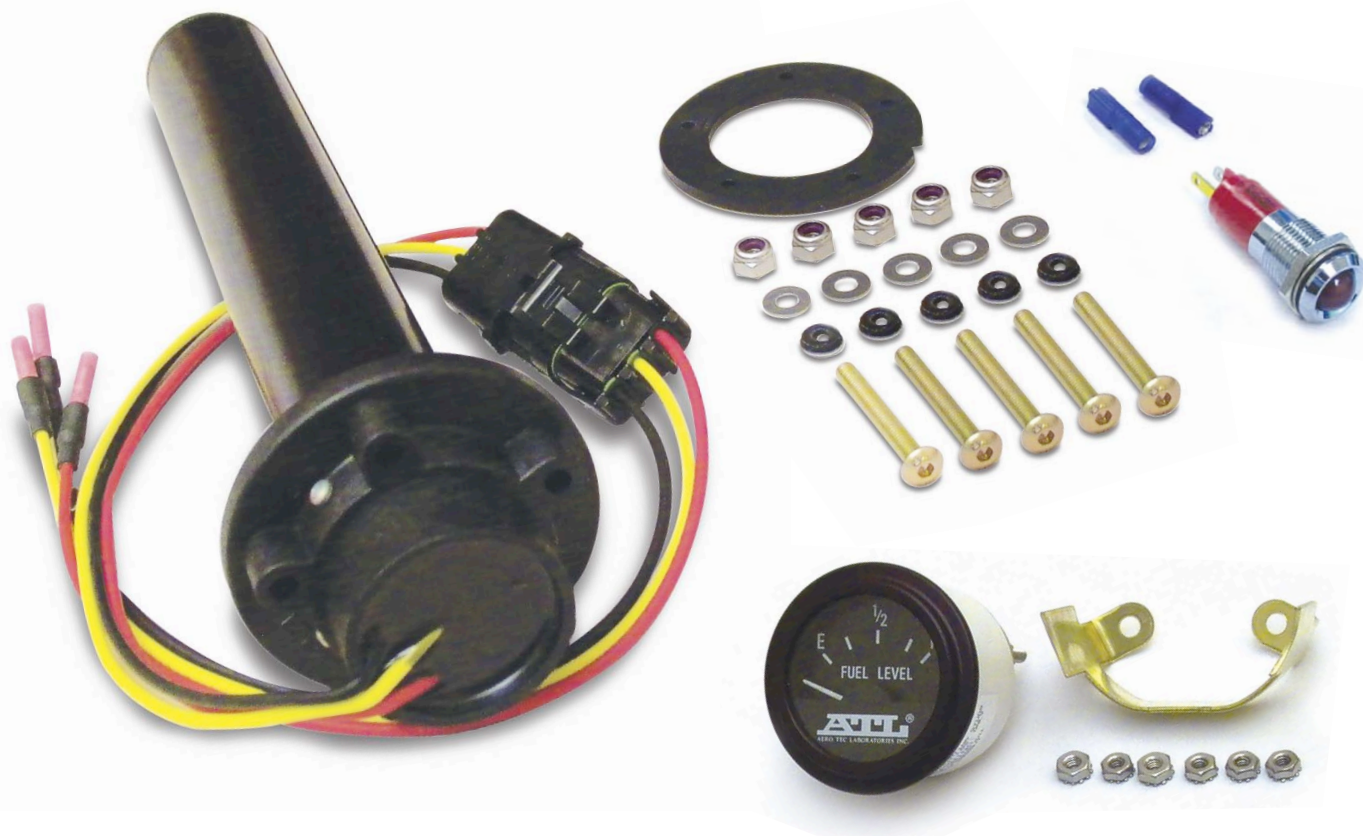


**ATL****ATL**<sup>®</sup>

# "ALL-FUEL" LEVEL GAUGE INSTALLATION GUIDE

Enclosed, Float-Style Level Sensing Probe with Optional Lighted Dash Gauge and Low-Level Lamp



- Suitable for use with Gasoline, Diesel, E-100, E-85, E-50, E-10, JP-8 and Methanol.
- 12 Volt standard. Also available in 6V and 24V. Custom voltages by special order.
- Color coded electrical leads and quick disconnect.
- Rugged design with anodized aluminum body and potted electrical circuit.
- Accurate, 3-terminal, multi-stage magnetic switch-based measurement system.
- Easy to install and maintain. Compatible with most ATL Fuel Cells.
- Probe available in five standard lengths: 8", 9", 10", 12", 13", 14" Custom lengths by special order.
- Standard Ohm range 240(Empty) to 33(Full). Custom Ohm ranges by special order.

