



## Tech Tip: E85 Conversion Holley 4150

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There is no denying that it is easier than ever to make big power, whether that be through a rowdy mouse motor on nitrous or a junkyard LS engine with a hair dryer; it seems that anyone can make near 4-digit numbers with their home built hot-rod.

While we can stuff more air into the cylinders and strap on individual coil packs, there is one missing ingredient... Fuel. With today's alcohol and gasoline offerings we find ourselves with an abundance of choices but there is one candidate quite a few crafty racers have taken advantage of.

E85 fuel can be found in nearly every state and it's hard to ignore being cheaper per gallon than even that putrid mix they call 87 Octane; this Gasohol concoction has found its way into racing series overseas and is now beginning to creep into our local venues.

By containing up to 85% ethanol, it gives us the ability to crank in a few more degrees or swap a spring to "eek" out that last little bit of horsepower. This plus the cost effectiveness compared to a pail of race gas gives us an opportunity that few would like to pass up. So this time, we decide to plunge deeper into the rabbit hole of "If you can't beat 'em, join 'em" by converting an RQ-1000 from Quick Fuel Technologies into an ethanol slurping treat that any Big Block would enjoy. I can guarantee that this conversion is so simple you're going to be kicking yourself for not doing it sooner; let's get started!

### QUICK FACTS:

- E85 CAN BE FOUND AT OVER 4000 STATIONS IN THE U.S. ALONE.
- CAN VARY FROM 51% TO 83% ETHANOL DEPENDING ON LOCATION, SEASON, ETC.
- REQUIRES 30-40% MORE FUEL COMPARED TO GASOLINE.
- EQUATES TO ROUGHLY 95-97+ OCTANE DEPENDING ON ETHANOL CONTENT.
- ETHANOL IS HYDROSCOPIC (ABSORBS WATER), MAKE SURE TO USE A SEALED CONTAINER IF STORING FOR EXTENDED PERIODS.



QFT's 36-E85 Fuel Tester

Quick Fuel Technologies offers a wide range of tools to handle this E85 conversion including metering blocks, E85 testing tubes and more. We will be using their 34-106QFT kit to swap our Gasoline blocks over to Ethanol blocks (larger metering wells) which still use Gasoline Main Jets and 6/32 emulsion bleeds.

Taking note of the instructions, we will need to upsize our jetting by 8-10 sizes as well as use the included gaskets to ensure we have no leaks in the future. The emulsion bleeds are pre-calibrated and should not be changed unless you are very familiar with adjusting carburetor circuits to fine tune air-fuel ratios.

Source: Department of Energy - Handbook for E85

Property	Ethanol	Gasoline	E85*
Octane (R+M)/2	113	86-94	95-97
Lower Heating Value (Btu per gallon)	76,300	116,900	83,600-95,450
Miles per Gallon Relative to Gasoline	67%	-	73%**
Specific Gravity (60°/65°F)	0.794	0.72-0.78	0.78
Air-Fuel Ratio (by weight)	9	14.7	10



