

CONTINENTAL MOTORS® AIRCRAFT ENGINE
SERVICE INFORMATION DIRECTIVE

CATEGORY 4
SID97-3G

Compliance Will Enhance Safety, Maintenance, or Economy of Operation

Supersedes SID97-3F
TECHNICAL PORTIONS
FAA APPROVED

- SUBJECT:** Continuous Flow Fuel Injection Systems Adjustment Specifications and Instructions
- PURPOSE:** Provide specifications and instructions for adjustment of Continental Motors (CM) 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 CM Aviation Gasoline (AvGas) engine models equipped with CM continuous flow fuel injection systems except IO520-N, NB; L/TSIO360-RB; TSIO520-L, LB, WB; GTSIO520-D, F, K, N and GIO550-A engine models.

WARNING

The instructions and values provided in this document apply to Continental Motors (CM) gasoline 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 CM 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 configured with the aircraft manufacturer’s induction system, fuel supply system, and are placed in service under varied conditions. These structural and functional differences require scheduled monitoring and adjustment of the fuel injection system to meet operational specifications before flight.

CAUTION: Engine performance, service life and reliability will be compromised if the engine's fuel injection system is neglected. Requirements set forth in this document cover general areas of operation, maintenance, and servicing and do not supersede or replace the Instructions for Continued Airworthiness (ICAs) provided by the aircraft manufacturer(s). Reference the applicable Aircraft Maintenance and Overhaul Manual for detailed fuel system adjustment and maintenance procedures.

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.

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A 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.

II. ADJUSTMENT PROCEDURES

The following adjustment procedures are presented in a sequential format that must be followed to ensure proper fuel system adjustment. 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 Continental Motors (CM) 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.

A. REQUIRED TOOLS AND EQUIPMENT

CAUTION: Refer to the torque specifications, Table 1, “Hose End and Cap Fitting Torque Specifications,” on page 15, when applying torque to hose end fittings.

A complete set of tools and test equipment is essential for correct setup of CM fuel injection systems. Various combinations of these tools and equipment will be used for fuel system adjustment (depending on the engine model), to include the following general items:

1. CM 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 following manufacturer:

Approved Aircraft Accessories
 29300 Goddard Road
 Romulus, Michigan 48174
 1-734-946-9000

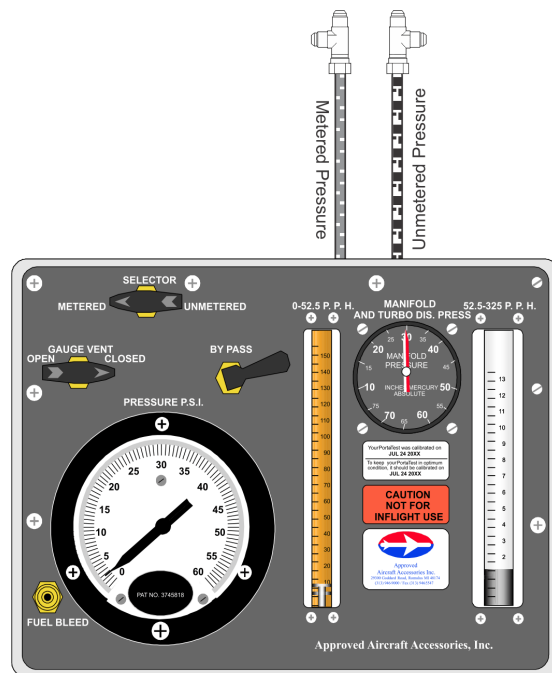


Figure 1. Model 20 ATM-C Porta-Test Unit

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GAUGE METHOD: Calibrated gauges may be used as an optional tool to the Model 20 ATM-C *Porta-Test Unit*. Calibrated pressure and differential pressure gauges may be purchased from various suppliers.

CAUTION: Pressure gauges must be accurate within $\pm 1\%$. Pressure gauges must be checked for accuracy and calibrated in accordance with the manufacturer's instructions.

- a. One calibrated 0-60 PSI gauge, graduated in 1 PSI increments. This gauge will be used for unmetered pressure measurement, *and*
- b. To perform metered pressure measurements and verification of aircraft fuel flow indications:
 - 1) *on normally aspirated engines*, one calibrated 0-30 PSI gauge, graduated in 0.2 PSI (maximum) increments, *or*
 - 2) *on turbocharged engines*, one calibrated differential pressure gauge, 0-30 PSID maximum, graduated in 0.2 PSI (maximum) increments
2. One digital hand-held tachometer capable of verifying aircraft tachometer accuracy prior to fuel system adjustment.
3. Two swivel tees (P/N MS51523-B4). These fittings are typically used to connect fuel lines for unmetered and metered pressure reference.

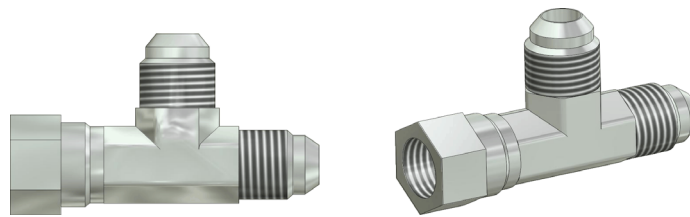


Figure 2. Tee (P/N MS51523-B4)

4. Hoses of appropriate diameters and sufficient lengths to allow personnel and equipment to provide proper clearance from the propeller arc and blast area. Hose connection requirements will vary by engine model.
5. 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.
6. Airframe boost pump.
7. General shop equipment and supplies including shop towels and a 2-5 gallon container free of contaminants.
8. Safety equipment including hearing and eye protection must be used.

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B. PRE-SETUP REQUIREMENTS

WARNING

Stand clear of the propeller arc prior to proceeding and DO NOT stand or place equipment within the arc of the propeller. Do not smoke or expose the work area to ignition sources while performing this procedure.

B.1. Fuel System Purge and Inspection

1. Remove the engine cowling according to the aircraft manufacturer's instructions.

WARNING

Fuel system contamination may lead to fuel system component damage, erratic engine operation, loss of power, or engine shutdown. Reference Service Bulletin SB08-4, "Fuel Injection System Contamination," anytime a CM continuous flow fuel injection system component is removed for replacement, repair, or maintenance.

NOTE: This procedure is not required for a newly installed factory engine or fully overhauled engine that has been previously ran.

2. During engine installation, purge the fuel system according to the following instructions. The following steps involve utilizing the airframe boost pump to flush and inspect specified quantities of fuel into an uncontaminated container. If contamination exists, always locate the source and correct the issue before proceeding to the next inspection step.
 - a. Flush a minimum of one gallon of fuel from the fuel pump inlet fuel line into a clean, dry container. Inspect the flushed fuel. If free from contamination connect the airframe boost pump **outlet fuel line** to the fuel pump at the inlet using the appropriate maintenance instructions. If contamination exists, correct the issue before proceeding.
 - b. Flush a minimum of one quart of fuel through the **fuel pump** (*on fuel pumps with integral mixture control*) and outlet fuel line 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.
 - c. Flush the **fuel transducer hose** (where installed) 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.
 - d. Flush a minimum of one quart of fuel through the **throttle and fuel 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 **fuel manifold valve** using the appropriate maintenance instructions. If contamination is found, correct the issue before proceeding.
 - e. Flush **each fuel injector line** separately into individual clean, dry containers. 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.

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3. Locate the idle speed stop screw on the throttle body and turn it counter-clockwise two complete turns (see Figure 11 through Figure 13). During fuel system adjustment, IDLE RPM will be controlled manually using the cockpit throttle control.
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 or replace the aircraft and **engine fuel screens** according to the aircraft manufacturer's instructions.

B.2. Engine Installation Inspection

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.

1. 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.
2. Inspect all lines, hoses, and wire bundles for chafing, loose connections, leaks and stains. Correct any discrepancies noted.

B.3. Induction and Exhaust System Inspection

1. Inspect the exhaust and induction systems for proper installation, security and leaks. Correct any discrepancies noted.
 - a. Inspect the aircraft **vapor return system** for proper operation according to the aircraft manufacturer's instructions. Correct any discrepancies noted.
 - b. Ensure the fuel **manifold valve vent and fuel pump drain lines** are properly installed, open and free of obstruction. Correct any discrepancies noted.
2. 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.

B.4. Linkage Inspection and Lubrication

WARNING

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

1. 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.
2. Inspect the **throttle and control assembly link rods** (where used) for correct installation, security and wear at the attach points. Correct any discrepancies noted.
3. Ensure all engine controls operate freely throughout their full range of travel and are properly adjusted according to the aircraft manufacturer's instructions.
4. Lubricate all control rod ends and fuel system components according to the latest revision of CM Service Bulletin SB95-2 and the Aircraft Maintenance and Overhaul Manual.

