

L7044GSI Mobile Cert engine Initial Set-up

ESP setup

Connect to the ESP computer to the ECU and open the service tool

Verify the workspace opens and screens are navigable

View fault list and record any faults on ESM. If any faults are present correct the faults before going forward.

From any screen perform Manual Actuator Calibration, observe the throttle actuator and verify movement. Verify ALM223 calibrate actuators fault is no longer active.

Set the following values in ESP

From any screen, start editing.

On the F3 Start Stop panel:

Pre lube time to 60 seconds

Purge time to 5 seconds

Post lube time to 180 seconds

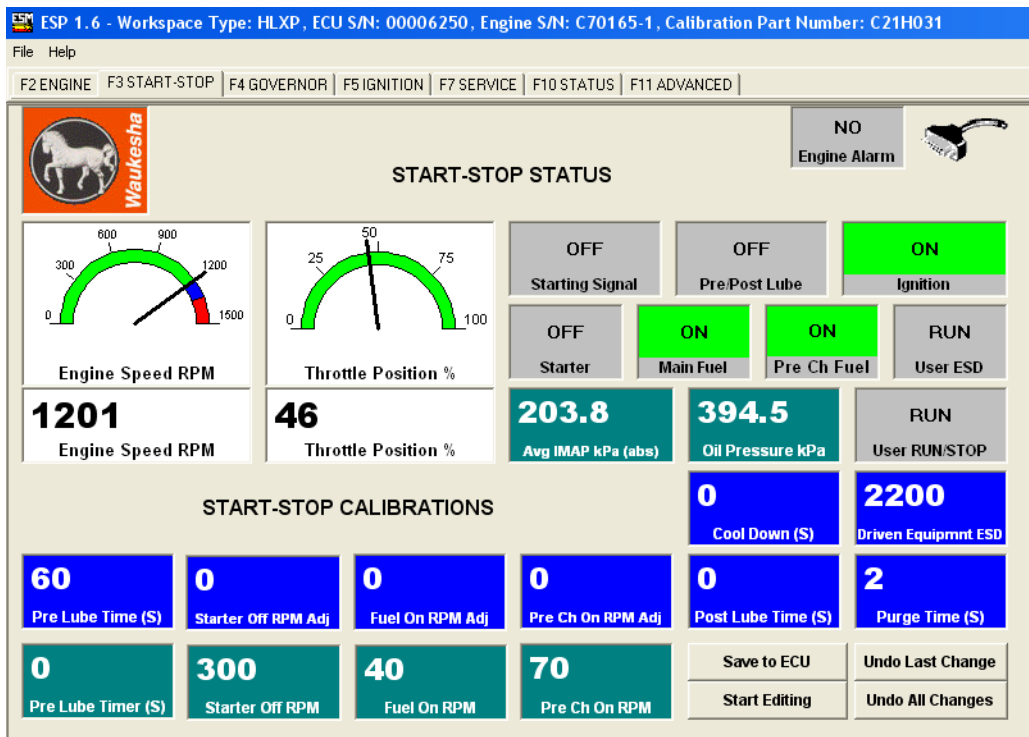


Figure 1-F3 Start-Stop Screen

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R.O.R. 03-06-2019

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ECO 156271

Rev. No. 102



TITLE - VHP MOBILE CERTIFICATION FUEL SYSTEM SETUP INSTRUCTIONS

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On the F4 Governor Panel input the generator Rotating moment of inertia in (kg-M²) or (lb-in-s²)

