Hinckley Yachts
Jetstick Technician Guide

THE HINCKLEY CO.

Quick Reference Guide

T29 - T36 - T40 - T44 - T44FB

August 2007

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Display Layout

Start Up Screen

This screen is displayed as soon as the ignition switch is turned to the on position
Normal operation will display Docking Mode Active and the current bucket position.

Should there be a problem an error message would be displayed.
NOTE: The Engine does not have to be running

Press the <<ESC>> key to move to the next screen, Date and Time.

Date and Time Screen

Refer to section SETTING Screen to set date and time. (See next page)
NOTE: If the boat has been stored for the winter the date and time must be reset.

Pressing the <<ESC>> key brings you to the next screen, the Mode Screen.

Mode Screen

Mode Screen is not currently used.

Press the UP arrow to get to the next screen, Information Screen.

Information Screen

For displaying Program Revision Level press the F1 button and then the F2 button.

Press the <<ESC>> key twice to return to Information Screen and press the up arrow to go to the next screen, Settings.

Settings Screen

The LCD screen settings are under the F1 key & the date & time are under the F3 key

Press the <<ESC>> key and then the up arrow to get to the next screen, called measure.

Measure Screen

This Screen is primarily used for trouble shooting and works in the same manner as a multi-meter for measuring inputs and outputs. The engine does not need to be running to check inputs.

Inputs

Pressing the F1 button then under Voltage In and Pressing F1 button again allows you to measure in real time the input signals form all input devices such as the Jetstick and position sensors as they are moved. Pushing the up arrow key allows you to scroll the screens. The readings should be close to the factory defaults listed below and in this order.

E-Gas	Do Not Use
Thruster JS	500 – 4500 mV
Steer JS	500 – 4500 mV
Bucket JS	500 – 4500 mV
Trim Pot	855 – 4076 mV
Bucket Position	449 – 4354 mV
Nozzle Position	2174 – 2678 mV
Power Mode PB	0% Off 100% On
Helm Mode PB	0% Off 100% On

Pressing the <<ESC>> Key twice brings you back to the original Measure Screen where you can now go into Outputs.

Current Outputs

Press the F2 button for outputs and the up arrow to scroll thru the screens. Engine should be running for this check.

Bucket Valves	600 – 1000 mA
Nozzle Valve	675 – 1100 mA

Press <<ESC>> to get to previous screen and then press the up arrow for digital outputs then F1. Engine can be off.

Digital Outputs

Port Thruster	Low when Off/High when ON
Stbd Thruster	Low when Off/High when ON
Auto Pilot Relay	Low when Off/High when ON
Docking Mode Light	Low when Off/High when ON
Power Steer Mode Light	Low when Off/High when ON
Helm Mode Light	Low when Off/High when ON

Any other screens not used.

Press <<ESC>> twice and push the up arrow key to go to the properties screen.

Properties Screen

The Properties Screen is where all boat setup occurs.
Pressing any of the function keys will bring you to the password screen.
NOTE: The Engine does not need to be running at this time.

PASSWORDS

2929*:* T29 & T36
4040*:* T40, T44 & T44FB

Enter password using the up down keys.

Input Screen

Pressing the F1 button brings up the Voltage In Screen

Press the F1 button to select the first screen, Thruster Jetstick.

The Voltage In screens are used to set the range/Min-Max settings of all input devices.
In this case moving the Jetstick to port and starboard (x axis) will display the Min and Max (range) settings of the thruster.

NOTE: Put boat in power steer mode to eliminate actuation of the thruster.

Press the F1 button to select setting the min setting.
The current Min setting is displayed with the factory default being 500 mV.

Hold the Jetstick to port and press the F3 button to set the Min.
The 500 mV will change to the new Min setting or may remain the same.

Press the <<ESC>> key and then the up arrow to continue to the Max setting screen.

Press the F1 button to select setting the Max setting.

The factory default for the Max setting is 4500 mV.

Hold the Jetstick to starboard and press the F3 key to set the Max setting. Again the new Max setting number will appear and press the F1 OK key to set.

Press the <<ESC>> key twice to get out of the thruster setting screens and press the up arrow key to move the next screen Steer JS

Press the F1 button to select setting the Min/Max settings for the Jetstick steering.

Rotate the Jetstick steer to port and press the F3 button to set the Min. The 500 mV will change to the new Min setting or may remain the same. To record this new setting press the F1 key for OK.

Press the <<ESC>> Key and then the up arrow to get to the max screen and select by pressing the F1 Key

The factory default for the Max setting is 4500 mV. Hold the Jetstick Steering to starboard and press the F3 key to set the Max setting.

Again, the new Max setting number will appear and press the F1 OK key to set.

Press the <<ESC>> Key twice to get out of the Steer setting screens and press the up arrow key to move the next screen Bucket JS

Press the F1 button to select setting the Min/Max settings for the Bucket JS.

The factory default for the Max setting is 500 mV.
Hold the Jetstick aft and press the F3 key to set the Min setting. Again the new Min setting number will appear and press the F1 OK key to set.

Press the <<ESC>> Key and up arrow for the Max screen.

The factory default for the Max setting is 4500 mV.
Hold the Jetstick Forward and press the F3 key to set the Max setting. Again the new Max setting number will appear and press the F1 OK key to set.

Press the <<ESC>> Key twice to get out of the Bucket JS setting screens and press the up arrow key to move the to next screen Bucket Position.

At the Mode Select Panel change to Helm Mode. Using the manual levers on the bucket valve assembly mounted aft, fully lower the bucket.

Press the <<ESC>> Key twice to get out of the Bucket JS setting screens and press the up arrow key to move the next screen Trim Pot.

Turn the trim pot to port and press the F1 key to select min.

Press the F3 key to set min and then the F1 key to accept the new min valve.
The factory default is 855mV.

Press the <<ESC>> key once and the up arrow to get to the max screen.

