Special Instruction

PW305A, PW305B
Individual Fan Blade Inspection and Replacement

1. GENERAL

1.1 The purpose of this Special Instruction (SI) is to provide a limited workscope to inspect and replace fan blades.

2. EFFECTIVITY

2.1 All PW305A and PW305B engines.

3. COMPLIANCE

3.1 The work recommended in this SI should be performed by a P&WC approved Service Center facility capable of carrying out PW305 engine Repair/HSI and/or Overhaul.

4. APPROVAL

4.1 P&WC Approved.

5. DESCRIPTION

5.1 This SI provides a limited workscope to inspect individual fan blades and replace those that have airfoil thickness under-minimum condition.

5.2 Required disassembly and assembly must be carried out per the applicable Maintenance and Overhaul manuals. Refer to the Maintenance and CIR Manuals for inspection criteria. In addition, the inspection criteria from existing published data may be supplemented by approved AMO procedures.

6. REFERENCES

6.1

PW305 series Engine Overhaul Manual (OHM)	30B1401
PW305 series Engine Maintenance Manual (EMM)	30B1402
PW300 Cleaning Inspection Repair Manual (CIR)	30B4133

PRATT & WHITNEY CANADA
MARIE-VICTORIN, LONGUEUIL
QUEBEC, CANADA J4G 1A1
PRINTED IN CANADA

Attachment 1

7. DURATION

7.1 This Special Instruction is valid until superceded or cancelled by revision.

8. ACCOMPLISHMENT INSTRUCTIONS

NOTE: 1 With the exception of fan blades requiring replacement, the engine must be serviceable in all respects for this limited workscope to be valid. Engines that have additional distress must be repaired per the specific maintenance, overhaul or CIR manual instructions.

NOTE: 2 DO NOT disassemble sub-assemblies unless indicated in the workscope.

NOTE: 3 Hardware not being replaced is subject to visual inspection only.

NOTE: 4 Upon engine fan re-installation a five point calibration and fan trim balancing test should be carried out.

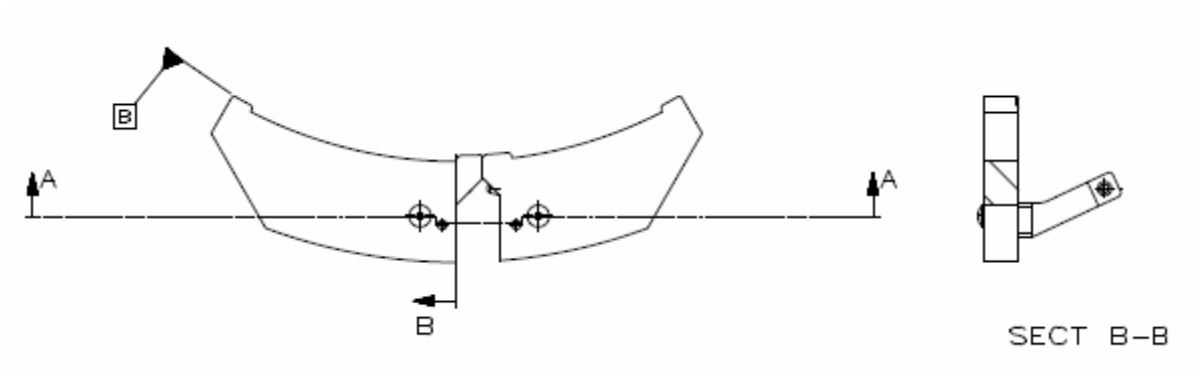
8.1 Visually inspect the fan and fan case (especially abradable condition) in accordance with the PW305 EMM, CH 72-30-01, Inspection. Adjust the workscope as required to rectify, if distress is identified.

