

SECTION 4.2.5
Annex A

4 Stroke Piston Engine Cylinder Leak Check

To effectively monitor the continuing airworthiness of a piston engine in service, certain maintenance actions should be carried out to establish the condition of the engine. Those maintenance actions should not only establish the condition of the engine at the time of the maintenance, but also establish a level of trend monitoring. The trends can then be used to plan maintenance in a pro-active manner, rather than in a reactive manner

A prime factor in piston engine trend monitoring is the cylinder leak check. A cylinder leak check should be carried out at specified intervals to establish and monitor the condition of the engine cylinders. The procedure should not only establish the rate of cylinder leakage but also the source of the leakage. For example; whilst a level of dynamic leakage past the piston rings may be acceptable, any static leakage past a valve seat or from the head to barrel joint renders that cylinder unserviceable.

The cylinder leak check should be carried out by the owner, for aircraft used in private operations and a Level 2 for all other aircraft. The procedure should utilise the differential pressure test method.

Leak rates acceptable are:

1. Static leaks are not permitted from the cylinder barrel, cylinder barrel to head joint, cylinder head, or the inlet and exhaust valve to seat seals.
2. Dynamic leaks of less than 25% are acceptable. That is; better than 60/80.
3. A dynamic leak rate of more than 25% (less than 60/80) will require a maintenance action. The maintenance required is:
 - a. Better than 50/80: The engine may continue in service subject to recording the results of the cylinder leak check on the maintenance release and listing as maintenance required:
 - (i) oil consumption shall be monitored in accordance with approved maintenance data at intervals not to exceed 50 hours time in service, and
 - (ii) a cylinder leak check shall be carried out at intervals not to exceed 50 hours time in service until rectification of the dynamic leak rate is carried out.
 - (b) Less than 50/80: Rectification before further flight is required.

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