PRATT & WHITNEY CANADA

SERVICE BULLETIN

P&WC S.B. No. 41046R2

BULLETIN INDEX LOCATOR
77-10-00

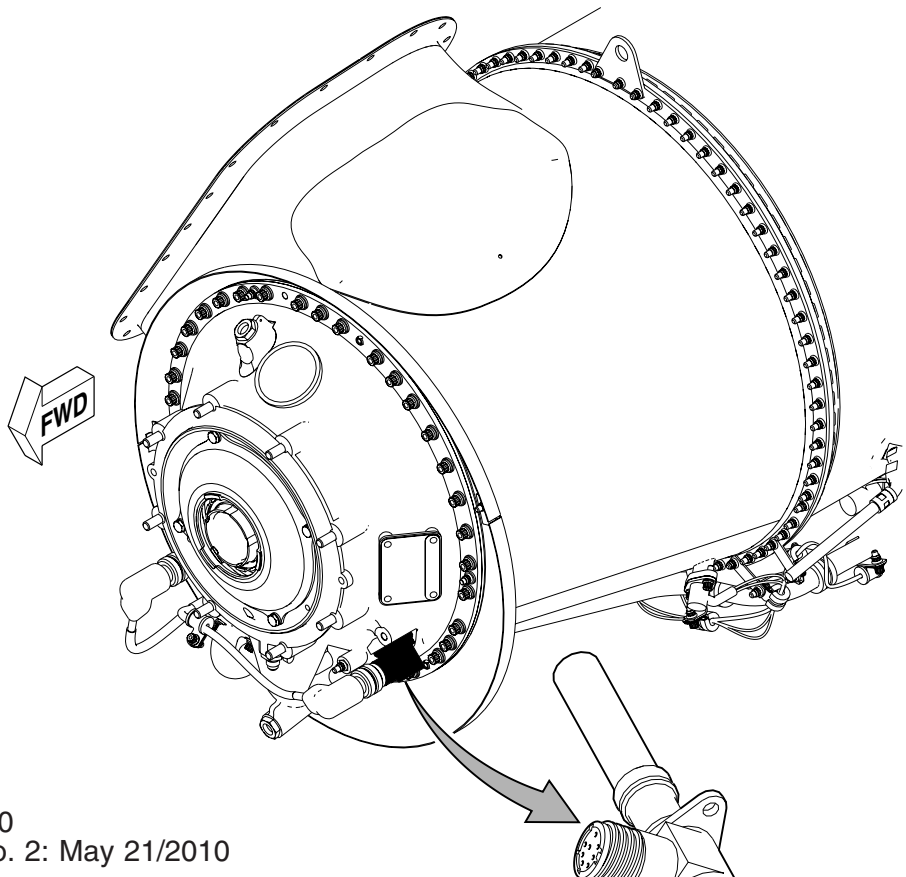
TURBOSHAFT ENGINE
PT SPEED AND TORQUE SENSOR, LEFT HAND - REPLACEMENT OF

MODEL APPLICATION

PT6C-67C

Compliance: CATEGORY 10

Summary: The intent of this Service Bulletin (SB) is cancelled as a new Engine Electronic Control (EEC) was introduced (Ref. SB41047) with a software change that includes revised torque matching logic to eliminate the torque split. The content of this SB is provided for information only.
At the Original Equipment Manufacturer (OEM), there may be a higher than desireable torque split when torque matching on engines incorporating power turbine shaft Post-SB41045. Introduce and new torque sensor with shims to adjust the gap between the sensor and torque shaft.



Feb 22/2010
Revision No. 2: May 21/2010

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21 May 2010

P&WC S.B. No. 41046R2

REVISION TRANSMITTAL SHEET
TURBOSHAFT ENGINE MODEL PT6C

SUBJECT: Pratt & Whitney Canada Service Bulletin No. PT6C-72-41046, Rev. No. 2, dated May 21/2010 (P&WC S.B. No. 41046R2) PT SPEED AND TORQUE SENSOR, LEFT HAND - REPLACEMENT OF

Replace your existing copy of this service bulletin with the attached revised bulletin. Destroy the superseded copy.

Please retain this Revision Transmittal Sheet with the revised bulletin.

SUMMARY: This revision is issued to cancel the intent of this Service Bulletin (SB) 41046.

EFFECT OF REVISION ON PRIOR ACCOMPLISHMENT:

None.

NOTE: A black bar in the left margin indicates a change in that line of text or figure.

