SERVICE INFORMATION DIRECTIVE

COMPLIANCE WILL ENHANCE SAFETY, MAINTENANCE OR ECONOMY OF OPERATION

SID97-3F

SUPERSEDES:
SID97-3E and SID07-3A
Technical Portions
FAA APPROVED

SUBJECT: CONTINENTAL MOTORS, INC. (CMI) CONTINUOUS FLOW FUEL INJECTION SYSTEMS ADJUSTMENT SPECIFICATIONS AND INSTRUCTIONS.

PURPOSE: Provide specifications and instructions for adjustment of CMI fuel injection systems.

COMPLIANCE: At Engine Installation, 100 hour/Annual Inspection, fuel system component replacement or as required if operation is not within specifications.

MODELS AFFECTED: All CMI continuous flow fuel injected engine models except L/TSIO-360-RB; TSIO-520-L, LB, WB; GTSIO-520-F, K, N and GIO-550-A Engine Models.

WARNING

The instructions and values provided in the document apply to CMI fuel injected engines that conform to the original type design. Refer to the Supplemental Type Certificate (STC) holder's instructions for aircraft that have been modified from the original type design.

I. GENERAL INFORMATION

Fuel injection system components manufactured by CMI are adjusted and calibrated to meet engineering specifications. Fuel injection system components installed on factory new and rebuilt engines are adjusted to meet design specifications during operation in the production engine test facility. These tests and adjustments are carried out in an environment of controlled fuel supply pressures and calibrated test equipment.

When engines are installed in aircraft, they are subjected to a different induction system, fuel supply system and operating environment. These differences require checking and adjusting the fuel injection system to meet operational specifications before flight.

Aircraft and engines that have been modified from their original type design must have the fuel injection system maintained in accordance with the Supplemental Type Certificate Holder's FAA approved instructions.

Fuel System Operational Check is required after any of the following circumstances: (1) at engine installation, (2) during 100 hour and annual inspections, (3) whenever a fuel system component is replaced or adjusted, (4) when changes occur in the operating environment.

CAUTION: Engine performance, service life and reliability will be compromised if the engine's fuel injection system is neglected.

II. ADJUSTMENT PROCEDURES

The following adjustment procedures are presented in a sequential format that must be followed to ensure proper fuel system adjustment. Reference the applicable Aircraft Maintenance Manual for detailed fuel system adjustment and maintenance procedures.

Any fuel system that cannot be adjusted to meet the specified values will require repair or replacement of the affected components prior to further engine operation.

The adjustment procedures provided in this document also apply to engine fuel systems equipped with CMI Position Tuned Fuel Nozzles. Refer to Publication Number FI-2, Position Tuned Fuel Injector Nozzle Installation and Maintenance

Manual for more detailed information and installation instructions.

CAUTION: Refer to the torque specifications, Table 1, page 10 for specified values when applying torque to hose end fittings.

A. TOOLS AND EQUIPMENT REQUIRED

A complete set of tools and test equipment is essential for correct setup of CMI fuel injection systems. Various combinations of these tools and equipment will be used, depending on the engine model. A proper inventory of tools and equipment for fuel system adjustment will include the following:

1. CMI recommends the Model 20 ATM-C Porta Test Unit P/N 630045-20 ATM-C, or equivalent, to ensure the fuel injection system meets all pressure and flow specifications. The Model 20 ATM-C Porta Test Unit is available from the manufacturer:

   APPROVED AIRCRAFT ACCESSORIES
   29300 Goddard Road
   Romulus, Michigan 48174
   (734) 946-9000

   Calibrated gauges may be used as an alternative to the Porta-Test Unit.

1. One (1) calibrated 0-60 PSI gauge, graduated in 1 PSI increments. This gauge will be used for unmetered pressure measurement.
2. One (1) calibrated 0-30 PSI gauge, graduated in .2 PSI (maximum) increments to be used for metered pressure measurements and verification of aircraft fuel flow indications on normally aspirated engines only.
3. One (1) calibrated differential gauge, 0-30 PSID maximum, graduated in .2 PSI (maximum) increments, to be used for metered pressure measurements and verification of aircraft fuel flow gauge on turbocharged engines only.

   NOTE: Pressure gauges must be accurate within ±1 %. Pressure gauges must be checked for accuracy and calibrated in accordance with the manufacturer's instructions. Calibrated pressure gauges may be purchased from various suppliers such as:

   Davis Instruments
   4701 Mount Hope Drive
   Baltimore, MD 21215
   Phone: 1-410-358-3900
   or 1-800-368-2516

4. Two (2) P/N MS51523-B4 swivel tee. These fittings will be used to tee into fuel lines for unmetered and metered pressure reference.
5. Hoses of appropriate diameters and sufficient lengths to allow personnel and equipment to be located away from propeller arc and blast area.
6. Common hand tools including: 7/8", 11/16", 9/16", 1/2", 3/8", 7/16", 11/32", and 5/16" wrenches. A 1/4" drive ratchet and sockets, universal swivel, extension, and a 5/32" hex key (Allen) wrench, common screw driver, a calibrated torque wrench, an oil can, mirror and flashlight. Safety equipment including hearing and eye protection must be used.
7. Tachometer verification instrument - various types are available. Verify aircraft tachometer accuracy prior to fuel system adjustment.

B. PRE-SETUP PROCEDURES

WARNING

Do not smoke or expose the work area to ignition sources while performing this procedure. Work with clean hands, tools, and shop towels.

1. Remove the engine cowling according to the aircraft manufacturer's instructions.
2. Purge the fuel system according to the following instructions during engine installation or when any fuel system component is replaced:

   (a) Utilizing the airframe boost pump, flush a minimum of one gallon of fuel from the fuel pump inlet hose into a clean, dry container. Inspect the flushed fuel. If free from contamination connect to the engine driven fuel pump using the appropriate maintenance instructions. If contamination exists, correct before proceeding.

(b) Using the airframe boost pump, flush a minimum of one quart of fuel through the engine driven fuel pump into a clean, dry container while working the mixture control through its full range of operation. Inspect the flushed fuel. If free from contamination, connect to the throttle and control unit using the appropriate maintenance instructions. If contamination is found, correct the issue before proceeding further.

(c) Using the airframe boost pump, flush a minimum of one quart of fuel through the throttle and control unit into a clean, dry container while working the throttle control through its full range of operation. Inspect the flushed fuel. If free from contamination connect to the manifold valve using the appropriate maintenance instructions. If contamination is found, correct the issue before proceeding further.

(d) Using the airframe boost pump, flush a minimum of one quart of fuel through the fuel transducer hose into a clean dry container. Inspect the flushed fuel. If free from contamination, install the fuel transducer according to the aircraft maintenance instructions. If contamination is found, correct the issue before proceeding further.

(e) Using the airframe boost pump, flush each fuel injector line into an appropriate, clean, dry container (one per fuel line). If the flushed fuel is free from contamination, connect to the fuel injectors using the appropriate maintenance instructions. If contamination is found, correct the issue before proceeding further.

WARNING

Use of inaccurate gauges will result in incorrect adjustment of the engine fuel system, possible cylinder wear due to lean operation, pre-ignition, detonation, loss of power and severe engine damage.

3. Before making any checks or adjustments, verify the accuracy of the aircraft tachometer, manifold pressure gauge and fuel flow gauge. Any gauge found to be inaccurate must be repaired or replaced before adjusting the fuel system.

4. Ensure all fuel system components are of the correct part number and are installed properly. Correct any discrepancies noted.

5. Remove, inspect, clean and reinstall the aircraft and engine fuel screens according to the aircraft manufacturer's instructions.

6. Inspect the aircraft induction air filter and alternate air system for condition, operation and cleanliness. Repair or replace any component that is not airworthy according to the aircraft manufacturer's instructions.

7. Inspect the aircraft vapor return system for proper operation according to the aircraft manufacturer’s instructions. Correct any discrepancies noted.

8. Ensure the fuel manifold valve vent and fuel pump drain lines are properly installed, open and free of obstruction. Correct any discrepancies noted.

9. Inspect all engine control rod ends for wear, freedom of movement, proper installation and security according to the aircraft manufacturer's instructions. Correct any discrepancies noted.

10. Inspect the throttle and control assembly link rods (where used) for correct installation, security and wear at the attach points. Correct any discrepancies noted.

11. Ensure all engine controls operate freely throughout their full range of travel and are properly adjusted according to the aircraft manufacturer's instructions.

12. Lubricate all control rod ends and fuel system components according to the latest revision of CMI Service Bulletin SB95-2 and the Aircraft Maintenance Manual.

WARNING

Failure to correctly install and maintain engine controls can result in loss of system control and subsequent loss of engine power.

13. Locate the IDLE speed (RPM) stop screw on the throttle body and turn it counter-clockwise two complete turns. (REF: **Figure 10** through **Figure 13**) During fuel system adjustment, IDLE RPM will be controlled manually using the cockpit throttle control.

14. Inspect the exhaust and induction systems for proper installation, security and leaks. Correct any discrepancies noted.

15. Inspect all lines, hoses and wire bundles for chafing, loose connections, leaks and stains. Correct any discrepancies noted.

Turbocharged engine models incorporating a fuel pressure regulator must have the regulator deactivated during initial fuel system adjustment. (REF: **Figure 14**) To deactivate the fuel pressure regulator, loosen and remove the fuel line or hose from the "center" port fitting at the pressure regulator. Install a cap on the "center" port fitting. Install a plug in the removed line. Torque the cap and plug to the value specified in **Table 1**. Perform a pressurized leak test on the connections prior to proceeding with fuel system adjustments.

C. SETUP PROCEDURES

WARNING

Failure to properly support and stabilize component fittings can result in fitting and/or component damage and loss of system pressure. Reference the latest revision of SIL95-5.

NOTE: Adjustments to any component of the fuel injection system can affect other system settings. Always verify the performance of the entire fuel injection system whenever any fuel injection system component is adjusted.

1. Loosen and remove the unmetered fuel supply hose from the fuel pump outlet fitting, the fuel control unit inlet fitting, or the throttle body/metering unit inlet tee whichever is most accessible. Some engine models have a fuel pressure connection fitting in the fuel control inlet screen that may be utilized for unmetered pressure gauge attachment.

2. For engine models with integral throttle body/metering units (REF: **Figure 10**), remove and set aside the 639494 cap fitting from the inlet tee. This cap will be reinstalled after setup is complete.

3. Install the MS51523-B4 swivel tee directly to the fuel pump outlet fitting or to the fuel control inlet fitting (REF: **Figure 5** through **Figure 11**), as applicable; torque the tee fitting to the value specified in **Table 1**.

NOTE: Some installations may require combinations of different fittings and hoses to facilitate installation of unmetered and metered test equipment connections.

3. Attach the unmetered fuel supply hose to the straight end of the tee connector and torque to the value specified in **Table 1**.

4. Connect the Unmetered test hose from the *Porta Test Unit* to the tee fitting and torque. If using the alternative procedure, connect the 0 to 60 PSI gauge to the swivel tee using a length of hose which will provide proper clearance from the engine cowling and propeller arc. Torque connections to the value specified in **Table 1** (REF: **Figure 15** through **Figure 18**).

5. Loosen and remove the metered fuel supply hose from the manifold valve inlet fitting.

6. Install and torque the second MS51523-B4 swivel tee directly to the fuel manifold valve inlet fitting.

7. Attach the metered fuel supply hose to the straight end of the tee connector and torque to the value specified in **Table 1**.

8. Connect the metered pressure test hose from the *Porta Test Unit* to this second tee connector and torque. If using the alternative procedure, connect the 0 to 30 PSI gauge to the swivel tee using a hose long enough to provide proper clearance from the engine cowling and

propeller arc. Torque all connections to the value specified in **Table 1** (REF: **Figure 15** and **Figure 16**).

9. On turbocharged engines, connect the Porta-Test Manifold Pressure and Upper Deck Pressure hose to the engine following the instructions provided with the Porta Test Unit. If using the alternative procedure, connect the 0 to 30 PSID differential gauge pressure fitting to the metered pressure swivel tee using a hose of sufficient length to provide clearance from the aircraft and propeller arc. Connect an equal length of hose to the "suction" side of the gauge and connect the other end to a location to reference turbocharger compressor discharge (upper deck) pressure. (REF: **Figure 17** and **Figure 18**). Torque connections to the value specified in **Table 1**.

