

Controlling

1. General

SR22 Serials: An electric two-speed fuel pump provides boost (low speed) and prime (high speed) for the engine. A console mounted rocker switch located on the center console provides control for the electric fuel pump. The prime position is momentary. Boost is a non-momentary on position.

SR22T Serials: An electric two-speed fuel pump provides boost (low speed) and high boost/prime (high speed) for the engine. A console mounted rocker switch located on the center console provides control for the electric fuel pump. The boost and high boost/prime are non-momentary on positions.

SR22 Serials: An oil pressure based system is used to control boost pump operation. The oil pressure sensor provides a signal to the GEA 71 engine airframe unit to generate a ground for fuel pump inhibition. This system allows the fuel pump to run at the prime (high speed) when the engine oil pressure is less than 10 PSI. Whenever the engine oil pressure exceeds 10 PSI, pressing the prime switch will have no effect. The boost position operates the electric pump at the low-speed, regardless of oil pressure. The boost pump operates on 28 VDC supplied through the 5-amp FUEL PUMP circuit breaker on Main Bus 2.

SR22T Serials: An manifold pressure/RPM based system is used to control boost pump operation. The manifold pressure sensor provides a signal to the GEA 71 engine airframe unit to generate fuel pump inhibition. To prevent over-priming during low power settings, the system uses a lockout relay that only allows HIGH BOOST/PRIME fuel pump operation when manifold pressure is greater than 24 inHg. or - to facilitate engine starting - when engine speed is less than 500 RPM. Whenever the engine parameters fall outside these specifications, pressing HIGH BOOST/PRIME will turn the pump on in low-speed mode. Selecting BOOST energizes the fuel pump in low-speed mode regardless of engine speed or manifold pressure to deliver a continuous 4 to 6 psi boost to the fuel flow for vapor suppression in a hot fuel condition. The boost pump operates on 28 VDC supplied through the 5-amp FUEL PUMP circuit breaker on Main Bus 2.

2. Maintenance Practices

A. Fuel Pump Setup - SR22T Serials

(1) Functional Test - Fuel Pump Setup

(See Figure 73-20-1) (See Figure 73-20-2)

- (a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Fuel Pressure Gauge or Porta-Test	- 630045-20	Any Source Aero-Test, Inc.	Set unmetered pressure.

- (b) Set BAT 1, BAT 2, and AVIONICS (*Serials 22-4435 thru 22-9749, Serials 22T-1460, 22T-1471, 22T-1473 thru 22T-9749*) switches to OFF positions.
- (c) Pull CONV SYS 1 and CONV SYS 2 (or CONV LIGHTS) circuit breakers.
- (d) Remove engine cowling. (Refer to 71-10)
- (e) At LH side of throttle body assembly, turn idle speed stop screw counter-clockwise two complete turns.

• NOTE •

When idle mixtures and low-unmetered fuel pressures are changed, engine idle is affected by the change in mixture ratios. During following fuel system adjustment, IDLE RPM is controlled manually using cockpit throttle control.

- (f) At RH side of throttle body assembly, remove and retain cap from unmetered fuel pressure port.
- (g) Connect pressure gauge or Porta-Test to unmetered fuel pressure port using length of hose providing proper clearance from engine cowling and propeller arc.
- (h) If using Porta-Test, refer to manufacturer’s approved Instructions for Continued Airworthiness to perform optional Manifold Pressure and Upper Deck Pressure hose connections.
- (i) Position throttle control in FULL OPEN position and mixture control to FULL RICH.
- (j) Set BAT 1 switch to ON positions.
- (k) Operate boost pump.

- (l) Loosen test connection at unmetered pressure gauge or Porta-Test to bleed line of any air. Tighten connection after bleeding.
- (m) Prime engine in accordance with Pilot's Operating Handbook.

• CAUTION •

Do not run prime pump dry more than 15 seconds. If pump runs for more than 15 seconds before switching to low speed, ensure fuel selector valve is in ON position.

