



IMPORTANT INFORMATION FROM ATL
SAFETY FUEL CELLS FOR
HISTORIC & VINTAGE RACE CARS

1.) REPLACING AN OLD OR DETERIORATED FUEL BLADDER

- a.) Remember, modern fuel bladder materials are *much* tougher and *less* flexible than the old “bag tanks”. Replacement bladders of FIA FT-3 or FT-3.5 construction may not conform exactly to your vintage tank or fuel cell “bay”. Sometimes, these new bladders end up an “approximation” of the original geometry, so a little volume may be lost.
- b.) If you are sending ATL an old bladder or tank as a pattern, be *sure* to clean it thoroughly inside and out before shipping. Package it well to avoid dents, punctures or other damage.
- c.) Old-fashioned rubber nipple fittings and flexible fill necks are no longer legal. To comply with FIA, NASCAR, SCCA etc., *metallic* fittings and nut-ring flanges must be used. FIA allows some flex-necks and rubber cross-overs *if* they are made from FT-3 fuel bladder material. These are much safer, but not quite as pliable or clampable as the old soft rubber tube connections.
- d.) It may *not* be feasible to install modern fittings, necks, flanges etc. in precisely the same *location* as on an old thin-liner bladder. However, ATL will make every effort to locate these ports as close as possible to the original orientation. Please try to *cluster* your fittings (fill, vent, return, outlets etc.) on the same *plate* rather than scattering them over the surface of the bladder. Clustering is neater, cheaper and safer !
- e.) It is sometimes difficult to secure accurate dimensions from an old shrunken or rotted fuel bladder ! ATL always takes time to allow for good judgment and acceptable compromises in measuring an amorphous shape. However, if you *must* have an absolute duplicate with no deviations, then a precise *build-drawing* will be necessary. Such drawings are generally produced by digitizing the interior surface of the original metal tank, container or bladder bay.

2.) FITTING A NEW ATL FUEL BLADDER INTO A VINTAGE GAS TANK.

- a.) Please read all of Section 1.
- b.) ATL is *primarily* a fuel cell bladder company, but we *do* maintain a metal-working shop as a customer convenience to help fit or “integrate” a new ATL bladder into the old gas tank. However, if absolute originality and authenticity is essential to you, we recommend sending the tank and bladder to a specialized race restoration shop for integration.
- c.) Adapting a bladder to an existing aluminum or steel gas tank requires removing the original tank fittings, baffles, fill tubes etc. and boring the tank wall so that the bladder fittings can protrude through. Also, a tank access hole is necessary through which to install the bladder. Interior tank surfaces must be smooth, clean and continuous to prevent abrading the rubber bladder.
- d.) As in paragraph 1 d, it may be necessary to orient fittings somewhat differently, from original, i.e. fill necks can *not* be located over the edge or corner of a fuel bladder. If the original fill neck is large enough, it may be possible to locate the ATL bladder fill pipe *inside* and under the old “Monza” cap.
- e.) Upon completion, your original tank will now function as a “container” for the bladder to facilitate mounting in the car. Most likely, the old tank will *not* be a sealed vessel as the bladder fittings will project through the tank’s wall. Rigid attachment of the bladder flanges and fittings to a tank is *not* recommended as this practice limits bladder flexibility and deformability in an accident. ATL recommends its “frangible” break-away tabs to support the bladder within its surrounding tank.

3.) BUILDING A NEW ALUMINUM CONTAINER IN LIEU OF AN OLD GAS TANK.

- a.) Constructing a metal “can” or “container” specifically to receive a bladder is preferable to adapting a bladder to the original gas tank. Containers can be supplied by the customer, or by ATL if a drawing is provided.

- b.) The fabricated container may take on a new shape or duplicate the old tank's configuration. Sometimes these containers are built smaller in volume, since vintage races are frequently shorter than those for which the car was originally intended.
- c.) The fabricated container should be of .063" aluminum, welded or riveted and designed with a removable top, bottom or side to install the foam-filled bladder.
- d.) All interior surfaces of the container should be clean, smooth and continuous to avoid bladder abrasions.
- e.) Flanges and fittings should *not* be located closer than 2" from any edge or corner of the container. All fittings should enter and exit from the bladder's *top* surface if possible.
- f.) Larger containers may require external reinforcements or bracketing to support the fuel load and to provide a rigid mounting to the race car frame. Consult your race preparation shop on matters of structural adequacy like this.

4.) GENERAL INFORMATION

- a.) In order of *preference*, ATL can accept any of these inputs to aid in reproducing a fuel bladder:
 - i.) CAD solid model (SAT, IGES) of finished bladder and fittings.
 - ii.) CAD solid model showing *interior* surface of cavity or metal tank.
 - iii.) CAD wire frame (DXF) drawing of (i) or (ii).
 - iv.) mechanical drawing of *bladder* with accurate dimensions, angles, and fitting locations.
 - v.) hand sketch or drawing depicting all dimensions, angles and fitting locations.
 - vi.) original bladder if reasonably complete.
 - vii.) new container approximating original tank and including one removable access panel for bladder insertion.
 - vi.) original gas tank, cleaned, baffles removed and with access panel for bladder insertion.
- b.) A *specification* is also helpful in defining the finished fuel cell product:
 - i.) type of bladder material (see ATL Sales Engineer).

- ii.) foam baffling requirements.
 - iii.) internal surge tanks, vanes, sumps, weirs, trap doors, baffles etc.
 - iv.) fuel pick-up(s) size and location.
 - v.) accessories such as return lines, level gauges, dip sticks, fuel strainers etc.
 - vi.) quick-fill valves, vent valves, dry-break refueling equipment, pressure-vacuum reliefs etc.
 - vii.) in-tank fuel pump(s), pressure regulators, electrical connectors, and break-away valves.
 - viii.) stenciling or markings such as part #, team name, tech data, capacity, safety warnings etc.
- c.) When ordering, these conditions apply:
- i.) prepayment or a 50% deposit is required with each order.
 - ii.) shipment is by UPS ground unless another carrier is requested.
 - iii.) applicable“ certifications” such as FT-3, FT-5, USAC-1000, NASCAR-2000 etc. will be furnished upon request.

Thank You For Your Interest In ATL Fuel Cells