NEW ZEALAND CIVIL AIRWORTHINESS REQUIREMENTS
PART III

SECTION **LEAFLET** A.6-1
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PROPELLERS AND CONTROLLING UNITS: OVERHAUL PERIODS AND MAINTENANCE

1. GENERAL

1.1 ALL PROPELLERS INSTALLED OR INTENDED FOR INSTALLATION ON NEW ZEALAND AIRCRAFT SHALL BE MAINTAINED AND OVERHAULED IN CONFORMITY WITH THE REQUIREMENTS OF THIS LEAFLET UNLESS THE DIRECTOR HAS NOTIFIED OR APPROVED OTHERWISE.

1.2 WHEN AN ENGINE IS CHANGED WITHIN THE PERMISSIBLE PROPELLER OVERHAUL PERIOD, THE PROPELLER MAY BE REINSTALLED PROVIDED THAT:

1.2.1 VISUAL INSPECTION REVEALS NO DEFECT OR CAUSE FOR OVERHAUL.

1.2.2 THE PROCEDURES CONTAINED IN PARAGRAPH 4 ARE COMPLIED WITH WHERE APPROPRIATE.

1.3 ALL PROPELLER AND CONTROLLING UNIT MAINTENANCE EXCEPT SERVICING SHALL BE CARRIED OUT IN APPROVED WORKSHOPS, AND ALL MAINTENANCE SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE REQUIREMENTS OF THE DIRECTOR.

1.4 A LOG BOOK SHALL BE MAINTAINED FOR ALL ADJUSTABLE PITCH AND VARIABLE PITCH PROPELLERS.

1.5 THE LOG BOOK SHALL AT ALL TIMES ACCOMPANY THE PROPELLER WHEN IT IS DESPATCHED TO AN APPROVED ORGANISATION FOR MAINTENANCE.

1.6 A PROPELLER CONTROLLING UNIT SHALL BE CONSIDERED PART OF THE ENGINE FOR THE PURPOSE OF DETERMINING ITS OVERHAUL PERIOD.

1.6.1 THE PROPELLER CONTROLLING UNIT SHALL BE OVERHAULED AT THE SAME TIME AS THE ENGINE, UNLESS CONTRARY TO THE MANUFACTURER'S PUBLISHED INSTRUCTIONS OR THE DIRECTOR NOTIFIES OR APPROVES OTHERWISE.

2. MINOR REPAIRS

FOR THE PURPOSE OF THIS LEAFLET THE MINOR REPAIRS PERMITTED DURING SERVICING OF PROPELLERS ARE DEEMED TO BE REPAIRS WHICH CAN BE PERFORMED BY MEANS OF ELEMENTARY OPERATIONS IN ACCORDANCE WITH ACCEPTED PRACTICES AND WHICH DO NOT MATERIALLY AFFECT THE STRENGTH, WEIGHT, BALANCE OR PERFORMANCE OF THE PROPELLER.

REPAIRS WHICH MAY BE CLASSIFIED AS MINOR ARE LIMITED TO THE FOLLOWING:

2.1 FOR ALUMINIUM ALLOY PROPELLERS AND BLADES: THE REPAIRING OF DENTS, CUTS, SCRATCHES, SCARS, NICKS OR LEADING EDGE PITTING PROVIDED:

2.1.1 THE PERMISSIBLE REDUCTIONS IN BLADE WIDTH AND THICKNESS ARE NOT EXCEEDED, AND

2.1.2 THE MANUFACTURER PERMITS LOCAL REMOVAL OF METAL AND BLENDING OUT OF THE DAMAGE WITHOUT REWORK OF THE BLADE PLAN FORM OR CORRESPONDING REMOVAL OF METAL FROM THE OTHER BLADE OR BLADES OR THE SHORTENING OF THE BLADES.

2.2 FOR WOODEN PROPELLERS AND BLADES: THE REPAIRING OF DENTS, CUTS, GOARS, SCRATCHES, NICKS AND SMALL CRACKS PARALLEL TO THE GRAIN OF THE WOOD PROVIDED SUCH WORK DOES NOT INVOLVE INLAY WORK, REPAIR OR REPLACEMENT OF METAL TIP AND LEADING EDGE STRIP, REPLACEMENT OF PART OF THE PLASTIC OR FABRIC COVERING.

2.3 FOR PROPELLERS WITH STEEL BLADES: NO MINOR REPAIRS ARE PERMITTED. ALL REPAIRS OF STEEL BLADES ARE CONSIDERED TO BE OF A MAJOR NATURE DUE TO THE CRITICAL EFFECTS OF SURFACE INJURIES AND THEIR REPAIR ON THE FATIGUE LIFE OF STEEL BLADES.