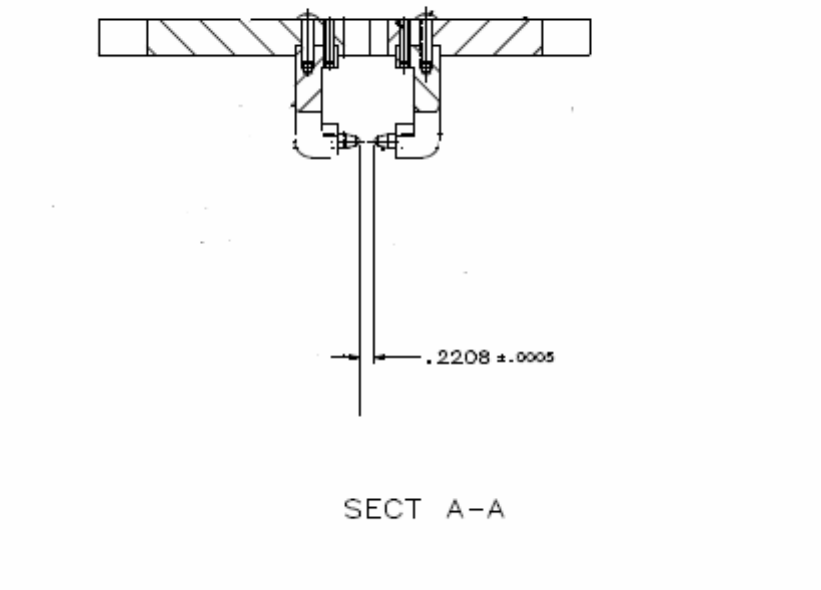
8.2 Measure and record the fan blade tip clearance.

8.3 Remove the fan assembly in accordance with the procedure in the PW305 EMM, Ch 72-30-01, Removal and Installation.

8.4 Carry out a visual inspection for obvious defects of all the hardware removed to access the fan blades and the hardware exposed by the fan removal (ex. Fan exit vane, compressor inlet vane, fan case, etc). Use the visual inspection criteria in section 72-30-01 of PW305 EMM, In addition, use the visual inspection criteria in the PW300 engine CIR manual or RDTI documents to inspect those areas not covered in the PW305 EMM or if defects are found that are not covered by the PW305 EMM.

8.5 Visually inspect gauge P/N PWC 40654, for signs of damage, distortion etc. If the gauge is damaged, distorted, or mishandled (for example, dropped from more than 4 feet on a hard surface, not properly stored in the carrying case, etc), inspect gauge dimension .2208 +/- .0005 in accordance with section AA of Figure 1.





Inspection of Gauge
Figure 1

8.6. Place the fan assembly on a clean suitable support with blades LE down. Inspect each individual fan blade airfoil thickness in accordance with the following procedure (Ref. Figure 2):

- Ensure the fan blade being inspected is firmly seated against the rear retaining ring and is loaded radially out in the hub fixing.
- Install each half of the inspection gauge P/N PWC 40654 on the fan blade rear retaining ring and using minimal force gently touch the measuring tips to each side of blade airfoil surface. Ensure the gauge is fully in contact with the retaining ring frontal and cylindrical faces and check the circumferential gap between the two halves.
- If the gap between the two halves is less than 0.005 in, the blade airfoil thickness is below minimum dimension. Using an approved temporary marker, mark blades that are under the minimum dimension.

8.7 If there are no marked blades (i.e. with under-min airfoil thickness) do not disassemble the fan. Proceed to step 8.9.

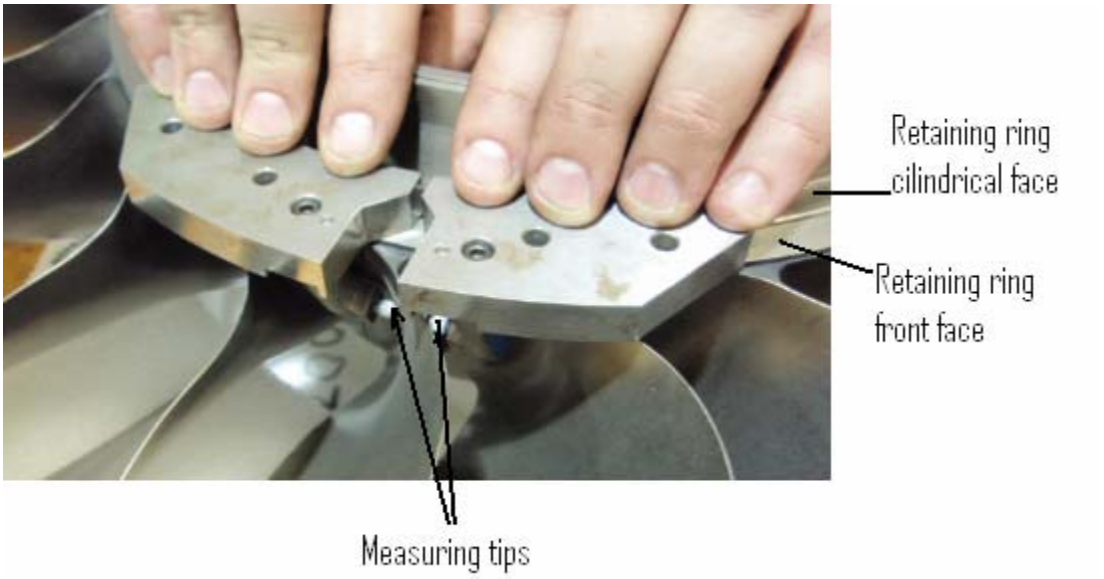
8.8 Replace marked fan blade(s) (i.e. with under-min airfoil thickness) only, using the PW305 OHM, CH 72-30-01 procedure to disassemble the fan to get access to the fan blade(s) needing replacement.

