



6-4.7.4.3. Fuel System Operational Checkout Procedure

Procedure

1. Set the aircraft brakes and block the aircraft main landing gear tires.
2. Verify the accuracy of the tachometer, manifold pressure gauge, and fuel flow gauges prior to making any adjustments; replace faulty gauges.
3. Locate the IDLE speed stop screw (Figure 6-37 or Figure 6-39) on the throttle assembly and turn it counter-clockwise two complete turns. During the operational check, IDLE RPM will be controlled manually using the cockpit throttle control.

WARNING

Ensure the propeller area is clear before starting the engine.

4. Fuel Selector Valve ON
5. Mixture Control FULL RICH
6. Boost Pump (if equipped) AFM/POH
7. Perform a normal “Engine Start” according to instructions in Section 7-3.2 and “Ground Run-up” according to Section 7-3.3 to allow the engine to warm to normal operating temperatures.

NOTE: A puff of white smoke from a new or rebuilt engine, or an engine returned from storage is normal. The source of the smoke is the remaining preservation oil in the burning off in the combustion chamber. The smoke should dissipate quickly; if smoke persists, shut down the engine and investigate the cause.

CAUTION: Operating the engine without oil pressure will result in engine malfunction or failure.

8. Throttle..... 600-1000 RPM (One minute)
RESULT: Operate the engine for one minute, gradually increasing the speed to 1000 RPM in 3 minutes.

9. Oil Temperature Check

NOTE: Allow the engine oil to reach normal operating temperature (100°F (38°C) for turbocharged engines or 75°F (24°C) for naturally aspirated engines) before proceeding to the next step.

10. Boost Pump OFF
11. Mixture Control FULL RICH
12. Throttle..... Set to IDLE RPM (Table 6-4)

13. Unmetered Fuel Pressure Gauge..... Check

RESULT: Unmetered fuel pressure is within the range specified in Section 6-4.7.1. Maintain engine speed until CHT is 250°F to 350°F (121°C to 177°C) and engine oil temperature is 160°-180°F. Record the unmetered fuel pressure, regardless of setting. If the unmetered fuel pressure is not within the limits specified in Section 6-4.7.1, adjust the fuel pressure according to the instructions in Section 6-4.10.2.

**WARNING**

Do not operate the engine at speeds above 1700 RPM until the oil temperature reaches minimum takeoff temperature (100°F (38°C) for turbocharged engines or 75°F (24°C) for naturally aspirated engines) and oil pressure is within the normal operating range. Operating at speeds above 1700 RPM before reaching the minimum oil temperature may result in engine malfunction or engine failure.

NOTE: To eliminate rough idling after mixture rise check, set engine RPM to 1500-1800 RPM for 15 seconds before returning to IDLE RPM.

14. Mixture Control Retard *slowly* to IDLE CUT-OFF
 RESULT: Monitor engine RPM as mixture is leaned; stop leaning when maximum RPM is achieved and record engine RPM. IDLE mixture rise should be 25 to 50 RPM (50-75 RPM for **IO-240-B** only) before beginning to drop toward zero. If mixture rise is less than 25 RPM (50 for **IO-240-B**), the mixture is too lean. If the mixture rise is more than 50 RPM (75 for **IO-240-B**), the mixture is too rich. Adjust the idle mixture rise according to instructions in Section 6-4.10.2.
 NOTE: The IDLE MIXTURE RISE is the difference (or RISE) between the IDLE RPM at FULL RICH and the maximum achievable IDLE RPM.
15. Mixture Control FULL RICH
16. Propeller Governor WIDE OPEN
17. Throttle WIDE OPEN
 RESULT: Check the engine RPM with a portable tachometer. Record the engine speed on the checklist. If the engine does not reach the rated, full power RPM, calculate the corrected metered fuel pressure (Table 6-5 or Table 6-6).
 NOTE: If no Manifold Pressure is provided for the engine model in Table 6-4, skip step 18.
18. Manifold Pressure Check
 RESULT: Manifold pressure should equal the value specified for the engine model in Section 6-4.7.1. If manifold pressure is not within the specified limits, adjust the Wastegate Controller according to instructions in Section 6-4.10.3.
19. Metered Fuel Pressure Gauge Check
 RESULT: The full power, metered fuel pressure should equal the value in Section 6-4.7.1, with Table 6-5 or Table 6-6 correction factor, if applicable. Record the metered fuel pressure, regardless of setting. If the full power, metered fuel pressure is not within the specified limits, adjust the metered fuel pressure according to Section 6-4.10.2.
20. Throttle Position to desired IDLE RPM
 RESULT: adjust IDLE RPM according to instructions in Section 6-4.10.2.
21. Perform a "Flight Check", if required, according to the instructions in Section 7-2.4.2.
22. If no further checks are required, proceed to "Engine Shutdown" instructions in Section 6-4.7.6.



