

**61**

**PROPELLER**



**LIST OF EFFECTIVE PAGES**

<b>CHAPTER</b>	<b>PAGE</b>	<b>DATE</b>	<b>CHAPTER</b>	<b>PAGE</b>	<b>DATE</b>
■ 61-LEP (BA)	1	NOV 09	61-10-00 (AM)	801	APR 99
	2	APR 99		802	APR 99
61-TC (BA)	1	JUN 02	61-10-00 (CA)	801	APR 99
	2	JUN 02		802	APR 99
	3	JUN 02	61-20-00 (EA)	1	APR 99
	4	APR 99		2	APR 99
61-00-00 (AF)	1	APR 99	3	APR 99	
	2	APR 99	4	APR 99	
61-00-00 (AM)	1	APR 99	■ 61-20-01 (BA)	401	JUN 02
	2	APR 99		402	NOV 09
61-10-00 (AF)	1	APR 99		403	JUN 02
	2	APR 99		404	JUN 02
	3	APR 99	61-20-01 (BA)	501	JUN 02
	4	APR 99		502	JUN 02
	5	APR 99	61-20-02 (BA)	401	JUN 02
	6	APR 99		402	JUN 02
61-10-00 (AM)	1	APR 99	403	JUN 02	
	2	APR 99	404	JUN 02	
	3	APR 99	405	JUN 02	
	4	APR 99	406	JUN 02	
61-10-00 (BA)	301	JUN 02			
	302	JUN 02			
61-10-00 (CA)	301	JUN 02			
	302	JUN 02			
61-10-00 (AI)	401	SEP 04			
	402	JUN 02			
61-10-00 (AM)	401	SEP 04			
	402	JUN 02			
	403	JUN 02			
	404	JUN 02			
61-10-00 (BA)	601	APR 99			
	602	APR 99			
	603	APR 99			
	604	APR 99			

CHAPTER

PAGE

DATE

CHAPTER

PAGE

DATE

PAGE INTENTIONALLY LEFT BLANK

**TABLE OF CONTENTS**

<b>SUBJECT</b>	<b>CHAPTER</b>	<b>PAGE</b>	<b>VALIDITY</b>
<b>PROPELLER</b>	<b>61-00-00 (AF)</b>	<b>1</b>	<b>1 - 764, 766 - 878</b>
DESCRIPTION AND OPERATION		1	<b>with constant speed propeller</b>
1. GENERAL		1	
2. OPERATION		1	
<b>PROPELLER</b>	<b>61-00-00 (AM)</b>	<b>1</b>	<b>1 - 9999 with fixed</b>
DESCRIPTION AND OPERATION		1	<b>pitch propeller</b>
1. GENERAL		1	
<b>PROPELLER ASSEMBLY</b>	<b>61-10-00 (AF)</b>	<b>1</b>	<b>1 - 764, 766 - 878</b>
DESCRIPTION AND OPERATION		1	<b>with constant speed propeller</b>
1. GENERAL		1	
2. LOCATION		1	
3. DESCRIPTION		1	
A. Propeller		1	
B. Spinner		1	
<b>PROPELLER ASSEMBLY</b>	<b>61-10-00 (AM)</b>	<b>1</b>	<b>1 - 9999 with fixed</b>
DESCRIPTION AND OPERATION		1	<b>pitch propeller</b>
1. GENERAL		1	
2. LOCATION		1	
3. DESCRIPTION		1	
A. Propeller		1	
B. Spinner		1	
<b>PROPELLER ASSEMBLY</b>	<b>61-10-00 (BA)</b>	<b>301</b>	<b>1 - 9999 with fixed</b>
SERVICING		301	<b>pitch propeller</b>
1. GENERAL		301	
A. Propeller maintenance		301	
<b>PROPELLER ASSEMBLY</b>	<b>61-10-00 (CA)</b>	<b>301</b>	<b>1 - 764, 766 - 878</b>
SERVICING		301	<b>with constant speed propeller</b>
1. GENERAL		301	
A. Propeller maintenance		301	

<b>SUBJECT</b>	<b>CHAPTER</b>	<b>PAGE</b>	<b>VALIDITY</b>
<b>PROPELLER ASSEMBLY REMOVAL / INSTALLATION</b>	<b>61-10-00 (AI)</b>	<b>401</b>	<b>1 - 9999 with fixed pitch propeller</b>
1. REMOVAL OF THE PROPELLER		401	
A. Tools and consumable materials		401	
B. Procedure		401	
2. INSTALLATION OF THE PROPELLER		401	
A. Tools and consumable materials		401	
B. Procedure		401	
<b>PROPELLER ASSEMBLY REMOVAL / INSTALLATION</b>	<b>61-10-00 (AM)</b>	<b>401</b>	<b>1 - 764, 766 - 878 with constant speed propeller</b>
1. REMOVAL OF THE PROPELLER		401	
A. Tools and consumable materials		401	
B. Procedure		401	
2. INSTALLATION OF THE PROPELLER		401	
A. Tools and consumable materials		401	
B. Procedure		401	
<b>PROPELLER ASSEMBLY INSPECTION / CHECK</b>	<b>61-10-00 (BA)</b>	<b>601</b>	<b>1 - 9999</b>
1. INSPECTION / CHECK - PROPELLER		601	
A. Tools and consumable materials		601	
B. Propeller check		601	
<b>PROPELLER ASSEMBLY REPAIR</b>	<b>61-10-00 (AM)</b>	<b>801</b>	<b>1 - 9999 with fixed pitch propeller</b>
1. REPAIR - PROPELLER		801	
A. Tools and consumable materials		801	
B. Repair of the propeller		801	
<b>PROPELLER ASSEMBLY REPAIR</b>	<b>61-10-00 (CA)</b>	<b>801</b>	<b>1 - 764, 766 - 878 with constant speed propeller</b>
1. REPAIR - PROPELLER		801	
A. Tools and consumable materials		801	
B. Repair of the propeller		801	
<b>CONTROLS</b>	<b>61-20-00 (EA)</b>	<b>1</b>	<b>1 - 764, 766 - 878</b>
<b>DESCRIPTION AND OPERATION</b>		<b>1</b>	<b>with constant speed propeller</b>
1. GENERAL		1	
2. LOCATION		1	
3. DESCRIPTION		1	
A. Propeller governor		1	
B. Propeller governor control		1	

AAAA  
Validity : S / N 1 - 9999

<b>SUBJECT</b>	<b>CHAPTER</b>	<b>PAGE</b>	<b>VALIDITY</b>
<b>PROPELLER GOVERNOR REMOVAL / INSTALLATION</b>	<b>61-20-01 (BA)</b>	<b>401</b>	<b>1 - 764, 766 - 878</b>
1. <b>REMOVAL OF THE PROPELLER GOVERNOR</b>		401	<b>with constant speed propeller</b>
A. Tools and consumable materials		401	
B. Procedure		401	
2. <b>INSTALLATION OF THE PROPELLER GOVERNOR</b>		401	
A. Tools and consumable materials		401	
B. Procedure		402	
<b>PROPELLER GOVERNOR ADJUSTMENT / TEST</b>	<b>61-20-01 (BA)</b>	<b>501</b>	<b>1 - 764, 766 - 878</b>
1. <b>ADJUSTMENT OF THE PROPELLER GOVERNOR</b>		501	<b>with constant speed propeller</b>
A. Tools and consumable materials		501	
B. Procedure		501	
<b>PROPELLER GOVERNOR CONTROL REMOVAL / INSTALLATION</b>	<b>61-20-02 (BA)</b>	<b>401</b>	<b>1 - 764, 766 - 878</b>
1. <b>REMOVAL OF THE PROPELLER GOVERNOR CONTROL</b>		401	<b>with constant speed propeller</b>
A. Tools and consumable materials		401	
B. Procedure		401	
2. <b>INSTALLATION OF THE PROPELLER GOVERNOR CONTROL</b>		402	
A. Tools and consumable materials		402	
B. Procedure		402	

PAGE INTENTIONALLY LEFT BLANK

## PROPELLER

### DESCRIPTION AND OPERATION

#### 1. GENERAL

The aircraft is equipped with a HARTZELL two-bladed constant speed all metal propeller – refer to 61-10-00, controlled by oil pressure using an engine-driven propeller governor – refer to 61-20-00.

#### 2. OPERATION

The governor is operated by a manual control. According to the control position, the governor determines propeller RPM, and thus the engine speed to be maintained. The governor controls engine oil flow, boosted to high pressure by the governor pump on a piston located in the propeller hub.

Oil pressure allows rotation of the blades towards high pitch (low RPM). When oil pressure to the piston is reduced, the blades rotate towards low pitch (high RPM).

AAAB

Validity : S / N 1 – 764, 766 – 878 with constant speed propeller

61-00-00 (AF)

Page 1  
APR 99

PAGE INTENTIONALLY LEFT BLANK

AAAB

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-00-00 (AF)

Page 2  
APR 99

## PROPELLER

### DESCRIPTION AND OPERATION

#### 1. GENERAL

- The aircraft is equipped with a SENSENICH two-bladed fixed pitch all metal propeller – refer to 61-10-00.

PAGE INTENTIONALLY LEFT BLANK

## PROPELLER ASSEMBLY

### DESCRIPTION AND OPERATION

#### 1. GENERAL

The propeller assembly includes the propeller and the spinner.

#### 2. LOCATION (Figures 1 and 1A)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Propeller	1	110	111	61-10-00
Spinner	1	110	/	61-10-00

#### 3. DESCRIPTION (Figures 2 and 2A)

##### A. Propeller

The two-bladed metal propeller is a constant speed and variable pitch propeller.

Its characteristics are :

- nominal diameter : 72 in (1.83 m),
- minimum diameter after rework : 70 in (1.78 m).

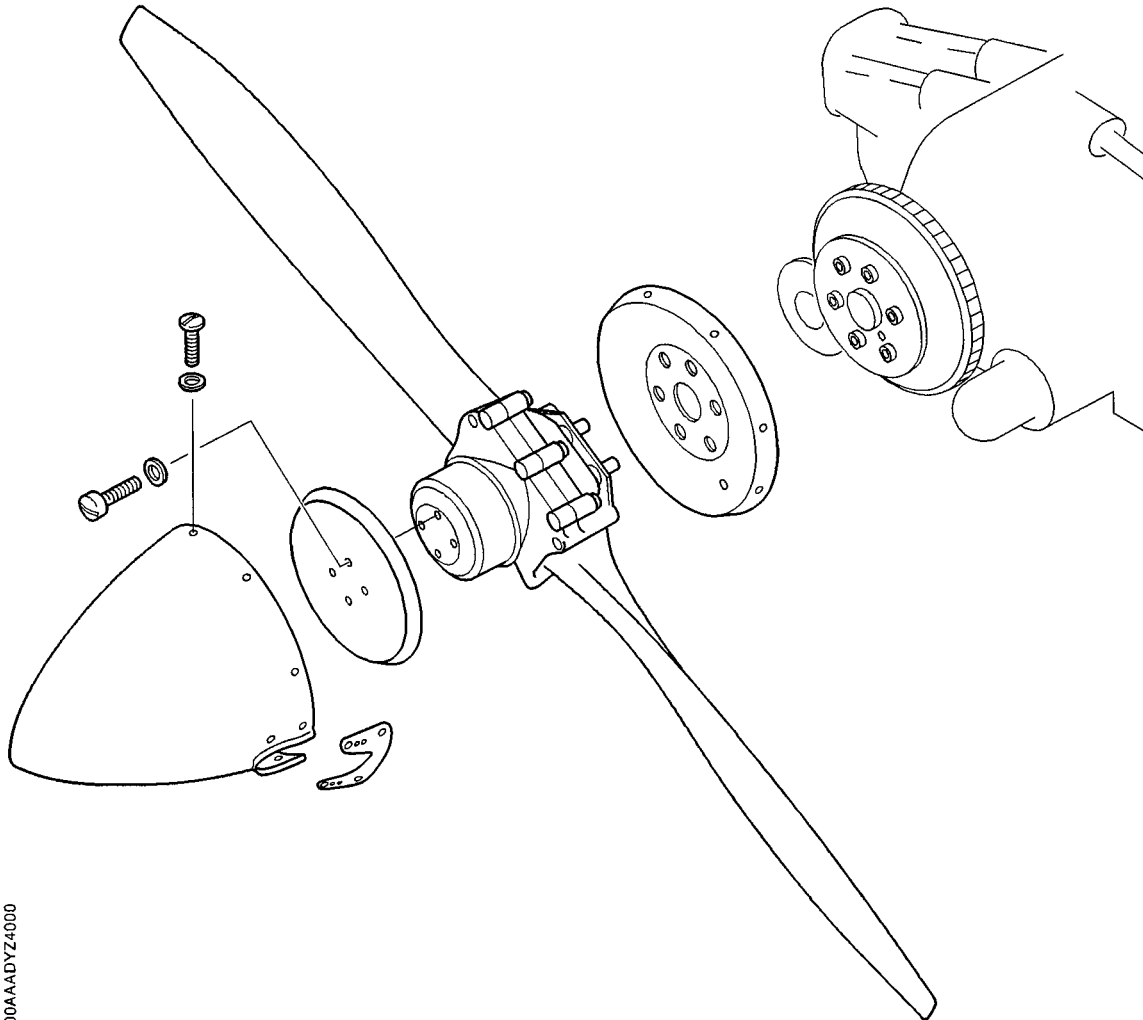
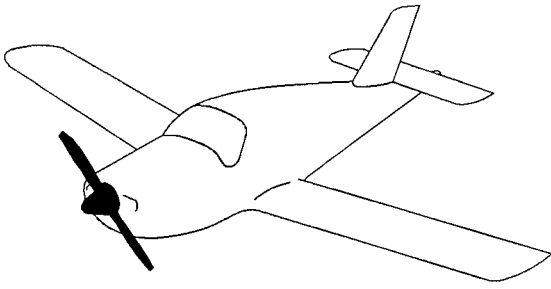
The forged light-alloy two-piece hub is bolted along the plane of rotation. Internally the hub contains the pitch change mechanism and the blade roots. The piston, installed in the front of the hub, provides power to change the pitch when acted upon by an outside force.

