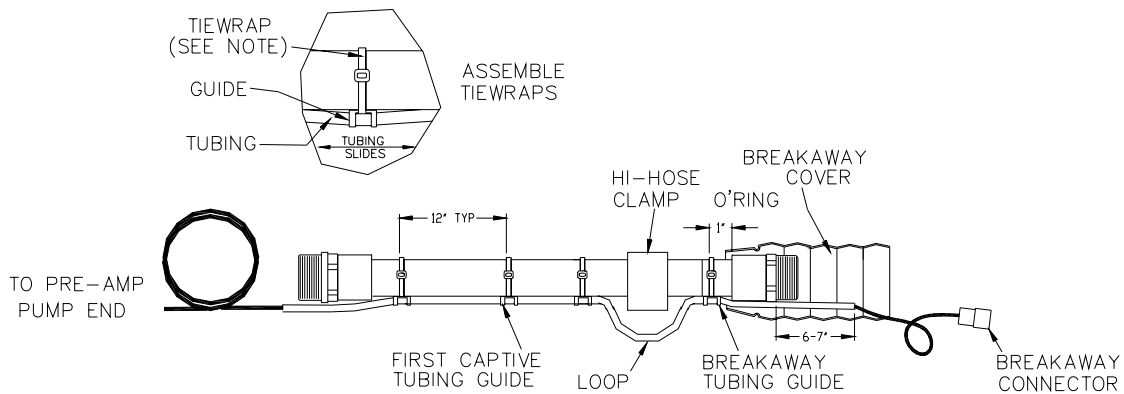
STEP A: DISASSEMBLE HOSE

1. Turn off dispenser power and fuel.
2. Remove hose assembly at discharge elbow or filter. For high hose retriever applications, remove the clamp for re-assembly later.
3. Move to a safe location away from fueling site.

STEP B: CONSTRUCT HOSE ASSEMBLIES

Hose 1 Assembly (Pump End)

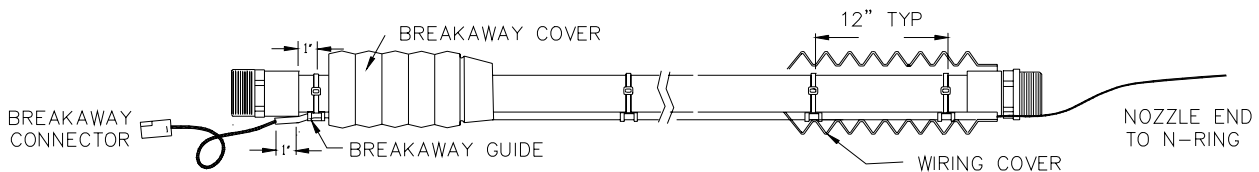
1. Locate the appropriate wire assembly from the kit and assemble to the hose with 8" tiewraps approximately at 12" centers (see diagram below). Slide tiewraps between the tubing and the guide; tiewraps must be assembled to allow the wire assembly to slide through the plastic guides (see diagram). Do 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.)
2. Assemble hose and breakaway covers.



STEP B: CONSTRUCT HOSE ASSEMBLIES (CONT'D)

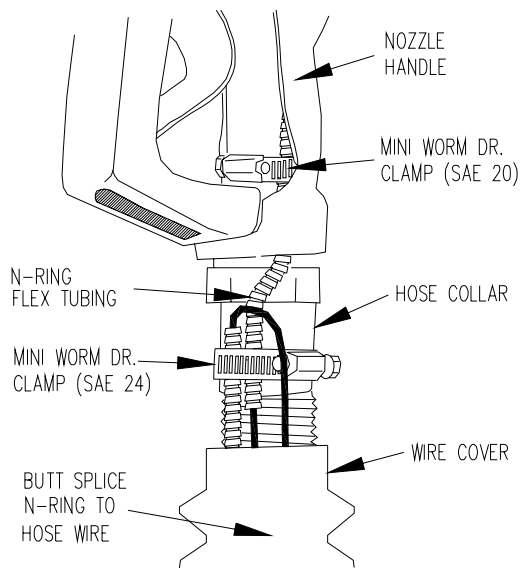
Hose 2 Assembly (Nozzle End)

3. Assemble the Nozzle End hose repeating Step 1 above.
4. Hose wire tubing is supplied for maximum length hoses normally required for this application. For shorter hose lengths the tubing can be cut to desired length using a hack saw and then deburred using a small file. To shorten tubing, first measure and mark tubing for length required. Then, remove the small tiewrap at the end opposite the connector and slide tubing off the cable and cut to length. Reassemble bushings and tubing, compress slightly and hold in place using the small tiewrap supplied with the kit.
5. Assemble hose and breakaway covers and proceed to **Final Assembly**.

