2012 Pix & notes from Walter Caldwell on repower:

Volvo 2003 to Volvo D2-40, J40 hull #007, *Shaken-not-Stirred*:

This solution has the advantage of being as close to drop-in as anything else, and the prop may be usable if you had a Volvo 2003. The talk is the engine is a little cheaper to put in, a little more expensive to maintain, but in the end about the same life cost as anything else on average. If you already have a can of green paint you can still use it.

(image 1824 – note coolant tank is right where it needs to be… check your hot water heater location though)

Also note in 1827 how the exhaust hose goes straight into the muffler. The exhaust port on the engine is smaller than the hose, so there is a smaller ID hose over the exhaust port. Then the exhaust hose fits over that hose. I had to modify the output part of the muffler by glassing in some fiberglass tube. I forget exactly what the issue was with that (smaller or larger), but it was an easy fix. That hose coming out of the muffler is new, and links into a longer piece of hose that goes from just in front of the steps back to the transom.

In the next picture, that long piece of hose looked fairly new, so we didn't replace it. I think I had to make a linkage out of fiberglass tubing for those two hoses as well. Maybe they are different sizes. I'll look at it again and see if I can remember. Basically I think the hose IDs had to be stepped up from the engine to the transom. Much better than the other way around.

(Back view- above), (Starboard side view – below)

Above (sorry it's out of focus) is of the door on the starboard side of the engine compartment. You can see the fuel and oil filters, the priming pump, and the yellow dipstick. Very convenient!

Both cables come to the engine compartment on the starboard side – you can see the red throttle cable in a few of the pictures. In one, you can see the transmission linkage on the right side of the transmission.

Cockpit Controls

The gauges and control were all separate. I cut a piece of starboard to size and cut holes in it for the control and gauges. There is one cluster of wires that runs from the engine to the control in the cockpit. We replaced the throttle and transmission cables, so the toughest part of that of course was going thru the pedestal (true regardless of what engine you get!)

The choke, start button, and stop pull lever have been replaced with an electronic vessel control (EVC) in the D2 series installations. The LCD in the Tach provides engine hours.

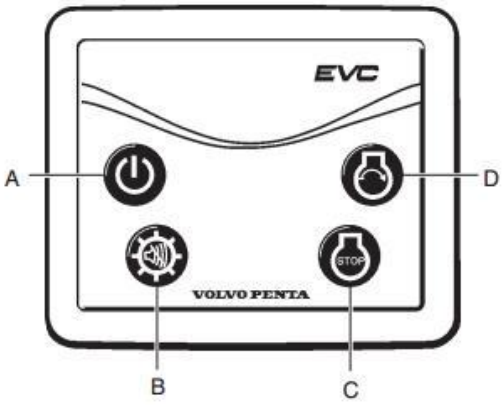
Voltmeter

Coolant temperature

Fuel level

Alarm display

Control panel



A. On/Off button
Press this button to engage or turn off the system.

NOTE! The control panel must not be turned off while the engine is running.

B. Multifunction button
- Alarm acknowledgement
- Dimmer (background lighting)
- Contrast (tachometer LCD)

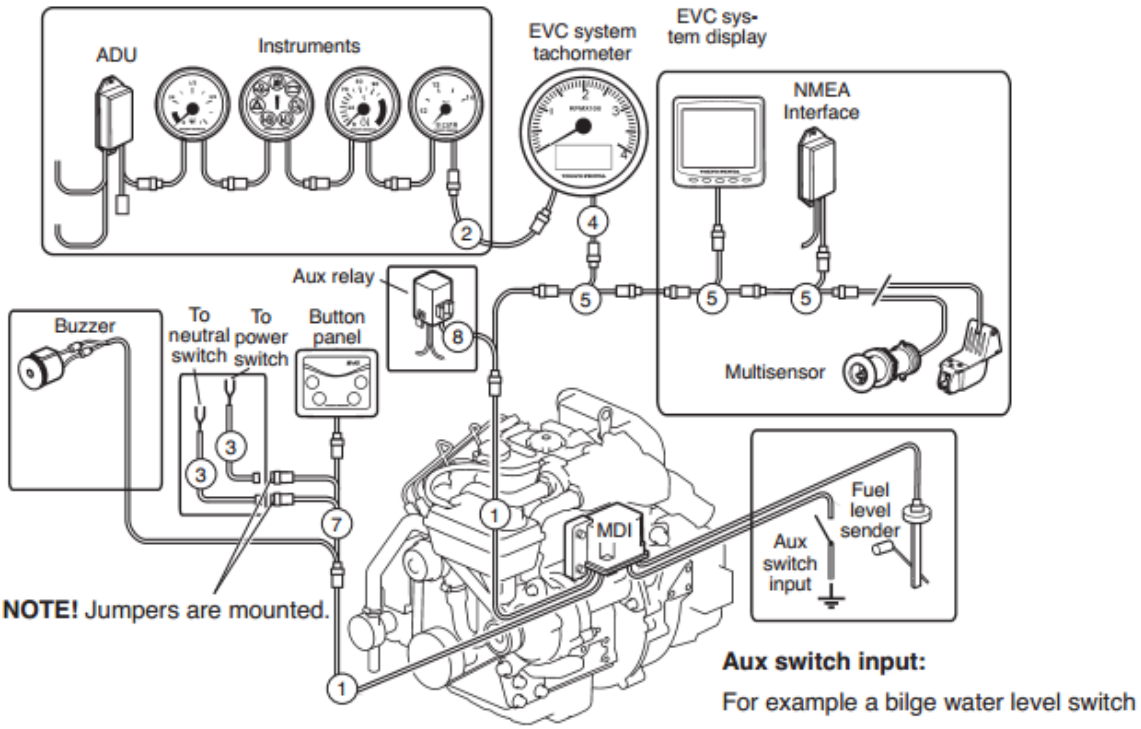
C. Stop button
The engine stop running when this button is pressed.