Holley EFT



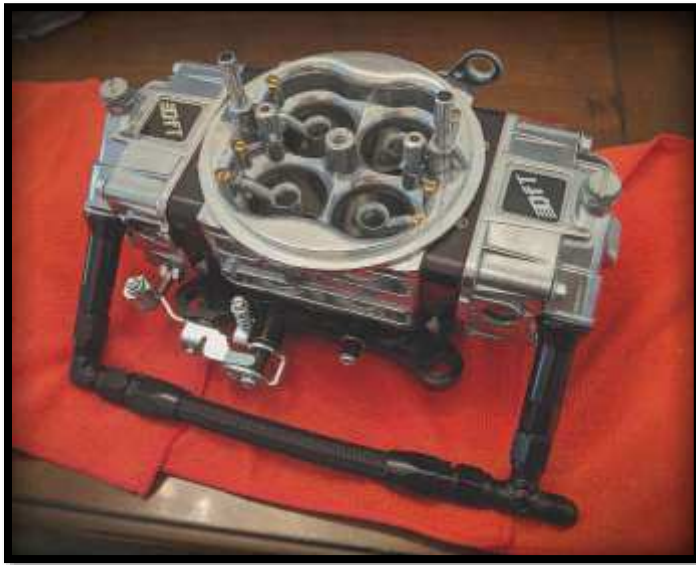
Superchips

DiabloSport



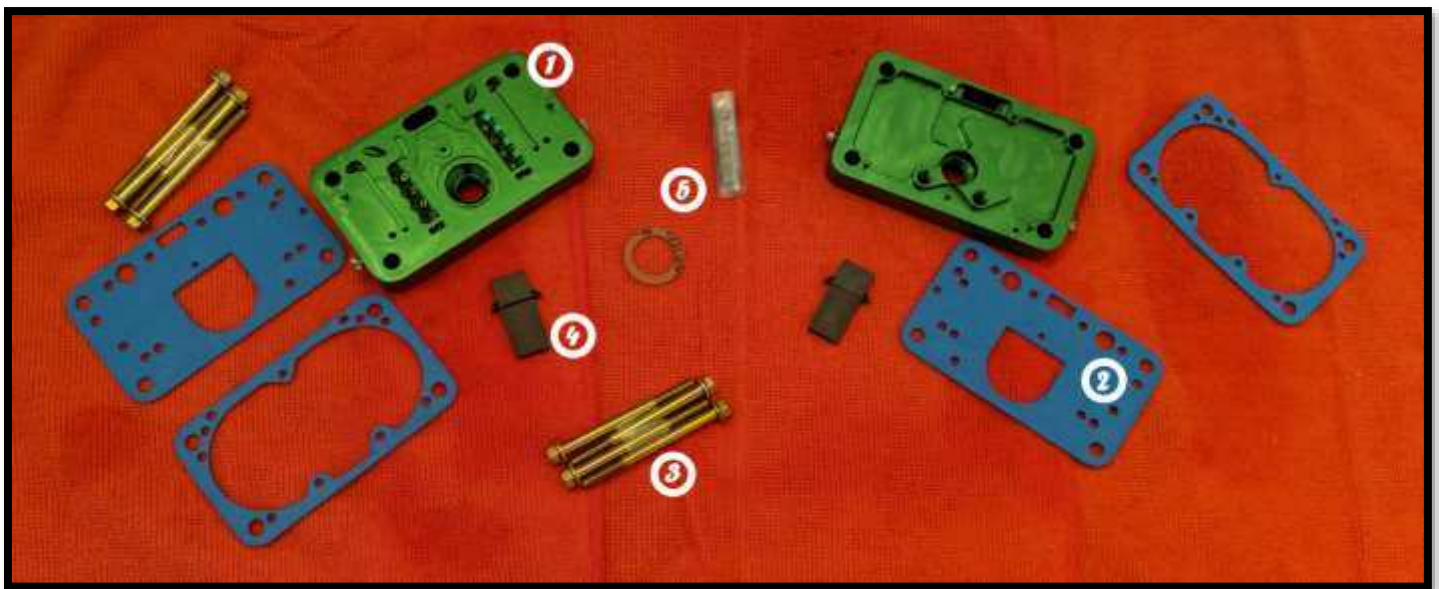
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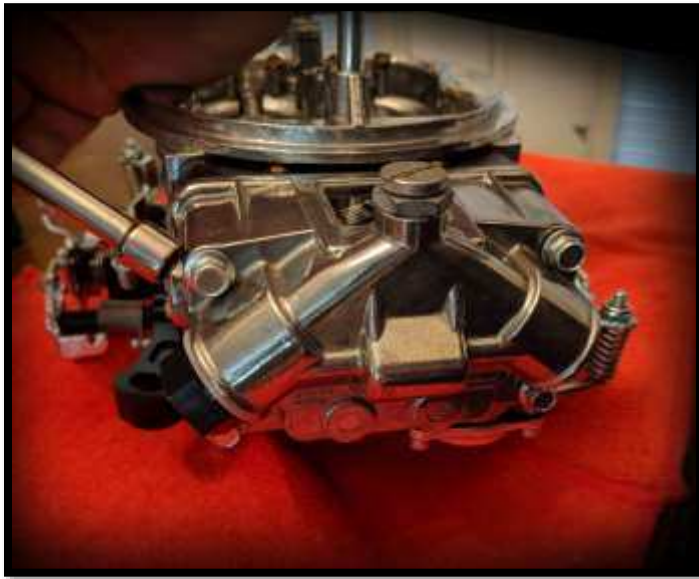
**1.** We've had this RQ-1000 on our 496" Big Block Chevy for a few months now and while it performs great, the cost of race fuel is driving us toward new ventures. To start, yank it off the engine and take note of where your fuel lines hookup; Ethanol can be corrosive to rubber so make sure your pump/lines are rated for use.