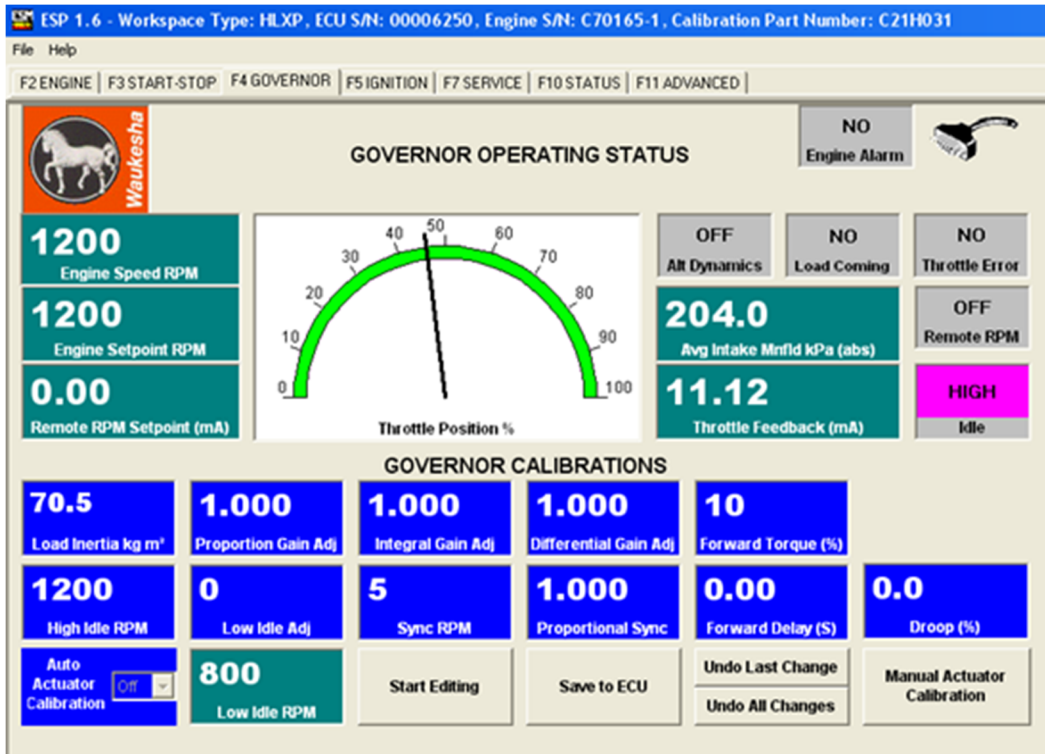


Figure 2-F4 Governor Screen

On the F5 ignition panel input the site WKI value.

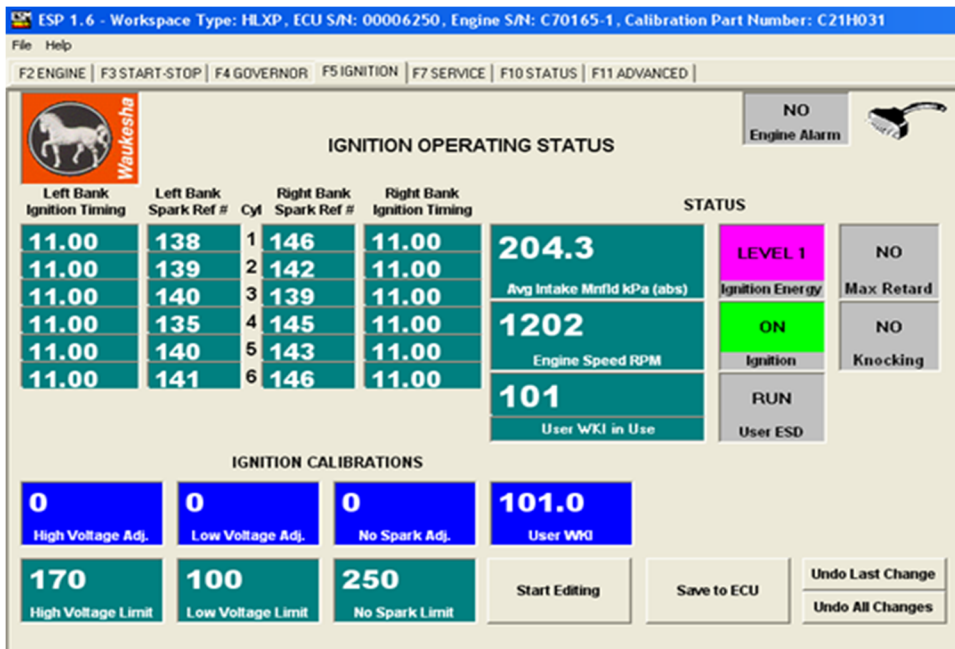


Figure 3-F5 Ignition Screen

On the F11 Advanced panel:

Set the Modbus baud rate to 9600 and the ID to 1 (These should already be set.)

