



### 11104 & 11110 Installation Instructions

#### WARNING!

The fuel system is under pressure. Do not open the fuel system until the pressure has been relieved. Refer to the appropriate vehicle service manual for the procedure and precautions for relieving the fuel system pressure.

To use this pump in your vehicle's fuel system, you must do the following:

- **A by-pass style fuel pressure regulator must be used in the system.**
- Utilize AN-12 size high pressure fuel lines, fittings and o-rings for all connections from the fuel tank pickup to the fuel pump.
- Mount pump level or lower and as close to the bottom of the tank as possible.
- Install a 12302 pre-filter and 12310 post filter.
- If you are using a stock fuel tank, install a reservoir sump in the bottom-rear of your fuel tank. Exercise extreme caution and follow all manufacturers' recommendations when installing a reservoir sump. (Sump part # 15650)
- Tank/Fuel cell must have at least a 1/2" tank vent.
- If you choose not to install a reservoir sump, then you must install a high flow capacity fuel tank pickup (3/4" inner tube diameter). (Installing pickup instead of a reservoir sump may shorten the fuel pump life and cause drivability problems. When using a pickup, you should maintain at least 1/2 tank of fuel in the vehicle at all times, to avoid possible engine & or fuel pump damage.)
- For any street driving or continuous use, Aeromotive recommends the installation of a pump voltage control module, Aeromotive p/n 16306 (not needed for marine use).
- Maximum continuous operating pressure should not exceed 70 psi.

Failure to follow the above may result in fuel leakage, bursting of the fuel lines, poor vehicle performance and/or decreased fuel pump life! Improper installation will void all warranties for this product!

#### CAUTION:

Installation of this product requires detailed knowledge of automotive systems and repair procedures. We recommend that this installation be carried out by a qualified automotive technician.

Installation of this product requires handling of gasoline. Ensure you are working in a well ventilated area with an approved fire extinguisher nearby. Extinguish all open flames, prohibit smoking and eliminate all sources of ignition in the area of the vehicle before proceeding with the installation.

When installing this product, wear eye goggles and other safety apparel as needed to protect yourself from debris and sprayed gasoline.

The enclosed Aeromotive fuel pump utilizes an o-ring sealed AN-12 style inlet and an AN-10 style outlet port; these ports are **NOT PIPE THREAD** and utilize **NO THREAD SEALANT**.

#### Compatible Fuels:

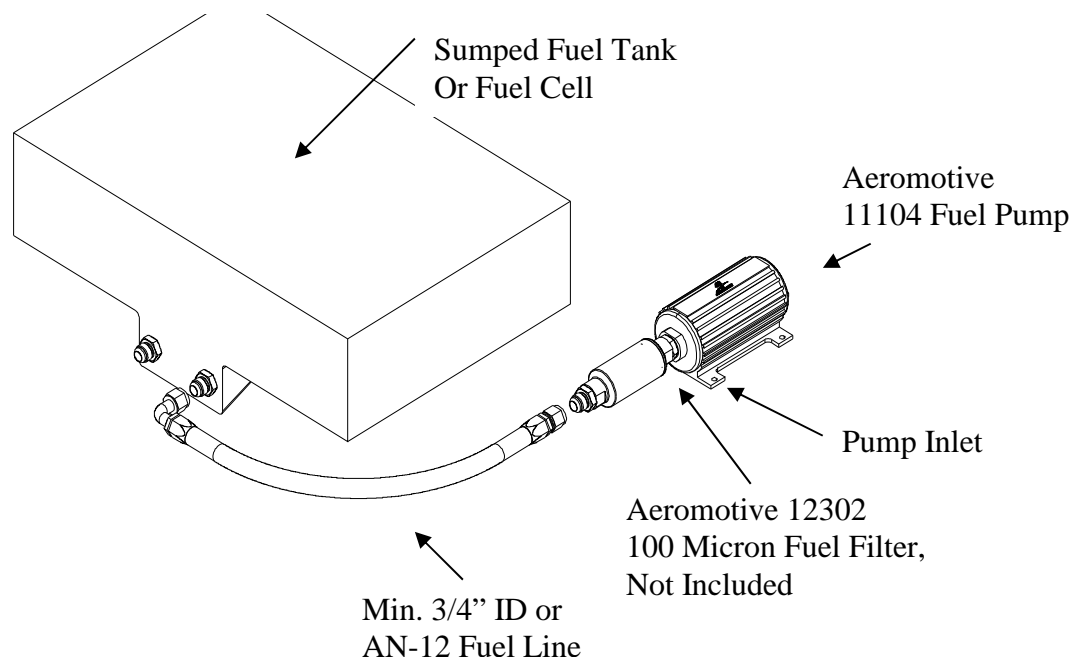
Pump Gas  
 Race Gas  
 E85  
 Alcohol/Ethanol

The following steps are typical of most installations:

1. Once the engine has been allowed to cool, relieve the fuel system pressure and disconnect the negative battery cable.
2. Raise the vehicle and support it with jack stands.
3. Referring to the appropriate vehicle service manual for instructions, remove the OEM fuel pump.
4. Install an after-market fuel cell or fuel tank sump kit, per the manufacturer's instructions.

