

When ***Installing the Polishing Fuel System*** in Nauticat 33 the installation cut into and added to the existing system. I wanted the installation to allow for filtering and recycle to the tank(s) and also allow for the filtering system to be isolated so that the original “normal” flow could be utilized.

The ***Original System*** has a supply line from each tank. Both lines run to a valve close to a first stage filter, which is near center of the hull; from there fuel flows to the engine. This allows the fuel to be drawn from either the starboard or the port tank. There is a return line from the engine that delivers excess flow from the high pressure fuel pump that feeds the injectors. This line tees and returns to both tanks (although one or the other tank can be favored in what is returned.) The fuel tanks have a small sump and a drain tap, similar to a oil pan drain in a car. The drain has a British parallel thread (BSPP) and stud that needs a washer or some sealant. Cranking it tighter doesn't necessarily stop a drip.

The ***Fuel Supply Was Modified*** by cutting into and teeing into the existing supply line on the the port side of the filter between the tank and the existing valve. In addition a new valve (NV3) was cut into the line between the new supply line tee and the tank. This new tee will accept the flow from the filter pump and the valving will allow flow to return to either tank.

Since the system has taps at both tanks (at the tanks sump drains), a line was connected at each tank and valves (NV1 and NV2) were added near the tank taps. Between these two new valves a line and new tee was installed that provides flow to the filter/pump. An additional tee was installed, on the port side of the new tee, and above that additional tee a valve (NV4) was installed that isolates a visual level gauge.

The Racor filter was installed and connected to the new tee from the drain line. The pump was installed and connected to the filter outlet. A line was installed at the pump outlet with a valve installed nearby the pump and this valve (NV5) was connected to the new supply line tee.

Operation of the System allows for a variety of modes. Fuel can be withdrawn from either tank and sent to either tank. Thus recycling within either the port or starboard tank is available (Modes 1&2). Also fuel can be withdrawn from either tank and directed to the other tank thereby transferring fuel from tank to tank (Modes 3&4).

With the new valves NV-1,2,4,and 5 closed the system can be run as the original system was run. With the recycle system running (Mode 11), recycling port tank, the pump discharge flows via the original supply line and the pump can be run while underway and the engine supply is filtered fuel. This allows for some pitch and roll while underway to disturb any settled water or solids in the sump to get picked up by the system.

The ***Level Indicating Sight Gauge*** can be connected to either tank (Mode 6&7) to allow for a direct measure of tank level. I remove the fuel in the sight gauge by drawing air through NV4 (Mode 8) with the pump. This also can be used to partially replace fuel in the Racor with air which drops the level in the filter and allows for a less messy filter element change.

The ***Operation of the Pump*** needs to be throttled. With the pump running, say recycling fuel in the port tank, there is very little resistance to flow and the solenoid pump operates at an unnecessary excessively high rate. This can be controlled by partial closure of the valve (NV5) at the pump discharge.

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