
THE GAMGRAM

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FILTER VESSEL CONCERNS

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We had a call from a customer: “Your filters aren’t working. I don’t get any improvement on membrane color and we have a customer complaining.” This is the sort of phone call that makes a filter manufacturer or salesman cringe. The reason is that he or she knows that 99% of the time, it isn’t the element’s fault, it is a fuel problem such as mixed fuels. But today, problems with the vessel hardware are often the cause.

In one case, we discovered the side of the element manifold had a hole in it. In another case, the screw base adapters under the coalescer were rotted out and flow was bypassing the elements. In many of the stories filter people share with one another, the gaskets simply fail and are never replaced. In most locations, hardware is not checked. If you have old vessels, you have a responsibility to take care of them.

WARNING: Make sure the vessels are ventilated and properly safe for entry, as well as obtaining all needed permits for confined space entry and personnel exposure. This is especially important if you are filtering leaded avgas, but all fuels represent a hazard.

Both plain filters and filter separators are wonderful technology. They remove dirt smaller than blood cells, smaller than the eye can see. Filter separators allow less than 1/1000 of one percent (10 ppm) of water, regardless of the inlet concentration.

But these vessels need more than just the periodic replacement of elements, there is maintenance to be done on accessories and there is serious concern for the hardware that is mounted semi-permanently inside the vessel.

The subject of this GamGram is that you are not only responsible for using the correct elements but also for maintaining the hardware! So, what can go wrong? It’s just a big metal container, right? Many vessels have never been maintained after 5, 10, 20 or even 50 years in service. Gaskets and aluminum castings and mounts do degrade over time.

INTERNAL HARDWARE

All filter vessels have internal element hardware. These should be removed and inspected periodically. These mount, seal and space the elements.

Spider plates are used to keep the elements spaced correctly and so that they cannot work loose or hit one another - or the vessel wall. Replace them if missing, not only do they hold the elements, they prevent static buildup that causes damage to the elements, interior coatings and help prevent fires inside the vessel. See GamGram [007](#) and [015](#).

Some filter separators have aluminum manifolds with hidden gaskets where they mount. All of this hardware (except stainless steel) is prone to corrode and ALL rubber gaskets will fail over time. In our opinion, all hardware should be removed AT LEAST once every 5 years and inspected.

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ACCESSORIES

There are also accessories on your vessel that must be maintained. These include a pressure relief valve, an automatic air eliminator, manual drain, differential pressure gauge, sampling connections - and on filter separators, a water control device. In cold weather, heaters are used on filter separators to prevent the sump and drain line from freezing.

Pressure relief valve: If it leaks, don't plug the outlet! Either get the valve serviced or replace it. Don't change the setting or dismantle unless you can accurately reset the relief point. If it drips, run the outlet to a recovery tank, back to the storage tank or to a sump separator. This is clean fuel! See [GamGram 037](#).

Automatic air eliminator: If an automatic air eliminator leaks, it may be rebuildable, but most are not. Once again, if it leaks, don't plug the outlet, service or replace the valve. If it drips, run it to a recovery tank, the storage tank or a sump separator. This is clean fuel!

Manual drain valves should not be plugged if they leak, but replaced. A common safety solution is to put a "camlock" connector and cap on manual drain valves. This allows more security against an accidental opening and contains any leaks. A leak at a ball valve shaft may be fixed by slightly tightening a nut under the handle, if present.

Differential Pressure Gauge/indicator: Typically, this is a Gammon Gauge, a piston operated differential pressure indicator. All you typically need to do is to check calibration regularly using [our procedure](#).

There is a filter in the upper housing which should be replaced regularly. Your standard is set by your company, the ATA-103, IATA or JIG. We recommend at least once every 10 years or if the piston moves slowly under pressurized testing in accord with our test. Don't use a cheap counterfeit filter, ours are under \$20 each (2018 price) and are of much better quality. We have rebuild kits that include cleaning material. [Cleaning of the gauge](#) should be done with only one material, 3M Scotchbrite.

Sampling Connections are pretty simple, if they leak, either replace the seals or replace the quick disconnect. But it is also important to maintain the dust cap. Our old dust caps (we invented the sample connection, so we know) were aluminum with a ball chain. These were sometimes lost, so we went to a polyurethane dust cap. If this fails, replace it. Keeping dirt out makes the QD last longer and gives more accurate fuel tests.

Water controls are much more complex. They can tell the difference between water and fuel and they have to stop fuel flow if too much water collects. Follow the manufacturer's instructions. Also, see GamGrams [010](#), [012](#), [024](#), [036](#), [044](#) and [050](#).

Filter separator sump and drain line heaters are fully covered in GamGram [030](#). We strongly recommend adjustable thermostats (all that we at GTP ever sell) so you can more easily test the function.