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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 either 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 (see Figure 11), remove and set aside the cap fitting (P/N 639494) from the inlet tee. This cap will be reinstalled after setup is complete.
3. Install the tee fitting (P/N MS51523-B4) directly to the fuel pump outlet fitting or to the fuel control inlet fitting (see Figure 9 through Figure 13 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.

4. Attach the unmetered fuel supply hose to the straight end of the tee fitting (P/N MS51523-B4) and torque to the value specified in Table 1.
5. Connect the unmetered test hose from the *Porta-Test Unit* to the tee fitting and torque to the value specified in Table 1.

GAUGE METHOD: If using the 0 to 60 PSI gauge, connect the gauge to the tee fitting 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.

6. Loosen and remove the metered fuel supply hose from the manifold valve inlet fitting.
7. Install and torque the second tee fitting directly to the fuel manifold valve inlet fitting.
8. Attach the metered fuel supply hose to the straight end of the second tee fitting and torque to the value specified in Table 1. On certain models there is an optional capped fitting on the manifold valve in lieu of second tee fitting.
9. Connect the metered pressure test hose from the *Porta-Test Unit* to the second tee fitting and torque to the value specified in Table 1.

GAUGE METHOD: If using the 0 to 30 PSI gauge, connect to the swivel end of the tee fitting 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.

10. *On turbocharged engine models*; connect the *Porta-Test* manifold pressure hose and the upper deck pressure hose to the engine following the instructions provided with the *Porta-Test* unit.

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GAUGE METHOD: If using the 0 to 30 PSID differential gauge pressure fitting, connect to the metered pressure tee fitting 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 (see Figure 17 and Figure 18).

Turbocharged engine models (incorporating a fuel pressure regulator) must have the regulator deactivated during the initial fuel system adjustment. (see Figure 14).

- a. To deactivate the fuel pressure regulator, loosen and remove the fuel line or hose from the “center” port fitting at the pressure regulator.
 - b. Install a cap on the “center” port fitting.
 - c. Install a plug in the removed line.
 - d. Torque the cap and plug to the values specified in Table 1.
 - e. Perform a pressurized leak test on the connections prior to proceeding with fuel system adjustments.
11. 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.

GAUGE METHOD: 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 securely torqued and that no fuel leaks exist before proceeding. Ensure test hoses have been routed clear of the exhaust system and are securely supported over 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.

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

D. GROUND ADJUSTMENT PROCEDURES

The Operational Check form (included on the last page of this service bulletin) should be reproduced and will be used to record adjustments and actual test indications. Also, transcribe the applicable (baseline) IDLE and FULL POWER **specified** adjustment points from Table 3 to the Operational Check form:

- a. Propeller RPM
- b. Manifold Absolute Pressure (MAP)
- c. Fuel Pressures (unmetered and metered)
- d. Fuel Flow
- e. IDLE MIXTURE RISE (recorded in the “Remarks” area)

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D.1. Important Setup Notes

CAUTION: For L/TSIO360 and TSIO520 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.

1. Test gauge readings must be taken with the gauges held at the same height above the ground as the fuel system component being measured.
2. Engine driven fuel pump output pressures vary with engine RPM. During ground operation, full power RPM may not be obtained. Use the **Corrected Metered Pressures** found in Table 2 to correct the specified metered pressures if full power RPM cannot be achieved.
3. *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 fuel pump pressure.
4. Turbocharged engines equipped with fuel pressure regulators must indicate a full power metered pressure and fuel flow five (5) percent higher than the maximum specified limit **when the regulator is disconnected**. This is required to ensure adequate part-throttle fuel flow.

D.2. Recording Fuel System Performance

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. Do not stand or place equipment in the arc of the propeller.

1. 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.

CAUTION: Turn aircraft boost pump OFF to prevent adverse affects to the adjustments (these instructions do not supersede or replace the Instructions for Continued Airworthiness (ICAs) provided by the aircraft manufacturer.

2. With the mixture control in the FULL RICH position, reduce the throttle to the **specified IDLE RPM**. Record the unmetereed fuel pressure indicated on the gauge.
3. Check the IDLE fuel/air mixture by *slowly* moving the mixture control from the FULL RICH position toward the IDLE CUTOFF position until you've achieved the **maximum IDLE RPM**. Record the IDLE MIXTURE RISE after returning the mixture control back to the FULL RICH position.

NOTE: The IDLE MIXTURE RISE is the difference (or RISE) between the IDLE RPM at FULL RICH and the maximum achievable IDLE RPM. It is generally consistent for most engines (25-50 RPM) except for the IO240-B (50-75 RPM). *Refer and use requirements for mixture checks and values requirements provided in your aircraft manufacturer's instructions.* I.E. More than 50 RPM rise indicates the mixture is too rich and less than 25 RPM or no rise indicates too lean.

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4. Slowly advance the throttle control (while monitoring all gauges) to full rated power for the engine and allow the engine to stabilize for 15 seconds. Record all engine and test gauge indications. Return the engine to the specified IDLE RPM.

CAUTION: DO NOT ALLOW ENGINE TEMPERATURES TO EXCEED 420°F CHT OR 210°F OIL TEMP. 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.

5. Compare the recorded IDLE fuel pressure, IDLE MIXTURE RISE, FULL POWER RPM, manifold pressure (as applicable), unmetered fuel pressure, metered fuel pressure, and fuel flow indications against the specified values.
 - a. *If all recorded values are within specifications, set the IDLE RPM according to Section D.3, step 6.*
 - b. *If any of the recorded readings are **not** within specifications, you must perform **ALL steps** in “Section D.3.*
6. Shut down the engine.

D.3. Fuel System Corrective Adjustments

WARNING

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

NOTE: Install the engine cowling or cooling shroud during all ground operation.

1. To set the specified **IDLE RPM** and unmetered pump pressure:
 - a. Loosen the jam nut on the low pressure relief valve (see Figure 5 through Figure 13). Turning the adjustment clockwise (CW) will increase pressure and counterclockwise (CCW) will decrease pressure.
 - b. Operate the engine at 1500 to 1800 RPM for 15 seconds after each adjustment to clear the engine, then reduce the throttle to the specified IDLE RPM.
 - c. Repeat adjustment (Section D.3, step 1) 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 (after completing Section D.3, step 2, below) the fuel control metering plate orifices are indexed to the maximum open position.**

2. To adjust the **IDLE fuel/air mixture** to operate within specification:
 - a. Identify the correct mixture control assembly that is to be adjusted (see Figure 11 to Figure 13). Make the necessary adjustment and record in the “Remarks” area of the Operational Check form.
 - b. Operate the engine at 1500 to 1800 RPM for 15 seconds after each adjustment to clear the engine, then reduce the throttle to the specified IDLE RPM
 - c. Repeat this adjustment (Section D.3, step 2) until the specified IDLE MIXTURE RISE is achieved.

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3. Recheck IDLE RPM unmetered pump pressure. If pressure is not within limits, repeat step 1 and step 2 until the specified values for both steps are achieved.
4. To set the specified **FULL POWER** metered fuel pressure:
 - a. *On naturally aspirated engines with an adjustable orifice screw*, turn the adjustable orifice screw clockwise to increase or counterclockwise to decrease metered fuel pressure (see Figures 5, 6, and 8).

NOTE: If installed, cut and remove the safety wire from the adjustable orifice. It is not necessary to replace the safety wire to the adjustable orifice housing after adjustment has been completed.
 - b. *On naturally aspirated engines without an adjustable orifice screw or on turbocharged engines without a fuel pressure regulator*:
 - 1) Loosen the aneroid adjustment screw jam nut (see Figures 7, 9, and 10).
 - 2) Turn the aneroid adjustment screw counterclockwise to increase or clockwise to decrease metered fuel pressure.
 - 3) After final adjustment is accomplished, torque the 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.
 - c. *On turbocharged engines equipped with a fuel pressure regulator*, perform a final adjustment to the FULL POWER metered fuel pressure and fuel flow as follows (see Figure 14):
 - 1) Reconnect the regulator and torque connections to the value specified in Table 1.
 - 2) Loosen the jam nut on the regulator adjustment set screw.
 - 3) Turn the regulator adjustment screw clockwise to increase or counterclockwise to decrease metered fuel pressure and fuel flow. **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 when regulator is disconnected.** This is required to ensure adequate part-throttle fuel flow.
 - 4) After final adjustments are completed, torque the jam nut to 21-25 inch pounds.
5. When FULL POWER metered fuel pressure has been adjusted to the specified values, recheck:
 - a. IDLE RPM
 - b. Unmetered pump pressure
 - c. IDLE fuel/air mixture

If any values are not within specified limits, repeat adjustment procedures (Section D.3, step 1 through step 5).
6. With the fuel system now set to the specified metered fuel pressure, set the IDLE RPM to the aircraft manufacturer's specified value by adjusting the idle speed stop screw (reference Figure 11 through Figure 13; turn idle speed stop screw clockwise to increase RPM or counterclockwise to decrease RPM).