REVISION HISTORY:

Original Issue: Feb 22/2010
Revision No. 1: Feb 23/2010
Revision No. 2: May 21/2010

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SERVICE BULLETIN

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TURBOSHAFT ENGINE
PT SPEED AND TORQUE SENSOR, LEFT HAND - REPLACEMENT OF

1. Planning Information

A. Effectivity

PT6C-67C Engines Post-SB41045.

NOTE: The above effectivity list does not identify engines that have been converted from one engine model to another via an engine conversion service bulletin. To clarify the effectivity of converted engines, refer to the original engine effectivity above. For the parts embodied during the engine conversion, refer to conversion service bulletin.

B. Concurrent Requirements

None.

C. Reason

(1) Problem

At the Original Equipment Manufacturer (OEM), there may be a higher than desireable torque split when in torque matching on engines incorporating power turbine shaft Post-SB41045.

(2) Cause

The gap between the left side torque probe (viewed from accessory gearbox) and the toothed wheel of the torque shaft is not optimal.

(3) Solution

Introduce a new torque sensor, on the left side, with shims to adjust the gap between the sensor and torque shaft.

D. Description

Replace the left sensor with a new sensor installed with shims.

E. Compliance

CATEGORY 10 - For information only.

F. Approval

D.O.T./D.A.A. approved.

G. Manpower

Once you have access to the part, an estimate of 1.5 man-hours is required to include this service bulletin at maintenance.

1. Planning Information (Cont'd)

H. Weight and Balance

None.

I. Electrical Load Data

Not changed.

J. Software Accomplishment Summary

Not applicable.

K. References

PT6C Maintenance Manual (3045332)

L. Publications Affected

PT6C Illustrated Parts Catalog (3045334)
PT6C Maintenance Manual (3045332)

M. Interchangeability and Intermixability of Parts

Interchangeability - Refer to Para. 2.D.

Intermixability - Not changed.

2. Material Information

A. Industry Support Information

Not applicable.

B. Material - Cost and Availability

You can get the procurable parts listed in Para. 2.C. from any Pratt & Whitney Canada Parts Distribution Center.

The estimated total cost of new parts needed to replace old parts is $Quote (US, 2010).

The new parts are available.

C. Material Necessary for Each Engine

The quantity of materials listed in this section is on a per Engine basis.

New P/N	Keyword	Old P/N	Qty	Est. Unit List Price ($US, 2010)	Instructions Disposition
For information only.					
3075969-01	Sensor, Torque, NPT	3043941-03	1	Quote	(A)(B)
3075975CL	Shim		AR	Quote	(A)
3075975CL01	. Shim, Thickness 0.005 in.				
3075975CL02	. Shim, Thickness 0.010 in.				
3075975CL03	. Shim, Thickness 0.015 in.				
3075975CL04	. Shim, Thickness 0.020 in.				
Ref. IPC 77-10-00, Figure 2.					
ST6202-114	Packing, Preformed	ST6202-114	1	2.11	(C)

(A) RESTRICTED INTERCHANGEABILITY - (ATA 200 Explanation Code 07):
All the old parts must be replaced by all the new parts as an assembly.

(B) Discard the part if it is unserviceable. Return a serviceable part to stock.

(C) Standard replacement part.

D. Reidentified Parts

None.

E. Tooling - Price and Availability

Not applicable.

The accomplishment instructions that follow are for information only.

3. Accomplishment Instructions

WARNING: THE NEW SHIMS HAVE SHARP EDGES AND MUST BE HANDLED WITH CARE.

A. Remove the left NPT torque sensor listed under Old P/N in Para. 2.D., Material Information, per the maintenance manual instructions (Ref. 77-10-00).

3. Accomplishment Instructions (Cont'd)

CAUTION: DO NOT INSERT THE NEW SENSOR BEFORE DETERMINING THE SHIM THICKNESS. THIS COULD CAUSE SERIOUS DAMAGE TO THE TEETH ON THE TORQUE SHAFT IF THE OUTPUT SHAFT IS TURNED.

B. Install the parts listed under New P/N in Para. 2.D., Material Information, per the maintenance manual instructions (Ref. 77-10-00) with the differences that follow (Ref. Fig. 1 and 2 and Tables 1 thru 4):

CAUTION: HANDLE THE MEASURING TOOL WITH EXTREME CARE TO AVOID DAMAGE.

CAUTION: THE MEASURING TOOL MUST BE USED IN A CLEAN ENVIRONMENT AND THE TRANSDUCER AND CALIBRATION BLOCK MUST BE KEPT CLEAN.