6-4.7.1. Fuel Injection System Specifications

NOTE: Engines may not reach rated full power RPM during ground run-up due to atmospheric, environmental, or configuration limitations. This condition is normal, occurring most often when operating naturally aspirated engines configured with a fixed pitch propeller. A correction factor must be applied to reduce the fuel pressure to the lower maximum RPM observed during fuel system adjustments on the ground. See Section 6-4.7.1.1 for RPM correction factors.

Table 6-4. 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 6-6	29.5 Table 6-6	9.4- 9.8 Table 6-6	- Table 6-6	65 - 70	11.0 - 11.9
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 ⁵ , DB ⁵ , G, GB, H, HB	600 2800	-	7.0 - 9.0 24.0 - 27.0	- 15.8 -18.2	100 - 106	17.0 - 18.1
IO-360-AF	600 2800	-	7.0 - 9.0 23.0 - 26.0	- 14.3 - 16.5	100 - 107	17.0 - 18.1
IO-360-ES 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 - Sea Level) ^{6, 7}	600 2700	-	7.0 - 9.0 21.0 - 24.0	- 13.8 - 15.5	96 - 102	16.4 - 17.4
IO-360-ES (Cirrus - 1500 ft press. alt.) ^{6, 7}	600 2700	-	7.0 - 9.0 19.0 - 22.0	- 13.3 - 14.6	94 - 98	16.0 - 16.7
IO-360-J, JB	600 2600 ⁸	-	7.0 - 9.0 24.0 - 27.0	- 15.8 -18.2	100 - 106	17.0 - 18.1
IO-360-K, KB	600 2600	-	7.0 - 9.0 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
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



Table 6-4. 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-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	MFG ⁹ -	- 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
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



Table 6-4. 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-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 ¹⁰	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
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 ¹¹	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 ¹¹	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 ¹¹ 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
GIO-550-A	600 2267	-	25 Minimum 45 - 55	- MFG ¹¹	175 - 185	29.8 - 31.5
IO-550-A ⁶	600 2700	- -	8.0 - 10.0 32.0 - 36.0	17.7 - 20.0	142 - 150	24.2 - 25.6
IO-550-B ⁶	600 2700	- -	8.0 - 10.0 29.2 - 36.2	16.5 - 18.4	146 - 156	24.9 - 26.6