Turn the trim pot fully starboard and press the F1 key to select

Press the F3 key to set the max then the F1 OK key.
Press the <<ESC>> key twice and the up arrow to get to Bucket Position.

NOTE: The engine must be running and in gear for the position feedback settings

It is important that the bucket position transducer be mounted so that the down reading is as close to 500 mV as possible.

Press the F1 button to select setting the Min settings for the Bucket Position Sensor.

With the bucket fully down press the F3 button and then the F1 OK button to record the new min setting.

Press the <<ESC>> Key and the up arrow for the Max screen.

Press the F1 button to select setting the Max settings for the bucket.

With the bucket fully Up press the F3 button and then the F1 OK button to record the new max setting.

Press the <<ESC>> Key twice to get out of the Bucket setting screens and press the up arrow key to move the to next screen Nozzle Position.

Press the F1 button to select setting the Min settings for the Nozzle. On the Mode select panel change to Helm Mode and turn the helm wheel fully to starboard.

Press the F3 button to set min and then the F1 ok button.
Press <<ESC>> key and the up arrow to go to the next screen set max

Turn the helm wheel fully to port to set the max setting.
Press the F1 key to select max

Press the F3 key to set the max setting, then the F1 OK key.
Press the <<ESC>> key twice and the up arrow to go to the Properties screen.

Press the F3 Other key to get to the Func. Parameter Screen

Press the F1 select screen and then the up arrow until you get to Bucket Neutral screen.

Press the F1 button to select Bucket Neutral Adjustment. Boat must be running and in gear.

Using the up-down arrow key, adjust Bucket Neutral in the desired direction. More negative lowers the bucket and less negative raises the bucket. This number will never be a positive number. Once desired neutral is obtained press the F1 or button.

Note: the F3 reset button will set bucket neutral to the factory default setting.

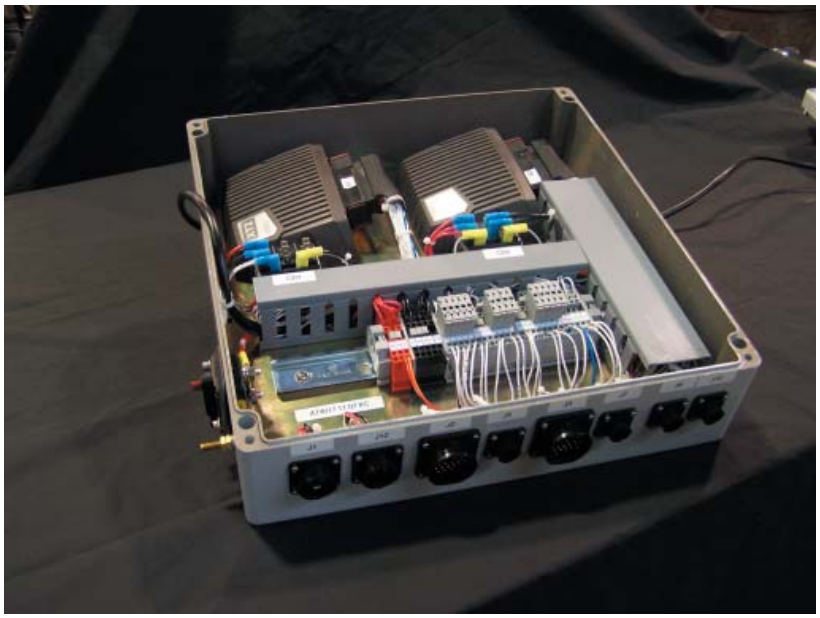
Press the <<ESC>> key twice and the up arrow until you come to nozzle neutral.

Press the F1 button to set nozzle neutral; boat must be running and in gear.

Nozzle Neutral is best set with the boat off the dock, pointed into the wind with RPM about 1500. Watch for a steering bias in either direction and change the value accordingly. This number can be a positive (port) or a negative (starboard) number.

This adjustment only affect the nozzle offset in docking mode. In power steer mode, the trim pot is used for this offset.