Below: Exploded view of the 34-106 QFT kit and all of the parts included.



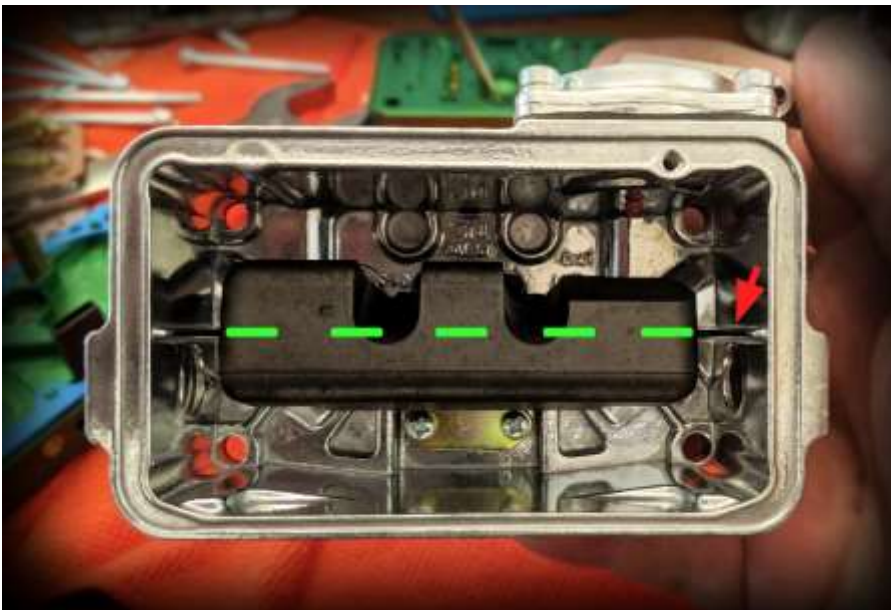
**2.** The 34-106QFT kit comes with blocks, gaskets, baffles and even new hardware to make this job as seamless as possible. The instructions note to use the included gaskets as they are approved for Ethanol use, it is a good idea to use the new whistles and bowl screws as well.

1. Metering Block(s)
2. Metering Block/Bowl Gasket(s)
3. Fuel Bowl Screws
4. Bowl Vent Whistles
5. Assorted Gaskets

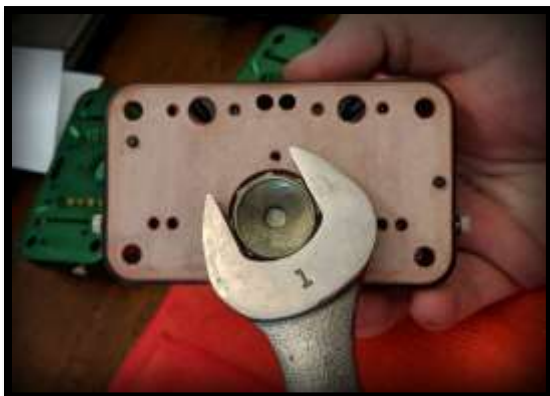


**3.** The fuel bowl screws come out with a 5/16 nut-driver, take care to not lose the black nylon gaskets behind them (they are included in the kit, but it's nice to have spares). Now is a good time to inspect the float for any cracks and verify your float arm is functioning correctly.

**4.** With the bowl removed, we start by pulling off the block and removing any hardware such as jet extensions or power valve(s) as well as any leftover gasket material.