(1) Determine the correct shim thickness as follows:

NOTE: All values and measurements are in inches.

(a) Do the calibration of the measuring tool P/N PWC72018 as follows:

1 Make sure that the power switch located at the back of the digital indicator is at the off position.

2 With the power switch at the off position, connect the digital indicator to a 120V/240V AC power source.

3 Connect the transducer cable to input A located at the back of the digital indicator.

4 Hold the transducer in the vertical position with the measuring tip facing down.

5 Put the power switch to the on position and make sure the digital indicator display is zero.

6 Put the transducer in the calibration block and tighten the 2 knurled screws, finger tight.

7 Make sure the transducer measuring tip has contact with the surface of the calibration block.

8 Record the reading on the digital indicator up to 0.0001 inch.

9 Add the value recorded in the previous step to the value indicated on the calibration block. The result must be between 3.910 and 3.915 inch. If the result is within the specified range, go to step 10. If the result is outside the specified range, it is possible to adjust the transducer as follows:

3. Accomplishment Instructions (Cont'd)

a With the transducer in the calibration block, loosen the Allen screw located in the middle of the transducer stem.

b Adjust the length of the transducer.

c Tighten the Allen screw and repeat steps 1 thru 9.

10 Depress the "A zero" button on the front of the digital indicator. Make sure the display changes to all zeros.

11 Remove the transducer from the calibration block.

(b) Rotate the engine output shaft 1 full turn, either direction, without the transducer installed.

(c) Install the transducer in the engine housing at the left sensor location. Tighten the two knurled screws, finger tight.

(d) Make sure the transducer flange is well seated on the machined surface of the engine housing.

(e) Put a piece of tape or an equivalent marker on the engine coupling shaft.

NOTE: The marker is used as a rotational reference to know when the engine output shaft is rotated 360 degrees.

CAUTION: ROTATE THE ENGINE OUTPUT SHAFT SLOWLY WHEN THE MEASURING TRANSDUCER IS INSTALLED IN THE ENGINE.

CAUTION: WHEN ROTATING THE ENGINE OUTPUT SHAFT STOP THE PROCEDURE IF HIGHER THAN USUAL RESISTANCE IS FELT.

(f) Rotate the engine output shaft slowly in either direction but keep the same direction of rotation throughout the procedure. When the measuring tip of the transducer is not in contact with a tooth on the torque shaft, the value on the digital indicator will be at a peak negative value. As a tooth approaches the measuring tip, the value on the digital indicator will quickly start moving toward zero and may eventually go positive. Keep rotating the shaft slowly until the highest value in the positive direction is reached (see examples 1 and 2 below). Record this value in inches in Table 1.

- Example 1: -0.0017 is higher than -0.0025 inch.
- Example 2: 0.0027 is higher than 0.0015 inch.

3. Accomplishment Instructions (Cont'd)

(g) Repeat the previous step until the values from all 10 teeth are recorded and make sure to always rotate the shaft slowly in the same direction.

NOTE: Make sure that no teeth are missed by ensuring the last tooth is measured prior to the completion of 360 degrees.

(h) Round off to the highest recorded value in Table 1 (in the positive direction) within 0.001 inch. Use this highest value in Table 2 to determine the correct shim thickness.

NOTE: 1. If the required shim class is not available, it is acceptable to use a combination of shims to get the correct thickness.