Boosted oil pressure, from the propeller governor, increases blade angle while a centrifugal twisting movement aims at positioning blades towards low pitch.

**NOTE : Full low pitch corresponds to high RPM (takeoff, climb, approach and landing), high pitch corresponds to low RPM.**

##### B. Spinner

The spinner preserves the aerodynamic profile of the propeller assembly at the propeller hub. It includes holes for its attachments around its edge and two opposite cut-outs which permit installation over the propeller body.



14611000AAAADYZ4000

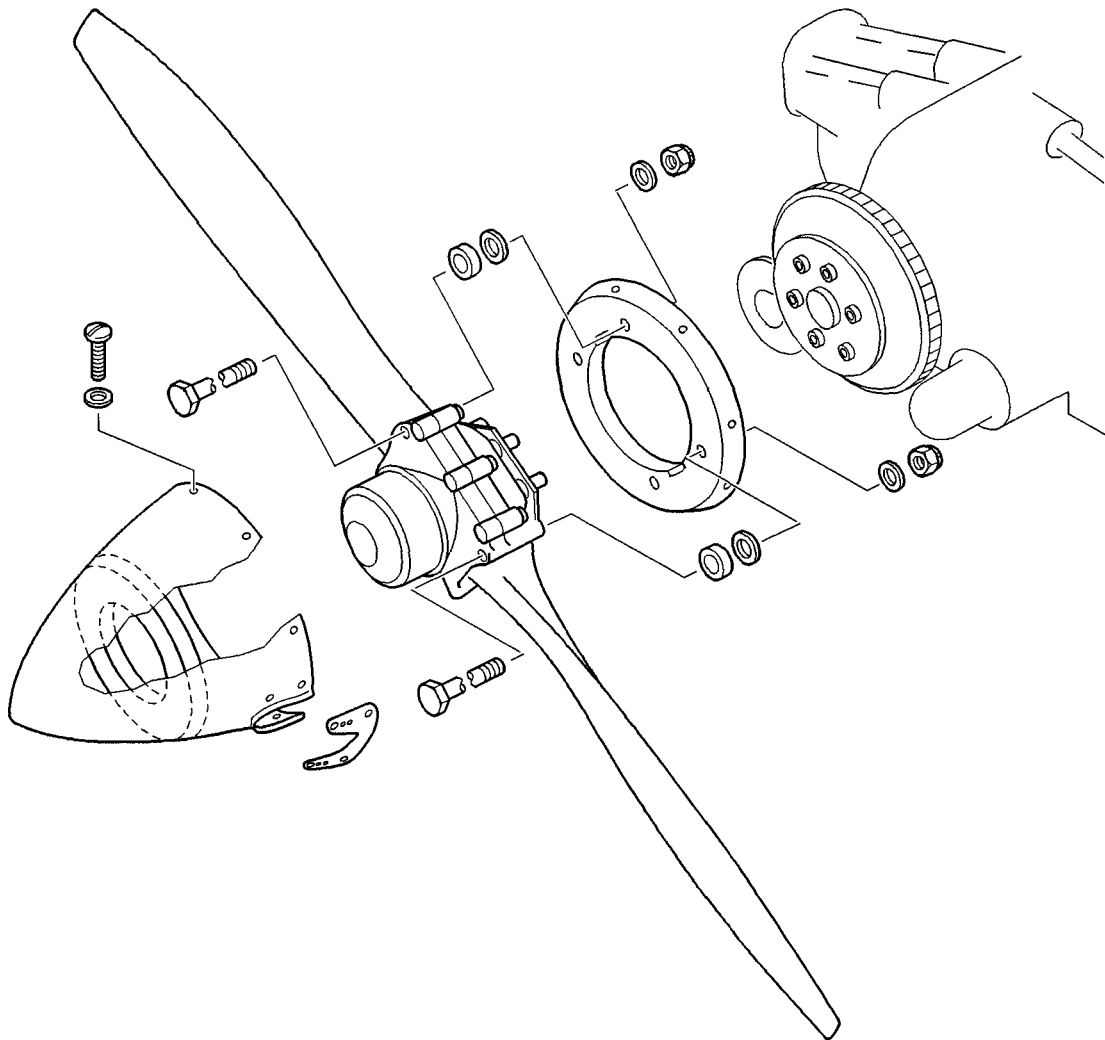
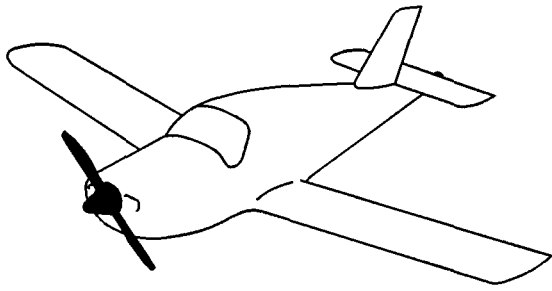
Propeller assembly – Location of components  
Figure 1 – Pre-Kit OPT10 917000

AEAB

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-10-00 (AF)

Page 2  
APR 99



1461100AAAAGVZ4001

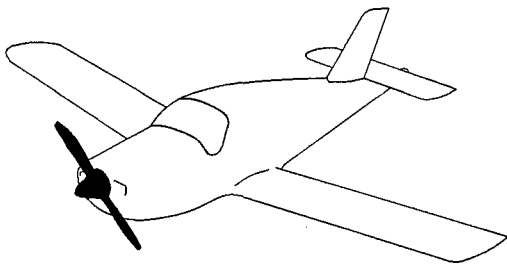
Propeller assembly – Location of components  
Figure 1A – Post-Kit OPT10 917000

AEAB

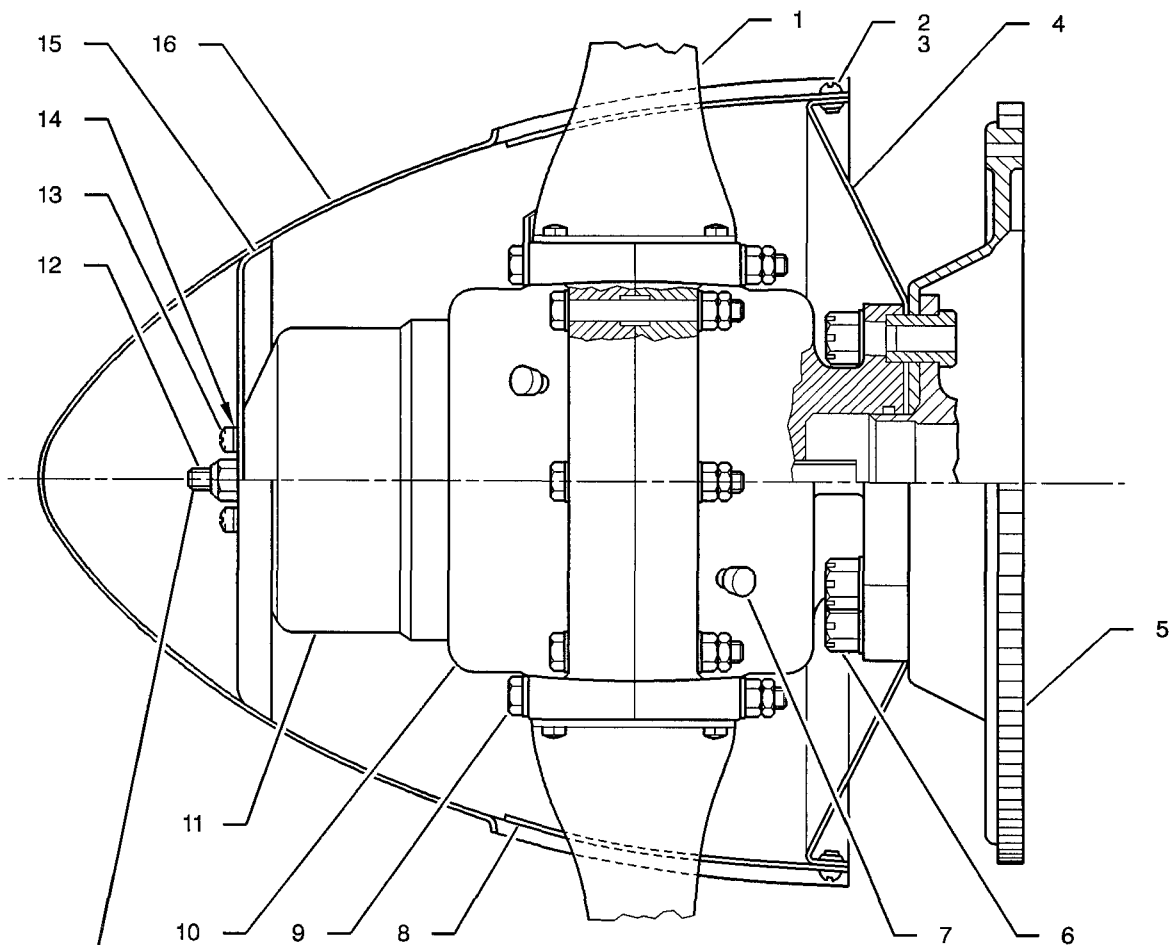
Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-10-00 (AF)

Page 3  
APR 99



- |                               |                             |
|-------------------------------|-----------------------------|
| 1 – Blade                     | 9 – Bolt                    |
| 2 – Screw                     | 10 – Hub                    |
| 3 – Washer                    | 11 – Cylinder               |
| 4 – Engine side bulkhead      | 12 – Adjusting screw        |
| 5 – Brush ring                | 13 – Screw                  |
| 6 – Installation bolt and nut | 14 – Washer                 |
| 7 – Grease nipple             | 15 – Cylinder side bulkhead |
| 8 – Equipped cover            | 16 – Spinner                |



Vis de réglage de la butée petit pas (dévisser pour augmenter la vitesse de rotation statique)  
 Low pitch adjusting screw (unscrew to increase the static rotation speed)

Propeller assembly – Description  
 Figure 2 – Pre-Kit OPT10 917000

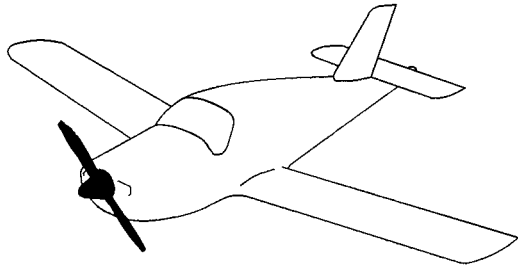
14306000AAA4100

AEAB

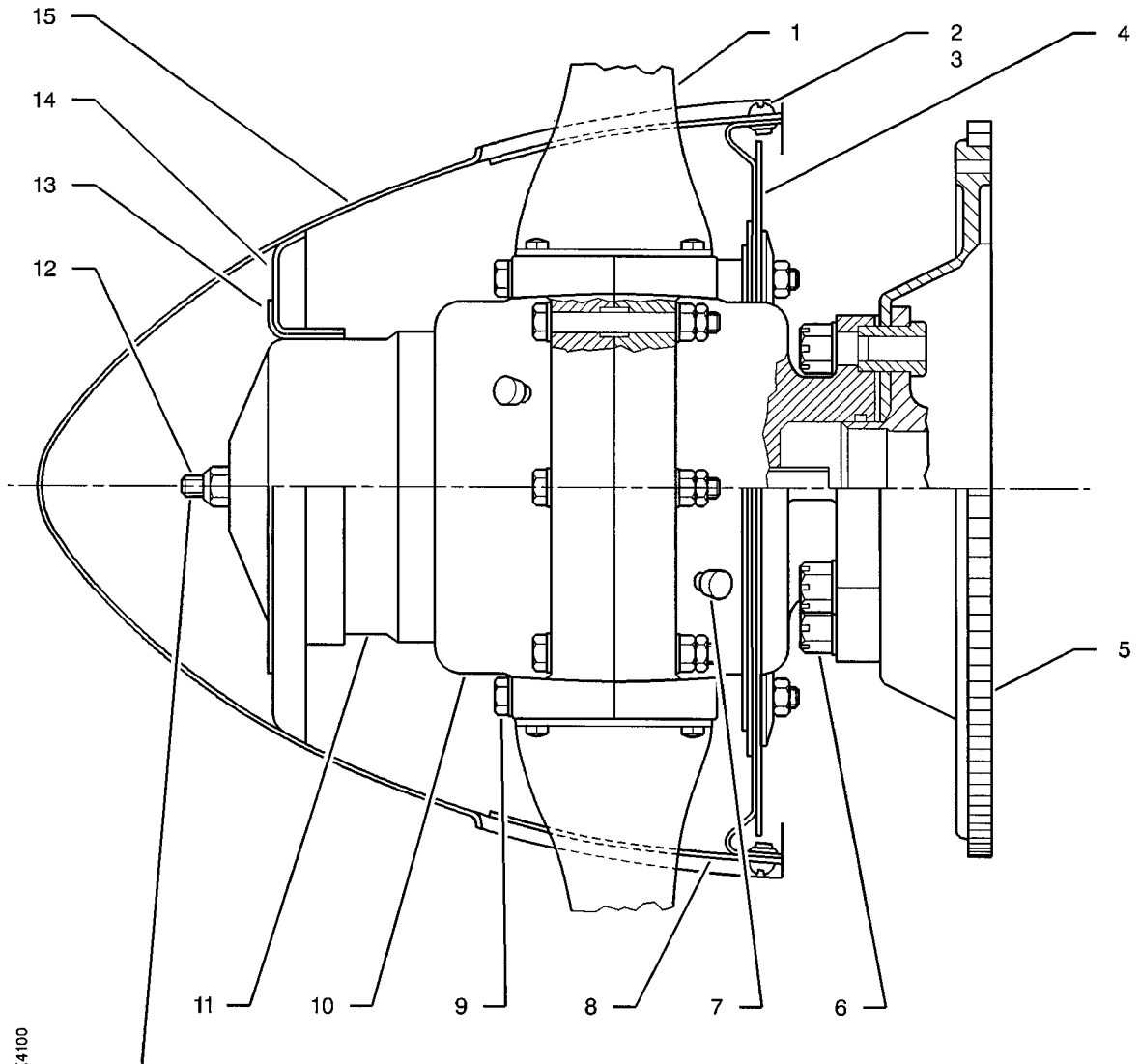
Validity : S / N 1 – 764, 766 – 878 with constant speed propeller