E. FOLLOW-ON MAINTENANCE

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.
3. Remove all test gauges, fittings and hoses that were installed for fuel system setup.
4. Reconnect all fuel hoses and cap fittings to their original locations.
5. Torque all fittings to the value specified in Table 1.
6. Verify cap assembly (P/N 639494, (see Figure 11)) is correctly installed on the inlet tee fitting on throttle body/metering units. Torque the cap to **135-190 inch pounds** according to Table 1. This cap is cadmium plated and yellow chromate treated. **DO NOT** install any cap other than P/N 639494 on the tee fitting under any circumstance.
7. 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.
 - a. Turn aircraft master switch to **ON** position.
 - b. Adjust mixture control to **FULL RICH**.
 - c. Adjust throttle control to 1/4 inch open.
 - d. Activate the aircraft boost pump to **ON**.
 - e. Inspect entire fuel system for fuel leakage
 - f. Return mixture and throttle to **IDLE/CLOSED** position
 - g. Turn aircraft boost pump **OFF**
 - h. Turn the aircraft master switch **OFF**
 - i. Allow fuel to drain from the cylinders prior to engine start; follow aircraft manufacturer's instructions/ pilot's operating handbook (AFM/POH).
8. Install engine cowling in accordance with the aircraft manufacturer's instructions.
9. Perform a complete operational ground run-up and verify that all fuel system performance specifications are achieved.

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F. FLIGHT CHECK

1. All naturally aspirated engines (*except those with an altitude compensating fuel pump*)
 - a. Refer to the AFM/POH, supplied by the aircraft manufacturer or Supplemental Type Certificate (STC) holder, for aircraft operating instructions. A Flight Check is required whenever:
 - 1) an adjustment is made that may affect engine operational characteristics or performance,
 - 2) if FULL POWER RPM was not obtained during fuel injection system setup or ground run-up adjustment.
 - b. Repeat the setup and adjustments as required until the fuel injection system is performing within specifications for the aircraft and engine.
2. Naturally aspirated engines (*with altitude compensating fuel pumps (Auto-lean)*)
 - a. All naturally aspirated engines utilizing an altitude compensating fuel pump require a Flight Check after:
 - 1) engine installation, fuel system repairs or adjustments,
 - 2) significant changes in geographic location from the last operational check,
 - 3) if the auto-leaning function is suspect,
 - 4) and at twelve month intervals, in conjunction with the Annual/ 100-hour inspection.

NOTE: Ensure the accuracy of aircraft fuel flow gauge and tachometer has been verified. These gauges must be accurate or the data recorded during flight check will not be valid.
 - b. Record the appropriate fuel flow vs. pressure altitude specifications from the correct **Engine Altitude Leaning Schedules** and **Auto-Leaning Chart** on the Operational Check Form (provided on the last page of this document). *Reference:*
 - 1) M-7, "Maintenance and Overhaul Manual" for all IO360 engines.
 - 2) Table 5 and Figure 4 for all other applicable engines.
3. Perform a complete preflight inspection, engine start, and ground run-up according to the AFM/POH.
4. Set the aircraft altimeter to **29.92 In. Hg.**
5. In accordance with the AFM/POH, conduct a normal take-off.
6. Climb must be accomplished using full throttle, FULL RICH mixture, and maximum rated full power RPM.
7. Using the aircraft fuel flow gauge and altimeter, record fuel flows at all pressure altitudes specified.
8. Compare the recorded fuel flows with the specified fuel flows for all pressure altitudes.
 - a. If fuel flow is within the minimum and maximum limits at all altitudes, no adjustments are required.
 - b. If the fuel flow is not within specified limits at all pressure altitudes, the fuel injection system auto-leaning schedule requires adjustment (see Section G).

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G. FUEL PUMP AUTO-LEAN SCHEDULE ADJUSTMENT

NOTE: On IO550-D, E, F and L model engines, do not attempt to adjust the auto-leaning schedule if the aircraft is at a field with an altitude greater than 3000 feet.

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

1. If not previously accomplished, adjust the engine fuel injection system according to instructions in Section D of this document using the appropriate table for the engine and aircraft.
2. Adjustments to the altitude compensating fuel pump aneroid adjustment screw will result in a change to the auto-leaning schedule (see Figure 7 through Figure 9). One complete revolution of the aneroid adjustment screw will increase or decrease the auto-leaning schedule approximately 1000 feet. Make adjustment in **small increments** to avoid drastic changes to fuel pump operating characteristics.
3. The altitude compensating fuel pump auto-leaning schedule is a function of the aneroid adjustment screw (see Figure 8). This adjustment properly positions the bellows/rod in the variable orifice housing.
 - a. Refer to the CM M-7, "Maintenance and Overhaul Manual" for the auto-leaning schedule adjustments on all IO360 engines

CAUTION: The aneroid adjustment screw has an extra fine thread; exceeding the jam nut torque will damage either the adjustable aneroid stem or housing threads. Jam nut torque value is 25-30 inch pounds.

- b. For all IO550-D, E, F, & L Altitude Leaning Schedules refer to Figure 4. Adjustment of the aneroid adjustment screw clockwise will decrease the altitude (moves horizontally to the left on the chart) while counterclockwise adjustment will increase the altitude (moves horizontally to the right on the chart) at a given pressure altitude. Adjustments made to the adjustable orifice (see Figure 8) will correct the chart fuel flow output vertically (see Figure 3).

CAUTION: The adjustable orifice screw is a tapered needle and may become damaged if forced against its seat. This adjustment should move freely. Do not continue adjustments if rotational resistance increases suddenly.

4. Adjustments to the aneroid may 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.** Further re-adjustment of the adjustable orifice (unmetered fuel pressure) may be necessary after setting the auto-leaning schedule (see Section D.3, step 4.a.):
5. Review the Operational Check Form recorded data to determine if the auto-leaning schedule is set correctly to the "specified limits" for your pressure altitudes (reference Table 5 and Figure 4 for an IO550-D engine). Use the following example to correct altitude offset errors and set the auto-leaning schedule:

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- a. Example altitude is 4000 feet with a measured fuel flow of 136 PPH. The optimum fuel flow specified for this pressure altitude should be 144 PPH (the midpoint between 139 PPH to 151 PPH, according to Table 5.) However, this fuel flow example of 136 PPH is located outside “specified limits” and requires manual adjustment to the aneroid adjustment screw to achieve the correct altitude offset.
- b. Plot your initial reference as Point A (Pressure Altitude 4000 ft, Fuel Flow 136 PPH, see Figure 3, bullet point 1).
- c. Draw a single horizontal line directly through Point “A” and both fuel flow curves (see Figure 3, bullet point 2). Plot the intersection of the horizontal line at the midpoint of the fuel flow curve as the new reference coordinate, Point “B”).
- d. The horizontal distance between points “A” and “B” is approximately 2750 ft. This value represents the ALTITUDE OFFSET ERROR.