From any panel save all changes to the ECU

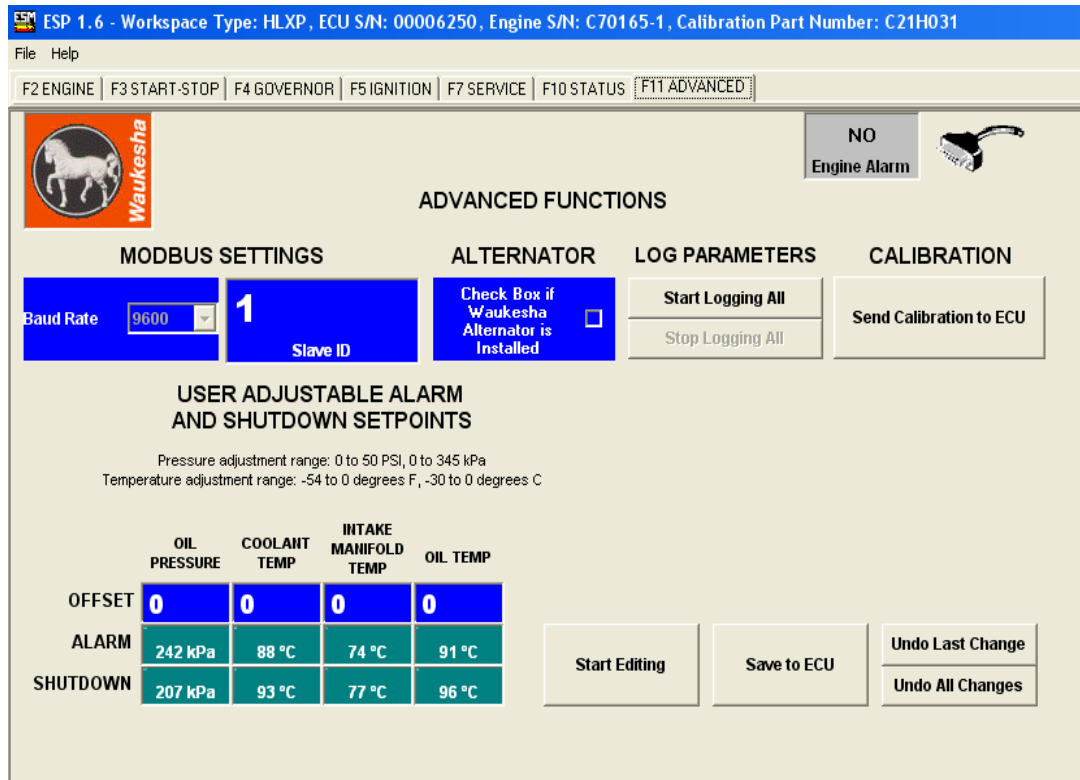


Figure 4-F11 Advanced Screen

Fuel System Instructions

A. SYSTEM DESCRIPTION & PHYSICAL REQUIREMENTS

1. Opening and closing of the main fuel valves is controlled by the ESM™.
2. A manual shutoff valve, placed upstream of the engine main shutoff valve (high-pressure gas line), is recommended. This valve will assist initial engine start-up and will act as a visual gas shutoff when engine is not in operation.
3. The main gas regulators (Fisher 99) control the Gas/Air via the regulator actuator.
4. The Carburetor Adjusting Screws are located on the carburetors below the intake manifolds. The Carburetor Adjusting Screws are used to adjust fuel flow at rated speed and load, with the Air/Fuel Ratio Control functioning in Automatic, until the regulator actuators are at the proper steps.