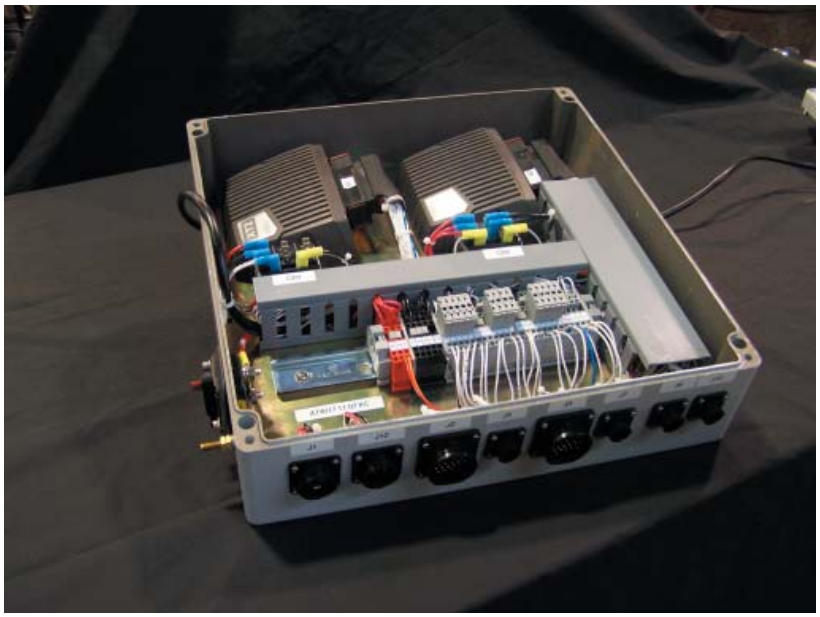
T29/T36



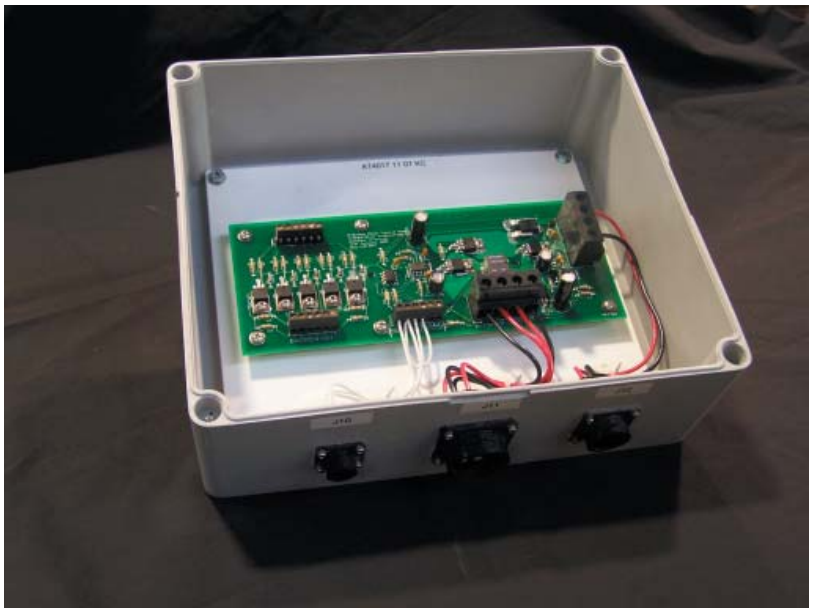
CR1 - Auto Pilot Relay

CR2 - Controller Power to Box via Ignition Key

T40/T44/44FB

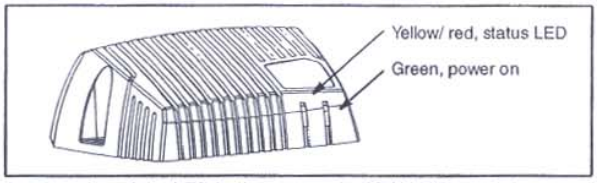


H-Bridge



System Diagnostics

The yellow blinking LED on the top of the module indicates normal status. If there is an error detected, the master will present a message on the display. The XT2 module also indicates *error status* through the red blinking LED as shown below.
This gives an immediate diagnosis as to the nature of the error that has occurred.



The location of the LED indicators on the IQAN-XT2 module.

The green LED indicates power on. The yellow/red LED, will be blinking red when an error has been detected. To get futher information about the error messages, see Appendix B, on page 30

LED indicator showing different XT2 modes

Status		Blink (yellow light)
Normal (no errors)		

Error code	Error	Blink (red light)
1	I/O and voltage errors	
2	High temperature	
3	CAN error	
4	Hardware error	
5	Address error	
6	Software error	

A small recommendation...
You can use the internal diagnostics in the IQAN-MDM to get more information about the XT2 module. Then following values are measured:

Internal temperature [°C]
Power supply [V]
Reference voltage [V]
Reference voltage-egas [V]

Pressure Setting

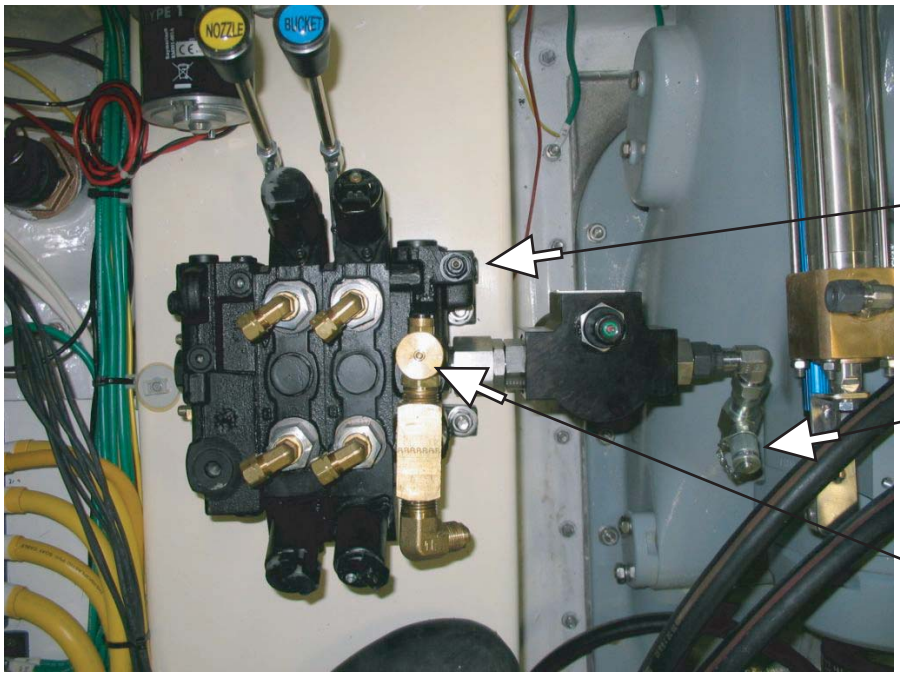
Fully raise or lower bucket using manual levers and hold while reading pressure gage in pressure line to valve.