Now would be a great time to set our float height(s); Start by loosening our needle/seat hardware. Invert the float bowl as to allow the float to ride on our seat. Adjust the height of the float so that the mid-line (green imaginary line) is parallel with the casting lines inside of our bowl. This should be a great starting point and will set our fuel level roughly  $\frac{1}{2}$  way up our sight glass.



**Left:** Power Valves can be removed with a 1" Wrench.

**Right:** Vent Whistles should be installed in a downward angle; Interference with bowl possible if installed at an upward angle.



**5.** With all of the gasket material removed we can install our new metering block; be sure to transfer over any hardware from our previous block (excluding jets). As for our jetting, QFT recommends adding +10 sizes to our existing jet(s). Once we have the baseline established, we can fine tune once our engine is running.

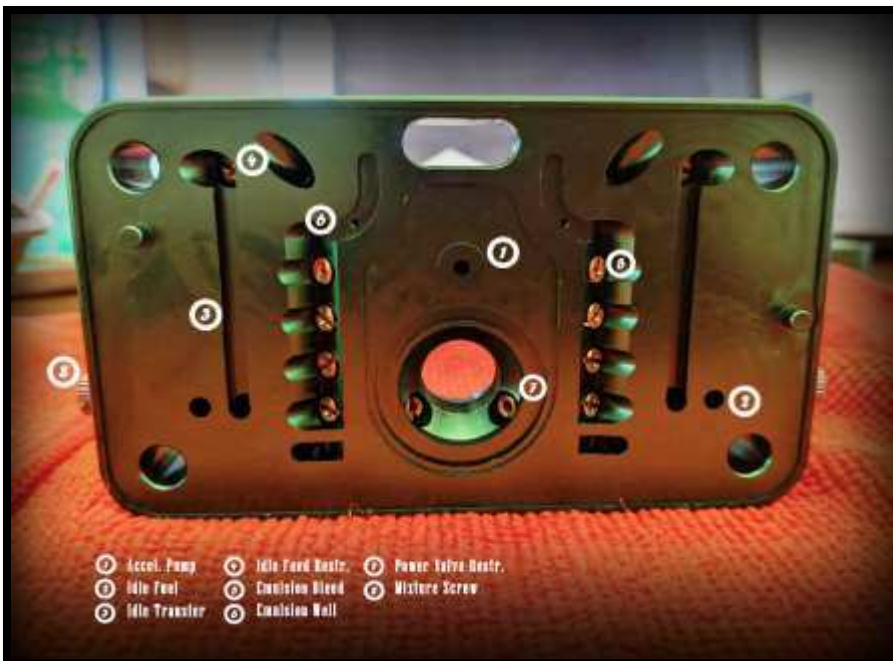
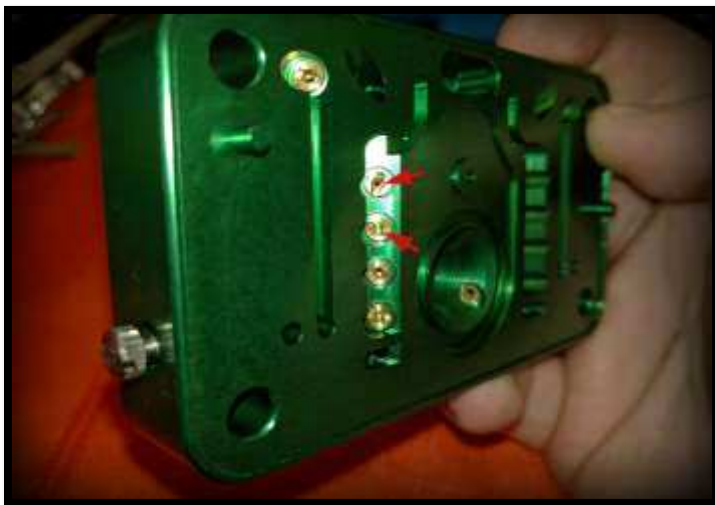
Right: Our existing jets were 88's, we stepped up to a 98 main jet.



**Left:** QFT has already calibrated the emulsion bleeds (arrows) as well as our Idle Feed Restrictors. They do not advise changing these unless you are very familiar with the emulsion circuit and how bleed changes affect it.