Table 6-4. 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-550-C ⁶	600 2700	- -	8.0 - 10.0 31.6 - 37.8	- 17.6 - 19.6	- 152 - 160	- 25.9 - 27.3
IO-550-D, E, F, L ⁶	600 2700	- -	8.0 - 10.0 32.0 - 36.0	- 17.2 - 20.0	- 143 - 155	- 24.4 - 26.4
IO-550-G	600 2500	- -	8.0 - 10.0 22.0 - 26.0	- 14.7 - 16.0	- 125 - 130	- 21.3 - 22.1
IO-550-N, P, R	600 2700	- -	8.0 - 10.0 28.0 - 30.0	- 19.0 - 21.3	- 150 - 160	- 25.6 - 27.3
TSIO-550-B	600 2700	- 38.0	7.0 - 9.0 32.0 - 36.0	- 15.3 - 16.9	- 241 - 252	- 41.0 - 42.9
TSIO-550-C	600 2600	- 35.5	7.0 - 9.0 26.0 - 29.0	- 12.7 - 13.9	- 212 - 224	- 36.1 - 38.1
TSIO-550-E	600 2700	- 38.5	7.0 - 9.0 32.0 - 36.0	- 15.3 - 16.9	- 244 - 254	- 41.5 - 43.3
TSIO-550-G	600 2700	- 34.0	7.0 - 9.0 20.5 - 28.5	- 12.4 - 13.6	- 201 - 211	- 35.2 - 35.9
TSIO-550-G MOONEY ¹²	600 2500	- 33.5	7.0 - 9.0 20.0 - 23.0	- 10.4 - 11.6	- 177 - 180	- 30.0 - 30.7
TSIO-550-K, N	600 2500	- 37.5	7.0 - 9.0 20.5 - 28.5	- 14.2 - 14.8	- 210 - 220	- 35.8 - 37.5
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

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 these instructions.
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 Manual for method of verifying accuracy of fuel flow indicator.
5. IO-360-DB engine model specifications equipped with altitude compensating fuel pumps; Flight Test (Section 7-2.4.2) required after fuel system adjustment.
6. Engine model equipped with altitude compensating fuel pump; Flight Test (Section 7-2.4.2) required after fuel system adjustment.
7. This engine is installed in Cirrus SR20 aircraft. IO-360-ES engines has been derated by Cirrus from original 210 HP at 2800 RPM to 200 HP at 2700 RPM. Engine data plate reflects original CM data of 210 HP at 2800 RPM. Refer to Cirrus SR20 Maintenance Manual and POH.
8. Engine model certified for five minute rated takeoff power at 2800 RPM. Max. continuous power is 2600 rpm.
9. Refer to the aircraft manufacturer's instructions for adjustment procedures.
10. Refer to the aircraft manufacturer's instructions for adjustment procedures.
11. Refer to the aircraft manufacturer's instructions for adjustment procedures.
12. 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.



6-4.10.3. Manifold Pressure Adjustment

Manifold pressure is based on ambient air pressure on naturally aspirated engines. Manifold pressure on turbocharged engines is determined by the turbocharger to throttle interface and varies by engine model. Consult the turbocharger and exhaust system description in the primary ICA for a description of system functionality.

Some turbocharger system configurations are delivered with the engine, others are coordinated with, developed by, and configuration controlled by the aircraft manufacturer. For systems not depicted in this manual, refer to the primary ICA or the Aircraft Maintenance Manual.

The following turbocharger and exhaust systems, or parts thereof, are provided by the aircraft manufacturer:

See Aircraft Maintenance Manual for the following Engine Models:

GTSIO-520-C, D, H, K, L, M, N;

TSIO-360-A, AB, B, BB, C, CB, D, DB, H, HB, and JB;

TSIO-470-B, C and D

TSIO-520-B, BB, C, D, DB, E, EB, G, H, J, JB, K, KB, M, N, NB, P, R, AE, AF, CE, and VB;

TSIO-550-C (select Cessna specifications)

TSIOL-550-A

6-4.10.3.1. Fixed Wastegate Adjustment

Applicable Engines: TSIO-360-E, EB, F, FB, G, GB, KB, LB; LTSIO-360-E, EB, KB

Engine manifold pressure is controlled by a ground adjustable fixed wastegate on the exhaust bypass pipe at the turbocharger location. This adjustment is preset and only minor changes should be required.