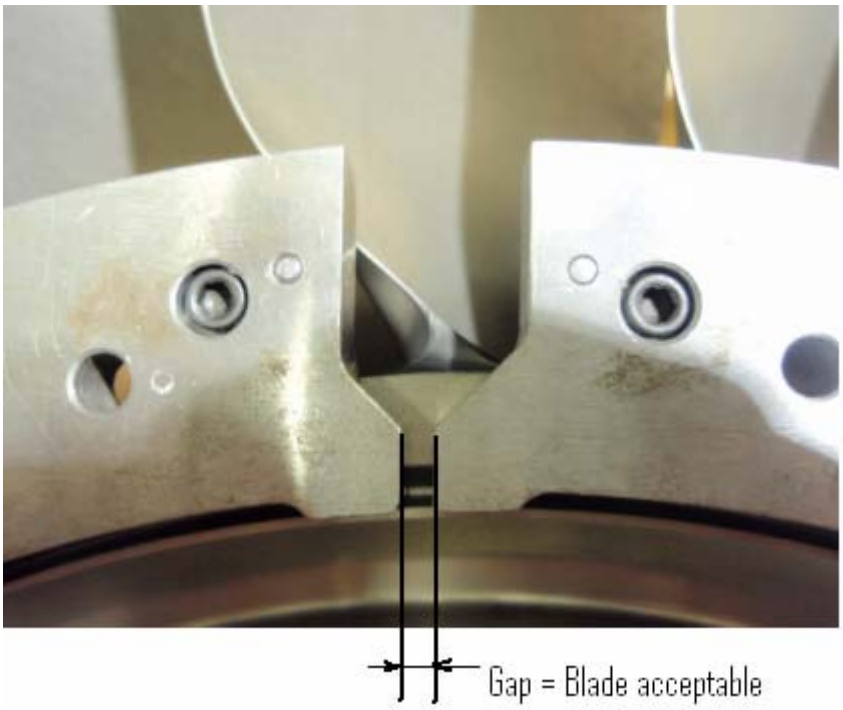
8.9. Record engine serial number, engine hours & cycle, fan blades S/N, heat code (for blades that are removed from the hub) and inspection results and sent to PWC attention , email address . (see Figure 3). Retain fan blades with an under min condition, in a secured area for further review as instructed by P&WC.

8.10. Inspect the remaining fan blades for obvious defects using the PW305, EMM CH 72-30-01, inspection criteria. For defects not covered by the PW305 EMM, use the visual inspection criteria in the PW300 engine CIR manual, CH 72-31-21.

8.11. If one of the fan blades retaining rings (which are installed on the fan hub) need to be replaced, perform fan hub static balancing as per the PW305 OHM CH 72-30-01 recommendations.

8.12. Check fan blade moment weight and determine fan blade position to facilitate balancing. Re-assembly and balance the fan assembly in accordance with the PW305 OHM, CH 72-30-01, recommendations.





Fan Blade Airfoil Thickness Inspection
Figure 2

FAN BLADE INSPECTION RECORD

ENGINE MODEL

PW305A/B

Engine Total Time Since new
Engine Total Cycle Since new
Engine Time Since H.S.I.

ENGINE SERIAL NO..

Engine Cycles Since H.S.I.
Engine Time Since Overhaul
Engine Cycle Since Overhaul

POSITION NO.	BLADE P/N	BLADE HEAT CODE	INSPECTION RESULTS
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

PLEASE FORWARD TO
Attention
Fax.
e-mail:

Fan Blade Inspection Record
Figure 3

8.13. Using the PW305 EMM, recommendations:

- Install fan assembly on the engine. Check the fan blade tip clearance is more than 0.0165 in. but does not exceed the value recorded in step 8.2. Calculate the spacer to obtain the required value. Ref CH 72-30-01.
- Perform the in-situ fan trim balancing procedure. Ref CH 71-00-00.
- Perform a five-point calibration test, Ref CH 71-00-00. Verify engine performance is the same or better than when received for fan blade replacement and it is better than the fully deteriorated engine limit.

8.14. Record the incorporation of this SI in the engine logbook and release the aircraft to service.