Set single engine boats to 450 PSI

Dual engine boats to 650 PSI

Pressure Adjustment

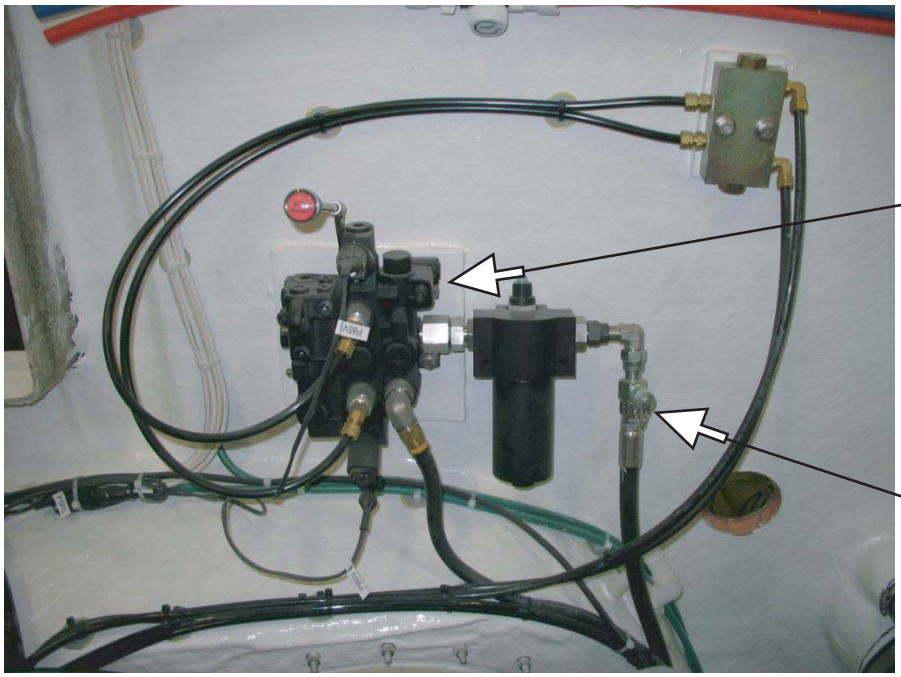
Turn In to Increase Pressure



Pressure Adjustment
Single Engine set at 450psi

Gage Port

Normally Open Valve
Close to Bleed Steering



Pressure Adjustment
Dual Engine set at 650psi

Gage Port

38R HYDRAULIC SYSTEM SETUP

INITIAL START UP

Fill hydraulic reservoir with MIL 5606 fluid to the top of site gauge.

Open all 3 ball valves on hydraulic reservoir (Illustration 8).

Preset pump pressure compensator (Illustration 6). Turn in all the way and back out ½ turn.

Preset pump differential (Illustration 6). Turn all the way in and back out ¼ turn.

Start port engine and check for leaks.

Move all manual valve overrides in both directions several times to extend and retract all cylinders and run motors to bleed air from system.

Start starboard engine and check for leaks.

Move all manual valve overrides in both directions to bleed air from system.

Refill hydraulic reservoir to ½" of top of site gauge.

Conduct all tests at 850 RPM.

P70 VALVE PRESSURE SET UP

Install a 3000psi gauge in the load sense line at pumps or in the main pressure line after the 2 check valves that isolate the pumps.

Move one bucket lever all the way in one direction with Jet stick in Helm mode and turn pressure reducing valve **(9/16" wrench & a 5/32" Allen wrench) IN** (clockwise) until gauge reads **600psi**. Then back **OUT** (counter clockwise) the relief valve on the P70 valve body (10mm wrench on lock nut & 3mm Allen wrench on set screw, Illustration 2) until pressure starts to drop below **600psi** and stop.

Back out adjustment screw on pressure reducing valve until gauge reads **400psi** and lock set screw. Release handle and move the port bucket up and down, then nozzle back and forth, and then the starboard valve up and down to make sure pressure stays at **400psi**, +/- 25psi. Readjust pressure reducing valve if necessary. **IN** increases pressure to P70 and **OUT** reduces pressure to the P70 valve.

NOTE: The more pressure to the P70 the harder it is to control the bucket down stop without a thump at the end of stroke.

VPL VALVE FOR [TOP- TOP BIN COVER –AUTOPILOT] SET UP

Open convertible top bin with manual override and check to see if pressure is set at **700psi.** Adjust if needed (Illustration 1).

Raise and lower top with manual override and hold at end of stroke to insure pressure is set at **1800psi.** Adjust if needed.

Run autopilot valve with manual override and insure pressure is set at **550psi**, +/- 50**.** Adjust if needed.

NOTE: Allen wrench to remove plug to get at the relief setting for individual sections is **1/8"**, and Allen wrench to adjust the pressure under plug is **5/32**". Turning in (clockwise) increases pressure and turning out (counter clockwise) decreases pressure.

VPL VALVE FOR THRUSTER & WINDLASS SET UP

Make sure all flow limiter screws (Illustration 1) are backed all the way out and then screw in 4 turns and set lock screw.

Move override handle full travel to see how fast thruster moves (only way to verify full speed is with flow meter) and windlass can be checked by line speed. Then run both functions electrically to see if they match flow, speed, or sound. The thruster requires a flow of 7 GPM.

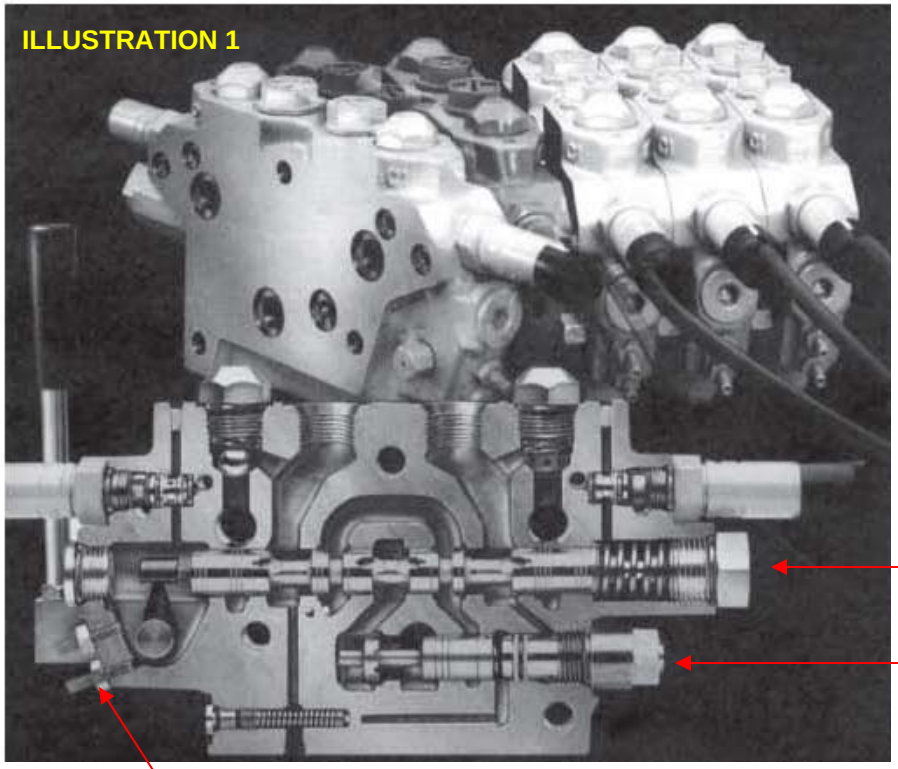
NOTE: As these are both hydraulic motors the only pressure you will see on the gauge is the pressure required to move the motor at the load that is induced by actual work being done. On the windlass this is set at a maximum of **1500psi** at full pump flow. 740 RPM need for maximum output of bow thruster without anything else running.