10. Position the throttle control in the FULL OPEN position and the mixture control to FULL RICH. Operate the aircraft boost pump in accordance with the aircraft manufacturer's instructions. Following the instructions provided with the Porta Test Unit, bleed all air from the test unit and hoses. If using the alternative calibrated test gauges, loosen the test connections at each gauge to bleed the lines of any air. Hold the gauge at or slightly above the height of the fuel system component during the bleeding operation. Operate the boost pump only long enough to allow purging of air from the installed test equipment. Verify that all fuel lines, hoses and fittings are secured and torqued and that no fuel leaks exist before proceeding. Ensure test hoses have been routed clear of the exhaust system and are supported their entire length to avoid inaccurate gauge readings.

WARNING

Verify all fuel has drained from the induction system prior to attempting engine start. Failure to do so could cause Hydraulic Lock and subsequent engine failure.

11. Install the engine cowling or cooling shroud during ground operation.

12. Refer to **Table 3**, beginning on page 12, for specific data applicable to your engine. Record the applicable IDLE and FULL POWER adjustment points: RPM, fuel pressure, fuel flow, manifold pressure and IDLE RPM rise provided in this document and the Aircraft Maintenance Manual on the operational check form included on the last page of this service bulletin. The Operational Check Form may be reproduced for use in recording adjustments and test indications.

    NOTE: To ensure optimum cooling during FULL POWER operations, the FULL POWER fuel flow should be set to the maximum specification limit.

WARNING

Ensure the aircraft brakes are set and wheel chocks are properly placed forward and aft of the main landing gear tires before engine start.

13. Prepare the aircraft for ground run and start the engine in accordance with the aircraft manufacturer's instructions. Advance the throttle to 1500 to 1800 RPM. While monitoring all engine gauges, operate the engine at this power setting until the engine temperatures and pressures have stabilized in the operational range.

14. With the mixture control in the FULL RICH position, reduce the throttle to the specified IDLE RPM. Record the unmetered pressure indicated on the gauge. Check the IDLE fuel/air mixture by slowly moving the mixture control toward the IDLE CUT-OFF position and record the IDLE RPM rise. Return the mixture control to FULL RICH.

15. Monitoring all engine gauges, slowly advance the throttle control to full rated power for the engine and allow the engine to stabilize for 15 seconds. Record all engine and test gauge indications. DO NOT ALLOW ENGINE TEMPERATURES TO EXCEED 420°F CHT AND 210°F OIL TEMP. Retard throttle control for 800 to 1000 RPM.

    NOTE: Test gauge readings must be taken with the gauges held at the same height above the

ground as the fuel system component it is attached to.

NOTE: For L/TSIO-360 and TSIO-520 engine models equipped with a fixed (ground adjustable) exhaust bypass, verify that the wastegate is adjusted according to the aircraft manufacturer's instructions. Failure to do so can result in an improperly adjusted fuel system and possible engine damage.

CAUTION: After FULL POWER operation - turbocharged engines must be operated at 800 to 1000 RPM for a minimum of five (5) minutes to allow engine temperatures to stabilize prior to engine shutdown.

16. Compare the recorded IDLE fuel pressure, IDLE RPM rise and full power RPM, manifold pressure (as applicable), unmetered fuel pressure, metered fuel pressure and fuel flow indications with the specified values. If all recorded values are within specifications, proceed to step 24.

    NOTE: Turbocharged engines equipped with fuel pressure regulators should indicate a full power metered pressure and fuel flow five (5) percent higher than specified. This is required to ensure adequate part-throttle fuel flow.

17. If any of the recorded readings are not within specifications, the fuel system must be completely adjusted. ALL READINGS MUST BE TAKEN WITH MIXTURE CONTROL IN THE FULL RICH POSITION. Install the engine cowling or cooling shroud during all ground operation.

    NOTE: Engine driven fuel pump output pressures vary with engine RPM. During ground operation full power RPM may not be obtained. Use the Compensation Table for Static Ground Setup in Table 2 to correct the specified metered pressures if full power RPM cannot be achieved. On turbocharged engines, ensure manifold pressure is adjusted according to the aircraft manufacturer's instructions. Engine driven fuel pumps installed on turbocharged engines are referenced to turbocharger compressor discharge pressure (upper deck pressure) to achieve FULL POWER engine driven fuel pump pressure.

WARNING

Make all adjustments with the engine STOPPED and the IGNITION and MASTER switches in the OFF positions.

18. To adjust the IDLE RPM unmetered pump pressure, loosen the jam nut on the low pressure relief valve. See **Figure 5** through **Figure 9** Turning the adjustment clockwise (CW) will increase pressure and counterclockwise (CCW) will decrease pressure. Operate the engine at 1500-1800 RPM for 15 seconds after each adjustment, then retard the throttle to the specified IDLE RPM. Repeat this step until pressure is within specified limits.

    NOTE: Maximum part throttle full rich fuel flow will be achieved by setting the idle rpm (low) unmetered fuel pump pressure to the minimum value specified. **With the idle rpm fuel/air mixture properly adjusted (step 19) the fuel control metering plate orifices are indexed to the maximum open position.**

19. With engine operating at the specified IDLE RPM and unmetered fuel pressure, slowly move the mixture control from the FULL RICH position toward IDLE CUT-OFF to check the IDLE fuel/air mixture. A rise of 25 to 50 RPM should be obtained. An IDLE RPM rise greater than 50 indicates the mixture is too rich and a rise of less than 25 RPM indicates the mixture is too lean. Adjust mixture conditions that are too rich or too lean as follows:

    a) Identify the type of mixture control assembly that is to be adjusted. See **Figure 10**, **Figure 12**, and **Figure 13**.

    b) If the IDLE RPM rise is not within specifications, advance the throttle control to 1500 - 1800 RPM for 15 seconds after each adjustment to clear the engine. Retard the throttle control to IDLE RPM and repeat fuel/air mixture check. Make the necessary adjustment. Repeat this procedure until the specified IDLE RPM rise is achieved.

c) Recheck IDLE RPM unmetered pump pressure. If pressure is not within limits, repeat Steps 18, 19, 19a), 19b), and 19c) before proceeding.

20. On all naturally aspirated engines, adjust the FULL POWER metered fuel pressure to the specified value by turning the adjustable orifice screw clockwise to increase fuel pressure and counterclockwise to decrease fuel pressure. See **Figure 5** through **Figure 7**.

21. On turbocharged engines, adjust the full power metered fuel pressure to the specified value as follows:

    NOTE: On turbocharged engines equipped with a fuel pressure regulator, the full power metered fuel pressure and fuel flow must be adjusted to five (5) percent higher than the maximum specified limit.

    a. Loosen the aneroid adjustment screw jam nut. See **Figure 8** through **Figure 9**.

    b. Turn the aneroid adjustment screw counterclockwise to increase metered fuel pressure and clockwise to decrease metered fuel pressure.

    c. After final adjustment is accomplished, torque jam nut to 25-30 inch pounds. DO NOT EXCEED JAM NUT TORQUE LIMITS. Exceeding the jam nut torque specification will result in damage to the aneroid housing threads and subsequent maladjustment.

22. For engines equipped with a fuel pressure regulator, perform a final adjustment to the full power metered fuel pressure and fuel flow as follows: Refer to **Figure 14**. Reconnect the regulator and torque connections to the value specified in **Table 1**. Loosen the jam nut on the regulator adjustment set screw. Turn the regulator adjustment screw clockwise to increase metered fuel pressure and fuel flow; turn the set screw counterclockwise to decrease metered fuel pressure and fuel flow. After final adjustment is completed, torque the jam nut to 21-25 inch pounds.

23. When full power metered fuel pressure has been adjusted to the specified values, recheck: (a) IDLE RPM, (b) unmetered fuel pressure, (c) IDLE fuel/air mixture. If any values are not within specified limits, repeat the adjustment procedures.

24. With the fuel system set to the specified metered fuel pressure, set the IDLE RPM to the aircraft manufacturer's specified value by turning the idle speed (RPM) stop screw (**Figure 10** through **Figure 13**) clockwise to increase RPM or counterclockwise to decrease RPM.

D. POST SETUP PROCEDURES

1. Ensure the master switch, ignition switch and fuel selector are in the OFF positions.

2. Remove the engine cowling or cooling shroud in accordance with the aircraft manufacturer's instructions. (a) remove all test gauges, fittings and hoses that were installed for fuel system setup, (b) reconnect all fuel hoses and cap fittings to their original locations, (c) torque all fittings to the value specified in **Table 1**.

3. Verify Cap Assembly, Part No. 639494 (REF: **Figure 10**) is correctly installed on the inlet tee fitting on throttle body/metering units. Torque the cap 135-190 inch pounds according to **TABLE 1**. DO NOT install any cap other than Part No. 639494 on the tee fitting under any circumstance.

4. Perform a complete fuel system leak check according to the aircraft manufacturer's instructions. If the aircraft manufacturer does not provide specific instructions, the instructions below may be used. Correct any discrepancies noted.

    - Turn aircraft master switch to ON position
    - Adjust mixture control to full rich
    - Adjust throttle control to 1/4 inch open
    - Activate the aircraft boost pump (ON)
    - Inspect entire fuel system for fuel leakage
    - Return mixture and throttle to idle/closed position

- Turn aircraft boost pump OFF
- Turn the aircraft master switch OFF

5. Install engine cowling in accordance with the aircraft manufacturer's instructions.

6. Perform a complete operational ground run-up and verify that all fuel system performance specifications are achieved.

E. FLIGHT TEST: All naturally aspirated engines except those with altitude compensating fuel pump

1. Refer to the AFM/POH, supplied by the aircraft manufacturer or Supplemental Type Certificate (STC) holder, for aircraft operating instructions.

2. A flight test is required whenever an adjustment is made that may affect engine operational characteristics or performance.

3. If FULL POWER RPM was not obtained during fuel injection system setup and adjustment, a flight test is required to ensure the fuel injection system is performing within specified limits for the engine and aircraft.

4. Repeat the setup and adjustments as required until the fuel injection system is performing within the published specification for the aircraft and engine.

F. FLIGHT TEST: Naturally Aspirated engines with altitude compensating fuel pumps (AUTO LEAN)

1. All naturally aspirated engines utilizing an altitude compensating fuel pump require a flight test at: (a) initial installation, (b) every 12 months (scheduled to coincide with annual inspection), (c) each time adjustments are made due to a fuel system component replacement, and (d) at any indication of improper auto-leaning feature operation.

2. **Table 4** and Auto Leaning Chart **Figure 1** provide fuel flow vs. pressure altitude specifications for the IO-360-DB engine with altitude compensating fuel pump. **Table 5** and **Table 6** and Auto Leaning Charts **Figure 2** and **Figure 3** provide fuel flow vs. pressure altitude specifications for the IO-360-ES engine with altitude compensating fuel pump. **Table 7** and Auto Leaning Chart **Figure 4** provide fuel flow vs. pressure altitude specifications for the IO-550 Sandcast series engine with altitude compensating fuel pumps.

3. Ensure the accuracy of aircraft fuel flow gauge and tachometer has been verified. These gauges must be accurate or the data recorded during flight test will not be valid.

4. Locate the correct Table and Auto Leaning Chart for the aircraft and engine. On the Operational Test form provided on the last page of this document, record all pressure altitudes and corresponding minimum and maximum fuel flows recorded.

5. Perform a complete preflight inspection, engine start and ground run-up according to the aircraft manufacturer’s instructions.

6. Set the aircraft altimeter to 29.92 inches Hg.

7. In accordance with the aircraft manufacturer’s instructions, conduct a normal take-off.

8. Climb must be accomplished using full throttle, FULL RICH mixture and maximum rated full power RPM.

9. Using the aircraft fuel flow gauge and altimeter, record fuel flows at all pressure altitudes specified.

10. Compare the recorded fuel flows with the specified fuel flows for all pressure altitudes. If fuel flow is within the minimum and maximum limits at all altitudes, no adjustments are required.

11. If the fuel flow is not within specified limits at all pressure altitudes, the fuel injection system auto leaning schedule requires adjustment.

G. FUEL PUMP AUTOLEAN SCHEDULE ADJUSTMENT:

NOTE: On IO-550-D, E, F and L model engines, do not attempt to adjust the auto leaning schedule if the aircraft is at a field with a pressure altitude greater than 3000 feet.

Refer to Section C of this document for required test equipment setup.