2.4 STEEL HUBS AND HUB PARTS: NO MINOR REPAIRS ARE PERMITTED UNLESS SPECIFICALLY AUTHORIZED BY THE MANUFACTURER.

3. COMPLETE OVERHAUL

3.1 VARIABLE PITCH PROPELLERS - COMPLETE OVERHAUL SHALL COMPRISE THE FOLLOWING OPERATIONS:

3.1.1 COMPLETE DISMANTLING OF THE PROPELLER AND CLEANING OF ALL PARTS.

3.1.2 INSPECTION, GAUGING, AND TESTING OF ALL PARTS.

3.1.3 ELECTRO-MAGNETIC INSPECTION OF MAJOR STEEL PARTS.

3.1.4 RENEWAL OR REPAIR OF ALL PARTS DAMAGED OR WORN BEYOND PERMISSIBLE LIMITS.

3.1.5 CRACK DETECTION TEST OF WHOLE SURFACE OF ALUMINIUM ALLOY BLADES BY ONE OF THE FOLLOWING METHODS:

3.1.5.1 ANODISING.

3.1.5.2 ETCHING.

3.1.5.3 HOT FLUID AND CHALK.

3.1.5.4 COLD FLUID AND CHALK.

3.1.5.5 FLUORESCENT SOLUTION.

3.1.5.6 PENETRANT DYE.

3.1.5.7 ULTRASONIC.

3.1.5.8 RADIOGRAPHIC .

3.1.6 HEAT TREATMENT, STRAIGHTENING, AND ANODIC TREATMENT OF ALUMINIUM ALLOY BLADES, WHEN NECESSARY.

3.1.7 REASSEMBLY, BALANCING, AND TRACK CHECK.

3.1.8 LOG BOOK ENTRY OF ALL WORK CARRIED OUT.

3.2 CONTROLLING UNITS - COMPLETE OVERHAUL SHALL COMPRISE THE FOLLOWING OPERATIONS:

3.2.1 COMPLETE DISMANTLING OF THE UNIT AND CLEANING OF ALL PARTS.

3.2.2 INSPECTION, GAUGING, AND TESTING OF ALL PARTS.

3.2.3 ELECTRO-MAGNETIC INSPECTION OF MAJOR STEEL PARTS.

3.2.4 RENEWAL OR REPAIR OF ALL PARTS DAMAGED OR WORN BEYOND PERMISSIBLE LIMITS.

3.2.5 REASSEMBLY, SETTING, AND TESTING.

3.2.6 LOG BOOK ENTRY (ENGINE) OF ALL WORK CARRIED OUT.

3.3 FIXED PITCH PROPELLERS: METAL - COMPLETE OVERHAUL SHALL COMPRISE THE FOLLOWING OPERATIONS:

3.3.1 COMPLETE DISMANTLING OF THE PROPELLER AND CLEANING OF ALL PARTS.

3.3.2 DETAILED INSPECTION OF ALL PARTS.

3.3.3 RENEWAL OR REPAIR OF ALL PARTS DAMAGED OR WORN BEYOND PERMISSIBLE LIMITS.

3.3.4 CRACK DETECTION TEST OF COMPLETE BLADE PIECE BY ONE OF THE METHODS SPECIFIED IN PARAGRAPH 3.1.5.

3.3.5 HEAT TREATMENT, STRAIGHTENING, AND ANODIC TREATMENT, WHEN NECESSARY, OF COMPLETE BLADE PIECE.

3.3.6 REASSEMBLY, BALANCING, AND TRACK CHECK.

3.3.7 LOG BOOK ENTRY (AIRCRAFT) OF ALL WORK CARRIED OUT.

NOTE - FAIREY REED METAL PROPELLERS SHALL BE OVERHAULED IN ACCORDANCE WITH FAIREY AVIATION SPECIFICATION NO. F.A.C.1 AND N.Z.C.A.R., PART III, LEAFLET A.6-2.

3.4 FIXED PITCH PROPELLERS: WOOD – COMPLETE OVERHAUL SHALL COMPRISE THE FOLLOWING OPERATIONS:

3.4.1 COMPLETE DISMANTLING OF THE PROPELLER AND CLEANING OF ALL PARTS.

3.4.2 DETAILED INSPECTION OF ALL PARTS, INCLUDING SHEATHING, TIPPING, AND WOOD LAMINATIONS FOR SEPARATION AND CRACKING.

3.4.3 RENEWAL OR REPAIR OF ALL PARTS DAMAGED OR WORN BEYOND PERMISSIBLE LIMITS.

3.4.4 REASSEMBLY, BALANCING, AND TRACK CHECK.

3.4.5 LOG BOOK ENTRY (AIRCRAFT) OF ALL WORK CARRIED OUT.

4. COMPLETE OVERHAUL PERIODS

4.1 ALL PROPELLERS INSTALLED OR INTENDED FOR INSTALLATION ON NEW ZEALAND AIRCRAFT SHALL BE MAINTAINED AND OVERHAULED IN CONFORMITY WITH THE REQUIREMENTS OF THIS LEAFLET UNLESS THE DIRECTOR HAS NOTIFIED OR APPROVED OTHERWISE.