STANDBY PUMP RELIEF VALVE SET UP

Using the manual override, on the top raise and lower valve, hold in the down position and adjust relief setting (Illustration 9, use 3/4" wrench with a 3/16" Allen wrench) to **1800psi**. A gauge will have to be installed into the pressure line out of the pump or in one of the functions as there is a check valve installed to isolate this from the main pressure manifold.

AFTER SEA TRIAL RECHECK ALL PRESSURES AND FLUID LEVEL

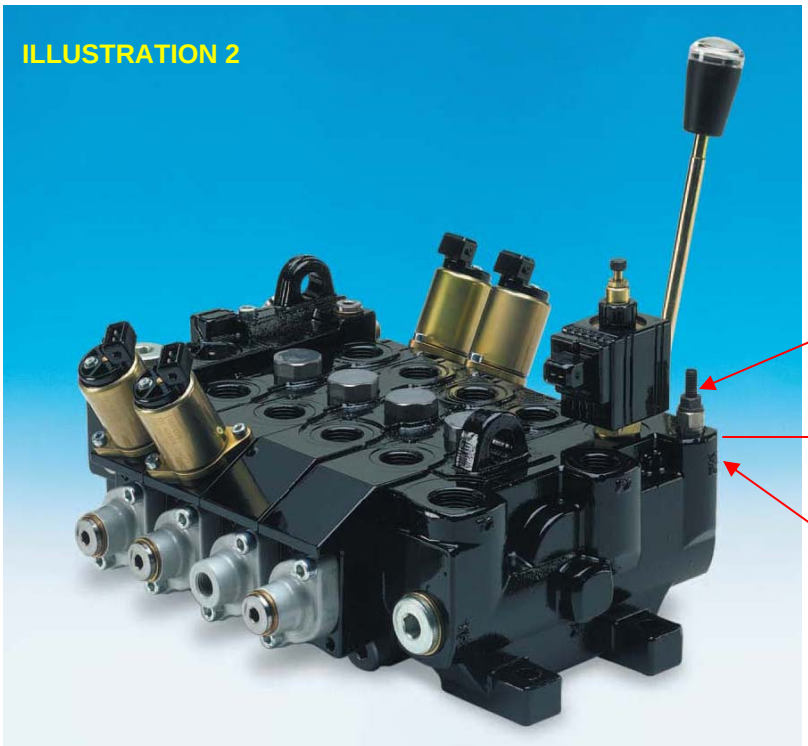
VPL Proportional Valve, Pulse Width Modulated (PWM), Thruster, Convertible & Autopilot



Pressure limiting adjustment screw

Individual pressure adjustment (relief); turn in to increase and turn out to decrease. Remove plug to access adjuster.

Flow limiter; turn out all the way and then turn in 4-turns.