**Bottom Left:** A diagram of a metering block briefly describing the different passages.

**Bottom Right:** Block/Bowl Gaskets for Reference.





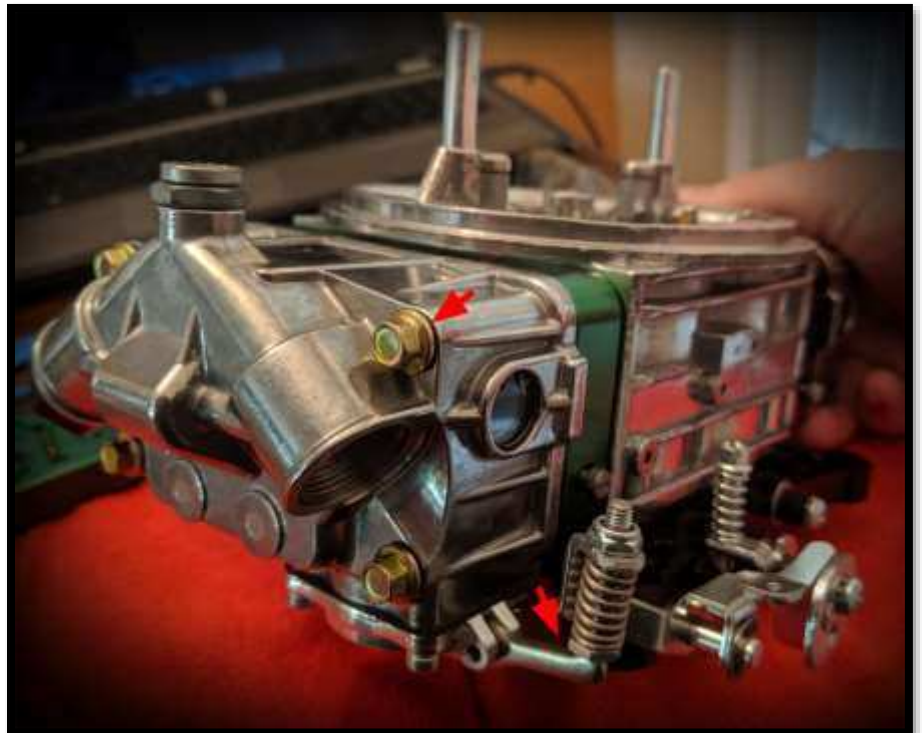
**6.** QFT advises we use at least a .130 Stainless Needle/Seat (18-10QFT), with the bowl still removed we can swap our current seats and adjust float height if necessary.

NOTE: Because Ethanol requires at least 30% percent more fuel, you may consider using a larger pump nozzle. We had a .033 nozzle installed and upgraded to a .037 nozzle, ensure you have an Ethanol approved pump diaphragm (GFLT) as well.

Top Left: The Needle/Seat we removed was a .120 Viton Tip (notice the small block cone), Viton can have a negative reaction to Ethanol thus requiring a Stainless model.

Bottom Left: Pictured is our .033 Nozzle we removed, note the Hollow Nozzle Screw that allows fuel to pass through.

**7.** When reinstalling our float bowl, make sure to use the new bowl screws/gaskets (top arrow) and torque them to 25-30 in/lbs. Ensure that our pump lever arm is installed on top of the diaphragm lever when reassembling (bottom arrow).





**8.** We're finished! Be sure to inspect your air bleeds for any dirt/debris and ensure our pump arm tension is correct. At WOT, our pump arm should fit a .015" feeler gauge. Reinstall any fuel lines or throttle attachments and bolt onto your intake.

Bottom Left: Collect our leftover blocks and hardware, these can be reused on another 4150 in the future.



Our main jets, hardware, blocks can all be saved for a later date. While you can technically reuse the gaskets, if they sit for an extended period of time it is best to chuck them and install new ones.

For more information on Quick Fuel Technology products visit their website:

[www.quickfueltechnology.com](http://www.quickfueltechnology.com)  
or 1-866-464-6553.

For more helpful tips like this one, visit:

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