D. Start button
When this button is pressed the glow function is activated and the starter is engaged.

Minimum config is the panel and a tach gauge. The Alarm Display is a classic idiot lights panel; there is also an LCD display option which can give numeric data. The system allows for multiple stations and a fair amount of flexibility:

Optional instrumentation

⚠ **IMPORTANT!** The MDI system allows maximum one EVC system tachometer and/or one EVC system display in the system.



2003-08-01

Volvo Penta launches EVC: Electronic platform makes boating simpler

EVC – Electronic Vessel Control – is Volvo Penta's new electronic platform.
EVC is an integral system that enables a boat's engine, control systems and instruments, as well as other functions on board, to communicate and exchange information. The system is highly flexible and expandable, and can be upgraded with new software. EVC is based on the latest CAN-bus technology, which is widely used in the automotive industry today.

Modern leisure craft feature extensive electronic systems on board. Engines are electronically controlled to a greater or lesser degree, control systems on the larger boats are electronic, instrumentation is becoming more advanced, and an increasing number of boats are equipped

with electronic navigation equipment. Electrical installations become complicated if conventional technology is used, since each instrument requires its own cable. On a larger leisure craft, this means drawing hundreds of feet of cable, which is tiresome for the boatbuilder and potentially unreliable for the boat owner. It also complicates the process of upgrading or installing new equipment. It follows that a far better solution is to gather all the functions into a single system.

One system for all engines

This was Volvo Penta's incentive to begin development of EVC as a control system for its electronically controlled engines.

"Our primary need as an engine supplier was to find a common system for all our engines, most of which are electronically controlled. Each engine control system is adapted to a specific engine, so they are not identical. We needed a common system that could manage all of our electronically controlled engines, including current and future models," explains Martin Vansvik, project manager at Volvo Penta.

The project began in 1998 with a pre-study, which showed that considerable advantages could be achieved by integrating all of a boat's electronic functions – not only those controlling the engine – in a single system. Among other steps, Volvo Penta developed a concept boat to enable the new technology to be tested.

"The automotive industry experienced a similar need, and we closely examined the systems developed in that sector. One of our aims was to make driving a boat as simple as possible – something like driving a modern car. The integrated systems that were being developed at that time looked highly promising, and we decided to develop a similar system adapted to boats," relates Martin.

CAN-bus system

Today, computerized networks designed to control all of a vehicle's functions, known as "CAN-bus" systems, are standard within the automotive industry. The networks comprise several processors that receive data from the connected units, process it and forward it to the right address. If you depress the accelerator in your car, this action is registered by a processor, which sends a command to the engine control system to increase the supply of fuel to the engine. With EVC, Volvo Penta has developed a CAN-bus system adapted specifically to the requirements of a modern boat.

"All of the components in the EVC system have been developed to meet our own exacting requirements. We develop and test the system to ensure that it can withstand moisture, vibrations, cold, electrical fields and many other adverse factors over a long period. All connections are waterproof, the cables are sturdy and the processors are robust and reliable. The EVC system fulfills the most stringent classification requirements for commercial use, and the system has also undergone extensive testing in a number of boats in commercial use," says Martin.

Better information and greater reliability

EVC is now being launched in combination with Volvo Penta's electronically controlled diesel and gasoline engines. Two versions of the system are available – one with electronic engine control, suitable for luxury-class boats, and one with traditional mechanical

controls for smaller boats. Volvo Penta is also launching a series of new instruments and displays developed for EVC.
"EVC has a number of advantages. First and foremost, installation is simpler and more reliable, giving the boat-owner higher quality and better operating reliability," says Martin. "It's also very simple to install additional instruments, since no new cables need be inserted. The information supplied to the instruments and displays is always exceedingly reliable. All messages and warnings are in the form of text messages, which clearly inform the driver what is going on. The trim function, for boats with Aquamatic, has been improved and now enables the tilt angle to be limited, as well as automatically synchronizing engine speed in twin-engine boats."
EVC also provides several functions that further increase safety on board and protect the engine and the transmission in the event of incorrect use or an inappropriate command. On boats with flying bridges, control of the consoles is simpler with EVC and there is less risk of someone activating a console by mistake.

Improved service
The EVC system is supported by a new service tool, VODIA, which replaces all previous diagnostic tools. VODIA is a small handheld computer which the mechanic can connect to the EVC system to perform various diagnoses and extract engine data, including various statistics. The data is presented both textually and graphically. The result is more rapid and efficient servicing. The process is also simplified for the service workshops, since service personnel need only use a single diagnostic tool for all types of old or new electronically controlled engines.

Exciting future
"The fact that the EVC functions are software-based, like the functions in an ordinary PC, means the system can be upgraded. What we are launching now is a platform to grow with. At present we are using only a fraction of the system's capacity, and it would be entirely feasible in due course to integrate navigation equipment, autopilot and much more. With EVC, we have laid a foundation on which we will be able to build for a long time to come," concludes Martin Vansvik.

For additional information contact:Ben Landis, Manager, Marketing Communications, Volvo Penta of the Americas, Inc. (757)436-5120