3mm Set Screw

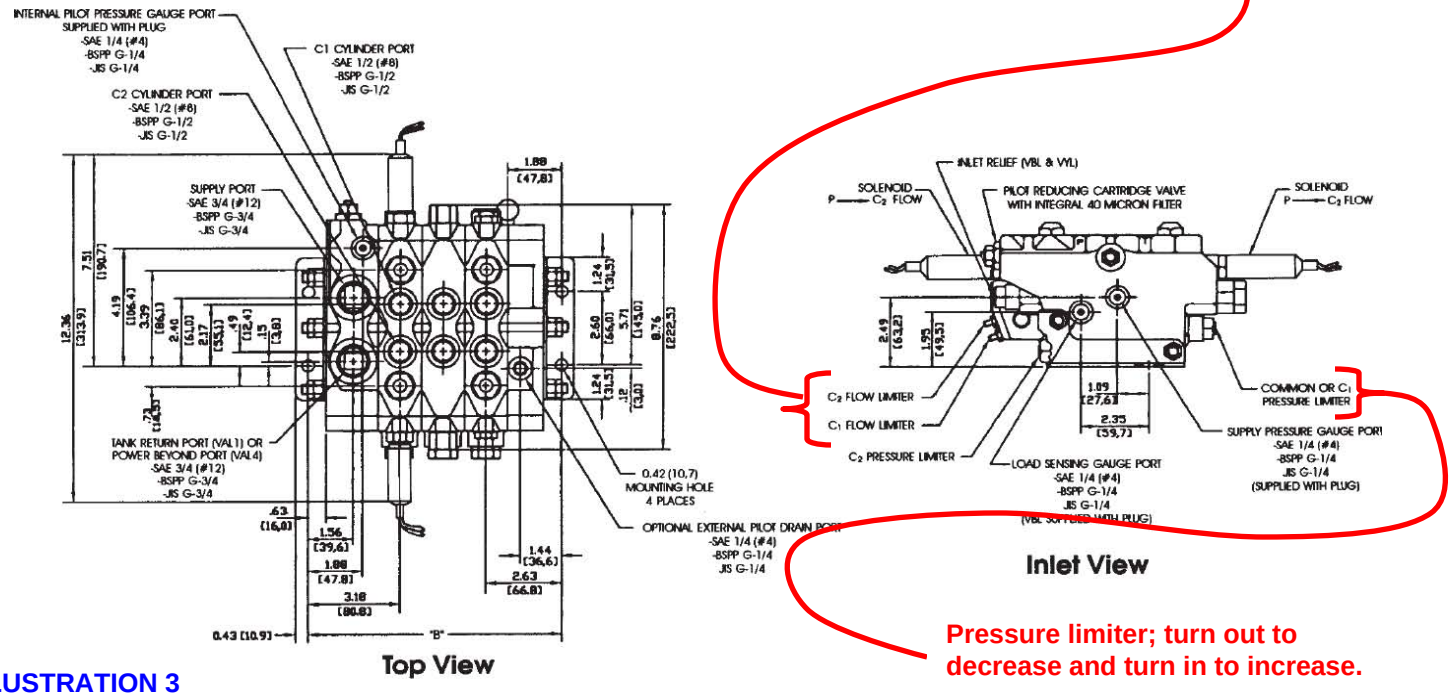
Main relief set at 600 PSI

10mm Lock Nut

P70 Proportional Control Valve, Current Controlled, Jetstick Bucket X (2) and Nozzle X (1)

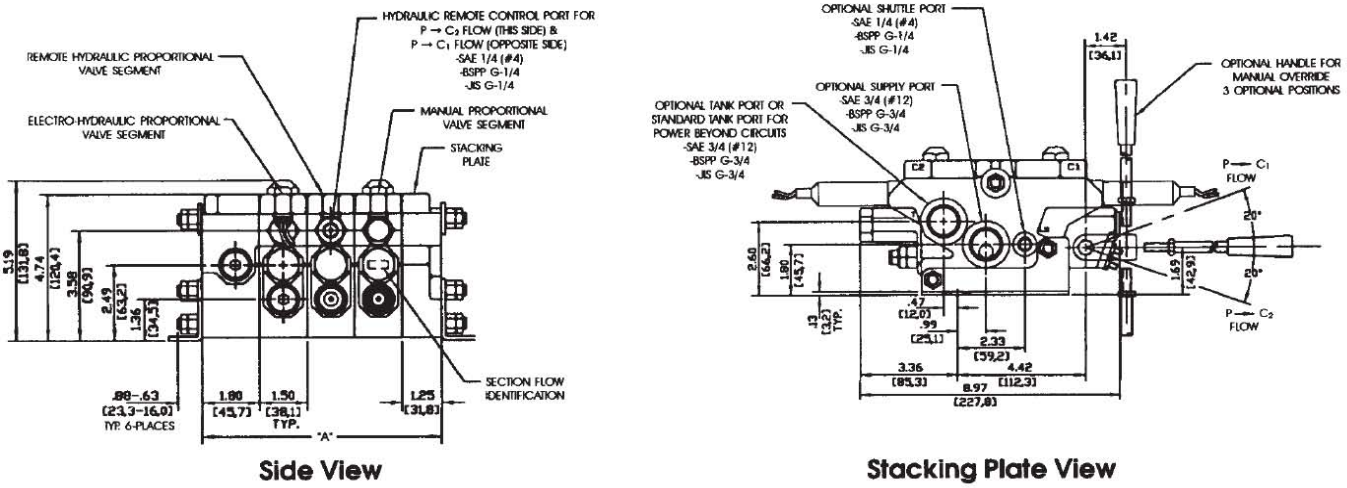
VPL Proportional Valve, PWM

Back flow limiter; thread all the way out and then rotate in (4) turns.



Pressure limiter; turn out to decrease and turn in to increase.

ILLUSTRATION 3



WEIGHTS (APPROX)
STACKING PLATE....7.0 LBS. (3,2 KG)
WORK SEGMENT....10.0 LBS. (4,5 KG)
INLET VALVE.....10.0 LBS. (4,5 KG)

DIMENSIONS ARE IN INCHES (mm)

NUMBERS OF SEGMENTS	A (In/mm)	B (In/mm)
1	4.55 (115,5)	5.80 (147,3)
2	6.05 (153,6)	7.30 (185,4)
3	7.55 (191,7)	8.80 (223,5)
4	9.05 (229,8)	10.30 (261,6)
5	10.55 (267,9)	11.80 (299,7)
6	12.05 (306,0)	13.30 (337,8)
7	13.55 (344,1)	14.80 (375,9)
8	15.05 (382,2)	16.30 (414,0)
9	16.55 (420,3)	17.80 (452,1)