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**ATL**

DS-584-229

## This Installation Guide is For Use With the Following ATL Products:

### COMPLETE FUEL LEVEL KITS:

INCLUDES FUEL PROBE, LEVEL GAGUE AND LOW-LEVEL LAMP (240 to 33 Ohm)

- KS 215K-8 .....8" Level Sensing Probe & Gauge**
- KS 215K-9 .....9" Level Sensing Probe & Gauge**
- KS 215K-10 ...10" Level Sensing Probe & Gauge**
- KS 215K-12 ...12" Level Sensing Probe & Gauge**
- KS 215K-13 ...13" Level Sensing Probe & Gauge**
- KS 215K-14 ...14" Level Sensing Probe & Gauge**

***Your ATL Fuel Level Probe and Gauge Comes With The Hardware You Need For Installation.***

### INDIVIDUAL COMPONENTS:

- Level Sensing Probe, 240 to 33 Ohm

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- KS 210-8 .....8" Level Sensing Probe
- KS 210-9 .....9" Level Sensing Probe
- KS 210-10 .....10" Level Sensing Probe
- KS 210-12 .....12" Level Sensing Probe
- KS 210-13 .....13" Level Sensing Probe
- KS 210-14 .....14" Level Sensing Probe
  
- KS 116 .....Lighted Fuel Gauge, 240 to 33 Ohm
  
- KS 209 .....Low Level LED Lamp, 12 Volt

### Level Sensing Probe Hardware Includes:

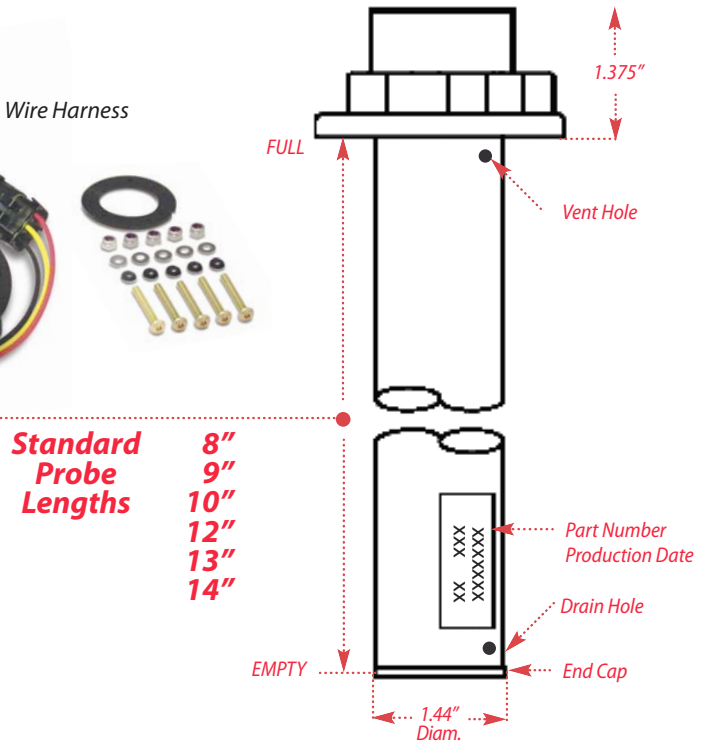
- 1 .....Level Probe, 12V, 3-Terminal  
Standard Range 240 to 33 ohms
- 1 .....Level Probe Gasket
- 1 .....Wire Harness and Quick Disconnect
- 5 .....10-32 x 1.5" Machine Screws
- 5 .....#10 Seal-Washers
- 5 .....#10 Lock-Washers
- 5 .....10-32 Elastic Stop Nuts
- 1 .....Installation Procedure  
Bulletin #DS-584-2Z9