1. If not previously accomplished, adjust the engine fuel injection system according to instructions in Section C of this document using the appropriate table for the engine and aircraft.
2. Adjustments to the engine-driven fuel pump aneroid adjustment screw will result in a change to the auto leaning schedule. One complete revolution of the aneroid adjustment screw will increase or decrease the auto leaning schedule approximately 1000 feet.
3. Refer to **Figure 1** through **Figure 4**. Adjustment of the aneroid adjustment screw clockwise will decrease the altitude (move horizontally to the left on the chart) while counterclockwise adjustments will increase the altitude (move horizontally to the right on the chart) at a given pressure altitude. The adjustable orifice (REF: **Figure 7**) will correct fuel pump output vertically.
4. Adjustments to the aneroid will affect the FULL POWER unmetered fuel pressure, metered pressure and fuel flow. It is important to maintain the balance between these adjustments in order to achieve the specified fuel system parameters. Readjustment of the adjustable orifice (unmetered pressure) may be necessary.

CAUTION: Exercise caution when adjustments to the aneroid are accomplished. The aneroid stem has an extra fine thread; exceeding the jam nut torque will damage either the aneroid stem or housing threads. Jam nut torque value is 25-30 inch pounds

NOTE: It will be necessary to cut and remove the safety wire and manufacturer's seal from the aneroid adjustment screw. Cut the safety wire as close to the termination point as possible, twist the loose wire ends together and bend to form a pigtail. It is not necessary to re-safety the aneroid adjustment screw after adjustment has been completed and the jam nut has been properly torqued.

5. By reviewing the data recorded on the Operational Test Flight form, we can determine if the auto leaning schedule is above or below the specified limits at the various pressure altitudes.
6. As an example, looking at **Figure 4** (IO-550-D engine) at a pressure altitude of 4000 feet the recorded fuel flow was 138 PPH (Point A). The fuel flow specified for this pressure altitude is 139 PPH to 151 PPH. The recorded fuel flow of 138 PPH would be correct if we were between 5000 feet and 7000 feet. To achieve the specified fuel flow versus pressure altitude we must adjust the aneroid adjustment screw counterclockwise. Adjustment of the aneroid adjustment screw two complete revolutions will adjust the pressure altitude two thousand feet to the right to 6000 feet (Point B).
7. After completing the aneroid screw adjustments, torque the jam nut to 25-30 inch pounds.
8. Perform a complete ground run-up and verify unmetered and metered pressures and fuel flows are within the limits specified in the appropriate table for the pressure altitude. If these parameters are not within the limits specified make adjustments according to Section C instructions to achieve the specified values.
9. Once the adjustments are complete, remove the test equipment in accordance with **Section D.** (**POST SETUP PROCEDURES**).
10. Perform a flight test according to instructions in **Section F** (**FLIGHT TEST: Naturally Aspirated engines with altitude compensating fuel pumps (AUTO LEAN)**.

NOTE: The adjustable orifice tapered needle may be damaged if forced against its seat. The adjustment should move freely. Do not continue adjustments if rotational resistance increases suddenly.

11. Repeat these procedures until the engine's fuel injection system meets all published specifications.

Table 1. Torque Specifications for Hose End and Cap Fittings

BRASS or ALUMINUM END FITTINGS/CAPS

Hose Size	Fitting Material	Torque (inch lbs.)
#2 (.31x24)	Hose end fitting Brass/Aluminum	50 – 80
#3 (.38x24)	Hose end fitting Brass/Aluminum	70 – 105
#4 (.4375x20)	Hose end fitting Brass/Aluminum	100 – 140
#5 (.500x20)	Hose end fitting Brass/Aluminum	130 – 180
#6 (.5625x18)	Hose end fitting Brass/Aluminum	150 – 195
#8 (.750x16)	Hose end fitting Brass/Aluminum	270 – 350
#10 (.875x14)	Hose end fitting Brass/Aluminum	360 – 430
#12 (1.063x12)	Hose end fitting Brass/Aluminum	460 – 550

STEEL HOSE END FITTINGS/CAPS

Hose Size	Fitting Material	Torque (inch lbs.)
#2 (.31x24)	Steel End Fitting	75 – 120
#3 (.38x24)	Steel End Fitting	95 – 140
#4 (.4375x20)	Steel End Fitting	135 – 190
#5 (.500x20)	Steel End Fitting	170 – 240
#6 (.5625x18)	Steel End Fitting	215 – 280
#8 (.750x16)	Steel End Fitting	470 – 550
#10 (.875x14)	Steel End Fitting	620 – 745
#12 (1.063x12)	Steel End Fitting	855 – 1055

NOTE: Reference Service Information Letter SIL95-5 for information specific to hose and tubing installation.

Table 2. Compensation Table for Static Ground Setup

Metered Pressure vs. RPM @ 70°F Fuel Temperature		
Static Engine RPM	Correction Factor	Corrected Metered Pressure (Metered Pressure x Correction Factor)
Rated RPM	1	
-20	.991	
-40	.982	
-60	.973	
-80	.964	
-100	.955	
-120	.946	

NOTE: All values are approximate. Variations may occur due to engine and installation specific influences.

Example: IO-520-BB, Maximum Rated RPM = 2700
Metered Fuel Pressure Limits = 14.9 - 17.2

If maximum static engine RPM = 2640, (-60 RPM) use Correction Factor .973
Metered Fuel Pressure Limits x Correction Factor = Corrected Metered Pressure Limits

14.9 x .973 = 14.5 (Minimum Metered Pressure Limit) @ 2640 RPM
17.2 x .973 = 16.7 (Maximum Metered Pressure Limit) @ 2640 RPM

II. Adjustment Specifications

Table 3. Fuel System Adjustment Values

IDLE AND FULL POWER FUEL PRESSURES AND FLOWS					
ENGINE SEE NOTE 1	**Prop. RPM & (MAP)**	**Unmetered Pump PSI (NOTE 2)**	**Metered Nozzle PSI (NOTE 3)**	**Fuel lbs/hr (NOTE 4)**	**Fuel gal/hr (NOTE 4)**
IO-240-A, B	SEE Maintenance Manual M-6				
IO-346-A, B	600 2700	7.0 - 7.5 19.0 - 21.0	- 12.5 - 14.0	- 78 - 85	- 13.3 - 14.5
IO-360-A, AB, C CB, D, DB(**NOTE 5**), G, GB, H, HB, J, JB	600 2800	7.0 - 9.0 24.0 - 27.0	- 15.8 - 18.2	- 100 - 106	- 17.0 - 18.1
IO-360-ES **NOTES 5 & 6**	600 2800	7.0 - 9.0 23.0 –26.0	14.3 – 16.5	100 - 107	17.0 - 18.1
IO-360-ES (CIRRUS) **NOTES 5, 6 & 7** Sea Level	600 2700	7.0 - 9.0 21.0 - 24.0	- 13.8 – 15.5	- 96 - 102	- 16.4 – 17.4
IO-360-ES (CIRRUS) **NOTES 5, 6 & 7** 1,500ft. Press Alt	600 2700	7.0 - 9.0 19.0 – 22.0	- 13.3 – 14.6	- 94 - 98	- 16.0 – 16.7
IO-360-K, KB	600 2600	7.0 - 9.0 7.1 21.0 - 24.0	- 14.3 - 16.3	- 93.5 - 97.5	- 15.9 - 16.6
TSIO-360-A, AB	600 2800 (32.0)	6.5- 7.5 27.2 - 31.2	- 15.8 - 16.7	- 119 - 124	- 20.1 - 21.0
TSIO-360-B, BB	600 2800 (32.0)	6.5 - 7.5 27.2 - 31.2	- 15.8 - 16.7	- 115 - 124	- 20.1 - 21.0
TSIO-360-C, CB	600 2800 (37.0)	6.5 - 7.5 34.0 - 37.0	- 16.7 - 19.3	- 135 - 145	- 23.0 - 24.7
TSIO-360-D, DB	600 2800 (36.0)	6.5 - 7.5 34.0 - 37.0	- 16.7 - 19.3	- 135 - 145	- 23.0 - 24.7
TSIO-360-E, EB, LTSIO-360-E, EB	700 2575 (40.0)	6.25 - 6.75 43.0 - 46.0	- 15.8 - 18.3	- 130 - 140	- 22.1 - 23.8
TSIO-360-F, FB	700 2575 (41.0)	6.25 - 6.75 40.0 - 43.0	- 15.8 - 18.3	- 130 - 140	- 22.1 - 23.8
TSIO-360-G, GB	700 2700 (40.0)	6.25 - 6.75 45.0 - 49.0	- 16.7 - 19.3	- 135 - 145	- 23.0 - 24.7

Table 3. Fuel System Adjustment Values

IDLE AND FULL POWER FUEL PRESSURES AND FLOWS					
ENGINE SEE NOTE 1	**Prop. RPM & (MAP)**	**Unmetered Pump PSI (NOTE 2)**	**Metered Nozzle PSI (NOTE 3)**	**Fuel lbs/hr (NOTE 4)**	**Fuel gal/hr (NOTE 4)**
TSIO-360-H, HB	600 2800 (34.5)	6.5 - 7.5 29.0 - 33.0	- 14.9 - 17.3	- 125 - 135	- 21.3 - 23.0
TSIO-360-JB	600 2800 (37.0)	6.5 - 7.5 34.5 - 37.5	- 16.7 - 19.3	- 134 - 145	- 22.8 - 24.7
TSIO-360-KB, L/TSIO-360-KB	700 2800 (40.0)	6.5 - 7.5 36.0 - 39.0	- 17.7 - 21.2	- 140 - 155	- 23.8 - 26.4
TSIO-360-LB	700 2700 (40.0)	6.25 - 6.75 34.0 - 38.0	- 14.7 - 16.7	- 135 - 145	- 23.0 - 24.7
TSIO-360-MB	700 2700 (36.0)	6.25 - 6.75 28.0 - 32.0	- 13.6 - 15.3	- 125 - 135	- 21.3 - 23.0
L/TSIO-360-RB	700 2600 (38.0)	25 Minimum 35.0 - 45.0	- **NOTE 8**	- 140 - 150	- 23.3 - 25.5
TSIO-360-SB	700 2600 (39.0)	6.25 - 6.75 31 - 36	- 15.1 - 17.8	- 131 - 151	- 22.3 - 25.7
O-470-GCI	600 2600	9.0 - 11.0 23.8 - 25.3	- 14.7 - 16.9	- 122 - 129	- 20.8 - 22.0
IO-470-C, G, P, R	600 2600	9.0 - 11.0 24.7 - 27.7	- 14.8 - 17.3	- 123 - 130	- 21.0 - 22.1
IO-470-D, E, F, H L, M, N, S, U	600 2625	9.0 - 11.0 25.0 - 28.0	- 15.0 - 17.5	- 124 - 131	- 21.1 - 22.3
IO-470-J, K	600 2600	5.5 - 7.0 24.7 - 27.7	- 14.8 - 17.3	- 123 - 130	- 21.0 - 22.1
IO-470-V	600 2625	6.5 - 7.5 28.3 - 29.8	- 17.8 - 18.8	- 123.5 - 131	- 21.0 - 22.3
IO-470-VO	600 2625	6.5 - 7.5 28.8 - 31.0	- 17.8 - 18.8	- 132 - 137.5	- 22.5 - 23.4
GIO-470-A	450 2400	9.0 - 11.0 26.0 - 28.0	- 15.5 - 16.5	- 145 - 155	- 24.7 - 26.4
TSIO-470-B, C, D	600 2600 (35.0)	5.5 - 6.0 28.0 - 30.0	- 15.0 - 17.0	- 145 - 155	- 24.7 - 26.4
IO-520-A, J	600 2700	9.0 - 11.0 29.0 - 32.0	- 15.9 - 18.2	- 136 - 146	- 23.2 - 24.9
IO-520-B, BA, BB C, CB	600 2700	9.0 - 11.0 28.0 - 31.0	- 14.9 - 17.2	- 136 - 146	- 23.2 - 24.9