Procedure

NOTE: Takeoff rated manifold pressure and RPM are obtained at approximately 40% throttle travel

1. Loosen jam nut on adjustment bolt.
2. For initial setting at installation or replacement: Screw the adjustment bolt (Figure 6-54) clockwise (*CW*) to the fully seated position. Turn the adjustment bolt counterclockwise (*CCW*) ten (10) turns and lock in position with the jam nut.
3. Run engine according to AFM/POH. Advance throttle to obtain rated manifold pressure. Make fine adjustments required to meet the manifold pressure setting for the engine model in Table 6-4, *CW* to increase, *CCW* to decrease.
4. Torque the jam nut on adjustment bolt after adjustments are complete. safety wire the adjustment bolt to the adjacent anchor point after the jam nut final torque.

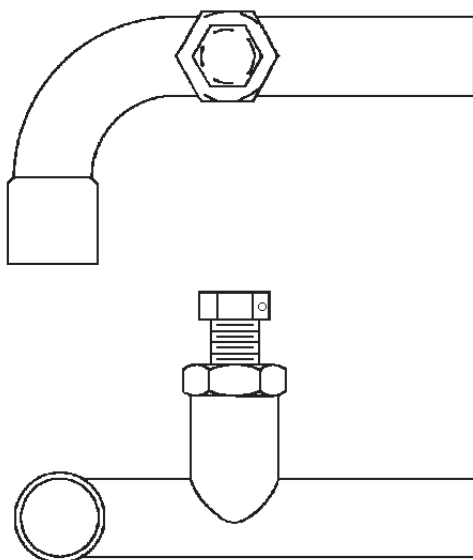


Figure 6-54. Fixed Wastegate (Typical)

5. Check critical altitude during Flight Check (Section 7-2.4.2); if adjustment is necessary:

NOTE: Take-off rated MP and RPM are obtained at approximately 40° throttle travel.

NOTE: Adjusting the exhaust bypass is extremely important. This setting determines Full Throttle manifold pressure and critical altitude and must be properly adjusted before the fuel system can be set up accurately.

NOTE: Rated manifold pressure for a given altitude should be achieved on take-off roll. If rated MAP cannot be obtained, check for exhaust leaks, turbocharger condition or calibration of overboost valve.

NOTE: To check actual critical altitude, the aircraft must be flown. Refer to Aircraft Service Manual for test flight procedures. If critical altitude is not correct and fixed wastegate is readjusted, the metered fuel flow must be rechecked and set to maximum power (full throttle) values.

6. Make adjustments, as necessary, to the fixed wastegate adjustment. Turning bolt clockwise (**CW**) increases critical altitude, turning bolt counter-clockwise (**CCW**) decreases critical altitude.

NOTE: One complete turn (360°) of the adjustment bolt changes the critical altitude by approximately 1000 feet.

7. Torque the jam nut on adjustment bolt after adjustments are complete. safety wire the adjustment bolt to the adjacent anchor point after the jam nut final torque.



6-4.10.3.2. Fixed Orifice Wastegate Adjustment

Applicable Engines: TSIO-520-T

The fixed orifice wastegate is a ground adjustable bypass valve located in the turbine exhaust bypass duct. The position of the fixed orifice wastegate valve remains constant throughout all modes of engine operation. An overboost pressure relief valve is used with the fixed orifice wastegate valve to bleed off upper deck pressure that exceeds the limits set by the aircraft manufacturer. Early Model TSIO-520-T engines use an exhaust system bypass valve similar to the one depicted in Figure 6-57, A. Current production engines use an exhaust system bypass valve similar to the one depicted in Figure 6-57, B. The bypass valve is installed in the exhaust system just forward and to the right of the turbocharger.

Procedure

1. Loosen jam nut on adjustment bolt.
2. If the installed exhaust system bypass resembles Figure 6-55, A:
 - a. Screw the adjustment bolt clockwise (*CW*) to the fully seated position. Turn the adjustment bolt counterclockwise (*CCW*) two turns and lock in position with the jam nut.
 - b. Run engine to check full throttle manifold pressure. Make fine adjustments required to meet the performance curve in the primary ICA, *CW* to increase, *CCW* to decrease.
3. If the installed exhaust system bypass resembles Figure 6-55, B:
 - a. Screw the adjustment bolt clockwise (*CW*) to the fully seated position. Turn the adjustment bolt counterclockwise (*CCW*) eight and one-half (8½) turns and lock in position with the jam nut.
 - b. Run engine to check full throttle manifold pressure. Make fine adjustments required to meet the performance curve in the primary ICA, *CW* to increase, *CCW* to decrease.
4. Torque the jam nut on adjustment bolt to Appendix B specifications and safety wire when complete.