Probe & Wire Harness

### Low-Level LED Lamp Hardware Includes:

- 1 .....LED Lamp (Red), 12V, 2-Terminal
- 2 .....Crimp Connectors

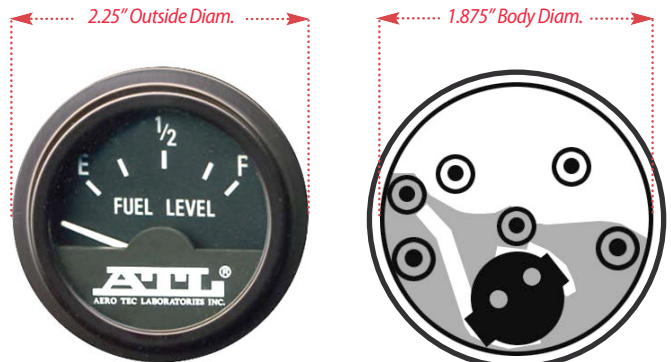


### Fuel Gauge Hardware Includes:

- 1 .....Lighted Fuel Gauge  
Standard Range 240 to 33 ohms
- 1 .....Brass Mounting Bracket
- 4 .....Terminal Nuts
- 2 .....Mounting Nuts



Gauge Requires a 1.875" Diam. hole to mount in dash.



## Examples of Typical Level Probe Installations on ATL 6" x 10" Fill Plates

**TF703-8**



Suitable for use with all TF703 fill plates:

- TF703-6
- TF703-8
- TF703-10

**TF703-8-LS**



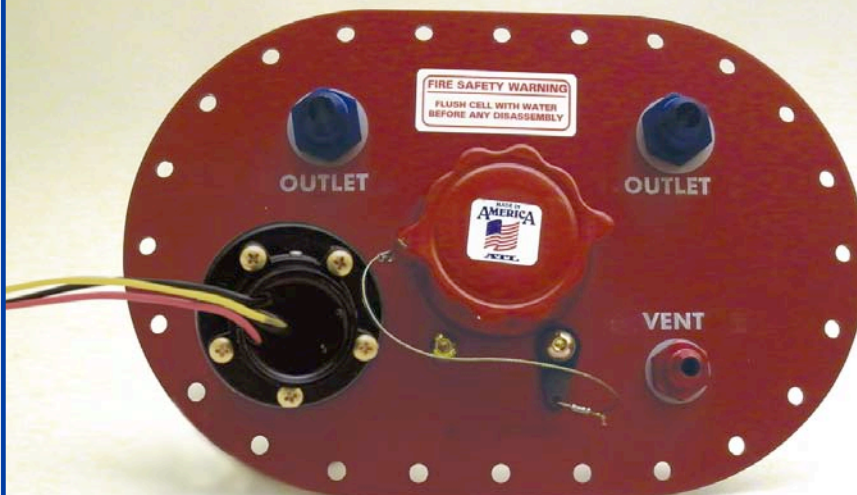
**TF600-8**



Suitable for use with all TF600 fill plates:

- TF600-6
- TF600-8
- TF600-10

**TF600-8-LS**



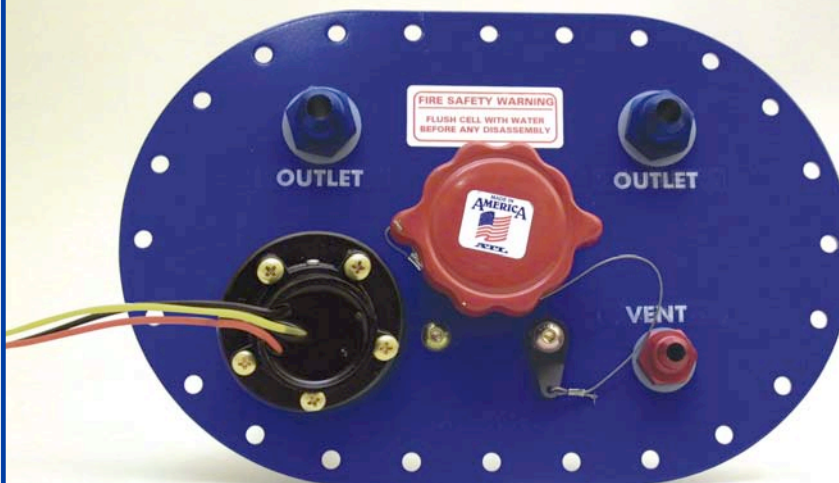
**TF195-8**



Suitable for use with all TF195 fill plates:

- TF195-6
- TF195-8
- TF195-10

**TF195-8-LS**



## **WARNING:**

***Gasoline, Alcohol and Diesel are flammable and toxic; exercise extreme caution.***

**Before you work on any fuel bladder, be sure that it has been completely drained of fuel and inerted by rinsing with water. Read ATL Product Safety Bulletin # DS-381 (p6). Level Probe installation on TF193, TF193A, and TF525 Fill Plates requires modification of the fill valve for clearance. ATL's Level Kits are intended for use with ATL Safety Fuel Cells. If you are installing onto a non-ATL fuel cell, check for compatibility with manufacturer and follow their guidelines.**

***Bypass this section if your Level Probe was installed and calibrated by the ATL factory.***

### **1. DRILL FUEL CELL FILL PLATE (See Figure 1)**

**Remove the fill plate from your fuel cell.** From the template found on the opposite page, cut along the dotted line and use it as your guide to drill holes in the fill plate. Orient the template on the fill plate so that the "Indexing Notch" indicated on the drawing points

toward the side of the fuel cell so that the wire harness will face that direction. Mark the Indexing Notch onto the fill plate with a pen or pencil. Drill a 1.5" diam. hole for the probe and 0.2" diam holes for the 5 machine screws.

### **2. INSTALL SENDER IN FILL PLATE (See Figures 2)**

Place gasket on probe tube and align index notch with the wires on top of the probe. Pass the probe tube through the hole in the fill plate and align the probe's gasket notch with the index mark you made on the plate. On each of the five screws, place a sealing washer with the rubber side facing down. Pass screws through level probe screw holes and fill plate and then apply the second washer and locking nut to each screw.

Torque screws to 20-25 inch lbs. No sealant is required on the gasket for a proper seal.

Remove the safety foam from your fuel cell and using a serrated knife, cut a 1.75" diam. channel out of the foam to accommodate the probe tube, then place foam back inside of bladder. **DO NOT** reinstall the fill plate on the bladder yet - you will need to test the probe and gauge in the next step.

### **3. HOOKUP ELECTRICAL WIRING AND THE TEST GAUGE (See Figure 2)**

***WARNING: Always disconnect vehicle battery before attempting any electrical work.***

If applicable, install ATL fuel gauge in dashboard, then run wiring from gauge to fuel cell. Connect the Black wire from the Probe to the "G" or Ground terminal on your gauge. Connect the Red wire to the "S" or Sender terminal on your gauge. Connect the yellow wire to the Gold terminal on the Low Level LED Lamp and connect the silver terminal on the lamp to Ground. Connect the "I" terminal on the Fuel Gauge to ignition (for light).

Once the electrical connections are made, turn probe upside down (to simulate Full indication) and then right side up again (to simulate Empty indication). See Troubleshooting section below if readings are inaccurate or probe does not respond.

Re-install the fill plate on the fuel cell ensuring the 24 flange bolts are tightened to 40 inch lbs. of torque.

### **USING CUSTOMER'S OWN FUEL LEVEL GAUGE**

For those wishing to retain their vehicle's original (OEM) fuel gauge, an ATL Level Probe can be ordered to match its resistance range. You must supply ATL with the resistance range (full and empty ohm

readings) of your OEM gauge, i.e.:

ATL = 240 to 33 Ohm, GM = 0 to 90 Ohm, VDO = 70 to 0 Ohm, Toyota/Nissan = 100 to 6 Ohm.

### **TROUBLESHOOTING:**

The Fuel Level Gauge does not move :

- Check all wiring
- Check that the ignition is on AND battery connected

- Check that a fuse is not blown
- Double check that the Ohm range on the gauge matches the Ohm range of the probe.