61-10-00 (AF)

Page 4  
 APR 99



- |                               |                             |
|-------------------------------|-----------------------------|
| 1 - Blade                     | 9 - Bolt                    |
| 2 - Screw                     | 10 - Hub                    |
| 3 - Washer                    | 11 - Cylinder               |
| 4 - Engine side bulkhead      | 12 - Adjusting screw        |
| 5 - Brush ring                | 13 - Adhesive tape          |
| 6 - Installation bolt and nut | 14 - Cylinder side bulkhead |
| 7 - Grease nipple             | 15 - Spinner                |
| 8 - Equipped cover            |                             |



14306000AAEWZ4100

Vis de réglage de la butée petit pas (dévisser pour augmenter la vitesse de rotation statique)  
 Low pitch adjusting screw (unscrew to increase the static rotation speed)

Propeller assembly - Description  
 Figure 2A - Post-Kit OPT10 917000

AEAB

Validity : S / N 1 - 764, 766 - 878 with constant speed propeller

61-10-00 (AF)

Page 5  
 APR 99

PAGE INTENTIONALLY LEFT BLANK

AEAB

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-10-00 (AF)

Page 6  
APR 99

**PROPELLER ASSEMBLY**  
**DESCRIPTION AND OPERATION**

**1. GENERAL**

The propeller assembly includes the propeller and the spinner.

**2. LOCATION (Figure 1)**

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Propeller	1	110	111	61-10-00
Spinner	1	110	/	61-10-00

**3. DESCRIPTION (Figure 2)**

**A. Propeller**

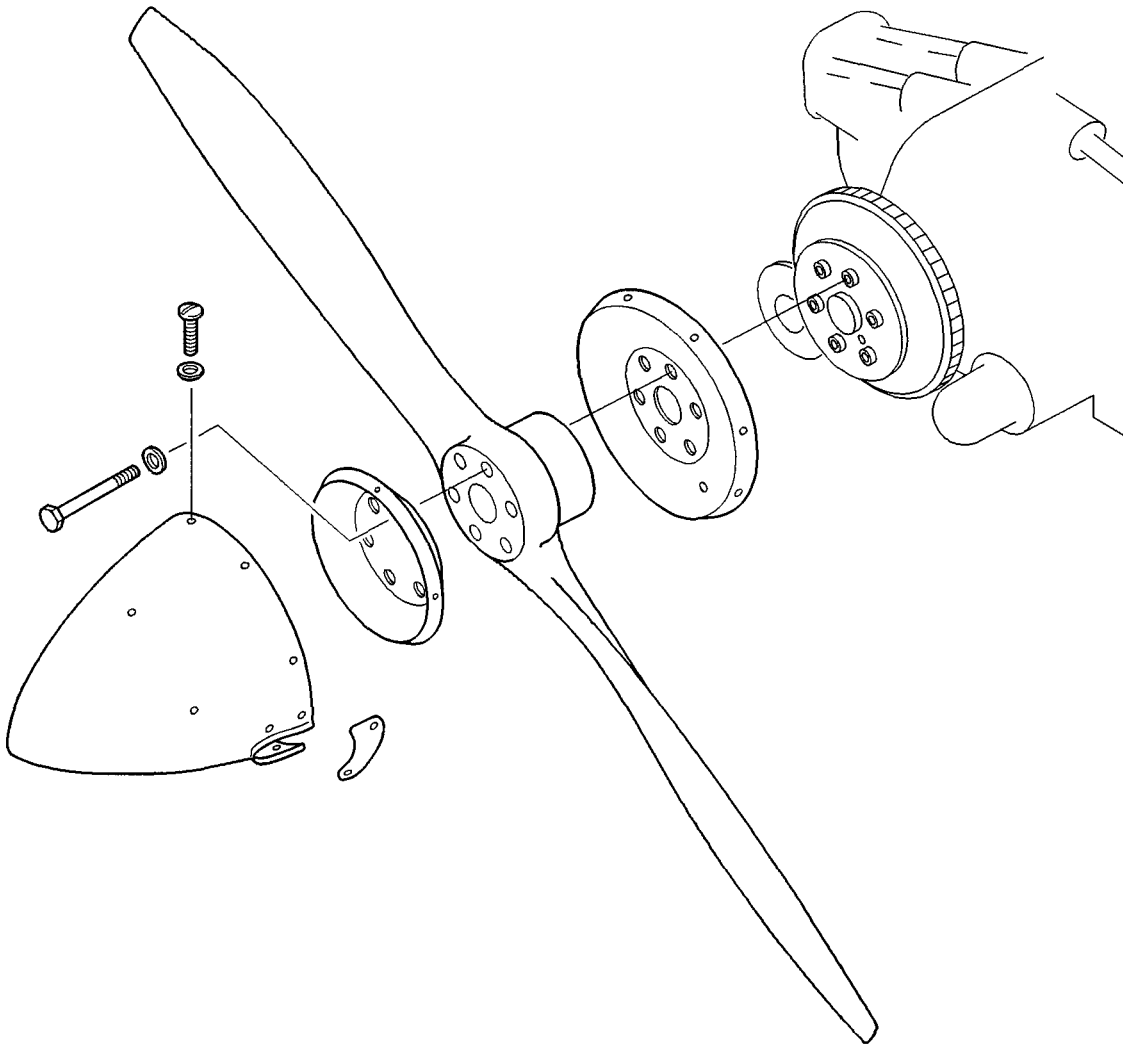
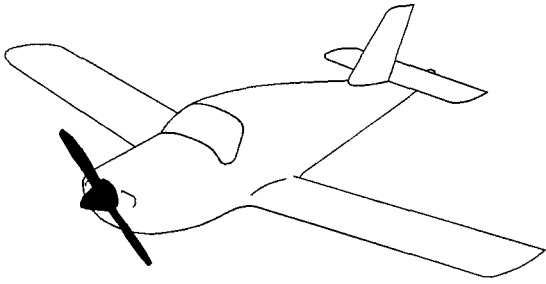
The two-bladed metal propeller is a fixed pitch propeller.

Its characteristics are :

- nominal diameter : 74 in (1.88 m),
- minimum diameter after rework : 72 in (1.83 m).

**B. Spinner**

The spinner preserves the aerodynamic profile of the propeller assembly at the propeller hub. It includes holes for its attachments around its edge and two opposite cut-outs which permit installation over the propeller body.



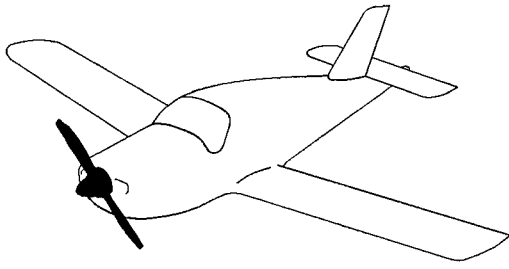
Propeller assembly – Location of components  
Figure 1

14611000AAAABUZ4000

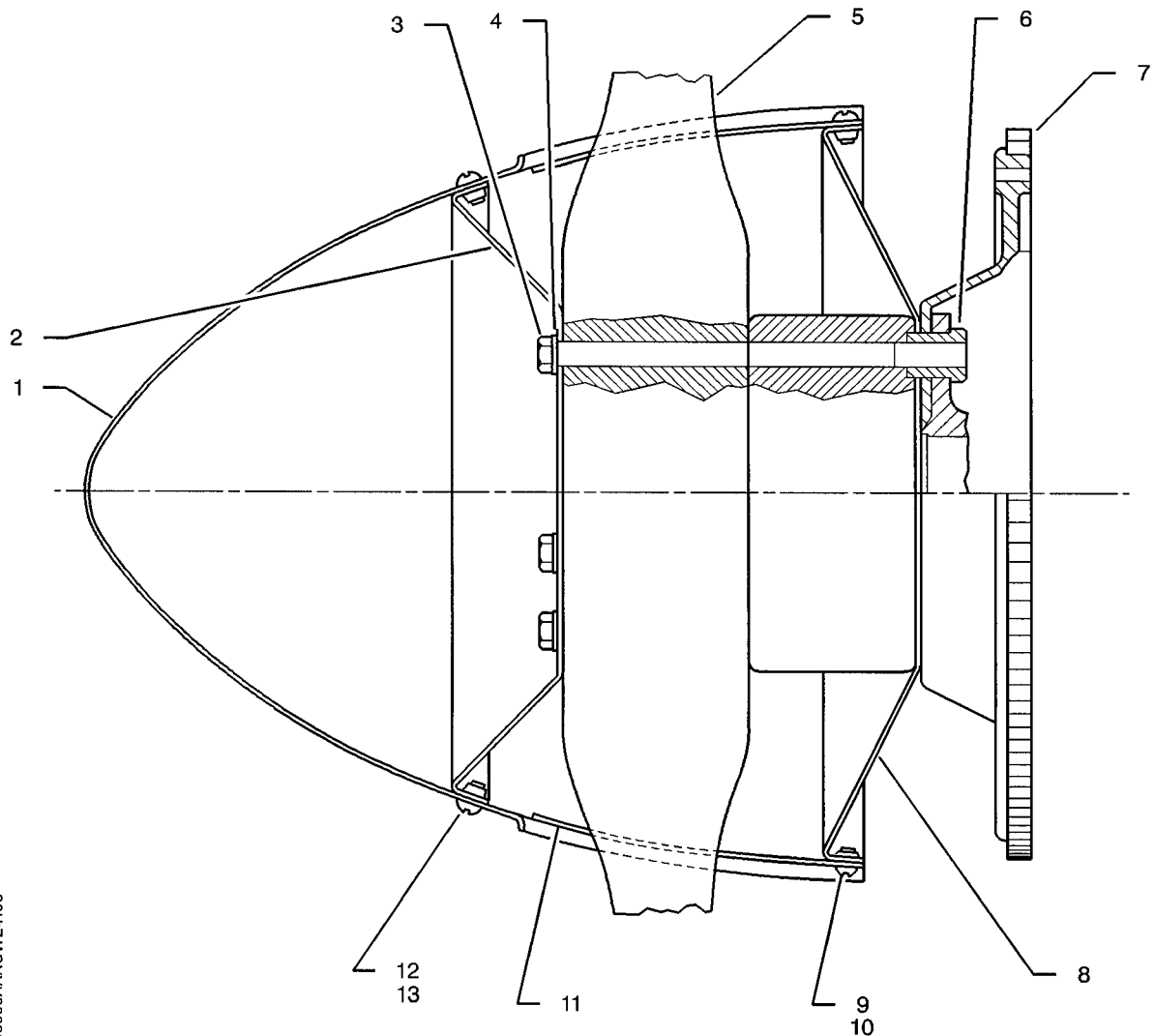
ADAC  
Validity : S / N 1 – 9999 with fixed pitch propeller

61-10-00 (AM)

Page 2  
APR 99



- 1 – Spinner
- 2 – Front bulkhead
- 3 – Bolt
- 4 – Washer
- 5 – Propeller
- 6 – Installation nut
- 7 – Brush ring
- 8 – Rear bulkhead
- 9 – Screw
- 10 – Washer
- 11 – Equipped cover
- 12 – Screw
- 13 – Washer



I4306000AAACWZ4100

Propeller assembly – Description  
Figure 2

ADAC  
Validity : S / N 1 – 9999 with fixed pitch propeller

61-10-00 (AM)

Page 3  
APR 99

PAGE INTENTIONALLY LEFT BLANK

## PROPELLER ASSEMBLY

### SERVICING

#### 1. GENERAL

##### A. Propeller maintenance

Refer, either to Advisory Circular No. 20-37 (at the latest edition) issued by FAA (US DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION), or to fascicle extract P-41-45 (at the latest edition) from G.S.A.C. (Groupement pour la Sécurité de l'Aviation Civile), previously BUREAU VERITAS, Aeronautics Division.