- (n) Start engine in accordance with Pilot's Operating Handbook.
- (o) Bring oil temperature into normal, green operating range of 170 to 180 °F (77 to 82 °C).
- (p) Verify oil pressure is within 30 to 60 psi.
- (q) At full power, ensure that manifold pressure is within specifications. (See Figure 73-20-2)
- (r) At 600 RPM and boost pump off, slowly move mixture control toward IDLE CUT-OFF position.
- (s) At RH side of throttle body assembly, locate idle mixture screw recessed within forward-facing boss of fuel-metering cover and set air-fuel mixture to obtain rise of 25 to 50 RPM.
 - 1 Turn idle mixture screw clockwise to lean air-fuel mixture as required.
 - 2 Turn idle mixture screw counter-clockwise to enrich air-fuel mixture as required.
- (t) If RPM rise is not within specifications:
 - 1 Advance throttle to 1500 to 1800 RPM for 15 seconds after each adjustment to clear engine.
 - 2 Retard throttle to 600 RPM and repeat air-fuel mixture adjustment.
 - 3 Record maximum RPM rise.
- (u) At 600 RPM, set unmetered fuel pressure to 7.0 to 9.0 psi.
 - 1 At aft centerline of fuel pump, loosen lock nut on idle low-pressure relief valve bolt.
 - 2 Turn idle low-pressure relief valve bolt clockwise to increase fuel pressure as required.
 - 3 Turn idle low-pressure relief valve bolt counter-clockwise to decrease fuel pressure as required.
- (v) Advance throttle to 2500 RPM (full power), and turn boost pump on to BOOST position.

- (w) At fuel pump, set fuel flow within specifications. (See Figure 73-20-2)
- 1 Loosen lock nut on high fuel flow aneroid screw.
 - 2 Turn high fuel flow aneroid screw clockwise to decrease fuel flow as required.
 - 3 Turn high fuel flow aneroid screw counter-clockwise to increase fuel flow as required.

• CAUTION •

Use care while tightening lock nut to avoid stripping threads.

- 4 Tighten lock nut on high fuel flow aneroid screw.
- (x) Verify unmetered fuel pressure is 21.0 to 24.5 psi.

• CAUTION •

If unmetered pressure is outside of limits, but manifold pressure and fuel flow both fall within specifications, then fuel obstruction (high pressure only), fuel flow, manifold pressure, or fuel pressure gauge error is likely and should be corrected prior to completing fuel setup.

- (y) Operate engine for minimum of 5 minutes at 800 to 1000 RPM after FULL power operation prior to shutdown.
- (z) Bring engine back to 600 RPM and verify unmetered pressure remains 7.0 to 9.0 psi.