*Aligns with Notch in Rubber Gasket*

FIGURE 1: FILL PLATE DRILLING TEMPLATE

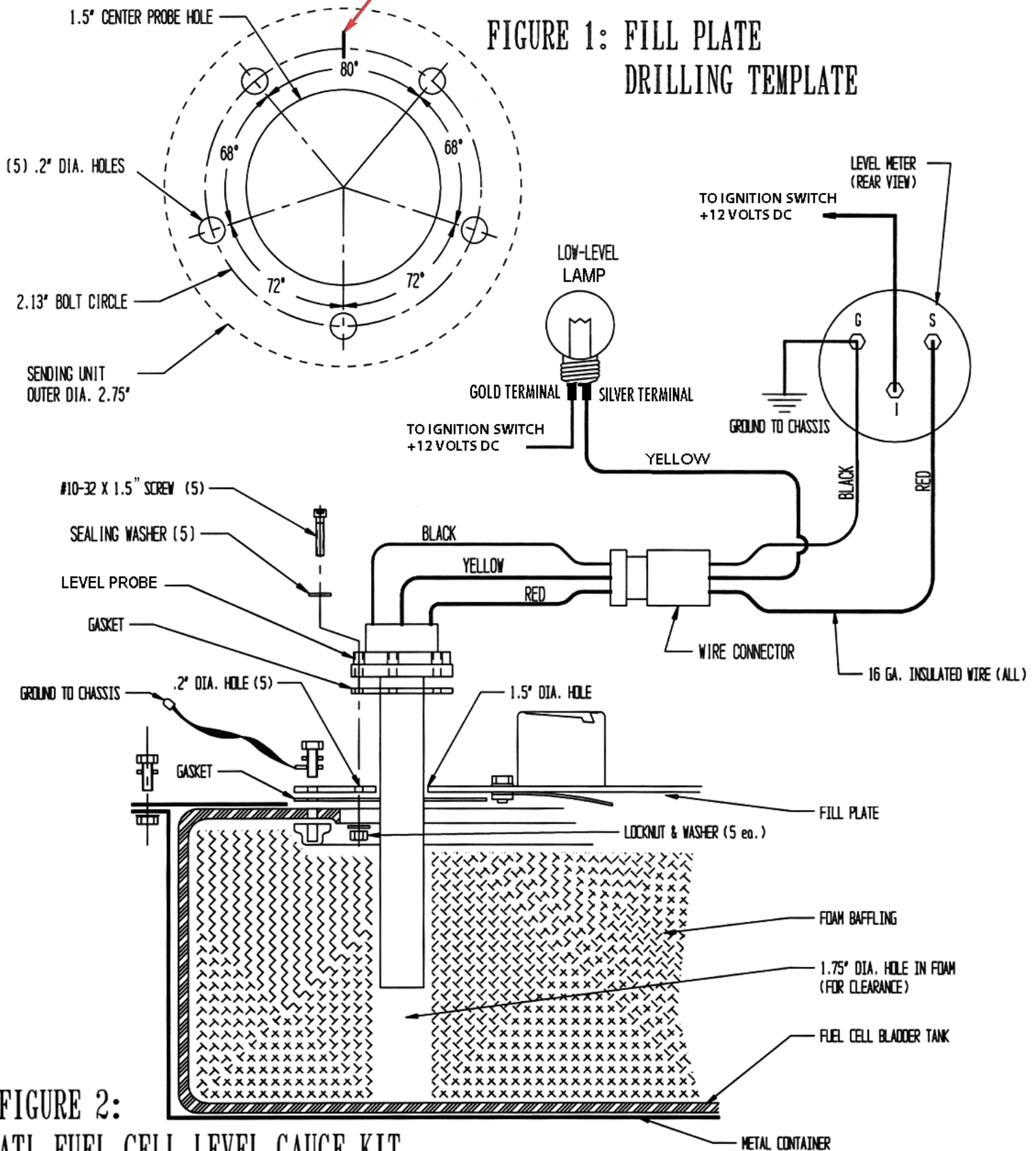


FIGURE 2:  
ATL FUEL CELL LEVEL GAUGE KIT  
TYPICAL INSTALLATION DIAGRAM FOR 3-WIRE PROBE

## **ATL SAFETY BULLETIN #DS-381**

IMPORTANT PRECAUTIONS IN USING ATL RACING EQUIPMENT:  
FUEL CELLS, CHECK VALVES, DUMP CANS, REFUELING RIGS,  
VENT VALVES, DRY-BREAK COUPLERS, FITTINGS, ETC.