AAAA

Validity : S / N 1 - 9999 with fixed pitch propeller

61-10-00 (BA) Page 301  
JUN 02

PAGE INTENTIONALLY LEFT BLANK

AAAA

Validity : S / N 1 - 9999 with fixed pitch propeller

61-10-00 (BA) Page 302  
JUN 02

## PROPELLER ASSEMBLY

### SERVICING

#### 1. GENERAL

##### A. Propeller maintenance

Refer, either to HARTZELL Service Letter No. 61 (at the latest revision), or to Advisory Circular No. 20-37 (at the latest edition) issued by FAA (US DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION), or to fascicle extract P-41-45 (at the latest edition) from G.S.A.C. (Groupement pour la Sécurité de l'Aviation Civile), previously BUREAU VERITAS, Aeronautics Division.

ABAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

61-10-00 (CA) Page 301  
JUN 02

PAGE INTENTIONALLY LEFT BLANK

ABAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

61-10-00 (CA) Page 302  
JUN 02

## PROPELLER ASSEMBLY

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE PROPELLER (Figure 401)

##### A. Tools and consumable materials

- Blanking caps

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Remove the key from the magneto selector.
- 2) Remove the engine cowlings - refer to 71-10-01.
- 3) Remove screws (4) and (11), washers (3) and (12), equipped covers (9) and spinner (10).
- 4) Cut off lockwire and remove bolts (1), washers (2), front bulkhead (5) and propeller (6).
- 5) Retain rear bulkhead (7).
- 6) Blank off.

#### 2. INSTALLATION OF THE PROPELLER (Figure 401)

##### A. Tools and consumable materials

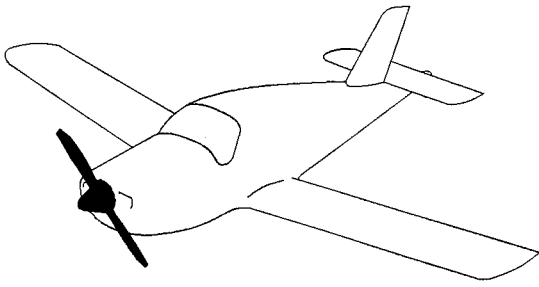
- Torque wrench 0 - 442 lbf.in (0 - 50 N.m)
- Stainless steel lockwire, dia. 0.032 in (0.8 mm)

##### B. Procedure

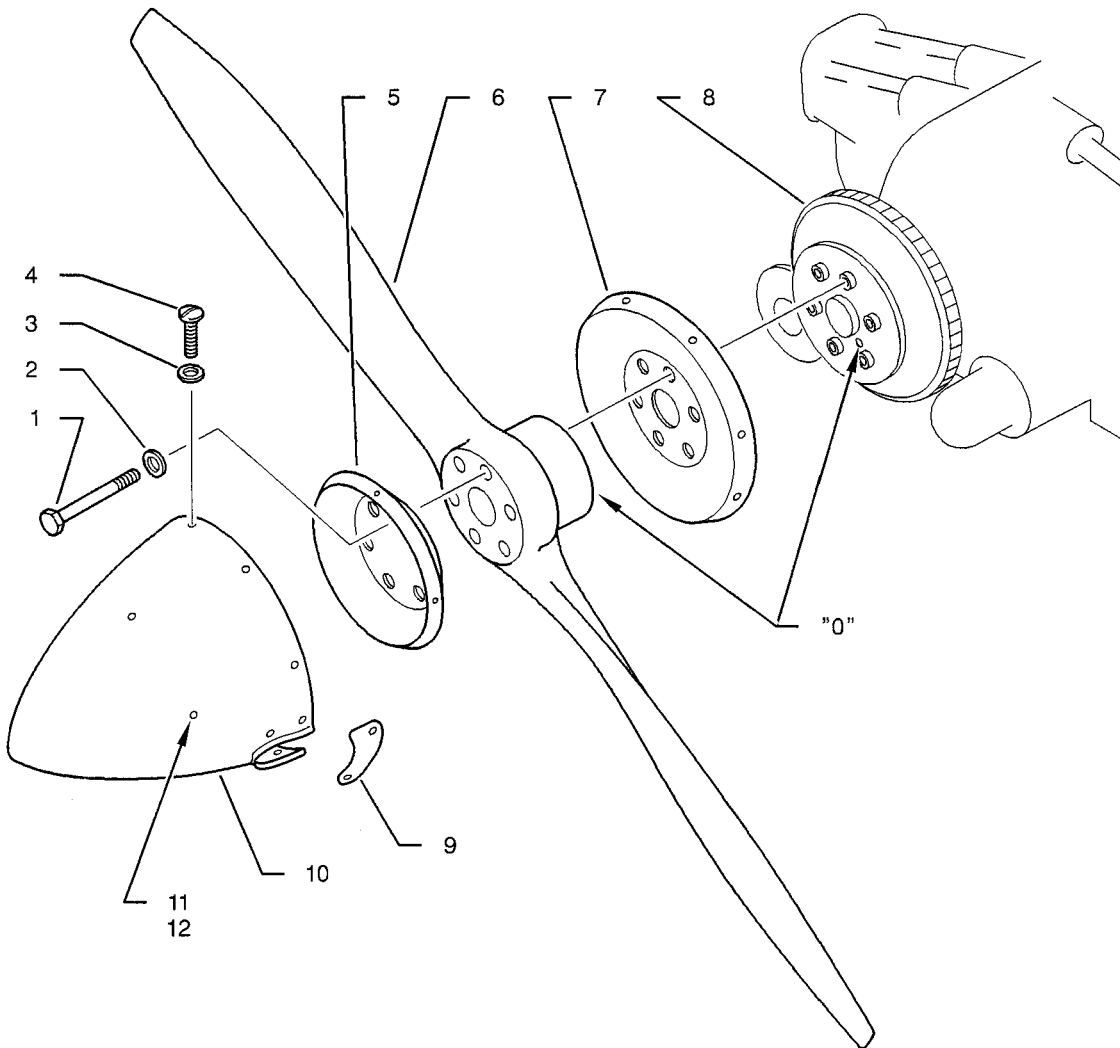
- 1) Check spinner (10), front bulkhead (5) and rear bulkhead (7) for cracks and distortions.
- 2) Check bolts (1) condition for absence of damage or corrosion. Replace them if necessary.
- 3) Remove the blanking caps.
- 4) Position rear bulkhead (7), propeller (6) and front bulkhead (5) and align the "O" of the propeller with the "O" of brush ring (8). Attach them with bolts (1) and washers (2).
- 5) Torque bolts (1) according to "Specific cases" tightening procedure - refer to 20-00-01.
- 6) Lockwire.
- 7) Position and attach spinner (10) and equipped covers (9) with washers (3) and (12), screws (4) and (11).

**NOTE : If spinner (10), inside, and rear bulkhead (7), on its front part, are marked with a red paint line, align these lines during installation.**

- 8) Install the engine cowlings - refer to 71-10-01.
- 9) Perform a test run-up - refer to 05-30-02.
- 10) Perform a test flight - refer to 05-30-00.



- 1 - Bolt
- 2 - Washer
- 3 - Washer
- 4 - Screw
- 5 - Front bulkhead
- 6 - Propeller
- 7 - Rear bulkhead
- 8 - Brush ring
- 9 - Equipped cover
- 10 - Spinner
- 11 - Screw
- 12 - Washer



Propeller - Removal / Installation  
Figure 401

I4611000AAABUZ4101

## PROPELLER ASSEMBLY

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE PROPELLER (Figures 401 and 401A)

##### A. Tools and consumable materials

- Blanking caps

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Remove the key from the magneto selector.
- 2) Remove the engine cowlings - refer to 71-10-01.
- 3) Remove screws (4), washers (3), equipped covers (12) and spinner (13).
- 4) Cut off lockwire, unscrew bolts (8) equipped with nuts (7) and remove propeller (5).
- 5) Discard O-ring (11) and blank off.

##### Pre-Kit OPT10 917000

- 6) Retain engine side bulkhead (9).
- 7) If necessary, cut off lockwire and remove screws (1), washers (2) and cylinder side bulkhead (6).

##### Post-Kit OPT10 917000

- 6) If necessary, remove engine side bulkhead (9).
  - a) Remove and discard nuts (15).
  - b) Remove washers (14), engine side bulkhead (9), washers (16), spacers (17) and bolts (18).

#### 2. INSTALLATION OF THE PROPELLER (Figures 401 and 401A)

##### A. Tools and consumable materials

- Torque wrench 0 - 885 lbf.in (0 - 100 N.m)
- Red paint
- Stainless steel lockwire, dia. 0.032 in (0.8 mm)

##### B. Procedure

- 1) Check spinner (13), cylinder side bulkhead (6) or (19) and engine side bulkhead (9) for cracks and distortions.
- 2) Check bolts (8) condition for absence of damage or corrosion. Replace them if necessary.
- 3) Remove the blanking caps and install a new O-ring (11).

##### Pre-Kit OPT10 917000

- 4) If removed, install cylinder side bulkhead (6) with screws (1) and washers (2). Lockwire.
- 5) Position engine side bulkhead (9).

AFAF

Validity : S / N 1 - 764, 766 - 878 with constant speed propeller

61-10-00 (AM)

Page 401  
SEP 04

- 6) Position the propeller on the engine and align the "0" of the propeller with the "0" of brush ring (10). Attach it with bolts (8) equipped with nuts (7).

Post-Kit OPT10 917000

- 4) If removed, install engine side bulkhead (9).

**NOTE : If the propeller has been replaced, make sure that engine side bulkhead (9) is mounted onto the hub. If not, replace the engine side bulkhead - refer to Illustrated Parts Catalog.**

- a) Install bolts (18), spacers (17), washers (16) and engine side bulkhead (9) on propeller (5).
- b) Install washers (14) and new nuts (15).
- c) Torque - refer to 20-00-01.
- d) Mark nut position with a red paint line.

- 5) Check adhesive tapes (20) for condition on cylinder side bulkhead (19).

- 6) Position propeller (5) on the engine and align the "0" of the propeller with the "0" of brush ring (10). Attach it with bolts (8) equipped with nuts (7).

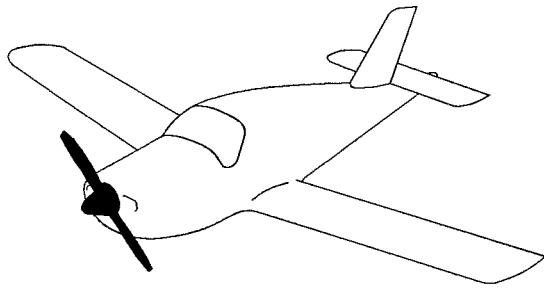
All

- 7) Torque bolts (8) according to "Specific cases" tightening procedure - refer to 20-00-01.
- 8) Lockwire.
- 9) Mark nut position with a red paint line.

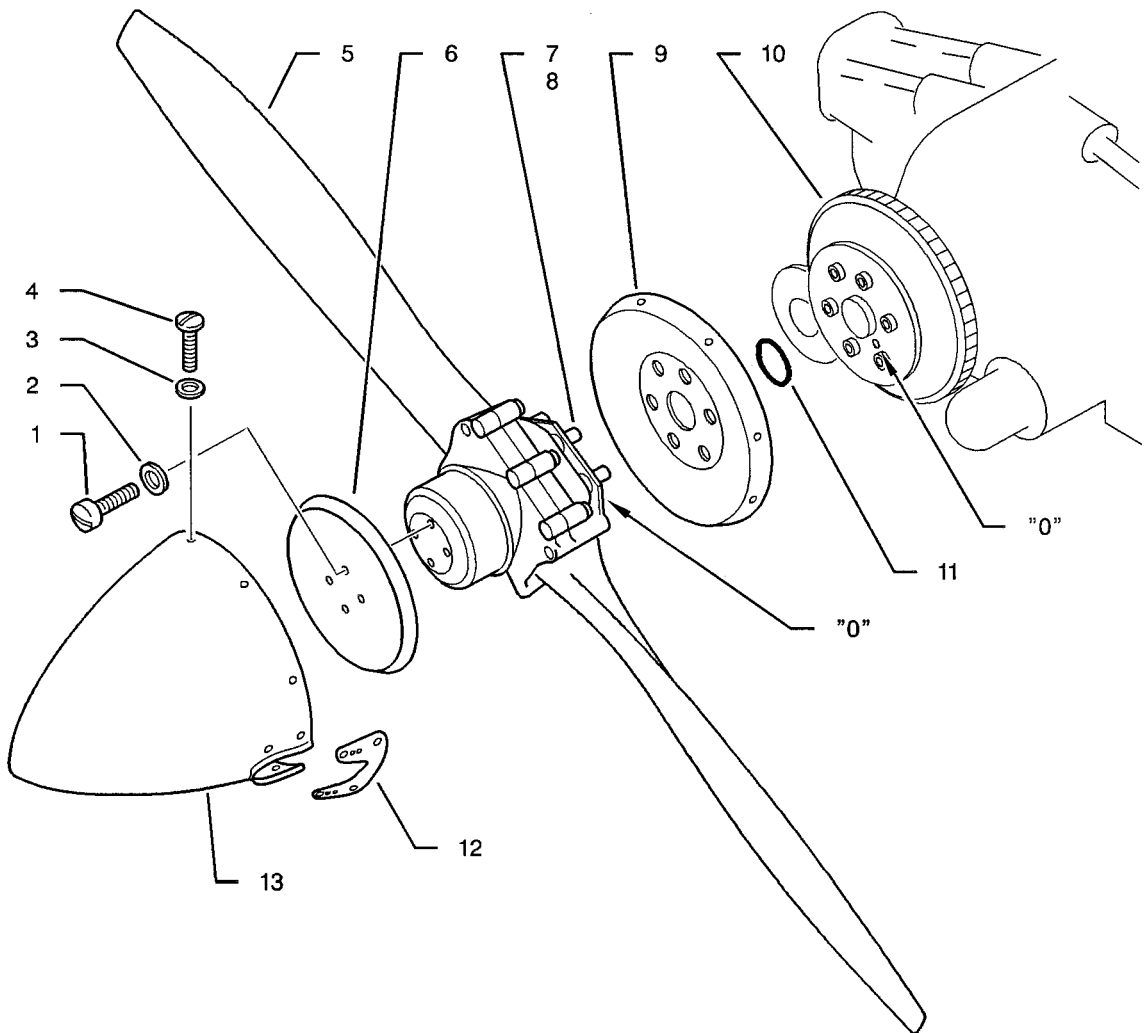
- 10) Install and attach spinner (13) and equipped covers (12) with washers (3) and screws (4).