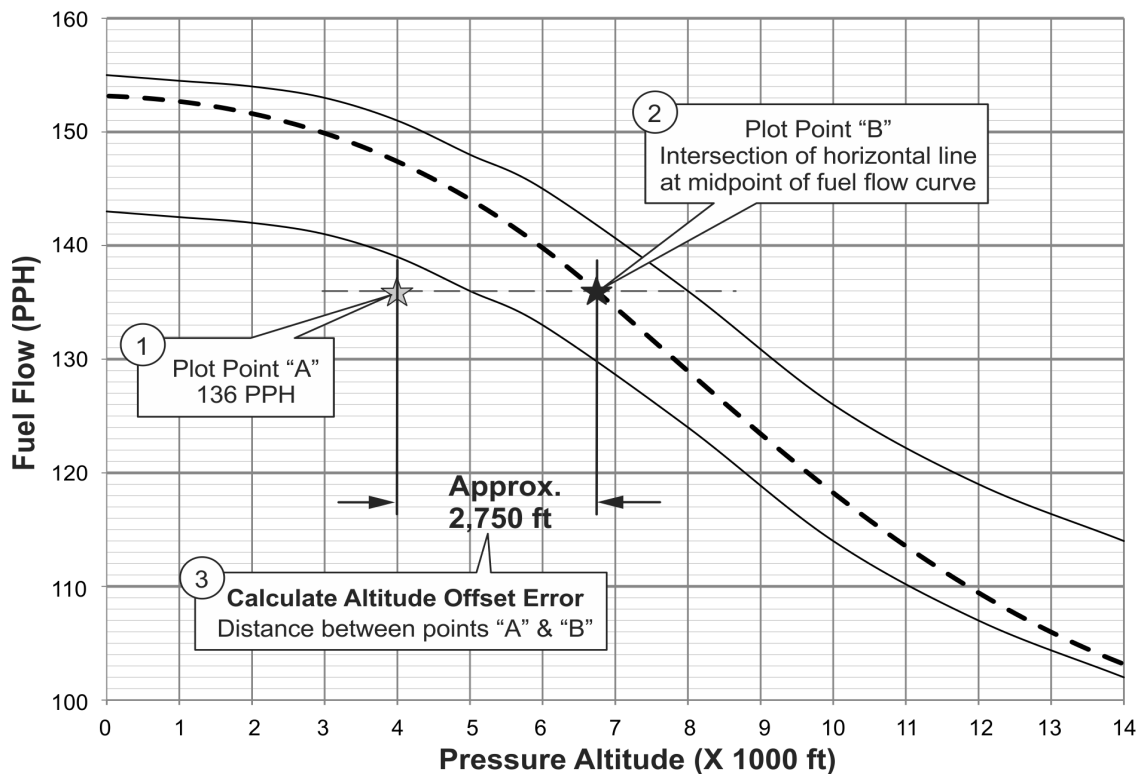


Figure 3. Calculating Altitude Offset Error (example only)

- e. In this example, to achieve the correct altitude offset, we must rotate the aneroid adjustment screw *one complete revolution counterclockwise for each 1000 ft of adjustment*. Thus, to make an adjustment of 2750 ft requires rotating the aneroid adjustment screw approximately 2-3/4 turns counterclockwise.
 - f. After verifying the aneroid screw adjustment has achieved the correct the altitude offset, torque the jam nut to 25-30 inch pounds.
6. Perform a complete ground run-up and verify the unmetered and metered pressures, IDLE MIXTURE RISE, and fuel flows are within the limits specified for the pressure altitude. If these parameters are not within the limits specified, make adjustments according to the instructions in Section D to achieve the specified values.

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7. Once the adjustments are complete, remove the test equipment in accordance with Section E.
8. Perform a flight check according to instructions in Section F.
9. Repeat procedures until the engine's fuel injection system meets all specifications.

Table 1. Hose End and Cap Fitting Torque Specifications

Brass or Aluminum End Fittings/Caps ¹		Steel Hose End Fittings/Caps ¹	
Hose Size	Torque (inch lbs.)	Hose Size	Torque (inch lbs.)
#2 (.31x24)	50 – 80	#2 (.31x24)	75 – 120
#3 (.38x24)	70 – 105	#3 (.38x24)	95 – 140
#4 (.4375x20)	100 – 140	#4 (.4375x20)	135 – 190
#5 (.500x20)	130 – 180	#5 (.500x20)	170 – 240
#6 (.5625x18)	150 – 195	#6 (.5625x18)	215 – 280
#8 (.750x16)	270 – 350	#8 (.750x16)	470 – 550
#10 (.875x14)	360 – 430	#10 (.875x14)	620 – 745
#12 (1.063x12)	460 – 550	#12 (1.063x12)	855 – 1055

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

Table 2. Static Ground Setup Compensation

Metered Pressure vs. RPM @ 70°F Fuel Temperature ¹			
Static Engine RPM	Correction Factor	Corrected Metered Pressure (Metered Pressure x Correction Factor)	
		Minimum	Maximum
Rated RPM	1		
-20	0.991		
-40	0.982		
-60	0.973		
-80	0.964		
-100	0.955		
-120	0.946		

1. All values are approximate. Variations may occur due to specific engine and installation configurations.

IO520-BB Example: Maximum Rated RPM = 2700, Metered Fuel Pressure Range = 14.9 - 17.2. If the maximum static engine RPM = 2640, (-60 RPM); use the Correction Factor of **0.973**

The corrected minimum metered pressure limit @ 2640 RPM is $14.9 \times 0.973 = 14.5$

The corrected maximum metered pressure limit @ 2640 RPM is $17.2 \times 0.973 = 16.7$

The formula is: *Metered Fuel Pressure Limits x Correction Factor = Corrected Metered Pressure Limits @ Static Engine RPM:*

H. ADJUSTMENT SPECIFICATIONS

Table 3. Fuel System Adjustment Values

Idle and FULL POWER Fuel Pressures and Flows						
Engine ¹	Prop. RPM	Manifold Absolute Pressure (MAP)	Unmetered Pump PSI ²	Metered Nozzle PSI ³	Fuel (lbs/hr) ⁴	Fuel (gal/hr) ⁴
IO-240-A, B	1000 Table 4	29.5 Table 4	9.4 - 9.8 Table 4	- Table 4	- -	- -
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, AF, C CB, D, DB, ES (ES CIRRUS), G, GB, H, HB, J, JB, K, KB	See Maintenance and Overhaul Manual M-7					
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
L/TSIO-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
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
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	MFG ⁵ -	- 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

Table 3. Fuel System Adjustment Values

Idle and FULL POWER Fuel Pressures and Flows						
Engine ¹	Prop. RPM	Manifold Absolute Pressure (MAP)	Unmetered Pump PSI ²	Metered Nozzle PSI ³	Fuel (lbs/hr) ⁴	Fuel (gal/hr) ⁴
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
IO-520-D, F, J, 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
L/TSIO-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	MFG ⁶	- 180 - 190	- 30.7 - 32.4
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

Table 3. Fuel System Adjustment Values

Idle and FULL POWER Fuel Pressures and Flows						
Engine ¹	Prop. RPM	Manifold Absolute Pressure (MAP)	Unmetered Pump PSI ²	Metered Nozzle PSI ³	Fuel (lbs/hr) ⁴	Fuel (gal/hr) ⁴
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	- MFG ⁷	- 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 ⁷	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, N ⁷ GTSIO-520-M	467 2234	39.0 40.0	4.0 - 7.0 29.5 - 35.0	- 16.4 - 17.9	- 255 - 265	- 43.4 - 45.1
IO-550-A, B, C, G, N, P, R	See Maintenance and Overhaul Manual M-16					
IO-550-D, E, F, L	600 2700	-	8.0 - 10.0 32.0 - 36.0	- 17.2 - 20.0	- 143 - 155	- 24.4 - 26.4
GIO-550-A	600 2267	-	25 Minimum 45 - 55	- MFG ⁷	- 175 - 185	- 29.8 - 31.5
TSIO-550-B, C, E, G, K, N	See Maintenance and Overhaul Manual M-18					
TSIO-550-G MOONEY ⁸	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.					

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. CM will not accept responsibility or liability for any modified engine set up according to the instructions contained in this Service Information Directive.
2. FULL POWER unmetered fuel pump pressure limits are provided for reference only. Use metered fuel pressure specifications for adjustments at full power.
3. Use for full power, maximum RPM adjustment only. All other parameters for reference only, Footnote 2 applies.
4. May be determined using a calibrated in-line flow measuring device. Otherwise use metered fuel pressure specifications. Refer to Aircraft Manufacturer's Maintenance and Overhaul Manual for method of verifying accuracy of fuel flow indicator.
5. Refer to the aircraft manufacturer's instructions for adjustment procedures.
6. Refer to the aircraft manufacturer's instructions for adjustment procedures.
7. Refer to the aircraft manufacturer's instructions for adjustment procedures.
8. TSIO550-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 and Overhaul Manual for setup instructions.

**Table 4. IO240-A, B Without Altitude Compensating (Aneroid Equipped) Pump
FULL THROTTLE STATIC RPM METERED FUEL PRESSURE SPECIFICATIONS**

Full Throttle Static Engine RPM	Nominal Metered Fuel Pressure (allowed variation ± 0.3)	Full Throttle Static Engine RPM	Nominal Metered Fuel Pressure (allowed variation ± 0.3)
1800	7.8	2150	9.6
1850	8.1	2200	9.9
1900	8.3	2250	10.2
1950	8.6	2300	10.5
2000	8.8	2350	10.8
2050	9.1	2400	11.2
2100	9.4		

**Table 5. IO550-D, E, F, & L Engine Altitude Fuel Schedule
FULL 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
1,000	142.5	154.5	24.3	26.3	17.1	19.9
2,000	142	154	24.2	26.2	17.0	19.8
3,000	141	153	24.0	26.1	16.9	19.6
4,000	139	151	23.7	25.7	16.5	19.2
5,000	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.