**Note: Failure to mount the pump lower than and close to the fuel tank may cause the pump to run dry, resulting in extreme pump wear! Make sure the pump is located lower than and as close as possible to the fuel tank, so that the pump is always supplied with fuel!**

5. Find a suitable place on the vehicle chassis to mount the Aeromotive fuel pump. Make sure the location will accommodate the pump mounting bolts, position the pump lower than the fuel tank, is clear of the exhaust, is clear of any moving suspension or drivetrain components and will keep the pump clear of road obstructions or debris. Using the pump as a template, mark and drill four mounting holes to accept 1/4" bolts. Mount the fuel pump using four 1/4" bolts, nuts and lock washers. For quieter fuel pump operation use Aeromotive p/n 11601 fuel pump vibration dampening mounting kit.
6. Using minimum of 3/4" ID or AN-12 fuel line, connect the fuel tank sump outlet to a 12302 fuel filter. Using the same size fuel line connect the fuel filter outlet to the fuel pump inlet, or if you are using an Aeromotive fuel filter you can attached the filter directly to the fuel pump utilizing an AN-12 fitting (15612) and 2 sealing o-rings (12AN o-ring pack 15624).



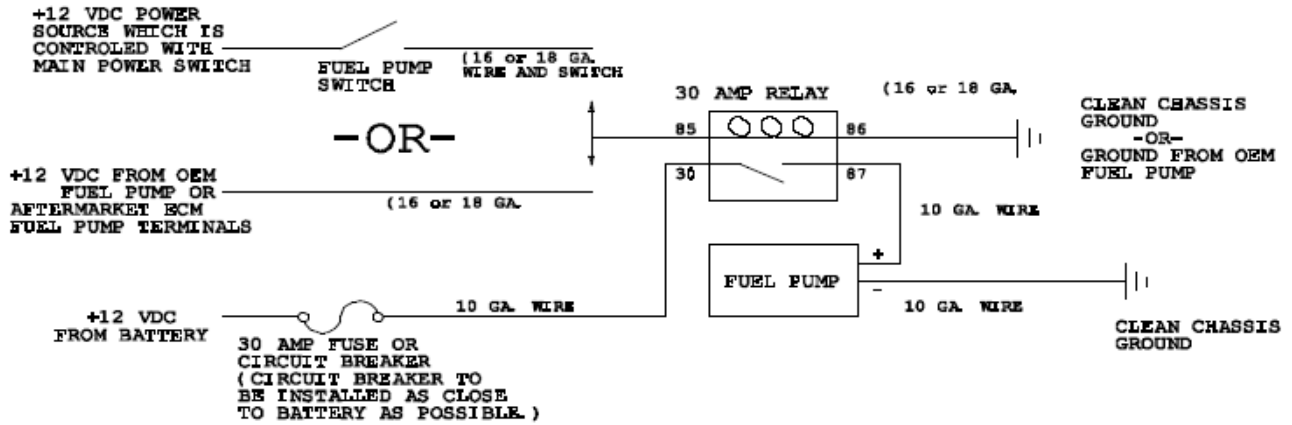
**Note: If you would like a fuel shut off valve installed between the fuel tank outlet and the fuel pump. Use Aeromotive part # 12332 shutoff valve fuel filter in place of the 12302 fuel filter.**

7. Connect the fuel pump outlet to the vehicle's fuel rails in the engine compartment. **Make sure you use high pressure (200 psi minimum) fuel line for this connection!**

**Note: Be sure to route all electrical wires clear of any moving suspension or drivetrain components and any exhaust components! Protect wires from abrasion and road obstructions or debris.**

8. There are several ways to connect electrical power to the pump, depending on your fuel injection system. Make sure you use stranded, insulated copper wire, in the sizes shown, with matching crimp-type connectors for all connections.

9. Attach the OEM fuel pump wires, the aftermarket ECM fuel pump wires or your fuel pump switch wires as shown in the following diagram.