VPL Valves

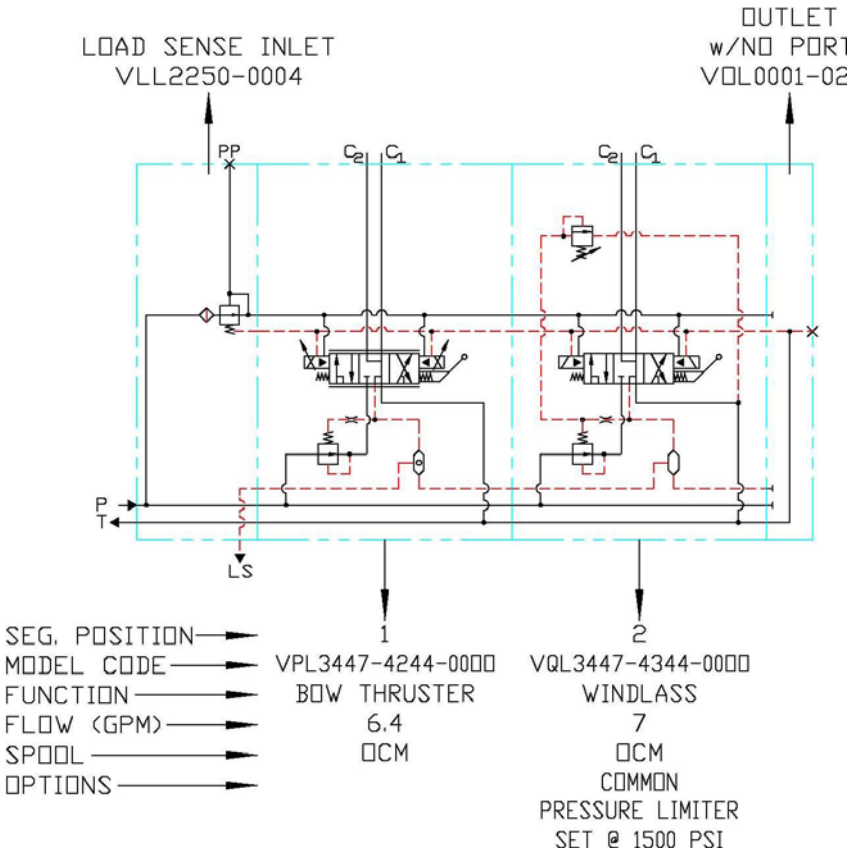


ILLUSTRATION 4

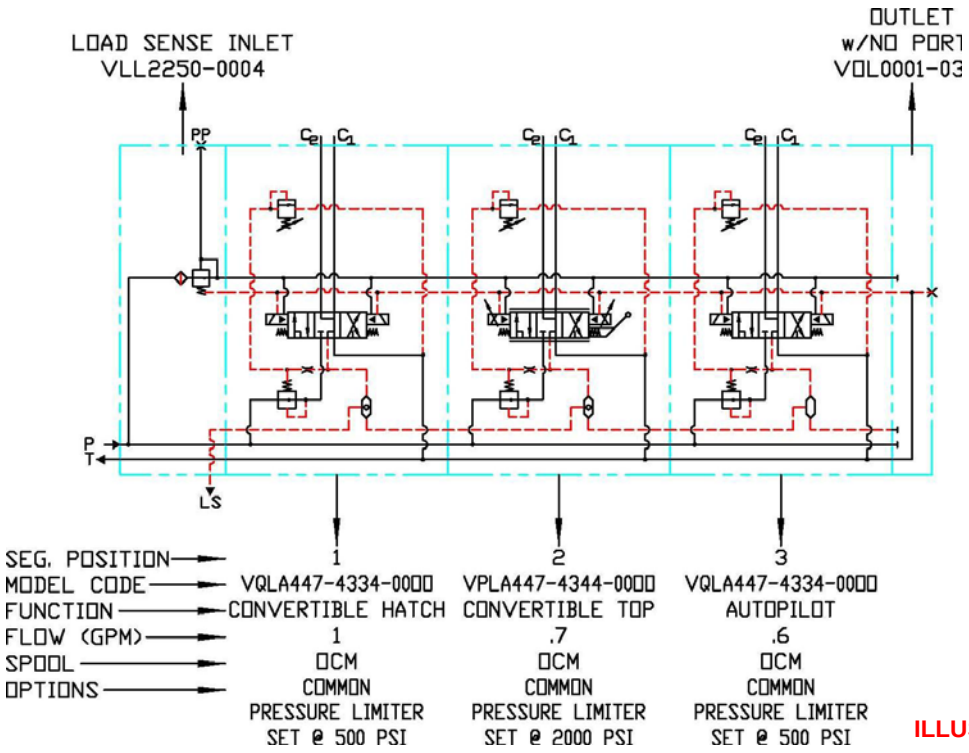


ILLUSTRATION 5

Engine PTO Pump X (2), Port & Starboard

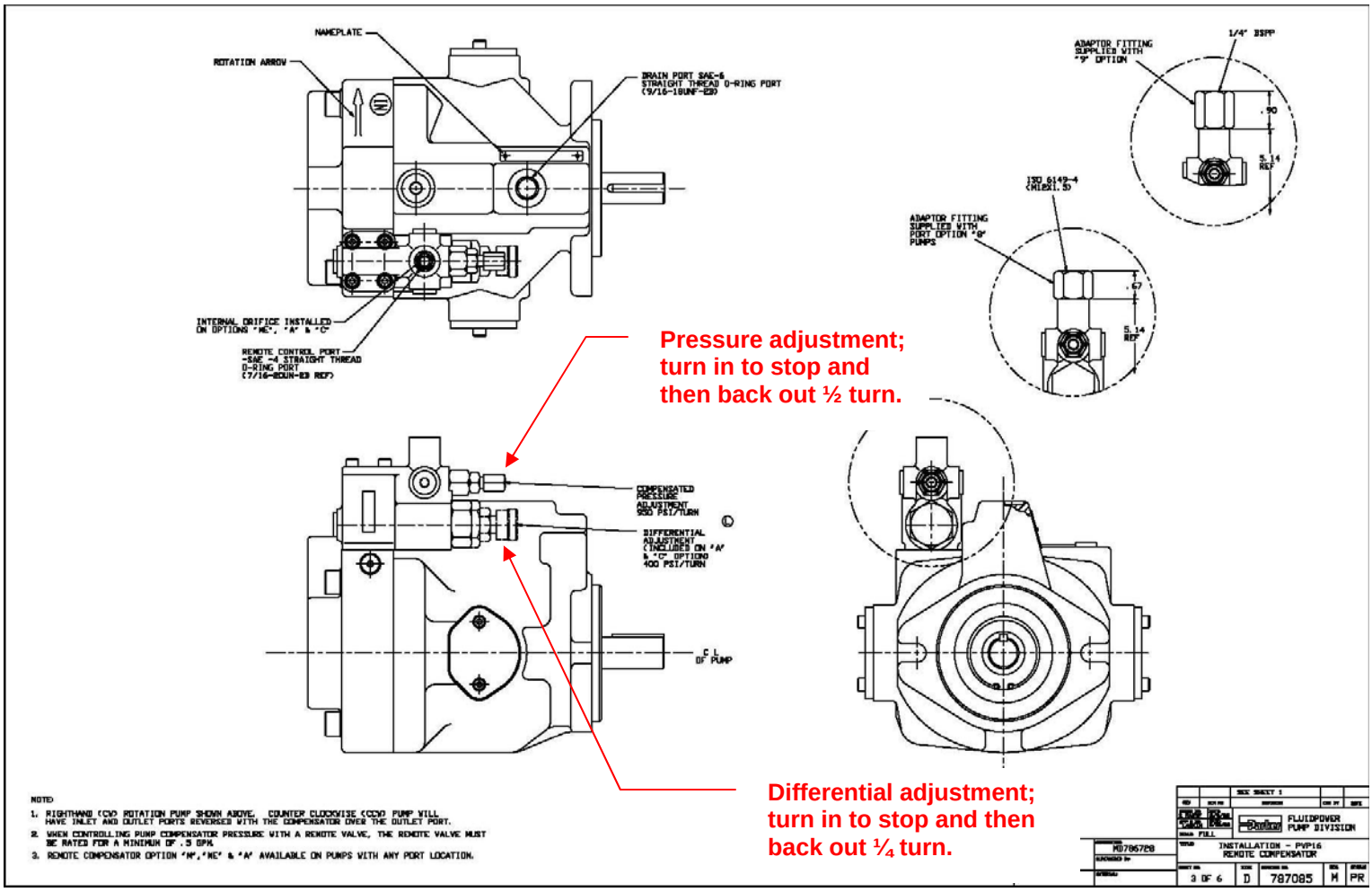