Table 3. Fuel System Adjustment Values

IDLE AND FULL POWER FUEL PRESSURES AND FLOWS					
ENGINE SEE NOTE 1	**Prop. RPM & (MAP)**	**Unmetered Pump PSI (NOTE 2)**	**Metered Nozzle PSI (NOTE 3)**	**Fuel lbs/hr (NOTE 4)**	**Fuel gal/hr (NOTE 4)**
IO-520-D, F, K, L	600 2850	9.0 - 11.0 30.0 - 33.0	- 17.0 - 19.4	- 143 - 153	- 24.4 - 26.1
IO-520-E	600 2850	9.0 - 11.0 29.0 - 32.0	- 16.1 - 18.3	- 143 - 153	- 24.4 - 26.1
IO-520-M, MB	600 2700	6.0 - 7.0 29.0 - 32.0	- 16.7 - 19.3	- 136 - 146	- 23.2 - 24.9
IO-520-P LIO-520-P	600 2500	6.0 - 7.0 26.2 - 26.9	- 14.3 - 16.2	- 130 - 140	- 22.1 - 23.9
TSIO-520-AE, LTSIO-520-AE	600 2400 (32.5)	7.5 - 8.5 34.5 - 38.0	- 15.2 - 16.5	- 160 - 165	- 27.3 - 28.1
TSIO-520-AF	600 2700 (35.5)	5.5 - 6.5 35.0 - 39.0	- 18.4 - 19.9	- 180 - 186	- 30.7 - 31.7
TSIO-520-B, BB	600 2700 (32.0)	5.5 - 7.0 29.0 - 32.0	- 16.0 - 17.9	- 165 - 175	- 28.1 - 29.8
TSIO-520-BE	600 2600 (38.0)	5.5 - 7.0 25.0 - 28.0	- 12.7 - 14.1	- 214 - 224	- 36.5 - 38.2
TSIO-520-C, H	600 2700 (32.5)	5.5 - 7.0 29.0 - 32.0	- 15.3 - 17.2	- 160 - 170	- 27.3 - 29.0
TSIO-520-CE	600 2700 (37.0)	5.5 - 6.5 33.0 - 36.0	- 16.2 - 18.0	- 215 - 225	- 36.6 - 38.3
TSIO-520-D, DB	600 2700 (32.5)	5.5 - 7.0 29.0 - 32.0	- 13.3 - 15.1	- 160 - 170	- 27.3 - 29.0
TSIO-520-E, EB	600 2700 (34.5)	5.5 - 6.5 31.0 - 34.0	- 15.6 - 17.7	- 175 - 185	- 29.8 - 31.5
TSIO-520-G	600 2700 (35.0)	5.5 - 6.5 31.0 - 34.0	- 15.8 - 17.6	- 181 - 191	- 30.8 - 32.5
TSIO-520-J, JB	600 2700 (36.0)	5.5 - 6.5 31.0 - 34.0	- 16.9 - 18.7	- 170 - 178	- 29.0 - 30.3
TSIO-520-K, KB	600 2700 (33.0)	5.5 - 7.0 29.0 - 32.0	- 15.1 - 17.4	- 163 - 175	- 27.8 - 29.8
TSIO-520-L, LB	600 2700 (38.0)	25 Minimum 45.0 - 55.0	- **NOTE 8**	- 180 - 190	- 30.7 - 32.4

Table 3. Fuel System Adjustment Values

IDLE AND FULL POWER FUEL PRESSURES AND FLOWS					
ENGINE SEE NOTE 1	**Prop. RPM & (MAP)**	**Unmetered Pump PSI (NOTE 2)**	**Metered Nozzle PSI (NOTE 3)**	**Fuel lbs/hr (NOTE 4)**	**Fuel gal/hr (NOTE 4)**
TSIO-520-M, R	600 2700 (36.5)	5.5 - 6.5 33.0 - 37.0	- 16.9 - 19.9	- 170 - 186	- 29.0 - 31.7
TSIO-520-N, NB	600 2700 (38.0)	5.5 - 6.5 32.0 - 35.0	- 16.9 - 19.9	- 170 - 186	- 28.9 - 31.7
TSIO-520-P	600 2700 (36.5)	5.5 - 6.5 33.0 - 37.0	- 18.4 - 19.9	- 180 - 186	- 30.7 - 31.7
TSIO-520-T	600 2700 (39.5)	5.5 - 6.5 33.0 - 37.0	- 16.3 - 18.1	- 185 - 195	- 31.5 - 33.2
TSIO-520-UB	600 2700 (36.0)	5.5 - 6.5 33.0 - 37.0	- 14.4 - 16.0	- 195 - 205	- 33.2 - 34.9
TSIO-520-VB	600 2700 (40.5)	5.6 - 6.5 36.0 - 39.5	- 16.9 - 18.7	- 200 - 210	- 34.1- 35.8
TSIO-520-WB	600 2700 (39.5)	25 Minimum 45.0 - 55.0	- **NOTE 8**	- 190 - 200	- 32.4 - 34.1
GTSIO-520-C	525 2400 (34.5)	4.0 - 7.0 30.0 - 33.0	- 16.5 - 17.5	- 215 - 225	- 36.6 - 38.3
GTSIO-520-D, H	467 2267 (39.5)	4.0 - 7.0 30.5 - 35.0	- 15.7 - 17.3	- 250 - 260	- 42.6 - 44.3
GTSIO-520-F, K **NOTE 8**	600 2267 (44.5)	6.75 - 7.25 38.0 - 41.0	- 17.4 - 18.8	- 300 - 310	- 51.1 - 52.8
GTSIO-520-L	467 2234 (39.0)	4.0 - 7.0 29.5 - 35.0	- 16.4 - 17.9	- 255 - 265	- 43.4 - 45.1
GTSIO-520-M	467 2234 (40.0)	4.0 - 7.0 29.5 - 35.0	- 16.4 - 17.9	- 255 - 265	- 43.4 - 45.1
GTSIO-520-N **NOTE 8**	467 2234 (39.0)	4.0 - 7.0 29.5 - 35.0	- 16.4 - 17.9	- 255 - 265	- 43.4 - 45.1
IO-550-A, B, C	SEE Maintenance Manual M-16				
IO-550-D, E, F,L **NOTES 5 & 6**	600 2700	8.0 - 10.0 32.0 - 36.0	- 17.2 - 20.0	- 143 - 155	- 24.4 - 26.4
IO-550-G	SEE Maintenance Manual M-16				
IO-550-N	SEE Maintenance Manual M-16				

Table 3. Fuel System Adjustment Values

IDLE AND FULL POWER FUEL PRESSURES AND FLOWS					
ENGINE SEE NOTE 1	**Prop. RPM & (MAP)**	**Unmetered Pump PSI (NOTE 2)**	**Metered Nozzle PSI (NOTE 3)**	**Fuel lbs/hr (NOTE 4)**	**Fuel gal/hr (NOTE 4)**
IO-550-P	SEE Maintenance Manual M-16				
IO-550-R	SEE Maintenance Manual M-16				
GIO-550-A	600 2267	25 Minimum 45 - 55	- **NOTE 8**	- 175 - 185	- 29.8 - 31.5
TSIO-550-B, C, E, G, K, N	SEE Maintenance Manual M-18				
TSIO-550-G MOONEY **NOTE 9**	600 2500 (33.5)	7.0-9.0 20.0-23.0	- 10.4-11.6	- 177-180	- 30.0-30.7
TSIOL-550-A	600 2600 (35.0)	5.5 - 6.5 32.5 - 35.5	- 17.0 - 19.0	- 170 - 180	- 29.0 - 30.7
TSIOL-550-B	600 2700 (35.0)	6.0 - 8.0 36.0 - 40.0	- 20.0 - 22.5	- 175 - 185	- 29.8 - 31.5
TSIOL-550-C	600 2600 (39.5)	6.0 - 8.0 37.0 - 40.0	- 15.0 – 16.5	- 204 - 216	- 34.8 – 36.8
6-285 (TIARA)	See latest revision of Continental Motors Service Bulletin M79-4.				

NOTE 1 The setup procedures contained in this bulletin are only for use on engines that have not been modified from their original configuration as shipped from the factory by Continental Motors. Engines which have been modified by the installation of aftermarket components such as turbo-normalizing systems, turbocharging systems, intercoolers, after-coolers, fuel nozzles, etc., whether by STC or field approval, must use the instructions provided by the STC holder or installer. CMI will not accept responsibility or liability for any modified engine set up according to the instructions contained in this Service Information Directive.

NOTE 2 FULL POWER unmetered fuel pump pressure limits are provided for reference only. Use metered fuel pressure specifications for adjustments at full power.

NOTE 3 Use for full power, maximum RPM adjustment only. All other parameters for reference only, NOTE 2 applies.

NOTE 4 May be determined using a calibrated in-line flow measuring device. Otherwise use metered fuel pressure specifications. Refer to Aircraft Manufacturer's Maintenance Manual for method of verifying accuracy of fuel flow indicator.

NOTE 5 Engine equipped with Altitude Compensating fuel pump. NOTE 6 applies.

NOTE 6 Flight test required to verify fuel flow vs. pressure altitude values are within the limits specified. See applicable Table 4 through Table 7 and Figure 1 through Figure 4 for applicable values by engine model.

NOTE 7 This engine installed in Cirrus SR20 aircraft. IO-360-ES (6) B engine has been de-rated by Cirrus from original 210 HP at 2800 RPM to 200 HP at 2700 RPM. Engine data plate reflects original TC and PC data of 210 HP at 2800 RPM. Refer to Cirrus SR20 Maintenance Manual and Pilots Operating Handbook.

NOTE 8 Refer to the aircraft manufacturer's instructions for adjustment procedures

NOTE 9 TSIO-550-G installed in Mooney aircraft has been rated to a power level that is less than the approved Type Certificate Data Sheet. Refer to the Mooney Aircraft maintenance manual for setup instructions

Table 4. IO-360-DB engine WIDE OPEN THROTTLE, FULL RICH MIXTURE 210 BHP @ 2800 RPM						
Pressure Altitude (Set Altimeter at 29.92 in. Hg.)	Fuel Flow (lbs/hr)		Fuel Flow (gals/hr)		Metered Fuel Pressure PSID	
	Min.	Max.	Min.	Max.	Min.	Max.
Sea Level	102.9	112.9	17.5	19.2	16.0	18.8
1,000	98.4	108.4	16.8	18.5	15.0	17.8
2,000	94.1	104.1	16.0	17.7	14.1	16.8
3,000	90.0	100.0	15.3	17.0	13.3	15.9
4,000	86.1	96.1	14.7	16.4	12.6	15.1
5,000	82.3	92.3	14.0	15.7	11.9	14.4
6,000	78.8	88.8	13.4	15.1	11.3	13.7
8,000	72.2	82.2	12.3	14.0	10.2	12.5
10,000	66.4	76.4	11.3	13.0	9.3	11.5
12,000	61.3	71.3	10.4	12.1	8.6	10.7
14,000	56.9	66.9	9.7	11.4	8.0	10.0
16,000	53.3	63.3	9.1	10.8	7.5	9.5
Gasoline = 5.87 lbs per gallon @ 70° F. IO-360-DB Installed in T-41 ACFT Refer to Cessna SL81-2 date 28 July 1981 for amplified instructions.						