**NOTE : If spinner (13), inside, and engine side bulkhead (9), on its front part, are marked with a red paint line, align these lines during installation.**

- 11) Install the engine cowlings - refer to 71-10-01.
- 12) Perform a test run-up - refer to 05-30-02.
- 13) After the run-up, check for traces of leaks (oil) around the propeller attachment.
- 14) Perform a test flight - refer to 05-30-00.



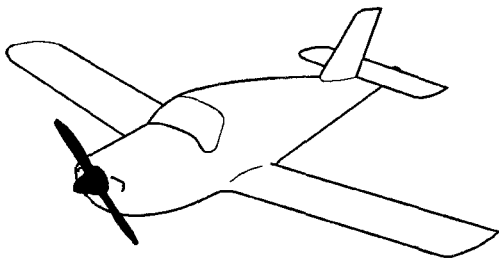
- 1 - Screw
- 2 - Washer
- 3 - Washer
- 4 - Screw
- 5 - Propeller
- 6 - Cylinder side bulkhead
- 7 - Nut
- 8 - Bolt
- 9 - Engine side bulkhead
- 10 - Brush ring
- 11 - O-ring
- 12 - Equipped cover
- 13 - Spinner



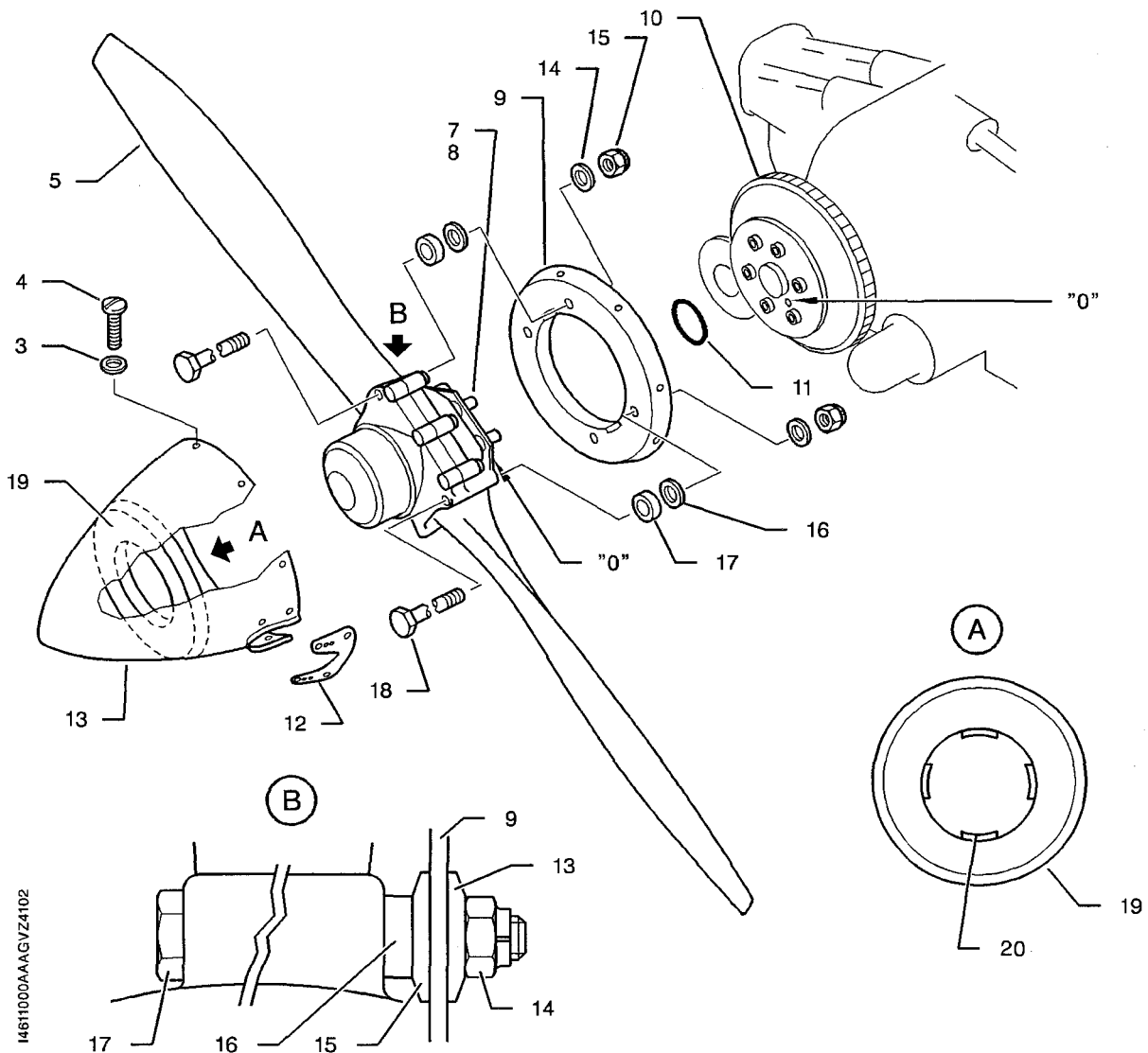
14611000AAADYZ4101

Propeller - Removal / Installation  
Figure 401 - Pre-Kit OPT10 917000

AFAF  
Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller



- |                          |                             |
|--------------------------|-----------------------------|
| 3 - Washer               | 13 - Spinner                |
| 4 - Screw                | 14 - Washer                 |
| 5 - Propeller            | 15 - Nut                    |
| 7 - Nut                  | 16 - Washer                 |
| 8 - Bolt                 | 17 - Spacer                 |
| 9 - Engine side bulkhead | 18 - Bolt                   |
| 10 - Brush ring          | 19 - Cylinder side bulkhead |
| 11 - O-ring              | 20 - Adhesive tape          |
| 12 - Equipped cover      |                             |



14611000AAA GVZ4102

Propeller - Removal / Installation  
Figure 401A - Post-Kit OPT10 917000

AFAF

Validity : S / N 1 - 764, 766 - 878 with constant speed propeller

## PROPELLER ASSEMBLY

### INSPECTION / CHECK

#### 1. INSPECTION / CHECK – PROPELLER

**NOTE** : In case of a propeller impact and / or an engine sudden shutdown, refer to fascicle P-66-10 (at the latest edition) from G.S.A.C. (Groupement pour la Sécurité de l'Aviation Civile), previously BUREAU VERITAS, Aeronautics Division.

##### A. Tools and consumable materials

- Cleaning agent (TB 11-003)
- Penetrant inspection material (TB 05-905C)

**NOTE** : If specific products are not available, it is possible to use a caustic soda solution :

- In a glass or in a clay container, prepare the following solution :

- . 1 volume of caustic soda,
- . 8 volumes of water.

Mix with a wooden spatula.

- Apply a small quantity of this solution on the suspect area.

- Immediately after the inspection has been carried out, remove any trace of diluted caustic soda using the following solution :

- . 1 volume of commercial nitric acid,
- . 5 volumes of water,

- Abundantly rinse with water.

##### B. Propeller check

**WARNING** : IF THE AIRCRAFT IS EQUIPPED WITH A CONNECTOR ON THE FIREWALL, DISCONNECT THE MAGNETO CONNECTOR AND CONNECT IT TO THE MAINTENANCE CONNECTOR.

IF THE AIRCRAFT IS NOT EQUIPPED WITH A CONNECTOR ON THE FIREWALL, DISCONNECT THE SPARK PLUGS.

- 1) Remove the engine cowlings – refer to 71-10-01.
- 2) Detect cracks by :
  - dye penetrant inspection for aluminum parts – refer to 20-00-14,
  - magnetic inspection for steel parts.

- 3) Check vertical alignment of the blades (Figure 601)

Blades alignment is an operation which defines the position of the end of the blades in relation to each other. This alignment only shows the relative position of blades and not their real trajectory.

- a) Remove the key from the magneto selector.
- b) Set a rod against wing leading edge until it comes into contact with blade surface at the end.

**NOTE** : In absence of rod, use a chair.

- c) Mark the position of the first blade.

d) Turn propeller until the opposite blade comes into the position of the first blade and mark the position of the second blade.

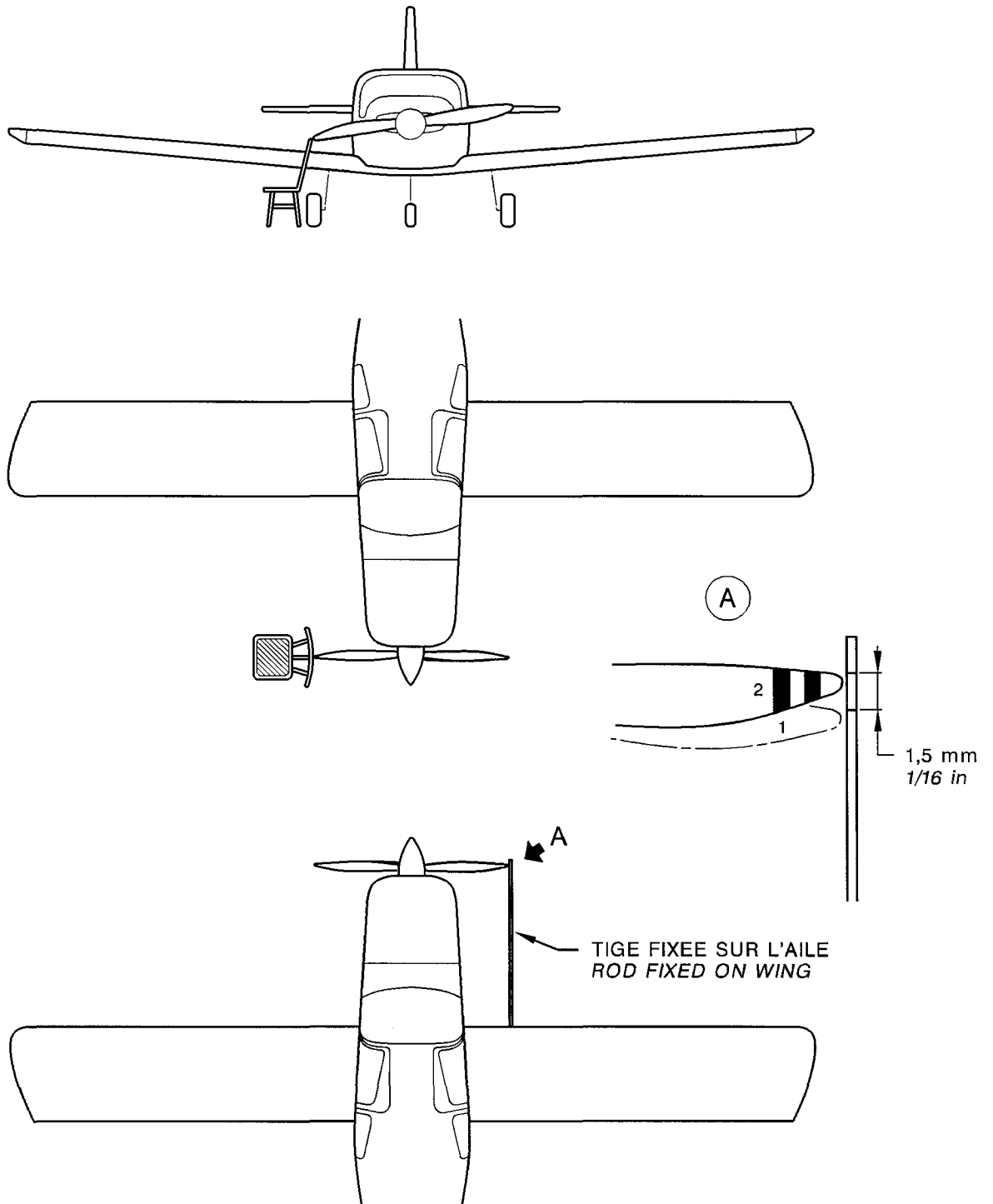
e) The gap between the two marks should be no more than 1/16 in (1.5 mm).