10. Attach a suitable fuel pressure gauge (part # 15633 for EFI and 15632 for Carb) to the fuel system schrader valve, fuel rail or fuel pressure regulator.

## EFI FUEL SYSTEMS



Approved for Racing Duty



**ELIMINATOR EFI SYSTEM** - 1400 HP forced induction, 1900 HP naturally aspirated.



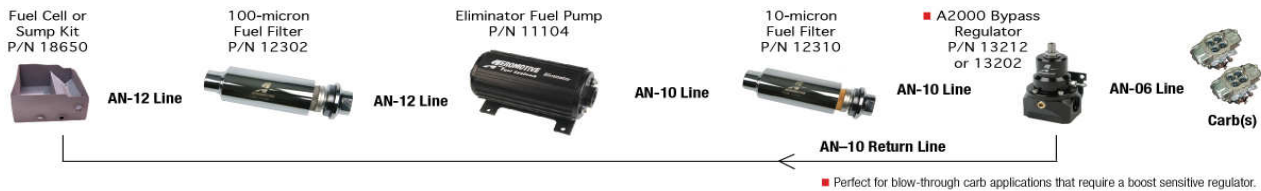
## CARBURETED FUEL SYSTEMS



Approved for Racing Duty



**ELIMINATOR CARBURETED SYSTEM** - 1700 HP forced induction, 2300 HP naturally aspirated.



**11. Ensure that any spilled fuel and any fuel soaked shop towels are cleaned up and removed from the vicinity of the vehicle!**

***CAUTION: While performing the following steps, if any fuel leaks are detected, immediately turn the ignition to OFF, remove any spilled fuel and repair the leak(s) before proceeding!***

12. Turn the ignition to ON **without starting the engine** , allow the pump to run for several seconds and check the fuel pressure. If there is no pressure, turn the ignition to OFF, wait one minute, then turn the ignition to ON and recheck the pressure. Repeat this ignition OFF and ON procedure until the gauge registers pressure or you detect a fuel leak. If no pressure is registered on the gauge after running the pump for several seconds and you have found no leaks, check all fuel and electrical connections to determine the cause.

13. Once the fuel pressure gauge registers pressure, start the engine. The fuel pressure gauge should register between 40 and 70 psi. If you have installed an adjustable fuel pressure regulator, adjust it to the desired setting.(For maximum fuel system performance, we recommend using an Aeromotive adjustable fuel pressure regulator; call us for info.)

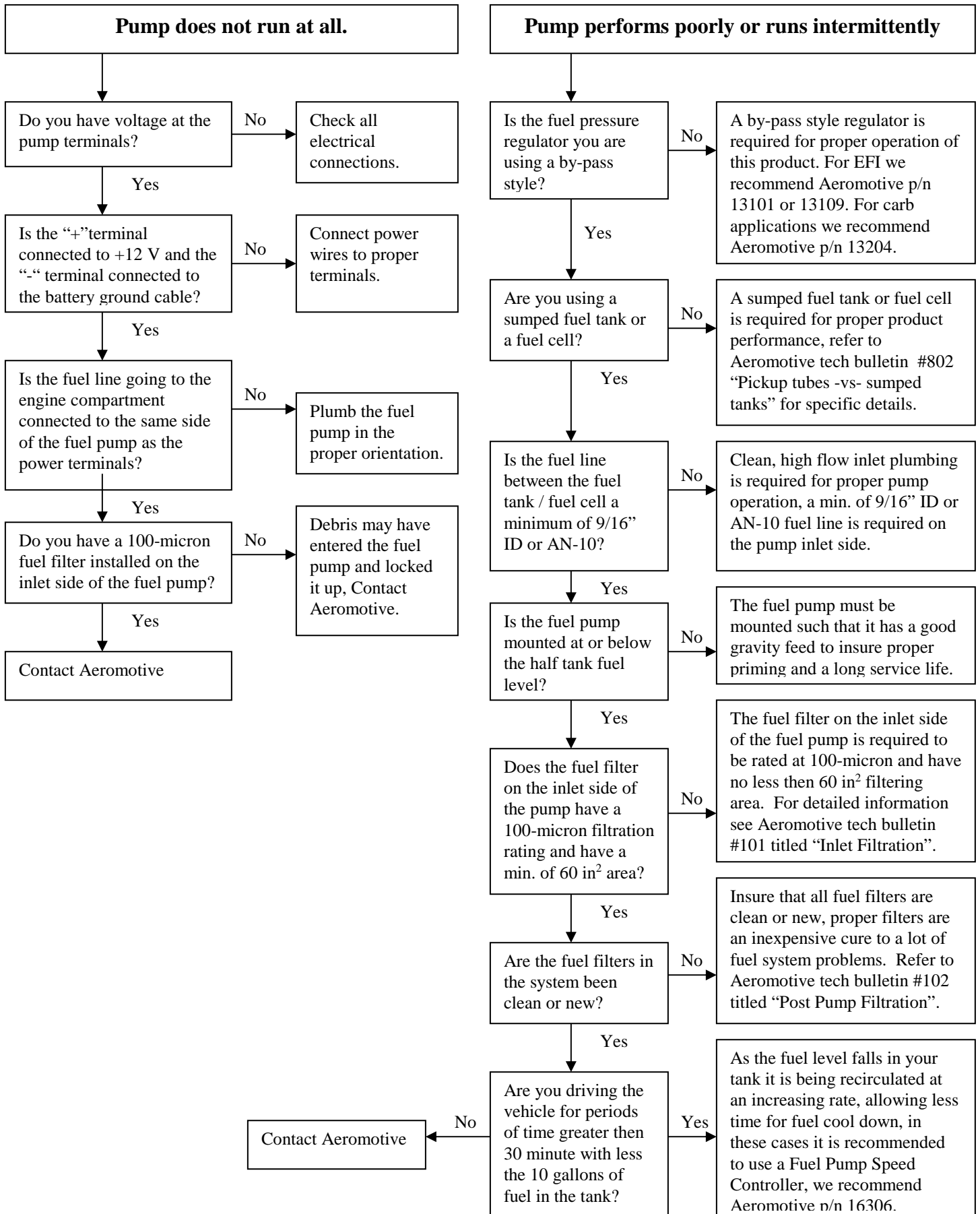
14. Shut the engine off. Using suitable clips and other mounting hardware, secure the newly installed fuel lines and electrical wires by attaching them to the vehicle chassis.