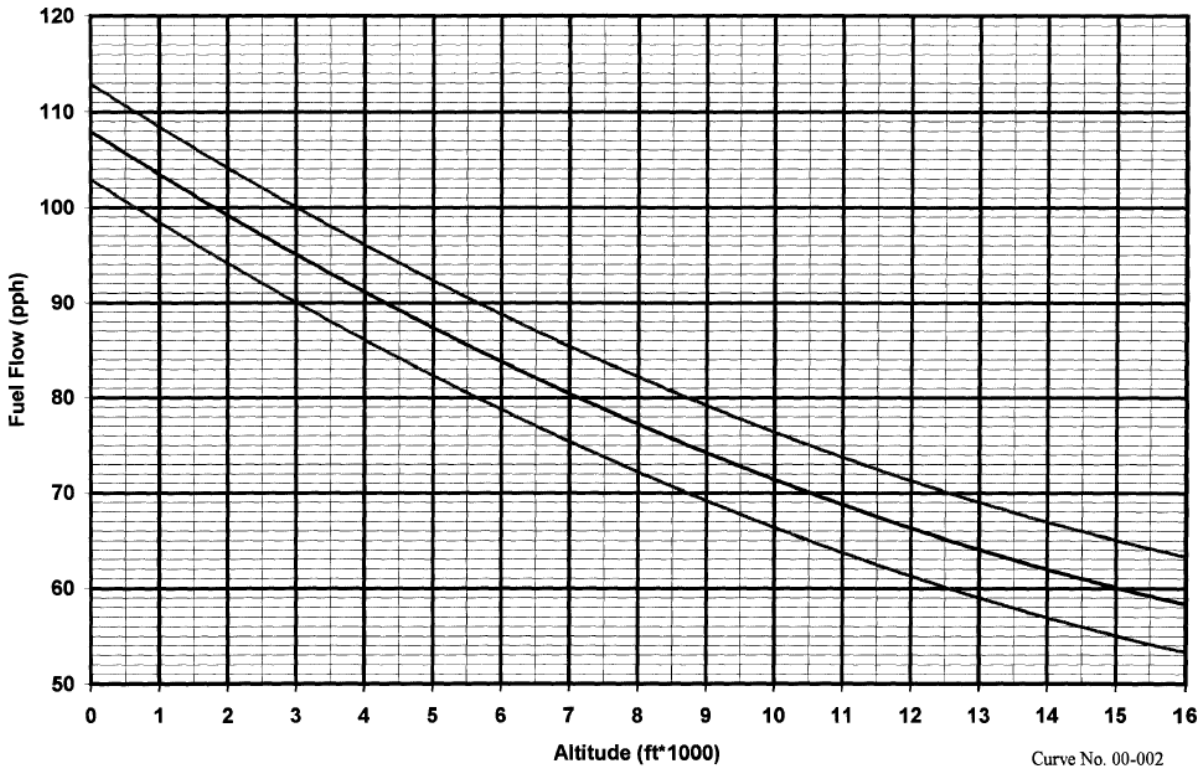

Figure 1. IO-360-DB34B Altitude Leaning Schedule

Table 5. IO-360-ES ENGINE ALTITUDE FUEL SCHEDULE WIDE OPEN THROTTLE, FULL RICH MIXTURE 210 BHP @ 2800 RPM						
Pressure Altitude (Set Altimeter at 29.92 in. Hg.)	Fuel Flow (lbs/hr)		Fuel Flow (gals/hr)		Metered Fuel Pressure PSID	
	Min.	Max.	Min.	Max.	Min.	Max.
Sea Level	100.0	107.0	17.0	18.1	14.3	16.5
1,000	97.7	103.7	16.6	17.7	13.9	15.8
2,000	93.7	99.7	16.0	17.0	13.1	14.9
3,000	90.3	96.3	15.4	16.4	12.3	14.1
4,000	87.3	93.3	14.9	15.9	11.7	13.6
5,000	85.0	91.0	14.5	15.5	11.5	13.2
6,000	83.3	89.3	14.2	15.2	11.1	12.8
8,000	80.0	86.0	13.6	14.7	10.6	12.2
10,000	77.3	83.3	13.2	14.2	10.1	11.8
12,000	74.4	80.4	12.7	13.7	9.6	11.2
14,000	71.3	77.3	12.1	13.2	9.2	10.7
16,000	69.3	75.3	11.8	12.8	8.9	10.3
Gasoline = 5.87 lbs per gallon @ 70° F.						

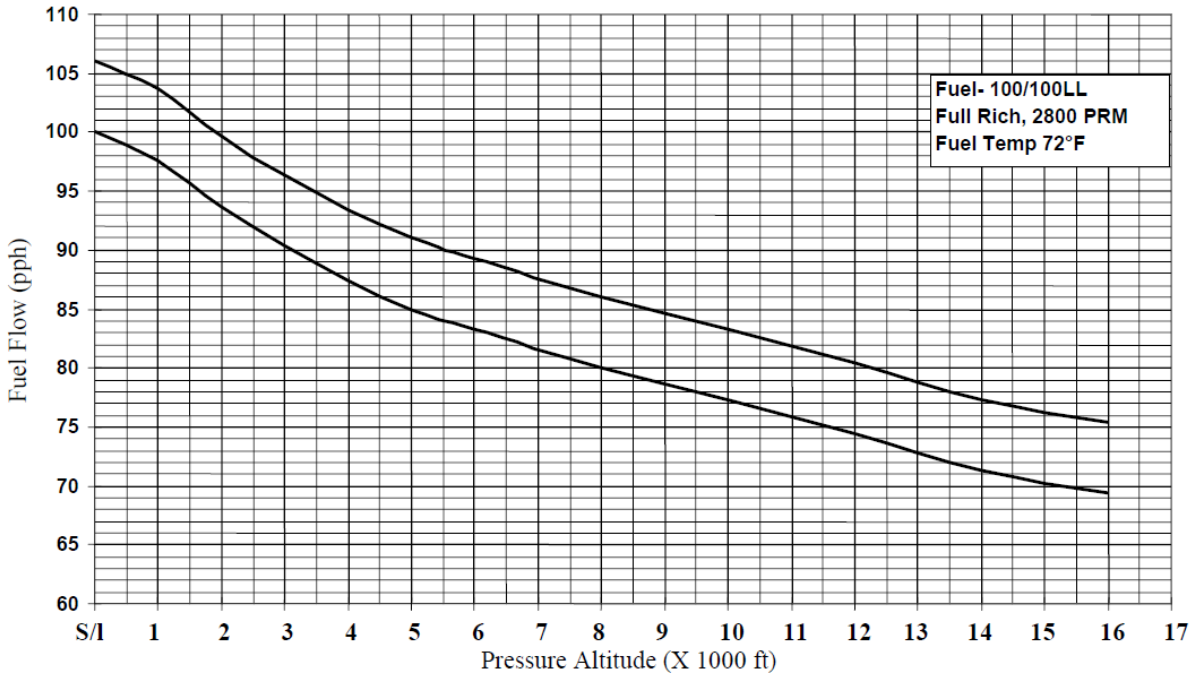

Figure 2. IO-360-ES Altitude Leaning Schedule
2800 RPM with Full Rich Mixture -Wide Open Throttle

Table 6. IO-360-ES ENGINE ALTITUDE FUEL SCHEDULE WIDE OPEN THROTTLE, FULL RICH MIXTURE 200 BHP @ 2700 RPM *SEE NOTE 7*						
Pressure Altitude (Set Altimeter at 29.92 in. Hg.)	Fuel Flow (lbs/hr)		Fuel Flow (gals/hr)		Metered Fuel Pressure PSID	
	Min.	Max.	Min.	Max.	Min.	Max.
Sea Level	96.0	102.0	16.4	17.4	13.8	15.5
1,000	93.7	99.7	16.0	17.0	13.3	15.0
2,000	89.7	95.7	15.3	16.3	12.5	14.2
3,000	86.3	92.3	14.7	15.7	11.9	13.5
4,000	83.3	89.3	14.2	15.2	11.4	13.0
5,000	81.0	87.0	13.8	14.8	11.0	12.5
6,000	79.3	85.3	13.5	14.5	10.7	12.2
8,000	76.0	82.0	12.9	14.0	10.2	11.7
10,000	73.3	79.3	12.5	13.5	9.7	11.2
12,000	70.4	76.4	12.0	13.0	9.3	10.7
14,000	67.3	73.3	11.5	12.5	8.8	10.2
16,000	65.3	71.3	11.1	12.1	8.6	9.9
Gasoline = 5.87 lbs. per gallon @ 70° F.						

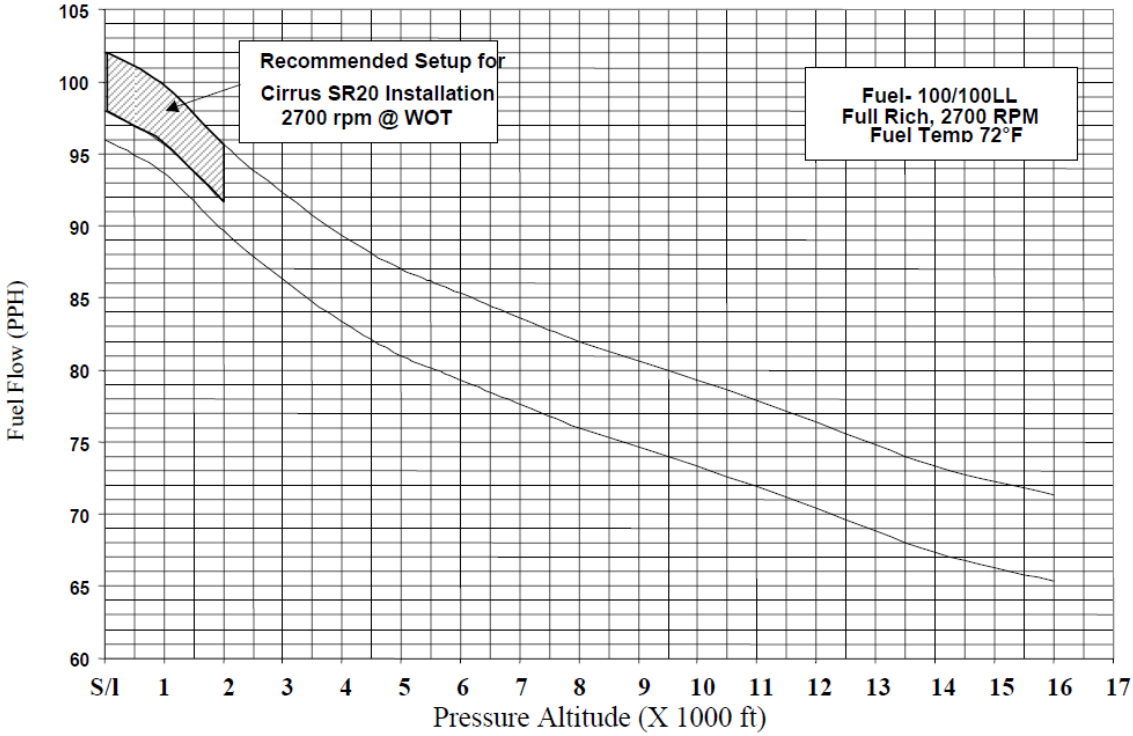

Figure 3. IO-360ES-6B Altitude Leaning Schedule
2700 RPM with Full Rich Mixture -Wide Open Throttle

Table 7. IO-550-D, E, F & L ENGINE ALTITUDE FUEL SCHEDULE FULL OPEN THROTTLE, FULL RICH MIXTURE 300 BHP @ 2700 RPM						
Pressure Altitude (Set Altimeter at 29.92 in. Hg.)	Fuel Flow (lbs/hr)		Fuel Flow (gals/hr)		Metered Fuel Pressure PSID	
	Min.	Max.	Min.	Max.	Min.	Max.
Sea Level	143	155	24.4	26.4	17.2	20.0
1000	142.5	154.5	24.3	26.3	17.1	19.9
2,000	142	154	24.2	26.2	17.0	19.8
3000	141	153	24.0	26.1	16.9	19.6
4,000	139	151	23.7	25.7	16.5	19.2
5000	136	148	23.2	25.2	16.0	18.7
6,000	133	145	22.6	24.7	15.5	18.2
8,000	124	136	21.1	23.2	14.0	16.6
10,000	114	126	19.4	21.5	12.5	15.0
12,000	107	119	18.2	20.3	11.5	13.9
14,000	102	114	17.4	19.4	10.8	13.1
Gasoline = 5.87 lbs per gallon @ 70° F.						