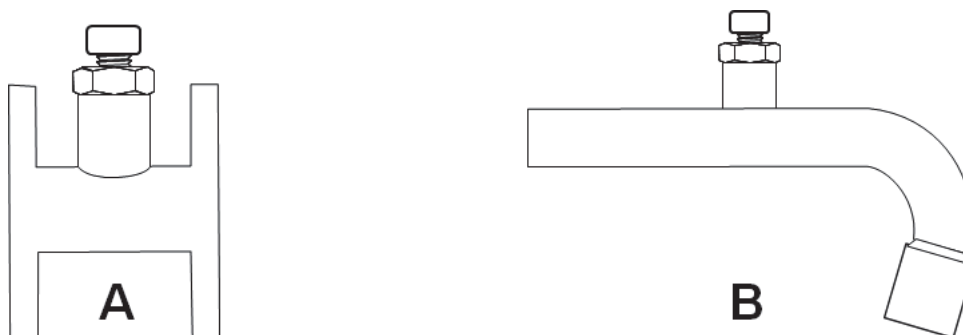


Figure 6-55. Fixed Wastegate (TSIO-520-T) (Typical)

6-4.10.3.3. Sloped Controller Adjustment

**Applicable Engines: TSIO-520-BE;
TSIO-550-A, B, C, E, G, K, N
TSIOL-550-C**

CAUTION: Instructions in this section were verified on TSIO-550-C engine models. For all other engine models, consult the Aircraft Maintenance Manual before proceeding.

The sloped controller limits oil flow through the wastegate, which determines the position of the butterfly valve in the wastegate. Adjustment of the sloped controller may be required after an engine is installed, rebuilt, serviced, or overhauled, or sloped controller replacement.

Procedure

1. Orient the aircraft nose into the prevailing wind and run the engine at 1500 to 1800 RPM until the oil temperature is 160 to 180° F (71 to 82°C).
2. Using a handheld digital tachometer set the propeller controls according to the Section 6-4.7.1.
3. With the throttle in the FULL FORWARD position, set the intake manifold pressure according to the value in Section 6-4.7.1 for the engine model by turning the adjusting screw on the bottom of the slope controller (Figure 6-56) using a wide blade common screwdriver. Turning the screw clockwise (*CW*) increases manifold pressure, counter-clockwise (*CCW*) decreases manifold pressure.

NOTE: 1/8 turn of the adjusting screw=@1.0 inch Hg.

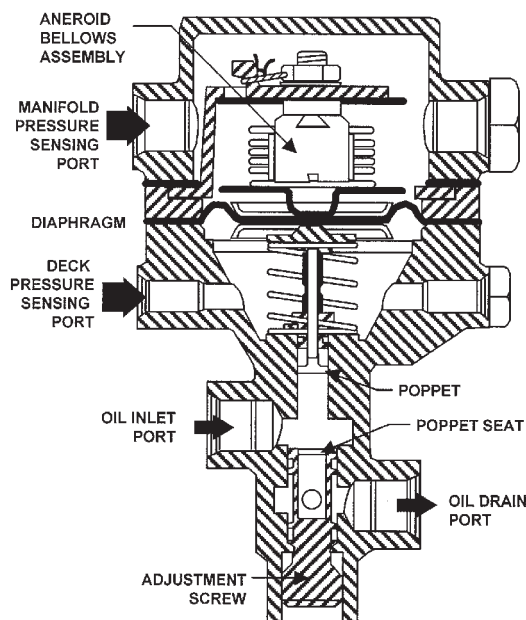


Figure 6-56. Sloped Controller