• CAUTION •

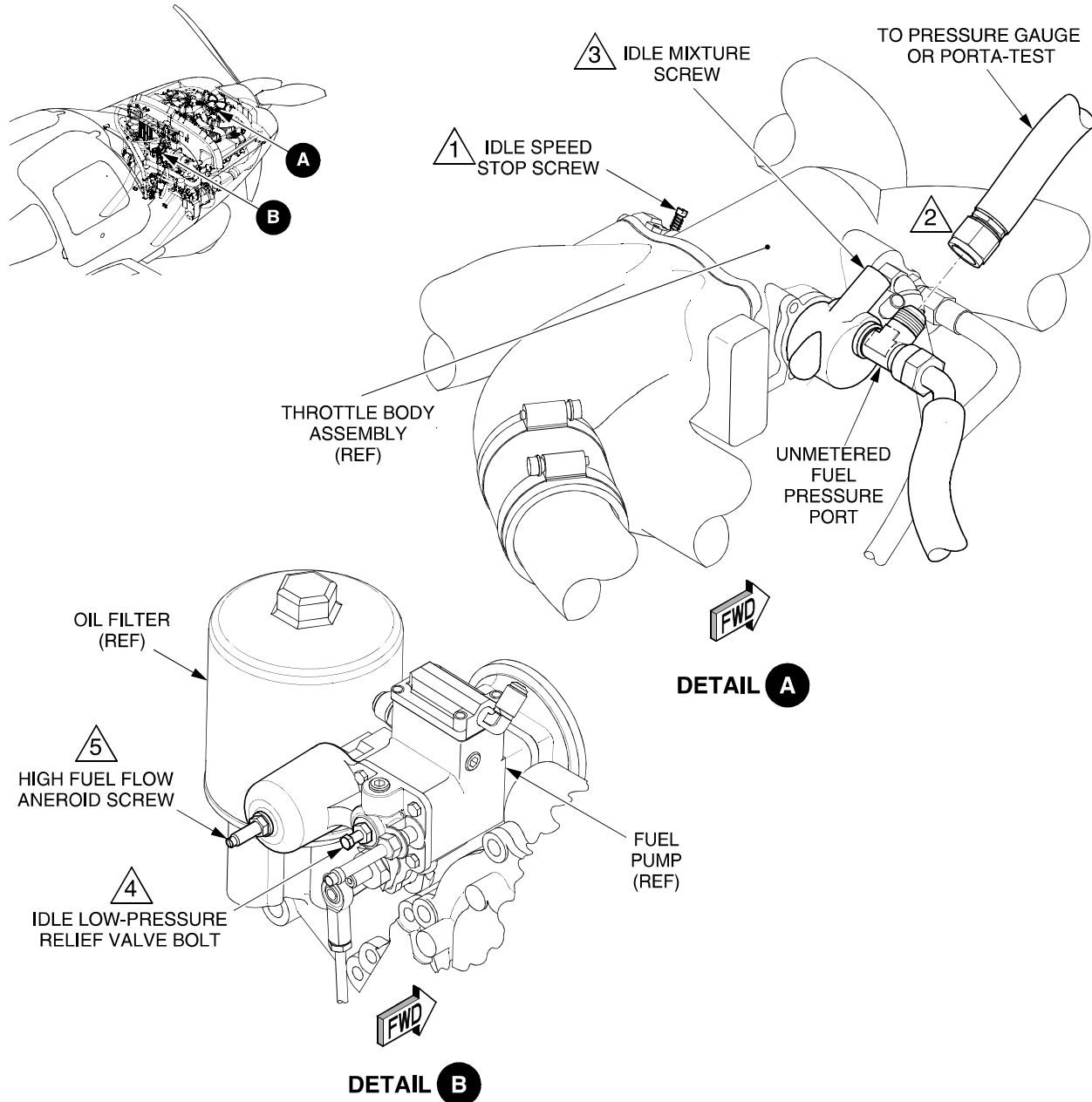
Use care while tightening lock nut to avoid stripping threads.

- (aa) At fuel pump, tighten lock nut on idle low-pressure relief valve bolt.
- (ab) At LH side of throttle body assembly, adjust idle speed stop screw to set idle speed to 700 ± 25 RPM.
- 1 Turn idle speed stop screw clockwise to increase speed as required.
 - 2 Turn idle speed stop screw counter-clockwise to decrease speed as required.
- (ac) Record following values:

Unmetered pressure at 600 and 2500 RPM	
MAP	
Fuel flow at 2500 RPM	
Idle RPM rise	

- (ad) At RH side of throttle body assembly, disconnect pressure gauge or Porta-Test from unmetered fuel pressure port.
 - (ae) Reinstall cap to unmetered fuel pressure port.
 - (af) If using Porta-Test, disconnect any optional Porta-Test hose connections in accordance with manufacturer's approved Instructions for Continued Airworthiness.
 - (ag) Install engine cowling. ([Refer to 71-10](#))
 - (ah) Reset CONV SYS 1 and CONV SYS 2 (or CONV LIGHTS) circuit breakers.
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Figure 73-20-1: Fuel Pump Setup - SR22T Serials