(I) FOR PROPELLERS NOT LISTED BELOW THE MAXIMUM OVERHAUL PERIOD SHALL BE AS RECOMMENDED BY THE MANUFACTURER UNLESS THE DIRECTOR NOTIFIES OR APPROVES OTHERWISE.

(II) WHEN A PROPELLER LISTED BELOW HAS A CALENDAR PERIOD BETWEEN OVERHAULS IMPOSED BY THE MANUFACTURER, THE PROPELLER SHALL BE OVERHAULED AT THE EXPIRY OF THE MANUFACTURER'S CALENDAR PERIOD OR THE HOURLY PERIOD SPECIFIED BELOW, WHICHEVER OCCURS FIRST.

(III) A PROPELLER WHICH HAS BEEN OPERATED ON AERIAL WORK (AGRICULTURAL) AIRCRAFT SHALL BE COMPLETELY OVERHAULED BEFORE IT IS INSTALLED ON AN AIRCRAFT WHICH IS CLASSIFIED IN ITS C. OF A. BELONGING TO ANY OF THE AIR TRANSPORT SUBDIVISIONS (A), (B) AND (C).

PROPELLER TYPE	MAXIMUM OVERHAUL PERIOD	REMARKS
FIXED PITCH – METAL	ON CONDITION	NOTE 5.
FIXED PITCH – WOOD	ON CONDITION	NOTES 2 AND 3.
DE HAVILLAND HYDRAULICALLY CONTROLLABLE –		
FEATHERING –		
PD102/446/1 AND 2	1,200 HOURS	NOTE 1.
PD108/446/1 AND 2	800 HOURS	NOTE 1.
PD164/446/1 AND 2	1,200 HOURS	NOTE 1.
PD186/446/1 AND 2	1,200 HOURS	NOTE 1.
PD122/446/1 AND 2	1,600 HOURS	NOTES 1 AND 4.
NON-FEATHERING –		
PD136/212/1	1,000 HOURS	..
PD170/212/1	1,000 HOURS	..
PD175/212/1	1,000 HOURS	..
PD30/211/1	800 HOURS	..
HAMILTON STANDARD HYDRAULICALLY CONTROLLABLE –		
FEATHERING –		
23E50	2,000 HOURS	NOTE 1.
22D30	1,500 HOURS	NOTE 1.
43E60	1,500 HOURS	NOTE 1.
NON-FEATHERING –		
2D30	800 HOURS	..
COUNTERWEIGHT –		
12D40	1,200 HOURS	..

Propeller Type	Maximum Overhaul Period	Remarks
Hartzell, hydraulically controllable – Feathering – HC 82X and HCA 2X Series .. .. HC 92Z Series .. .. HC 83X and HCA 3X Series .. .. Non-feathering – HC 82X and HCA 2X Series .. .. HC 92Z Series .. .. McCauley hydraulically controllable – Non-feathering – -A 36C .. .. 2B 36C 2D 36C	Propeller overhaul shall coincide with engine overhaul, but shall not exceed 1,000 hours.	
Universal (Koppers) Aeromatic – F.200 .. .. F.200H	600 hours .. .. 600 hours	.. ..
Rotol hydraulically controllable – R30/2/2/1 and 4	1,000 hours	..

NOTE 1 – At regular intervals between overhaul periods and on any other occasion when its removal is necessary, the dome assembly shall be partially dismantled and cleared of carbon and sludge.

NOTE 2 – For all fixed pitch wooden propellers the following inspection procedure is to be observed.

(i) Daily Inspection – This shall consist of a check of the propeller and its attachments to determine whether any defect has developed which may prevent satisfactory and safe operation.

(ii) Fifty-hour Inspection – This shall include the requirements of a Daily Inspection in addition to those listed hereunder –

(A) Check propeller track.
(B) Check tightness of hub bolts.
(C) Check for minor damage, e.g., cuts, bruises, dents, cracks, etc., which must be rectified in accordance with approved methods and limits.

NOTE 3 – The hub bolts of newly fitted wooden propellers are to be checked for tightness at 10, 25 and 50 flying hours following installation. Spinners, if fitted, must be removed when carrying out this inspection.

NOTE 4 – (i) Renew the spinner fan drive plate sub-assembly at every propeller overhaul, unless Mod. 5788 is embodied.
(ii) D.H. Modification 4124 and 3738 must be embodied not later than next overhaul.

NOTE 5 – For all fixed pitch metal propellers the following inspection procedure is to be observed:

(i) Daily Inspection – This shall consist of a check of the propeller and its attachments to determine whether any defect has developed which may prevent satisfactory and safe operation.

(ii) Fifty-hour Inspection – This shall include the requirements of a Daily Inspection in addition to those listed hereunder.

(A) Check propeller track.
(B) Check tightness of hub bolts.
(C) Check for minor damage, e.g., cuts, scratches, nicks, dents, and corrosion, which must be rectified in accordance with approved methods and limits.
(D) Check for possible cracks in vicinity of minor damage by local etching and examination under magnifying glass.