B. FUEL SYSTEM ADJUSTMENT PRIOR TO ENGINE START-UP

1. Set main fuel supply pressure to 30 – 60 psi
2. Determine the site fuel Heating Value. Either Higher Heating Value (HHV) or Lower Heating Value (LHV) can be used.
3. Determine which column in Figure 5 your fuel heating value fits in.
4. Turn each carburetor screw all the way in (clockwise), then turn out based on the column for your heating value. For 900 BTU/SCF LHV Natural Gas the screws are turned out 3 ½ turns from full clockwise. A field gas with an LHV of 1150 BTU/SCF would have the carburetor screw turned 3 ¼ turns out from full clockwise.

| | | | | | | | |
|---|----------|-----------|-----------|-----------|-----------|-----------|--------------|
| HHV BTU/SCF | 935-1075 | 1075-1175 | 1175-1325 | 1325-1545 | 1545-1765 | 1765-1875 | HD-5 Propane |
| LHV BTU/SCF | 850-970 | 970-1060 | 1060-1200 | 1200-1400 | 1400-1600 | 1600-1700 | HD-5 Propane |
| WKI | 100-85 | 85-70 | 70-55 | 55-45 | 45 | 45-42 | 34-36 |
| Carb Setting-turns out from full clockwise. | 3 1/2 | 3 1/2 | 3 1/4 | 3 | 2 3/4 | 2.5 | 1.5 |
| User Lambda Offset Table | | | | | | | |
| IMAP "Hga | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5.904 | -0.005 | -0.003 | 0.003 | 0.002 | 0.005 | 0.0025 |
| | 11.808 | -0.005 | -0.003 | 0.003 | 0.002 | 0.005 | 0.004 |
| | 17.712 | -0.005 | -0.0027 | 0.003 | 0.004 | 0.005 | 0.0045 |
| | 23.616 | -0.005 | -0.002 | 0.003 | 0.004 | 0.002 | 0.0045 |
| | 29.52 | -0.0065 | -0.0014 | 0.005 | 0.0065 | 0.0045 | 0.0045 |
| | 35.424 | -0.004 | -0.001 | 0.006 | 0.006 | 0.005 | 0.005 |
| | 41.328 | -0.003 | -0.001 | 0.004 | 0.003 | 0.002 | 0.002 |
| | 47.232 | -0.003 | -0.001 | 0.004 | 0.003 | 0.002 | 0.002 |
| | 53.136 | -0.003 | -0.001 | 0.004 | 0.003 | 0.002 | 0.002 |
| | 59.04 | -0.003 | -0.001 | 0.004 | 0.003 | 0.002 | 0.002 |

Figure 5

5. Using ESP, go to [F8] AFR Setup Panel and verify the short shaft stepper motor has been selected.
6. On [F8] AFR Setup Panel, set AFR start position to 1500.