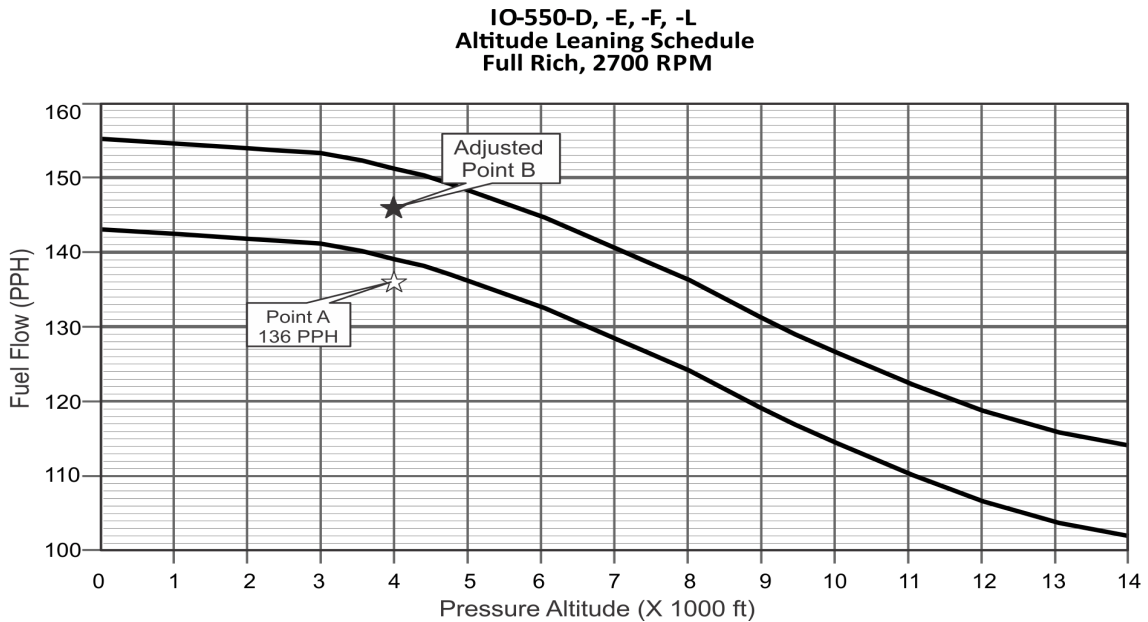


Figure 4. IO550-D, E, F & L Altitude Leaning Schedule

NOTE: Rotating the aneroid adjustment screw (increase/decrease)
corrects the altitude offset in the altitude leaning schedule.

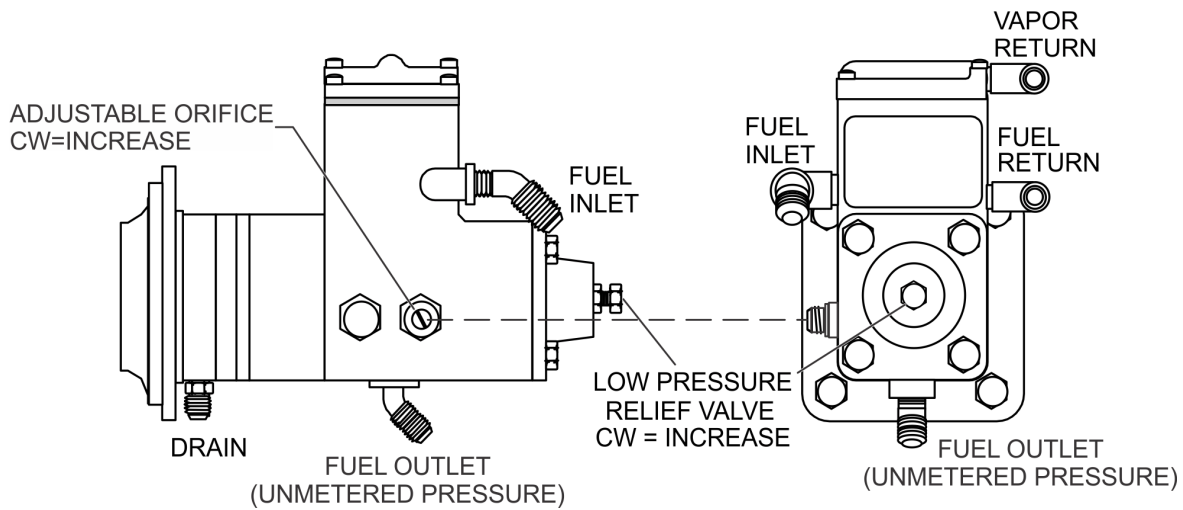


Figure 5. Fuel Pump, Naturally Aspirated Engine

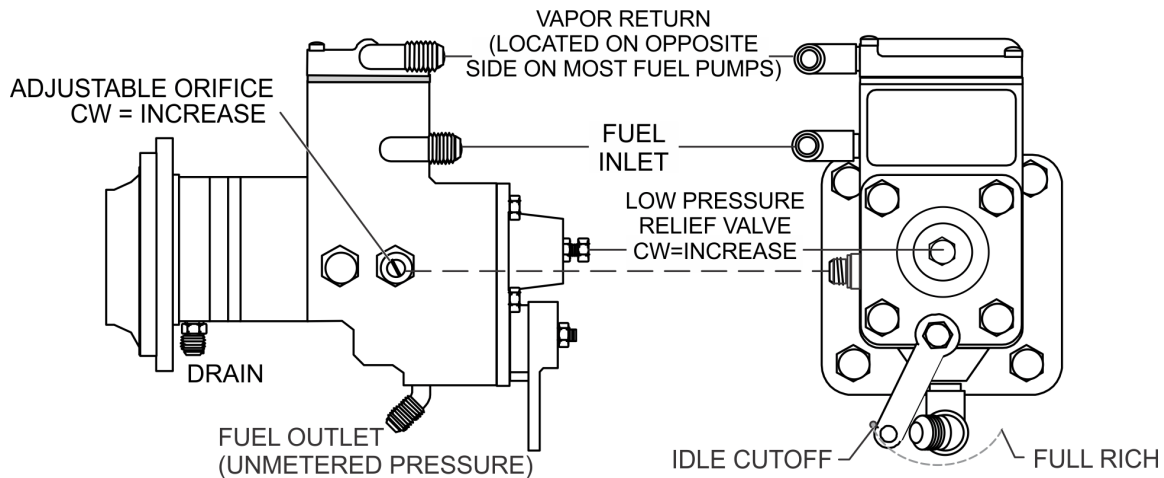


Figure 6. Fuel Pump with Mixture Control, Naturally Aspirated Engine

NOTE: The adjustable orifice screw is a tapered needle and may become damaged if forced against its seat. This adjustment should move freely. Do not continue adjustments if rotational resistance increases suddenly.

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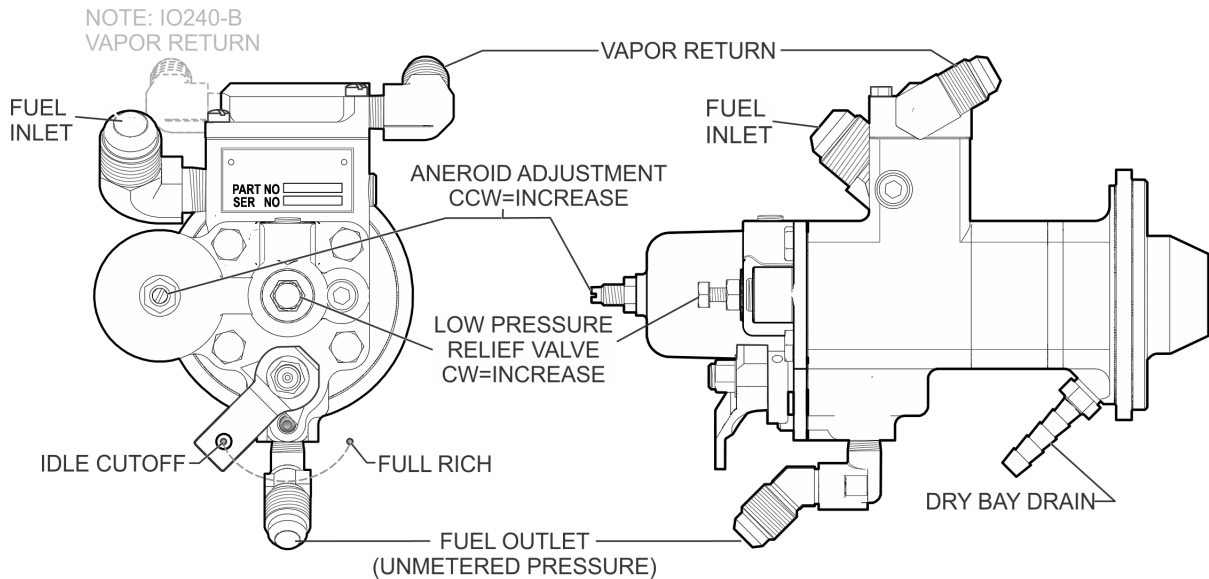