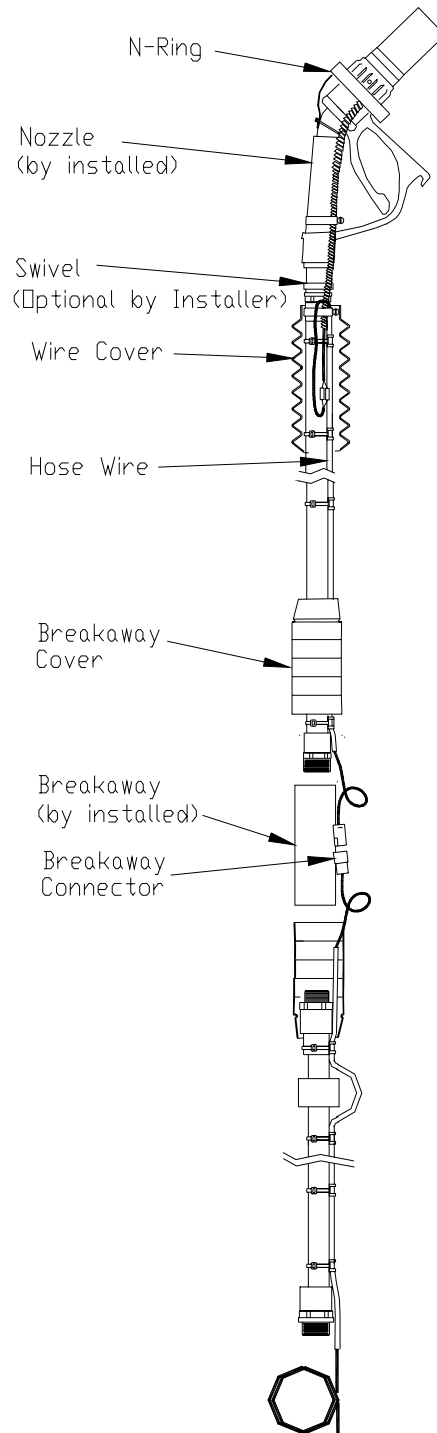


STEP C: FINAL ASSEMBLY

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.



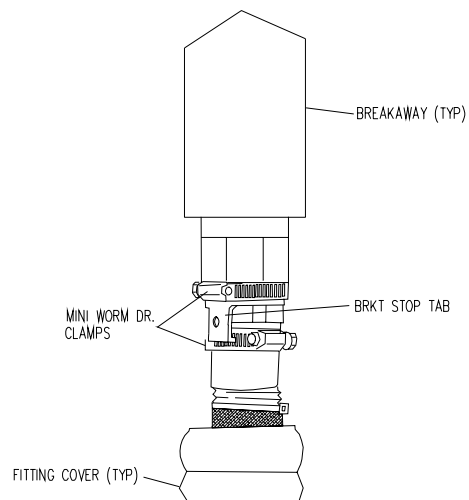
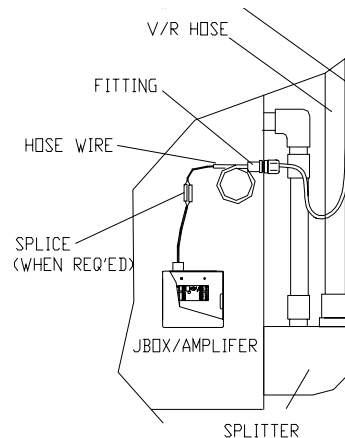
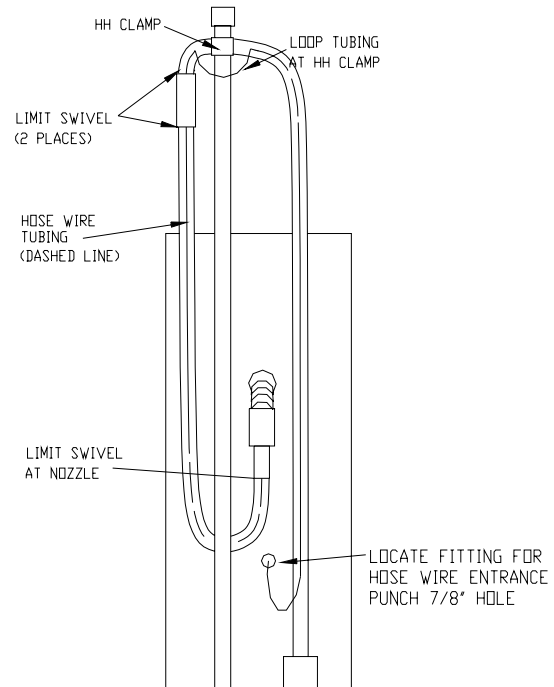
THROUGH FP ELBOW
TO JBOX/AMPLIFIER

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 hose. 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**.

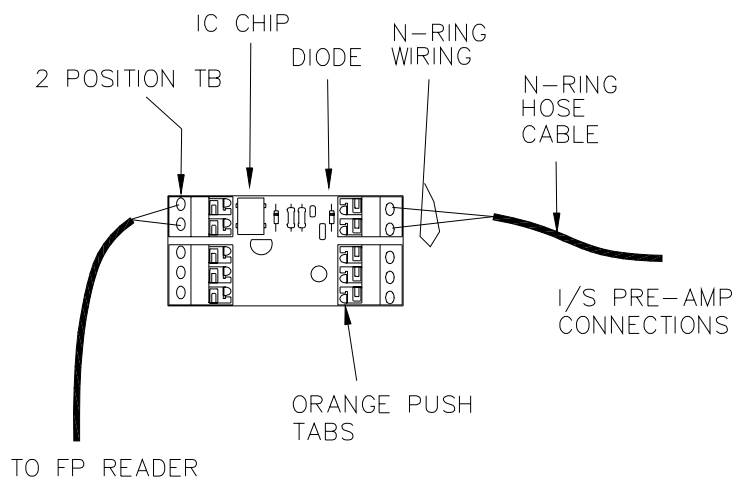
NOTE: Excess hose wire length can be coiled and stored within the pumping unit.

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

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