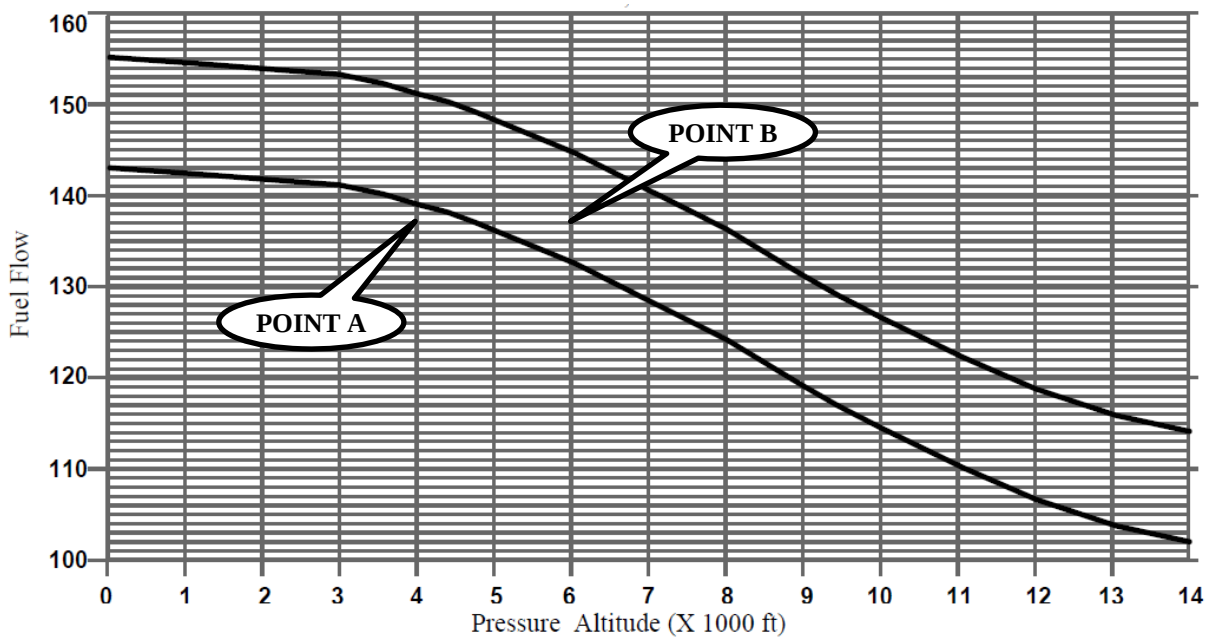

Figure 4. IO-550-D, E, F & L Altitude Leaning Schedule Full Rich 2700 RPM

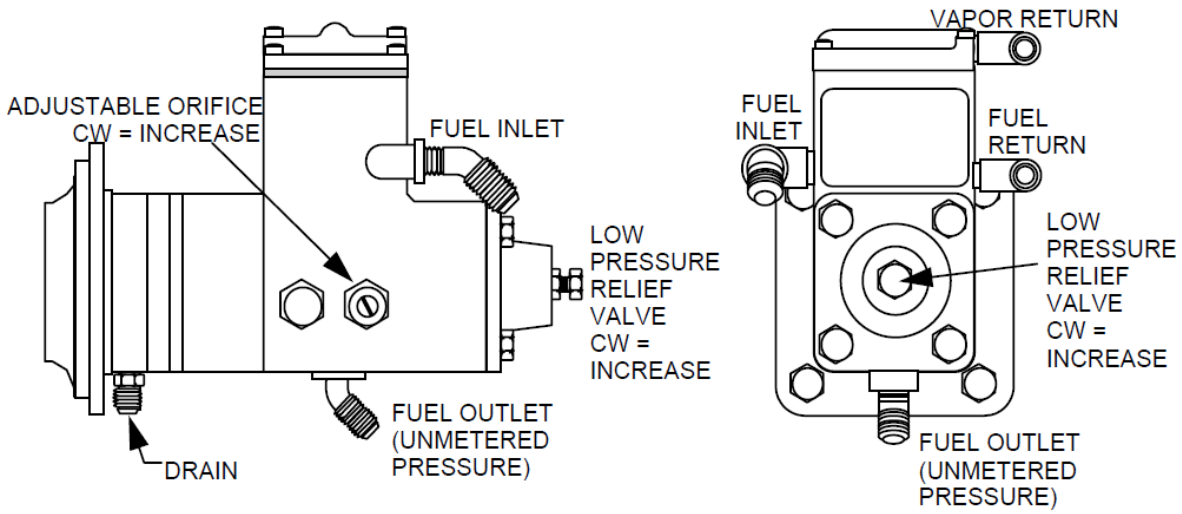

Figure 5. Fuel Pump-Naturally Aspirated Engine

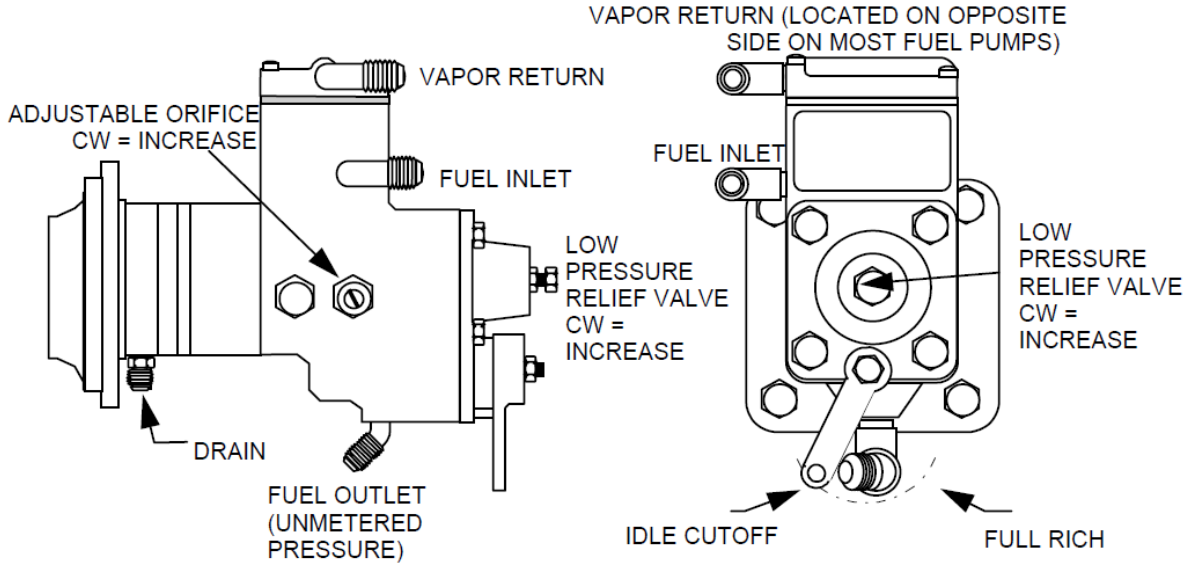

Figure 6. Fuel Pump with Mixture Control – Naturally Aspirated Engine

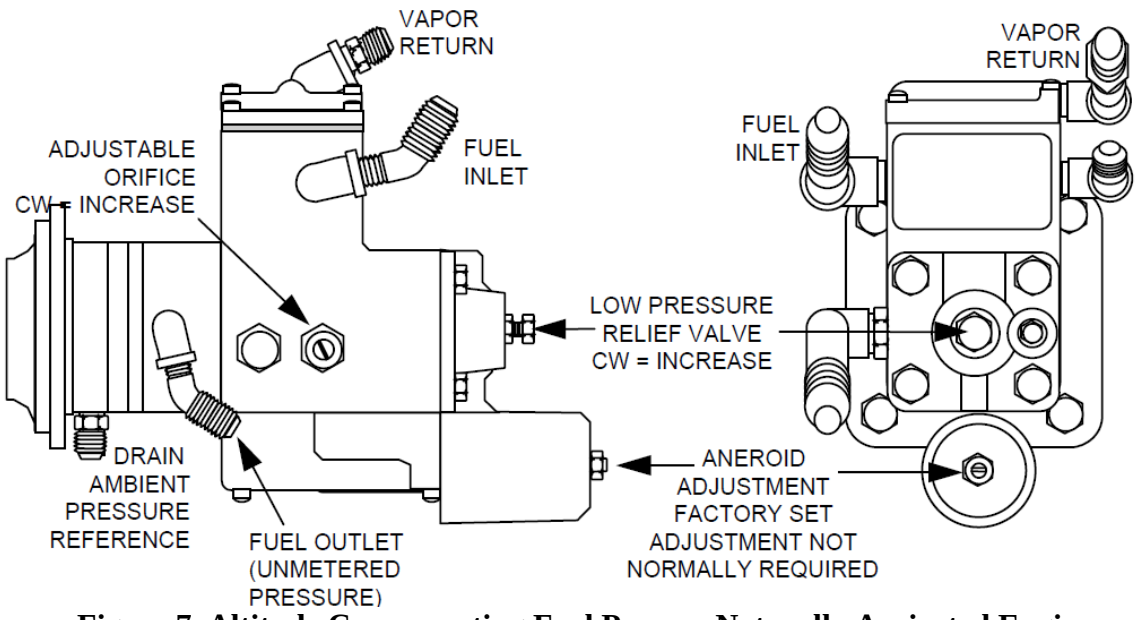

Figure 7. Altitude Compensating Fuel Pump – Naturally Aspirated Engine

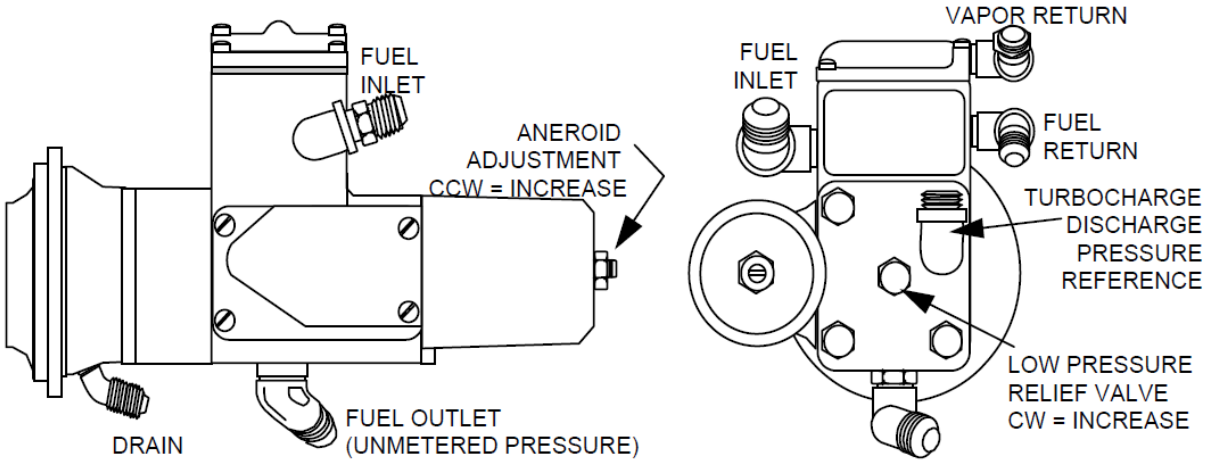

Figure 8. Aneroid Equipped Fuel Pump – Turbocharged Engine

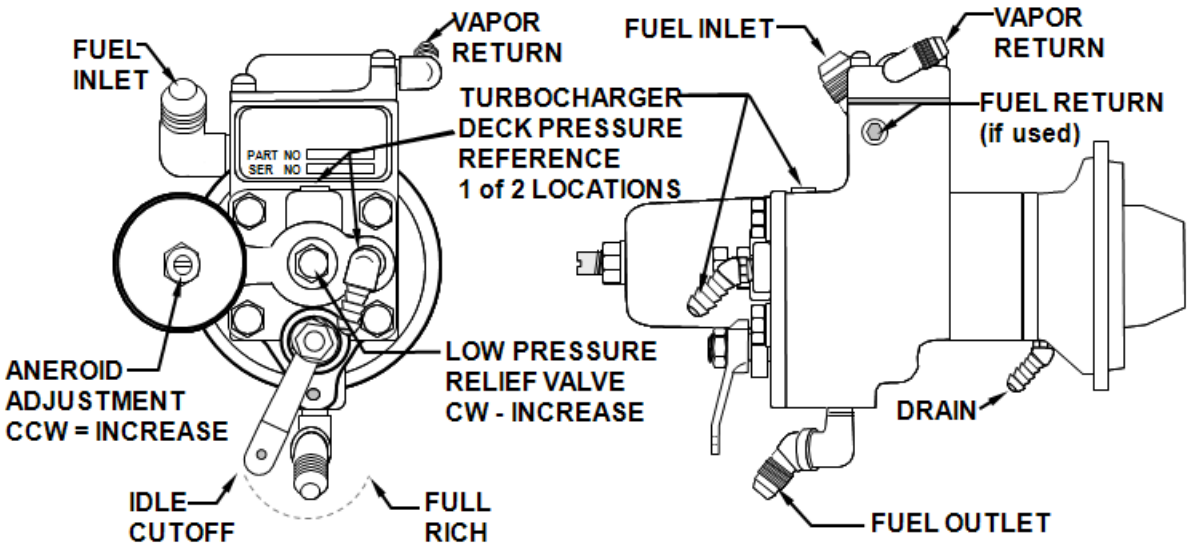