PLEASE READ THOROUGHLY  
AND REFER TO CURRENT ATL COMPETITION EQUIPMENT CATALOG

1. **TEMPERATURE** – Racing fuel cell bladders rely on deformability to ward off impact and puncture. Decreasing temperatures may limit pliability and could thereby reduce the cell's effectiveness. Most ATL racing type fuel cells are designed for normal competition environments of 30°F to 120°F (0° to 50°C). Use below -20°F (-30°C) may diminish performance. Maximum intermittent bladder exposure temperature is 160°F(60°C).
2. **LIFE SPAN** – Major sanctioning bodies such as FIA, NASCAR, ASA, SCCA, etc. have recognized that fuel cells and related equipment are slowly affected by ozone, ultraviolet, aging and the chemical action of gasoline and racing fuels. Hence, a Five-Year Legal Life Span has been set on all fuel cell bladders. The rubber bladder portion of your fuel cell system must be replaced within 5 years of its manufacture date. No repairs may be made to bladders after that 5-year period has elapsed. Upon factory re-inspection, a 2-year extension may be granted by FIA & SCCA.
3. **WATER & MOISTURE** – Water vapor and direct sunlight exposure may affect fuel cell bladders and foam baffling. Always install you fuel bladder within a metal or composite enclosure, and keep the system externally and internally free of water and water vapor.
4. **DIFFUSION** – Due to the polymeric nature of fuel cell bladders, molded tanks and hoses, a certain amount of fuel permeation or “diffusion” will occur through the walls. Always provide generous ventilation around the cell and vehicle so as to preclude the accumulation of hazardous fuel vapors.
5. **STORAGE** - When storing a fuel cell, drain the bladder completely, wash and dry the interior, close off all ports, and keep it in a dark, warm and dry area (see paragraph #18).
6. **WEATHERING EFFECTS** – Most racing equipment is affected by weathering; that is: sunlight, wind, freeze-thaw cycles, high and low temperatures, rain and airborne contaminants. Ozone, ultra-violet light, water and acids are especially detrimental to many plastic and rubber parts. Protect your fuel cell and refueling equipment from necessary weather exposure.
7. **ABRASION** – Many racing products, and especially rubberized fuel cell bladders, are susceptible to chafing or abrasion. Handle these items with care and install them gently without force or compaction. Keep free of pebbles, sand and other abrasives which can wear rubber and plastic materials. Be certain that the tank, container, nacell or cavity which holds a fuel cell bladder is thoroughly smooth and continuous on its interior. Do not put sharp, heavy or irregular loose items (i.e. metal pick-ups, baffles, swirl pots, etc.) inside a fuel cell bladder as they could chafe the rubber and create an eventual leak.
8. **FUEL COMPATIBILITY** – Most fuel system components are not resistant to all types of fuels. Therefore, it is essential to identify the intended fuel or blend (i.e. gasoline, diesel, alcohol, etc.) before purchasing equipment and putting it in service. For example, most fuel cell foam baffling material is adversely affected by alcohol as are certain fuel cell bladders. Other chemical fuels such as nitromethane, nitropropane, hydrazine, and additives such as aniline, toluedine and aromatics can deteriorate hoses, gaskets, valves, bladders and other fuel system parts. Double check compatibility and, when in doubt, contact the ATL factory for advice. Don't take chances.
9. **INSTALLATION** –When installing any fuel cell, dry break valve, vent valve, fuel hoses or other ATL components be certain to follow the instructions strictly and carefully. Pay particular attention to location, bracketing, venting, grounding and isolation from the driver compartment. Since every vehicle is different, it is not realistic to prescribe a set method of installation for every ATL product. However, certain basic safety and function practices must be adhered to for all installations. Be certain your installation procedure complies with ATL's general instructions as well as the specific requirements of your competition organization or sanctioner. When in doubt, consult a professional chassis builder, vehicle engineer or the ATL factory for installation assistance.

