TELEDYNE
CONTINENTAL MOTORS
An Allegheny Teledyne Company

OVERHAUL MANUAL

MODELS TSIO-520-B,BB
D,DB
E,EB
J,JB
K,KB
L,LB
N,NB
UB
VB
WB
BE

FORM NO. X30574A

FAA APPROVED
MARCH 1999

Special Instructions for the TSIO-520-T: Early engines used an exhaust system bypass valve "A" as shown in Fig. 81-20-00. Current production engines use the bypass valve "B" as shown in Fig. 81-20-00. The bypass valve is installed in the exhaust system just forward and to the right of the turbocharger.

A. If the exhaust bypass valve "A" is as shown in Fig. 81-20-00, adjust the bolt all the way in turning in a clockwise (CW) direction and reposition 2 turns out turning in a counterclockwise (CCW) direction. Lock in place with check nut. Run engine to check full throttle manifold pressure. Make fine adjustments required to meet the curve at the end of this section, CW to increase, CCW to decrease. Safety wire when complete.

B. If the exhaust bypass valve "B" is as shown in Fig. 81-20-00, adjust the bolt all the way (CW) and reposition 8½ turns out (CCW). Lock in place with check nut. Run engine to check full throttle manifold pressure. Make fine adjustments required to meet the curve at the end of this section, CW to increase, CCW to decrease. Safety wire when complete.

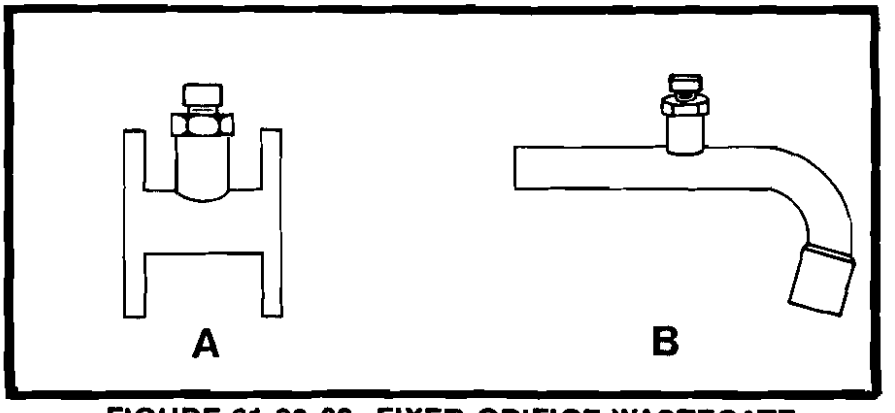

FIGURE 81-20-00. FIXED ORIFICE WASTEGATE.

2. Hydraulic Wastegate

The hydraulic wastegate consists of either a butterfly or poppet type bypass valve located in the turbine exhaust ducting. Both type wastegate valves are controlled by a spring loaded hydraulic wastegate actuator. The actuator is operated by engine oil pressure. The hydraulic wastegate actuators consist of a movable piston and spring. Engine oil pressure against the piston will close the wastegate increasing turbocharger turbine speed. As oil pressure against the piston is reduced, the spring will open the wastegate, reducing turbocharger turbine speed. (See Fig. 81-20-00 Hydraulic Wastegate). The oil pressure operating the wastegate actuator is controlled by a wastegate controller. The hydraulically actuated wastegate systems also use an overboost pressure relief valve as a precautionary measure.

NOTE . . . Hydraulic wastegates are not field serviceable or adjustable devices and should be replaced when found to be defective.

81-50-00 TURBOCHARGER SYSTEM TROUBLESHOOTING CHART

This troubleshooting chart is provided as a guide. Review all probable causes given, check other listings of troubles with similar symptoms. Items are presented in sequence of the approximate ease of checking, not necessarily in order of probability.

TROUBLE	PROBABLE CAUSE	CORRECTION
Low Manifold Pressure	Improperly Adjusted Wastegate	Adjust According to Aircraft Manufacturer's Instructions
	Binding Wastegate	Replace Wastegate
	Improperly Adjusted Wastegate Controller	Adjust According to Aircraft Manufacturer's Instructions
	Induction or Exhaust Manifold Leaks	Repair or Replace as Required
Manifold Pressure Higher than Normal	Binding Wastegate	Replace Wastegate
	Improperly Adjusted Controller	Adjust According to Aircraft Manufacturer's Instructions
Deck Pressure Higher Than Normal	Intercooler Plugged or Damaged	Repair or Replace as Required
Loss of Aircraft's Critical Altitude	Improperly Adjusted Wastegate and Controllers	Adjust According to Aircraft Manufacturer's Instructions
	Induction or Exhaust Manifold Leaks	Repair or Replace as Required
Turbocharger Oil Seals Leaking	Worn or Damaged Seals	Refer to Turbocharger Manufacturer's Instructions
	Leaking Check Valve	Replace Check Valve
Engine Oil Level Frequently Low After Servicing Prior to Operation	Leaking Turbo Charger Check Valves and Seals	Replace Check Valves Refer to Turbocharger Manufacturer's Instructions for Turbocharger Maintenance
Lack of Oil to Turbocharger	Damaged Check Valve	Replace Check Valve