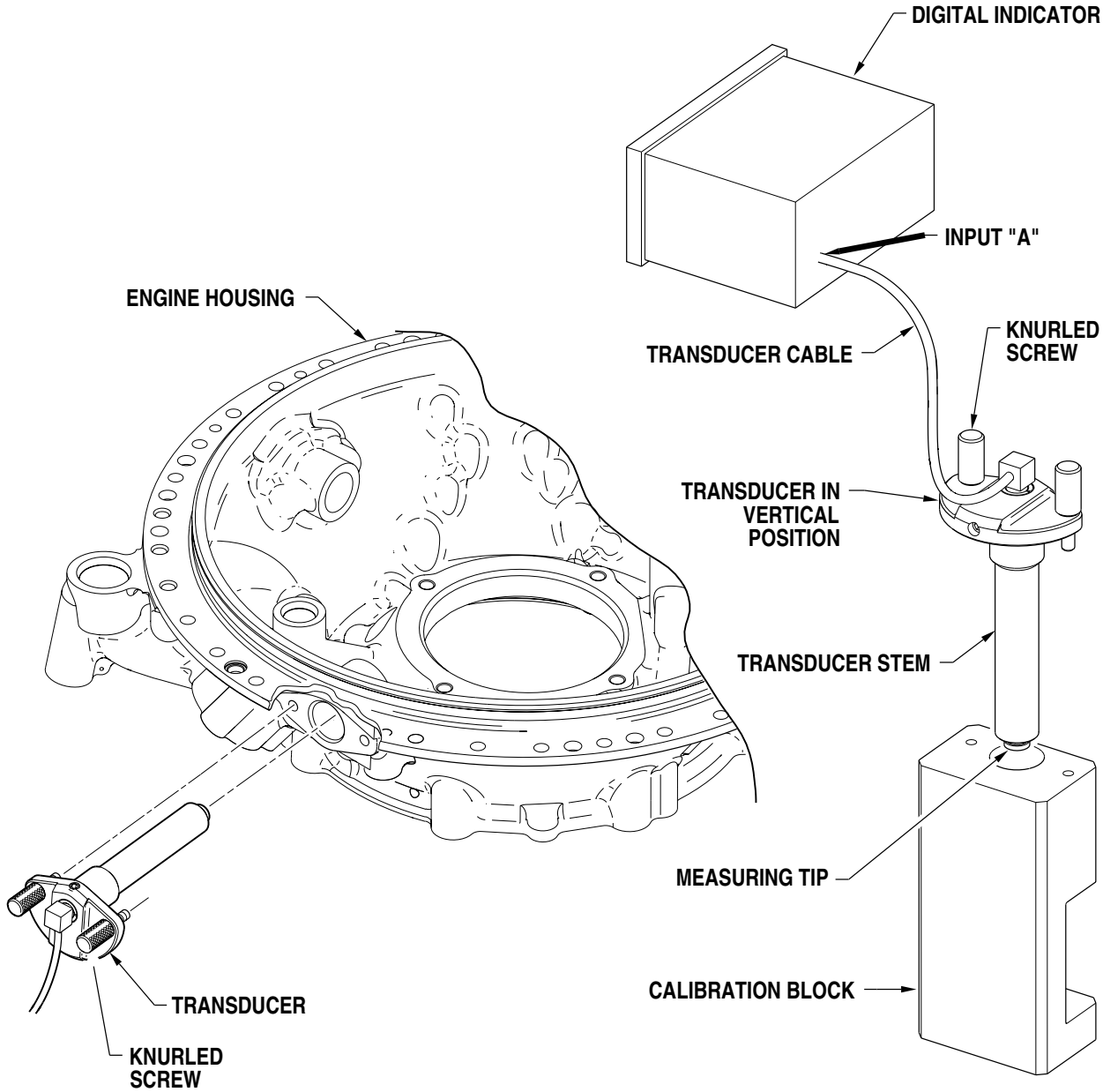
NOTE: 2. If the required shim class (or combination) is not available, use the next higher shim class.

C. Write accomplishment of P&WC S.B. No. 41046 and class of shim(s) used in the applicable engine module log book.

NOTE: For future replacement of the new sensor with another new sensor, the same shim thickness can be used.