15. Carefully lower the vehicle to the ground.

**16. Test drive the vehicle to insure proper operation and re-check the fuel system for leaks. If any leaks are found, immediately discontinue use of the vehicle and repair the leak(s)!**

**NOTE: When installing a new fuel system, the system will be contaminated from manufacturing and assembly. This contamination will be stopped by the 12310 post filter. Change the post filter element after 100 miles to insure pump/system life (filter element part # 12610).**

# Fuel System Troubleshooting



# Aeromotive, Inc. Technical Bulletin #101

From: Aeromotive Technical Department

Re: **Fuel Filtration: Selecting the correct filter to prevent lean-out and pump failure.**

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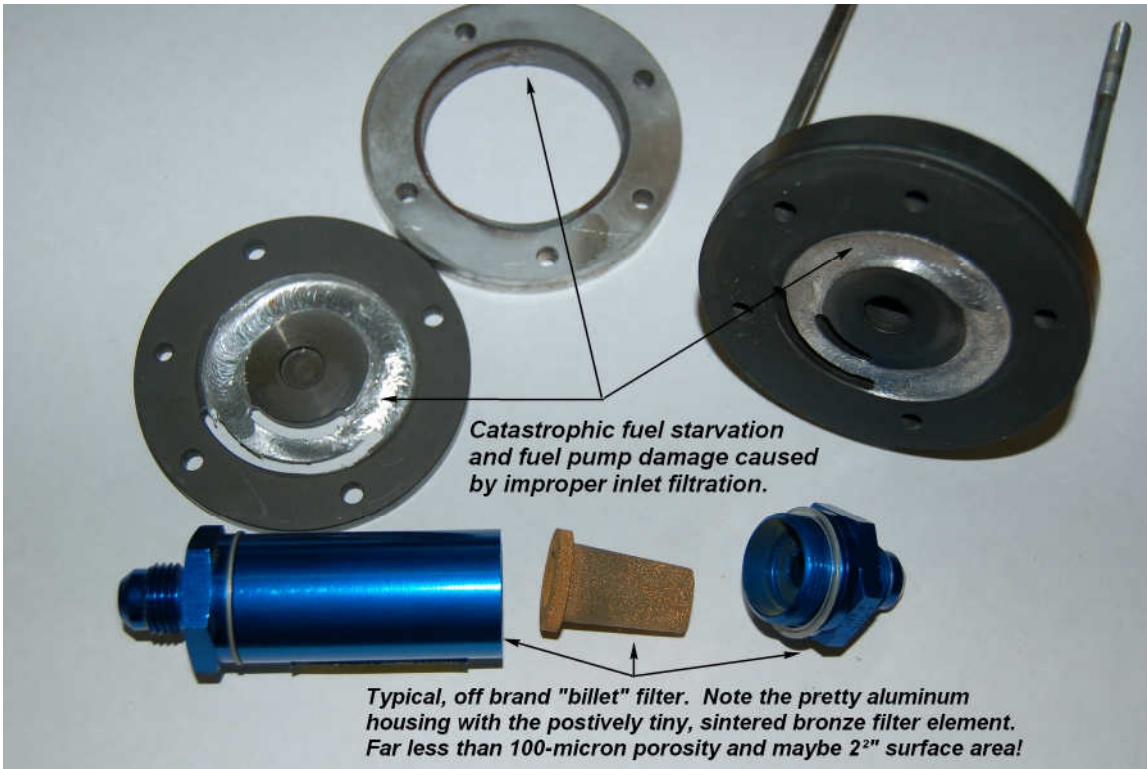
STOP!! If you are selling or installing a fuel filter *on the inlet* of an Aeromotive fuel pump, be certain you do not use a filter that causes more problems than it solves. For pump inlet filtration, use *only* Aeromotive 100-micron P/N #12304, #12302 or an acceptable equivalent (see specifications below). Do not install the Aeromotive P/N #12301 or 12310 filter with 10-micron fabric element *on the inlet* of any Aeromotive fuel pump, they are however perfect for use on the outlet of the pump, and this is the only location for which they are recommended.