Figure 7. Altitude Compensating Fuel Pump (Auto-Lean), Naturally Aspirated Engine (without adjustable orifice)

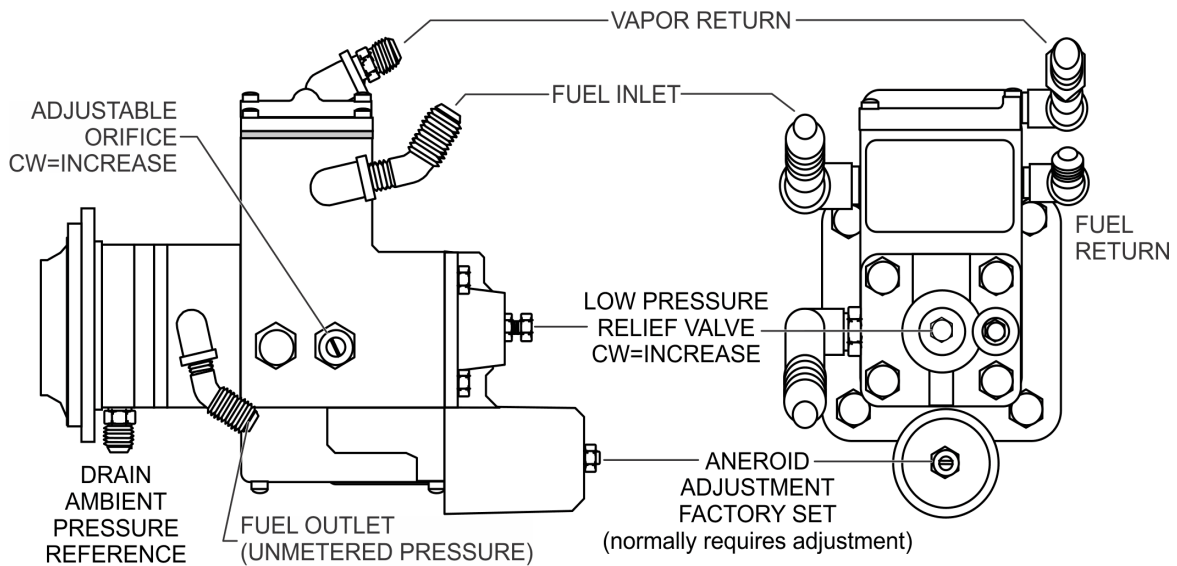


Figure 8. Altitude Compensating Fuel Pump (Auto-Lean), Naturally Aspirated Engine (with adjustable orifice)

NOTE: The adjustable orifice screw is a tapered needle and may become damaged if forced against its seat. This adjustment should move freely. Do not continue adjustments if rotational resistance increases suddenly.

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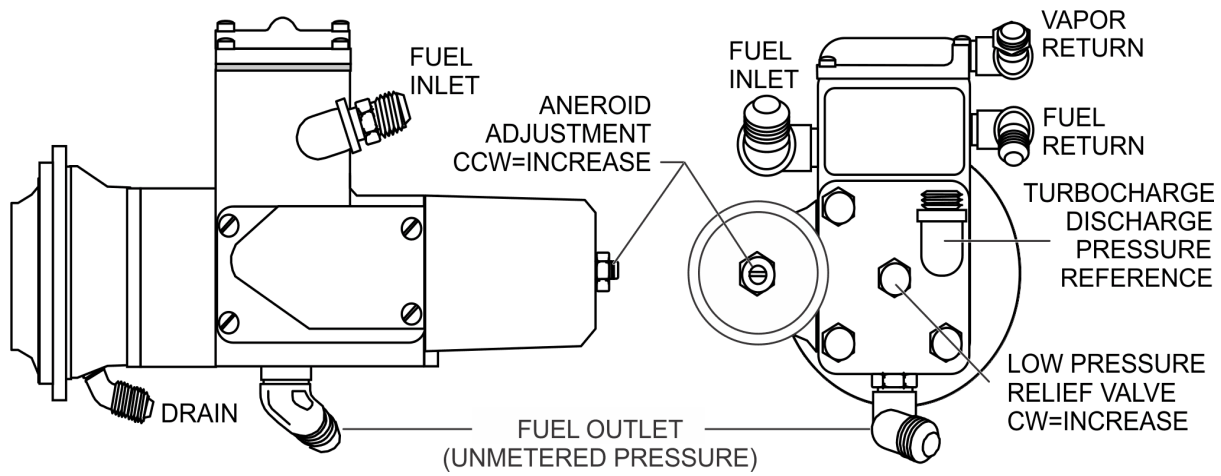


Figure 9. Aneroid Equipped Fuel Pump, Turbocharged Engine

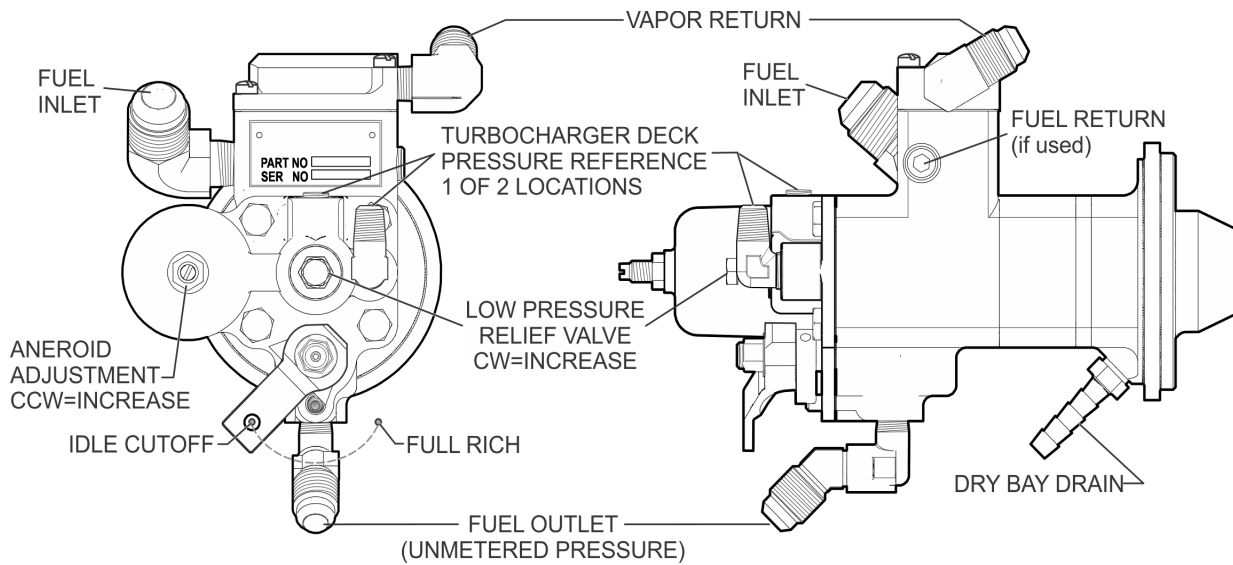


Figure 10. Aneroid and Mixture Control Equipped Fuel Pump, Turbocharged Engine

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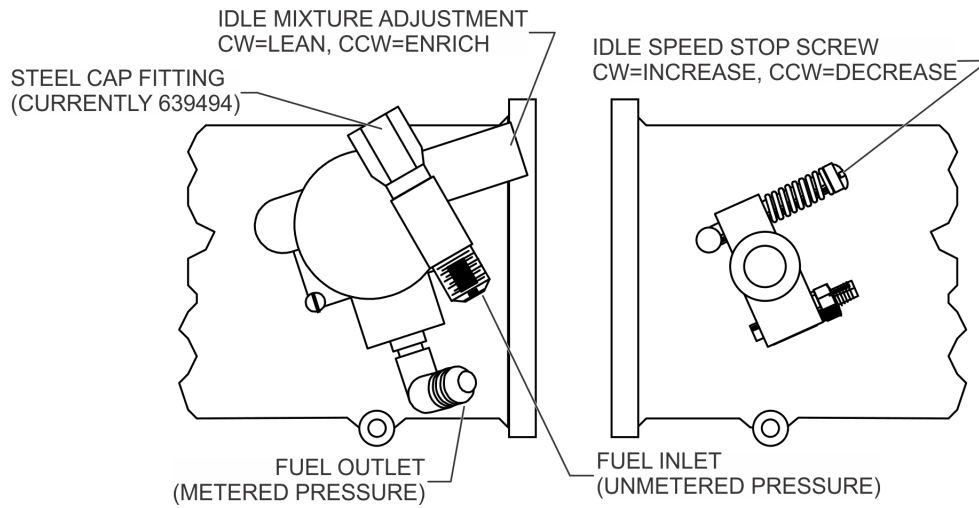