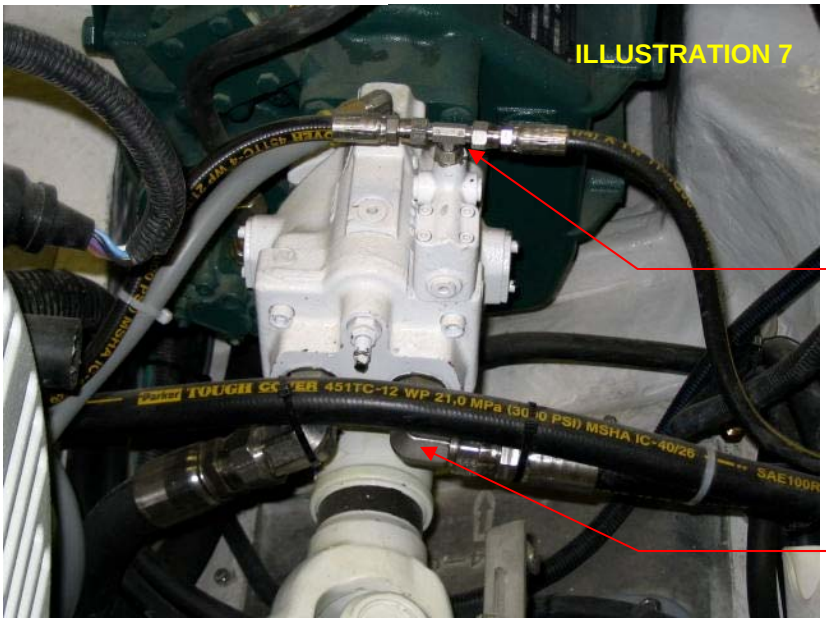
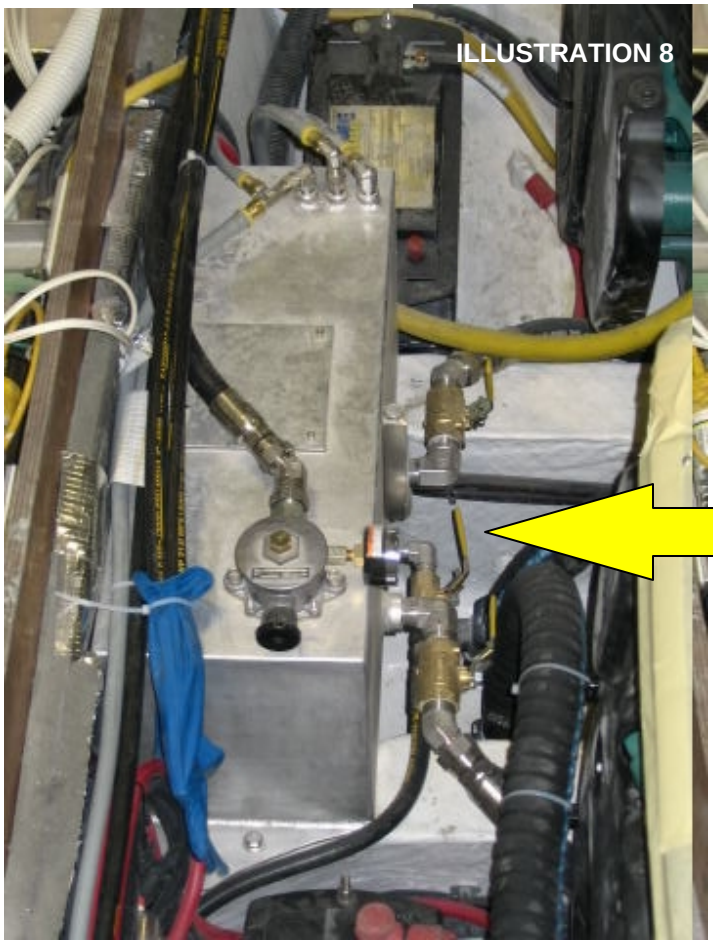


ILLUSTRATION 6

Starboard PTO Pump



Hydraulic Reservoir, Engine Room



Standby Pump, Engine Room to Port