#### 4) Propeller vibrations

When there are vibrations in a power unit, it is sometimes difficult to specify if they originate from the engine or from the propeller. In most cases, it is possible to determine the vibration origin by observing the hub, with removed spinner, while engine runs between 1200 and 1500 RPM and by establishing whether or not the propeller hub turns in a plane which is perfectly horizontal.

If propeller hub oscillates following a small orbit, vibration normally originates from propeller. If propeller hub does not follow such a trajectory, it is reasonable to think that vibration originates from engine.

When an excessive vibration of power plant is due to a propeller vibration, the defect will require to return the propeller to the manufacturer or even to discard it.



I4061000AAA BVZ4200

Vertical alignment of blades – Inspection / Check  
Figure 601

AAAA  
Validity : S / N 1 – 9999

61-10-00 (BA)

Page 603  
APR 99

PAGE INTENTIONALLY LEFT BLANK

## PROPELLER ASSEMBLY

### REPAIR

#### 1. REPAIR – PROPELLER

##### A. Tools and consumable materials

None

##### B. Repair of the propeller

**CAUTION : NEVER TRY TO REMOVE A DEFECT WITH A HAMMER.**

Refer either to "Metal Propeller Repair Manual SENSENICH", or to fascicle extract P-41-45 (at the latest edition) from G.S.A.C. (Groupement pour la Sécurité de l'Aviation Civile), previously BUREAU VERITAS, Aeronautics Division.

PAGE INTENTIONALLY LEFT BLANK

**PROPELLER ASSEMBLY**

**REPAIR**

**1. REPAIR – PROPELLER**

**A. Tools and consumable materials**

None

**B. Repair of the propeller**

**CAUTION : NEVER TRY TO REMOVE A DEFECT WITH A HAMMER.**

Refer to "Propeller Owner's Manual & Log Book HARTZELL" delivered with the aircraft.

PAGE INTENTIONALLY LEFT BLANK

AAAC

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-10-00 (CA)

Page 802  
APR 99

## CONTROLS

### DESCRIPTION AND OPERATION

#### 1. GENERAL

The control is the part of the system which controls propeller blade pitch.

The main elements of this sub-system are :

- propeller governor,
- propeller governor control.

#### 2. LOCATION (Figures 1 and 2)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Propeller governor	1	100	121 / 131	61-20-01
Propeller governor control	1	100 / 200	121 / 131 / 235L / 235R / 252	61-20-02

#### 3. DESCRIPTION

##### A. Propeller governor (Figure 3)

The propeller governor is the part of the sub-system which controls propeller pitch variation by regulating oil pressure supplied by the engine acting on the propeller hub piston. This variation determines the propeller rotation speed and, consequently the engine RPM to be maintained. The function of the propeller governor is to sense engine RPM and respond to any RPM changes by controlling oil flow. The propeller governor, which is driven by the camshaft through gears, is basically an oil pump, which boots engine oil pressure going towards the propeller.

The propeller governor, through a pilot valve, directs oil pressure to the propeller to increase or reduce blade angle.

It is equipped with a low pitch adjusting screw.

The governor is located at the R.H. lower part of the engine rear table.

##### B. Propeller governor control

The propeller control is actuated using a handle located to the right of the throttle control on the central pedestal of the cockpit. It transmits movement to the propeller governor using a flexible sheathed cable, a control rod and a lever hinged on the propeller governor.

The propeller control has two main positions :

- high pitch (control full rearward),
- low pitch (control full forward).

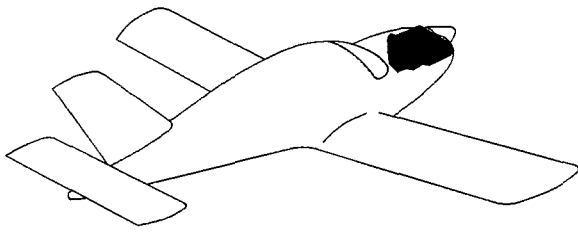
The maneuvering range between these two positions allows to adjust the propeller rotation speed and consequently, the engine RPM to be maintained.

ACAB

Validity : S / N 1 - 764, 766 - 878 with constant speed propeller

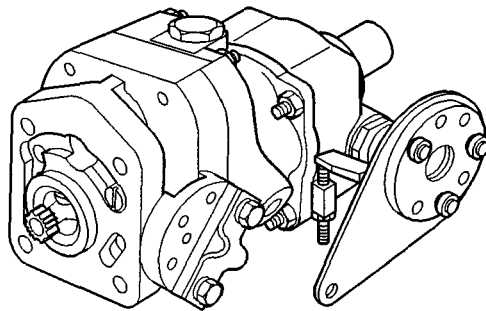
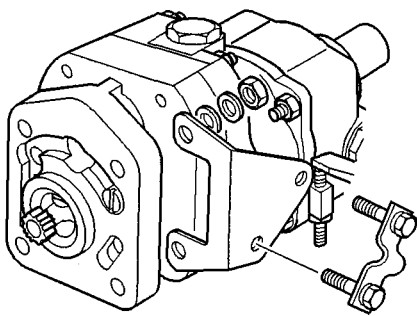
61-20-00 (EA)

Page 1  
APR 99

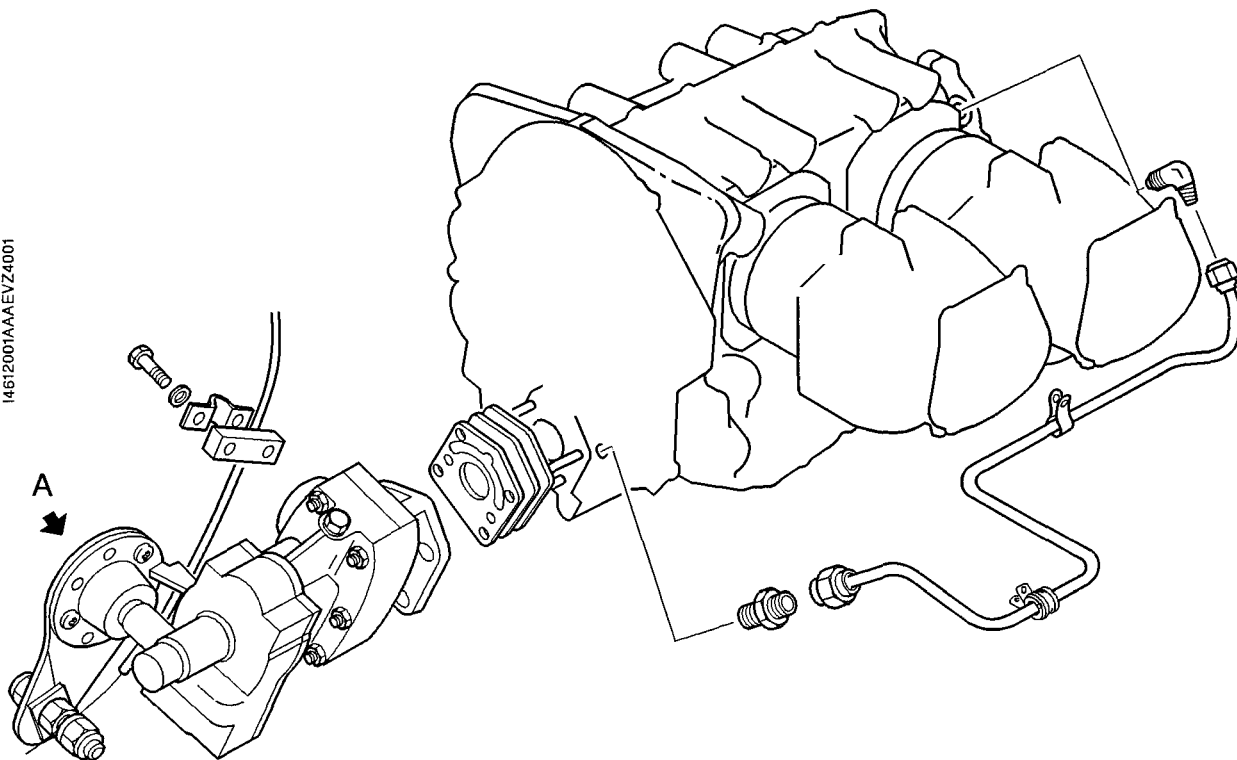


A

AV - FWD



14612001AAA REVZ4001



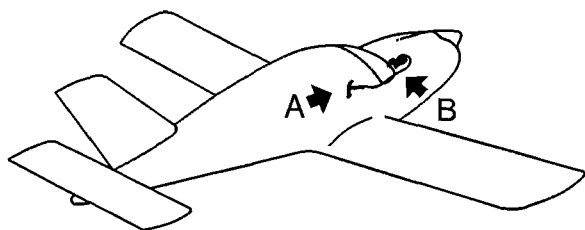
Propeller governor – Location of components  
Figure 1

ACAB

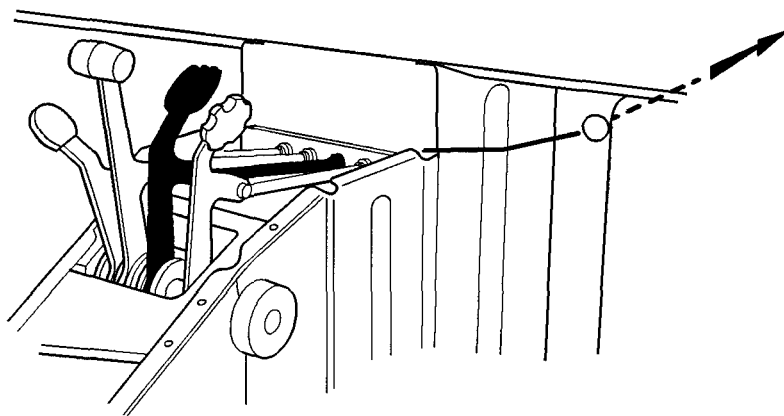
Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-20-00 (EA)

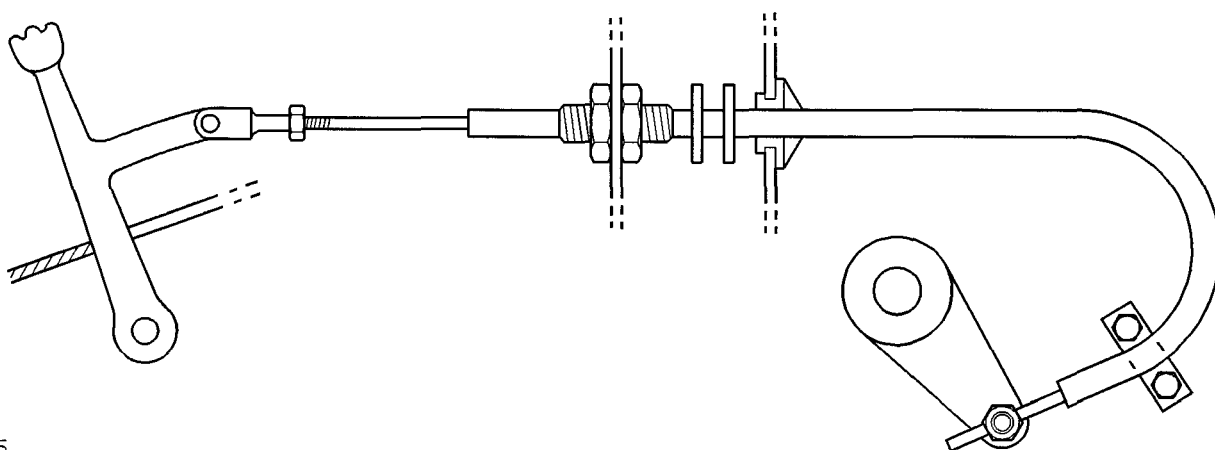
Page 2  
APR 99



(A)



(B)