Figure 11. Throttle and Metering Assembly

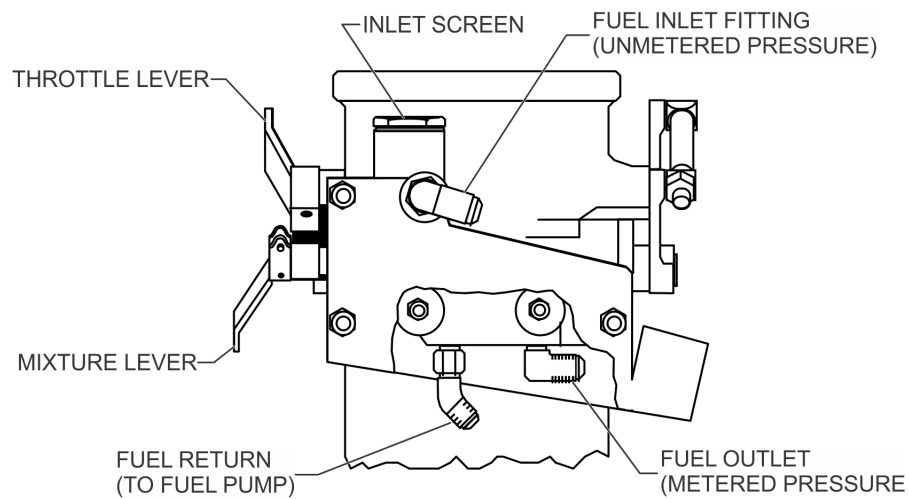
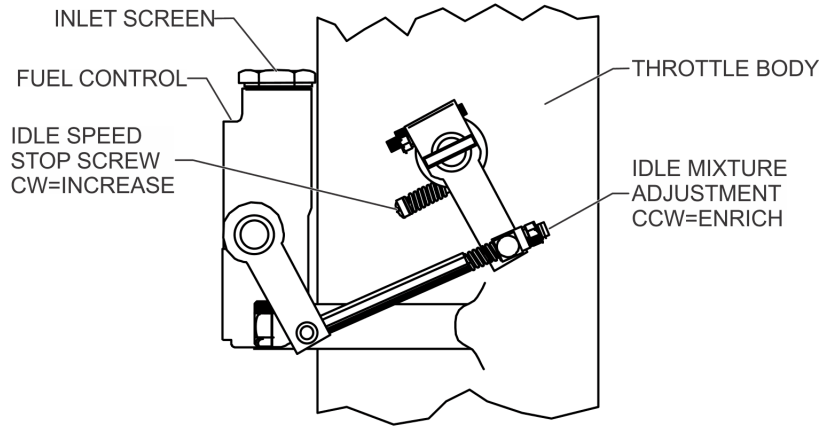
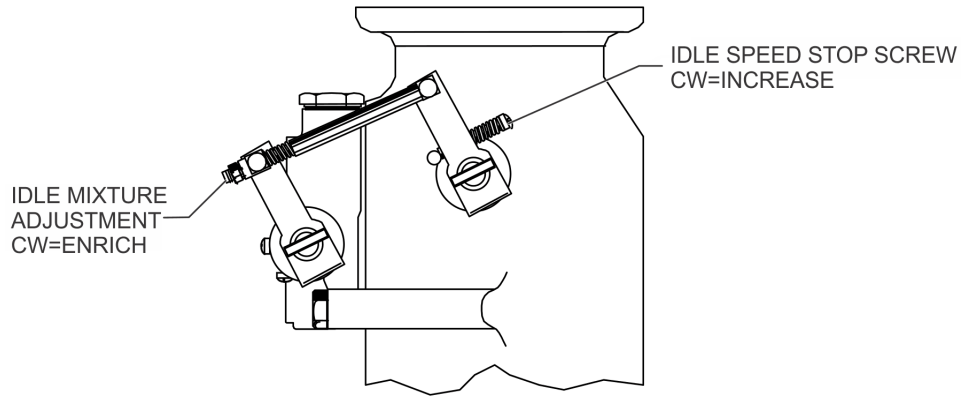


Figure 12. Throttle and Control Assembly, Front View

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**Figure 13. Throttle and Control Assembly, Side View
(various orientations)**

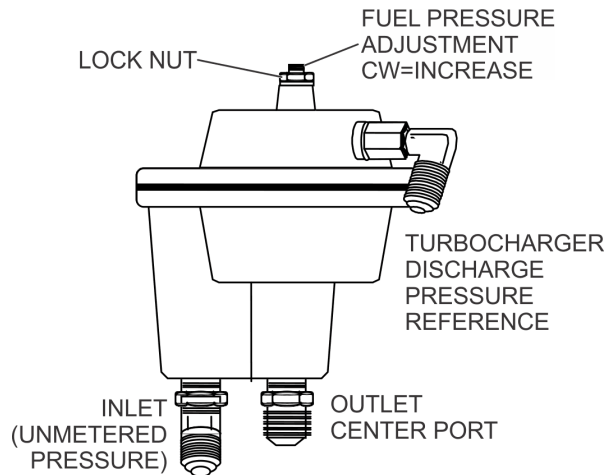


Figure 14. Fuel Pressure Regulator, Turbocharged Engine

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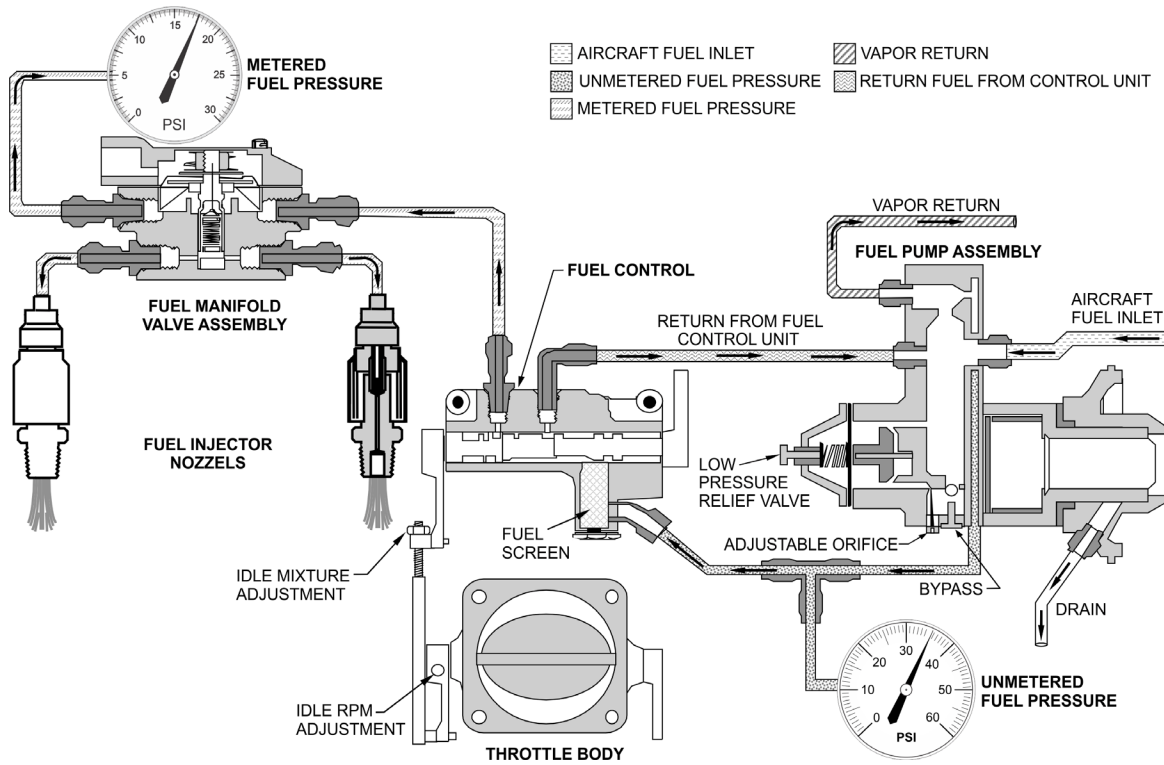


Figure 15. Typical Naturally Aspirated Fuel System Schematic (with Fuel Control Unit)