You may run any brand of filter you choose on your car, just be certain that it meets the following requirements: ***The filter element used on the inlet side of any Aeromotive fuel pump may be no finer than 100-micron (no number smaller than 100), with a surface area of 60 square inches or more.***

Any filter element not meeting these criteria may fail to flow the full volume of the pump, resulting in both vehicle drivability and pump reliability problems. Aeromotive fuel pumps are engineered to be efficient, and can create both high outlet pressure *and* high inlet vacuum. The boiling temperature of any liquid varies with pressure. For example, the engine' cooling system is purposely designed to pressurize the coolant in order to raise the boiling point. So how does this apply to fuel delivery? When a fuel pump has to pull through a

restriction to get fuel from the tank a vacuum develops which lowers the fuel's boiling temperature, cavitating the fuel and turning it from liquid into vapor. **Bottom line: Inlet restrictions create vacuum, which causes cavitation, which in turn causes vapor-lock and fuel pump damage. Of course, drivability problems and even engine damage can result! Lesson: Don't combine high flow, efficient fuel pumps with poor flowing inlet filters. Don't use fuel lines smaller than the pump ports. Don't use fuel tank pick-ups or tank outlets smaller than the line.**



What about a fine filter? They are also necessary, but must be installed on the outlet side of your Aeromotive fuel pump, never on the inlet. Options include the Aeromotive 10-micron (replaceable element) fabric filter assemblies P/N #12301 and P/N #12310, and the new, high-flow 40-micron (cleanable element) stainless steel filter assembly P/N #12335. Given the alcohol content found in today's pump gas, it is now necessary to frequently monitor and service any downstream fuel filters in use. Because they cannot be cleaned, keep a spare 10-micron element on hand for immediate service to eliminate engine fuel starvation and drivability problems when they become heavy clogged.

**All Aeromotive pumps except the Pro Series EFI pump may use the Aeromotive filter #12304 with -10 inlet and outlet fittings and 100-micron stainless steel element. The Pro Series EFI pump #11102 requires filter #12302 with larger stainless steel element and -12 inlet and outlet fittings. The #12302 is also recommended for the #11104 EFI Eliminator pump and our new #11105 belt drive pump (try 400gph or 2700lb/hr of fuel delivery at 100psi!). Though Genuine Aeromotive Filters may be somewhat more expensive than the off-brand options, you simply must "compare apples to apples". They say "a picture is worth a thousand words..."**



Above are various versions of “100-micron” fuel filters/elements. Note: the top element is the Aeromotive 100-micron element P/N #12604, as found the fuel filter assembly P/N #12304. Note the various filters all have “billet” housing, with AN connections, and can be disassembled for inspection and cleaning. Also, note that all are sold and recommended as appropriate pre-filters.

Of course, it’s obvious by this comparison image that there’s more to a filter than the micron rating, a billet housing or even AN Connections. It should be equally clear that surface area, the amount of filter material available for fuel flow, is not at all related to micron rating, but a major key to a filters flow capacity. All these filters may be fine, well made assemblies, and perhaps they are suitable for use with various fuel pumps on various engines; **However, excepting the very top element which is there for comparison, none of the above belong in any system featuring an Aeromotive fuel pump and certainly not any car, boat, truck, etc. that features an engine worthy of such a pump.**