Propeller governor control – Location of components  
Figure 2

14612000AAAADVZ4001

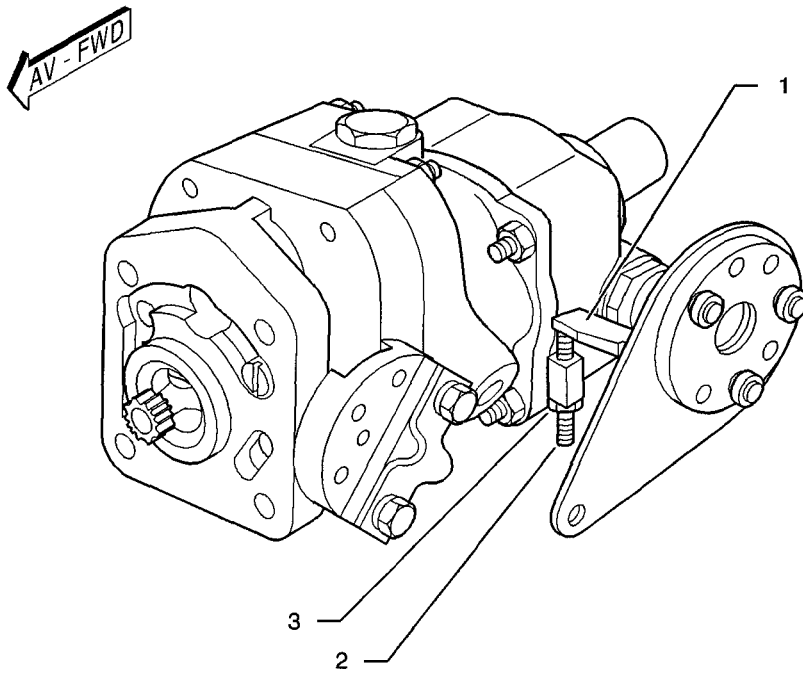
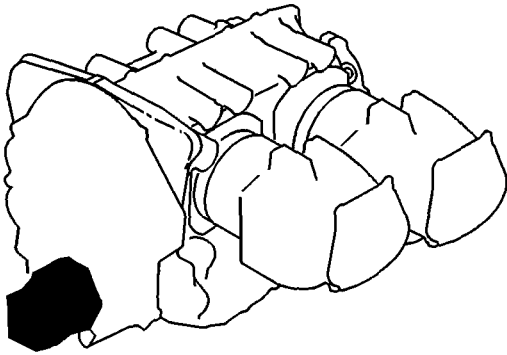
ACAB

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-20-00 (EA)

Page 3  
APR 99

- 1 – Low pitch stop
- 2 – Adjusting screw
- 3 – Jam nut



14612001AAAENVZ4201

Propeller governor – Description  
Figure 3

ACAB

Validity : S / N 1 – 764, 766 – 878 with constant  
speed propeller

61-20-00 (EA)

Page 4  
APR 99

## PROPELLER GOVERNOR

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE PROPELLER GOVERNOR (Figure 401)

##### A. Tools and consumable materials

- Blanking caps

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Remove the engine cowlings - refer to 71-10-01.
- 2) Disconnect governor (6) control (18) - refer to 61-20-02.
- 3) While holding governor (6), remove nuts (5), lockwashers (4), washers (3) and bracket (9) if installed. Discard lockwashers (4).
- 4) Remove governor (6), making sure that spacer (12) and gasket (13) remain on the governor. Discard gasket (11) and blank off.
- 5) If governor (6) has to be replaced, perform the following operations :
  - a) Remove and discard nut (26), remove washers (25) and (24).
  - b) Remove cable grip (17) equipped with washer (22) and nut (15) and insulating plate (23).
  - c) If shim (10) and sheath grip (21) are attached to governor (6) body, remove bolts (20), washers (19), sheath grip (21) and shim (10).

#### 2. INSTALLATION OF THE PROPELLER GOVERNOR (Figure 401)

##### A. Tools and consumable materials

- Cleaning agent (TB 11-002)
- Oil (TB 03-901) or (TB 03-902) or (TB 03-903)
- Red paint

AAAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

**61-20-01** (BA) Page 401  
JUN 02

**B. Procedure**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) If governor (6) is replaced, perform the following operations :
  - a) Drain preservative oil and clean, with cleaning agent (TB 11-002), the excess of oil which plugs the ports of the slide valve of governor (6).
  - b) Rinse and lubricate the governor with oil (TB 03-901) or (TB 03-902) or (TB 03-903).
  - c) Counterdrill cable grip attaching hole (8) to a diameter of 0.256 in (6.5 mm).
  - d) Make sure that lever (1) is on the left side with respect to the engine ; otherwise, rotate the governor rear section (14) by 180° after removing nuts (7). Position lever (1) correctly then lock nuts (7).
  - e) Install insulating plate (23) on lever (1), cable grip (17), washers (24) and (25) and new nut (26). Slightly tighten so that cable grip (17) rotates.
  - f) If control (18) attachment operates directly on governor (6) body, install bolts (20), washers (19), sheath grip (21) and shim (10) ; do not tighten.
- 2) Check that the dimension is 4.6 in or 5.1 in (118 mm or 130 mm) between lever (1) centerline and sheath grip (21) edge. To move the lever, slightly unscrew screws (2), then lock them again.

**CAUTION : IF SPACER (12) AND GASKET (13) ARE REMOVED WITH GOVERNOR (6), DO NOT FORGET TO REINSTALL SPACER (12), EQUIPPED WITH A NEW GASKET (13) WHEN GOVERNOR (6) IS INSTALLED.**

- 3) Remove the blanking cap and install the new gasket (11), curved side towards the governor.
- 4) Position governor (6) and, if necessary, bracket (9). Attach with nuts (5), new lockwashers (4) and washers (3). Mark with a red paint line.
- 5) Connect control (18) to governor (6) - refer to 61-20-02.
- 6) Adjust governor (6) - refer to Page 501.
- 7) Install the engine cowlings - refer to 71-10-01.
- 8) Perform a test run-up - refer to 05-30-02. Perform a propeller regulation test.

- 1 - Lever
- 2 - Screw
- 3 - Washer
- 4 - Lockwasher
- 5 - Nut
- 6 - Governor
- 7 - Nut
- 8 - Cable grip attaching hole
- 9 - Bracket
- 10 - Shim
- 11 - Gasket
- 12 - Spacer
- 13 - Gasket
- 14 - Governor rear section
- 15 - Nut
- 16 - Cable
- 17 - Cable grip
- 18 - Control
- 19 - Washer
- 20 - Bolt
- 21 - Sheath grip
- 22 - Washer
- 23 - Insulating plate
- 24 - Washer
- 25 - Washer
- 26 - Nut
- 27 - Adjusting bolt

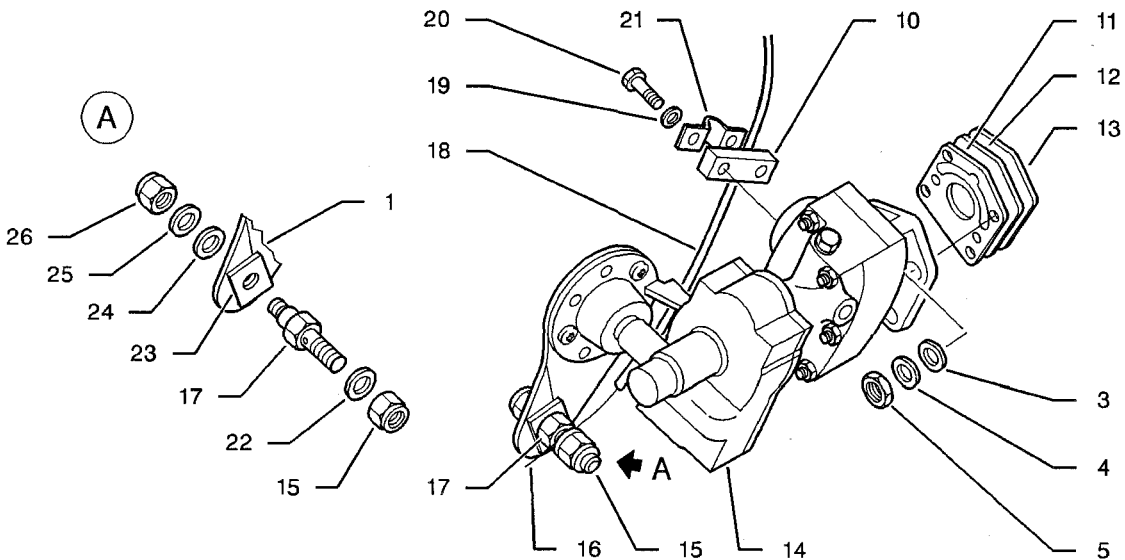
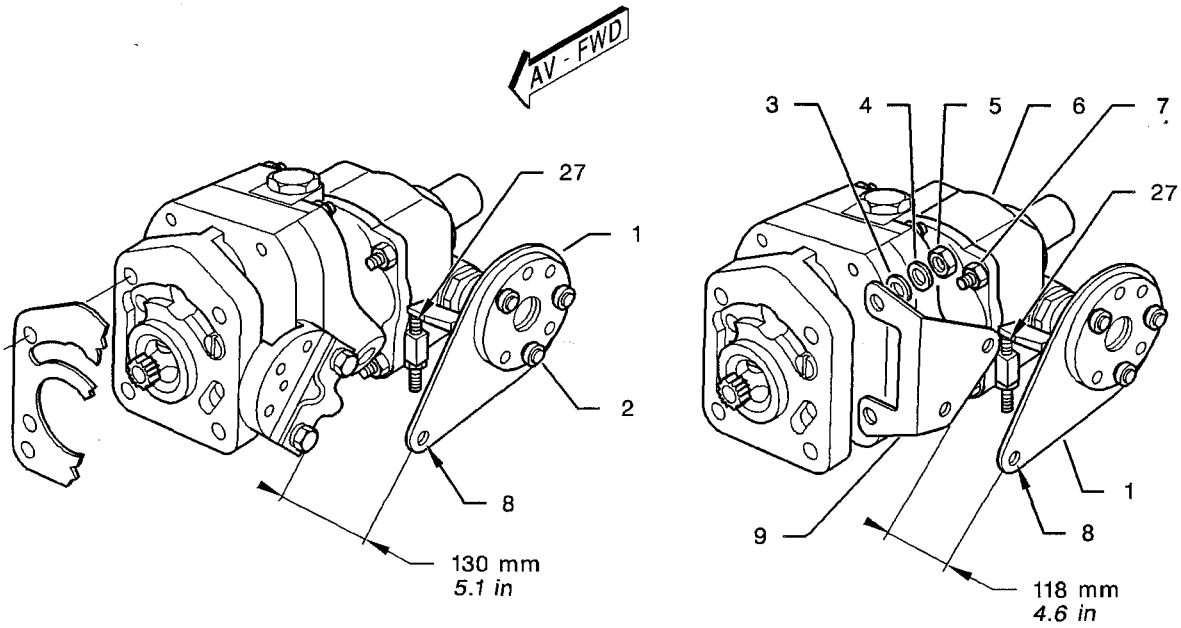
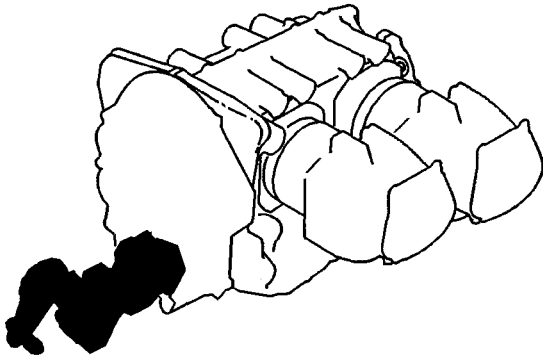
Propeller governor - Removal / Installation  
Key to Figure 401

AAAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

61-20-01 (BA)

Page 403  
JUN 02



Propeller governor - Removal / Installation  
Figure 401

14612001AAAEVZ4101

AAAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

61-20-01 (BA)

Page 404  
JUN 02

## PROPELLER GOVERNOR

### ADJUSTMENT / TEST

#### 1. ADJUSTMENT OF THE PROPELLER GOVERNOR (Figure 501)

##### A. Tools and consumable materials

None

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

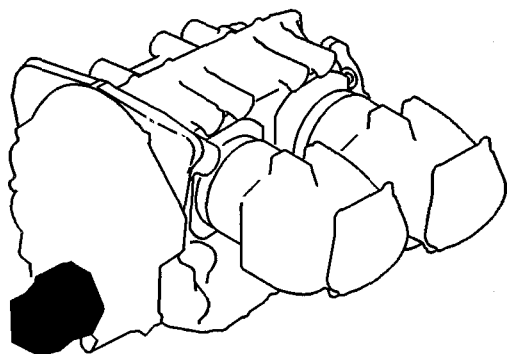
- 1) Remove the engine cowlings - refer to 71-10-01.
  - 2) Release the governor stop by unscrewing adjusting screw (2).
  - 3) Make sure that control lever (3) stops when positioning propeller lever to full low pitch.
  - 4) Install the engine cowlings.
  - 5) Run the engine at 1200 RPM for about 5 minutes.
  - 6) Increase engine RPM to full manifold pressure with the throttle lever.
  - 7) Check that the engine RPM is 2700 RPM (+ 50 ; - 0) on tachometer. If not, adjust the low pitch stop screw on the propeller hub - refer to 61-10-00.
  - 8) When this parameter is correct, carefully pull the propeller lever so that the tachometer displays 2700 RPM (+ 0 ; - 20).
  - 9) Keep the propeller lever in this position and shut down the engine ; remove the engine cowlings.
- NOTE : At engine shutdown, it is necessary to maintain the propeller lever in its position ; then, lock the controls with the blocking knob.**
- 10) Put adjusting screw (2) in contact with control lever (3) stop.
  - 11) Start the engine and check on tachometer that the engine rating is 2700 RPM (+ 0 ; - 20) ; if necessary, repeat operations 2) and 8) to 11).
  - 12) Once the rating of 2700 RPM (+ 0 ; - 20) is reached, lock jam nut (1) of adjusting screw (2).
  - 13) Make sure that the propeller lever is set to full low pitch stop ; if necessary, adjust the control - refer to 61-20-02.
  - 14) Check that adjusting screw (2) actuates before [about 0.2 in (5 mm)] the propeller lever stop.
  - 15) With the engine running at 2000 RPM (propeller set to full low pitch), change twice to high pitch ; the RPM drop should be 500 RPM.
  - 16) Install the engine cowlings - refer to 71-10-01.