Figure 9. Aneroid and Mixture Control Equipped Fuel Pump – Turbocharged Engine

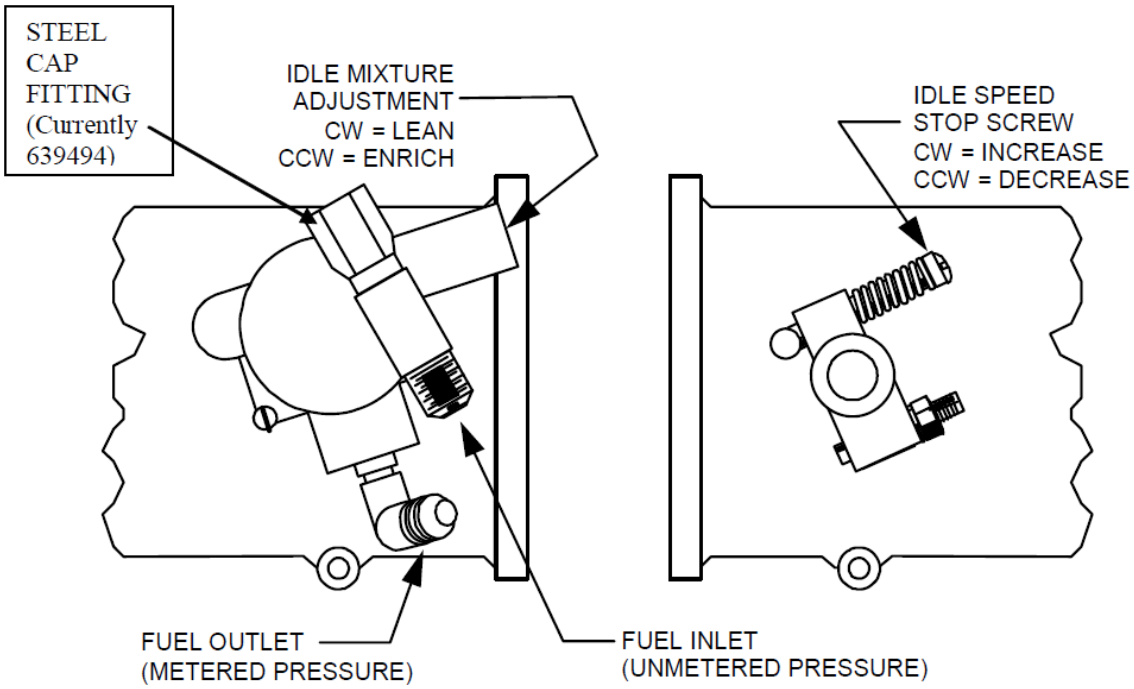

Figure 10. Throttle and Metering Assembly

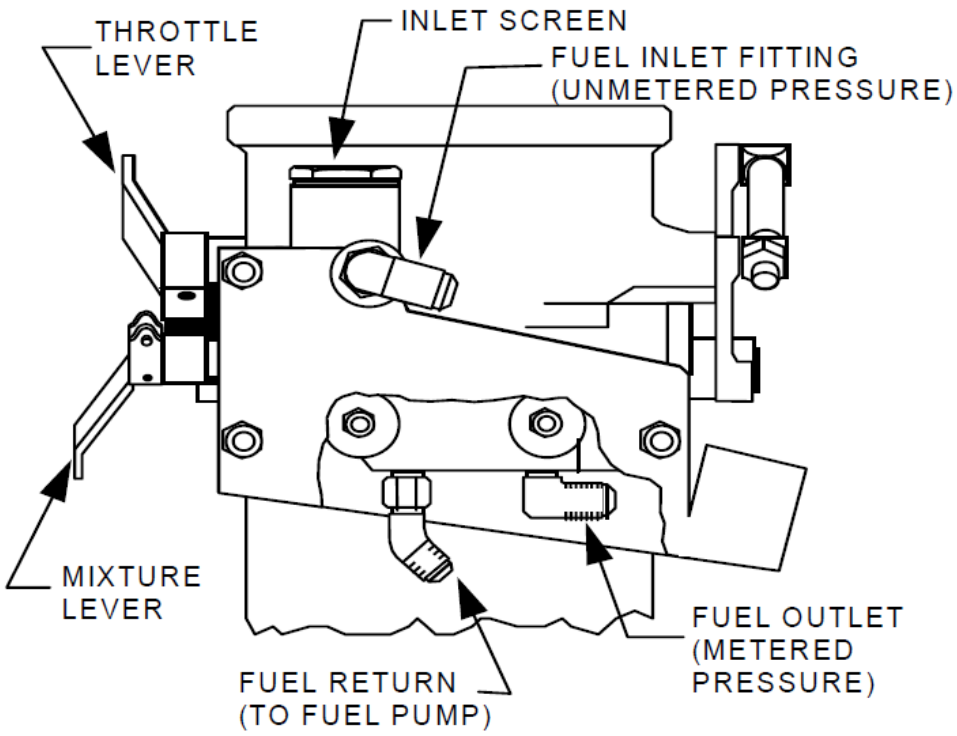

Figure 11. Throttle and Control Assembly
Front View (except GTSIO520-D, F, H, K, L, M & N

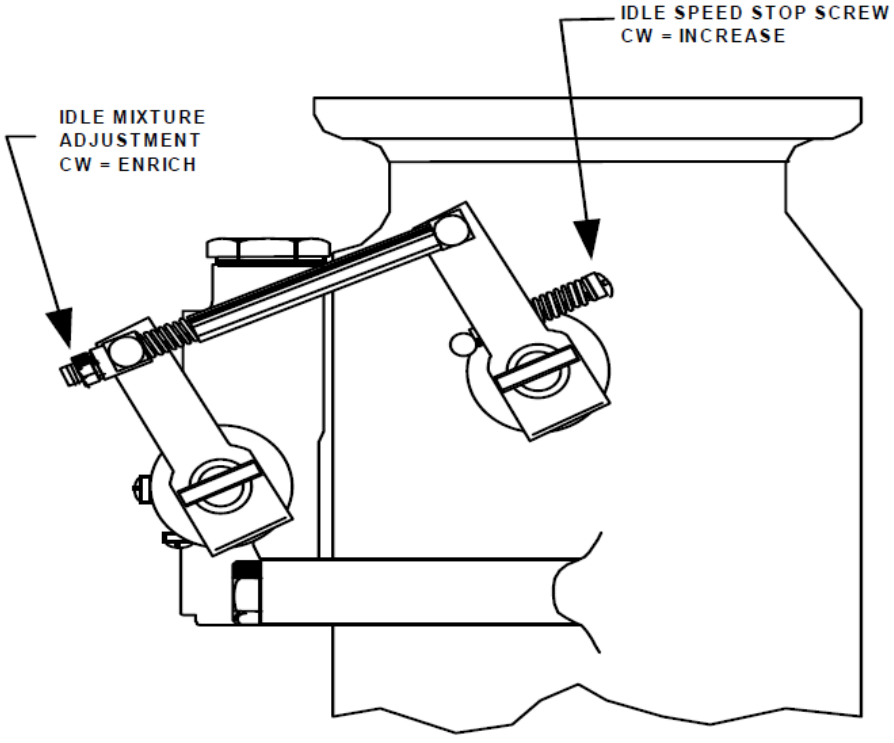

Figure 12. Throttle and Control Assembly
Side View (except GTSIO520-D, F, H, K, L, M & N

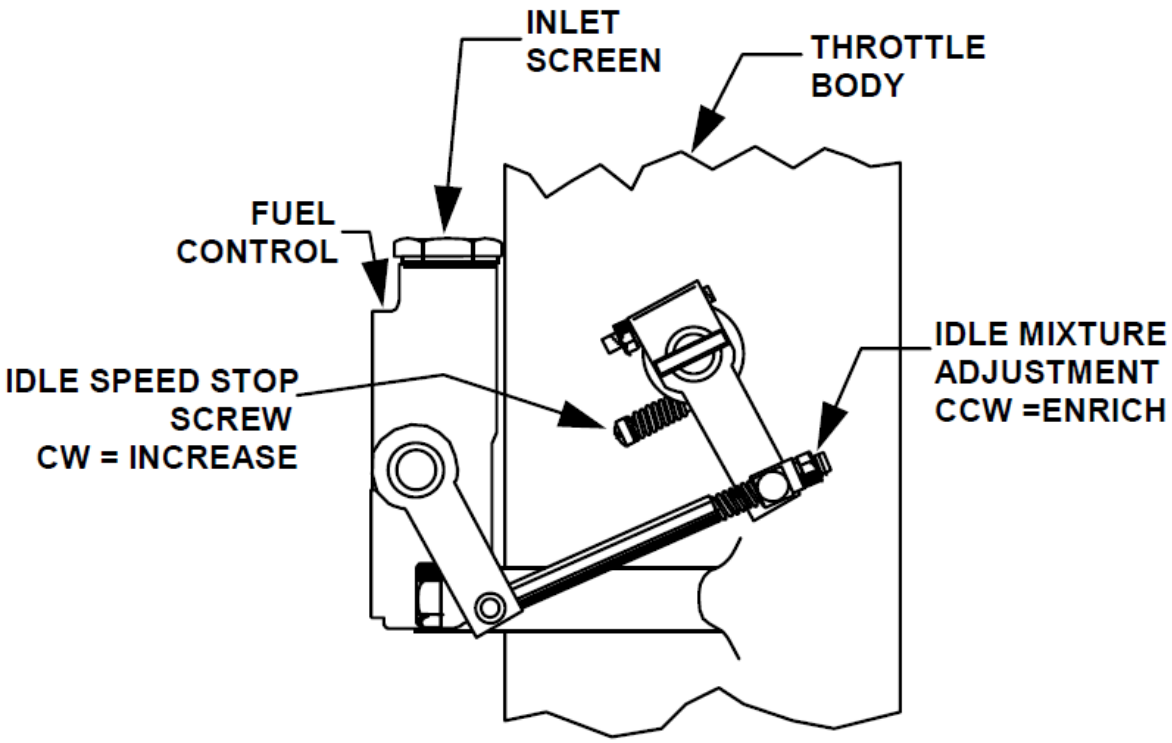

Figure 13. Throttle and Control Assembly
Side View (All GTSIO-520 except GTSIO-520 -C, F & K