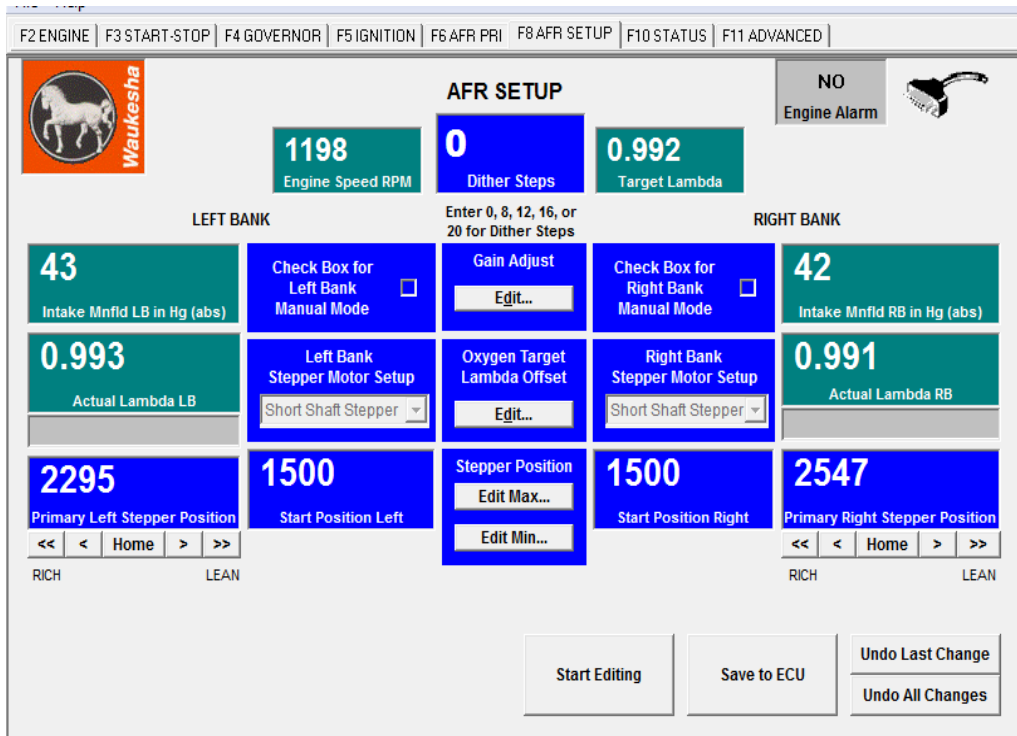


Figure 6-F8 AFR Setup Screen

7. Select the Oxygen Target Lambda Offset “Edit” Key.
 Fill in the table based on which fuel range the site fuel heating value falls into. For the example 1150 BTU/SCF fuel we would use the column for LHV of 1060-1200. For 900 BTU/SCF LHV Natural Gas we would use the column for 850-970. The table in Figure 7 is filled out for 1150 BTU/SCF LHV fuel.

8. Select “Stepper Position Edit Max”. Set Max position for Steppers 1 and 2 to 3000 at IMAP 11.808, and to 2000 at IMAP 5.904. This will help prevent rich misfire when the engine is idled at 750 RPM when hot.