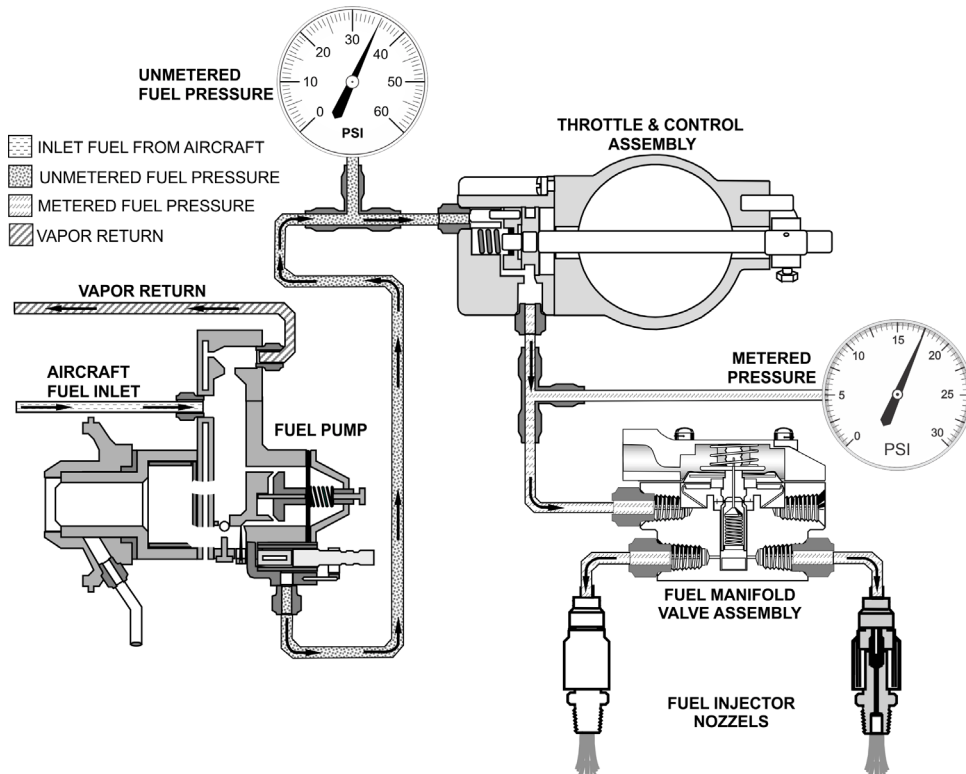


Figure 16. Typical Naturally Aspirated Engine Fuel System Schematic (Fuel Pump w/Integral Mixture Control)

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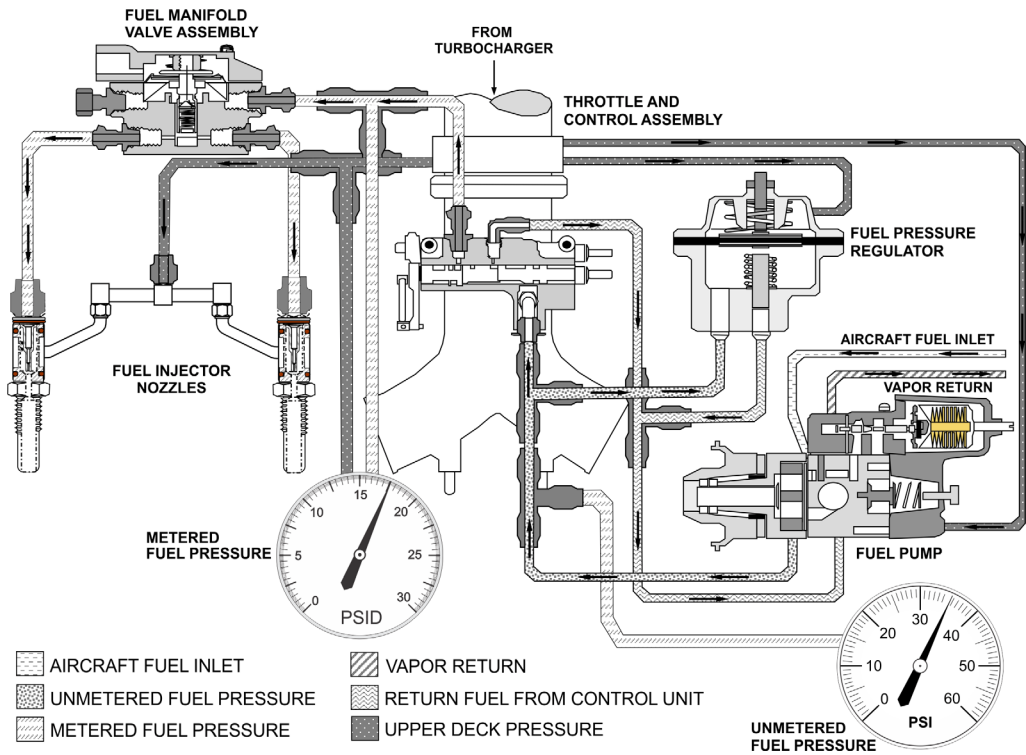


Figure 17. Typical Turbo-Charged Fuel System Schematic (with Fuel Control Unit and Fuel Regulator)

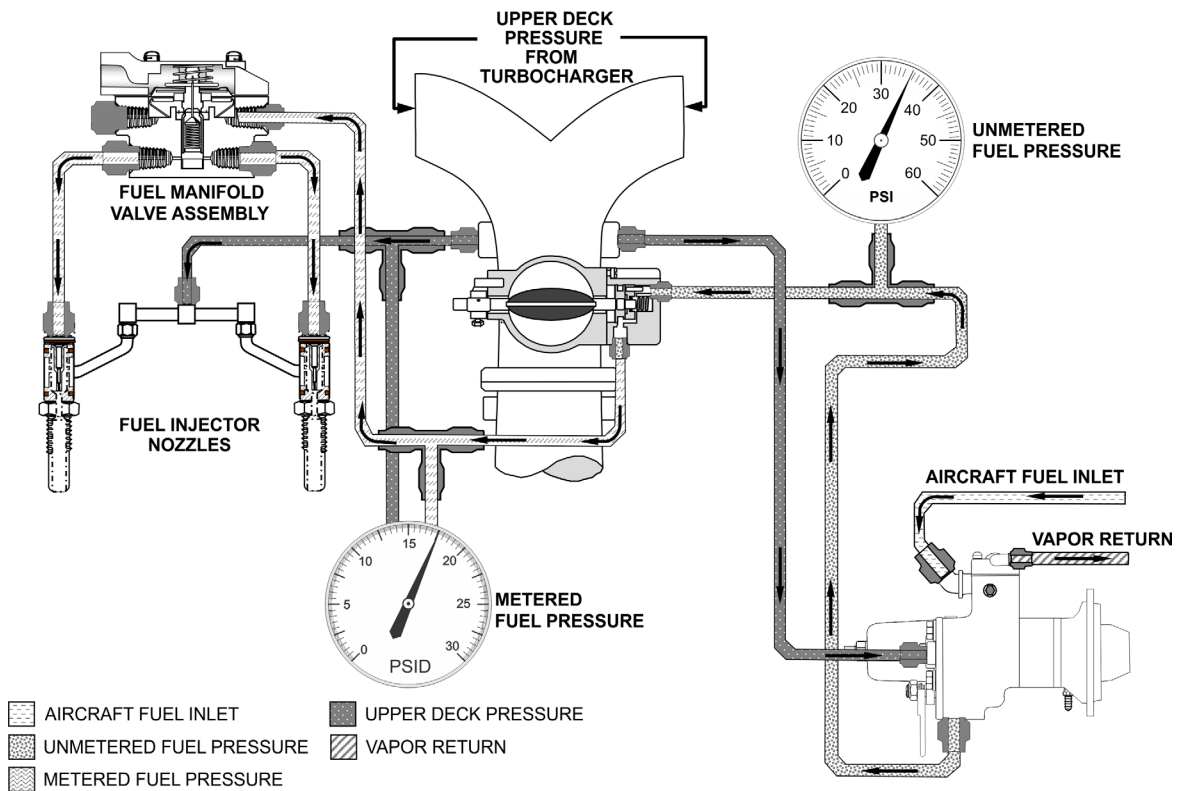


Figure 18. Typical Turbo-Charged Engine Fuel System Schematic (Fuel Pump w/Integral Mixture Control)

OPERATIONAL CHECK FORM

Date:	Location:	Elevation:	OAT:	Field In. 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)

*The IDLE MIXTURE RISE is consistent for most engines (25-50 RPM) except for the IO-240-B (50-75 RPM)

R.P.M.		M.A.P.		Fuel Pressure		Fuel Flow	EGT °F	TIT °F	Cylinder Head Temperature °F						Oil		Adjustment (# of turns)					
		Spec	Actual	Unmetered	Metered				Actual	Spec	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 In. 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: (Record IDLE MIXTURE RISE, magneto drop, etc.)

Signature: _____