4. Appendix

TURBOSHAFT ENGINE
PT SPEED AND TORQUE SENSOR, LEFT HAND - REPLACEMENT OF



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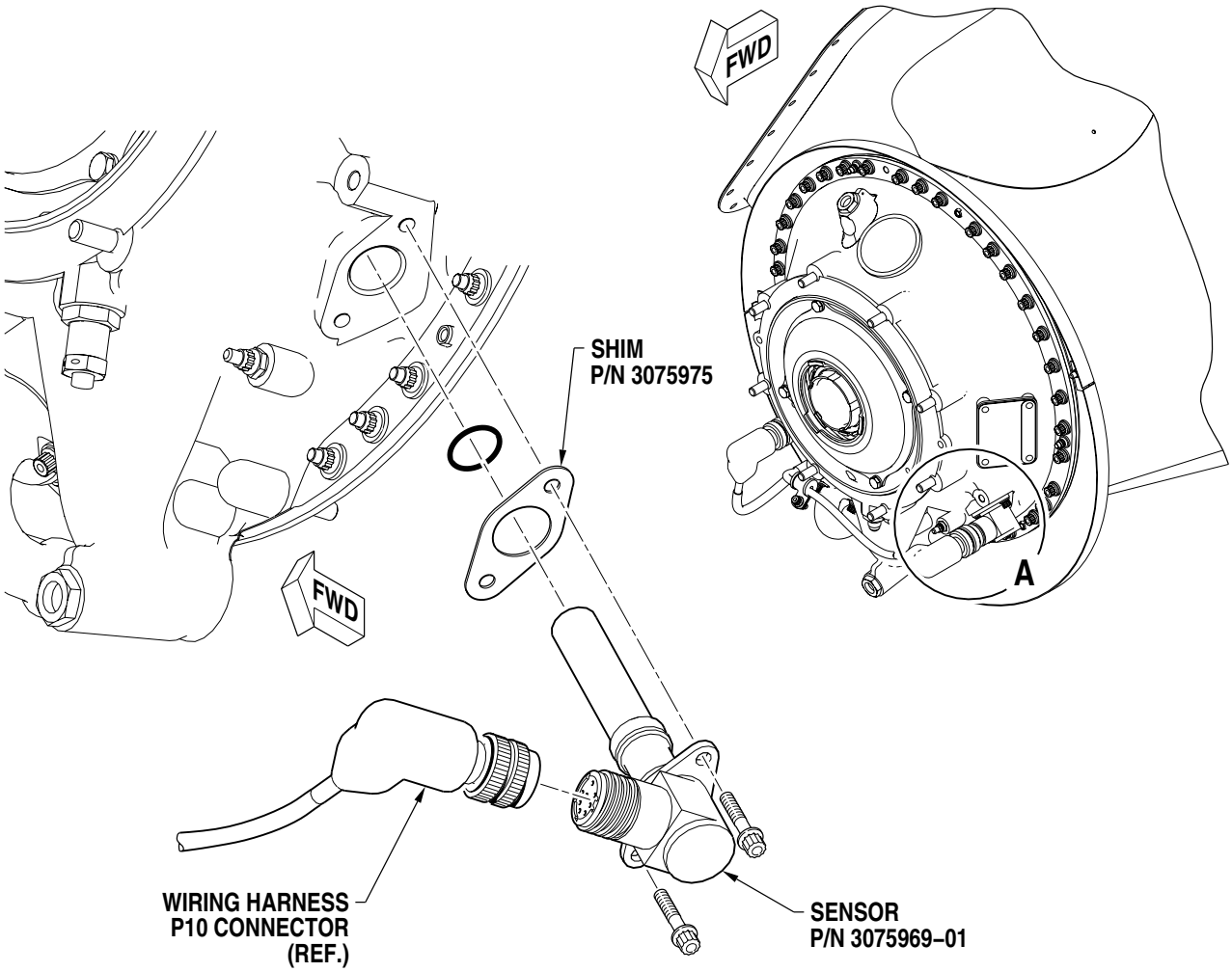
Measuring Tool PWC72018
Figure 1

TURBOSHAFT ENGINE
PT SPEED AND TORQUE SENSOR, LEFT HAND - REPLACEMENT OF



DETAIL A

C166355

PT Speed and Torque Sensor, Left Hand - Installation
Figure 2

4. Appendix (Cont'd)

TABLE 1, Digital Indicator Reading

Tooth	Digital Indicator Value
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TABLE 2, Shim Class and Thickness

Highest Value Range	Shim Class	Shim Thickness
-0.015 to -0.011	No Shim Required	Not Applicable
-0.010 to -0.006	1	0.005
-0.005 to -0.001	2	0.010
0.000 to 0.004	3	0.015
0.005 to 0.009	4	0.020

TABLE 3, Example 1 - Shim Selection

Tooth	Digital Indicator Value
1	-0.0035
2	-0.0034
3	-0.0032
4	-0.0038
5	-0.0040
6	-0.0035

4. Appendix (Cont'd)

TABLE 3, Example 1 - Shim Selection (Cont'd)

Tooth	Digital Indicator Value
7	-0.0034
8	-0.0031 (highest value)
9	-0.0035
10	-0.0038

NOTE: 1. The highest value is -0.0031. Rounded off within 0.001 inch = -0.003 inch. From table 2, value -0.003 requires a Class 2 shim.

TABLE 4, Example 2 - Shim Selection

Tooth	Digital Indicator Value
1	0.0005
2	-0.0005
3	0.0011(highest value)
4	0.0004
5	0.0007
6	0.0003
7	0.0006
8	0.0008
9	0.0000
10	-0.0001

NOTE: 2. The highest value is 0.0011. Rounded off within 0.001 inch = 0.001 inch. From table 2, value 0.001 requires a Class 3 shim.