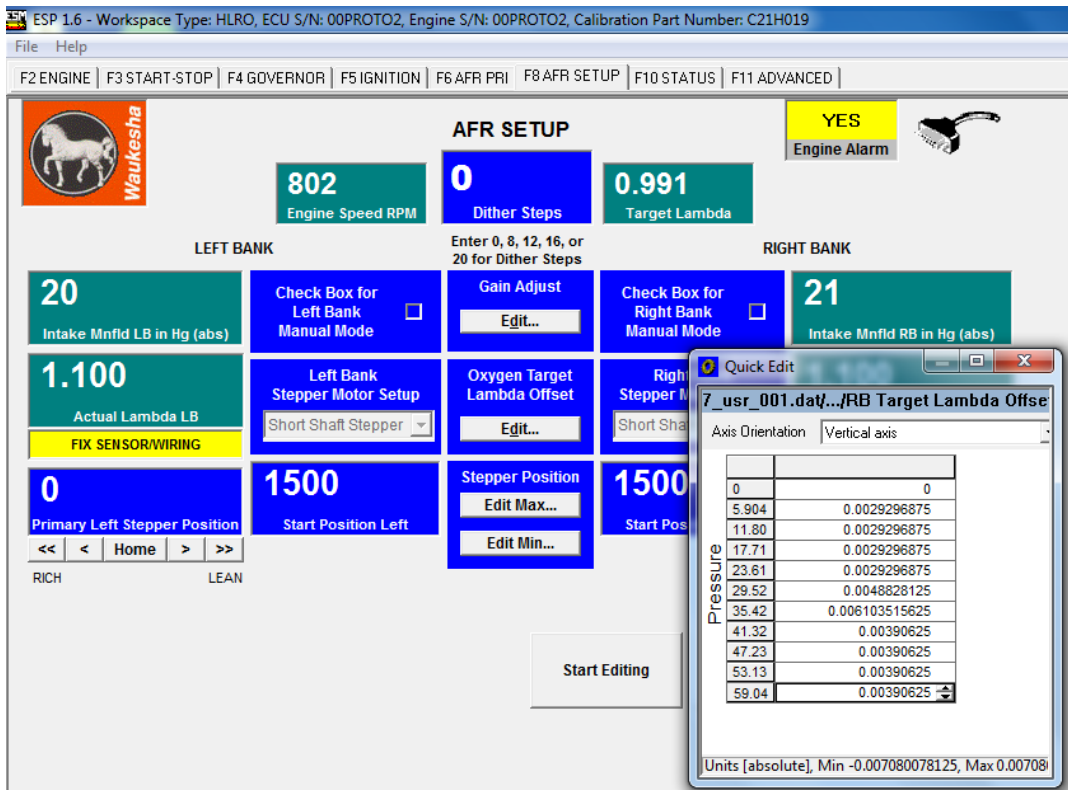


Figure 7-Target Lambda Offset table filled out for 1150 BTU LHV

C. ENGINE START-UP AND PRELIMINARY SETTINGS

1. Complete all pre-start activities and checks including checking oil and coolant levels, adjusting valves (if needed), alignment and crankshaft deflection, rocker arm oiling, piping tests, etc...
2. Confirm engine coolant and lube oil are at least 50°F for reliable starting.
3. Open manual gas shut-off valve.
4. Prelube engine for 60 seconds.
5. Set operating speed to 750 RPM.
6. Start engine.
7. If engine fails to start:
 - a. Confirm fuel is reaching engine and ignition is firing.
 - b. Reduce regulator start position steps in 200 step increments and re-try.
 - c. Raise regulator start position steps in 200 step increments and re-try.
 - d. Repeated start attempt failures may cause moisture to build on spark plugs. Crank several times with fuel off to “dry” the spark plugs, and repeat start attempts.
8. Once started verify there are no current alarms present. If alarms are active, they may interfere with stepper control.
9. Raise speed to rated speed (1200 RPM).

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10. At the highest available load (minimum 50% of rated), adjust carburetor screws until Regulator Actuator Stepper Position reaches the correct position for the fuel heating value based on Figure 8. Adjust carburetor screws to achieve this.
- To lower stepper position, turn the carburetor screw counterclockwise (rich).
 - To raise stepper position, turn the carburetor screw clockwise (lean).

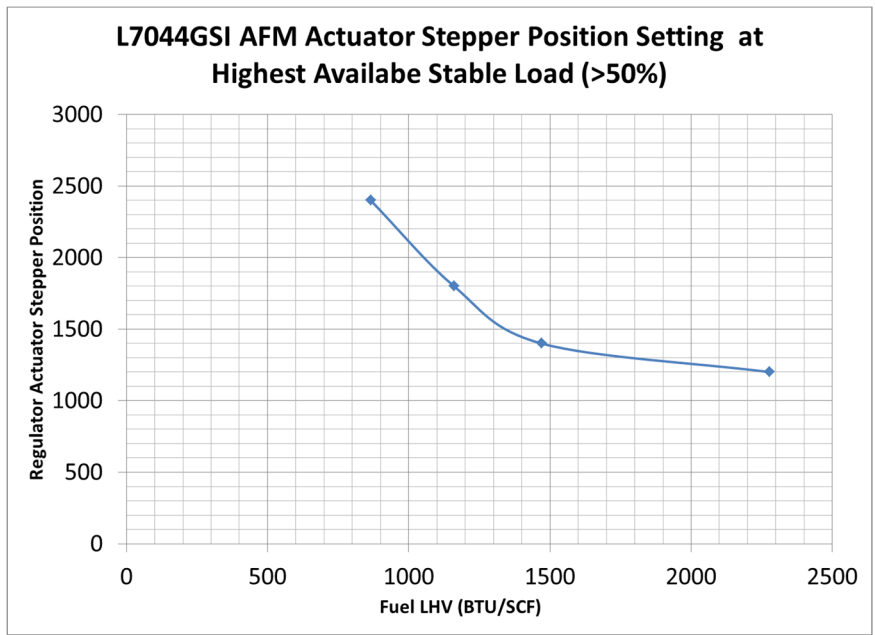


Figure 8

Based on the example 1150 BTU/SCF LHV fuel, the carburetor screws will be adjusted at 50% load or higher to provide regulator actuators positions of about 1800 steps.

11. If everything is set up properly, both banks should be within approximately 200 steps of each other. If not, readjust the carburetor screws.

D. Engine Shutdown

1. Remove all load from the engine.
2. Allow to cool for 1-2 minutes when running unloaded at 1200 RPM.
3. Shutdown engine from 1200 RPM.

Caution: Running unloaded at reduced speed when hot can result in rich misfire causing thermal damage to the catalytic converter.

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|--------|-------|--------------------------|
| 155777 | 03-13 | Released. |
| 156271 | 08-13 | Updated tables - see ECO |

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