10. SAFETY FOAM BAFFLING – Fuel cell foam is a “reticulate” or open-cell sponge-like material. When used within a fuel cell bladder, foam helps suppress explosion, control fuel slosh and absorb some impact energy. Foam should never be handled when wet with fuel as surface fire could erupt. Flush the cell with water before removing foam. Also, SF103 and SF112 foams should be used with gasoline only and not with additives, alcohol or an excess of 40% aromatics. SF110 foam offers the best methanol and ethanol resistance as well as static charge suppression
11. INFLATION – ATL tanks and bladders are not to be inflated or pressurized. However, leak testing of these containers with less than 50 gallons capacity may be performed at 1/4 psi (6” water) maximum pressure. An accurate gauge and a redundant pressure regulator system are essential. Overpressurizing may elongate the tank or bladder and damage its seams without visual evidence.
12. CONTAINERS – All fuel cell bladders are to be installed inside a minimum 20 gauge steel or .062” aluminum enclosure (container). These are minimums and thicker walls are sometimes mandatory and always recommended. The container serves to support the bladder, deflect impacts and provide a flame shield. ATL offers ready-made containers as well as drawings and templates for the do-it-yourselfer. When sizing a bladder or container, be sure to leave a clearance for easy installation and removal. Containers for soft rubber bladders (rubberized fabric) should be 1% larger in length, width and height. Containers for molded hard rubber bladders must be 2% larger in each dimension to accommodate linear swell.
13. STATIC GROUNDING – Electrical charges may build up on components due to fuel agitation, high flow rates, and by induction from other sources. To alleviate sparking and possible fuel ignition, always electrically ground fuel handling equipment. Fuel cells, fill necks, dry-break valves, etc. should be installed with a bonding strap to the chassis for unimpeded electrical dissipation. Overhead fueling rigs, dump cans, hose connections, funnels, valves, filter presses, gasoline cans, etc. must be electrically “bonded” together with static straps and then connected to an earth ground before any fuel or vapors are transferred. Always wear full protective clothing when working with flammable fuels. Use 1/2” braided grounding cable for bonding and grounding straps. All terminals must make a clean full-circle connection to assure electrical conductivity
14. MODIFICATION & ASSEMBLY – Alterations, modifications and repairs to ATL cells and equipment must only be performed by the manufacturer at its facilities. Disassembly for periodic inspection and cleaning purposes is highly recommended and should be performed only by a trained mechanical technician or fuel system engineer. Reassembly must conform to ATL design and a low pressure (1/4 psi) leak test must be applied to all joints, fittings and surfaces. Certain ATL products, notably Saver Cells, Sports Cells and Racells are not repairable if punctured. Patching may provide a seal, but it may not restore lost strength. Replace the bladder immediately. For other items requiring repair or service, contact these Repair Stations: Ramsey, NJ USA and Milton Keynes, England. See the last page for addresses and phone numbers.
15. LUBRICATION – Most ATL products do not require periodic lubrication. However, others, such as dry-break valves do need frequent disassembly for cleaning and lubing. Keep all your racing equipment free from dirt, sand and other contaminants and regularly lubricate moving parts with fuel resistant grease for smooth, safe operation.
16. VENTING – Proper fuel cell venting is essential to fuel system operation and fire safety. If your fuel cell is to be “quick-filled”, you will need a 1” or 1-1/2” diameter vent, ball check valve, vent hose and Discriminator Valve. Regular-fill fuel cells require a 3/8” vent, vent check valve (TF210 or TF350) and vent hose. Be certain the vent hose is firmly attached to the fuel cell and is routed upward and away from the cell, engine, exhaust and driver compartment. Always use top quality fuel resistant hose, make air-tight joints and exit the vent rearward to a catch tank or into the free air stream and away from any potential ignition source.
17. ALTERNATIVE APPLICATIONS – ATL racing fuel cells and related fuel system equipment may qualify for use in commercial and military vehicles, road cars, off-road equipment and boats. However, be certain the entire installation complies with required agency regulations such as NHTSA, D.O.T., E.P.A., NMMA, Coast Guard, I.C.C. or applicable Mil-Specs. Pay particular attention to safe location, secure mounting, appropriate venting, non-spill filling, static grounding, ventilation, firewalls and ground clearance. Contact ATL or the relevant Agency for assistance in compliance.