**NOTE : All the propeller governors must be overhauled at T.B.O. prescribed for the propeller to which they are associated.**

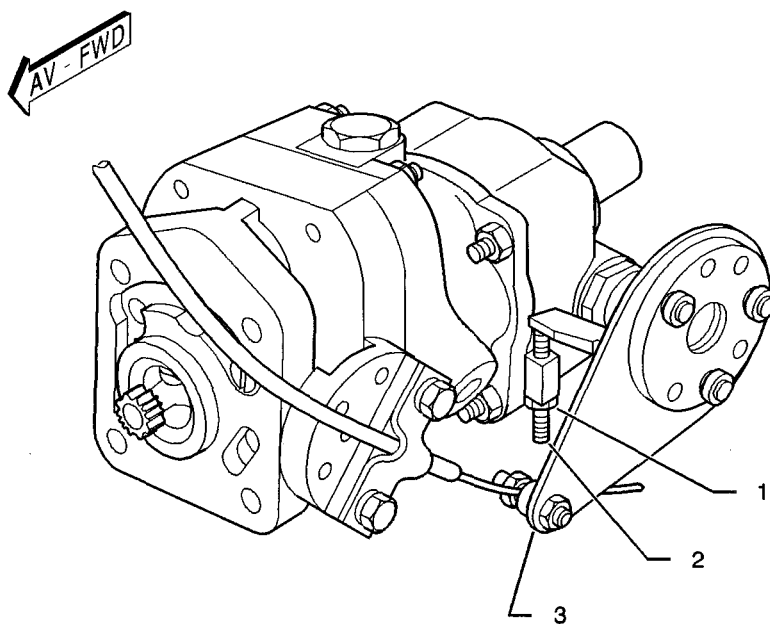
AAAB

Validity : S / N 1 - 764, 766 - 878 with constant speed propeller

61-20-01 (BA) Page 501  
JUN 02



- 1 - Jam nut
- 2 - Adjusting screw
- 3 - Control lever



14612001AAAEEVZ14001

Propeller governor - Adjustment / Test  
Figure 501

AAAB

Validity : S / N 1 - 764, 766 - 878 with constant  
speed propeller

## PROPELLER GOVERNOR CONTROL

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE PROPELLER GOVERNOR CONTROL (Figure 401)

##### A. Tools and consumable materials

- None

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Remove the engine cowlings - refer to 71-10-01.
- 2) Remove the control pedestal - refer to 25-14-00.
- 3) Remove and discard cotter pin (25), retain washer (24) and clevis pin (23). Then disengage fork end (22) from control lever (26).
- 4) Remove fork end (22) and jam nut (21).
- 5) Remove nut (19) and discard lockwasher (18).
- 6) Loosen nut (4) and bolts (2), then disengage control (20) from cable grip (3) and sheath grip (1).

**NOTE : If sheath grip (1) is attached onto propeller governor body, cut off and discard lockwire of bolts (2).**

- 7) Remove inspection door 235R to gain access to clamp (14) - refer to 06-30-00.
- 8) Remove and discard nut (11), remove washer (12), bolt (13) and clamp (14).
- 9) Remove inspection door 211L to gain access to clamp (8) - refer to 06-30-00.
- 10) Remove and discard blind rivet (10) - refer to 51-40-02, retain washer (9) and clamp (8).

**NOTE : Set control wheels to nose down attitude.**

- 11) Remove sealant (6) from grommet (7).
- 12) Mark control (20) routing then cut off and discard tie-wrap that attaches it onto the landing gear mount.
- 13) Disengage control (20) from pedestal bulkhead (17) to remove nut (15) and lockwasher (16). Discard lockwasher (16).
- 14) Remove control (20).

AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

61-20-02 (BA) Page 401  
JUN 02

## 2. INSTALLATION OF THE PROPELLER GOVERNOR CONTROL (Figure 401)

### A. Tools and consumable materials

- Sealant (TB 09-904)
- Oil (TB 03-900)
- Stainless steel lockwire, dia. 0.032 in (0.8 mm)
- Grease (TB 04-004A)
- Tie-wrap
- Protection tape (TB 05-938)

### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Check control (20), grommet (7) and clamps (8) and (14) for condition. Replace them if necessary.
- 2) Lubricate clevis pin (23) with grease (TB 04-004A).
- 3) Discard nut (4) and install a new nut. Do not tighten it.
- 4) Engage control (20) into grommet (7) up to pedestal bulkhead (17). Install nut (15) and a new lockwasher (16) on control (20).
- 5) Engage control (20) into pedestal bulkhead (17), install a new lockwasher (18) and nut (19) on control (20), then tighten nuts (15) and (19).
- 6) Fully screw jam nut (21) on control (20).
- 7) Screw fork end (22) on control (20) until the control threaded rod is flush with the inside of the fork end - refer to Detail C.
- 8) Tighten jam nut (21).
- 9) Attach fork end (22) onto control lever (26) with clevis pin (23), washer (24) and a new cotter pin (25).
- 10) Lubricate control (20) - refer to 12-21-02.
- 11) Install the control pedestal - refer to 25-14-00.
- 12) Route control (20) as marked during removal.
- 13) Engage control (20) into sheath grip (1) and cable grip (3).
- 14) Set throttle and mixture control levers to front stop.
- 15) Set control lever (26) to front stop, slightly pull it backwards and align it with throttle and mixture control levers.

AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

61-20-02 (BA) Page 402  
JUN 02

16) Set lever (5) to full low pitch stop.

17) Tighten bolts (2) to secure the sheath.

**NOTE : If sheath grip (1) is attached to propeller governor body, cut off and discard lockwire of bolts (2).**

18) Tighten nut (4) to secure the cable.

**CAUTION : LEVER (5) MUST REACH MECHANICAL STOP ON THE PROPELLER GOVERNOR BEFORE CONTROL LEVER (26) REACHES MECHANICAL STOP ON THE CONTROL PEDESTAL.**

19) Operate control lever (26) twice or three times and make sure that lever (5) is correctly controlled, that it reaches mechanical stop on the propeller governor before control lever (26) reaches mechanical stop on the control pedestal and that all the control levers are aligned in front and rear stops.

**NOTE : If necessary, actuate on nuts (15) and (19) and/or screw or unscrew fork end (22) by one turn and a half max. to adjust control lever (26) position.**

20) Install clamp (8) with washer (9) and a new blind rivet (10) – refer to 51-40-02.

21) Install clamp (14) with bolt (13), washer (12) and a new nut (11).

22) Install a new tie-wrap to attach control (20) onto landing gear mount.

**NOTE : If necessary, put protection tape (TB 05-938) on landing gear mount before installing the tie-wrap.**

23) Apply sealant (TB 09-904) to grommet (7) to seal the passage of control sheaths in the firewall.

24) Lubricate control (20) – refer to 12-21-01.

25) Make sure all the tools and materials are removed and the work area is clean and free from debris.

26) Install inspection doors 211L and 235R.

27) Install the engine cowlings – refer to 71-10-01.

28) Perform a test run-up – refer to 05-30-02. Perform a propeller regulation test and adjust the governor if necessary – refer to 61-20-01.

AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

61-20-02 (BA) Page 403  
JUN 02

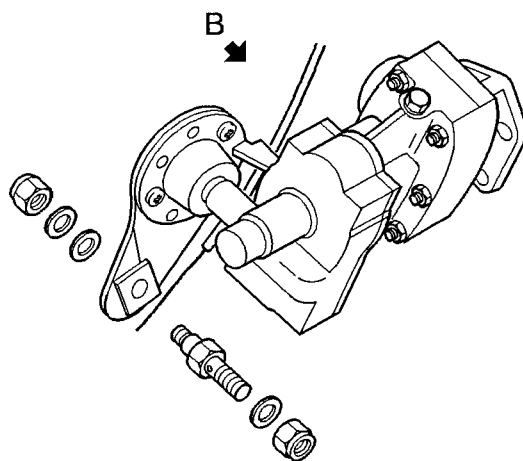
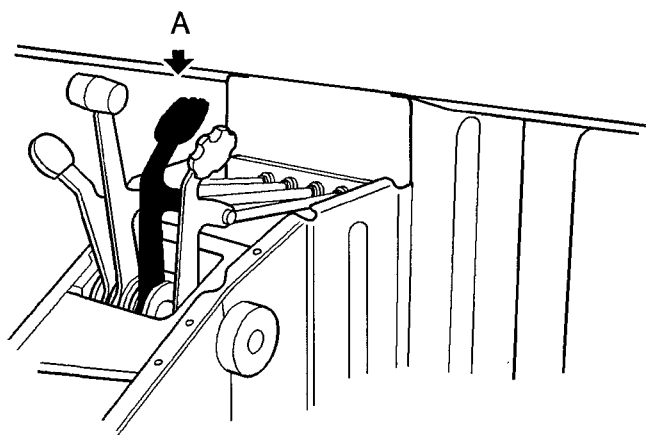
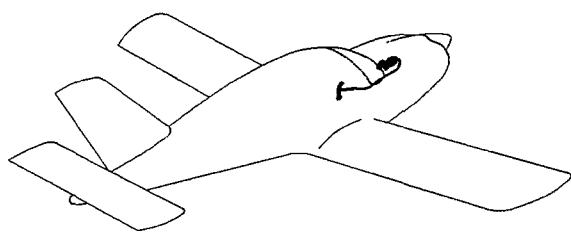
- 1 - Sheath grip
- 2 - Bolt
- 3 - Cable grip
- 4 - Nut
- 5 - Lever
- 6 - Sealant
- 7 - Grommet
- 8 - Clamp
- 9 - Washer
- 10 - Blind rivet
- 11 - Nut
- 12 - Washer
- 13 - Bolt
- 14 - Clamp
- 15 - Nut
- 16 - Lockwasher
- 17 - Pedestal bulkhead
- 18 - Lockwasher
- 19 - Nut
- 20 - Control
- 21 - Jam nut
- 22 - Fork end
- 23 - Clevis pin
- 24 - Washer
- 25 - Cotter pin
- 26 - Control lever

Propeller governor control – Removal / Installation  
Key to Figure 401

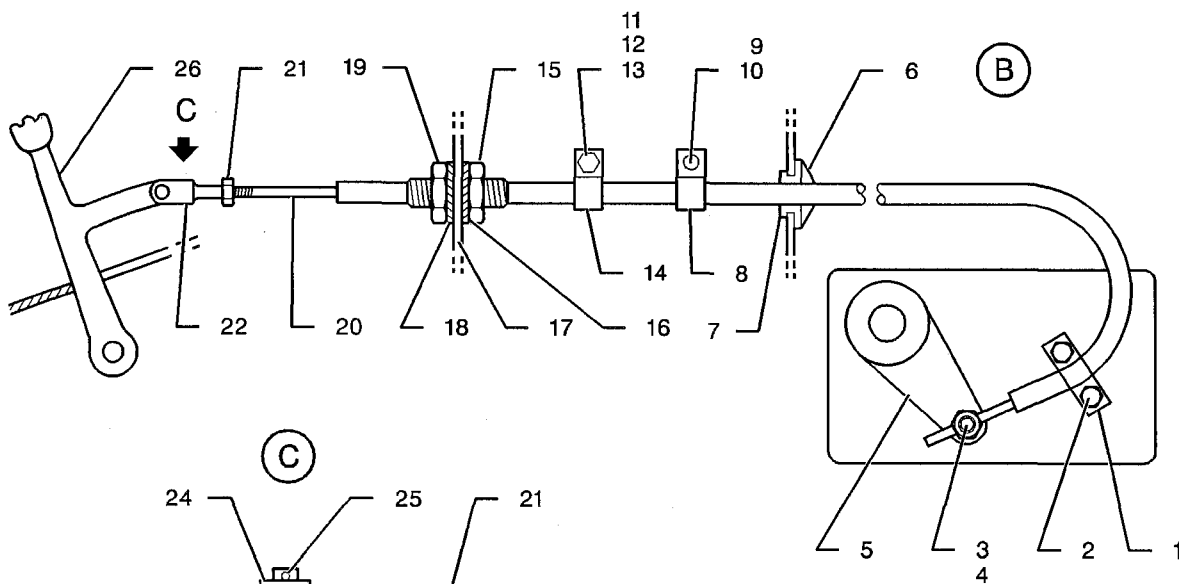
AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

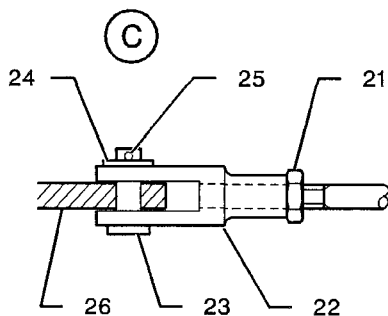
61-20-02 (BA) Page 404  
JUN 02



(A)



(B)



(C)

14612001AAA4FWZ24200

Propeller governor control – Removal / Installation  
Figure 401

AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

PAGE INTENTIONALLY LEFT BLANK

AAAB

Validity : S / N 1 - 764, 766 - 878 with  
constant speed propeller

61-20-02 (BA) Page 406  
JUN 02