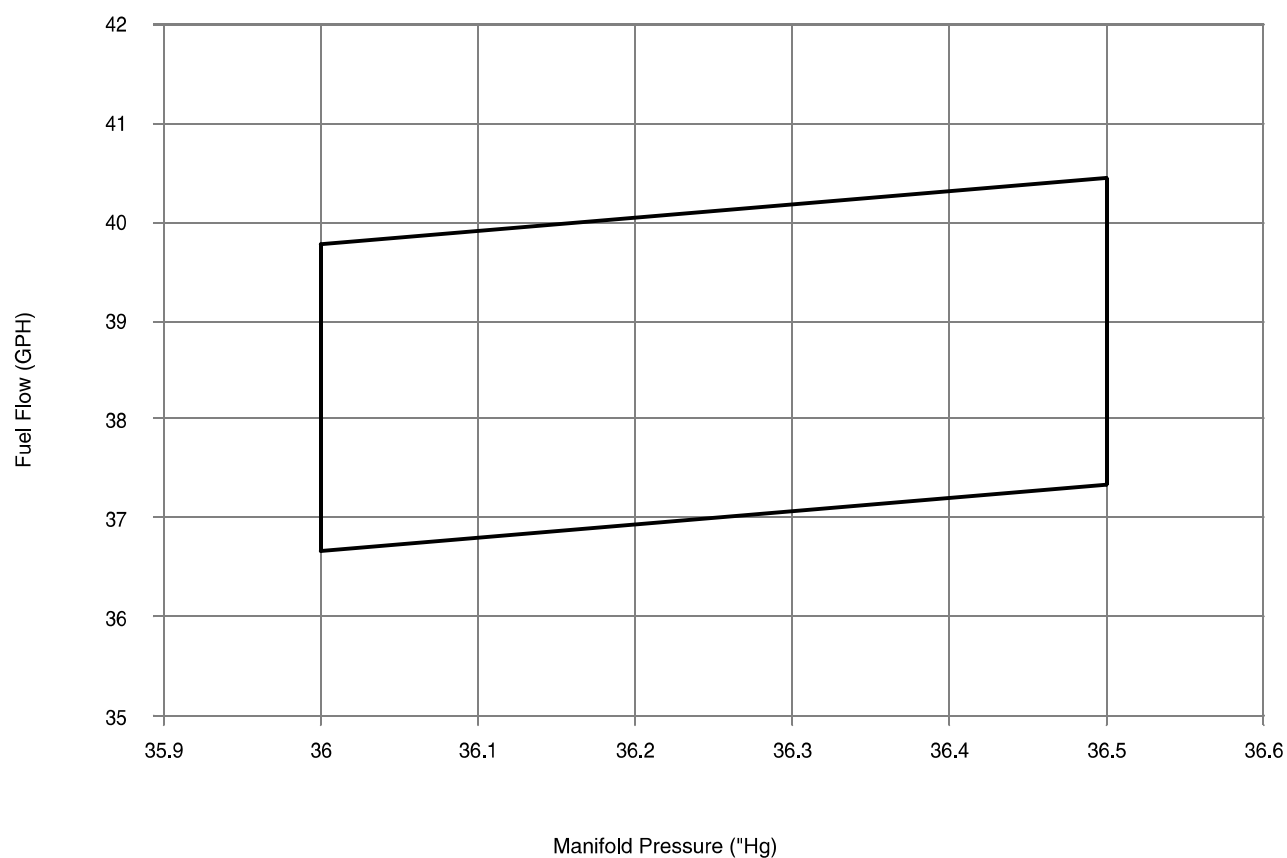


NOTE

- 1 At LH side of throttle body assembly, turn idle speed stop screw counter-clockwise two complete turns.
- 2 Connect pressure gauge or Porta-Test to unmetered fuel pressure port using length of hose providing proper clearance from engine cowling and propeller arc.
- 3 At RH side of throttle body assembly, locate idle mixture adjustment screw recessed within forward-facing boss of fuel-metering cover and set air-fuel mixture to obtain rise of 25 - 50 RPM.
- 4 At 600 RPM, adjust idle low-pressure relief valve bolt to set unmetered fuel pressure to 7.0 - 9.0 psi.
- 5 At fuel pump, adjust high fuel flow aneroid screw to set fuel flow within specifications.

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Figure 73-20-2: Manifold Pressure and Fuel Flow Range at 2500 RPM - SR22T Serials



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