18. **FOAM REMOVAL – CAUTION:** All fuel tanks, fuel cells, and gasoline containers must be purged and inerted before inspection, disassembly or storage. Fuel cells are best treated by draining all fuel and then filling with water for 5 minutes and emptying. The internal foam baffling should be removed immediately thereafter and dried outdoors. After wiping the bladder dry, the foam may be cleaned and reinstalled or replaced with new. NEVER REMOVE OR INSTALL FOAM THAT IS WET WITH FUEL AS IT MAY SPRAY DROPLETS OR IGNITE FROM A STATIC CHARGE. ALWAYS WEAR FULL PROTECTIVE CLOTHING WHEN WORKING ON ANY FUEL CELL, FUEL CONTAINER OR ACCESSORY.
19. **DATA BLOCK –** All ATL fuel cells are individually manufactured, inspected and serial numbered. Information regarding your ATL fuel cell is located on the fuel bladder in the “data block”. This information includes the manufacture date, inspector, Model #, material of construction, capacity and serial number. Write down this information before contacting ATL with any questions. It will help immeasurably in speeding your inquiry.
20. **SPILLAGE –** Some accidents occur in the pits or even at home in the garage due to sloppy or leaky filling procedures. Fill your fuel cell slowly allowing time for vapors to discharge and avoiding “back-surge” or dripping. If your cell is designed for quick-filling, then be certain you have the appropriate dry break valve, roll-over valve, and proper vent. Use a Discriminator Valve, catch tank or overflow can to prevent or collect any liquid fuel discharge from the vent line. Also, check frequently that all fuel lines, pumps, level gauges, dipsticks and fuel return lines are drip free and air-tight. Your fuel cell is only as good as its peripheral equipment and accessories. Be sure your entire fuel system from dump-can to intake manifold is completely spill free and leak free well before the flag drops.
21. **PERSONNEL PROTECTION –** Pit crews, mechanics and all others involved with handling flammables must wear FULL protective clothing and equipment of an impervious, non-static and flame resistant type. Multi-layer suits of the duPont Kevlar or Nomex type are appropriate when used with a fire protective hood, underwear, socks, shoes and face shield.
22. **LIMITS OF WARRANTY –** ATL (AERO TEC LABORATORIES) WARRANTS ONLY THAT ITS PRODUCTS ARE CONSTRUCTED TO GENERAL INDUSTRY STANDARDS AND HAVE PASSED ATL’S OWN IN-PLANT INSPECTION. BECAUSE OF THE GRAVE AND UNAVOIDABLE DANGERS INVOLVED IN RACING AND ESPECIALLY IN THE USE OF FUEL HOLDING AND FUEL HANDLING DEVICES, ATL MAKES NO WARRANTY, EXPRESS OR IMPLIED OF ANY PRODUCTS’ SUITABILITY FOR USE. NOTWITHSTANDING ITS LONG HISTORY OF SUCCESSFUL PRODUCT USAGE, ATL AGAIN, MAKES NO WARRANTY WHATSOEVER REGARDING ITS PRODUCTS’ SAFETY OR APPLICABILITY FOR ALL OR ANY PURPOSES. FURTHER, ATL DISCLAIMS ANY LIABILITY IN TORT FOR DAMAGES, DIRECT OR CONSEQUENTIAL INCLUDING PERSONAL INJURIES RESULTING FROM A MALFUNCTION OR FROM A DEFECT IN DESIGN, MATERIAL, WORKMANSHIP OR MANUFACTURE WHETHER CAUSED BY NEGLIGENCE ON THE PART OF ATL OR OTHERWISE. BY USING ATL EQUIPMENT OR COMPONENTS, OR ALLOWING IT TO BE USED BY OTHERS, THE BUYER AND USER WAIVE ANY LIABILITY OF ATL FOR PERSONAL INJURIES OR OTHER DAMAGES ARISING FROM SUCH USE. THE ABOVE SHALL APPLY TO ALL PRODUCTS ATL FURNISHES WHETHER OR NOT DESIGNED, MANUFACTURED, IMPORTED, WAREHOUSED, DISTRIBUTED OR SOLD BY ATL.
23. **FACTORY SAFETY SUPPORT –** Gasoline and racing fuels are highly flammable and subject to sudden ignition and/or explosion. Before every competition event, be certain to carefully inspect all ATL equipment for proper installation, function and freedom from leaks. Should any questions arise, ATL is available to assist with technical advice, replacement parts or product service:

END

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