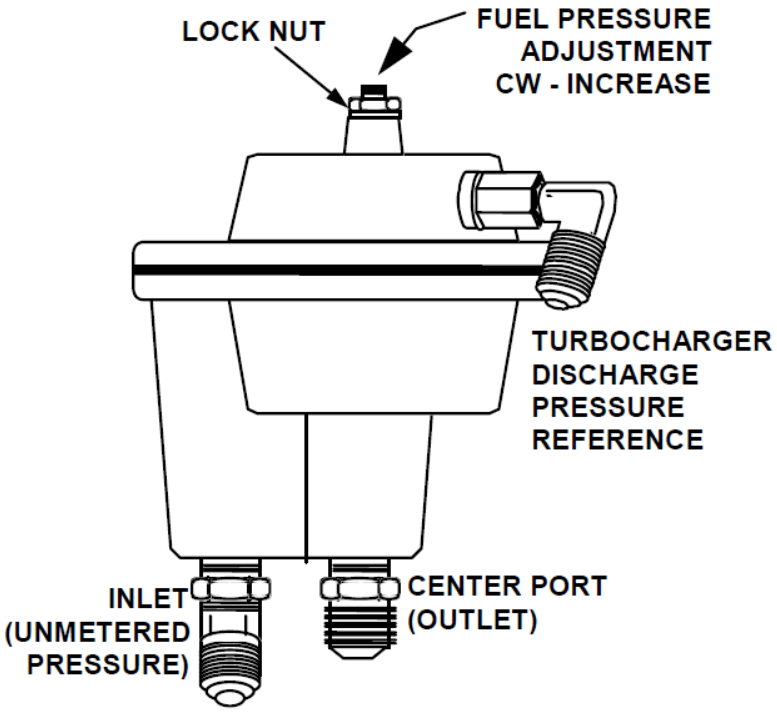

Figure 14. Fuel Pressure Regulator - Turbocharged Engine

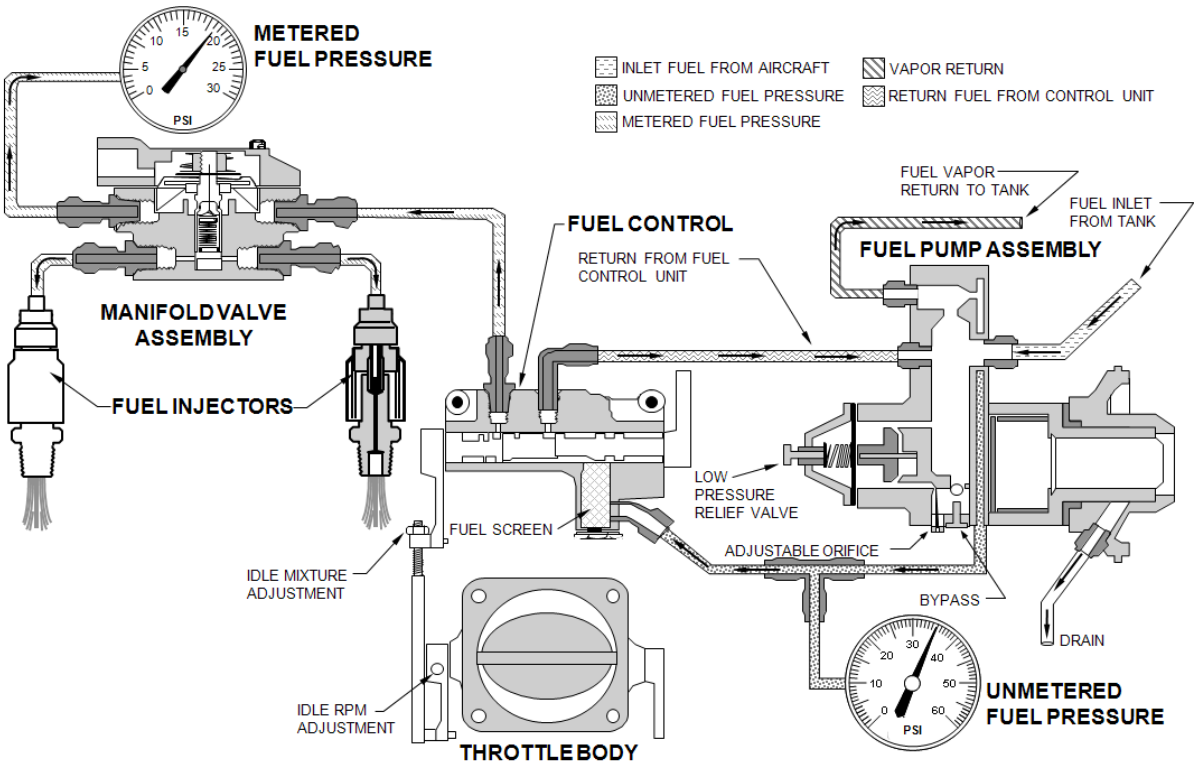

Figure 15.Typical Naturally Aspirated Fuel System Schematic (with Fuel Control Unit)

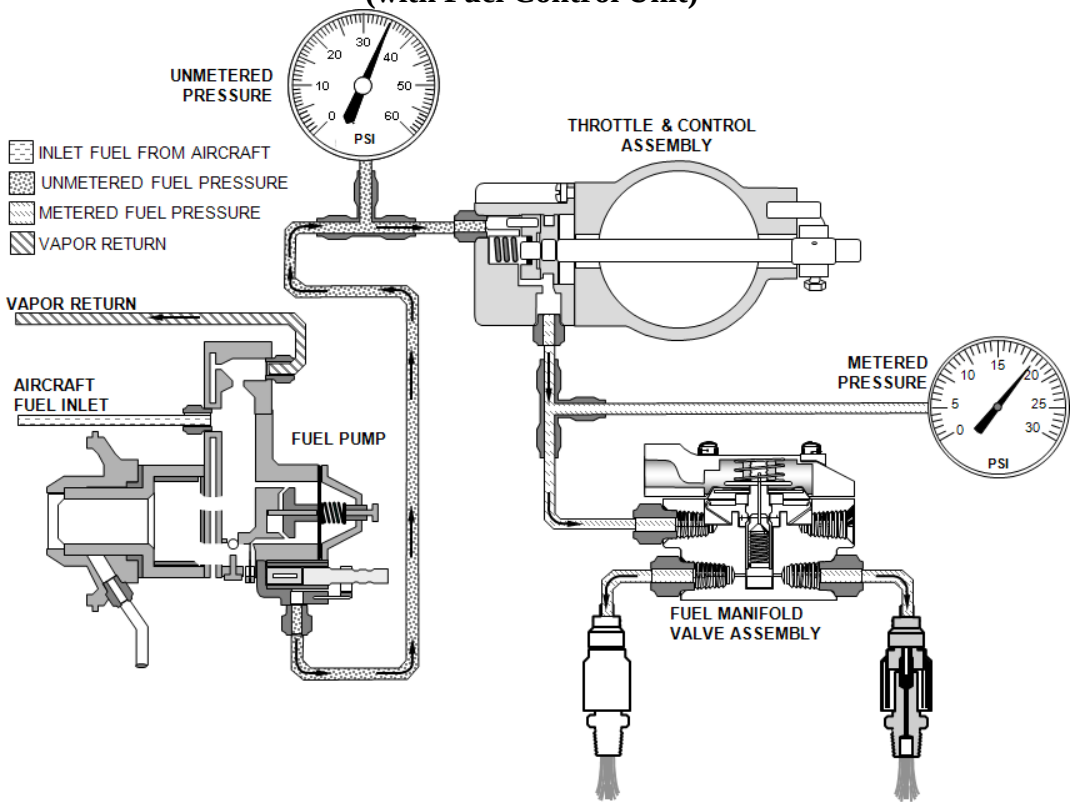

Figure 16. Typical Naturally Aspirated Engine Fuel System Schematic (Fuel Pump w/Integral Mixture Control)

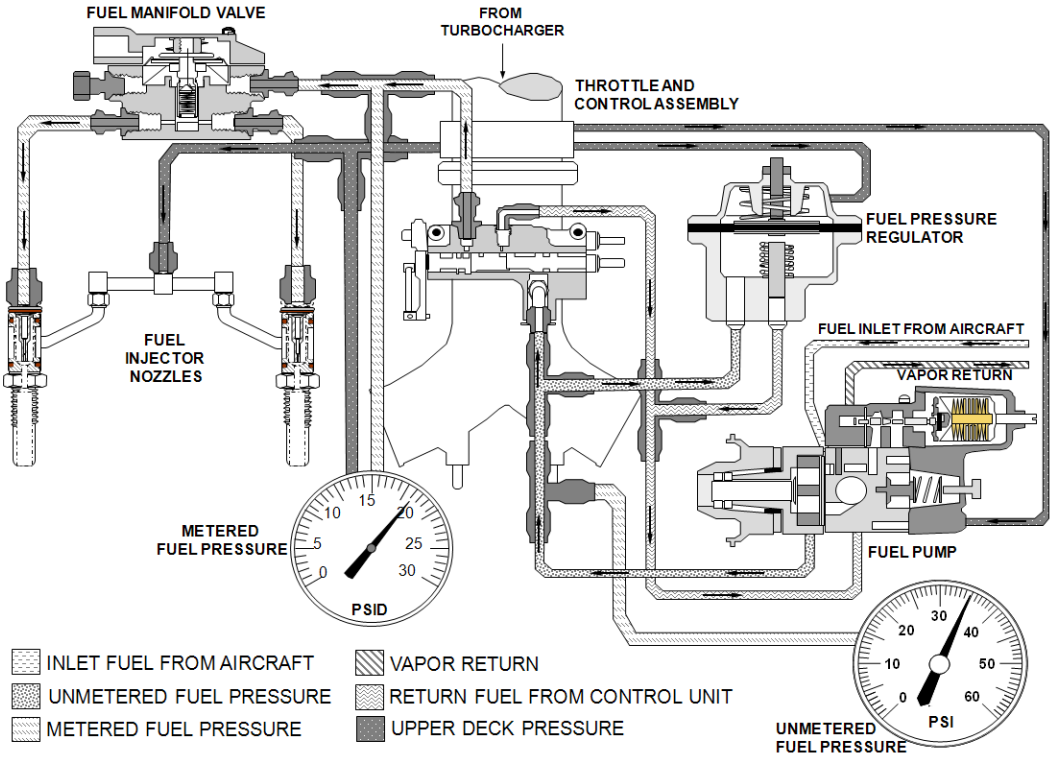

Figure 17. Typical Turbo-Charged Fuel System Schematic (with Fuel Control Unit and Fuel Regulator)

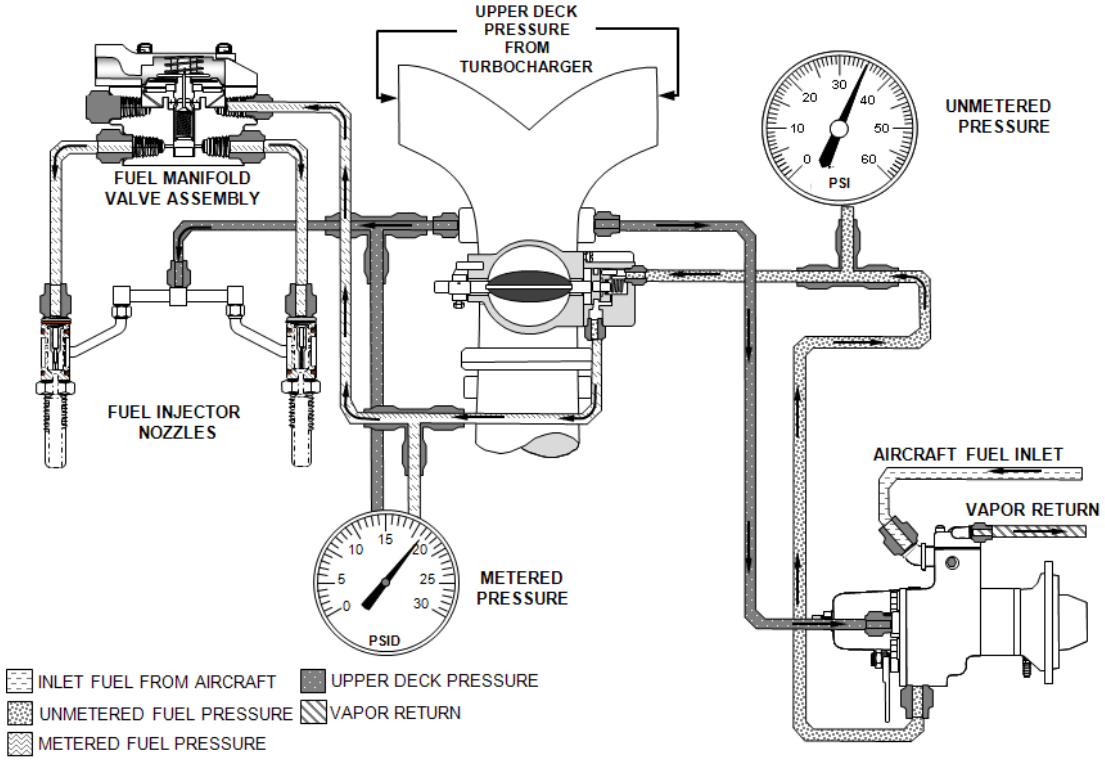

Figure 18. Typical Turbo-Charged Engine Fuel System Schematic (Fuel Pump w/Integral Mixture Control)

Date:	Location:	Elevation:	OAT:	Field "Hg:
Aircraft Make & Model:		Aircraft Registration #:		
Engine Model:		Engine Position: Left Right Front Rear		
Engine Serial Number:		Engine Total Time - New - Overhaul		

Fuel System Adjustment - Record engine specifications and actual gauge indications.

				Fuel Pressure																Adjustment	
R.P.M.		M.A.P.		**Unmetered**		**Metered**		Fuel Flow		EGT	TIT	Cylinder Head Temp. - °F						Oil		# of turns	
Spec	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	°F	°F	1	2	3	4	5	6	PSI	°F	CW	CCW

Flight Test Data - Record gauge indications

R.P.M.		M.A.P.		Pressure Altitude - (Set altimeter to 29.92" Hg)	Fuel Flow		EGT °F		TIT °F		CHT °F		Oil PSI		Oil Temp. °F		I.A.S. **knots**	
Spec	**Actual**	**Spec**	**Actual**		**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**	**Spec**	**Actual**		

Remarks: **(Idle fuel/air mixture RPM rise, magneto drop, etc.)**

Signature: